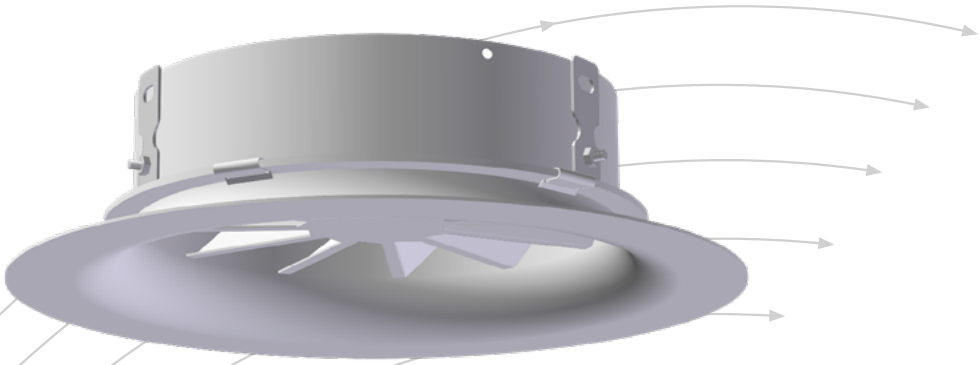
GB0630
05.20

RFD

Swirl diffuser



- For ceiling heights from 2.6 to 4m
- Data provided with Luna plenum box
- Box lined with sound absorber in polyester

TROX® TECHNIK

Auranor

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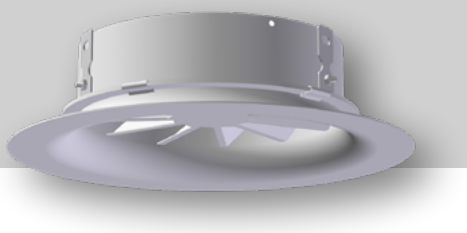
RFD



APPLICATION
RFD is a circular swirl diffuser for ceiling mounting.

DESIGN
Swirl diffuser with fixed deflection blades.

MATERIALS AND SURFACE COATING
RFD is made of steel and comes in a RAL 9003 - gloss 30 finish.

QUICK SELECTION, RFD-R-D-K

RFD	[m^3/h]		
Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	76	90	107
160	120	144	172
200	158	193	235
250	260	308	366
315	366	440	530
400	471	559	662

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

ORDER CODE, RFD-R-D-K

RFD-R-D-K - 160

Product — Dimension : Ø125 - Ø400

Example:
RFD-R-D-K - 160
Explanation:
RFD-R-D-K, dimension Ø160

ORDER CODE, Luna

Luna-0-0-125-160

Product:
UI = Outlet installed, Low profile design
RH = Plenum box for fixed ceiling plate
I = External condensation insulation
Dimension outlet: Ø125 – Ø400
Dimension inlet: Ø100 – Ø315

Example:
Luna-0-0-125-160
Explanation:
Luna plenum box with inlet Ø125 and outlet Ø160

DIMENSIONS AND WEIGHT, RFD-R-D-K

Dim.	A	B	H	Weight [kg]
125	123	200	75	0,4
160	158	250	78	0,8
200	198	300	78	1,0
250	248	350	75	1,3
315	313	450	88	2,1
400	398	580	88	3,0

Table 2:

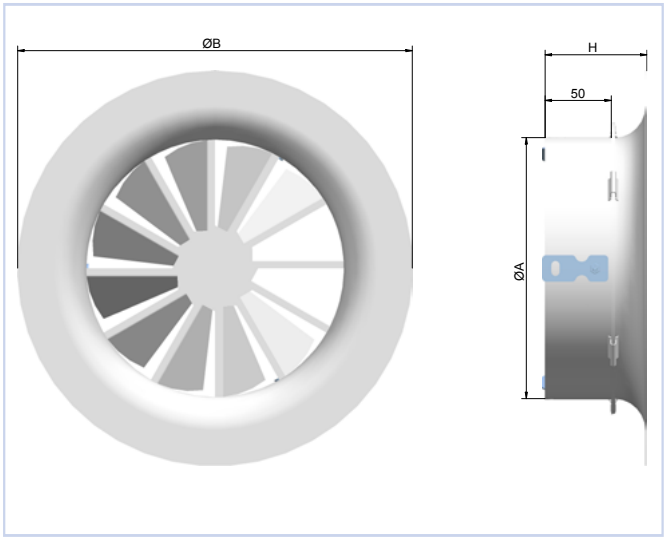


Fig. 1

RFD with Luna plenum box

APPLICATION

The Luna plenum box is recommended for improved sound attenuation, and works as an adjustment and measurement option. 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

The Luna plenum box features a damper and measurement device for adjustment. 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 supplied with external condensation insulation. A low-profile design [UI] is also available, and for this design 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. The connection collar is fitted with an EPDM rubber gasket.

QUICK SELECTION

RFD-R-D-K	Luna	[m^3/h]		
Dim.	Dim.	25 dB(A)	30 dB(A)	35 dB(A)
125	100-125	58	76	94
160	125-160	90	112	135
200	160-200	154	183	216
250	200-250	209	256	317
315	250-315	266	338	421
400	315-400	360	439	540

Table 3: The table shows air flow rates at given sound power levels and 50 Pa total pressure loss.

DIMENSIONS AND WEIGHT, Luna

Dim.	D	DA	B	H	H1	H2	L	L1	L2	Weight (kg) w/Luna
100–125	99	127	220	122	210	88	325	292	127	2,3
100–160	99	162	220	122	213	91	360	309	145	2,4
125–160	124	162	250	147	238	91	360	334	145	2,9
125–200	124	202	250	147	238	91	400	354	165	3,1
160–200	159	202	340	182	273	91	403	390	167	4,2
160–250	159	252	340	182	270	88	453	415	192	4,6
200–250	199	252	380	222	310	88	453	457	190	5,7
200–315	199	317	380	222	323	101	515	487	222	6,1
250–315	249	317	390	272	373	101	515	537	222	7,4
250-400	249	402	50	272	373	101	101	249	249	249
315–400	314	402	500	337	438	101	600	644	265	11

Table 4

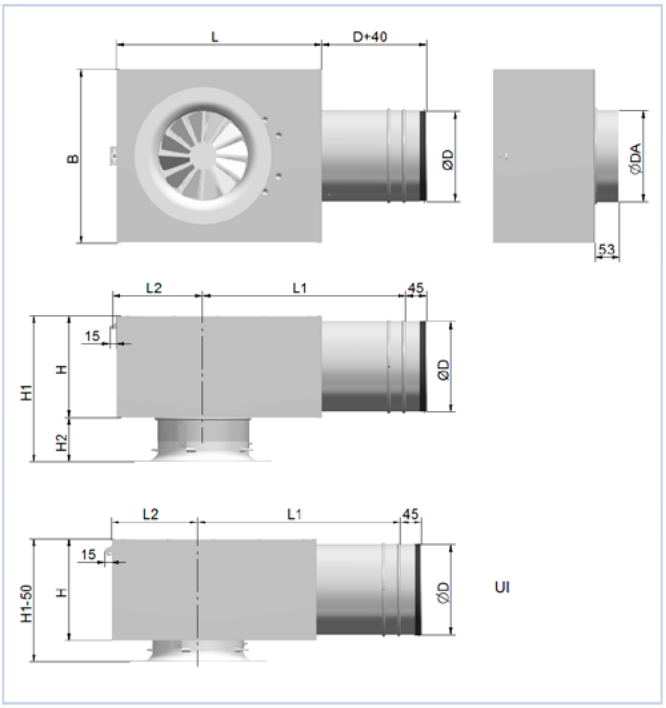
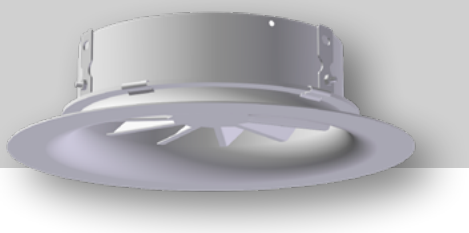


Fig. 2

RFD



ACOUSTIC DATA

The diagrams provide a summary of the A-weighted sound power level from valve, L_{WA}. Correction factors in table 8, page 7, are used to calculate emitted sound power level at the respective frequencies, $L_W = L_{WA} + KO$. A room with absorption equivalent to 10m^2 Sabine will have a sound pressure level which is 4 dB below the sound power level emitted.

Example:
Selection is made for an air terminal device of the RFD with Luna plenum chamber, and the dimension is 125-200. The airflow rate is calculated to 50l/s. According to diagram 4 this will generate a level of L_{WA} = 33 dB(A) with damper open and 32 Pa total pressure loss.
We aim to find the following:

a) Emitted sound power level in 250 Hz

b) A-weighted sound pressure level in an office.

c) A-weighted sound pressure level in an office at 50 Pa total pressure loss (i.e. 18 Pa choking over the unit's damper)

a) The correction factor in Table 8 shows 4dB. Emitted sound power level at 250 Hz is: $L_{WA} + KO = 33 + 4 = 37$ dB

b) With room attenuation equivalent to 4 dB, the sound pressure level in the room will be: 33 - 4 = 29 dB(A)

c) When the damper is choked for 50Pa total pressure loss, the diagram indicates a noise level of 36dB, which will emit 32dB(A) sound pressure level in the room.

CALCULATION DIAGRAMS

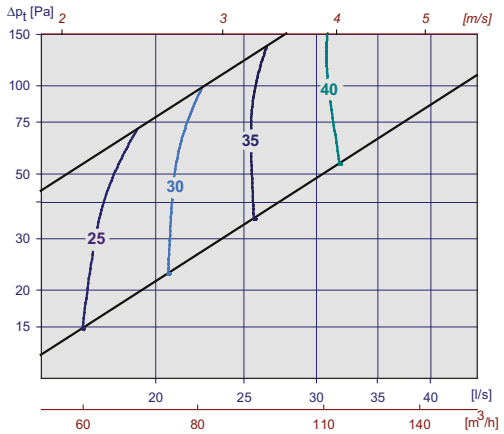


Diagram 1, RFD-R-D-K w/Luna 100-125

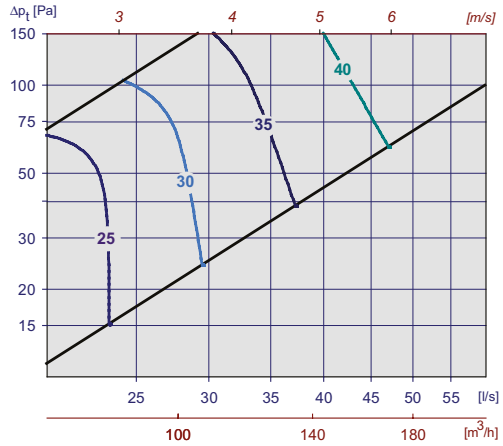


Diagram 2, RFD-R-D-K w/Luna 100-160

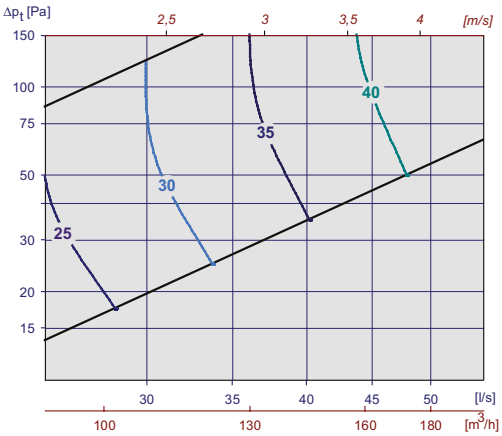


Diagram 3, RFD-R-D-K w/Luna 125-160

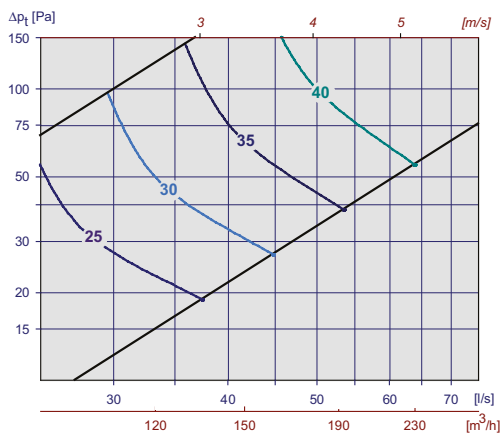


Diagram 4, RFD-R-D-K w/Luna 125-200

RFD

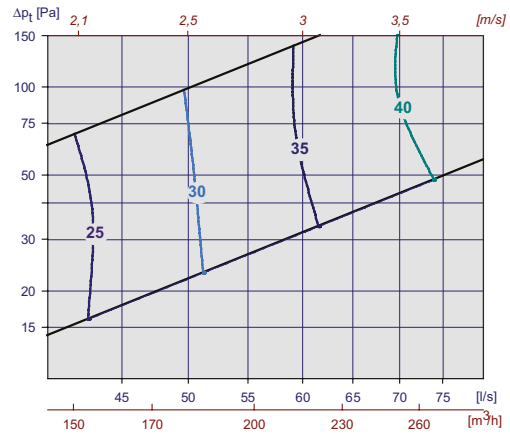


Diagram 5, RFD-R-D-K w/Luna 160-200

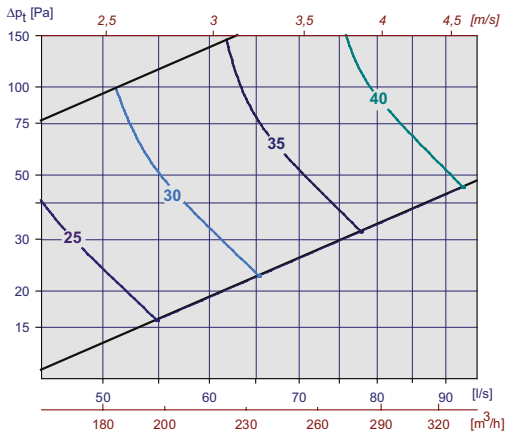


Diagram 6, RFD-R-D-K w/Luna 160-250

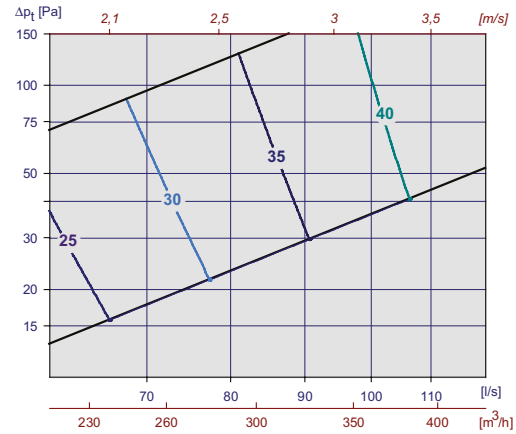


Diagram 7, RFD-R-D-K w/Luna 200-250

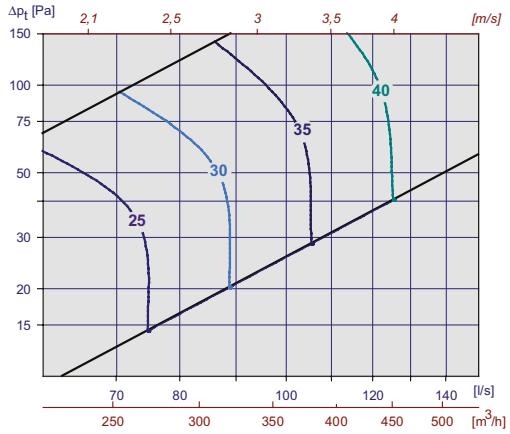


Diagram 8, RFD-R-D-K w/Luna 200-315

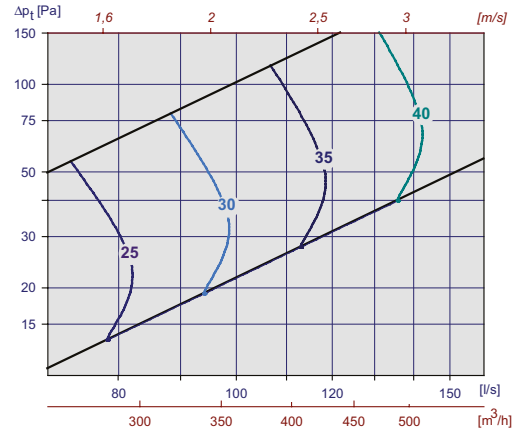


Diagram 9, RFD-R-D-K w/Luna 250-315

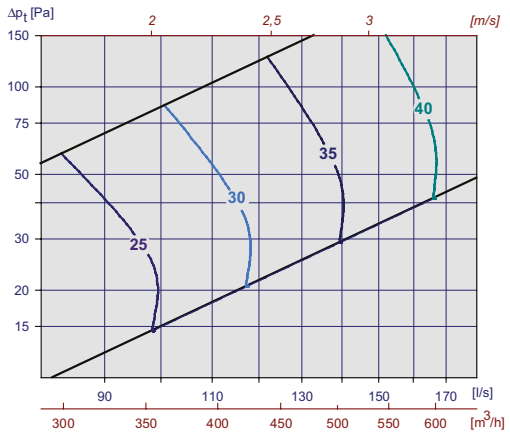
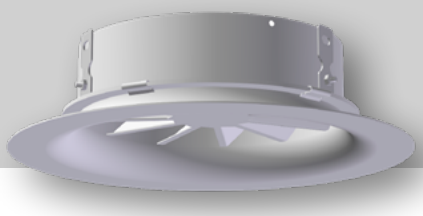


Diagram 10, RFD-R-D-K w/Luna 250-400



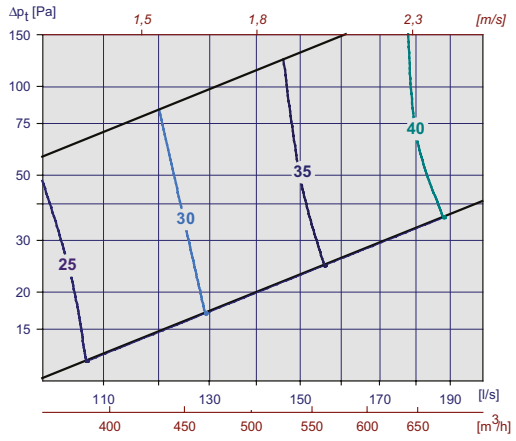


Diagram 11, RFD-R-D-K w/Luna 315-400

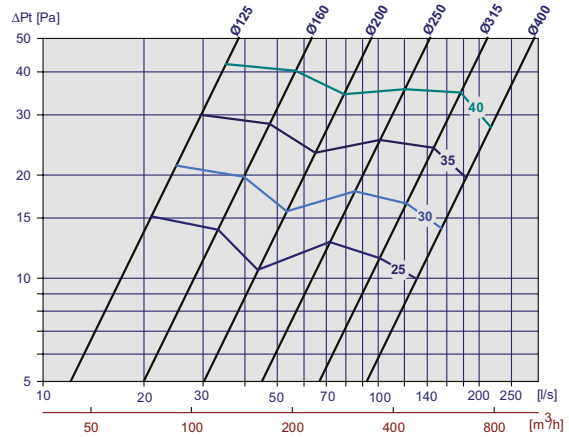


Diagram 12, capacity diagram for RFD-R-D-K at duct end.

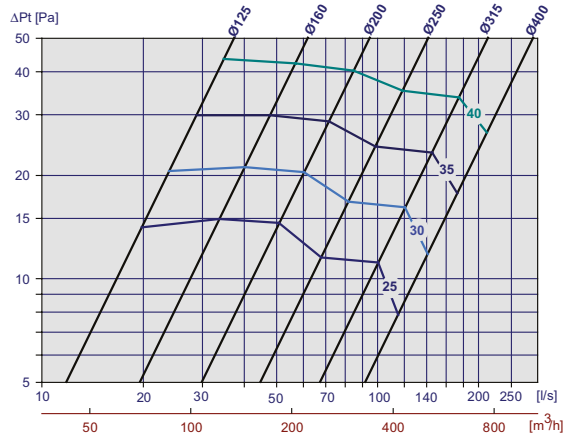


Diagram 13, capacity diagram for RFD-R-D-K directly into 90° bend

Static sound attenuation incl. end reflection, RFD-R-D-K

RFD-R-D-K	Attenuation [dB]							
Dim.	63	125	250	500	1k	2k	4k	8k
125	23	16	12	6	2	0	1	2
160	19	13	11	5	1	0	1	3
200	19	13	8	3	1	0	1	3
250	17	13	7	3	1	1	2	4
315	16	8	5	2	1	1	2	2
400	14	6	3	1	1	1	2	2

Table 5

Correction factor [KO], RFD-R-D-K

RFD-R-D-K	KO [dB]							
Dim.	63	125	250	500	1k	2k	4k	8k
125	-2	-7	-4	-2	-4	-10	-15	-22
160	1	-3	-3	-2	-5	-8	-13	-22
200	-3	-2	-4	-2	-6	-7	-10	-22
250	0	1	-1	-1	-6	-9	-15	-20
315	3	-1	-1	-2	-4	-10	-19	-27
400	2	2	-1	-1	-4	-13	-21	-23

Table 6

RFD

Static sound attenuation incl. end reflection, RFD-R-D-K with Luna

RFD-R-D-K	Luna	Attenuation [dB]							
Dim.	Dim.	63	125	250	500	1k	2k	4k	8k
125	100-125	26	15	16	19	19	17	13	16
160	100-160	24	11	14	17	17	17	13	16
	125-160	24	14	14	18	18	14	11	16
200	125-200	24	11	11	16	16	13	10	15
	160-200	19	11	14	18	18	10	13	16
250	160-250	21	12	15	16	17	9	10	8
	200-250	17	13	14	17	16	10	13	17
315	200-315	19	10	12	14	16	9	12	16
	250-315	15	11	13	15	14	10	12	15
400	250-400	14	9	14	16	11	9	12	15
315	315-315	11	9	14	14	10	10	8	12
400	315-400	10	7	12	15	10	10	11	14

Table 7

Correction factor [KO], RFD-R-D-K with Luna

		KO [dB]															
RFD-R-D-K	Luna	Damper closed								Damper open							
Dim.	Dim.	63	125	250	500	1K	2K	4K	8K	63	125	250	500	1K	2K	4K	8K
125	100-125	-2	6	2	-3	-7	-9	-13	-18	0	6	2	-3	-7	-9	-15	-21
160	100-160	0	3	3	-5	-7	-10	-10	-11	2	5	3	-3	-7	-10	-17	-23
	125-160	-3	4	2	-4	-8	-9	-9	-12	-5	3	2	-4	-7	-8	-12	-23
200	125-200	0	2	-1	-7	-6	-6	-10	-14	6	4	4	-3	-7	-10	-18	-20
	160-200	4	8	8	1	-3	-7	-15	-16	4	8	8	2	-3	-7	-16	-17
250	160-250	-1	3	0	-7	-10	-6	-8	-10	3	5	4	-3	-7	-11	-20	-21
	200-250	3	5	1	-4	-7	-8	-12	-15	5	6	2	-3	-6	-10	-17	-24
315	200-315	2	3	1	-5	-8	-7	-9	-13	5	4	2	-4	-5	-8	-17	-26
	250-315	2	5	1	-4	-7	-8	-12	-14	3	6	2	-3	-6	-10	-19	-23
400	250-400	4	4	-1	-6	-7	-7	-9	-12	5	6	1	-3	-5	-10	-20	-24
315	315-315	-4	-4	-6	-2	-2	-11	-21	-25	3	5	0	-4	-5	-8	-18	-26
400	315-400	3	5	0	-4	-6	-8	-13	-14	3	4	0	-3	-5	-8	-17	-26

Table 8

FLOW PATTERN

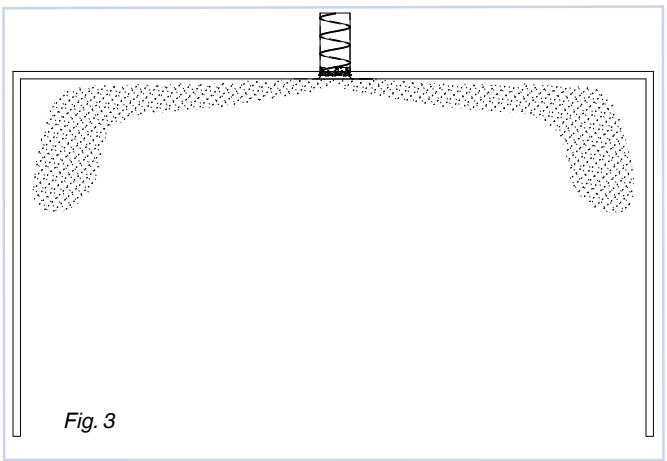
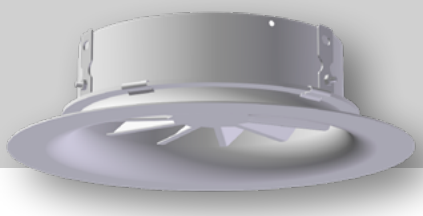


Fig. 3

RFD



INSTALLATION

When mounted in fixed ceiling or inserted in ceiling plate, RFD is attached by means of two mounting brackets. If a Luna plenum box is used, the unit is attached to the rear of the support bracket by means of threaded rod or strap (fig. 4).

Fig. 4: Installation

COMMISSIONING

During commissioning, the diffuser front must be fitted. Measuring tube and adjustment wire are pulled through the perforation at the front. If RFD is used, wire and measuring tube are pulled out from underneath the box and 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 valve can be cleaned by using a damp cloth. When cleaning the duct network, the valve must be removed in order to gain access to the ducting. If Luna is used, 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

RFD is developed and manufactured by:

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

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