

# WISE Sphere Free

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 <sup>3</sup> /h)	(l/s)	(m <sup>3</sup> /h)	p Δt=8K (W)	(l/s)	(m <sup>3</sup> /h)	p Δt=8K (W)
160	5	18	80	288	768	95	342	912
200	10	36	130	468	1248	150	540	1440

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).

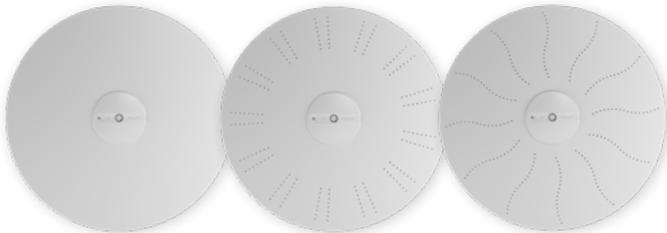
# Technical description

## 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 dust protection.
- Optional front plate in three variants.



Selectable front plate. 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.

## Project design / Typical room

See the separate documentation "WISE System Guide", which is available for download via [www.swegon.com](http://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](http://www.swegon.com).

## Environment

The Building Materials Declaration is available from [www.swegon.com](http://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 mm<sup>2</sup>  
 Valve actuator: Push-in spring force connections, max. 1.5 mm<sup>2</sup>  
 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

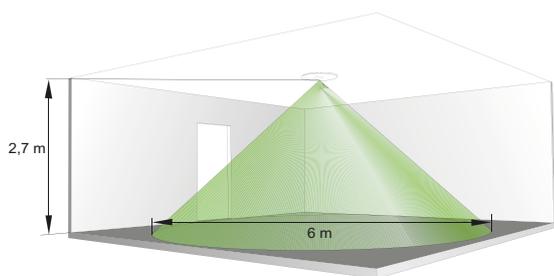


Figure 1. WISE Sphere Free, detection range.

# 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](http://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 ( $\Delta L$ ) 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	5	0	-2	0	-1	-7	-16	-22
200	7	-1	-3	0	0	-7	-17	-22
Tol. $\pm$	2	2	2	2	2	2	2	2

### Attenuation $\Delta L$ (dB)

Table  $\Delta L$

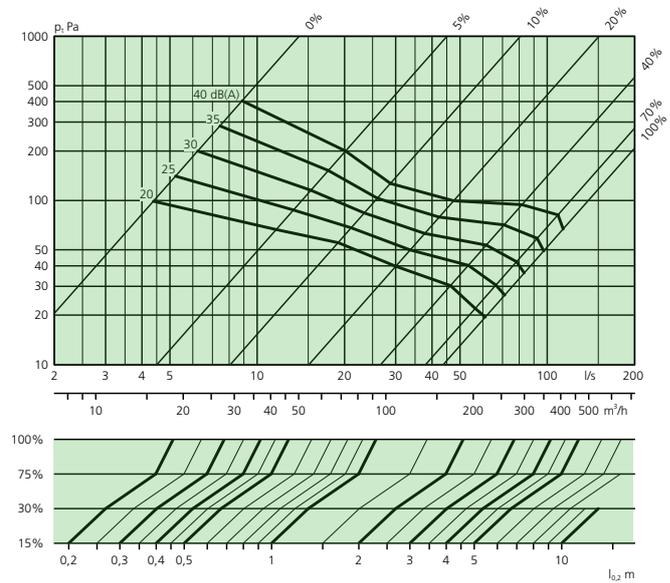
Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160	21	16	24	21	19	10	11	11
200	18	13	23	21	14	10	10	12
Tol. $\pm$	2	2	2	2	2	2	2	2

## Sizing diagram

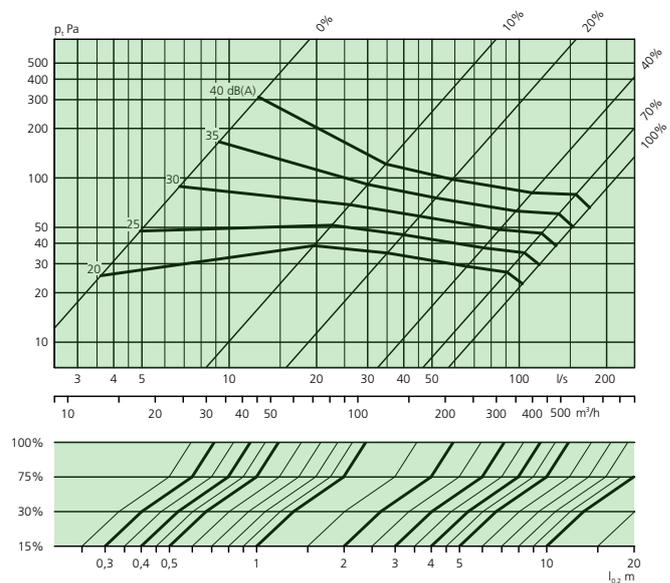
### Air flow - Pressure drop - Sound level – Throw length

- 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 m<sup>2</sup> (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 F 160



### WISE Sphere F 200



# Installation, dimensions and weights

Size	Dimensions (mm)			
	A	B	C	ØD
160	380	375	545	159
200	456	440	660	199

Size	Dimensions (mm)				Weight (kg)
	E	F	G	H	
160	130	245	120	310	8.5
200	150	290	160	390	11.3

CL = Centreline

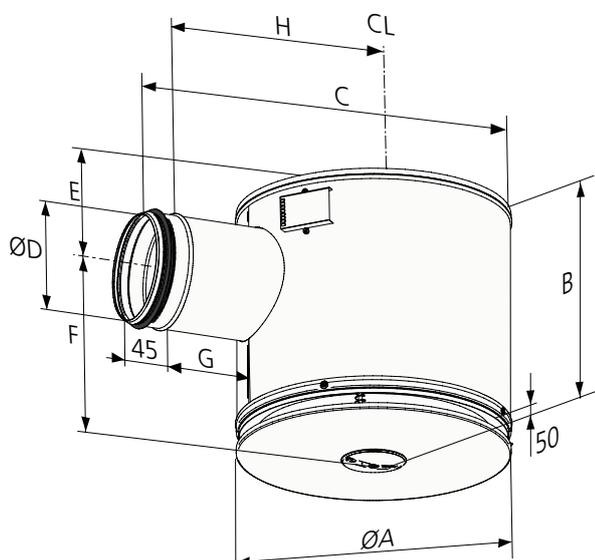
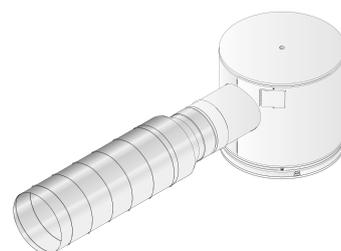


Figure 2. WISE Sphere F, dimensional figure.

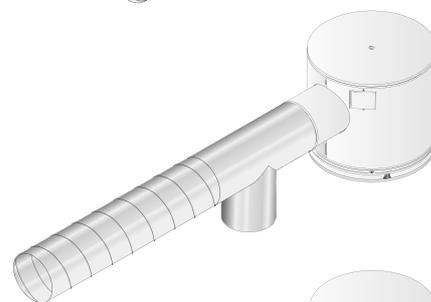
## Installation

- WISE Sphere F 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](http://www.swegon.com).

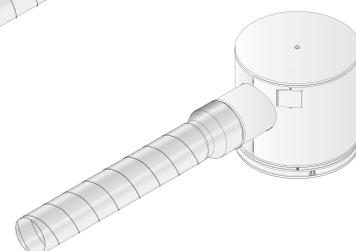
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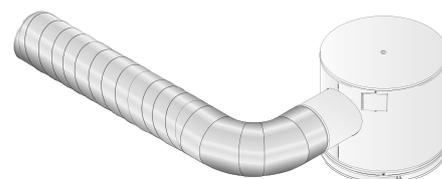
2\*



3.



4.



5.

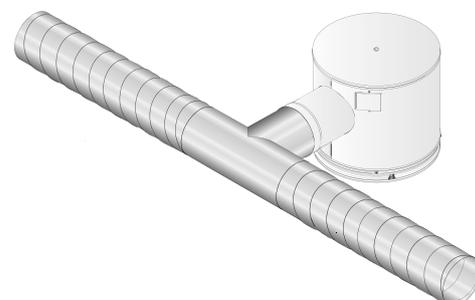


Figure 3. Straight section requirements, circular ducts.

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

\*Cleaning hatch

# Specification

## Product

Circular active air supply diffuser for ceiling WISE Sphere F 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

# 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

Suspended single slot diffuser without 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 F c xxx y x pcs.

Accessories:

Transformer for power supply POWER A a xxx xx items

Valve actuator for heating regulation ACTUATOR b xxx yy xx items