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Tellus-Opus VAV

Circular supply diffuser with VAV

- Unique damper function
- Extensive working range
- Belimo MP-Bus

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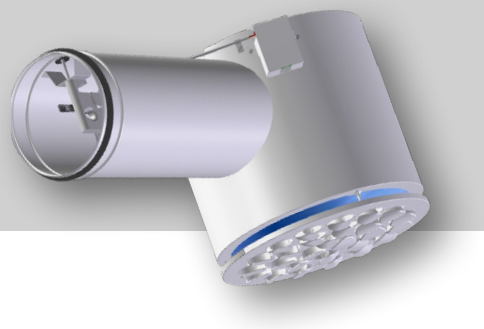
Tellus-Opus VAV



APPLICATION

Tellus-Opus VAV is a circular supply diffuser with VAV function for open installation. It has excellent induction and is suitable for both constant and variable air flow rate. The diffuser is also available with a pass-through function.

FUNCTION

Tellus-Opus VAV has a built-in VAV regulator for demand control of air flow. The damper solution will choke the pressure at high flow rates and maintain a low sound level. This may reduce the need for additional dampers and sound attenuators in a duct system. Tellus-Opus VAV is supplied with Belimo MP-Bus. For communication with Modbus and BACnet, a Belimo UK 24-Gateway can be utilised. Measurement deviation for the area:

10-20% of nominal: ±25%
20-40% of nominal: <±10%
40-100% of nominal: <±4 %

In order to sustain the product's measurement accuracy, straight ducting of min. 5 x ØD is recommended.

DESIGN

Tellus-Opus VAV is designed as a complete measurement and regulating unit for demand control of air flow in the ventilation system. The measuring station measures the differential pressure via a sensor integrated into the unit. The unit is equipped with a CHV-VAV-MP regulator from Belimo. The regulator specifications are provided in the table below. Tellus-Opus VAV has a removable front plate with Opus nozzles.

Actuator	CHV-VAV-MP
Operating voltage	AC 24 V 50/60 Hz, DC 24 V
Power consumption	1.5W
Dim. power	2.5VA

Table 1, Technical specification, Belimo VAV regulator

MATERIALS AND FINISH

Tellus-Opus VAV has a galvanised steel finish. The damper is fitted with a polyester cloth. The spigot has an EPDM rubber gasket. Tellus-Opus VAV are delivered in RAL 9003 - gloss 30.

ORDER CODE, TELLUS-OPUS VAV

Tellus-Opus VAV- 160 - 0 / 0

Product:

Dimension:
- Ø125
- Ø160
- Ø200
- Ø250

SL = Special lacquer

- 0 = Connection box mounted
- 1 = Connection box supplied separately
- 2 = Only cable with loose ends

Example:
Tellus-Opus VAV-160 - 0/0
Explanation:
Tellus-Opus VAV, dimension Ø160, connection box mounted, powder coated in standard RAL 9003 – gloss 30.

QUICK SELECTION, Tellus-Opus VAV

	(Open) m³/h		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	163	197	239
160	306	375	461
200	388	465	557
250	441	541	663

	(75 Pa) m³/h		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	115	170	234
160	252	332	440
200	260	396	550
250	370	475	641

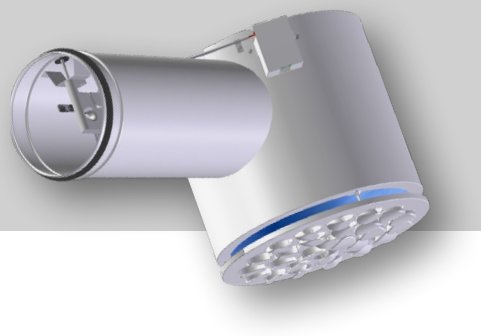
Table 2

REGULATION RANGE, Tellus-Opus VAV

Tellus-Opus VAV	(m³/h)	
ØD.	Minimum	Maximum
125	26	265
160	43	434
200	70	700
250	106	1060

Table 3, Regulation range for VAV, air flow rate in m³/h. See calculation diagram for sound power and pressure loss.

Tellus-Opus VAV



DIMENSIONS AND WEIGHT, Tellus-Opus VAV

Dim.	D	DA	H	S	Weight [kg]
125	124	380	210	15/29	7.5
160	159	380	262	15/29	8
200	199	380	322	15/29	9
250	249	416	397	15/29	11

Table 4

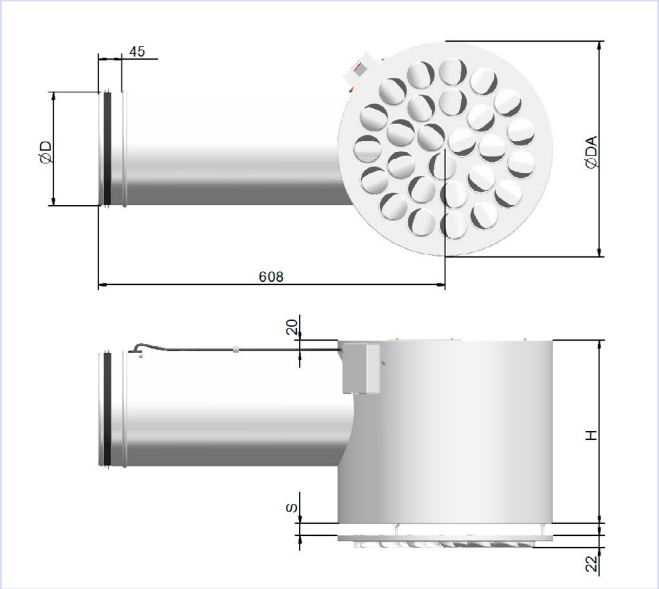


Figure 1. Dimensioned sketch, Tellus-Opus VAV

ACOUSTIC DOCUMENTATION

The diagrams provide a summary of the A-weighted sound power level from diffuser, L_{WA}. The correction factors in table 5 are used to calculate the emitted frequency-distributed sound power level, $L_W = L_{WA} + KO$. A room with absorption equivalent to 10 m^2 Sabine will have a sound pressure level which is 4 dB below the sound power level emitted.

Example:
Office premises with an air flow requirement of 125 l/s – product selected is Tellus-Opus VAV 200 with high-profile design. Sound attenuation in the room is 6 dB, and it is estimated that the diffuser's damper shall choke 15 Pa. From diagram 3, we find that L_{WA} = 29 dB(A) with open damper and 50 Pa total pressure drop.

The aim is to find the following:

a) A-weighted sound pressure level in the room with open damper and relevant room attenuation.
b) Emitted sound power level from the diffuser for frequency 250 Hz with open damper.
c) A-weighted sound pressure level in the room with choked damper and same room attenuation.
d) Emitted sound power level from the diffuser for frequency 250 Hz with choked damper.

a) With 6 dB room attenuation, the sound pressure level in the room is: 29 – 6 = 23 dB(A)
b) Table 5 shows that the correction factor for 250 Hz is +1 dB, L_W in 250 Hz is thus: $L_{WA} + KO = 29 + 1 =$ 30 dB
c) With 15 Pa choking, we arrive at 65 Pa, and the diagram shows that L_{WA} increases by 2 dB. The sound pressure level is therefore 29 + 2 – 6 = 25 dB(A)
d) Table 5 shows that the correction factor for 250 Hz is +1 also with choked damper, so that the emitted sound power level is the same as with an open damper.

CALCULATION DIAGRAM

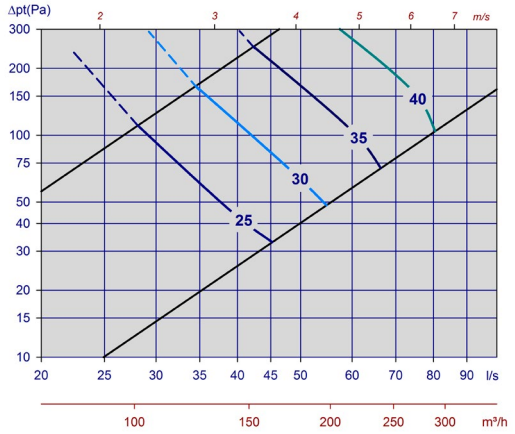


Diagram 1, Tellus-Opus VAV Ø125 Max. slot height.

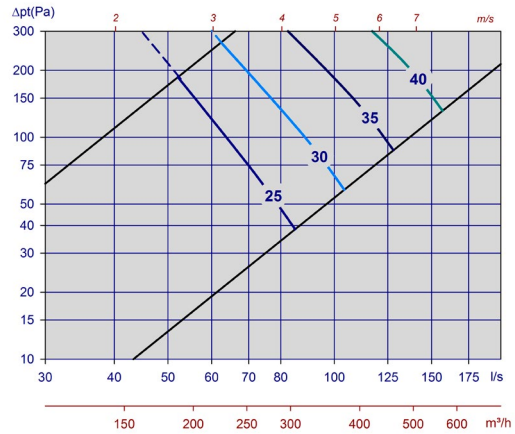


Diagram 2, Tellus-Opus VAV Ø160 Max. slot height.

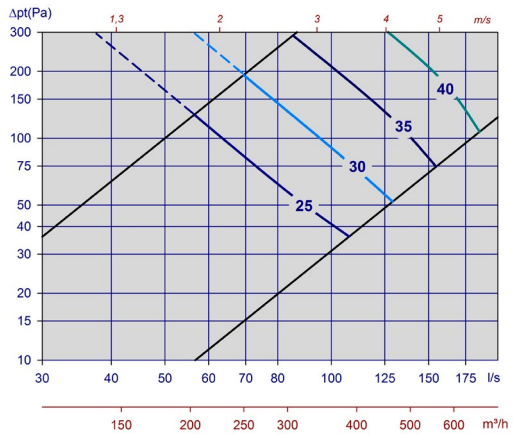


Diagram 3, Tellus-Opus VAV Ø200 Max. slot height.

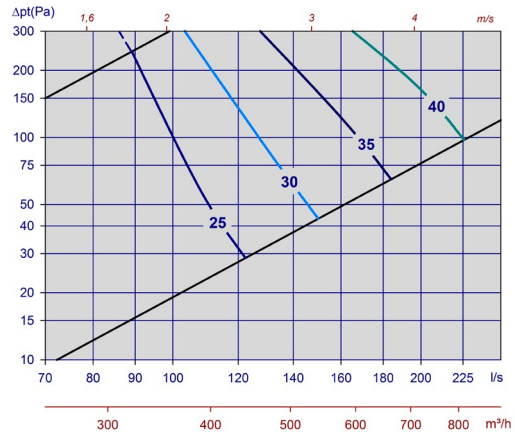


Diagram 4, Tellus-Opus VAV Ø250 Max. slot height.

ADJUSTMENT

Tellus-Opus VAV uses Belimo PC-Tool or ZTH-EU in order to make the requisite adjustments.

	Right pressure loss line (open damper)								KO (dB)	Left pressure loss line (choked damper)							
Dim.	63	125	250	500	1k	2k	4k	8k		63	125	250	500	1k	2k	4k	8k
125	2	0	1	-2	-8	-11	-10	-10		1	-5	-2	-5	-6	-10	-7	-8
160	3	0	1	-3	-7	-10	-10	-10		2	-3	0	-6	-8	-9	-7	-9
200	1	1	1	-3	-6	-10	-12	-13		5	2	1	-5	-8	-11	-8	-8
250	5	3	0	-2	-7	-11	-13	-10		4	2	-3	-5	-9	-10	-7	-6

Table 5-Tellus-Opus VAV KO-factor

	Attenuation (dB)							
Dim.	63	125	250	500	1k	2k	4k	8k
125	20	11	8	13	14	13	15	14
160	19	10	7	12	15	13	14	17
200	19	9	7	12	13	11	12	14
250	14	7	6	11	12	10	11	13

Table 6-Tellus-Opus VAV static sound attenuation incl. end reflection

DIFFUSION PATTERN Tellus-Opus VAV

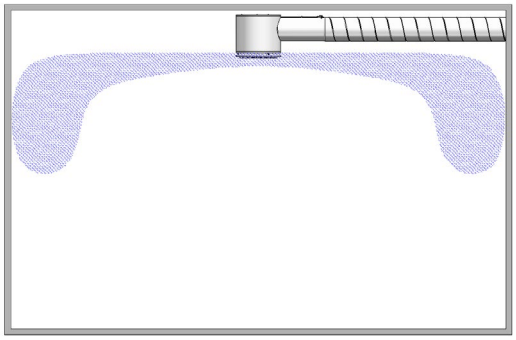


Figure 2, diffusion pattern Tellus-Opus VAV

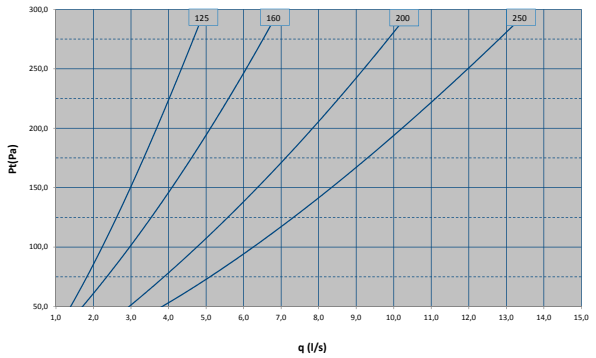


Figure 3, leakage amount with closed damper Tellus-Opus VAV

THROW LENGTH Tellus-Opus VAV

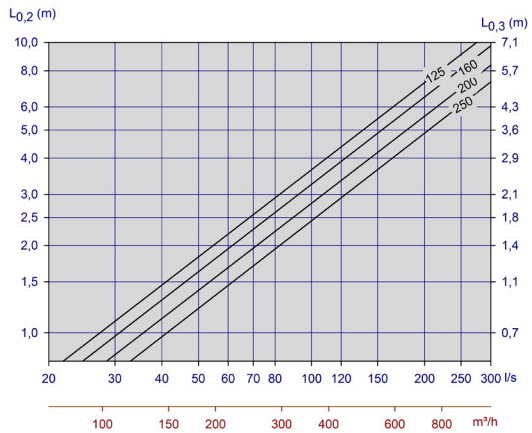


Diagram 5, Throw length - Tellus-Opus VAV

INSTALLATION

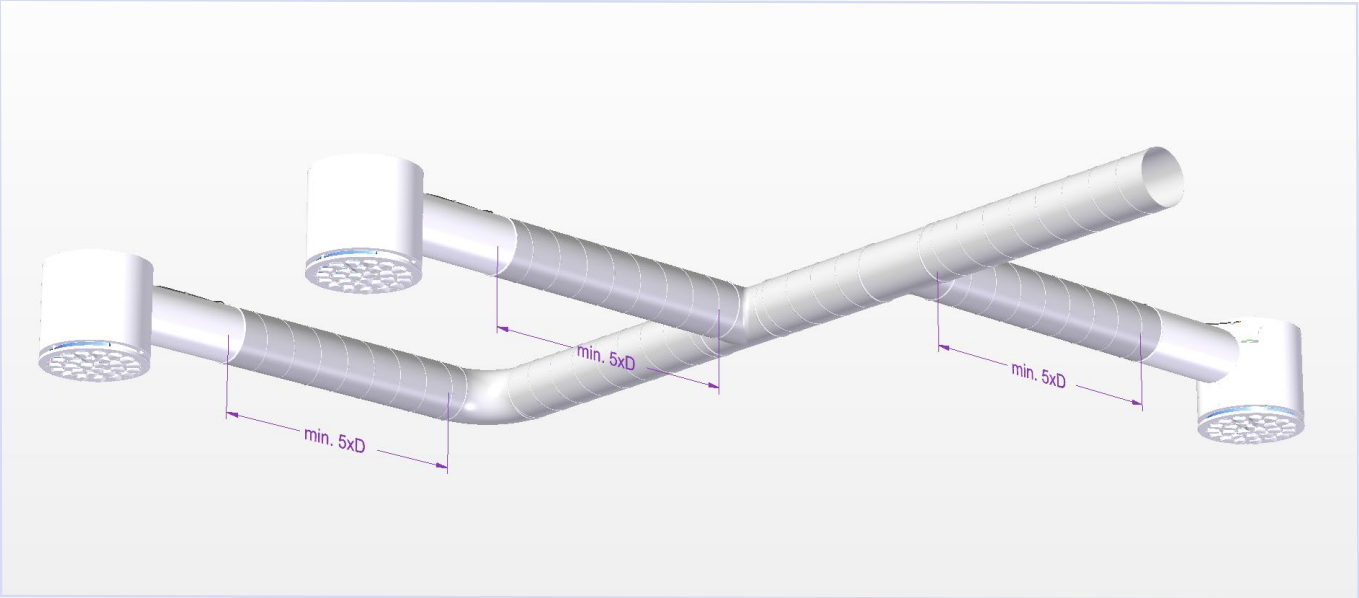
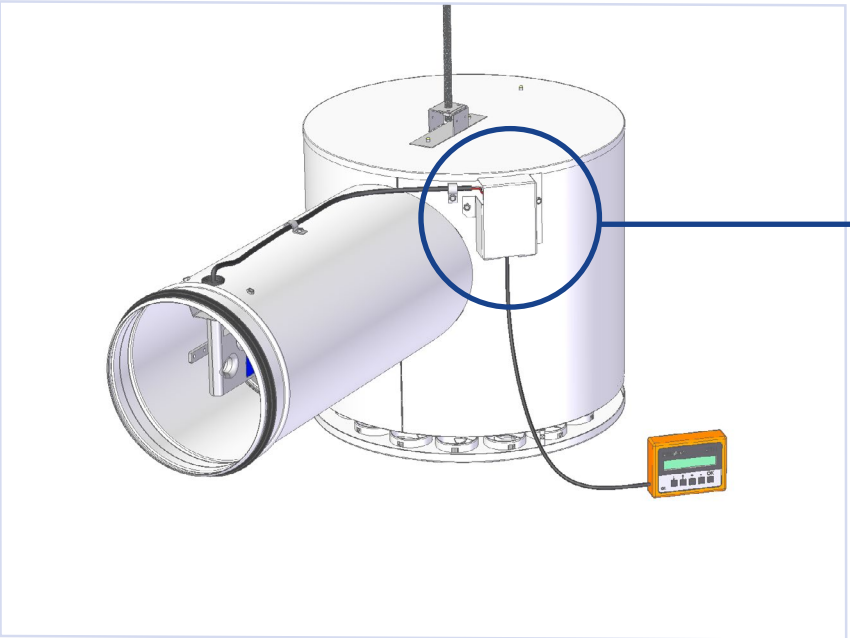
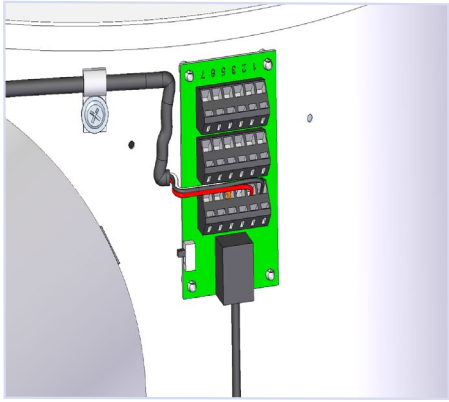


Figure 4, Tellus-Opus VAV installation



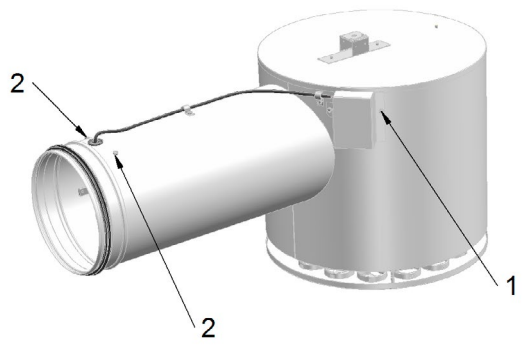


Quick connection for power and bus communication via terminal blocks (1, 2, 3, 5). RJ 12 plug for easy adjustment of actuator via ZTH.
NB! When Bus communication is used, the switch on the printed circuit board must be tilted down to the service position to achieve contact with service tools. Remember to return the switch to the normal position when disconnecting service tools.

Figure 5, Tellus-Opus VAV installation. The diffuser can be suspended using a threaded rod in the fastening bracket at the top of the chamber.

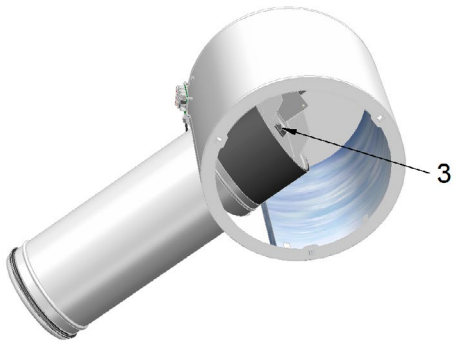
REMOVAL OF ACTUATOR AND DAMPER

Figure 6



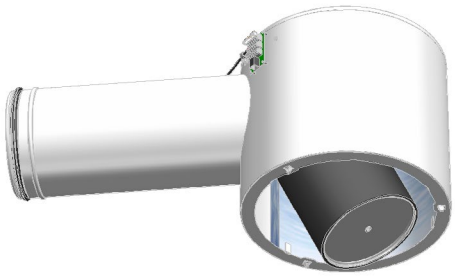
Unscrew the print card cover (1). Disconnect the actuator wires on the print card.
Unscrew the two screws on the actuator support on the spigot (2). (Screw direct on the actuator, dimension 125). Remove the front.

Figure 7



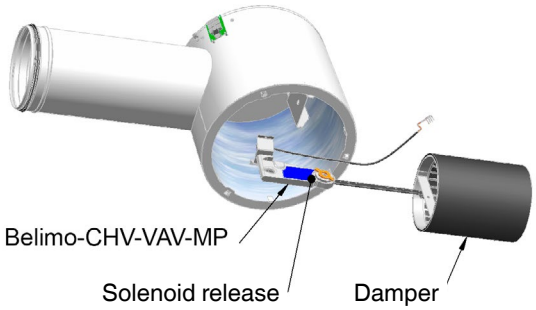
Remove the wing screw (6 mm) from the damper (3) and pull the damper bracket into the rear position. The actuator and damper are now loose from the casing.

Figure 8



Pull out the damper and angle it downwards towards the outlet. The actuator will follow.

Figure 9



In order to disconnect the pitch rack from the actuator, you have to place a magnet in the specified position on the actuator. You will find the magnet on the bracket between the damper and the rail.

ADJUSTMENT

Tellus-Opus VAV uses Belimo PC-Tool or ZTH-EU in order to make the requisite adjustments.

MAINTENANCE

There are no specific maintenance requirements.

ENVIRONMENT

Inquiries regarding the product declaration can be directed to our sales team, or information can be found on our website: www.trox.no

Tellus-Opus VAV is developed and produced by:

The company reserves the right to make amendments without prior notice.

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