

DFR – Round Floor Mounted Displacement Diffuser

Model: DFR

The Holyoake DFR Series of supply diffusers operate on the principles of Displacement Ventilation.

Displacement Ventilation is essentially a buoyancy driven displacement process where supply air at a temperature slightly cooler than the design room air temperature, is delivered into the room at low level. The cool air spreads across the floor, only rising when it comes into contact with a heat source such as a human. The heated air rises and will exit the room via openings at ceiling level, taking with it any pollutants that have been picked up on the way.

Holyoake DFR Displacement Diffusers have been designed to enable floor mounting, although they can also be used in many other locations. They are ideally suited for use in Auditoria and Theatres. Typically these areas contain a large volume of space that although not occupied, is still conditioned. By introducing the treated air unobtrusively from directly behind the occupants, only the space around the patrons is conditioned, rather than the whole auditorium. This ensures that the occupied area is maintained at ideal conditions, whilst saving energy treating the whole space at design parameters.

Features

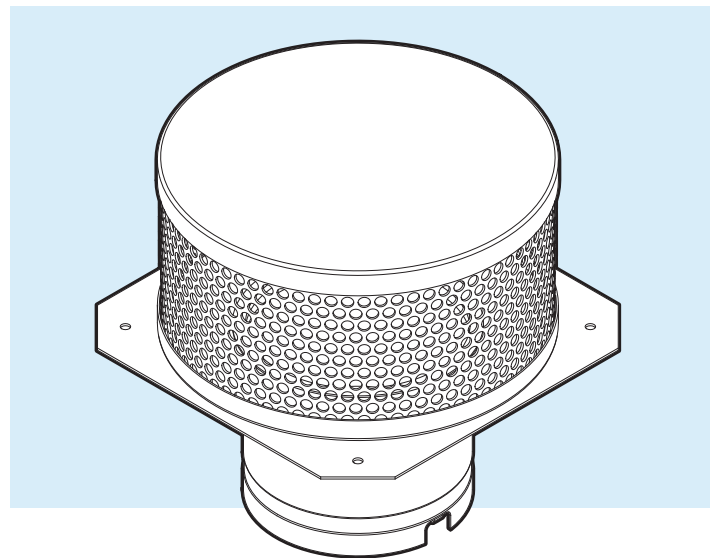
- Compact Unobtrusive Design.
- Energy Saving Operation.
- No Drafts.
- Low Noise.
- Simple Installation.
- Black Powder Coat Finish.



Construction

The DFR is of robust construction and manufactured from zinc coated steel. Standard finish is powder coat Black.

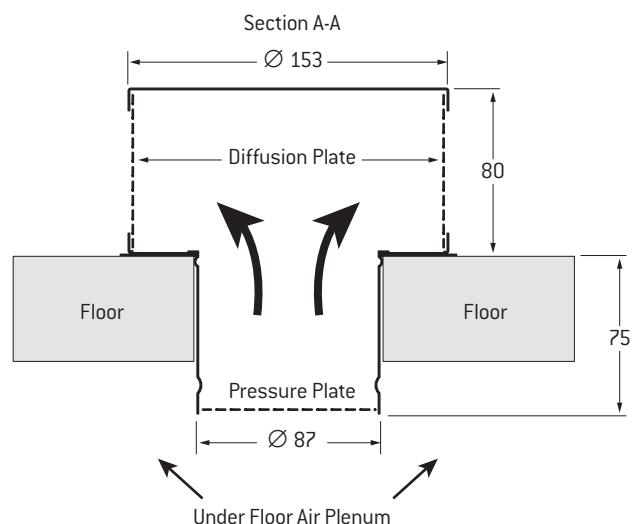
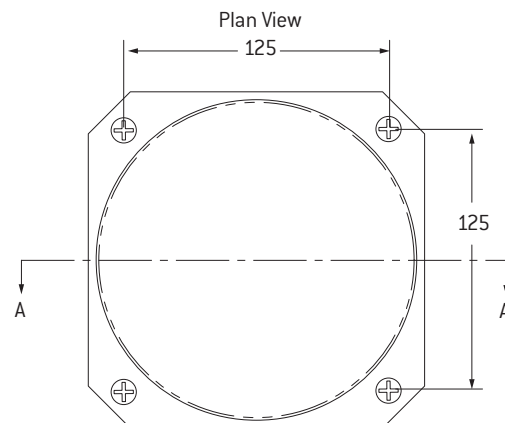
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Installation

The DFR is simply inserted through a hole in the floor ensuring that the neck of the diffuser is fed from the supply plenum under the floor area. The diffuser is then fixed in place with screws inserted through the four holes in the mounting plate and suitably sealed between the flange and the plenum.

Series DFR



Flowrate [l/s]	ΔP_s (Pa)	NC	Velocity at specified distance from diffuser face (m/s)			
			100mm	200mm	300mm	400mm
7.5	11	17	0.25	0.15	0.10	-
10.0	21	20	0.35	0.25	0.15	0.10
12.5	28	21	0.45	0.35	0.25	0.15

Performance Notes

1. ΔP_s – Static Pressure inside the supply plenum
2. Acoustic data assumes a standard room absorption of 10dB, Re 10^{-12} watts.
3. All testing was performed with the diffuser mounted in a plenum box.

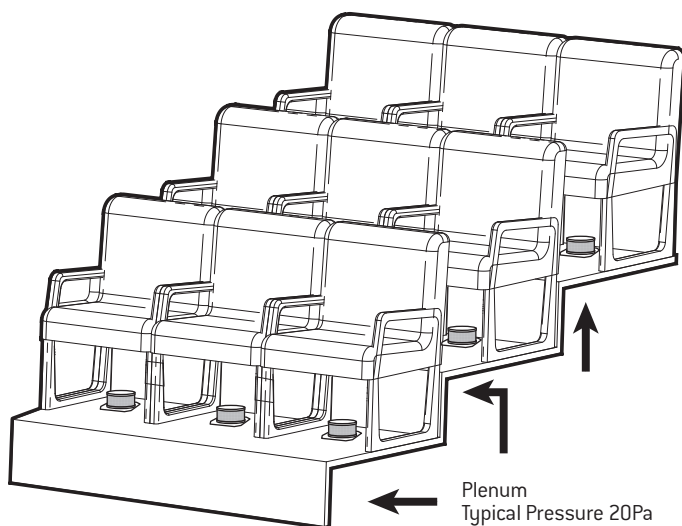
Performance

The DFR displacement diffuser supplies a low velocity, low momentum blanket of air into the occupied space. Low velocities ensure that no drafts are felt by the occupants. Plenum pressures of around 10-20 Pa will achieve excellent balancing across all diffusers while achieving low noise and throw lengths.

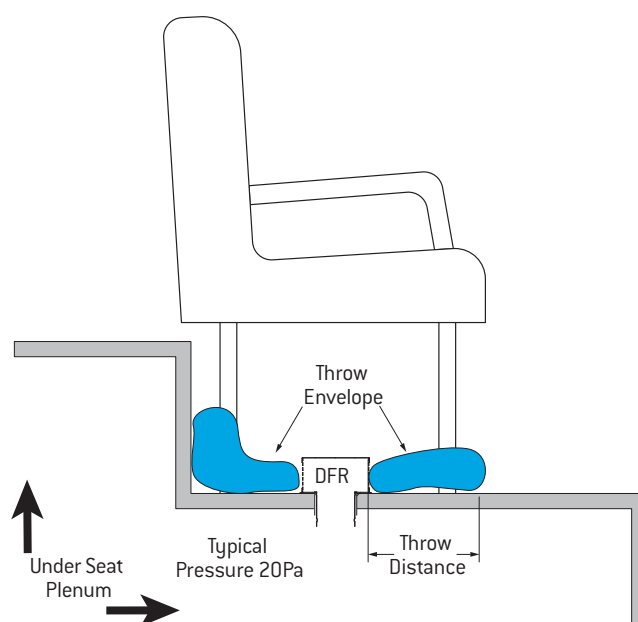
System Balancing

The DFR Displacement Diffuser achieves the unobtrusive delivery of conditioned air, whilst still maintaining a significant pressure drop across the grille. This allows the diffuser to be used in plenum fed distribution systems without balancing dampers. In theatres and auditoria, the area under the seating can be used as the supply plenum.

Typical Underseat Installation



Cross Sectional View



Due to a policy of continuous development and improvement the right is reserved to supply products which may differ slightly from those illustrated and described in this publication.

Series	Approximate Weight in Kg.
DFR	0.76

BHC, DFR, DS & JD

Product Ordering Key and Suggested Specifications

<p>BHC – SIZE – OPTIONS – FINISH</p> <p>High Capacity Barrel Diffuser</p> <p>635 x 300 or 1270 x 300</p> <p>24 V AC or, 230 V AC Actuators / Thermal Power Pill</p> <p>Mill Aluminium Anodized Aluminium Holyoake White Powder Coat</p>	<p>High Capacity Barrel Diffusers shall be Holyoake Series BHC. They shall be designed to be mounted into a supply plenum that may contain a number of BHC units, which will provide high capacity and long throw diffusion. Adjustment is available to change the vertical and horizontal throw and spread.</p> <p>Series BHC shall be finished in Mill Aluminium and fitted with accessories where indicated.</p> <p>All shall be as manufactured by Holyoake.</p>
<p>DFR – FINISH</p> <p>Displacement Floor Mounted Round Diffuser</p> <p>Black Holyoake White Powder Coat</p>	<p>Displacement Floor Mounted Round Diffusers shall be Holyoake Series DFR. They shall be designed to mount into a supply plenum at floor level and to provide an even distribution of air flow at low velocity, thereby creating a draft-less environment. Pressure drop through the displacement diffusers will be such to provide balance within the supply plenum, while being low enough to generate very low noise levels.</p> <p>Series DFR Displacement Diffusers shall be circular.</p> <p>All shall be as manufactured by Holyoake.</p>
<p>DS – W x H – FLANGE – OPTION – FINISH</p> <p>Displacement Step Mounted Diffuser</p> <p>Hole Size</p> <p>17mm 25mm</p> <p>RC Removable Core (25 mm flange only).</p> <p>Powder Coat Mill Aluminium</p>	<p>Displacement Step Mounted Diffusers shall be Holyoake Series DS. They shall be designed to mount into a supply plenum at floor level and to provide an even distribution of air flow at low velocity, thereby creating a draft-less environment. Pressure drop through the displacement diffusers will be such to provide balance within the supply plenum, while being low enough to generate very low noise levels.</p> <p>Series DS Displacement Step Mounted Diffusers are designed to be face fixed, or supplied with the Holyoake Removable Core System (25 mm flange only).</p> <p>All shall be as manufactured by Holyoake.</p>
<p>JD – 250 – OPTIONS – FINISH</p> <p>Jet Diffusers</p> <p>Nominal Size</p> <p>Mounting Plate (Type 1, 2, 3 or 4)</p> <p>Holyoake White Mill Aluminium Powder Coat</p>	<p>Circular Jet Diffusers shall be Holyoake Model JD constructed from spun aluminium cones. JD Jet Diffusers shall be capable of operating in either diffused, or jet air pattern configurations. The air patterns shall be achieved by rotating the cone assembly through 180 degrees. JD Jet Diffusers shall be complete with a mounting system suitable for wall, or ceiling applications.</p> <p>Series JD shall be finished in powder coat and fitted with accessories where indicated.</p> <p>All shall be as manufactured by Holyoake.</p>

Note

For ceiling applications of JD Diffusers, Seismic Restraints would be required, but not supplied.

JND, EL, EL-P, FSD & TLC-EL

Product Ordering Key and Suggested Specifications

JND	-	SIZE	-	FINISH	<p>Holyoake Jet nozzle diffusers shall be of spun aluminium construction with a steel concealed mounting system. They shall be designed to supply large air quantities over large throws.</p> <p>Series JND shall be finished in powder coat and all shall be as manufactured by Holyoake.</p>
Jet Nozzle Diffuser		160, 200, 250, 360, 400		Powder coat white, special colours available on request	

FSD	OPTIONS	<p>Circular floor diffusers shall be Holyoake FSD Series manufactured in glass filled polycarbonate, in self-coloured grey, or black, as standard. Nominal FSD diffuser size shall be 220mm in diameter. The FSD diffuser shall contain a flow regulation damper and the fascia is complete with 'Min/Max' indication.</p> <p>Series FSD mounting clamp and trim ring shall also be manufactured in glass filled polycarbonate. FSD diffusers shall contain a dust/dirt collection basket.</p> <p>All Series FSD materials used are fire retardant and the diffusers shall resist permanent deformation when subject to point loads up to 500 Kg.</p> <p>All shall be as manufactured by Holyoake.</p>
Floor Swirl Diffuser	Die Cast Aluminium Mill Finish, or, Die Cast Aluminium Powder Coat Finish	

EL	-	2	-	S	-	300 x 300	-	ACCESSORIES	-	OPTIONS	-	FINISH	<p>Surface Mounted Eyelash Type</p> <p>EL surface mounted diffusers shall be of the "Eyelash", or curved blade type. They shall be of extruded aluminium construction, with each blade individually adjustable from the face. Optional opposed blade damper can be adjusted through the face of the diffuser.</p> <p>All shall be as manufactured by Holyoake</p>
Series "Eyelash"		Core Model		Style		Duct Size		OBD-1 Opposed Blade damper		RC 25 RC 50 CMF Removable Core Frame Option		Holyoake White Mill Aluminium Powder Coat	

EL	-	P	-	2	-	S	-	300 x 150 - 600 x 600	-	ACCESSORIES	-	FINISH	<p>Panel Lay-in Eyelash Type</p> <p>EL-P Panel Lay-in diffusers shall be of the "Eyelash", or curved blade type. They shall be of extruded aluminium construction, with each blade individually adjustable from the face. Optional opposed blade damper can be adjusted through the face of the diffuser.</p> <p>All shall be as manufactured by Holyoake.</p>	
Series "Eyelash"		Panel Lay-in Model		Core Model		Style		Duct Size		Module Size		OBD-1 Opposed Blade damper		Holyoake White Mill Aluminium Powder Coat

TLC-EL	-	2	-	L	-	400 x 150	-	ACCESSORIES	-	FINISH	<p>Curved Frame Eyelash Type</p> <p>TLC-EL diffusers shall be of the "Curved Frame Eyelash" type, with curved blades. They shall be of extruded aluminium construction, with each blade adjustable from the face. Optional opposed blade damper can be adjusted through the face of the diffuser.</p> <p>All shall be as manufactured by Holyoake.</p>
Series Curved Frame "Eyelash"		Core Model		Style		Nominal Duct Size		OBD-1 Opposed Blade damper		Holyoake White Mill Aluminium Powder Coat	

Note

For ceiling applications of EL Diffusers, Seismic Restraints would be required, but not supplied.