

## TRB

### Conical Ceiling Diffuser



- Horizontal or vertical air supply, suitable for both heating and cooling applications
- Supply air jet velocity is effectively reduced due to high mixing effect
- Installation flush to the ceiling, or exposed (especially in high spaces)
- Adjustable throw pattern and pressure drop
- Circular duct connection; gasket in sizes 100 ... 400
- Openable cone module enables cleaning of the diffuser and ductwork

#### Accessories

- Balancing plenum with measurement and adjustment functions.

#### MATERIAL AND FINISHING

PART	MATERIAL	NOTE
Frame	Galvanised steel	Sizes 100 ... 630
Cone module	Galvanised steel	Sizes 100 ... 630
Finishing	Epoxy-painted / White RAL 9010	Special colours available

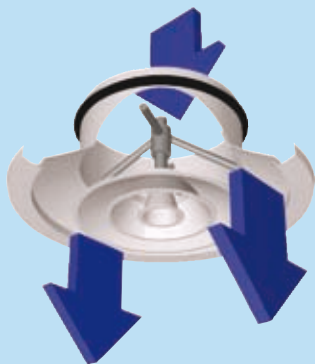
## QUICK SELECTION

qv	Pa	240	360	480	600	720	960	1320	1920	2640	3600	4800	6240	8400	10800	14400
	l/s	20	30	40	50	60	80	110	160	220	300	400	520	700	900	1200
	m³/h	72	108	144	180	216	288	396	576	792	1080	1440	1872	2520	3240	4320
TRB-100(R)	LpA	20	29	35	40	43										
	ΔPst	6	14	24	38	54										
	ΔPtot	10	22	40	62	89										
	Ld	-	-	-	-	-										
	Lmin	-	-	0,5	0,5	0,8										
	L0.2	0,8	1,2	1,6	2,0	2,4										
TRB-125(R)	LpA		21	26	31	35	41	47								
	ΔPst		6	11	17	24	43	81								
	ΔPtot		10	17	27	24	43	81								
	Ld		-	-	-	-	-	-								
	Lmin		-	-	0,5	0,5	0,9	1,7								
	L0.2		1,0	1,4	1,6	2,0	2,6	3,2								
TRB-160(R)	LpA			20	25	29	35	42								
	ΔPst			6	10	14	25	48								
	ΔPtot			9	14	20	35	66								
	Ld			-	-	-	-	-								
	Lmin			-	0,5	0,5	0,6	1,2								
	L0.2			-	0,5	0,5	0,6	1,2								
TRB-200(R)	LpA					20	26	33	41	48						
	ΔPst					6	12	22	46	87						
	ΔPtot					9	15	29	62	117						
	Ld					-	-	-	-	5,0						
	Lmin					-	0,5	0,8	1,6	2,6						
	L0.2					1,4	1,8	3,0	4,4	6,0						
TRB-250(R)	LpA						18	25	33	40	46					
	ΔPst						5	9	20	38	70					
	ΔPtot						7	12	26	50	93					
	Ld						-	-	-	4,0	4,6					
	Lmin						-	0,5	0,9	1,7	2,6					
	L0.2						1,6	2,2	3,2	4,4	6,0					
TRB-315(R)	LpA								20	27	34	41	47			
	ΔPst								6	12	22	38	65			
	ΔPtot								9	16	30	54	92			
	Ld								2,4	2,8	3,4	4,0	4,6			
	Lmin								1,0	2,2	3,6	5,6	7,8			
	L0.2								2,5	3,4	4,8	6,2	8,2			
TRB-400(R)	LpA										25	32	38	45		
	ΔPst										9	16	27	49		
	ΔPtot										12	22	37	68		
	Ld										2,8	3,4	3,8	4,4		
	Lmin										2,2	3,6	5,2	7,8		
	L0.2										3,4	4,6	6,0	8,2		
TRB-500(R)	LpA											25	31	39	45	
	ΔPst											8	14	24	41	
	ΔPtot											10	18	32	53	
	Ld											2,8	3,4	4,0	4,6	
	Lmin											2,6	4,0	6,2	8,4	
	L0.2											3,8	5,0	6,8	8,8	
TRB-630(R)	LpA												21	29	35	42
	ΔPst												4	8	13	23
	ΔPtot												6	11	18	32
	Ld												2,6	3,0	3,4	4,2
	Lmin												2,8	4,4	6,2	9,0
	L0.2												4,0	5,4	6,8	9,2

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

Pa Supply air cooling capacity, W  
LpA A-weighted sound pressure level, reduced by total equivalent absorption surface of 10m², dB(A) red 10m² - sab  
ΔPst Static pressure drop, Pa

ΔPtot Total pressure drop, Pa  
Ld Distance from the supply unit, at which air jet detaches from ceiling, m  
Lmin Minimum distance between central lines of two supply units, m (V3 = 0,25m/s at 1.8m height)  
L0.2 Isothermal throw length, m when residual velocity of supply air jet 0,2 m/s  
Room temperature (Tr) = 24 °C  
Supply air temperature (Ta) = 14 °C  
Room height = 2,8 m



Compact jet



Radial Jet

## Function

TRB is a conical ceiling diffuser with an adjustable flow pattern.

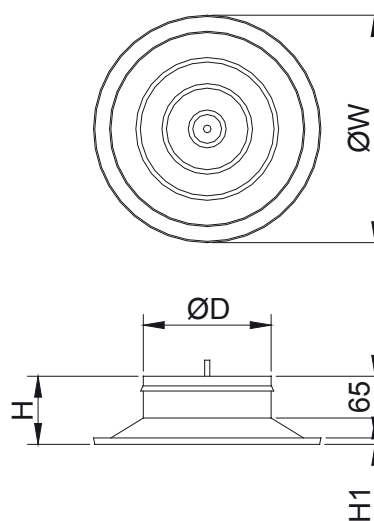
The horizontal radial jet is used mainly in cooling applications and the vertical compact jet with warm supply air in heating applications.

The supply air pattern is adjusted by rotating the cone module into the desired position.

The recommended maximum temperature difference between supply air and room air in cooling applications is 10 °C.

## DIMENSIONS

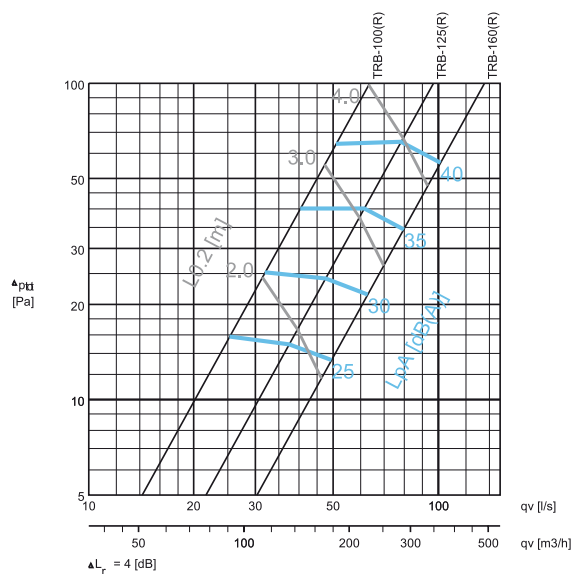
NS	ØW	H	H1	ØD
100	286	97	9	99
125	286	97	9	124
160	286	97	9	159
200	354	106	10	199
250	438	116	11	249
315	545	130	13	314
400	682	148	14	399
500	845	168	15	499
630	1055	195	16	629



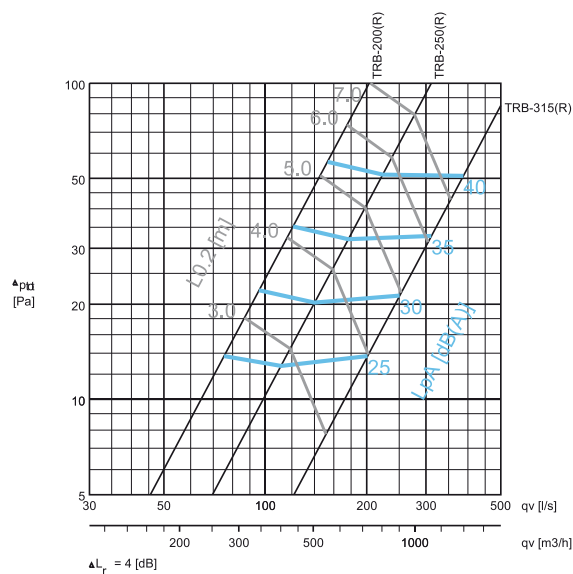
## Pressure drop, throw pattern and sound data

Supply, radial jet

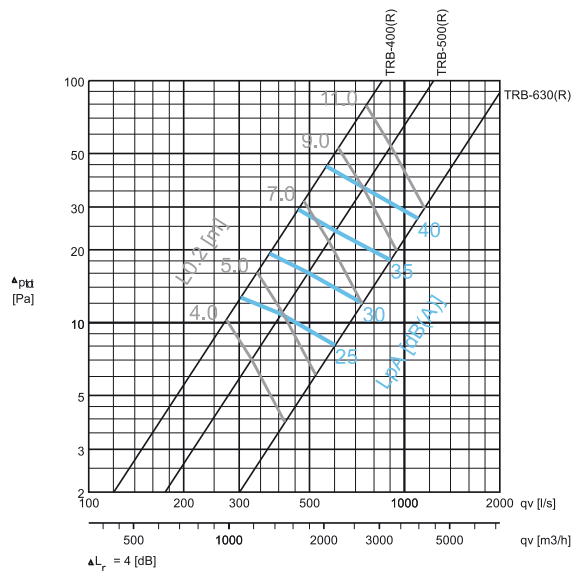
TRB-100, TRB-125, TRB-160



TRB-200, TRB-250, TRB-315



TRB-400, TRB-500, TRB-630



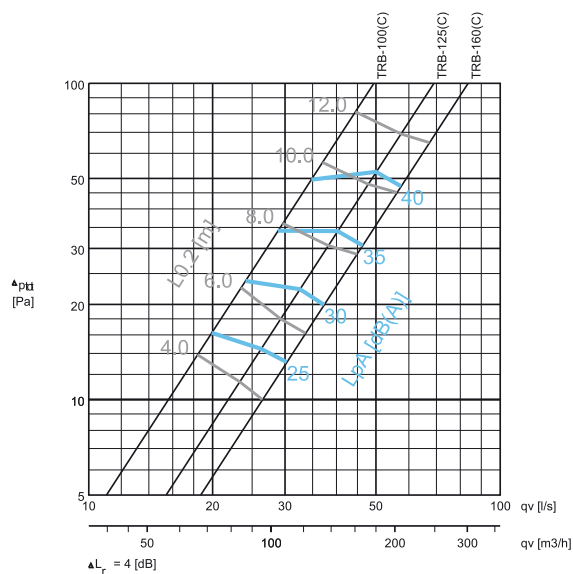
Selection example :

Requirements :	qv = 500 l/s	Selection:	TRB-500(R)
	Lp(A) < 35 dB(A)		Lp(A) = 30 dB(A)
	L0.2 < 7.0 m		L0.2 = 6.0 m
			ΔPtot = 16 Pa

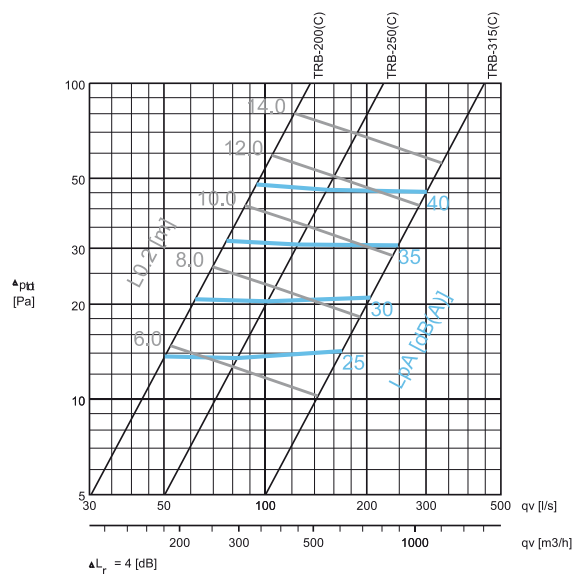
## Pressure drop, throw pattern and sound data

Supply, compact jet

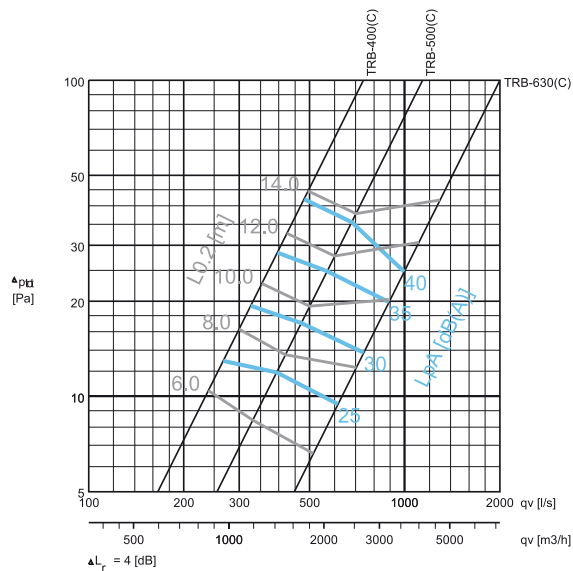
TRB-100, TRB-125, TRB-160



TRB-200, TRB-250, TRB-315



TRB-400, TRB-500, TRB-630



Selection example :

Requirements :	$q_v = 100 \text{ l/s}$	Selection:	TRB-250(C)
	$L_{p(A)} < 35 \text{ dB(A)}$		$L_{p(A)} = 30 \text{ dB(A)}$
	$L_{0.2} < 8.0 \text{ m}$		$L_{0.2} = 7.5 \text{ m}$
			$\Delta p_{tot} = 20 \text{ Pa}$

## SOUND LEVEL DATA, SUPPLY

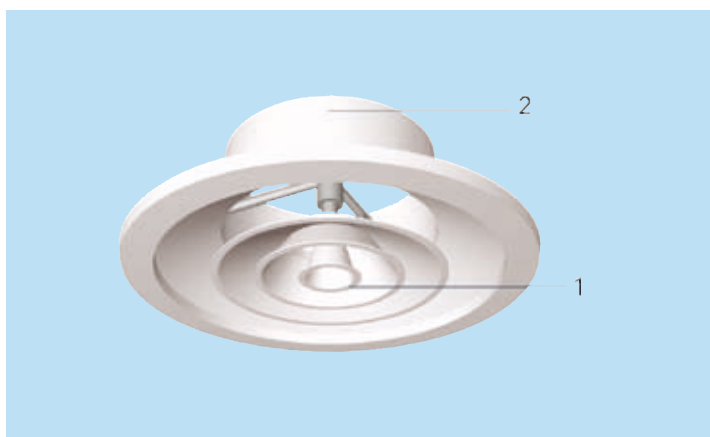
Radial jet	qv		$\Delta P_{st}$ (Pa)	$\Delta P_{tot}$ (Pa)	F (Hz)						LpA [dB(A)]	NR	NC
	(l/s)	(m³/h)			125	250	500	1000	2000	4000			
TRB-100(R)	25	90	9	15	30	24	25	24	23	14	25	22	20
	32	115	15	25	35	29	30	29	28	19	30	27	25
	40	144	24	40	40	34	35	34	33	24	35	32	30
	51	184	39	64	45	39	40	39	38	29	40	37	35
TRB-125(R)	37	133	9	15	31	27	26	23	21	12	25	21	18
	48	173	15	25	37	33	32	29	27	18	30	26	23
	61	220	25	40	42	38	37	34	32	23	35	31	28
	78	281	41	65	47	43	42	39	37	28	40	36	34
TRB-160(R)	50	180	10	14	34	31	28	24	19	9	25	19	17
	63	227	16	22	38	35	32	28	23	13	30	24	23
	80	288	25	35	43	40	37	33	28	18	35	29	28
	101	364	40	55	48	45	42	38	33	23	40	35	34
TRB-200(R)	75	270	10	14	32	29	26	23	22	12	25	21	19
	96	346	17	22	37	34	31	28	27	17	30	26	24
	121	436	26	35	42	39	36	33	32	22	35	31	29
	153	551	42	56	48	45	42	39	38	28	40	36	34
TRB-250(R)	111	400	10	13	32	28	25	23	23	11	25	22	20
	140	504	15	20	37	33	30	28	28	16	30	27	25
	176	634	24	32	42	38	35	33	33	21	35	32	30
	223	803	39	51	47	43	40	38	38	26	40	37	35
TRB-315(R)	201	724	10	14	33	29	25	24	22	11	25	21	19
	251	904	15	21	38	34	30	29	27	16	30	26	24
	311	1120	23	33	43	39	35	34	32	21	35	31	29
	388	1397	36	51	48	44	40	39	37	26	40	36	34
TRB-400(R)	303	1091	9	13	33	29	25	24	22	11	25	21	18
	374	1346	14	19	38	34	30	29	27	16	30	26	23
	461	1660	21	29	43	39	35	34	32	21	35	31	29
	566	2038	32	44	48	44	40	39	37	26	40	36	34
TRB-500(R)	407	1465	8	11	33	29	25	24	22	11	25	21	19
	495	1782	12	16	38	34	30	29	27	16	30	26	24
	604	2174	18	24	43	39	35	34	32	21	35	31	29
	743	2675	28	36	48	44	40	39	37	26	40	36	34
TRB-630(R)	603	2171	6	8	33	29	25	24	22	11	25	21	19
	737	2653	9	12	38	34	30	29	27	16	30	26	24
	904	3254	13	18	43	39	35	34	32	21	35	31	29
	1102	3967	19	27	48	44	40	39	37	26	40	36	34

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

## SOUND LEVEL DATA, SUPPLY

Compact jet	qv		$\Delta P_{st}$ (Pa)	$\Delta P_{tot}$ (Pa)	F (Hz)						LpA [dB(A)]	NR	NC
	(l/s)	(m³/h)			125	250	500	1000	2000	4000			
TRB-100(C)	20	72	13	16	28	24	26	24	23	16	25	22	19
	24	86	18	24	33	29	31	29	28	21	30	27	24
	29	104	26	34	38	34	36	34	33	26	35	32	29
	35	126	38	50	43	39	41	39	38	31	40	37	35
TRB-125(C)	26	94	11	14	28	28	27	24	20	13	25	20	18
	33	119	18	23	34	34	33	30	26	19	30	25	24
	40	144	27	34	38	38	37	34	30	23	35	30	29
	50	180	42	52	43	43	42	39	35	28	40	35	34
TRB-160(C)	30	108	12	13	33	30	27	24	17	10	25	20	18
	37	133	18	20	38	35	32	29	22	15	30	25	23
	46	166	27	30	43	40	37	34	27	20	35	30	29
	58	209	43	48	48	45	42	39	32	25	40	35	34
TRB-200(C)	50	180	12	14	28	28	27	23	22	12	25	21	19
	62	223	18	21	33	33	32	28	27	17	30	26	24
	77	277	28	32	38	38	37	33	32	22	35	31	29
	94	338	42	48	43	43	42	38	37	27	40	36	34
TRB-250(C)	83	299	12	14	31	30	27	24	22	12	25	21	18
	102	367	18	21	36	35	32	29	27	17	30	26	23
	125	450	27	31	41	40	37	34	32	22	35	31	28
	153	551	40	46	46	45	42	39	37	27	40	36	33
TRB-315(C)	169	608	11	14	31	29	25	24	23	10	25	22	19
	205	738	17	21	36	34	30	29	28	15	30	27	24
	248	893	25	31	40	38	34	33	32	19	35	32	29
	301	1084	36	45	45	43	39	38	37	24	39	37	35
TRB-400(C)	267	961	10	13	31	29	25	24	23	10	25	22	19
	326	1174	15	19	36	34	30	29	28	15	30	27	24
	396	1426	23	29	41	39	35	34	33	20	35	32	29
	481	1732	33	42	46	44	40	39	38	25	40	37	35
TRB-500(C)	394	1418	10	12	31	30	25	24	23	10	25	22	19
	471	1696	14	17	36	35	30	29	28	15	30	27	24
	569	2048	20	25	41	39	35	34	33	20	35	32	29
	680	2448	28	36	46	44	40	39	38	25	40	37	35
TRB-630(C)	616	2218	7	9	31	29	25	24	23	10	25	22	19
	742	2671	10	14	36	34	30	29	28	15	30	27	24
	893	3215	15	20	41	39	35	34	33	20	35	32	29
	997	3589	19	25	46	44	40	39	38	25	40	37	35

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	Cone module
2	Frame

The diffuser is connected either directly to duct by screwing or by riveting, or alternatively to the TRI balancing plenum.

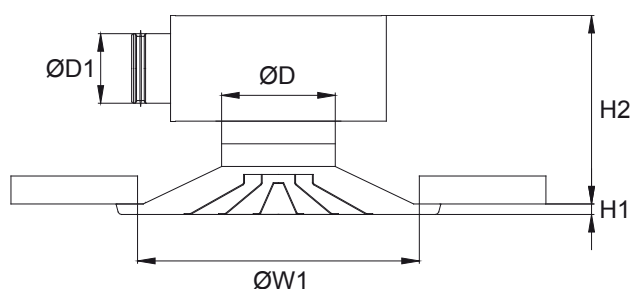
The minimum recommended safety distance upstream of the diffuser is 3xD.

The collar of TRI plenum can be installed either internally in the plenum or externally onto the bottom of the plenum. The height of the unit for the external installation is presented in the table below. When the collar is installed internally, the total height H2 is reduced by 60 mm.

TRB (ØD)	ØD1	TRI	ØW1	H2	H3
100	100	TRI-100-100	244	9	242-282
125	100	TRI-100-125	244	9	242-282
125	160	TRI-125-125	244	9	272-312
160	125	TRI-125-160	244	9	272-312
160	160	TRI-160-160	244	9	312-352
200	160	TRI-160-200	306	10	312-352
200	200	TRI-200-200	306	10	371-411
250	200	TRI-200-250	384	11	380-420
250	250	TRI-250-250	384	11	444-484
315	250	TRI-250-315	482	13	455-495
315	315	TRI-315-315	482	13	500-550
400	315	TRI-315-400	617	14	518-558

The technical performance for the combination of supply air diffuser and TRI plenum is presented separately for the two different installations. See HIT Design software.

## Installation with TRI



## Adjustment

The technical performance has been defined for radial jet with cone module opening = 0 mm or for compact jet with opening = -15 mm.

The TRB itself has no means for airflow adjustment.

In order to enable airflow adjustment and measurement of airflow rate it is recommended that the diffuser be connected to the TRI balancing plenum.

The supply flow rate is determined by using the measurement and adjustment module MSM.

Detach the front panel or the whole diffuser and pass the tubes and control spindle through the cone module of the diffuser.

Replace the cone module or diffuser.

Measure the differential pressure using a manometer.

The airflow rate is calculated using the formula below.

$$q_v = k * \sqrt{\Delta p_m}$$

Adjust the airflow rate by rotating the control spindle until the desired setting is achieved.

Lock the damper position with a screw.

Reassemble the tubes and spindle into the plenum.

K-factor for installations with different safety distances (D= duct diameter)

TRI	> 8 x D	min 3 x D
100	6.0	7.5
125	9.9	12.6
160	16.9	21.9
200	28.3	31.0
250	47.9	51.5
315	78.6	-



## Servicing

Detach the cone module of the diffuser and clean the parts by wiping with a damp cloth.

Reinstall the cone module.

## Suggested Specifications

The ceiling diffuser shall have a steel (or aluminium) casing with an adjustable cone module and a spigot with integral gasket for connection to the circular duct.

The throw pattern of the diffuser shall be adjustable in radial or compact jet.

## Product Code

TRB-D(J)

D = Diameter of duct connection

100, 125, 160, 200, 250, 315, 400, 500, 630

Specifics and accessories

CO = Colour

W      White

X      Special colour

Code example

TRB-100(R), CO=W

Sub products

TRI    Plenum (Diffusers)

PLC    Plenum (Ceiling diffusers)