

LINEAR SLOT DIFFUSERS

MODEL CD



AIR IN MOTION

LINEAR SLOT DIFFUSERS

QUALITY AND EFFICIENCY WITHOUT COMPROMISE

Application

Colman Moducel's model CD is a high capacity linear slot diffuser with a curved blade profile specifically designed for applications that require high air volumes with short throws. This makes it particularly suited to VAV systems where its ability to turndown to 20% of maximum air volume whilst still maintaining effective air distribution is crucial. The CD diffuser combines excellent performance with a simple, cost effective design to provide an economic solution to a variety of air distribution requirements.

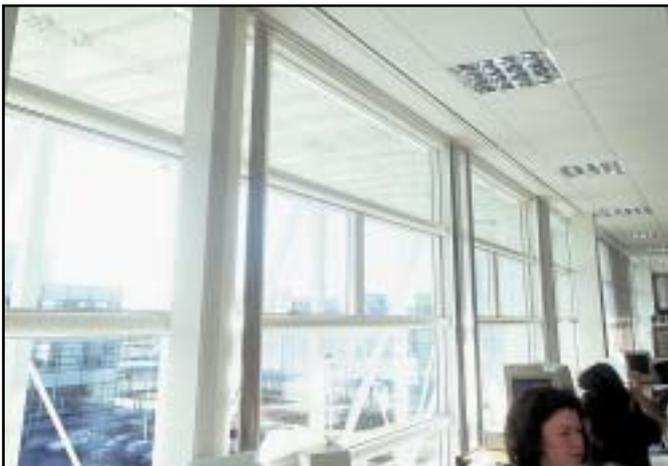


Description

CD linear slot diffuser is designed with no moving parts and is hence tamper proof. It is available in single slot for one way and double slot for two way discharge and has a self supporting hanging method to allow for continuous clip on plenum boxes. The standard diffuser is constructed from high quality aluminium extrusion in maximum one piece lengths of 3000 mm. Continuous lengths are achieved by multiple sections joined by alignment strips giving hairline butt joints. End caps are supplied with single piece diffusers and for end sections of continuous runs. Special profile and angled end caps can be offered. Mitred sections are available as standard.



Single and double slot CD diffuser at the DSS office, Newcastle



Fixings

CD is supplied with support extrusion to allow for fixing to drop rods and for aligning multiple sections. The diffuser is designed to complement the Colman Moducel CND clip on plenum system described opposite and is supplied fitted with the necessary gasket.

Please note a separate brochure is available covering installation details of all Colman Moducel slot diffusers. Please contact us should you require a copy.

Finish

The slot diffuser is available as standard, powder coated in RAL 9010 Matt White. Please refer to the product coding section within this brochure for a list of other standard finishes. Special finishes are available on request.

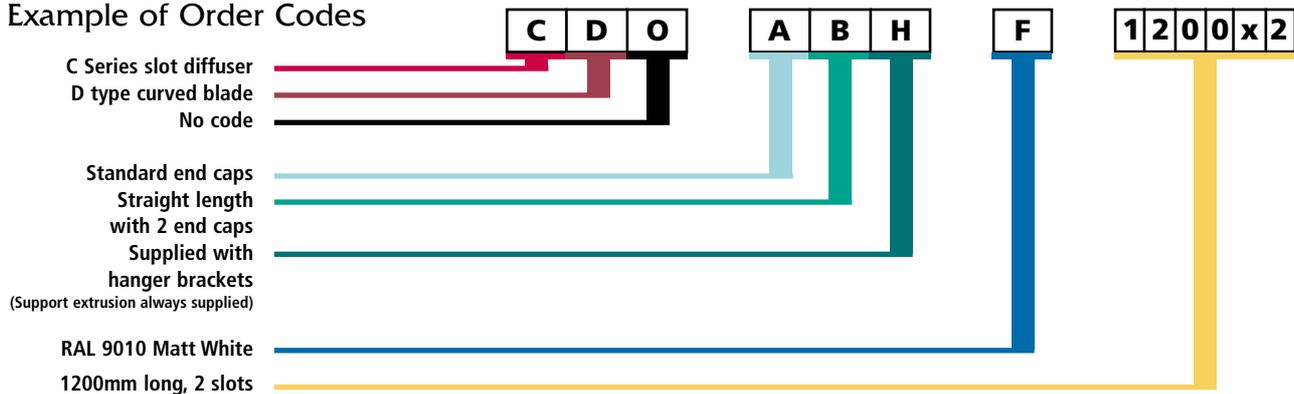
Options and Order Codes

CD Diffusers

SERIES	DIFFUSER	BLADE	ACCESSORIES	ARRANGEMENT	FIXINGS	FINISH
C	D Self supporting curved flange G Std cd diffuser with special outer frame Y Blanking plate	O None	A Std end caps B Std end plates C Non std end caps O None	A Intermediate (No end caps) B Straight - 2 end caps C Straight - R/H end caps D Straight - L/H end caps E Std mitre (Flat ceiling mounted) O None Note: Specify mitre angle, template may be required	O None H Hanger brackets	A Anodised 9 Satin anodised F Ral9010 Matt white O Mill finish C BS00E55 Gloss white H BS00E55 Satin white D BS00E55 Matt white E Ral9010 Gloss white G Ral9010 Satin white 3 Ral9006 Aluminium 1 Special

Note: The items shown in red print above and below and in the order code example below are the standard options for this product. Unless shown otherwise on any quotation or order the units will be supplied in this configuration.

Example of Order Codes



CND Plenum Boxes

SERIES	LINING	INSTALLATION METHOD	ACCESSORIES	ARRANGEMENT	SPIGOT TYPE	SPIGOT SIZE (DIA or SQ - all in mm)
C	L Lined (6mm Bestobell) N Unlined 1 Special	D Clip on plenum with hanger brackets	O None M Mono blade cord operated damper N Mono blade cord operated damper (matt black) P Internally painted matt black Note: Max size mono blade - Ø 400 and 350 Sq	S Supply E Extract	R Round - side entry S Square - side entry T Round - top entry W Round - side entry flush with top X Square - flush with top of unit Y Square - top entry 1 Special	A 100 B 125 C 150 D 200 E 250 F 300 G 350 H 400 J 450 K 500 L 160 M 180 N 315 P 280 R 225 S 355 T 175 1 Special All standard spigots 75mm deep

SPECIFICATION:

The CD slot diffuser is manufactured from 1.5mm extruded aluminium to BS 1474/6063T6. Outer frames are formed from extruded aluminium and contain key ways to facilitate independent suspension of the unit from all surfaces. This shall be achieved by use of support extrusion and suspension brackets. The slots shall be of curved profile and contain no moving parts, to provide control of the air pattern in either direction along the length of the diffuser. Overall width for one slot to be 76mm and two slot to be 120mm.

Selection Information

This page gives details on how to correctly select the CD slot diffuser, together with a worked example. Please read the notes carefully and contact us should you have any queries.

Table 1: Diffuser length correction figures

Active Diffuser Length (m)	Factor	NC Correction
0.3	0.52	-5
0.6	0.88	-2
0.9	0.98	0
1	1	0
1.2	1.04	1
1.5	1.09	2
1.8	1.14	3
2.1	1.17	3
2.4	1.19	4
2.7	1.2	4
3.0+	1.21	5

Table 2: Spigot velocity against NC rating

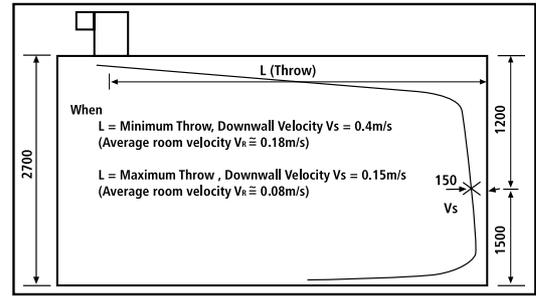
Sound Rating NC	Spigot Velocity m/s
25	2.5
30	3
35	3.5
40	4.5

Table 3: Maximum recommended throw

Ceiling Height	Max Diffuser Throw
2.4m	2.4m
2.7m	3.7m
3.0m	4.8m

Throw

Throw and NC data is given for 1m active lengths for other lengths use the correction figures given in table 1. If two diffusers are to throw towards each other, select an air volume that gives a maximum throw equal to half the distance between the two. The CD diffuser provides a relatively thick airstream due to its high capacity, hence throws should be limited in order to avoid high air velocities in the occupied zone, as per table 3.



Plenums

Select the appropriate spigot velocity to match the NC rating required, as per table 2.

The standard plenum box sizes are suitable for diffuser lengths up to 3.0m for 1 slot diffusers, 1.8 m., for 2 slot diffusers, with spigot on the centre line.

Pressure Drop

The pressure drop is given for the diffuser and plenum combined.

Typical Selection

Given: Room Size of 4.5m long x 3.6m wide x 2.7m high
 Required NC level of 35
 Desired air volume of 0.22m³/s

1) Decide Position of Diffuser:

Assuming the diffuser is positioned 2m from the perimeter wall and 2.5m from the internal zone, hence throws of 2m and 2.5m are required.

2) Calculate Active Length:

For a throw of 2m (min) and 2.5m (max) with an air volume per direction of 0.022m³/s $\therefore 2 = 0.11\text{m}^3/\text{s}$. The CD supply table below shows an air volume of 0.045m³/m has a throw of 1.8 to 2.4m, with a pressure drop of 10 Pa and an NC rating of 17.

$$\dots \text{ Active length} = \frac{0.11}{0.045} = 2.44\text{m}$$

As this length exceeds the maximum recommended plenum length of 1800mm, 2 plenums would be required with their length given by $2.44 \div 2 = 1.22\text{m}$ long.

3) Select Spigot Size:

$$\text{Spigot area} = \frac{\text{Total Volume}}{\text{No. of plenums} \div \text{max allowed velocity}} = \frac{0.22}{2 \div 3.5} = 0.0314\text{m}^2$$

$$\text{Area of 200mm dia. spigot} = \pi r^2 = 3.142 \times 0.1^2 = 0.0314\text{m}^2$$

Therefore a 200mm dia. spigot is acceptable.

Note: Although the basic selection is now made the following points should be checked

Check No 1 - Active Length

As the room is 3.6m wide with an active diffuser length of only 2.44m, it is better to evenly space the two 1.22m plenums along the diffuser. Hence the active length check can be made for 2 single units of 1.22m not a combined unit of 2.44m.

Use the correction factors given in table 1.

$$\text{Minimum Throw } 1.8\text{m} \times 1.04 = 1.9\text{m}$$

$$\text{Maximum Throw } 2.4\text{m} \times 1.04 = 2.5\text{m}$$

... desired throw range of 2 to 2.5m is still acceptable.

Check No. 2 - NC Level

The performance table shows the NC level as 17 and Table 1 gives a correction figure for the active length of +1dB giving a total figure of NC18 for one slot. As we require a 2 slot unit 3dB must be added, giving NC21. Finally, as there are 2 plenums a further 3dB must be added giving NC24 with an 8dB room absorption.

Check No. 3 - Plenum Height

The drawings on the back of this brochure give the standard plenum heights which are suitable for 3m for 1 slot and 1.8m for 2 slot.

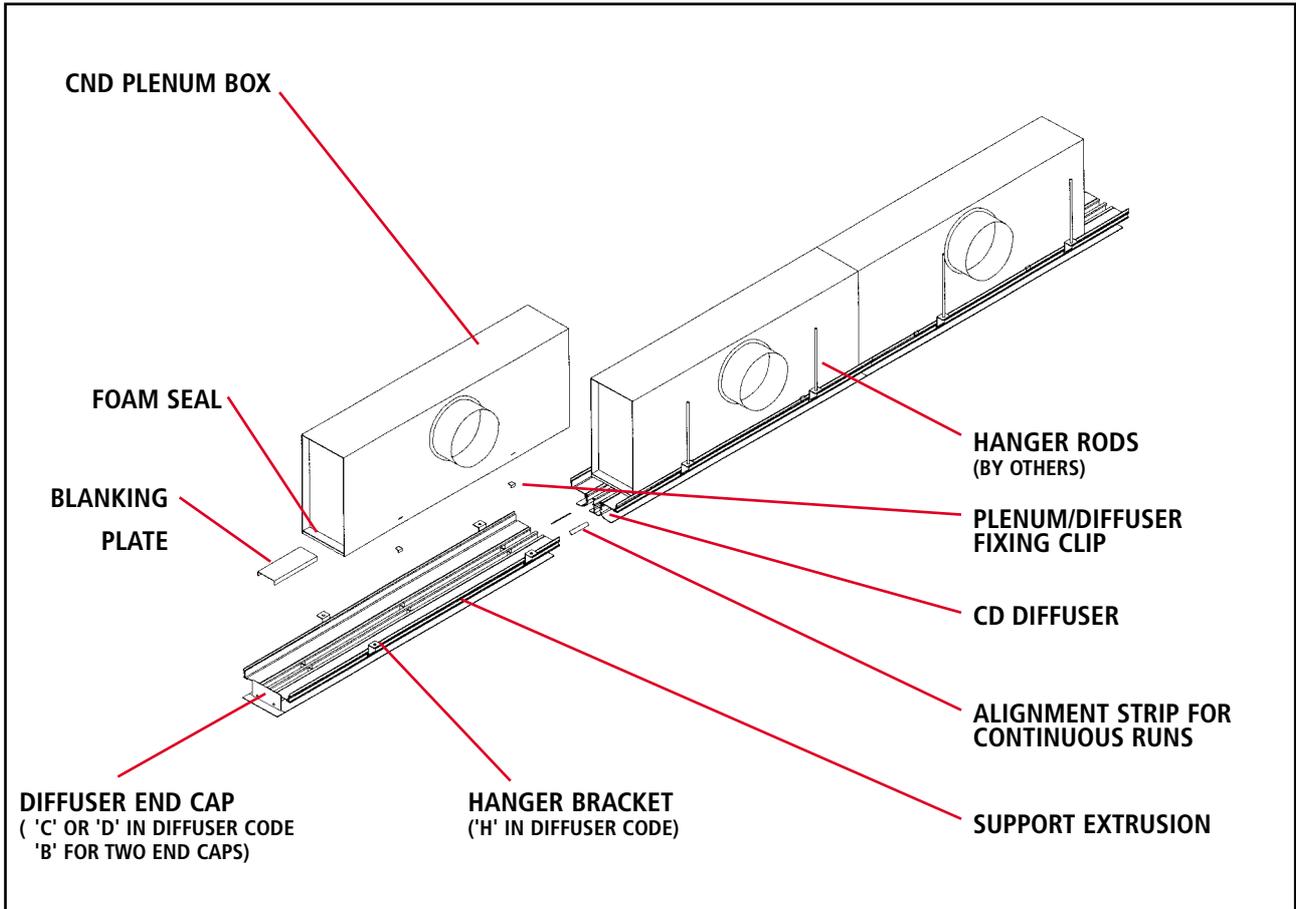
CD Supply and Return

Air Volume m ³ /m	Pressure Drop N/m ²	Throw m		SoundRating Supply NC	SoundRating Return NC
		Min.	Max.		
0.015	1	0.6	1.2	-	-
0.030	4	0.9	1.5	-	15
0.045	10	1.8	2.4	17	23
0.060	17	2.1	3.1	25	31
0.075	27	2.4	3.4	29	36
0.090	39	2.7	4.0	35	41

Note:

- 1) Data is applicable for 1 slot diffuser flush mounted with a horizontal ceiling.
- 2) Data is based on normal temperature differentials on cooling up to 11°C.
- 3) All NC ratings based on room absorption of 8dB, dampers fully open. Where no figure is given in the NC column the rating is <NC 20.

Slot Diffuser and CND Plenum Arrangement Drawing

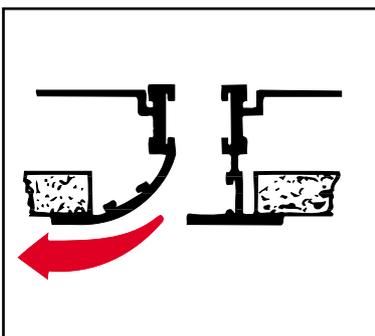


CND Plenum Boxes

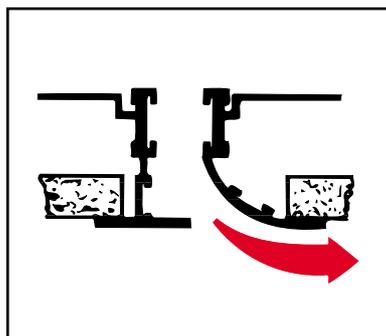
Colman Moducel manufacture a range of high quality, galvanised sheet steel plenum boxes to suit the CD range of slot diffusers. Designed to equalise the air distribution along the diffuser, these plenums are available in standard configurations or purpose made to suit different ceilings, bulkheads or air volumes. Plenums are normally supplied unlined but can be offered with a variety of acoustic lining materials. Supplied to a maximum length of 1800mm the units are manufactured to ensure rigidity. Where lengths exceed this maximum, plenums are supplied in even lengths with a single entry spigot per plenum. As standard, plenums are supplied with a central circular spigot but oval or rectangular versions are also available. The diffuser is first fixed generally, using the support extrusion supplied, and hanger rods supplied by others. The plenum is then clipped to the back.

Optional Air Patterns

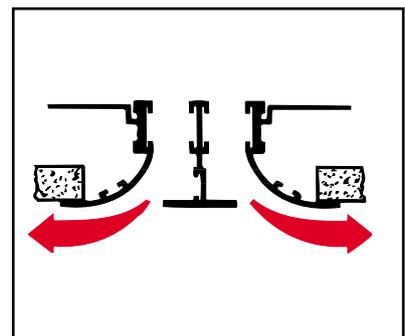
One Way (LEFT)



One Way (RIGHT)

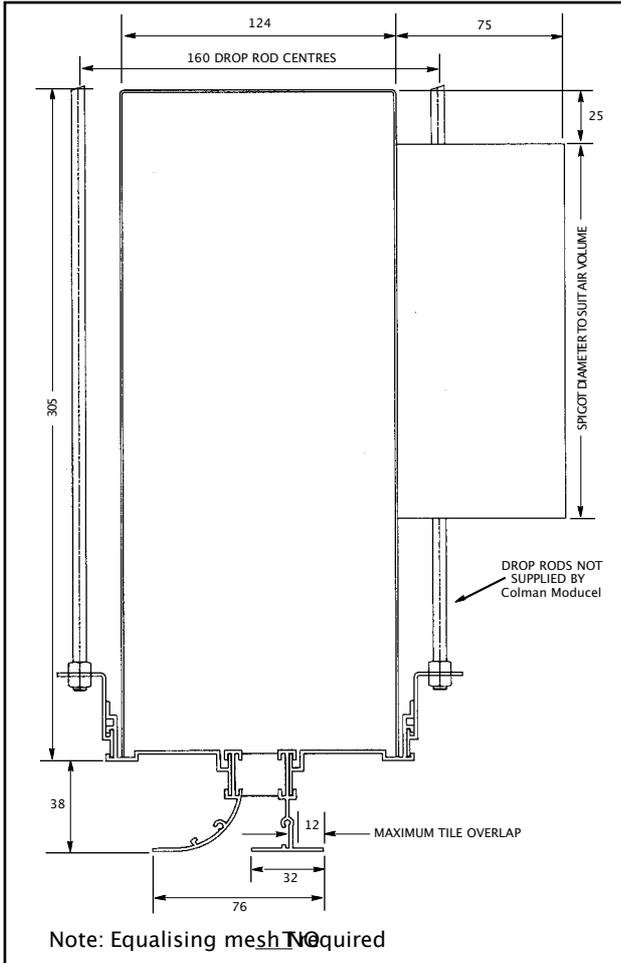


Two Way

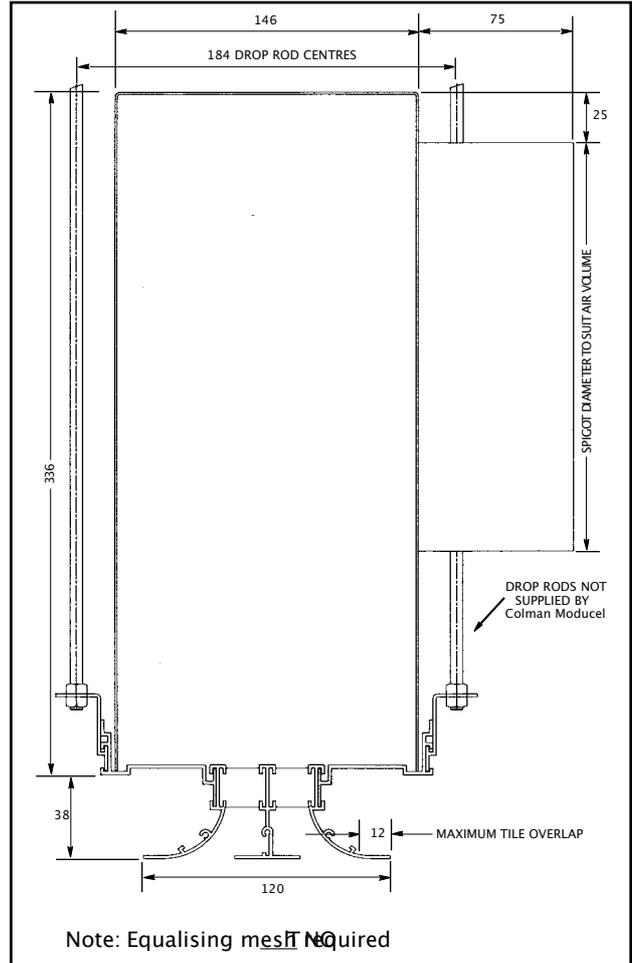


Please note that the handing is required for diffusers with single end caps and for mitred sections and should be given when viewed from the back.

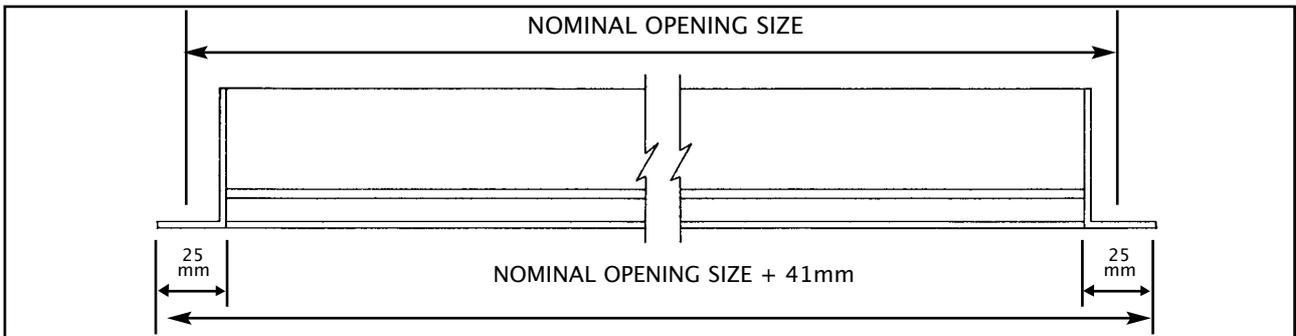
Model CD Diffuser (1 way) with CND Plenum



Model CD Diffuser (2 way) with CND Plenum



Longitudinal Section of diffuser



Weight Kg/m

No. Slots	1	2
Diffuser	2.0	2.5
Plenum	3.75	4.5
Support extrusion included		



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