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We know your needs

Lindab is a modern and innovative corporation with great experience and expertise within its field. With us you will be well equipped to meet the challenges and demands of the future.

Lindab - an international success

Lindab is an international Group that develops, manufactures, markets and distributes products and system solutions primarily in steel for simplified construction and improved indoor climate. The company was founded in Sweden in 1959 and the business is carried out within three business areas, Ventilation, Building Components and Building Systems. Worldwide the corporation has approximately 4,500 employees distributed throughout more than 100 branches in 31 countries. Our management system has been certified by ISO 14001 and ISO 9001 standards.

The success of our clients is our future

Today Lindab is one of the world's leading suppliers to the ventilation business, and we want to continue to be so. We will continuously develop and strengthen the abilities we possess today: knowledge, logistics, design and dialogue - and in doing so, we will make the difference to ensure our customer's continued success.

Simple.

We make a difference in the indoor climate

A good indoor climate is far from a natural part of daily life - although it should be. Now, however indoor climate has been put on the agenda of the public debate. This makes demands on you, and Lindab can help you meet them.

Lindab puts indoor climate on the agenda

Not all your customers think about the underlying factors for a good and energy efficient indoor climate. Lindab does. Our many years of experience has given us an in-depth knowledge of how to create the best conditions for a good indoor climate - and an understanding of what it means for both health and well-being. We put that knowledge, and our experience in developing energy efficient products and solutions, at your disposal, when you choose Lindab as your business partner.

We help to secure a good and energy efficient indoor climate for everyone

We don't just make a difference with regards to the indoor climate - but also in the co-operation with our customers. It is not by coincidence that our products are integral parts of the majority of the world's ventilation systems. Right from the design through production to the final delivery, your needs are front and centre. It is by working together that we can achieve success. How? That is just what we will give you an insight to on the following pages.



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Knowledge

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Knowledge is about being in possession of the necessary competence and insight, which makes it possible to develop the right solutions and systems. It is also about having the necessary understanding for the customers and the co-workers, who are able to offer technical advice and support, as well as develop and design these solutions.

2

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We can document our solutions

When you implement a solution, you must be able to trust its quality. That is why documentation and new technology plays an important role for us in our work to find the most intelligent solutions and functional products. These are continuously tested in our own laboratories to insure the highest quality. Our product programme is carefully described and documented – in catalogues and the programme CADvent, which is a part of Lindab's extensive software package, for the design and calculation of complete ventilation plants, climate simulation and selection of air terminal devices and silencers.

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Lindab laboratories ensure a high quality

Quality is the key in choosing us as your business partner. Consequently, all our products are tested in our own air- and acoustic laboratories, where we combine the customers' ideas and views with our abilities and experience - before production begins. The laboratories enable us to conduct full-scale testing offering you a direct advantage.

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Logistics

Your time is valuable, and therefore it is crucial that we always deliver components on time. Never too late – and not too soon.

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Delivery from hour to hour

To deliver on time – often from hour to hour – is a priority with Lindab. The key to our effective logistics system is our fully integrated online sales- and production system, which connects Lindab's divisions throughout the nation. That means, that your local Lindab division for all purposes will function as your main warehouse, and that you can order or pick up any components you may need from your local division.

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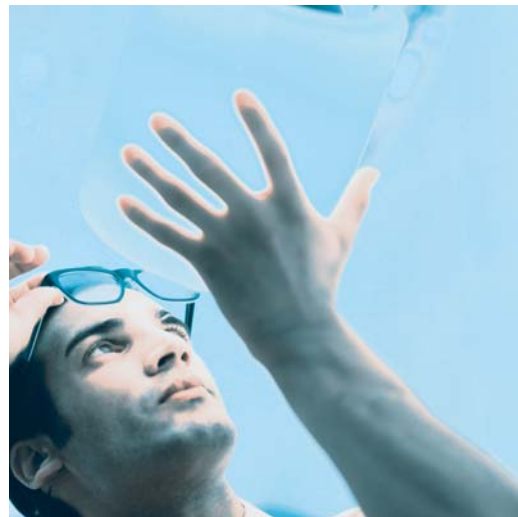
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Design

With a selection of more than 25,000 standard components and the possibility of specialized solutions which can meet any need, Lindab helps secure a good indoor climate for everyone.

Good indoor climate is also design

If we want to make sure thousands of people have a good indoor climate, insuring their well-being every day of the year, it is not only a matter of delivering a product, which is efficient and economical. It is as much a matter of design.

We co-operate with architects and designers

Lindab knows that it is not enough that our solutions are efficient, they have to be beautiful and in harmony with the surroundings in which they are placed. Consequently, we have throughout many years had a dialogue with our customers. Through a close co-operation with a number of renowned architects and designers, we have shaped diffusers and other visible and important details. One architect and industrial designer is Knud Holscher, who has won the Industrial Design award for his design of our diffusers.

We offer our clients special treatment

We are always up to the task. Besides our standard programme, we can design and produce components and solutions to suit your every need. We have divisions, who specialize in bespoke solutions. Tell us which component you need, and we will produce it. That is the only way we can achieve the perfect solution – every time – together.

Dialogue

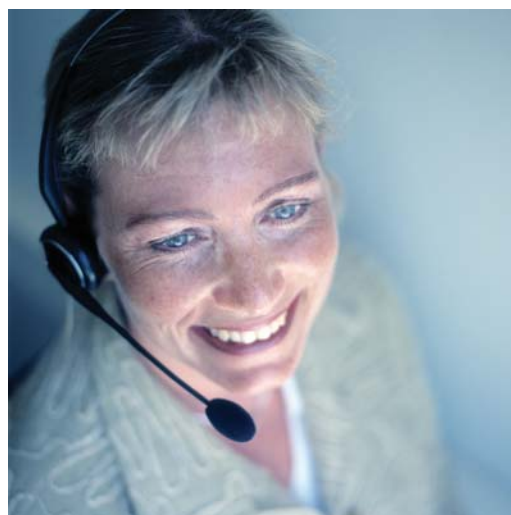
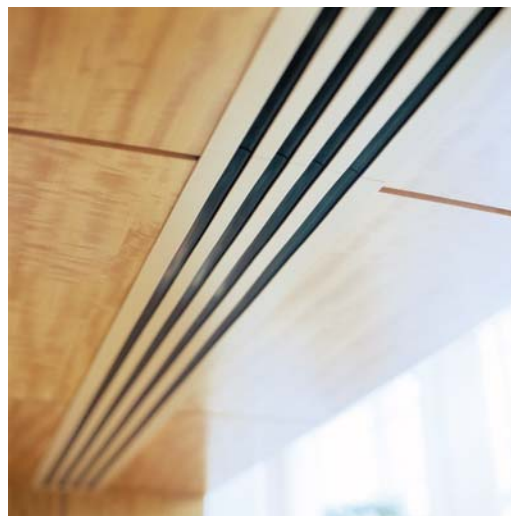
Dialogue is the heart of our corporation. It is the dialogue with our customers and our suppliers – and that between co-workers – which is the central axis of all, that we do.

Dialogue is an important part of everyday life

It is the daily contact, which makes us better at: servicing our customers, co-operation, and developing new innovative products. Lindab is not just a supplier – we also function as the technical advisor, with regards to our product's function and we have to be able to fulfill the very different needs and wants of our customers.

We develop through close dialogue

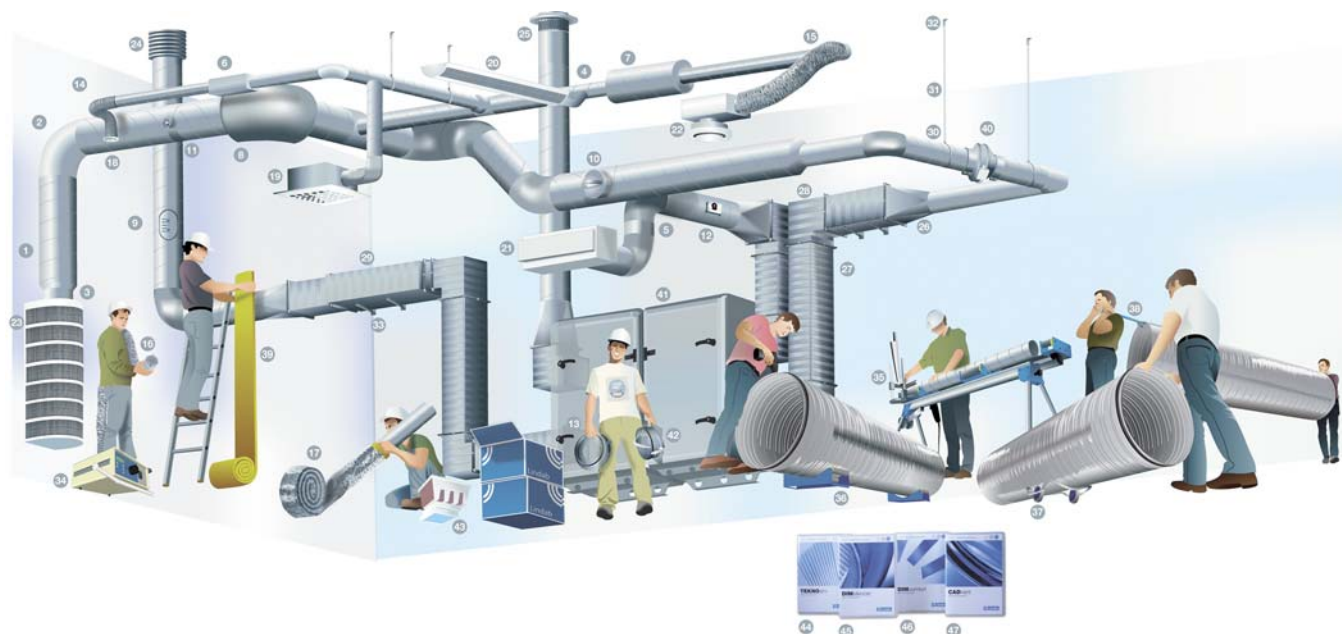
It is only through the close contact with our customers that we are continuously able to develop better solutions. It takes two parties to keep a dialogue going, and Lindab never just sits waiting by the phone. In active co-operation, we follow up on your expectations. How else would we be able to meet them?



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Product range



Lindab Safe

- 1 Circular duct
- 2 Bend
- 3 Reducer
- 4 T-piece
- 5 Female coupling

Silencer

- 6 Circular straight low-built silencer
- 7 Circular straight silencer
- 8 Circular curved silencer

Access doors

- 9 Access door
- 10 Access cap

Damper & Measure

- 11 Regulating damper
- 12 Constant-/variable flow damper
- 13 Damper with flow meter

Flexible ducting

- 14 Semiflexible duct
- 15 Multi layer flexible duct (Combi)
- 16 Flexible duct (PVC)
- 17 Flexible duct insulation/insulation sleeve

Comfort

- 18 Exhaust air valve
- 19 Diffuser VERSIO
- 20 Supply air beam
- 21 Pressure control valve
- 22 Diffuser
- 23 Diffuser COMDIF

Hoods

- 24 Roof hood
- 25 Roof hood

Rectangular

- 26 Rect to round transition
- 27 Rectangular duct
- 28 Rectangular bend
- 29 Rectangular straight silencer

Installation equipment

- 30 Suspension clamp
- 31 Suspension threaded rod
- 32 L-fastener with vibration damper
- 33 Cantilever

Smart tools

- 34 Leakage tester
- 35 SR Cutter
- 36 SR Roller
- 37 Trolley
- 38 SR Handle

Other products

- 39 Insulation
- 40 Duct fan
- 41 Fan
- 42 Fire damper
- 43 Filters

IT solutions

- 44 TEKNOsim
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- 46 DIMcomfort
- 47 CADvent



Air Duct Systems

The Air Duct Systems product area consists of a range of circular ducts and fittings, complemented by e.g. rectangular duct products and hoods. The products are used for the construction of ventilation systems and are the business area's core business.

Comfort

The Comfort product area includes three product programs – Air systems, Water systems and Acoustics – all contributing to create a pleasant, healthy and productive indoor climate.

Air systems – products for supplying and extracting air to and from a ventilated area – such as diffusers, grilles and VAV systems – in order to achieve the required demands for the indoor climate.

Water systems – products that use water for achieving the required indoor climate, such as chilled beams, chilled panels, induction units, heating panels and regulation equipment.

Acoustics – a complete range of silencers which provide the basis for a quiet and pleasant ventilation system.

Ventilation Products

Some of our markets offer a network of branches, or One Stop Shops, where we keep a wide assortment of our standard products on stock, as well as all the tools and accessories needed for installation of ventilation equipment.

At Lindab branch shops we aim to offer our customers everything they need, all collected at one place.

IT solutions

Lindab offers a large range of intelligent and rational tools and services that make your day-to-day work easier. We want to give you the opportunity to develop optimal, reliable and economical ventilation solutions in the shortest possible time.

One part of our offer is a software package for the design, calculation, quantification and planning of complete ventilation and indoor climate systems.



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IT solutions



What if we could help you shorten your design and installation phase, minimizing the risks, and creating better designs? Would that give you improved client satisfaction?

We know that your time is expensive. We offer a large range of intelligent and rational tools that make your day-to-day business work easier, and with us as your partner you can benefit from more than 40 years' experience within ventilation. In short, we want to give you the opportunity to develop optimal, reliable ventilation solutions in the shortest possible time.

CADvent

CADvent is an AutoCAD© application with a complete toolbox for drafting, dimensioning, calculation, quantification and presentation of complete HVAC installations. Our criteria for developing CADvent always start from the basic needs of the draughtsman or engineer.

CADvent provides you with:

- quick and easy drafting, both in 2D and 3D
- improved productivity through design visualisation and instant collision feedback
- correct product data which can be used in the whole project.
- embedded calculations for pressure, noise and balancing, reports easily exportable to Excel and PDF.
- visualisation/presentation tools that lets you present the project in an attractive and more realistic manner towards your client
- production model creation, connected to our business system for pricing, delivery planning and suborder scheduling
- CADvents production modul is based on real-life product information such as measures, connections an technical data, providing BIM information

DIMcomfort

DIMcomfort is based on Lindab's supply and exhaust air terminal device range, and provides calculation and design of diffusers based on the specified requirements.

DIMcomfort offers:

- fast and easy product selection based on the specified requirements
- dimensioning and positioning of the products
- calculation support for noise and temperature
- simulation of flow patterns and velocity from diffusers
- adjustments of air flows to optimise the comfort level
- printing drafts of rooms and diffusers as well as reports with data for chosen diffusers
- integration with CADvent

DIMsilencer

Based on the specified requirements DIMsilencer provides quick, professional noise calculation as well as simple product selection combined with a high degree of user-friendliness.

DIMsilencer offers:

- fast and easy product selection based on the specified requirements
- room-module makes it possible to simulate sound calculations adapted to the conditions in the room
- complete system calculation from unit to room
- quick and easy drafting
- verified, guaranteed properties – data is based on measurement values according to a new standard
- printing of reports with data for chosen products
- integration with CADvent

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TEKNOsim

TEKNOsim is our software for climate simulation. It is user-friendly and provides you with clear, understandable results. You can easily see the consequences of altering various parameters, and you can rely on the software's brand-neutral results.

Easy to use

- all data entered can be selected by means of dialog buttons
- the software contains a large variety of pre-defined, completed designs for walls, windows, ceilings and floors
- the results are presented in easily understood diagrams and tables
- all of Lindab's water-borne climate control products are included in the software
- includes a guide to help new users start their climate simulations quickly and easily

Accurate and reliable

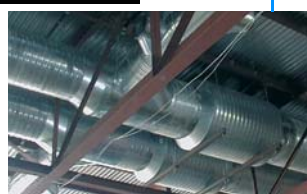
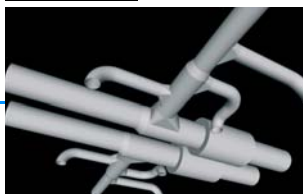
- TEKNOsim is based on many years' experience of data-based climate simulation
- the software takes into account every significant parameter affecting indoor climate
- fast, accurate calculations that minimize the risk of oversizing your climate control system
- verified by Chalmers Industriteknik, CIT, Sweden.

Brand neutrality

- allows the calculation of the heating and cooling effect of various climate control systems

See the results

- the results are presented as clear tables and diagrams
- by changing various parameters, it is possible to study building and installation dynamics
- the software can be used at all stages, beginning with the early stages of planning



Project Support

With Lindab as your partner you can benefit from more than 40 years' experience within ventilation. This means that you can get support from the first draft, to the finished drawing and all the way through quotation and order process.

- Calculations
- Pricing
- Preproduction engineering
- Order handling
- Product selection
- Conversion of rectangular to round duct systems
- 2D/3D CAD model conversion to CADvent

Additional information is available at www.lindabventilation.com or the site of your local Lindab company. Or contact us by mail: itcenter@lindab.com

Training and Support

Our software package is easy to learn, but our philosophy is that all users should invest in our basic training program.

We offer training and support on all our software:

- basic introductory course
- support during installation and start-up
- advanced training courses
- seminars/courses held at your company

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Turning Torso, Malmö, Sweden



Hotel Marriott, Copenhagen, Denmark



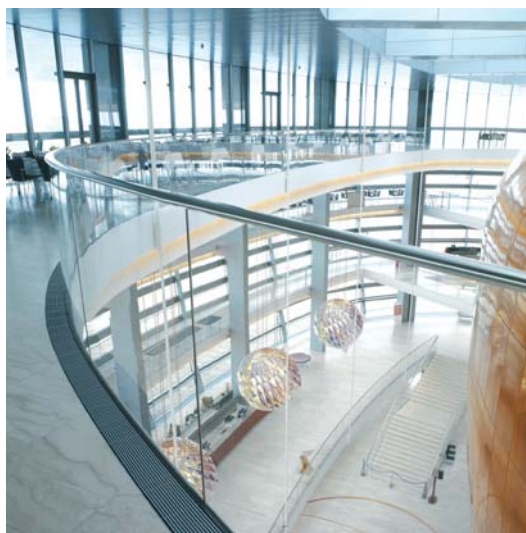
DESY research centre, Hamburg, Germany



Shopping centre, Stockholm, Sweden



Tenpin bowling hall, Sweden



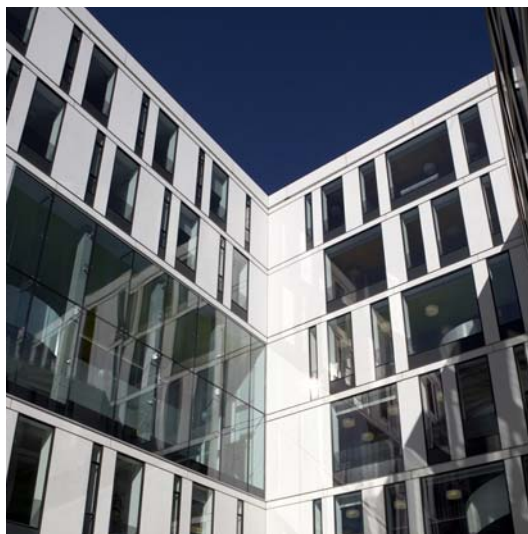
The Opera house, Copenhagen, Denmark



References



Ejdendals arena, Leksand, Sweden



University of Edinburgh, UK



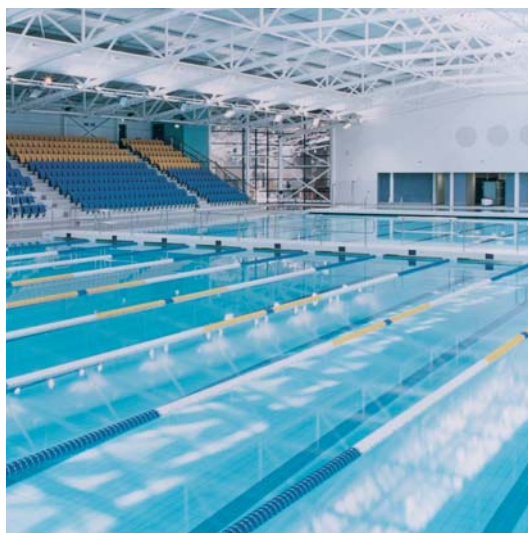
Pareto print, Tver, Russia



Brussels Airport, Belgium



Hospital, Copenhagen, Denmark



Tollcross Park Leisure Center, Glasgow, UK

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General information and theory



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Dimensions

Designations and examples

These designations and dimensions of ducts and fittings are adapted to CEN standards.

Lengths are given in mm.

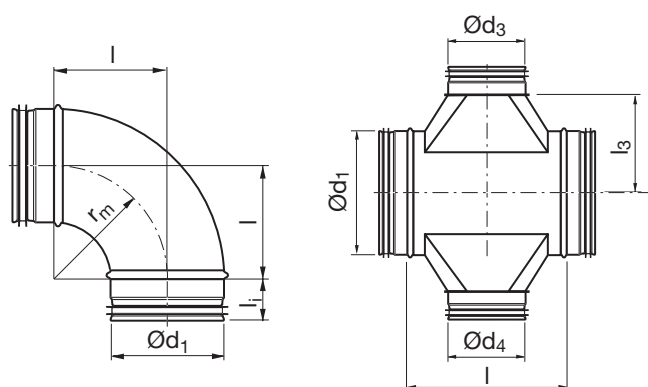
Angles are given in degrees.

Fittings with $\text{Ød}_1 - \text{Ød}_4$ fit inside ducts and fittings with Ød .

Duct and female dimension Ød

Connector dimension $\text{Ød}_1, \text{Ød}_2, \text{Ød}_3, \text{Ød}_4$

Sheet metal thickness t



Installation length l, l_1, l_2, l_3

Bend radius r_m

Insertion length l_i

Eccentricity cc

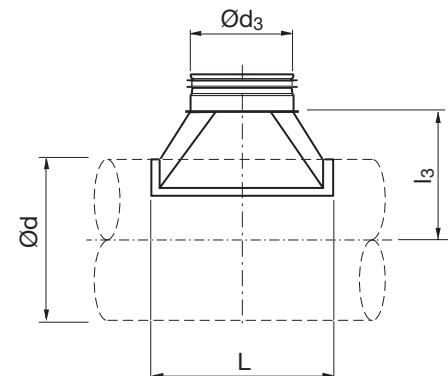
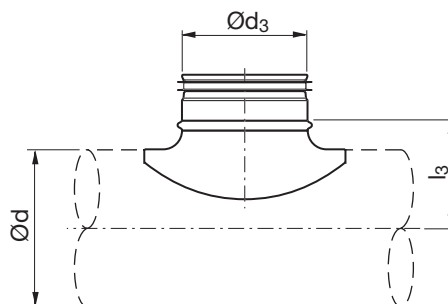
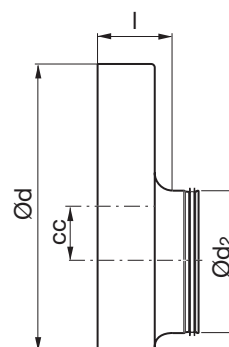
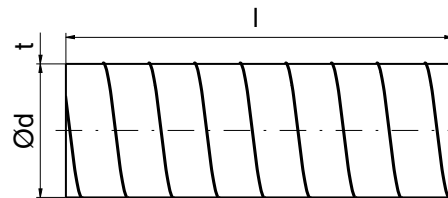
Component length L

Circumference O

Cross-sectional area A_c

Mass m

Linear mass m_l



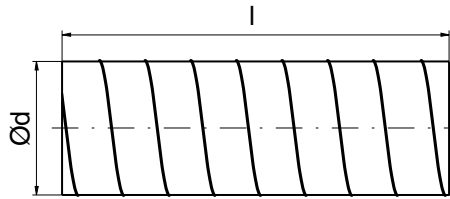


Tolerances

The measures on this page are principally applicable to our "old" range of products mainly manufactured of sheet metal. The measures cannot unreflectingly be regarded as valid for "any" product e.g. flexible ducts.

Bold face denotes standard dimensions.
Standard face denotes intermediate dimensions.

Ducts



According to EN1506

Ød nom	Tolerance range
63	63,0 - 63,5
80	80,0 - 80,5
100	100,0 - 100,5
112	112,0 - 112,5
125	125,0 - 125,5
140	140,0 - 140,6
150	150,0 - 150,6
160	160,0 - 160,6
180	180,0 - 180,7
200	200,0 - 200,7
224	224,0 - 224,8
250	250,0 - 250,8
280	280,0 - 280,9
300	300,0 - 300,9
315	315,0 - 315,9
355	355,0 - 356,0
400	400,0 - 401,0
450	450,0 - 451,1
500	500,0 - 501,1
560	560,0 - 561,2
600	600,0 - 601,2
630	630,0 - 631,2
710	710,0 - 711,6
800	800,0 - 801,6
900	900,0 - 902,0
1000	1000,0 - 1002,0
1120	1120,0 - 1122,5
1250	1250,0 - 1252,5
1400	1400,0 - 1402,8
1500	1500,0 - 1502,9
1600	1600,0 - 1603,1

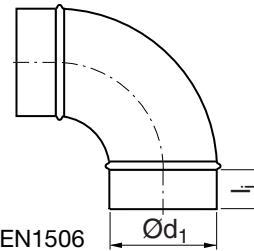
Length

l, l ₁ , l ₃ , etc	Tolerance
0-15	+0 -2
16-100	+0 -5
101-	+0 -10
L	±5

Angle

α	Tolerance
	±2°

Fittings



According to EN1506

Ød ₁ , d ₂ , d ₃ , d ₄ nom	Tolerance range	l _i nom
63	61,8 - 62,3	40
80	78,8 - 79,3	40
100	98,8 - 99,3	40
112	110,8 - 111,3	40
125	123,8 - 124,3	40
140	138,7 - 139,3	40
150	148,7 - 149,3	40
160	158,7 - 159,3	40
180	178,6 - 179,3	40
200	198,6 - 199,3	40
224	222,5 - 223,3	40
250	248,5 - 249,3	60
280	278,4 - 279,3	60
300	298,4 - 299,3	60
315	313,4 - 314,3	60
355	353,3 - 354,3	60
400	398,3 - 399,3	80
450	448,2 - 449,3	80
500	498,2 - 499,3	80
560	558,1 - 559,3	80
600	598,1 - 599,3	80
630	628,1 - 629,3	80
710	708,0 - 709,3	100
800	798,0 - 799,3	100
900	897,9 - 899,3	100
1000	997,9 - 999,3	120
1120	1117,8 - 1119,3	120
1250	1247,8 - 1249,3	120
1400	1397,3 - 1398,8	150
1500	1496,9 - 1498,5	150
1600	1596,5 - 1598,2	150

Weight

±10%

Sheet metal thickness

As in sheet metal standard EN 10143:1993.

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Material

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Sheet metal quality

Fittings and ducts from Lindab Ventilations standard programme are manufactured from zink coated sheet metal. This means that the base material shall be hot dipped zink galvanized steel sheet metal with a yield point of approx. 200 N/mm², and that the galvanization shall be minimum as class Z 275. This surface treatment corresponds to the corrosivity category C2.

A surface treatment to class Z 275 means 275 g zink/m² double sided. Z 275 thus tells the total amount of zink on both sides of a 1 m² sheet metal plate. The thickness can thus be calculated as

$$\text{Zinc thickness} = \frac{\text{zinc weight}}{\text{number of sides} \cdot \text{zinc density}} = \frac{0,275}{2 \cdot 7140} \cdot 10^6 = 19 \mu\text{m}$$

Sheet metal thicknesses

Other thicknesses of sheet metal can be supplied. You will have to expect some changes to the product range, however. For example, an increase in thickness in the ducts of 0,5 mm means that the internal diameter falls by 1,0 mm, which means in turn that standard fittings do not fit, and will have to be specially made for these ducts.

Corrosivity categories

Corrosivity category	Sheet metal material
C2	Galvanized steel sheet metal Z 275
C4	Aluminium sheet metal
	Plastic HB-polyester coated galvanized steel sheet metal
	Plastic epoxy+PE-painted galvanized steel sheet metal
C5	Aluzink sheet metal AZ 185
	Stainless steel sheet metal

Material

- The following material is used in the standard range:
- Ducts and hand made fittings are made with material to EN 10327 – D×51 D.
- Pressed fittings are made with material to EN 10327 – D×54 D.

Other material than galvanised can also be supplied, for example

- **Stainless steel** to EN 1.4404 or AISI 316 or EN 1.4301 or AISI 304. Complies with the requirements of corrosivity category C5. Some fittings which are normally pressed have to be hand made and swaged together.
- **Aluminium** to ISO/DIS 209-1. Complies with the requirements of corrosivity category C4 without surface coating. Some fittings which are normally pressed have to be hand made and swaged together.
- **Plastic coated products**

Products are made, as standard, from hot dip galvanised steel sheet and then powder coated internally and externally with a mixed powder consisting of epoxy and polyester (PE) to a thickness of 80 µm.

Plastic coated products as above complies with the requirements of corrosivity category C4.

Standard colours are white NCS S0502-Y 30 gloss units according to Gardner 60° and brown NCS S7010-Y70R 45 gloss units.

NOTE! For ducts of Ø<100, the maximum length is 1,5 m for internal coating.

Products can optionally be coated on only the inside or outside.

Powder coating can be optionally obtained in thicknesses of up to 200 µm.

Products painted with mix powder, epoxy plus polyester, can after some time of exposure to UV radiation receive changes in colour. Hence storage in sunlight ought to be avoided.

- **Aluzink** with surface treatment to AZ 185 means 185 g aluzink/m² double sided, which complies with the requirements of corrosivity category C4. The sheet metal is treated with ALC (Anti-fingerprint Lubrication Corrosion). Some fittings which are normally pressed have to be fabricated and swaged together.



Materials

The measures on this page are principally applicable to our "old" range of products mainly manufactured of sheet metal.

The measures cannot unreflectingly be regarded as valid for "any" product e.g. flexible ducts.

Product	Material/type	Operation			
		Continual		Intermittent	
		Temperature limit			
		min °C	max °C	min °C	max °C
Pressed and seam welded	Galvanized steel sheet metal		200 ¹		250 ²
	Aluminium sheet metal		200 ³		300
	Stainless steel sheet metal		500		700
	PVC coated sheet steel metal		80		120
	PE/EP coated products		150		200
	Aluzink sheet metal		315		
Swaged, spot welded and/or blind interlocked joint	Acrylic mastic	-40	70		
	Silicone mastic		150		200
Safe gasket and damper blade seals	EPDM rubber	-30	100	-50	120
	Silicone rubber	-70	150	-90	200
Damper blade seal at Ø80	Silicone cell rubber	-50	200		
Foam rubber seal	EPDM rubber	-30	100	-50	120
Foam plastic gasket	Polyester	-40	70		
Measuring nozzle	Plastic		70		
Damper shaft bearings	Polyamide	-30	150	-50	200
	Brass		300		
Damper actuator	Electric	-30	50		
	Pneumatic	-5	60		
Duct filter	Polyester		120		
Drain hose	Ethylene vinyl acetate and polyethylene	-45	65		
Insulation	Glass wool		200		
	Rock wool		700		
Silencer	Polyester		130		180

¹ Discoloration occurs at about 200 °C in galvanized steel. This is mostly an appearance problem and does not mean impaired corrosion protection in a normal environment.

² If the temperature rises to about 300 °C, the adhesion of the zinc is impaired, which means poorer corrosion protection.

³ Aluminium sheet will soften after a couple of years at 200 °C.



The SI system

Units

The SI system (Système International d'Unités) is used in this catalogue, in accordance with international practice. Units may be given in the "technical system" in diagrams and tables, in parallel with the SI system.

Some basic units

For length	metre	m
For mass	kilogramme	kg
For time	second	s
For electric current	ampere	A
For temperature	kelvin	K

Some derived units

For frequency	hertz	Hz	1 Hz = 1/s
For force	newton	N	1 N = 1 kg · m/s ²
For pressure, mechanical stress	pascal	Pa	1 Pa = 1 N/m ²
For energy, work	joule	J	1 J = 1 N · m
For power	watt	W	1 W = 1 J/s
For electric potential, electric tension	volt	V	1 V = 1 W/A

Some additional units

For time	minute	min	1 min = 60 s
	hour	h	1 h = 3 600 s = 60 min
For flat angles	degree	°	1° = 1/360 of a circle
For volume	litre	l	1 l = 1 000 cm ³ = 1 dm ³

Some multiple prefixes

Index	Designation	Des.	Example	
10 ¹²	tera	T	1 terajoule	1 TJ
10 ⁹	giga	G	1 gigawatt	1 GW
10 ⁶	mega	M	1 megavolt	1 MV
10 ³	kilo	k	1 kilometre	1 km
10 ²	hecto	h	1 hectogramme	1 hg
10 ¹	deca	da	1 decalumen	1 dalm
10 ⁻¹	deci	d	1 decimetre	1 dm
10 ⁻²	centi	c	1 centimetre	1 cm
10 ⁻³	milli	m	1 milligramme	1 mg
10 ⁻⁶	micro	μ	1 micrometre	1 μm
10 ⁻⁹	nano	n	1 nanohenry	1 nH
10 ⁻¹²	pico	p	1 picofarad	1 pF



The SI system

Conversion factors

Tables for conversion to other dimensions are given for some of the units commonly used in the industry.

Pressure, p

Pa pascal N/m ²	mm wc mm Aq mm H ₂ O	mm Hg (at 20 °C)	in wg " wg in wc	psi(g) ibf/in ²	bar
1	0,102	0,007 53	0,004 02	0,000 145	0,000 010 0
9,79	1	0,073 7	0,039 4	0,001 42	0,000 097 9
133	13,6	1	0,534	0,019 3	0,001 33
249	25,4	1,87	1	0,036 1	0,002 49
6 895	704	51,9	27,7	1	0,068 9
100 000	10 215	753	402	14,5	1

Length, l

in inch	ft foot	yd yard	m metre	mile
1	0,083 3	0,027 8	0,025 4	0,000 015 8
12,0	1	0,333	0,305	0,000 189
36,0	3,00	1	0,914	0,000 568
39,4	3,28	1,09	1	0,000 621
63 360	5 280	1 760	1 609	1

Area, A

in ² sq in	ft ² sq ft	yd ² sq yd	m ² sq metre	ar	ha hectare
1	0,006 94	0,000 772	0,000 645	0,000 006 45	0,000 000 064 5
144	1	0,111	0,092 9	0,000 929	0,000 009 29
1 296	9,00	1	0,836	0,008 36	0,000 083 6
1 550	10,8	1,20	1	0,010 0	0,000 100
155 000	1 076	120	100	1	0,010 0
15 500 031	107 639	11 960	10 000	100	1

Volume, V

in ³ cu in	l litre	US gal gallon	UK gal gallon	ft ³ cu ft	yd ³ cu yd	m ³ cubic metre
1	0,016 4	0,004 33	0,003 60	0,000 579	0,000 021 4	0,000 016 4
61,0	1	0,264	0,220	0,035 3	0,001 31	0,001 00
231	3,79	1	0,833	0,134	0,004 95	0,003 79
277	4,55	1,20	1	0,161	0,005 95	0,004 55
1 728	28,3	7,48	6,23	1	0,037 0	0,028 3
46 656	765	202	168	27,0	1	0,765
61 024	1 000	264	220	35,3	1,31	1

Velocity, v

ft/min fpm	km/h Bz	ft/s	mile/h mph	knot kn	m/s
1	0,018 3	0,016 7	0,011 4	0,009 87	0,005 08
54,7	1	0,911	0,621	0,540	0,278
60,0	1,10	1	0,682	0,592	0,305
88,0	1,61	1,47	1	0,869	0,447
101	1,85	1,69	1,15	1	0,514
197	3,60	3,28	2,24	1,94	1



The SI system

Conversion factors

Volume flow, q_v

ft ³ /h cfh	l/min	m ³ /h	ft ³ /min cfm	l/s	m ³ /s
1	0,472	0,028 3	0,016 7	0,007 87	0,000 007 87
2,12	1	0,060 0	0,035 3	0,016 7	0,000 016 7
35,3	16,7	1	0,589	0,278	0,000 278
60,0	28,3	1,70	1	0,472	0,000 472
127	60,0	3,60	2,12	1	0,001 00
127 133	60 000	3 600	2 119	1 000	1

Mass, m

oz ounce	lb pound	kg kilogramme
1	0,062 5	0,028 3
16,0	1	0,454
35,3	2,20	1

Mass flow, q_m

lb/min	kg/s
1	0,007 56
132	1

Density, ρ

kg/m ³	lb/ft ³	g/cm ³	lb/in ³
1	0,062 4	0,001 00	0,000 036 1
16,0	1	0,016 0	0,000 579
1 000	62,4	1	0,036 1
27 680	1 728	27,7	1

Force, F

N newton	lbf pound-force	kp kilopond
1	0,225	0,102
4,45	1	0,454
9,81	2,20	1

Torque, M

lbf · in	Nm	lbf · ft	kpm
1	0,113	0,083 3	0,011 5
8,85	1	0,738	0,102
12,0	1,36	1	0,138
86,8	9,81	7,23	1

Energy, work, E

J joule Nm, Ws	Btu British thermal unit	kcal kilocalorie	kWh
1	0,000 948	0,000 239	0,000 000 278
1 055	1	0,252	0,000 293
4 187	3,97	1	0,001 16
3 600 000	3 412	860	1



The SI system

Conversion factors

Power, P

Btu/h	W watt Nm/s, J/s	kcal/h	hk metric horsepower	hp UK, US horsepower
1	0,293	0,252	0,000 398	0,000 393
3,41	1	0,860	0,001 36	0,001 34
3,97	1,16	1	0,001 58	0,001 56
2 510	735	632	1	0,986
2 544	746	641	1,01	1

Temperature difference, temperature change, ΔT for K; $\Delta\vartheta$ for $^{\circ}\text{C}$

K kelvin	$^{\circ}\text{F}$ degree Fahrenheit	$^{\circ}\text{C}$ degree Celsius
1	1,80	1,00
0,556	1	0,556
1,00	1,80	1

Associated temperatures

K	$^{\circ}\text{F}$	$^{\circ}\text{C}$	Physical state
0,00	-460	-273	Absolute zero
255	0,00	-17,8	Mixture of sal ammoniac and snow
273	32,0	0,00	Melting point of ice
293	68,0	20,0	Standard atmospheric temperature
311	100	37,8	Normal temperature of human body
373	212	100	Boiling point of water

Conversion between temperatures

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9 \quad ^{\circ}\text{C} = \text{K} - 273,15$$

$$^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32 \quad \text{K} = ^{\circ}\text{C} + 273,15$$

Greek letters

Greek letters are used in technical and scientific texts to denote physical units.

Minor variations in the shapes of the letters can be tolerated, on condition that this does not cause any risk of confusion.

Name	Lower case	Upper case	Name	Lower case	Upper case
alfa	α	A	ny	ν	N
beta	β	B	ksi	ξ	Ξ
gamma	γ	Γ	omikron	\omicron	O
delta	δ	Δ	pi	π	Π
epsilon	ϵ	E	ro	ρ	P
zeta	ζ	Z	sigma	σ	Σ
eta	η	H	tau	τ	T
teta	ϑ	Θ	ypsilon	υ	Y
jota	ι	I	fi	ϕ	Φ
kappa	κ	K	ki	χ	X
lambda	λ	Λ	psi	ψ	Ψ
my	μ	M	omega	ω	Ω



Pressure

1

Total pressure = dynamic pressure + static pressure

2

The static pressure in the atmosphere varies with the weather - high pressure or low pressure - and with the height above sea level. The standard pressure, atmospheric pressure at sea level is:

3

101,3 kPa = 1,013 bar = 1013 mbar
(= 1 atm = 760 mm Hg)

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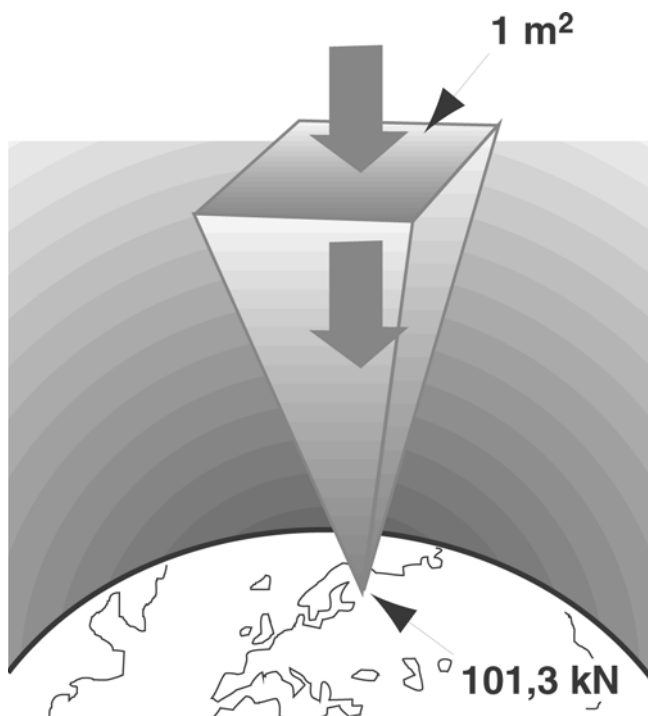
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At one particular point, such as in a ventilation duct, the static pressure comes from all sides.

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In a ventilation system, the static pressure is related to the ambient atmospheric pressure outside the duct system; the static pressure can thus be positive - higher than ambient atmospheric, or negative - lower than ambient atmospheric pressure.

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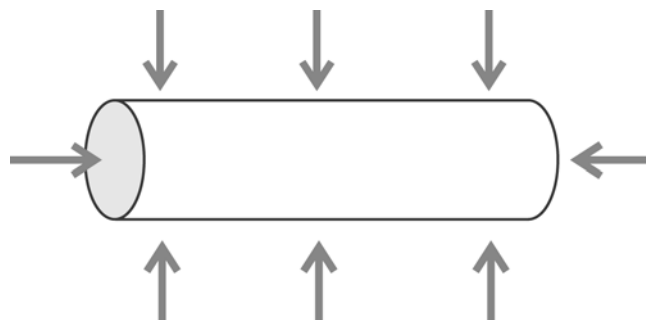
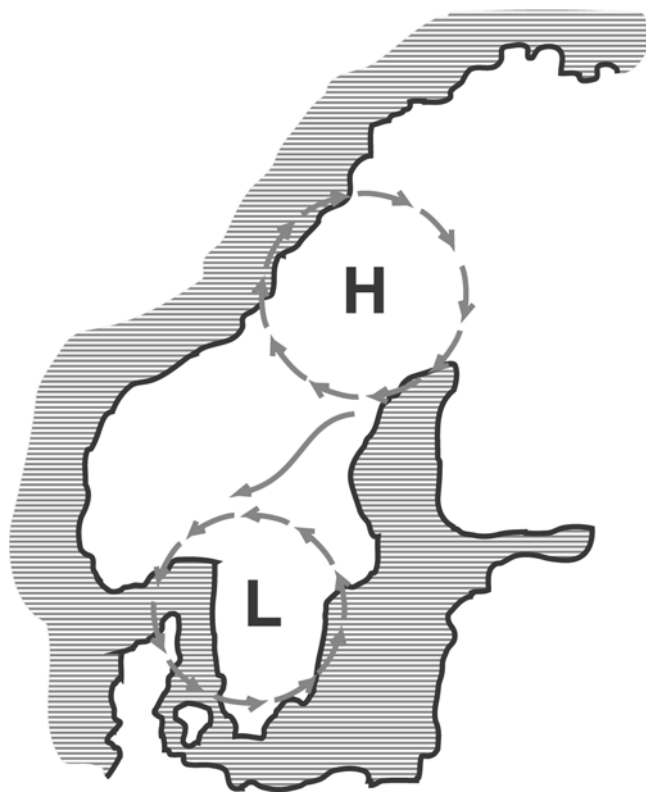
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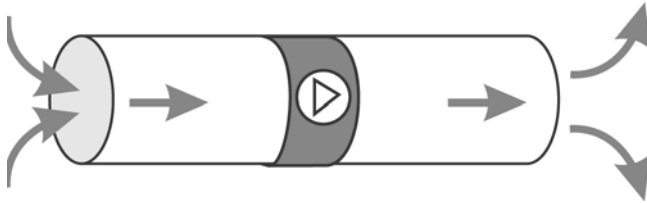




Pressure

Pressure drop

If you produce a static pressure difference in an open duct system, you can get the air to flow from a point of higher pressure to a point of lower pressure - from the atmosphere via the inlet grating to the suction side of the fan, and from the supply side of the fan via the supply terminals back to the atmosphere. The pressure difference is converted into kinetic energy.



Dynamic pressure is a measure of the kinetic energy of the moving air. The connection between pressure and energy is easy to see if you use SI system units

$\text{Pa} = \text{N}/\text{m}^2 = \text{Nm}/\text{m}^3 = \text{J}/\text{m}^3$ i.e. energy (in J) per unit volume (in m^3) of the flowing air.

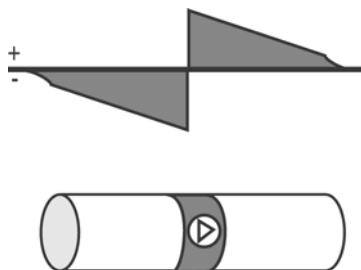
The dynamic pressure depends on

$$p_d = \rho \cdot \frac{\bar{v}^2}{2} \text{ with the units}$$

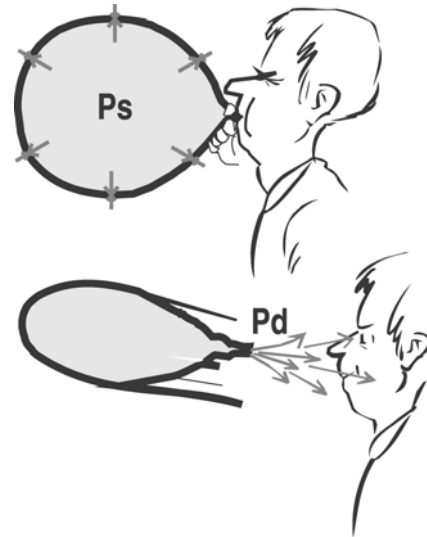
$$\frac{\text{kg}}{\text{m}^3} \cdot \left(\frac{\text{m}}{\text{s}}\right)^2 = \frac{\text{kg}}{\text{m}^3} \cdot \frac{\text{m}^2}{\text{s}^2} = \frac{\text{kgm}}{\text{s}^2} \cdot \frac{\text{m}}{\text{m}^3} = \text{N} \cdot \frac{1}{\text{m}^2} = \frac{\text{N}}{\text{m}^2} = \text{Pa}$$

Flow in a duct system is normally not free of loss. Friction losses occur and the air is forced to change direction. It requires pressure (i.e. energy) to manage both dynamic and static pressure - the sum of these two is referred to as total pressure.

$$p_t = p_s + p_d$$



Since p_s will be negative in relation to atmospheric pressure (on the suction side of the fan), this means that p_t will also be negative if the total of p_s and p_d is negative.



Pressure drop and flow losses

In a ventilation system, you want to get air moving! Clean air is to be supplied to the occupancy zone and polluted air must leave the room, process or machine. Energy is needed to move the air, which is added via the fan, which gets the air moving.

In order to flow through a duct system, air has to overcome two types of flow resistances or pressure drops:

- **friction loss** between the flowing air and the duct walls.
- **single loss** when the air changes direction or speed.

Friction loss (also known as the R value) is expressed in the

$$\text{unit Pa/m} \Delta p_f = \frac{\lambda}{d_h} \cdot \rho \frac{\bar{v}^2}{2}$$

where

Δp_f = friction loss per metre (Pa/m)

λ = friction factor related to duct material and surface roughness

d_h = hydraulic diameter of the duct, the diameter of a circular duct which gives the same friction pressure drop at the same flow velocity as a rectangular duct

$$d_h = \frac{2 \cdot a \cdot b}{a + b}$$

where a and b are duct sides

For a circular duct, $d_h = d$

ρ = air density (kg/m^3)

\bar{v} = average velocity of the air (m/s)

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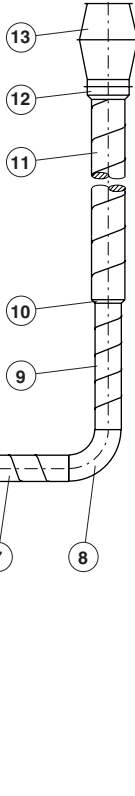
Pressure

Pressure drop calculation

Fan pressure capacity required

Let us do a pressure drop calculation for a simple duct system!

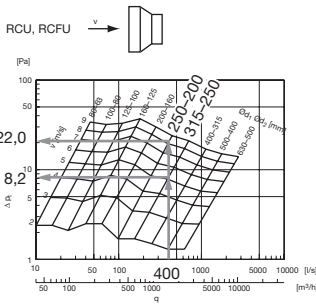
- Number the fittings, in the direction of air flow.
- Then put the dimension and data of each component in a table as in the example.
- Read the pressure drop from the graph for each component. You can follow this example from the reduced scale graphs below.



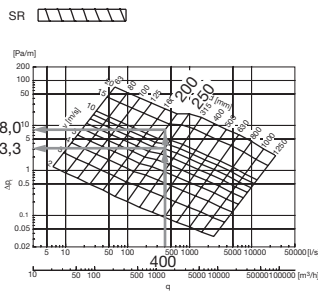
No	Flow l/s	Component Denom.	Dimension Ø mm	Length m	Pressure drop Pa/m	Pressure drop Pa
①	400	RCU	315-250	-	-	8,2
②	"	SR	250	2,0	3,3	6,6
③	"	BU 90°	250	-	-	11,0
④	"	SR	250	1,6	3,3	5,3
⑤	"	SLCU 100	250/1200	1,2	5,0	6,0
⑥	"	RCFU	250-200	-	-	22,0
⑦	"	SR	200	1,5	8,0	12,0
⑧	"	BU 90°	200	-	-	24,0
⑨	"	SR	200	1,2	8,0	9,6
⑩	"	RCU	250-200	-	-	15,0
⑪	"	SR	250	3,5	3,3	11,6
⑫	"	RCFU	400-250	-	-	16,0
⑬	"	HF	400	-	-	14,0
<i>Total pressure drop (sum of rows 1 – 13) = 161,3</i>						

Add up the pressure drops on the far right of the table. Then select a suitable fan which gives the required flow $q = 400$ l/s and a total pressure rise of $p_t = 161$ Pa.

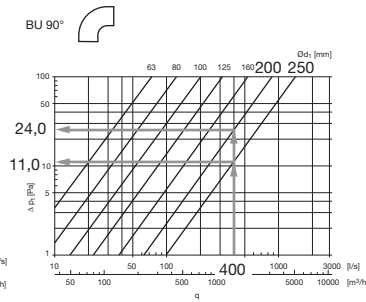
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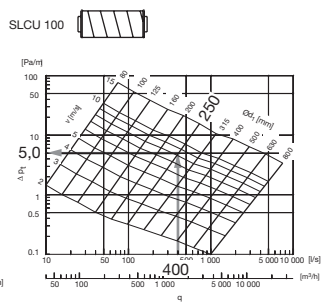
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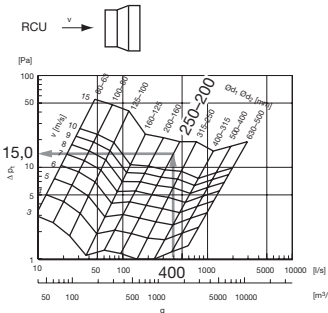
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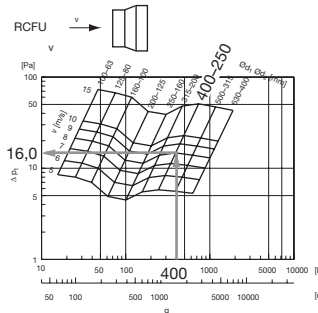
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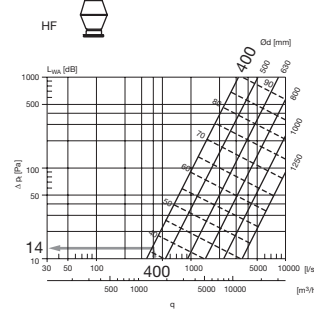
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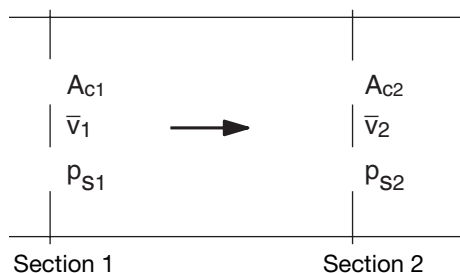
Pressure

Prerequisites

In order to correctly dimension a duct system you need information about the total pressure drops of the fittings.

The total pressure drop Δp_t (Pa) between two sections, 1 and 2, in a duct system is defined by

$$p_t = p_{t1} - p_{t2} = (p_{s1} + p_{d1}) - (p_{s2} + p_{d2})$$



where $p_d = \frac{\rho \cdot \bar{v}^2}{2}$ and $\bar{v} = \frac{q}{A_c}$

It is assumed in pressure drop calculation of ventilation ducts that:

- incompressible flow, i.e. air density does not change
- isothermal relationship, i.e. no exchange of heat between the duct and its surroundings occurs
- no changes in potential energy, i.e. height differences between the various sections of the duct system are neglected

Designations used

l	=	length	m (mm)
a	=	long side	m (mm)
b	=	short side	m (mm)
r	=	radius	m (mm)
d	=	diameter	m (mm)
d _h	=	hydraulic diameter	m (mm)
A _c	=	cross sectional area	m ²
p _A	=	atmospheric pressure	mbar
p _s	=	static pressure	Pa
p _d	=	dynamic pressure	Pa
p _t	=	total pressure	Pa
Δp	=	pressure drop	Pa
Δp _t	=	total pressure drop	Pa
θ	=	temperature	°C
\bar{v}	=	air velocity (average)	m/s
q	=	air flow	m ³ /s
ρ	=	density	kg/m ³
α	=	angle	°
φ	=	relative humidity	%
λ	=	friction number	
R	=	coefficient of friction	Pa/m
ζ	=	resistance number	
ν	=	kinematic viscosity	m ² /s

The total pressure drops for the most common fittings are shown in graphs, as a function of air flow (or velocity in some cases).

The basic data for the graphs comes from measurements and calculations done at our laboratories. Some graphs are taken from literature.

The graphs apply to air under standard conditions.

ν	=	15,1 · 10 ⁻⁶ m ² /s
θ	=	20 °C
ρ	=	1,2 kg/m ³
φ	=	65 %
p _A	=	1013,2 mbar

For air of other density (ρ_{other}) the flow (q_{other_density}) is obtained from the formula

$$q_{\text{other_density}} = q_{\text{graph}} \cdot \sqrt{\frac{1,2}{\rho_{\text{other}}}}$$

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Sound

Ventilation does not have to be noisy!

1

If you use your common sense, and construct your air treatment system with consideration and good components, you can often avoid problems and complaints.

2

Fans make noise, this is something you can not do a lot about. But you can prevent the noise from getting into the areas connected to the fan system - you can absorb and damp the noise on the way.

3

This description does not claim to teach you how to calculate and attenuate noise in a ventilation system - there are books available on this.

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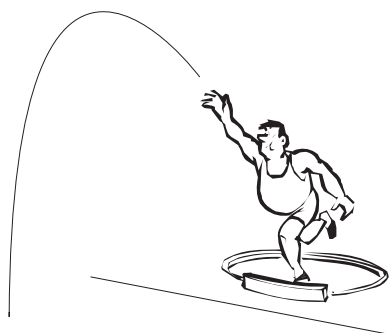
Source

Waves on water

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We throw a stone onto completely calm water.

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Waves in air

We fire a starter's gun.

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This description only aims at providing information about a few simple rules and hints, which together with common sense can be enough for simple installations.

You must have some basic knowledge about how and where noise is generated, transmitted and attenuated in the system, to be able to choose the correct principle and correct components. To take a simple analogy: noise transmission consists of waves in a medium, i.e. air, which we can not see. This is very similar to the way waves spread on water.

Let us examine the analogy, to make the comparison clearer:

Distribution

Waves on water

Waves on water spread out in increasing concentric circles from the centre, where the stone hit the water.



Waves in air

Sound waves spread out in the air, in all directions, in an increasing ball from the centre, i.e. the gun.





Sound

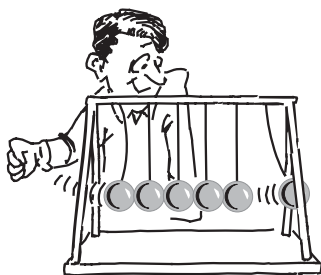
Energy transport

Waves on water

Kinetic energy is transmitted from molecule to molecule in the water. They bounce against each other. Molecules move back and forwards. Energy spreads from the source.

Waves in air

Kinetic energy is transmitted from molecule to molecule in the air. They bounce against each other, and move back and forwards. Energy spreads from the source.



Distance

Waves on water

When waves depart from the centre, where the stone hit, the wave height becomes lower and lower, until they are invisible. The water is calm again.

Waves in air

When sound waves depart from the source, the starter's gun, wave movement drops off and the sound becomes weaker and weaker until it can no longer be heard.



Intensity

Waves on water

The energy which started the wave propagation, or the power needed to keep it going, is distributed across an increasing area as the distance, the radius, increases.

Waves in air

The energy which started the wave propagation, or the power needed to keep it going, is distributed across an increasing volume as the distance, the radius, increases.



Obstruction in the way

Waves on water

If waves in water encounter the side of a boat or jetty, they will be reflected at the same angle as they met the obstruction.

Waves in air

If waves in air encounter a wall, they will be reflected at the same angle as they met the obstruction.

In the same way as when you bounce a ball on the wall.

Energy loss

Waves on water

The reflected wave height is lower than the incident wave. Some of the kinetic energy is absorbed in the collision with the jetty side (and is converted into heat).

Waves in air

The reflected wave movement is lower than the incident wave. Some of the kinetic energy is absorbed in the collision with the wall (and is converted into heat)

The ball moves more slowly when it bounces back than when it hits the wall.

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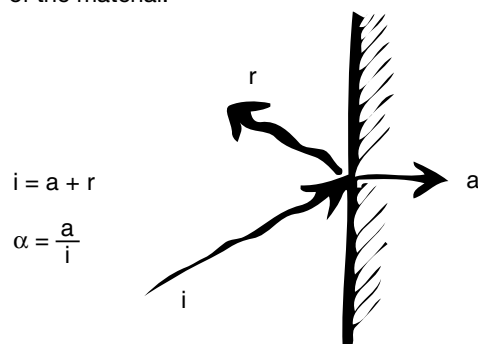
Sound

Sound can be absorbed

When sound waves meet a soft, porous wall (mineral wool etc.), the vibrating molecules penetrate the surface layer, and are then braked by friction against the material fibres.

The part of the energy which is thus absorbed is converted to heat in the material, and the rest is reflected back into the room. This type of damping, where the sound is braked by the soft surface layer, is referred to as porous absorption.

The sound absorption ability of different materials varies. This property is expressed as the sound absorption factor α of the material.



If nothing is absorbed, everything is reflected, then $a = 0$ which makes $\alpha = 0$:

$$i = 0 + r\alpha = \frac{0}{i} = 0$$

If nothing is reflected, everything is absorbed, then $r = 0$ which makes $\alpha = 1$:

$$i = a + 0\alpha = \frac{a}{a} = 1$$

An open window can be said to have $\alpha = 1$, all sound from the room which arrives at the window disappears out!

In hard materials, such as concrete or marble surfaces, virtually no sound energy is absorbed, everything is reflected and the α value is near to zero. In rooms with hard surfaces, the sound bounces for a long time before it dies out. The room has a long reverberation time and we get a strong, unpleasant echo. The sound level caused by normal sound sources becomes high.

In soft materials, such as thick mineral wool boards, the opposite happens. The α value is close to 1. Sometimes, excessively damped, soft rooms are unsuitable "You can't hear what you say". Avoid extremes - the reverberation time in a room should be chosen to suit the activities there.

Sound, in a ventilation system, moves just as easily with or against the direction of flow.

Sound which moves through a duct system will be damped in several ways. Let us start off with bare metal duct walls.

Metal walls also absorb - but not much

When the metal duct walls are hit by the sound wave, they will start to vibrate at the same frequency as the sound.

The movements are normally very small, and hardly visible to the naked eye (it is often easier to feel the vibration, with your fingertips on the sheet metal).

What happens is the same as when a window vibrates when a heavy truck passes by on the street.

The duct panels and the window will then function as **membrane dampers** - boards which are made to vibrate by the incident sound energy. But this movement is not without friction, since it is braked by both the bending strength of the sheet, and (mostly) by the connection around the edges of the sheet. As previously, with the porous damper, some of the energy is converted into heat - the sound which remains has become weaker and has been damped.

Given the same free duct area, a circular, spiral seamed duct is stiffer than a rectangular one and will thus provide less damping.

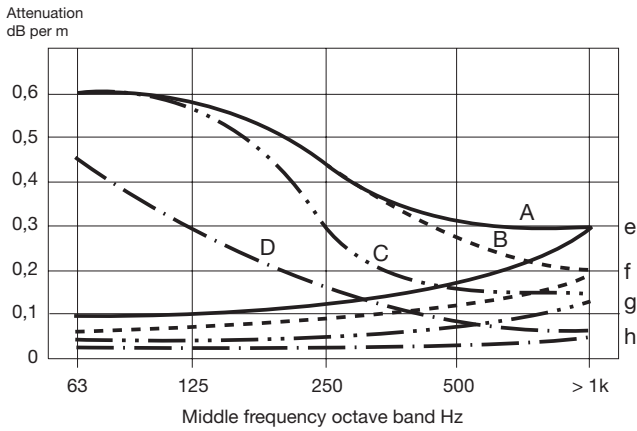
As shown in the illustration on the next page, damping in unlined ducts is relatively modest. For this reason, it is normally ignored when the noise in the installation is calculated, it is instead used as the margin of safety.

Attenuation in straight sheet metal ducts (1 mm sheet metal thickness)



Sound

Attenuation in straight sheet metal ducts (1 mm sheet metal thickness)

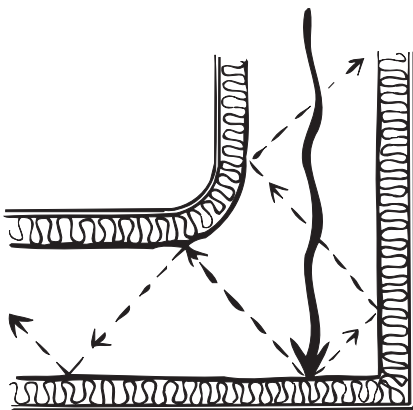


Duct dimensions			
Rectangular sheet metal ducts			
□ 75-200	200-400	400-800	800-1000
A ———	B - - - -	C ·····	D - ·····
Circular sheet metal ducts			
Ø75-200	200-400	400-800	800-1600
e ———	f - - - -	g ·····	h - ·····

Absorption is more effective

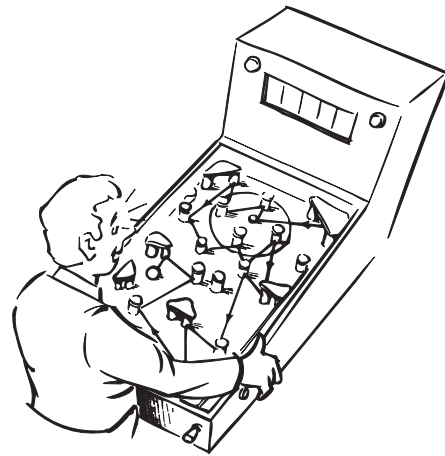
The damping becomes more effective if we put absorbent material into the duct system. The way that sound is damped was described above, part of the sound energy is absorbed by the absorption material which is hit by the sound.

If the sound waves bounce enough times against porous surfaces, the remaining sound energy, the kinetic energy which makes your eardrums vibrate, will be so low that it does not cause annoyance!

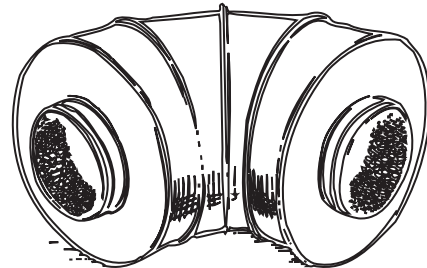


Where should you put the absorption material in the ducts?

The answer is obvious - where the material comes into contact with the greatest number of sound waves. Noise which travels along a long, unlined, straight duct will be directed by reflection against the duct walls. Absorption material here is of less use than if it is put in a bend, a suction or pressure plenum chamber or in a straight duct just after a fan, or anywhere where we have "turbulent sound flow". The more times sound bounces against the soft sides, the more useful the material becomes.



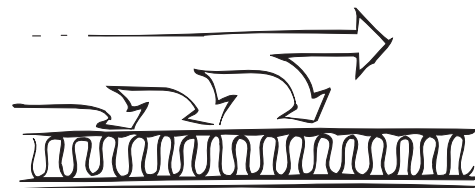
Why the curved silencer BSLCU is so effective!



Straight silencers concentrate the absorption material

There is a complement to the description of sound waves above. When the sound waves travel along a porous surface, they will be deflected towards the duct walls. This deflection is called, "diffraction".

This, and the way that sound propagation is disturbed by turbulence, gives that straight silencers can have high attenuation.

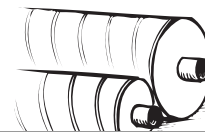


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Sound

As we can see from the values for SLCU 50 and SLCU 100, damping varies with a few simple rules:



To attenuate low frequencies (< 500 Hz) thicker absorption material is needed. – SLCU 100 is more efficient than SLCU 50.

SLCU 50

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	5	5	8	15	28	29	23	16
80	600	5	7	12	26	41	50	48	24
80	900	5	9	17	37	50	50	50	32
80	1200	6	11	21	49	50	50	50	40
100	300	2	2	6	14	21	25	20	11

SLCU 100

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	10	8	10	16	21	27	24	16
80	600	12	13	19	27	37	50	46	24
80	900	14	18	28	38	50	50	50	33
80	1200	16	23	37	49	50	50	50	42
100	300	5	4	11	14	18	24	20	11

To attenuate high frequencies (> 500 Hz), thinner absorption material is sufficient. – SLCU 50 is just as effective as SLCU 100.

SLCU 50

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	5	5	8	15	28	29	23	16
80	600	5	7	12	26	41	50	48	24
80	900	5	9	17	37	50	50	50	32
80	1200	6	11	21	49	50	50	50	40
100	300	2	2	6	14	21	25	20	11

SLCU 100

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	10	8	10	16	21	27	24	16
80	600	12	13	19	27	37	50	46	24
80	900	14	18	28	38	50	50	50	33
80	1200	16	23	37	49	50	50	50	42
100	300	5	4	11	14	18	24	20	11

The longer way the sound has to pass over the absorption surface the higher the attenuation. Long silencers have higher attenuation than short ones. – SLCU with l = 600 attenuates more than SLCU with l = 300.

SLCU 50

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	5	5	8	15	28	29	23	16
80	600	5	7	12	26	41	50	48	24
80	900	5	9	17	37	50	50	50	32
80	1200	6	11	21	49	50	50	50	40
100	300	2	2	6	14	21	25	20	11

NOTE!

The attenuation is not directly proportional to the length. The reason for this is that you get an extra attenuation at cross section area changes, and all silencers have two of them irrespective of their length.

The shorter distance between the absorbing surfaces the higher the attenuation. Silencers with small diameter attenuates more than big ones. – SLCU Ø 80 attenuates more than SLCU Ø 250.

SLCU 50

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	5	5	8	15	28	29	23	16
80	600	5	7	12	26	41	50	48	24
80	900	5	9	17	37	50	50	50	32
80	1200	6	11	21	49	50	50	50	40
100	300	2	2	6	14	21	25	20	11
250	600	3	2	7	13	17	16	8	6
250	900	3	4	8	20	26	23	10	8
250	1200	4	5	9	26	35	30	12	10
315	600	0	2	6	11	14	9	4	5

SLCU 100

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
80	300	10	8	10	16	21	27	24	16
80	600	12	13	19	27	37	50	46	24
80	900	14	18	28	38	50	50	50	33
80	1200	16	23	37	49	50	50	50	42
100	300	5	4	11	14	18	24	20	11
250	900	7	7	15	18	25	23	10	9
250	1200	7	9	20	25	34	30	13	11
315	600	1	4	7	9	12	10	5	6
315	900	2	6	12	14	19	15	7	8
315	1200	2	8	16	18	26	21	9	10
400	600	1	5	5	5	7	4	4	4

SLCBU 100

Ød ₁ nom	l mm	Attenuation in dB for centre frequency Hz							
		63	125	250	500	1k	2k	4k	8k
315	600	4	6	10	16	22	28	27	18
315	900	5	7	16	23	30	38	32	22
315	1200	7	9	23	30	38	47	37	25
400	600	4	5	7	9	13	16	15	13

For the same reason, an extra baffle gives higher attenuation than a silencer of the same diameter, but without a baffle. – SLCBU 100 attenuates more than SLCU 100.



Sound

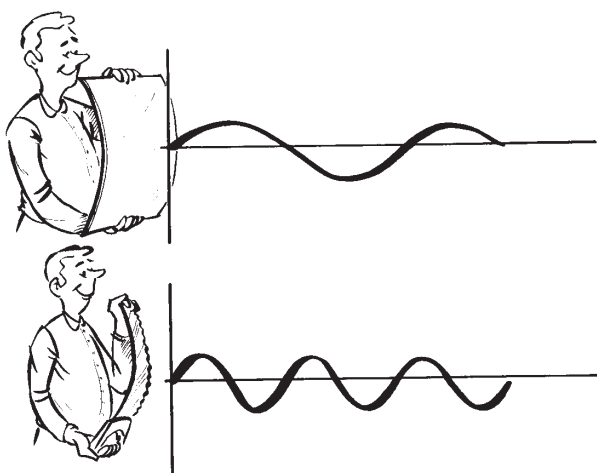
Noise frequency influences the choice of silencer

As we see in the tables above, the damping ability varies with the frequency of sound. Before we look at the choice of silencers, it could be a good idea to describe the concept of frequency in greater detail.

A sound source influences the surrounding air, and makes it vibrate. The character of the sound depends on the variations in pressure which occur in the air.

Let us assume that the sound source is a vibrating plate - the changes in pressure, or the sound will then have the same frequency as the vibrations in the plate. The strength of the sound will depend on the amount that the plate vibrates, i.e. the amplitude of the movement. Let us start off with that:

If there is only one note, of a single frequency, the pressure will vary sinusoidally, so a pure note is referred to as a sine wave.



The characteristics of sound propagation are:

- frequency (f), which is measured in hertz, **Hz**, (s^{-1}), (and specifies the number of times a second that a new sound wave arrives).
- wave length (λ , "lambda"), which is measured in metres, **m**, (and specifies the distance between two similar points on the curve).

and

- speed of sound (c) which is measured in **m/s**, (and specifies the speed of movement of the sound wave).

These three variables have the following relationship:

$$c = f \cdot \lambda$$

The speed of sound in air is also a function of pressure and temperature.

At normal air pressure and + 20 °C is $c \approx 340$ m/s.

A young person with normal hearing can hear sounds at frequencies from 20-20 000 Hz, i.e. (in air) at wavelengths ranging from 17 m (at 20 Hz) to app. 17 mm (at 20 kHz).

We perceive changes in sound frequency on a logarithmic scale, i.e. it is the relative frequency and not the difference in Hz which determines how a change in note is perceived. A doubling of frequency is perceived as being the same, irrespective of whether it is a change from 100 to 200 Hz, 1000 to 2000 Hz or 10 to 20 kHz.

The logarithmic scale is usually sub-divided into octaves. i.e. in scales where the top note is twice the frequency of the bottom note. This has been customary in music for a long time.

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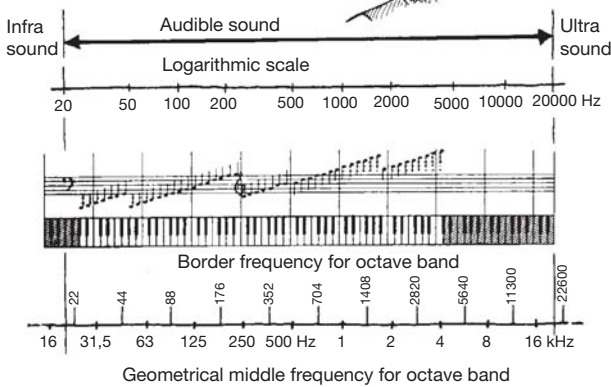
17

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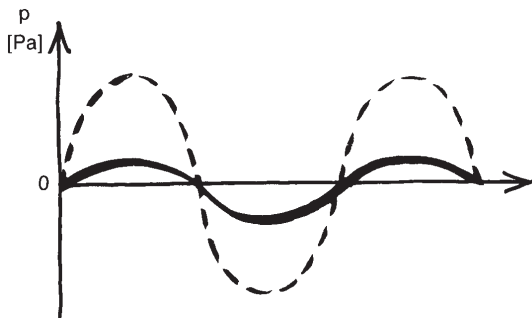
Sound

And in engineering.



The concept of decibel

The stronger the sound is, the harder the particles of air will bump into each other.



Sound pressure changes in the audible area can vary within very wide limits. Some sounds are so weak that we can not hear them. The so-called **audible limit** varies with frequency and is 20 μ Pa at about 1000 Hz .

Other sounds are so loud that we risk hearing damage. The **pain limit**, the sound pressure which causes pain in your ears also varies with frequency, but is about 20 Pa at 1000 Hz. This means that it is a million times louder than the weakest sound we can perceive.

We also perceive changes in sound pressure on a logarithmic scale. A **sound level concept** using the **decibel (dB)** as the unit, has been created to express comparable values.

The **dB** unit, which is used in many different applications, is generally defined as: $10 \cdot \log (X/X_0)$, where X is the unit measured, i.e. the sound pressure, and X_0 is a reference level expressed in the same units. The relationship of X/X_0 is thus dimensionless. The reference level from which the dB unit is

specified, is given instead. This means that you generally express the level in **dB (above X_0)**.

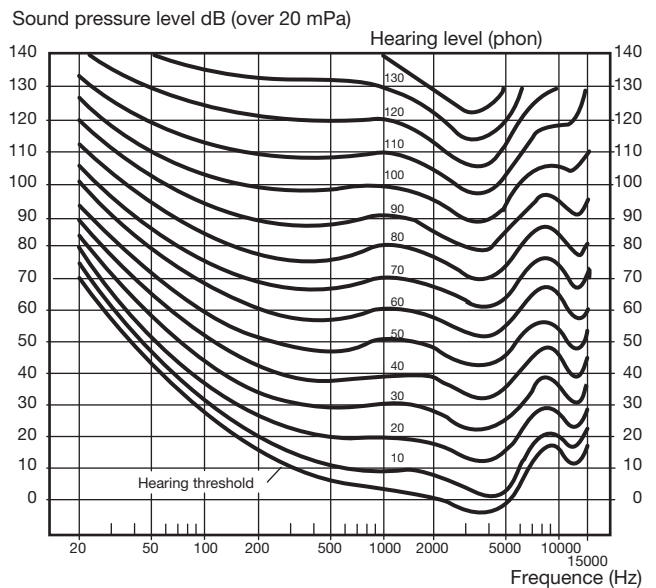
Our perception of sound

We react differently to two sounds which have the same sound pressure level and different frequencies.



Curves which describe how people normally perceive sounds of varying strength and frequency have been constructed through experiments on large numbers of volunteers. These so-called **hearing level curves** are designated by the sound pressure level for each curve at a frequency of 1 kHz. The unit used for the curves is the **phon**.

Hearing level curves



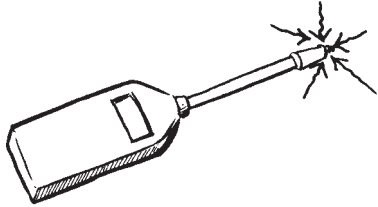
Example:

The sound pressure level 70 dB at 50 Hz is normally perceived as being as loud as 50 dB at 1000 Hz.

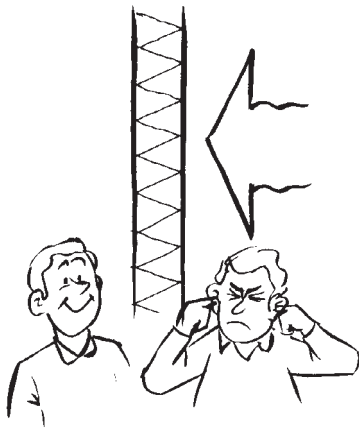


Sound

Sound levels



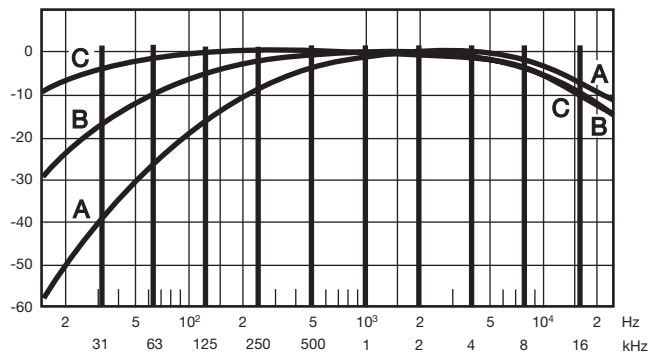
Several methods are used to compare the disturbance caused by two different sounds, and where the perception of the ear to noise has been modelled.



The simplest way is to compare their “weighted” sound levels. The incoming sound is filtered in an electronic filter to reduce the components, mostly the low-frequency components, where the ear is not so sensitive, and amplify the components between 1 and 4 kHz, where we are most sensitive.

Sound meters usually have three electronic filters, A-, B- and C-filter. The A-filter is mostly used these days, where the result, the “weighted” **sound level**, is expressed in **dB (A)**.

Attenuation dB (above 20 mPa)



Choosing silencers

The fan is the primary sound source in a ventilation system, but intrusive noise can also be caused by an unsuitable choice of duct components and terminal units:

$$L_w = 40 + 10 \cdot \log q + 20 \cdot \log p_t \text{ dB (above 1 pW)}$$

q = air flow (in m³/s) through the fan

p_t = total pressure rise (in Pa) in the fan

40 = “specific noise power level” which considers the efficiency of the fan at its point of operation, and the SI units for q and p_t .

The noise generated in the fan must be attenuated in the duct system, at some point before the room terminal unit. Some of the attenuation is “natural”, examples are given above. This attenuation is often not enough, and additional silencers can be put in the duct system - in the main channel near the fan to damp the fan noise to all the duct branches or in the branch ducts only to damp particularly sensitive rooms.

Low air speeds should be selected in the ducts, to avoid disturbing noise in the rooms.

- At a given air speed, a doubling of that speed corresponds to a 12 dB increase in noise levels.

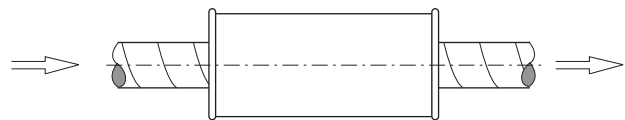
Low air speeds also cut operating costs.

- At a given air speed, the fan power required increases as the square of the air speed.

In this example, calculation has shows that the existing attenuation in the duct system is not enough. The table shows that more attenuation is needed. What to choose?

Example

Duct Ø315



	63	125	250	500	1k	2k	4k	8k	
Before	X	X	X	X	X	X	X	X	dB
After	X	X	X	X	X	X	X	X	dB
Difference	1	4	8	13	20	16	7	7	dB

Lindab has a large range of silencers with varying characteristics and dimensions. Let us see what might fit!





Sound

SLCU 50	63	125	250	500	1k	2k	4k	8k
600	0	2	6	11	14	9	4	5
900	1	3	7	16	22	12	6	7
1200	1	3	8	22	30	16	7	9

This is the narrowest silencer, so the longest one, 1200 mm, should be selected to meet the requirements. The deviation in the 125 Hz band, 1 dB, is small and will not be noticeable.

This is one of the possible alternatives!

SLCU 100	63	125	250	500	1k	2k	4k	8k
600	1	4	7	9	12	10	5	6
900	2	6	12	14	19	15	7	8
1200	2	8	16	18	26	21	9	10

This silencer has a thicker layer of absorbing material (100 mm instead of 50 mm) and thus has better low frequency damping, but also has a larger external diameter than SLCU 50. To meet the requirements, you should choose the longer one, 900 mm. The deviations in the 500 and 1k Hz bands, 1 dB, are small and will not be noticeable. This is another of the possible alternatives.

SLCUBU 100	63	125	250	500	1k	2k	4k	8k
600	4	6	10	16	22	28	27	18
900	5	7	16	23	30	38	32	22
1200	7	9	23	30	38	47	37	25

This silencer has the same thickness of absorbing material as SLCU 100 (100 mm) but also has a 100 mm thick baffle which increases damping (but also the pressure drop across the silencer). You only have to choose the shortest one, 600 mm, to meet the requirements by a wide margin. The silencer manages all the octave bands by a wide margin. This is still another possible alternative.

The final choice of alternatives is determined by other considerations:

- **SLCU 50 1200**
if there is space lengthways, (but perhaps tight at the sides).
- **SLCU 100 900**
shorter, but needs more room at the sides.
- **SLCUBU 100 600**
If the lengthways space is limited and if the slight increase in total pressure drop is not important - e.g. in a branch duct where part of the available pressure has to be restricted anyway when the air flows are adjusted.

Decide how safe the values in the sound calculation are, and choose a silencer with the corresponding margin of safety. It is always more expensive and more difficult to add damping afterwards, if it was not installed from the beginning. If the users ever become dissatisfied with the noise, it is difficult to get them to change their views!

You can find the products under Silencers.



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Bends

Overview bends – ordinary

Ød ₁	Short radius r _m ≈ 0,6 • d ₁		Normal radius r _m ≈ 1 • d ₁		Long radius r _m ≈ 1,5 • d ₁	
	Pressed and seam welded	Segmented and lockseamed	Pressed and seam welded	Segmented and lockseamed	Pressed and seam welded	Segmented and lockseamed
63	BKU 90°		BU 90° BU 60° BU 45° BU 30° BU 15°		BSU 90° BSU 45°	
80						
100						
125						
160		BKFU 90°		BFU 90° BFU 60° BFU 45° BFU 30° BFU 15°		BSFU 90° BSFU 45°
200						
250						
315						
400						
500						
630						
800						
1000						
1250						



Overview bends – others

Ød ₁	Short radius r _m ≈ 0,6 • d ₁	Normal radius r _m ≈ 1 • d ₁						
	Pressed and seam welded	Segmented and lockseamed	Pressed and seam welded	Segmented and lockseamed	Segmented and lockseamed	Segmented and lockseamed	Pressed and seam welded	Pressed and seam welded
63	BKMU 90°		BKCU 90°		BBKCU 90°		BU GJUT	BSIU GJUT
80								
100								
125								
160		BKFMU 90°		BFKCU 90°		BFBKCU 90°		
200								
250								
315								
400								
500								
630								
	Female end		Cleaning stud at side		Cleaning stud at back		Female end and nail flange	Air valve socket and nail flange





T-pieces and saddle

Overview T-pieces – ordinary

Ød ₁	Short installation length	Normal installation length	
	Pressed and seam welded	Pressed and seam welded	Segmented and lockseamed
63	TCPU KORT	TCPU	TCU TU
80			
100			
125			
160			
200			
250			
315			
400			
500			
630			
800			
1000			
1250			



Overview saddle and T-pieces

Normal installation length	
Pressed and seam welded	Segmented and lockseamed
PSU	TSTCU TSTU



Overview T-pieces – others

Ød ₁	Short installation length	Normal installation length	
	Pressed and seam welded	Pressed and seam welded	Pressed and seam welded
63	TCPU GIPS	TCPU GJUT	
80			
100			TCSIU GJUT
125			
160			
200			
250			
315			
400			
	Female end	Female end and nail flange	Air valve socket and nail flange





The Safe system

The Safe-system

- Safe is a quickly assembled system for round ventilation ducts.
- Safe is type approved to class D by SITAC, no. 1358/88.
- The complete programme has dimensions according to Eurovent 2/3 and Swedish Standard SS-EN 1506.
- The system is based on a double-lipped, factory-installed seal made from EPDM rubber. The moulding, which can withstand rough handling, and is almost insensitive to temperature changes, gives a very air-tight seal.

Advantages of the Safe-system

- Quick assembly.
- Factory fitted seal with no loose fittings.
- Can be twisted and adjusted with tightness unaffected.
- Installation without sealant or solvents.
- Can be used in all climates.
- Seal moulding remains tight from 5 000 Pa negative pressure to 3 000 Pa positive pressure. Duct resistance to collapse differs from these pressures, and is noted on page 51.
- Type approved to sealing class D.

Click function

The Click function exists in principle on all Safe-products. The exceptions are stated under each product.

The Click function exists on the dimensions Ø 80–315.

The Click function means;

- that an end with male measure has an open turned-over end and
- that an end with female measure has a number of notches.

Type approval

Approval no 1358/88 means that the Safe-system complies with the requirements for tightness class D without any demand for pressure testing after installation.

The approval is only valid on condition that all fittings are marked by us in accordance with the example and are installed in accordance with the accompanying installation instruction.

Marking

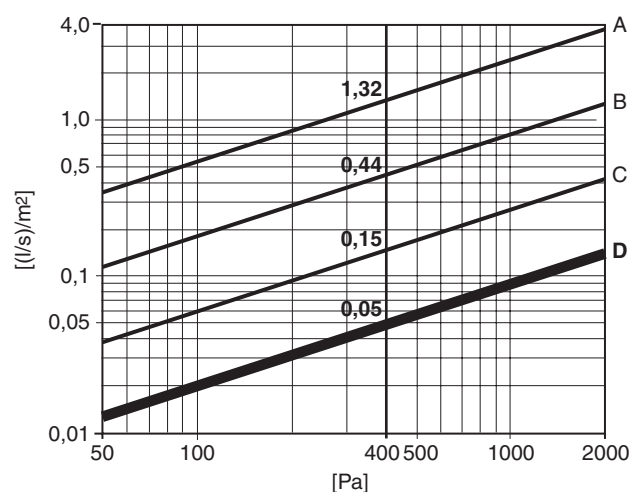
Each individual product is marked with a special label or stamped in the metal.



Tightness

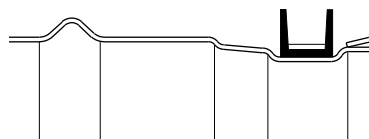
A duct system will never be “completely tight”. The system will normally have some leaks at joints between ducts and fittings. The leakage will also increase as the pressure difference between the in- and outside of the duct sides increases.

The leakage factor in (l/s)/m² is always specified in relation to the pressure difference in Pa. (The unit (l/s)/m² denotes the leakage flow in l/s in or out of the system in relation to its duct area in m².) The graph below shows the leakage factor for the sealing classes A–D as a function of the pressure difference.



The graph shows that sealing class D is 3 times better than class C, which in turn is 3 times better than class B etc. Class D thus entails demands on not only the seal moulding but also the fittings and how well the system is installed.

This is one reason why we have given all fittings a turned-over edge and have given still more fittings a stop bead. This gives us stable products which are better suited to withstand handling on site at the same time as the risk of skewed assembly falls.



Turned-over edge design



The Safe system

1

Economy – Tightness

Present-day stringent demands for interior climate entail expensive air treatment. Leakage leads to uneconomical operation, adjustment difficulties and over-dimensioned equipment. For this reason, it is important that ventilation systems are very well sealed, to keep overall costs down. This is why official requirements for sealing vary with the size and use of systems.

2

3

Inspection/Testing

In order to make Safe comply with the requirements of sealing class D, we have constant inspection procedures where we do daily sampling. Inspection is done on goods received from sub-contractors and our own production of ducts and fittings.

4

5

Goods reception inspection complies with Swedish Standard for testing methods and batch acceptance levels. The inspection points include:

6

7

1. Inspection of seal moulding inner diameter. This is particularly important for ageing resistance of the rubber. The greater the load on the rubber, either stretching or pressure, the faster the rubber ages, causing brittleness and cracking.
2. The seal moulding profile is measured in a profile projector, where the dimensions of the seal moulding are checked against agreed tolerances.
3. The seal moulding material is tested by accelerated ageing in heat oven.

8

9

Manufacturing inspection is logged. The inspection includes a diameter check of ducts and fittings, a check of the groove where the seal moulding has been fixed, and a check of its fixing. Pressure testing is done in our air laboratory, to check the leakage flow from our products. This does not give the whole picture, however, so the best inspection of the Safe system is the pressure testing that The Swedish National and Testing Institute undertakes on randomly sampled products. In all these pressure tests, the Safe system has always exceeded the relevant sealing requirements.

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Fittings

Products under the Safe insert and fittings with Safe seals under the Silencers, Dampers and measure units, and Isol inserts are included in the type approval for sealing class D. In addition, some fittings, under the Other circular products insert, are included.

14

15

A handful of fittings with the Safe seal can only manage up to tightness class C. This is marked on each of these products.

16

17

Fittings in this catalogue with a “U” in their designations have Safe seals, with only a few exceptions.

18

Degreased

Fittings can be supplied degreased on the inside, to order.

Dimensions

Almost all products in the Safe-programme can also be delivered in intermediate dimensions. For further information see page 15.

Negative pressure

At big negative pressure there is a risk for a ventilation system to collapse. This risk is greater the bigger dimensions you have.

In order to increase the strength of *the ducts* you can e.g. increase their sheet metal thickness. This is a simple way but the effect is rather small. It exists other ways with higher result. For bigger dimensions then the ducts may be stronger than the fittings.

In order to increase the strength of *the fittings* other ways than thicker sheet metal thickness are more suitable.

Lindab has experience and knowledge about this and is willing to offer help at special cases. We can, as special, deliver duct systems that can withstand at least 5 000 Pa negative pressure.



The Safe system

Design

Our Safe seal system is based on a U-shaped profile of solid rubber. The seal moulding rests in a groove at the end of the fitting and is fixed with a steel strap.

As standard are Safe-fittings always supplied with an EPDM (ethylene-propylene rubber) seal moulding. The material has been chosen due to its long service life and the best possible resistance to ozone and UV radiation. It is also highly tolerant to temperature variations. Under normal conditions, the moulding can withstand:

-30 °C to +100 °C continuous
-50 °C to +120 °C intermittent

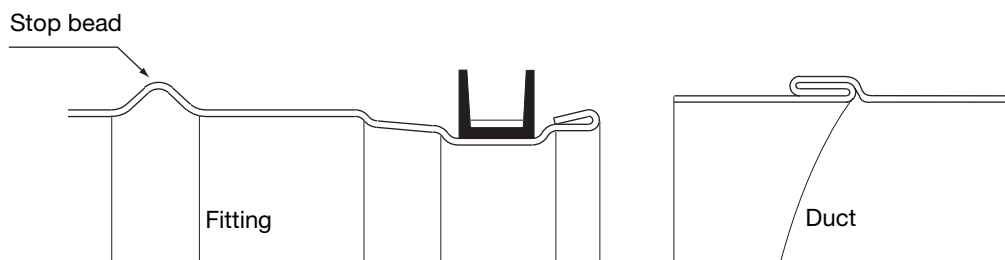
As special for installations which demand high temperature tolerance and somewhat higher oil resistance, Safe fittings can be supplied with a special silicone rubber moulding. This moulding is recognized by its blue colour. Mastic sealed fittings for higher temperatures are also produced with a more temperature resistant mastic. Temperature tolerance:

-70 °C to +150 °C continuous
-90 °C to +200 °C intermittent

When fittings are installed in ducts, the seal moulding lips will be bent backwards. This means that the seal will be better at withstanding negative pressure than positive pressure, since the negative pressure will tend to press the lips harder against the duct walls. The following pressure differences must not be exceeded, to cope with tightness class D.

Positive pressure in duct 3000 Pa
Negative pressure in duct 5000 Pa

Both Swedish and European standards allow a greater tolerance range between the duct and matching fittings as the diameter increases. In order to achieve maximum sealing for all dimensions, we have chosen to use successively bigger seal mouldings as duct dimensions increase.



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The Safe system

Resistance of seal mouldings to various substances

The table below gives a basic guide to how the rubber is affected by various substances.

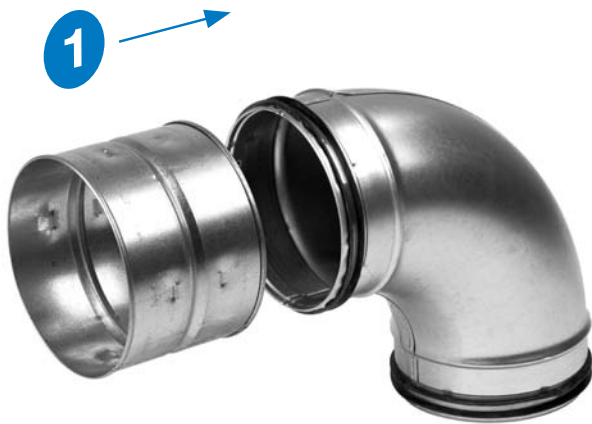
A figure for each type of rubber indicates its suitability.

- 4 Scarcely affected Recommended
- 3 Lightly affected Normally usable
- 2 Strongly affected Only usable in certain cases
- 1 Badly affected Unsuitable
- No information

	EPDM	Sili- cone		EPDM	Sili- cone		EPDM	Sili- cone
A			Ethylene chloride	1	-	Oxalic acid	4	3
Acetaldehyde	4	4	Ethyl glycol, cellosolve	3	-	Ozone	4	4
Acetic acid dilute 30%	4	3	Ethyl chloride	4	1	Oxygen	4	4
Acetic acid crystalline	4	3	Ethane, ethylene	1	-			
Acetic anhydride	3	2				P		
Acetone	4	3	F			Palmitinic acid	3	-
Acetylene	3	3	Fluoric silicate	4	2	Paraffin (kerosine)	1	1
Aluminium salts (non-oxidizing)	4	4	Formic acid	4	2	Perchloroethylene	1	3
Alun	4	4	Formaldehyde, formalin	4	-	Perchloric acid	3	1
Ammonia, liquid	4	1	Freon, see CFC			Petrol (gasoline), 65 octane	1	1
Ammonia gas, cold	4	4	Furan, furfuran	2	-	Petrol (gasoline), 100 octane	1	1
Ammonia gas, hot 65 °C	3	3	Furfural	3	-	Petroleum ether	1	1
Ammonium hydroxide, dil. ammonia	3	3				Petroleum oils high aromatic content	1	1
Ammonium salts (non-oxidising)	4	3	G			Petroleum oils low aromatic content	1	3
Amyl acetate	4	1	Glucose	4	4	Phenol	3	2
Aniline	3	-	Glycerine, glycerol	4	4	Phosphoric acid 45%	4	1
Aniline dyes	4	-	Green liquor, white liquor	4	3	Phosphoric acid 85%	4	1
Animal fats	2	3				Plating solutions without chromium	4	3
Arsenic acid	4	4	H			Potassium hypochlorite,		
Asphalt	1	1	Heating oil	1	2	pH 7 below 10 g/l	4	1
			Hydraulic oil, mineral oil based	1	3	over 10 g/l	3	1
B			Hydraulic oil, phosphate ester based	4	4	Potassium hydroxide, potash	4	3
Barium salts (non-oxidizing)	4	4	Hydrogen	4	4	Potassium salts (non-oxidizing)	4	3
Beer	4	4	Hydrogen peroxide 3%	4	4	Propane, LPG	1	1
Benzene, bensol	1	1	30% 20 °C	4	4	Propanol, Propyl alcohol	4	4
Black liquor	1	-	90% 20 °C	2	4			
Black water, waste water	4	3	Hydrochloric acid dilute	4	1			
Bleaching liquor, see Potassium hypochlorite			conc 37% room temp	4	1	R		
Borax	4	3	conc 37% 70 °C	2	1	Radioactive radiation	3	2
Boric acid	4	4	Hydrogen sulphide dry, room temp	4	4	Rape seed oil (canola oil)	4	4
Bromide, liquid	-	1	damp, room temp	4	2	Rosin oil	1	1
Bromic acid	4	1	damp, hot	3	1			
Butane	1	4	Hydrofluosilicic acid	4	1	S		
Butanol, butyl alcohol	4	3	Hydrofluoric acid 50%	4	1	Salicylic acid	4	4
Butter oils	1	1	Hydrofluoric acid, conc.	4	1	Sodium salts (non-oxidizing)	4	4
Butyl acetate	4	1				Sodium hydroxide, sodium hydrate	4	2
			I			Sodium hypochlorite max 10 g/l free Cl	4	-
C			Iodine	-	-	over 10 g/l free Cl	3	-
Caustic soda, sodium hydroxide	4	2	Iron salts (non-oxidizing)	4	3	Sugar solutions	4	4
Calcium salts (non-oxidizing)	4	3				Styrene	1	1
Cellosolve, ethylene glycol	3	-	L			Sulphur, melted	4	4
Cellosolve acetate	3	-	Lactic acid	4	4	Sulphur dioxide, dry gas	4	3
Chlorine gas dry	2	-	Lead salts (non-oxidizing)	4	2	Sulphur chloride	1	-
damp	2	-	Linseed oil	3	4	Sulphuric acid 60% room temp.	4	1
Chlorine solutions 0,1 g/l free chlorine	4	-	Liquid manure	4	3	60% 50 °C	4	1
0,1-1 g/l free chlorine	4	-	LPG (Propane/butane)	1	1	60-75% 50 °C	3	1
1-10 g/l free chlorine	3	-				75-80% 50 °C	2	1
over 10 g/l free chlorine	2	-	M			85-96% 50 °C	1	1
Chlorine sulphonate acid	1	1	Magnesium salts (non-oxidizing)	4	4	fuming, Oleum	1	1
Chromic acid	2	2	Manganese salts (non-oxidizing)	4	4	Sulphurous acid	4	1
CFC (e.g. Freon)	11	11	Mercury	4	4	Sulphur trioxide, dry gas	3	2
	12	31	Mercury salts (non-oxidizing)	4	4			
	13	4-	Methanol, methyl alcohol, wood alcohol	4	4	T		
	21	1-	Methylene chloride	1	1	Tar	1	2
	22	41	Methyl chloride	2	1	Tannic acid	4	1
	31	4-	Methyl ethyl ketone MEK	4	-	Terpentine, terpenes	1	1
	32	4-	Methyl isobutyl ketone	3	2	Toluene, toluol	1	1
	112	1-	Methyl isopropyl ketone	3	2	Trichlorethane, "thinner"	1	2
	113	11	Milk	4	4	Transformer oil mineral oil based	1	3
	114	41				chlorated hydrocarbon	1	1
	115	4	N			V		
Copper salts (non-oxidizing)	44	4	Natural gas	1	4	Vegetable oils	4	4
Citric acid	4	4	Nickel salts (non-oxidizing)	4	4			
			Nitrobenzene, Nitrobenzol	2	1	W		
D			Nitric acid 20% room temp.	4	-	Water fresh	4	4
Detergent	4	4	20% 50 °C	3	1	distilled	4	4
Diesel oil	1	2	40% 50 °C	3	1	salt	4	4
Dilutin (White spirit)	1	1	50% 50 °C	2	1	fresh & dist. 100 °C	4	2
Developing solutions	3	-	60% room temp.	2	1	White spirit (Dilutin)	1	1
			70% room temp.	1	1	Wine	4	4
			red fuming	1	1			
E			Nitrogen	4	4	X		
Ethanol, ethyl alcohol	4	4	Nitrous gases	2	2	Xylene, xylol	1	1
"Ether", diethyl ether, ethyl ether	2	-				Z		
Ethyl acetate	3	2	O			Zinc salts (non-oxidizing)	4	4
Ethylene glycol	4	3	Olive oil	3	3			
			Oleic acid	4	-			



Lindab Safe® Click Assemble easy and fast



2 "CLICK"



The new, innovative duct system from Lindab is based on a principle well known to you. A simple click is all it takes to assemble ducts and fittings. Save time and create a perfect ventilation solution.

The new system is installed quickly and improves working conditions especially where space is limited. Lindab Safe Click is based on our well-known, tested and documented Safe system. We just added simplicity. One click and the job is done.

Advantages during installation

- Quick assembly
- Minimised use of screws or rivets
- Easy to install, especially where space is limited
- Better ergonomics
- Assembling and adjusting is made easier

Advantages during use

- Fewer holes from screws or rivets in the duct system and thereby a tighter system
- Fewer sharp parts from screws or rivets in the duct
- The ducts are easier to clean and the risk of bacteria growth is reduced
- Based on our well-known, tested and well-documented Lindab Safe system
- Compatible with other systems



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Assembly Instruction

Lindab Safe and Lindab Safe Click

1

The Lindab Safe and the Lindab Safe Click duct system are type-approved, as per certificate no. 1358/88 issued by SITAC and are subject to continuous production checks.

2

This means that the requirements for air tightness class D are met if ducts and fittings of the systems are used and if assembly is performed as per these instructions.

3

The products covered by the type approval are either specified on the delivery note or are supplied with the following labelling. Labelling can comprise a sticker or an embossing on the sheet metal

4



6

NOTE! The assembly methods described herein only cope with the forces from the “Static pressure limits” defined in EN 12237. Forces from other sources, e.g. gravity or wind, have to be dealt with using other means, e.g. suspensions or supports.

7

NOTE! If the system shall be tested for air tightness, this shall be done before integration and insulation so that there is an opportunity for inspection and taking action. Any complaints regarding air tightness will only be dealt with provided the system is fully accessible for inspection.

8

Joining systems (general characteristics)

9

Lindab Safe	Lindab Safe Click
Is joined with screws or blind rivets.	Is joined with snapping heels, below called notches. Is based on Lindab Safe.
Spans all dimensions.	Spans only a restricted number of dimensions. See table 2. For the other dimensions use Lindab Safe.
	Lindab Safe Click can be complementary joined with screws or blind rivets. This may be done in order to: <ul style="list-style-type: none"> • achieve a stronger joint • prevent a joint from twisting • join a Click product with a non-Click product • join a Click product with a non-Click product to create an openable joint.

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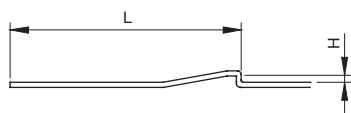


Preparations for assembly

- Check that ducts and fittings to be used in the system are labelled as shown above.
- Store ducts and fittings in a well-ordered and weatherproof storage area to minimize the risk of damage. Do not use ducts or fittings that have been damaged in such a way that they jeopardise the air tightness or structural strength of the system.

Lindab Safe	Lindab Safe Click
<ul style="list-style-type: none"> • Cut ducts at right angles. Carefully remove any burrs from cut edges. Installation is easier and the risk of damaging the gasket is reduced if there are no burrs. Also cut away the two needles created from the fold. 	<ul style="list-style-type: none"> • Cut ducts at right angles. This is an uncompromisable demand for Lindab Safe Click. Carefully remove any burrs from cut edges. Installation is easier and the risk of damaging the gasket is reduced if there are no burrs. Also cut away the two needles created from the fold.
	<ul style="list-style-type: none"> • If a duct is cut – make notches around its circumference. See table 1 and 2.
<ul style="list-style-type: none"> • Carefully seal any holes left by measurements, removed screws, blind rivets, etc. 	<ul style="list-style-type: none"> • Carefully seal any holes left by measurements etc.

Table 1. Size and location of notches







Ø [mm]	Click Pliers		L [mm]
	40.1	60.1	
80–224			30,5–32,5
250–315	–	2,5	50,5–52,5

Table 2. Number of fasteners and notches

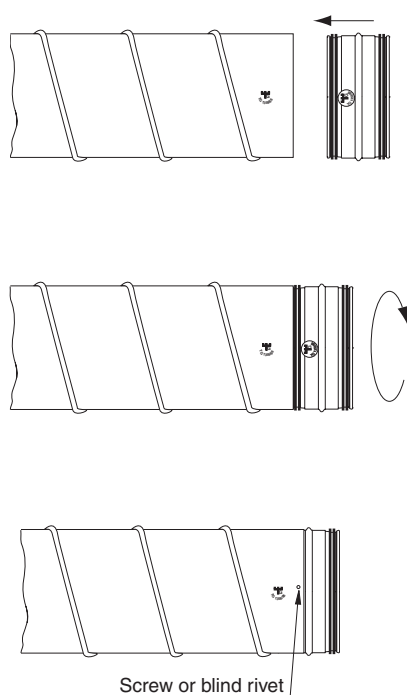
Ø [mm]	Lindab Safe	Lindab Safe Click	
	Minimum number of fasteners required to achieve sufficient strength.	Click Pliers	
			
63	2	–	–
80–112	2	2	–
125–160	3	4	–
180–224	3	4	–
250–315	4	–	4
355–630	4	–	–
710–1250	6	–	–
	Depending on the means of suspension, a larger number of fasteners than this may be required to achieve sufficient structural strength of a duct system.	Depending on the means of suspension, a larger number of notches than this may be required to achieve sufficient structural strength of a duct system. A greater number of notches makes it harder to assemble the parts.	



Assembly

	Lindab Safe	Lindab Safe Click
	1. Start by inserting the turned-over edge of the fitting into the duct.	1. Insert the fitting's turned-over edge into the duct.
1	2. Check that the first lip of the gasket is in contact with the edge of the duct all the way around and sticks straight out so that the lip is not twisted in one direction or the other.	2. Check that the gasket's first lip is in contact with the duct's edge all the way around and points straight out so that the lip is not twisted in any direction.
2	3. Push the end of the fitting into the duct. Twisting the fitting slightly aids insertion.	3. Push the first part of the fitting into the duct to just before the notches. Twisting the fitting slightly aids insertion.
3	4. Secure the fitting in the duct using self-tapping screws or airtight blind rivets. NOTE! Use only the types allowed by Lindab when going for tightness class C or D. See table 3.	4. Push the rest of the fitting into the duct and over the notches. Bend the fitting or duct back and forward slightly in order not to pass all notches at the same time aids insertion.
4	5. Fasteners should be positioned 10–15 mm from the end of the duct to prevent damage to the gasket.	5. The fitting is secured to the duct when the fitting's end has snapped behind all the notches.
5	6. Always position fasteners at the present largest radial gap between fitting and duct. Be sure to achieve an even distribution around the circumference.	6. After assembly it's possible to rotate the fitting.

Lindab Safe



Lindab Safe Click

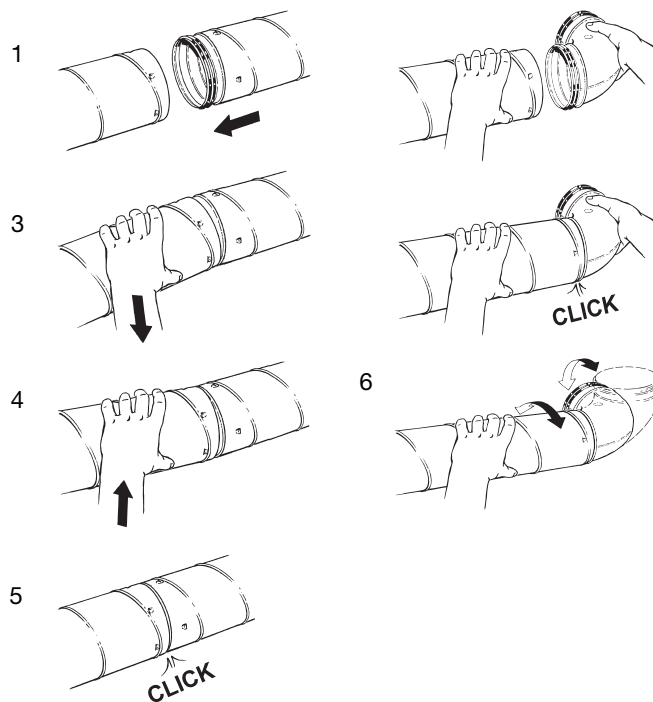




Table 3. Allowed and banned screws and blind rivets

	<p>Screw with sharp tip</p> <ul style="list-style-type: none"> • Very tight • Strong since it forms a collar in the thin sheet metal 	<p>Allowed by Lindab</p>
	<p>Screw with reduced drill tip</p> <ul style="list-style-type: none"> • Very tight • Strong since it only drills off a small part of the thin sheet metal 	<p>Allowed by Lindab</p>
	<p>Screw with drill tip</p> <ul style="list-style-type: none"> • Not tight • Weak since it drills off a big part of the thin sheet metal 	<p>Banned by Lindab</p>
	<p>Pressure-tight blind rivet</p> <ul style="list-style-type: none"> • Very tight • Strong • Very laborious to install 	<p>Allowed by Lindab</p>
	<p>Blind rivet</p> <ul style="list-style-type: none"> • Not tight if the inner splint falls out • Strong • Laborious to install 	<p>Banned by Lindab</p>

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Hints!

Turning and bending the fitting slightly as you insert it into the duct aids assembly and removal.

If ducts and fittings are round, assembly is much easier. Lindab has placed high demands on roundness during the design and production stages, but large heavy fittings in particular have a tendency to be slightly oval because of their weight. These often become round when suspended, which is why you should use the brackets to make the components round and in this way simplify assembly.

Carefully tapping the surface of the duct with your hand normally makes assembly a lot easier, as it reduces the friction between duct and fitting, and the fitting tries to move to the right side if there are burrs and irregularities.

When cutting, be sure to remove burrs properly. Also cut away the two needles created from the fold.

For larger dimensions, Lindab has moved the gasket away from the edge, which makes assembly much easier.

If you have to reinstall a product, take care to seal old holes from screws or blind rivets which can cause leaks and noise.

Products with special seals

Some fittings, such as the collar saddle PSU, T-pieces TSTCU, TSTU and take-offs ILRU, ILU, ILF, have one more connection than Lindab Safe or Lindab Safe Click. This connection must be sealed so that they definitely meet the requirements for air-tightness class C or D. Sealing material used must be durable and permanently elastic.

Products without Click

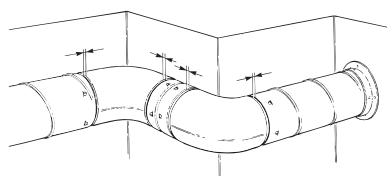
Some fittings, such as the slide-in female coupling SMFU, the end caps EPF and ESU and of course the cleaning covers EPFH, ESHU, KCU and KCIVU, do not have any Click function in order to make them easier to remove.

Use of products other than Lindab Safe or Lindab Safe Click

Products that do not formally fulfil the requirements for air tightness class C or D may only be used to a small extent. If such items are used, they must be carefully checked with regard to seal design and strength. They must be sealed so that they definitely meet the requirements for air-tightness class C or D. Sealing material used must be durable and permanently elastic.

To join parts temporarily to check if length of duct or system run is all right.

Lindab Safe	Lindab Safe Click
<p>Solution:</p> <ol style="list-style-type: none"> 1 Join together to check. 2 Then take apart – and cut if necessary the duct length. 3 Join together with screws or blind rivets. 	<p>Solution 1:</p> <ol style="list-style-type: none"> 1 Use a duct without notches in the end/ends. 2 Join together to check. 3 Then take apart – and cut if necessary the duct length. 4 Make notches in the duct. 5 Click-join together. <p>Solution 2:</p> <ol style="list-style-type: none"> 1 Use a duct with notches in the end/ends. 2 Join together to check – but don't join the parts completely so they click together. 3 Then take apart – and cut if necessary the duct length and make new notches. 4 Click-join together.

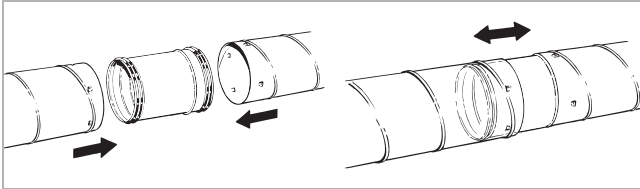




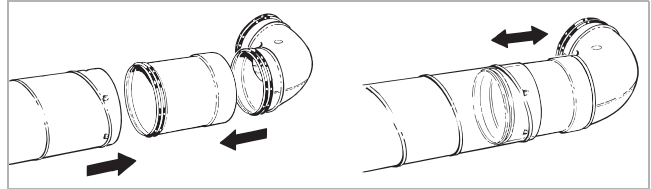
To lengthwise adjust joined products instead of cutting the duct.

Lindab Safe	Lindab Safe Click
<p>Solution:</p> <ol style="list-style-type: none"> 1 Use products with sliding property. E.g. slide-in coupling SNPU or slide-in female coupling SMFU. 2 Join together with screws or blind rivets. 	<p>Solution:</p> <ol style="list-style-type: none"> 1 Use products with sliding property. E.g. slide-in coupling SNPU or slide-in female coupling SMFU. 2 Join together with screws or blind rivets.

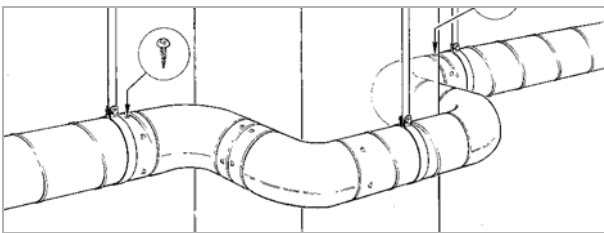
Slide-in coupling



Slide-in female coupling

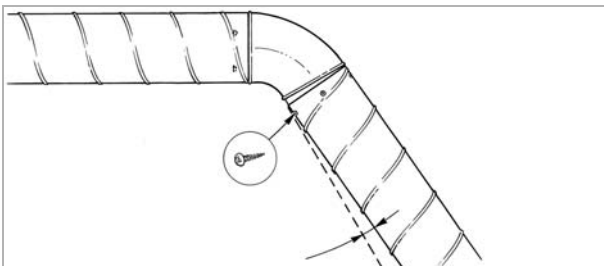


The joint must be locked



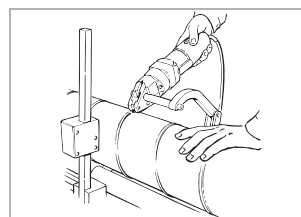
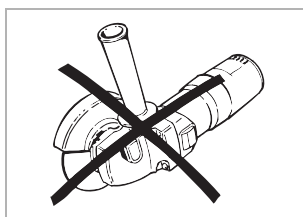
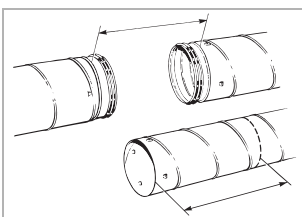
In situations where the mounting must be locked, e.g. when a bend is mounted to a duct and it twists downwards the floor. Mount the first hanger and mount the bend, then lock the joint with a screw or blind rivet.

Corners out of angle and curved walls

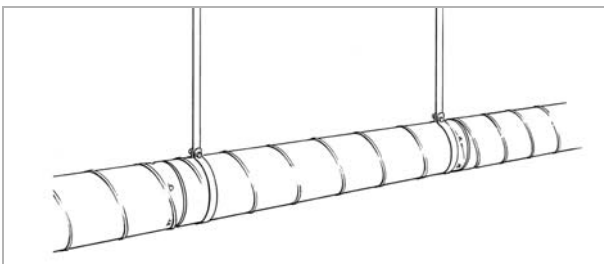


Mount the next piece of duct at an angle, but make sure that the rubber sealant is not visible. Put screws or blind rivets where the notches have not clicked in position.

Cutting duct with the SR Cutter



Suspension



Mount the hangers in a straight line and as close to every joint as possible. Fix with an extra screw when needed for extra stability.

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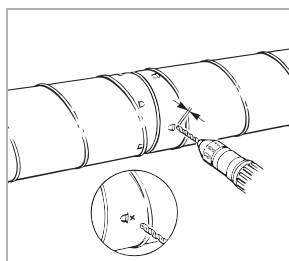
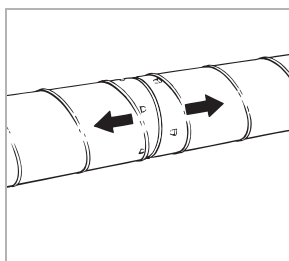
Dismantling

To separate joined products.

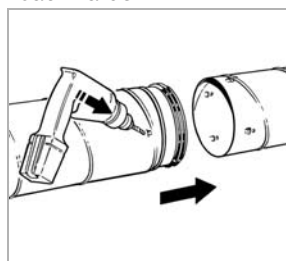
Lindab Safe	Lindab Safe Click
<p>Solution:</p> <ol style="list-style-type: none"> 1 Unscrew the screws or drill away the blind rivets. 2 Twist the product loose. 3 The fitting will now have leaking holes but can be reused if these holes are carefully sealed off with mastic or tape. 	<p>Solution:</p> <ol style="list-style-type: none"> 1 Drill a 5 mm hole in the duct 4 mm behind the notch with the drill angled backward and 2 turn in the same moment the drill back so the fitting and duct are separated somewhat from each other. With the right technique the fitting remains undamaged and can be reused. 3 Repeat if necessary at more notches. 4 Twist the product loose. 5 Cut away the drilled through duct end.

Lindab Safe Click

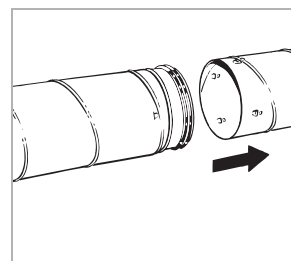
5 mm drill



Angle and press the drill backwards



Take apart



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Circular duct

SR



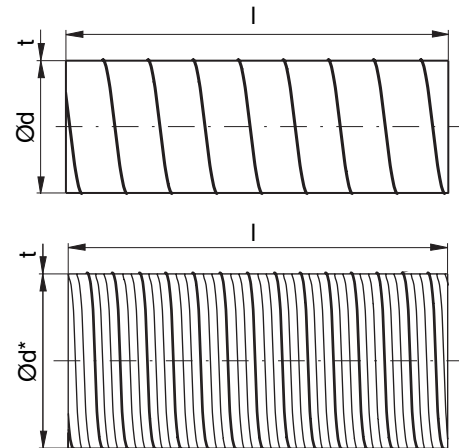
Description

Circular duct.

Ducts are always produced locally and can therefore have different thicknesses and other specifications per country.

Has normally not any Click function – hasn't any notches.
Can to order be delivered with Click function – i.e. with notches.

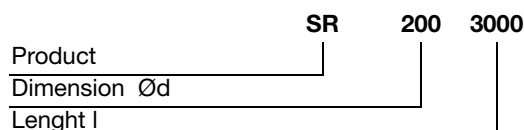
Dimensions



Ød std nom	O πd m	A $\pi d^2/4$ m ²	t std mm	l std mm	ml std kg/m
63	0,198	0,003	0,5	3000	0,89
80	0,251	0,005	0,45	3000	0,91
100	0,314	0,008	0,45	3000	1,14
112	0,352	0,010	0,5	3000	1,42
125	0,393	0,012	0,45	3000	1,41
140	0,440	0,015	0,5	3000	1,76
150	0,471	0,018	0,5	3000	1,89
160	0,503	0,020	0,5	3000	2,02
180	0,565	0,025	0,5	3000	2,26
200	0,628	0,031	0,5	3000	2,56
224	0,704	0,039	0,6	3000	3,42
250 *	0,785	0,049	0,5	3000	3,18
280	0,880	0,062	0,55	3000	3,92
300 *	0,942	0,071	0,55	3000	4,20
315 *	0,990	0,078	0,55	3000	4,41
355 *	1,115	0,099	0,55	3000	4,96
400 *	1,257	0,126	0,55	3000	6,01
450 *	1,414	0,159	0,7	3000	8,60
500 *	1,571	0,196	0,7	3000	9,54
560 *	1,759	0,246	0,8	3000	12,2
600 *	1,885	0,283	0,7	3000	13,1
630 *	1,979	0,312	0,7	3000	12,0
710 *	2,231	0,396	0,8	3000	15,5
800 *	2,513	0,503	0,8	3000	17,4
900 *	2,827	0,636	0,9	3000	21,7
1000 *	3,142	0,785	0,9	3000	24,1
1120 *	3,519	0,985	0,9	3000	27,0
1250 *	3,927	1,227	0,9	3000	30,2
1400 *	4,398	1,539	1,25	2400	48,0
1500 *	4,712	1,767	1,25	2400	51,4
1600 *	5,027	2,011	1,25	2400	54,8

* With outturned stiffening corrugation

Ordering example

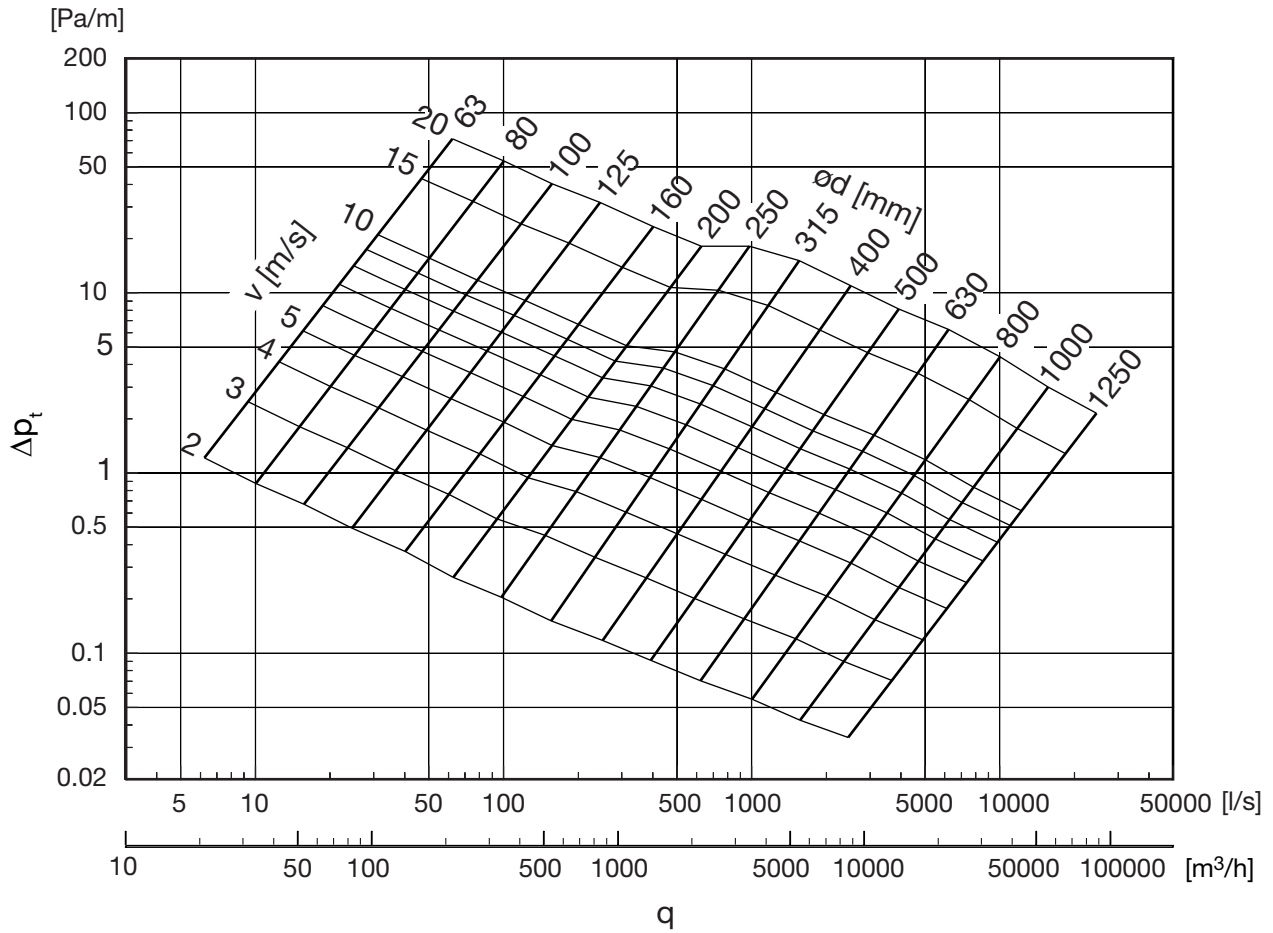




Circular duct

SR

Technical data





Circular duct

SR

Technical data

Special versions

We can supply ducts with the following special designs:

- In intermediate dimensions, see page 15.
- Extra tight, with nitrile rubber seal in the lock seam
- In other sheet metal thicknesses

Extra tight, with seam seal

When extremely good sealing is required in the spiral seam, the ducts can also be supplied with a special rubber seal in the seam.

This seal is very effective at stopping leakage of vegetable oils and greases, and most petroleum products including white spirit.

Other sheet metal thicknesses

If extra stability is needed in ducts, because of high negative pressure etc., they can be supplied with thicker sheet metal than standard. Remember that the thickness increase always reduces the inner diameter. Fittings for such special ducts must be specified separately and sometimes have to be made specially.

Reinforcement corrugations

Ducts of Ø250 mm and above are normally given stiffening corrugations to increase radial stiffness.

Strength

Positive pressure

In case of high positive pressure, the seal moulding lips will first start to whistle. At considerably higher pressure, the joints between the ducts will be forced apart. If you manage to fix the connections very well, the ducts will burst at their seams at even higher pressure. The high pressures needed for this to happen are not relevant to ventilation installations.

Negative pressure

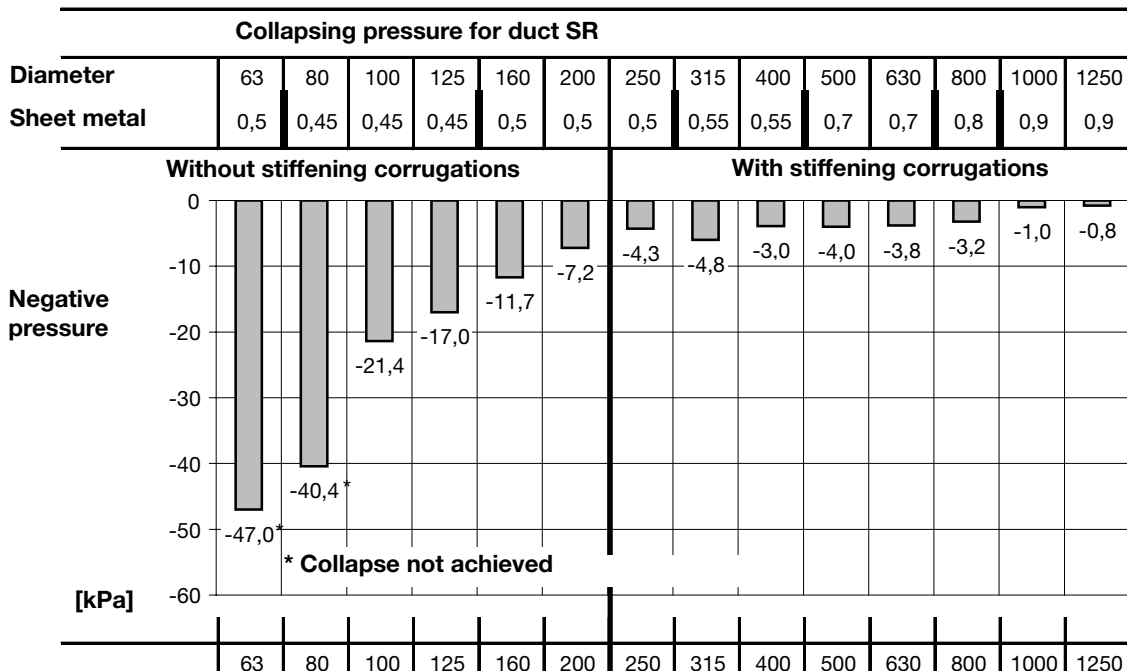
In installations with high negative pressure, there is a risk that the ducts could collapse.

This phenomenon is referred to as buckling, and can suddenly happen at the weakest point in the system. Buckling wanders along the duct, which can be completely flattened. The weakest point is frequently a "transport dent" on a duct. For this reason, only use undamaged ducts in systems which are close to the critical pressure!

Sealing

The ability of the seal moulding to seal is different from these pressures, and is noted on page 39.

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Capped circular duct

SRL



Dimensions

Ød std nom	O πd m	A πd ² /4 m ²	t std mm	l std mm	ml std kg/m
63 ¹	0,198	0,003	0,5	3000	0,89
80 ¹	0,251	0,005	0,45	3000	0,91
100 ¹	0,314	0,008	0,45	3000	1,14
112	0,352	0,01	0,5	3000	1,42
125 ¹	0,393	0,012	0,45	3000	1,41
140	0,44	0,015	0,5	3000	1,76
150	0,471	0,018	0,5	3000	1,89
160 ¹	0,503	0,02	0,5	3000	2,02
180	0,565	0,025	0,5	3000	2,26
200 ¹	0,628	0,031	0,5	3000	2,56
224	0,704	0,039	0,6	3000	3,42
250 ^{*1}	0,785	0,049	0,5	3000	3,18
280	0,88	0,062	0,55	3000	3,92
300 [*]	0,942	0,071	0,55	3000	4,26
315 ^{*1}	0,99	0,078	0,55	3000	4,41
355 [*]	1,115	0,099	0,55	3000	4,96
400 ^{*2}	1,257	0,126	0,55	3000	6,01
450 [*]	1,414	0,159	0,7	3000	8,60
500 ^{*2}	1,571	0,196	0,7	3000	9,54
560 [*]	1,759	0,246	0,8	3000	12,2
600 [*]	1,885	0,283	0,7	3000	13,1
630 ^{*2}	1,979	0,312	0,7	3000	12,0
710 [*]	2,231	0,396	0,8	3000	15,5
800 ^{*2}	2,513	0,503	0,8	3000	17,4
900 [*]	2,827	0,636	0,9	3000	21,7
1000 ^{*2}	3,142	0,785	0,9	3000	24,1
1120 [*]	3,519	0,985	0,9	3000	27,0
1250 ^{*2}	3,927	1,227	0,9	3000	30,2

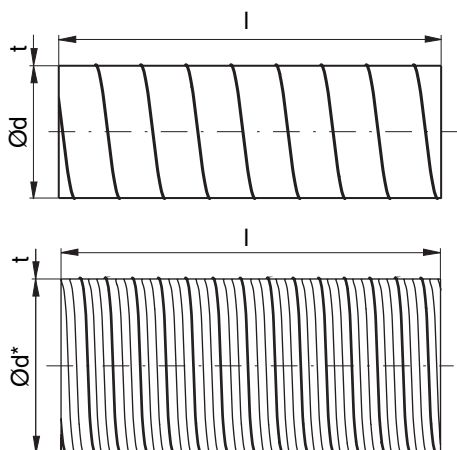
Description

Capped circular duct.

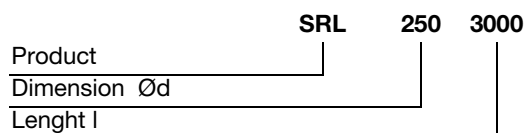
Ducts are always produced locally and can therefore have different thicknesses and other specifications per country.

Has normally not any Click function – hasn't any notches. Can to order be delivered with Click function – i.e. with notches.

Dimensions



Ordering example



* With outturned stiffening corrugations.

¹ With blue plastic cap.

² With transparent plastic hood.



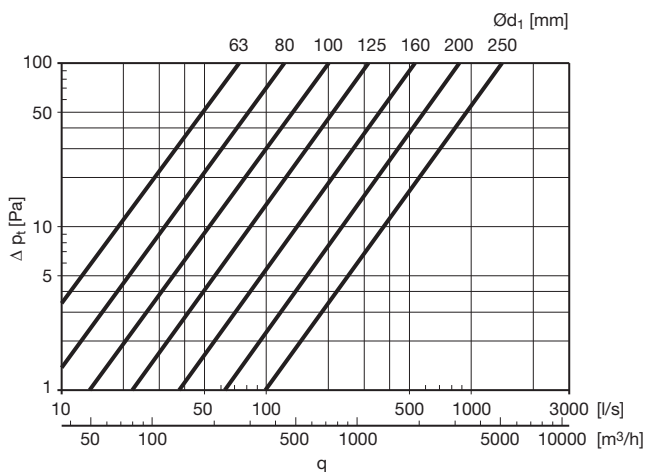
Bend

BU 90°

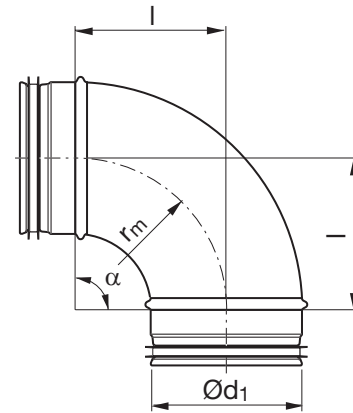


Description

Pressed and seam welded bend.



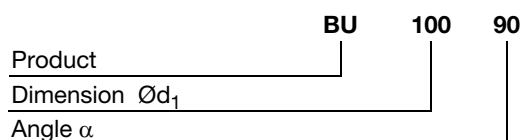
Dimensions



$$r_m \approx 1 \cdot d_1$$

$\text{Ø}d_1$ nom	l mm	m kg
63	110	0,20
80	105	0,26
100	100	0,31
112	120	0,39
125	125	0,48
140	135	0,66
150	150	0,66
160	160	0,74
180	180	1,02
200	200	1,12
224	225	1,33
250	250	1,77

Ordering example





Bend

BU 60°

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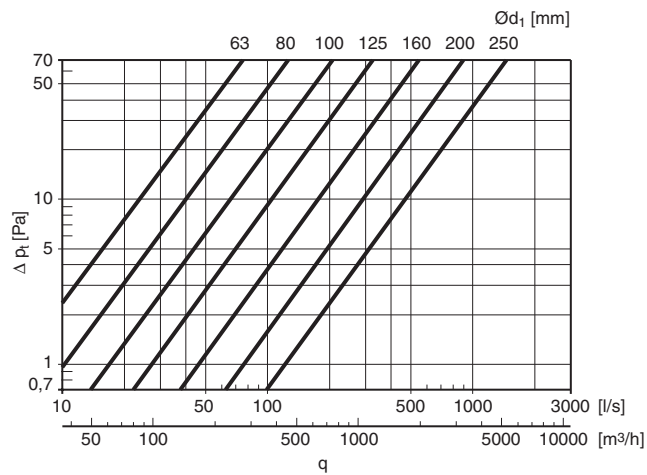
6

Description

Pressed and seam welded bend.

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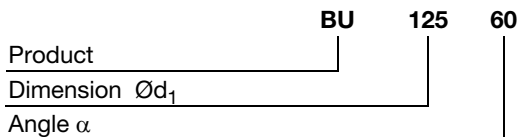
13

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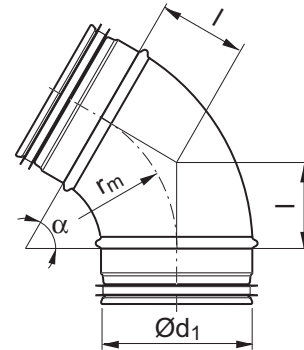
Ordering example



17

18

Dimensions



$$r_m \approx 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
63	64	0,30
80	58	0,32
100	58	0,33
112	69	0,37
125	72	0,33
140	78	0,51
150	87	0,50
160	92	0,56
180	104	0,79
200	115	0,82
224	130	0,95
250	144	1,12



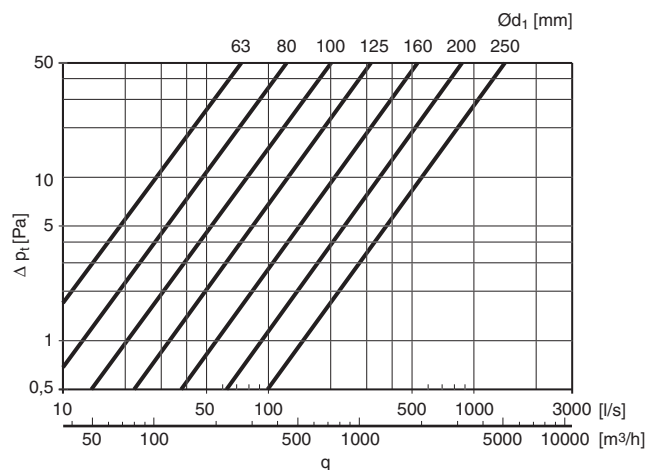
Bend

BU 45°

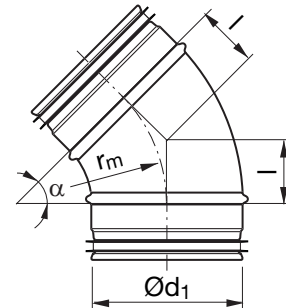


Description

Pressed and seam welded bend.



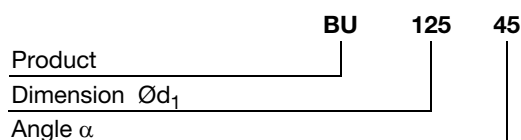
Dimensions



$$r_m \approx 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
63	46	0,16
80	41	0,17
100	41	0,21
112	81	0,24
125	52	0,29
140	56	0,43
150	62	0,42
160	66	0,48
180	76	0,65
200	83	0,80
224	93	0,82
250	103	1,05

Ordering example





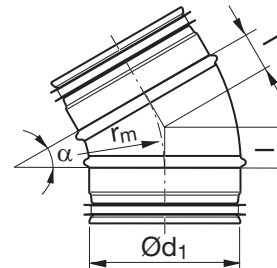
Bend

BU 30°

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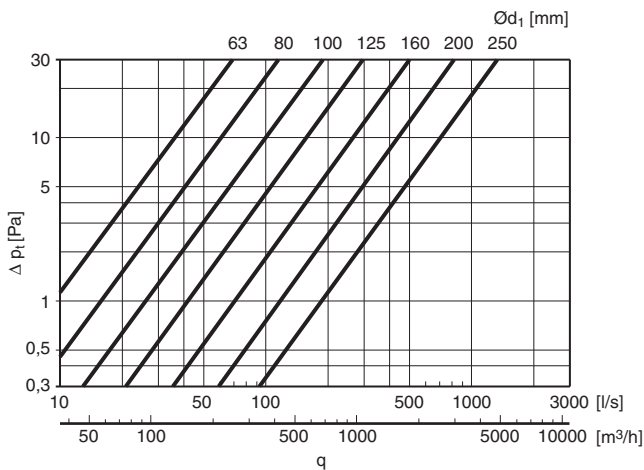
Dimensions



$r_m \approx 1 \cdot d_1$

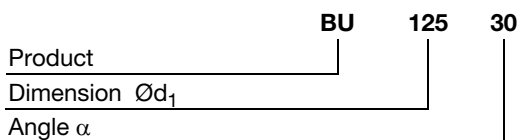
Description

Pressed and seam welded bend.



$\text{Ø}d_1$ nom	l mm	m kg
63	29	0,13
80	27	0,15
100	27	0,18
112	30	0,21
125	33	0,20
140	36	0,36
150	40	0,35
160	43	0,32
180	48	0,51
200	54	0,62
224	60	0,72
250	67	0,91

Ordering example





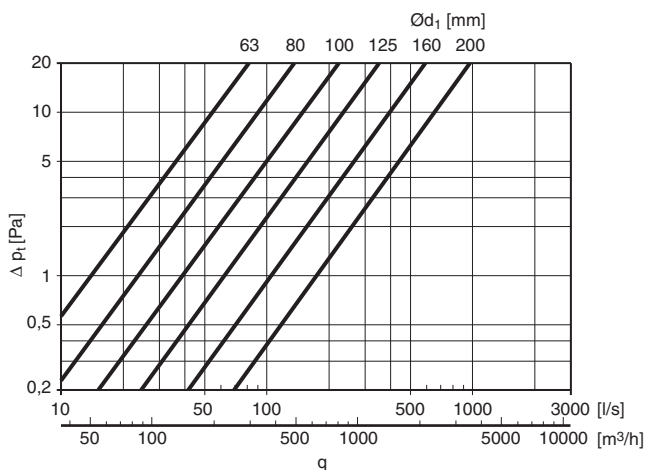
Bend

BU 15°

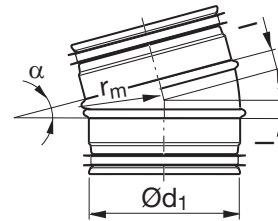


Description

Pressed and seam welded bend.



Dimensions

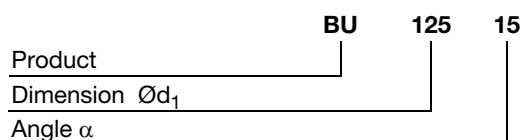


$$r_m \approx 1 \cdot d_1$$

$\text{Ø}d_1$ nom	l mm	m kg
63 *	14	0,09
80 *	13	0,11
100	13	0,15
112 *	25	0,29
125	16	0,18
140 *	18	0,29
150 *	20	0,27
160	21	0,24
180 *	24	0,37
200	26	0,47
224 *	30	0,56

* Segmented and lockseamed

Ordering example



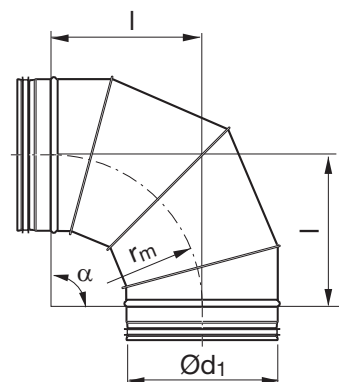


Bend – lockseamed

BFU 90°



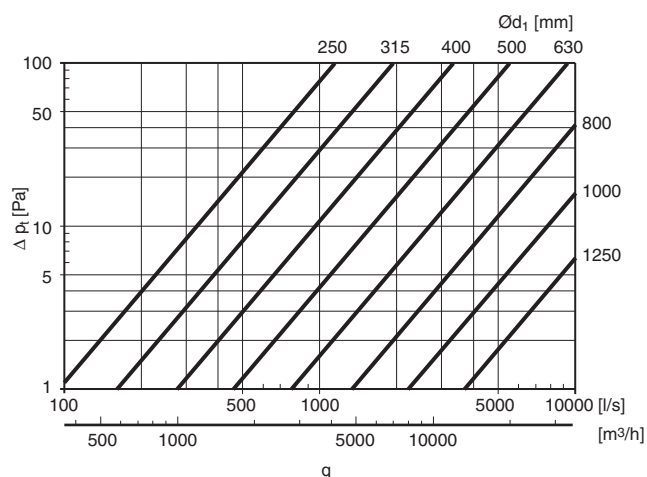
Dimensions



$r_m \approx 1 \cdot d_1$

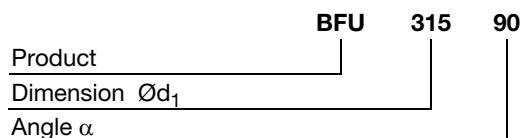
Description

Segmented and lockseamed bend.



$\text{Ø}d_1$ nom	l mm	m kg
250	250	2,20
280	280	2,50
300	300	2,7
315	315	3,00
355	355	3,75
400	400	5,64
450	450	7,00
500	500	8,20
560	560	10,1
600	600	11,7
630	630	12,9
710	710	19,8
800	800	26,0
900	900	33,6
1000	1000	42,0
1120	1120	52,6
1250	1250	64,0

Ordering example





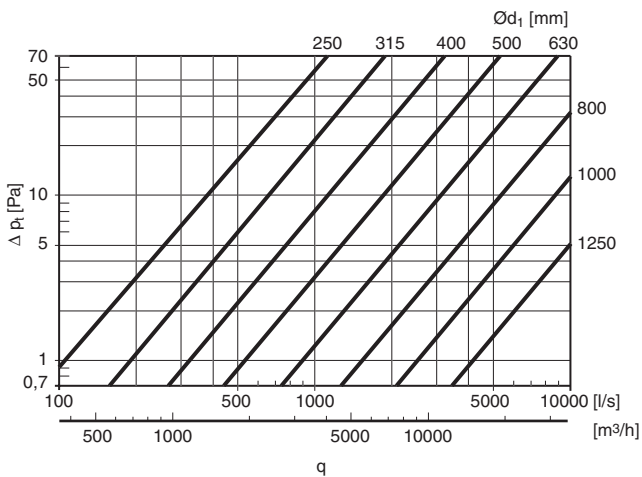
Bend – lockseamed

BFU 60°

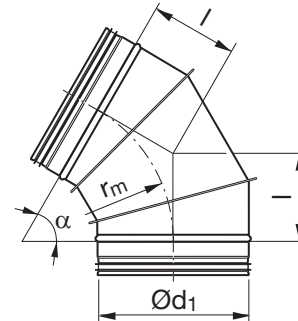


Description

Segmented and lockseamed bend.



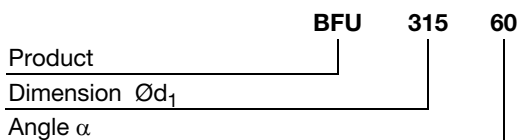
Dimensions



$$r_m \approx 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
250	144	1,48
280	162	1,80
300	173	2,00
315	182	2,20
355	205	2,80
400	231	3,47
450	260	4,70
500	289	6,00
560	323	7,40
600	346	8,60
630	364	9,20
710	410	11,3
800	462	14,8
900	520	19,3
1000	577	24,2
1120	647	30,1
1250	722	36,6

Ordering example



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Bend – lockseamed

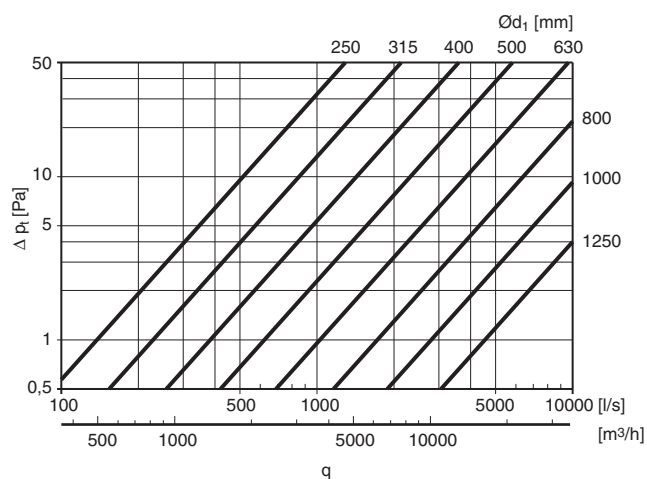
BFU 45°

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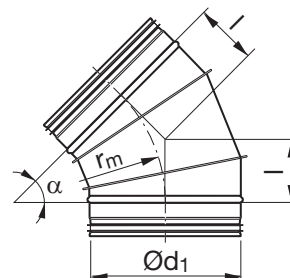


Description

Segmented and lockseamed bend.



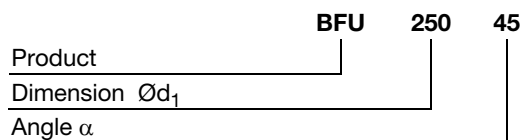
Dimensions



$$r_m = 1 \cdot d_1$$

$\text{Ø}d_1$ nom	l mm	m kg
250	104	1,26
280	116	1,54
300	124	1,77
315	130	1,90
355	147	2,26
400	166	2,96
450	186	4,00
500	207	4,90
560	232	6,10
600	249	6,80
630	261	7,49
710	294	11,3
800	331	15,0
900	373	16,8
1000	414	19,5
1120	464	28,5
1250	518	38,0

Ordering example





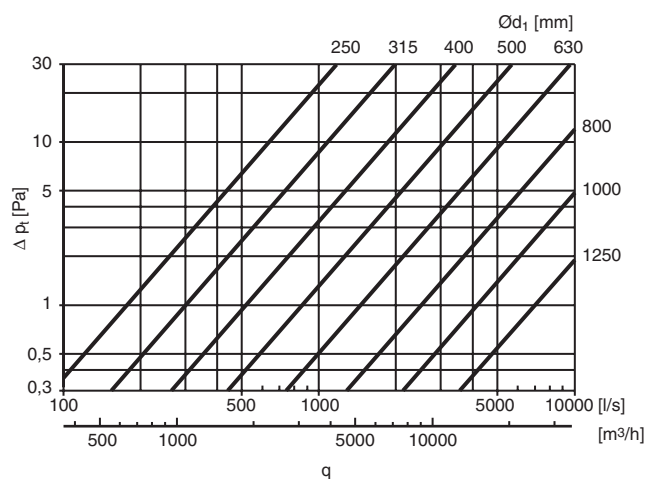
Bend – lockseamed

BFU 30°

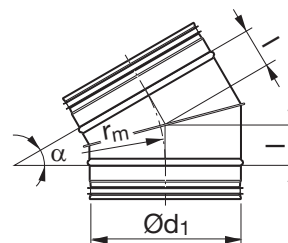


Description

Segmented and lockseamed bend.



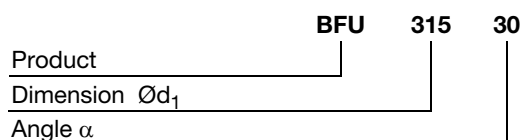
Dimensions



$$r_m = 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
250	67	1,00
280	75	1,10
300	80	1,30
315	84	1,42
355	95	1,70
400	107	2,27
450	121	3,00
500	134	3,70
560	150	4,60
600	161	5,10
630	169	5,60
710	190	8,60
800	214	11,0
900	241	10,9
1000	268	13,4
1120	300	16,1
1250	335	19,0

Ordering example



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Bend – lockseamed

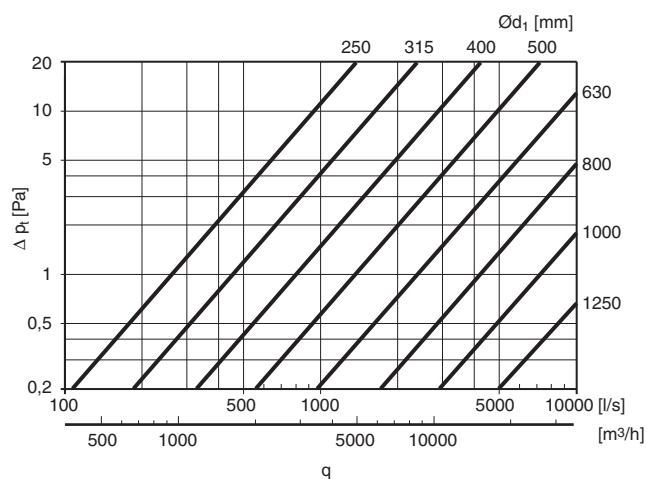
BFU 15°

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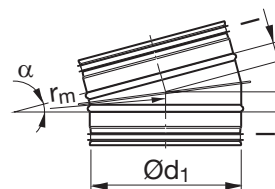


Description

Segmented and lockseamed bend.



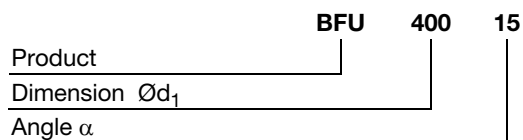
Dimensions



$$r_m = 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
250	33	0,65
280	37	0,77
300	39	0,85
315	41	0,91
355	47	1,41
400	53	1,70
450	59	2,20
500	66	2,65
560	74	3,30
600	79	3,70
630	83	4,00
710	93	5,80
800	105	7,00
900	118	8,50
1000	132	10,4
1120	147	12,5
1250	165	14,5

Ordering example





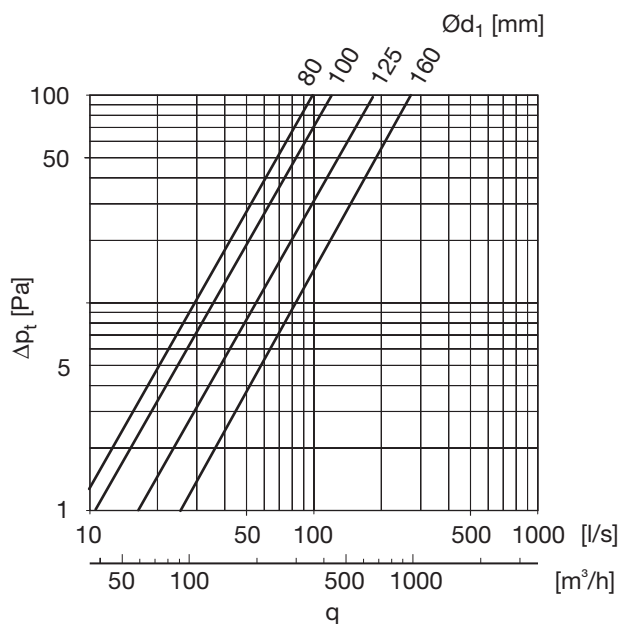
Bend – short

BKU90°

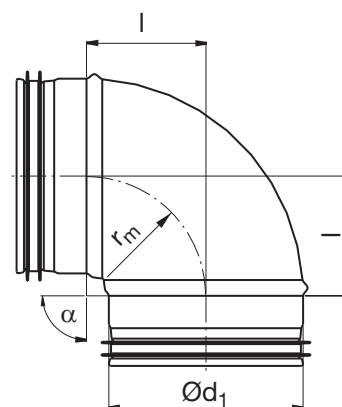


Description

Pressed and seam welded bend with short installation length.



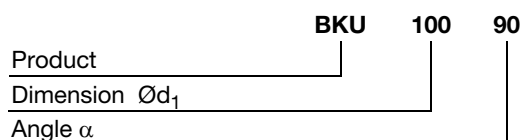
Dimensions



$$r_m \approx 0,6 \cdot d_1$$

Ød ₁ nom	l mm	m kg
80	80	0,14
100	62	0,22
125	79	0,31
160	94	0,50

Ordering example



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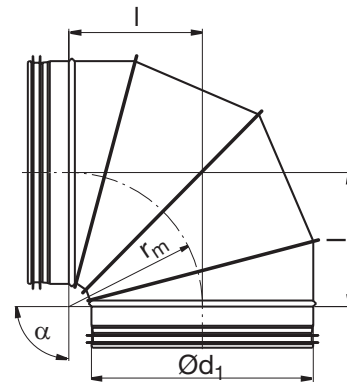


Bend – short, lockseamed

BKFU 90°



Dimensions

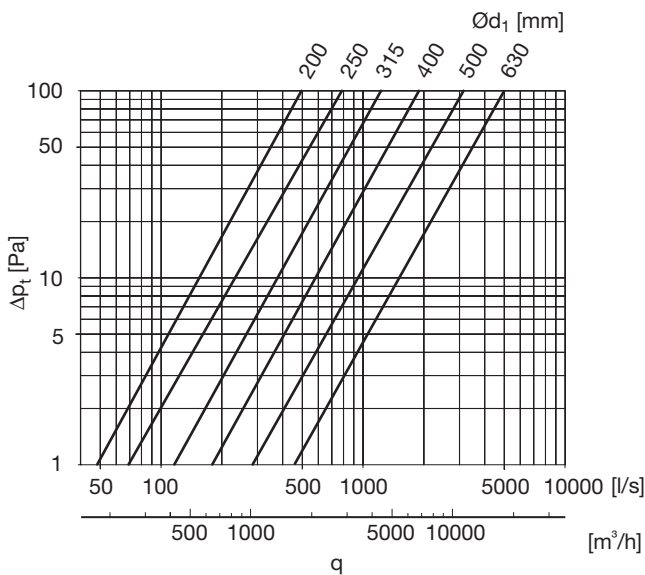


$$r_m \approx 0,6 \cdot d_1$$

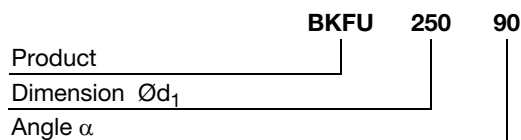
Description

Segmented and lockseamed bend with short installation length.

$\text{Ø}d_1$ nom	l mm	m kg
200	158	1,18
250	180	1,64
315	220	2,49
400	255	3,61
500	315	6,30
630	397	9,45



Ordering example





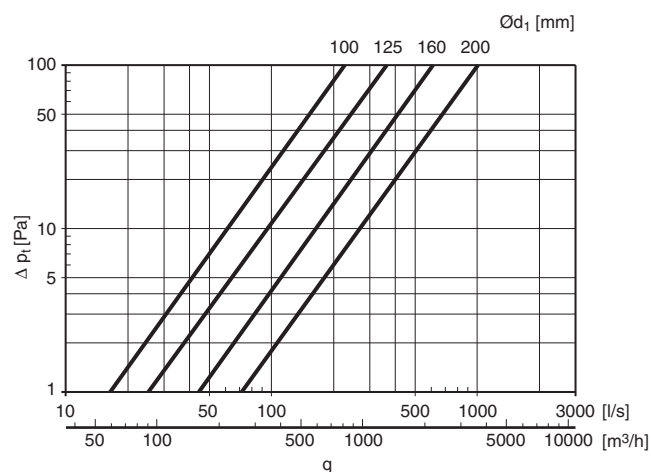
Bend – long

BSU 90°

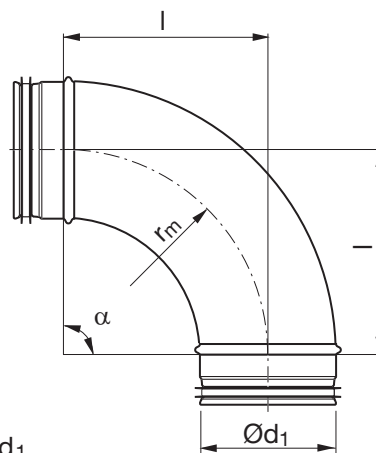


Description

Pressed and seam welded bend.



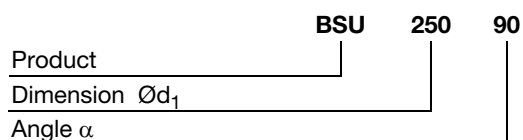
Dimensions



$$r_m \approx 1,5 \cdot d_1$$

$\text{Ø}d_1$ nom	l mm	m kg
100	150	0,50
125	190	0,79
150	225	0,95
160	240	1,14
180	270	1,50
200	300	1,55

Ordering example



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Bend – long

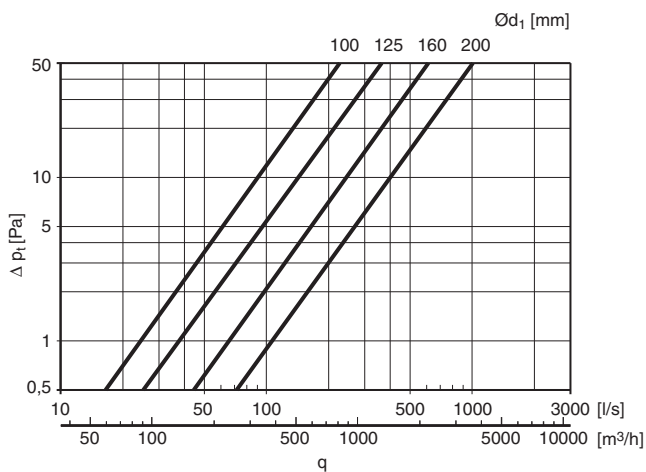
BSU 45°

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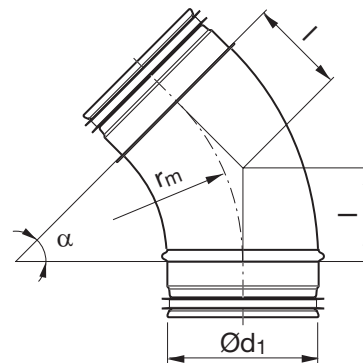


Description

Pressed and seam welded bend.



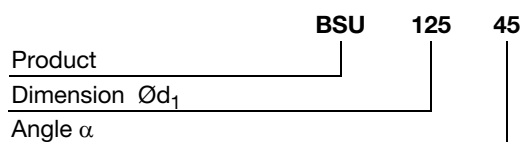
Dimensions



$$r_m \approx 1,5 \cdot d_1$$

$\text{Ø}d_1$ nom	l mm	m kg
100	62	0,26
125	79	0,41
150	93	0,49
160	100	0,59
180	112	0,77
200	124	0,82

Ordering example





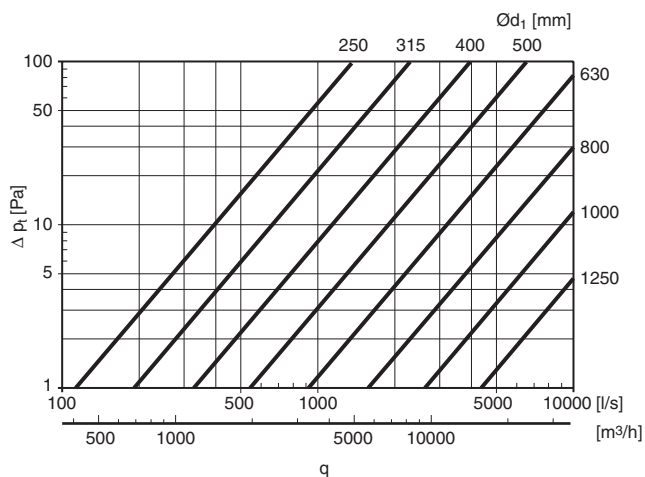
Bend – long, lockseamed

BSFU 90°

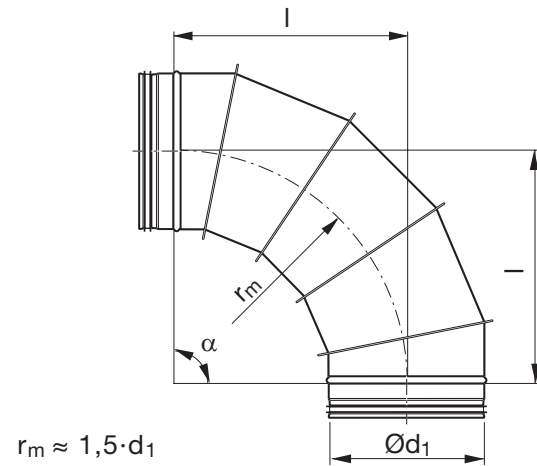


Description

Segmented and lockseamed bend.

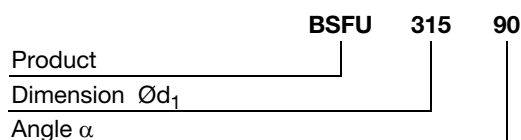


Dimensions



$\text{Ø}d_1$ nom	l mm	m kg
250	375	2,70
280	420	3,33
300	450	3,60
315	473	4,20
355	533	4,60
400	600	8,30
450	675	10,2
500	750	11,9
560	840	15,2
600	900	17,0
630	945	18,8
710	1065	22,7
800	1200	26,9
900	1350	39,3
1000	1500	47,7
1120	1680	63,0
1250	1875	78,5

Ordering example





Bend – long, lockseamed

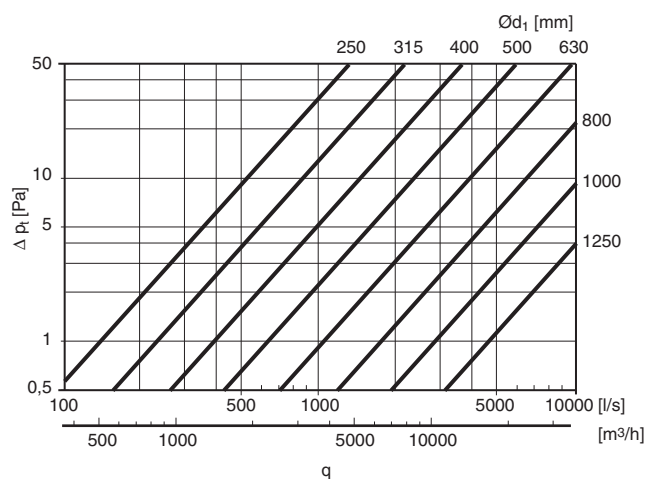
BSFU 45°

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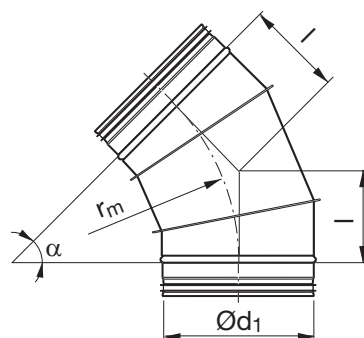


Description

Segmented and lockseamed bend.



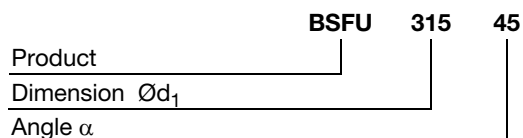
Dimensions



$$r_m = 1,5 \cdot d_1$$

Ød ₁ nom	l mm	m kg
250	155	1,60
280	174	1,81
300	186	2,00
315	196	2,26
355	221	2,60
400	249	4,50
450	280	5,53
500	311	6,60
560	348	7,95
600	373	8,80
630	391	9,50
710	441	11,1
800	497	13,1
900	559	18,9
1000	621	23,9
1120	696	29,6
1250	777	36,1

Ordering example





Bend – Casting-in programme

BKMU 90°



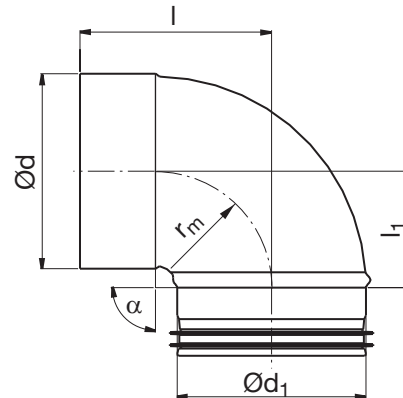
Description

Pressed and seam welded bend with short installation length and female end.

Has Click function at the Safe end – has an open turned-over end.

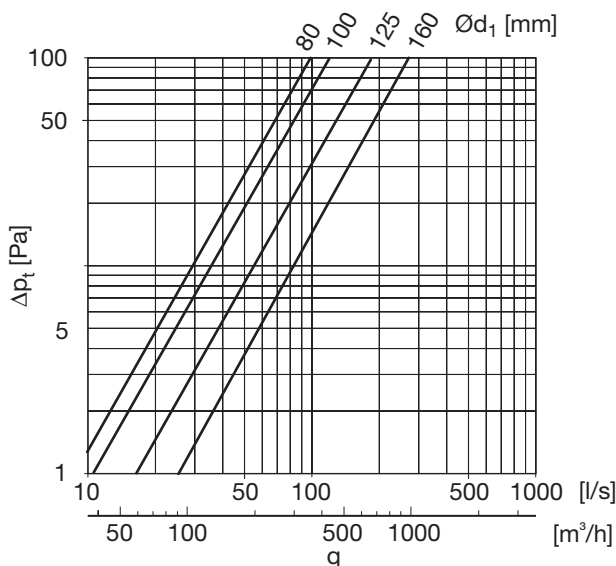
Has not any Click function at the female end – hasn't any notches.

Dimensions

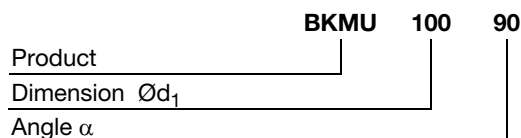


$$r_m = 0,6 \cdot d_1$$

Ød ₁ nom	Ød nom	l mm	l ₁ mm	m kg
80	80	123	80	0,13
100	100	105	62	0,21
125	125	120	79	0,31
160	160	136	94	0,63



Ordering example



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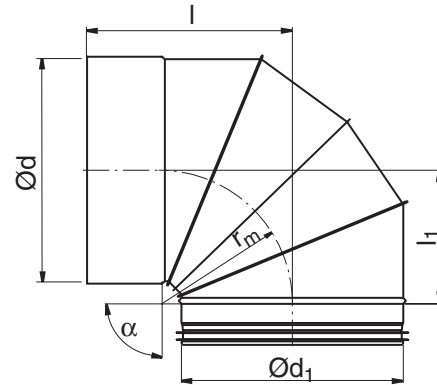


Bend, short, segmented, female end

BKFMU 90°



Dimensions



$r_m \approx 0,6 \cdot d_1$

Description

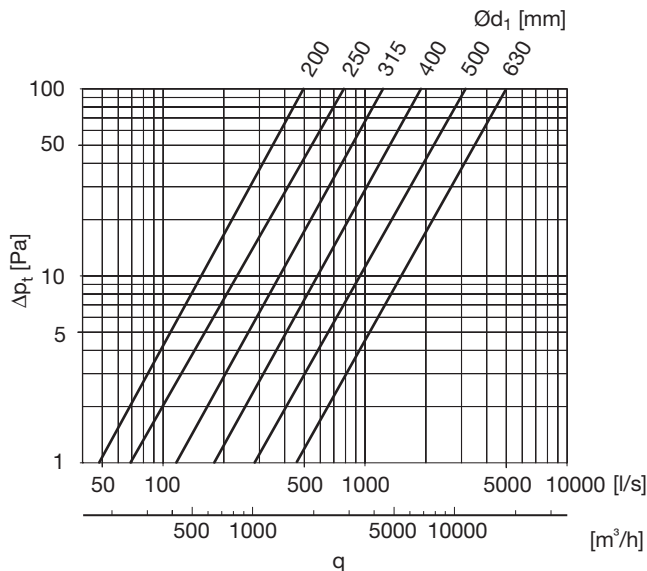
Segmented and lockseamed bend with short installation length and female end.

Has Click function at the Safe end – has an open turned-over end.

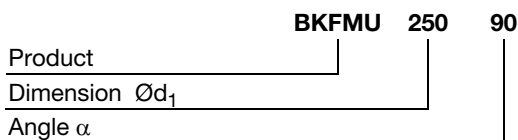
Has normally not any Click function at the female end – hasn't any notches.

Can to order be delivered with Click function at the female end as well – i.e. with notches.

Ød ₁ nom	Ød nom	l mm	l ₁ mm	m kg
200	200	199	158	1,17
250	250	240	180	1,59
315	315	280	220	2,26
400	400	335	255	3,46
500	500	395	315	6,33
630	630	475	397	9,51
710	710	525	425	16,0
800	800	570	470	20,0
1000	1000	690	570	32,0
1120	1120	750	630	41,0
1250	1250	815	695	52,0



Ordering example





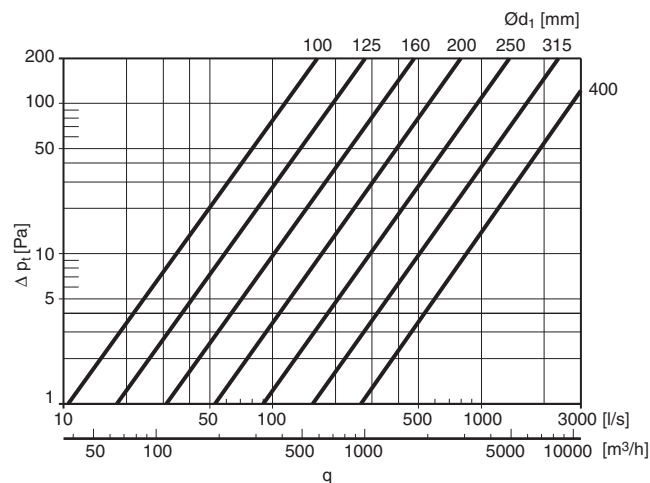
Cleaning bends

BKCU 90° BFKCU 90°



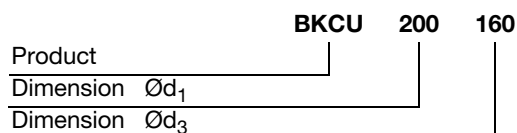
Description

Pressed and seam welded bend with separate branch for cleaning. The stud is fitted with a Safe take-off and fits an inspection cap. The design gives a lower pressure drop than the equivalent design using a T-piece. The stud can also be used as the connection for an SR duct.

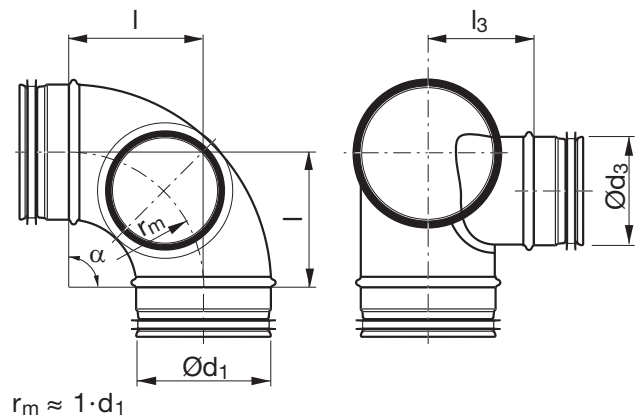


The graph applies to a cleaning bend with cleaning cap. Pressure drop is independent of take-off dimension ($\text{Ø}d_3 \leq \text{Ø}d_1$).

Ordering example



Dimensions



$\text{Ø}d_1$ nom	$\text{Ø}d_3$ nom	l mm	l_3 mm	m kg
100	100	100	75	0,41
112	100	120	85	0,50
125	100	125	90	0,59
125	125	125	90	0,66
140	125	135	100	0,75
150	125	150	105	0,78
160	125	160	110	0,97
160	160	160	110	0,97
180	160	180	120	1,18
200	160	200	130	1,24
200	200	200	130	1,28
224	200	225	140	1,57
250	200	250	155	1,93
250	250	250	150	2,01

* Segmented and lockseamed. Designated BFKCU 90°

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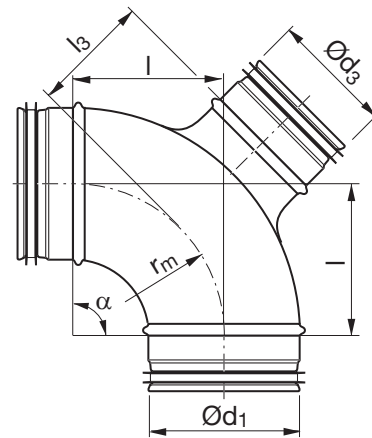


Cleaning bends

BBKCU90°, BFBKCU90°



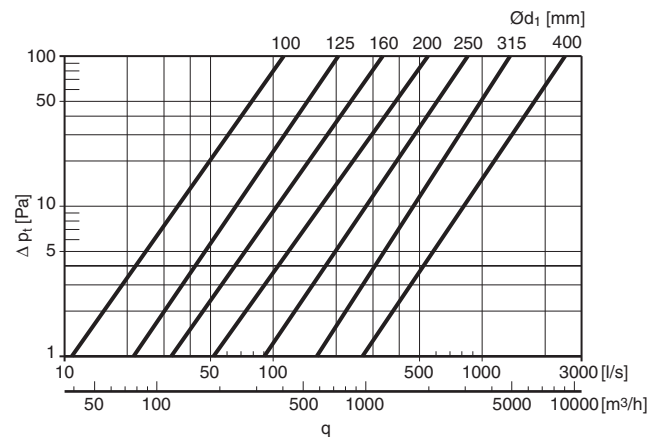
Dimensions



$r_m \approx 1 \cdot d_1$

Description

Pressed and seam welded bend with separate branch for cleaning. The stud is fitted with a Safe take-off and fits an inspection cap.



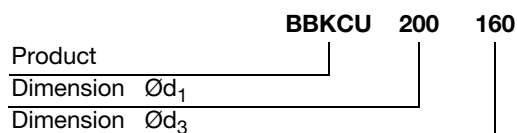
The graph applies to a cleaning bend with cleaning cap EPFH and with the same dimension of take-off and main duct ($\text{Ø}d_3 = \text{Ø}d_1$).

The pressure drop is about 30% lower for cleaning cap KCU and $\text{Ø}d_3 = \text{Ø}d_1$.

The pressure drop is about 30% lower for cleaning cap EPFH and one step smaller take-off dimension ($\text{Ø}d_3 < \text{Ø}d_1$).

The pressure drop is about 50% lower for cleaning cap KCU and one step smaller take-off dimension ($\text{Ø}d_3 < \text{Ø}d_1$).

Ordering example



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
100	100	100	75	0,42
112	100	120	78	0,51
125	100	125	78	0,58
125	125	125	83	0,58
140	125	135	90	0,75
150	125	150	90	0,77
160	125	160	100	0,97
160	160	160	105	0,96
180	160	180	108	1,20
200	160	200	125	1,24
200	200	200	125	1,29
224	200	225	128	1,67
250	200	250	150	2,02
250	250	250	150	2,12

* Segmented and lockseamed. Designated BFBKCU 90°



Bend – Casting-in programme

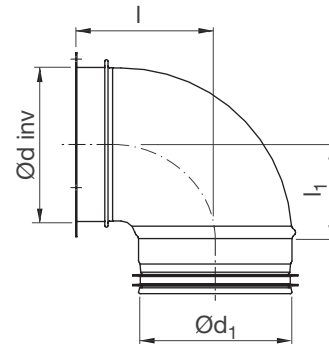
BU



Description

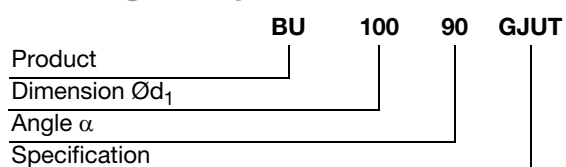
Short installation length with female end and nail flange with pre-punched holes.

Dimensions



Ød ₁ nom	Ød nom	l mm	l ₁ mm	m kg
80	80	101	80	0,26
100	100	93	62	0,24
125	125	106	79	0,32
160	160	130	94	0,43

Ordering example



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Bend – Casting-in programme

BSIU

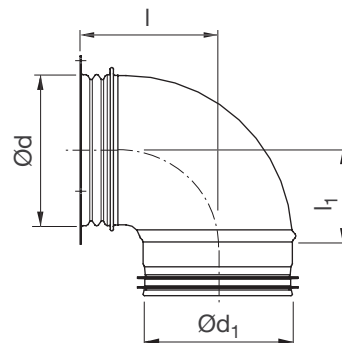
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Description

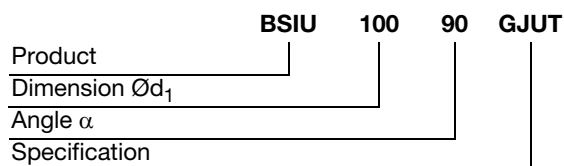
Short installation length with air valve socket and nail flange with pre-punched holes. Fits air valve KVB etc.

Dimensions



Ød ₁ nom	Ød nom	l mm	l ₁ mm	m kg
100	92	93	62	0,23
125	117	106	79	0,31
160	152	131	94	0,39

Ordering example





Reducer

RCU



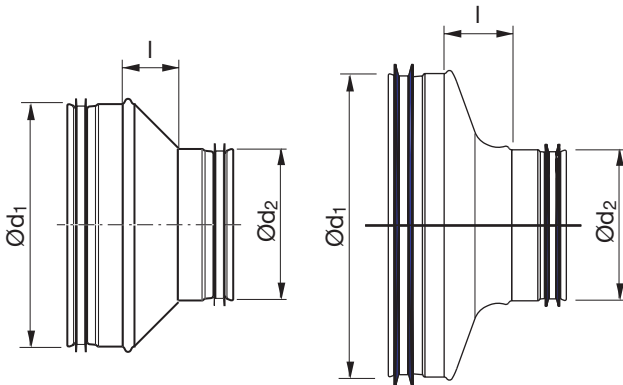
Description

Pressed, concentric reducer to meet demands for short installation length with low pressure drop and low internal noise generation.

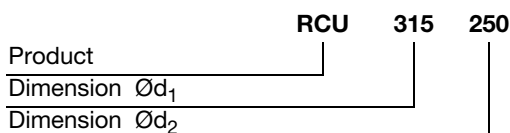
Pressure drop, see graphs on page 79.

Pressure drop, see graphs on page 79.

Dimensions



Ordering example



Dimensions

Ød ₁ nom	Ød ₂ nom	l mm	m kg
80	63	18	0,12
100	63	30	0,17
100 *	80	26	0,18
125 *	80	36	0,16
125 *	100	27	0,21
150	100	36	0,17
150 *	125	31	0,15
160	80	55	0,31
160 *	100	46	0,17
160 *	125	35	0,22
160	150	22	0,26
180	100	55	0,24
180	125	40	0,37
180	150	27	0,29
180	160	20	0,26
200 *	100	46	0,22
200 *	125	55	0,30
200	150	37	0,37
200 *	160	39	0,29
200	180	26	0,35
224	150	48	0,53
224	160	44	0,53
224	180	34	0,48
224	200	24	0,45
250	125	70	0,62
250	150	62	0,60
250 *	160	60	0,46
250	180	47	0,59
250 *	200	42	0,46
250	224	29	0,57
300 *	200	59	0,64
300	250	34	0,71
315	160	91	0,86
315 *	200	74	0,72
315 *	250	50	0,65
355	250	69	1,08
355	315	33	0,99
400	200	118	1,37
400	250	94	1,38
400	315	54	1,29
500 **	250	128	2,30
500	315	95	1,90
500	400	68	1,76
630 **	315	160	3,37
630 **	400	118	3,17
630 **	500	68	2,89

* With stream-lined transition

** Hand made





Reducer

RCFU

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Description

Pressed, concentric reducer with female coupling, with a 45° angle to meet demands for short installation length with low pressure drop and low internal noise generation. Ød fits outside another fitting.

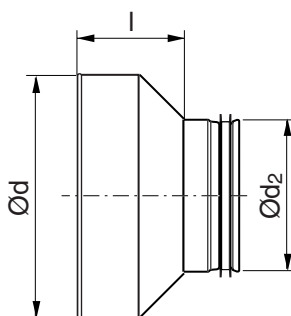
Pressure drop, see graphs on page 79.

Has Click function at the Safe end – has an open turned-over end.

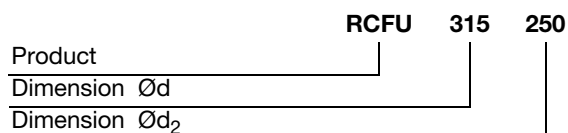
Has normally not any Click function at the female end – hasn't any notches.

Can to order be delivered with Click function at the female end as well – i.e. with notches.

Dimensions



Ordering example



Dimensions

Ød nom	Ød ₂ nom	l mm	m kg
80	63	57	0,11
100	63	70	0,14
100 *1	80	61	0,16
125 *1	80	73	0,16
125 *1	100	64	0,14
150	100	78	0,16
150 1	125	66	0,17
160 *	80	92	0,24
160 *1	100	83	0,16
160 *1	125	71	0,20
160	150	59	0,25
180	100	98	0,24
180	125	85	0,31
180	150	68	0,24
180	160	66	0,27
200 *1	100	84	0,23
200 *1	125	90	0,27
200	150	75	0,34
200 *1	160	73	0,26
200	180	63	0,32
224	150	92	0,45
224	160	87	0,49
224	180	76	0,46
224	200	66	0,45
250 *	125	133	0,57
250	150	122	0,56
250 *1	160	117	0,40
250	180	107	0,55
250 *1	200	103	0,42
250	224	89	0,53
300	200	119	0,68
300	250	94	0,66
315 *	160	153	0,82
315 *	200	134	0,77
315 *1	250	108	0,65
355	250	136	1,04
355	315	97	0,89
400 *	200	196	1,31
400 *	250	174	1,37
400 *	315	133	1,20
500 **	250	208	2,12
500 **	315	185	2,09
500 **	400	150	1,95
630 **	315	240	2,76
630 **	400	198	2,72
630 **	500	148	2,69

* With turned-over edge

** Hand made

1 With stream-lined transition

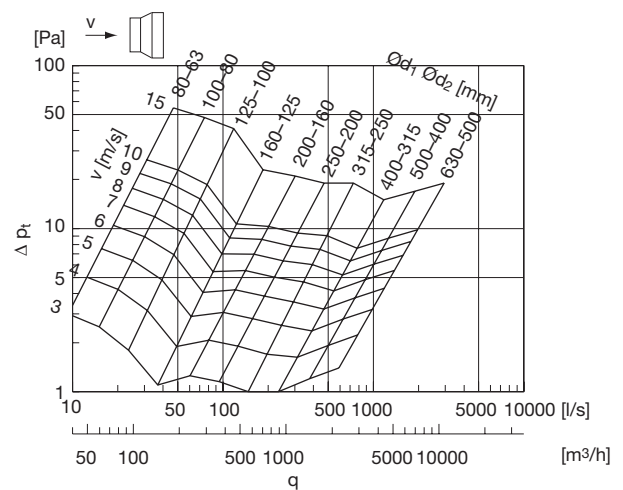
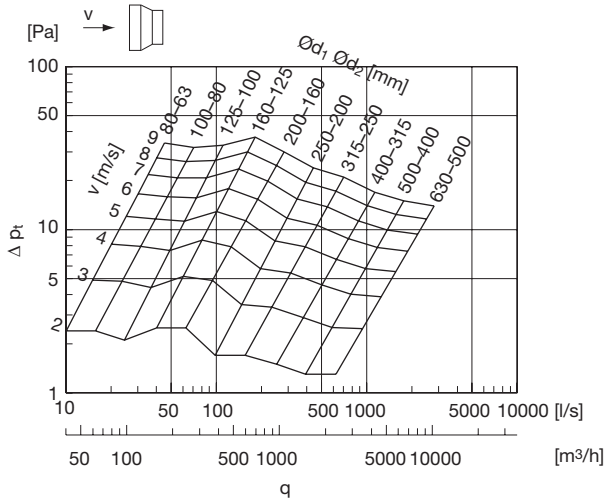


Reducers

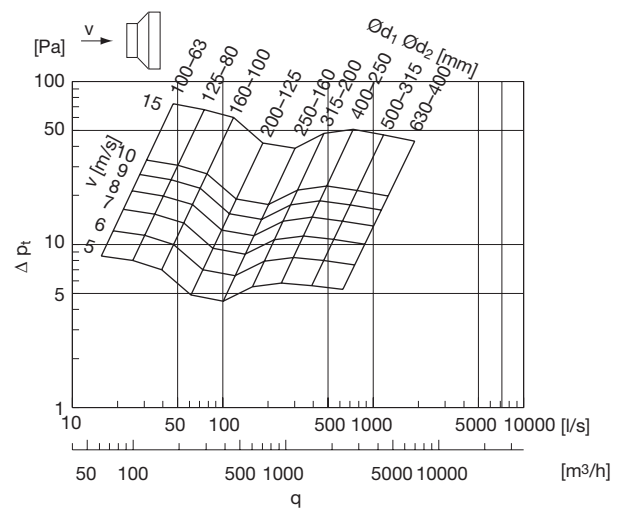
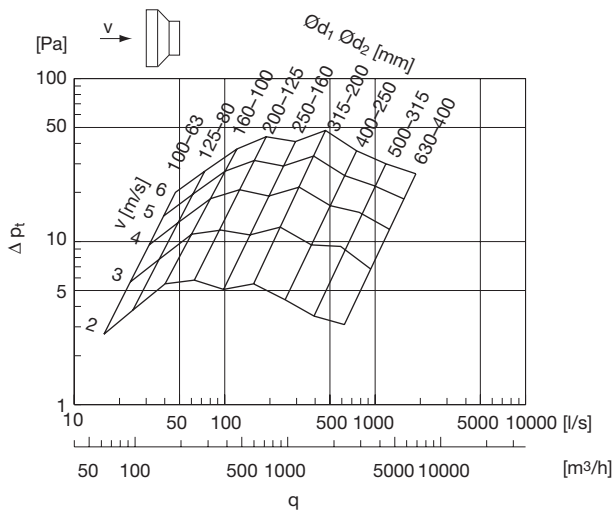
RCU, RCFU

Technical data

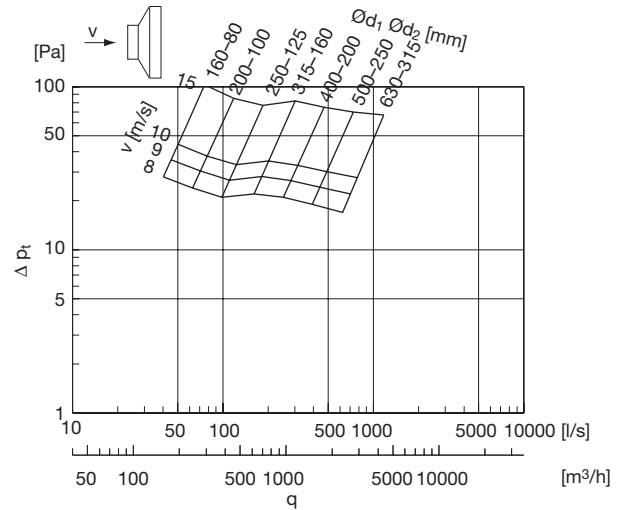
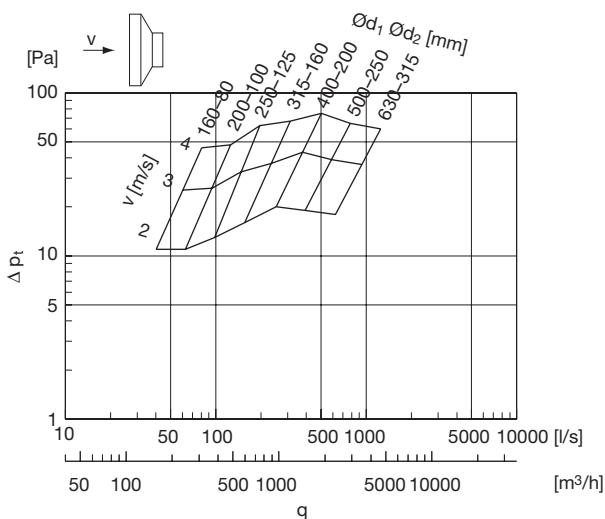
1 dimension step



2 dimension steps



3 dimension steps



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Reducer

RU

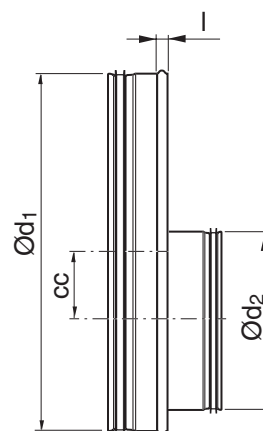
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Description

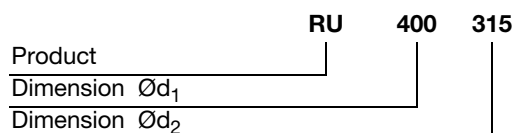
Short, eccentric reducer to achieve extremely short installation length.

Dimensions



Ød ₁ nom	Ød ₂ nom	cc mm	l mm	m kg
400	200	90	12	1,42
400	224	78	12	1,48
400	250	65	12	1,54
400	280	50	12	1,53
400	300	40	12	1,52
400	315	33	12	1,51
400	355	13	12	1,13
450	250	90	4	1,76
450	280	75	4	1,75
450	300	65	4	1,74
450	315	58	4	1,73
450	355	38	4	1,64
450	400	15	4	1,31
500	250	115	12	1,98
500	280	100	12	1,97
500	300	90	12	1,96
500	315	83	12	1,95
500	355	63	12	1,87
500	400	40	12	1,92
500	450	15	12	1,46
560	315	113	4	2,29
560	355	93	4	2,21
560	400	70	4	2,26
560	450	45	4	1,80
560	500	20	4	1,70
600	315	133	4	2,63
600	355	113	4	2,54
600	400	90	4	2,60
600	450	65	4	2,14
600	500	40	4	2,56
600	560	10	4	1,87
630	315	148	4	2,85
630	355	128	4	2,77

Ordering example





Reducer

RU

Ød ₁ nom	Ød ₂ nom	cc mm	l mm	m kg
630	400	105	4	2,82
630	450	80	4	2,36
630	500	55	4	2,78
630	560	25	4	2,09
630	600	5	4	1,90
710	400	145	4	3,43
710	450	120	4	2,97
710	500	95	4	3,39
710	560	65	4	2,70
710	600	45	4	2,51
710	630	30	4	2,48
800	400	190	4	4,06
800	450	165	4	3,60
800	500	140	4	4,02
800	560	110	4	3,33
800	600	90	4	3,14
800	630	75	4	3,75
800	710	35	4	3,06
900	500	190	4	5,30
900	560	160	4	4,58
900	600	140	4	4,36
900	630	125	4	4,95
900	710	85	4	4,20
900	800	40	4	4,01
1000	500	240	4	6,52
1000	560	210	4	5,80
1000	600	190	4	5,58
1000	630	175	4	6,17
1000	710	135	4	5,42
1000	800	90	4	5,23
1000	900	40	4	4,94
1120	630	235	4	7,59
1120	710	195	4	6,48
1120	800	150	4	6,64
1120	900	100	4	6,36
1120	1000	50	4	5,46
1250	630	300	4	9,69
1250	710	260	4	8,94
1250	800	215	4	8,74
1250	900	165	4	8,46
1250	1000	115	4	7,56
1250	1120	55	4	7,53

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Reducer

RFU

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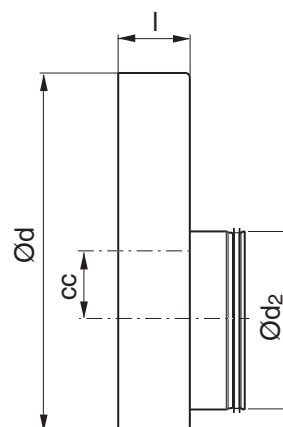


Description

Short, eccentric reducer with female end to achieve extremely short installation length.

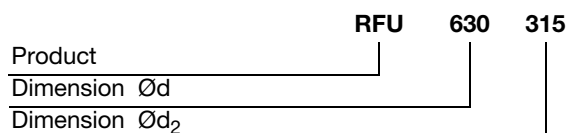
Ød fits outside another fitting.

Dimensions



Ød nom	Ød ₂ nom	cc mm	l mm	m kg
400 *	200	90	80	1,33
400	224	78	80	1,39
400 *	250	65	80	1,44
400	280	50	80	1,43
400	300	40	80	1,43
400 *	315	33	80	1,42
400	355	13	80	0,99
450	250	90	80	1,76
450	280	75	80	1,75
450	300	65	80	1,74
450	315	58	80	1,73
450	355	38	80	1,69
450	400	15	80	1,31
500	250	115	80	2,09
500	280	100	80	2,08
500	300	95	80	2,07
500	315	83	80	2,06
500	355	63	80	1,98
500	400	40	80	2,03
500	450	15	80	1,57
560	315	113	80	2,39
560	355	93	80	2,32
560	400	70	80	2,36
560	450	45	80	1,90
560	500	20	80	1,80
600	315	133	80	2,62
600	355	113	80	2,54
600	400	90	80	2,59
600	450	65	80	2,53
600	500	40	80	2,54
600	560	10	80	1,86
630	315	148	80	2,79
630	355	128	80	2,71

Ordering example





Reducer

RFU

Ød nom	Ød ₂ nom	cc mm	l mm	m kg
630	400	105	80	2,76
630	450	80	80	2,30
630	500	55	80	2,72
630	560	25	80	2,03
630	600	5	80	1,84
710	400	145	100	3,72
710	450	120	100	2,76
710	500	95	100	3,18
710	560	65	100	2,49
710	600	45	100	2,30
710	630	30	100	2,44
800	400	190	100	3,76
800	450	165	100	3,30
800	500	140	100	3,72
800	560	110	100	3,03
800	600	90	100	2,84
800	630	75	100	3,44
800	710	35	100	2,76
900	500	190	100	6,14
900	560	160	100	5,42
900	600	140	100	5,20
900	630	125	100	5,74
900	710	85	100	5,04
900	800	40	100	4,84
1000	500	240	100	7,34
1000	560	210	100	6,42
1000	600	190	100	6,40
1000	630	175	100	6,99
1000	710	135	100	6,24
1000	800	90	100	6,04
1000	900	40	100	5,76
1120	630	235	120	9,09
1120	710	195	120	8,34
1120	800	150	120	8,14
1120	900	100	120	7,86
1120	1000	50	120	6,96
1250	630	300	120	11,0
1250	710	260	120	10,3
1250	800	215	120	10,0
1250	900	165	120	9,76
1250	1000	115	120	8,86
1250	1120	55	120	8,83

* With turned-over edge

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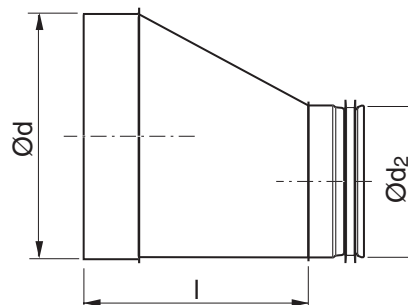


Reducer

RFLU



Dimensions



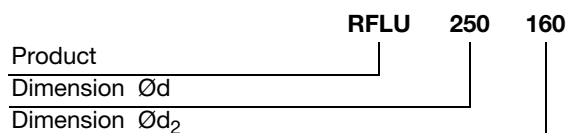
Description

Long, tangential, hand made reducer with a female end and with approx. 35° angle.

Dimensions are otherwise adapted to DIN 24147 section 4.

Ød nom	Ød ₂ nom	l mm	m kg
80	63	98	0,14
100	63	126	0,20
100	80	103	0,18
112	63	142	0,23
112	80	119	0,22
112	100	92	0,20
125	63	159	0,28
125	80	137	0,26
125	100	109	0,24
125	112	93	0,23
140	63	181	0,33
140	80	157	0,32
140	100	130	0,30
140	112	114	0,28
140	125	96	0,27
150	63	195	0,37
150	80	171	0,36
150	100	144	0,34
150	112	127	0,32
150	125	109	0,30
150	140	99	0,28
160	63	207	0,43
160	80	185	0,42
160	100	157	0,40
160	112	141	0,38
160	125	123	0,36
160	140	102	0,34
160	150	99	0,32
180	80	212	0,51
180	100	185	0,49
180	112	168	0,47
180	125	151	0,46
180	140	130	0,43

Ordering example





Reducer

RFLU

Ød nom	Ød ₂ nom	l mm	m kg
180	150	116	0,41
180	160	103	0,41
200	80	240	0,61
200	100	213	0,59
200	112	196	0,57
200	125	178	0,55
200	140	157	0,53
200	150	144	0,51
200	160	130	0,50
200	180	103	0,46
224	100	215	0,72
224	112	229	0,70
224	125	211	0,68
224	140	190	0,65
224	150	177	0,64
224	160	163	0,63
224	180	135	0,58
224	200	107	0,53
250	100	301	0,94
250	112	285	0,92
250	125	267	0,90
250	140	246	0,89
250	150	232	0,87
250	160	219	0,87
250	180	191	0,80
250	200	164	0,75
250	224	131	0,67
280	125	308	1,10
280	140	287	1,08
280	150	274	1,06
280	160	260	1,05
280	180	232	1,00
280	200	205	0,95
280	224	172	0,87
280	250	136	0,84
300	125	335	1,25
300	140	315	1,22
300	150	301	1,20
300	160	287	1,20
300	180	260	1,15
300	200	262	1,09
300	224	200	1,02
300	250	164	0,98
300	280	123	0,86
315	125	356	1,36
315	140	335	1,33
315	150	322	1,32
315	160	308	1,31

Ød nom	Ød ₂ nom	l mm	m kg
315	180	281	1,26
315	200	253	1,21
315	224	220	1,13
315	250	184	1,09
315	280	143	0,97
315	300	116	0,88
355	160	363	1,84
355	180	335	1,77
355	200	308	1,71
355	224	275	1,61
355	250	239	1,56
355	280	198	1,41
355	300	171	1,30
355	315	150	1,21
400	160	450	2,44
400	180	422	2,38
400	200	395	2,31
400	224	362	2,23
400	250	326	2,20
400	280	285	2,01
400	300	257	1,90
400	315	237	1,86
400	355	182	1,55
450	200	463	2,99
450	224	431	2,90
450	250	395	2,85
450	280	354	2,70
450	300	326	2,59
450	315	306	2,50
450	355	251	2,24
450	400	194	2,64
500	200	532	3,66
500	224	499	3,56
500	250	463	3,51
500	280	422	3,36
500	300	395	3,25
500	315	374	3,16
500	355	319	2,89
500	400	262	2,69
500	450	194	2,37
560	250	546	4,47
560	280	505	4,32
560	300	477	4,21
560	315	456	4,11
560	355	402	3,85
560	400	345	3,66
560	450	276	2,70
560	500	207	2,86

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Reducer

RFLU

Ød nom	Ød ₂ nom	l mm	m kg
600	250	601	5,10
600	280	560	4,96
600	300	532	4,84
600	315	512	4,76
600	355	457	4,49
600	400	400	4,29
600	450	331	3,96
600	500	262	3,49
600	560	180	2,94
630	250	642	5,60
630	280	601	5,46
630	300	573	5,34
630	315	553	5,25
630	355	498	4,99
630	400	441	4,79
630	450	372	4,46
630	500	304	4,00
630	560	221	3,43
630	600	166	2,97
710	355	633	7,11
710	400	576	6,92
710	450	507	6,60
710	500	438	6,12
710	560	356	5,57
710	600	301	5,10
710	630	260	4,72
800	400	699	8,81
800	450	631	8,49
800	500	562	8,02
800	560	480	7,46
800	600	425	6,99
800	630	384	6,62
800	710	279	6,21
900	450	768	10,8
900	500	699	10,3
900	560	617	9,78
900	600	562	9,31
900	630	521	8,94
900	710	416	8,53
900	800	292	7,18
1000	500	857	13,1
1000	560	774	12,5
1000	600	719	12,0
1000	630	678	11,7
1000	710	573	11,2
1000	800	450	9,91
1000	900	312	8,17
1120	560	939	16,4

Ød nom	Ød ₂ nom	l mm	m kg
1120	600	884	15,9
1120	630	843	15,5
1120	710	738	15,1
1120	800	615	13,8
1120	900	477	12,1
1120	1000	656	16,2
1250	600	340	10,3
1250	630	1063	20,1
1250	710	1022	19,7
1250	800	917	19,3
1250	900	793	17,9
1250	1000	518	14,4
1250	1120	354	12,2



Reducer

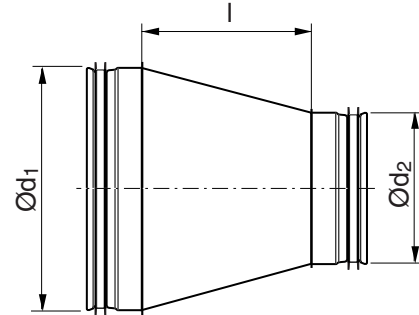
RCLU



Description

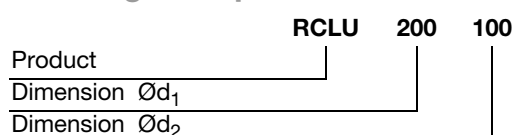
Long, concentric, hand made reducer with approx. 18° angle.

Dimensions



Ød ₁ nom	Ød ₂ nom	l mm	m kg
112	63	97	0,23
112	80	74	0,22
112	100	47	0,20
125	63	115	0,28
125	112	48	0,23
140	63	136	0,33
140	80	112	0,32
140	100	85	0,30
140	112	69	0,28
140	125	51	0,27
150	63	150	0,37
150	80	126	0,36
150	112	82	0,32
150	140	44	0,28
160	63	163	0,43
160	112	96	0,38
160	140	57	0,34
180	80	167	0,51
180	112	123	0,47
180	140	85	0,43
200	80	195	0,61
200	112	151	0,57
200	140	112	0,53
224	100	200	0,72
224	112	184	0,70
224	125	166	0,68
224	140	145	0,65
250	100	236	0,94
250	112	220	0,92
250	140	181	0,89
280	125	243	1,10
280	140	222	1,08
280	150	209	1,06

Ordering example





Reducer

RCLU

Ød ₁ nom	Ød ₂ nom	l mm	m kg
280	160	195	1,05
280	180	167	1,00
280	200	140	0,95
280	224	107	0,87
280	250	71	0,84
300	125	270	1,25
300	140	250	1,22
300	150	236	1,20
300	160	222	1,20
300	180	195	1,15
300	224	135	1,02
300	280	58	0,86
315	125	291	1,36
315	140	270	1,33
315	150	257	1,32
315	180	216	1,26
315	224	155	1,13
315	280	78	0,97
315	300	51	0,88
355	160	298	1,84
355	180	270	1,77
355	200	243	1,71
355	224	210	1,61
355	280	133	1,41
355	300	106	1,30
400	160	365	2,44
400	180	337	2,38
400	224	277	2,23
400	280	200	2,01
400	300	172	1,90
400	355	97	1,55
450	200	378	2,99
450	224	346	2,90
450	250	310	2,85
450	280	269	2,70
450	300	241	2,59
450	315	221	2,50
450	355	166	2,24
450	400	109	2,64
500	200	447	3,66
500	224	414	3,56
500	280	337	3,36
500	300	310	3,25
500	355	234	2,89
500	450	109	2,37
560	250	461	4,47
560	280	420	4,32
560	300	392	4,21

Ød ₁ nom	Ød ₂ nom	l mm	m kg
560	315	371	4,11
560	355	317	3,85
560	400	260	3,66
560	450	191	2,70
560	500	122	2,86
600	250	516	5,10
600	280	475	4,96
600	300	447	4,84
600	315	427	4,76
600	355	372	4,49
600	400	315	4,29
600	450	246	3,96
600	500	177	3,49
600	560	95	2,94
630	250	557	5,60
630	280	516	5,46
630	300	488	5,34
630	355	413	4,99
630	450	287	4,46
630	560	136	3,43
630	600	81	2,97
710	355	528	7,11
710	400	471	6,92
710	450	402	6,60
710	500	333	6,12
710	560	251	5,57
710	600	196	5,10
710	630	155	4,72
800	400	594	8,81
800	450	526	8,49
800	500	457	8,02
800	560	375	7,46
800	600	320	6,99
800	630	279	6,62
800	710	174	6,21
900	450	663	10,8
900	500	594	10,3
900	560	512	9,78
900	600	457	9,31
900	630	416	8,94
900	710	311	8,53
900	800	187	7,18
1000	500	732	13,1
1000	560	649	12,5
1000	600	594	12,0
1000	630	553	11,7
1000	710	448	11,2
1000	800	325	9,91



Reducer

RCLU

$\varnothing d_1$ nom	$\varnothing d_2$ nom	l mm	m kg
1000	900	187	8,17
1120	560	814	16,4
1120	600	759	15,9
1120	630	718	15,5
1120	710	613	15,1
1120	800	490	13,8
1120	900	352	12,1
1120	1000	215	10,3
1250	600	938	20,1
1250	630	897	19,7
1250	710	792	19,3
1250	800	668	17,9
1250	900	531	16,2
1250	1000	393	14,4
1250	1120	229	12,2

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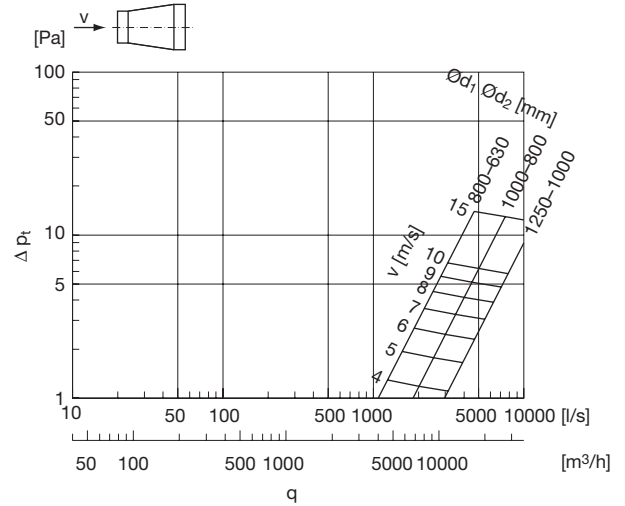
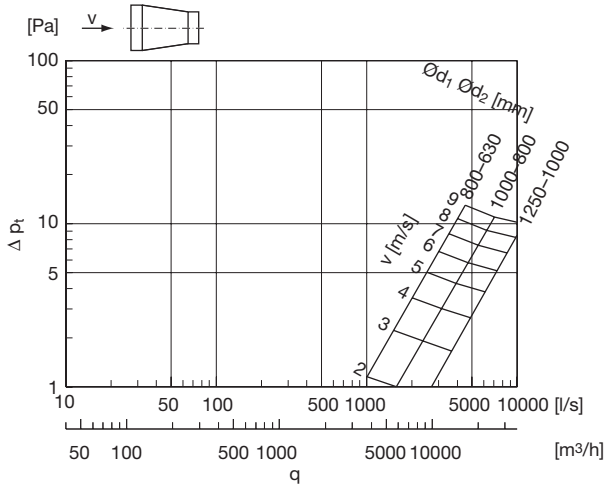


Reducer

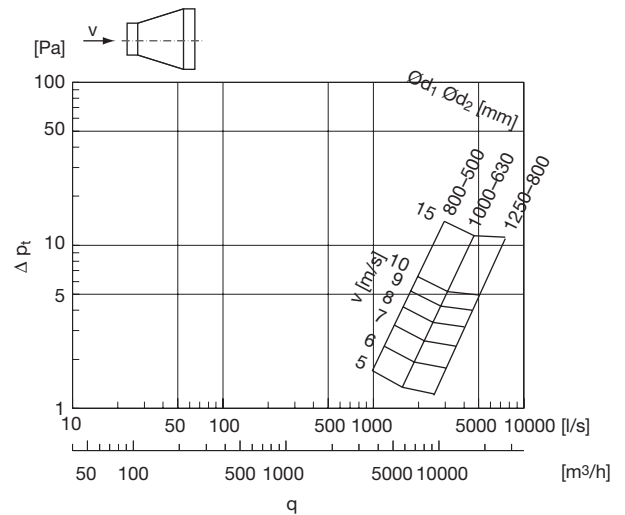
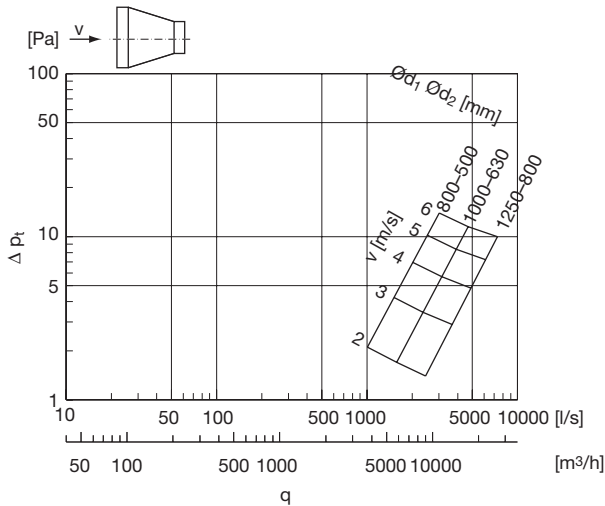
RCLU

Technical data

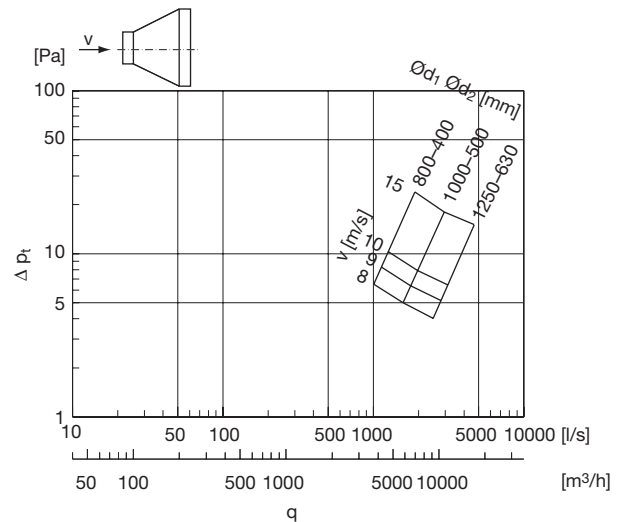
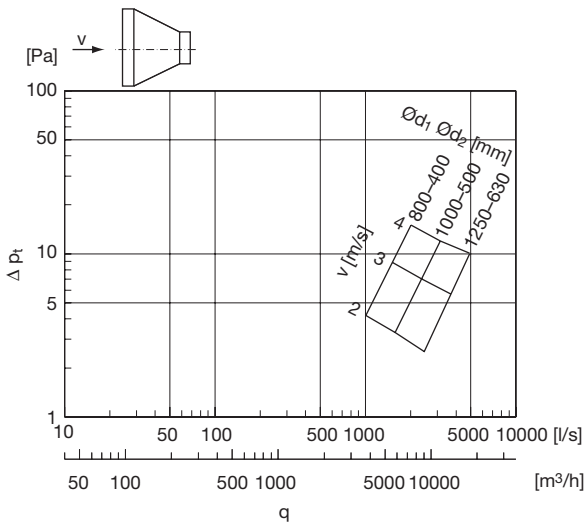
1 dimension step



2 dimension steps



3 dimension steps





Reducer

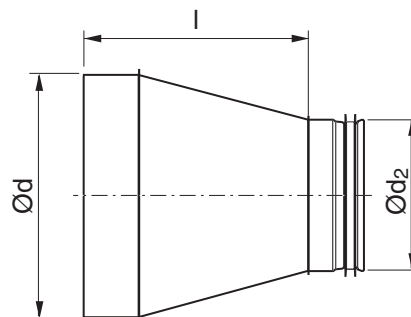
RCFLU



Description

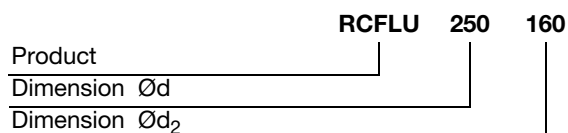
Long, concentric, hand made reducer with a female end and with approx. 18° angle.

Dimensions



Ød nom	Ød ₂ nom	l mm	m kg
80	63	98	0,14
100	63	126	0,20
100	80	103	0,18
112	63	142	0,23
112	80	119	0,22
112	100	92	0,20
125	63	159	0,28
125	100	109	0,24
125	112	93	0,23
140	63	137	0,26
140	80	181	0,33
140	112	130	0,30
140	125	114	0,28
140	140	96	0,27
150	63	157	0,32
150	80	195	0,37
150	100	144	0,34
150	112	127	0,32
150	125	109	0,30
150	140	99	0,28
160	63	171	0,36
160	80	207	0,43
160	100	157	0,40
160	112	141	0,38
160	125	123	0,36
160	140	102	0,34
160	150	99	0,32
180	80	185	0,42
180	100	185	0,49
180	112	168	0,47
180	125	151	0,46
180	140	130	0,43
180	150	116	0,41

Ordering example



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Reducer

RCFLU

Ød nom	Ød ₂ nom	l mm	m kg
180	160	103	0,41
200	80	212	0,51
200	100	213	0,59
200	112	196	0,57
200	125	178	0,55
200	140	157	0,53
200	150	144	0,51
200	160	130	0,50
200	180	103	0,46
224	100	215	0,72
224	112	229	0,70
224	125	211	0,68
224	140	190	0,65
224	150	177	0,64
224	160	163	0,63
224	180	135	0,58
224	200	107	0,53
250	100	301	0,94
250	112	285	0,92
250	125	267	0,90
250	140	246	0,89
250	150	232	0,87
250	160	219	0,87
250	180	191	0,80
250	200	164	0,75
250	224	131	0,67
280	125	308	1,10
280	140	287	1,08
280	150	274	1,06
280	160	260	1,05
280	180	232	1,00
280	200	205	0,95
280	224	172	0,87
280	250	136	0,84
300	125	335	1,25
300	140	315	1,22
300	150	301	1,20
300	160	287	1,20
300	180	260	1,15
300	200	262	1,09
300	224	200	1,02
300	250	164	0,98
300	280	123	0,86
315	125	356	1,36
315	140	335	1,33
315	150	322	1,32
315	160	308	1,31
315	180	281	1,26

Ød nom	Ød ₂ nom	l mm	m kg
315	200	253	1,21
315	224	220	1,13
315	250	184	1,09
315	280	143	0,97
315	300	116	0,88
355	160	363	1,84
355	180	335	1,77
355	200	308	1,71
355	224	275	1,61
355	250	239	1,56
355	280	198	1,41
355	300	171	1,30
355	315	150	1,21
400	160	450	2,44
400	180	422	2,38
400	200	395	2,31
400	224	362	2,23
400	250	326	2,20
400	280	285	2,01
400	300	257	1,90
400	315	237	1,86
400	355	182	1,55
450	200	463	2,99
450	224	431	2,90
450	250	395	2,85
450	280	354	2,70
450	300	326	2,59
450	315	306	2,50
450	355	251	2,24
450	400	194	2,64
500	200	532	3,66
500	224	499	3,56
500	250	463	3,51
500	280	422	3,36
500	300	395	3,25
500	315	374	3,16
500	355	319	2,89
500	400	262	2,69
500	450	194	2,37
560	250	546	4,47
560	280	505	4,32
560	300	477	4,21
560	315	456	4,11
560	355	402	3,85
560	400	345	3,66
560	450	276	2,70
560	500	207	2,86
600	250	601	5,10



Reducer

RCFLU

Ød nom	Ød ₂ nom	l mm	m kg
600	280	560	4,96
600	300	532	4,84
600	315	512	4,76
600	355	457	4,49
600	400	400	4,29
600	450	331	3,96
600	500	262	3,49
600	560	180	2,94
630	250	642	5,60
630	280	601	5,46
630	300	573	5,34
630	315	553	5,25
630	355	498	4,99
630	400	441	4,79
630	450	372	4,46
630	500	304	4,00
630	560	221	3,43
630	600	166	2,97
710	355	633	7,11
710	400	576	6,92
710	450	507	6,60
710	500	438	6,12
710	560	356	5,57
710	600	301	5,10
710	630	260	4,72
800	400	699	8,81
800	450	631	8,49
800	500	562	8,02
800	560	480	7,46
800	600	425	6,99
800	630	384	6,62
800	710	279	6,21
900	450	768	10,8
900	500	699	10,3
900	560	617	9,78
900	600	562	9,31
900	630	521	8,94
900	710	416	8,53
900	800	292	7,18
1000	500	857	13,1
1000	560	774	12,5
1000	600	719	12,0
1000	630	678	11,7
1000	710	573	11,2
1000	800	450	9,91
1000	900	312	8,17
1120	560	939	16,4
1120	600	884	15,9

Ød nom	Ød ₂ nom	l mm	m kg
1120	630	843	15,5
1120	710	738	15,1
1120	800	615	13,8
1120	900	477	12,1
1120	1000	656	16,2
1250	600	340	10,3
1250	630	1063	20,1
1250	710	1022	19,7
1250	800	917	19,3
1250	900	793	17,9
1250	1000	518	14,4
1250	1120	354	12,2

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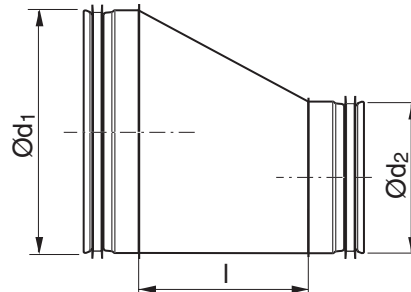


Reducer

RLU



Dimensions



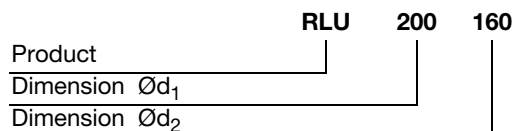
Description

Long, tangential, hand made reducer with approx. 35° angle.

Dimensions are otherwise adapted to DIN 24147 section 4.

Ød ₁ nom	Ød ₂ nom	l mm	m kg
80	63	53	0,14
100	63	81	0,20
100	80	58	0,18
112	63	97	0,23
112	80	74	0,22
112	100	47	0,20
125	63	115	0,28
125	80	92	0,26
125	100	64	0,24
125	112	48	0,23
140	63	136	0,33
140	80	112	0,32
140	100	85	0,30
140	112	69	0,28
140	125	51	0,27
150	63	150	0,37
150	80	126	0,36
150	100	99	0,34
150	112	82	0,32
150	125	64	0,30
150	140	44	0,28
160	63	163	0,43
160	80	140	0,42
160	100	112	0,40
160	112	96	0,38
160	125	78	0,36
160	140	57	0,34
160	150	44	0,32
180	80	167	0,51
180	100	140	0,49
180	112	123	0,47
180	125	106	0,46
180	140	85	0,43

Ordering example





Reducer

RLU

Ød ₁ nom	Ød ₂ nom	l mm	m kg
180	150	71	0,41
180	160	58	0,41
200	80	195	0,61
200	100	167	0,59
200	112	151	0,57
200	125	133	0,55
200	140	112	0,53
200	150	99	0,51
200	160	85	0,50
200	180	58	0,46
224	100	200	0,72
224	112	184	0,70
224	125	166	0,68
224	140	145	0,65
224	150	132	0,64
224	160	118	0,63
224	180	90	0,58
224	200	63	0,53
250	100	236	0,94
250	112	220	0,92
250	125	202	0,90
250	140	181	0,89
250	150	167	0,87
250	160	154	0,87
250	180	126	0,80
250	200	99	0,75
250	224	66	0,67
280	125	243	1,10
280	140	222	1,08
280	150	209	1,06
280	160	195	1,05
280	180	167	1,00
280	200	140	0,95
280	224	107	0,87
280	250	71	0,84
300	125	270	1,25
300	140	250	1,22
300	150	236	1,20
300	160	222	1,20
300	180	195	1,15
300	200	167	1,09
300	224	135	1,02
300	250	99	0,98
300	280	58	0,86
315	125	291	1,36
315	140	270	1,33
315	150	257	1,32
315	160	243	1,31

Ød ₁ nom	Ød ₂ nom	l mm	m kg
315	180	216	1,26
315	200	188	1,21
315	224	155	1,13
315	250	119	1,09
315	280	78	0,97
315	300	51	0,88
355	160	298	1,84
355	180	270	1,77
355	200	243	1,71
355	224	210	1,61
355	250	174	1,56
355	280	133	1,41
355	300	106	1,30
355	315	85	1,21
400	160	365	2,44
400	180	337	2,38
400	200	310	2,31
400	224	277	2,23
400	250	241	2,20
400	280	200	2,01
400	300	172	1,90
400	315	152	1,86
400	355	97	1,55
450	200	378	2,99
450	224	346	2,90
450	250	310	2,85
450	280	269	2,70
450	300	241	2,59
450	315	221	2,50
450	355	166	2,24
450	400	109	2,64
500	200	447	3,66
500	224	414	3,56
500	250	378	3,51
500	280	337	3,36
500	300	310	3,25
500	315	289	3,16
500	355	234	2,89
500	400	177	2,69
500	450	109	2,37
560	250	461	4,47
560	280	420	4,32
560	300	392	4,21
560	315	371	4,11
560	355	317	3,85
560	400	260	3,66
560	450	191	2,70
560	500	122	2,86

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Reducer

RLU

Ød ₁ nom	Ød ₂ nom	l mm	m kg
600	250	516	5,10
600	280	475	4,96
600	300	447	4,84
600	315	427	4,76
600	355	372	4,49
600	400	315	4,29
600	450	246	3,96
600	500	177	3,49
600	560	95	2,94
630	250	557	5,60
630	280	516	5,46
630	300	488	5,34
630	315	468	5,25
630	355	413	4,99
630	400	356	4,79
630	450	287	4,46
630	500	219	4,00
630	560	136	3,43
630	600	81	2,97
710	355	528	7,11
710	400	471	6,92
710	450	402	6,60
710	500	333	6,12
710	560	251	5,57
710	600	196	5,10
710	630	155	4,72
800	400	594	8,81
800	450	526	8,49
800	500	457	8,02
800	560	375	7,46
800	600	320	6,99
800	630	279	6,62
800	710	174	6,21
900	450	663	10,8
900	500	594	10,3
900	560	512	9,78
900	600	457	9,31
900	630	416	8,94
900	710	311	8,53
900	800	187	7,18
1000	500	732	13,1
1000	560	649	12,5
1000	600	594	12,0
1000	630	553	11,7
1000	710	448	11,2
1000	800	325	9,91
1000	900	187	8,17
1120	560	814	16,4

Ød ₁ nom	Ød ₂ nom	l mm	m kg
1120	600	759	15,9
1120	630	718	15,5
1120	710	613	15,1
1120	800	490	13,8
1120	900	352	12,1
1120	1000	215	10,3
1250	600	938	20,1
1250	630	897	19,7
1250	710	792	19,3
1250	800	668	17,9
1250	900	531	16,2
1250	1000	393	14,4
1250	1120	229	12,2



Saddle

PSU



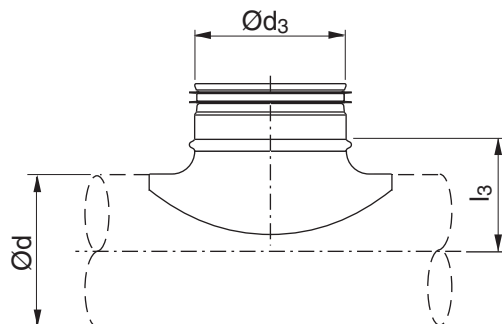
Description

Pressed saddle with aerodynamic flow radius facing the branch.

Pressure drop, see graphs on page 85.

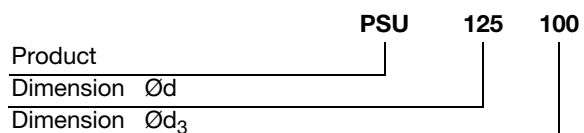
Some PSUs are pressed with one and the same tool, and fit several dimensions of main pipe.

Dimensions



Ød nom	Ød ₃ nom	l ₃ mm	m kg
63	63	42	0,09
80	63	50	0,09
80	80	52	0,13
100	63	60	0,09
100	80	60	0,14
100	100	65	0,18
112	63	66	0,09
112	80	68	0,13
112	100	71	0,18
112 *	112	81	0,21
125	63	73	0,08
125	80	75	0,13
125	100	78	0,18
125 *	112	88	0,21
125	125	83	0,25
140	80	82	0,13
140	100	85	0,18
140 *	112	95	0,21
140 *	125	95	0,22
140	140	90	0,25
150	80	87	0,10
150	100	90	0,18
150	125	95	0,18
150	140	95	0,25
150	150	95	0,25
160	80	92	0,10
160	100	95	0,18
160	125	100	0,18
160	140	100	0,25
160	150	100	0,32
160	160	105	0,26
180	80	102	0,09
180	100	105	0,19

Ordering example





Saddle

PSU

Ød nom	Ød ₃ nom	l ₃ mm	m kg
180	125	110	0,25
180	140	110	0,25
180	150	110	0,22
180	160	115	0,27
180	180	115	0,48
200	80	112	0,09
200	100	115	0,19
200	125	115	0,25
200	140	120	0,25
200	150	120	0,22
200	160	125	0,27
200	180	125	0,45
200	200	125	0,39
224	80	124	0,12
224	100	127	0,18
224	125	132	0,23
224	140	132	0,29
224	150	132	0,21
224	160	137	0,24
224	180	137	0,41
224	200	137	0,47
224	224	137	0,64
250	80	137	0,12
250	100	140	0,18
250	125	145	0,23
250	140	145	0,29
250	150	145	0,21
250	160	150	0,24
250	180	150	0,41
250	200	150	0,47
250	224	150	0,63
250	250	150	0,80
280	80	155	0,12
280	100	155	0,12
280	125	160	0,23
280	140	160	0,27
280	150	160	0,21
280	160	165	0,24
280	180	165	0,40
280	200	165	0,46
280	224	165	0,58
280 *	250	165	0,77
280 *	280	165	0,59
300	80	162	0,12
300	100	165	0,12
300	125	170	0,23
300	140	170	0,27
300	150	170	0,21

Ød nom	Ød ₃ nom	l ₃ mm	m kg
300	160	175	0,24
300	180	175	0,40
300	200	175	0,46
300	224	175	0,58
300	250	175	0,71
300 *	280	175	0,59
300	300	175	1,13
315	80	170	0,12
315	100	173	0,12
315	125	178	0,23
315	140	178	0,27
315	150	178	0,21
315	160	182	0,24
315	180	182	0,40
315	200	182	0,46
315	224	182	0,58
315	250	182	0,71
315 *	280	182	0,95
315	300	182	1,10
315	315	182	1,22
355	100	193	0,12
355	125	198	0,23
355	140	198	0,27
355	150	198	0,21
355	160	203	0,24
355	180	203	0,40
355	200	203	0,44
355	224	203	0,58
355	250	203	0,65
355 *	280	203	0,89
355	300	203	0,94
355 *	315	203	1,12
355 *	355	203	0,90
400	100	215	0,12
400	125	220	0,23
400	150	220	0,24
400	160	225	0,24
400	200	225	0,44
400	224	225	0,54
400	250	225	0,65
400 *	280	225	0,83
400	300	250	0,94
400	315	225	1,03
400 *	355	225	1,42
400	400	225	1,87
450	100	240	0,12
450	125	245	0,23
450	150	245	0,24



Saddle

PSU

Ød nom	Ød ₃ nom	l ₃ mm	m kg
450	160	250	0,25
450	200	250	0,42
450	224	250	0,54
450	250	250	0,67
450 *	280	250	0,77
450	300	250	0,83
450	315	250	0,94
450 *	355	250	1,01
450	400	250	1,81
450 *	450	250	1,58
500	100	265	0,12
500	125	270	0,23
500	150	270	0,24
500	160	275	0,25
500	200	275	0,42
500	224	275	0,54
500	250	275	0,67
500	300	275	0,83
500	315	275	0,93
500 *	355	275	1,01
500	400	275	1,75
500 *	450	275	1,45
500 *	500	290	1,87
560	100	295	0,12
560	125	300	0,23
560	160	305	0,25
560	200	305	0,42
560	224	305	0,54
560	250	305	0,67
560	300	305	0,83
560	315	305	0,93
560 *	355	305	1,06
560	400	305	1,75
560 *	450	305	1,37
560 *	500	320	1,75
560 *	560	320	2,24
600	100	315	0,12
600	125	320	0,23
600	160	325	0,31
600	200	325	0,40
600	224	325	0,54
600	250	325	0,65
600	300	325	0,83
600	315	325	0,93
600 *	355	325	0,94
600	400	325	1,49
600 *	450	325	1,34
600 *	500	340	1,60

Ød nom	Ød ₃ nom	l ₃ mm	m kg
600 *	560	340	2,09
600 *	600	340	2,47
630	100	330	0,12
630	125	335	0,23
630	160	340	0,31
630	200	340	0,40
630	224	340	0,54
630	250	340	0,83
630	300	340	0,55
630	315	340	0,93
630 *	355	340	0,80
630	400	340	1,49
630 *	450	340	1,82
630 *	500	355	1,53
630 *	560	355	2,09
630 *	600	355	2,35
630 *	630	355	2,53

* Hand made

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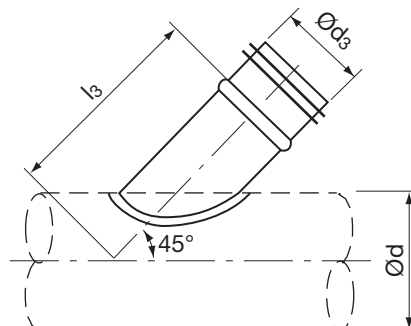
Saddle

PSVU45°

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Dimensions

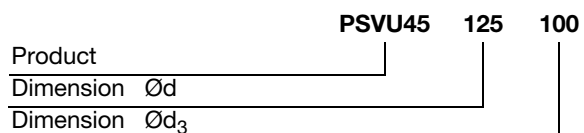


Description

As standard the angle is 45°.
Different angle available to order.

Ød nom	Ød ₃ nom	l ₃ mm	m kg
80	80	165	0,20
100	80	180	0,20
100	100	190	0,30
125	80	200	0,20
125	100	210	0,30
125	112	215	0,30
125	125	220	0,40
140	80	210	0,20
140	100	220	0,30
140	112	225	0,30
140	125	230	0,40
140	140	250	0,50
150	80	215	0,20
150	100	225	0,30
150	112	235	0,30
150	125	240	0,40
150	140	260	0,50
150	150	265	0,50
160	80	220	0,20
160	100	230	0,30
160	112	240	0,30
160	125	245	0,40
160	140	265	0,50
160	150	270	0,50
160	160	275	0,60
180	80	235	0,20
180	100	245	0,30
180	112	250	0,30
180	125	260	0,40
180	140	280	0,50
180	150	285	0,50
180	160	290	0,60
180	180	300	0,90

Ordering example





Saddle

PSVU45°

Ød nom	Ød ₃ nom	l ₃ mm	m kg
200	80	250	0,20
200	100	260	0,30
200	112	265	0,30
200	125	270	0,40
200	140	295	0,50
200	150	300	0,50
200	160	305	0,60
200	180	315	0,90
200	200	325	1,00
224	100	275	0,30
224	112	285	0,30
224	125	290	0,40
224	140	310	0,50
224	150	315	0,50
224	160	320	0,60
224	180	330	0,90
224	200	340	1,00
224	224	350	1,20
250	80	287	0,20
250	100	295	0,30
250	112	300	0,30
250	125	310	0,40
250	140	330	0,50
250	150	335	0,50
250	160	340	0,60
250	180	350	0,90
250	200	360	1,00
250	224	370	1,20
250	250	385	1,60
280	112	320	0,30
280	125	330	0,40
280	140	350	0,50
280	150	355	0,50
280	160	360	0,60
280	180	370	0,90
280	200	380	1,00
280	224	390	1,20
280	250	405	1,60
280	280	435	1,80
300	125	350	0,40
300	140	365	0,50
300	150	370	0,50
300	160	375	0,60
300	180	385	0,90
300	200	395	1,00
300	224	405	1,20
300	250	420	1,60
300	280	450	2,00

Ød nom	Ød ₃ nom	l ₃ mm	m kg
300	300	460	2,20
315	80	333	0,20
315	100	343	0,30
315	125	360	0,40
315	140	375	0,50
315	150	380	0,50
315	160	385	0,60
315	180	395	0,90
315	200	405	1,00
315	224	415	1,20
315	250	430	1,60
315	280	460	1,90
315	300	470	2,20
315	315	480	2,40
355	80	361	0,20
355	100	371	0,30
355	125	388	0,40
355	150	410	0,50
355	160	415	0,60
355	180	425	0,90
355	200	435	1,00
355	224	445	1,20
355	250	460	1,60
355	280	490	2,00
355	300	500	2,20
355	315	505	2,30
355	355	525	2,80
400	80	393	0,20
400	100	403	0,30
400	125	420	0,40
400	160	445	0,60
400	180	455	0,90
400	200	465	1,00
400	224	475	1,20
400	250	490	1,60
400	280	520	1,90
400	300	530	2,20
400	315	535	2,30
400	355	555	2,80
400	400	580	4,30
450	180	490	0,90
450	200	500	1,00
450	224	510	1,20
450	250	525	1,60
450	280	555	1,90
450	300	565	2,20
450	315	570	2,30
450	355	590	2,80

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Saddle

PSVU45°

Ød nom	Ød ₃ nom	l ₃ mm	m kg
450	400	615	4,30
450	450	640	5,20
500	80	464	0,20
500	100	474	0,30
500	125	491	0,40
500	160	518	0,60
500	200	535	1,00
500	224	550	1,20
500	250	560	1,60
500	280	590	1,80
500	300	600	2,20
500	315	610	2,40
500	355	630	2,90
500	400	650	4,30
500	450	675	5,20
500	500	700	6,30
560	160	560	0,60
560	224	590	1,20
560	250	605	1,60
560	280	630	1,90
560	300	640	2,20
560	315	650	2,30
560	355	670	2,80
560	400	690	4,30
560	450	715	5,20
560	500	740	6,30
560	560	800	7,80
600	250	630	1,60
600	280	655	1,90
600	300	665	2,20
600	315	675	2,40
600	355	695	2,80
600	400	715	4,30
600	450	740	5,20
600	500	765	6,20
600	560	825	7,80
600	600	850	8,80
630	315	700	2,30
630	355	720	2,80
630	400	740	4,30
630	450	765	5,20
630	500	790	6,30
630	560	850	7,80
630	600	870	8,80
630	630	885	9,50
710	300	745	2,20
710	315	755	2,30
710	355	775	2,80

Ød nom	Ød ₃ nom	l ₃ mm	m kg
710	400	800	4,20
710	450	825	5,10
710	500	850	6,10
710	560	905	7,60
710	600	925	8,60
710	630	940	9,30
710	710	980	15,5
800	315	820	2,30
800	355	840	2,80
800	400	860	4,30
800	450	885	5,20
800	500	910	6,30
800	560	970	7,80
800	600	990	8,80
800	630	1005	9,50
800	710	1045	15,6
800	800	1090	19,0
900	355	910	2,80
900	400	935	4,30
900	450	960	5,20
900	500	980	6,30
900	560	1040	7,80
900	600	1060	8,80
900	630	1075	9,50
900	710	1115	15,6
900	800	1160	19,0
900	900	1210	23,3
1000	400	1005	4,30
1000	450	1030	5,20
1000	500	1055	6,40
1000	560	1110	7,80
1000	600	1130	8,80
1000	630	1145	9,50
1000	710	1185	15,5
1000	800	1230	19,0
1000	900	1280	23,0
1000	1000	1330	28,5
1120	500	1140	6,30
1120	560	1195	7,80
1120	600	1215	8,80
1120	630	1230	9,50
1120	710	1270	15,5
1120	800	1315	19,0
1120	900	1365	23,3
1120	1000	1415	28,5
1120	1120	1505	36,0
1250	500	1230	6,30
1250	560	1290	7,80



Saddle

PSVU45°

Ød nom	Ød ₃ nom	l ₃ mm	m kg
1250	600	1310	8,80
1250	630	1325	9,50
1250	710	1365	15,6
1250	800	1410	19,1
1250	900	1460	23,0
1250	1000	1510	28,6
1250	1120	1595	35,9
1250	1250	1660	43,4

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T-piece

TCPU

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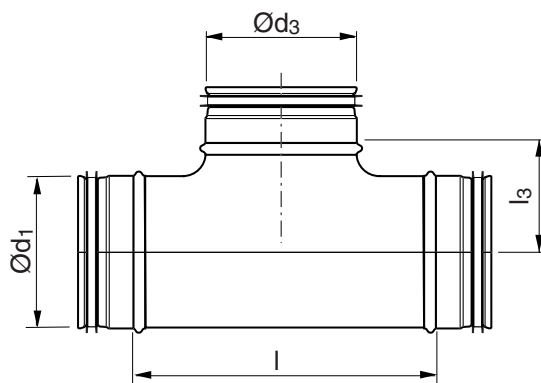
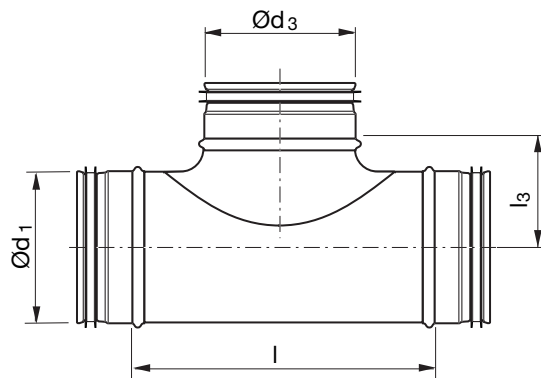
Description

T-piece built with PSU saddle or a fully pressed top section.

Pressure drop, see graphs on page 85.

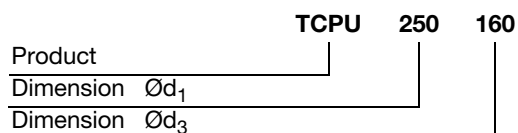
Pressure drop, see graphs on page 85.

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
63	63	125	42	0,26
80	63	125	50	0,31
80	80	140	52	0,36
100	63	125	60	0,35
100	80	103	65	0,23
100	100	130	65	0,32
112	63	125	66	0,41
112	80	140	68	0,47
112	100	175	71	0,55
112	112 *	175	56	0,57
125	63	125	73	0,44
125	80	97	75	0,34
125	100	130	78	0,37
125	112	175	78	0,61
125	125	165	83	0,44
140	80	140	82	0,56
140	100	175	85	0,65
140	112	175	85	0,67
140	125 *	215	70	0,76
140	140	230	90	0,78
150	80	140	87	0,58

Ordering example





T-piece

TCPU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
150	100	175	90	0,69
150	125	215	95	0,76
150	140	230	95	0,82
150	150	260	95	0,94
160	80	140	92	0,59
160	100	130	95	0,46
160	125	166	100	0,53
160	140	230	100	0,87
160	150	260	100	0,99
160	160	209	105	0,63
180	80	140	102	0,92
180	100	175	105	0,80
180	125	215	110	0,91
180	140	230	110	0,96
180	150	260	110	1,08
180	160	260	115	1,06
180	180	285	115	1,44
200	80	140	112	0,77
200	100	175	115	0,88
200	125	215	115	1,02
200	140	230	120	1,07
200	150	260	120	1,19
200	160	209	125	0,67
200	180	285	125	1,35
200	200	249	125	1,21
224	80	140	124	0,85
224	100	175	127	1,01
224	125	215	132	1,14
224	140	230	132	1,20
224	150	260	132	1,29
224	160	260	137	1,28
224	180	285	137	1,46
224	200	346	137	1,69
250	80	156	137	1,13
250	100	175	140	1,22
250	125	220	145	1,48
250	140	230	145	1,48
250	150	255	145	1,55
250	160	256	150	1,58
250	180	306	150	1,79
250	200	306	150	1,78
250	224	350	150	2,09
250	250	296	150	1,65
280	80	156	155	1,25
280	100	175	155	1,37
280	125	220	160	1,56
280	140	230	160	1,63
280	150	255	160	1,72

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
280	160	256	165	1,75
280	180	306	165	1,97
280	200	306	165	2,01
280	224	350	165	2,27
280	250 *	350	140	2,44
280	280 *	390	140	2,67
300	80	156	162	1,36
300	100	175	165	1,47
300	125	220	170	1,68
300	140	230	170	1,74
300	150	255	170	1,86
300	160	256	175	1,87
300	180	306	175	2,12
300	200	306	175	2,15
300	224	350	175	2,41
300	250	350	175	2,50
300	280 *	390	150	2,53
300	300	430	175	3,55
315	80	156	170	1,43
315	100	175	173	1,50
315	125	220	178	1,76
315	140	230	178	1,82
315	150	355	178	2,38
315	160	256	182	1,96
315	180	306	182	2,21
315	200	306	182	2,14
315	224	350	182	2,51
315	250	350	182	2,59
315	280	390	182	3,00
315	300	430	182	3,21
315	315	363	182	2,20
355	100	175	193	1,73
355	125	220	198	1,96
355	140	230	198	2,03
355	150	255	198	2,46
355	160	256	203	2,45
355	180	306	203	2,81
355	200	306	203	2,82
355	224	350	203	3,13
355	250	350	203	3,18
355	280 *	390	178	3,63
355	300	430	203	3,87
355	315	455	203	4,06
355	355 *	470	203	5,14
400	100	175	215	2,27
400	125	225	220	2,81
400	160	266	225	3,02
400	200	300	225	3,37

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T-piece

TCPUR

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
400	224	350	225	3,74
400	250	350	225	3,79
400	280 *	390	200	4,23
400	300	430	225	4,47
400	315	415	225	4,42
400	355 *	470	225	5,04
400	400	510	225	6,20
450	100	175	240	2,76
450	125	225	245	3,15
450	160	266	250	3,38
450	200	300	250	3,75
450	224	350	250	4,16
450	250	350	250	4,23
450	280 *	390	225	4,64
450	300	430	250	4,89
450	315	415	250	4,82
450	355	470	250	5,16
450	400	510	250	5,81
450	450 *	550	225	6,99
500	100	175	265	3,06
500	125	225	270	3,35
500	160	266	275	3,77
500	200	300	275	4,14
500	250	350	275	4,68
500	300	430	275	5,36
500	315	415	275	5,30
500	355	470	275	5,70
500	400	510	275	6,34
500	450 *	550	250	6,56
500	500 *	552	290	8,27
560	100	175	295	3,59
560	125	225	300	3,92
560	160	266	305	4,41
560	200	300	305	4,78
560	250	350	305	5,38
560	300	430	280	5,86
560	315	415	305	6,06
560	355	470	305	6,57
560	400	510	305	7,08
560	450 *	550	280	7,38
560	500 *	552	280	7,57
560	560 *	610	280	9,69
600	100	175	315	3,83
600	125	225	320	4,19
600	160	266	325	4,73
600	200	300	325	5,10
600	250	350	325	5,73
600	300 *	430	300	6,36

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
600	315	415	325	6,46
600	355 *	470	300	6,98
600	400	510	325	7,43
600	450 *	550	300	7,84
600	500 *	552	300	7,91
600	560 *	610	300	8,76
600	600 *	650	300	10,8
630	100	175	330	4,03
630	125	225	335	4,41
630	160	266	340	4,99
630	200	300	340	5,35
630	250	350	340	6,00
630	300 *	450	315	7,23
630	315	415	340	6,77
630	355 *	470	315	7,18
630	400	510	340	7,69
630	450 *	555	315	8,24
630	500 *	552	340	8,44
630	560 *	610	315	9,11
630	600 *	650	315	9,58
630	630 *	680	340	11,3

* Built with PSU saddle, without radius

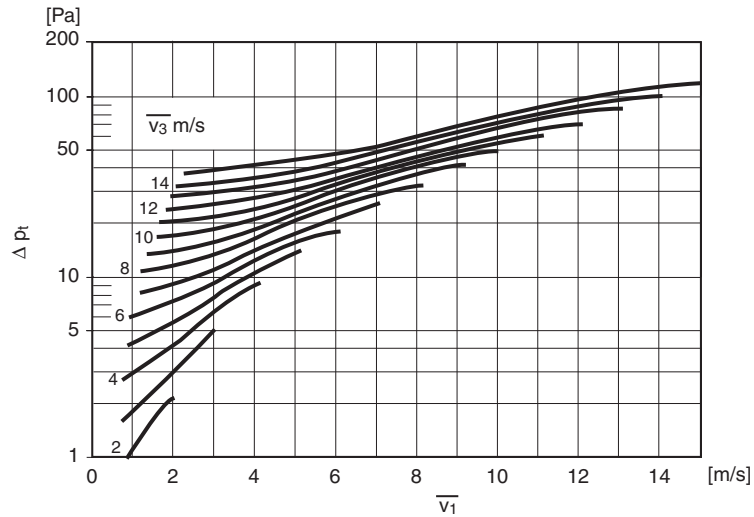
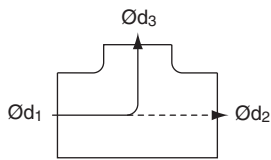


T-piece and saddle

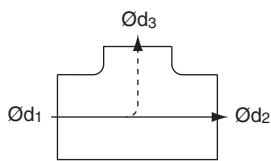
TCPU, PSU

Supply air

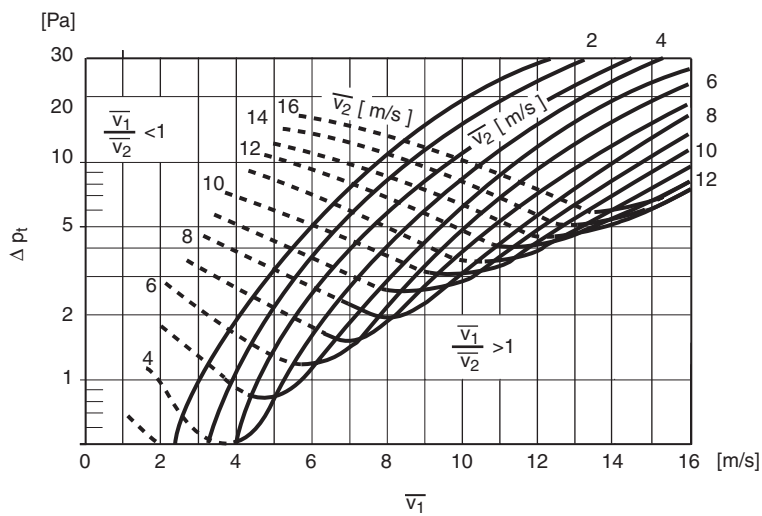
Diverging flow



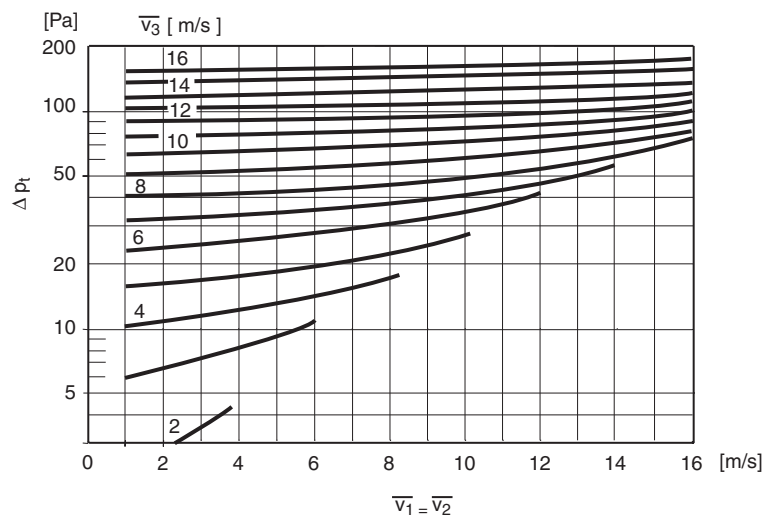
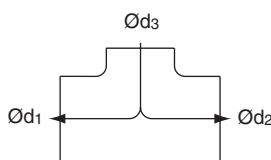
Diverging flow



The diagram is also applicable to reduction in Ød_2 .



Diverging flow



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T-piece and saddle

TCPU, PSU

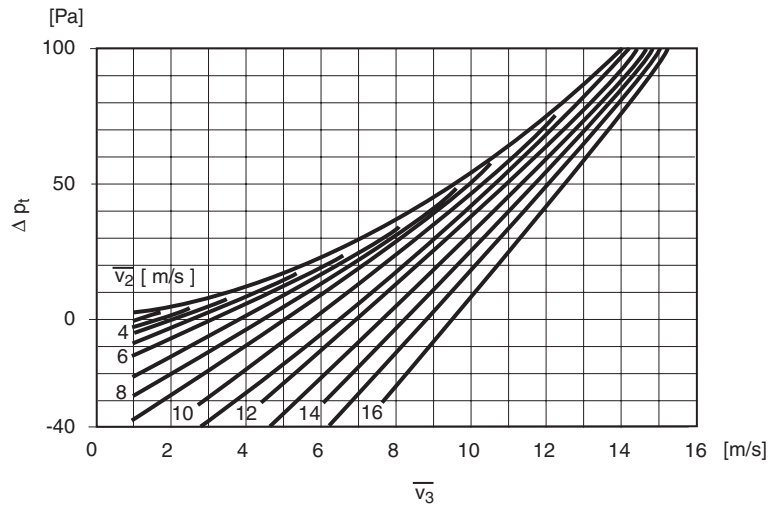
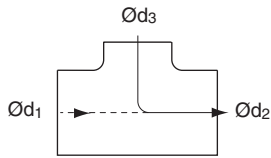
Exhaust air

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Converging flow



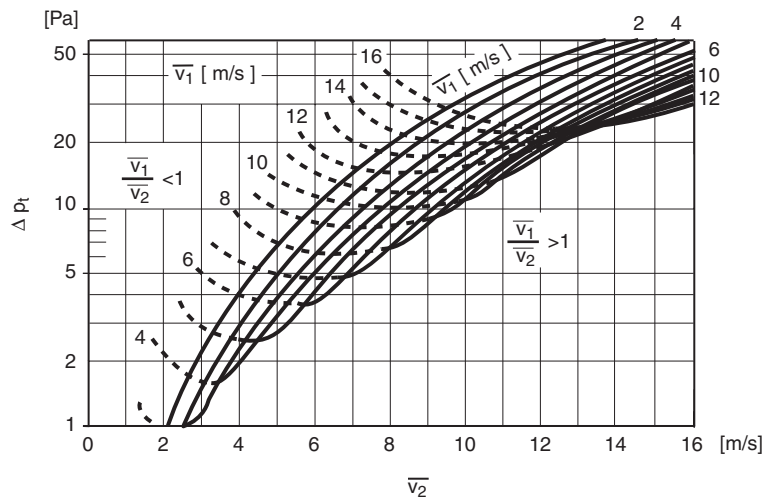
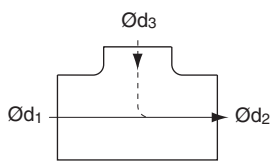
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Converging flow



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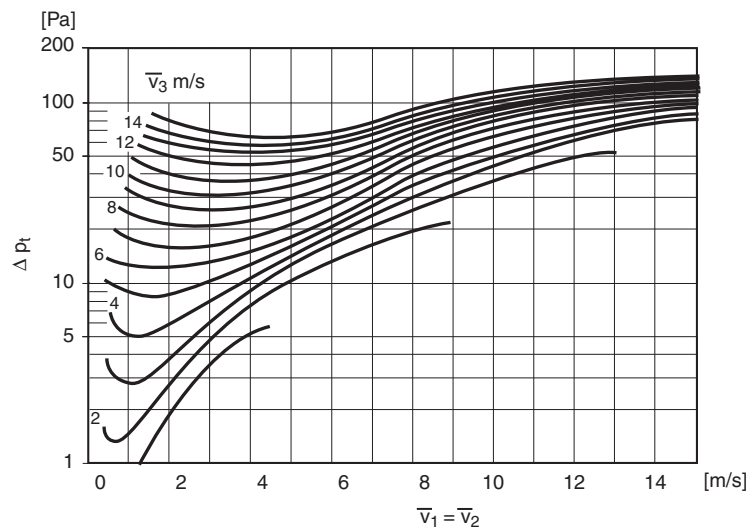
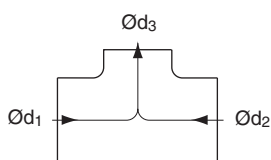
The diagram is also applicable to reduction in Ød_1 .

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Converging flow



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T-piece – Casting-in programme

TCSIU

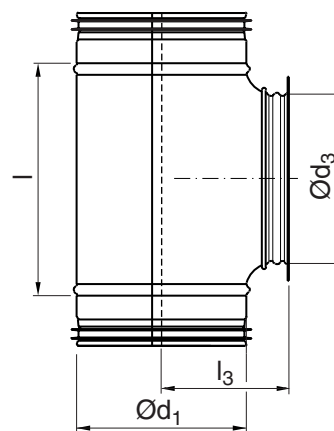


Description

Short branch with air valve socket and nail flange with pre-punched holes.

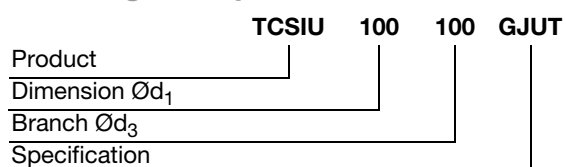
Fits air valve KVB etc.

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
100	92	130	93	0,31
125	92	130	106	0,52
125	117	165	106	0,67
160	152	229	131	1,02

Ordering example



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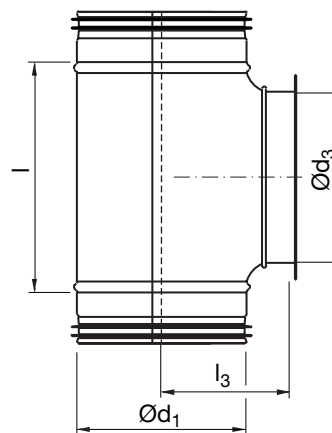


T-piece – Casting-in programme

TCPU



Dimensions



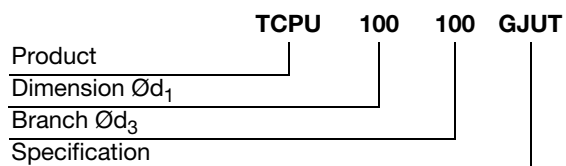
Description

Short branch with female end and nail flange with pre-punched holes.

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
80 *	80	140	80	0,38
100	100	130	93	0,30
125	100	130	106	0,50
125	125	165	102	0,59
160	160	209	130	0,88

* Made with saddle PS

Ordering example





T-piece – Casting-in programme

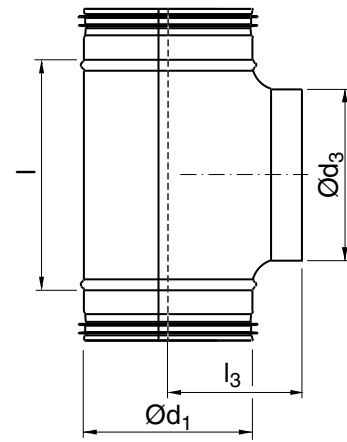
TCPU



Description

Short branch with female end.

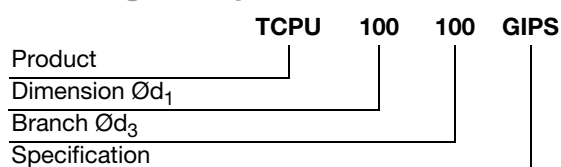
Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
80 *	80	140	80	0,33
100	100	130	85	0,27
125	100	130	100	0,44
125	125	165	100	0,53
160	160	229	117	0,82

* Made with saddle PS

Ordering example



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T-piece – Casting-in programme

TCPU

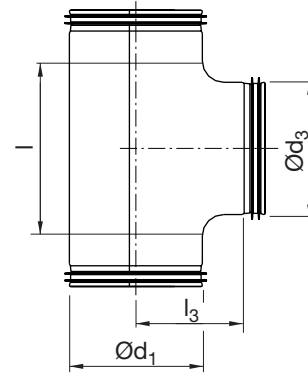
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Description

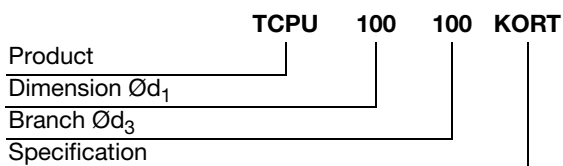
Short branch and short installation lengths.

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
100	100	130	65	0,32
125	125	165	83	0,44
160	160	210	105	0,63

Ordering example





T-piece

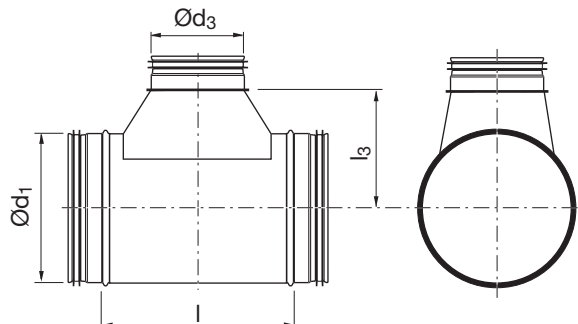
TCU



Description

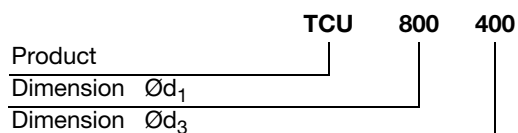
Centric T-piece with hand made T-piece TSTCU.

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
63	80	195	77	0,33
63	100	215	77	0,38
80	112	225	85	0,48
80	125	240	85	0,53
100	112	225	95	0,52
100	125	240	95	0,56
100	140	260	100	0,63
100	150	270	100	0,63
100	160	280	100	0,68
112	112	225	100	0,60
112	140	260	105	0,71
112	150	270	105	0,74
112	160	280	105	0,77
112	180	300	105	0,83
125	140	260	115	0,72
125	150	270	115	0,75
125	160	280	115	0,77
125	180	300	115	0,85
125	200	335	130	1,01
140	63	178	115	0,60
140	125	240	115	0,75
140	150	270	120	0,85
140	160	280	120	0,88
140	180	300	120	0,95
140	200	335	135	1,09
140	224	360	135	1,19
150	63	178	120	0,59
150	112	225	120	0,75
150	180	300	125	0,99
150	200	335	140	1,17
150	224	360	140	1,24
150	250	385	140	1,40
160	63	178	125	0,58

Ordering example





T-piece

TCU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
160	200	335	145	1,21
160	224	360	145	1,30
160	250	385	145	1,52
180	63	178	135	0,69
180	112	225	135	0,87
180	200	335	155	1,32
180	224	360	155	1,41
180	250	385	155	1,58
180	280	425	165	1,98
200	63	178	145	0,74
200	112	225	145	0,92
200	224	360	165	1,50
200	250	385	165	1,68
200	280	425	175	2,06
200	300	445	175	2,19
200	315	460	175	2,11
224	63	178	160	0,83
224	112	225	160	1,02
224	250	385	180	1,94
224	280	425	190	2,21
224	300	445	190	2,33
224	315	460	190	2,42
224	355	510	200	2,80
250	63	178	170	1,05
250	112	225	170	1,12
250	280	425	200	2,36
250	300	445	200	2,49
250	315	460	200	2,55
250	355	510	210	2,97
250	400	555	210	3,56
280	112	225	185	1,24
280	250	385	205	2,27
280	280	425	215	2,51
280	300	445	215	2,65
280	315	460	215	2,75
280	355	510	225	3,13
280	400	555	225	3,74
280	450	605	225	4,14
300	112	225	195	1,34
300	280	425	225	2,64
300	315	460	225	2,87
300	355	510	235	3,28
300	400	555	235	3,81
300	450	605	235	4,29
315	112	235	205	1,38
315	355	520	245	3,44
315	400	565	245	3,99
315	450	615	245	4,31

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
315	500	670	250	4,68
355	112	235	225	1,76
355	280	435	245	3,78
355	355	520	265	4,44
355	400	565	265	5,07
355	450	615	265	5,50
355	500	670	270	5,99
355	560	730	270	6,51
400	112	235	245	1,97
400	140	270	250	2,31
400	150	280	250	2,40
400	180	310	250	2,68
400	280	435	275	4,16
400	355	520	285	4,85
400	450	615	285	5,99
400	500	670	290	6,59
400	560	730	290	7,11
400	600	770	290	7,47
400	630	800	290	7,73
450	140	270	275	2,52
450	150	280	275	2,62
450	180	310	275	2,94
450	280	435	300	4,72
450	450	615	310	6,44
450	500	670	315	7,16
450	560	730	315	7,78
450	600	770	315	8,19
450	630	800	315	8,50
450	710	880	315	9,85
500	140	270	300	2,79
500	150	280	300	2,90
500	180	310	300	3,18
500	224	370	315	3,87
500	280	435	325	4,99
500	450	615	335	7,15
500	500	670	340	7,81
500	560	730	340	8,60
500	600	770	340	9,19
500	630	800	340	9,41
500	710	880	340	11,5
500	800	970	340	11,8
560	224	370	345	4,33
560	280	435	355	5,56
560	450	615	365	8,01
560	500	670	370	8,56
560	560	730	370	9,21
560	600	770	370	9,80
560	630	800	370	10,3



T-piece

TCU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
560	710	880	370	12,1
560	800	970	370	13,7
560	900	1090	370	15,6
600	224	370	365	4,62
600	280	435	375	5,93
600	300	455	375	6,15
600	355	520	385	6,99
600	450	615	385	8,55
600	500	670	390	9,16
600	560	730	390	9,63
600	600	770	390	10,5
600	630	800	390	10,7
600	710	880	390	12,6
600	800	970	390	14,1
600	900	1090	390	16,1
630	224	380	380	4,84
630	280	445	390	6,21
630	300	465	390	6,44
630	355	530	400	7,23
630	450	625	400	8,95
630	500	680	405	9,72
630	560	740	405	10,2
630	600	780	405	10,4
630	630	810	405	10,8
630	710	890	405	12,9
630	800	980	405	14,4
630	900	1100	405	16,4
630	1000	1200	405	18,3
710	250	455	420	6,34
710	280	495	420	7,00
710	300	515	430	7,26
710	315	530	430	7,46
710	355	580	440	8,24
710	400	625	440	9,49
710	450	675	440	10,1
710	500	730	445	10,9
710	560	790	445	11,6
710	600	830	445	12,1
710	630	860	445	12,3
710	710	940	445	14,1
710	800	1030	445	15,7
710	900	1150	445	17,8
710	1000	1250	445	19,8
710	1120	1370	445	23,2
800	250	455	465	8,49
800	280	495	475	9,46
800	300	515	475	9,80
800	315	530	475	9,99

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
800	355	580	485	11,1
800	400	625	485	12,6
800	450	675	485	13,4
800	500	730	490	14,6
800	560	790	490	15,3
800	600	830	490	15,8
800	630	860	490	16,5
800	710	940	490	18,0
800	800	1030	490	19,5
800	900	1150	490	21,5
800	1000	1250	490	22,6
800	1120	1370	490	27,6
800	1250	1500	490	30,8
900	315	530	525	11,5
900	355	580	535	12,8
900	400	625	535	15,0
900	450	675	535	15,7
900	500	730	540	16,9
900	560	790	540	18,2
900	600	830	540	19,0
900	630	860	540	19,6
900	710	940	540	22,2
900	800	1030	540	23,8
900	900	1150	540	26,1
900	1000	1250	540	29,1
900	1120	1370	540	34,1
900	1250	1500	540	38,5
1000	315	530	575	12,7
1000	355	580	585	14,1
1000	400	625	585	16,1
1000	450	675	585	17,3
1000	500	730	590	18,4
1000	560	790	590	20,1
1000	600	830	590	21,0
1000	630	860	590	22,0
1000	710	940	590	24,7
1000	800	1030	590	26,8
1000	900	1150	590	29,1
1000	1000	1250	590	31,8
1000	1120	1370	590	37,4
1000	1250	1500	590	42,5
1120	500	730	650	20,5
1120	560	790	650	22,3
1120	600	830	650	23,3
1120	630	860	650	24,1
1120	710	940	650	27,5
1120	800	1030	650	29,9
1120	900	1150	650	32,9

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T-piece

TCU

Ød_1 nom	Ød_3 nom	l mm	l ₃ mm	m kg
1120	1000	1250	650	35,0
1120	1120	1370	650	40,0
1120	1250	1500	650	45,3
1250	500	730	715	22,9
1250	560	790	715	24,6
1250	600	830	715	25,8
1250	630	860	715	26,7
1250	710	940	715	30,4
1250	800	1030	715	33,1
1250	900	1150	715	36,5
1250	1000	1250	715	39,2
1250	1120	1370	715	43,9
1250	1250	1500	715	48,4



T-piece

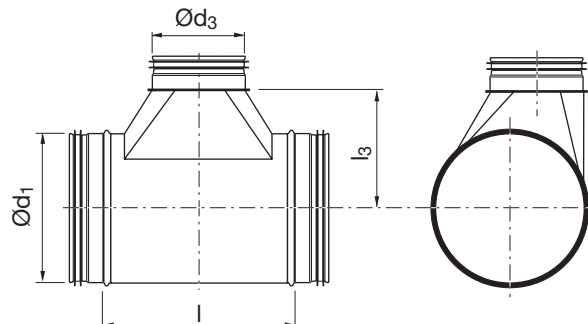
TU



Description

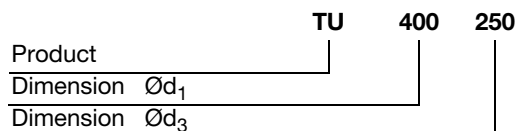
Tangential T-piece with hand made T-piece TSTU.

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
63	63	178	77	0,28
63	80	195	77	0,33
63	100	215	77	0,38
80	63	178	85	0,34
80	80	195	85	0,38
80	100	215	85	0,44
80	112	225	85	0,48
80	125	240	85	0,53
100	63	178	95	0,41
100	80	195	95	0,45
100	100	215	95	0,49
100	112	225	95	0,52
100	125	240	95	0,56
100	140	260	100	0,63
100	150	270	100	0,63
100	160	280	100	0,68
112	63	178	100	0,50
112	80	195	100	0,54
112	100	215	100	0,59
112	112	225	100	0,60
112	125	240	100	0,65
112	140	260	105	0,71
112	150	270	105	0,74
112	160	280	105	0,77
112	180	300	105	0,83
125	63	178	110	0,51
125	80	195	110	0,55
125	100	215	110	0,59
125	112	225	110	0,61
125	125	240	110	0,65
125	140	260	115	0,72
125	150	270	115	0,75
125	160	280	115	0,77

Ordering example





T-piece

TU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
125	180	300	115	0,85
125	200	335	130	1,01
140	63	178	115	0,60
140	80	195	115	0,65
140	100	215	115	0,69
140	112	225	115	0,72
140	125	240	115	0,75
140	140	260	120	0,81
140	150	270	120	0,85
140	160	280	120	0,88
140	180	300	120	0,95
140	200	335	135	1,09
140	224	360	135	1,19
150	63	178	120	0,59
150	80	195	120	0,65
150	80	195	120	0,65
150	100	215	165	0,70
150	112	225	120	0,75
150	125	240	120	0,80
150	140	260	125	0,86
150	150	270	125	0,89
150	160	280	125	0,92
150	180	300	125	0,99
150	200	335	140	1,17
150	224	360	140	1,24
150	250	385	140	1,40
160	63	178	125	0,58
160	80	195	125	0,65
160	100	215	125	0,72
160	112	225	125	0,76
160	125	240	125	0,82
160	140	260	130	0,89
160	150	270	130	0,91
160	160	280	130	0,93
160	180	300	130	1,04
160	200	335	145	1,21
160	224	360	145	1,30
160	250	385	145	1,52
180	63	178	135	0,69
180	80	195	135	0,76
180	100	215	135	0,82
180	112	225	135	0,87
180	125	240	135	0,90
180	140	260	140	1,00
180	150	270	140	1,03
180	160	280	140	1,07
180	180	300	140	1,12
180	200	335	155	1,32

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
180	224	360	155	1,41
180	250	385	155	1,58
180	280	425	165	1,98
200	63	178	145	0,74
200	80	195	145	0,95
200	100	215	145	0,87
200	112	225	145	0,92
200	125	240	145	0,96
200	140	260	150	1,07
200	150	270	150	1,10
200	160	280	150	1,12
200	180	300	150	1,19
200	200	335	165	1,42
200	224	360	165	1,50
200	250	380	165	1,68
200	280	425	175	2,06
200	300	445	175	2,19
200	315	460	175	2,11
224	63	178	160	0,83
224	80	195	160	0,90
224	100	215	160	0,98
224	112	225	160	1,02
224	125	240	160	1,08
224	140	260	165	1,18
224	150	270	165	1,22
224	160	280	165	1,25
224	180	300	165	1,33
224	200	335	180	1,54
224	224	360	180	1,61
224	250	385	180	1,94
224	280	425	190	2,21
224	300	445	190	2,33
224	315	460	190	2,42
224	355	510	200	2,80
250	63	178	170	1,05
250	80	195	170	0,99
250	100	215	170	1,20
250	112	225	170	1,12
250	125	240	170	1,30
250	140	260	175	1,29
250	150	270	175	1,34
250	160	280	175	1,49
250	180	300	175	1,46
250	200	335	190	1,80
250	224	360	190	1,76
250	250	385	190	2,09
250	280	425	200	2,36
250	300	445	200	2,49



T-piece

TU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
250	315	460	200	2,55
250	355	510	210	2,97
250	400	555	210	3,56
280	80	195	185	1,10
280	100	215	185	1,20
280	112	225	185	1,24
280	125	240	185	1,32
280	140	260	190	1,43
280	150	270	190	1,48
280	160	280	190	1,53
280	180	300	190	1,62
280	200	335	205	1,85
280	224	360	205	1,96
280	250	385	205	2,27
280	280	425	215	2,51
280	300	445	215	2,65
280	315	460	215	2,75
280	355	510	225	3,13
280	400	555	225	3,74
280	450	605	225	4,14
300	80	195	195	1,18
300	100	215	195	1,27
300	112	225	195	1,34
300	125	240	195	1,40
300	140	260	200	1,52
300	150	270	200	1,59
300	160	280	200	1,64
300	180	300	200	1,74
300	200	335	215	2,01
300	224	360	215	2,10
300	250	385	215	2,44
300	280	425	225	2,64
300	300	445	225	2,77
300	315	460	225	2,87
300	355	510	235	3,28
300	400	555	235	3,81
300	450	605	235	4,29
315	80	205	205	1,22
315	100	225	205	1,33
315	112	235	205	1,38
315	125	250	205	1,46
315	140	270	210	1,63
315	150	280	210	1,69
315	160	290	210	1,72
315	180	310	210	1,87
315	200	345	225	2,09
315	224	370	225	2,28
315	250	395	225	2,60

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
315	280	435	235	2,85
315	300	455	235	2,90
315	315	470	235	3,08
315	355	520	245	3,44
315	400	565	245	3,99
315	450	615	245	4,31
315	500	670	250	4,68
355	100	225	225	1,67
355	112	235	225	1,76
355	125	250	225	1,89
355	140	270	230	2,09
355	150	280	230	2,18
355	160	290	230	2,26
355	180	310	230	2,42
355	200	345	245	2,79
355	224	370	245	2,97
355	250	395	245	3,45
355	280	435	245	3,78
355	300	455	255	3,89
355	315	470	255	3,96
355	355	520	265	4,44
355	400	565	265	5,07
355	450	615	265	5,50
355	500	670	270	5,99
355	560	730	270	6,51
400	100	225	245	1,90
400	112	235	245	1,97
400	125	250	245	2,11
400	140	270	250	2,31
400	150	280	250	2,40
400	160	290	250	2,50
400	180	310	250	2,68
400	200	345	265	3,04
400	224	370	265	3,30
400	250	395	265	3,84
400	280	435	275	4,16
400	300	455	275	4,38
400	315	470	275	4,43
400	355	520	285	4,85
400	400	565	285	5,54
400	450	615	285	5,99
400	500	670	290	6,59
400	560	730	290	7,11
400	600	770	290	7,47
400	630	800	290	7,73
450	125	250	270	2,26
450	140	270	275	2,52
450	150	280	275	2,62

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T-piece

TU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
450	160	290	275	2,73
450	180	310	275	2,94
450	200	345	290	3,41
450	224	370	290	3,66
450	250	395	290	4,26
450	280	435	300	4,72
450	300	455	300	4,89
450	315	470	300	5,02
450	355	520	310	5,50
450	400	565	310	6,19
450	450	615	310	6,44
450	500	670	315	7,16
450	560	730	315	7,78
450	600	770	315	8,19
450	630	800	315	8,50
450	710	880	315	9,85
500	125	250	295	2,56
500	140	270	300	2,79
500	150	280	300	2,90
500	160	290	300	3,70
500	180	310	300	3,18
500	200	345	315	3,73
500	224	370	315	3,87
500	250	395	315	4,57
500	280	435	325	4,99
500	300	455	325	5,18
500	315	470	325	5,32
500	355	520	335	5,89
500	400	565	335	6,75
500	450	615	335	7,15
500	500	670	340	7,81
500	560	730	340	8,60
500	600	770	340	9,19
500	630	800	340	9,41
500	710	880	340	11,5
500	800	970	340	11,8
560	200	345	345	4,07
560	224	370	345	4,33
560	250	395	345	5,03
560	280	435	355	5,56
560	300	455	355	5,77
560	315	470	355	5,93
560	355	520	365	6,56
560	400	565	365	7,52
560	450	615	365	8,01
560	500	670	370	8,56
560	560	730	370	9,21
560	600	770	370	9,80

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
560	630	800	370	10,3
560	710	880	370	12,1
560	800	970	370	13,7
560	900	1090	370	15,6
600	200	345	365	4,34
600	224	370	365	4,62
600	250	395	365	5,37
600	280	435	375	5,93
600	300	455	375	6,15
600	315	470	375	6,32
600	355	520	385	6,99
600	400	565	385	8,01
600	450	615	385	8,55
600	500	670	390	9,16
600	560	730	390	9,63
600	600	770	390	10,5
600	630	800	390	10,7
600	710	880	390	12,6
600	800	970	390	14,1
600	900	1090	390	16,1
630	200	355	380	4,56
630	224	380	380	4,84
630	250	405	380	5,62
630	280	445	390	6,21
630	300	465	390	6,44
630	315	480	390	6,62
630	355	530	400	7,23
630	400	575	400	8,48
630	450	625	400	8,95
630	500	680	405	9,72
630	560	740	405	10,2
630	600	780	405	10,4
630	630	810	405	10,8
630	710	890	405	12,9
630	800	980	405	14,4
630	900	1100	405	16,4
630	1000	1200	405	18,3
710	250	455	420	6,34
710	280	495	420	7,00
710	300	515	430	7,26
710	315	530	430	7,46
710	355	580	440	8,24
710	400	625	440	9,49
710	450	675	440	10,1
710	500	730	445	10,9
710	560	790	445	11,6
710	600	830	445	12,1
710	630	860	445	12,3



T-piece

TU

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
710	710	940	445	14,1
710	800	1030	445	15,7
710	900	1150	445	17,8
710	1000	1250	445	19,8
710	1120	1370	445	23,2
800	250	455	465	8,49
800	280	495	475	9,46
800	300	515	475	9,80
800	315	530	475	9,99
800	355	580	485	11,1
800	400	625	485	12,6
800	450	675	485	13,4
800	500	730	490	14,6
800	560	790	490	15,3
800	600	830	490	15,8
800	630	860	490	16,5
800	710	940	490	18,0
800	800	1030	490	19,5
800	900	1150	490	21,5
800	1000	1250	490	22,6
800	1120	1370	490	27,6
800	1250	1500	490	30,8
900	315	530	525	11,5
900	355	580	535	12,8
900	400	625	535	15,0
900	450	675	535	15,7
900	500	730	540	16,9
900	560	790	540	18,2
900	600	830	540	19,0
900	630	860	540	19,6
900	710	940	540	22,2
900	800	1030	540	23,8
900	900	1150	540	26,1
900	1000	1250	540	29,1
900	1120	1370	540	34,1
900	1250	1500	540	38,5
1000	315	530	575	12,7
1000	355	580	585	14,1
1000	400	625	585	16,1
1000	450	675	585	17,3
1000	500	730	590	18,4
1000	560	790	590	20,1
1000	600	830	590	21,0
1000	630	860	590	22,0
1000	710	940	590	24,7
1000	800	1030	590	26,8
1000	900	1150	590	29,1
1000	1000	1250	590	31,8

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
1000	1120	1370	590	37,4
1000	1250	1500	590	42,5
1120	500	730	650	20,5
1120	560	790	650	22,3
1120	600	830	650	23,3
1120	630	860	650	24,1
1120	710	940	650	27,5
1120	800	1030	650	29,9
1120	900	1150	650	32,9
1120	1000	1250	650	35,0
1120	1120	1370	650	40,0
1120	1250	1500	650	45,3
1250	500	730	715	22,9
1250	560	790	715	24,6
1250	600	830	715	25,8
1250	630	860	715	26,7
1250	710	940	715	30,4
1250	800	1030	715	33,1
1250	900	1150	715	36,5
1250	1000	1250	715	39,2
1250	1120	1370	715	43,9
1250	1250	1500	715	48,4

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T-piece

TVU45°

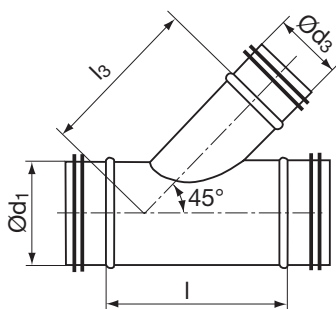
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Description

As standard the angle is 45°.
Different angle available to order.

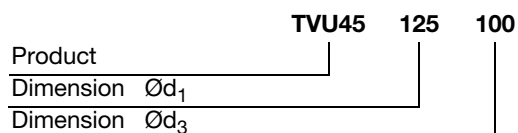
Dimensions



Dimensions

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
80	80	250	165	0,70
100	80	250	180	0,80
100	100	280	190	1,10
125	80	250	200	0,90
125	100	280	210	1,10
125	112	300	215	1,20
125	125	315	220	1,30
140	80	280	210	1,00
140	100	305	220	1,20
140	112	320	225	1,30
140	125	340	230	1,40
140	140	365	250	1,60
150	80	280	215	1,10
150	100	305	225	1,30
150	112	320	235	1,40
150	125	340	240	1,50
150	140	365	260	1,70
150	150	380	265	1,80
160	80	280	220	1,10
160	100	305	230	1,30
160	112	320	240	1,40
160	125	340	245	1,50
160	140	365	265	1,70
160	150	380	270	1,80
160	160	390	275	1,90
180	80	280	235	1,20
180	100	305	245	1,40
180	112	320	250	1,50
180	125	340	260	1,60
180	140	365	280	1,90
180	150	380	285	2,00
180	160	390	290	2,10
180	180	420	300	2,30
200	80	280	250	1,30
200	100	305	260	1,50
200	112	320	265	1,60
200	125	340	270	1,80
200	140	365	295	2,00
200	150	380	300	2,10
200	160	390	305	2,20
200	180	420	315	2,50
200	200	450	325	2,80
224	100	305	275	1,70
224	112	320	285	1,80
224	125	340	290	1,90
224	140	365	310	2,20
224	150	380	315	2,30
224	160	390	320	2,40

Ordering example





T-piece

TVU45°

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
224	180	420	330	2,70
224	200	450	340	3,00
224	224	480	350	3,20
250	100	305	295	2,10
250	112	320	300	2,20
250	125	340	310	2,30
250	140	365	330	2,60
250	150	380	335	2,80
250	160	390	340	2,80
250	180	420	350	3,00
250	200	450	360	3,40
250	224	480	370	3,60
250	250	520	385	4,10
280	112	320	320	2,50
280	125	340	330	2,70
280	140	365	350	2,90
280	150	380	355	3,00
280	160	390	360	3,10
280	180	445	370	3,40
280	200	475	380	3,80
280	224	510	390	4,00
280	250	545	405	4,50
280	280	590	435	5,10
300	125	340	350	3,10
300	140	365	365	3,40
300	150	380	370	3,60
300	160	390	375	3,70
300	180	445	385	4,00
300	200	475	395	4,40
300	224	510	405	4,70
300	250	545	420	5,20
300	280	590	450	5,90
300	300	615	460	6,70
315	100	280	343	3,50
315	125	340	360	3,60
315	140	365	375	3,80
315	150	380	380	4,00
315	160	395	385	4,10
315	180	445	395	4,40
315	200	475	405	4,90
315	224	510	415	5,20
315	250	545	430	5,80
315	280	590	460	6,50
315	300	615	470	7,00
315	315	640	480	7,30
355	100	280	371	4,00
355	125	340	388	5,90
355	150	380	410	4,40

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
355	160	395	415	4,50
355	180	445	425	4,80
355	200	475	435	5,40
355	224	510	445	5,60
355	250	545	460	6,30
355	280	590	490	7,10
355	300	615	500	7,50
355	315	640	505	7,80
355	355	695	525	8,80
400	100	280	403	5,90
400	125	340	420	6,10
400	160	395	445	5,30
400	180	445	455	5,60
400	200	475	465	6,20
400	224	510	475	6,50
400	250	545	490	7,10
400	280	590	520	8,00
400	300	615	530	8,50
400	315	640	535	8,80
400	355	695	555	9,80
400	400	760	580	11,2
450	180	445	490	6,30
450	200	475	500	6,90
450	224	510	510	7,20
450	250	545	525	7,90
450	280	590	555	8,70
450	300	615	565	9,20
450	315	640	570	9,60
450	355	695	590	10,6
450	400	760	615	12,1
450	450	830	640	13,5
500	200	475	535	7,50
500	224	510	550	7,80
500	250	545	560	8,60
500	280	590	560	9,50
500	300	615	600	10,0
500	315	640	610	10,4
500	355	695	630	11,5
500	400	760	650	13,0
500	450	830	675	14,5
500	500	900	700	16,1
560	224	510	590	9,20
560	250	600	605	10,0
560	280	640	630	10,8
560	300	665	640	11,4
560	315	690	650	11,8
560	355	750	670	13,0
560	400	810	690	14,5

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T-piece

TVU45°

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
560	450	880	715	16,1
560	500	950	740	17,8
560	560	1040	800	20,4
600	250	600	630	11,5
600	280	640	655	12,5
600	300	665	665	13,1
600	315	690	675	13,6
600	355	750	695	15,1
600	400	810	715	16,7
600	450	880	740	18,4
600	500	950	765	20,5
600	560	1040	825	23,4
600	600	1090	850	25,8
630	280	640	680	14,0
630	300	665	690	14,6
630	315	690	700	15,1
630	355	750	720	16,8
630	400	810	740	18,7
630	450	880	765	20,6
630	500	950	790	22,7
630	560	1040	850	25,8
630	600	1090	870	27,8
630	630	1140	885	29,2
710	300	665	745	16,9
710	315	690	755	17,4
710	355	750	775	19,1
710	400	810	800	21,0
710	450	880	825	23,2
710	500	950	850	25,4
710	560	1040	905	28,6
710	600	1090	925	30,6
710	630	1140	940	32,2
710	710	1250	980	36,7
800	315	690	820	19,2
800	355	750	840	21,0
800	400	810	860	23,1
800	450	880	885	25,4
800	500	950	910	27,7
800	560	1040	970	31,2
800	600	1090	990	33,9
800	630	1140	1005	34,9
800	710	1250	1045	39,6
800	800	1380	1090	45,0
900	355	750	910	26,2
900	400	810	935	28,8
900	450	880	960	31,5
900	500	950	985	34,4
900	560	1040	1040	38,6

Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg
900	600	1090	1060	41,1
900	630	1140	1075	43,1
900	710	1250	1115	48,7
900	800	1380	1160	55,2
900	900	1520	1210	62,7
1000	400	810	1005	31,5
1000	450	880	1030	34,4
1000	500	950	1055	37,5
1000	560	1040	1110	41,8
1000	600	1090	1130	44,5
1000	630	1140	1145	46,5
1000	710	1250	1185	52,5
1000	800	1380	1230	59,3
1000	900	1520	1280	67,2
1000	1000	1660	1330	75,5
1120	500	1005	1140	49,0
1120	560	1090	1195	54,3
1120	600	1140	1215	57,4
1120	630	1190	1230	60,0
1120	710	1305	1270	67,1
1120	800	1430	1315	75,2
1120	900	1570	1365	84,6
1120	1000	1710	1415	94,7
1120	1120	1880	1505	109
1250	500	1005	1230	53,6
1250	560	1090	1290	59,3
1250	600	1140	1310	62,8
1250	630	1190	1325	65,4
1250	710	1305	1365	73,0
1250	800	1430	1410	81,5
1250	900	1570	1460	91,5
1250	1000	1710	1510	101
1250	1120	1880	1595	117
1250	1250	2065	1660	132



X-piece

XCU

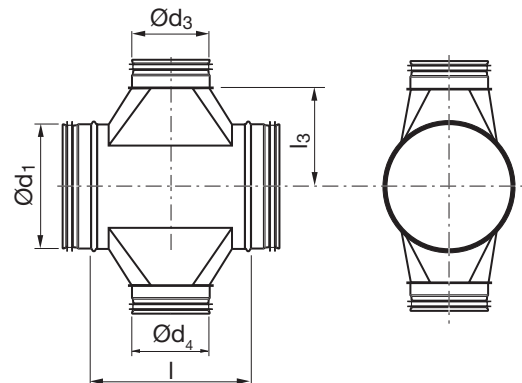


Description

Centric –

- fully pressed or
- with saddle PSU or
- with hand made T-piece TSTCU

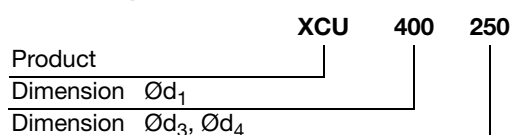
Dimensions



Centric – fully pressed

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
63 *	63	125	42	0,38
80 *	63	125	50	0,31
80 *	80	140	52	0,36
100 *	63	125	60	0,35
100 *	80	126	65	0,43
100	100	130	65	0,37
112	63	125	66	0,68
112	80	140	68	0,73
112	100	175	71	0,77
112	112	225	100	0,80
125 *	63	125	73	0,44
125 *	80	146	75	0,51
125 *	100	175	78	0,45
125	112	225	110	0,77
125	125	165	83	0,57
140	63	178	115	0,79
140	80	140	82	0,79
140	100	175	85	0,86
140	112	225	115	0,88
140	125	240	115	0,92
140	140	230	90	0,99
150	63	178	120	0,67
150	80	140	87	0,77
150	100	175	90	0,86
150	112	225	120	0,90
150	125	215	95	0,96
150	140	230	95	1,03
150	150	260	95	1,08
160 *	63	178	125	0,62
160 *	80	140	92	0,59
160 *	100	175	95	0,91
160	112	225	125	0,89
160 *	125	215	100	0,91

Ordering example





X-piece

XCU

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
160	140	230	100	1,05
160	150	260	100	1,08
160	160	209	105	0,67
180	63	178	135	0,79
180	80	140	102	0,88
180	100	175	105	0,97
180	112	225	135	1,01
180	125	215	110	1,08
180	140	230	110	1,18
180	150	260	110	1,21
180	160	260	115	1,26
180	180	285	115	1,33
200 **	63	178	145	0,83
200 *	80	140	112	0,77
200 *	100	175	115	0,88
200	112	200	145	1,05
200 *	125	215	115	1,02
200	140	230	120	1,22
200	150	260	120	1,26
200 *	160	260	125	0,77
200	180	285	125	1,36
200	200	249	125	1,70
224	63	178	160	0,91
224	80	140	124	0,99
224	100	175	127	1,09
224	112	200	160	1,14
224	125	215	132	1,22
224	140	230	132	1,33
224	150	260	132	1,38
224	160	260	137	1,42
224	180	285	137	1,50
224	200	346	137	1,81
224	224	346	137	1,83
250 **	63	178	170	0,99
250 *	80	156	137	1,13
250 *	100	175	140	1,22
250	112	200	170	1,24
250 *	125	220	145	1,48
250	140	230	145	1,45
250	150	255	145	1,50
250 *	160	256	150	1,58
250	180	306	150	1,65
250 *	200	306	150	1,78
250	224	350	150	1,98
250	250	296	150	1,78
280	80	156	152	1,20
280	100	175	155	1,31
280	112	200	185	1,37

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
280	125	220	160	1,46
280	140	230	160	1,59
280	150	255	160	1,65
280	160	256	165	1,71
280	180	306	165	1,81
280	200	306	165	2,08
280	224	350	165	2,19
280	250	385	205	2,57
280	280	425	215	2,86
300	80	156	162	1,29
300	100	175	165	1,38
300	112	200	195	1,47
300	125	220	170	1,53
300	140	230	170	1,66
300	150	255	170	1,76
300	160	256	175	1,82
300	180	306	175	1,93
300	200	306	175	2,27
300	224	350	175	2,34
300	250	350	175	2,75
300	280	425	225	2,95
300	300	445	225	3,12
315 *	80	156	170	1,43
315 *	100	175	173	1,50
315	112	200	205	1,49
315 *	125	220	178	1,76
315	140	230	178	1,81
315	150	255	178	1,90
315 *	160	256	182	1,96
315	180	306	182	2,13
315 *	200	306	182	2,14
315	224	350	182	2,61
315 *	250	350	182	2,59
315	280	435	235	3,26
315	300	430	182	3,26
315	315	363	182	3,73
355	100	175	193	1,74
355	112	200	225	1,85
355	125	220	198	2,03
355	140	230	198	2,29
355	150	255	198	2,40
355	160	256	203	2,50
355	180	306	203	2,71
355	200	306	203	3,15
355	224	350	203	3,37
355	250	350	203	3,96
355	280	435	245	4,33
355	300	430	203	4,43



X-piece

XCU

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
355	315	470	255	4,48
355	355	520	265	5,09
400 *	100	175	215	2,27
400	112	200	245	2,05
400 *	125	225	220	2,81
400	140	270	250	2,47
400	150	255	220	2,60
400 *	160	266	225	3,02
400	180	310	250	2,95
400 *	200	300	225	3,37
400	224	350	225	3,71
400 *	250	350	225	3,79
400	280	435	275	4,68
400	300	430	225	4,97
400 *	315	415	225	4,42
400	355	470	225	5,42
400 *	400	510	225	6,20
450	125	225	245	2,30
450	140	270	275	2,62
450	150	255	245	2,76
450	160	266	250	2,90
450	180	310	275	3,17
450	200	300	250	3,75
450	224	350	250	4,06
450	250	350	250	4,79
450	280	435	300	5,33
450	300	430	250	5,54
450	315	415	250	5,68
450	355	525	310	6,19
450	400	510	250	6,96
450	450	615	310	7,08
500 *	125	225	270	3,35
500	140	270	300	2,91
500	150	255	270	3,04
500 *	160	266	275	3,77
500	180	310	300	3,35
500 *	200	300	275	4,14
500	224	350	275	4,12
500 *	250	350	275	4,68
500	280	435	325	5,42
500	300	430	275	5,64
500 *	315	415	275	5,30
500	355	470	275	6,45
500 *	400	510	275	6,34
500	450	615	335	7,86
500 **	500	670	340	8,69
560	200	300	305	4,30
560	224	350	305	4,59

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
560	250	350	305	5,41
560	280	435	355	6,01
560	300	430	305	6,25
560	315	415	305	6,43
560	355	520	365	7,15
560	400	510	305	8,28
560	450	615	365	8,82
560	500	670	370	9,35
560	560	730	370	10,1
600	200	300	325	4,59
600	224	350	325	4,98
600	250	350	325	5,75
600	280	430	325	6,38
600	300	430	325	6,64
600	315	415	325	6,83
600	355	510	325	7,59
600	400	510	325	8,78
600	450	615	385	9,38
600	500	670	390	10,0
600	560	730	390	10,4
600	600	770	390	11,7
630 *	200	300	340	5,35
630	224	350	340	5,12
630 *	250	350	340	6,00
630	280	445	390	6,67
630	300	430	340	6,93
630 *	315	415	340	6,77
630	355	530	400	7,74
630 *	400	510	340	7,69
630	450	625	400	9,78
630 **	500	680	405	10,7
630	560	740	405	11,0
630	600	780	405	11,1
630 **	630	810	405	11,6
710	250	455	420	6,78
710	280	495	420	7,52
710	300	515	430	7,82
710	315	530	430	8,05
710	355	580	440	8,91
710	400	625	440	10,4
710	450	675	440	11,1
710	500	730	445	12,0
710	560	790	445	12,7
710	600	830	445	13,2
710	630	860	445	13,4
710	710	940	445	15,5
800 **	250	455	465	7,08
800	280	495	475	8,10

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X-piece

XCU

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
800	300	515	475	8,42
800 **	315	530	475	8,54
800	355	580	485	9,60
800 **	400	625	485	11,1
800	450	675	485	11,9
800 **	500	730	490	13,3
800	560	790	490	13,7
800	600	830	490	14,2
800 **	630	860	490	15,2
800	710	940	490	16,3
800 **	800	1030	490	17,9
900	315	530	525	11,9
900	355	580	535	13,2
900	400	625	535	16,0
900	450	675	535	16,5
900	500	730	540	17,9
900	560	790	540	19,2
900	600	830	540	20,1
900	630	860	540	20,7
900	710	940	540	23,7
900	800	1030	540	25,1
900	900	1150	540	27,8
1000 **	315	530	575	13,0
1000	355	580	585	14,3
1000 **	400	625	585	16,6
1000	450	675	585	17,9
1000 **	500	730	590	19,0
1000	560	790	590	21,0
1000	600	830	590	22,1
1000 **	630	860	590	23,4
1000	710	940	590	26,4
1000 **	800	1030	590	28,5
1000	900	1150	590	31,0
1000 **	1000	1250	590	34,3
1120	500	730	650	21,4
1120	560	790	650	23,1
1120	600	830	650	24,3
1120	630	860	650	25,2
1120	710	940	650	29,1
1120	800	1030	650	31,7
1120	900	1150	650	35,4
1120	1000	1250	650	37,3
1120	1120	1370	650	43,5
1250 **	500	730	715	23,4
1250	560	790	715	25,3
1250	600	830	715	26,6
1250 **	630	860	715	27,6
1250	710	940	715	31,9

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
1250 **	800	1030	715	34,9
1250	900	1150	715	39,1
1250 **	1000	1250	715	41,9
1250	1120	1370	715	47,1
1250 **	1250	1500	715	52,6



X-piece

XU

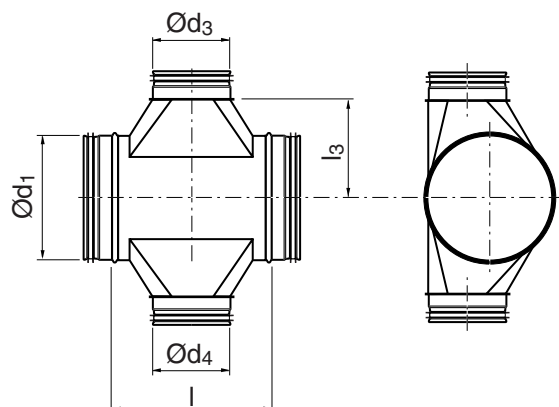


Description

Tangential –

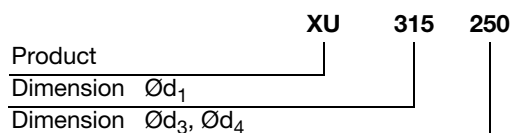
- with hand made T-piece TSTU

Dimensions



Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
80	63	178	85	0,46
100	63	178	95	0,54
100	80	195	95	0,58
112	63	178	100	0,68
112	80	195	100	0,73
112	100	215	100	0,77
125	63	178	110	0,65
125	80	195	110	0,70
125	100	215	110	0,75
125	112	225	110	0,77
140	63	178	115	0,79
140	80	195	115	0,79
140	100	215	115	0,86
140	112	225	115	0,88
140	125	240	115	0,92
150	63	178	120	0,67
150	80	195	120	0,77
150	100	215	120	0,86
150	112	225	120	0,90
150	125	240	120	0,96
150	140	260	125	1,03
160	63	178	125	0,62
160	80	195	125	0,72
160	100	215	125	0,82
160	112	225	125	0,89
160	125	240	125	0,97
160	140	260	130	1,05
160	150	270	130	1,08
180	63	178	135	0,79
180	80	195	135	0,88
180	100	215	135	0,97
180	112	225	135	1,01
180	125	240	135	1,08

Ordering example





X-piece

XU

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
180	140	260	140	1,18
180	150	270	140	1,21
180	160	280	140	1,26
200	63	178	145	0,83
200	80	195	145	0,91
200	100	215	145	1,00
200	112	225	145	1,05
200	125	240	145	1,11
200	140	260	150	1,22
200	150	270	150	1,26
200	160	280	150	1,30
200	180	300	150	1,36
224	63	178	160	0,91
224	80	195	160	0,99
224	100	215	160	1,09
224	112	225	160	1,14
224	125	240	160	1,22
224	140	260	165	1,33
224	150	270	165	1,38
224	160	280	165	1,42
224	180	300	165	1,50
224	200	335	180	1,81
250	63	178	170	0,99
250	80	195	170	1,08
250	100	215	170	1,19
250	112	225	170	1,24
250	125	240	170	1,31
250	140	260	175	1,45
250	150	270	175	1,50
250	160	280	175	1,55
250	180	300	175	1,65
250	200	335	190	1,95
250	224	360	190	1,98
280	80	195	185	1,20
280	100	215	185	1,31
280	112	225	185	1,37
280	125	240	185	1,46
280	140	260	190	1,59
280	150	270	190	1,65
280	160	280	190	1,71
280	180	300	190	1,81
280	200	335	205	2,08
280	224	360	205	2,19
280	250	385	205	2,57
300	80	195	195	1,29
300	100	215	195	1,38
300	112	225	195	1,47
300	125	240	195	1,53

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
300	140	260	200	1,66
300	150	270	200	1,76
300	160	280	200	1,82
300	180	300	200	1,93
300	200	335	215	2,27
300	224	360	215	2,34
300	250	385	215	2,75
300	280	425	225	2,95
315	80	205	205	1,31
315	100	225	205	1,44
315	112	235	205	1,49
315	125	250	205	1,59
315	140	270	210	1,81
315	150	280	210	1,90
315	160	290	210	1,91
315	180	310	210	2,13
315	200	345	225	2,35
315	224	370	225	2,61
315	250	395	225	2,97
315	280	435	235	3,26
315	300	455	235	3,26
355	100	225	250	1,74
355	112	235	250	1,85
355	125	250	250	2,03
355	140	270	230	2,29
355	150	280	230	2,40
355	160	290	230	2,50
355	180	310	230	2,71
355	200	345	245	3,15
355	224	370	245	3,37
355	250	395	245	3,96
355	280	435	245	4,33
355	300	455	255	4,43
355	315	470	255	4,48
400	100	225	245	1,99
400	112	235	245	2,05
400	125	250	245	2,24
400	140	270	250	2,47
400	150	280	250	2,60
400	160	290	250	2,72
400	180	310	250	2,95
400	200	345	265	3,35
400	224	370	265	3,71
400	250	395	265	4,37
400	280	435	275	4,68
400	300	455	275	4,97
400	315	470	275	4,99
400	355	520	285	5,42



X-piece

XU

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
450	125	250	270	2,30
450	140	270	275	2,62
450	150	280	275	2,76
450	160	290	275	2,90
450	180	310	275	3,17
450	200	345	290	3,75
450	224	370	290	4,06
450	250	395	290	4,79
450	280	435	300	5,33
450	300	455	300	5,54
450	315	470	300	5,68
450	355	520	310	6,19
450	400	565	310	6,96
500	125	250	295	2,65
500	140	270	300	2,91
500	150	280	300	3,04
500	160	290	300	3,14
500	180	310	300	3,35
500	200	345	315	4,05
500	224	370	315	4,12
500	250	395	315	4,99
500	280	435	325	5,42
500	300	455	325	5,64
500	315	470	325	5,80
500	355	520	335	6,45
500	400	565	335	6,81
500	450	615	335	7,86
560	200	345	345	4,30
560	224	370	345	4,59
560	250	395	345	5,41
560	280	435	355	6,01
560	300	455	355	6,25
560	315	470	355	6,43
560	355	520	365	7,15
560	400	565	365	8,28
560	450	615	365	8,82
560	500	670	370	9,35
600	200	345	365	4,59
600	224	370	365	4,89
600	250	395	365	5,75
600	280	435	375	6,38
600	300	455	375	6,64
600	315	470	375	6,83
600	355	520	385	7,59
600	400	565	385	8,78
600	450	615	385	9,38
600	500	670	390	10,0
600	560	730	390	10,4

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ mm	m kg
630	200	355	380	4,81
630	224	380	380	5,12
630	250	405	380	6,01
630	280	445	390	6,67
630	300	465	390	6,93
630	315	480	390	7,13
630	355	530	400	7,74
630	400	575	400	9,36
630	450	625	400	9,78
630	500	680	405	10,7
630	560	740	405	11,0
630	600	780	405	11,1
710	250	455	420	6,78
710	280	495	420	7,52
710	300	515	430	7,82
710	315	530	430	8,05
710	355	580	440	8,91
710	400	625	440	10,4
710	450	675	440	11,1
710	500	730	445	12,0
710	560	790	445	12,7
710	600	830	445	13,2
710	630	860	445	13,4
800	250	455	465	7,08
800	280	495	475	8,10
800	300	515	475	8,42
800	315	530	475	8,54
800	355	580	485	9,60
800	400	625	485	11,1
800	450	675	485	11,9
800	500	730	490	13,3
800	560	790	490	13,7
800	600	830	490	14,2
800	630	860	490	15,2
800	710	940	490	16,3
900	315	530	525	11,9
900	355	580	535	13,2
900	400	625	535	16,0
900	450	675	535	16,5
900	500	730	540	17,9
900	560	790	540	19,2
900	600	830	540	20,1
900	630	860	540	20,7
900	710	940	540	23,7
900	800	1030	540	25,1
1000	315	530	575	13,0
1000	355	580	585	14,3
1000	400	625	585	16,6

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X-piece

XU

$\varnothing d_1$ nom	$\varnothing d_3/\varnothing d_4$ nom	l mm	l ₃ mm	m kg
1000	450	675	585	17,9
1000	500	730	590	19,0
1000	560	790	590	21,0
1000	600	830	590	22,1
1000	630	860	590	23,4
1000	710	940	590	26,4
1000	800	1030	590	28,5
1000	900	1150	590	31,0
1120	500	730	650	21,4
1120	560	790	650	23,1
1120	600	830	650	24,3
1120	630	860	650	25,2
1120	710	940	650	29,1
1120	800	1030	650	31,7
1120	900	1150	650	35,4
1120	1000	1250	650	37,3
1250	500	730	715	23,4
1250	560	790	715	25,3
1250	600	830	715	26,6
1250	630	860	715	27,6
1250	710	940	715	31,9
1250	800	1030	715	34,9
1250	900	1150	715	39,1
1250	1000	1250	715	41,9
1250	1120	1370	715	47,1



X-piece

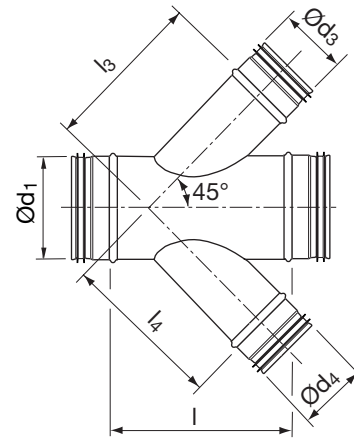
XVU45°



Description

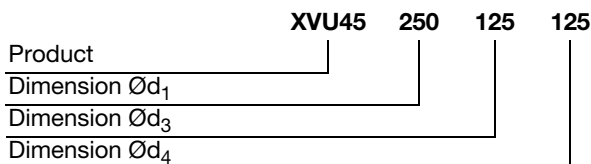
As standard is $\text{Ød}_3 = \text{Ød}_4$ and the angle 45° .
Different dimensions and angle available to order.

Dimensions



Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ /l ₄ mm	m kg
80	80	250	165	0,80
100	80	250	180	0,90
100	100	280	190	1,10
125	80	250	200	1,00
125	100	280	210	1,30
125	112	295	215	1,40
125	125	315	220	1,50
140	80	280	210	1,10
140	100	305	220	1,40
140	112	320	225	1,50
140	125	340	230	1,60
140	140	365	250	1,90
150	80	280	215	1,20
150	100	305	225	1,50
150	112	320	235	1,60
150	125	340	240	1,70
150	140	365	260	2,00
150	150	380	265	2,10
160	80	280	220	1,20
160	100	305	230	1,50
160	112	320	240	1,60
160	125	340	245	1,70
160	140	365	265	2,00
160	150	380	270	2,10
160	160	390	275	2,20
180	80	280	235	1,30
180	100	305	245	1,60
180	112	320	250	1,70
180	125	340	260	1,80
180	140	365	280	2,20
180	150	380	285	2,30
180	160	390	290	2,40
180	180	420	300	2,70

Ordering example





X-piece

XVU45°

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ /l ₄ mm	m kg
200	80	280	250	1,40
200	100	305	260	1,70
200	112	320	265	1,80
200	125	340	270	2,00
200	140	365	295	2,30
200	150	380	300	2,40
200	160	390	305	2,50
200	180	420	315	2,90
200	200	450	325	3,30
224	100	305	275	1,90
224	112	320	285	2,00
224	125	340	290	2,10
224	140	365	310	2,50
224	150	380	315	2,60
224	160	390	320	2,70
224	180	420	330	3,10
224	200	450	340	3,50
224	224	480	350	3,80
250	100	305	295	2,30
250	112	320	300	2,40
250	125	340	310	2,50
250	140	365	330	2,90
250	150	380	335	3,10
250	160	390	340	3,20
250	180	420	350	3,40
250	200	450	360	3,90
250	224	480	370	4,20
250	250	520	385	4,80
280	112	320	320	2,70
280	125	340	330	2,90
280	140	365	350	3,20
280	150	380	355	3,30
280	160	390	360	3,40
280	180	445	370	3,80
280	200	475	380	4,30
280	224	510	390	4,60
280	250	545	405	5,20
280	280	590	435	5,90
300	125	340	350	3,30
300	140	365	365	3,70
300	150	380	370	3,90
300	160	390	375	4,00
300	180	445	385	4,40
300	200	475	395	4,90
300	224	510	405	5,30
300	250	545	420	5,90
300	280	590	450	6,70
300	300	615	460	7,60

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ /l ₄ mm	m kg
315	140	365	375	4,10
315	150	380	380	4,30
315	160	395	385	4,40
315	180	445	395	4,80
315	200	475	405	5,40
315	224	510	415	5,80
315	250	545	430	6,50
315	280	590	460	7,30
315	300	615	470	7,90
315	315	640	480	8,30
355	150	380	410	4,70
355	160	395	415	4,80
355	180	445	425	5,20
355	200	475	435	5,90
355	224	510	445	6,20
355	250	545	460	7,00
355	280	590	490	7,90
355	300	615	500	8,40
355	315	640	505	8,80
355	355	695	525	10,0
400	160	395	445	5,60
400	180	445	455	6,00
400	200	475	465	6,70
400	224	510	475	7,10
400	250	545	490	7,80
400	280	590	520	8,80
400	300	615	530	9,40
400	315	640	535	9,80
400	355	695	555	11,0
400	400	760	580	12,7
450	180	445	490	6,70
450	200	475	500	7,40
450	224	510	510	7,80
450	250	545	525	8,60
450	280	590	555	9,50
450	300	615	565	10,1
450	315	640	570	10,6
450	355	695	590	11,8
450	400	760	615	13,6
450	450	830	640	15,5
500	200	475	535	8,00
500	224	510	550	8,40
500	250	545	560	9,30
500	280	590	590	10,3
500	300	615	600	10,9
500	315	640	610	11,4
500	355	695	630	12,7
500	400	760	650	14,5



X-piece

XVU45°

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ /l ₄ mm	m kg
500	450	830	675	16,5
500	500	900	700	18,6
560	224	510	590	9,80
560	250	600	605	10,7
560	280	640	630	11,6
560	300	665	640	12,3
560	315	690	650	12,6
560	355	750	670	14,2
560	400	810	690	16,0
560	450	880	715	18,1
560	500	950	740	20,3
560	560	1040	800	23,4
600	250	600	630	12,2
600	280	640	655	13,3
600	300	665	665	14,0
600	315	690	675	14,6
600	355	750	695	16,3
600	400	810	715	18,2
600	450	880	740	20,4
600	500	950	765	23,0
600	560	1040	825	26,4
600	600	1090	850	29,3
630	280	640	680	14,8
630	300	665	690	15,6
630	315	690	700	16,1
630	355	750	720	18,0
630	400	810	740	20,2
630	450	880	765	22,6
630	500	950	790	25,2
630	560	1040	850	28,8
630	600	1090	870	31,3
630	630	1140	885	33,4
710	300	665	745	17,8
710	315	690	755	18,4
710	355	750	775	20,3
710	400	810	800	22,5
710	450	880	825	25,2
710	500	950	850	27,9
710	560	1040	905	31,6
710	600	1090	925	34,1
710	630	1140	940	36,4
710	710	1250	980	41,7
800	315	690	820	20,2
800	355	750	840	22,2
800	400	810	860	24,6
800	450	880	885	27,4
800	500	950	910	30,2
800	560	1040	970	34,2

Ød ₁ nom	Ød ₃ /Ød ₄ nom	l mm	l ₃ /l ₄ mm	m kg
800	600	1090	990	37,4
800	630	1140	1005	39,1
800	710	1250	1045	44,6
800	800	1380	1090	51,0
900	355	750	910	27,4
900	400	810	935	30,3
900	450	880	960	33,5
900	500	950	985	36,9
900	560	1040	1040	41,6
900	600	1090	1060	44,6
900	630	1140	1075	47,3
900	710	1250	1115	53,7
900	800	1380	1160	51,2
900	900	1520	1210	69,7
1000	400	810	1005	33,0
1000	450	880	1030	36,4
1000	500	950	1055	40,0
1000	560	1040	1110	44,8
1000	600	1090	1130	48,0
1000	630	1140	1145	50,7
1000	710	1250	1185	57,5
1000	800	1380	1230	65,3
1000	900	1520	1280	74,2
1000	1000	1660	1330	83,5
1120	500	1005	1140	51,0
1120	560	1090	1195	57,3
1120	600	1140	1215	60,9
1120	630	1190	1230	64,2
1120	710	1305	1270	72,1
1120	800	1430	1315	81,2
1120	900	1570	1365	91,6
1120	1000	1710	1415	102
1120	1120	1880	1505	118
1250	500	1005	1230	56,1
1250	560	1090	1290	62,3
1250	600	1140	1310	66,3
1250	630	1190	1325	69,6
1250	710	1305	1365	78,0
1250	800	1430	1410	87,5
1250	900	1570	1460	98,5
1250	1000	1710	1510	110
1250	1120	1880	1595	126
1250	1250	2065	1660	142

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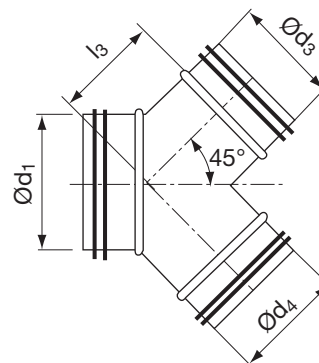


Y-piece

YVU45°



Dimensions

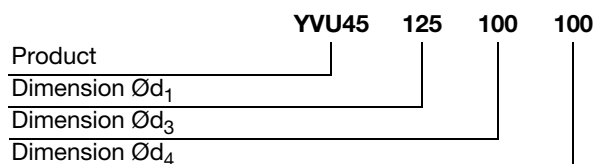


Description

As standard is $\text{Ød}_3 = \text{Ød}_4$ and the angle 45° .
Different dimensions and angle available to order.

Ød ₁ nom	Ød ₃ nom	Ød ₄ nom	l ₃ mm	m kg
80	80	80	120	0,90
100	80	80	140	1,00
100	100	100	140	1,00
112	80	80	160	1,00
125	100	100	170	1,30
125	125	125	170	1,30
140	100	100	185	1,40
150	100	100	190	1,50
150	150	150	190	1,50
160	112	112	205	1,60
160	160	160	205	1,80
180	125	125	215	1,80
180	180	180	215	1,80
200	140	140	230	2,10
200	200	200	230	2,10
224	160	160	250	3,50
224	224	224	250	2,70
250	180	180	280	3,50
250	200	200	280	3,50
250	250	250	280	3,50
280	200	200	310	3,60
280	280	280	310	3,50
300	200	200	320	4,20
300	300	300	320	4,20
315	224	224	335	4,40
315	315	315	335	4,80
355	250	250	365	5,00
355	355	355	365	6,40
400	280	280	410	6,80
400	300	300	410	7,00
400	400	400	410	9,10
450	300	300	440	8,50
450	315	315	440	8,50

Ordering example





Y-piece

YVU45°

Ød ₁ nom	Ød ₃ nom	Ød ₄ nom	l ₃ mm	m kg
500	355	355	490	9,80
560	400	400	550	12,1
600	400	400	580	13,2
630	450	450	610	15,6
630	630	630	610	20,6
710	500	500	670	18,7
710	710	710	670	24,4
800	560	560	740	22,7
800	800	800	740	28,9
900	630	630	825	24,8
1000	710	710	920	30,5
1120	800	800	1030	38,0
1250	900	900	1150	50,0

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T-piece

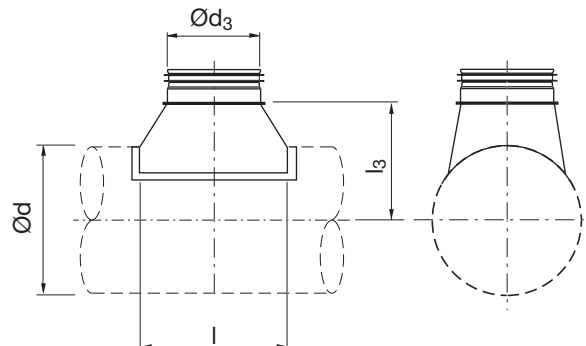
TSTCU



Description

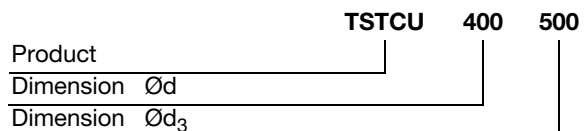
Hand made centric T-piece.

Dimensions



Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
63	80	145	77	0,15
63	100	165	77	0,20
80	100	165	85	0,21
80	112	175	85	0,24
80	125	190	85	0,29
100	112	175	95	0,22
100	125	190	95	0,25
100	140	210	100	0,30
100	150	220	100	0,30
100	160	230	100	0,36
112	112	175	100	0,27
112	125	190	100	0,30
112	140	210	105	0,34
112	150	220	105	0,37
112	160	230	105	0,39
112	180	250	105	0,43
125	112	175	110	0,23
125	140	210	115	0,31
125	150	220	115	0,33
125	160	230	115	0,35
125	180	250	115	0,41
125	200	285	130	0,50
140	80	145	115	0,22
140	112	175	115	0,28
140	150	220	120	0,38
140	160	230	120	0,40
140	180	250	120	0,45
140	200	285	135	0,53
140	224	310	135	0,59
150	80	145	120	0,19
150	112	175	120	0,27
150	160	230	125	0,43
150	180	250	125	0,47

Ordering example





T-piece

TSTCU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
150	200	285	140	0,57
150	224	310	140	0,64
150	250	335	140	0,77
160	63	128	125	0,10
160	112	175	125	0,25
160	180	250	130	0,47
160	200	285	145	0,57
160	224	310	145	0,65
160	250	335	145	0,85
180	63	128	135	0,16
180	80	145	135	0,20
180	112	175	135	0,27
180	125	190	135	0,31
180	140	210	140	0,36
180	150	220	140	0,39
180	160	230	140	0,43
180	200	285	155	0,62
180	224	310	155	0,69
180	250	335	155	0,82
180	280	375	165	1,02
200	63	128	145	0,14
200	112	175	145	0,25
200	224	310	165	0,66
200	250	335	165	0,79
200	280	375	175	1,00
200	300	395	175	1,09
200	315	410	175	1,13
224	63	128	160	0,15
224	112	175	160	0,25
224	250	335	180	0,84
224	280	375	190	1,01
224	300	395	190	1,11
224	315	410	190	1,18
224	355	460	200	1,44
250	63	128	170	0,15
250	112	175	170	0,26
250	280	375	200	1,03
250	300	395	200	1,12
250	315	410	200	1,13
250	355	460	210	1,46
250	400	505	210	1,83
280	112	175	185	0,27
280	250	335	205	0,86
280	280	375	215	1,03
280	300	395	215	1,12
280	315	410	215	1,19
280	355	460	225	1,44
280	400	505	225	1,80

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
280	450	555	225	2,11
300	112	175	195	0,28
300	280	375	225	1,03
300	315	410	225	1,20
300	355	460	235	1,45
300	400	505	235	1,73
300	450	555	235	2,10
315	112	175	205	0,26
315	280	375	235	1,11
315	355	460	245	1,53
315	400	505	245	1,80
315	450	555	245	2,01
315	500	610	250	2,24
355	112	175	225	0,28
355	280	375	245	1,36
355	315	410	255	1,55
355	355	460	265	1,91
355	400	505	265	2,18
355	450	555	265	2,46
355	500	610	270	2,77
355	560	670	270	3,11
400	112	175	245	0,28
400	140	210	250	0,44
400	180	250	250	0,66
400	280	375	275	1,34
400	355	460	285	1,89
400	450	555	285	2,58
400	500	610	290	2,96
400	560	670	290	3,29
400	600	710	290	3,51
400	630	740	290	3,68
450	140	210	275	0,40
450	180	250	275	0,64
450	280	375	300	1,46
450	355	460	310	1,98
450	450	555	310	2,60
450	500	610	315	3,08
450	560	670	315	3,48
450	600	710	315	3,74
450	630	740	315	3,94
450	710	820	315	4,70
500	140	210	300	0,43
500	180	250	300	0,60
500	280	375	325	1,29
500	355	460	335	1,85
500	450	555	335	2,74
500	500	610	340	3,28
500	560	670	340	3,83

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T-piece

TSTCU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
500	600	710	340	4,25
500	630	740	340	4,35
500	710	820	340	5,74
500	800	910	340	6,91
560	280	375	355	1,34
560	355	460	365	1,98
560	450	555	365	2,78
560	500	610	370	3,27
560	560	670	370	3,85
560	600	710	370	4,26
560	630	740	370	4,58
560	710	820	370	5,71
560	800	910	370	6,34
560	900	1030	370	8,45
600	280	375	375	1,37
600	355	460	385	1,93
600	450	555	385	2,81
600	500	610	390	3,29
600	560	670	390	3,86
600	600	710	390	4,54
600	630	740	390	4,58
600	710	820	390	5,69
600	800	910	390	6,79
600	900	1030	390	8,36
630	280	375	390	1,39
630	355	460	400	1,86
630	450	555	400	2,83
630	500	610	405	3,42
630	560	670	405	3,87
630	600	710	405	4,27
630	630	740	405	4,45
630	710	820	405	5,68
630	800	910	405	6,76
630	900	1030	405	8,30
630	1000	1130	405	9,71
710	250	335	420	1,26
710	280	375	420	1,50
710	300	395	430	1,64
710	315	410	430	1,74
710	355	460	440	2,08
710	400	505	440	2,61
710	450	555	440	3,01
710	500	610	445	3,52
710	560	670	445	4,11
710	600	710	445	4,52
710	630	740	445	4,81
710	710	820	445	6,00
710	800	910	445	7,10

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
710	900	1030	445	8,69
710	1000	1130	445	10,2
710	1120	1250	445	12,4
800	250	335	465	1,08
800	280	375	475	1,44
800	300	395	475	1,57
800	315	410	475	1,61
800	355	460	485	2,00
800	400	505	485	2,50
800	450	555	485	2,88
800	500	610	490	3,59
800	560	670	490	3,93
800	600	710	490	4,32
800	630	740	490	4,94
800	710	820	490	5,73
800	800	910	490	6,99
800	900	1030	490	8,32
800	1000	1130	490	8,61
800	1120	1250	490	11,9
800	1250	1380	490	14,0
900	315	410	525	2,00
900	355	460	535	2,43
900	400	505	535	3,41
900	450	555	535	3,59
900	500	610	540	4,24
900	560	670	540	5,01
900	600	710	540	5,56
900	630	740	540	5,99
900	710	820	540	7,50
900	800	910	540	9,03
900	900	1030	540	11,2
900	1000	1130	540	13,3
900	1120	1250	540	16,4
900	1250	1380	540	19,7
1000	315	410	575	1,95
1000	355	460	585	2,36
1000	400	505	585	2,97
1000	450	555	585	3,54
1000	500	610	590	3,99
1000	560	670	590	5,02
1000	600	710	590	5,66
1000	630	740	590	6,34
1000	710	820	590	7,67
1000	800	910	590	9,31
1000	900	1030	590	11,8
1000	1000	1130	590	14,2
1000	1120	1250	590	17,7
1000	1250	1380	590	21,5



T-piece

TSTCU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
1120	500	610	650	4,25
1120	560	670	650	5,07
1120	600	710	650	5,66
1120	630	740	650	6,12
1120	710	820	650	7,75
1120	800	910	650	9,45
1120	900	1030	650	12,2
1120	1000	1130	650	14,3
1120	1120	1250	650	17,9
1120	1250	1380	650	21,7
1250	500	610	715	4,28
1250	560	670	715	5,11
1250	600	710	715	5,71
1250	630	740	715	6,18
1250	710	820	715	7,83
1250	800	910	715	9,55
1250	900	1030	715	12,5
1250	1000	1130	715	14,5
1250	1120	1250	715	18,2
1250	1250	1380	715	22,0

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T-piece

TSTU

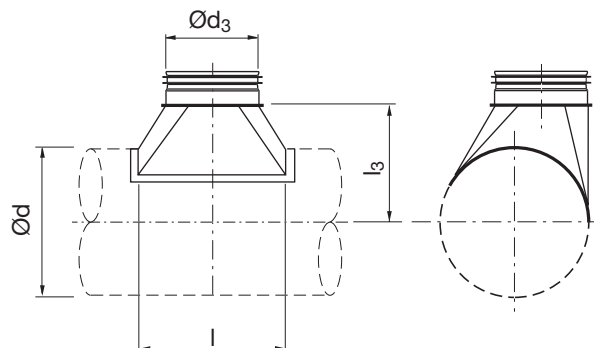
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Description

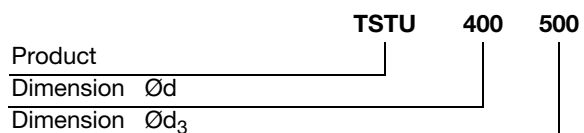
Hand made tangential T-piece.

Dimensions



Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
63	63	128	77	0,12
63	80	145	77	0,15
63	100	165	77	0,20
80	63	128	85	0,12
80	80	145	85	0,16
80	100	165	85	0,21
80	112	175	85	0,24
80	125	190	85	0,29
100	63	128	95	0,13
100	80	145	95	0,16
100	100	165	95	0,20
100	112	175	95	0,22
100	125	190	95	0,25
100	140	210	100	0,30
100	150	220	100	0,30
100	160	230	100	0,36
112	63	128	100	0,18
112	80	145	100	0,21
112	100	165	100	0,25
112	112	175	100	0,27
112	125	190	100	0,30
112	140	210	105	0,34
112	150	220	105	0,37
112	160	230	105	0,39
112	180	250	105	0,43
125	63	128	110	0,14
125	80	145	110	0,17
125	100	165	110	0,21
125	112	175	110	0,23
125	125	190	110	0,27
125	140	210	115	0,31
125	150	220	115	0,33
125	160	230	115	0,35

Ordering example





T-piece

TSTU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
125	180	250	115	0,41
125	200	285	130	0,50
140	63	128	115	0,18
140	80	145	115	0,22
140	100	165	115	0,26
140	112	175	115	0,28
140	125	190	115	0,31
140	140	210	120	0,36
140	150	220	120	0,38
140	160	230	120	0,40
140	180	250	120	0,45
140	200	285	135	0,53
140	224	310	135	0,59
150	63	128	120	0,14
150	80	145	120	0,19
150	100	165	120	0,24
150	112	175	120	0,27
150	125	190	120	0,31
150	140	210	125	0,37
150	150	220	125	0,39
150	160	230	125	0,43
150	180	250	125	0,47
150	200	285	140	0,57
150	224	310	140	0,64
150	250	335	140	0,77
160	63	128	125	0,10
160	80	145	125	0,15
160	100	165	125	0,22
160	112	175	125	0,25
160	125	190	125	0,29
160	140	210	130	0,35
160	150	220	130	0,38
160	160	230	130	0,41
160	180	250	130	0,47
160	200	285	145	0,57
160	224	310	145	0,65
160	250	335	145	0,85
180	63	128	135	0,16
180	80	145	135	0,20
180	100	165	135	0,25
180	112	175	135	0,27
180	125	190	135	0,31
180	140	210	140	0,36
180	150	220	140	0,39
180	160	230	140	0,43
180	180	250	140	0,49
180	200	285	155	0,62
180	224	310	155	0,69

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
180	250	335	155	0,82
180	280	375	165	1,02
200	63	128	145	0,14
200	80	145	145	0,18
200	100	165	145	0,23
200	112	175	145	0,25
200	125	190	145	0,29
200	140	210	150	0,34
200	150	220	150	0,37
200	160	230	150	0,40
200	180	250	150	0,46
200	200	285	165	0,64
200	224	310	165	0,66
200	250	335	165	0,79
200	280	375	175	1,00
200	300	395	175	1,09
200	315	410	175	1,13
224	63	128	160	0,15
224	80	145	160	0,18
224	100	165	160	0,23
224	112	175	160	0,25
224	125	190	160	0,29
224	140	210	165	0,35
224	150	220	165	0,37
224	160	230	165	0,40
224	180	250	165	0,47
224	200	285	180	0,63
224	224	310	180	0,67
224	250	335	180	0,84
224	280	375	190	1,01
224	300	395	190	1,11
224	315	410	190	1,18
224	355	460	200	1,44
250	63	128	170	0,15
250	80	145	170	0,18
250	100	165	170	0,23
250	112	175	170	0,26
250	125	190	170	0,29
250	140	210	175	0,35
250	150	220	175	0,38
250	160	230	175	0,41
250	180	250	175	0,47
250	200	285	190	0,62
250	224	310	190	0,68
250	250	335	190	0,89
250	280	375	200	1,03
250	300	395	200	1,12
250	315	410	200	1,13

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T-piece

TSTU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
250	355	460	210	1,46
250	400	505	210	1,83
280	80	145	185	0,20
280	100	165	185	0,24
280	112	175	185	0,27
280	125	190	185	0,31
280	140	210	190	0,36
280	150	220	190	0,39
280	160	230	190	0,42
280	180	250	190	0,49
280	200	285	205	0,60
280	224	310	205	0,69
280	250	335	205	0,86
280	280	375	215	1,03
280	300	395	215	1,12
280	315	410	215	1,19
280	355	460	225	1,44
280	400	505	225	1,80
280	450	555	225	2,11
300	80	145	195	0,20
300	100	165	195	0,24
300	112	175	195	0,28
300	125	190	195	0,30
300	140	210	200	0,35
300	150	220	200	0,40
300	160	230	200	0,43
300	180	250	200	0,49
300	200	285	215	0,63
300	224	310	215	0,70
300	250	335	215	0,86
300	280	375	225	1,03
300	300	395	225	1,13
300	315	410	225	1,20
300	355	460	235	1,45
300	400	505	235	1,73
300	450	555	235	2,10
315	80	145	205	0,19
315	100	165	205	0,24
315	112	175	205	0,26
315	125	190	205	0,31
315	140	210	210	0,40
315	150	220	210	0,44
315	160	230	210	0,45
315	180	250	210	0,56
315	200	285	225	0,63
315	224	310	225	0,79
315	250	335	225	0,92
315	280	375	235	1,11

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
315	300	395	235	1,19
315	315	410	235	1,32
315	355	460	245	1,53
315	400	505	245	1,80
315	450	555	245	2,01
315	500	610	250	2,24
355	100	165	225	0,23
355	112	175	225	0,28
355	125	195	225	0,36
355	140	210	230	0,45
355	150	220	230	0,50
355	160	230	230	0,55
355	180	250	230	0,65
355	200	285	245	0,82
355	224	310	245	0,95
355	250	335	245	1,16
355	280	375	245	1,36
355	300	395	255	1,47
355	315	410	255	1,55
355	355	460	265	1,91
355	400	505	265	2,18
355	450	555	265	2,46
355	500	610	270	2,77
355	560	670	270	3,11
400	100	165	245	0,26
400	112	175	245	0,28
400	125	195	245	0,36
400	140	210	250	0,44
400	150	220	250	0,50
400	160	230	250	0,55
400	180	250	250	0,66
400	200	285	265	0,78
400	224	310	265	0,97
400	250	335	265	1,19
400	280	375	275	1,34
400	300	395	275	1,52
400	315	410	275	1,56
400	355	460	285	1,89
400	400	505	285	2,29
400	450	555	285	2,58
400	500	610	290	2,96
400	560	670	290	3,29
400	600	710	290	3,51
400	630	740	290	3,68
450	125	190	270	0,28
450	140	210	275	0,40
450	150	220	275	0,46
450	160	230	275	0,52



T-piece

TSTU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
450	180	250	275	0,64
450	200	285	290	0,84
450	224	310	290	0,98
450	250	335	290	1,22
450	280	375	300	1,46
450	300	395	300	1,58
450	315	410	300	1,68
450	355	460	310	1,98
450	400	505	310	2,39
450	450	555	310	2,60
450	500	610	315	3,08
450	560	670	315	3,48
450	600	710	315	3,74
450	630	740	315	3,94
450	710	820	315	4,70
500	125	190	295	0,35
500	140	210	300	0,43
500	150	220	300	0,48
500	160	230	300	0,52
500	180	250	300	0,60
500	200	285	315	0,84
500	224	310	315	0,86
500	250	335	315	1,13
500	280	375	325	1,29
500	300	395	325	1,42
500	315	410	325	1,52
500	355	460	335	1,85
500	400	505	335	2,26
500	450	555	335	2,74
500	500	610	340	3,28
500	560	670	340	3,83
500	600	710	340	4,25
500	630	740	340	4,35
500	710	820	340	5,74
500	800	910	340	6,91
560	200	285	345	0,78
560	224	310	345	0,90
560	250	335	345	1,12
560	280	375	355	1,34
560	300	395	355	1,47
560	315	410	355	1,57
560	355	460	365	1,98
560	400	505	365	2,38
560	450	555	365	2,78
560	500	610	370	3,27
560	560	670	370	3,85
560	600	710	370	4,26
560	630	740	370	4,58

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
560	710	820	370	5,71
560	800	910	370	6,34
560	900	1030	370	8,45
600	200	285	365	0,81
600	224	310	365	0,93
600	250	335	365	1,14
600	280	375	375	1,37
600	300	395	375	1,50
600	315	410	375	1,59
600	355	460	385	1,93
600	400	505	385	2,39
600	450	555	385	2,81
600	500	610	390	3,29
600	560	670	390	3,86
600	600	710	390	4,54
600	630	740	390	4,58
600	710	820	390	5,69
600	800	910	390	6,79
600	900	1030	390	8,36
630	200	285	380	0,83
630	224	310	380	0,95
630	250	335	380	1,16
630	280	375	390	1,39
630	300	395	390	1,52
630	315	410	390	1,62
630	355	460	400	1,86
630	400	505	400	2,51
630	450	555	400	2,83
630	500	610	405	3,42
630	560	670	405	3,87
630	600	710	405	4,27
630	630	740	405	4,45
630	710	820	405	5,68
630	800	910	405	6,76
630	900	1030	405	8,30
630	1000	1130	405	9,71
710	250	335	420	1,26
710	280	375	420	1,50
710	300	395	430	1,64
710	315	410	430	1,74
710	355	460	440	2,08
710	400	505	440	2,61
710	450	555	440	3,01
710	500	610	445	3,52
710	560	670	445	4,11
710	600	710	445	4,52
710	630	740	445	4,81
710	710	820	445	6,00

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T-piece

TSTU

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
710	800	910	445	7,10
710	900	1030	445	8,69
710	1000	1130	445	10,2
710	1120	1250	445	12,4
800	250	335	465	1,08
800	280	375	475	1,44
800	300	395	475	1,57
800	315	410	475	1,61
800	355	460	485	2,00
800	400	505	485	2,50
800	450	555	485	2,88
800	500	610	490	3,59
800	560	670	490	3,93
800	600	710	490	4,32
800	630	740	490	4,94
800	710	820	490	5,73
800	800	910	490	6,99
800	900	1030	490	8,32
800	1000	1130	490	8,61
800	1120	1250	490	11,9
800	1250	1380	490	14,0
900	315	410	525	2,00
900	355	460	535	2,43
900	400	505	535	3,41
900	450	555	535	3,59
900	500	610	540	4,24
900	560	670	540	5,01
900	600	710	540	5,56
900	630	740	540	5,99
900	710	820	540	7,50
900	800	910	540	9,03
900	900	1030	540	11,2
900	1000	1130	540	13,3
900	1120	1250	540	16,4
900	1250	1380	540	19,7
1000	315	410	575	1,95
1000	355	460	585	2,36
1000	400	505	585	2,97
1000	450	555	585	3,54
1000	500	610	590	3,99
1000	560	670	590	5,02
1000	600	710	590	5,66
1000	630	740	590	6,34
1000	710	820	590	7,67
1000	800	910	590	9,31
1000	900	1030	590	11,8
1000	1000	1130	590	14,2
1000	1120	1250	590	17,7

Ød nom	Ød ₃ nom	l mm	l ₃ mm	m kg
1000	1250	1380	590	21,5
1120	500	610	650	4,25
1120	560	670	650	5,07
1120	600	710	650	5,66
1120	630	740	650	6,12
1120	710	820	650	7,75
1120	800	910	650	9,45
1120	900	1030	650	12,2
1120	1000	1130	650	14,3
1120	1120	1250	650	17,9
1120	1250	1380	650	21,7
1250	500	610	715	4,28
1250	560	670	715	5,11
1250	600	710	715	5,71
1250	630	740	715	6,18
1250	710	820	715	7,83
1250	800	910	715	9,55
1250	900	1030	715	12,5
1250	1000	1130	715	14,5
1250	1120	1250	715	18,2
1250	1250	1380	715	22,0



Take-off

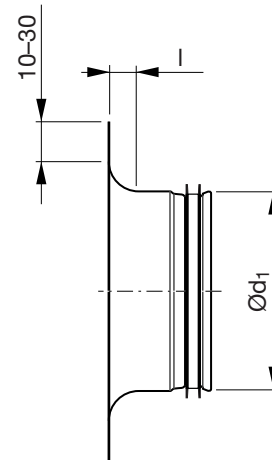
ILRU



Description

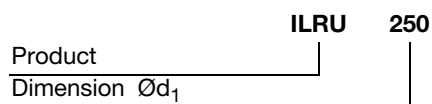
Take-off with radius.

Dimensions



Ød ₁ nom	l mm	m kg
63	10	0,07
80	12	0,10
100	15	0,11
125	20	0,14
140	20	0,22
150	20	0,24
160	25	0,19
180	25	0,30
200	25	0,26
224	25	0,46
250	25	0,57
300	25	0,68
315	25	0,72
355	25	0,53
400	25	0,97
500	25	1,35
630	25	1,77

Ordering example



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Take-off

ILU

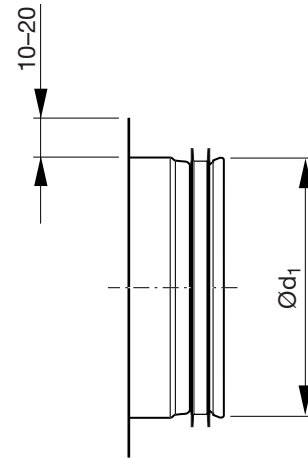
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Description

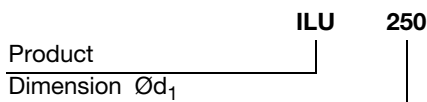
Take-off without radius.

Dimensions



Ød ₁ nom	m kg
63	0,07
80	0,07
100	0,08
112	0,09
125	0,11
140	0,12
150	0,12
160	0,16
180	0,20
200	0,17
224	0,23
250	0,33
280	0,37
300	0,40
315	0,42
355	0,48
400	0,65
450	0,74
500	0,82
560	1,13
600	1,21
630	1,27
710	2,12
800	2,39
900	2,69
1000	3,57
1120	3,99
1250	4,46

Ordering example





Take-off

ILF

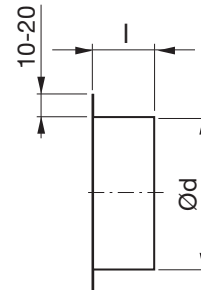


Description

Take-off without radius. With female end – fits outside a Safe fitting.

Hasn't any Click function – hasn't any notches.

Dimensions



Ød nom	l mm	m kg
63	45	0,06
80	45	0,08
100	45	0,06
112	45	0,10
125	45	0,08
140	45	0,15
150	45	0,15
160	45	0,16
180	45	0,19
200	45	0,21
224	45	0,26
250	65	0,31
280	65	0,30
300	65	0,41
315	65	0,46
355	65	0,41
400	90	0,58
450	90	0,71
500	90	0,83
560	90	0,96
600	90	0,99
630	90	1,13

Ordering example

Product	ILF	200
Dimension Ød		

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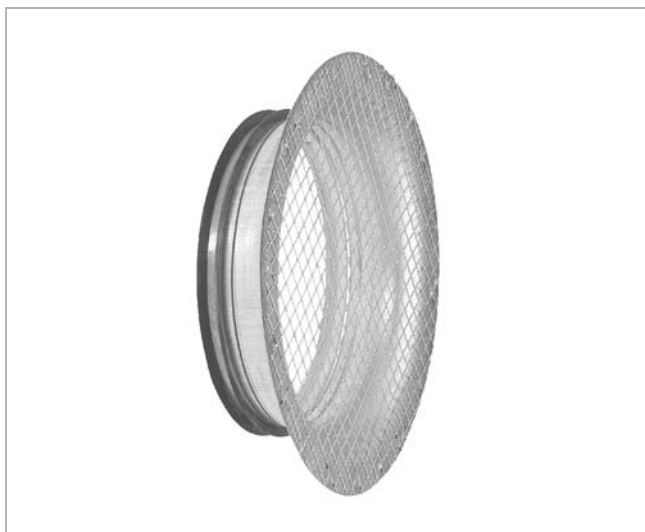
18



Take-off with mesh

ILRNU

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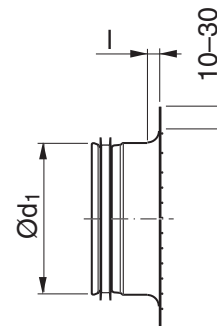
Description

To terminate an inlet duct.

With radius.

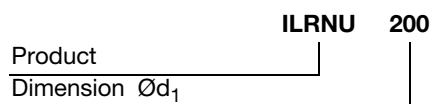
Mesh size 10 × 10 mm

Dimensions



Ød ₁ nom	l mm	m kg
63	10	0,07
80	12	0,11
100	15	0,16
125	20	0,21
140	20	0,24
150	20	0,27
160	25	0,22
180	25	0,34
200	25	0,39
224	25	0,51
250	25	0,64
300	25	0,77
315	25	0,83
355	25	0,89
400	25	1,14
500	25	1,61
630	25	2,19

Ordering example





Take-off with mesh

ESNU

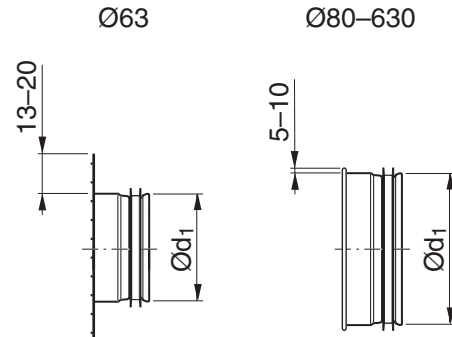


Description

To terminate an inlet duct.

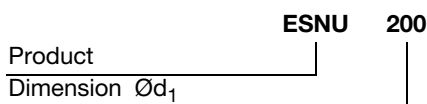
Mesh size 10 × 10 mm.

Dimensions



Ød ₁ nom	m kg
63	0,06
80	0,08
100	0,10
112	0,11
125	0,13
140	0,15
150	0,16
160	0,17
180	0,21
200	0,25
224	0,31
250	0,38
280	0,44
300	0,51
315	0,57
355	0,66
400	0,75
450	0,92
500	1,09
560	1,32
600	1,48
630	1,55
710	1,82
800	2,11
900	2,57
1000	3,23
1120	3,59
1250	4,00

Ordering example



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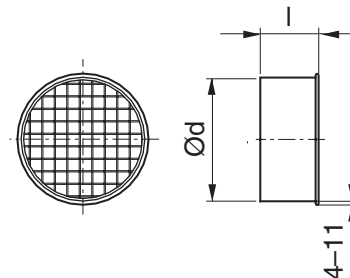
Take-off with mesh

EPNF

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Dimensions



Description

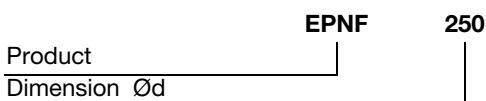
To terminate an inlet duct. With female end – fits outside a Safe fitting.

Mesh size 10 × 10 mm.

No Click function – no notches.

Ød nom	l mm	m kg
80	48	0,07
100	48	0,09
112	48	0,10
125	48	0,11
140	48	0,13
150	48	0,14
160	48	0,15
180	48	0,17
200	48	0,21
224	48	0,25
250	68	0,32
280	68	0,38
300	68	0,42
315	68	0,45
355	68	0,54
400	93	0,69
450	93	0,81
500	93	0,92
560	93	1,12
600	93	1,23
630	93	1,29
710	113	1,47
800	113	1,65
900	138	1,97
1000	138	2,50
1120	138	2,79
1250	138	3,08

Ordering example



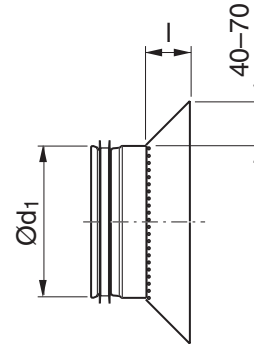


Take-off with mesh and cone

ILKNU 50



Dimensions



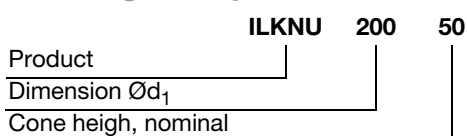
Description

To terminate an inlet duct.

Mesh size 10 × 10 mm.

Ød ₁ nom	l mm	m kg
100	50	0,15
125	50	0,22
160	50	0,25
200	50	0,32
250	53	0,65
315	68	0,89
400	50	1,00
500	50	1,24
630	40	1,43
800	50	1,79

Ordering example



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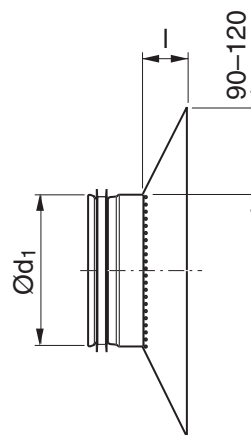
Take-off with mesh and cone

ILKNU 100

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Dimensions



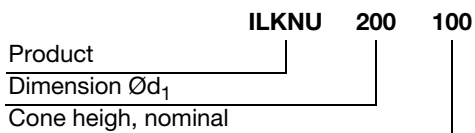
Description

To terminate an inlet duct.

Mesh size 10 × 10 mm.

$\varnothing d_1$ nom	l mm	m kg
100	100	0,48
125	95	0,54
160	98	0,68
200	100	0,99
250	100	1,23
315	93	1,43
400	100	1,73
500	105	2,14
630	115	2,87
800	100	4,21

Ordering example



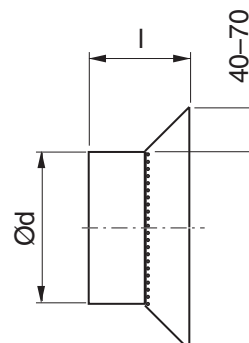


Take-off with mesh and cone

ILKNF 50



Dimensions



Description

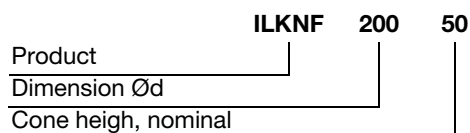
To terminate an inlet duct. With female end – fits outside a Safe fitting.

Mesh size 10 × 10 mm.

No Click function – no notches.

Ød nom	l mm	m kg
100	92	0,15
125	92	0,22
160	92	0,25
200	92	0,32
250	115	0,65
315	130	0,89
400	132	1,00
500	132	1,24
630	122	1,43
800	152	1,79

Ordering example



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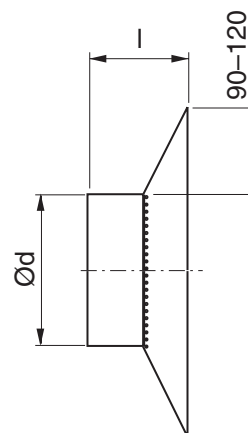
Take-off with mesh and cone

ILKNF 100

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Dimensions



Description

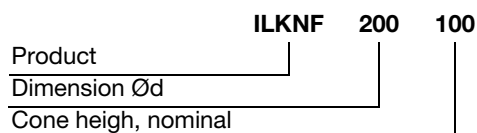
To terminate an inlet duct. With female end – fits outside a Safe fitting.

Mesh size 10 × 10 mm.

No Click function – no notches.

Ød nom	l mm	m kg
100	142	0,48
125	137	0,54
160	140	0,68
200	142	0,99
250	162	1,23
315	155	1,43
400	182	1,73
500	187	2,14
630	197	2,87
800	202	4,21

Ordering example





Take-off

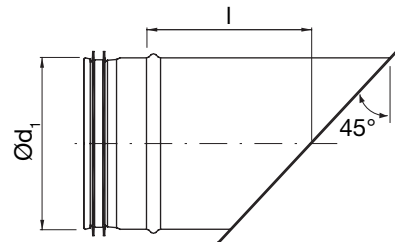
ILVU45°



Description

As standard the angle is 45°.
Different angle available to order.

Dimensions



Ød ₁ nom	l mm	m kg
80	80	0,11
100	90	0,15
112	96	0,18
125	103	0,21
140	110	0,25
150	115	0,27
160	120	0,30
180	130	0,36
200	140	0,43
224	152	0,62
250	185	0,87
280	200	1,00
300	210	1,20
315	218	1,20
355	238	1,50
400	280	2,40
450	305	2,90
500	330	3,50
560	360	4,20
600	380	4,60
630	395	5,00
710	455	8,40
800	500	10,0
900	550	12,0
1000	620	16,0
1120	680	19,0
1250	745	23,0

Ordering example

Product	ILVU45	125
Dimension Ød ₁		

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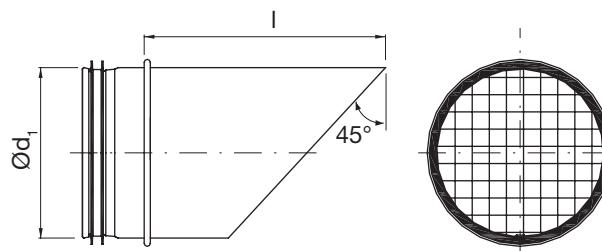
Take-off

AVU

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Dimensions

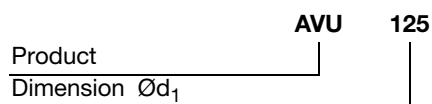


Description

As standard the angle is 45°.
Different angle available to order.

Ød ₁ nom	l mm	m kg
63	160	0,12
80	180	0,17
100	200	0,22
112	210	0,25
125	225	0,29
140	240	0,34
150	250	0,37
160	260	0,41
180	280	0,48
200	300	0,56
224	325	0,80
250	350	1,00
280	380	1,20
300	400	1,30
315	415	1,40
355	455	1,70
400	500	2,50
450	550	3,00
500	600	3,60
560	660	4,30
600	700	4,80
630	730	5,20
710	810	8,40
800	900	10,0
900	1000	12,0
1000	1100	15,0
1120	1220	19,0
1250	1350	23,0

Ordering example





Coupling

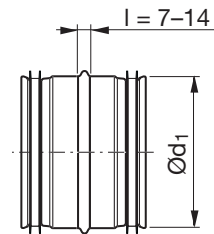
NPU



Description

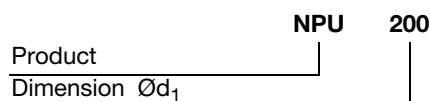
Coupling connector for joining circular ducts.

Dimensions



Ød ₁ nom	m kg
63	0,07
80	0,09
100	0,12
112	0,14
125	0,15
140	0,16
150	0,18
160	0,19
180	0,25
200	0,30
224	0,30
250	0,52
280	0,56
300	0,64
315	0,66
355	0,76
400	1,10
450	1,34
500	1,52
560	1,90
600	2,10
630	2,24
710	2,65
800	3,10
900	4,52
1000	5,30
1120	7,03
1250	7,70

Ordering example



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Expanding coupling

NPEU

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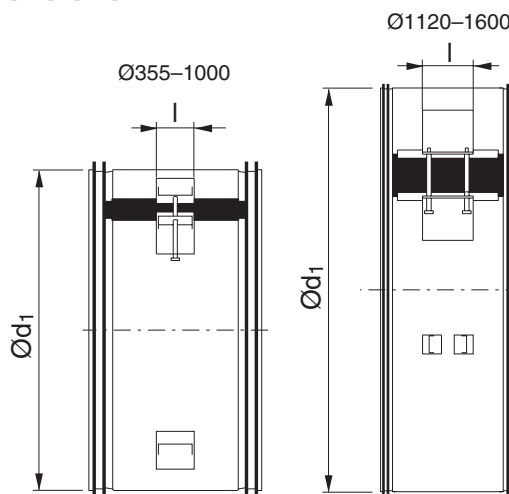


Description

Expanding coupling, intended for installation of ventilation ducts and components of larger dimensions. The coupling makes installation easier and can also be used between circular ducts and fittings without a rubber seal.

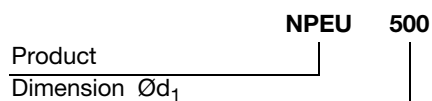
The coupling is expanded by means of a threaded bolt, socket no. 13. Can achieve maximum tightness class C.

Dimensions



Ød ₁ nom	l mm	m kg
355	45	1,24
400	45	1,64
450	45	1,83
500	45	2,50
560	45	2,95
600	45	3,15
630	45	3,30
710	45	4,30
800	45	4,81
900	45	5,40
1000	45	8,48
1120	120	15,3
1250	120	17,3
1400	120	15,2
1500	120	16,4
1600	120	17,5

Ordering example





Female coupling

MF

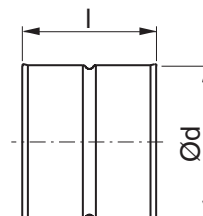


Description

Female coupling for joining fittings.

Has normally not any Click function – hasn't any notches.
Can to order be delivered with Click function – i.e. with notches.

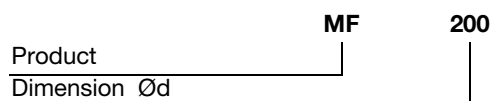
Dimensions



Ød nom	l mm	m kg
63 *	95	0,06
80 *	95	0,08
100 *	95	0,10
112	90	0,11
125 *	95	0,13
140	90	0,17
150 *	95	0,18
160 *	95	0,20
180	90	0,22
200 *	95	0,25
224	90	0,27
250 *	140	0,42
280	125	0,50
300	125	0,51
315 *	140	0,54
355	125	0,62
400 *	180	0,96
450	170	1,17
500 *	180	1,46
560	170	1,57
600	170	1,65
630	170	1,74
710	219	1,96
800	219	2,24
900	219	4,00
1000	255	5,09
1120	255	8,71
1250	255	10,2

* With turned-over edge

Ordering example



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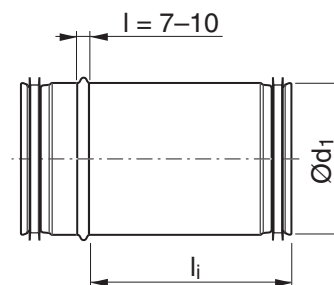


Slide-in coupling

SNPU



Dimensions



Description

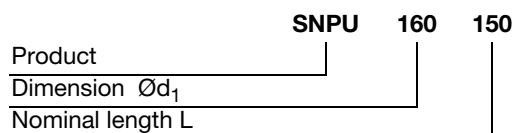
Areas of use:

- To eliminate the accurate length cutting of ducts which the ordinary NPU connector sometimes requires when joining SR ducts. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To make it possible to use a duct that is cut to a too short length – instead of having to cut a new duct to the correct length. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To assist when joining two ducts which run towards each other. E.g. when building a system from two opposing directions. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To assist when inserting or adding an other product into an existing system. E.g. the addition of a new piece of duct to replace a damaged part. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To facilitate access when inspecting and/or cleaning a system – by simply sliding the coupling. The coupling acts as an access cap.

No Click function – has closed turned-over ends (at both ends).

Ød ₁ nom	L nom	l _i mm	m kg
80	150	133	0,18
80	300	284	0,32
80	500	548	0,69
100	150	133	0,22
100	300	284	0,40
100	500	548	0,84
112	150	133	0,24
112	300	284	0,43
112	500	548	0,92
125	150	133	0,28
125	300	284	0,50
125	500	548	1,07
140	150	133	0,31
140	300	284	0,56
140	500	548	1,19
150	150	133	0,33
150	300	284	0,59
150	500	548	1,26
160	150	133	0,36
160	300	284	0,65
160	500	548	1,38
180	150	133	0,40
180	300	284	0,72
180	500	548	1,53
200	150	133	0,56
200	300	293	1,02
200	500	548	1,76
224	150	133	0,62
224	300	293	1,13
224	500	548	1,95
250	150	177	0,91
250	300	297	1,35
250	500	527	2,17

Ordering example





Slide-in coupling

SNPU

$\text{\O}d_1$ nom	L nom	l_i mm	m kg
280	150	177	1,02
280	300	297	1,50
280	500	527	2,41
300	150	177	1,12
300	300	297	1,63
300	500	527	2,61
315	150	177	1,18
315	300	297	1,72
315	500	527	2,76
355	150	177	1,32
355	300	297	1,94
355	500	527	2,93
400	150	175	2,11
400	300	297	2,80
400	500	510	3,10
450	150	175	2,37
450	300	297	3,10
450	500	510	3,80
500	150	175	2,65
500	300	297	3,70
500	500	515	4,50
630	150	175	3,40
630	300	297	4,70
630	500	515	6,00

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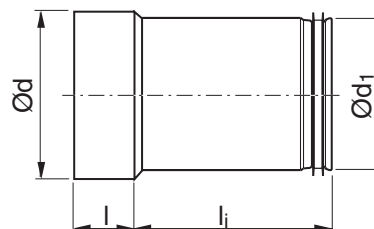


Slide-in female coupling

SMFU



Dimensions



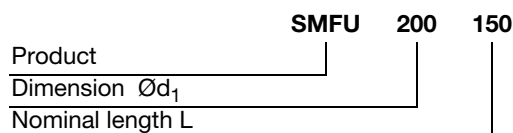
Description

Areas of use:

- To avoid the necessity of an exact length cutting of a duct when it is difficult to take a proper measure. E.g. the connection of a duct to a stub on an air supply terminal. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To make it possible to use a duct that is cut to a too short length – instead of having to cut a new duct to the correct length. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To eliminate or minimize the number of ordinary duct cuttings at building site – together with pre-cut ducts of shorter lengths. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To assist when inserting or adding an other product into an existing system. E.g. the cutting-in of an extra silencer. In this case the slide-in coupling shall be secured with screws or pop rivets.
- To assist when removing an other product when cleaning a system. E.g. the removal of a damper with a obstructionable blade.
- To facilitate access when inspecting and/or cleaning a system – by simply sliding the coupling. The coupling acts as an access cap.
- To extend the distance between a T-piece and an access cap, e.g. EPFH or KCU, to get the cap outside any insulation. In this case the slide-in coupling shall be secured with screws or pop rivets only at its female end.

No Click function – has a closed turned-over end and hasn't any notches.

Ordering example



Ød ₁ nom	L nom	l mm	l _i mm	m kg
80	150	40	127	0,16
80	300	40	288	0,30
80	500	40	552	0,65
100	150	40	127	0,20
100	300	40	288	0,38
100	500	40	552	0,81
112	150	40	127	0,23
112	300	40	288	0,43
112	500	40	552	0,93
125	150	40	127	0,25
125	300	40	288	0,47
125	500	40	552	1,01
140	150	40	127	0,28
140	300	40	288	0,53
140	500	40	552	1,13
150	150	40	127	0,29
150	300	40	288	0,57
150	500	40	552	1,21
160	150	40	127	0,31
160	300	40	288	0,60
160	500	40	552	1,29
180	150	40	127	0,35
180	300	40	288	0,68
180	500	40	552	1,45
200	150	40	127	0,49
200	300	40	297	0,96
200	500	40	552	1,67
224	150	40	127	0,55
224	300	40	297	1,08
224	500	40	552	1,87
250	150	60	192	0,90
250	300	60	302	1,28
250	500	60	537	2,10



Slide-in female coupling

SMFU

$\varnothing d_1$ nom	L nom	l mm	l_j mm	m kg
280	150	60	192	1,02
280	300	60	302	1,44
280	500	60	537	2,36
300	150	60	192	1,10
300	300	60	302	1,55
300	500	60	537	2,53
315 *	150	60	182	1,11
315 *	300	60	297	1,62
315 *	500	60	537	2,64
355 *	150	60	182	1,26
355 *	300	60	297	1,83
355 *	500	60	537	5,00
400 **	300	80	242	2,65
400 **	500	80	500	6,05
450 **	300	80	242	3,04
450 **	500	80	500	7,20
500 **	300	80	242	3,37
500 **	500	80	500	7,69
630 **	300	80	242	5,90
630 **	500	80	500	8,00

* With stiffening bead

** Design with lockseam

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End cap

EPF

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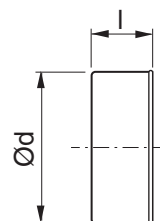


Description

End cap, which fits outside a Safe fitting.

No Click function – no notches.

Dimensions

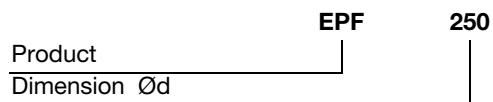


Ød nom	l mm	m kg
63	40	0,04
80 *	48	0,07
100 *	48	0,11
112 **	48	0,10
125 *	48	0,14
140	48	0,16
150	48	0,14
160 *	48	0,17
180	48	0,24
200 *	46	0,21
224	46	0,35
250 *	68	0,50
280 **	60	0,61
300	60	0,63
315 *	60	0,67
355	60	0,84
400 *	91	1,17
450 **	80	1,48
500 **	80	1,81
560 **	80	2,14
600 **	80	2,37
630 **	80	2,54
710 **	100	3,00
800 **	100	3,54
900 **	100	6,10
1000 **	100	7,30
1120 **	120	9,40
1250 **	120	11,3

* With turned-over edge

** Hand made

Ordering example





End cap

ESU

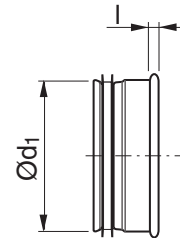


Description

End cap, which fits inside SR duct.

No Click function – has a closed turned-over end.

Dimensions



Ød ₁ nom	l mm	m kg
63	4	0,08
80	10	0,08
100	10	0,12
112	4	0,13
125	10	0,14
140	10	0,19
150	10	0,17
160	10	0,24
180	10	0,28
200	10	0,32
224	10	0,40
250	10	0,37
280	4	0,62
300	10	0,70
315	10	0,80
355	12	0,91
400	12	1,26
450	4	1,48
500	12	2,00
560	4	2,04
600	4	2,38
630	4	2,90
710	4	3,21
800	4	5,00
900	4	5,26
1000	4	9,25
1120	4	7,92
1250	4	10,0

Ordering example

Product	ESU	160
Dimension Ød ₁		



Silencers



Lindab	1
General information and theory	2
Safe	3
Silencers	4
Dampers & Measure units	5
Fire dampers & Smoke evacuation	6
Air valves	7
Roof hoods	8
Other circular products	9
Transfer	10
Rectangular	11
Flexible ducting	12
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Duct suspensions & Support systems	16
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Circular straight



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SLGU 100.....	176
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SLCBU 100.....	179
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Circular straight low-built



LRCA.....	181
LRBCB.....	182

Circular curved



BSLU 50.....	183
BSLU 100.....	184
BSLCU 50.....	185
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Exhaust air terminal device



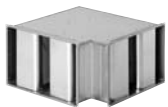
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Rectangular straight silencers



SLRS.....	189
SLRA.....	193
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DLDR.....	195
DLDY.....	205

Rectangular curved silencer



BDLD.....	216
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Rectangular straight low-built silencer

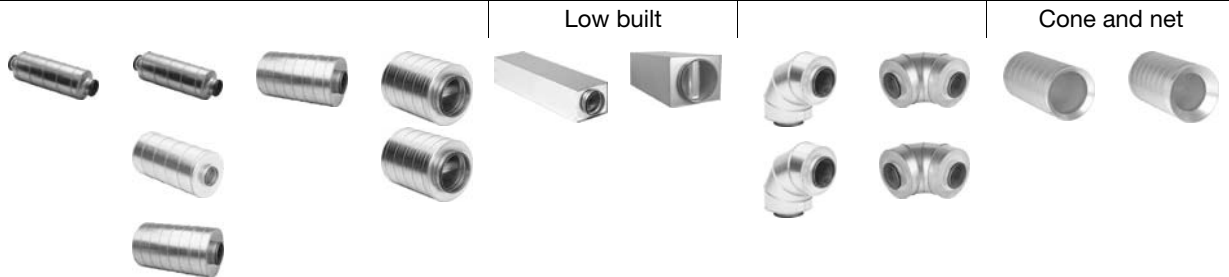


LRLB.....	225
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Overview silencers – circular connection

Ød ₁	Straight				Curved		Straight	
	Circular outer sheet casing			Rectangular outer sheet casing	Circular outer sheet casing		Circular outer sheet casing	
			Baffle		Baffle			
63								
80	SLCU 50	SLU SLCU 100 SLGU 100	SLGU 150	LRCA	LRBCB	BSLU 50 BSLCU 50	BSLU 100 BSLCU 100	SLKNU 50 SLKNU 100
100								
125								
160								
200								
250								
315								
400								
500								
630								
800								
1000								
1250								



Overview silencers – rectangular connection

a x b	Straight						Curved
	Baffle						
	SLRS	SLRA	DLD	DLDY	DLDR	LRLB	BDLD
						Low built	

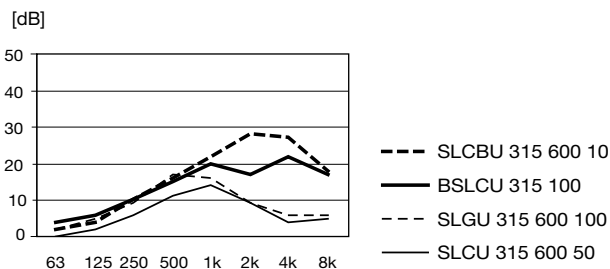


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General

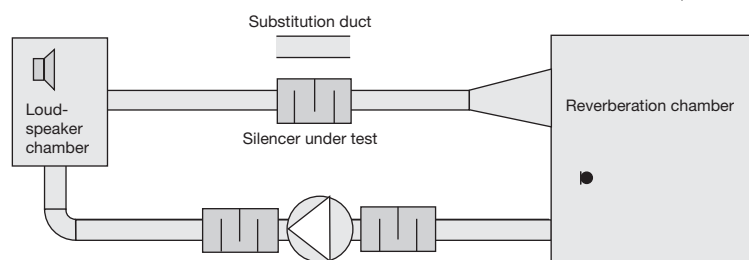
The silencers are of the absorption silencer type. The damping ability of absorption silencers is affected by the geometric design of the silencer and the type of damping material chosen. Silencer comprises a total of 17 such variants, with different properties. The graph below summarises the attenuation of some types of silencer.



More information about damping in duct systems, and dimensioning and calculation examples can be found on page 30.

Method of measurement

The silencers are tested in accordance with ISO 7235 "Acoustics - Measurement procedures for ducted silencers - Insertion loss, flow noise and total pressure loss".



Design

The straight types consist of an outer and inner sheet casing. The space between them is filled with mineral wool of varying type and density.

The outer sheet casing of the circular curved silencers are built as a segmented bend, BFU.

Baffles, one or more, for better noise attenuation, exist in SLCBU, SLBGU, LRBCB.

The tear of fibre is prevented since all exposed surfaces are lined. The connections of the circular types are supplied with a Safe-gasket.

A Swedish fire classification does not exist for these silencers	A Swedish fire classification exists for these silencers
SLU	SLCU 50
	SLCU 100
SLBU	SLCBU 100
BSLU 50	BSLCU 50
BSLU 100	BSLCU 100

Cleaning of duct systems

Silencers with baffles have parts which block the duct system to a greater or lesser extent, and thus obstruct or prevent cleaning of the duct system. Please refer to page 601.

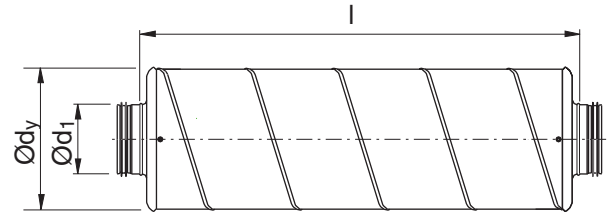


Circular straight silencer

SLU



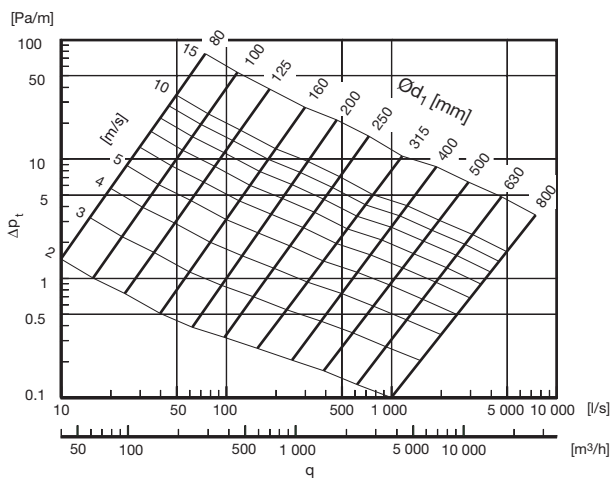
Dimensions



Description

Insulation thickness 50 mm (Ø 80–250).
 Insulation thickness 100 mm (Ø 315–800).

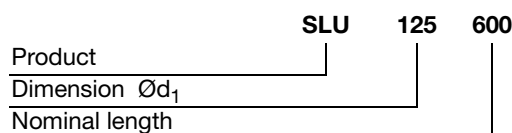
Technical data



Ød ₁ nom	Length nom	Attenuation [dB] centre frequency [Hz]								Ød _y mm	l mm	m kg
		63	125	250	500	1k	2k	4k	8k			
80	300	1	5	8	15	25	25	21	15	180	300	2,00
80	600	2	8	14	28	49	50	47	24	180	600	3,00
80	900	3	10	21	40	50	50	50	34	180	900	5,00
80	1200	4	13	27	50	50	50	50	43	180	1200	7,00
100	300	1	5	7	15	25	25	21	13	200	360	2,00
100	600	1	7	12	25	43	48	35	20	200	660	3,00
100	900	2	10	17	34	50	50	49	28	200	960	5,00
100	1200	3	12	22	44	50	50	50	35	200	1260	7,00
125	300	0	4	5	13	23	20	16	11	224	365	3,00
125	600	1	5	10	22	39	37	26	16	224	665	4,00
125	900	1	7	14	30	50	50	37	21	224	965	7,00
125	1200	2	9	18	39	50	50	47	26	224	1265	9,00
160	300	0	3	5	11	22	16	11	7	260	375	3,00
160	600	1	4	8	19	37	28	17	11	260	675	6,00
160	900	1	5	12	27	50	39	24	14	260	975	8,00
160	1200	2	6	15	35	50	50	30	17	260	1275	10,0
200	300	0	2	4	9	19	11	7	5	300	385	4,00
200	600	1	3	8	15	28	19	12	8	300	685	7,00
200	900	2	4	11	21	37	28	16	10	300	985	10,0
200	1200	2	5	14	27	46	36	21	13	300	1285	12,0
250	600	1	2	6	14	26	14	8	7	355	600	9,00
250	900	1	3	9	19	38	19	11	9	355	900	12,0
250	1200	2	4	11	24	50	24	13	11	355	1200	15,0
315	600	2	5	9	14	12	6	4	5	500	600	12,0
315	900	3	6	13	20	19	10	6	7	500	900	18,0
315	1200	4	8	16	27	25	15	9	10	500	1200	24,0
400 *	600	4	5	8	10	7	4	4	6	600	600	16,0
400 *	900	4	5	10	17	13	6	6	8	600	900	22,0
400 *	1200	5	6	13	24	18	8	7	10	600	1200	32,0
500 *	900	4	4	10	14	8	4	6	6	710	900	26,0
500 *	1200	3	5	11	21	12	6	7	9	710	1200	39,0
630 *	900	2	3	7	12	5	4	4	5	800	900	44,0
630 *	1200	2	4	8	17	7	4	5	7	800	1200	56,0
800 *	1200	2	3	8	11	5	4	5	6	1000	1200	69,0
800 *	1500	2	3	10	16	6	5	6	7	1000	1500	86,0

* Supplied with two loose couplings

Ordering example



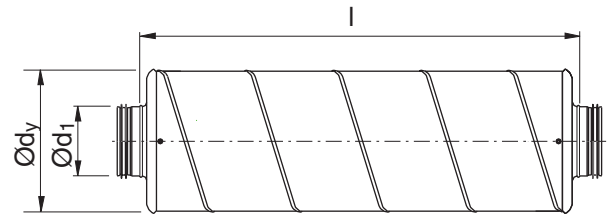


Circular straight silencer

SLCU 50



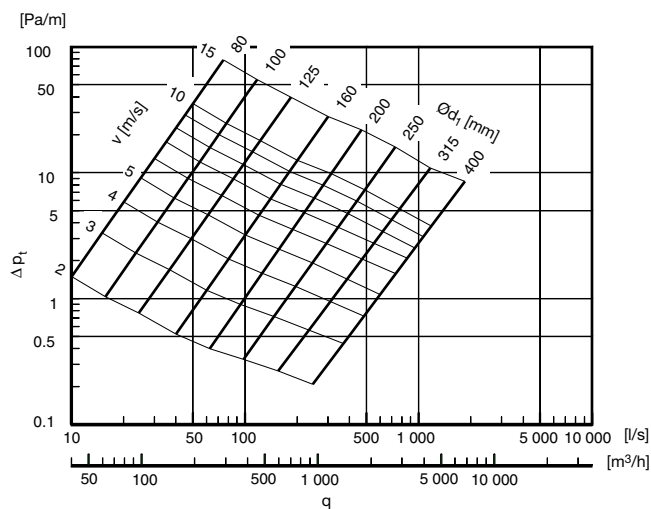
Dimensions



Description

Insulation thickness 50 mm.

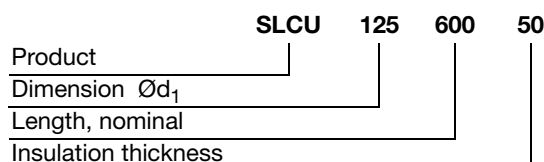
Technical data



Ød ₁ nom	Length nom	Attenuation [dB] centre frequency [Hz]								Ød _y mm	l mm	m kg
		63	125	250	500	1k	2k	4k	8k			
80	300	5	5	8	15	28	29	23	16	190	300	1,92
80	600	5	7	12	26	41	50	48	24	190	600	3,14
80	900	5	9	17	37	50	50	50	32	190	900	4,61
80	1200	6	11	21	49	50	50	50	40	190	1200	5,73
100	300	2	2	6	14	21	25	20	11	210	360	2,28
100	600	4	3	11	24	36	49	34	17	210	660	4,09
100	900	5	4	15	34	50	50	48	23	210	960	5,18
100	1200	6	5	19	45	50	50	50	29	210	1260	6,46
125	300	2	2	6	13	16	20	15	10	235	365	2,66
125	600	3	3	9	23	30	40	22	14	235	665	4,39
125	900	4	4	12	33	45	50	30	17	235	965	6,20
125	1200	5	5	15	43	50	50	38	21	235	1265	7,47
160	300	1	2	4	10	12	15	8	8	270	375	2,98
160	600	2	3	7	19	27	29	14	11	270	675	5,37
160	900	2	4	10	28	42	43	20	15	270	975	7,48
160	1200	2	5	13	37	50	50	26	19	270	1275	9,23
200	300	1	2	5	8	10	11	5	5	325	385	4,11
200	600	2	3	7	16	21	23	9	8	325	685	6,90
200	900	2	4	8	24	32	34	13	10	325	985	9,74
200	1200	3	5	10	31	43	45	18	13	325	1285	12,0
250	600	3	2	7	13	17	16	8	6	365	600	8,55
250	900	3	4	8	20	26	23	10	8	365	900	11,7
250	1200	4	5	9	26	35	30	12	10	365	1200	15,0
315	600	0	2	6	11	14	9	4	5	427	600	11,3
315	900	1	3	7	16	22	12	6	7	427	900	15,6
315	1200	1	3	8	22	30	16	7	9	427	1200	20,3
400 *	600	0	3	4	6	8	4	4	4	508	600	20,5
400 *	900	1	3	5	10	13	7	5	6	508	900	26,8
400 *	1200	1	4	7	14	19	10	7	8	508	1200	30,0

* Supplied with two loose couplings

Ordering example



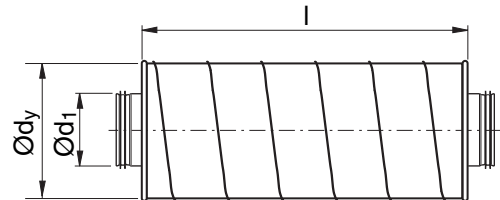


Circular straight silencer

SLCU 100



Dimensions

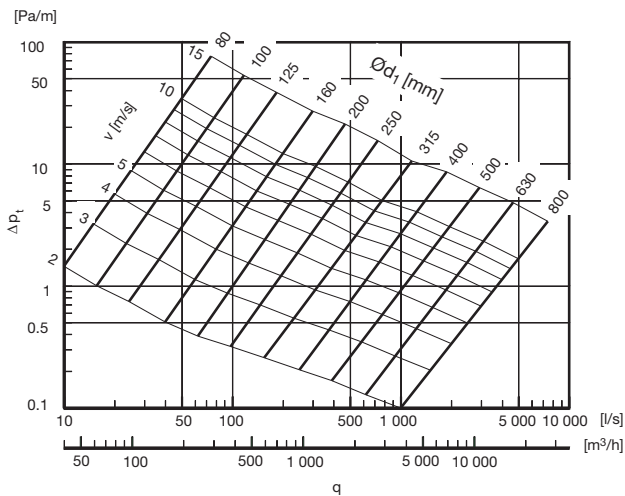


Description

Insulation thickness 100 mm.

Good attenuation in 125 and 250 Hz bands.

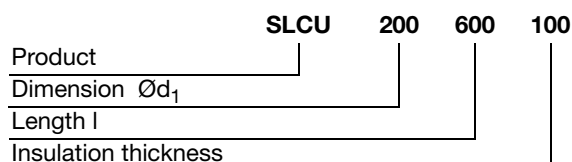
Technical data



Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
80	300	10	8	10	16	21	27	24	16	295	4,28
80	600	12	13	19	27	37	50	46	24	295	7,05
80	900	14	18	28	38	50	50	50	33	295	8,93
80	1200	16	23	37	49	50	50	50	42	295	11,6
100	300	5	4	11	14	18	24	20	11	325	4,53
100	600	8	8	18	25	34	46	38	19	325	7,26
100	900	11	11	25	36	50	50	50	26	325	11,2
100	1200	14	14	32	47	50	50	50	33	325	13,4
125	300	5	4	9	11	16	19	15	10	325	5,17
125	600	7	7	16	20	28	37	24	14	325	7,54
125	900	9	10	22	29	41	50	33	18	325	10,8
125	1200	12	13	29	38	50	50	42	22	325	14,6
160	300	4	3	6	8	11	14	9	8	365	5,69
160	600	5	6	13	16	23	28	15	12	365	9,48
160	900	6	9	20	24	34	42	21	16	365	13,0
160	1200	8	12	27	32	46	50	28	20	365	17,4
200	300	4	4	6	6	9	11	6	6	410	7,69
200	600	5	6	11	14	19	22	10	8	410	10,6
200	900	6	9	17	21	29	33	14	11	410	15,3
200	1200	7	11	22	29	38	45	18	13	410	19,4
250	600	6	5	10	11	16	16	8	7	465	10,7
250	900	7	7	15	18	25	23	10	9	465	18,0
250	1200	7	9	20	25	34	30	13	11	465	22,9
315	600	1	4	7	9	12	10	5	6	510	16,3
315	900	2	6	12	14	19	15	7	8	510	22,3
315	1200	2	8	16	18	26	21	9	10	510	29,1
400*	600	1	5	5	5	7	4	4	4	625	20,6
400*	900	3	7	8	9	13	7	5	6	625	30,0
400*	1200	4	8	12	13	19	10	6	7	625	38,1
500*	900	2	4	7	8	10	5	3	5	735	34,6
500*	1200	3	7	10	12	14	7	4	6	735	44,7
630*	900	2	4	5	7	6	4	3	4	880	44,3
630*	1200	2	6	8	10	9	4	4	5	880	54,5
800*	1200	2	3	6	7	4	3	4	4	1030	76,2
800*	1500	2	5	8	10	6	4	4	5	1030	93,2

* Supplied with two loose couplings

Ordering example



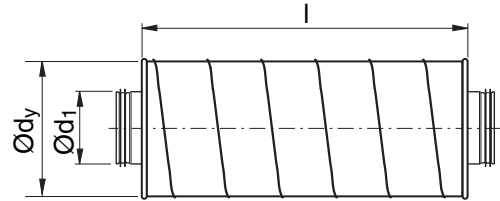


Circular straight silencer

SLGU 100



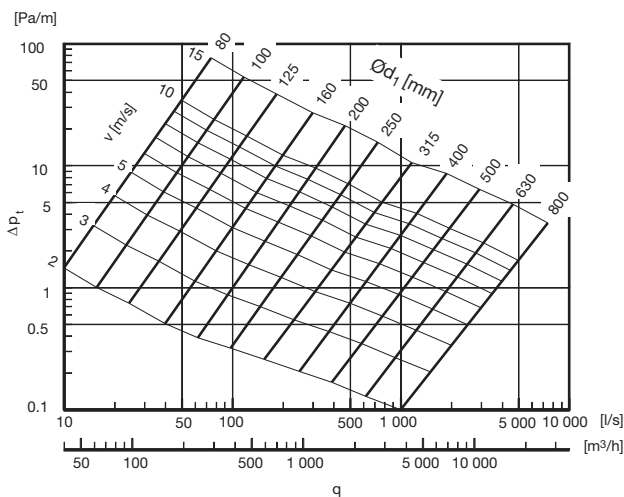
Dimensions



Description

Insulation thickness 100 mm.

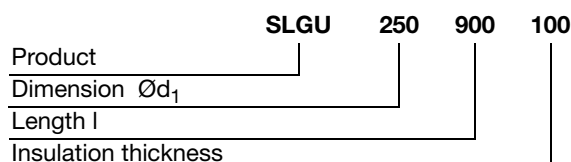
Technical data



$\text{Ø}d_1$ nom	l mm	Attenuation [dB] centre frequency [Hz]								$\text{Ø}d_y$ mm	m kg
		63	125	250	500	1k	2k	4k	8k		
80	300	4	8	11	17	25	30	28	15	295	3,00
80	600	6	15	23	34	50	50	50	25	295	5,30
80	900	9	22	35	50	50	50	50	36	295	7,60
100	300	2	7	10	15	20	25	21	13	310	3,40
100	600	4	13	20	28	40	49	36	20	310	6,10
100	900	7	20	30	41	50	50	50	27	310	8,80
125	300	1	7	9	16	19	19	15	10	325	3,20
125	600	3	11	17	26	38	38	25	15	325	5,90
125	900	4	15	25	36	50	50	35	20	325	8,50
125	1200	6	19	33	46	50	50	45	25	325	11,2
160	300	1	6	9	14	16	14	10	7	365	4,20
160	600	3	8	15	23	29	29	17	11	365	7,50
160	900	4	11	21	32	43	44	25	14	365	10,7
160	1200	5	14	27	41	50	50	32	18	365	14,0
200	600	3	7	14	21	24	21	12	9	410	10,6
200	900	5	10	20	33	38	30	16	11	410	15,3
200	1200	6	12	26	45	50	40	20	13	410	20,0
250	600	3	5	11	17	19	15	8	7	465	12,2
250	900	4	8	17	27	30	21	11	9	465	17,7
250	1200	5	10	23	37	41	26	14	11	465	23,2
315	600	2	5	9	17	16	9	6	6	510	15,7
315	900	3	6	14	23	24	13	8	8	510	23,0
315	1200	4	8	18	29	32	17	10	11	510	30,1
400*	900	4	5	10	11	14	7	6	8	615	27,4
400*	1200	5	6	13	16	17	9	7	9	615	35,9
400*	1500	5	8	15	20	20	11	8	11	615	44,3
500*	900	3	5	10	11	9	5	6	7	735	31,4
500*	1200	3	6	14	16	13	7	7	9	735	41,0
500*	1500	4	7	17	21	17	9	7	11	735	50,6
630*	900	3	4	7	8	5	4	4	5	880	39,9
630*	1200	3	5	11	12	8	5	5	7	880	51,9
630*	1500	3	6	14	16	11	6	6	9	880	64,0
800*	1200	2	3	9	8	5	4	5	5	1030	68,7
800*	1500	2	4	11	12	6	5	6	6	1030	84,7

* Supplied with two loose couplings

Ordering example



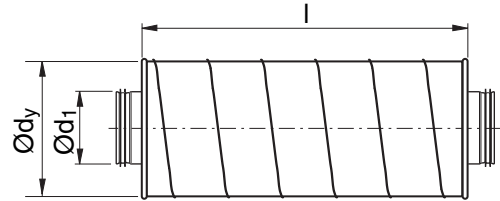


Circular straight silencer

SLGU 150



Dimensions

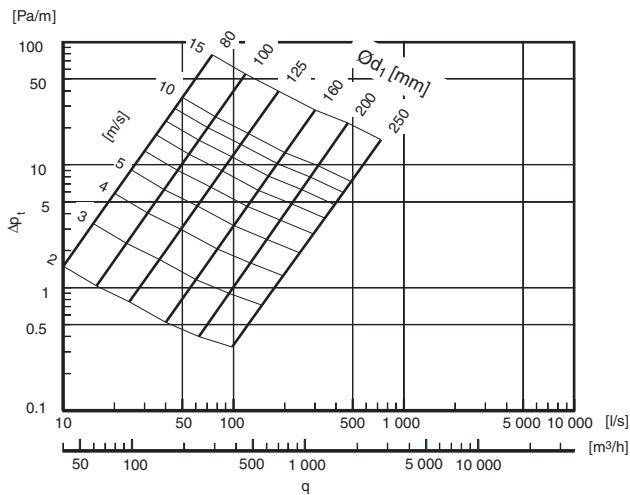


Description

Insulation thickness 150 mm.

Used when you need particularly good attenuation at low frequencies (125 and 250 Hz). Otherwise equivalent to SLGU 100.

Technical data



$\text{Ø}d_1$ nom	l mm	Attenuation [dB] centre frequency [Hz]								$\text{Ø}d_y$ mm	m kg
		63	125	250	500	1k	2k	4k	8k		
80	900	15	30	41	50	50	50	50	34	410	13,6
100	900	10	26	36	48	50	50	48	26	410	14,1
125	900	8	20	31	45	49	49	36	19	465	15,9
125	1200	13	30	38	48	50	50	45	24	465	20,9
160	900	6	15	25	38	48	45	23	14	465	16,7
160	1200	11	21	31	47	50	50	30	16	465	22,1
200	900	8	15	23	33	38	30	16	11	510	19,7
200	1200	10	19	28	43	49	39	21	13	510	25,9
250	900	8	12	19	27	31	21	11	10	580	22,6
250	1200	9	15	26	36	41	26	14	11	580	29,8

Ordering example

	SLGU	160	900	150
Product				
Dimension $\text{Ø}d_1$				
Length l				
Insulation thickness				

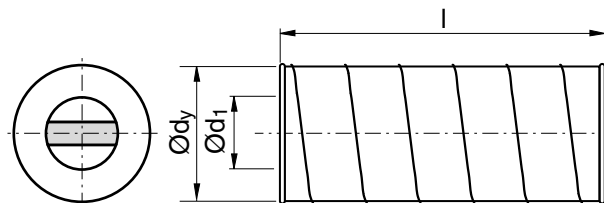


Circular straight silencer with baffle

SLBU



Dimensions



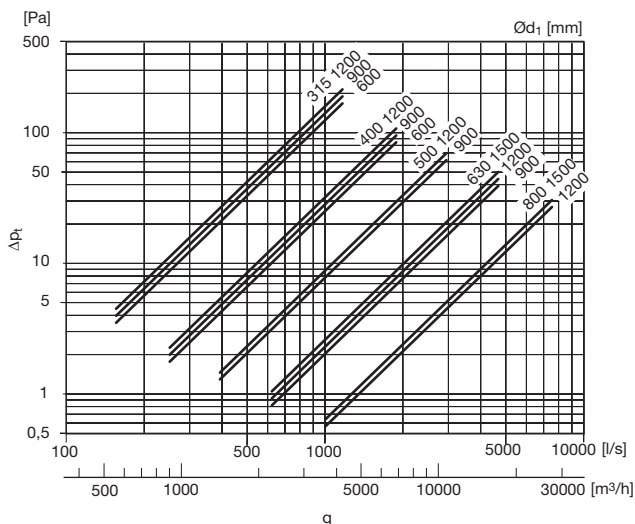
Description

Insulation thickness 100 mm.

Provided with a 100 mm thick baffle. This gives very good attenuation across the entire range.

Used where very good attenuation is needed and SLU 100 is not enough. Specially suitable for large dimensions.

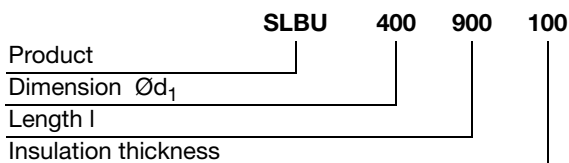
Technical data



$\varnothing d_1$ nom	l nom	Attenuation [dB] centre frequency [Hz]								$\varnothing d_y$ mm	m kg
		63	125	250	500	1k	2k	4k	8k		
315	600	3	6	12	20	25	22	17	14	500	15,0
315	900	4	8	17	26	39	37	24	19	500	22,0
315	1200	5	10	21	33	50	50	32	23	500	29,0
400 *	600	4	5	10	15	18	14	11	12	600	20,0
400 *	900	5	7	13	22	30	22	16	15	600	30,0
400 *	1200	6	8	16	30	42	31	21	18	600	40,0
500 *	900	4	5	12	20	23	15	11	12	710	40,0
500 *	1200	4	6	14	27	34	21	14	15	710	53,0
630 *	1200	3	4	11	23	24	14	11	12	800	62,0
630 *	1500	3	6	15	29	30	17	12	14	800	78,0
800 *	1200	2	3	10	20	16	10	9	9	1000	80,0
800 *	1500	2	4	13	26	20	12	10	10	1000	99,0

* Supplied with two loose couplings

Ordering example





Circular straight silencer with baffle

SLCBU 100



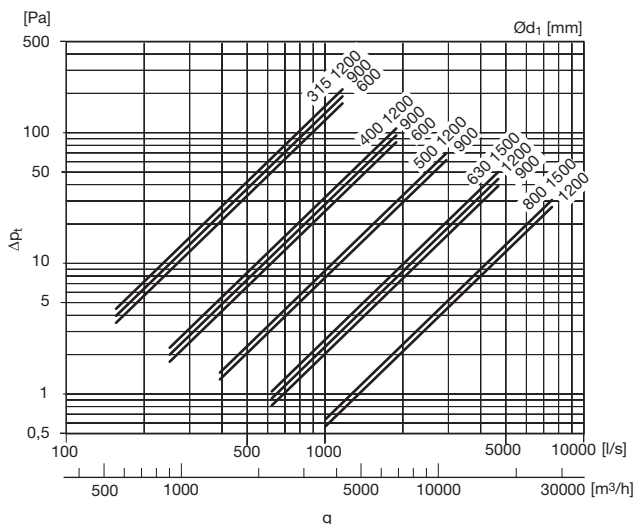
Description

Insulation thickness 100 mm.

Provided with a 100 mm thick baffle. This gives very good attenuation across the entire range.

Used where very good attenuation is needed and SLU 100 is not enough. Specially suitable for large dimensions.

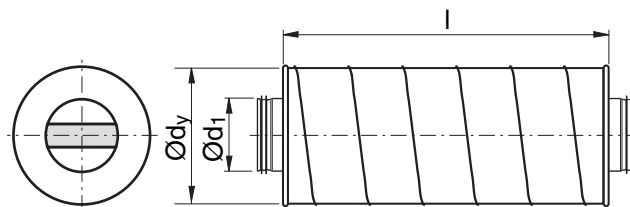
Technical data



Ordering example

	SLCBU	400	900	100
Product				
Dimension Ød ₁				
Length l				
Insulation thickness				

Dimensions



Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
315	600	4	6	10	16	22	28	27	18	510	18,3
315	900	5	7	16	23	30	38	32	22	510	25,1
315	1200	7	9	23	30	38	47	37	25	510	32,6
400 *	600	4	5	7	9	13	16	15	13	625	22,5
400 *	900	5	7	12	16	22	26	20	16	625	32,7
400 *	1200	6	10	18	23	31	36	25	19	625	41,7
500 *	900	4	6	9	12	17	20	15	13	735	37,8
500 *	1200	4	8	13	18	24	28	17	16	735	48,8
630 *	900	3	6	6	9	13	13	11	10	880	48,0
630 *	1200	3	8	10	13	18	18	12	12	880	59,3
630 *	1500	4	10	13	17	23	22	13	13	880	70,4
800 *	1200	2	4	8	10	13	12	9	8	1030	81,8
800 *	1500	2	5	11	12	17	15	10	10	1030	100

* Supplied with two loose couplings

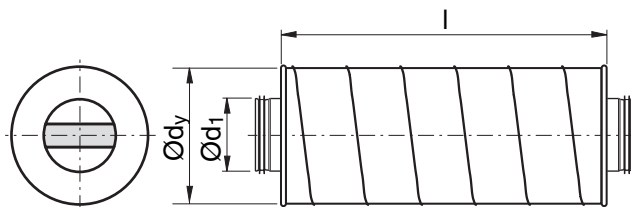


Circular straight silencer with baffle

SLBGU 100



Dimensions



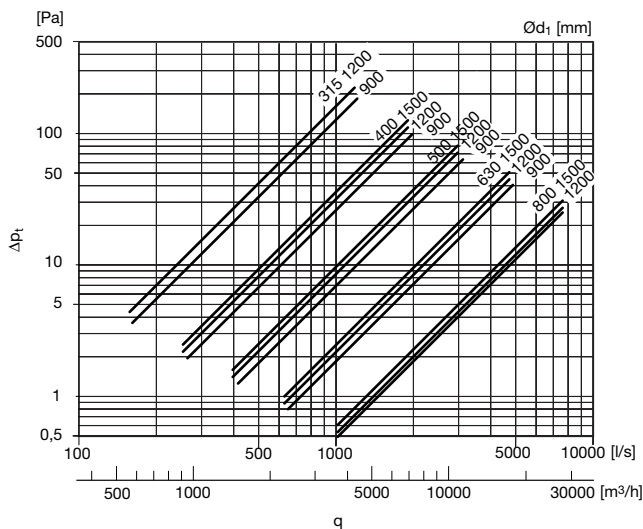
Description

Insulation thickness 100 mm.

Provided with a 100 mm thick baffle. This gives very good attenuation across the entire range.

Used where very good attenuation is needed and SLGU 100 is not enough. Specially suitable for large dimensions.

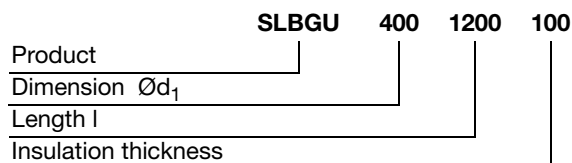
Technical data



Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
315	900	6	9	20	34	39	44	34	22	510	25,5
315	1200	7	12	27	39	50	50	45	27	510	33,6
400*	900	4	6	13	22	24	26	20	17	625	29,9
400*	1200	6	9	19	29	33	35	24	19	625	39,5
400*	1500	7	12	25	38	42	44	29	22	625	48,7
500*	900	4	6	13	17	19	19	12	12	735	34,3
500*	1200	4	8	19	24	26	26	17	15	735	45,1
500*	1500	4	9	25	31	33	33	20	18	735	55,7
630*	900	3	4	10	12	14	12	10	10	880	43,2
630*	1200	3	7	14	17	18	17	12	12	880	56,7
630*	1500	4	8	19	23	23	20	14	14	880	69,9
800*	1200	2	4	11	12	13	11	9	8	1030	74,3
800*	1500	2	5	15	17	16	14	10	9	1030	91,6

* Supplied with two loose couplings

Ordering example



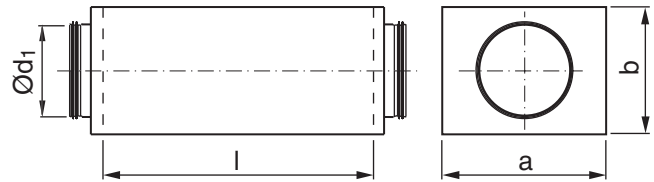


Circular straight low-built silencer

LRCA



Dimensions



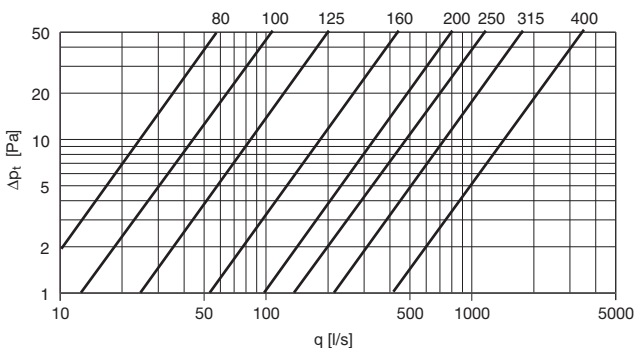
Description

Silencer with low installation height. LRCA has a bowl-shaped mineral wool insulation with a fibre cloth in order to prevent tear off mineral wool. Can achieve maximum tightness class C.

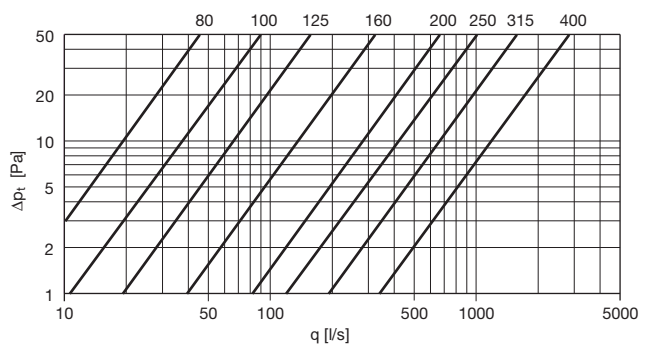
Ød ₁ nom	l mm	a mm	b mm	Attenuation [dB] centre frequency [Hz]								m kg
				63	125	250	500	1k	2k	4k	8k	
100	500	210	158	8	12	12	23	44	45	30	18	3,17
100	1000	210	158	17	18	25	41	50	50	50	32	5,55
125	500	239	181	8	9	11	21	36	36	23	14	3,85
125	1000	239	181	17	14	21	38	50	50	45	23	6,89
160	500	275	218	6	7	10	18	28	24	13	10	4,40
160	1000	275	218	9	10	19	36	50	49	24	17	7,90
200	500	328	254	5	6	9	16	22	17	7	7	5,74
200	1000	328	254	11	13	15	30	46	36	14	12	10,1
250	500	390	308	5	4	8	16	19	13	6	6	7,24
250	1000	390	308	11	7	14	31	41	26	12	9	13,0
315	500	453	372	3	4	7	13	15	8	4	5	9,15
315	1000	453	372	8	8	13	26	33	18	9	9	16,4
400	500	546	460	2	3	6	10	10	5	5	5	12,7
400	1000	546	460	6	6	12	20	24	11	7	8	21,6

Technical data

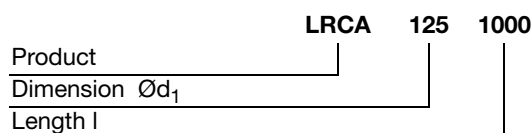
500 mm



1000 mm



Ordering example



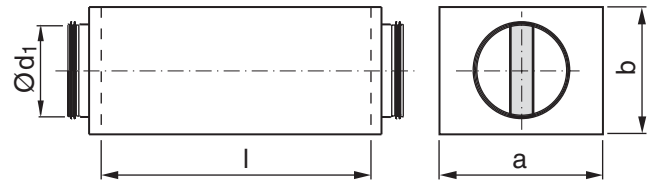


Circular straight low-built silencer with baffle

LRBCB



Dimensions



Description

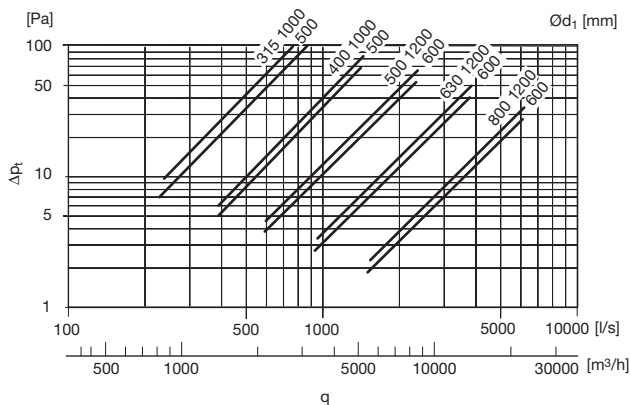
Baffle silencer with low installation height.

Inner pipe of perforated sheet metal. A fibre cloth prevents tear off mineral wool. Can achieve maximum tightness class C.

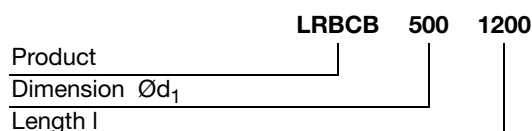
The baffle has an approved surface lining that can withstand cleaning with rotating plastic brush.

Technical data

Ød ₁ nom	l mm	a mm	b mm	Attenuation [dB] centre frequency [Hz]								m kg
				63	125	250	500	1k	2k	4k	8k	
315	500	453	372	5	5	7	15	28	19	14	14	10,6
315	1000	453	372	9	6	13	27	45	36	23	21	19,4
400	500	546	460	5	4	6	13	21	13	11	10	14,0
400	1000	546	460	6	5	10	22	39	25	17	15	24,3
500	600	700	600	5	4	9	17	17	12	10	9	24,1
500	1200	700	600	6	6	15	28	32	21	15	13	41,4
630	600	810	710	3	3	7	16	11	9	7	7	29,5
630	1200	810	710	5	5	13	26	24	15	11	10	50,4
800	600	980	880	2	2	6	12	9	7	5	5	38,4
800	1200	980	880	3	4	11	14	11	9	7	6	63,7



Ordering example



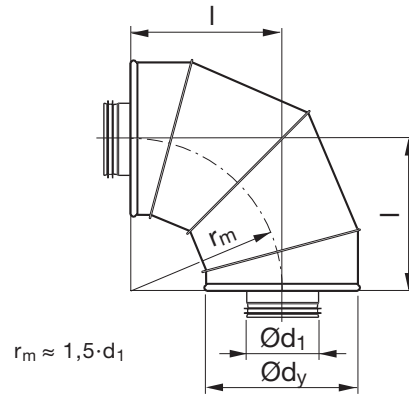


Circular curved silencer

BSLU 50



Dimensions



Description

Lack of space is a frequent problem in air treatment installations. This means that it is often difficult to find enough straight lengths to install a straight silencer.

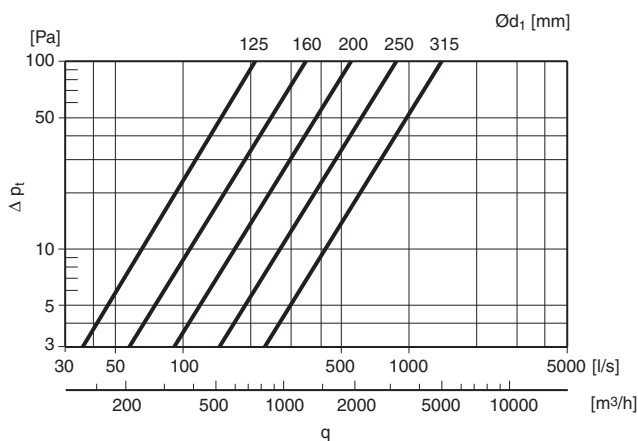
This problem can be eliminated by installing a curved silencer.

For the same length, it mostly has better attenuation than the equivalent straight silencer. In particular, you get better attenuation at high frequencies (4 and 8 kHz).

Insulation thickness 50 mm.

Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
125	260	3	2	6	14	22	33	26	22	235	3,34
160	285	1	2	6	14	23	29	25	21	270	4,22
200	355	0	2	5	15	29	24	24	20	310	6,31
250	370	1	2	6	17	31	22	27	20	365	10,7
315	370	1	2	7	19	20	17	20	16	427	11,4

Technical data



Ordering example



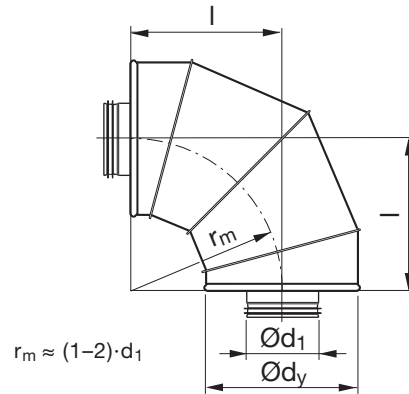


Circular curved silencer

BSLU 100



Dimensions



Description

Lack of space is a frequent problem in air treatment installations. This means that it is often difficult to find enough straight lengths to install a straight silencer.

This problem can be eliminated by installing a curved silencer.

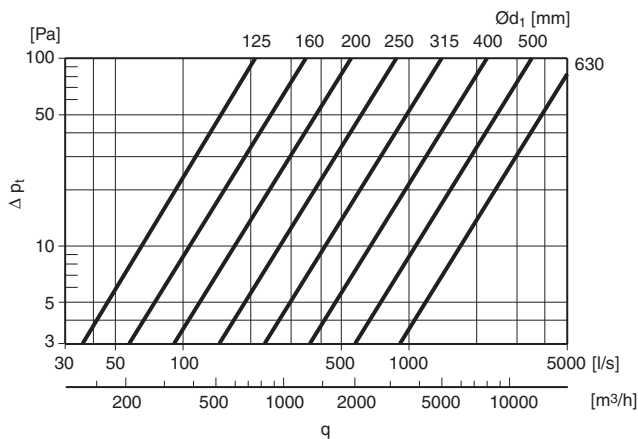
For the same length, it mostly has better attenuation than the equivalent straight silencer. In particular, you get better attenuation at high frequencies (4 and 8 kHz).

Insulation thickness 100 mm.

Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
125	260	7	6	17	22	28	38	33	26	325	7,70
160	280	4	6	13	17	25	33	26	25	365	8,90
200	325	2	5	14	19	29	24	25	22	410	11,8
250	370	3	5	11	15	28	22	26	21	465	16,0
315	375	2	4	10	15	20	17	22	17	510	19,6
400 *	420	2	4	8	13	13	13	14	13	615	29,9
500 *	510	1	4	9	13	10	13	13	12	735	45,0
630 *	610	2	6	13	12	11	12	13	12	880	64,1

* Supplied with two loose couplings

Technical data



Ordering example



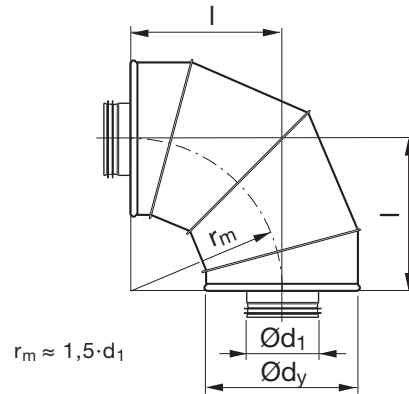


Circular curved silencer

BSLCU 50



Dimensions



Description

Lack of space is a frequent problem in air treatment installations. This means that it is often difficult to find enough straight lengths to install a straight silencer.

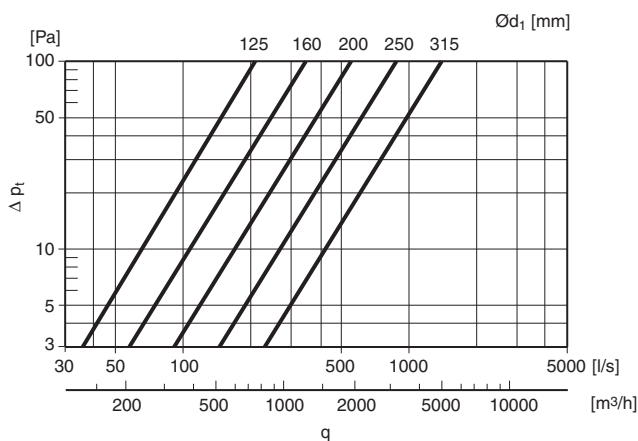
This problem can be eliminated by installing a curved silencer.

For the same length, it mostly has better attenuation than the equivalent straight silencer. In particular, you get better attenuation at high frequencies (4 and 8 kHz).

Insulation thickness 50 mm.

Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
125	260	3	2	6	14	22	33	26	22	235	3,34
160	285	1	2	6	14	23	29	25	21	270	4,22
200	355	0	2	5	15	29	24	24	20	310	6,31
250	370	1	2	6	17	31	22	27	20	365	9,74
315	370	1	2	7	19	20	17	20	16	427	13,6

Technical data



Ordering example



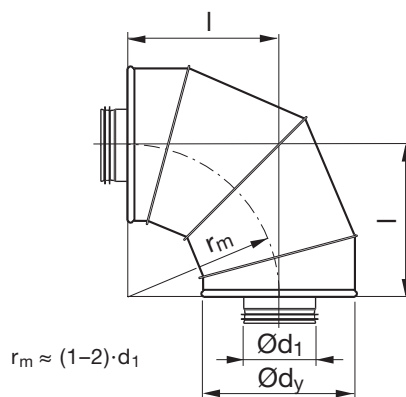


Circular curved silencer

BSLCU 100



Dimensions



Description

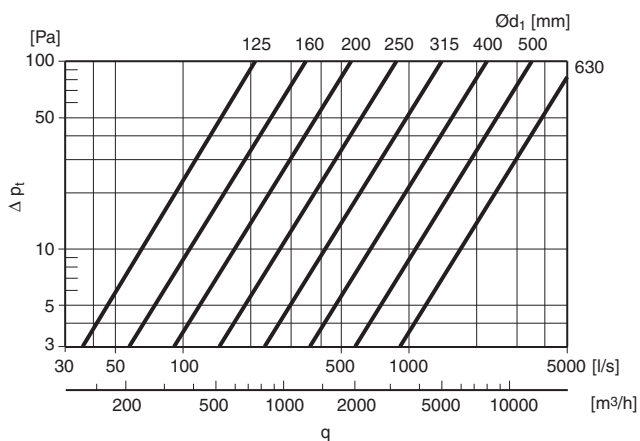
Lack of space is a frequent problem in air treatment installations. This means that it is often difficult to find enough straight lengths to install a straight silencer.

This problem can be eliminated by installing a curved silencer.

For the same length, it mostly has better attenuation than the equivalent straight silencer. In particular, you get better attenuation at high frequencies (4 and 8 kHz).

Insulation thickness 100 mm.

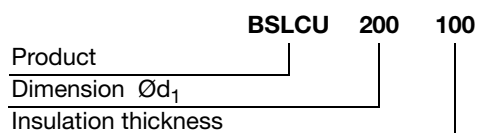
Technical data



Ød ₁ nom	l mm	Attenuation [dB] centre frequency [Hz]								Ød _y mm	m kg
		63	125	250	500	1k	2k	4k	8k		
125	260	7	6	17	22	28	38	33	26	325	6,93
160	280	4	6	13	17	25	33	26	25	365	8,01
200	325	2	5	14	19	29	24	25	22	410	10,6
250	370	3	5	11	15	28	22	26	21	465	14,4
315	375	2	4	10	15	20	17	22	17	510	17,6
400*	420	2	4	8	13	13	13	14	13	615	26,9
500*	510	1	4	9	13	10	13	13	12	735	38,5
630*	610	2	6	13	12	11	12	13	12	880	57,7

* Supplied with two loose couplings

Ordering example





Exhaust air terminal device

SLKNU 50



Description

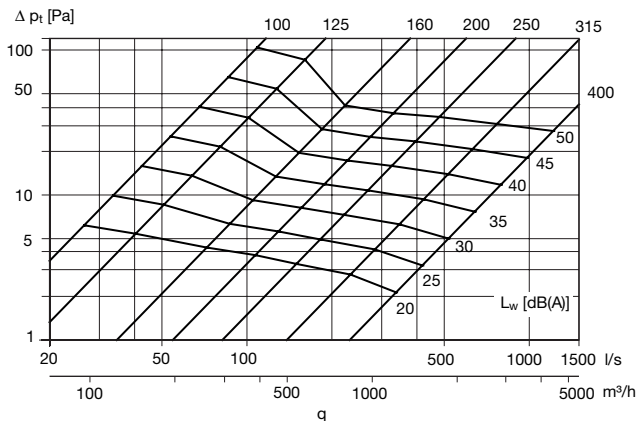
SLKNU is an exhaust air terminal device consisting of a silencer with 50 mm insulation and conical inlet with net.

Material and surface treatment

SLKNU is manufactured from galvanized sheet metal and is as standard delivered non-painted. The device can also be painted to order.

Capacity

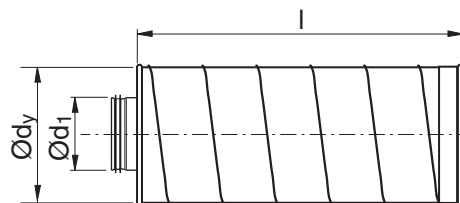
Air flow q [l/s] and [m³/h], total pressure Δp_t [Pa] and sound pressure level L_w [dB(A)] is read in the graph.



Ordering example

	SLKNU	125	600	50
Product				
Dimension $\varnothing d_1$				
Length, nominal				
Insulation thickness				

Dimensions



Self attenuation ΔL

The device's self attenuation from duct to room inclusive end reflexion.

$\varnothing d_1$ nom	Length nom	Attenuation [dB] centre frequency [Hz]								$\varnothing d_y$ mm	l mm	m kg
		63	125	250	500	1k	2k	4k	8k			
100	300	2	2	6	14	21	25	20	11	210	382	2,32
100	600	4	3	11	24	36	49	34	17	210	682	4,27
100	900	5	4	15	34	50	50	48	23	210	982	5,51
100	1200	6	5	19	45	50	50	50	29	210	1282	6,94
125	300	2	2	6	13	16	20	15	10	235	382	2,69
125	600	3	3	9	23	30	40	22	14	235	682	4,59
125	900	4	4	12	33	45	50	30	17	235	982	6,56
125	1200	5	5	15	43	50	50	38	21	235	1282	8,00
160	300	1	2	4	10	12	15	8	8	270	382	2,99
160	600	2	3	7	19	27	29	14	11	270	682	5,57
160	900	2	4	10	28	42	43	20	15	270	982	7,87
160	1200	2	5	13	37	50	50	26	19	270	1282	9,82
200	300	1	2	5	8	10	11	5	5	325	410	4,03
200	600	2	3	7	16	21	23	9	8	325	710	6,82
200	900	2	4	8	24	32	34	13	10	325	1010	9,66
200	1200	3	5	10	31	43	45	18	13	325	1310	11,9
250	600	3	2	7	13	17	16	8	6	365	693	8,43
250	900	3	4	8	20	26	23	10	8	365	993	11,6
250	1200	4	5	9	26	35	30	12	10	365	1293	14,9
315	600	0	2	6	11	14	9	4	5	427	701	10,9
315	900	1	3	7	16	22	12	6	7	427	1001	15,3
315	1200	1	3	8	22	30	16	7	9	427	1301	20,2
400*	600	0	3	4	6	8	4	4	4	508	655	18,9
400*	900	1	3	5	10	13	7	5	6	508	955	24,3
400*	1200	1	4	7	14	19	10	7	8	508	1255	26,7

* Supplied with one loose coupling

Sound power level $L_{Wok} = L_w + k_{ok}$

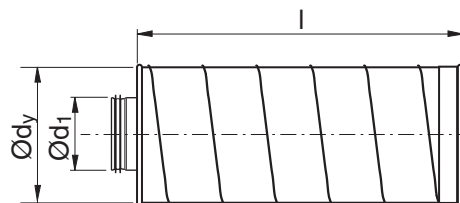
$\varnothing d_1$ mm	Correction, k_{ok} , in dB at middle frequency Hz							
	63	125	250	500	1k	2k	4k	8k
100	5	-11	-17	-15	-9	-2	-15	-22
125	9	-9	-14	-12	-8	-3	-13	-21
160	3	-14	-18	-14	-9	-2	-13	-20
200	12	-9	-12	-9	-5	-4	-16	-21
250	7	-8	-13	-10	-4	-5	-16	-22
315	20	-8	-14	-12	-7	-4	-17	-27
400	11	-3	-8	-10	-10	-2	-19	-28



Exhaust air terminal device SLKNU 100



Dimensions



Self attenuation ΔL

The device's self attenuation from duct to room inclusive end reflexion.

Description

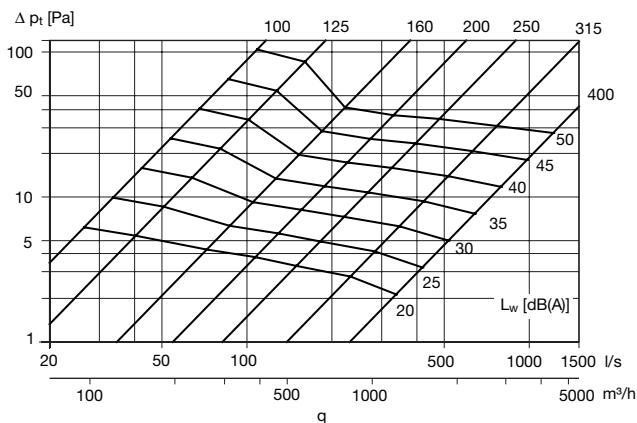
SLKNU is an exhaust air terminal device consisting of a silencer with 100 mm insulation and conical inlet with net.

Material and surface treatment

SLKNU is manufactured from galvanized sheet metal and is as standard delivered non-painted. The device can also be painted to order.

Capacity

Air flow q [l/s] and [m³/h], total pressure Δp_t [Pa] and sound pressure level L_w [dB(A)] is read in the graph.



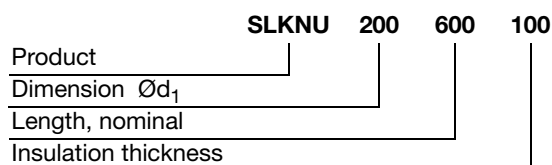
Ød ₁ nom	Length nom	Attenuation [dB] centre frequency [Hz]								Ød _y mm	l mm	m kg
		63	125	250	500	1k	2k	4k	8k			
100	300	5	4	11	14	18	24	20	11	325	432	4,31
100	600	8	8	18	25	34	46	38	19	325	732	7,04
100	900	11	11	25	36	50	50	50	26	325	1032	11,0
100	1200	14	14	32	47	50	50	50	33	325	1332	13,2
125	300	5	4	9	11	16	19	15	10	325	427	4,94
125	600	7	7	16	20	28	37	24	14	325	727	7,31
125	900	9	10	22	29	41	50	33	18	325	1027	11,6
125	1200	12	13	29	38	50	50	42	22	325	1327	14,4
160	300	4	3	6	8	11	14	9	8	325	439	5,40
160	600	5	6	13	16	23	28	15	12	325	739	9,19
160	900	6	9	20	24	34	42	21	16	325	1039	12,7
160	1200	8	12	27	32	46	50	28	20	325	1339	17,1
200	300	4	4	6	6	9	11	6	6	410	434	7,37
200	600	5	6	11	14	19	22	10	8	410	734	10,3
200	900	6	9	17	21	29	33	14	11	410	1034	14,9
200	1200	7	11	22	29	38	45	18	13	410	1334	19,0
250	600	6	5	10	11	16	16	8	7	465	749	10,3
250	900	7	7	15	18	25	23	10	9	465	1049	17,6
250	1200	7	9	20	25	34	30	13	11	465	1349	22,5
315	600	1	4	7	9	12	10	5	6	510	735	14,3
315	900	2	6	12	14	19	15	7	8	510	1035	19,4
315	1200	2	8	16	18	26	21	9	10	510	1335	25,4
400*	600	1	5	5	5	7	4	4	4	625	702	20,2
400*	900	3	7	8	9	13	7	5	6	625	1002	29,6
400*	1200	4	8	12	13	19	10	6	7	625	1302	37,7

* Supplied with one loose coupling

Sound power level $L_{Wok} = L_w + k_{ok}$

Ød ₁ mm	Correction, k_{ok} , in dB at middle frequency Hz							
	63	125	250	500	1k	2k	4k	8k
100	5	-11	-17	-15	-9	-2	-15	-22
125	9	-9	-14	-12	-8	-3	-13	-21
160	3	-14	-18	-14	-9	-2	-13	-20
200	12	-9	-12	-9	-5	-4	-16	-21
250	7	-8	-13	-10	-4	-5	-16	-22
315	20	-8	-14	-12	-7	-4	-17	-27
400	11	-3	-8	-10	-10	-2	-19	-28

Ordering example





Silencer

SLRS

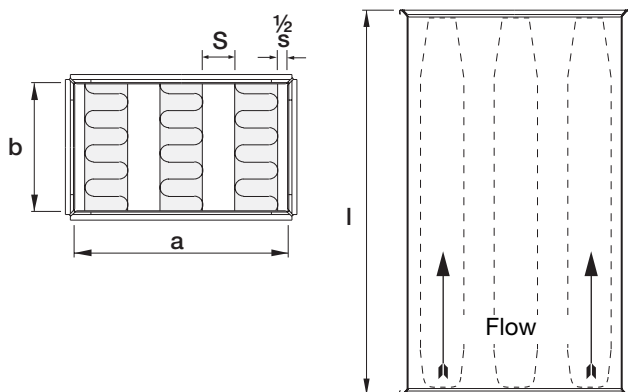


Description

Rectangular straight silencer from the Aerodim™ series. SLRS is built with the Aerodim™ silencer splitter SLRA. The silencer SLRA is manufactured with a frame of galvanized sheet and absorption material type Lindtec™. The Lindtec™ surface is easy to clean and prevents removal of fibres.

Due to the aerodynamic design, the SLRS has a low pressure loss and a low generation of flow noise. The splitter is available in a width of 200 mm. The SLRS is also available in other lengths and with other splitter distances than shown in the tables. To calculate the silencer, you can use our IT-program DIMsilencer, where splitter distance, length and height can be optimized for the best performance.

Dimensions



Ordering example

	SLRS	200	100	1200	900	1000	LS
Product							
Splitter width in mm							
Splitter distance in mm.							
a in mm							
b in mm							
l in mm							
Connection type, e.g. LS							

Technical data

Splitter distance S = 60 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	5	11	23	34	48	43	28	20	10,2
1500	7	16	34	50	50	50	39	27	12,9
2000	9	22	45	50	50	50	49	33	15,6
2500	11	27	50	50	50	50	50	38	18,2

Splitter distance S = 80 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	4	9	20	30	42	36	23	17	5,5
1500	5	14	29	44	50	50	32	22	6,9
2000	7	18	39	50	50	50	40	27	8,2
2500	8	22	48	50	50	50	48	31	9,5

Splitter distance S = 100 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	8	18	27	37	29	19	14	3,2
1500	5	12	26	40	50	44	27	18	4,0
2000	6	16	34	50	50	50	33	22	4,8
2500	7	19	42	50	50	50	40	26	5,6

Splitter distance S = 120 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	7	16	25	32	24	16	11	2,0
1500	4	11	23	36	50	36	22	15	2,5
2000	5	14	31	48	50	47	28	18	3,0
2500	6	17	38	50	50	50	33	21	3,5

Splitter distance S = 140 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	7	15	23	28	20	13	9	1,3
1500	4	10	22	34	44	30	18	12	1,7
2000	4	13	28	45	50	39	23	15	2,0
2500	5	16	35	50	50	48	27	18	2,4

NB. Max. attenuation specified is 50 dB.

The pressure loss Δp in Pa can be calculated from the pressure value ξ : $\Delta p = 0,6 \times v^2 \times \xi$ where (v) is the velocity on the face area of the silencer.

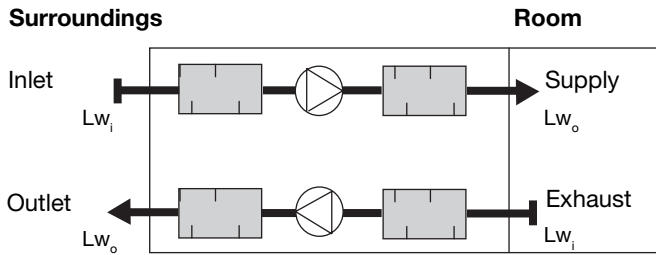
The lengths shown above are only examples, other lengths between are also available. Min. length is 500 mm. Maximum length is 2500 mm. Lengths over 2500 mm. will be divided up into two or more silencers.



Silencer

SLRS

Technical data



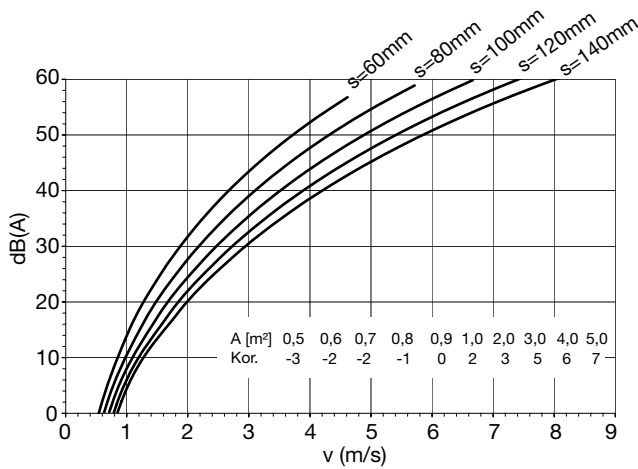
The flow noise and pressure loss is dependent on the velocity (v) on the face area (A) of the silencer.

However, the noise generated at the inlet of the silencer Lw_i is higher than the noise generated at the outlet of the silencer Lw_o . It is therefore crucial to use the correct value depend on the placement of the silencer in the duct system, cf. drawing.

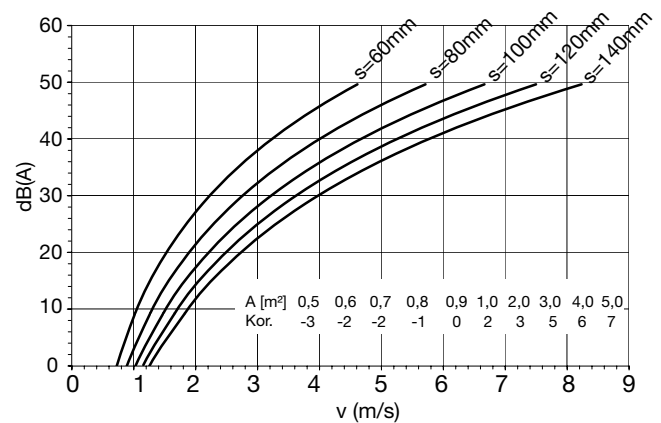
When calculating the silencer for:

- supply and outlet - use outlet noise Lw_o
- inlet and exhaust - use inlet noise Lw_i

Sound power level, inlet: Lw_i



Sound power level, outlet: Lw_o

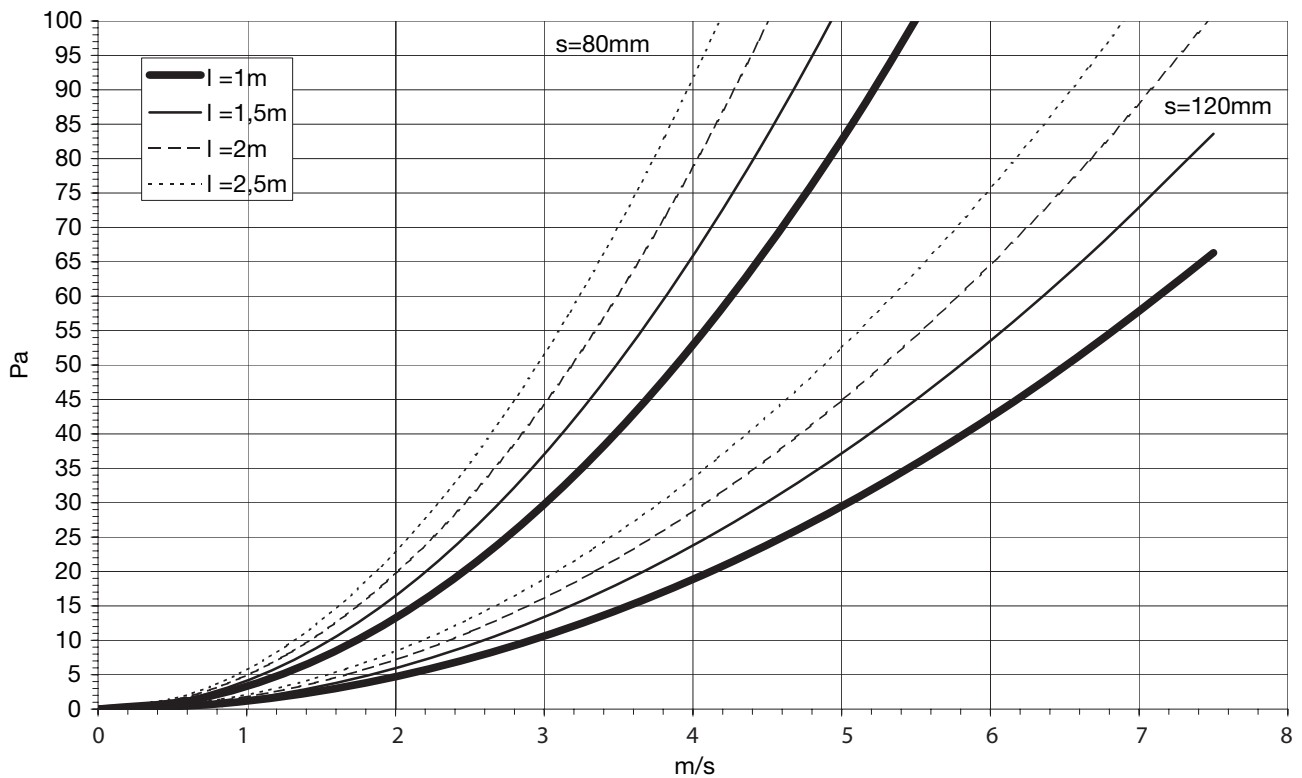
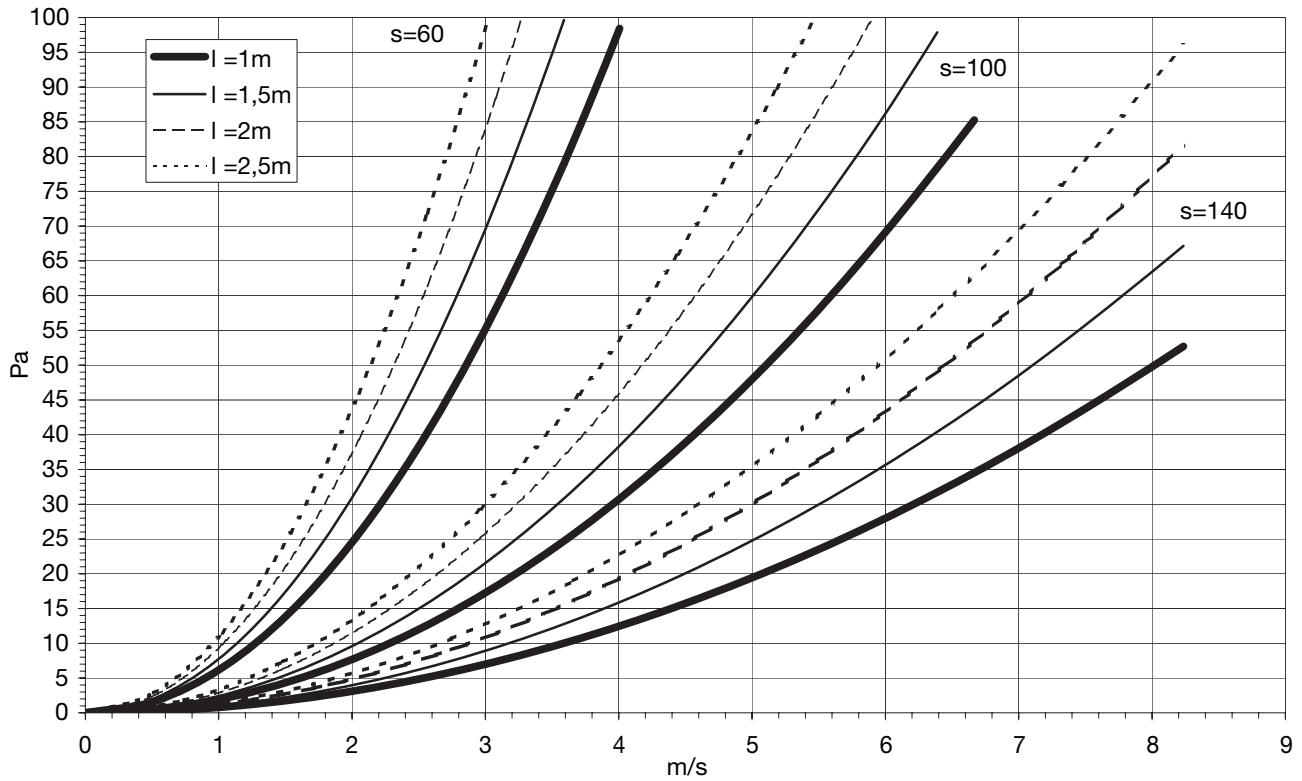




Silencer

SLRS

Pressure drop



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Silencer

SLRS

1

Calculation example

Pressure loss and flow noise depend on the velocity on the face area of the silencer A.

2

This is illustrated in the following example:
SLRS 900x600 mm, Length 1.5 metre
3 splitters, distance 100 mm.

3

Flow = 7776 m³/h = 2.16 m³/s.
Area A = 0.9 m × 0.6 m = 0.54 m²

4

$$\text{Face velocity} = \frac{2,16 \text{ m}^3/\text{s}}{0,54 \text{ m}^2} = 4 \text{ m/s}$$

5

Pressure loss:
Pressure loss = 39 Pa.

6

7

8

9

Flow noise from inlet:
Lw_i = 44 dB(A) -3 = 41 dB(A)
(-3 from area korrektion)

10

11

12

13

14

Flow noise from outlet:
From graph:
Lw_o = 36 dB(A) -3 = 33 dB(A)
(-3 from area korrektion)

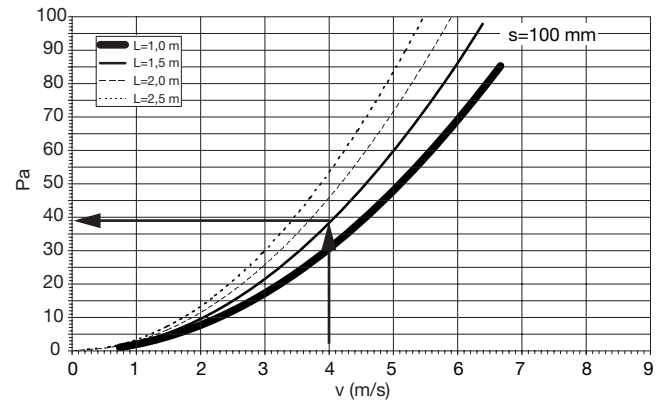
15

16

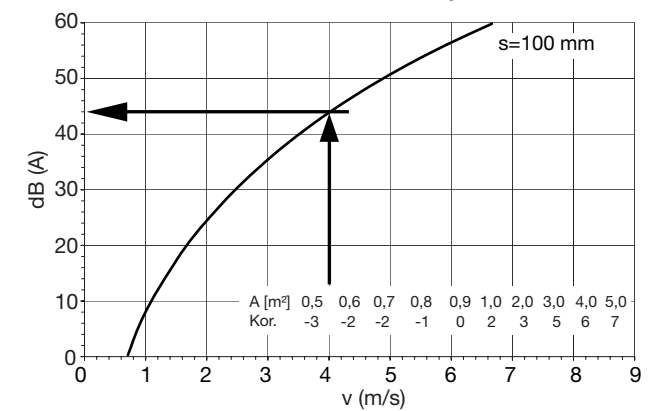
17

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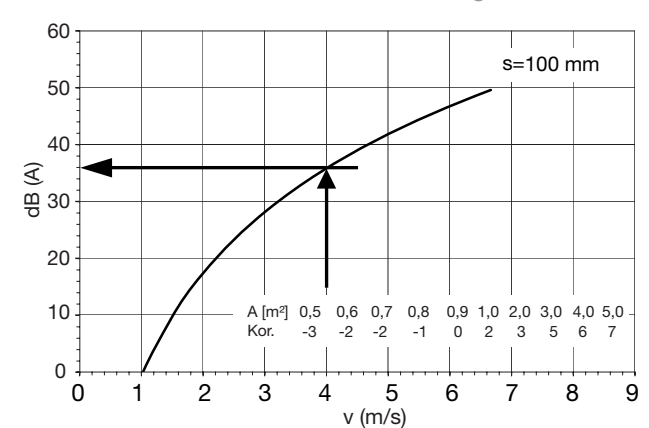
Pressure loss



Sound power level, inlet: Lw_i



Sound power level, outlet: Lw_o





Silencer splitter

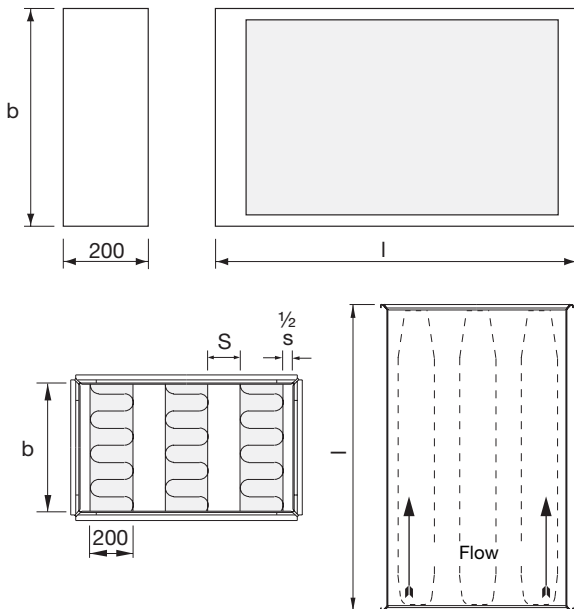
SLRA



Description

SLRA is the basic element in the Aerodim™ silencer series. The SLRA is manufactured with a frame of galvanized sheet and absorption material type Lindtec™. The Lindtec™ surface is easy to clean and prevents removal of fibres. Due to the aerodynamic design, the SLRA has a low pressure loss and a low generation of flow noise. The SLRA is available in a width of 200 mm. The SLRA is also available in other lengths and with other splitter distances than shown in the tabels. To calculate the silencer, you can use our IT-program DIMsilencer, where splitter distance, length and height can be optimized for the best performance.

Dimensions



Ordering example

	SLRA	200	600	1000
Product				
Splitter width in mm				
b in mm				
l nom. in mm.				

Technical data

Splitter distance S = 60 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	5	11	23	34	48	43	28	20	10,2
1500	7	16	34	50	50	50	39	27	12,9
2000	9	22	45	50	50	50	49	33	15,6
2500	11	27	50	50	50	50	50	38	18,2

Splitter distance S = 80 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	4	9	20	30	42	36	23	17	5,5
1500	5	14	29	44	50	50	32	22	6,9
2000	7	18	39	50	50	50	40	27	8,2
2500	8	22	48	50	50	50	48	31	9,5

Splitter distance S = 100 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	8	18	27	37	29	19	14	3,2
1500	5	12	26	40	50	44	27	18	4,0
2000	6	16	34	50	50	50	33	22	4,8
2500	7	19	42	50	50	50	40	26	5,6

Splitter distance S = 120 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	7	16	25	32	24	16	11	2,0
1500	4	11	23	36	50	36	22	15	2,5
2000	5	14	31	48	50	47	28	18	3,0
2500	6	17	38	50	50	50	33	21	3,5

Splitter distance S = 140 mm

Length mm	Attenuation [dB] centre frequency [Hz]								Pressure value ξ
	63	125	250	500	1k	2k	4k	8k	
1000	3	7	15	23	28	20	13	9	1,3
1500	4	10	22	34	44	30	18	12	1,7
2000	4	13	28	45	50	39	23	15	2,0
2500	5	16	35	50	50	48	27	18	2,4

NB. Max. attenuation specified is 50 dB.

The pressure loss Δp in pa can be calculated from the pressure value ξ : $\Delta p = 0,6 \times v^2 \times \xi$ where (v) is the velocity on the face area of the silencer.

The lengths shown above are only examples, other lengths between are also available. Min. length is 500 mm. Maximum length is 2500 mm.

Be aware that, **l nom** means, that the length in the Order examples normally are ment as the length of the duct, the splitter will be a bit shorter to prevent mounting problems.



Rectangular straight silencer

DLD



Description

DLD has a conventional design with dimensions that not exceed the corresponding connection dimensions. The silencer can be manufactured in all standard duct sizes.

Design

DLD has an outer sheet casing of trapezoidal corrugated sheet metal for stability and reduced risk of natural oscillation.

DLD is designed for low air resistance with baffle combinations that attenuate particularly low-frequency noise well. The type of insulation material has been developed to provide good noise properties, low weight and to be cleanable.

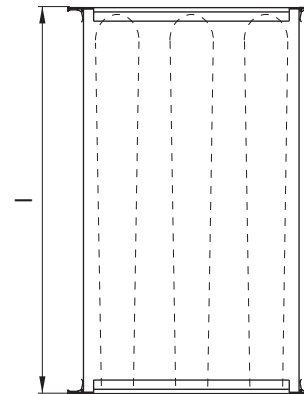
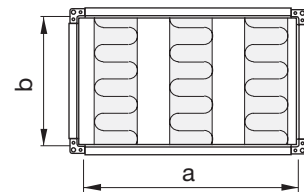
DLD meets the requirements of air tightness class C and pressure class 2 according to EN 1507:2006.

DLD is equipped with joining profile type RJFP.

Tools for dimensioning and planning

The software CADvent and DIMsilencer offer features for dimensioning and selection of products in an environment with 3D modelling. Computerised planning can be conducted with automatic presentation of noise levels, pressure drop etc.

Dimensions



If alternative material is required, this shall be stated when ordering, e.g. aluminium zinc (AZ185), stainless (2333) and acid-proof steel (2343).

The silencer is also available with the following accessories/options.

- TRA = Non-insulated inspection hatch.
- TRB = Hatch intended for external insulation.*
- TRC = Hatch intended for external insulation.*
- AIA = 50 mm fire protection insulation. Note! a and b dimensions increase by 100 mm.
- AIB = 100 mm fire protection insulation. Note! a and b dimensions increase by 200 mm.
- AIA+TRB = 50 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 100 mm.
- AIB+TRC = 100 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 200 mm.

The dimension of the hatches is adapted for cleaning and inspection of all baffle spacings.

* Specify insulation thickness when ordering.

Ordering example

	DLD	800 × 600	650	1015	TRA
Product					
Width height a × b					
Length l					
Code					
Accessories					



Rectangular straight silencer

DLDR



Description

DLDR has a conventional design with dimensions that not exceed the corresponding connection dimensions. The silencer can be manufactured in all standard duct sizes.

The silencer is provided with cleaning hatch and removable baffles.

Design

DLDR has an outer sheet casing of trapezoidal corrugated sheet metal for stability and reduced risk of natural oscillation.

DLDR is designed for low air resistance with baffle combinations that attenuate particularly low-frequency noise well. The type of insulation material has been developed to provide good noise properties, low weight and to be cleanable.

DLDR meets the requirements of air tightness class C and pressure class 2 according to EN 1507:2006.

DLDR is equipped with joining profile type RJFP.

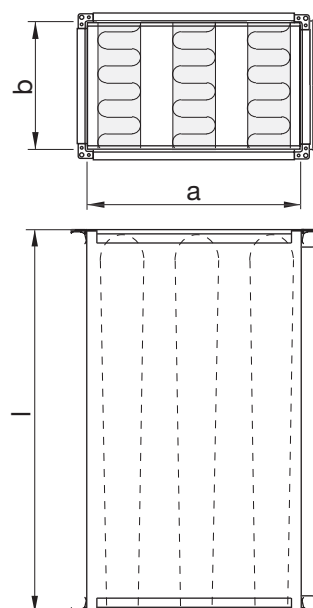
Tools for dimensioning and planning

The software CADvent and DIMsilencer offer features for dimensioning and selection of products in an environment with 3D modelling. Computerised planning can be conducted with automatic presentation of noise levels, pressure drop etc.

Ordering example

	DLDR	800 x 600	750	1015	1	TRB
Product						
Width height a x b						
Length l						
Code						
Alternative for placing of hatch (Alt 1 on top, alt 2 on side, alt 3 on bottom.)						
Accessories						

Dimensions



If alternative material is required, this shall be stated when ordering, e.g. aluminium zinc (AZ185), stainless (2333) and acid-proof steel (2343).

The silencer is also available with the following accessories/options.

- TRB = Hatch intended for external insulation.*
- TRC = Hatch intended for external insulation.*
- AIA = 50 mm fire protection insulation. Note! a and b dimensions increase by 100 mm.
- AIB = 100 mm fire protection insulation. Note! a and b dimensions increase by 200 mm.

The dimension of the hatches is adapted for cleaning and inspection of all baffle spacings.

* Specify insulation thickness when ordering.

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Rectangular straight silencer DLD/DLDR

Manual designing for DLD and DLDR

A number of silencers can be designed manually, for more combinations of silencers and faster calculations use DIMsilencer. Manual method of calculation is shown below:

A Specify connection dimensions and flow-type location of the silencer.

Width	800	mm
Height	1000	mm
Length	1250	mm
Location	Exhaust air	

DLD-800-1000-1250-1016

B Specify the sound power level before the silencer.
Read the insertion attenuation from the tables on page 201 – 204.
Calculate the sound power level after the silencer irrespective of the air flow (self generated noise).

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resistance number	Self generated noise number inlet
Sound power level before silencer	72	73	73	64	62	59	52	44		
Attenuation from table page 201 – 204	3	9	16	23	23	17	12	9	2,8	2,7
Sound power level after silencer without self generated noise	69	64	57	41	39	42	40	35		

C Determine the pressure drop with help of the graph on page 198 and table on page 199.
In this case we have straight ducts before and after the silencer.

Pressure drop

	Area	0,8 m ²	Air flow	400 l/s
Graph on page 198, use resistance number, area and air velocity	Air velocity	5 m/s	Pressure drop	42 Pa
Correction at disturbance according table on page 199	Factor	1	Pressure drop after correction	42 Pa

D Determine the self generated noise from the silencer at present air flow.
Calculate the sound power level after the silencer inclusive the self generated noise.

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	
Graph on page 200, use resistance number and air velocity	59	55	54	51	48	45	41	35	
Correction for gross cross section area	-1	-1	-1	-1	-1	-1	-1	-1	
Self generated noise	58	54	53	50	47	44	40	34	
Sound power level after the silencer	69	64	58	51	48	46	43	38	
(Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)									



Rectangular straight silencer DLD/DLDR

The following table can be used for own manual calculations in accordance with the example on the previous page.

Designing table for DLD and DLDR

With	<input type="text"/>	mm
Height	<input type="text"/>	mm
Length	<input type="text"/>	mm
Location	<input type="text"/>	

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resis- tance num- ber	Self gene- rated noise number inlet
Sound power level before silencer										
Attenuation from table page 201 – 204										
Sound power level after silencer without self generated noise										

Pressure drop

	Area	m ²	Air flow	l/s
Graph on page 198, use resistance number, area and air velocity	Air velocity	m/s	Pressure drop	Pa
Correction at disturbance according table on page 199	Factor		Pressure drop after correction	Pa

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 200, use resistance number and air velocity								
Correction for gross cross section area								
Self generated noise								
Sound power level after the silencer								
(Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)								

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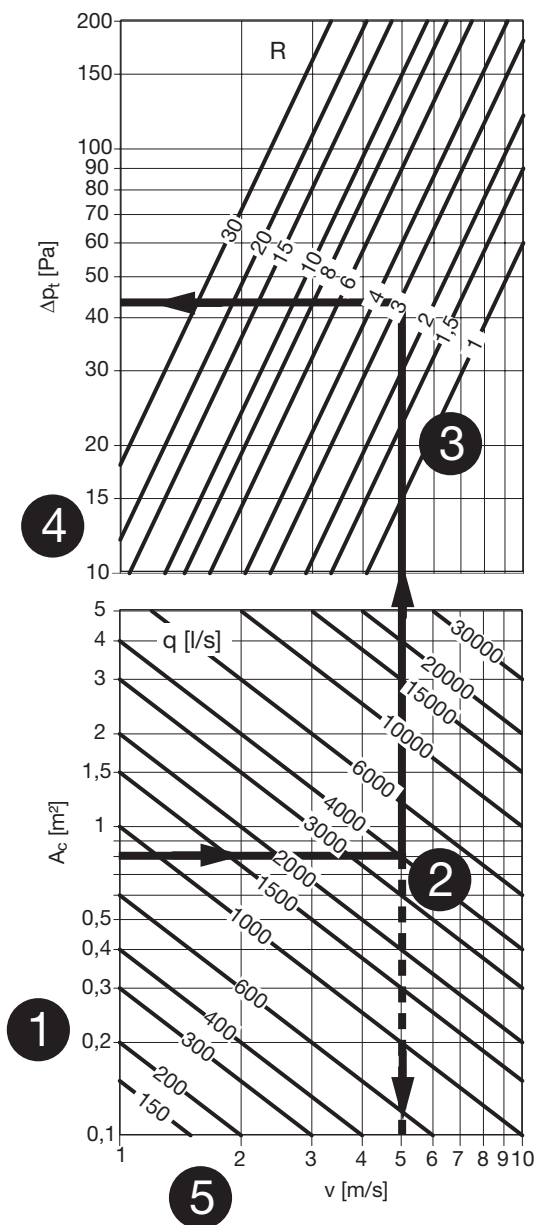
Rectangular straight silencer DLD/DLDR

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Pressure drop

Follow the directions below and the adjoining graph.

- 1 Calculate the gross cross section area $a \times b$ in m^2 .
- 2 Go horizontal in the graph to the present air flow, l/s.
- 3 Go up to the resistance number achieved from the tables on page 201 – 204.
- 4 Read the pressure drop over the silencer, at straight duct connection before and after the silencer, (factor 1,0). For other modes of connection see the table for correction on page 199.
- 5 Air flow velocity, which is used at the calculation of the self generated noise, can be read here.





Rectangular straight silencer DLD/DLDR

Pressure drop

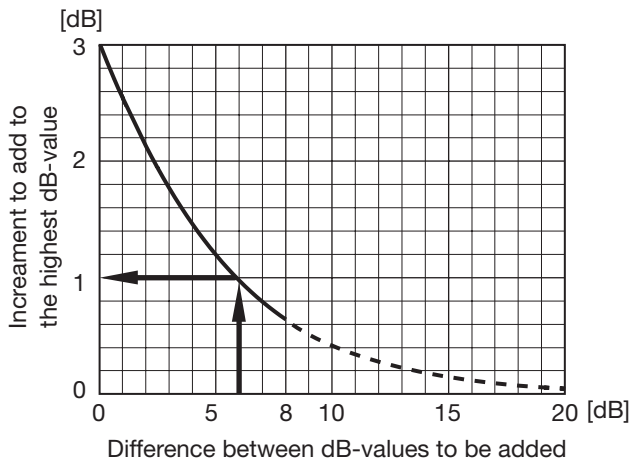
Present pressure drop = Read pressure drop × below factor

D = The largest connection side (a or b) of the silencer.

The table contains of a selection of the most common disturbance cases.

Before the silencer				Silencer	After the silencer				Factor
Distance before the silencer					Distance after the silencer				
3×D	2×D	1×D	0×D		0×D	1×D	2×D	3×D	
Duct				Silencer	Duct				1,0
Bend				Silencer	Duct				1,1
	Bend			Silencer	Duct				1,2
		Bend		Silencer	Duct				1,4
			Bend	Silencer	Duct				1,5
Duct				Silencer		Bend			1,2
Duct				Silencer	Bend				1,3
Bend				Silencer		Bend			1,3
Bend				Silencer	Bend	Bend			1,4
	Bend			Silencer	Bend	Bend			1,5
	Bend			Silencer	Bend	Bend			1,6
		Bend		Silencer	Bend	Bend			1,7
		Bend		Silencer	Bend	Bend			1,8
			Bend	Silencer	Bend	Bend			1,9
			Bend	Silencer	Bend	Bend			2,0
Chamber				Silencer	Duct branch				2,0
Duct				Silencer	Chamber				3,0
Chamber				Silencer	Chamber				3,5

Logarithmic addition



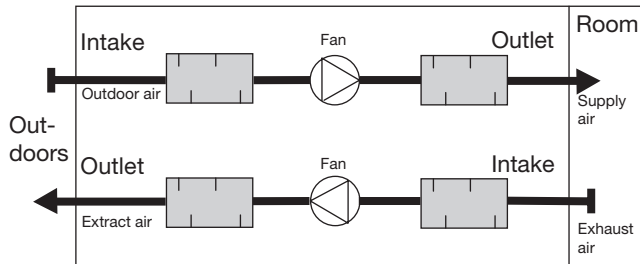
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Rectangular straight silencer DLD/DLDR

Self generated noise per frequency band

- Decide from the location of the silencer whether it is the supply or exhaust graph that shall be used. (Rule of memory - the side that leads away from the fan, i.e. at supply air the outlet graph is used and at exhaust air the in-take graph.)



- Go horizontally into the present graph, at present air velocity, to the self generated noise number.
- Then go vertically up to the crossing of the different frequency band lines.
- Read the self generated noise, at gross cross section area 1 m², for each frequency band straight out to the left. In the example only the 8000 Hz-reading is shown.
- Add or subtract the correction for the present gross cross section area.

Sound power level after the silencer

The sound power level after the silencer can be calculated for all frequencies by a logarithmical addition of:

"The self generated noise" and "The sound power level before the silencer".

The shown example gives at 8000 Hz:

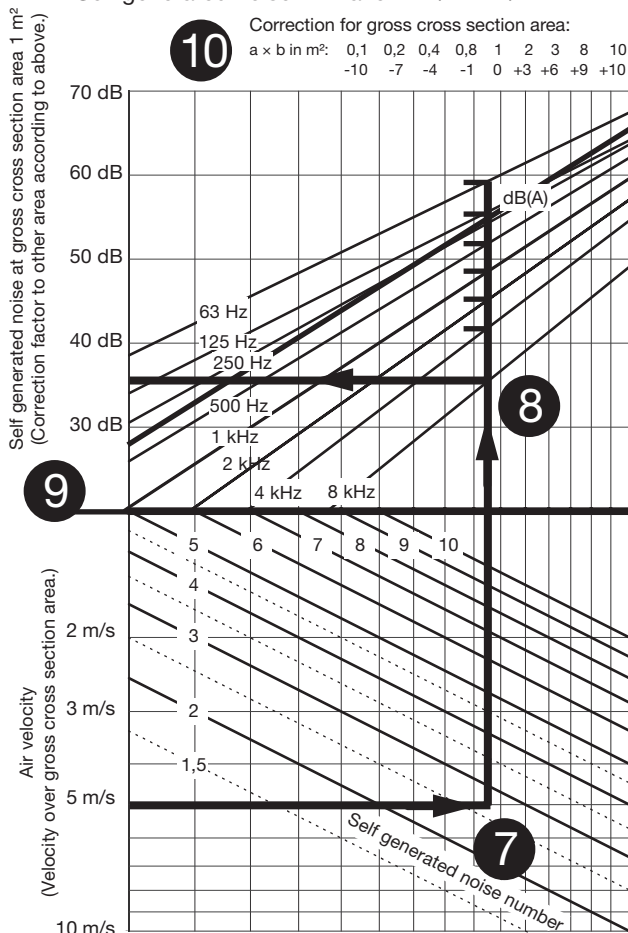
$$\text{Self generated noise} = 35 \text{ dB} - 1 \text{ dB} = 34 \text{ dB}$$

$$\text{Sound power level before the silencer} - \text{the attenuation: } 44 \text{ dB} - 9 \text{ dB} = 35 \text{ dB}$$

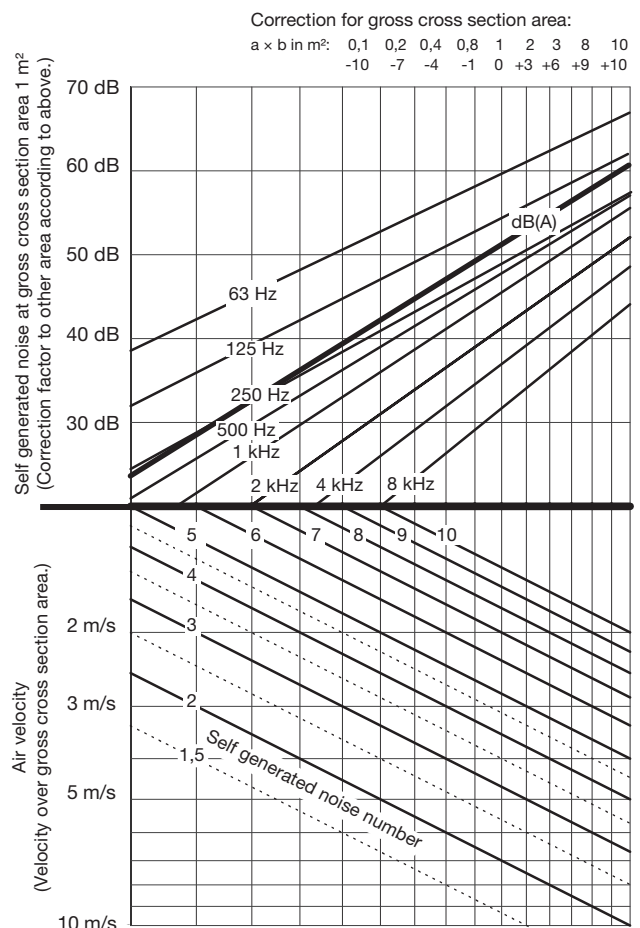
$$\text{Logarithmic addition of } 34 \text{ and } 35 = 36 \text{ dB}$$

(See graph for logarithmical addition on page 199.)

Self generated noise in intake DLD/DLDR/DLDY



Self generated noise in outlet DLD/DLDR/DLDY





Rectangular straight silencer DLD/DLDR

Width a mm	Code	Length l mm		Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDR	63	125	250	500	1000	2000	4000	8000			
400	1009	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
400	1010	650	750	2	6	9	14	13	11	8	6	2,5	2,7	2,0
400	1011	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
400	1009	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
400	1010	1250	1350	3	9	16	23	23	17	12	9	2,8	2,7	2,0
400	1011	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
400	1009	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
400	1010	1850	1950	4	13	23	32	33	24	16	12	3,2	2,7	2,0
400	1011	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
500	1013	650	750	2	6	8	12	10	9	7	5	2,2	2,5	2,0
500	1014	650	750	3	7	10	15	13	11	8	6	4,7	3,3	2,5
500	1013	1250	1350	3	10	15	20	18	13	10	7	2,4	2,5	2,0
500	1014	1250	1350	5	12	19	25	23	17	12	9	5,3	3,3	2,5
500	1013	1850	1950	4	13	22	28	26	18	13	9	2,6	2,5	2,0
500	1014	1850	1950	6	17	28	35	33	24	16	12	5,9	3,3	2,5
600	1012	650	750	2	6	9	17	19	14	11	9	3,1	3,0	2,0
600	1014	650	750	4	9	14	23	29	23	18	14	15,3	6,0	3,0
600	1017	650	750	3	7	10	13	10	9	7	5	3,8	3,0	2,4
600	1012	1250	1350	3	9	17	28	32	24	17	13	3,8	3,0	2,0
600	1014	1250	1350	5	15	27	38	50	40	29	22	19,1	6,0	3,0
600	1017	1250	1350	5	12	18	21	18	13	10	7	4,1	3,0	2,4
600	1012	1850	1950	3	13	25	39	46	34	23	17	4,4	3,0	2,0
600	1014	1850	1950	7	21	39	53	60	57	39	29	22,9	6,0	3,0
600	1017	1850	1950	6	17	26	30	26	18	13	9	4,5	3,0	2,4
700	1012	650	750	2	5	8	13	13	11	8	6	1,6	2,3	1,8
700	1013	650	750	3	7	11	18	19	14	11	9	4,8	3,5	2,3
700	1012	1250	1350	2	8	14	22	23	17	12	9	1,9	2,3	1,8
700	1013	1250	1350	4	11	20	30	32	24	17	13	5,7	3,5	2,3
700	1012	1850	1950	3	11	21	30	33	24	16	12	2,2	2,3	1,8
700	1013	1850	1950	5	16	29	42	46	34	23	17	6,5	3,5	2,3
800	1014	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
800	1015	650	750	2	7	11	21	25	19	15	12	6,1	4,0	2,3
800	1016	650	750	2	6	9	14	13	11	8	6	2,5	2,7	2,0
800	1017	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
800	1014	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
800	1015	1250	1350	3	11	21	36	44	33	24	18	7,6	4,0	2,3
800	1016	1250	1350	3	9	16	23	23	17	12	9	2,8	2,7	2,0
800	1017	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
800	1014	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
800	1015	1850	1950	4	15	31	50	60	46	32	24	9,1	4,0	2,3
800	1016	1850	1950	4	13	23	32	33	24	16	12	3,2	2,7	2,0
800	1017	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
800	1014	2450	2550	3	12	23	32	33	23	15	11	1,5	2,0	1,6
800	1016	2450	2550	5	17	31	41	43	30	20	15	3,5	2,7	2,0
800	1017	2450	2550	8	23	42	56	60	43	29	22	10,3	4,0	2,7
900	1017	650	750	2	5	7	11	10	9	7	5	1,5	2,3	1,8
900	1018	650	750	4	9	14	23	29	23	18	14	15,3	6,0	3,0
900	1019	650	750	3	7	10	14	13	11	8	6	3,5	3,0	2,3
900	1020	650	750	4	9	13	19	19	14	11	9	9,4	4,5	3,0
900	1017	1250	1350	3	8	14	19	18	13	10	7	1,7	2,3	1,8
900	1018	1250	1350	5	15	27	38	50	40	29	22	19,1	6,0	3,0
900	1019	1250	1350	4	11	18	24	23	17	12	9	4,0	3,0	2,3
900	1020	1250	1350	6	15	24	32	32	24	17	13	10,8	4,5	3,0
900	1017	1850	1950	3	12	20	27	26	18	13	9	1,9	2,3	1,8
900	1018	1850	1950	7	21	39	53	60	57	39	29	22,9	6,0	3,0
900	1019	1850	1950	5	15	26	34	33	24	16	12	4,4	3,0	2,3
900	1020	1850	1950	8	20	35	45	46	34	23	17	12,2	4,5	3,0
900	1017	2450	2550	4	15	27	34	33	23	15	11	2,1	2,3	1,8
900	1018	2450	2550	9	26	51	60	60	60	50	37	26,7	6,0	3,0
900	1019	2450	2550	6	20	34	43	43	30	20	15	4,9	3,0	2,3
900	1020	2450	2550	10	26	45	58	60	43	29	22	13,6	4,5	3,0
1000	1019	650	750	3	7	12	20	21	16	13	10	6,5	4,0	2,5





Rectangular straight silencer DLD/DLDR

Width a mm	Code	Length l mm		Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDR	63	125	250	500	1000	2000	4000	8000			
1000	1020	650	750	2	6	8	12	10	9	7	5	2,2	2,5	2,0
1000	1021	650	750	3	7	10	15	13	11	8	6	4,7	3,3	2,5
1000	1022	650	750	5	10	14	20	19	14	11	9	12,2	5,0	3,3
1000	1019	1250	1350	4	12	21	33	37	28	20	15	7,8	4,0	2,5
1000	1020	1250	1350	3	10	15	20	18	13	10	7	2,4	2,5	2,0
1000	1021	1250	1350	5	12	19	25	23	17	12	9	5,3	3,3	2,5
1000	1022	1250	1350	7	16	25	33	32	24	17	13	13,9	5,0	3,3
1000	1019	1850	1950	5	17	31	46	53	39	27	20	9,1	4,0	2,5
1000	1020	1850	1950	4	13	22	28	26	18	13	9	2,6	2,5	2,0
1000	1021	1850	1950	6	17	28	35	33	24	16	12	5,9	3,3	2,5
1000	1022	1850	1950	9	23	37	46	46	34	23	17	15,7	5,0	3,3
1000	1019	2450	2550	7	22	41	59	60	50	34	25	10,4	4,0	2,5
1000	1020	2450	2550	5	17	29	36	33	23	15	11	2,9	2,5	2,0
1000	1021	2450	2550	8	22	37	45	43	30	20	15	6,4	3,3	2,5
1000	1022	2450	2550	12	29	49	60	60	43	29	22	17,4	5,0	3,3
1100	1017	650	750	2	5	7	12	12	10	8	6	1,4	2,2	1,7
1100	1018	650	750	2	6	11	20	23	18	14	11	5,0	3,7	2,2
1100	1022	650	750	4	9	14	24	25	19	15	12	13,6	5,5	3,1
1100	1023	650	750	3	6	9	12	10	9	7	5	2,9	2,8	2,2
1100	1024	650	750	4	8	11	15	13	11	8	6	6,2	3,7	2,8
1100	1017	1250	1350	2	8	13	20	21	16	11	8	1,6	2,2	1,7
1100	1018	1250	1350	3	11	20	33	41	30	22	16	6,2	3,7	2,2
1100	1022	1250	1350	6	15	26	39	44	33	24	18	16,3	5,5	3,1
1100	1023	1250	1350	4	11	17	21	18	13	10	7	3,2	2,8	2,2
1100	1024	1250	1350	6	14	21	26	23	17	12	9	6,8	3,7	2,8
1100	1017	1850	1950	2	11	20	28	30	21	15	11	1,8	2,2	1,7
1100	1018	1850	1950	4	15	29	47	58	42	29	22	7,4	3,7	2,2
1100	1022	1850	1950	8	21	38	55	60	46	32	24	19,1	5,5	3,1
1100	1023	1850	1950	5	15	24	29	26	18	13	9	3,5	2,8	2,2
1100	1024	1850	1950	7	19	30	36	33	24	16	12	7,5	3,7	2,8
1100	1017	2450	2550	3	14	26	37	39	27	18	13	2,0	2,2	1,7
1100	1018	2450	2550	5	19	38	60	60	55	37	27	8,5	3,7	2,2
1100	1022	2450	2550	10	27	50	60	60	60	40	30	21,9	5,5	3,1
1100	1023	2450	2550	6	19	32	37	33	23	15	11	3,8	2,8	2,2
1100	1024	2450	2550	9	24	40	46	43	30	20	15	8,2	3,7	2,8
1200	1019	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
1200	1020	650	750	2	6	9	17	19	14	11	9	3,1	3,0	2,0
1200	1024	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
1200	1026	650	750	5	11	17	25	29	23	18	14	29,7	8,0	4,0
1200	1027	650	750	3	7	10	13	10	9	7	5	3,8	3,0	2,4
1200	1019	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
1200	1020	1250	1350	3	9	17	28	32	24	17	13	3,8	3,0	2,0
1200	1024	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
1200	1026	1250	1350	8	19	32	41	50	40	29	22	36,5	8,0	4,0
1200	1027	1250	1350	5	12	18	21	18	13	10	7	4,1	3,0	2,4
1200	1019	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
1200	1020	1850	1950	3	13	25	39	46	34	23	17	4,4	3,0	2,0
1200	1024	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
1200	1026	1850	1950	11	27	47	58	60	57	39	29	43,2	8,0	4,0
1200	1027	1850	1950	6	17	26	30	26	18	13	9	4,5	3,0	2,4
1200	1019	2450	2550	3	12	23	32	33	23	15	11	1,5	2,0	1,6
1200	1020	2450	2550	4	17	33	51	60	43	29	22	5,0	3,0	2,0
1200	1024	2450	2550	8	23	42	56	60	43	29	22	10,3	4,0	2,7
1200	1027	2450	2550	8	21	34	38	33	23	15	11	4,8	3,0	2,4
1300	1019	650		2	5	8	15	15	12	10	7	2,2	2,6	1,9
1300	1020	650		3	7	12	22	27	20	16	12	7,3	4,3	2,4
1300	1023	650		3	7	10	16	15	12	9	7	4,3	3,3	2,4
1300	1025	650		4	9	14	21	21	16	13	10	12,7	5,2	3,3
1300	1019	1250		2	9	16	24	27	20	14	11	2,6	2,6	1,9
1300	1020	1250		4	12	22	36	48	35	25	19	9,1	4,3	2,4
1300	1023	1250		4	11	19	26	26	19	14	10	4,9	3,3	2,4
1300	1025	1250		7	16	26	36	37	28	20	15	14,8	5,2	3,3



Rectangular straight silencer DLD/DLDR

Width a mm	Code	Length l mm		Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDR	63	125	250	500	1000	2000	4000	8000			
1300	1019	1850		3	12	23	34	39	28	19	14	3,0	2,6	1,9
1300	1020	1850		5	16	32	50	60	50	34	26	11,0	4,3	2,4
1300	1023	1850		5	16	28	36	37	26	18	13	5,4	3,3	2,4
1300	1025	1850		9	22	38	50	53	39	27	20	17,0	5,2	3,3
1300	1019	2450		4	15	30	44	50	36	24	18	3,4	2,6	1,9
1300	1020	2450		6	21	42	60	60	60	44	32	12,8	4,3	2,4
1300	1023	2450		7	21	36	47	48	34	23	17	6,0	3,3	2,4
1300	1025	2450		11	28	50	60	60	50	34	25	19,2	5,2	3,3
1400	1022	650		2	5	8	13	13	11	8	6	1,6	2,3	1,8
1400	1025	650		3	7	11	18	19	14	11	9	4,8	3,5	2,3
1400	1026	650		3	6	9	13	12	10	8	6	2,9	2,8	2,2
1400	1028	650		4	8	12	18	16	13	10	8	7,2	4,0	2,8
1400	1030	650		6	11	16	25	25	19	15	12	24,0	7,0	4,0
1400	1022	1250		2	8	14	22	23	17	12	9	1,9	2,3	1,8
1400	1025	1250		4	11	20	30	32	24	17	13	5,7	3,5	2,3
1400	1026	1250		4	10	17	22	21	16	11	8	3,3	2,8	2,2
1400	1028	1250		5	14	22	29	29	21	15	11	8,2	4,0	2,8
1400	1030	1250		9	19	31	42	44	33	24	18	28,5	7,0	4,0
1400	1022	1850		3	11	21	30	33	24	16	12	2,2	2,3	1,8
1400	1025	1850		5	16	29	42	46	34	23	17	6,5	3,5	2,3
1400	1026	1850		5	15	25	31	30	21	15	11	3,7	2,8	2,2
1400	1028	1850		7	19	32	41	41	30	20	15	9,2	4,0	2,8
1400	1030	1850		12	27	45	59	60	46	32	24	33,0	7,0	4,0
1400	1022	2450		3	14	27	39	43	30	20	15	2,4	2,3	1,8
1400	1025	2450		6	20	38	53	60	43	29	22	7,4	3,5	2,3
1400	1026	2450		6	19	32	40	39	27	18	13	4,0	2,8	2,2
1400	1028	2450		9	25	42	53	53	38	26	19	10,2	4,0	2,8
1500	1021	650		2	4	7	12	12	9	7	6	1,3	2,1	1,7
1500	1022	650		2	6	9	17	19	14	11	9	3,1	3,0	2,0
1500	1027	650		2	6	8	12	10	9	7	5	2,2	2,5	2,0
1500	1029	650		3	7	10	15	13	11	8	6	4,7	3,3	2,5
1500	1030	650		5	10	14	20	19	14	11	9	12,2	5,0	3,3
1500	1022	1250		3	9	17	28	32	24	17	13	3,8	3,0	2,0
1500	1027	1250		3	10	15	20	18	13	10	7	2,4	2,5	2,0
1500	1029	1250		5	12	19	25	23	17	12	9	5,3	3,3	2,5
1500	1030	1250		7	16	25	33	32	24	17	13	13,9	5,0	3,3
1500	1021	1850		2	10	19	28	29	21	14	10	1,7	2,1	1,7
1500	1022	1850		3	13	25	39	46	34	23	17	4,4	3,0	2,0
1500	1027	1850		4	13	22	28	26	18	13	9	2,6	2,5	2,0
1500	1029	1850		6	17	28	35	33	24	16	12	5,9	3,3	2,5
1500	1030	1850		9	23	37	46	46	34	23	17	15,7	5,0	3,3
1500	1021	2450		3	13	25	35	38	26	18	13	1,9	2,1	1,7
1500	1022	2450		4	17	33	51	60	43	29	22	5,0	3,0	2,0
1500	1027	2450		5	17	29	36	33	23	15	11	2,9	2,5	2,0
1500	1029	2450		8	22	37	45	43	30	20	15	6,4	3,3	2,5
1500	1030	2450		12	29	49	60	60	43	29	22	17,4	5,0	3,3
1600	1023	650		2	4	7	11	10	9	7	5	1,0	2,0	1,6
1600	1024	650		2	5	9	15	16	13	10	8	2,3	2,7	1,9
1600	1025	650		2	7	11	21	25	19	15	12	6,1	4,0	2,3
1600	1032	650		4	9	12	17	15	12	9	7	7,5	4,0	2,9
1600	1023	1250		2	7	12	18	18	13	10	7	1,2	2,0	1,6
1600	1024	1250		3	9	16	25	28	21	15	11	2,8	2,7	1,9
1600	1025	1250		3	11	21	36	44	33	24	18	7,6	4,0	2,3
1600	1032	1250		6	14	22	28	26	19	14	10	8,4	4,0	2,9
1600	1023	1850		2	10	18	25	26	18	13	9	1,3	2,0	1,6
1600	1024	1850		3	12	23	35	40	29	20	15	3,2	2,7	1,9
1600	1025	1850		4	15	31	50	60	46	32	24	9,1	4,0	2,3
1600	1032	1850		8	20	32	39	37	26	18	13	9,3	4,0	2,9
1600	1023	2450		3	12	23	32	33	23	15	11	1,5	2,0	1,6
1600	1024	2450		4	16	31	45	52	37	25	18	3,6	2,7	1,9
1600	1025	2450		5	20	40	60	60	60	40	30	10,6	4,0	2,3
1600	1032	2450		10	26	42	50	48	34	23	17	10,2	4,0	2,9





Rectangular straight silencer DLD/DLDR

Width a mm	Code	Length l mm		Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDR	63	125	250	500	1000	2000	4000	8000			
1800	1026	650		2	5	7	13	13	10	8	6	1,5	2,3	1,7
1800	1033	650		4	10	15	24	27	20	16	12	16,2	6,0	3,3
1800	1035	650		4	9	13	19	19	14	11	9	9,4	4,5	3,0
1800	1036	650		3	7	10	13	10	9	7	5	3,8	3,0	2,4
1800	1026	1250		2	8	14	21	22	16	12	9	1,7	2,3	1,7
1800	1033	1250		6	16	27	40	48	35	25	19	19,7	6,0	3,3
1800	1035	1250		6	15	24	32	32	24	17	13	10,8	4,5	3,0
1800	1036	1250		5	12	18	21	18	13	10	7	4,1	3,0	2,4
1800	1026	1850		3	11	20	29	31	22	15	11	1,9	2,3	1,7
1800	1033	1850		8	22	40	56	60	50	34	26	23,2	6,0	3,3
1800	1035	1850		8	20	35	45	46	34	23	17	12,2	4,5	3,0
1800	1036	1850		6	17	26	30	26	18	13	9	4,5	3,0	2,4
1800	1026	2450		3	14	26	38	41	28	19	14	2,2	2,3	1,7
1800	1033	2450		11	29	53	60	60	60	44	32	26,6	6,0	3,3
1800	1035	2450		10	26	45	58	60	43	29	22	13,6	4,5	3,0
1800	1036	2450		8	21	34	38	33	23	15	11	4,8	3,0	2,4
2000	1027	650		2	4	7	11	10	9	7	5	1,0	2,0	1,6
2000	1029	650		2	6	10	18	21	16	13	10	4,0	3,3	2,1
2000	1032	650		2	6	9	14	13	11	8	6	2,5	2,7	2,0
2000	1033	650		3	7	12	20	21	16	13	10	6,5	4,0	2,5
2000	1039	650		5	10	14	20	19	14	11	9	12,2	5,0	3,3
2000	1027	1250		2	7	12	18	18	13	10	7	1,2	2,0	1,6
2000	1029	1250		3	10	19	31	37	27	20	15	4,9	3,3	2,1
2000	1032	1250		3	9	16	23	23	17	12	9	2,8	2,7	2,0
2000	1033	1250		4	12	21	33	37	28	20	15	7,8	4,0	2,5
2000	1039	1250		7	16	25	33	32	24	17	13	13,9	5,0	3,3
2000	1027	1850		2	10	18	25	26	18	13	9	1,3	2,0	1,6
2000	1029	1850		4	14	27	43	52	38	26	20	5,8	3,3	2,1
2000	1032	1850		4	13	23	32	33	24	16	12	3,2	2,7	2,0
2000	1033	1850		5	17	31	46	53	39	27	20	9,1	4,0	2,5
2000	1039	1850		9	23	37	46	46	34	23	17	15,7	5,0	3,3
2000	1027	2450		3	12	23	32	33	23	15	11	1,5	2,0	1,6
2000	1029	2450		5	18	36	55	60	49	33	24	6,7	3,3	2,1
2000	1032	2450		5	17	31	41	43	30	20	15	3,5	2,7	2,0
2000	1033	2450		7	22	41	59	60	50	34	25	10,4	4,0	2,5
2000	1039	2450		12	29	49	60	60	43	29	22	17,4	5,0	3,3
2200	1031	650		2	5	7	12	12	10	8	6	1,4	2,2	1,7
2200	1033	650		2	6	11	20	23	18	14	11	5,0	3,7	2,2
2200	1036	650		3	8	13	23	26	19	16	12	10,1	4,9	2,8
2200	1038	650		3	7	10	15	14	11	9	7	3,9	3,1	2,3
2200	1040	650		3	6	9	12	10	9	7	5	2,9	2,8	2,2
2200	1042	650		4	8	11	15	13	11	8	6	6,2	3,7	2,8
2200	1031	1250		2	8	13	20	21	16	11	8	1,6	2,2	1,7
2200	1033	1250		3	11	20	33	41	30	22	16	6,2	3,7	2,2
2200	1036	1250		5	13	24	38	45	34	24	18	12,3	4,9	2,8
2200	1038	1250		4	11	18	25	25	18	13	10	4,5	3,1	2,3
2200	1040	1250		4	11	17	21	18	13	10	7	3,2	2,8	2,2
2200	1042	1250		6	14	21	26	23	17	12	9	6,8	3,7	2,8
2200	1031	1850		2	11	20	28	30	21	15	11	1,8	2,2	1,7
2200	1033	1850		4	15	29	47	58	42	29	22	7,4	3,7	2,2
2200	1036	1850		6	19	35	53	60	48	33	24	14,5	4,9	2,8
2200	1038	1850		5	16	27	35	35	25	17	13	5,0	3,1	2,3
2200	1040	1850		5	15	24	29	26	18	13	9	3,5	2,8	2,2
2200	1042	1850		7	19	30	36	33	24	16	12	7,5	3,7	2,8
2200	1031	2450		3	14	26	37	39	27	18	13	2,0	2,2	1,7
2200	1033	2450		5	19	38	60	60	55	37	27	8,5	3,7	2,2
2200	1036	2450		8	24	46	60	60	60	41	31	16,8	4,9	2,8
2200	1038	2450		6	20	35	45	46	32	22	16	5,5	3,1	2,3
2200	1040	2450		6	19	32	37	33	23	15	11	3,8	2,8	2,2
2200	1042	2450		9	24	40	46	43	30	20	15	8,2	3,7	2,8



Rectangular straight silencer

DLDY



Description

DLDY is fitted with built-in side baffles located outside the fitting dimensions. The products can be manufactured in all standard duct sizes.

Design

DLDY has an external shell of trapezoidal corrugated sheet for stability and reduced risk of natural oscillation. DLDY is designed for low air resistance with baffle combinations that dampen particularly low-frequency noise well. The type of insulation material is Lindtec which has been developed to provide good noise properties, low weight and to be cleanable.

DLDY meets the requirements of air tightness class C and pressure class 2 according to EN 1507:2006.

DLDY is equipped with joining profile type RJFP.

Tools for dimensioning and planning

The software DIMsilencer is recommended for fast choice of silencer or a complete and fast sound calculation of the duct system.

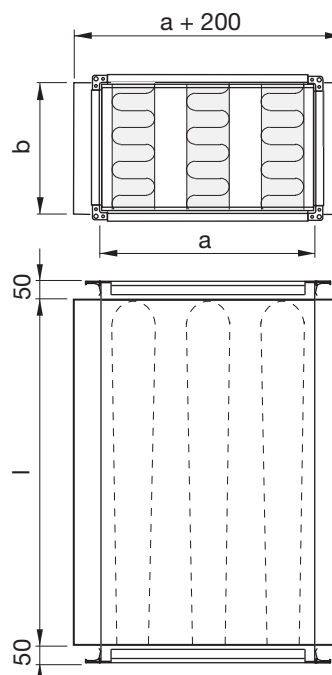
The software CADvent offers dimensioning in an environment with 3D-modelling.

Computerised planning can be conducted with automatic presentation of noise levels, pressure drop etc.

Ordering example

	DLDY	800 × 600	650	2015	TRA
Product					
Width height a × b					
Length l					
Code					
Accessories					

Dimensions



If alternative material is required, this shall be stated when ordering, e.g. aluminium zinc (AZ185), stainless (2333) and acid-proof steel (2343).

The silencer is also available with the following accessories/options.

- TRA = Non-insulated inspection hatch.
- TRB = Hatch intended for external insulation.*
- TRC = Hatch intended for external insulation.*
- AIA = 50 mm fire protection insulation. Note! a and b dimensions increase by 100 mm.
- AIB = 100 mm fire protection insulation. Note! a and b dimensions increase by 200 mm.
- AIA+TRB = 50 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 100 mm.
- AIB+TRC = 100 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 200 mm.

The dimension of the hatches is adapted for cleaning and inspection of all baffle spacings.

* Specify insulation thickness when ordering.





Rectangular straight silencer

DLDY

Manual designing for DLDY

A number of silencers can be designed manually, for more combinations of silencers and faster calculations use DIMsilencer. Manual method of calculation is shown below:

A Specify connection dimensions and flow-type location of the silencer.

Width	800	mm
Height	1000	mm
Length	1350	mm
Location	Exhaust air	

DLDY-800-1000-1350-2016

B Specify the sound power level before the silencer.
 Read the insertion attenuation from the tables on page 211 – 215.
 Calculate the sound power level after the silencer irrespective of the air flow (self generated noise).

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resistance number	Self generated noise number inlet
Sound power level before silencer	72	73	73	64	62	59	52	44		
Attenuation from table page 211 – 215	3	11	19	31	35	26	19	14	2,8	2,7
Sound power level after silencer without self generated noise	69	62	54	33	27	33	33	30		

C Determine the pressure drop with help of the graph on page 208 and table on page 209. In this case we have straight ducts before and after the silencer.

Pressure drop

	Area	0,8 m ²	Air flow	400 l/s
Graph on page 208, use resistance number, area and air velocity	Air velocity	5 m/s	Pressure drop	42 Pa
Correction at disturbance according table on page 209	Factor	1	Pressure drop after correction	42 Pa

D Determine the self generated noise from the silencer at present air flow. Calculate the sound power level after the silencer inclusive the self generated noise.

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	
Graph on page 210, use resistance number and air velocity	59	55	54	51	48	45	41	35	
Correction for gross cross section area	-1	-1	-1	-1	-1	-1	-1	-1	
Self generated noise	58	54	53	50	47	44	40	34	
Sound power level after the silencer	59	63	57	50	47	44	41	35	
(Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)									



Rectangular straight silencer

DLDY

The following table can be used for own manual calculations in accordance with the example on the previous page.

Designing table for DLDY

With	<input type="text"/>	mm
Height	<input type="text"/>	mm
Length	<input type="text"/>	mm
Location	<input type="text"/>	

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resistance number	Self generated noise number inlet
Sound power level before silencer										
Attenuation from table page 211 – 215										
Sound power level after silencer without self generated noise										

Pressure drop

	Area	m ²	Air flow	l/s
Graph on page 208, use resistance number, area and air velocity	Air velocity	m/s	Pressure drop	Pa
Correction at disturbance according table on page 209	Factor		Pressure drop after correction	Pa

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 210, use resistance number and air velocity								
Correction for gross cross section area								
Self generated noise								
Sound power level after the silencer (Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)								

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



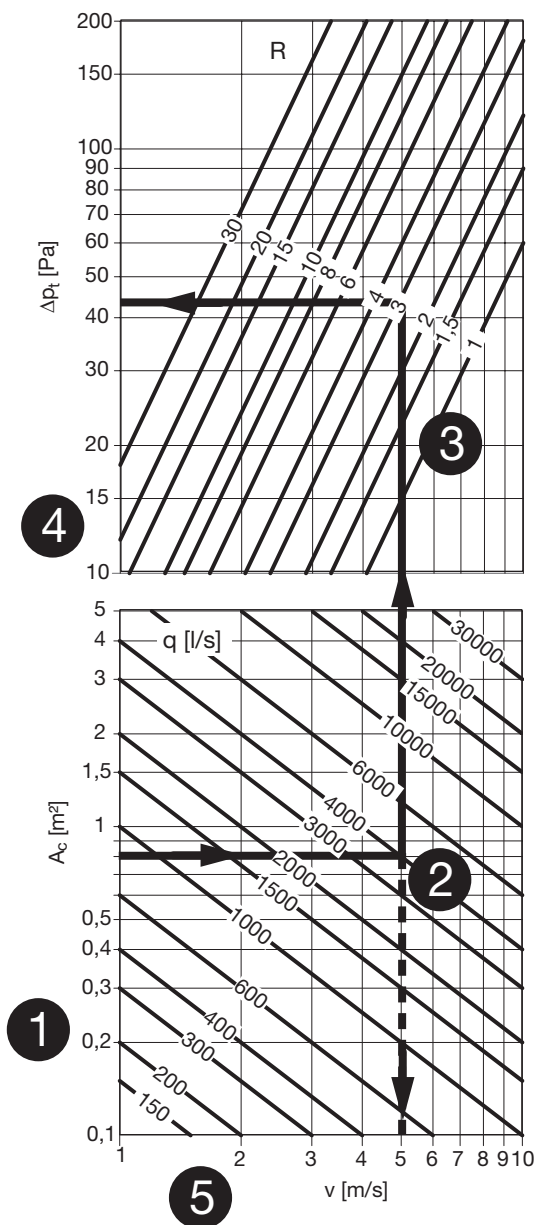
Rectangular straight silencer

DLDY

Pressure drop

Follow the directions below and the adjoining graph.

- 1 Calculate the gross cross section area $a \times b$ in m^2 .
- 2 Go horizontal in the graph to the present air flow, l/s.
- 3 Go up to the resistance number achieved from the tables on page 211 –215.
- 4 Read the pressure drop over the silencer, at straight duct connection before and after the silencer, (factor 1,0). For other modes of connection see the table for correction on page 209.
- 5 Air flow velocity, which is used at the calculation of the self generated noise, can be read here.





Rectangular straight silencer

DLDY

Tryckfall

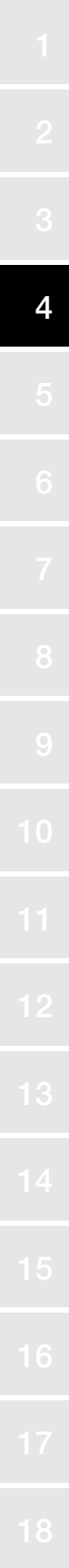
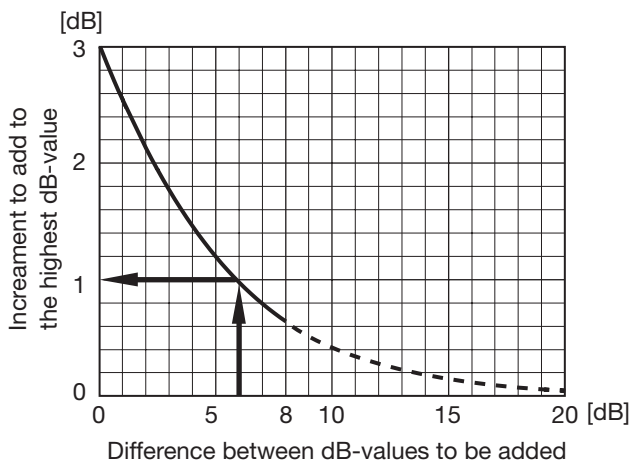
Aktuellt tryckfall = Avläst tryckfall × nedanstående faktor.

D = Ljuddämparens största anslutningssida (a eller b).

Tabellen omfattar ett urval av de vanligaste förekommande störningsfallen.

Before the silencer				Silencer	After the silencer				Factor
Distance before the silencer					Distance after the silencer				
3xD	2xD	1xD	0xD		0xD	1xD	2xD	3xD	
Duct				Silencer	Duct				1,0
Bend				Silencer	Duct				1,1
	Bend			Silencer	Duct				1,2
		Bend		Silencer	Duct				1,4
			Bend	Silencer	Duct				1,5
Duct				Silencer		Bend			1,2
Duct				Silencer	Bend				1,3
Bend				Silencer		Bend			1,3
Bend				Silencer	Bend				1,4
	Bend			Silencer		Bend			1,5
	Bend			Silencer	Bend				1,6
		Bend		Silencer		Bend			1,7
		Bend		Silencer	Bend				1,8
			Bend	Silencer		Bend			1,9
			Bend	Silencer	Bend				2,0
		Chamber		Silencer	Duct branch				2,0
Duct				Silencer	Chamber				3,0
		Chamber		Silencer	Chamber				3,5

Logaritmsk addition



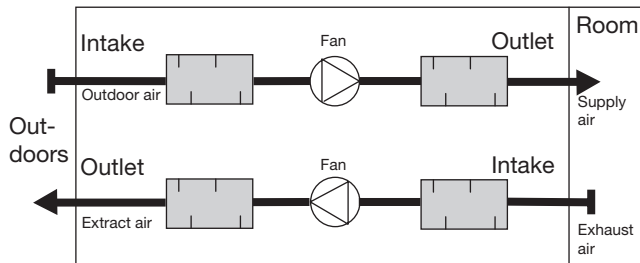


Rectangular straight silencer

DLDY

Self generated noise per frequency band

- Decide from the location of the silencer whether it is the supply or exhaust graph that shall be used. (Rule of memory - the side that leads away from the fan, i.e. at supply air the outlet graph is used and at exhaust air the in-take graph.)



- Go horizontally into the present graph, at present air velocity, to the self generated noise number.
- Then go vertically up to the crossing of the different frequency band lines.
- Read the self generated noise, at gross cross section area 1 m², for each frequency band straight out to the left. In the example only the 8000 Hz-reading is shown.
- Add or subtract the correction for the present gross cross section area.

Sound power level after the silencer

The sound power level after the silencer can be calculated for all frequencies by a logarithmical addition of:

"The self generated noise" and "The sound power level before the silencer".

The shown example gives at 8000 Hz:

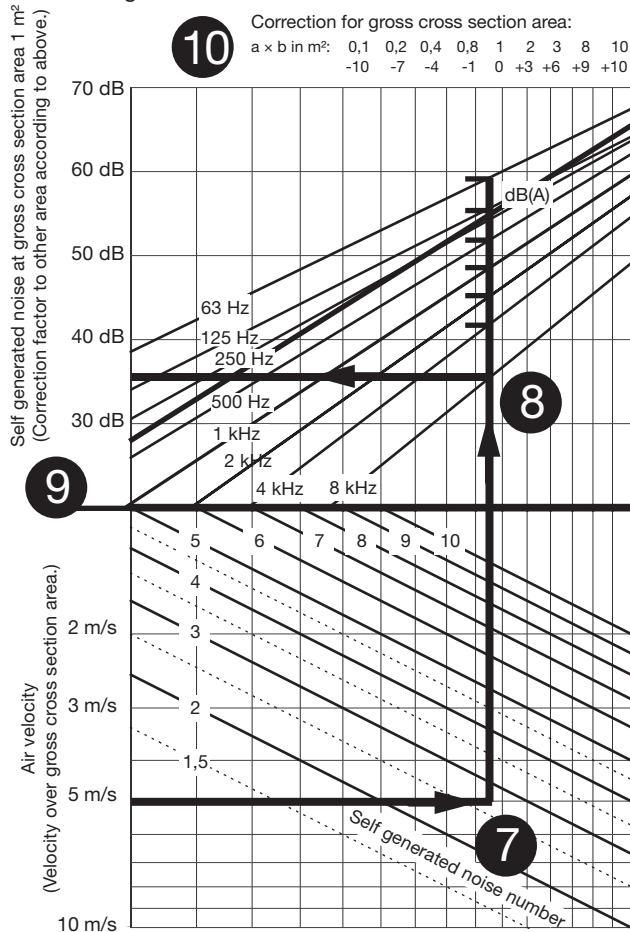
$$\text{Self generated noise} = 35 \text{ dB} - 1 \text{ dB} = 34 \text{ dB}$$

$$\text{Sound power level before the silencer} - \text{the attenuation: } 44 \text{ dB} - 14 \text{ dB} = 30 \text{ dB}$$

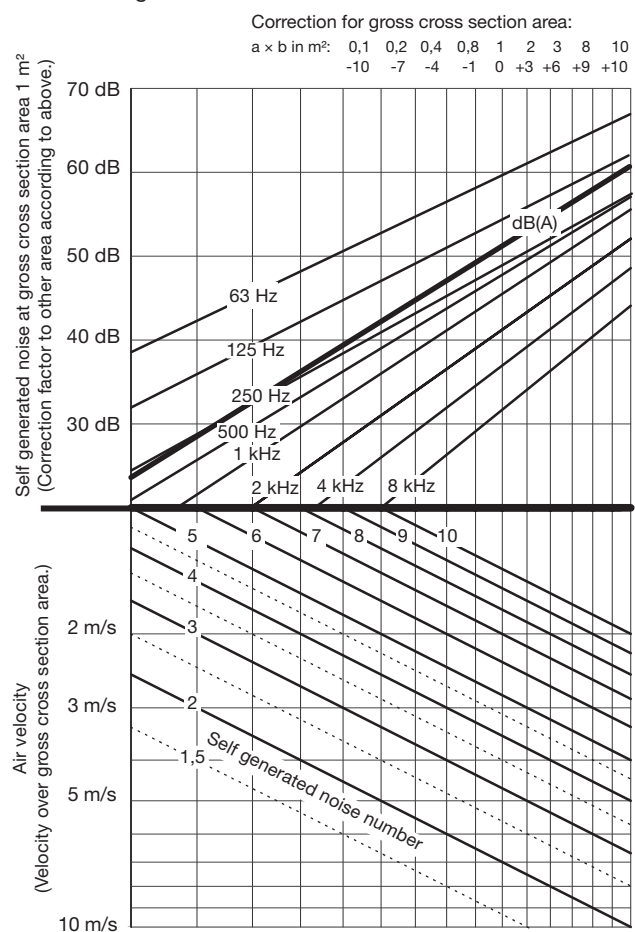
$$\text{Logarithmic addition of } 34 \text{ and } 30 = 35 \text{ dB}$$

(See graph for logarithmical addition on page 209.)

Self generated noise in intake DLD/DLDR/DLDY



Self generated noise in outlet DLD/DLDR/DLDY





Rectangular straight silencer

DLDY

Width a mm	Code	Length l mm	Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
			63	125	250	500	1000	2000	4000	8000			
400	2009	650	2	5	9	18	21	16	13	10	1,0	2,0	1,6
400	2010	650	3	7	11	23	26	20	16	12	2,5	2,7	2,0
400	2009	1250	2	9	16	30	36	27	19	14	1,2	2,0	1,6
400	2010	1250	4	12	21	38	46	34	25	19	2,8	2,7	2,0
400	2009	1850	3	12	24	43	51	38	26	19	1,3	2,0	1,6
400	2010	1850	5	16	31	53	60	49	33	25	3,2	2,7	2,0
500	2012	650	2	5	9	17	17	13	10	8	1,1	2,0	1,7
500	2013	650	3	7	11	20	21	16	13	10	2,2	2,5	2,0
500	2014	650	4	9	14	25	26	20	16	12	4,7	3,3	2,5
500	2012	1250	3	9	16	28	29	22	16	12	1,2	2,0	1,7
500	2013	1250	4	12	20	34	36	27	19	14	2,4	2,5	2,0
500	2014	1250	6	15	26	41	46	34	25	19	5,3	3,3	2,5
500	2012	1850	4	13	24	39	42	31	21	16	1,3	2,0	1,7
500	2013	1850	5	16	30	47	51	38	26	19	2,6	2,5	2,0
500	2014	1850	8	21	38	58	60	49	33	25	5,9	3,3	2,5
600	2012	650	2	6	11	22	28	21	17	13	3,1	3,0	2,0
600	2013	650	2	5	7	13	12	10	8	6	0,6	1,7	1,5
600	2015	650	2	6	9	15	14	11	9	7	1,1	2,0	1,7
600	2016	650	3	7	11	18	17	13	10	8	2,0	2,4	2,0
600	2017	650	4	9	13	22	21	16	13	10	3,8	3,0	2,4
600	2012	1250	3	11	20	36	49	36	26	19	3,8	3,0	2,0
600	2013	1250	2	8	14	22	22	16	12	9	0,7	1,7	1,5
600	2015	1250	3	10	16	25	25	18	13	10	1,2	2,0	1,7
600	2016	1250	4	12	20	30	29	22	16	12	2,2	2,4	2,0
600	2017	1250	6	15	24	36	36	27	19	14	4,1	3,0	2,4
600	2012	1850	4	15	30	50	60	51	35	26	4,4	3,0	2,0
600	2013	1850	3	11	20	30	31	22	15	11	0,7	1,7	1,5
600	2015	1850	4	14	24	36	36	26	18	13	1,3	2,0	1,7
600	2016	1850	6	17	29	42	42	31	21	16	2,4	2,4	2,0
600	2017	1850	8	21	35	50	51	38	26	19	4,5	3,0	2,4
700	2012	650	2	5	9	18	20	15	12	9	1,6	2,3	1,8
700	2013	650	3	8	12	23	28	21	17	13	4,8	3,5	2,3
700	2016	650	3	6	9	14	12	10	8	6	1,1	2,0	1,8
700	2017	650	3	7	10	16	14	11	9	7	1,9	2,3	2,0
700	2012	1250	3	9	17	30	35	26	19	14	1,9	2,3	1,8
700	2013	1250	4	13	23	38	49	36	26	19	5,7	3,5	2,3
700	2016	1250	4	10	16	24	22	16	12	9	1,2	2,0	1,8
700	2017	1250	5	12	19	27	25	18	13	10	2,0	2,3	2,0
700	2012	1850	3	12	24	41	50	36	25	19	2,2	2,3	1,8
700	2013	1850	6	18	34	53	60	51	35	26	6,5	3,5	2,3
700	2016	1850	5	14	24	33	31	22	15	11	1,3	2,0	1,8
700	2017	1850	6	17	28	38	36	26	18	13	2,2	2,3	2,0
800	2016	650	2	6	10	19	20	15	12	9	2,5	2,7	2,0
800	2017	650	4	9	14	24	28	21	17	13	6,9	4,0	2,7
800	2019	650	3	6	9	13	11	9	7	5	1,2	2,0	1,8
800	2016	1250	3	11	19	31	35	26	19	14	2,8	2,7	2,0
800	2017	1250	6	15	26	40	49	36	26	19	8,0	4,0	2,7
800	2019	1250	4	11	16	22	19	14	10	8	1,2	2,0	1,8
800	2016	1850	4	15	28	44	50	36	25	19	3,2	2,7	2,0
800	2017	1850	7	20	37	56	60	51	35	26	9,1	4,0	2,7
800	2019	1850	5	15	24	31	27	19	13	10	1,3	2,0	1,8
800	2016	2450	5	19	36	56	60	47	31	23	3,5	2,7	2,0
800	2017	2450	9	26	49	60	60	60	44	33	10,3	4,0	2,7
800	2019	2450	6	19	31	40	35	24	16	12	1,4	2,0	1,8
900	2015	650	2	4	7	13	13	10	8	6	0,7	1,8	1,5
900	2017	650	2	6	9	15	15	12	10	7	1,5	2,3	1,8
900	2019	650	3	7	11	20	20	15	12	9	3,5	3,0	2,3
900	2020	650	4	10	15	25	28	21	17	13	9,4	4,5	3,0
900	2015	1250	2	7	13	21	22	16	12	9	0,8	1,8	1,5
900	2017	1250	3	9	16	26	27	20	14	11	1,7	2,3	1,8





Rectangular straight silencer

DLDY

	Width a mm	Code	Length l mm	Static insertion attenuation / octave band [dB]							Resistance number	Self generated noise number Intake	Self generated noise number Outlet	
				63	125	250	500	1000	2000	4000				8000
1	900	2019	1250	4	12	21	33	35	26	19	14	4,0	3,0	2,3
2	900	2020	1250	7	16	28	41	49	36	26	19	10,8	4,5	3,0
3	900	2015	1850	2	10	19	29	32	23	16	12	0,9	1,8	1,5
4	900	2017	1850	4	13	24	36	39	28	19	14	1,9	2,3	1,8
5	900	2019	1850	6	17	30	46	50	36	25	19	4,4	3,0	2,3
6	900	2020	1850	9	23	41	58	60	51	35	26	12,2	4,5	3,0
7	900	2015	2450	3	13	24	38	41	29	19	14	1,0	1,8	1,5
8	900	2017	2450	4	17	31	46	50	36	24	18	2,1	2,3	1,8
9	900	2019	2450	7	22	40	59	60	47	31	23	4,9	3,0	2,3
10	900	2020	2450	11	30	53	60	60	60	44	33	13,6	4,5	3,0
11	1000	2015	650	1	4	6	11	11	9	7	5	0,5	1,7	1,4
12	1000	2018	650	2	5	8	13	13	10	8	6	1,1	2,0	1,7
13	1000	2020	650	3	6	10	16	15	12	10	7	2,2	2,5	2,0
14	1000	2021	650	4	8	12	20	20	15	12	9	4,7	3,3	2,5
15	1000	2022	650	5	11	16	25	28	21	17	13	12,2	5,0	3,3
16	1000	2015	1250	2	6	11	18	19	14	10	7	0,6	1,7	1,4
17	1000	2018	1250	3	8	14	22	22	16	12	9	1,2	2,0	1,7
18	1000	2020	1250	4	11	18	27	27	20	14	11	2,4	2,5	2,0
19	1000	2021	1250	5	14	23	34	35	26	19	14	5,3	3,3	2,5
20	1000	2022	1250	8	18	30	42	49	36	26	19	13,9	5,0	3,3
21	1000	2015	1850	2	9	17	26	27	19	13	10	0,7	1,7	1,4
22	1000	2018	1850	3	12	21	31	32	23	16	12	1,3	2,0	1,7
23	1000	2020	1850	5	15	26	38	39	28	19	14	2,6	2,5	2,0
24	1000	2021	1850	7	19	33	47	50	36	25	19	5,9	3,3	2,5
25	1000	2022	1850	11	25	44	59	60	51	35	26	15,7	5,0	3,3
26	1000	2015	2450	2	12	22	33	35	24	16	12	0,7	1,7	1,4
27	1000	2018	2450	4	15	28	40	41	29	19	14	1,4	2,0	1,7
28	1000	2020	2450	6	19	34	49	50	36	24	18	2,9	2,5	2,0
29	1000	2021	2450	9	25	44	60	60	47	31	23	6,4	3,3	2,5
30	1000	2022	2450	14	33	57	60	60	60	44	33	17,4	5,0	3,3
31	1100	2018	650	2	7	12	22	29	22	17	13	5,0	3,7	2,2
32	1100	2019	650	2	5	7	12	11	9	7	5	0,8	1,8	1,6
33	1100	2021	650	2	6	9	14	13	10	8	6	1,5	2,2	1,8
34	1100	2023	650	3	7	10	17	15	12	10	7	2,9	2,8	2,2
35	1100	2024	650	4	9	13	21	20	15	12	9	6,2	3,7	2,8
36	1100	2018	1250	3	11	22	36	50	38	27	20	6,2	3,7	2,2
37	1100	2019	1250	2	8	13	20	19	14	10	7	0,9	1,8	1,6
38	1100	2021	1250	3	10	16	23	22	16	12	9	1,6	2,2	1,8
39	1100	2023	1250	5	12	19	28	27	20	14	11	3,2	2,8	2,2
40	1100	2024	1250	6	15	24	35	35	26	19	14	6,8	3,7	2,8
41	1100	2018	1850	4	16	32	50	60	53	37	27	7,4	3,7	2,2
42	1100	2019	1850	3	11	19	27	27	19	13	10	1,0	1,8	1,6
43	1100	2021	1850	4	13	23	32	32	23	16	12	1,8	2,2	1,8
44	1100	2023	1850	6	17	28	39	39	28	19	14	3,5	2,8	2,2
45	1100	2024	1850	9	21	36	49	50	36	25	19	7,5	3,7	2,8
46	1100	2018	2450	5	20	42	60	60	60	46	34	8,5	3,7	2,2
47	1100	2019	2450	3	14	25	35	35	24	16	12	1,0	1,8	1,6
48	1100	2021	2450	5	17	31	42	41	29	19	14	1,9	2,2	1,8
49	1100	2023	2450	7	22	37	50	50	36	24	18	3,8	2,8	2,2
50	1100	2024	2450	11	27	47	60	60	47	31	23	8,2	3,7	2,8
51	1200	2023	650	2	5	8	12	11	9	7	5	1,1	2,0	1,7
52	1200	2024	650	4	8	13	23	25	19	15	11	6,9	4,0	2,7
53	1200	2025	650	3	7	9	14	13	10	8	6	2,0	2,4	2,0
54	1200	2027	650	4	8	11	17	15	12	10	7	3,8	3,0	2,4
55	1200	2023	1250	3	9	14	20	19	14	10	7	1,2	2,0	1,7
56	1200	2024	1250	5	14	24	39	43	32	23	17	8,0	4,0	2,7
57	1200	2025	1250	4	11	17	24	22	16	12	9	2,2	2,4	2,0
58	1200	2027	1250	5	13	21	29	27	20	14	11	4,1	3,0	2,4
59	1200	2023	1850	4	12	21	29	27	19	13	10	1,3	2,0	1,7
60	1200	2024	1850	7	20	36	54	60	45	31	23	9,1	4,0	2,7
61	1200	2025	1850	5	15	25	34	32	23	16	12	2,4	2,4	2,0



Rectangular straight silencer

DLDY

Width a mm	Code	Length l mm	Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
			63	125	250	500	1000	2000	4000	8000			
1200	2027	1850	7	19	31	40	39	28	19	14	4,5	3,0	2,4
1200	2023	2450	4	16	28	37	35	24	16	12	1,4	2,0	1,7
1200	2024	2450	9	25	47	60	60	59	39	29	10,3	4,0	2,7
1200	2025	2450	6	20	33	43	41	29	19	14	2,5	2,4	2,0
1200	2027	2450	9	24	40	52	50	36	24	18	4,8	3,0	2,4
1300	2018	650	2	4	7	12	12	10	8	6	0,8	1,9	1,5
1300	2021	650	2	6	9	15	15	12	9	7	1,8	2,4	1,9
1300	2022	650	3	8	13	23	29	22	17	13	7,8	4,3	2,6
1300	2023	650	3	7	11	19	19	15	12	9	4,3	3,3	2,4
1300	2026	650	3	7	10	15	13	10	8	6	2,6	2,6	2,2
1300	2018	1250	2	7	13	20	21	15	11	8	0,9	1,9	1,5
1300	2021	1250	3	9	16	25	26	19	14	10	2,0	2,4	1,9
1300	2022	1250	5	13	24	38	50	38	27	20	9,4	4,3	2,6
1300	2023	1250	5	12	21	32	34	25	18	14	4,9	3,3	2,4
1300	2026	1250	5	12	19	25	22	16	12	9	2,8	2,6	2,2
1300	2018	1850	2	10	18	28	30	21	15	11	1,0	1,9	1,5
1300	2021	1850	4	13	24	35	37	27	18	14	2,2	2,4	1,9
1300	2022	1850	6	19	36	53	60	53	37	27	11,0	4,3	2,6
1300	2023	1850	6	17	31	45	49	36	24	18	5,4	3,3	2,4
1300	2026	1850	6	17	27	35	32	23	16	12	3,0	2,6	2,2
1300	2018	2450	3	13	24	36	39	27	18	13	1,1	1,9	1,5
1300	2021	2450	4	17	31	45	48	34	23	17	2,5	2,4	1,9
1300	2022	2450	8	24	47	60	60	60	46	34	12,6	4,3	2,6
1300	2023	2450	7	22	41	58	60	46	31	23	6,0	3,3	2,4
1300	2026	2450	8	22	36	45	41	29	19	14	3,2	2,6	2,2
1400	2021	650	1	4	6	11	11	9	7	5	0,6	1,8	1,5
1400	2022	650	2	5	8	15	17	13	10	8	1,6	2,3	1,8
1400	2026	650	3	7	10	17	16	13	10	8	2,9	2,8	2,2
1400	2028	650	4	9	13	22	22	17	13	10	7,2	4,0	2,8
1400	2029	650	3	7	9	13	11	9	7	5	1,9	2,3	2,0
1400	2021	1250	2	7	12	18	19	14	10	7	0,7	1,8	1,5
1400	2022	1250	2	8	15	26	29	21	15	12	1,9	2,3	1,8
1400	2026	1250	4	11	19	28	28	21	15	11	3,3	2,8	2,2
1400	2028	1250	6	15	25	36	38	28	20	15	8,2	4,0	2,8
1400	2029	1250	4	11	17	22	19	14	10	7	2,0	2,3	2,0
1400	2021	1850	2	9	17	26	26	19	13	10	0,8	1,8	1,5
1400	2022	1850	3	12	23	36	41	30	21	15	2,2	2,3	1,8
1400	2026	1850	5	16	27	39	40	29	20	15	3,7	2,8	2,2
1400	2028	1850	8	21	36	51	54	40	27	20	9,2	4,0	2,8
1400	2029	1850	5	15	25	30	27	19	13	10	2,2	2,3	2,0
1400	2021	2450	2	12	22	33	34	24	16	12	0,9	1,8	1,5
1400	2022	2450	3	15	30	46	54	38	26	19	2,4	2,3	1,8
1400	2026	2450	6	20	36	50	52	37	25	18	4,0	2,8	2,2
1400	2028	2450	10	27	47	60	60	52	35	26	10,2	4,0	2,8
1400	2029	2450	7	20	32	39	35	24	16	12	2,3	2,3	2,0
1500	2021	650	2	5	8	14	14	11	9	7	1,3	2,1	1,7
1500	2022	650	2	6	10	19	22	17	13	10	3,1	3,0	2,0
1500	2027	650	3	6	9	15	14	11	9	7	2,2	2,5	2,0
1500	2029	650	3	8	12	19	18	14	11	8	4,7	3,3	2,5
1500	2030	650	5	11	15	25	25	19	15	11	12,2	5,0	3,3
1500	2021	1250	2	8	14	23	25	19	14	10	1,5	2,1	1,7
1500	2022	1250	3	10	19	32	39	29	21	16	3,8	3,0	2,0
1500	2027	1250	4	10	17	25	24	18	13	10	2,4	2,5	2,0
1500	2029	1250	5	13	22	31	31	23	16	12	5,3	3,3	2,5
1500	2030	1250	8	18	28	41	43	32	23	17	13,9	5,0	3,3
1500	2021	1850	3	11	21	33	36	26	18	13	1,7	2,1	1,7
1500	2022	1850	4	14	27	45	56	41	28	21	4,4	3,0	2,0
1500	2027	1850	5	14	25	34	34	25	17	13	2,6	2,5	2,0
1500	2029	1850	7	19	32	43	44	32	22	16	5,9	3,3	2,5
1500	2030	1850	10	25	41	58	60	45	31	23	15,7	5,0	3,3
1500	2021	2450	3	14	27	42	47	33	22	16	1,9	2,1	1,7





Rectangular straight silencer

DLDY

	Width a mm	Code	Length l mm	Static insertion attenuation / octave band [dB]							Resistance number	Self generated noise number Intake	Self generated noise number Outlet	
				63	125	250	500	1000	2000	4000				8000
1	1500	2022	2450	5	18	36	58	60	53	35	26	5,0	3,0	2,0
2	1500	2027	2450	6	19	33	44	45	31	21	16	2,9	2,5	2,0
	1500	2029	2450	8	24	42	56	57	41	28	20	6,4	3,3	2,5
	1500	2030	2450	13	32	55	60	60	59	39	29	17,4	5,0	3,3
3	1600	2023	650	2	4	7	13	13	10	8	6	1,0	2,0	1,6
	1600	2024	650	2	5	9	17	19	15	12	9	2,3	2,7	1,9
	1600	2025	650	3	7	12	22	29	22	18	13	6,1	4,0	2,3
	1600	2028	650	2	6	8	13	12	10	8	6	1,7	2,3	1,9
4	1600	2030	650	3	7	10	16	15	12	9	7	3,4	2,9	2,3
	1600	2032	650	4	9	13	21	19	15	12	9	7,5	4,0	2,9
	1600	2023	1250	2	7	13	21	23	17	12	9	1,2	2,0	1,6
	1600	2024	1250	3	9	17	29	34	25	18	13	2,8	2,7	1,9
5	1600	2025	1250	4	12	22	36	50	38	27	21	7,6	4,0	2,3
	1600	2028	1250	3	10	16	22	21	15	11	8	1,9	2,3	1,9
	1600	2030	1250	5	12	19	27	26	19	14	10	3,7	2,9	2,3
6	1600	2032	1250	7	15	25	34	34	25	18	14	8,4	4,0	2,9
	1600	2023	1850	2	10	19	30	32	23	16	12	1,3	2,0	1,6
	1600	2024	1850	3	13	25	40	48	35	24	18	3,2	2,7	1,9
	1600	2025	1850	5	16	32	50	60	54	37	28	9,1	4,0	2,3
7	1600	2028	1850	4	13	23	31	30	21	15	11	2,0	2,3	1,9
	1600	2030	1850	6	17	28	38	37	27	18	14	4,1	2,9	2,3
	1600	2032	1850	9	22	36	48	49	36	24	18	9,3	4,0	2,9
8	1600	2023	2450	3	13	26	38	42	29	20	14	1,5	2,0	1,6
	1600	2024	2450	4	16	33	52	60	45	30	22	3,6	2,7	1,9
	1600	2025	2450	6	21	43	60	60	60	47	35	10,6	4,0	2,3
	1600	2028	2450	5	17	30	40	39	27	18	13	2,2	2,3	1,9
9	1600	2030	2450	7	22	37	49	48	34	23	17	4,4	2,9	2,3
	1600	2032	2450	11	28	47	60	60	46	31	23	10,2	4,0	2,9
	1800	2026	650	2	5	8	14	15	12	9	7	1,5	2,3	1,7
	1800	2027	650	2	6	10	19	22	16	13	10	3,1	3,0	2,0
10	1800	2032	650	3	7	10	17	17	13	10	8	3,5	3,0	2,3
	1800	2034	650	3	6	9	13	11	9	7	6	2,0	2,4	2,0
	1800	2035	650	4	9	14	23	23	18	14	11	9,4	4,5	3,0
11	1800	2036	650	3	8	11	16	14	11	9	7	3,8	3,0	2,4
	1800	2026	1250	2	8	15	24	26	19	14	11	1,7	2,3	1,7
	1800	2027	1250	3	10	18	32	38	28	20	15	3,8	3,0	2,0
12	1800	2032	1250	4	12	19	28	29	21	15	12	4,0	3,0	2,3
	1800	2034	1250	4	10	16	22	20	15	10	8	2,2	2,4	2,0
	1800	2035	1250	6	16	26	38	41	30	22	16	10,8	4,5	3,0
	1800	2036	1250	5	13	20	26	24	18	13	10	4,1	3,0	2,4
13	1800	2026	1850	3	11	21	34	38	27	19	14	1,9	2,3	1,7
	1800	2027	1850	4	14	27	44	54	40	27	20	4,4	3,0	2,0
	1800	2032	1850	5	16	28	40	41	30	21	15	4,4	3,0	2,3
14	1800	2034	1850	5	15	24	31	28	20	14	10	2,4	2,4	2,0
	1800	2035	1850	9	22	38	53	58	42	29	22	12,2	4,5	3,0
	1800	2036	1850	7	18	29	37	34	25	17	13	4,5	3,0	2,4
15	1800	2026	2450	3	14	28	43	49	35	23	17	2,2	2,3	1,7
	1800	2027	2450	4	18	35	57	60	51	34	25	5,0	3,0	2,0
	1800	2032	2450	7	21	37	51	54	38	26	19	4,9	3,0	2,3
	1800	2034	2450	6	19	32	39	36	25	17	12	2,5	2,4	2,0
16	1800	2035	2450	11	28	50	60	60	55	37	27	13,6	4,5	3,0
	1800	2036	2450	8	23	38	47	45	31	21	16	4,8	3,0	2,4
	2000	2027	650	2	4	7	12	12	10	8	6	1,0	2,0	1,6
	2000	2028	650	2	5	9	16	17	13	11	8	2,0	2,5	1,8
17	2000	2029	650	2	6	11	20	24	18	14	11	4,0	3,3	2,1
	2000	2035	650	3	8	13	21	22	17	13	10	6,9	4,0	2,7
	2000	2038	650	3	7	9	13	11	9	7	5	2,3	2,5	2,1
	2000	2039	650	5	10	15	24	23	18	14	11	12,2	5,0	3,3
18	2000	2027	1250	2	7	13	21	22	16	12	9	1,2	2,0	1,6
	2000	2028	1250	2	9	16	26	30	22	16	12	2,3	2,5	1,8
	2000	2029	1250	3	10	20	34	42	31	22	17	4,9	3,3	2,1



Rectangular straight silencer

DLDY

Width a mm	Code	Length l mm	Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake	Self generated noise number Outlet
			63	125	250	500	1000	2000	4000	8000			
2000	2035	1250	5	14	23	36	39	29	21	16	8,0	4,0	2,7
2000	2038	1250	4	11	17	22	19	14	10	7	2,5	2,5	2,1
2000	2039	1250	8	17	28	39	41	30	22	16	13,9	5,0	3,3
2000	2027	1850	2	10	19	29	31	22	15	11	1,3	2,0	1,6
2000	2028	1850	3	12	23	37	43	31	21	16	2,6	2,5	1,8
2000	2029	1850	4	15	29	48	60	44	30	22	5,8	3,3	2,1
2000	2035	1850	7	19	34	50	56	41	28	21	9,1	4,0	2,7
2000	2038	1850	6	16	25	30	26	19	13	10	2,7	2,5	2,1
2000	2039	1850	10	24	40	55	58	42	29	22	15,7	5,0	3,3
2000	2027	2450	3	13	25	37	40	28	19	14	1,5	2,0	1,6
2000	2028	2450	4	16	31	47	55	40	27	20	3,0	2,5	1,8
2000	2029	2450	5	19	38	60	60	57	38	28	6,7	3,3	2,1
2000	2035	2450	8	25	45	60	60	53	35	26	10,3	4,0	2,7
2000	2038	2450	7	20	33	39	34	24	16	12	2,9	2,5	2,1
2000	2039	2450	13	31	53	60	60	55	37	27	17,4	5,0	3,3
2200	2030	650	1	4	6	11	10	9	7	5	0,8	1,8	1,5
2200	2031	650	2	5	8	14	14	11	9	7	1,4	2,2	1,7
2200	2032	650	2	6	9	17	19	15	12	9	2,5	2,8	1,9
2200	2038	650	3	7	11	17	17	13	10	8	3,9	3,1	2,3
2200	2041	650	4	10	14	24	24	18	15	11	11,2	4,9	3,1
2200	2042	650	4	9	12	18	17	13	10	8	6,2	3,7	2,8
2200	2030	1250	2	7	12	18	18	14	10	7	0,9	1,8	1,5
2200	2031	1250	2	8	14	23	25	18	13	10	1,6	2,2	1,7
2200	2032	1250	3	9	17	29	33	25	18	13	3,0	2,8	1,9
2200	2038	1250	4	12	20	29	29	22	16	12	4,5	3,1	2,3
2200	2041	1250	7	16	27	39	42	31	23	17	13,0	4,9	3,1
2200	2042	1250	6	14	23	30	29	21	15	12	6,8	3,7	2,8
2200	2030	1850	2	9	17	26	26	18	13	9	1,0	1,8	1,5
2200	2031	1850	3	11	21	32	35	25	17	13	1,8	2,2	1,7
2200	2032	1850	3	13	25	40	47	35	24	18	3,5	2,8	1,9
2200	2038	1850	5	16	29	40	42	31	21	16	5,0	3,1	2,3
2200	2041	1850	9	22	39	55	60	44	30	23	14,8	4,9	3,1
2200	2042	1850	8	20	33	43	41	30	21	15	7,5	3,7	2,8
2200	2030	2450	2	12	23	33	34	23	16	11	1,1	1,8	1,5
2200	2031	2450	3	14	27	41	46	32	22	16	2,0	2,2	1,7
2200	2032	2450	4	17	33	52	60	45	30	22	4,0	2,8	1,9
2200	2038	2450	7	21	38	52	55	39	26	19	5,5	3,1	2,3
2200	2041	2450	11	29	51	60	60	57	38	29	16,6	4,9	3,1
2200	2042	2450	10	26	43	55	54	38	26	19	8,2	3,7	2,8

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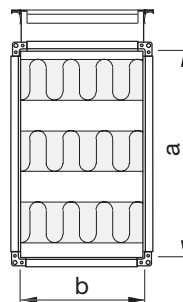
Rectangular curved silencer

BDLD

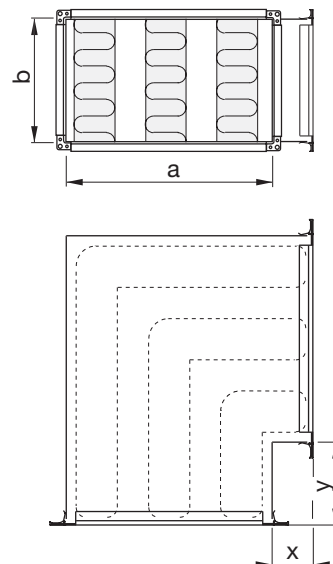


Dimensions

Vertical mounting



Horizontal mounting



Description

BDLD is a curved rectangular silencer with conventional design with width and height dimensions that doesn't exceed the present connection dimensions. The silencer can be produced in all normally existing duct dimensions.

Design

BDLD has an external shell of trapezoidal corrugated sheet metal for stability and reduced risk of oscillation.

BDLD is designed for low pressure drop with baffle combinations that attenuate especially low frequencies well.

The type of insulation material is developed to provide good sound properties, low weight and to be cleanable.

BDLD meets the requirements of air tightness class C and pressure class 2 according to EN 1507:2006.

DLDY is equipped with joining profile type RJFP.

Tools for dimensioning and planning

The software DIMsilencer is recommended for fast choice of silencer or a complete and fast sound calculation of the duct system.

The software CADvent offers dimensioning in an environment with 3D-modelling.

Computerised planning can be conducted with automatic presentation of noise levels, pressure drop etc.

If alternative material is required, this shall be stated when ordering, e.g. aluminium zinc (AZ185), stainless (2333) and acid-proof steel (2343).

The silencer is also available with the following accessories/options.

- TRA = Non-insulated inspection hatch.
- TRB = Hatch intended for external insulation.*
- TRC = Hatch intended for external insulation.*
- AIA = 50 mm fire protection insulation. Note! a and b dimensions increase by 100 mm.
- AIB = 100 mm fire protection insulation. Note! a and b dimensions increase by 200 mm.
- AIA+TRB = 50 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 100 mm.
- AIB+TRC = 100 mm fire protection insulation and the appropriate cleaning cover. Note! a and b dimensions increase by 200 mm..

* Specify insulation thickness when ordering.

Ordering example

BDLD 800 x 600 150-150 3015 TRA

Product	BDLD		
Width height a x b	800 x 600		
Leg length x, y	150-150		
Code	3015		
Accessories	TRA		



Rectangular curved silencer

BDLD

Manual designing for BDLD

A number of silencers can be designed manually, for more combinations of silencers and faster calculations use DIMsilencer. Manual method of calculation is shown below:

A Specify connection dimensions and flow-type location of the silencer.

Width	800	mm
Height	1000	mm
Leg length	150	mm
Location	Exhaust air	

BDLD-800-1000-150-3008

B Specify the sound power level before the silencer.
 Read the insertion attenuation from the tables on page 222–224.
 Calculate the sound power level after the silencer irrespective of the air flow (self generated noise).

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resistance number	Self generated noise number inlet
Sound power level before silencer	72	73	73	64	62	59	52	44		
Attenuation from table page 222–224	3	10	17	17	16	16	17	17	1,8	1,6
Sound power level after silencer without self generated noise	69	63	56	47	46	43	35	27		

C Determine the pressure drop with help of the graph on page 219 and table on page 220.
 In this case we have straight ducts before and after the silencer.

Pressure drop

	Area	0,8 m ²	Air flow	400 l/s
Graph on page 219, use resistance number, area and air velocity	Air velocity	5 m/s	Pressure drop	28 Pa
Correction at disturbance according table on page 220	Factor	1	Pressure drop after correction	28 Pa

D Determine the self generated noise from the silencer at present air flow.
 Calculate the sound power level after the silencer inclusive the self generated noise.

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 221, use resistance number and air velocity	59	56	49	46	44	40	36	28
Correction for gross cross section area	-1	-1	-1	-1	-1	-1	-1	-1
Self generated noise	58	55	48	45	43	39	35	27
Sound power level after the silencer	69	64	57	49	48	44	38	30

(Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)





Rectangular curved silencer

BDLD

The following table can be used for own manual calculations in accordance with the example on the previous page.

Designing table for DLDY

With	<input type="text"/>	mm
Height	<input type="text"/>	mm
Leg length	<input type="text"/>	mm
Location	<input type="text"/>	

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Resis- tance number	Self gene- rated noise number inlet
Sound power level before silencer										
Attenuation from table page 222-224										
Sound power level after silencer without self generated noise										

Pressure drop

	Area	m ²	Air flow	l/s
Graph on page 219, use resistance number, area and air velocity	Air velocity	m/s	Pressure drop	Pa
Correction at disturbance according table on page 220	Factor		Pressure drop after correction	Pa

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 221, use resistance number and air velocity								
Correction for gross cross section area								
Self generated noise								
Sound power level after the silencer (Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)								



Rectangular curved silencer

BDLD

Pressure drop

Follow the directions below and the adjoining graph.

- 1 Calculate the gross cross section area $a \times b$ in m^2 .
- 2 Go horizontal in the graph to the present air flow, l/s.
- 3 Go up to the resistance number achieved from the tables on page 222–224.
- 4 Read the pressure drop over the silencer, at straight duct connection before and after the silencer, (factor 1,0). For other modes of connection see the table for correction on page 220.
- 5 Air flow velocity, which is used at the calculation of the self generated noise, can be read here.

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Rectangular curved silencer

BDLD

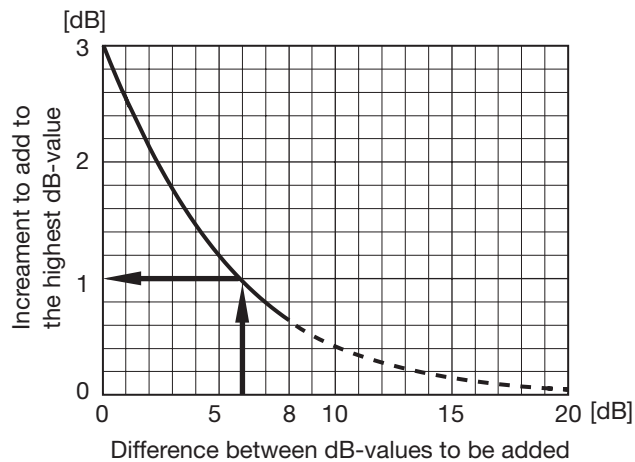
Pressure drop

Present pressure drop = Read pressure drop × below factor
 D = The largest connection side (a or b) of the silencer.

The table contains of a selection of the most common disturbance cases.

Before the silencer				Silencer	After the silencer				Factor
Distance before the silencer					Distance after the silencer				
3xD	2xD	1xD	0xD		0xD	1xD	2xD	3xD	
Duct				Silencer	Duct				1,0
Bend				Silencer	Duct				1,1
Bend		Bend		Silencer	Duct				1,2
Bend			Bend	Silencer	Duct				1,4
Bend				Silencer	Duct				1,5
Duct				Silencer	Bend		Bend		1,2
Duct				Silencer	Bend		Bend		1,3
Bend				Silencer	Bend		Bend		1,3
Bend				Silencer	Bend		Bend		1,4
Bend			Bend	Silencer	Bend		Bend		1,5
Bend		Bend		Silencer	Bend		Bend		1,6
Bend				Silencer	Bend		Bend		1,7
Bend			Bend	Silencer	Bend		Bend		1,8
Bend		Bend		Silencer	Bend		Bend		1,9
Bend				Silencer	Bend		Bend		2,0
Chamber				Silencer	Duct branch				2,0
Duct				Silencer	Chamber				3,0
Chamber				Silencer	Chamber				3,5

Logarithmic addition



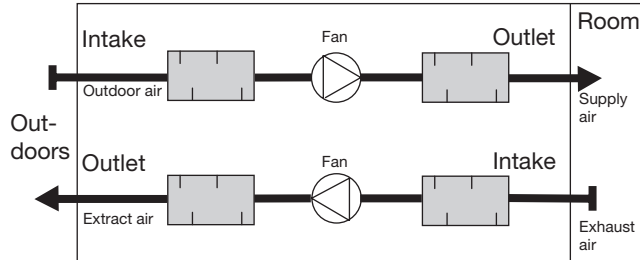


Rectangular curved silencer

BDLD

Self generated noise per frequency band

- 6 Decide from the location of the silencer whether it is the supply or exhaust graph that shall be used. (Rule of memory - the side that leads away from the fan, i.e. at supply air the outlet graph is used and at exhaust air the in-take graph.)



- 7 Go horizontally into the present graph, at present air velocity, to the self generated noise number.
- 8 Then go vertically up to the crossing of the different frequency band lines.
- 9 Read the self generated noise, at gross cross section area 1 m², for each frequency band straight out to the left. In the example only the 8000 Hz-reading is shown.
- 10 Add or subtract the correction for the present gross cross section area.

Sound power level after the silencer

The sound power level after the silencer can be calculated for all frequencies by a logarithmical addition of:

"The self generated noise" and "The sound power level before the silencer".

The shown example gives at 8000 Hz

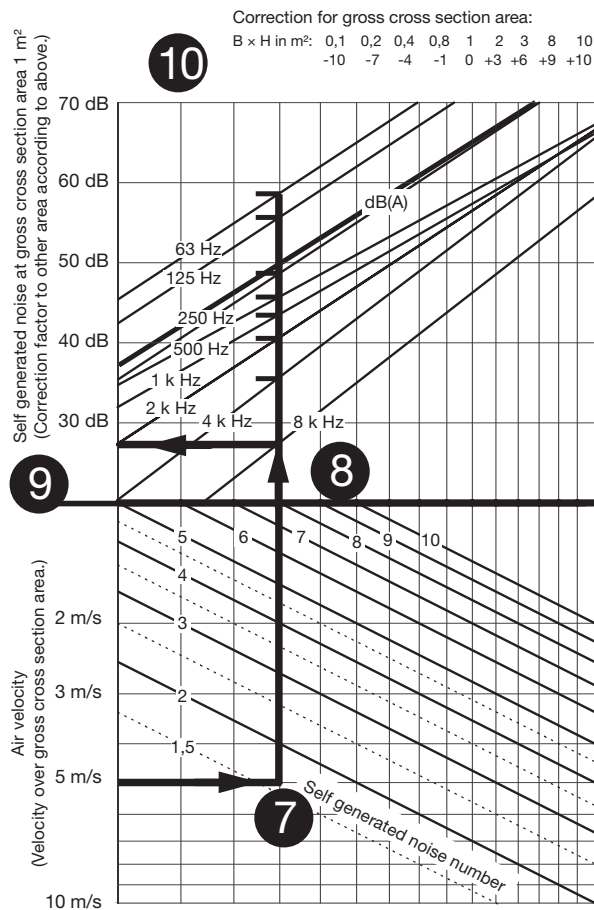
Self generated noise = 28 dB - 1 dB = 27dB

Sound power level before the silencer - the attenuation:
44 dB - 17 dB = 27dB

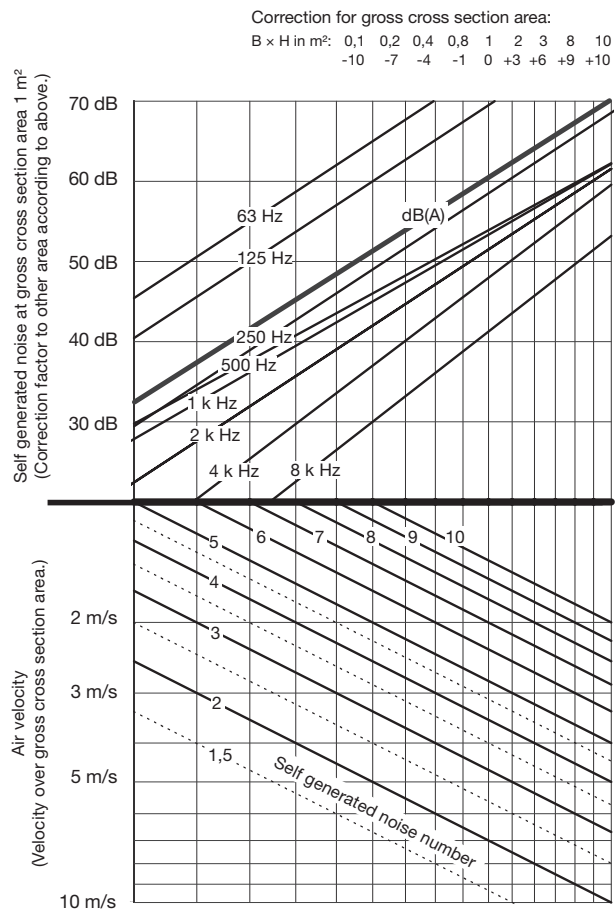
Logarithmic addition of 27 and 27 = 30 dB

(See graph for logarithmical addition on page 220.)

Self generated noise in intake BDLD



Self generated noise in outlet BDLD





Rectangular curved silencer

BDLD

Width a mm	Code	Leg length (x+y)/2 mm	Static insertion attenuation / octave band [dB]								Resis- tance number	Self gener- ated noise number Intake/Out- lett
			63	125	250	500	1000	2000	4000	8000		
400	3006	150	1	6	16	17	17	14	13	15	3,3	2,0
400	3009	150	1	7	12	12	13	12	11	12	3,3	2,0
400	3010	150	1	8	14	14	14	13	12	13	7,1	2,7
400	3006	300	1	8	20	23	25	20	17	17	3,6	2,0
400	3009	300	1	8	15	16	17	14	13	13	3,4	2,0
400	3010	300	2	10	18	19	20	16	14	15	7,4	2,7
400	3006	450	1	9	23	29	34	26	21	20	3,8	2,0
400	3009	450	2	10	19	20	22	17	14	14	3,5	2,0
400	3010	450	2	12	22	24	26	20	17	16	7,6	2,7
500	3006	150	1	7	15	15	15	14	13	14	2,0	1,7
500	3007	150	2	8	21	22	20	17	17	19	6,0	2,5
500	3014	150	2	11	15	15	15	14	13	14	12,4	3,3
500	3006	300	1	8	18	19	21	18	16	16	2,1	1,7
500	3007	300	2	10	25	29	31	27	23	23	6,7	2,5
500	3014	300	3	13	20	21	21	18	16	16	12,8	3,3
500	3006	450	2	9	20	24	27	22	18	18	2,2	1,7
500	3007	450	3	12	29	35	42	36	29	27	7,5	2,5
500	3014	450	4	16	25	26	27	22	18	18	13,2	3,3
600	3006	150	2	7	14	14	14	14	14	14	1,5	1,5
600	3007	150	2	9	19	19	18	16	17	18	3,3	2,0
600	3008	150	3	11	26	27	24	20	20	22	9,6	3,0
600	3006	300	2	8	17	17	18	16	15	16	1,5	1,5
600	3007	300	2	10	23	25	27	23	20	21	3,6	2,0
600	3008	300	4	13	30	34	34	29	26	27	11,1	3,0
600	3006	450	2	9	19	21	23	19	17	17	1,6	1,5
600	3007	450	3	12	26	31	36	29	24	23	3,8	2,0
600	3008	450	4	15	34	40	45	39	33	31	12,7	3,0
700	3008	150	3	9	18	18	17	16	16	18	2,3	1,8
700	3011	150	4	12	22	22	20	18	19	20	8,0	2,8
700	3012	150	3	11	17	17	16	16	16	17	5,0	2,3
700	3008	300	3	11	21	22	23	21	19	20	2,4	1,8
700	3011	300	4	14	27	29	31	26	23	24	8,7	2,8
700	3012	300	4	13	21	22	22	20	18	19	5,2	2,3
700	3008	450	3	12	24	27	30	25	22	22	2,5	1,8
700	3011	450	5	16	31	36	41	34	28	27	9,4	2,8
700	3012	450	4	15	25	27	28	24	21	20	5,4	2,3
800	3008	150	3	10	17	17	16	16	17	17	1,8	1,6
800	3009	150	4	11	22	21	19	19	19	21	3,3	2,0
800	3012	150	4	12	20	20	18	18	18	20	4,7	2,3
800	3015	150	6	16	26	26	23	21	22	23	19,2	4,0
800	3008	300	3	11	20	21	21	20	19	19	1,8	1,6
800	3009	300	4	13	25	27	28	25	23	23	3,6	2,0
800	3012	300	4	14	24	26	26	23	22	22	5,0	2,3
800	3015	300	7	19	31	34	33	30	27	28	21,1	4,0
800	3008	450	3	12	23	25	27	23	21	20	1,9	1,6
800	3009	450	4	14	28	33	37	31	27	26	3,8	2,0
800	3012	450	5	16	28	31	33	28	25	24	5,3	2,3
800	3015	450	8	21	37	41	44	40	33	32	22,9	4,0
900	3008	150	3	10	17	16	15	16	17	17	1,5	1,5
900	3010	150	5	13	25	25	22	21	22	23	4,5	2,3
900	3011	150	7	15	30	31	26	23	25	27	9,6	3,0
900	3013	150	5	13	19	18	17	17	18	19	3,3	2,0
900	3008	300	3	11	19	19	20	19	18	19	1,5	1,5
900	3010	300	5	15	29	31	32	29	27	27	5,0	2,3
900	3011	300	7	17	34	38	37	33	31	32	11,1	3,0
900	3013	300	5	14	22	23	23	21	21	21	3,5	2,0
900	3008	450	3	12	22	23	24	22	20	20	1,6	1,5
900	3010	450	6	16	33	38	43	37	31	31	5,5	2,3
900	3011	450	7	19	38	44	47	42	37	36	12,7	3,0



Rectangular curved silencer

BDLD

Width a mm	Code	Leg length (x+y)/2 mm	Static insertion attenuation / octave band [dB]								Resis- tance number	Self gener- ated noise number Intake/Out- lett
			63	125	250	500	1000	2000	4000	8000		
900	3013	450	5	16	26	28	29	25	23	23	3,6	2,0
1000	3009	150	5	12	20	19	18	18	19	20	2,0	1,7
1000	3010	150	6	13	24	23	20	20	21	23	3,3	2,0
1000	3011	150	7	15	28	28	24	23	24	26	6,0	2,5
1000	3014	150	9	18	32	32	27	24	26	29	19,2	4,0
1000	3009	300	5	13	23	23	23	22	22	22	2,1	1,7
1000	3010	300	6	15	27	29	29	27	25	26	3,6	2,0
1000	3011	300	7	16	32	35	35	32	30	30	6,7	2,5
1000	3014	300	10	21	37	39	37	34	32	33	22,0	4,0
1000	3009	450	5	14	25	27	29	26	24	24	2,2	1,7
1000	3010	450	6	16	31	35	38	33	29	28	3,8	2,0
1000	3011	450	7	18	36	41	45	42	36	35	7,5	2,5
1000	3014	450	10	24	42	46	48	43	39	38	24,8	4,0
1200	3010	150	6	13	19	17	17	18	19	20	1,5	1,5
1200	3011	150	7	14	22	21	19	20	21	22	2,1	1,7
1200	3012	150	8	15	26	24	21	22	24	25	3,3	2,0
1200	3014	150	11	18	34	34	28	26	29	31	9,6	3,0
1200	3018	150	12	21	34	34	28	26	29	31	19,2	4,0
1200	3010	300	6	14	21	21	21	21	21	21	1,5	1,5
1200	3011	300	7	15	25	25	25	24	24	24	2,3	1,7
1200	3012	300	8	17	29	30	30	28	27	28	3,6	2,0
1200	3014	300	11	20	38	41	38	36	35	36	11,1	3,0
1200	3018	300	13	24	39	41	38	36	35	36	22,0	4,0
1200	3010	450	6	15	24	24	25	24	23	22	1,6	1,5
1200	3011	450	7	16	28	30	31	29	27	26	2,4	1,7
1200	3012	450	8	18	32	36	39	34	31	31	3,8	2,0
1200	3014	450	11	22	42	47	49	45	41	40	12,7	3,0
1200	3018	450	14	27	44	48	49	45	41	40	24,8	4,0
1400	3012	150	8	15	21	19	18	20	22	22	1,6	1,6
1400	3013	150	9	16	24	22	20	22	23	25	2,3	1,8
1400	3014	150	10	17	27	26	22	23	26	27	3,3	2,0
1400	3015	150	12	19	31	30	25	25	28	30	5,0	2,3
1400	3016	150	13	20	35	34	28	27	30	33	8,0	2,8
1400	3020	150	16	24	36	36	29	28	31	34	19,2	4,0
1400	3022	150	11	20	23	21	19	21	23	24	5,0	2,3
1400	3012	300	8	16	24	23	23	23	23	24	1,7	1,6
1400	3013	300	9	17	27	27	26	26	26	27	2,4	1,8
1400	3014	300	10	19	31	32	31	30	29	30	3,6	2,0
1400	3015	300	12	20	35	36	35	34	33	33	5,5	2,3
1400	3016	300	14	22	39	41	38	37	36	37	9,2	2,8
1400	3020	300	17	27	41	43	39	38	37	38	22,0	4,0
1400	3022	300	11	22	27	26	25	25	25	25	5,2	2,3
1400	3012	450	8	17	26	27	27	26	25	25	1,8	1,6
1400	3013	450	9	19	30	32	33	31	29	29	2,5	1,8
1400	3014	450	10	20	34	38	39	36	33	32	3,8	2,0
1400	3015	450	12	22	39	42	46	42	38	37	6,1	2,3
1400	3016	450	14	24	43	47	49	46	42	41	10,4	2,8
1400	3020	450	17	29	46	50	50	47	44	43	24,8	4,0
1400	3022	450	11	24	31	31	31	29	28	27	5,4	2,3
1600	3013	150	9	16	23	20	19	21	23	24	1,8	1,6
1600	3015	150	11	18	28	26	22	24	26	28	3,3	2,0
1600	3016	150	13	20	31	30	25	26	28	30	4,7	2,3
1600	3017	150	14	21	35	34	27	28	31	33	7,1	2,7
1600	3023	150	10	20	21	19	17	20	22	22	3,3	2,0
1600	3025	150	17	26	33	32	26	27	30	32	19,2	4,0
1600	3013	300	9	17	25	24	24	24	25	25	1,8	1,6
1600	3015	300	12	20	31	32	31	30	30	31	3,6	2,0
1600	3016	300	13	21	35	36	35	34	33	34	5,2	2,3
1600	3017	300	15	23	39	40	38	37	36	37	8,0	2,7

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Rectangular curved silencer

BDDL

	Width a mm	Code	Leg length (x+y)/2 mm	Static insertion attenuation / octave band [dB]								Resistance number	Self generated noise number Intake/Outlet
				63	125	250	500	1000	2000	4000	8000		
1	1600	3023	300	11	21	24	23	22	23	23	23	3,4	2,0
2	1600	3025	300	18	29	39	40	37	36	36	36	21,1	4,0
3	1600	3013	450	9	18	28	28	29	28	27	27	1,9	1,6
4	1600	3015	450	12	21	35	38	40	36	34	33	3,8	2,0
5	1600	3016	450	13	23	39	43	46	42	38	38	5,7	2,3
6	1600	3017	450	15	25	43	47	49	46	42	42	9,0	2,7
7	1600	3023	450	11	23	27	27	26	26	25	25	3,5	2,0
8	1600	3025	450	19	32	45	47	48	46	41	40	22,9	4,0
9	1800	3014	150	9	16	23	21	19	21	23	24	1,9	1,6
10	1800	3016	150	11	18	28	26	22	24	26	28	3,3	2,0
11	1800	3019	150	16	22	37	37	29	29	32	35	9,6	3,0
12	1800	3026	150	12	21	23	21	19	21	23	24	4,5	2,3
13	1800	3027	150	14	23	28	26	22	24	26	28	9,6	3,0
14	1800	3030	150	15	25	27	25	22	23	26	27	11,8	3,3
15	1800	3014	300	9	17	26	25	25	25	25	26	2,0	1,6
16	1800	3016	300	12	20	31	32	31	30	30	31	3,6	2,0
17	1800	3019	300	16	24	41	43	40	38	38	39	11,1	3,0
18	1800	3026	300	12	23	27	26	24	25	25	26	4,7	2,3
19	1800	3027	300	15	26	33	33	31	30	30	31	10,1	3,0
20	1800	3030	300	16	27	32	32	30	29	29	30	12,5	3,3
21	1800	3014	450	9	19	28	29	30	29	28	27	2,1	1,6
22	1800	3016	450	12	21	35	38	40	36	34	33	3,8	2,0
23	1800	3019	450	16	26	46	50	50	48	45	44	12,7	3,0
24	1800	3026	450	12	24	30	30	30	28	28	27	4,9	2,3
25	1800	3027	450	16	28	38	40	40	36	34	33	10,7	3,0
26	1800	3030	450	16	30	37	38	37	35	33	32	13,1	3,3
27	2000	3016	150	9	17	24	22	19	22	24	24	2,0	1,7
28	2000	3018	150	11	18	28	26	22	24	26	28	3,3	2,0
29	2000	3019	150	13	19	30	29	24	25	28	30	4,4	2,2
30	2000	3020	150	14	20	33	32	26	27	30	32	6,0	2,5
31	2000	3021	150	15	22	36	36	28	28	32	34	8,4	2,9
32	2000	3026	150	18	25	37	37	29	29	32	35	19,2	4,0
33	2000	3029	150	16	24	30	28	24	25	28	29	12,4	3,3
34	2000	3016	300	9	18	26	26	25	25	26	26	2,1	1,7
35	2000	3018	300	12	20	31	32	31	30	30	31	3,6	2,0
36	2000	3019	300	13	21	34	35	35	33	33	33	4,8	2,2
37	2000	3020	300	14	22	37	39	37	36	36	36	6,7	2,5
38	2000	3021	300	15	24	40	42	39	38	38	38	9,7	2,9
39	2000	3026	300	19	28	42	44	40	38	38	39	22,0	4,0
40	2000	3029	300	16	27	35	36	34	32	32	33	13,3	3,3
41	2000	3016	450	10	19	29	30	31	29	28	28	2,2	1,7
42	2000	3018	450	12	21	35	38	40	36	34	33	3,8	2,0
43	2000	3019	450	13	23	38	42	46	41	37	37	5,3	2,2
44	2000	3020	450	14	24	41	45	48	46	41	40	7,5	2,5
45	2000	3021	450	16	25	44	49	50	47	44	43	11,0	2,9
46	2000	3026	450	19	31	47	51	50	48	45	44	24,8	4,0
47	2000	3029	450	17	29	41	43	44	40	37	36	14,2	3,3

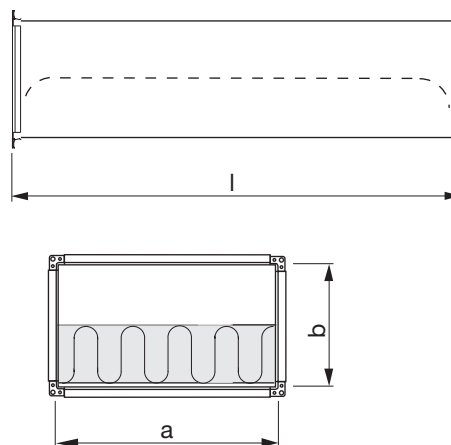


Rectangular straight low-built silencer

LRLB



Dimensions



Description

Rectangular silencer with low installation height.

Insulation with surface cover which can be cleaned with a rotating brush.

LRLB meets the requirements of tightness class C and pressure class 2 according to EN 1507:2006.

LRLB is equipped with joining profile type RJFP.

Note that the choice of interior fire insulation to reduce the free area of the silencer, leading to higher pressure drop.

a mm	b mm	l mm	Attenuation [dB] centre frequency [Hz]								Self generated noise number Intake/Outlet
			63	125	250	500	1k	2k	4k	8k	
200-1000	200	650	4	6	11	13	15	14	12	12	2,5
200-1000	200	950	5	9	16	21	23	20	15	14	2,5
200-1000	200	1250	6	11	20	28	31	26	17	15	2,5
250-1000	250	650	5	8	10	13	12	11	10	9	2,5
250-1000	250	950	6	10	15	19	18	15	12	11	2,5
250-1000	250	1250	6	12	19	25	22	18	14	12	2,5
300-1000	300	650	4	8	11	15	12	13	11	10	3
300-1000	300	950	5	10	15	19	17	19	15	13	3
300-1000	300	1250	6	13	18	23	21	22	17	15	3
350-1000	150	650	3	7	15	19	20	17	16	14	3
350-1000	150	950	3	9	21	28	30	28	23	19	3
350-1000	150	1250	4	12	26	35	40	37	29	22	3
350-1000	350	650	4	7	7	11	10	9	8	7	2,3
350-1000	350	950	5	9	10	14	13	11	9	8	2,3
350-1000	350	1250	5	11	13	18	17	14	10	9	2,3
400-1000	400	650	3	6	6	10	12	14	12	11	1,9
400-1000	400	950	4	8	9	15	19	20	15	12	1,9
400-1000	400	1250	6	10	12	20	25	24	17	14	1,9

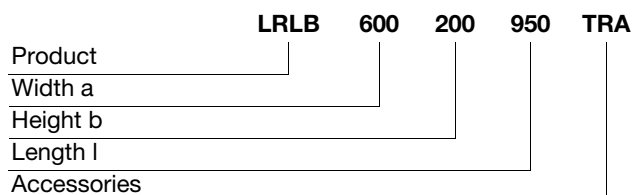
If alternative material is required, this shall be stated when ordering, e.g. aluminium zinc (AZ185), stainless (2333) and acid-proof steel (2343).

The silencer is also available with the following accessories/options.

- TRA = Non-insulated inspection hatch.
- TRB = Hatch intended for external insulation.*
- AIC = **Internal** 50 mm fire protection insulation. All insulation is covered with perforated steel.
- AIB+TRB = **Internal** 50 mm fire protection insulation as above and cleaning outlet for internal insulation.

* Specify insulation thickness when ordering.

Ordering example





Rectangular straight low-built silencer

LRLB

Manual designing for LRLB

A number of silencers can be designed manually, for more combinations of silencers and faster calculations use DIMsilencer. Manual method of calculation is shown below:

A Specify connection dimensions and flow-type location of the silencer.

Width	800	mm
Height	200	mm
Leg length	950	mm
Location	Exhaust air	

LRLB-800-200-950

B Specify the sound power level before the silencer. Read the insertion attenuation from the table on pages 225. Calculate the sound power level after the silencer irrespective of the air flow (self generated noise).

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Self generated noise number inlet
Sound power level before silencer	72	73	73	64	62	59	52	44	
Attenuation from table pages 225	5	9	16	21	23	20	15	14	1,6
Sound power level after silencer without self generated noise	67	64	57	43	39	39	37	30	

C Determine the pressure drop with help of the graph on page 228–229 and table on page 230. In this case we have straight ducts before and after the silencer.

Pressure drop

	Area	0,16 m ²	Air flow	600 l/s
Graph on page 228–229, use resistance number, area and air velocity	Air velocity	3,8 m/s	Pressure drop	35 Pa
Correction at disturbance according table on page 230	Factor	1	Pressure drop after correction	35 Pa

D Determine the self generated noise from the silencer at present air flow. Calculate the sound power level after the silencer inclusive the self generated noise.

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 231, use resistance number and air velocity	52	47	45	42	38	34	30	22
Correction for gross cross section area	-9	-9	-9	-9	-9	-9	-9	-9
Self generated noise	43	38	36	33	29	25	21	13
Sound power level after the silencer (Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)	67	64	57	43	39	39	37	30



Rectangular straight low-built silencer

LRLB

The following table can be used for own manual calculations in accordance with the example on the previous page.

Designing table for LRLB

With	<input type="text"/>	mm
Height	<input type="text"/>	mm
Leg length	<input type="text"/>	mm
Location	<input type="text"/>	

Insertion attenuation

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	Self generated noise number inlet
Sound power level before silencer									
Attenuation from table pages 225									
Sound power level after silencer without self generated noise									

Pressure drop

	Area	m ²	Air flow	l/s
Graph on page 228–229, use resistance number, area and air velocity	Air velocity	m/s	Pressure drop	Pa
Correction at disturbance according table on page 230	Factor		Pressure drop after correction	Pa

Self generated noise

	63 Hz	125 Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
Graph on page 231, use resistance number and air velocity								
Correction for gross cross section area								
Self generated noise								
Sound power level after the silencer (Logarithmical addition of self generated noise and sound power level after the silencer without self generated noise)								

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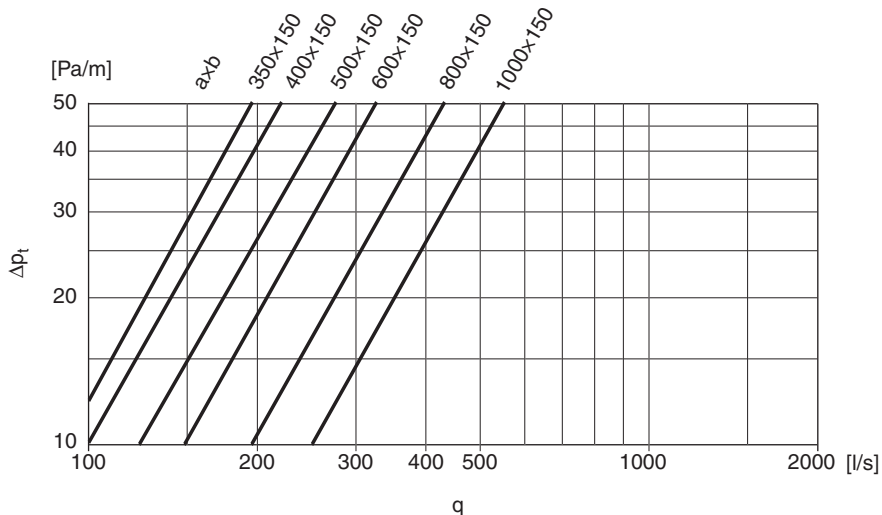
Rectangular straight low-built silencer

LRLB

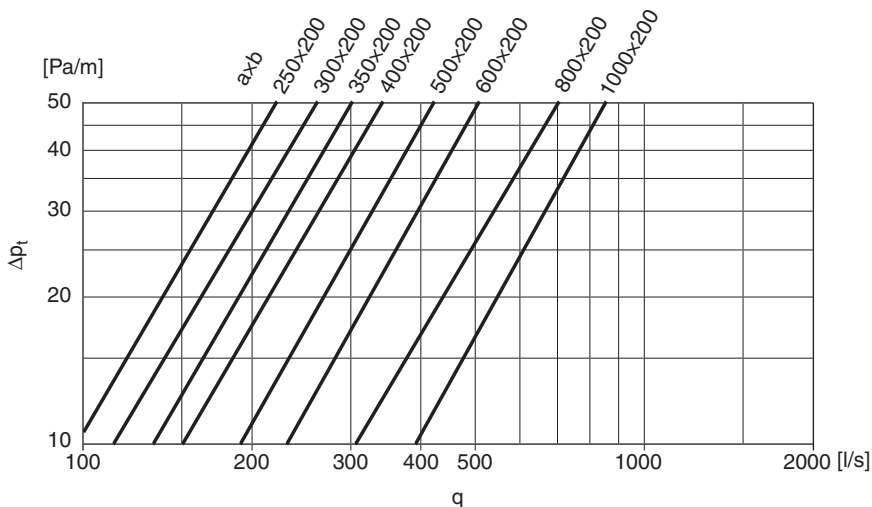
Technical data

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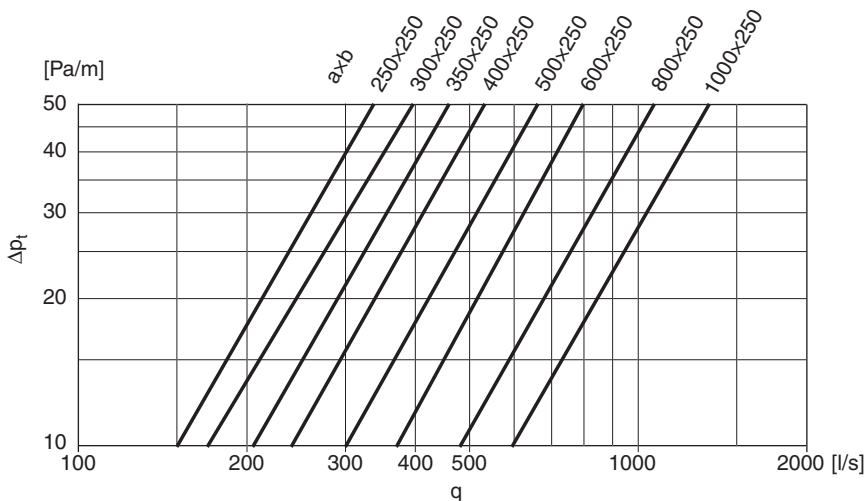
Height 150 mm



Height 200 mm



Height 250 mm



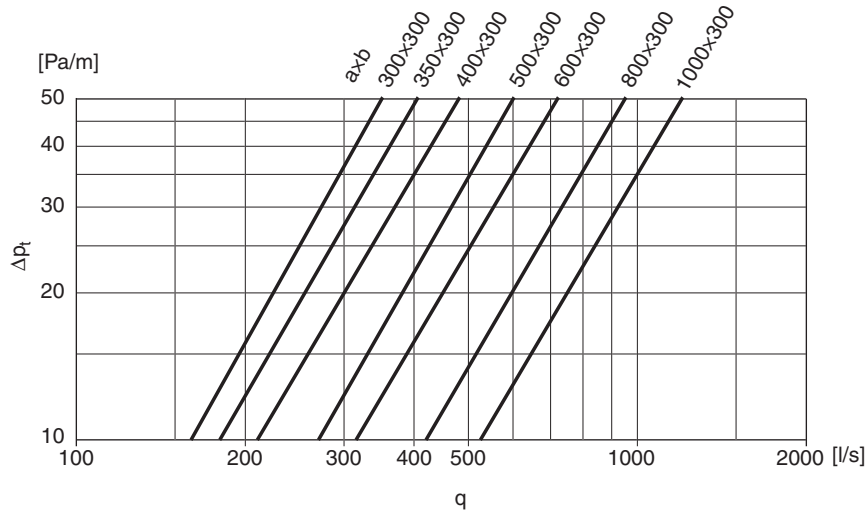


Rectangular straight low-built silencer

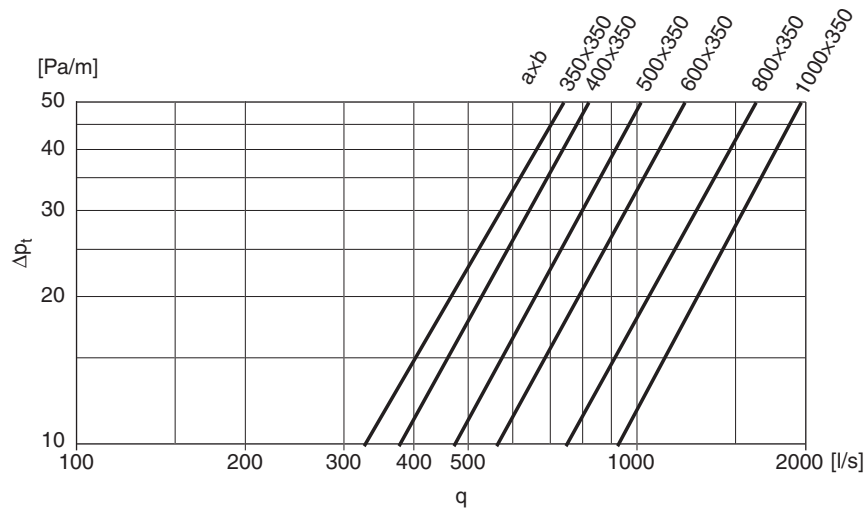
LRLB

Technical data

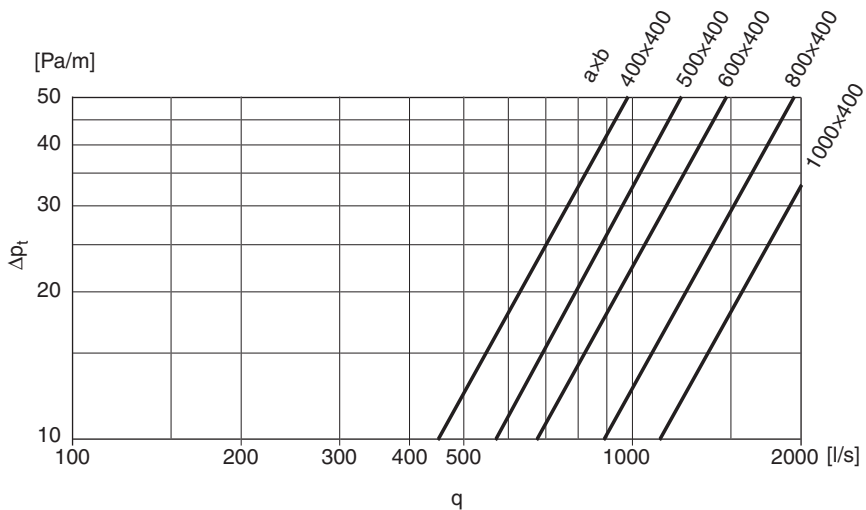
Height 300 mm



Height 350 mm



Height 400 mm



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Rectangular straight low-built silencer

LRLB

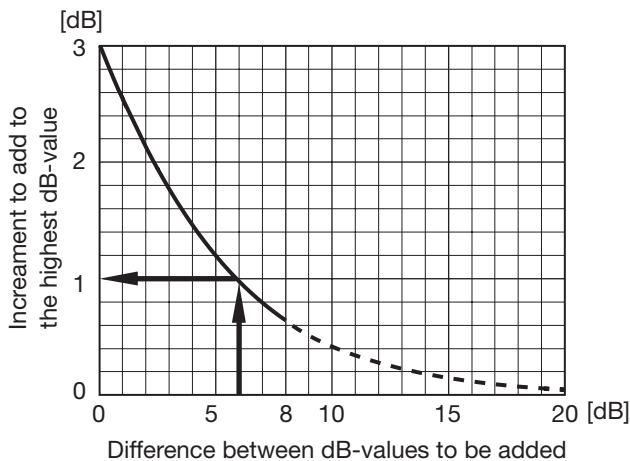
Pressure drop

Present pressure drop = Read pressure drop × below factor
 D = The largest connection side (a or b) of the silencer.

The table contains of a selection of the most common disturbance cases.

Before the silencer				Silencer	After the silencer				Factor
Distance before the silencer					Distance after the silencer				
3xD	2xD	1xD	0xD		0xD	1xD	2xD	3xD	
Duct				Silencer	Duct				1,0
Bend				Silencer	Duct				1,1
	Bend			Silencer	Duct				1,2
		Bend		Silencer	Duct				1,4
			Bend	Silencer	Duct				1,5
Duct				Silencer		Bend			1,2
Duct				Silencer	Bend				1,3
Bend				Silencer		Bend			1,3
Bend				Silencer	Bend				1,4
	Bend			Silencer	Bend	Bend			1,5
	Bend			Silencer	Bend	Bend			1,6
		Bend		Silencer	Bend	Bend			1,7
		Bend		Silencer	Bend	Bend			1,8
			Bend	Silencer	Bend	Bend			1,9
			Bend	Silencer	Bend	Bend			2,0
		Chamber		Silencer	Duct branch				2,0
Duct				Silencer	Chamber				3,0
	Chamber			Silencer	Chamber				3,5

Logarithmic addition



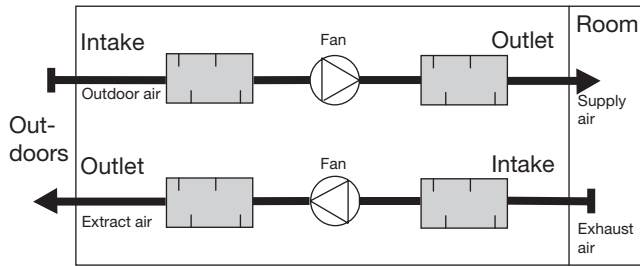


Rectangular straight low-built silencer

LRLB

Self generated noise per frequency band

- 6 Decide from the location of the silencer whether it is the supply or exhaust graph that shall be used. (Rule of memory - the side that leads away from the fan, i.e. at supply air the outlet graph is used and at exhaust air the in-take graph.)



- 7 Go horizontally into the present graph, at present air velocity, to the self generated noise number.
- 8 Then go vertically up to the crossing of the different frequency band lines.
- 9 Read the self generated noise, at gross cross section area 1 m², for each frequency band straight out to the left. In the example only the 8000 Hz-reading is shown.
- 10 Add or subtract the correction for the present gross cross section area.

Sound power level after the silencer

The sound power level after the silencer can be calculated for all frequencies by a logarithmical addition of:

"The self generated noise" and "The sound power level before the silencer".

The shown example gives at 8000 Hz

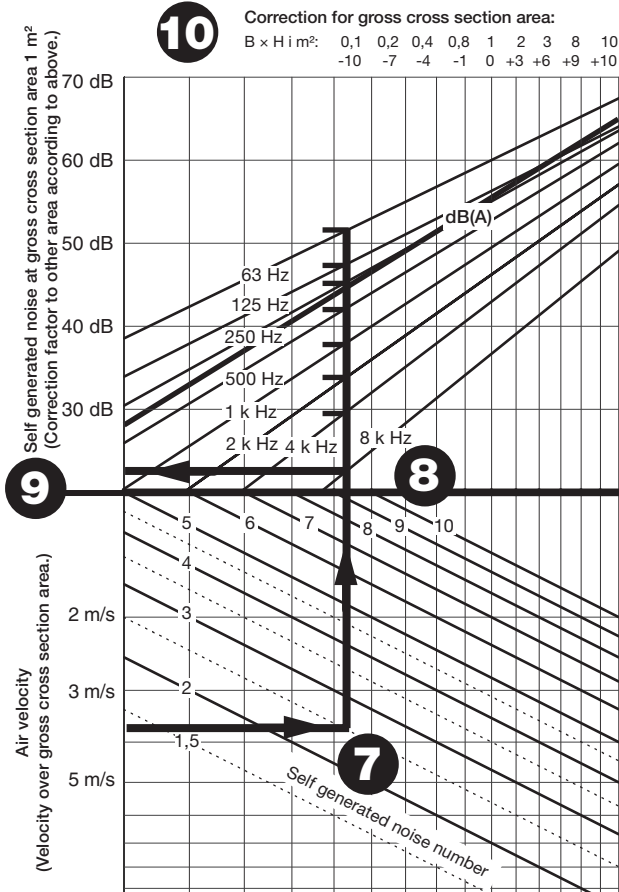
$$\text{Self generated noise} = 28 \text{ dB} - 1 \text{ dB} = 27 \text{ dB}$$

$$\text{Sound power level before the silencer} - \text{the attenuation: } 44 \text{ dB} - 17 \text{ dB} = 27 \text{ dB}$$

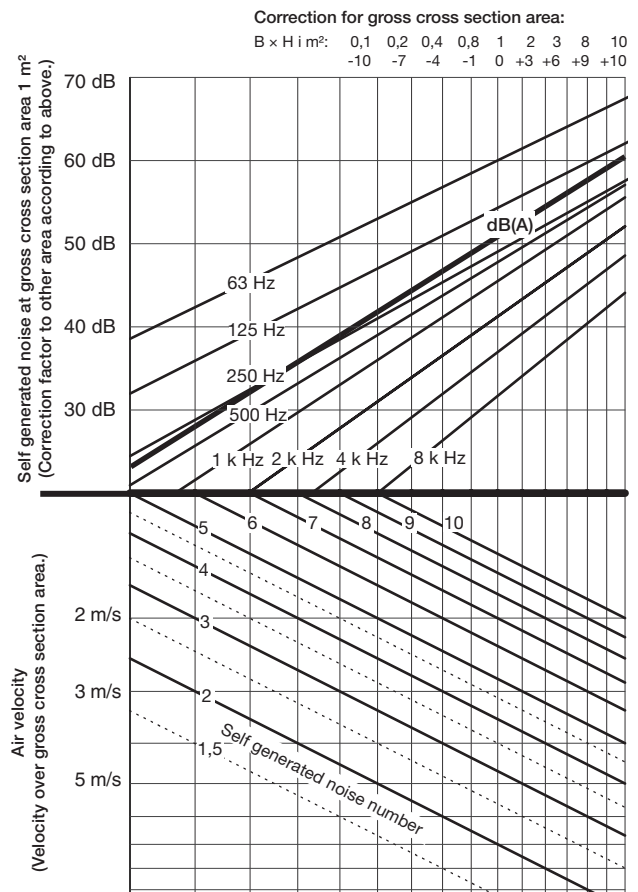
$$\text{Logarithmic addition of } 27 \text{ and } 27 = 30 \text{ dB}$$

(See graph for logarithmical addition on page 230).

Self generated noise in intake LRLB



Self generated noise in outlet LRLB





Dampers & Measure units












Lindab	1
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		To regulate	To shut-off
Standard dampers	manual	 DRU 238 DIRU 244	DSU 250 DTU 256 DTMU/DTWU 264
	for motor	electric or pneumatic 	DTHU 262
	with motor	electric 	DIRBU 269 DIRVU 271 DTBU 273 DTBCU 277 DTFU 282
		pneumatic 	DTPU 283
Cleaning dampers	manual	 PSDRU 284 TDRU 285	TDSU 286
	Alternating dampers	manual	
with motor		electric 	TATBU 289
Constant- and variable flow units (automatic dampers)	manual		DAU 298
	with motor	electric 	DA2EU 299 DAVU 300



Regulating damper



LKSR..... 301

Regulating damper



DRUI..... 302

Sliding dampers



SKMTR..... 303
SKPTR 304

Flow meters



FMDRU 305



FMDU 310



FMU 315

Measuring bends



MBU 318



MBFU 319

Insulation cup



IK 321

Handle



DRHTG 321



HANDLE 321

Assembly kits



MSATS 31
MSATS 41 321
MSATS 42

Extension spindles



VREDF 8 35 321
VREDF 15 60 321
VREDF 15 100 321

Mounting shelves



KOMHY 321



LÖMOK..... 321

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Content – Dampers

Tightness and pressure classes

		Tightness class										
		0		1		2		3		4		
		To regulate					To shut-off					
Pressure class	A	DRU DIRU DIRBU DIRVU DSU Ø63–315 PSDRU TDRU TASU	DSU Ø355–1000 TDSU				TATU TATBU				DTU Ø710–1000 DTHU Ø710–1000 DTBU Ø710–1000	
	B	DAU DA2EU DAVU							DTPU Ø355–630		DTU Ø355–630 DTMU Ø355–630 DTWU Ø355–630 DTHU Ø355–630 DTBU Ø355–630 DTBCU Ø355–630	
	C								DTPU Ø80–315		DTU Ø80–315 DTMU Ø80–315 DTWU Ø80–315 DTHU Ø80–315 DTBU Ø80–315 DTBCU Ø80–315	

Summary, motorized dampers

This is the standard range. Other combinations of dampers and motors can be ordered

	Forward Return	el el	el el	el el	el el	el spring	el spring	el spring	el el	el el	el el	press. air spring	press. air spring	press. air spring
Motor	Regulating	2 set-points	2 set-points	2 set-points	2 set-points	2 set-points	2 set-points	2 set-points	cont.	cont.	cont.	2 set-points	2 set-points	2 set-points
	Denomination	LM 24A (-F) LM 230A (-F)	NM 24A (-F) NM 230A (-F)	SM 24A SM 230A	GM 24A GM 230A	TF 24 TF 230	LF 24 LF 230	AF 24 AF 230	LM 24A -SR	NM 24A -SR	SM 24A -SR	AK 31 P	AK 41 P	AK 42 P
Original damper	Motorized damper													
DTU		DTBU Ø80–315	DTBU Ø400–500	DTBU Ø630	DTBU Ø710–1000	DTBCU Ø80–200	DTBCU Ø250–315	DTBCU Ø400–630				DTPU Ø80–200	DTPU Ø250–315	DTPU Ø400–630
TATU			TATBU Ø100–400											
DAU		DA2EU Ø80–315							DAVU Ø80–315					
DIRU			DIRBU Ø100–200	DIRBU Ø250–315						DIRVU Ø100–200	DIRVU Ø250–315			

Accessories to be used at installation of damper motors on site

Motor	Damper type	
	Normal damper with knob and normal spindle	DTHU damper and long spindle
Belimo LM	LÖMOK + VREDF 15 60	– (Motor fits directly)
Belimo NM	LÖMOK + VREDF 15 100 or KOMHY + VREDF 15 60	– (Motor fits directly)
Belimo SM	KOMHY + VREDF 15 60	– (Motor fits directly)
Belimo GM	Motor does not fit	– (Motor fits directly) NOTE! Ø900–1000 need 2 motors
Belimo TF	LÖMOK + VREDF 15 100 or KOMHY + VREDF 15 100	– (Motor fits directly)
Belimo LF	KOMHY + VREDF 15 100	– (Motor fits directly)
Belimo AF	KOMHY + VREDF 15 100	– (Motor fits directly)
Sauter AK 31 P	KOMHY + VREDF 15 100 + MSATS AK 31 P	MSATS AK 31 P
Sauter AK 41 P	KOMHY + VREDF 15 100 + MSATS AK 41 P	MSATS AK 41 P
Sauter AK 42 P	Special shelf + VREDF 15 100 + MSATS AK 42 P	Motor does not fit



General

Dampers for different purposes are used in a ventilation system

Regulating dampers are used to balance the plant so that the wanted air flow is achieved.

The damper blade is normally designed so that a certain flow of air can always leak through, even if the damper is closed. This makes the sensitivity to angle changes less than for a shut-off damper.

Dampers are available in both manual and automatic versions. The manual dampers are adjusted when the installation is commissioned, and are cheaper than the automatic ones. On the other hand, manual dampers need many more hours of adjustment, and means of flow measurement. For this reason, some dampers have measuring nozzles. In large systems, or where pressure variations occur, it is better to use automatic dampers. These are also referred to as constant flow dampers.

Shut-off dampers are used to save energy, to prevent the spread of poisonous gas etc. These dampers often have rubber seals on the damper blade. The damper can either be designed as a straight piece of ducting, or as a T-piece to switch the air flow from one duct to another. The blade is normally either fully open or fully closed.

Tightness

Two types of tightness are applicable to dampers:

1. Tightness to the environment

This specifies the magnitude of the air leakage through joints and leaks in the duct sides in relation to the duct surface. This leakage is classified into tightness classes A, B, C and D. Most dampers can be used in installations/systems which require them to maintain tightness class D. Please refer to the Safe section.

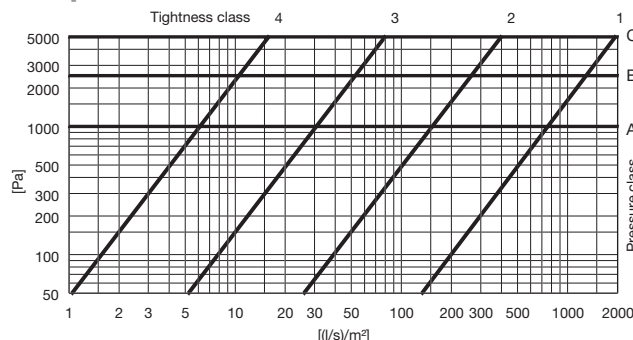
Fulfills the demands of the standard EN 1751.

2. Tightness past a closed damper shutter

This refers to the amount of air leaking past the closed blade, in relation to shutter area. This relationship is classified into five sealing classes 0–4. There is no tightness requirement for class 0. The classes 0 and 1 are regulating dampers. The highest class, tightness class 4, refers to very tight shut-off dampers.

Fulfills the demands of the standard EN 1751.

Tightness past the closed damper blade and pressure classes



Motorized dampers

Dampers can be supplied ex works with actuators installed. Various types of actuators are available, both electric and pneumatic.

Material

Standard

Bushings are made from polyamide. The bushings can withstand constant temperatures of up to 150 °C.

Special

If a higher corrosivity class is required, the dampers can be supplied with a polyester coating, or made from aluminium or stainless steel. The blades can be provided with silicone rubber seals for higher temperature operation. The dampers can then withstand constant temperatures of 150 °C and 200 °C intermittent. In these cases, please contact Lindab.

CE-labeling

Our dampers with electrical shifting motor are regarded as components of the duct system and need not to be separately CE-labeled. Their electrical shifting motor on the contrary is a part of the electrical system and is CE-labeled. Assurance of conformity can be found at www.belimo.com.

Blade setting

DRU and DSU dampers of dimensions Ø63–160 are supplied with their blades completely open, to facilitate adjustment preparations. Dampers of other dimensions are supplied with closed blades to prevent transport damage.

Cleaning of duct system

Most dampers have components which obstruct the duct system to a greater or lesser extent, and thus obstruct or prevent cleaning.

Please refer to page 603.



Regulating damper

DRU



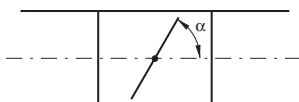
Description

Has a turning, cut-off blade. The blade is stepless adjustable 0–90°. The damper admits an insulation thickness of approx. 50 mm.

The blade is designed to generate a minimum of noise. The noise is approx. the same as for a perforated blade. But the blade is less sensitive to clogging since it lacks perforations.

Setting angle α

$\alpha = 0^\circ =$ open blade, $\alpha = 90^\circ =$ closed blade

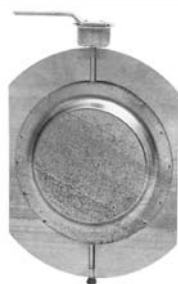


There is a separate assembly, measuring, balancing and maintenance instruction for this product.

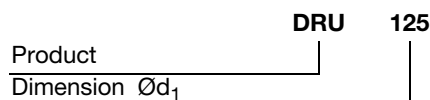
Ø 80–1000 fulfills pressure class A in closed position.

The cup at Ø 80–630 can be complemented with the special insulation cup IK at insulation thicker than 50 mm.

Reinforced blade

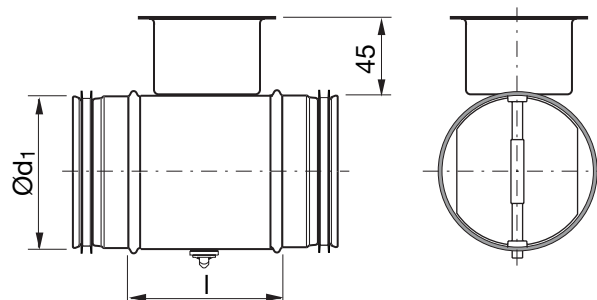


Ordering example

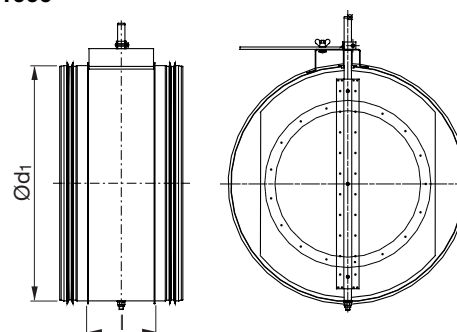


Dimensions

Ø 80–630



Ø 800–1000



Ød ₁ nom	l mm	m kg	Sealing class past closed blade
80	100	0,34	0
100	100	0,40	0
112	100	0,43	0
125	100	0,46	0
140	100	0,54	0
150	100	0,60	0
160	100	0,65	0
180	100	0,69	0
200	100	0,80	0
224	100	0,90	0
250	100	1,28	0
280	100	1,40	0
300	100	1,62	0
315	100	1,70	0
355	100	2,01	0
400	100	2,82	0
450	100	3,70	0
500	115	4,70	0
560	115	5,51	0
600	115	5,90	0
630	115	6,21	0
800	230	18,2	0
1000	230	24,4	0



Regulating damper

DRU

Property	Ø 80-315	Ø 400	Ø 500	Ø 630	Ø 800x1000
The blade is set via a knob in a protective cup.	x	x	x	x	
The setting of the blade is read against an embossed scale at the rim of the cup.	x	x	x	x	
The blade is locked with two screws, type Pozidriv (PZD2).	x	x	x	x	
The blade has reinforced locking with a sturdy wing nut.					x
The blade is reinforced.			x	x	
The blade is additionally reinforced.					x
With sturdy handle.		x	x	x	
With additionally reinforced handle.					x
With reinforced stop beads.			x	x	
The axle is reinforced.					x
The damper can be delivered prepared for motor.	x	x	x	x	
The damper can be delivered with motor.	x	x	x	x	x

Technical data

Pressure drop graphs with noise data for dimensioning

The solid curves show the pressure drop, Δp_t , over the damper as a function of flow q , and setting angle α . The dashed curves give the A-weighted sound power data, L_{WA} , in dB to the duct.

Example

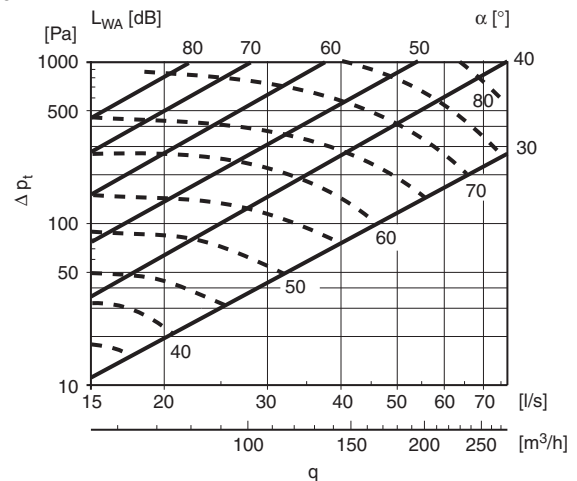
Given

- Dimension Ø100
- Flow 60 l/s
- Pressure drop 200 Pa

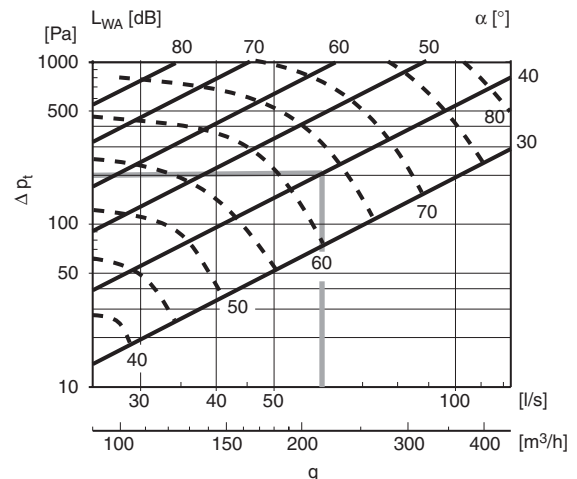
Obtained from graph

- Setting angle 40°
- Sound power level 63 dB (A)

Ø80



Ø100



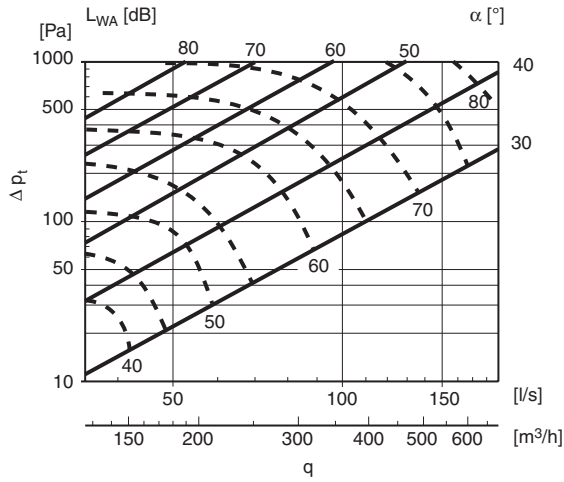


Regulating damper

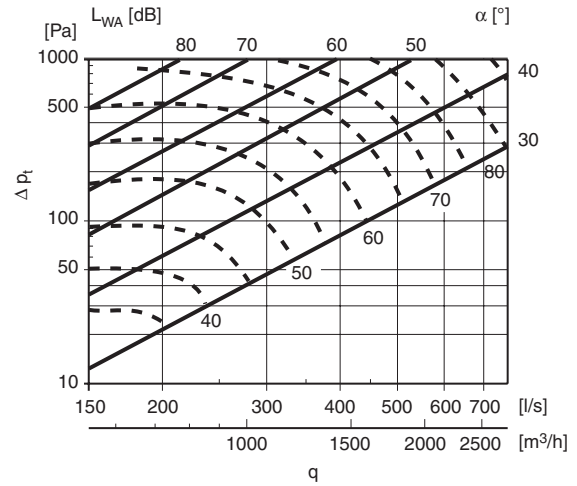
DRU

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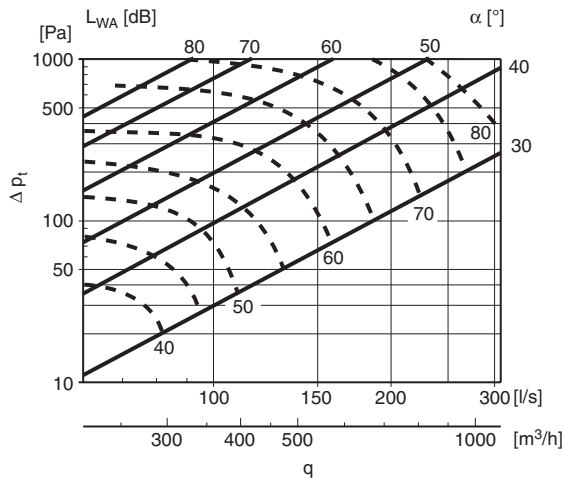
Ø125



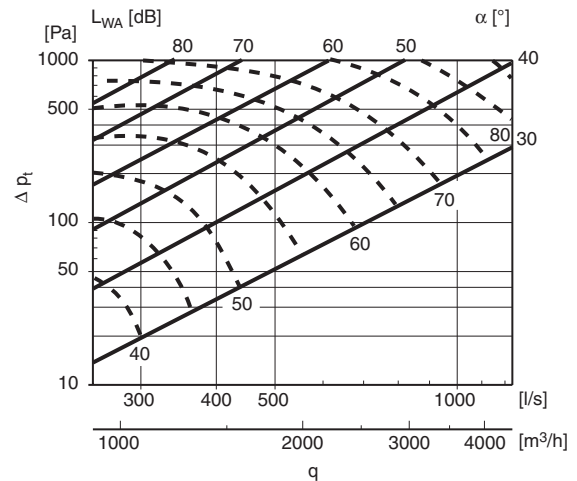
Ø250



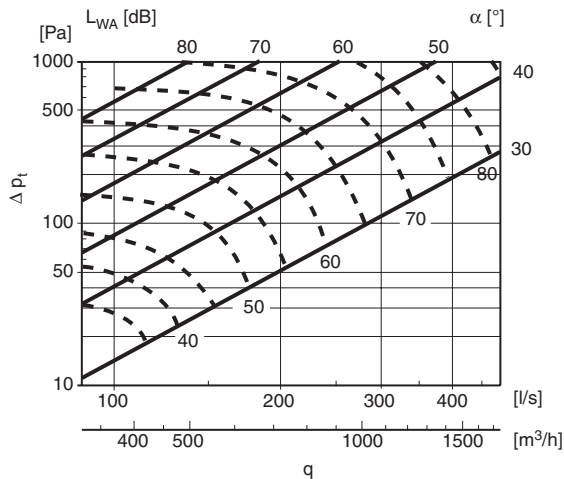
Ø160



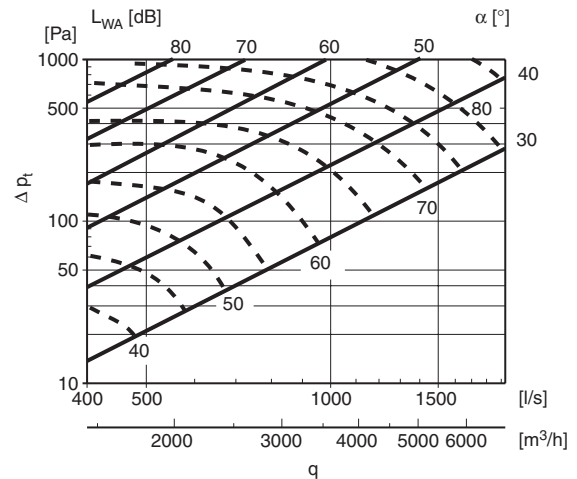
Ø315



Ø200



Ø400

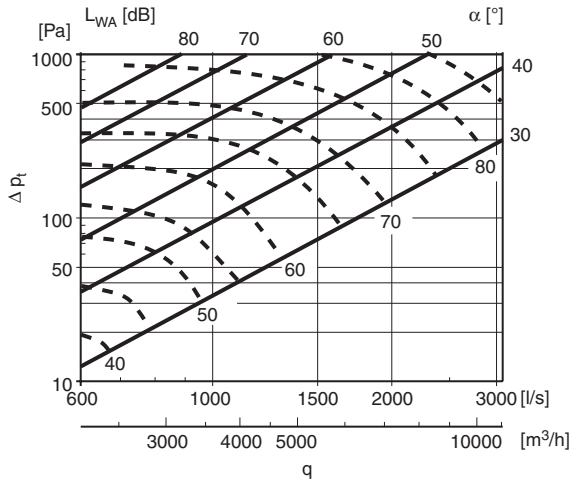




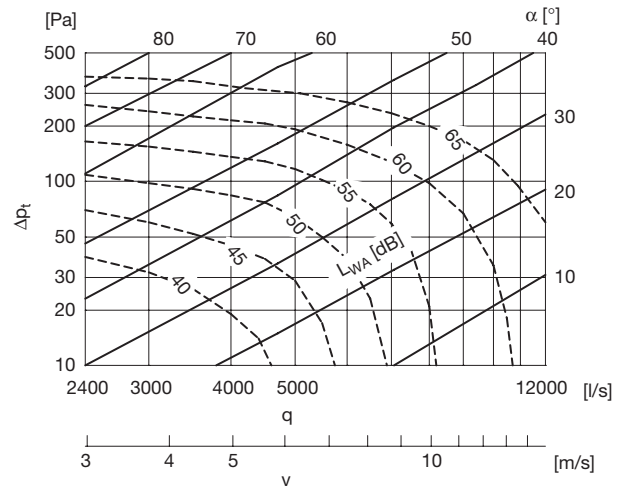
Regulating damper

DRU

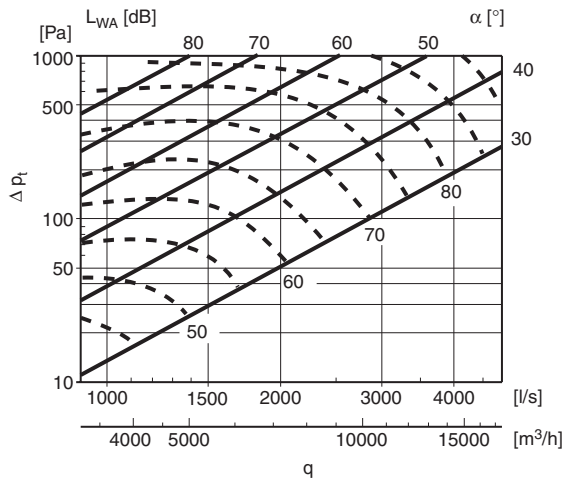
Ø500



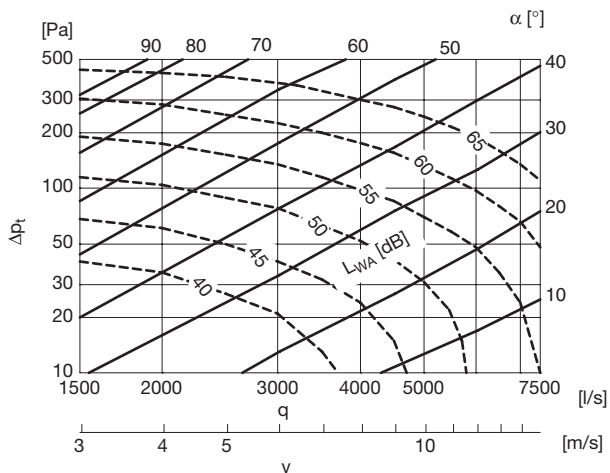
Ø1000



Ø630



Ø800



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Regulating damper

DRU

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dim Ød ₁	Pressure drop [Pa]	Velocity app. 12 [m/s]								Velocity app. 15 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80		Flow 60 [l/s]								Flow 75 [l/s]							
	500	75	75	75	75	68	64	56	53	80	80	80	80	72	68	60	56
	300	75	75	71	71	64	57	50	43	79	79	75	75	68	60	53	45
	200	75	75	71	65	61	51	41	34	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100		Flow 100 [l/s]								Flow 120 [l/s]							
	500	84	81	80	72	68	62	61	61	88	85	84	76	72	65	64	64
	300	81	80	79	70	67	59	56	55	86	85	84	74	70	62	59	58
	200	80	80	79	69	66	55	51	51	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
125		Flow 160 [l/s]								Flow 180 [l/s]							
	500	89	85	81	73	69	62	62	58	91	87	83	75	71	63	63	59
	300	86	86	79	71	68	60	56	53	89	88	81	73	69	62	58	54
	200	89	85	78	70	63	56	52	52	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
160		Flow 240 [l/s]								Flow 300 [l/s]							
	500	84	84	80	72	68	65	65	65	89	89	85	77	73	69	69	69
	300	81	81	78	70	67	63	59	59	87	87	83	76	72	68	64	64
	200	84	80	77	69	66	58	55	55	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
200		Flow 400 [l/s]								Flow 450 [l/s]							
	500	90	82	78	72	67	66	71	70	93	85	81	73	71	70	74	73
	300	92	84	78	71	67	63	67	66	95	87	81	72	68	66	69	68
	200	90	83	79	69	65	62	61	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
250		Flow 600 [l/s]								Flow 750 [l/s]							
	500	87	83	76	68	64	68	68	68	94	90	82	74	70	74	74	74
	300	84	80	73	67	65	64	62	61	91	87	80	72	70	69	72	68
	200	82	79	72	64	63	63	62	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315		Flow 1000 [l/s]								Flow 1200 [l/s]							
	500	89	85	77	69	68	67	69	65	92	88	80	72	71	70	72	68
	300	85	81	74	66	64	64	66	59	89	85	78	70	68	68	70	62
	200	86	79	72	65	63	62	64	58	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
400		Flow 1600 [l/s]								Flow 1800 [l/s]							
	500	95	87	79	75	67	71	70	69	98	90	82	78	70	74	73	72
	300	91	83	76	69	67	66	65	64	94	86	79	71	70	69	68	67
	200	89	82	75	69	67	64	63	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
500		Flow 2400 [l/s]								Flow 3000 [l/s]							
	500	96	88	80	72	70	73	72	71	102	94	85	78	75	77	77	76
	300	93	85	78	70	66	66	70	70	99	91	83	74	70	70	74	74
	200	91	84	76	70	68	66	65	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
630		Flow 4000 [l/s]								Flow 4500 [l/s]							
	500	103	95	86	82	77	77	76	73	107	98	90	85	81	81	80	76
	300	100	91	83	79	75	75	74	66	105	96	88	83	79	79	79	70
	200	98	90	82	78	74	70	70	62	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
800		Flow 6000 [l/s]								Flow 7500 [l/s]							
	500	83	73	69	69	68	66	65	60	-	-	-	-	-	-	-	-
	300	79	70	65	65	63	61	59	54	83	73	68	67	66	64	62	57
	200	77	67	63	62	60	58	55	49	80	70	66	65	63	61	58	52
	100	73	63	59	57	55	52	48	42	77	67	62	60	57	55	51	45
	50	71	60	55	52	49	47	41	35	76	65	61	58	54	52	47	40
25	71	59	54	51	48	44	39	32	76	65	60	57	54	50	45	38	
1000		Flow 9400 [l/s]								Flow 11800 [l/s]							
	500	85	77	71	71	68	67	65	60	-	-	-	-	-	-	-	-
	300	82	74	68	66	64	62	60	54	-	-	-	-	-	-	-	-
	200	80	71	65	64	61	58	57	50	-	-	-	-	-	-	-	-
	100	76	67	61	59	56	54	52	46	-	-	-	-	-	-	-	-
	50	73	65	58	57	54	51	50	45	-	-	-	-	-	-	-	-
25	72	64	58	57	53	51	49	44	-	-	-	-	-	-	-	-	

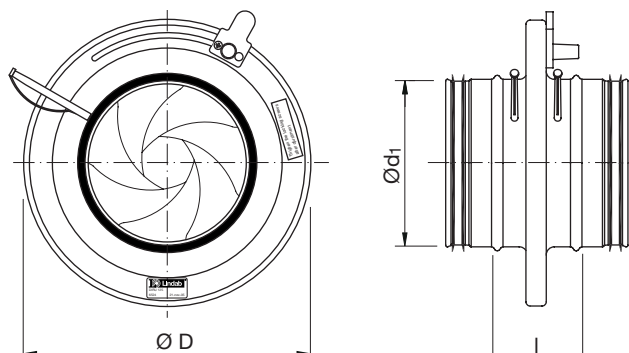


Damper with flow meter

DIRU



Dimensions



Description

The damper DIRU with flow meter offers measurement of the air flow. DIRU has following characteristics: low noise level, centric flow, fixed measurement nozzles for accurate flow measurement and is equipped with regulating facilities which can be fully opened, which means that you do not need cleaning covers. It fulfils tightness class C.

The damper blades forms a measuring flange which allows flow measuring. By measuring the pressure difference between the measure nozzles, you can through the equation on the damper derive the flow q [l/s]. The setting value of the damper and the correction factor (k-factor) is the same number which means that you do not have to read a graphs in order to get the k-factor from a setting value.

The air flow is regulated with a handle.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–630 fullfills pressure class A in closed position.

Material

The damper is made of hot-dip galvanized sheet steel.

Installation

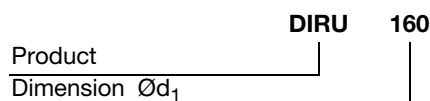
Consider required straight distance after or before disturbance, as mentioned on the card attached to the measurement nozzles, to obtain accurate flow measurement.

Cleaning

By fully open the damper, one get access to the duct. Do not forget to readjust the damper after cleaning.

Ød ₁ nom	ØD mm	l mm	m kg
80	135	52	0,60
100	163	54	0,80
125	210	63	1,20
150	230	53	1,40
160	230	60	1,40
200	285	62	2,00
250	333	62	2,60
300	406	65	3,00
315	406	63	3,40
400	560	70	6,90
500	644	60	7,90
630	811	60	11,9

Ordering example

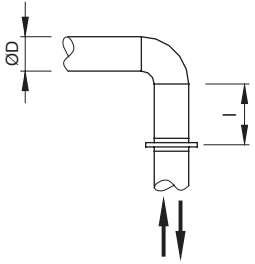
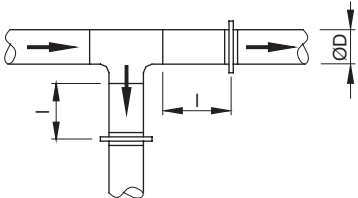
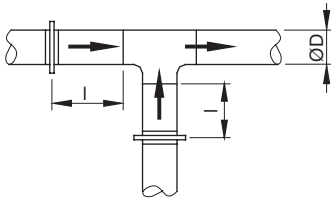
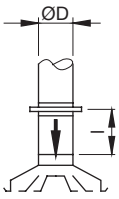




Damper with flow meter

DIRU

Technical data for DIRU, DIRBU and DIRVU

l = straight distance before and after disturbances	Method error ± 7%
	$l \geq 1 D$
	$l \geq 1 D$
	$l \geq 3 D$
	$l \geq 3 D$

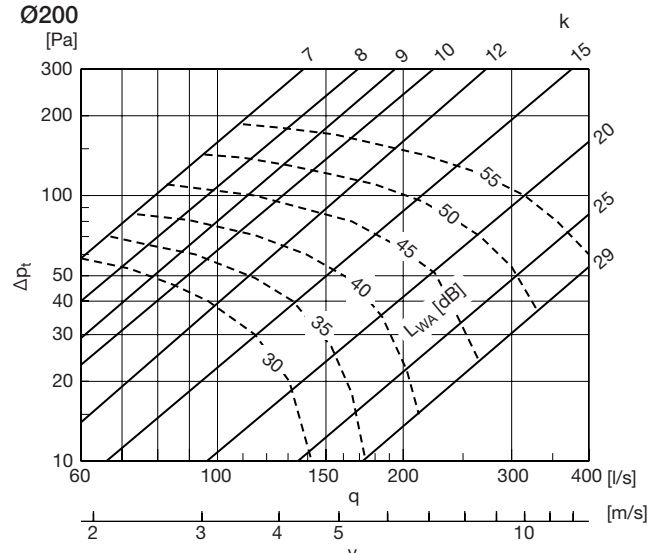
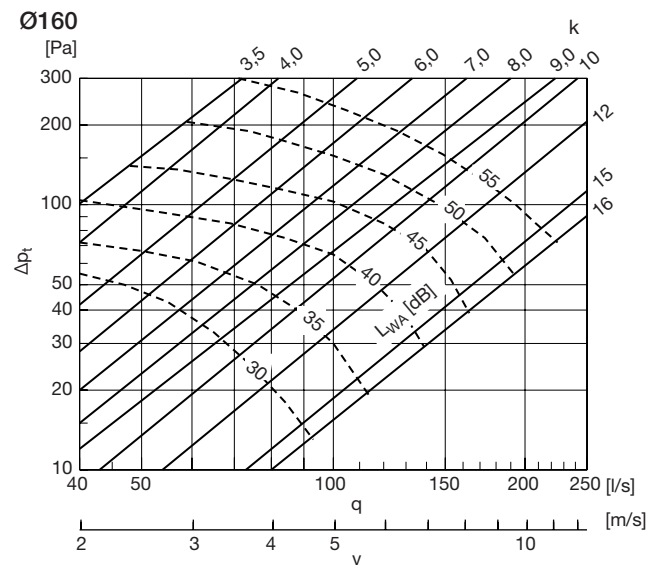
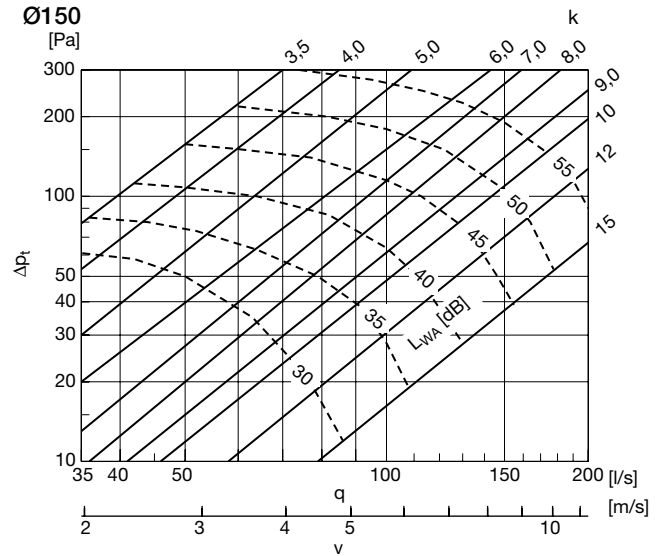
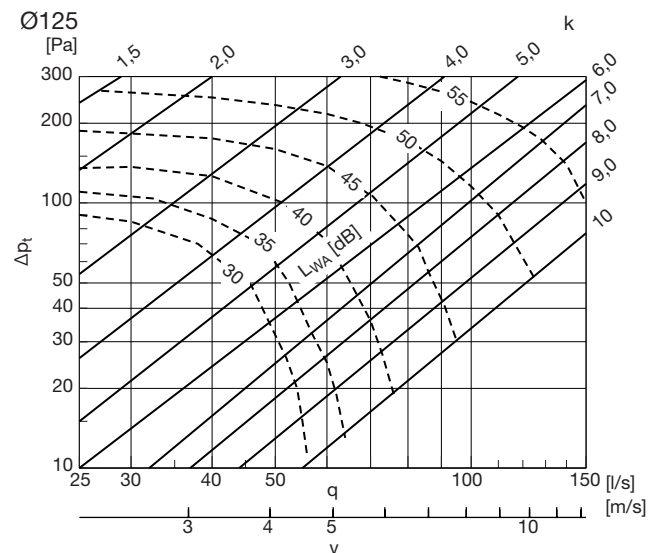
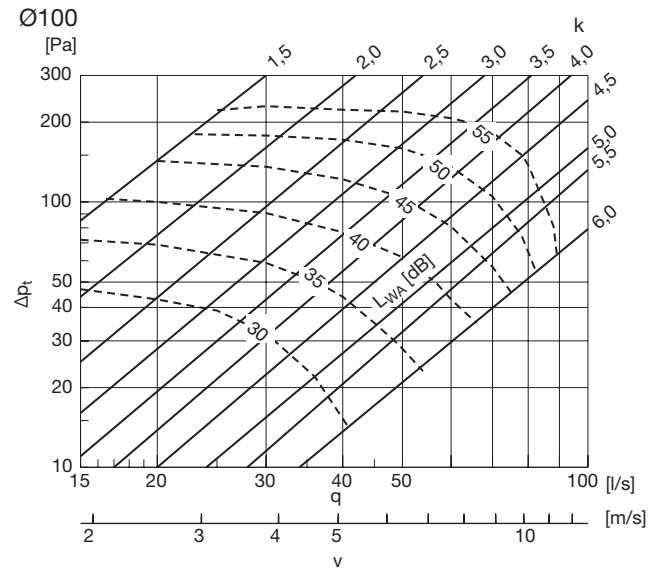
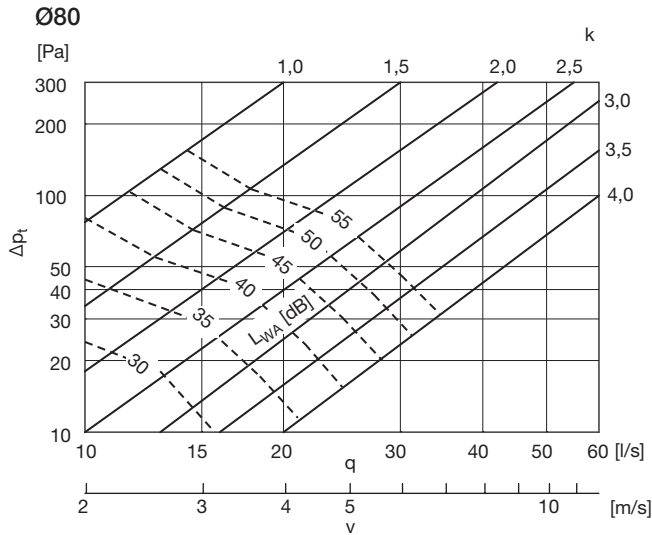
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Damper with flow meter

DIRU, DIRBU, DIRVU

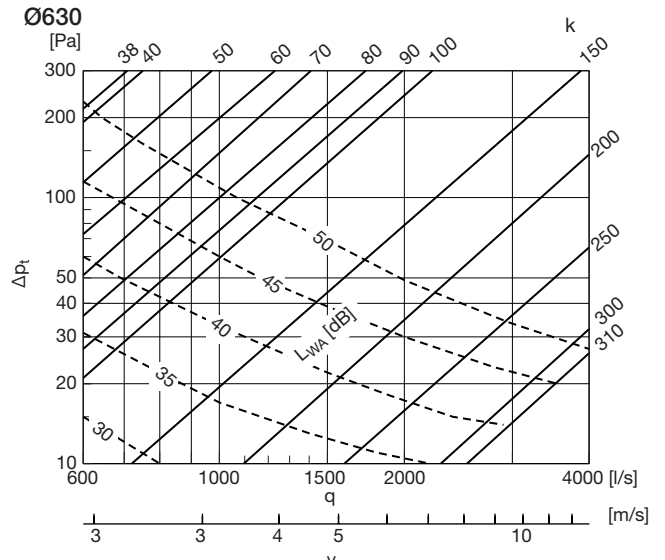
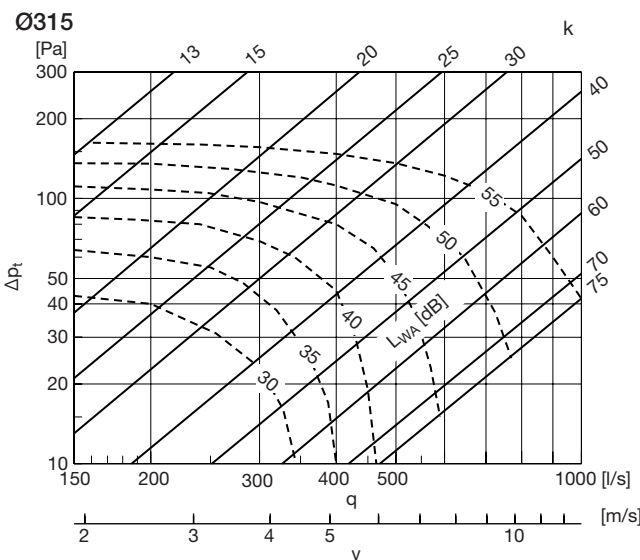
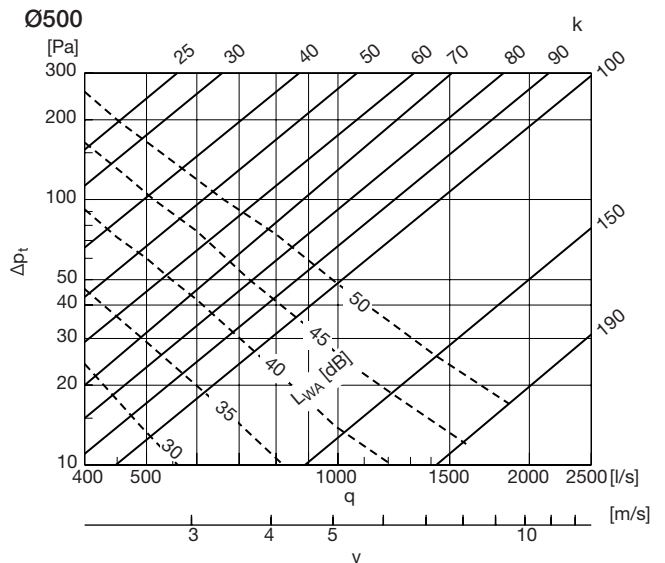
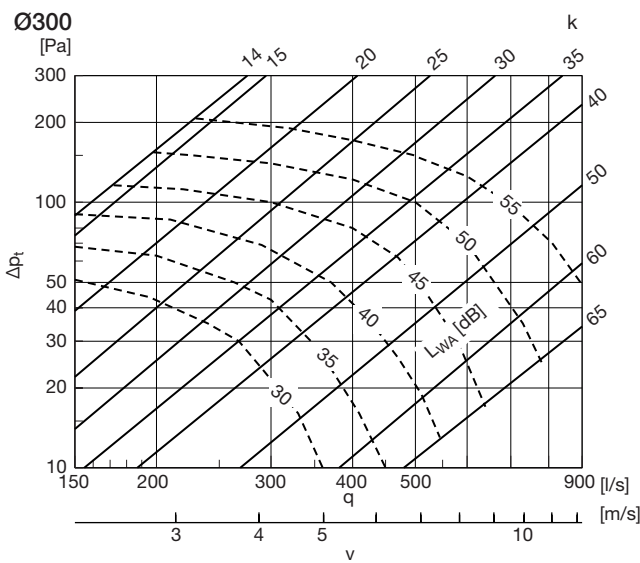
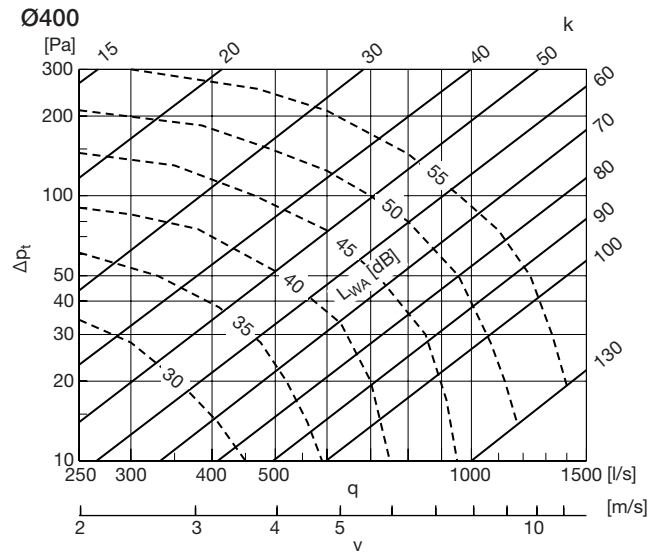
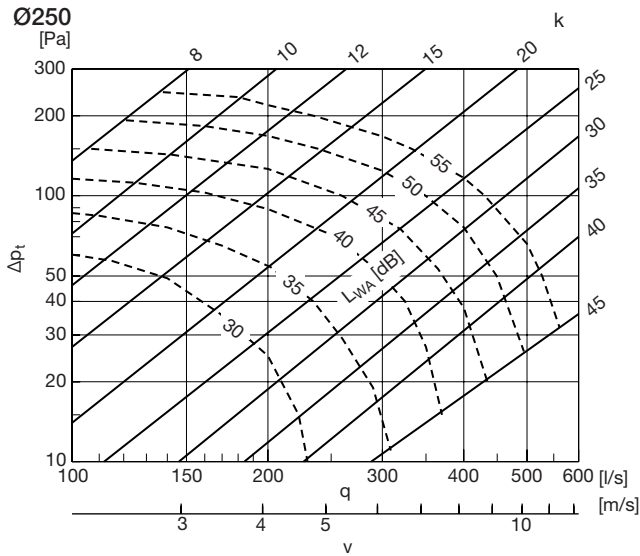
Pressure drop graph with noise data for dimensioning





Damper with flow meter

DIRU, DIRBU, DIRVU



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Damper with flow meter

DIRU, DIRBU, DIRVU

dim Ød ₁	Pressure drop [Pa]	Velocity app. 9 [m/s]								Velocity app. 12 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80		Flow 45 [l/s]								Flow 60[l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	63	68	67	60	54	48	41	30	-	-	-	-	-	-	-	-
20	63	64	62	55	48	39	29	20	-	-	-	-	-	-	-	-	
100		Flow 70 [l/s]								Flow 95[l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	89	82	69	59	50	41	32	-	-	-	-	-	-	-	-	-
	100	83	76	63	53	44	35	26	-	-	-	-	-	-	-	-	-
	50	77	70	57	47	38	29	20	16	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
125		Flow 110 [l/s]								Flow 145 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	81	76	65	54	44	35	27	24	-	-	-	-	-	-	-	-
	100	78	73	62	51	41	32	24	21	81	76	65	54	44	35	27	24
	50	75	70	59	48	38	29	21	18	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
150		Flow 160 [l/s]								Flow 200[l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	77	71	59	49	41	33	24	21	81	75	63	53	45	37	28	25
	50	73	67	55	45	37	29	20	17	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
160		Flow 180 [l/s]								Flow 240 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	81	72	62	52	44	36	27	24	-	-	-	-	-	-	-	-
	50	75	66	56	46	38	30	21	18	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
200		Flow 280 [l/s]								Flow 380 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	79	69	60	51	43	37	30	26	-	-	-	-	-	-	-	-
	50	73	63	54	45	37	31	24	20	78	68	59	50	42	36	29	25
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
250		Flow 440 [l/s]								Flow 590 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	76	66	56	54	44	39	32	29	-	-	-	-	-	-	-	-
	50	70	60	50	48	38	33	26	23	-	-	-	-	-	-	-	-
20	65	55	45	43	33	28	21	18	-	-	-	-	-	-	-	-	
300		Flow 640 [l/s]								Flow 850[l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	70	62	53	51	44	39	30	29	70	62	53	51	44	39	30	29
	50	66	58	49	47	40	35	26	25	-	-	-	-	-	-	-	-
20	62	54	45	43	36	31	22	21	-	-	-	-	-	-	-	-	
315		Flow 700 [l/s]								Flow 940 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	70	63	54	52	46	41	32	32	-	-	-	-	-	-	-	-
	50	66	59	50	48	42	37	28	28	70	63	54	52	46	41	32	32
20	63	56	47	45	39	34	25	25	-	-	-	-	-	-	-	-	
400		Flow 1130 [l/s]								Flow 1500 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	66	59	51	50	44	40	34	32	-	-	-	-	-	-	-	-
20	63	56	48	47	41	37	31	29	-	-	-	-	-	-	-	-	
500		Flow 1770 [l/s]								Flow 2360 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	73	63	54	48	40	34	25	20	-	-	-	-	-	-	-	-	
630		Flow 2810 [l/s]								Flow 3740 [l/s]							
	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	63	53	46	41	36	33	30	24	64	54	47	42	37	34	31	25	

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Shut-off damper

DSU



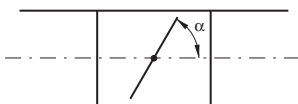
Description

Has a turning, circular blade. The blade is stepless adjustable 0–90°. The damper is used when you have lower demands for shut-off capacity. The damper admits an insulation thickness of approx. 50 mm.

The damper can on occasions be used for regulation.

Setting angle α

$\alpha = 0^\circ =$ open blade, $\alpha = 90^\circ =$ closed blade



There is a separate assembly, measuring, balancing and maintenance instruction for this product.

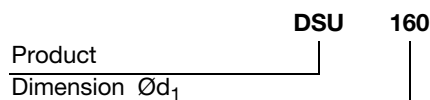
$\varnothing 63$ –1000 fullfills pressure class A in closed position.

The cup at $\varnothing 80$ –630 can be complemented with the special insulation cup IK at insulation thicker than 50 mm.

Reinforced blade

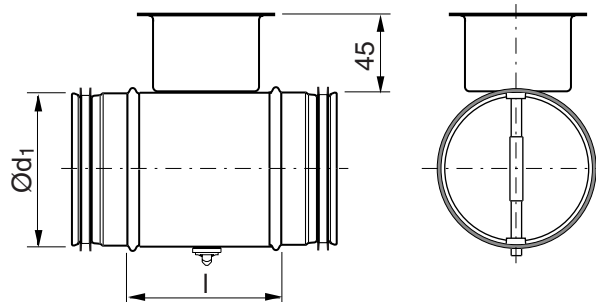


Ordering example

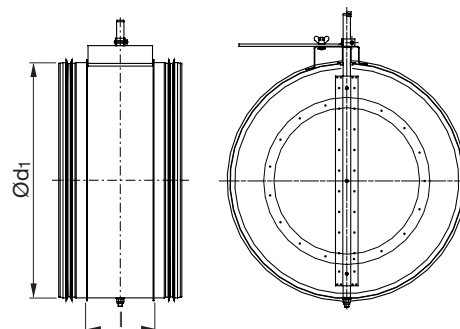


Dimensions

$\varnothing 80$ –630



$\varnothing 800$ –1000



$\varnothing d_1$ nom	l mm	m kg	Sealing class past closed blade
63	100	0,30	0
80	100	0,35	0
100	100	0,40	0
112	100	0,44	0
125	100	0,49	0
140	100	0,54	0
150	100	0,57	0
160	100	0,67	0
180	100	0,73	0
200	100	0,86	0
224	100	1,10	0
250	100	1,31	0
280	100	1,51	0
300	100	1,65	0
315	100	1,81	0
355	100	2,00	0
400	100	2,91	1
450	100	3,90	1
500	115	4,92	1
560	115	6,01	1
600	115	6,40	1
630	115	6,92	1
800	230	19,0	1
1000	230	30,0	1



Shut-off damper

DSU

Property	Ø 80-315	Ø 400	Ø 500	Ø 630	Ø 800-1000
The blade is set via a knob in a protective cup.	x	x	x	x	
The setting of the blade is read against an embossed scale at the rim of the cup.	x	x	x	x	
The blade is locked with two screws, type Pozidriv (PZD2).	x	x	x	x	
The blade has reinforced locking with a sturdy wing nut.					x
The blade is reinforced.		x	x	x	
The blade is additionally reinforced.					x
With sturdy handle.		x	x	x	
With additionally reinforced handle.					x
With reinforced stop beads.			x	x	
The axle is reinforced.					x
The damper can be delivered prepared for motor.	x	x	x	x	
The damper can be delivered with motor.	x	x	x	x	x

Technical data

Pressure drop graphs with noise data for dimensioning

The solid curves show the pressure drop, Δp_t , over the damper as a function of flow q , and setting angle α .

The dashed curves give the A-weighted sound power data, L_{WA} , in dB to the duct.

Example

Given Dimension Ø100

Flow 60 l/s

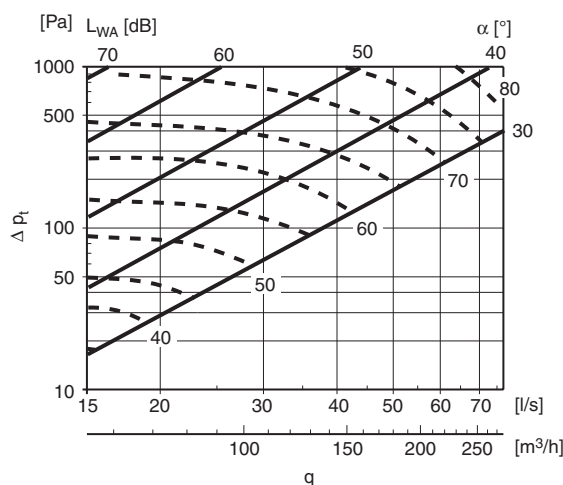
Pressure drop 200 Pa

Obtained from graph

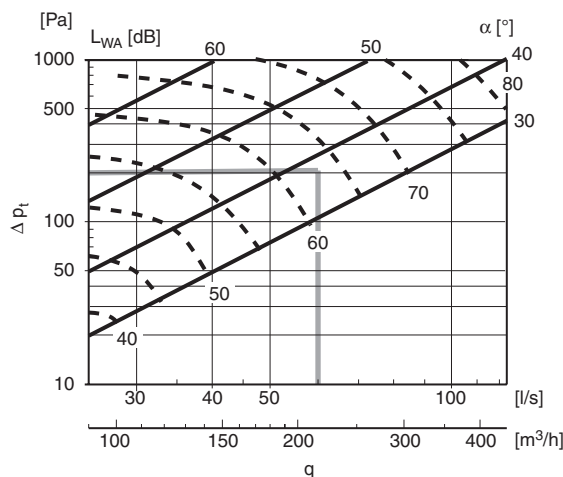
Setting angle 38°

Sound power level 63 dB (A)

Ø80



Ø100



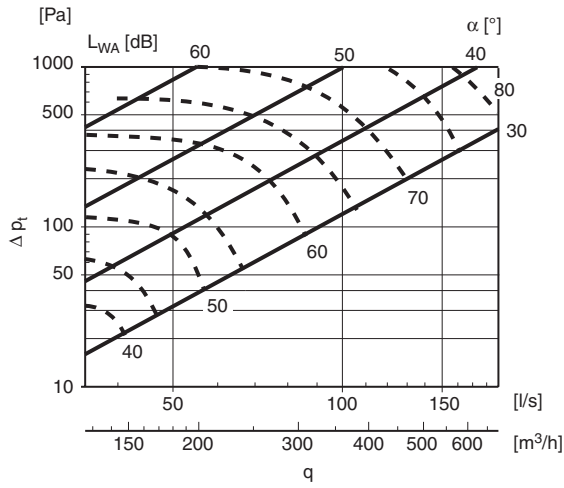


Shut-off damper

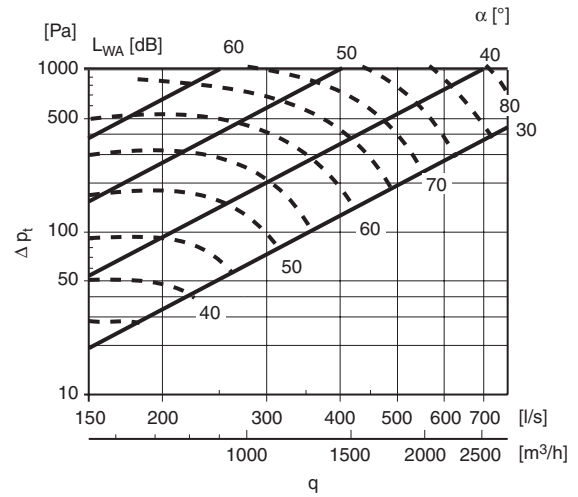
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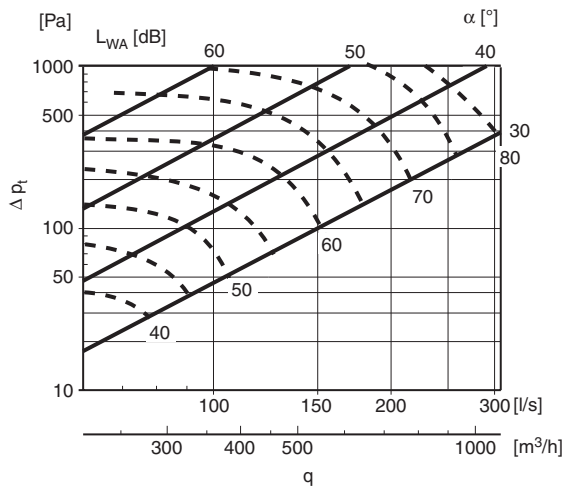
Ø125



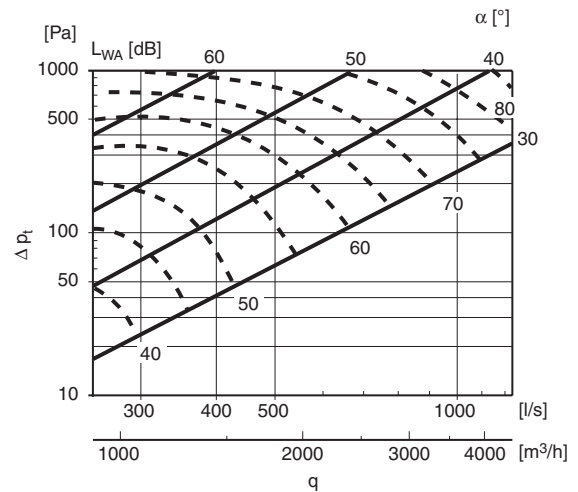
Ø250



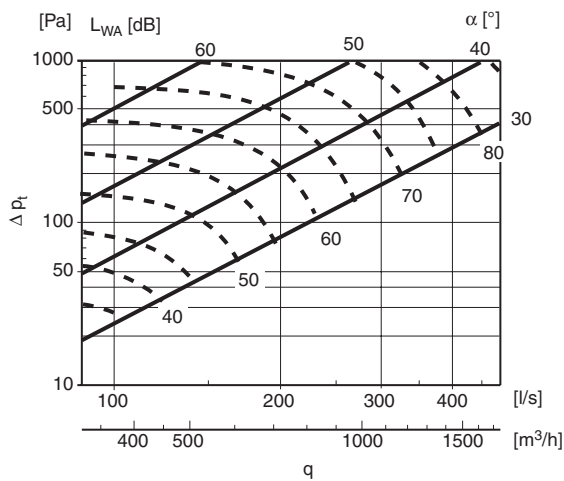
Ø160



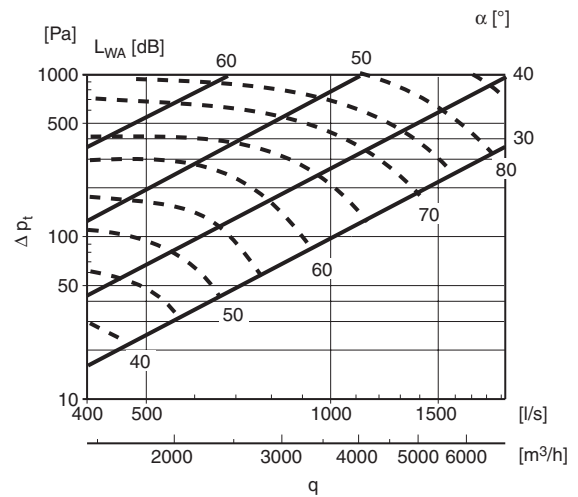
Ø315



Ø200



Ø400

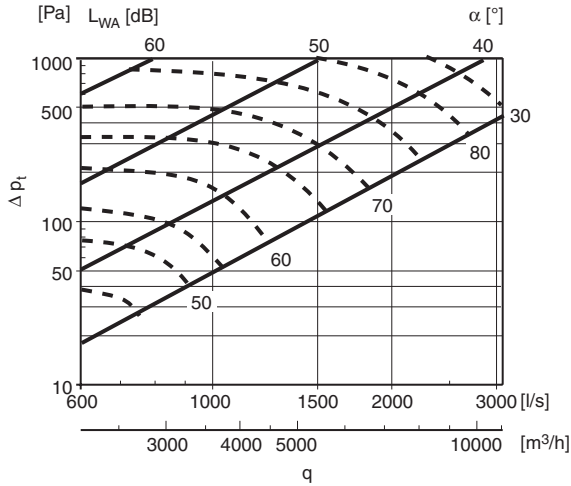




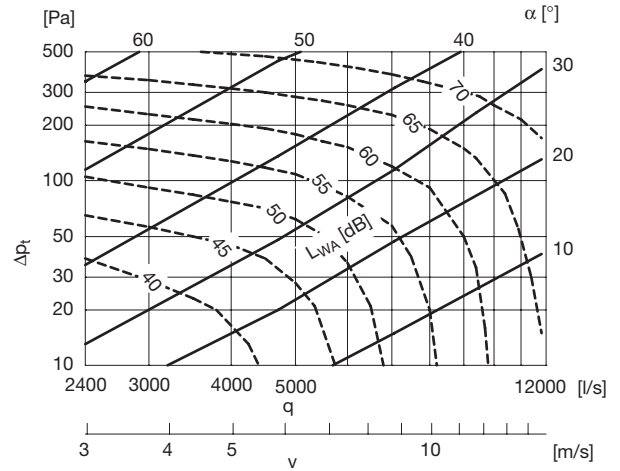
Shut-off damper

DSU

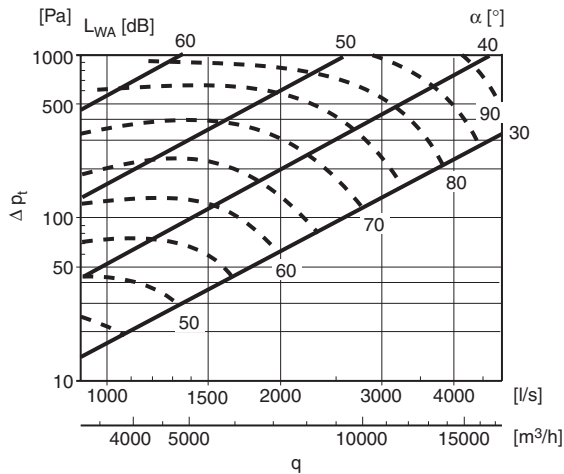
Ø500



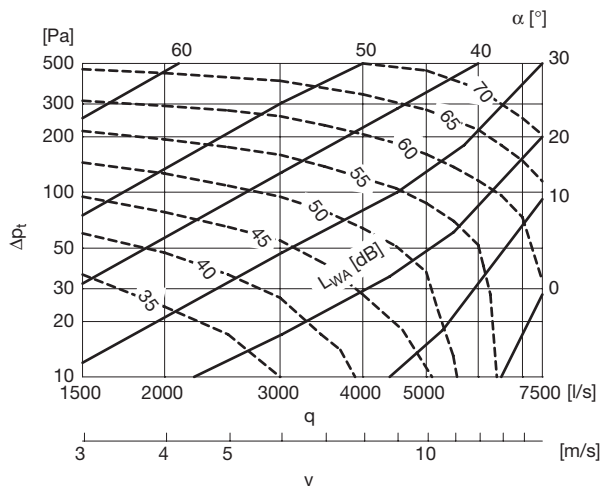
Ø1000



Ø630



Ø800



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Shut-off damper

DSU

dim Ød ₁	Pressure drop [Pa]	Velocity app. 12 [m/s]								Velocity app. 15 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80		Flow 60 [l/s]								Flow 75 [l/s]							
	500	75	75	75	75	68	64	56	53	80	80	80	80	72	68	60	56
	300	75	75	71	71	64	57	50	43	79	79	75	75	68	60	53	45
	200	75	75	71	65	61	51	41	34	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100		Flow 100 [l/s]								Flow 120 [l/s]							
	500	84	81	80	72	68	62	61	61	88	85	84	76	72	65	64	64
	300	81	80	79	70	67	59	56	55	86	85	84	74	70	62	59	58
	200	80	80	79	69	66	55	51	51	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125		Flow 160 [l/s]								Flow 180 [l/s]							
	500	89	85	81	73	69	62	62	58	91	87	83	75	71	63	63	59
	300	86	86	79	71	68	60	56	53	89	88	81	73	69	62	58	54
	200	89	85	78	70	63	56	52	52	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160		Flow 240 [l/s]								Flow 300 [l/s]							
	500	84	84	80	72	68	65	65	65	89	89	85	77	73	69	69	69
	300	81	81	78	70	67	63	59	59	87	87	83	76	72	68	64	64
	200	84	80	77	69	66	58	55	55	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200		Flow 400 [l/s]								Flow 450 [l/s]							
	500	90	82	78	72	67	66	71	70	93	85	81	73	71	70	74	73
	300	92	84	78	71	67	63	67	66	95	87	81	72	68	66	69	68
	200	90	83	79	69	65	62	61	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250		Flow 600 [l/s]								Flow 750 [l/s]							
	500	87	83	76	68	64	68	68	68	94	90	82	74	70	74	74	74
	300	84	80	73	67	65	64	62	61	91	87	80	72	70	69	72	68
	200	82	79	72	64	63	63	62	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315		Flow 1000 [l/s]								Flow 1200 [l/s]							
	500	89	85	77	69	68	67	69	65	92	88	80	72	71	70	72	68
	300	85	81	74	66	64	64	66	59	89	85	78	70	68	68	70	62
	200	86	79	72	65	63	62	64	58	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400		Flow 1600 [l/s]								Flow 1800 [l/s]							
	500	95	87	79	75	67	71	70	69	98	90	82	78	70	74	73	72
	300	91	83	76	69	67	66	65	64	94	86	79	71	70	69	68	67
	200	89	82	75	69	67	64	63	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500		Flow 2400 [l/s]								Flow 3000 [l/s]							
	500	96	88	80	72	70	73	72	71	102	94	85	78	75	77	77	76
	300	93	85	78	70	66	66	70	70	99	91	83	74	70	70	74	74
	200	91	84	76	70	68	66	65	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
630		Flow 4000 [l/s]								Flow 4500 [l/s]							
	500	103	95	86	82	77	77	76	73	107	98	90	85	81	81	80	76
	300	100	91	83	79	75	75	74	66	105	96	88	83	79	79	79	70
	200	98	90	82	78	74	70	70	62	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
800		Flow 6000 [l/s]								Flow 7500 [l/s]							
	500	84	74	69	68	66	66	63	60	88	79	73	70	71	71	67	62
	300	82	72	66	63	61	61	57	53	84	76	71	66	68	68	63	57
	200	80	69	63	60	57	57	53	47	82	74	68	63	64	63	58	52
	100	76	64	59	55	52	51	46	41	79	69	63	59	56	55	51	45
	50	72	60	56	51	48	46	41	35	77	66	61	57	54	52	48	41
25	70	59	55	51	48	44	39	32	-	-	-	-	-	-	-	-	
1000		Flow 9400 [l/s]								Flow 11800 [l/s]							
	500	85	77	71	70	69	69	66	60	-	-	-	-	-	-	-	-
	300	82	74	67	66	65	63	60	54	-	-	-	-	-	-	-	-
	200	80	72	65	64	61	60	57	51	-	-	-	-	-	-	-	-
	100	76	68	61	60	57	55	53	51	-	-	-	-	-	-	-	-
	50	73	66	59	58	55	52	51	48	-	-	-	-	-	-	-	-
25	70	64	57	57	53	50	49	43	-	-	-	-	-	-	-	-	

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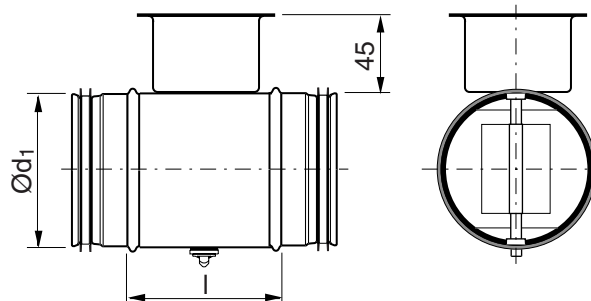
Shut-off damper

DTU

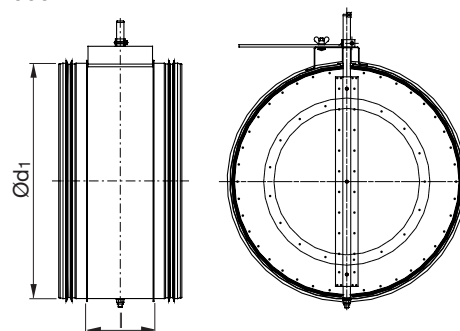


Dimensions

Ø 80–630



Ø 710–1000



Description

Has a turning circular blade with an EPDM-rubber seal which tightens against the inside of the damper when closed. The blade can be adjusted in a 0–90° angle.

The cup at Ø 80–630 can be complemented with the special insulation cup IK at insulation thicker than 50 mm.

The damper can be used for regulating at rare occasions.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–315 fullfills pressure class C in closed position.
 Ø 355–630 fullfills pressure class B in closed position.
 Ø 710–1000 fullfills pressure class A in closed position.

Motorizing

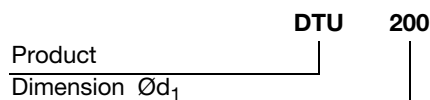
The torque needed for the motorizing is given in the adjacent table.

Ø710–1000 is not possible to motorize on site.

Reinforced blade



Ordering example



Ød ₁ nom	l mm	M Nm	m kg	Sealing class past closed blade
80	100	2,0	0,30	4
100	100	2,0	0,38	4
112	100	2,0	0,48	4
125	100	2,0	0,53	4
140	100	2,0	0,60	4
150	100	2,0	0,63	4
160	100	2,0	0,74	4
180	100	2,0	0,82	4
200	100	2,0	1,04	4
224	100	3,0	1,27	4
250	100	3,0	1,52	4
280	100	4,0	1,77	4
300	100	4,0	1,98	4
315	100	4,0	2,14	4
355	100	8,0	2,44	4
400	100	8,0	3,65	4
450	100	10	4,84	4
500	115	10	6,07	4
560	115	15	7,47	4
600	115	15	8,11	4
630	115	15	8,80	4
710	230	40	17,0	4
800	230	40	19,5	4
900	230	60	26,0	4
1000	230	60	31,0	4



Shut-off damper

DTU

Property	Ø 80-315	Ø 400	Ø 500	Ø 630	Ø 710-1000
The blade is set via a knob in a protective cup.	x	x	x	x	
The setting of the blade is read against an embossed scale at the rim of the cup.	x	x	x	x	
The blade is locked with two screws, type Pozidriv (PZD2).	x	x	x	x	
The blade has reinforced locking with a sturdy wing nut.					x
The blade is reinforced.		x	x	x	
The blade is additionally reinforced.					x
With sturdy handle.		x	x	x	
With additionally reinforced handle.					x
With reinforced stop beads.			x	x	x
The axle is reinforced.					x
The damper can be delivered prepared for motor. Is then called DTHU.	x	x	x	x	x
The damper can be delivered with electric motor of On/Off-type without spring return. Is then called DTBU.	x	x	x	x	x
The damper can be delivered with electric motor of On/Off-type with spring return. Is then called DTBCU.	x	x	x	x	
The damper can be delivered with pneumatic actuator of On/Off-type with spring return. Is then called DTPU.	x	x	x	x	

Technical data

Pressure drop graphs with noise data for dimensioning

The solid curves show the pressure drop, Δp_t , over the damper as a function of flow q , and setting angle α .

The dashed curves give the A-weighted sound power data, L_{WA} , in dB to the duct.

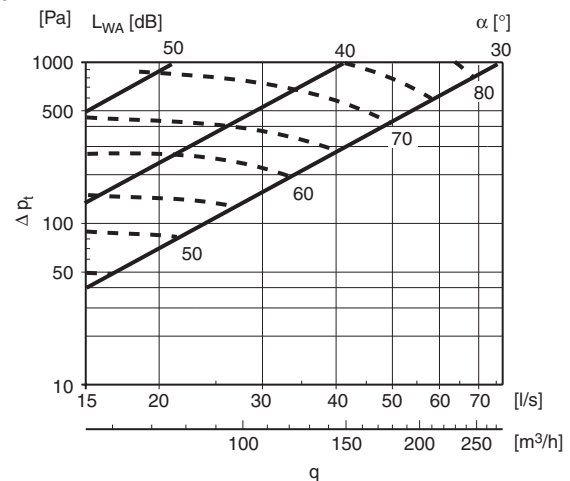
Example

Given Dimension Ø100
 Flow 60 l/s
 Pressure drop 200 Pa

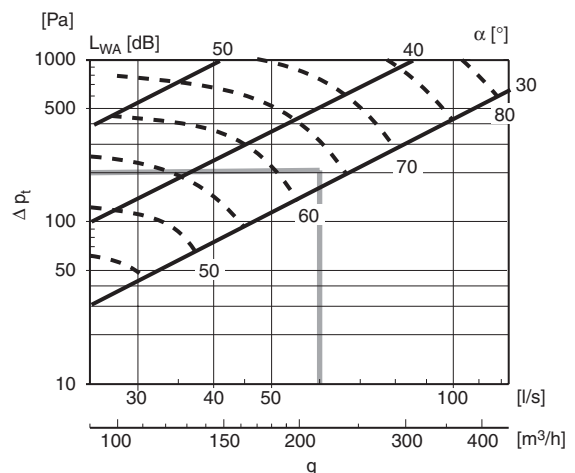
Obtained from graph

Setting angle 32°
 Sound power level 63 dB (A)

Ø80



Ø100



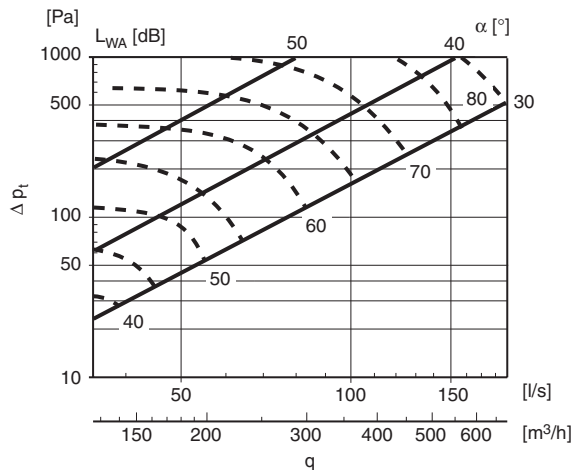


Shut-off damper

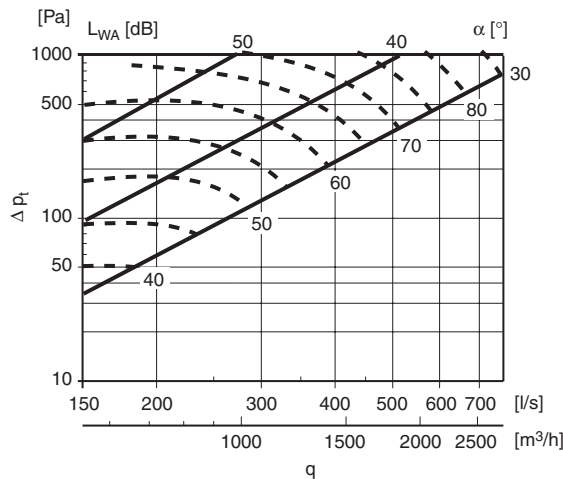
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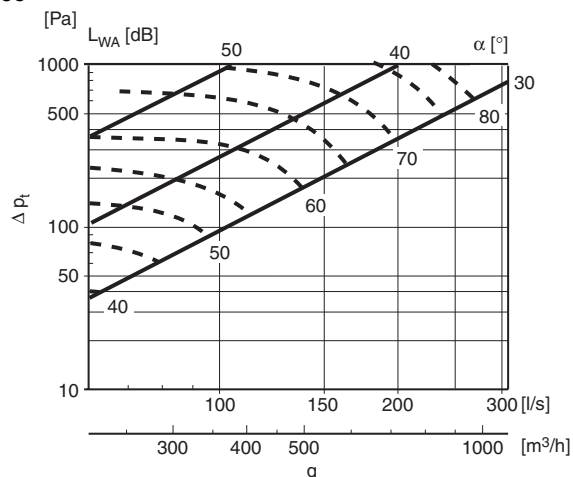
Ø125



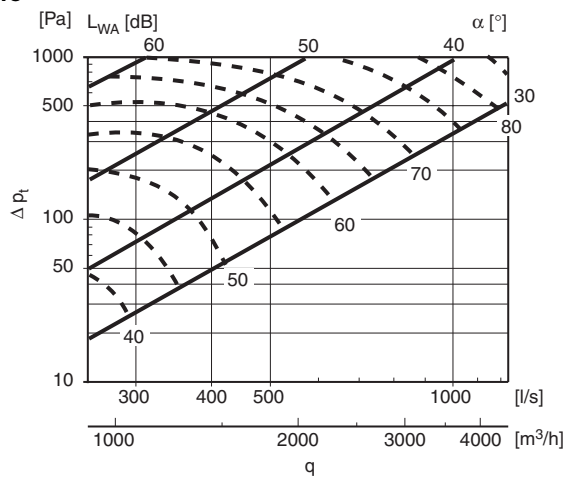
Ø250



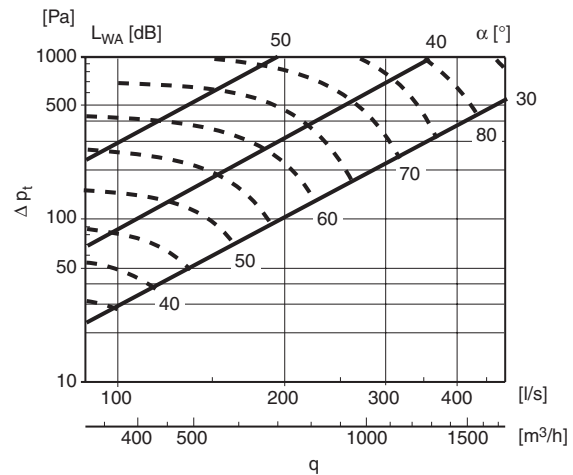
Ø160



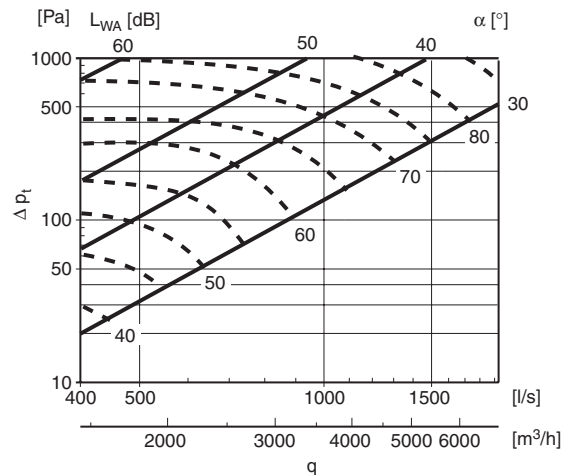
Ø315



Ø200



Ø400

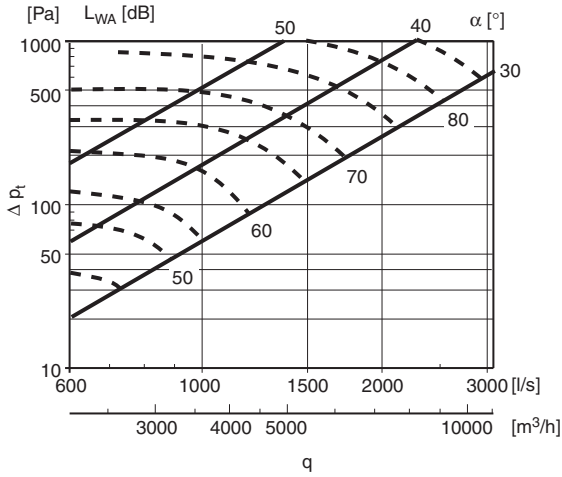




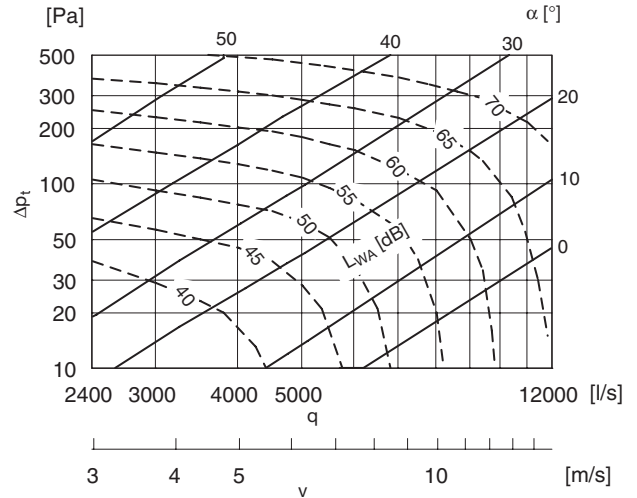
Shut-off damper

DTU

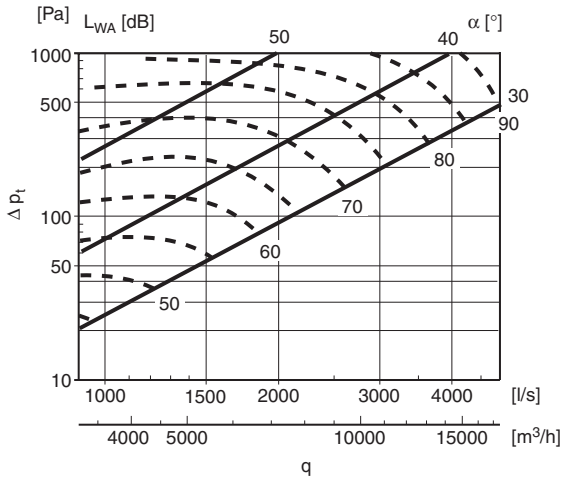
Ø500



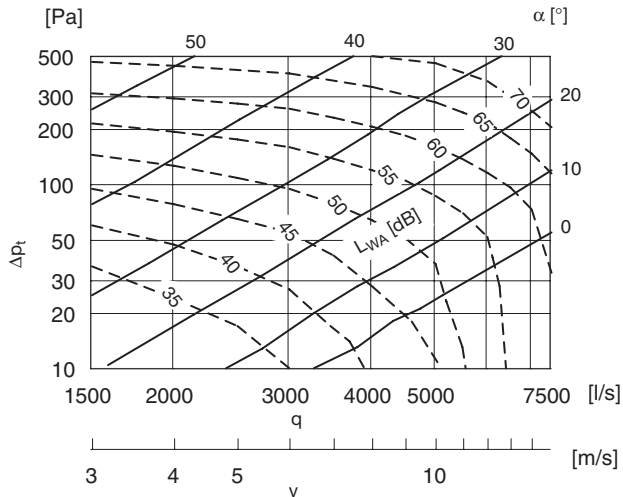
Ø1000



Ø630



Ø800



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Shut-off damper

DTU

dim Ød ₁	Pressure drop [Pa]	Velocity app. 12 [m/s]								Velocity app. 15 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80		Flow 60 [l/s]								Flow 75 [l/s]							
	500	75	75	75	75	68	64	56	53	80	80	80	80	72	68	60	56
	300	75	75	71	71	64	57	50	43	79	79	75	75	68	60	53	45
	200	75	75	71	65	61	51	41	34	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
100		Flow 100 [l/s]								Flow 120 [l/s]							
	500	84	81	80	72	68	62	61	61	88	85	84	76	72	65	64	64
	300	81	80	79	70	67	59	56	55	86	85	84	74	70	62	59	58
	200	80	80	79	69	66	55	51	51	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
125		Flow 160 [l/s]								Flow 180 [l/s]							
	500	89	85	81	73	69	62	62	58	91	87	83	75	71	63	63	59
	300	86	86	79	71	68	60	56	53	89	88	81	73	69	62	58	54
	200	89	85	78	70	63	56	52	52	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
160		Flow 240 [l/s]								Flow 300 [l/s]							
	500	84	84	80	72	68	65	65	65	89	89	85	77	73	69	69	69
	300	81	81	78	70	67	63	59	59	87	87	83	76	72	68	64	64
	200	84	80	77	69	66	58	55	55	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
200		Flow 400 [l/s]								Flow 450 [l/s]							
	500	90	82	78	72	67	66	71	70	93	85	81	73	71	70	74	73
	300	92	84	78	71	67	63	67	66	95	87	81	72	68	66	69	68
	200	90	83	79	69	65	62	61	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
250		Flow 600 [l/s]								Flow 750 [l/s]							
	500	87	83	76	68	64	68	68	68	94	90	82	74	70	74	74	74
	300	84	80	73	67	65	64	62	61	91	87	80	72	70	69	72	68
	200	82	79	72	64	63	63	62	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
315		Flow 1000 [l/s]								Flow 1200 [l/s]							
	500	89	85	77	69	68	67	69	65	92	88	80	72	71	70	72	68
	300	85	81	74	66	64	64	66	59	89	85	78	70	68	68	70	62
	200	86	79	72	65	63	62	64	58	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
400		Flow 1600 [l/s]								Flow 1800 [l/s]							
	500	95	87	79	75	67	71	70	69	98	90	82	78	70	74	73	72
	300	91	83	76	69	67	66	65	64	94	86	79	71	70	69	68	67
	200	89	82	75	69	67	64	63	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
500		Flow 2400 [l/s]								Flow 3000 [l/s]							
	500	96	88	80	72	70	73	72	71	102	94	85	78	75	77	77	76
	300	93	85	78	70	66	66	70	70	99	91	83	74	70	70	74	74
	200	91	84	76	70	68	66	65	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
630		Flow 4000 [l/s]								Flow 4500 [l/s]							
	500	103	95	86	82	77	77	76	73	107	98	90	85	81	81	80	76
	300	100	91	83	79	75	75	74	66	105	96	88	83	79	79	79	70
	200	98	90	82	78	74	70	70	62	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
800		Flow 6000 [l/s]								Flow 7500 [l/s]							
	500	84	74	69	68	66	66	63	60	88	79	73	70	71	71	67	62
	300	82	72	66	63	61	61	57	53	84	76	71	66	68	68	63	57
	200	80	69	63	60	57	57	53	47	82	74	68	63	64	63	58	52
	100	76	64	59	55	52	51	46	41	79	69	63	59	56	55	51	45
50	72	60	56	51	48	46	41	35	77	66	61	57	54	52	48	41	
25	70	59	55	51	48	44	39	32	-	-	-	-	-	-	-	-	
1000		Flow 9400 [l/s]								Flow 11800 [l/s]							
	500	85	77	71	70	69	69	66	60	-	-	-	-	-	-	-	-
	300	82	74	67	66	65	63	60	54	-	-	-	-	-	-	-	-
	200	80	72	65	64	61	60	57	51	-	-	-	-	-	-	-	-
	100	76	68	61	60	57	55	53	51	-	-	-	-	-	-	-	-
50	73	66	59	58	55	52	51	48	-	-	-	-	-	-	-	-	
25	70	64	57	57	53	50	49	43	-	-	-	-	-	-	-	-	

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Shut-off damper with motor shelf

DTHU



Description

Shut-off damper with motor shelf KOMHY

Ø 80–630 consists of a DTU damper with a KOMHY combined motor shelf added. The damper has no knob, and has a longer spindle to avoid the need for extension spindle VREDF. The damper is designed to have a motor added on site.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–315 fullfills pressure class C in closed position.
 Ø 355–630 fullfills pressure class B in closed position.
 Ø 710–1000 fullfills pressure class A in closed position.

Motorizing

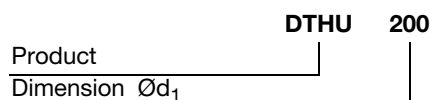
The motor shelf KOMHY is provided with suitable fixing holes for Belimo's LM, NM SM and AF motors, and for Sauter's pneumatic actuators AK 31 P and AK 41 P.

Ø 900 and 1000 has two motor shelves.

NOTE! AK 42 P does not fit this damper. The torque needed for motorizing is given in the adjacent table.

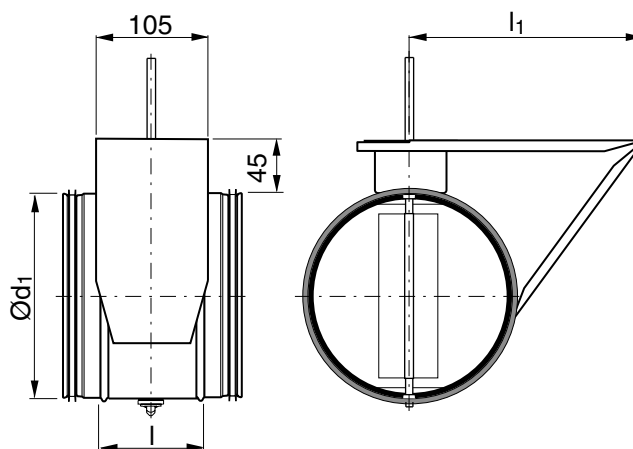
Also the dampers DRU and DSU can be ordered in this version.

Ordering example

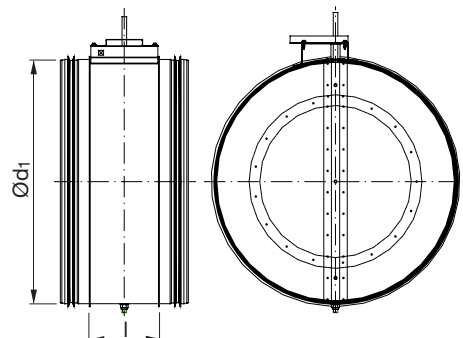


Dimensions

Ø 80–630



Ø 710–1000



Ød ₁ nom	l mm	l ₁ mm	M Nm	m kg	Sealing class past closed blade
80	100	230	2,0	0,67	4
100	100	230	2,0	0,75	4
112	100	230	2,0	0,85	4
125	100	230	2,0	0,90	4
140	100	230	2,0	0,97	4
150	100	230	2,0	1,00	4
160	100	230	2,0	1,11	4
180	100	230	2,0	1,19	4
200	100	230	2,0	1,41	4
224	100	230	3,0	1,64	4
250	100	230	3,0	1,89	4
280	100	230	4,0	2,14	4
300	100	230	4,0	2,33	4
315	100	230	4,0	2,51	4
355	100	230	8,0	2,81	4
400	100	230	8,0	4,02	4
450	100	230	10	5,21	4
500	115	230	10	6,44	4
560	115	230	15	7,84	4
600	115	230	15	8,48	4
630	115	315	15	9,17	4



Shut-off damper with motor shelf

DTHU

$\varnothing d_1$ nom	l mm	l ₁ mm	M Nm	m kg	Sealing class past closed blade
710	230	355	40	18,2	4
800	230	400	40	20,7	4
900	230	450	60	27,6	4
1000	230	500	60	32,6	4

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Shut-off damper

DTMU/DTWU

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Description

DTMU/DTWU are tight-closing shut-off dampers. The dampers can be used to completely shut off the air flow.

The blade consists of double sheet metal with a intermediate sealing of EPDM-rubber, which is in contact with the inside of the damper housing when in the closed position.

DTMU is equipped with a handle and a locking mechanism for stepless adjustment of 0–90°.

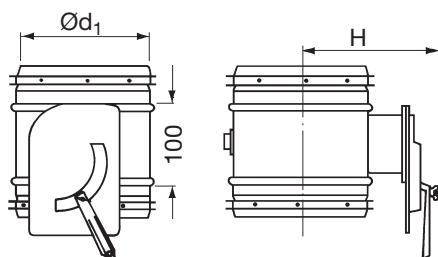
DTWU is equipped with a transverse lever, on which pulling ropes can be mounted for manual remote control.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

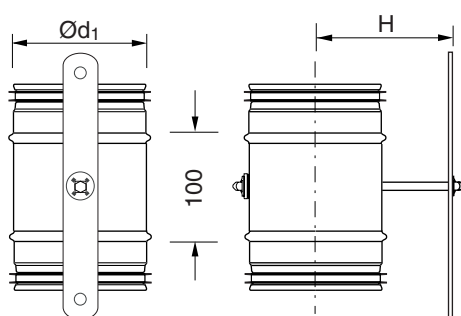
Ø 80–315 fullfills pressure class C in closed position.

Ø 355–630 fullfills pressure class B in closed position.

DTMU



DTWU



Dimensions

Ød ₁ nom	H mm	m kg	Sealing class past closed blade
80	95	0,80	4
100	105	0,90	4
112	110	0,90	4
125	118	1,00	4
140	125	1,00	4
150	130	1,10	4
160	135	1,10	4
180	145	1,30	4
200	155	1,40	4
224	165	1,60	4
250	180	1,90	4
280	195	2,20	4
300	205	2,40	4
315	215	2,60	4
355	240	3,10	4
400	260	3,90	4
450	285	4,50	4
500	310	5,20	4
560	340	6,20	4
600	360	7,20	4
630	375	8,10	4

Ordering example

Product **DTMU** **250**
 Dimension Ød₁



Shut-off damper

DTMU/DTWU

Technical data

Pressure drop graphs with noise data for dimensioning

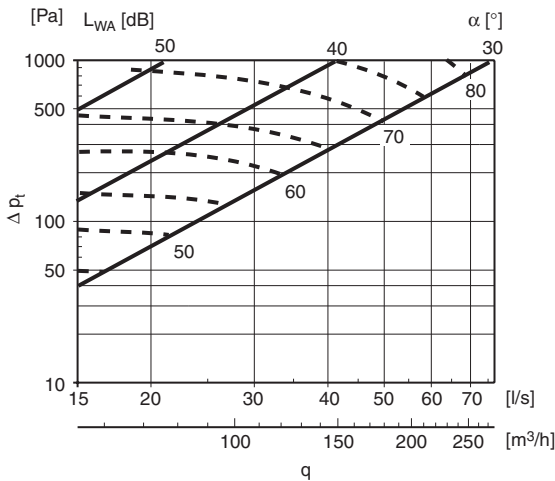
The solid curves show the pressure drop, Δp_t , over the damper as a function of the flow q , and setting angle α . The dashed curves give the A-weighted sound power data, L_{WA} , in dB to the duct.

Example

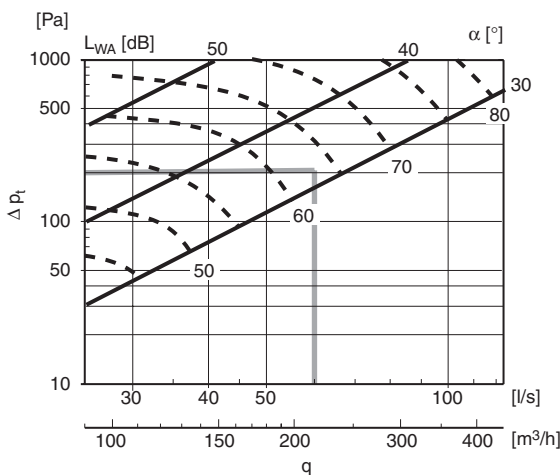
Given

- Dimension $\text{Ø}100$
- Flow 60 l/s
- Pressure drop 200 Pa
- Obtained from the graph
- Setting angle 32°
- Sound power level 63 dB (A)

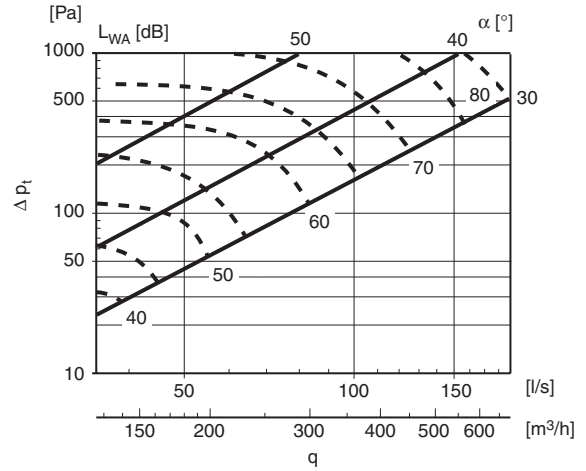
Ø80



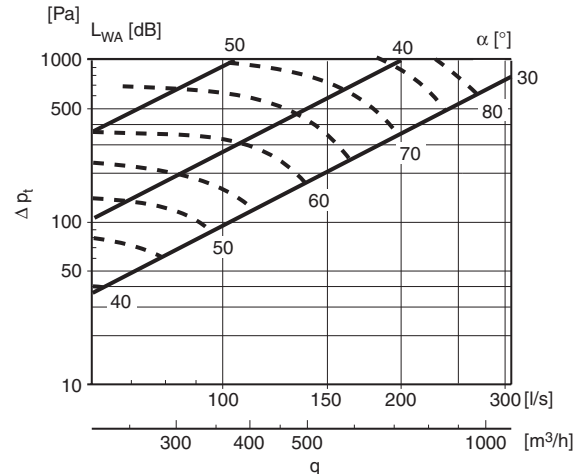
Ø100



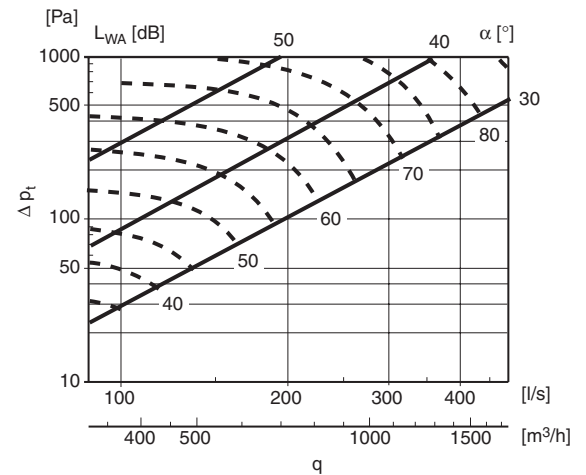
Ø125



Ø160



Ø200



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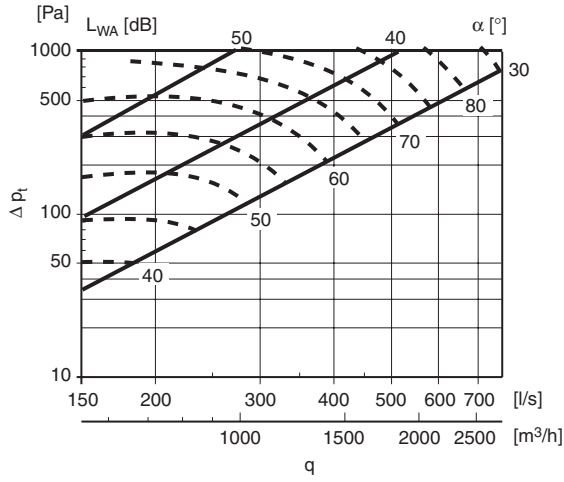


Shut-off damper

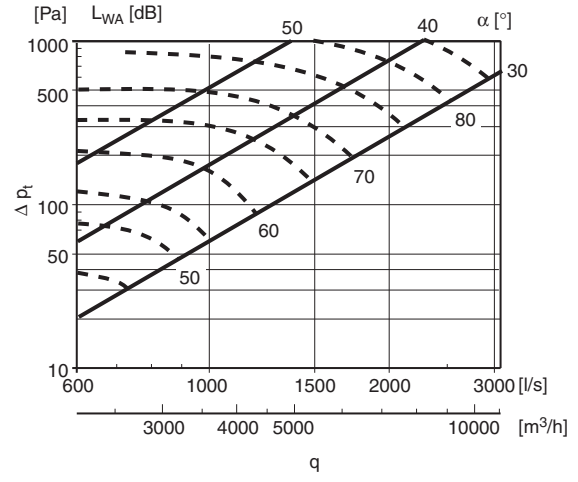
DTMU/DTWU

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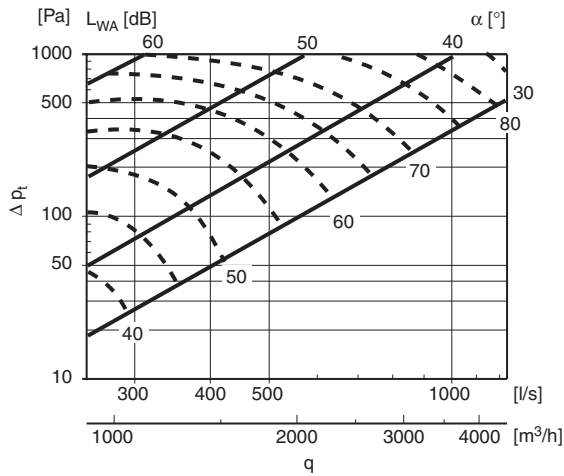
Ø250



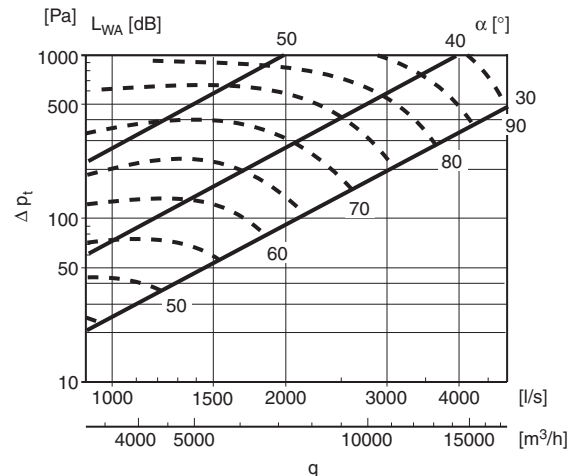
Ø500



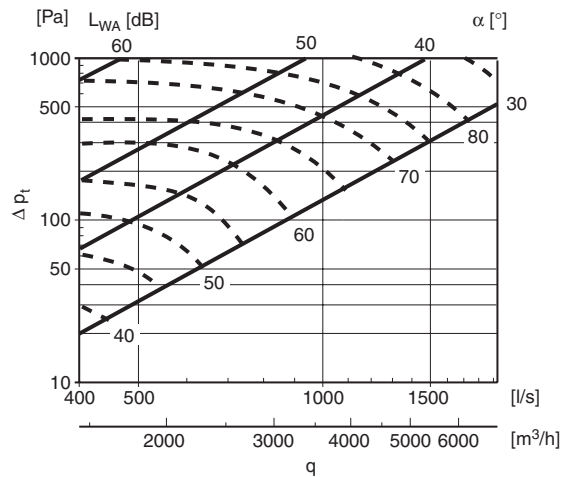
Ø315



Ø630



Ø400





Shut-off damper

DTMU/DTWU

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dim Ød ₁	Pressure drop [Pa]	Velocity app. 12 [m/s]								Velocity app. 15 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80		Flow 60 [l/s]								Flow 75 [l/s]							
	500	75	75	75	75	68	64	56	53	80	80	80	80	72	68	60	56
	300	75	75	71	71	64	57	50	43	79	79	75	75	68	60	53	45
	200	75	75	71	65	61	51	41	34	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100		Flow 100 [l/s]								Flow 120 [l/s]							
	500	84	81	80	72	68	62	61	61	88	85	84	76	72	65	64	64
	300	81	80	79	70	67	59	56	55	86	85	84	74	70	62	59	58
	200	80	80	79	69	66	55	51	51	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
125		Flow 160 [l/s]								Flow 180 [l/s]							
	500	89	85	81	73	69	62	62	58	91	87	83	75	71	63	63	59
	300	86	86	79	71	68	60	56	53	89	88	81	73	69	62	58	54
	200	89	85	78	70	63	56	52	52	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
160		Flow 240 [l/s]								Flow 300 [l/s]							
	500	84	84	80	72	68	65	65	65	89	89	85	77	73	69	69	69
	300	81	81	78	70	67	63	59	59	87	87	83	76	72	68	64	64
	200	84	80	77	69	66	58	55	55	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200		Flow 400 [l/s]								Flow 450 [l/s]							
	500	90	82	78	72	67	66	71	70	93	85	81	73	71	70	74	73
	300	92	84	78	71	67	63	67	66	95	87	81	72	68	66	69	68
	200	90	83	79	69	65	62	61	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
250		Flow 600 [l/s]								Flow 750 [l/s]							
	500	87	83	76	68	64	68	68	68	94	90	82	74	70	74	74	74
	300	84	80	73	67	65	64	62	61	91	87	80	72	70	69	72	68
	200	82	79	72	64	63	63	62	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
315		Flow 1000 [l/s]								Flow 1200 [l/s]							
	500	89	85	77	69	68	67	69	65	92	88	80	72	71	70	72	68
	300	85	81	74	66	64	64	66	59	89	85	78	70	68	68	70	62
	200	86	79	72	65	63	62	64	58	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400		Flow 1600 [l/s]								Flow 1800 [l/s]							
	500	95	87	79	75	67	71	70	69	98	90	82	78	70	74	73	72
	300	91	83	76	69	67	66	65	64	94	86	79	71	70	69	68	67
	200	89	82	75	69	67	64	63	60	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
500		Flow 2400 [l/s]								Flow 3000 [l/s]							
	500	96	88	80	72	70	73	72	71	102	94	85	78	75	77	77	76
	300	93	85	78	70	66	66	70	70	99	91	83	74	70	70	74	74
	200	91	84	76	70	68	66	65	61	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
630		Flow 4000 [l/s]								Flow 4500 [l/s]							
	500	103	95	86	82	77	77	76	73	107	98	90	85	81	81	80	76
	300	100	91	83	79	75	75	74	66	105	96	88	83	79	79	79	70
	200	98	90	82	78	74	70	70	62	-	-	-	-	-	-	-	-
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

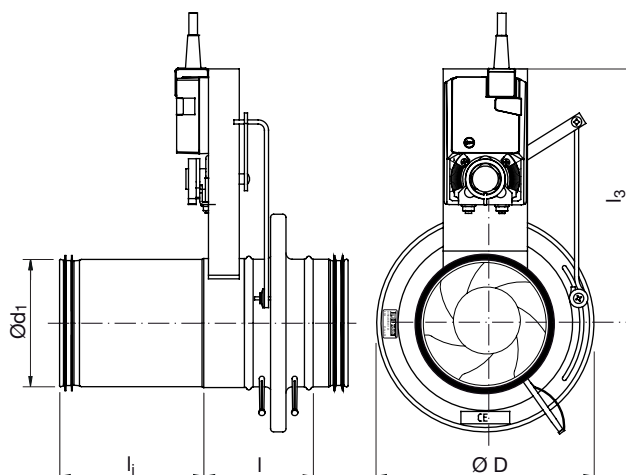


Damper with flow meter

DIRBU



Dimensions



Ød ₁ nom	ØD nom	l mm	l _i mm	l ₃ mm	m kg
100	163	94	130	235	1,90
125	210	103	130	249	2,30
150	230	100	130	262	2,50
160	230	100	130	268	2,50
200	285	102	130	289	3,40
250	333	123	185	315	4,50
300	406	123	185	341	5,10
315	406	123	185	350	5,50

Description

The motor-driven damper DIRBU with flow meter is suitable for systems where it should be possible to increase the air flow or lower it to the basic level. Examples of such systems are conference rooms and public areas.

It fulfils tightness class C. DIRBU is intended for use where you want to be able to set two air flows.

Maximum and minimum flow is set with the measurement nozzles and are fixed with the two end stop screws on the motor.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

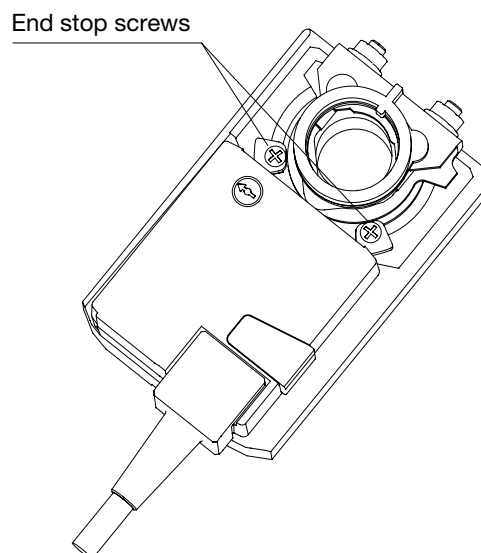
Ø 100–315 fullfills pressure class A in closed position.

Cleaning

By fully open the damper, one get access to the duct. Do not forget to readjust the damper after cleaning.

Installation

Consider required straight distance after or before disturbance, as mentioned on page 245 and on the card attached to the measurement nozzles, to obtain accurate flow measurement.



Ordering example

Product	DIRBU	160	24	NM
Type				
Dimension Ød ₁				
Voltage				
Motor type				





Damper with flow meter

DIRBU

Technical data for the motors

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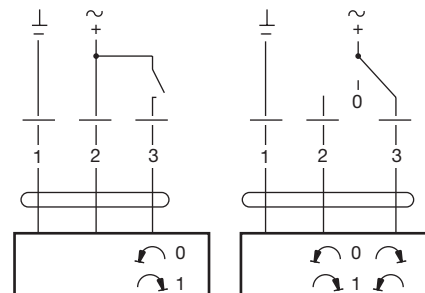
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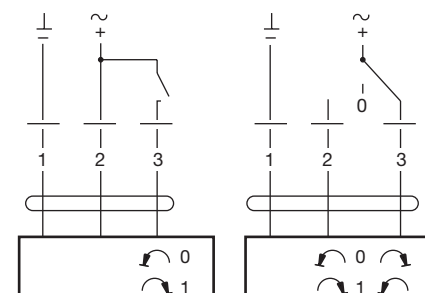
17

18

	NM 24 A-F	NM 230 A-F
Dimension	Ø100–200	Ø100–200
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	1,5 W	2,5 W
For wire sizing	3,5 VA	6 VA
Connection	Cable 1 m, 3x0,75 mm2	Cable 1 m, 3x0,75 mm2
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 10 Nm	Min. 10 Nm
Direction of rotation	Switch selectable 0 ↺ or 1 ↻	Switch selectable 0 ↺ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	Max. 35 dB (A)	Max. 35 dB (A)
Protection class	III Safety extra-low voltage	II Safety insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RF	95 % RF



	SM 24 A	SM 230 A
Dimension	Ø250–315	Ø250–315
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	2 W	2,5 W
For wire sizing	4 VA	6 VA
Connection	Kabel 1 m, 3x0,75 mm2	Kabel 1 m, 3x0,75 mm2
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 20 Nm	Min. 20 Nm
Direction of rotation	Switch selectable 0 ↺ or 1 ↻	Switch selectable 0 ↺ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	Max. 35 dB (A)	Max. 35 dB (A)
Protection class	III Safety extra-low voltage	II Safety extra-low voltage
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RF	95 % RF



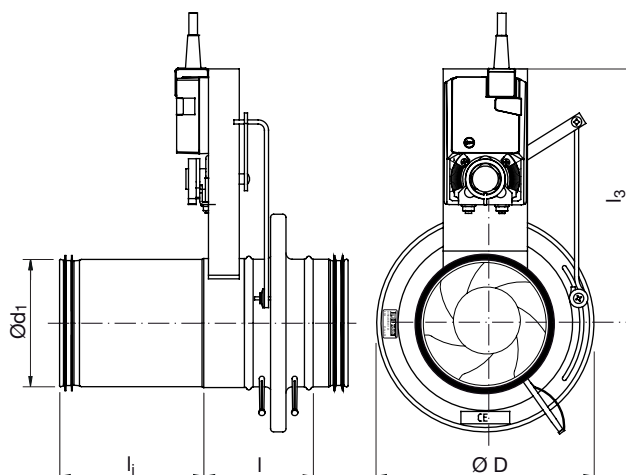


Damper with flow meter

DIRVU



Dimensions



Ød ₁ nom	ØD nom	l mm	l ₁ mm	l ₃ mm	m kg
100	163	94	130	235	1,90
125	210	103	130	249	2,30
150	230	100	130	262	2,50
160	230	100	130	268	2,50
200	285	102	130	289	3,40
250	333	123	185	315	4,50
300	406	123	185	341	5,10
315	406	123	185	350	5,50

Description

The motor-driven damper DIRVU with flow meter is suitable for systems where it should be possible to vary the air flow. Examples of such systems are conference rooms and public areas. It fulfills tightness class C.

Maximum and minimum flow is set with the measurement nozzles and are fixed with the two end stop screws on the motor. A special mounting, measuring, balancing and maintenance instruction exists for this product.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–315 fulfills pressure class A in closed position.

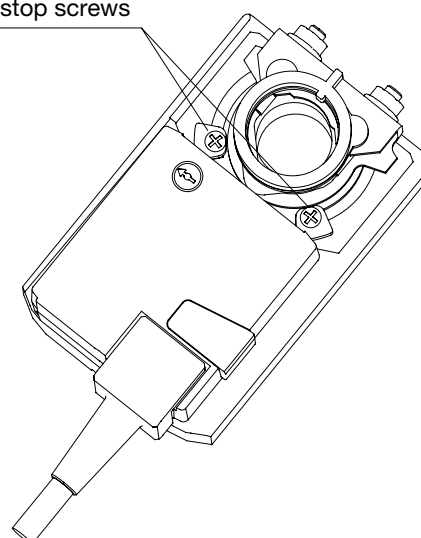
Cleaning

By fully open the damper, one gets access to the duct. Do not forget to readjust the damper after cleaning.

Installation

Consider required straight distance after or before disturbance, as mentioned on page 245 and on the card attached to the measurement nozzles, to obtain accurate flow measurement.

End stop screws



Ordering example

Product	DIRVU	160	24	NM
Type				
Dimension Ød ₁				
Voltage				
Motor type				





Damper with flow meter

DIRVU

Technical data for the motors

1

	NM 24 A-SR
Dimension	Ø100–200
Power supply	AC 24 V, 50/60 Hz DC 24 V
Power consumption	2 W
For wire sizing	4 VA
Connection	Cable 1 m, 4x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 10 Nm
Direction of rotation	Switch selectable 0 ↺ eller 1 ↻
Position indication	Mechanical
Running time for 95°	150 s
Sound power level	Max. 35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 till +50°C
Ambient moisture	95 % RF

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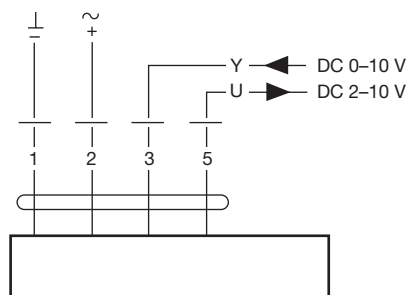
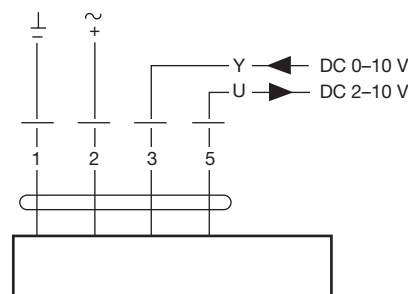
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	SM 24 A-SR
Dimension	Ø100–200
Power supply	AC 24 V, 50/60 Hz DC 24 V
Power consumption	2 W
For wire sizing	4 VA
Connection	Kabel 1 m, 4x0,75 mm ²
Operating angle	Max. 95°, justerbar 0–100%
Torque at rated voltage	Min. 20 Nm
Direction of rotation	Switch selectable 0 ↺ eller 1 ↻
Position indication	Mechanical
Running time for 95°	150 s
Sound power level	Max. 35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 till +50°C
Ambient moisture	95 % RF





Motorized shut-off damper

DTBU



Description

Shut-off damper with electric motor – LM 24 A-F or LM 230 A-F

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. The stops can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

The spindle and motor can be disconnected from each other via a release button on the motor housing.

In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

Also the dampers DRU and DSU can be ordered with motor.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

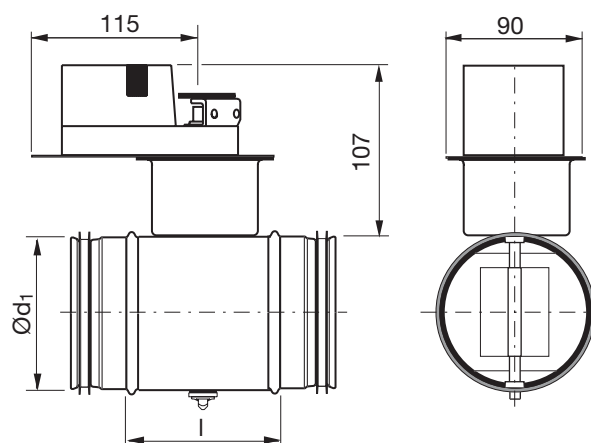
Ø 80–315 fullfills pressure class C in closed position.

Technical data for the motors

	LM 24 A
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V
Power consumption	1 W
For wire sizing	2 VA
Connection	Cable 1 m, 3x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 5 Nm
Direction of rotation	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical
Running time for 95°	150 s
Sound power level	Max. 35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 to +50°C
Ambient moisture	95 % RH

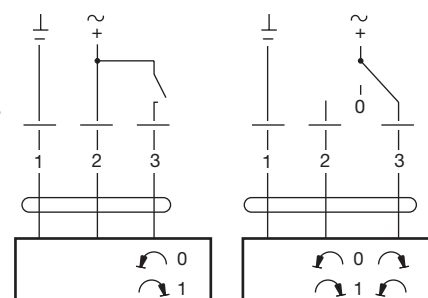
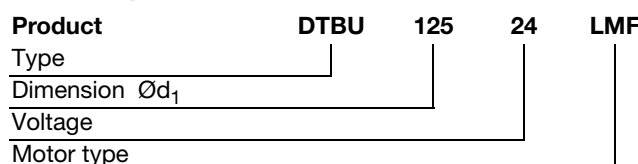
	LM 230 A
Power supply	AC 65–265 V, 50/60 Hz
Power consumption	1,5 W
For wire sizing	4 VA
Connection	Cable 1 m, 3x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 5 Nm
Direction of rotation	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical
Running time for 95°	150 s
Sound power level	Max. 35 dB (A)
Protection class	II Safety insulated
Protection type	IP 54
Ambient temperature range	-30 to +50°C
Ambient moisture	95 % RH

Dimensions



Ød ₁ nom	l mm	m kg	Sealing class past closed blade
80	100	1,00	4
100	100	1,08	4
125	100	1,23	4
160	100	1,44	4
200	100	1,74	4
250	100	2,22	4
315	100	2,84	4

Ordering example



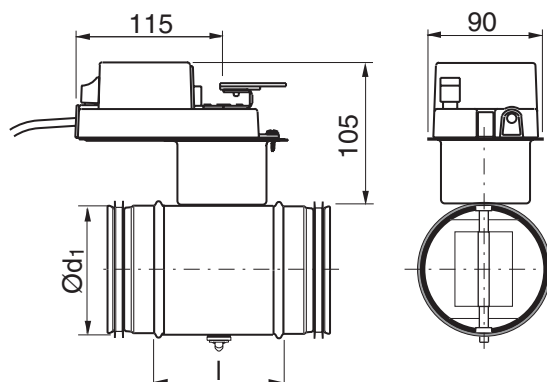


Motorized shut-off damper

DTBU



Dimensions



Ød ₁ nom	l mm	m kg	Sealing class past closed blade
400	100	4,59	4
500	115	7,29	4

Description

Shut-off damper with electric motor – NM 24 A-F or NM 230 A-F

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. The stop can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

The spindle and motor can be disconnected from each other via a release button on the motor housing.

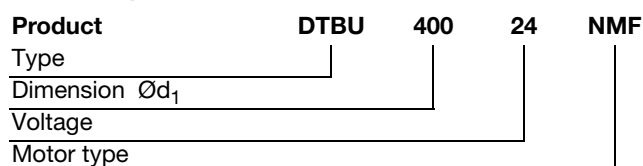
In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

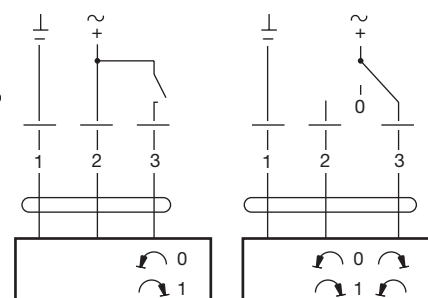
Ø 400–500 fullfills pressure class B in closed position.

Ordering example



Technical data for the motors

	NM 24 A-F	NM 230 A-F
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	1,5 W	2,5 W
For wire sizing	3,5 VA	6 VA
Connection	Cable 1 m, 3×0,75 mm ²	Cable 1 m, 3×0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 10 Nm	Min. 10 Nm
Direction of rotation	Switch selectable 0 ↺ or 1 ↻	Switch selectable 0 ↺ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	Max. 35 dB (A)	Max. 35 dB (A)
Protection class	III Safety extra-low voltage	II Safety insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH



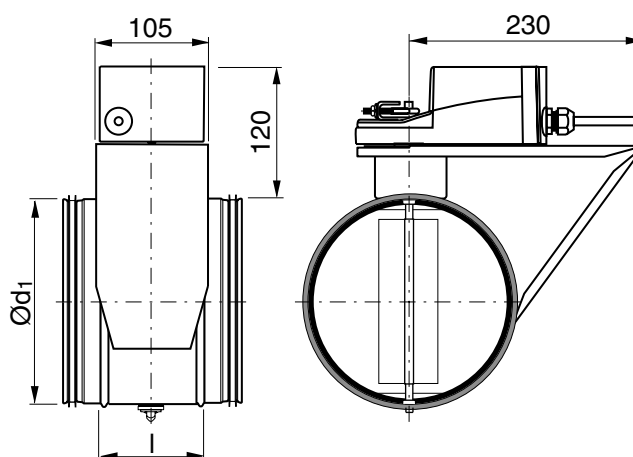


Motorized shut-off damper

DTBU



Dimensions



Ød ₁ nom	l mm	m kg	Sealing class past closed blade
630	115	10,5	4

Description

Shut-off damper with electric motor – SM 24 A or SM 230 A

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. The stop can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

The spindle and motor can be disconnected from each other via a release button on the motor housing.

In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

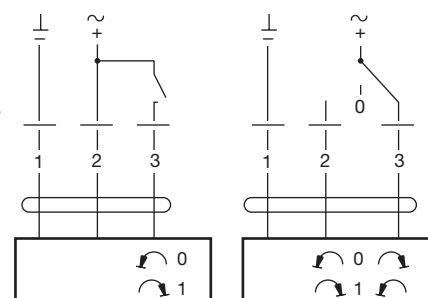
Ø 630 fullfills pressure class B in closed position.

Ordering example

Product	DTBU	630	24	SM
Type				
Dimension Ød ₁				
Voltage				
Motor type				

Technical data for the motors

	SM 24 A	SM 230 A
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	2 W	2,5 W
For wire sizing	4 VA	6 VA
Connection	Cable 1 m, 3x0,75 mm ²	Cable 1 m, 3x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 20 Nm	Min. 20 Nm
Direction of rotation	Switch selectable 0 ↻ or 1 ↻	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	Max. 35 dB (A)	Max. 35 dB (A)
Protection class	III Safety extra-low voltage	II Safety insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH



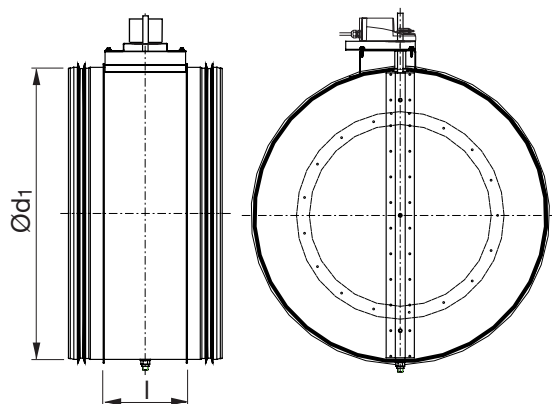


Motorized shut-off damper

DTBU



Dimensions



Description

Shut-off damper with electric motor – GM 24 A or GM 230 A

Consists of a DTU damper with a 24 or 230 V electric motor added. Ø900 and 1000 has two motors.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. The stop can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

The spindle and motor can be disconnected from each other via a release button on the motor housing.

In outdoor installation, the motor should be protected from direct UV radiation.

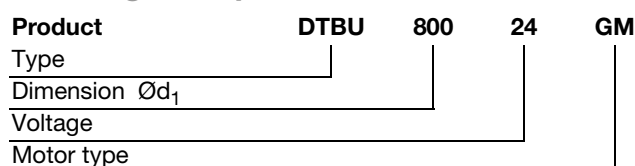
The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 710–1000 fullfills pressure class A in closed position.

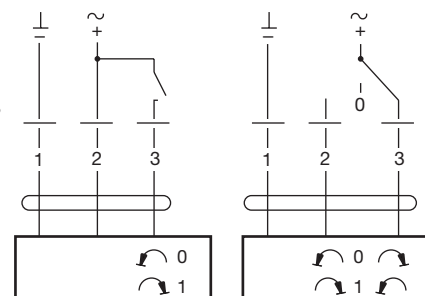
Ød ₁ nom	l mm	m kg	Sealing class past closed blade
710	230	19,9	4
800	230	22,4	4
900	230	31,0	4
1000	230	36,0	4

Ordering example



Technical data for the motors

	GM 24 A	GM 230 A
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	4,5 W	4,5 W
For wire sizing	7 VA	7 VA
Connection	Cable 1 m, 3x0,75 mm ²	Cable 1 m, 3x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 40 Nm	Min. 40 Nm
Direction of rotation	Switch selectable 0 ↻ or 1 ↻	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	Max. 45 dB (A)	Max. 45 dB (A)
Protection class	III Safety extra-low voltage	II Safety insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50 °C	-30 to +50 °C
Ambient moisture	95 % RH	95 % RH



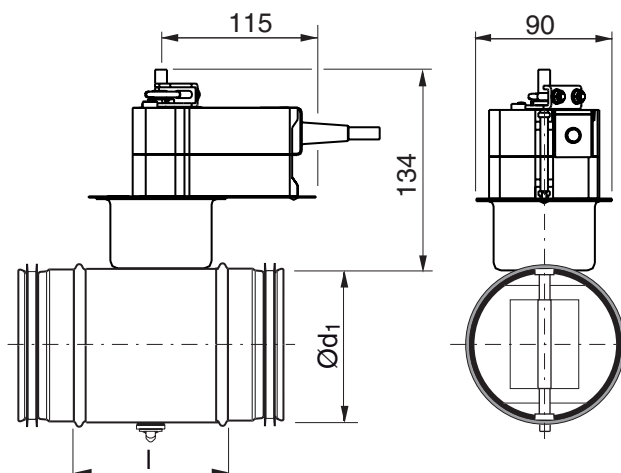


Motorized shut-off damper

DTBCU



Dimensions



Description

Shut-off damper with spring return motor – TF 24 or TF 230

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. Although the current is connected, the motor is not damaged if blocked.

When system voltage is connected, the motor starts and tensions the return spring at the same time. The motor stops at its end position and is not damaged by blockage, although system voltage remains.

When the power is cut, the damper closes when the drive motor freewheels and the return spring pulls the blade back to its original position.

If you want the damper to open instead of close, you can undo the two nuts on the spindle clamp, turn the spindle 90° and tighten the nuts again.

In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–200 fullfills pressure class C in closed position.

Ød ₁ nom	l mm	24 V m kg	230 V m kg	Sealing class past closed blade
80	100	1,06	1,06	4
100	100	1,14	1,14	4
125	100	1,29	1,29	4
160	100	1,50	1,50	4
200	100	1,90	1,90	4

Ordering example

Product	DTBCU	200	24	TF
Type				
Dimension Ød ₁				
Voltage				
Motor type				

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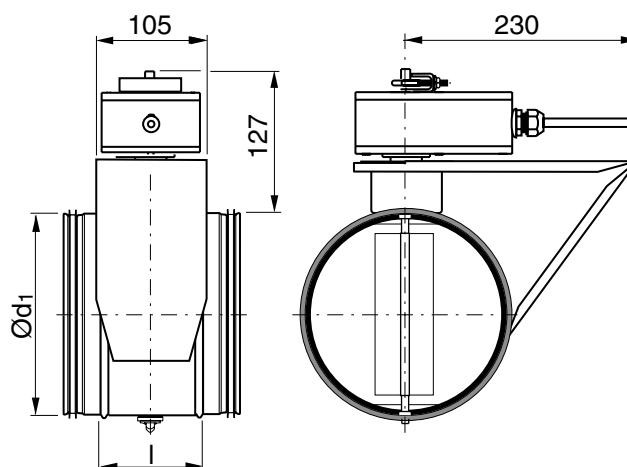


Motorized shut-off damper

DTBCU



Dimensions



Ød ₁ nom	l mm	24 V m kg	230 V m kg	Sealing class past closed blade
250	100	3,29	3,44	4
315	100	3,91	4,06	4

Description

Shut-off damper with spring return motor – LF 24 or LF 230

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. Although the current is connected, the motor is not damaged if blocked.

When system voltage is connected, the motor starts and tensions the return spring at the same time. The motor stops at its end position and is not damaged by blockage, although system voltage remains.

When the power is cut, the damper closes when the drive motor freewheels and the return spring pulls the blade back to its original position.

If you want the damper to open instead of close, you can undo the two nuts on the spindle clamp, turn the spindle 90° and tighten the nuts again.

In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 250–315 fullfills pressure class C in closed position.

Ordering example

Product	DTBCU	250	24	LF
Type				
Dimension Ød ₁				
Voltage				
Motor type				



Motorized shut-off damper

DTBCU



Description

Shut-off damper with spring return motor – AF 24 or AF 230

Consists of a DTU damper with a 24 or 230 V electric motor added.

The motor is controlled by a single-pole breaking contact. The motor has overload protection and stops automatically when the blade has reached its end stop. Although the current is connected, the motor is not damaged if blocked.

When system voltage is connected, the motor starts and tensions the return spring at the same time. The motor stops at its end position and is not damaged by blockage, although system voltage remains.

When the power is cut, the damper closes when the drive motor freewheels and the return spring pulls the blade back to its original position.

If you want the damper to open instead of close, you can undo the two nuts on the spindle clamp, turn the spindle 90° and tighten the nuts again.

In outdoor installation, the motor should be protected from direct UV radiation.

The motor is installed at a distance from the damper, which makes it easy to insulate the ventilation duct.

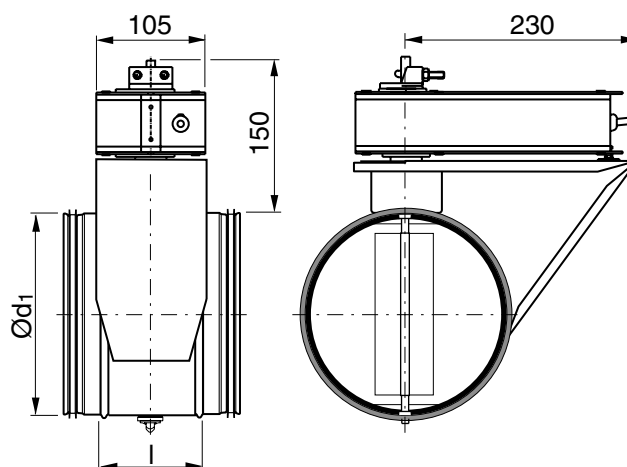
There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 400–630 fullfills pressure class B in closed position.

Ordering example

Product	DTBCU	400	24	AF
Type				
Dimension Ød ₁				
Voltage				
Motor type				

Dimensions



Ød ₁ nom	l mm	24 V m kg	230 V m kg	Sealing class past closed blade
400	100	7,02	7,32	4
500	115	9,44	9,74	4
630	115	11,2	11,5	4





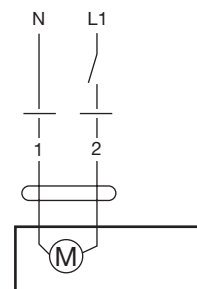
Motorized shut-off damper

DTBCU

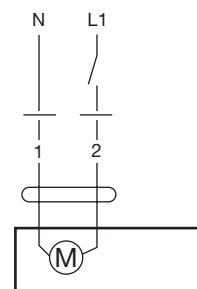
Technical data for the motors

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	TF 24	TF 230
Voltage range.....	2AC 19,2–28,8 V, 50/60 Hz DC 21,6–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption		
– during opening.....	2,5 W	2,5 W
– stand-by.....	1,5 W	1,5 W
For wire sizing.....	5 VA	5 VA
Connection	Cable 1 m, 2×0,75 mm ²	Cable 1 m, 2×0,75 mm ²
Operating angle, adjustable.....	Mech. limited to 95°	Mech. limited to 95°
Torque at rated voltage		
– motor	Min. 2 Nm	Min. 2 Nm
– return spring.....	Min. 2 Nm	Min. 2 Nm
Direction of rotation	Optional through right or left-hand installation L/R	Optional through right or left-hand installation L/R
Position indication	Mechanical	Mechanical
Running time		
– motor	< 75 s (0–2 Nm)	< 75 s (0–2 Nm)
– return spring.....	< 25 s	< 25 s
Degree of protection.....	IP 42	IP 42
Ambient temperature range.....	-30 to +50°C	-30 to +50°C



	LF 24	LF 230
Voltage range.....	2AC 19,2–28,8 V, 50/60 Hz DC 21,6–28,8 V	AC 198–264 V, 50/60 Hz
Power consumption		
– during opening.....	5 W	5 W
– stand-by.....	2,5 W	3 W
For wire sizing.....	7 VA	7 VA
Connection	Cable 1 m, 2×0,75 mm ²	Cable 1 m, 2×0,75 mm ²
Operating angle, adjustable.....	Mech. limited to 95°	Mech. limited to 95°
Torque at rated voltage		
– motor	Min. 4 Nm	Min. 4 Nm
– return spring.....	Min. 4 Nm	Min. 4 Nm
Direction of rotation	Optional through right or left-hand installation L/R	Optional through right or left-hand installation L/R
Position indication	Mechanical	Mechanical
Running time		
– motor	40–75 s (0–4 Nm)	40–75 s (0–4 Nm)
– return spring.....	app. 20 s	app. 20 s
Sound power level		
– motor	max 50 dB (A)	max 50 dB (A)
– return spring.....	app. 62 dB (A)	app. 62 dB (A)
Degree of protection.....	IP 54	IP 54
Ambient temperature range.....	-30 to +50°C	-30 to +50°C

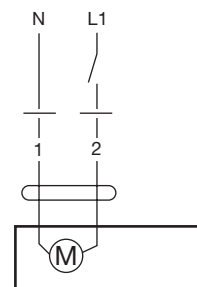




Motorized shut-off damper

DTBCU

	AF 24	AF 230
Voltage rang	AC 19,2–28,8 V, 50/60 Hz DC 21,6–26,4 V	AC 198–264 V, 50/60 Hz
Power consumption		
– during opening	5 W	6,5 W
– stand-by	1,5 W	2,5 W
For wire sizing	10 VA	11 VA
Connection	Cable 1 m, 2×0,75 mm ²	Cable 1 m, 2×0,75 mm ²
Operating angle, adjustable.....	Mech. limited to 95°	Mech. limited to 95°
Torque at rated voltage		
– motor	Min. 15 Nm	Min. 15 Nm
– spring bias	Min. 15 Nm	Min. 15 Nm
Direction of rotation	Optional through right or left-hand installation L/R	Optional through right or left-hand installation L/R
Position indication	Mechanical	Mechanical
Running time		
– motor	app. 150 s	app. 150 s
– return spring.....	app. 16 s	app. 16 s
Sound power level		
– motor	max 45 dB (A)	max 45 dB (A)
– return spring.....	app. 62 dB (A)	app. 62 dB (A)
Degree of protection.....	IP 54	IP 54
Ambient temperature range.....	-30 to +50°C	-30 to +50°C



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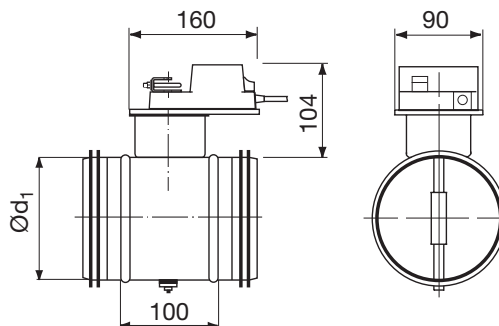


Shut-off damper, fastrunning motor

DTFU



Dimensions



Ød ₁ nom	m kg	Sealing class past closed blade
80	1,30	4
100	1,40	4
125	1,50	4
160	1,80	4
200	2,10	4
250	2,50	4

Description

Tight-closing shut-off damper with mounted setting motor:

Damper blade: Double sheet metal with a intermediate sealing of EPDM-rubber, which is in contact with the inside of the damper housing when in the closed position. Spacer sleeve for

Insulation up to 50 mm thickness.

LMQ 24A: Fast-running reversing on/off-motor, specially developed for extraction at working places, where a fast opening and closing of the damper is needed. Setting angle electronically limited, overload proof even at blocked damper blade.

The motor has overload protection and stops automatically when the blade has reached its end stop. The stops can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

LMQ 24A-SR: Fast-running, modulating motor, specially developed for the laboratory extraction, where a fast and accurate adaption of the volume flow is achieved through a sudden change of the damper blad position.

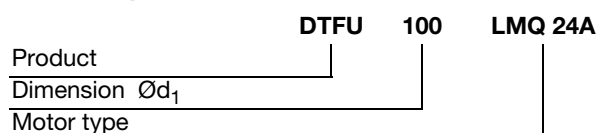
The motor has overload protection and stops automatically when the blade has reached its end stop. The stops can be continually adjusted. Although the current is connected, the motor is not damaged if blocked.

Note: At weather exposed mounting the motor housing must be protected from rain and direct UV-radiation!

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–250 fullfills pressure class C in closed position.

Ordering example





Motorized shut-off damper

DTPU



Description

Shut-off damper with pneumatic actuator

Consists of a DTU damper with a pneumatic actuator installed. The actuator consists of a glass-reinforced polyamide housing with an internal rolling diaphragm to which the spindle is fixed.

When air pressure rises, the actuator spindle is forced out and operates the blade via a lever. When air pressure falls, the actuator spindle retracts under the tension of the return spring. The damper blade is closed when delivered, and the actuator fully retracted.

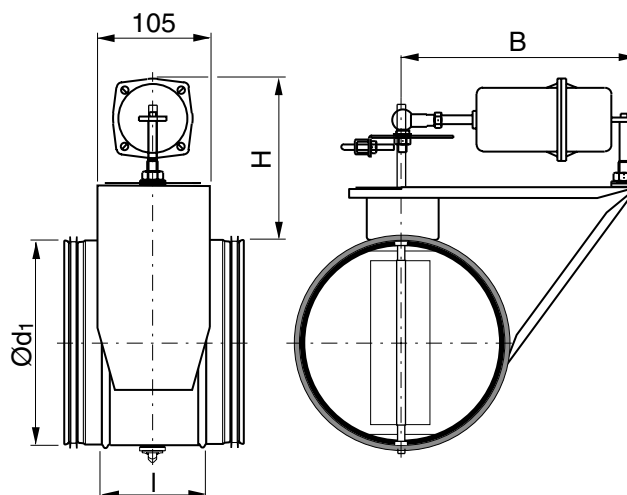
There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–315 fullfills pressure class C in closed position.
Ø 400–630 fullfills pressure class B in closed position.

Ordering example

	DTPU	200	AK31
Product			
Dimension Ød ₁			
Motor type			

Dimensions



Ød ₁ nom	I mm	H mm	B mm	m kg	Sealing class past closed blade
80	100	144	230	1,07	3
100	100	144	230	1,15	3
125	100	144	230	1,30	3
160	100	144	230	1,51	3
200	100	144	230	1,81	3
250	100	160	230	2,39	3
315	100	160	230	3,01	3
400	100	195	325	5,42	3
500	115	195	325	7,84	3
630	115	195	325	10,6	3

Technical data for the motors

	AK 31 P Ø80–200	AK 41 P Ø250–315	AK 42 P Ø400–630
Dimension.....	Nozzle Ø4 mm	1/8"	1/8"
Air connection.....	0,3 l _n	0,5 l _n	1,7 l _n
Volume of free air required for full stroke	150 kPa (1,5 bar)	150 kPa (1,5 bar)	150 kPa (1,5 bar)
Power pressure max.....	-5 to +60°C	-10 to +70°C	-10 to +70°C
Ambient temperature range.....	0,3 kg	0,5 kg	1,4 kg
Weight.....			
Running time 0 – 90 °			
At power pressure 90 kPa	10 s10 s	10 s	
At power pressure 150 kPa	1 s1 s	1 s	
At spring return.....	2 s2 s	2 s	



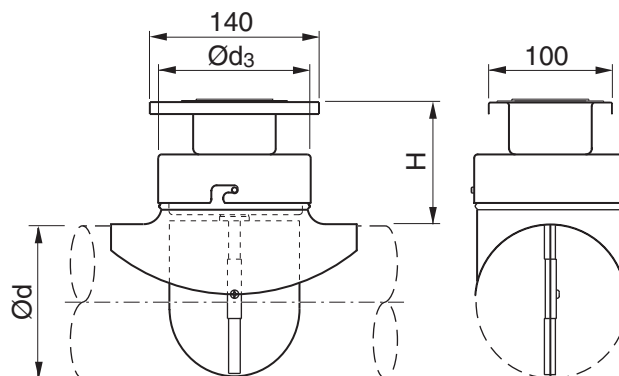


Cleaning regulating damper

PSDRU



Dimensions



Description

Cleaning regulating damper

Consists of a KCU cleaning cover with a blade without rubber gasket similar to the DRU and a PSU collar saddle in whose branch the cleaning cover is fixed.

The branch is provided with a Safe seal.

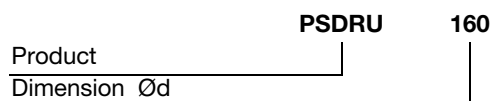
Since it is easy to remove the cleaning cover together with the blade, it is easy to inspect and clean the ventilation system. The original pressure balance in the system is not affected since the blade and cleaning cover retain their mutual positions which they were given during balancing. The damper can be used to advantage, to complete an existing ventilation system.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ød nom	Ød ₃ nom	H mm	m kg	Sealing class past closed blade
100	100	100	0,70	0
125	125	105	0,95	0
160	160	110	1,30	0
200	200	110	1,75	0
250	250	120	2,60	0
315	315	120	3,80	0
400	400	175	5,70	0

Ordering example



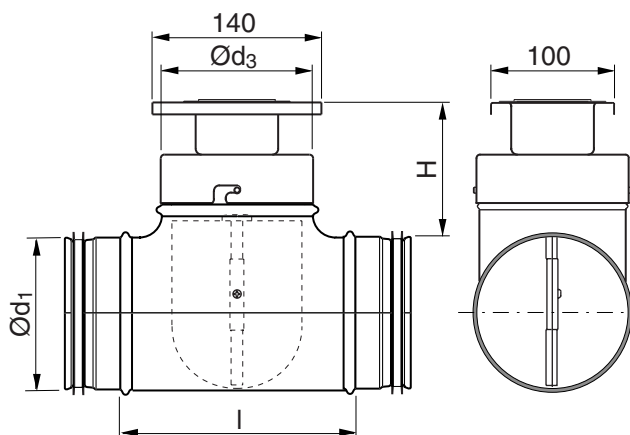


Cleaning regulating damper

TDRU



Dimensions



Description

Cleaning regulating damper

Consists of a KCU cleaning cover with a blade without rubber gasket similar to the DRU and a TCPU T-piece in whose branch the cleaning cover is fixed.

The branch is provided with a Safe seal.

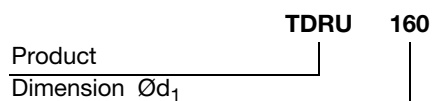
Since it is easy to remove the cleaning cover together with the blade, it is easy to inspect and clean the ventilation system. The original pressure balance in the system is not affected since the blade and cleaning cover retain their mutual positions which they were given during balancing.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ød ₁ nom	Ød ₃ nom	l mm	H mm	m kg	Sealing class past closed blade
100	100	130	100	0,71	0
125	125	165	105	1,28	0
160	160	209	110	1,80	0
200	200	249	110	2,80	0
250	250	296	120	3,51	0
315	315	363	120	4,03	0
400	400	510	175	9,30	0

Ordering example



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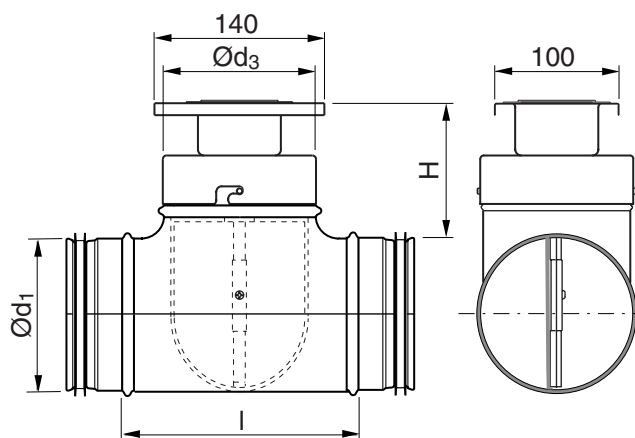


Cleaning shut-off damper

TDSU



Dimensions



Description

Cleaning shut-off damper

Consists of a KCU cleaning cover with a blade without rubber gasket similar to the DSU and a TCPU T-piece in whose branch the cleaning cover is fixed.

The branch is provided with a Safe seal.

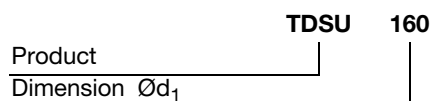
Since it is easy to remove the cleaning cover together with the blade, it is easy to inspect and clean the ventilation system. The original pressure balance in the system is not affected since the blade and cleaning cover retain their mutual positions which they were given during balancing.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ød ₁ nom	Ød ₃ nom	l mm	H mm	m kg	Sealing class past closed blade
100	100	130	100	0,75	1
125	125	165	105	1,33	1
160	160	209	110	2,00	1
200	200	249	110	2,80	1
250	250	296	120	3,71	1
315	315	363	120	4,33	1
400	400	510	175	9,90	1

Ordering example





Alternating shut-off damper

TASU

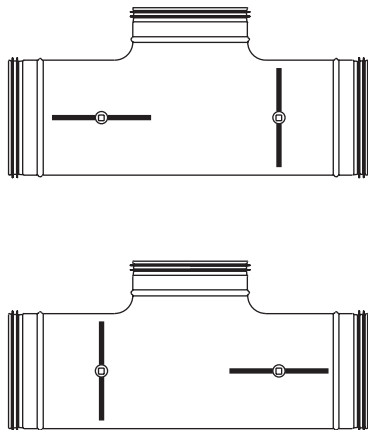


Description

Alternating shut-off damper

Consists of an extended T-piece and two linked DSU dampers.

Can be used for "by pass" ducts. It thereby replaces two conventional dampers + two couplings + one T-piece and is 20–30% shorter.



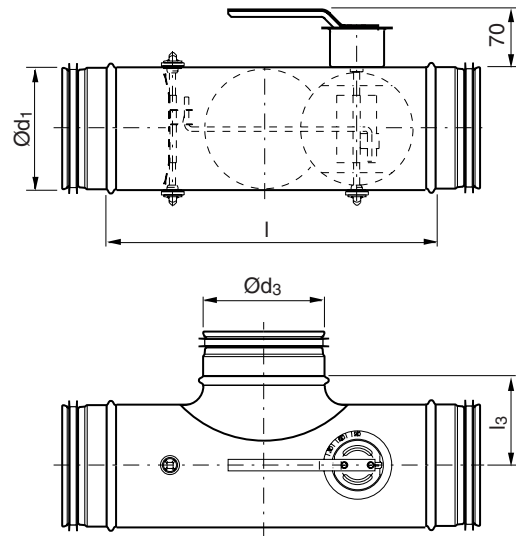
There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ordering example

Product	TASU	160	160
Dimension Ød ₁			
Dimension Ød ₃			

Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg	Sealing class past closed blade
100	100	280	65	1,10	0
125	125	345	83	1,50	0
160	160	385	105	2,00	0
200	200	425	125	2,80	0
250	250	520	150	4,10	0
315	315	585	182	5,90	0
400	400	645	225	8,30	0

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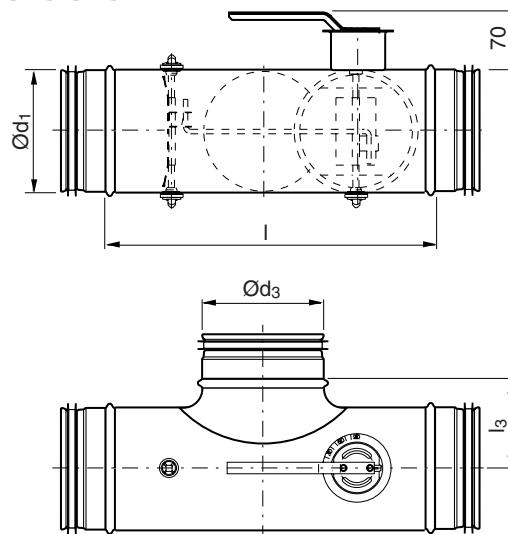


Alternating shut-off damper

TATU



Dimensions

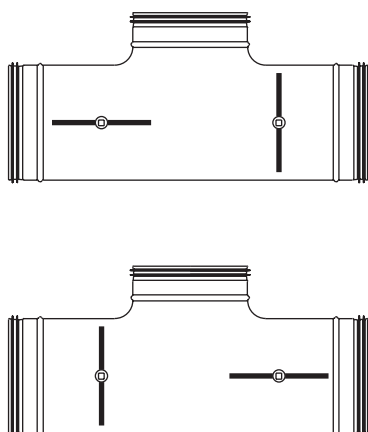


Description

Alternating shut-off damper

Consists of an extended T-piece and two linked DTU dampers.

Can be used for "by pass" ducts. It thereby replaces two conventional dampers + two couplings + one T-piece and is 20–30% shorter.

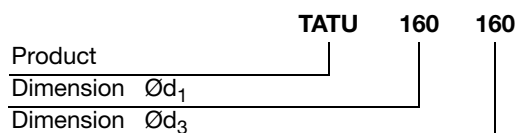


Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg	Sealing class past closed blade
100	100	280	65	1,20	2
125	125	345	83	1,60	2
160	160	385	105	2,20	2
200	200	425	125	3,15	2
250	250	520	150	4,50	2
315	315	585	182	6,60	2
400	400	645	225	9,80	2

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ordering example





Motorized alternating shut-off damper

TATBU



Description

Alternating shut-off damper with electric motor – NM 24 A-F or NM 230 A-F

Consists of an extended T-piece with two linked DTU dampers and a 24 or 230 V electric motor installed.

Can be used for "by pass" ducts. This means that it replaces two conventional dampers + two couplings + one T-piece and is 20–30% shorter.

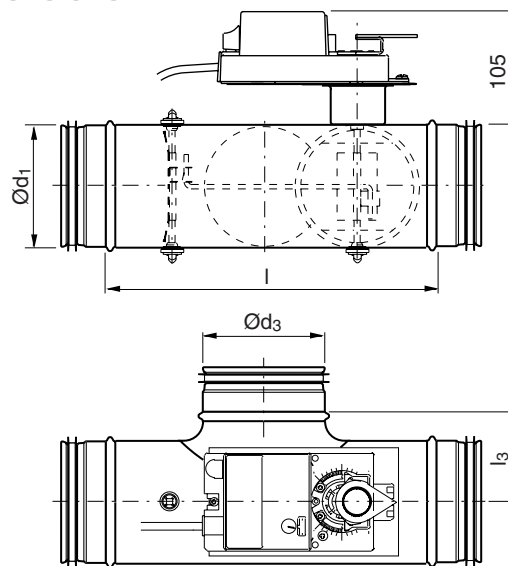
There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 100–400 fullfills pressure class A in closed position.

Ordering example

Product	TATBU	400	24	NMF
Type				
Dimension Ød ₁				
Voltage				
Motor type				

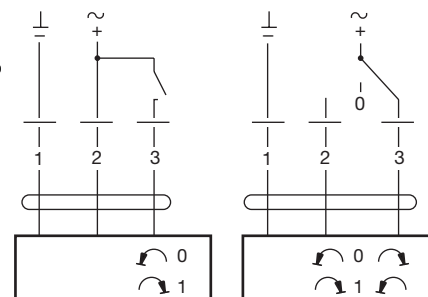
Dimensions



Ød ₁ nom	Ød ₃ nom	l mm	l ₃ mm	m kg	Sealing class past closed blade
100	100	280	65	2,00	2
125	125	345	83	2,40	2
160	160	385	105	3,00	2
200	200	425	125	3,90	2
250	250	520	150	5,20	2
315	315	585	182	7,40	2
400	400	645	225	10,6	2

Technical data for the motors

	NM 24 A-F	NM 230 A-F
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	1,5 W	2,5 W
For wire sizing	3,5 VA	6 VA
Connection	Cable 1 m, 3x0,75 mm ²	Cable 1 m, 3x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 10 Nm	Min. 10 Nm
Direction of rotation	Switch selectable 0 ↻ or 1 ↻	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level.....	Max. 35 dB (A)	Max. 35 dB (A)
Protection class.....	III Safety extra-low voltage	II Safety insulated
Protection type.....	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH





Motorized alternating shut-off dampers

TASU, TATU, TATBU

1

Technical data

2

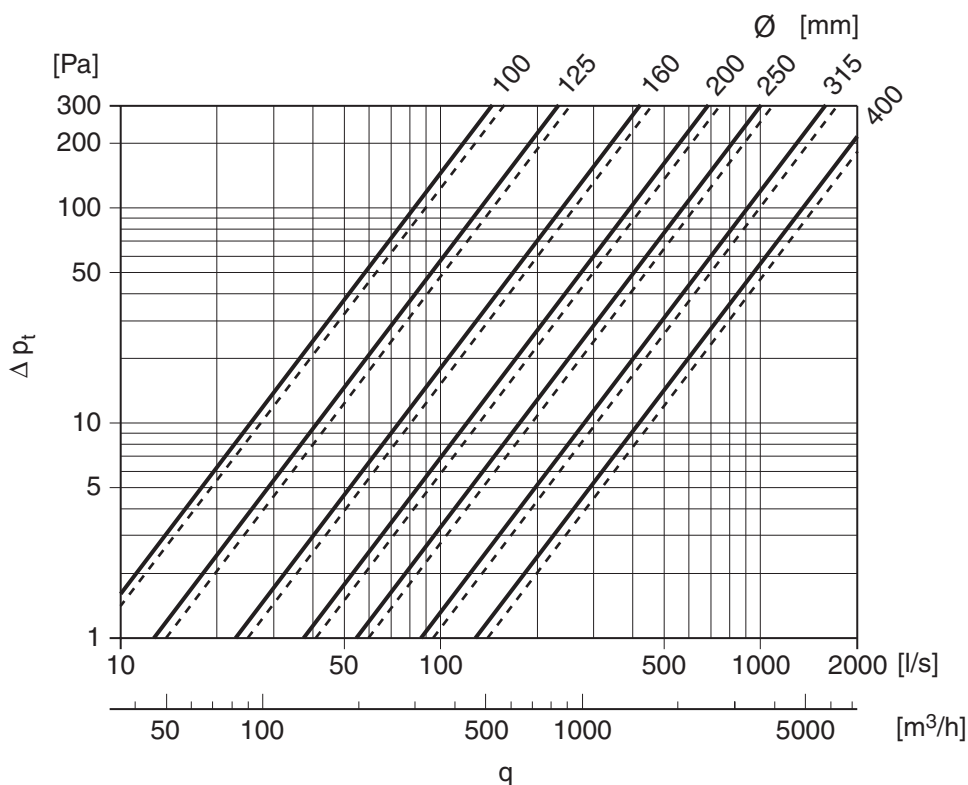
The dashed pressure drop curves refer to the flow direction in the right picture.

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Constant-/variable flow damper

Summary

- DAU - manual single flow unit
- DA2EU - motorized twin flow unit
- DAVU - motorized variable flow unit
- Diameters Ø 80–315
- Flow range 15–830 l/s (54–2988 m³/h)
- Pressure range 50–1000 Pa (over the unit)
- Independent of mounting direction
- Handles 50 mm duct insulation

Function

The constant flow damper is an automatic damper, which at varying pressures wholly mechanical and independent of external energy sources maintains a set flow constant. The force, needed for regulation, is taken from the passing air stream. The air stream across the blade attempts to close it and generates a closing torque. This is balanced by an opposed opening force from a spring. The greater the pressure across the blade the more it closes. A bellow eliminates oscillations, which could occur at unfavourable conditions of operation.

Types

The following types exist:

- DAU – one flow unit – with knob and arrow for manual setting of one flow.
- DA2EU – two flows unit – with electric motor for switching between two flows.
- DAVU – variable flow unit – with electric motor for continuous setting of one flow.

Material

Housing and damper blade are of galvanized sheet metal and shaft is of stainless steel.

Temperature

Working range: +5 to +70 °C.

Insulation

The units can handle 50 mm duct insulation without the scale or the motor being hidden. DAU is available with an 45 mm external insulation and an outer sheet metal shell for lower sound radiation to the surroundings. Is then called DALU.

Regulating accuracy

The units are calibrated from factory within their whole working range. In this the units keep the flow constant within approximately ±5 to ±10% of the set flow. Greater deviations occur at the lower flows, especially for small sizes.

Flow setting

The units can not be delivered from factory with a preset flow. You can set the flow yourself very easy following to the instruction for each product.

DAU, DA2EU, DAVU

Disturbance tolerance

In order to achieve the stated accuracy for the pre-set flow a straight distance of at least 3×d before and at least 1,5×d after the units are required. A mounting close to a source of disturbance (bend, saddle etc.) decreases the regulation accuracy and the flow may deviate from the set value.

Change of direction

The units are independent of their mounting direction and one may deviate from the specified direction and mount them in any direction without affecting the accuracy.

Combinations

The units can be mounted together with e.g. a motorized shut off damper DTBU, see page side 273. Constant flow damper combined with shut off damper can with advantage be used in groups at installations where you want:

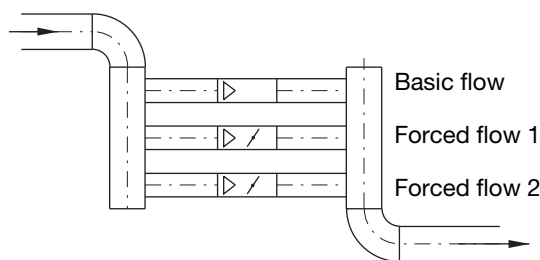
- two flows, that lies too far away from each other for a two flow unit to handle

or

- more than two flows

Presume: Basic flow	= 80 l/s
Forced flow 1	= 100 l/s
Forced flow 2	= 150 l/s

Four flows will then be possible: 80, 180, 230 and 330 l/s.





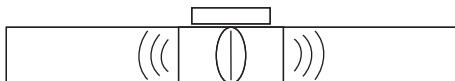
Constant-/variable flow damper

DAU, DA2EU, DAVU

1

Technical data

Pressure and flow ranges and sound to duct



The graphs show A-weighted sound **power** level, L_{WA} [dB], to duct. These curves are intended for brief comparison. For more accurate calculation, please use the tables.

Example

Given: Diameter 125 mm
 Flow 70 l/s
 Pressure drop 200 Pa

The graph gives:

A-weighted sound power level approx. 57 dB

The table gives:

Sound power level as below

Centre frequency [Hz]	63	125	250	500	1 k	2 k	4 k	8 k
Sound power level [dB]	52	52	49	49	49	51	51	46

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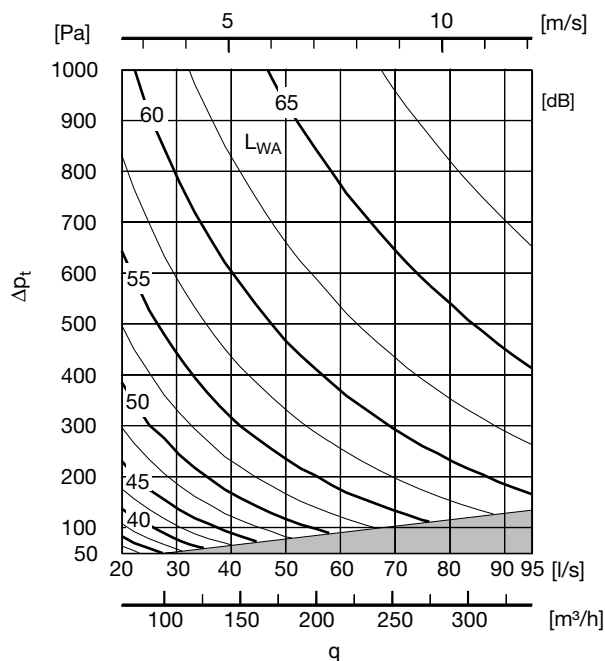
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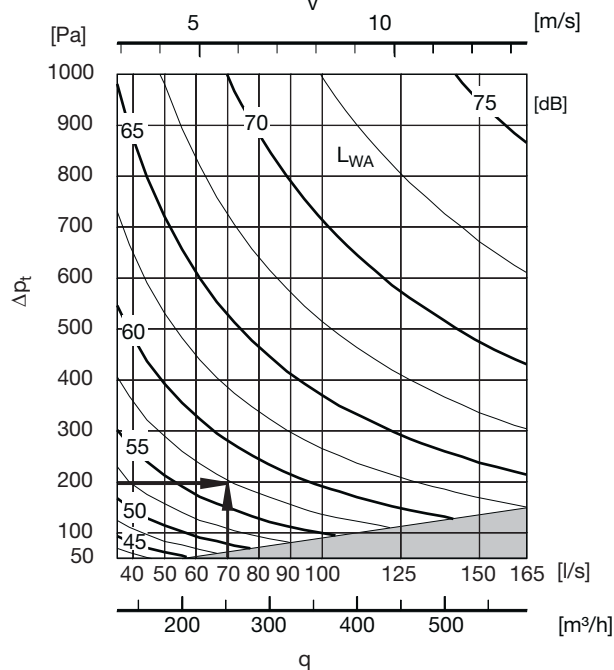
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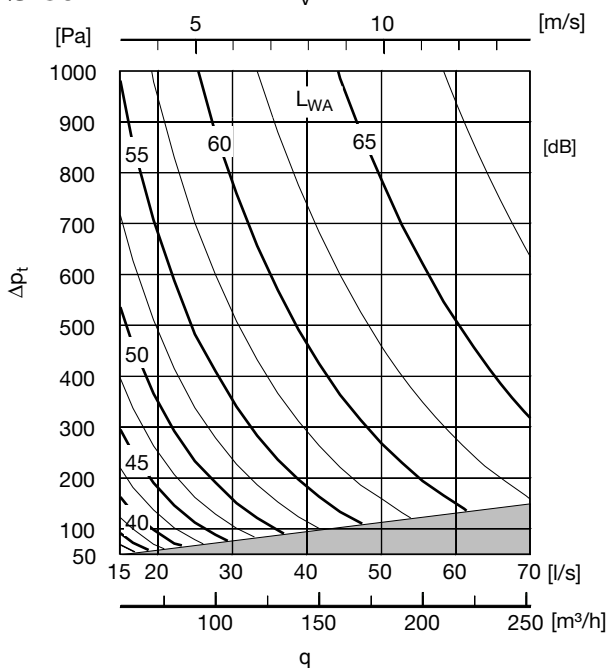
Ø 100



Ø 125



Ø 80





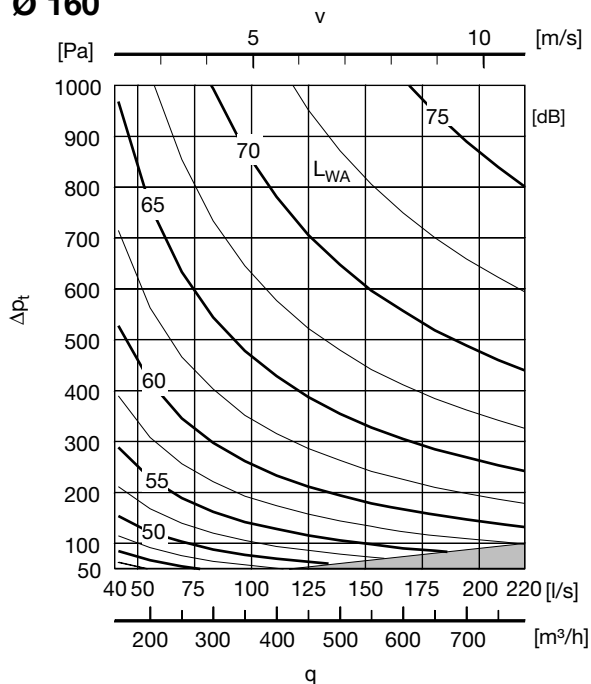
Constant-/ variable flow damper

DAU, DA2EU, DAVU

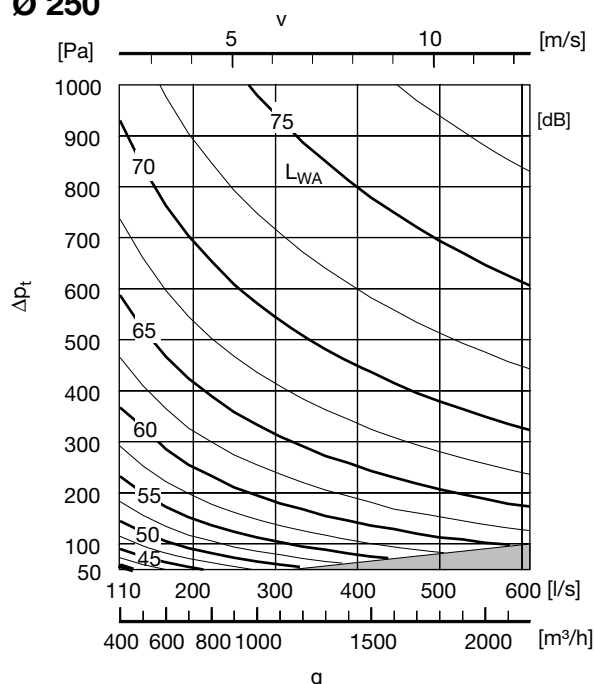
Technical data

Pressure and flow ranges and sound to duct

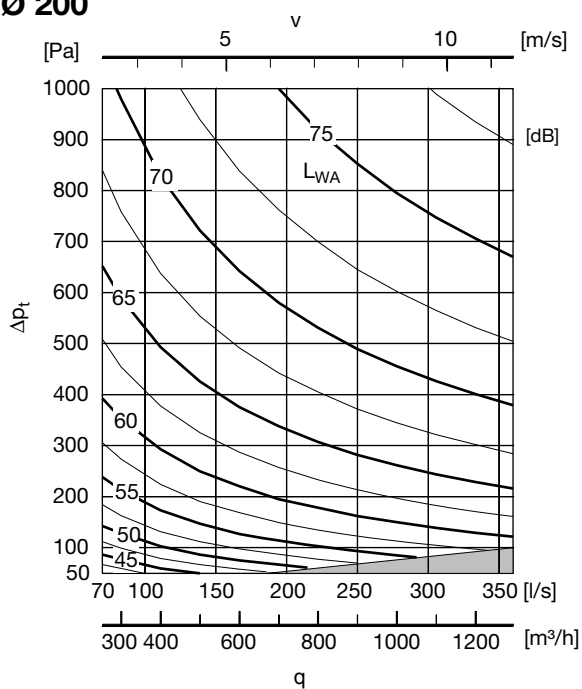
Ø 160



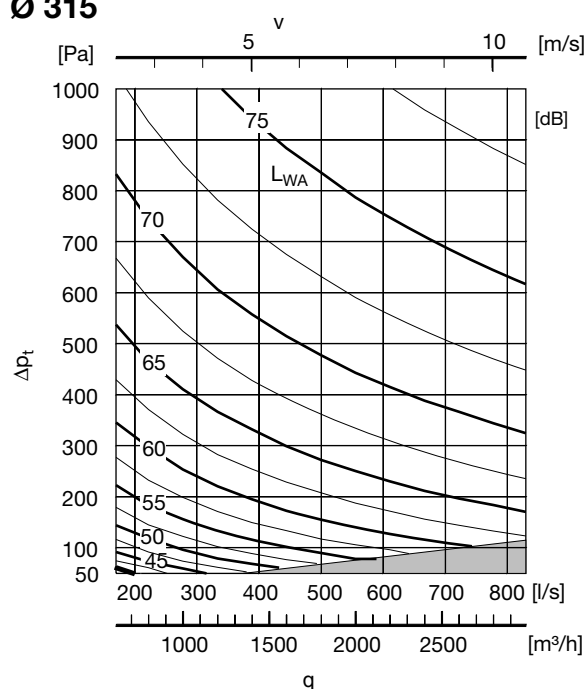
Ø 250



Ø 200



Ø 315



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Constant-/variable flow damper

DAU, DA2EU, DAVU

Technical data

Sound to duct

Sound power level, L_W [dB], to duct in octave bands 1–8, 63–8000 Hz, as function of diameter, pressure drop and flow.

Ød ₁	Pressure drop [Pa]	Velocity app. 2,5 [m/s]								Velocity app. 6 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
		Flow 15 [l/s]								Flow 30 [l/s]							
80	1000	51	49	44	44	46	49	49	44	56	56	53	53	53	55	55	50
	500	45	43	38	38	40	43	43	38	51	51	49	49	49	51	50	46
	200	37	35	30	30	32	35	35	30	45	45	43	43	43	45	44	40
	100	32	30	25	25	27	30	30	25	41	41	39	39	39	41	40	35
	50	26	24	19	19	21	24	24	19	–	–	–	–	–	–	–	–
		Flow 20 [l/s]								Flow 45 [l/s]							
100	1000	56	53	48	48	50	53	54	48	59	59	57	57	57	59	58	53
	500	49	46	41	41	43	47	47	42	54	54	51	51	51	53	53	48
	200	39	37	31	31	33	37	37	32	47	47	44	44	45	47	46	41
	100	34	31	26	26	28	32	32	27	42	42	39	39	40	42	41	36
	50	26	24	18	18	20	24	24	19	–	–	–	–	–	–	–	–
		Flow 30 [l/s]								Flow 70 [l/s]							
125	1000	60	58	52	52	54	58	58	53	64	64	62	62	62	64	63	59
	500	54	52	46	46	48	52	52	47	59	59	56	57	57	59	58	53
	200	46	44	38	38	40	44	44	39	52	52	49	49	49	51	51	46
	100	40	38	32	32	34	38	38	33	46	46	44	44	44	46	45	40
	50	34	32	26	26	28	32	32	27	–	–	–	–	–	–	–	–
		Flow 40 [l/s]								Flow 120 [l/s]							
160	1000	62	59	52	52	55	59	60	54	67	67	65	65	65	67	66	61
	500	56	53	47	47	49	53	54	48	61	61	59	59	59	61	60	55
	200	49	46	39	39	42	46	47	41	53	53	51	51	51	53	52	47
	100	43	40	33	33	36	40	41	35	48	48	46	46	46	48	47	42
	50	37	34	27	27	30	34	35	29	–	–	–	–	–	–	–	–
		Flow 70 [l/s]								Flow 180 [l/s]							
200	1000	66	63	57	57	59	63	63	58	69	69	66	66	66	68	68	63
	500	59	56	50	50	53	57	57	52	62	62	60	60	60	62	61	57
	200	50	47	41	41	43	47	47	42	54	54	51	51	52	54	53	48
	100	43	40	34	34	36	40	40	35	47	47	45	45	45	47	46	42
	50	37	34	28	28	30	34	34	29	–	–	–	–	–	–	–	–
		Flow 110 [l/s]								Flow 300 [l/s]							
250	1000	67	64	59	59	61	65	65	60	70	70	67	68	67	69	69	64
	500	60	57	51	51	53	57	57	52	63	63	61	61	61	63	62	57
	200	50	47	41	41	43	47	47	42	55	55	53	53	53	54	54	49
	100	43	40	34	34	36	40	40	35	49	49	47	47	47	48	48	43
	50	35	32	26	26	28	32	33	27	43	43	40	41	40	42	42	37
		Flow 170 [l/s]								Flow 470 [l/s]							
315	1000	69	66	60	60	62	66	67	61	70	70	68	68	68	70	69	65
	500	61	58	52	52	54	58	59	53	64	64	62	62	62	64	63	59
	200	50	47	41	41	44	48	48	43	56	56	54	54	54	56	55	50
	100	42	40	34	34	36	40	40	35	50	50	47	47	47	49	49	44
	50	35	32	26	26	29	33	33	28	–	–	–	–	–	–	–	–



Constant-/variable flow damper

DAU, DA2EU, DAVU

Technical data

Sound to duct

Sound power level, L_W [dB], to duct in octave bands 1–8, 63–8000 Hz, as function of diameter, pressure drop and flow.

Ød ₁	Pressure drop [Pa]	Velocity app. 9 [m/s]								Velocity app. 12 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]							
		63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
		Flow 45 [l/s]								Flow 70 [l/s]							
80	1000	58	59	59	59	58	59	58	53	61	64	65	65	63	63	61	57
	500	55	56	55	55	54	55	54	50	59	61	62	62	60	60	59	55
	200	50	51	51	51	50	51	50	45	55	58	59	59	57	57	55	51
	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 70 [l/s]								Flow 95 [l/s]							
100	1000	61	62	61	62	61	62	61	56	62	64	65	65	63	63	62	58
	500	56	58	57	57	56	57	56	51	59	60	61	61	59	60	58	54
	200	51	52	51	51	50	51	50	46	53	55	56	56	54	54	53	49
	100	47	48	47	47	46	47	46	42	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 110 [l/s]								Flow 165 [l/s]							
125	1000	66	67	67	67	66	67	66	61	68	71	71	72	70	70	68	64
	500	61	62	62	62	61	62	61	56	63	66	66	67	65	65	63	59
	200	54	55	55	55	54	55	54	49	57	59	60	60	58	58	57	52
	100	50	51	50	50	49	50	49	45	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 180 [l/s]								Flow 220 [l/s]							
160	1000	69	70	69	69	68	69	68	64	70	71	71	71	70	71	69	65
	500	63	64	63	63	62	63	62	58	64	66	66	66	64	65	64	59
	200	55	56	56	56	55	56	55	50	56	58	58	58	57	57	56	52
	100	50	51	50	50	49	50	49	45	51	52	52	52	51	52	50	46
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 280 [l/s]								Flow 360 [l/s]							
200	1000	70	71	71	71	70	71	70	65	71	73	73	73	72	72	71	67
	500	64	65	64	64	63	64	63	59	65	67	67	67	65	66	65	60
	200	56	57	56	56	55	56	55	51	57	58	59	59	57	58	56	52
	100	50	51	50	50	49	50	49	45	51	53	53	53	52	52	51	47
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 450 [l/s]								Flow 600 [l/s]							
250	1000	71	72	71	71	70	71	70	66	72	73	74	74	72	73	71	67
	500	65	66	65	65	64	65	64	60	66	68	69	69	67	67	66	62
	200	57	58	57	57	56	57	56	52	58	60	61	61	59	59	58	54
	100	51	52	52	52	51	52	51	46	54	55	56	56	54	55	53	49
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Flow 700 [l/s]								Flow 830 [l/s]							
315	1000	71	72	72	72	71	72	71	66	72	73	73	73	72	73	71	67
	500	66	67	66	66	65	66	65	61	66	67	67	68	66	67	66	61
	200	58	59	59	59	58	59	58	53	59	60	60	60	59	60	58	54
	100	52	53	53	53	52	53	52	47	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





Constant-/variable flow damper

DAU, DA2EU, DAVU

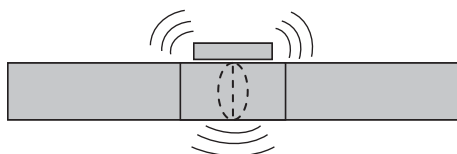
1

Technical data

2

Pressure and flow ranges and sound to the surroundings

3



4

The graphs show A-weighted sound **power** level, L_{WA} [dB], to the surroundings.

5

Example:

Given: Diameter 125 mm
Flow 70 l/s
Pressure drop 200 Pa

6

The graph gives:

A-weighted sound power level approx. 40 dB

7

The A-weighted sound **pressure** level in the middle of the room becomes approx. 8 dB lower than these graph values.

8

With insulation shell around the unit (the DALU unit) the A-weighted sound **pressure** level in the middle of the room becomes approx. 26 dB lower than the graph values on condition that also the connected ducts are attenuated (insulated) to the same extent.

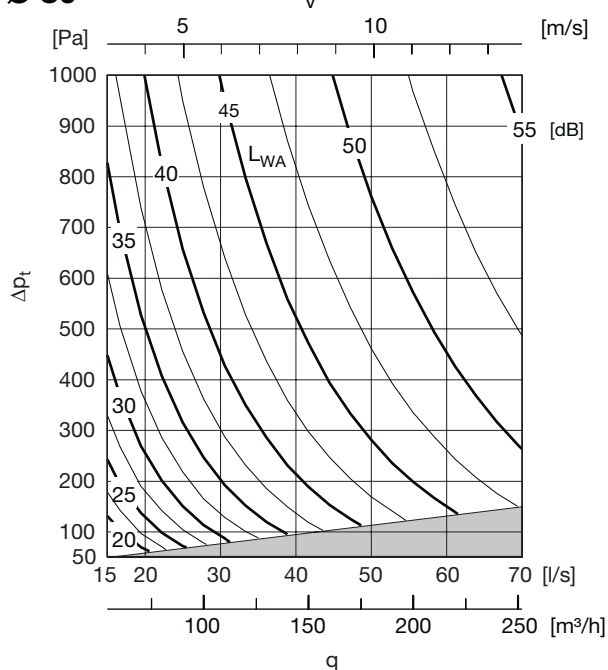
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Still lower sound **pressure** level can be achieved with additional constructional sound attenuation measures (false ceiling, high room attenuation).

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Ø 80



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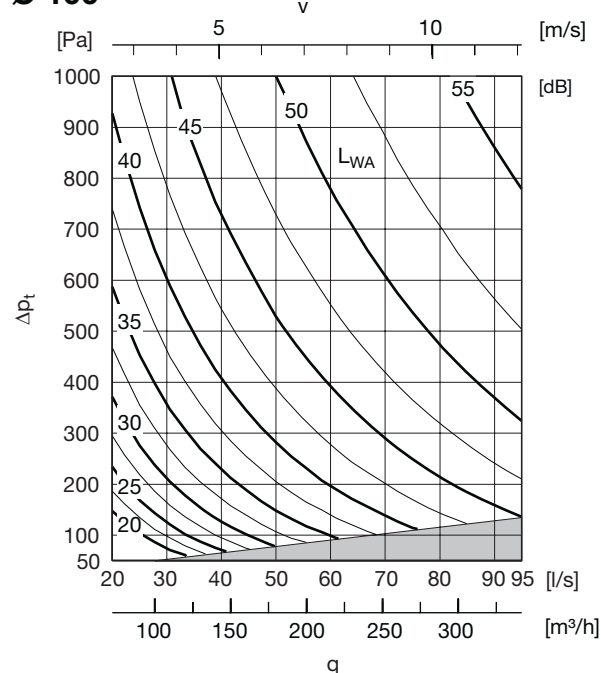
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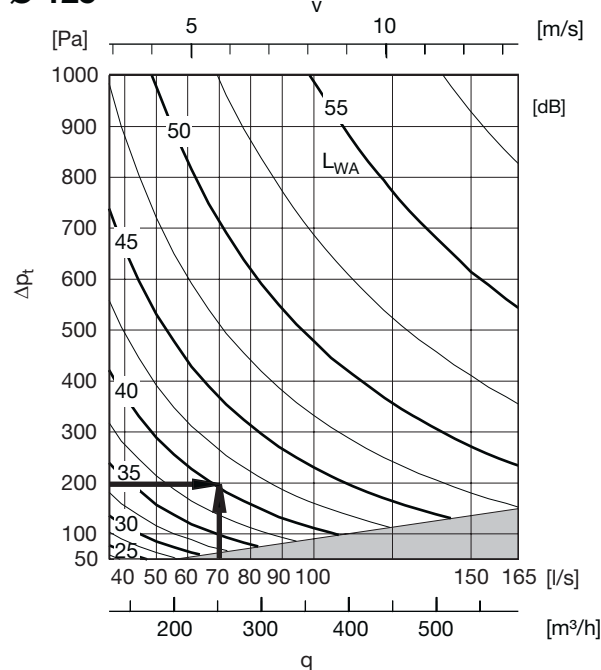
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Ø 100



Ø 125





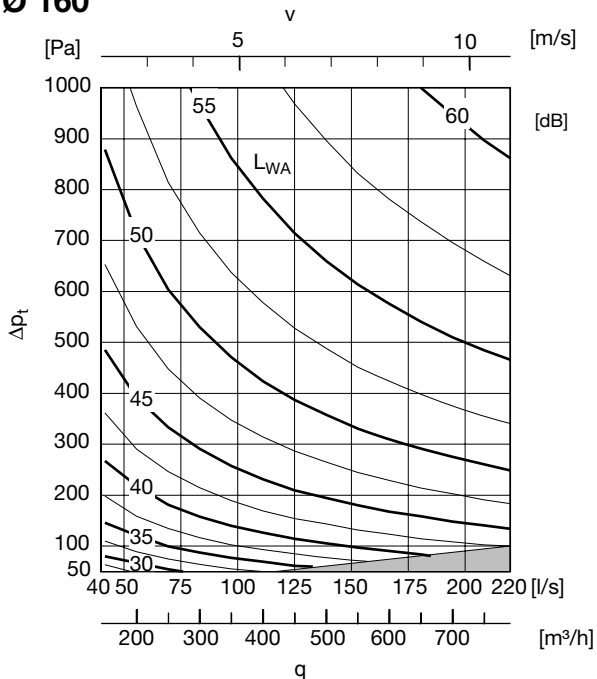
Constant-/variable flow damper

DAU, DA2EU, DAVU

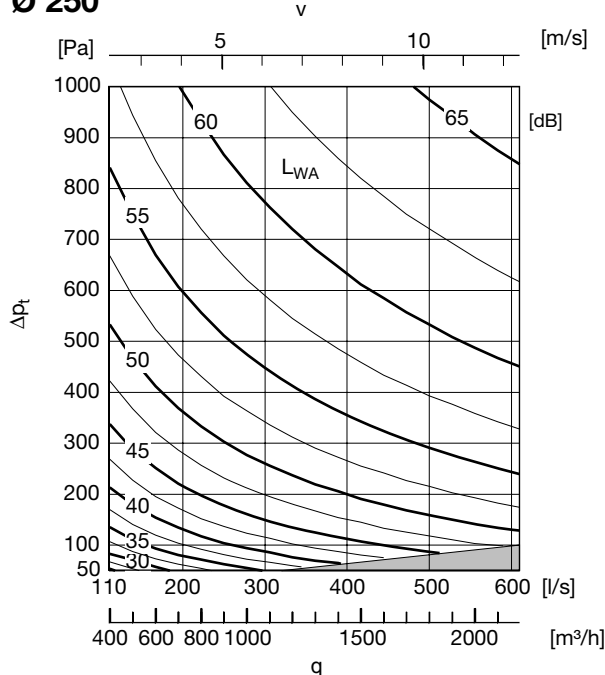
Technical data

Pressure and flow ranges and sound to the surroundings

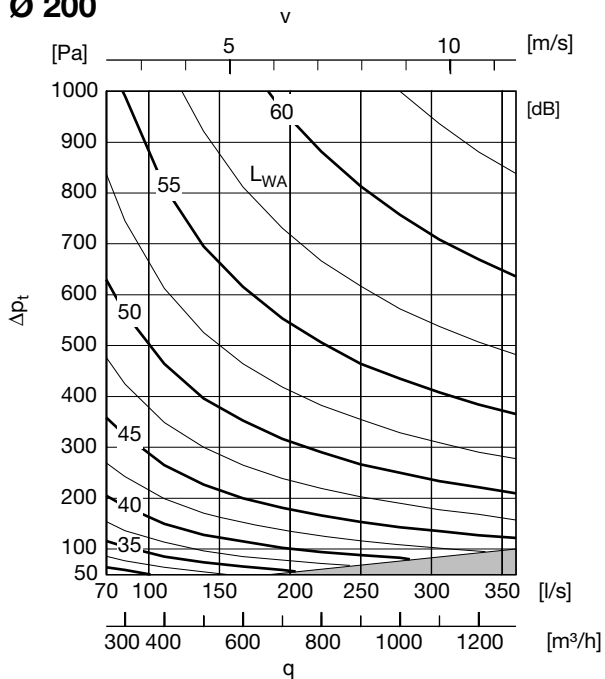
Ø 160



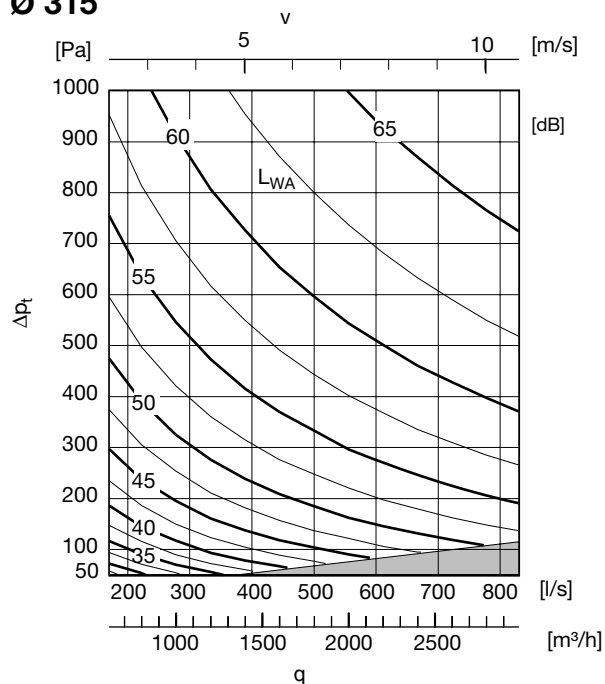
Ø 250



Ø 200



Ø 315



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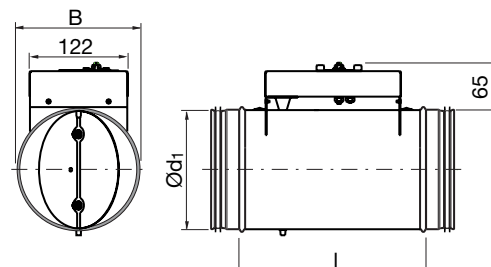


Constant-/variable flow damper

DAU



Dimensions



Description

Constant flow damper with manual setting of one flow

DAU is a constant flow damper, which facilitates balancing of ventilation systems and gives correct flow from the start.

The unit compensates for e.g. connection and disconnection of system parts, clogging of filters and ducts, thermal lift forces, wind effects, window opening etc.

Ø 80–315 fullfills pressure class A in closed position.

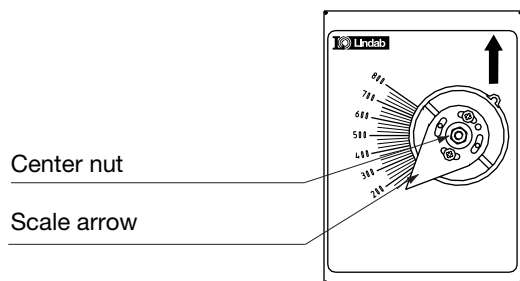
Fulfils tightness class C.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

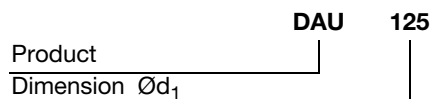
Technical data

Flow setting

The flow is set by loosening the center nut and via the knob turning the scale arrow so it points at the wanted flow on the scale. Then the center nut is tightened.

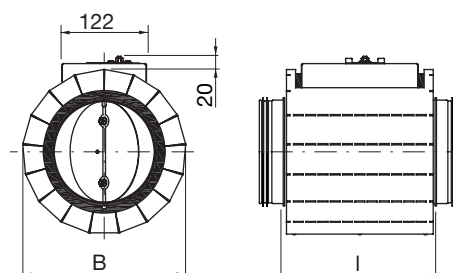


Ordering example



Ød ₁ nom	l mm	B mm	m kg	Tightness class across closed blade
80	240	122	1,35	0
100	240	122	1,40	0
125	240	135	1,65	0
160	250	170	1,85	0
200	268	210	2,26	0
250	290	260	3,35	0
315	332	325	4,75	0

DAU is available with an 45 mm external insulation and an outer sheet metal shell for lower sound radiation to the surroundings. Is then called DALU.



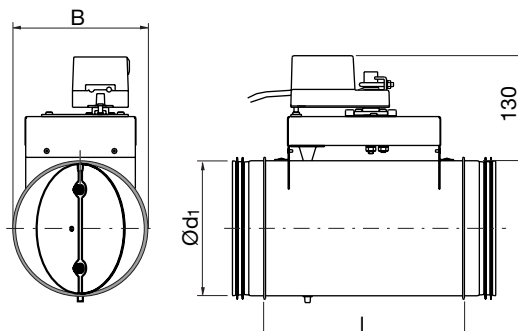
Ød ₁ nom	l mm	B mm	m kg	Tightness class across closed blade
80	240	170	2,35	0
100	240	190	2,50	0
125	240	215	2,90	0
160	250	250	3,45	0
200	268	290	4,06	0
250	290	340	6,05	0
315	332	405	8,60	0



Constant-/variable flow damper DA2EU



Dimensions



Description

Constant flow damper with electric motor for switching between two flows

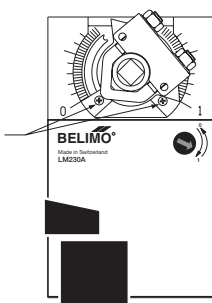
DA2EU is a constant flow damper, which facilitates balancing of ventilation systems and gives correct flow from the start. The unit compensates for e.g. connection and disconnection of system parts, clogging of filters and ducts, thermal lift forces, wind effects, window opening etc. The motors shall be completed with a switch. The switch can in turn be controlled either manually with timer, with on/off-thermostat, with attendance transmitter or similar. Ø 80–315 fullfills pressure class A in closed position. Fulfils tightness class C. There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Flow setting

The two flows are set by moving the end stoppers screws.

At delivery the screws are set at largest possible distance.

End stop screws



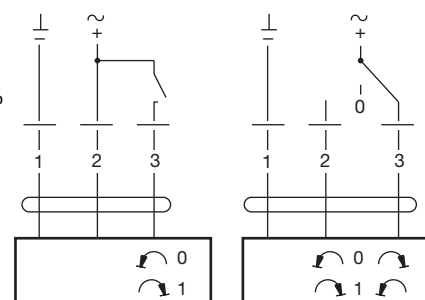
Ød ₁ nom	l mm	B mm	m kg	Tightness class across closed blade
80	250	122	1,95	0
100	250	122	2,00	0
125	250	135	2,25	0
160	250	170	2,45	0
200	250	210	2,86	0
250	290	260	3,95	0
315	332	325	5,35	0

Ordering example

Product	DA2EU	125	24	LM
Type				
Dimension Ød ₁				
Voltage				
Motor type				

Technical data for the motors

	LM 24 A	LM 230 A
Power supply.....	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 65–265 V, 50/60 Hz
Power consumption	1 W	1,5 W
For wire sizing	2 VA	4 VA
Connection.....	Cable 1 m, 3×0,75 mm ²	Cable 1 m, 3×0,75 mm ²
Operating angle.....	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 5 Nm	Min. 5 Nm
Direction of rotation.....	Switch selectable 0 ↻ or 1 ↻	Switch selectable 0 ↻ or 1 ↻
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level.....	Max. 35 dB (A)	Max. 35 dB (A)
Protection class.....	III Safety extra-low voltage	II Safety insulated
Protection type.....	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH



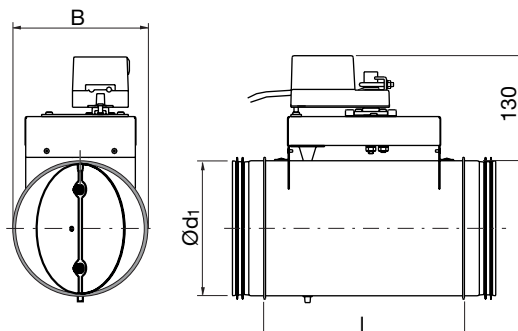


Constant-/variable flow damper

DAVU



Dimensions



Description

Constant flow damper with electric motor for continuous setting of one flow

DAVU is a constant flow damper, which facilitates balancing of ventilation systems and gives correct flow from the start. The unit compensates for e.g. connection and disconnection of system parts, clogging of filters and ducts, thermal lift forces, wind effects, window opening etc. The motor shall be completed with control signal transmitter e.g. an external potentiometer or a proportionally regulating thermostat. A special mounting, measuring, balancing and maintenance instruction exists for this product.

Ø 80–315 fullfills pressure class A in closed position.

Fulfills tightness class C.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Flow setting

The two flows are set by moving the end stoppers screws.

End stop screws



At delivery the screws are set at largest possible distance.

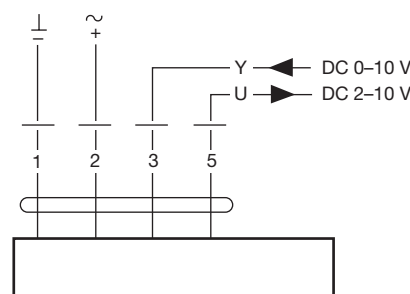
Ød ₁ nom	l mm	B mm	m kg	Tightness class across closed blade
80	250	122	1,95	0
100	250	122	2,00	0
125	250	135	2,25	0
160	250	170	2,45	0
200	250	210	2,86	0
250	290	260	3,95	0
315	332	325	5,35	0

Ordering example

Product	DAVU	125	24	LMSR
Type				
Dimension Ød ₁				
Voltage				
Motor type				

Technical data for the motors

	LM 24 A-SR
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V
Power consumption	1 W
For wire sizing	2 VA
Connection	Cable 1 m, 4x0,75 mm ²
Operating angle	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 5 Nm
Direction of rotation	Switch selectable 0/1
Position at Y=0 V	Switch selectable 0 or 1
Position indication	Mechanical
Running time for 95°	150 s
Sound power level	Max. 35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 to +50°C
Ambient moisture	95 % RH



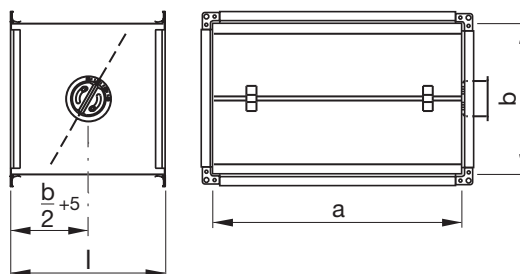


Regulating damper

LKSR



Dimensions



Description

Rectangular regulating damper

Består av trapetskorrugerad kanal med vridbart blad. Bladet är steglöst inställbart 0–90° via vredet i dosan och avläsning av spjällvinkeln sker mot enpräglad gradering på doskanten. Låsning sker med två skruvar för Pozidriv (PZD2).

För allmän information om spjäll se sidan *.

Spjällets förses med skarvprofil i båda ändar. Längden är normalt $b+10$ men spjället kan även fås i speciallängder.

Dosan medger en isolertjocklek av ca 50 mm. Vid krav på tjockare isolering kompletteras spjället med den speciella isoleringskoppen IK.

Spjället är möjligt att motorisera i efterhand.

Täthetsklass förbi stängt blad: 0.

Maximal storlek på spjället är 600 × 600 mm.

LKSR levereras försedd med skarvprofil typ RJFP.

För vidare information om tillbehör se sidan *.

Ordering example

	LKSR	500	300	1
Product				
Side in mm	a			
Knob side in mm	b			
Normal length in mm				
$l = b+10$	1			

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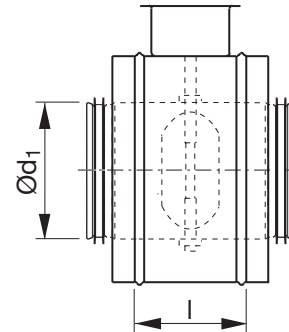
Regulating damper

DRUI

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Dimensions

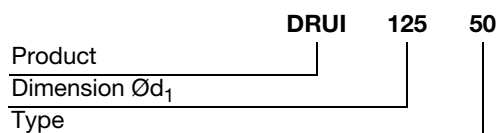


Description

Preinsulated regulating damper of DRU type.
 Ø 100–500 fullfills pressure class A in closed position.

Ød ₁ nom	l mm	m kg	Sealing class past closed blade
100	100	1,25	0
125	100	1,44	0
160	100	1,70	0
200	100	2,17	0
250	100	3,24	0
315	100	3,94	0
400	100	6,15	0
500	115	7,68	0

Ordering example





Sliding damper – manual

SKMTR



Description

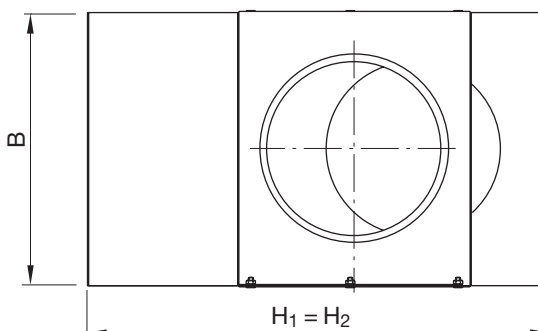
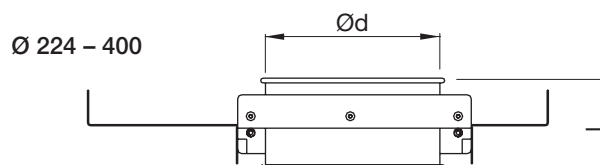
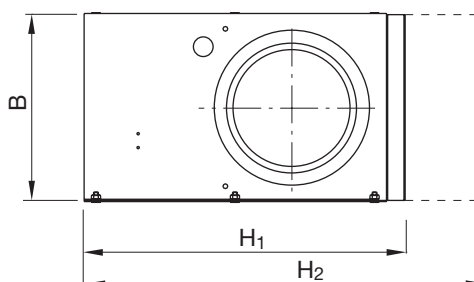
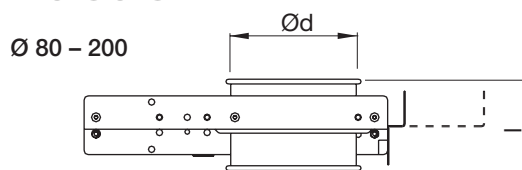
Manual shut-off sliding damper with transfer joint

The damper meets the requirements for tightness class 4 at pressure class C.

The damper meets the requirements for tightness class C only in fully closed or fully opened position.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

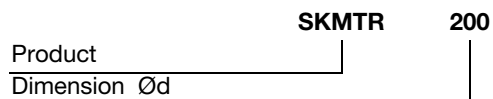
Dimensions



Ød nom	H ₁ mm	H ₂ mm	B mm	l mm	m kg
80	250	330	160	125	2,70
100	290	390	180	125	3,00
125	340	465	205	125	3,60
140	390	530	230	125	4,50
150	390	540	230	125	4,50
160	410	570	240	125	4,70
180	490	670	280	125	5,60
200	490	690	280	125	5,60
224 *	585	809	345	165	10,2
250 *	585	835	370	165	12,2
300 *	730	1030	420	165	18,1
315 *	730	1045	435	165	19,0
350 *	800	1150	470	165	22,5
400 *	905	1305	520	165	26,1

* Has through blade

Ordering example



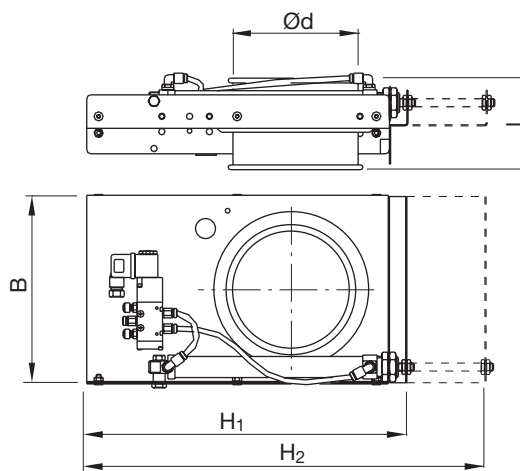


Sliding damper – pneumatic

SKPTR



Dimensions



Description

Pneumatic shut-off sliding damper with transfer joint

The damper meets the requirements for tightness class 4 at pressure class C.

The damper meets the requirements for tightness class C only in fully closed or fully opened position.

Pressurized air cylinder with mounted regulation valve is included.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Technical data

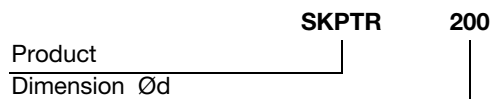
Cylinder

Power pressure, normal 0,6 MPa (6 bar)
 , max 1,0 MPa (10 bar)
 Ambient temperature range -20 °C (dry air) to +80 °C
 Working fluid Air, clean and dry

Solenoid valve

Power pressure max 7 bar
 Ambient temperature max +50 °C
 Power supply, standard 220 V~
 , special 24 V~ or 24 V-
 Power tolerance ±10 %
 Power requirements appr. 5 W
 Protection class IP 65
 Insulation class B
 Air connection Quick release for Ø 6 mm hose

Ordering example



Ød nom	H ₁ mm	H ₂ mm	B mm	l mm	m kg
80	250	330	160	125	3,00
100	290	390	180	125	3,30
125	340	465	205	125	4,00
140	390	530	230	125	5,00
150	390	540	230	125	5,00
160	410	570	240	125	5,20
180 *	490	670	280	125	6,20
200 *	490	690	280	125	6,20
224 *	585	809	345	165	11,3
250 *	585	835	370	165	13,5
300 *	730	1030	420	165	20,1
315 *	730	1045	435	165	21,1
350 *	800	1150	470	165	25,0
400 *	905	1305	520	165	29,0

* Provided with 2 compressed air cylinders



Damper with flow meter

FMDRU



Description

Applications

The flow meter is suitable both for setting up and for continuous flow measurement. It is intended for permanent installation and must therefore be specified at the design stage.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–630 fullfills tightness class 0 and pressure class A .

Design

The flow meter consists of two reducers joined together, with measurement nozzles. Each nozzle has a removable plastic plug which prevents dirt from entering. It also eliminates air leakage when measurement is not done.

The unit permits insulation of up to 100 mm thickness to be installed without concealing the measurement nozzles or the label plate. The plate can be rotated for best legibility, irrespective of the way the unit is installed and can easily be removed, to be located away from the unit.

The unit also contains a regulating damper DRU to allow balancing. The cup around the damper knob allows insulation up to 50 mm thick to be used. If thicker insulation is needed, add the special insulation cup IK.

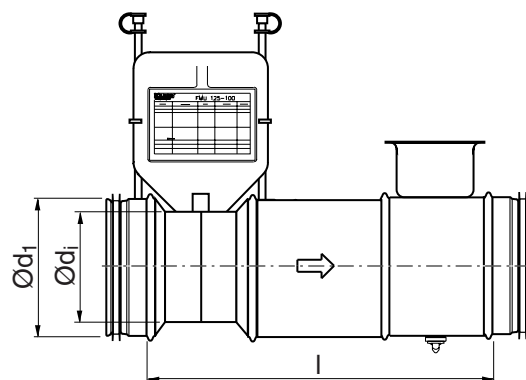
The unit has components which partly block the duct system. You can use one of the tips on page 603 to facilitate cleaning.

The unit has components which partly block the duct system. You can use one of the tips on page 603 to facilitate cleaning.

Ordering example

	FMDRU	160	125
Product			
Dimension Ød ₁			
Dimension Ød _i			

Dimensions



Ød ₁ nom	Ød _i nom	l mm	m kg
80	63	300	0,78
100	80	300	0,94
125	100	310	1,21
160	125	315	1,52
200	160	380	2,20
250	200	440	3,31
315	250	570	4,92
400	315	660	7,81
500	400	845	12,0
630	500	1030	18,2

Flow meters with reductions of two dimension steps can be obtained, to give higher reading pressure in the measurement nozzles. This entails higher pressure drop and noise generation, however.

Advantages

- Has low pressure drop due to good aerodynamic design.
- Has low noise generation due to good aerodynamic design.
- Suitable for use with insulation.





Damper with flow meter

FMDRU

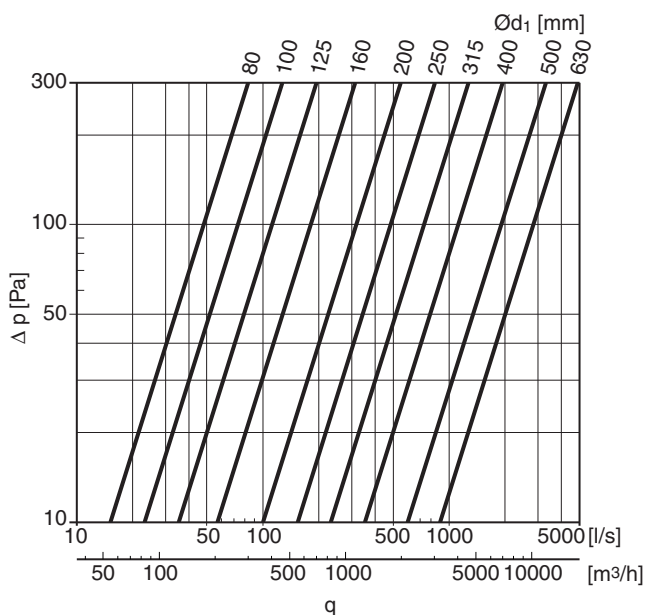
Technical data

Sound

Sound generation has been measured at the Swedish National Testing and Research Institute in an reverberation room, in accordance with ISO 5135 and ISO 3741.

Flow graph for balancing

The graph show the flow, q , as a function of the pressure difference in the measurement nozzles. Flow data for dimensioning differs from this graph.

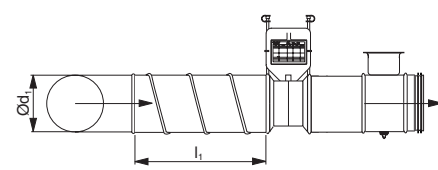


Measurement function

Measure pressure difference, D_p , between the measurement nozzles, and use the equation on the units plate to derive the duct flow.

Measurement accuracy

If the velocity profile is asymmetric, the measurement values can differ from the ideal values. For this reason, the flow meter should never be located right up to any flow disturbance. The method error in the table below will differ, depending on the distance to the flow disturbance.

l_1 =straight distance before meter	Method error m_2	
Type of disturbance	5%	10%
A 90° bend		
	2· d_1	1· d_1
l_2 = straight distance after meter	1· d_1	1· d_1



Damper with flow meter

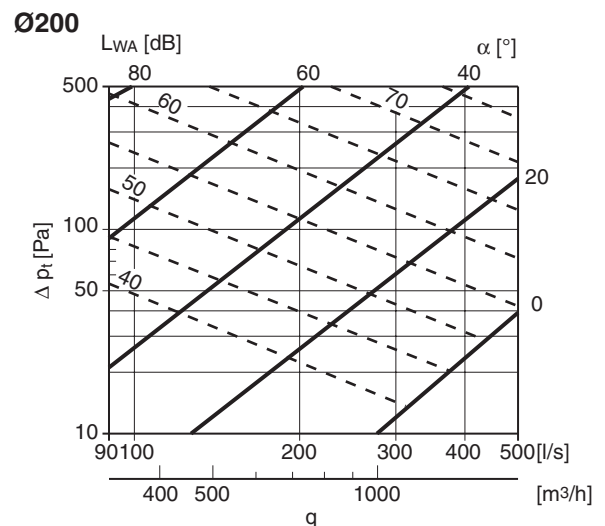
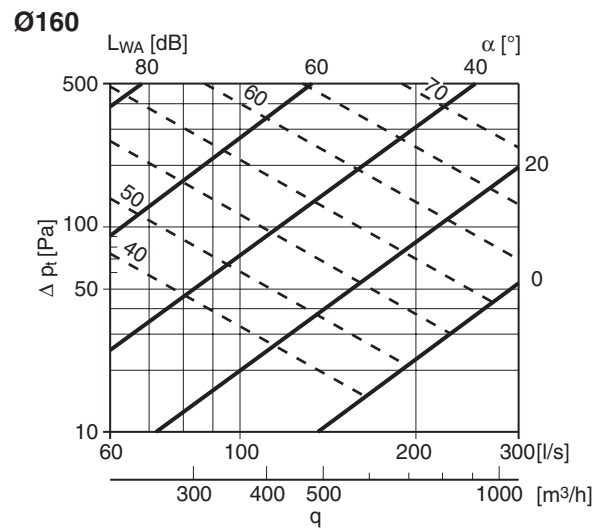
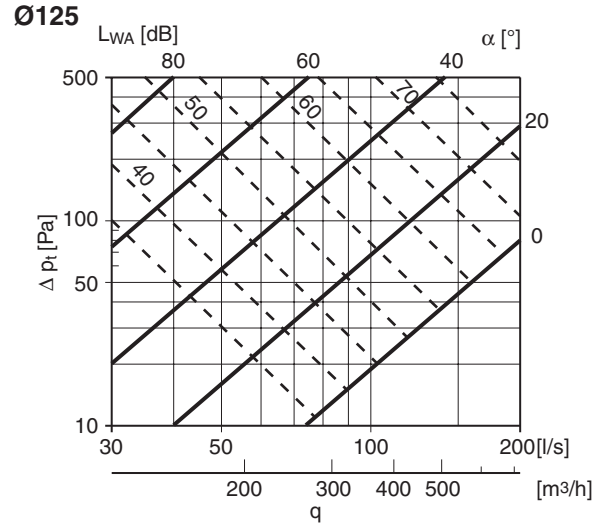
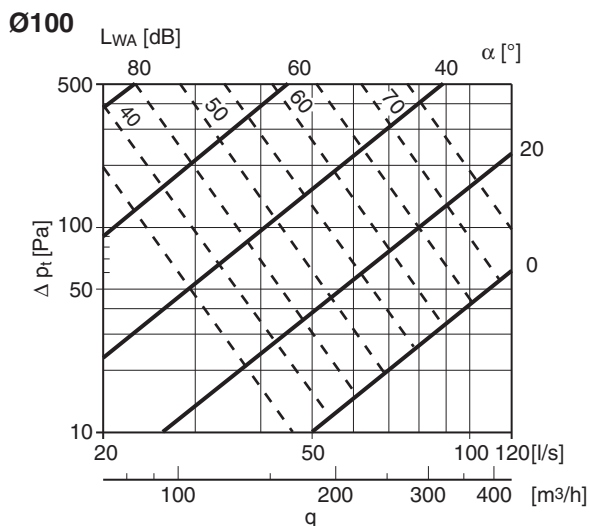
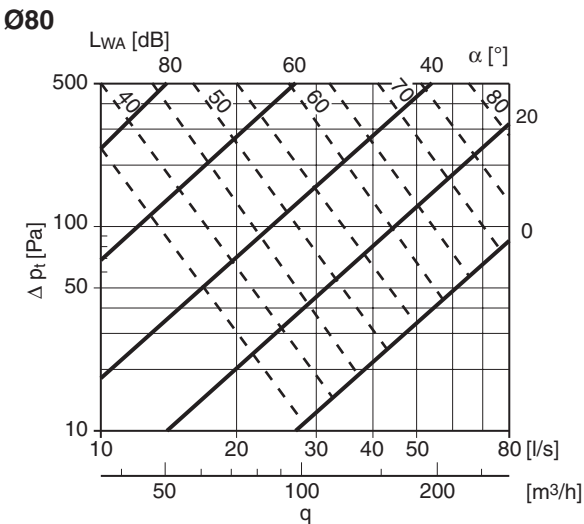
FMDRU

Pressure drop graphs with sound data for dimensioning

The solid lines show the pressure drop, Δp_t , across the unit as a function of flow, q .

The dashed lines give the A-weighted sound power data, L_{WA} , in dB to the duct.

Flow data for balancing differs from these graphs.



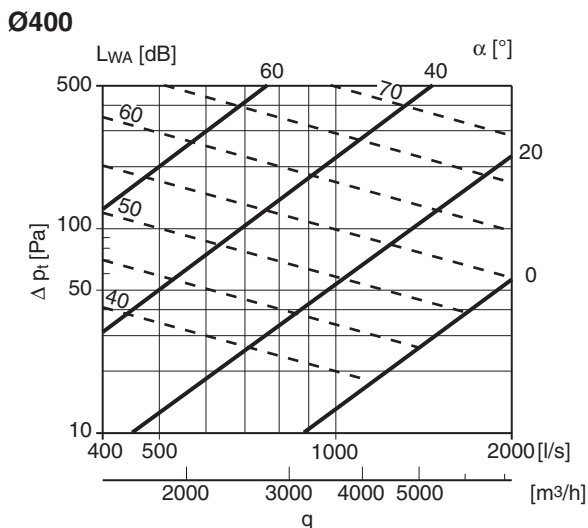
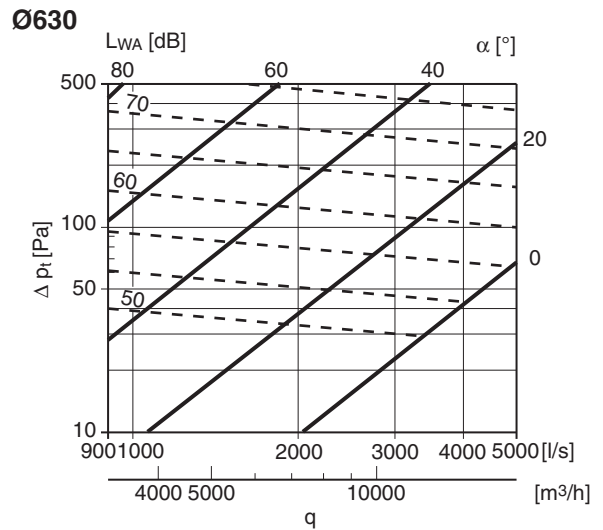
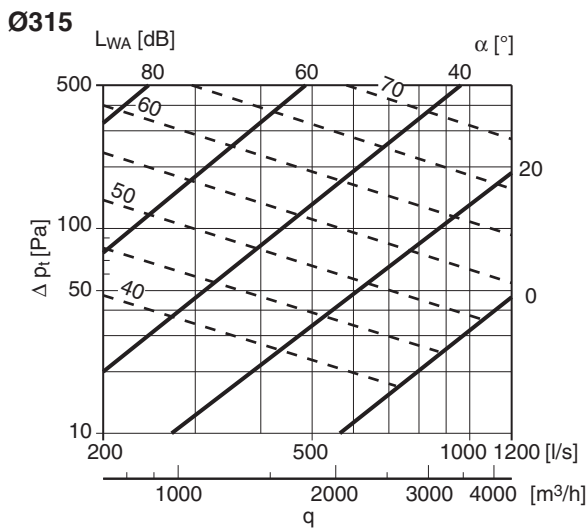
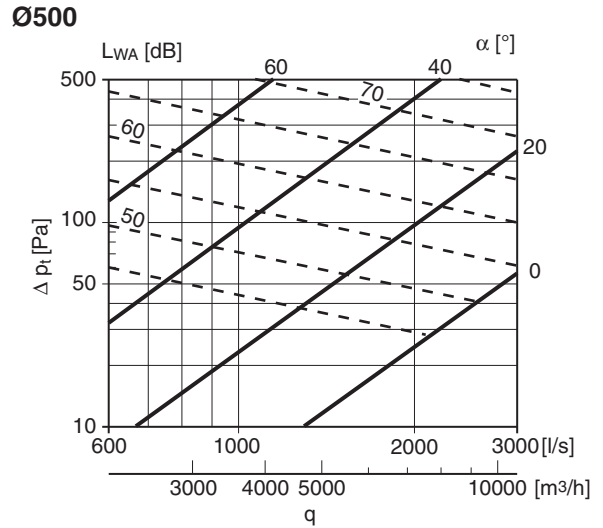
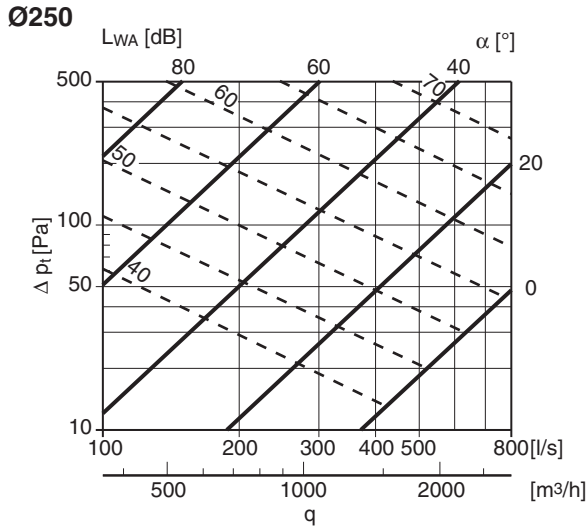
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Damper with flow meter

FMDRU

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Damper with flow meter

FMDU

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Description

Applications

The meter is suitable both for setting up and for continuous flow measurement. It is intended for permanent installation and must therefore be specified at the design stage.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Ø 80–630 fullfills tightness class 0 and pressure class A .

Design

The meter consists of a regulating shutter and a centrally located measurement plate. Each measurement nozzle has a removable plastic plug which prevents dirt from entering. It also eliminates air leakage when measurement is not done.

The unit permits insulation of up to 50 mm thickness to be installed without concealing the measurement nipples or the label plate.

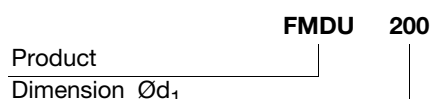
The plate can be rotated for best legibility, irrespective of the way the unit is installed and can easily be removed, to be located away from the unit. The cup around the damper knob allows insulation up to 50 mm thick to be used. If thicker insulation is needed, add the special insulation cup IK. The unit has components which partly block the duct system. You can use one of the tips on page 603 to facilitate cleaning.

Advantages

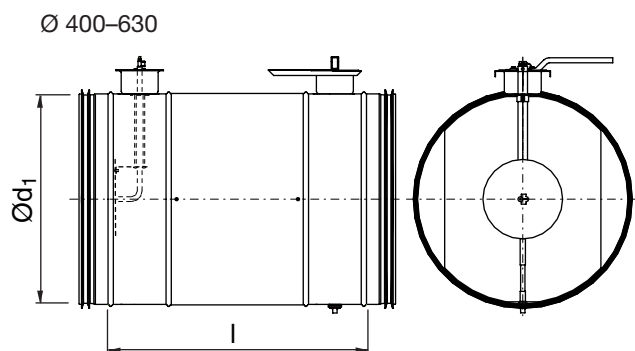
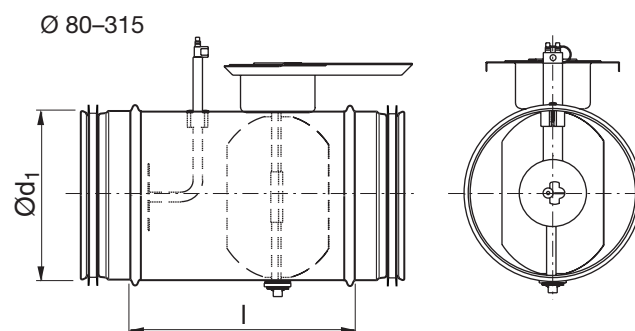
- Short installation length.
- Suitable for use with insulation.

The unit has components which partly block the duct system. You can use one of the tips on page 603 to facilitate cleaning.

Ordering example



Dimensions



Ød ₁ nom	l mm	m kg
80	165	0,66
100	165	0,76
125	165	0,88
160	165	1,08
200	230	1,44
250	275	2,10
315	275	2,65
400	450	6,10
500	520	11,4
630	570	16,0



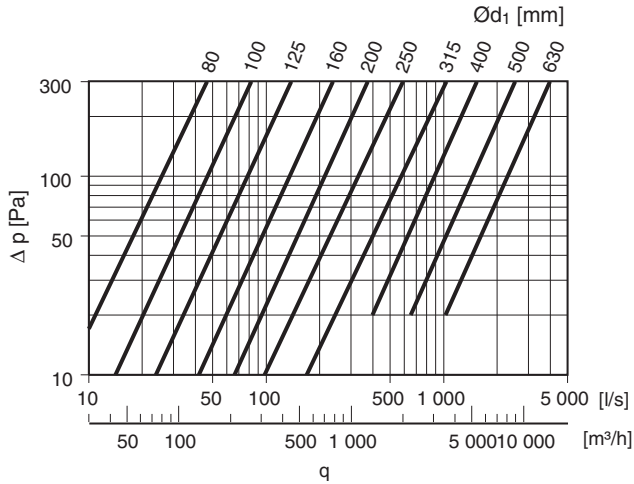
Damper with flow meter

FMDU

Technical data

Flow graph for balancing

The curves show the flow, q , as a function of the pressure difference in the measurement nozzles. Flow data for dimensioning differs from this graph.

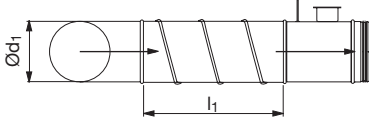
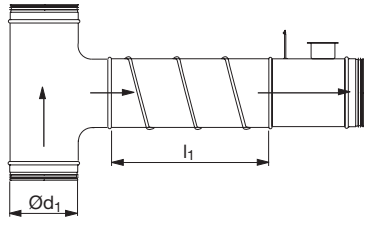


Measurement function

By measuring the pressure difference, Dp , between the measurement nozzles, you can derive the flow in the duct by means of the equation on the units plate.

Measurement accuracy

If the velocity profile is asymmetric, the measurement values can differ from the ideal values. For this reason, the flow meter should never be located right up to any flow disturbance. The method error in the table below will differ, depending on the distance to the flow disturbance.

l_1 = straight distance before meter	Method error m_2	
Type of disturbance	5%	10%
A 90° bend		
	$6 \cdot d_1$	$0 \cdot d_1$
A branch		
	$6 \cdot d_1$	$4 \cdot d_1$
l_2 = straight distance after meter	$1 \cdot d_1$	$1 \cdot d_1$

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Damper with flow meter

FMDU

1

Pressure drop graphs with sound data for dimensioning

The solid lines show the pressure drop, Δp_t , across the unit as a function of flow, q . The dashed lines give the A-weighted sound power data, L_{WA} , in dB to the duct. Flow data for balancing differ from these graphs.

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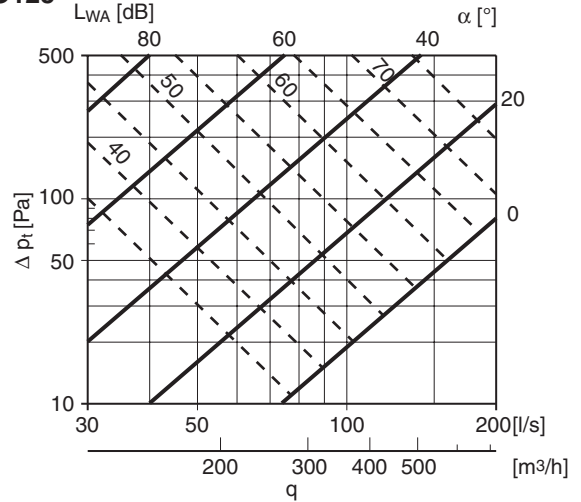
15

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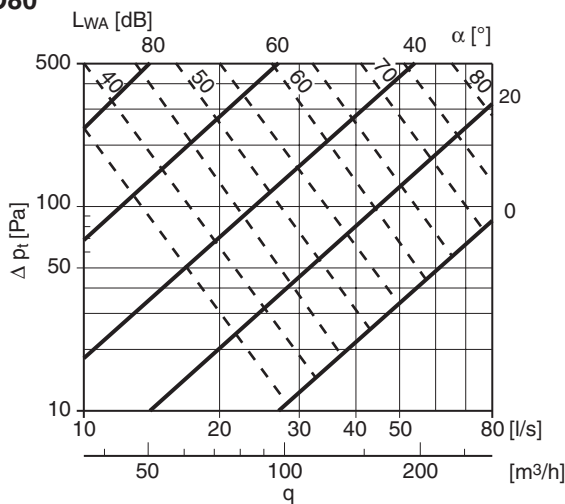
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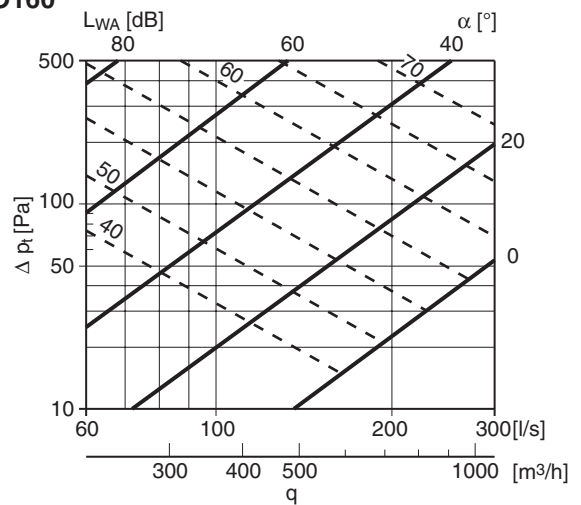
Ø125



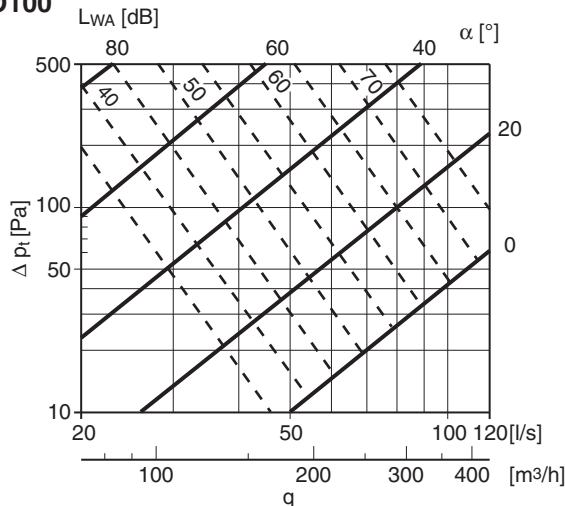
Ø80



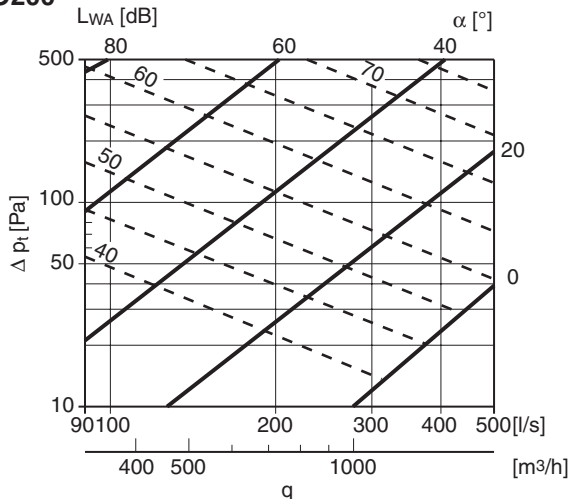
Ø160



Ø100



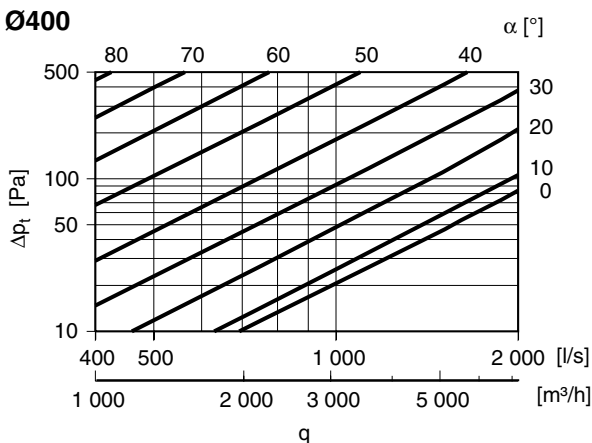
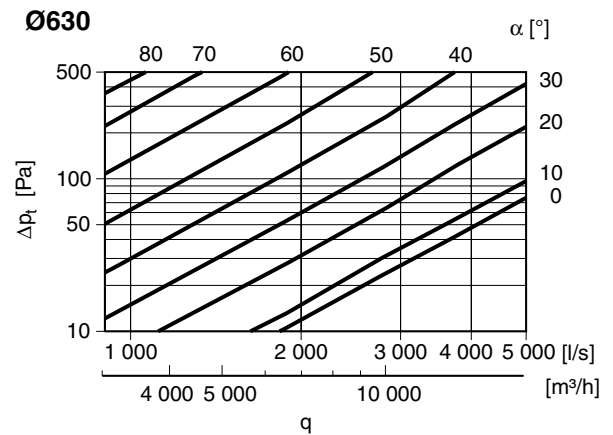
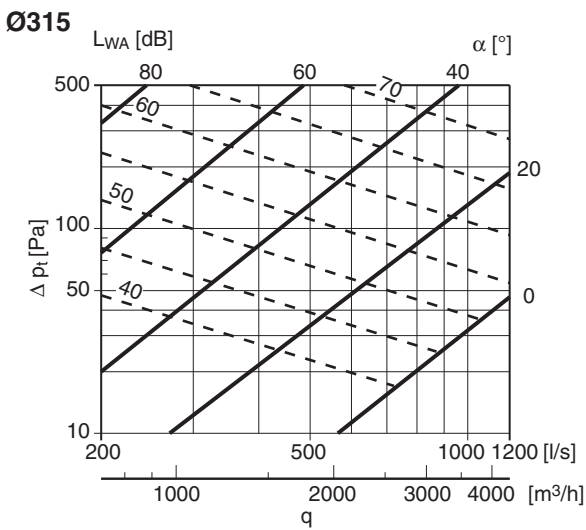
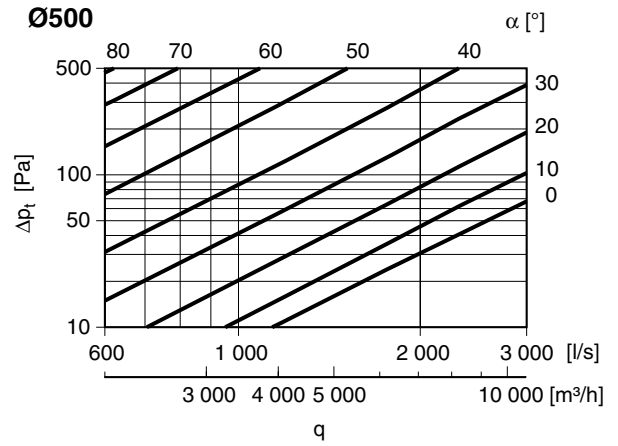
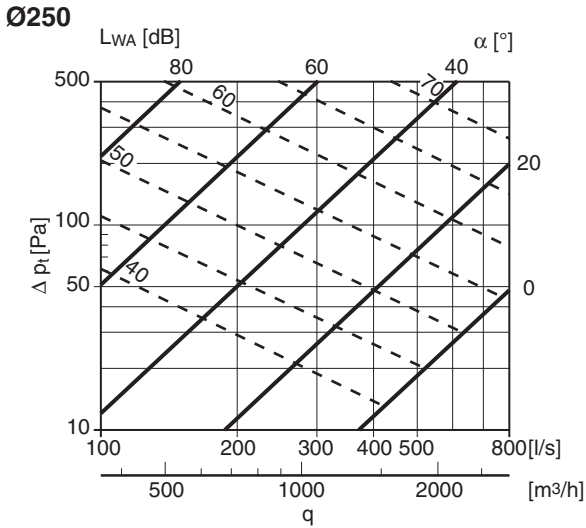
Ø200





Damper with flow meter

FMDU



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Damper with flow meter

FMDU

Sound generation

dim Ød ₁	Pressure drop [Pa]	Velocity app. 5 [m/s]								Velocity app. 10 [m/s]								Velocity app. 15 [m/s]							
		Centre frequency [Hz]								Centre frequency [Hz]								Centre frequency [Hz]							
		631252505001k2k4k8k								631252505001k2k4k8k								631252505001k2k4k8k							
80		Flow 25 [l/s]								Flow 50 [l/s]								Flow 75 [l/s]							
	500	64	65	62	59	57	56	52	51	68	76	76	70	64	61	59	56	71	80	80	73	67	63	61	58
	300	61	62	58	55	52	50	45	43	65	75	75	67	61	57	53	49	68	79	77	68	63	58	55	52
	200	59	60	56	51	47	46	40	38	63	75	74	64	58	53	48	44	67	78	75	64	59	54	51	47
	100	56	56	51	45	40	38	30	28	59	74	72	59	52	47	40	35	63	76	71	58	53	48	42	38
	50	52	52	47	40	33	30	21	18	56	73	71	54	47	41	32	26	Pressure drop exceeds 50 [Pa]							
100		Flow 40 [l/s]								Flow 80 [l/s]								Flow 120 [l/s]							
	500	64	63	62	58	56	55	53	54	67	76	76	69	63	60	61	61	70	81	82	70	66	64	64	64
	300	61	60	58	54	51	50	46	46	65	76	76	65	59	55	56	56	68	81	80	65	62	60	60	59
	200	59	58	55	51	47	46	40	40	62	75	75	62	55	51	52	53	65	81	79	61	58	57	56	55
	100	56	54	51	45	40	40	31	30	59	75	75	57	49	44	46	46	62	81	78	54	52	51	50	49
	50	52	50	46	39	34	33	22	20	55	75	74	52	43	37	39	40	Pressure drop exceeds 50 [Pa]							
125		Flow 60 [l/s]								Flow 120 [l/s]								Flow 180 [l/s]							
	500	66	64	62	59	56	56	54	53	72	76	75	68	63	60	61	59	75	81	79	71	66	63	63	61
	300	63	61	58	55	51	51	47	45	69	75	73	65	59	56	55	53	73	79	76	67	62	59	58	56
	200	61	59	56	51	47	47	42	40	67	74	71	62	56	52	50	49	71	78	74	63	58	55	53	51
	100	57	55	51	46	41	40	33	30	64	72	69	57	50	45	43	41	67	76	70	57	52	49	46	43
	50	53	51	46	40	35	32	25	21	60	71	66	51	44	38	36	34	Pressure drop exceeds 50 [Pa]							
160		Flow 100 [l/s]								Flow 200 [l/s]								Flow 300 [l/s]							
	500	66	63	61	57	54	54	53	52	77	78	73	67	63	59	59	58	80	81	76	71	66	62	61	59
	300	63	60	57	53	50	49	47	45	75	77	70	63	59	54	54	53	78	79	72	67	62	57	55	53
	200	61	58	55	50	47	45	42	40	74	75	68	60	56	50	49	48	76	77	69	64	58	53	50	48
	100	58	54	50	45	41	38	34	31	71	73	64	55	51	43	42	41	74	74	63	59	53	46	42	39
	50	55	51	45	39	36	31	26	23	69	71	60	50	46	36	34	33	71	71	58	54	47	39	34	31
200		Flow 150 [l/s]								Flow 300 [l/s]								Flow 450 [l/s]							
	500	71	68	65	61	58	58	57	55	75	77	70	63	60	54	54	53	80	82	78	71	67	65	66	63
	300	67	64	60	57	53	53	50	47	74	75	68	60	56	50	49	48	77	79	74	67	63	60	60	57
	200	65	61	57	53	49	49	45	42	71	73	68	61	56	53	52	50	74	77	71	63	58	56	55	52
	100	60	56	52	48	43	41	36	32	66	69	64	55	50	46	45	42	70	71	66	57	52	50	48	44
	50	55	52	46	42	37	34	28	23	62	66	60	50	44	38	37	34	65	69	51	50	46	41	40	35
250		Flow 250 [l/s]								Flow 500 [l/s]								Flow 750 [l/s]							
	500	69	66	64	61	57	59	58	56	79	76	72	67	62	61	64	63	83	81	76	72	65	64	67	66
	300	66	63	60	58	53	54	53	49	77	73	68	63	57	56	59	58	81	77	72	68	60	59	61	60
	200	64	60	57	55	49	50	49	44	75	70	65	60	53	52	54	53	78	74	69	65	56	55	57	55
	100	60	56	52	50	43	44	41	34	72	65	59	54	47	45	47	46	75	69	63	60	50	48	50	47
	50	56	51	47	45	37	37	34	25	69	61	54	49	40	38	39	38	71	64	58	55	43	41	42	39
315		Flow 400 [l/s]								Flow 800 [l/s]								Flow 1200 [l/s]							
	500	76	71	67	62	60	60	60	57	82	79	74	68	66	64	65	63	86	83	77	71	68	66	69	64
	300	72	67	62	58	55	55	54	49	78	75	69	64	61	58	49	57	82	79	72	66	63	61	62	58
	200	69	64	59	55	51	50	48	44	74	72	66	60	57	54	54	51	78	75	69	62	59	56	57	53
	100	63	58	53	49	45	43	39	34	69	66	60	54	51	46	46	43	73	67	62	56	52	51	49	44
	50	58	52	47	43	39	36	30	24	63	61	54	48	44	38	38	34	67	64	56	49	45	41	41	36



Flow meter

FMU



Description

Applications

The meter is suitable both for setting up and for continuous flow measurement. It is intended for permanent installation and must therefore be specified at the design stage.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Design

The meter consists of two reductions joined together, with measurement nozzles. Each nozzle has a removable plastic plug which prevents dirt from entering. It also eliminates air leakage when measurement is not done.

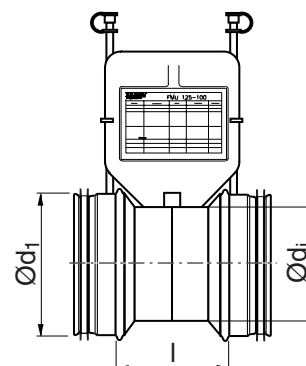
The unit permits insulation of up to 100 mm thickness to be installed without concealing the measurement nozzles or label plate. The plate can be rotated for best legibility, irrespective of the way the fitting is installed and can easily be removed, to be located away from the unit.

Flow meters with reductions of two dimension steps can be obtained, to give higher reading pressure in the measurement nozzles. This entails higher pressure drop and noise generation, however.

Ordering example

Product	FMU	160	125
Dimension $\varnothing d_1$			
Dimension $\varnothing d_i$			

Dimensions



$\varnothing d_1$ nom	$\varnothing d_i$ nom	l mm	m kg
80	63	110	0,33
100	80	120	0,42
125	100	111	0,48
160	125	123	0,62
200	160	129	0,83
250	200	131	1,15
315	250	195	1,81
400	315	206	2,60
500	400	275	3,92
630	500	355	6,38

Advantages

- Has low pressure drop due to good aerodynamic design.
- Has low noise generation due to good aerodynamic design.
- Does not obstruct duct cleaning.
- Suitable for use with insulation.





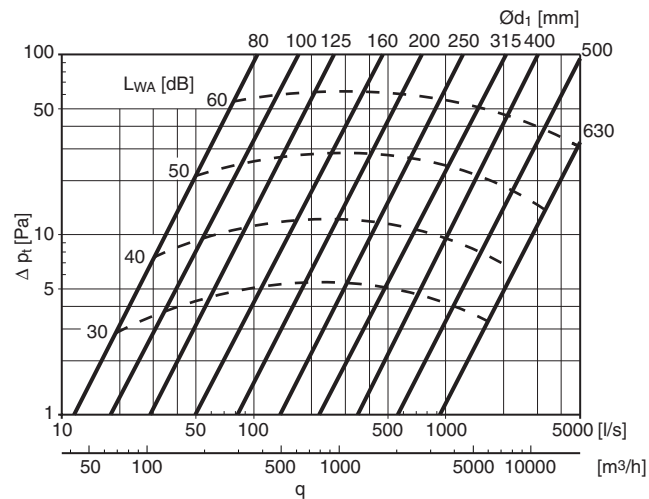
Flow meter

FMU

Technical data

Pressure drop graph with sound data for dimensioning

The solid lines give the pressure drop, Δp , as a function of flow, q . The dashed lines give the A-weighted sound power data, L_{WA} , in dB to the duct. Flow data for balancing differ from this graph.

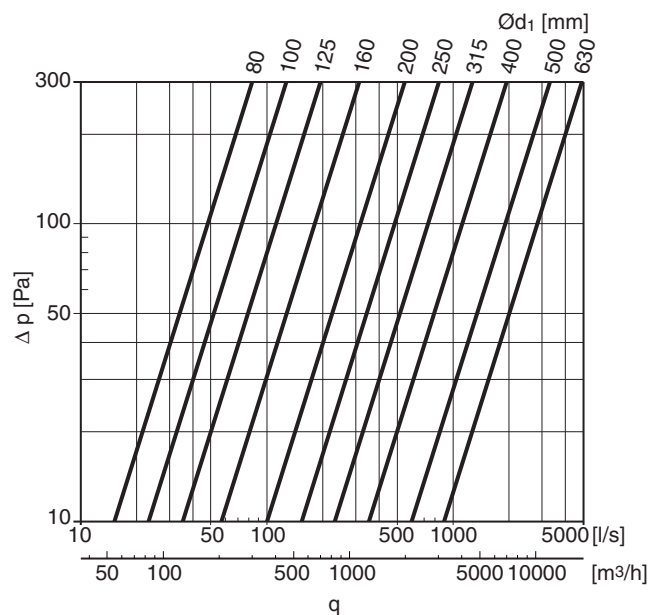


Sound

Sound generation has been measured at the Swedish National Testing and Research Institute in reverberation room, in accordance with ISO 5135 and ISO 3741.

Flow graph for balancing

The curves show the flow, q , as a function of the pressure difference in the measurement nozzles. Flow data for dimensioning differ from this graph.

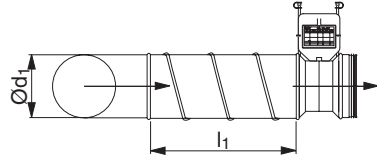
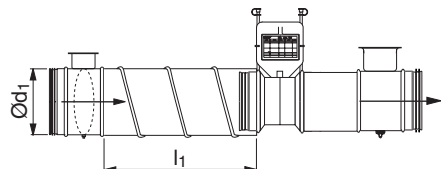


Measurement function

By measuring the pressure difference, Δp , between the measurement nozzles, you can derive the flow in the duct by means of the equation on the units plate.

Measurement accuracy

If the velocity profile is asymmetric, the measurement values can differ from the ideal values. For this reason, the flow meter should never be located right up to any flow disturbance. The method error in the table below will differ, depending on the distance to the flow disturbance.

l_1 = straight distance before meter	Method error m_2	
Type of disturbance	5%	10%
A 90° bend		
	2· d_1	1· d_1
A rotary damper (45°). Shaft in line with measurement nozzles		
	4· d_1	3· d_1
l_2 = straight distance after meter	1· d_1	1· d_1



Flow meter

FMU

Sound generation

dim Ød ₁	Velocity app. 5 [m/s]								Velocity app. 10 [m/s]								Velocity app. 15 [m/s]							
	Centre frequency [Hz]								Centre frequency [Hz]								Centre frequency [Hz]							
	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
80	Flow 25 [l/s]								Flow 50 [l/s]								Flow 75 [l/s]							
	49	45	42	33	22	14	11	11	54	56	56	51	42	34	29	21	68	62	61	59	54	44	41	34
100	Flow 40 [l/s]								Flow 80 [l/s]								Flow 120 [l/s]							
	50	45	39	30	18	6	2	7	51	59	54	48	38	30	22	16	60	64	62	59	50	43	38	34
125	Flow 60 [l/s]								Flow 120 [l/s]								Flow 180 [l/s]							
	45	40	33	24	11	1	1	8	53	55	50	42	34	26	21	16	61	62	61	53	45	38	35	33
160	Flow 100 [l/s]								Flow 200 [l/s]								Flow 300 [l/s]							
	41	39	31	24	13	0	0	3	58	54	50	42	34	27	19	15	66	64	61	52	46	41	35	31
200	Flow 150 [l/s]								Flow 300 [l/s]								Flow 450 [l/s]							
	41	36	32	23	7	0	0	4	55	52	47	39	30	27	20	17	64	62	58	48	42	38	34	31
250	Flow 250 [l/s]								Flow 500 [l/s]								Flow 750 [l/s]							
	44	37	31	22	17	15	17	17	64	53	48	39	28	27	26	22	72	64	58	49	44	40	39	29
315	Flow 400 [l/s]								Flow 800 [l/s]								Flow 1200 [l/s]							
	51	35	29	19	14	10	5	6	64	55	46	38	34	31	32	28	72	65	57	48	45	42	42	41
400	Flow 600 [l/s]								Flow 1200 [l/s]								Flow 1800 [l/s]							
	46	37	30	22	19	14	9	7	64	58	47	41	40	40	37	30	75	69	59	53	51	52	51	46
500	Flow 1000 [l/s]								Flow 2000 [l/s]								Flow 3000 [l/s]							
	54	40	29	24	22	15	8	5	64	58	47	41	40	40	37	30	75	69	59	53	51	52	51	46
630	Flow 1500 [l/s]								Flow 3000 [l/s]								Flow 4500 [l/s]							
	53	43	32	28	25	19	14	10	68	61	50	44	43	45	42	35	78	73	62	56	54	58	57	48

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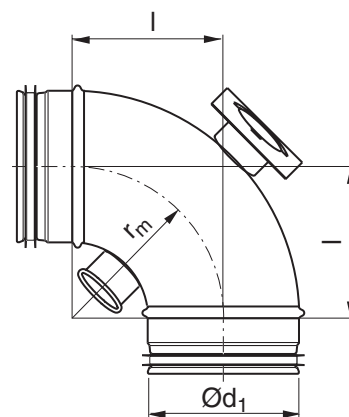


Measuring bend

MBU



Dimensions



$$r_m \approx 1 \cdot d_1$$

Ød ₁ nom	l mm	m kg
100	100	0,40
125	125	0,60
160	160	1,02
200	200	1,23
250	250	1,74

Description

Applications

The measuring bend is suitable both for balancing and for continuous flow measurement. It is intended for permanent installation and must therefore be specified at the design stage. The measuring bend is a good choice, since bends are normally used in all installations.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Design

The measuring bend consists of a pressed and seam welded 90° Safe bend with measurement nozzles on the inner and outer radii. The nozzles are asymmetrically located on the centreline, for manufacturing reasons. Each nozzle has a removable plastic plug which prevents dirt from entering. It also eliminates air leakage when measurement is not done.

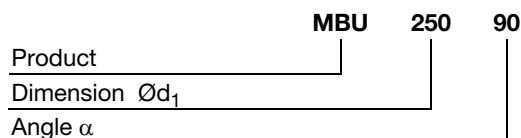
The unit allows insulation of up to 50 mm thickness to be installed without concealing the measurement nozzle or the label plate. The plate can be rotated for best legibility, irrespective of the way the unit is installed and can easily be removed, to be located away from the unit. If thicker insulation is needed, add the insulation cup IK to the standard cup.

Thanks to the robust design of the standard cup, the measurement nozzles are securely protected both before and after installation.

Advantages

- Has a double function – both as bend and as flow meter.
- Does not increase pressure drop, compared with a standard Safe bend.
- Does not cause any noise, due to projecting components in the duct.
- Does not obstruct duct cleaning.

Ordering example





Measuring bend

MBFU



Description

Applications

The measuring bend is suitable both for balancing and for continuous flow measurement. It is intended for permanent installation and must therefore be specified at the design stage. The measuring bend is a good choice, since bends are normally used in all installations.

There is a separate assembly, measuring, balancing and maintenance instruction for this product.

Design

The measuring bend consists of a segmented and lock-seamed 90° Safe bend with measuring nozzles on the inner and outer radii. The nozzles are asymmetrically located on the centreline, for manufacturing reasons. Each nozzle has a removable plastic plug which prevents dirt from entering. It also eliminates air leakage when measurement is not done.

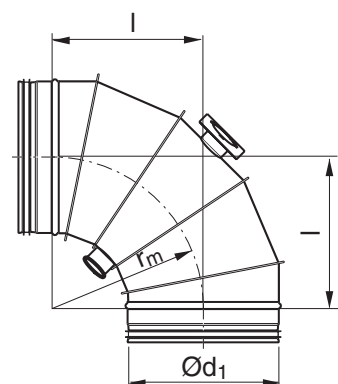
The unit allows insulation of up to 50 mm thickness to be installed without concealing the measurement nozzle or the label plate. The plate can be rotated for best legibility, irrespective of the way the unit is installed and can easily be removed, to be located away from the unit. If thicker insulation is needed, add the insulation cup IK to the standard cup.

Thanks to the robust design of the standard cup, the measurement nozzles are securely protected both before and after installation.

Ordering example

	MBFU	500	90
Product			
Dimension Ød ₁			
Angle α			

Dimensions



$$r_m \approx 0,9 \cdot d_1$$

Ød ₁ nom	l mm	m kg
315	300	3,18
400	360	5,82
500	454	8,38
630	566	13,1

Advantages

- Has a double function – both as a bend and as a meter.
- Does not increase pressure drop, compared with a standard Safe bend.
- Does not cause any noise, due to projecting components in the duct.
- Does not obstruct duct cleaning.



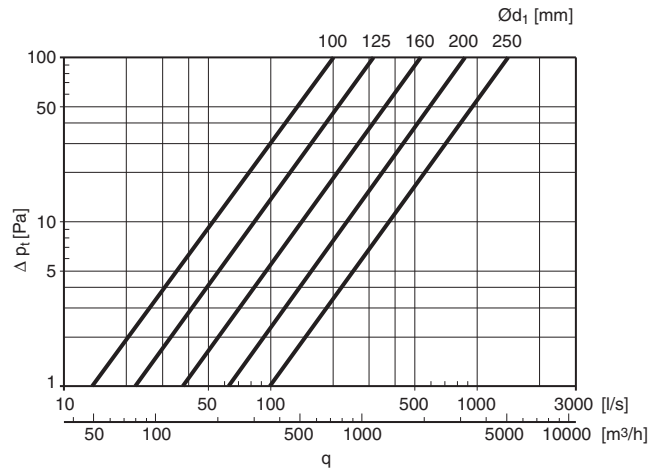


Measuring bends

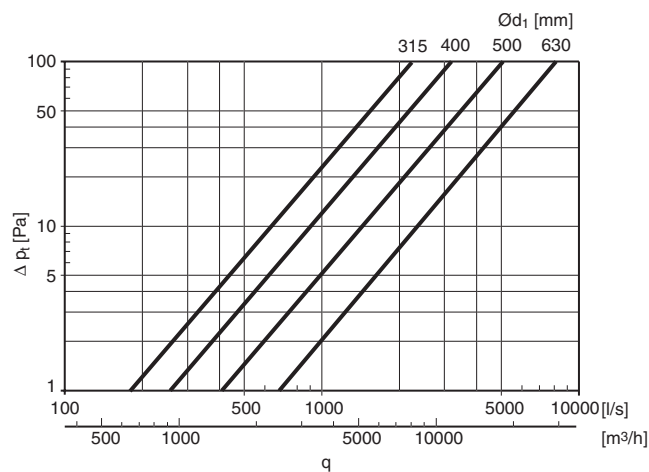
MBU, MBFU

Technical data

Pressure drop graph for dimensioning of MBU

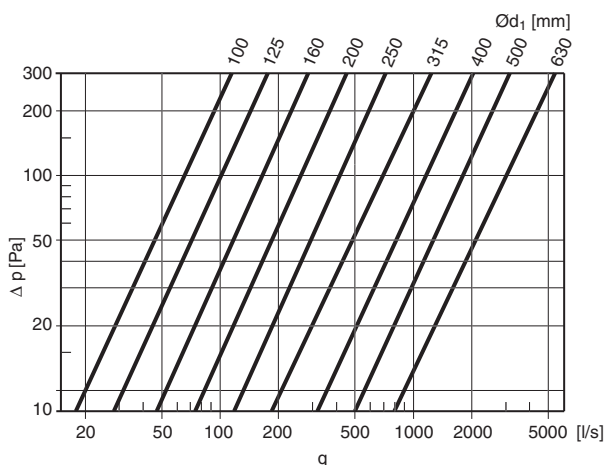


Pressure drop graph for dimensioning of MBFU



Flow graph for balancing

The curves show the flow, q , as a function of the pressure difference in the measurement nipples. Flow data for dimensioning differ from this graph



Measurement function

By measuring the pressure difference, Δp , between the inner and outer bend radii, you can derive the flow in the duct by means of the equation on the units plate.

Measurement accuracy

If the velocity profile is asymmetric, the measurement values can differ from the ideal values. For this reason, the measuring bend should never be located right up to any flow disturbance. The method error, as shown in the table below will differ, depending on the distance to the flow disturbance.

l_1 = straight distance before measuring bends. Type of disturbance	Method error m_2	
	5%	10%
<p>A 90° bend</p>	8,5· d_1	4,5· d_1
<p>A rotary damper (45°). Shaft in line with the measurement nozzles</p>	9,0· d_1	6,0· d_1
l_2 = straight distance after measuring bend	2· d_1	2· d_1

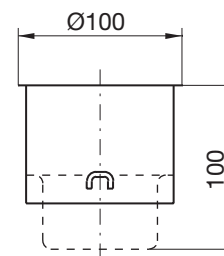


Accessories



Insulation cup IK

If the insulation is thicker than 50 mm, there is a risk that the insulation will cover the knob cup and make it difficult to find or use. The insulation cup allows about 100 mm of insulation to be used at the same time as it gives good access to the damper knob. It is quick and easy to fit - just snap it over the edge of the cup. It fits all Lindab dampers with cup, both circular and rectangular.



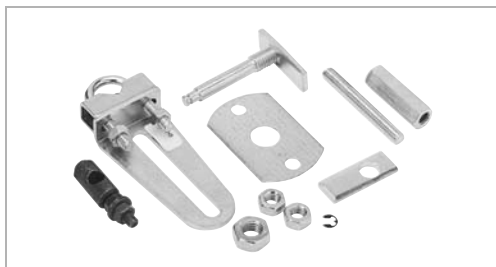
Handle DRHTG

Strong handle to facilitate setting. Suits all manual dampers.



Handle HANDLE

Handle suitable for damper with motor shelf DTHU – without motor. Can be used for temporary setting/locking of the damper blade before the motor is mounted or as a permanent alternative to the motor. Can be set stepless 0–90°. Fits axle 8×8 mm. Is advisably fixed with one or two sheet metal screws/rivets.



Assembly kit MSATS AK 31

Kit for installing a Sauter AK 31 P pneumatic actuator. The kit contains all components needed.



Assembly kit MSATS AK 41

Kit for installing a Sauter AK 41 P pneumatic actuator. The kit contains all components needed.



Assembly kit MSATS AK 42

Kit for installing a Sauter AK 42 P pneumatic actuator. The kit contains all components needed.

Extension spindle VREDF 8 35

With a 35 mm long and 8×8 mm spindle. Fixed to the knob with 2 self-tapping screws.

Extension spindle VREDF 15 60

With a 60 mm long and Ø15 mm spindle. Used for motorising standard dampers. Fits Belimo's LM, NM and AM motors. Fixed to the knob with 2 self-tapping screws.

Extension spindle VREDF 15 100

With a 100 mm long and Ø15 mm spindle. Used for motorising standard dampers. Fits Belimo's NM, AM, LF and AF motors and Sauter's AK 31 P and AK 41 P actuators. Fixed to the knob with 2 self-tapping screws.

Installation shelf KOMHY

Fits Belimo's LM, NM, AM, LF and AF motors and Sauter's AK 31 P and AK 41 P actuators. Thread it over the edge of the cup and blind rivet it to the damper body.

Installation shelf LÖMOK

Fits Belimo's LM and NM motors. Screwed to the edge of the cup.

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Fire dampers & Smoke evacuation




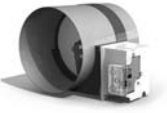
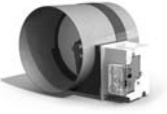


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General information and theory	2
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Air valves	7
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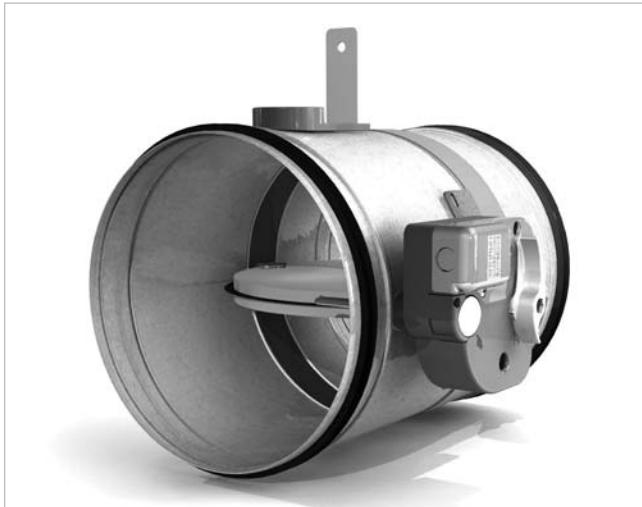
– Fire dampers & Smoke evacuation

1	Circular fire dampers	
		CR60 323 CR2 325
2		
3	Rectangular fire damper	
		CU2 328 CU-LT 338 CU-LT-1s 355
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5	Fire damper	
		MEC 331
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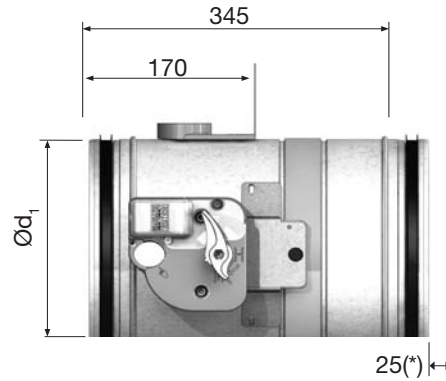


Fire dampers

CR60



Dimensions



* Extending damper blade only for Ø 315

Description

The CR60 is a very light circular fire damper with a fire resistance up to 90 minutes, which is installed in ventilation ducts passing through a construction element in order to stop the propagation of fire. The refractory casing is made of galvanised steel. The blade consists of asbestos free panels, which are resistant to humidity. The CR60 can be equipped with a fusible link mechanism up to a motorised mechanism, completely out of the wall. The damper is especially designed for smaller diameters up to 315 mm.

Standard

Galvanised steel tunnel

Damper blade (thickness 20 mm)

Operating mechanism with:

- manual command
- manual locking
- blade position indicator
- identification label
- electrical connections
- fusible link 72°C

Rubber air sealing ring

Intumescent strip

Fusible link base plate

Positioning plate

Damper sealing ring

Fire resistance

Up to 90 minutes

Ordering example

	CR60	125	24	MFUS
Product				
Dimension Ød ₁				
Voltage				
Motor type				

Ød ₁ nom
100
125
160
200
250
315

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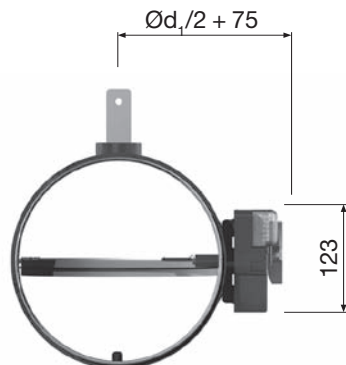


Fire dampers

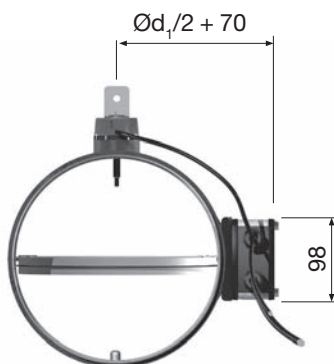
CR60

Technical data for the motors

MFUS



BLFT



Installation

- In rigid wall, floor and in flexible wall
- Provide an additional zone of 200 mm to have free access to the mechanism
- Avoid deflection of the tunnel
- Installation and air movement may be from either direction
- Verify the free movement of the blade
- Installation according to test report
- On the side of the mechanism the damper exceeds the wall by 170 mm.
- Minimal size of opening to incorporate = $\varnothing d_1 + 80$ mm in rigid wall and rigid floor/ceiling

Mechanism

MFUS

Automatic command with fusible link 72°C

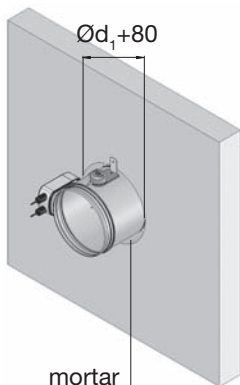
MFUS + FDCU

End and begin of range switch in option

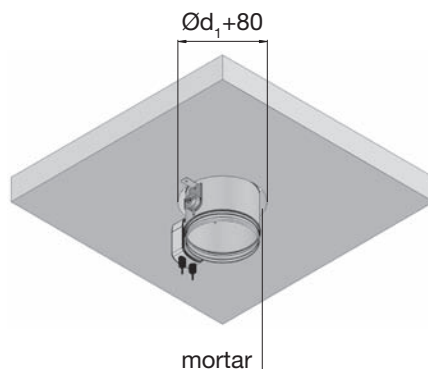
BLFT

Springreturn actuator 24/230V

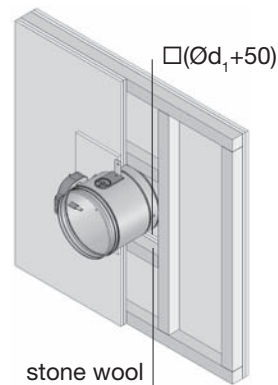
rigid wall



rigid floor/ceiling



flexible wall





Fire dampers

CR2



Description

The circular fire damper CR2 with a fire resistance of 120 minutes is installed in ventilation ducts passing through a construction element in order to stop the propagation of fire. The fire damper can be equipped with a common fusible link mechanism up to a motorised mechanism, positioned completely outside the wall. The refractory tunnel is made of galvanised steel. The CR2 fire damper is especially designed for larger dimensions up to 630 mm.

Standard

Galvanised steel tunnel

Damper blade

Operating mechanism with:

- manual command
- manual locking
- blade position indicator
- identification label
- electrical connections

Sealing cold smoke

Blade bumper

Intumescent strip

Fusible link 72°C

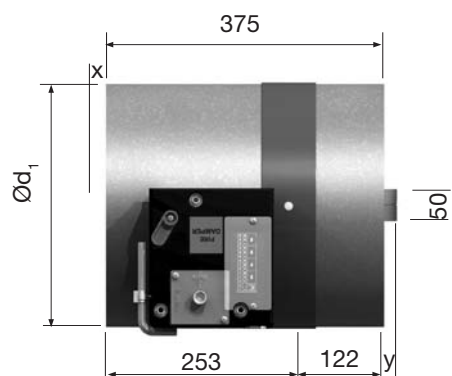
Fire resistance

2 hours

Ordering example

	CR2	400	230	CFTH
Product				
Dimension $\varnothing d_1$				
Voltage				
Motor type				

Dimensions



	Exceeding damper blade
$x = \varnothing d_1 - 253 \text{ mm}$	if $\varnothing d_1 \geq 560 \text{ mm}$
$y = \varnothing d_1 - 122 \text{ mm}$	if $\varnothing d_1 \geq 250 \text{ mm}$

$\varnothing d_1$ nom
200
250
315
355
400
450
500
560
630

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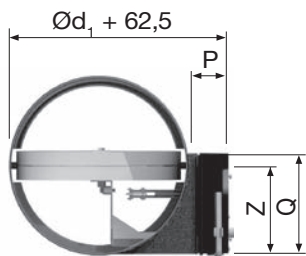


Fire dampers

CR2

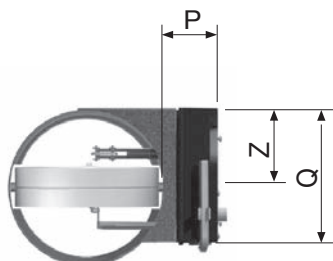
Technical data for the motors

$\varnothing d_1 \geq 315 \text{ mm}$



	CFTH	MANO (+ME)	BLF (T)	BF (T)	DB (T)
P	65	115	110	110	145
Q	180	190	210	210	210
Z	155	180	180	180	180

$\varnothing d_1 < 315 \text{ mm}$



	CFTH	MANO (+ME)	BLF (T)	BF (T)	DB (T)
P	65	115	110	110	145
Q	180	190	210	210	210
Z	60	85	80	-	90

Installation

- Installation in rigid wall with horizontal or vertical axis
- Installation in massive floor or ceiling with horizontal axis
- Provide an additional zone of 200 mm to have free access to the mechanism
- Avoid deflection of the tunnel
- Installation and air movement may be from either direction
- Verify the free movement of the blade
- Installation according to test report
- On the side of the mechanism the damper exceeds the wall by 230 mm
- Minimal size of opening to incorporate = $\varnothing d_1 + 50 \text{ mm}$

Mechanism

CFTH

Automatic command

MANO

Automatic and remote controlled command

BLF/BF/DB

Spring return actuator 24/230V

Function

see MEC, see page 331.



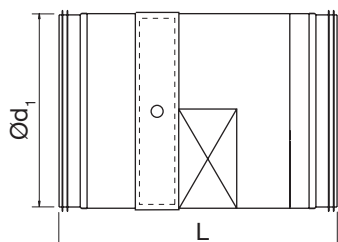
Fire dampers

CR2

Variants for CR2

Round connection with rubber sealing ring.
Delivered in sets of 2 pieces.

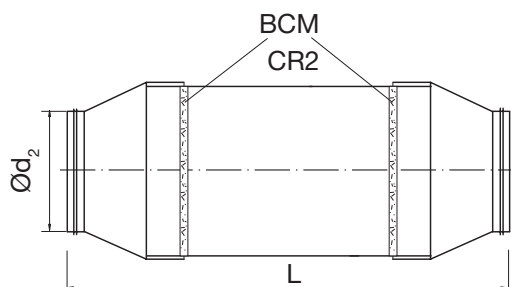
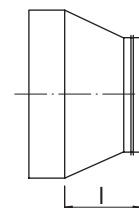
RCJ



$\varnothing d_1$	L
200	447
250	487
315	497
355	487
400	527
450	527
500	517
560	517
630	527

Reducer for connection on a duct with a smaller diameter than the damper.
Delivered per piece.

RCVF



$\varnothing d_2$	$\varnothing d$ CR2	L	I
80	200	665	145
100	200	545	85
125	200	525	75
160	200	495	60
180	200	595	110
224	250	625	125

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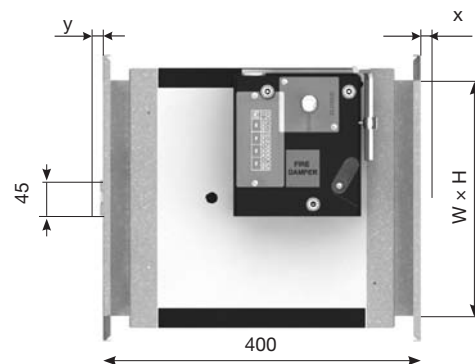


Fire dampers

CU2



Dimensions



Exceeding damper blade	
$x = H/2 - 274 \text{ mm}$	if $H \geq 550 \text{ mm}$
$y = H/2 - 148 \text{ mm}$	if $H \geq 300 \text{ mm}$

Description

The CU2 is a rectangular fire damper with a fire resistance up to 120 minutes, which is installed in ventilation ducts passing through a construction element in order to stop the propagation of fire. The fire damper can be equipped with a common fusible link mechanism up to a motorised mechanism, completely out of the wall. The refractory casing is made of asbestos free panels, which are resistant to humidity. Suitable for installation in rigid and flexible walls.

Standard

Connection frame PG30

Casing of refractory material

Damper blade

Operating mechanism with:

- manual command
- manual locking
- blade position indicator
- identification label
- electrical connections

Sealing cold smoke

Blade bumper

Intumescent strip

Transmission with locking open/closed

Fusible link 72°C

Fire resistance

		EI 120 S	E 120 S	EI 90 S	EI 60 S
Rigid wall	Concrete wall 100 mm ($v_e i \leftrightarrow o$)	up to 600x600 (500 Pa)	up to 1500x1000 (500 Pa)	up to 1500x800 (300 Pa)	up to 1500x1000 (500Pa)
	Concrete floor 150 mm ($h_o i \leftrightarrow o$)	up to 1200x800 (500 Pa)			
Flexible wall	Concrete floor 125 mm ($h_o i \leftrightarrow o$)	up to 1500x800 (300 Pa)			
	Metal stud wall 100 mm ($v_e i \leftrightarrow o$)			up to 1200x800 (500Pa)	up to 1200x800 (500Pa)
Flexible wall	Gypsum block wall 70 mm ($v_e i \leftrightarrow o$)	up to 1200x800 (500 Pa)	up to 1200x800 (500Pa)	up to 1200x800 (500 Pa)	up to 1200x800 (500 Pa)
				up to 1500x800 (300Pa)	up to 1500x800 (300Pa)

v_e = damper mounted directly in the wall

h_o = damper mounted directly in a floor/ceiling

$i \leftrightarrow o$ = fire side randomly

Ordering example

	CU2	600	500	24	BLF
Product					
Width					
Height					
Voltage					
Motor type					

Types of frames

see PG page 336.

Options

EQ – Equipotential connection

UL – Inspection shutter

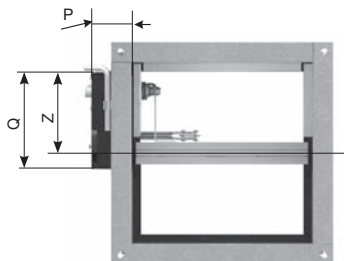


Fire dampers

CU2

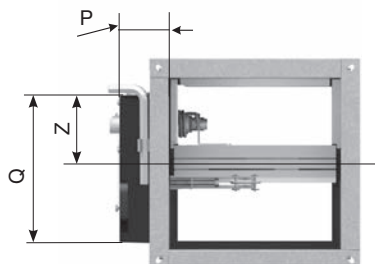
Technical data for the motors

H ≥ 300 mm



	CFTH	MANO (+ME)	BLF (T)	BF (T)	DB (T)
P	65	115	110	110	145
Q	180	190	210	210	210
Z	155	180	180	180	180

H < 300 mm



	CFTH	MANO (+ME)	BLF (T)	BF (T)	DB (T)
P	65	115	110	110	145
Q	180	190	210	210	210
Z	60	85	80	-	90

Installation

- Installation in rigid or flexible wall with horizontal or vertical axis
- Installation in rigid floor or ceiling with horizontal axis
- Provide an additional zone of 200 mm to have free access to the mechanism
- Installation and air movement may be from either direction
- Verify the free movement of the blade
- Installation according to test report
- On the side of the mechanism the damper exceeds the wall by 240 mm
- Minimal size of opening to incorporate = (W+100) x (H+100) mm

Mechanism

CFTH

Automatic command

MANO

Automatic and remote controlled command

BL/BLF/DB/RMEX/EMEX

Spring return actuator 24/230V

Function

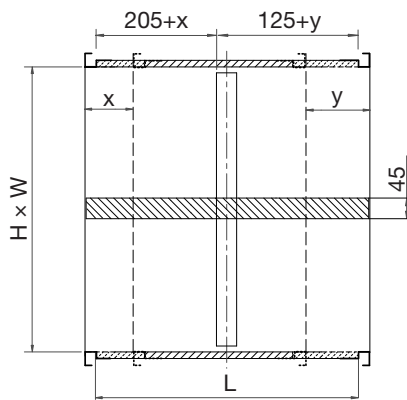
see MEC page 331.

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Fire dampers

CU2L



Dimension

L	330+x+y	X = (H/2) - 230 Y = (H/2) - 100	Prolongation on the other side of the mechanism
x or y > 0			

Description

Elongated duct

The damper CU2L is a damper CU2 of which the duct is extended along one or both sides.

Applications

- the damper blade must not extend beyond one or both sides of the duct
- to allow an easy connection in case of a thick wall
- to allow the installation of a grill on the damper duct

Options

EQ – Equipotential connection

UL – Inspection shutter

Ordering example

	CU2L	600	500
Product	_____		
Width	_____		
Height	_____		



Fire dampers

MEC

MANO (+ME)

The unlocking mechanism MANO unlatches the fire damper blade via remote control by sending an electric impulse (VD) or by interruption (VM) of the magnet's power supply, or automatically, as the fusible link melts when the temperature in the duct rises above 72°C. For high temperatures, the mechanism is supplied with a fusible link of 100 or 140°C. By unlocking, the internal torsion spring unwinds and releases the damper blade into its closed safety position.

To indicate the open or closed position of the fire damper blade, the mechanism is standard provided with an end and begin of range switch FDCU.

The rearmation has to be done manually (MANO).

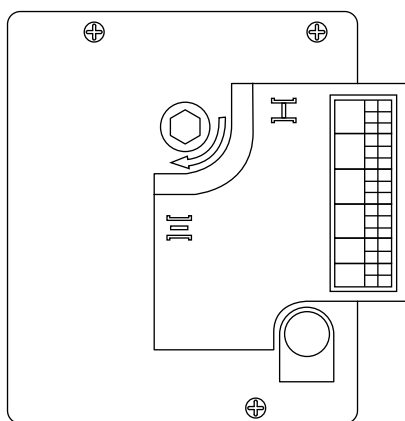
The rearmation can be done by a remote controlled electric rearmation motor ME.

Type of magnet

VD: natural magnet

VM: electromagnet

	VM24	VM48	VD24	VD48
Voltage	24 Vdc	48 Vdc	24 Vdc	48 Vdc
Capacity	1,5 W interruption of current		3,5 W impulse of current	



	ME	DCU	FCU	DCB	FCB
+	1	2	3	4	5
-	6	7	8	9	10
+/-	11	12	13	14	15
-/+	16	17	18	19	20

Unlocking

- Manually : by pressing the yellow button
- Automatically : as the fusible link melts at 72° in the duct
- Remote control : by an electric impulse (VD) or by interruption (VM) of the magnets power supply

Rearmation

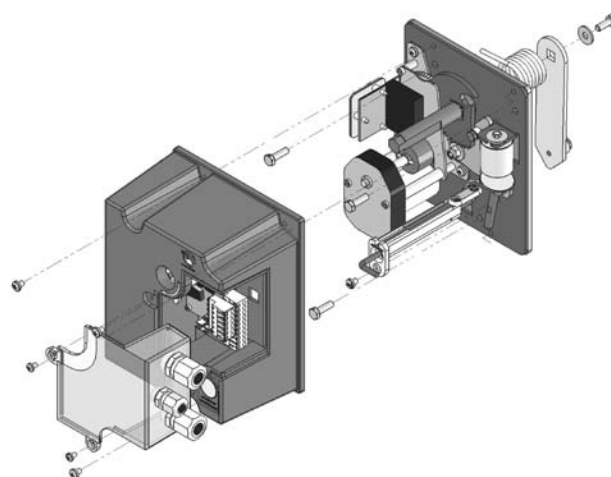
- Manually : turn 90° with hexagon key 13 mm
A magnet with interruption (VM) needs power supply for rearmation
- By electric rearmation motor

Options

Bipolar end and begin of range switch FDCB

Rearmation motor ME.

Voltage	24/48 Vdc ± 10%
	24/48 Vac ± 10%
I_{rms}	1A
I_{max}	± 1,5A





Fire dampers

MEC

BLF – Belimo





When connected to the power supply the servomotor moves the damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

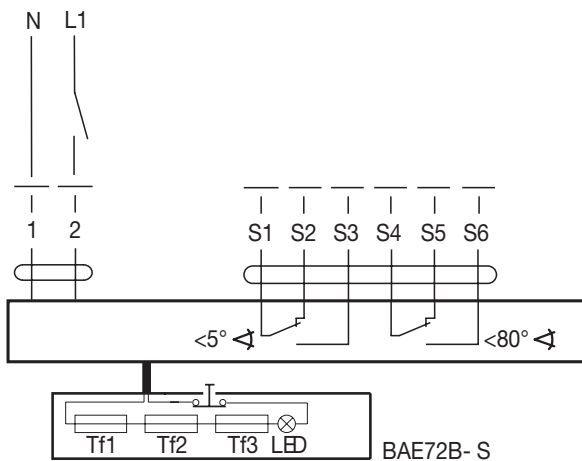
	BLF 24	BLF 230
Voltage	24 Vdc -10% +20% 24 Vac ±20%	230 Vac ±15%
Consumption holding	2,5 W	3 W
Consumption rearmation	5 W	6 W
Capacity	7 VA	7 VA



W + H ≤ 1200 mm or Ø ≤ 400 mm.

BLF24 BLF230 24V 230V 	BLF24-ST 24V + plug (ST) 	BLFT24 BLFT230 24V 230V + thermo-electric fuse (T) 	BLFT24-ST 24V + plug (ST) + thermo-electric fuse (T) 
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BLF, BLFT





Fire dampers

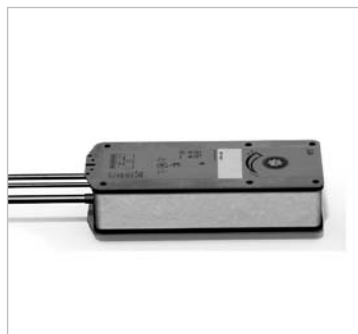
MEC

BF – Belimo





When connected to the power supply the servomotor moves the damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

	BF 24	BF 230
Voltage	24 Vdc -10% +20% 24 Vac ±20%	230 Vac ±15%
Consumption holding	2 W	3 W
Consumption rearmation	7 W	8 W
Capacity	10 VA	12,5 VA



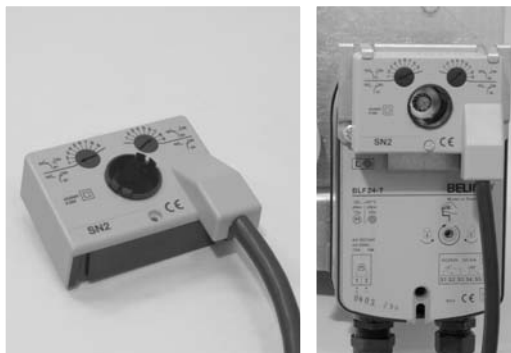
W + H > 1200 mm or Ø > 400 mm.

BF24 BF230 24V 230V 	BF24-ST 24V + plug (ST) 	BFT24 BFT230 24V 230V + thermo-electric fuse (T) 	BFT24-ST BFT24-TL-ST 24V 24V TOPLINE + plug (ST) + thermo-electric fuse (T)  For bussystem BFT24-TwL-ST
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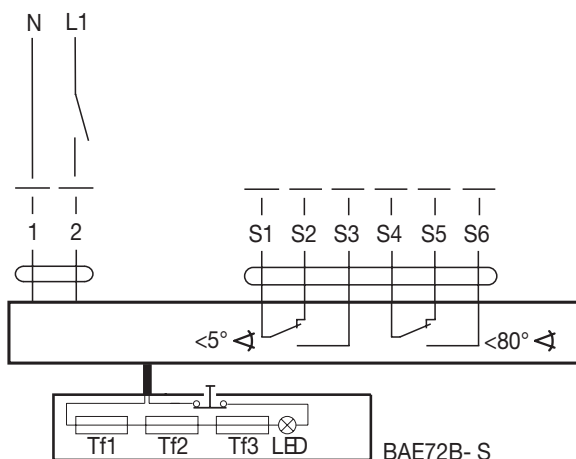
Option

Bipolar end and begin of range switches

SN2



BF, BFT



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Fire dampers

MEC

DB – Joventa

When connected to the power supply the servomotor moves the damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

	DB 24	DB 230
Voltage	24 Vdc ±10% 24 Vac ±20%	230 Vac ±10%
Consumption holding	4 W	4,5 W
Consumption rearmation	10 W	8 W
Capacity	18 VA	13 VA



DB24 | DB230
24V | 230V



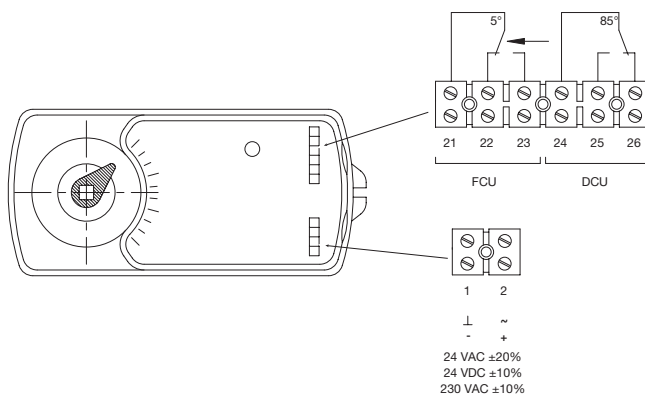
DBT24 | DBT230
24V | 230V
+ thermo-electric fuse (T)



DBT24 – SLC
24V
+ thermo-electric fuse (T)
Option: BSLC



DB, DBT



Option

Module for bus system

BSLC





Fire dampers

MEC

EX-Schischek

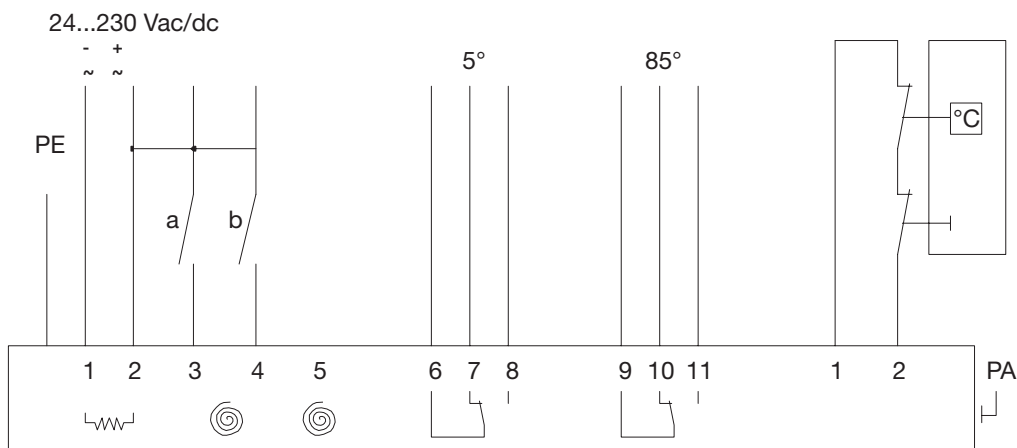
When connected to the power supply the explosion proof motor moves the damper blade into its standby position.
 When the power is interrupted, the internal armed spring returns the damper blade into its closed safety position.
 For deflagration risk between several risk areas are distinguished:

- Zone 1/21 :
midling risk of explosion
>100h/year explosive surroundings
- Zone 2/22 :
low risk of explosion
<10h/year of explosive surroundings



		EX 24/230	
Voltage		24...230 Vac/Vdc +15%/-20%	
I_{rms}		24V: 1,45A 230V: 0,3A	
RMAX	RMAXT	EMEX	EMEXT
RedMax 24V/230V	RedMax 24V/230V	ExMax 24V/230V	ExMax 24V/230V
	Thermo-electric fuse (T)		Thermo-electric fuse (T)
Zone 2/22	Zone 2/22	Zone 1/2/21/22	Zone 1/2/21/22
Explosion proof ACTUATOR for CR2/CU2, CU2L			

EX

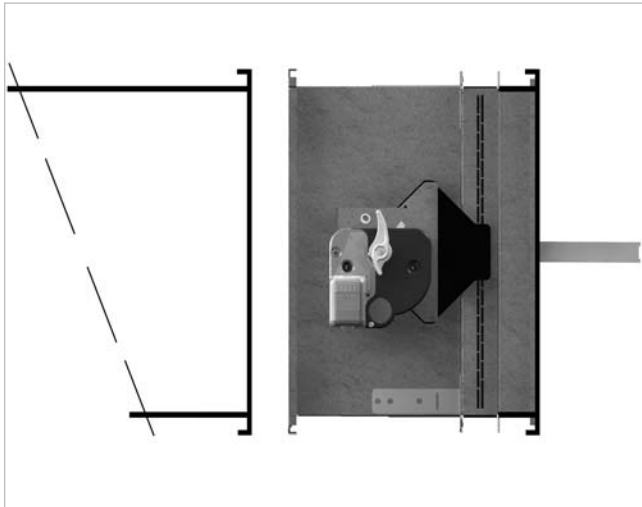


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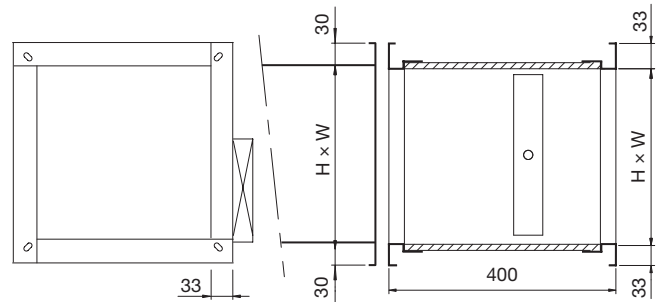


Frame

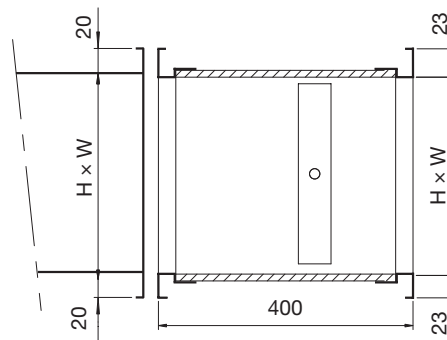
PG



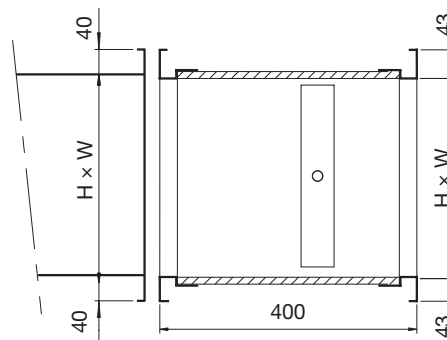
PG30



PG20



PG40



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Standard for the damper CU2

PG30

Connection with ducts via frames of 30 mm:

Junction of damper/duct:

- either by sliding profile
- or with bolts
- or with clamps/clips

The four corners of the flange are provided with elliptical holes $\varnothing 8,5 \times 16$ mm.

Variants

PG20

Connection with ducts via frames of 20 mm:

The four corners of the flange are provided with elliptical holes $\varnothing 6,5 \times 16$ mm.

PG40

Connection with ducts via frames of 40 mm:

The four corners of the flange are provided with elliptical holes $\varnothing 8,5 \times 16$ mm.



Frame

PG

Variants

PM

Connection with ducts by socket joint. This type of frame is used in case of shortage of space for standard frames PG30.

PP

No connection

This type of frame is used on transfer dampers or on one side of a damper that opens into a room.

Elongated frame

Elongated frame to avoid that the damper blade extends beyond the damper.

Connection with ducts via frames of 30 mm:

Junction of damper / duct:

- either by sliding profile
- or with bolts
- or with clamps/clips

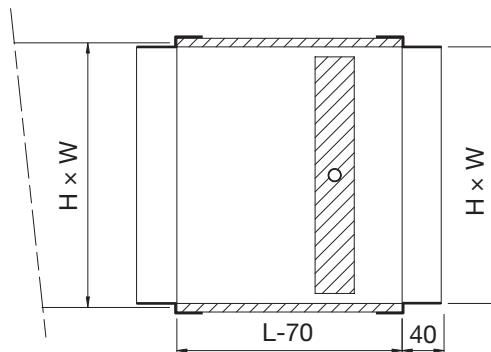
The four corners of the flange are provided with elliptical holes $\varnothing 8,5 \times 16$ mm

Maximum elongation on 1 side = 500 mm

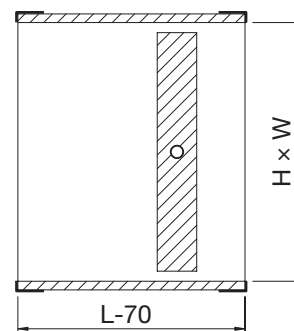
Maximum elongation on 2 sides = 600 mm

Elongation in steps of 50 mm

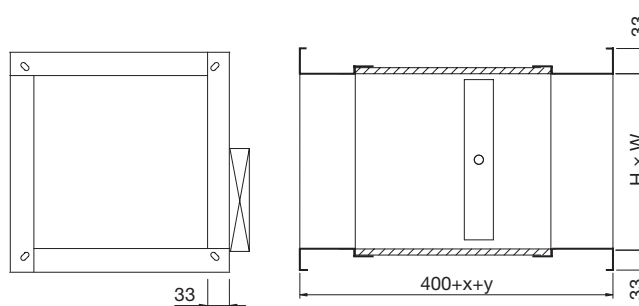
PM



PP



PG3V

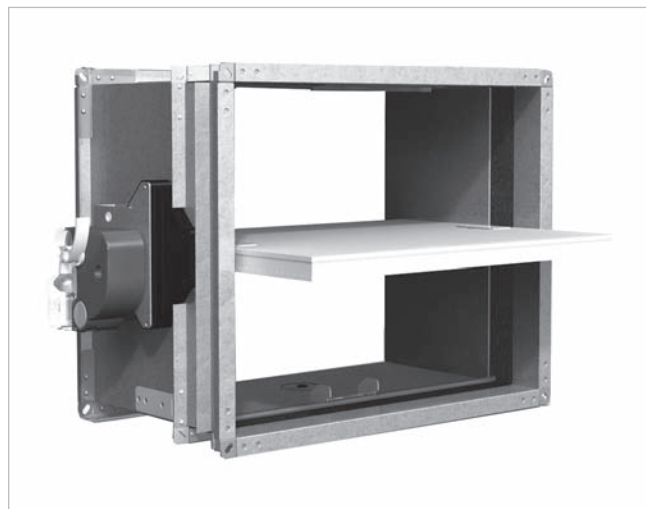


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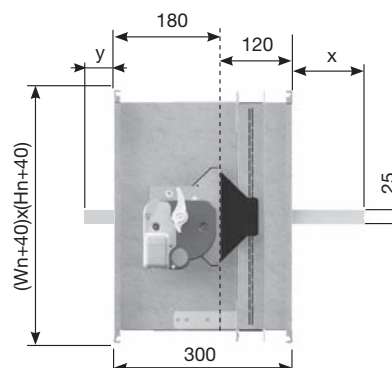


Fire dampers

CU-LT



Dimensions



The damper blade exceeds the tunnel:

$$x = (H_n - 6) / 2 - 70$$

$$y = (H_n - 6) / 2 - 230$$

Description

Rectangular fire dampers CU-LT are installed in ventilation ducts passing through a construction element in order to stop the propagation of fire. They consist of a modular operating mechanism positioned completely outside the wall.

The rectangular fire damper CU-LT has a fire resistance up to 120 minutes. The casing is made of galvanised steel.

This fire damper is especially designed for smaller dimensions from 200 x 100 to 800 x 600 mm.

The fire damper can be equipped with a fusible link mechanism up to a motorized mechanism.

Standard

- Tested according to EN 1366-2 up to 500Pa
- Minimal pressure drop - very thin damper blade 25 mm
- Air tightness according to EN 1751 minimum class B (class C on demand)
- Suitable for mounting in rigid wall/floor and flexible wall (metal stud gypsum plasterboard)
- Operating mechanism completely outside the wall
- Easy to install
- Maintenance free
- For interior applications

Fire resistance according to EN13501-3 : 2005

		EI 60 S (500 Pa)	EI 90 S (500 Pa)	EI 120 S (500 Pa)
Rigid wall	Aerated concrete wall 100mm (ve i ↔ o)	up to 800x600 (*)	up to 800x600 (**)	up to 800x600 (**)
	Aerated concrete floor 110mm (ho i ↔ o)	up to 800x600 (*)	-	-
Rigid floor	Aerated concrete floor 150mm (ho i ↔ o)	up to 800x600 (*)	up to 800x600 (**)	up to 800x600 (**)
	Light partition wall 100mm (ve i ↔ o)	up to 800x600	up to 800x600	-
Flexible wall				

(*) sealing with standard concrete mortar or plaster

(**) sealing with plaster

v_e = damper mounted directly in the wall

h_o = damper mounted directly in a floor/ceiling

$i \leftrightarrow o$ = fire can come from either direction

Pa = Pascal

E = integrity

I = thermal insulation

S = smoke leakage

Ordering example

	CU-LT	200	200	MMAG	ME
Product					
Width					
Height					
Type					
Options					

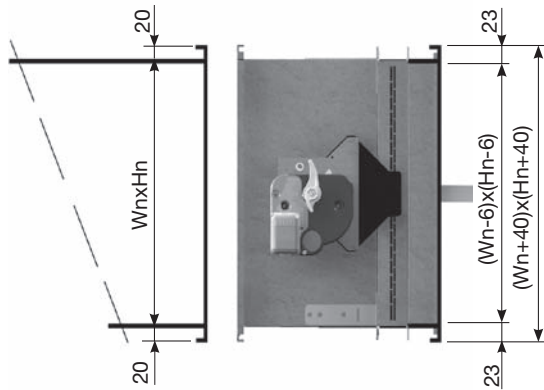


Fire dampers

CU-LT

Types of frames

PG20



- Connection to ducts with 20 mm flanges (and 30 mm flanges)
- Connection of damper/duct:
 - either with sliding profile (flanges of 20 mm only)
 - or with bolts
- The four corners of the frame are provided with elliptical holes $\varnothing 8,5 \times 16$ mm.

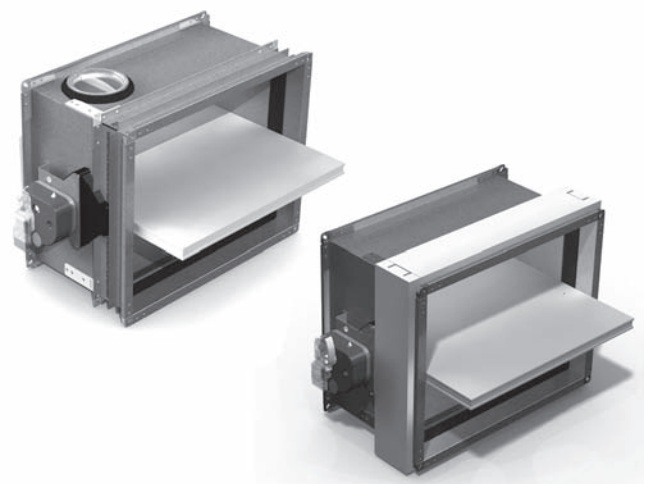
Option

Inspection shutter UL:

An inspection shutter can be used to visually determine the state and the condition (e.g. filth) of the damper. The inspection shutter is always mounted two-fold, one on the lower side and one on the upper side of the fire damper.

Positioning kit flexible wall IFW:

In order to facilitate the installation in a flexible wall, the kit Installation Flexible Wall is available. When ordered together, this kit is mounted on the damper.



Technical data for the motors

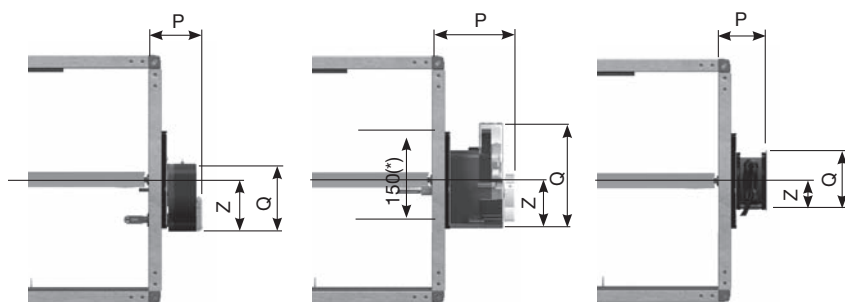


fig. CU-LT + MFUSP

fig. CU-LT + MMAG

fig. CU-LT + BLF(T)

(*) the mechanism and the transmission exceed the damper when $H_n = 100$ mm

If the height < 200 mm the mechanisms MFUSP and MMAG are turned 90° for the assembly.

Height < 200 mm	MFUSP	MMAG	BLF(T)
P	103	150,50	92
Z	62	62	49
Q	125	173	98

Height ≥ 200 mm	MFUSP	MMAG	BLF(T)
P	103	150,50	92
Z	95	95	49
Q	120	125	98





Fire dampers

CU-LT

Weights

Weight CU-LT + MFUSP [kg]

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	3,7	4,0	4,4	4,8	5,2	5,5	5,9	6,3	6,6	7,0	7,4	7,8	8,1
150	4,1	4,6	5,0	5,4	5,9	6,3	6,7	7,1	7,6	8,0	8,4	8,9	9,3
200	4,6	5,1	5,6	6,1	6,6	7,1	7,5	8,0	8,5	9,0	9,5	10,0	10,4
250	5,1	5,7	6,2	6,7	7,3	7,8	8,4	8,9	9,4	10,0	10,5	11,1	11,6
300	5,6	6,2	6,8	7,4	8,0	8,6	9,2	9,8	10,4	11,0	11,6	12,1	12,7
350	6,1	6,7	7,4	8,0	8,7	9,3	10,0	10,6	11,3	11,9	12,6	13,2	13,9
400	6,6	7,3	8,0	8,7	9,4	10,1	10,8	11,5	12,2	12,9	13,6	14,3	15,0
450	7,1	7,8	8,6	9,3	10,1	10,9	11,6	12,4	13,1	13,9	14,7	15,4	16,2
500	7,5	8,4	9,2	10,0	10,8	11,6	12,4	13,3	14,1	14,9	15,7	16,5	17,3
550	8,0	8,9	9,8	10,6	11,5	12,4	13,3	14,1	15,0	15,9	16,8	17,6	18,5
600	8,5	9,4	10,4	11,3	12,2	13,1	14,1	15,0	15,9	16,9	17,8	18,7	19,7

Weight CU-LT + MMAG (automatic) [kg]

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	3,9	4,3	4,7	5,0	5,4	5,8	6,1	6,5	6,9	7,3	7,6	8,0	8,4
150	4,4	4,8	5,3	5,7	6,1	6,5	7,0	7,4	7,8	8,3	8,7	9,1	9,5
200	4,9	5,4	5,8	6,3	6,8	7,3	7,8	8,3	8,8	9,2	9,7	10,2	10,7
250	5,4	5,9	6,4	7,0	7,5	8,1	8,6	9,1	9,7	10,2	10,8	11,3	11,8
300	5,8	6,4	7,0	7,6	8,2	8,8	9,4	10,0	10,6	11,2	11,8	12,4	13,0
350	6,3	7,0	7,6	8,3	8,9	9,6	10,2	10,9	11,5	12,2	12,8	13,5	14,1
400	6,8	7,5	8,2	8,9	9,6	10,3	11,1	11,8	12,5	13,2	13,9	14,6	15,3
450	7,3	8,1	8,8	9,6	10,3	11,1	11,9	12,6	13,4	14,2	14,9	15,7	16,4
500	7,8	8,6	9,4	10,2	11,1	11,9	12,7	13,5	14,3	15,1	16,0	16,8	17,6
550	8,3	9,1	10,0	10,9	11,8	12,6	13,5	14,4	15,3	16,1	17,0	17,9	18,7
600	8,8	9,7	10,6	11,5	12,5	13,4	14,3	15,3	16,2	17,1	18,0	19,0	19,9

Weight CU-LT + BLF(T) [kg]

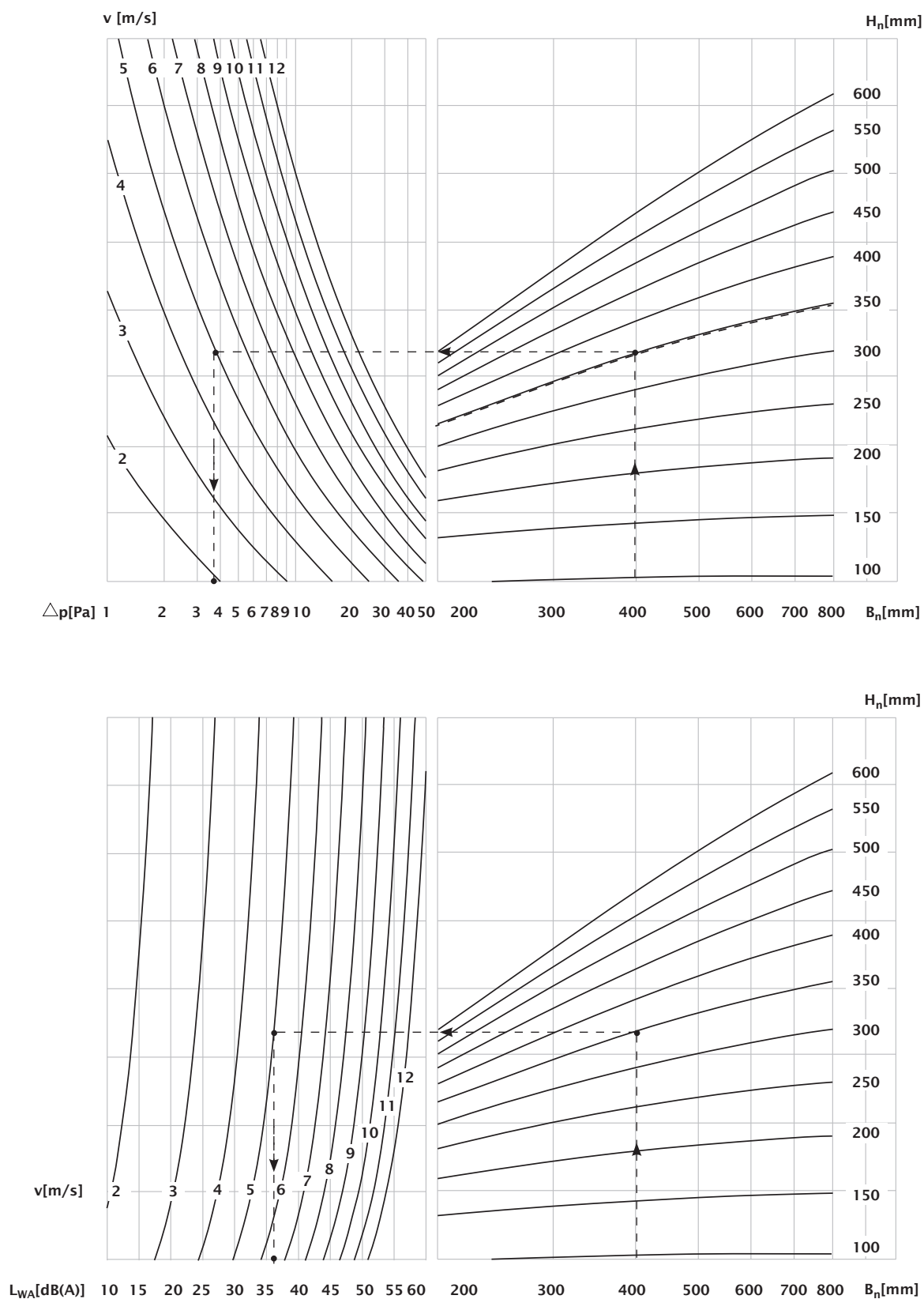
H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	5,0	5,4	5,8	6,1	6,5	6,9	7,2	7,6	8,0	8,4	8,7	9,1	9,5
150	5,5	5,9	6,4	6,8	7,2	7,6	8,1	8,5	8,9	9,4	9,8	10,2	10,6
200	6,0	6,5	6,9	7,4	7,9	8,4	8,9	9,4	9,9	10,3	10,8	11,3	11,8
250	6,5	7,0	7,5	8,1	8,6	9,2	9,7	10,2	10,8	11,3	11,9	12,4	12,9
300	6,9	7,5	8,1	8,7	9,3	9,9	10,5	11,1	11,7	12,3	12,9	13,5	14,1
350	7,4	8,1	8,7	9,4	10,0	10,7	11,3	12,0	12,6	13,3	13,9	14,6	15,2
400	7,9	8,6	9,3	10,0	10,7	11,4	12,2	12,9	13,6	14,3	15,0	15,7	16,4
450	8,4	9,2	9,9	10,7	11,4	12,2	13,0	13,7	14,5	15,3	16,0	16,8	17,5
500	8,9	9,7	10,5	11,3	12,2	13,0	13,8	14,6	15,4	16,2	17,1	17,9	18,7
550	9,4	10,2	11,1	12,0	12,9	13,7	14,6	15,5	16,4	17,2	18,1	19,0	19,8
600	9,9	10,8	11,7	12,6	13,6	14,5	15,4	16,4	17,3	18,2	19,1	20,1	21,0



Fire dampers

CU-LT

Selection graph



Elaborated example p. 15

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Fire dampers

CU-LT

Pressure drop coefficient cu-lt ζ [-]

H\W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	1,69	1,65	1,62	1,60	1,59	1,58	1,57	1,56	1,55	1,55	1,54	1,54	1,54
150	0,98	0,93	0,89	0,87	0,85	0,83	0,82	0,81	0,80	0,80	0,79	0,79	0,78
200	0,69	0,63	0,60	0,57	0,55	0,54	0,52	0,51	0,51	0,50	0,49	0,49	0,49
250	0,54	0,48	0,44	0,42	0,40	0,39	0,37	0,37	0,36	0,35	0,35	0,34	0,34
300	0,45	0,39	0,35	0,33	0,31	0,30	0,29	0,28	0,27	0,26	0,26	0,26	0,25
350	0,39	0,33	0,30	0,27	0,25	0,24	0,23	0,22	0,22	0,21	0,21	0,20	0,20
400	0,34	0,29	0,26	0,23	0,22	0,20	0,19	0,18	0,18	0,17	0,17	0,16	0,16
450	0,31	0,26	0,23	0,20	0,19	0,17	0,16	0,16	0,15	0,15	0,14	0,14	0,13
500	0,29	0,24	0,20	0,18	0,17	0,15	0,14	0,14	0,13	0,13	0,12	0,12	0,12
550	0,27	0,22	0,19	0,16	0,15	0,14	0,13	0,12	0,12	0,11	0,11	0,10	0,10
600	0,25	0,20	0,17	0,15	0,14	0,12	0,12	0,11	0,10	0,10	0,10	0,09	0,09

$$\Delta p = v^2 \times 0,6 \times \zeta \quad v = \frac{q}{A}$$

q = air flow in the duct [m³/h]

Δp = static pressure drop [Pa]

ζ = pressure drop coefficient zeta [-]

A = internal surface of the duct [m²]

v = air speed in the duct [m/s]

L_{WA} = A-weighted sound power level

H_n/B_n = Nominal height/width of the damper

Example:

Data: $H_n = 350$ mm $W_n = 400$ mm $v = 5$ m/s

Required: $\Delta p = \text{ca. } 3,9$ Pa
 $L_{WA} = \text{ca. } 36$ dB(A) } cfr. selection graph CU-LT

Calculation: $\Delta p = (5\text{m/s})^2 \times 0,6 \times 0,25 = 3,75$ Pa



Fire dampers

CU-LT

Elaborated example of a pressure drop calculation Δp with air speed $v = 4\text{m/s}$

$\Delta p[\text{Pa}]$	200	250	300	350	400	450	500	550	600	650	700	750	800
100	16,22	15,84	15,55	15,36	15,26	15,17	15,07	14,98	14,88	14,88	14,78	14,78	14,78
150	9,41	8,93	8,54	8,35	8,16	7,97	7,87	7,78	7,68	7,68	7,58	7,58	7,49
200	6,62	6,05	5,76	5,47	5,28	5,18	4,99	4,90	4,90	4,80	4,70	4,70	4,70
250	5,18	4,61	4,22	4,03	3,84	3,74	3,55	3,55	3,46	3,36	3,36	3,26	3,26
300	4,32	3,74	3,36	3,17	2,98	2,88	2,78	2,69	2,59	2,50	2,50	2,50	2,40
350	3,74	3,17	2,88	2,59	2,40	2,30	2,21	2,11	2,11	2,02	2,02	1,92	1,92
400	3,26	2,78	2,50	2,21	2,11	1,92	1,82	1,73	1,73	1,63	1,63	1,54	1,54
450	2,98	2,50	2,21	1,92	1,82	1,63	1,54	1,54	1,44	1,44	1,34	1,34	1,25
500	2,78	2,30	1,92	1,73	1,63	1,44	1,34	1,34	1,25	1,25	1,15	1,15	1,15
550	2,59	2,11	1,82	1,54	1,44	1,34	1,25	1,15	1,15	1,06	1,06	0,96	0,96
600	2,40	1,92	1,63	1,44	1,34	1,15	1,15	1,06	0,96	0,96	0,96	0,86	0,86

Elaborated example of a pressure drop calculation Δp with air speed $v = 7\text{m/s}$

$\Delta p[\text{Pa}]$	200	250	300	350	400	450	500	550	600	650	700	750	800
100	49,69	48,51	47,63	47,04	46,75	46,45	46,16	45,86	45,57	45,57	45,28	45,28	45,28
150	28,81	27,34	26,17	25,58	24,99	24,40	24,11	23,81	23,52	23,52	23,23	23,23	22,93
200	20,29	18,52	17,64	16,76	16,17	15,88	15,29	14,99	14,99	14,70	14,41	14,41	14,41
250	15,88	14,11	12,94	12,35	11,76	11,47	10,88	10,88	10,58	10,29	10,29	10,00	10,00
300	13,23	11,47	10,29	9,70	9,11	8,82	8,53	8,23	7,94	7,64	7,64	7,64	7,35
350	11,47	9,70	8,82	7,94	7,35	7,06	6,76	6,47	6,47	6,17	6,17	5,88	5,88
400	10,00	8,53	7,64	6,76	6,47	5,88	5,59	5,29	5,29	5,00	5,00	4,70	4,70
450	9,11	7,64	6,76	5,88	5,59	5,00	4,70	4,70	4,41	4,41	4,12	4,12	3,82
500	8,53	7,06	5,88	5,29	5,00	4,41	4,12	4,12	3,82	3,82	3,53	3,53	3,53
550	7,94	6,47	5,59	4,70	4,41	4,12	3,82	3,53	3,53	3,23	3,23	2,94	2,94
600	7,35	5,88	5,00	4,41	4,12	3,53	3,53	3,23	2,94	2,94	2,94	2,65	2,65

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Fire dampers

CU-LT

Selection data CU-LT

A-weighted sound power level L_{WA} of 45 dB(A) in the duct

S_n = Free air passage
 Q = Air flow
 Δp = Pressure drop

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	S_n [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	S_n [%]
	690	860	1030	1200	1360	1530	1700	1870	2030	2200	2370	2540	2700	Q [m ³ /h]
	93	90	88	87	85	84	84	83	82	82	82	82	81	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	S_n [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	S_n [%]
	940	1170	1390	1610	1840	2060	2290	2510	2730	2960	3180	3410	3630	Q [m ³ /h]
	24	23	22	21	20	20	20	19	19	19	19	19	18	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	S_n [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	S_n [%]
	1190	1470	1750	2030	2310	2590	2860	3140	3420	3700	3980	4260	4530	Q [m ³ /h]
	28	25	23	22	21	21	20	19	19	19	19	18	18	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	S_n [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	S_n [%]
	1440	1770	2100	2440	2770	3100	3430	3760	4090	4420	4750	5090	5420	Q [m ³ /h]
	21	18	16	15	14	14	13	13	12	12	12	12	11	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	S_n [m ²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	S_n [%]
	1690	2070	2450	2840	3220	3600	3990	4370	4750	5130	5520	5900	6280	Q [m ³ /h]
	16	14	12	11	10	10	9	9	9	8	8	8	8	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	S_n [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	S_n [%]
	1930	2370	2800	3240	3670	4100	4540	4970	5400	5830	6260	6700	7130	Q [m ³ /h]
	14	11	10	9	8	8	7	7	7	6	6	6	6	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	S_n [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	S_n [%]
	2170	2660	3150	3630	4110	4600	5080	5560	6040	6520	7000	7480	7960	Q [m ³ /h]
	12	9	8	7	7	6	6	5	5	5	5	5	5	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	S_n [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	S_n [%]
	2420	2960	3490	4020	4560	5090	5620	6150	6680	7200	7730	8260	8790	Q [m ³ /h]
	10	8	7	6	6	5	5	4	4	4	4	4	4	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	S_n [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	S_n [%]
	2660	3250	3830	4410	4990	5570	6150	6730	7300	7880	8460	9030	9610	Q [m ³ /h]
	9	7	6	5	5	4	4	4	4	3	3	3	3	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	S_n [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	S_n [%]
	2900	3540	4170	4800	5430	6060	6680	7300	7930	8550	9170	9790	10420	Q [m ³ /h]
	9	7	5	5	4	4	4	3	3	3	3	3	3	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	S_n [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	S_n [%]
	3140	3830	4510	5190	5860	6540	7210	7880	8550	9220	9880	10550	11220	Q [m ³ /h]
	8	6	5	4	4	3	3	3	3	3	2	2	2	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 45dB(A), for the respective dimension.



Fire dampers

CU-LT

A-weighted sound power level L_{WA} of 40 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	560	700	840	970	1110	1250	1380	1520	1650	1790	1930	2060	2200	Q [m ³ /h]
	61	60	59	57	57	56	55	55	54	54	54	54	54	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	770	950	1130	1310	1490	1680	1860	2040	2220	2400	2590	2770	2950	Q [m ³ /h]
	30	28	26	25	24	24	23	23	23	22	22	22	22	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	970	1200	1420	1650	1880	2100	2330	2550	2780	3010	3230	3460	3690	Q [m ³ /h]
	19	17	15	15	14	14	13	13	13	12	12	12	12	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	1170	1440	1710	1980	2250	2520	2790	3060	3330	3600	3870	4130	4400	Q [m ³ /h]
	14	12	11	10	9	9	9	8	8	8	8	8	8	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m ²]
	96,97	98,51	99,53	100,25	100,79	101,21	101,55	101,82	102,05	102,24	102,40	102,54	102,67	Sn [%]
	1370	1680	2000	2310	2620	2930	3240	3550	3860	4170	4480	4790	5110	Q [m ³ /h]
	11	9	8	7	7	6	6	6	6	6	5	5	5	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1570	1930	2280	2630	2980	3340	3690	4040	4390	4740	5090	5440	5790	Q [m ³ /h]
	9	7	6	6	5	5	5	5	4	4	4	4	4	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1770	2160	2560	2950	3350	3740	4130	4520	4910	5300	5690	6080	6470	Q [m ³ /h]
	8	6	5	5	4	4	4	4	3	3	3	3	3	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1970	2400	2840	3270	3700	4140	4570	5000	5430	5860	6290	6720	7150	Q [m ³ /h]
	7	5	5	4	4	3	3	3	3	3	3	3	2	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	2160	2640	3120	3590	4060	4530	5000	5470	5940	6410	6870	7340	7810	Q [m ³ /h]
	6	5	4	4	3	3	3	3	2	2	2	2	2	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	2360	2880	3390	3900	4410	4920	5430	5940	6440	6950	7460	7960	8470	Q [m ³ /h]
	6	4	4	3	3	3	2	2	2	2	2	2	2	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	2560	3110	3670	4220	4770	5310	5860	6400	6950	7490	8040	8580	9120	Q [m ³ /h]
	5	4	3	3	2	2	2	2	2	2	2	2	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 40dB(A), for the respective dimension.





Fire dampers

CU-LT

A-weighted sound power level L_{WA} of 35 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	460	570	680	790	900	1010	1120	1230	1350	1460	1570	1680	1790	Q [m³/h]
	41	40	39	38	37	37	36	36	36	36	36	36	36	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	620	770	920	1070	1220	1360	1510	1660	1810	1960	2100	2250	2400	Q [m³/h]
	19	18	17	17	16	16	15	15	15	15	15	15	14	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	790	970	1160	1340	1530	1710	1890	2080	2260	2450	2630	2810	3000	Q [m³/h]
	13	11	10	10	9	9	9	9	8	8	8	8	8	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	950	1170	1390	1610	1830	2050	2270	2490	2710	2920	3140	3360	3580	Q [m³/h]
	9	8	7	7	6	6	6	6	5	5	5	5	5	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	1120	1370	1620	1880	2130	2380	2640	2890	3140	3390	3650	3900	4150	Q [m³/h]
	7	6	5	5	5	4	4	4	4	4	4	4	3	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1280	1570	1850	2140	2430	2710	3000	3280	3570	3850	4140	4430	4710	Q [m³/h]
	6	5	4	4	4	3	3	3	3	3	3	3	3	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1440	1760	2080	2400	2720	3040	3360	3670	3990	4310	4630	4950	5260	Q [m³/h]
	5	4	4	3	3	3	3	2	2	2	2	2	2	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1600	1950	2310	2660	3010	3360	3710	4060	4410	4760	5110	5460	5810	Q [m³/h]
	5	4	3	3	2	2	2	2	2	2	2	2	2	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1760	2150	2530	2920	3300	3680	4060	4450	4830	5210	5590	5970	6350	Q [m³/h]
	4	3	3	2	2	2	2	2	2	2	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1920	2340	2760	3170	3590	4000	4420	4830	5240	5650	6060	6470	6880	Q [m³/h]
	4	3	2	2	2	2	2	1	1	1	1	1	1	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	2080	2530	2980	3430	3880	4320	4760	5210	5650	6090	6530	6970	7410	Q [m³/h]
	4	3	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 35dB(A), for the respective dimension.



Fire dampers

CU-LT

A-weighted sound power level L_{WA} of 30 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	370	460	550	640	730	820	910	1000	1090	1180	1270	1360	1450	Q [m ³ /h]
	27	26	25	25	24	24	24	24	24	24	24	24	23	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	510	630	750	870	990	1110	1230	1350	1470	1590	1710	1830	1950	Q [m ³ /h]
	13	12	11	11	11	10	10	10	10	10	10	10	10	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	640	790	940	1090	1240	1390	1540	1690	1840	1990	2140	2290	2440	Q [m ³ /h]
	8	7	7	6	6	6	6	6	6	5	5	5	5	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	780	950	1130	1310	1490	1670	1840	2020	2200	2380	2560	2730	2910	Q [m ³ /h]
	6	5	5	4	4	4	4	4	4	3	3	3	3	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m ²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	910	1110	1320	1530	1730	1940	2140	2350	2550	2760	2960	3170	3370	Q [m ³ /h]
	5	4	4	3	3	3	3	3	3	2	2	2	2	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1040	1270	1510	1740	1970	2210	2440	2670	2900	3130	3370	3600	3830	Q [m ³ /h]
	4	3	3	3	2	2	2	2	2	2	2	2	2	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1170	1430	1690	1950	2210	2470	2730	2990	3250	3500	3760	4020	4280	Q [m ³ /h]
	3	3	2	2	2	2	2	2	2	1	1	1	1	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1300	1590	1880	2160	2450	2730	3020	3300	3590	3870	4150	4440	4720	Q [m ³ /h]
	3	2	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1430	1750	2060	2370	2680	2990	3300	3610	3920	4230	4540	4850	5160	Q [m ³ /h]
	3	2	2	2	1	1	1	1	1	1	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1560	1900	2240	2580	2920	3250	3590	3920	4260	4590	4930	5260	5600	Q [m ³ /h]
	3	2	2	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	1690	2060	2420	2790	3150	3510	3870	4230	4590	4950	5310	5670	6030	Q [m ³ /h]
	2	2	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 30dB(A), for the respective dimension.





Fire dampers

CU-LT

A-weighted sound power level LWA of 25dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	310	380	450	520	600	670	740	820	890	960	1040	1110	1180	Q [m³/h]
	19	18	17	16	17	16	16	16	16	16	16	16	15	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	410	510	610	710	810	900	1000	1100	1200	1290	1390	1490	1590	Q [m³/h]
	9	8	8	7	7	7	7	7	7	6	6	6	6	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	520	640	770	890	1010	1130	1250	1370	1500	1620	1740	1860	1980	Q [m³/h]
	5	5	5	4	4	4	4	4	4	4	4	3	3	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	630	780	920	1070	1210	1360	1500	1640	1790	1930	2080	2220	2370	Q [m³/h]
	4	3	3	3	3	3	2	2	2	2	2	2	2	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	740	910	1070	1240	1410	1580	1740	1910	2080	2240	2410	2580	2740	Q [m³/h]
	3	3	2	2	2	2	2	2	2	2	2	2	2	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	850	1040	1230	1420	1600	1790	1980	2170	2360	2550	2740	2930	3110	Q [m³/h]
	3	2	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	950	1160	1380	1590	1800	2010	2220	2430	2640	2850	3060	3270	3480	Q [m³/h]
	2	2	2	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1060	1290	1530	1760	1990	2220	2450	2690	2920	3150	3380	3610	3840	Q [m³/h]
	2	2	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1160	1420	1680	1930	2180	2430	2690	2940	3190	3440	3690	3940	4200	Q [m³/h]
	2	1	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1270	1550	1820	2100	2370	2650	2920	3190	3460	3730	4010	4280	4550	Q [m³/h]
	2	1	1	1	1	1	1	1	1	1	1	1	0	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	1380	1670	1970	2270	2560	2860	3150	3440	3730	4030	4320	4610	4900	Q [m³/h]
	2	1	1	1	1	1	1	1	1	0	0	0	0	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 25dB(A), for the respective dimension. Additional data can be consulted on our website.



Fire dampers

CU-LT

Correction factor ΔL

To obtain the sound power level for the $L_{W \text{ oct}}$ octave midband

L_{WA} = A-weighted sound power level

ΔL = Correction factor

$L_{W \text{ oct}}$ = Sound power level for each octave midband

$$L_{W \text{ oct}} = \Delta L + L_{WA}$$

[Hz]	63	125	250	500	1000	2000	4000	8000
2 - 4 m/s	22	9	-2	-11	-18	-21	-17	-8
6 - 8 m/s	17	10	1	-4	-8	-13	-19	-21
10 - 12 m/s	15	9	0	-4	-7	-10	-14	-20

Deduct L_{WA} from the selection graph on page 342.

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Fire dampers

CU-LT

Operating mechanisms

MFUSP: simple operating mechanism with fusible link
The operating mechanism MFUSP automatically unlocks the blade when the temperature in the duct exceeds 72°C.

The damper needs to be rearmed manually.

- Standard:**
- Fusible link 72° C
 - Manual unlocking possible
 - Manual rearmation, use the rearmation handle (turn clockwise)
 - IP42
- Options:**
- FDCU: Unipolar beginning and end of range switches

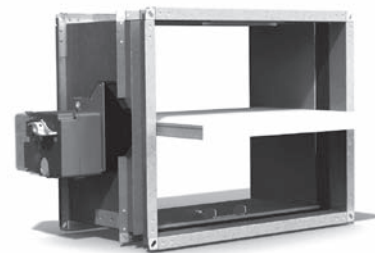


fig. CU-LT + MFUSP

MMAG: Upgradable automatic / remote controlled operating mechanism with fusible link

The operating mechanism MMAG automatically unlocks the blade when the temperature in the duct exceeds 72°C. It can also close the damper by sending an electrical impulse (VD) or by interrupting the power supply (VM) to the magnet.

Manual or motorized rearmation (ME MMAG).

- Standard:**
- Fusible link 72° C
 - Manual unlocking possible
 - Manual rearmation, use a rearmation handle (turn clockwise)
 - IP42
- Options:**
- Remote controlled by means of a dual voltage magnet 24/48V
- Types of magnets:**
- VD = natural magnet
 - VM = electromagnet
- FDCU : Unipolar beginning and end of range switches
 - FDCB : Bipolar beginning and end of range switches
 - ME : Rearmation motor

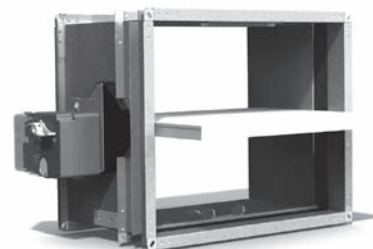


fig. CU-LT + MMAG

BLF(T) : spring-return actuator (with thermo-electric fuse)

When connected to the power supply, the actuator moves the blade into its standby position (open). When the power is interrupted, an internal armed spring closes the blade (safety position).

If the motor is equipped with a thermo-electric fuse BLFT, this will interrupt the power supply when the temperature in the duct exceeds 72°C.

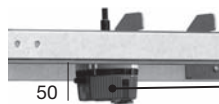


fig. thermo-electric fuse

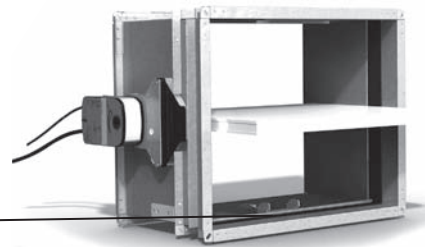







fig. CU-LT + BLFT

Technical data

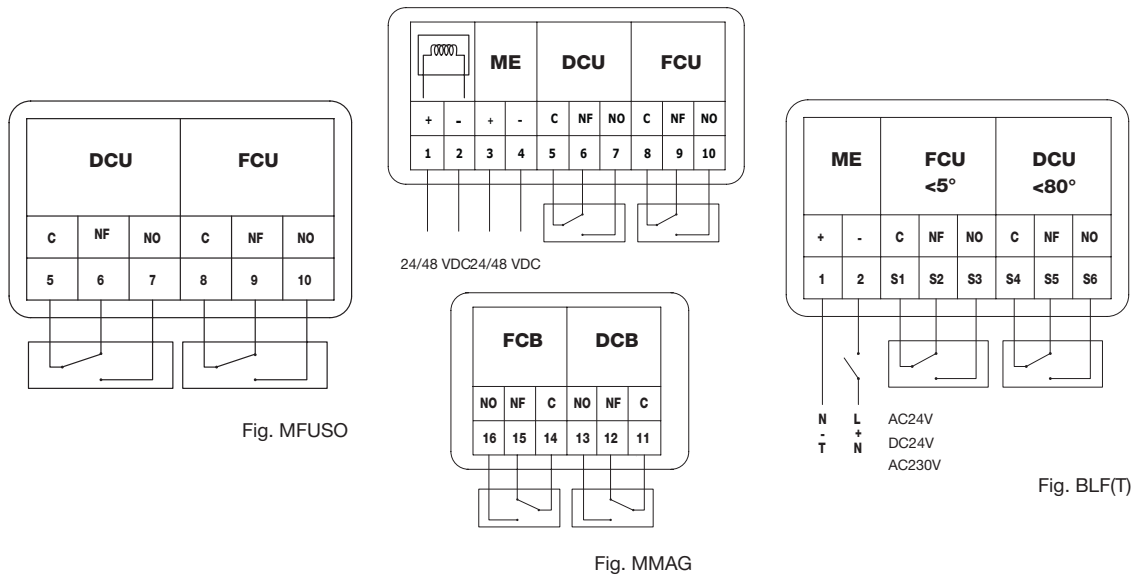
Operating mechanism	CU-LT MFUSP	CU-LT MMAG	CU-LT BLF(T)
Description	Automatic fire damper	Upgradable automatic and remote controlled damper	Motorized remote controlled damper with spring-return actuator
Certifications	 		 
Classification	Fire resistance : - EI 120 (ve i↔o) S : range until 800 x 600 : Mounting in rigid wall min. 100 mm - EI 90 (ve i↔o) S : range until 800 x 600 : Mounting in flexible wall 60' min. 100 mm - EI 60 (ho i↔o) S : range until 800 x 600 : Mounting in rigid floor/ceiling min. 110 mm - EI 60 (ve i↔o) S : range until 800 x 600 : Mounting in rigid wall min. 110 mm - EI 120 (ho i↔o) S : range until 800 x 600 : Mounting in rigid floor/ceiling min. 150 mm Pressure during test : 500 Pa		



Fire dampers

CU-LT

Electrical connections



MFUSP	MMAG	BLF(T)
Power supply MFUSP	Power supply motor/ magnet MMAG	Power supply motor BLF(T)
n.a.	Rearmation motor (ME): 24/48 VDC (automatic switch) Magnet: 24/48 VDC (automatic switch)	BLF(T)24: 24VAC / 24VDC BLF(T)230: 230VAC
Power consumption	Power consumption	Power consumption
n.a. n.a. n.a.	Rearmation motor (ME): 24VDC : Pmax = 10W 48VDC : Pmax = 15W Magnet: VM: Pnom = 1,5W VD: Pmax = 3,5W	BLF(T)24: motoring: 5W holding: 2,5W BLF(T)230: motoring: 6W holding: 3W
Position switches	Position switches	Position switches
Standard: 1mA...1A, DC 5V...AC 48V	Standard: 1mA...500mA, DC 5V...AC 48V	Standard: 1mA...3A, DC 5V...AC 250V SN2: 1mA...3A, DC 5V...AC 250V
Running time	Running time	Running time
motor: n.a spring: 1s	Motor: < 30 s spring: 1s	motor: 40 ... 75s spring: 20s
Noise level	Noise level	Noise level
n.a.	Motor: max 66 DB (A)	motor: max 45 dB (A) spring: ca. 62 dB (A)
Degree of protection	Degree of protection	Degree of protection
IP 45	IP 45	IP 54





Fire dampers

CU-LT

Position of the thermo-electric fuse for BLFT(T)

Height	Width	Position
≤ 300mm	= 200mm	on the side opposite to the mechanism
	> 200mm	on the W-side next to the inspection shutter
> 300mm		on the same side of the mechanism

The mechanism is always mounted on the H-side.

Standard:

- Thermo-electric fuse 72°C for BLFT
- Motorized unlocking and rearmation
- Manual rearmation possible, use the enclosed handle turn clockwise
- 24V or 230V
- Integrated unipolar begin and end of range switches
- IP 54

Options:

- SN2 Bipolar begin and end of range switches
- ST plug





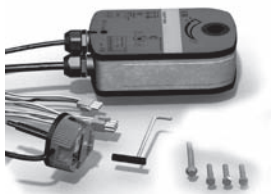



Fire dampers

CU-LT

Evolution kits

	KITS MFUSP	
	Automatic operating mechanism MFUSP with fusible link 72°C	
	KITS FUS 72 MFUS(P)	
	Fusible link 72°C for MFUS(P)	
	KITS FDCU MFUS(P)	
	Unipolar beginning and end of range switches FDCU for MFUS(P)	
	KITS MMAG	
	Upgradable operating mechanism MMAG with fusible link 72°C	
	KITS FUS 72 MMAG	
	Fusible link 72°C for MMAG	
	KITS VD MMAG FDCU	KITS VM MMAG FDCU
	Magnet VD24/48, VM24/48 with FDCU for MMAG	
	KITS ME MMAG	
	Rearmation motor ME 24/48 for MMAG	
	KITS FDCU MMAG	
	Unipolar beginning and end of range switches FDCU for MMAG	

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1		KITS FDCB MMAG	
		Bipolar beginning and end of range switches FDCB for MMAG	
3		KITS BLF 24	KITS BLF 24-ST
		KITS BLF 230	
Actuator Belimo BLF 24V/230V or BLF 24V with plug (ST), without thermo-electric fuse (T)			
5		KITS BLFT 24	KITS BLFT 24-ST
		KITS BLFT 230	
Actuator Belimo BLF 24V/230V or BLF 24V with plug (ST) and thermo-electric fuse (T)			
7		KITS SN2 BLF	
		Bipolar beginning and end of range switches FDCB for BLF actuator	
9		KITS BAE 72	
		Thermo-electric fuse 72°C (T) for Belimo BLFT 24V	
11		KITS CULT-IFW	
		Positioning kit flexible wall	



Fire dampers

CU-LT-1s



Description

Rectangular fire dampers CU-LT-1s are installed wall mounted in ventilation ducts passing through a construction element in order to stop the propagation of fire. They exist of a modular operating mechanism positioned completely outside the wall.

The rectangular fire damper CU-LT-1s has a fire resistance up to 120 minutes. The casing is made of galvanised steel. This fire damper is especially designed for smaller dimensions from 200x100 up to 800x600mm.

The fire damper can be equipped with a fusible link mechanism up to a motorized mechanism.

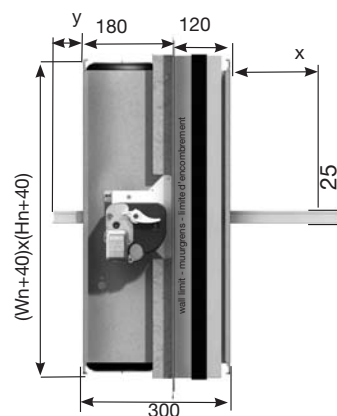
Standard

- Tested according to EN 1366-2 up to 500Pa
- Minimal pressure drop - very thin damper blade 25mm
- Air tightness according to EN 1751 minimum class B (class C on demand)
- Suitable for installing wall mounted on rigid wall/floor and flexible wall (metal stud gypsum plasterboard and gypsum blocs)
- Operating mechanism completely outside the wall
- Easy to install
- Maintenance free
- For interior applications

Ordering example

	CU-LT-1s	200	200	MMAG	ME
Product					
Width					
Height					
Type					
Options					

Dimensions



The damper blade exceeds the tunnel:

$$x = (Hn-6)/2 - 70$$

$$y = (Hn-6)/2 - 230$$

Fire resistance according to EN 13501-3 : 2005

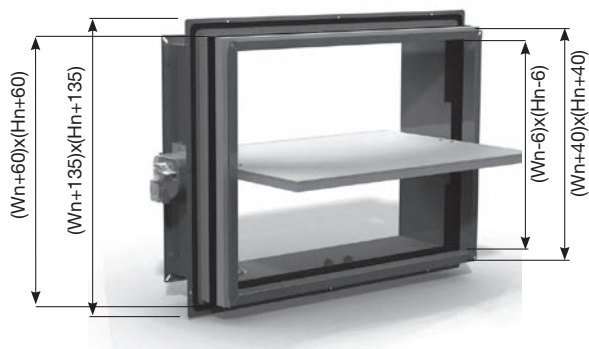
		EI 120 S (500 Pa)	EI 90 S (500 Pa)
Rigid wall	Aerated concrete wall 100mm (ve i ↔ o)	up to 800x600	
Rigid floor	Aerated concrete floor 150mm (ho i ↔ o)	(*)	(*)
Flexible wall	Light partition wall 100mm (ve i ↔ o)		up to 800x600
Flexible wall	Gypsum blocks wall 70mm (ve i ↔ o)	up to 800x600	

v_e = damper mounted directly in the wall
 h_o = damper mounted directly in a floor/ceiling
 i ↔ o = fire can come from either direction
 Pa = Pascal
 E = integrity
 I = thermal insulation
 S = smoke leakage
 (*) result is not yet available

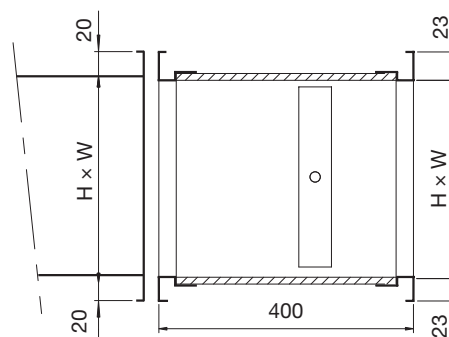


Types of frames

PG20



- Connection to ducts with 20 mm flanges (and 30 mm flanges)
- Connection of damper/duct:
 - either with sliding profile (flanges of 20 mm only)
 - or with bolts
- The four corners of the frame are provided with elliptical holes $\varnothing 8,5 \times 16$ mm.



Option : inspection shutter ul

An inspection shutter can be used to visualise the position and the condition (e.g. filth) of the damper. The inspection shutter is always mounted two-fold, one on the lower side and one on the upper side of the fire damper.



Technical data for the motors

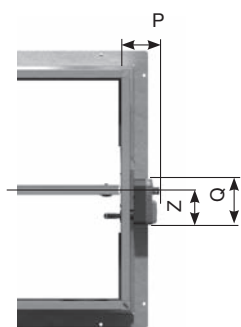


fig. CU-LT-1s + MFUSP

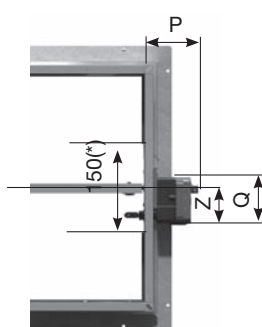


fig. CU-LT-1s + MMAG

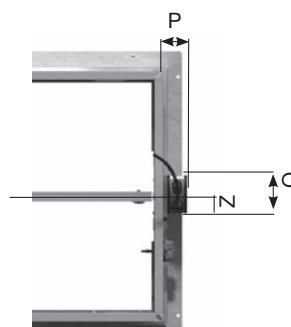


fig. CU-LT-1s + BLF(T)

(*) The mechanism and the transmission stick out with $H_n = 100$ mm

If the height < 200 mm the mechanisms MFUSP and MMAG are turned 90° for the assembly.

Height < 200 mm	MFUSP	MMAG	BLF(T)
P	103	150,50	92
Z	62	62	49
Q	125	173	98

Height \geq 200 mm	MFUSP	MMAG	BLF(T)
P	103	150,50	92
Z	95	95	49
Q	120	125	98



Fire dampers

CU-LT-1s

Weights

Weight CU-LT-1s + MFUSP [kg]

H\W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	3,7	4,0	4,4	4,8	5,2	5,5	5,9	6,3	6,6	7,0	7,4	7,8	8,1
150	4,1	4,6	5,0	5,4	5,9	6,3	6,7	7,1	7,6	8,0	8,4	8,9	9,3
200	4,6	5,1	5,6	6,1	6,6	7,1	7,5	8,0	8,5	9,0	9,5	10,0	10,4
250	5,1	5,7	6,2	6,7	7,3	7,8	8,4	8,9	9,4	10,0	10,5	11,1	11,6
300	5,6	6,2	6,8	7,4	8,0	8,6	9,2	9,8	10,4	11,0	11,6	12,1	12,7
350	6,1	6,7	7,4	8,0	8,7	9,3	10,0	10,6	11,3	11,9	12,6	13,2	13,9
400	6,6	7,3	8,0	8,7	9,4	10,1	10,8	11,5	12,2	12,9	13,6	14,3	15,0
450	7,1	7,8	8,6	9,3	10,1	10,9	11,6	12,4	13,1	13,9	14,7	15,4	16,2
500	7,5	8,4	9,2	10,0	10,8	11,6	12,4	13,3	14,1	14,9	15,7	16,5	17,3
550	8,0	8,9	9,8	10,6	11,5	12,4	13,3	14,1	15,0	15,9	16,8	17,6	18,5
600	8,5	9,4	10,4	11,3	12,2	13,1	14,1	15,0	15,9	16,9	17,8	18,7	19,7

Weight CU-LT-1s + MMAG (automatic) [kg]

H\W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	3,9	4,3	4,7	5,0	5,4	5,8	6,1	6,5	6,9	7,3	7,6	8,0	8,4
150	4,4	4,8	5,3	5,7	6,1	6,5	7,0	7,4	7,8	8,3	8,7	9,1	9,5
200	4,9	5,4	5,8	6,3	6,8	7,3	7,8	8,3	8,8	9,2	9,7	10,2	10,7
250	5,4	5,9	6,4	7,0	7,5	8,1	8,6	9,1	9,7	10,2	10,8	11,3	11,8
300	5,8	6,4	7,0	7,6	8,2	8,8	9,4	10,0	10,6	11,2	11,8	12,4	13,0
350	6,3	7,0	7,6	8,3	8,9	9,6	10,2	10,9	11,5	12,2	12,8	13,5	14,1
400	6,8	7,5	8,2	8,9	9,6	10,3	11,1	11,8	12,5	13,2	13,9	14,6	15,3
450	7,3	8,1	8,8	9,6	10,3	11,1	11,9	12,6	13,4	14,2	14,9	15,7	16,4
500	7,8	8,6	9,4	10,2	11,1	11,9	12,7	13,5	14,3	15,1	16,0	16,8	17,6
550	8,3	9,1	10,0	10,9	11,8	12,6	13,5	14,4	15,3	16,1	17,0	17,9	18,7
600	8,8	9,7	10,6	11,5	12,5	13,4	14,3	15,3	16,2	17,1	18,0	19,0	19,9

Weight CU-LT-1s + BLF(T) [kg]

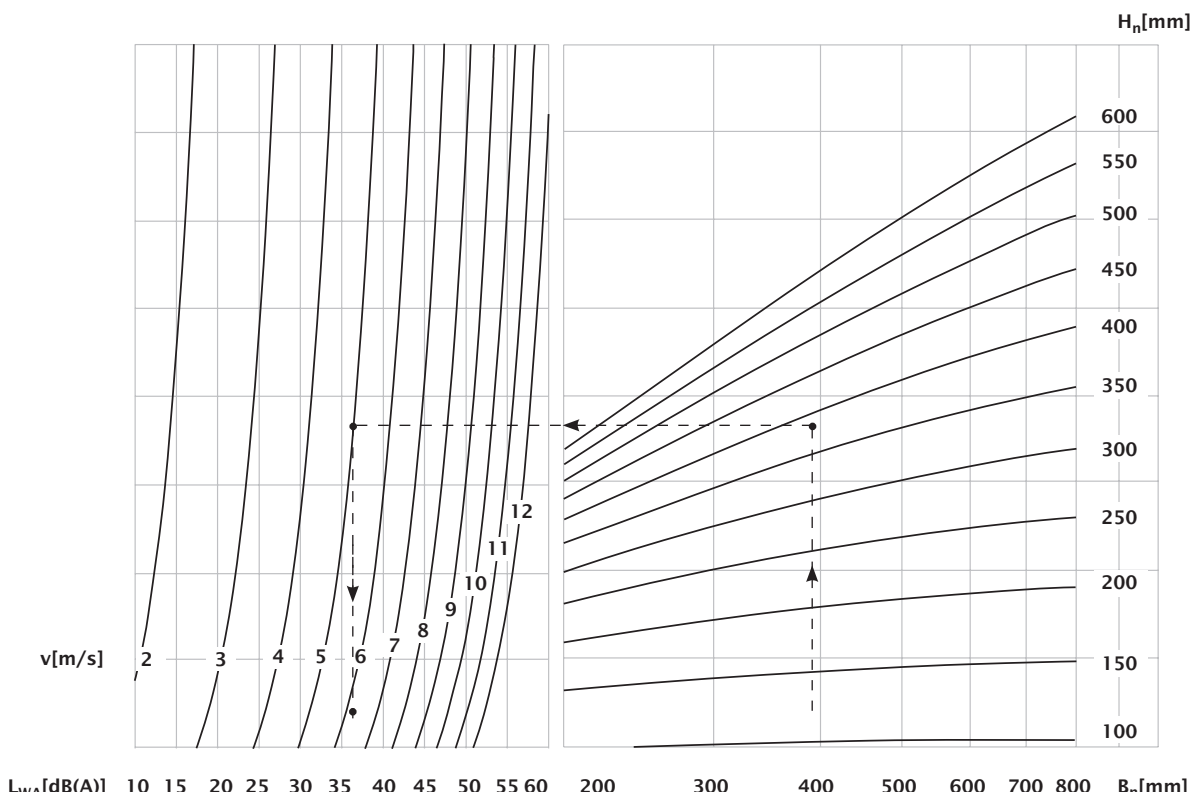
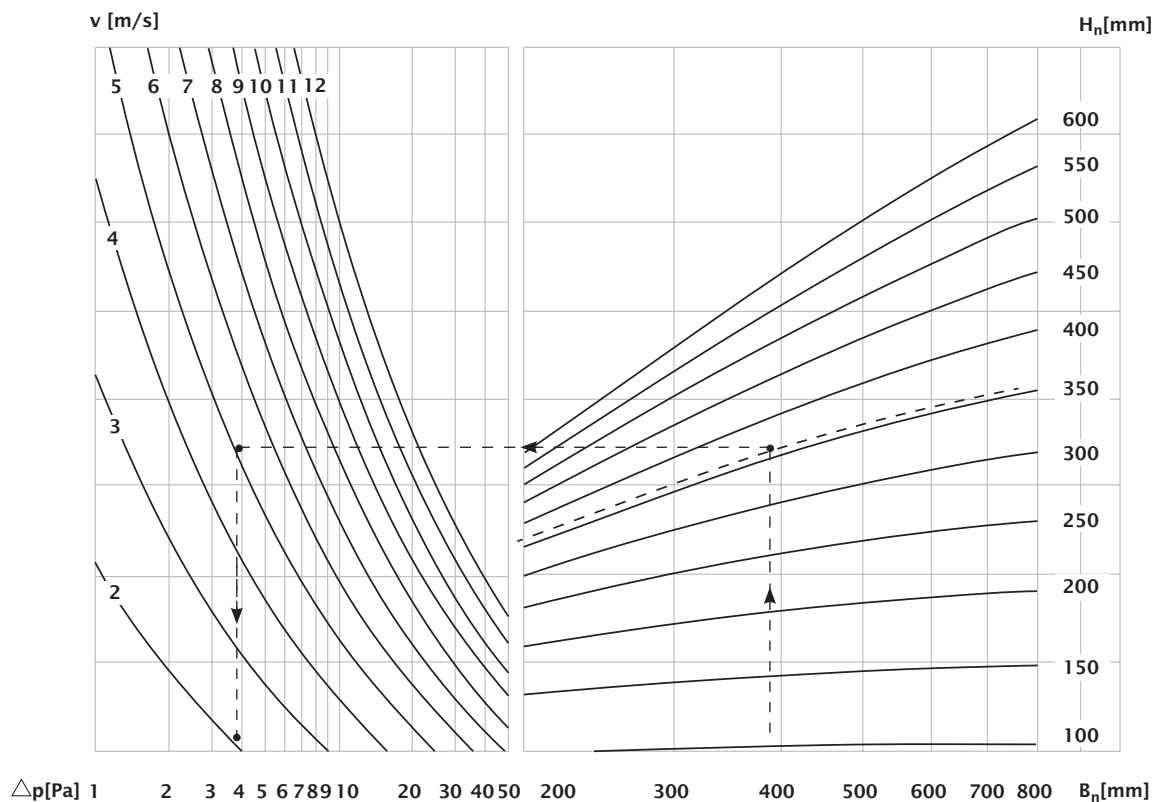
H\W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	5,0	5,4	5,8	6,1	6,5	6,9	7,2	7,6	8,0	8,4	8,7	9,1	9,5
150	5,5	5,9	6,4	6,8	7,2	7,6	8,1	8,5	8,9	9,4	9,8	10,2	10,6
200	6,0	6,5	6,9	7,4	7,9	8,4	8,9	9,4	9,9	10,3	10,8	11,3	11,8
250	6,5	7,0	7,5	8,1	8,6	9,2	9,7	10,2	10,8	11,3	11,9	12,4	12,9
300	6,9	7,5	8,1	8,7	9,3	9,9	10,5	11,1	11,7	12,3	12,9	13,5	14,1
350	7,4	8,1	8,7	9,4	10,0	10,7	11,3	12,0	12,6	13,3	13,9	14,6	15,2
400	7,9	8,6	9,3	10,0	10,7	11,4	12,2	12,9	13,6	14,3	15,0	15,7	16,4
450	8,4	9,2	9,9	10,7	11,4	12,2	13,0	13,7	14,5	15,3	16,0	16,8	17,5
500	8,9	9,7	10,5	11,3	12,2	13,0	13,8	14,6	15,4	16,2	17,1	17,9	18,7
550	9,4	10,2	11,1	12,0	12,9	13,7	14,6	15,5	16,4	17,2	18,1	19,0	19,8
600	9,9	10,8	11,7	12,6	13,6	14,5	15,4	16,4	17,3	18,2	19,1	20,1	21,0



Fire dampers

CU-LT-1s

Selection graph



Elaborated example p. 15



Fire dampers

CU-LT-1s

Pressure drop coefficient cu-lt-1s ζ [-]

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800
100	1,69	1,65	1,62	1,60	1,59	1,58	1,57	1,56	1,55	1,55	1,54	1,54	1,54
150	0,98	0,93	0,89	0,87	0,85	0,83	0,82	0,81	0,80	0,80	0,79	0,79	0,78
200	0,69	0,63	0,60	0,57	0,55	0,54	0,52	0,51	0,51	0,50	0,49	0,49	0,49
250	0,54	0,48	0,44	0,42	0,40	0,39	0,37	0,37	0,36	0,35	0,35	0,34	0,34
300	0,45	0,39	0,35	0,33	0,31	0,30	0,29	0,28	0,27	0,26	0,26	0,26	0,25
350	0,39	0,33	0,30	0,27	0,25	0,24	0,23	0,22	0,22	0,21	0,21	0,20	0,20
400	0,34	0,29	0,26	0,23	0,22	0,20	0,19	0,18	0,18	0,17	0,17	0,16	0,16
450	0,31	0,26	0,23	0,20	0,19	0,17	0,16	0,16	0,15	0,15	0,14	0,14	0,13
500	0,29	0,24	0,20	0,18	0,17	0,15	0,14	0,14	0,13	0,13	0,12	0,12	0,12
550	0,27	0,22	0,19	0,16	0,15	0,14	0,13	0,12	0,12	0,11	0,11	0,10	0,10
600	0,25	0,20	0,17	0,15	0,14	0,12	0,12	0,11	0,10	0,10	0,10	0,09	0,09

$$\Delta p = v^2 \times 0,6 \times \zeta \quad v = \frac{q}{A}$$

q = air flow in the duct [m³/h]

Δp = static pressure drop [Pa]

ζ = pressure drop coefficient zeta [-]

A = internal surface of the duct [m²]

v = air speed in the duct [m/s]

L_{WA} = A-weighted sound power level

H_n/B_n = Nominal height/width of the damper

Example:

Data: $H_n = 350$ mm $W_n = 400$ mm $v = 5$ m/s
 Required: $\Delta p = \text{ca. } 3,9$ Pa } cfr. selection graph CU-LT-1s
 $L_{WA} = \text{ca. } 36$ dB(A)
 Calculation: $\Delta p = (5\text{m/s})^2 \times 0,6 \times 0,25 = 3,75$ Pa

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Fire dampers

CU-LT-1s

Elaborated example of a pressure drop calculation Δp with air speed $v = 4\text{ m/s}$

$\Delta p[\text{Pa}]$	200	250	300	350	400	450	500	550	600	650	700	750	800
100	16,22	15,84	15,55	15,36	15,26	15,17	15,07	14,98	14,88	14,88	14,78	14,78	14,78
150	9,41	8,93	8,54	8,35	8,16	7,97	7,87	7,78	7,68	7,68	7,58	7,58	7,49
200	6,62	6,05	5,76	5,47	5,28	5,18	4,99	4,90	4,90	4,80	4,70	4,70	4,70
250	5,18	4,61	4,22	4,03	3,84	3,74	3,55	3,55	3,46	3,36	3,36	3,26	3,26
300	4,32	3,74	3,36	3,17	2,98	2,88	2,78	2,69	2,59	2,50	2,50	2,50	2,40
350	3,74	3,17	2,88	2,59	2,40	2,30	2,21	2,11	2,11	2,02	2,02	1,92	1,92
400	3,26	2,78	2,50	2,21	2,11	1,92	1,82	1,73	1,73	1,63	1,63	1,54	1,54
450	2,98	2,50	2,21	1,92	1,82	1,63	1,54	1,54	1,44	1,44	1,34	1,34	1,25
500	2,78	2,30	1,92	1,73	1,63	1,44	1,34	1,34	1,25	1,25	1,15	1,15	1,15
550	2,59	2,11	1,82	1,54	1,44	1,34	1,25	1,15	1,15	1,06	1,06	0,96	0,96
600	2,40	1,92	1,63	1,44	1,34	1,15	1,15	1,06	0,96	0,96	0,96	0,86	0,86

Elaborated example of a pressure drop calculation Δp with air speed $v = 7\text{ m/s}$

$\Delta p[\text{Pa}]$	200	250	300	350	400	450	500	550	600	650	700	750	800
100	49,69	48,51	47,63	47,04	46,75	46,45	46,16	45,86	45,57	45,57	45,28	45,28	45,28
150	28,81	27,34	26,17	25,58	24,99	24,40	24,11	23,81	23,52	23,52	23,23	23,23	22,93
200	20,29	18,52	17,64	16,76	16,17	15,88	15,29	14,99	14,99	14,70	14,41	14,41	14,41
250	15,88	14,11	12,94	12,35	11,76	11,47	10,88	10,88	10,58	10,29	10,29	10,00	10,00
300	13,23	11,47	10,29	9,70	9,11	8,82	8,53	8,23	7,94	7,64	7,64	7,64	7,35
350	11,47	9,70	8,82	7,94	7,35	7,06	6,76	6,47	6,47	6,17	6,17	5,88	5,88
400	10,00	8,53	7,64	6,76	6,47	5,88	5,59	5,29	5,29	5,00	5,00	4,70	4,70
450	9,11	7,64	6,76	5,88	5,59	5,00	4,70	4,70	4,41	4,41	4,12	4,12	3,82
500	8,53	7,06	5,88	5,29	5,00	4,41	4,12	4,12	3,82	3,82	3,53	3,53	3,53
550	7,94	6,47	5,59	4,70	4,41	4,12	3,82	3,53	3,53	3,23	3,23	2,94	2,94
600	7,35	5,88	5,00	4,41	4,12	3,53	3,53	3,23	2,94	2,94	2,94	2,65	2,65



Fire dampers

CU-LT-1s

Selection data CU-LT-1s

A-weighted sound power level L_{WA} of 45 dB(A) in the duct

S_n = Free air passage

Q = Air flow

Δp = Pressure drop

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	S_n [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	S_n [%]
	690	860	1030	1200	1360	1530	1700	1870	2030	2200	2370	2540	2700	Q [m ³ /h]
	93	90	88	87	85	84	84	83	82	82	82	82	81	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	S_n [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	S_n [%]
	940	1170	1390	1610	1840	2060	2290	2510	2730	2960	3180	3410	3630	Q [m ³ /h]
	24	23	22	21	20	20	20	19	19	19	19	19	18	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	S_n [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	S_n [%]
	1190	1470	1750	2030	2310	2590	2860	3140	3420	3700	3980	4260	4530	Q [m ³ /h]
	28	25	23	22	21	21	20	19	19	19	19	18	18	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	S_n [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	S_n [%]
	1440	1770	2100	2440	2770	3100	3430	3760	4090	4420	4750	5090	5420	Q [m ³ /h]
	21	18	16	15	14	14	13	13	12	12	12	12	11	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	S_n [m ²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	S_n [%]
	1690	2070	2450	2840	3220	3600	3990	4370	4750	5130	5520	5900	6280	Q [m ³ /h]
	16	14	12	11	10	10	9	9	9	8	8	8	8	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	S_n [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	S_n [%]
	1930	2370	2800	3240	3670	4100	4540	4970	5400	5830	6260	6700	7130	Q [m ³ /h]
	14	11	10	9	8	8	7	7	7	6	6	6	6	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	S_n [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	S_n [%]
	2170	2660	3150	3630	4110	4600	5080	5560	6040	6520	7000	7480	7960	Q [m ³ /h]
	12	9	8	7	7	6	6	5	5	5	5	5	5	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	S_n [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	S_n [%]
	2420	2960	3490	4020	4560	5090	5620	6150	6680	7200	7730	8260	8790	Q [m ³ /h]
	10	8	7	6	6	5	5	4	4	4	4	4	4	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	S_n [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	S_n [%]
	2660	3250	3830	4410	4990	5570	6150	6730	7300	7880	8460	9030	9610	Q [m ³ /h]
	9	7	6	5	5	4	4	4	4	3	3	3	3	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	S_n [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	S_n [%]
	2900	3540	4170	4800	5430	6060	6680	7300	7930	8550	9170	9790	10420	Q [m ³ /h]
	9	7	5	5	4	4	4	3	3	3	3	3	3	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	S_n [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	S_n [%]
	3140	3830	4510	5190	5860	6540	7210	7880	8550	9220	9880	10550	11220	Q [m ³ /h]
	8	6	5	4	4	3	3	3	3	3	2	2	2	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 45dB(A), for the respective dimension.





Fire dampers

CU-LT-1s

A-weighted sound power level L_{WA} of 40 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	560	700	840	970	1110	1250	1380	1520	1650	1790	1930	2060	2200	Q [m ³ /h]
	61	60	59	57	57	56	55	55	54	54	54	54	54	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	770	950	1130	1310	1490	1680	1860	2040	2220	2400	2590	2770	2950	Q [m ³ /h]
	30	28	26	25	24	24	23	23	23	22	22	22	22	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	970	1200	1420	1650	1880	2100	2330	2550	2780	3010	3230	3460	3690	Q [m ³ /h]
	19	17	15	15	14	14	13	13	13	12	12	12	12	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	1170	1440	1710	1980	2250	2520	2790	3060	3330	3600	3870	4130	4400	Q [m ³ /h]
	14	12	11	10	9	9	9	8	8	8	8	8	8	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m ²]
	96,97	98,51	99,53	100,25	100,79	101,21	101,55	101,82	102,05	102,24	102,40	102,54	102,67	Sn [%]
	1370	1680	2000	2310	2620	2930	3240	3550	3860	4170	4480	4790	5110	Q [m ³ /h]
	11	9	8	7	7	6	6	6	6	6	5	5	5	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1570	1930	2280	2630	2980	3340	3690	4040	4390	4740	5090	5440	5790	Q [m ³ /h]
	9	7	6	6	5	5	5	5	4	4	4	4	4	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1770	2160	2560	2950	3350	3740	4130	4520	4910	5300	5690	6080	6470	Q [m ³ /h]
	8	6	5	5	4	4	4	4	3	3	3	3	3	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1970	2400	2840	3270	3700	4140	4570	5000	5430	5860	6290	6720	7150	Q [m ³ /h]
	7	5	5	4	4	3	3	3	3	3	3	3	2	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	2160	2640	3120	3590	4060	4530	5000	5470	5940	6410	6870	7340	7810	Q [m ³ /h]
	6	5	4	4	3	3	3	3	2	2	2	2	2	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	2360	2880	3390	3900	4410	4920	5430	5940	6440	6950	7460	7960	8470	Q [m ³ /h]
	6	4	4	3	3	3	2	2	2	2	2	2	2	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	2560	3110	3670	4220	4770	5310	5860	6400	6950	7490	8040	8580	9120	Q [m ³ /h]
	5	4	3	3	2	2	2	2	2	2	2	2	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 40dB(A), for the respective dimension.



Fire dampers

CU-LT-1s

A-weighted sound power level L_{wa} of 35 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	460	570	680	790	900	1010	1120	1230	1350	1460	1570	1680	1790	Q [m³/h]
	41	40	39	38	37	37	36	36	36	36	36	36	36	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	620	770	920	1070	1220	1360	1510	1660	1810	1960	2100	2250	2400	Q [m³/h]
	19	18	17	17	16	16	15	15	15	15	15	15	14	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	790	970	1160	1340	1530	1710	1890	2080	2260	2450	2630	2810	3000	Q [m³/h]
	13	11	10	10	9	9	9	9	8	8	8	8	8	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	950	1170	1390	1610	1830	2050	2270	2490	2710	2920	3140	3360	3580	Q [m³/h]
	9	8	7	7	6	6	6	6	5	5	5	5	5	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	1120	1370	1620	1880	2130	2380	2640	2890	3140	3390	3650	3900	4150	Q [m³/h]
	7	6	5	5	5	4	4	4	4	4	4	4	3	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1280	1570	1850	2140	2430	2710	3000	3280	3570	3850	4140	4430	4710	Q [m³/h]
	6	5	4	4	4	3	3	3	3	3	3	3	3	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1440	1760	2080	2400	2720	3040	3360	3670	3990	4310	4630	4950	5260	Q [m³/h]
	5	4	4	3	3	3	3	2	2	2	2	2	2	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1600	1950	2310	2660	3010	3360	3710	4060	4410	4760	5110	5460	5810	Q [m³/h]
	5	4	3	3	2	2	2	2	2	2	2	2	2	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1760	2150	2530	2920	3300	3680	4060	4450	4830	5210	5590	5970	6350	Q [m³/h]
	4	3	3	2	2	2	2	2	2	2	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1920	2340	2760	3170	3590	4000	4420	4830	5240	5650	6060	6470	6880	Q [m³/h]
	4	3	2	2	2	2	2	1	1	1	1	1	1	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	2080	2530	2980	3430	3880	4320	4760	5210	5650	6090	6530	6970	7410	Q [m³/h]
	4	3	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 35dB(A), for the respective dimension.





Fire dampers

CU-LT-1s

A-weighted sound power level L_{WA} of 30 dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m ²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	370	460	550	640	730	820	910	1000	1090	1180	1270	1360	1450	Q [m ³ /h]
	27	26	25	25	24	24	24	24	24	24	24	24	23	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m ²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	510	630	750	870	990	1110	1230	1350	1470	1590	1710	1830	1950	Q [m ³ /h]
	13	12	11	11	11	10	10	10	10	10	10	10	10	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m ²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	640	790	940	1090	1240	1390	1540	1690	1840	1990	2140	2290	2440	Q [m ³ /h]
	8	7	7	6	6	6	6	6	6	5	5	5	5	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m ²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	780	950	1130	1310	1490	1670	1840	2020	2200	2380	2560	2730	2910	Q [m ³ /h]
	6	5	5	4	4	4	4	4	4	3	3	3	3	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m ²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	910	1110	1320	1530	1730	1940	2140	2350	2550	2760	2960	3170	3370	Q [m ³ /h]
	5	4	4	3	3	3	3	3	3	2	2	2	2	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m ²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	1040	1270	1510	1740	1970	2210	2440	2670	2900	3130	3370	3600	3830	Q [m ³ /h]
	4	3	3	3	2	2	2	2	2	2	2	2	2	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m ²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	1170	1430	1690	1950	2210	2470	2730	2990	3250	3500	3760	4020	4280	Q [m ³ /h]
	3	3	2	2	2	2	2	2	2	1	1	1	1	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m ²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1300	1590	1880	2160	2450	2730	3020	3300	3590	3870	4150	4440	4720	Q [m ³ /h]
	3	2	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m ²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1430	1750	2060	2370	2680	2990	3300	3610	3920	4230	4540	4850	5160	Q [m ³ /h]
	3	2	2	2	1	1	1	1	1	1	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m ²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1560	1900	2240	2580	2920	3250	3590	3920	4260	4590	4930	5260	5600	Q [m ³ /h]
	3	2	2	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m ²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	1690	2060	2420	2790	3150	3510	3870	4230	4590	4950	5310	5670	6030	Q [m ³ /h]
	2	2	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 30dB(A), for the respective dimension.



Fire dampers

CU-LT-1s

A-weighted sound power level LWA of 25dB(A) in the duct

H/W [mm]	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,0099	0,0127	0,0154	0,0182	0,0209	0,0237	0,0264	0,0292	0,0319	0,0347	0,0374	0,0402	0,0429	Sn [m²]
	54,29	55,15	55,72	56,13	56,43	56,67	56,85	57,00	57,13	57,24	57,33	57,41	57,48	Sn [%]
	310	380	450	520	600	670	740	820	890	960	1040	1110	1180	Q [m³/h]
	19	18	17	16	17	16	16	16	16	16	16	16	15	Δp [Pa]
150	0,0189	0,0242	0,0294	0,0347	0,0399	0,0452	0,0504	0,0557	0,0609	0,0662	0,0714	0,0767	0,0819	Sn [m²]
	67,65	68,73	69,44	69,95	70,33	70,62	70,85	71,04	71,20	71,33	71,45	71,54	71,63	Sn [%]
	410	510	610	710	810	900	1000	1100	1200	1290	1390	1490	1590	Q [m³/h]
	9	8	8	7	7	7	7	7	7	7	6	6	6	Δp [Pa]
200	0,0279	0,0357	0,0434	0,0512	0,0589	0,0667	0,0744	0,0822	0,0899	0,0977	0,1054	0,1132	0,1209	Sn [m²]
	74,13	75,31	76,09	76,65	77,06	77,38	77,63	77,84	78,01	78,16	78,29	78,39	78,49	Sn [%]
	520	640	770	890	1010	1130	1250	1370	1500	1620	1740	1860	1980	Q [m³/h]
	5	5	5	4	4	4	4	4	4	4	4	4	3	Δp [Pa]
250	0,0369	0,0472	0,0574	0,0677	0,0779	0,0882	0,0984	0,1087	0,1189	0,1292	0,1394	0,1497	0,1599	Sn [m²]
	77,95	79,20	80,02	80,60	81,03	81,37	81,64	81,85	82,04	82,19	82,32	82,44	82,53	Sn [%]
	630	780	920	1070	1210	1360	1500	1640	1790	1930	2080	2220	2370	Q [m³/h]
	4	3	3	3	3	3	2	2	2	2	2	2	2	Δp [Pa]
300	0,0459	0,0587	0,0714	0,0842	0,0969	0,1097	0,1224	0,1352	0,1479	0,1607	0,1734	0,1862	0,1989	Sn [m²]
	80,48	81,76	82,60	83,20	83,65	84,00	84,28	84,50	84,69	84,85	84,99	85,10	85,21	Sn [%]
	740	910	1070	1240	1410	1580	1740	1910	2080	2240	2410	2580	2740	Q [m³/h]
	3	3	2	2	2	2	2	2	2	2	2	2	2	Δp [Pa]
350	0,0549	0,0702	0,0854	0,1007	0,1159	0,1312	0,1464	0,1617	0,1769	0,1922	0,2074	0,2227	0,2379	Sn [m²]
	82,26	83,58	84,44	85,05	85,51	85,87	86,15	86,38	86,57	86,74	86,87	86,99	87,10	Sn [%]
	850	1040	1230	1420	1600	1790	1980	2170	2360	2550	2740	2930	3110	Q [m³/h]
	3	2	2	2	2	1	1	1	1	1	1	1	1	Δp [Pa]
400	0,0639	0,0817	0,0994	0,1172	0,1349	0,1527	0,1704	0,1882	0,2059	0,2237	0,2414	0,2592	0,2769	Sn [m²]
	83,60	84,93	85,81	86,43	86,90	87,26	87,55	87,78	87,98	88,14	88,28	88,41	88,51	Sn [%]
	950	1160	1380	1590	1800	2010	2220	2430	2640	2850	3060	3270	3480	Q [m³/h]
	2	2	2	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
450	0,0729	0,0932	0,1134	0,1337	0,1539	0,1742	0,1944	0,2147	0,2349	0,2552	0,2754	0,2957	0,3159	Sn [m²]
	84,63	85,98	86,87	87,50	87,98	88,34	88,63	88,87	89,07	89,23	89,38	89,50	89,61	Sn [%]
	1060	1290	1530	1760	1990	2220	2450	2690	2920	3150	3380	3610	3840	Q [m³/h]
	2	2	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
500	0,0819	0,1047	0,1274	0,1502	0,1729	0,1957	0,2184	0,2412	0,2639	0,2867	0,3094	0,3322	0,3549	Sn [m²]
	85,46	86,82	87,72	88,36	88,83	89,20	89,49	89,73	89,93	90,10	90,25	90,37	90,48	Sn [%]
	1160	1420	1680	1930	2180	2430	2690	2940	3190	3440	3690	3940	4200	Q [m³/h]
	2	1	1	1	1	1	1	1	1	1	1	1	1	Δp [Pa]
550	0,0909	0,1162	0,1414	0,1667	0,1919	0,2172	0,2424	0,2677	0,2929	0,3182	0,3434	0,3687	0,3939	Sn [m²]
	86,13	87,50	88,41	89,05	89,53	89,90	90,20	90,44	90,64	90,81	90,96	91,08	91,19	Sn [%]
	1270	1550	1820	2100	2370	2650	2920	3190	3460	3730	4010	4280	4550	Q [m³/h]
	2	1	1	1	1	1	1	1	1	1	1	1	0	Δp [Pa]
600	0,0999	0,1277	0,1554	0,1832	0,2109	0,2387	0,2664	0,2942	0,3219	0,3497	0,3774	0,4052	0,4329	Sn [m²]
	86,69	88,07	88,99	89,63	90,11	90,49	90,79	91,03	91,23	91,40	91,55	91,68	91,79	Sn [%]
	1380	1670	1970	2270	2560	2860	3150	3440	3730	4030	4320	4610	4900	Q [m³/h]
	2	1	1	1	1	1	1	1	1	1	0	0	0	Δp [Pa]

Every air flow lower than the above mentioned maximum value, will meet the listed A-weighted sound power level 25dB(A), for the respective dimension. Additional data can be consulted on our website.





Fire dampers

CU-LT-1s

Correction factor ΔL

To obtain the sound power level for the $L_{W \text{ oct}}$ octave midband

L_{WA} = A-weighted sound power level

ΔL = Correction factor

$L_{W \text{ oct}}$ = Sound power level for each octave midband

$$L_{W \text{ oct}} = \Delta L + L_{WA}$$

[Hz]	63	125	250	500	1000	2000	4000	8000
2 - 4 m/s	22	9	-2	-11	-18	-21	-17	-8
6 - 8 m/s	17	10	1	-4	-8	-13	-19	-21
10 - 12 m/s	15	9	0	-4	-7	-10	-14	-20

Deduct L_{WA} from the selection graph on page 360.



Fire dampers

CU-LT-1s

Operating mechanism

MFUSP: operating mechanism with fusible link

The operating mechanism MFUSP automatically unlocks the blade when the temperature in the duct exceeds 72°C.

The damper needs to be rearmed manually.

- Standard:**
- Fusible link 72° C
 - Manual unlocking possible
 - Manual rearmation, use the rearmation handle turn clockwise)
 - IP42
- Options:**
- FDCU: Unipolar begin and end of range switches



fig. CU-LT-1s + MFUSP

MMAG: upgradable automatic / remote controlled operating mechanism with fusible link

The operating mechanism MMAG automatically unlocks the blade when the temperature in the duct exceeds 72°C by sending an electrical impulse (VD) or a by interrupting the power supply (VM) to the magnet. Manual or motorized rearmation (ME MMAG).

- Standard:**
- Fusible link 72° C
 - Manual unlocking possible
 - Manual rearmation, use a rearmation handle (turn clockwise)
 - IP42
- Options:**
- Remote controlled by means of a dual voltage magnet 24/48V
- Types of magnets:**
- VD = natural magnet
 - VM = electromagnet
- FDCU : Unipolar begin and end of range switches
 - FDCB : Bipolar begin and end of range switches
 - ME : Rearmation motor



fig. CU-LT-1s + MMAG

BLF(T) : spring-return actuator (with thermo-electric fuse)

When connected to the power supply, the actuator moves the blade into its standby position (open). When the power is interrupted, an internal armed spring closes the blade (safety position).

If the motor is equipped with a thermo-electric fuse BLFT, this will interrupt the power supply when the temperature in the duct exceeds 72°C.

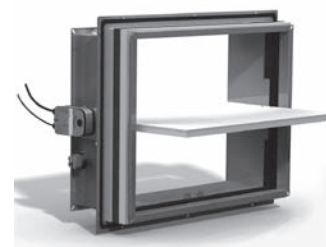







fig. CU-LT-1s + BLF(T)

Technical data

Operating mechanism	CU-LT-1s MFUSP	CU-LT-1s MMAG	CU-LT-1s BLF(T)
Description	Automatic fire damper	Upgradable automatic and remote controlled damper	Motorized remote controlled damper with spring-return actuator
Certifications	 		 
Classification	Fire resistance : - EI 120 (ve i↔o) S : range until 800 x 600 : Mounting in rigid wall min. 100 mm - EI 90 (ve i↔o) S : range until 800 x 600 : Mounting in flexible wall 120' min. 100 mm - EI 120 (ho i↔o) S : range until 800 x 600 : Mounting in rigid floor/ceiling min. 110 mm Pressure during test : 500 Pa		

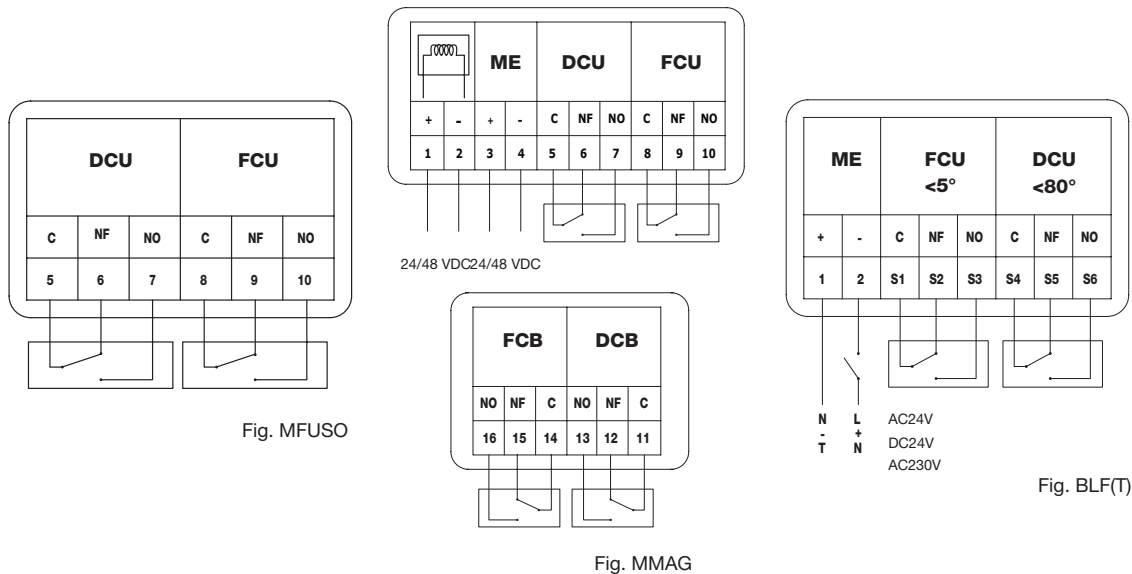




Fire dampers

CU-LT-1s

Electrical connections



MFUSP	MMAG	BLF(T)
Power supply MFUSP	Power supply motor/ magnet MMAG	Power supply motor BLF(T)
n.a.	Rearmation motor (ME): 24/48 VDC (automatic switch) Magnet: 24/48 VDC (automatic switch)	BLF(T)24: 24VAC / 24VDC BLF(T)230: 230VAC
Power consumption	Power consumption	Power consumption
n.a.	Rearmation motor (ME): 24VDC : Pmax = 10W 48VDC : Pmax = 15W	BLF(T)24: motoring: 5W holding: 2,5W
n.a.	Magnet: VM: Pnom = 1,5W VD: Pmax = 3,5W	BLF(T)230: motoring: 6W holding: 3W
Position switches	Position switches	Position switches
Standard: 1mA...1A, DC 5V...AC 48V	Standard: 1mA...500mA, DC 5V...AC 48V	Standard: 1mA...3A, DC 5V...AC 250V SN2: 1mA...3A, DC 5V...AC 250V
Running time	Running time	Running time
motor: n.a spring: 1s	Motor: < 30 s spring: 1s	motor: 40 ... 75s spring: 20s
Noise level	Noise level	Noise level
n.a.	Motor: max 66 DB (A)	motor: max 45 dB (A) spring: ca. 62 dB (A)
Degree of protection	Degree of protection	Degree of protection
IP 45	IP 45	IP 54



Fire dampers

CU-LT-1s

Position of the thermo-electric fuse for BLFT(T)

Height	Width	Position
≤ 300mm	= 200mm	on the side opposite to the mechanism
	> 200mm	on the W-side next to the inspection shutter
> 300mm		on the same side of the mechanism

The mechanism is always mounted on the H-side.

Standard:

- Thermo-electric fuse 72°C for BLFT
- Motorized unlocking and rearmation
- Manual rearmation possible, use the enclosed handle turn clockwise
- 24V or 230V
- Integrated unipolar begin and end of range switches
- IP 54

Options:

- SN2 Bipolar begin and end of range switches
- ST plug

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Fire dampers

CU-LT-1s



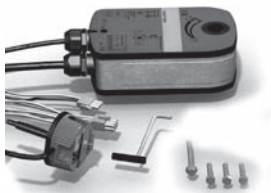


Evolution kits

1		KITS MFUSP	
		Automatic operating mechanism MFUSP with fusible link 72°C	
2		KITS FUS 72 MFUS(P)	
3		Fusible link 72°C for MFUS(P)	
4		KITS FDCU MFUS(P)	
5		Unipolar beginning and end of range switches FDCU for MFUS(P)	
6		KITS MMAG	
7		Upgradable operating mechanism MMAG with fusible link 72°C	
8		KITS FUS 72 MMAG	
9		Fusible link 72°C for MMAG	
10		KITS VD MMAG FDCU	KITS VM MMAG FDCU
11		Magnet VD24/48, VM24/48 with FDCU for MMAG	
12		KITS ME MMAG	
13		Rearmation motor ME 24/48 for MMAG	
14		KITS FDCU MMAG	
15		Unipolar beginning and end of range switches FDCU for MMAG	
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Fire dampers

CU-LT-1s

	KITS FDCB MMAG	
	Bipolar beginning and end of range switches FDCB for MMAG	
	KITS BLF 24	KITS BLF 24-ST
	KITS BLF 230	
	Actuator Belimo BLF 24V/230V or BLF 24V with plug (ST), without thermo-electric fuse (T)	
	KITS BLFT 24	KITS BLFT 24-ST
	KITS BLFT 230	
	Actuator Belimo BLF 24V/230V or BLF 24V with plug (ST) and thermo-electric fuse (T)	
	KITS SN2 BLF	
	Bipolar beginning and end of range switches FDCB for BLF actuator	
	KITS BAE 72	
	Thermo-electric fuse 72°C (T) for Belimo BLFT 24V	

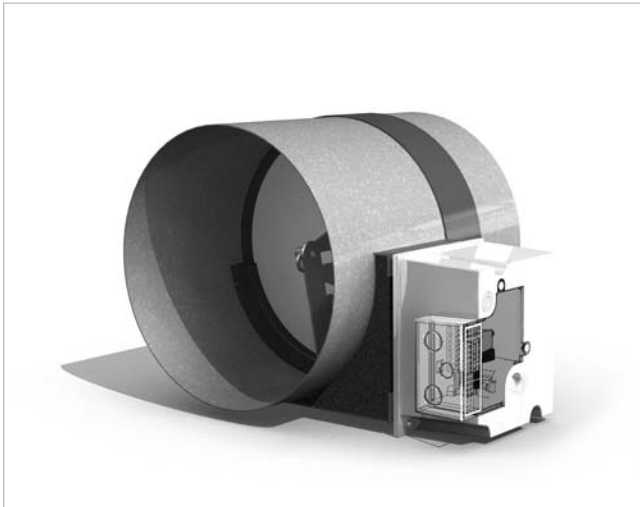
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Smoke evacuation

VR2

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Description

The VR2 is a circular smoke evacuation damper, normally closed, remote controlled and fire resistant in closed position. The damper opens in case of fire to permit smoke evacuation.

Standard

Steel tunnel

Damper blade

Operating mechanism with:

- manual command
- manual locking
- blade position indicator
- identification label
- electric connections

Rubber sealing ring

Blade bumper

Intumescent packing

Transmission with locking open/closed

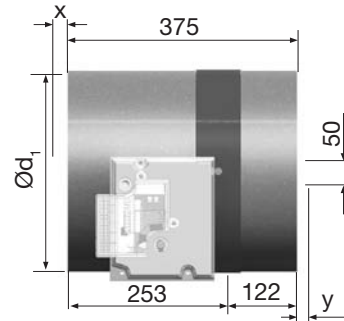
Fire resistance

2 hours

Ordering example

	VR2	315	24	BLF
Product				
Dimension Ød ₁				
Voltage				
Motor type				

Dimensions



	Exceeding damper blade
$x = \text{Ød}_1/2 - 253 \text{ mm}$	if $\text{Ød}_1 \geq 560\text{mm}$
$y = \text{Ød}_1/2 - 122 \text{ mm}$	if $\text{Ød}_1 \geq 250\text{mm}$

Ød ₁ nom
200
250
315
355
400
450
500
560
630

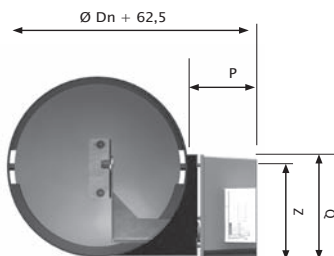


Smoke evacuation

VR2

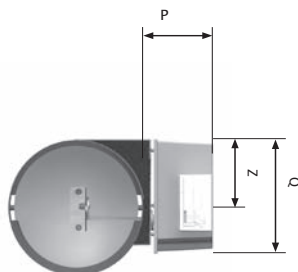
Technical data for the motors

$\varnothing d_1 \geq 315 \text{ mm}$



	MANF (+ME)	BF	DB
P	115	85	115
Q	190	250	250
Z	180	170	175

$\varnothing d_1 < 315 \text{ mm}$



	MANF (+ME)	BF	DB
P	115	85	115
Q	190	250	250
Z	185	-	80

Installation

- Placement in rigid wall with horizontal or vertical axis
- Approval for mounting in rigid ceiling and floor
- Provide an additional zone of 200 mm to have free access to the mechanism
- Avoid deflection of the tunnel while sealing the damper
- Installation and air movement may be from either direction
- Verify the free movement of the blade
- Installation according to test report
- On the side of the mechanism the damper extends 230 mm from the wall
- Minimal size of installation opening = $\varnothing d_1 + 50 \text{ mm}$

Mechanism

MANF

Remote controlled command

BF/DB

Springreturn actuator 24/230 V page

Function

See MEC page 381.

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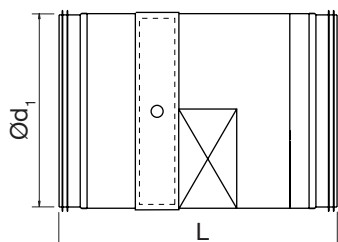
Smoke evacuation

VR2

Variants for VR2

Round connection with rubber sealing ring.

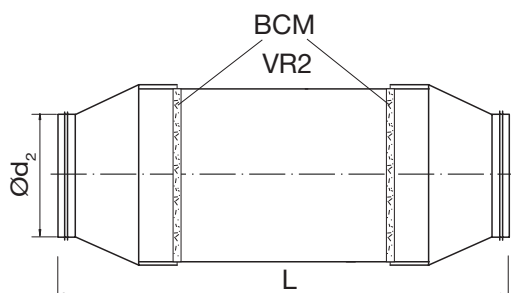
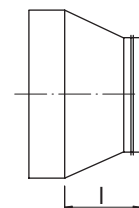
RCJ



$\varnothing d_1$	L
200	447
250	487
315	497
355	487
400	527
450	527
500	517
560	517
630	527

Reducer for connection on a duct with a smaller diameter than the damper.

RCVF



$\varnothing d_2$	$\varnothing d$ VR2	L	I
80	200	665	145
100	200	545	85
125	200	525	75
160	200	495	60
180	200	595	110
224	250	625	125

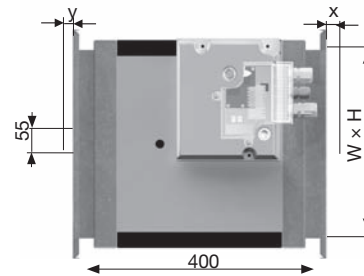


Smoke evacuation

VU2



Dimensions



Description

The VU2 is a fire resistant smoke evacuation damper with a normally closed position. The damper opens in case of fire to permit smoke evacuation. The VU2 has a fire resistance up to 120 minutes. The smoke evacuation damper can be equipped with a remote controlled mechanism or a motorised mechanism.

Standard

Connection frame PG30

Casing from refractory material

Damper blade

Operating mechanism with:

- manual command
- manual locking
- blade position indicator
- identification label
- electric connections

Rubber sealing ring

Blade bumper

Intumescent packing

Transmission with locking open/closed

Fire resistance

2 hours

Ordering example

	VU2	600	500	24	MANF
Product					
Width					
Height					
Voltage					
Motor type					

	Exceeding damper blade
$x = H/2 - 274 \text{ mm}$	if $H \geq 550\text{mm}$
$y = H/2 - 148 \text{ mm}$	if $H \geq 300\text{mm}$

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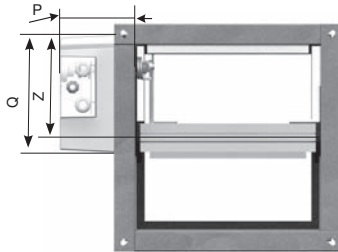


Smoke evacuation

VU2

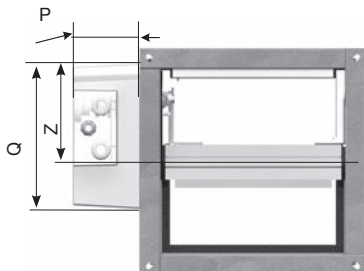
Technical data for the motors

H ≥ 300 mm



	MANF (+ME)	BF	DB
P	115	85	115
Q	190	250	250
Z	180	170	175

H < 300 mm



	MANF (+ME)	BF	DB
P	115	85	115
Q	190	250	250
Z	185	-	80

Installation

- Placement in rigid wall with horizontal or vertical axis
- Approval for mounting in rigid ceiling and floor
- Provide an additional zone of 200 mm to have free access to the mechanism
- Install the damper perpendicularly and avoid deflection of the tunnel
- Installation and air movement may be from either direction
- Verify the free movement of the blade
- Installation according to test report
- On the side of the mechanism the damper extends 240 mm from the wall
- Minimal size of installation opening
= (W+100) × (H+100) mm

Mechanism

MANF

Remote controlled command

BF/DB

Springreturn actuator 24/230 V

Function

See MEC page 381.

VU2/B

Battery assembly

A damper in battery assembly is a composition of several dampers VU2 with maximum 6 individual smoke evacuation dampers.

VU2L

Elongated duct

The damper VU2L is a damper VU2 of which the duct is extended along one or both sides.

Applications

- The smoke evacuation damper blade must not extend beyond one or both sides of the duct
- to allow an easy connection in case of a thick wall
- to allow the installation of a grill on the damper duct

Options

EQ – Equipotential connection

UL – Inspection shutter



Smoke evacuation

VAN1V



Description

The “VANTAGE”-shutters are used for the smoke evacuation in residential buildings in order to facilitate a safe evacuation of people.

Standard

- locking mechanism
- connection box
- blocking
- 1 shutter [1V]
- hinge
- front frame
- gaz spring (type ceiling)

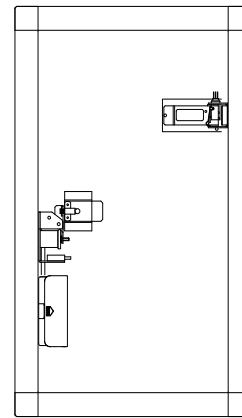
Options

- begin of range switch
- end of range switch

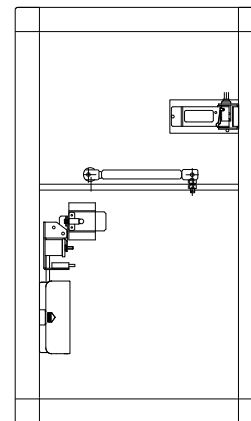
Ordering example

	VANTAGE 1	400	505
Product			
Width			
Height			

1V



1V/P



Fire resistance

Type	1h	1h 30	2h
	Finishing frame obligated		
Wall mounting	VANTAGE - 1H/2V		VANTAGE - 2H/2V
Wall mounting motorised	VANTAGE - 1H/1V/M + ME		VANTAGE - 2H/1V/M +ME
Ceiling mounting	VANTAGE - 1H/2V/P	VANTAGE - 1H30/2V/P	

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Smoke evacuation

VAN1V

Installation

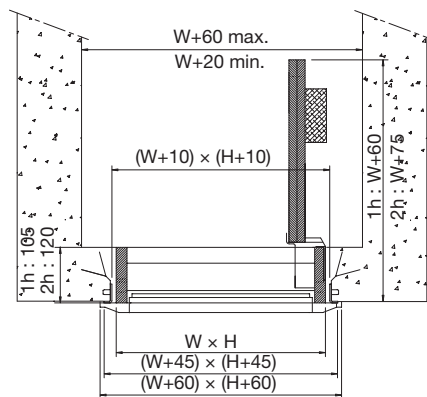
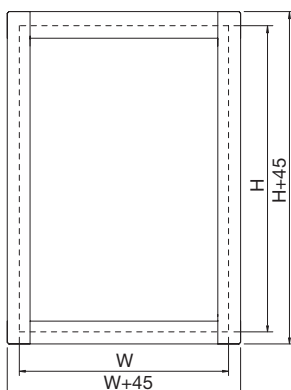
- Respect the top/bottom indication
- Cable-entry via a hole drilled in the refractory casing in one of the corners of the metallic front frame
- Direction of installation: mechanism on the fire-free side
- Verify the free movement of the blade

H/W [mm]	300	350	390	400	450	500	550	600
385								
415								
445								
475								
505								
535								
565								
595								
625								
655								
685								
715								
745								
775								

Reversible models

- (W+10) × (H+10)
- (W+20) × (H+20)
- CF 1h: W+60, CF 2h: W+75
- (W+45) × (H+45)
- (W+60) × (H+60)

- Installation space without build in frame
- Installation space with build in frame
- Depth opened shutter
- Ext. dimensions shutter
- Ext. dimensions grill





Smoke evacuation

VAN2V



Description

The “VANTAGE”-shutters are used for the smoke evacuation in residential buildings in order to facilitate a safe evacuation of people.

Standard

- centre support
- locking mechanism
- connection box
- blocking
- 2 shutters [2V]
- hinge
- front frame
- gaz springs (type ceiling)

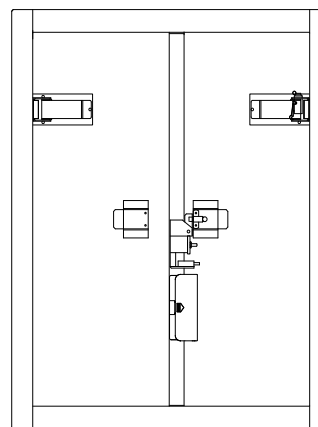
Options

- begin of range switch
- end of range switch

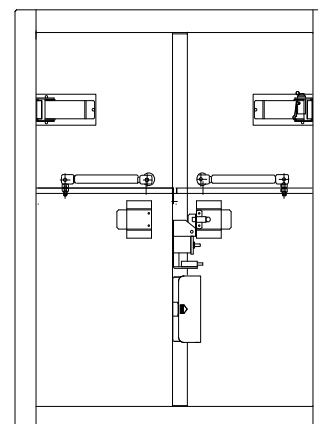
Ordering example

	VANTAGE 1	400	505
Product			
Width			
Height			

2V



2V/P



Fire resistance

Type	1h	1h30	2 h
	Finishing frame obligated		
Wall mounting	VANTAGE - 1H/2V		VANTAGE - 2H/2V
Ceiling mounting	VANTAGE - 1H/2V/P	VANTAGE - 1H30/2V/P	

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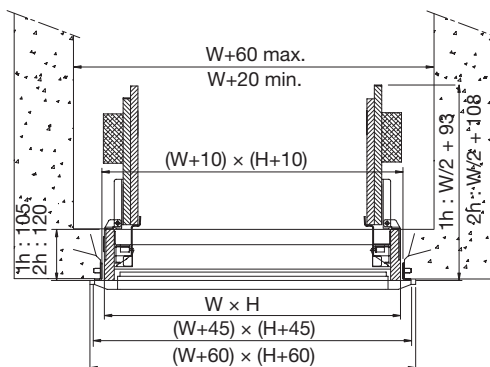
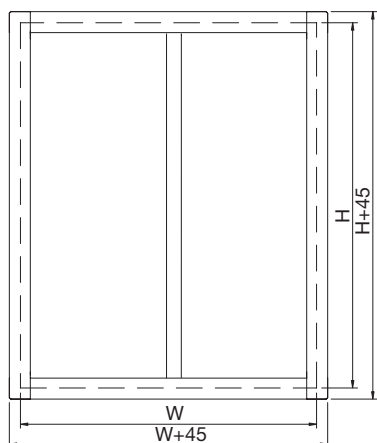
Smoke evacuation

VAN2V

Installation

- Respect the top/bottom indication
- Cable-entry via a hole drilled in the refractory casing in one of the corners of the metallic front frame
- Direction of installation: mechanism on the fire-free side
- Verify the free movement of the blade

(W+10) × (H+10)	Installation space without build in frame
(W+20) × (H+20)	Installation space with build in frame
CF 1h: W+60, CF 2h: W+75	Depth opened shutter
(W+45) × (H+45)	Ext. dimensions shutter
(W+60) × (H+60)	Ext. dimensions grill





Smoke evacuation

MEC

MANF (+ME)

The unlocking mechanism MANF unlatches the smoke evacuation damper blade via remote control by sending an electric impulse (VD) or by interruption (VM) of the magnet's power supply.

By unlocking, the internal torsion spring unwinds and releases the damper blade into its safety position

To indicate the open or closed position of the fire damper blade, the mechanism is standard provided with an end and begin of range switch FDCU.

The rearmation has to be done manually (MANF).

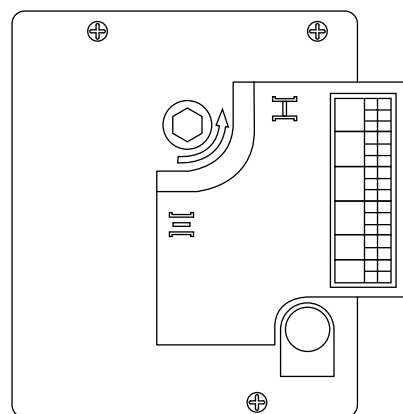
The rearmation can be done by a remote controlled electric rearmation motor ME.

Type of magnet

VD: natural magnet

VM: electromagnet

	VM24	VM48	VD24	VD48
Voltage	24 Vdc	48 Vdc	24 Vdc	48 Vdc
Capacity	1,5 W interruption of current		3,5 W impulse of current	



	ME	FCU	DCU	FCB	DCB
1	+	NF	NF	NF	NF
2	-	ND	ND	ND	ND
3	+/-	C	C	C	C
4	-/+	NF	NF	NF	NF
5	-	ND	ND	ND	ND
6	+	C	C	C	C
7		NF	NF	NF	NF
8		ND	ND	ND	ND
9		C	C	C	C
10		NF	NF	NF	NF
11		ND	ND	ND	ND
12		C	C	C	C
13		NF	NF	NF	NF
14		ND	ND	ND	ND
15		C	C	C	C
16		NF	NF	NF	NF

Unlocking

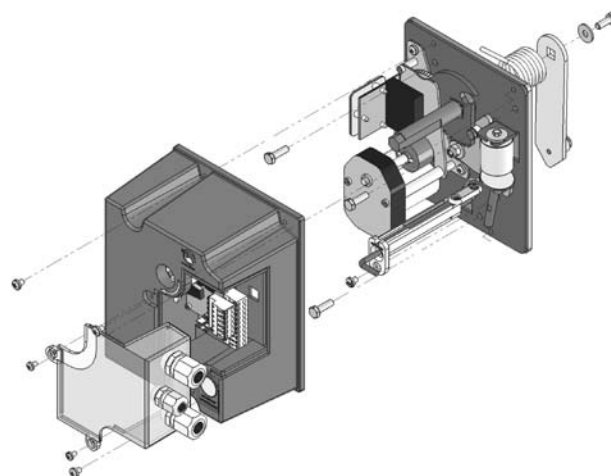
- Manually : by pressing the yellow button
- Remote control : by an electric impulse (VD) or by interruption (VM) of the magnets power supply

Rearmation

- Manually : turn 90° with hexagon key 13 mm
A magnet with interruption (VM) needs power supply for rearmation
- By electric rearmation motor

MANF (+ME) pg C/35

Voltage	24/48 Vdc ± 10% 24/48 Vac ± 10%
I_{rms}	1A
I_{max}	± 1,5A



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Smoke evacuation

MEC



BF – Belimo

When connected to the power supply the servomotor moves the smoke evacuation damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

	BF 24	BF 230
Voltage	24 Vdc -10% +20% 24 Vac ±20%	230 Vac ±15%
Consumption holding	2 W	3 W
Consumption rearmation	7 W	8 W
Capacity	10 VA	12,5 VA

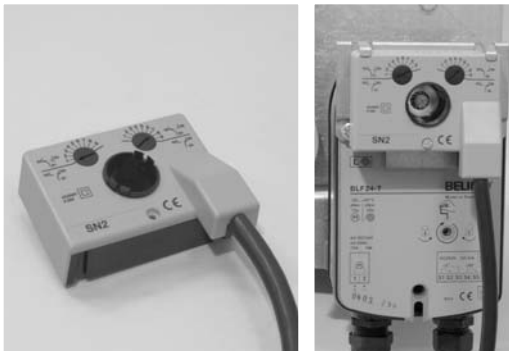


BF24 BF230 24V 230V	BF24-ST 24V + plug
	

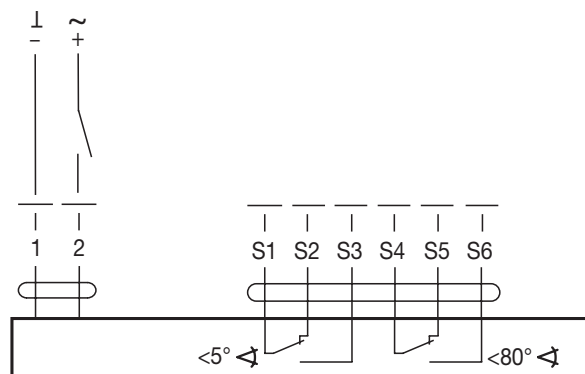
Option

Bipolar end and begin of range switches

SN2



BF





Smoke evacuation

MEC

DB – Joventa

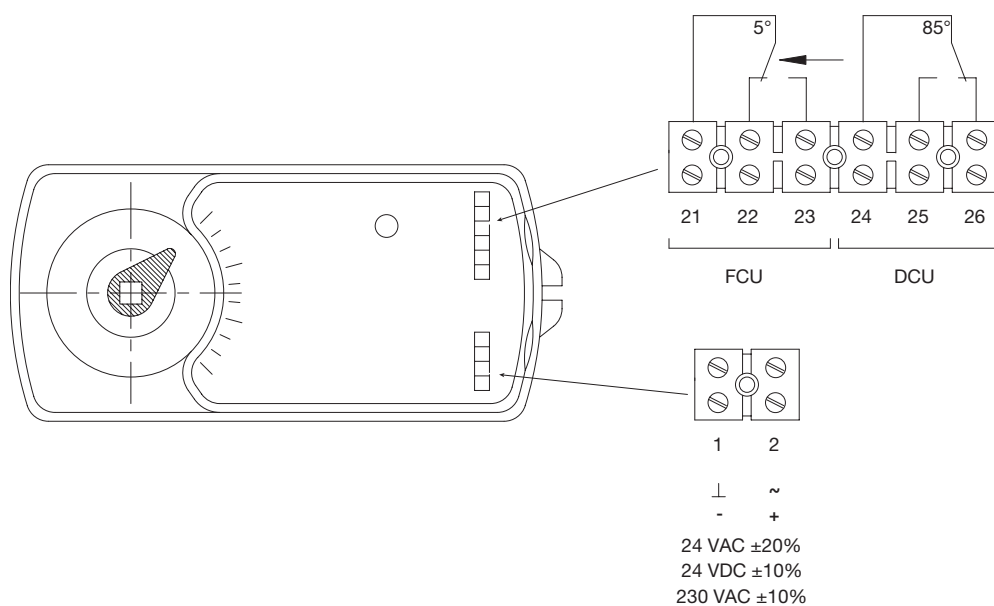
When connected to the power supply the servomotor moves the smoke evacuation damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

	DB 24	DB 230
Voltage	24 Vdc ±10% 24 Vac ±20%	230 Vac ±10%
Consumption holding	4 W	4,5 W
Consumption rearmation	10 W	8 W
Capacity	18 VA	13 VA



DB



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Smoke evacuation

MEC

EX – Schischek

When connected to the power supply the explosion proof motor moves the smoke evacuation damper blade into its stand-by position.

When the power is interrupted, the internal armed spring returns the damper blade into its safety position.

For deflagration risk between several risk areas are distinguished:

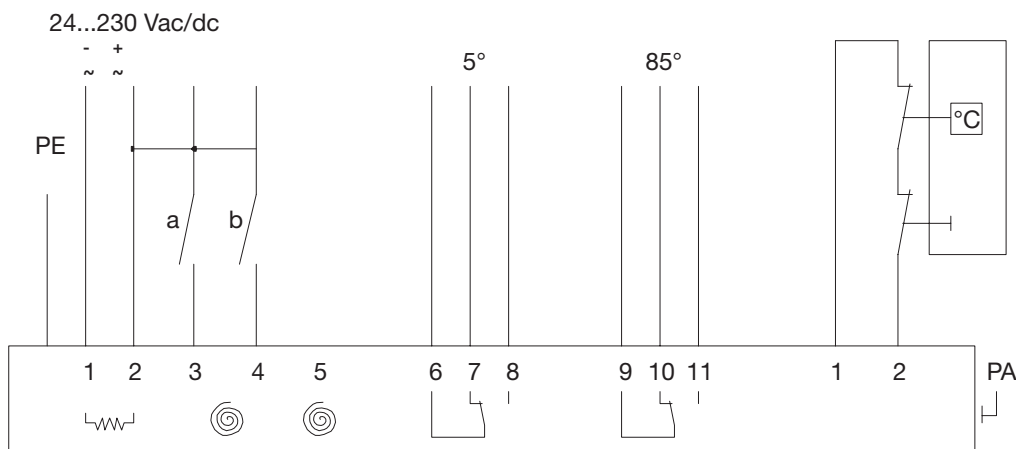
- Zone 1/21 :
midling risk of explosion
>100h/year explosive surroundings
- Zone 2/22 :
low risk of explosion
<10h/year of explosive surroundings



	EX 24/230
Voltage	24...230 Vac/Vdc +15%/-20%
I_{rms}	24V: 1,45A 230V: 0,3A

RMEX	EMEX
RedMax 24V/230V	ExMax 24V/230V
Zone 2/22	Zone 1/2/21/22
Explosion proof ACTUATOR for VR2/VU2	

EX





Air valves



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Supply air Diffusers



VTK 391



VTKR 395



VTTB 393

Valves



KPT 396



KI 399



KIR 402

Supply and exhaust air Valve



TAV 407

Exhaust air Valves



KVB 410



KVG 413



KU 416



KSU 419



KSUL 422



KSUB 425



KPF 428



KDPF 431

No air Cover



TLO 433

Sockets



VRFU 434



VRFM 435



VRGU 436



VRGL 437



VRGM 438






















VRR 439



VAK 440












































Overview diffusers, valves and cover

				Connects to							
Unit				Socket with thread for units with bayonet holder			Socket with groove for units with spring holder		Cover socket with groove for units with wire spring holder	Smooth socket for units with plate spring holder	Duct/Fitting
Supply air	VTK	Diffuser					VRFU 	VRFM 	VRR 		
	VTTB	Diffuser					VRFU 	VRFM 	VRR 		
	KPT	Valve								IL 	Duct/Fittings
	KI	Valve		VRGU 	VRGL 	VRGM 					
	KIR	Valve		VRGU 	VRGL 	VRGM 					
Supply and exhaust air	TAV	Valve									Duct

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				Connects to							
Unit				Socket with thread for units with bayonet holder			Socket with groove for units with spring holder		Cover socket with groove for units with wire spring holder	Smooth socket for units with plate spring holder	Duct/Fitting
Exhaust air	KVB	Valve					VRFU 	VRFM 	VRR 		
	KDPF	Valve		VRGU 	VRGL 	VRGM 	VRFU 	VRFM 	VRR 		
	KVG Ø 100–160	Valve					VRFU 	VRFM 	VRR 		
	KVG Ø 200	Valve		VRGU 	VRGL 	VRGM 					
	KU	Valve		VRGU 	VRGL 	VRGM 					
	KSU	Valve		VRGU 	VRGL 	VRGM 					
	KSUL	Valve		VRGU 	VRGL 	VRGM 					
	KSUB	Valve and fire damper		VRGU 	VRGL 	VRGM 					
	KPF	Valve								IL 	Duct/Fittings
	No air	TLO	Cover					VRFU 	VRFM 	VRR 	



Diffuser

VVTK



Description

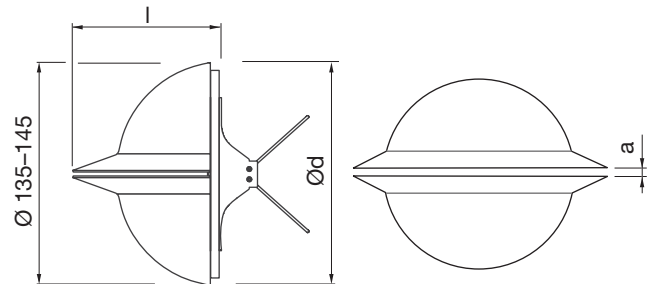
Diffuser for supply air.
Designed for wall mounting.
Spring holders connect to socket VRFU, VRFM or VRR.

* For Ø125 the outer part of the brim of the socket is visible.
If this is not acceptable the cover plate VVTKR can be used
to hide the brim.

Material
Painted galvanized sheet metal.

Colour
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	l mm	m kg
100	90	0,31
125 *	90	0,31

Ordering example

Product	VVTK	100
Dimension Ød		

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Diffuser

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], throw length, $l_{0,2}$ [m], and

A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graph.

Note! The A-weighted sound power level, L_{WA} , will increase by 3 dB when the valve is mounted in a bend.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Diffuser mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-2	-7	-7	-4	-4	-7	-10	-14
125	Duct	-2	-7	-7	-4	-4	-7	-10	-14

Sound attenuation, ΔL , [dB]

Ød nom	Diffuser mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	24	20	18	12	10	10	10	10
125	Duct	24	20	18	12	10	10	10	10

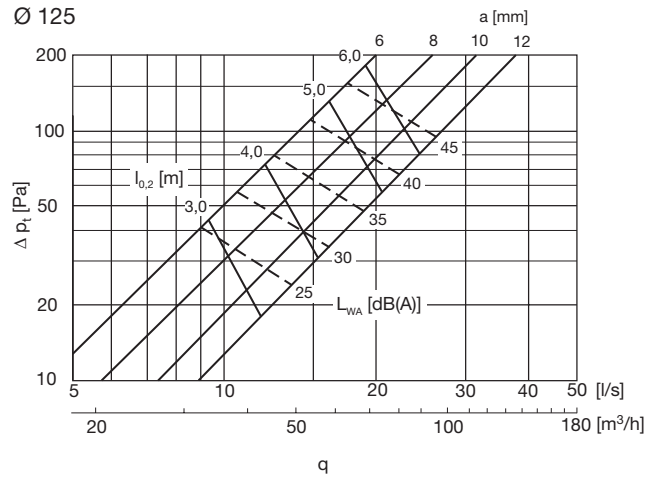
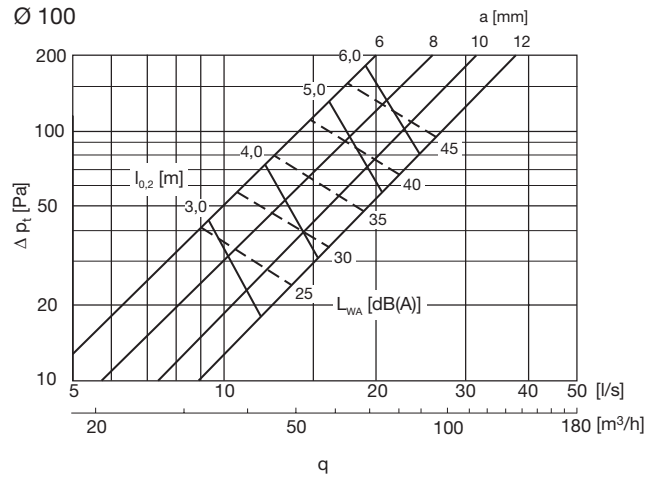
Air jet diffusion pattern

Maximum vertical width, $b_v = 0,1 \times l_{0,2}$ m

Maximum horizontal width, $b_h = 0,6 \times l_{0,2}$ m

Measurement of air flow

Data is available in a separate brochure.



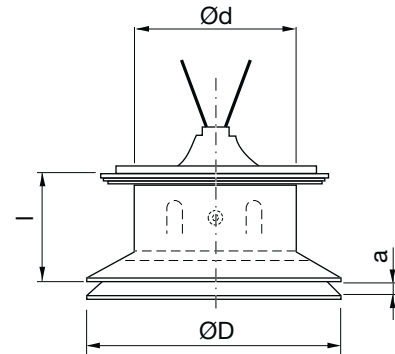


Diffuser

VTTB



Dimensions



Description

Diffuser for supply air.
 Designed with a prolonged neck for ceiling mounting. Is equipped with a fixed blanking-off segment for preventing the air flow in a desired direction.
 Spring holders connect to socket VRFU, VRFM or VRR.

Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Ød nom	ØD mm	l mm	m kg
100	155	70	0,44
125	185	76	0,60
160	226	83	0,85

Ordering example



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Diffuser

VTTTB

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], throw length, $l_{0,2}$ [m], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Note! The A-weighted sound power level, L_{WA} , will increase by 3 dB when the valve is mounted in a bend.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Diffuser mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-2	-7	-7	-4	-5	-5	-13	-20
125	Duct	-1	-2	-3	-3	-4	-7	-13	-16
160	Duct	1	2	-2	-2	-4	-9	-14	-9

Sound attenuation, ΔL , [dB]

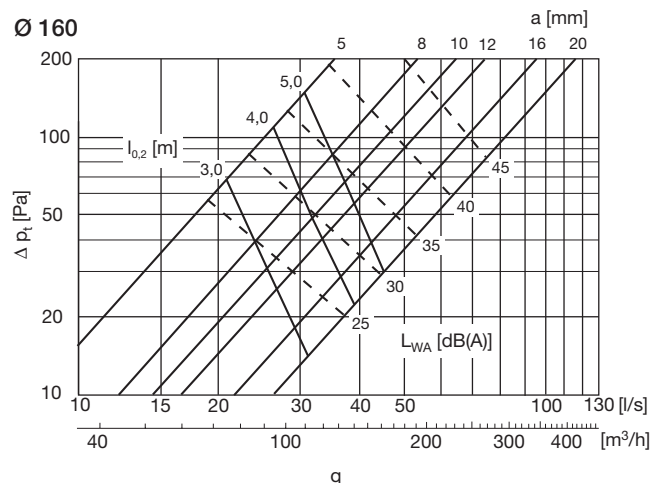
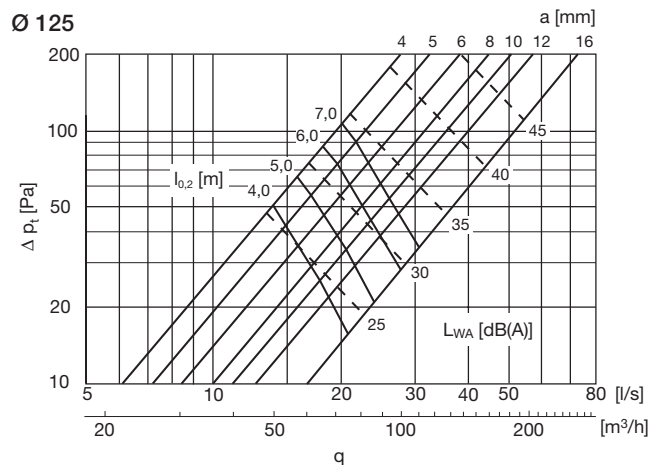
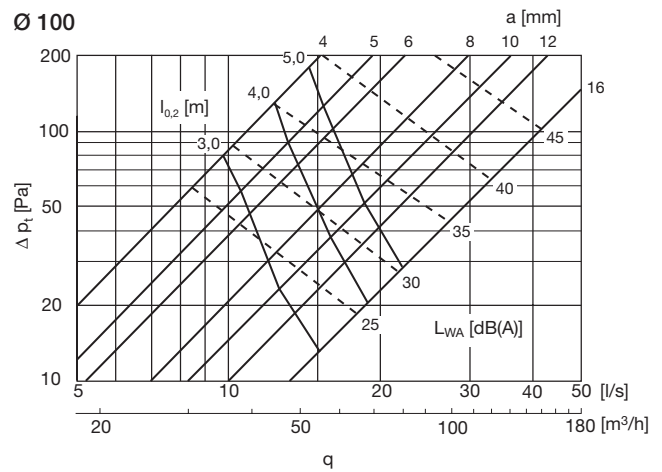
Ød nom	Diffuser mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	25	22	17	13	12	11	11	11
125	Duct	25	20	15	12	11	9	9	9
160	Duct	26	17	13	12	11	7	7	8

Air jet diffusion pattern

Maximum vertical width, $b_v = 0,1 \times l_{0,2}$ m

Measurement of air flow

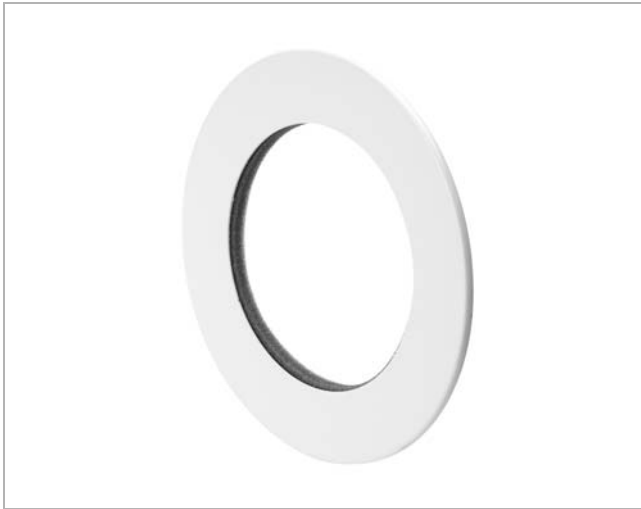
Data is available in a separate brochure.





Cover plate

VVTKR



Description

Plate to cover the outer part of the brim of the socket.

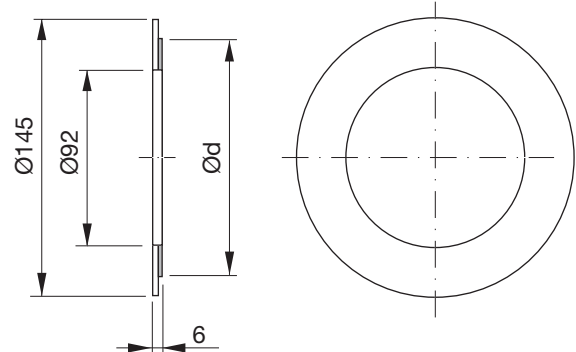
Material

Painted galvanized sheet metal.

Colour

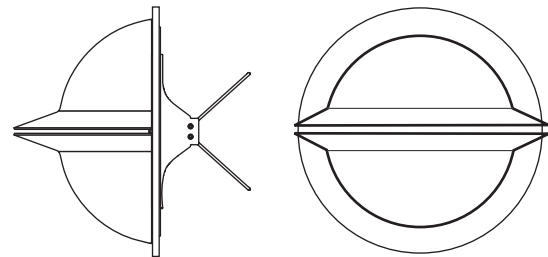
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	m kg
125	0,07

Cover plate together with valve VVTK Ø125



Ordering example

Product	VVTKR	125
Dimension Ød		

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Valve

KPT

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Description

Valve for supply air.
Designed for ceiling mounting.
Flat spring holders connect to duct.

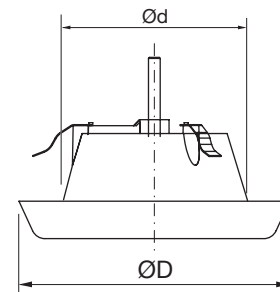
Material

Plastic.

Colour

White RAL 9010.

Dimensions



Ød nom	ØD mm	m kg
80	118	0,08
100	148	0,10
125	180	0,16
160	203	0,22
200	246	0,55

Ordering example

Product **KPT**
Dimension Ød **125**



Valve

KPT

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, n [number of opening turns], are shown in the graphs.

Sound power level, L_{WA} [dB], A-weighted is shown in the graphs.

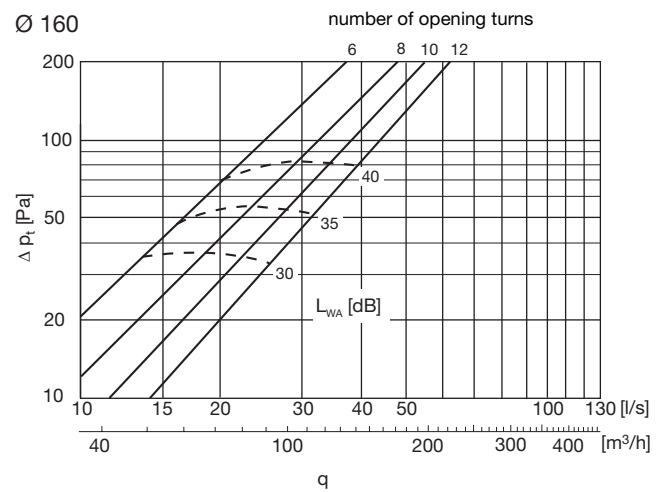
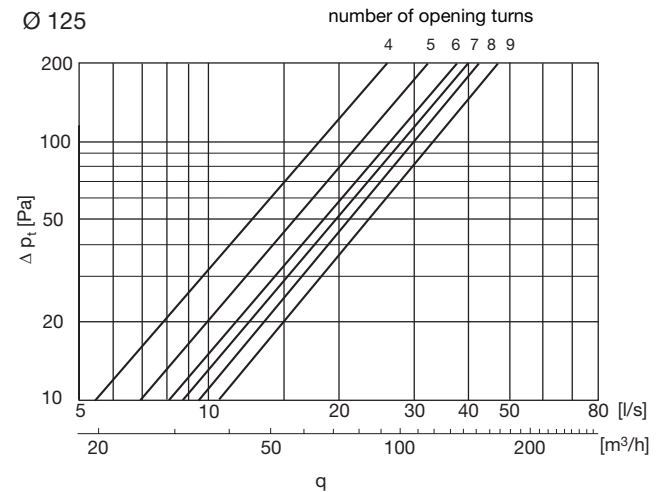
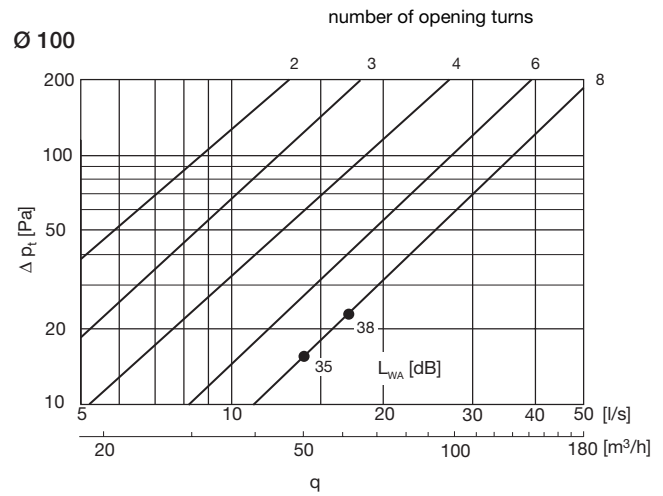
Sound attenuation, ΔL_A , [dB]

$\varnothing d$ nom	Valve mounted in	Setting n [number of opening turns]	Attenuation ΔL_A [dB]
100	Duct	0	8,5
		2	8,5
		3	8,5
		4	8
		6	8
		8	8
125	Duct	10	8
		0	14
		4	8
		5	8
		6	7,5
160	Duct	7	7
		8	6,5
		9	6
		0	14,5
200	Duct	6	6,5
		8	6
		10	6
		12	6
200	Duct	0	15,5
		7	6,5
		9	6
		11	5,5
		13	5,5
		15	5,5

Tolerance ± 1

Measurement of air flow

Data is available in a separate brochure.



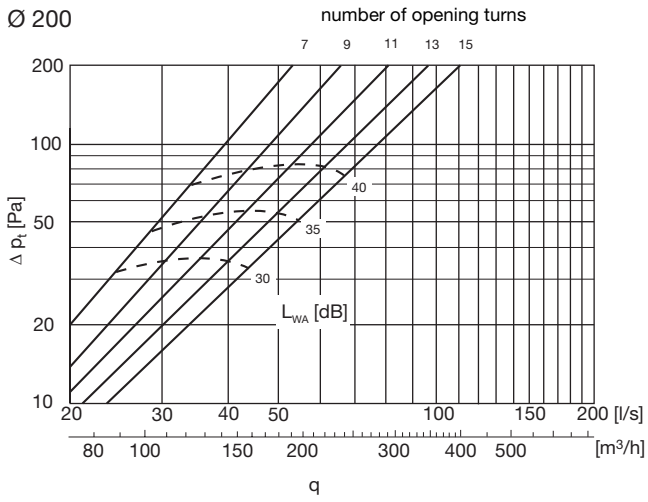
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Valve

KPT

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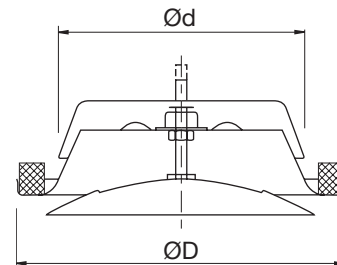


Valve

KI



Dimensions



Description

Valve for supply air.
Designed for ceiling mounting.
Bayonet holders connect to socket VRGU, VRGL or VRGM.

Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Ød nom	ØD mm	m kg
80	111	0,14
100	130	0,21
125	160	0,30
150	190	0,39
160	190	0,41
200	245	0,65

Ordering example



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Valve

KI

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], throw length, $l_{0,2}$ [m], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{Ok}$. K_{Ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
80	Duct	-	3	2	-1	-6	-15	-27	-39
100	Duct	-	2	2	-1	-6	-14	-25	-37
125	Duct	-	2	4	-2	-7	-14	-25	-37
160	Duct	-	6	5	-3	-9	-14	-25	-36
200	Duct	-	5	5	-2	-8	-16	-24	-36

Tolerance	-	±3	±2	±2	±2	±2	±2	±2	±3
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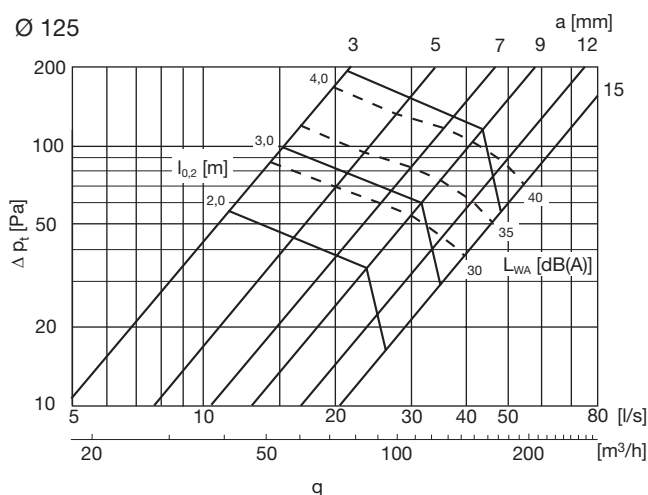
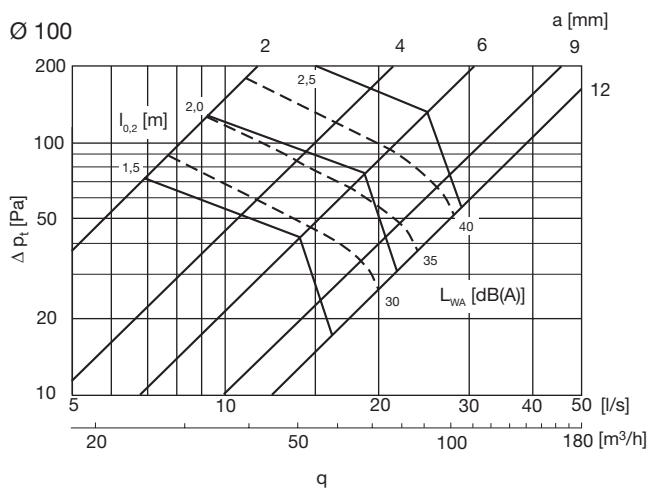
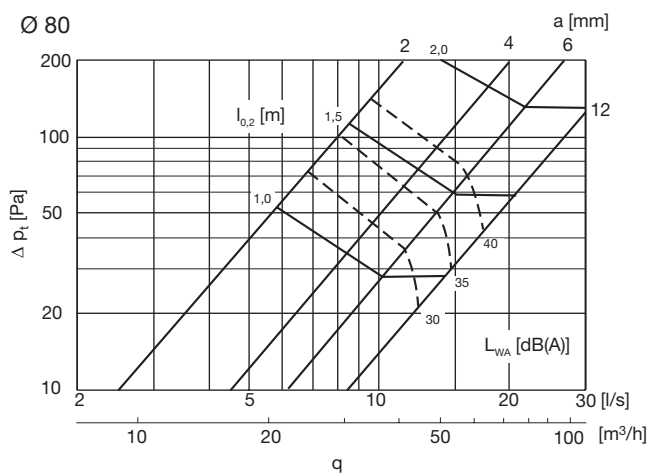
Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Setting a [mm]	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
80	Duct	2	26	20	15	14	11	8	10	9
		6	24	19	13	11	8	5	8	6
		12	24	19	13	10	6	4	5	6
100	Duct	2	22	19	14	12	11	12	10	12
		6	22	17	11	9	8	9	6	9
		12	22	17	11	8	6	7	4	7
125	Duct	3	20	17	12	11	9	9	8	8
		7	19	15	10	8	7	7	5	5
		12	19	15	9	7	5	5	4	4
160	Duct	4	18	14	10	10	10	10	8	8
		9	18	13	9	8	7	7	6	6
		20	18	13	8	7	6	5	5	5
200	Duct	5	17	13	10	9	11	10	9	9
		9	16	12	8	8	9	9	8	7
		20	15	11	7	6	7	6	7	6

Tolerance	±6	±3	±2	±2	±2	±2	±2	±2	±3
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Measurement of air flow

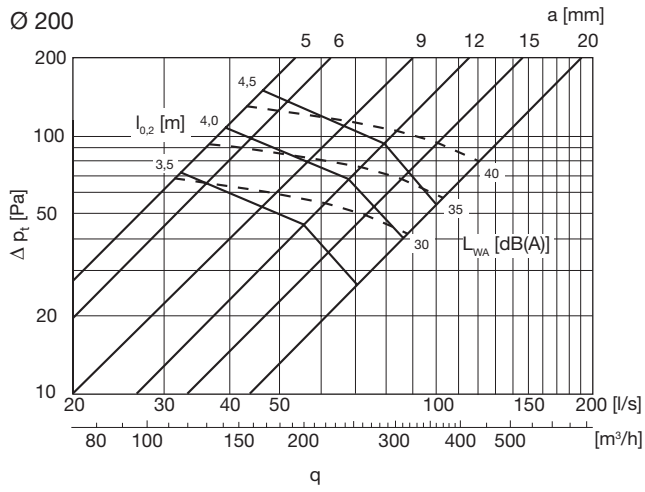
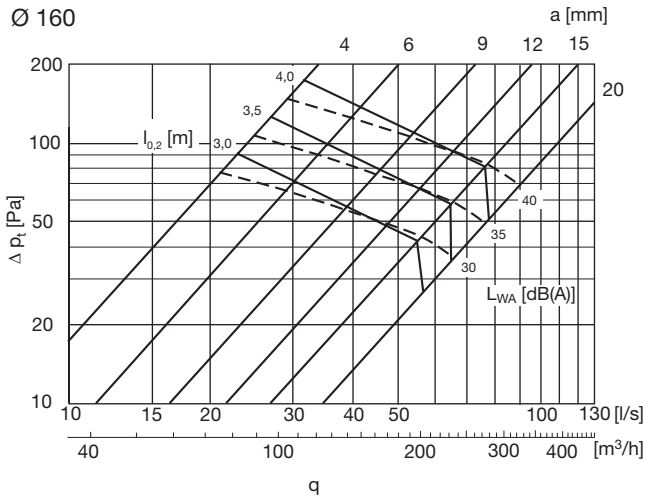
Data is available in a separate brochure.





Valve

KI



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Valve

KIR

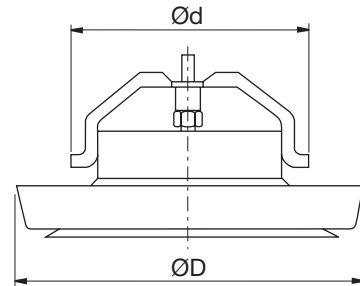
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Description

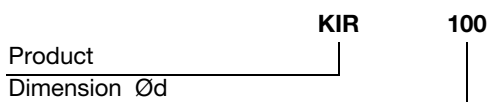
Valve for supply air.
 Designed for ceiling mounting.
 Equipped with a removable blanking-off sector plate for preventing the air flow in a desired direction.
 Bayonet holders connect to socket VRGU, VRGL or VRGM.

Dimensions



Ød nom	ØD mm	m kg
100	135	0,28
125	165	0,44
160	205	0,62

Ordering example





Valve

KIR

Technical data

Without sector plate

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], throw length, $l_{0,2}$ [m], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Maximal vertical width, b_v [m] and Maximal horizontal width, b_h [m], are shown in the tables.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	-6	-2	-3	-5	-8	-9	-15
125	Duct	-	0	1	-1	-5	-15	-21	-33
160	Duct	-	3	2	-1	-6	-15	-23	-36

Tolerance	-	±3	±2	±2	±2	±2	±2	±2	±3
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Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	22	18	13	11	9	8	7	8
125	Duct	20	16	11	9	9	7	6	5
160	Duct	18	14	10	9	9	7	6	6

Tolerance	±6	±3	±2	±2	±2	±2	±2	±2	±3
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Measurement of air flow

Data is available in a separate brochure.

Air jet diffusion pattern

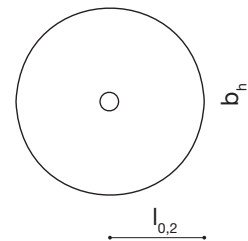
Maximal vertical width, b_v [m]:

Setting a [mm]	Supply air temperature difference Δt	
	±0 °C	-10 °C
4	$b_v = 0,04 \cdot l_{02}$	$b_v = 0,064 \cdot l_{02}$
12	$b_v = 0,04 \cdot l_{02}$	$b_v = 0,075 \cdot l_{02}$



Maximal horizontal width, b_h [m]:

Setting a [mm]	Supply air temperature difference Δt	
	±0 °C	-10 °C
4	$b_h = 2 \cdot l_{02}$	$b_h = 2 \cdot l_{02}$
12	$b_h = 2 \cdot l_{02}$	$b_h = 2 \cdot l_{02}$



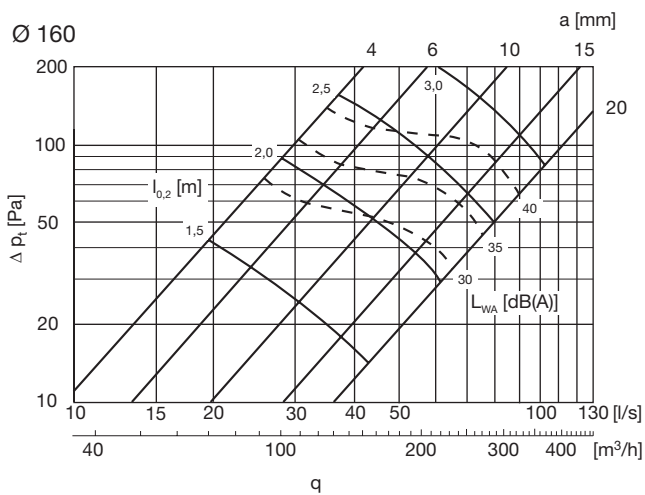
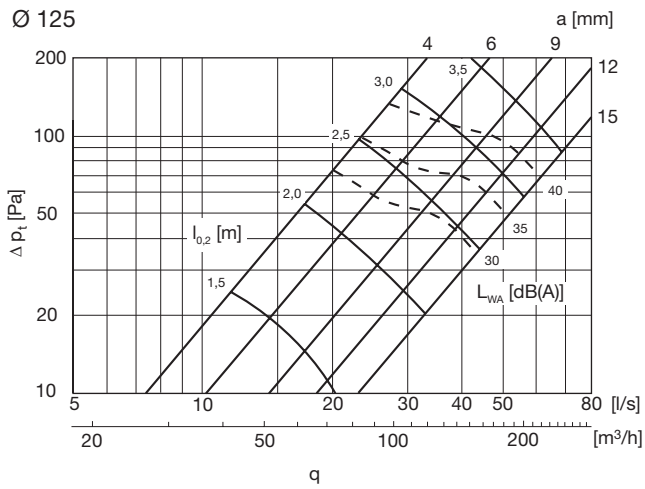
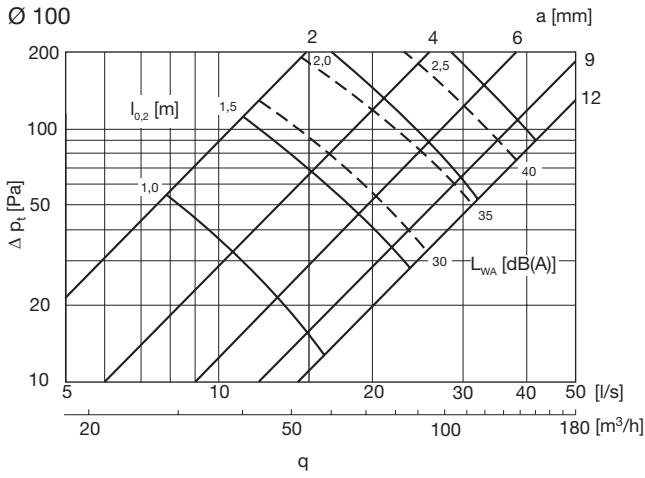
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Valve

KIR

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Valve

KIR

Technical data

With sector plate

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], throw length, $l_{0,2}$ [m], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Maximal vertical width, b_v [m] and Maximal horizontal width, b_h [m], are shown in the tables.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	-2	-2	-4	-6	-8	-8	-16
125	Duct	-	-1	-1	-1	-4	-12	-19	-33
160	Duct	-	3	0	-2	-5	-10	-21	-35

Tolerance	-	±3	±2	±2	±2	±2	±2	±2	±3
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Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	22	18	13	11	9	8	7	8
125	Duct	20	16	11	9	9	7	6	5
160	Duct	18	14	10	9	9	7	6	6

Tolerance	±6	±3	±2	±2	±2	±2	±2	±2	±3
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Measurement of air flow

Data is available in a separate brochure.

Air jet diffusion pattern

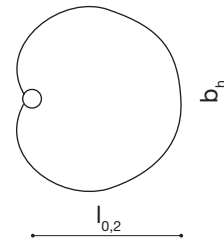
Maximal vertical width, b_v [m]:

Setting a [mm]	Supply air temperature difference Δt	
	±0 °C	-10 °C
4	$b_v = 0,04 \cdot l_{02}$	$b_v = 0,064 \cdot l_{02}$
12	$b_v = 0,04 \cdot l_{02}$	$b_v = 0,075 \cdot l_{02}$



Maximal horizontal width, b_h [m]:

Setting a [mm]	Supply air temperature difference Δt	
	±0 °C	-10 °C
4	$b_h = 1,45 \cdot l_{02}$	$b_h = 1,15 \cdot l_{02}$
12	$b_h = 1,45 \cdot l_{02}$	$b_h = 1,09 \cdot l_{02}$

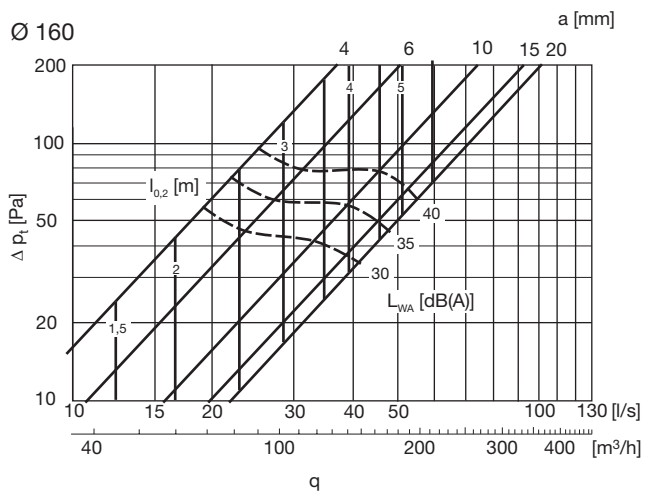
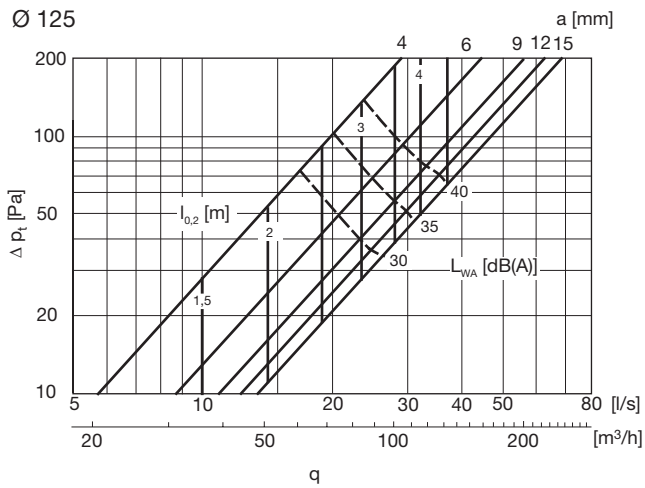
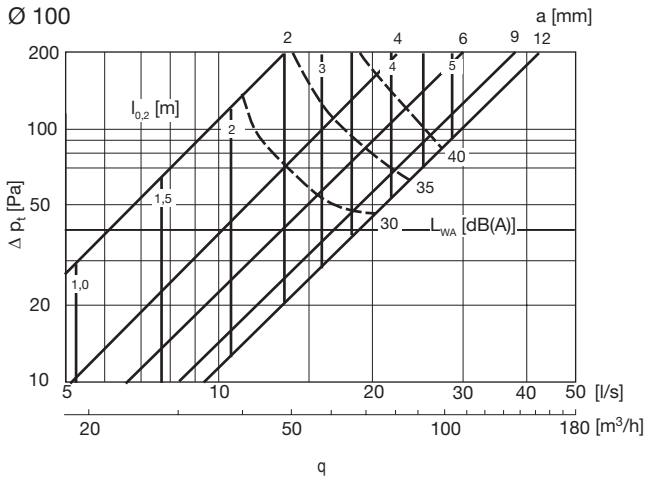




Valve

KIR

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Valve

TAV



Description

Valve for supply and exhaust air.
Designed for natural ventilation. Can also be used as an outdoor air valve.
Screws connect to a duct.

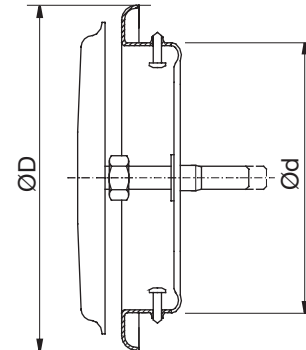
Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
63	92	0,10
80	105	0,12
100	140	0,19
125	155	0,26
160	200	0,39
200	235	0,53
250	270	0,70
315	330	0,90

Ordering example

Product	TAV	160
Dimension Ød		

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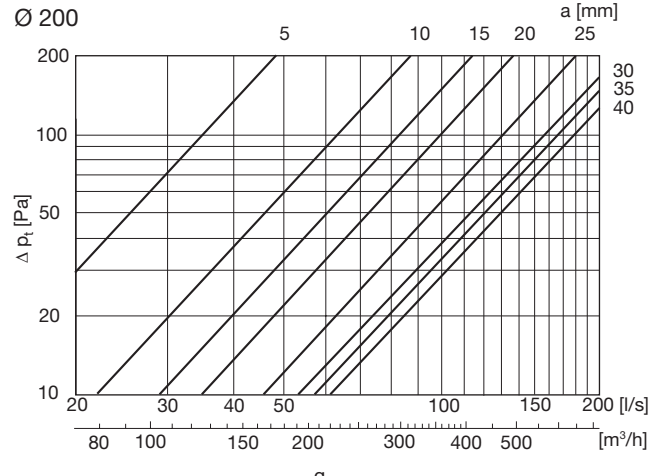
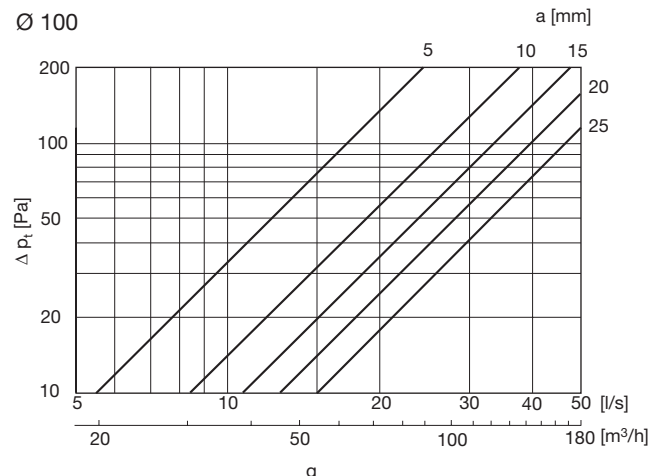
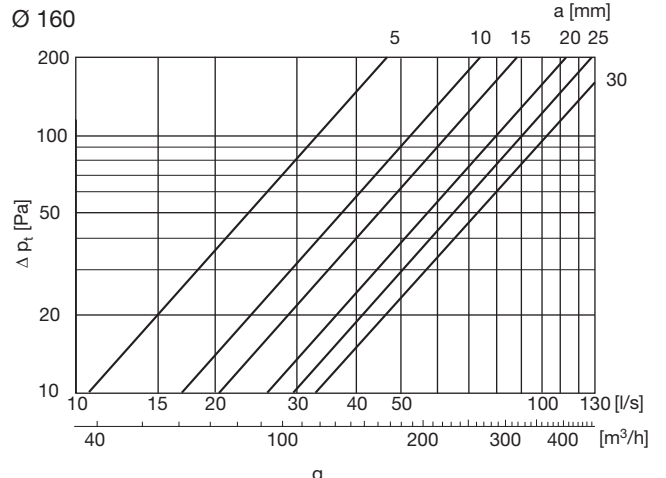
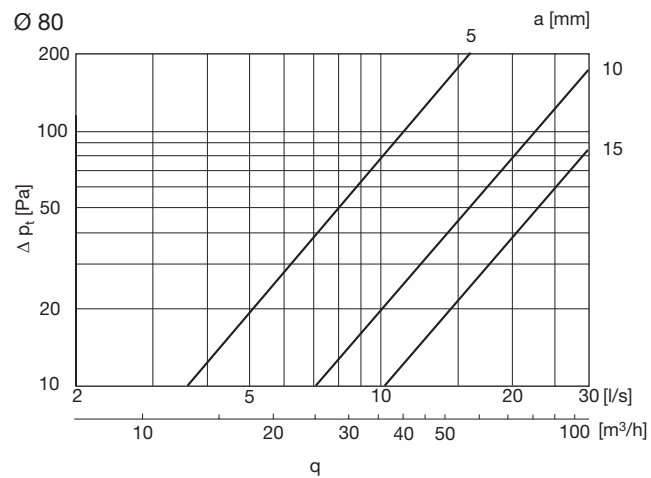
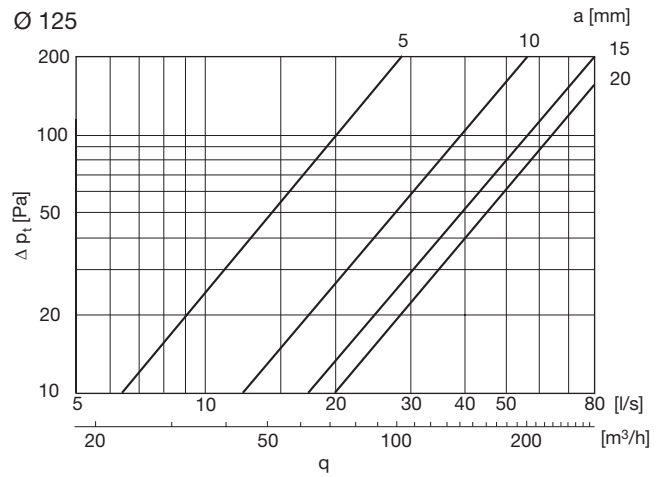
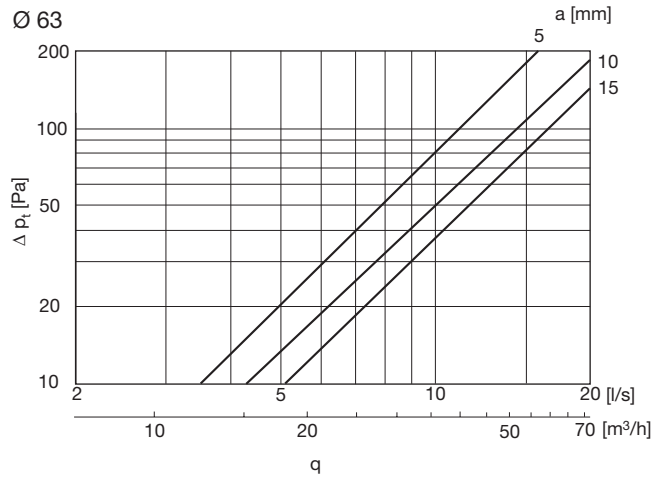


Valve

TAV

Technical data

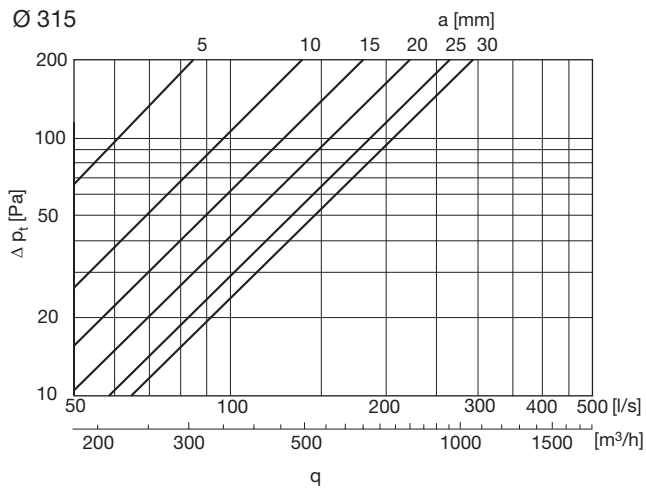
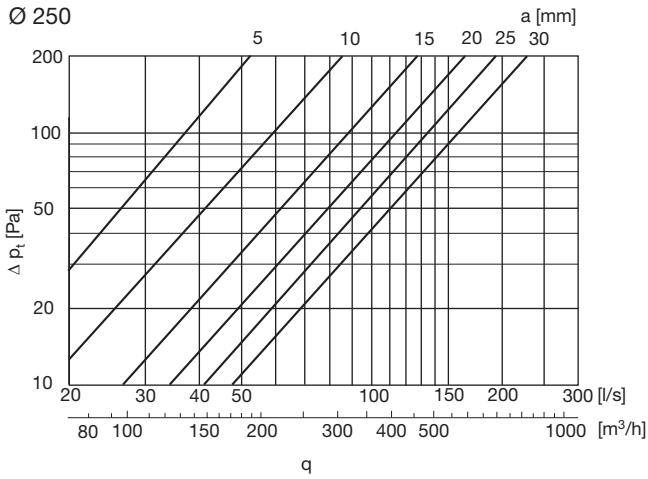
Air flow, q [l/s] and [m³/h] and total pressure drop, Δp_t [Pa], for different settings, a [mm], are shown in the graphs.





Valve

TAV



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Valve

KVB

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Description

Valve for exhaust air.
 Designed for wall or ceiling mounting.
 Spring holders connect to socket VRFU, VRFM or VRR.

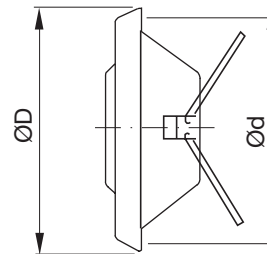
Material

Painted galvanized sheet metal.

Colour

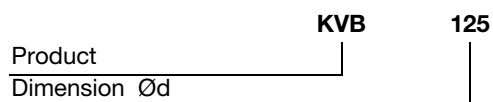
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
100	125	0,27
125	150	0,36
160	190	0,54

Ordering example





Valve

KVB

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

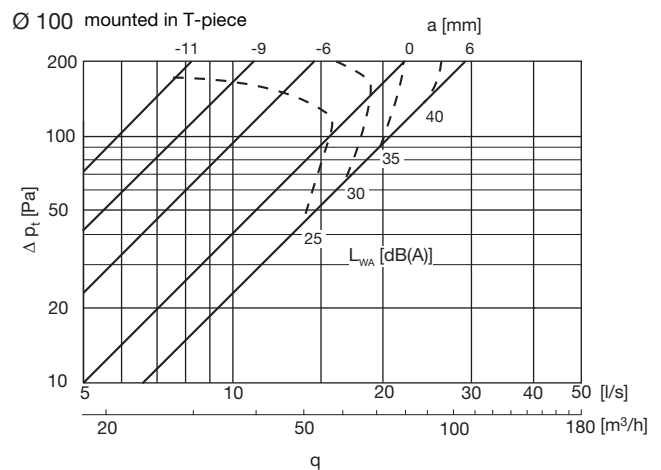
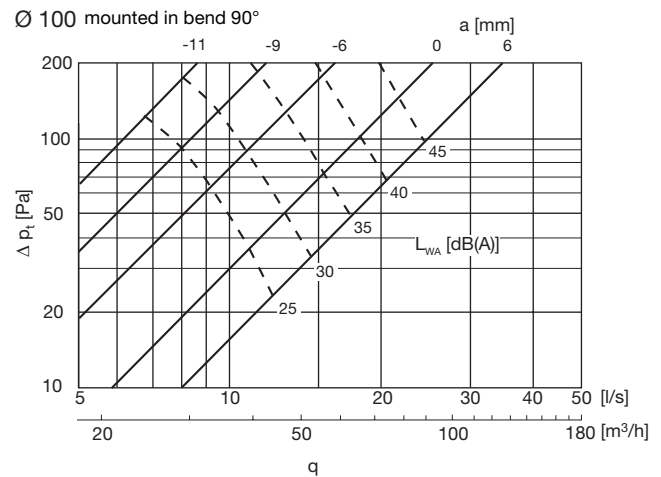
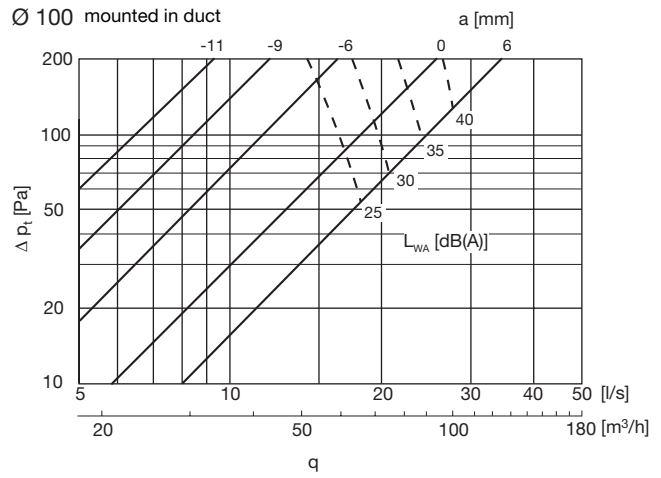
Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	6	2	1	-3	-6	-8	-11	-16
	Bend 90°	6	2	1	-3	-6	-8	-11	-16
	T-piece	6	2	1	-3	-6	-8	-11	-16
125	Duct	13	-2	-1	-5	-5	-8	-12	-16
	Bend 90°	13	-2	-1	-5	-5	-8	-12	-16
	T-piece	13	-2	-1	-5	-5	-8	-12	-16
160	Duct	14	0	-1	-4	-3	-8	-16	-18
	T-piece	14	0	-1	-4	-3	-8	-16	-18

Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	25	22	21	20	14	18	9	10
	Bend 90°	30	27	23	17	16	19	12	13
	T-piece	25	22	21	20	14	18	9	10
125	Duct	24	20	17	15	11	12	7	7
	Bend 90°	29	25	19	12	13	13	10	10
	T-piece	24	20	17	15	11	12	7	7
160	Duct	22	18	16	12	14	10	9	8
	T-piece	22	18	16	12	14	10	9	8

Measurement of air flow

Data is available in a separate brochure.



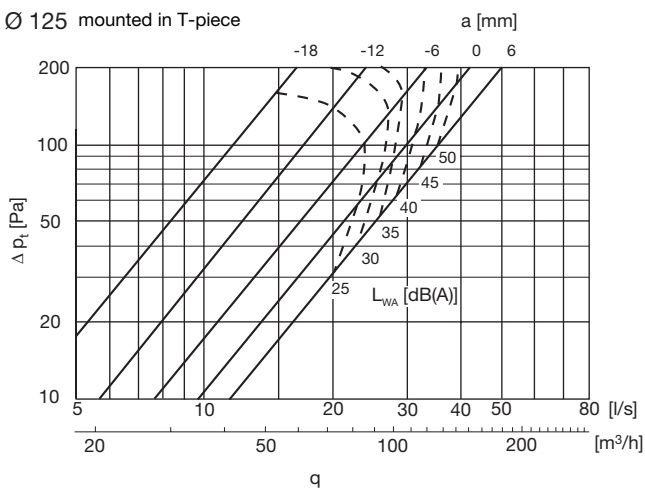
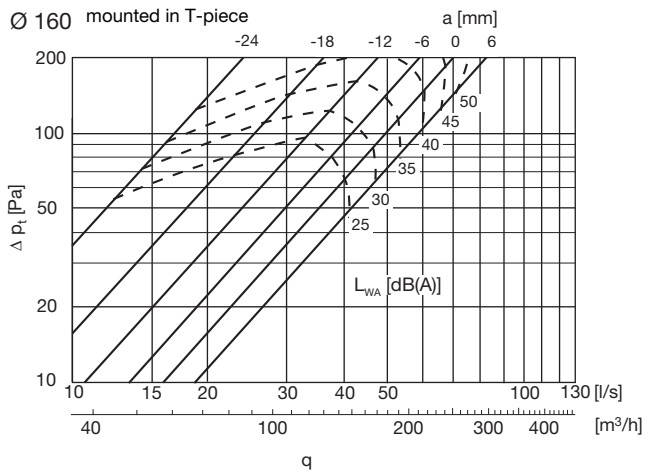
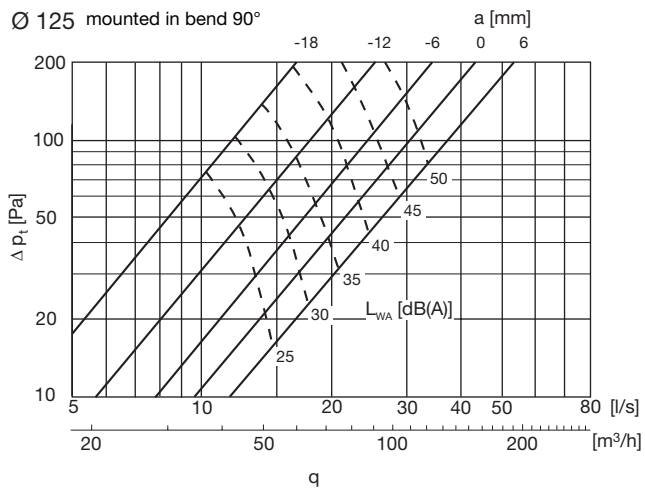
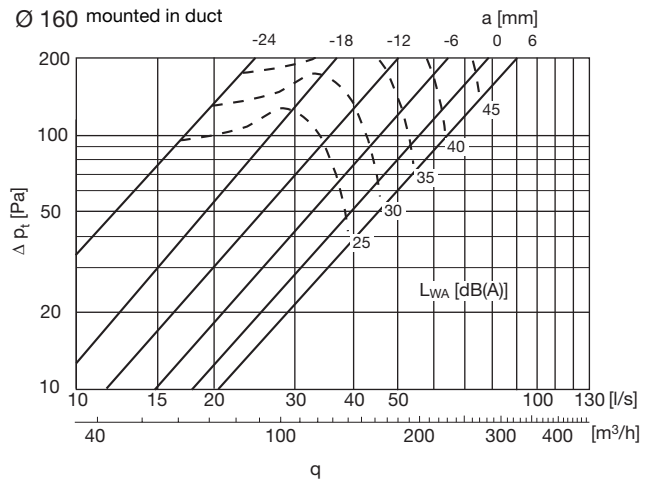
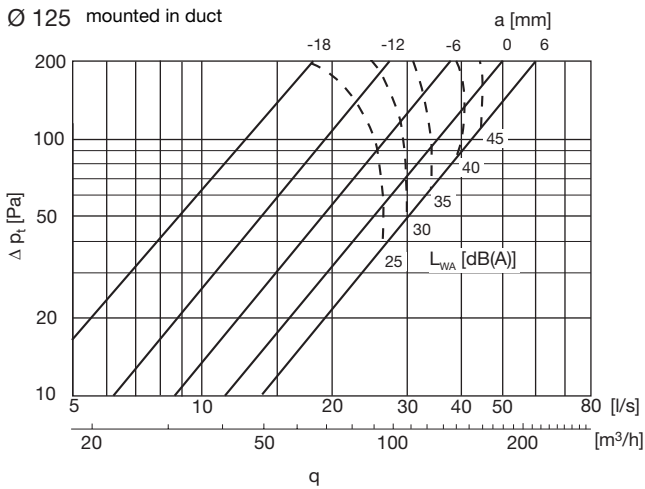
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Valve

KVB

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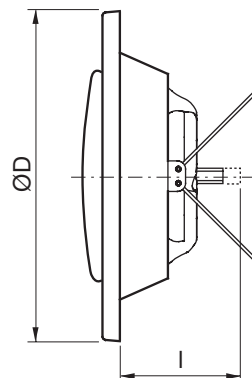


Valve

KVG



Dimensions



Ød nom	ØD mm	m kg
100	132	0,18
125	162	0,25
160	192	0,37
200	243	0,59

Description

Valve for exhaust air.

Designed for wall or ceiling mounting.

Ø 100–160 have spring holders which connect to socket VRFU, VRFM or VRR.

Ø 200 has bayonet holders which connect to socket VRGU, VRGL or VRGM.

Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Ordering example

Product	KVG	100
Dimension Ød		

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Valve

KVG

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	4	-4	-6	-7	-6	-4	-13	-18
	Bend 90°	-1	-1	-3	-3	-5	-7	-16	-27
	T-piece	7	0	-2	-7	-6	-5	-11	-21
125	Duct	6	-1	-6	-6	-7	-4	-16	-27
	T-piece	7	0	-7	-7	-6	-5	-13	-24
160	Duct	5	-5	-4	-6	-3	-7	-18	-30
	T-piece	5	1	-5	-8	-6	-4	-18	-29
200	Duct	3	-2	-5	-6	-2	-9	-16	-26

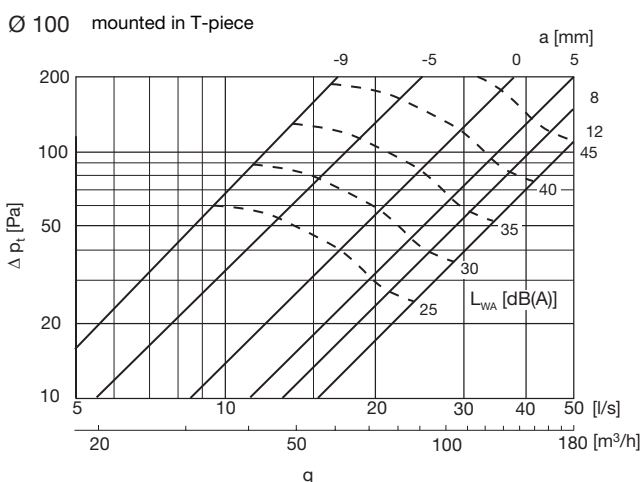
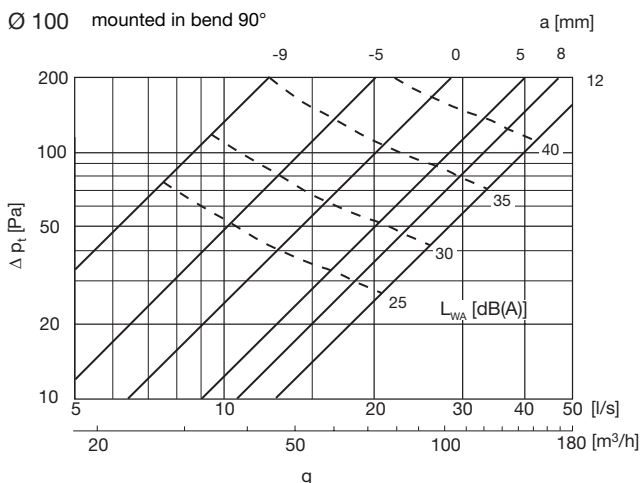
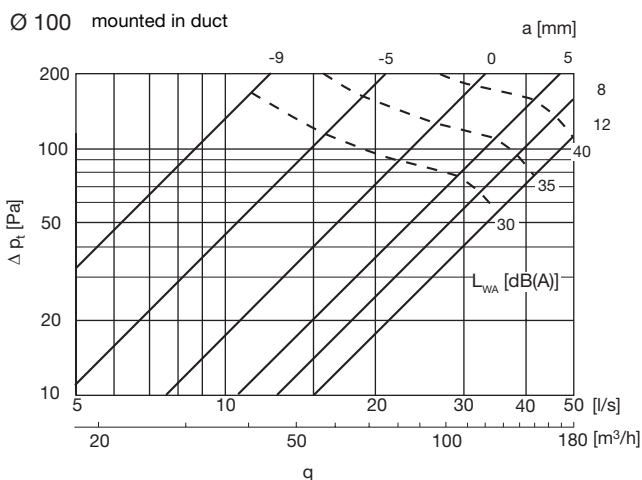
Tolerance	±6	±3	±2	±2	±2	±2	±2	±3
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Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Setting a [mm]	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
100	Duct	-12	23	19	14	14	12	11	13	16
		0	22	16	9	8	6	6	6	10
		8	22	16	9	7	5	5	4	8
	Bend 90°	-12	25	20	15	13	12	12	12	15
0		24	17	11	7	6	7	6	11	
8		24	17	11	6	5	5	5	11	
T-piece	-12	23	19	14	14	12	11	13	16	
	0	22	16	9	8	6	6	6	10	
	8	22	16	9	7	5	5	4	8	
125	Duct	-17	21	15	12	10	8	8	11	14
		-6	20	14	10	7	5	5	6	7
		5	19	14	9	6	4	4	4	8
160	Duct	-18	19	14	10	8	7	9	13	13
		5	18	13	8	6	5	5	10	8
		6	18	12	7	5	4	4	10	6
200	Duct	-20	17	14	9	8	8	10	11	12
		0	17	12	7	5	5	6	8	8
		20	15	12	6	5	3	4	8	7

Measurement of air flow

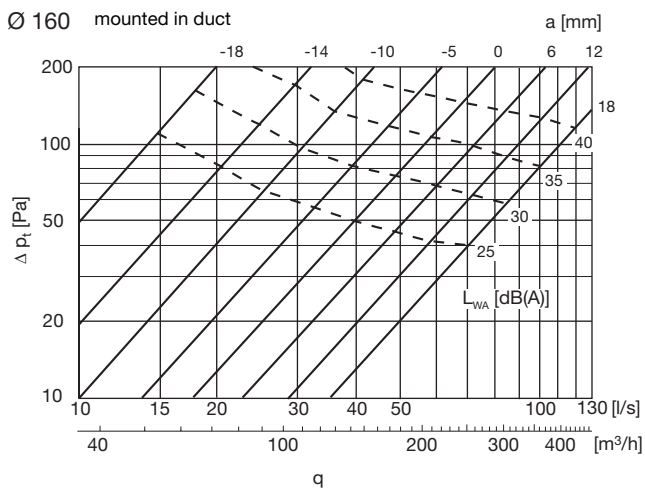
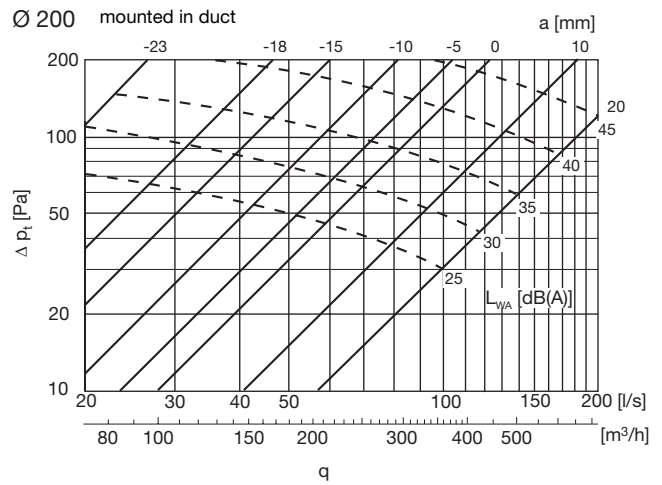
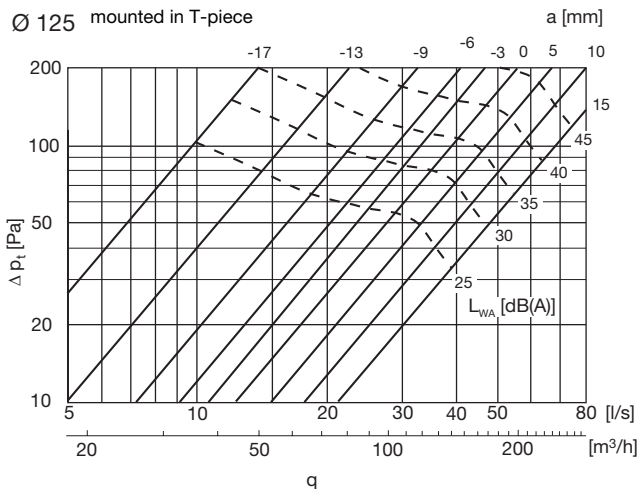
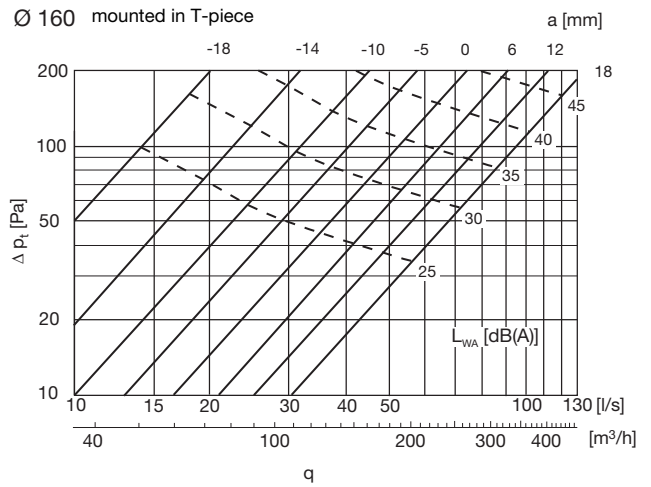
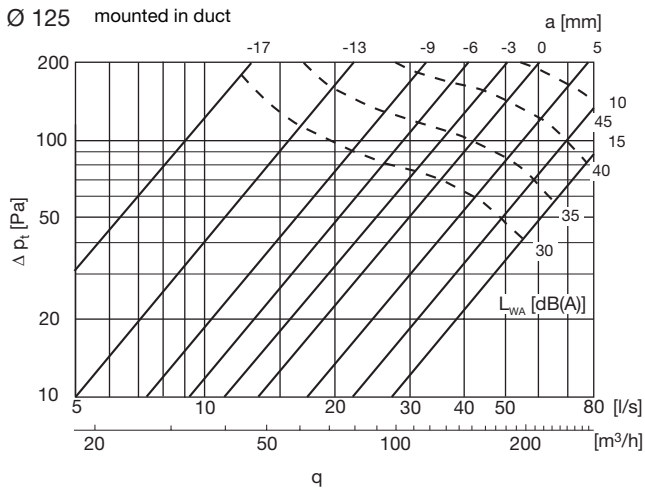
Data is available in a separate brochure.





Valve

KVG



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Valve

KU

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Description

Valve for exhaust air.
Designed for wall or ceiling mounting.
Bayonet holders connect to socket VRGU, VRGL or VRGM.

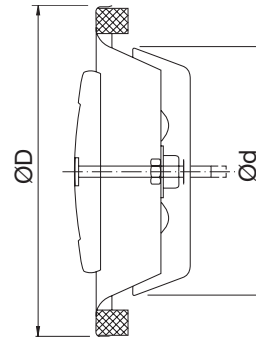
Material

Painted galvanized sheet metal.

Colour

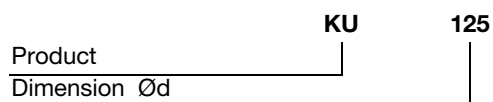
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
80	110	0,13
100	130	0,19
125	160	0,27
150	188	0,36
160	190	0,38
200	245	0,58

Ordering example





Valve

KU

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	-8	-5	-6	-6	-4	-12	-21
125	Duct	-	-11	-4	-6	-7	-3	-16	-25
160	Duct	-	-7	-4	-6	-3	-6	-18	-31
200	Duct	-	-7	-6	-7	-2	-9	-18	-27

Tolerance	-	±3	±2	±2	±2	±2	±2	±3
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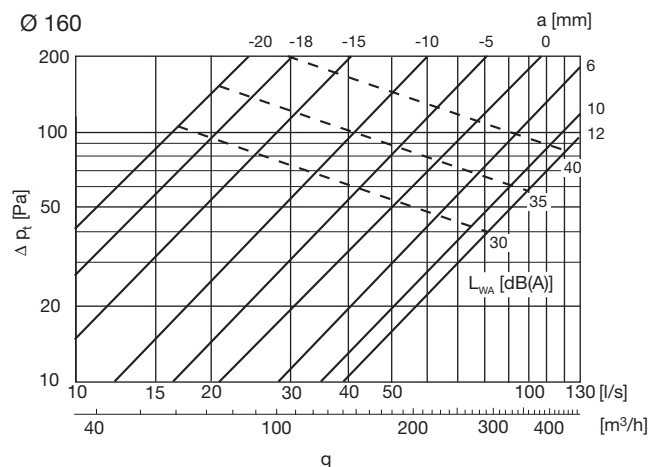
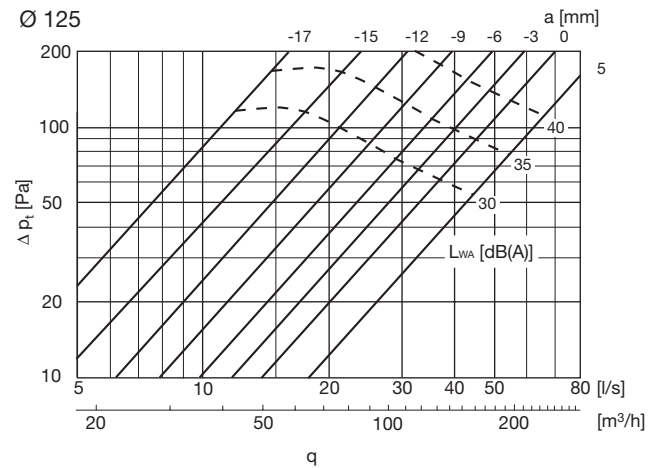
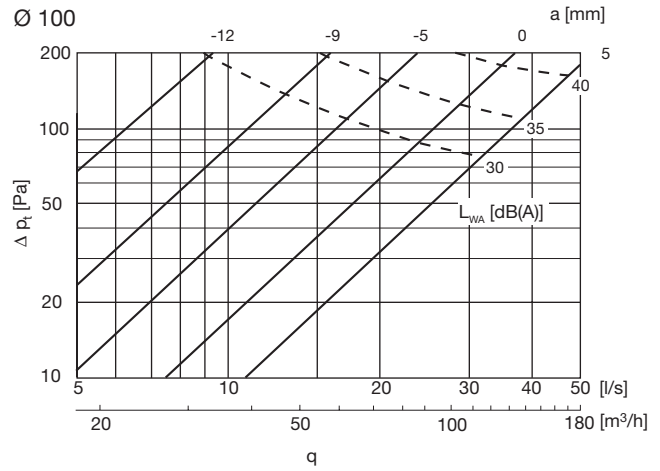
Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Setting a [mm]	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
100	Duct	-12	21	18	12	14	12	11	12	15
		-5	21	16	9	11	9	8	8	12
		5	21	16	8	10	8	7	5	11
125	Duct	-17	22	16	11	9	7	7	9	12
		-9	21	16	9	8	5	5	7	8
		5	20	15	9	6	4	3	4	7
160	Duct	-15	19	14	9	8	6	7	9	10
		-5	19	13	9	6	5	4	6	8
		5	18	13	8	5	4	3	6	6
200	Duct	-25	17	12	10	9	9	12	14	12
		0	16	10	7	6	6	6	10	7
		20	16	10	6	4	4	5	9	6

Tolerance	±6	±3	±2	±2	±2	±2	±2	±3
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Measurement of air flow

Data is available in a separate brochure.



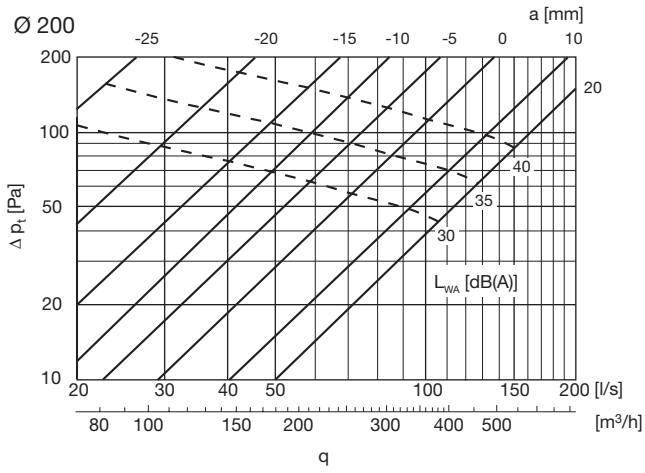
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Valve

KU

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Valve

KSU



Description

Valve for exhaust air.
Designed for wall or ceiling mounting.
Bayonet holders connect to socket VRGU, VRGL or VRGM.

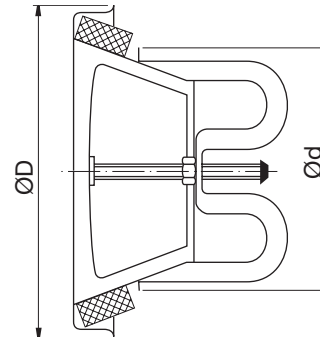
Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
100	130	0,30
125	160	0,39
150	188	0,52
160	190	0,52
200	235	0,78

Ordering example



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- 17
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Valve

KSU

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-6	-6	-3	-3	-4	-9	-13	-27
125	Duct	-7	-7	-6	-5	-8	-4	-12	-28
160	Duct	-3	-3	-7	-5	-2	-12	-16	-29
200	Duct	-5	-5	-7	-8	-2	-9	-13	-30

Tolerance	±3	±2	±2	±2	±2	±2	±2	±3
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Sound attenuation, ΔL , [dB]

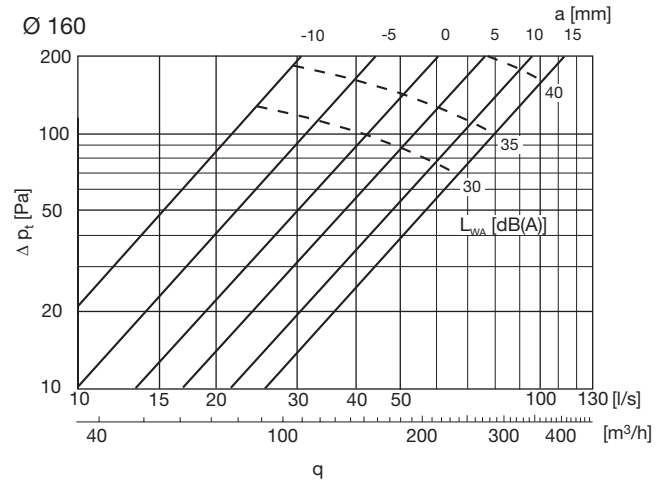
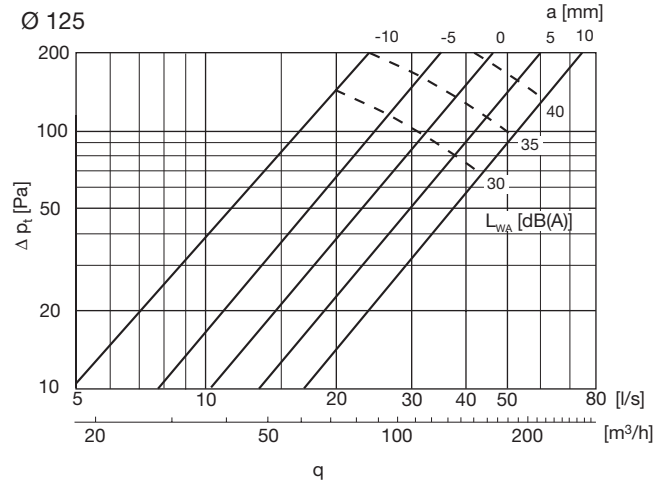
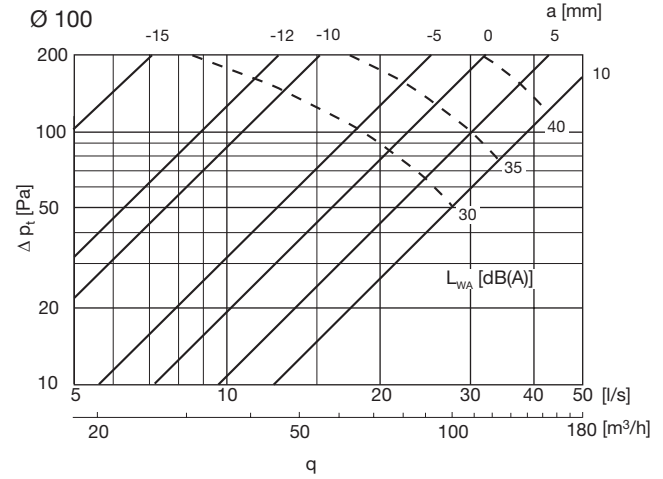
Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	23	18	14	12	12	14	5	6
125	Duct	21	17	12	11	12	11	7	6
160	Duct	19	14	12	11	11	14	5	7
200	Duct	15	13	11	11	13	12	7	7

Tolerance	±6	±3	±2	±2	±2	±2	±2	±3
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Measurement of air flow

Data is available in a separate brochure.

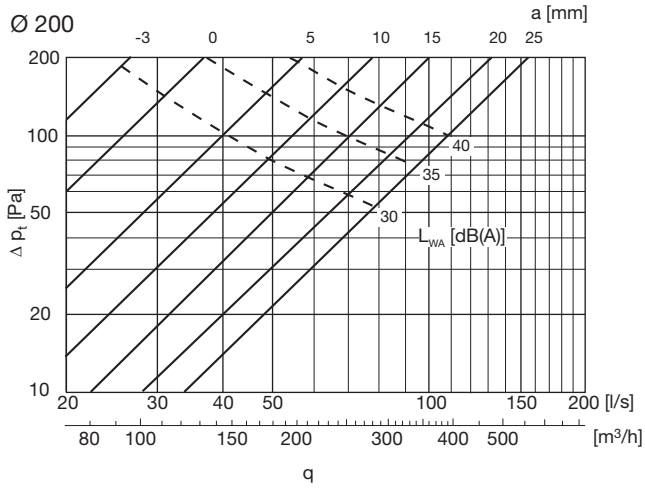
xx





Valve

KSU



- 1
- 2
- 3
- 4
- 5
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Valve

KSUL

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Description

Valve for exhaust air.
 Has built-in silencer for extra noise attenuation.
 Designed for wall or ceiling mounting.
 Bayonet holders connect to socket VRGU, VRGL or VRGM.

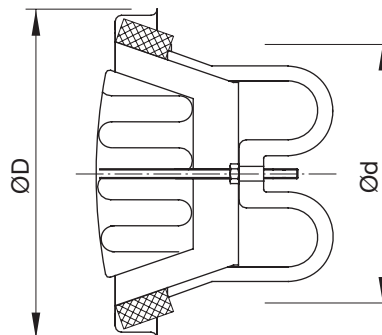
Material

Painted galvanized sheet metal.

Colour

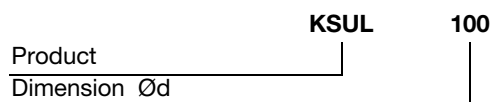
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
100	130	0,30
125	160	0,32
160	190	0,48
200	235	0,71

Ordering example





Valve

KSUL

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	2	2	-2	-7	10	-13	-31
125	Duct	-	3	4	-2	-8	-12	-17	-33
160	Duct	-	4	1	-4	-8	-7	-10	-28
200	Duct	-	-2	-1	-5	-7	-7	-9	-28

Tolerance	-	±3	±2	±2	±2	±2	±2	±3
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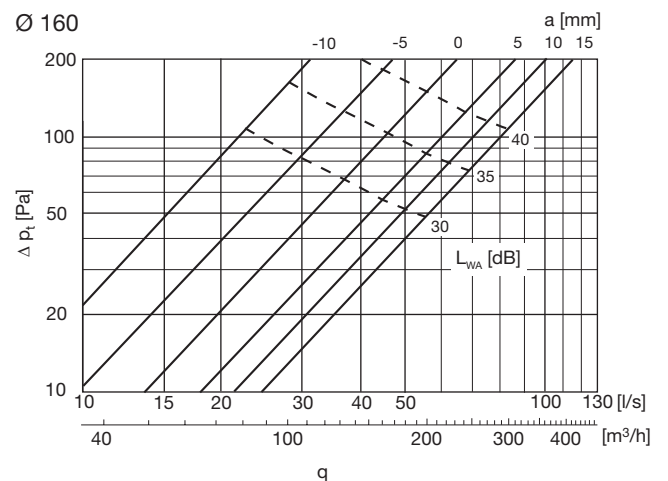
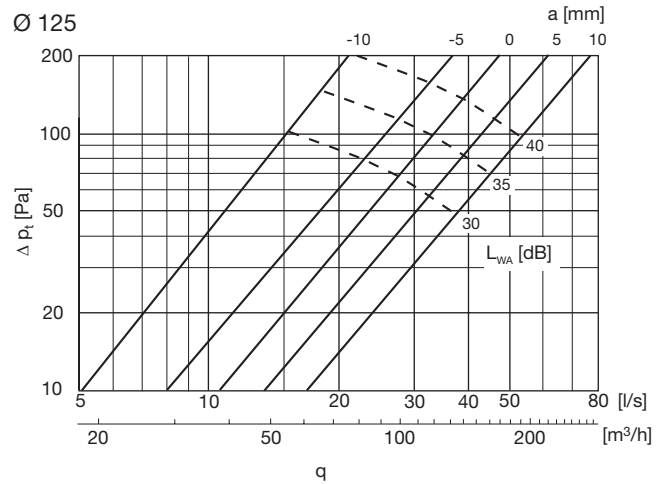
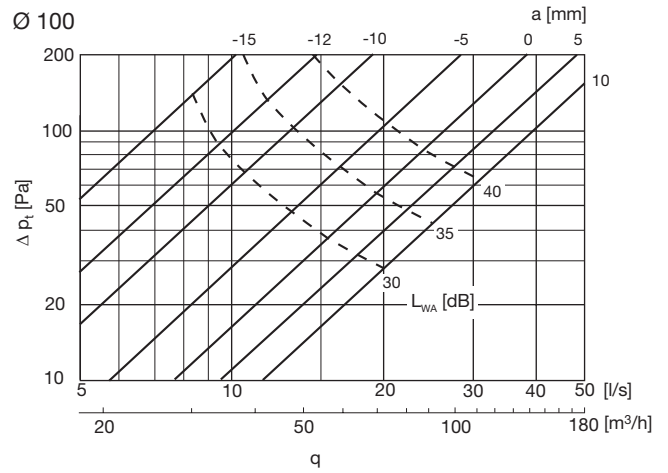
Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Setting a [mm]	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
100	Duct	0	22	18	14	14	13	12	5	8
125	Duct	0	20	16	12	13	12	9	6	8
160	Duct	0	19	14	11	12	13	12	6	8
200	Duct	10	14	12	10	13	14	12	8	9

Tolerance	±6	±3	±2	±2	±2	±2	±2	±3
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Measurement of air flow

Data is available in a separate brochure.



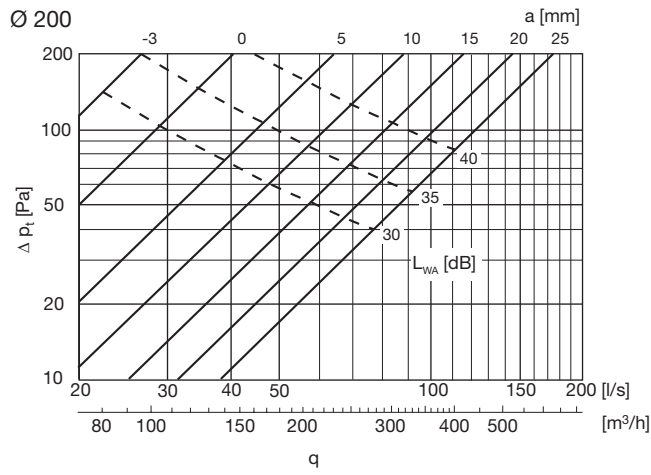
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Valve

KSUL

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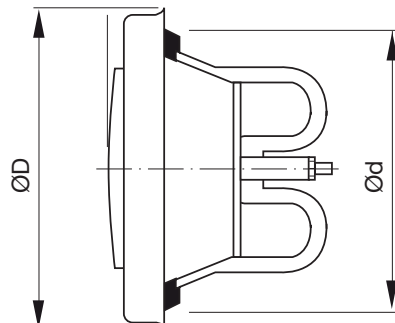


Valve and fire damper

KSUB



Dimensions



Ød nom	ØD mm	m kg
100	130	0,32
125	160	0,42
150	188	0,56
160	190	0,56
200	235	0,81

Description

Valve and fire damper for exhaust air. Is used to prevent spreading of fire and smoke into duct systems. A spring loaded melting fuse shuts the valve when the temperature exceeds +70° C. Bayonet holders connect to socket VRGU, VRGL or VRGM. Socket VRGL is as standard delivered together with KSUB. This case is shown in the ordering example below. If socket VRGU or VRGM is wanted instead this socket has to be specified in the type field. The product holds a Swedish type approval with number 0901. Certification body is Swedcert.

Material

Painted galvanized sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Ordering example



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Valve and fire damper

KSUB

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

Sound power level, L_{WA} [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	-2	-5	-5	-3	-8	-12	-26
125	Duct	-	-7	-7	-7	-6	-4	-11	-28
160	Duct	-	-4	-7	-5	-2	-11	-15	-29
200	Duct	-	-3	-7	-8	-1	-12	-16	-33

Tolerance	-	±3	±2	±2	±2	±2	±2	±3
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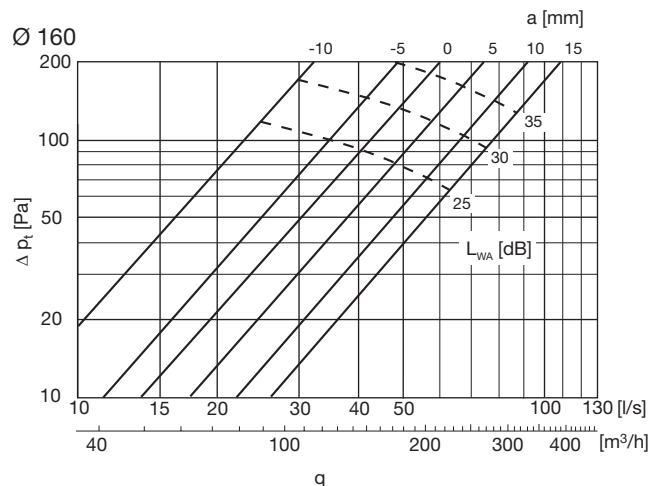
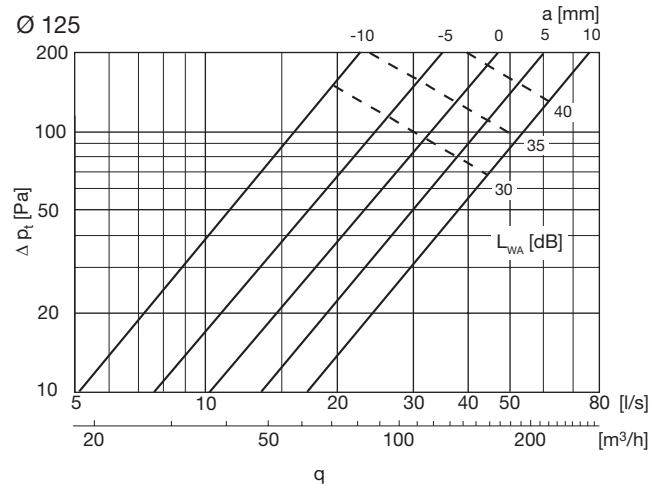
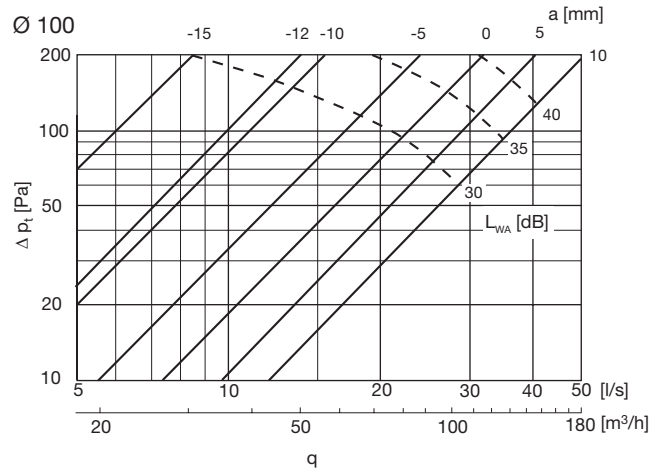
Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Setting a [mm]	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
100	Duct	-10	22	19	16	16	16	18	9	9
		0	22	18	13	12	12	13	6	7
		10	22	17	12	9	8	11	4	6
125	Duct	-10	21	18	15	14	15	14	10	7
		0	19	17	12	11	11	10	6	5
		10	20	16	10	9	9	8	5	5
160	Duct	-10	19	16	14	14	14	16	8	8
		0	18	14	11	11	11	13	5	7
		10	18	14	10	9	9	11	4	6
200	Duct	0	14	12	11	10	12	12	7	7
		10	13	11	8	8	9	10	6	6

Tolerance	±6	±3	±2	±2	±2	±2	±2	±3
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Measurement of air flow

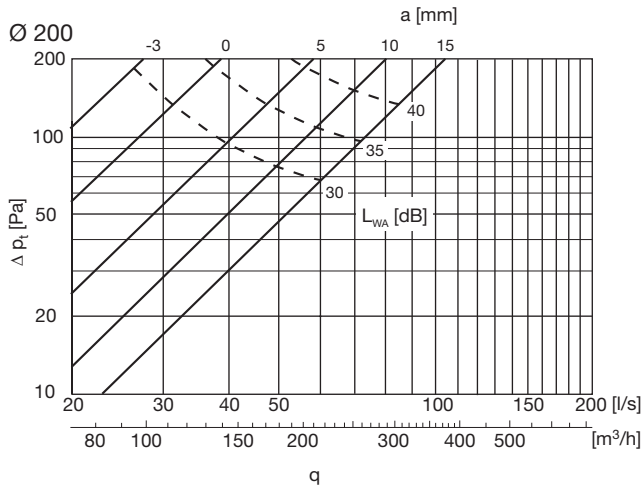
Data is available in a separate brochure.





Valve and fire damper

KSUB



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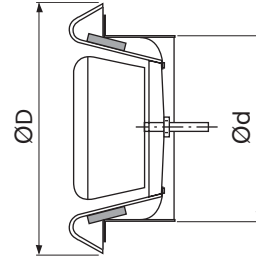
Valve

KPF

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Dimensions



Description

Valve for exhaust air.
Designed for wall or ceiling mounting.
Flat spring holders connect to duct.

Material

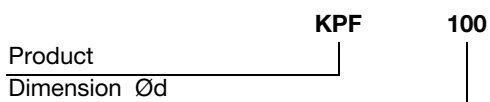
Plastic.

Colour

White RAL 9010.

Ød nom	ØD mm	m kg
80	114	0,07
100	138	0,09
125	164	0,11
160	190	0,24
200	246	0,33

Ordering example





Valve

KPF

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, n [number of opening turns], are shown in the graphs.

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

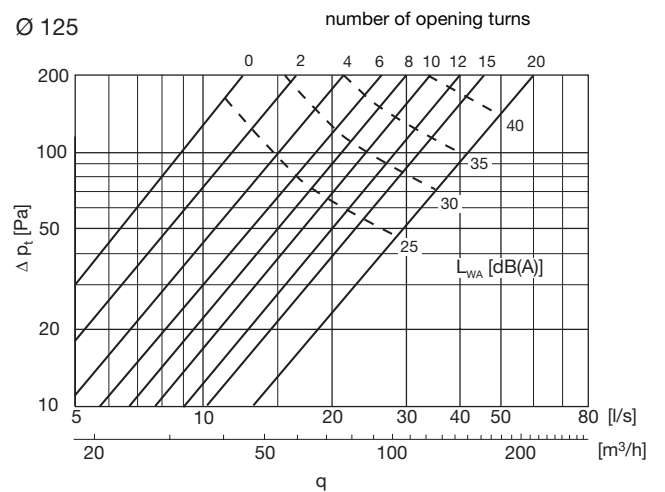
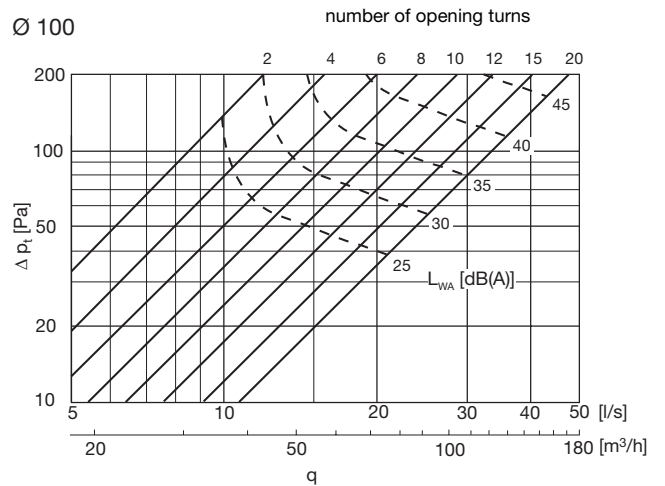
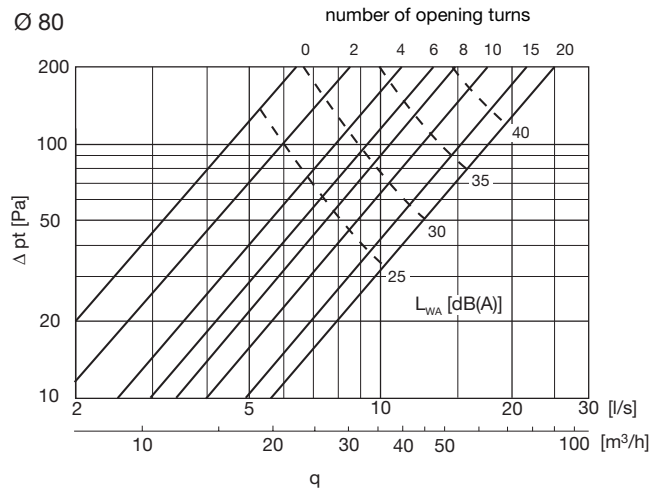
Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
80	Duct	-12	-11	-9	-8	-5	-6	-9	-16
100	Duct	-11	-10	-10	-8	-6	-5	-8	-15
125	Duct	-10	-9	-7	-8	-6	-5	-8	-17
160	Duct	-3	-2	-3	-5	-3	-8	-13	-22
200	Duct	-3	-2	0	-4	-5	-8	-14	-22

Sound attenuation, ΔL , [dB]

Ød nom	Valve mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
80	Duct	23	23	16	15	13	10	6	9
100	Duct	22	21	15	13	11	10	6	9
125	Duct	21	19	13	11	10	10	7	9
160	Duct	20	16	12	10	9	10	8	8
200	Duct	17	12	7	5	4	4	7	5

Measurement of air flow

Data is available in a separate brochure.



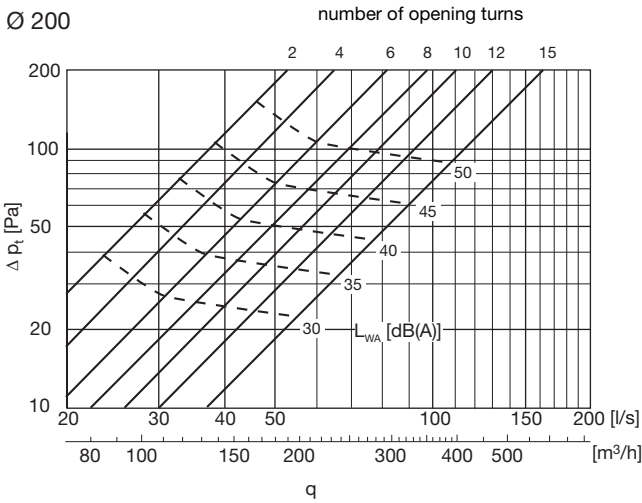
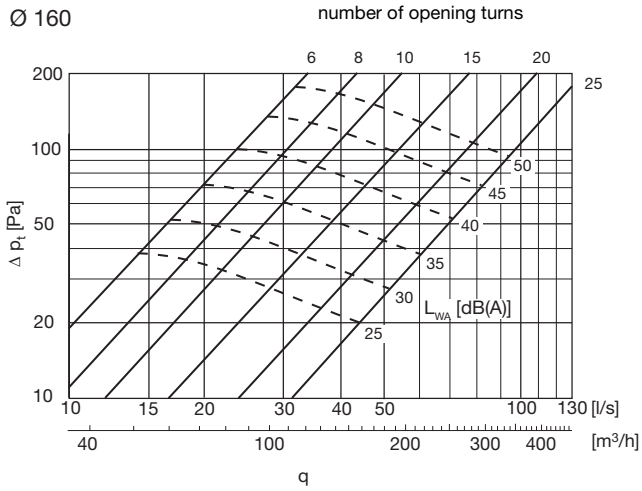
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Valve

KPF

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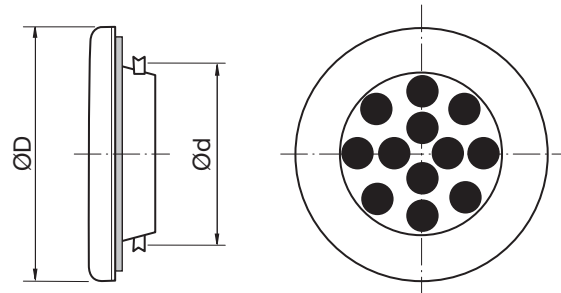


Valve

KDPF



Dimensions



Ød nom	ØD mm	m kg
100	133	0,06

Description

Valve for exhaust air.
Designed for wall or ceiling mounting.
Flat spring holders connect to socket VRGU, VRGL, VRGM, VRFU or VRFM.

Material

Plastic.

Colour

White RAL 9010.

Ordering example



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Valve

KDPF

1

Technical data

Air flow, q [l/s] and [m³/h], total pressure drop, Δp_t [Pa], and A-weighted sound power level, L_{WA} [dB], for different settings, a [mm], are shown in the graphs.

2

Measurement of air flow

Data is available in a separate brochure.

3

Sound power level, L_W [dB], in octave bands

is calculated as $L_{WA} + K_{ok}$. K_{ok} is found in the table below.

4

$\varnothing d$ nom	Diffuser mounted in	Centre frequency [Hz]							
		63	125	250	500	1K	2K	4K	8K
100	Duct	-	-5	-4	-3	-3	-8	-13	-16

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Sound attenuation, ΔL , [dB]

$\varnothing d$ nom	Valve mounted in	Number of open holes	Centre frequency [Hz]							
			63	125	250	500	1K	2K	4K	8K
100	Duct	2	-	23	22	24	18	16	15	10
		6	-	19	16	15	12	8	10	7
		12	-	19	15	12	9	5	5	3

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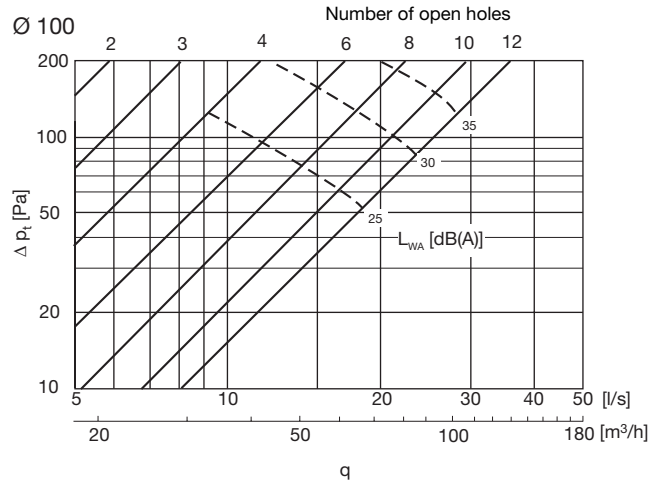
14

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Cover

TLO



Description

Cover or access door.
Designed for wall or ceiling mounting.
Spring holders connect to socket VRFU, VRFM or VRR.

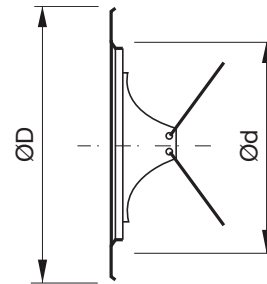
Material

Painted galvanized sheet metal.

Colour

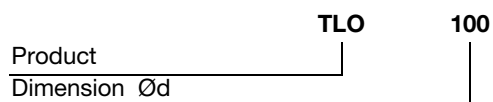
White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	ØD mm	m kg
100	140	0,13
125	170	0,20
160	200	0,28

Ordering example



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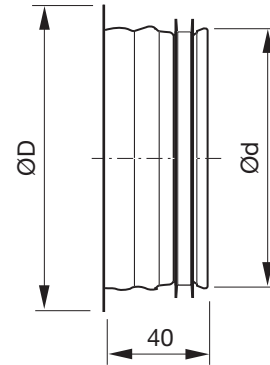
Socket

VRFU

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Dimensions



Description

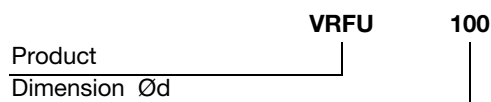
Socket with groove for unit with spring holder.
 Supplied with Safe gasket in the far end.
 Connects to duct.

Material

Galvanized sheet metal.

Ød nom	ØD mm	m kg
100	125	0,09
125	150	0,11
160	185	0,14

Ordering example



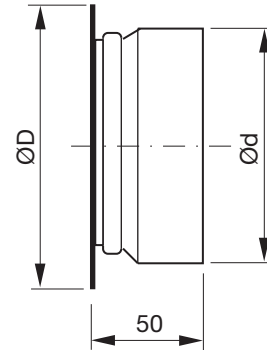


Socket

VRFM



Dimensions



Ød nom	ØD mm	m kg
100	125	0,09
125	150	0,12
160	185	0,16

Description

Socket with groove for unit with spring holder.
Has female connection in the far end.
Connects to fitting.

Material

Galvanized sheet metal.

Ordering example



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Socket

VRGU

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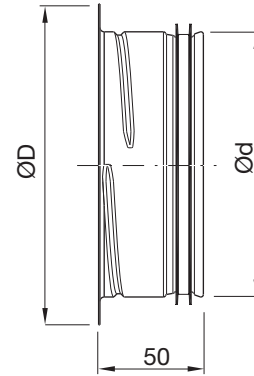
Description

Socket with thread for unit with bayonet holder.
 Supplied with Safe gasket in the far end.
 Connects to duct.

Material

Galvanized sheet metal.

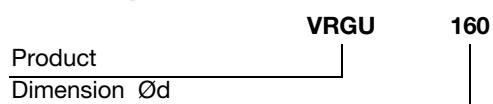
Dimensions



Ød nom	ØD mm	m kg
80	105	0,08
100	125	0,10
125	150	0,12
150	175	0,15
160	185	0,16
200	225	0,22

Material: Galvanized sheet metal.

Ordering example



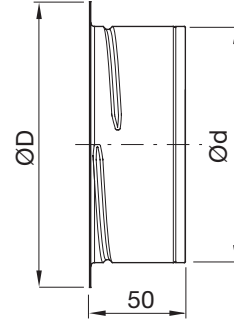


Socket

VRGL



Dimensions



Description

Socket with thread for unit with bayonet holder.
 Supplied without any gasket.
 Connects to duct.

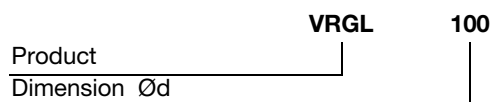
Material

Galvanized sheet metal.

Ød nom	ØD mm	m kg
80	105	0,07
100	125	0,09
125	150	0,11
150	175	0,14
160	185	0,15
200	225	0,18

Material: Galvanized sheet metal.

Ordering example



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Socket

VRGM

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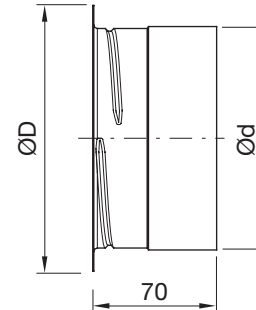
Description

Socket with thread for unit with bayonet holder.
Has female connection in the far end.
Connects to fitting.

Material

Galvanized sheet metal.

Dimensions



Ød nom	ØD mm	m kg
100	125	0,11
125	150	0,14
150	175	0,17
160	185	0,19
200	225	0,25

Material: Galvanized sheet metal.

Ordering example





Cover socket

VRR



Description

Cover socket with groove for unit with spring holder. Are used where older valve types are replaced.

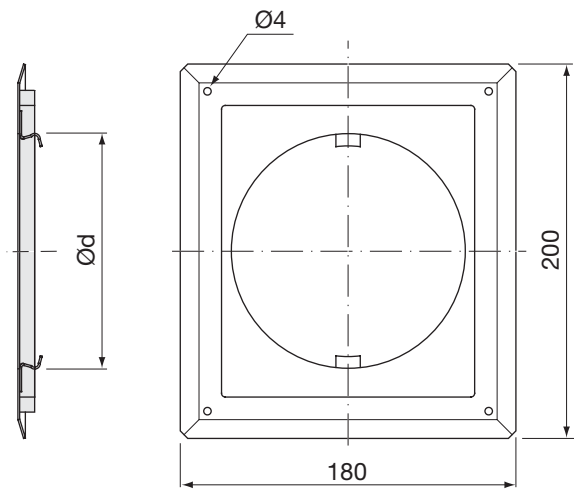
Material

Painted sheet metal.

Colour

White RAL 9010, gloss 70, equivalent to NCS S 0502 Y.

Dimensions



Ød nom	m kg
100	0,23
125	0,20

Ordering example



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Valve adjustment kit

VAK

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Description

VAK is a kit of three tools for adjustment of valves.

The kit consists of:

7

- a a bent pipe for measuring of adjustment pressure for valves with a cone,
- b a straight lance for measuring of adjustment pressure for valves with a gap and
- c an adjustable combination tool for measuring the position of the cone or the size of the gap.

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Ordering example

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Product VAK

Advantages

- The combination tool is adjustable to fit valves \varnothing 100–200.
- The position of the cone (-25 to +25 mm) or the size of the gap (0 to 20 mm) is directly readable.















Roof hoods



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Roof hoods

General

Extract air – All Lindab’s roof hoods are suitable for use as extract air hoods. When choosing extract air hood, the architectural design is important to ensure that the hood is in harmony with the rest of the building. Our range includes ribbed hoods, rectangular and circular roof hoods, models that are available with inclines adapted to the angle of the roof, as well as products with a horizontal profile, of course. If a high extract velocity and long ejection distance are required, choose our HN and HF roof hoods.

NOTE! When fans are not running there is always a risk for drifting snow and damp to penetrate into ducts. At some occasions also condensation can cause trouble.

Outdoor air – Out of Lindab’s range of roof hoods, HN and HF are not suitable as outdoor air hoods. When choosing outdoor air hoods, too, the architectural design is important to ensure that it is in harmony with the rest of the building. Lindab’s range of outdoor air hoods includes the same design as for extract air hoods (see above).

Connection options – Connection to a sleeve, flange or directly to the roof through connection must always be specified where these alternatives are possible. The recommended roof through connection is specified for each hood.

Dimensioning

Extract air – If high extract velocities are not required, as low a pressure drop as possible is desirable. The pressure drop should not exceed 100 Pa in order to minimise self-generated noise emissions and energy consumption.

Outdoor air – When outdoor air hoods are used, there is always a risk of water and snow entering the duct. In order to minimise this risk, the velocity over the free area must not exceed 2 m/s.

Location – When locating roof hoods, the design of the roof should be taken into consideration to ensure that there are no ‘snow pockets’. The hoods must also be positioned so that extract fumes from vehicles etc. cannot be drawn into the outdoor air hood. In the same way, it is necessary to avoid short-circuits arising between outdoor air and extract air. If there is a risk of short-circuits, our combination hood HKOMR should be chosen in the first instance.

Noise – To avoid self-generated noise emissions, the pressure drop must not exceed 100 Pa. At this pressure drop, self-generated noise emissions are so low that they do not need to be added to the fan noise. To calculate noise to the surrounding environment, the calculation example shown to the right can be used.

Version

Material – Lindab’s roof hoods are manufactured as follows.

Galvanised sheet metal, aluzink sheet AZ185, stainless steel sheet 2343, and painted as detailed below.

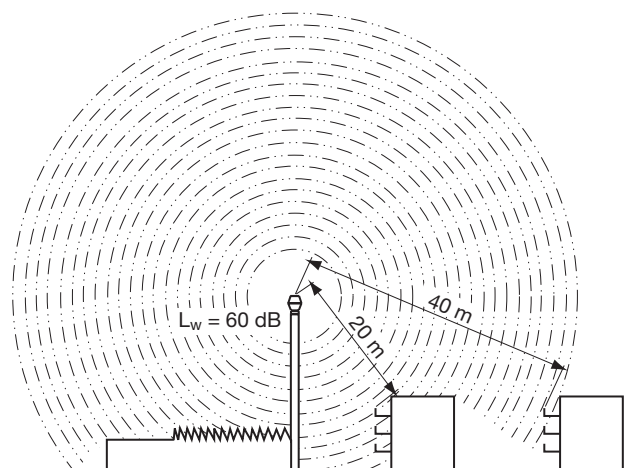
With these alternatives we cover up to and including corrosion class C5.

Painting – We have 3 standard colours (see below) but can also supply other colours to specification.

Standard colours – Black 015 RAL 9005, brick red 742 RAL 8004, zinc grey 244 RAL 7040.

However, this does not apply to VHL and LHR, where black RAL 9005 and grey RAL 7024 are the standard colours.

Noise dispersion outdoors without obstacle



- L_w = Sound power level radiated from sound source [dB]
- r = Distance from sound source to point of listening [m]
- L_p = Sound pressure level at point of listening [dB]
- Q = Direction factor [-]
- 1 = in free field, far from all surfaces
- 2 = on one surface
- 4 = in the corner between two surfaces
- 8 = in the corner between three surfaces

$$L_p = L_w - 10 \cdot \log \left(\frac{4 \cdot \pi \cdot r^2}{Q} \right)$$

$$L_p = 60 - 10 \cdot \log \left(\frac{4 \cdot \pi \cdot 20^2}{1} \right) = 23 \text{ dB}$$

$$L_p = 60 - 10 \cdot \log \left(\frac{4 \cdot \pi \cdot 40^2}{1} \right) = 17 \text{ dB}$$

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
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- 15
- 16
- 17
- 18

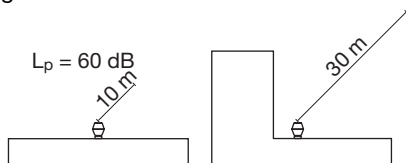


Roof hoods

Example – Noise from roof hood

Conditions – A level of 60 dB(A) has been measured 10 metres from an existing roof hood, the noise output level of which we do not know.

This is now to be moved, and we want to know the sound pressure level 30 metres from its new location closer to a vertical wall surface. We assume that the noise from the fan is unchanged in the two cases.



First you extract the sound power level L_W from the equation above.

$$L_W = L_p + 10 \cdot \log \left(\frac{4 \cdot \pi \cdot r^2}{Q} \right)$$

$$L_W = 60 + 10 \cdot \log \left(\frac{4 \cdot \pi \cdot 10^2}{2} \right) = 88 \text{ dB}$$

I.e. the radiated sound power level L_W from the hood = 88 dB.

$$L_p = L_W - 10 \cdot \log \left(\frac{4 \cdot \pi \cdot r^2}{Q} \right)$$

$$L_p = 88 - 10 \cdot \log \left(\frac{4 \cdot \pi \cdot 30^2}{4} \right) = 53 \text{ dB}$$

I.e. the sound pressure level at 30 m distance from the new location is 53 dB.



Roof hood

H



Description

Circular roof hood intended for outdoor air and extract air. The hood is designed for location above the roof with or without a roof through connection. The air runs both on the top- and downside of the hood. This is valid both for outdoor and extract air. The hood is free-draining downwards. Can also be supplied with a pest-proof mesh.

NOTE! When fans are not running there is always a risk for drifting snow and damp to penetrate into ducts. At some occasions also condensation can cause trouble.

H is manufactured as standard from galvanised steel sheet Z275, but is also available in aluminium zinc AZ 185, stainless acid-resistant steel 2343 or painted.

H in dimensions 100 – 315 has a sleeve connection as standard and fits on the outside of ventilation ducts.

Dimensions 400 – 1250 are supplied with flange connection (including counter-flange) as standard. They are also supplied with twistable lifting and anchoring eyelets. An individual anchoring eyelet must not be subjected to forces in excess of 1 500 N.

All dimensions can also be obtained with connections that fit directly to the roof through connection TGR.

Ordering example

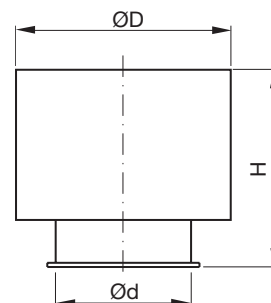
Product	H	315	1
Dimension Ød			
Connection options			
Sleeve (standard 100 – 315)		1	
Flange (standard 400 – 1250)		2	
Transition piece to roof through connection		3-15	

Specify size of roof through connection according to the measurement table to the right.

Specify separately if the hood is to be supplied with a pest-proof mesh from the factory.

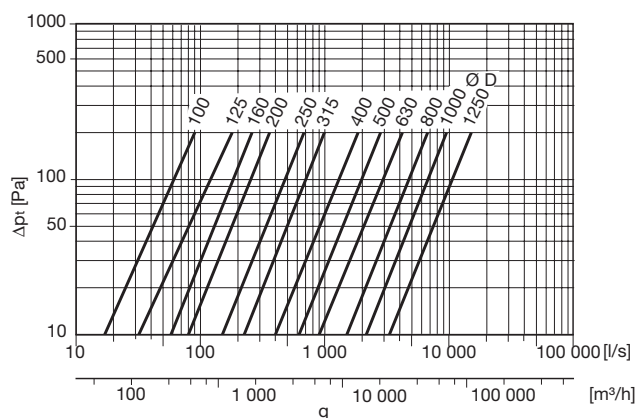
Standard colours, see page 443.

Dimensions



Ød nom	ØD mm	H mm	Free area m ²	m kg	Roof through connection TGR	
					50 mm	100 mm
					Size	
100	163	180	0,008	0,70	3	3
125	203	200	0,012	1,00	3	4
160	260	245	0,020	1,30	3	4
200	330	300	0,031	2,20	3	4
250	410	355	0,049	3,60	4	5
315	515	460	0,078	5,30	5	6
400	690	550	0,126	16,0	5	6
500	860	630	0,196	27,8	6	7
630	1150	780	0,312	41,9	8	9
800	1385	950	0,503	74,0	9	10
1000	1690	1180	0,785	107	11	12
1250	2070	1520	1,230	246	14	15

Technical data





Roof hood

HV



Description

Circular roof hood with angled upper side intended for outdoor air and extract air. The hood is designed for location above the roof with or without a roof through connection. The air runs both on the top- and downside of the hood. This is valid both for outdoor and extract air. The hood is free-draining downwards. Can also be supplied with a pest-proof mesh.

NOTE! When fans are not running there is always a risk for drifting snow and damp to penetrate into ducts. At some occasions also condensation can cause trouble.

HV is manufactured as standard from galvanised steel plate Z275, but is also available in aluminium zinc AZ 185, stainless acid-resistant steel 2343 or painted.

HV is available with different angles in order to be in harmony with the architectural design of the building.

HV in dimensions 100 – 315 has a sleeve connection as standard and fits on the outside of ventilation ducts.

Dimensions 400 – 1250 are supplied with flange connection (including counter-flange) as standard. They are also supplied with twistable lifting and anchoring eyelets. An individual anchoring eyelet must not be subjected to forces in excess of 1 500 N.

All dimensions can also be obtained with connections that fit directly to the roof through connection TGR.

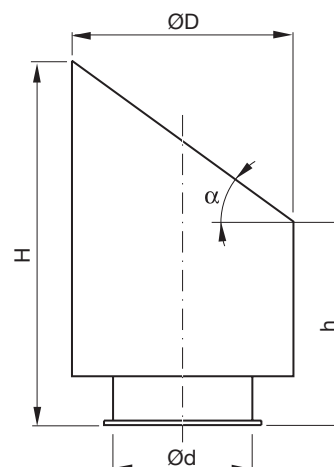
Ordering example

	HV	315	1
Product			
Dimension Ød			
Connection options			
Sleeve (standard 100 – 315)		1	
Flange (standard 400 – 1250)		2	
Transition piece to roof through connection		3-15	

Specify size of roof through connection according to the measurement table to the right.

Specify separately if the hood is to be supplied with a pest-proof mesh from the factory and if a special angle is required. Standard colours, see page 443.

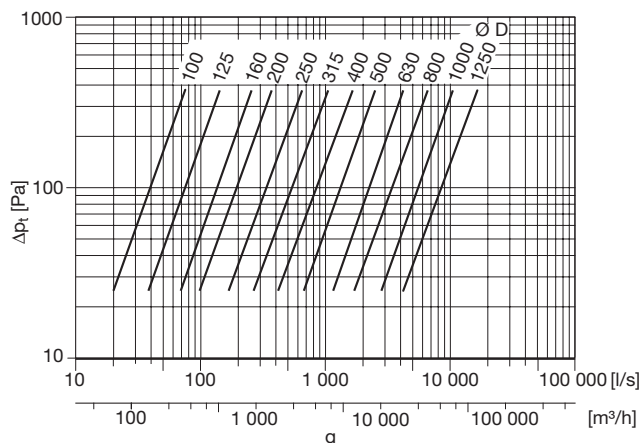
Dimensions



....

Ød nom	ØD mm	h mm	H mm	α °	Free area m ²	m kg	Roof through connection TGR	
							50 mm Size	100 mm Size
100	163	180	343	45	0,008	0,77	3	3
125	203	200	403	45	0,012	1,10	3	4
160	260	245	479	42	0,020	1,43	3	4
200	330	300	567	39	0,031	2,42	3	4
250	410	355	664	37	0,049	3,96	4	5
315	515	460	834	36	0,078	5,83	5	6
400	690	550	1015	34	0,126	16,8	5	6
500	860	630	1188	33	0,196	29,2	6	7
630	1150	780	1470	32	0,312	44,0	8	9
800	1385	1040	1872	31	0,503	75,5	9	10
1000	1690	1270	2285	31	0,785	109	11	12
1250	2070	1610	2805	30	1,230	251	14	15

Technical data





Roof hood

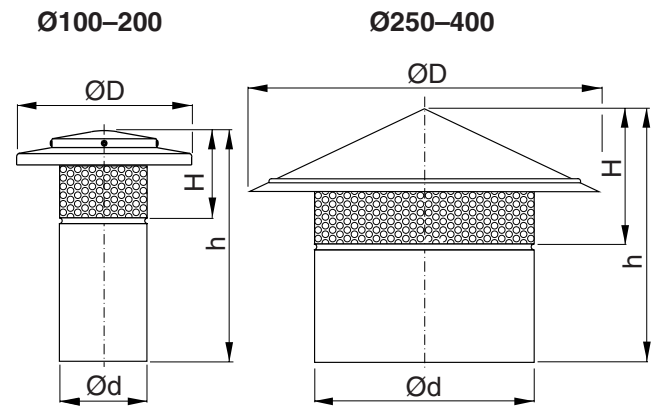
HU



Description

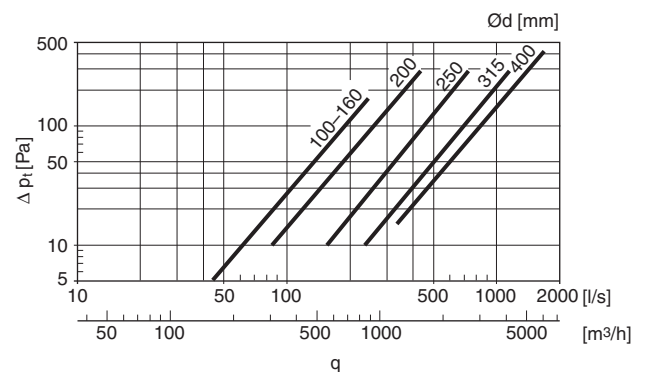
For air exit above roof.
 Provided with a female connection which fits outside a ventilation duct.

Dimensions

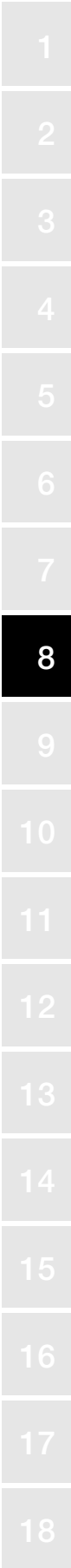


Ød nom	ØD mm	H mm	h mm	m kg	Roof through connection TGR	
					50 mm	100 mm
					Size	
100	200	99	264	0,51	3	3
125	225	102	267	0,65	3	4
160	260	105	270	0,81	3	4
200	315	114	273	1,09	3	4
250	400	156	291	1,45	4	5
315	500	185	303	1,99	5	6
400	600	226	344	2,70	5	6

Technical data



Ordering example



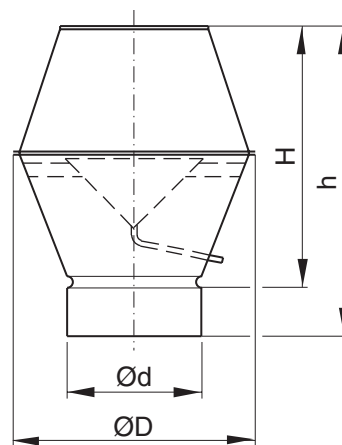


Roof hood

HN



Dimensions



Description

Ventilation hood for air exit above roof, suitable for both industrial and comfort ventilation. The air is ejected in an upwards-directed jet. This avoids contaminating the air in the vicinity of the hood, and soiling of the area around the hood. The ejection is so effective that you can install a fresh air inlet in the immediate vicinity of the hood, without any special precautions.

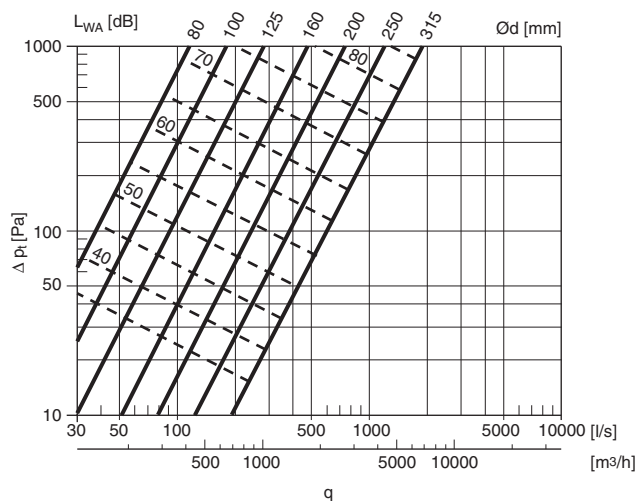
The hood is made of galvanised sheet steel, and can also be supplied in other materials such as stainless steel, aluzinc and painted in various colours, to special order. It has a net over the opening and an internal rain funnel to collect rain-water and snow, which is drained out of the hood through a hose. The hose can withstand temperatures of between -45 and +65 °C.

The hood has a female connection, which fits outside a ventilation duct. The hood can be ordered with other connections, however.

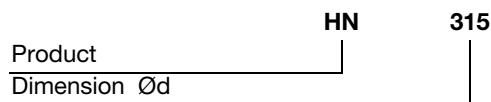
As special delivery the hood can be supplied with three anchoring wire-loops.

Ød nom	ØD mm	H mm	h mm	m kg	Roof through connection TGR	
					50 mm	100 mm
					Size	
80	130	160	310	0,66	3	3
100	180	220	360	0,96	3	3
125	225	240	380	1,26	3	4
160	280	340	475	1,95	3	4
200	345	420	555	2,92	3	4
250	430	505	640	4,31	4	5
315	550	620	755	6,75	5	6

Technical data



Ordering example





Roof hood

HF



Description

Ventilation hood for air exit above roof, suitable for both industrial and comfort ventilation. The air is ejected in an upwards-directed jet. This avoids contaminating the air in the vicinity of the hood, and soiling of the area around the hood. The ejection is so effective that you can install a fresh air inlet in the immediate vicinity of the hood, without any special precautions.

The hood is made of galvanised sheet steel, and can also be supplied in other materials such as stainless steel, aluzinc and painted in various colours, to special order. It has a net over the opening and an internal rain funnel to collect rain-water and snow, which is drained out of the hood through a hose. The hose can withstand temperatures of between -45 and +65 °C.

The hood has a flange connection, which includes a mating flange. The hood can be ordered with other connections, however.

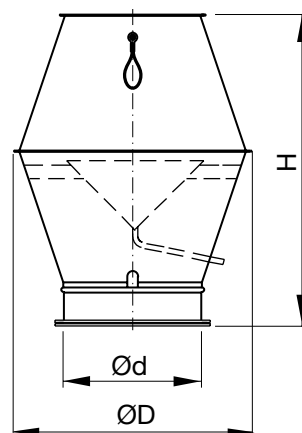
To avoid damage to the net in the opening the hood is supplied with transport protection. This must be removed before the hood is taken into service.

The hood is delivered with three turnable lifting and anchoring wire-loops. A single wire-loop shall not be exposed for forces exceeding 1500 N.

Ordering example

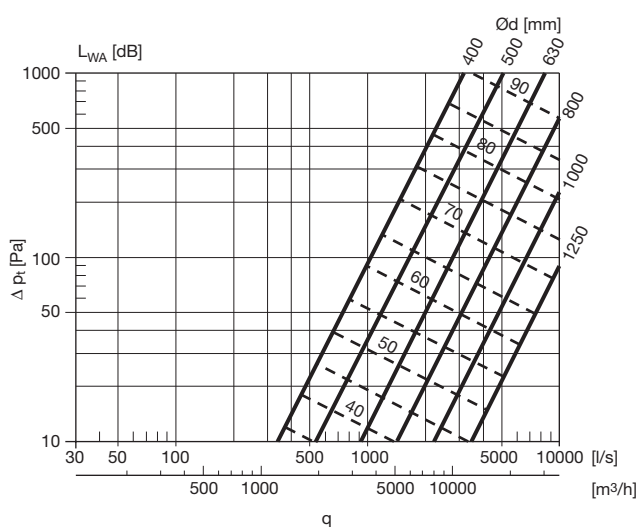
Product **HF** **630**
 Dimension Ød

Dimensions



Ød nom	ØD mm	H mm	m kg	Roof through connection TGR	
				50 mm	100 mm
				Size	
400	685	905	11,1	5	6
500	855	1055	20,0	6	7
630	1075	1295	38,0	8	9
800	1360	1640	63,0	9	10
1000	1600	2110	89,1	11	12
1250	2020	2615	118	14	15

Technical data



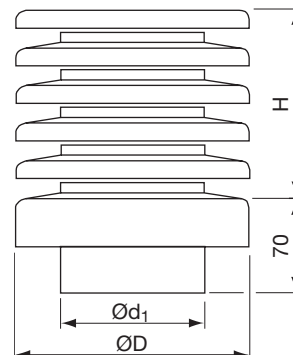


Roof hood

VHL



Dimensions



Description

VHL roof hood with ribs is specially developed to achieve an architecturally correct way of terminating outdoor air intakes and extract air ejectors on the roof. The ribbed hood is supplied as standard in galvanised form, but are also available painted.

VHL can be installed with duct dimensions corresponding to Ød or ØD.

When connecting to the roof through connection TGR, the special transition piece TGR-VHL must be used (see page 458).

Ød nom	ØD mm	H mm	Free area m ²	m kg	Roof through connection TGR	
					50 mm Size	100 mm Size
100	160	110	0,019	1,00	3	3
125	200	145	0,033	1,50	3	4
160	250	180	0,055	2,00	3	4
200	315	250	0,100	2,90	3	4
250	315	250	0,125	3,20	4	5
315	400	290	0,182	6,40	5	6
400	500	370	0,306	10,1	5	6
500	630	410	0,441	15,9	6	7

Ordering example



Standard colours, see page 443.

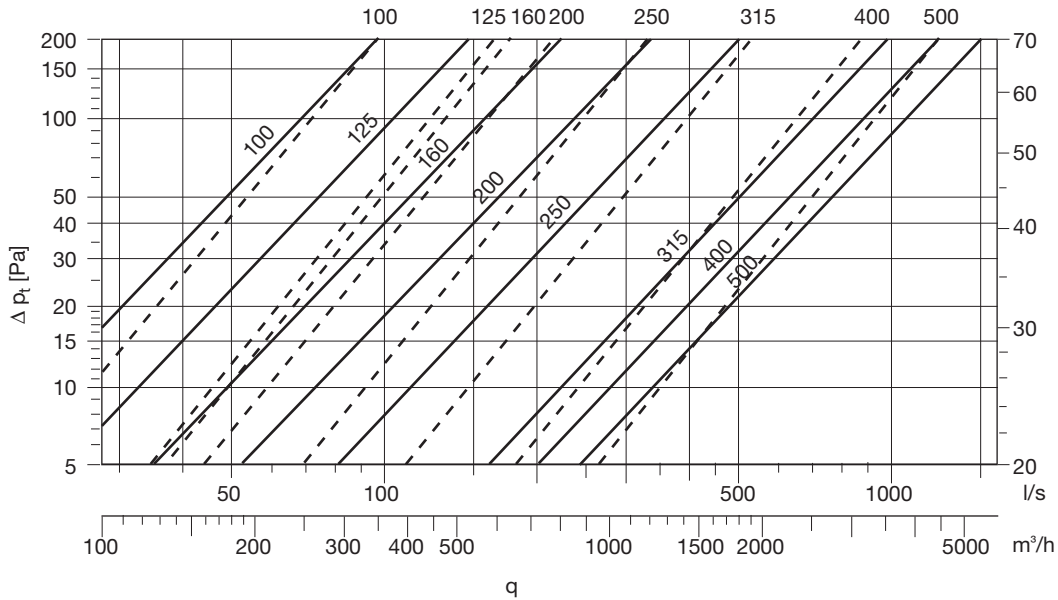


Roof hood

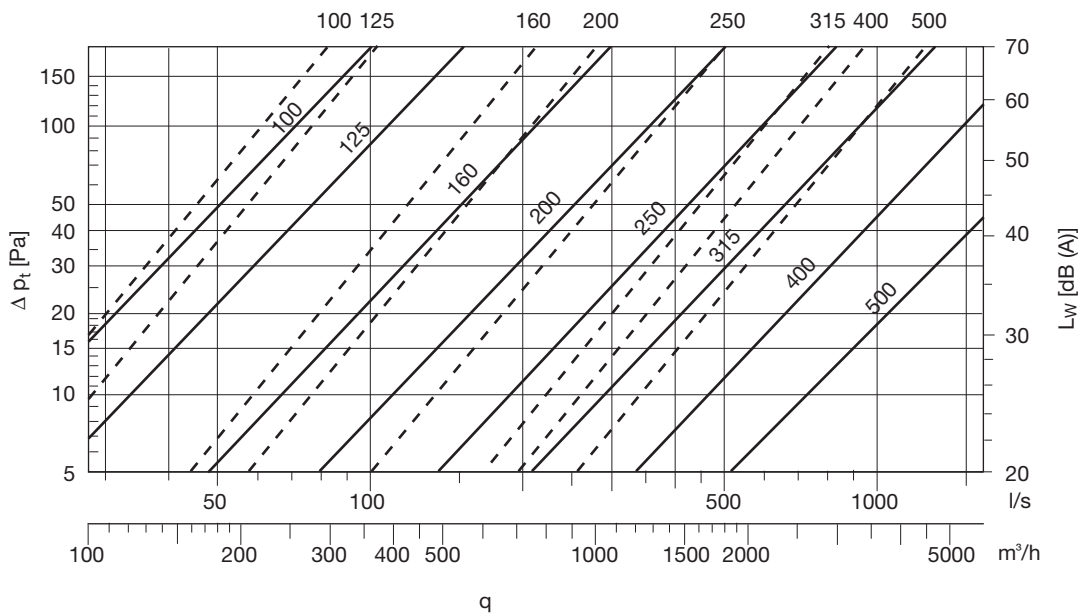
VHL

Technical data

Outdoor air



Extract air



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Roof hood

HRR



Dimensions



Description

Rectangular roof hood intended for outdoor air and extract air. HRR is designed for positioning above the outer roof on the roof through connection. The air runs both on the top- and downside of the hood. This is valid both for outdoor and extract air. The hood is free-draining downwards.

Can also be supplied with a pest-proof mesh.

HRR is manufactured as standard from galvanised steel sheet Z275, but is also available in aluminium zinc AZ 185, stainless, acid-resistant steel 2343 or painted.

Sizes 7 and 9 are supplied with four twistable lifting and anchoring wire-loops. An individual anchoring eyelet must not be subjected to forces in excess of 1 500 N.

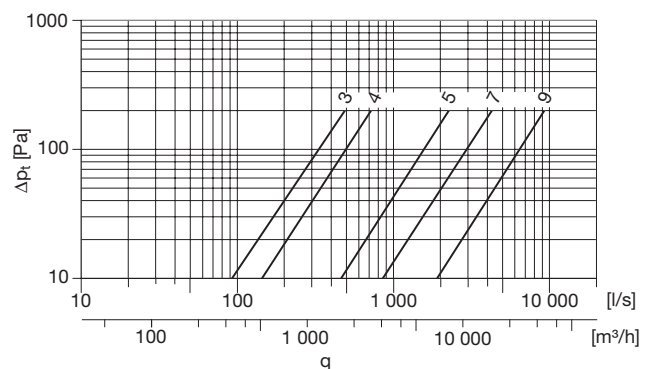
Size	A mm	B mm	H mm	Free area m ²	m kg	Roof through connection TGR	
						50 mm	100 mm
3	400	450	150	0,045	5,00	3	3
4	500	550	205	0,100	7,80	4	4
5	600	750	300	0,260	11,9	5	5
7	800	1050	450	0,500	27,2	7	7
9	1000	1350	575	0,720	48,4	9	9

Ordering example

Product **HRR** **4**
 Type _____
 Size _____

Specify separately if the hood is to be supplied with a pest-proof mesh from the factory.
 Standard colours, see page 443.

Technical data





Roof hood

HVR



Description

Rectangular roof hood with angled upper side intended for outdoor air and extract air. HVR is designed for positioning above the outer roof on the roof through connection. The air runs both on the top- and downside of the hood. This is valid both for outdoor and extract air. The hood is free-draining downwards.

Can also be supplied with a pest-proof mesh.

HVR is manufactured as standard from galvanised steel sheet Z275, but is also available in aluminium zinc AZ 185, stainless, acid-resistant steel 2343 or painted.

HVR is available with different angles in order to be in harmony with the architectural design of the building.

Sizes 7 and 9 are supplied with four twistable lifting and anchoring wire-loops. An individual anchoring eyelet must not be subjected to forces in excess of 1 500 N.

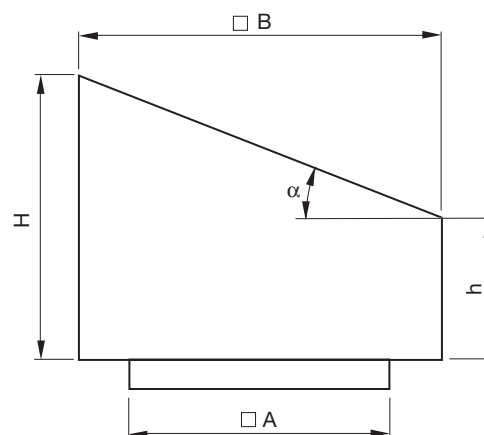
Ordering example

Product **HVR** **4**
 Type _____
 Size _____

Specify separately if the hood is to be supplied with a pest-proof mesh from the factory and if a special angle is required.

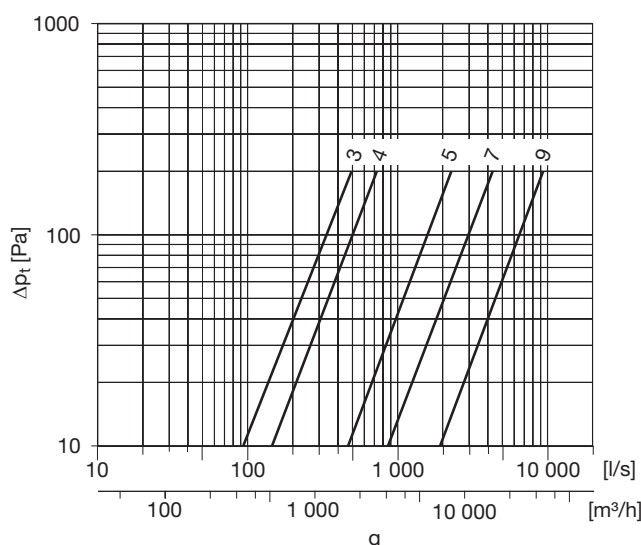
Standard colours, see page 443.

Dimensions



Size	A mm	B mm	h mm	H mm	α °	Free area m ²	m kg	Roof through connection TGR	
								50 mm	100 mm
3	400	450	150	410	30	0,045	6,40	3	3
4	500	550	205	525	30	0,100	9,90	4	4
5	600	750	300	735	30	0,260	17,0	5	5
7	800	1050	450	1060	30	0,500	34,3	7	7
9	1000	1350	575	1360	30	0,720	67,5	9	9

Technical data



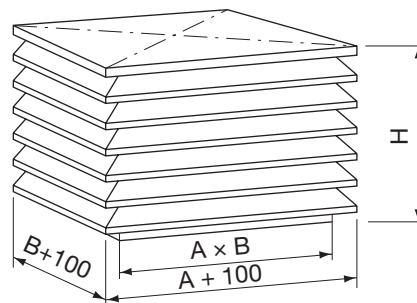


Roof hood

LHR



Dimensions



Description

LHR is a rectangular roof hood with ribs that is used for both outdoor air and extract air.

The hood is supplied as standard in galvanised form, but is also available painted.

LHR is supplied as standard with LS joint for guiding.

When connecting to the roof through connection TGR, the special transition piece TGR-LHR must be used. (see page 458).

When connecting to the roof through connection TGR, the special transition piece TGR-LHR must be used. (see page 458).

A mm	B mm	H mm	Num- ber of ribs	Free area m ²	m kg	Roof through connection TGR	
						50 mm Size	100 mm Size
300	300	370	5	0,216	5,40	4	5
400	400	390	6	0,384	8,7	5	6
500	500	450	7	0,600	12,6	6	7
600	600	450	7	0,720	15,1	7	8
700	700	510	8	1,008	20,2	8	9
800	800	570	9	1,344	25,9	9	10
900	900	630	10	1,728	32,4	10	11
1000	1000	690	11	2,160	47,4	11	12
1100	1100	750	12	2,640	56,9	12	13
1200	1200	750	12	2,880	62,1	13	14
1300	1300	810	13	3,432	72,1	14	15
1400	1400	870	14	4,032	84,5	15	16
1500	1500	930	15	4,680	97,0	16	-

A x B = Duct dimensions

Ordering example

	LHR	S	300	300	1	LS
Product						
Colour, if desired						
A in mm						
B in mm						
Duct connection						
Joining methods (Type 1)						

Standard colours, see page 443.

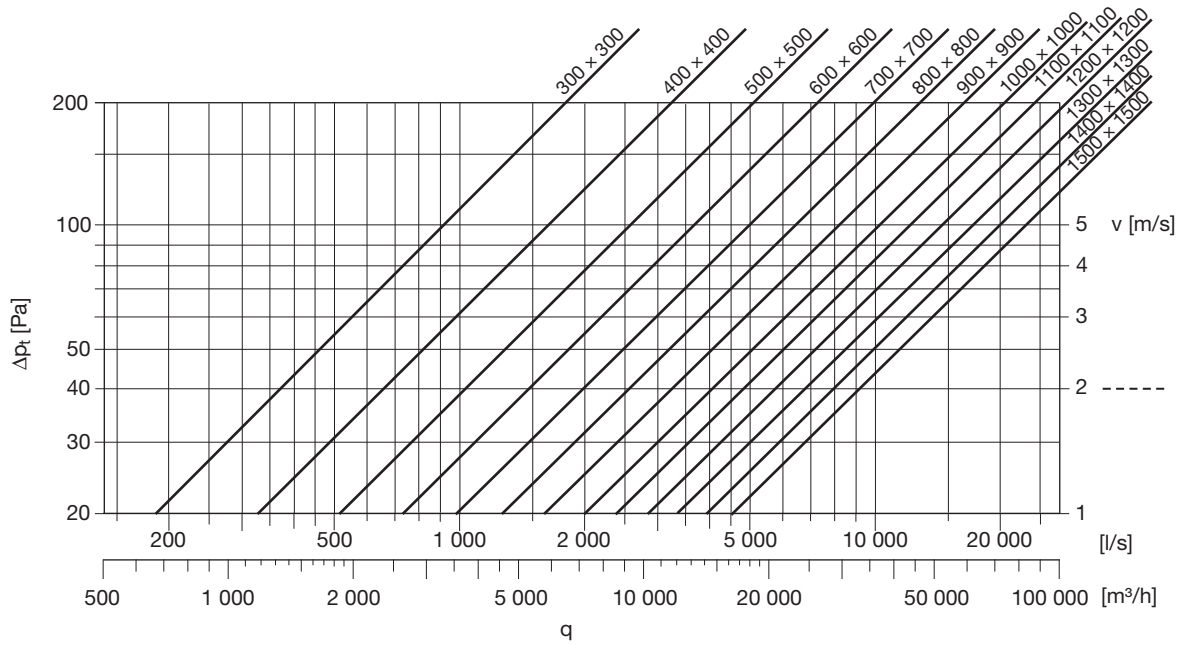


Roof hood

LHR

Technical data

Outdoor air/extract air



....

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 9
- 10
- 11
- 12
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- 15
- 16
- 17
- 18

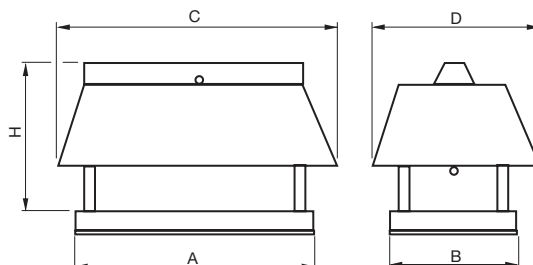


Roof hood

HKOMR



Dimensions



Description

Combi-hood intended for outdoor air intake and the expelling of extract air.

HKOMR is designed for location above the roof with or without a roof through connection.

The intake and extract sections are separated with an internal wall. The intake section is protected against precipitation with a roof and pest-proof mesh. The extract section has a high-speed device and water-collection vessel. This part is also available with a pest-proof mesh. Air short circuit is prevented by the air intake's roof and the extract's high-speed device that ensures a long ejection distance.

HKOMR is manufactured as standard from galvanised steel sheet Z275, but is also available in aluminium zinc AZ 185, stainless, acid-resistant steel 2343 or painted.

HKOMR is produced as standard for installation on Lindab's roof through connection TGKOMR, but can also be supplied with an adapted connection hose for guiding directly on to the duct.

Size	A mm	B mm	C mm	D mm	H mm
2	750	400	850	500	560
3	950	500	1050	600	590
4	1150	600	1450	900	640
5	1350	700	1650	1000	740
6	1550	800	1850	1100	840
8	1950	1000	2450	1500	910
10	2350	1200	2850	1700	1090
12	2750	1400	3350	2000	1170
14	3150	1600	3850	2300	1345

Size	Free area		m kg
	outdoor air m ²	extract air m ²	
2	0,138	0,030	16,7
3	0,202	0,059	23,1
4	0,291	0,098	36,6
5	0,501	0,162	50,3
6	0,764	0,256	65,9
8	1,159	0,420	102
10	1,948	0,624	148
12	2,639	1,055	244
14	3,180	1,331	320

Ordering example

Product	HKOMR	3
Type		
Size		

Alternatives that should be specified separately if required:

- With pest-proof mesh on the extract section
- With adapted connection hose for guiding directly into the duct.

Standard colours, see page 443.

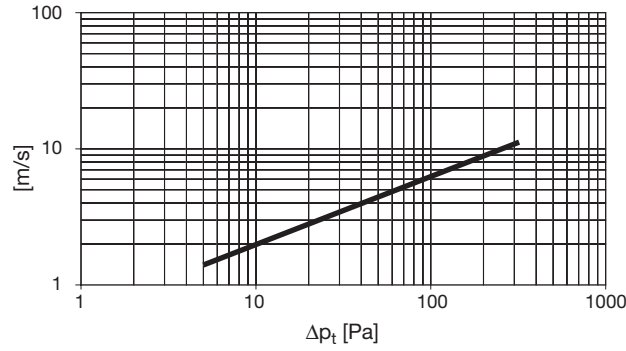


Roof hood

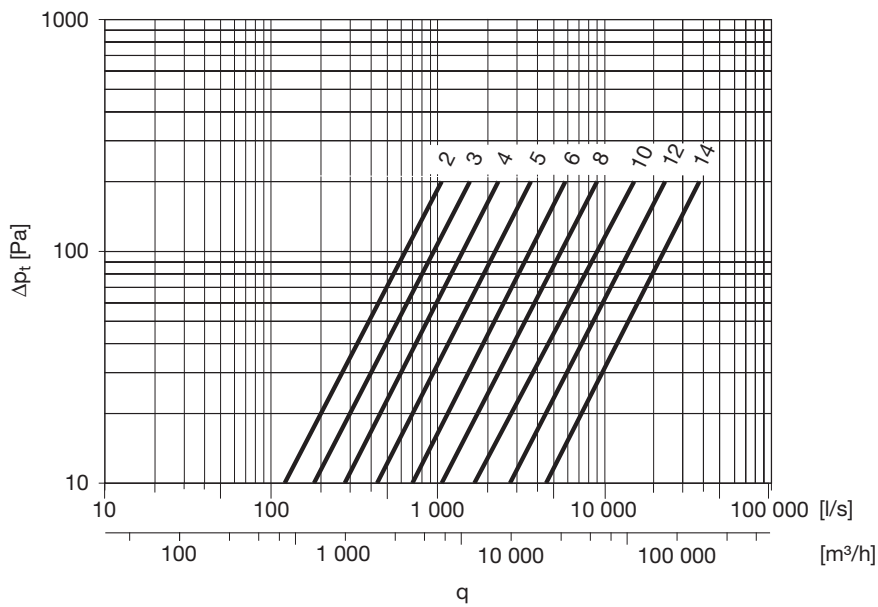
HKOMR

Technical data

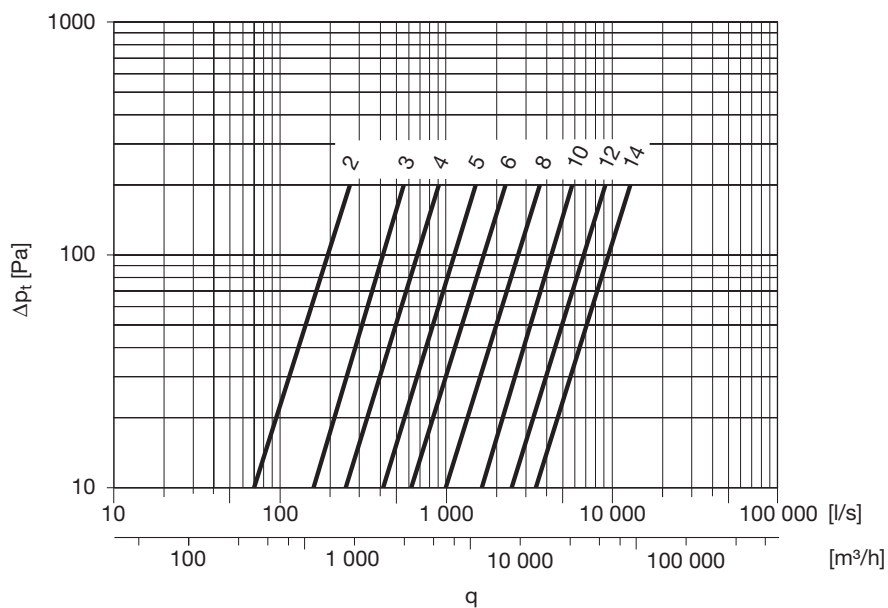
Expelling velocity extract air



Outdoor air



Extract air



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Roof transition

TGR

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Description

Intended for connection to roof hood and roof fan. Available with various types of insulation for condensation or fire protection. Two fixing profiles are supplied to suit the roof pitch.

The upper connection in sizes 100-315 suits roof hood HN, for example.

The upper connection in sizes 400-1200 is supplied without flange and is made so that you can use the enclosed mating flange from roof hood HF for instance.

TGR can as addition be provided with two through-connections for electric power and control voltage.

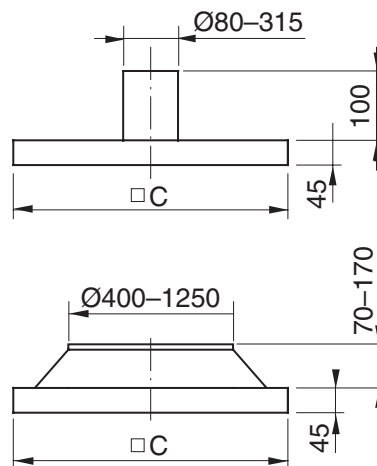
TGR is manufactured as standard from galvanized steel sheet Z275, but is also available in aluminium zinc AZ 185, stainless steel 2333, stainless acid-resistant steel 2343 or painted.

The duct connection is supplied with RJFP joint for guiding.

Dimensions

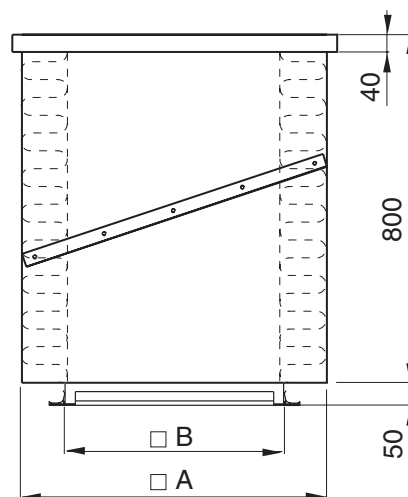
TGR-OA

- Upper connection



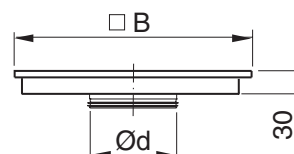
The C-measure of the upper connection (TGR-OA) shall fit the A-measure of the roof transition (TGR).

TGR



TGR-NA

- Lower connection



The B-measure of the lower connection (TGR-NA) shall fit the B-measure of the roof transition (TGR).



Roof transition

TGR

Dimensions

Size	B mm			C mm	Weight kg	
	A mm	50 mm insul.	100 mm insul.		50 mm insul.	100 mm insul.
3	300	200	100	400	16,9	21,9
4	400	300	200	500	22,9	30,1
5	500	400	300	600	29,7	39,2
6	600	500	400	700	37,4	49,6
7	700	600	500	800	43,9	58,4
8	800	700	600	900	50,3	67,1
9	900	800	700	1000	59,2	78,8
10	1000	900	800	1100	65,9	87,9
11	1100	1000	900	1200	72,7	97,0
12	1200	1100	1000	1300	82,6	110,3
13	1300	1200	1100	1400	99,1	129,9
14	1400	1300	1200	1500	124,8	159,1
15	1500	1400	1300	1600	138,9	177,2
16	1600	1500	1400	1700	153,8	196,3

Hole punching dimensions (A + 20 mm) × (A + 20 mm)

Ordering example

	TGR	3	1	2	1
Product					
Size					
Type of insulation					
Fire protection 50 mm		1			
Fire protection 100 mm			2		
Condensation 50 mm				3	
Internal cladding of insulation					
Zink plated steel				1	
Zink plated perf. steel				2	
Aluzink sheet metal AZ 185				3	
Aluzink sheet metal AZ185 perf.				4	
Stainl. acid-res. steel 2343				5	
Stainl. acid-res. steel perf. 2343				6	
No internal cladding (Only applicable at condensation insulation)				7	
Stainless steel 2333				8	
External material					
Zink plated steel				1	
Aluzink sheet metal AZ 185				2	
Stainl. acid-res. steel 2343				3	
Stainless steel 2333				4	

Accessories

Upper connection	TGR-OA	3	125	1
Product				
Size				
Hood dimension				
Material				
Zink plated steel		1		
Aluzink sheet metal AZ 185		2		
Stainl. acid-res. steel 2343		3		
Stainless steel 2333		4		

Lower connection	TGR-NA	3	125	1	50
Product					
Size					
Connection Measure					
Material					
Zink plated steel		1			
Aluzink sheet metal AZ 185		2			
Stainl. acid-res. steel 2343		3			
Stainless steel 2333		4			
Insulation thickness					

Upper connection only for roof hood VHL

	TGR-VHL	-	3	-	125	-	1
Product							
Size							
Hood dimension							
Material							
Zink plated steel			1				
Aluzink sheet metal AZ 185			2				
Stainl. acid-res. steel 2343			3				
Stainless steel 2333			4				

Upper connection only for roof hood LHR

	TGR-LHR	-	5	-	400	-	400	-	1
Product									
Size									
A mm									
B mm									
Material									
Zink plated steel			1						
Aluzink sheet metal AZ 185			2						
Stainl. acid-res. steel 2343			3						
Stainless steel 2333			4						





Roof transition

TGKOMR



Description

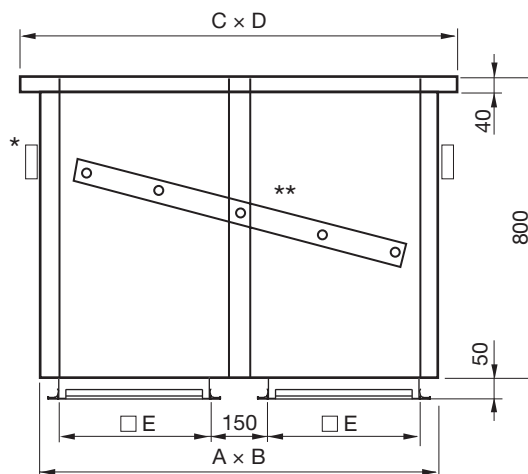
Roof transition adapted for combi-hood HKOMR. The transition is produced with 50 mm fire or condensation insulation. At connection to circular duct two lower connections TGR-NA are used. The roof transition is manufactured as standard in galvanised steel plate, but is available in stainless acid-resistant steel 2343, aluminium zinc AZ 185 or painted. Two angle brackets are supplied for adaptation to the relevant roof incline. Sizes and dimensions according to drawing and table, but is available in extended version which is specified separately. The duct connections are supplied with RJFP joints for guiding.

Ordering example

	TGKOMR 3 1 2 1
Product	
Size	
Type of insulation	
Fire protection 50 mm	1
Condensation 50 mm	2
Internal cladding of insulation	
Zink plated steel	1
Zink plated perf. steel	2
Aluzink sheet metal AZ 185	3
Aluzink sheet metal AZ185 perf.	4
Stainl. acid-res. steel 2343	5
Stainl. acid-res. steel perf. 2343	6
No internal cladding (Only applicable at condensation insulation)	7
External material	
Zink plated steel	1
Aluzink sheet metal AZ 185	2
Stainl. acid-res. steel 2343	3

Standard colours see page 443.

Dimensions

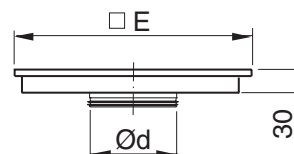


Size	A mm	B mm	C mm	D mm	E mm	m kg
2	650	300	740	390	200	32,5
3	850	400	940	490	300	43,5
4	1050	500	1140	590	400	54,3
5	1250	600	1340	690	500	72,4
6	1450	700	1540	790	600	84,5
8	1850	900	1940	990	800	113
10	2250	1100	2340	1190	1000	138
12	2650	1300	2740	1390	1200	190
14	3050	1500	3140	1590	1400	251

Hole punching dimensions = $(A + 20) \times (B + 20)$
* and ** are alternative positions for angle brackets

TGKOMR-NA

- Lower connection



The E-measure of the lower connection (TGKOMR-NA) shall fit the E-measure of the roof transition (TGKOMR).

Accessories

Lower connection	TGKOMR-NA 3 125 1
Product	
Size	
Connection measure	
Material	
Zink plated steel	1
Aluzink sheet metal AZ 185	2
Stainl. acid-res. steel 2343	3












Other circular products



Lindab	1
General information and theory	2
Safe	3
Silencers	4
Dampers & Measure units	5
Fire dampers & Smoke evacuation	6
Air valves	7
Roof hoods	8
Other circular products	9
Transfer	10
Rectangular	11
Flexible ducting	12
Isol	13
Access doors	14
Smart tools	15
Duct suspensions & Support systems	16
Fastening material	17
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Content – Other circular products

1	Air entry nozzle	IMSKU..... 463
2		
3	Jet for air entry nozzle	DY 464
4		
5	Plenum or distribution chamber	SLRU..... 465
6		
7	Duct filter	STR 466
8		
9	Sealing clamp	SVK 467
10		
11	End cover	EP..... 468
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13	Flanges	FL 469
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15	Wall stubs	TVILU 470 TVIL..... 471
16		
17	Membrane lead-through	MG 472 MGL 473
18		



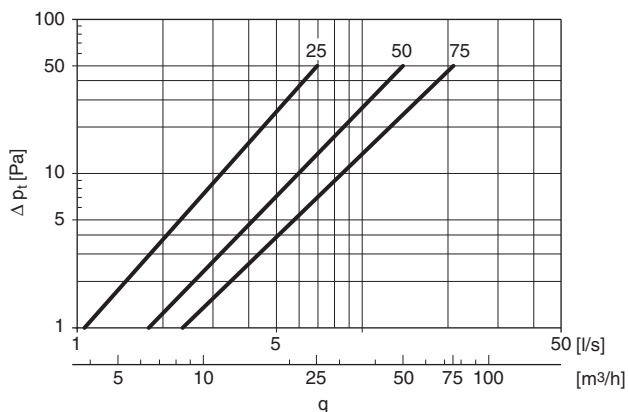
Air entry nozzle

IMSKU

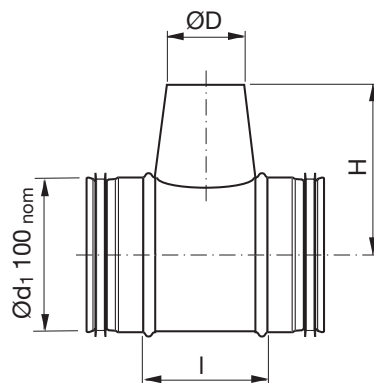


Description

Used for ducting in bomb shelters, and is dimensioned for the air volumes specified by the Civil Defence Board regulations.



Dimensions



Size nom	ØD mm	l mm	H mm	m kg
25	35	85	95	0,31
50	50	110	110	0,38
75	60	110	110	0,39

Size nom	q _{max} m³/h	Maximum no. of persons
25	25	10
50	50	20
75	75	30

Ordering example

Product	IMSKU	75
Type		
Size		

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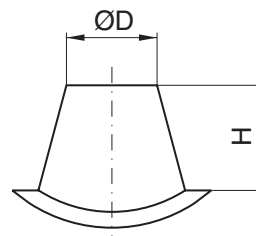
Jet for air entry nozzle

DY

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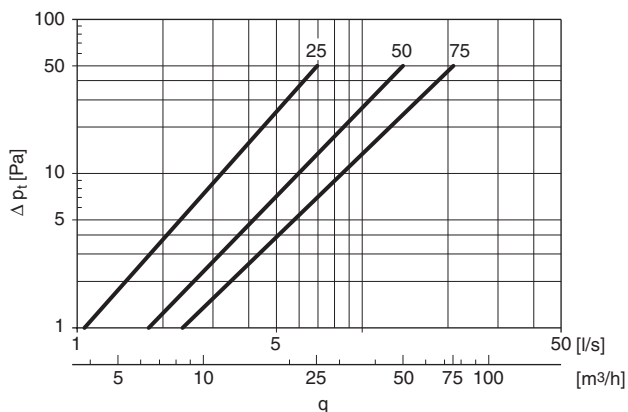
Dimensions



Description

Used for ducting in bomb shelters, and is dimensioned for the air volumes specified by the Civil Defence Board regulations.

Size nom	ØD mm	H mm	m kg
25	35	45	0,04
50	50	60	0,09
75	60	60	0,10



Size nom	q _{max} m³/h	Maximum no. of persons
25	25	10
50	50	20
75	75	30

Ordering example

Product	DY	75
Type		
Size		



Plenum or distribution chamber

SLRU



Description

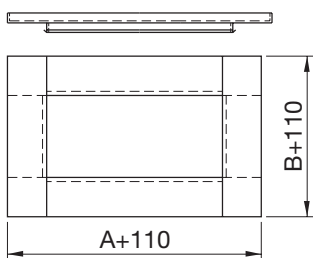
Intended for installation beneath joists, for collection or distribution of connected ducts underneath. The number of ducts for each size is noted in the table.

The plenum or distribution chamber is clad internally with fire protection insulation of 50 or 100 mm thickness. The insulation is protected by perforated sheet metal steel against damages from cleaning procedures.

The chamber has a simply removable lid.

RAM

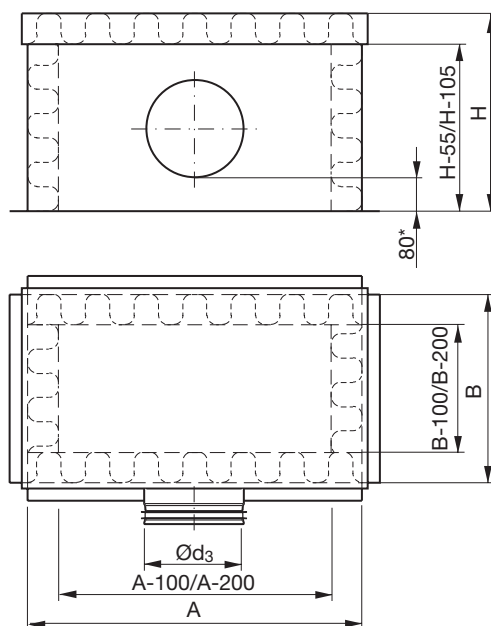
- Casting-in frame



Used to locate plenum or distribution chamber SLRU in. The chamber is locked to the frame with folding flaps.

Other dimensions can be made to order.

Dimensions



Ordering example

	SLRU	1300	310	355	50	0
Product						
Length	A					
Width	B					
Height	H					
Insulation thickness	50 alt. 100					
Casting-in frame	0 = without, 1 = with					

Ød ₃ Nm	Insulation thickness								Maximum no. of connected ducts						Frame m kg
	50 mm				100 mm				Ød _{nom}						
	A* mm	B* mm	H* mm	m kg	A* mm	B* mm	H* mm	m kg	63	80	100	125	160	200	
160	310	310	355	7,23	410	410	405		1	1	1	1	1	1	3,08
160	550	310	355	10,6	650	410	405		3	3	3	2	2	2	3,52
200	700	310	355	12,8	800	410	405		4	4	4	4	3	2	4,28
200	900	310	355	15,7	1000	410	405		5	5	5	5	4	3	4,90
200	1100	310	355	18,5	1200	410	405		7	7	6	6	5	4	5,52
200	1300	310	355	21,4	1400	410	405		8	8	8	8	6	5	6,14

* Tolerance ±5 mm

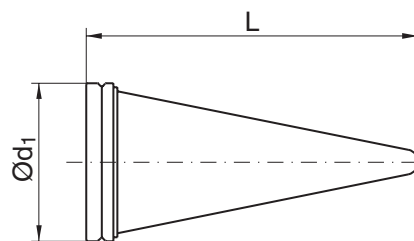


Duct filter

STR



Dimensions



Ød ₁ Nm	L mm	tolerance mm	area m ²	m kg
100	220	± 20	0,04	0,04
125	260	± 20	0,05	0,08
160	340	± 20	0,09	0,12
200	420	± 25	0,14	0,16
250	540	± 30	0,22	0,23
315	670	± 30	0,34	0,36
400	860	± 35	0,55	0,59
500	1100	± 50	0,89	0,72
630	1350	± 50	1,37	0,91

Description

The duct filter fits in all fittings with a Safe-groove. To install the filter in a T-piece means a simple mounting and replacing.

The special tapered shape gives 4–5 times larger filter area than the equivalent duct cross section area, giving lower pressure drop and longer exchange intervals than the equivalent flat filter.

Standard filter class is G4, but class F5 is optionally available. The diagram shows the pressure drop across a clean filter, including T-piece. The filter can be used to twice this pressure drop. It is a good idea to dimension the system for the average value.

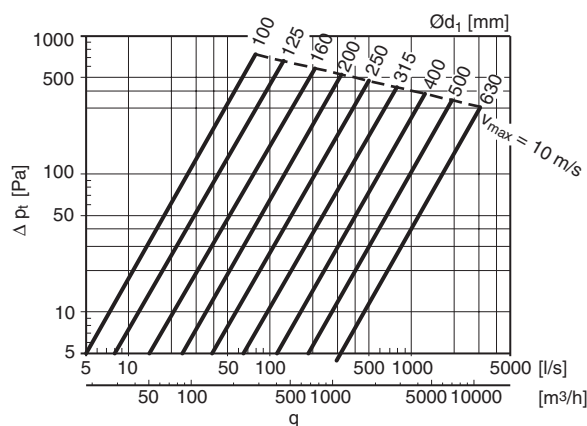
$$\Delta p_{t \text{ dim}} = 1,5 \cdot \Delta p_{t \text{ clean}}$$

Max temperature = 120 °C

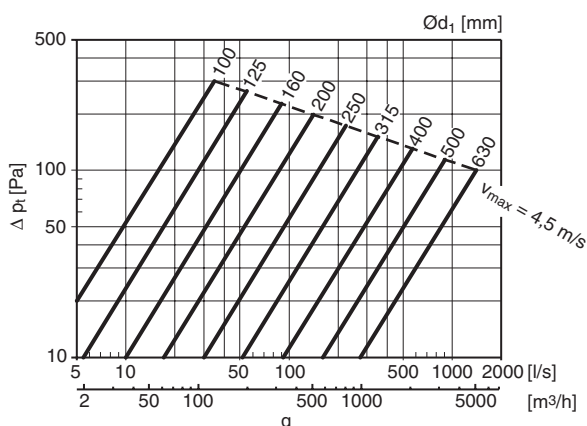
Highest recommended air speed in the duct.

Filter class	v _{max} (m/s)
G4	10
F5	4,5

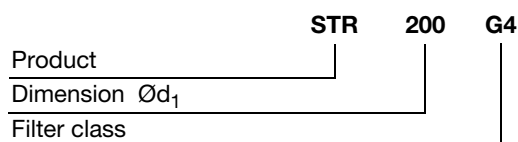
Filter class G4



Filter class F5



Ordering example



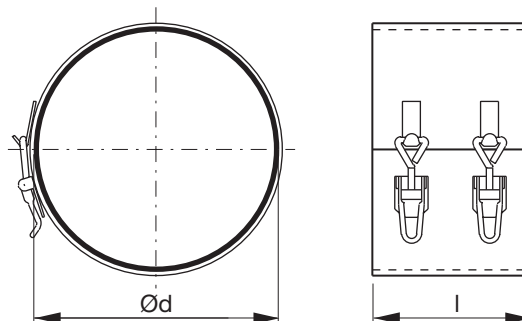


Sealing clamp

SVK



Dimensions



Description

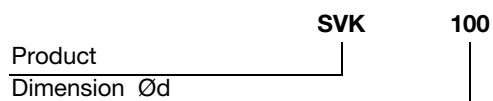
Removable sealing clamp made from galvanised sheet steel. Coated internally with a thick EPDM foam rubber seal.

The sealing clamp can join two ducts together, fitting to duct or duct to fitting.

The sealing clamp is very useful when you want to be able to remove a fitting or a unit from a ventilation system, and can also be used to advantage for repairing a duct system.

Ød nom	l mm	m kg
80	130	0,30
100	130	0,34
125	130	0,40
160	130	0,46
200	130	0,59
250	190	0,94
315	190	1,17
400	250	1,42
500	250	1,75

Ordering example



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End cap

EP

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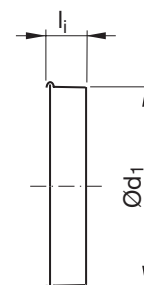
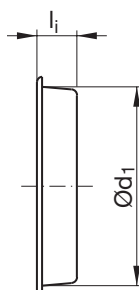
Description

Fits inside a duct.

Dimensions

Ø 63–500

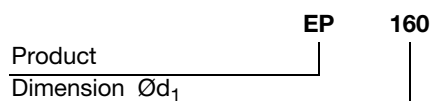
Ø 630–1250



Ød ₁ nom	l _i mm	m kg
63	20	0,03
80	21	0,05
100	23	0,09
125	20	0,09
160	22	0,14
200	20	0,19
250	26	0,27
315	21	0,51
400	20	0,76
500	20	1,22
630 *	80	2,41
800 *	100	4,87
1000 *	100	7,09
1250 *	120	15,5

* Hand made

Ordering example





Flat bar flange

FL

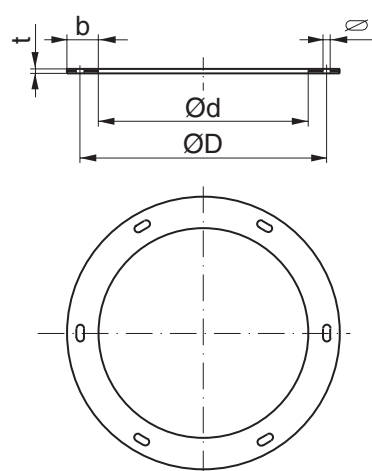


Description

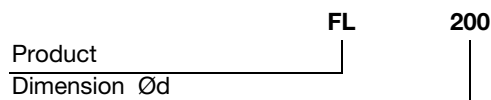
Heavy flange made from flat bar which then is hot dip galvanized. It suits both spirally swaged and lengthways swaged ducts. Oval bolt holes facilitate assembly.

Other dimensions and hole spacings can be provided for large orders.

Dimensions



Ordering example



Dimensions

Ød			ØD		f mm	Bolts to DIN 601			b x t mm	m kg
nom mm	real mm	tolerance mm	real mm	tolerance mm		quantity pcs	dim	L mm		
80	82,5		108		7,0 x 16	4	M6	16	25 x 3	0,18
100	102	+1,0	129							0,22
112	114	-0,0	141							0,25
125	127		155							0,30
140	142	+1,5 -0,0	176	±1,0	9,5 x 20	6	M8	20	30 x 4	0,49
150	152		184							0,52
160	162		194							0,55
180	182		213							0,60
200	203		235							0,70
224	227		259							0,74
250	253		286							0,81
280	283		322							1,31
300	303	341	1,40							
315	318	356	1,47							
355	358	395	1,63							
400	404	+2,0 -0,0	438	±1,5	11,5 x 24	12	M10	25	35 x 5	1,80
450	454		487							2,02
500	504		541							2,35
560	564		605							2,81
600	604		644							3,00
630	634		674							3,15
710	714		751							3,54
800	804		837							3,90
900	904		934							4,39
1000	1005		1043							4,89
1120	1125		1174							8,36
1250	1255		1311							9,32
1400	1407	1465	10,4							
1600	1607	1637	11,8							



Casting-in programme – Wall stub

TVILU

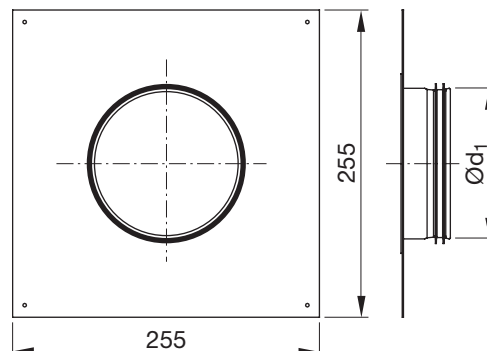
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Description

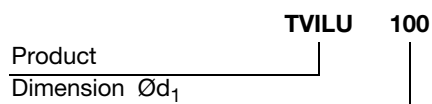
With Safe connection.

Dimensions



Ød ₁ nom	m kg
100	0,29
125	0,31
160	0,32

Ordering example





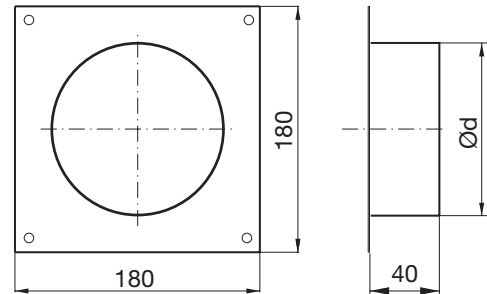
Casting-in programme – Wall stub

TVIL



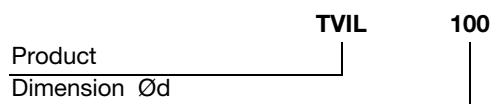
Description
With female end.

Dimensions



Ød nom	m kg
100	0,15
125	0,20

Ordering example

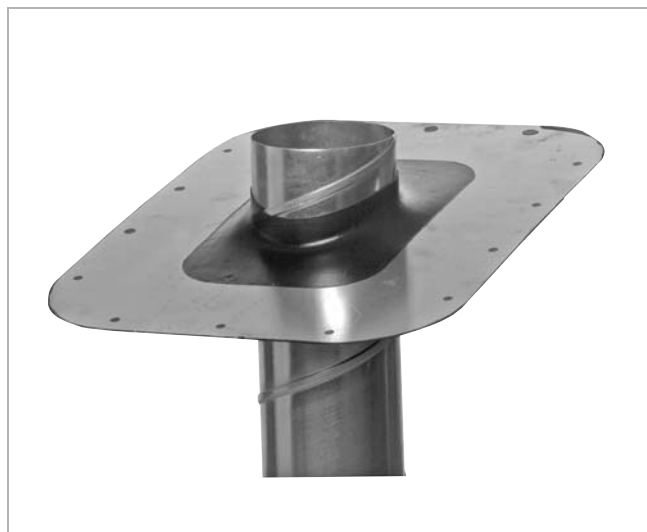


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Membrane lead-through

MG



Description

The product is based on a special flexible 2-component rubber (1) that is integrated with a 1 mm aluminium plate (2).

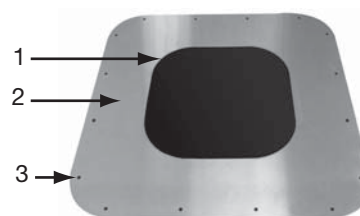
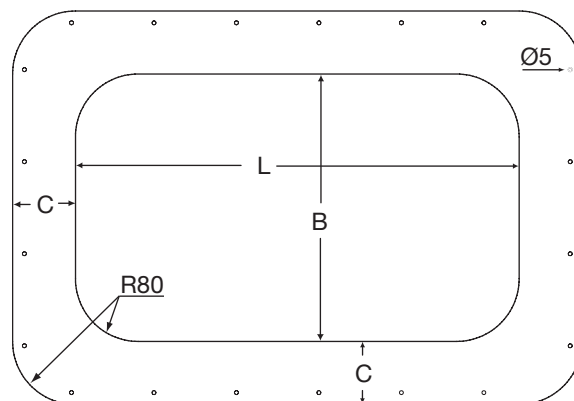
Used for sealing of the building envelope for all types of pipes and ducts, which is lead trough a vapour barrier of roofing underlay.

The product can be used as a roofing underlay transition or as a vapour barrier sheet, in the ridge as well as on the inclined roof area.

You will also find screwholes (3) ready for fixed roofing underlay, concrete floor or floor structures.

A special mounting instruction exists for this product.

Dimensions



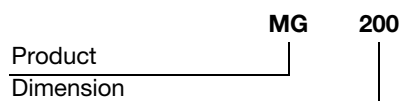
Special transition designet for ceiling, shaft etc. used for ducts from Ø100 - Ø160

Type	Max. duct measure □ / Ø mm	B x L x C mm	m kg
MG 1016	160	200 x 200 x 50	0,32

Standard transition

Type	Max. duct measure □ / Ø mm	B x L x C mm	m kg
MG 100	110	150 x 235 x 80	0,40
MG 200	200	240 x 390 x 80	0,78
MG 315	315	355 x 565 x 80	1,36
MG 400	405	445 x 750 x 80	1,76
MG 710	710	750 x 1280 x 80	2,00

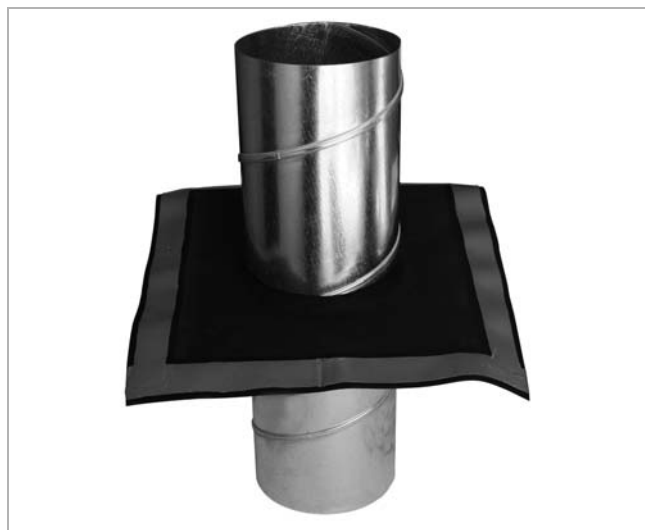
Ordering example





Membrane lead-through

MGL



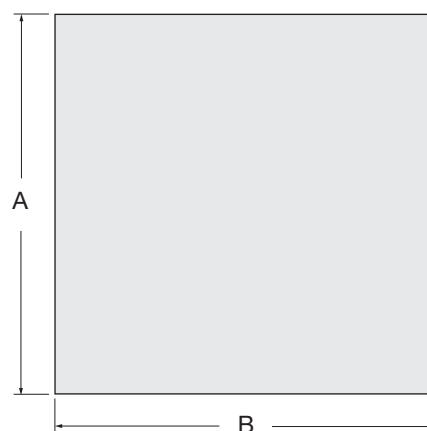
Description

Made from a special flexible syntetic rubber and provided with tape with adhesive on both sides.

Is used for sealing of the climate shield to all sorts of pipes and ducts, which passes through moisture barrier or roofing underlay.

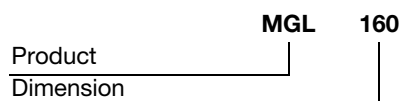
A special mounting instruction exists for this product.

Dimensions



Type	Max. duct dimension □ / Ø mm	A × B mm	m kg
MGL 80	80	200 × 200	0,10
MGL 125	125	250 × 250	0,10
MGL 160	160	300 × 300	0,15
MGL 250	250	400 × 400	0,20
MGL 355	355	500 × 500	0,25

Ordering example



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Transfer






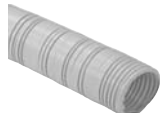






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Description

Transfer – the duct system which is quick and easy to assemble and take apart

Transfer is the circular duct system with tension clips for quick assembly and disassembly. The system is supplied as standard with clips in dimensions Ø80 to Ø500 and with FL flanges in dimensions Ø560 to Ø900. Please refer to page 469.

Dust explosions

There is always a risk of dust explosion in installations where finely-divided material is transported.

A dust explosion occurs when a critical mixture of finely divided material and air is ignited and burns rapidly with consequent rapid expansion and pressure rise. A common cause of ignition is a spark from electrostatic discharge. Dust and sawdust extraction installations must be designed to minimise sources of fire and explosion.

Noise

In particle transport systems, where the pressure difference between in- and outside is big and where a little leakage may cause noise, the joints ought to be taped if low noise levels are required.

Applications

The duct system is suitable for

- Particle transportation from woodworking, such as saw mills, carpenters, furniture manufacturers and craft workshops.
- Comfort ventilation.
- Extraction systems for better working environment.
- Plasma cutters.
- Specially designed ventilation plants where you have extra demands for form, colour and appearance.

Please contact Lindab if you need other applications or to transport other materials, and if there are special operation circumstances.

Mountings

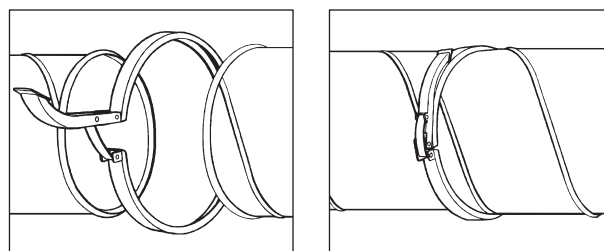
The types of mountings and their distances shall be chosen so that no sagging occurs in the system, and as justified for safe installation.

Maintenance

The duct system does not normally need any maintenance, but regular checks for wear should be made.

Advantages of the Transfer system

- Facilitates inspection and cleaning thanks to quick and simple disassembly.
- Facilitates environmental checking of the duct system.
- Rational joining, without screws or blind rivets.
- Has well-protected seal mouldings inside the clips.
- Can be twisted and adjusted after installation.
- Gives straight assembly.
- Does not have any sharp edges in the joints, since the bead is swaged directly on the fittings.
- Is highly suitable for transporting light material by means of air (chip extraction).
- Thanks to the bead, components are round and stiff.
- Does not require couplings.
- Transition pieces available for the Safe systems etc.
- Has lower pressure drop than the Safe system.
- Quick and easy to assemble and disassemble.



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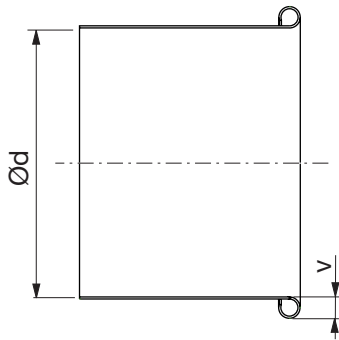
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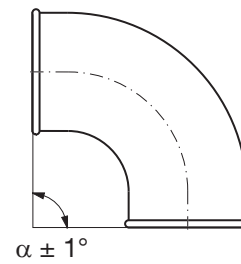
General

Dimensions of ducts and fittings



Ød nom	Ød mm	v mm
80	78	6
100	98	6
125	123	6
140	138	6
150	148	6
160	158	6
180	178	8
200	198	8
224	224	8
250	250	8
300	300	10
315	315	10
350	350	10
400	400	10
450	450	10
500	500	10
560–900 with flanges		

Angle tolerances





Spiral swaged duct

SRTR



Description

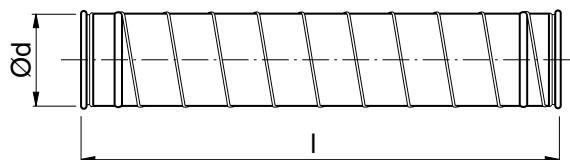
Circular spiral swaged duct with projecting seam.

The duct has end stubs swaged on, with Transfer beads at each end.

Please refer to page 51 for technical data about ducts.

Please refer to pages 51 for technical data about ducts.

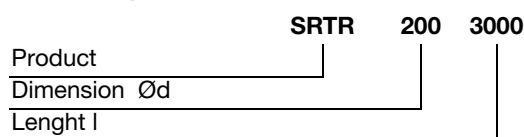
Dimensions



Ød nom	t std mm	500 mm	1000 mm	1500 mm	2000 mm	3000 mm	6000 mm
Weight for standard lengths, kg							
80	0,45	0,55	1,10	1,65	2,20	3,30	6,60
100	0,45	0,74	1,37	2,11	2,74	4,11	8,22
125	0,45	0,82	1,64	2,46	3,28	4,92	9,84
140	0,5	1,00	2,00	3,00	4,00	6,00	12,0
150	0,5	1,10	2,20	3,30	4,40	6,60	13,2
160	0,5	1,20	2,30	3,50	4,60	6,90	13,8
180	0,5	1,30	2,60	3,90	5,20	7,80	15,6
200	0,5	1,40	2,90	4,30	5,80	8,70	17,4
224	0,6	1,90	3,80	5,80	7,70	11,5	23,0
250	0,5	1,80	3,60	5,40	7,20	10,8	21,6
300	0,6	2,60	5,20	7,80	10,4	15,6	31,2
315	0,6	2,80	5,50	8,30	11,0	16,5	33,0
350	0,6	3,10	6,20	9,30	12,4	18,6	37,2
400	0,6	3,50	7,00	10,5	14,0	21,0	42,0
450	0,6	3,90	7,80	11,7	15,6	23,4	46,8
500	0,7	5,10	10,2	15,2	20,3	30,5	60,9
560 *	0,8	11,7	18,2	24,7	31,2	44,2	83,3
600 *	0,8	12,5	19,5	26,5	33,4	47,4	89,2
630 *	0,7	11,3	17,6	23,9	30,2	42,8	80,6
710 *	0,8	14,8	23,0	31,2	39,4	55,9	105
800 *	0,8	16,5	25,7	35,1	44,4	63,0	119
900 *	0,8	17,8	28,3	38,8	49,2	70,2	133

* Supplied with flange FL

Ordering example





Slide-on stub

TSRTR

- 1
- 2
- 3
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Description

Slide-on stub for installation in ducts of type SR.

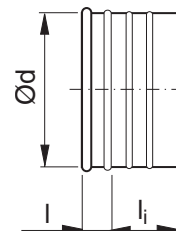
After the duct has been shortened/fitted, add sealant etc between the swaged seams on the slide-on stub, after which the slide-on stub is inserted into the duct. The two swaged seams guide and retain the slide-on stub.

To finish off, the edge of the stub is swaged, both to remove the sharp edge of the transition and to fix the slide-on stub.

Please refer to the shortening instruction on page 486.

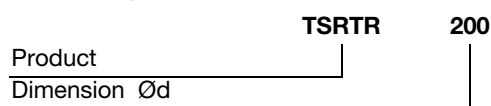
Is also used as transition piece OTRTH between Transfer and flexible hose THVTR. See page 522.

Dimensions



Ød nom	t mm	l mm	li mm	m kg
80	0,7	18	44	0,10
100	0,7	18	44	0,10
125	0,7	18	44	0,20
140	0,7	18	44	0,20
150	0,7	18	44	0,20
160	0,7	18	44	0,20
180	0,7	20	37	0,30
200	0,7	20	37	0,30
224	0,7	20	37	0,30
250	0,7	20	37	0,30
300	0,9	22	32	0,40
315	0,9	22	32	0,50
350	0,9	22	32	0,50
400	0,9	22	32	0,70
450	0,9	22	32	0,80
500	0,9	22	32	0,90

Ordering example





Slide-on stub

ILRTR



Description

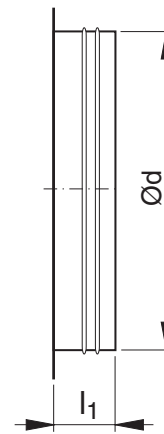
Slide-on stub for installation in ducts of type SR in dimension range Ø560–900 where flange FL is used for joining.

After the duct has been shortened/fitted, add sealant etc between the swaged seams on the slide-on stub, after which the slide-on stub is inserted into the duct. The two swaged seams guide and retain the slide-on stub.

To finish off, the edge of the stub is swaged to both remove the sharp edge of the transition, and to fix the slide-on stub.

Please refer to the shortening instruction on page 486.

Dimensions



Ød nom	l ₁ mm	m kg
560	80	0,90
600	80	1,00
630	80	1,00
710	100	1,40
800	100	2,00
900	100	2,20

Ordering example

Product	ILRTR	800
Dimension Ød		

- 1
- 2
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- 10**
- 11
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Lengthways swaged duct

LRTR



Dimensions



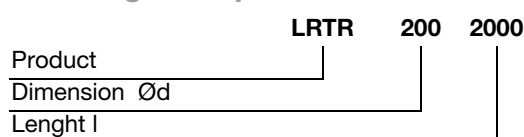
Description

Circular lengthways swaged duct with external seam.

Ød nom	t std mm	1000 mm Max permissible static negative pressure, kPa	2000 mm	3000 mm
80	0,6	36,0		
100	0,6	34,0	25,0	
125	0,6	32,0	24,0	
140	0,6	29,0	21,0	
150	0,6	25,0	18,0	
160	0,6	22,0	16,0	
180	0,7	21,0	15,5	
200	0,7	21,0	15,0	
224	0,7	20,0	14,5	
250	0,7	19,5	14,0	10,0
300	0,7	18,5	13,5	9,5
315	0,7	18,0	13,0	9,0
350	0,7	16,0	12,0	8,0
400	0,9	19,0	14,0	8,5
450	0,9	16,0	12,0	7,0
500	0,9	14,0	10,0	6,0

Ød nom	t std mm	500 mm	1000 mm	1500 mm	2000 mm	2960** mm
Weight for standard lengths, kg						
80	0,6	0,70	1,30			
100	0,6	0,80	1,68	2,50	3,40	
125	0,6	1,00	2,09	3,10	4,20	
140	0,6	1,10	2,29	3,40	4,60	
150	0,6	1,20	2,49	3,70	5,00	
160	0,6	1,30	2,69	4,00	5,40	
180	0,7	1,80	3,6	5,40	7,20	
200	0,7	1,90	3,89	5,80	7,80	
224	0,7	2,20	4,4	6,60	8,80	
250	0,7	2,40	4,88	7,30	9,80	14,6*
300	0,7	2,90	5,88	8,80	11,8	17,6**
315	0,7	3,10	6,2	9,30	12,4	18,6**
350	0,7	3,50	7	10,5	14,0	21,0**
400	0,9	4,70	9,4	14,1	18,8	28,2**
450	0,9	5,30	10,6	15,9	21,2	31,8**
500	0,9	5,90	11,8	17,7	23,6	35,4**
560***	0,9	11,8	18,4	25,0		
600***	0,9	12,6	19,7	26,7		
630***	0,9	13,2	20,7	27,1		
650***	0,9	13,6	21,3	28,9		
710***	0,9	14,9	23,3	31,6		
750***	0,9	15,7	24,6	33,4		
800***	0,9	16,6	26,1	35,5		
900***	0,9	18,8	29,4	40,0		

Ordering example



* t = 0,9; l = 2970

** t = 0,9

*** Supplied with flange FL



Slide-on stub

PTR



Description

Slide-on stub for installation in ducts of type LRTR.

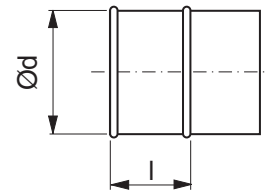
After the duct has been shortened/fitted the slide-on stub is inserted into the duct, after which the slide-on stub is sealed and fixed with putty or an sealing clamp such as MFK.

Turn the join during assembly, to face away from the direction of air flow.

Please refer to the shortening instruction on page 486.

Please refer to the shortening instruction on page 486.

Dimensions



Ød nom	t mm	l mm	m kg
80	0,5	58	0,20
100	0,5	58	0,20
125	0,5	58	0,30
140	0,5	58	0,30
150	0,5	58	0,40
160	0,5	58	0,40
180	0,5	53	0,40
200	0,5	53	0,40
224	0,5	53	0,40
250	0,5	53	0,30
300	0,9	49	0,60
315	0,9	49	0,40
350	0,9	49	0,80
400	0,9	49	1,20
450	0,9	49	1,30
500	0,9	49	1,50

Ordering example

	PTR	200
Product		
Dimension Ød		

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Telescopic duct

TLTR1



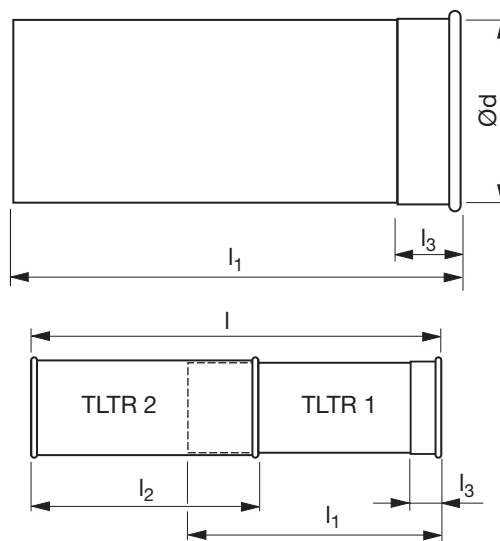
Description

Used together with telescopic duct TLTR 2 where it is necessary to adjust duct length when the standard lengths are not sufficient.

Fits also inside ducts of type SRTR Ø 80–200 and LRTR Ø 80–500.

For SRTR Ø 224–500 use the special duct TLSR.

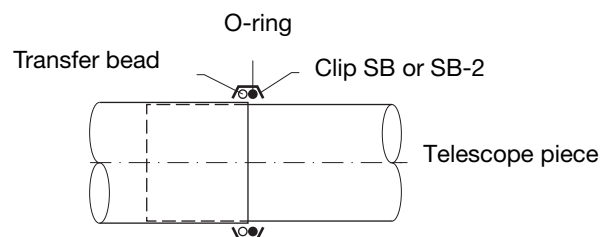
Dimensions



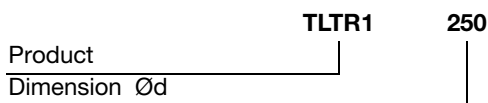
Ød nom	t mm	l ₁ , l ₂ mm	l ₃ mm	l _{min} mm	l _{max} mm	m kg
80	0,7	220	30	250	410	0,40
100	0,7	220	30	250	410	0,45
125	0,7	220	30	250	410	0,55
140	0,7	220	60	280	410	0,60
150	0,7	220	30	250	410	0,65
160	0,7	220	30	250	410	0,70
180	0,7	220	30	250	410	0,80
200	0,7	350	30	380	670	1,35
224	0,7	350	30	380	670	1,50
250	0,7	350	30	380	670	1,70
300	0,7	350	60	410	670	2,05
315	0,7	350	30	380	670	2,15
350	0,7	350	60	410	670	2,40
400	0,9	350	60	410	670	3,30
450	0,9	350	60	410	670	3,70
500	0,9	350	60	410	670	4,10

Seal the joint after assembly by using either:

- Mastic or tape
- O-ring ORINGTR + clip SB or SB-2



Ordering example





Telescopic duct

TLTR2

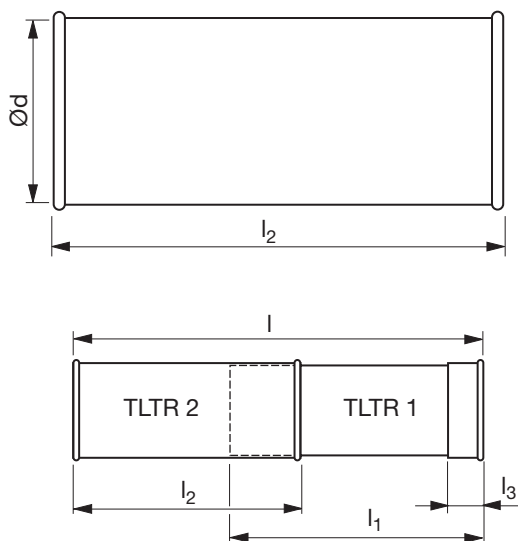


Description

Used together with telescopic duct TLTR 1 where it is necessary to adjust duct length when the standard lengths are not sufficient.

Can also be used as an ordinary duct.

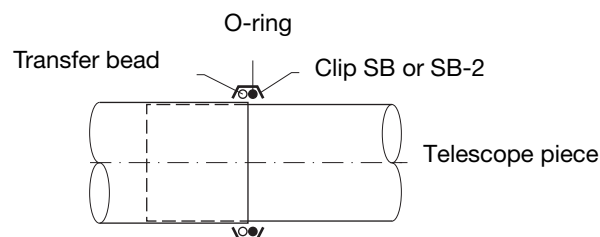
Dimensions



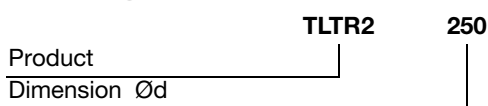
$\varnothing d$ nom	t mm	l_1, l_2 mm	l_3 mm	l_{min} mm	l_{max} mm	m kg
80	0,7	220	30	250	410	0,40
100	0,7	220	30	250	410	0,45
125	0,7	220	30	250	410	0,55
140	0,7	220	60	280	410	0,60
150	0,7	220	30	250	410	0,65
160	0,7	220	30	250	410	0,70
180	0,7	220	30	250	410	0,80
200	0,7	350	30	380	670	1,35
224	0,7	350	30	380	670	1,50
250	0,7	350	30	380	670	1,70
300	0,7	350	60	410	670	2,05
315	0,7	350	30	380	670	2,15
350	0,7	350	60	410	670	2,40
400	0,9	350	60	410	670	3,30
450	0,9	350	60	410	670	3,70
500	0,9	350	60	410	670	4,10

Seal the joint after assembly by using either:

- Mastic or tape
- O-ring ORINGTR + clip SB or SB-2



Ordering example



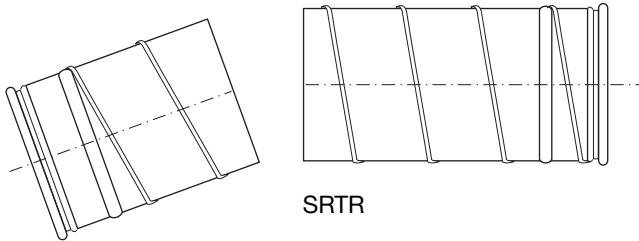


Instruction for shortening for length adaptation of Transfer ducts

1

Spiral swaged duct SRTR

Adaption with fixed length



SRTR

Shorten the duct to the desired length. Also consider the installation length of the slide-on stub.

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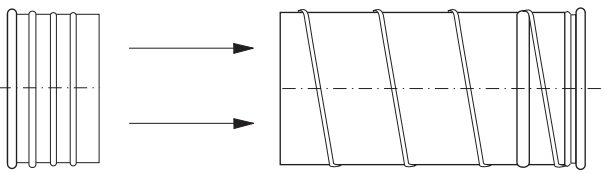
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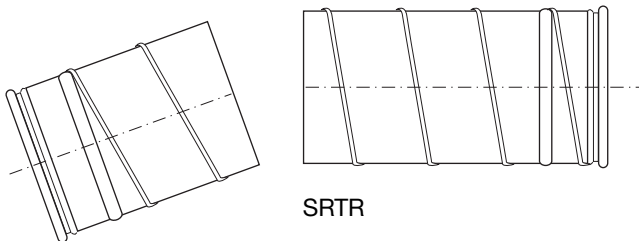


TSRTR

SRTR

Install slide-on stub TSRTR (please refer to page 480).

Adaption with flexible length



SRTR

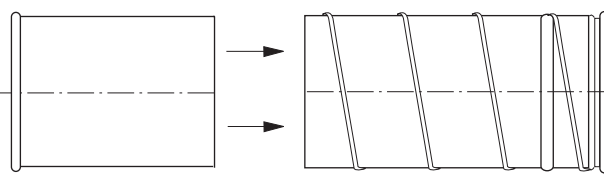
Shorten the duct to the desired length. Also consider the installation length of the slide-on stub.

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14



TLTR 1/TLSR

SRTR

Install telescopic duct

For Ø80–200 use TLTR-1 (page 484)

For Ø224–500 use TLSR (page 484)

Remember to

Turn the duct so that the joint does not point towards the direction of the air flow.

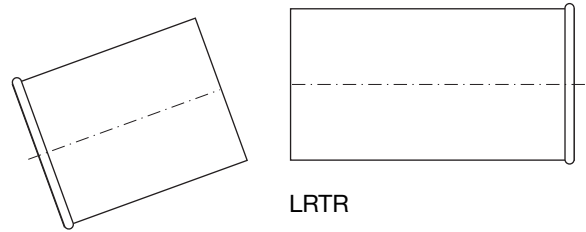
16

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18

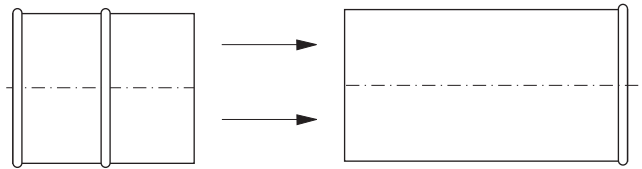
Lengthways swaged duct LRTR

Adaption with fixed length



LRTR

Shorten the duct to the desired length. Also consider the installation length of the slide-on stub.

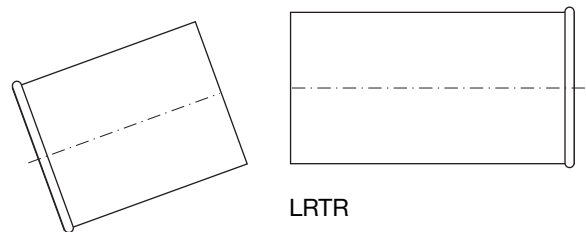


PTR

LRTR

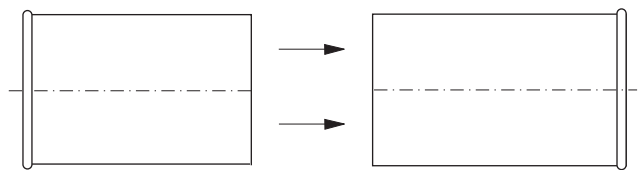
Install slide-on stub PTR (please refer to page 483).

Adaption with flexible length



LRTR

Shorten the duct to the desired length. Also consider the installation length of the slide-on stub.



TLTR 1

LRTR

Install telescopic duct

Use TLTR-1 (page 484)

Remember to

Turn the duct so that the joint does not point towards the direction of the air flow.



Bend

BTR 90°

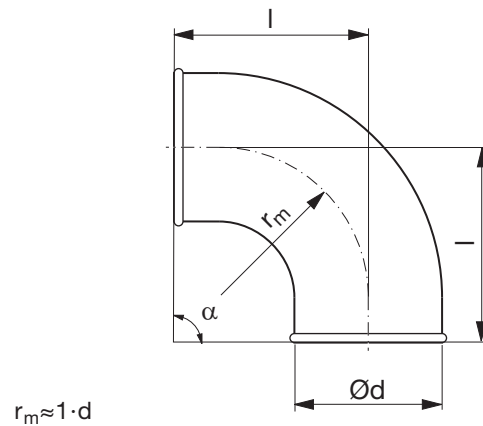


Description

Pressed and seam welded bend.

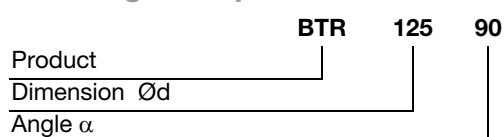
Some dimensions are made with a swaged-on beaded end.

Dimensions



Ød nom	t mm	r _m mm	l mm	m kg
80	0,5	100	135	0,31
100	0,5	100	130	0,30
125	0,5	125	155	0,50
140	0,7	135	165	0,70
150	0,7	150	180	0,80
160	0,6	160	190	0,77
180	0,7	180	205	1,00
200	0,7	200	252	1,20
224	0,7	225	277	1,37
250	0,7	250	302	1,71

Ordering example





Bend

BTR 60°

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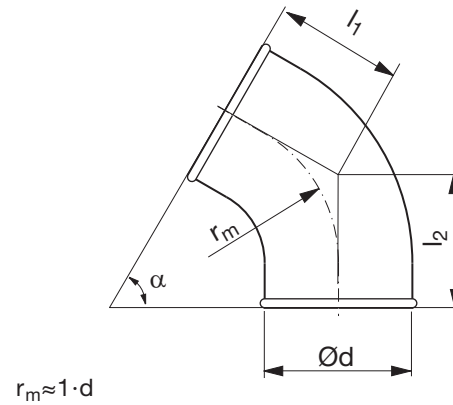


Description

Pressed and seam welded bend.

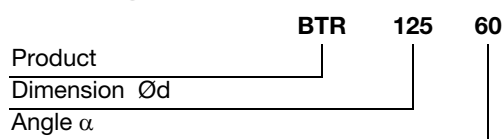
Some dimensions are made with a swaged-on beaded end.

Dimensions



Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
80	0,5	100	88	114	0,20
100	0,5	100	88	88	0,20
125	0,6	125	102	102	0,25
140 *	0,7	135	108	134	0,50
150 *	0,7	150	117	143	0,51
160 *	0,6	160	122	148	0,51
180 *	0,7	180	129	156	0,80
200	0,7	200	167	167	0,86
224	0,7	225	182	182	1,03
250	0,7	250	196	196	1,20

Ordering example





Bend

BTR 45°

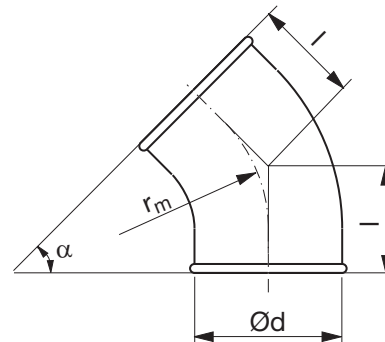


Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

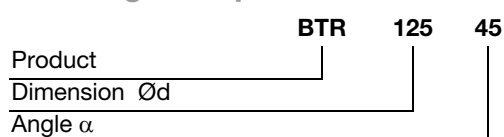
Dimensions



$$r_m \approx 1 \cdot d$$

Ød nom	t mm	r _m mm	l mm	m kg
80	0,5	100	71	0,20
100	0,5	100	71	0,30
125	0,5	125	82	0,30
140	0,7	135	86	0,40
150	0,7	150	92	0,43
160	0,6	160	96	0,43
180	0,7	180	110	0,68
200	0,6	200	135	0,80
224	0,7	225	145	0,86
250	0,7	250	156	0,86

Ordering example



- 1
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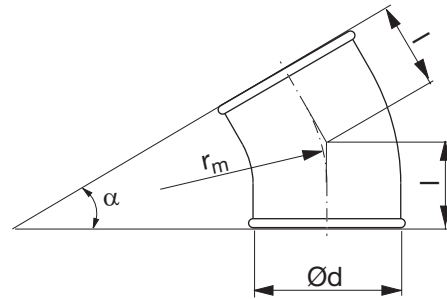


Bend

BTR 30°



Dimensions



$$r_m \approx 1 \cdot d$$

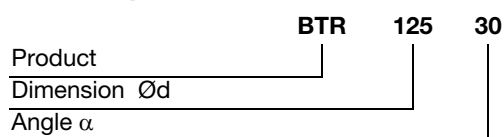
Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
80	0,5	100	57	57	0,20
100	0,5	100	57	57	0,20
125	0,6	125	63	63	0,25
140	0,7	140	68	68	0,40
150	0,7	150	70	70	0,34
160	0,7	160	73	73	0,50
180	0,7	180	73	73	0,60
200	0,7	200	106	106	0,80
224	0,7	225	112	112	0,77
250	0,7	250	119	119	1,10

Ordering example





Bend

BTR 15°

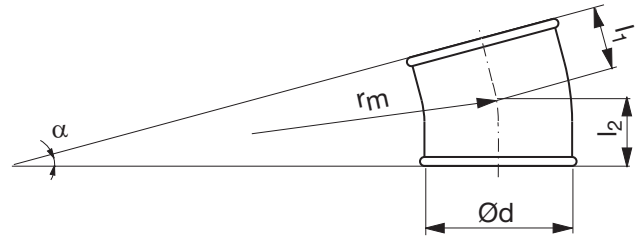


Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

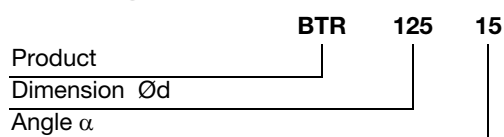
Dimensions



$$r_m \approx 1 \cdot d$$

Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
80	0,5	100	43	69	0,10
100	0,5	100	43	43	0,20
125	0,5	125	46	46	0,14
140	0,7	140	74	74	0,30
150	0,6	150	76	76	0,26
160	0,5	160	51	51	0,14
180	0,7	180	76	76	0,40
200	0,7	200	78	78	0,60
224	0,7	225	81	81	0,60

Ordering example



- 1
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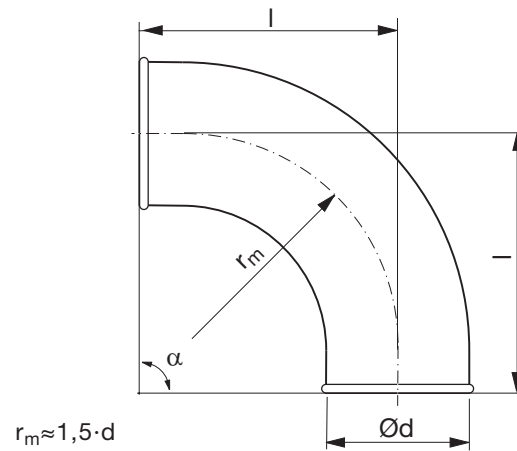


Bend

BSTR 90°



Dimensions



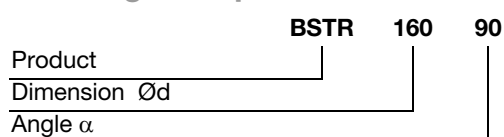
Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

Ød nom	t mm	r _m mm	l mm	m kg
100	0,6	150	180	0,50
125	0,7	190	220	0,80
150	0,7	225	255	1,10
160	0,7	240	270	1,20
180	0,7	270	295	1,60
200	0,6	300	352	1,63

Ordering example





Bend

BSTR 60°

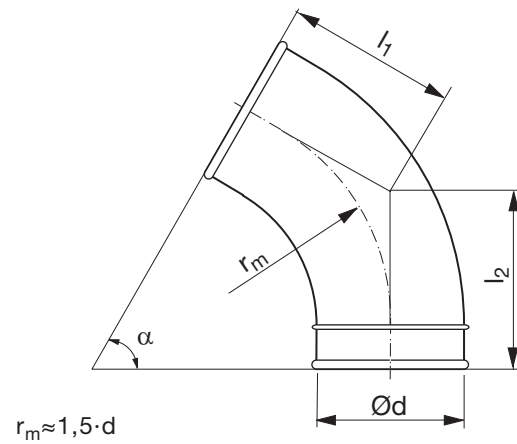


Description

Pressed and seam welded bend.

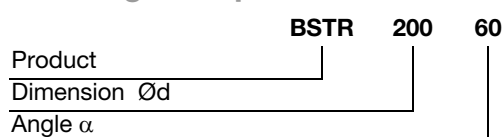
Some dimensions are made with a swaged-on beaded end.

Dimensions



Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
100	0,6	150	117	143	0,40
125	0,7	190	140	166	0,60
150	0,7	225	160	186	0,70
160	0,7	240	169	195	0,80
180	0,7	270	181	208	1,20
200	0,7	300	225	225	1,13

Ordering example



- 1
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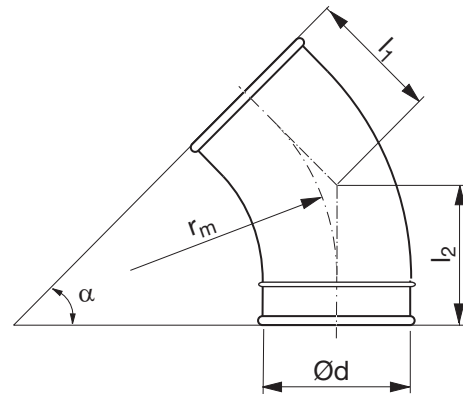


Bend

BSTR 45°



Dimensions



$$r_m \approx 1,5 \cdot d$$

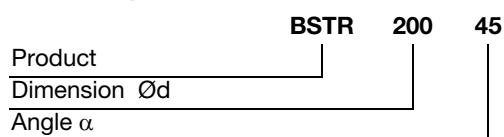
Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
100	0,6	150	92	118	0,30
125	0,7	190	109	135	0,40
150	0,7	225	123	149	0,50
160	0,7	240	129	155	0,60
180	0,7	270	137	164	0,90
200	0,6	300	176	176	0,88

Ordering example





Bend

BSTR 30°

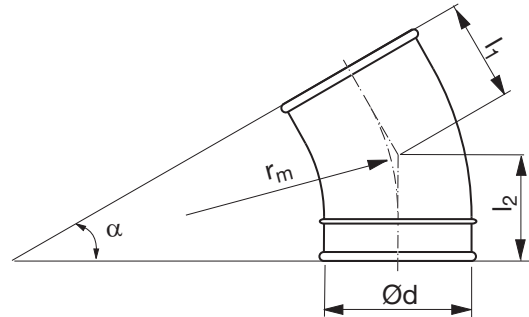


Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

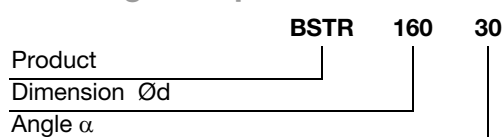
Dimensions



$$r_m \approx 1,5 \cdot d$$

Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
100	0,6	150	70	96	0,30
125	0,7	190	81	107	0,30
150	0,7	225	90	116	0,50
160	0,7	240	94	120	0,50
180	0,7	270	97	124	0,70
200	0,7	300	132	132	0,79

Ordering example



- 1
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Bend

BSTR 15°

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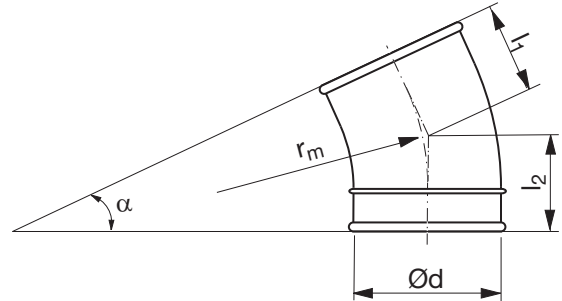


Description

Pressed and seam welded bend.

Some dimensions are made with a swaged-on beaded end.

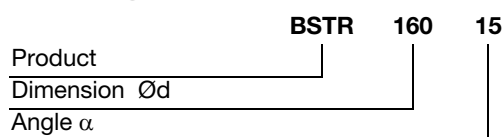
Dimensions



$$r_m \approx 1,5 \cdot d$$

Ød nom	t mm	r _m mm	l ₁ mm	l ₂ mm	m kg
100	0,6	150	50	76	0,20
125	0,7	190	55	81	0,40
150	0,7	225	60	86	0,40
160	0,7	240	62	88	0,40
180	0,7	270	61	88	0,50
200	0,7	300	91	91	0,62

Ordering example





Bend

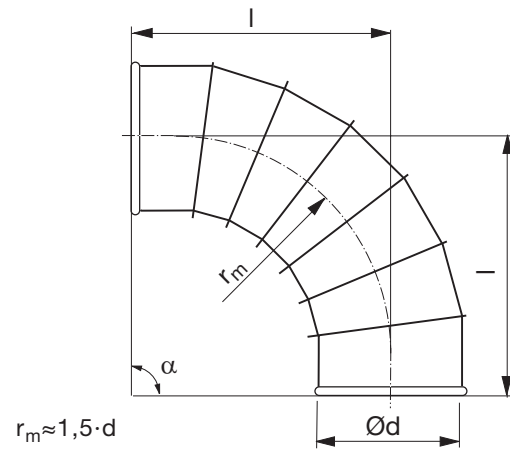
BSFTR 90°



Description

Segmented and swaged bend.

Dimensions



Ød nom	t mm	r _m mm	l mm	m kg
200	0,7	300	387	3,40
224	0,7	336	423	4,20
250	0,7	375	462	4,90
300	0,7	450	531	6,40
315	0,7	472	553	7,10
350	0,7	525	606	9,00
400	0,9	600	681	13,1
450	0,9	675	756	16,2
500	0,9	750	831	19,5
560 *	0,9	840	875	29,3
600 *	0,9	900	935	32,7
630 *	0,9	945	980	37,3
650 *	0,9	975	1010	41,4
710 *	0,9	1065	1100	47,0
750 *	0,9	1125	1160	51,1
800 *	0,9	1200	1235	54,5
900 *	0,9	1350	1385	74,8

* Supplied with flange FL

Ordering example

Product	BSFTR	250	90
Dimension Ød			
Angle α			

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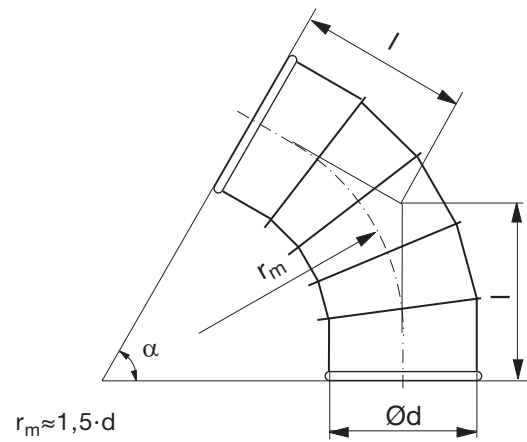


Bend

BSFTR 60°



Dimensions



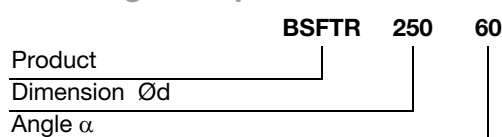
Description

Segmented and swaged bend.

Ød nom	t mm	r _m mm	l mm	m kg
200	0,7	300	260	2,30
224	0,7	336	281	2,70
250	0,7	375	304	3,10
300	0,7	450	341	4,20
315	0,7	472	354	4,60
350	0,7	525	384	5,60
400	0,9	600	427	8,10
450	0,9	675	471	10,1
500	0,9	750	514	12,1
560 *	0,9	840	520	20,8
600 *	0,9	900	555	23,5
630 *	0,9	945	581	24,6
650 *	0,9	975	598	27,2
710 *	0,9	1065	650	36,4
750 *	0,9	1125	685	40,4
800 *	0,9	1200	728	42,3
900 *	0,9	1350	814	45,1

* Supplied with flange FL

Ordering example





Bend

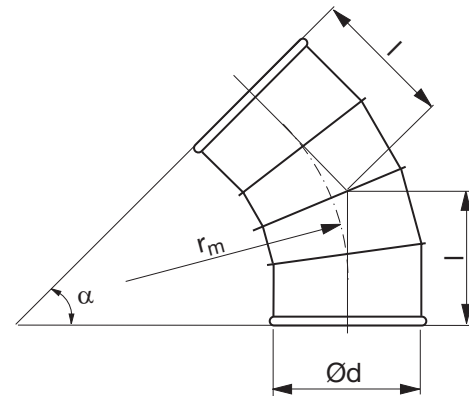
BSFTR 45°



Description

Segmented and swaged bend.

Dimensions

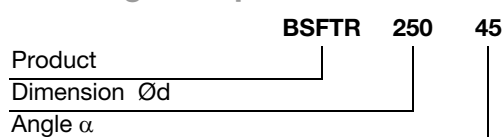


$$r_m \approx 1,5 \cdot d$$

Ød nom	t mm	r _m mm	l mm	m kg
200	0,7	300	211	1,90
224	0,7	336	226	2,20
250	0,7	375	242	2,50
300	0,7	450	267	3,40
315	0,7	472	277	3,70
350	0,7	525	298	4,50
400	0,9	600	330	6,50
450	0,9	675	361	7,90
500	0,9	750	392	9,40
560 *	0,9	840	383	16,7
600 *	0,9	900	408	18,5
630 *	0,9	945	426	20,1
650 *	0,9	975	439	22,3
710 *	0,9	1065	476	26,4
750 *	0,9	1125	501	28,6
800 *	0,9	1200	532	31,8
900 *	0,9	1350	594	34,9

* Supplied with flange FL

Ordering example





Bend

BSFTR 30°

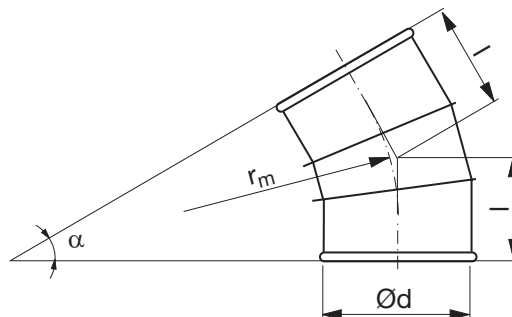
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Description

Segmented and swaged bend.

Dimensions

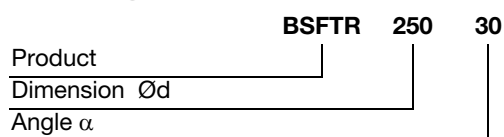


$$r_m \approx 1,5 \cdot d$$

Ød nom	t mm	r _m mm	l mm	m kg
200	0,7	300	167	1,50
224	0,7	336	177	1,70
250	0,7	375	187	1,90
300	0,7	450	202	2,50
315	0,7	472	208	2,80
350	0,7	525	222	3,40
400	0,9	600	242	4,90
450	0,9	675	262	5,80
500	0,9	750	282	6,80
560 *	0,9	840	260	12,7
600 *	0,9	900	276	14,5
630 *	0,9	945	288	15,7
650 *	0,9	975	296	18,4
710 *	0,9	1065	320	20,2
750 *	0,9	1125	336	21,5
800 *	0,9	1200	357	24,9
900 *	0,9	1350	397	29,6

* Supplied with flange FL

Ordering example





Bend

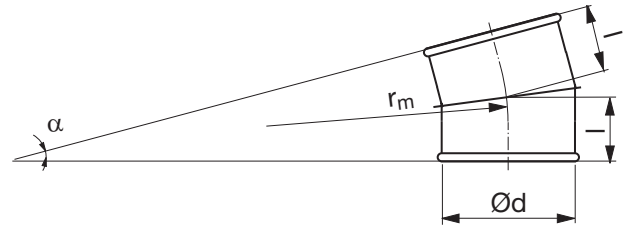
BSFTR 15°



Description

Segmented and swaged bend.

Dimensions



$$r_m \approx 1,5 \cdot d$$

Ød nom	t mm	r _m mm	l mm	m kg
200	0,7	300	126	1,10
224	0,7	336	131	1,30
250	0,7	375	136	1,50
300	0,7	450	140	2,00
315	0,7	472	143	2,40
350	0,7	525	150	2,90
400	0,9	600	160	4,50
450	0,9	675	170	5,40
500	0,9	750	180	6,20
560 *	0,9	840	146	11,8
600 *	0,9	900	153	13,4
630 *	0,9	945	159	15,6
650 *	0,9	975	163	16,4
710 *	0,9	1065	175	18,3
750 *	0,9	1125	183	19,6
800 *	0,9	1200	193	22,4
900 *	0,9	1350	213	26,3

* Supplied with flange FL

Ordering example

Product	BSFTR	250	15
Dimension Ød			
Angle α			



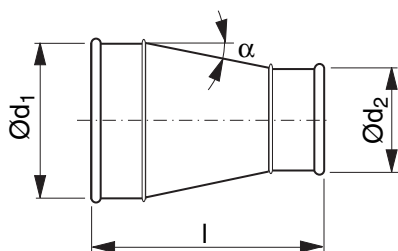
Reducer

RCLTR



Description

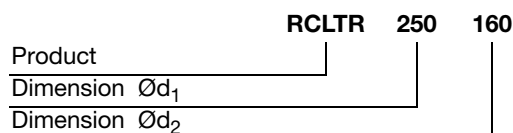
Long, concentric reducer with about 18° angle.



Dimensions

Ød ₁ nom	Ød ₂ nom	t mm	l mm	m kg
100	80	0,7	162	0,30
125	80	0,7	196	0,40
125	100	0,7	168	0,40
140	80	0,7	216	0,60
140	100	0,7	189	0,40
140	125	0,7	155	0,40
150	80	0,7	230	0,60
150	100	0,7	203	0,60
150	125	0,7	168	0,40
150	140	0,7	148	0,40
160	80	0,7	244	0,70
160	100	0,7	216	0,60
160	125	0,7	182	0,50
160	140	0,7	161	0,60
160	150	0,7	148	0,40
180	100	0,7	239	0,60
180	125	0,7	205	0,60
180	140	0,7	184	0,60
180	150	0,7	170	0,60
180	160	0,7	157	0,50
200	125	0,7	232	0,80
200	140	0,7	211	0,70
200	150	0,7	198	0,70
200	160	0,7	184	0,60
200	180	0,7	152	0,50
224	140	0,7	244	1,00
224	150	0,7	231	1,00
224	160	0,7	217	0,80
224	180	0,7	184	0,80
224	200	0,7	157	0,70
250	140	0,7	280	1,30
250	150	0,7	266	1,30
250	160	0,7	253	1,10
250	180	0,7	220	1,00
250	200	0,7	193	1,00
250	224	0,7	160	1,00
300	150	0,7	332	1,70
300	160	0,7	318	1,70
300	180	0,7	286	1,70
300	200	0,7	258	1,50
300	250	0,7	190	1,40
315	160	0,7	339	1,60
315	180	0,7	307	1,60
315	200	0,7	279	1,50
315	224	0,7	246	1,40

Ordering example





Reducer

RCLTR

Ød ₁ nom	Ød ₂ nom	t mm	l mm	m kg
315	250	0,7	210	1,40
315	300	0,7	139	1,30
350	180	0,7	361	2,00
350	200	0,7	334	2,00
350	224	0,7	301	2,10
350	250	0,7	265	1,90
350	300	0,7	194	1,70
350	315	0,7	173	1,40
400	180	0,7	428	2,80
400	200	0,7	401	2,80
400	224	0,7	368	3,00
400	250	0,7	332	2,60
400	300	0,7	260	2,70
400	315	0,7	240	2,30
400	350	0,7	185	2,00
450	200	0,7	469	3,50
450	224	0,7	437	3,80
450	250	0,7	401	3,30
450	300	0,7	329	3,40
450	315	0,7	309	2,90
450	350	0,7	254	2,60
450	400	0,9	197	2,80
500	224	0,7	505	4,30
500	250	0,7	469	4,00
500	300	0,7	398	4,00
500	315	0,7	377	3,80
500	350	0,7	322	3,40
500	400	0,9	265	3,60
500	450	0,9	197	3,20
560 *	250	0,7	578	8,20
560 *	300	0,9	506	8,00
560 *	315	0,7	485	7,80
560 *	350	0,7	431	7,60
560 *	400	0,9	374	7,40
560 *	450	0,9	305	7,00
560 *	500	0,9	236	6,50
600 *	300	0,9	561	8,60
600 *	315	0,7	541	8,60
600 *	350	0,7	486	8,20
600 *	400	0,9	429	8,20
600 *	450	0,9	360	7,70
600 *	500	0,9	291	7,20
600 *	560	0,9	235	6,40
630 *	315	0,7	582	8,60
630 *	350	0,7	527	8,00
630 *	400	0,9	470	7,90
630 *	450	0,9	401	7,40
630 *	500	0,9	333	7,00

Ød ₁ nom	Ød ₂ nom	t mm	l mm	m kg
630 *	560 *	0,9	276	9,30
630 *	600	0,9	221	8,80
650 *	350	0,9	547	8,40
650 *	400	0,9	490	8,30
650 *	450	0,9	421	7,80
650 *	500	0,9	353	7,40
650 *	560 *	0,9	296	9,70
650 *	600 *	0,9	241	9,20
650 *	630 *	0,9	221	9,00
710 *	400	0,9	605	9,60
710 *	450	0,9	536	9,20
710 *	500	0,9	467	8,70
710 *	560 *	0,9	411	11,1
710 *	600 *	0,9	356	10,6
710 *	630 *	0,9	315	10,2
750 *	450	0,9	566	9,60
750 *	500	0,9	497	9,10
750 *	560 *	0,9	441	11,5
750 *	600 *	0,9	386	11,0
750 *	630 *	0,9	345	10,6
750 *	650 *	0,9	325	10,4
750 *	710 *	0,9	290	10,0
800 *	500	0,9	591	11,0
800 *	560 *	0,9	535	13,4
800 *	600 *	0,9	480	12,9
800 *	630 *	0,9	439	12,5
800 *	650 *	0,9	419	12,1
800 *	710 *	0,9	354	11,6
800 *	750 *	0,9	325	11,2
900 *	560 *	0,9	697	17,7
900 *	600 *	0,9	642	17,0
900 *	630 *	0,9	601	16,5
900 *	650 *	0,9	570	16,1
900 *	710 *	0,9	516	15,3
900 *	750 *	0,9	450	14,9
900 *	800 *	0,9	392	13,8

* Supplied with flange FL

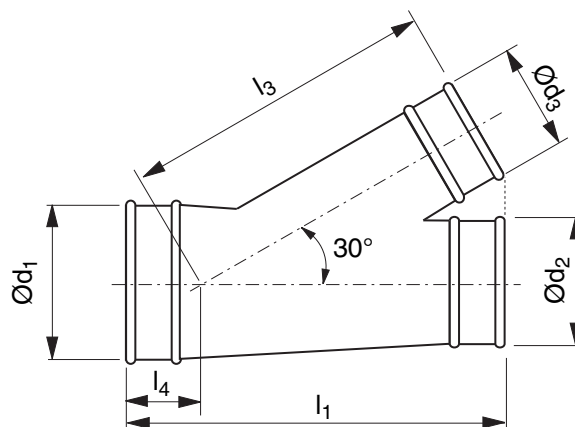


T-piece

TVTR 30°



Dimensions



Description

T-piece.

NB

To save space, the adjacent table only contains a limited selection from our range – the T-pieces where all dimensions $\text{Ø}d_1$, $\text{Ø}d_2$ and $\text{Ø}d_3$ are equal in size. Other dimensions are available to special order.

In all combinations, the installation length l_1 is only governed by the branch diameter $\text{Ø}d_3$. For example, all T-pieces with $\text{Ø}d_3 = 200$ have installation length $l_1 = 589$ mm.

NB

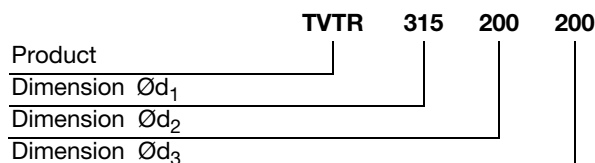
To save space, the adjacent table only contains a limited selection from our range the T-pieces where all dimensions d_1 , d_2 and d_3 are equal in size. Other dimensions are available to special order.

In all combinations, the installation length l_1 is only governed by the branch diameter d_3 . For example, all T-pieces with $d_3 = 200$ have installation length $l_1 = 589$ mm.

$\text{Ø}d_1$ nom	$\text{Ø}d_2$ nom	$\text{Ø}d_3$ nom	t mm	l_1 mm	l_3 mm	l_4 mm	m kg
80	80	80	0,7	358	263	109	0,90
100	100	100	0,7	398	301	112	1,20
125	125	125	0,7	448	347	116	1,60
140	140	140	0,7	478	375	118	1,80
150	150	150	0,7	498	394	119	2,00
160	160	160	0,7	518	413	120	2,30
180	180	180	0,7	549	445	119	2,80
200	200	200	0,7	589	482	121	3,40
224	224	224	0,7	637	527	124	4,20
250	250	250	0,7	689	576	128	4,90
300	300	300	0,7	777	662	129	7,00
315	315	315	0,7	807	690	131	7,30
350	350	350	0,7	960	755	177	9,00
400	400	400	0,9	1060	848	184	14,0
450	450	450	0,9	1160	842	190	16,9
500	500	500	0,9	1260	1035	197	20,1
560 *	560 *	560 *	0,9	1520	1245	275	26,0
600 *	600 *	600 *	0,9	1600	1320	280	29,0
630 *	630 *	630 *	0,9	1660	1376	284	31,0
650 *	650 *	650 *	0,9	1700	1413	287	34,0
710 *	710 *	710 *	0,9	1820	1525	295	41,0
750 *	750 *	750 *	0,9	1900	1600	301	45,0
800 *	800 *	800 *	0,9	2000	1693	307	51,0
900 *	900 *	900 *	0,9	2200	1879	321	64,0

* Supplied with flange FL

Ordering example





X-piece

XVTR 30°



Description

X-piece.

NB

To save space, the adjacent table only contains a limited selection from our range – the X-pieces where all dimensions $\text{Ø}d_1$, $\text{Ø}d_2$ and $\text{Ø}d_3/\text{Ø}d_4$ are equal in size. Other dimensions are available to special order.

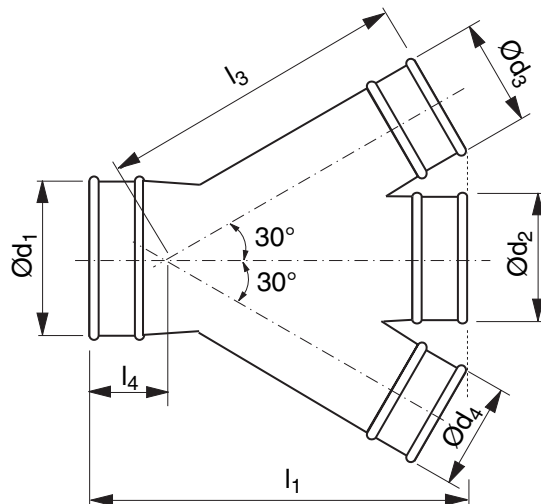
In all combinations, the installation length l_1 is only governed by the larger branch diameter $\text{Ø}d_3/\text{Ø}d_4$. For example, all X-pieces with $\text{Ø}d_3 = 160$ and $\text{Ø}d_4 = 200$ have installation length $l_1 = 589$ mm.

NB

To save space, the adjacent table only contains a limited selection from our range the X-pieces where all dimensions d_1 , d_2 and d_3/d_4 are equal in size. Other dimensions are available to special order.

In all combinations, the installation length l_1 is only governed by the larger branch diameter d_3/d_4 . For example, all X-pieces with $d_3 = 160$ and $d_4 = 200$ have installation length $l_1 = 589$ mm.

Dimensions



$\text{Ø}d_1$ nom	$\text{Ø}d_2$ nom	$\text{Ø}d_3$ $\text{Ø}d_4$ nom	t mm	l_1 mm	l_3 mm	l_4 mm	m kg
80	80	80	0,7	358	263	109	1,10
100	100	100	0,7	398	301	112	1,40
125	125	125	0,7	448	347	116	1,80
140	140	140	0,7	478	375	118	2,10
150	150	150	0,7	498	394	119	2,30
160	160	160	0,7	518	413	120	2,60
180	180	180	0,7	549	445	119	3,20
200	200	200	0,7	589	482	121	4,00
224	224	224	0,7	637	527	124	4,90
250	250	250	0,7	689	576	128	5,80
300	300	300	0,7	777	662	129	8,80
315	315	315	0,7	807	690	131	9,30
350	350	350	0,7	960	755	177	11,2
400	400	400	0,9	1060	848	184	18,8
450	450	450	0,9	1160	842	190	22,2
500	500	500	0,9	1260	1035	197	26,8
560*	560*	560*	0,9	1520	1245	275	34,0
600*	600*	600*	0,9	1600	1320	280	39,0
630*	630*	630*	0,9	1660	1376	284	41,0
650*	650*	650*	0,9	1700	1413	295	46,0
710*	710*	710*	0,9	1820	1525	295	54,0
750*	750*	750*	0,9	1900	1600	301	60,0
800*	800*	800*	0,9	2000	1693	307	68,0
900*	900*	900*	0,9	2200	1879	321	85,0

* Supplied with flange FL

Ordering example

	XVTR	400	200	160	160
Product					
Dimension $\text{Ø}d_1$					
Dimension $\text{Ø}d_2$					
Dimension $\text{Ø}d_3$					
Dimension $\text{Ø}d_4$					

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- 18

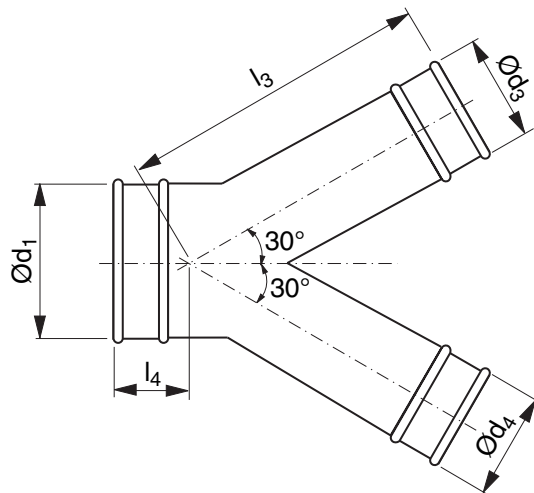


Y-piece

YVTR 30°



Dimensions



Description

Y-piece.

NB

To save space, the adjacent table only contains a limited selection from our range – the Y-pieces where all dimensions $\text{Ø}d_1$, $\text{Ø}d_3$ and $\text{Ø}d_4$ are equal in size. Other dimensions are available to special order.

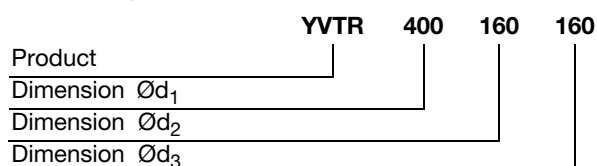
NB

To save space, the adjacent table only contains a limited selection from our range the Y-pieces where all dimensions d_1 , d_3 and d_4 are equal in size. Other dimensions are available to special order.

$\text{Ø}d_1$ nom	$\text{Ø}d_3$ $\text{Ø}d_4$ nom	t mm	l_3 mm	l_4 mm	m kg
80	80	0,7	191	65	0,70
100	100	0,7	213	67	0,80
125	125	0,7	242	71	0,90
140	140	0,7	259	73	1,10
150	150	0,7	270	74	1,20
160	160	0,7	281	75	1,30
180	180	0,7	304	73	1,60
200	200	0,7	327	76	2,00
224	224	0,7	354	79	2,50
250	250	0,7	383	82	2,90
300	300	0,7	440	82	4,40
315	315	0,7	457	84	4,70
350	350	0,7	497	89	5,40
400	400	0,9	554	96	9,00
450	450	0,9	610	102	10,8
500	500	0,9	667	109	13,1
560*	560*	0,9	735	155	17,0
600*	600*	0,9	780	160	19,5
630*	630*	0,9	814	164	20,5
650*	650*	0,9	837	167	23,0
710*	710*	0,9	905	195	27,0
750*	750*	0,9	951	201	30,0
800*	800*	0,9	1007	207	38,0
900*	900*	0,9	1121	221	47,0

* Supplied with flange FL

Ordering example



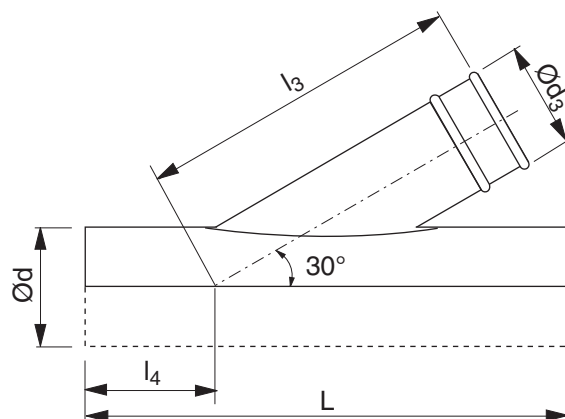


Saddle

PSVTR 30°



Dimensions



Description

Saddle.

The saddle is fixed with two sealing clamps MFK.

This product should not be installed with screws or blind rivets when used in chip extraction installations.

NB

To save space, the adjacent table only contains a limited selection from our range – the saddles where all dimensions Ød and Ød₃ are equal in size. Other dimensions are available to special order.

NB

To save space, the adjacent table only contains a limited selection from our range the saddles where all dimensions d and d₃ are equal in size. Other dimensions are available to special order.

Ød nom	Ød ₃ nom	t mm	L mm	l ₃ mm	l ₄ mm	m kg
80	80	0,7	410	221	136	0,50
100	100	0,7	450	263	138	0,60
125	125	0,7	500	317	142	0,80
140	140	0,7	530	349	144	0,90
150	150	0,7	550	370	145	1,00
160	160	0,7	570	391	146	1,20
180	180	0,7	610	434	149	1,50
200	200	0,7	650	477	152	1,70
224	224	0,7	700	528	156	2,10
250	250	0,7	750	584	159	2,40
300	300	0,7	850	690	165	3,10
315	315	0,7	880	722	167	3,60
350	350	0,7	950	797	172	5,60
400	400	0,9	1050	904	179	6,50
450	450	0,9	1150	1010	185	8,20
500	500	0,9	1250	1117	192	9,80
560	560 *	0,9	1370	1245	200	11,2
600	600 *	0,9	1450	1330	205	13,8
630	630 *	0,9	1510	1394	209	14,0
650	650 *	0,9	1550	1437	212	16,0
710	710 *	0,9	1670	1565	220	18,0
750	750 *	0,9	1750	1651	225	21,0
800	800 *	0,9	1850	1757	232	24,0
900	900 *	0,9	2050	1971	245	28,0

* Supplied with flange FL

Ordering example

	PSVTR	400	160
Product			
Dimension Ød			
Dimension Ød ₃			



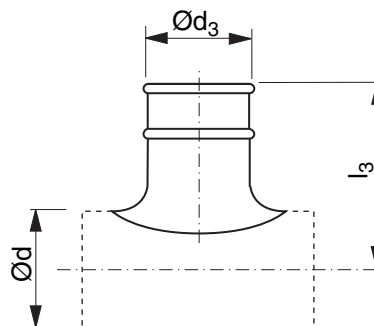


Collar saddle

PSTR



Dimensions

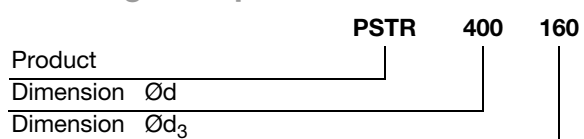


Description

Collar saddle.

Ød nom	Ød ₃ mm	t mm	l ₃ mm	m kg
80	80	0,6	143	0,20
100	80	0,6	156	0,20
100	100	0,6	131	0,30
125	80	0,6	166	0,20
125	100	0,6	144	0,30
125	125	0,6	149	0,40
140	80	0,6	173	0,20
140	100	0,6	176	0,40
140	125	0,6	121	0,30
140	140	0,6	181	0,50
150	80	0,6	178	0,20
150	100	0,6	181	0,40
150	125	0,6	186	0,50
150	140	0,6	186	0,50
150	150	0,6	186	0,50
160	80	0,6	183	0,20
160	100	0,6	161	0,30
160	125	0,6	166	0,40
160	140	0,6	191	0,50
160	150	0,6	191	0,50
160	160	0,6	171	0,50
180	80	0,6	193	0,20
180	100	0,6	196	0,40
180	125	0,6	201	0,50
180	140	0,6	201	0,50
180	150	0,6	201	0,50
180	160	0,6	206	0,60
180	180	0,6	202	0,90
200	80	0,6	203	0,20
200	100	0,6	181	0,30
200	125	0,6	181	0,40
200	140	0,6	211	0,50
200	150	0,6	211	0,50

Ordering example





Collar saddle

PSTR

Ød nom	Ød ₃ mm	t mm	l ₃ mm	m kg
200	160	0,6	191	0,50
200	180	0,6	212	0,90
200	200	0,6	212	1,00
224	80	0,6	215	0,20
224	100	0,6	218	0,40
224	125	0,6	223	0,50
224	140	0,6	223	0,50
224	150	0,6	223	0,50
224	160	0,6	228	0,60
224	180	0,6	224	0,80
224	200	0,6	224	0,80
224	224	0,6	224	1,00
250	80	0,6	228	0,30
250	100	0,6	206	0,40
250	125	0,6	211	0,40
250	140	0,6	236	0,50
250	150	0,6	236	0,50
250	160	0,6	241	0,60
250	180	0,6	237	0,90
250	200	0,6	237	0,90
250	224	0,6	237	1,20
250	250	0,6	257	1,30
300	80	0,6	201	0,20
300	100	0,6	201	0,20
300	125	0,6	201	0,30
300	140	0,6	201	0,40
300	150	0,6	201	0,40
300	160	0,6	201	0,40
300	180	0,6	197	0,60
300	200	0,6	197	0,60
300	224	0,6	197	0,70
300	250	0,6	197	0,80
315	80	0,6	261	0,30
315	100	0,6	264	0,40
315	125	0,6	244	0,40
315	140	0,6	269	0,50
315	150	0,6	269	0,50
315	160	0,6	273	0,50
315	180	0,6	273	0,90
315	200	0,6	269	0,90
315	224	0,6	269	0,90
315	250	0,6	289	1,10
315	300	0,6	259	1,50
315	315	0,6	283	1,90
350	100	0,6	226	0,30
350	125	0,6	226	0,30
350	140	0,6	226	0,40
350	150	0,6	226	0,40

Ød nom	Ød ₃ mm	t mm	l ₃ mm	m kg
350	160	0,6	226	0,40
350	180	0,6	222	0,60
350	200	0,6	222	0,70
350	224	0,6	222	0,70
350	250	0,6	222	0,80
350	300	0,6	216	0,90
350	315	0,6	216	1,10
350	350	0,6	216	1,60
400	125	0,6	311	0,40
400	140	0,6	251	0,30
400	150	0,6	311	0,40
400	160	0,6	316	0,50
400	180	0,6	247	0,40
400	200	0,6	312	0,90
400	224	0,6	312	0,90
400	250	0,6	332	1,10
400	300	0,6	301	1,10
400	315	0,6	326	1,60
400	350	0,6	326	1,90
400	400	0,7	321	2,40
450	100	0,6	331	0,40
450	125	0,6	336	0,50
450	140	0,6	276	0,40
450	150	0,6	336	0,40
450	160	0,6	341	0,50
450	180	0,6	272	0,40
450	200	0,6	337	0,90
450	224	0,6	337	0,90
450	250	0,6	357	1,10
450	300	0,6	266	1,00
450	315	0,6	351	1,50
450	400	0,7	371	2,30
450	450	0,7	266	1,40
500	100	0,6	356	0,40
500	125	0,6	361	0,50
500	140	0,6	301	0,30
500	150	0,6	361	0,40
500	160	0,6	366	0,50
500	180	0,6	297	0,50
500	200	0,6	362	0,90
500	224	0,6	322	0,70
500	250	0,6	382	1,10
500	300	0,6	291	0,90
500	315	0,6	376	1,50
500	350	0,7	291	1,70
500	400	0,7	396	2,30
500	450	0,7	291	1,50
500	500	0,7	291	1,70

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Collar saddle

PSTR

Ød nom	Ød ₃ mm	t mm	l ₃ mm	m kg
560	250	0,7	412	1,50
560	300	0,7	321	1,30
560	315	0,7	406	1,90
560	350	0,7	381	2,00
560	400	0,9	426	3,10
560	450	0,9	321	2,70
560	500	0,9	321	3,10
560	560 *	0,9	321	5,70
600	300	0,7	341	1,40
600	315	0,7	426	1,90
600	350	0,7	341	1,70
600	400	0,9	446	3,10
600	450	0,9	341	2,70
600	500	0,9	341	3,30
600	560 *	0,9	341	5,80
600	600 *	0,9	341	6,30
630	315	0,7	441	2,10
630	350	0,7	356	1,80
630	400	0,9	461	3,30
630	450	0,9	356	2,80
630	500	0,9	356	3,50
630	560 *	0,9	356	5,90
630	600 *	0,9	356	6,40
630	630 *	0,9	356	6,80
650	350	0,7	366	1,90
650	400	0,9	366	2,60
650	450	0,9	366	2,90
650	500	0,9	366	3,60
650	560 *	0,9	366	6,00
650	600 *	0,9	366	6,50
650	630 *	0,9	366	6,90
650	650 *	0,9	366	7,20
710	400	0,9	396	3,00
710	450	0,9	396	3,10
710	500	0,9	396	3,80
710	560 *	0,9	396	6,10
710	600 *	0,9	396	6,70
710	630 *	0,9	396	7,10
710	650 *	0,9	396	7,40
710	710 *	0,9	396	8,50
750	450	0,9	416	3,20
750	500	0,9	416	3,80
750	560 *	0,9	416	6,20
750	600 *	0,9	416	6,70
750	630 *	0,9	416	7,10
750	650 *	0,9	416	7,40
750	710 *	0,9	416	8,60
750	750 *	0,9	416	9,00

Ød nom	Ød ₃ mm	t mm	l ₃ mm	m kg
800	500	0,9	441	3,80
800	560 *	0,9	441	6,30
800	630 *	0,9	441	7,30
800	650 *	0,9	441	7,70
800	710 *	0,9	441	8,70
800	750 *	0,9	441	9,20
800	800 *	0,9	441	10,1
900	560 *	0,9	491	6,60
900	600 *	0,9	491	7,20
900	630 *	0,9	491	7,60
900	650 *	0,9	491	8,00
900	710 *	0,9	491	9,10
900	750 *	0,9	491	9,70
900	800 *	0,9	491	10,6
900	900 *	0,9	491	12,2

* Supplied with flange FL



Take-off

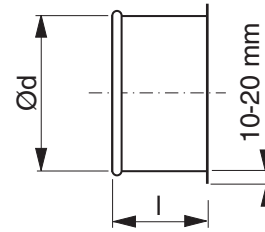
ILTR



Description

Take-off.

Dimensions



Ød nom	t mm	l mm	m kg
80	0,7	50	0,10
100	0,7	50	0,10
125	0,7	50	0,20
140	0,7	50	0,20
150	0,7	50	0,20
160	0,7	50	0,20
180	0,7	45	0,30
200	0,7	45	0,30
224	0,7	45	0,30
250	0,7	45	0,40
300	0,7	40	0,40
315	0,7	40	0,50
350	0,7	40	0,50
400	0,9	40	0,70
450	0,9	40	0,80
500	0,9	40	0,90

Ordering example

Product	ILTR	315
Dimension Ød		

1

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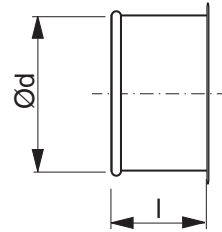


End cover

EPTR



Dimensions



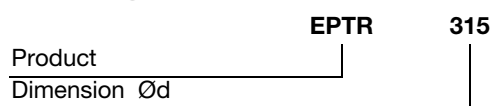
Description

End cover.

Ød nom	t mm	l mm	m kg
80	0,7	56	0,30
100	0,7	56	0,40
125	0,7	56	0,40
140	0,7	56	0,40
150	0,7	56	0,50
160	0,7	56	0,60
180	0,7	52	0,60
200	0,7	52	0,80
224	0,7	52	0,80
250	0,7	52	0,80
300	0,9	46	0,90
315	0,9	46	1,00
350	0,9	46	1,00
400	0,9	46	1,40
450	0,9	46	1,60
500	0,9	46	1,80
560 *	0,9	70	5,40
600 *	0,9	70	6,10
630 *	0,9	70	6,30
650 *	0,9	70	6,70
710 *	0,9	90	7,80
750 *	0,9	90	8,30
800 *	0,9	90	9,00
900 *	0,9	90	10,7

* Supplied with flange FL

Ordering example





Transition piece

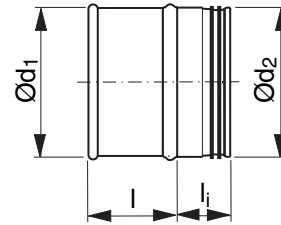
OUTR



Description

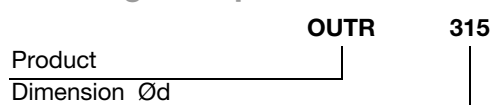
Coupling between Transfer and Safe systems.

Dimensions



Ød ₁ nom	Ød ₂ nom	t mm	l mm	l _i mm	m kg
80	80	0,7	40	40	0,15
100	100	0,7	40	40	0,15
125	125	0,7	40	40	0,20
140	140	0,7	40	40	0,20
150	150	0,7	40	40	0,30
160	160	0,7	40	40	0,30
180	180	0,7	40	40	0,30
200	200	0,7	40	40	0,30
224	224	0,7	40	40	0,40
250	250	0,7	60	60	0,40
300	300	0,7	46	60	0,70
315	315	0,7	46	60	0,50
350	350	0,9	46	60	0,80
400	400	0,9	46	80	1,20
450	450	0,9	46	80	1,40
500	500	0,9	46	80	1,60
560	560	0,9	80	80	4,6
600	600	0,9	80	80	4,9
630	630	0,9	80	80	5,1
650	650	0,9	80	80	5,4
710	710	0,9	100	100	6,1
750	750	0,9	100	100	6,8
800	800	0,9	100	100	7,5
900	900	0,9	125	125	8,5

Ordering example



- 1
- 2
- 3
- 4
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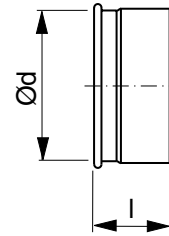
Transition piece

MFTR

- 1
- 2
- 3
- 4
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- 15
- 16
- 17
- 18



Dimensions

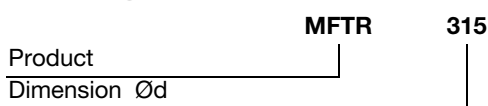


Description

Coupling with female end between Transfer and Safe systems.

Ød nom	t mm	l mm	m kg
80	0,7	62	0,10
100	0,7	62	0,10
125	0,7	62	0,20
140	0,7	62	0,20
150	0,7	62	0,20
160	0,7	62	0,20
180	0,7	58	0,20
200	0,7	58	0,20
224	0,7	58	0,30
250	0,7	79	0,30
300	0,9	106	0,70
315	0,9	73	0,30
350	0,7	115	0,9
400	0,9	126	1,20
450	0,9	126	1,40
500	0,9	126	1,60

Ordering example



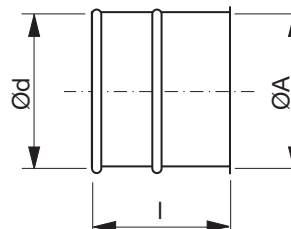


Transition piece

OTR



Dimensions



Description

Coupling between Transfer and other joining system.

As standard the length is 100 mm. If a specific length is desired it can be stated when order. The length depends on dimensions and joining system. Minimum length is 50 mm.

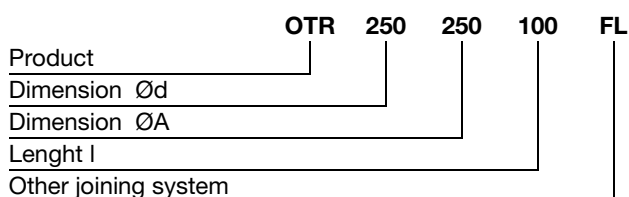
Ød : dimension for Transfer

ØA : dimension for other system

At order state the type of the other joining system.

Ød nom	t mm
80	0,7
100	0,7
125	0,7
140	0,7
150	0,7
160	0,7
180	0,7
200	0,7
224	0,7
250	0,7
300	0,9
315	0,9
350	0,9
400	0,9
450	0,9
500	0,9

Ordering example



- 1
- 2
- 3
- 4
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- 13
- 14
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- 16
- 17
- 18



Transition piece

LORTR



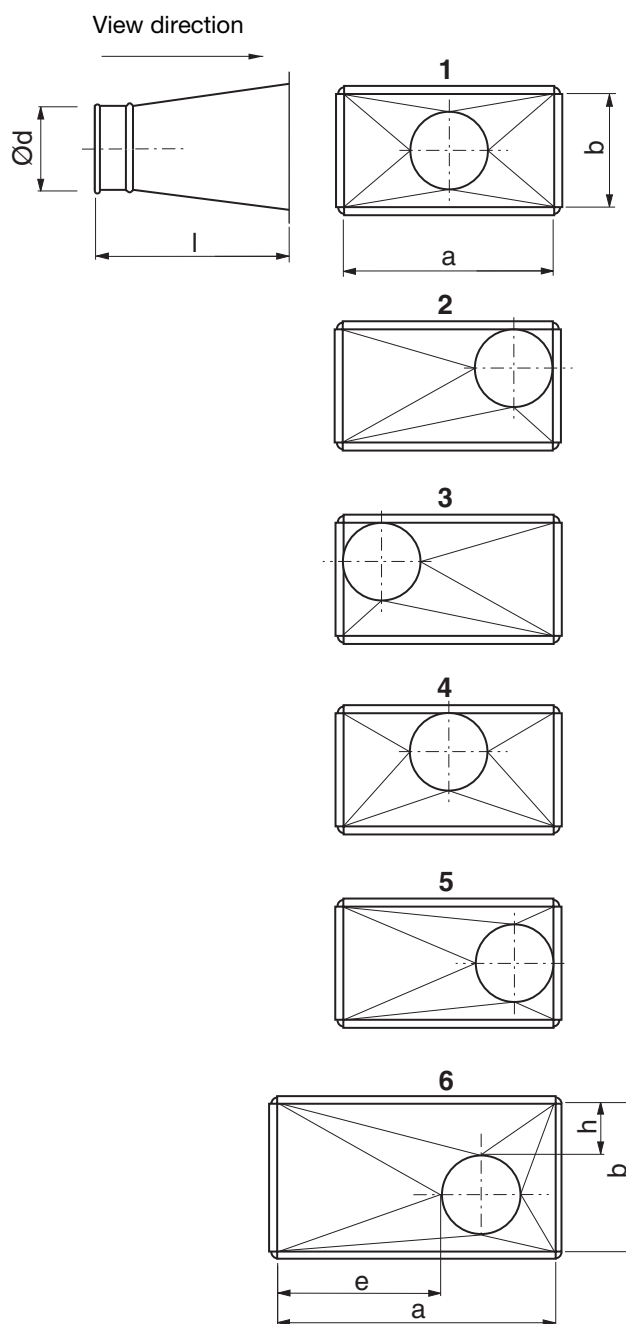
Description

Coupling between Transfer and rectangular connection.

The measures e and h only need to be specified for alternative 6. A negative value for e, for example, means that e is outside side a.

The measures e and h only need to be specified for alternative 6. A negative value for e, for example, means that e is outside side a.

Dimensions



a, b Largest side mm	l mm
100 – 350	300
351 – 750	450
751 – 1200	600

Ordering example

Product	LORTR	500	300	160	1
Largest side	a				
Smallest side	b				
Diameter in mm	Ød				
The alt. displacement are seen from the circular end 1-6					



Extraction hood

SH

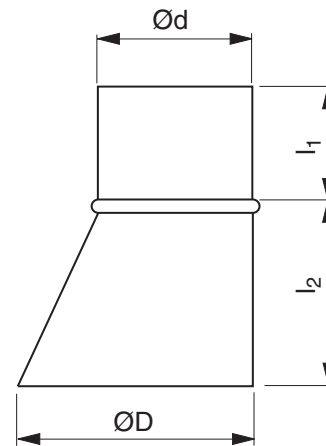


Description

Extraction hood for all types of extraction.

Available in two standard sizes with various accessories such as a damper, net and magnet.

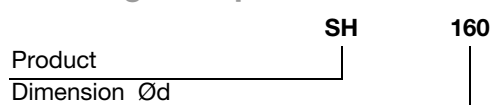
Dimensions



Ød nom	ØD nom	l ₁ mm	l ₂ mm	m kg
80	160	80	95	0,31
160 *	315	120	155	1,00

* Supplied with handle

Ordering example



- 1
- 2
- 3
- 4
- 5
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- 11
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- 13
- 14
- 15
- 16
- 17
- 18



Extraction hood

SHTR

- 1
- 2
- 3
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- 11
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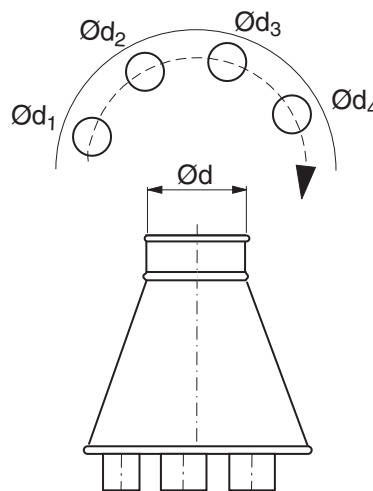


Description

Extraction hood.

To order, specify $\varnothing d$ and dimensions for stubs $\varnothing d_1$, $\varnothing d_2$, $\varnothing d_3$ etc. and the sequence they should be located on the pitch circle.

Dimensions



$\varnothing d$ nom	t mm
80	0,7
100	0,7
125	0,7
140	0,7
150	0,7
160	0,7
180	0,7
200	0,7
224	0,7
250	0,7
300	0,7
315	0,7
350	0,7
400	0,9
450	0,9
500	0,9

Ordering example





Extraction hood

SPTR

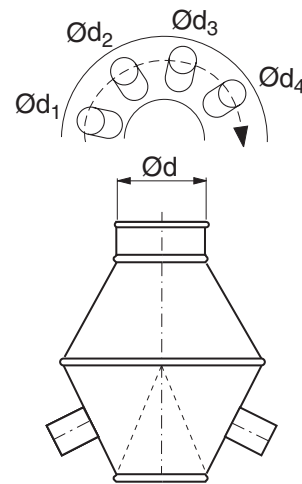


Description

Extraction hood.

To order, specify $\text{\O}d$ and dimensions for stubs $\text{\O}d_1$, $\text{\O}d_2$, $\text{\O}d_3$ etc. and the sequence they should be located on the pitch circle.

Dimensions



$\text{\O}d$ nom	t mm
80	0,7
100	0,7
125	0,7
140	0,7
150	0,7
160	0,7
180	0,7
200	0,7
224	0,7
250	0,7
300	0,7
315	0,7
350	0,7
400	0,9
450	0,9
500	0,9

Ordering example

Product	SPTR	315	xxx - xxx - xxx
Dimension $\text{\O}d$			
Dimension $\text{\O}d_1, \text{\O}d_2, \text{\O}d_3$			

- 1
- 2
- 3
- 4
- 5
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- 16
- 17
- 18



Waste extractor

GSTR

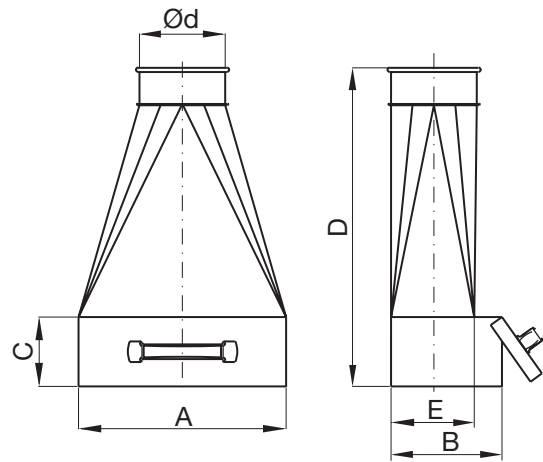
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
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- 10
- 11
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- 14
- 15
- 16
- 17
- 18



Description

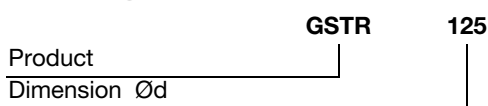
Used for extraction of chips etc. Is to be placed up to a wall.

Dimensions



Ød nom	A mm	B mm	C mm	D mm	E mm
100	300	165	100	460	120
125	300	165	100	460	120
160	300	165	100	460	120

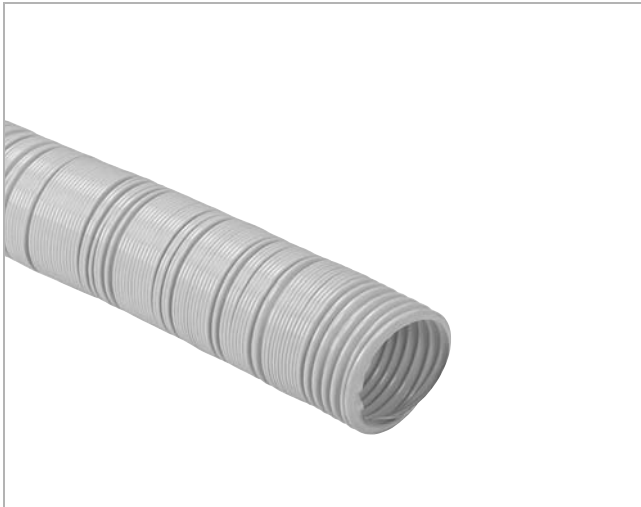
Ordering example





Flexible hose

THTR



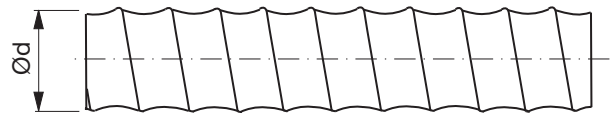
Description

Light, flexible hose built on a bright steel spiral. Transparent with a light bluish tone.

Material polyester – polyurethane
 Temperature range -40 to +100 °C

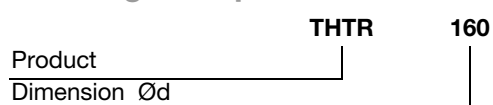
Fits standard fitting dimensions.

Dimensions



Ød mm	Min. bending radius mm	Max. per- missible negative pressure kPa	l mm	m _l kg/m
80	80	14,5	6000	0,50
100	100	12,0	6000	0,60
125	125	10,0	6000	0,70
140	140	8,0	6000	0,80
150	150	7,8	6000	0,90
160	160	7,5	6000	0,90
180	180	6,5	6000	1,00
200	200	6,2	6000	1,10
250	250	5,0	6000	1,40

Ordering example



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

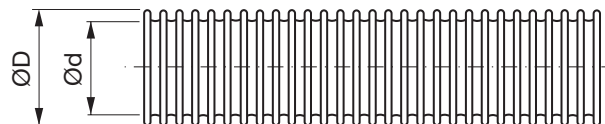


Flexible hose

THVTR



Dimensions



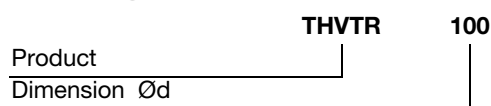
Description

Flexible hose, non-spiral, profiled wall construction, extruded ethylene-vinyl-acetate. The design means that the hose has an almost completely smooth interior under high vacuum, with consequent low pressure drop. This is because the open ridges on the inside of the hose are compressed at negative pressure.

Colour blue
 Temperature range -45 to +65 °C

Ød mm	ØD mm	Min. bending radius mm	Max. per- missible negative pressure kPa	l mm	m _l kg/m
25	31	66	50	30000	0,20
32	41	82	50	30000	0,30
38	48	93	50	30000	0,40
45	56	111	50	30000	0,50
50	61	122	50	30000	0,60
63	76	160	50	30000	0,80
76	91	188	50	15000	1,10
100	115	252	50	15000	1,50

Ordering example



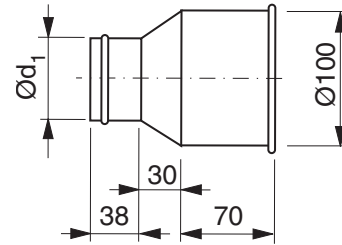


Transition piece

OTRTH



Dimensions



Description

Coupling between Transfer and flexible hose THVTR.

Ød ₁ nom	m kg
25	0,19
32	0,20
38	0,20
45	0,20
50	0,21
63	0,21
76	0,22

Dim 80–250 use TSRTR page 480.

Ordering example

Product	OTRTH	50
Dimension Ød ₁		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10**
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Clip

SB

- 1
- 2
- 3
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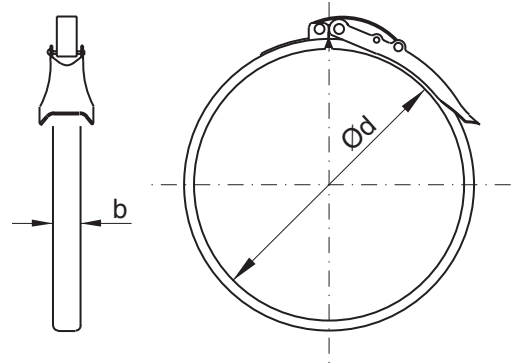


Description

The clip is provided with a rubber gasket. The clip handles can be secured against inadvertent opening by means of a lock pin.

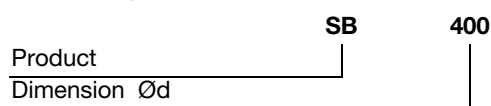
Temperature range -30 to +75 °C continuous
 -40 to +85 °C intermittent

Dimensions



Ød nom	b mm	m kg
80	14	0,10
100	14	0,10
125	14	0,10
140	14	0,10
150	14	0,10
160	14	0,10
180	19	0,20
200	19	0,30
224	19	0,30
250	19	0,30
300	25	0,40
315	25	0,50
350	25	0,60
400	25	0,60
450	25	0,70
500	25	0,80

Ordering example



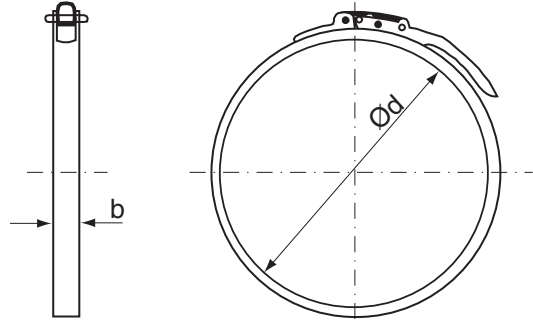


Clip

SB-1



Dimensions



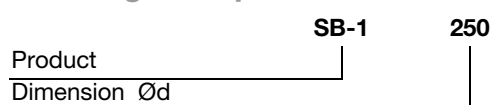
Description

Provided with a rubber gasket of EPDM rubber and a thread spring. The clip handle can be secured against inadvertent opening by means of a lock pin.

Temperature range -30 to +75 °C continuous
 -40 to +85 °C intermittent

Ød nom	b mm	m kg
80	14	0,10
100	14	0,10
125	14	0,10
140	14	0,10
150	14	0,10
160	14	0,10
180	19	0,20
200	19	0,30
224	19	0,30
250	19	0,30
300	25	0,40
315	25	0,50
350	25	0,60
400	25	0,60
450	25	0,70
500	25	0,80

Ordering example



- 1
- 2
- 3
- 4
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- 17
- 18



Clip

SB-2

- 1
- 2
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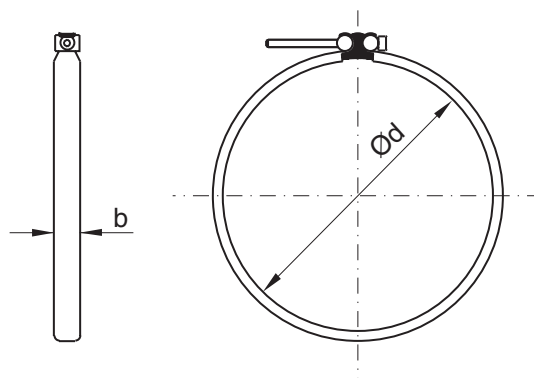


Description

The clip is provided with a rubber gasket. The clip is tensioned by means of a hexagonal socket cap screw. Suitable for tightening with a screw tightener.

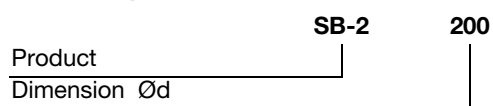
Temperature range -30 to +75 °C continuous
 -40 to +85 °C intermittent

Dimensions



Ød nom	b mm	Key size mm	m kg
80	14	3	0,10
100	14	3	0,10
125	14	3	0,10
140	14	3	0,10
150	14	3	0,10
160	14	3	0,10
180	19	3	0,20
200	19	3	0,30
224	19	3	0,30
250	19	3	0,30
300	25	5	0,40
315	25	5	0,50
350	25	5	0,60
400	25	5	0,60
450	25	5	0,70
500	25	5	0,80

Ordering example





Sealing clamp

MFK

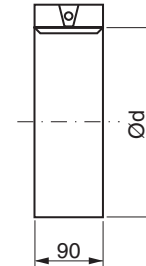


Description

The inside of the sealing clamp is clad with longlife resistant EPDM rubber.

Used for sealing joints on slide-on stub PTR and saddle PSVTR.

Dimensions



Ød nom	m kg
80	0,30
100	0,30
125	0,40
140	0,40
150	0,50
160	0,50
180	0,50
200	0,50
224	0,60
250	0,60
300	0,60
315	0,70
350	0,70
400	0,80
450	1,10
500	1,20

Ordering example

Product	MFK	200
Dimension Ød		

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Rectangular
















Lindab	1
General information and theory	2
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3	Bends	LBR 536
4		
5	LBXR 537	
6		
7	S-bend	LBSR 538
8		
9	Taper	LDR 539
10		
11	Rect-to-round transition	LORU 540
12		
13	Collars	LTR 541
14		
15	LTRSR 542	
16		
17	T-piece	LTROR 543
18		
	End cover	LEPR 544
		

Rectangular joint system	Flange profile RJFP 545
	
Corner RJCL 546	
	
Bolt clamp RJBC 547	
	
Slide profile RJSP 547	
	
Bot RJB 547	
	
Nut RJN 547	
	
Sealing moulding RJSM 547	
	
Rod RDR 548	
	
Rod bolt RDRB 548	
	
Rod washer RDRW 548	
	
Rod dowel RDRD 548	
	
Rod cross RDRC 549	
	
Vane fastener RDVF 550	
	



Content – Rectangular

Joining parts	Joining profile LS 1 551
	Joining profile LS 11 551
	Joining profile LS 21 551
	Joining profile LS 31 551
	Joining profile LS 3 551
	Joining profile LS 4 551
	Joining profile LS 5 551
	
Regulating damper	See chapter Dampers & Measure units LKSR..... 301
	
Access doors	See chapter Access doors
	IPLR 610
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General

1 Some products might differ slightly from country to country. Please contact your local Lindab store for correct information.

2 Rectangular consists of rectangular ducts, fittings and silencers with dimensions in accordance with SS-EN 1505 when not otherwise specified. The duct system fulfils tightness class C and pressure class 2 according to EN 1507:2006. All fittings and ducts are made of hot-dip galvanized steel sheet Z 275. If higher corrosion protection is needed, alu-zinc or stainless steel can be used.

3 A joining profile is mounted at the end of every fitting and duct. A common slide profile LS-3 or bolt clamps and a seal moulding, RJSM is needed to join components. So pre-cut mouldings and an adequate length of seal moulding are supplied in each delivery. Seals are made from temperature resistant polythene. Recommended temperature range is -70 to +80°C.

4 Support distances of ducts and components must never exceed 2400 mm for any dimension. Nor may there be more than one joint between two supports. The support must be located max. 500 mm from a joint.

5 Non-standard ducts and duct components can be tendered on request. Please enclose a dimensioned sketch if possible.

8 Tightness

Ducts and fittings fulfil tightness class C. This only applies on condition that the products are installed in accordance with the installation instruction.

Please refer to page 39–40 for more information about sealing classes and official requirements.

10 Strength

Standard ducts and duct components can withstand positive of 1000 Pa and negative pressures of -750 Pa.

The ducts are manufactured to fulfil the requirements of EN 1507:2006. This means that when the duct is submitted to the maximum pressure of relevant pressure class than

- the duct slide doesn't bulge or cave more than the smallest value of 3% of its width or 30 mm
- the joint between two products doesn't bulge or cave more than 1/250-part of the longest side width.

14 Larger ducts and fittings are reinforced by hat-shaped profiles and rods.

Dimensions and weights

The "I"-measures given in the tables are the overall installation dimensions of products. The following tolerances apply, depending on duct or fitting dimensions.

a and b are the internal duct or fitting dimensions.

Tolerances for dimensions a and b

when $a + b \leq 1200$: +0 mm

when $a + b > 1200$: $\begin{matrix} -4 \\ +0 \\ -6 \end{matrix}$ mm

Tolerances for "I"-measures ± 5 mm

Hydraulic diameter d_h

The diameter of a circular duct which gives the same pressure drop at the same air velocity as in the rectangular duct.

$$d_h = \frac{4 \cdot A_c}{O} = \frac{2 \cdot a \cdot b}{a + b}$$

Equivalent diameter d_e

The diameter of a circular duct which gives the same pressure drop at the same air flow as in the rectangular duct.

Insulated ducts

Insulated ducts can be made in the following designs:

- Internally condensation and heat insulated with Lindtec®
- Internally insulated, clad with solid sheet metal
- Internally insulated, clad with perforated sheet metal
- Internal fire protection insulation 50 and 100 mm



General

Technical data for standard sizes

Cross-sectional area, A_c [m²]

b \ a	200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000
100	0,02	0,03	0,03	0,04									
150	0,03	0,04	0,05	0,06	0,08	0,09							
200	0,04	0,05	0,06	0,08	0,10	0,12	0,16						
250		0,06	0,08	0,10	0,13	0,15	0,20	0,25					
300			0,09	0,12	0,15	0,18	0,24	0,30	0,36				
400				0,16	0,20	0,24	0,32	0,40	0,48	0,56	0,64		
500					0,25	0,30	0,40	0,50	0,60	0,70	0,80	0,90	1,00
600						0,36	0,48	0,60	0,72	0,84	0,96	1,08	1,20
800							0,64	0,80	0,96	1,12	1,28	1,44	1,60
1000								1,00	1,20	1,40	1,60	1,80	2,00
1200									1,44	1,68	1,92	2,16	2,40

$$A_c = a \times b$$

Circumference, O [m]

b \ a	200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000
100	0,6	0,7	0,8	1,0									
150	0,7	0,8	0,9	1,1	1,3	1,5							
200	0,8	0,9	1,0	1,2	1,4	1,6	2,0						
250		1,0	1,1	1,3	1,5	1,7	2,1	2,5					
300			1,2	1,4	1,6	1,8	2,2	2,6	3,0				
400				1,6	1,8	2,0	2,4	2,8	3,2	3,6	4,0		
500					2,0	2,2	2,6	3,0	3,4	3,8	4,2	4,6	5,0
600						2,4	2,8	3,2	3,6	4,0	4,4	4,8	5,2
800							3,2	3,6	4,0	4,4	4,8	5,2	5,6
1000								4,0	4,4	4,8	5,2	5,6	6,0
1200									4,8	5,2	5,6	6,0	6,4

$$O = 2 \times (a + b)$$

Hydraulic diameter, d_h [mm]

b \ a	200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000
100	133	143	150	160									
150	171	188	200	218	231	240							
200	200	222	240	267	286	300	320						
250		250	273	308	333	353	381	400					
300			300	343	375	400	436	462	480				
400				400	444	480	533	571	600	622	640		
500					500	545	615	667	706	737	762	783	800
600						600	686	750	800	840	873	900	923
800							800	889	960	1018	1067	1108	1143
1000								1000	1091	1167	1231	1286	1333
1200									1200	1292	1371	1440	1500

$$d_h = 4 \times A_c / O = 2 \times a \times b / (a + b)$$



General

Equivalent diameter, d_e [mm]

b \ a	200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000
100	152	169	183	207									
150	189	210	229	260	287	310							
200	219	244	267	305	337	366	414						
250		274	299	344	381	414	470	518					
300			328	378	421	458	521	575	621				
400				438	489	534	610	675	732	783	829		
500					547	599	688	763	829	888	941	991	1036
600						657	757	842	916	982	1043	1098	1150
800							876	978	1068	1148	1221	1289	1351
1000								1095	1199	1292	1376	1454	1527
1200									1314	1419	1514	1602	1684

$$d_e = 2 \times b \times (\pi^{2-n} \times (1 + a/b)^{1+n} / (a/b)^3)^{1/(n-5)}$$

where $n = 1 / (1,05 \times \log(\text{Re}) - 0,45)$

where $\text{Re} = v_m \times d_h / \nu$

where $v_m = 5 \text{ m/s}$

and $\nu = 0,000\,000\,101\,312 \times t + 0,010\,013\,001\,375\,72$

where $t = 20^\circ\text{C}$

Specific weight, m_l [kg/m]

b \ a	200	250	300	400	500	600	800	1000	1200	1400	1600	1800	2000
100	5	6	6	8									
150	6	6	7	9	10	12							
200	6	7	8	10	11	13	16						
250		8	9	10	12	14	17	21					
300			10	11	13	14	17	22	25				
400				13	14	16	19	23	27	31	44		
500					16	17	21	25	28	33	46	50	55
600						19	22	27	30	34	48	53	57
800							25	30	33	37	53	57	62
1000								34	38	42	58	62	67
1200									41	45	62	67	72

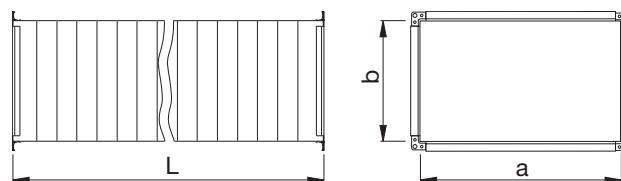


Duct

LKR



Dimensions



Description

Straight duct, stiffened with transverse trapezoid corrugations, which reduces the risk of noise generation. Larger dimensions have stiffening profiles and/or internal rods. Installation height of these profiles is 23 mm.

When a or $b \leq 1200$, standard lengths are 2400 or 1250 mm. If a or $b > 1200$, standard length is 1250 mm. Other lengths can be ordered.

Ducts are normally supplied with a strong joining profile RJFP 20 or RJFP 30 at each end, but can also be supplied as a flexible piece, where the joining profile on one end is not fixed. Also available with an end cover fixed by joining profiles.

Ordering example

	LKR	500	300	1	1
Product					
Largest side	a				
Smallest side	b				
L = 2400 mm*	1				
L = 1250 mm	2				
L < 2400 mm	L				
RJFP-joint at both ends		1			
RJFP-joint at one end					
Loose joint included.		2			
RJFP-joint at one end					
End cover on joining profiles at other end.			3		
End cover on joining profiles at both ends.				4	
RJFP-joint at one end					
No loose joint included.				5	

* Applies when a or $b \leq 200$ mm.

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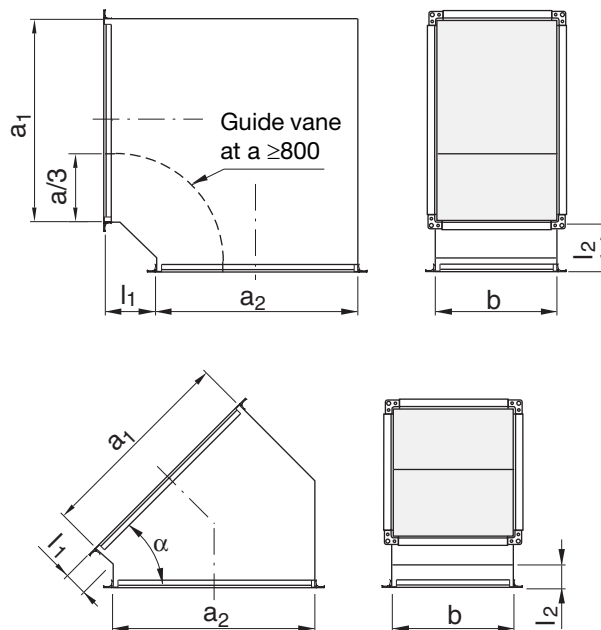


Bend

LBR



Dimensions



Description

Bend with sharp outer corner, stiffened with trapezoid corrugation.

The bend is delivered with 90° or 45° angles and joining profile RJFP at both ends. Other leg lengths and angles can also be ordered.

Standard design $l_1 = l_2 = 125$ mm.

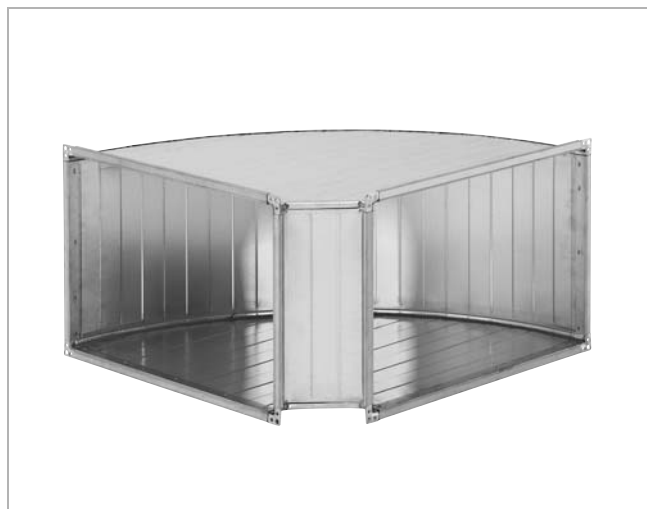
Ordering example

	LBR	500	300	500	1	1	1
Product							
Form side	a_1						
Curved side	b						
Form side	a_2						
90°	1						
45°	2						
Angle	α						
125 mm	1						
Leg length	l_1						
125 mm	1						
Leg length	l_2						



Bend

LBXR



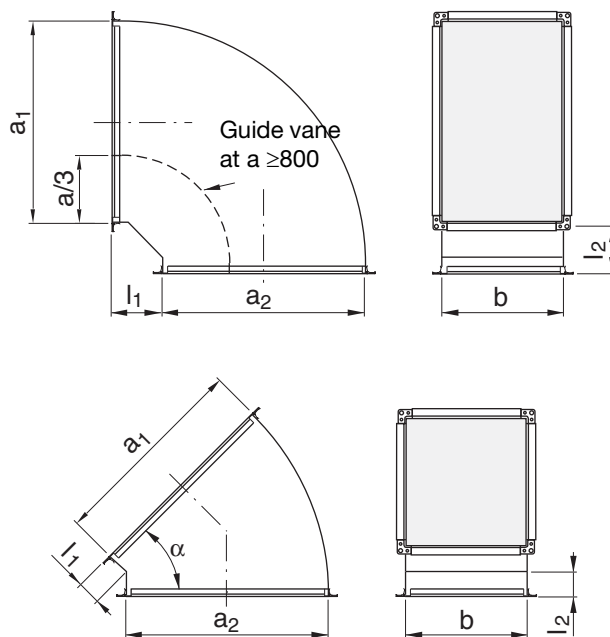
Description

Bend with rounded outer corner, stiffened with trapezoid corrugations.

The bend is delivered with 90° or 45° angles and joining profiles type RJFP at both ends. Other leg lengths and angles can also be ordered.

Standard design $l_1 = l_2 = 125$ mm.

Dimensions



Ordering example

	LBXR	500	300	500	1	1	1
Product							
Form side	a_1						
Curved side	b						
Form side	a_2						
90°	1						
45°	2						
Angle	α						
125 mm	1						
Leg length	l_1						
125 mm	1						
Leg length	l_2						

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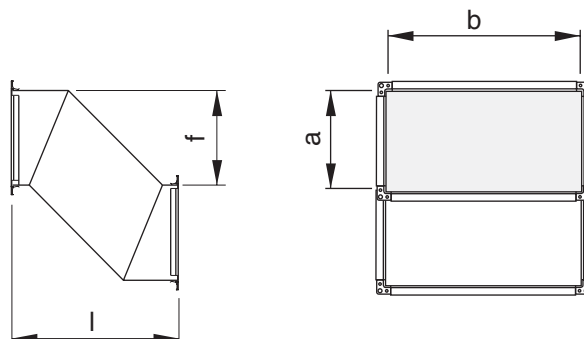


S-bend

LBSR



Dimensions



Description

Used for deflections of the duct system, for example where ducts cross.

Has a joining profile type RJFP at both ends, and is stiffened by trapezoid corrugations.

A special relationship is needed between the a-dimension, fall f and length l for the LBSR to retain its cross-sectional area and not restrict the air flow. For this reason, standard lengths and standard drops have been prepared.

a mm	l std mm	f std mm
100	400	300
150	400	300
200	400	300
250	400	300
300	500	300
350	500	300
400	600	400
450	600	400
500	600	400
600	700	400
700	800	500
800	900	500
900	1000	500
1000	1100	500
1100	1200	500
1200	1300	500
1300	1400	500
1400	1500	500
1500	1600	500
1600	1700	500
1800	1900	500
2000	2100	500

Ordering example

Product	LBSR	300	600	300	400
Form side	a				
Curved side	b				
Fall	f				
Length	l				



Taper

LDR



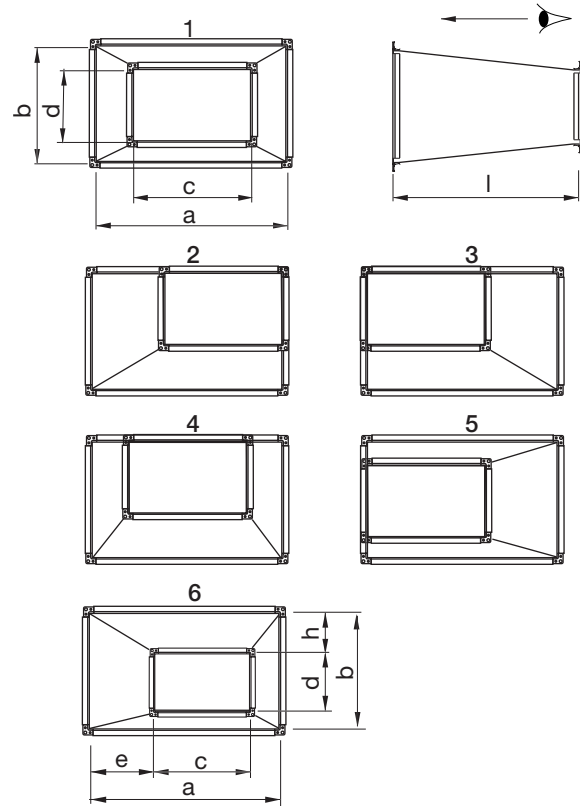
Description

The taper is used as transition between different duct dimensions. The larger dimensions are available with offsets as in the coded sketches.

Dimension changes have a joining profile type RJFP at both ends, and are stiffened by trapezoid corrugations.

Measures e and h only need to be given for alternative 6. Negative values for e, for example, mean that e is outside side a.

Dimensions



Ordering example

Product	LDR	500	300	300	200	1	450
Large end	a								
Large end	b								
Small end	c								
Small end	d								
The alternative displacements are seen from the cxd end			1 - 6						
Length	l								
Displacement	h								(Only at alternative 6.)
Displacement	e								(Only at alternative 6.)

a mm	l std mm
100	300
150	300
200	300
250	300
300	300
350	300
400	450
450	450
500	450
600	450
700	450
800	600
900	600
1000	600
1100	600
1200	600
1300	600
1400	600
1500	600
1600	600
1800	600
2000	600

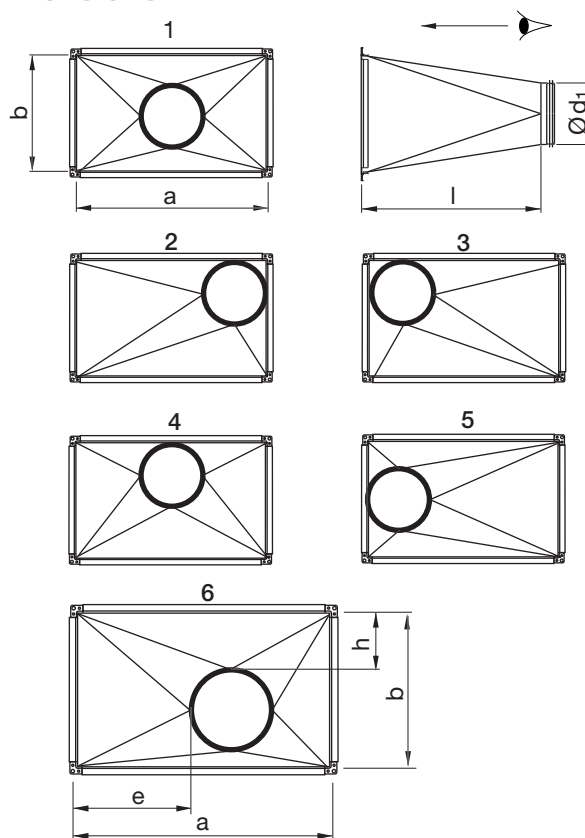


Rect-to-round transition

LORU



Dimensions



Description

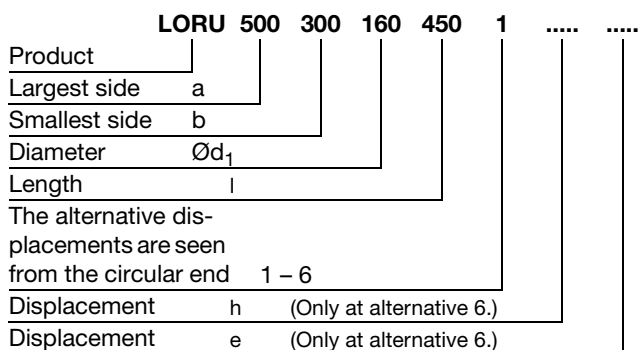
Rect-to-round transition are used between rectangular and circular ducts. The rectangular connection has joining profiles type RJFP and the circular connection has Safe seal.

The rectangular connection is available with offsets as in the coded sketches.

Measures e and h only need to be given for alternative 6. Negative values for e , for example, mean that e is outside side a .

a mm	l std mm
100	300
150	300
200	300
250	300
300	300
350	300
400	450
450	450
500	450
600	450
700	450
800	600
900	600
1000	600
1100	600
1200	600
1300	600
1400	600
1500	600
1600	600
1800	600
2000	600

Ordering example





Collar

LTR

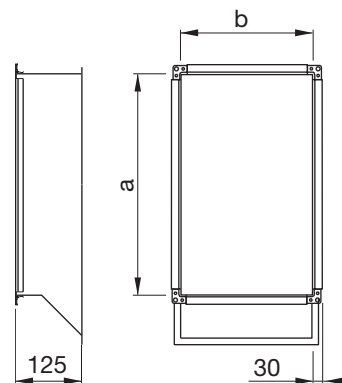


Description

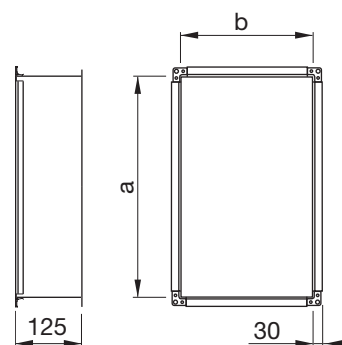
The collar is used for connection to rectangular duct. The smaller joint end is provided with joining profiles type RJFP. The larger one has an edge, for fixing with blind rivets or self-tapping screws, but can also be given a folding tab to facilitate assembly.

Dimensions

Sloping design: FAS



Straight design: RAK



Ordering example

Product		LTR	500	300	125	FAS	v
Form side	a						
Curved side	b						
Length							
Design	sloping	FAS					
	straight	RAK					
Option							
Fixing with folding tabs							

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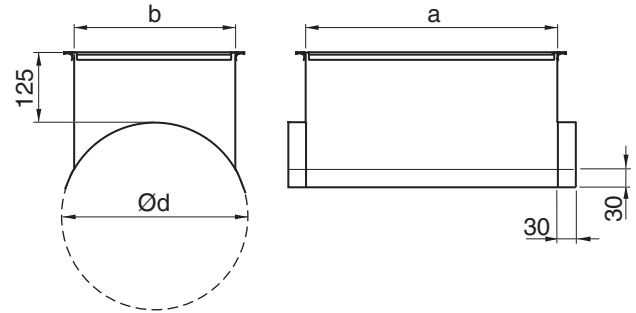
Collar on circular duct

LTRSR

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Dimensions



Description

The collar is used for connection to circular duct. The rectangular end is provided with joining profiles type RJFP. The rounded end has an edge, for fixing with blind rivets or self-tapping screws.

Other lengths can also be supplied.

Ordering example

	LTRSR	600	300	400	125
Product					
Side	a				
Side	b				
Diameter	Ød				
Length					

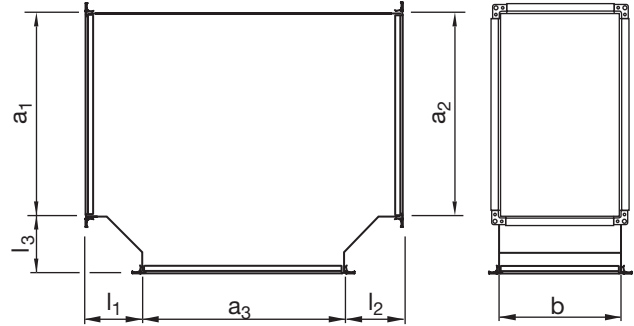


T-piece

LTROR



Dimensions



Description

A T-piece which is provided with joining profiles type RJFP and is stiffened with trapezoid corrugations.

Standard design $l_1 = l_2 = l_3 = 125$ mm.

Other leg lengths can also be supplied.

Ordering example

	LTROR	600	600	800	400	1	1	1
Product								
Side	a_1							
Side	a_2							
Side	a_3							
Side	b							
125 mm	1							
Leg length	l_1							
125 mm	1							
Leg length	l_2							
125 mm	1							
Leg length	l_3							

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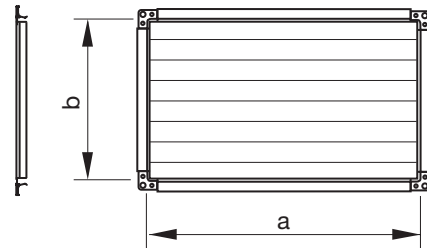
End cover

LEPR

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Dimensions



Description

Used as end cover in duct.

The edges are equipped with joining profiles type RJFP.

The end cover is stiffened with trapezoid corrugations.

Ordering example

Product	LEPR	500	300
Largest side	a		
Smallest side	b		



Rectangular joint system

The joint system is strong, airtight and easy to install.

- Flange profiles
- Corners
- Flange profile fasteners
- Corner fasteners
- Seal moulding



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Flange profiles

RJFP Rectangular Joint Flange Profil comes in three sizes, different sheet steel thicknesses, with and without sealant.



Dimensions

Code	Dim	Length	Material	Type	Thickness
RJFP	20	5000	GALV		0,7
RJFP	20	5000	GALV	SEAL	0,7
RJFP	20	5000	GALV		0,8
RJFP	20	5000	GALV	SEAL	0,8
RJFP	30	5000	GALV		0,8
RJFP	30	5000	GALV	SEAL	0,8
RJFP	30	5000	GALV		0,9
RJFP	30	5000	GALV	SEAL	0,9
RJFP	40	5700	GALV		1,13
RJFP	40	5700	GALV		1,2

Ordering example

	RJFP	20	5000	GALV	0,7
Product					
Dimension					
Length					
Material					
Thickness					

RJFP 20



RJFP 30



RJFP 40





Rectangular joint system

Corners

1

RJCL 20

The corner is constructed to fit the flange profile RJFP 20.



2

3

4

5

Length 63 is to be used when the side of the duct is very small. Up to 100 mm.

6



7

8

9

Length 73 is to be used in all normal cases where the 20 profile is used.

10

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Ordering example

	RJCL	20	63	GALV	3
Product					
Dimension					
Length					
Material					
Thickness					

17

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RJCL 30

The corner is constructed to fit the flange profile RJFP 30.



RJCL 40

The corner is constructed to fit the flange profile RJFP 40



Dimensions

Code	Dim	Length	Material	Thickness
RJCL	20	63	GALV	3
RJCL	20	73	GALV	3
RJCL	20	95	GALV	3
RJCL	30	103	GALV	3
RJCL	40	123	GALV	4



Rectangular joint system

Flange profile fasteners

RJBC

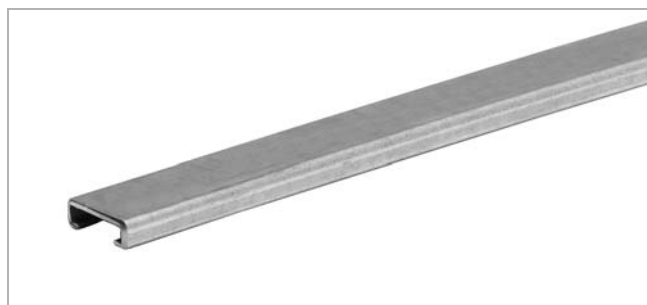
Rectangular Joint Bolt Clamp



The clamp is easy to use where there is sufficient space to fasten the clamp.

RJSP

Rectangular Joint Slide Profile



The slide profile does not demand space above the profile, but there has to be space at the side of the duct.

Dimensions

Code	Dim	Length	Material	Thickness
RJBC			GALV	
RJSP		5000	GALV	
RJB	8	25	GALV	
RJB	10	25	GALV	
RJN	8		GALV	
RJN	10		GALV	
RJSM	9	10000	PE	4
RJSM	12	10000	PE	4

Ordering example

	RJBC	GALV
Product		
Material		

Corner fasteners

The M8 bolt and nut is to be used with all the RJCL 20 corners. The M10 bolt and nut is to be used with RJCL 30 and 40 corners.

RJB

Rectangular Joint Bolt



RJN

Rectangular Joint Nut



Seal moulding

RJSM

Rectangular Joint Seal Moulding



The 9 mm seal moulding is to be used with RJFP 20 profile.

The 12 mm seal moulding is to be used with RJFP 30 and 40 profiles.

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Rectangular duct stiffeners

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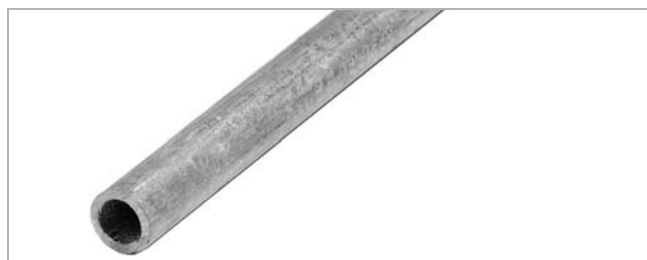
The rod is round and together with the crosses and the rod fasteners it will decrease the bulging and caving of the duct.

- Rod
- Rod fasteners
- Rod crosses



Rod

RDR
Rectangular Duct Rod



Rod fasteners

RDRB
Rectangular Duct Rod Bolt



RDRW
Rectangular Duct Rod Washer



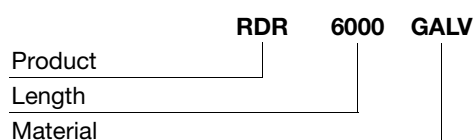
RDRD
Rectangular Duct Rod Dowel



Dimensions

Code	Dim	Length	Material
RDR		6000	GALV
RDRB	6	40	GALV
RDRW			GALV
RDRD	6		

Ordering example



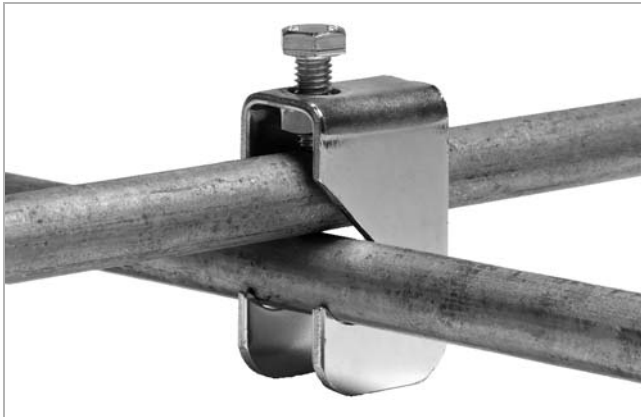


Rectangular duct stiffeners

Rod crosses

RDRC

Rectangular Duct Rod Cross



The metal cross is used for large ducts.



The plastic cross is used for small ducts.

Dimensions

Code	Material
RDRC	GALV
RDRC	PE

Ordering example

	RDRC	GALV
Product		
Material		

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RDVF

The vane fasteners are easy to mount and gives a stable and airtight construction.

- Vane fasteners

Vane fasteners

Rectangular Duct Vane Fastener

RDVF



The small Vane Fastener is used for sheet steel thickness 0,5–0,9 mm.

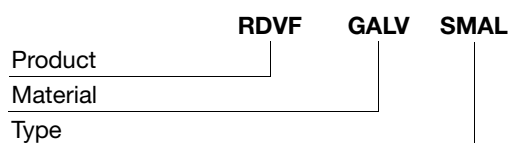


The large Vane Fastener is used for sheet steel thickness 0,9–1,25 mm.

Dimensions

Code	Material	Type
RDVF	GALV	SMAL
RDVF	GALV	LARG

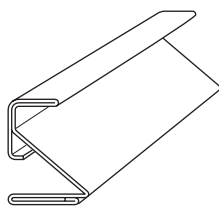
Ordering example





Joining parts

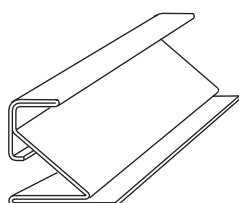
Description



Joining profile LS 1

Joining profile designed to be fixed to the duct by embossing with a special pincers. It is sealed to the duct by special factory-applied seam putty. Profile height is app. 20 mm. Normally supplied in 5 m lengths.

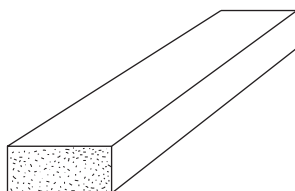
Specific weight: 0,40 kg/m



Joining profile LS 11

Joining profile designed to be spot welded to the duct. It is sealed to the duct by special factory-applied seam putty. Profile height is app. 20 mm. Normally supplied in 5 m lengths.

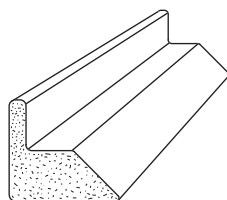
Specific weight: 0,47 kg/m



Seal moulding LS 21

The seal moulding is intended to be installed in each joining profile.

Made from polythene foam. Supplied in 10 m coils.



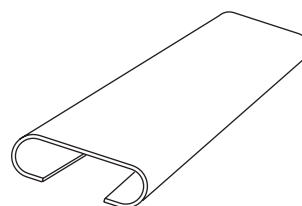
Seal moulding LS 31

The seal moulding is intended to be installed in each joining profile.

Made from polythene foam.

Included as standard with all orders.

Supplied in 250 m in cartons.

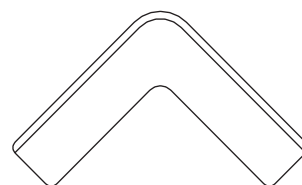


Slide profile LS 3

Used to join two ducts or fittings which both have joining profiles.

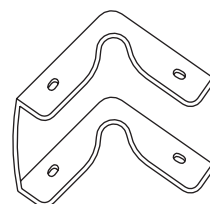
Normally supplied in 5 m lengths.

Specific weight: 0,20 kg/m



Inner corner LS 4

Used to keep the seal moulding in place and give the ventilation duct stiffness and stability.



Outer corner LS 5

Used outside the slide profile to protect the seal moulding and stiffen the joint. Gives a neat finish.

Other joining methods

If you do not want to fix ducts or duct components together with slide mouldings, as described above, we can meet your needs. You must then specify the particular method of joining you want, in plain language. For example: blind rivet edge 25 mm, flat bar flange to a particular standard, or equivalent.

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Flexible ducting






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Flexible ducts and semiflexible ducts

Linings and materials

	Flexible				Semiflexible				Denomination interpretation		
	Denomination	Inner wall	Insulation	Outer wall	Denomination	Inner wall	Insulation	Outer wall			
Uninsulated ducts	KF	PVC							Flexible Duct		
	FD	PVC							Flexible Duct		
									FDO	AL	Flexible Duct One
									FD	GALV	Flexible Duct
	FBLD	AP budget light							Flexible Budget Light Duct		
	FLD	AP light							Flexible Light Duct		
	FMD	AP medium							Flexible Medium Duct		
	FBLDD	AP budget light + PVC							Flexible Budget Light Double Duct		
	FLDD	AP+PVC							Flexible Light Double Duct		
		FDD	AL+AL	Flexible Double Duct							
Connector					DRASUT	AL					
Insulated ducts	FIBLD	AP budget light	Glass wool 25 mm	AP or PMP					Flexible Insulated Budget Light Duct		
	FILD	AP light	Glass wool 25 mm	AP					Flexible Insulated Light Duct		
	FIMD	AP medium	Glass wool 25 mm	MP					Flexible Insulated Medium Duct		
	FIHD	AP heavy	Glass wool 25 mm	AP					Flexible Insulated Heavy Duct		
						FIDD	AL+AL	Glass wool 25 or 50 mm	AL+AL	Flexible Insulated Double Duct	
	FDI		Glass wool 25 mm	AP					Flexible Duct Insulation		
	FDFI	PE	Glass wool 25 mm	AP					Flexible Duct Foil Insulation		

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Flexible ducts and semiflexible ducts

	Flexible				Semiflexible				Denomination interpretation
	Denomination	Inner wall	Insulation	Outer wall	Denomination	Inner wall	Insulation	Outer wall	
Silencers	AKUCOM	AL	Mineral wool 25 mm	PE					
	FMDSL	AP medium	Glass wool 25 mm	AP or MP					Flexible Medium Duct Silencer
	FHDSL	AP heavy	Glass wool 25 mm	AP					Flexible Heavy Duct Silencer
	FLDFSL	AP light	Glass wool 25 mm	AP or PMP					Flexible Light Duct Foil Silencer
					FDDGSL	AL+AL	Glass wool 25 mm	AL+AL	Flexible Double Duct Gables Silencer
					FDDGSL	AL+AL	Glass wool 50 mm	AL+AL	Flexible Double Duct Gables Silencer

Materials

AL = Aluminium

AP = Aluminium-polyester

GALV = Galvanized steel

MP = Metalized Polyester

PE = Polyester

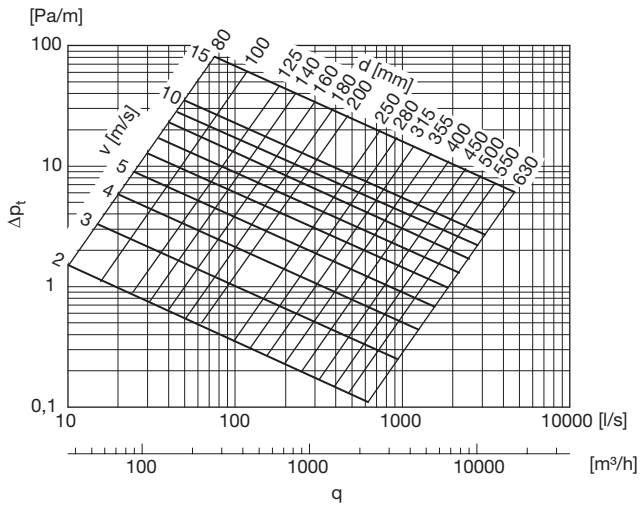
PVC = Polyvinyl Chloride



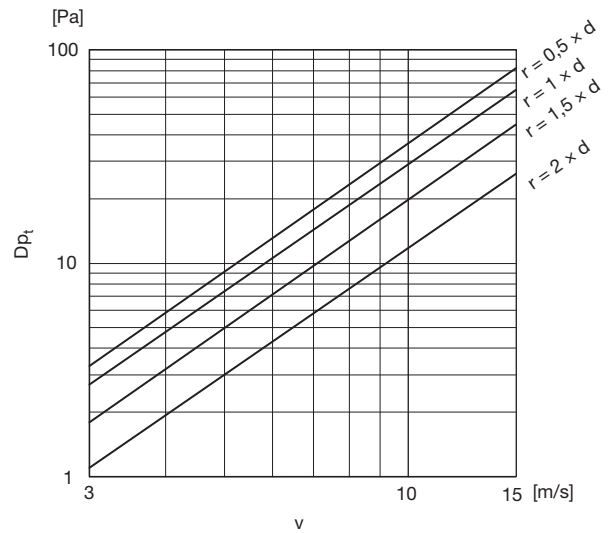
Flexible ducts and semiflexible ducts

Technical data

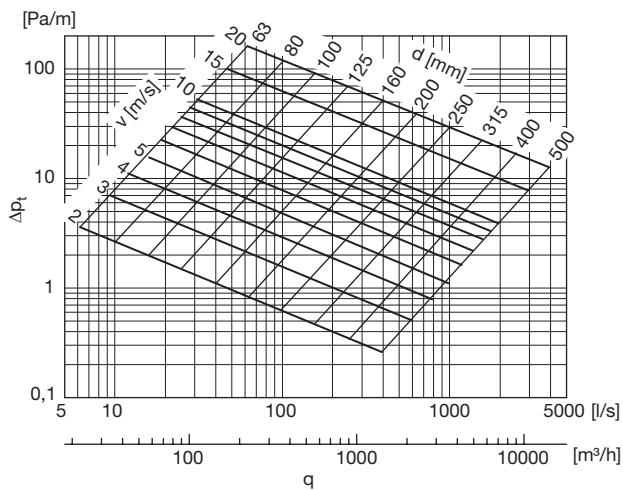
Flexible ducts



Flexible ducts 90° bends



Semiflexible ducts

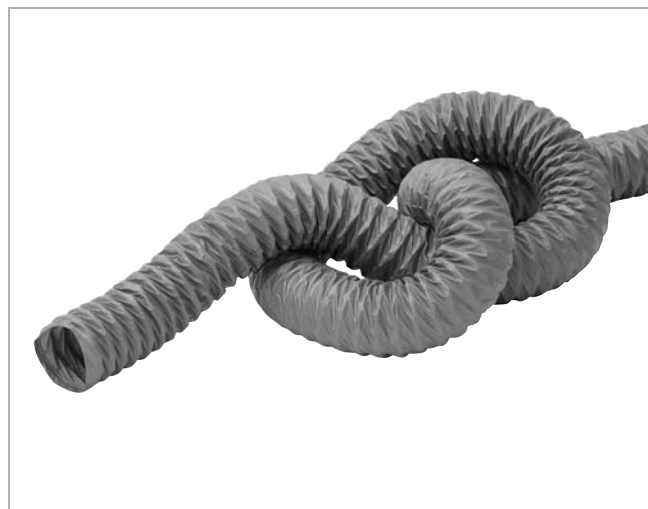


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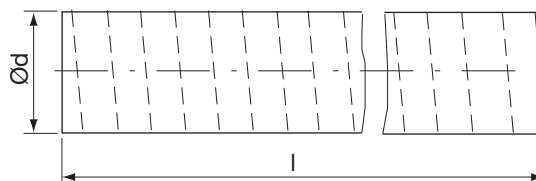


Flexible duct

KF



Dimensions



Description

Single-layer duct wall reinforced with a spiral wire. Due to the materials used in its construction KF is able to withstand repeated flexing without damage or kinking.

Applications

Suitable for high, medium and low pressure applications. Also suitable for air conditioning and fume extraction systems.

Advantages

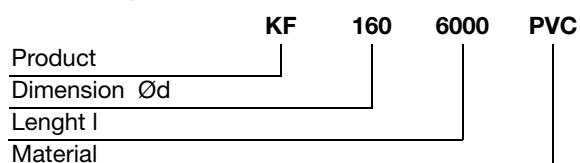
- Easy assembly
- Very small storage and transport volume
- Tested for fire resistance
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage

Technical data

Duct material.....	PVC coated glassfibre fabric
Colour.....	Grey
Minimum bending radius.....	0,5×d
Maximum air velocity	25 m/s
Temperature range	-20 to +70 °C
Working pressure	-125 to +3000 Pa
Fire type approval	Meets class E according to EN 13501-1 and French class M1 (CSTB)

Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm
80	0,251	0,005	6000
100	0,314	0,008	6000
125	0,393	0,012	6000
150	0,471	0,018	6000
160	0,503	0,020	6000
180	0,565	0,025	6000
200	0,628	0,031	6000
224	0,704	0,039	6000
250	0,785	0,049	6000
280	0,880	0,062	6000
300	0,942	0,071	6000
315	0,990	0,078	6000
350	1,10	0,096	6000
400	1,26	0,126	6000
450	1,41	0,159	6000
500	1,57	0,196	6000
560	1,76	0,246	6000
600	1,88	0,292	6000

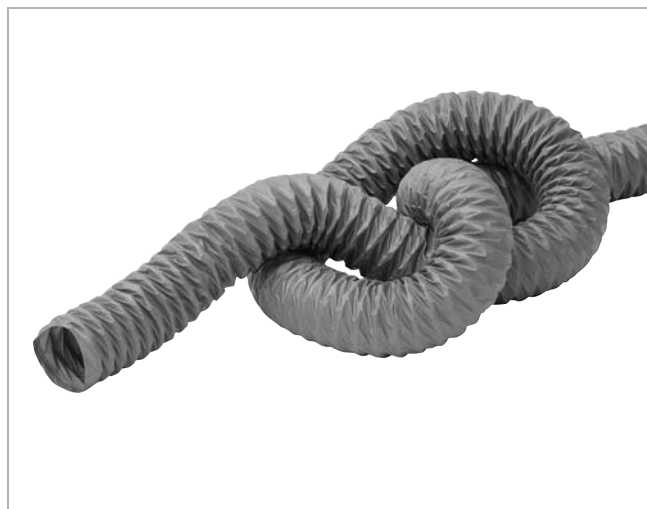
Ordering example





Flexible duct

FD



Description

Single-layer duct wall reinforced with a spiral wire. Due to the materials used in its construction FD is able to withstand repeated flexing without damage or kinking.

Applications

Suitable for high, medium and low pressure applications. Also suitable for air conditioning and fume extraction systems.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 15°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed.

Advantages

- Easy assembly
- Very small storage and transport volume
- Tested for fire resistance
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage

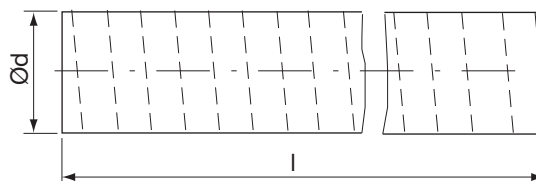
Technical data

Duct material.....	PVC coated glass cloth
Colour.....	Grey
Minimum bending radius.....	1,0xd
Maximum air velocity	30 m/s
Temperature range	-10 to +80 °C
Working pressure	from -125 to +3000 Pa
Standard length.....	10 m

Ordering example

	FD	160	10000	PVC
Product				
Dimension Ød				
Length l				
Material				

Dimensions



Ød nom	O πd m	A πd ² /4 m ²	Max. pressure Pa
82	0,258	0,005	+3000
102	0,320	0,008	+3000
127	0,157	0,013	+3000
133	0,198	0,014	+3000
152	0,478	0,018	+3000
160	0,503	0,020	+3000
180	0,565	0,025	+3000
203	0,638	0,032	+3000
229	0,719	0,041	+3000
254	0,798	0,051	+3000
305	0,958	0,073	+3000
315	0,990	0,078	+3000
356	1,12	0,100	+3000
406	1,28	0,129	+3000
457	1,44	0,164	+3000
508	1,60	0,203	+3000
560	1,76	0,246	+3000
610	1,92	0,292	+3000

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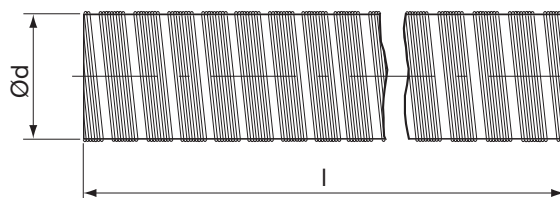


Semiflexible duct

FDO



Dimensions



Description

Single-layer duct wall.

Advantages

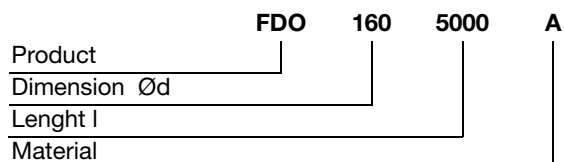
- Small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Technical data

Duct material.....	Aluminium
Minimum bending radius.....	1×d
Maximum temperature.....	+200 °C
Fire resistance.....	Not flammable in accordance with DIN 4102 class A1
Standard length.....	5 m also available in 3 m

Ød nom	O πd m	A πd ² /4 m ²	l mm	m kg
80	0,251	0,005	5000	0,67
100	0,314	0,008	5000	0,83
125	0,393	0,012	5000	1,04
140	0,440	0,015	5000	1,17
150	0,471	0,018	5000	1,25
160	0,503	0,020	5000	1,33
180	0,565	0,025	5000	1,79
200	0,628	0,031	5000	1,99
224	0,704	0,039	5000	2,23
250	0,785	0,049	5000	2,49
280	0,880	0,062	5000	2,79
300	0,942	0,071	5000	2,99
315	0,990	0,078	5000	3,14
355	1,12	0,099	5000	3,54
400	1,26	0,126	5000	3,99

Ordering example





Semiflexible duct

FD



Description

Single-layer duct wall

Can also be used where a flexible duct of aluminium is not sufficient to meet fire regulations. Ø 80 and 100 mm are usually used in this field of application.

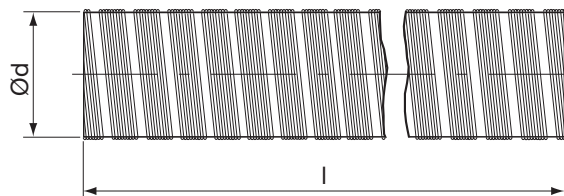
Advantages

- Small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Technical data

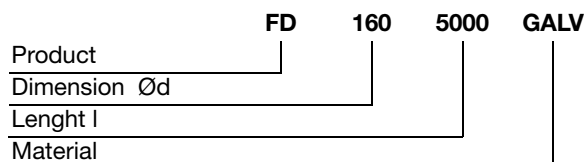
Duct material	Galvanized steel sheet (GALV)
Minimum bending radius.....	1×d
Maximum temperature.....	+350 °C
Fire resistance	Not flammable in accordance with DIN 4102 class A1

Dimensions



Ød nom	O πd m	A πd ² /4 m ²	l mm	Max. pressure Pa
80	0,251	0,005	5000	+10 000
100	0,314	0,008	5000	+10 000
125	0,393	0,012	5000	+8000
140	0,471	0,018	5000	+8000
150	0,471	0,018	5000	+7000
160	0,503	0,020	5000	+7000
180	0,565	0,025	5000	+7000
200	0,628	0,031	5000	+7000
224	0,704	0,039	5000	+5000
250	0,785	0,049	5000	+5000

Ordering example



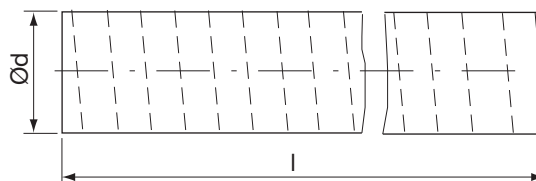


Flexible budget light duct

FBLD



Dimensions



Description

Multi-layer duct wall reinforced with a spiral wire. The duct wall is thinner than FMD and FHD, which means lower durability to temperature and pressure.

Applications

Used in ventilation, air conditioning, and air handling systems where a low-cost, non-rated flexible duct is suitable.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 15°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed.

Advantages

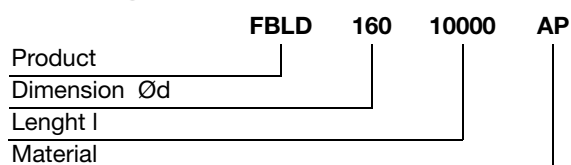
- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage

Technical data

Duct material	Aluminium-polyester (AP)
Minimum bending radius.....	1,0×d
Maximum air velocity	20 m/s
Temperature range	-30 to +82 °C
Working pressure	from -188 to +1500 Pa
Delivery length.....	Compressed to 0,4 or 0,8 m
Packing	Individual box
Standard length.....	10 m

Ød nom	O πd m	A πd ² /4 m ²	l mm	Max. pressure Pa
82	0,258	0,005	10000	+1500
102	0,320	0,008	10000	+1500
127	0,157	0,013	10000	+1500
133	0,198	0,014	10000	+1500
152	0,478	0,018	10000	+1500
160	0,503	0,020	10000	+1500
180	0,565	0,025	10000	+1500
203	0,638	0,032	10000	+1500
229	0,719	0,041	10000	+1500
254	0,798	0,051	10000	+1500
305	0,958	0,073	10000	+1500
315	0,990	0,078	10000	+1500
356	1,12	0,100	10000	+1500
406	1,28	0,129	10000	+1500
457	1,44	0,164	10000	+1500
508	1,60	0,203	10000	+1500
560	1,76	0,246	10000	+1500
610	1,92	0,292	10000	+1500

Ordering example





Flexible light duct

FLD



Description

Multi-layer duct wall reinforced with a spiral wire. The duct wall is thinner than FMD and FHD, which means lower durability to temperature and pressure.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 15°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed.

French - M1, Report No. LNE N° C050541-CEMATE/17

Dutch - NEN 6065 Class 1, NEN 6066 DL;h;max < 0.03m-1, Report No. 2005-CVB-R0445

Italy - Class 1, Report No. CSI/0235/06/RF

UK - BS 476 Parts 5, 6, 7 & 20, Report No. WARRES 140343, 140150, 140147, & 141454

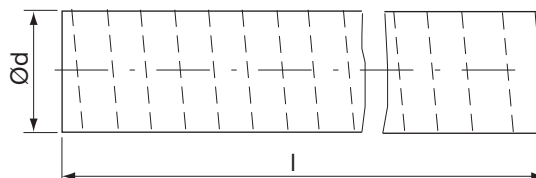
Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Tested on fire resistance

Ordering example

	FLD	160	10000	AP
Product				
Dimension Ød				
Length l				
Material				

Dimensions



Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm	Max. pressure Pa
65	0,204	0,003	10000	+2500
76	0,239	0,005	10000	+2500
82	0,258	0,005	10000	+2500
90	0,238	0,006	10000	+2500
102	0,320	0,008	10000	+2500
112	0,352	0,010	10000	+2500
127	0,157	0,013	10000	+2500
133	0,198	0,014	10000	+2500
140	0,440	0,015	10000	+2500
152	0,478	0,018	10000	+2500
160	0,503	0,020	10000	+2500
180	0,565	0,025	10000	+2500
203	0,638	0,032	10000	+2500
229	0,719	0,041	10000	+2500
254	0,798	0,051	10000	+2500
280	0,880	0,062	10000	+2500
305	0,958	0,073	10000	+2500
315	0,990	0,078	10000	+2500
356	1,12	0,100	10000	+2500
380	1,19	0,113	10000	+2500
406	1,28	0,129	10000	+2500
457	1,44	0,164	10000	+2500
508	1,60	0,203	10000	+2500
560	1,76	0,246	10000	+2500
610	1,92	0,292	10000	+2500

Technical data

Duct material	Aluminium-polyester (AP)
Minimum bending radius	1,0×d
Maximum air velocity	30 m/s
Temperature range	-30 to +140 °C
Working pressure	from -188 to +2500 Pa
Delivery length	Compressed to 0,4 or 0,8 m
Packing	Individual box
Standard length	10 m



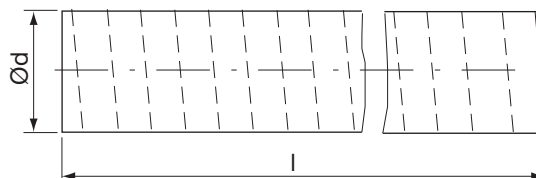


Flexible medium duct

FMD



Dimensions



Description

Multi-layer duct wall reinforced with a spiral wire. The duct wall is thicker than for FLD and FBLD, which means higher durability to temperature and pressure.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 15°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed.

EU - B/s1/d0, Report No. MA 39-VFA2004-075.01

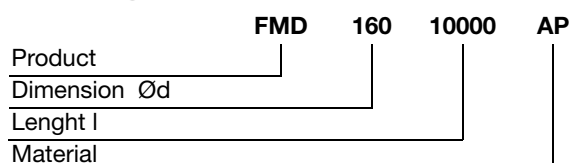
French - M0, Report No. LNE N° F080237-CEMATE/2

Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Tested on fire resistance

Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm	Max. pressure Pa
65	0,204	0,003	10000	+3000
76	0,239	0,005	10000	+3000
82	0,258	0,005	10000	+3000
90	0,238	0,006	10000	+3000
102	0,320	0,008	10000	+3000
112	0,352	0,010	10000	+3000
127	0,157	0,013	10000	+3000
133	0,198	0,014	10000	+3000
140	0,440	0,015	10000	+3000
152	0,478	0,018	10000	+3000
160	0,503	0,020	10000	+3000
180	0,565	0,025	10000	+3000
203	0,638	0,032	10000	+3000
229	0,719	0,041	10000	+3000
254	0,798	0,051	10000	+3000
280	0,880	0,062	10000	+3000
305	0,958	0,073	10000	+3000
315	0,990	0,078	10000	+3000
356	1,12	0,100	10000	+3000
380	1,19	0,113	10000	+3000
406	1,28	0,129	10000	+3000
457	1,44	0,164	10000	+3000
508	1,60	0,203	10000	+3000
560	1,76	0,246	10000	+3000
610	1,92	0,292	10000	+3000

Ordering example



Technical data

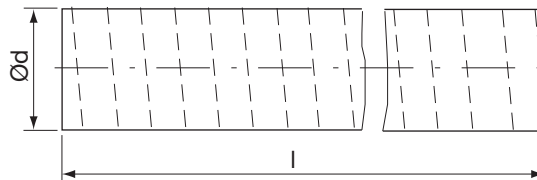
Duct material	Aluminium-polyester (AP)
Minimum bending radius	1,0xd
Maximum air velocity	30 m/s
Temperature range	-30 to +200 °C
Working pressure	from -188 to +2500 Pa
Delivery length	Compressed to 0,4 or 0,8 m
Standard length	10 m



Flexible budget light double duct FBLDD



Dimensions



Description

Multi-layer duct wall reinforced with a spiral wire.

Applications

Used in ventilation, air conditioning, and air handling systems where a low-cost, non-rated flexible duct is suitable.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 10°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Combination of mechanical strength and high temperature

Technical data

Duct materials	Aluminium-polyester (AP) + PVC (PV)
Minimum bending radius.....	1,0xd
Maximum air velocity	20 m/s
Temperature range	-30 to +140 °C
Working pressure	from -188 to +1500 Pa
Standard length.....	10 m
Delivery length.....	Compressed to 0,4 or 0,8 m
Packing	Individual box

Ød nom	O πd m	A πd ² /4 m ²	l mm	Max. pressure Pa
102	0,320	0,008	10000	+1500
127	0,157	0,013	10000	+1500
133	0,198	0,014	10000	+1500
152	0,478	0,018	10000	+1500
160	0,503	0,020	10000	+1500
180	0,565	0,025	10000	+1500
203	0,638	0,032	10000	+1500
229	0,719	0,041	10000	+1500
254	0,798	0,051	10000	+1500
305	0,958	0,073	10000	+1500
315	0,990	0,078	10000	+1500
356	1,12	0,100	10000	+1500
406	1,28	0,129	10000	+1500
457	1,44	0,164	10000	+1500
508	1,60	0,203	10000	+1500

Ordering example

	FBLDD	160	10000	AP	PV
Product					
Dimension Ød					
Length l					
Material					
Type					



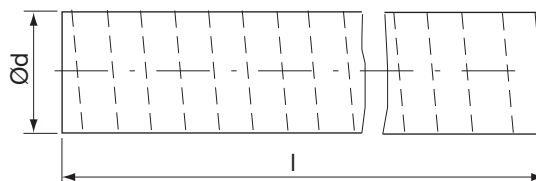


Flexible light double duct

FLDD



Dimensions



Description

Multi-layer duct wall reinforced with a spiral wire. The duct is covered with a mechanical resistant chlorinated Polyethylene (CPE) layer.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 10°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

French - M1, Report No. CSTB N° RA07-0373

Italy - Class 1, Report No. CSI/0233/06/RF

UK - BS 476 Parts 5, 6, & 20, Report No. WARRES 145962, 145902, & 146123

Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Combination of mechanical strength and high temperature

Technical data

Duct materials	Aluminium-polyester (AP) + PVC (PV)
Temperature range	30 to +140 °C
Maximum air.....	30 m/s
Delivery length.....	Compressed to 0,8 m
Standard length.....	10 m. Available in 6 or 1,5 m on request.

Available in black or grey.

Ordering example

	FLDD	160	10000	APPV	BLAC
Product					
Dimension Ød					
Lenght l					
Material					
Type					

Ød nom	O πd m	A $\pi d^2/4$ m ²	Max. pressure Pa
102	0,320	0,008	+3000
108	0,339	0,009	+3000
127	0,157	0,013	+3000
133	0,198	0,014	+3000
152	0,478	0,018	+3000
160	0,503	0,020	+3000
180	0,565	0,025	+3000
203	0,638	0,032	+3000
229	0,719	0,041	+3000
254	0,798	0,051	+3000
305	0,958	0,073	+3000
315	0,99	0,078	+3000
356	1,12	0,100	+3000
406	1,28	0,129	+3000
457	1,44	0,164	+3000
508	1,60	0,203	+3000



Semiflexible double duct

FDD



Description

Double-layer duct wall.

Applications

Suitable for mechanical air supply systems and air conditioning systems

Advantages

- Small storage and transport volume.

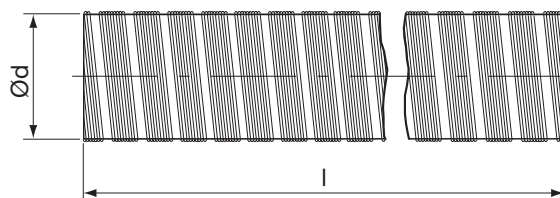
Technical data

Duct material	Aluminium + aluminium (AL)
Minimum bending radius.....	1×d
Maximum temperature	+200 °C
Fire resistance	Not flammable in accordance with DIN 4102 class A1

Delivery length:

Ø 50–315	Compressed to 1,2 m
Ø 355–500	Not compressed (i.e. 5 m)
Standard length.....	5 m. Also available in 10 m

Dimensions



Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm	Max. pressure Pa
50	0,157	0,002	5000	±3150
63	0,198	0,003	5000	±3150
71	0,223	0,004	5000	±3150
75	0,236	0,004	5000	±3150
80	0,251	0,005	5000	±3150
100	0,314	0,008	5000	±3150
125	0,393	0,012	5000	±3150
140	0,440	0,015	5000	±3150
150	0,471	0,018	5000	±2500
160	0,503	0,020	5000	±2500
180	0,565	0,025	5000	±2500
200	0,628	0,031	5000	±2500
224	0,704	0,039	5000	±2500
250	0,785	0,049	5000	±2000
280	0,880	0,062	5000	±2000
300	0,942	0,071	5000	±2000
315	0,990	0,078	5000	±2000
355	1,12	0,099	5000	-
400	1,26	0,126	5000	-
450	1,41	0,159	5000	-
500	1,57	0,196	5000	-

Ordering example

	FDD	160	5000	AA	DOUB
Product					
Dimension Ød					
Length l					
Material					
Type					



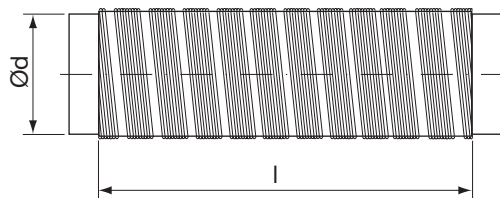


Semiflexible connector

DRASUT



Dimensions



Description

Single wall of flexible and folded duct.
Available in three lengths 500, 1000 and 1500 mm.
 r_i denominates minimum inner radius.

Applications

Suitable for mechanical air supply systems and air conditioning systems

Advantages

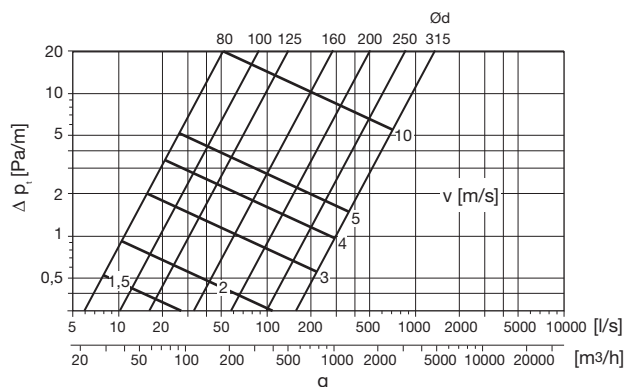
- Saves installation time and material
- Small storage and transport volume.
- The ends are equipped with female connectors for simple mounting and tighter connection.
- The ends are also available with male connectors.

Technical data

Duct material	Aluminium
Maximum temperature..	200 °C
Delivery length.....	0,5 m compressed to 0,25 m 1,0 m compressed to 0,35 m 1,5 m compressed to 0,55 m

Ød nom	l mm	l mm	l mm	r_i mm
80	500	1000	1500	48
100	500	1000	1500	60
125	500	1000	1500	75
160	500	1000	1500	96
200	500	1000	1500	160
250	500	1000	1500	200
315	500	1000	1500	250

Specific pressure drop, straight duct



Ordering example

	DRASUT	125	500
Product	_____ _____ _____		
Dimension Ød	_____ _____ _____		
Length	_____ _____ _____		



Flexible insulated budget light duct FIBLD



Description

Multi-layer inner duct wall reinforced with a spiral wire. The inner duct wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in the duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

French - M1, Report No. CSTB RA06-0042

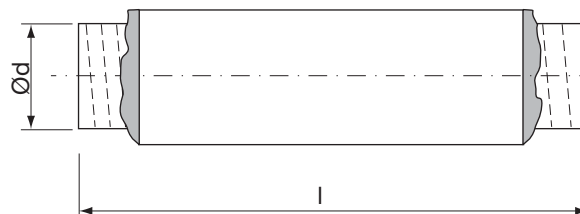
Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Tested on fire resistance

Ordering example

	FIBLD	160	10000	AP	AP/MP/PMP
Product					
Dimension Ød					
Length l					
Material					
Type					

Dimensions



Ød nom	O πd m	A πd ² /4 m ²	l mm	Max. pressure Pa
82	0,258	0,005	10000	+1500
102	0,320	0,008	10000	+1500
127	0,157	0,013	10000	+1500
133	0,198	0,014	10000	+1500
152	0,478	0,018	10000	+1500
160	0,503	0,020	10000	+1500
180	0,565	0,025	10000	+1500
203	0,638	0,032	10000	+1500
229	0,719	0,041	10000	+1500
254	0,798	0,051	10000	+1500
305	0,958	0,073	10000	+1500
315	0,990	0,078	10000	+1500
356	1,12	0,100	10000	+1500
406	1,28	0,129	10000	+1500
457	1,44	0,164	10000	+1500
508	1,60	0,203	10000	+1500
560	1,76	0,246	10000	+1500

Technical data

Duct materials:
 inner wall (core) Aluminium-polyester (AP)
 insulation Glass wool 25 mm
 outer wall (jacket) Aluminium-polyester (AP),
 Micron Polyester (MP) or
 Metalized Polyester (PMP)

Temperature range:
 AP -30 to +140 °C
 MP -30 to +140 °C
 PMP -30 to +140 °C

Maximum air velocity 20 m/s
 Delivery length Compressed to 1 m
 Standard length 10 m.
 Packing Individual box



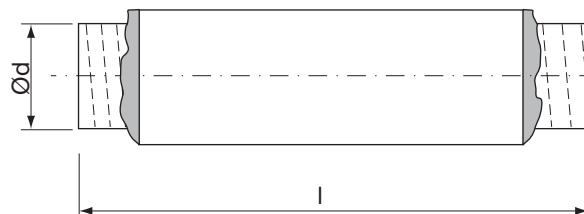


Flexible insulated light duct

FILD



Dimensions



Description

Multi-layer inner duct wall reinforced with a spiral wire. The inner duct wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in the duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

French - M1, Report No. CSTB RA06-0042

Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage

Ordering example

Product	FILD	160	10000	AP	AP
Dimension Ød					
Length l					
Material					
Type					

Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm	Max. pressure Pa
76	0,239	0,005	10000	+2500
82	0,258	0,005	10000	+2500
90	0,238	0,006	10000	+2500
102	0,320	0,008	10000	+2500
112	0,352	0,010	10000	+2500
127	0,157	0,013	10000	+2500
133	0,198	0,014	10000	+2500
140	0,440	0,015	10000	+2500
152	0,478	0,018	10000	+2500
160	0,503	0,020	10000	+2500
180	0,565	0,025	10000	+2500
203	0,638	0,032	10000	+2500
229	0,719	0,041	10000	+2500
254	0,798	0,051	10000	+2500
280	0,880	0,062	10000	+2500
305	0,958	0,073	10000	+2500
315	0,990	0,078	10000	+2500
356	1,12	0,100	10000	+2500
380	1,19	0,113	10000	+2500
406	1,28	0,129	10000	+2500
457	1,44	0,164	10000	+2500
508	1,60	0,203	10000	+2500

Technical data

Duct materials:

inner wall (core)	Aluminium-polyester (AP)
insulation	Glass wool 25 mm
outer wall (jacket)	Aluminium-polyester (AP)
Temperature range.....	-30 to +140 °C
Maximum air velocity	30 m/s
Delivery length	Compressed to 1 m
Standard length	10 m
Packing	Individual box



Flexible insulated medium duct

FIMD



Description

Multi-layer inner duct wall reinforced with a spiral wire. The inner duct wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in the duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

French - M0/M1, Report No. LNE N° F014932-CEMATE/12

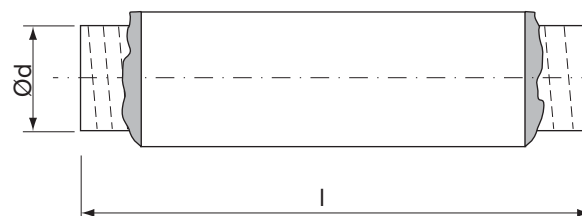
Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Tested on fire resistance

Ordering example

	FIMD	160	10000	AP	MP
Product					
Dimension Ød					
Length l					
Material					
Type					

Dimensions



Ød nom	O πd m	A πd ² /4 m ²	l mm	Max. pressure Pa
82	0,258	0,005	10000	+2500
102	0,320	0,008	10000	+2500
127	0,157	0,013	10000	+2500
133	0,198	0,014	10000	+2500
152	0,478	0,018	10000	+2500
160	0,503	0,020	10000	+2500
180	0,565	0,025	10000	+2500
203	0,638	0,032	10000	+2500
229	0,719	0,041	10000	+2500
254	0,798	0,051	10000	+2500
305	0,958	0,073	10000	+2500
315	0,990	0,078	10000	+2500
356	1,12	0,100	10000	+2500
406	1,28	0,129	10000	+2500
457	1,44	0,164	10000	+2500
508	1,60	0,203	10000	+2500
560	1,76	0,246	10000	+2500

Technical data

Duct materials:	
inner wall (core)	Aluminium-polyester (AP)
insulation	Glass wool 25 mm
outer wall (jacket)	Micron-Polyester (MP)
Temperature range	
inner wall	-30 to +200 °C
outer wall	-30 to +140 °C
Maximum air velocity	30 m/s
Delivery length	Compressed to 1 m
Standard length	10 m
Packing	Individual box



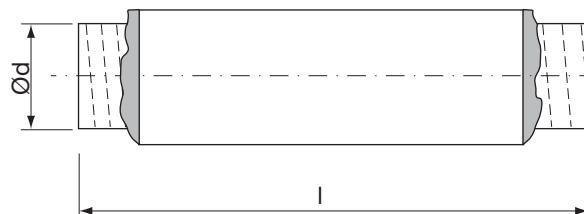


Flexible insulated heavy duct

FIHD



Dimensions



Ød nom	O πd m	A $\pi d^2/4$ m ²	l mm	Max. pressure Pa
82	0,258	0,005	10000	+2500
102	0,320	0,008	10000	+2500
127	0,157	0,013	10000	+2500
133	0,198	0,014	10000	+2500
152	0,478	0,018	10000	+2500
160	0,503	0,020	10000	+2500
180	0,565	0,025	10000	+2500
203	0,638	0,032	10000	+2500
229	0,719	0,041	10000	+2500
254	0,798	0,051	10000	+2500
305	0,958	0,073	10000	+2500
315	0,990	0,078	10000	+2500
356	1,12	0,100	10000	+2500
406	1,28	0,129	10000	+2500
457	1,44	0,164	10000	+2500
508	1,60	0,203	10000	+2500
560	1,76	0,246	10000	+2500

Description

Multi-layer inner duct wall reinforced with a spiral wire. The inner duct wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in the duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Applications

Used in ventilation, air conditioning, and air handling systems where high mechanical strength, temperature, and fire resistance is required.

Classifications

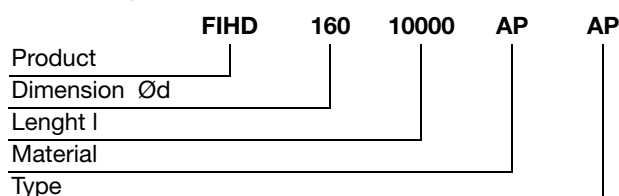
EU - EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing Strength 13–35 kg compressed, 2–5 kg uncompressed

French - M0/M1, Report No. LNE N° F014932-CEMATE/12

Advantages

- Easy assembly
- Very small storage and transport volume
- Manufactured from puncture and tear resistant materials. Withstands repeated flexing without damage
- Tested on fire resistance

Ordering example



Technical data

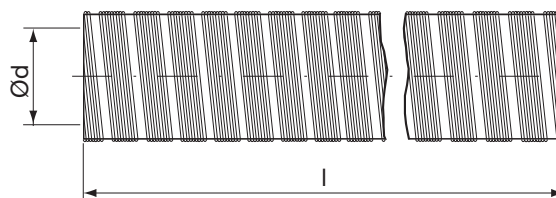
Duct materials:	
inner wall (core)	Aluminium-polyester (AP)
insulation	Glass wool 25 mm
outer wall (jacket)	Aluminium-polyester (AP)
Temperature range	
inner wall	-30 to +250 °C
outer wall	-30 to +140 °C
Maximum air velocity	30 m/s
Delivery length	Compressed to 1 m
Standard length	10 m
Packing	Individual box



Semiflexible insulated double duct FIDD



Dimensions



Description

Double-layer inner duct wall. The inner duct wall is covered with a fibre glass insulation. The insulation is covered with a double-layer outer duct.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in the duct and the surrounding air.

The outer duct acts as a vapour barrier to prevent condensation to enter into the insulation. Condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Advantages

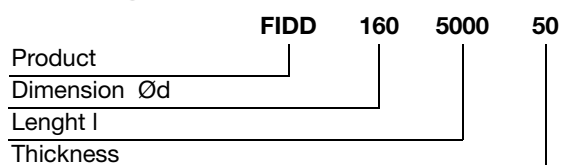
- Small storage and transport volume.

Technical data

Duct materials:	
inner wall.....	Aluminium + aluminium (AL)
insulation.....	Glass wool 25 or 50 mm
outer wall	Aluminium + aluminium
Minimum bending radius.....	2-3×d
Fire resistance	Not flammable in accordance with DIN 4102 class A1
Standard length.....	5 m

Ød nom	O πd m	A πd ² /4 m ²	l mm
80	0,251	0,005	5000
100	0,314	0,008	5000
125	0,393	0,012	5000
140	0,440	0,015	5000
150	0,471	0,018	5000
160	0,503	0,020	5000
180	0,565	0,025	5000
200	0,628	0,031	5000
224	0,704	0,039	5000
250	0,785	0,049	5000
280	0,880	0,062	5000
300	0,942	0,071	5000
315	0,990	0,078	5000
350	1,12	0,099	5000
400	1,26	0,126	5000

Ordering example



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

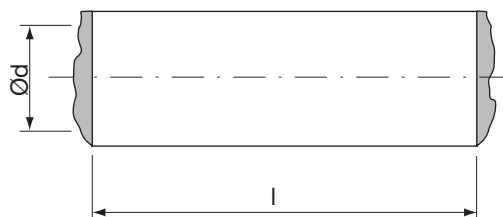


Flexible duct insulation

FDI



Dimensions



Description

Fibre glass insulation. The insulation is covered with an outer jacket.

Applications

The purpose is to insulate a rigid duct.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in a duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. Condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Advantages

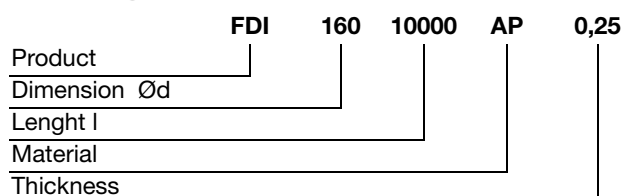
- Easy assembly, saves installation time.
- Very small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Technical data

Insulation materials:	
insulation.....	Glass wool 25 mm
outer wall (jacket).....	Aluminium-polyester (AP)
Temperature range	-30 to +140 °C
Delivery form	Flattened
Packing	Roll
Standard length.....	5 or 10 m

Ød nom	l mm	
76	5000	10000
82	5000	10000
90	5000	10000
102	5000	10000
112	5000	10000
127	5000	10000
133	5000	10000
152	5000	10000
160	5000	10000
180	5000	10000
203	5000	10000
229	5000	10000
254	5000	10000
280	5000	10000
305	5000	10000
315	5000	10000
356	5000	10000
380	5000	10000
406	5000	10000
457	5000	10000
508	5000	10000
560	5000	10000

Ordering example



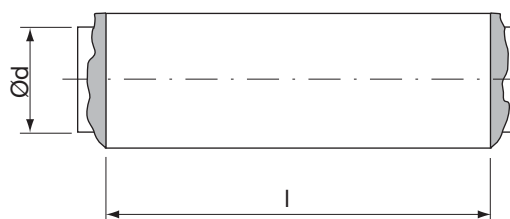


Flexible duct insulation

FDFI



Dimensions



Description

Fibre glass insulation. The insulation is covered with an inner liner and an outer jacket.

Applications

The purpose is to insulate a rigid duct. The inner liner makes it easier to pull the insulation over the rigid duct.

The insulation reduces the heat gain or loss resulting from a temperature difference between the air flowing in a duct and the surrounding air.

The outer jacket acts as a vapour barrier to prevent condensation to enter into the insulation. condensation can occur on the outside of a duct carrying air at lower temperatures than the surrounding air.

Advantages

- Easy assembly, saves installation time.
- Very small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Technical data

Insulation materials:

liner	Polyethylene (PE)
insulation.....	Glass wool 25 mm
outer wall (jacket).....	Aluminium-polyester (AP)
Temperature range	-30 to +140 °C
Delivery form	Flattened
Packing	Roll
Standard length.....	5 or 10 m

Ød nom	l mm	
76	5000	10000
82	5000	10000
90	5000	10000
102	5000	10000
112	5000	10000
127	5000	10000
133	5000	10000
152	5000	10000
160	5000	10000
180	5000	10000
203	5000	10000
229	5000	10000
254	5000	10000
280	5000	10000
305	5000	10000
315	5000	10000
356	5000	10000
380	5000	10000
406	5000	10000
457	5000	10000
508	5000	10000
560	5000	10000

Ordering example

	FDFI	160	10000	AP	0,25
Product					
Dimension Ød					
Length l					
Material					
Thickness					

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

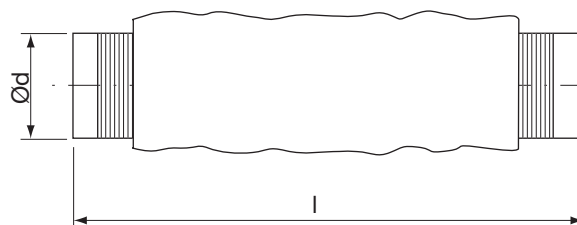


Flexible duct silencer

AKUCOM



Dimensions



Ød nom	l mm	Ødy mm
80	1200	130
100	1200	150
125	1200	175
160	1200	210
200	1200	250
250	1200	300
315	1200	365

Description

Inner duct wall of flexible, folded and perforated duct. The inner wall is covered with mineral wool insulation. The insulation is covered with an outer jacket. The insulation reduces the noise passing through the silencer. For best attenuation the silencer shall be pulled out to full length.

Advantages

- Small storage and transport volume.
- The ends are equipped with female connectors for simple mounting and tighter connection.
- Saves installation time and material.

Technical data

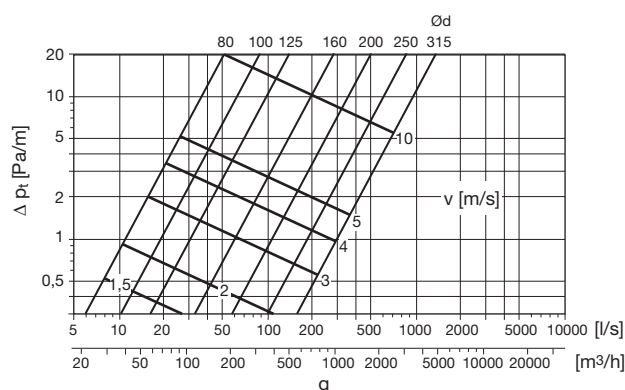
Duct material:	
inner wall (core)	Perforated aluminium
insulation	Mineral wool 25 mm
outer wall (jacket)	Gray or white polyeten (PE)
Delivery length.....	Compressed to 0,55 m
Standard length.....	1,2 m. Also available in 600 mm

Sound attenuation, ΔL, [dB]

According to the GLSM method. The silencer fully extended and straight.

Ød nom	Centre frequency [Hz]							
	63	125	250	500	1K	2K	4K	8K
80	28	35	37	35	36	39	43	31
100	28	35	37	32	33	41	32	17
125	29	34	35	30	30	39	29	16
160	26	33	31	23	27	34	24	15
200	21	24	30	22	24	27	17	13
250	31	26	25	18	23	24	13	12
315	25	23	22	17	22	20	14	10

Specific pressure drop, straight silencer



Ordering example

Product	AKUCOM	100	1200
Dimension Ød			
Lenght l			



Flexible medium duct silencer

FMDSL



Description

Multi-layer micro-perforated inner duct wall reinforced with a spiral wire. The inner wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket. The insulation reduces the noise passing through the silencer.

Classifications

EU – EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing strength 13–35 kg compressed, 2–5 kg uncompressed.

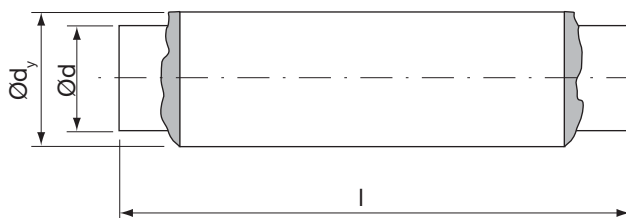
Advantages

- Easy assembly
- Very small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Ordering example

Product	FMDSL	160	10000	AP	AP/MP
Dimension Ød					
Length l					
Material					
Type					

Dimensions



Ød nom	l mm	Ødy mm
76	10000	126
82	10000	132
90	10000	140
102	10000	152
112	10000	162
127	10000	177
133	10000	183
140	10000	190
152	10000	202
160	10000	210
180	10000	230
203	10000	253
229	10000	279
254	10000	304
280	10000	330
305	10000	355
315	10000	365
356	10000	406
380	10000	430
406	10000	456
457	10000	507
508	10000	558

Technical data

Duct materials:	
inner wall (core)	Micro-perforated aluminium-polyester (AP)
insulation	Glass wool 25 mm
outer wall (jacket)	Aluminium-polyester (AP) or metalized polyester (MP)
Temperature range.....	-30 to +140 °C
Maximum air velocity.....	30 m/s
Delivery length	Compressed to 1 m
Standard length	10 m
Packing	Individual box



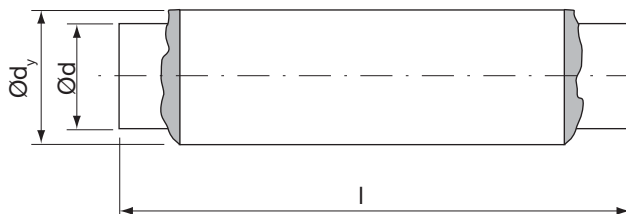


Flexible heavy duct silencer

FHDSL



Dimensions



Ød nom	l mm	Ødy mm
82	10000	132
102	10000	152
127	10000	177
133	10000	183
152	10000	202
160	10000	210
180	10000	230
203	10000	253
229	10000	279
254	10000	304
305	10000	355
315	10000	365
356	10000	406
406	10000	456
457	10000	507
508	10000	558
560	10000	610

Description

Multi-layer micro-perforated inner duct wall reinforced with a spiral wire. The inner wall is covered with a fibre glass insulation. The insulation is covered with an outer jacket. The insulation reduces the noise passing through the silencer.

Classifications

EU – EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing strength 13–35 kg compressed, 2–5 kg uncompressed.

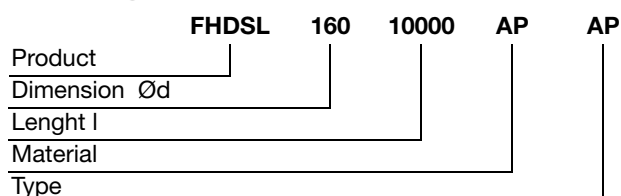
Advantages

- Easy assembly
- Very small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Technical data

Duct materials:	
inner wall (core)	Micro-perforated aluminium-polyester (AP)
insulation	Glass wool 25 mm
outer wall (jacket)	Aluminium-polyester (AP)
Temperature range	
inner wall	-30 to +250 °C
outer wall	-30 to +140 °C
Maximum air velocity	30 m/s
Delivery length	Compressed to 1 m
Standard length	10 m
Packing	Individual box

Ordering example





Flexible light duct silencer

FLDFSL



Description

Multi-layer micro-perforated inner duct wall reinforced with a spiral wire. The inner wall is covered with a liner. The liner is covered with a fibre glass insulation. The insulation is covered with an outer jacket. The insulation reduces the noise passing through the silencer.

Classifications

EU – EN 13180 Dia. Class B, Tightness Class C, Sag < 4°, Crushing strength 13–35 kg compressed, 2–5 kg uncompressed.

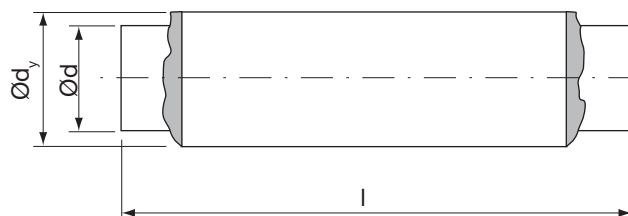
Advantages

- Easy assembly
- Very small storage and transport volume.
- No toxic gases are emitted in case of fire.
- Tested on fire resistance.

Ordering example

Product	FLDFSL	160	10000	AP	AP/MP
Dimension Ød					
Length l					
Material					
Type					

Dimensions



Ød nom	l mm	Ødy mm
76	10000	126
82	10000	132
90	10000	140
102	10000	152
112	10000	162
127	10000	177
133	10000	183
140	10000	190
152	10000	202
160	10000	210
180	10000	230
203	10000	253
229	10000	279
254	10000	304
280	10000	330
305	10000	355
315	10000	365
356	10000	406
380	10000	430
406	10000	456
457	10000	507
508	10000	558

Technical data

Duct materials:	
inner wall (core)	Micro-perforated aluminium-polyester (AP)
liner.....	Polyethylene (PE)
insulation	Glass wool 25 mm
outer wall (jacket)	Aluminium-polyester (AP) or metalized polyester (MP)
Temperature range.....	-30 to +140 °C
Standard length	10 m
Maximum air velocity	30 m/s
Delivery length	Compressed to 1 m
Packing	Individual box

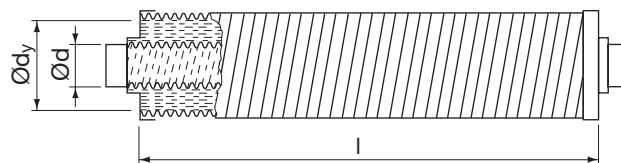




Semiflexible double duct silencer FDDGSL



Dimensions



Description

Double-layer micro-perforated inner duct wall. The inner wall is covered with a fibre glass insulation. The insulation is covered with a double-layer outer duct.

The ends of the silencer are covered with aluminium gables. The duct connections fits inside ducts.

The insulation reduces the noise passing through the silencer.

Advantages

- Small storage and transport volume.

Technical data

Duct materials:	
inner wall.....	Aluminium + aluminium (AL)
insulation.....	Glass wool 25 mm
outer wall	Aluminium + aluminium
Minimum bending radius.....	2-3xd
Maximum temperature.....	+200 °C
Fire resistance	Not flammable in accordance with DIN 4102 class A1

Ordering example

	FDDGSL	160	1250	AA	25
Product					
Dimension Ød					
Length l					
Material					
Thickness					

Ød nom	l mm	Attenuation [dB] centre frequency [Hz]								Ødy mm
		63	125	250	500	1k	2k	4k	8k	
80	750									135
80	1000	2	6	10	20	38	58	33	28	135
80	1250									135
80	1500									135
80	2000									135
100	750									160
100	1000	1	5	8	18	35	58	33	27	160
100	1250									160
100	1500									160
100	2000									160
125	750									190
125	1000	1	5	8	18	35	58	33	27	190
125	1250									190
125	1500									190
125	2000									190
160	750									210
160	1000	1	2	4	10	23	43	18	14	210
160	1250									210
160	1500									210
160	2000									210
200	750									260
200	1000	2	2	4	9	20	27	13	11	260
200	1250									260
200	1500									260
200	2000									260
250	750									310
250	1000	1	2	4	9	18	19	9	9	310
250	1250									310
250	1500									310
250	2000									310
315	750									365
315	1000	1	2	3	5	11	13	7	8	365
315	1250									365
315	1500									365
315	2000									365



Semiflexible double duct silencer FDDGSL



Description

Double-layer micro-perforated inner duct wall. The inner wall is covered with a fibre glass insulation. The insulation is covered with a double-layer outer duct.

The ends of the silencer are covered with aluminium gables. The duct connections fits inside ducts.

The insulation reduces the noise passing through the silencer.

Advantages

- Small storage and transport volume.

Technical data

Duct materials:

inner wall..... Aluminium + aluminium (AL)
 insulation..... Glass wool 50 mm
 outer wall Aluminium + aluminium

Minimum bending radius.....

2-3xd

Maximum temperature.....

+200 °C

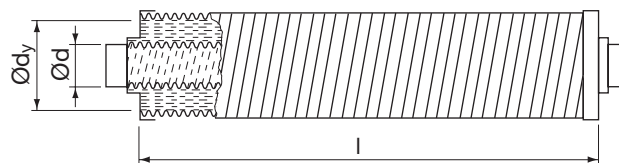
Fire resistance.....

Not flammable in accordance with DIN 4102 class A1

Ordering example

	FDDGSL	160	1250	AA	50
Product					
Dimension Ød					
Length l					
Material					
Thickness					

Dimensions



Ød nom	l mm	Attenuation [dB] centre frequency [Hz]								Ødy mm
		63	125	250	500	1k	2k	4k	8k	
80	750									190
80	1000	3	13	19	30	47	58	33	28	190
80	1250									190
80	1500									190
80	2000									190
100	750									210
100	1000	2	11	16	28	46	58	36	36	210
100	1250									210
100	1500									210
100	2000									210
125	750									235
125	1000	1	7	13	24	41	45	29	28	235
125	1250									235
125	1500									235
125	2000									235
160	750									260
160	1000	1	5	10	21	39	30	20	18	260
160	1250									260
160	1500									260
160	2000									260
200	750									310
200	1000	3	4	9	16	32	22	15	15	310
200	1250									310
200	1500									310
200	2000									310
250	750									365
250	1000	2	4	8	16	33	15	11	12	365
250	1250									365
250	1500									365
250	2000									365
315	750									410
315	1000	2	3	6	12	25	11	8	11	410
315	1250									410
315	1500									410
315	2000									410



Flexible duct clamp

MDC

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Description

A metal clamp for all types of flexible ducting. The clamp consists of the band FDB and the flip-up band lock FDBL.

This system allows an easy and quick application thanks to the automatic locking that forms the right diameter of the duct.

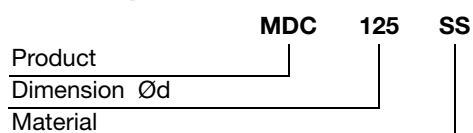
Advantages

- Labour saving.
- The band has lifted edges to avoid damage to the ducting.

Technical data

Diameter range.....	Ø 60–660
Band width	9 mm
Band material	Stainless steel (SS) UNI X 8 CR17 - DIN 14016 (W2) - AISI 430

Ordering example





Flexible duct band/band lock FDB/FDBL



Description

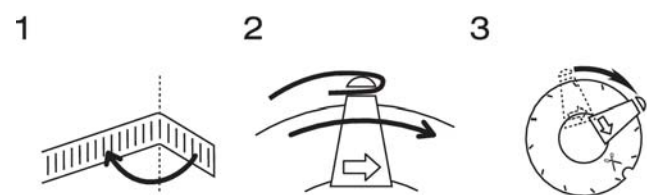
A metal band for all types of flexible ducting. The band lock FDBL fits this band.

Advantages

- The band has lifted edges to avoid damage to the ducting.
- Just cut to adequate length to fit any diameter.

Technical data

Diameter range.....	Any
Band width.....	9 mm
Band material.....	Stainless (SS) steel UNI X 8 CR17 - DIN 14010 (W2) - AISI 430
Band length.....	30 m



Ordering example

	FDB	30 000	SS
Product			
Length			
Material			

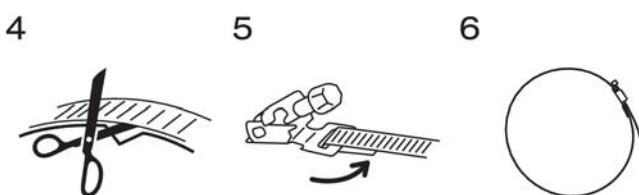


Description

A flip-up lock for the flexible duct band FDB.

Technical data

Lock material.....	Stainless (SS) steel UNI X 8 CR17 - DIN 14010 (W2) - AISI 430
Packing.....	Box of 50 pieces



Ordering example

	FDBL	SS
Product		
Material		

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Isol







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Content – Isol

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	See chapter Access doors
	KCRUI 616
Regulating damper	See chapter Dampers and Measure units
	DRUI302



General

Isol is the name for our pre-insulated ducts and fittings, intended for both indoor and outdoor use. The system is based on sheet steel inner and outer sheaths with rock wool insulation in between.

The nominal size Ø100–500 always refers to the inner duct diameter, irrespective of the type in question.

Insulation

insulation thickness is 50 mm.

As special we can offer products with 25 mm glass wool insulation.

Inner sheath

The inner sheath is made from standard units from the Safe programme. This means that adequate properties are the same as for the corresponding Safe units.

Outer sheath

The outer sheath is supplied as standard with hot dip galvanised steel sheet Z 275. It can also be made in plastic coated galvanised steel sheet, stainless steel or alu-zink to special order.

Joints

When installation is done outdoors, it is important to have a diffusion-proof outer sheath. For this reason, use the special sealing clamp SVK, which gives good mechanical strength and good sealing at the joints. The sealing material consists of long-life EPDM rubber.

Duct fixing

The Isol system is normally mounted on straps, in the same way as other duct systems.

Heat/cold

Graphs of theoretically estimated power loss in a straight duct.

Prerequisites

Transported air $t_1 = 20$ [°C]

Heat transfer coefficient between outer sheath and surrounding air at 10 [m/s] $\alpha_y = 30-40$ [W/(m²·°C)]

Ambient temperature $t_2 = -20$ to $+20$ [°C]

Do like this:

1. Start with the temperature difference, Δt [°C], between the air in the duct and the surrounding.
2. Go to the duct diameter, \varnothing [mm].
3. Find the specific power loss, P_l [W/m].
4. Continue to the air flow, q [m³/s].
5. Find the specific temperature drop, T_d [°C/m].

Example:

1. $\Delta t = 30$ °C and
2. $\varnothing = 400$ mm yields
3. $P_l = 25,5$ W/m
4. $q = 0,1$ m³/s yields
5. $T_d = 0,212$ °C/m

Explanations:

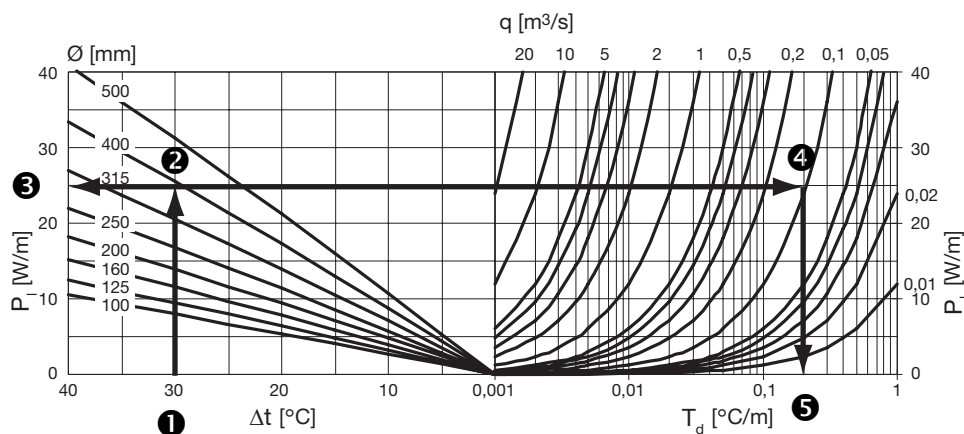
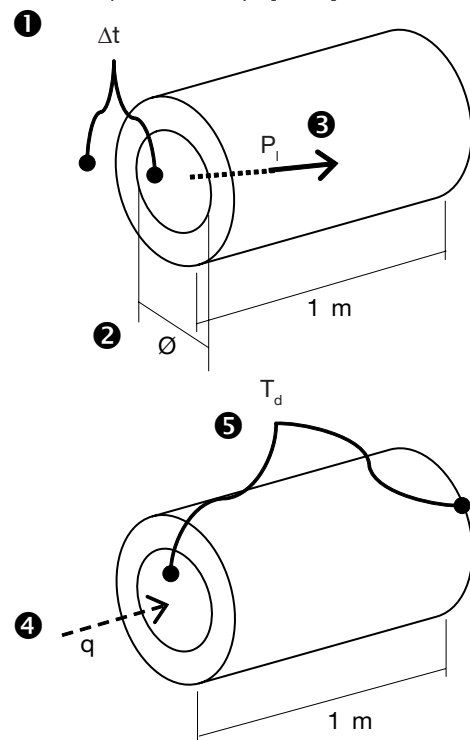
Δt = temperature difference, [°C]

\varnothing = duct diameter, [mm]

P_l = specific power loss, [W/m]

q = air flow, [m³/s]

T_d = specific temperature drop, [°C/m]



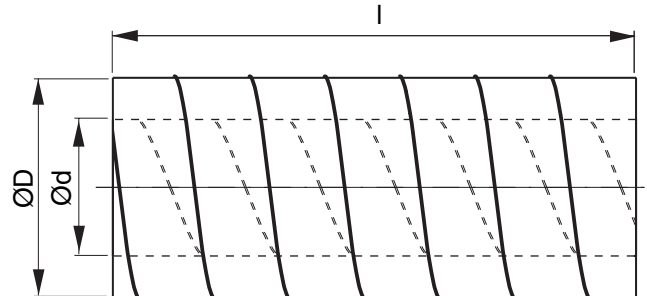


Circular duct

SRI



Dimensions



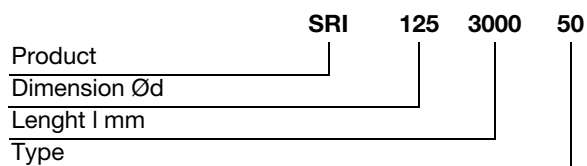
Description

Circular duct.

Ød nom	ØD mm	l std mm	m ₁ kg/m
100	200	3000	6,19
125	224	3000	7,44
160	260	3000	9,29
200	300	3000	11,1
250 *	355 *	3000	13,3
315 *	415 *	3000	19,6
400 *	500 *	3000	23,2
500 *	600 *	3000	31,3

* With external stiffening corrugation

Ordering example





Bend

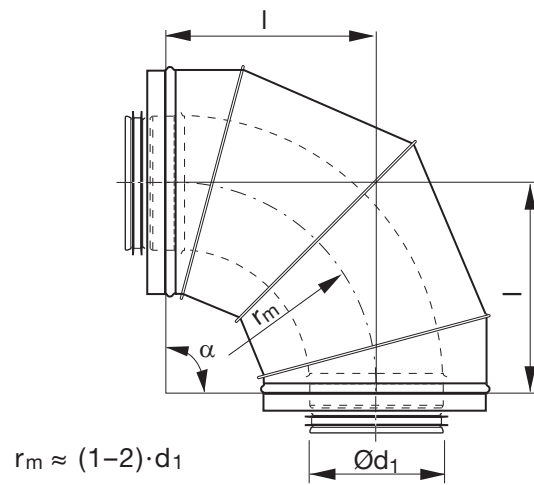
BFUI 90°



Description

Segmented and lockseamed bend.

Dimensions



Ød ₁ nom	l mm	m kg
100	200	2,93
125	225	3,44
160	240	4,88
200	300	6,86
250	352	9,74
315	315	11,6
400	400	18,6
500	500	26,1

Ordering example

Product	BFUI	200	90	50
Dimension Ød ₁				
Angle α				
Type				

- 1
- 2
- 3
- 4
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- 18



Bend

BFUI 45°

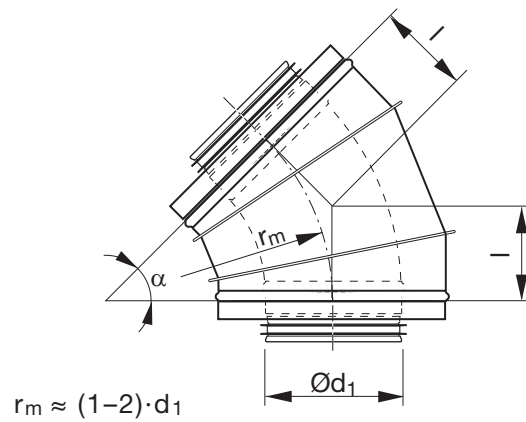
- 1
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Description

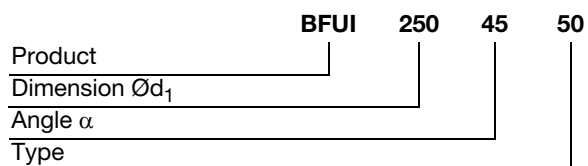
Segmented and lockseamed bend.

Dimensions



$\varnothing d_1$ nom	l mm	m kg
100	83	1,55
125	79	1,68
160	100	2,49
200	124	3,34
250	136	4,90
315	145	5,55
400	188	8,97
500	224	12,9

Ordering example





Bend

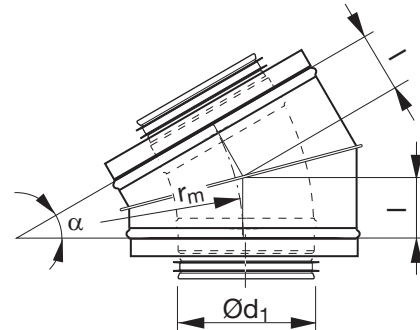
BFUI 30°



Description

Segmented and lockseamed bend.

Dimensions



$$r_m \approx (0,8-2) \cdot d_1$$

Ød ₁ nom	l mm	m kg
100	54	1,03
125	60	1,35
160	67	1,95
200	54	2,67
250	69	3,65
315	83	4,48
400	99	6,90
500	105	10,1

Ordering example

Product	BFUI	315	30	50
Dimension Ød ₁				
Angle α				
Type				

- 1
- 2
- 3
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- 8
- 9
- 10
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- 17
- 18

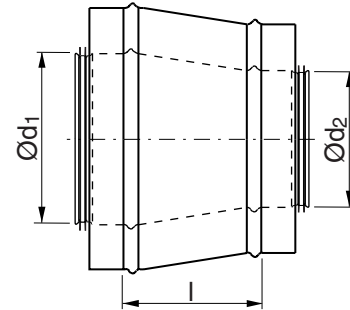


Reducer

RCLUI



Dimensions



Description

Long, hand made reducer with appr. 20° angle.

Ød ₁ nom	Ød ₂ nom	l mm	m kg
125	100	64	0,87
160	100	112	1,24
160	125	78	1,11
200	100	167	1,90
200	125	133	1,66
200	160	85	1,42
250	125	202	2,82
250	160	154	2,54
250	200	99	2,24
315	160	243	3,78
315	200	188	3,43
315	250	119	3,15
400	200	310	5,87
400	250	241	6,69
400	315	152	4,77
500	250	378	9,26
500	315	289	8,06
500	400	177	6,78

Ordering example

	RCLUI	400	250	50
Product				
Dimension Ød ₁				
Dimension Ød ₂				
Type				



Reducer

RCFUI

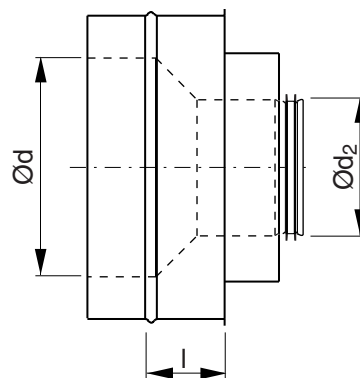


Description

Short, concentric reducer with one female end.

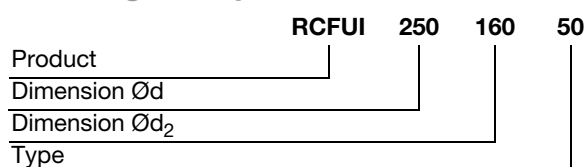
$\varnothing d$ fits over a fitting and $\varnothing d_2$ fits inside a duct.

Dimensions



$\varnothing d$ nom	$\varnothing d_2$ nom	l mm	m kg
125	100	82	0,93
160	100	97	1,11
160	125	66	1,04
200	100	118	1,46
200	125	106	1,44
200	160	86	1,37
250	125	150	2,23
250	160	133	2,21
250	200	112	2,15
315	160	168	2,87
315	200	148	2,81
315	250	143	3,14
400	200	203	4,59
400	250	198	4,08
400	315	165	4,81
500	250	248	6,90
500	315	215	6,62
500	400	193	6,92

Ordering example





T-piece

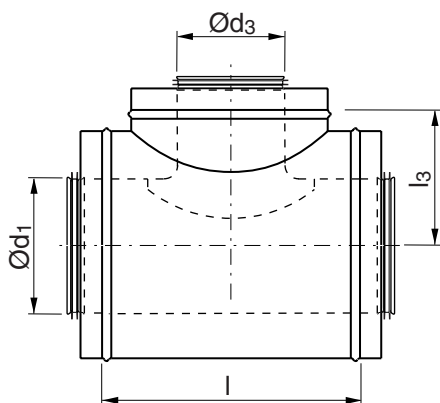
TCUI



Description

Centric T-piece.

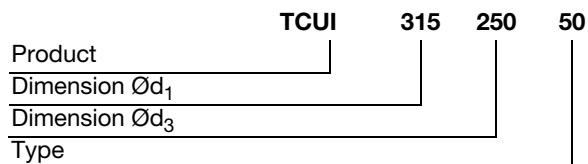
Dimensions



Dimensions

$\varnothing d_1$ nom	$\varnothing d_3$ nom	l mm	l_3 mm	m kg
100	100	250	134	2,86
125	100	250	131	3,21
125	125	274	146	3,49
160	100	250	149	3,72
160	125	274	149	4,05
160	160	310	149	4,54
200	100	250	169	4,30
200	125	274	169	4,67
200	160	310	169	5,33
200	200	350	169	5,97
250	100	250	194	5,60
250	125	274	194	6,03
250	160	310	194	6,79
250	200	350	194	7,53
250	250	400	192	9,16
315	100	250	227	6,51
315	125	274	227	7,01
315	160	310	227	7,86
315	200	350	227	8,58
315	250	400	222	10,4
315	315	465	222	12,7
400	100	250	269	8,38
400	125	274	269	9,00
400	160	310	269	10,0
400	200	350	269	11,0
400	250	400	264	13,1
400	315	465	264	15,9
400	400	550	269	17,6
500	100	250	319	11,3
500	125	274	319	12,2
500	160	310	319	13,4
500	200	350	319	14,5
500	250	443	314	18,1
500	315	465	314	20,7
500	400	550	314	22,5
500	500	650	349	27,0

Ordering example





Take-off

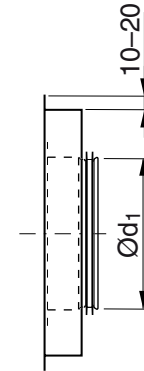
ILUI



Description

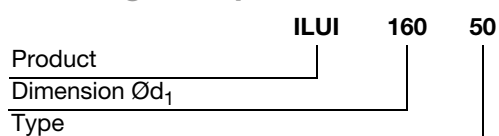
Take-off with radius 2–4 mm.

Dimensions



Ød ₁ nom	m kg
100	0,32
125	0,37
160	0,47
200	0,58
250	0,81
315	1,05
400	1,58
500	2,04

Ordering example



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Coupling

NPUI

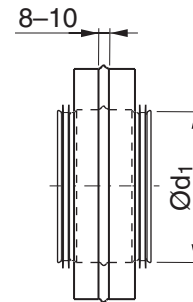
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Description

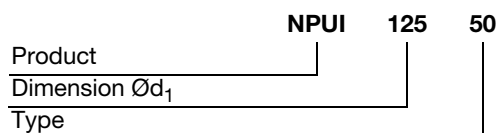
Coupling for joining of SRI ducts.

Dimensions



Ød_1 nom	m kg
100	0,26
125	0,30
160	0,36
200	0,50
250	0,97
315	1,18
400	2,05
500	2,72

Ordering example





Female coupling

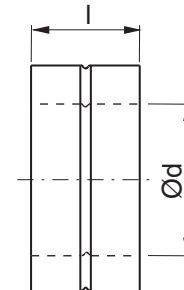
MFI



Description

Female coupling for joining of fittings.

Dimensions



Ød nom	l mm	m kg
100	90	0,58
125	90	0,68
160	90	0,85
200	90	1,01
250	130	1,76
315	130	2,08
400	170	3,64
500	170	4,62

Ordering example

Product	MFI	100	50
Dimension Ød			
Type			

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End cap

ESUI

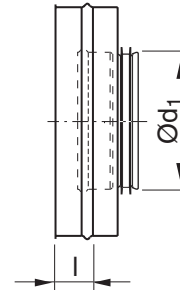
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Description

End cap which fits inside a duct.

Dimensions



Ød nom	l mm	m kg
100	58	0,81
125	58	0,95
160	58	1,25
200	58	1,58
250	58	2,26
315	58	3,04
400	58	4,77
500	58	6,41

Ordering example



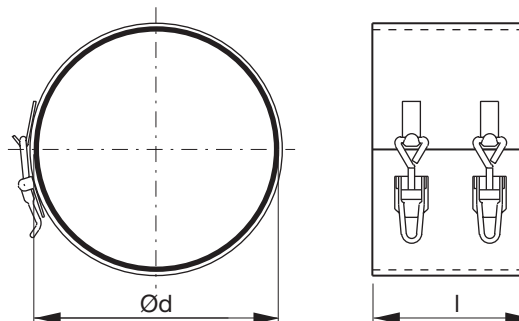


Sealing clamp

SVK



Dimensions



Description

Removable sealing clamp to be installed outside the outer sheath.

The inside of the sealing clamp is covered with a thick layer of cellular EPDM rubber.

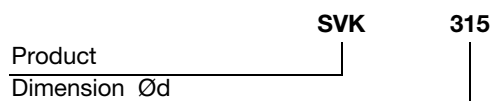
The table below specifies the sealing clamp SVK, with diameter d, which is used on each nominal diameter d₁, of Isol.

Isol Ød ₁ nom	Use SVK Ød
100	200
125	224
160	260
200	300
250	355
315	415
400	500
500	600

Ød nom	l mm	m kg
80 *	130	0,30
100 *	130	0,34
125 *	130	0,40
160	130	0,46
180	130	0,52
200	130	0,59
224	130	0,75
250 *	190	0,94
260	190	0,98
300	190	1,12
315	190	1,17
355	190	1,30
375	190	1,35
400 *	250	1,42
415	250	1,49
460	250	1,60
500	250	1,75
560	250	2,00
600	250	2,20

* Only used in the Safe programme

Ordering example



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Access doors



Lindab	1
General information and theory	2
Safe	3
Silencers	4
Dampers & Measure units	5
Fire dampers & Smoke evacuation	6
Air valves	7
Roof hoods	8
Other circular products	9
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Access doors



EPFH	604
ESHU	605
KCU	606
KCIVU	607
KCRU	608
KC	609

Uninsulated for circular ducts



IPLR	610
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Uninsulated for rectangular ducts



IPF	611
-----------	-----

Insulated for rectangular ducts



IPRD	612
------------	-----



IPL	613
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Access door for rectangular ducts



LKCR	614
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Insulated for circular ducts



EPFUI	615
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KCRUI	616
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End caps and access doors

Cleaning of duct systems

Some duct units have parts which more or less block the duct system, and thus obstruct or prevent cleaning of it. Such units are silencers with baffles, most dampers and some flow measurement units. You can choose one of the following approaches, to permit cleaning at such units:

- You can install access doors such as KCU page 606, EPFH page 604, KCRU page 608 or KC page 609 on each side of the unit.
- You can use sealing clamp SVK page 467 to make it easy to remove the unit from the system.
- You can use slide-in coupling SMFU page 164 to make it easy to remove the unit from the system.
NOTE! To prevent the system from inadvertently coming apart during operation, locate the slide-in coupling **upstream** of the unit, seen from the direction of the air flow.
- You can locally switch over to Transfer to make it easy to remove the unit from the system.

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Access door

EPFH



Description

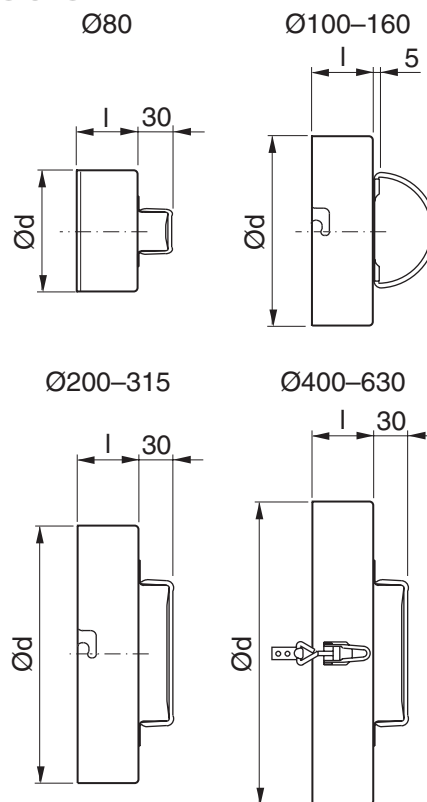
Access door, which fits outside a Safe fitting.

Some dimensions Ø80–355 have notches for bayonet locking, in order to be better fixed in ducts with positive pressure. You must then add two rivets to the fitting.

Dimensions Ø400–630 have eccentric locks in order to be better fixed in ducts with positive pressure. You must then mount the hooks of the locks in the fitting.

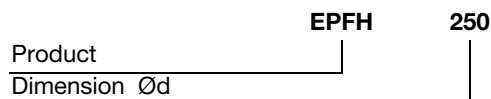
No Click function – no notches.

Dimensions



Ød nom	l mm	m kg	Handle	Lock
80	48	0,09	1 fixed small	–
100	40	0,15	1 folding	bayonet
112	40	0,16	1 folding	–
125	40	0,17	1 folding	bayonet
140	40	0,19	1 folding	–
150	40	0,21	1 folding	–
160	40	0,22	1 folding	bayonet
180	40	0,24	1 fixed	–
200	40	0,32	1 fixed	bayonet
224	60	0,38	1 fixed	–
250	60	0,55	2 fixed	bayonet
280	60	0,64	2 fixed	–
300	60	0,69	2 fixed	–
315	60	0,74	2 fixed	bayonet
355	60	0,87	2 fixed	–
400	80	1,26	2 fixed	eccenter
450	80	1,57	2 fixed	eccenter
500	80	1,87	2 fixed	eccenter
560	80	2,18	2 fixed	eccenter
600	80	2,49	2 fixed	eccenter
630	80	2,71	2 fixed	eccenter

Ordering example





Access door

ESHU



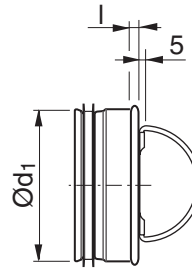
Description

Access door, which fits inside an SR duct.

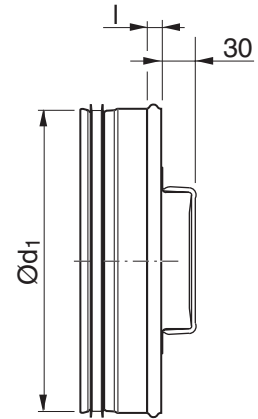
No Click function – has a closed turned-over end.

Dimensions

Ø100–160



Ø200–630



Ød ₁ nom	l mm	m kg	Handle
100	10	0,17	1 folding
112	4	0,18	1 folding
125	10	0,19	1 folding
140	10	0,24	1 folding
150	10	0,22	1 folding
160	10	0,29	1 folding
180	10	0,32	1 fixed
200	10	0,36	1 fixed
224	10	0,44	1 fixed
250	10	0,58	2 fixed
280	4	0,70	2 fixed
300	10	0,78	2 fixed
315	10	0,88	2 fixed
355	10	0,99	2 fixed
400	12	1,34	2 fixed
500	12	1,72	2 fixed
630	4	2,62	2 fixed

Ordering example

Product	ESHU	160
Dimension Ød ₁		

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Access door

KCU

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Description

Insulated access door which fits outside a Safe fitting.

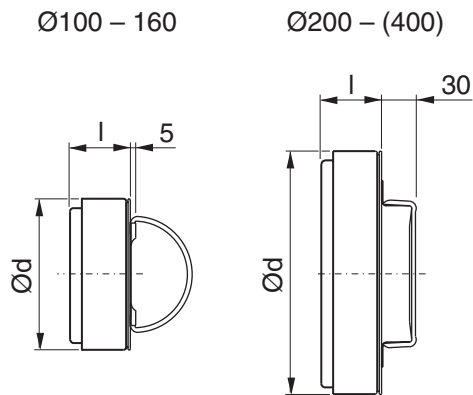
The door is held in place by spring clips against the inside of the Safe fitting. This does not apply to Ø400 which is held in place by two eccentric locks.

The door is loosened by pulling it straight outwards, and is installed in the opposite manner (but not Ø400). There are one or two handles to help in the process.

Δp in the table gives the maximum positive pressure the access door can withstand when installed from beneath.

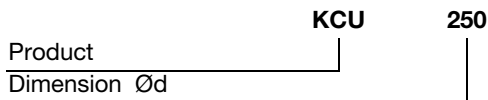
No Click function – no notches.

Dimensions



Ød nom	Δp Pa	l mm	m kg	Handle
100	3400	40	0,30	1 folding
125	3400	40	0,40	1 folding
160	3400	40	0,60	1 folding
200	3400	40	0,80	1 fixed
250	3400	60	1,28	2 fixed
315	2600	60	1,81	2 fixed
400	10000	90	2,82	2 fixed

Ordering example





Access door

KCIVU



Description

Insulated access door which fits outside a Safe fitting.

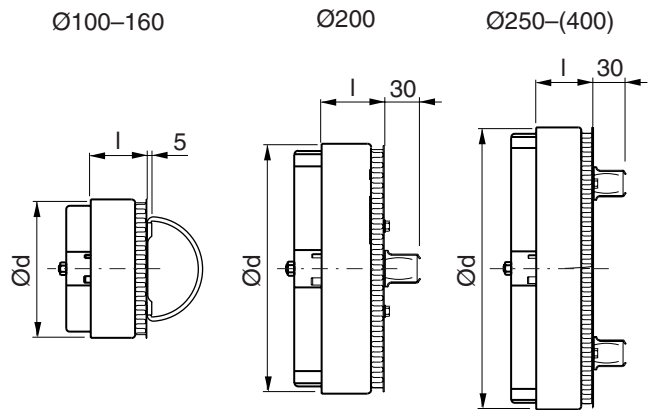
The door is held in place by spring clips against the inside of the Safe fitting. This does not apply to Ø400 which is held in place by two eccentric locks.

The door is loosened by pulling it straight outwards, and is installed in the opposite manner (but not Ø400). There are one or two handles to help in the process.

Δp in the table gives the maximum positive pressure the access door can withstand when installed from beneath.

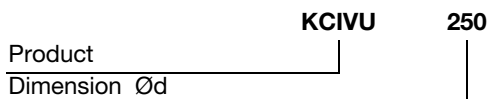
No Click function – no notches.

Dimensions



Ød nom	Δp Pa	l mm	m kg	Handle
100	3400	50	0,43	1 folding
125	3400	50	0,62	1 folding
160	3400	50	1,00	1 folding
200	3400	50	1,41	1 fixed
250	3400	70	2,25	2 fixed
315	2600	70	3,30	2 fixed
400	10000	100	5,00	2 fixed

Ordering example





Access door

KCRU

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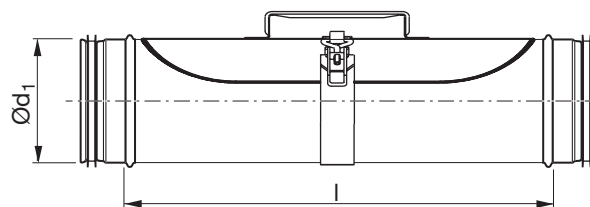
Description

Access door which complies with the requirements for access doors in Swedish Standard SS 2645.

The door is held in place by a tension strap with adjustable eccentric lock. This offers a quick and simple opening and closing. A built-in handle also aids handling.

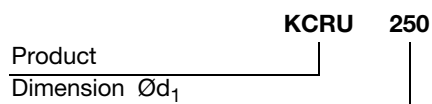
Can achieve maximum tightness class C.

Dimensions



Ød ₁ nom	l mm	m kg
100	480	1,06
125	480	1,30
160	480	1,80
200	480	2,00
250	480	2,92
315	480	4,10
400	480	5,51

Ordering example





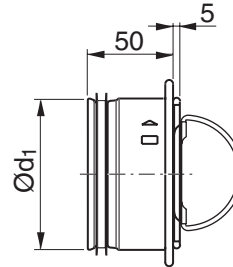
Access door

KC

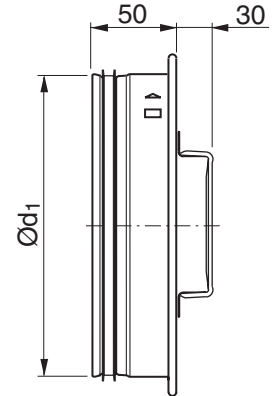


Dimensions

Ø100–160



Ø200–315



Description

Intended for use with fittings which do not have a Safe gasket. The door is retained by spring clips which press against the inside of the fitting. It is released by pulling it straight out, and installed by pressing it in. There are one or two handles to help. The gasket is made from EPDM rubber.

Δp in the table specifies the maximum positive pressure the access door can withstand without coming loose, when installed from below.

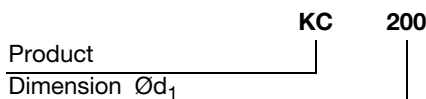
Can manage up to tightness class C.

The corresponding Safe component (of different design) is designated KCU and only fits inside Safe components.

Hasn't any Click function – has a closed turned-over end.

Ød nom	Δp Pa	m kg	Handle
100	3400	0,29	1 folding
125	3400	0,38	1 folding
160	3400	0,57	1 folding
200	3000	0,94	1 fixed
250	2300	1,76	2 fixed
315	1600	1,86	2 fixed

Ordering example

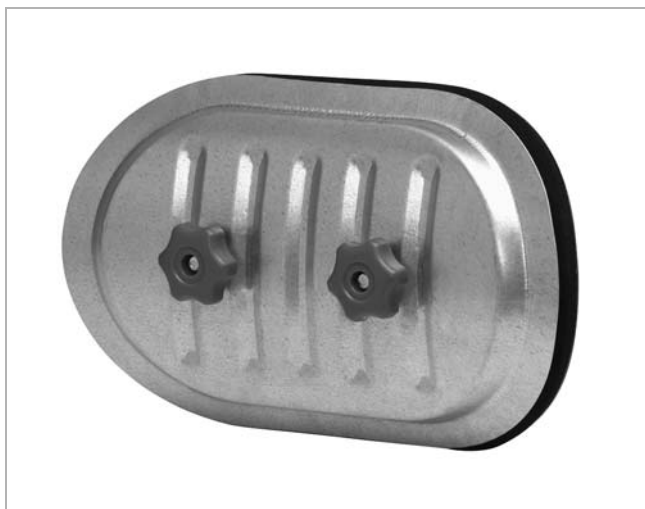


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Access door

IPLR



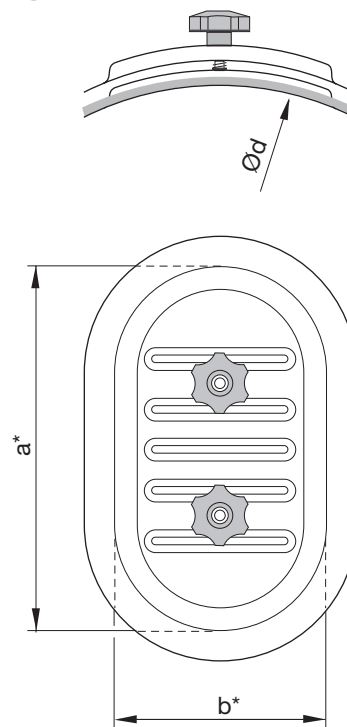
Description

Access door, which fits on the curved side of a circular duct.

A neoprene cellular gasket seals on the duct's inside. Supplied with a self adhesive template which guides when cutting the oval aperture.

Ø 100–800 is available in stainless steel by request.

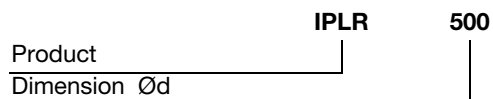
Dimensions



Ød nom	a* mm	b* mm	m kg
80	180	80	0,36
100	180	80	0,36
112	180	80	0,36
125	180	80	0,36
150	180	80	0,36
160	180	80	0,36
180	250	150	0,80
200	250	150	0,80
250	250	150	0,80
315	250	150	0,80
355	300	200	0,88
400	300	200	0,88
450	300	200	0,88
500	400	300	2,20
560	400	300	2,20
630	400	300	2,20
710	400	300	2,20
800	400	300	2,20
900	400	300	2,31
1000	500	400	2,31
1120	500	400	2,31
1250	500	400	2,31

* Note! Opening dimensions.

Ordering example





Access door

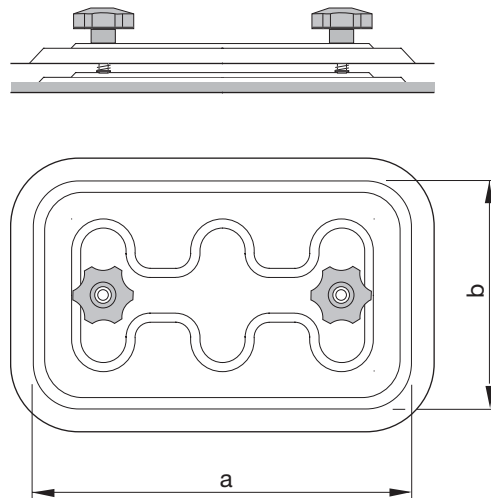
IPF



Description

Access door, which fits on the flat side of a rectangular duct. A neoprene cellular gasket seals on the duct's inside. Supplied with a self adhesive template which guides when cutting the rectangular aperture.

Dimensions



a*	b*	m
mm	mm	kg
250	150	0,65
300	200	1,10
450	350	2,78
600	450	4,90

* Note! Opening dimensions.

Ordering example

Product	IPF	300	200
Largest side	a		
Smallest side	b		

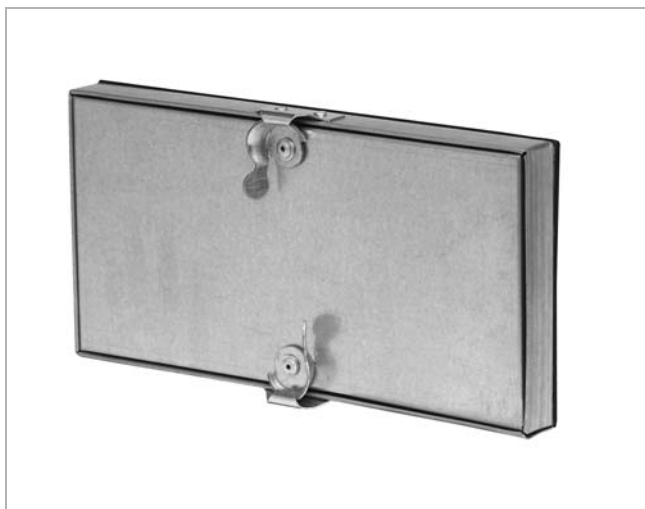
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Access door

IPRD

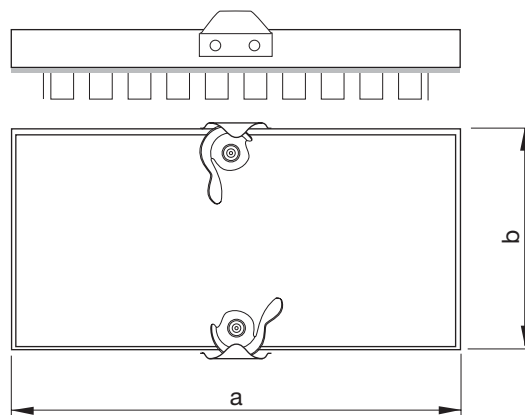
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Description

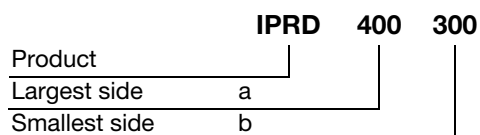
Access door, which fits on the flat side of a rectangular duct. Consists of a door and a frame. The door has a 25 mm thick high density insulation. The frame is attached to the duct wall by means of fixing tabs. Both door and frame are supplied with a neoprene cellular gasket.

Dimensions



a mm	b mm	m kg
300	150	0,90
400	300	2,00
500	500	3,10

Ordering example





Access door

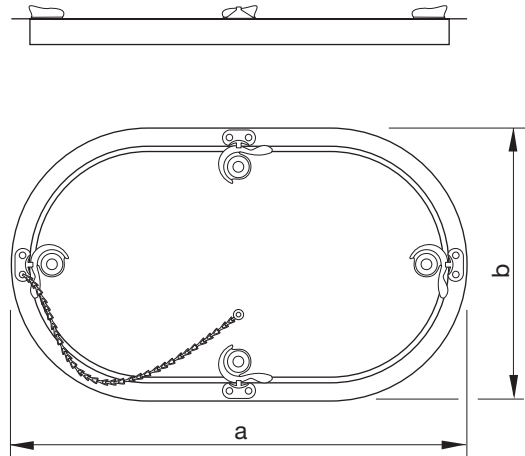
IPL



Description

Access door, which fits on the flat side of a rectangular duct. Consists of a door and a frame. The door has a 20 mm thick high density insulation. The frame is attached to the duct wall by means of screws. A gasket as well as a retaining chain is fitted between door and frame.

Dimensions



a mm	b mm	m kg
300	150	1,03
460	250	2,08
560	360	2,70
635	430	3,57

Ordering example

Product	IPL	460	250
Largest side	a		
Smallest side	b		

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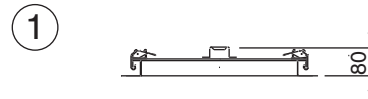
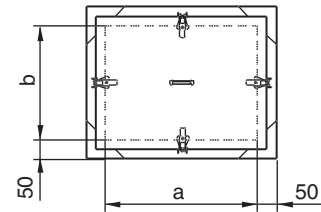


Access door

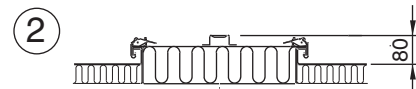
LKCR



Dimensions



Non-insulated duct



Internally insulated duct



Externally insulated duct

Description

The access door is also used as an inspection hatch for rectangular ducts. To the access door belongs a fixing frame, which is attached to the rectangular duct. This is normally done with blind rivets through the folded-down edge of the door frame. It can also be provided with folding tabs on request.

It is easy to remove the access door from the fixing frame by using over-centre catches. In the insulated versions, the inner side will always be in level with the innermost boundary line of the duct, irrespective of whether the duct is insulated internally or externally. The table below shows the insulation thickness of the door at different duct insulation alternatives.

The door should not be placed closer than 50 mm from the nearest side of the rectangular duct.

Maximum square measurement of the access door is 1170x1170 mm.

Ordering example

	LKCR	500	300	250/100	v
Product					
Largest side		a			
Smallest side		b			
Non-insulated duct		Type 1			
Internally insulated duct		Type 2			
Externally insulated duct		Type 3			
Duct/cover insulation	30/80 mm	(Type 2)			
Duct/cover insulation	50/100 mm	(Type 2)			
Duct/cover insulation	70/120 mm	(Type 2)			
Duct/cover insulation	100/150 mm	(Type 2)			
Duct/cover insulation	120/170 mm	(Type 2)			
Duct/cover insulation	40/60 mm	(Type 3)			
Duct/cover insulation	50/80 mm	(Type 3)			
Duct/cover insulation	70/100 mm	(Type 3)			
Duct/cover insulation	140/160 mm	(Type 3)			
Option					
Fixing with folding tabs					



Access door

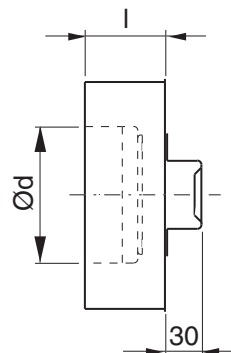
EPFUI



Description

End cap which fits outside a fitting.
Belongs to the Isol programme range.

Dimensions



Ød nom	l mm	m kg
100	90	0,73
125	90	0,88
160	90	1,13
200	90	1,41
250	110	2,24
315	110	2,94
400	130	4,71
500	130	6,55

Ordering example

Product	EPFUI	400	50
Dimension Ød			
Type			

- 1
- 2
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Access door

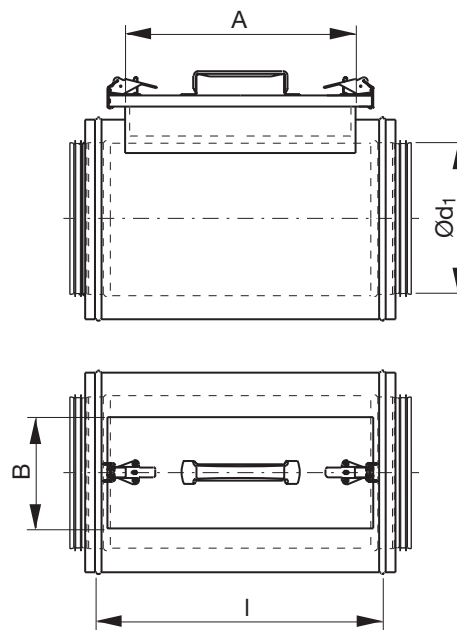
KCRUI



Description

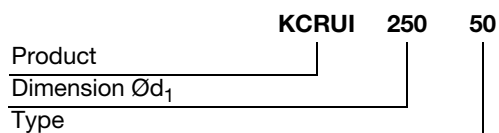
Inspection door which fits at a duct. The hatch is easy to open, with eccentric lock. Belongs to the Isol programme range.

Dimensions



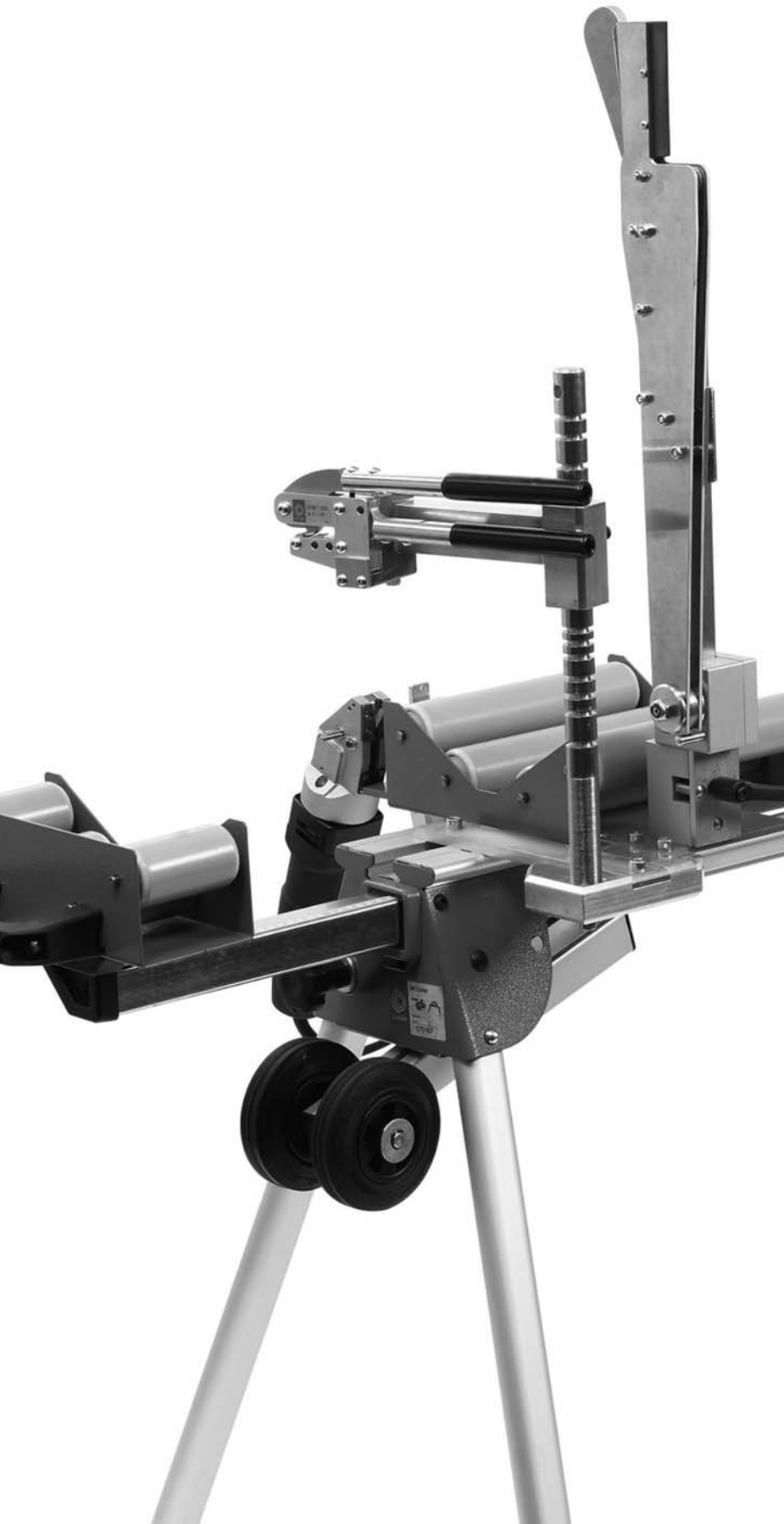
Ød ₁ nomkg	A mm	B mm	l mm	m
200	300	100	360	5,70
250	300	100	360	7,71
315	400	200	460	9,38
400	400	200	460	13,6
500	400	200	460	15,2

Ordering example





Smart tools



Lindab	1
General information and theory	2
Safe	3
Silencers	4
Dampers & Measure units	5
Fire dampers & Smoke evacuation	6
Air valves	7
Roof hoods	8
Other circular products	9
Transfer	10
Rectangular	11
Flexible ducting	12
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Access doors	14
Smart tools	15
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Content – Smart tools

SR Cutter and accessories

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SR Cutter



SRCS 619

Shears



CSS 620

Click pliers kit



CSCPS 621

Click pliers



CSCP 622

Needle cut pliers



NCP 623

SR roller



SRR 624

SR carrying handle



SRH 625

Trolley and side bars

Trolley



TRO 626

Side bars



TROB 627

Ring spanner



SPANN 628

Heavy duty knife



KNIFE 629

Markingmeasure



TALMET 630

Bits set



BITS 631

Duct cover



DC 632

Leakage tester



LTEST 633

Joining aid tool



D3H 634



SR Cutter

SRCS



Description

Working bench/platform for cutting circular ducts of diameters Ø 80–315 and lengths 200–3000 mm.

The bench is CE and TÜV approved.

The bench is equipped with:

- two wheels – to very easily move the bench to the working spot where you momentarily are,
- four foldable legs and a foldable knife arm – to fold the bench to a very compact format,
- a handle – to offer a good grip when folding and unfolding the bench,
- two scales on two telescopic arms – to set the wanted duct length,
- sixteen rollers – to rotate the duct,
- a knife – to make a designed start cutting hole for the shears,
- an arm – to guide the shears.

Spare parts are available.

Technical data

<i>Folded</i>	
Length	1 910 mm
Width	500 mm
Height	380 mm
<i>Erected</i>	
Length	1 910 mm
Length (with extended telescope arms)	4 800 mm
Width	730 mm
Height	1 270 mm
Working height	820 mm
Maximum load	75 kg
Weight	36 kg

Note

The bench is delivered without any:

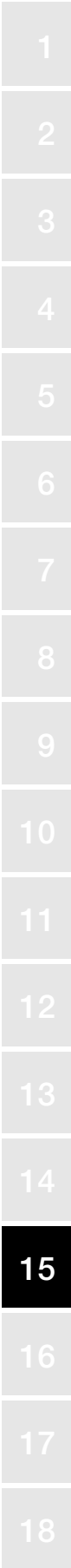
- Shears – to cut the duct,
- Needle cut pliers – to cut the needle,
- Click pliers – to make the notches for the Click system,
- Click pliers kit – to support the click pliers.

These tools, if wanted, have to be ordered separately.

In order to ...		
cut a duct	cut a duct and cut the needle	cut a duct and cut the needle and make Click notches
you need ...		
SR Cutter	SR Cutter	SR Cutter
+	+	+
Shears	Shears	Shears
	+	+
	Needle cut pliers	Needle cut pliers
		+
		Click pliers
		+
		Click pliers kit

Ordering example

	SRCS	3000
Product		
Length		





Shears

CSS

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Technical data

Model	3514-7R
Power	500 W
Stroke frequency	2400 1/min
Weight	2,2 kg

Description

Shears to cut circular ducts of sheet metal thickness up to 0,9 mm.

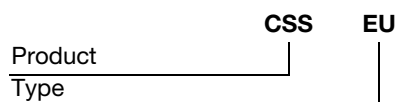
The shears is also suitable for general sheet metal cutting, e.g. holes for take-offs, since it is easy to detach the shears from the bench and it is equipped with jaws for radius cuts.

The cutter comes in four types adapted to the different electrical standards in different countries:

Type	Country	Voltage V	Frequency Hz
EU	Most European	230	50
CH	Switzerland	230	50
UK	United Kingdom	110	50
US	United States of America	110	60

Spare parts are available.

Ordering example





Click pliers kit

CSCPS



Description

Stand to support and guide the Click pliers.

The stand is designed to be used together with the SR Cutter, SRCS.

The stand has guiding grooves to suit all duct diameters. Rarely used grooves can advantageously be "filled" with special clips.

The stand can easily be unscrewed to make the folded bench still more compact.

A bagful of clips, CSCPSC, to fill unwanted grooves are delivered together with every kit order.

Technical data

Length	440 mm
Weight	4,5 kg

Ordering example

Product **CSCPS**

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Click pliers

CSCP

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Description

Pliers to produce the notches for the Click joining system.

The pliers is intended to be used together with the SR Cutter, SRCS.

The pliers sits on a stand, CSCPS, which guides it to facilitate the work.

The pliers can also be used to make notches on ducts away from the bench, since the pliers is very easily detachable from the support.

The pliers comes in two sizes adapted to the different insertion lengths of different duct diameters:

Size nom	Duct diameter mm	Duct insertion length mm
40	80-224	40
60	250-315	60

A special gauge tool, CSNC, to check the notch is delivered together with every pliers order.

Technical data

CSCP 40
 Length 290 mm
 Weight 1,0 kg

CSCP 60
 Length 290 mm
 Weight 1,1 kg

Ordering example





Needle cut pliers

NCP



Description

Pliers to cut away the very sharp and dangerous needle which is formed when cutting a spirally lockseamed duct.

Advantages

- Cut off the needle without harming the duct wall.
- Sturdy construction for reliable function and longevity.
- Well designed handles make the work effortless.
- Opening spring for easier work.
- Operated by one hand.

Technical data

Length	200 mm
Weight	0,35 kg

Ordering example

Product NCP

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SR roller

SRR



Description

SRR is a cradle for cutting of ducts with \varnothing 315–1250 mm. The duct is placed on two or three cradles for simple, fast and ergonomically correct rotating at marking of cut length and at cutting.

The cradle substantially reduces the need of free floor space, and makes it easier to arrange a proper working place e.g. with simpler cord handling.

Made with lightening holes for smaller weight and easier carrying.

The rollers are available as spare part and can easily be exchanged.

Weight: 5,0 kg

Ordering example

Product SRR

Advantages

The duct coming up a little from the floor surface leads to the following advantages:

- faster to cut the ducts,
- easier to insert fittings in the duct,
- easier to slip on flat bar flanges.

The duct being easy to rotate also leads to the following advantages:

- full access all around and better working position to screw/rivet a fitting,
- easier to cut hole for and to screw/rivet e.g. a saddle piece.

Painted ducts run much smaller risk of being scratched.

Easily damaged floors run much smaller risk of being damaged.

Material

Manufactured of sturdy, painted steel sheet metal to be robust.



SR carrying handle

SRH



Description

SRH is a carrying handle which makes it substantially easier to manually move circular ventilation ducts at the building site.

The handle fit ducts \varnothing 315–1250, but it is adequate to limit its use to the sizes \varnothing 400–800. You ought not to exceed the recommended maximum carrying weight of 25 kg per person.

One person at each duct end uses a handle each.

Weight: 2,0 kg

Advantages

- Connects and disconnects in a moment.
- Provides a superior better and more secure grip compared to hold directly on to the duct.
- Can be gripped with one or two hands.
- Can be held on the shoulder to relieve the load on the arms.
- Eliminates the risk of hitting the legs to the edge of the duct and makes it possible to walk with "normal" step length.
- Gives a much better all-around-view and in particular you can see where you put your feet.

Ordering example

Product SRH

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Trolley

TRO

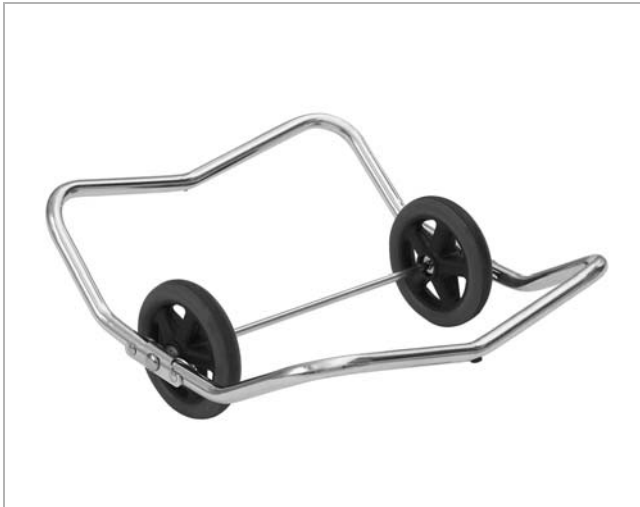
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Description

TRO is a trolley which makes it substantially easier and more ergonomic to manually move circular ventilation ducts and other heavy products at the building site.

7

The trolley is suitable for ducts Ø 400–1250.

8

Trolley with loaded duct is easily moved by one person.
Maximum load: circa 100 kg.

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Weight: 4,0 kg.

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Ordering example

TRO

Product _____

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Advantages

- Very easy to load and unload the duct.
- Soft punctureproof tyres.
- The wheels manages passing of smaller obstacles and semi-rough surface.
- Foldable for easier storage.
- You can also use it to transport large fittings in the building place like for example silencers and bends in big diameters.
- More flexibility at the building site as you can work alone.
- Improved ergonomics and workig conditions as you reduce lifting of heavy products.



Side bars

TROB



Description

TROB are side bars to the trolley TRO which makes it possible to transport many small ventilation ducts at the building site at the same haulage.

The side bars are suitable for ducts \varnothing 80–500.

Trolley with bars and loaded ducts is easily run by one person.

Weight: 6,0 kg

Advantages

- Very easy to snap the bars on and off without any need of tools.
- Equipped with a handle that gives a good manoeuvrability and a comfortable driving position.
- The handle can be adopted to fit both right- and left-handed persons.
- Removable for easier storage.

Ordering example

Product **TROB**

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Ring spanner

SPANN

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Description

SPANN is a ring spanner with ratcheting mechanism for sheet metal screws with 1/4" hexagon head.

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The spanner has a hexagon grip.

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The other end has an 8 mm fixed ring spanner with a twelve-point grip.

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Ordering example

SPANN

Product _____

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Advantages

- Suitable in cramped spaces where there is no room for a common electric screwdriver.
- The stem is angled 15° for easier handling.



Heavy duty knife

KNIFE



Description

KNIFE is a sturdy and durably sharpened knife for tough tasks e.g. hole-making in ventilation ducts e.g. at cutting with shears.

The blade is manufactured of 3 mm Japanese carbon steel and sharpened with double edge angles.

The handle and sheath are manufactured of extra impact resistant PP plastic.

Advantages

- The sheath has a unique function to attach around a button on the clothing or to a belt so it doesn't fall off, at the same time it is easy to remove.
- Due to the thickness of the blade and the double edge angles it makes a perfect hole in the duct when cutting with a nibbler.
- More rigid compared to other knives when used to make hole in steel ducts.

Ordering example

Product **KNIFE**

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Markingmeasure

TALMET

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Description

TALMET is a combination tool for measuring and marking of lengths up to 3 m. Measures both external and internal lengths. Equipped with three steel scribing edges for marking. Locks the setting automatically and has a two-step release mechanism.

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π -scale for direct reading of the diameter when measuring the circumference.

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Ordering example

TALMET

Product _____

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Advantages

- No need to see the scale, i.e. measurements can be taken at hard-to-reach or dark places.
- Transfers a measure directly without any need to read the scale, nor to remember nor to set the measure.
- Can be operated with one hand only.
- Can be used as a scratch gauge.
- Can be used as a spacer or gauge block.
- Can be used as a scribe-compass.
- Easily exchangeable scale and extender.
- Small dimensions – goes into any pocket.



Bits set

BITS



Description

A bit collection specially selected to suit mounting of ventilation systems.

16 bits sits in a holster of red, flexible plastic.

The holster has a smart metal clip for rapid attachment to and removal from clothes or belt.

The supplied bits are:

- Screwdriver Torx, T-20 W
- Screwdriver Torx, T-25 W
- Screwdriver Torx, T-30 W
- Screwdriver Phillips, PH 2
- Screwdriver Phillips, PH 2, 70 mm long
- Screwdriver Phillips, PH 3
- Screwdriver Robertson, R 2
- Screwdriver Robertson, R 3
- Screwdriver slotted, 1x6 mm
- Bit holder with quick lock, 1/4" – for 1/4" bit
- Magnetic socket, hexagon, 1/4" – for sheet metal screw
- Spring socket, hexagon, 8 mm – for bolt
- Spiral drill, 3,3 mm – for blind rivet 3,2 mm
- Spiral drill, 3,3 mm – for blind rivet 3,2 mm
- Spiral drill, 4,1 mm – for blind rivet 4,0 mm
- Spiral drill, 5,0 mm – for separation of Click system

Technical data

Length	90 mm
Width	60 mm
Thickness	25 mm
Weight	0,18 kg

Advantages

- A variety of useful bits are always at hand.
- The bit kit fits snugly in a pocket.
- The bit kit can easily be attached to your clothes.

Ordering example

	BITS	SATS
Product		
Material		





Duct cover

DC



Advantages

- Protects your ducts in bad weather conditions.
- Keeps ducts clean during transport and storage.

Size nom	Length mm	Height mm	Width mm	m kg
3000	3100	1250	1100	2,1
5000	5100	1250	1100	4,5
6000	6100	1250	1100	5,4

Description

The duct cover protects your ducts in bad weather conditions, and keeps the ducts clean during transport and storage.

- Equipped with Velcro®-fastenings at one gable.
- Has a binding loop at each bottom corner.

Ordering example

Product	DC	3000
Size		



Leakage tester

LTEST



Description and advantages

A complete equipment for field measuring of leakage in duct systems.

The unit automatically regulates to the chosen pressure.

All is built in - No loose meters and connection hoses.

The unit automatically calculates leakage, leakage factor and whether the chosen leakage class is achieved.

The unit automatically runs the measurement cycle according to the standards EN 12237 and EN 1507.

The fully automatized operation makes the whole measurement process considerably faster and easier.

Simple to handle, carry and store.

Spare parts

Thermal paper for printer

Sealing-off bladder

Filter for air intake

Storage and transportation

Aluminium trunks, 2 pcs

Device

Main device Lindab Leakage Tester LT 510

Adapter Type 1 (in minitrunk)

Adapter Type 2 (in minitrunk)

Electric wire (length 2,4 m)

Fuses (fine-wire T10, 250 V)

Printer TD 600

Thermal paper (roll)

Batteries (type AA or LR6), 4 pcs

Connection for leakage air

Plastic hose (Ø 50 mm, length 4 m)

Connector (Special female end cap EPF Ø 100)

Connection for system pressure

Rubber hose (Ø 10 mm, length 10 m)

Connector (Special female end cap EPF Ø 100)

Sealing-off equipment

Seal-off bladder (size 3), 5 pcs

Seal-off bladder (size 5), 5 pcs

Seal-off bladder (size 10), 5 pcs

Air hand pump (For bladder)

Technical data

Pressure measurement

Principle	piezo-resistive semi-conductor sensor
Measuring range	-750 to +2000 Pa
Resolution	1 Pa
Accuracy	±3 Pa or ±2,5 % of reading, whichever is highest

Flow measurement (referred to 1013 hPa and 20 °C)

Principle	massflow hot film anemometer
Measuring range	0,00 to 55,00 l/s
Resolution	0,01 l/s
Accuracy	±0,03 l/s or ±5 % of reading, whichever is highest

Flow range

No adapter	8,00 to 55 l/s
Adapter type 1	3,00 to 7,99 l/s
Adapter type 2	0,00 to 2,99 l/s

General data

Power supply	230 V, 50 Hz
Power consumption	max. 9 A
Working temperature range	+5 to +40 °C
Storage temperature range	-20 to +50 °C
Main device weight	approx. 9,5 kg
Total weight	approx. 22 kg

Ordering example

Product LTEST



Joining aid tool

D3H

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Description

A helping tool to join rectangular ducts and fittings. The tool is clamped fast on the already mounted product. The tool carries the unmouted product's one end so you don't have to hold it yourself and also it guides the unmouted product in place so that the joining profiles are located at right position close to each other.

8

The tool only works at horizontal duct runnings.

9

NOTE! The tool only works with products equipped with joining profiles type LS.

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Ordering example

D3H

Product _____

18

Technical data

Length	240 mm
Width	85 mm
Height	190 mm
Weight	0,9 kg



Duct suspensions & Support systems



Lindab	1
General information and theory	2
Safe	3
Silencers	4
Dampers & Measure units	5
Fire dampers & Smoke evacuation	6
Air valves	7
Roof hoods	8
Other circular products	9
Transfer	10
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Flexible ducting	12
Isol	13
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Duct suspensions & Support systems	16
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Duct suspension

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2	Rectangular plain washer	RPW641
---	---------------------------------	--------------



3	Threaded rod	OSB.....642
---	---------------------	-------------



4	Hexagonal studding connector	OSM642
---	-------------------------------------	--------------



5	Eye bolt	EB643
---	-----------------	-------------



6	Circular suspension	
7	Duct support	FA.....644



8	Suspension rings	UV25, UV30645
---	-------------------------	---------------------



9		UVH25, UVH30646
---	--	-----------------------



	DRSN.....647
	DRSNR648



Channels and channel brackets

Cantilever	CL.....649
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Supported cantilever	CLS.....649
-----------------------------	-------------



Channel	RPA650
	RPC650



Channel nut without spring	CN651
-----------------------------------	-------------



Channel nut with spring	CNS651
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Channel nut long spring	CNLS651
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Channel nut short spring

CNSS652



Hammer head bolt

HHB652



Hammer top screw

HTS652



Channel end cap

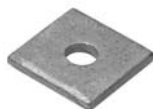
CEC653



Channel framing system

External plate

TS00654



Two hole joining plate

TS01654



Three hole joining plate

TS02654



Four hole joining plate

TS03 654



90° joining plate

TS06 655



T joining plate

TS07 655



Two hole 90° bracket

TS11 655



Three hole 90° bracket

TS12 655



Four hole 90° bracket

TS14 655











Four hole 90° bracket with gusset

TS15 656










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1	Extern angle bracket	TS29.....656
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Brackets

L-fastener	WCL..... 659
	
Fastening bracket	WCLT..... 659
	
L-fastener with vibration damper	WCLGM..... 659
	
Z-fastener	WCZ 660
	
Z-fastener with vibration damper	WCZGM..... 660
	
Sheet metal roof attachment without nut with rubber	WCVG..... 660
	
Beam clamp	BCT 661 BC 661
	



Frame support system

Square tube



SSR.....662

T-piece



SSTP.....663

Support foot



SSF663

Adjustable foot



SSFA.....663

Corner piece



SSH.....663

Angle 45° int. and ext.



SSB.....664

Angle 90°



SSB.....664

Wall attachment



SSVA.....664

Corner X



SSKV 664

Pipe cover, inside



SBEI..... 665

Pipe cover, outside



SBEU 665

Gripplé – hang fast system

Fast hanging wire kit loop



FHL..... 666

Fast hanging wire kit stud



FHS..... 667

Fast hanging wire kit toggle



FHT..... 668

Fast hanging plastic sleeve



FHPS 668

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Fast hanging wire kit eyelet
 FHE669



Fast hanging wire kit 90° eyelet
 FHE90669



Corner sadel
 FHCS670



Wire rope cutter
 WRC.....670



Wire rope twister
 WRT670



Support systems

H frame
 HFS671



Multi foot
 MULTIF672



Anti vibration mat
 MFAV672



Fix-it foot
 FIF 673





Duct suspension

FB17, FB30, FB40, FB50

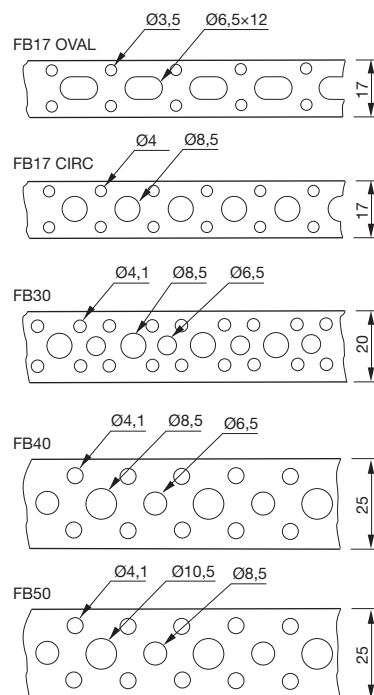
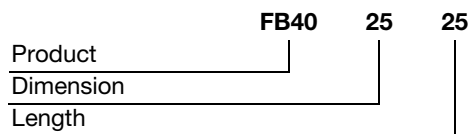
Suspension band

Suspension bands are designed to suspend air ducts. It is easy to cut and bend and allows a quick and economical method of assembly. The perforated suspension steel band is made of galvanised steel with assorted holes, which, according to the type selected, allow fixing of threaded rods, threaded clamps, bolts, etc. The small holes can be used with rivets, screws or nails.

Surface finish: Electro zinc plated.

Product	Dim mm	Thickness mm	Length m	Type
FB17	17	0,6	25	OVAL
FB17	17	0,6	25	CIRC
FB30	20	0,7	25	
FB40	25	0,9	25	
FB50	25	1,25	25	

Ordering example

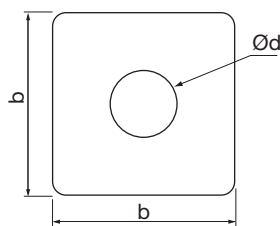


RPW

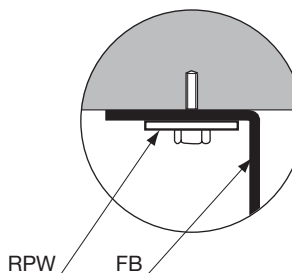
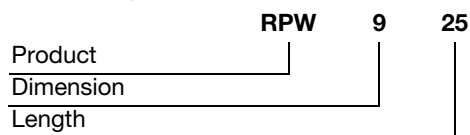
Rectangular plain washer

Surface finish: Hot dipped galvanized.

Dim Ød	b mm	Thickness mm
9	25	3
11	30	3



Ordering example



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- 18



Duct suspension

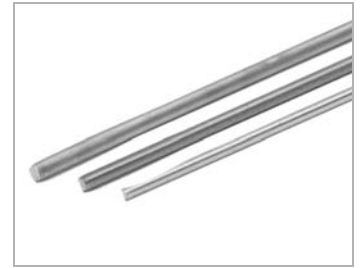
1

OSB

Threaded rod

Surface finish: Electro zinc plated.

Dim	Length mm
M6	1000
M6	2000
M6	3000
M8	1000
M8	2000
M8	3000
M10	1000
M10	2000
M10	3000
M12	1000
M12	2000
M12	3000



2

3

4

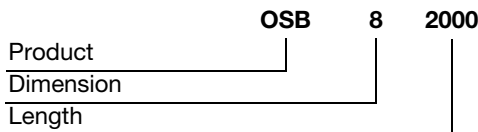
5

6

7

8

Ordering example



9

10

OSM

Hexagonal studding connector

Used together with threaded rod to reduce wastage to a minimum.

Threaded in both ends with a stop in the middle.

Surface finish: Electro zinc plated.

Dim	Length mm
M6	30
M8	30
M10	30
M12	30



11

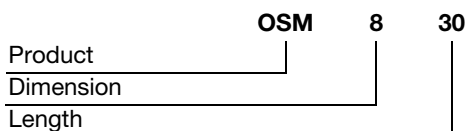
12

13

14

15

Ordering example



16

17

18



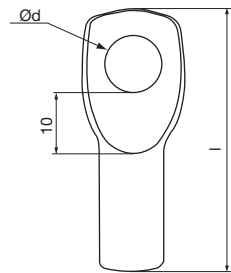
Duct suspension

EB

Eye bolt

Surface finish: Electro zinc plated.

Dim	Length mm	Ød mm
M8	46	8,5
M10	51	10,5
M12	61	12,5



Ordering example

	EB	8
Product		
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Circular suspension

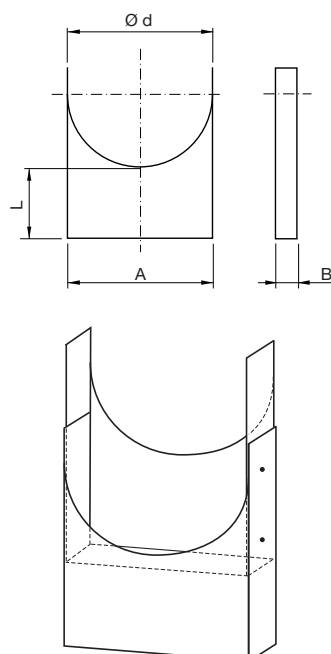
FA

Duct support

Used to fix ducts standing on joists.
Is provided with fixing holes in the base.



Ød nom	A mm	B mm	L mm
63	66	30	100
80	83	30	100
100	103	30	100
125	128	30	100
160	163	30	100
200	203	30	100
250	253	30	100
315	318	30	100
400	403	30	100
500	503	30	100
630	633	30	100
80	83	30	75
100	103	30	75
125	128	30	75
160	163	30	75
200	203	30	75
250	253	30	75
315	318	30	75
400	403	30	75
500	503	30	75
630	633	30	75



Varying height can be arranged by installing two duct supports, one inside the other. These can be locked with two self-tapping screws on each short side.

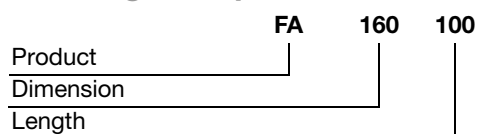
The L dimension can then vary:

for Ø 63–250 between 100 and 200 mm,

for Ø 315–630 between 100 and 250 mm.

Can also be delivered in additional sizes.

Ordering example



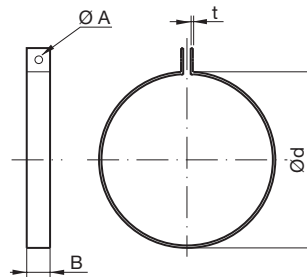


Circular suspension

UV25, UV30

Suspension rings

For suspension of circular ducting. At insulated duct it is recommended that the suspension ring is mounted inside the insulation.



Ød nom	UV25			UV30		
	t mm	ØA mm	B mm	t mm	ØA mm	B mm
63						
80				1,25	10,5	30
100	2,00	9,5	25	1,25	10,5	30
125	2,00	9,5	25	1,25	10,5	30
160	2,00	9,5	25	1,50	10,5	30
200	2,00	9,5	25	1,50	10,5	30
250	2,00	9,5	25	1,50	10,5	30
315	2,00	9,5	25	1,50	10,5	30
400	2,00	9,5	25	2,00	10,5	30
500	2,00	9,5	25	2,00	10,5	30
630	2,00	9,5	25	2,00	10,5	30
710	2,00	9,5	25	3,00	10,5	30
800	2,00	9,5	25	3,00	10,5	30
1000	2,00	9,5	25	3,00	10,5	30
1250	2,00	9,5	25	3,00	10,5	30

Can also be delivered in additional sizes.

Ordering example

	UV25	250
Product		
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



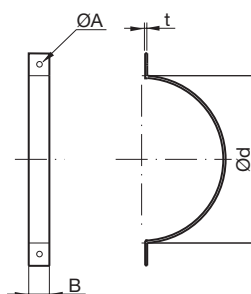
Circular suspension

UVH25, UVH30

Suspension rings

For suspension of circular ducting. At insulated duct it is recommended that the suspension ring is mounted inside the insulation.

N.B. Is sold in pairs.



Ød nom	UVH25			UVH30		
	t mm	ØA mm	B mm	t mm	ØA mm	B mm
80	2,00	9,5	25	1,25	10,5	30
100	2,00	9,5	25	1,25	10,5	30
125	2,00	9,5	25	1,25	10,5	30
160	2,00	9,5	25	1,25	10,5	30
200	2,00	9,5	25	1,25	10,5	30
250	2,00	9,5	25	1,50	10,5	30
315	2,00	9,5	25	1,50	10,5	30
400	2,00	9,5	25	2,00	10,5	30
500	2,00	9,5	25	2,00	10,5	30
630	2,00	9,5	25	2,00	10,5	30
800	2,00	9,5	25	3,00	10,5	30
1000	2,00	9,5	25	3,00	10,5	30
1250	2,00	9,5	25	3,00	10,5	30

Can also be delivered in additional sizes.

Ordering example

Product	UVH25	250
Dimension		



Circular suspension

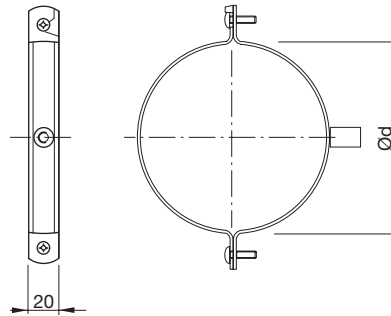
DRSN

Suspension ring

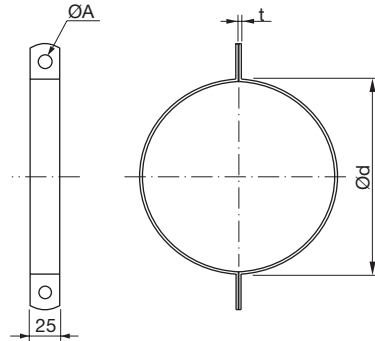
Combined nut M8/M10 up to dim 400. With slotted quick release. At insulated duct it is recommended that the suspension ring is mounted inside the insulation. N.B. Is sold in pairs.

Ød nom	t mm	ØA mm
63	1,8	
80	1,8	
100	1,8	
125	1,8	
140	1,8	
150	1,8	
160	1,8	
180	1,8	
200	1,8	
224	1,8	
250	1,8	
280	1,8	
300	1,8	
315	1,8	
355	1,8	
400	1,8	
450	2,3	10
500	2,3	10
560	2,3	10
600	2,3	10
630	2,3	10
710	2,3	10
800	2,3	10
900	2,3	10
1000	2,3	10
1120	2,3	10
1250	2,3	10

Ø63-400



Ø450-1250



Ordering example

Product	DRSN	250
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Circular suspension

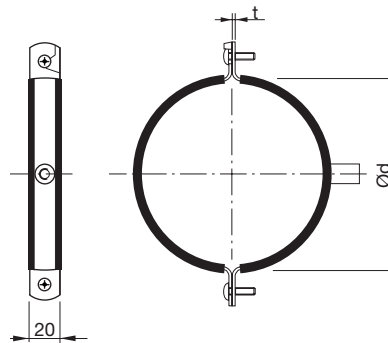
DRSNR

Suspension ring

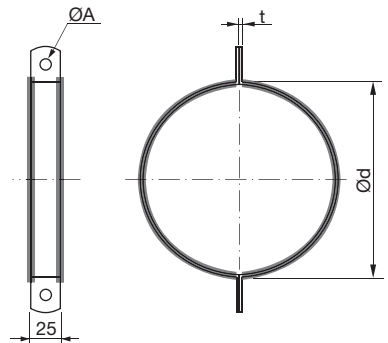
Combined nut M8/M10 up to dim 400. With slotted quick release and vibration-damping rubber. At insulated duct it is recommended that the suspension ring is mounted inside the insulation. N.B. Is sold in pairs.

Ød nom	t mm	ØA mm
63	1,8	
80	1,8	
100	1,8	
125	1,8	
140	1,8	
150	1,8	
160	1,8	
180	1,8	
200	1,8	
224	1,8	
250	1,8	
280	1,8	
300	1,8	
315	1,8	
355	1,8	
400	1,8	
450	2,3	10
500	2,3	10
560	2,3	10
600	2,3	10
630	2,3	10
710	2,3	10
800	2,3	10
900	2,3	10
1000	2,3	10
1120	2,3	10
1250	2,3	10

Ø63-400



Ø450-1250



Ordering example

Product	DRSNR	250
Dimension		



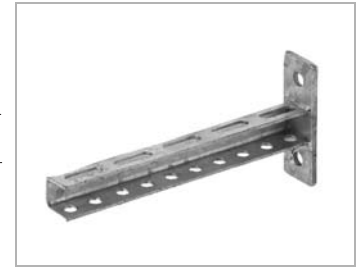
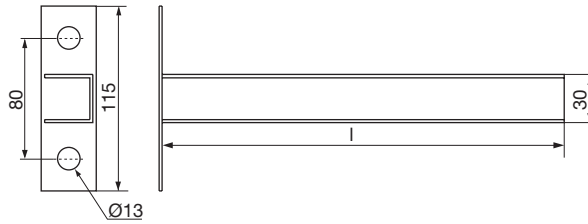
Channels and channel brackets

CL

Cantilever

Material: Hot dipped galvanized.
To be fixed of walls, floors and ceilings as an assembly profile.

Length mm
150
200
250
300
400



Ordering example

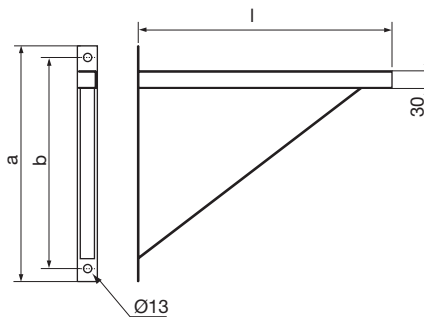


CLS

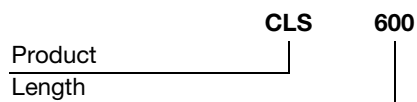
Supported cantilever

Material: Hot dipped galvanized.
To be fixed of walls, floors and ceilings as an assembly profile. The diagonal support bar makes it suitable for heavy loads.

Length mm	a mm	b mm
400	230	190
500	230	190
600	230	190
800	400	360
1000	400	360



Ordering example



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Channels and channel brackets

RPA

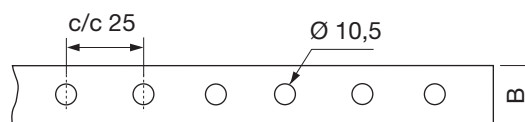
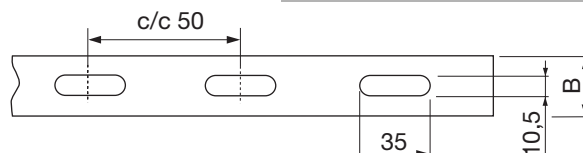
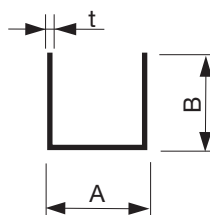
Channel

Surface finish: Electro zinc plated.

Dim		Length mm	SLOT/ PLAI	Thickness mm
A	B			
30	30	2000	SLOT	3
30	30	2000	SLOT	2

Ordering example

Product	RPA	3030	2000	SLOT	3
Dimension A x B					
Length					
Type					
Thickness					



RPC

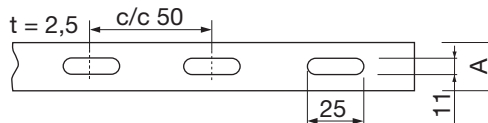
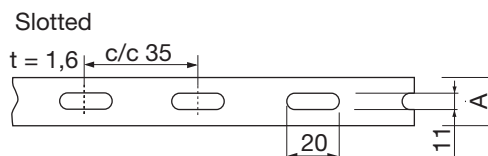
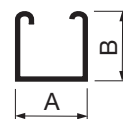
Channel

Surface finish: Electro zinc plated.
Available as plain or slotted.

Dim		Length mm	SLOT/ PLAI	Thickness
A	B			t mm
41	21	3000	PLAI	1,6
41	21	3000	PLAI	2,5
41	21	3000	SLOT	1,6
41	21	3000	SLOT	2,5
41	21	6000	PLAI	1,6
41	21	6000	PLAI	2,5
41	21	6000	SLOT	1,6
41	21	6000	SLOT	2,5
41	41	3000	PLAI	1,6
41	41	3000	PLAI	2,5
41	41	3000	SLOT	1,6
41	41	3000	SLOT	2,5
41	41	6000	PLAI	1,6
41	41	6000	PLAI	2,5
41	41	6000	SLOT	1,6
41	41	6000	SLOT	2,5

Ordering example

Product	RPC	4121	3000	SLOT	2,5
Dimension A x B					
Length					
Type					
Thickness					





Channels and channel brackets

Channel slide nuts

Channel slide nuts and springs are self aligning and are specially manufactured to complement the range of RPC channels. The slide nut can be moved along the channel for ease of alignment whilst the springs tension the nut against the internal channel lips to facilitate installation. In addition to the shape of the slide nuts prevents turning inside the channel eliminating the need to grip the nut whilst inserting bolts or threaded rod.

CN

Channel nut, without spring

Dim
8
10
12



Ordering example

Product	CN	8
Dimension		

CNS

Channel nut with spring

Dim
8
10
12



Ordering example

Product	CNS	8
Dimension		

CNLS

Channel nut long spring

Dim
8
10
12



Ordering example

Product	CNLS	8
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Channels and channel brackets

1

CNSS

Channel nut short spring

Dim
8
10
12



2

3

Ordering example



4

5

6

HHB

Hammer head bolt

Dim	Length mm
8	30
10	30
12	30
8	40
10	40
12	40

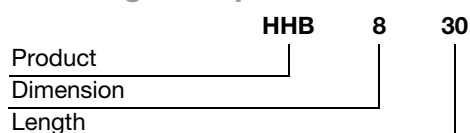


7

8

9

Ordering example



10

11

12

HTS

Hammer top screw

Dim	Length mm
8	30
10	30
12	30
8	40
10	40
12	40



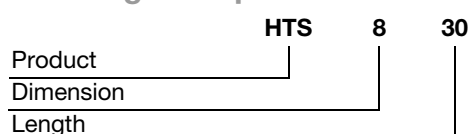
13

14

15

16

Ordering example



17

18



Channels and channel brackets

CEC

Channel end cap

for channel 4141
for channel 4121



Ordering example

	CEC	4141
Product		
For channel		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16**
- 17
- 18



Channel framing system

1

The Lindab channel framing system is designed to provide an effective yet economical solution to today's framing and support requirements.

The TS fittings are used together with the RPC channels.

All TS fittings are generally manufactured from 6 mm thick steel strip and hot dip galvanised to BSENISO1461:1999 unless otherwise indicated. Standard hole diameter 14 mm.

2

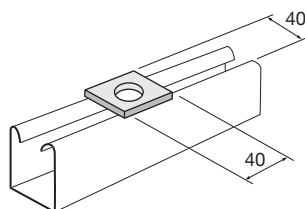
3

TS00

External plate

Available in 8 and 10 mm hole clearance – 5 mm thick

Dim
8
10



4

5

6

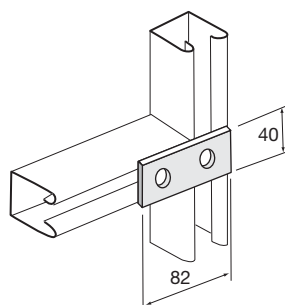
Ordering example

Product	TS00	8
Dimension		

8

TS01

Two hole joining plate



9

10

Ordering example

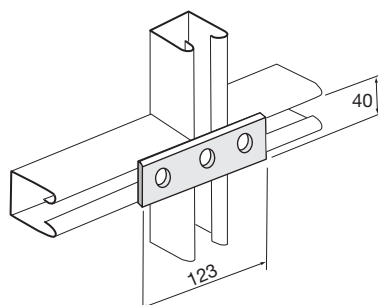
Product	TS01
---------	------

11

12

TS02

Three hole joining plate



13

14

Ordering example

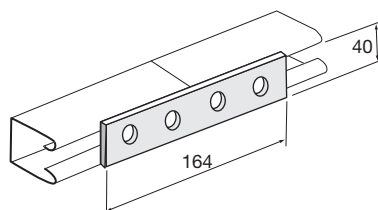
Product	TS02
---------	------

15

16

TS03

Four hole joining plate



17

18

Ordering example

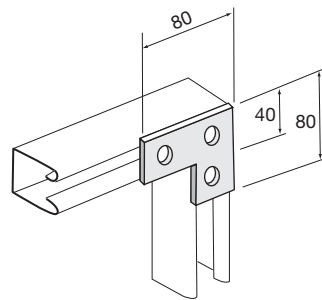
Product	TS03
---------	------



Channels and channel brackets

TS06

90° joining plate

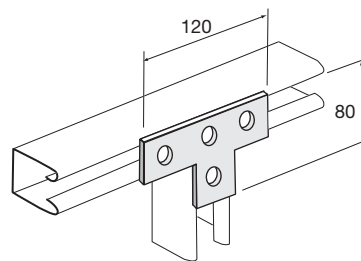


Ordering example

Product TS06

TS07

T joining plate

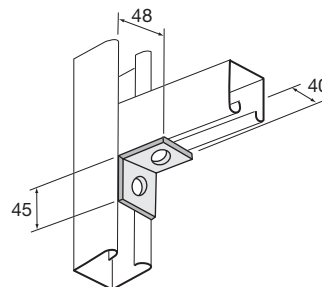


Ordering example

Product TS07

TS11

Two hole 90° bracket

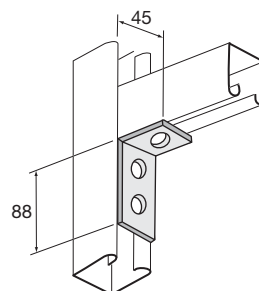


Ordering example

Product TS11

TS12

Three hole 90° bracket

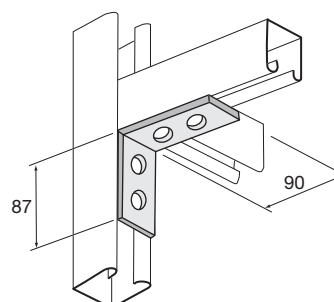


Ordering example

Product TS12

TS14

Four hole 90° bracket



Ordering example

Product TS14

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

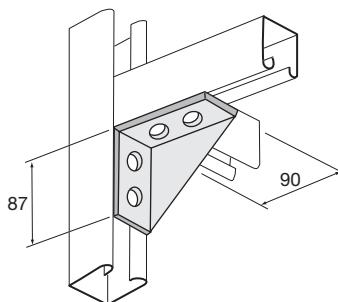


Channels and channel brackets

1

TS15

Four hole 90° bracket with gusset



2

Ordering example

TS15

Product

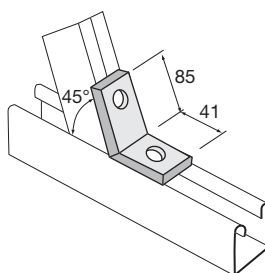
4

5

TS29

Extern angle bracket

Angles available 45°



6

Ordering example

TS29

Product

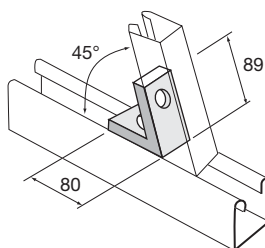
8

9

TS31

Internal angle bracket

Angles available 45°



10

Ordering example

TS31

Product

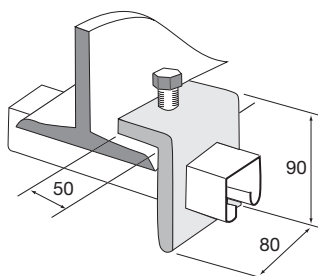
12

13

TS45

Window bracket

Maximum loading 220 kg.



14

Dim
41
21

15

16

Ordering example

TS45

41

Product

Dimension

17

18



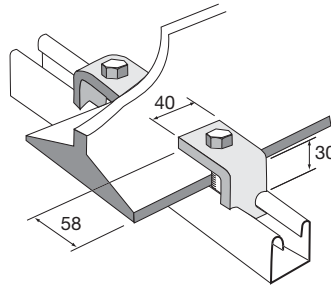
Channels and channel brackets

TS48

Beam clamp

Ordering example

Product TS48



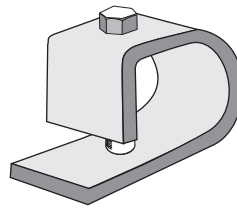
TS91

Purlin clips

Mild steel zinc plated
Clearance hole allows for M10.

Ordering example

Product TS91

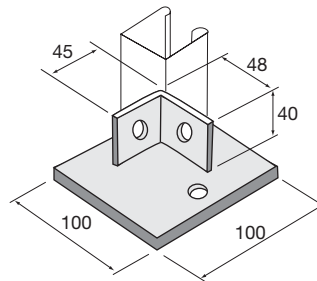


TS38

Two hole base plate

Ordering example

Product TS38

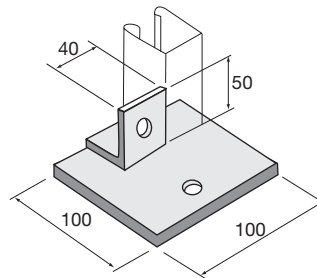


TS39

One hole base plate

Ordering example

Product TS39



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Channels and channel brackets

1

TS40

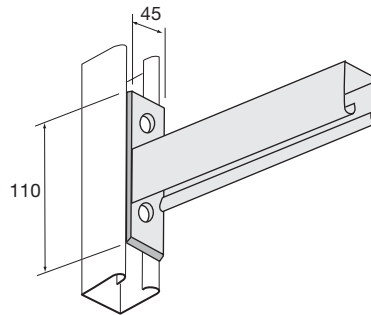
Cantilever arms, universal

Back plate 8 mm thick.

2

Length
450
600

3



4

Ordering example

5

Product	TS40	450
Length		

6

7

8

9

10

11

12

13

14

15

16

17

18



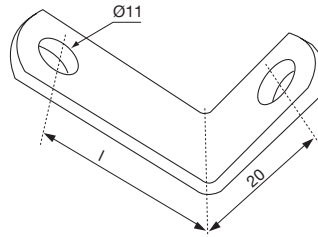
Brackets

WCL

L-fastener

Surface finish: Electro zinc plated.

Dim	Length	Thickness mm
	l mm	
25	35	4
25	110	4



Ordering example

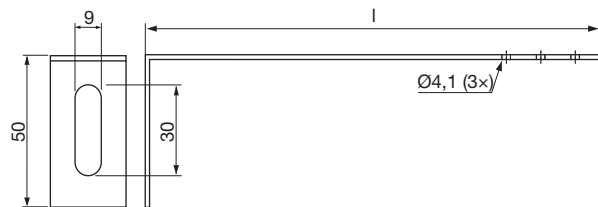
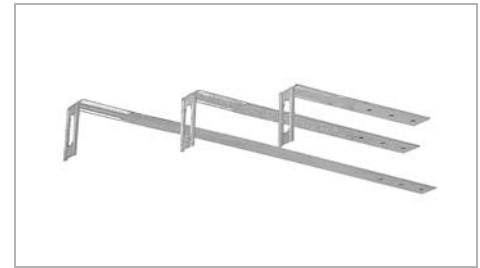
Product	WCL	25	35
Dimension			
Length			

WCLT

Fastening bracket

Surface finish: Electro zinc plated.

Dim	Length	Thickness mm
	l mm	
25	150	1,5
25	250	1,5
25	400	1,5



Ordering example

Product	WCLT	25	150
Dimension			
Length			

WCLGM

L-fastener with vibration damper

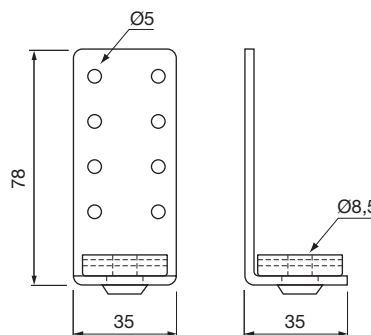
Quick fixing of rectangular ducts. Supplied with sound reduction mounting compliant with DIN 4109.

Fixing with blind rivets or self drilling screws.

Easy height adjustment by using M8 threaded rod and hex nuts.

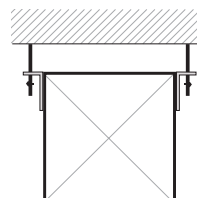
Material 35 x 2,0 mm.

Surface finish: Electro zinc plated.



Ordering example

Product	WCLGM
---------	-------



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



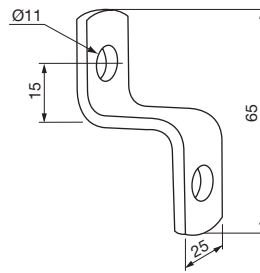
Brackets

WCZ

Z-fastener

Surface finish: Electro zinc plated.

Dim	Thickness mm
25	4



Ordering example

Product	WCZ	25
Dimension		

WCZGM

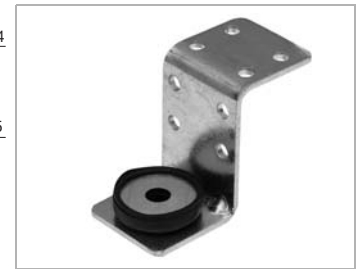
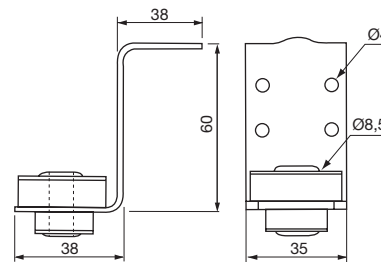
Z-fastener with vibration damper

Quick installation of rectangular ducts. Supplied with sound reduction mounting compliant with DIN 4109.

Fixing with blind rivets or self drilling screws.

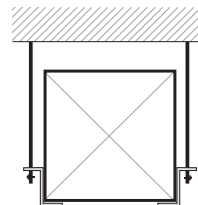
Easy height adjustment by using M8 threaded rod and hex nuts. Material 35 x 2,0 mm.

Surface finish: Electro zinc plated.



Ordering example

Product	WCZGM
---------	-------



WCVG

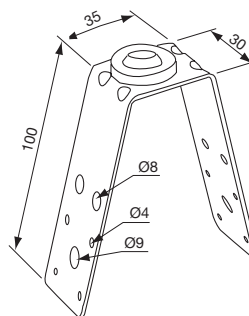
Sheet metal roof attachment without nut with rubber

Suspension bracket designed to suspend ductwork with threaded rods of maximum 8 mm. Allows fixing against trapeze type ceilings.

Supplied with a moulded elastomeric element which prevents the transmission of vibrations.

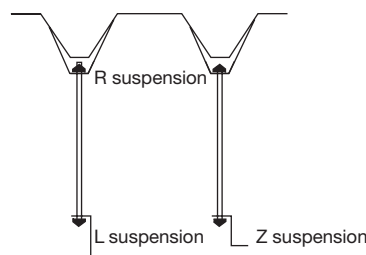
For best vibration isolation, load should not exceed 40 kg. Material: 25 x 2,5 mm.

Surface finish: Electro zinc plated.



Ordering example

Product	WCVG
---------	------

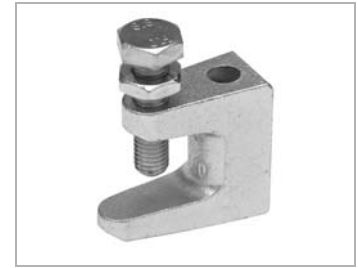
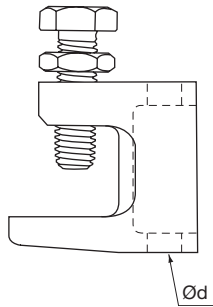




Brackets

Beam clamp

To fix on to beams without welding or drilling. With hexagon head screw DIN 933 8.8, threaded end with cup point according to EN ISO 4753 and locknut DIN 439. Available as threaded (BCT) or not threaded (BC). Material: Body made of malleable cast iron, zinc plated, casting tolerance acc. to DIN 1684 GTA / 17.



BCT

Threaded rod hole.

Dim Ød
M 8
M 10
M 12

BC

Not threaded rod hole.

Dim Ød
8
10
12

Ordering example

Product	BCT	8
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Frame support system

1

Stand system

Consisting of square tubes and a number of parts which are used to create a range of different structures. This stand system is made up of square tubes in accordance with DIN 2395 and materials in accordance with SIS 1312. The load diagram indicates the maximum permissible load with regard to flex sensing and does not take deflection into account. The diagram indicates the maximum permissible load for different distances between the supporting legs without exceeding the limit load in accordance with the Swedish Fatigue Design Code for Welded Structures, StBK-N1, static load. This load diagram is applicable to all horizontal tubes with their associated supports, provided that there are no lateral forces.

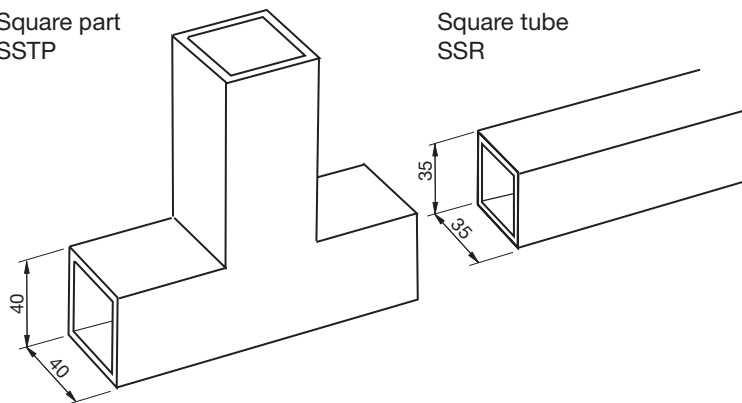
2

3

4

Square part SSTP

Square tube SSR



5

6

7

8



9

10

11

12

13

SSR

Square tube

Surface finish: Hot dipped galvanized.

Dim mm	Thickness mm	Length mm
35x35	1,5	3000

15

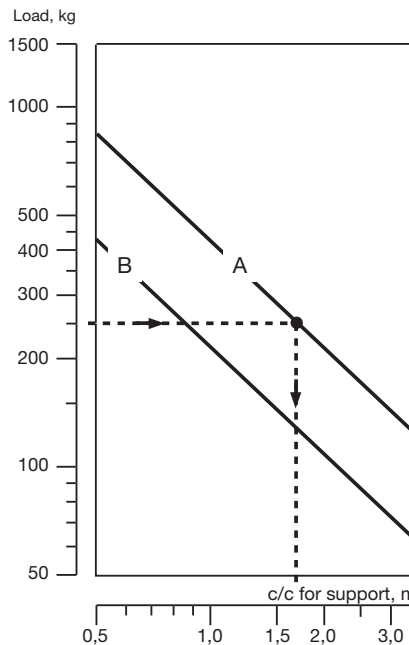
16

Ordering example

Product SSR

17

18



A = Extended, evenly distributed static load – tubes 35 x 35 x 1,5
 B = Centrally applied static spot load – 35 x 35 x 1,5

Example

Load 250 kg, distributed evenly
 Stand tube 35 x 35 gives a max c/c between supporting legs of 1,7 m





Frame support system

SSTP

T-piece

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

SSTP

Product



SSF

Support foot

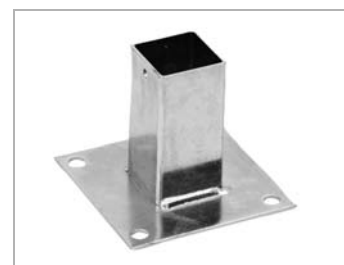
Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

SSF

Product



SSFA

Adjustable foot

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

SSFA

Product



SSH

Corner piece

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

SSH

Product



1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18



Frame support system

1

SSB

Angle 45° internal and external

Surface finish: Electro zinc plated.

Dim mm	Dim mm	Thickness mm
40x40	35x35	2,0

Ordering example

Product SSB 45

Angle



2

3

4

5

6

SSB

Angle 90°

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

Product SSB 90

Angle



7

8

9

10

SSVA

Wall attachment

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

Product SSVA



12

13

14

15

SSKV

Corner X

Surface finish: Electro zinc plated.

Dim mm	Thickness mm
40x40	2,0

Ordering example

Product SSKV



17

18



Frame support system

SBEI

Pipe cover, inside

Material: Plastic.

for square tubes
for square parts



Ordering example

SBEI

Product

SBEU

Pipe cover, outside

Material: Plastic.

for square tubes
for square parts



Ordering example

SBEU

Product

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18



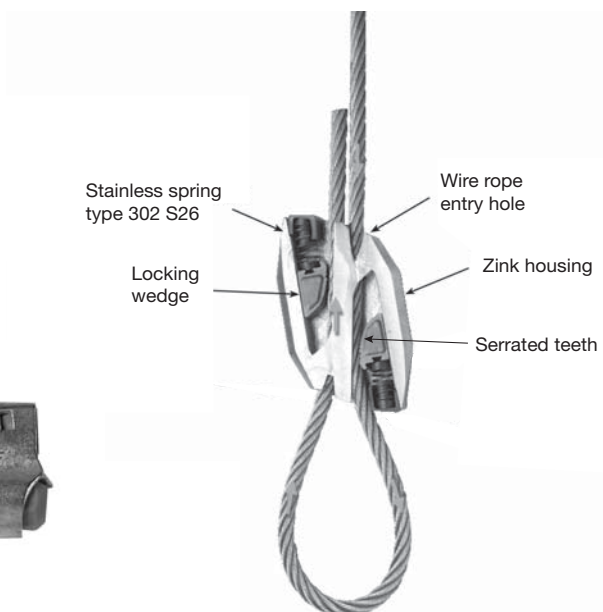
Gripple – hang fast system

1 Fast hanging wire kit

Each kit comprises a Length of steel wire rope with a choice of different end fixings, a rope grip to adjust the free end, and a setting key.

2 Hangers are available as standard in 2 load related sizes. Each size is designed to carry a specific weight range and has a designated safe working load (SWL).

Size	Working load span
2	11–45 kg
3	46–90 kg

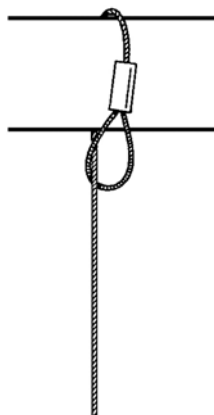


10 FHL

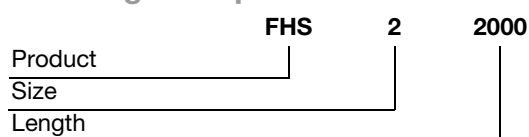
Fast hanging wire kit loop

For looping around purlins, beams, roof trusses and other accessible building features.

Size	Length mm
2	1000
2	2000
2	3000
2	5000
2	10000
3	3000
3	5000
3	10000



16 Ordering example





Gripple – hang fast system

FHS

Fast hanging wire kit stud

For anchoring into concrete ceilings, metal decking and pressed metal brackets (with nuts). Supplied with drop in anchors or nuts as required.

Size	Length mm	Type
2	1000	M6
2	2000	M6
2	3000	M6
3	3000	M6
3	5000	M6
3	10000	M6
2	1000	M8
2	2000	M8
2	3000	M8
2	4000	M8
2	5000	M8
2	10000	M8
3	3000	M8
3	5000	M8
3	10000	M8



Ordering example

	FHS	2	2000	6
Product				
Size				
Length				
Type				

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



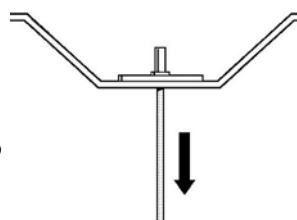
Gripple – hang fast system

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
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- 17
- 18

FHT

Fast hanging wire kit toggle

For anchoring into profile roof cladding, light fixings, luminaries and other pre-drilled structures. Toggle end fixing is an integral part of the wire, requiring no additional accessories.



Size	Length m
2	1000
2	2000
2	3000
2	4000
2	5000
2	10000
3	4000
3	5000
3	10000

Ordering example

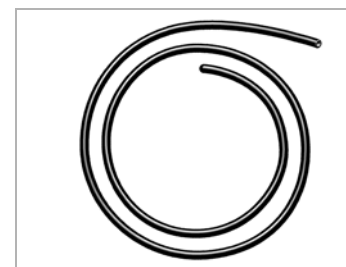
	FHT	2	2000
Product			
Size			
Length			

FHPS

Fast hanging plastic sleeve

Protective black plastic sleeve tubing to further reduce risk of condensation. Colour: Black.

Length m	Thickness mm	Suits size
25	2	2
25	3	3



Ordering example

	FHPS	25	2	2
Product				
Length				
Thickness				
Size				



Gripple – hang fast system

FHE

Fast hanging wire kit eyelet

For attachment to a variety of applications that require bolting to brackets or fixtures. Eyelet end fixing is an integral part of the wire, requiring no additional accessories.

Size	Length mm
2	1000
2	2000
2	3000
2	4000
2	5000
2	10000
3	3000
3	5000
3	10000



Ordering example

	FHE	2	2000
Product			
Size			
Length			

FHE90

Fast hanging wire kit 90° eyelet

For fixing into concrete, steel and wood using gas and power actuated tools or fixing screws. Eyelet end fixing is an integral part of the wire, requiring no additional accessories.

Size	Length mm
2	1000
2	2000
2	3000
2	4000
2	5000
2	10000
3	3000
3	5000
3	10000



Ordering example

	FHE90	2	2000
Product			
Size			
Length			

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



Gripple – hang fast system

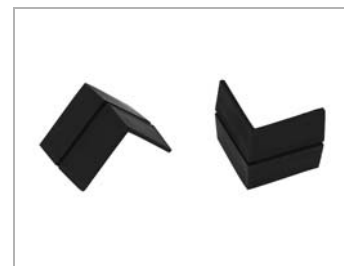
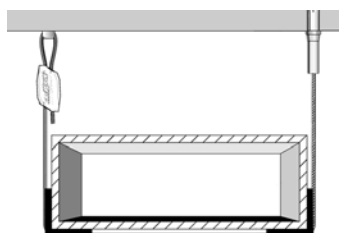
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

FHCS

Corner Saddle

A right-angles reinforcement moulding for positioning and supporting wire ropes, sizes no 2 to no 3. Standard or magnetic version. Material: Plastic.

Type
Standard
MAGN



Ordering example

	FHCS	MAGN
Product		
Type		

WRC

Wire rope cutter

A purpose-made tool for cutting wire rope. Suitable for use on the Gripple ranges sizes 2–3. Hardened jaws for durability.

Ordering example

	WRC
Product	



WRT

Wire rope twister

For securing wires tails, and make a tidy finish. Suitable for use with sizes no. 2 and 3.

Ordering example

	WRT
Product	





H Frame Support System

HFS

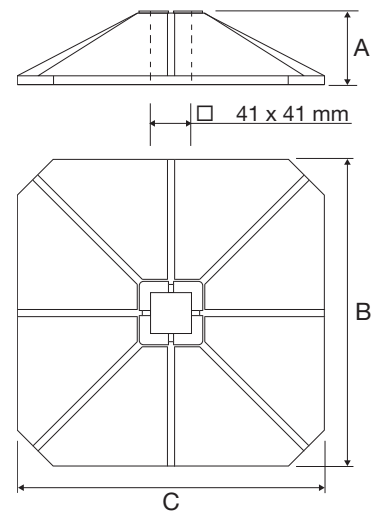


Description

The Lindab H frame set is a quick, versatile and economical solution for supporting ductwork, pipework or cable trays. Using the inserts supplied the feet are adapted to accommodate Lindabs off the shelf 40 mm x 40 mm channel support system (not included in kit).

Construction

The Lindab Big Foot plastic mounting feet for the modular framework system are manufactured from UV protected Nylon 6 B601L 30% Glass fibre filled. Metal components are manufactured from hot dipped galvanised steel and comply with EN10219 S235 J0H, EN10219 S275 J2H & EN10219 S355 J2H.



Type	A mm	B mm	C mm	m kg
305	75	305	305	5,0
450	100	450	450	10,0

Kit Includes

- 2 x Feet
- 2 x AV mats
- 2 x Channel inserts
- 2 x L-Brackets
- 4 x M10 Bolts
- 4 x Square channel nuts

Kit does not include channel

Options

Available with either 305 mm or 450 mm square feet depending on the load requirements.

Maximum Loads

Maximum load per 305 mm² Leg Assembly – 120 kg
 Maximum load per 450 mm² Leg Assembly – 220 kg

Ordering example

	HFS	305
Product		
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16**
- 17
- 18



Multi Foot MULTIF



Description

The Lindab Multi Foot is designed to be a multi-purpose ductwork, cable and pipework support. The Multi Foot is an extremely versatile and cost effective one piece support available in two sizes with optional antivibration mats. When used with Lindab's Support Channel and Threaded Rod (not included) the Multi Foot provides a complete support solution for a host of applications from cable trays to ductwork

Designed to

- 41 x 41 mm channel
- 40 mm wide channel (horizontally)
- 12 mm threaded (vertically)

Dim	Length mm	Width mm	Height mm	Weight kg	Max Load kg
400	400	180	95	1,7	77
600	600	220	95	2,8	142

Max recommended load is based on each foot producing a loading of 10,0 kN/m², if conditions allow, the maximum load per foot is 500 kg.

Construction

The Lindab Multi Foot plastic mounting feet are manufactured from Polypropylene 20% Glass fibre filled.

Application

Suitable for internal or external applications in temperatures between -30°C to +80°C.

Ordering example

Product	MULTIF	400
Dimension		

Anti-Vibration Mat MFAV



Optional

Multi Foot Anti-vibration Mat 400 MFAV
Multi Foot Anti-vibration Mat 600 MFAV

Dim	Length mm	Weight kg
400	180	2,5
600	220	4,5

Construction

The antivibration mats are manufactured from Styrene Butadiene Rubber (SBR).

Application

Suitable for internal or external applications in temperatures between -30°C to +80°C.

Ordering example

Product	MFAV	400
Dimension		



Fix-it Foot Support System

FIF



Description

The Lindab Fix-it Foot are available in three sizes, each has a 40 mm x 20 mm aluminium channel recessed into the top face allowing fixing of the services resting across the feet.

Construction

The Lindab Fix-it Foot is pressure moulded using a one or two part mix, utilising milled, sieved and grade Styrene Butadiene Rubber (SBR-Recycled Rubber) bound with a ratio of high quality moisturecuring Polyurethane Pre-Polymer.

Multi Foot	Length mm	Width mm	Height mm	Weight kg	Max Load kg
250	250	180	95	2,3	50
400	400	180	95	3,7	100
600	600	220	95	5,5	150

Ordering example

	FIF	250
Product		
Dimension		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
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Fastening material



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Content – Fastening material

1	Hex head wood screw	FRSK.....677
2		
3	Hex head bolt	RJB677
4		
5	Hex nut	RJN678
6		
7	Circular plain washer	CPW678
8		
9	Through bolt anchor	ANKS678
10		
11	Drop in anchor	DIA679
12		
13	Gypsum fastener	DYBH679
14		
15		
16		
17		
18		



Fastening materials

FRSK

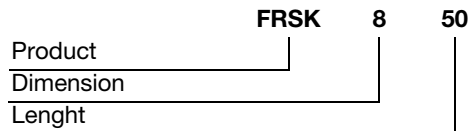
Hex head wood screw

Surface finish: Hot galvanised.

Dim	Lenght mm
8	50
8	65
8	75
10	50
10	65
10	75
10	100



Ordering example



RJB

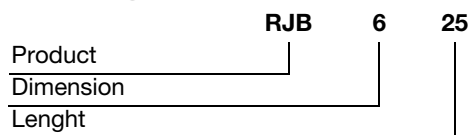
Hex head bolt

Surface finish:electro zink plated.

Dim	Lenght mm
M6	25
M8	25
M8	35
M10	30



Ordering example



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17**
- 18



Fastening materials

1

RJN

Hex nut

Surface finish:electro zink plated.

Dim
M6
M8
M10
M12



2

3

4

Ordering example

Product	RJN	6
Dimension		

5

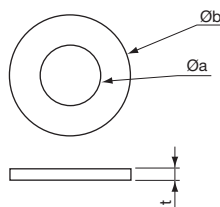
6

CPW

Circular plain washer

Surface finish:electro zink plated.

Ø a mm	Ø b mm	t mm
6,4	12	1,5
8	16	1,5
10	22	2
13	24	2
12	35	2



7

8

9

10

Ordering example

Product	CPW	10	22	2
Dimension Ø a				
Dimension Ø b				
Thickness t				

11

12

13

ANKS

Through bolt anchor

Through bolt is designed for medium heavy and heavy fixings in concrete and natural stone.

Surface finish: electro zink plated.

Dim	Lenght mm
M8	50
M8	75
M10	80



14

15

16

Ordering example

Product	ANKS	8	75
Dimension			
Lenght			

17

18



Fastening materials

DIA

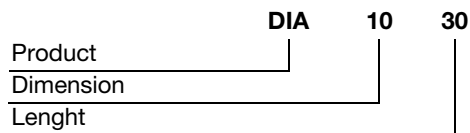
Drop in anchor

Drop anchor is designed for medium heavy and heavy loads.
With internal thread.
Surface finish: electro zink plated.

Dim	Lenght mm
M10	30
M12	40
M14	50



Ordering example



DYBH

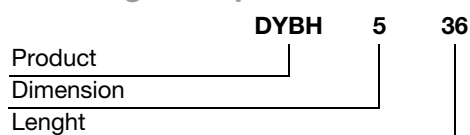
Gypsum fastener

With screws.
Surface finish: electro zink plated.

Dim	Lenght mm	For gypsum mm
M5	36	13
M5	64	26



Ordering example



- 1
- 2
- 3
- 4
- 5
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- 7
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Index, denomination

1	A		
	Access door	EPFH	604
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	Access door	ESHU	605
	Access door	IPF	611
	Access door	IPL	613
	Access door	IPLR	610
	Access door	IPRD	612
	Access door	KC	609
	Access door	KCIVU	607
	Access door	KCRU	608
	Access door	KCRUI	616
	Access door	KCU	606
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