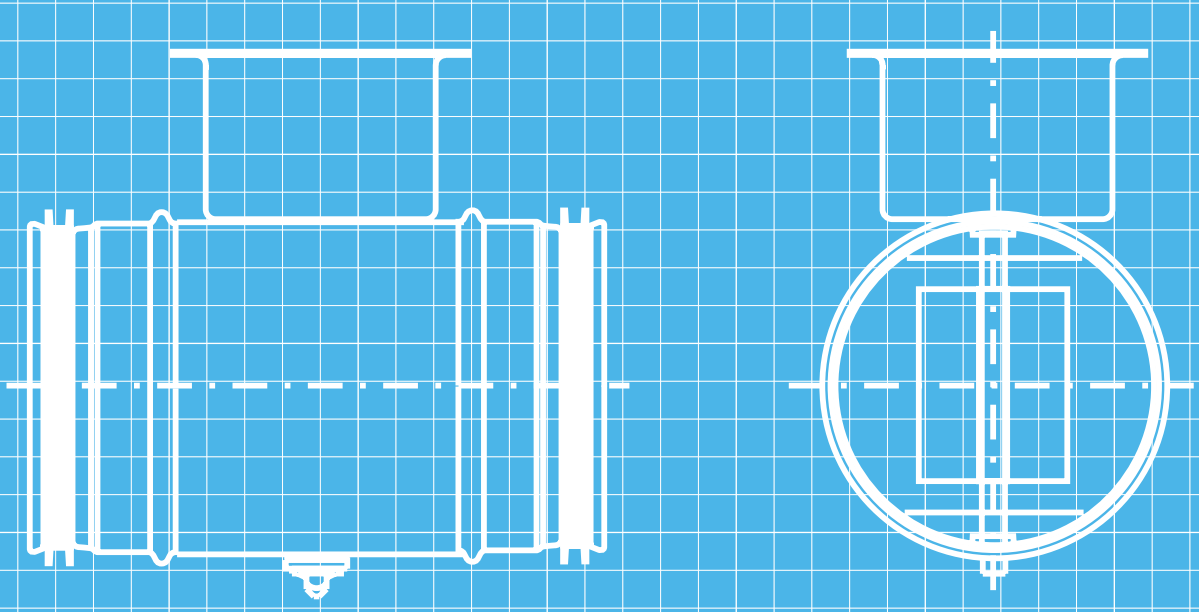
lindab | for a better climate



Lindab **Dampers**

Mounting instructions

Lindab®

Product overview

Standard dampers

		To regulate	To shut-off
manual		 DRU  DIRU	 DSU DTU   DTMU
for motor	electric or pneumatic	 DRH1U	 DTH1U   DTH2U DTHU
	electric	DTBVU DRBVU 	   DSUSN DTBU DTBCU   DTFU DTBLU
with motor	pneumatic		DTPU 

Cleaning dampers

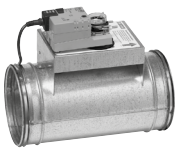
	To regulate	To shut-off
manual	 PSDRU  TDRU	

Product overview

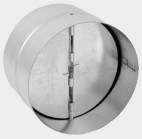
Alternating dampers

	To regulate	To shut-off
manual		 TASU  TATU
with motor electric		 TATBU

Constant- and variable flow units (automatic dampers)

	To regulate	To shut-off
manual	 DAU  VRL1	
with motor electric	 DAVU DA2EU	

Air stream operated damper

	To regulate	To shut-off
manual	 RSKA	

Product overview

Flow meters

FMU

Flow meters with UltraLink

UltraLink

FTMU

UltraLink with damper

FTCU

Other dampers

Rectangular damper

LKSR

JSM

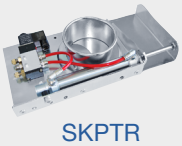
JSMM
JSMMU

Regulating dampers

DRUI

Sliding dampers

SKMTR



SKPTR

Air stream operating dampers

CARU

CAR

Accesories

Insulation cup

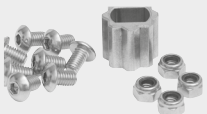
IK

Handles

DRHTG

HANDLE

Assembly kits



MSATS PPWS
MSATS P0WS

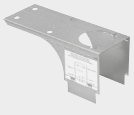
Extension spindles

VREDF 15 60
VREDF 15 100

AXFL

Mounting shelves

KOMHY



KOMHY
LONG

LÖMOK

HYLLA
PNEU

Dampers

DRBVU, DRH1U, DRU, DSU, DTU, DTHU, DTH1U, DTH2U, DTBU, DTBVU, DTBCU, DTFU, DTBLU, DSUSN, DTPU, PSDRU, TDRU, TASU, TATU, TATBU

Assembly

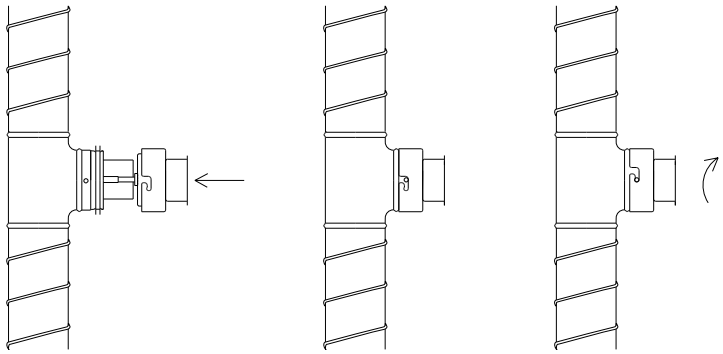
In order to fulfil the requirements for air-tightness class D, the dampers must be installed as per ‘Assembly Instruction Lindab Safe’.

For certain manual dampers, there is the option of adding a motor later on.

The dampers allow 50 mm duct insulation without the knob being hidden. For 100 mm duct insulation, there is an insulation cup, IK, for DRU, DSU, DTU, TASU and TATU.

PSDRU and TDRU

The dampers are installed by inserting the two guide pins on the T-piece or saddle into the L-shaped slots on the dampers. The dampers are then locked by turning them slightly clockwise.



Balancing

On DRU, PSDRU and TDRU the damper blade is stepless adjustable through 0–90° (0°=fully open, 90°=completely closed) using the knob in the cup. Locking is performed using screws for Pozidrive (PZD2) and the damper angle can be read off a stamped grade on the edge of the cup. Other types of damper normally only work in the fully open or completely closed positions.

On motorized shut-off dampers and dampers adapted for a motor, the shaft end for the motor is equipped with a notch showing the position of the damper blade.

Manual dampers Ø <355 can be supplemented with a sturdy handle to facilitate adjustment. Larger dimensions are equipped with a handle as standard.

Maintenance

Dampers and motors normally don't require any maintenance.

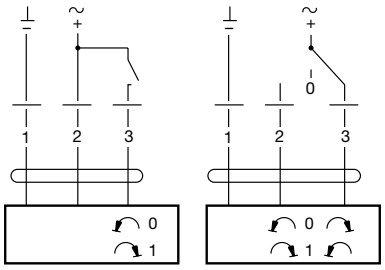
CE marking

Our dampers with electrical actuator are regarded as a component in the duct system and does not need to be CE marked separately.

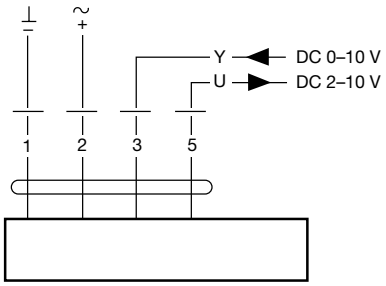
Their electrical actuators on the other hand are part of the electrical system and are CE marked. Declaration of compliance with the essential requirements can be found at www.belimo.ch .

Dampers

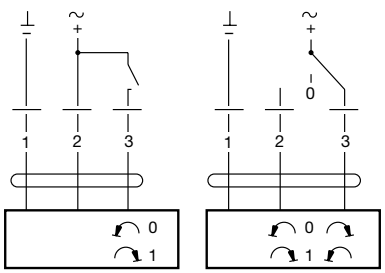
	CM 24 / CM 24 F	CM 230 / CM 230 F
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 65–265 V, 50/60 Hz
Power consumption	0,5 W	1,5 W
For wire sizing	1 VA	3 VA
Connection	Cable 1 m, 3×0,75 mm2	Cable 1 m, 3×0,75 mm2
Operating angle	Continously rotating	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 2 Nm	Min. 2 Nm
Direction of rotation	-L or -R	-L or -R
Position indication	Mechanical, removable	Mechanical, removable
Running time for 95°	75 s	75 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



	CM 24 SR
Power supply	AC 24 V, 50/60 Hz DC 24 V
Power consumption	0,5 W
For wire sizing	2 VA
Connection	Cable 1 m, 4×0,75 mm²
Torque at rated voltage	Min. 2 Nm
Direction of rotation	Switch selectable 0 or 1
Running time for 95°	75 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

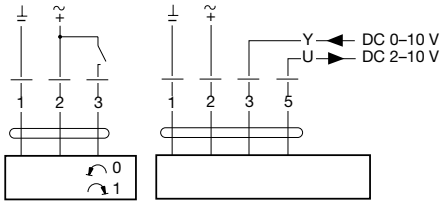


	LM 24 A-F	LM 230 A-F
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 65–265 V, 50/60 Hz
Power consumption	1 W	1,5 W
For wire sizing	2 VA	4 VA
Connection	Cable 1 m, 3×0,75 mm²	Cable 1 m, 3×0,75 mm²
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	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

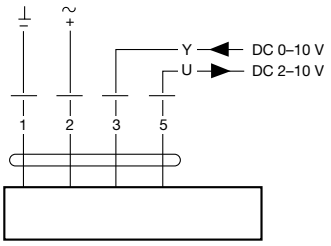


Dampers

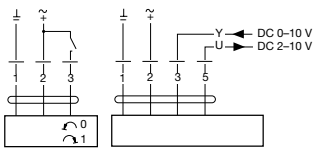
	LMQ 24A	LMQ-SR 24A
Power supply	AC 19,2-28,8 V, 50/60 Hz	AC 19,2-28,8 V, 50/60 Hz
	DC 21,6-28,8 V	DC 21,6-28,8 V
Power consumption	13 W	12 W
For wire sizing	23 VA	23 VA
Connection	Cable 1 m, 3×0,75 mm²	Cable 1 m, 4×0,75 mm²
Operating angle	Max. 95°, adjustable 0-100 %	Max. 95°, adjustable 0-100 %
Torque at rated voltage	Min. 4 Nm	Min. 4 Nm
Direction of rotation	Switch selectable	Switch selectable
	0 ↶ or 1 ↷	0 ↶ or 1 ↷
Position indication	Mechanical	Mechanical
Running time for 90°	2,5 s	2,5 s
Sound power level	52 dB (A)	52 dB (A)
Protection class	III Safety extra-low voltage	II Safety insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +40°C	-30 to +40°C
Ambient moisture	95 % RH	95 % RH



	LM 24 A-SR	LM 230 A-SR
Power supply	AC 19,2–28,8 V, 50/60 Hz	AC 230 V, 50/60 Hz
	DC 19,2–28,8 V	
Power consumption	1 W	1,8 W
For wire sizing	2 VA	4 VA
Connection	Cable 1 m, 4×0,75 mm²	Cable 1 m, 2×0,75 mm²
Operating angle	Max. 95°, adjustable	Max. 95°, adjustable
Torque at rated voltage	Min. 5 Nm	Min. 5 Nm
Direction of rotation	Switch selectable	Switch selectable
	0 ↶ or 1 ↷	0 ↶ or 1 ↷
Position indication	Mechanical	Mechanical
Running time for 95°	150 s	150 s
Sound power level	35 dB (A)	35 dB (A)
Protection class	III Safety extra-low voltage	II
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH

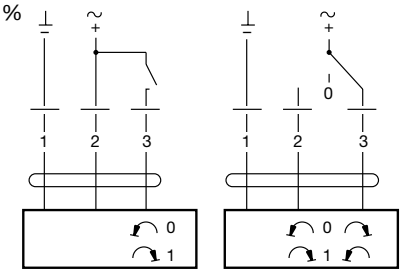


	LM 24 A-SX
Power supply	AC 19,2–28,8 V, 50/60 Hz
DC 21,6–28,8 V	
Power consumption	2 W
For wire sizing	4 VA
Connection	Cable 1 m, 4×0,75 mm2
Operating angle	Max. 95°, adjustable 0–100 %
Torque at nominal voltage	Min. 5 Nm
Direction of rotation	Switch selectable 0/1
Position at Y=0 V	Switch selectable 0 ↶ or 1 ↷
Position indication	Mechanical
Running time for 90°	150 s
Sound power level	35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 to +50 °C
Ambient humidity	95 % RH

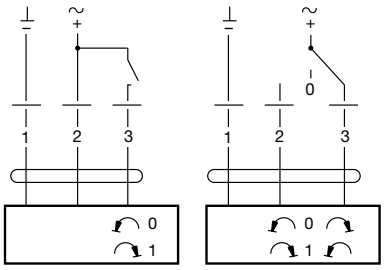


Dampers

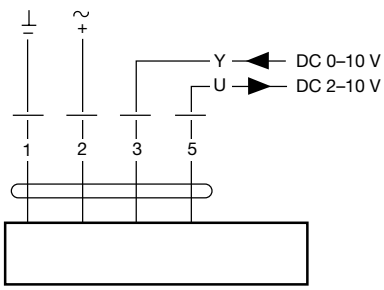
	NM 24 A-F	NM 230 A-F
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	1,5 W	2,5 W
For wire sizing	3,5 VA	6 VA
Connection	Cable 1 m, 3×0,75 mm2	Cable 1 m, 3×0,75 mm2
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100 %
Torque at rated voltage	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 % RH	95 % RH



	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, 3×0,75 mm2	Cable 1 m, 3×0,75 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 insulated
Protection type	IP 54	IP 54
Ambient temperature range	-30 to +50°C	-30 to +50°C
Ambient moisture	95 % RH	95 % RH

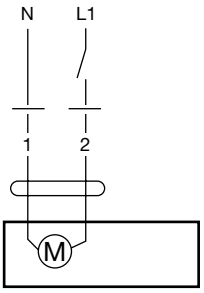


	GM 24 A	GM 230 A
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 19,2–28,8 V	AC 85–265 V, 50/60 Hz
Power consumption	4,5 W	4,5 W
For wire sizing	7 VA	7 VA
Connection	Cable 1 m, 3×0,75 mm2	Cable 1 m, 3×0,75 mm2
Operating angle	Max. 95°, adjustable 0–100%	Max. 95°, adjustable 0–100%
Torque at rated voltage	Min. 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

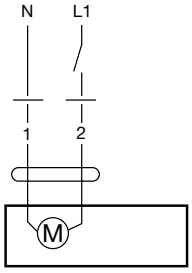


Dampers

	TF 24	TF 230
Power supply	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 mm²	Cable 1 m, 2×0,75 mm²
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	Optional through right or
left-hand installation L/R		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

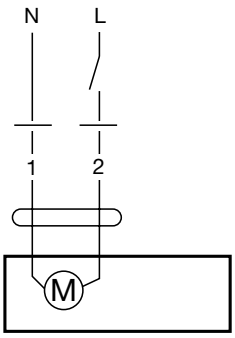


	LF 24	LF 230
Power supply	2AC 19,2–28,8 V, 50/60 Hz DC 21,6–28,8 V	AC 198–264 V, 50/60 Hz
Power consumption		
– during opening	5 W	5 W
– stand-by	2,5 W	3 W
For wire sizing	7 VA	7 VA
Connection	Cable 1 m, 2×0,75 mm²	Cable 1 m, 2×0,75 mm²
Operating angle, adjustable	Mech. limited to 95°	Mech. limited to 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	Optional through right or
	left-hand installation L/R	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

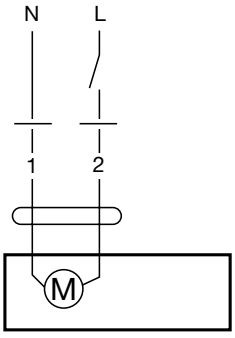


Dampers

	SFA (both 24 V and 230 V power supplay)
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 21,6–137,5 V
Power consumption	
– during operation	7 W
– stand-by	3,5 W
For wire sizing	18 VA (I_{ma}x 20 A @ 5 ms)
Connection	Cable 1 m, 2×0,75 mm2
Operating angle, adjustable	Mech. limited to 95°
Torque at rated voltage	
– motor	Min. 20 Nm
– spring bias	Min. 20 Nm
Direction of rotation	Optional through right or left-hand installation L/R
Position indication	Mechanical
Running time	
– motor	≤ 75 s (0 … 20 Nm)
– return spring	≤ 20 s @ -20 … 50°C / max. 60 s @ -30°C
Sound power level	
– motor	≤ 45 dB (A)
– return spring	≤ 62 dB (A)
Degree of protection	IP 54
Ambient temperature range	-30 to +50 °C
Ambient temperature range	-30 to +50 °C



	EF 24A	EF 230A
Power supply	AC 19,2–28,8 V, 50/60 Hz DC 21,6–28,8 V	AC 90–264 V, 50/60 Hz
Power consumption		
– during operation	9,5 W	9 W
– stand-by	4,5 W	4,5 W
For wire sizing	16 VA	21 VA
Connection	Cable 1 m, 2×0,75 mm2	Cable 1 m, 2×0,75 mm2
Operating angle, adjustable	Mech. limited to 95°	Mech. limited to 95°
Torque at rated voltage		
– motor	Min. 30 Nm	Min. 30 Nm
– spring bias	Min. 30 Nm	Min. 30 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 (0–30 Nm)	≤ 75 s (0–30 Nm)
– return spring	≤ 20 s	≤ 20 s
Sound power level		
– motor	≤ 55 dB (A)	≤ 55 dB (A)
– return spring	≤ 71dB (A)	≤ 71dB (A)
Degree of protection	IP 54	IP 54
Ambient temperature range	-30 to +50 °C	-30 to +50 °C



Dampers

LKSR

Assembly

In order to fulfil the requirements for air-tightness class C, the damper must be installed as per ‘Assembly Instruction Rectangular air duct systems’.

For the damper, there is the option of adding a motor later on.

The damper allows a 50 mm duct insulation without the knob being hidden. For 100 mm insulation, an insulation cup, IK, is available.

Balancing

On LKSR the damper blade is adjusted through 0–90° (0° = fully open, 90° = completely closed) using the knob in the cup. Locking is performed using screws for Pozidrive (PZD2) and the damper angle can be read off a stamped grade on the edge of the cup.

Manual damper can be supplemented with a sturdy handle to facilitate adjustment.

Maintenance

The damper and motor normally don't require any maintenance.

Constant/variable flow dampers

DAU, DA2EU, DAVU

Assembly

In order to fulfil the requirements for air-tightness class D, the devices must be installed as per ‘Assembly Instruction Lindab Safe’.

The devices must be installed with the air flow in the direction of the arrow.

The devices allow 50 mm duct insulation without the scale or any motor being hidden.

Pressure range

50–1000 Pa over the unit.

Interference sensitivity

In order to achieve stated precision for the set flow, a straight duct of at least 3×d before and 1.5×d after the devices is required. A assembly close to a source of interference (bend, saddle, etc.) reduces control accuracy and the flow can deviate from the set value.

Changes in direction

The units are independent of their direction of installation; you can deviate from the projected direction and install them in any direction you like without affecting accuracy.

Systematic error

Control accuracy

The devices are calibrated within their entire operating range at the factory. This means the devices keep the flow constant to within approx. ±5 to ±10 % of the set flow. Larger deviations occur at lower flows, especially with small sizes.

Maintenance

The devices normally don't require any maintenance, but should be protected from contaminated air wherever possible.

CE marking

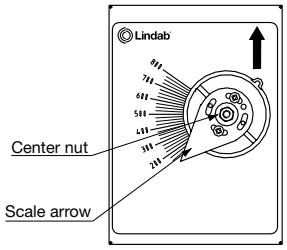
Our dampers with electrical actuator are regarded as a component in the duct system and does not need to be CE marked separately.

Their electrical actuators on the other hand are part of the electrical system and are CE marked. Declaration of compliance with the essential requirements can be found at www.belimo.ch .

Constant/variable flow dampers

DAU

The flow is adjusted by loosening the central nut and using the knob to turn the scale arrow so that it points to the desired flow on the scale. The nut is then locked.

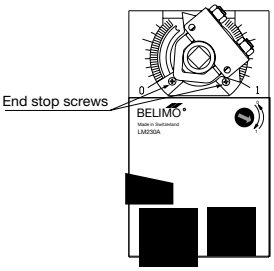


DA2EU

Setting of flows

The two flows are set by moving the end stops. At delivery the stops are set at largest possible distance. If you want to limit the flow span proceed in the following way:

1. The one flow is set by turning the spindle so that the scale arrow points at the desired flow and thereafter move one of the end stops close up to the clamp's one heel and lock the stop there.
2. The other flow is set by turning the spindle so that the scale arrow points at this flow and thereafter move the other end stop close up to the clamp's other heel and lock this stop there.



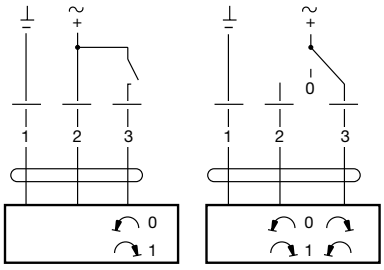
Choice of flows

The one flow is chosen by feeding an operating voltage. This voltage, 24 or 230 V, turns the motor to one of the stops.

The other flow is chosen by breaking the operating voltage. The motor then goes to the other stop.

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 mm2	Cable 1 m, 3×0,75 mm2
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

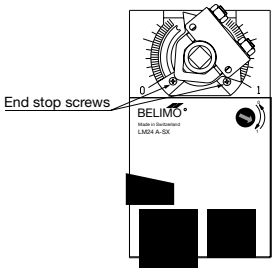


Constant/variable flow dampers

DAVU

Setting of flow limits

The two flow limits are set by moving the end stops. At delivery the stops are set at largest possible distance. If you want to limit the flow span proceed in the following way:



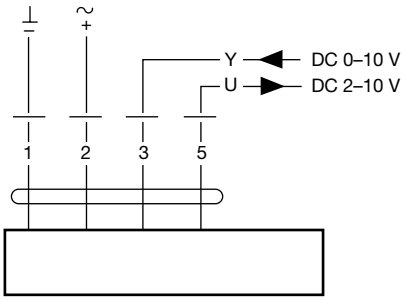
1. The one flow limit is set by turning the spindle so that the scale arrow points at the desired flow and thereafter move one of the end stops close up to the clamp's one heel and lock the stop there.
2. The other flow limit is set by turning the spindle so that the scale arrow points at this flow and thereafter move the other end stop close up to the clamp's other heel and lock this stop there.
3. The motor shall then be adapted so that the regulating span 2–10 V adapts to the thus set flow span. This is done by a push on the "gear disengagement" button. The motor then automatically performs a stroke between the flow limits.

Choice of flow

The flow is chosen by feeding a control signal. This signal, 2–10 V, sets the motor in a proportional position between the flow limits.

Technical data for the motor

	LM 24 A-SX
Power supply	AC 19,2–28,8 V, 50/60 Hz
	DC 21,6–28,8 V
Power consumption	2 W
For wire sizing	4 VA
Connection	Cable 1 m, 4×0,75 mm²
Operating angle	Max. 95°, adjustable 0–100 %
Torque at nominal 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 90°	150 s
Sound power level	35 dB (A)
Protection class	III Safety extra-low voltage
Protection type	IP 54
Ambient temperature range	-30 to +50 °C
Ambient humidity	95 % RH



Air stream operated dampers

CARU, CAR

Assembly

CARU

In order to fulfil the requirements of tightness class D the damper must be installed as per 'Assembly Instruction Lindab Safe'.

CAR

The damper is installed by simply placing it inside a duct.

Measurement

The dampers normally don't need any maintenance.

Flow meters

FMU

Assembly

In order to fulfil the requirements for air-tightness class D, the devices must be installed as per ‘Assembly Instruction Lindab Safe’.

The devices allow 100 mm duct insulation without sticker or measuring points being hidden.

For optimum readability (regardless of the installation position), the plate with the sticker can be turned, folded up to prevent it disappearing in any insulation or to be easily removed and positioned separately from the device.

Measurement

By measuring the pressure difference Δp in Pa at the measuring points, you can achieve a flow q in l/s using the equation on the devices.

The specified flows only apply for air with a density of 1.2 kg/m^3. For air of another density (ρ_{other}) the flow ($q_{other\_density}$) is achieved as per the formula:

$$q_{other\_density} = q_{equation} \times \sqrt{\frac{1,2}{\rho_{other}}}$$

Dimension mm	k-factor
80– 63	4,40
100– 80	7,32
125–100	11,2
160–125	18,0
200–160	29,4
250–200	45,7
315–250	73,3
400–315	116
500–400	191
630–500	283

Systematic error

Straight stretches are required in order to achieve flows as per equations with specified accuracy. The systematic error m_2 is 5% and 10% below the minimum requirements for straight stretches as specified. For these minimum straight requirements – do not install measuring points in line with the nearest bend’s inside radius.

Maintenance

The devices normally don't require any maintenance.

Cleaning

FMU does not limit cleaning opportunities.

Damper with flow meter

DIRU

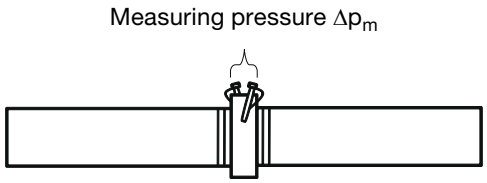
Assembly

Mount the dampers according to “Assembly Instructions Lindab Safe” to meet with the requirements for tightness class C.

Consider required straight distance after or before disturbance, as mentioned on the card attached to the measurement nozzles, to obtain accurate flow measurement. Dampers with dimension 400, 500 and 630 are provided with transport protections. Remove these before assembly.

The damper may not be loaded with weight from connected ducts, specially when assembled vertically.

Measuring



The balancing graphs show the flow, q, as a function of the measured pressure, Δp_m, in the measure nozzles.

$q = k \cdot \sqrt{\Delta p_m}$

The formula is only accurate for air with the density 1,2 kg/m³. For air with other density, (ρ_{other}), the flow, (q_{other}), is given according to the formula.

$$q_{other} = q_{equation} \times \sqrt{\frac{1,2}{\rho_{other}}}$$

The balancing graphs should only be used to balance the system. They should not be used to calculate the pressure drop in the system, in those cases the dimensioning graphs should be used.

Measurement accuracy

Consider required straight distance after or before disturbance, as mentioned on the card attached to the measurement nozzles, to obtain accurate flow measurement.

Balancing

Connect the measuring hoses to the damper measuring nozzles.

Loosen the locking screws (3), which have Philips slot no.1. adjust the handle so that requisited pressure drop receives. Fasten the screws (3) and remount the tightness screws (2), so that the slot gets airtight.

For dimension 400,500 and 630 - remove the tightness screws (2). Then loosen the locking screws (3), which have Philips slot no. 2. Adjust the handle so that requisited pressure drop receives. Fasten the screws (3) and remount the tightness screws (2), so that the slot gets airtight.

Disconnect the hoses and plug the nozzles.

Maintenance

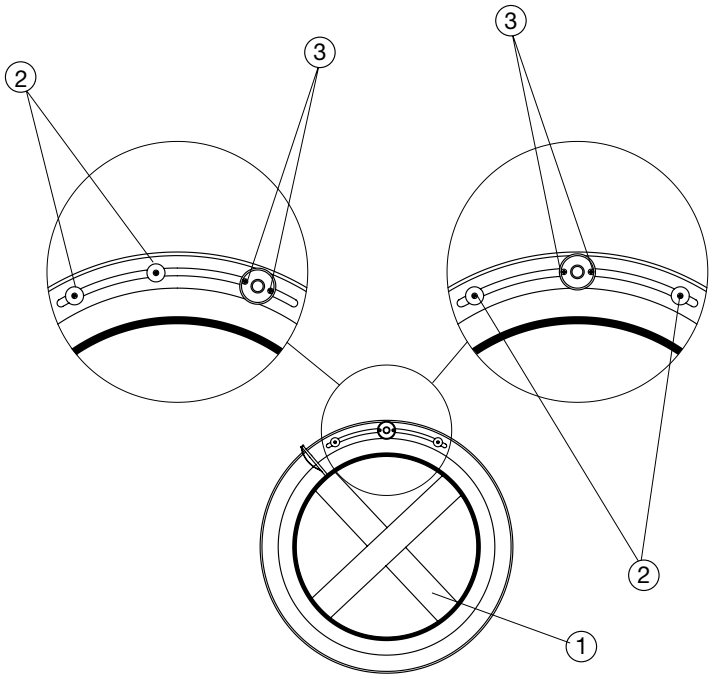
The product normally doesn't requires any maintenance.

Cleaning

By fully open the damper, one get access to the duct. Do not forget to readjust the damper after cleaning.

Damper with flow meter

DIRU



To set the air flow:

1. Determine the k factor on the scale on the damper, k.
2. Measure the pressure difference by connecting a measuring device to the damper's nozzles, Δp_m.
3. Calculate the flow by using the formula, $q=k \cdot \sqrt{\Delta p_m}$.
4. Compare the calculated flow to the required.
5. Adjust the damper if necessary and repeat steps 1-4 until you get the required flow.

Don't forget to plug the nozzles after measuring.

Damper with flow meter

DIRU

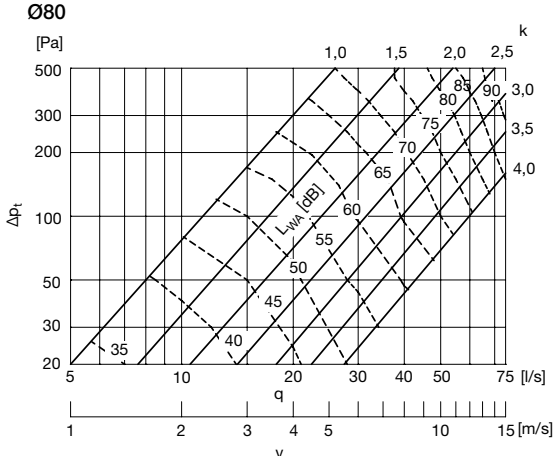
Pressure drop graphs with noise generation for dimensioning

The dimensioning graphs show the pressure drop over the damper with flow meter, Δp_t. They should be used to determine the pressure drop and to provide information about sound power levels at different settings.

Flow graphs for balancing

The balancing graphs show the flow as a function of the measured pressure, Δp_m. These graphs should be used to balance the system.

Ø80



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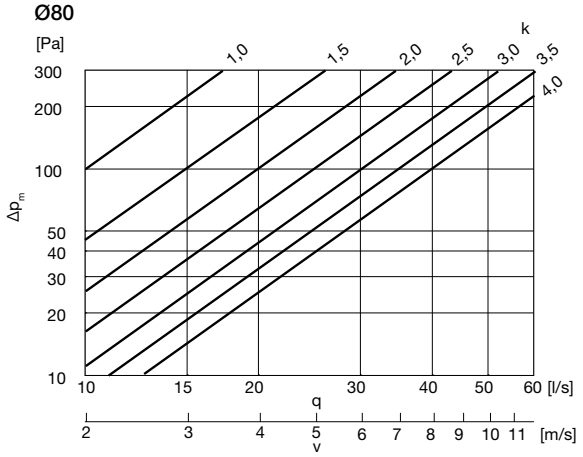

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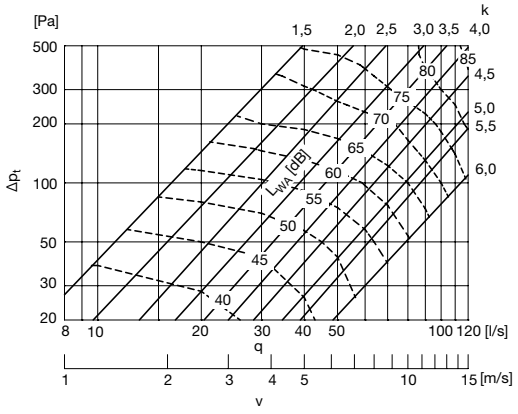

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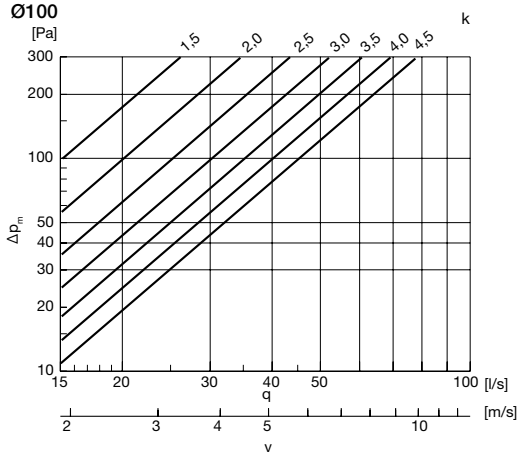

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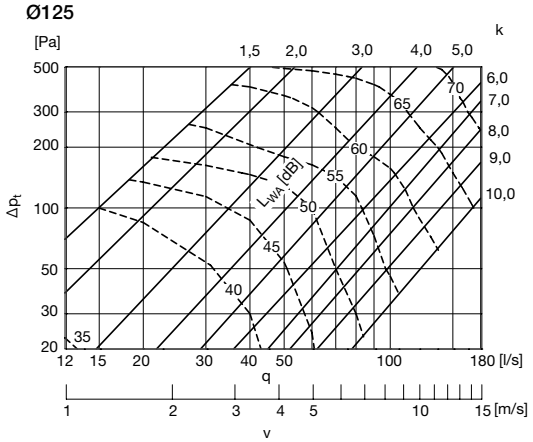

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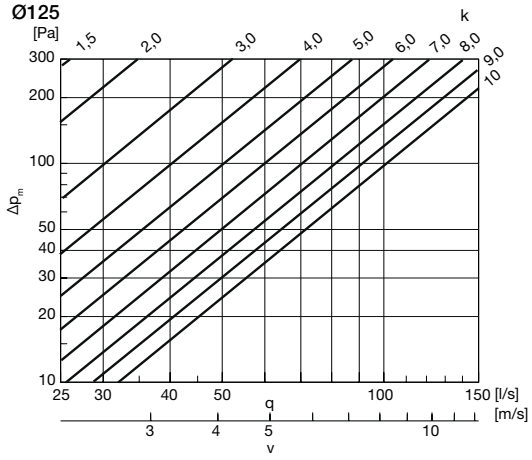
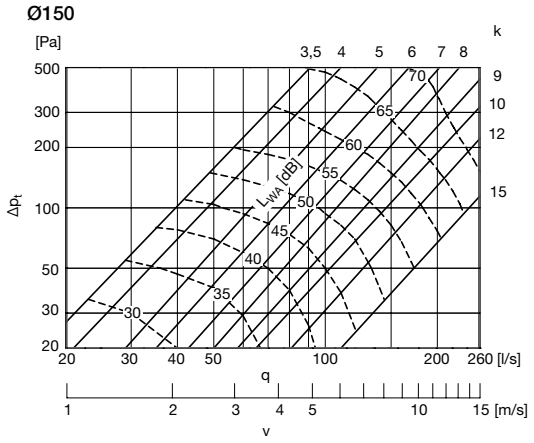
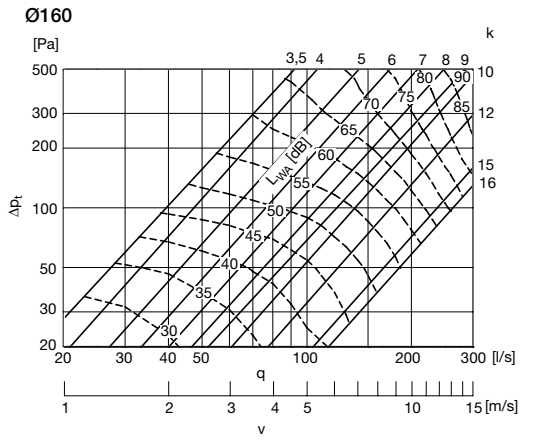


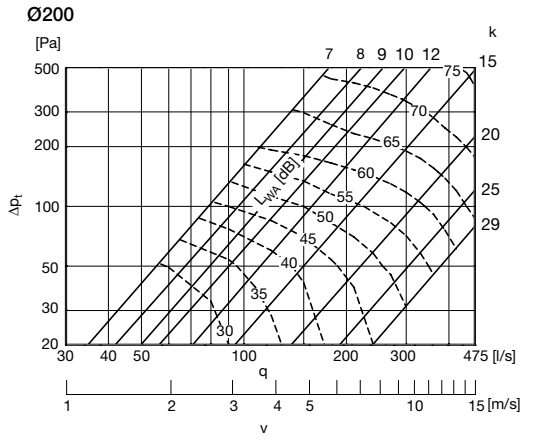
Damper with flow meter

DIRU

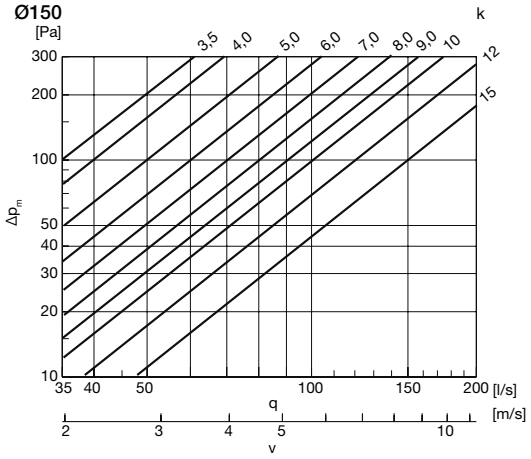
Pressure drop graphs with noise generation for dimensioning

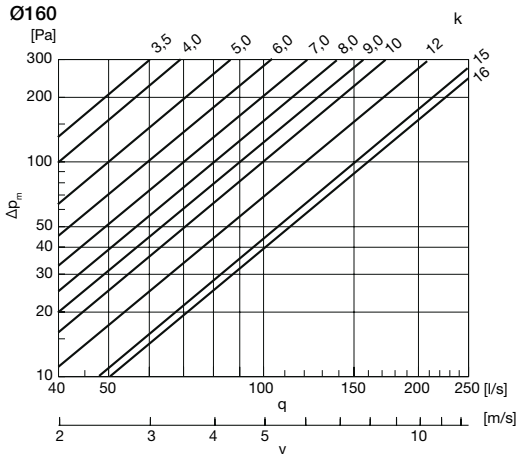


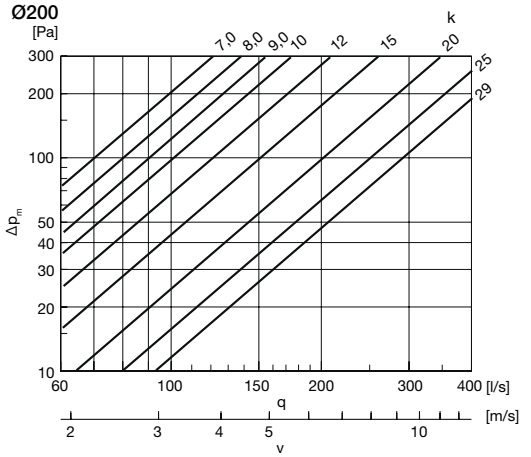




Flow graphs for balancing





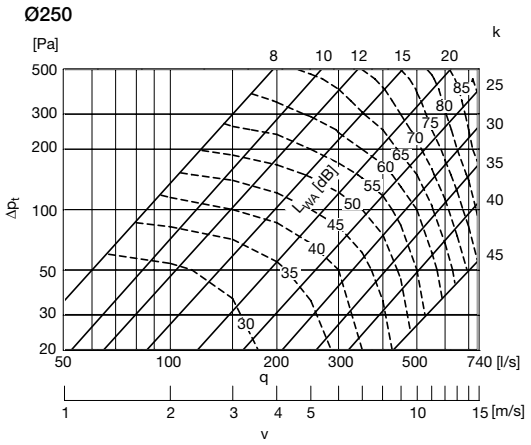


Damper with flow meter

DIRU

Pressure drop graphs with noise generation for dimensioning

Ø250



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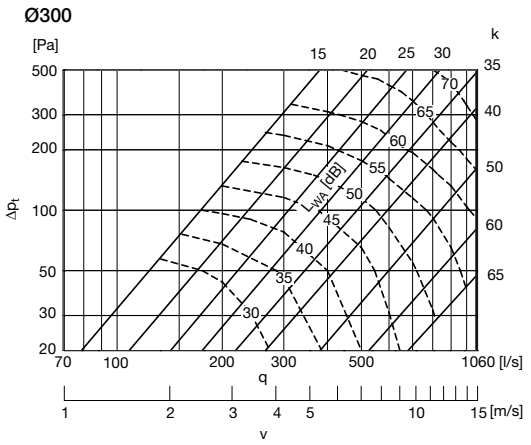

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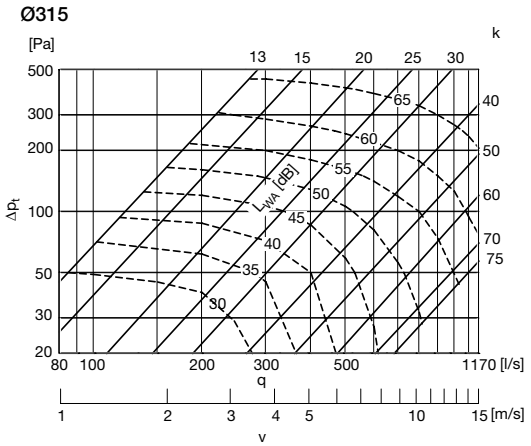
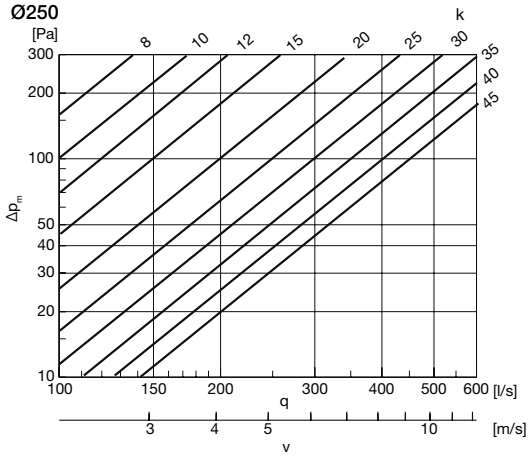


Flow graphs for balancing

Ø250



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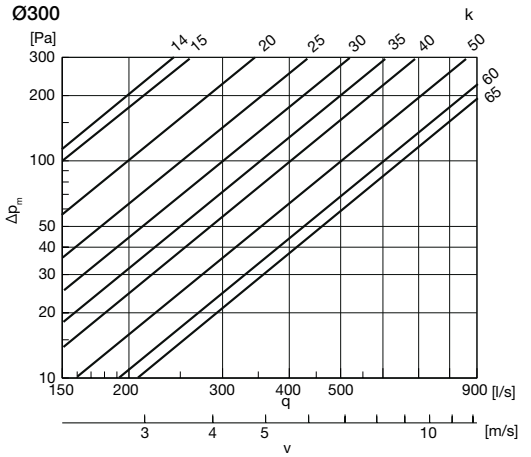

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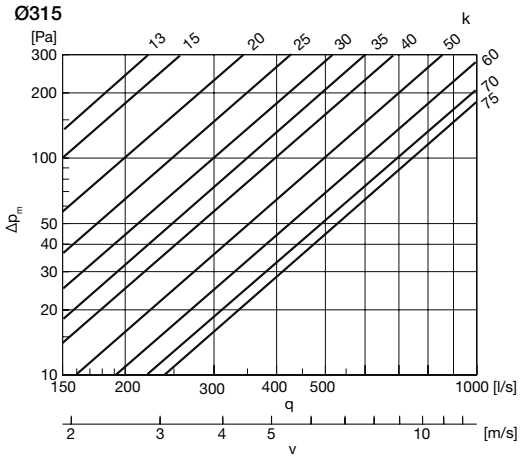
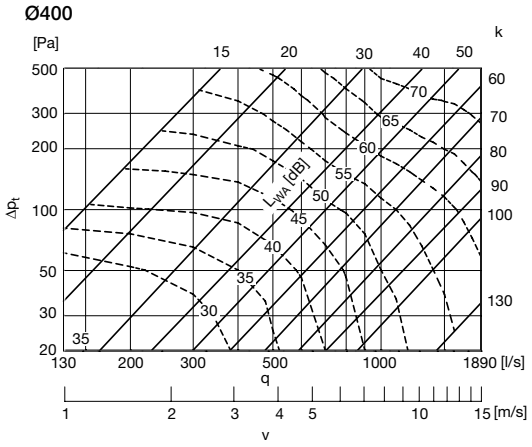
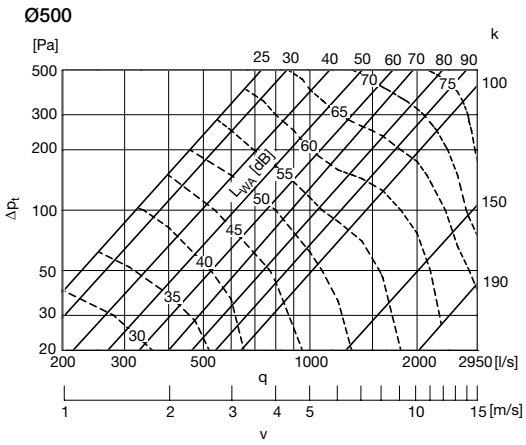


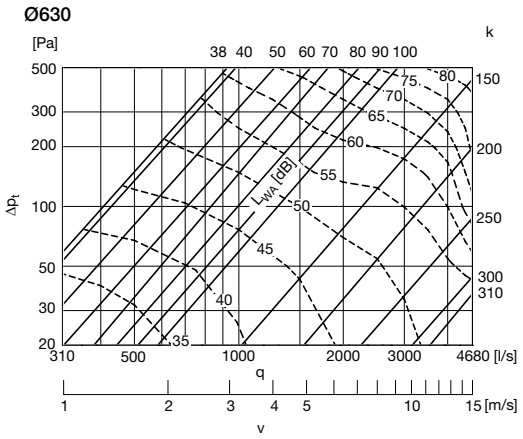
Damper with flow meter

DIRU

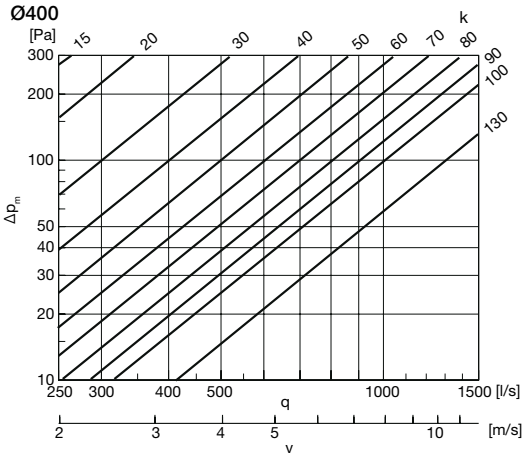
Pressure drop graphs with noise generation for dimensioning

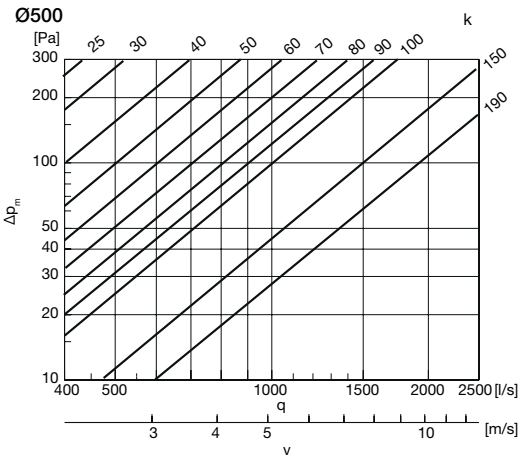


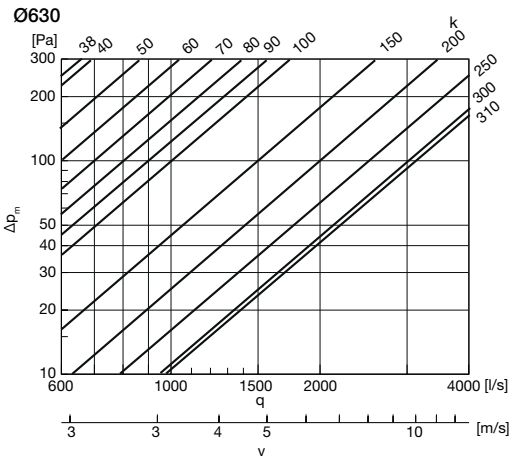




Flow graphs for balancing





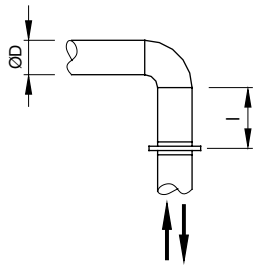
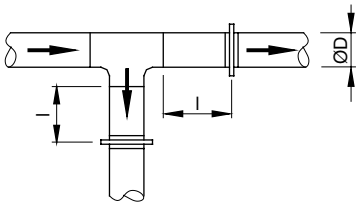
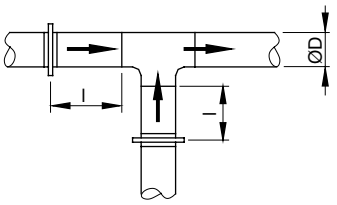
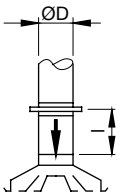


Damper with flow meter

DIRU

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 = straight distance before and after disturbances	Method error ± 7%
	l ≥ 1 D
	l ≥ 1 D
	l ≥ 3 D
	l ≥ 3 D

UltraLink®

Lindab UltraLink® Controller FTCU

Mounting instruction

Technical information

Lindab UltraLink® Monitor FTMU

Mounting instruction

Technical information

Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

Lindab | For a better climate

Lindab®
For a better climate