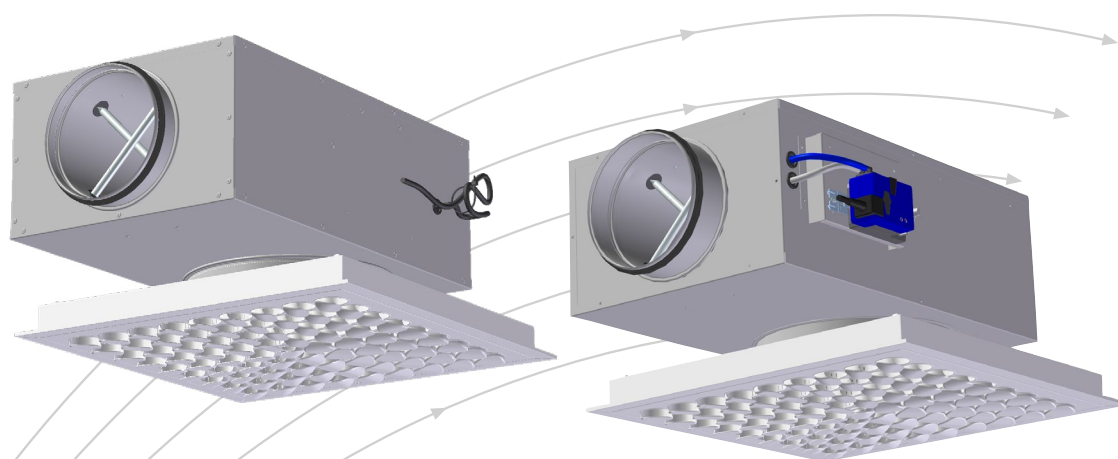


Orion-Opus with Sirius

VAV box for supply diffuser



- Unique damper function
- Extensive working range
- Can be used with internal linear regulator, or external rotary regulator

TROX[®] TECHNIK

Auranor

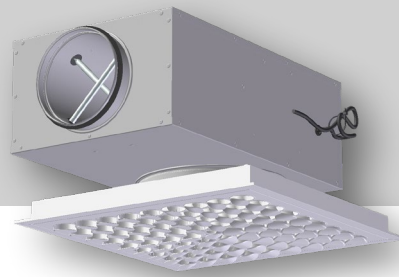
TROX Auranor AS

Auranorvegen 6
NO-2770 Jaren

Telephone +47 61 31 35 00

e-mail: office-no@troxgroup.com
www.trox.no/en

Orion-Opus with Sirius



Product sheet for Motion sensor can be found on our website: www.trox.no/en

APPLICATION

Orion-Opus with Sirius is a diffuser unit with VAV function, and is used as volume flow controller and diffuser in ventilation systems to enable air flow rates to be set as per requirements. Orion-Opus offers excellent induction, and is ideal for variable air flow rates.

FUNCTION

Orion-Opus with Sirius has a built-in VAV controller for adjustment of air flow rate. The damper solution will choke the pressure at high flow rates and will maintain a low sound level. This may reduce the need for additional dampers and sound attenuators in a duct system. Sirius VAV chambers can be supplied with several different bus options for SD systems.

If T-pipes are used, a spacing of at least 5 x ØD is recommended in order to maintain the measurement accuracy.

The diffuser front can be supplied with integrated motion sensor.

DESIGN

Orion-Opus with Sirius is a complete measuring and control unit where the air flow rates in ventilation systems can be set as required. At the measuring station, the differential pressure is measured by using measuring rods integrated in the unit. Sirius is equipped with VAV regulators from Belimo or Siemens. Sirius MI (motor inside) is supplied with a linear regulator from Belimo. Access to the engine is via the valve front. Sirius MU (external motor) is supplied with a rotating motor from Belimo and Siemens. Access to the motor is via the ceiling plate next to the valve. If there is a fixed ceiling, an inspection hatch must be made. When choosing Sirius MU, other engine variants can be delivered on request.

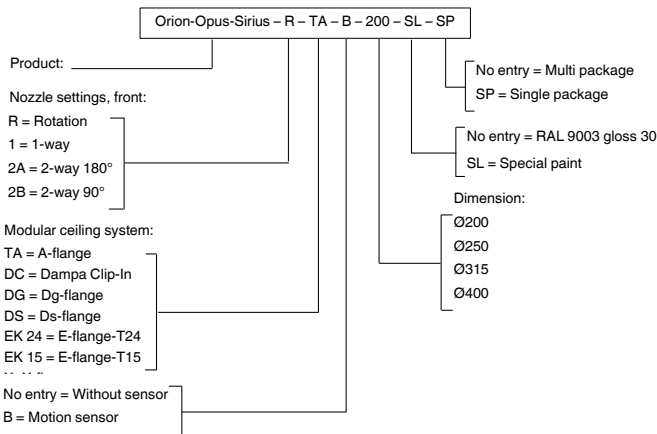
The regulators' specifications can be found in table 1. Complete technical documentation can be found on our website.

Orion-Opus with Sirius features a removable front panel, and is available with 4 different nozzle settings: rotational, 1-way, 2-way 180° or 2-way 90°. It is suitable for a range of ceiling systems.

MATERIALS AND SURFACE COATING

Sirius comes in a galvanised steel design. The measurement unit is in aluminium, and hoses and nipples are in plastic. The damper is equipped with polyester material, and the connection collar is fitted with EPDM rubber gasket

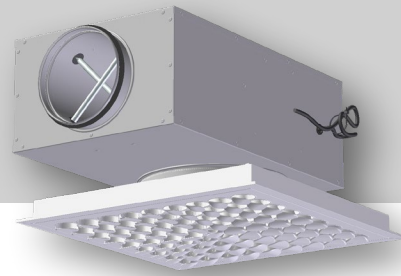
ORDER CODE, diffuser - Orion-Opus Sirius



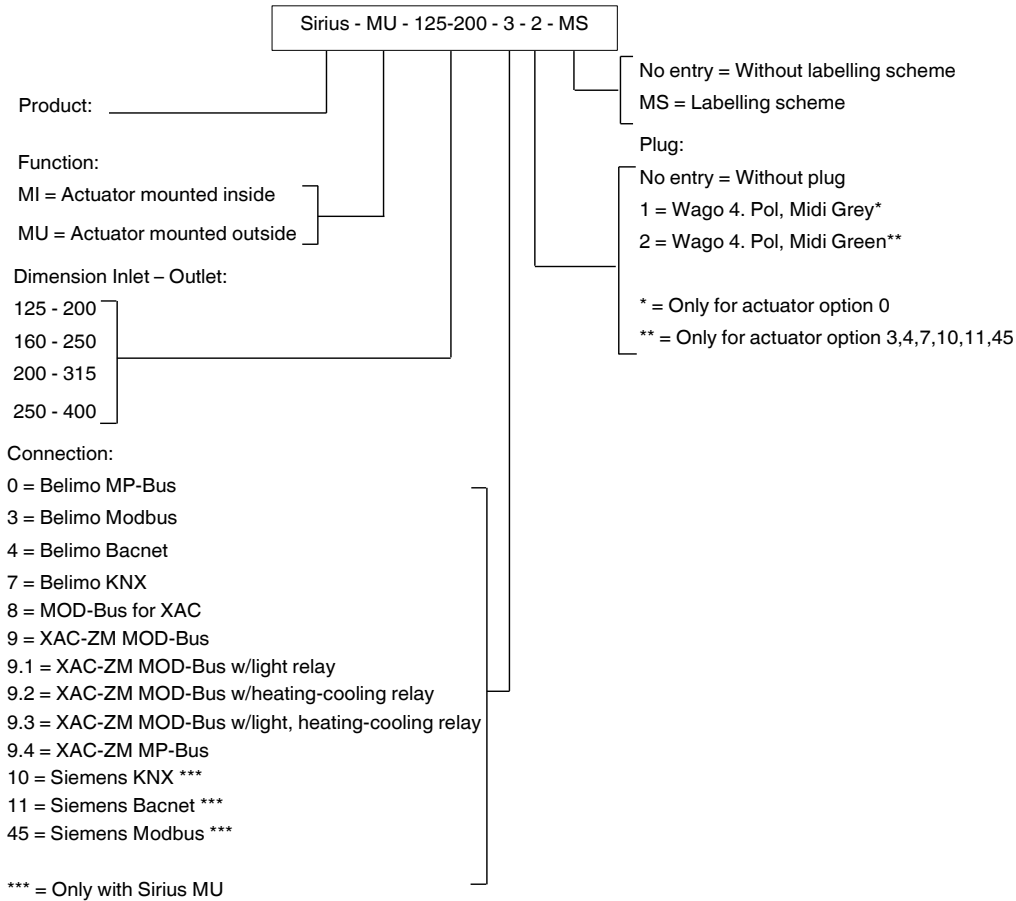
Example:
Orion-Opus-Sirius-R-TA-B-200-SL-SP

Explanation:
Orion-Opus-Sirius supply diffuser with rotational nozzle setting at front. A flange for T-profile ceiling system, motion sensor in diffuser front, spigot Ø200, special paint and single package

Orion-Opus with Sirius



ORDER CODE, Sirius



Example:

Sirius-MU-125-200-3-2-MS

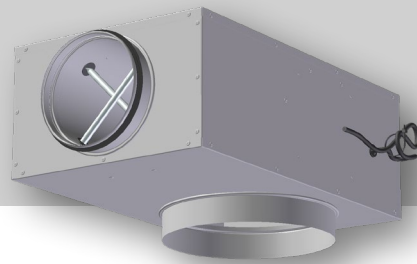
Explanation:

Sirius with Ø125 inlet and Ø200 outlet, with Belimo Modbus, Wago-plug mounted, with labelling scheme.

Producent	Regulator code	Moment	Type	Operating voltage	Power consumption in operation	Dim.effect
Belimo	LHV-D3-MP/MOD/BAC/KNX	150 N	Lineær	AC/DC 24 V, 50/60 Hz	2,5W	4,5 VA (max. 8 A @ 5 ms)
Belimo	LMV-D3-MP/MOD/BAC/KNX	5 Nm	Roterende	AC/DC 24 V, 50/60 Hz	2W	4 VA (max. 8 A @ 5 ms)
Siemens	GDB181.1E/KN (KNX)	5 Nm	Roterende	AC 24 V, 50/60 Hz	2.5W	3 VA
Siemens	GDB181.1E/BA (Bacnet)	5 Nm	Roterende	AC 24 V, 50/60 Hz	2,5W	3 VA
Siemens	GDB181.1E/MO (Modbus)	5 Nm	Roterende	AC 24 V, 50/60 Hz	2,5W	3 VA

Table 1: Technical specification

Orion-Opus with Sirius



QUICK SELECTION, Orion-OPUS with Sirius

Sirius dim.	[Open] m ³ /h		
	25dB(A)	30dB(A)	35dB(A)
125	175	221	280
160	306	367	440
200	374	446	529
250	478	575	692

Sirius dim.	(75Pa) m ³ /h		
	25dB(A)	30dB(A)	35dB(A)
125	158	223	-
160	252	353	432
200	360	450	558
250	360	526	677

Table 2: Quick selection, Orion-Opus with Sirius

Sirius ØD.	(m ³ /h)	
	Minimum	Maximum
125	26	265
160	43	434
200	70	700
250	106	1060

Table 3: Adjustment range for VAV controller, air flow rate in m³/h.
See calculation diagram for sound power level and pressure drop.

Deviation for working range 10 - 20% of V_{nom} : $\pm 25\%$
 20 - 40%: of V_{nom} $< \pm 10\%$
 40 - 100%: of V_{nom} $< \pm 4\%$

DIMENSIONS AND WEIGHT, Orion-Opus with Sirius

Dim.	D	DA	B	H	L	L1	Weight Sirius [kg]	Weight Sirius with valve [kg]
125-200	124	202	325	175	645	386	8	12
160-250	159	252	360	210	645	402	9	13
200-315	199	317	400	240	645	435	10,5	14,5
250-400	249	402	450	290	645	392	12	16

Table 4

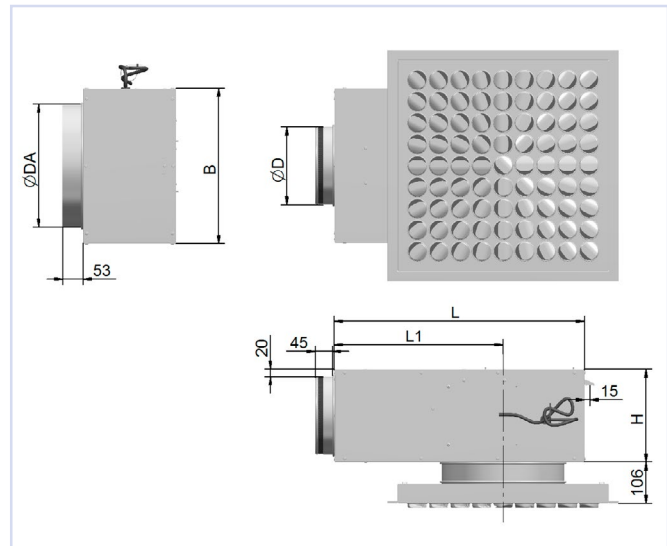
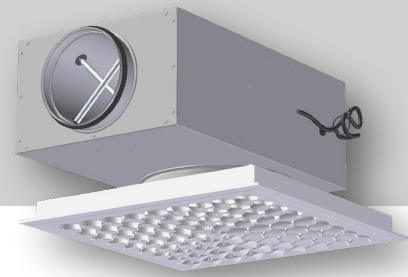


Fig. 1: Dimensions, Orion-Opus with Sirius

Orion-Opus with Sirius



ACOUSTIC DATA

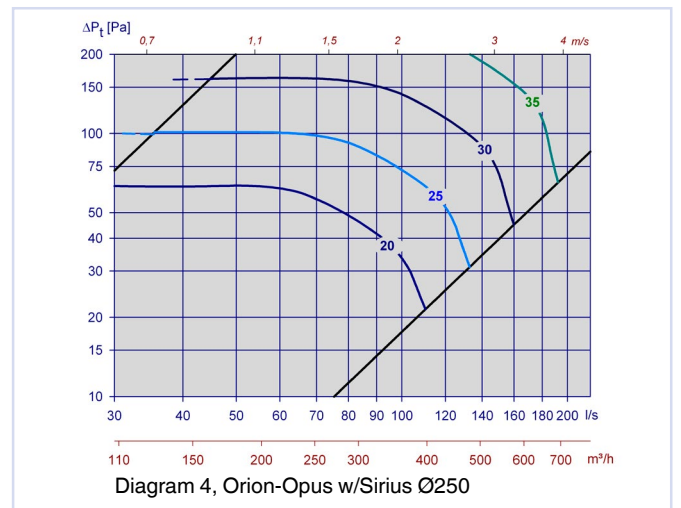
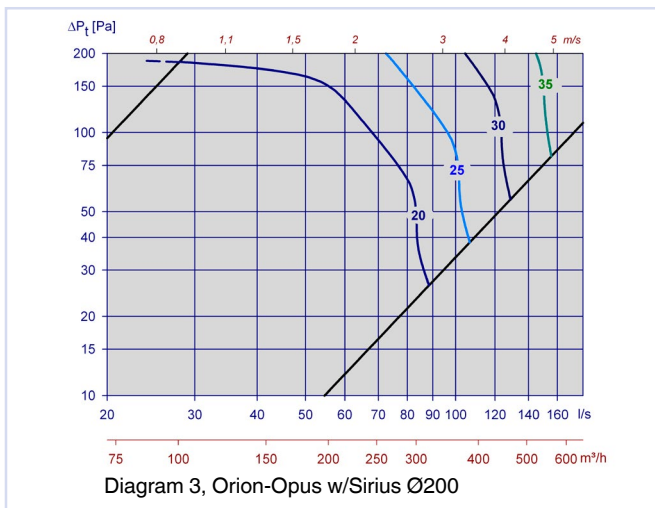
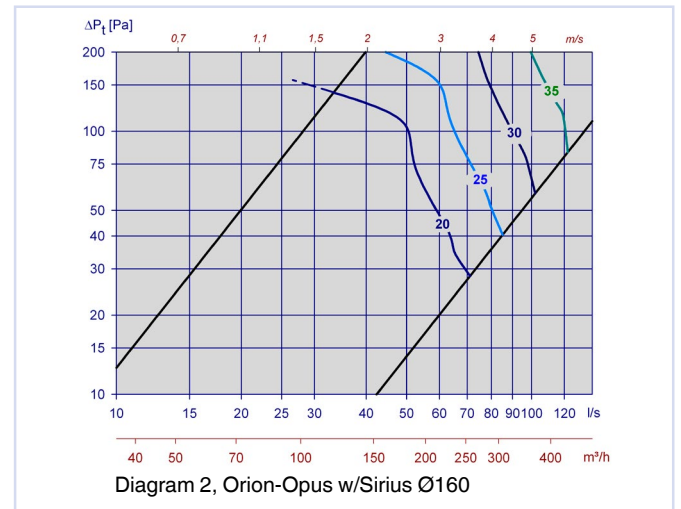
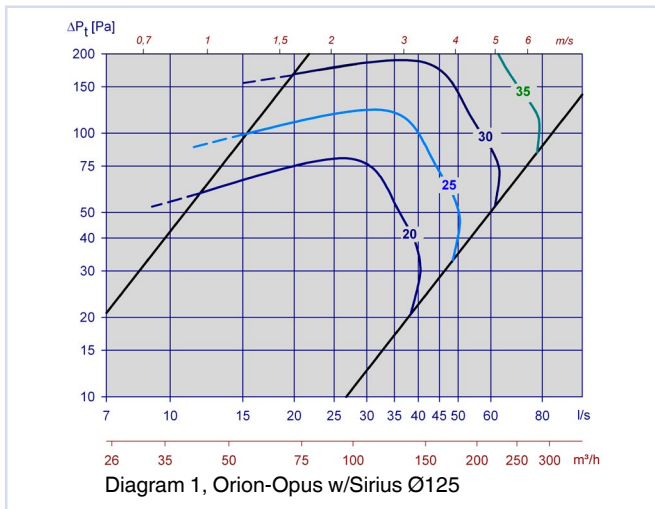
The diagrams provide a summary of the A-weighted sound power level from diffuser, L_{WA} . Correction factors in table 5, page 5, are used to calculate emitted sound power level at the respective frequencies, $L_W = L_{WA} + KO$. A room with absorption equivalent to 10m² Sabine will have a sound pressure level which is 4 dB below the sound power level emitted.

Example:

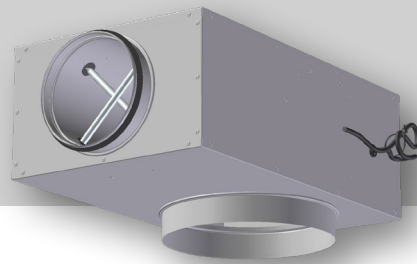
Sirius 160 with Orion-Opus supply diffuser, desired volume flow 90 l/s. From diagram 2, we find that $L_{WA} = 27$ dB(A) with open damper and 45 Pa total pressure drop. The aim is to find the following data:

- Emitted sound power level at 250 Hz with open damper.
 - A-weighted total sound pressure level from diffuser in an office with 4dB room attenuation.
 - A-weighted sound pressure level in an office at 75 Pa total pressure loss, i.e. 20 Pa choking with the unit's damper.
- The correction factor for 250 Hz is -0 dB. Emitted sound power at 250 Hz is then: $L_W = L_{WA} + KO = 27 + 0 = 27$ dB
 - With room attenuation equivalent to 4 dB, A-weighted sound pressure level is: $27 - 4 = 23$ dB(A)
 - At the operating point of 90 l/s and 75 Pa total pressure loss, the diagram indicates 28dB(A). With 4dB room attenuation the sound pressure level in the room will be: $28 - 4 = 24$ dB(A)

CALCULATION DIAGRAM



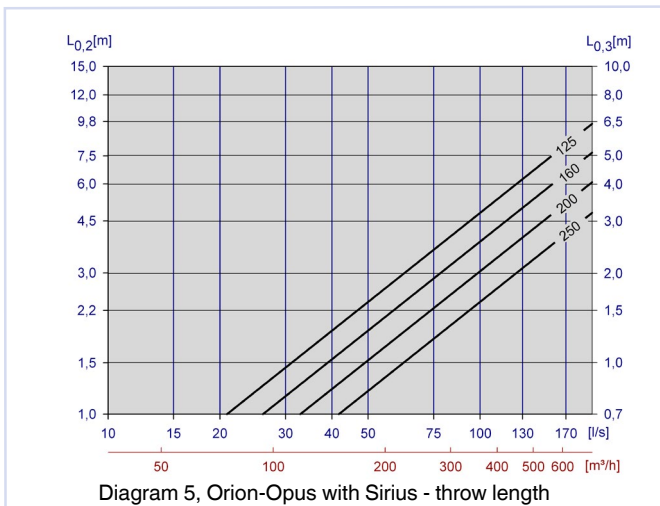
Orion-Opus with Sirius



Sirius dim.	Right pressure drop line (open)								Left pressure drop line (heavily choked)							
	63	125	250	500	1k	2k	4k	8k	63	125	250	500	1k	2k	4k	8k
125	7	3	1	-3	-7	-13	-12	-8	3	-6	-7	-13	-10	-9	-4	-7
160	7	3	0	-2	-6	-13	-13	-10	3	-2	-4	-7	-7	-9	-7	-7
200	6	4	-1	-3	-5	-13	-13	-10	2	-1	-2	-5	-5	-11	-9	-8
250	5	3	-1	-2	-5	-15	-14	-9	3	1	-1	-3	-6	-12	-10	-7

Table 5: Correction factor, Orion-Opus with Sirius

THROW LENGTH



FLOW PATTERN

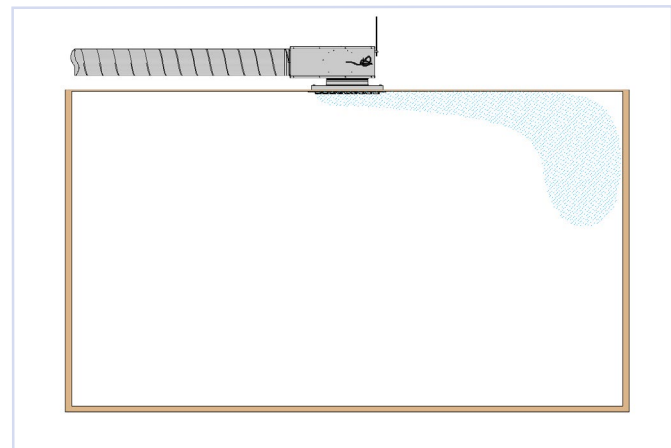


Fig. 2: Flow pattern - Orion-Opus - 1-way

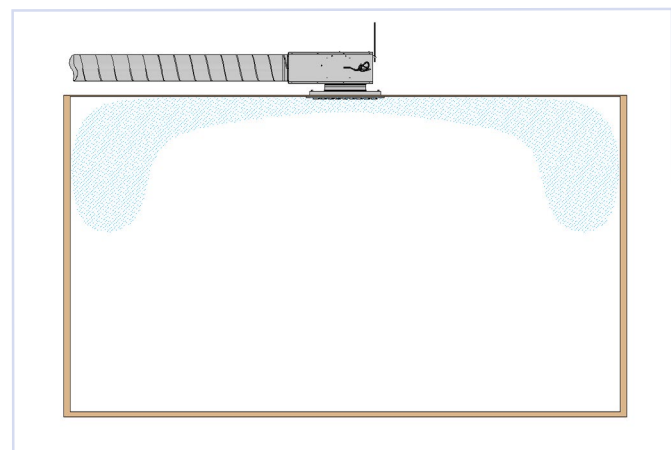


Fig. 3: Flow pattern - Orion-Opus - rotation

Orion-Opus with Sirius	Attenuation [dB]							
Dim.	63	125	250	500	1k	2k	4k	8k
125	21	9	13	18	12	11	12	17
160	17	6	10	15	11	11	12	17
200	13	5	11	12	10	10	12	16
250	14	4	12	9	10	10	12	15

Table 6: Static sound attenuation incl. end reflection, Orion-Opus with Sirius

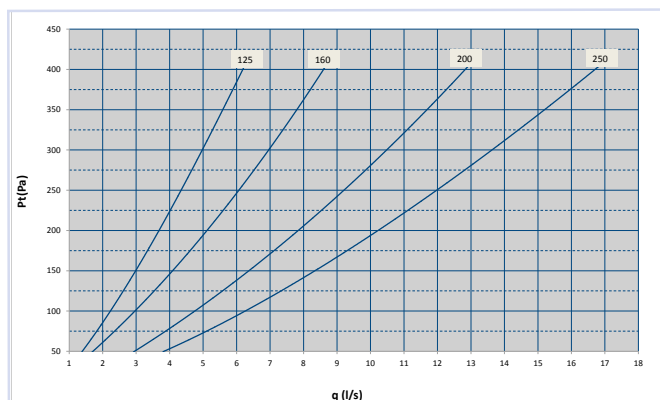


Diagram 6, Sirius, leakage at closed damper

Orion-Opus with Sirius

INSTALLATION

The Orion-Opus diffuser can be installed in a range of modular ceiling systems as well as in fixed ceilings. Sirius is attached by means of threaded rod or strap (fig. 5). In order to maintain the system's measurement accuracy, it is important to install units with spacing as shown in fig. 6.

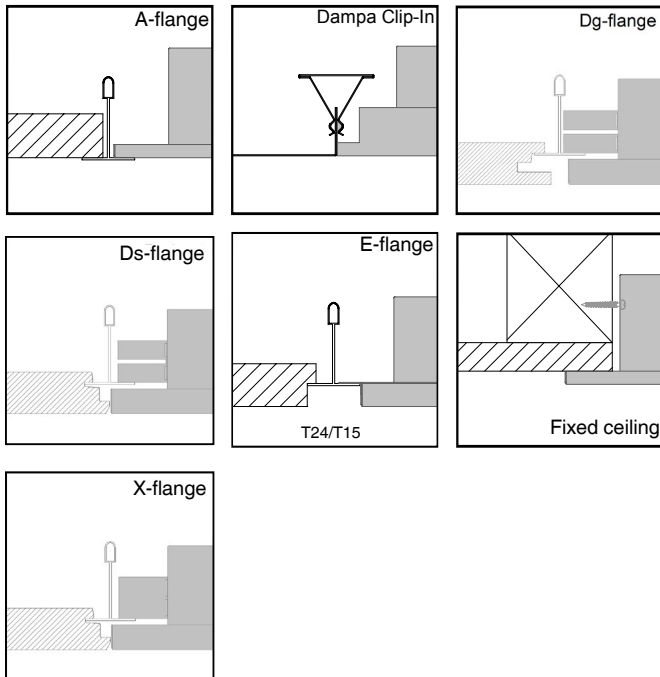


Fig. 4: Installation

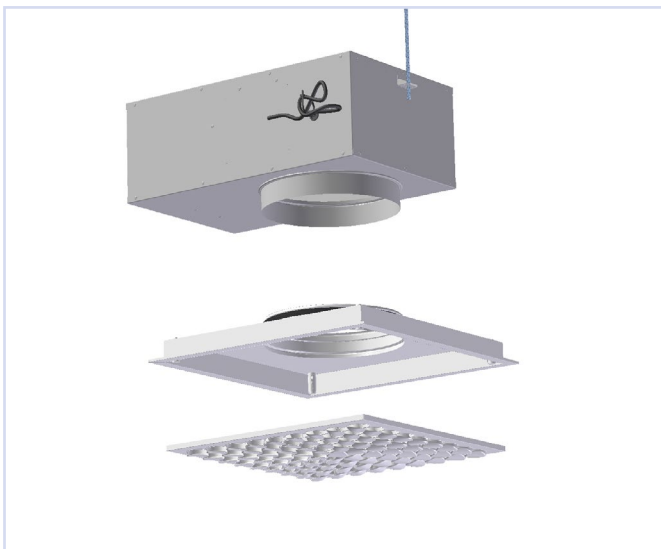


Fig. 5: Installation

COMMISSIONING

The PC program Belimo PC-Tool can be used for adjustment and service or you can use Siemens ACS941. With these service tools, the regulators can be set to e.g. desired minimum and maximum air volumes, 0-10 V or 2-10 V control signal and Open-loop. It can also be run function tests that can be displayed graphically for documentation of the regulator's function. There are also service tools that do not require a PC, Belimo ZTH-VAV and Siemens AST20.

For more information, see www.belimo.eu and www.siemens.com or contact one of our sales representatives.

MAINTENANCE

No specific maintenance requirements..

ENVIRONMENT

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

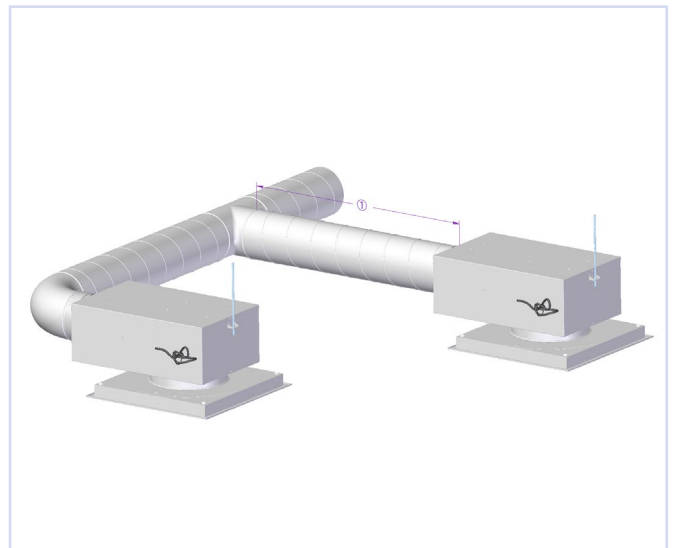


Fig. 6: Installation ① Recommended min. 5 x Dia.

Orion-Opus with Sirius is developed and manufactured by:

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