Profile Type A LightFrame® Panel

The Cog Connector Hardware

The Cog connector is the centerpiece of the Decoustics A profile LightFrame® system. The panel frames are connected to each other or to a pre-engineered perimeter utilizing Cog connector hardware. The Cog connector is built into the A profile framework and can be accessed from the ceiling face utilizing the proprietary Installation removal tool.

Position of Cog Connectors

Cog Connectors are positioned between light frame panels concealed in the panel frame. To access A profile LightFrame® ceiling installations it necessary to review the ceiling plan, provided, which will indicate the position of Cog connectors. In this way maintenance staff can plan the removal of the appropriate LightFrame® panels to gain access to the plenum.

Cog Connector Components

The Cog Connector components are as follows:

- Chase Stone
- Tension bolt with cap nut
- Cog Connector and cage

Fig. 1: Fixing mechanism components;  
a) Cage b) Cogwheel c) Chase stone  
d) Tension bolt e) Cap nut

Fig. 2: Assembly stage; Cogwheel and tension bolt

Fig. 3: Assembly stage; Cogwheel covered by cage and tension bolt
By turning the cog connector, the attachment bolt is rotated into the threaded stone in the adjoining panel or perimeter profile. The Installation Removal tool, available through Decoustics, is used to manipulate the Cog connector and rotate the bolt in either clockwise or counter-clockwise direction. Figure 5-7 illustrate the Cog connector attachment of the Light Frame profiles to each other.

Fig. 5: Detached the tensioning bolt is completely recessed into Element B. The gap between the elements varies according to the inclination of the profile (see remarks). As such, the elements are disconnected and can be removed.

Fig. 6: By rotating the Cog connector with the Installation Removal tool the tensioning bolt moves towards Element A in a manner where it will engage the chase stone in Element A. When several Light-Frame panels are ganged together the assembly requires that the panels are stretched so to accommodate engagement of the tensioning bolt with the threaded stone. This is facilitated with a tensioning tool (see Page 9).

Fig. 7: Attached. The tension bolt is driven completely into Element A. Attachment is complete.
The following tools are required to install Profile A LightFrame® panels.

- Standard Installation and Removal Tensioning Tool
- Tensioning Tool to assist the assembly Process

Fig. 8: Standard Installation and Removal Tensioning Tool

Fig. 9: Tensioning tool

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Proper Tool Operation

The LightFrame® Installation tool utilizes a portable battery powered drill. The drill should be equipped with a torque limiting clutch. The clutch should be adjusted to apply enough force to install the Cog connector without over tightening. If bolts are over tightened you can possibly damage the Cog bolt threads making the bolt inoperable. This can occur during release and closure of the LightFrame® Cog connectors. When using a portable battery powered drill, it is important to maintain the correct direction of rotation. How the drill works is shown in Fig. 20.

Fig. 10: The tool is introduced into the slot of the LightFrame® Panel at the cog connector. As already mentioned, attention must be paid to the operational direction of the tool.

Fig. 11: Standard Installation Removal Tensioning Tool
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Dismounting and Reassembly of Ceiling Installations

Dismounting profile A LightFrame® panels

Profile A LightFrame® panels can be dismounted or rotated to an open position at the Cog connectors.

To access profile A LightFrame® panels by rotation of the panel determine the axis of rotation and undo the Cog connectors on the opposing side of the LightFrame® panel. This will allow the panel to rotate to an open position.

To remove profile A LightFrame® panels undo all of the Cog connectors being careful to support the panel as it is being removed.

The process should be carried out with due care. The LightFrame® panels that are removed should be stored in a safe location to protect against damage.

Reassembly profile A LightFrame® panel Installation

Reassembly is to be carried out in the reverse order to dismounting.

The tensioning tool is required when engaging multiple assemblies of A profile LightFrame® panels. When assembling large LightFrame® installations it is advisable to not fully tighten the Cog Connectors. Leaving a gap of 3 to 5mm between panels will allow the easier insertion of additional LightFrame® panels into the ceiling assembly. Only when all of the Cog connectors have been provisionally engaged should all of the connectors be fully tightened.

Example shown: Rotating LightFrame® panels

The three panel LightFrame® panel example shown on the right (Fig. 14) illustrates, the middle panel in the assembly can be rotated open.

Fig. 14: Determine the LightFrame® panel axis of rotation. Once all of the Cog connectors opposing the axis of rotation have been disengaged the LightFrame® panel can be rotated and opened along the axis.

Fig. 15: Determine the LightFrame® panel axis of rotation. Once all of the Cog connectors opposing the axis of rotation have been disengaged the LightFrame® panel can be rotated and opened along the axis.

Fig. 16: The LightFrame® panel is being rotated downward.

Fig. 17: The LightFrame® panel has been rotated downward and is completely accessible.
Example, Proper Use of the Tensioning Tool

The LightFrame® panel extrusion profiles hourglass inwards (towards the fabric), as soon as the Cog connectors are detached. For larger spans this can amount to 30mm or more. Therefore it is possible that the tensioning bolt will not reach the thread of the chase stone located in the frame of the adjacent panel. To facilitate installation it is necessary to pull the neighbouring profiles together with the aid of the tensioning tool. This will allow for the Cog Bolt thread to engage the stone in the opposing panel frame. The tensioning tool should be attached to the panel frame edges at a point close to the Cog connector to be engaged. The bolt should then be engaged to the threaded stone. Remove the tensioning tool before the Cog connector is completely engaged.
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Rotational Access of Installed LightFrame® Panels.

If a ceiling installation needs to be accessed two procedures are possible:

- Rotation of the LightFrame® panel along the LightFrame® panel axis of rotation.
- Dismounting of the LightFrame® panel

Example, Proper Use of the Tensioning Tool

The enable the rotation of type A LightFrame® panels the ceiling layout needs to have taken into account the preferred axis of rotation for the LightFrame® panels. This would be done at the planning stage, see also the checklist on Page 14.

To access LightFrame® panels all Cog connectors must be detached from those on the hinged axis. The Cog connectors on the hinged axis only need to be loosened. The Pivot point can be either within the LightFrame® (Fig. 5-7) panel or along the outside perimeter

The LightFrame® panel simply rotates on the selected axis. The LightFrame® panel depends on the neighbouring construction to remain suspended in the ceiling.

Fig. 21: Ceiling before Cog connectors are released.

Fig. 22: LightFrame® panels turned on its axis and rotated. Maintenance staff require an in depth ceiling plan identify the best way to access the ceiling installation. The plan will illustrate which elements are to be accessed, direction of rotation, and the proper sequence of panel access.

Fig. 23: Profile A LightFrame® panel in an open rotated down panel position.

Fig. 24: Rotating additional LightFrame® panels open increases the access area.
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