WISE Damper

Active damper for Swegon's WISE System for demand controlled ventilation

QUICK FACTS

- Variable or constant flow regulation or constant pressure regulation
- Wireless communication via radio
- Integrated sensor
- Variants:
  - Circular connections: Ø100-630 mm
  - Rectangular connections: 200x200-1400x700 mm
  - Available with spring return actuator
  - Available with Sensor Module Advanced Multi (WISE SMA Multi)

FLOW RANGE				
WISE Damper Size	Min. (0.6m/s)*		Max. (10 m/s)*	
	l/s	m³/h	l/s	m³/h
100	5	18	79	285
125	7	26	123	443
160	11	40	202	728
200	18	65	315	1134
250	30	108	491	1768
315	50	180	780	2808
400	87	314	1257	4526
500	135	486	1964	7071
630	187	674	3118	11225

**The product can regulate below Min. but the measurement accuracy cannot be guaranteed, for tolerances see page 8. NOTE for a high pressure drop across the product, it may be difficult to reach the min. flow, see the sizing diagrams.*

Content

Technical description

General

- Designed for demand controlled ventilation of premises with a varying load.
- Designed for comfort ventilation.
- Moist, cold and aggressive environments must be avoided.
- Can be installed in both supply and extract air systems.
- Pressure independent, but does require a minimum pressure drop equivalent to that of an open damper.
- The minimum air flow must be considered during design.

Design

- Motor: Normal or spring return.
- Options for selection of spring return:
  - De-energized closed.
  - De-energized open.
- Integrated air flow sensor.
- Integrated duct temperature sensor.
- Possibility to connect up to 3 valve actuators.
- With or without WISE SMA Multi.
- With WISE SMA Multi:
  - Integrated CO_2 sensor.
  - Integrated VOC sensor.
  - Integrated RH sensor.
  - Integrated duct temperature sensor.

Circular design

- Connection: Ø100-630 mm.
- Always supplied with dust protection.
- Motor shelf with 30 mm spacer to facilitate condensation insulation of the duct system.
- A factory-insulated model available on request.

Rectangular design

- Slip-clamp connection.
- Connection 200x200-1400x700 mm.
- Other sizes are also available on request.

Functions

- Variable or constant flow regulation or constant pressure regulation (supplemented with the WISE DPS Modbus/ WISE DPS accessory).
- Measurement of air flow, duct pressure, temperature, CO_2, VOC and RH.
- Wireless communication via radio.
- Heating and cooling function with air.
- Control external heating and cooling.

Materials and surface treatment

- All sheet-metal parts are galvanized sheet steel (Z275).

Project design / Typical room

See the separate documentation "WISE System Guide", which is available for download via www.swegon.com.

Maintenance

The product does not require any maintenance/service, except for any cleaning when necessary. See the separate Instructions for Use, available on www.swegon.com.

Environment

The Building Materials Declaration is available from www.swegon.com.

Accessories

FSR	Clamp for easy dismantling of a circular design for cleaning and inspection.
WISE DPS Modbus	Duct pressure sensor to retain constant pressure in the duct system, wired communication, see figure 1.
WISE DPS	Duct pressure sensor to retain constant pressure in the duct system, wireless communication, see figure 1.
POWER Adapt	Transformer for power supply.
ACTUATOR	Valve actuator for heating and cooling regulation.
WISE Cover Circular Damper	Cover for visible installation.


FSR


WISE DPS Modbus


WISE DPS


POWER Adapt


ACTUATOR


WISE Cover Circular Damper

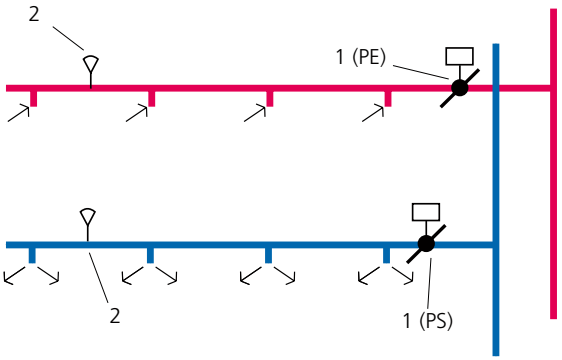


Figure 1. Constant pressure regulation.
1. WISE Damper.
2. WISE DPS Modbus/WISE DPS.

Technical data

Output (ERP):	50 mW
Frequency band:	2.45 GHz, IMS band (2400-2483 MHz)
Temperature sensor:	0 - 50°C ± 0.5°C
Pressure sensor:	0 - 300 Pa
With WISE SMA Multi	
CO_2 sensor:	400 - 2000 ppm
VOC sensor:	450 - 2000 ppm
RH sensor:	0 - 100%
IP class:	IP20
Corrosivity class:	C3
Pressure class:	A
Leakage class according to SS-EN 1751	
- Air tightness class, casing:	C
- Air tightness class circular damper, closed:	4
- Air tightness class rectangular damper, closed:	3
Running time open/close (90°):	120 s
Spring return actuator, running time electricity (90°):	120 s
Return time spring:	max. 20 s (90°)
Ambient temperature	
Operation:	0 – 50°C
Storage:	-20 – +50°C
RH:	10 - 95% (non condensing)
CE marking:	2016/42/EC (MD)
	2014/53/EU (RED)
	2011/65/EU (RoHS2)

Electrical data

Power supply:	24V AC ±15% 50 - 60Hz
Connections pipe dim.	
Power:	Screw terminal max. 2.5mm²
Valve actuator:	Push-in spring force connections, max. 1.5 mm²
Max. power consumption:	See table below

Variant	Motor	VA			
		Default	+1 valve actuator	+2 valve actuator	+3 valve actuator
Normal	5 Nm 10 Nm 15 Nm	8	15	22	29
Spring return	5 Nm 10 Nm	12	19	26	
	20 Nm	16	23	30	

Sizing

Circular design

- Important! Increased air flow gives increased duct velocity and increased sound level.

Acoustic data

Sound power level

- The diagrams show the a-weighted sound power (L_{WA}-dB), as a function of the air flow and pressure drop across the damper.
- Correct L_{WA} with correction factor K_{ok} from the tables below to obtain the sound power levels for each octave band ($L_W = L_{WA} + K_{ok}$).

Correction factors for conversion to sound power in octave bands:

L_{WA} = Sound level in the sizing diagram for duct products.

K_{ok} = Correction factor in octave bands.

K_{trans} = Correction factor in octave bands for transmitted sound.

Sound power in octave bands

$L_W = L_{WA} + K_{ok}$

Correction factor, K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	7	7	5	-1	-5	-10	-17	-22
125	7	9	6	-2	-4	-10	-19	-25
160	5	10	6	-3	-5	-11	-18	-24
200	5	10	5	-2	-5	-11	-19	-27
250	8	5	2	-3	-6	-10	-18	-24
315	4	6	3	-3	-6	-10	-18	-25
400	6	3	1	-3	-5	-10	-17	-26
500	3	0	-1	-3	-5	-10	-17	-28
630	3	-1	-2	-3	-5	-9	-17	-27
Tol. ±	6	3	2	2	2	2	2	2

Transmitted sound through uninsulated casing

$L_W = L_{WA} + K_{trans}$

Correction factor K_{trans}

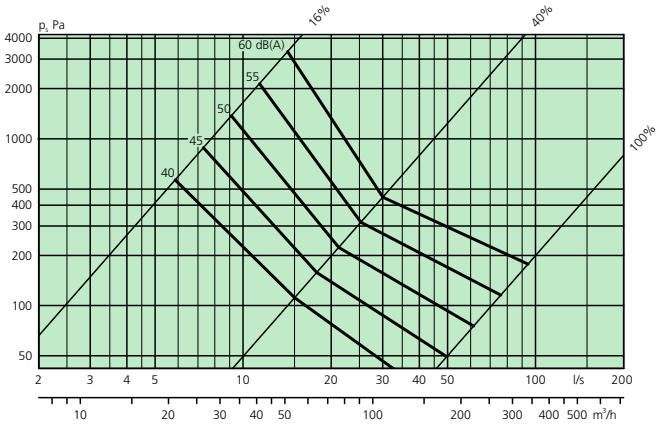
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	-2	-9	-7	-10	-9	-10	-15	-22
125	-4	-9	-8	-13	-9	-12	-19	-27
160	-7	-9	-10	-15	-12	-15	-20	-28
200	-9	-11	-13	-16	-14	-16	-23	-32
250	-8	-18	-17	-19	-17	-17	-23	-31
315	-14	-19	-18	-21	-18	-19	-25	-34
400	-13	-23	-22	-22	-19	-21	-26	-37
500	-18	-28	-27	-24	-21	-22	-28	-40
630	-18	-27	-27	-24	-21	-21	-29	-38
Tol±	6	3	2	2	2	2	2	2

Sizing diagrams

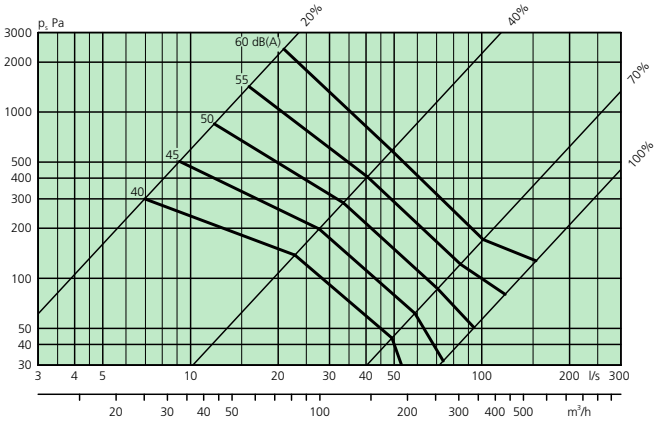
Air flow – Pressure drop – Sound level

- Specified sound levels, L_{WA}: 40, 45, 50, 55 and 60 dB.
- The data is for the sound created in ducts.
- 100% corresponds to the damper being fully open.

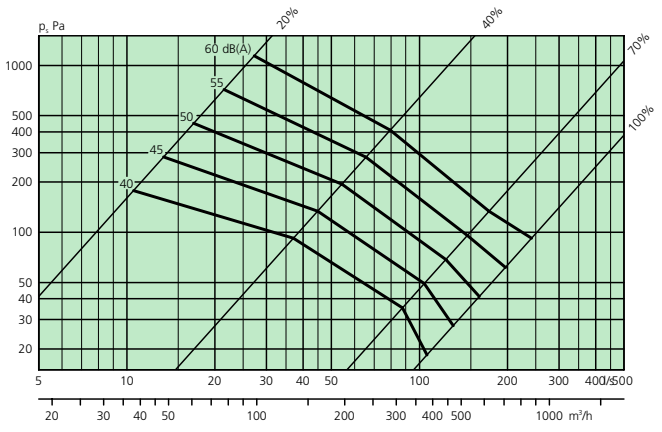
WISE Damper 100



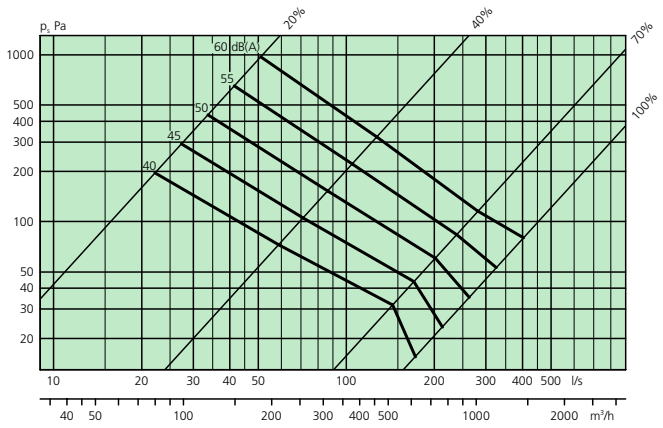
WISE Damper 125



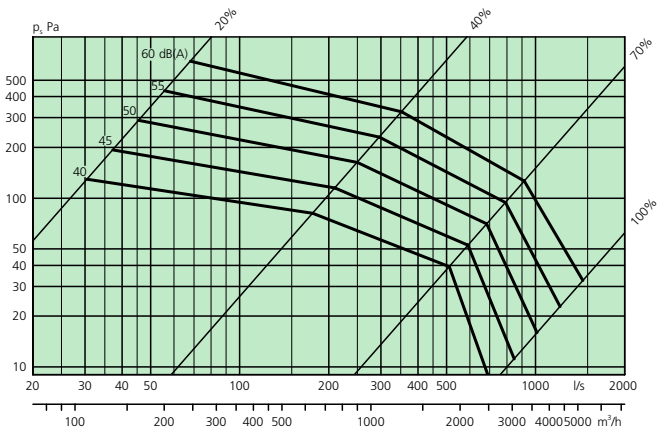
WISE Damper 160



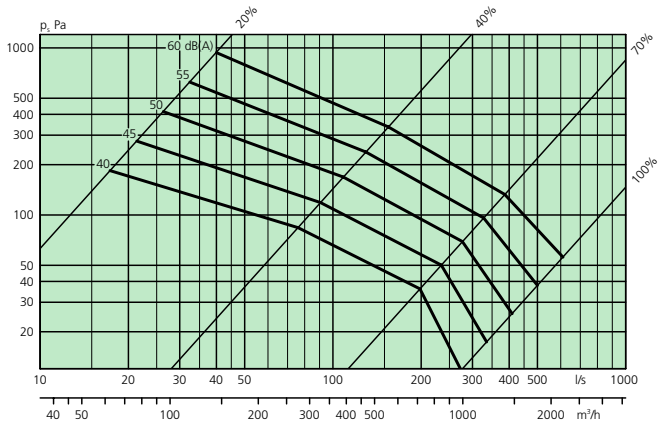
WISE Damper 200



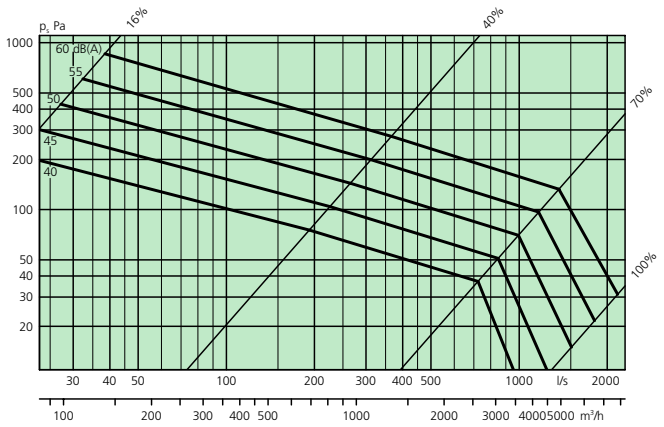
WISE Damper 400



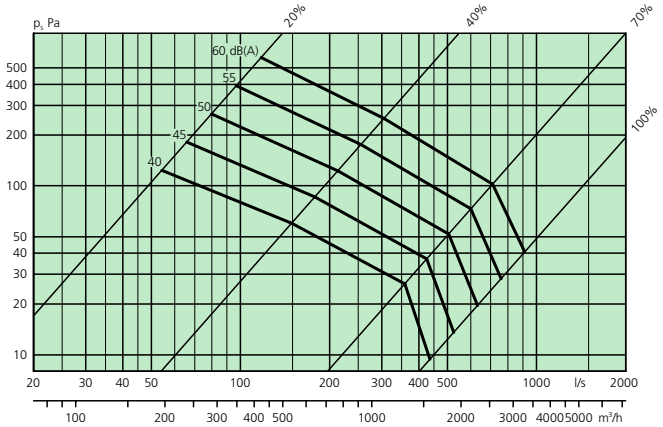
WISE Damper 250



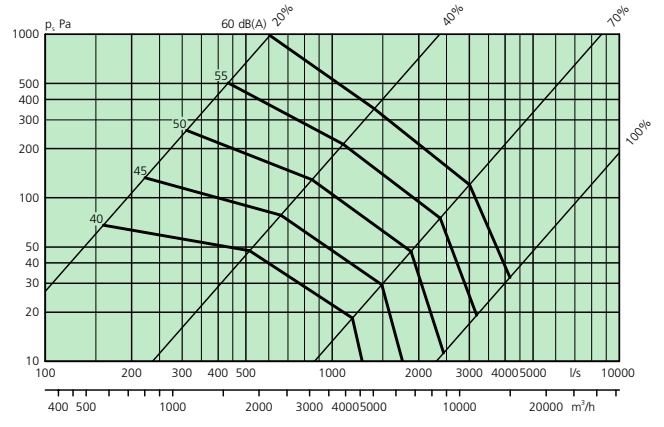
WISE Damper 500



WISE Damper 315



WISE Damper 630



Rectangular design

- Important! Increased air flow gives increased duct velocity and increased sound level.

Acoustic data

Sound power level

- The diagram shows the a-weighted sound power (L_{WA}-dB), as a function of the air flow and pressure drop across the damper.
- Correct L_{WA} with correction factor K_{ok} from the tables below to obtain the sound power levels for each octave band ($L_W = L_{WA} + K_k + K_{ok}$).

Sound power in octave bands

$$L_W = L_{WA} + K_k + K_{ok}$$

Correction factor, K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
All	7	3	1	0	-5	-14	-23	-22
Tol. ±	4	4	3	2	2	2	2	2

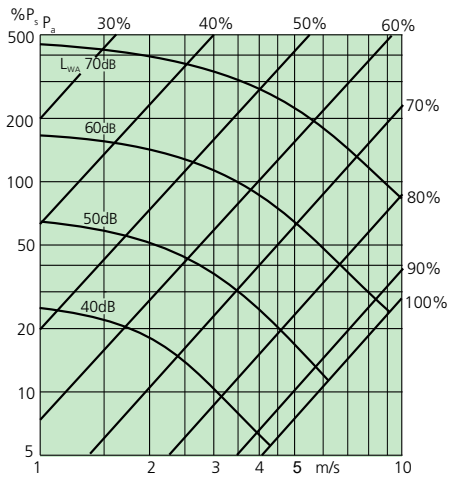
Correction factor K_K for the damper's face area

Correction factor – face area								
Area m^2	0.1	0.15	0.25	0.4	0.6	1.0	1.6	2.5
K_k	-3	-2	0	2	4	6	8	10

Sizing diagram

Velocity - Pressure drop - Sound level

- The data is for the sound created in ducts.
- Specified sound levels, L_{WA}: 40, 50, 60 and 70 dB.
- Calculate the face velocity across the damper and read the sound data and pressure drop at an appropriate damper position.
- 100% corresponds to the damper being fully open.



Installation, torque, dimensions and weights

Circular design

Dimensions

Size Ø (mm)	A (mm)	B (mm)	Installation dimensions (mm)	Normal motor		Spring return			Flow range				Tolerance Q* ±5% with at least ±x l/s
				Torque (Nm)	Weight (kg)	C (mm)	Torque (Nm)	Weight (kg)	Min (0,6m/s)		Max (10m/s)		
									l/s	m³/h	l/s	m³/h	
100	574	50	584	5	2.7	11	5	3.2	5	18	79	285	2
125	574	50	584	5	2.9	24	5	3.5	7	26	123	443	2
160	574	50	584	5	3.5	33	5	4.0	11	40	202	728	2
200	574	50	584	5	3.9	19	5	4.5	18	65	315	1134	3
250	574	50	584	5	4.5	13	5	5.1	30	108	491	1768	5
315	600	50	610	10	5.6	0	10	6.5	50	180	780	2808	8
400	830	60	850	10	8.4	0	10	9.4	87	314	1257	4526	13
500	830	60	850	10	10.3	0	10	11.3	135	486	1964	7071	20
630	915	60	935	15	13.6	0	20	14.8	187	674	3118	11225	32

*Installed according to the instructions.

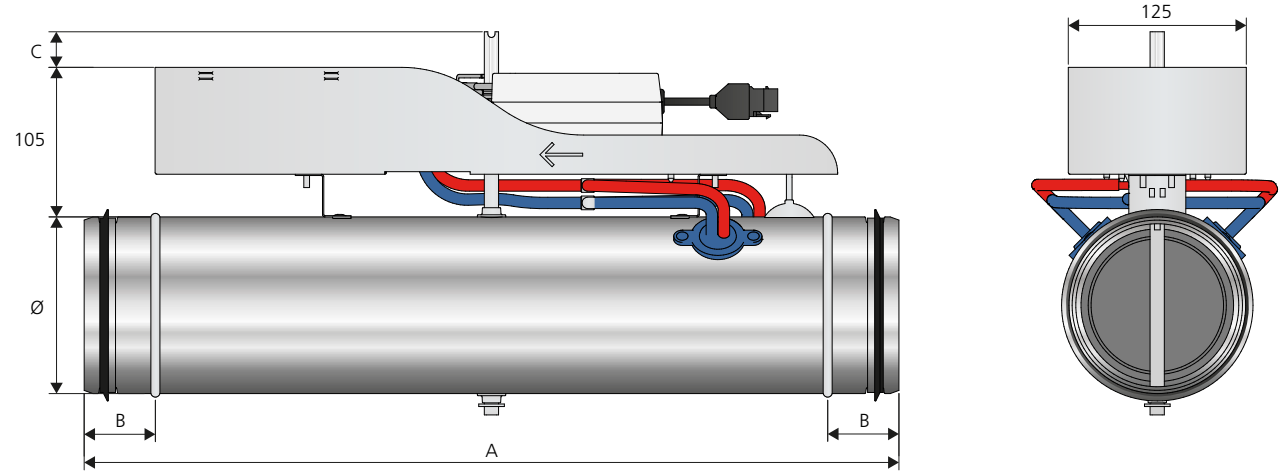


Figure 2. Dimensions, WISE Damper circular and WISE Damper circular with spring return.

Installation

- The product's air flow measurement requires a straight duct section as per the installation figures.
- Installation is position independent.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

Straight duct section requirements

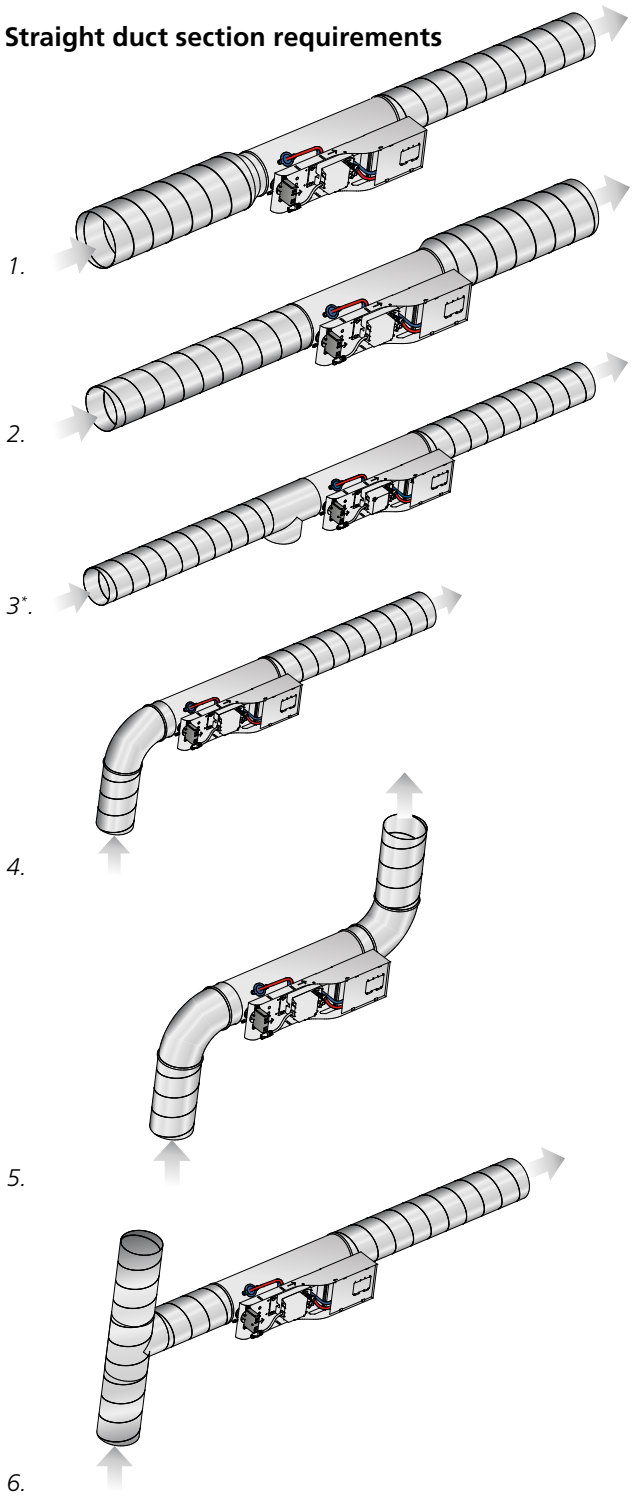


Figure 3. Straight duct section requirements in circular ducts, number of Ø before product:
1-5: Require no straight duct section.
6: Requires a straight duct section before the damper equivalent to 2 x Ø.
**T piece with a cleaning hatch.*

Straight duct section requirements in case of sound attenuator with baffle

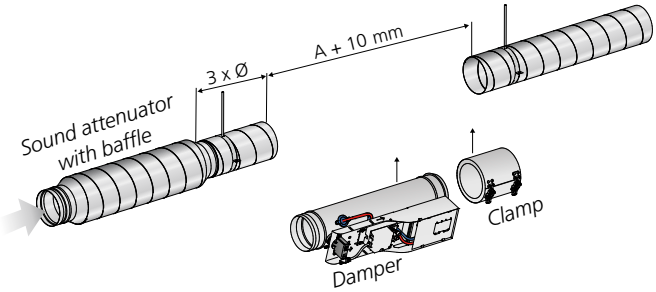


Figure 4. Straight duct section requirements 3 x Ø in case of sound attenuator with baffle or centre body.

Installation in the duct system

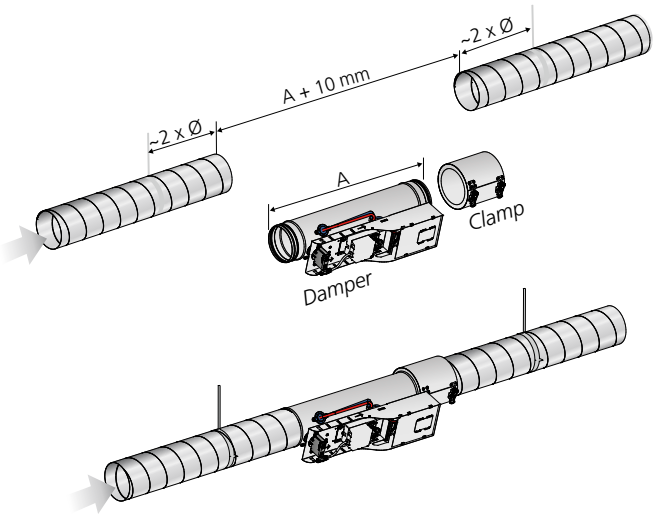


Figure 5. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of the product.

Rectangular design

Dimensions

Size BxH (mm)	Normal motor		Spring return		Flow range				Tolerance Q* ±5% with at least ±x l/s
	Torque (Nm)	Weight (kg)	Torque (Nm)	Weight (kg)	Min (1m/s)		Max (10m/s)		
					l/s	m³/h	l/s	m³/h	
200 x 200	5	7.0	5	7.5	34	123	400	1440	4
300 x 200	5	8.2	5	8.7	50	180	600	2160	6
400 x 200	5	9.3	5	9.8	67	242	800	2880	8
500 x 200	5	10.5	5	11.0	84	303	1000	3600	10
600 x 200	5	11.6	5	12.1	100	360	1200	4320	12
700 x 200	5	12.7	5	13.2	117	422	1400	5040	14
800 x 200	5	13.9	5	14.4	133	479	1600	5760	16
1000 x 200	5	16.2	5	16.7	167	602	2000	7200	20
300 x 300	5	9.8	5	10.3	76	274	900	3240	9
400 x 300	5	11.0	5	11.5	102	368	1200	4320	12
500 x 300	5	12.3	5	12.8	127	458	1500	5400	15
600 x 300	5	13.6	5	14.1	152	548	1800	6480	18
700 x 300	5	14.7	5	15.2	178	641	2100	7560	21
800 x 300	5	16.1	5	16.6	203	731	2400	8640	24
1000 x 300	5	18.7	5	19.2	254	915	3000	10800	30
400 x 400	5	13.0	5	13.5	136	490	1600	5760	16
500 x 400	5	14.4	5	14.9	171	616	2000	7200	20
600 x 400	5	15.7	5	16.2	205	738	2400	8640	24
700 x 400	5	17.3	5	17.8	250	900	2800	10080	28
800 x 400	5	18.8	5	19.3	273	983	3200	11520	32
1000 x 400	5	21.6	5	22.1	341	1228	4000	14400	40
1200 x 400	10	24.4	10	25.5	409	1473	4800	17280	48
1400 x 400	10	27.2	10	28.3	478	1721	5600	20160	56
1600 x 400	10	30.1	10	31.2	546	1966	6400	23040	64
500 x 500	5	16.2	5	16.7	214	771	2500	9000	25
600 x 500	5	17.7	5	18.2	257	926	3000	10800	30
700 x 500	10	19.4	10	20.5	300	1080	3500	12600	35
800 x 500	10	20.9	10	22.0	343	1235	4000	14400	40
1000 x 500	10	24.0	10	25.1	429	1545	5000	18000	50
1200 x 500	10	27.2	10	28.3	514	1851	6000	21600	60
1400 x 500	10	30.3	10	31.4	600	2160	7000	25200	70
1600 x 500	10	33.4	10	34.5	686	2470	8000	28800	80
600 x 600	10	20.0	10	21.1	309	1113	3600	12960	36
700 x 600	10	21.8	10	22.9	361	1300	4200	15120	42
800 x 600	10	23.4	10	24.5	412	1484	4800	17280	48
1000 x 600	10	26.9	10	28.0	515	1854	6000	21600	60
1200 x 600	10	30.3	10	31.4	618	2225	7200	25920	72
1400 x 600	10	34.2	10	35.3	722	2600	8400	30240	84
1600 x 600	10	37.2	10	38.3	825	2970	9600	34560	96
700 x 700	10	23.0	10	24.1	422	1520	4900	17640	49
800 x 700	10	25.7	10	26.8	482	1736	5600	20160	56
1000 x 700	10	29.4	10	30.5	603	2171	7000	25200	70
1200 x 700	10	33.0	10	34.1	723	2603	8400	30240	84
1400 x 700	10	36.8	10	37.9	844	3039	9800	35280	98
1600 x 700	10	49.2	10	50.3	964	3471	11200	40320	112

*Installed according to the instructions.

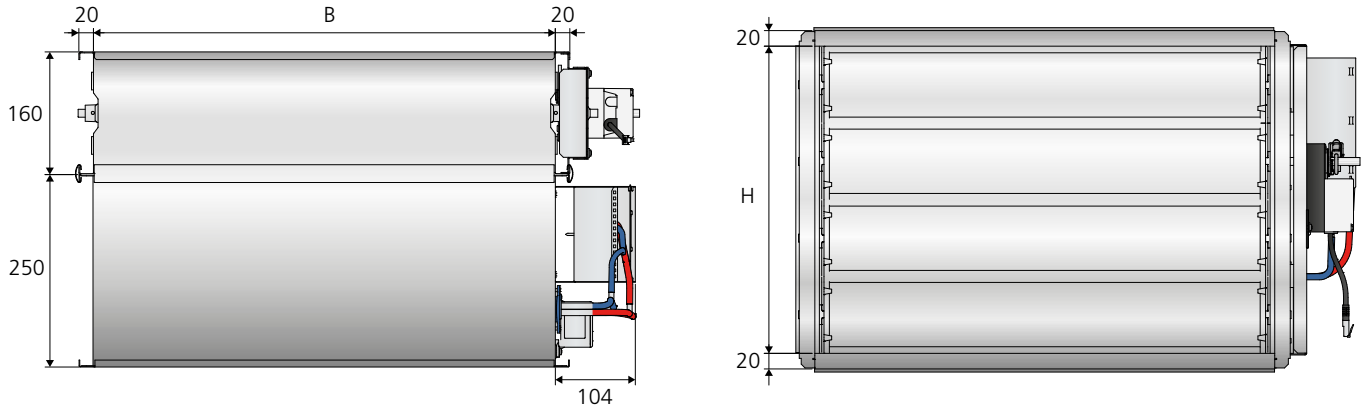


Figure 6. Dimensions, WISE Damper rectangular and WISE Damper rectangular with spring return.

Installation

- The product's air flow measurement requires a straight duct section as per the installation figures.
- For rectangular ducts, always install the damper so that the controller/actuator is placed along the side of the duct.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

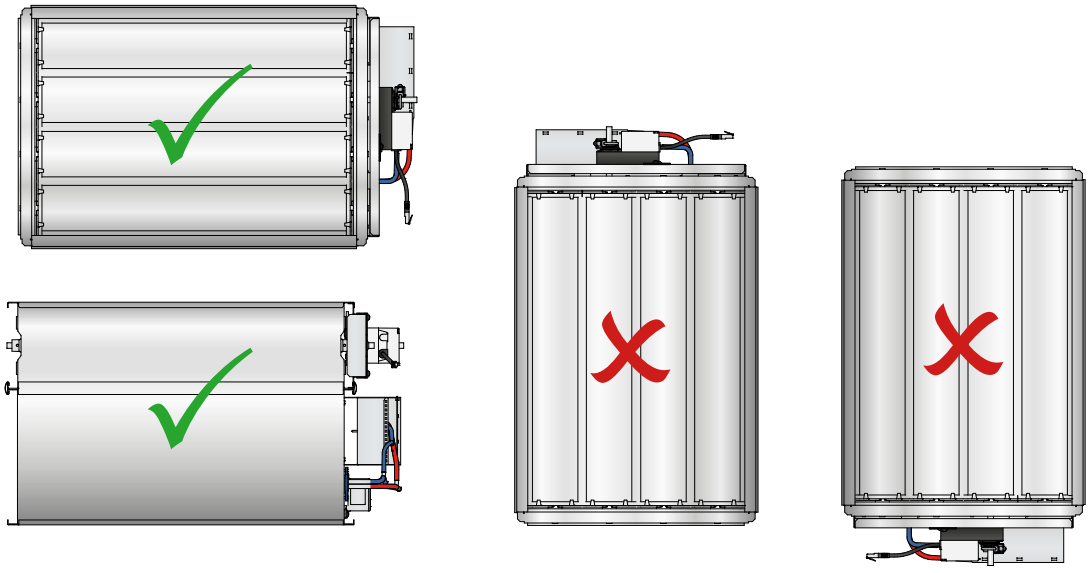


Figure 7. Installation - For rectangular ducts, always install the damper so that the controller/actuator is placed along the side of the duct.

Straight duct section requirements

Type of obstruction	E (m_2=5 %)	E (m_2=10 %)
One 90° bend	E = 3 x B	E = 2 x B
T piece	E = 3 x B	E = 2 x B

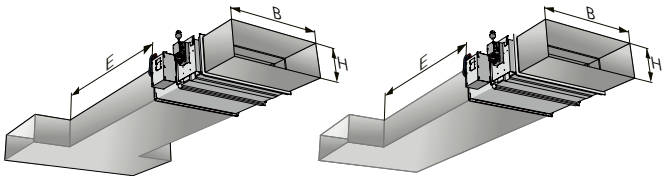


Figure 8. Straight duct section requirements in rectangular ducts.

Straight duct section requirements in case of sound attenuator with baffle

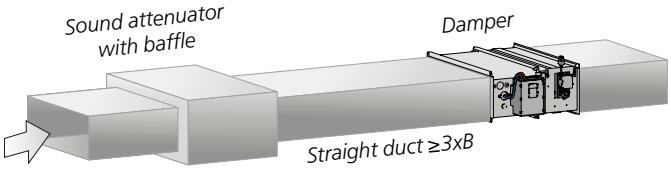


Figure 9. Straight duct section requirements 3 x B in case of sound attenuator with baffle. Applies to both supply and extract air.

Specification

Product

Circular design

Active damper	WISE Damper	b	aaa	bbb	cc
Version:					
Size/Special: 100, 125, 160, 200, 250, 315, 400, 500, 630, Special					
SMA = With WISE SMA Multi					
SR = With spring return actuator (NC)					

Rectangular design

Active damper	WISE Damper	b	aaa-bbb	ccc	dd
Version:					
Size/Special: B x H (see table page 10) *, Special					
SMA = With WISE SMA Multi					
SR = With spring return actuator (NC)					

*Other rectangular sizes than those in the table on page 10 are ordered as Special.

Accessories

FSR

Clamp for circular ventilation ducts	FSR	c	aaa	
Version:				
Dimension: 100, 125, 160, 200, 250, 315, 400, 500, 630				

WISE DPS Modbus

Duct pressure sensor	WISE DPS Modbus	a
Version:		

WISE DPS

Duct pressure sensor	WISE DPS	b
Version:		

POWER Adapt

1-Phase protective transformer	POWER A	a	aaa	
Version:				
Size (VA): 20*, 60 **, 150**				

*Plug contact
**Permanent installation

ACTUATOR

Valve actuator	ACTUATOR	c	aaa	bb
Version:				
Alternatives: 24V, 0-10V				
Type: NC, NO*				

*Only applies to 24 V

WISE Cover Circular Damper

Cover for visible installation	WISE Cover Circular Damper

Specification text

Example of a specification text according to VVS AMA.

QJB.11 Damper with single blade

Make: Swegon

Type: WISE Damper

Variable flow damper for Swegon's WISE system, with the following functions:

- Pressure-independent VAV unit for demand controlled ventilation.
- Built-in temperature sensor and flow measurement.
- Built-in regulator, damper selectable as flow regulating, position optimised function or pressure regulating function (pressure sensor WISE DPS Modbus/WISE DPS is required for pressure regulation).
- The damper can be ordered with factory fitted spring return actuator.
- The damper can be ordered with factory fitted air quality sensor WISE SMA Multi (CO_2, VOC and RH).
- The damper can be ordered with factory fitted external insulation.
- Wireless communication in Swegon's demand controlled indoor climate system WISE.

Must be installed with a minimum straight duct section on the inlet side as per the product sheet.

Size: Ø 100 to Ø 630

Specification

Standard SS-EN1751:	2014, Annex C
Power supply:	24V AC ±15 % 50 - 60Hz
Air tightness class, casing:	C
Air tightness class closed damper:	4
Corrosivity class:	C3
Pressure class:	A
Tolerance flow measurement:	±5%, however at least ±X l/s according to the table in the catalogue.

Type: WISE Damper b aaa bbb cc xx pcs

Accessories

Duct pressure sensor	WISE DPS Modbus a	xx pcs
Duct pressure sensor	WISE DPS b	xx pcs
Transformer for power supply	POWER Aa	aaa xx pcs
Valve actuator for heating and cooling regulation	ACTUATOR c	aaa bb xx pcs
Clamp for ventilation ducts	FSRc	xx pcs
Cover for visible installation	WISE Cover Circular Damper	

QJB.41 Louvre damper with counter-rotating blade

Make: Swegon

Type: WISE Damper

Swegon's variable flow damper of the type WISE Damper with the following functions:

- Pressure-independent VAV unit for demand-controlled ventilation.
- Built-in temperature sensor and flow measurement.
- Built-in regulator, damper selectable as flow regulating, position optimised function or pressure regulating function (pressure sensor WISE DPS Modbus/WISE DPS is required for pressure regulation).
- The damper can be ordered with factory fitted spring return actuator.
- The damper can be ordered with factory fitted air quality sensor WISE SMA Multi (CO_2, VOC and RH).
- Wireless communication in Swegon's demand controlled indoor climate system WISE.

Must be installed with a minimum straight duct section on the inlet side as per the product sheet.

Size: 200 x 200 to 2000 x 1500

Specification

Standard SS-EN1751:	2014, Annex C
Power supply:	24V AC ±15 % 50 - 60Hz
Air tightness class, casing:	C
Air tightness class closed damper:	3
Corrosivity class:	C3
Pressure class:	A
Tolerance flow measurement:	±5%, however at least ±X l/s according to the table in the catalogue.

Type: WISE Damper b aaa-bbb ccc dd xx pcs

Accessories

Duct pressure sensor	WISE DPS Modbus a	xx pcs
Duct pressure sensor	WISE DPS b	xx pcs
Transformer for power supply	POWER Aa	aaa xx pcs
Valve actuator for heating and cooling regulation	ACTUATOR c	aaa bb xx pcs