

WISE Sphere Ceiling

Active air diffuser for Swegon's WISE System for demand-controlled ventilation



QUICK FACTS

- Variable or constant flow regulation
- Wireless communication via radio
- Integrated sensor
- Supply air diffuser with active slot
- Variants:
 - Connection Ø160 or Ø200
 - Selectable front plate

AIR FLOW - SOUND LEVEL - COOLING CAPACITY max Q (l/s)								
Size	min.		30 dB(A)			35 dB(A)		
	(l/s)	(m ³ /h)	(l/s)	(m ³ /h)	p Δt=8K (W)	(l/s)	(m ³ /h)	p Δt=8K (W)
160	5	18	95	342	912	115	414	1104
200	10	36	140	504	1344	165	594	1584

The table shows data for the open damper.

The product can regulate below min. but the measurement accuracy cannot be guaranteed, for tolerances see page 4. NOTE for a high pressure drop across the product, it may be difficult to reach the min. flow, at the same time as the sound generation increases, see the sizing diagrams.

Max cooling capacity is calculated at Δt=8K and for the air flow at 100% and 30 dB(A).

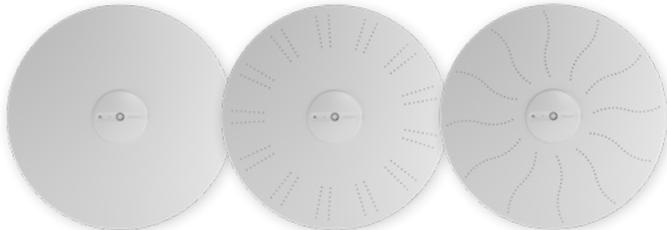
Technical description

General

- Designed for demand-controlled ventilation of premises with a varying load.
- Designed for comfort ventilation.
- Moist, cold and aggressive environments must be avoided.
- Designed for supply 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

- Integrated air flow sensor.
- Integrated duct temperature sensor.
- Integrated room temperature sensor.
- Integrated presence sensor.
- Integrated LED.
- Possibility to connect up to 3 valve actuators.
- Connection: Ø160 or Ø200.
- Always supplied with commissioning box and dust protection.
- Optional front plate in three variants.



Selectable front plates, from the left 1, 2 and 3

Functions

- Variable or constant flow regulation.
- Supply air diffuser with active slot.
- Measurement of air flow, temperature and occupancy.
- Status indication via LEDs.
- Wireless communication via radio.
- External heating control.
- Heating and cooling function with air.

Materials and surface treatment

Air diffuser

- All metal parts are power coated sheet steel.

Commissioning box

- All sheet-metal parts are galvanized sheet steel (Z275).
- Internal sound-absorbing material is made of PET (polyethylene terephthalate, fire rating: B-s1, d0).



Accessories

- POWER Adapt, transformer for power supply.
- ACTUATOR, valve actuator for heating regulation with e.g. radiators.
- ADAPTER, for adaptation to various variants and makes of modular suspended ceiling systems.

Project planning/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.

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
 Flow tolerance: Q±5%, however at least ±3 l/s
 Detection range: See Figure 1
 IP class: IP20
 Corrosivity class: C3
 Air tightness class, casing, according to SS-EN 1751: C
 Running time open/close: 40 s
 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: Push-in spring force connections max. 2.5 mm²
 Valve actuator: Push-in spring force connections, max. 1.5 mm²
 Max. power consumption: See table below

Variant	VA			
	Default	+1 valve actuator	+2 valve actuator	+3 valve actuator
Ø160, Ø200	8	15	22	29*

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

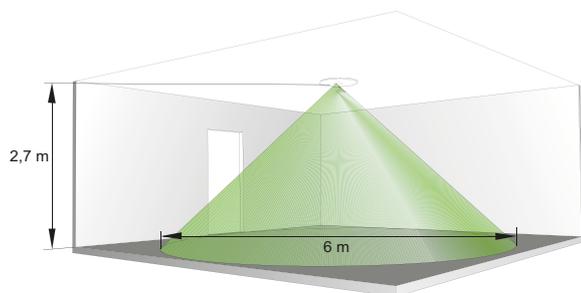


Figure 1. WISE Sphere Ceiling, detection range.

Sizing

- To calculate the air stream diffusion, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our calculation software available on www.swegon.com.

Air flow

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

Acoustic data

Sound power level

- The diagrams show the a-weighted sound pressure level (L_{p10A} -dB), as a function of the air flow and total pressure drop across the air diffuser product.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.
- Correct L_{p10A} with correction factor K_{ok} from the tables below to obtain the sound power levels for each octave band ($L_w = L_{pA} + K_{ok}$).

Correction factors for conversion to sound power in octave bands:

L_w = Sound power level

L_{p10A} = Sound pressure level dB (A)

K_{ok} = Correction for producing the L_w value in the octave band

Sound power level in octave bands

$$L_w = L_{p10A} - K_{ok}$$

Sound power level L_w (dB)

Table K_{ok}

Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160	0	-5	-5	-1	-1	-7	-16	-23
200	-3	-4	-4	1	0	-9	-21	-28
Tol. \pm	2	2	2	2	2	2	2	2

Attenuation ΔL (dB)

Table ΔL

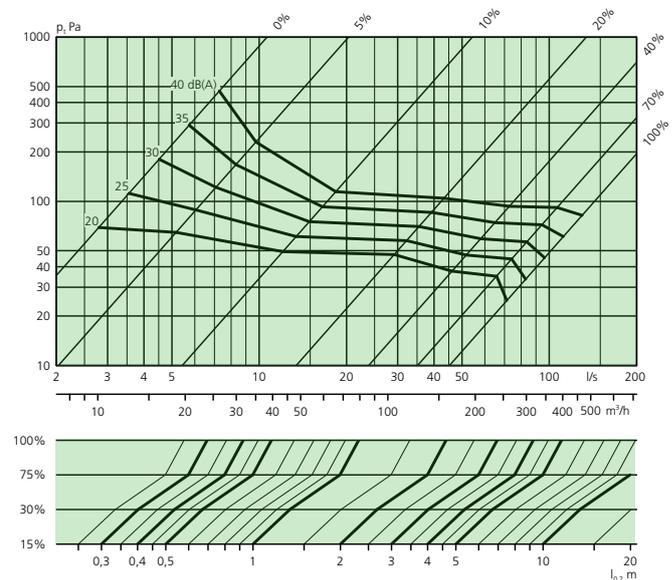
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160	16	12	14	19	21	17	20	18
200	18	11	13	20	19	17	20	18
Tol. \pm	2	2	2	2	2	2	2	2

Sizing diagram

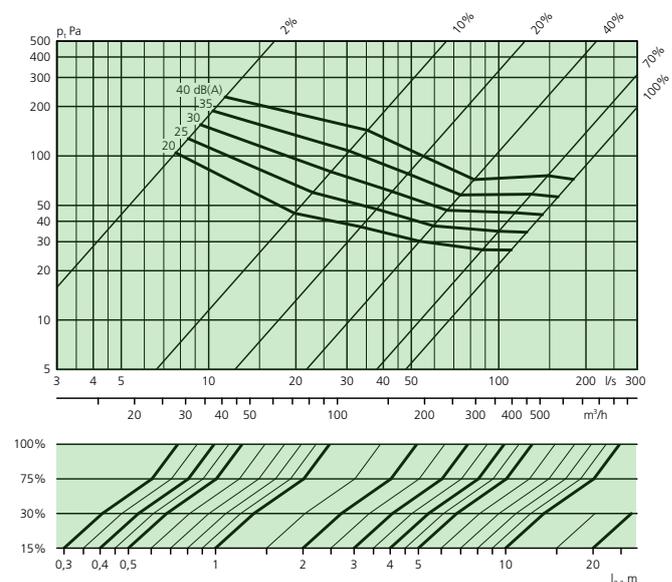
Air flow - Pressure drop - Sound level – Throw length

- Specified sound pressure levels, L_{p10A} : 20, 25, 30, 35, 40.
- Sound pressure level dB(A) is applicable to rooms with an equivalent sound absorption area of 10 m² (4 dB room attenuation).
- The throw length $L_{0.2}$ is measured under isothermal discharge conditions.
- Throw length for 360° distribution pattern.
- The recommended max. permissible temperature below room temperature is 12 K.
- 100% corresponds to the damper being fully open.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.

WISE Sphere C 160



WISE Sphere C 200



Installation dimensions and weights

Size	Dimensions (mm)						
	ØA	B	C	ØD	Ød	ØJ	E
160	380	404	288	159	200	280	295
200	456	504	332	199	250	350	345

ØJ = Size of opening

Size	Dimensions (mm)					Weight (kg)
	F	G	H	I	K	
160	200	195	365	43	95	6.6
200	240	230	460	45	115	9.0

CL = Centreline

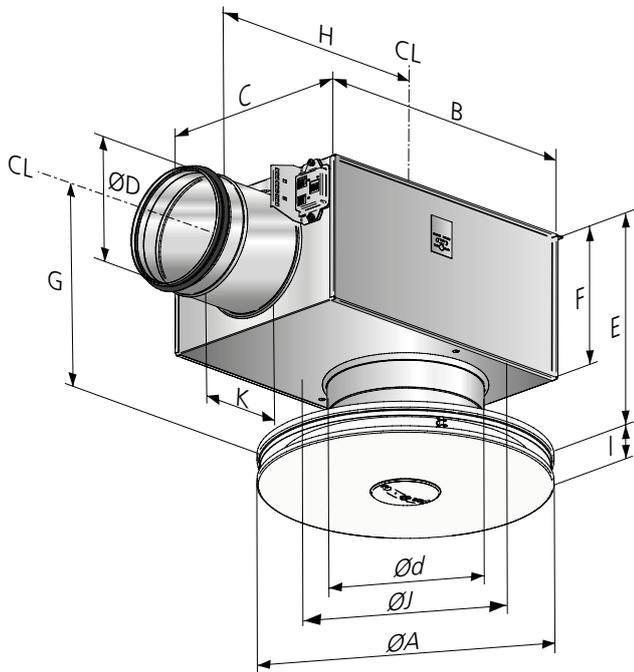


Figure 2. WISE Sphere C, dimensional figure.

Installation

- WISE Sphere C air flow measurement does not require a straight section before the product according to the installation figures.
- Avoid installing the product above/near a heat source, for example, luminaires.
- Instructions for Use are supplied with the product on delivery, but can also be downloaded from www.swegon.com.

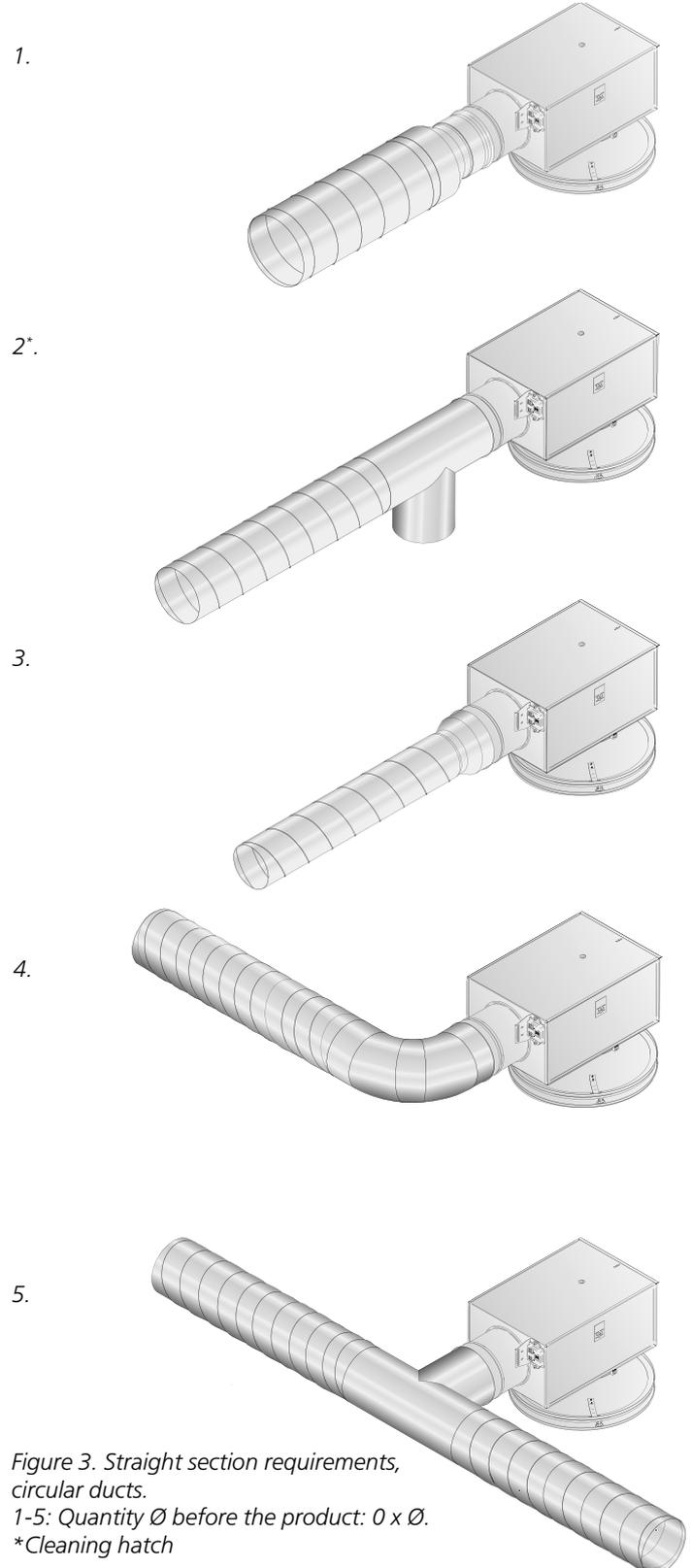


Figure 3. Straight section requirements, circular ducts.
1-5: Quantity Ø before the product: 0 x Ø.
*Cleaning hatch

Specification

Product

Circular active air supply diffuser for ceiling WISE Sphere C c xxx y

Version:

Connection dimensions Ø: 160, 200

Front plate: -1, -2, -3

Accessories

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

Adapter for cassette suspended ceiling ADAPTER
See specification in separate catalogue

Specification text

Example of a specification text according to VVS AMA.

Q Units, ducts, devices, etc. in air treatment systems

QM Air diffuser, etc.

QMC Supply air diffuser

QMC.2 Supply air diffuser mounted in the ceiling

TDxx

Single slot diffuser interconnected with the commissioning box with fixed distribution pattern:

- Pressure independent VAV unit with active slot for demand-controlled ventilation
- Built-in sensors for duct temperature and, room measurement, flow measurement and occupancy control
- Integrated regulator, flow regulated function
- Optional front plate in three variants
- 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 stated in relevant catalogue data.

Size: Ø 160
Ø 200

Colour: Standard finish signal white RAL 9003, gloss 30.

Specification:

- Power supply: 24V AC ±15% 50 - 60Hz
- Air tightness class, casing: C
- Corrosivity class: C3
- Tolerance flow measurement: ±5%, however at least ±3 l/s

Type: WISE Sphere C c xxx y xx items

Accessories:

Transformer for power supply POWER A a xxx xx items

Valve actuator for heating regulation ACTUATOR b xxx yy xx items

Adjustment frame for suspended ceilings ADAPTER a -b-ccc xx items