Quick Selection Guide

Third Edition

Content

Content

Introduction

This Quick Selection Guide has been prepared to assist you to select TROX products with ease.
It also provides you with general technical information and dimensional details as guide for each product.
You should also visit TROX website and download TROX 'Easy Product Finder' to select the products you want.
This software will also provide you with the relevant product information that include;

i. Product codes
ii. Technical data
iii. Specification text
iv. Product photos
v. CAD-data (dxf, Step)

For detailed information, you are advised to refer the full product information from our website at www.troxapo.com and our KLIMA Asia Pacific catalogue. If you need a FREE copy of our KLIMA Asia Pacific catalogue, please contact us at Enquiry-My@troxgroup.com stating your full name, position, company name, email address and telephone number for speedy response. The full TROX product range for ventilation and air conditioning technology includes;

Components
Air terminal devices
Air terminal units
Sound attenuators
Dampers and weather louvers
Air filter units and filter elements
Fire and smoke protection components

Systems
Air-water systems
Laboratory ventilation systems
Communication systems for fire and smoke protection
Advance IT cooling system for data centres

Introduction to Indoor Comfort Environment

In mechanical air distribution systems, two criteria are of particular importance:
Thermal comfort
Noise Level

Thermal Comfort

The factors affecting thermal comfort condition within an enclosed space are influenced by air distribution system in the following ways;

a. Air temperature difference
b. Air velocity
c. Asymmetric radiation

The air flow pattern from an air terminal device will influence the thermal comfort within the occupied space. Careful consideration is necessary when selecting and deciding on the location of supply air terminal devices to avoid draft.

Research in human comfort has suggested that the temperature difference between the ankle and the neck should not exceed 3°C. For thermal comfort, the recommended room temperature within the occupied zone during cooling mode should be around 24 °C (with a tolerance of ± 1.5 °C) and the mean air velocity should not exceed 0.25 m/s according to the International Standard, ISO 7730.

Asymmetry radiation occurs when there are hot or cold surfaces with the enclosed space such as direct solar gain through the window, which can be overcome with shading for example. Such condition is usually generated independent of the air distribution system.

Apart from maintaining an acceptable thermal environment, the purpose of a good air distribution system to provide adequate amount of 'fresh' air for respiration and effectively removing air contaminants that are generated from within the occupied space.

Noise Level

As an integral part of a good air distribution system, it is also important to achieve the recommended acceptable noise level for a particular application. In this Quick Selection Guide, the performance data given in this document is based on NC 35 with the assumption of 8dB room attenuation unless stated otherwise.

The table below provide recommendations on acceptable Noise Criteria (NC) rating for various applications. These recommendations are based on the NC curves that attempt to represent equal noise tolerance for the average person at each frequency band.

Table 1: Recommended Design Noise Criteria in accordance to the CIBSE Guide A

Type of ventilated space	Design NC Level
Live theatres (500 seats), auditoriums, television studios, large conference and lecture rooms (50 people).	25
Board rooms, top management offices, conference and lecture rooms (20 – 50 people), multi-purpose halls, libraries, bedrooms in hotels, banqueting rooms, operating theatres and cinemas.	30
Public rooms in hotels, ballrooms, hospital open wards, middle management and small offices, small conference and lecture rooms (20 people), school classrooms, small court rooms, museums, libraries, banking halls, small restaurants, cocktail bars and quality shops.	35
Toilets and washrooms, large open offices, drawing offices, reception areas (offices), halls, corridors, lobbies in hotels and hospitals, laboratories, recreation rooms, post offices, large restaurants, bars and night clubs, department stores, shops, gymnasia.	40
Kitchens in hotels, hospitals, laundry rooms, computer rooms, office equipment rooms, cafeteria, canteens, supermarkets, swimming pools, large covered parking areas, bowling alleys.	45

Introduction

Design Criteria For A Typical Office

Generally for most comfort cooling application, the acceptable design criteria for occupied office space should be as follows;

24 ± 1.5 °C	Mean resultant temperature
0.25 m/s	Mean air velocity in occupied zone
NC 35	NC Level in small offices or conference rooms according to the CIBSE Guide A
NC 40	NC Level in large open offices or reception areas according to the CIBSE Guide A

It is important to note that performance data for air diffusion products as published by TROX were tested to international standards under uniform air flow and pressure conditions at the point of entry. If non-uniform entry condition occur on site, this could have the following impact on air distribution in the room;

a. The throw and spread of the supply air stream will not correspond with the manufacturer's published data.
b. Higher regenerated noise can be expected from the air terminal devices.
c. The supply air stream from the air terminal device may not create the Coanda effect as expected.
d. It may be difficult to obtain accurate air flow or velocity measurements during site commissioning.

Hence, it is advisable to adopt good engineering practices to ensure uniform air flow and pressure conditions at the entry point for all supply air terminal devices as recommended by ASHRAE or CIBSE Design Guidelines.






Application & Conversion Table

The table below shows where TROX products can be used in relation to the required air change rates;

Room Height Up to 4.0 metres						
Air Change Rate (hr^{-1})	Air Flow Control	Grille	Slot Diffuser	Swirl Diffuser	Blade Diffuser	Perforated Diffuser
≤ 10	CAV	++	++	++	++	++
	VAV	+	+	++	+	+
10 - 20	CAV	-	++*	++	++	++
	VAV	-	++*	++	+	+
20 - 30	CAV	-	-	++	-	-
	VAV	-	-	++	-	-

Legend

CAV - Constant Volume System
VAV - Variable Volume System

++	Very suitable
+	Suitable
-	Not suitable
*	With alternating horizontal discharge (suitable with slot diffuser only)

Unit Conversion Factors

Physical Quantity	IP Unit	Conversion Factor	SI Unit	SI Symbol
Length	Inch Feet	25.4 0.3048	milimetre metre	mm m
Area	Square feet	0.0929	square metre	m^2
Volume	Cubic Foot	0.0283	cubic metre	m^3
Velocity	Foot / minute	0.0051	metre / second	m/s
Volume Flow Rate	Cubic foot / minute Cubic metre / hour	0.472 0.278	litre / second litre / second	l/s l/s
Pressure	Inch of water Foot of water Bar	249.1 2.989 100	Pascal kiloPascal kiloPascal	Pa kPa kPa
Energy	British Thermal Unit	1.055	kiloJoule	kJ
Power	British Thermal Unit/ hour Horsepower Ton of refrigeration	0.293 0.745 3.517	Watt kiloWatt kiloWatt	W kW kW
Temperature	Fahrenheit	(^oF-32) / 1.8	Celsius	^0C

X-Grilles Modular Malaysia

X-Grilles Modular

X- Grilles Modular Malaysia system offers the modular configuration of frame, grille core and attachment in individual color and sizes- all according to your requirements.
It can be individually tailored, regardless weather if it is installed in a workshop or reception area. The X-Grille Modular Malaysia is the right solution.

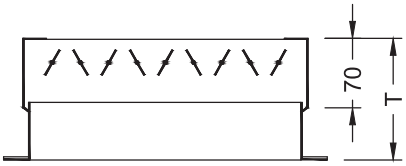
Material
Aluminum (border, blades & pattern core) Sheet steel (only for rear assemblies)

Standard finish
Powder coated in RAL9010

Mounting
I. Concealed screw fixing with / without subframe
II. Visible screw fixing without subframe
III. Spring clip with subframe

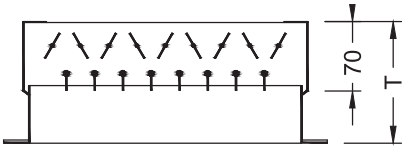
Application
Suitable for supply or exhaust air

Attachment / Rear assemblies
I. AG- Damper unit, opposed action blades,
II. D- Air direction control, blades installed at 90° to the front blades, independently adjustable combined with AG
I. DG- D combined with AG



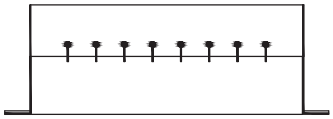
...-AG

Opposed blade action volume control damper, adjutable from the front face.



... -DG

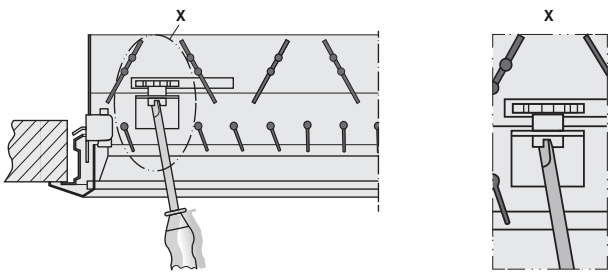
Volume control damper as ...-AG plus a set of individually adjustable vertical air pattern control blades. For vertical blade grilles these blades are horizontal.



-D

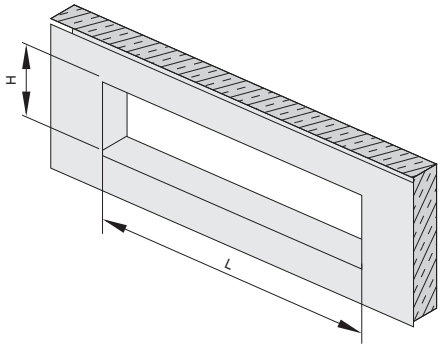
A set of individually adjustable vertical air pattern control blades. For vertical blade grilles, these blades are horizontal

Adjustment of Rear Assembly



Damper unit with opposed action blades, adjustable, secured with a locking screw.

Installation opening for a ventilation grille



Installation opening for VS, SP, A11, SCF & SC fixing:
Order length, L and order height, H

Table No.1: Aerodynamic data for adjustable blade grilles with ceiling effect

H (mm)	Grille Length (mm)	Air Flow with 0^0 Blade Divergence							
		200	300	400	500	600	800	1000	1200
100	Flow (l/s); Vmin - Vmax	12.5 - 25.0	20 - 40	25 - 50	35 - 70	40 - 80	55 -110	65 - 130	8. - 160
	Throw, X (m)	1.5 - 3.0	2.4 - 4.0	2.0 - 4.0	2.5 - 5.0	2.5 - 5.0	3.0 - 6.0	3.5 - 7.0	1.8 - 8.0
150	Flow (l/s); Vmin - Vmax	25 - 50	40 - 80	55 - 110	65 - 130	80 - 160	105 - 210	130 - 260	155 - 310
	Throw, X (m)	2.0 - 4.0	2.5 - 5.0	3.0 - 6.0	3.5 - 7.0	4.8 - 8.0	4.0 - 8.0	5.0 - 10.0	6.0 - 12.0
250	Flow (l/s); Vmin - Vmax	55 - 105	80 - 155	105 - 210	130 - 260	155 - 310	210 - 420	260 - 520	310 - 620
	Throw, X (m)	3.0 - 4.0	4.0 - 8.0	4.0 - 8.0	5.0 - 10.0	6.0 - 12.0	7.0 - 14.0	8.0 - 16.0	10.0 - 18.0
350	Flow (l/s); Vmin - Vmax	-	115 - 228	155 - 310	195 - 390	235 - 470	310 - 620	385 - 775	460 - 925
	Throw, X (m)	-	5.0 - 10.0	6.0 - 12.0	7.0 - 14.0	8.0 - 16.0	9.0 - 18.0	10.0 - 20.0	10.0 - 20.0
450	Flow (l/s); Vmin - Vmax	-	-	-	-	310 - 620	415 - 825	515 - 1030	620 - 1235
	Throw, X (m)	-	-	-	-	9.0 - 18.0	10.0 - 20.0	10.0 - 20.0	10.0 - 20.0
550	Flow (l/s); Vmin - Vmax	-	-	-	-	-	-	640 - 1280	770 - 1540
	Throw, X (m)	-	-	-	-	-	-	10.2 - 20.0	10.2 - 20.0

Notes

i The flow range given in the table above is based on the following conditions:
a. The temperature differential between the supply air and the room design temperature is 10°C.
b. The throw (X0.5) is based on a terminal velocity of 0.5 m/s.c. The room design maximum Noise Criteria is NC 40, where the sound power level (L_{WA}) is 45 dB (A) per grille at V̇max. This only happens at V̇max with the volume control damper set at 50% open. Anticipated maximum pressure drop through the grille is 45 Pa.

ii The selection is valid for ceiling height ≥ 2.7 m with ceiling effect (i.e., grille should be mounted no more that 0.3 m below the ceiling).

iii For values betweem V̇min and V̇max, they can be determined by interpolation.

Order Code

XGMy - H - F0 - L - VS / B x H / AG / RAL

1 2 3 4 5 6 7 8

1 Type

XGMy

2 Core design

H Horizontal blades
V Vertical blades
P Perforated sheet

3 Core type

F0 Fixed blade 0^0 pitch 12.5 mm
F15 Fixed blade 15^0 pitch 12.5 mm
F45 Fixed blade 45^0 pitch 20 mm
MO Adjustable blades pitch 16.7 mm
EG Rectangular holes

4 Border frame

O Without border
M Flat (20 mm wide)
L Flat (30 mm wide)
A Angled (32 mm wide)

5 Mounting

VS Concealed screw fixing with subframe
SP Concealed screw fixing without subframe
A11 Visible screw fixing
SCF Spring clip with subframe
SC Spring clip without subframe

6 Dimensions

Standard Min 150 (B) x 75 (H)
Max 1200 (B) x 300 (H)
Standard + Max 1200 (B) x 600 (H)

7 Rear assemblies

A Without (Grille face only)
AG Damper unit, opposed action blades
D Air direction control, blades installed at 90^0 to the front blades, independently adjustable
DG D combined with AG

8 Finish

0 RAL 9010 (Standard supply)
P1 Powder coated, specify RAL colour

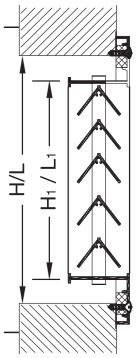
Transfer Air Grille Type AGS

Type AGS

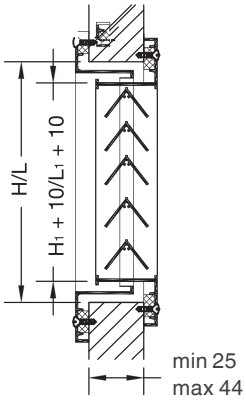
This is a non-vision grille suitable for transfer of make-up air from one room to another. It has V-shaped blades and 30 mm wide border with visible screw fixings (i.e., counter-punched holes). This grille can also be provided with matching rear frame (if required) with product code 'AGS-T'.

Material

Extruded aluminum



AGS



AGS-T

For all constructions
H1 = H - 19
L1 = L - 19

Size Available

L (mm)	H (mm)	Air flow (l/s)	ΔP (Pa)
225	125	16	15
325	125	25	15
325	225	56	15
425	225	75	15
425	325	89	8
525	325	112	8
625	425	182	8
825	425	243	8

Note The recommended flow rates given in the table above is based on NC 35 with 8 dB room attenuation.

Order Code for AGS

AGS - DG / 800 x 200 / R1 / P11 / S1 / RAL 9006

1 2 3 4 5 6

1 Type

AGS

2 Construction options

L Light baffle plate
T Matching rear frame
TL T combined with L

3 Grille size

Refer to tables no.1 to 7 for grille and liner grille sizes

4 Sub-frame requirement

Refer to product catalogue

5 Fixing method

Refer to product catalogue

6 Exposed surface

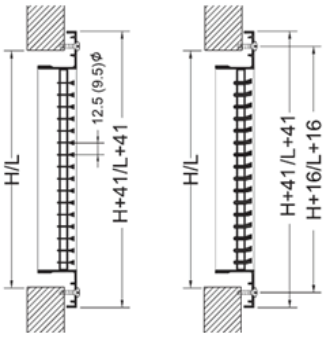
No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour
S2 Mill finish (Standard for Type AF grille)

Type AH

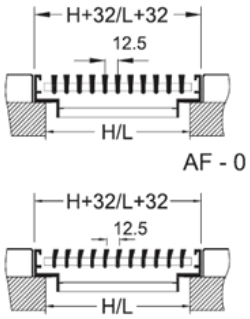
Type AF

Type 'AH' Grille with fixed horizontal blades and 30 mm wide border. Blades can be in either 0° or 15° deflection. The grille is suitable for supply or return air.

Type 'AF' Grille with fixed horizontal blades and recessed aluminium 'Z' frame. Blades can be in either 0° or 15° deflection. This grille is suitable for either supply or return air application and, is designed to be mounted on floor or wall.



AH - 15 | AH - 0 | 0° & 15° Deflection Blades



AF - 15

Material

Extruded aluminium.

Standard finish

i. AH - Powder coating in RAL 9010, matt white.
ii. AF - Mild finish if meant to be floor mounted.

Options for fixing method

i. Visible screw fixing with counter punched holes on the border.
ii. Concealed fixing with sub-frame.

Application

Suitable for either supply or exhaust air. Air discharge will be straight when using 0° deflection blades and 15° angled when using 15° deflection blades.

Optional accessories at the rear

i. AG - Damper unit, opposed action blades.
ii. D - Double deflection blades
iii. DG - Opposed blade damper with double deflection blades.

Standard dimensions

Standard Heights, H

Type \ H	75	125	225	325
AH	•	•	•	•
AF	•	•	•	•

Standard Intermediate Section, M

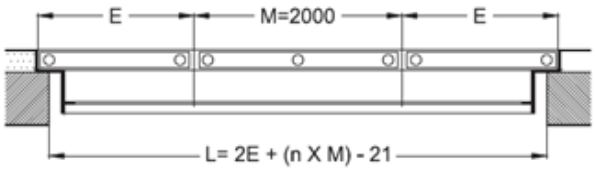
Intermediate Section M in mm
2000

Standard End Section, E

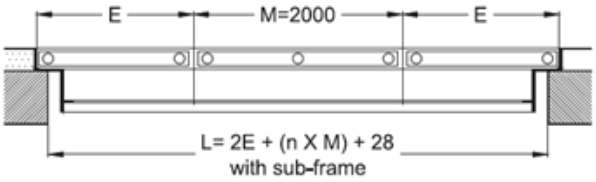
End Section E in mm					
950	1130	1310	1490	1670	1850
1010	1190	1370	1550	1730	1910
1070	1250	1430	1610	1790	1970

Linear Aluminium Grilles Type AF . AH

Selection Tables for Linear Grilles Length



L = Inside dimensions of opening
n = Number of M sections



L = Inside dimensions of opening
n = Number of M sections

Installation without installation subframe
L = 2E + (n x M) + 19 for types AH

Order Code

E - AH - 0 - AG / 1910 x 125 / R1 / P11 / 0 / RAL9010

1 2 3 4 5 6 7 8

1 Section

E	End section
M	Intermediate section

2 Type

AH
AF

3 Blade deflection

0	Deflection 0°
15	Deflection 15°

4 Rear assemblies

A	Without (Grille face only)
AG	Damper unit, opposed action blades
D	Air direction control, blades installed at 90° to the front blades, independently adjustable
DG	D combined with AG

5 Dimensions

ExH	Min 950 (B) x 75 (H) Max 1970 (B) x 325 (H)
MxH	Min 2000 (B) x 75 (H) Max 2000 (B) x 600 (H)

6 Subframe

0	No subframe (Standard supply)
R1	With subframe

7 Mounting / fixing

P11	Spring clip
S11	Concealed screw fixing

8 Finish

0	RAL 9010 (Standard supply)
S1	Powder coated, specify RAL colour
S2	Mill finish (Standard supply for AF grille)

Type TCG

The Cell Grille is suitable for either supply or, exhaust air application. The perforated grille face is made from heavy gauge galvanised steel sheet. The grille is secured to the wall with steel mounting frame.

Opposed blade damper (OBD) can be provided to the back of each grille if required, which is adjusted from the grille face. In addition, circular spigot connection can be provided if requested.

Fixings and jacking screws required to install the cell grille to the wall shall be provided by others.

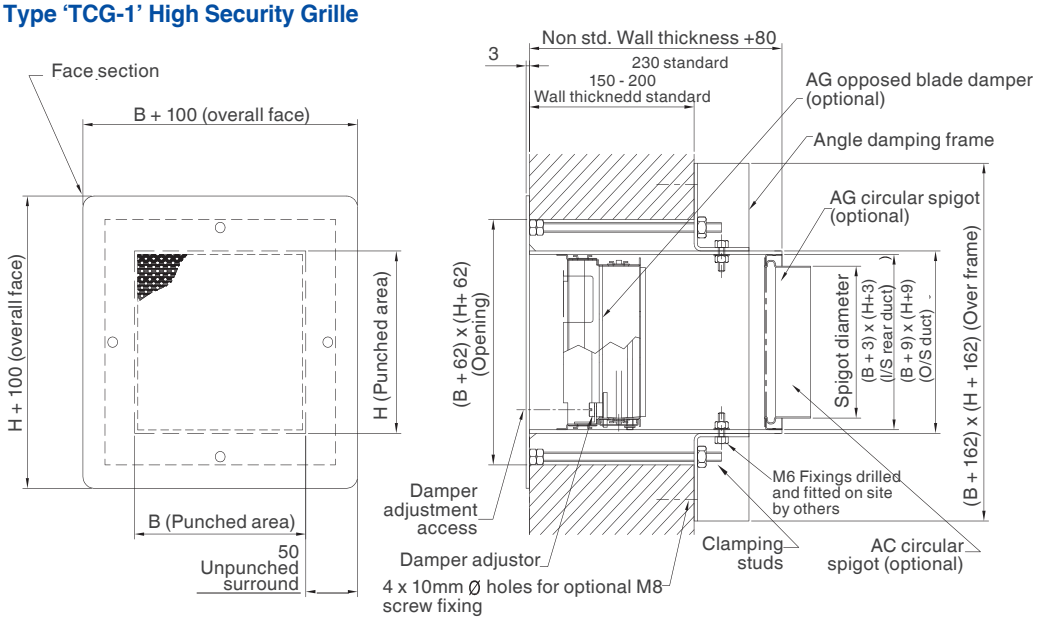
The grille section and the rear mounting frame is powder coated in matt white to RAL 9010 as standard supply. Other RAL colour code can be provided if requested.

Table 1 : Quick selection for type TCG grille

Size (mm) L x H	Air Flow (l/s)	ΔP (Pa)	Throw @ 0.5 m/s
150 x 150	51	27	5.7
200 x 200	80	21	6.9
250 x 250	120	19	8.3
300 x 300	158	16	8.9

Note
Based on NC 35 with 8 dB room attenuation and with only one grille in the room.

Type 'TCG-1' High Security Grille



Order Code

TCG1- AG / 200 x 200 / S1 / RAL 9002

1 2 3 4

1 Type

TCG	
TCG-1	High security grille
TCG-2	Medium security grille
TCG-3	Low security grille

2 Rear assemblies

A	Face only
AG	Grille with an opposed blade damper
C	Grille with circular spigot connection
AGC	Grille complete with OBD and circular spigot connection

3 Size (LxH)

Refer to the product catalogue

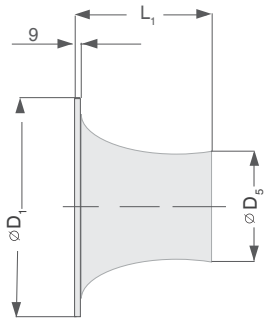
4 Exposed surface

	No entry: Powder coated RAL 9010, pure white
P1	Powder coated, specify RAL colour

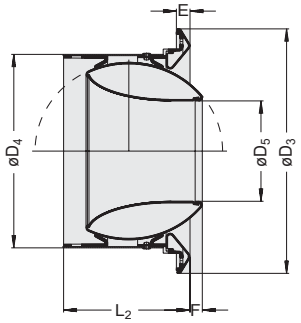
Jet Nozzles Type DUK

Type DUK

Type DUK-F



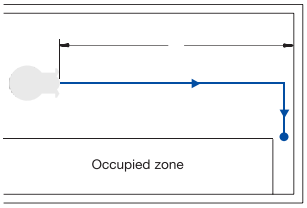
Type DUK-Type DUK-V



Air flow in l/s		21	28	42	69	111	167	222	278	347	417
Size		Throw distance and pressure drop									
100	X (m)	8	11								
	Δpt (Pa)	50	100								
125	X (m)	6	9	11							
	Δpt (Pa)	25	50	100							
160	X (m)	5	6	9	12						
	Δpt (Pa)	10	20	40	100						
200	X (m)		5	7	9	18					
	Δpt (Pa)		10	15	40	100					
250	X (m)			5	7	15	22				
	Δpt (Pa)			5	15	40	90				
315	X (m)				5	11	17	23	28		
	Δpt (Pa)				5	15	30	60	90		
400	X (m)					8	13	18	23	28	32
	Δpt (Pa)					5	10	15	25	40	60

Dimensions (mm)						
Size	⌀ D_1	⌀ D_3	⌀ D_4	⌀ D_5	L_1	L_2
100	136	146	98	50	94	87
125	159	169	123	64	112	96
160	225	200	158	82	122	105
200	265	257	198	108	153	126
250	315	302	248	136	187	162
315	400	384	313	174	224	196
400	485	467	398	230	287	201

Installation situation - isotherm



Nomenclature

X in m = Throw distance
Δp_t in Pa = Total pressure drop
Dimension of recess = ⌀ D_4 + 15 mm

Note

- The combinations of flow rate and size as shown in the table produce a sound power level :
- L_{WA} = 35 dB(A) for axial connection
- L_{WA} = 43 dB(A) for lateral connection

Order Code

DUK - V - K - E1 / 400 / P1 / RAL 9016

1 2 3 4 5 6

1 Type

DUK Jet Nozzles

2 Discharged control

F[1] Fixed
V Adjustable

3 Duct connection

A Element spigot
R[3] Circular ducting
K Duct connection element

4 Attachements

E1..E3 External rotary actuator
E4..E6 Internal linear actuator

5 Size[2]

Refer to product catalogue

6 Exposed surface

0 Untreated
P0 RAL 9010 (GE 50%)[4]
PI RAL 9006 (GE 30%), others colour to RAL...(GE 70%)

1) For attachment without counterpunched holes: Supplementary text necessary for order
2) For sizes 100 and 125, construction with actuator not available.
3) Please indicate the onsite duct diameter (ØR) as supplementary text.
4) GE = Gloss level!

Type TJN

Jet nozzles are the preferred solution where the supply air has to travel large distances from the point of discharge to the occupied zone.

Nominal sizes: 160, 200, 250, 315 and 400 mm

Volume flow rate range 20 – 1000 l/s or 72 – 3600 m^3/h

Visible parts made of high-grade polymer in white aluminium or pure white

Optimised nozzle contours

Discharge angle indication, discharge angle limiting and setting -30 – +30 on a concealed scale

Easy-to-remove face cover ring with bayonet fixing

Order Code

TJN - R - E7 / 160 - 315 / C / D / S1

1 2 3 4 5 6 7 8

1 Type

TJN Adjustable jet nozzle

2 Connection piece

No entry: without connection piece
K For rectangular ducts
R For circular ducts (Saddle connector)

3 Actuator

No entry: manual adjustment
E7 230 V AC, 3-point
E8 24 V AC/DC, 3-point
E9 24 V AC/DC, modulating, 2 – 10 V DC

4 Nominal size

160
200
250
315
400

5 Duct diameter

Applies only to circular ducts 315 (Nominal size 160 only)

500 (Up to nominal size 315 only)
630
800

6 Attachments

No entry: without attachments
C Outer casing

7 Accessories

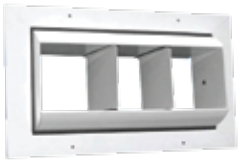
No entry: without accessories
D Swirl unit and cap for throw distance reduction

8 Expose Surface

No entry: similar to RAL 9010 (Pure white)
S1 Similar to RAL 9006 (White aluminium)

Drum Louvres Type AIL

Type AIL-A



This drum louvre is designed to deliver large volume of supply air into a space that requires long throw such as assembly halls, auditoriums and convention halls. The drum louvre can be installed onto the side walls or, mounted directly to metal ducting.

It can be manually adjusted in the vertical plain to direct the supply air at any angle between 30° up or down in the vertical plane. Once the louvre position is set, that position is held by means of friction-held fixings. It is also fitted with manually adjustable guide vanes within the drum louvre to enable the supply airstream to be directed on either side if required.

The drum louver can also be supplied with opposed blade volume control damper fitted to the rear and, is easily adjustable from the face of the drum louvre.

Size	Flow (l/s)	Throw (m)		Drop (m) @ 0.5 m/s	Δpt (Pa)
		0.5 m/s	0.25 m/s		
1	214	8.0	19	0.50	110
2	311	10.0	24	0.80	120
3	403	11.5	27	1.00	125
4	583	13.5	31	2.00	135
5	639	10.0	24	0.85	110
6	792	12.0	27	1.35	120
7	1014	13.5	31	1.60	125
8	1222	15.0	35	2.40	135

Note
The selection above is based on NC 35 or 40 dB(A) with a room attenuation of 8 dB.

Order Code

AIL - A / 3 / 0 / S1 / RAL 9016
1 2 3 4

1 Type

AIL-A	Louvre face only (Standard supply)
AIL-AG	Louvre with volume control damper

2 Size

Size raging from 1 to 8

3 Flange options

0	50 mm wide flange (Standard supply)
1	50 mm wide flange with counter punched holes

4 Exposed surface

	No entry: Powder coated RAL 9010, pure white
P1	Powder coated, specify RAL colour

Type QLV

Key features

- Suitable for commercial and industrial applications
- Manufactured in pre-galvanised sheet steel.
- Available in 90°; 180° or 360° radial air discharge.
- Comes with circular inlet spigot which can be located at the top or bottom of the diffuser.

Recommandation

Temperature differential for supply air should be between -1 and -6 K.

Table 1: Quick selection guide for 'QLV' Type 90°; 180° and 360° construction variants

Unit Size	Unit Ht. (mm)	QLV-90 @ 0.3 m/s dishcrage vel.				QLV-180@0.3 m/s discharge vel.				QLV-360 @ 0.3 m/s dishcrage vel.			
		Air flow (l/s)	Δpt (Pa)	SWL in dB(A)	Throw ≤ 0.25 m/s	Air flow (l/s)	Δpt (Pa)	SWL in dB(A)	Throw ≤ 0.25 m/s	Air flow (l/s)	Δpt (Pa)	SWL in dB(A)	Throw ≤ 0.25 m/s
160	1000	104	46	32	1.3	148	89	42	1.3	192	148	50	1.3
200	1000	126	29	27	1.3	180	55	37	1.3	233	90	44	1.3
250	1000	155	18	21	1.3	218	35	31	1.3	281	55	38	1.3
315	1250	240	16	22	1.4	339	31	31	1.4	433	49	38	1.4
400	1500	360	14	21	1.6	508	26	31	1.6	646	40	37	1.6
500	1500	443	9	<15	1.6	627	17	25	1.6	795	26	32	1.6
600	1750	644	7	<15	1.8	913	14	24	1.8	1154	21	31	1.8

Note
The selection given above assumes that the volume control damper is fully open.

Order Code

QLV - 180 - O - M - L / 250 X 600 / W0 / 0 / P1 / RAL 9016
1 2 3 4 5 6 7 8

1 Type
QLV Displacement diffusers

2 Construction
90
180
360

3 Air connection spigot
O On top
U At the bottom

4 Construction
M With volume control damper

5 Lip seal
L

6 Size
Refer to the product catalogue

7 Fixing method
0 Without wall mounting kit
W0 With wall mounting kit (Supplied loose) (Only for QLV-90 and QLV-180)
B0 With floor fixing plate (Only for QLV-360)

8 Exposed surface
0 Standard finish powder coated to RAL 9010
PI Powder coated to RAL 9006
S7 Galvanized variant

Displacement Diffusers Type QLF

Type QLF

Key Features

- Suitable for commercial and industrial applications
- Manufactured in galvanised sheet steel.
- Available in one (i.e., face only) or three (i.e, face and sides) directional air discharge.
- Comes with rectangular inlet spigot located at the top or bottom of the diffuser.

Recommendation

Temperature differential for supply air should be between -1 and -6 K.

Table 1 : Quick Selection for QLF-1

H x B mm	V̇min (l/s)	Vmax (l/s)	L_{WA} min dB(A)	L_{WA} max dB(A)
450 x 300	13	40	< 15	26
450 x 450	20	60	< 15	27
600 x 300	18	54	< 15	27
600 x 450	27	81	< 15	29
600 x 600	36	108	< 15	28
750 x 450	34	101	< 15	30
750 x 600	45	135	< 15	27
750 x 750	56	168	< 15	24
1000 x 600	60	180	< 15	28
1000 x 750	75	224	< 15	25
1250 x 600	75	224	< 15	28
1250 x 750	94	281	< 15	26
1500 x 750	112	337	< 15	26
1500 x 1000	150	449	< 15	29
1750 x 750	131	303	< 15	26
1750 x 1000	175	524	< 15	30
1750 x 1250	218	655	< 15	32
2000 x 1000	200	599	< 15	30
2000 x 1250	250	749	< 15	33

Table 2 : Quick Selection for QLF-3

H x B mm	V̇min (l/s)	Vmax (l/s)	L_{WA} min dB(A)	L_{WA} max dB(A)
450 x 300	25	75	< 15	45
450 x 450	32	95	< 15	42
600 x 300	33	99	< 15	47
600 x 450	42	126	< 15	45
600 x 600	55	164	< 15	40
750 x 450	52	157	< 15	45
750 x 600	68	204	< 15	42
750 x 750	79	238	< 15	36
1000 x 600	92	276	< 15	43
1000 x 750	107	321	< 15	37
1250 x 600	115	344	< 15	46
1250 x 750	133	400	< 15	38
1500 x 750	160	480	< 15	39
1500 x 1000	216	649	< 15	42
1750 x 750	186	559	< 15	39
1750 x 1000	252	757	< 15	42
1750 x 1250	296	888	< 15	43
2000 x 1000	290	869	< 15	43
2000 x 1250	340	1019	< 15	43

Order Code

QLF - O - 1 / 450 X 1250 / 0 / 0 / P1 / RAL 9016

1 | 2 | 3 | 4 | 5

1 Type

QLF Displacement diffusers

2 Air connection spigot

O On top
U At the bottom

3 Discharge

1 1-Directional
3 3-directional

4 Size

Refer to the product catalogue

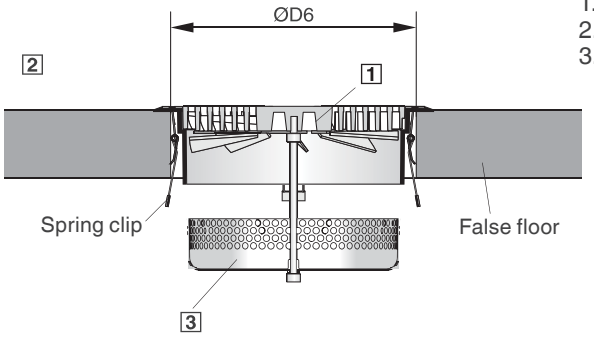
5 Exposed surface

0 No entry
(Standard finish: powder coated to RAL 9010)
P1 Powder coated, specify RAL colour

*Other construction available upon request

Type FB

Typical installation detail with trim ring



1. Diffuser core
2. Trim ring with spring clip fixings
3. Dirt tray with adjustable height

Plastic Floor Diffuser (FBK)

Type	Discharge setting	
	Vertical V (l/s)	Horizontal V (l/s)
FBK-150	28	14
FBK-200	37	25

Aluminum Floor Diffuser (FBA)

Type	Discharge setting	
	Vertical V (l/s)	Horizontal V (l/s)
FBA-150	30	17
FBA-200	37	25

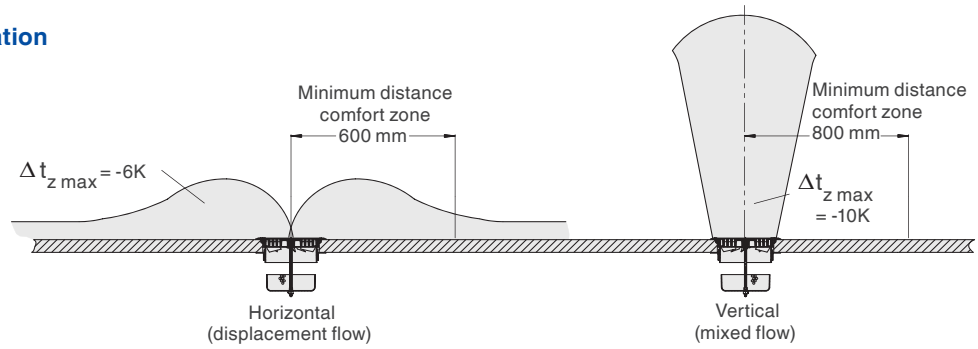
Dimensions

Nominal Size	Overall Face Size	Core Face Diameter (mm)	Floor Opening (mm)
150	200	149 ∅	170 - 180 ∅
200	250	199 ∅	220 - 230 ∅

Note
- Sound power level is LWA ≤ 35 dB(A) in all cases.
- Total pressure drop Δpt ≤ 40 Pa.

Note
Overall unit height is 167 mm.

Discharge Situation



Order Code

FBA - 1 - V - KF - SM - A / 150 / V00

1 2 3 4 5 6 7 8

1 Type
FBA Aluminium diffuser core
FBK Plastic diffuser core

2 Surface or diffuser core and trim ring
1 Die cast, deburred
3 Die cast, deburred, painted black, visible face skimmed
4 Die cast, deburred, visible face skimmed

3 Swirl element, discharge direction[1]
H Horizontal, adjustable
V Vertical, adjustable
VF Vertical, fixed[2]

4 Trim ring with spring clips[3]
O None, no entry required
KF With trim ring

5 Dirt tray
O None, no entry requied
SM Flow rate control adjustment from rear
SV Flow rate control adjustment from face

6 Plenum box
O None,no entry required
A With plenum box

7 Nominal size
150
200

8 Diffuser core and trim ring only for FBK
Polyamide (PA 6)
No entry required
V00 Polymide (PA 6-VO) ,flame retardant in accordance with UL 94

Accessories for type FBA and FBK nominal size 150
GA Multiple diffuser plenum box for 4 diffusers
GAM As GA, with flow rate control damper in side entry spigot

[1] Floor diffusers without swirl element only have vertical air discharge.
[2] Available only for the nominal size 200
[3] Floor diffusers without a trim ring are supplied with a spacing ring for functional reasons and for height correction.

Floor Diffusers Type FBA-250

Type FBA-250

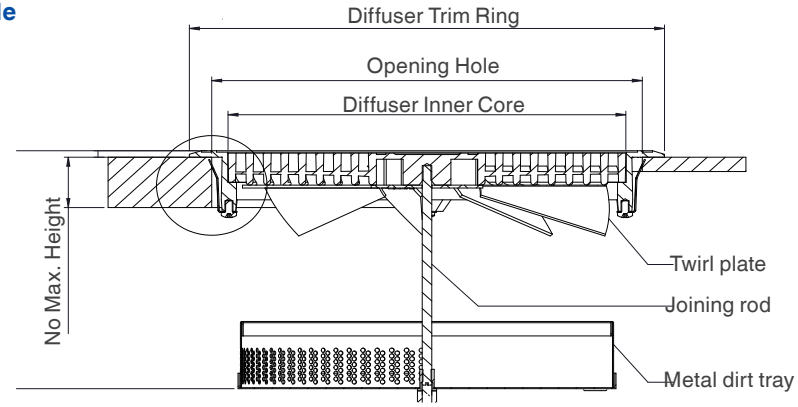
Introduction

The floor diffuser and trim ring are manufactured from aluminum die cast. The twirl plate is made from black ABS plastic and the dirt tray is available either ABS plastic or metal.
The floor diffuser core incorporates a large number of support ribs for structural integrity, capable of withstanding a point load at the center up 20 kN.
The floor diffuser can be manually adjusted to provide vertical and horizontal supply air dishcarge in a swirl pattern.

Recommendation

The use of trim rings is recommended for installation in false floors with carpeting and can be installed in floor tiles that are at least 10mm thick. The installation openings required for the trim ring version is 270 (-0/ +2) mm diameter.

FBA - V/H Adjustable



Pressure drop (Pa)	10 Pa		20 Pa		30 Pa		35 Pa		40 Pa		45 Pa	
FBA-V	Flow (l/s)	LW; dB (A)	Flow (l/s)	LW; dB (A)	Flow (l/s)	LW; dB (A)	Flow (l/s)	LW; dB (A)	Flow (l/s)	LW; dB (A)	Flow (l/s)	LW; dB (A)
With dirt tray	29	25	43	33	52	38	55	40	58	42	60	43
Without dirt tray	30	25	44	34	54	40	57	41	60	43	62	44

Order Code

FBA - 1 - H - KF - SW - A / 250
1 2 3 4 5 6 7

1 Type

FBA Floor diffuser

2 Surface or diffuser core and trim ring

1 Die cast, deburred
3 Die cast, deburred, stove-enamelled in black face skimmed
4 Die cast, deburred, face skimmed

3 Discharge control

V Vertical, adjustable
H Horizontal, adjustable
VF Vertical, fixed (Without swirl element)

4 Trim ring

O Without
KF With

5 Dirt trap

O Without dirt tray
SW With dirt tray (With volume adjustment)
VF : in ABS plastic (Only for KF)
V/H : in metal
S With dirt tray (Without volume adjustmend) element, not available for V/H option)

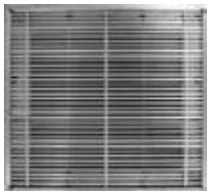
6 Plenum box

O Without plenum box
A With plenum box

7 Size

250

Type AFG

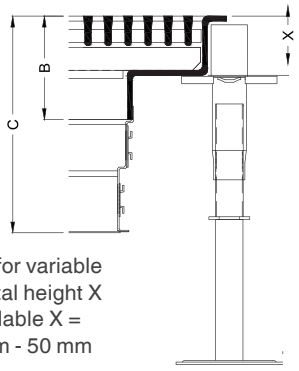


The 'AFG' Type floor grille is designed to mount on any 600 x 600 mm sq. raised floor system, to provide supply air to computer or data processing centres where cooling load demand is high.
This heavy duty floor grille is capable of taking high static load and is robust in construction.

Key Features

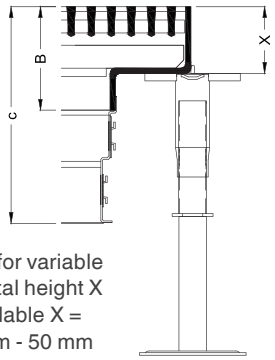
- Grille face is made from extruded aluminium with steel support frame at the back.
- Designed to suit 600 x 600 mm sq. floor tile.
- Opposed blade damper can be provided at the rear of the steel frame and is adjustable from the grille face.

Detail A



Detail for variable pedestal height X
Available X =
25 mm - 50 mm

Detail B



Detail for variable pedestal height X
Available X =
25 mm - 50 mm

Table No. 1: "AFG-A" (without OBD).

Static Press ΔP (Pa)	Air Flow Rate (l/s)
5	470
7	510
10	595

Table No. 2: "AFG-AG" (with OBD).

Static Press ΔP (Pa)	Air Flow Rate (l/s)
5	250
7	302
10	343

Order Code

AFG-A / 00 / 0 / F1
1 2 3 4 5

1 Type

AFG Computer Floor Grilles

2 Construction

A Floor grilles with support steel strusture (Standard supply)
AG Floor grilles with support steel structure and volume control damper

3 Dirt trap

00 Without dirt trap (Standard supply)
SM Dirt trap with shut-off damper
SO Dirt trap without damper

4 Plenum box

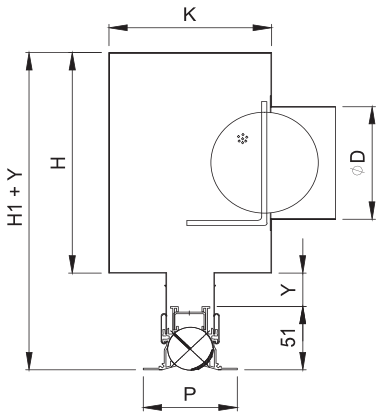
0 Without (Standard supply)
A With plenum box

5 Finished

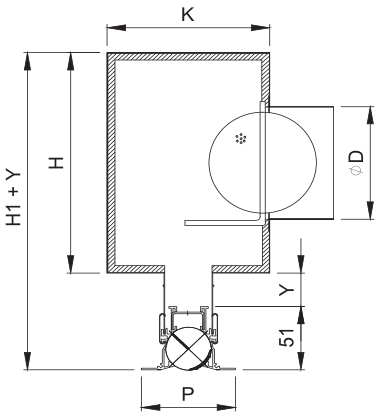
F0 Deburred and natural skimmed face
F1 Tumble fettled and polished with black stove enamel paint and face skimmed-natural (Standard supply)

Slot Diffusers Type VSD35

Type VSD35



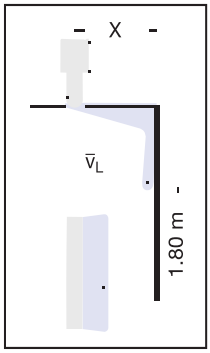
VSD35-1...4-AK



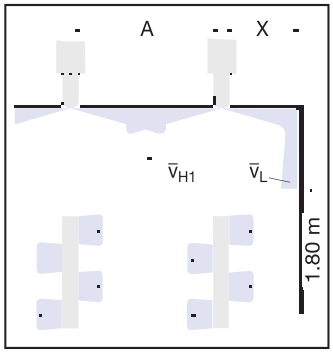
VSD35-1...4-DK

Diffuser layout

Flow discharge horizontal, one direction



Flow discharge alternating horizontal



Dimensions (mm)

No. of Slots	P	Q	K	H1	H2	D
1	62	35	138	247	223	98 123
2	93	66	176	277	253	123 148
3	123	96	214	295	271	148
4	154	127	254	327	303	148 198

Nomenclature

V in l/s	= Flow rate
X in m	= Throw distance
L_1 in mm	= Length of plenum box
A in m	= Distance between 2 diffusers
V_{H1} in m/s	= Time averange upstream velocity between 2 diffusers
V_L in m/s	= Time average upstream velocity at the wall

Note

Room height = 3 m
$\bar{V}_{H1}$ = 0.15 - 0.17 m/s
$\bar{V}_L$ = 0.34 - 0.37 m/s
Sound power level is $L_{WA} \leqq$ 40 dB(A) in all cases
Pressure drop $\Delta pt \leqq$ 30 Pa
If required, the length of the diffuser face can be greater than the length of the plenum box.

Order Code

VSD35 - 1 - AK - M - Z0 - I1 / 900 x 98 x y / 0 / P1 / RAL9016 / WS

1 2 3 4 5 6 7 8 9 10

1 Type

VSD Slot diffuser

2 Number of slot

Ranging from 1 to 4

3 Plenum box

AK Clip fix
DK Clip fix with internal lining
AS Concealed slot fixture
DS Concealed slot fixture with internal lining
AA Offset
E - 900 mitre
F - Face section

4 Construction

M With volume control damper

5 Flange

Z0 Flanged
Z4 Flangeless

6 Internal lining

I1 6 mm thick rubber foam
I2 25 mm fibre glass insulation

7 Size

(Refer to the product catalogue)

8 End cap

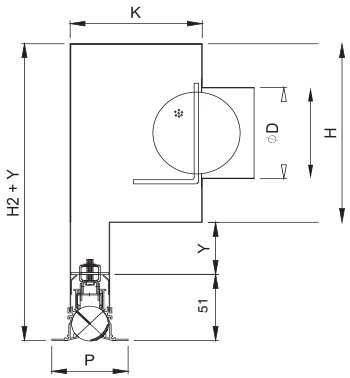
0 With end cap
1 Without end cap

9 Exposed surface

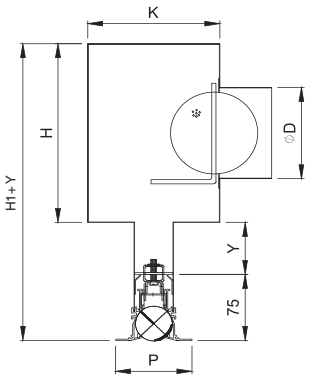
0 No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

10 Air discharge

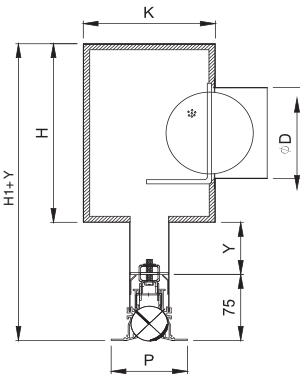
HL Horizontal left
HR Horizontal right
WH Alternating horizontal
WS Alternating angled



VSD35-1...4-AA-M



VSD35-1...4-AS-M



VSD-1...4-DS-M

Throw distance, X (m) for VSD35-1*

$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
11	2.2									
14	4.2	2.2								
17	6.4	3.7	2.2							
19	8.2	5.4	3.4	2.2						
22		7.6	4.9	3.2	2.2					
25		8.7	6.4	4.5	3.1	2.2				
28			7.2	5.7	4.1	3.0	2.2			
31				7.2	5.3	3.9	2.9	2.2		
33				7.7	6.5	4.9	3.7	2.9	2.2	
39					8.2	7.1	5.4	4.3	3.4	2.8
44						8.5	7.6	6.0	4.9	3.9
50							8.7	8.1	6.4	5.4
56								8.8	8.1	6.9
61										7.5

Throw distance, X (m) for VSD35-2*

$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
22	5.5									
28	8.3	5.5	3.2							
33		7.5	5.5	3.2						
39			7.1	5.5	3.4					
44				6.7	5.5	3.6				
50				8.8	6.4	5.5	3.7			
56					8.3	6.2	5.5	3.8		
61						7.8	6.1	5.5	3.9	
67							7.5	5.9	5.5	3.9
72								7.3	5.8	5.5
78								8.7	7.1	5.8
83									8.3	6.9
89										8.0

Throw distance, X (m) for VSD35-3*

$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
28	5.1									
33	7.9	4.7								
39		6.7	4.1							
44			6.0							
50			7.9	5.4						
56				7.0	5.1					
61				8.8	6.4	4.8				
67					7.9	6.0				
72						7.2	5.6			
78						8.5	6.7	5.3		
83							7.9	6.3	5.1	
89								7.3	6.0	4.9
94								8.4	6.9	5.7
100									7.9	6.5
106										7.3
111										8.3

Throw distance, X (m) for VSD35-4*

$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
33	5.6									
39	8.1	4.8								
44		6.6								
50		8.7	5.6							
56			8.2	5.0						
61			8.7	6.4	4.5					
67				7.8	5.6					
72				8.8	6.9	5.2				
78					8.1	6.1	4.8			
83					8.4	7.2	5.6	4.5		
89						8.4	6.6	5.2		
94						8.6	7.6	6.1	4.9	
100							8.7	6.9	5.6	4.7
106								7.9	6.4	5.3
111								8.8	7.2	6.0
117									8.1	6.7
122										7.5
128										8.3

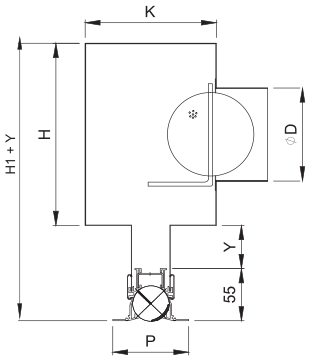
**Air flow discharge in one direction only*

VSD50 slot diffuser with alternating horizontal discharge

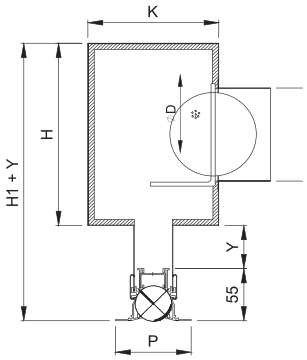
No. of slots 'n'	Air flow ranges (l/s)																			
	Unit length, L_1 (mm)																			
	600		750		900		1050		1200		1350		1500		1650		1800		1950	
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
1	11	25	14	28	17	33	19	39	22	50	25	56	28	56	31	67	33	72	39	78
2	25	33	31	39	39	50	44	61	50	67	56	78	61	83	67	89	72	100	83	106
3	11	25	14	28	17	33	19	39	22	50	25	56	28	56	31	67	33	72	39	78
4	25	33	31	39	39	50	44	61	50	67	56	78	61	83	67	89	72	100	83	106

Slot diffusers Type VSD 50

Type VSD50



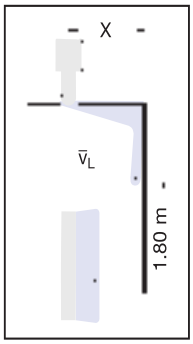
VSD50-1...2-AK



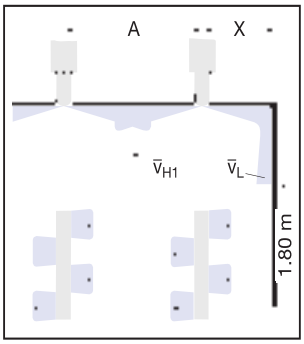
VSD50-1...2-DK

Diffuser Layout

Flow discharge horizontal, one direction



Flow discharge alternating horizontal



Nomenclature

V in l/s	= Flow rate
X in m	= Throw distance
L_1 in mm	= Length of plenum box
A in m	= Distance between 2 diffusers
V_{H1} in m/s	= Time averange upstream velocity between 2 diffusers
V_L in m/s	= Time average upstream velocity at the wall

Dimensions (mm)

No. of Slot	P	K	H1	H2	D
1	77	138	286	262	123 148
2	123	176	326	302	148 198

Note

Room height = 3 m
$\bar{V}_{H1}$ = 0.15 - 0.17 m/s
$\bar{V}_L$ = 0.34 - 0.37 m/s
Sound power level is $L_{WA} \leqq$ 40 dB(A) in all cases
Pressure drop $\Delta pt \leqq$ 30 Pa

If required, the length of the diffuser face can be greater than the length of the plenum box.

Order Code

VSD50 - 1 - AK - M - Z0 - I1 / 900 x 123 x y / 0 / P1 / RAL9016 / WS

1 2 3 4 5 6 7 8 9 10

1 Type

VSD Slot diffuser

2 Number of slots

1
2

3 Plenum box

AK Clip fix
DK Clip fix with internal lining
AS Concealed slot fixture
DS Concealed slot fixture with internal lining
AA Offset
E - 900 mitre
F - Face section

4 Construction

M With volume control damper

5 Flange

Z0 Flanged

6 Internal lining

I1 6 mm thick rubber foam
I2 25 mm fibre glass insulation

7 Size

Refer to the product catalogue

8 End cap

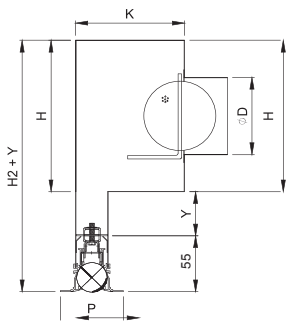
0 With end cap
1 Without end cap

9 Exposed surface

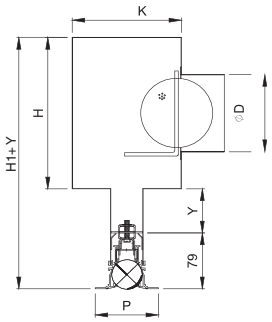
0 No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

10 Air discharge

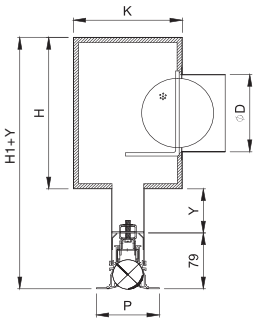
HL Horizontal left
HR Horizontal right
WH Alternating horizontal
WS Alternating angled



VSD50-1...2-AA-M



VSD50-1...2-AS-M



VSD50-1...2-DS-M

Throw distance, X (m) for VSD50-1

$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
11	3.0									
14	3.0	3.0								
17	4.0	3.0	3.0							
19	5.5	3.4	3.0	3.0						
22	7.1	4.6	3.2	3.0	3.0					
25		5.8	4.0	3.0	3.0	3.0				
28		7.1	5.0	3.6	3.0	3.0	3.0			
31		8.7	6.0	4.4	3.5	3.0	3.0	3.0		
33			7.1	5.3	4.0	3.2	3.0	3.0	3.0	
39				7.1	5.5	4.3	3.5	3.0	3.0	3.0
44					7.1	5.7	4.6	3.7	3.2	3.0
50						7.1	5.8	4.8	4.0	3.3
56						8.8	7.1	5.9	5.0	4.3
61							8.7	7.1	6.0	5.2
67								8.5	7.1	6.1
72									8.3	7.1
78										8.3

Throw distance, X (m) for VSD50-2

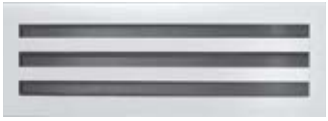
$\dot{V}$	Unit Length, L_1 (mm)									
	600	750	900	1050	1200	1350	1500	1650	1800	1950
22	3.0									
25	5.5									
28	6.8	3.0								
31	8.1	5.3	3.0							
33		6.2	3.0	3.0						
39		8.4	5.9	3.0						
44			7.7	5.6	3.0					
50				7.1	5.5	3.0				
56				8.7	6.8	5.3	3.0			
61					8.1	6.5	5.3	3.0		
67						7.7	6.2	5.1	3.0	
72							7.3	6.1	5.0	
78							8.4	7.0	5.9	3.0
83								8.0	6.8	5.8
89									7.7	6.5
94									8.6	7.4
100										8.3

VSD50 slot diffuser with alternating horizontal discharge

No. of slots 'n'	Air flow ranges (l/s)																			
	Unit length, L_1 (mm)																			
	600		750		900		1050		1200		1350		1500		1650		1800		1950	
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
1	11	25	14	28	17	33	19	39	22	50	25	56	28	56	31	67	33	72	39	78
2	25	33	31	39	39	50	44	61	50	67	56	78	61	83	67	89	72	100	83	106

Slot diffusers Type ESD

Type ESD



Key features:

- Diffuser face is made from extruded aluminium.
- Can be supplied with 1 up to 8 slots with adjustable air deflection blades in black.
- Standard finish in powder coating to RAL 9010.
- Plenum can be supplied with;
  a. Volume control damper
  b. Rubber foam lining or
  c. Fibre glass lining

Recommendation

Suitable for floor to ceiling heights from 2.6 to 4.0 m.

Table 1 : Quick selection for ESD Slot diffuser with plenum box

Product Code	Length (m)	Air flow (l/s)	Δpt (Pa)	Throw (m) 0.75 m/s
ESD-1-AK-M	600	30	45	4.8
	900	45	48	4.8
	1200	55	50	4.8
	1500	70	55	4.8
	2000	100	56	4.8
ESD-2-AK-M	600	42	27	4.8
	900	63	33	4.8
	1200	80	44	4.8
	1500	100	48	4.8
	2000	140	35	4.8
ESD-3-AK-M	600	51	22	4.8
	900	76	29	4.8
	1200	100	43	4.8
	1500	127	61	4.8
	2000	170	32	4.8
ESD-4-AK-M	600	60	15	4.8
	900	90	18	4.8
	1200	120	23	4.8
	1500	150	30	4.8
	2000	200	20	4.8

Note Selection is based on NC 35, assuming 8dB room attenuation

Order Code

ESD - 1 - AK - M - I / 1200 / P1 / RAL 9016

1 2 3 4 5 6 7

1 Type

ESD Slot diffuser

2 Number of slot

Ranging from 1 to 8

3 Rear assemblies

AK With plenum box
0 Without plenum box

4 Construction

M With damper
0 Without damper

5 Internal lining

I0 No internal insulation (Standard supply)
I1 6 mm thick rubber foam
I2 25 mm fibre glass insulation
I3 6mm thick PE foam

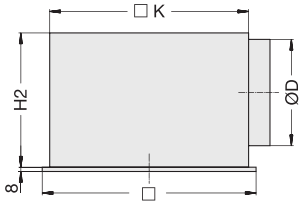
6 Length of diffuser, L_1

600
900
1200
1500
2000

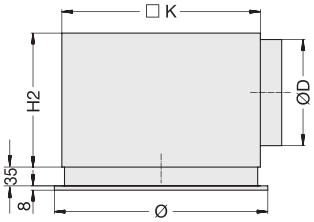
7 Exposed surface

No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

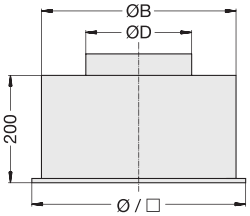
Type FD-Q



FD-Q-...-H



FD-R-...-H



FD-Q/R-...-V

Air Flow Rate (l/s) - For multiple row arrangment

Size	B (m)	Distance between diffusers, A (m)					
		0	1.2	1.8	2.4	3.0	3.6
300	3.0	47	42	44	47	56	56
400		69	61	64	64	81	94
500		83	72	75	78	97	111
600		92		81	83	106	119
625		92		81	83	106	119
300	3.6	56	50	53	56	56	56
400		83	75	78	81	81	110
500		100	89	92	97	97	136
600		108	94	100	103	103	150
625		108	94	100	103	103	150
300	4.2	56	56	56	56	56	56
400		97	86	92	92	110	110
500		119	103	108	111	136	136
600		128	111	119	119	150	150
625		128	111	119	119	150	150

Air Flow Rate (l/s) - For single row arrangment

Size	Distance between diffusers, A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300	56	56	56	56	56	56	56
400	110	100	86	92	92	110	110
500	144	119	100	106	106	136	144
600	164	128	111	119	119	150	164
625	164	128	111	119	119	150	164

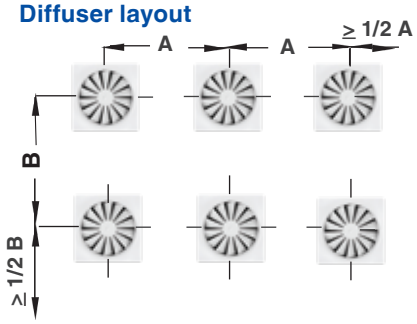
Dimensions (mm)

Size	□	Ø	ØB	ØD	H_2	□K
300	298	300	280	158	250	290
400	398	400	364	198	295	372
500	498	500	462	198	295	476
600	598	600	559	248	345	567
625	623	623	559	248	345	567

Minimum flow rate

Size	$\dot{V}_{min}$
300	28
400	50
500	60
600	81
625	81

Diffuser layout



Nomenclature

$\dot{V}$ in l/s = Flow rate
$\dot{V}_{min}$ in l/s = Minimum flow rate
A, B in m = Distance between two diffusers

Note

Sound power level is $L_{WA} \leqq$ 40 dB(A) in all cases
Pressure drop $\Delta P_t \leqq 30$ Pa
Selection valid for ceiling height 2.7 m to 3 m.

Order Code

FD – Q – Z – H – M – L1 / 500 x 24 / 0 / P1- RAL...
1 2 3 4 5 6 7 8

1 Type
FD Swirl Diffusers

2 Diffuser face
Q Square
R Circular

3 System
Z Supply air
A Extract air

4 Connection
H Horizontal
V Vertical

5 Construction
No Entry, without damper blade
M With

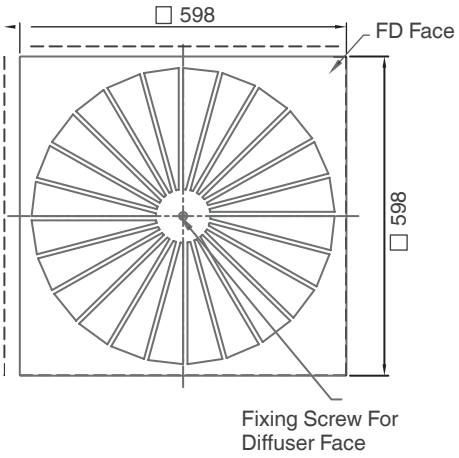
6 Internal Lining
No entry, no internal insulation (Standard supply)
L1 6mm thick rubber foam

7 Size (mm)
Refer to catalogue

8 Exposed surface
No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

Swirl Diffusers Type FD24

Type FD24



The TROX FD600-24 Swirl Diffuser is designed to fit into a standard 600 mm square ceiling tile with 24 fixed blades and is provided with either a square or round face. It is only manufactured in ONE size but, it can be supplied with blanking plates fitted to the rear of the diffuser face to reduce the air flow if needed. This diffuser is designed to provide a radial air flow discharge pattern with high induction flow rate.

Recommended Mounting Height

2.6 m to 4.0 m

Performance data

Type	Air Flow (l/s)	ΔP (Pa)	NC level	SPL in dB(A)
FD600-24/ 0	275	20	NC 38	44
	220	12	NC 35	41
FD600-24/ 1	177	11	NC 35	41
	150	8	NC 30	36
	101	4	NC 25	29
FD600-24/ 2	165	17	NC 35	39
	141	12	NC 30	36
	100	7	NC 25	29
FD600-24/ 3	140	23	NC 35	40
	123	19	NC 30	36
	92	10	NC 25	29
FD600-24/ 4	108	34	NC 35	39
	91	24	NC 30	35
	72	15	NC 25	29

Order Code

FD600-24 / 0 / Q - Z – H – M – L0 / P1- RAL...

1 2 3 4 5 6 7 8

1 Type

FD600-24 Radial Swirl Diffusers

2 Blanking plate

0 No entry
1 Size 1
2 Size 2
3 Size 3
4 Size 4

3 Diffuser face

Q Square

4 System

Z Supply air
A Extract air

5 Inlet spigot

V Plenum with top inlet spigot
H Plenum with side inlet spigot

6 Construction

No Entry, without damper blade
M With

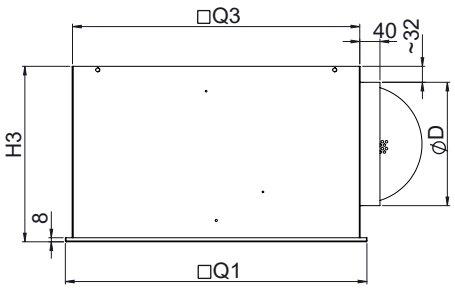
7 Internal lining

I0 No entry, no internal insulation
I1 6mm thick rubber foam
I2 25mm fibre glass insulation

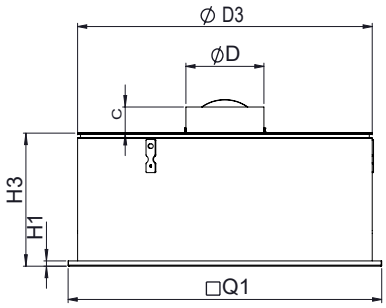
8 Exposed surface

0 No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

Type VDW



VDW-Q...-H



VDW-Q...-V

Air flow Rrate (l/s) - For single row arrangment

Size	Distance between diffusers, A (m)						
	0	1.2	1.8	2.4	3.0	3.6	4.2
300 x 8	69	58	53	56	58	69	69
400 x 16	108	78	78	83	86	108	108
500 x 24	128	97	92	94	94	119	128
600 x 24	183	111	111	119	128	158	183
600 x 48	228	139	125	139	139	181	211
625 x 24	183	111	111	119	128	158	183
625 x 54	231	147	139	150	156	197	233

Dimensions

Size	□Q1	$□Q_3$	H_3	Q_3	H_3	ØD
			VDW-Q...H		VDW-Q...V	
300 x 8	298	290	250	290	200	158
400 x 16	398	372	295	375	200	198
500 x 24	498	476	295	476	200	198
600 x 24	598	567	345	567	200	248
600 x 48	598	590	345	590	300	248
625 x 24	623	567	345	567	200	248
625 x 54	623	615	345	615	300	248

Nomenclature

$\dot{V}$ in l/s = Flow rate
$\dot{V}_{min}$ in l/s = Minimum flow rate
A, B in m = Distance between two diffusers

Note

Sound power level is $L_{WA} \leqq 40$ dB(A) in all cases
Pressure drop $\Delta P_t \leqq 40$ Pa
Selection valid for ceiling height = 2.7 m to 3 m.

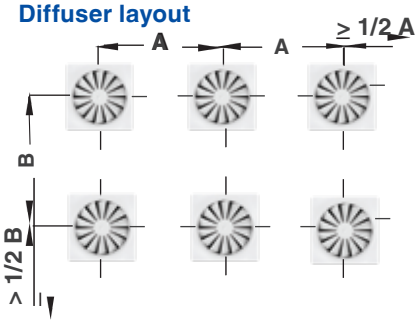
Air flow Rrate (l/s) - For multiple row arrangment

Size	B (m)	Distance between diffusers, A (m)					
		1.2	1.8	2.4	3.0	3.6	4.2
300 x 8	3.0	43	39	42	44	53	58
400 x 16		56	56	58	64	81	92
500 x 24		67	61	64	83	83	92
600 x 24		81	81	86	97	117	136
600 x 48		100	100	100	100	125	147
625 x 24		81	81	86	97	117	136
625 x 54						142	164
300 x 8	3.6	50	47	50	53	64	69
400 x 16		67	67	69	81	89	108
500 x 24		81	75	81	81	117	125
600 x 24		94	94	106	117	139	161
600 x 48		117	108	117	125	139	181
625 x 24		94	94	106	117	139	161
625 x 54				128	139	156	197
300 x 8	4.2	58	53	56	58	69	69
400 x 16		78	75	83	89	108	108
500 x 24		97	92	94	94	125	128
600 x 24		111	111	119	133	158	183
600 x 48		139	131	139	147	186	217
625 x 24		111	111	119	133	158	183
625 x 54		150	139	150	164	197	228

Minimum flow rate

Size	$\dot{V}_{min}$
300 x 8	54
400 x 16	108
500 x 24	144
600 x 24	216
600 x 48	360
625 x 54	432

Diffuser layout



Order Code

VDW – Q – Z – H – M – L1 / 500 x 24 / 0 / P1- RAL...
1 2 3 4 5 6 7 8 9

1 Type
VDW Swirl Diffusers

2 Construction
Q Square
R Circular

3 System
Z Supply air
A Extract air

4 Connection
H Horizontal
V Vertical

5 Construction
No Entry, without damper blade
M With

6 Internal lining
0 No entry: No Internal insulation (Standard supply)
L1 6mm thick rubber foam

7 Size
Refer to the catalogue

8 Colour of air control blades
No entry : supply air – black air control blades, extract air – no air control blades
Q11 Extract air – black air control blades
Q21 Supply air – white air control blades
Extract air – white air control blades

9 Exposed surface
No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL colour

Swirl Diffusers Type VD

Type VD

Key features

- Manually or automatically adjustable discharge angle.
- Suitable for cooling and heating application.
- Suitable for mounting at ceiling height greater than 3.8 m high.
- Can be supplied with plenum box with either top or side entry spigot.
- Powder coating as standard finish in RAL 9010 matt white.

Product type	Air flow (l/s)	ΔP (Pa)	Spacing between diffusers, A (m)	Floor to ceiling ht. (m)	Distance from wall, X (m)
VD-H/425	220	32	6	4.8	4
VD-H/600	380	30	6	4.8	4
VD-H/775	680	25	6	4.8	4
VD-H/1050	860	21	6	4.8	4

Note
The selection given above is based on;
- Room design noise criteria being NC 40 with 8 dB room attenuation.
- Average air velocity within the occupied zone is 0.25 m/s.
- Diffusers are fitted with side inlet plenum.
- Temperature differential of supply air is ΔT of 10 °C.
- The diffuser is mounted flushed against the suspended ceiling.

Order Code

VD - V - E1 - K / 600 / 0 / 0 / P1 / RAL 9016

1 2 3 4 5 6

1 Type

VD Swirl Diffusers

2 Diffuser face

V Top entry
H Side entry

3 Oppposed blade

E1 230 V~, 50 Hz,open-close control
E2 24 V~, 50 Hz, open-close control
E3 24 V~, 50 Hz, 2…10 V-, continuous control

4 Horizontal discharge,

K With collar[1]
S With protection grid[1]

5 Size

425
600
775
1050

6 Exposed surface

0 Diffuser face standard finish E6-C-0
P1 Powder coated
RAL 9010, pure white (GE50%)[2]
RAL 9006 (GE30%)[2)]
Other : Specify RAL colour

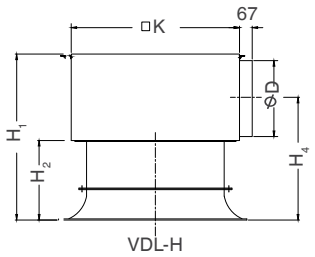
Note
1 For variants with plenum box only, supplied loose
2 GE = gloss level

Type VDL

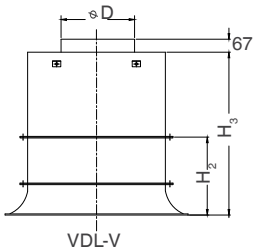
Key features

- Manually or automatically adjustable discharge angle.
- Suitable for cooling and heating application.
- Suitable for mounting height greater than 3.8 m high.
- Can be supplied with plenum box with either top or side entry spigot.
- Powder coating as standard finish in RAL 9010 matt white.

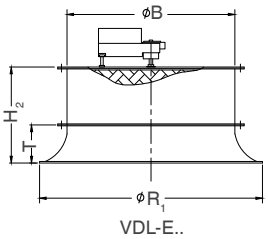
Size	B	D	DL	H_1	H_2	H_3	H_4	K	R_1	R_2	T	n
315	318.5	248	368	483	203	425	342.5	435	464	382	63	6
400	403.5	313	450	603	238	534	420.5	500	567	464	80	6
630	633.5	398	690	848	383	748	615.5	750	871	708	125	6
800	803.5	498	853	1133	568	998	850.5	1000	1077	871	160	12



VDL-H



VDL-V



VDL-E..

Table 1: Quick Selection for 'VDL-H' (without continuous ceiling)

Size	L_{WA} in dB(A)	Flow (l/s)	ΔP (Pa)	Cooling mode only				L (m)	L_{WNC}
				A_{min}	H_1	A_{max}	H_2		
315	43	140	35	2.0	2.0	-	-	3.5	NC 35
	47	160	47	2.0	2.2	2.3	2.0	3.8	NC 40
400	41	230	28	2.0	2.5	2.3	2.0	4.0	NC 35
	47	280	38	2.0	3.0	2.8	2.0	4.8	NC 40
630	41	400	26	2.0	3.1	3.2	2.0	5.0	NC 35
	46	480	34	2.0	4.0	3.8	2.0	6.0	NC 40
800	41	510	25	2.0	4.0	3.5	2.0	5.8	NC 35
	46	600	31	2.0	5.0	4.0	2.0	6.5	NC 40

Order Code

VDL - V - 0 / 630 / P1 / RAL 9006

1 2 3 4

1 Type

VD Swirl Diffusers

2 Rear assemblies

P Manual setting
Pre-set for cooling only

E1 220V; 50 Hz
2 position control

E2 24V; 50Hz
2 position control

E3 24V; to 10 V
propportional control

3 Size

315
400
630
800

4 Exposed surface

0 Diffuser face standard finish
E6-C-0

P1 Powder coated
RAL 9010, pure white (GE50%)[2)]
RAL 9006 (GE30%)[2)]
Others : Specify RAL colour

Ceiling Diffusers Type ADT

Type ADT

Key features

- Comes with 4; 3; 2 or 1-way throw.
- Removable diffuser face.
- Can be supplied with plenum box with either top or side circular inlet connection.
- Plenum box can be supplied with;
  1a. Internal rubber lining or
  1b. Acoustic lining.
  2. Volume control damper.
- Suitable for supply or extract.

Recommendations

- Suitable for floor to ceiling heights from 2.6 to 4.0 m.
- Clear ceiling void height of 500 mm.

Description	Product code	Air flow (l/s)	ΔP (Pa)	Throw (m)	Face Size (mm)
4-way throw ceiling diffuser with top inlet spigot plenum and opposed blade damper suitable for 600 x 600 T-bar ceiling.	ADTL-4/AGC/ 500 x 500	400	39	4.5 - 6.1	590 x 590
4-way throw ceiling diffuser with top inlet spigot plenum and opposed blade damper suitable for 600 x 600 T-bar ceiling.	ADTL-4/KM/ 500 x 500	330	20	3.8 - 5.4	590 x 590
4-way throw ceiling diffuser with top inlet spigot plenum and opposed blade damper suitable for plaster board ceiling.	ADTF-4/AGC/ 450 x 450	370	35	4.3 - 6.1	597 - 597
4-way throw ceiling diffuser with top inlet spigot plenum and opposed blade damper suitable for plaster board ceiling.	ADTF-4/KM/ 450 x 450	300	20	3.4 - 5.2	597 - 597

Note

- The selections given in the table above are based on NC 35 assuming 8 dB room attenuation.
- The throw of the jet stream is based on terminal velocity of 0.5 and 0.25 m/s respectively.
- The ΔT between supply air temperature and room temperature is assumed to be 10°C. Inlet spigot size for the plenum box is 298 mm diameter.

Order Code

ADTF - 4 / AGC / I0 / 300 x 300 / S1 / RAL 9010

1 2 3 4 5 6

1 Type

ADTF
ADTC
ADTL

2 Discharge direction

1*
1L
1S
2
2L
2S
2C(1)
3
3L
4

3 Rear assemblies and plenum box

A	Face only
AG	Face with opposed blade damper
C	
AC	
CS	
AGC	
K	
KM[1]	With side inlet plenum box

4 Internal lining

L0	No entry: No Internal insulation (Standard suply)
L1	6mm fire retardant rubber foam lining
L2	25mm fibre glass insulation

5 Size

B x H (mm)

6 Exposed surface

0	No entry: Powder coated RAL 9010 (Standard supply)
S1	Powder coated specify RAL colour

1 : Only availabe in size 150, 225, 300, 375 for border types F, R, C.
Sizes 200 x 200, 500 x 350 for border type L.

*Further details, please refer product catalogue

Type ADLQL

Key features

- Comes with 4; 3; 2 or 1-way throw.
- Removable diffuser face.
- Can be supplied with plenum box with either top or side circular inlet connection.
- Plenum box can be supplied with;
  1a. Internal rubber lining or
  1b. Acoustic lining.
  3. Volume control damper.
- Suitable for supply or extract.

ADLQL-H with side inlet plenum box and 4-way throw.

Size	Air flow (l/s)		At V_{max} where L_{WNC} = NC35			
	V_{min}	V_{max}	ΔP (Pa)	A (m)	$V_{L\ (m/s)}$	$V_{H1\ (m/s)}$
300	40	55	32	3.0	0.25	0.17
400	55	100	30	4.2	0.25	0.17
500	70	150	26	4.8	0.25	0.17
600	125	200	25	5.4	0.25	0.17
625						

Notes

- Data given above is based on floor to ceiling at 3 m and ΔT at 10°C.
- 'A' is the distance between two diffusers.

Order Code

ADLQL - K - V - D - M - I0 - E / 500 / 0 / 0 / P1 / RAL 9010

1 2 3 4 5 6 7 8 9

1 Type

ADLQL Ceiling diffusers

2 Border

K Cover border (face with 27mm)
P Flush border (face with 11mm)

3 Circular inlet connection

V Top entry
H Side entry

4 Lining

D Acoustic[1)]

5 Construction

M Volume control damper[2)]

1) Only available with side entry plenum
2) Only avaiilable with flush fitting border
Accessories
AB = Blanking plates

6 Internal lining

No entry: No Internal insulation (Standard supply)
L1 6mm thick rubber foam
L2 25mm fibre glass insulation

7 Application

S Supply air
E Extract air

8 Size

300
400
500
600
625
300T
600T

9 Exposed surface

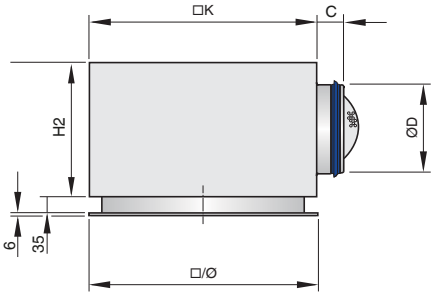
No entry: Powder coated RAL 9010, pure white
P1 Powder coated, specify RAL CLASSIC colour

Ceiling Diffusers Type ADLR

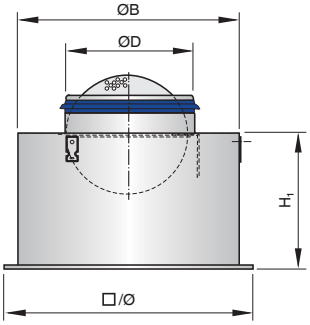
Type ADLR

ADLR-Q

ADLR



ADLR-...-H



ADLR-...-V-M

Minimum distance between two diffusers

Size	Flow Rate, V̇ (l/s)																
	19	31	42	50	58	83	100	119	139	181	219	231	250	278	300	360	440	500
1	1.2	2.0	2.3	2.5	2.7													
2		1.2	2.0	2.2	2.4	2.9	3.2	3.5										
3				1.2	2.3	2.8	3.0	3.3	3.5	4.1								
4					1.8	2.7	3.0	3.3	3.5	4.0	4.3	4.3						
5								2.5	3.5	3.8	4.2	4.3	4.4	4.6	4.8			
6									2.5	3.7	4.1	4.2	4.4	4.6	4.7	5.1		
7										2.5	3.9	4.0	4.2	4.4	4.6	5.0	5.4	
8										3.8	3.9	4.1	4.4	4.5	4.9	5.4	5.7	

Minimum flow rate

Size	$\dot{V}_{min}$
1	19
2	315
3	50
4	83
5	111
6	139
7	181
8	222

Dimensions (mm)

Size	Ø	ØB	ØD	H_2	□K
1	244	202	123	220	266
2	300	258	158	250	290
3	356	314	198	295	372
4	412	370	248	345	476
5	468	426	248	345	476
6	542	482	313	410	567
7	598	538	313	410	590
8	654	594	313	410	615

Nomenclature

V̇ in l/s = Flow rate
V̇min in l/s = Minimum flow rate

Note

- Sound power level is $L_{WA} \leqq 40$ dB(A) in all cases
- Pressure drop $\Delta P_t \leqq 45$ Pa
- Selection valid for ceiling height 2.7 m to 3 m
- Available dimensions:
  Diffuser face ADLR-Q = □593, 598, 618, 623 mm

Order Code

ADLR - Q - ZH - M - L / 598 x 4 / 0 / 0 / S1 / RAL 9016

1 2 3 4 5 6 7 8

1 Type

ADLR Circular diffuser

2 Diffuser face

Q Square diffuser

3 Application

A Diffuser face
C With flap damper
AR With connecting ring

Top entry plenum

ZV Supply air
AV Extract air

Side entry plenum

ZH Supply air
AH Extract air

4 Construction

M Damper in plenum box spigot
MN Volume setting by cord and measurement test point

5 Lip seal

L Spigot with lip seal

6 Size

593
598
618
623 Size of face section

1-8 Size of diffuser

7 Accessories

0 Without subframe
D0 Duct subframe
F0 Standard subframe

8 Exposed surface

0 No entry: Powder coated RAL 9010
P1 Powder coated, specify RAL colour

Table 1: Comparison between 4-way throw and swirl diffusers suitable for 600 by 600 mm T-bar suspended ceiling complete with plenum box (for ceiling height between 2.8 and 3.8 m).

Product type	Air flow[1] (l/s)	Max. ΔP (Pa)	Spacing between the diffuser & wall X (m)	Spacing (A/B) between diffuser (m)	Plenum box ht. (mm)	Inlet spigot, Ø(mm)	Type of ceiling diffuser	Comments
ADTL-4/KM/ 500 x 500	330	43	2.7 to 5.7	4.8 to 6.0	475	298	Square Face with 4-way throw	This type of diffuser can handle higher air flow compare to swirl diffuser. Hence, fewer diffusers will be required.
ADLQL-P-H-M-S/ 600T	200	35	1.5 to 2.1	3.0 to 4.2	455	299		
ADLR-Q-ZH-M/ 598 -7	310	36	2.1 to 4.8	3.6 to 4.8	503	298	Round face with radial discharge	
ADLR-Q-ZH-M/ 598 - 8	365	40	1.8 to 4.8	4.8	503	298		
FD-Q-Z-H-M/ 600	160	40	1.5 to 4.2	3.6 to 4.8	350	248	Square / circular face swirl diffuser	This type of diffuser is best suited for VAV system as it can handle lower flow rates with minimal down draft. It can also be used on CAV system but it delivers lower air flow rate compared to the ADT diffuser.
VDW-Q-Z-H-M/ 600 x 24	185	47	1.5 to 4.2	3.6 to 4.2	345	248		
VDW-Q-Z-H-M/ 600 x 48	200	43	1.5 to 4.2	3.6 to 4.2	345	248		
VDW-Q-Z-H-M/ 600 x 48	175	43	2.1 to 4.2	3.6 to 4.2	345	248		

Note

The selections given above are based on on the following assumptions;

1. Recommended air flow rate given above is based on the damper blade is set to partially closed at 45°.
2. Temperature differential between supply air and room tempearture, ΔT is 10°C.
3. The floor to ceiling height is between 2.8 and 3.0 metres high.
4. The design NC rating required is NC 35, assuming 8 dB room attenuation.
5. The diffusers are fitted with side inlet plenum with volume control damper.
6. Average air velocity within the occupied space is at 0.25 ± 0.10 m/s. But VL may be as high as 0.4 m/s.
7. The diffuser arrangement is assumed to be symmetry.

Most of the ceiling diffusers and slot diffusers found in TROX KLIMA Asia Pacific Catalogue or in this Quick Selection Guide are meant to be mounted at ceiling heights from 2.6 up to 4.0m high. For ceiling heights greater than 3.8 metres , customers are advised to use one of the following;

1. Type 'VDL' Swirl Diffusers
2. Type 'VD' Swirl Diffusers

As a rule of thumb, if the room is very wide (i.e., in access of 8 metres) and it does not have any columns installed in the middle of the room, then jet nozzles or drum lourves should be considered, provided that the floor to ceiling height is greater than 4 metres high.

Active Chilled Beams Type DID642

Type DID642

Key features

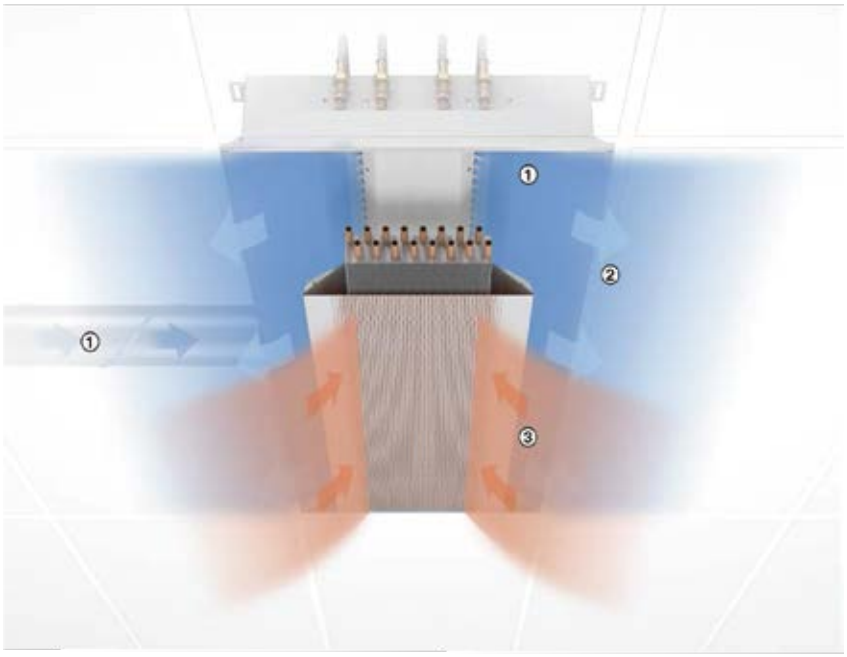
Active chilled beam for heating and cooling, with 2-pipe or 4-pipe heat exchanger, for integration with various ceiling systems

- Preferably for room heights up to 4.0 m.
- High heating and cooling capacity with a low conditioned primary air volume flow rate and low sound power level.
- Five nozzle variants to optimise induction based on demand, including adjustable twin nozzles, i.e. one pair of nozzles with different diameters
- Hinged, removable induced air grille in two designs.
- Adjustable air control blade for air direction control.

*Other Active Chilled Beams model as DID-EV, BID, DID-E, DID-E2 are upon request

Nominal length	900, 1200, 1500, 1800, 2100, 2400, 2700, 3000 mm
Length	893 – 3000 mm
Height	170/205 mm
Width	593, 598, 618, 623 mm
Primary air spigot, diameter	123/158 mm
Primary air volume flow rate	10 – 125 l/s or 36 – 450 m^3/h
Output, cooling	Up to 3100 W
Heating capacity	Up to 2330 W
Factory leak test pressure	36 bar
Max. operating pressure, water side	15 bar
Max. operating temperature	75 °C

Principle of operation



① Conditioned fresh air (primary air)
② Supply air
③ Room air (secondary air)

Order code

DID642 - D1 - 2 - HE - RR - AV - A1 / 1200 x 900 - 593 / 123 / 158 / P1 - RAL ... / LE / L1

1 2 3 4 5 6 7 8 9 10 11 12 13

1 Type

DID 642 Active chilled beam

2 Induced air grille

No entry : Perforated metal facing, decreasing apertures towards the edges
D1 Perforated metal facing

3 Heat exchanger

2 2-pipe
4 4-pipe

4 Nozzle variant

HE Small
S1 Medium
S2 Large
HP Extra large
DA Adjustable twin nozzle, all nozzles are open (factory setting)
Sizing options: Adjustable twin nozzles, All nozzles are open (factory setting), adjustment during commisioning by others DB and DS can be calculated with the EPF and adjusted by others. The order variant for this is DA

5 Arrangement of casings and connections

LL Casing on left, water connections on left
LR Casing on left, water connections on right
RL Casing on right, water connectons on left
RR Casing on right, water connections on right

6 Additional casing - function and arrangement

No entry : none
Constructions LL, RR are only available from L = LN + 250 mm
AV Extract air, spigot at the front
AH Extract air, spigot at the rear
ZV Supply air, spigot at the front
ZH Supply air, spigot at the rear

7 Water Connections

No entry required : pipe with plain tails Ø12 mm
A1 With G½" external thread and flat seal
A2 With G½" union nut and flat seal

8 Unit size [mm]

L x L^N - B
Total length (diffuser face) x nominal size - width of front frame
L is up to 7 mm shorter than LN

9 Primary air spigot, diameter

123
158
2x123
2x158

10 Additional casing - spigot diameter

Only for AV, AH, ZV, ZH
123
158

11 Exposed surface

No entery: powder-coated RAL 9010, pure-white
P1 Powder-coated, specify RAL CLASSIC
Gloss level
RAL 9010 50%
RAL 9006 30%
All other RAL colours 70%

12 Air control blades

LE With air control blades

13 Internal Lining

No entry No Internal insulation (Standard)
L1 6mm thick rubber foam

Active Chilled Beams Type DID 604

Type DID 604

Key features

- Provides 4-way air discharge pattern.
- Comes with adjustable air deflection blades.
- Performance is certified by Eurovent.
- Comes in two standard sizes –see Table No.1 below.
- Suited for flush ceiling installation with heights between 2.6 and 4.0 m.

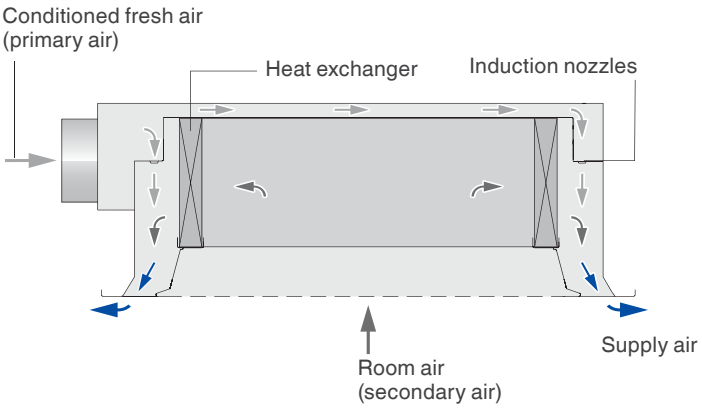
*Other Active Chilled Beams model as DID-EV, BID, DID-E, DID-E2 are upon request

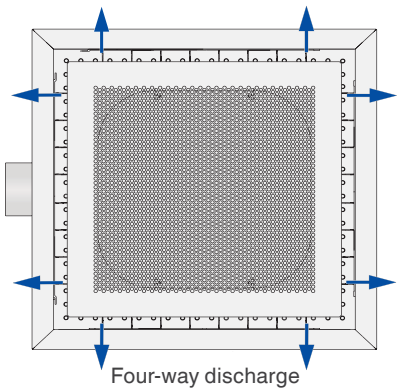
Unit size (L x W)	Design output	Total cooling load (W)	Primary supply air		SWL in dB (A)	Δp water coil (kPa)
			Flow (l/s)	ΔP (Pa)		
600 x 600	Average	700	18	192	29	2.4
	Max	1092	38	245	40	
1200 x 600	Average	997	27	167	32	3.2
	Max	1334	50	174	42	

Notes

- The air inlet spigot connection to these units is 123 mm diameter.
- Unit overall height is 230 mm high.

Principle of operation





Order Code

DID604 - LR - 2 - M - VR - A1 / Nominal size / P1 / RAL 9006 / G1 / 0

1 2 3

1 Type

DID 604 Active chilled beams

2 Nozzle size

Z
M
G

3 Exposed surface

No entry: Powder coated RAL 9010, pure white (Standard supply)

P1 Powder coated, specify RAL CLASSIC colour

Type AWG

Both 'AWG' and 'AWK' Type weather louvers are made from extruded aluminum with an approximate free area of 60%.

Key Features

Type 'AWG' Louvre

- 50 mm flange for 'AWG' Louvre.
- 20 x 20 mm sq. wire mesh screen.
- 95 mm deep frame.
- Max. module size – 1985 mm (B) x 1980 mm (H).

Type 'AWK' Louvre

- 28 mm flange for 'AWG' Louvre
- 6 x 6 mm sq. wire mesh screen.
- 34 mm deep frame.
- Max. module size – 1197 mm (B) x 497 mm (H).

Recommendation

Limit the face velocity to 3 m/s in order to maintain a pressure drop of 60 Pa.

Order Code

AWG - 1 - BM / 4800 x 1815 / 12 / P1 / RAL 9016

1 2 3 4 5 6

1 Type

AWG	Weather resistant louvres
WGE	
AWK	

2 Types of screen

1	With galvanised insect screen
2	With 20 x 20 mm sq 430 grade stainless steel wire mesh
3	With 430 grade stainless steel wire mesh and insect screen

3 Modular construction

BM	When the width B> 1985 mm wide
HM	When the height, H> 1980 mm high
B	When the louvre comes with corner section(s)

4 Size

B x H (mm)	Refer to the product catalogue

5 Masory sub-frame

Refer to the product catalogue

6 Exposed surface

	No entry: Powder coated RAL 9010, pure white, with approximately 30% gross
P1	Powder coated, specify RAL CLASSIC colour

Volume Control Dampers Type VCD

Type VCD

Key Features

- Available in galvanised or stainless steel construction.
- Available with either parallel or opposed blade arrangement.
- Available with the following seal options:
  1. C – Without side or tip seal
  2. C1 – With side seals only
  3. C2 – With side and tip seal for improve closed blade leakage rating
- Can be supplied with hand locking quadrant or with either electric or pneumatic actuator.

Minimum module size : 100 mm x 100 mm
Maximum module size : 1200 mm x 1800 mm

Table 1 : Quick Selection for VCD damper

Damper size (mm)		Recommended Max. Air Flow (m^3/s)	ΔP (Pa)
B	H		
200	200	0.32	50
250	250	0.50	45
300	300	0.72	43
400	400	1.28	38
500	500	2.00	35
600	600	2.88	33
700	700	3.92	30
800	800	5.12	28
900	900	6.48	25
1000	1000	8.00	25
1100	1100	9.68	25
1200	1200	11.52	25
1200	1300	12.48	25
1200	1400	13.44	25
1200	1500	14.40	25
1200	1600	15.36	25
1200	1700	16.32	25
1200	1800	17.28	25

Note
The pressure drop data given above is based on the damper in the fully open position with the damper connected to ductwork on both sides.

Order Code

VCD - A2 - B2 - C2 - D - R / 800 X 500 / Z00
1 2 3 4 5 6 7 8

1 Type

VCD	Volume control dampers (Standard supply)
VCP	
VCE	

2 Case

A	Flange case wth 40mm wide flange (Standard supply)
A1	With sleeve casing
A2	With rectangular spigot
A3	With circular spigot

3 Blade

B	Parallel arrangement with face linkage (Standard supply)
B1	Parallel blade with external side linkage
B2	Opposed blade with external side linkage

4 Seal

C	Without side or tip seals (Standard supply)
C1	With side seals only
C2	With side and silicon tip seals
C3	With side and PVC tip seals

5 Bearing

D	Sintered bronze (Standard supply)
D1	Plastic

6 External control location

R	Right hand side (Standard supply)
L	Left hand side

7 Duct size

In mm to suit connecting duct

8 Accessories

Refer to the product catalogue

Type SLC

The 'SLC' Type damper is a multi-leaf volume control with aerofoil blades with an opposed blade arrangement.
It is designed for air flow regulation and control.
If low closed blade leakage performance is required, it is advisable to consider using C2 seal variant, which includes tip and side seals.
It can be operated manually with a hand locking quadrant or with the aid of electric or pneumatic actuator(s) if required

Key Features

- Ideal for air flow balancing or regulation.
- Low pressure drop (e.g., ΔP of 10 Pa at 10 m/s in fully open position when the damper is connected to ductwork at both ends).
- Low damper leakage rate with C2 seal variant (i.e., about 25 l/s/ m sq. at 1000 Pa).
- 30 mm wide flange (Standard supply).

Material

- Casing – Galvanised steel
- Blades – Extruded aluminium

Minimum module size : 100 mm x 100 mm
Maximum module size : 1000 mm x 1000 mm

Table 1 : Quick Selection for SLC damper

Damper size (mm)		Recommended Max. Air Flow (m^3/s)	ΔP (Pa)
B	H		
200	200	0.32	10
250	250	0.50	10
300	300	0.72	10
400	400	1.28	10
500	500	2.00	10
600	600	2.88	10
700	700	3.92	10
800	800	5.12	10
900	900	6.48	10
1000	1000	8.00	10

Note
Recommended air flow is based on duct velocity of 8 m/s.

Order Code

SLC - A - C1 - D1 - R / 800 X 500 / Z00
1 2 3 4 5 6 7

1 Type

SLC	Volume control damper

2 Case

A	Flange case wth 30mm wide flange (Standard supply)
A2	With rectangular spigot
A3	With circular spigot
A35	Flange casing with 35 mm
A40	Flange casing with 40 mm
A45	Flange casing with 45 mm

3 Seal

C0	Without side or tip seals
C1	With side seals only (Standard suplpy)
C2	With side and tip seals

4 Bearing

D	Sintered bronze (Standard supply)
D1	Plastic (standard supply for Z04-Z07 only)

5 External control location

R	Right hand side (Standard supply)
L	Left hand side

6 Duct size

In mm to suit connecting duct

7 Accessories

Refer to the product catalogue

Pressure Relief Dampers Type UL. KUL

Type UL

This is a pressure relief damper suitable for air intake or exhaust application.
Three different construction variants are available to suit different installation.

Key Features

Type UL

- Suitable to be mounted on a wall mounting with 45 mm wide border.
- Border is in galvanised steel.
- Blades are in aluminium sheet.

Type AUL

- Suitable to be mounted on a wall with 28 mm wide border.
- Both border and blades are in aluminium.

Type KUL

- Suitable to be mounted in a duct with 38 mm wide flanges on both sides of the casing.
- Damper casing is in galvanised steel.
- Blades are in aluminium sheet.

Recommendation

Air velocity through the damper should be limited at 5 m/s. Based on this, the anticipated maximum pressure drop is 45 Pa.

Table 1: Quick selection for Type 'UL/AUL/KUL' damper

Damper Size (mm)		Recommended Max. Air Flow (m^3/s)
B	H	
297	215	0.28
397	215	0.38
397	315	0.56
497	215	0.48
497	315	0.70
497	415	0.92
597	215	0.57
597	315	0.84
597	415	1.11
597	515	1.38

Note
The flow rates given above are based on a face velocity of 4.5 m/s.
Based on this, the anticipated pressure drop across the damper is not expected to exceed 40 Pa.

Order Code

UL-1 / 797 X 515 / 19
1 2 3

1 Type

UL-1 Pressure relief dampers
UL-2
KUL
KUL 1 Both flanges drilled

2 Sizes

W x H in mm Refer to the product catalogue

3 Masonry sub-frame

Refer to the product catalogue

Type BDD

The 'BDD' damper is a non-return damper intended to be used in mechanical ventilation systems to prevent back flow. It is designed to allow air to flow in only one direction. It will close automatically when the supply fan upstream of the damper is switched off. It can also serve as an adjustable pressure relief damper by manually adjusting the weight or the position of weights on each counter weight arm.

Key Features

- Maximum operating temperature is 80 °C.
- Comes with 40 mm wide flanges at both ends of the damper casing (Standard supply).

Recommendation

Air velocity through the damper should be limited to 10 m/s.

Material

- Galvanised sheet (Standard supply)
- Stainless steel construction is available if requested.

Minimum module size : 150 mm x 210 mm
Maximum module size : 1200 mm x 1860 mm

Order Code

BDD - A - R / 500 X 500
1 2 3 4

1 Type

BDD	Back draught dampers (Standard supply)
BDP	
BDE	

2 Case

A	Flange casing (Standard supply)
A2	With rectangular spigot
A3	With circular spigot

3 Counter-weight arm

R	Right hand side (Standard supply)
L	Left hand side
R&L	On the both sides*

*Note : if the damper is made out of two modules and arranged side by side, then counter-weight arms will be located on both sides of the damper casing

Non-return Dampers Type ARK

Type ARK

The Type 'ARK' Damper comes in three different construction variants.

Type '**ARK**' and '**ARK1**' are designed to shut-off a section of the ventilation system when the fan is switched off. The main difference between the two is the Type 'ARK1' comes with external adjustable blade stop to limit the blade opening angle.

The recommended maximum operating pressure and temperature are 5000 Pa and 80°C respectively. Anticipated maximum leakage through these dampers are 7.5 and 9.0 l/s per metre square at 1100 Pa and 2000 Pa respectively.

Type '**ARK2**' is designed to be used to prevent access pressure from building up in ventilation systems or in rooms. The damper blades will open automatically once the specific pressure is exceeded.

Table 1: Standard damper sizes

Damper Size (mm)	
B	**H**
200	345
400	675
600	1005
800	1335
1000	1665
1200	1995

Notes
- Available damper size can be any combination of B and H given in the table above.
- Anticipated total pressure drop across the damper at 7 m/s is 100 Pa with the damper mounted vertically.

Order Code

ARK - 1 - A2 - G / 600 X 1005 / ER / P1 - RAL...
1 2 3 4 5 6 7

1 Type
ARK Non-return damper

2 Blade mechanism
No entry: linked blades
1 Blades with adjustable restrictors

3 Material
No entry: galvanized steel, with aluminum blades
A2 Stainless steel with aluminum blades

4 Construction
No entry: duct connection without lange holes
G Duct connection with flange holes

5 Size
B x H (mm)

6 Installation subframe
No entry: none
ER With (only for construction G)

7 Surface
No entry: standard construction
P1 Powder-coated, RAL classic colour*
PS Powder-coated, DB colour

Gloss level	
RAL 9010	50%
RAL 9006	30%
All other RAL colours	70%

Type JFD

TROX Type 'JFD' Damper is classified as an 'A-60' Marine Multi-leaf Fire and Gas Damper, designed for marine and offshore applications. This damper is certified by Lloyd's Register and ABS for the 'compliance with the essential Fire protection requirements of Marine Equipment Directive (MED) 96/98/EC' in accordance with IMO Fire Test Procedures Code, Annex 1; Part 3.

The damper is designed for horizontal or vertical mounting, suitable to be used in 'A-0' divisions, and 'A-15', 'A-30' and 'A-60' divisions with 900 mm length of insulated duct including the damper.

It complies with Directive 94/9/EG (ATEX 95), Appendix 1 and is classified under equipment group II, category 2G. According to Directive 99/92/EC (ATEX 137), this damper can be used in Zone 1 and 2, and Group IIA, IIB and IIC, which is for potentially explosive environment with the presence of flammable materials at temperature classes T1 to T6.

In addition, under Directive 94/9/EC (ATEX 95), Appendix 1, this damper is classified under equipment group II, category 2D. In accordance with Directive 99/92/EC (ATEX 137), this damper can be used in Zone 21 or 22 subject to combustible dusts.

The maximum recommended operating pressure for this damper is 3000 Pa.

Material

- Galvanised Sheet (Standard supply).
- Stainless steel construction is available if requested.

Minimum module size : 200 mm x 200 mm
Maximum module size : 1050 mm x 1250 mm

Order Code

JFD / G / FL1 / F4 / 0 / G2 / 600 x 600 / 12 / R / V / Z01 / A1

1 2 3 4 5 6 7 8 9 10 11 12

1 Type

JFD Marine fire & gas dampers

2 Material

G Galvanised steel (Standard supply)
E 304 grade stainless steel
E1 316 grade stainless steel
E2 316L grade stainless steel

3 Case variants

FL1 With side seals only
FL2 With side seals and blade tip seals (Standard supply)

4 Wide flange

F1 30 mm
F2 40 mm
F4 50 mm (Standard supply)
F6 65 mm
F7 75 mm
F8 80 mm

5 One side extended flange

0 No entry: no extended (Standard supply)
50 50 mm
80 80 mm
100 100 mm
150 150 mm

6 Drilling details

0 Undrilled
G1 40 flange
G2 50 flange (Standard supply)

7 Duct size

B x H (in mm)

8 Blade material thickness

12 1.2 mm thick (Standard supply)
20 2.0 mm thick

9 External control location

R Right (Standard supply)
L Left

10 Damper orientation

V Vertical (Standard supply)
H Horizontal

11 Control

Z00 Manual
Z01 Pneumatic spring return
Z02 Pneumatic double acting
Z03 Electric spring return
Z04 Electric double acting

12 Accessories

Refer to the product catalogue

Note
If the order codes are incomplete, then it is assumed that a standard damper construction is required.

Type JFM

The TROX Type 'JFM' is an industrial damper designed to operate in arduous environment, suitable for tunnel ventilation, offshore oil and gas and nuclear applications.

This damper is suitable for isolation, regulation of air flow and to control the spread of fire and smoke in mechanical ventilation systems. It can be operated manually or automatically using either electric or pneumatic actuators with associated ancillary controls in accordance with the system design requirements.

This damper can be manufactured in either galvanised sheet steel or in stainless steel with a pressure rating up to 3 kPa for standard supply or, 6 kPa for high pressure applications. The 'JFM' damper has been successfully tested for fire integrity for up to 4 hours to BS 476: Part 20, 1987 and, for 1 hour to BS EN 1366 Part 2, in both horizontal and vertical mounting positions by an independent fire test centre.

The Type 'JFM' damper is capable of operating for TWO hours at an elevated ambient temperature of 400°C.

Actuator ratings are:

- Pneumatic: 250°C for 2 hours, 400°C for 1 hour without thermal enclosure including external end position switches.
- Electric: 400°C for 2 hours with thermal enclosure including integral end position switches.

They can be mounted vertically or horizontally, directly to structural walls or concrete floor slabs and directly onto connecting ductwork. In all cases, this damper should be installed to manufacturer's recommendations and comply with the local by-laws and fire authority requirements.

This damper complies with the European Directive 94/9/EC (ATEX 95), Appendix 1 and is classified under equipment group II, category 2D and 2G. It can therefore be used in Zone 21 and Zone 22 hazardous areas where combustible dust is present and Zone 1 and 2 hazardous areas where Group IIA, IIB and IIC gases are present at temperature classes T1 to T6 in accordance with European Directive 99/92/EC (ATEX 137),

Material

- Galvanised sheet (Standard supply).
- Stainless steel construction is available if requested.

Minimum module size	: 200 mm x 200 mm
Maximum module size	: 2200 mm x 2500 mm

Order Code

JFM / E / FL1 / 6 / F4 / 0 / 0 / 1200 x 1800 / 12 / R / V / Z01 / TE

1 2 3 4 5 6 7 8 9 10

1 Type

JFM Industrial tunnels damper

2 Material

G Galvanised steel (Standard supply)
E 304 grade stainless steel
E1 316 grade stainless steel
E2 316L grade stainless steel

3 Mode variants

FL1 Low leak case
FL2 Low leak case with Kerlane tip seals

4 Pressure rating

3 For max. operating pressure of 3 kPa (Standard supply)
6 For max. operating pressure of 6 kPa

5 Wide flange

F1 30 mm
F2 40 mm
F4 50 mm (Standard supply)
F6 65 mm
F7 75 mm
F8 80 mm

6 One side extended flange

0 No entry: no extended (Standard supply)
50 50 mm
80 80 mm
100 100 mm
150 150 mm

7 Drilling details

0 Undrilled (Standard supply)
1 Drilled
2 Special request

8 Damper size

Refer to product catalogue

9 Blade material thickness

12 1.2 mm thick (Standard supply)
20 2.0 mm thick

Actuator position

R Right (Standard supply)
L Left
T Top
B Base
F Face

Damper mounting position

V Vertical mounted (Standard supply)
H Horizontally

Control options

Z00X Manual
Z01X Pneumatic spring return
Z02X Pneumatic double acting
Z03X Electric spring return
Z04X Electric double acting
**Refer to product catalogue for more info*

10 Thermal enclosure

TE1 250°C for 2 hours
TE2 400°C for 2 hours
TE3 Others

Note
If the order codes are incomplete, then it is assumed that a standard damper construction is required.

Fire Shutter Dampers Type FSD

Type FSD

Key Features

The Fire Shutter Damper provides a means to isolate and prevent the spread of fire and products of combustion through mechanical and air conditioning ventilation systems.

This damper is designed to be installed into walls or floor slabs. It is available in a wide range of sizes that are suitable for low and medium pressure system application.

Each damper module is fitted with a standard fusible link rated at 72 °C.

This damper has been tested successfully for up to four hours fire integrity to the British Standard, BS 476 Part 20, 1987 and Australian Standard, AS 1530.4, 1997.
This damper has been approved by BOMBA, the Malaysian Fire Services Department and, the Hong Kong Fire Services Department (HKFSD) has given a letter of no objection.

Installation

Please note that the damper installation method, which includes the provision of access panel and breakaway joint (to be provided by the others), should meet the requirements of the local standards and fire authority's requirements.
This damper can be mounted in the vertical or horizontal position EXCEPT for construction variant Type 'FSD-CM' since it does not have a set of closing springs. The Type 'FSD-CM' can only be mounted vertically.

This damper should be installed into the wall or floor structure with the means of;
I. Sleeve and peripheral angles or,
II. HEVAC Sub-frame.

Note
Silicon based sealant will be used on TROX FSD Type fire dampers.
If requested, special silicon free sealant can be applied to these dampers.

Material

- Galvanised sheet (Standard supply).
- Stainless steel construction is available if requested.

Minimum module size: 150 mm x 150 mm
Maximum module size: 1000 mm x 1000 mm

Order Code

FSD - AM / 1000 X 1000 / S150 / Z01
1 2 3 4 5

1 Type

FSD	Fire shutter damper (Standard supply)
FSP	Same construction as FSD, blades from SS 430
FSE	Same construction as FSD, blades & casing from SS 430

2 Construction variants

AM	(Standard supply)
BM, **CM**	With damper blades outside the airstream
DM	
EM	

**Note: please refer product catalogue for construction variants & accessories description*

3 Size

B x H (mm)	Widths and heights for square and rectangular ductwork
D	Diameter fot circular ducting

4 Damper

0	Damper only (Standard supply)
S	With sleeve and retaining angles E.g S150, S225 or S300

5 Accessories

Refer to the product catalogue

Type MSD

The Smoke Damper is designed to prevent the spread of smoke through mechanical ventilation systems. This damper is capable of operating for a maximum period of 120 minutes at 250°C using an electric spring return actuator in a thermal enclosure.

Material

- Galvanised sheet (Standard supply).
- Stainless steel construction is available if requested.

Minimum module size: 100 mm x 100 mm.
Maximum module size: 1200 mm x 1800 mm.

General specification

Smoke damper type MSD is a designed for smoke isolation in sections of ducting in a typical mechanical ventilation system. Generally this damper consists of flanged casing and shut-off blades with overlapping interlocking joints as a standard construction. The blades are connected by internal face linkage for parallel blade operation. This damper has been independently tested for:

- Closed blade leakage to UL 555S Standard.
- Damper cycling test for more that 20,000 complete cycles with electric actuator as required under UL 555S.
- Elevated temperature test at **250^{0}C for 120 minutes** with actuator in a thermal housing.

Order Code

MSD - A1 - B1 - C1 - D - R / 1000 x 1000 / Z01

1 2 3 4 5 6 7 8

1 Type

MSD	Smoke dampers (Standard supply)
MSP	
MSE	

2 Case variants

A	Casing with 40 mm wide flange (Standard supply)
A1	Sleeve casing
A2	Rectangular spigot
A3	Circular spigot
A4	Oval spigot

3 Blade operations

B	Face link parallel blade arrangement (Standard supply)
B1	External link parallel blade arrangement

4 Seal

C	No entry (Standard supply)
C1	Side seals only
C2	Side and tip seals included

5 Bearing variants

D	Sintered bronze (Standard supply)

6 External controls location

R	Right hand side (Standard supply)
L	Left hand side

7 Duct size

Refer to the product catalogue

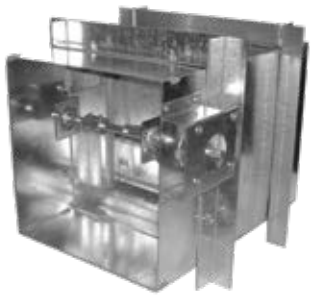
8 Accessories

Refer to the product catalogue

Note
If the order codes are incomplete, then it is assumed that a standard damper construction is required.

Combination Smoke & Fire Damper Type SFD

Type SFD



This damper is designed to provide an automatic means of preventing the spread of fire and/or smoke through mechanical ventilation system.
The damper has been independently tested for fire integrity for up to 4 hours to AS 1530.4,1997 and for up to 3 hours to BS 476: Part 20, 1987 by an internationally recognised fire test centre. The Type SFD damper is capable of operating for a maximum period of 60 minutes with air temperature at 250 °C passing through the damper, using an electric spring return actuator housed in a thermal enclosure. Additionally it has been tested independently for closed blade leakage and cycling tests, having completed more than 20,000 cycles with electric spring return actuator to comply with the requirements of UL 555S.

Three different seal variants are available:
- C – Without side or tip seal.
- C1 – With side seals only (Class 3 to UL555S).
- C2 – With side and tip seal for improve blade leakage rating (to Class 2 of UL555S).

Material

- Galvanised sheet (Standard supply).
- Stainless steel construction is available if requested.

Minimum module size : 250 mm x 250 mm
Maximum module size : 1000 mm x 1000 mm

General specification

The combination fire and smoke damper type SFD is designed for fire and/or smoke isolation in sections of ducting for a typical mechanical ventilation system. Generally this damper consists of flanged casing and shut-off blades with overlapping interlocking joints as a standard construction. The blades are connected by internal face linkage for parallel blade operation. This damper has been independently tested for:
- **Three hours** fire integrity to BS 476 part 20,1987 and for **four hours** to AS 1530.4,1997.
- Closed blade leakage test UL 555S Standard.
- Damper cycling test for more that 20,000 complete cycles with actuator as required under UL 555S.
- Elevated temperature test at **250°C for 60 minutes** with actuator in a thermal housing.

Order Code

SFD - A1 - C1 - D - R / 800 x 800 / 0 / Z01
1 2 3 4 5 6 7 8

1 Type

SFD	Smoke and fire dampers (Standard supply)
SFP	
SFE	

2 Case variants

A	Casing with 40 mm wide flange (Standard supply)
A1	Sleeve casing
A2	Rectangular spigot
A3	Circular spigot
A4	Oval spigot

3 Seal

C	No entry (Standard supply)
C1	Side seals only
C2	Side and tip seals included

4 Bearing variants

D	Sintered bronze (Standard supply)
D2	Stainless steel

5 External controls location

R	Right hand side (Standard supply)
L	Left hand side

6 Duct size

Refer to the product catalogue

7 Installation

0	Damper only (Standard supply)
H	HEVAC sub-frame
S	Sleeve and retaining angles S150 for 150 mm thick wall / slab S225 for 225 m thick wall / slab S300 for 300 mm thick wall / slab

8 Accessories

Refer to the product catalogue

Note
If the order codes are incomplete, then it is assumed that a standard damper construction is required.

Type TVB

Key Features

- Pressure independent control.
- Fibre glass insulation is covered with a protective lining to prevent fibre erosion. This was successfully tested against fibre erosion for up to 20 m/s.
- Fitted with multi-point sensor grid for better air flow measurement accuracy.
- Terminal units that are supplied with actuators and controllers will be fully factory calibrated and tested for air flow accuracy within a tolerance of ± 3%.
- Fiber glass lining resistant to fungal and bacterial growth.
- Volume flow rate can later be measured and adjusted on site; additional adjustment device may be necessary.

This terminal unit is available in four different constructions;

I. TVB-A; With short rectangular casing.
II. TVB-B; With long rectangular casing for better acoustic performance.
III. TVB-C; With long rectangular casing and multiple outlet spigots.
IV. TVB-E; With long casing and electric air heater complete with manual reset thermal cut-out switch.

Note
Hot water heater coil can be provided with TVB-A or TVB-B Type unit if required.

Table No.1: Quick Selection for Type 'TVB-A'; 'TVB-B' and 'TVB-C' Units

Unit size	TVB-A				TVB-B				TVB-C			
	100 Pa		200 Pa		100 Pa		200 Pa		100 Pa		200 Pa	
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
4	20	100	20	86	20	100	20	100	20	100	20	100
5	35	130	35	117	35	165	35	165	35	165	35	165
6	45	215	45	155	45	215	45	215	45	215	45	215
7	60	270	60	192	60	300	60	300	60	277	60	250
8	80	315	80	175	80	380	80	380	80	297	80	222
10	128	470	128	220	128	640	128	608	128	389	128	300
12	200	770	200	510	200	928	200	863	200	555	200	411
14	300	1030	300	568	300	1310	300	1163	300	953	300	602
16	380	1380	380	583	380	1783	380	1476	380	998	380	768

Recommended Air Flow Range (l/s) at NC 40

Order Code

TVB - A / 12 / BC0 / 95 - 950 l/s
1 2 3 4 5

1 Type

TVB VAV terminal units

2 Construction variants

A Short casing (Standard supply)
B Long casing
C With multi-outlet spigots
E With electric heater
EC With electric heater and multiple outlets

3 Nominal size (inch)

4
5
6
7
8
10
12
14
16

4 Attachments (control component)

Specific controller name

5 Design flow range (l/s or CFM), differential pressure (Pa)

$\dot{V}$min and $\dot{V}$max for factory setting or Δpmin for factory

Single Duct Terminal Units Type TVR/TVRD

Type TVR

Key features

- Pressure independent control.
- Plastic components are fire retardant to UL 94.
- Comes with damper tip seal.
- With semi rigid and fire retardant fibre glass insulation. Fibre glass insulation is covered with a protective lining to prevent fibre erosion. This was successfully tested against fibre erosion for up to 30 m/s. This is only applicable for double skin construction, Type TVRD.
- Fitted with multi-point sensor grid for better air flow measurement accuracy
- Terminal units that are supplied with actuators and controllers will be fully factory calibrated and tested for air flow accuracy within a tolerance of ± 3%.
- This is available in single skin construction, Type TVR or double skin construction, Type TVRD

Table1: Quick selection for TVR/TVRD

Unit size	100 Pa		200 Pa	
	$\dot{V}_{min}$	$\dot{V}_{max}$	$\dot{V}_{min}$	$\dot{V}_{max}$
4	20	100	20	100
5	35	165	35	165
6	45	215	45	215
7	60	300	60	300
8	80	365	80	341
10	128	608	128	550
12	200	781	200	657
14	300	992	300	911
16	380	1311	380	1196

Air Flow Range (l/s) at NC 40

Order Code

TVR - 0 / 12 / BC0 / 95 - 950 l/s

1 2 3 4 5

1 Type

TVR VAV terminal units
TVRD

2 Construction variation

A2 Stainless steel material

3 Nominal size (inch)

4
5
6
7
8
10
12
14
16

4 Attachments (control component)

Specific controller name

5 Design flow range (l/s or CFM), differential pressure (Pa)

V_{min} and V_{max} for Δp_{min} for factory setting

Type TFP

This is series fan terminal unit with 5 different sizes.

Key features

- Pressure independent control
- Plastic components are fire retardant to UL 94.
- Comes with damper tip seal.
- With semi rigid and fire retardant fibre glass insulation.
- Fibre glass insulation is covered with a protective lining to prevent fibre erosion. This was successfully tested against fibre erosion for up to 20 m/s.
- Fitted with multi-point sensor grid for better air flow measurement accuracy.
- Terminal units that are supplied with actuators and controllers will be fully factory calibrated and tested for air flow accuracy within a tolerance of ± 3%.
- Constant air flow at the fan discharge outlet.
- As optional extras, the unit can be supplied with;
  a. Disposable filter panel at air induction port.
  b. Electric air heater(s).

Air Flow Range for 'TFP' Series Fan Terminal Units

Unit size	Secondary & Primary Air Flow	Air Flow Rate (l/s) Fan Speed		
		Low	Med	High
2	Sec. Flow Vmin	150	200	250
	Sec. Flow Vmax	230	310	400
2-05	Pri. Flow Vmin - Vmax		15 - 170	
2-06	Pri. Flow Vmin - Vmax		25 - 240	
2-08	Pri. Flow Vmin - Vmax		40 - 400	
4	Sec. Flow Vmin	300	400	500
	Sec. Flow Vmax	480	650	700
4-08	Pri. Flow Vmin - Vmax		40 - 435	
4-10	Pri. Flow Vmin - Vmax		60 - 690	
4-12	Pri. Flow Vmin - Vmax		90 - 1000	
5	Sec. Flow Vmin	450	550	650
	Sec. Flow Vmax	680	850	1050
5-10	Pri. Flow Vmin - Vmax		60 - 690	
5-12	Pri. Flow Vmin - Vmax		90 - 1000	
5-14	Pri. Flow Vmin - Vmax		130 - 1375	
6	Sec. Flow Vmin	600	800	1000
	Sec. Flow Vmax	920	1280	1400
6-12	Pri. Flow Vmin - Vmax		90 - 1000	
6-14	Pri. Flow Vmin - Vmax		130 - 1375	
6-16	Pri. Flow Vmin - Vmax		170 - 1800	
7	Sec. Flow Vmin	900	1100	1300
	Sec. Flow Vmax	1300	1750	2100
7-12	Pri. Flow Vmin - Vmax		90 - 1000	
7-14	Pri. Flow Vmin - Vmax		130 - 1375	
7-16	Pri. Flow Vmin - Vmax		170 - 1800	

Estimated NC Level within the Occupied Space

Unit size	Sec. Airflow $\dot{V}_{max}$ (l/s)	External Static Pressure at 100 Pa at $\dot{V}_{max}$					
		Discharge noise			Radiated noise		
		Inlet static pressure (Pa)					
		100	200	500	100	200	500
2-05	200	< 15	< 15	< 15	< 15	< 15	< 15
2-06	400	18	19	19	24	25	26
2-08	400	19	19	20	22	22	24
4-08	500	< 15	< 15	< 15	17	17	19
4-10	650	< 15	15	16	20	21	23
4-12	650	15	16	18	21	23	25
5-10	750	21	21	22	26	27	29
5-12	1050	25	25	26	30	32	33
5-14	1000	28	28	29	33	34	36
6-12	1000	< 15	< 15	16	24	25	28
6-14	1300	16	17	19	27	28	32
6-16	1300	16	16	19	26	27	31
7-12	1300	19	21	22	30	31	33
7-14	1700	24	25	27	35	37	39
7-16	2000	26	27	29	39	39	41

Order Code

TFP - E - C - 2 - 10 / BC0 / 400 - 300 - 105

1 2 3 4 5 6 7 8

1 Type

TFP Series fan terminal unit

2 Reheat

E Electric heat coil
H Hot water reheat coil

3 Filter

C Throwaway
No entry

4 Size and spigot

2 Spigot: 05, 06, 08
4 Spigot: 08, 10 ,12
5 Spigot: 10, 12, 14
6 Spigot: 12, 14, 16
7 Spigot: 12, 14, 16

5 Controller

Refer to the product catalogue

6 Fan volume

l/s

7 Maximum primary air volume

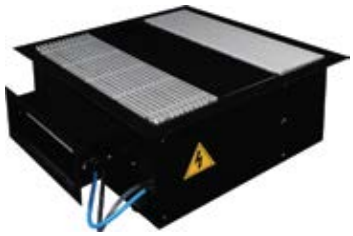
l/s

8 Minimum primary air volume

l/s

Fan Terminal Units Type TFTU . UFAD system

Type TFTU



Key features

- Pressure independent series fan terminal unit suitable for under-floor air distribution system (UFAD).
- Rubber and plastic components are fire retardant to UL 94.
- Designed to be mounted on 600 mm by 600 mm raised floor systems.
- As optional extras, the following can be provided;
  - 750 Watts electric heater with manual reset thermal cut-out switch as standard supply.
  - Washable filter panel.
  - 3-speed fan control.

Recommendations

- Temperature differential of the supply air should range between 2 to 6°C.
- The floor void should have a clear depth of between 400 mm to 600 mm deep depending on the extent of engineering services to be accommodated.

Table 1: Typical performance data for TFTU

Fan speed	Typical flow rate (l/s)	NC Level
Low	80	NC 30
Medium	115	NC 35
High	135	NC 40

Order Code

TFTU / 0 / M / 27-100 l/s

1 2 3 4

1 Type

TFTU Fan unit to suit 600 x 600 floor tile

2 Heater

0 Without heater
H With 750w electric heater

3 Configuration

M Master (complete with wall terminal) Standard Supply
S Slave (without wall terminal)
MR Master and remote (complete with wall terminal and remote control)
BiS Master (complete with wall terminal fix at return air grille)

4 Flow range

Minimum ($\dot{V}_{min}$) to maximum ($\dot{V}_{max}$) flow settings in litres per second.

Note: Flow rate setting during heating mode is generally taken as Vmin setting

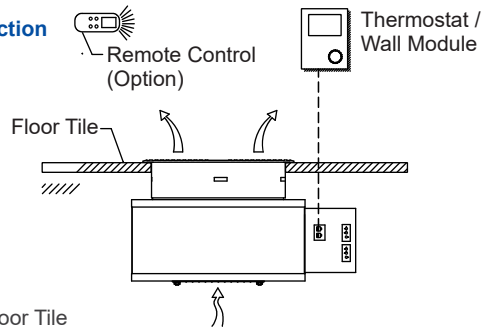
Type FAT

Key features

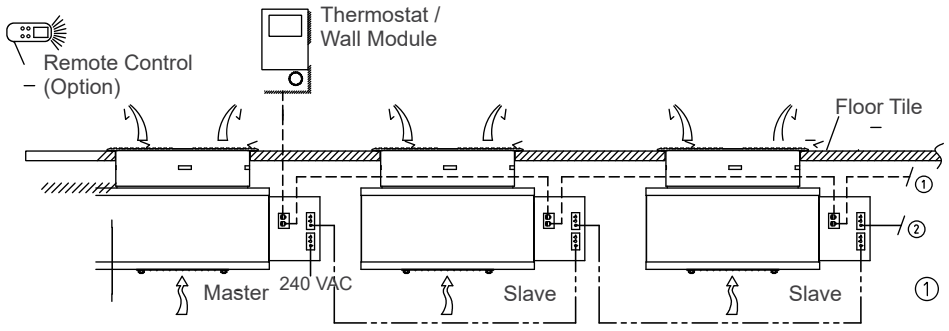
- TROX 3-speed fan terminal units with TROX “FBA/250”.
- Type circular floor diffuser in die cast aluminium complete with wall mounted temperature sensor to each unit.
- The wall sensor allows the building occupants to adjust the room set point temperature, and the fan speed manually or automatically.
- The fan casing is manufactured from 0.7mm thickness galvanized sheet steel with 25mm thickness internal glass fibre insulation for acoustic purpose. Each unit will come with a 3-core PVC insulated power supply cable complete with a BS1363 (IEC 60083 type G) 13 Amp 3-pin plug.

Fan Speed	Air Flow Rate (l/s)	Velocity (m/s)	SPL (NC)
Low	50	1.9	31
Medium	60	2.4	37
High	70	2.8	40

Single Connection



Master Slave Connection



① Communication : Total 8 boxes max.
: 1 Master, 7 slaves

② Power Supply : Total 8 boxes max.

*Total length for communication cable max.200 m

Order Code

FAT / M / 2 / 3 / C
1 2 3 4 5

1 Type

FAT 250

2 Confirguration

M	Master (complete with wall terminal)
MR	Master and Remote complete with wall terminal and wireless remote control)
S	Slave (without wall terminal)
BACM	Bacnet ms/tp Master (complete with wall terminal) - Standard Supply
BACS	Bacnet ms/tp Slave
MODM	Modbus RTU Master (complete with wall terminal) - Standard Supply
MODS	Modbus RTU Slave
BiSM	Buid-in Sensor Master
BiSS	Build-in Sensor Slave

3 Power Supply (Silflex Cable)

2	2 meters - Standard Supply
Z*	Custom length

4 Communication Cable Length

3	3 meters - Standard Supply
Z*	Custom length

5 Fixing Method

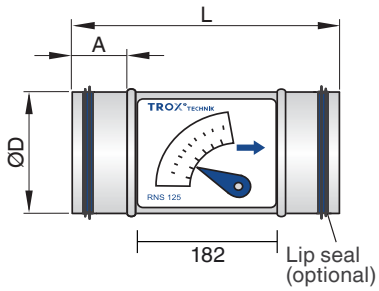
C	Clamping bolt

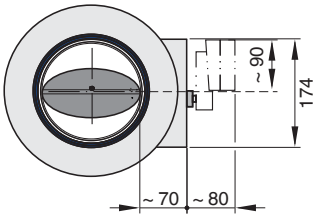
*Indicate the length in meters
E.g Z5 equals to 5 meters legths

Constant Flow Controllers Type RN

Type RN

This is a mechanical self-balancing constant flow regulator suitable for circular ductwork.
It does NOT require an actuator or electronic controller to operate.





Dimensions (mm)

D	$ØD_a$	L
80	79	310
100	99	310
125	124	310
160	159	310
200	199	310
250	249	400
315	314	400
400	399	400

Sound pressure level (dB[A])

Size	$ØD_a$	Air flow range	V vel= 5 m/s	ΔP_g = 100 Pa				ΔP_g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				Without silencer	With silencer Type CS (L=1000mm)	Without acoustic cladding	With acoustic cladding	Without silencer	With silencer Type CS (L=1000mm)	Without acoustic cladding	With acoustic cladding
				L_{pA}	L_{pA1}	L_{pA2}	L_{pA3}	L_{pA}	L_{pA1}	L_{pA2}	L_{pA3}
80	79	11 - 45	26	39	16	22	<	43	20	26	<
100		22 - 90	39	39	19	19	<	43	23	23	<
125	124	35 - 140	61	41	25	17	<	45	29	21	<
160	159	60 - 240	100	44	30	31	<	48	34	35	<
200	199	90 - 360	156	42	26	30	<	46	30	34	<
250	249	145 - 580	244	41	27	31	<	45	31	35	<
315	314	230 - 920	389	40	27	32	<	44	31	36	15
400	399	350 - 1400	628	46	34	46	16	50	38	50	20

Nomenclature

ΔP_g in Pa = Total pressure differential
v in m/s = Upstream velocity
L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account
Lp_{A1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with CS silencer, system attenuation taken into account
Lp_{A2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account
Lp_{A3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

All sound pressure levels are based on 20 µPa, please refer to the product catalogue for system attenuation

Order Code

RN - 00 - 00 / 125 / B50
1 2 3 4

1 Type

RN Volume flow controller
RND Volume flow controller with acoustic cladding

2 Material

00 Basic construction, steel, galvanised
P1 Surface powder-coated colour RAL 7001

3 Size

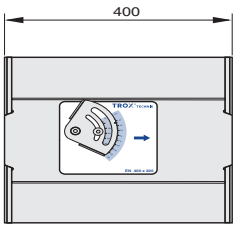
80, 100, 125, 160, 200, 250, 315, 400

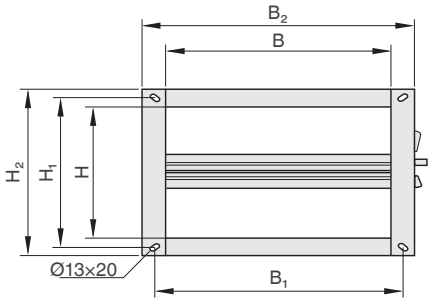
4 Actuator

Please refer to the product catalogue

Type EN

This is a mechanical self-balancing constant flow regulator suitable for rectangular ductwork. It does NOT require an actuator or electronic controller to operate.





Sound pressure level (dB[A])

Size		Air flow range (l/s)	V vel = 5 m/s	ΔP_g = 100 Pa				ΔP_g = 200 Pa			
				Air-regenerated noise		Case-radiated noise		Air-regenerated noise		Case-radiated noise	
				Without silencer	With silencer Type CS (L=1000mm)	Without acoustic cladding	With acoustic cladding	Without silencer	With silencer Type CS (L=1000mm)	Without acoustic cladding	With acoustic cladding
B	H			L_{pA}	L_{pA1}	L_{pA2}	L_{pA3}	L_{pA}	L_{pA1}	L_{pA2}	L_{pA3}
200	100	40 - 160	100	40	30	32	27	48	35	38	32
300	100	65 - 260	150	42	31	34	29	49	36	41	34
300	150	105 - 420	225	42	29	34	27	49	35	40	32
300	200	128 - 520	300	43	27	34	25	52	35	42	33
400	200	210 - 840	400	40	24	33	25	49	33	41	32
500	200	230 - 920	500	38	23	31	23	47	31	39	31
600	200	255 - 1020	600	36	23	31	24	44	31	39	32
400	250	220 - 880	500	41	26	34	25	51	34	42	33
500	250	300 - 1200	625	39	23	32	23	48	32	40	31
600	250	320 - 1280	750	38	24	32	24	47	32	40	33
400	300	315 - 1260	600	44	27	37	27	52	35	44	35
500	300	375 - 1500	750	41	25	35	26	49	33	42	33
600	300	420 - 1680	900	39	24	32	24	47	31	40	31
400	400	420 - 1680	800	46	29	39	30	54	37	47	37
500	400	460 - 1840	1000	43	26	37	27	52	34	45	35
600	400	510 - 2040	1200	41	26	36	27	49	34	44	34
500	500	600 - 2400	1250	46	28	40	30	54	36	48	38
600	500	565 - 2560	1500	43	28	39	29	51	36	47	37
600	600	840 - 3360	1800	45	28	41	31	53	36	48	38

Nomenclature

ΔP_g in Pa = Total pressure differential
v in m/s = Upstream velocity
L_{pA} in dB(A) = A-weighted sound pressure level of air-regenerated noise, system attenuation taken into account
Lp_{A1} in dB(A) = A-weighted sound pressure level of air-regenerated noise with CS silencer, system attenuation taken into account
Lp_{A2} in dB(A) = A-weighted sound pressure level of case-radiated noise, system attenuation taken into account
Lp_{A3} in dB(A) = A-weighted sound pressure level of case-radiated noise with additional acoustic cladding, system attenuation taken into account

All sound pressure levels are based on 20 µPa, please refer to the product catalogue for system attenuation

Order Code

EN / 400 x 200 / B50 (Setpoint re-adjustment option)
1 2 3

1 Type

EN Volume flow controller

END Volume flow controller with acoustic cladding

2 Size

B X H

3 Actuators

Refer to the product catalogue

Volume Flow Limiters Type VFL

Type VFL

This is a mechanical self-balancing damper that does not require an actuator and controller to regulate the air flow in the duct. It saves valuable time on air flow balancing and measurement on site. It is easy to set to the required air flow on site. Once it is done, the device can be inserted into the duct to operate as a self-balancing damper.

Key features

- Easy to set the flow rate and install.
- Air flow accuracy of ± 10%.
- Damper blade and housing are made from fire retardant plastic (UL 94 V1).
- Recommended operating temperature range is between 0 and 50°C.
- Recommended storage temperature range is between -20 and 60°C.

Table 1: Quick Selection for 'VFL' units

Duct/ Unit size (mm)	Length, L (mm)	Flow range (l/s)		SPL in dB(A) at	
		$\dot{V}_{min}$	$\dot{V}_{max}$	$\Delta P_{g=}$ 50 Pa	$\Delta P_{g=}$ 100 Pa
80	86	4	25	28	35
100	100	4	33	32	38
125	118	11	57	36	42
160	148	14	97	35	42
200	175	17	158	31	37
250	220	35	250	31	39

Order Code

VFL / 100

1 2

1 Type

VFL Volume flow limiters

2 Size Reference flow rate, V[1)]

	m^3/h	l/s
80	35	10
100	70	19
125	100	28
160	150	42
200	290	81
250	450	125

[1)] Factory setting of different flow rate setpoint values can be offered at extra costs, only for quantity as of 50 per each size and flow rate. Please refer to the product catalogue for range of values available as a function of size.

Type DS

The 'DS' Type rectangular attenuator is made from galvanised sheet steel with 40 mm wide Doby slide on flanges. The infill acoustic material is fire retardant and complies with Class 'O' Building Regulations. The infill acoustic material is protected with a lining which prevents fibre erosion. This was successfully tested against fibre erosion for up to 30 m/s. This is available in galvanised or stainless steel construction.
Vertical or horizontal bend construction is also available on request.

DK Type splitters can be supplied separately to be installed in AHU section or builder's work duct by others. For detail selection, please contact TROX.

Table 1: Quick selection table for DS20 to maintain a design Noise Criteria of NC 40

Duct height (mm)	Duct width (mm)	300	350	400	550	600	700	800	900	1050	1200
	Type DS20 -	100	150	200	75	100	150	200	100	150	200
200	Flow, Vmax (m^3/s)	0.342	0.539	0.712	0.506	0.684	1.078	1.424	1.026	1.617	2.136
	ΔP (Pa)	97	81	66	124	98	81	66	98	81	66
300	Flow, Vmax (m^3/s)	0.513	0.809	1.068	0.759	1.026	1.617	2.136	1.539	2.426	3.204
	ΔP (Pa)	95	78	64	120	96	78	63	96	78	63
400	Flow, Vmax (m^3/s)			1.424	1.012	1.368	2.156	2.848	2.052	3.234	4.272
	ΔP (Pa)			62	118	95	77	62	95	77	62
500	Flow, Vmax (m^3/s)				1.265	1.710	2.695	3.560	2.565	4.043	5.340
	ΔP (Pa)				118	94	76	61	94	76	61
600	Flow, Vmax (m^3/s)					2.052	3.234	4.272	3.078	4.851	6.408
	ΔP (Pa)					94	76	61	94	76	61
700	Flow, Vmax (m^3/s)						3.773	4.984	3.591	5.660	7.476
	ΔP (Pa)						75	61	94	75	61
800	Flow, Vmax (m^3/s)							5.696	4.104	6.468	8.544
	ΔP (Pa)							60	93	75	60
900	Flow, Vmax (m^3/s)								4.617	7.277	9.612
	ΔP (Pa)								93	75	60
1000	Flow, Vmax (m^3/s)									8.085	10.680
	ΔP (Pa)									75	60
1100	Flow, Vmax (m^3/s)										11.748
	ΔP (Pa)										60
1200	Flow, Vmax (m^3/s)										12.816
	ΔP (Pa)										60

Table 2: Insert Loss for 600 mm long DS20 attenuator

Product type @ 600 mm long	Insert Loss, De (in dB) at Octave Band Freq. (Hz)					
	125	250	500	1000	2000	4000
DS20-200	3	8	16	18	13	8
DS20-150	3	9	20	23	17	11
DS20-100	4	11	25	31	22	15
DS20-75	5	12	29	36	26	18

Order Code

DS / 0 / 20 - 100 / 0 / 800 x 800 x 1200
1 2 3 4 5

1 Type

DS Attenuator type
DK Splitters only to be installed in ductwork by others

2 Construction variants

0 With vertical air ways (Standard supply)
For other variants, please refer to the product catalogue

3 Width of splitter and air gap

4 Material

0 Galvanised steel (Standard supply)
304 Grade 304 stainless steel
316 Grade 316 stainless steel

5 Attenuator size

Standard length (mm) 600, 900, 1200, 1500, 1800, 2100

Circular Duct Silencers Type CA

Type CA

Key features

The outer casing and the internal perforated duct of this circular attenuator is made from galvanised sheet steel. This attenuator can be supplied with either 50 mm or 100mm thk non-combustible acoustic insulation that is referred to as 'CA50' and 'CA100' respectively. The 'CA50' and 'CA100' Type attenuators are available in two standard lengths;
a. 500 mm long and,
b. 1000 mm long

Both inlet and outlet connections for this type of attenuator, as a standard supply, are designed for a plain socket and spigot joint. The infill acoustic material is fire retardant and complies with Class 'O' Building Regulations. The infill acoustic material is protected with a lining which prevents fibre erosion. This was successfully tested against fibre erosion for up to 30 m/s.

Table 1: Standard sizes

Unit Size	Inlet spigot conn. (mm)	External Dia (mm)	
		CA 50 500 mm long	CA 100 1000 mm long
4	99	199	299
5	124	224	324
6	149	249	349
7	174	274	374
8	199	299	399
10	249	349	449
12	299	399	499
14	349	449	549
16	399	499	599
18	448	n/a	648

Order Code

CA50 / 5 x 1000 / 00
1 2 3 4

1 Type

CA50	Circular duct silencer
CA100	

2 Size

Standard sizes (mm)	4, 5, 6, 7, 8, 10, 12, 14, 16, 18

3 Unit length

500 mm
1000 mm

4 Joint

00	Plain socket and spigot joint (Standard supply)
SP	Special arrangement

Note
Size 18 is only vailable with CA100 at 1000 mm long

Type NL

The Type NL acoustic louvre provides a positive solution where noise attenuation is required at the weather louvre. This type of louvre is available in either steel or aluminium construction for both 'standard' (Type 'NL') and 'high' (Type 'NLH') acoustic performance options.

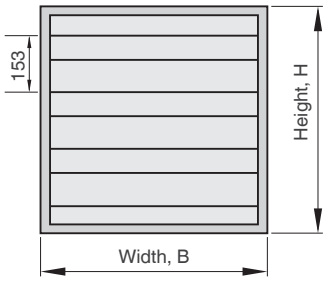
A non- acoustic version (Type 'NLD') is also available to complement these two options to provide a consistent visual external appearance.

Minimum module size : 300 mm (B) x 450 mm (H)
Maximum module size : 1800 mm (B) x 2400 mm (H)

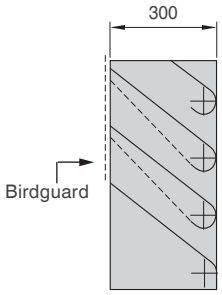
Table 1 : Recommend maximum velocity for 'NL' and 'NLH' Acoustic Louvres with a maximum pressure drop of 70 Pa across the louvre.

Louvre Ht. (mm)	Louvre type	
	NL	NLH
450	1.5 m/s	0.7 m/s
600	2.0 m/s	1.0 m/s
750	2.5 m/s	1.2 m/s
900	3.0 m/s	1.5 m/s
1500	3.0 m/s	1.8 m/s
2400	3.5 m/s	2.0 m/s

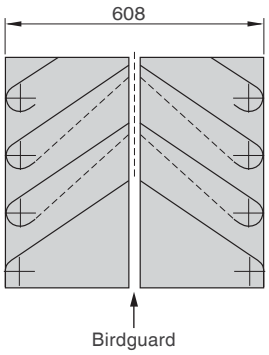
Type NL . NLH . NLD



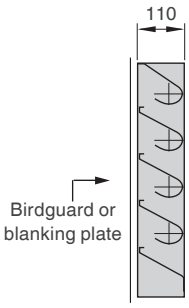
Type NL



Type NLH



Type NLD



Order Code

NL / H / A / 4000 / 1800 / S1 / RAL9010
1 2 3 4 5

1 Type

NL Acoustic louvre

2 Type suffix

H High performance
D Non acoustic

3 Material

S Galvanised steel
A Natural aluminum

4 Size

B x H (mm)

5 Exposed surface

0 No entry: Galvanised (Standard suppy)
S1 Powder coated, specify RAL CLASSIC colour

X-Fan Type Ventilation Fans

Axial Fan AXN / AXO

Axial Fan high pressure “ temperature max. 60 C/80 C

Axial Double Fan

ZAXN
Axial Fans for car park ventilation and higher pressures
(2 AXN in line impeller with 6/9/12 blades)

Centrifugal Fan

RZH-R
Centrifugal Fans double inlet, belt drive

Centrifugal Fan

REH
M Centrifugal Fans single inlet , direct drive

REH
R Centrifugal Fans single inlet , belt drive

Smoke Exhaust Fans - BVDAX

Easy installation
-Casing , dampers , fan and roof base form one unit
-Integrated roof base is suitable for flat and pitched roofs (0-25 / 0-35)

Powerful
-Volume flow rates up to 100.000 m 3 /h

Versatile
-All X FANS axial fans can be integrated

Easy electrical installation
-Fan drive and actuator for outlet damper are prewired
-Terminal box placed outside with easy accees
-Supply cable can be passed through the fan casing

Smoke Exhaust Fans - BV DAX

Building envelope is tight and thermal insulated
-Fan casing double shell
-Tight closing dampers
-No formation of condensation
-Reduced sound emission

Modern and lawful
-Fullfills the energy saving regulations (EnEV)

Certified safety properties
-Integrity for F200, F300 und F400

Weatherproof and robust
-Fulfills EN 12101 3 regarding snow and windload SL1000

Lightweight and durable
-Casing is made of aluminum , corrosion protection class C5

BVD Smoke Exhaust Roof Fan F400 / F600

Smoke Exhaust Fans - Axial Fan BVZAXN with VD-System

Example with type: Axial fan BVZAXN - F600
X-FAN System contains
VME : Flow-measuring device
VD : Fan diagnosis system

Smoke Exhaust Fans - Axial Fan BVAXN 8/56

Smoke Exhaust Fans BVW-D

Smoke Exhaust Fan for wall installation

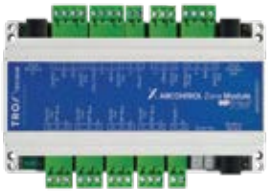
X-AIRCONTROL - System Components

Zone Modules

Analogue (0-10V)

X-AIR-ZMO-ANA
e.g. for volume flow controller with control group EASY and for valve actuators with 0-10V signal

MP-Bus



X-AIR-ZMO-MP
e.g. for volume flow controller with control group BC0 and for valve actuators with MP-Bus (Belimo)

Modbus RTU

X-AIR-ZMO-MOD
e.g. for volume flow controller with control group BM0-J6 and for valve actuators with Modbus (Belimo)

Zone Master Module

X-Air-ZMAS
e.g. for up to 25 Zone modules, with integral webserver and interfaces to higher-level systems

Zone Module for Expansion

X-Air-ZM0-EXT
e.g. for zone expansion of the control system X-Aircontrol for connect additional cooling and/or heating valves or electric air heaters to a zone module

Control Panels

X-AIR-CP-2T

2” colour touch screen incl. temperature sensor and real time clock (RTC)

Sensors

Temperature sensors

X-SENS-TEMP-RH-EXH
Temperature and humidity duct sensor (exhaust air)

X-SENS-TEMP-PT1000
Duct temperature sensor

Air Quality Sensors

X-SENS-CO2-RH
Air quality and humidity sensor (room)

X-SENS-VOC
Air quality duct sensor (exhaust air)

Presence Sensors

X-SENS-PIR-FM
Presence detector (PIR) 360° (for ceiling mounting)

X-SENS-PIR-SM
Presence detector (PIR) 180° (for wall mounting)

Dew Point Sensor

X-SENS-DEWPT

4 Way Distributor

X-SENS-SPLITTER

TROX LabControl

Working place security combined with efficient energy management in the field of laboratory ventilation

The requirements for engineering of air system in laboratory buildings are complex and demanding. There is a general need to protect laboratory personnel from dangerous substances whilst simultaneously optimising energy usage.

The LABCONTROL system offers a customised solution including the regulation and monitoring of individual fume cupboards and rooms, all the way up to the provision of an entire laboratory building ventilation system.
This is undertaken taking into account the related standards and regulations, e.g., EN 14175 or DIN 1946, Part 7.

To provide the necessary fast response times, room pressure and room temperature controls can be combined. The LABCONTROL product family specifically addresses these requirements electronically- or alternatively we can offer pneumatic options.

The electronic controller uses analogue -and/or digital signals (LonWorks) for communication. Efficient systems, centralised measurement and monitoring of all system parameters, e.g. error messages, provides increased security. An ability to rapidly modify a system offers greater flexibility. Remote access allows diagnostics and adjustment of parameters without incurring large personnel and time costs.

To achieve such a total concept, requires close co-operation at the design stage of a project between consultants, the end users and the equipment manufacturers (laboratory furniture, air and control engineering). The early coordination of design in the long term can simplify the achievement and maintenance of excellent safety and comfort conditions within the laboratory area.

Fume Cupboard Control

The TCU3 or TCU-LON II control units are mainly used for controlling fume cupboards with variable volume flow rates. This is done by intake velocity/volume flow cascade control. All requirements of EN 14175, BS7258 and ASHRAE standard are met. This controller offers the highest possible level of safety while remaining economical.
For use as a fume cupboard controller, the TCU-LON II is combined with a TROX volume flow control device (e.g. TVLK).

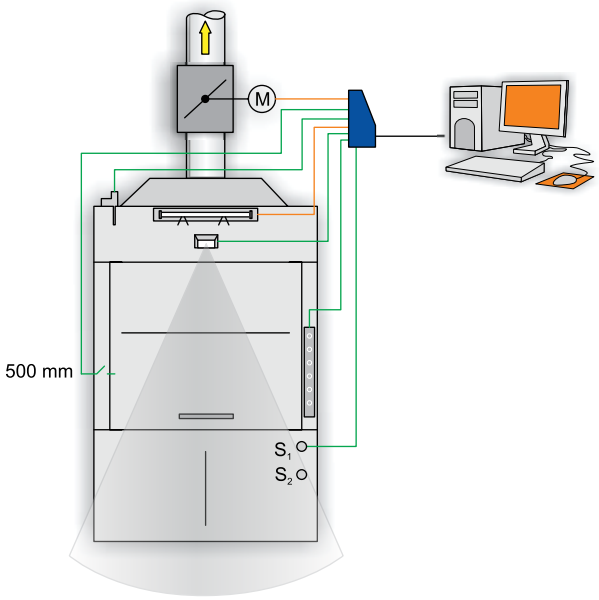
The unit consists of the TCU-LON II controller with an integrated function control and the volume flow control device with actuator and control damper. Also included in the delivery is an operator terminal for user operation of the controller.

In addition, the VS-TRD face velocity transducer, supplied separately for mounting onto the fume cupboard, measures face velocity without contact, moving parts or wear. The sash window can be adjusted in its vertical or horizontal direction. The inter connection of a number of fume cupboards is also possible. The measurement system records the intake velocity independently of the location of the opening.

Application example 1: Individual fume cupboard controller as stand-alone solution

Area of application:
- A fume cupboard controller can be used as a stand-alone device.
- All variants of fume cupboard control are possible
- The operating modes and special functions for fume cupboard control can be adjusted using the control panel or digital switching inputs
- External volume flow rates from extractor arms and hoods can be included

In addition, an expansion module that provides a communication interface, e.g. EM-LON, can be used for the operating mode default setting or for requesting actual values through a central BMS.



Air Filters Product Summary

Activated Carbon Filters

Activated carbon filter catridges
Activated carbon filter cells
Activated carbon filter inserts

Type KSFS Ducted HEPA filter units for critical requirements

Duct casing for installation into ductwork, with or without prefilter.
Double-groove service board for contamination-free filter change.
The basic unit can be combined to a filter unit system with entry spigot.
Duct casing for installation into ductwork.
Fitting of filter elements for the separation of suspended particles such as aerosols, toxic dusts, viruses and bacteria from the supply or extract air.

Type TFC, TFP HEPA terminal filter units

For critical air purity and hygiene requirements.
Used in medicine, biology, pharmaceuticals and sensitive technical areas.
Constructions with shut-off damper or volume flow controller.
Different faces available: ADLQ, DLQ, DLQL, LF, FD, TDF, VDWF, PCD, AIRNAMIC

Type MFP Minipleat filter panels used as HEPA filters

High efficiency filters for very critical requirements of air purity.
Used for industrial, research, medical, pharmaceutical and nuclear engineering applications.
Various dimensions and constructions.
Filter classes: ePM10, ePM1, E11, H13, H14
Filter frames made of aluminum, galvanized steel frames, stainless steel frames, plastic or MDF.

Type TFM HEPA filter modules

For ceiling installation in clean room technology.
Casing with clamping mechanism for the HEPA filter.
Individual casing can be combined into ceiling sections.

X-CUBE

The New TROX Air Handling Unit

- For even more energy efficiency and better quality with less coordination effort.
- For the ventilation of rooms and entire buildings for filtering, heating, and cooling the air, for heat. recovery as well as for humidification and dehumidification, and for volume flow rates of up to 86,000 m^3/h.
- Flexible frame construction, completely covered externally by thermally insulated panels or doors.
- Easy installation, maintenance and cleaning.
- Significantly reduced wiring workload due to flexible control and regulation based on fieldbus technology.
- Special hygiene construction variant according to AHU Guideline 01 (RLT-Richtlinie 01) for use in hospitals and laboratories; weatherproof construction variant for outdoor installation.

X-CUBE X2

Stable and Smart

Ideal for solutions up to 25,000m^3/h
The X-CUBE X2 is a newly developed series for small to medium volume flow rates, designed specifically by TROX to extend the X-CUBE range.

It provides low and medium volume flow rates, can be configured to virtually any application and comes with a range of new features.
One new feature is the X-CUBE Configurator, a web -based tool that helps you with selecting and sizing air handling units.

X-CUBE X2 Compact

Top Performance, Small Size - Compact. Efficient TROX

- Volume flow rates of 600 to 6,000 m^3/h
- Maximum energy efficiency
- Powerful EC fans
- High level of hygiene (conforms to VDI 6022)
- Heat recovery with rotary heat exchanger or counter flow plate heat exchanger
- Air filtration with TROX minipleat or NanoWave filters
- Ready-to-operate unit (plug and play)
- Integral, bus compatible controls
- Intuitive operation
- Integration with advanced ventilation and air conditioning systems
- Optional weatherproof version with powder-coated metal roof to protect the unit and accessories, with perimeter drip edge, RAL 7012

TROX® TECHNIK