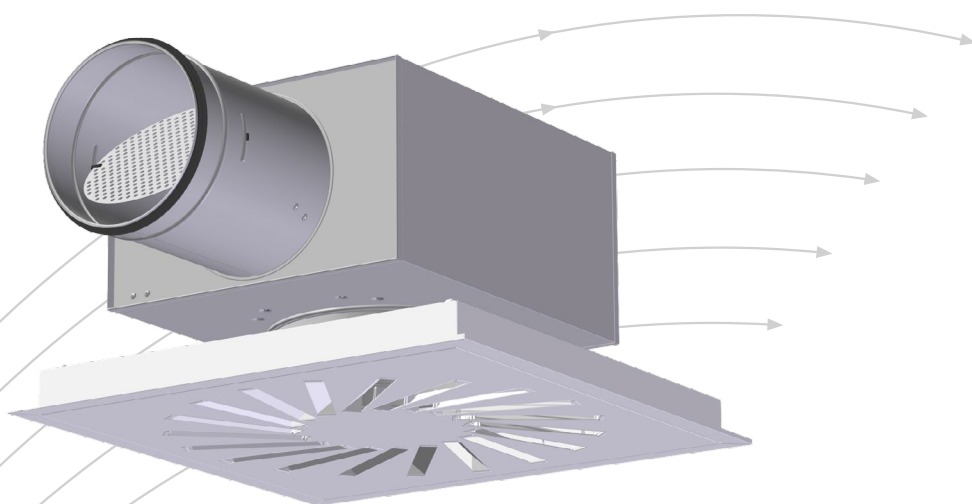


Orion-VDW

Square supply diffuser



- Removable front panel
- Flush mounting
- Suitable for a range of ceiling systems
- Data provided with Luna plenum box installed
- Box lined with sound absorber in polyester

TROX[®] TECHNİK

 **Auranor**

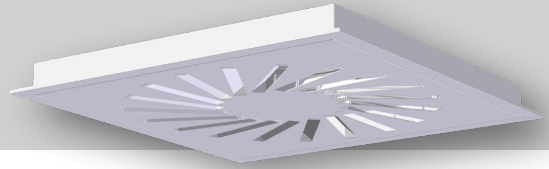
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www.trox.no/en

Orion-VDW



APPLICATION

Orion-VDW is a square supply diffuser for installation in modular ceiling systems. The unit offers excellent induction, and is suitable for both constant and variable air flow rates.

DESIGN

Orion-VDW features a removable front panel with slots, rotational pattern is supplied as standard. The unit is equipped with a TA flange suitable for T-profile ceiling systems as standard, but is also available with alternative flange designs, type: DC, DG, DS and EK (see fig. 2 and under order code).

MATERIALS AND SURFACE COATING

The front panel, ceiling plate and diffuser body are in a steel design, and the diffuser body is equipped with EPDM rubber gasket. The VDW slots and corner connection points are in plastic, and the corner connection points are fitted with holding magnets.

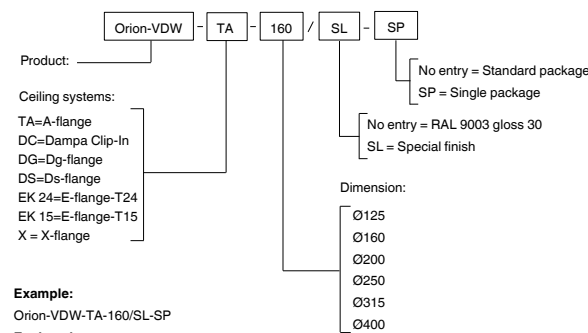
All internal and external diffuser elements are in RAL 9003-gloss 30 finish, and control blades are made of white plastic. Other colours are available on request.

QUICK SELECTION

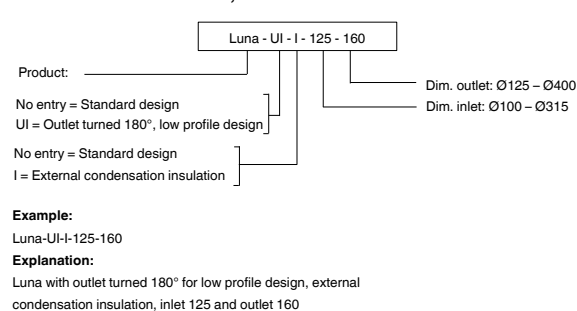
Orion-VDW Dim.	[m ³ /h]		
	25 dB (A)	30 dB (A)	35 dB (A)
125	79	101	112
160	119	144	176
200	216	252	299
250	353	414	486
315	468	565	763
400	720	871	1044

Table 1: The table provides air flow at given sound power levels.

ORDER CODE, Orion-VDW



ORDER CODE, Luna



DIMENSIONS AND WEIGHT, Orion-VDW

Orion-VDW	D	Weight diffuser [kg]
125	124	3,9
160	159	4,2
200	199	4,1
250	249	4,0
315	314	4,0
400	399	3,9

Table 2

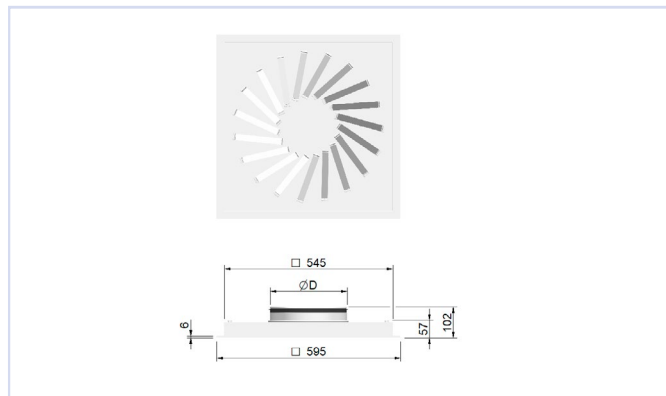


Figure 1

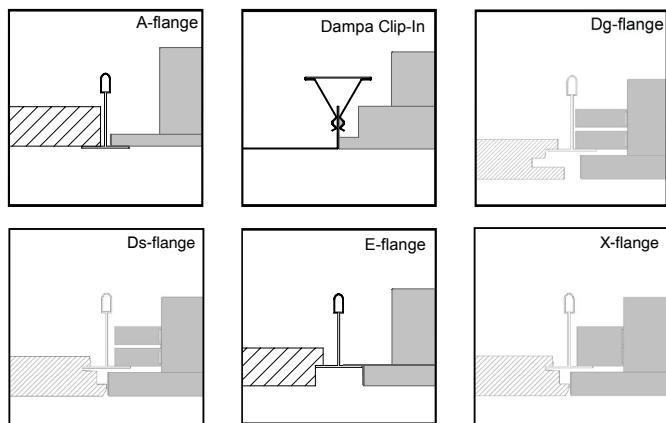


Figure 2

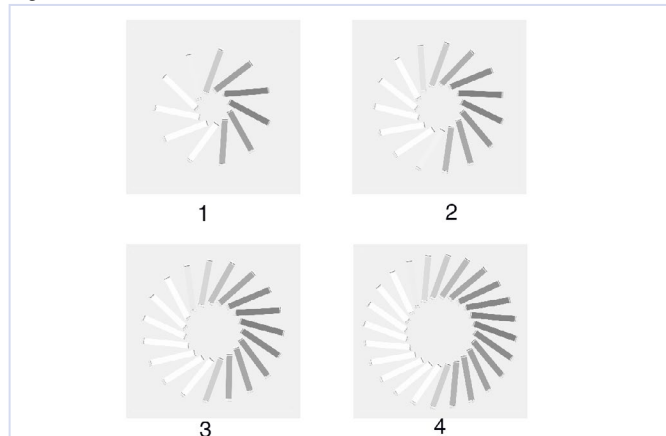
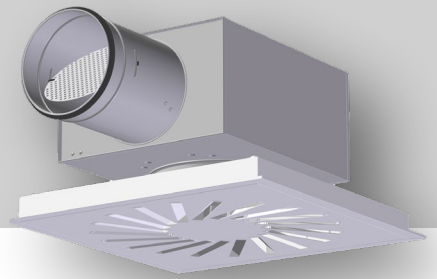


Figure 3, Front sizes Orion-VDW:
 1: ø125-11 slots, 2: ø160/200-15 slots
 3: ø250-19 slots, 4: ø315/400-24 slots

Orion-VDW with Luna plenum box



APPLICATION

The Luna plenum box is recommended for improved sound attenuation, and works as an adjustment and measurement unit. Luna is a rectangular box fitted with a removable damper which provides access to the connecting duct. The damper can be secured in any position required.

DESIGN

Luna plenum box features a damper and measuring outlet for commissioning. It is insulated with a sound absorber in polyester and is available with one or two dimensional changes between inlet and outlet. Furthermore, the box can be delivered with external condensation insulation. **A low-profile design [UI]** is also available, and for this type **a reduction in capacity of approx. 20% will apply**. The distance between diffuser and box can be increased by up to 35 cm. without extending the wire and measuring tube.

MATERIALS AND SURFACE COATING

Luna is supplied in a galvanised finish, and with all four internal walls lined with sound absorber in polyester. Equipped with EPDM rubber gasket on connection collar.

QUICK SELECTION

Orion-VDW Dim.	Luna Dim.	[m ³ /h]		
		25 dB(A)	30 dB(A)	35 dB(A)
125	100-125	79	101	115
	125-125	83	101	119
160	100-160	83	119	130
	125-160	112	144	169
200	160-160	101	155	187
	125-200	130	155	180
250	160-200	166	205	245
	200-200	191	241	302
315	160-250	187	223	259
	200-250	220	266	324
400	250-250	245	302	382
	200-315	245	288	335
400	250-315	306	371	446
	315-315	320	403	508
400	250-400	331	392	457
	315-400	421	504	605

Table 3, the table provides air flow rates at given sound power levels and 30 Pa total pressure loss.

DIMENSIONS AND WEIGHT, Luna

Dim.	D	DA	B	H	H1	L	L1	L2	Weight (kg) Luna
100-125	99	127	220	122	228	325	292	127	2,3
100-160	99	162	220	122	228	360	309	145	2,4
125-125	124	127	250	147	253	360	334	145	2,4
125-160	124	162	250	147	253	360	334	145	2,9
125-200	124	202	250	147	253	400	354	165	3,1
160-160	159	162	340	182	288	403	390	167	4,1
160-200	159	202	340	182	288	403	390	167	4,2
160-250	159	252	340	182	288	453	415	192	4,6
200-200	199	202	380	222	328	453	457	190	5,7
200-250	199	252	380	222	328	453	457	190	5,7
200-315	199	317	380	222	328	515	487	222	6,1
250-250	249	252	390	272	378	515	537	222	7,4
250-315	249	317	390	272	378	515	537	222	7,4
250-400	249	402	500	272	378	600	579	265	9,1
315-315	314	317	500	337	443	600	654	255	10,7
315-400	314	402	500	337	443	600	644	265	10,7

Table 4

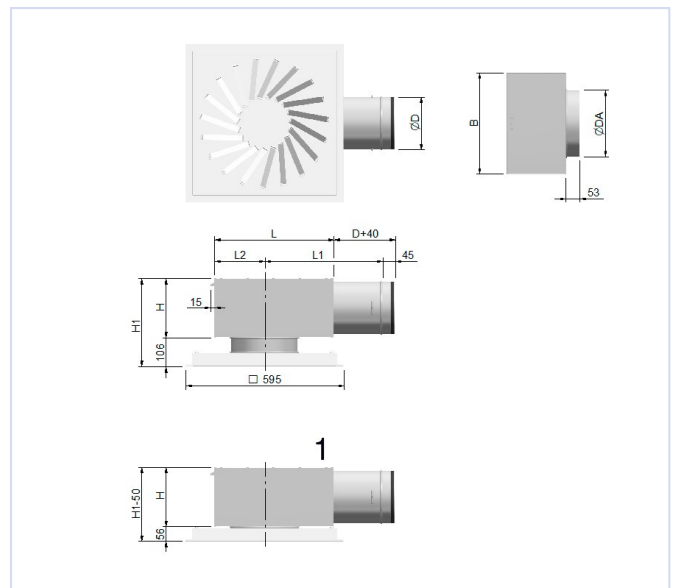


Figure 4, 1: Design UI

Orion-VDW

ACOUSTIC DATA

Example:

Orion-VDW with Luna Ø160-200 desired volume flow 70 l/s. From diagram 7 we find that $L_{WA} = 36$ dB(A) with damper open and 29 Pa total pressure loss.

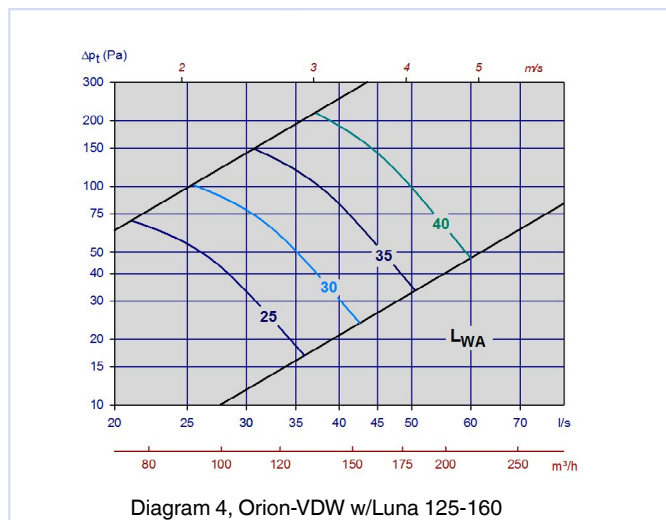
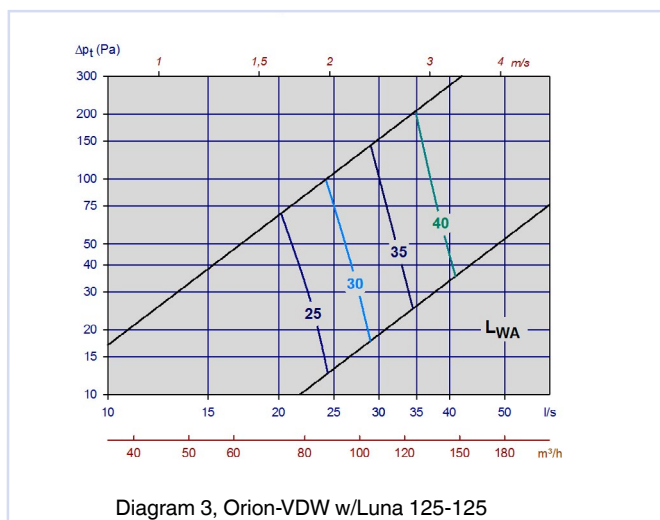
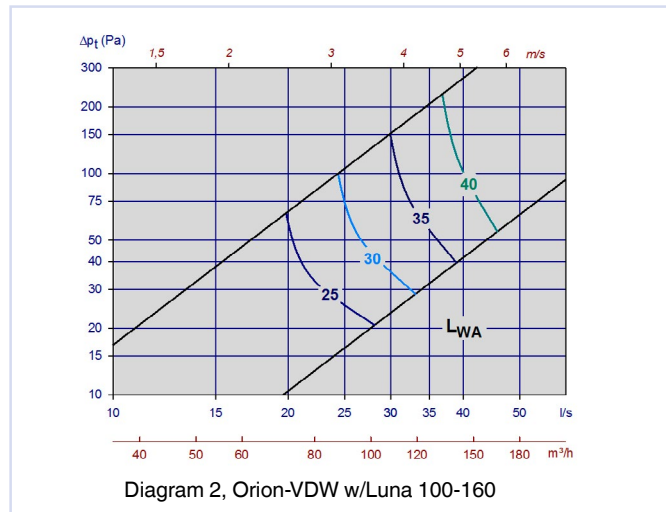
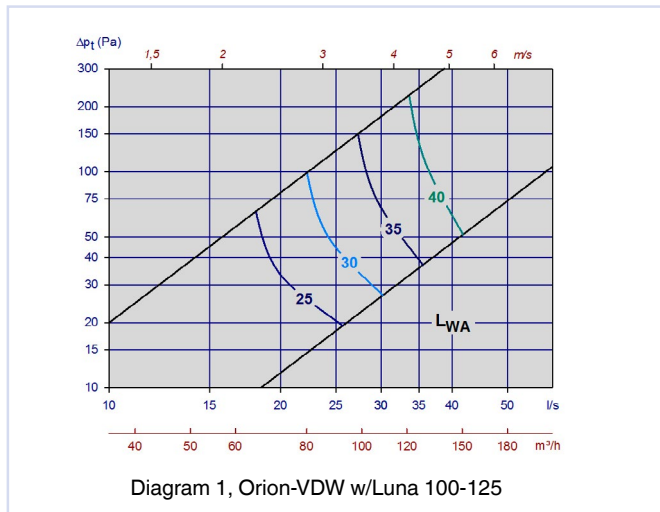
We aim to find the following data:

- Emitted sound power level at 250 Hz with open damper
- A-weighted sound pressure level at 250 Hz at 50Pa total pressure loss. (i.e. 21 Pa choking with the units damper)
- A-weighted sound pressure level for the valve with 50Pa in a office with 4dB room attenuation.

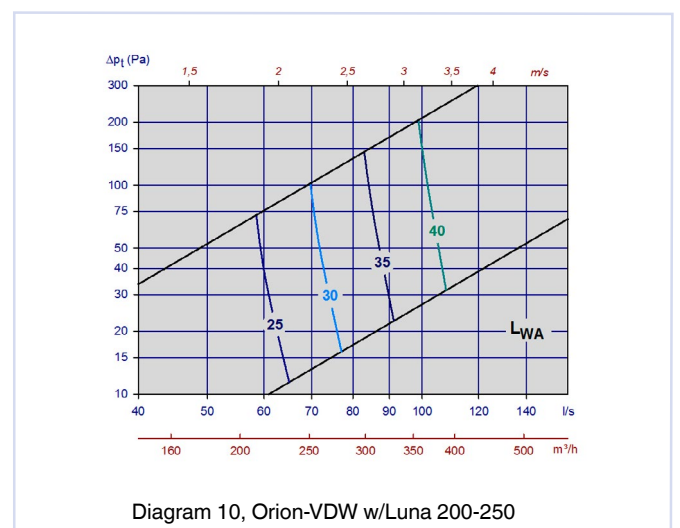
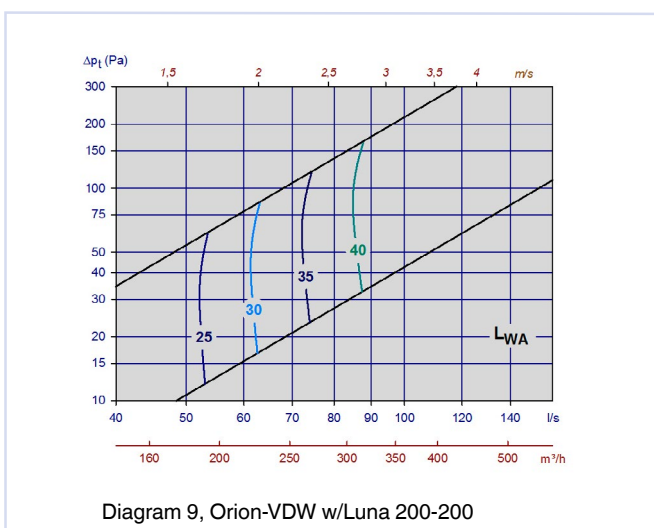
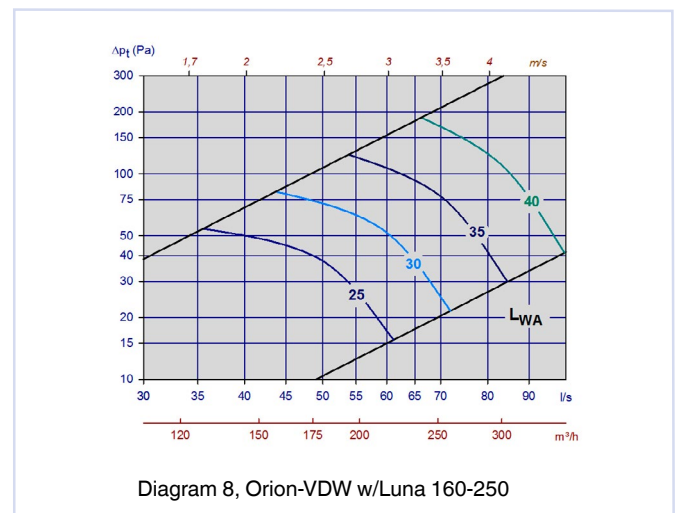
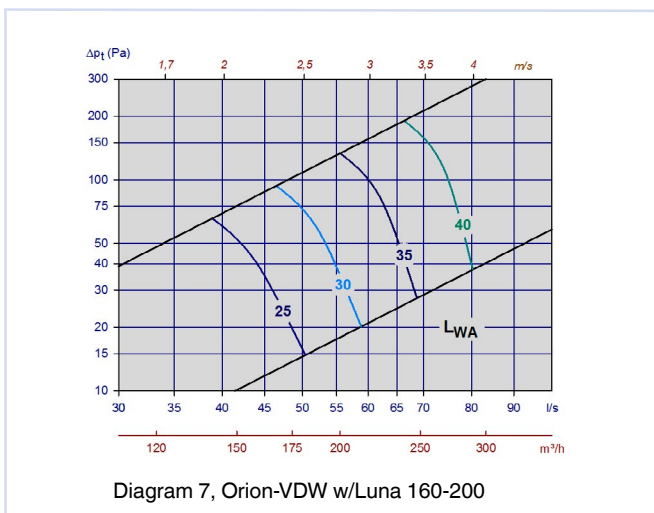
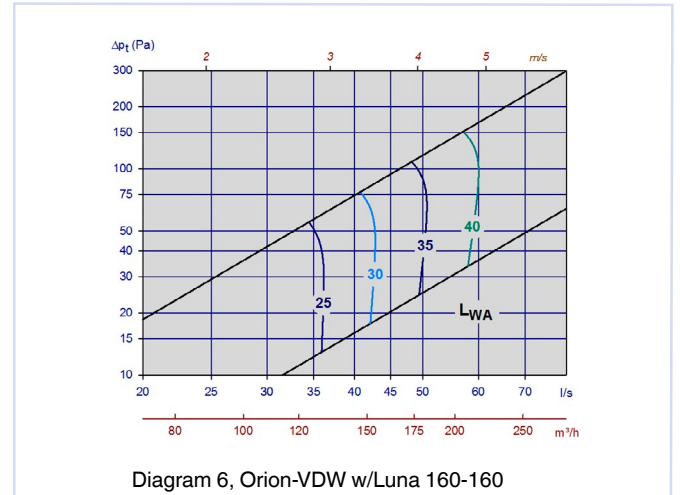
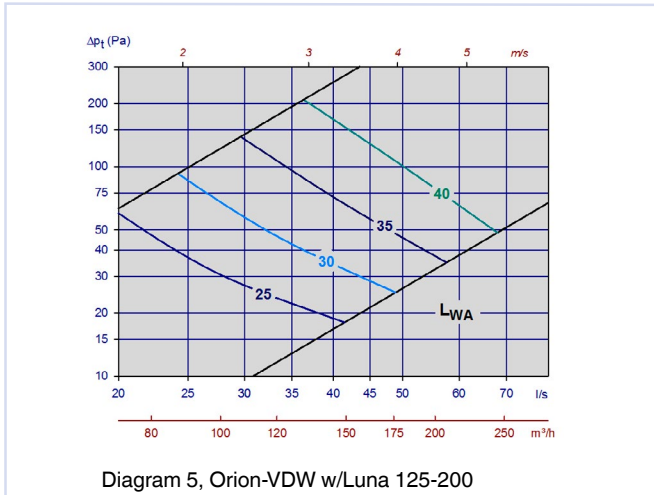
Solution:

- The correction factor is -1dB with damper open: $36 + (-1) = 35$ dB.
- The diagram shows that the sound power increases from 36 and up to 37 dB for this operating point. The correction factor for closed damper is -3dB, we choose to use -2dB for our operating point, $37 + (-2) = 35$ dB(A)
- Total A-weighted sound pressure level: $37 - 4 = 33$ dB(A)

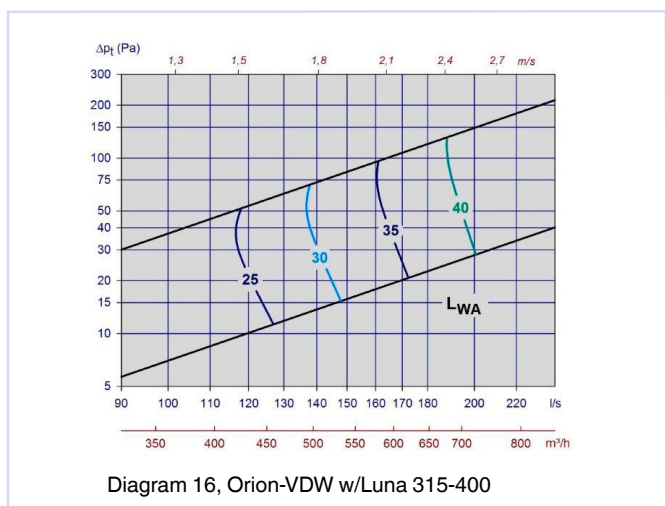
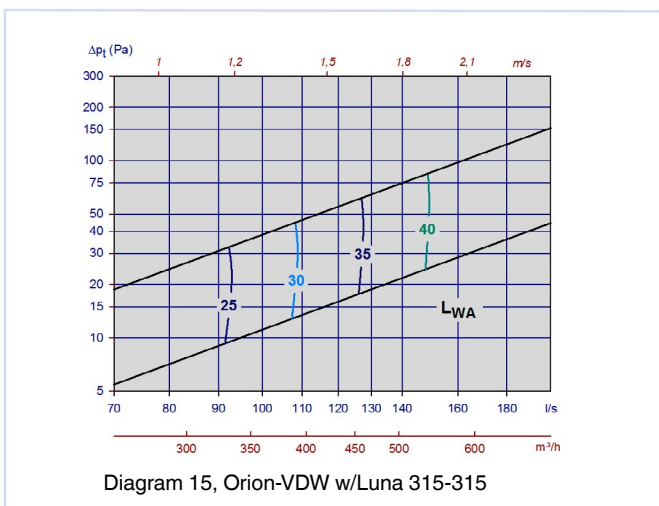
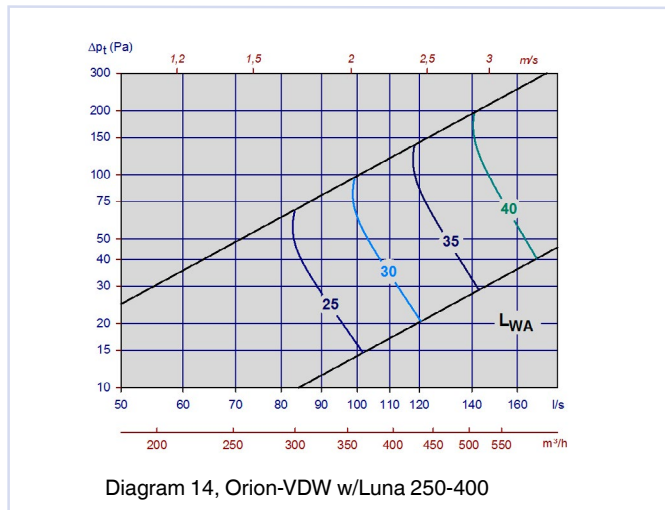
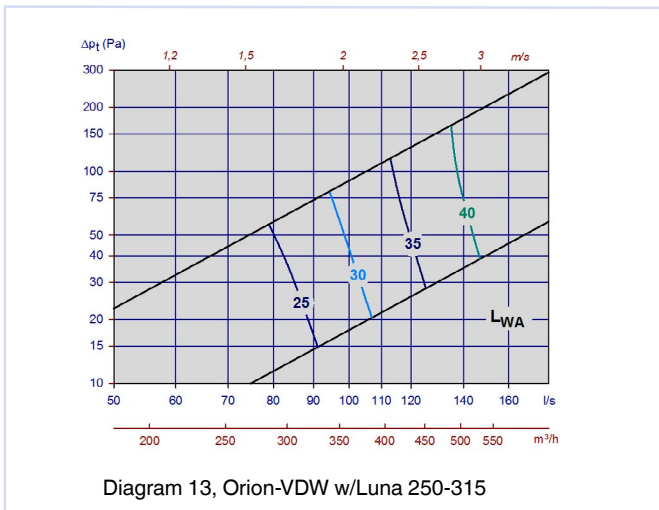
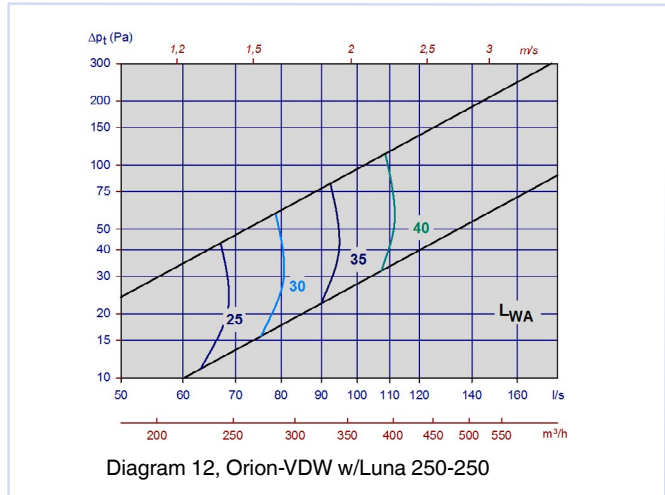
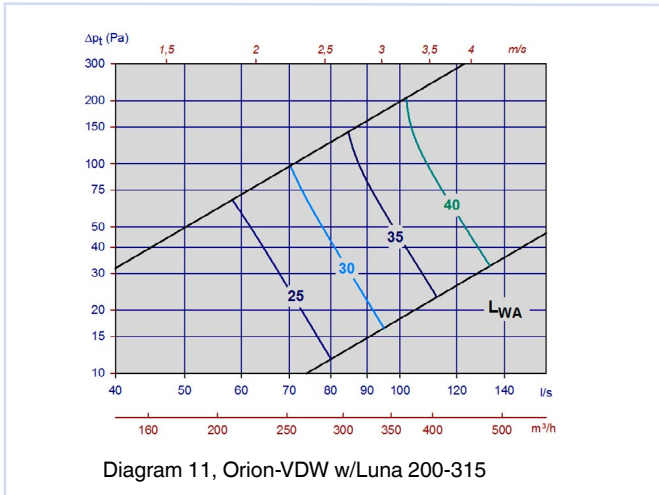
CALCULATION DIAGRAMS



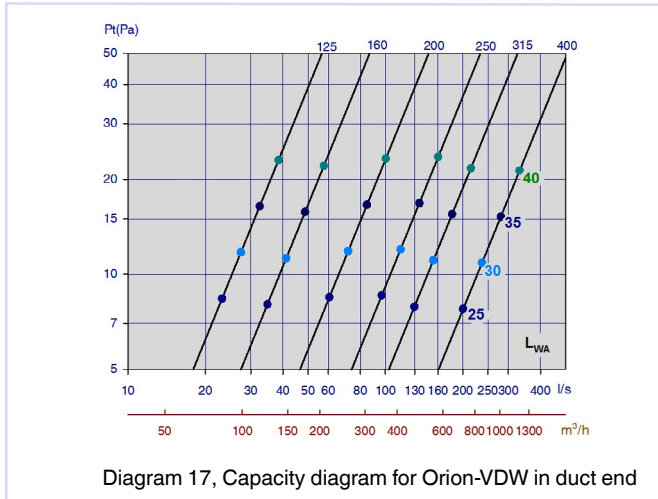
Orion-VDW



Orion-VDW



Orion-VDW



Luna-VDW		KO							
		63	125	250	500	1k	2k	4k	8k
100-125	Open	-3	3	0	-3	-4	-11	-15	-16
	Closed	-4	2	0	-5	-8	-10	-7	-10
100-160	Open	-2	2	1	-2	-4	-10	-14	-14
	Closed	-3	2	0	-4	-6	-9	-7	-9
125-125	Open	-2	3	0	-4	-4	-10	-14	-17
	Closed	-5	-2	-4	-8	-9	-11	-7	-3
125-160	Open	-1	3	1	-3	-4	-11	-15	-18
	Closed	-9	-4	-5	-11	-13	-12	-6	-2
125-200	Open	-2	-3	1	-2	-5	-10	-15	-17
	Closed	-8	-6	-5	-11	-13	-12	-6	-2
160-160	Open	3	4	-1	-3	-4	-11	-15	-18
	Closed	3	3	-2	-4	-5	-11	-10	-10
160-200	Open	1	4	-1	-2	-4	-12	-17	-16
	Closed	-3	1	-3	-6	-8	-11	-6	-6
160-250	Open	2	4	0	-3	-4	-11	-16	-17
	Closed	-11	-4	-7	-11	-13	-11	-4	-4
200-200	Open	4	2	-2	-2	-4	-12	-16	-18
	Closed	-4	0	-3	-3	-5	-11	-10	-10
200-250	Open	1	3	0	-3	-4	-11	-14	-14
	Closed	-2	1	-3	-5	-7	-10	-7	-7
200-315	Open	-1	3	0	-2	-4	-13	-15	-15
	Closed	-2	-2	-6	-8	-11	-10	-5	-5
250-250	Open	2	-1	-4	-2	-3	-10	-14	-17
	Closed	1	-1	-5	-3	-4	-10	-13	-16
250-315	Open	3	2	-3	-2	-4	-11	-15	-17
	Closed	2	1	-4	-4	-6	-10	-8	-8
250-400	Open	1	5	-3	-2	-4	-11	-17	-16
	Closed	-4	-1	-7	-7	-8	-9	-5	-6
315-315	Open	1	1	-5	-1	-4	-11	-16	-17
	Closed	-1	1	-5	-2	-4	-11	-12	-16
315-400	Open	2	5	-2	-3	-4	-11	-16	-16
	Closed	2	2	-4	-4	-5	-10	-8	-11

Table 5, correction factor [KO], Orion-VDW with Luna.

Orion-VDW

VDW Dim.	Attenuation [dB]							
	63	125	250	500	1k	2k	4k	8k
125	23	13	7	5	4	3	5	6
160	24	10	6	5	3	3	5	6
200	17	8	4	3	3	2	3	5
250	14	7	4	3	2	2	3	3
315	16	6	2	2	2	1	2	2
400	12	4	2	1	1	1	1	1

Table 6, static sound attenuation incl. end reflection for Orion-VDW in duct end.

VDW Dim.	KO							
	63	125	250	500	1k	2k	4k	8k
125	3	-7	-5	-1	-6	-13	-17	-18
160	3	-4	-1	0	-5	-10	-14	-15
200	1	-2	2	1	-4	-11	-10	-14
250	1	-2	2	2	-4	-8	-9	-14
315	1	-1	1	2	-2	-6	-8	-12
400	1	-1	1	1	-2	-6	-7	-11

Table 7, correction factors [KO], Orion-VDW in duct end.

FLOW PATTERN

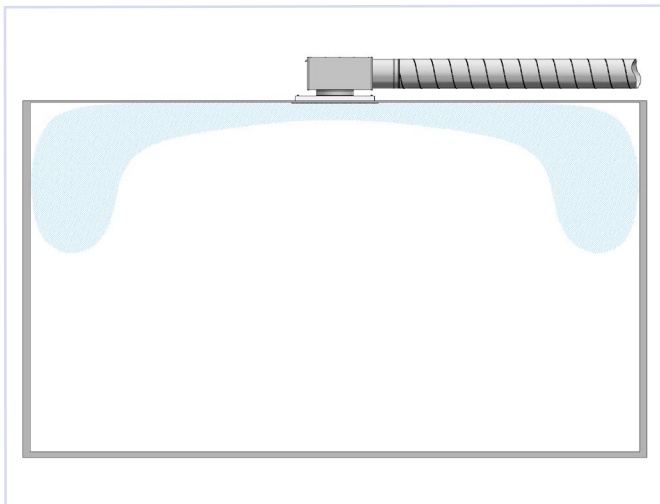
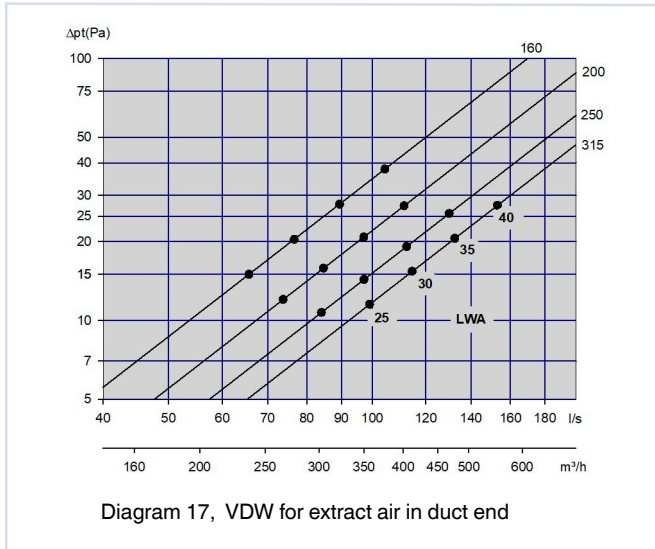


Figure 5, Flow pattern Orion-VDW, rotation pattern

Orion-VDW Dim.	Luna Dim.	Attenuation [dB]							
		63	125	250	500	1k	2k	4k	8k
125	100-125	24	9	13	19	22	21	18	20
	125-125	16	9	14	19	22	17	15	18
160	100-160	22	7	10	16	17	18	14	16
	125-160	22	9	12	15	18	15	13	18
200	160-160	24	14	15	20	22	14	15	20
	125-200	18	6	10	13	18	15	12	16
	160-200	19	9	12	15	15	12	13	19
250	200-200	18	9	10	16	16	12	15	19
	160-250	17	10	10	14	17	11	12	17
	200-250	18	7	10	15	15	10	13	18
315	250-250	19	7	9	13	13	10	12	17
	200-315	21	6	10	12	15	9	12	16
	250-315	15	9	9	11	12	10	11	15
400	315-315	13	10	12	16	12	11	14	17
	250-400	12	9	11	15	12	11	12	16
	315-400	13	8	12	14	12	11	13	16

Table 8, static sound attenuation incl. end reflection Orion-VDW with Luna.

Orion-VDW



VDW	Attenuation [dB]							
	63	125	250	500	1k	2k	4k	8k
125	23	13	7	5	4	3	5	6
160	24	10	6	5	3	3	5	6
200	17	8	4	3	3	2	3	5
250	14	7	4	3	2	2	3	3
315	16	6	2	2	2	1	2	2
400	12	4	2	1	1	1	1	1

Table 9, static sound attenuation incl. end reflection for Orion-VDW for extract air in duct end.

VDW	KO							
	63	125	250	500	1k	2k	4k	8k
125	3	-7	-5	-1	-6	-13	-17	-18
160	3	-4	-1	0	-5	-10	-14	-15
200	1	-2	2	1	-4	-11	-10	-14
250	1	-2	2	2	-4	-8	-9	-14
315	1	-1	1	2	-2	-6	-8	-12
400	1	-1	1	1	-2	-6	-7	-11

Table 10, correction factors [KO], Orion-VDW for extract air in duct end.

Orion-VDW

INSTALLATION

Orion-VDW can be installed in a range of modular ceiling systems as well as in fixed ceilings, see figure 6. If a Luna plenum box is used, the unit is attached to the rear by the support bracket by means of treaded rod or strap, see figure 7.

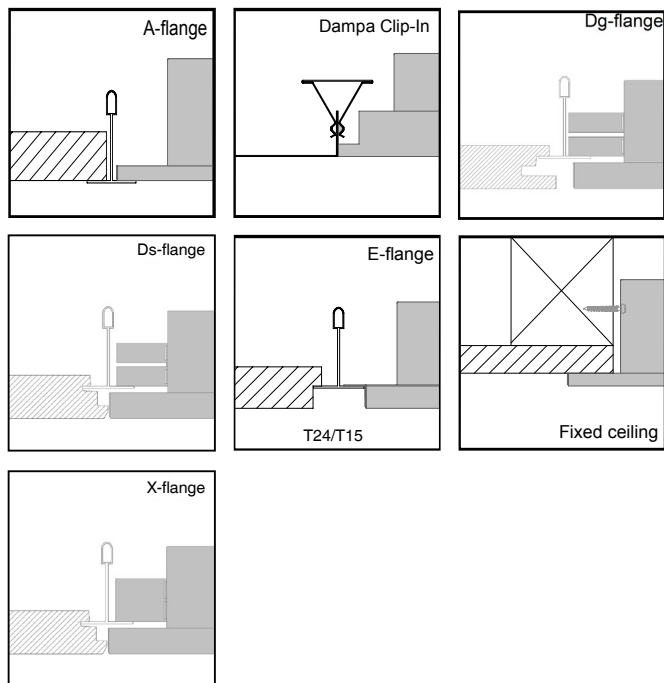


Figure 6, installation

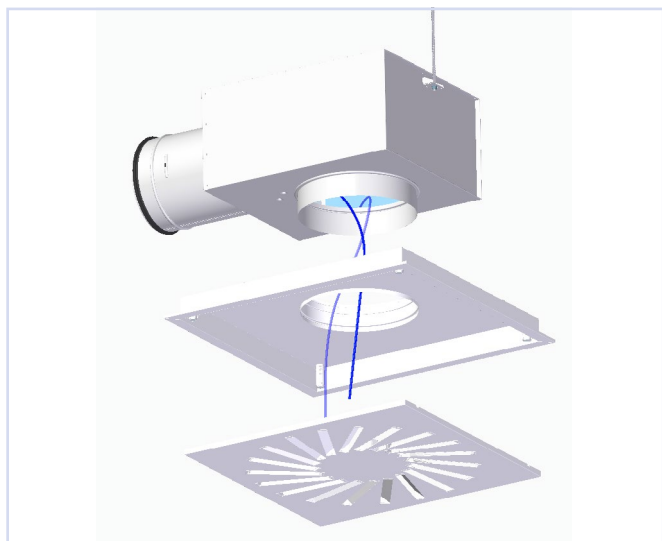


Figure 7, installation

Orion-VDW is developed and manufactured by:

COMMISSIONING

During commissioning, the diffuser front must be fitted. Measuring tube and adjustment wire are pulled through one of the slots on the front. The damper is secured by using a clamping nut on the wire, tighten the clamping nut properly so the damper not change position. Correction factors for calculation of air flow rates are provided on the label inside the diffuser, or can be found in our commissioning guide at our website: www.trox.no

MAINTENANCE

The diffuser should be cleaned by using a damp cloth. When cleaning the ductwork, the diffuser front must be removed in order to gain access. If Luna is used, the diffuser plate and damper must be removed in order to gain free access to the duct.

ENVIRONMENT

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

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