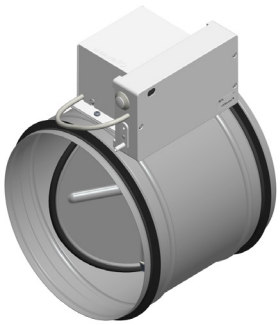
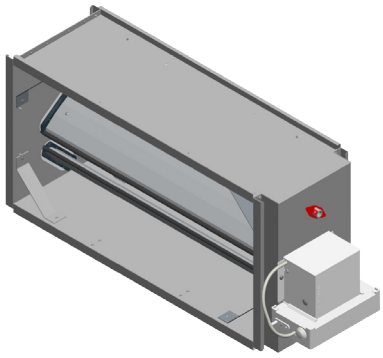
Product description

DCV-SP – Pressure control

SPL Version B03



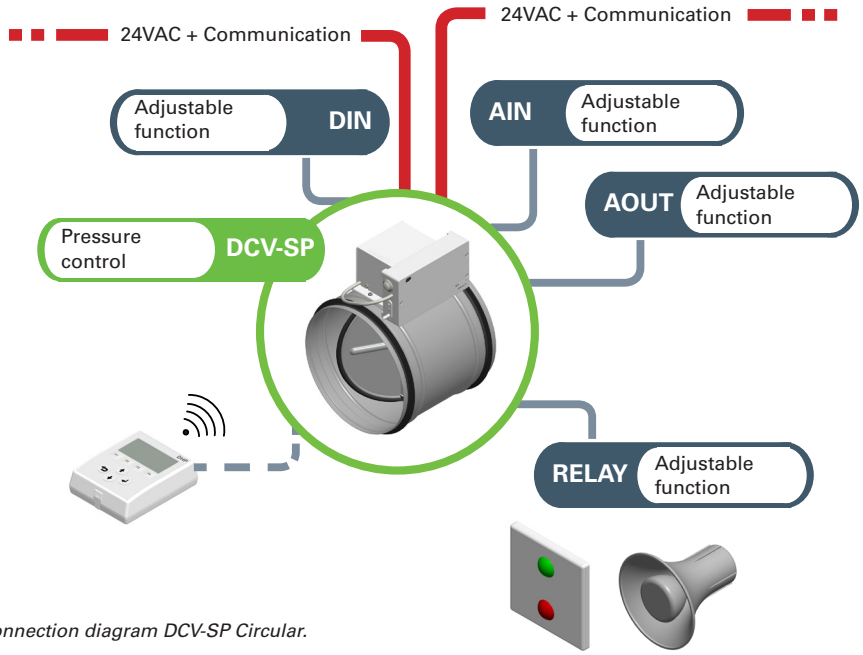
DCV-SP circular - Controller SPL and damper actuator mounted on a circular damper.



DCV-SP rectangular - Controller SPL and damper actuator mounted on a rectangular damper.

DCV-SP

Pressure control



Connection diagram DCV-SP Circular.

Product description

DCV-SP – Pressure control

SPL Version B03

Contents Page

Products included (circular or rectangular design)

The products below are included in DCV-SP. The damper included is for either a circular or a rectangular duct.

Pressure controller

- Internal pressure sensor
- CAN connection
- Inputs and outputs for equipment/functions
- Circular design factory-assembled

Controller SPL

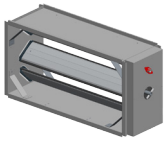
Circular damper SPM

- Throttle damper with full damper blade
- Pre-mounted with controller SPL and damper actuator

Damper SPM

Rectangular damper JSPM

- Louvre damper
- Controller and damper actuator supplied separately



Damper JSPM

Damper actuator DA4 or DA8

- Supplied pre-mounted in circular design (DA4)
- Supplied separately with rectangular design (DA4 or DA8 depending on damper size)

Damper actuator DA4/8

Product description

DCV-SP – Pressure control

SPL Version B03

Introduction DCV-SP

DCV-SP, which is included in Lindinvent's series of smart dampers and measuring units, is used for pressure control in ventilation ducts.

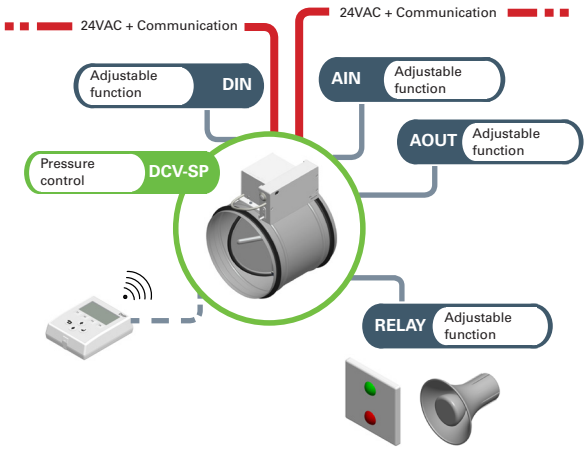
DCV-SP circular (Ø125-500) is supplied factory-assembled. For other sizes, the controller and damper actuator are supplied separately. Models may be found in the MagiCAD database.

Function

- Can compensate for pressure changes and hereby maintain static pressure in ventilation ducts.
- Can be pressure-optimised via LINDINTELL to obtain the lowest pressure and noise level in associated supply air diffusers.
- Can pressure optimise air handling units using LINDINTELL for lowest energy consumption.
- Protects following units from varying pressure, which increases service life and avoids self-oscillation.
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with ModbusTCP/RTU.
- The controller has a great number of parameters that can be read and controlled from LINDINTELL/LINDINSPECT via CAN.

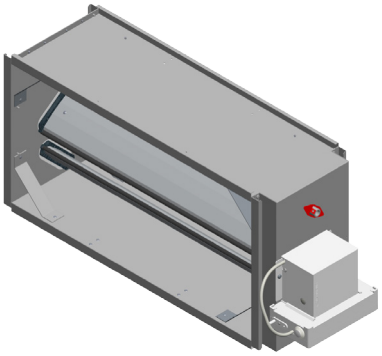
Connections for input and output signals

Many types of equipment/functions can be connected to the controller. For example, a fire signal can be connected and a buzzer alarm provided via relay. If no exchange to a superior system is possible via Modbus, a number of functions can instead be defined for the controller's inputs and outputs.



Connection diagram DCV-SP Circular. The controller is connected to a voltage feed and communication loop via Lindinvent's standard cable with two conductors for voltage feed and two twisted-pair conductors for communication.

DCV-SP circular - Controller SPL and damper actuator mounted on a circular damper.



DCV-SP rectangular - Controller SPL and damper actuator mounted on a rectangular damper.

User interface

- Server with LINDINTELL/LINDINSPECT via CAN.
- Direct login on the controller via DHP hand unit (IR or wired communication)
- Fixed wall panel FLOCHECK P (Direct wired communication with SPL)

LINDINTELL/LINDINSPECT

LINDINTELL is the software package that is installed on a central server. The software coordinates all optimisation and monitoring functions in Lindinvent's system for climate control and protective ventilation. LINDINTELL has functions for optimisation, oversteering and free programming.

LINDINSPECT is a Web interface that has been developed to be used with LINDINTELL.

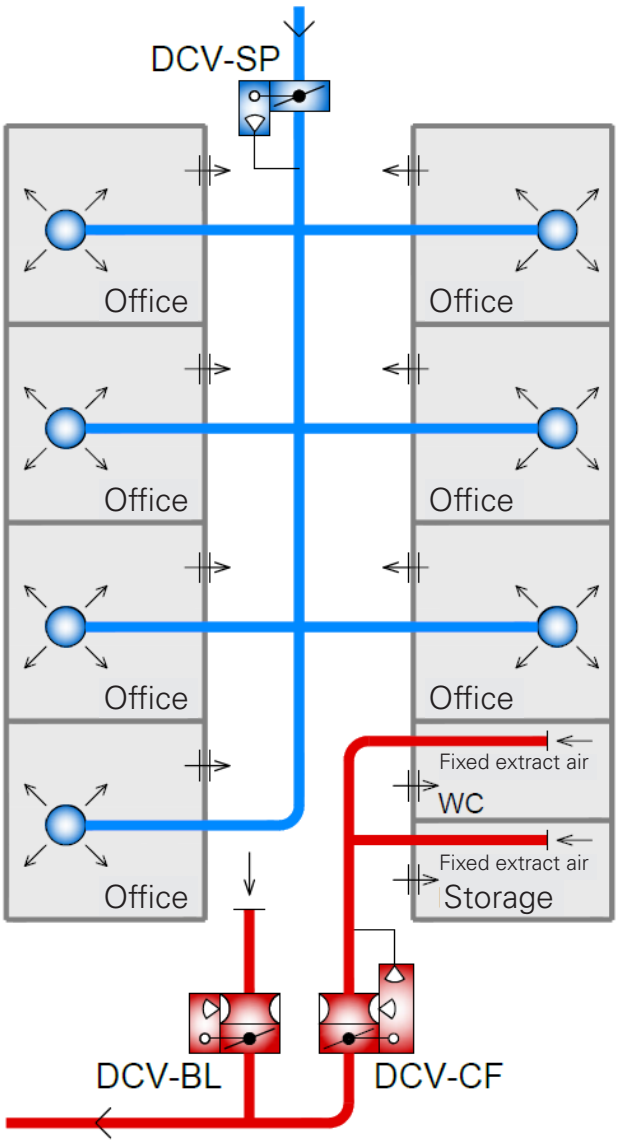
Control and alarm

Systems with LINDINTELL/LINDINSPECT can log pressure continually and set an alarm flag in the event of any deviations. By mounting FLOCHECK P as fixed panel, an alarm can be indicated both acoustically and optically.

DCV-SP – Pressure control

SPL Version B03

Functional chart with DCV-SP, DCV-CF and DCV-BL



Keeping duct pressure constant

Main duct for supply air equipped with DCV-SP for keeping duct pressure constant.

Demand control of supply air

An active device measures and regulates the flow of supply air with regard to requirements in the respective office.

Keeping duct pressure constant and measuring air-flow

DCV-CF commissioned for keeping constant duct pressure and measuring the flow for fixed extract air units.

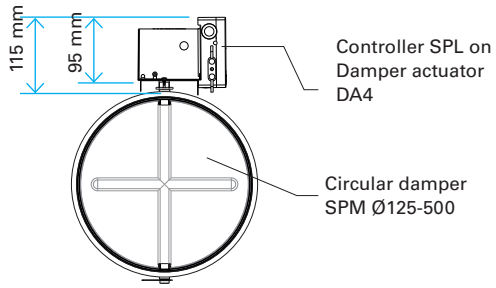
Airflow balancing Corridor

DCV-BL commissioned for balancing of the total extract air flow via transferred air from active device and the fixed flow through DCV-CF.

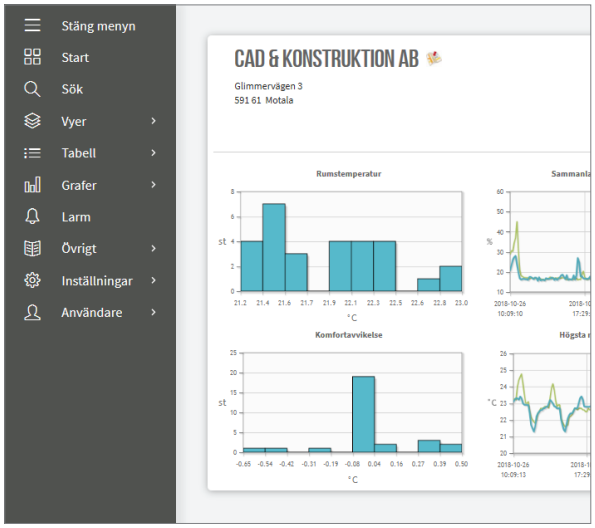
DCV-SP – Pressure control

SPL Version B03

Dimensions DCV-SP



Critical dimension for installation of circular DCV-SP.



Detail from the start page in LINDINSPECT. LINDINSPECT is a web interface where SPL(DCV-SP) and other connected nodes can be visualized and administered.

Ordering format

Circular Ø125-500

Pressure controller, Lindinvent AB,
type **DCV-SP-[Damper size][Material]-[Colour]**

Damper size = 125, 160, 200, 250, 315, 400, 500
Material = G (Galvanised), E (Epoxy lacquered; RAL9003, Gloss 30), P (Powder coated); Omitted material specification = G (Galvanised)
Colour = Colour code indicated for material P; RAL9003, Gloss 30 (Standard)

Example:
DCV-SP-250G (Circular DCV-SP in galvanised style)
DCV-SP-250P-RAL9003 (Power coated in colour RAL9003)

Circular connection Ø630

Pressure controller, Lindinvent AB,
type **DCV-SP-630(700x700)[Material]**

Material = Galvanised (G)

Example: DCV-SP-630(700x700)G
The rectangular damper JSPM 700x700 with circular connection 630, controller SPL and damper actuator DA8 are supplied individually to be assembled on site.

Rectangular

Pressure controller Lindinvent AB,
type **DCV-SP- [WxH] [Material]**

Size: WxH = 200x200 -> 1600x1000 mm
Width (W): 200 to 1000 mm in intervals of 100, then in intervals of 200 mm.
Height(H): 200 to 800 mm in intervals of 100, then in intervals of 200 mm.
Contact Lindinvent where differing dimensions are required.
Material = G (Galvanised)

Example: DCV-SP-600x300G
Damper JSPM, controller SPL and damper actuator DA8 are supplied individually to be assembled on site.

Additional product documentation DCV-SP

Table 1: Additional documentation for DCV-SP can be obtained via links on the product's website under Products at *www.lindinvent.se*

Document	Available	Not available	Comments
Installation Instruction	●		Combined installation instruction for DCV-SP and controller SPL (Assembly + connection).
Start-up instruction	●		Simple start-up. For the complete set of settings, see the start-up instruction for pressure controller SPL.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram	●		Shows connections on circuit board.
Environmental product declaration	●		Assesed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list	●		Pressure controller SPL.
AMA text	●		

DCV-SP – Pressure control

SPL Version B03

Introduction SPL

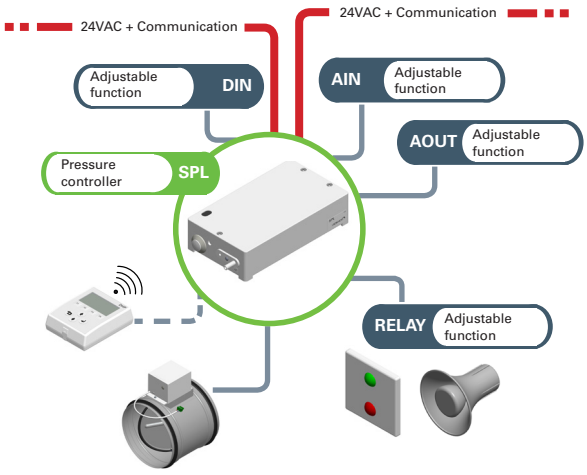
Pressure controller SPL ensures that the desired pressure is maintained in a ventilation duct. The controller is included in Lindinvent's smart damper and airflow measuring unit for pressure control DCV-SP.

Function

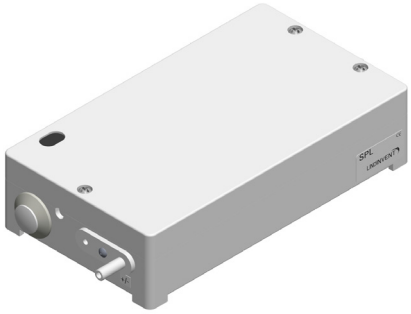
- Can compensate for pressure changes and hereby maintain static pressure in ventilation ducts.
- Can be pressure-optimised via LINDINTELL to obtain the lowest pressure and noise level in associated supply air diffusers.
- Can pressure optimise air handling units using LINDINTELL for lowest energy consumption.
- Protects following units from varying pressure, which increases service life and avoids self-oscillation.
- Can be connected via node ID to a communication loop (CAN) for access to and communication with other concurrent nodes or systems via LINDINTELL or Gateway NCE with ModbusTCP/RTU.
- The controller has a great number of parameters that can be read and controlled from LINDINTELL/ LINDINSPECT via CAN.

Connections for input and output signals

Many types of equipment/functions can be connected to the controller. If no exchange to a superior system is possible via Modbus, a number of functions can instead be defined for the controller's inputs and outputs.



Connection diagram SPL. The controller is connected to a voltage feed and communication loop via Lindinvent's standard cable with two conductors for voltage feed and two twisted-pair conductors for communication. The same cable is used for connection of damper actuator and other accessories.



SPL – Pressure controller.

User interface

- Server with LINDINTELL/LINDINSPECT via CAN.
- Direct login on the controller via DHP hand unit (IR or wired communication)
- Fixed wall panel FLOCHECK P (Direct wired communication with SPL)

LINDINTELL/LINDINSPECT

LINDINTELL is the software package that is installed on a central server. The software coordinates all optimisation and monitoring functions in Lindinvent's system for climate control and protective ventilation. LINDINTELL has functions for optimisation, oversteering and free programming.

LINDINSPECT is a Web interface that has been developed to be used with LINDINTELL.

Control and alarm

Systems with LINDINTELL/LINDINSPECT can log pressure continually and set an alarm flag in the event of deviations. By mounting FLOCHECK P as fixed panel, an alarm can be indicated both acoustically and optically.

Calibration

SPL is supplied factory calibrated.

DCV-SP – Pressure control

SPL Version B03

Technical specifications SPL

General

Dimension
176 x 100 x 44 mm (LxWxH, excluding couplings)

Temperature limits
Operation: 10°C to 40°C; <85% RF
Storage: -20°C to 50°C; <90% RF

Material
Polystyrene encapsulation

Net weight
0.3 kg

Paint colour
RAL 9003

IP class
Covering complies with IP53

Electrical system

Supply voltage
24 VAC

Capacity
1.5 VA

CE marking
Complies with EMC and the Low Voltage Directive

Pressure control

Pressure sensor
SPL is equipped with a digital pressure sensor, integrated in the controller.

Range
Measurement range: 5-500 Pa

Tolerance
± 5 % or a minimum of ± 3 Pa

Performance
Change regulated within 4 s (95 % within 3 s)

Connections

- 2 x 24 VAC + communication loop (CAN)
- 1 x 0-10 VDC analogue out for damper actuator
- 1 x 0-10 VDC analogue in for feedback from damper actuator.
- 1 x general 0-10 VDC analogue in
- 1 x general 0-10 VDC analogue out
- 1 x general digital in
- 1 x relay (24VAC or switch function)
- 1 x IR port
- 1 x modular jack RJ45 - for connection of user panel DHP or FLOCHECK P.

Additional product documentation SPL

Table 1: Additional documentation for DCV-SP can be obtained via links on the product's website under Products at *www.lindinvent.se*

Document	Available	Not available	Comments
Installation Instruction	●		Combined installation instruction with DCV-SP (Assembly + connection).
Start-up instruction	●		Describes the complete menu structure with settings.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram	●		Shows connections on circuit board.
Environmental product declaration	●		Assesed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list	●		Pressure controller SPL.
AMA text	●		

DCV-SP – Pressure control

SPL Version B03

Introduction SPM

SPM is an end-sealing throttle damper with full damper blade. The damper requires low torque, which makes control quick and accurate. The actuator seat is adapted for Lindinvent's damper actuator. SPM is included in the smart damper for pressure control, DCV-SP, circular.

Function

SPM is used with Lindinvent's pressure sensor and damper actuator for controlling air pressure. In combination with a measuring flange, see SMED or SMID, the damper SPM can also be used for controlling air flow.

Order information

Circular damper, Lindinvent AB,
SPM-[Size][Material]-[Colour]

Size: 125, 160, 200, 250, 315, 400, 500
Material: G (Galvanised), E (Epoxy lacquered; RAL 9003; Gloss 85), P (Powder coated); Omitted material specification = G.
Colour: Colour code is stated for material P; RAL9003, Gloss 30 (Standard).

Example: SPM-250P-RAL9003

Dampers can also be supplied in stainless steel, SS 23 33 or SS 23 43; state material in plain text when ordering.

SPM - Circular damper.

Technical specifications

General

Material

The dampers are manufactured as standard in galvanised steel plate, but can be supplied in other materials and surface treatments; see *Material* under *Order information* above. Duct seal in EPDM rubber and damper blade seal in silicon rubber.

Size and classification

Sizes: Ø125 – Ø500 mm according to EN 1506:2007
Tightness class 3 according to VVS AMA.
Pressure class A according to VVS AMA.

Dimensions

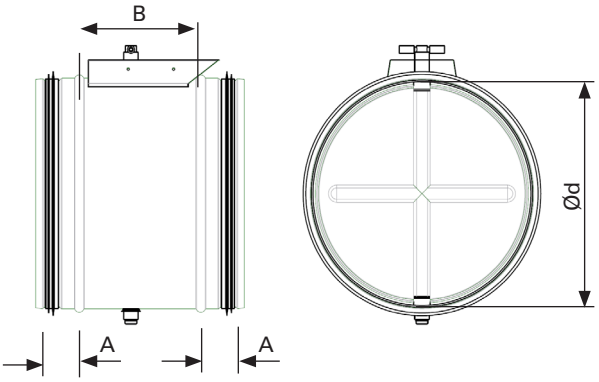


Table 1: Dimensions, measurement and weight

Ød	A	B	Weight/ kg
125	38	104	0.7
160	38	104	1.0
200	38	124	1.2
250	60	110	1.7
315	60	110	2.4
400	78	124	4.3
500	78	174	4.5

DCV-SP – Pressure control

SPL Version B03

Total A-weighted sound power levels, dB (A) for SPM-125 to SPM-250.

Noise generation

$L_W = L_{WA} + K_0$

L_W = Sound power level, dB

L_{WA} = Total A-weighted sound power level, dB (A), read from the sound power level diagram for each dimension of SPM, see the following 2 pages.

K_0 = Correction factor for actual frequency band is read from the table under each sound level diagram.

Table 2: Sound data tolerance

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 1: SPM-125

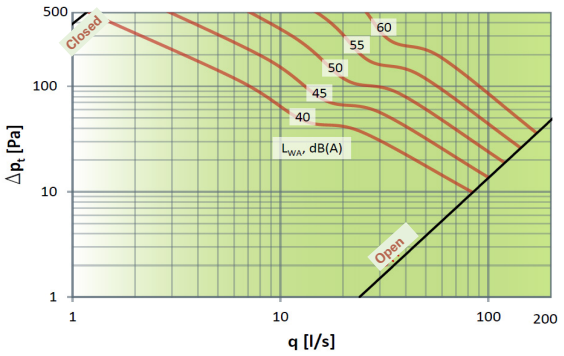


Table 3: Correction factor K_0 [SPM-125]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	13	13	10	3	-6	-10	-17	-23

Diagram 2: SPM-160

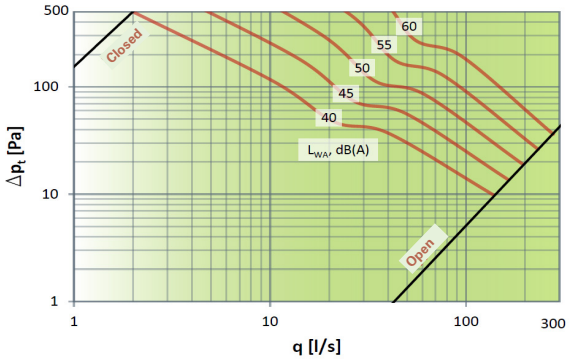


Table 4: Correction factor K_0 [SPM-160]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	12	9	8	2	-6	-11	-17	-23

Diagram 3: SPM-200

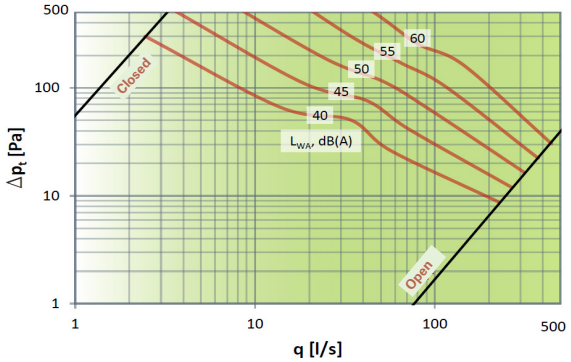


Table 5: Correction factor K_0 [SPM-200]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	14	8	6	0	-4	-9	-15	-21

Diagram 4: SPM-250

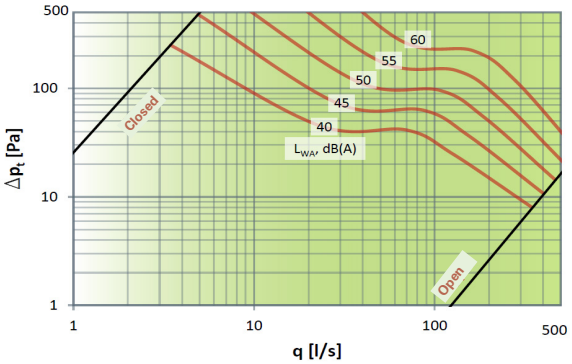


Table 6: Correction factor K_0 [SPM-250]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	15	9	7	0	-5	-10	-16	-24

DCV-SP – Pressure control

SPL Version B03

Total A-weighted sound power levels, dB (A) for SPM-315 to SPM-500.

Noise generation

$L_W = L_{WA} + K_0$

L_W = Sound power level, dB

L_{WA} = Total A-weighted sound power level, dB (A), read from the sound power level diagram for each dimension of SPM, see the following 2 pages.

K_0 = Correction factor for actual frequency band is read from the table under each sound level diagram.

Table 2: Sound data tolerance

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 5: SPM-315

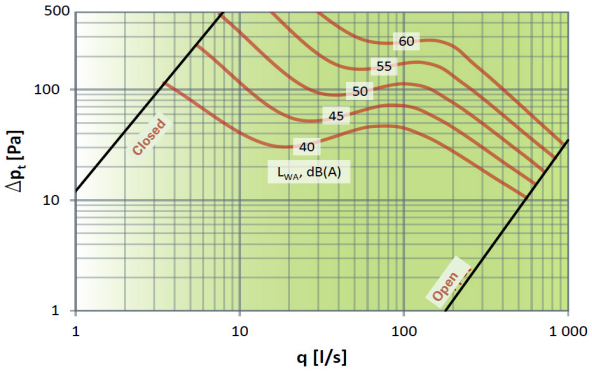


Table 7: Correction factor K_0 [SPM-315]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	15	8	5	1	-5	-11	-16	-24

Diagram 6: SPM-400

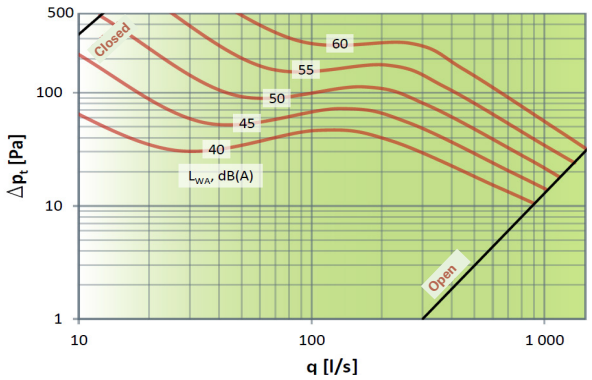


Table 8: Correction factor K_0 [SPM-400]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	12	7	4	0	-4	-12	-15	-23

Diagram 3: SPM-500

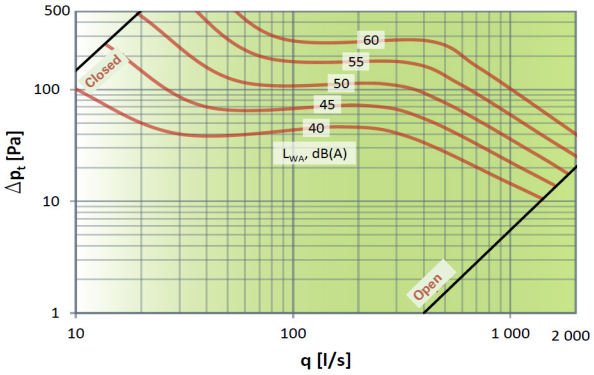


Table 9: Correction factor K_0 [SPM-500]

Hz	63	125	250	500	1k	2k	4k	8k
K_0	11	5	5	1	-4	-12	-15	-22

Additional product documentation SPM

Table 10: Additional documentation for SPM can be obtained via links on the product's website under Products at www.lindinvent.se

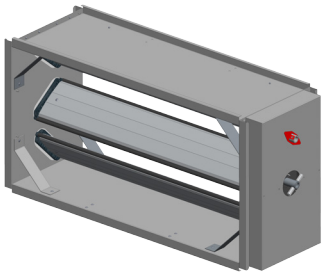
Document	Available	Not available	Comments
Installation Instruction	●		See the combined installation instruction for DCV-SP and SPL.
Start-up instruction		●	Not applicable.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen and Sundahus.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

DCV-SP – Pressure control

SPL Version B03

Introduction JSPM

JSPM is a fully sealed balancing damper with an actuator seat adapted for Lindinvent's damper actuator. The damper blades are linked via gears. JSPM is included in the rectangular design of control unit DCV-SP. JSPM is also included, along with the rectangular measuring flange SMRD, in the smart control units DCV-RC, DCV-LC, DCV-BL and DCV-CF.



JSPM size 600x300 mm.

JSPM size 700x700/630 mm.

Function

The damper is used for controlling flow and pressure together with a Lindinvent controller and a damper actuator.

Order information

Rectangular damper, Lindinvent AB, type JSPM-[WxH]

Sizes (WxH) in combinations according to *Table 1*.
Width (W): from 200 to 1600 mm.
Height (H): from 200 to 1000 mm.
Length (L): Not relevant here (Always 220 mm)
Example: JSPM-400x300

JSPM may be ordered with circular connection Ø630 or Ø800. Designations as follows: *JSPM-700x700/630* or *JSPM-800x800/800*.

Dimensions: Width(W) x Height(H) in mm

W\H	200	300	400	500	600	700	800	1000
200	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
300	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
400	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
500	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
700	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
800	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1000	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1200	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1400	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8

Table 1: Available standard dimensions for W and H. The length (L) is always 220 mm. Devices within the marked area are available in MagiCAD. The table shows which actuator DA4 or DA8 should be used for each damper.

Technical specifications

General

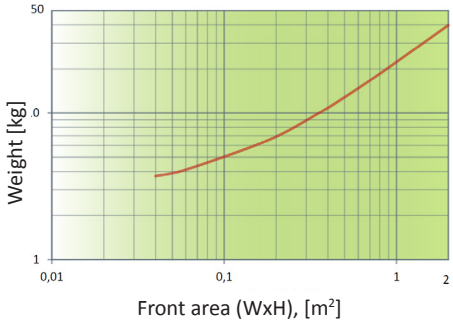
Material

The damper consists of a case in galvanised steel plate and damper blades in aluminium. The damper blades are equipped with end gaskets made of nylonplated EPDM-rubber and with length going gaskets made of silicon-rubber.

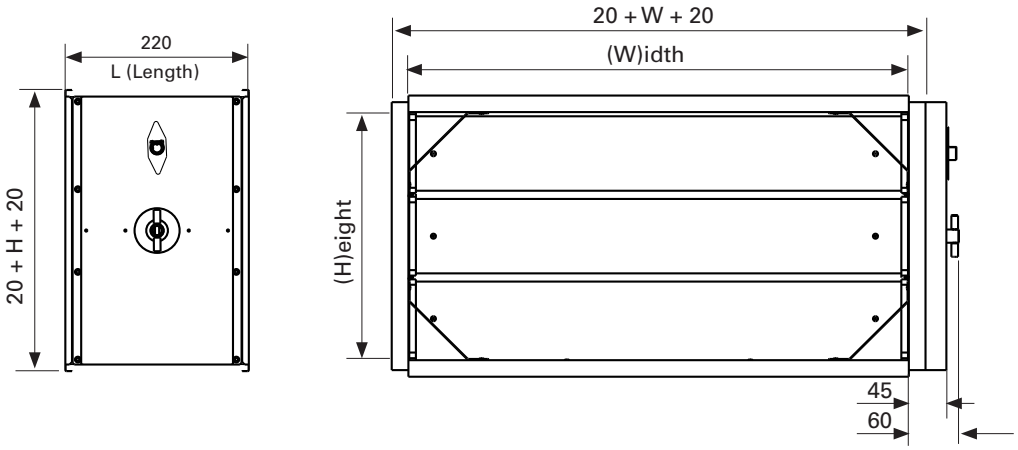
Tightness class 2 according to VVS AMA.
Pressure class A according to VVS AMA.

Weight

Diagram 1: Weight JSPM



Measure in mm



DCV-SP – Pressure control

SPL Version B03

Sound data JSPM

Noise generation

$L_W = L_{pA} + K_0 + K_k$

L_W = Sound power level, dB.
L_{pA} = Total A-weighted sound power level, dB (A), read from sound level diagram below for cross section area 1 m².
K_0 = Correction factor for actual frequency band read from table 2 for actual damper blade angle.
K_k = Correction factor for actual duct area is read from diagram 3.

Table 2: Correction factor K_0 [JSPM]

Damper angle	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
30 - 40°	-4	-6	-8	-8	-9	-12	-16	-19
50 - 60°	-5	-5	-8	-10	-10	-10	-13	-15
70 - 80°	-6	-4	-5	-7	-9	-9	-10	-12

Table 3: Tolerance sound effect level L_W [JSPM]

Hz	63	125	250	500	1k	2k	4k	8k
± dB	6	4	3	3	3	3	3	3

Diagram 2: Noise generation (cross section area 1 m²) [JSPM]

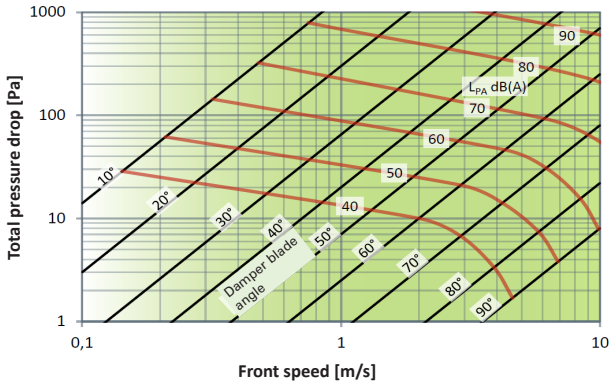
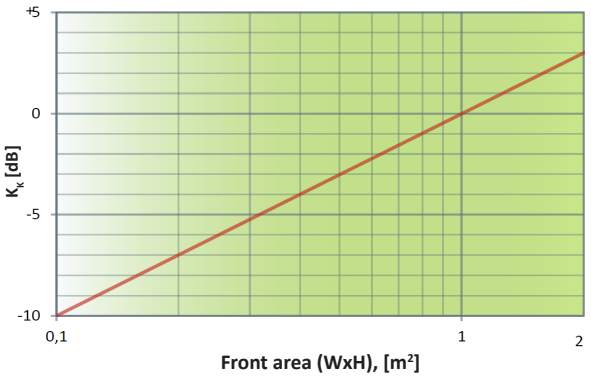


Diagram 3: Correction factor for duct area [K_k]



Additional product documentation JSPM

Table 4: Additional documentation for JSPM can be obtained via links on the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction		●	See installation instruction for DCV-SP.
Start-up instruction		●	Not applicable.
Maintenance instruction		●	Maintenance free.
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

DCV-SP – Pressure control

SPL Version B03

Introduction DA4 and DA8

The damper motors DA4 and DA8 are designed for Lindinvent's dampers for air flow and pressure control. All smart dampers in circular design are equipped with DA4 while DA8 is used for larger rectangular dampers as shown in Table1 below.

Function

The damper motor controls damper blades via signal from the connected regulator.

The motor cover is specially designed to act as holder for Lindinvent's regulators. Assembly and disassembly of the regulator on the cover is made easy and without tools.

Ordering information

Both DA4 and DA8 can be ordered with cabling mounted in two designs: Length 0.25 meters with a connector mounted or length 3 meters without a connector mounted.

Motor size: DA4 or DA8

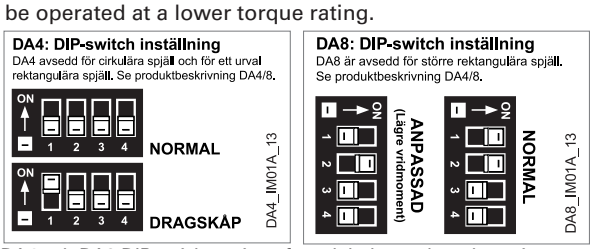
DA4 is used for Lindinvent's circular dampers Ø125 - Ø500 and for a selection of rectangular dampers. DA8 is used for Lindinvent's larger rectangular dampers, see Table 1 below. DA8 should also be used for the rectangular damper 700x700 with circular connection Ø630.

B\H	200	300	400	500	600	700	800	1000
200	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
300	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
400	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
500	DA4	DA4	DA4	DA4	DA8	DA8	DA8	DA8
600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
700	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
800	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1000	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1200	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1400	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8
1600	DA4	DA8	DA8	DA8	DA8	DA8	DA8	DA8

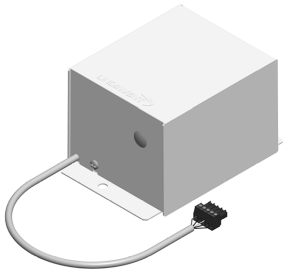
Table1: Rectangular damper JSPM showing it's size dependent designated actuator DA4 or DA8. Sizes within the marked area are available in MagiCAD.

Mode of operation

Both actuators are normally delivered with it's DIP-switch settings at "NORMAL", as shown bellow . DA4 is set to "DRAGSKÅP" when installed with Fume capboard controller FCL. DA8 can be switched to "ANPASSAD" to be operated at a lower torque rating.



DA4 och DA8 DIP-swich settings from labels used on the units.



DA4 with pre-mounted connector. Damper actuator for Lindinvent's controllers.

DCV-SP circular: Regulator SPL and damper motor DA4 mounted on a circular damper.

Technical specifications

General

Dimension
DA4: 140 x 97 x 80 mm (LxWxH)
DA8: 140 x 130 x 80 mm (LxWxH)

Material
Gearbox in metal
DA4: Thermoplastic encapsulation (PS)
DA8: Powder-coated steel plate encapsulation

Weight
DA4: Net weight 0.7 kg (0.25 m cable with connector)
DA8: Net weight 1.4 kg (0.25 m cable with connector)

Colour
RAL 9003

IP class
Encapsulation complies with IP42

Damper blade positioning
By turning a screw, any damper angle can be selected on a switched-off motor. The engine calibration is not affected by the damper position being set with the screw.

Electrical system

Supply voltage
24 VAC

Capacity
DA4: 2.3 VA (max 12 VA)
DA8: 2.3 VA (max 17 VA)

CE marking
Complies with EMC and the Low Voltage Directive

Performance

DA4: Running time 0-90° 6.5 s
DA8: Running time 0-90° 6.5 s

Input and output signals

Input signals
1 x 0-10 VDC control signal

Output signals
1 x 0-10 VDC feedback signal

DCV-SP – Pressure control

SPL Version B03

Additional product documentation DA4/8

Table 1: Additional documentation for DA4/8 is available via the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction	●		
Start-up instruction		●	See start-up instruction for connected controller.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram		●	Cable with connector for terminal block on controller.
Environmental product declaration	●		Assessed by Byggvarubedömningen.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text		●	See corresponding controller.

Product documentation can be downloaded via www.lindinvent.se/produkter/

Contact

www.lindinvent.se
Tel: 046–15 85 50

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The company offers products and systems for controlling ventilation, lighting, solar shading and local utilization. Equipment and climate solutions are being developed for offices, schools, hospitals, laboratories and similar working environments. Lindinvent's systems work together to provide high indoor comfort and the lowest possible energy use.