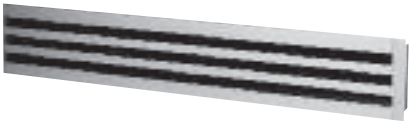
Linear Slot Diffusers

Description

For supply or extract air, fully adjustable linear slot diffuser with unique air pattern control design. The air pattern can be adjusted in situ or factory set to suit design requirements. Suitable for wall or ceiling mounting.



Construction

From extruded aluminium sections, frame 1.6mm thick, anodised matt black air pattern controllers, 3.0mm thick traversing nylon bearings.

Size

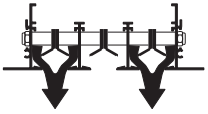
Height of slot diffuser is determined by the number of slots required, usually to a maximum of eight slots. The slot diffuser is designed to form long continuous lengths but is also effective in short sections.
Weight for 1 slot is 4.0kg per metre length, for each slot thereafter, add 2kg per metre length.

How to Specify

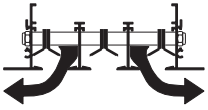
STATE QUANTITY, THE PRODUCT CODING AND THE SIZE WIDTH X HEIGHT
e.g. 10 Qty. Y4S40+8C 3000 Long.

Frame Style	Options	Slot Quantity	Accessories
Y4 30mm Border 2 End Caps	S Supply	1 > 8	0 None
Y3 30mm Border 1 End Caps	E Extract		V Damper
Y2 30mm Border No End Caps	L Supply c/w Equalising Grid		

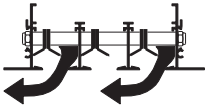
Fixings	Finish
8 Concealed Rear Bracket	C PPC BS/RAL Colour
4 Drop Rod Lugs	A Satin Adonised
	D Mill Finish
	B PPC BS00E55 White



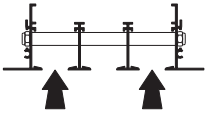
Supply (Vertical Projection)



Supply (2 - Way)

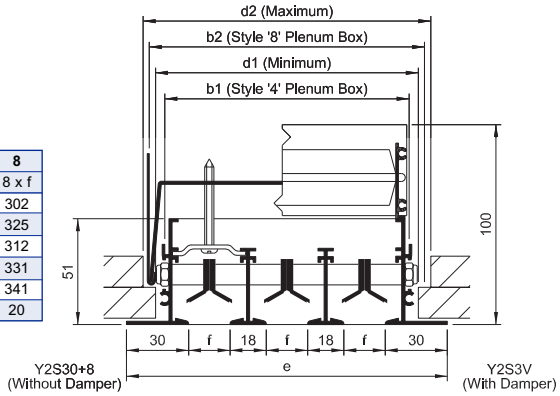


Supply (1 - Way)

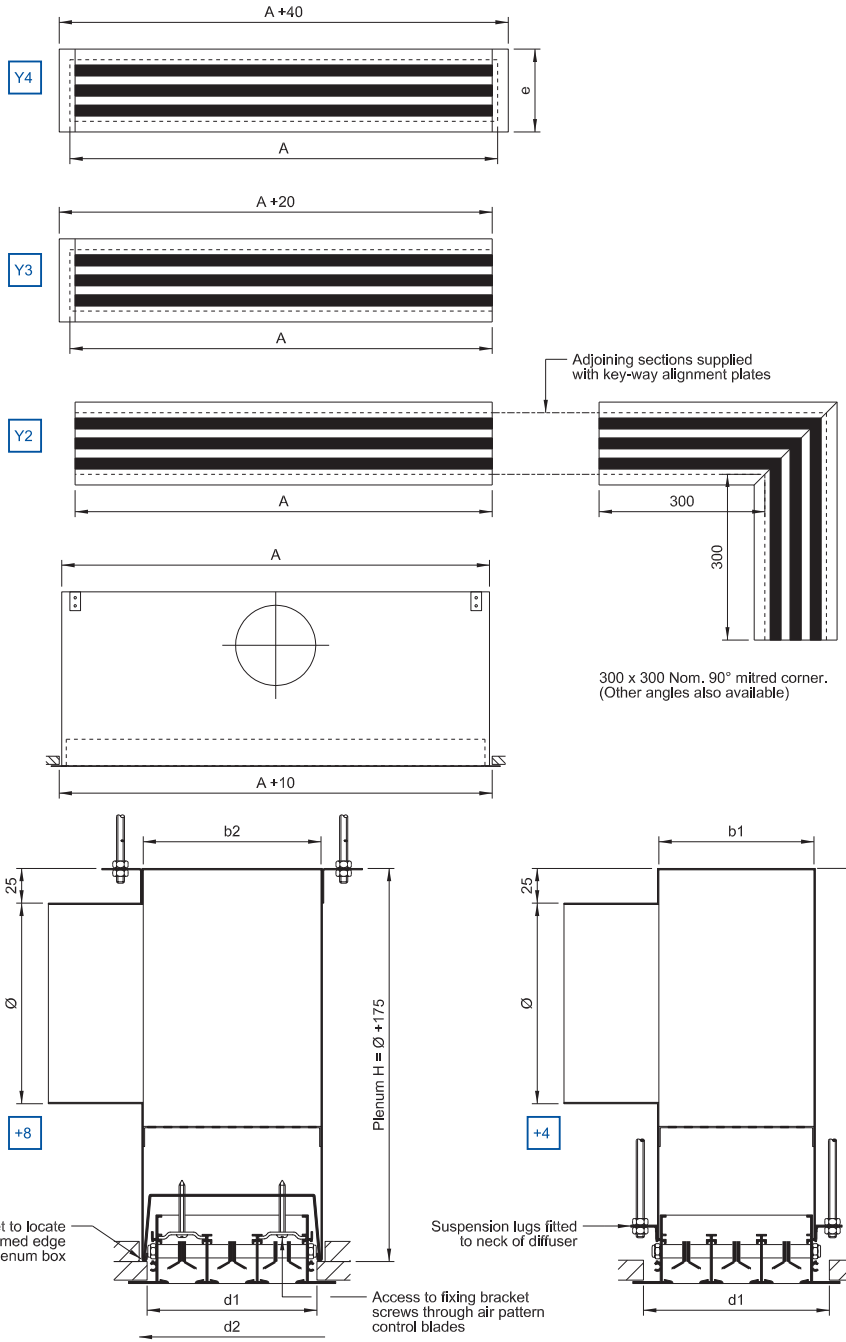


Extract

f	1	2	3	4	5	6	7	8
Slot Qty	1xf	2xf	3xf	4xf	5xf	6 x f	7 x f	8 x f
b1	41	78	116	153	191	228	265	302
b2	61	99	138	174	212	250	287	325
d1	50	88	127	163	201	238	275	312
d2	67	105	144	180	218	256	293	331
e	80	117	155	192	230	268	304	341
f	20	20	20	20	20	20	20	20



Linear Slot Diffusers



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Technical Data Linear Slot Diffusers (Y - Model)

Application

The inverted 'Y' form air deflection vanes provide full adjustment of the air pattern through 180° thus giving the option of horizontal, vertical or intermediate airflow and with multi-slot options (from 1 to 8 slots wide). A 2-way opposite air pattern is available. The integral matt black air deflection vanes can be adjusted in situ without affecting the pressure drop and noise rating. A highly effective diffuser in either short length form or in long continuous lengths. Single modules to 3000mm, hairline jointing and good alignment of multiple units ensure neat continuous appearance.

Performance Data

Suitable for both cooling and heating applications with normal temperature differentials to 11°C. Data is based upon a 1200mm long diffuser module, a 2.7M high flush ceiling and a cooling temperature differential (Td) of 10°C. The effect of shorter and longer difusers is given as follows.

Fig. 1.

Diffuser Length (metres)	Lt (Throw Distance in metres)	NC ±
0.3	Lt x 0.60	-2
0.5 - 1.0	Lt x 0.90	-2
1.2 - 1.8	Lt x 1.00	0
2.0 - 3.0	Lt x 1.10	+3
3.5 - 6.0	Lt x 1.15	+5
6.0 +	Lt x 1.20	+8

Note: When using continuous length diffusers with short alternating active and inactive sections the above factors need not be applied.

Greater ceiling heights

Floor to ceiling heights of greater than 2.7M will affect the throw. As a guide, the throw (Lt) will be reduced by 5% for each .25M increment above 2,7M to a maximum of 30%.

Exposed duct mounting

Where there is no ceiling to support the air stream the throw (Lt) will effectively be reduced by approximately 33%. To compensate increase the desired throw by x1.5 and select from the tables (fig. 3.) as normal.

Noise levels

Noise ratings in the form of 'NC' levels are given in the performance tables and are based on an 8dB deduction for average room absorption and sound power level (LW) 10^{-12} W.

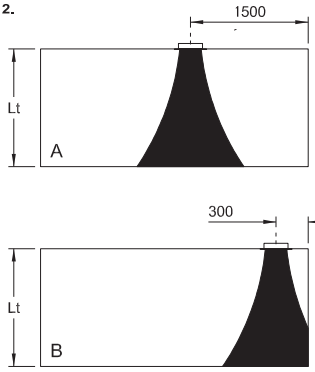
Throw (Lt) and terminal velocity

The throw (Lt) in metres is the distance from the outlet to the opposing wall or half the distance between opposing discharge diffusers. The short throw values given in the tables is that distance at which the air stream velocity has been reduced to Vt 0.5M/s and the longer throw is the distance at which the air stream velocity has been reduced to Vt 0.25M/s.

Vertical down blow

For vertical projection of the air stream consider Fig. 2. diagrams A and B then apply the appropriate correction factor to the **horizontal** throw values (Lt) given in Fig. 3. and the correction factor in Fig. 1. if applicable.

Fig. 2.



	-10°C (td)	± 0 (Ti)	+10°C (td)
A	Lt x 0.75	Lt x 0.60	Lt x 0.40
B	Lt x 1.00	Lt x 0.85	Lt x 0.60

Td = Temperature differential Ti = Isothermal

Selection example

i) In terms of performance and aesthetics a long narrow slot diffuser should be selected in preference to a short wide one. For example a 6 metre long x 2 slot diffuser would be preferable to a 1.5 metre long x 8 slot unit though both sizes have identical outlet areas.

ii) The ends of a fully active supply air slot diffuser should finish between 20% and 10% of its total length from any adjacent wall to avoid turbulence and possible occupancy discomfort in that vicinity.

iii) Data given in tables (Fig. 3.) is based upon air being diffused in one direction only. Diffusers can of course be set to diffuse in opposite directions, thus for 2-way air pattern divide the total air volume propotionately. **Example:**

Select a diffuser approximately 10 metres long to be mounted in the ceiling (positioned centrally in plan view) to supply air in opposite directions producing a throw distance (Lt) of 9 metres. The total air volume being 1600 l/s, the ceiling height 2.7M and NC35.

a) Determine the total air volume in each direction.

$$\frac{1600\ \text{l/s}}{2\ \text{(directions)}} = 800\ \text{l/s per direction}$$

b) From Fig. 1. a 10 metre long diffuser will increase the throw distance (Lt) given in the performance table Fig. 3. by x1.2 and add +8NC.

c) Determine the air voume per metre of diffuser.

$$\frac{800\ \text{l/s}}{10\ \text{(metres long)}} = 80\ \text{l/s per metre}$$

d) Enter Fig. 3. at volume 80l/s and you will find that a 2-slot diffuser gives a 7.5metre horizontal throw (Lt) and NC20.

e) Apply the correction factors from Fig.1:
7.5 (Lt) x 1.20 = 9 metre throw
NC 20 + 8NC = 28NC.

Selection

Two slots per direction = 4-slot diffuser x 10 metres long.
1 qty. Y4S40+8B 10 metres long

Technical Data Linear Slot Diffusers (Y - Model) Supply

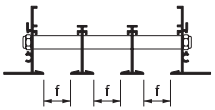
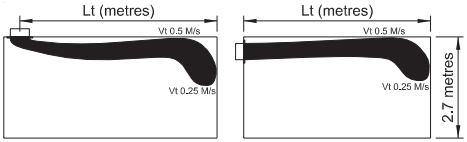


Fig. 3.



qm (l/s) (1000mm)	f = 1 > 8 (Slot Quantity)	Ps (Pascals)	Ceiling Mounting	Sidewall Mounting	NC
20	1 x f	5	1.5 - 2.6	1.0 - 1.6	-
30	1 x f	9	2.5 - 4.0	2.0 - 3.0	18
40	1 x f	20	4.4 - 5.6	3.8 - 5.0	22
	2 x f	6	3.3 - 5.2	2.7 - 4.2	14
50	1 x f	27	4.8 - 6.1	4.2 - 5.7	24
	2 x f	10	3.6 - 5.6	3.1 - 4.7	17
	3 x f	5	2.5 - 4.0	2.0 - 3.2	-
60	1 x f	38	6.8 - 8.6	5.8 - 7.7	29
	2 x f	11	5.0 - 6.7	4.0 - 5.8	17
	3 x f	6	3.0 - 5.2	2.5 - 4.3	-
	4 x f	3	2.5 - 3.6	2.2 - 3.0	-
70	1 x f	42	7.5 - 10.5	6.2 - 8.4	34
	2 x f	13	5.3 - 7.1	4.4 - 6.1	18
	3 x f	5	4.0 - 5.6	3.0 - 4.7	-
	4 x f	3	2.8 - 4.0	2.5 - 3.4	-
80	2 x f	15	5.5 - 7.5	4.7 - 6.5	20
	3 x f	6	4.7 - 6.0	3.5 - 5.2	14
	4 x f	3	3.2 - 4.7	2.8 - 3.7	-
90	2 x f	20	7.0 - 9.0	5.8 - 7.7	24
	3 x f	11	5.8 - 7.4	5.0 - 6.5	15
	4 x f	6	4.0 - 5.6	3.3 - 5.0	-
100	2 x f	29	8.2 - 10.0	7.1 - 8.8	28
	3 x f	13	6.5 - 8.0	5.5 - 7.0	19
	4 x f	6	4.7 - 6.1	4.0 - 5.4	14
	5 x f	4	3.5 - 5.0	2.8 - 4.5	-
125	2 x f	38	9.0 - 11.3	7.0 - 10.0	34
	3 x f	18	7.0 - 9.0	5.8 - 7.7	25
	4 x f	11	5.3 - 6.6	5.0 - 6.3	17
	5 x f	8	4.5 - 5.7	4.0 - 5.4	-
	6 x f	5	3.7 - 5.3	3.0 - 5.0	-
150	3 x f	27	8.2 - 10.6	7.0 - 9.3	29
	4 x f	16	7.1 - 9.0	6.3 - 8.4	20
	5 x f	13	5.6 - 7.2	4.9 - 6.3	17
	6 x f	10	4.7 - 6.1	4.2 - 5.4	15
	7 x f	7	4.1 - 5.3	3.3 - 4.5	-
175	3 x f	33	9.6 - 11.4	7.9 - 10.2	34
	4 x f	20	7.8 - 9.8	6.8 - 8.9	26
	5 x f	16	6.2 - 7.8	5.9 - 7.2	19
	6 x f	12	5.6 - 7.1	4.8 - 6.3	17
	7 x f	10	4.8 - 6.0	4.2 - 5.6	15
	8 x f	7	3.9 - 5.1	3.4 - 4.6	14
200	3 x f	38	11.5 - 14.0	8.7 - 11.3	41
	4 x f	26	9.4 - 11.7	7.8 - 10.2	30
	5 x f	19	8.1 - 9.4	6.6 - 8.8	26
	6 x f	12	6.5 - 8.2	5.8 - 7.3	21
	7 x f	9	5.9 - 7.3	5.0 - 6.2	18
	8 x f	7	4.8 - 6.3	4.0 - 5.3	16
250	4 x f	43	11.3 - 13.6	9.2 - 11.2	38
	5 x f	30	9.0 - 11.2	7.3 - 9.5	31
	6 x f	22	8.4 - 10.0	6.7 - 9.0	26
	7 x f	15	7.5 - 9.1	5.5 - 7.5	22
	8 x f	11	5.8 - 7.5	4.7 - 6.5	19
300	5 x f	39	11.2 - 13.8	9.0 - 11.5	36
	6 x f	26	10.0 - 11.8	8.0 - 10.0	32
	7 x f	19	8.4 - 10.5	6.0 - 8.5	25
	8 x f	14	6.0 - 8.3	5.0 - 7.0	21
350	6 x f	35	12.0 - 15.0	9.0 - 12.0	38
	7 x f	25	10.5 - 13.0	8.5 - 11.0	33
	8 x f	20	8.5 - 11	7.0 - 10.0	29
400	6 x f	44	13.8 - 17.2	-	43
	7 x f	31	11.6 - 14.0	-	39
	8 x f	26	9.8 - 12.7	-	32

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Technical Data Linear Slot Diffusers (Y - Model) Extract

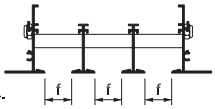
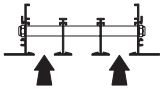


Fig. 4.



1 x f	qm (l/s)	30	50	60	80	90	100	120	-	-
	Psn (Pa)	6	9	16	30	38	57	80	-	-
	NC	-	-	-	19	24	30	36	-	-

2 x f	qm (l/s)	80	90	110	120	140	150	170	190	230
	Psn (Pa)	7	11	18	22	27	33	38	45	63
	NC	-	-	15	18	22	24	27	31	38

3 x f	qm (l/s)	110	120	140	150	170	190	230	270	310
	Psn (Pa)	6	9	12	14	18	24	32	43	55
	NC	-	-	-	-	16	19	23	30	36

4 x f	qm (l/s)	150	190	230	270	310	350	380	420	460
	Psn (Pa)	8	13	17	28	33	39	43	53	65
	NC	-	15	19	23	26	30	34	38	44

5 x f	qm (l/s)	190	230	270	310	350	380	420	460	540
	Psn (Pa)	9	13	15	19	25	30	38	45	63
	NC	-	-	17	22	25	27	32	37	42

6 x f	qm (l/s)	230	270	310	350	380	460	540	580	610
	Psn (Pa)	5	8	11	17	22	30	37	48	56
	NC	-	-	18	20	24	27	32	37	40

7 x f	qm (l/s)	270	310	350	380	420	460	540	610	690
	Psn (Pa)	8	13	15	19	23	26	30	37	61
	NC	-	-	17	19	24	26	29	33	38

8 x f	qm (l/s)	310	350	380	460	540	610	770	-	-
	Psn (Pa)	10	13	16	20	28	37	53	-	-
	NC	-	-	16	20	27	33	39	-	-