flowbar
Installation Manual

FlowBar Architectural Linear Diffusers

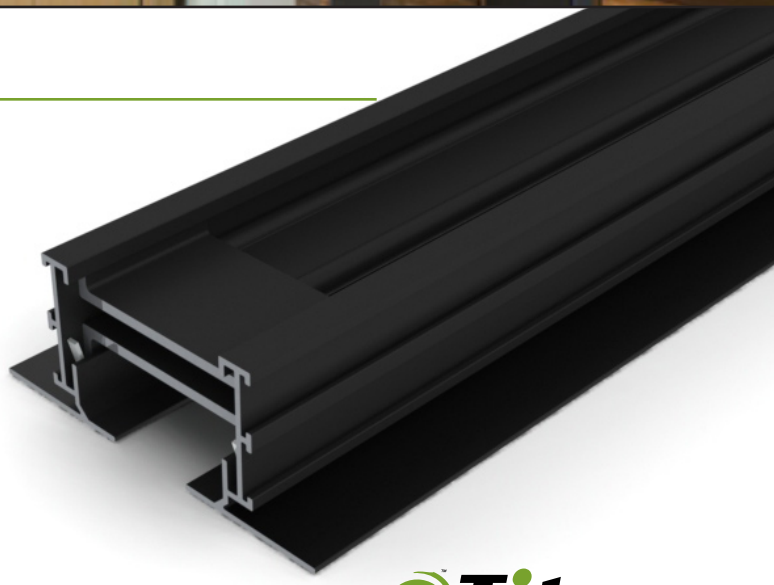
FL-10

FL-15

FL-20

FL-25

FL-30



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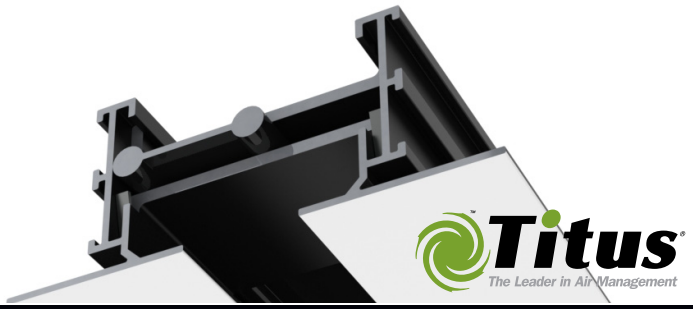


FlowBar Installed During Hard Ceiling Installation

Titus FlowBar Linear Diffusers are designed to integrate with the ceiling system. The integration process takes place by installing the diffuser concurrently with the ceiling.

Figure 1 below summarizes the steps required to install a FlowBar Diffuser System as part of the hard ceiling installation.

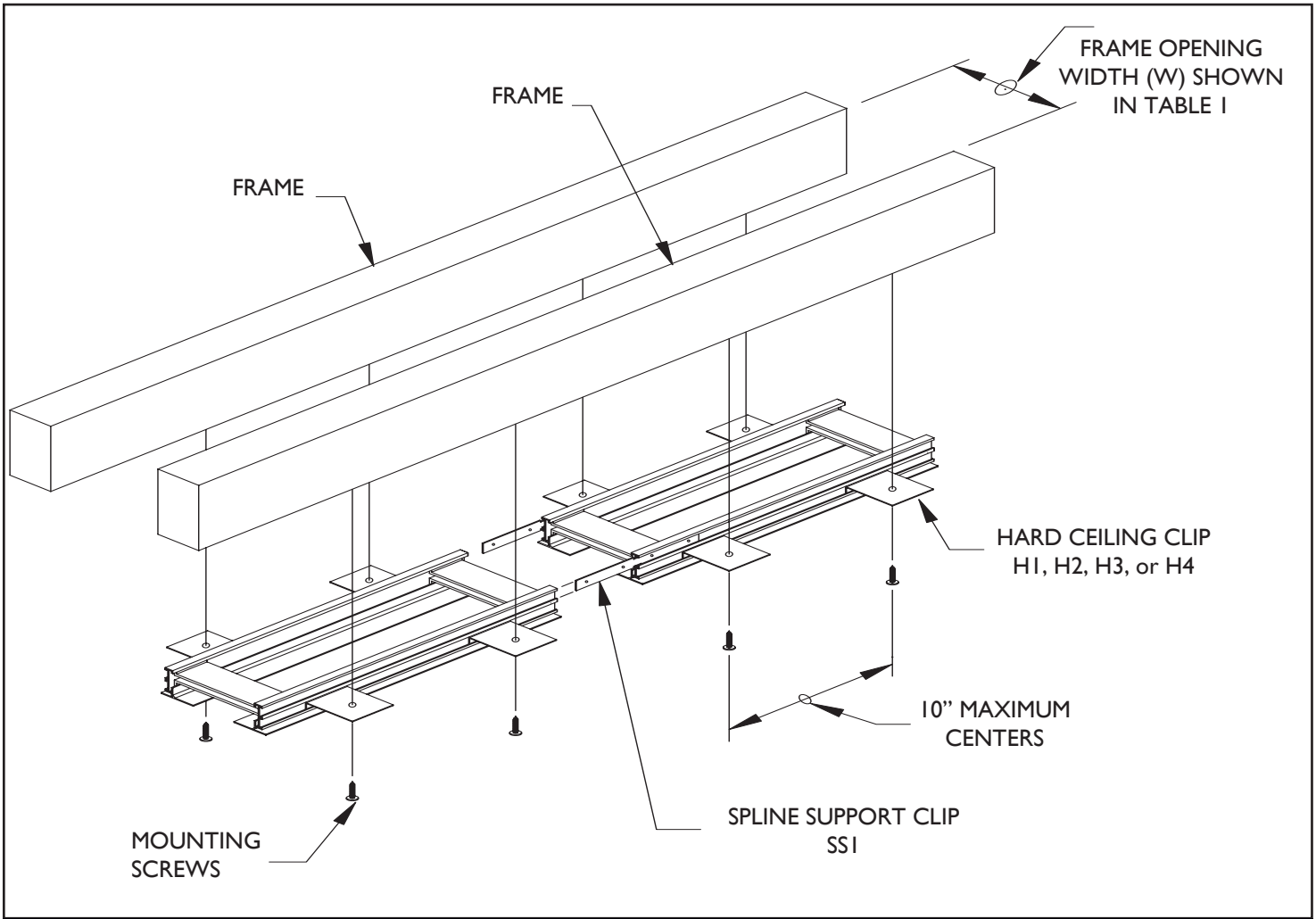


Figure 1. Installation of FlowBar with a Hard Ceiling

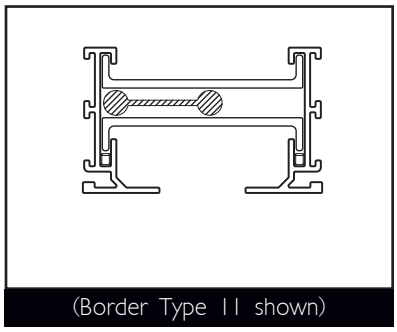
Summary of Steps to Install FlowBar with a Hard Ceiling

STEP 1. Identify the Diffuser Border Type
STEP 2. Construct Ceiling Frame Work
STEP 3. Attach Mounting Clips to Diffuser
STEP 4. Attach Diffuser to Ceiling Frame Work
STEP 5. Attach Plenum to Diffuser

FlowBar Installed During Hard Ceiling Installation

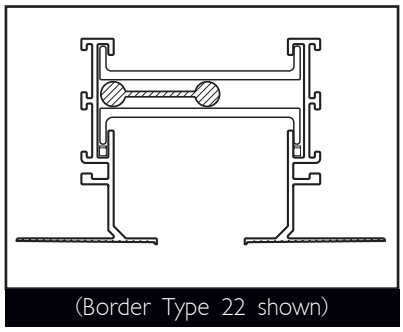
STEP 1. Identify the Diffuser Border Type

There are six different extrusion styles (identified as "Frame Types" in this manual) which are combined to form eight different Border Types. Border Types are identified by combining the two frame styles used i.e. Border Type 16 has one frame #1 and one frame #6.



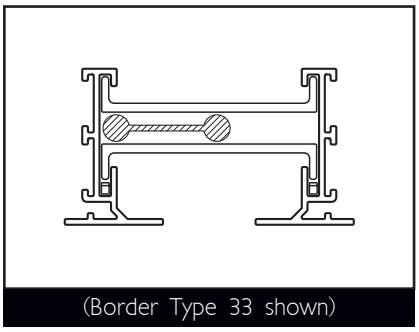
(Border Type 11 shown)

FRAME 1. The outer edge of the face flange is even with the stack head for flush mounting. Frame 1 is used with border types 11, 13, 14 or 16.



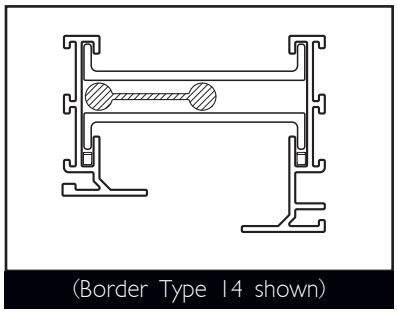
(Border Type 22 shown)

FRAME 2. is designed for use with hard ceiling applications where the finishing flange is taped and spackled into the ceiling to leave only the air slot exposed to the room. Frame 2 is used with border type 22.



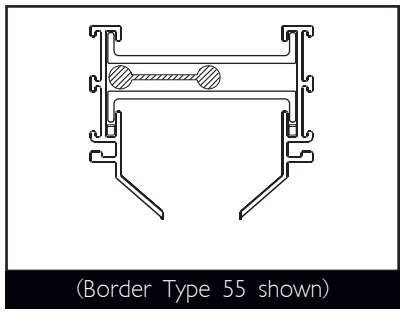
(Border Type 33 shown)

FRAME 3. The outer edge of the face flange is extended 3/16" out to provide a surface for sheetrock or acoustic ceiling tile to lay on. Frame 3 is used with border types 13 or 33.



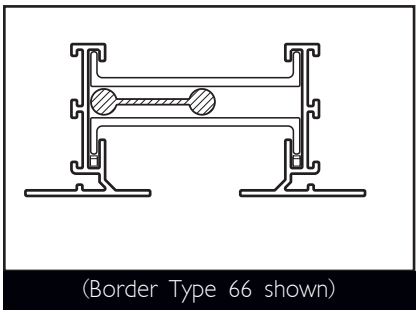
(Border Type 14 shown)

FRAME 4. has an extended height for use with uneven ceiling heights or where the ceiling meets the wall. Frame 4 is used with frame 1 to form border type 14.



(Border Type 55 shown)

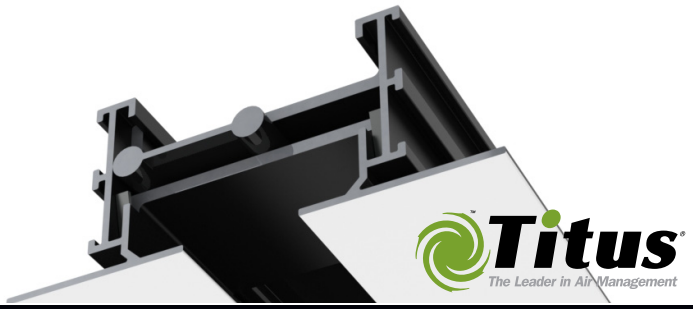
FRAME 5. Like frame 2, is designed for use with hard ceiling applications where the finishing flange is taped and spackled into the ceiling. The sheetrock or wood for frame 5 is cut at an angle to match the frame. Frame 5 is used with border type 55.



(Border Type 66 shown)

FRAME 6. The outer edge of the face flange is extended 1/2" out to provide an extended surface for sheetrock or acoustic ceiling tile to lay on. Frame 6 is used with border types 16, 66 & 77.

Border Type 77 utilizes the Quick-Clip® Mounting System allowing FlowBar to be installed after the ceiling is in place.



FlowBar Installed During Hard Ceiling Installation

STEP 2. Construct Ceiling Framework

- ☐ Before installing drywall, a framed opening must be constructed to support the FlowBar Diffuser.
- ☐ It is recommended that the framework be continuous to accommodate the Hard Ceiling Clip spacing requirements.
- ☐ The framing material must be suitable to hold the Diffuser in place when attached with screws through the FlowBar Mounting Clips.
- ☐ The width of the framed opening required depends on the model of FlowBar being installed. The frame opening width dimension, 'W', is listed in Table 1.
- ☐ NOTE: If it appears that it will be difficult to install plenums after the opening is framed and FlowBar installed, then use wires to support the Plenums above the framework first.

FlowBar Model	Frame Opening Width (W)		
	1-SLOT	2-SLOT 2CRA & 2CRB	2-SLOT 2CRN
FL-10	3 1/4"	5 11/16"	6 9/16"
FL-15	4 1/4"	7 11/16"	8 9/16"
FL-20	5 1/4"	9 11/16"	10 9/16"
FL-25	6 1/4"	11 11/16"	12 9/16"
FL-30	7 1/4"	13 11/16"	14 9/16"

Table 1. Frame Opening Dimensions

STEP 3. Attach Mounting Clips

- ☐ Hard Ceiling Clips are shipped loose for field attachment to the FlowBar Diffuser.
- ☐ Slide the Hard Ceiling Clips into the lower bosses of each frame rail as shown in Figure 2.
- ☐ Position the clips at a maximum of 10" intervals along the Diffuser frame.
- ☐ The Hard Ceiling Clips must be secured to a framing member.
- ☐ These Mounting Clips should be attached to the ceiling framework at a maximum of 10" intervals.
- ☐ For Diffusers with two slots, a CenterTee Support Bracket is shipped loose for installation. The Center-Tee Support Bracket is installed over the center rail of the FlowBar and then rotated to interlock with the outer FlowBar borders as shown in Figure 3.

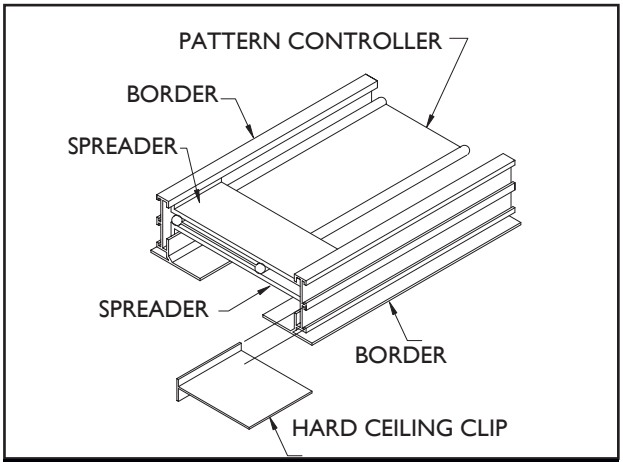


Figure 2. Installation of Hard Ceiling Clips

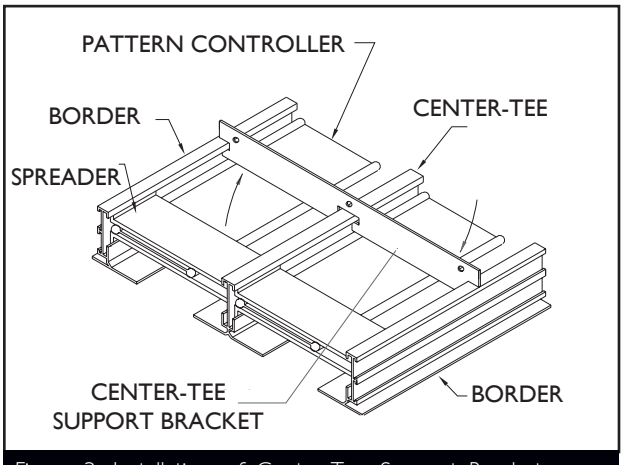


Figure 3. Installation of Center-Tee Support Bracket

FlowBar Installed During Hard Ceiling Installation

STEP 4. Attach Diffuser to Ceiling Frame

- ☐ Lift the FlowBar Diffuser into the framed opening and secure the Mounting Clips to the frame with flat head screws as shown in Figure 4.
- ☐ If multiple sections of FlowBar are required, repeat previous step by lifting additional sections into the framed opening. Be sure to insert Spline Support Clips-SS1 into the FlowBar ends to insure a tight and aligned connection as shown in Figure 4.
- ☐ Install and secure end caps and mitered corners if required as shown in Figure 5.

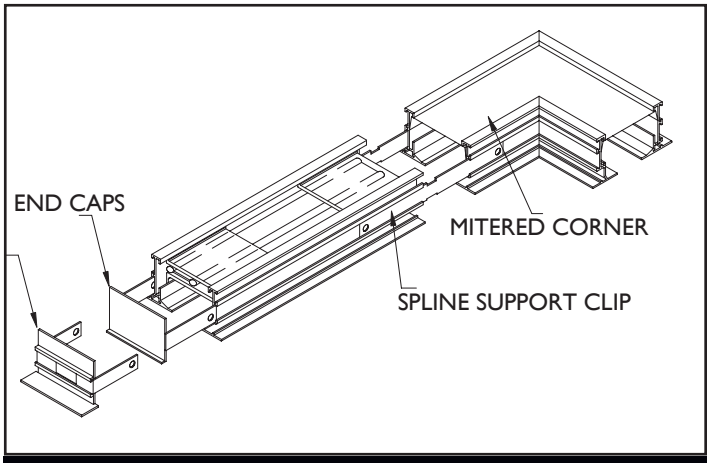


Figure 5. Installation of End Caps & Mitered Corner

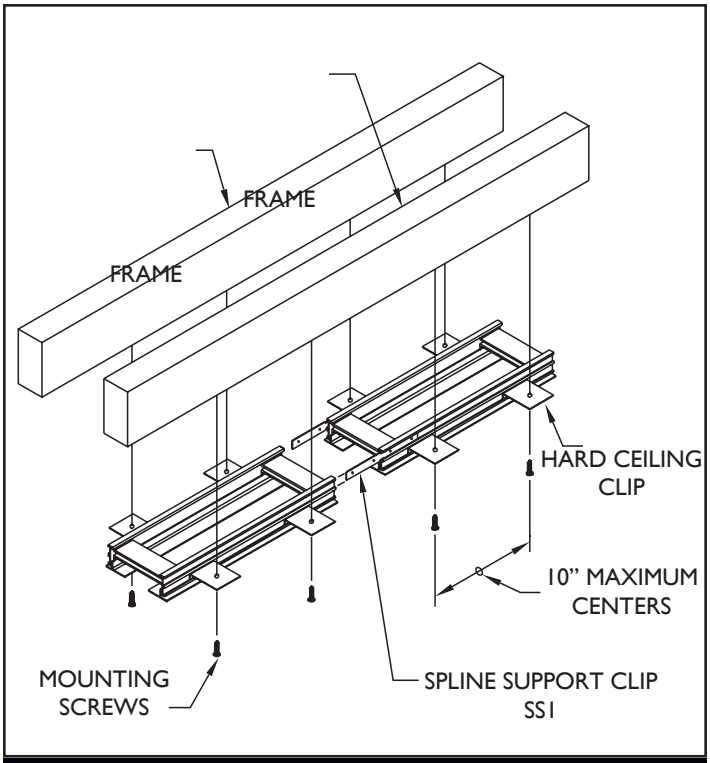


Figure 4. Installation of Diffuser in Ceiling

STEP 5. Attach Plenum to Diffuser

- ☐ If Plenums were mounted earlier, attach the Plenum by snapping it to the Diffuser using the clips on the Plenum as shown in Figure 6.
- ☐ If Plenums were not mounted earlier, lift the Plenums into place and attach them to the FlowBar at this time.
- ☐ Plenums may need support with ceiling wire to the building structure per code requirements.

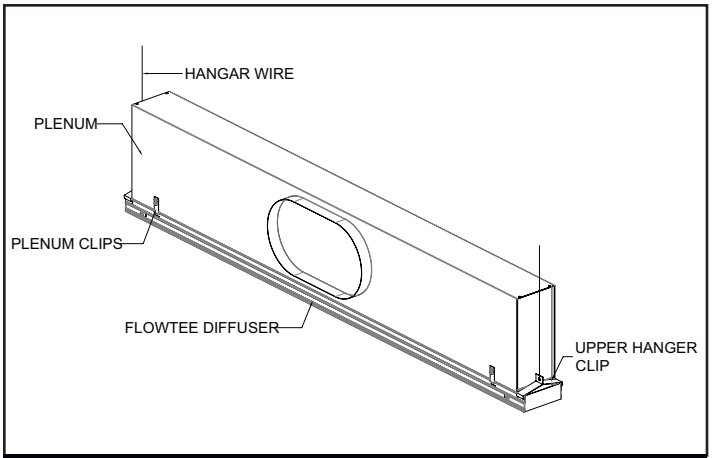
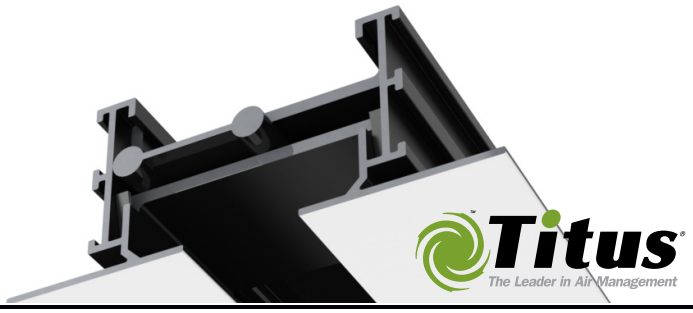


Figure 6. Attachment of Plenum to Diffuser



FlowBar Installed During Hard Ceiling Installation

STEP 6. Attach Inlet Damper (if required)

- ☐ Attach optional Inlet Damper assembly (if supplied) to the Inlet Collar. Position the lever inside the Plenum on the bottom of the Inlet Collar.
- ☐ Install the Inlet Duct on the Plenum Inlet Collar using the methods prescribed by the sheet metal specification.

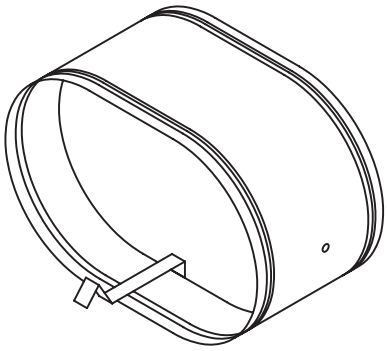


Figure 7. View of Inlet Damper

STEP 7. Install Drywall

- ☐ Slide the Drywall tightly between the mounting clips and the FlowBar Flange as shown in Figure 8. For ease of installation, insert the tapered edge of the Drywall into this opening. For the best fit, slide the edge of the Drywall all the way to the vertical leg of the frame.
- ☐ Every 12" and between the Hard Ceiling Clips, attach screws just beside the Diffuser Flange, through the Drywall and into the Framing Member.
- ☐ For Border 55 only, before installing the sheetrock or wood ceiling, the leading edge must be trimmed at a 45° angle to match the Diffuser as shown in Figure 9.

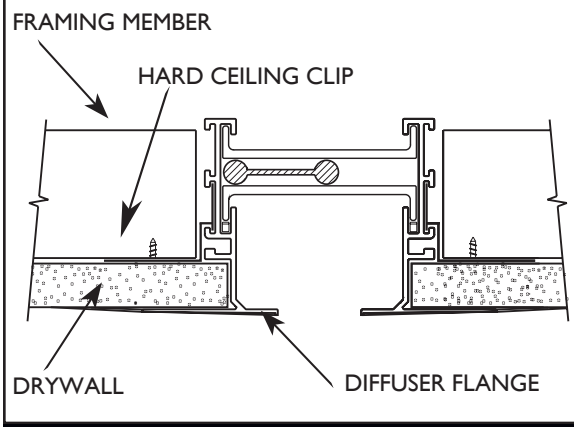


Figure 8. Drywall Installation

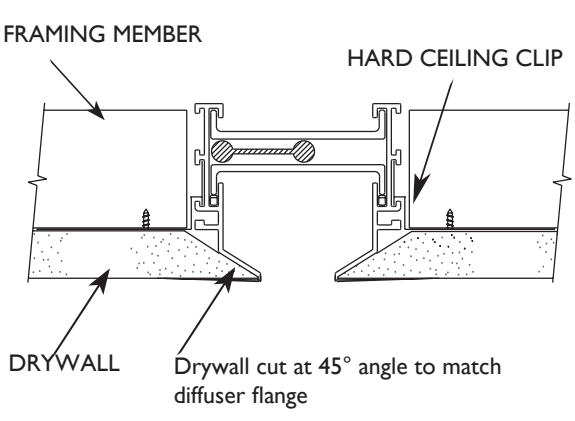


Figure 9. Drywall Preparation - (Border 55 Only)

FlowBar Installed During Hard Ceiling Installation

STEP 8. Review Installation - (Borders 22 & 55 Only)

Before continuing it is recommended that the installer confirm that:

☐ The FlowBar Diffuser is secure and straight.

☐ For units longer than twelve feet, a 1/8" gap between sections is recommended to allow for thermal expansion.

☐ Do not run the HVAC system during the finishing procedures. This could cause premature drying of the compounds, making them more prone to cracking.

STEP 9. Finish the Surface - (Borders 22 & 55 Only)

☐ Thoroughly wipe the entire finishing flange with solvent/degreaser such as Rust-Oleum Ready-To-Use Cleaner/Degreaser to remove any oils or residue.

☐ Apply one coat of bonding agent onto the entire surface of the finishing flange per the manufacturers instructions. Bonding agent should be equivalent to Plaster Weld, made by Larsen Products which is available from plaster supply houses. The bonding agent provides a strong bond to prevent the flange from delaminating. Allow bonding agent to dry at least one hour.

☐ Apply first coat of joint compound onto the diffuser's finishing flange and onto the sheetrock three inches. Use a durabond setting-type compound.

☐ Embed a 4" wide mesh or paper tape into the first coat of joint compound. Smooth to remove air pockets. The tape should cover the aluminum rail, but not extend over the raised lip on the rail. Apply second coat of finishing compound over the tape and smooth.

☐ After compound has dried, apply two coats of standard finishing compound and let dry. Sand smooth, prime, and paint as scheduled.

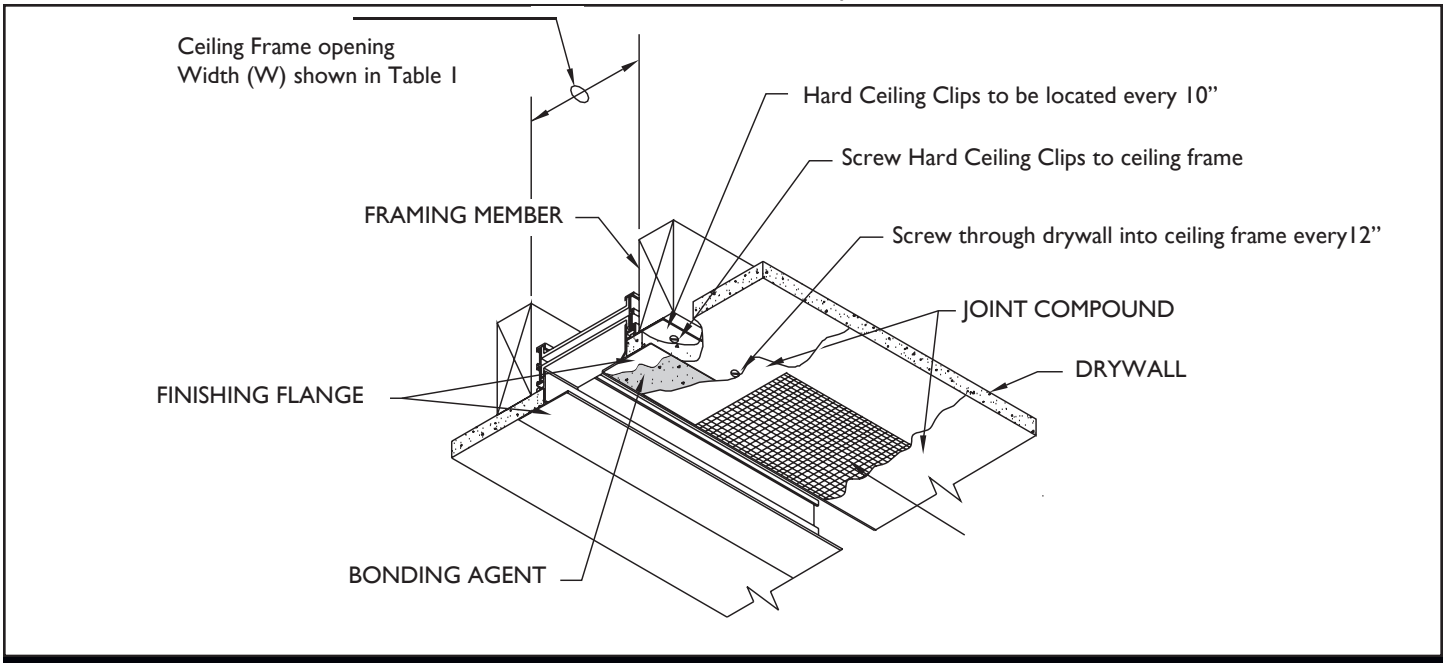
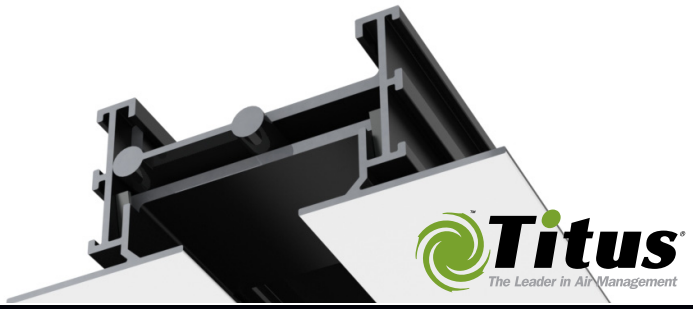


Figure 10. Summary of Border Type 22 Installation



FlowBar Installed After Hard Ceiling Installation

STEP 1. Install Plenums

☐ Install Titus model FBP or FBPI Plenum and secure to the building structure using hanger wire.

☐ If Plenum is furnished by others, a hemmed edge inside the bottom of the Plenum sides is required to capture the hanger bracket assemblies.

☐ The Plenum should be hung so that the Plenum straddles the ceiling opening and the bottom edge of the Plenum rests on the backside of the ceiling as shown in Figure 11.

STEP 2. Make Inlet Duct Connections

☐ Attach the Inlet Duct to the inlet collar using the method prescribed by the job specification.

☐ NOTE: If the Plenum Inlet is accessible after the ceiling is installed, this step can be completed later.

STEP 3. Install Drywall Ceiling

☐ The ceiling contractor can now frame in the ceiling around the Plenum and install the drywall. Complete the ceiling surfacing.

☐ NOTE: The finished opening must be smaller than the overall FlowBar face dimensions. Refer to Table 2 for the ceiling opening width required. The Two-Slot Diffusers are available with the three different types of center extrusions as shown in Figure 12. The type of center extrusion determines the ceiling opening.

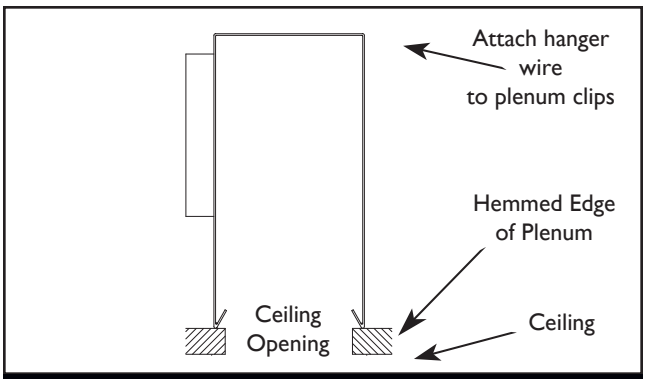


Figure 11. Concealed Fastening Plenum Installation

FlowBar Model	Ceiling Opening Width		
	1-SLOT	2-SLOT 2CRA & 2CRB	2-SLOT 2CRN
FL-10	3	5 1/2"	6 3/8"
FL-15	4	7 1/2"	8 3/8"
FL-20	5	9 1/2"	10 3/8"
FL-25	6	11 1/2"	12 3/8"
FL-30	7	13 1/2"	14 3/8"

Table 2. Ceiling Opening Dimensions for Border Type 77

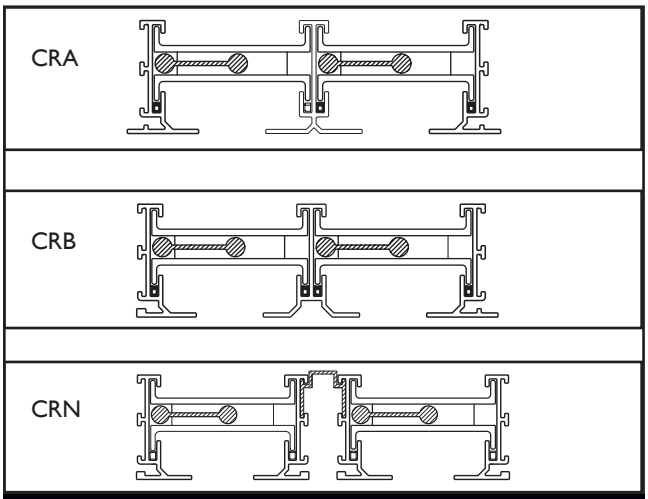


Figure 12. Center Extrusion Configurations

FlowBar Installed After Hard Ceiling Installation

STEP 4. Install Concealed Fasteners

- ☐ Install the QuickClip® Mounting Bracket to the FlowBar Spacer at the desired interval by pushing the #10 x 2-1/2" long screw through the hole in the spacer from the face of the Diffuser. Start the threaded end of the screw into the bracket as shown in Figure 13.
- ☐ The recommended spacing is 48" maximum between hangers.

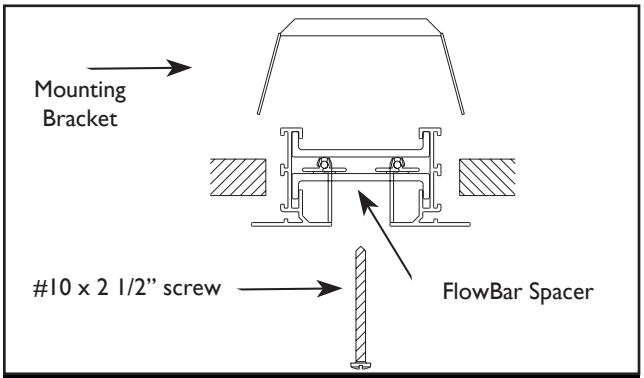


Figure 13. Bracket / Diffuser Assembly

STEP 5. Install Diffuser in Ceiling

- ☐ If continuous FlowBar is being installed using multiple sections, assemble the sections together using Spline Support Clips (SS1). Attach end caps or end borders as required. See Hard Ceiling Installation, Step 4.
- ☐ Lift the Diffuser into the Plenum until the Mounting Brackets spring into the hemmed edge. Using a slotted screw driver, tighten the screw until the Diffuser is snug against the ceiling as shown in Figure 14. Before securing the Diffuser, make sure that the Diffuser Flange overlaps the ceiling opening.
- ☐ Make sure that at least two QuickClip® Mounting Assemblies line up with each Plenum.
- ☐ Where Mounting Brackets do not line up with a Plenum, the Drywall can be used to support the FlowBar Diffuser. Use a slotted screw driver to tighten the screws until the Diffuser is snug against the ceiling as shown in Figure 15.

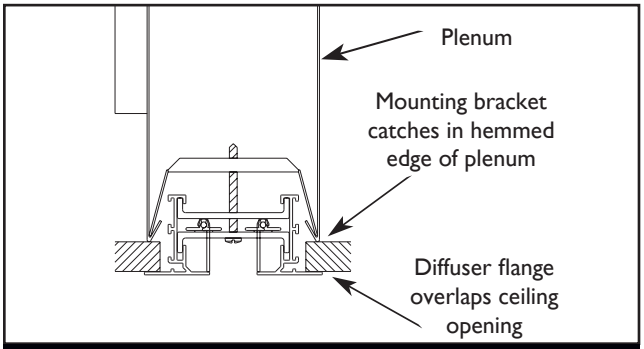


Figure 14. Diffuser Installation with Plenum

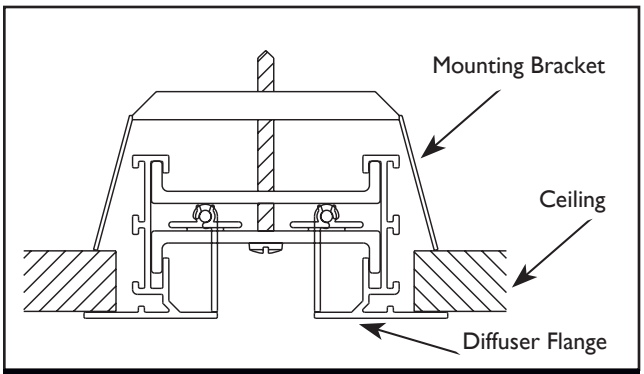
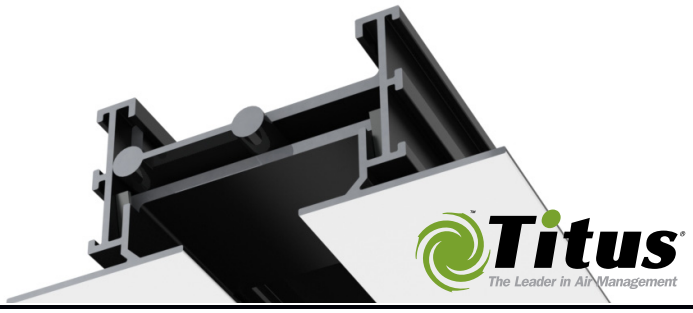


Figure 15. Diffuser Installation without Plenum



Field Cutting Linear FlowBar

STEP 1. Prepare Diffuser for Cutting

- ☐ Working from a table covered with indoor/outdoor carpet, measure the length of Diffuser to be cut.
- ☐ Slide the top Spacer sufficiently to allow for removal of the Pattern Controller(s) as shown in Figure 16.
- ☐ Remove the Pattern Controller(s) as shown in Figure 17.
- ☐ Slide both top and bottom Spacers back into the FlowBar frame as shown in Figure 18, beyond the cut mark to clear the saw blade.

STEP 2. Cut Diffuser to Length

- ☐ Secure FlowBar to table. Cut through both FlowBar rails with the finished flanges facing up as shown in Figure 19.
- ☐ A 10" miter saw with an aluminum cutting blade is recommended.
- ☐ Caution: Use/Wear proper safety equipment.
- ☐ Cut the pattern controller so it will fit between the spacers.

STEP 3. Reassemble Diffuser

- ☐ Move both Spacers to the end of FlowBar.
- ☐ Slide the top Spacer sufficiently to allow for replacement of the Cattern Controller(s).
- ☐ Reinstall the Pattern Controller(s) and slide the top Spacer back over the Pattern Controller(s).
- ☐ Lubricate the portion of the Pattern Controller that fits between the top and bottom spreader with WD-40 or other lubricants of your choice.
- ☐ All FlowBar components may be reused after cutting, however, additional Spacer Kits are an available option.

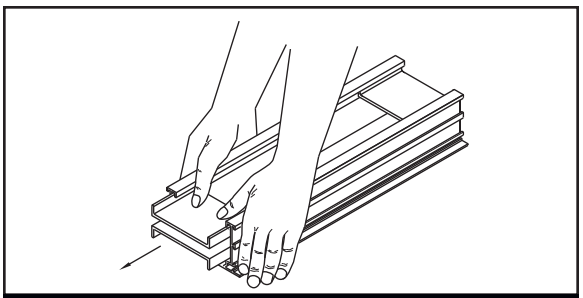


Figure 16. Diffuser Spacer Removal

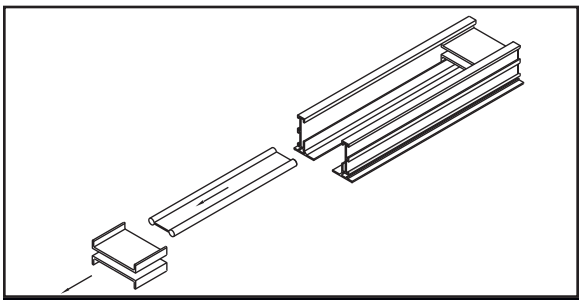


Figure 17. Removal of Pattern Controller

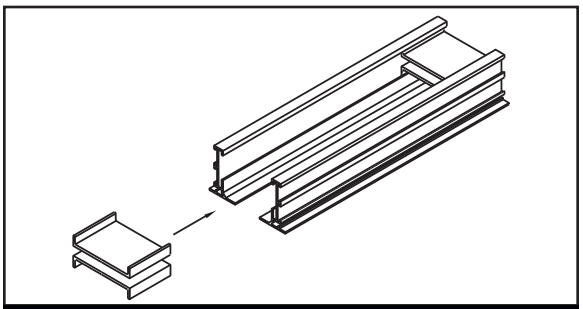


Figure 18. Replacement of Diffuser Spreader

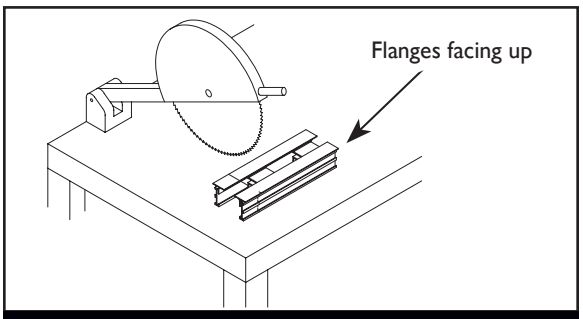


Figure 19. Field Cutting Diffuser

FlowBar Installed In Acoustical Ceiling

STEP 1. Install Hanger Clips to Diffuser

- ☐ FlowBar Diffusers with one-slot are supported by sliding Upper Hanger Clips through the top bosses in the FlowBar rails as shown in Figure 20.
- ☐ FlowBar Diffusers with two-slots are supported by sliding Upper Support Hangers through the top bosses in the FlowBar rails as shown in Figure 21.
- ☐ The clips are secured to the building structure with hanger wire.

STEP 2. Install Diffuser in Ceiling

- ☐ If continuous FlowBar is being installed in multiple sections, assemble the sections together using Spline Support Clips (SS1). Attach end caps or end borders as required. (Refer to Step 4, Page 5.) (SS1 clips may be secured using #8 - 18 x 1/2" crimptite head screw).
- ☐ Where ceiling tees (By Others) intersect the FlowBar, bend the connecting Spline Support Clip-SS1 90°, slide into the lower FlowBar rail bosses, and secure to the ceiling tee as shown in Figure 22.

STEP 3. Attached Plenums to Diffusers

After installing the FlowBar into the ceiling suspension system, install the air distribution plenums and connect to ductwork.

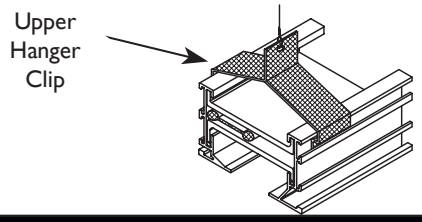


Figure 20. Attachment of UHC to One-Slot Diffuser

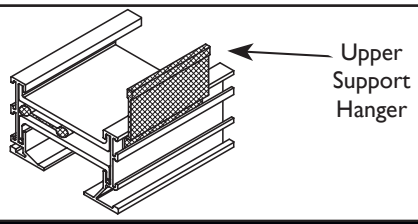


Figure 21. Attachment of UHC to Two-Slot Diffuser

STEP 4. Attached Plenums to Diffusers

After installing the FlowBar into the ceiling suspension system, install the air distribution plenums and connect to ductwork.

STEP 5. Install Ceiling Tiles

Trim and install the acoustic ceiling tiles.

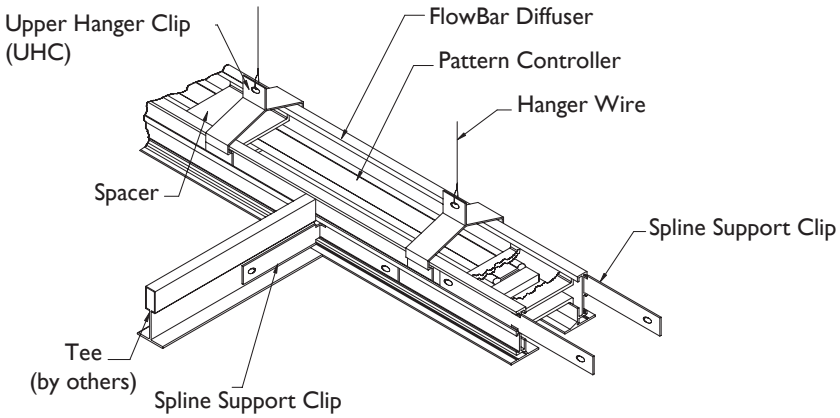
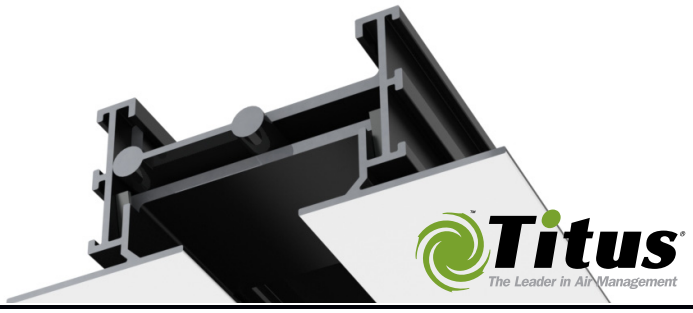


Figure 22. Installation of FlowBar in Acoustical Ceiling



FlowTee Installation

STEP 1. Install Hanger Clips to Diffuser

☐ Slide Upper Hanger Clips into Single Slot Diffuser rails or Upper Support Hangers into the top bosses at each end of the Diffuser as described in Acoustical Ceiling Installation, Step 1.

STEP 2. Install Diffuser in Ceiling

☐ Install the Diffuser on top of the ceiling grid as shown in Figure 23.

☐ The Diffuser can be positioned adjacent to a ceiling T-Bar or inside the module.

STEP 3. Secure Diffuser to Building Structure

☐ Secure the Diffuser to the building structure by attaching the Hanger Brackets to the building structure with Hanger Wire.

☐ Secure the Plenums to the building structure by attaching the Plenum tabs to the building structure with Hanger Wire.

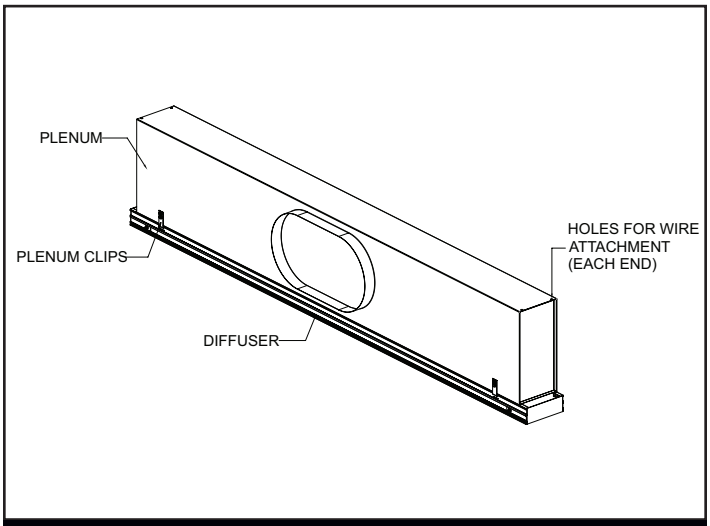


Figure 23. Installation of FlowTee Diffuser

STEP 4. Make Inlet Duct Connections

☐ Connect the Inlet Duct to the Inlet Collar using the prescribed methods.

STEP 5. Install Ceiling Tiles

☐ Trim and install acoustic ceiling tiles.

ModuFlow Installation

STEP 1. Install Center Tile in Diffuser

☐ Unlatch spring clips holding the back pan onto the frame and pattern controller assembly.

☐ Cut ceiling tile to 17-15/16" x 17-15/16".

☐ Insert the cut ceiling tile into the frame and pattern controller assembly.

☐ Attach back pan assembly to frame making sure that the clips are secure.

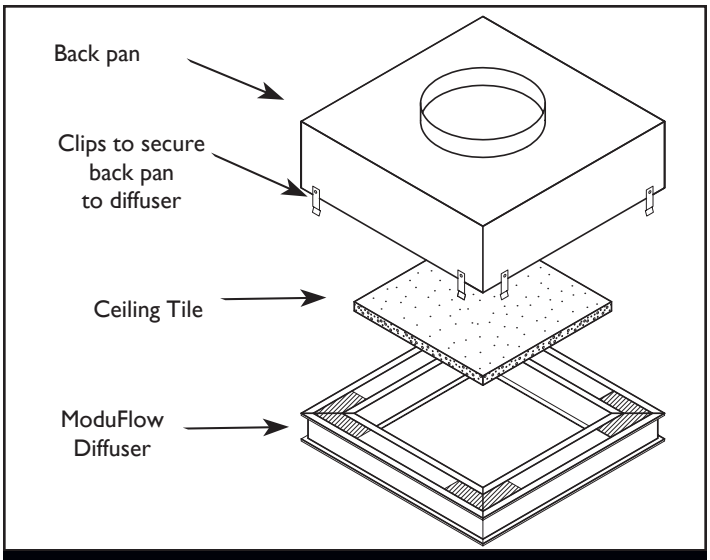


Figure 24. Center Tile Installation

Moduflow Installation

STEP 2. Install Hanger Clips

- ☐ Install the Upper Support Hanger (USH) Clips at the clip access area into the upper boss of the Diffuser extrusion and move a clip towards each corner as shown in Figure 25.

- ☐ Additionally for 9/16" bolt slot grids, install the SC1 Clips into the lower extrusion boss at the access area and move a clip towards each corner.

STEP 3. Install Diffuser in Ceiling

- ☐ Install ModuFlow unit into ceiling grid. Moduflow Diffusers lay into the Acoustical Ceiling Suspension System.

- ☐ Support Diffuser by attaching Hanger Wire from the clips to the ceiling structure.

- ☐ Attach Inlet Duct to the Inlet Collar on the back pan using prescribed methods.

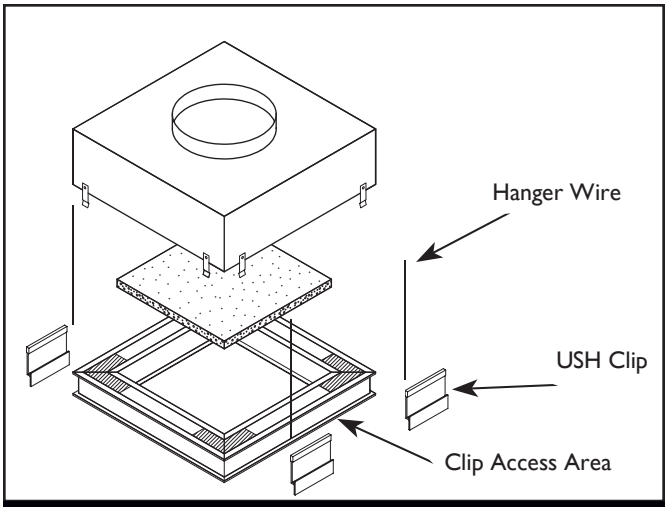
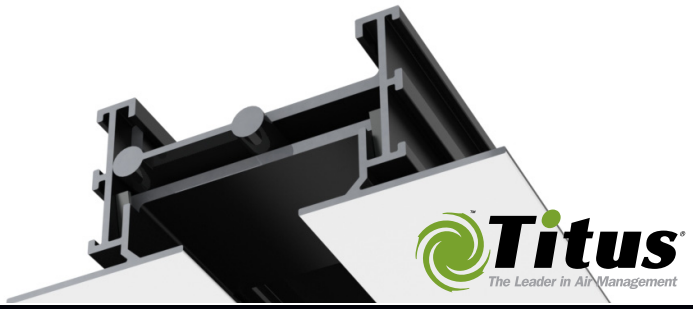
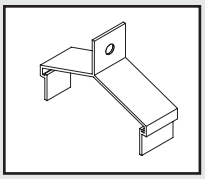


Figure 25. Installation of USH clips

Figure 26. View of USH and SCI Clips



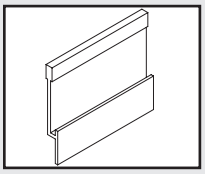
FlowBar Parts List



Model: UHC-10, -15 or -20 Description: Upper Hanger Clip

Application: Use with One-Slot models FL-10, -15 or -20 any border type, except Border Type 77. Clip inserts into extrusion boss and hanger wire threads through hole in clip to support FlowBar Diffuser.

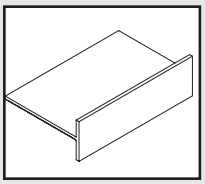
Quantity per Bag: 5 pieces



Model: USH Description: Upper Support Hanger

Application: Use with any One-Slot or Two-Slot Diffuser with any border type, except Border Type 77. Insert a clip into the extrusion boss on each side of the diffuser. Thread hanger wire through hole to support FlowBar Diffuser.

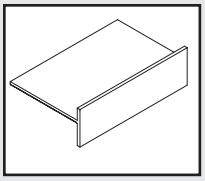
Quantity per Bag: 15 pieces



Model: H1 Description: Hard Ceiling Clip

Application: Use with Frame 3 or Frame 6 in hard ceiling installation. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

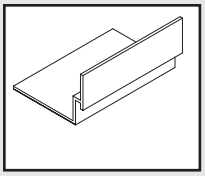
Quantity per Bag: 48 pieces



Model: H2 Description: Hard Ceiling Clip

Application: Use with Frame 1 in hard ceiling installation. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach the clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

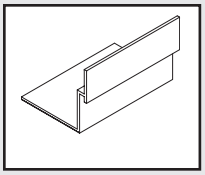
Quantity per Bag: 48 pieces



Model: H3 Description: Hard Ceiling Clip

Application: Use with Frame 2, Frame 4 or Frame 5 in hard ceiling installation. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

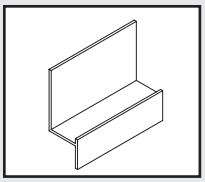
Quantity per Bag: 48 pieces



Model: H4 Description: Hard Ceiling Clip

Application: Use with Frame 4 in hard ceiling installation. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

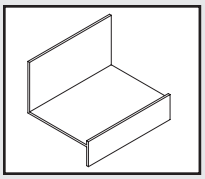
Quantity per Bag: 48 pieces



Model: WC1 Description: Wall Clip

Application: Use with Frame 3 to install Diffuser flush against side wall. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

Quantity per Bag: 28 pieces

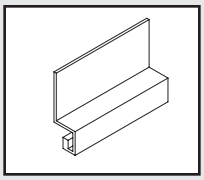


Model: WC2 Description: Wall Clip

Application: Use with Frame 1, Frame 3 or Frame 6 to install Diffuser with reveal against side wall. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

Quantity per Bag: 28 pieces

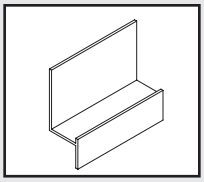
FlowBar Parts List



Model: WC3 Description: Wall Clip

Application: Use with Frame 1 install Diffuser flush against side wall. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

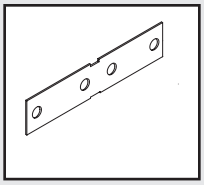
Quantity per Bag: 28 pieces



Model: WC4 Description: Wall Clip

Application: Use with Frame 6 or 7 install Diffuser flush against side wall. Insert a clip into the extrusion boss on the outside of the Diffuser frame. Attach clip to Framing Member with flat head screw. Clips should be spaced at 10" intervals.

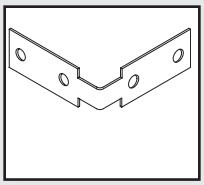
Quantity per Bag: 28 pieces



Model: SS1 Description: Spline Support Clip

Application: Used to connect multiple sections of FlowBar Diffusers. Insert clip half way into the extrusion boss on the outside of the Diffuser frame, then slide exposed end of Spline Support Clip into connecting piece of FlowBar.

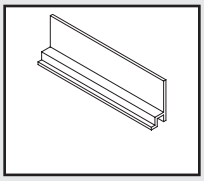
Quantity per Bag: 28 pieces



Model: SS1 Description: Spline Support Clip

Application: Spline Support Clip can also be used to connect FlowBar Diffuser to Accoustical Ceiling T-bar. Bend straight clip 90°. Insert clip half way into the extrusion boss on the outside of the Diffuser frame, then slide exposed end of Spline Support Clip into T-bar.

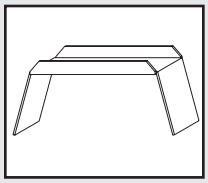
Quantity per Bag: 28 pieces



Model: SC1 Description: ModuFlow Support Clip

Application: Use with ModuFlow Border Type 13 to install in Bolt-Slot Ceiling System. Insert a clip into the extrusion boss on the outside of the Diffuser Frame 1. Thread Hanger Wire through hole in clip. Bottom of support clip rests on bolt slot ceiling bar.

Quantity per Bag: 28 pieces



Model: CFB-10, -15, -20, -25, -30 Description: Concealed Fastener Bracket Kit

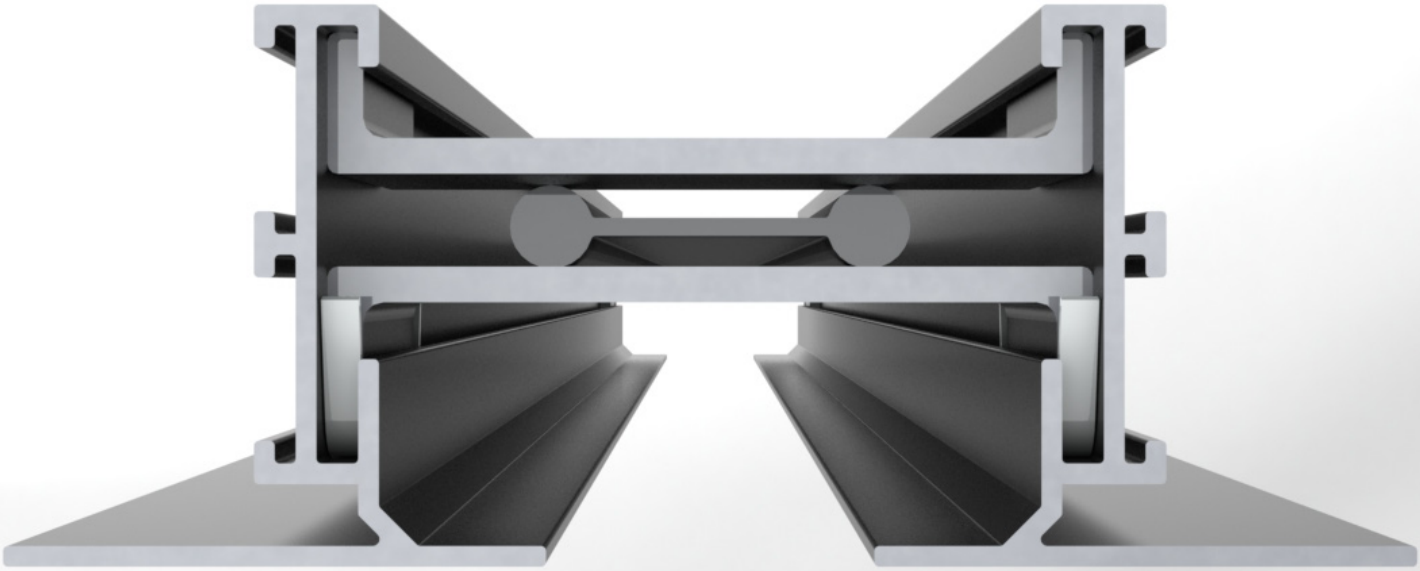
Application: Use with FlowBar Border Type 77 to install FlowBar Diffuser after hard ceiling installation. Place Mounting Bracket above Diffuser. Drill hole into existing FlowBar Spacer(s). Thread #10 x 2 1/2 flat head screw through each Spacer and into Mounting Bracket. Tighten screw(s) until Diffuser Flanges draw tight against ceiling. Note: One-Slot models use one screw. Two-Slot models use two screws.

Quantity per Bag: 4 pieces (includes four #10 x 2 1/2 screws for One-Slot models)
4 pieces (includes eight #10 x 2 1/2 screws for One-Slot models)

Titus FlowBar architectural linear diffuser system maximizes engineering performance without sacrificing aesthetic considerations for the designer. FlowBar's outstanding performance allows higher air flows than conventional linear diffusers, with lower noise levels, making it ideal for high profile designs.

FlowBar

The FlowBar was the first supply diffuser in the industry designed specifically for the architect. The wide array of slot widths allow for more CFM per linear foot while minimizing noise and pressure loss.



990 Security Row
Richardson TX 75081
Office: 972.699.1030
Fax: 972.680.1971
Email: titus@titus-hvac.com