

TRF

Floor Diffuser



- Vertical swirl jet air supply, in auditoriums, theatres, concert halls, offices etc.
- Comfortable thermal and good acoustic conditions
- Installation flush to the floor connected to under-floor plenum with positive pressure
- Adjustable pressure drop of the diffuser enables auto-balancing in most cases
- Only very limited distance between diffuser and seat required
- Detachable front plate enables cleaning of the diffuser

MATERIAL AND FINISHING

PART	MATERIAL	NOTE
Casing	Galvanised steel	
Control ring	Galvanised steel	
Front panel	Perforated stainless steel AISI 316	Optional perforated galvanised steel Epoxy-painted / White RAL 9010



Function

Air is supplied through the front panel of the device and mixes efficiently with the room air due to the swirling flow action. A rapid decrease in air velocity occurs in the vicinity of the diffuser. An adjustment ring is used to adjust the airflow rate.

QUICK SELECTION

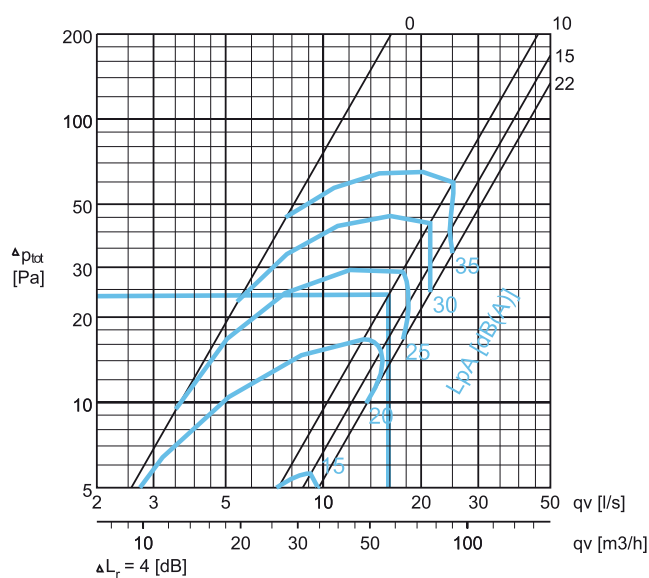
qv		12	14	16	18	20
		l/s	14	16	18	20
	m ³ /h	43	50	58	65	72
TRF-250	LpA	19	21	23	25	28
	ΔP_{st}	8	10	14	18	22
	ΔP_{tot}	8	10	14	18	22
	dP_t	30	30	28	-	-

LpA values presented with room attenuation 4 dB (red 10m² - sab).
When using room attenuation 8 dB (red 25m² - sab): LpA - 4dB.

LpA A-weighted sound pressure level, reduced by total equivalent absorption surface of 10m², dB(A) red 10m² - sab
 ΔP_{st} Static pressure drop, Pa
 ΔP_{tot} Total pressure drop, Pa

Pressure drop, throw pattern and sound data

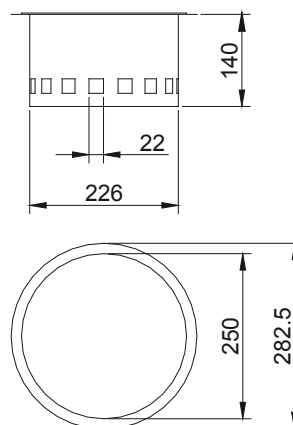
TRF-250



Selection example :

Requirements : qv = 16 l/s Selection : TRF-250
 LpA < 25 dB(A) ΔP_{tot} = 24 Pa
 opening x = 10 mm LpA < 23 dB(A)

DIMENSIONS



Floor supply design

The TRF auditorium diffuser is designed for installation in raised floors in auditoriums, theatres, concert halls, where good indoor climate conditions are required.

The recommended supply air temperature is less than 3°C below the ambient temperature.

The supply airflow rate is up to 15 l/s per unit.

Where requirements for comfort are perceived to be less important, higher airflow rates can be used, resulting in increased velocities close to the diffusers. In such cases diffusers should be installed further away from continuously occupied areas

The recommended distance between TRF auditorium diffusers is 0.8 to 1 meter.

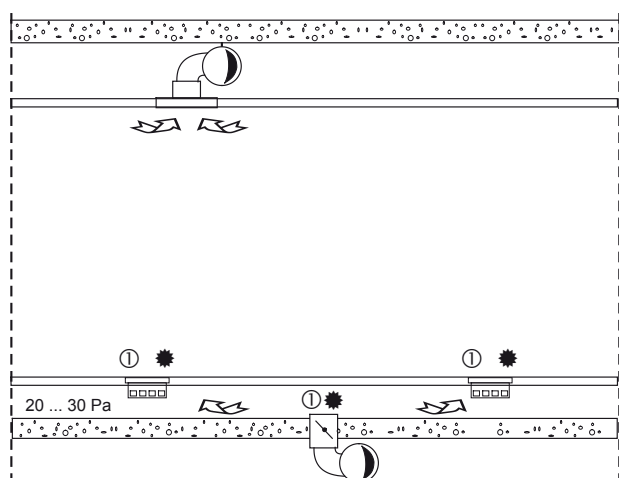


Figure 1

Connection of the diffusers

The TRF floor diffuser is suitable for installation without ductwork connection (Figures 1 and 2).

The space beneath the raised floor is used as a distribution plenum chamber.

The TRC/F diffuser causes sufficient pressure loss in order to provide self-balancing of the system and adjustment of airflow rates.

The airflow rate of each diffuser is adjusted by setting the plenum chamber static pressure.

The recommended pressure level of the plenum chamber is 20 ...30 Pa.

For plenum chambers with larger volumes, multiple air inlets are recommended (Figure 2).

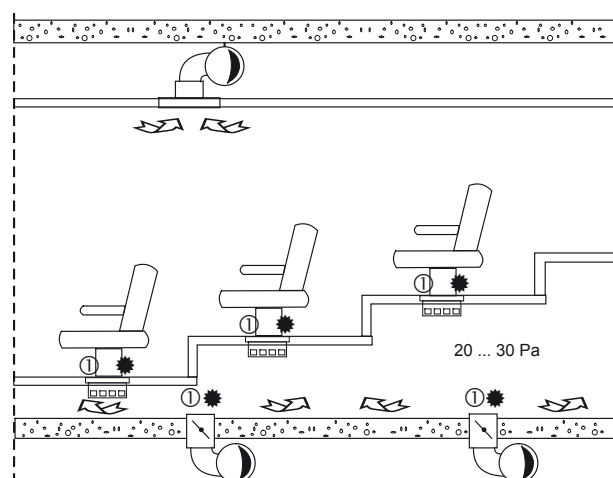


Figure 2

Velocity and temperature measurements

Air velocities and room air temperatures for different heights and distances from the diffuser centrelines are presented in the tables below.

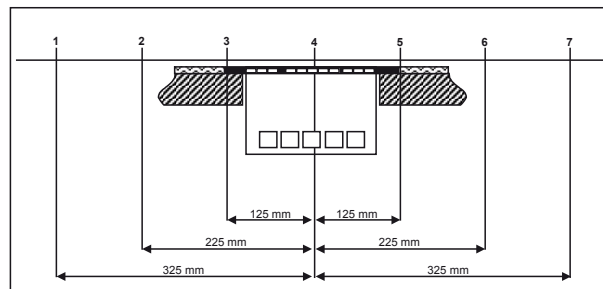
TRF-250

Airflow rate, q_v

11 l/s (40 m³/h)

Temperature difference between - 2°C

supply and room air, ΔT



HEIGHT mm	DISTANCE mm						
	-325	-225	-125	0	125	225	325
700	0.09 m/s 19.6°C	0.07 m/s 19.6°C		0.05 m/s 19.5°C		0.09 m/s 19.5°C	0.06 m/s 19.4°C
500	0.07 m/s 19.0°C	0.07 m/s 19.2°C		0.05 m/s 18.8°C		0.08 m/s 19.1°C	0.11 m/s 19.2°C
300	0.10 m/s 18.3°C	0.19 m/s 18.0°C		0.07 m/s 18.3°C		0.24 m/s 17.9°C	0.07 m/s 19.3°C
200	0.08 m/s 19.1°C	0.19 m/s 18.3°C		0.04 m/s 19.2°C		0.07 m/s 19.1°C	0.05 m/s 19.2°C
100		0.09 m/s 19.1°C	0.38 m/s 18.3°C	0.13 m/s 19.2°C	0.12 m/s 19.1°C	0.05 m/s 19.2°C	
50		0.04 m/s 19.2°C	0.14 m/s 19.2°C	0.45 m/s 16.0°C	0.10 m/s 19.0°C	0.07 m/s 19.2°C	

TRF-250

Airflow rate, q_v

15 l/s (54 m³/h)

Temperature difference between - 2°C

supply and room air, ΔT

HEIGHT mm	DISTANCE mm						
	-325	-225	-125	0	125	225	325
700	0.09 m/s 21.4°C	0.12 m/s 21.4°C		0.18 m/s 20.6°C		0.08 m/s 21.2°C	0.06 m/s 22.1°C
500	0.10 m/s 21.5°C	0.25 m/s 21.3°C		0.22 m/s 20.9°C		0.20 m/s 21.8°C	0.10 m/s 21.8°C
300	0.07 m/s 22.3°C	0.12 m/s 21.4°C		0.34 m/s 20.2°C		0.14 m/s 21.0°C	0.13 m/s 21.8°C
200	0.07 m/s 22.4°C	0.09 m/s 21.9°C		0.24 m/s 20.1°C		0.14 m/s 21.3°C	0.12 m/s 21.7°C
100		0.06 m/s 22.0°C	0.19 m/s 21.3°C	0.20 m/s 19.8°C	0.18 m/s 21.1°C	0.13 m/s 21.7°C	
50		0.08 m/s 21.5°C	0.13 m/s 21.3°C	0.31 m/s 19.6°C	0.17 m/s 21.2°C	0.15 m/s 21.3°C	

SOUND LEVEL DATA

TRF-250 Opening x (mm)	q_v		ΔP_{st} (Pa)	ΔP_{tot} (Pa)	F (Hz)								LpA [dB(A)]	NR	NC
	(l/s)	(m ³ /h)			63	125	250	500	1000	2000	4000	8000			
0	1	4	1	1	41	23	16	16	3	3	3	15	15	18	15
	2	7	3	3	41	27	23	24	3	3	3	17	20	21	17
	4	14	9	9	42	29	29	30	15	11	8	19	25	22	20
	5	18	23	23	42	31	33	35	25	21	15	21	30	27	25
	8	29	45	45	42	32	36	39	33	30	20	22	35	31	29
10	7	25	5	5	37	17	3	3	3	3	8	19	15	22	19
	13	47	17	17	41	30	20	16	13	12	15	21	20	24	21
	18	65	29	29	43	35	28	26	21	17	18	22	25	25	22
	21	76	43	43	44	39	33	33	27	21	20	22	30	25	23
	25	90	60	60	46	43	38	39	32	25	22	23	35	31	30
15	9	32	6	6	28	16	9	3	3	4	10	19	15	22	19
	15	54	15	15	33	28	24	19	16	11	14	20	20	23	20
	18	65	22	23	35	33	29	28	23	13	16	20	25	23	20
	21	76	31	31	36	37	34	34	28	15	17	20	30	26	24
	25	90	40	40	37	41	38	40	32	17	18	21	35	32	31
22	8	29	3	3	40	22	10	3	3	3	7	18	15	21	18
	14	50	10	10	42	31	24	17	13	9	13	20	20	23	20
	18	65	17	17	43	35	30	26	22	14	16	21	25	24	21
	21	76	24	24	43	38	34	33	28	17	17	21	30	25	24
	25	90	33	34	44	41	38	39	33	20	19	22	35	32	30

LpA values presented with room attenuation 4 dB (red 10m² - sab). When using room attenuation 8 dB (red 25m² - sab): LpA - 4dB.

NR/NC noise criteria



Installation

CODE DESCRIPTION

1	Front panel
2	Swirl jet deflector
3	Mounting ring
4	Casing with adjustment ring

Fix the casing onto the floor.

The diameter of the installation hole is 235 mm.

Attach the supply air part to the sleeve with spring clips.

Adjustment

Adjust the opening size by turning the adjustment ring inside the device.

Servicing

Lift the front panel from its place and wipe with a damp cloth instead of immersing in the water. Reassemble the supply air part by pushing into place.

Suggested Specifications

The casing shall be made of hot galvanised steel with the front panel of stainless steel AISI 316.

Alternative

The casing shall be made of hot galvanised steel with the front panel of epoxy-painted hot galvanised steel, with white (RAL 9010) as the standard colour.

Air shall be supplied through the front panel of the diffuser with a swirling low velocity action.

Sufficient pressure loss shall be created by the diffuser in order to provide self-balancing and airflow adjustment for a plenum chamber installation. The diffuser unit shall have an adjustment ring for airflow rate adjustment.

Product Code

TRF-D

D = Diameter of duct connection
250

Specifics and accessories

MA = Material
CS Steel
AS Stainless steel, AISI 316

CO = Colour
W White
X Special colour

Code example

TRF-250, MA=CS,CO=W