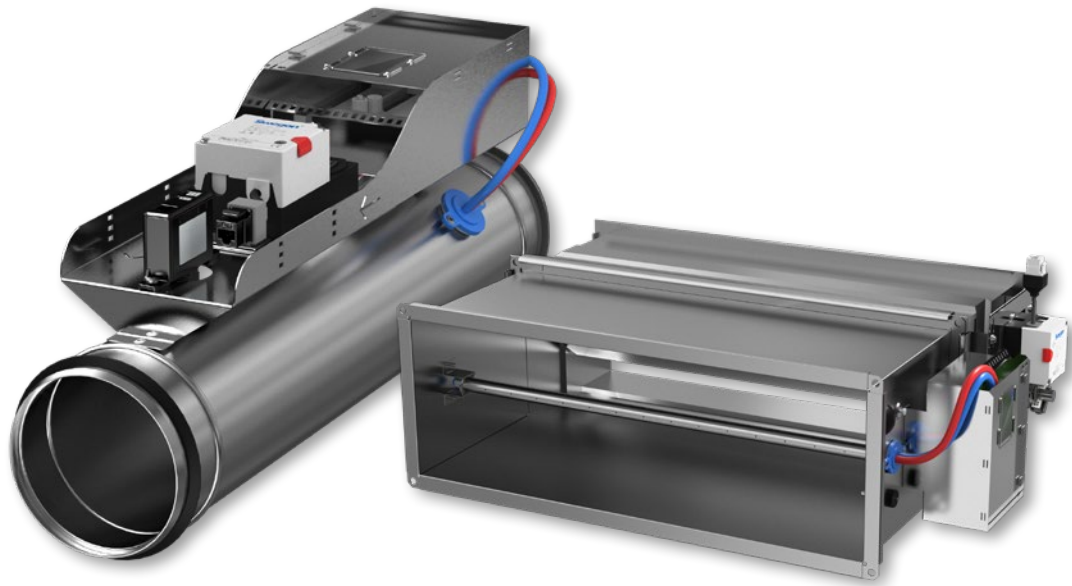


WISE Damper

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: 200x200-1600x700 mm
 - Available with spring return actuator
 - Available with Sensor Module Advanced (SMA)

WISE Damper Size	FLOW RANGE			
	Min. (0.6m/s)*		Max. (10 m/s)*	
	l/s	m ³ /h	l/s	m ³ /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.....	3
General	3
Design	3
Functions.....	3
Materials and surface treatment.....	3
Project design / Typical room	3
Maintenance	3
Environment	3
Technical data.....	4
Electrical data	4
Sizing	5
Air flows – all designs	5
Acoustic data – circular design	5
Sizing diagram – Circular, all designs.....	5
Sound power in octave bands.....	7
Sizing diagram – rectangular design.....	7
Installation, torque, dimensions and weights..	8
Circular design	8
Installation – all designs	8
Installation – circular version	8
Rectangular design	9
Installation – rectangular design.....	9
Specification	10
Specification text	11

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 SMA or without SMA.
- With SMA:
 - Integrated VOC sensor.
 - Integrated RH sensor.

Circular variant:

- 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 variant:

- Connection 200x200-1600x700 mm.
- Other sizes are also available on request.

Functions

- Variable or constant flow regulation or constant pressure regulation (supplemented with the WISE DPS accessory).
- Measurement of air flow, duct pressure, temperature, 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).



Accessories

- FSR, clamp/quick coupling for easy dismantling of circular WISE Damper for cleaning and inspection.
- WISE DPS, duct pressure sensor to retain constant pressure in the duct system, wired Modbus communications, see figure 2.
- POWER Adapt, transformer for power supply.
- ACTUATOR, valve actuator for heating and cooling regulation with for example radiator or cooling coil.
- WISE Cover Circular Damper, cover for visible installation, see figure 1.

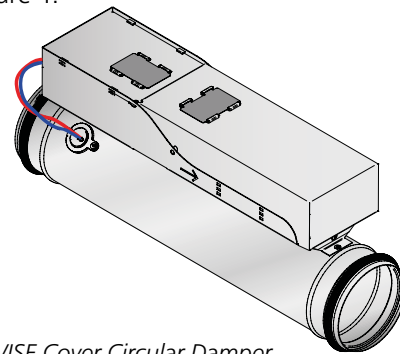


Figure 1. WISE Cover Circular Damper.

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.

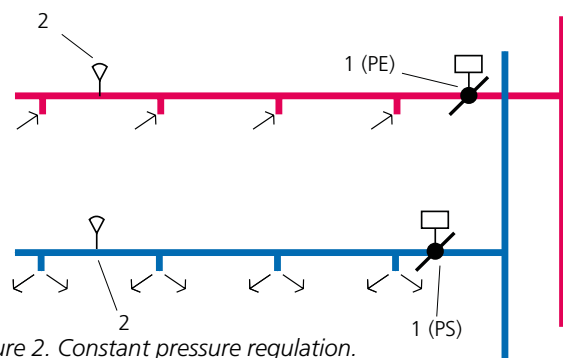


Figure 2. Constant pressure regulation.

- 1: WISE Damper
- 2: 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 SMA	
VOC sensor:	450 - 2000 ppm
RH sensor:	0 - 100 RH%
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. 2.5mm ²
Valve actuator:	Push-in spring force connections, max. 1.5 mm ²
Max. power consumption:	See table below

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

*Applies to products with CU ver. 2, delivered from 10/01/2019.

Sizing

Air flows – all designs

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

Acoustic data – circular design

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}

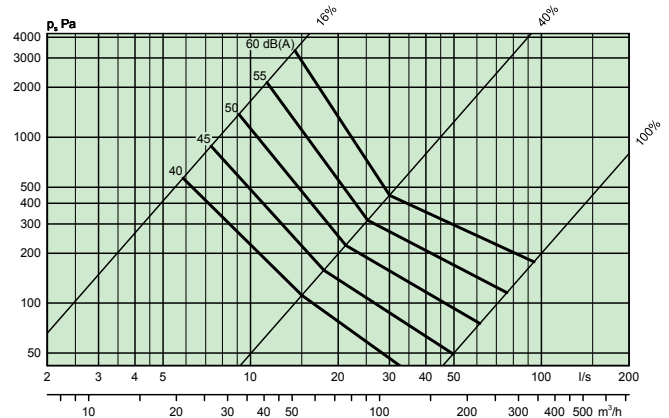
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	-2	-9	-7	-10	-9	-10	-15	-22
125	-4	-9	-8	-13	-9	-12	-19	-27
160	-7	-9	-10	-15	-12	-15	-20	-28
200	-9	-11	-13	-16	-14	-16	-23	-32
250	-8	-18	-17	-19	-17	-17	-23	-31
315	-14	-19	-18	-21	-18	-19	-25	-34
400	-13	-23	-22	-22	-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 diagram – Circular, all designs

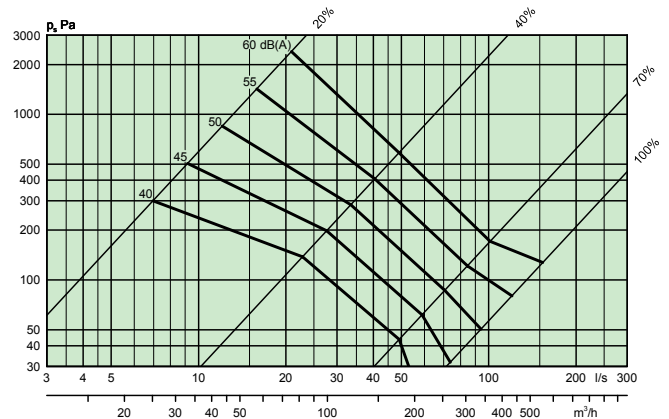
Air flow – Pressure drop – Sound level

- 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.

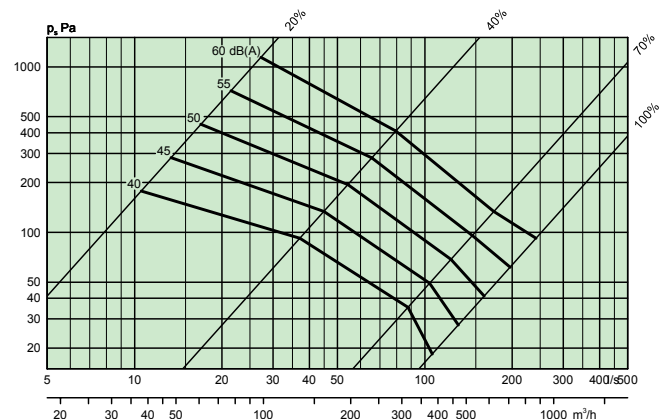
WISE Damper 100



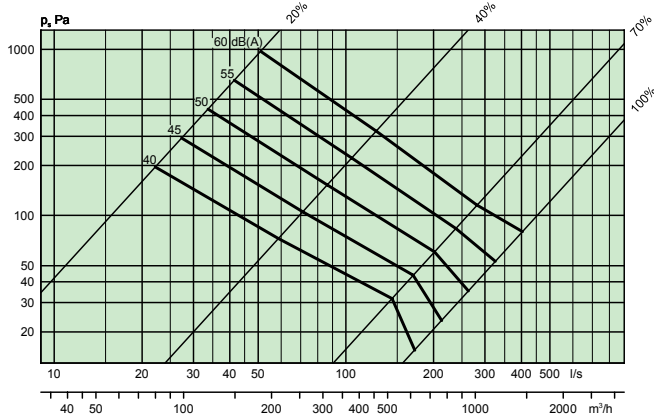
WISE Damper 125



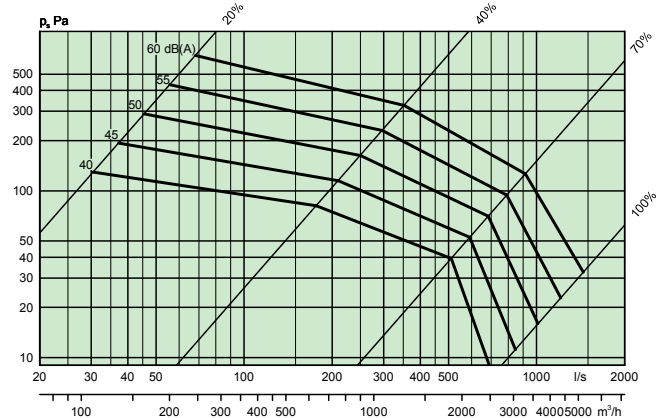
WISE Damper 160



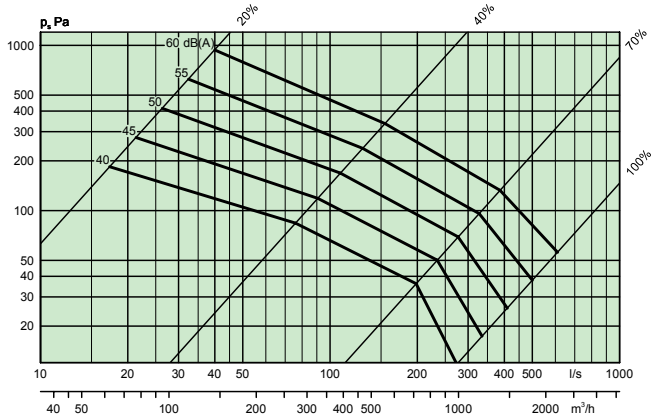
WISE Damper 200



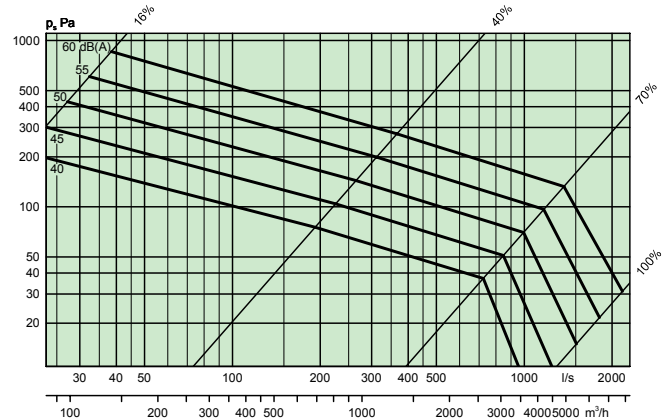
WISE Damper 400



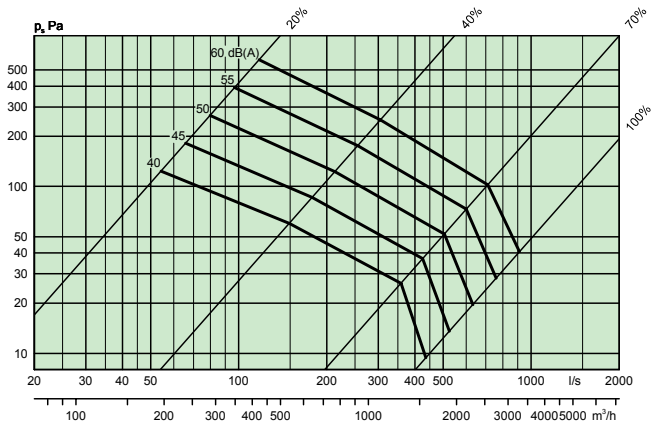
WISE Damper 250



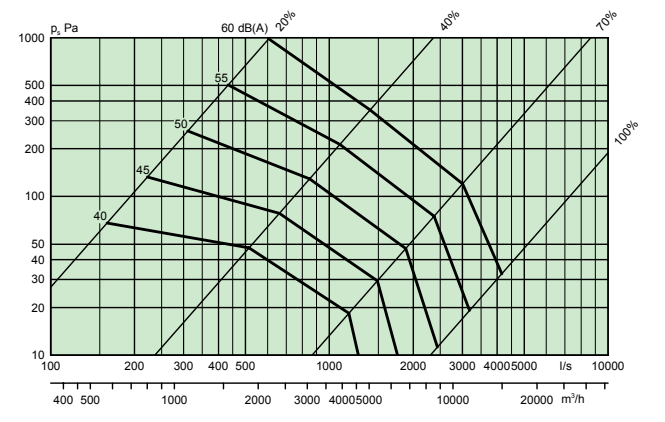
WISE Damper 500



WISE Damper 315



WISE Damper 630



Acoustic data – rectangular design

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

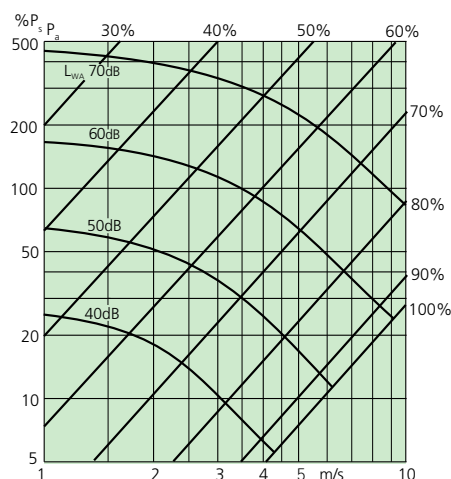
Correction factor K_k for the damper's face area

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 – rectangular design

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

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. (0.6 m/s)		Max. (10 m/s)		
									l/s	m³/h	l/s	m³/h	
100	574	50	584	5	2.5	11	5	3.0	5	18	79	285	2
125	574	50	584	5	2.8	24	5	3.3	7	26	123	443	2
160	574	50	584	5	3.2	33	5	3.7	11	40	202	728	2
200	574	50	584	5	3.7	19	5	4.2	18	65	315	1134	3
250	574	50	584	5	4.3	13	5	4.8	30	108	491	1768	5
315	600	50	610	10	5.2	0	10	6.2	50	180	780	2808	8
400	830	60	850	10	8.0	0	10	9.0	87	314	1257	4526	13
500	830	60	850	10	9.9	0	10	10.9	135	486	1964	7071	20
630	915	60	935	15	13.5	0	20	14.5	187	674	3118	11225	32

*Installed according to the instructions

Installation – all designs

- WISE Dampers' air flow measurement requires a straight section before the product according to the installation figures.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

Installation – circular version

- Installation is position dependent.

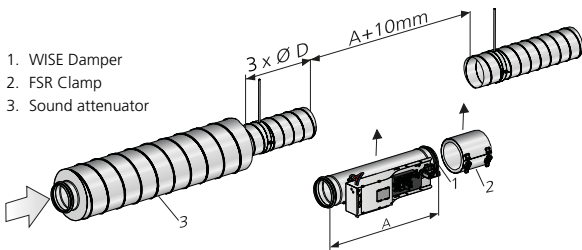


Figure 3. Requires a straight section of 3 x Ø for sound attenuators with baffle or centre body.

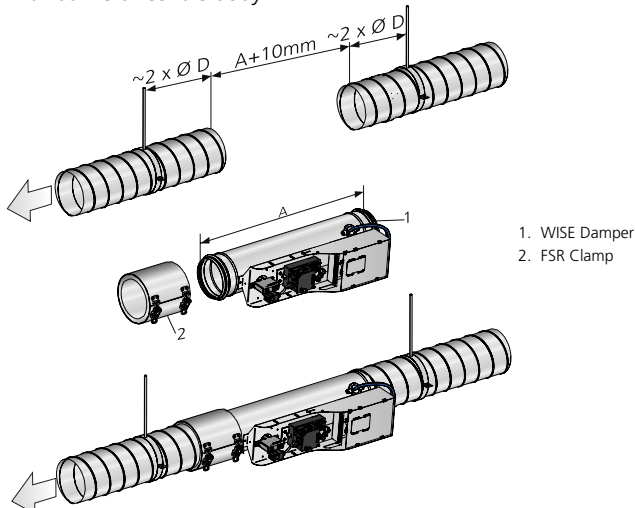


Figure 4. Installation in the duct system. The ducts must be firmly fixed to the frame of the building on each side of WISE Damper.

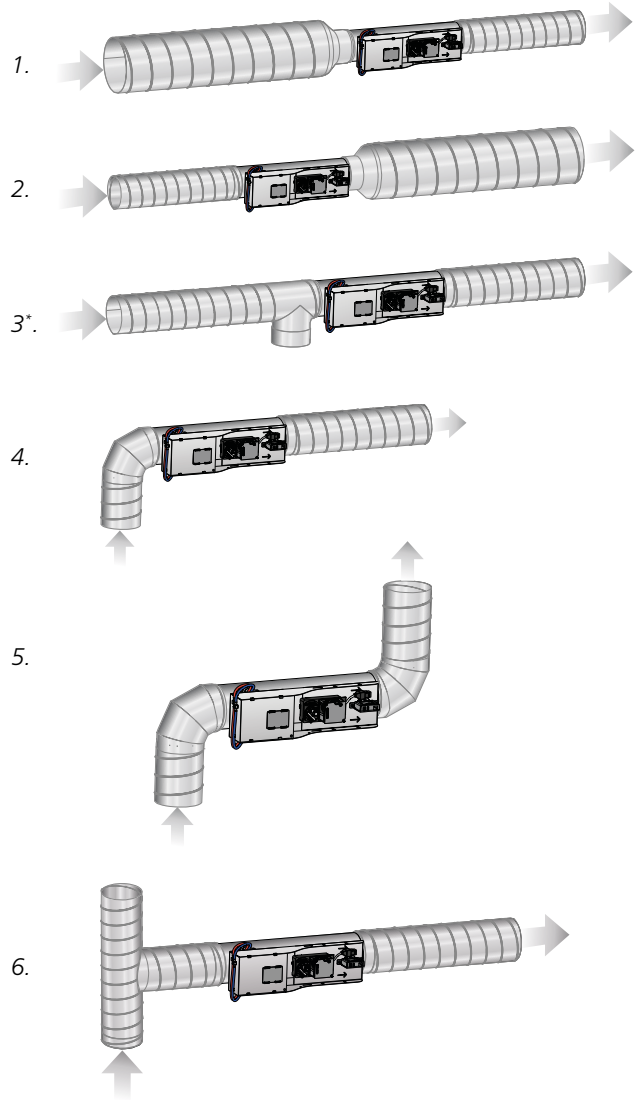


Figure 5. Straight section requirements, circular ducts.

1-5: Quantity Ø before the product: 0 x Ø.

6: Quantity Ø before the product: 2 x Ø.

*Cleaning hatch

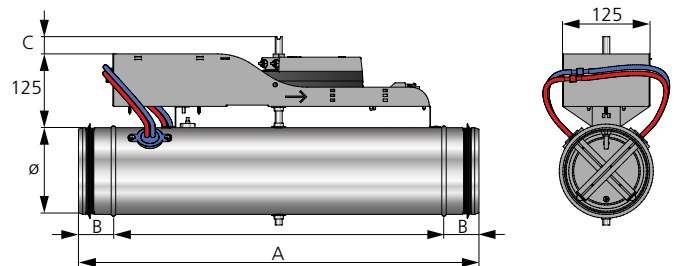


Figure 6. Dimensions, WISE Damper circular and WISE Damper circular with spring return.

Rectangular design

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. (1 m/s)		Max. (10 m/s)		
					l/s	m³/h	l/s	m³/h	
200 x 200	5	7.2	5	8.0	34	123	400	1440	4
300 x 200	5	8.4	5	9.2	50	180	600	2160	6
400 x 200	5	9.9	5	10.7	67	242	800	2880	8
500 x 200	5	11.4	5	12.2	84	303	1000	3600	10
600 x 200	5	12.9	5	13.7	100	360	1200	4320	12
700 x 200	5	14.4	5	15.2	117	422	1400	5040	14
800 x 200	5	15.4	5	16.2	133	479	1600	5760	16
1000 x 200	10	18.4	10	19.9	167	602	2000	7200	20
300 x 300	5	10.9	5	11.3	76	274	900	3240	9
400 x 300	5	12.4	5	12.9	102	368	1200	4320	12
500 x 300	5	13.9	5	14.4	127	458	1500	5400	15
600 x 300	5	15.4	5	15.9	152	548	1800	6480	18
700 x 300	10	16.8	10	17.8	178	641	2100	7560	21
800 x 300	10	18.4	10	19.4	203	731	2400	8640	24
1000 x 300	10	21.4	10	22.4	254	915	3000	10800	30
400 x 400	5	14.0	5	14.5	136	490	1600	5760	16
500 x 400	10	16.0	10	18.0	171	616	2000	7200	20
600 x 400	10	17.4	10	18.5	205	738	2400	8640	24
700 x 400	10	19.6	10	20.6	250	900	2800	10080	28
800 x 400	10	21.1	10	22.2	273	983	3200	11520	32
1000 x 400	10	24.2	10	25.2	341	1228	4000	14400	40
1200 x 400	15	27.2	20	29.2	409	1473	4800	17280	48
1400 x 400	15	30.3	20	32.2	478	1721	5600	20160	56
1600 x 400	15	33.3	20	35.3	546	1966	6400	23040	64
500 x 500	10	18.5	10	19.5	214	771	2500	9000	25
600 x 500	10	20.5	10	21.6	257	926	3000	10800	30
700 x 500	10	22.6	10	23.6	300	1080	3500	12600	35
800 x 500	10	24.6	10	25.6	343	1235	4000	14400	40
1000 x 500	15	28.6	20	30.6	429	1545	5000	18000	50
1200 x 500	15	32.7	20	34.6	514	1851	6000	21600	60
1400 x 500	15	36.8	20	38.7	600	2160	7000	25200	70
1600 x 500	15	40.8	20	42.8	686	2470	8000	28800	80
600 x 600	10	22.7	10	23.7	309	1113	3600	12960	36
700 x 600	10	24.8	10	25.8	361	1300	4200	15120	42
800 x 600	15	26.8	20	27.8	412	1484	4800	17280	48
1000 x 600	15	30.9	20	32.9	515	1854	6000	21600	60
1200 x 600	15	35.0	20	37.0	618	2225	7200	25920	72
1400 x 600	15	39.2	20	41.1	722	2600	8,400	30240	84
1600 x 600	15	43.3	20	45.2	825	2970	9600	34560	96
700 x 700	15	27.6	20	29.5	422	1520	4900	17640	49
800 x 700	15	30.3	20	32.2	482	1736	5600	20160	56
1000 x 700	15	34.9	20	36.8	603	2171	7000	25200	70
1200 x 700	15	40.6	20	42.6	723	2603	8,400	30240	84
1400 x 700	15	45.7	20	47.7	844	3039	9800	35280	98
1600 x 700	15	51.0	20	52.9	964	3471	11200	40320	112

*Installed according to the instructions

Installation – rectangular design

Dimension B in the figure and table below is found in the table “Rectangular design” to the left.

NOTE! Damper spindles must be installed horizontally.

Straight section before WISE Damper in rectangular ducts

Type of disruption	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

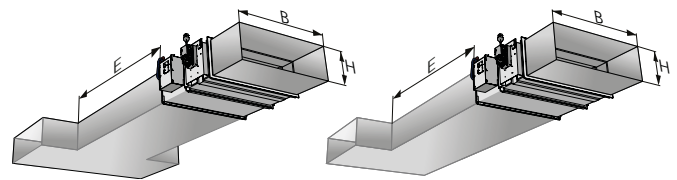


Figure 7. Straight section requirements, rectangular ducts.

Straight section before/after WISE Damper – sound attenuator with baffle

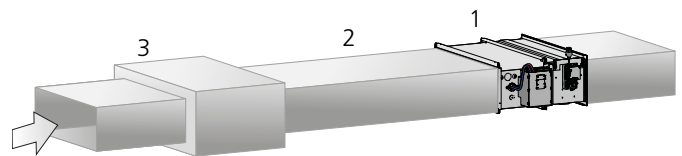


Figure 8. Straight section requirements, rectangular WISE Damper and sound attenuator with baffle. Installation with straight section applies both to supply and extract air.

- 1 = Rectangular WISE Damper.
- 2 = Straight duct ≥3xB.
- 3 = Sound attenuator with baffle.

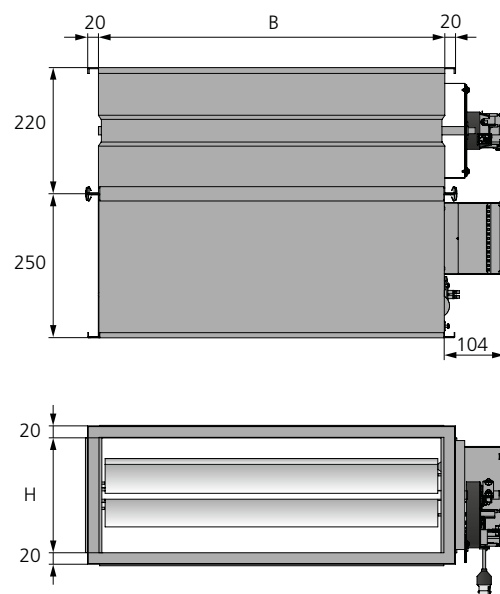


Figure 9. Dimensions, WISE Damper rectangular and WISE Damper rectangular with spring return.

Specification

Product

Circular design

Active damper	WISE Damper	a	xxx	yy	zz
Version:					
Size/Special: 100, 125, 160, 200, 250, 315, 400, 500, 630, Special					
SMA = With SMA (Sensor Module Advanced) 0 = Without SMA					
SR = With spring return type motor (NC) 0 = Without spring return actuator (NC)					

Rectangular design

Active damper	WISE Damper	a	xxx-xxx	yy	zz
Version:					
Size/Special: W x H (see table page 9) *, Special					
SMA = With SMA (Sensor Module Advanced) 0 = Without SMA					
SR = With spring return actuator (NC) 0 = With spring return actuator (NC)					

*Other rectangular sizes than those in the table on page 9 are ordered as Special.

Accessories

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

Duct pressure sensors	WISE DPS	a
Version:		

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

*Plug contact

**Permanent installation

Valve actuator	ACTUATOR	b	xxx	yy
Version:				
Alternatives are: 24V, 0-10V				
Type: NC, NO*				

*Only applies to 24 V

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

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

- Pressure-independent VAV unit for demand-controlled ventilation.
- Must be installed with a minimum straight duct section on the inlet side as stated in relevant catalogue data, designed for temperatures between 0–50°C.
- Built-in temperature sensor and flow measurement.
- Built-in communication unit for communication in Swegon WISE radio network.
- Built-in regulator, damper selectable as flow regulating, position optimised function or pressure regulating function (requires the accessory pressure sensor WISE DPS 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 SMA (VOC and air humidity).
- The damper can be ordered with factory fitted external insulation.

Size: Ø 100
 ...
 Ø 630

Specification:

Standard SS-EN1751:2014, Annex C

- 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 a xxx yyy zz xx items

Accessories:

Clamp for ventilation ducts	FSR	xx items
Duct pressure sensors	WISE DPS a	xx items
Transformer for power supply	POWER A a xxx	xx items
Valve actuator for heating and cooling regulation	ACTUATOR b xxx yy	xx items
Cover for visible installation	WISE Cover Circular Damper	

QJB.41 Louvre damper with counter-rotating blade

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

- Pressure-independent VAV unit for demand-controlled ventilation.
- Must be installed with a minimum straight duct section on the inlet side as stated in relevant catalogue data, designed for temperatures between 0–50°C.
- Built-in temperature sensor and flow measurement.
- Built-in communication unit for communication in Swegon WISE radio network.
- Built-in regulator, damper selectable as flow regulating, position optimised function or pressure regulating function (requires the accessory pressure sensor WISE DPS 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 SMA (VOC and air humidity).

Size: 200 x 200
 ...
 2000 x 1500

Specification:

- Standard SS-EN1751:2014, Annex C
- 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 a xxx-xxx yyy zz xx items

Accessories:

Duct pressure sensors	WISE DPS a	xx items
Transformer for power supply	POWER A a xxx	xx items
Valve actuator for heating and cooling regulation	ACTUATOR b xxx yy	xx items