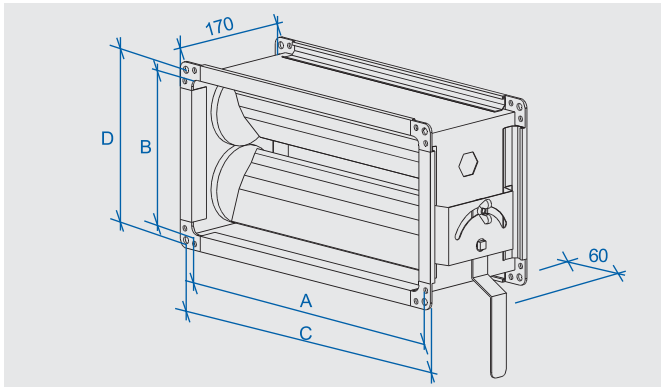


LKR Manual Blade Dampers



	A	B	C	D	m	graph
	(mm)	(mm)	(mm)	(mm)	(kg)	(curve no.)
LKR 30-15	300	150	320	170	4	1
LKR 40-20	400	200	420	220	4	1
LKR 50-25	500	250	520	270	5	2
LKR 50-30	500	300	520	320	6	1
LKR 60-30	600	300	620	320	7	1
LKR 60-35	600	350	620	370	7	2
LKR 70-40	700	400	720	420	8	1
LKR 80-50	800	500	820	520	10	1
LKR 90-50	900	500	930	530	11	1
LKR 100-50	1000	500	1030	530	13	1

Application

The LKR tight blade damper for the square duct is mostly used to regulate an air-handling system or manually close individual duct branches.

Operating Conditions and Position

This damper is intended for indoor and outdoor 1) applications in air flow free of solid, fibrous, sticky, or aggressive impurities. Operating position is arbitrary, and the range of operating temperatures can be from -30 °C to +70 °C. Pressure loss-air flow rate-opening angle correlation is shown in the graph "Blade damper pressure losses".

Dimensional and Type Range

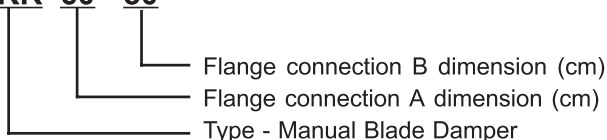
LKR blade dampers are manufactured in ten Vento dimensional ranges, refer to the table.

Materials and Design

The LKR blade damper is equipped with a hand lever and plastic grip which can be arrested in any position using a wing screw. The external casing and connecting flanges are made of galvanized steel sheets. The connecting bar flanges are 20 mm (for sizes from 30-15 to 80-50) or 30 mm (for sizes 90-50 and 100-50) high. Contra-rotating vanes (blades) are made of galvanized, hollow sectional steel. Individual blades are equipped with elastic plastic sealing so that the edge of one blade fits in the sealed groove of the other. Side sealing is ensured by plastic tooth-wheels seated in the bearings, which are also made of plastic.

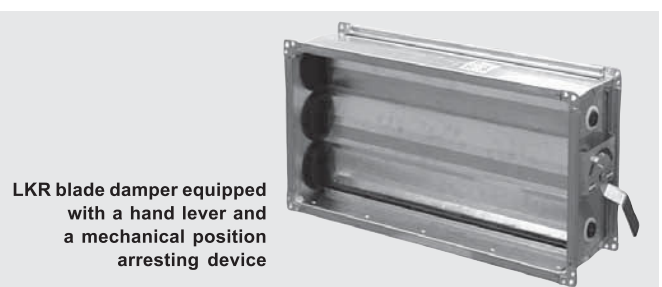
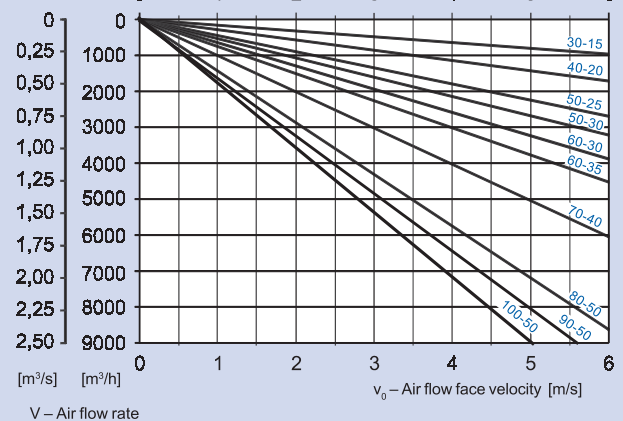
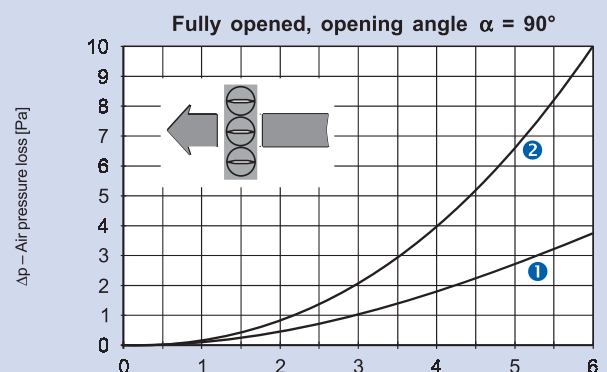
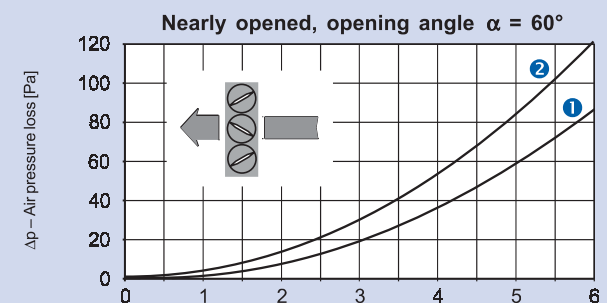
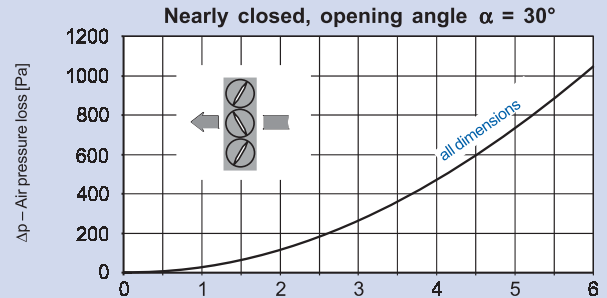
Example of designation

LKR 60 - 50

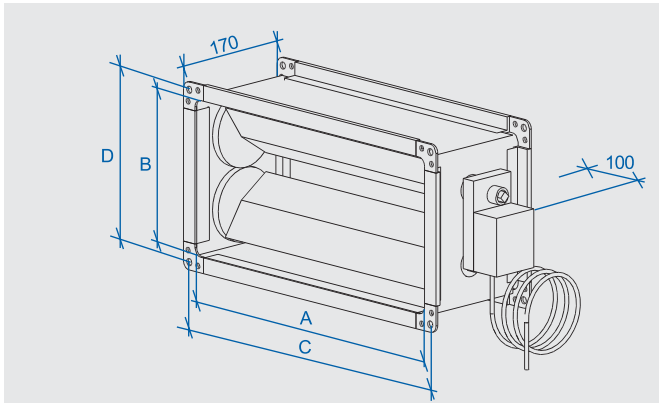


⁽¹⁾ If exposed to intensive moisture condensation or weather conditions, it is necessary to coat the dampers with anticorrosive paint, provide the actuator and movable elements with protective shielding against direct effect of precipitation.

Air Pressure Loss of Blade Dampers LKR, LKS, LKSX, LKSF



LKS Driven Blade Dampers



	A	B	C	D	m ±10%	graph
	(mm)	(mm)	(mm)	(mm)	(kg)	(curve no.)
LKS 30-15/..	300	150	320	170	5	①
LKS 40-20/..	400	200	420	220	5	①
LKS 50-25/..	500	250	520	270	6	②
LKS 50-30/..	500	300	520	320	7	①
LKS 60-30/..	600	300	620	320	8	①
LKS 60-35/..	600	350	620	370	8	②
LKS 70-40/..	700	400	720	420	9	①
LKS 80-50/..	800	500	820	520	11	①
LKS 90-50/..	900	500	930	530	12	①
LKS 100-50/..	1000	500	1030	530	14	①

Application

The LKS tight blade damper is mostly used to close square air-handling ducting. After being connected to the control system, the damper's actuator ensures automatic closing, respectively opening of the air inlet (outlet). The damper can also be used for actuated closing of individual duct branches.

Operating Conditions and Position

The damper is designed for indoor (1 and outdoor use in air flow free of solid, fibrous, sticky, aggressive, respectively explosive impurities. Operating position is arbitrary, and the range of operating temperatures can be from -30 °C to +50 °C. Pressure loss-air flow rate-blade opening angle correlation is shown in the graph "Blade damper pressure losses".

Dimensional and Type Range

These blade dampers are manufactured in ten Vento dimensional ranges, refer to the table.

Materials and Design

The LKS closing damper is equipped with the LM 24 actuator (24 V voltage) or LM 230 actuator (230 V voltage). The external casing and connecting flanges are made of galvanized steel sheets. The connecting bar flanges are 20 mm (for sizes from 30-15 to 80-50) or 30 mm (for sizes 90-50 and 100-50) high. Contra-rotating vanes (blades) are made of galvanized, hollow sectional steel. Individual blades are equipped with elastic plastic sealing so that the edge of one blade fits in the sealed groove of the other. Side sealing is ensured by plastic tooth-wheels and bearings, which are also made of plastic.

Actuator

A single or two-conductor two-stage control is used. Manual adjustment can be performed using the release button (the gear is taken out of operation as long as this button is pressed). After releasing this button, the actuator will return to the default position. Working angle can be li-

imited by mechanical stops. The actuator is protected against overloading; there are no end limit switches (it automatically stops on the stop).

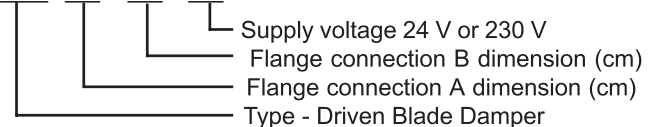
Installation, Maintenance and Service

Before installation, paste self-adhesive sealing onto the connecting flange face. To connect the damper flanges, use galvanized M8 screws and nuts (M10 only for dimensions 90-50 and 100-50). It is necessary to ensure conductive connection of the flange using fan-washers placed on both sides at least on one flange connection. To brace the flanges with a side longer than 40 cm, it is advisable to connect them in the middle with another screw clamp which prevents flange bar gapping.

If installed into a ceiling, space for the opening enabling inspection of the actuator must be taken into account. The damper must not be exposed during installation or operation to any torsion. After installation, it is necessary to check free movement of the blades by pressing the release button on the actuator. Deformed blades can cause increased resistance, and the actuator will be automatically stopped.

Example of designation

LKS 60 - 30 / 24

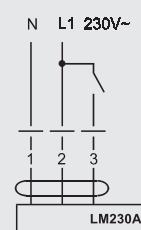
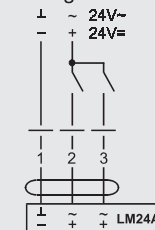
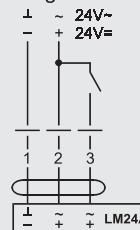


Wiring diagram of damper actuators

LKS .. - .. /24

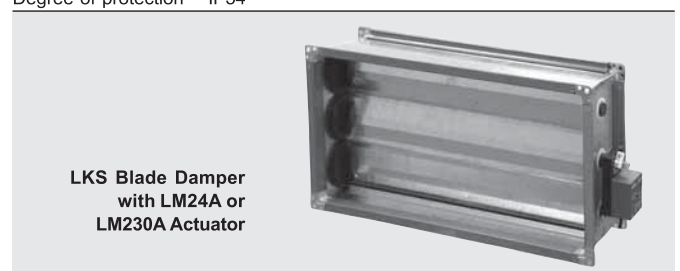
LKS .. - .. /230

Single-conductor wiring Two-conductor wiring



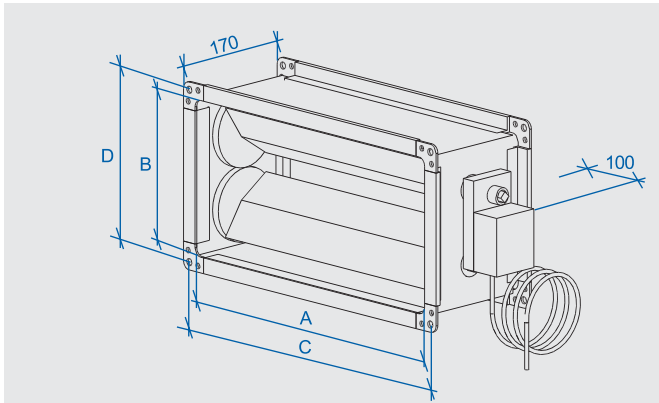
Technical Data - LM 24A and LM 230A Actuators

Power supply voltage	LM 24A : 24V~ ±20%, 50/60Hz or 24V=, ± 20% LM 230A : 230V~, 50/60Hz), ± 5%
Dimensioning	LM 24A : 2 VA / LM 230A : 4 VA
Input power	LM 24A : 1 W / LM 230A : 2 W
Direction of rotation	can be selected by the left/right (L/R) selector
Manual adjustment	using the button, automatic return to the default position
Torque	min. 5 Nm (at the rated voltage)
Working angle	max. 95° (mechanical stops, adjustable 0...100%)
Adjustment time	150 s
Noise level	max. 35 dB (A)
Position indicator	mechanical
Protection Class	LM 24A : III (low voltage) LM 230 : II (double insulation)
Degree of protection	IP54



(1) If exposed to intensive moisture condensation or weather conditions, it is necessary to coat the dampers with anticorrosive paint, and provide the actuator and movable elements with protective shielding against direct effect of precipitation.

LKSX Driven Blade Dampers



	A	B	C	D	m ±10%	graf
	(mm)	(mm)	(mm)	(mm)	(kg)	(curve no)
LKSX 30-15/24	300	150	320	170	5	①
LKSX 40-20/24	400	200	420	220	5	①
LKSX 50-25/24	500	250	520	270	6	②
LKSX 50-30/24	500	300	520	320	7	①
LKSX 60-30/24	600	300	620	320	8	①
LKSX 60-35/24	600	350	620	370	8	②
LKSX 70-40/24	700	400	720	420	9	①
LKSX 80-50/24	800	500	820	520	11	①
LKSX 90-50/24	900	500	930	530	12	①
LKSX 100-50/24	1000	500	1030	530	14	①

Application

The LKSX tight blade regulating damper is mostly used to mix air, respectively to close square air-handling ducting. The accurate position of the damper is set by the actuator controlled by the control system.

Operating Conditions and Position

LKSX blade dampers are designed for indoor and outdoor (1 use in air flow free of solid, fibrous, sticky, aggressive or explosive impurities. Operating position is arbitrary, and the range of operating temperatures can be from -30 °C to +50 °C. Pressure loss - air flow rate - blade opening angle correlation is shown in the graph "Blade damper pressure losses".

Dimensional and Type Range

These blade dampers are manufactured in ten Vento dimensional ranges, refer to the table.

Materiály a provedení

As standard, the LKSX regulating damper is equipped with an LM 24X actuator (for details, refer to the table). The external casing and connecting flanges are made of galvanized steel sheets. The connecting bar flanges are 20 mm (for sizes from 30-15 to 80-50) or 30 mm (for size 100-50) high. Contra-rotating vanes (blades) are made of galvanized, hollow sectional steel. Individual blades are equipped with elastic plastic sealing so that the edge of one blade fits in the sealed groove of the other. Side sealing is ensured by plastic tooth-wheels and bearings, which are also made of plastic.

Actuator

The actuator is proportionally set to the position given by the unified control signal of 0 to 10V. Measuring voltage signal U serves as a feedback signal for an electrical representation of the damper position 0...100%. The angle of the damper shift can be gradually adjusted by an integrated potentiometer. Measuring voltage signal U is automatically adapted in the actuator. Manual adjustment can be performed using the rele-

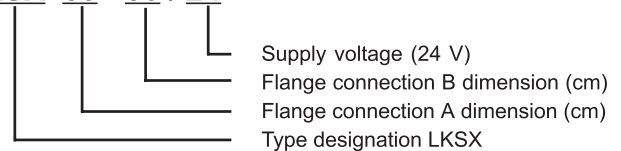
ase button (the gear is taken out of operation as long as this button is pressed). After releasing this button, the actuator will return to the default position.

Installation, Maintenance and Service

Before installation, paste self-adhesive sealing onto the connecting flange face. To connect the damper flanges, use galvanized M8 screws and nuts, for dimensions 90-50 and 100-50 use M10 screws. It is necessary to ensure conductive connection of the flange using fan-washers placed on both sides at least on one flange connection. To brace the flanges with a side longer than 40 cm, it is advisable to connect them in the middle with another screw clamp which prevents flange bar gapping. If installed into a ceiling, space for the opening enabling inspection of the actuator must be taken into account. The damper must not be exposed during installation or operation to any torsion. After installation, it is necessary to check free movement of the blades by pressing the release button on the actuator. Deformed blades can cause increased resistance, and the actuator will be automatically stopped. The wiring connection can be performed via the wiring terminal box. The actuator is equipped with a 1m-long 3 x 0.75 mm² cable.

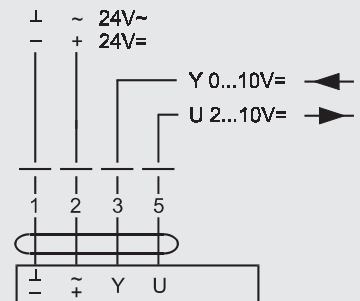
Example of designation

LKSX 60 - 30 / 24



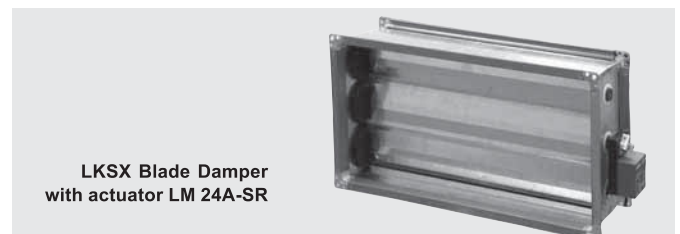
Damper actuator wiring diagram

LKSX ... /24



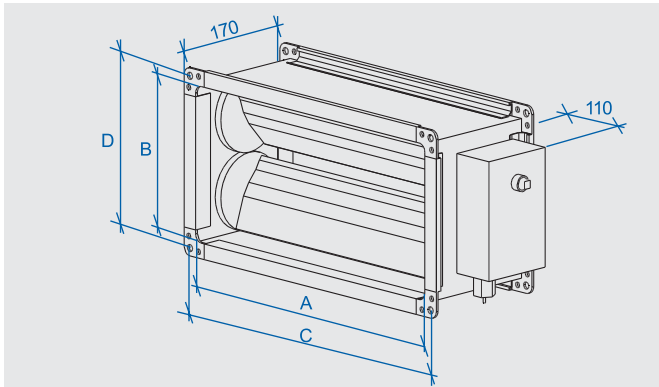
Technical Data - LM 24A-SR Actuator

Power supply voltage	24V~ ±20%, 50/60Hz, 24V= ±10%
Dimensioning, input power	2 VA, 1 W
Control signal Y	0...10V=, input impedance 100kΩ
Working range	2...10V= (for the set working angle)
Measuring voltage signal U2...10V=	≤ 0,5mA (for the set working angle)
Direction of rotation	can be selected by the left/right (L/R) selector (L/R)
Manual adjustment	using the button, automatic return to the default position
Torque	min. 5 Nm (at the rated voltage)
Working angle	max. 95° (adjustable by the potentiometer within the range 20...100%)
Adjustment time	35 s
Noise and Noise Level	max. 35dB (A)
Position indicator	mechanical
Protection class	III (low voltage)
Degree of protection	IP54



LKSX Blade Damper with actuator LM 24A-SR

LKSF Driven Blade Dampers



	A	B	C	D	m ±10%	graf
	(mm)	(mm)	(mm)	(mm)	(kg)	(curve no)
LKSF 30-15/230	300	150	320	170	6	①
LKSF 40-20/230	400	200	420	220	6	①
LKSF 50-25/230	500	250	520	270	7	②
LKSF 50-30/230	500	300	520	320	8	①
LKSF 60-30/230	600	300	620	320	9	①
LKSF 60-35/230	600	350	620	370	9	②
LKSF 70-40/230	700	400	720	420	10	①
LKSF 80-50/230	800	500	820	520	12	①
LKSF 90-50/230	900	500	930	530	13	①
LKSF 100-50/230	1000	500	1030	530	15	①

Application

The LKSF tight blade damper with an emergency function is mostly used to close square air-handling ducting. If the power supply fails, the actuator will ensure quick closure of the damper; therefore, the LKSF damper is recommended as one of the elements of antifreeze protection in systems equipped with a water heater.

Operating Conditions and Position

The damper is designed for indoor (1 and outdoor use in air flow free of solid, fibrous, sticky, aggressive, respectively explosive impurities. Operating position is arbitrary, and the range of operating temperatures can be from -30 °C to +50 °C. Pressure loss - air flow rate - blade opening angle correlation is shown in the graph "Blade damper pressure losses".

Dimensional and Type Range

These blade dampers are manufactured in ten Vento dimensional ranges, refer to the table.

Materials

As standard, the LKSF regulating damper is equipped with an LF 230 actuator (for details, refer to the table). The external casing and connecting flanges are made of galvanized steel sheets. The connecting bar flanges are 20 mm (for sizes from 30-15 to 80-50) or 30 mm (for sizes 90-50 and 100-50) high.

Contra-rotating vanes (blades) are made of galvanized, hollow sectional steel. Individual blades are equipped with elastic plastic sealing so that the edge of one blade fits in the sealed groove of the other. Side sealing is ensured by plastic tooth-wheels and bearings, which are also made of plastic.

Actuator

The actuator opens the damper and simultaneously takes up the return spring. If the power supply is interrupted, the damper is moved by the spring energy back to the closed (safety) position. The damper's angle of shift can be set by the inte-

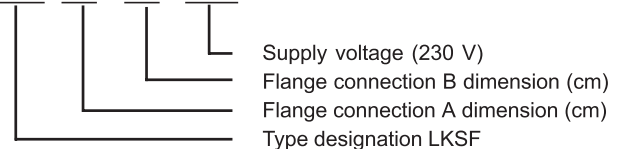
grated adjustable stop. The actuator is protected against overloading; there are no end limit switches (it automatically stops on the stop).

Installation, Maintenance and Service

Before installation, paste self-adhesive sealing onto the connecting flange face. To connect the damper flanges, use galvanized M8 screws and nuts (for dimensions 90-50 and 100-50 use M10 screws). It is necessary to ensure conductive connection of the flange using fan-washers placed on both sides at least on one flange connection. To brace the flanges with a side longer than 40 cm, it is advisable to connect them in the middle with another screw clamp which prevents flange bar gapping. If installed into a ceiling, space for the opening enabling inspection of the actuator must be taken into account. The damper must not be exposed during installation or operation to any torsion. After installation, it is necessary to check free movement of the blades. Deformed blades can cause increased resistance, and the actuator will be automatically stopped. The wiring connection can be performed via the wiring terminal box. The actuator is equipped with a 1m-long 2 x 0.75 mm² cable.

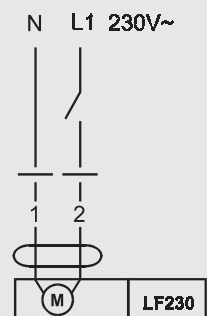
Example of designation

LKSF 60 - 30 / 230



Damper actuator wiring diagram

LKSF ... / 230



Damper actuator wiring diagram

Power supply voltage	230V~ ±15%, 50/60Hz
Dimensioning	7 VA (I _{max} 150mA, t=10ms)
Input power	5 W when taking up the spring 4W in resting position
Direction of rotation	optional left/right installation
Torque	min. 4Nm (at the rated voltage)
Working angle	max. 95° (adjustable within the range 37...100%, integrated mechanical limiters of the working angle)
Adjustment time	motor 40...75 s, return spring 5 s
Noise Level	motor max. 50 dB (A), spring 62 dB (A)
Position indicator	mechanical
Protection Class	II (double insulation)
Degree of protection	IP54

LKSF Blade Damper with emergency actuator LF 230



(1) If exposed to intensive moisture condensation or weather conditions, it is necessary to coat the dampers with anticorrosive paint and provide the actuator and movable elements with protective shielding against direct effect of precipitation.