FDD Submittal

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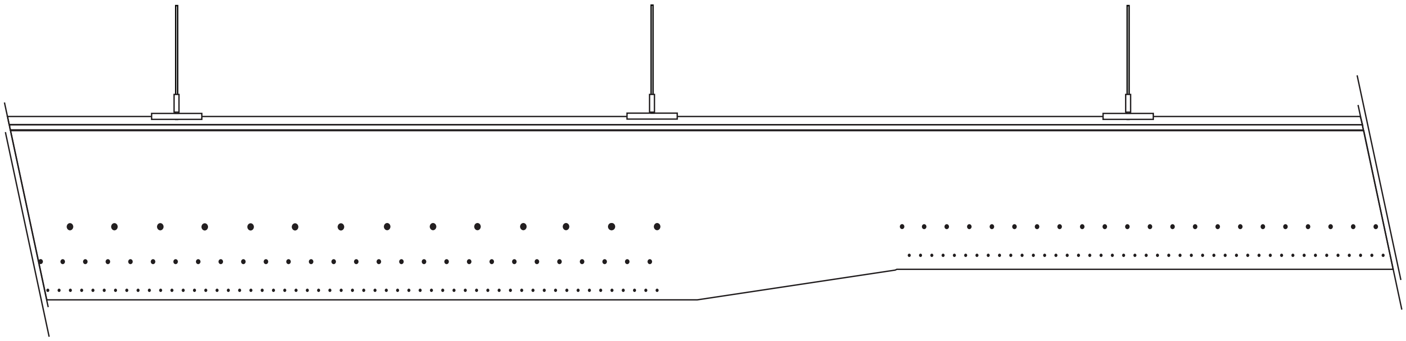
MADE IN CANADA

Date

Project

Engineer

Contractor



The flexible diffuser

- Circular flexible diffuser with perforation
- Made with PVC permeated polyester (Polyvinyl Chloride).
- Made according to the ASTM-D 2136 standard "Standard test method for coated fabrics-low-temperature bend test".
- Qualified to NFPA 701, ASTM E-84 class 1 and CAN/ULC S102-10 standards, "Standard method of test for surface burning characteristics of building materials and assemblies".
- Resistant to mechanical traction of 400 X 375 Lbp/in.
- Treated for resistance to dust, UV rays, salty environments, condensation, fungi and mold.
- Weight of 542g/m^2 (16 oz/yard^2).
- Section can reach up to 15 meters (50 ft)
- Diameter from 203 mm (9 in) to 1524 mm (60 in).
- Perforation designed with software.
- Easy to clean
- 17 colours available.
- Single or double suspension.
- PVC extrusion integrated into the diffuser allowing suspension to rail.
- Joining sections with zippers or by metal collar.

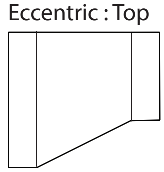
Accessories

The elbows, reducers and end caps are available in polyvinyl. All of the standard accessories (elbows, sleeves, reducers, multi-branch connectors, etc.) are available in the precise dimensions of the diffusers.

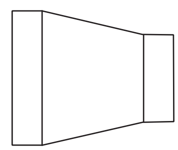
For air balancing reasons, reducers are required between sections.

Reducers

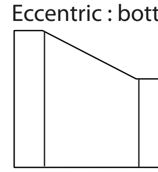
Eccentric : Top



Centered

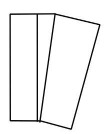


Eccentric : bottom

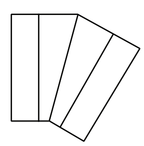


Elbows

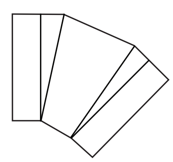
15°



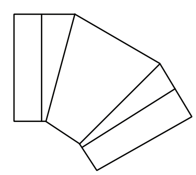
30°



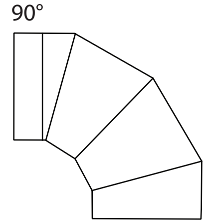
45°



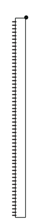
60°



90°



End cap



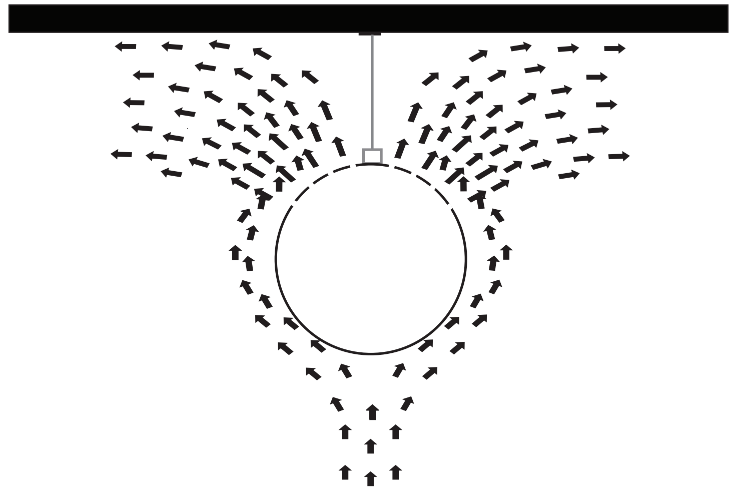
FDD - Mode of operation

General operation

The FDD flexible diffuser is made to surpass the technical limits of traditional air diffusion systems.
Its function is based on the principle of high induction diffusion. The perforations, of various diameters, and their positioning on the FDD promote a displacement of a large quantity of ambient air (see the illustration below).

The thermal exchange between the blown air and the ambient air occurs close to the FDD, and the temperatures rapidly near isothermal levels. The risk of stratification is eliminated without creating drafts in the occupied zone.

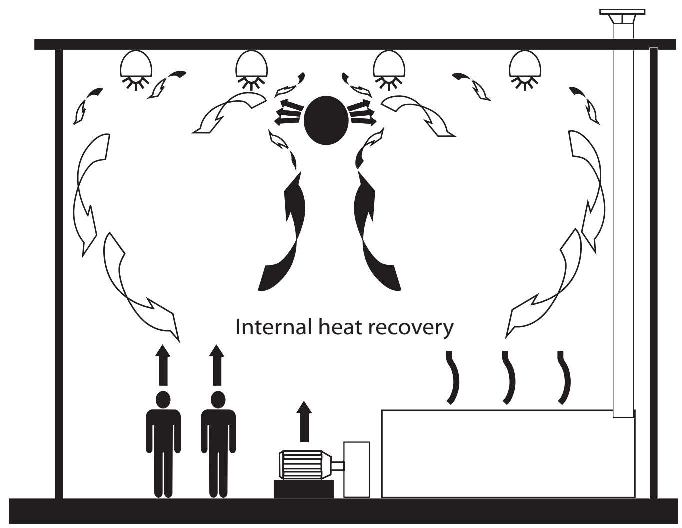
Representation of the induction effect generated by the FDD



Heat recovering

In this type of situation, in a space where internal heat sources are very high, it allows for much more significant energy savings. The higher the amount of heat, the more the FDD is efficient.

In some cases, energy saving in winter can reach up to 100% on the heating of the fresh air and the heating of the building..



Height of areal Mode of diffusion

Indeed, for areas with **elevated heights** (H > 6 m (20 ft)), the FDD is perforated to diffuse air downwards, for both heating and cooling modes.

In the case of heating mode, air is directed downwards to oppose the force of gravity exerted on the different densities of warm blown air and cooler ambient air (figure A). The large mass of air circulates in a controlled manner, from the top of the space downwards, resulting in an optimal temperature mixture. The variation in temperature throughout the occupied area is < 1°C.

For rooms with **lower ceilings** (H < 6 m (20 ft)), air is pushed upwards through the FDD (see figure B). For cooling mode, the multitude of perforations with different diameters allow air to be pushed upwards. It then mixes with the hot air of the room which often accumulates at ceiling height.

Figure A :
Heating mode with elevated heights - H > 6m (20 ft)

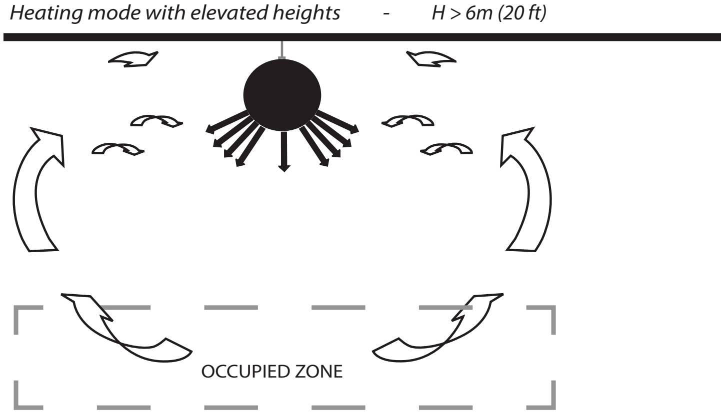
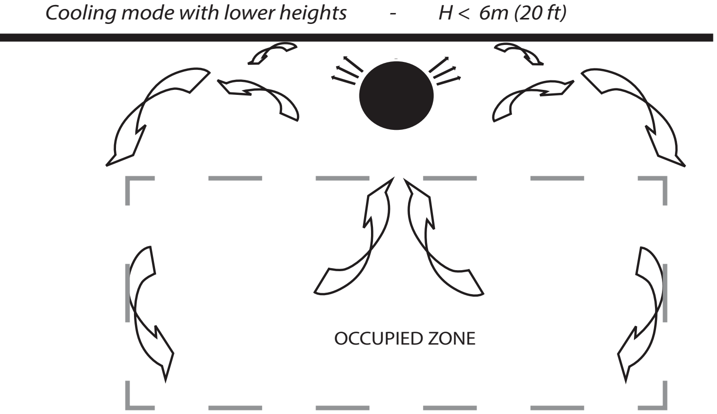


Figure B :
Cooling mode with lower heights - H < 6m (20 ft)



FDD - Dimensions and weight

Ø diameter		Total weight	
mm	in	kg / li m.	lb / li ft.
203	8	1.17	0.79
254	10	1.26	0.85
305	12	1.35	0.91
356	14	1.43	0.96
406	16	1.52	1.02
457	18	1.61	1.08
508	20	1.69	1.14
559	22	1.78	1.20
610	24	1.87	1.26
660	26	1.95	1.31
711	28	2.04	1.37
762	30	2.13	1.43
813	32	2.21	1.49
864	34	2.30	1.55
914	36	2.39	1.60
965	38	2.47	1.66
1016	40	2.56	1.72
1067	42	2.65	1.78
1118	44	2.73	1.84
1168	46	2.82	1.90
1219	48	2.91	1.95
1270	50	2.99	2.01
1321	52	3.08	2.07
1372	54	3.17	2.13
1422	56	3.25	2.19
1473	58	3.34	2.25

FDD - Suspension system

The lightweight polyvinyl and the support mechanism allow for a rapid installation of the FDD. The installation consists in a suspension of a rail on the ceiling with 9.5 mm (3/8 in) threated rods supplied by the installer.

Once the rail is installed, the tube is slid onto the rail. It should be noted that the distance between the two suspension rods is 3 m (10 ft) or less, as illustrated in figure 2.

The FDD can be installed in two ways; either by single centered suspension on a rail (figure 3) or by a double lateral suspension with two rails (figure 4).

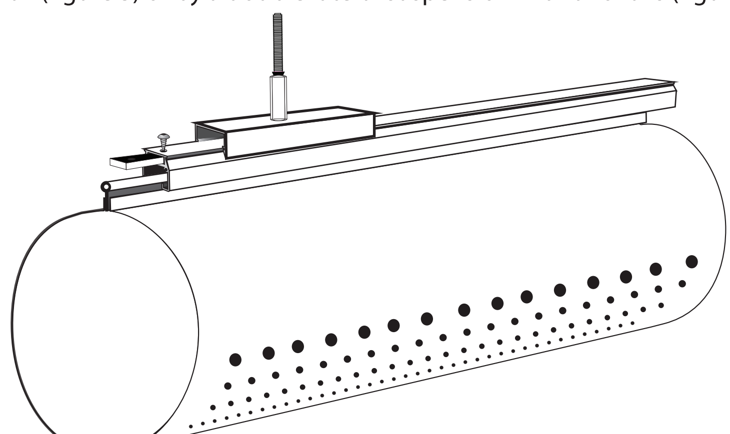
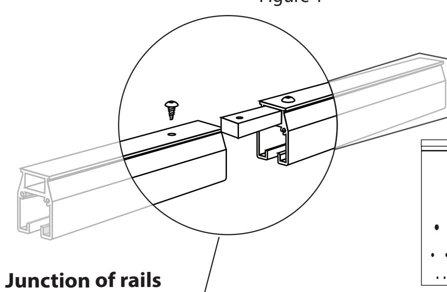


Figure 1



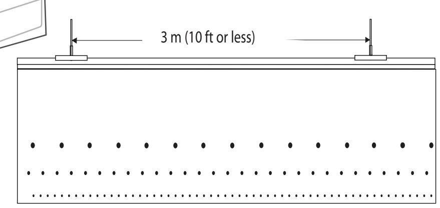


Figure 2

Single suspension

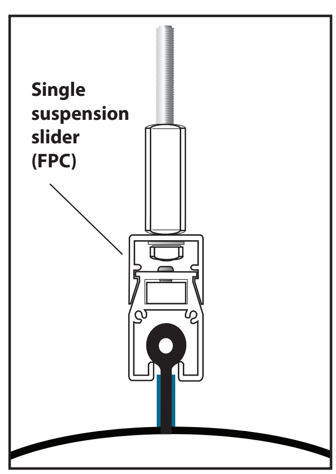


Figure 3

Double suspension

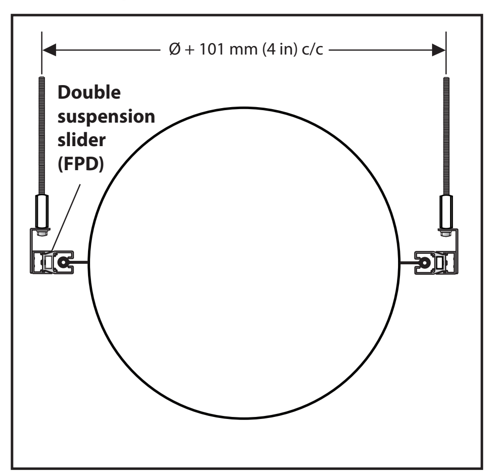


Figure 4

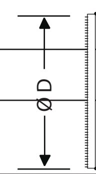
Note : a slider is provided per 1.5 m (5 ft) length

FDD - Codification

FDD	Product
00000 = Write the total length of the diffuser in millimeters (mm)	Length
203, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1016, 1067, 1118, 1168, 1219, 1270, 1321, 1372, 1422	Ø Diameter section
IM = Connection with adjustable stainless steel collar IZ = Connection with black zip IV = Connection with Velcro	Inlet section
EZ = Connection with black zip EM = Connection with adjustable stainless steel collar EV = Connection with Velcro	Outlet section
01 = Standard white ● 02 = Cream white 03 = Sand 04 = Beige 05 = Taupe 06 = Brown 07 = Terracotta 08 = Yellow 10 = Red 11 = Burgundy 14 = Standard blue ● 15 = Marine blue ● 17 = Emerald green 18 = Forest green 19 = Metallic grey ● 21 = Standard grey ● 24 = Black	Diffuser color
S = Single (12:00) D = Double track (3:00 and 9:00)	Hanging system
FDD - 00000 - 203 - IM - EM - 01 - S	Example

● = Standard, in stock

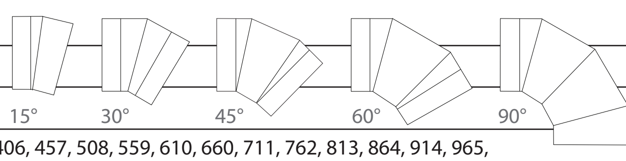
CAP codification



FDD CAP	Product
203, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1016, 1067, 1118, 1168, 1219, 1270, 1321, 1372, 1422	Ø Diameter
01 = Standard white Ⓢ 02 = Cream white 03 = Sand 04 = Beige 05 = Taupe 06 = Brown 07 = Terracotta 08 = Yellow 10 = Red 11 = Burgundy 14 = Standard blue Ⓢ 15 = Marine blue Ⓢ 17 = Emerald green 18 = Forest green 19 = Metallic grey Ⓢ 21 = Standard grey Ⓢ 24 = Black	Color
FDD - CAP - 203 - 01	Example

Ⓢ = Standard, in stock

Elbows codification

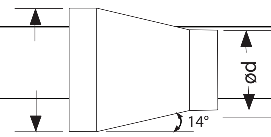


FDD ELB = Elbow	Product
15, 30, 45, 60, 90	Angle
203, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1016, 1067, 1118, 1168, 1219, 1270, 1321, 1372, 1422	Ø Diameter
IZ = Connection with black zip IM = Connection with adjustable stainless steel collar IV = Connection with Velcro	Inlet section
EZ = Connection with black zip EM = Connection with adjustable stainless steel collar EV = Connection with Velcro	Outlet section
S = Standard (based on: r =1.5 Ø centre) A = Other (specified in annotation)	Radius
01 = Standard white Ⓢ 02 = Cream white 03 = Sand 04 = Beige 05 = Taupe 06 = Brown 07 = Terracotta 08 = Yellow 10 = Red 11 = Burgundy 14 = Standard blue Ⓢ 15 = Marine blue Ⓢ 17 = Emerald green 18 = Forest green 19 = Metallic grey Ⓢ 21 = Standard grey Ⓢ 24 = Black	Color
FDD - ELB - 15 - 203 - IZ - EZ - S - 01	Example

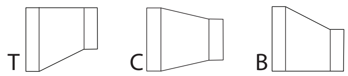
Ⓢ = Standard, in stock

FDD - Codification

Codification of reducers



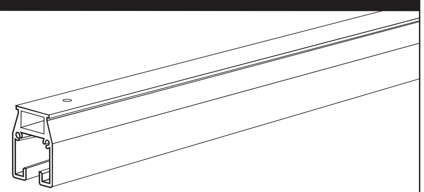
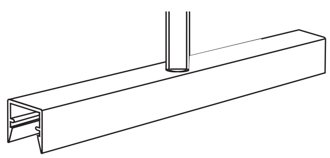
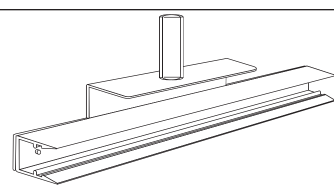
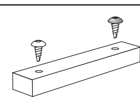
FDD	RED = Reducer	**Product**
	203, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1016, 1067, 1118, 1168, 1219, 1270, 1321, 1372, 1422	**Ø Inlet diameter (interior)**
	203, 254, 305, 356, 406, 457, 508, 559, 610, 660, 711, 762, 813, 864, 914, 965, 1016, 1067, 1118, 1168, 1219, 1270, 1321, 1372	**Ø Outlet diameter (interior)**
	T = Flat on top C = Centered B = Flat Bottom	**Configuration**
	IZ = Connection with black zip IM = Connection with adjustable stainless steel collar IV = Connection with Velcro	**Inlet section**
	EZ = Connection with black zip EM = Connection with adjustable stainless steel collar EV = Connection with Velcro	**Outlet section**
	01 = Standard white Ⓢ 02 = Cream 03 = Sable 04 = Beige 05 = Taupe 06 = Brown 07 = Terracotta 08 = Yellow 10 = Red 11 = Burgundy 14 = Standard blue Ⓢ 15 = Marine blue Ⓢ 17 = Emerald green 18 = Forest green 19 = Metallic grey Ⓢ 21 = Standard grey Ⓢ 24 = Black	**Color**



Ⓢ = standard, in stock

FDD - RED - 305 - 203 - T - IZ - EZ - 01 **Example**

Codification of additionnal accessories for FDD flexible diffuser installation

Product code	Description	
FRA	Rail Aluminum (1 1/4 in x 1 3/4 in x 10 li. ft) * may be painted	
FPC	Slider for centered single suspension - coupling included Aluminum 24 mm x 20 mm x 203 mm (3/4 in x 15/16 in x 8 in)	
FPD	Lateral slider for double suspension - coupling included Aluminum 26 mm x 51 mm x 203 mm (1 in x 2 in x 8 in)	
FBL	Connector 12 mm x 6 mm x 83 mm (1/2 in x 1/4 in x 3 1/4 in)	
FRA	**Example**	

Accessories supplied with FDD diffuser
- Rail
- Slider (single or double)
- Connectors