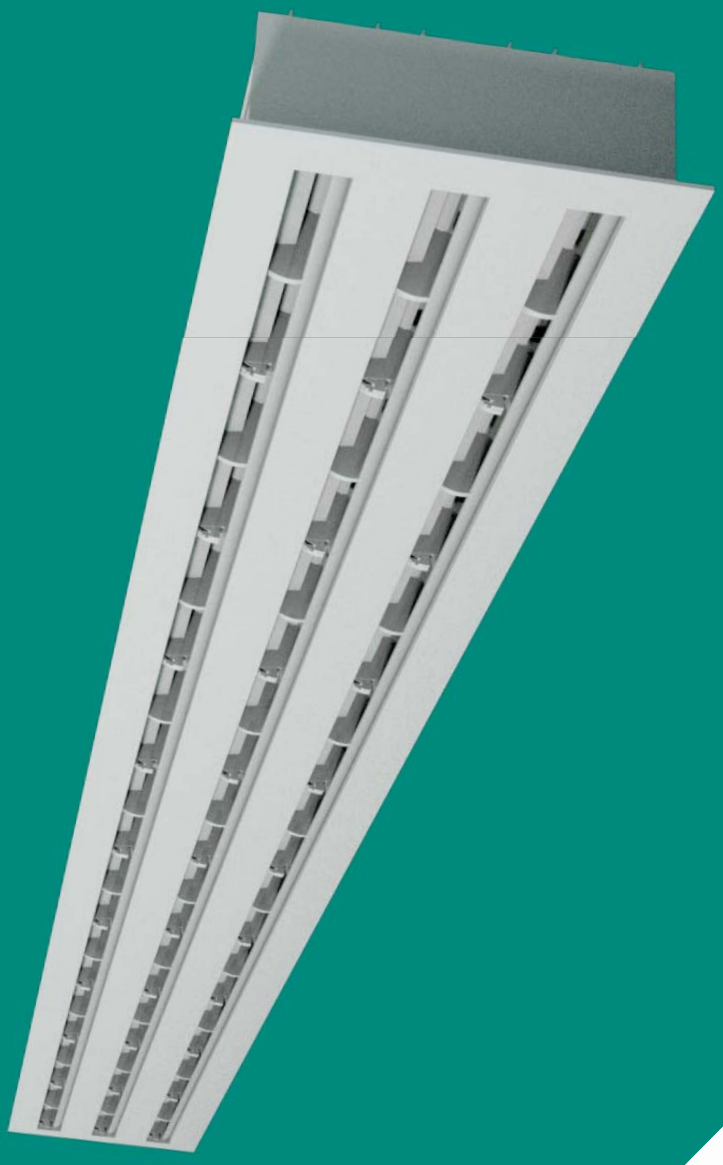
WATERLOO
A Swegon Group Company

Operating and Maintenance

CSB Barrel Slot Diffusers



CSB Barrel Slot Diffusers

Product Description

CSB 15 –F Standard flange for general purpose

CSB 15 –P Narrow flange for flush/recess mounting

Tools Required

- 1 x Medium Cross Head Screwdriver
- 1 x Plenum setting Go / No-Go Gauge

Note: Power tools are not recommended for this installation due to the risk of damage caused by the over-tightening of the hanging bracket screws.

When fixing Plenum Boxes in position, please note that the height from the base of the Plenum Hem to the Ceiling Face is a Critical dimension. It is recommended that you use the Waterloo Plenum fixing Go / No-Go Gauge which are supplied free of charge upon request.

The recommended Ceiling opening sizes for the installation of the CSB Series of Diffusers can be calculated from the following table:

Diffuser Type	Width of Opening (mm)				Length of Opening (mm)
	CSB S1	CSB S2	CSB S3	CSB S4	
CSB-F	52	87	122	157	Nominal + 10
CSB-P	45	80	115	150	Nominal + 10

Plenum Box Installation

1- Install the Plenum Box, suspending it from its mounting holes with Drop Rods (supplied by others). Use Locknuts and Washers above and below the mounting holes to set the Plenum Box height.

2- Adjust the Plenum height as required using the Go / No-Go Gauge. The correct position is indicated when the ceiling face is located within the notch in the side of the Gauge as shown in **Figure 1**.

3- Check that the Plenum Box is level and aligned with the ceiling opening. When this has been achieved, tighten the Locknuts to secure the Plenum position.

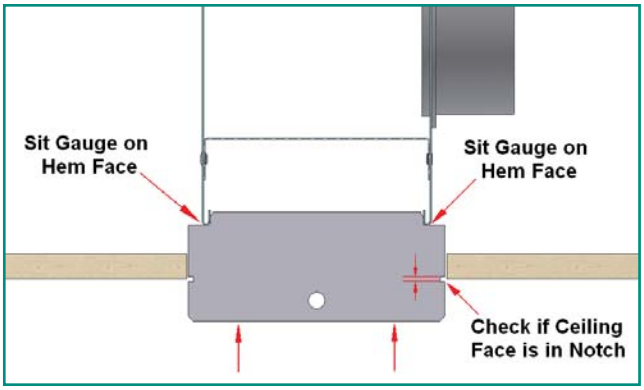
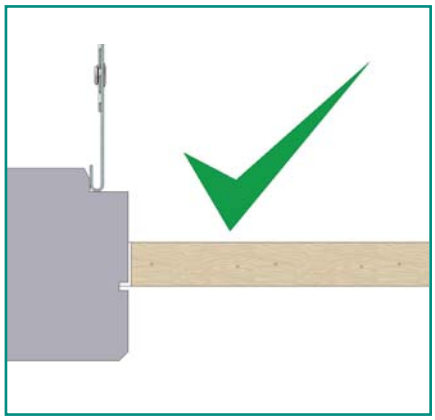
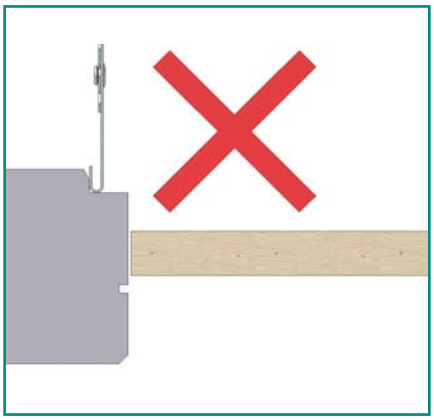
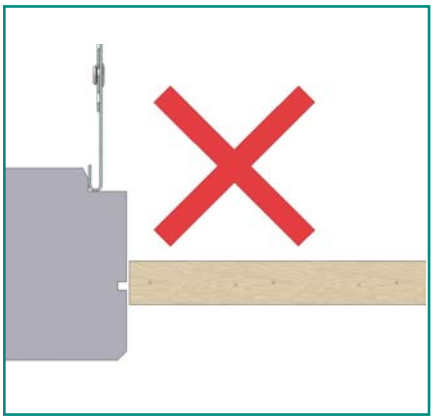


Figure 1
Plenum Installation using Waterloo Go / No-Go







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Alternatively, if you are not using the Go / No-Go Gauge then you will need to follow these procedures:

4- Install the Plenum Box, suspending it from its mounting holes with Drop Rods (supplied by others). Take care to align the centreline of the Plenum Box with the centreline of the Ceiling opening.

5- Lower the Plenum towards the Ceiling, ensuring that the distance from the Ceiling Face to the bottom of the Plenum Hem is within the required range (31 to 34mm for CSB-F Diffusers, and 34.5 to 37.5mm for CSB-P Diffusers) as shown in **Figure 2**. Once this has been achieved, tighten the Locknuts to secure the Plenum position.

It is essential that all the Plenums be installed in the ceiling void prior to the Diffuser installation.

For continuous Diffuser runs, Waterloo recommend that longitudinal angle (supplied by others) are attached to the sides of the Plenums to prevent the Plenum Boxes pulling the Diffuser out of alignment. Waterloo also recommends that all Mitre Sections be installed prior to the fitting of continuous runs of Diffusers.

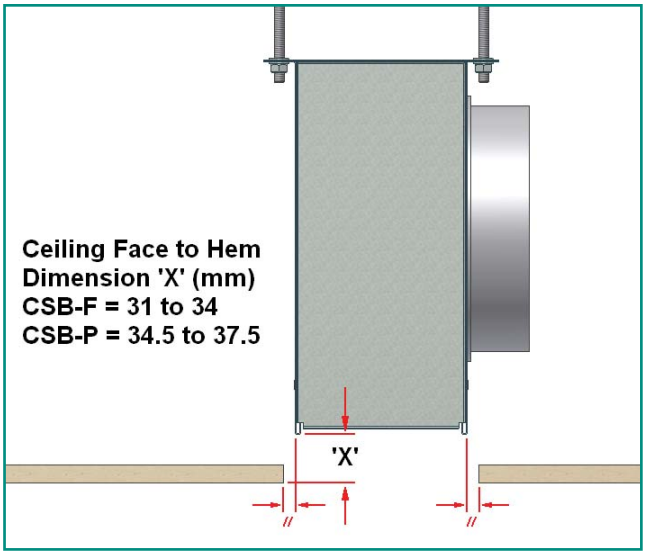

Figure 2
Setting Plenum height without Waterloo Go / No-Go Gauge

Installation of Diffuser with Plenum Boxes

Once the Plenums have been installed and the Ceiling fitted, you are ready to install the Diffusers. To do this, just follow these simple instructions.

6- Where Plenum Hanging Brackets (PHB) or Dummy Hanging Brackets (DHB) are to be fitted, rotate the Diffuser Barrels to allow access to screw fixing holes as shown in **Figure 3**.

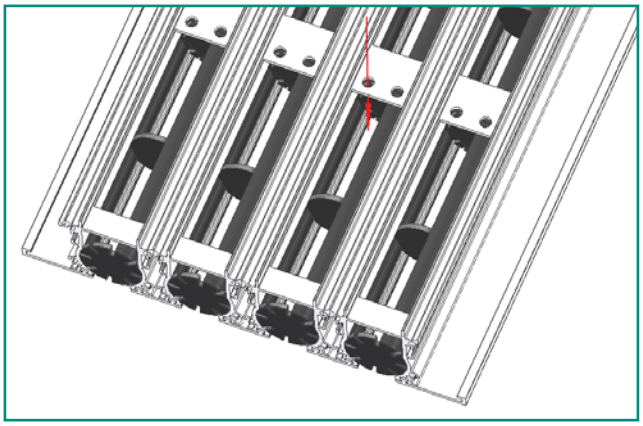

Figure 3
Rotate Barrels to allow free access to Screw Fixing Holes

7- Loosely screw the PHB's to the Diffuser assembly. Tighten just 2 – 3 turns as shown in **Figure 4**.

Waterloo recommend that the minimum quantity of PHB's to be used for any given size of Plenum Box are as follows:

- Up to 1m = 2 PHB's
- 1m to 1.5m = 3 PHB's
- Above 1.5m = 4 PHB's

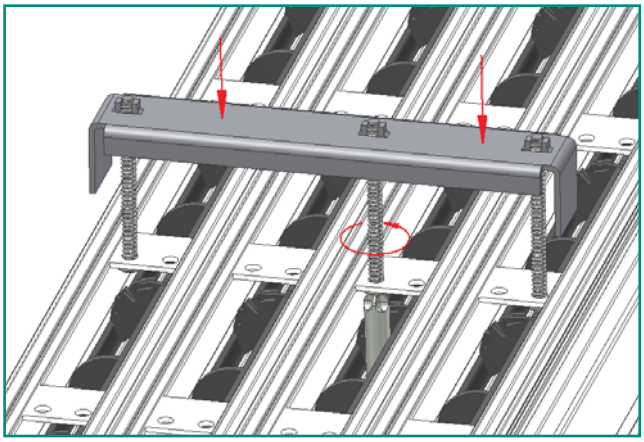

Figure 4
Loosely screw the PHB's to the Diffuser Assembly

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8- Once the PHB's have been attached to the Diffuser, offer it up into ceiling opening. Locate PHB's between Plenum Hems and push into position. It should be noted that some deflection of the Hems is required to clear the Plenum Hanging Brackets (PHB's). See **Figures 5a and 5b** below.

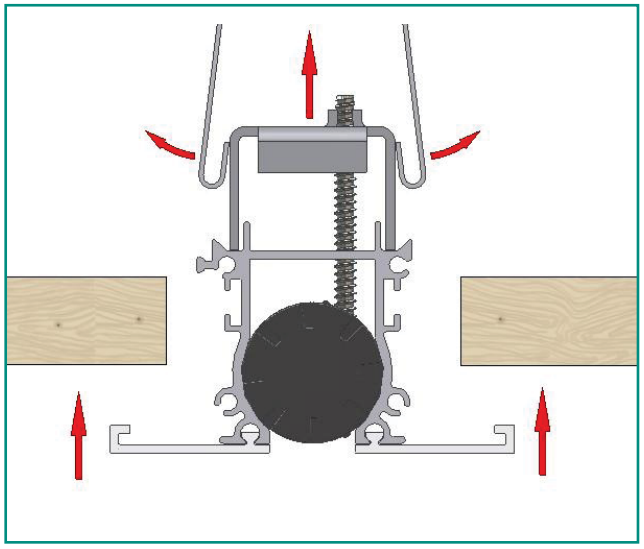

Figure 5a: Locate PHB between the Hems

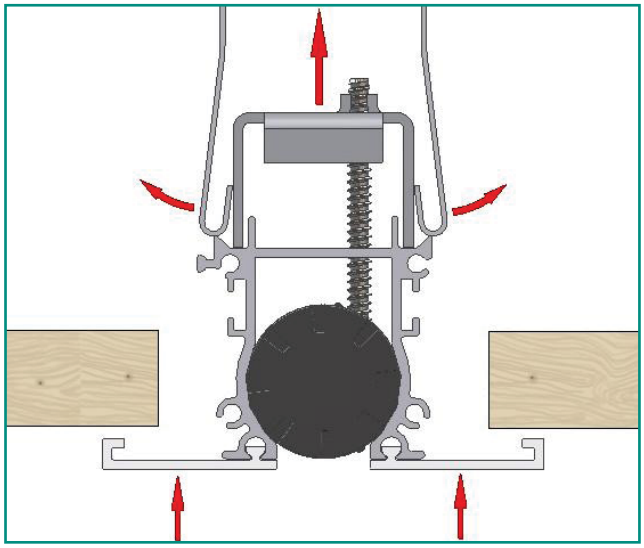

Figure 5b: Deflecting them, then push upwards

9- Whilst holding the Diffuser in position, push the PHB Screw head upwards until it touches the Diffuser rear face. This will force the Hanging Bracket past the Hems so allowing them to spring back into their natural position (as shown in **Figure 6**). Carry this out on all Hanging Brackets on the Diffuser.

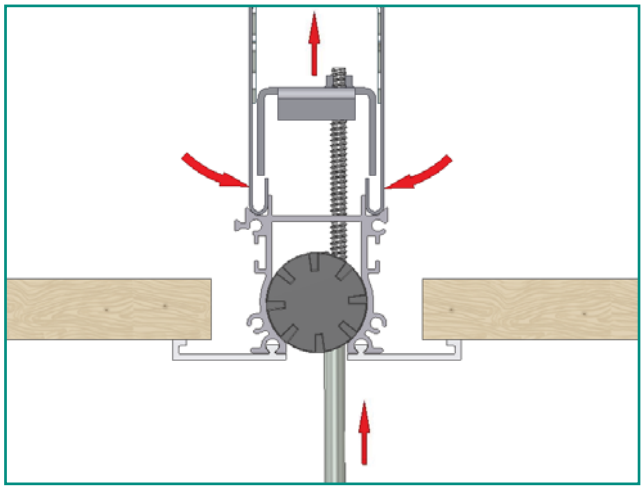

Figure 6
Push Screw Head upwards to clear Plenum Hems

10- Tighten the Screws to draw the PHB into the Hems. This will close any gap between the Diffuser and Plenum. Height adjustment fine tuning is carried out with the adjustment of these screws. **Figure 7**.

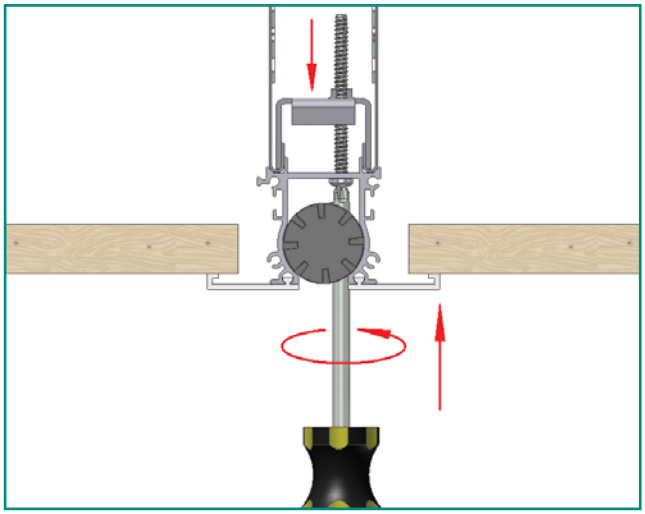

Figure 7
Tighten Screws to reach desired fit

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Installation of Diffuser using Dummy Hanging Brackets (DHB's)

Waterloo recommend the use of Dummy Hanging Brackets (DHB) for the installation of Dummy Sections, and it should be noted that they are supplied to order and the quantity requirement should be based on the following:

- CSB S1 = 2 x off per 1m length of Diffuser (i.e. 2 x off for a 1m Diffuser, 3 x off for a 1.5m Diffuser, etc).
- CSB S2 / S3 / S4 = 4 x off per 1m length of Diffuser (i.e. 4 x off for a 1m Diffuser, 6 x off for a 1.5m Diffuser, etc).

However, the Diffuser Sections can be installed using support wires or straps (supplied by others) if preferred as long as care is taken to ensure that the Barrels can still freely rotate.

The details of Installation using DHB's is as follows:

11- Locate the end of the DHB with 2 Rivet Holes in the opening on the rear of Diffuser Body. Lower it down into the gap and slide along until it is positioned under the Holes in the Body as shown in **Figure 8**.

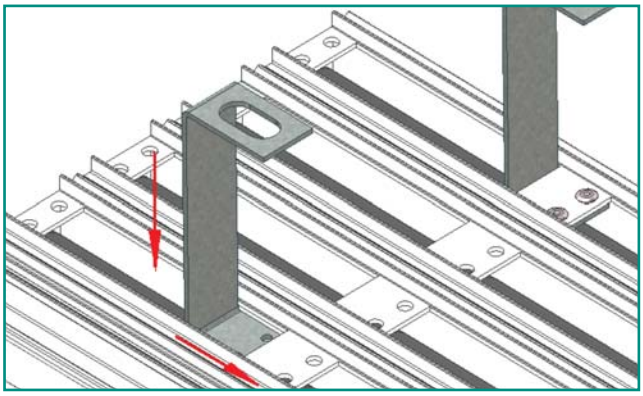

Figure 8: Insert DHB under Fixing Holes

12- Fix the DHB into place using either Pop Rivets or No 8 x 6 Self Tapping Screws as shown in **Figure 9**.

Note: that the use of Screws longer than 8mm could prevent the Barrels from rotating during commissioning.

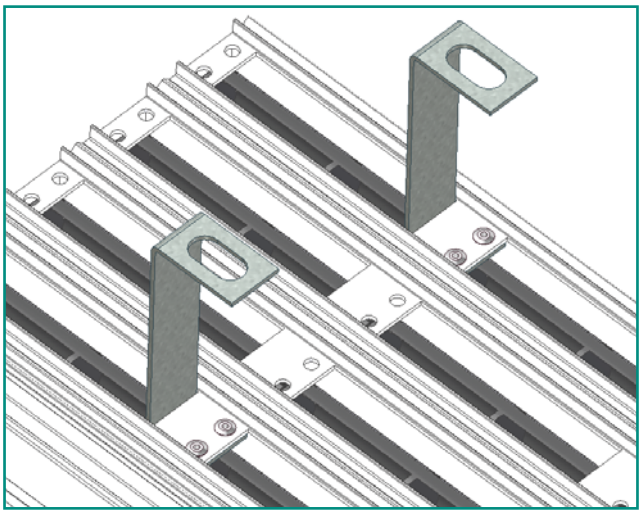

Figure 9: Installed DHB's

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13- Install the Diffuser using Drop Rods attached to the DHB at each end (or as required), not forgetting to fit the Alignment Strips if required. Final adjustment of the fit of the Diffuser to the ceiling is made via the Locknuts on the Drop Rod. (See **Figure 10**).

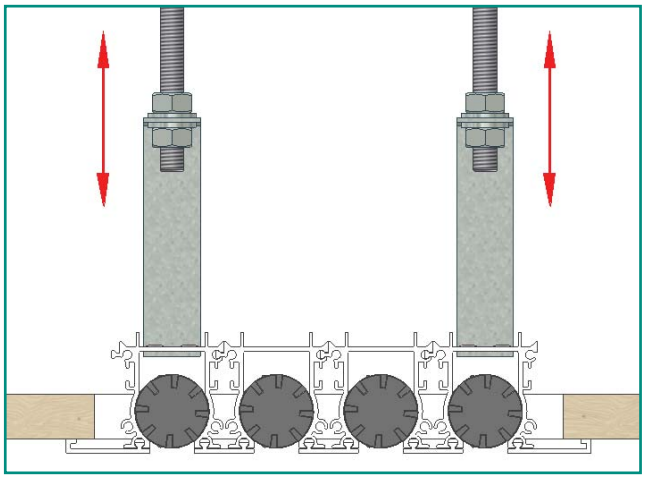

Figure 10: Adjust height to suit

Installation of Alignment Strips

When installing continuous runs of this CSB Diffuser it is recommended that Alignment Strips be fitted to minimise any potential misalignment of the Diffuser sections along the length of the run.

These are fitted into extruded tracks on the exterior of the Diffuser Body, and can if desired be screwed or riveted in position for a more permanent fix. To install these, simply:

14- Slide the Alignment Strips into the extruded tracks of the Diffuser Section that is already installed in the Ceiling opening. Make sure that they are pushed in clear of the end of the Diffuser. (**Figure 11**).

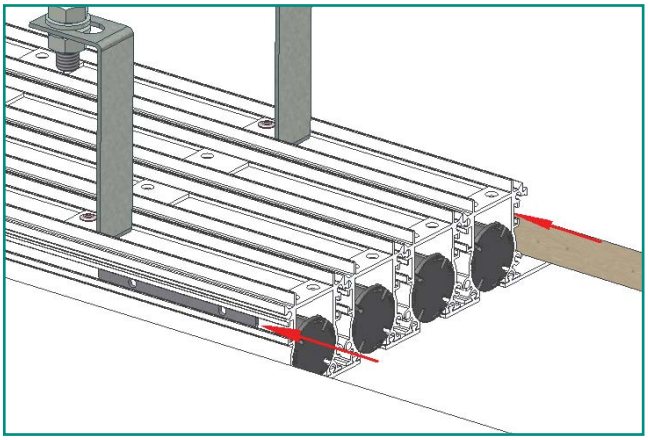

Figure 11: Slide Alignment Strip into place

15- Install the next Diffuser Section, then slide the Alignment Strip along until half of its length is located into the new Diffuser Section (**Figure 12**), then secure in place if desired.

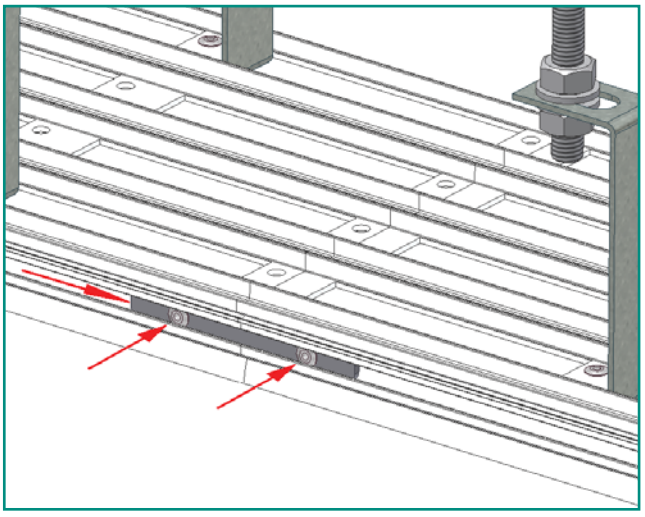

Figure 12: Position Alignment Strip & secure

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Installation of Diffuser using Plasterboard Dummy Hanging Brackets (PDHB's)

These Brackets are supplied to order and the quantity requirement should be based on the following:

- CSB S1 = 2 x off per 1m length of Diffuser (i.e. 2 x off for a 1m Diffuser, 3 x off for a 1.5m Diffuser, etc).
- CSB S2 / S3 / S4 = 4 x off per 1m length of Diffuser (i.e. 4 x off for a 1m Diffuser, 6 x off for a 1.5m Diffuser, etc).

The details of Installation using PDHB's is as follows:

16- Loosely screw the PDHB to the Diffuser assembly. Tighten just 2 – 3 turns as shown in **Figure 13a**, then rotate the Bracket so it does not overhang the rear of the Diffuser (**Figure 13b**). Repeat for all remaining Brackets.

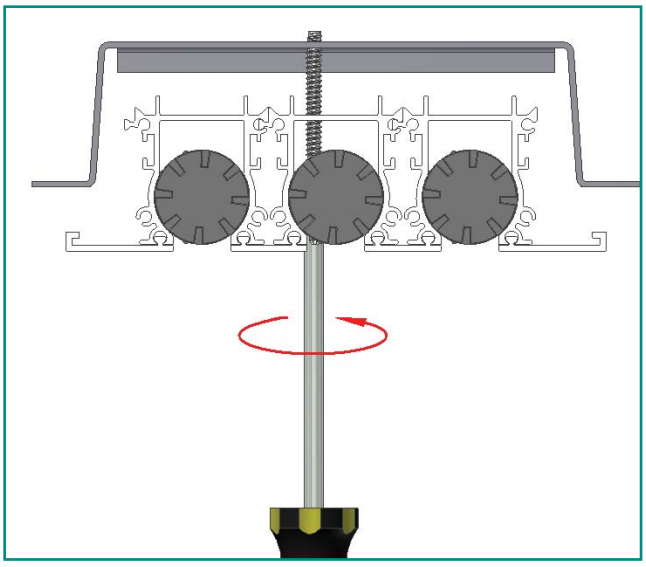

Figure 13a: Screw PDHB's to Diffuser

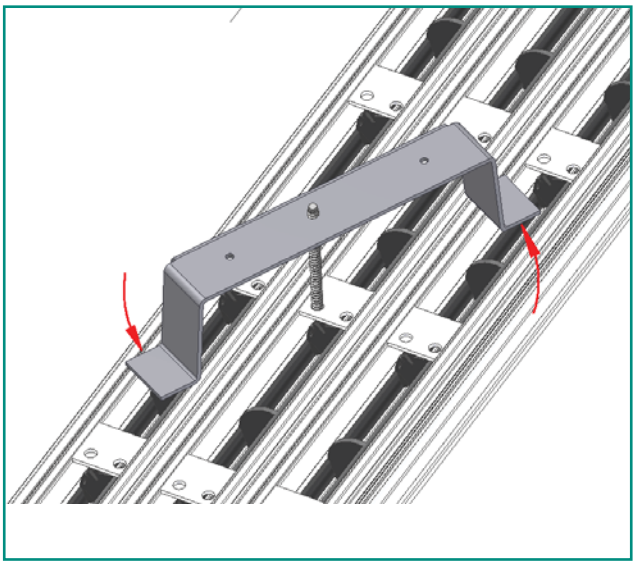

Figure 13b: Rotate PDHB's

17- Offer the Diffuser assembly up into the Ceiling opening. Push up on the Screw Head and rotate the PDHB so it now overhangs the Diffuser (**Figure 14**).

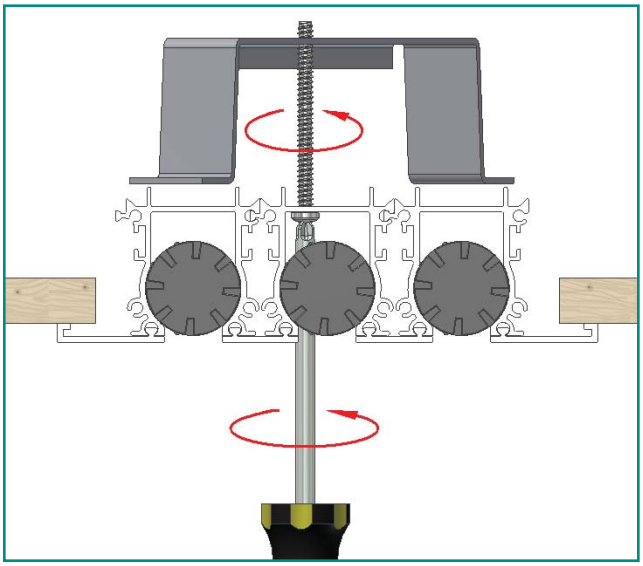

Figure 14: Rotate PDHB

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18- It will now drop down and sit on the rear face of the ceiling (**Figure 15**). Repeat this operation on all remaining Brackets.

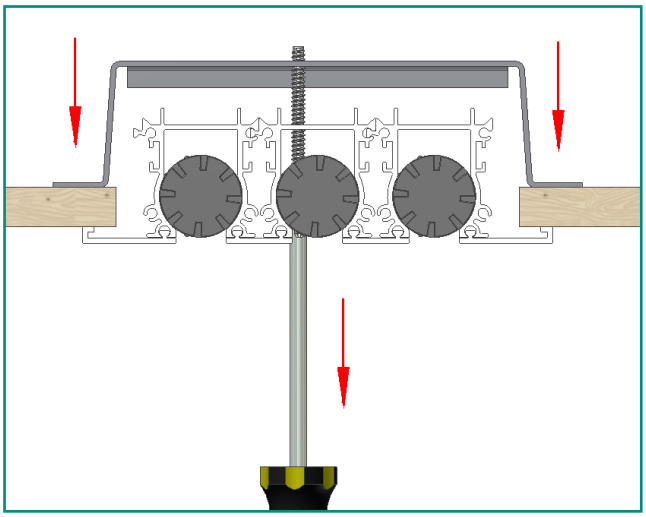

Figure 15: Allow PDHB to drop into place

19- Tighten the Fixing Screws until you get the desired Diffuser to Ceiling fit (**Figure 16**).

Note: that 1 screw per PDHB whilst adequate on 1 and 2 Slot Diffusers, will be insufficient on larger 3 Slot & 4 Slot Diffusers.

Therefore, Waterloo recommends a minimum of 2 Screws should be used as shown in **Figure 16**.

However, if the installer wishes to use more, then it will be at their discretion and additional Screws will need to be ordered

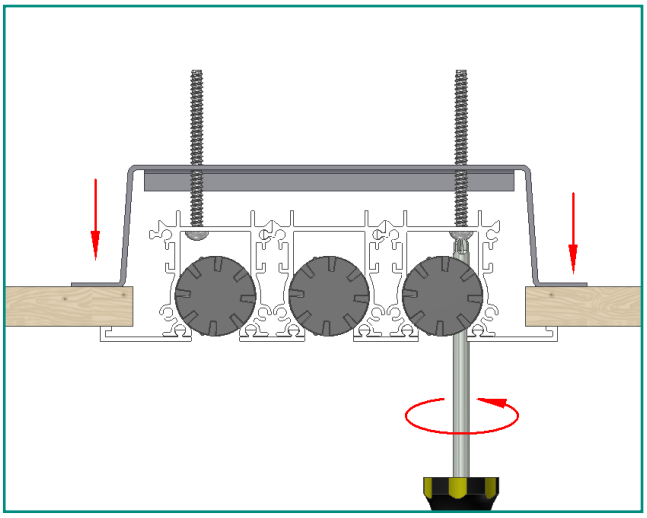

Figure 16: Tighten Screws to give desired fit

Mitre Section Installation

a) Installation using DHB's

Fit the DHB's in the positions shown in **Figure 17** and then install in ceiling opening using Drop Rods as previously described in the Dummy Section installation, remembering to fit the Alignment Strips as previously described.

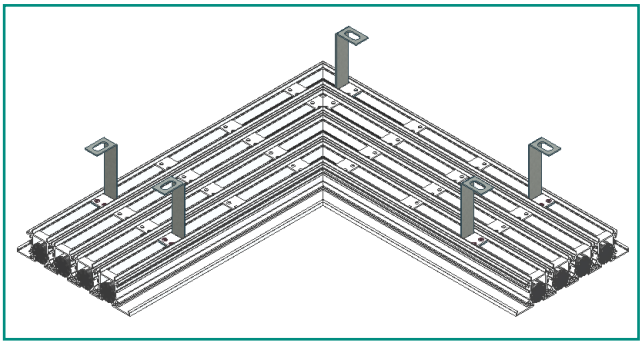

Figure 17
DHB mounting locations on Mitre Section

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b) Installation using DHB's

Fit the PDHB's in the positions shown in **Figure 18**, rotate them so they do not overhang the rear of the Diffuser, then install in the ceiling as previously described in the Dummy Section installation, remembering to t the Alignment Strips as previously described.

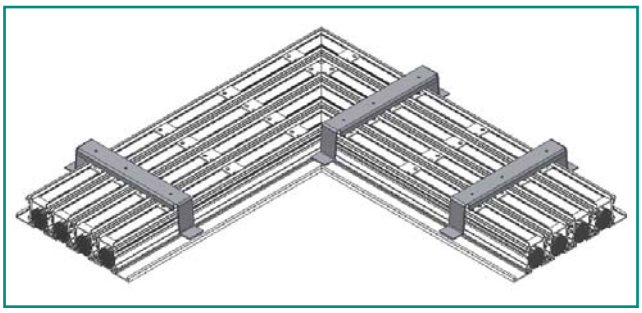


Figure 18: PDHB mounting locations

Flow Control

Set the position of the barrel type Flow Control elements to give the desired air distribution pattern (see **Figure 19**).

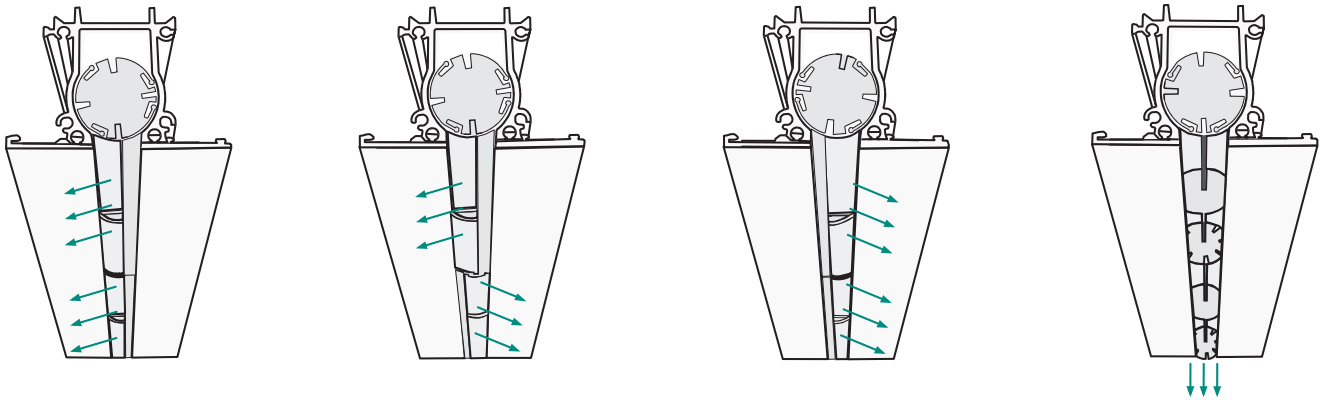


Figure 19: Flow Control Settings

Cleaning and Maintenance

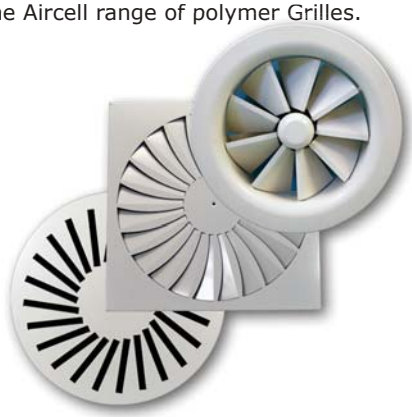
Waterloo recommend that the Diffuser faces are cleaned with warm soapy water. For regular cleaning, a simple wipe down of all accessible faces will suffice.

However for a deeper clean it is recommended that the Barrels are rotated to allow access to their working faces.

Waterloo Product Range

GRILLES

A complete range of products suitable for all wall, ceiling and floor applications. Most grilles are made from aluminium and have a range of fixed or moveable blades designed to give performance whilst remaining aesthetically pleasing to the eye. Grilles are made to customer specified sizes and colours (PPM/G); standard colour PPM9010 (20% Gloss White). The range is complemented by the Aircell range of polymer Grilles.



DIFFUSERS

Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetical requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G); standard colour is PPM 9010 (20% Gloss White). This range is complemented by the Aircell range of polymer Diffusers.

ACTIVE AND PASSIVE CHILLED BEAMS

The finest quality range of high output active beams, used for ventilated heating and cooling applications. These units have 4 pipe coils to allow heating and cooling circuits to run simultaneously, giving constant and responsive control. The design allows a large optimum capacity and also allows the customer to specify the nozzle type and pitch for individual circumstances.

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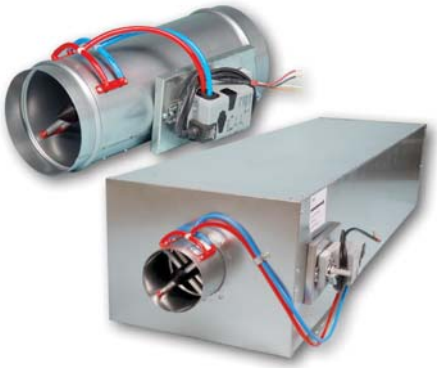

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The Constant Air Volume damper requires no power source as it is controlled via a mechanical device and calibrated before delivery. All volume dampers can be ordered with a single or double (insulation) skin.

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A quality range of products for external wall applications. Made from aluminium, with birdscreen or insect screen options. All louvres are made to customer specified sizes and (PPM/G) colours; standard colour is PPM 9006.

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