

Halton DFA

Conical Ceiling Diffuser



- Horizontal air supply, suitable also for exhaust
- Installation flush to the ceiling, light-weight aluminium design
- Circular duct connection with rubber gasket
- Openable cone module enables cleaning of the diffuser and ductwork.

Accessories

- Balancing plenum with measurement and adjustment functions

MATERIAL AND FINISHING

PART	MATERIAL	FINISHING	NOTE
Frame	Aluminium	Anodised Polyester-painted/ White RAL 9010/ 50% gloss	Epoxy-painted (100%) available
Vanes	Aluminium	Anodised Polyester-painted/ White RAL 9010/ 50% gloss	Epoxy-painted (100%) available
Perforated plate	Galvanised steel	45 % perforation	
Plenum	Galvanised steel		

QUICK SELECTION

qv	Pa	360	480	600	840	1080	1440	1800	2160	2520	3000	3600	4800	6000
	l/s	30	40	50	70	90	120	150	180	210	250	300	400	500
	m ³ /h	108	144	180	252	324	432	540	648	756	900	1080	1440	1800
DFA-125-295	LpA	22	28	34	46									
	ΔPst	24	43	67	131									
	ΔPtot	28	49	77	150									
	Ld	-	-	-	-									
	Lmin	-	1,2	2,0	3,6									
	L0.2	2,0	2,6	3,4	4,8									
DFA-160-370	LpA			20	31	39	50							
	ΔPst			20	39	64	114							
	ΔPtot			23	46	76	135							
	Ld			-	3,6	4,2	5,0							
	Lmin			1,0	2,0	3,2	4,8							
	L0.2			2,8	4,6	5,8	7,8							
DFA-250-450	LpA					25	30	36	41	47				
	ΔPst					19	29	42	58	82				
	ΔPtot					22	35	51	69	97				
	Ld					3,8	4,8	5,4	6,2	7,5				
	Lmin					2,0	4,2	4,8	6,0	8,0				
	L0.2					7,2	9,2	11,0	12,8	15,4				
DFA-250-520	LpA					25	30	35	41	47				
	ΔPst					18	29	41	56	79				
	ΔPtot					22	34	49	67	95				
	Ld					4,0	4,8	5,6	6,4	7,2				
	Lmin					2,8	3,8	5,0	6,6	8,4				
	L0.2					8,0	10,0	12,0	14,0	16,6				
DFA-400-595	LpA							22	24	28	36	44		
	ΔPst							13	18	26	46	72		
	ΔPtot							14	20	29	52	81		
	Ld							3,2	3,6	4,4	5,6	6,9		
	Lmin							7,6	9,4	11,6	16,2	20,8		
	L0.2							8,2	9,6	11,6	15,6	19,4		

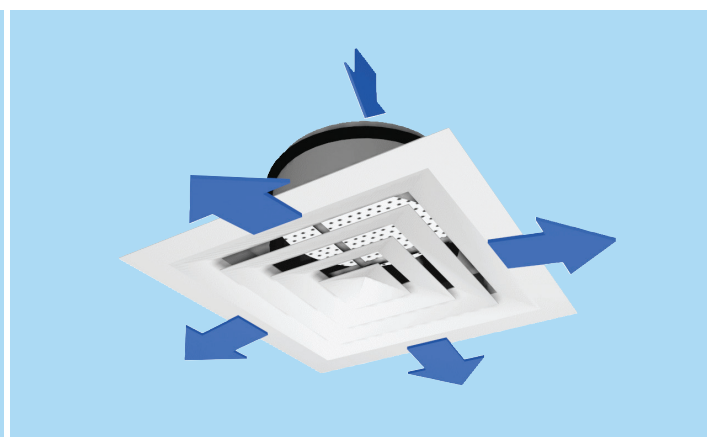
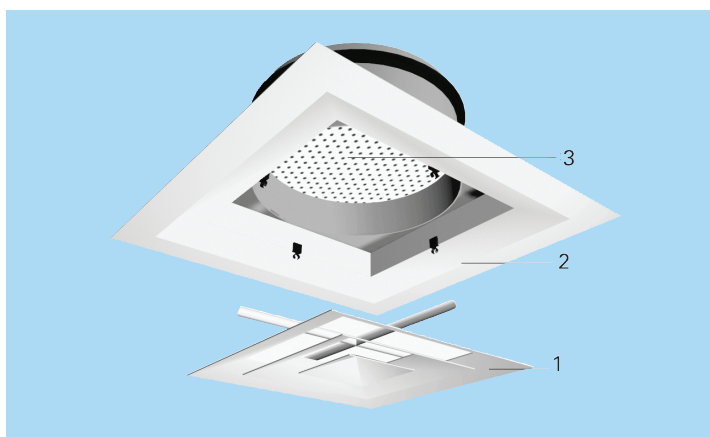
LpA values presented with room attenuation 4 dB (red 10m² - sab). When using room attenuation 8 dB (red 25m² - sab):
LpA - 4dB.

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

ACCESSORIES

ACCESSORY	CODE	DESCRIPTION
Balancing plenum with airflow measurement and adjustment unit	TRI/N	For balancing, equalising the airflow
Sound attenuation	IN	Polyester fibre in the TRI plenum
Airflow measurement and adjustment unit	MSM	For supply installation



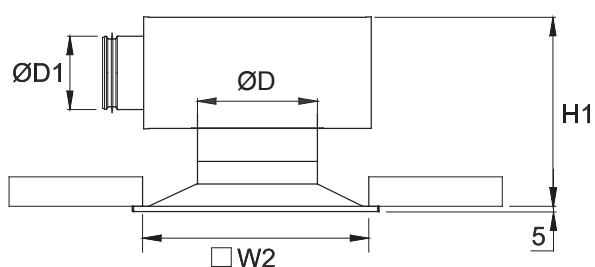
Installation

CODE DESCRIPTION

1	Front panel
2	Frame
3	Perforated plate

The diffuser is connected either directly to the duct or using a TRI balancing plenum.

Installation with plenum TRI



DFA (ØD)	ØD1	TRI	W2	H1
125	100	TRI-100-125	235	272-322
160	125	TRI-125-160	310	302-352
250-445	160	TRI-160-250	385	342-392
250-520	200	TRI-200-250	460	392-442
400	250	TRI-250-400	535	456-506

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.

Duct installation

When the DFA diffuser is installed without a TRI balancing plenum, it is recommended that the diffuser be connected to ductwork using a straight connection duct of minimum length $3xD$ upstream of the diffuser.

Function

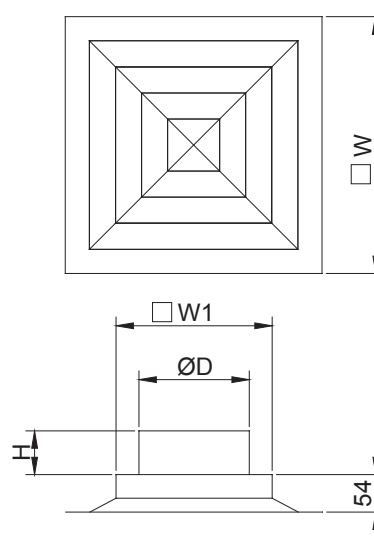
Air is supplied horizontally into the space through the slots of the conical front panel. Supply air mixes with room air in the vicinity of the diffuser.

The fixed cones of the diffuser are designed to ensure that the supply air flows along the ceiling.

The DFA diffuser can also be used as an exhaust unit.

DIMENSIONS

NS	W	W1	H	ØD
125	295	150	63	124
160	370	225	63	159
250-445	445	300	63	249
250-520	520	375	63	249
400	595	450	100	399



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 equipped with the MSM module.

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

Detach the front panel and pass the tubes and control spindle through the diffuser.

Measure the differential pressure using a manometer.

The flow 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.

Replace the tubes and spindle into the plenum and reattach the front panel.

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

TRI	>8XD	min 3XD
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

Remove the front panel (central cones) by gently drawing out the central part.

Detach the perforated plate from the supply air section and sleeve.

Clean the parts by wiping them with a damp cloth.

Push the perforated plate back into place.

Push the front panel back into place so that the springs lock.

Option: with balancing plenum TRI + MSM

Remove the measurement and adjustment module by gently pulling the shaft (not the control spindle).

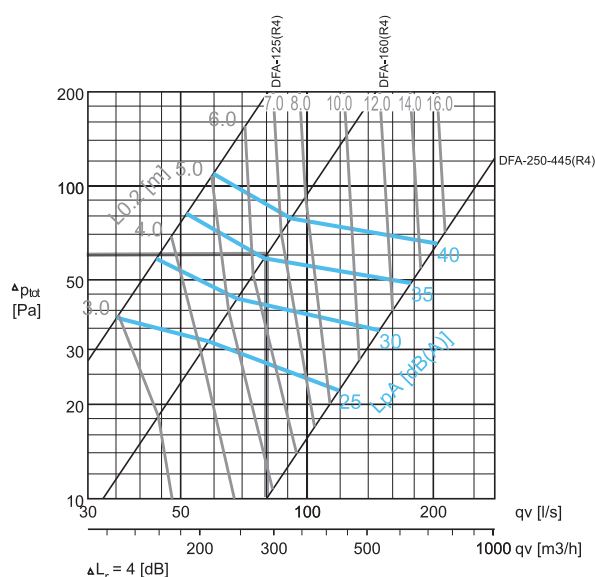
Wipe the parts with a damp cloth, instead of immersing in water.

Reassemble the measurement and adjustment module by pushing in the shaft until the module meets the stopper.

Push the front panel back into place so that the clips lock.

Pressure drop, throw pattern and sound data

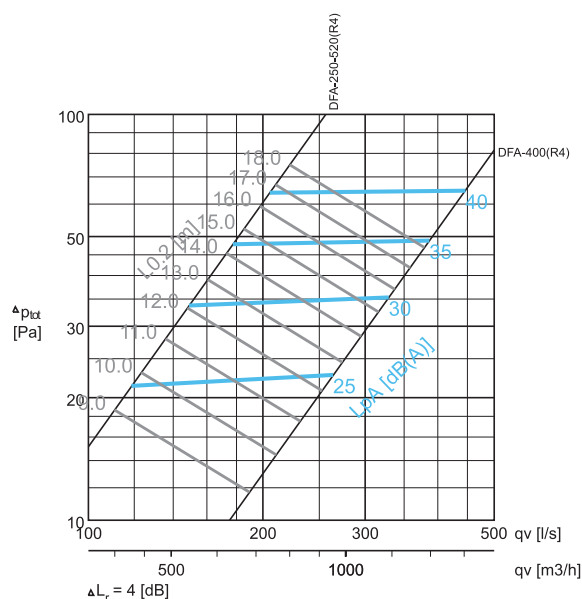
DFA-125, DFA-160, DFA-200-450



Selection example :

Requirements : $qv = 80 \text{ l/s}$ Selection : DFA-160
 $LpA < 35 \text{ dB(A)}$ $LpA < 35 \text{ dB(A)}$
 $L0,2 < 7 \text{ m}$ $L0,2 < 6,4 \text{ m}$
 $\Delta P_{tot} = 60 \text{ Pa}$

DFA-250-250, DFA-400



Note:

- Recommended minimum supply temperature, 10°C below room.
- For return use, adjust supply data by adding + 2 dB(A) and $\Delta P_{tot} = \Delta P_{tot} (\text{supply}) \times 1,5$.
- Throw pattern using different input data (velocity, ΔT) can be seen using the Halton HIT Design program.

SOUND LEVEL DATA

	qv		ΔP_{st} (Pa)	ΔP_{tot} (Pa)	F (Hz)								LpA [dB(A)]	NR	NC
	(l/s)	(m³/h)			63	125	250	500	1000	2000	4000	8000			
DFA-125(R4)	35	126	33	38	52	31	26	24	20	15	11	3	25	17	16
	44	158	51	58	54	34	32	31	28	23	22	10	30	24	22
	52	187	71	81	56	36	36	36	34	30	29	18	35	31	28
	60	216	95	109	57	38	40	41	39	35	36	25	40	37	35
DFA-160(R4)	58	209	27	32	41	30	28	26	26	18	5	3	25	22	20
	68	245	37	44	41	33	32	31	31	24	14	4	30	27	25
	79	284	49	59	42	35	36	36	36	30	21	11	35	32	30
	91	328	66	79	42	38	40	40	40	36	29	18	40	36	35
DFA-250-445(R4)	119	428	19	22	53	33	29	23	20	8	3	3	25	17	16
	149	536	29	34	55	37	34	31	28	19	6	3	30	24	22
	177	637	41	49	56	39	39	37	34	27	16	6	35	30	29
	205	738	55	65	58	42	42	42	40	34	24	8	40	36	35
DFA-250-520(R4)	119	428	18	21	53	29	27	24	20	7	3	3	25	18	17
	149	536	28	34	55	34	33	31	28	18	6	3	30	24	22
	177	637	40	48	56	37	38	37	35	26	16	5	35	31	29
	205	738	54	64	57	40	42	42	40	33	25	6	40	36	35
DFA-400(R4)	264	950	20	23	52	28	31	24	18	10	3		25	17	16
	329	1184	31	35	53	33	36	32	27	20	6		30	24	22
	387	1393	43	49	54	37	40	38	34	28	16		35	30	29
	446	1606	57	65	54	40	43	43	39	34	24		40	35	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

Suggested Specifications

The diffuser shall be made of extruded aluminium, anodised or polyester-painted with a white (RAL 9010) standard colour.

The bevel angles of the outer frame and central cone shall be welded so that the joints are almost invisible.

The diffuser shall have a galvanised steel transition to provide for circular duct connection. The spigot shall have a sealing gasket for airtight duct connection.

The diffuser shall be connected to the ductwork using a balancing plenum, which comprises polyester fibre with a washable surface as sound attenuation material.

The plenum shall be equipped with an airflow measurement and adjustment module.

The front panel of the diffuser shall be detachable in order to provide access to the measurement and adjustment module in the plenum.

Product Code

DFA-D-A

D = Diameter of duct connection
125, 160, 250, 315, 400

A = Diffuser size
D=125: 295
D=160: 370
D=250: 450, 520
D=315: 520
D=400: 595

Specifics and accessories

FI = Finishing
PN Painted
AN Anodised

CO = Colour
W White

Code example

DFA-125-295, FI=PN,CO=W

Sub products

TRI Plenum (Diffusers)