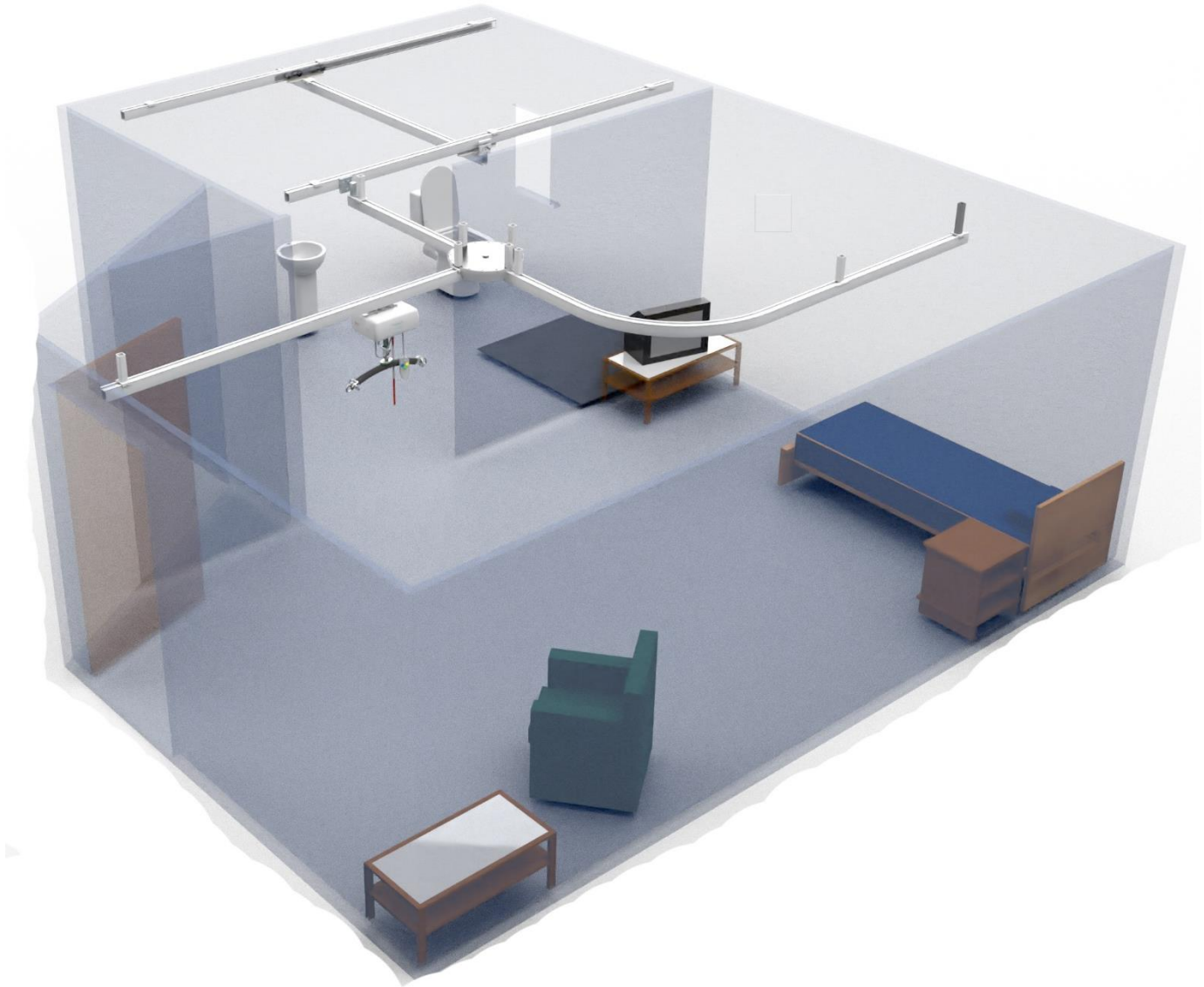
mackworth

Ceiling Track Systems



Installation Manual

1 Critical Information

The section below will give vital information that must be understood prior to continuing with this manual. This includes information on the various track types covered within this manual, the various materials we permit the tracks to be installed into, along with other accessories and information that is required for installation.

1.1 Installation Room Assessment

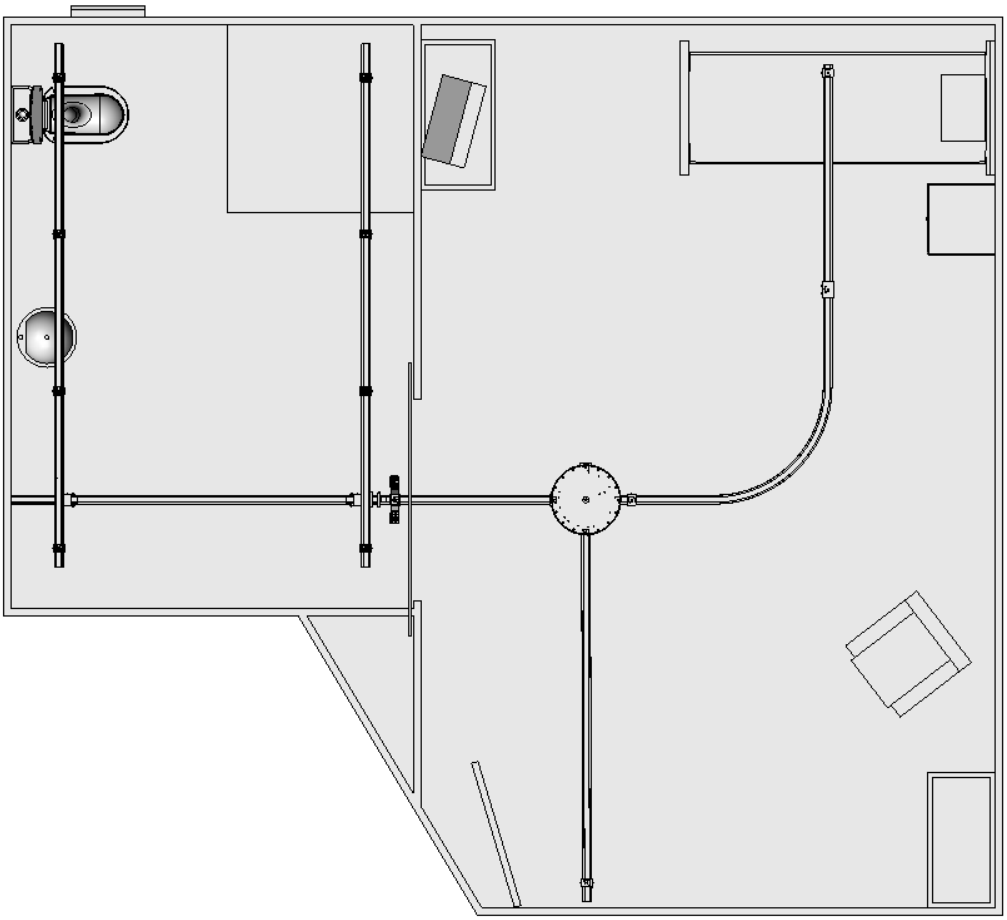
Prior to any installation, a thorough assessment must be completed to ensure that the installation is possible and safe. Ensure that this process has occurred, and that the relevant information has been provided to the installation engineer prior to installation.

The installation engineer must perform further assessments when installing the track system. This includes a pre-installation room assessment to ensure that no obstacles will cause an issue during and after installation. This assessment must also be done in the ceiling/false ceiling. This includes obstacles such as light fixings, smoke detectors, sprinklers, doorways and other track systems.

When fixing more complex systems such as h-systems, the assessment must include the full travelling area that the track and ceiling lift system will cover.

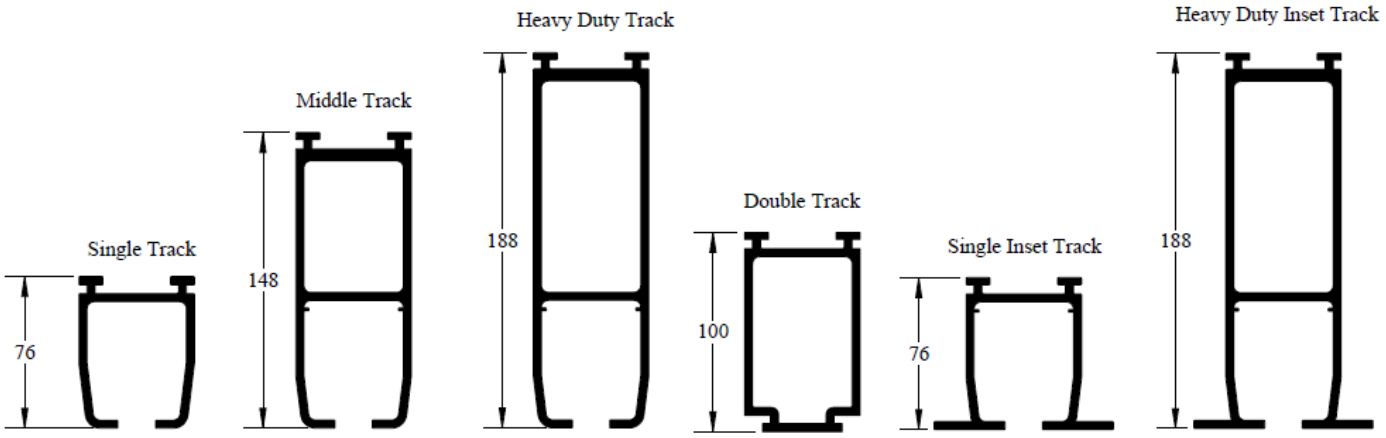
It is not always possible to fit a ceiling track fixing in the desired location. Always ensure that when relocating the fixing, it remains within the maximum permitted span length of the track. It may be necessary to reduce the distance between the fixings and fit an additional fixing for secure installation.

For further details on installation room assessments, see the ceiling track systems survey document.



1.2 Track Profiles

Below are the various track types profiles for reference, see below for the dimensions of each track type. (the double track is combined with the single track during installation)



Track Weights					
Single Track	Middle Track	Heavy-Duty Track	Double Track	Single Inset Track	Heavy-Duty Inset Track
1.8 lb/ft	3.5 lb/ft	7.46 lb/ft	2.37 lb/ft	2.02 lb/ft	7.66 lb/ft
2.7 kg/m	5.3 kg/m	11.1 kg/m	3.52 kg/m	3.0 kg/m	11.4 kg/m

1.3 Track Brackets

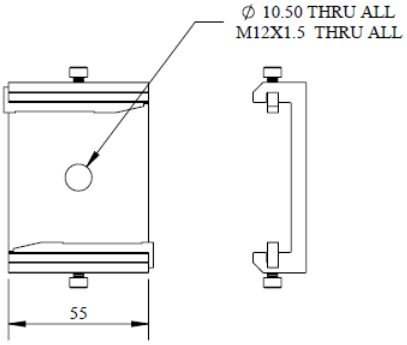
55mm threaded hole, 55mm unthreaded hole, 55mm slotted hole, 110mm threaded hole, 110mm unthreaded hole and 110mm slotted hole. All brackets stated are suitable for each type of ceiling track referred in this manual.

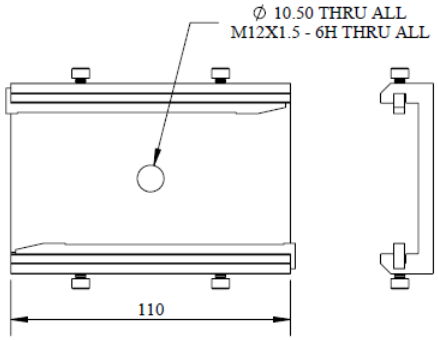
For ceiling track installation, the threaded track bracket is the first choice to use, with the unthreaded bracket an option used with turntable fixings. (depending on the turntable mounting hole state) the 55mm is the standard bracket to use to suspend a track, and the 110mm being used to link two tracks together. The track brackets will be supplied with wedges which are fitted to secure the ceiling track to the bracket.

55mm Standard Track Brackets

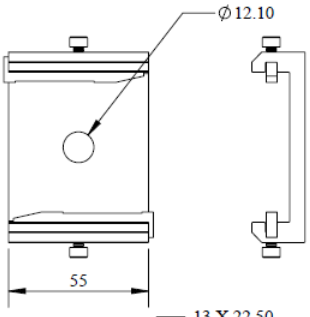
110mm Standard Track Brackets

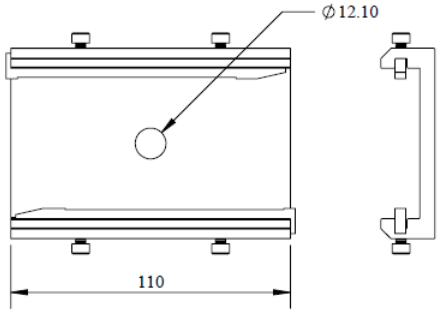
Threaded:



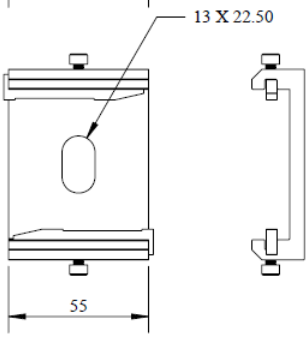


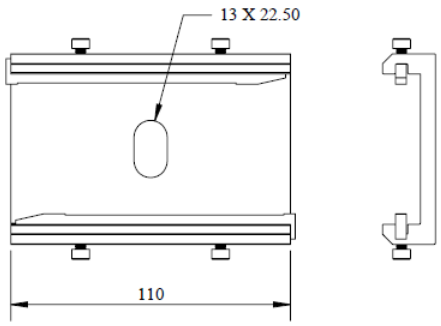
Through Hole:

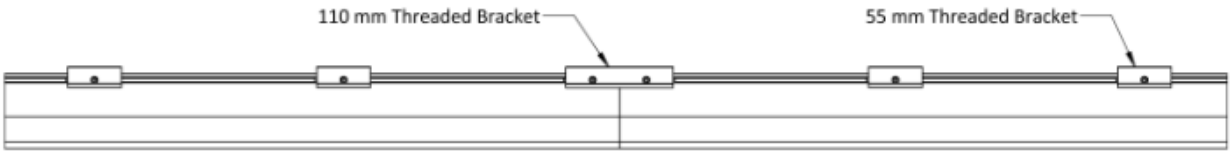




Slotted:







1.4 Straight Track Fixing Requirements

The ceiling track requires a certain amount of fixings to ensure that the installation is safe for the end users' usage. Depending on the type of track, the fixing distances will vary. See below the various track types available and the various lengths they are supplied in.

Track Type	Track Lengths			
	7ft 11" (2.16m)	12ft (3.66m)	16ft 4" (5m)	23ft (7m)
Single Track	✓	✓		
Single Inset Track			✓	
Double Track			✓	
Middle Duty Track		✓		
Heavy Duty Track				✓
Heavy Duty Inset Track				✓

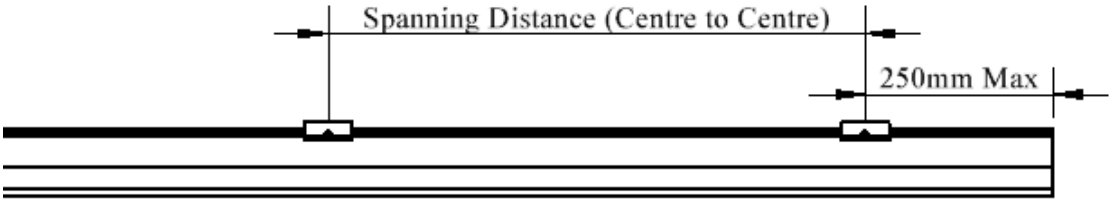
Where required a ceiling track can be cut to length to suit the installation requirements.

1.4.1 Track Bracket Positions

For each track type the maximum spanning distances between each fixing will vary. It is not permitted for any track to exceed the maximum span requirements under any circumstances. The maximum span is relevant to all safe working loads applied to the ceiling track system.

For every ceiling fixing, the ceiling track requires a minimum of three fixings. Wall fixings, gantry fixings and h-systems will only require two fixings. We recommend that the track fixings are spaced out evenly across a ceiling fixed track.

The definition of a track span is from the centre of a track bracket to the centre of the next track bracket directly in line. See image below for reference. A ceiling track is permitted to have an overhang of no more than 250mm from its final fixing point, this overhang must not be exceeded and applies to all track types.



An architectural survey is recommended to be completed prior to ceiling track system installations

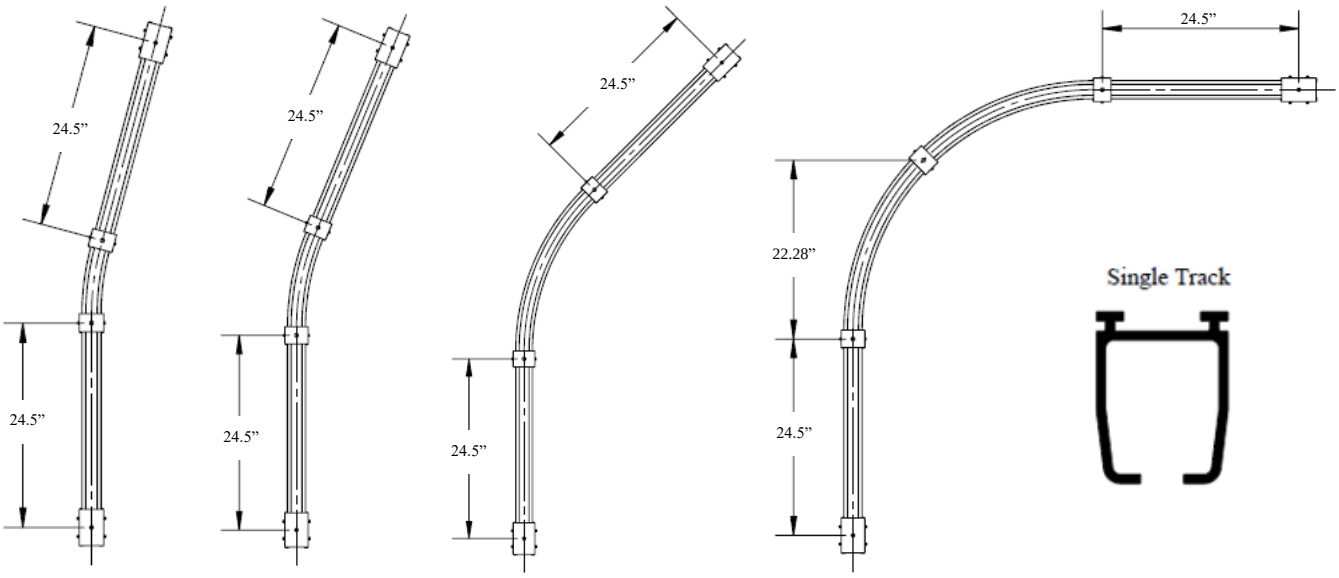
Track maximum spanning distances

Track Type	Applied Load	Max Span between each fixing
Single Track + Single Inset Track	287lb / 130kg	8.2ft / 2.5m
	353lb / 160kg	6.9ft / 2.1m
	440lb / 200kg	6.2ft / 1.9m
	600lb / 272kg	3.9ft / 1.2m
	838lb / 380kg	3.3ft / 1.0m
	1000lb / 454kg	1.6ft / 0.5m
Mid Duty Track	287lb / 130kg	23.0ft / 7.0m
	353lb / 160kg	19.7ft / 6.0m
	440lb / 200kg	19.0ft / 5.8m
	600lb / 272kg	16.4ft / 5.0m
	838lb / 380kg	13.8ft / 4.2m
	1000lb / 454kg	13.1ft / 4.0m
Double Track	287lb / 130kg	16.4ft / 5.0m
	353lb / 160kg	15.4ft / 4.7m
	440lb / 200kg	13.1ft / 4.0m
	600lb / 272kg	10.8ft / 3.3m
	838lb / 380kg	9.2ft / 2.8m
	1000lb / 454kg	8.2ft / 2.5m
Heavy Duty Track + Heavy Duty Inset Track	287lb / 130kg	23.0ft / 7.0m
	353lb / 160kg	23.0ft / 7.0m
	440lb / 200kg	23.0ft / 7.0m
	600lb / 272kg	23.0ft / 7.0m
	838lb / 380kg	19.7ft / 6.0m
	1000lb / 454kg	18.0ft / 5.5m

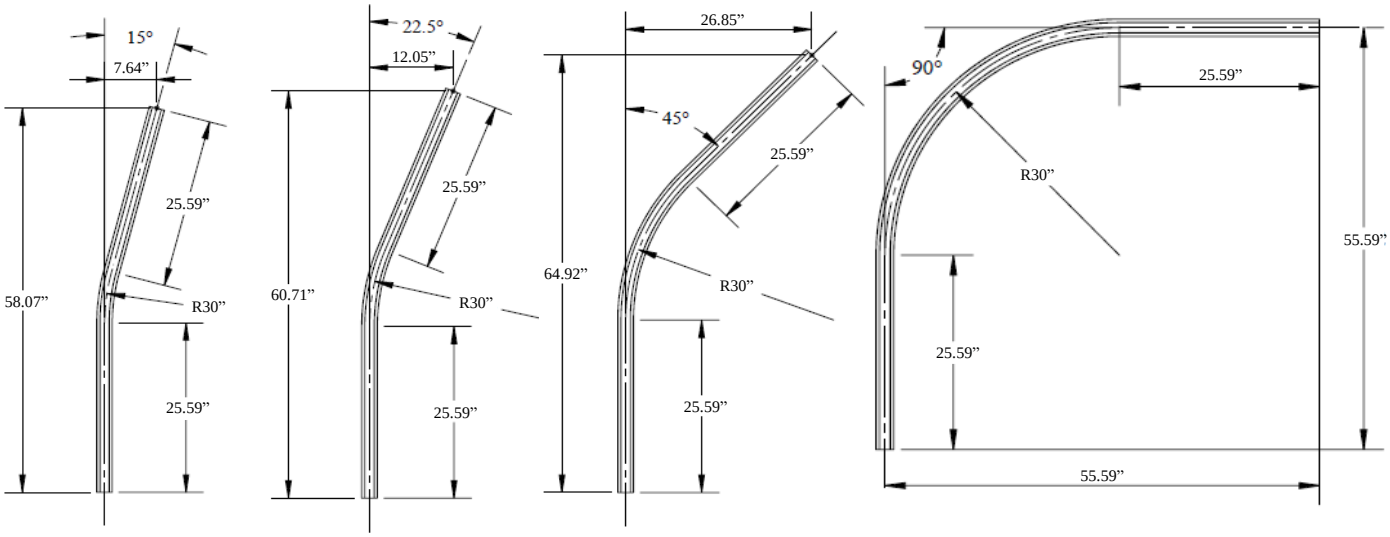
1.5 Track Bends Fixing Requirements

1.5.1 Standard Track Bends

The single track is also available in bends to allow a system to change direction. The standard track bends are available in the following angles: 15°, 22.5°, 45° and 90°.
The track bends are only available in the lengths stated below and are required to have additional fixings for security.



15° Bend **22.5° Bend** **45° Bend** **90° Bend**



15°, 22.5° and 45° bends require a minimum of 4 fixing points evenly distributed along its length. While the 90° bend requires a minimum of 5 fixing points, ensuring that the additional fixing is placed directly at the centre of the bend. See images above for reference.

The track bends can be cut to length to suit the installation requirements but must only be cut along the straight section of track, this section must be 100mm from the beginning of the bend in the track.

It is recommended that when fixing track bends with straight track, the straight track is cut to length to allow a track bend to be fitted. The track bend may be required to be cut when placed at the end of the track system, (i.e. The track bend will be up against the wall) in this scenario, the track bend can be cut to the required length.

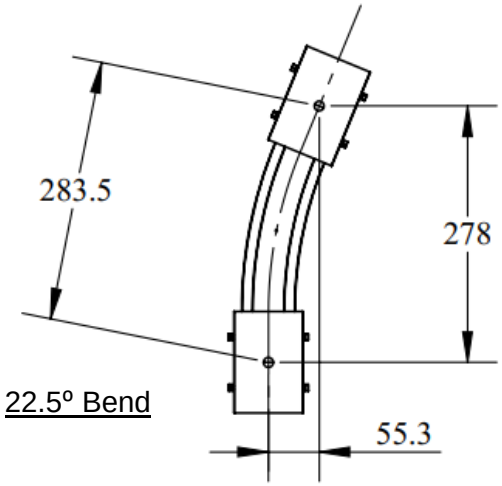
When cutting the track bend, the final bracket will still need to be fitted to the end of the track if the overhang exceeds 250mm.

1.5.2 Quick Bend

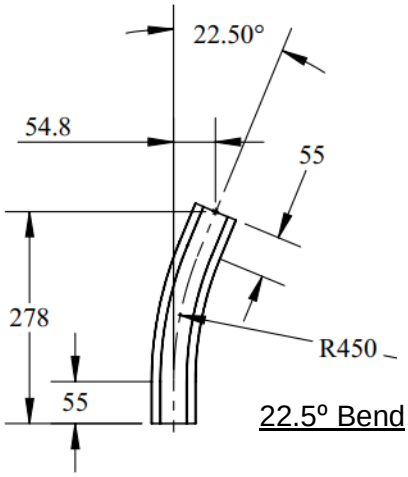
The single track is also available as a quick bend, the quick bend is a shorter length track which allows the install into tighter areas. The quick bend also has a tighter radius meaning that only ceiling lifts with a short wheel base are suitable.

Ceiling lifts include: **TX Advanced, CPP, CP, CT, CPR**

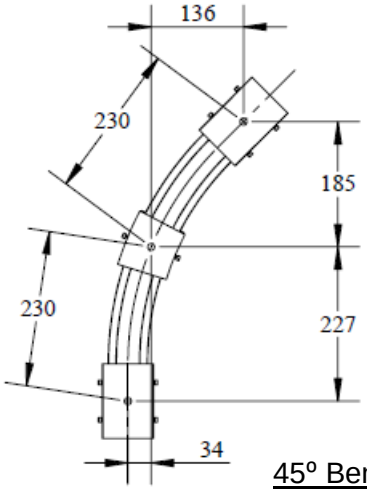
The quick bend is available as 22.5˚, 45˚ and 90˚. The quick track only requires 2 fixing points, using 110mm brackets which will align the bend with straight track.



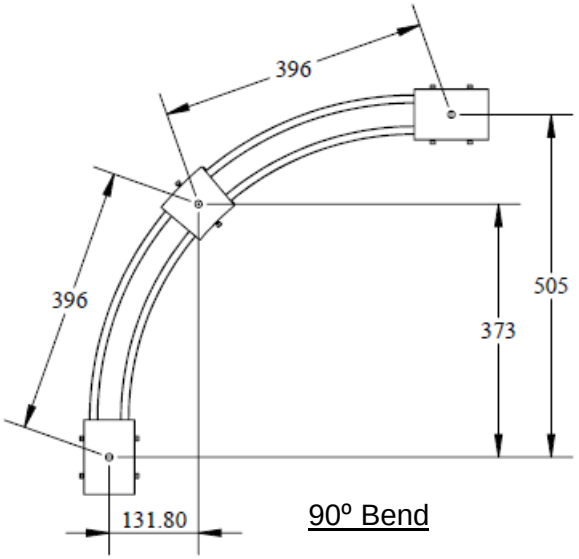
22.5º Bend



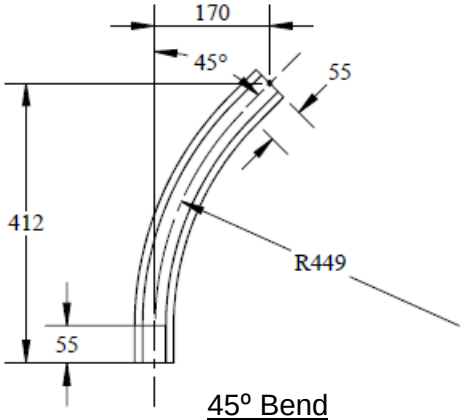
22.5º Bend



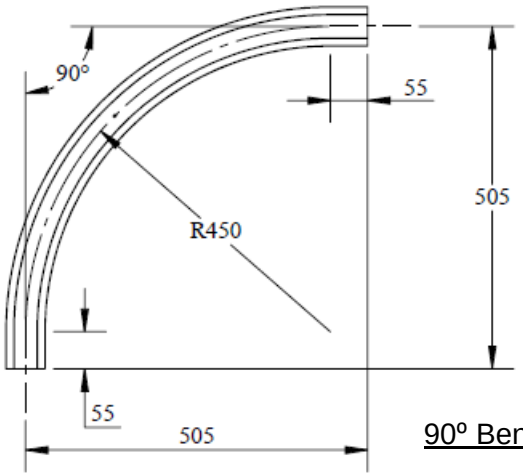
45º Bend



90º Bend



45º Bend



90º Bend

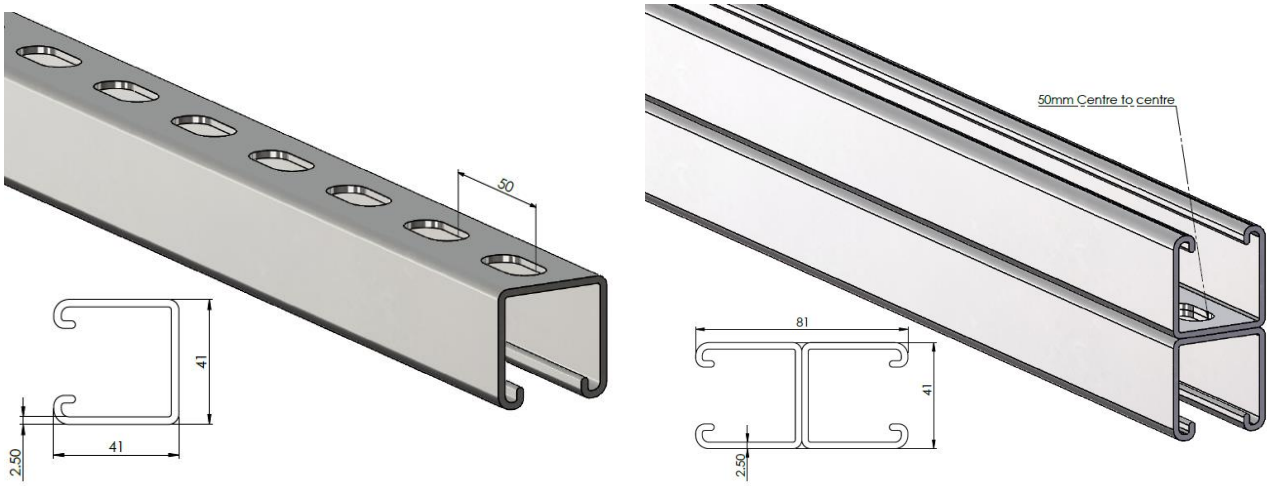
1.6 Track Fixing Accessories

To fix the track to the ceiling, other accessories are required for a successful installation.
This includes:

1.6.1 Steel Channel (Unistrut)

Steel channel is used for almost every ceiling track installation. The channel is the link between the ceiling fixings, and the track bracket. It is used to spread the load between ceiling fixings and allows simpler alignment of the track brackets location.

The steel channel is supplied in at any length required but is required to be a box section of 41x41.
For installations where the ceiling fixings are above 23.6 inch (600mm) apart. Double steel channel is used for additional strength. 82x41
The steel channel can be cut to size to suit the installation requirements.



1.6.2 Zykon Fixings

Zykon Fixings are required for installing a track system into a solid concrete ceiling. We recommend only to use Zykon and no other similar fixing accessory during track installation.
Always ensure to refer to the manufacturer's instructions along with our guidance on the correct use of these fixings.
The Zykon fixing we recommend are the Fischer FZEA II 14x40 M12 thread, as we recommend the use of M12 threaded bar for all installations to ensure safe instalment of any track system.

For further information on Zykon fixings and how they work, refer to the manufacturer's instructions.
To fix a Zykon fixing to the Ceiling, only the Zykon Universal drill bit 40x14 should be used, along with the Fischer Setting Tool FZED 14 Plus.

1.6.3 Chemical Resin

Chemical resin is a method of fixing a track system into a concrete ceiling or brick/block wall. We recommend only to use the Fischer FIS-VL 410C chemical resin and no other similar substance to install the ceiling track system. Always ensure to refer to the manufacturer's instructions along with our guidance on the correct use of these fixings.
The chemical resin is a substance which requires gel and curing time, see the table below which are the manufacturer's recommended gel and curing time.

For further information on the chemical resin and how it works, refer to the manufacturer's instructions.

CURING TIME FIS VL

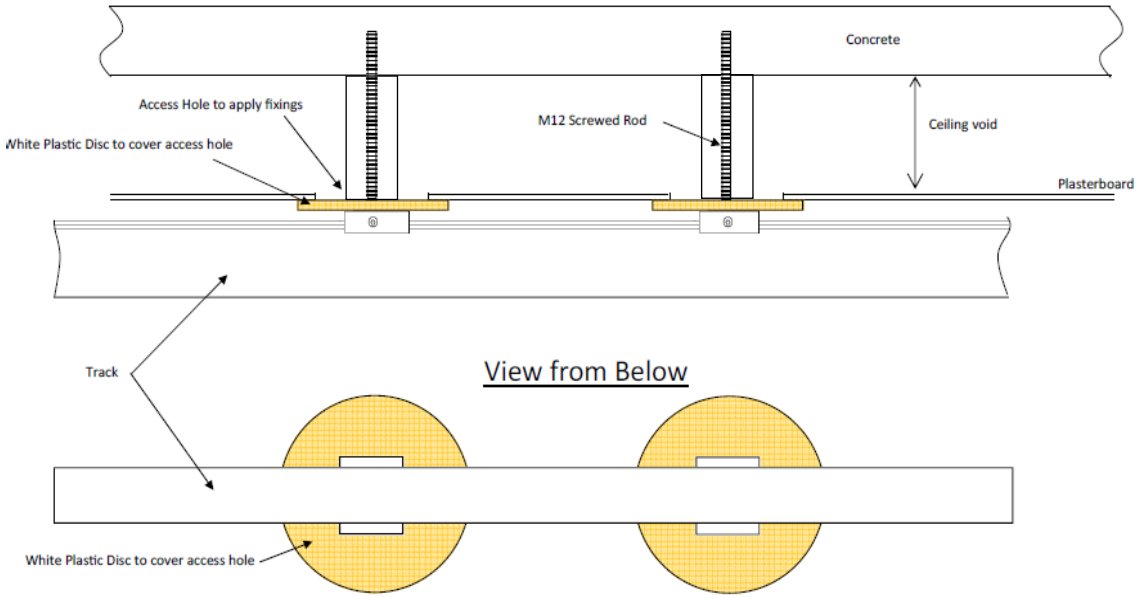
Cartridge temperature (mortar)	Gelling time	Temperature at anchoring base	Curing time
		- 5°C - ± 0°C	24 hrs.
+ 0°C - + 5°C	13 min.	± 0°C - + 5°C	3 hrs.
+ 5°C - +10°C	9 min.	+ 5°C - +10°C	90 min.
+10°C - +20°C	5 min.	+10°C - +20°C	60 min.
+20°C - +30°C	4 min.	+20°C - +30°C	45 min.
+30°C - +40°C	2 min.	+30°C - +40°C	35 min.

The above times apply from the moment of contact between resin and hardener in the static mixer.
For installation, the cartridge temperature must be at least +5 °C. For longer installation times, i.e. when interruptions occur in work, the mixer should be replaced.

1.6.4 Ceiling Discs

When installing the ceiling track brackets to a ceiling fixing (timber, concrete or steel), the ceiling may require ceiling discs to tidy up the ceiling to conceal any voids created during the installation process. The ceiling discs are very simple to install, during a standard installation the disc can be placed onto the threaded bar and placed flush up against the ceiling. Any track spacers can be placed underneath the ceiling discs, and the track bracket can be secured below.
During installations where the track must be lowered below the ceiling height, ceiling discs are available with a 40x40 box section cut out to allow for lowered track installations.

The two varying ceiling disc both come in two sizes, 7.1 inch (180mm) and 11.8 inch (300mm), these are chosen depending on the size of the ceiling void.



1.7 Installation Materials

This manual includes the fixing of all ceiling track systems into solid and hollow concrete, timber, steel works (beams), wall mountings (brick or block), and steel gantry's fixed into a concrete or timber floor.

The ceiling track system should not be installed onto any other material without the correct authorisation.

1.8 Ceiling Track System Alignment

A very important factor to take into account when installing the track system is alignment and accuracy. For the track system to run smoothly, it must be installed perfectly horizontally for the ceiling lift to traverse with ease, along with a straight line fixing to allow two tracks to successfully link between each other and allow a transition for the ceiling lift to pass between tracks. It is a critical part of ceiling track installation to allow the system to function.

1.8.1 Determining the Joist Positions for Ceiling Track Installation into Timber

The joist positions can be determined below the ceiling using a joist finder. Follow the procedure below to mark out the positions of the joists prior to any installation type into timber. This will make the process and positioning of ceiling track systems installation much easier to navigate and position the fixings.

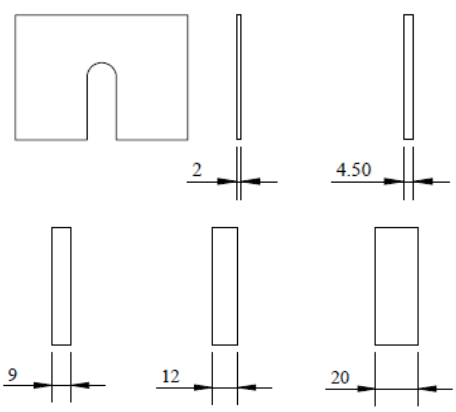
- A step ladder is required to gain access to the base of the ceiling.
- Starting from one side of the room, place the joist finder equipment up against the ceiling and move across.
- Once the first joist is found, the direction of the joist can be easily determined by moving the joist finder around the area.
- When the first joist and direction is determined, the room can be marked onto a drawing.
- Measure the area of the room and mark the distance to the first joist from a wall.
- Move the joist finder along the ceiling until the next joist has been found.
- Mark the second joist distance from the first.
- Continue until all joists have been discovered and marked onto the drawing to provide a clear view of the ceiling above.

1.8.2 Aligning the Track System Horizontally

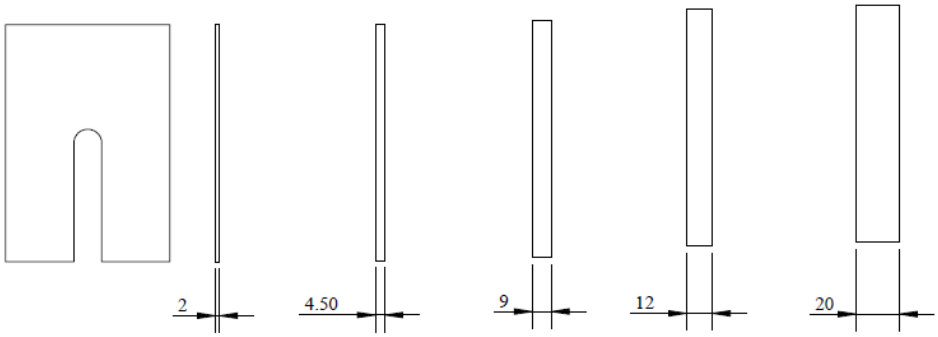
When a track system is installed up against the ceiling, it is not unusual for a ceiling to be slanted. To remedy this issue, a laser can be used to determine which track bracket is at the lowest height, from here, the remaining brackets must all be lowered to align horizontally with the lowest bracket. To do this, track bracket spacers are used to space between the ceiling and the track bracket to lower the height. Use as many track bracket spacers as required to ensure that all the track brackets become aligned horizontally. This can be seen using the laser.

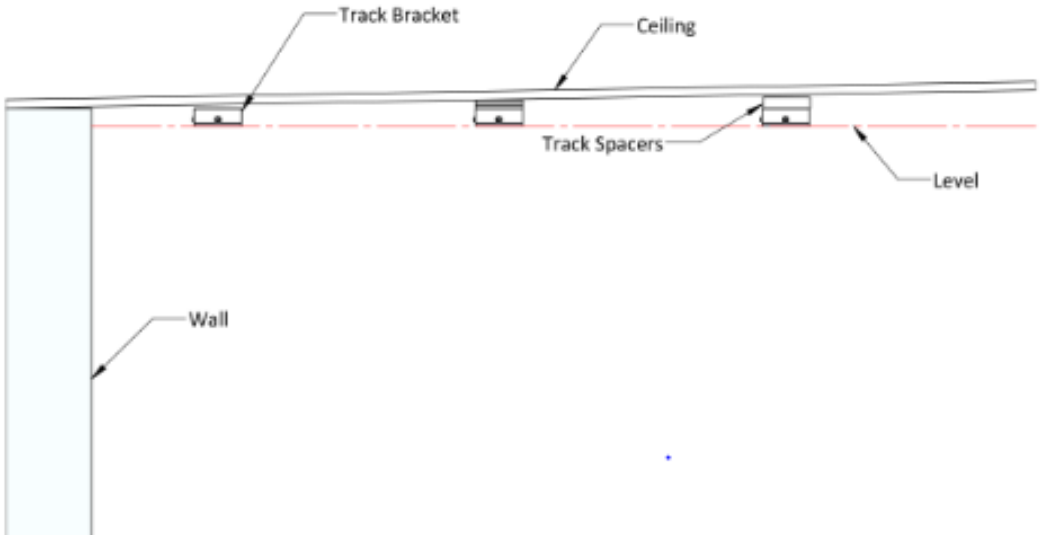
The track bracket spacers are available in multiple sizes, from 2mm to 20mm. They are available for the 55mm and 110mm bracket spacer.

55mm Bracket Spacer



110mm Bracket Spacer

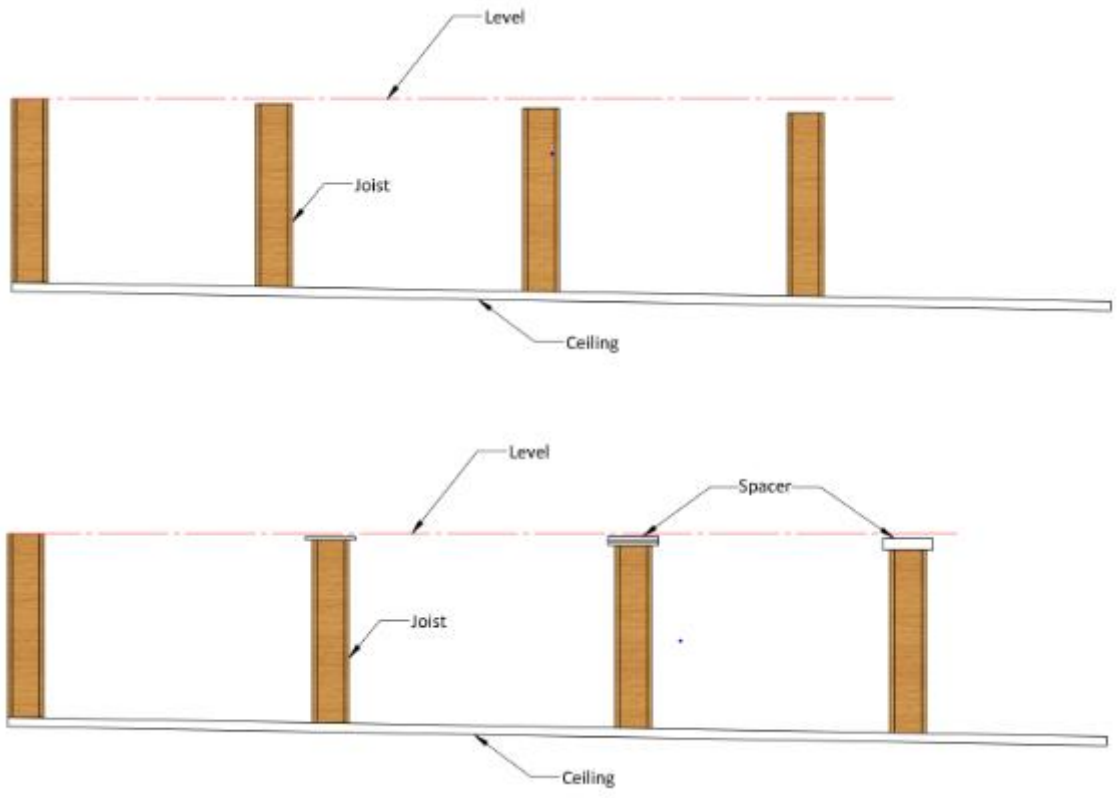




1.8.3 Aligning the Steel Channel Horizontally onto uneven Joists

A very important factor to consider when installing the steel channel along the top of any joists is to make sure that it is level and every joist is always in contact so that the weight is spread evenly across the joists. To ensure this, before installing steel channel the joists should be checked to see if they are level with each other. This can be achieved by using a laser and tape measure. Simply place the laser on the highest joist and using a tape measure, measure from the top of the other joist to the red laser line to work out the distance which is required to be filled. A range of track spacers are available to be used to fill the specified gap.

See section 1.6.2 for the list of track spacers available.



1.9 Building Work Requirements

Some installations will require building work to be done for a successful ceiling track installation to occur. This may include electrical work such as installing spurs in suitable locations or opening up doorways for track systems to span between different rooms.

During the assessment of the installation, which will have taken place previously, any building work that was required to take place by an approved electrician or builder, should have been completed prior to the day of installation, this will have been confirmed during the second assessment of the install. The list below should only be done by an approved builder or electrician and not by an install engineer who is unqualified.

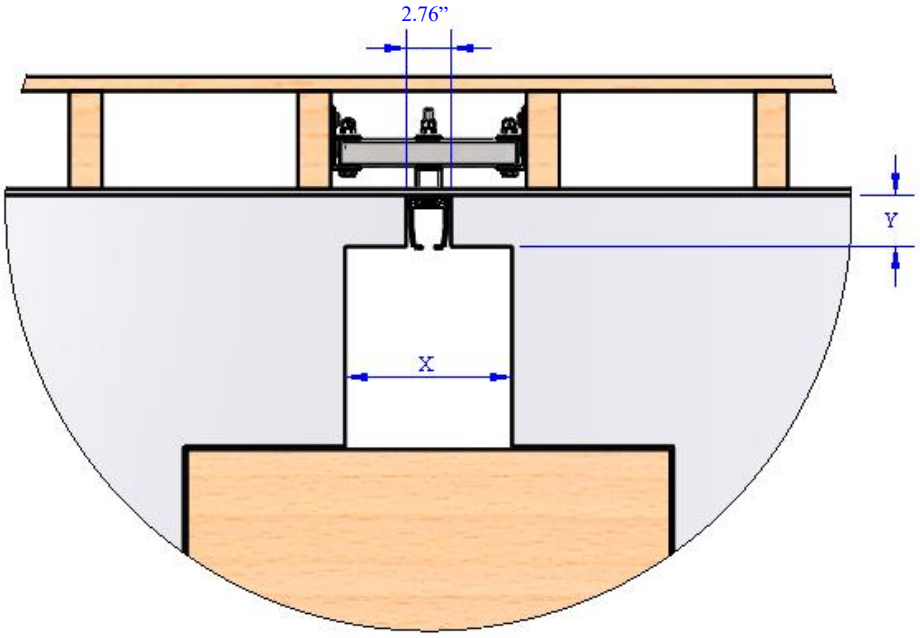
- Fused (5A) Spur – This should be fitted close to the desired location of the charging dock.
- Ceiling Construction – Noggins - These must be located where track fixings are required.
- Doorway Reconstruction – Increase doorway height to the ceiling for the track system to pass.
- Wall Reconstruction – Remove the top section of a wall to allow h-system track to pass.

1.9.1 Electrical Installations

See the guidance below on electrical installations, this information is for reference only, a qualified electrician must carry out all electrical installation for the ceiling track systems.

1.9.2 Doorway Reconstruction Details for Ceiling Track Systems

See the guidance below on doorway reconstruction installations, this information is for guidance only, an approved builder must carry out all building reconstructions during a ceiling track system installation.



Hoist and Track Type	Dim 'X'	Dim 'Y'
Transactive Xtra		
Standard Track System	10.24"	3.35"
Mid Duty Track System	10.24"	6.18"
Heavy Duty Track System	10.24"	7.76"
Turntable Track System	10.24"	3.82"
H-System - Single + Single Track	10.24"	7.28"
H-System - Single + Mid Duty Track	10.24"	10.12"
H-System - Single + Heavy Duty Track	10.24"	11.69"
TX Advanced		
Standard Track System	11.42"	3.35"
Mid Duty Track System	11.42"	6.18"
Heavy Duty Track System	11.42"	7.76"
Turntable Track System	11.42"	3.82"
H-System - Single + Single Track	11.42"	7.28"
H-System - Single + Mid Duty Track	11.42"	10.12"
H-System - Single + Heavy Duty Track	11.42"	11.69"
CP / CPP / CPR / CT		
Standard Track System	8.66"	3.35"
Mid Duty Track System	8.66"	6.18"
Heavy Duty Track System	8.66"	7.76"
Turntable Track System	8.66"	3.82"
H-System - Single + Single Track	8.66"	7.28"
H-System - Single + Mid Duty Track	8.66"	10.12"
H-System - Single + Heavy Duty Track	8.66"	11.69"

1.10 Tool List

Below is a list of all the tools required for the complete installation of every system included within this Manual. Ensure that these tools are at hand during any installation of a ceiling track system.

List of Tools Required for Installation		
Laser	Drill	2mm Allen Key
Tape Measure	7mm Masonry Drill Bit	2.5mm Allen Key
Spirit Level	15mm Masonry Drill Bit	3mm Allen Key
Vernier Calliper	16mm Masonry Drill Bit	4mm Allen Key
Joist Finder	20mm Masonry Drill Bit	5mm Allen Key
Pencil / Marker Pen	6mm Timber Drill Bit	8mm Allen Key
Hoover / Air Gun / Hole Brush	8mm Timber Drill Bit	10mm Spanner
Loctite 270	2.5mm HSS Drill Bit	13mm Spanner x2
Test Weights	3mm HSS Drill Bit	19mm Spanner x2
Weight Trolley	6mm HSS Drill Bit	Pozi Head Screwdriver
Block + Tackle	6.5mm HSS Drill Bit	Flat Head Screwdriver
Fischer FIS VW 3COS Vinyl-ester Styrene Free Injection Resin Applicator Gun	8.5mm HSS Drill Bit	Long Nose Pliers
Fischer Setting Tool FZED 14 Plus	10mm HSS Brad Drill Bit	Flat File
40mm Hole Cutter	12mm HSS Drill Bit	Deburring Tool
Zykon Universal Drill Piece 4x14	12.5mm HSS Drill Bit	Hammer
Coping Saw	13mm HSS Drill Bit	
Reciprocating Saw	M3 x 0.5 HSS Tap	

2 Fixing the Ceiling Track to a Concrete Ceiling

The section below will give full instruction on the recommended method of installation for a ceiling track system into a concrete ceiling. It covers the two main methods including, chemical resin and Zykon fixings.

All track types stated previously are available for concrete ceiling installation. Ensure to follow the straight track fitting requirements (section 1.4) to determine the maximum span between each fixing depending on the track type. This is a critical factor of ceiling track installation and must be determined prior to installing a track onto the ceiling. The turntables will also be fixed to a concrete ceiling using the same fixing methods, see section 7.3 for turntable fitting requirements.

It is also important to familiarise yourself with each subsection within section 1.0 before continuing a ceiling track installation into concrete.

A full assessment should have been conducted to ensure that the ceiling is safe for installation, but the service engineer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking or any other damage to the ceiling should be avoided. Depending on the type of concrete and its thickness, certain fixings are chosen.

Zykon fixings are the first choice fixing when installing a ceiling track system, including turntables to a concrete ceiling. Zykon fixings become unsuitable when fixing a track system to hollow concrete, as the fixing will not secure the load unless it is fixed to solid concrete. When the concrete is hollow, the process of chemical resin with a threaded bar is used. The only other circumstance a Zykon fixing will be unsuitable is when the concrete is not thick enough to allow the Zykon fixing to be fully inserted into the drilled hole. In this situation, chemical resin with a threaded bar is used.

Why are Zykon fixings the preferred form of fixing a track system into a concrete ceiling?

- Zykon fixings are a vastly faster form of installing a track system, due to there being no curing time.
- It is a simpler form of installing the threaded bars into the concrete.
- The Zykon fixing is more likely to be successful during install. Less mistakes can be made.

2.1 Aligning the Ceiling Track System for Concrete

A very important factor to consider when installing the track system is alignment and accuracy. For the track system to run smoothly, it must be installed horizontally for the ceiling lift to traverse with ease, along with a straight line fixing to allow two tracks to successfully link between each other and allow a transition for the ceiling lift to pass between tracks. It is a critical part of ceiling track installation to allow the system to function.

2.1.1 Marking out Bracket Positions for a Straight Track Installation into Concrete

1. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc.
2. Where false ceilings are present, remove the tiles to inspect the roof space for any obstacles as well as inspecting the concrete for suitable fixing points.
3. Determine a suitable location for the first fixing, and thereby calculate how many more fixings are required and their distance apart, this will depend on the track type chosen. (see section 1.4 for track type maximum spans)
4. Mark the first track bracket position on the (false) ceiling, from here a laser can be placed on the floor directly in line with the first position, and it will draw a straight line along the ceiling to represent the track position.
5. Use a tape measure to measure the distance between each fixing. (this distance should have been calculated in step 3)
6. Mark on the ceiling the second fixing position, this will be in line with the laser and the measured distance on the tape measure.
7. Repeat this process to mark out all fixings.
8. Using a 12.5mm drill bit, drill the holes into the false ceiling.
9. From here, measure vertically, using a laser to mark out on the ceiling where the brackets will align.

2.1.2 Marking out Bracket Positions for a Track Bend Installation into Concrete

1. Ensure that where the track bend is intended to be fitted is clear of any obstacles, this includes light fixings, sprinklers etc.
2. Where false ceilings are present, remove the tiles to inspect the roof space for any obstacles as well as inspecting the concrete for suitable fixing points.
3. Ensure that the track is cut to desired length before marking out any fixing points.
4. Depending on the type of track bend, a certain amount of fixings is required. See section 1.0 for track bends information.
5. Track bends should be fitted after a straight track is installed, therefore ensure the straight track is already fitted to assist in track bends positioning.
6. Align the track bend on the (false) ceiling, up against the straight track system, where the bend is desired to be.
7. Draw the outline of the track onto the ceiling with a marker/pencil. Mark out the fixing points from the profile as described in section 1.2.
8. Using a 12.5mm drill bit, drill the holes into the false ceiling.
9. From here, measure directly vertically, using a laser to mark out on the concrete ceiling where the track brackets will align.

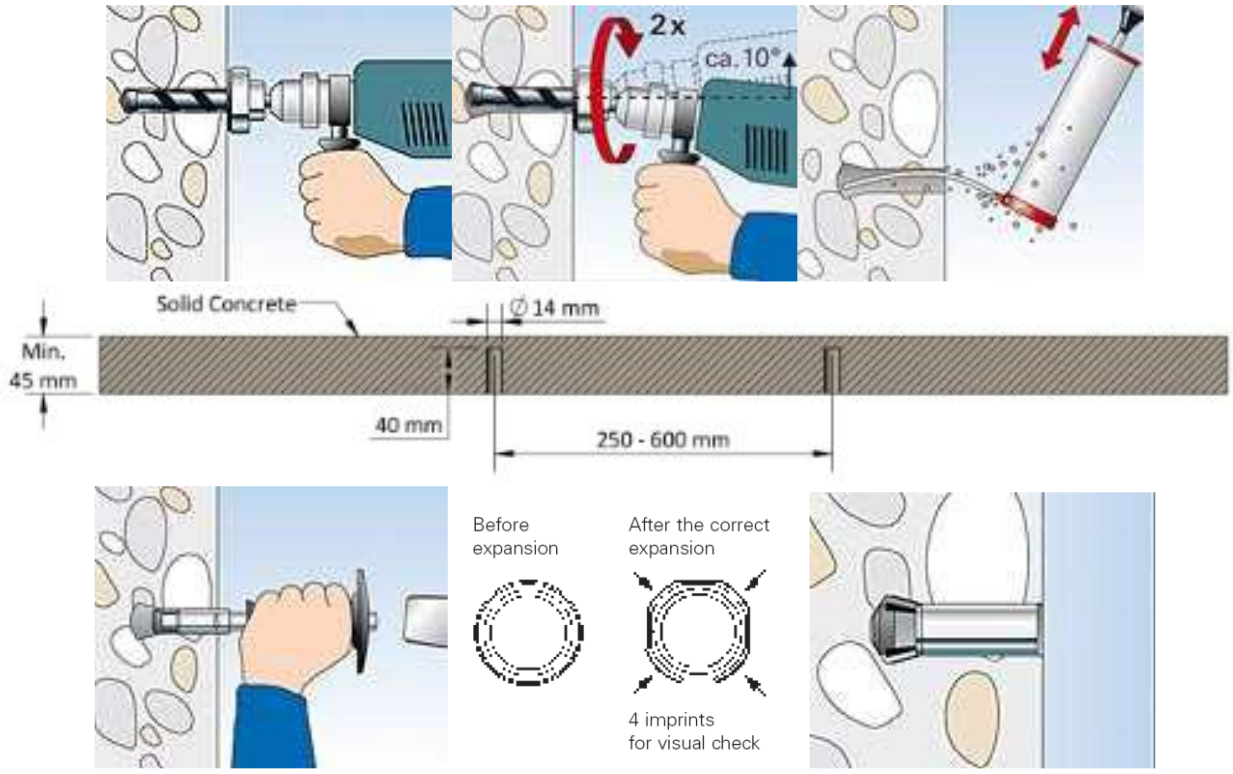
2.2 Fixing the Zykon Fixing to a Concrete Ceiling

To fix a zykon fixing, it must be determined that the concrete is solid and has a minimum depth of 1.77" (45mm) to accommodate the fixing. Always ensure that the zykon fixing is being installed into good condition concrete, ensure that no cracks or other weaknesses are found during placement.
The fixing point for each Zykon fixing (along the full track installation) should be determined to ensure that the installation is suitable. Per track bracket installation, two Zykon fixings are required, this will spread the load between the two fixing points.

The process below can be followed as a guide on how to correctly install the Zykon fixings into a concrete ceiling. This guide should be followed along with the manufacturer's instructions.

See section 2.1 for guidance on how to mark out the track bracket positions on the ceiling correctly before fixing any Zykon fixing to the ceiling.

1. From the track bracket centre point marked on the ceiling, a Zykon fixing must be fitted either side. Depending on any obstacles, mark out fixing positions on the ceiling. The two fixings are ideally fixed between 9.84" (250mm) and 23.62" (600mm) from each other. But it is acceptable for them to go up to 39.37" (1000mm) if necessary.
2. A laser should be used to ensure that the marked-out positions are in line with the centre hole.
3. Using a suitable drill and the universal Zykon drill bit 40x14, drill both holes into the concrete. The drill bit should reach its maximum depth for the Zykon fixing to be fitted.
4. A circular deflection movement of the drill allows conical undercutting of the hole. It provides the anchor with the exact undercut which is needed for the positive locking fit which is virtually free of expansion pressure.
5. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
6. The Zykon fixings can be placed up against the hole ready for fitting.
7. The Fischer Setting Tool FZED 14 plus will fit into the rear of the Zykon fixing nicely, position it correctly, and use a hammer to hammer the Zykon fixing into the ceiling.
8. Correct installation of the Zykon fixing will result in a distinctive pattern on the base of the Zykon fixing, see the image below for reference.
9. Repeat this process for the fixing of each Zykon fixing.



2.3 Fixing Threaded Bar to a Concrete Ceiling (Chemical Resin)

Fixing a threaded bar directly to a concrete ceiling through chemical resin is usually done where Zykon fixings are not suitable, this will be because the concrete is hollow, or is not deep enough. Depending on the concrete being hollow or solid, the process varies slightly.
When a threaded bar is fixed to the concrete, a minimum of 1.57" (40mm) of solid concrete is required before reaching the hollow state. It is recommended that an 3.39" (86mm) hole is drilled into the ceiling for a secure solid fixing.
The manufacturer's instructions on the chemical resin must be followed when using the substance, while only using this manual as a guide. See section 1.6 for the gel and curing times on the chemical resin.

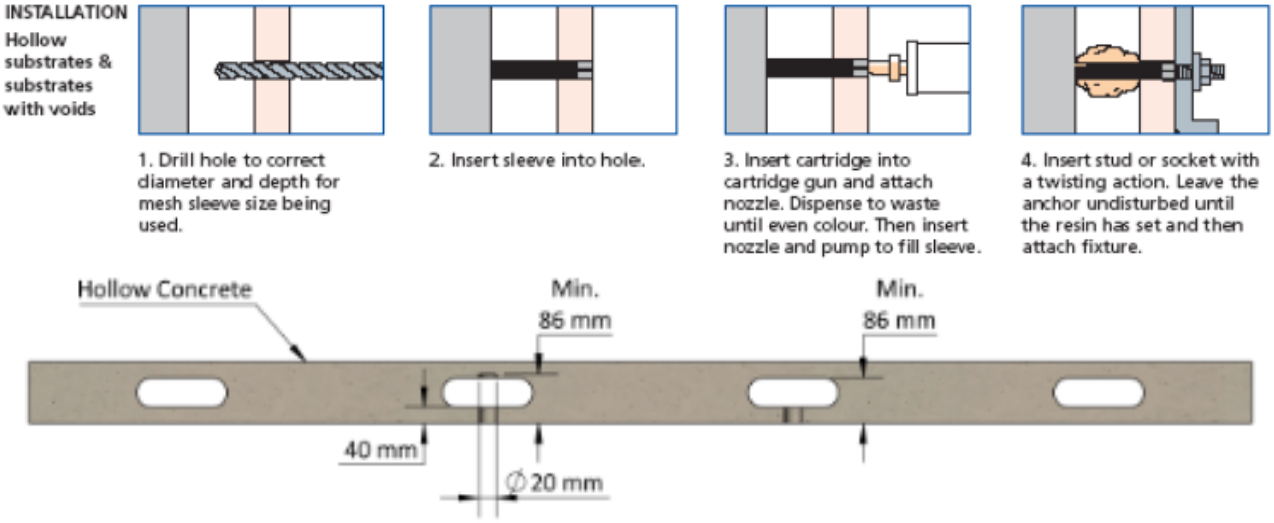
See section 2.1 for guidance on how to mark out the track bracket positions on the ceiling correctly before fixing any threaded bar to the ceiling.

Follow the guide below for the relevant fixing method.

2.3.1 Fixing Threaded bar to a Hollow Concrete Ceiling (Chemical Resin)

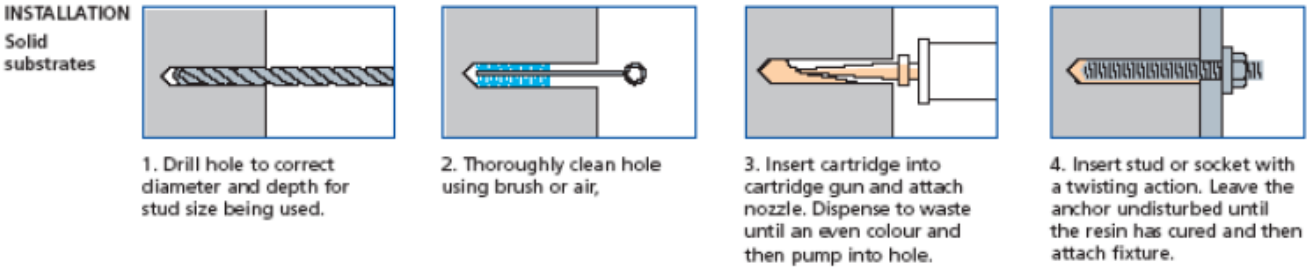
1. From the track bracket centre point marked on the ceiling, a threaded bar must be fitted either side. Depending on any obstacles, mark out fixing positions on the ceiling. The two fixings are ideally fixed between 9.84" (250mm) and 23.62" (600mm) from each other. But it is acceptable for them to go up to 39.37" (1000mm) if necessary.
2. A laser should be used to ensure that the marked-out positions are in line with the centre hole.
3. Using a 0.79" (20mm) diameter drill bit, drill the two holes into the concrete. The holes must be a depth of 3.39" (86mm).
4. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
5. Insert the fixing sleeve into the hole, with the sleeve being a length of 3.39" (86mm), it should fit into the hole perfectly.
6. Depending on the following method of fixing the track brackets to these fixing points, cut two pieces of M12 threaded bar to a suitable length.
7. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispensing the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
8. Inject the holes/sleeves with the chemical resin, the resin should fill 100% of the sleeve capacity.

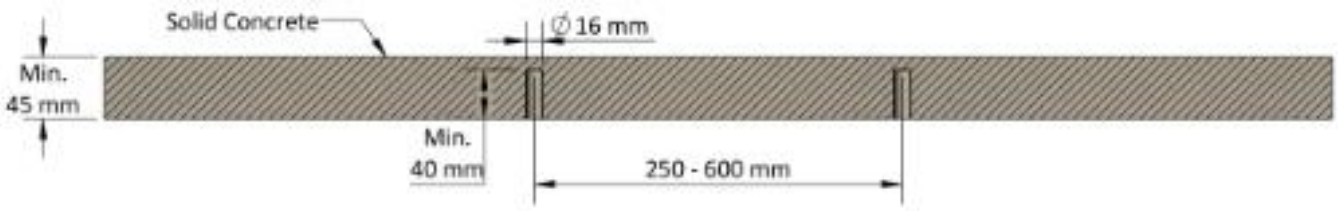
9. Insert the two pieces of threaded bar into the sleeves. This will cause the resin to expand out of the sleeve and into the hollow concrete.
10. It is highly recommended that the threaded bar is twisted into the holes to provide additional strength and mixing with the chemical resin.
11. The two bars will require supporting until the gel time has been reached.
12. Once the gel time is over the remaining fixings for the installation should be undergone, allowing the chemical resin time to cure. Refer to the gel and curing times in section 1.6.
13. During the curing time, the threaded bars can be secured with a fish plate and M12 half nut. This can be tightened up flush against the concrete.
14. Repeat this process to fit all the threaded bars into a hollow concrete ceiling with chemical resin.



2.3.2 Fixing the Threaded Bar to a Solid Concrete Ceiling (Chemical Resin)

15. From the track bracket centre point marked on the ceiling, a threaded bar must be fitted either side. Depending on any obstacles, mark out fixing positions on the ceiling. The two fixings are ideally fixed between 9.84" (250mm) and 23.62" (600mm) from each other. But it is acceptable for them to go up to 39.37" (1000mm) if necessary.
1. A laser should be used to ensure that the marked-out positions are in line with the centre hole.
2. Using a 0.63" (16mm) diameter drill bit, drill the two holes into the concrete. The holes must be a minimum depth of 1.57" (40mm) but is recommended to be around 86mm for additional fixing strength and security.
3. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
4. Depending on the following method of fixing the track brackets to these fixing points, cut two pieces of M12 threaded bar to a suitable length.
5. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispensing the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
6. Inject the holes with the chemical resin, the resin should fill 50% of the hole capacity.
7. Insert the two pieces of threaded bar into the holes. This will force the resin to fill the full holes capacity.
8. It is highly recommended that the threaded bars are twisted into the holes to provide additional strength and mixing with the chemical resin.
9. the two bars will require supporting until the gel time has been reached.
10. Once the gel time is over the remaining fixings for the installation should be undergone, allowing the chemical resin time to cure. Refer to the gel and curing times in section 1.4.
11. During the curing time, the threaded bars can be secured with a fish plate and M12 half nut. This can be tightened up flush against the concrete.
12. Repeat this process to fit all the threaded bars into a solid concrete ceiling with chemical resin.





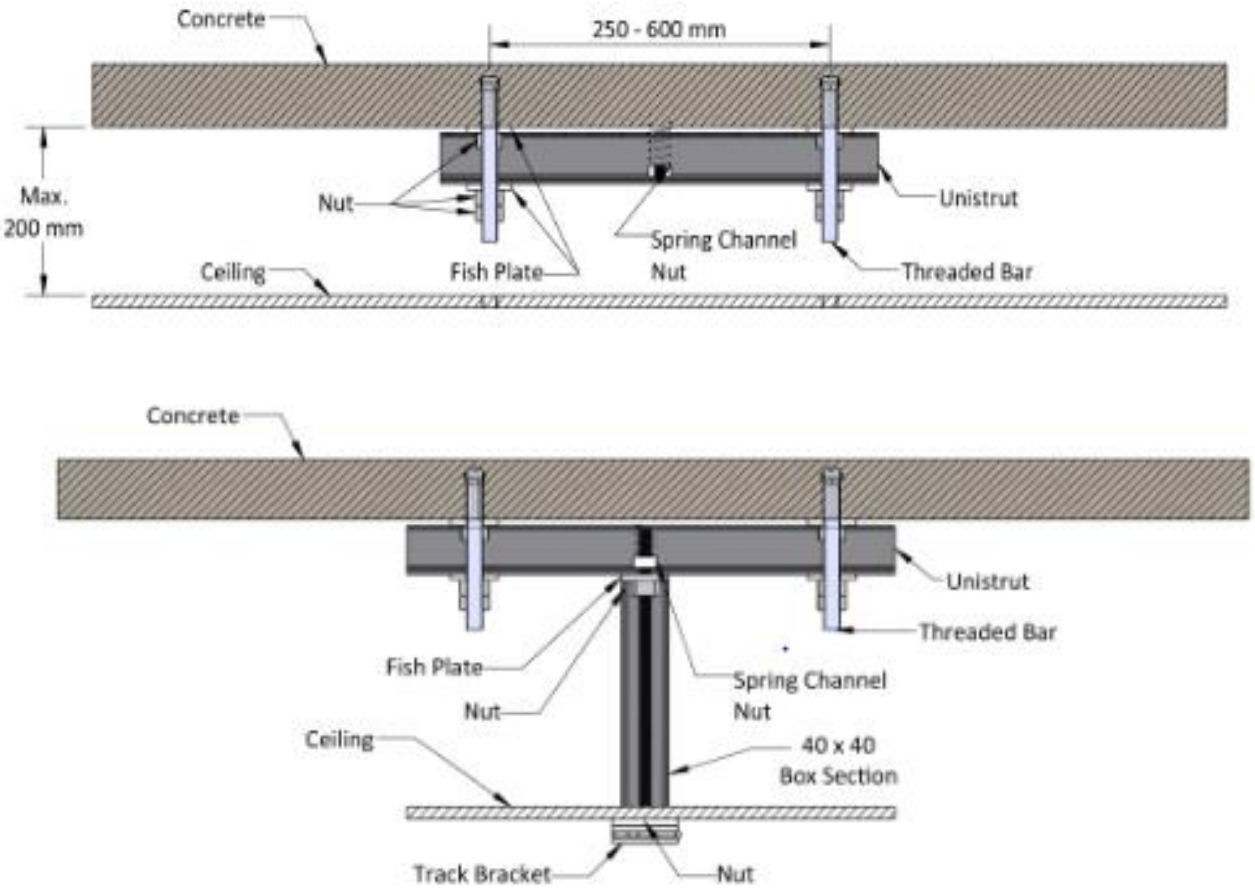
2.4 Fixing the Track Bracket to the Concrete Fixings

Once the fixings have already been installed into the ceiling, either through the process of chemical resin or using Zykon fixings, there are a few ways of attaching the track bracket. This usually depends on the height from the concrete ceiling to the false ceiling. Follow the suitable guide for the installation at hand. This does not include turntable fixing. See section 7.3 for turntable installation.

2.4.1 A False Ceiling with under 7.87" (200mm) Roof Space

Some buildings will have a very small roof space/void which will require the fixing method shown below. There is not enough roof space to create the solid structure within, therefore a threaded bar will suspend the track bracket directly from the height of the concrete ceiling. Follow the process below to secure the track bracket against the false ceiling.

1. When Zykon fixings have been used, two pieces of M12 threaded bars must be cut to a length, a suitable length to thread into the Zykon and fix a piece of steel channel and its fixings (fish plate and half nut).
2. For additional strength, Loctite 270 can be applied to the threaded bar where it threads into the Zykon.
3. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.6" (600mm), a single piece of steel channel will suit. If the gap size is between 23.6" (600mm) and 39.4" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
4. When placing the steel channel onto the threaded bars, ensure to place a spring channel nut into the steel channel and place it central. (this will be directly above the position of the track bracket on the false ceiling)
5. Fix the steel channel onto the two threaded bars and secure in place with a fish plate and half nut.
6. The steel channel should be flush with the concrete ceiling. (if the concrete is not level, place some M12 washers onto the threaded bar to level the steel channel)
7. A piece of threaded bar can now be cut to length to reach from the spring channel nut to the false ceiling.
8. Insert the threaded bar into the spring channel washer. Lock in place with a fish plate up against the steel channel and a half nut to secure.
9. With the threaded bar protruding through the false ceiling, a 40x40 box section template can be cut out of the tile.
10. A piece of 40x40 box section must be cut to length to be placed onto the threaded bar and down to the ceiling height.
11. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
12. When necessary, adjust the position of the bracket to make it level with the false ceiling using track spacers.
13. Repeat this process for each track bracket to complete track bracket installation.

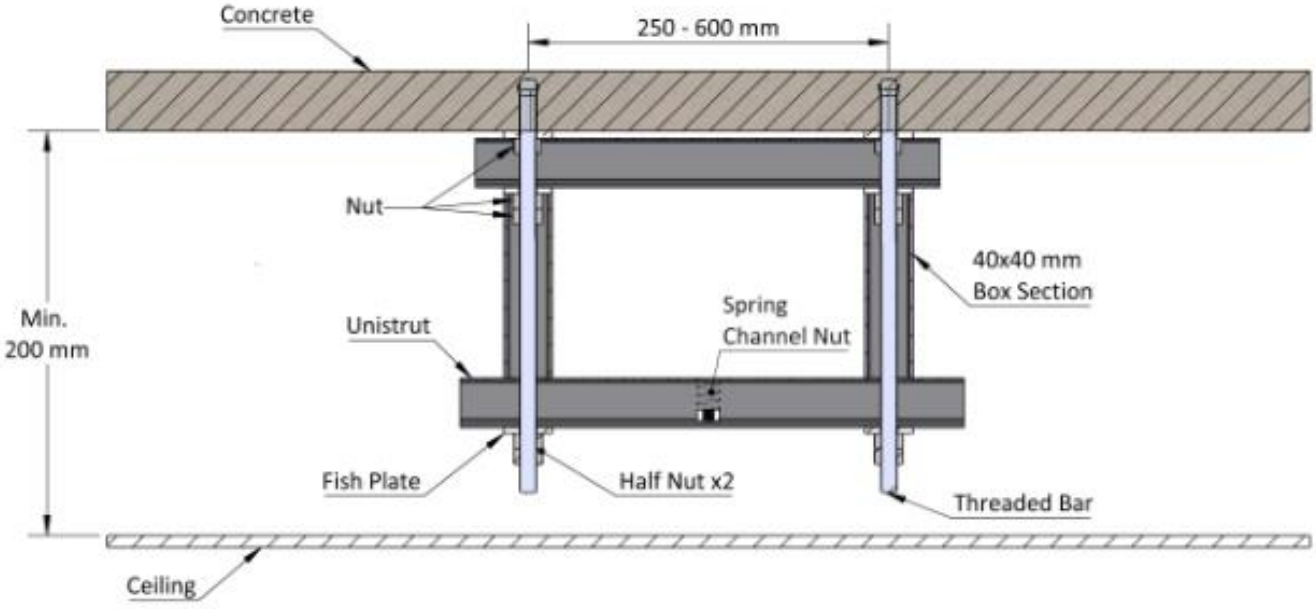


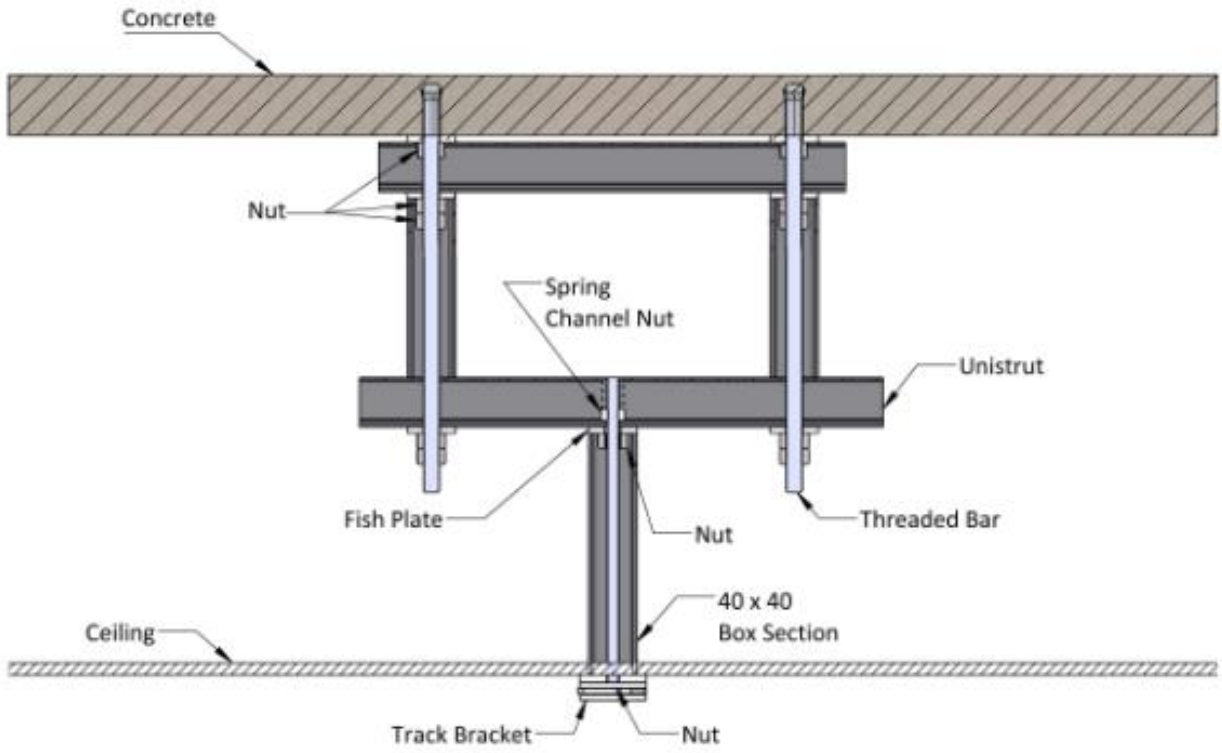
2.4.2 A False Ceiling with over 7.87" (200mm) Roof Space

When the roof space is over 7.87" (200mm) in height, the process below is the standard solution to creating a fixed solid structure from the concrete ceiling to the false ceiling, threaded bar with a length of over 200mm directly from a concrete ceiling to a false ceiling will allow too much swing in the track making it feel insecure. It must be strengthened using steel channel and box section.
Follow the process below for a secure fixing of the track bracket against the false ceiling.

1. When Zykon fixings have been used, two pieces of M12 threaded bars must be cut to length, a suitable length would be close to the height of the false ceiling.
2. For additional strength, Loctite 270 can be applied to the threaded bar where it threads into the Zykon.
3. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.6" (600mm), a single piece of steel channel will suit. If the gap size is between 23.6" (600mm) and 39.4" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
4. Fix the steel channel onto the two threaded bars and secure in place with a fish plate and two half nuts.
5. The steel channel should be flush with the concrete ceiling. (if the concrete is not level, place some M12 washers onto the threaded bar to level the steel channel)
6. Two pieces of 40x40 box section must be cut to a suitable length, these will be shorter than the threaded bars and allow enough space to place the box sections, steel channel and its fixings (fish plate and nut) onto the threaded bar.
7. Place the two box sections onto the two threaded bars and then secure them in position by placing the steel channel below.
8. When placing the steel channel onto the threaded bars, ensure to place a spring channel nut into the steel channel and place it central. (this will be directly above the position of the track bracket on the false ceiling)
9. Fix the steel channel onto the two threaded bars and secure in place with a fish plate and two half nuts.
10. The steel channel should be flush with the two box sections. (if the concrete ceiling is not level, place some M12 washers onto the threaded bar to level the two box sections)
11. Any excess threaded bar can be cut for tidy installation.

12. A piece of threaded bar can now be cut to length to reach from the spring channel nut to the false ceiling.
13. Insert the threaded bar into the spring channel washer. Lock in place with a fish plate up against the steel channel and a half nut to secure.
14. With the threaded bar protruding through the false ceiling, a 40x40 box section template can be cut out of the tile.
15. A piece of 40x40 box section must be cut to length to be placed onto the threaded bar and down to the ceiling height.
16. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
17. When necessary, adjust the position of the bracket to make it level with the false ceiling using track spacers.
18. Repeat this process for each track bracket to complete track bracket installation.

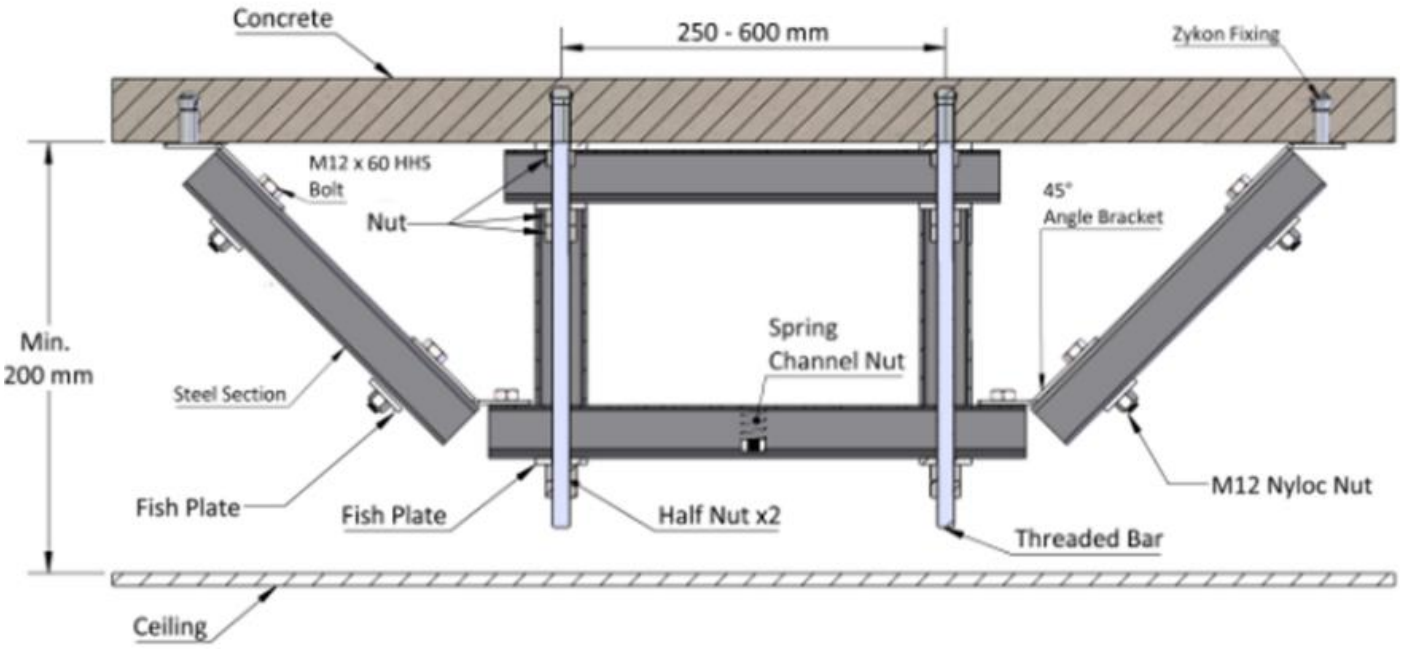


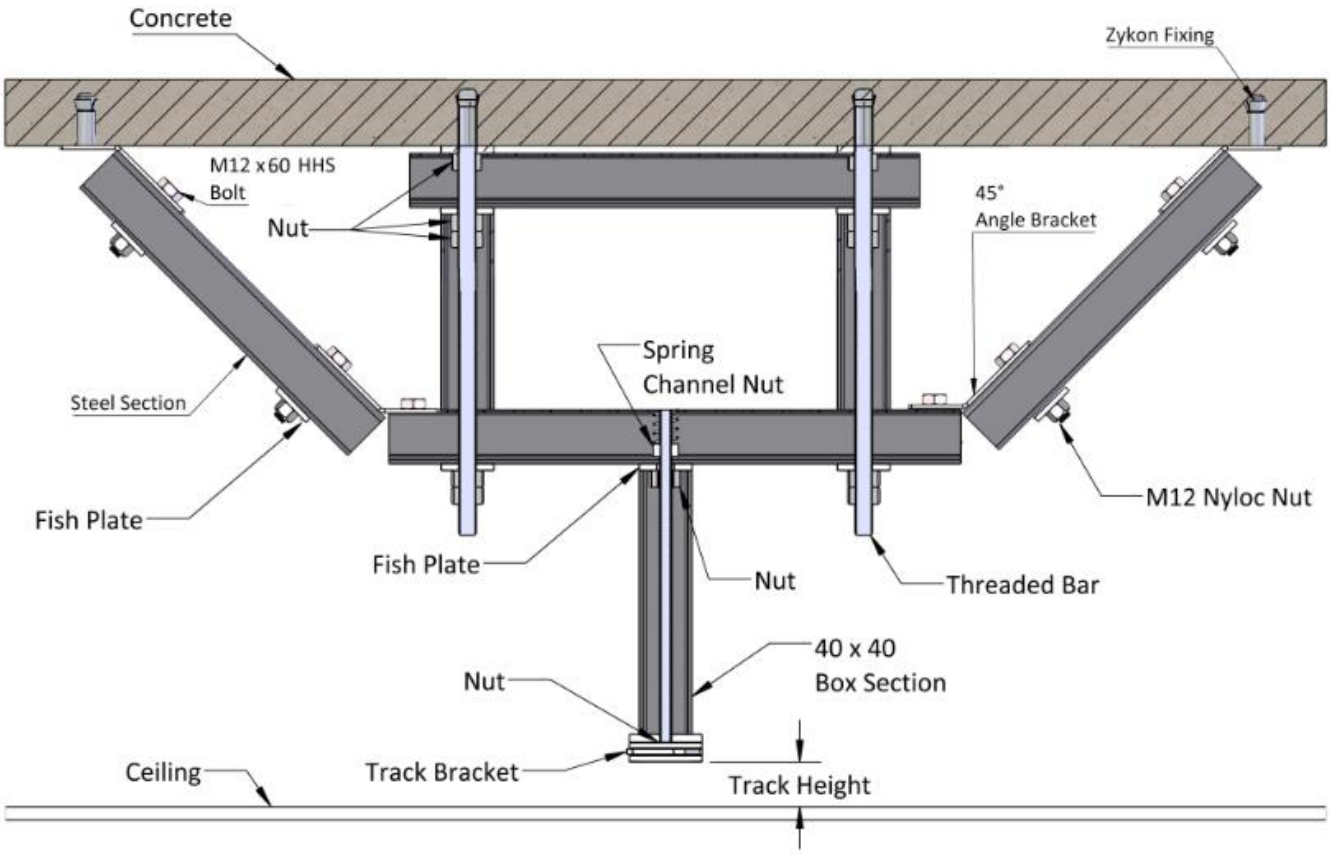


2.4.3 A False Ceiling with over 19.7" (500mm) Roof Space

When the roof space is over 19.7" (500mm) in height, the process below is the standard solution to modifying the solid structure in 2.4.2 to provide additional lateral security to remove lateral movement.
Follow the process below for a secure fixing of the track bracket against the false ceiling.

1. When Zykon fixings have been used, two pieces of M12 threaded bars must be cut to length, a suitable length would be close to the height of the false ceiling.
2. For additional strength, Loctite 270 can be applied to the threaded bar where it threads into the Zykon.
3. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.6" (600mm), a single piece of steel channel will suit. If the gap size is between 23.6" (600mm) and 39.4" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
4. Fix the steel channel onto the two threaded bars and secure in place with a fish plate and two half nuts.
5. The steel channel should be flush with the concrete ceiling. (if the concrete is not level, place some M12 washers onto the threaded bar to level the steel channel)
6. Two pieces of 40x40 box section must be cut to a suitable length, these will be shorter than the threaded bars and allow enough space to place the box sections, steel channel and its fixings (fish plate and nut) onto the threaded bar.
7. Place the two box sections onto the two threaded bars and then secure them in position by placing the steel channel below.
8. The steel channel below must be cut to a longer length to allow the 45˚ brackets to be fixed at both ends of the steel channel.
9. When placing the steel channel onto the threaded bars, ensure to place a spring channel nut into the steel channel and place it central. (this will be directly above the position of the track bracket on the false ceiling)
10. Fix the steel channel onto the two threaded bars and secure in place with a fish plate and two half nuts.
11. The steel channel should be flush with the two box sections. (if the concrete ceiling is not level, place some M12 washers onto the threaded bar to level the two box sections)
12. Any excess threaded bar can be cut for tidy installation.
13. Onto both ends of the lower steel channel, the 45˚ bracket must be fixed.
14. The brackets can be fixed using an M12x60 bolt, and a fish plate and two half nuts on either side. Repeat this for both brackets on either side of the steel channel.
15. Two more 45˚ brackets must be fixed to the ceiling, these must be fixed using zykon fixings or chemical resin, mark out the fixing location using the bracket and follow the correct concrete fixing method (section 2.2 and/or 2.3) provide a fixing for the bracket.
16. Depending on the fixing method, follow the method below to fix the bracket:
17. (chemical resin) - secure the 45˚ bracket to the threaded bar using two half nuts. Cut of excess bar for tidy installation.
18. (Zykon) – insert a threaded bar into the Zykon fixing, ensuring the length is adequate for the installation. Secure the 45˚ bracket using to half nuts. Cut any excess bar for tidy installation.
19. Cut two pieces of steel channel that will span the distances between the 45˚ brackets on either side of the box section assembly.
20. Fix the steel channel to the brackets using an M12x60 bolt, and a fish plate and two half nuts on either side. The steel channel should be at a 45˚ angle. Ensure to repeat this for both sides of the box assembly. See the images below for reference.
21. A piece of threaded bar can now be cut to length to reach from the spring channel nut to the false ceiling.
22. Insert the threaded bar into the spring channel washer. Lock in place with a fish plate up against the steel channel and a half nut to secure.
23. With the threaded bar protruding through the false ceiling, a 40x40 box section template can be cut out of the tile.
24. A piece of 40x40 box section must be cut to length to be placed onto the threaded bar and down to the ceiling height.
25. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
26. When necessary, adjust the position of the bracket to make it level with the false ceiling using track spacers.
27. Repeat this process for each track bracket to complete track bracket installation.

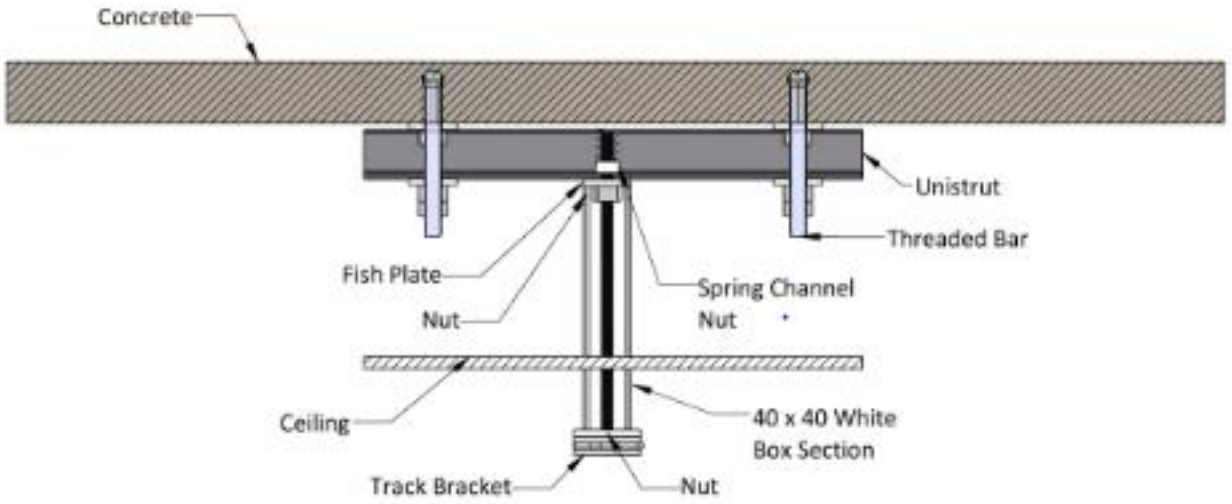

Concrete
250 - 600 mm
Zykon Fixing
M12 x 60 HHS
Bolt
Nut
45°
Angle Bracket
Min.
200 mm
Spring
Channel Nut
Steel Section
M12 Nyloc Nut
Fish Plate
Fish Plate
Half Nut x2
Threaded Bar
Ceiling


Concrete
Zykon Fixing
M12 x60 HHS
Bolt
Nut
45°
Angle Bracket
Spring
Channel Nut
Steel Section
M12 Nyloc Nut
Fish Plate
Fish Plate
Nut
Threaded Bar
40 x 40
Box Section
Nut
Ceiling
Track Bracket
Track Height

2.4.4 Lowered Track Requirements

When the track is required to be lowered from the ceiling, the two methods above will vary slightly. Follow the relevant section above (2.4.1, 2.4.2 or 2.4.3) for the initial fixing of the box section assembly. But to fix the track bracket the fixing method is stated below.

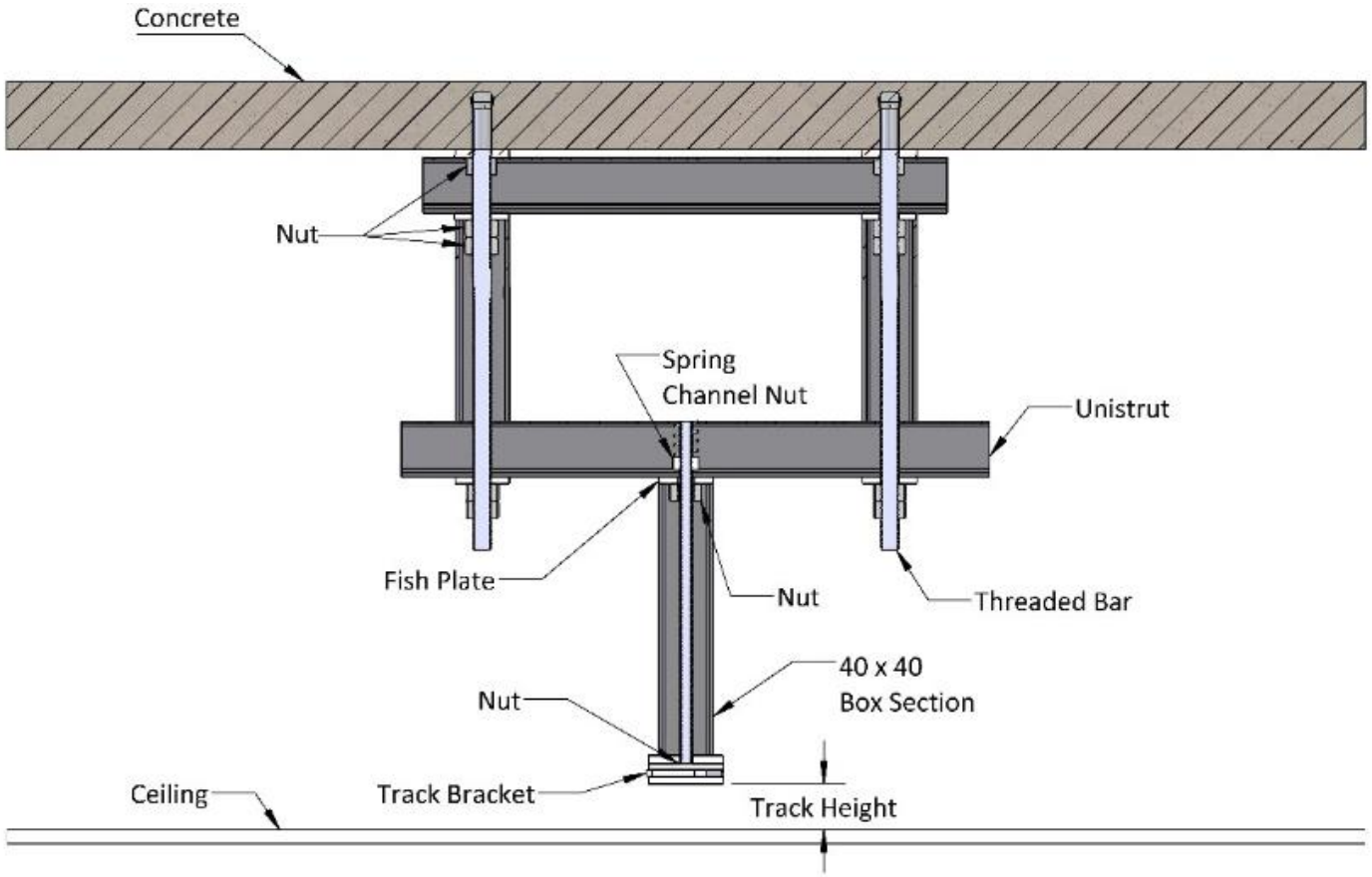
1. A piece of threaded bar must be cut to length from the spanning steel channel up to the desired track bracket height. (allowing additional thread for the bracket and half nut.)
2. Fix the threaded bar into the spring channel nut and secure with a fish plate and half nut.
3. With the threaded bar protruding through the false ceiling, a 40x40 box section template can be cut out of the tile.
4. A piece of white 40x40 box section must be cut to length to be placed onto the threaded bar and down to the chosen track bracket height.
5. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
6. When necessary, adjust the position/height of the bracket using track spacers.
7. Repeat this process for each track bracket to complete track bracket installation.



2.4.5 Inset Track Requirements

When an inset track is being installed into the ceiling, there is slight differences made to the installation process. Follow the relevant section above (2.4.1, 2.4.2 or 2.4.3) for the initial fixing of the box section assembly. But to fix the track bracket the fixing method is stated below. The track bracket will be suspended inside the false ceiling, depending on the track type used, the bracket will be suspended the height of the track to the false ceiling.

1. A piece of threaded bar must be cut to length from the spanning steel channel up to the track bracket height. (allowing additional thread for the bracket and half nut.). This will depend on the insert track type used. For single track inset track, the height of the bracket above the false ceiling will be 2.5" (64mm). For the heavy duty track inset track the height will of the bracket above the false ceiling will be 6.9" (176mm).
2. Fix the threaded bar into the spring channel nut and secure with a fish plate and half nut.
3. A piece of 40x40 box section must be cut to length to be placed onto the threaded bar and down to the chosen track bracket height.
4. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
5. When necessary, adjust the position/height of the bracket using track spacers.
6. Repeat this process for each track bracket to complete track bracket installation.

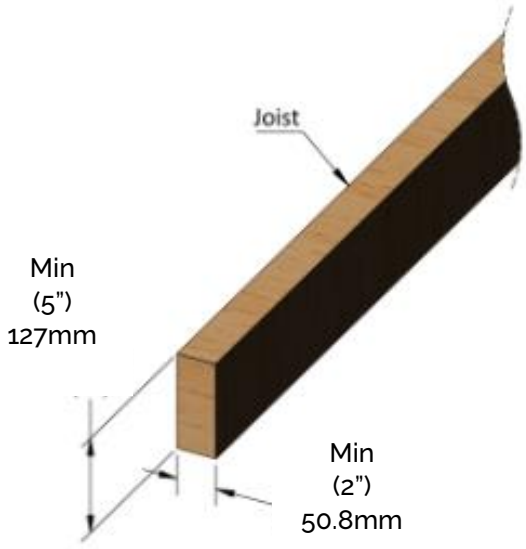


3 Fixing the Ceiling Track onto a Timber Ceiling

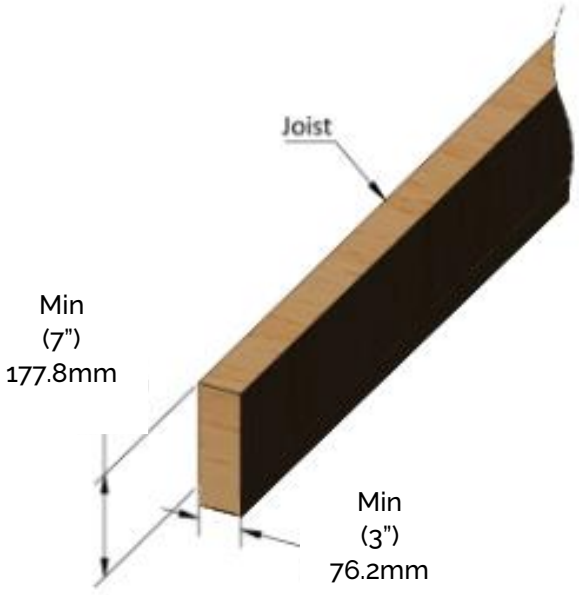
The section below will give full instruction on the recommended method of installation for a ceiling track system into a timber ceiling. This includes all the typical installation methods, each one specific to the building structure.
All track types stated previously are available for timber ceiling installation. Ensure to follow the straight track fitting requirements (section 1.4) to determine the maximum span between each fixing, this depends on the track type used. This is a critical factor of ceiling track installation and must be determined prior to installing a track into the ceiling. The turntables will be fitted following the fixing methods below, but with slight differences. See section 7.4 for turntable fitting requirements.
It is also important to familiarise yourself with each subsection within section 1.0 before continuing a ceiling track installation into timber.
A full assessment should have been conducted to ensure that the ceiling is safe for installation, but the service engineer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking, rotten wood or any other damage to the ceiling should be avoided. Depending on the type of ceiling, the various fixing methods must be followed.

When fixing a ceiling track to a timber ceiling, the joists must be no smaller than 5" x 2" (127mm x 50.8mm) when the track runs perpendicular with the joist, and no smaller than 7" x 3" (177.8mm x 76.2mm) when running in parallel. This ensures that the joist provides suitable strength to suspend a ceiling track system.

Perpendicular - Across joists



Parallel - Along joists



3.1 Aligning the Ceiling Track System for Timber

A very important factor to take into account when installing the track system is alignment and accuracy. For the track system to run smoothly, it must be installed horizontally for the ceiling lift to traverse with ease, along with a straight line fixing to allow two tracks to successfully link between each other and allow a transition for the ceiling lift to pass between tracks. It is a critical part of ceiling track installation to allow the system to function.

3.1.1 Marking out Bracket Positions for a Straight Track Installation into Timber

1. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc.
2. The room should have been mapped out previously using a joist finder, from here you can determine where the best location for track fixings are. It is possible to fix the track brackets between or into joists, but different fixing methods are required.
3. Determine a suitable location for the first fixing, and thereby calculate how many more fixings are required and their distance apart, this will depend on the track type used.
4. Mark the first track bracket position on the ceiling, from here a laser can be placed on the floor directly in line with the first position, and it will draw a straight line along the ceiling to represent the track position.
5. Use a tape measure to measure the distance between each fixing. (this distance should have been calculated in step 3)
6. Mark on the ceiling the second fixing position, this will be in line with the laser and the measured distance on the tape measure.
7. Repeat this process to mark out all fixings.
8. Using a 12.5mm drill bit, drill the holes into the ceiling where there are no joists present.
9. Where joists are present, an 8mm diameter hole should be drilled into the ceiling and into the joist, the hole should be approximately 3.9" (100mm) deep into the joist.
10. The track bracket locations are now successfully marked out.

3.1.2 Marking out Bracket Positions for a Track Bend Installation into Timber

1. Ensure that where the track bend is intended to be fitted is clear of any obstacles, this includes light fixings, sprinklers etc.
2. The room should have been mapped out previously using a joist finder, from here you can determine where the best location for track fixings are. It is possible to fix the track brackets between or into joists, but different fixing methods are required.
3. Ensure that the track is cut to desired length before marking out any fixing points.
4. Depending on the type of track bend, a certain amount of fixings is required. See section 1.0 for track bends information.
5. Track bends should be fitted after a straight track is installed, therefore ensure the straight track in already fitted to assist in track bends positioning.
6. Align the track bend on the ceiling, up against the straight track system, where the bend is desired to be.
7. Draw the outline of the track onto the ceiling with a marker/pencil. Mark out the fixing points from the profile as described in section 1.0
8. Using a 12.5mm drill bit, drill the holes into the ceiling where there are no joists present.
9. Where joists are present, an 8mm diameter hole should be drilled into the ceiling and into the joist, the hole should be approximately 3.9" (100mm) deep into the joist.
10. The track bracket locations are now successfully marked out.

3.2 Ceiling Track Fixings into Timber with a Loft Space

Where a loft space is available, the installation method for the ceiling track will follow one of the below procedures. For loft space installation, it is physically possible to enter the loft and fix the ceiling track fixings on top of the joists, allowing simpler installation. The below fixing methods include tracks running parallel, perpendicular and diagonal to the joists.
It may be necessary to remove the loft floor boards if they are obstructing installation.

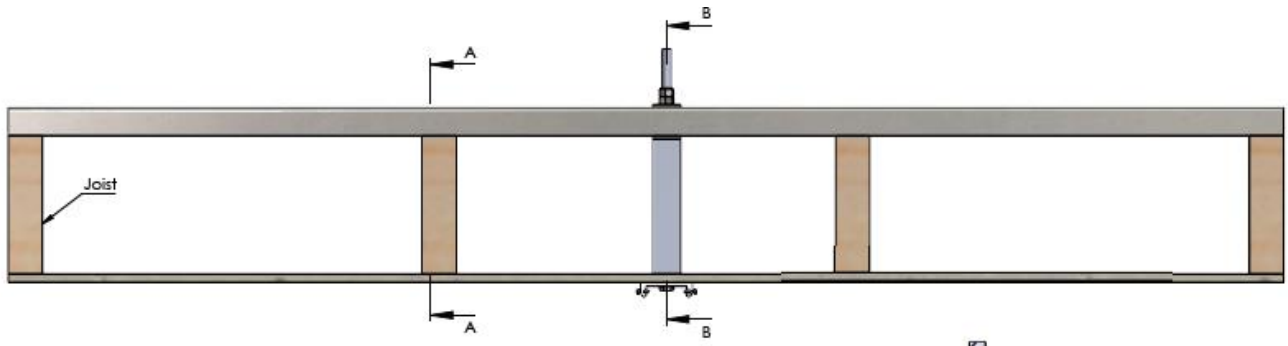
3.2.1 Ceiling Track running parallel with the Joists

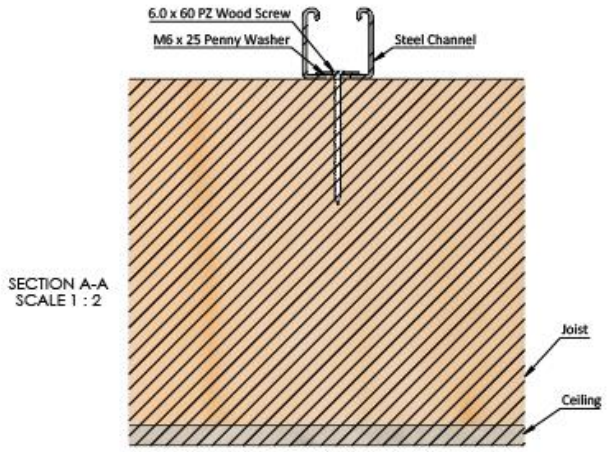
This section will describe the process of fixing the ceiling track to the joists where the ceiling track is in parallel to the joist. It is not permitted for a single joist to suspend a track system, therefore during the ceiling marking out, section 3.1, the track should be positioned between two joists, at worst case, 2/3 towards one of the two joists.

Follow the process below for track installation:

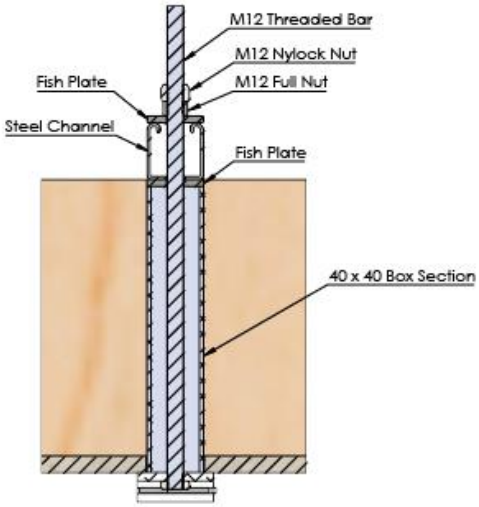
1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Ensure that the located holes are central between the joists, this is important to spreading the load between two fixings.
3. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
4. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
5. See section 3.1.4 for a solution on avoiding obstacles such as piping.
6. A piece of steel channel must be cut to length to span over four joists, with the track bracket installation in the centre.
7. Single channel steel is sufficient when fixing ceiling track systems across joists.
8. Place the steel channel onto the four joists directly over the track bracket fixing point, refer to section 1.6 for information on how to even uneven joists.
9. Repeat step 7 for each track bracket fixing point.
10. Secure the steel channel to the joist using the 6x60 wood screws and an M6x25 penny washer.
11. Ensure to fix the steel channel at each joist, totalling four fixings per steel channel.
12. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
13. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
14. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
15. Place a fish plate up against the underside of the steel channel.
16. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
17. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
18. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
19. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.

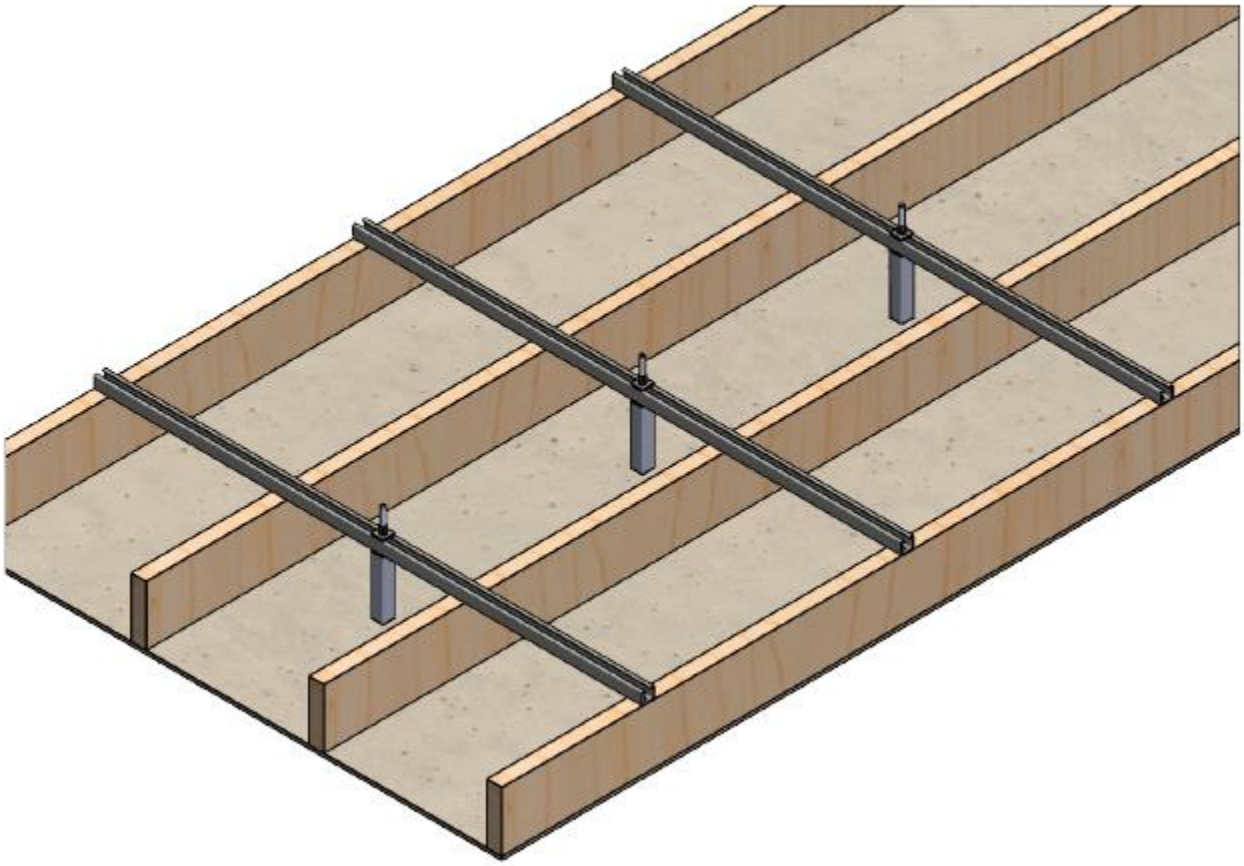




SECTION A-A
SCALE 1 : 2



SECTION B-B
SCALE 1 : 2,5



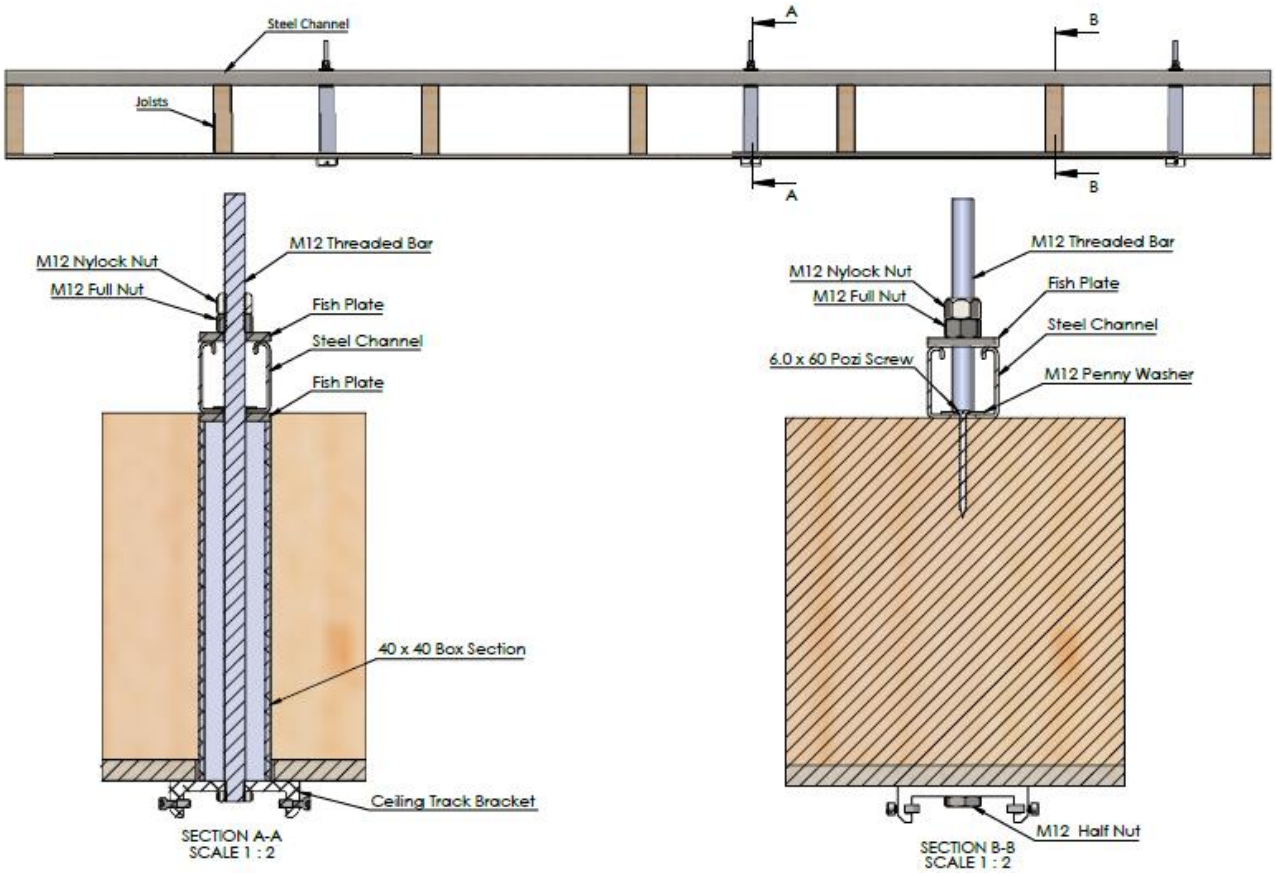
3.2.2 Ceiling Track running perpendicular to the Joists

This section will describe the process of fixing the ceiling track to the joists where the ceiling track is perpendicular to the joist.

Follow the process below for track installation:

1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
4. See section 3.1.4 for a solution on avoiding obstacles such as piping.
5. A piece of steel channel may be placed across the top of the joists, following the perpendicular path of the pre-drilled holes in the ceiling. There is no requirement to cut the steel channel unless it is necessary to avoid obstructions. Refer to section 1 for information on how to even uneven joists.
6. Single channel steel is sufficient when fixing ceiling track systems across joists.
7. When using steel channel, it may be necessary to use multiple pieces, ensure that the separate pieces are placed up against each other between joists where no fixings are located between.
8. Ensure that when the final ceiling track fixing point has been located (at both ends), the steel channel will span over an additional joist for increased strength.
9. Secure the steel channel to each joist using the 6x60 wood screws and an M6x25 penny washer.
10. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
11. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
12. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
13. Place a fish plate up against the underside of the steel channel.
14. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
15. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
16. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying loctite 270 to the half nut.
17. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.1.


Steel Channel
Joists
A
B
A
B
M12 Nylock Nut
M12 Full Nut
M12 Threaded Bar
Fish Plate
Steel Channel
Fish Plate
40 x 40 Box Section
Ceiling Track Bracket
SECTION A-A
SCALE 1 : 2
M12 Nylock Nut
M12 Full Nut
M12 Threaded Bar
Fish Plate
Steel Channel
6.0 x 60 Pozi Screw
M12 Penny Washer
M12 Half Nut
SECTION B-B
SCALE 1 : 2

3.2.3 Ceiling Track running diagonal to the Joists

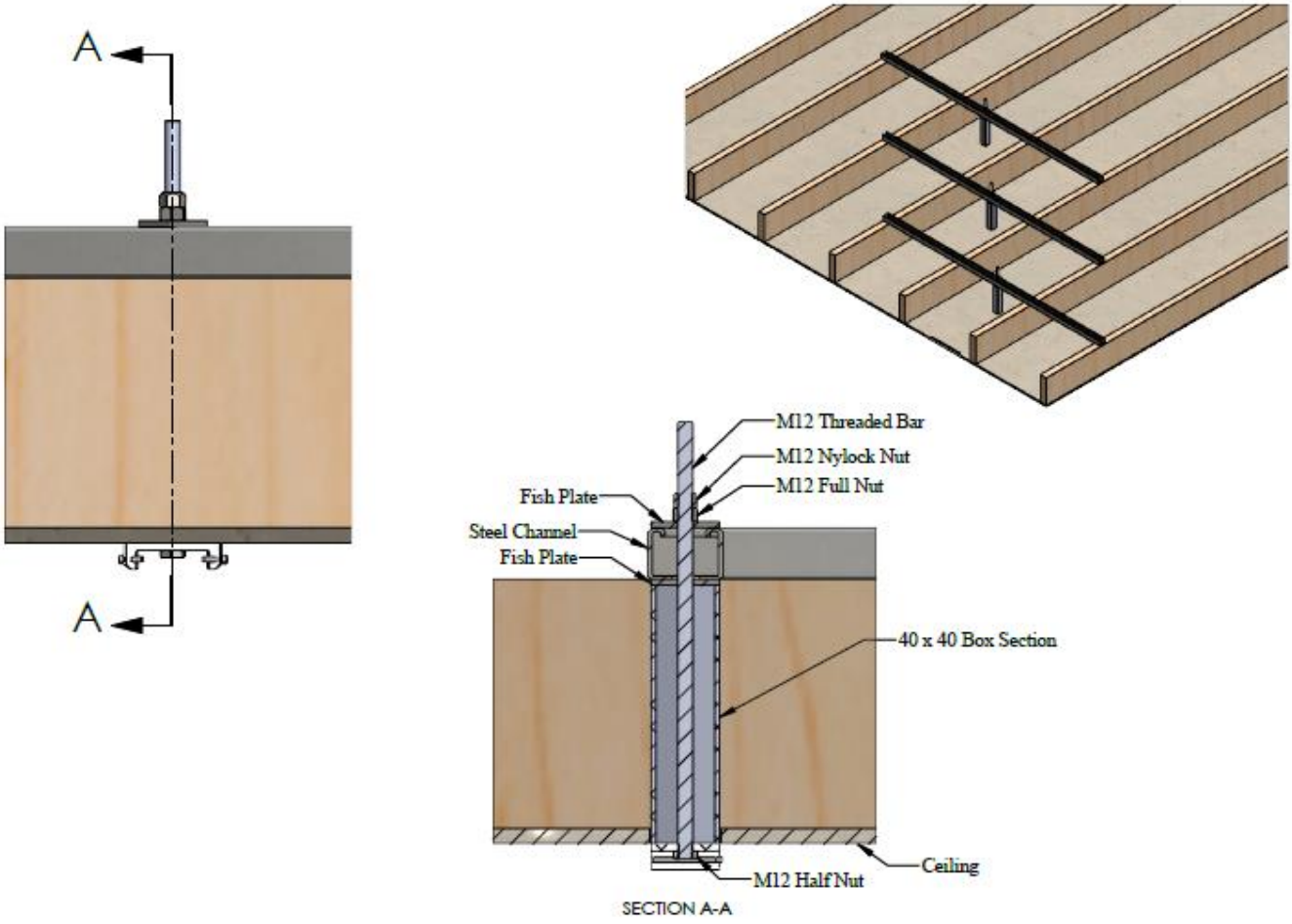
This section will describe the process of fixing the ceiling track to the joists where the ceiling track is diagonal to the joist.

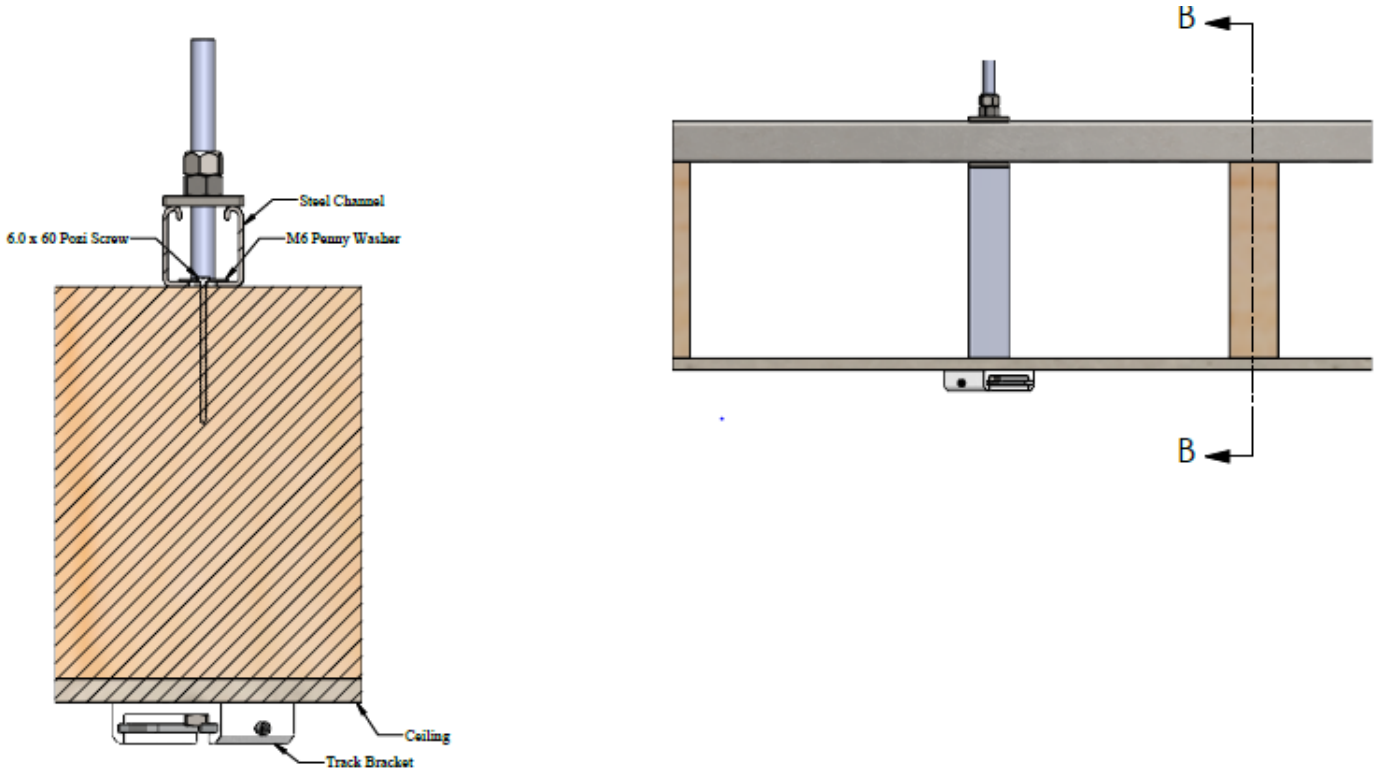
Follow the process below for track installation:

1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
4. See section 3.1.4 for a solution on avoiding obstacles such as piping.
5. For each fixing, a piece of steel channel must be cut to length to span over four joists, with the track bracket installation in the centre.
6. Single channel steel is sufficient when fixing ceiling track systems across joists.
7. Place the steel channel onto the four joists directly over the track bracket fixing point, refer to section 1.6 for information on how to even uneven joists.
8. Repeat step 7 for each track bracket fixing point. The steel channels should appear across the joists in a diagonal fashion, while the individual channels are perpendicular. (see image below)
9. Secure the steel channel to the joist using the 6x60 wood screws and an M6x25 penny washer.
10. Ensure to fix the steel channel at each joist, totalling four fixings per steel channel.
11. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
12. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
13. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
14. Place a fish plate up against the underside of the steel channel.
15. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
16. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
17. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
18. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1

Within this section the fixing method for each individual fixing point is identical to that of section 3.2.1, only with the fixings moving diagonally within the loft space.





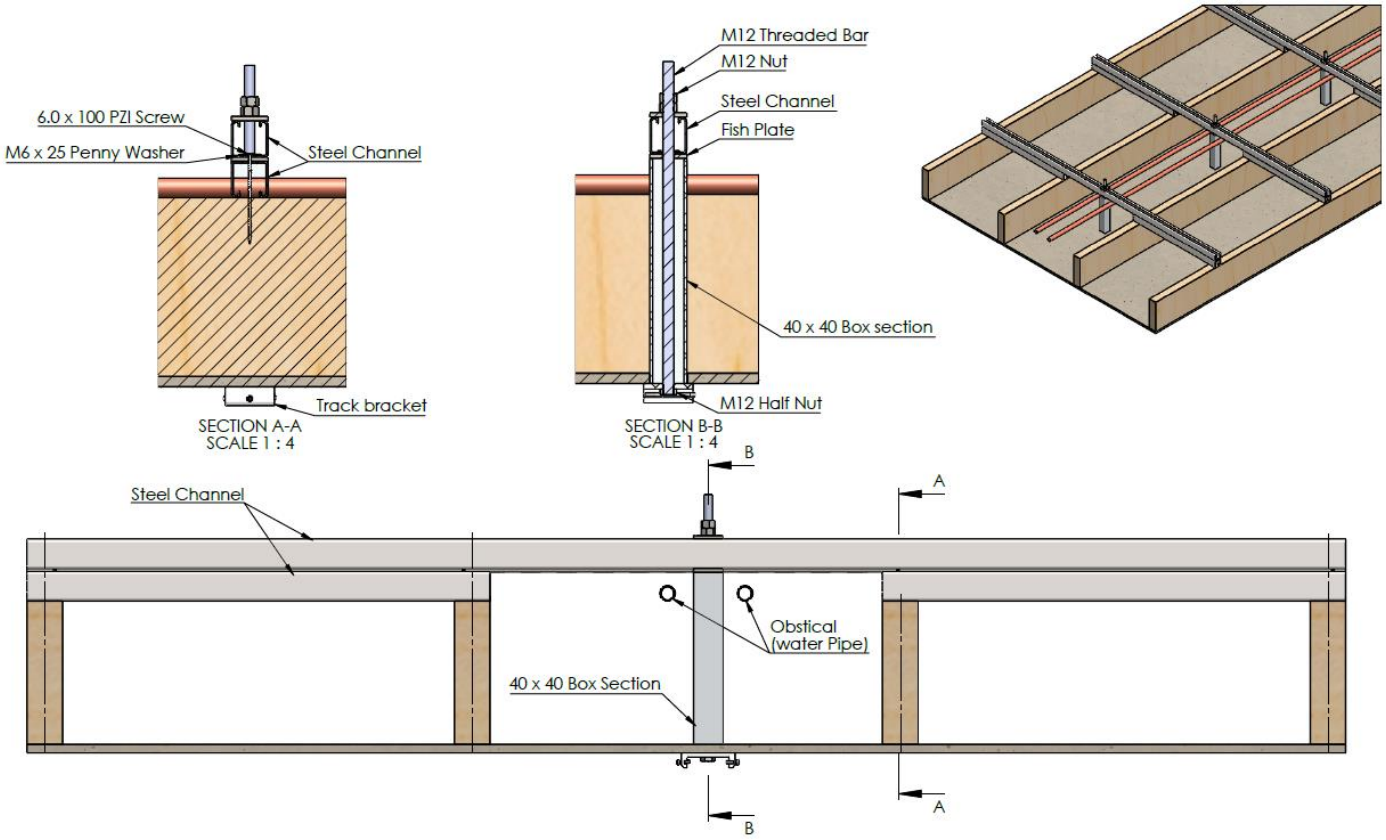
SECTION B-B
SCALE 1 : 2

3.2.4 Joist fixing obstacles

This section will cover the best solutions to working fixings around obstacles such as pipes.
Follow the process below for assistance in avoiding certain obstructions. The process below can be referred to when fixing a ceiling track into a loft space from either section 3.2.1, 3.2.2, and 3.2.3.

1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. It is found that the standard procedure of placing steel channel has been obstructed due to pipe works. Follow the steps below:
4. Between each joist where an obstruction is located, the height of the steel channel must be raised. This can be done by double layering steel channel.
5. Fix the first layer of steel channel across a minimum of two joists. This first layer will be fixed on either side of the obstructed path. (see image)
6. Secure the steel channel to the joists using the 6x60 wood screws and an M6x25 penny washer.
7. Ensure to fix the steel channel at each joist, totalling two fixings per steel channel.
8. Once the first layer has been fixed, the height of the bridging steel channel should have been increased and allow the steel channel to pass over the obstruction. (where the obstruction is still causing an obstruction – it is permitted to use a track spacer to increase the height of the first layer of steel channel a few millimetres.
9. Fix the bridging steel channel across all four joists, with the obstruction central. To fix the bridging steel channel, M12 threaded bar must be used.
10. Cut the threaded bar to length, it must pass through the two steel channels and allow enough length to secure the fixings.
11. A minimum of one threaded bar fixing should be installed to fix the two steel channels together on either side of the obstruction. (see image below). The bar should be inserted central between the joists.
12. Fix the two steel channels together with the threaded bar and secure in place with a fish plate and two half nuts on either side.
13. Once the steel channels have been installed, the track bracket fixing method must be continued.
14.
15. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Ensure to allow additional thread for the fixings.
16. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
17. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
18. Place a fish plate up against the underside of the steel channel.
19. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
20. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
21. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
22. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.1.


6.0 x 100 PZI Screw
M6 x 25 Penny Washer
Steel Channel
Track bracket
SECTION A-A
SCALE 1 : 4
M12 Threaded Bar
M12 Nut
Steel Channel
Fish Plate
40 x 40 Box section
M12 Half Nut
SECTION B-B
SCALE 1 : 4
B
A
Steel Channel
Obstical
(water Pipe)
40 x 40 Box Section
A
B

3.2.5 Ceiling Track perpendicular with Trusses

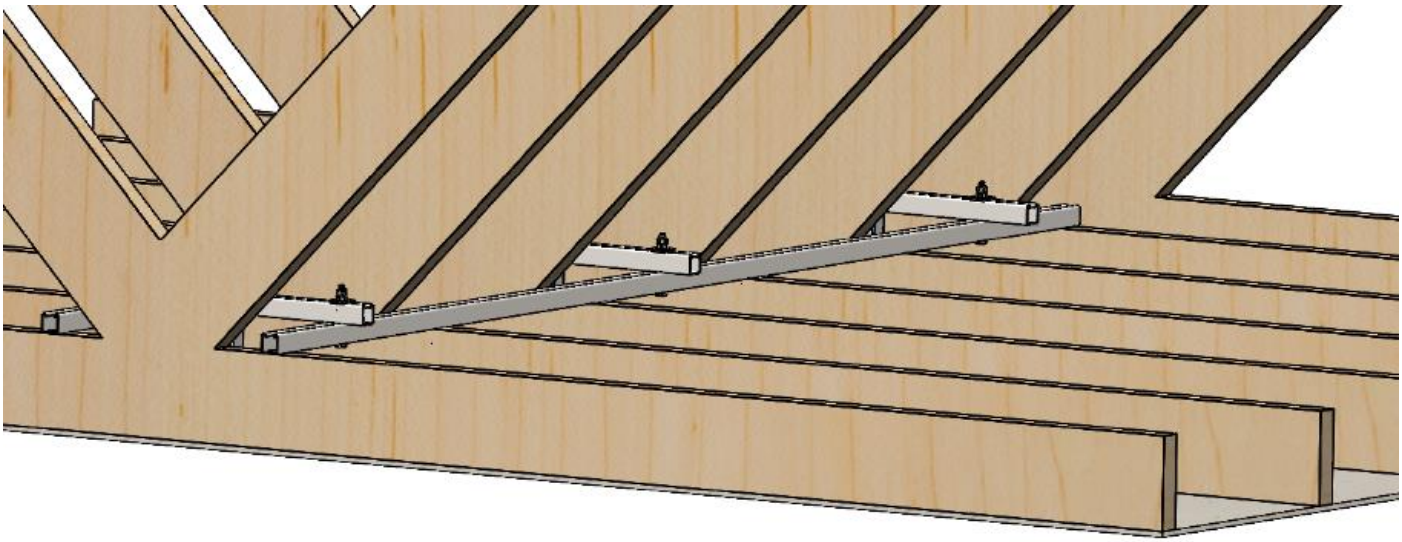
This section will describe the best fixing process for a ceiling track system when the fixing positions are obstructed by ceiling trusses.

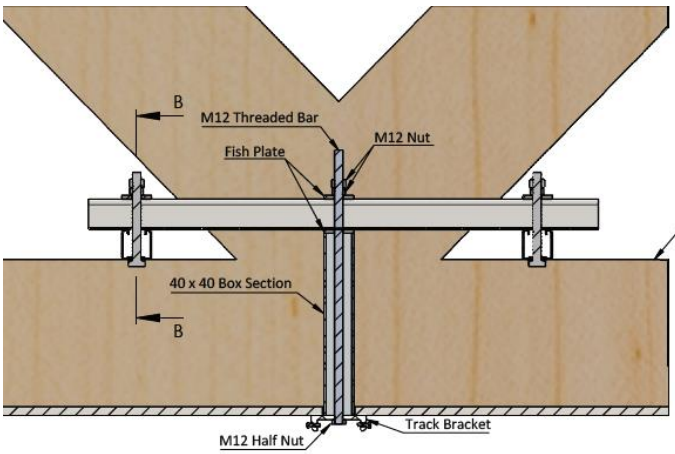
Follow the process below for track installation:

1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. It is found that the standard procedure of placing steel channel has been obstructed due to trusses. Follow the steps below:

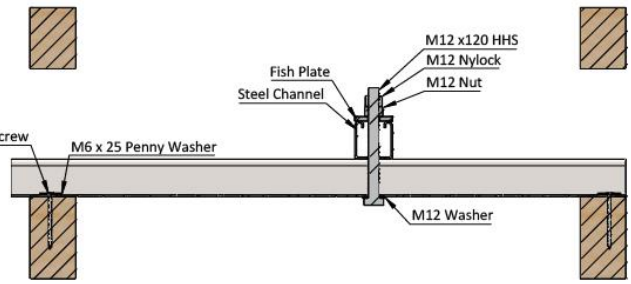
4. The method of fixing a steel channel has been obstructed due to trusses, therefore a new fixing point must be created. This can be done using two parallel steel channels, running either side of the trusses and fixed from one joist onto the next. These two steel channels will run parallel with the ceiling track.
5. Two pieces of steel channel either side of the trusses may be placed across the top of the joists, following the perpendicular path of the pre-drilled holes in the ceiling. There is no requirement to cut the steel channel unless it is necessary to avoid obstructions. Refer to section 1.6 for information on how to even uneven joists.
6. Single channel steel is sufficient when fixing ceiling track systems across joists.
7. When using steel channel, it may be necessary to use multiple pieces, ensure that the separate pieces are placed up against each other between joists where no fixings are located between.
8. Ensure that when the final ceiling track fixing point has been located (at both ends), the steel channel will span over an additional joist for increased strength.
9. Secure the steel channel to each joist using the 6x60 wood screws and an M6x25 penny washer.
10. With the two steel channels now in place, running parallel with the track direction. Steel channel must be used to bridge between the two parallel steel channels where the track bracket fixing points align.
11. When the spanning distance between the two parallel steel channel is between 9.8" (250mm) and 23.6" (600mm), single steel channel is sufficient. Where the distances between the two steel channels is between 23.6" (600mm) and 39.4" (1000mm), double steel channel is required. It is recommended that the distance between the two parallel steel channels is kept as narrow as possible.
12. To fix the bridging steel channel between the parallel channels, M12 threaded bar must be used.
13. Cut the threaded bar to length, it must pass through the two steel channels and allow enough length to secure the fixings.
14. The threaded bar should be fixed at both ends, securing the bridging steel channel.
15. Fix the two steel channels together with the threaded bar and secure in place with a fish plate and two half nuts on either side.
16. Once the steel channels have been installed, the track bracket can be installed onto the bridging steel channel, see the process below.
17. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Ensure to allow additional thread for the fixings.
18. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
19. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
20. Place a fish plate up against the underside of the steel channel.
21. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
22. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
23. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
24. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.1.

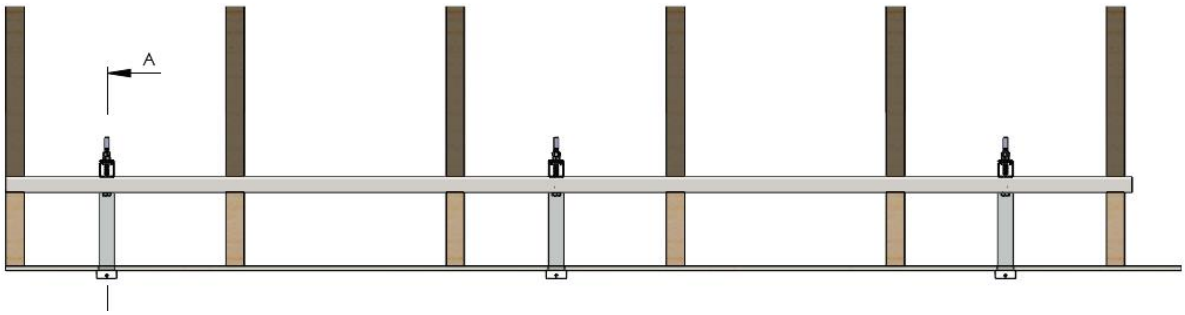




SECTION A-A
SCALE 1 : 5



SECTION B-B
SCALE 1 : 4



3.2.6 Up/down bracket install method

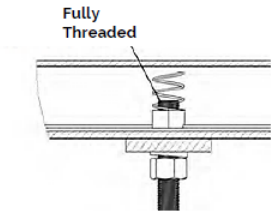
The up/down bracket install method can be used for all loft over timber install methods, this includes parallel, perpendicular and diagonal installs. The benefit of the up/down bracket is that it allows you to adjust the height of the track bracket for simpler alignment.

This section will describe the process of installing an up/down bracket to any loft over timber installation. Follow the process below for correct installation:

Fixing the steel channel to the joists

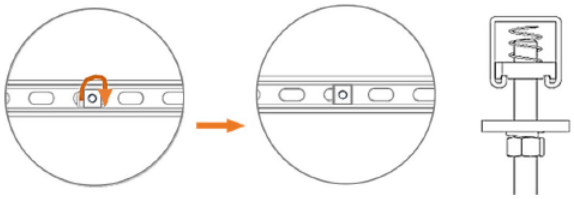
1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
4. See section 3.1.4 for a solution on avoiding obstacles such as piping.
5. A piece of steel channel may be placed across the top of the joists, following the perpendicular path of the pre-drilled holes in the ceiling. There is no requirement to cut the steel channel unless it is necessary to avoid obstructions. Refer to section 1 for information on how to even uneven joists.
6. Single channel steel is sufficient when fixing ceiling track systems across joists.
7. When using steel channel, it may be necessary to use multiple pieces, ensure that the separate pieces are placed up against each other between joists where no fixings are located between.
8. Ensure that when the final ceiling track fixing point has been located (at both ends), the steel channel will span over an additional joist for increased strength.
9. Secure the steel channel to each joist using the 6x60 wood screws and an M6x25 penny washer.

Fixing the up/down bracket kit to the steel channel



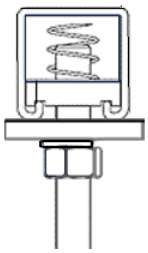
1. Threaded Rod Fully Threaded into the Strut Channel Nut

- Make sure the strut channel nut is seated properly in the 1 5/8" slotted (1/2") strut channel



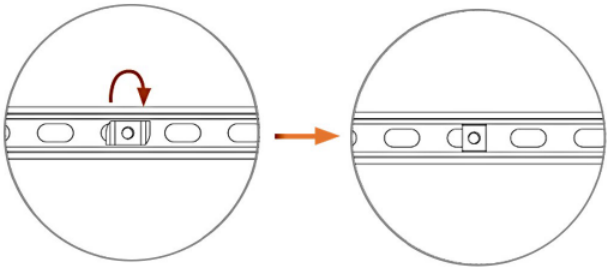
2. Strut Channel Nut Seated Properly in the Slotted Strut Channel

- Tighten the hex nut to the recommended torque, making sure the lock washer is fully compressed



3. Tighten the Hex Nut to the Recommended Torque, So That the Lock Washer is Fully Compressed

- Use the plumb bob to mark the location of the attachment point on the ceiling, then drill a 1" hole in the ceiling for the attachment point.
- Repeat steps 3–10 for each attachment point.
- Make sure the bottoms of all threaded rods are level to each other.



4. Strut Channel Nuts Properly Seated in the Slotted Strut Channels

- Tighten both bolts connecting the two-hole 90° strut fitting to the 1 5/8" slotted (1/2") strut channels.
- Torque to the manufacturer's recommended setting.
- Make sure the lock washers are fully compressed.

5. Secure the 1 5/8" slotted strut channel to the two-hole 90° strut fitting on the threaded rod.

- Use a plumb bob to make sure the bottom of the threaded rod is in line with the marked attachment location on the floor (adjust rod position as necessary).
- Make sure the strut channel nut is properly seated in the 1 5/8" slotted (1/2") strut channel before tightening.
- Tighten the 1/2" hex nuts on either side of the two-hole 90° strut fitting.
- Torque all hardware to the manufacturer's recommended setting.
- Make sure all lock washers are fully compressed.

Repeat steps for each lateral brace

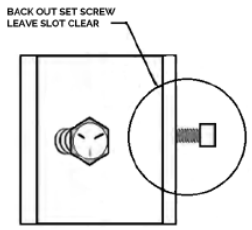


Figure 1: Loosen the Ceiling Bracket Set Screw So No Threads are Visible in the Bracket Channel

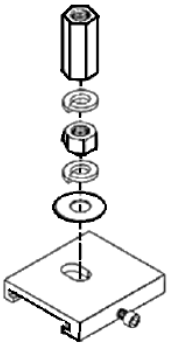


Figure 2: Flat Washer, Lock Washer, Hex Nut

Install the Ceiling Track Brackets at All Attachment Locations

1. Loosen the set screw on the ceiling bracket so no threads are visible in the bracket channel. ***(See Figure 1)***

- This makes mounting the track to the bracket easier.

2. Insert the 1 1/2" x 1/2" bolt through the slot in the ceiling bracket, with the bolt head in the underside of the bracket. ***(See Figure 2)***

3. On top of the bolt, place in this order: ***(See Figure 3)***

1. 1/2" Flat washer
2. 2. 1/2" Lock washer 3. 1/2" Hex nut

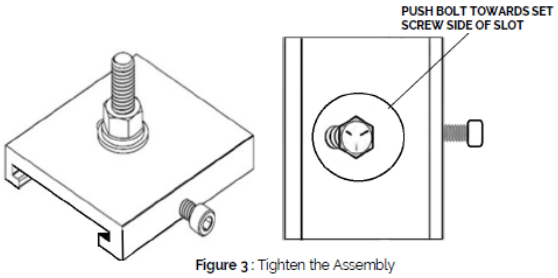


Figure 3 : Tighten the Assembly

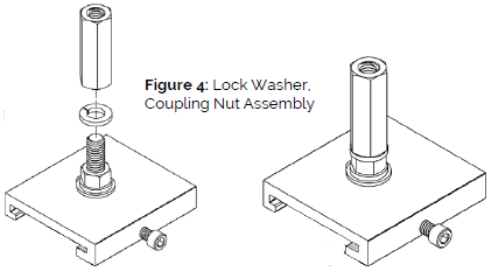


Figure 4: Lock Washer, Coupling Nut Assembly

Flat Washer, Lock Washer, Hex Nut

4. Use two 3/4" wrenches to tighten this assembly.

- Make sure the bolt head on the underside of the bracket is as close as possible within the slotted bracket hole to the set screw side of the ceiling bracket. ***(See Figure 4)***

5. On top of this assembly, place in this order: ***(See Figure 5)***

1. 1/2" Lock washer
2. 1/2" Coupling nut

6.Tighten this assembly using an 11/16" wrench on the coupling nut while holding the bolt head under the bracket using a 3/4" wrench. ***(See Figure 6-10)***

7.Thread a hex nut onto the threaded rod approximately 2" up from where the bracket assembly will be attached.

8.Place a lock washer on the threaded rod beneath the hex nut.

9.Thread the 1/2" coupling nut on top of the ceiling bracket assembly onto the threaded rod a minimum of four complete rotations.

- Level by threading the 1/2" coupling nut further onto or off the threaded rod.

10.Tighten the 1/2" hex nut on the threaded rod against the 1/2" coupling nut of the ceiling bracket assembly.

- Make sure all lock washers are fully compressed.

Figure 6:-10 Tighten the Hex Nut on the Threaded Rod So All Lock Washers are Fully Compressed

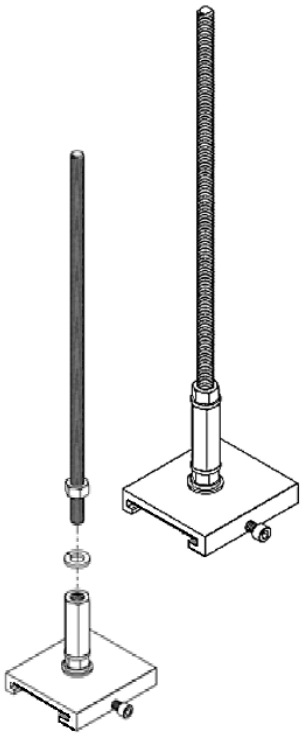
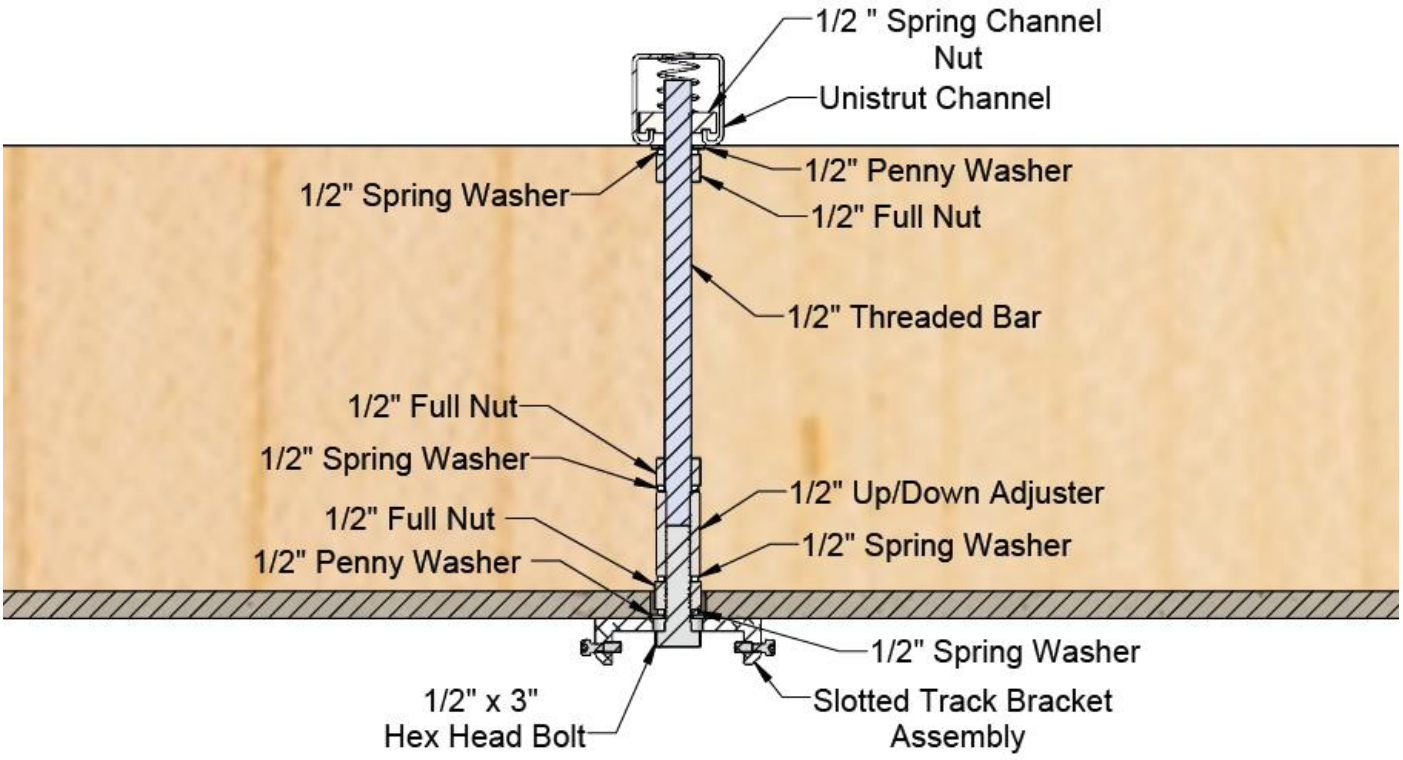
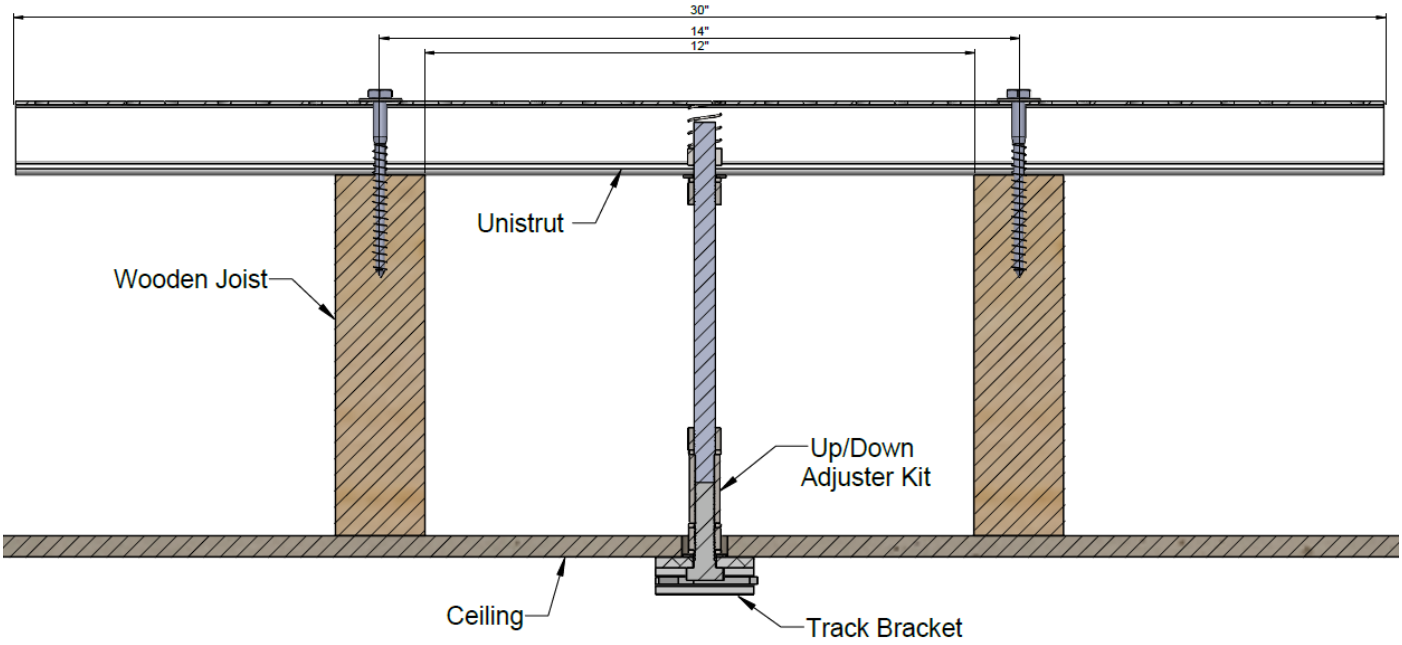


Figure 5: Level by Threading the 1/2" Coupling Nut Further On or Off of the Threaded Rod




30"
14"
12"
Unistrut
Wooden Joist
Up/Down
Adjuster Kit
Ceiling
Track Bracket

3.3 Ceiling track fixings into timber without loft space

When a loft space is not available (usually when an installation is on the ground floor), the installation method for the ceiling track will follow one of the below procedures. For this installation the installer must access the floor above and remove the floorboards to access the joists below. During this installation the fixings must be fitted to the side face of the joists, which will require joist brackets. The below fixing methods include tracks running parallel, perpendicular and diagonal to the joists.

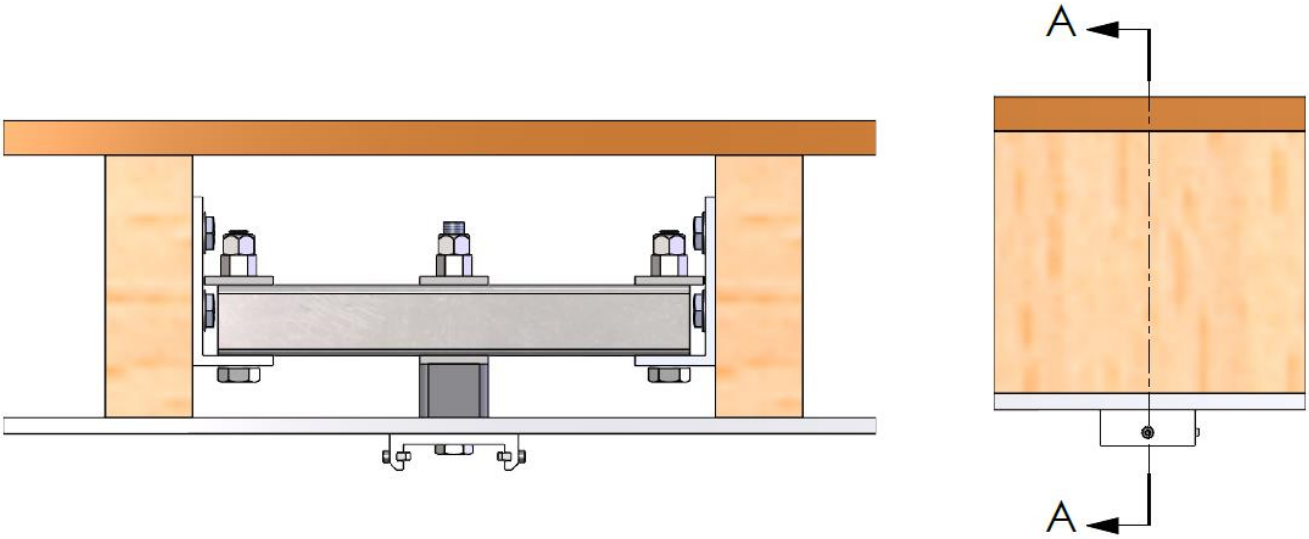
3.3.1 Ceiling Track running parallel with the Joists

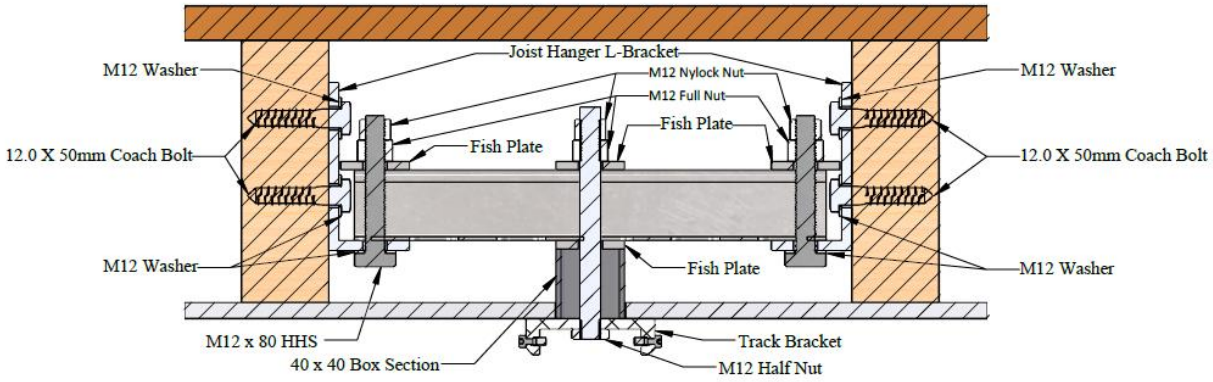
This section will describe the process of fixing the ceiling track to the joists where the ceiling track is in parallel to the joist. It is not permitted for a single joist to suspend a track system, therefore during the ceiling marking out, section 1, the track should be positioned between two joists, at worst case, 2/3 towards one of the two joists.

Follow the process below for track installation:

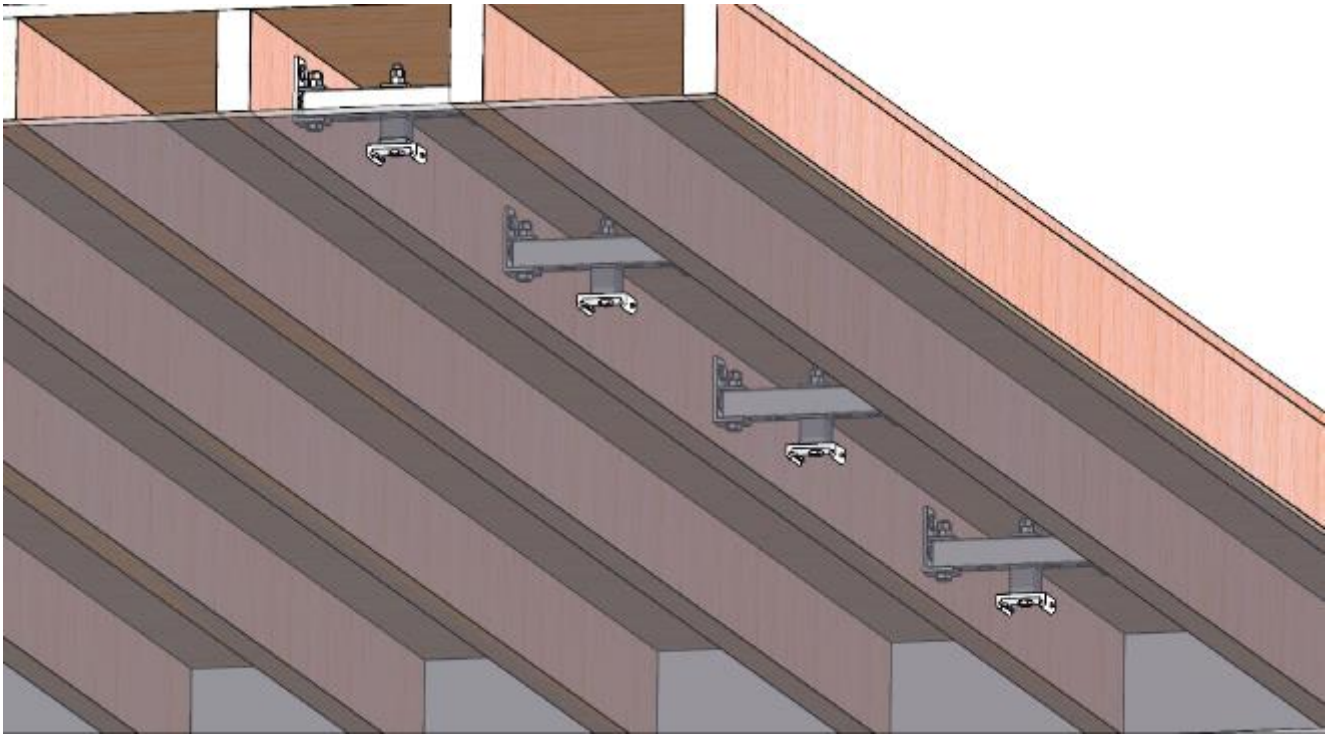
1. The installer must enter the room upstairs and remove the floorboards directly above the track bracket fixing points.
2. Inspect the fixing location for any obstacles such as wiring or piping that may cause an issue, ensure to avoid obstacles where possible.
3. Ensure that the fixing point between the two joists is central, at worst case, 2/3 towards one of the two joists.
4. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. rotten, cracked)
5. On the inside of the joists, joist hanger brackets are used to fix a bridging steel channel.
6. On both joists, pilot holes must be drilled into the inner face where the joist hanger bracket coach bolts are to be fitted. Using the profile of the joist hanger bracket to locate the correct fixing point, drill two holes for each bracket a depth of 2.0" (50mm) and a diameter of 8mm.
7. Once the first joist hanger is marked out, use a laser to perfectly align the opposite joist hanger position and drill the pilot holes.
8. Secure the joist hangers into position on the inner joist face using the given 12.0x50mm coach bolts.
9. A piece of steel channel can now be cut to length to bridge between the two joist hangers.
10. Where the distances between the joist hangers are between 9.8" (250mm) to 23.6" (600mm), single steel channel is sufficient. Where the distances between the fixing points are between 23.6" (600mm) - 39.4" (1000mm), double steel channel is required.
11. Place the steel channel onto the joist hangers.
12. The steel channel can be secured by placing an M12x80 bolt through the bottom of the joist hanger and through the steel channel. (ensure to place an M12 washer onto the bolt first)
13. Secure the bolt to the steel channel using a fish plate and two half nuts.
14. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
15. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
16. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
17. Place a fish plate up against the underside of the steel channel.
18. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
19. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
20. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
21. The track bracket should become flush with the ceiling and box section.

Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.


A
A


Joist Hanger L-Bracket
M12 Nylock Nut
M12 Full Nut
M12 Washer
M12 Washer
Fish Plate
Fish Plate
12.0 X 50mm Coach Bolt
12.0 X 50mm Coach Bolt
M12 Washer
Fish Plate
M12 Washer
M12 x 80 HHS
40 x 40 Box Section
Track Bracket
M12 Half Nut

SECTION A-A

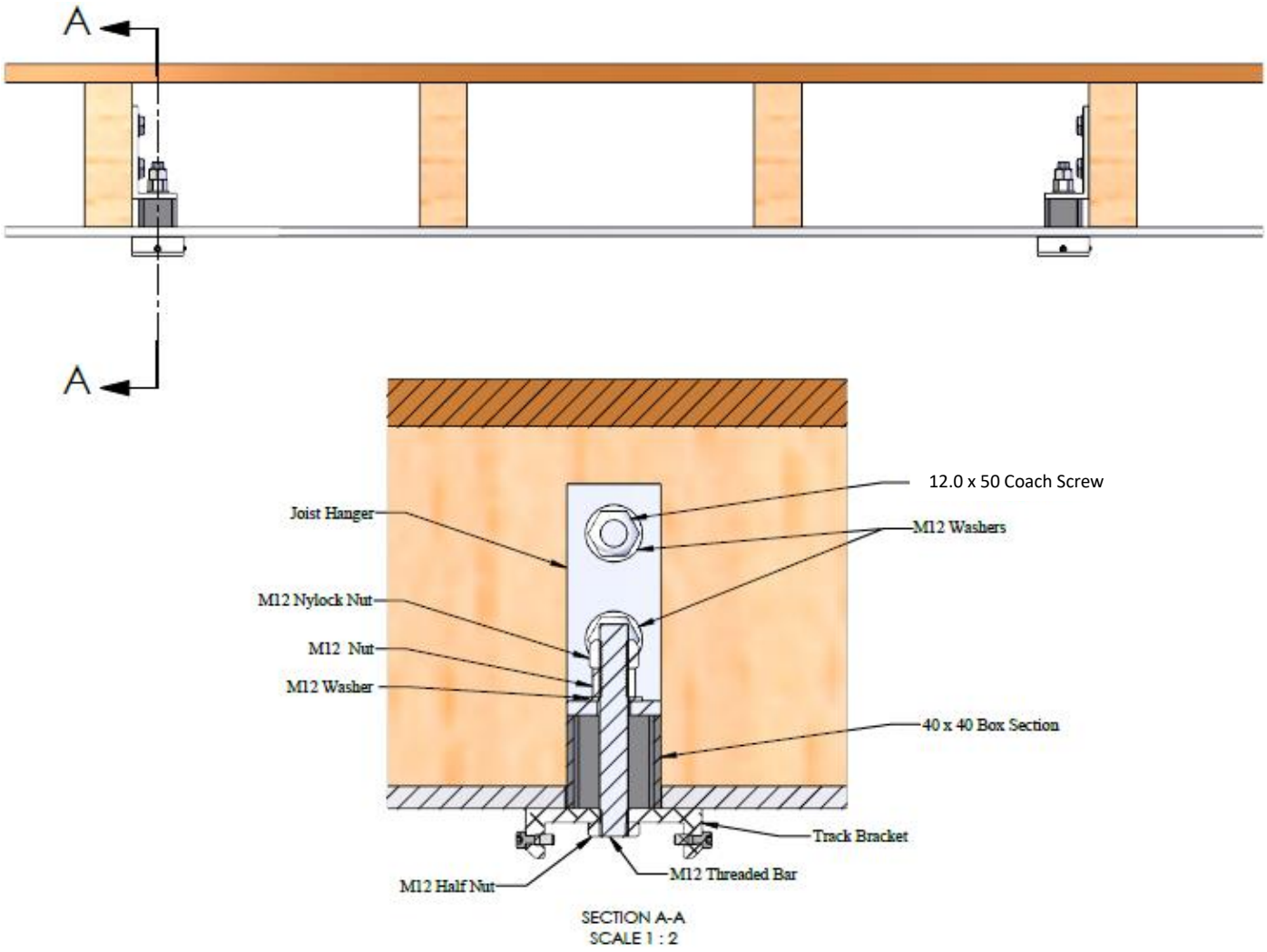


3.3.2 Ceiling Track running perpendicular or diagonal to the Joists

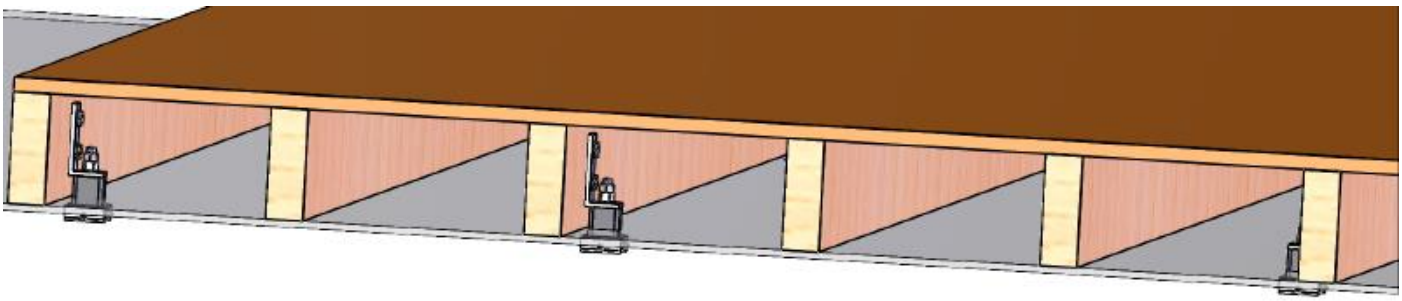
This section will describe the process of fixing the ceiling track to the joists where the ceiling track is perpendicular or diagonal to the joist. The same process applies to both fixing types, only that the diagonal track will have the joist hanger brackets located in a diagonal direction. Bear in mind the diagonal method may require more frequent joist hanger brackets to ensure that the track maximum span is not exceeded. See the images below for reference to perpendicular and diagonal fixing method.
Follow the process below for track installation.

1. The installer must enter the room upstairs and remove the floorboards directly above the track bracket fixing points.
2. The marked out fixing locations must be moved directly in front of the joist, to allow the joist hanger bracket to suspend the track bracket. (see image below for reference)
3. Place a laser within the ceiling to ensure that a straight line is maintained when relocating holes.
4. To perfectly position the hole, the joist hanger bracket must be fitted onto the joist first.
5. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
6. On the joists, pilot holes must be drilled into the inner face where the joist hanger bracket coach bolts are to be fitted. Using the profile of the joist hanger bracket to locate the correct fixing point, drill two holes for each bracket a depth of 50mm and a diameter of 8mm.
7. Secure the joist hangers into position on the inner joist face using the given 12.0x50mm coach bolts.
8. Once the joist hanger is fitted, the hole in the ceiling can be relocated directly below the joist hanger bracket, use a 12.5mm diameter drill bit to drill through the ceiling.
9. The unused holes should be filled to tidy the ceiling.
10. A piece of threaded bar must now be cut to length to suspend the track bracket from the joist hanger bracket to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
11. Insert the threaded bar through the joist hanger, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the joist hanger.
12. Place a fish plate up against the underside of the joist hanger.
13. Insert the threaded bar through the joist hanger bracket, lock the threaded bar off at both ends by placing a fish plate and two half nuts on either side of the joist hanger.
14. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
15. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
16. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
17. The track bracket should become flush with the ceiling and box section.

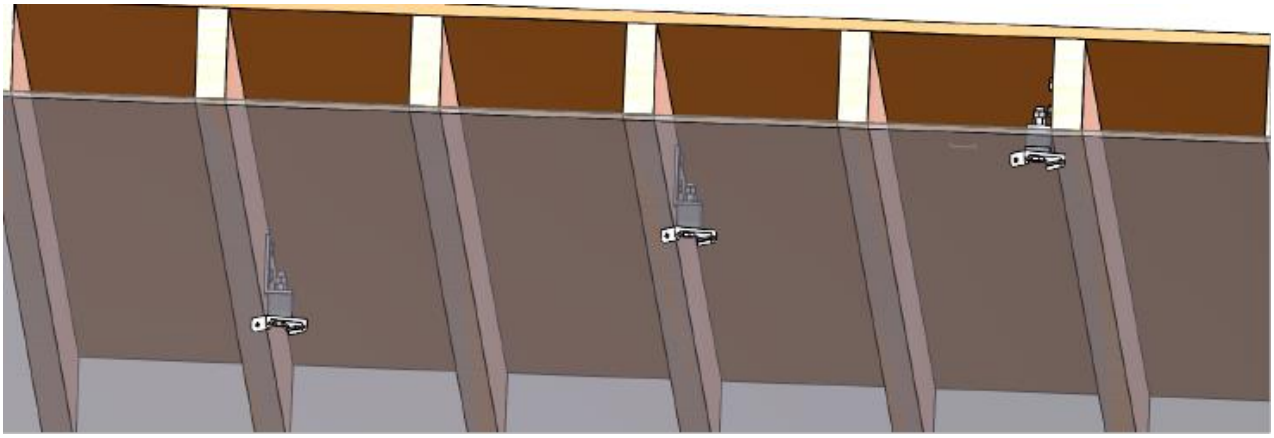
Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.
It is likely that the fixings will have to be relocated to the closest joist to ensure that the ceiling track span is not exceeded.



Perpendicular



Diagonal

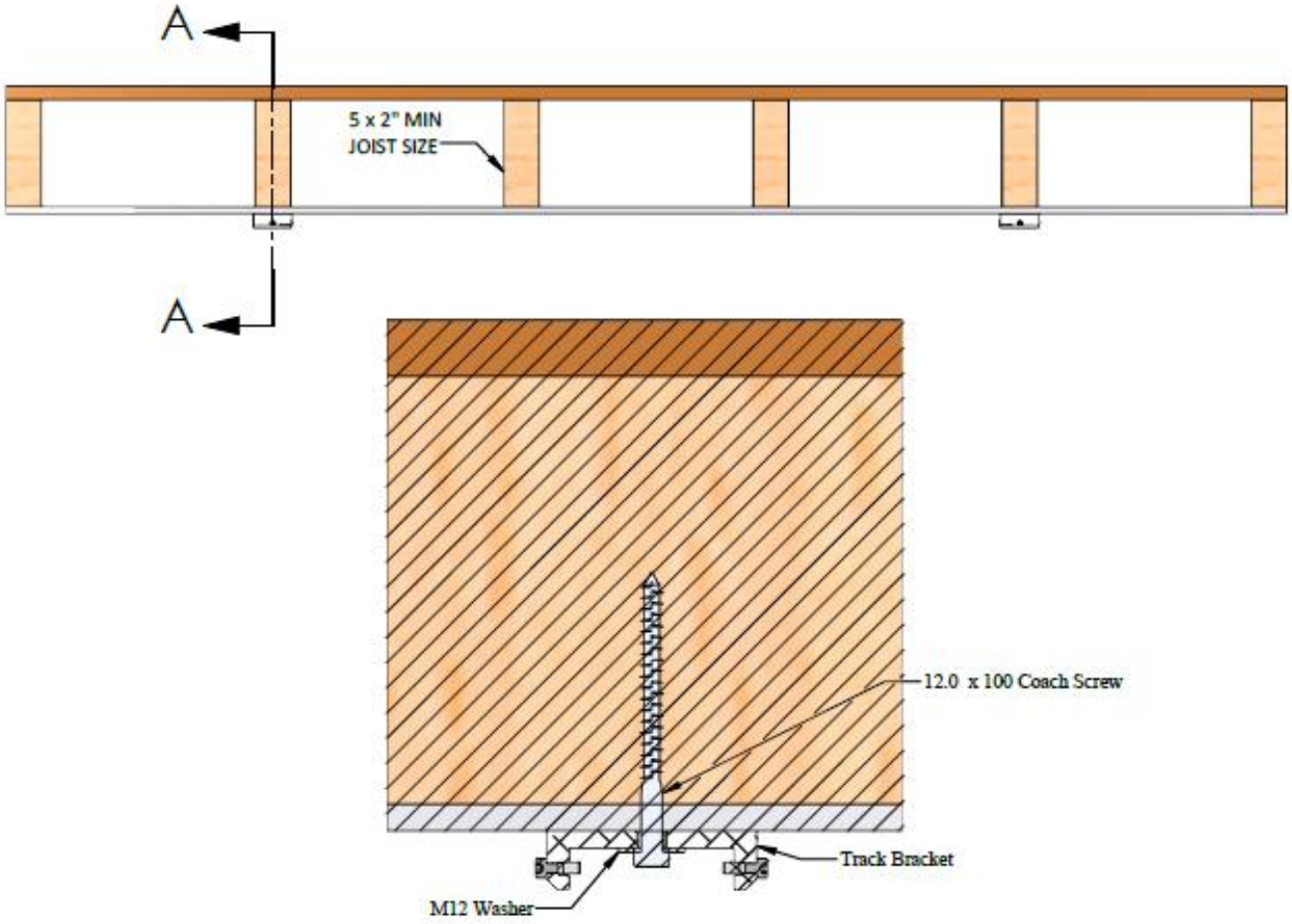


3.4 Ceiling Track Fixing Directly into the Joist

Where the ceiling track bracket is required to be fixed directly into the joist, follow the procedure below for the correct fixing method. This applies to all buildings, with or without loft space. Ensure to follow section 1. to mark out the suitable locations in the joist and to drill the pilot hole for fixing.

This method should be used when there is no access to the ceiling loft space or joists and the track runs perpendicular and/or diagonal to the joists.

1. Align an unthreaded track bracket in the correct orientation against the joist pilot hole.
2. Place an M12 washer onto the coach bolt and thread the bolt into the joist, securing the bracket.
3. Repeat this process for each direct fixing into a joist.



SECTION A-A
SCALE 1 : 2

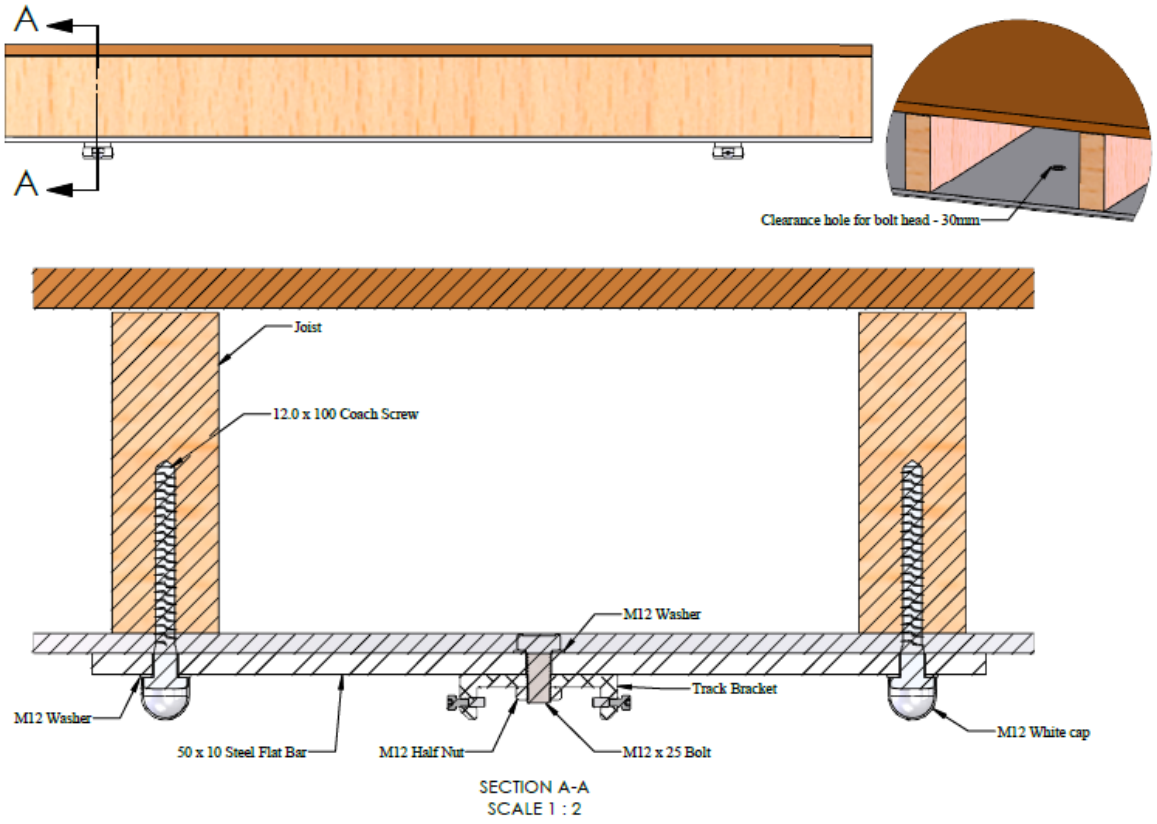
3.5 Ceiling Track Fixings into Timber with No Access to Joists

When there is no loft space and there in no access to the joists from above or below, the installation method for the ceiling track will follow the procedure below when the ceiling track runs parallel or diagonal with the joists. If the track runs perpendicular, section 3.3 will suffice for successful installation. Section 3.3 may also be suitable for some diagonal fixings where preferred.

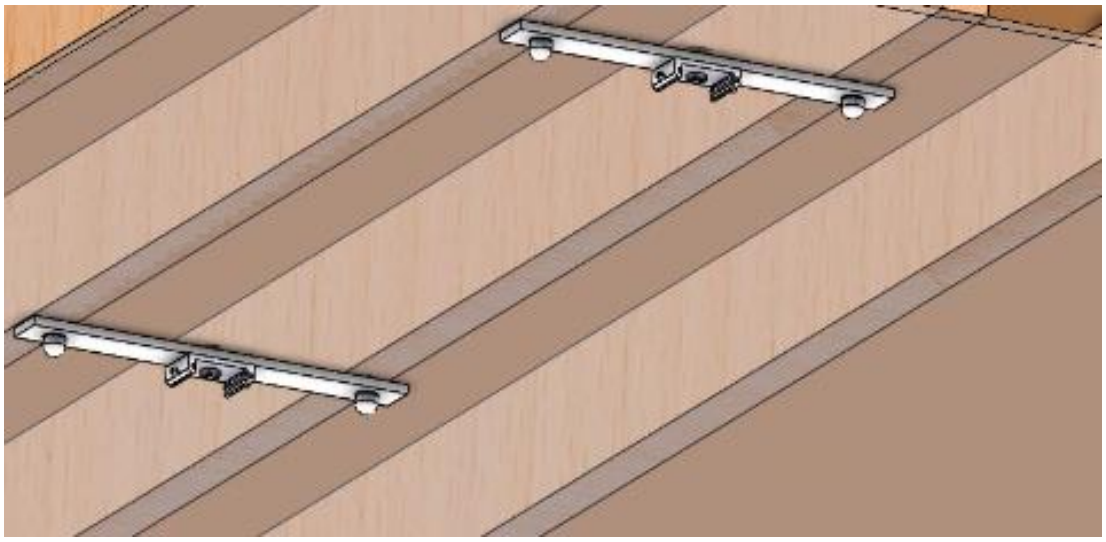
It is not permitted for a single joist to suspend a track system, therefore during the ceiling marking out, section 1.6.4, the track should be positioned between two joists, at worst case, 2/3 towards one of the two joists. A steel bar will be used to suspend the track between the two joists on the underside of the ceiling as there is no access above the ceiling.
Follow the process below for track installation.

1. From section 1., the track bracket location has been determined. From here the centre of the two joists either side of the track bracket location should be marked out.
2. Use a laser to ensure that the two joists are marked out horizontally.
3. Drill out the two joist positions with a 8mm diameter drill bit to a depth of 3.54" (90mm).
4. A piece of steel bar must be cut to length to be fixed to the ceiling between the joists.
5. Once the steel bar is cut, the two fixing positions must be marked out and drilled to 12.5mm.
6. The marked-out position of the track bracket must also be drilled out from the steel bar.
7. Place the M12x25 bolt through the centre hole of the steel bar from its top face. (the bolt head will sit inside the ceiling)
8. Attach the track bracket to the steel bar directly onto the bolt and secured below using a half nut. Loctite 270 should be used to retain the nut.
9. Angle the track bracket in the intended direction of travel, this will depend on whether the track is installed parallel or diagonal to the joists. (this can be adjusted at the end of installation)
10. Place the steel bar up onto the ceiling and secure using the 12.0x100mm coach bolts.

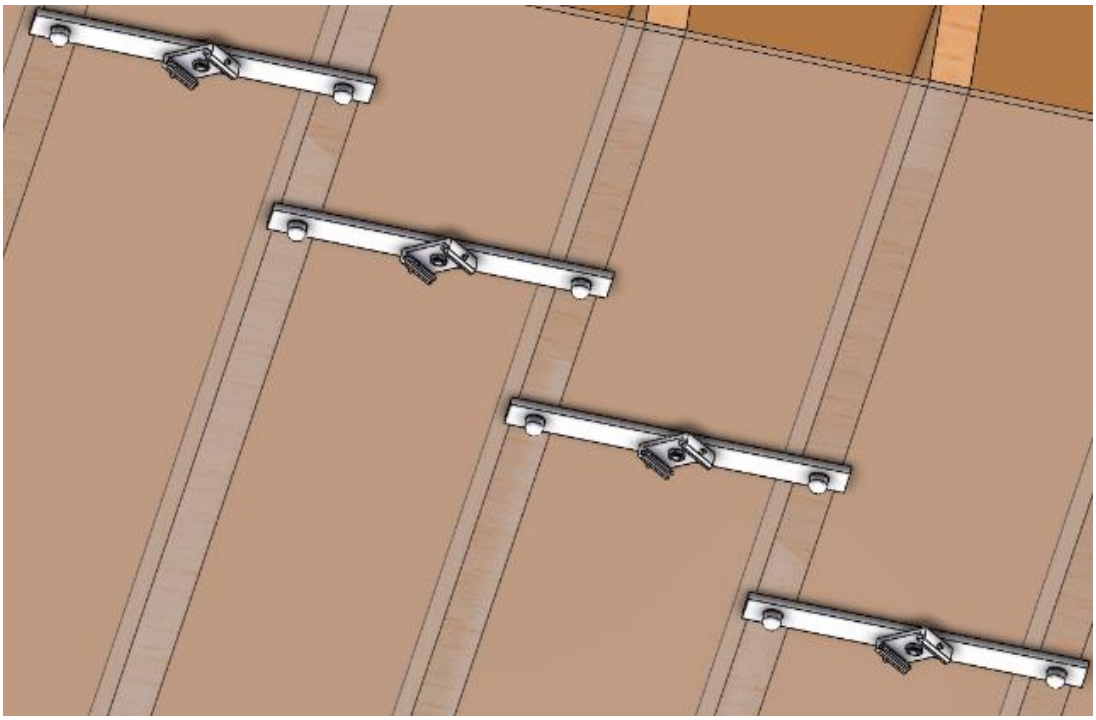
Repeat all relevant steps to fit the next track bracket, ensure the gap between the two fixings are suitable to the section 1.



Parallel



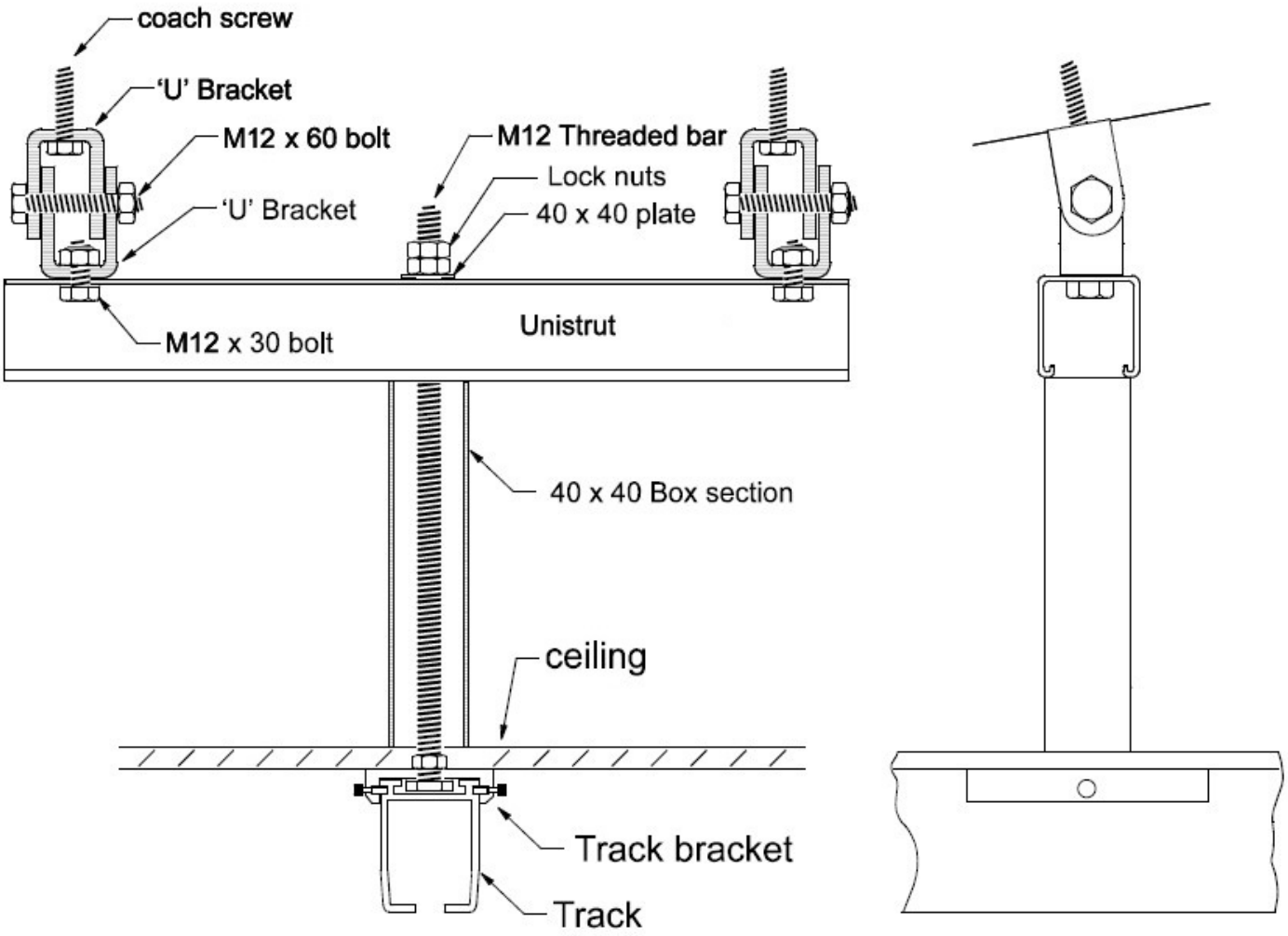
Diagonal



3.6 Swivel Fixing Method for Timber Sloping Roof

When a fixing is required to be installed onto a sloping roof, the standard fixing methods will not suffice. The swivel fixing method allows the track bracket fixing point to swivel and realign vertically for a suitable fixing to the ceiling. The swivel fixing assembly can be fitted onto joists which run parallel, diagonal and perpendicular with the track. (when fixing parallel, the fixings cannot exceed the steel channel maximum spans, see section 1. for details). The swivel fixing assembly can only be fitted directly into the joists from below and will use coach bolts to secure. See the guidance below for the fixing method of the swivel assembly. Ensure to refer to section 3.1 to predetermine the fixing positions of the track brackets into the joist before proceeding with this section, it is not necessary to drill the pilot holes from section 3.1 as the location is incorrect. Simply mark out the centre point.

1. From the track bracket centre point marked on the ceiling, the two coach bolts must be fixed either side. Depending on any obstacles, mark out fixing positions on the ceiling. The two fixings are ideally fixed between 9.84" (250mm) and 23.6" (600mm) from each other. But it is acceptable for them to go up to 39.4" (1000mm) if necessary.
2. A laser should be used to ensure that the marked-out positions are in line with the centre hole.
3. Using a drill, pilot holes must be drilled into the joist using an 8mm drill bit to a depth of 3.54" (90mm).
4. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
5. Place a u-bracket onto a coach bolt and secure the 12.0x100mm coach bolt into the joist. Repeat this for both fixing points.
6. Align the u-bracket in the opposite orientation as the fixed u-bracket and place a bolt through the two brackets and secure using an M12 nyloc nut. See image below for reference. Repeat this for both fixing points. Do not fully tighten the two brackets together.
7. Angle the lower u-bracket vertically, to allow the track bracket to align horizontally. Once the angle has been determined, the bolt can be secured tight to disallow rotation.
8. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.6" (600mm), a single piece of steel channel will suit. If the gap size is between 23.6 (600mm) and 39.4" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
9. Place the steel channel up against the u brackets and place an M12x30 bolt through the steel channel and secure inside the u bracket with an M12 nut.
10. A piece of threaded bar must now be cut to length to suspend the track bracket from the steel channel to the ceiling. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
11. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the track bracket.
12. Insert the threaded bar through the steel channel, lock the threaded bar off at the top by placing a fish plate, full nut and nyloc nut onto the steel channel.
13. Place a fish plate up against the underside of the steel channel.
14. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
15. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
16. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
17. The track bracket should become flush with the ceiling and box section.


coach screw
'U' Bracket
M12 x 60 bolt
'U' Bracket
M12 Threaded bar
Lock nuts
40 x 40 plate
Unistrut
M12 x 30 bolt
40 x 40 Box section
ceiling
Track bracket
Track

4 Fixing the Ceiling Track System to Ceiling Steelworks

The section below will give full instruction on the recommended method of installation for a ceiling track system to the ceiling using ceiling steelwork. This includes 3 fixing methods, two methods (beam clamps and window brackets) are used to fix the track bracket to an I beam, the two methods are optional and are both suitable for fixing the track bracket. The third method is the flange clamp which is used to fix a track bracket to a C-Section beam. Each method can be used to secure to one beam or two beams depending on the track bracket location.

All track types stated previously are available for steelwork ceiling installation. Ensure to follow the straight track fitting requirements (section 1.2) to determine the maximum span between each fixing, this depends on the track type used. This is a critical factor of ceiling track installation and must be determined prior to installing a track into the ceiling.
It is also important to familiarise yourself with each subsection within section 1.0 before continuing a ceiling track installation into steelwork.
A full assessment should have been conducted to ensure that the ceiling is safe for installation, but the installer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking, extreme rust or any other damage to the steel should be avoided. Depending on the type of ceiling, the various fixing methods must be followed.

When fixing a ceiling track to steelwork, the steel beam must be in good condition to ensure that the steel provides suitable strength to suspend a ceiling track system.

4.1 Aligning the Ceiling Track System for Steelworks

A very important factor to take into account when installing the track system is alignment and accuracy. For the track system to run smoothly, it must be installed horizontally for the ceiling lift to traverse with ease, along with a straight line fixing to allow two tracks to successfully link between each other and allow a transition for the ceiling lift to pass between tracks. It is a critical part of ceiling track installation to allow the system to function.

4.1.1 Marking out Bracket Positions for a Straight Track Installation into Steelwork

1. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc.
2. Where false ceilings are present, remove the tiles to inspect the roof space for any obstacles as well as inspecting the concrete for suitable fixing points.
3. Determine a suitable location for the first fixing, and thereby calculate how many more fixings are required and their distance apart, this will depend on the same working load of the installed ceiling lift, the track type and the distance the track will cover.
4. Mark the first track bracket position on the (false) ceiling, from here a laser can be placed on the floor directly in line with the first position, and it will draw a perfectly straight line along the ceiling to represent the track positions.
5. Use a tape measure to measure the distance between each fixing. (this distance should have been calculated in step 3)
6. Mark on the ceiling the second fixing position, this will be in line with the laser and the measured distance on the tape measure.
7. Repeat this process to mark out all fixings.
8. Using a 12.5mm drill bit, drill the holes into the false ceiling.
9. From here, measure directly vertically, using a laser to mark out on the ceiling where the track brackets will align.
10. Track bracket positions can be aligned either between or directly below a steel beam.
11. Mark the bracket position onto the beam or ceiling.

4.1.2 Marking out Bracket Positions for a Track Bend Installation into Steelwork

1. Ensure that where the track bend is intended to be fitted is clear of any obstacles, this includes light fixings, sprinklers etc.
2. Where false ceilings are present, remove the tiles to inspect the roof space for any obstacles as well as inspecting the concrete for suitable fixing points.
3. Ensure that the track is cut to desired length before marking out any fixing points.
4. Depending on the type of track bend, a certain amount of fixings is required. See section 1 for track bends information.
5. Track bends should be fitted after a straight track is installed, therefore ensure the straight track in already fitted to assist in track bends positioning.
6. Align the track bend on the (false) ceiling, up against the straight track system, where the bend is desired to be.
7. Draw the outline of the track onto the ceiling with a marker/pencil. Mark out the fixing points from the profile as described in section 1.
8. Using a 12.5mm drill bit, drill the holes into the false ceiling.
9. From here, measure directly vertically, using a laser to mark out on the ceiling where the track brackets will align.
10. Track bracket positions can be aligned either between or directly below a steel beam.
11. Mark the bracket position onto the beam or ceiling.

4.2 Fixing the Beam Clamps to the Steelworks – I Beam

Beam clamps are one of two methods used to fix the ceiling track onto an I beam steelwork. Always ensure that the beam clamp is being installed onto good condition steelwork, ensure that no cracks or other weaknesses are found during placement.
The fixing point for each beam clamp (along the full track installation) should be determined to ensure that the installation is suitable. There are two methods of fixing the beam clamps to the steelworks, this depending on the required location of the track bracket.

The processes below can be followed as a guide on how to correctly install the beam clamps onto a steel I beam.

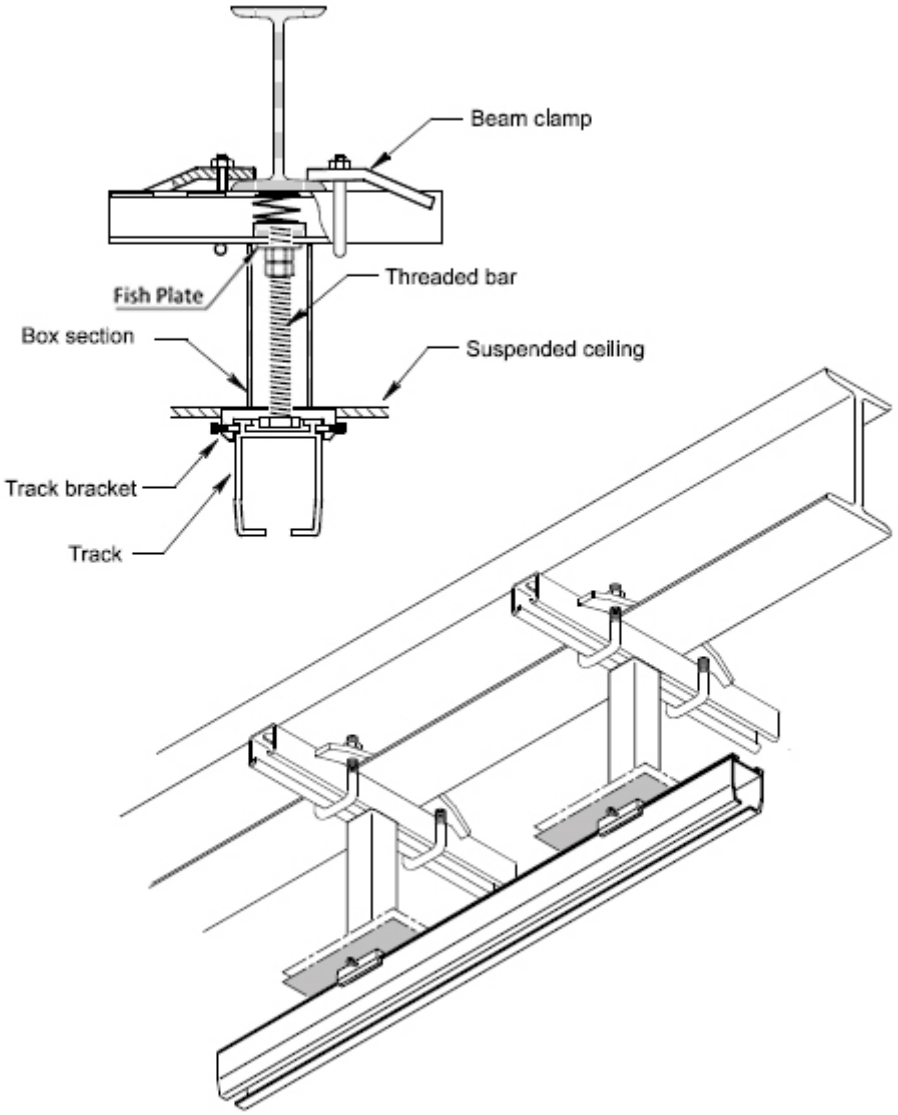
See section 4.1 for guidance on how to mark out the track bracket positions on the ceiling correctly before fixing any beam clamps to the steelwork.

4.2.1 Fixing the Beam Clamp Directly to a Singular I Beam

When the track is to run perpendicular or diagonal to the I beams, this fixing method is used to secure the track bracket with beam clamps. It is also used when the track runs parallel but is located directly below the I beam. This means that the fixing will only require a singular I beam. Follow the guidance below for the correct fixing method.

1. A piece of steel channel must be cut to a suitable length, this must incorporate the width of the I beam and additional length to fix the beam clamps either side.
2. Place a spring channel nut into the steel channel and place it central. (this will be directly above the position of the track bracket on the false ceiling)
3. The track bracket centre point should be marked on the I beam, as per section 4.1.
4. Position the steel channel flush against the I beam, with the spring channel nut central.
5. Two beam clamps are required to fix on either side of the I beam.
6. Place the beam clamp onto the steel channel, ensuring that the plate sits onto the I beam flange.
7. Tighten the beam clamp nuts using a 17mm spanner until the clamp is solid and secure.
8. Repeat this fixing method for both beam clamps on either side of the I beam.
9. There should be no movement between the three mating parts.
10. A piece of threaded bar can be cut to length from the steel channel to the height of the ceiling.
11. Insert the threaded bar into the spring channel nut. Loctite 270 should be applied for additional security.
12. Clamp the threaded bar to the steel channel using a fish plate and two M12 half nuts.
13. A piece of 40x40 box section must be cut to length from the steel channel to the height of the ceiling.
14. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.

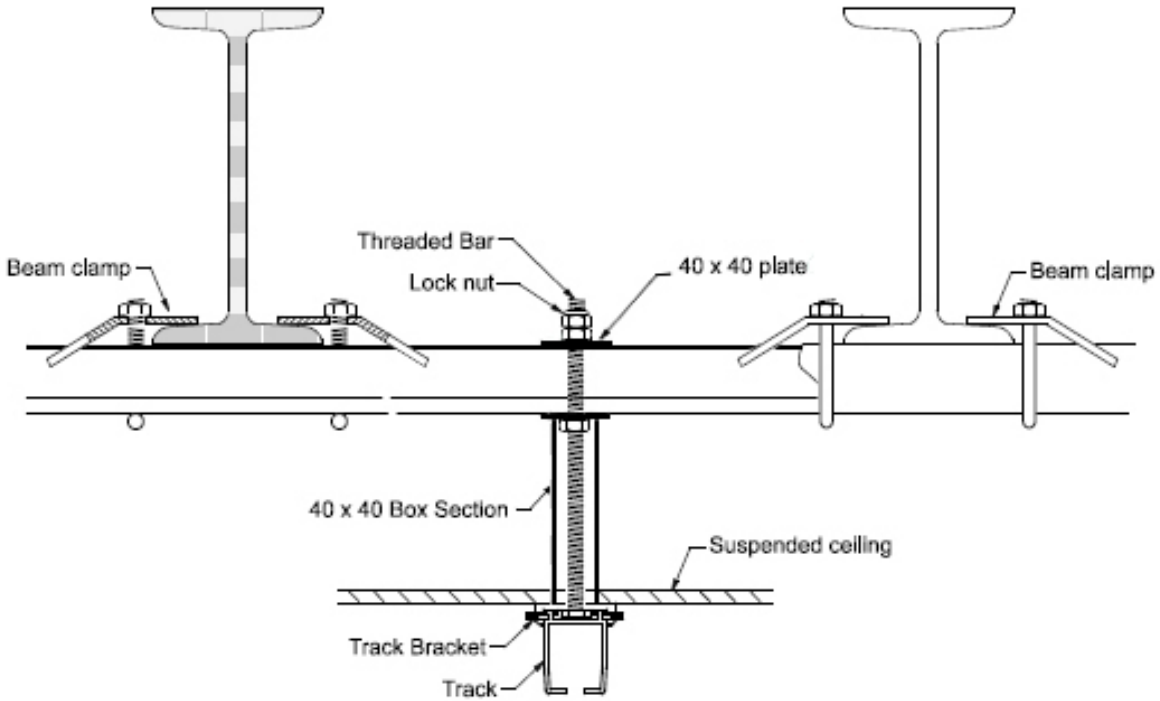
15. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
16. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
17. The track bracket should become flush with the ceiling and box section.



4.2.2 Fixing the Beam Clamp between two I Beams

When the track is to run parallel and in between two I beams, this fixing method is used to secure the track bracket with beam clamps. This means that the fixing will require two I beams to secure the track bracket. Follow the guidance below for the correct fixing method.

1. A piece of steel channel must be cut to a suitable length, this must incorporate gap between the two I beams, the width of the I beams and additional length to fix the beam clamps either side.
2. Position the steel channel flush against the I beams.
3. Four beam clamps are required to fix onto the two I beams, one on either side of each beam.
4. Place the beam clamp onto the steel channel, ensuring that the plate sits onto the I beam flange.
5. Tighten the beam clamp nuts using a 17mm spanner until the clamp is solid and secure.
6. Repeat this fixing method for all four beam clamps on either side of the two I beams.
7. There should be no movement between the three mating parts.
8. A piece of threaded bar can be cut to length from the steel channel to the height of the ceiling. The threaded bar must allow additional length to place the bar through the steel channel and for fixings.
9. The track bracket centre point should be marked on the ceiling above, place the threaded bar through the steel channel directly below the track bracket marked position.
10. Secure the threaded bar using two half nuts and a fish plate on either side of the steel channel.
11. A piece of 40x40 box section must be cut to length from the steel channel to the height of the ceiling.
12. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
13. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
14. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
15. The track bracket should become flush with the ceiling and box section.



4.3 Fixing the Window Brackets to the Steelworks – I Beam

Window brackets are one of two methods used to fix the ceiling track onto an I beam steelwork. Always ensure that the window bracket is being installed onto good condition steelwork, ensure that no cracks or other weaknesses are found during placement.
The fixing point for each window bracket (along the full track installation) should be determined to ensure that the installation is suitable. There are two methods of fixing the window brackets to the steelworks, this depending on the required location of the track bracket.

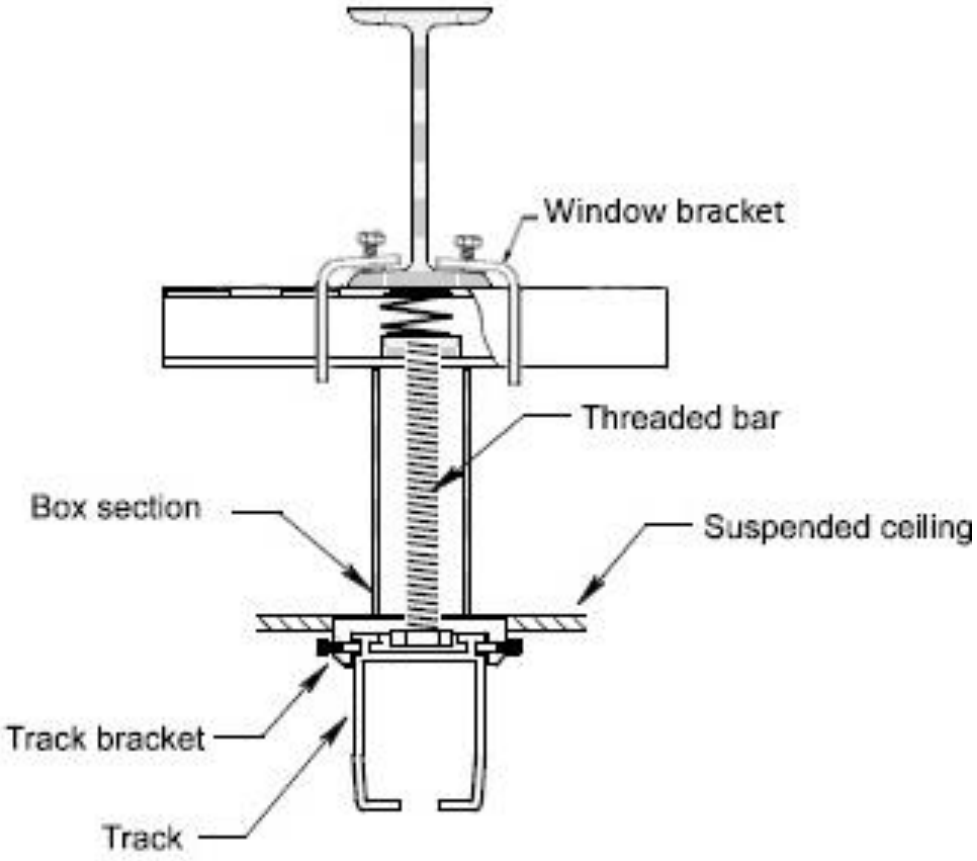
The processes below can be followed as a guide on how to correctly install the window brackets onto a steel I beam.

See section 4.1 for guidance on how to mark out the track bracket positions on the ceiling correctly before fixing any window bracket to the steelwork.

4.3.1 Fixing the Window Bracket Directly to a Singular I Beam

When the track is to run perpendicular or diagonal to the I beams, this fixing method is used to secure the track bracket with window brackets. It is also used when the track runs parallel but is located directly below the I beam. This means that the fixing will only require a singular I beam. Follow the guidance below for the correct fixing method.

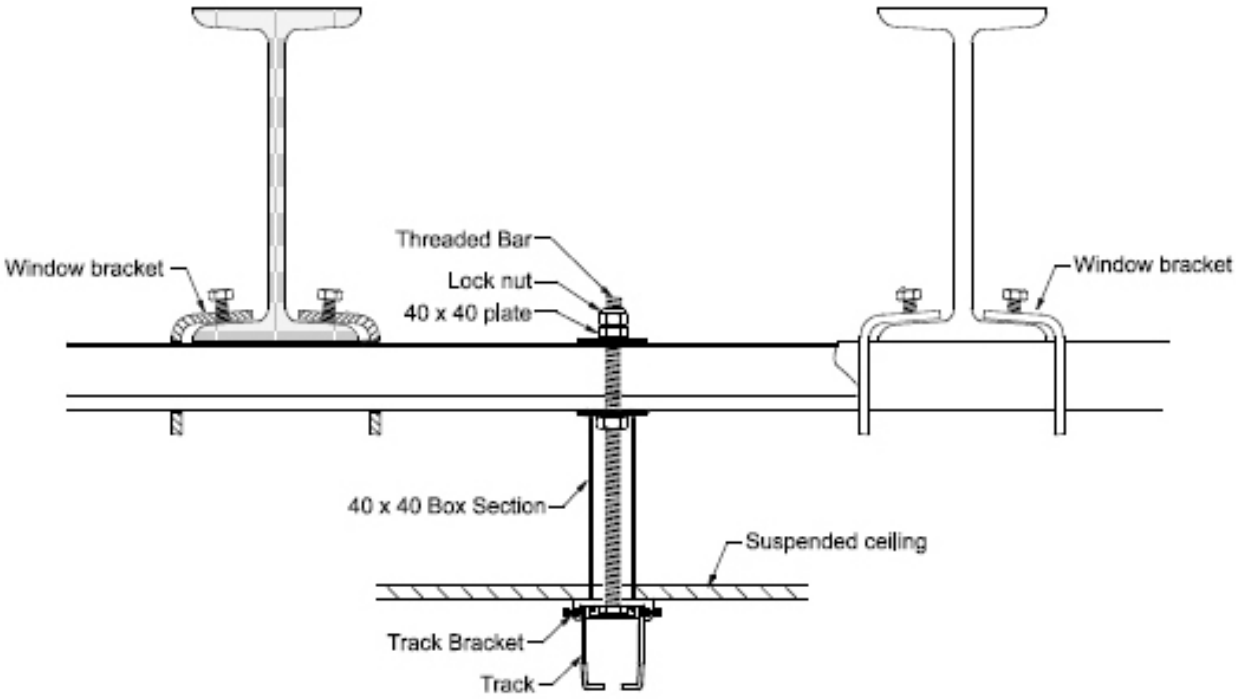
1. A piece of steel channel must be cut to a suitable length, this must incorporate the width of the I beam and additional length to fix the window brackets either side.
2. Place a spring channel nut into the steel channel and place it central. (this will be directly above the position of the track bracket on the false ceiling)
3. The track bracket centre point should be marked on the I beam, as per section 4.1.
4. Position the steel channel flush against the I beam, with the spring channel nut central.
5. Two window brackets are required to fix on either side of the I beam.
6. Place the window bracket onto the steel channel, ensuring that the plate sits onto the I beam flange.
7. Tighten the window bracket screw until the bracket is solid and secure.
8. Repeat this fixing method for both window brackets on either side of the I beam.
9. There should be no movement between the three mating parts.
10. A piece of threaded bar can be cut to length from the steel channel to the height of the ceiling.
11. Insert the threaded bar into the spring channel nut. Loctite 270 should be applied for additional security.
12. Clamp the threaded bar to the steel channel using a fish plate and two M12 half nuts.
13. A piece of 40x40 box section must be cut to length from the steel channel to the height of the ceiling.
14. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
15. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
16. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
17. The track bracket should become flush with the ceiling and box section.


Window bracket
Threaded bar
Box section
Suspended ceiling
Track bracket
Track

4.3.2 Fixing the Window Bracket between two I Beams

When the track is to run parallel and in between two I beams, this fixing method is used to secure the track bracket with window brackets. This means that the fixing will require two I beams to secure the track bracket. Follow the guidance below for the correct fixing method.

1. A piece of steel channel must be cut to a suitable length, this must incorporate gap between the two I beams, the width of the I beams and additional length to fix the window brackets either side.
2. Position the steel channel flush against the I beams.
3. Four window brackets are required to fix onto the two I beams, one on either side of each beam.
4. Place the window bracket onto the steel channel, ensuring that the plate sits onto the I beam flange.
5. Tighten the window bracket screw until the bracket is solid and secure.
6. Repeat this fixing method for all four window brackets on either side of the two I beams.
7. There should be no movement between the three mating parts.
8. A piece of threaded bar can be cut to length from the steel channel to the height of the ceiling. The threaded bar must allow additional length to place the bar through the steel channel and for fixings.
9. The track bracket centre point should be marked on the ceiling above, place the threaded bar through the steel channel directly below the track bracket marked position.
10. Secure the threaded bar using two half nuts and a fish plate on either side of the steel channel.
11. A piece of 40x40 box section must be cut to length from the steel channel to the height of the ceiling.
12. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
13. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
14. Attach a track bracket (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks) to the end of the threaded bar, and secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
15. The track bracket should become flush with the ceiling and box section.



4.4 Fixing the Flange Clamps to the Steelworks

Flange clamps is the method used to fix the ceiling track onto a C-Section beam steelwork. Always ensure that the flange clamp is being installed onto good condition steelwork, ensure that no cracks or other weaknesses are found during placement.
The fixing point for each flange clamp (along the full track installation) should be determined to ensure that the installation is suitable. There are two methods of fixing the flange clamps to the steelworks, this depending on the required location of the track bracket.

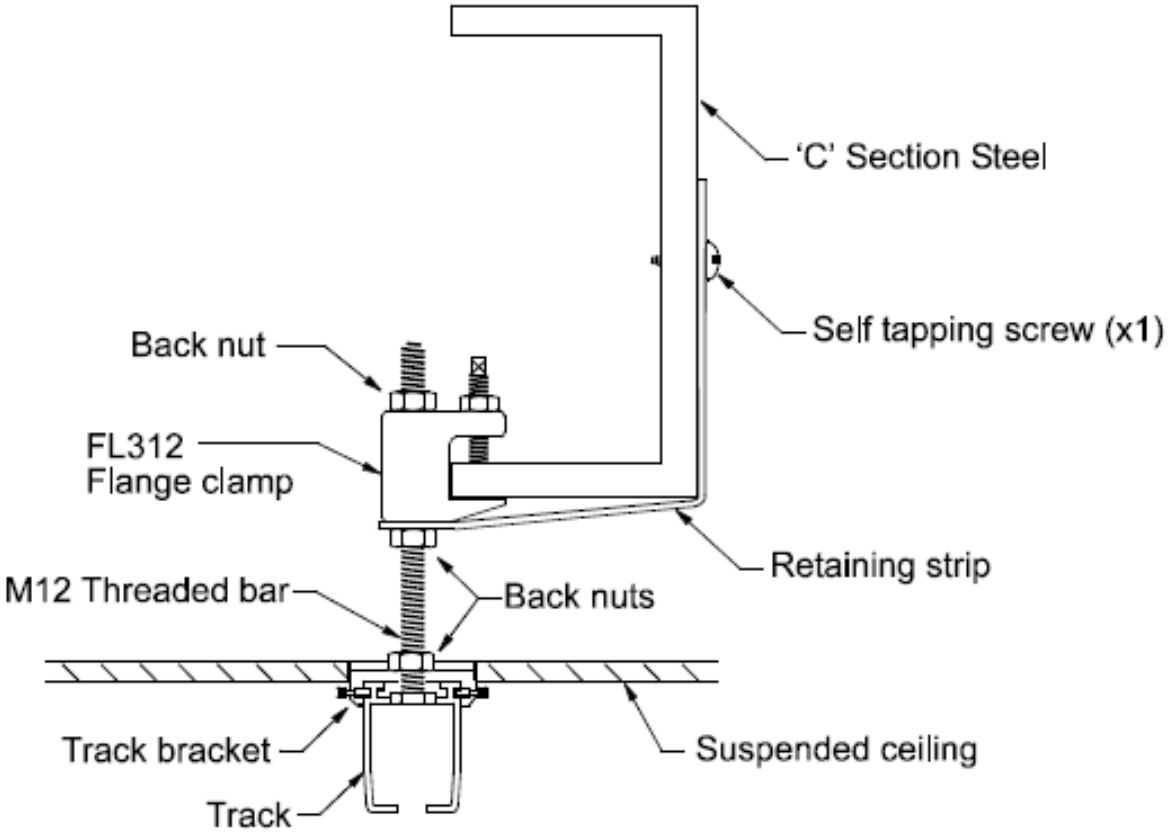
The processes below can be followed as a guide on how to correctly install the flange clamps onto a steel C-Section beam.

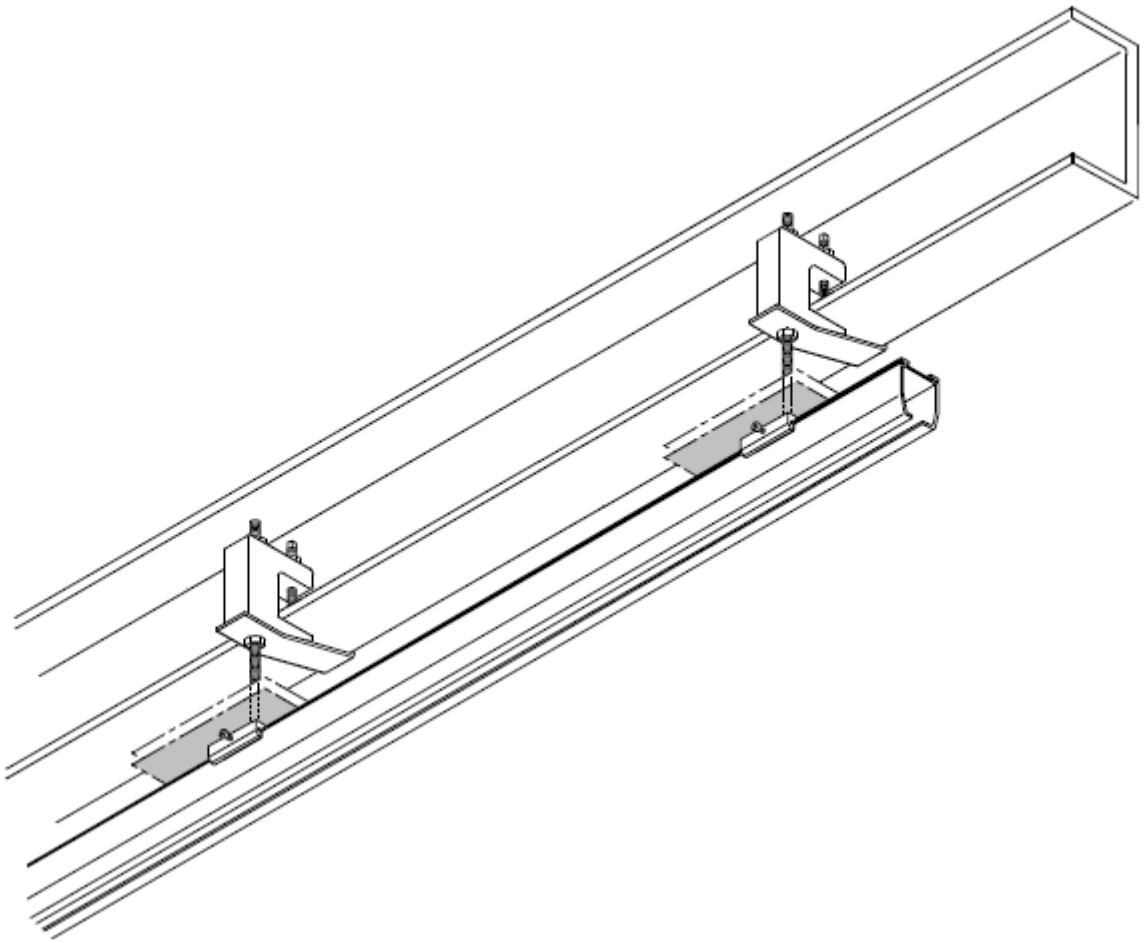
See section 4.1 for guidance on how to mark out the track bracket positions on the ceiling correctly before fixing any flange clamps to the steelwork.

4.4.1 Fixing the Flange Clamps Directly onto a Singular C-Section Beam

When the track is to run perpendicular or diagonal to the C-Section beams, this fixing method is used to secure the track bracket with flange clamps. It is also used when the track runs parallel but is located directly below the C-Section beam. This means that the fixing will only require a singular C-Section beam. Follow the guidance below for the correct fixing method.

1. Place the flange clamp directly onto the C-Section beam and tighten the bolt until the clamp is solid and secure.
2. Ensure that the flange clamp has been positioned correctly on the beam as shown in the diagram, the gripping point must be at its maximum.
3. A piece of threaded bar can be cut to length from the flange clamp to the height of the ceiling, leaving enough length for fixings at either end.
4. Place the threaded bar through the flange clamp and secure at the top face using a flanged back nut.
5. Place the retaining strip on the up against the under face of the flange clamp (on the threaded bar) and secure it on the back face of the C-Section steel by fixing it with a self-tapping screw. See diagram for reference.
6. Place a flanged back nut onto the threaded bar securing the retaining strip in place against the flange clamp.
7. Place a flanged back nut at the bottom end of the threaded bar and attach the track bracket directly below, (either a single 55mm threaded hole or a double 110mm bracket threaded hole depending whether the bracket is securing a single track or two joining tracks), secure with a M12 half nut at the ceiling end, applying Loctite 270 to the half nut.
8. The track bracket should become flush with the ceiling and box section.


'C' Section Steel
Self tapping screw (x1)
Back nut
FL312
Flange clamp
Retaining strip
M12 Threaded bar
Back nuts
Track bracket
Suspended ceiling
Track

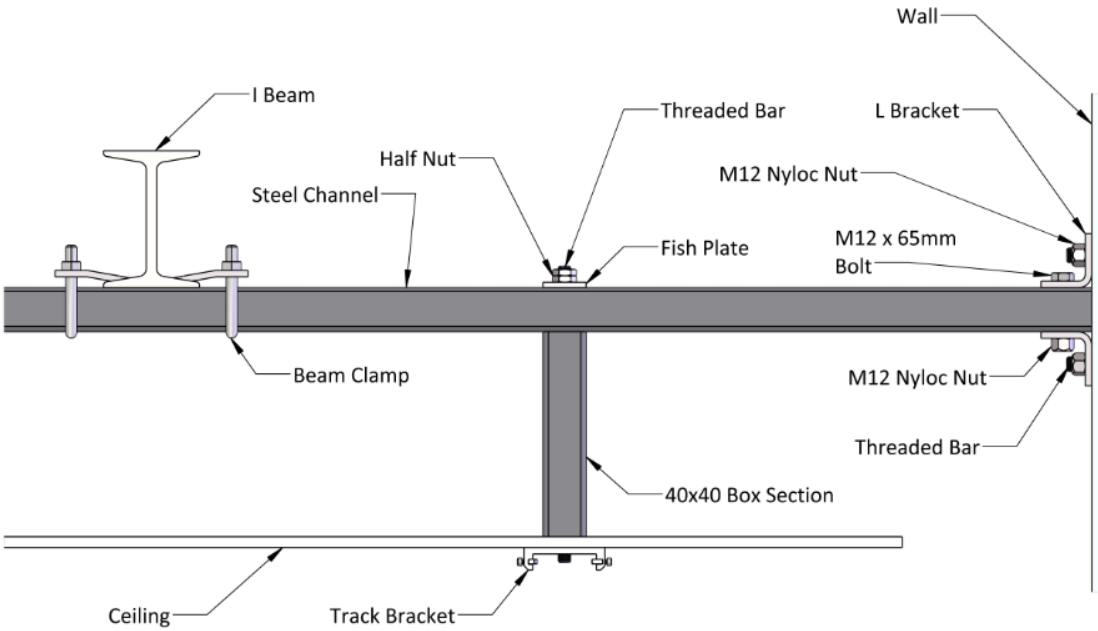


4.5 Steelwork fixings against the Wall

When fixing the ceiling track system using the above fixing methods (beam clamps, window brackets and flange clamps), a wall fixing may be required at the end of the track system where no beams are present. A wall fixing is only suitable for solid walls, constructed of either brick or block.

The process below will give an example of how to fix the steel channel to the wall.

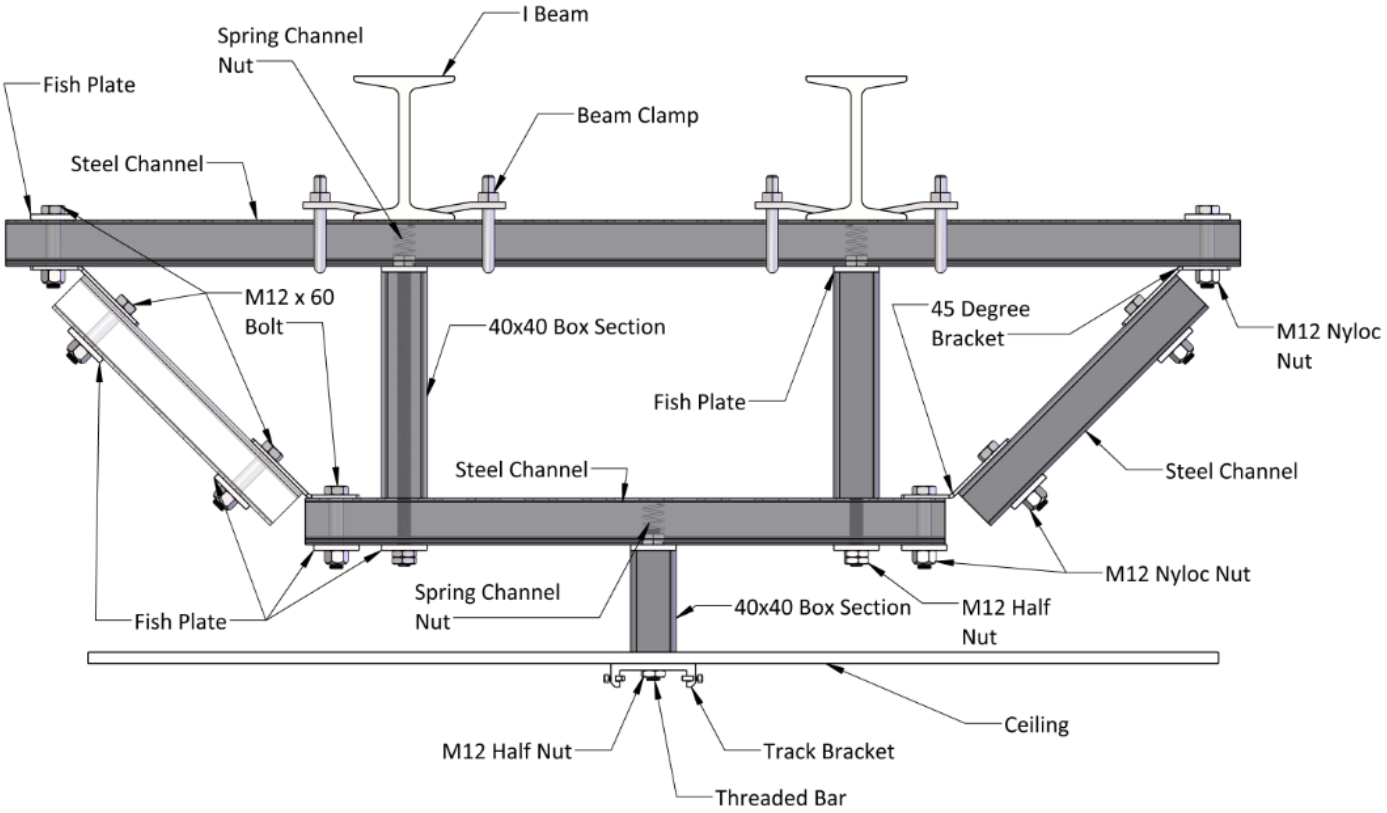
1. From the final steel beam, the steel channel must span up to and against the wall.
2. Two L-brackets will fix the steel channel to the wall from above and below as shown.
3. Place the L-brackets in their fixing position and mark the hole positions on the wall using a marker.
4. A typical wall fixing method will be used to fix the brackets to the wall, this requires the use of chemical resin.
5. Drill the holes into the wall to a minimum depth of 2.8" (70mm). The hole diameter must be 16mm.
6. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
7. Align the L-brackets with the drilled holes to ensure that they align correctly and that the wall bracket can be secured horizontally.
8. M12 threaded bar should be cut to allow a minimum of 2.8" (70mm) insertion into the wall along with an additional 0.8" (20mm) to allow for the wall bracket and fixings. One M12 threaded bar is required per l-bracket.
9. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispensing the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
10. Inject the holes with the chemical resin, the resin should fill 50% of the hole capacity.
11. Insert the threaded bar into the holes. This will force the resin to fill the full holes capacity.
12. It is highly recommended that the threaded bars are twisted into the holes to provide additional strength and mixing with the chemical resin.
13. Place a M12 washer and M12 nyloc nut onto the threaded bars and tighten onto the l-bracket for secure fixing.
14. Repeat these steps to secure the second l-bracket.
15. Allow each hole time for the chemical resin to cure, see manufacturers curing times in the table in section 1.4.
16. With the steel channel sandwiched between the two L-brackets, secure the assembly by placing an M12x65 bolt through and locking off with a washer and nyloc nut.



4.6 Steelwork Lateral Support Fixings

When fixing the ceiling track system using the above fixing methods (beam clamps, window brackets and flange clamps), lateral support will be required when the fixing height from the beams to the ceiling exceed 19.7" (500mm). Follow the guidance below for the correct fixing method.

1. A piece of steel channel must be cut to a suitable length, this must incorporate gap between the two beams, and allow additional length to fix the lateral supports at both ends of the channel.
2. Two spring channel nuts must be positioned within the steel channel, located directly below the beam positions.
3. Fix the steel channel to the beams following a suitable fixing method from section 4.0.
4. Two pieces of threaded bar must be cut to a suitable length, around 120mm from the ceiling height.
5. Insert the threaded bars into the spring channel nuts, Loctite 270 can be used for additional security.
6. Two pieces of box section must be cut to length, this must be shorter than the threaded bar, allowing enough space for the steel channel and fixings below.
7. Place the box sections onto the two threaded bars.
8. A piece of steel channel must be cut to length, this must span the width of the two box sections and allow additional length for two 45˚ brackets to be fixed either end.
9. Insert a spring channel nut into the steel channel and locate at the centre of the steel channel.
10. Place the steel channel onto the threaded bar and secure in place using two half nuts and a fish plate at either end.
11. Any excess threaded bar can be cut for tidy installation.
12. Onto both ends of the lower steel channel, the 45˚ bracket must be fixed.
13. The brackets can be fixed using an M12x60 bolt, and a fish plate and two half nuts on either side. Repeat this for both brackets on either side of the steel channel.
14. Two more 45˚ brackets must be fixed to the upper steel channel.
15. The brackets can be fixed using an M12x60 bolt, and a fish plate and two half nuts on either side. Repeat this for both brackets on either side of the steel channel.
16. Fix the steel channel to the brackets using M12x60 bolts and two half nuts. The steel channel should be at a 45˚ angle. Ensure to repeat this for both sides of the box assembly. See the images below for reference.
17. A piece of threaded bar can now be cut to length to reach from the spring channel nut to the false ceiling.
18. Insert the threaded bar into the spring channel washer. Lock in place with a fish plate up against the steel channel and a half nut to secure.
19. With the threaded bar protruding through the false ceiling, a 40x40 box section template can be cut out of the tile.
20. A piece of 40x40 box section must be cut to length to be placed onto the threaded bar and down to the ceiling height.
21. Thread the track bracket, either a single 55mm threaded hole or a double 110mm threaded hole (depending on the bracket requirement with the track) onto the threaded bar and up against the box section locking in place with a half nut.
22. Repeat this process for each track bracket to complete track bracket installation.


I Beam
Spring Channel Nut
Fish Plate
Beam Clamp
Steel Channel
M12 x 60 Bolt
40x40 Box Section
45 Degree Bracket
M12 Nyloc Nut
Fish Plate
Steel Channel
Steel Channel
M12 Nyloc Nut
Fish Plate
Spring Channel Nut
40x40 Box Section
M12 Half Nut
Ceiling
M12 Half Nut
Track Bracket
Threaded Bar

5 Wall Fixings

When the ceiling is not suitable for fixing the ceiling track system, the system must be fixed onto the wall. There are various scenarios where different fixing methods must be followed to secure the ceiling track system to the wall. Wall fixings may be used in combination with ceiling fixings where necessary. The tracks maximum span will dictate whether the wall fixing method is suitable, although a side hanging steel box section may be suitable to increase the spanning distance of the track. See section 1 to determine the maximum spanning distances of the various track types. Only straight track is suitable for wall fixings, all straight tracks included in this manual are suitable for fixing.

It is also important to familiarise yourself with each subsection within section 1.0 before continuing a ceiling track installation into the wall.

See the various fixing methods for wall fixings and follow the suitable fixing method for the installation at hand.

5.1 Wall to Wall Fixing Method 1

The wall to wall fixing method is used when the ceiling is not suitable for fixing the track system, where the track system cannot be fixed to the ceiling at any point.
A wall bracket can be used in combination with ceiling fixings when required.
A wall to wall installation can be fitted in a straight line or in a diagonal direction as long as the fixings remain level.

The wall to wall fixing method 1 has two options of wall brackets which can be used, this includes the standard wall bracket and the swivel wall bracket.
The standard wall bracket is typically used for straight line spanning tracks where the swivel bracket offers the same option but can be used to span the track across the room at any angle up to 180˚. This feature allows the track to be spanned along the wall face, and with one at either side of the room, this can potentially be used as the fixed track in a h-system.

The section below will give full instruction on the recommended method of installation for a ceiling track system into a wall fixing.

A full assessment should have been conducted to ensure that the wall is safe for installation, but the installation engineer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking, or any other damage to the wall should be avoided. Depending on the type of wall material, the various fixing methods must be followed.
For ceiling track wall fixings, only solid walls are suitable for installation. This includes brick and block materials. To ensure the wall material is suitable, drill a small hole (7mm) where the wall bracket is to be fitted to check the material of the wall. A wall to wall fixing cannot be fixed directly above a door or window as the fixing cannot be fixed to a lintel. This will not be a sufficient fixing point to bare the load of a ceiling track system.

5.1.1 Aligning a Wall to Wall Track Fixing

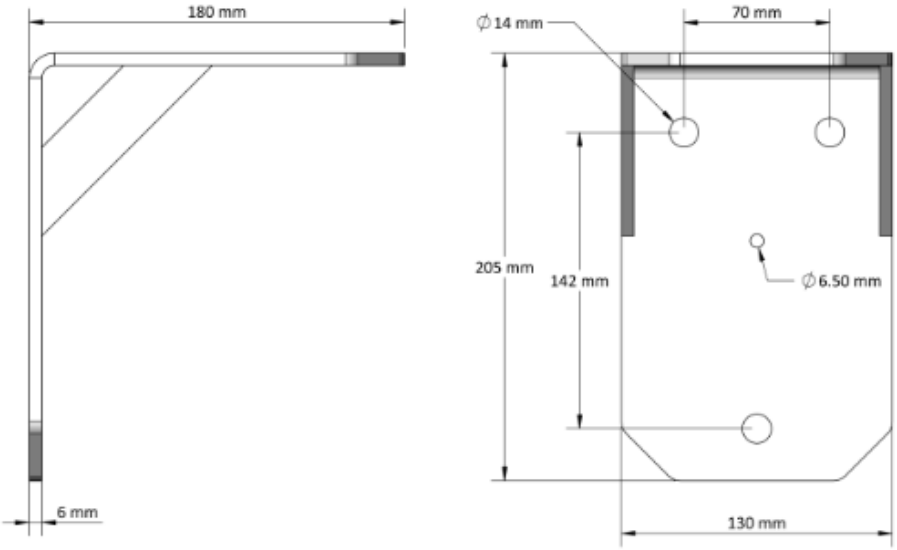
When a track system is installed onto a wall fixing or a wall to wall fixing, it is essential to ensure that the track system is level to ensure that the fixings will align. Follow the guidance below:

1. Measure the length from the wall to wall fixing positions to ensure that the distance between the two fixings will be suitable. See section 1 for maximum track spans. Choose the suitable track for the installation.
2. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc. To accommodate this, the wall fixings maximum height should be 50mm below the lowest obstacle on the ceiling. This will also provide a clearance gap for the track bracket fixings above the wall bracket upper face.
3. Determine a suitable location for the first wall bracket fixing. Align the wall bracket as close to the ceiling as possible to provide maximum track height. Depending on the wall type, the bracket must

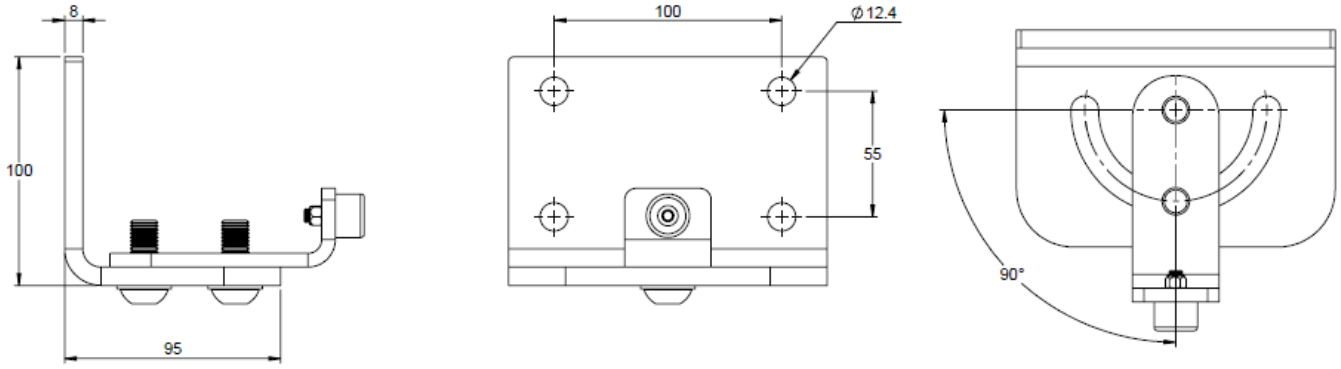
never be fixed to the top two bricks, as this will not provide sufficient strength to support the track system, always ensure that the fixing point is secure.

4. Place the wall bracket onto the wall and mark out all the hole fixings onto the wall with a marker/pencil.
5. Using a laser, the second bracket position can be marked on the opposing wall to provide a level fixing.
6. Once alignment is determined, ensure to place a wall bracket on the opposite wall and mark out all the hole fixings onto the wall with a marker/pencil.

Standard Wall Bracket



Swivel Bracket



5.1.2 Fixing the Wall Bracket to the Wall

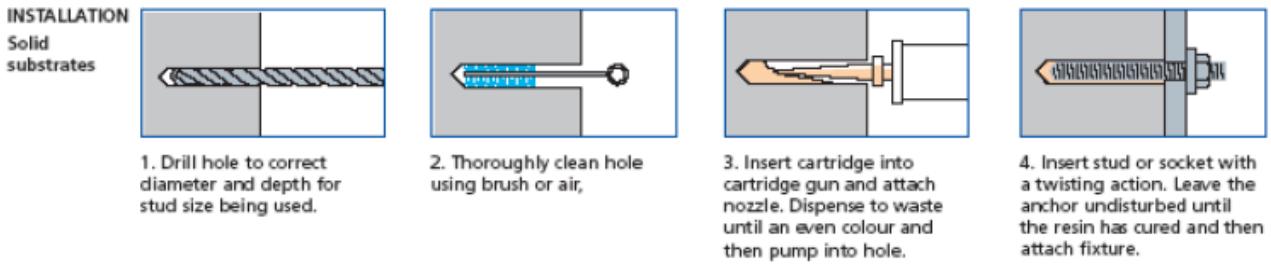
Standard Wall Bracket

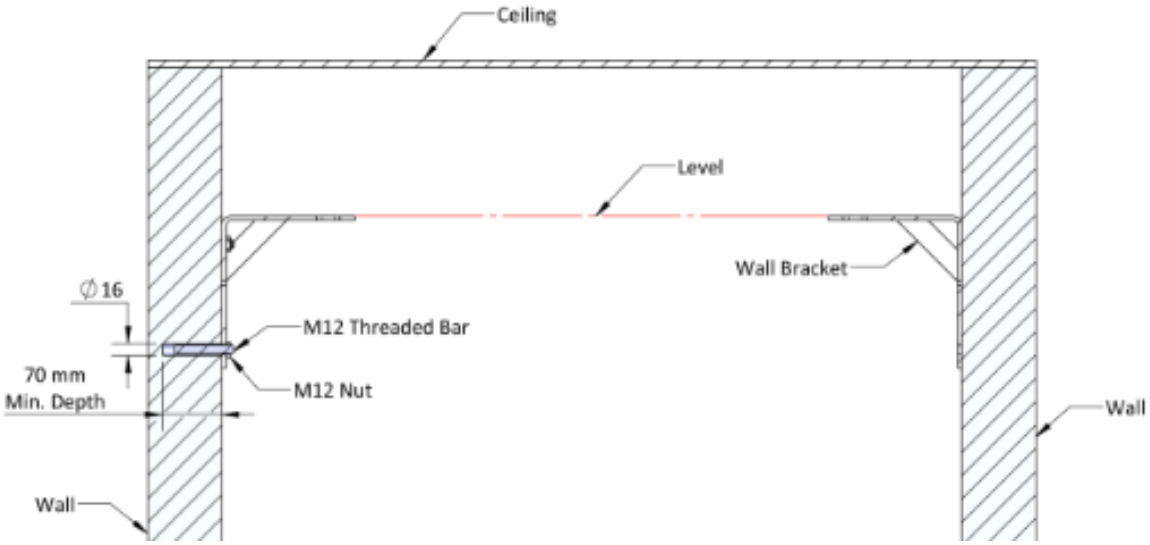
When fixing the wall bracket to the wall, the best fixing method is to fix threaded bar directly into the wall through the process of chemical resin. There will be three fixings to support the wall bracket, and the threaded bar must be inserted a minimum of 2.8" (70mm) to provide suitable strength to support the ceiling track. The wall bracket must be installed into a wall that is in good condition, ensure that there are no cracks or weaknesses found during placement.
When using the chemical resin, always ensure to follow the manufacturer's instructions along with the guidance of this manual.

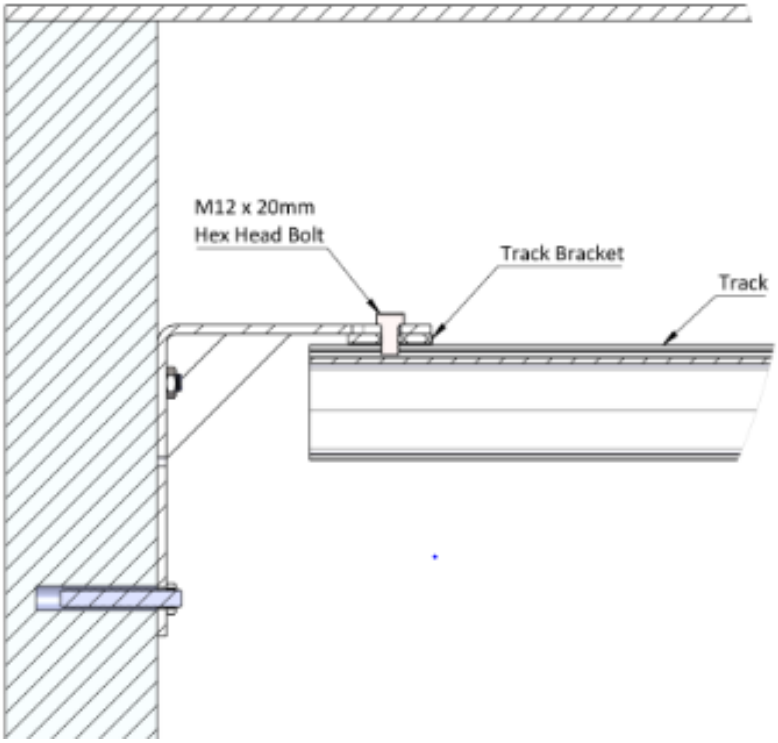
See section 5.1.1 for guidance on how to mark out the wall bracket positions on the wall correctly before proceeding to fixing the brackets.

Follow the guidance below to fix the wall bracket to the wall.

1. Position the bracket against the wall, at the maximum height below the ceiling/false ceiling to achieve maximum track height.
2. Ensure that the hole positions are already marked onto the wall. See section 5.1.1 if this step has been missed.
3. As the wall is solid concrete or similar block material, drill the three marked holes to a minimum depth of 2.8" (70mm), this depth provides suitable strength for the fixing to support the track. A 16mm drill bit diameter should be used.
4. Drill the centre hole out to a depth of 1.2" (30mm) using a 7mm drill bit.
5. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
6. Place the brown wall plug into the centre hole.
7. Align the wall bracket with the drilled holes to ensure that they align correctly and that the wall bracket can be secured horizontally.
8. Fix the bracket in place by inserting the 7x30 screw into the centre hole.
9. M12 threaded bar should be cut to allow a minimum of 2.8" (70mm) insertion into the wall along with an additional 0.8" (20mm) to allow for the wall bracket and fixings. Three M12 threaded bar is required for each wall bracket.
10. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispense the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
11. Inject the holes with the chemical resin, the resin should fill 50% of the hole capacity.
12. Insert the three pieces of threaded bar into the holes. This will force the resin to fill the full holes capacity.
13. It is highly recommended that the threaded bars are twisted into the holes to provide additional strength and mixing with the chemical resin.
14. Place a M12 washer and M12 nyloc nut onto the threaded bars and tighten onto the wall bracket for secure fixing.
15. Repeat these steps to secure the second wall bracket on the opposing wall. The wall brackets must be fitted directly opposite to each other for a level track fixing.
16. Allow each hole time for the chemical resin to cure, see manufacturers curing times in the table in section 1.
17. The track bracket can be directly bolted onto the wall brackets using an M12 bolt and nyloc nut, ensure to fit the bolt through the track bracket and into the wall bracket, securing it from above with the nyloc nut. Ensure to place the white cap onto the bolt above.




Ceiling
Level
Wall Bracket
Ø16
M12 Threaded Bar
70 mm
Min. Depth
M12 Nut
Wall
Wall


M12 x 20mm
Hex Head Bolt
Track Bracket
Track

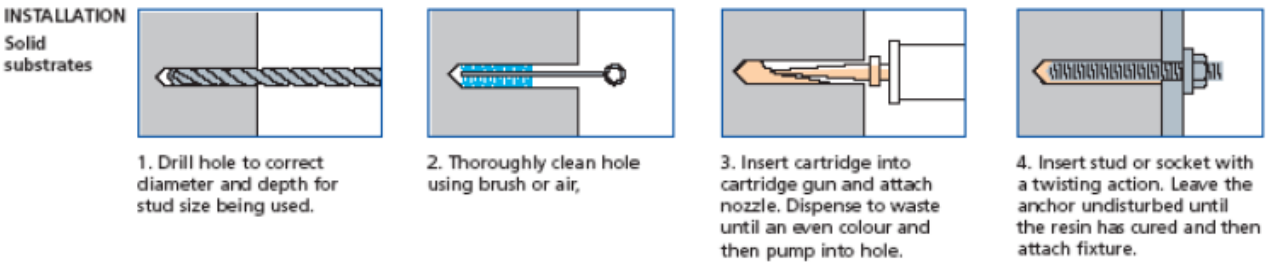
Swivel Bracket

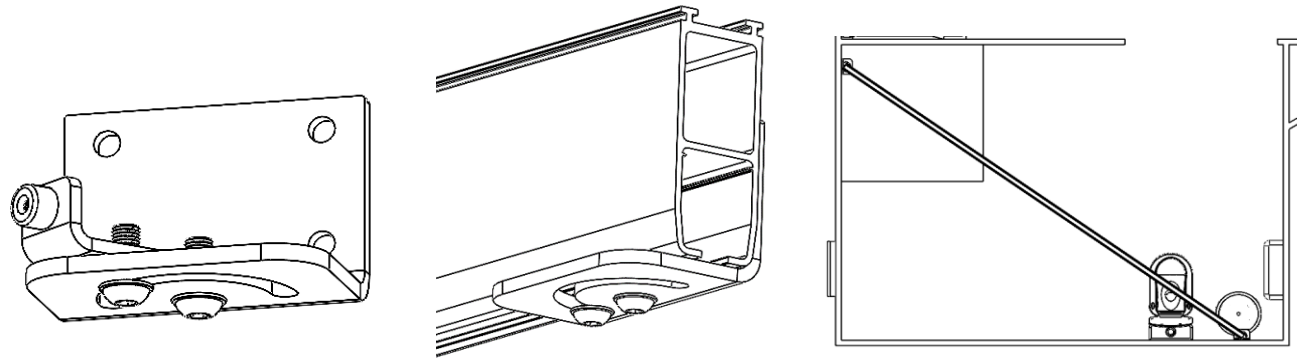
When fixing the swivel bracket to the wall, the best fixing method is to fix threaded bar directly into the wall through the process of chemical resin. There will be four fixings to support the wall bracket, and the threaded bar must be inserted a minimum of 2.8" (70mm) to provide suitable strength to support the ceiling track. The wall bracket must be installed into a wall that is in good condition, ensure that there are no cracks or weaknesses found during placement.
When using the chemical resin, always ensure to follow the manufacturer's instructions along with the guidance of this manual.

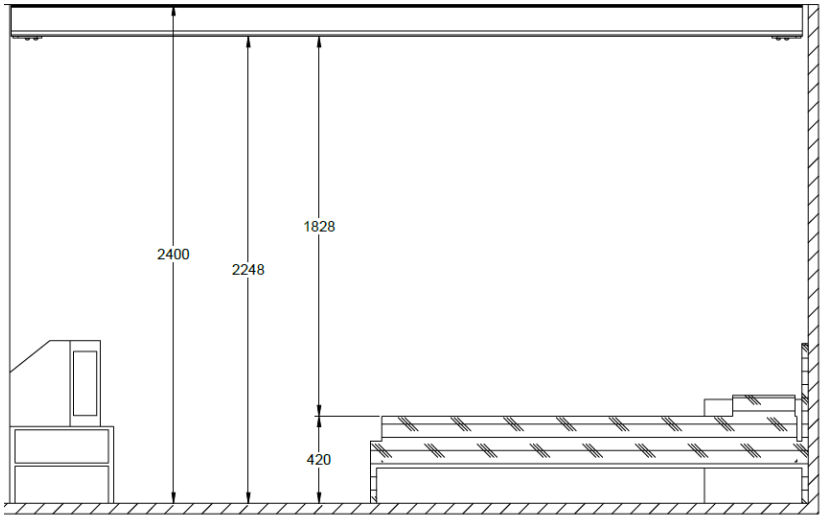
See section 5.1.1 for guidance on how to mark out the wall bracket positions on the wall correctly before proceeding to fixing the brackets.

Follow the guidance below to fix the swivel bracket to the wall.

1. Position the bracket against the wall, at the maximum height below the ceiling/false ceiling to achieve maximum track height.
2. Ensure that the hole positions are already marked onto the wall. See section 5.1.1 if this step has been missed.
3. As the wall is solid concrete or similar block material, drill the four marked holes to a minimum depth of 2.8" (70mm), this depth provides suitable strength for the fixing to support the track. A 12mm drill bit diameter should be used.
4. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
5. Align the wall bracket with the drilled holes to ensure that they align correctly and that the wall bracket can be secured horizontally.
6. M12 threaded bar should be cut to allow a minimum of 2.8" (70mm) insertion into the wall along with an additional 0.8" (20mm) to allow for the wall bracket and fixings. Four M12 threaded bars are required for each wall bracket.
7. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispense the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
8. Inject the holes with the chemical resin, the resin should fill 50% of the hole capacity.
9. Insert the four pieces of threaded bar into the holes. This will force the resin to fill the full holes capacity.
10. It is highly recommended that the threaded bars are twisted into the holes to provide additional strength and mixing with the chemical resin.
11. Place a M12 washer and M12 nyloc nut onto the threaded bars and tighten onto the wall bracket for secure fixing.
12. Repeat these steps to secure the second wall bracket on the same wall or opposing wall.
13. Allow each hole time for the chemical resin to cure, see manufacturers curing times in the table in section 1.
14. The track can be mounted onto the wall bracket from here. See section 10 for track install details.






2400
2248
1828
420

5.2 Wall to Wall Fixing Method 2

If the two direct fixing walls are not suitable for wall to wall fixing method 1, (i.e. Stud Walls), the opposing walls can be used as fixing points, (assuming they are solid).

The wall to wall fixing method is used when the ceiling is not suitable for fixing the track system, where the track system cannot be fixed to the ceiling at any point.

The wall to wall fixing method 2 has two options, where you can use a simple T-Bracket to span off parallel tracks, or use specialised steel supporting box section to span parallel across the room which the track can mount onto using specialised brackets.

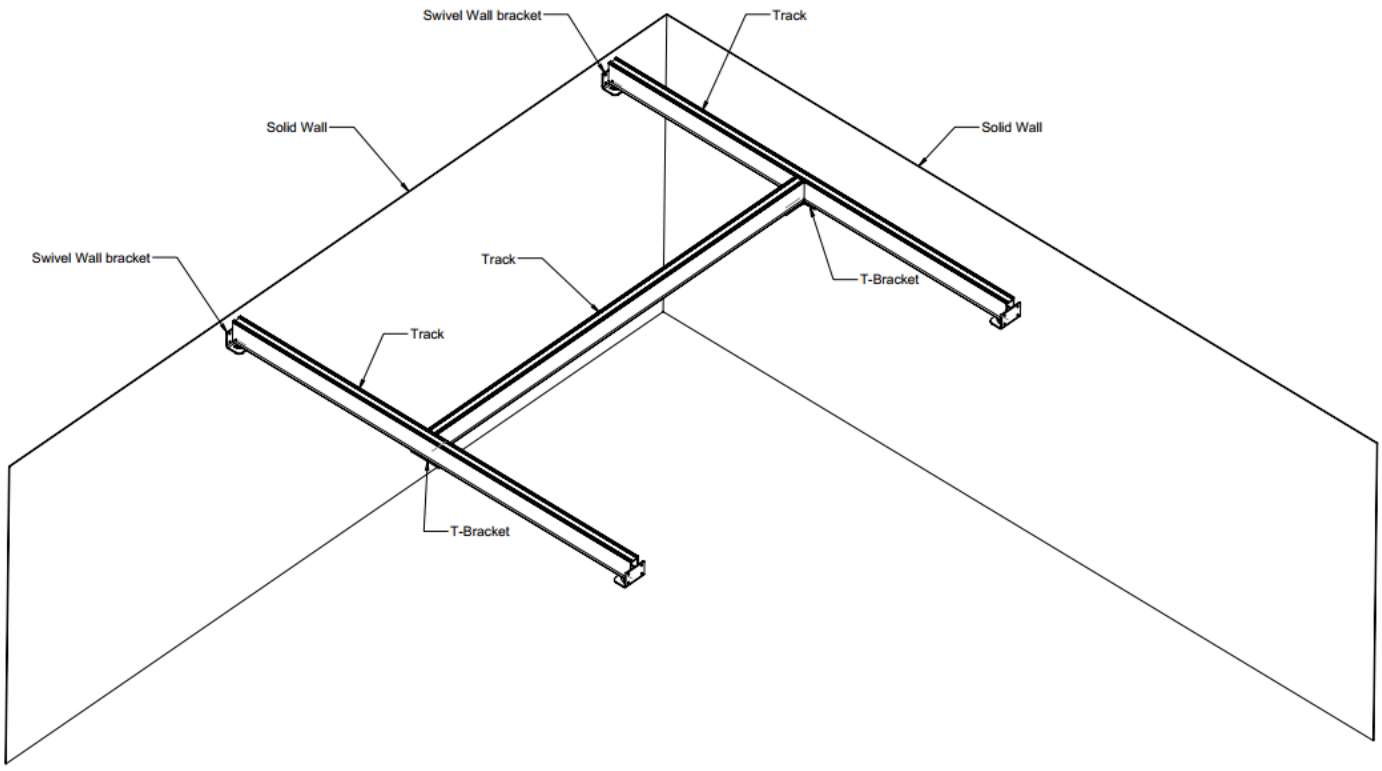
The section below will give full instruction on the recommended method of installation for a ceiling track system into a wall fixing when the standard wall to wall fixing method is not suitable.

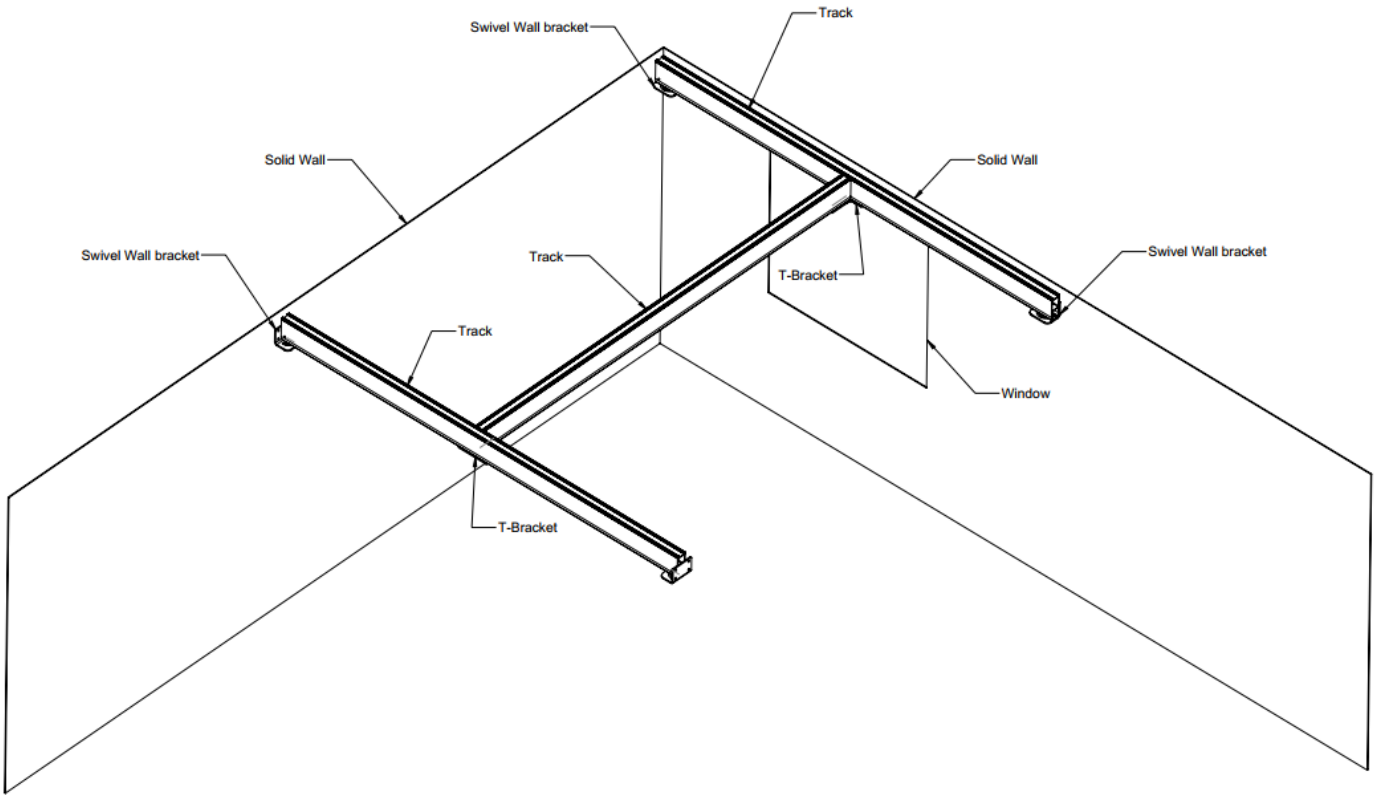
A full assessment should have been conducted to ensure that the wall is safe for installation, but the installation engineer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking, or any other damage to the wall should be avoided. Depending on the type of wall material, the various fixing methods must be followed.

For ceiling track wall fixings, only solid walls are suitable for installation. This includes brick and block materials. To ensure the wall material is suitable, drill a small hole 0.3" (7mm) where the wall bracket is to be fitted to check the material of the wall. A wall to wall fixing cannot be fixed directly above a door or window as the fixing cannot be fixed to a lintel. This will not be a sufficient fixing point to bare the load of a ceiling track system.

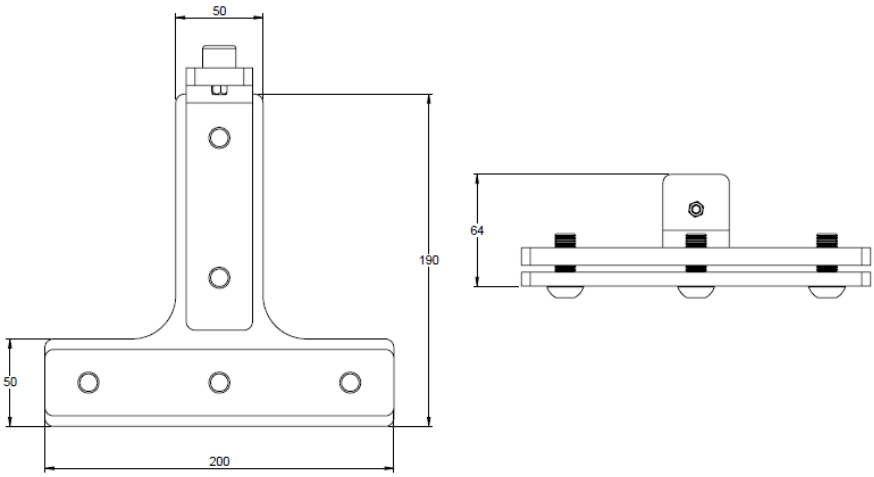
5.2.1 T-Bracket Fixing Method

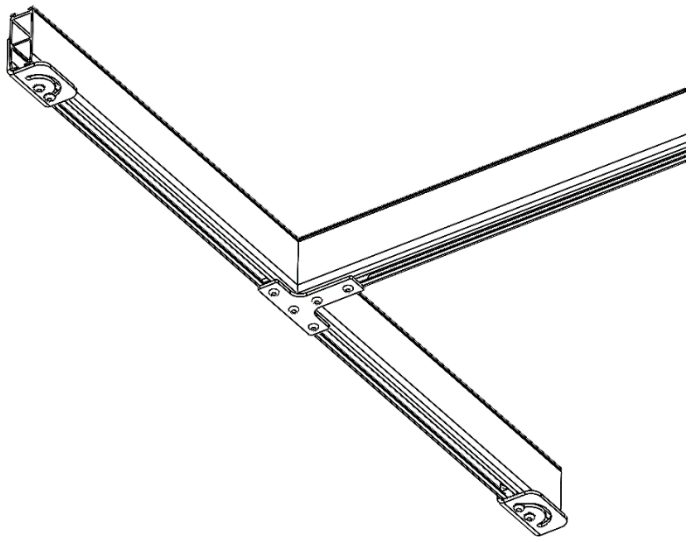
The T-Bracket is used in conjunction with two parallel tracks which are installed onto the walls using the swivel brackets.
This may be onto the opposing walls as the direct wall is not suitable or onto the direct wall but a door header is in the way of direct mounting onto the wall.





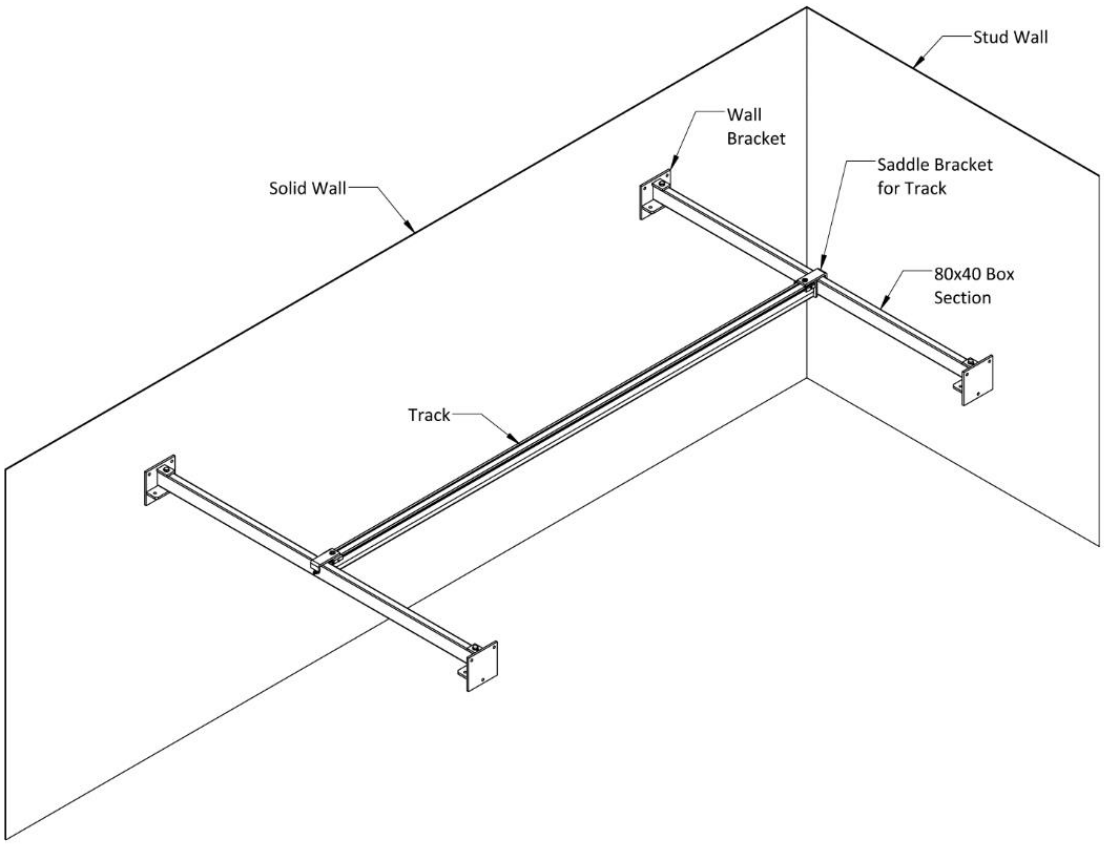
The T-Bracket must be slid onto the parallel tracks and clamped using a 5mm Allen Key in its desired location. The spanning track must then be placed onto the T-Bracket and is secured in the same fashion.





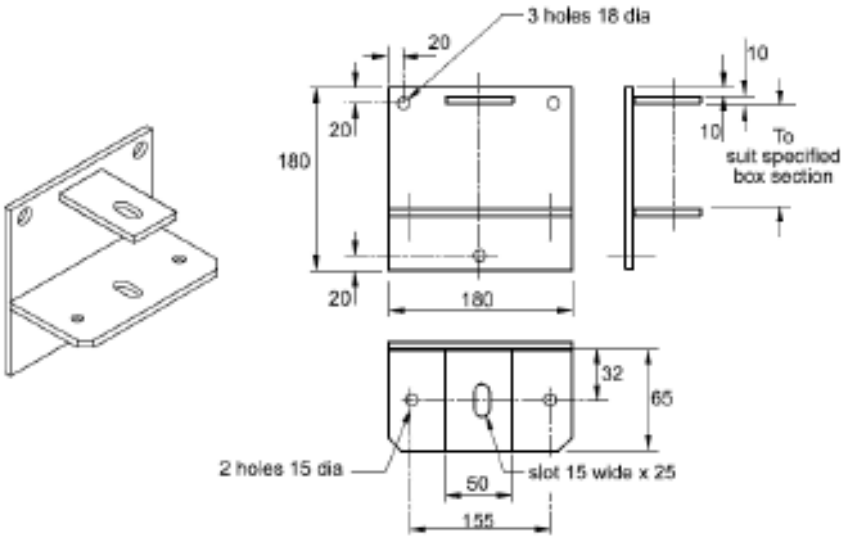
5.2.2 Aligning a Wall to Wall Fixing Method 2 onto the Walls using Steelworks

See image below of a typical wall to wall fixing method 2 using steelworks. This method is typically used for greater spanning distances of the parallel “tracks”, as the T-Bracket will not be suitable.



When a track system is installed onto a wall fixing or a wall to wall fixing, it is essential to ensure that the track system is level to ensure that the fixings will align. The wall to wall fixing method 2 includes four wall fixings that must be aligned horizontally. Follow the guidance below:

1. Measure the distance between the two fixing walls.
2. The steel box sections must be cut to suitable length, this will be the distance between the two walls subtracting 0.8” (20mm).
3. Determine the spanning requirements of the track system and choose a suitable track type for the installation at hand. See section 1 for maximum track spans.
4. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc. To accommodate this, the wall fixings maximum height should be 50mm below the lowest obstacle on the ceiling. This will also provide a clearance gap for the track bracket fixings above the wall bracket upper face.
5. Determine a suitable location for the first wall bracket fixing. Align the wall bracket as close to the ceiling as possible to provide maximum track height. Depending on the wall type, the bracket must never be fixed to the top two bricks, as this will not provide sufficient strength to support the track system, always ensure that the fixing point is secure.
6. Place the wall bracket onto the wall and mark out all the hole fixings onto the wall with a marker/pencil. See diagram below for hole positions.
7. Using a laser, the second bracket position can be marked on the opposing wall to provide a level fixing.
8. Using the laser and a tape measure, position the third and fourth wall fixing on the wall, and mark out the fixing positions.



Wall Bracket for Steel

5.2.3 Fixing the Wall to Wall Fixing Method 2 to the Walls

To fix the wall to wall fixing method 2, the fixing method must be split into sections, this includes fixing the steel wall brackets, the steel box section and the saddle brackets with the track. See the guidance below for the correct method of fixing. Ensure to first refer to section 5.2.1 for the correct alignment and marking out positions of the wall brackets.

Steel Wall Bracket Fixing

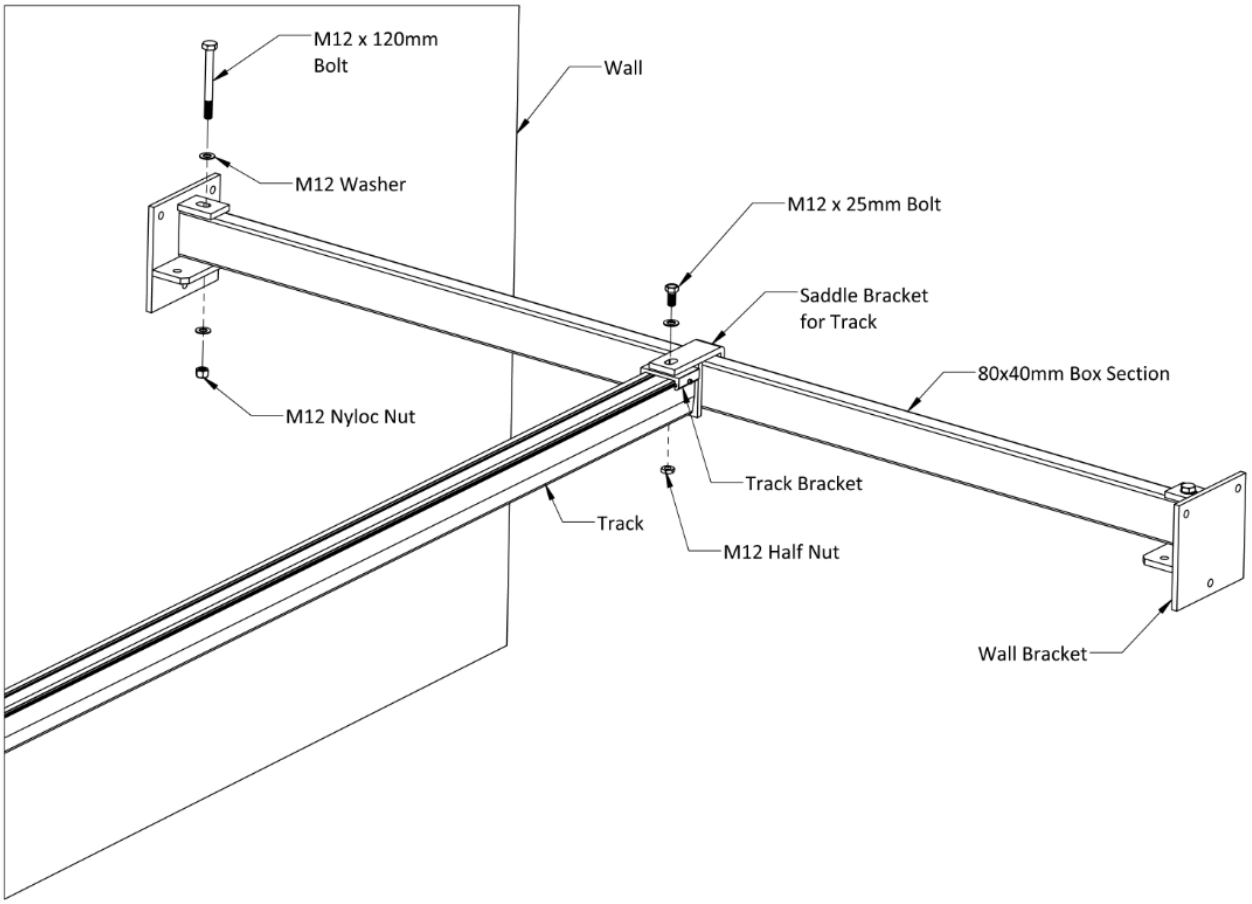
When fixing the wall bracket to the wall, the best fixing method is to fix threaded bar directly into the wall through the process of chemical resin. There will be three fixings to support the wall bracket, and the threaded bar must be inserted a minimum of 70mm to provide suitable strength to support the ceiling track. The wall bracket must be installed into a wall that is in good condition, ensure that there are no cracks or weaknesses found during placement.
When using the chemical resin, always ensure to follow the manufacturer's instructions along with the guidance of this manual.

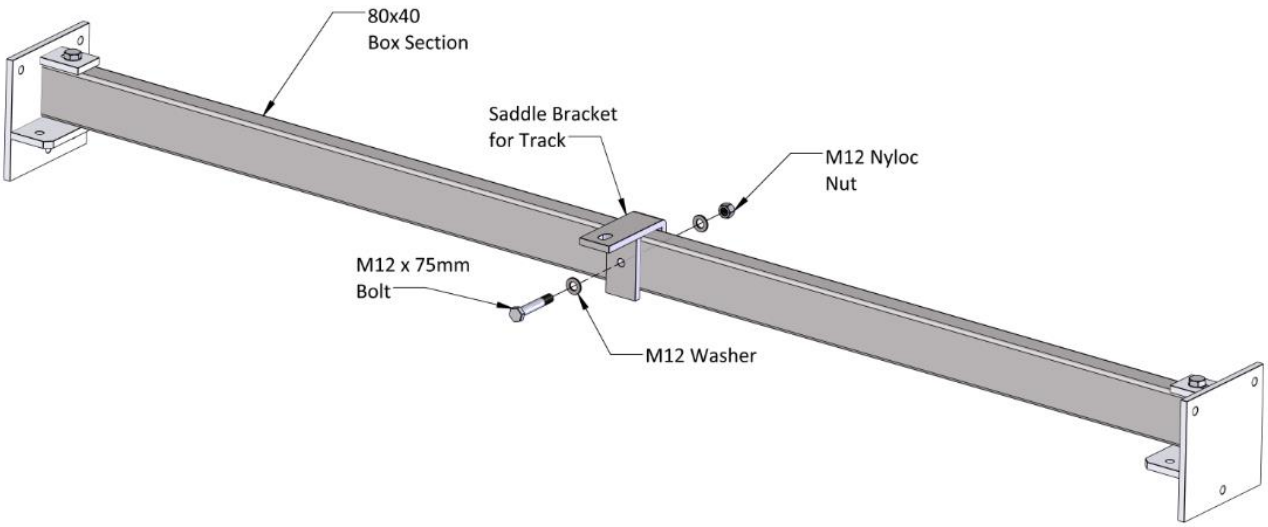
1. Align the steel wall bracket up against the wall to ensure the pre marked hole positions remain true.
2. As the wall is solid concrete or similar block material, drill the three marked holes to a minimum depth of 70mm, this depth provides suitable strength for the fixing to support the track. A 16mm drill bit diameter should be used.
3. Once the holes have been drilled, they must be cleaned out, a hoover, air gun or hole brush will suffice.
4. Ensure the drilled hole positions remain true.
5. M12 threaded bar should be cut to allow a minimum of 2.8" (70mm) insertion into the wall along with an additional 0.8" (20mm) to allow for the wall bracket and fixings. Three M12 threaded bar are required for each wall bracket.
6. The chemical resin can be placed into the gun and tested to ensure the two resins are mixing correctly. The two resins are individually coloured white and light grey, but when dispensing the resin out of its nozzle, they should mix into a dark grey colour. Ensure that this is the colour of the resin.
7. Inject the holes with the chemical resin, the resin should fill 50% of the hole capacity.
8. Insert the three pieces of threaded bar into the holes. This will force the resin to fill the full holes capacity.
9. It is highly recommended that the threaded bars are twisted into the holes to provide additional strength and mixing with the chemical resin.
10. Place the steel wall bracket onto the threaded bars.
11. Place a M12 washer and M12 nyloc nut onto the threaded bars and tighten onto the wall bracket for secure fixing.
12. Repeat these steps to secure all four steel wall brackets. The wall brackets must be fitted directly opposite to each other for a level track fixing.
13. Allow each fixing time for the chemical resin to cure, see manufacturers curing times in the table in section 1.4.

Wall to Wall Fixing Method 2 – Steelwork Assembly

The steel box section is spanned between the two walls and is fixed directly onto the steel wall brackets, this box section provides a fixing point for the saddle bracket and track.
The box section will require being cut to length to suit the spanning distance of the room. Follow the guidance below on how to attach the box section to the steel wall brackets correctly.

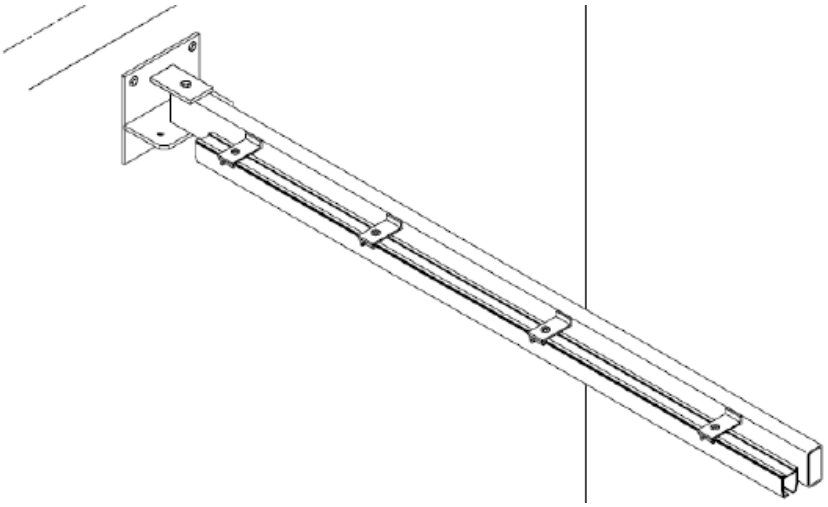
1. Position the steel box section into the steel wall brackets vertically. (as shown in the image).
2. From here, the hole positions on the steel box section can be determined and marked.
3. Drill a 13.5mm clearance hole to allow the fixings to pass through the box section at both ends.
4. From the centre point of the box section, a 13.5mm clearance hole must be drilled into the side face for the saddle bracket fixing.
5. Reposition the box section onto the wall brackets and secure using an M12x120 bolt, ensure to place a washer at either end and secure using an M12 nyloc nut.
6. Repeat this process for both box sections onto all four wall brackets.
7. Position the saddle bracket centrally onto the box section and align with the predrilled clearance hole.
8. Secure the saddle bracket onto the box section using an M12x75mm bolt, ensure to place a washer at either end and secure using an M12 nyloc nut.
9. Attach a track bracket onto the saddle bracket using an M12x25mm bolt, ensure to place a washer between the bolt head and saddle bracket, and secure the track bracket using a single half nut. Apply loctite 270 to the end of the bolt to secure the nut.

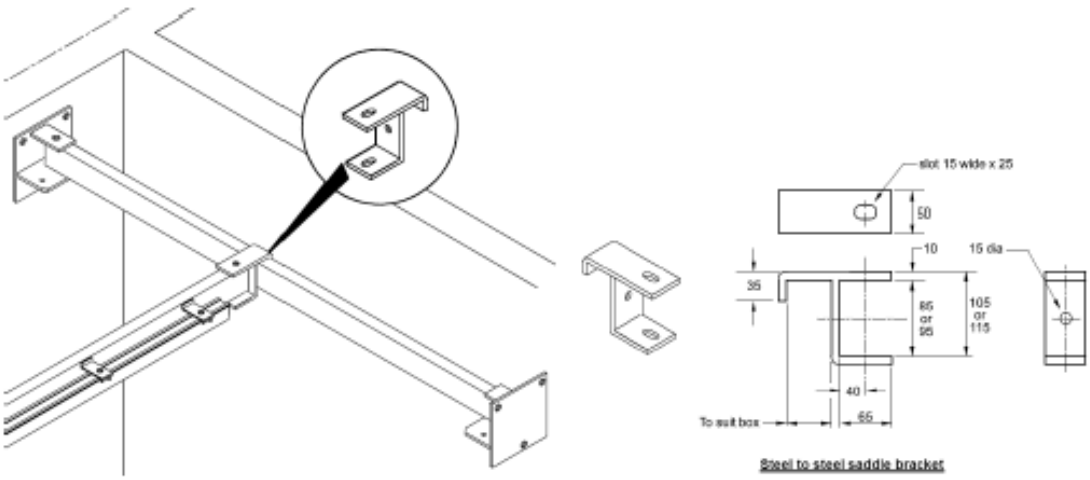




5.3 Specialist Wall to Wall Fixings

A specialised wall to wall fixing can be made to suit a specific installation at hand, this will require specially made steel wall brackets to suit various sizes of steel to allow varying spanning distances. The saddle bracket can also be custom made to support steel box section for side hanging steel box sections, with specific track mounting fixings. These custom fixing must be made prior to the installation and ordered by the assessor during the assessment of the installation. The fixing method for the steel wall brackets and the saddle brackets remain the same as the guidance above. Below are examples of specialist wall fixings that are possible.





6 Gantry Fixings

When the ceiling and the walls are not suitable for fixing the ceiling track system, the system must be secured onto a fixed gantry system, this will be attached to a concrete or timber floor.
The single gantry leg is bolted to the floor, (when bolting to timber, the joists must be located), with an additional three screws into the wall, (this may be a stud wall) to provide stability. The wall requires a **minimum thickness of 0.47" (12mm)**. A gantry system could be used in combination with a wall to wall fixing or ceiling fixing where applicable. See below for fixing details.
The tracks maximum span will dictate whether the gantry fixing method is suitable. See section 1 to determine the maximum spanning distances of the various track types. Only straight track is suitable for wall fixings, all straight tracks included in this manual are suitable for fixing.

It is also important to familiarise yourself with each subsection within section 1.0 before continuing a ceiling track installation onto a gantry system.

6.1 Singular Gantry Leg

The singular gantry leg fixing method is used when the ceiling and wall is not suitable for fixing the track system. Only straight track is suitable for singular gantry leg fixings, all straight tracks included in this manual are suitable for fixing.

Two singular gantries are required at either end for the system to be complete. A gantry installation can be fitted in a in a straight line or in a diagonal direction as long as the fixings remain level. The gantry system must be fixed up against a wall for additional stability, with the leg base against the floor. When there are obstacles affecting the installation, refer to section 6.2 for the goal post gantry leg and other specialist gantry fixings.

When using the singular gantry leg installation method, the maximum permitted load is 200kg. This should not be exceeded and should be lowered depending on the spanning distances of the track.

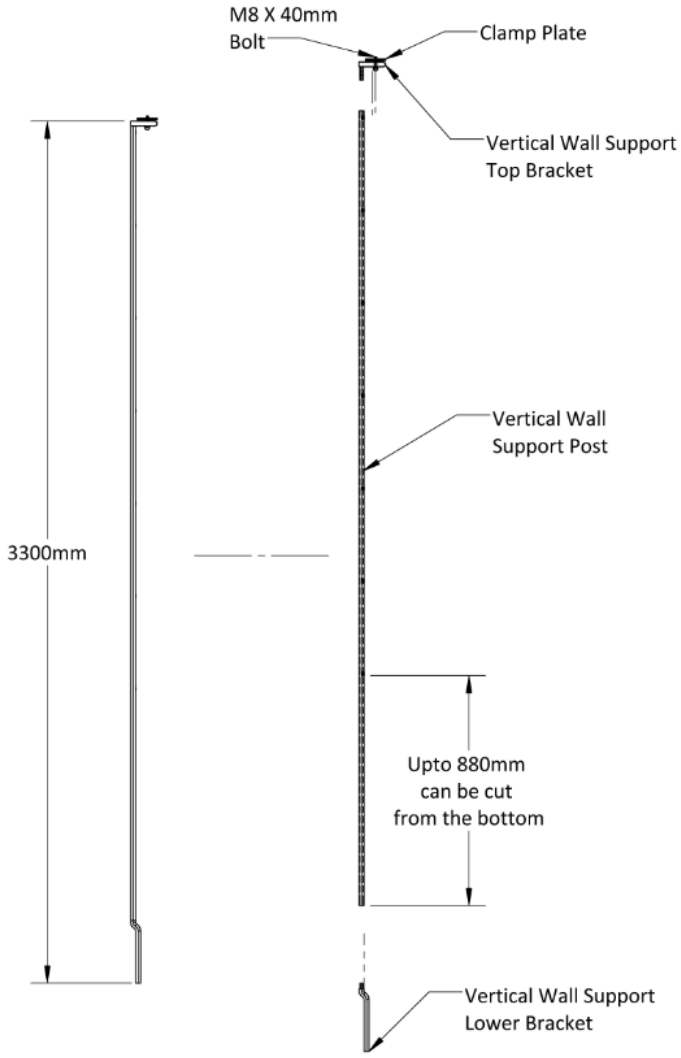
The section below will give full instruction on the recommended method of installation for a ceiling track system using a gantry fixing.

A full assessment should have been conducted to ensure that the floor and wall is safe for installation, but the installation engineer must always be vigilant and ensure that the track fixing locations are safe, any signs of cracking, or any other damage to the fixing materials should be avoided.

6.1.1 Aligning a Gantry to Gantry Fixing Method onto the Floor/Wall

When a track system is installed onto a gantry fixing, it is essential to ensure that the track system is level to ensure that the fixings will align. Each gantry requires the Fischer 5x37 metal cavity fixings with screws for installation. Follow the guidance below for alignment.

1. Measure the distance between the two gantry positions.
2. Determine the spanning requirements of the track system and choose a suitable track type for the installation at hand. See section 1 for maximum track spans.
3. Determine a suitable location for the first gantry fixing. This should be on the floor up against the wall, the gantry leg accommodates for skirting boards.
4. When positioning the gantry, ensure that the stud wall provides suitable fixing locations where the gantry is to be fixed, along with this, ensure that the floor is level for the base of the gantry.
5. Along the full length of the track installation, any obstacles must be avoided, this includes obstacles such as light fixings, sprinklers etc. To accommodate this, the gantry system maximum height should be 50mm below the lowest obstacle on the ceiling.
6. Measure the height from the floor to the ceiling to determine the required height of the gantry leg. From here the gantry can be cut to size to suit the room.
7. Align the gantry in its desired location and mark out the fixing positions on the wall.
8. For the stud wall, the holes must be drilled using a 10mm drill bit to a depth of 1.46" (37mm).
9. Insert the Fischer 5x37 metal cavity fixing (sleeve) into the stud wall.
10. Ensure to follow the relevant steps for the opposing gantry leg.

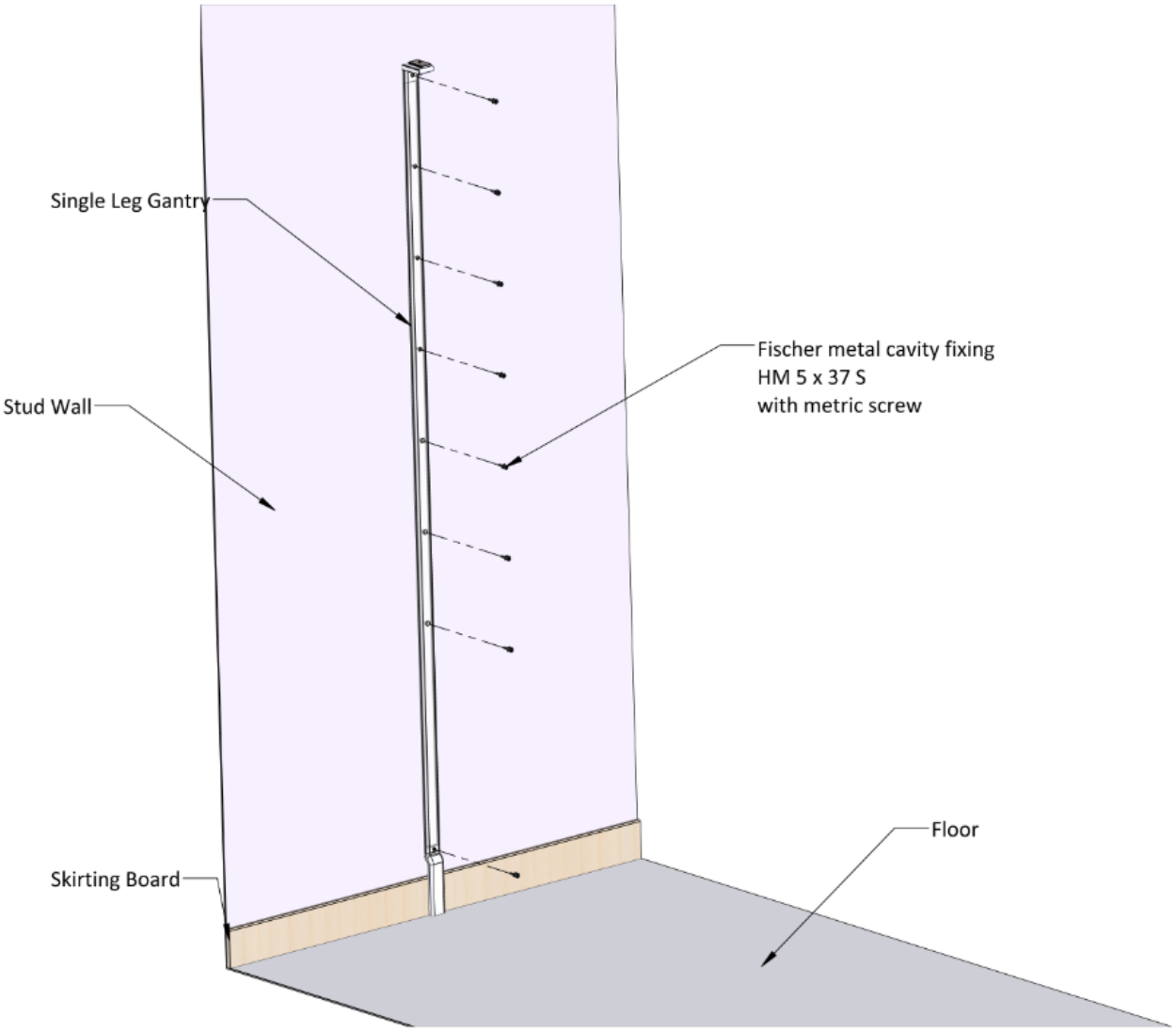


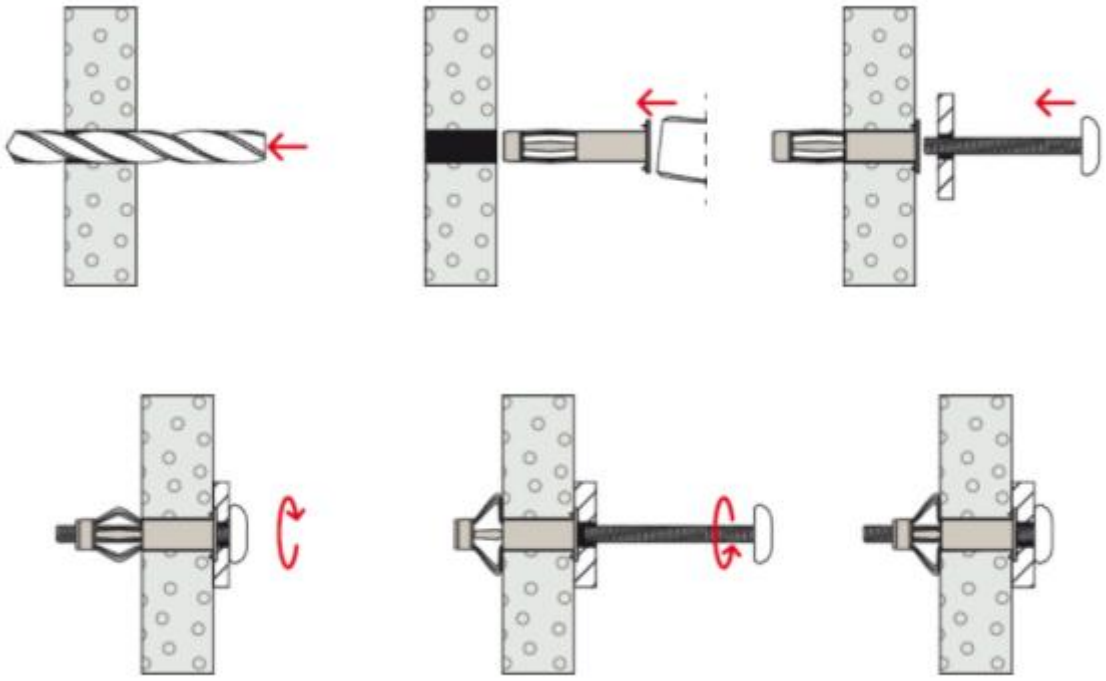
6.1.2 Fixing the Singular Gantry Leg to the Floor/Wall

The singular gantry must be cut to length to suit the installation at hand. The bottom end of the gantry leg is designed to be cut to length. Once this is done, follow the guidance below.
See section 6.1.1 for guidance on how to mark out the gantry fixing positions on the wall correctly before proceeding to fixing the gantry.

Follow the guidance below to fix the gantry in position.

1. Once the gantry leg is cut to suit, slot the gantry foot onto the bottom end of the leg.
2. Slot the gantry head onto the top end of the leg.
3. Screw the Fischer screws 5x37mm into the wall to secure the gantry. This will secure the gantry foot and head to the gantry leg. (see image below on how the sleeves interact with the stud wall)
4. Repeat the relevant steps to secure the second gantry system.

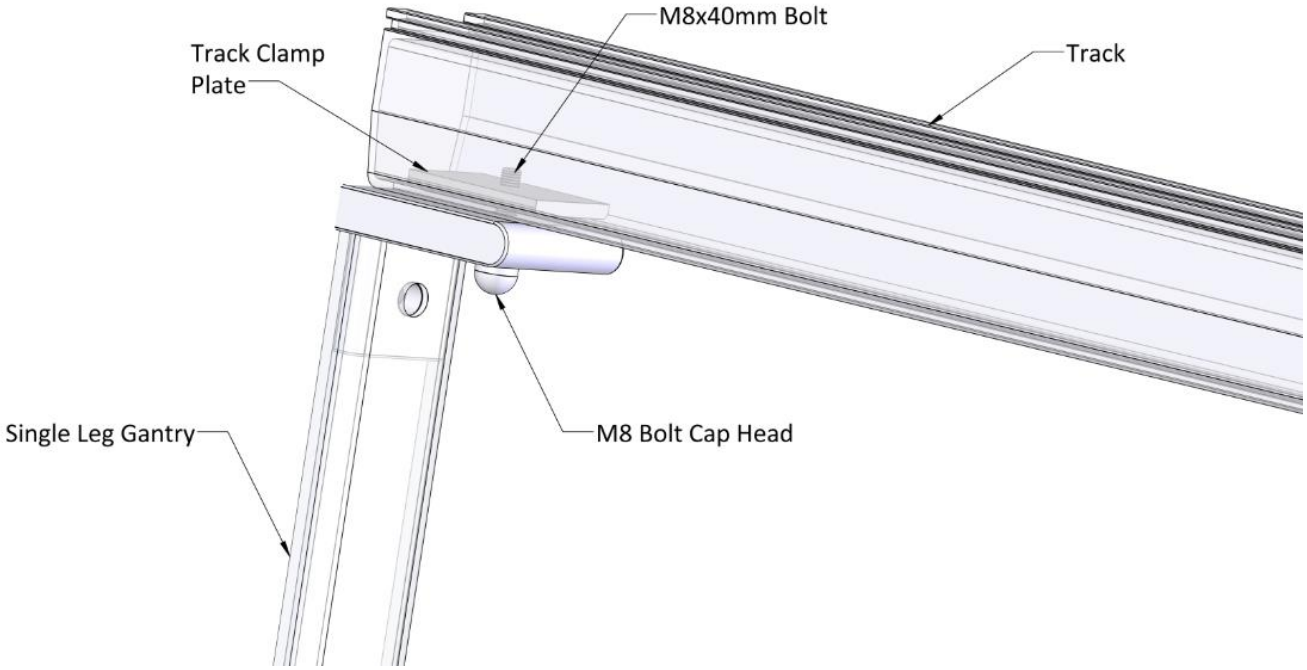

Single Leg Gantry
Stud Wall
Fischer metal cavity fixing
HM 5 x 37 S
with metric screw
Skirting Board
Floor



6.1.3 Fixing the Track to the Gantry

No track brackets are required to fix the ceiling track to the gantry system, follow the process below to install the track. The ceiling track ceiling lift must be inserted into the ceiling track prior to securing the track to the gantry, this will require a minimum of two installation engineers to ensure that the track remains level when positioning it on top of the gantry.

1. Once the ceiling lift is located inside the track system, place the track on top of the two gantry system fixings. While locating the track against the wall, it is important to also locate the steel fixing plates at either end of the track directly above the gantry fixing. See image below for reference.
2. Using the M8x40 bolt provided, clamp the track in place by tightening the gantry head, track and steel fixing plate together. See images below.
3. Repeat the fixing method for both gantries.



6.2 Specialist Gantry Fixings

A specialised gantry leg can be made to suit a specific installation at hand, this leg must be made prior to the installation and ordered by the assessor during the assessment of the installation. This gantry leg is fixed to the wall following the same fixing guidelines as above, but also includes floor fixings, see the brief explanation for floor fixings below:

Concrete:

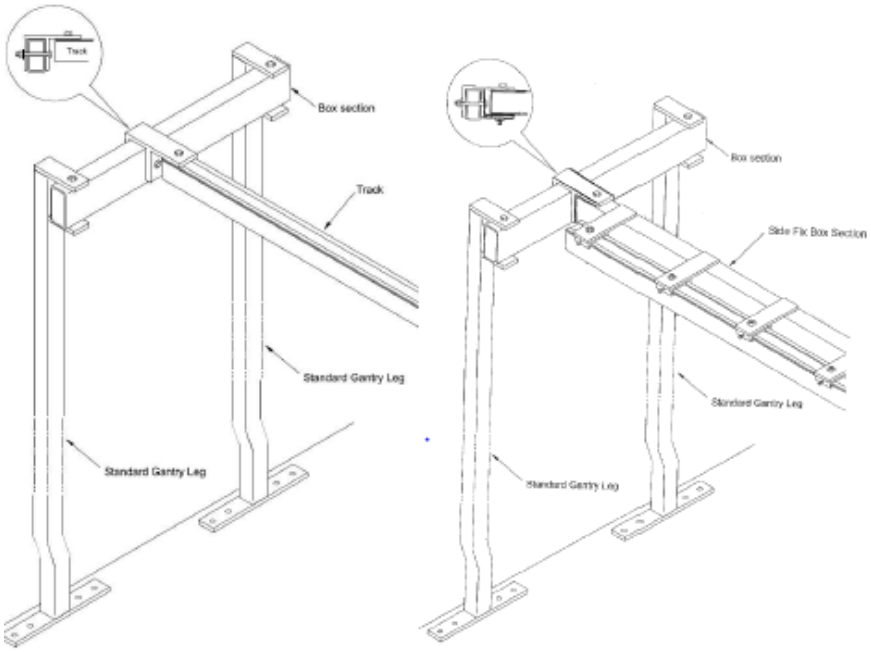
1. To fix the gantry to concrete, four holes must be drilled into the concrete using a 15mm drill bit to a depth of 80mm.
2. Insert the 14x75 Rawl plugs into the concrete floor.
3. Mark out the correct fixing locations on the gantry feet to ensure that the holes will align.
4. Drill the gantry feet to a diameter of 13mm.
5. Secure the feet into the concrete using the 12.0x70mm coach bolts.

Timber:

1. To fix the gantry to timber, the four holes must be drilled into the timber using a 10mm drill bit to a depth of 2.76" (70mm)
2. Mark out the correct fixing locations on the gantry feet to ensure that the holes will align.
3. Drill the gantry feet to a diameter of 13mm.
4. Secure the feet into the timber using the 12.0x70mm coach bolts.
5. Note: the hole positions must align with the joists in the timber floor for a secure fixing.

The only other variance being that the foot and head of the gantry is fixed and allows a steel box section to be fitted. Below are examples of specialist gantry fixings that are possible.

The goalpost fixing method is designed to avoid obstacles such as doorways and windows. The specialist gantry leg is typically used to attach side hanging steel box section to allow additional spanning distances for the ceiling track.

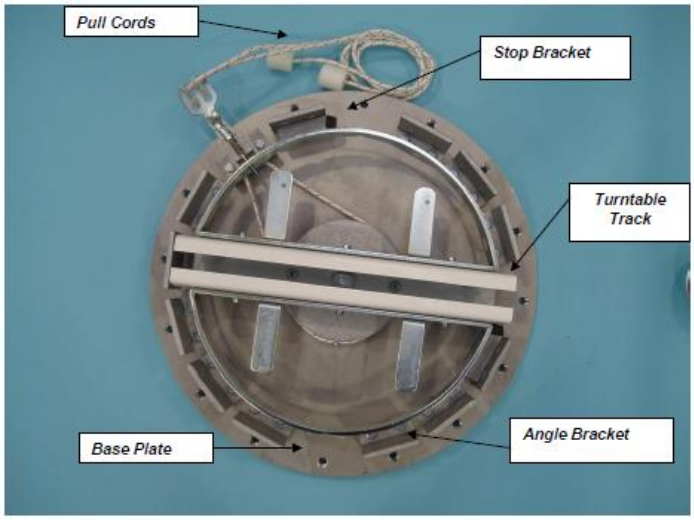


Goalpost For Track Goalpost for Side Hanging Steel

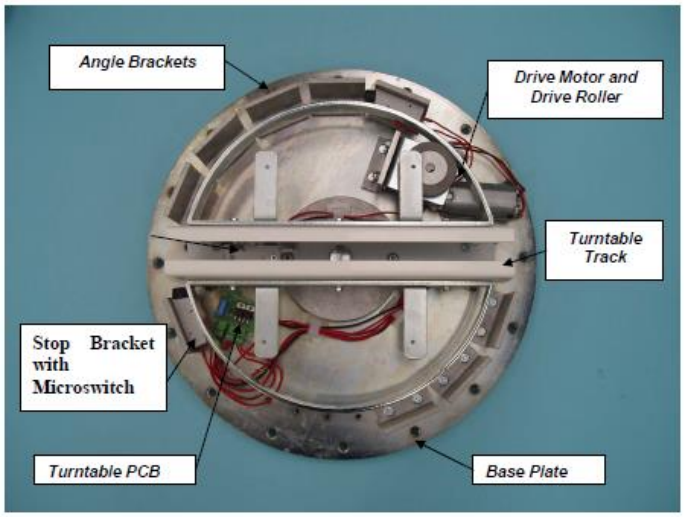
7 Turntable Installation

The turntable is a rotating piece of track that allows the ceiling lift to dock into, rotate, and exit into another track system. The turntable is ideal for installations require many track systems that interlink with each other, allowing the user(s) to move from one system to another, or when the track bends cannot accommodate the required change in direction.
There are two types of turntables available, this includes the manual turntable and the powered turntable, the operation of the two products are different, but their installation into the ceiling remain the same. Both types have two varying safe working loads, a 287lb (130kg) and 705lb (320kg), ensure that the correct choice of SWL is used during the installation.
The manual turntable provides exit for a maximum of 14 track systems. This means that 14 different tracks can be linked to the turntable and allow the ceiling lift to transfer between any.
The powered turntable provides exit for a maximum of 10 track systems. The powered turntable has less exit points due to the design of the product. See the images below of the two types of turntable.

Manual Turntable



Powered Turntable



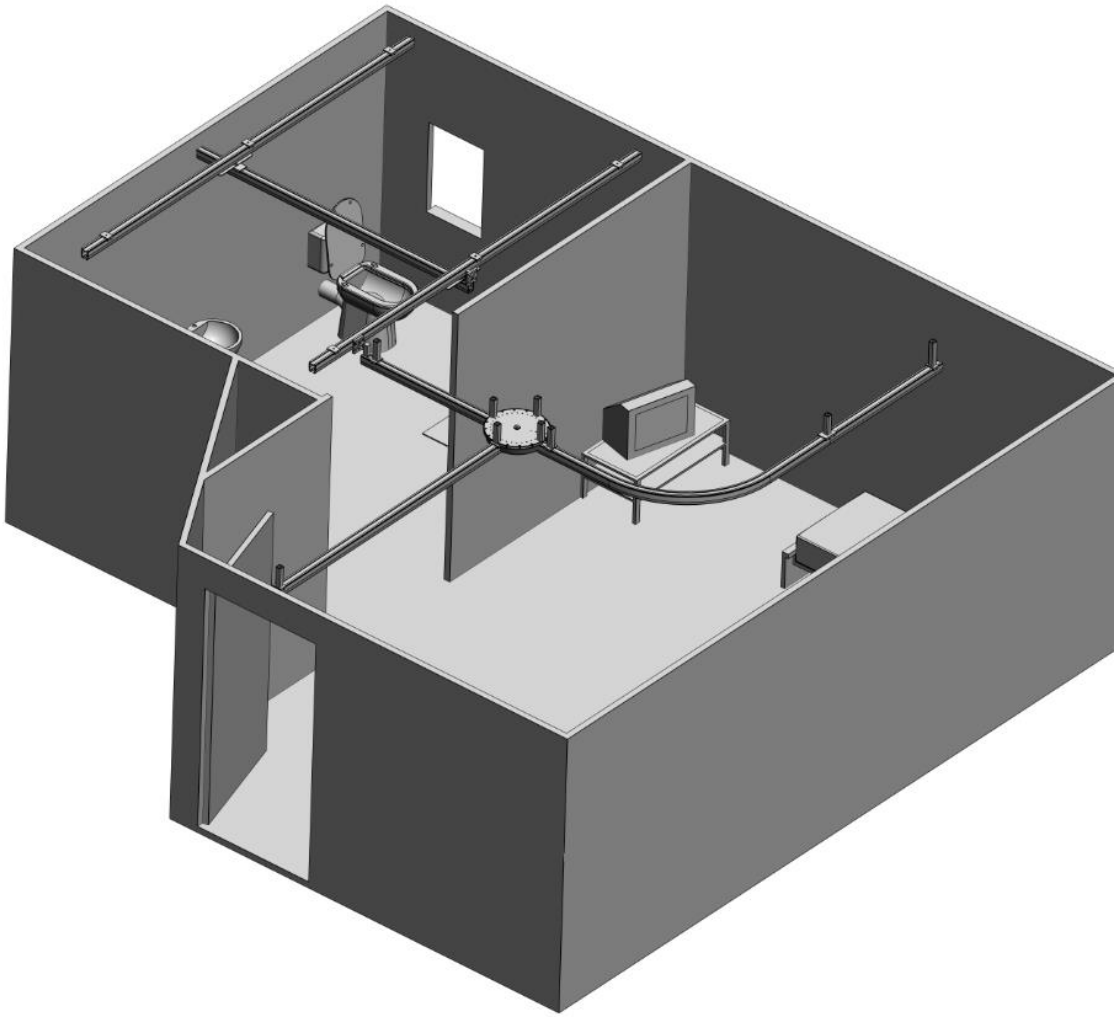
Manual Turntable	Powered Turntable
14 Possible Track Take of Positions	10 Possible Track Take of Positions
Aluminium Base Plate – 287lb (130kg) (SWL)	Aluminium Base Plate – 287lb (130kg) (SWL)
Steel Base Plate – 705lb (320kg) (SWL)	Steel Base Plate - 705lb (320kg) (SWL)
Provided with end stops all around the turntable – these are removed for at the take of positions	Provided with end stops all around the turntable – these are removed for at the take of positions
Rotation is achieved by using the simple pull cord mechanism	The powered turntable is operated by the ceiling lift when docked, the turntable takes power from the ceiling lifts communications port, and the ceiling lift handset buttons are used to activate the turntable rotation.
The turntable requires a minimum of four fixings to the ceiling	The turntable requires a minimum of four fixings to the ceiling

For full details on the turntable, see the latest revision of the turntable user manual.

7.1 Turntable Compatibility

The turntable is only compatible with the single track and double track by prism. This also includes the track bends. When fixing a track bend directly to a turntable junction, ensure that the track bend in not cut passed the 3.9" (100mm) of straight track limit. This is stated in section 1 – track bends installation, this is important as (depending on the ceiling lift used) the ceiling lift will not be able to traverse from one to the other without a suitable amount of straight track.

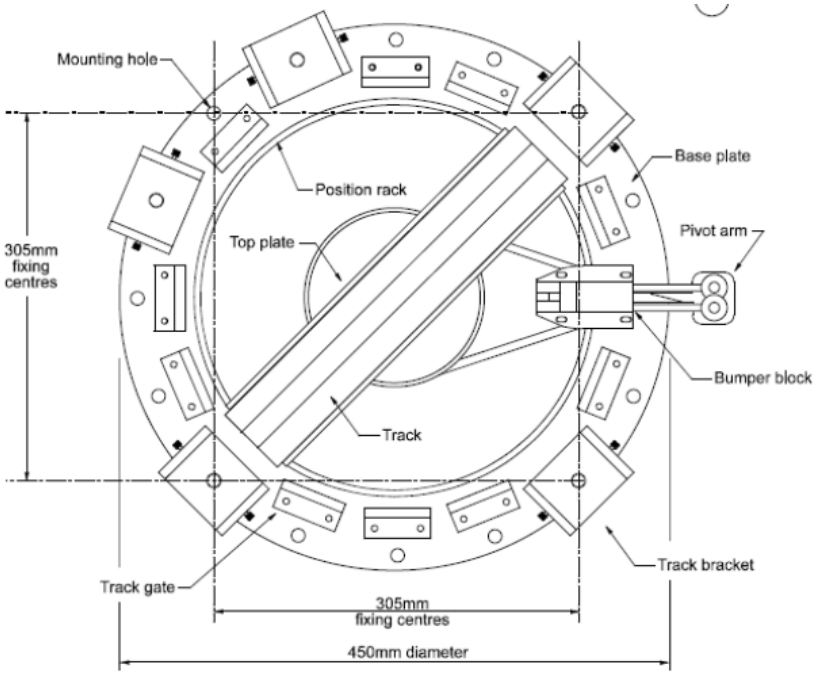
The image below gives example of multiple track systems taking off from a turntable, along with examples of track bends coming from the turntable.



7.2 Turntable Fixings

The turntable is suitable for concrete and timber ceiling fixings. The turntable must be fitted to the ceiling with a minimum of four fixings. These fixings must be directly opposing each other as shown in the image.

When mounting a turntable, it is preferable to fix the fixings directly to the base plate, this can be seen in the top left fixing of the image below. However, this is not always possible, depending on the amount and layout of the track take off positions. As the image shows, the remaining three fixings are passing through a track bracket.



It is always recommended that a turntable is the first system to be installed during a ceiling track installation, followed by the straight track/track bends.

7.3 Installing a Turntable into Concrete

The section below will include the full process of installing a turntable into a concrete ceiling, this will include the positioning and accurate marking out and the fixings used to mount a turntable.

7.3.1 Marking out the Turntable Fixing Positions into Concrete

1. A suitable location for the turntable must be chosen, this must be considered with the use of the pull cord in mind (manual only) and the direction of the take-off tracks regarding obstacles.
2. Ensure that the turntable itself is also clear of any obstacles.
3. Where false ceilings are present, remove the tiles to inspect the roof space for any obstacles as well as inspecting the concrete for suitable fixing points.
4. Using a turntable base plate template, align this on the ceiling where the installation is desired.
5. Mark out the chosen four fixing points onto the ceiling using a marker/pencil. The four fixings should measure to be 12" (305mm) apart. See section 7.2 (above) on turntable fixings for further details on fixing points.
6. Using a 12.5mm drill bit, drill the holes into the false ceiling.
7. From here, measure directly vertically, using a laser to mark out on the concrete ceiling where the four fixing points will align.

7.3.2 Concrete Ceiling Fixings used for Turntables

To fix the turntable to a concrete ceiling, threaded bar with chemical resin and Zykon fixings remain the chosen fixings to support the turntable.

Refer to section 2.1 and 2.2 for full details on fixing the fixings to the ceiling. But note the following points.

1. Four Zykon fixings / threaded bar (chemical resin) are required to install the turntable.
2. Refer to section 7.3.1 to mark out the four fixing points on the ceiling.

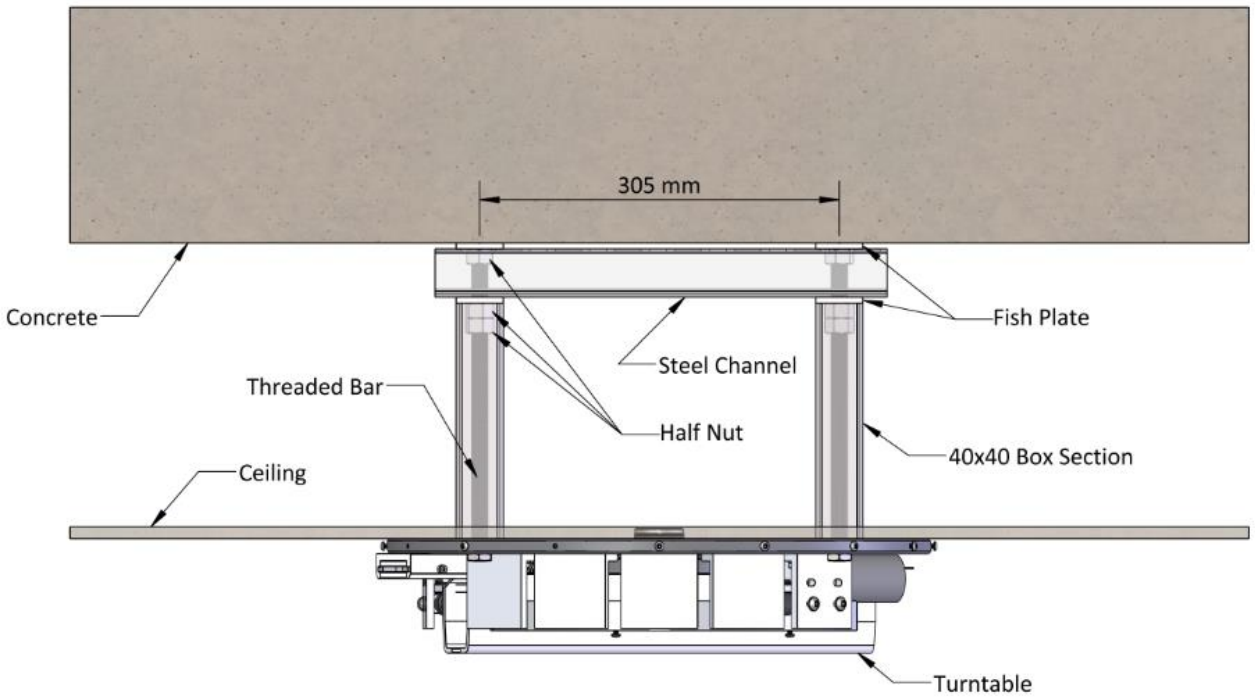
7.3.3 False Ceiling with under 7.87" (200mm) Roof Space

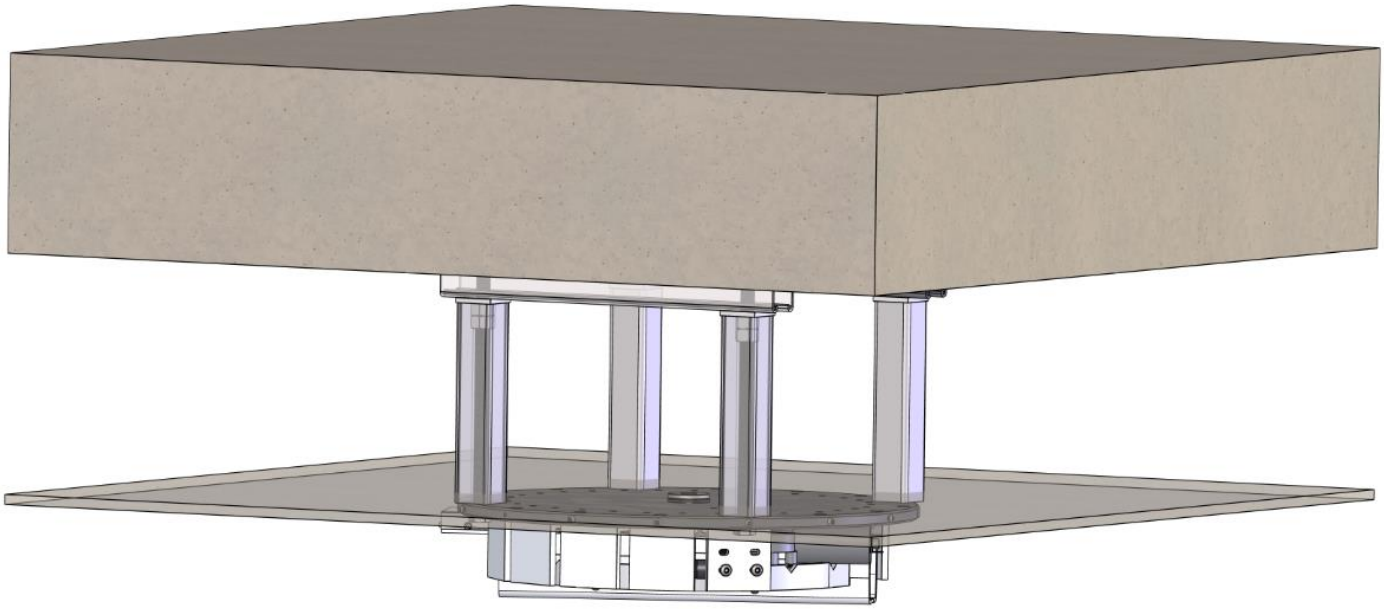
Some buildings will have a very small roof space/void which will require the fixing method shown below. There is not enough roof space to create the solid structure within. Therefore, a threaded bar will suspend the track bracket directly from the height of the concrete ceiling. Follow the process below to secure the track bracket against the false ceiling.

1. When Zykon fixings have been used, four pieces of M12 threaded bars must be cut to a length, this length must protrude through the ceiling and allow the turntable to be fixed, the bar can be cut shorter to suit during the turntable mounting.
2. For additional strength, Loctite 270 can be applied to the threaded bar where it threads into the Zykon.
3. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.62" (600mm), a single piece of steel channel will suit. If the gap size is between 23.62" (600mm) and 39.37" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
4. A pair of Zykon fixings will be linked using the steel channel. Therefore, two individual steel channels will be fixed to the Zykons in parallel. See image below for further details.
5. Fix the steel channels onto the threaded bars and secure in place with a fish plate and two half nuts.
6. The steel channel should be flush with the concrete ceiling. (if the concrete is not level, place some M12 washers onto the threaded bar to level the steel channel)
7. With the threaded bars protruding through the ceiling, four 40x40 box section templates can be cut out of the tile.
8. Four pieces of 40x40 box section must be cut to length to be placed onto the threaded bars and down to the ceiling height.
9. Place the box sections through the ceiling and onto the threaded bars, the box sections should become flush with the steel channel and the ceiling.
10. The turntable is ready for mounting.

(note: the turntable should be mounted at the same time as the box section as there is nothing securing the box section in place)

Repeat all relevant steps to fix each turntable fixing points. Ensure the gap between the mounting positions remain 12" (305mm) for successful turntable installation.


305 mm
Concrete
Fish Plate
Steel Channel
Threaded Bar
Half Nut
40x40 Box Section
Ceiling
Turntable



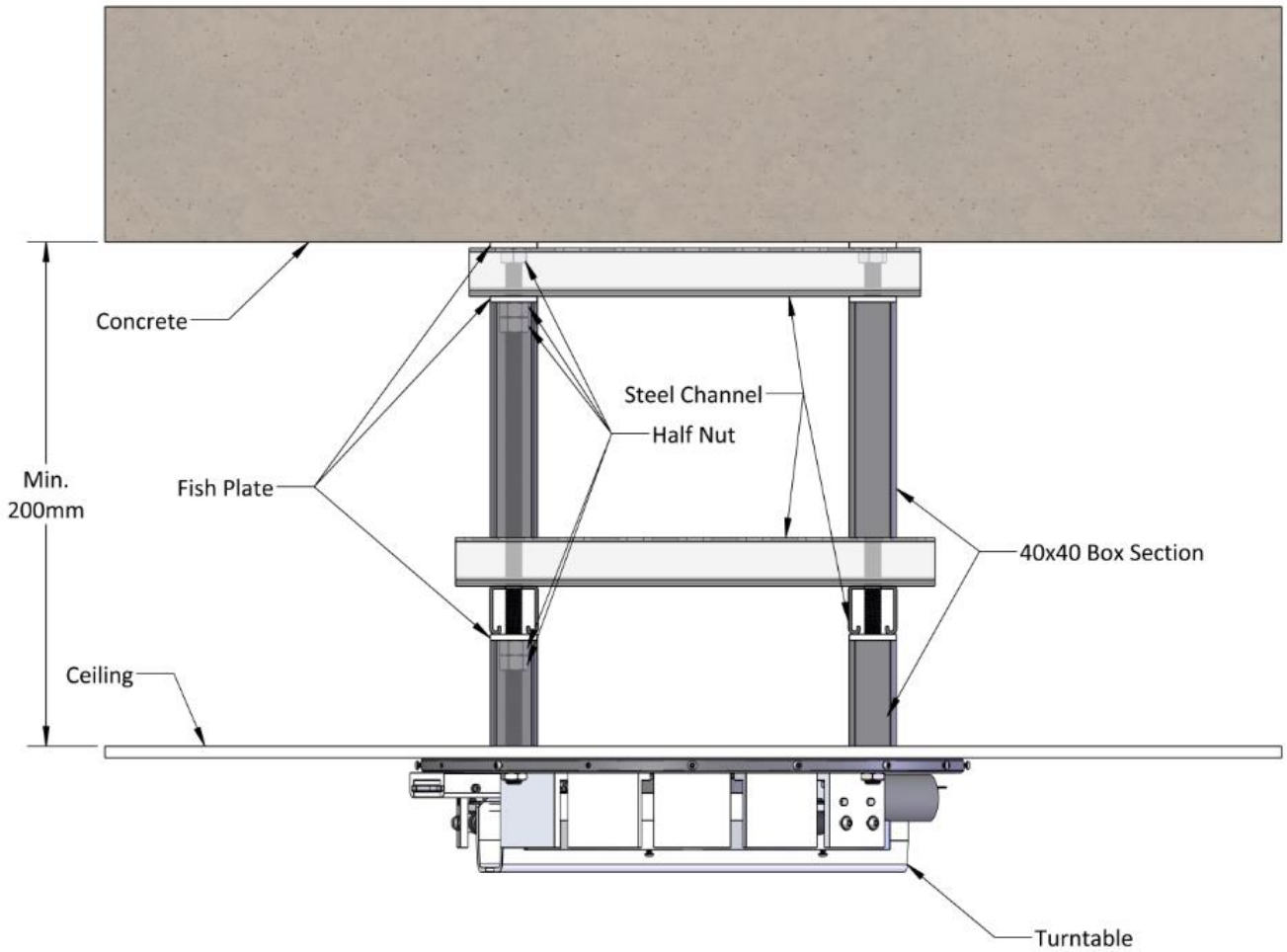
7.3.4 False Ceiling with over 7.87" (200mm) Roof Space

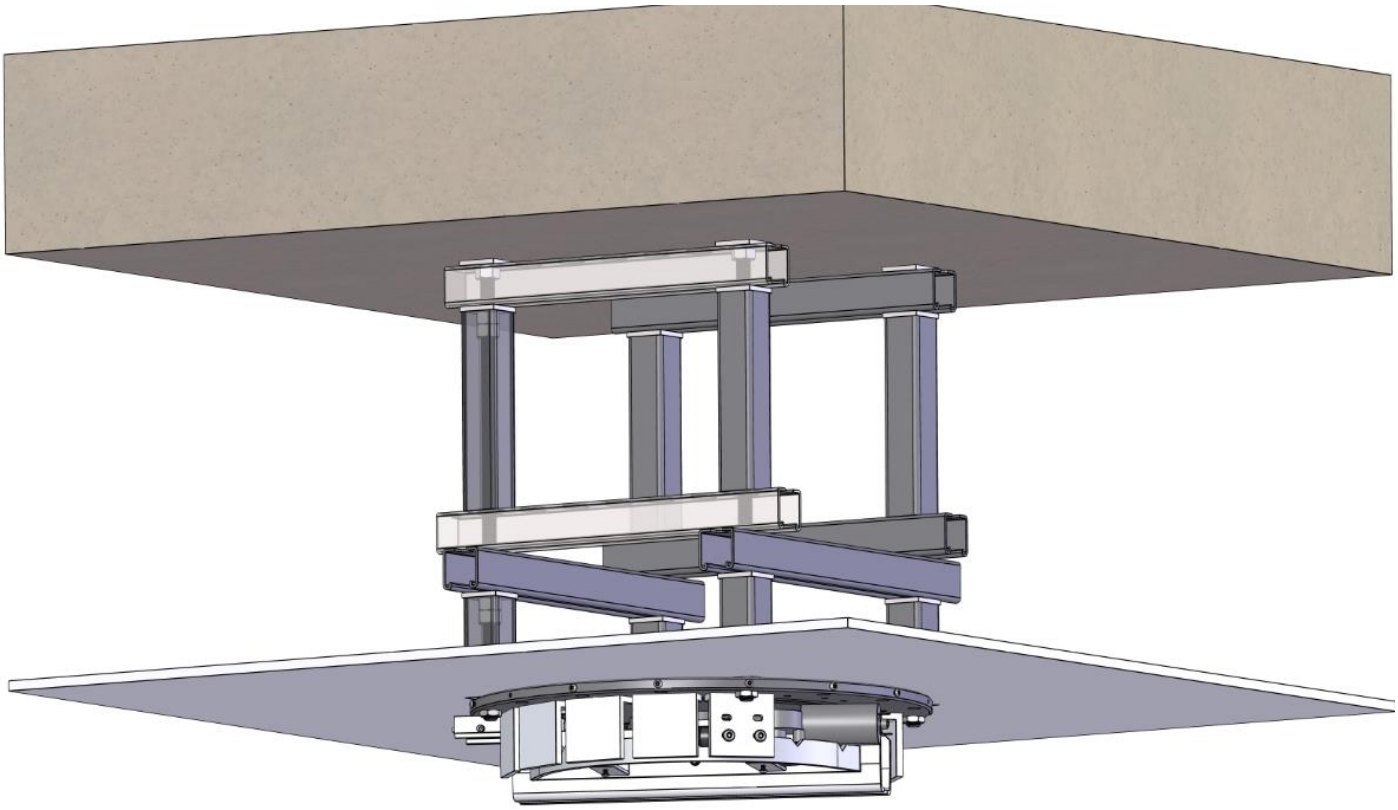
When the roof space is over 7.87" (200mm) in height, the process below is the standard solution to creating a fixed solid structure from the concrete ceiling to the false ceiling, threaded bar with a length of over 7.87" (200mm) directly from a concrete ceiling to a false ceiling will allow too much swing in the turntable making it feel insecure. It must be strengthened using steel channel and box section.
Follow the process below for a secure fixing of the track bracket against the false ceiling.

1. When Zykon fixings have been used, four pieces of M12 threaded bars must be cut to a length, this length must protrude through the ceiling and allow the turntable to be fixed, the bar can be cut shorter to suit during the turntable mounting.
2. For additional strength, Loctite 270 can be applied to the threaded bar where it threads into the Zykon.
3. Depending on the gap size between the two fixings, a piece of steel channel must be cut to a suitable length. If the gap size is between 9.84" (250mm) and 23.62" (600mm), a single piece of steel channel will suit. If the gap size is between 23.62" (600mm) and 39.37" (1000mm), a piece of double steel channel must be used and cut to a suitable length.
4. A pair of Zykon fixings will be linked using the steel channel. Therefore, two individual steel channels will be fixed to the Zykons in parallel. See image below for further details.
5. Fix the steel channels onto the threaded bars and secure in place with a fish plate and two half nuts.
6. The steel channel should be flush with the concrete ceiling. (if the concrete is not level, place some M12 washers onto the threaded bar to level the steel channel)
7. Four pieces of 40x40 box section must be cut to a suitable length, this length will be as close to the false ceiling as possible (around 4.72" (120mm)), leaving enough space for two layers of steel channel and the required fixings.
8. Place the four box sections onto the threaded bars and then secure them in position by placing the steel channel below.
9. Ensure to place a fish plate between the box sections at both ends.
10. Link two threaded bars together using the steel channel and link the other two in the same fashion.
11. Now link the two the threaded bars in the opposite direction, to create a lattice. See diagram below for reference.
12. Secure the steel channels in place on each threaded bar using a fish plate and two M12 half nuts.
13. Another four pieces of box section must be cut to length, from the lattice to the false ceiling height.
14. Place the box sections through the ceiling and onto the threaded bars, the box sections should become flush with the steel channel and the ceiling.
15. The turntable is ready for mounting.

(note: the turntable should be mounted at the same time as the box section as there is nothing securing the box section in place)

Repeat all relevant steps to fix each turntable fixing points. Ensure the gap between the mounting positions remain 12" (305mm) for successful turntable installation.


Concrete
Steel Channel
Half Nut
Min.
200mm
Fish Plate
40x40 Box Section
Ceiling
Turntable



7.4 Installing a Turntable into Timber

The section below will include the full process of installing a turntable into a timber ceiling, this will include the positioning and accurate marking out and the fixings used to mount a turntable.
Prior to installation the positions of all the joists should be mapped out and determined. This can be done using a joist finder. See section 1 for joist mapping. For simpler installation of a turntable into timber, it is recommended to install the turntable into the ceiling where no joists are positioned directly above.

7.4.1 Marking out the Turntable Fixing Positions for a Timber Installation

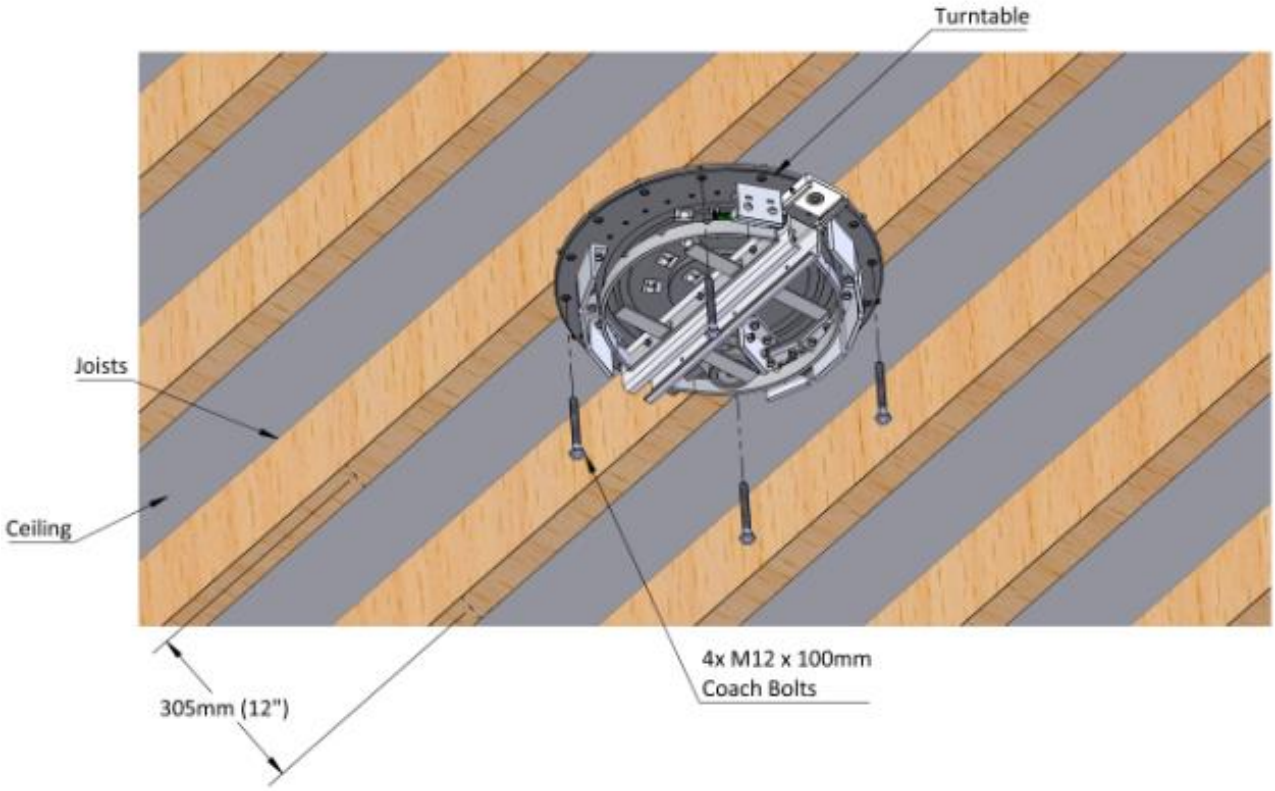
1. A suitable location for the turntable must be chosen, this must be considered with the use of the pull cord in mind (manual only) and the direction of the take-off tracks regarding obstacles.
2. Ensure that the turntable itself is also clear of any obstacles.
3. When 12" gapped (centre to centre) joists are present, it is highly recommended to align the turntable fixings between two joists, as the four fixing points will allow the turntable to be directly bolted to the joists. For other joists such as 14", 16" and larger, this is not possible. But it is still recommended that at least two fixings are aligned directly below a joist for simpler installation.
4. Inspect the inside of the ceiling (where possible) to ensure that there are no clear obstacles that will affect the installation of the turntable.
5. Inspect the condition of the joists to ensure they are in suitable condition for installation. Cracking, rotten wood or any other weaknesses should be avoided.
6. Depending on the ceiling layout, the fixing method will vary.
7. Determine the best location to fix the turntable.
8. Using a turntable base plate template, align this on the ceiling where the installation is desired.
9. Mark out the chosen four fixing points onto the ceiling using a marker/pencil. The four fixings should measure to be 12" (305mm) apart. See section 7.2 (above) on turntable fixings for further details on fixing points.
10. Using a 12.5mm drill bit, drill the holes into the ceiling when no joists are present.
11. If any of the holes in the ceiling align with a joist, ensure that the hole aligns perfectly in the centre of the joist for strength and security. This may require the fixing positions to be relocated slightly. Drill into the joists using an 8mm diameter drill bit to a depth of 3.54" (90mm).

7.4.2 Timber Ceiling Fixings used for Turntables

There are four methods of installing fixings into a timber ceiling, with each depending on the type of ceiling available at each install. See the four fixing methods below. Refer to section 3.0 for installation instructions within timber as additional guidance within this section. But ensure to note the following points on turntable fixings.

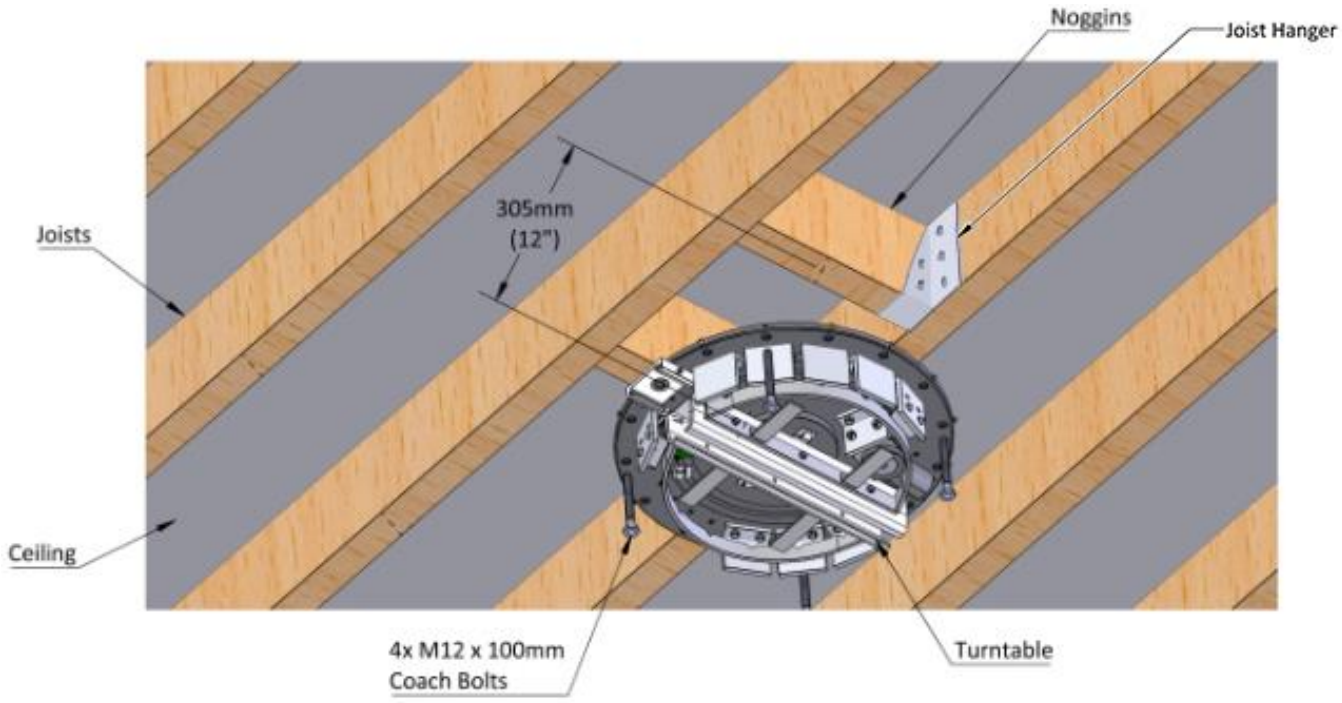
Fixing Method 1 – Directly into the Joists

Fixing method 1 is the recommended method of fixing a turntable. It is not always possible to use this fixing method, but more common to use in combination with one of the other methods. When the location of the turntable can be chosen, this method is the simplest fixing method available. When 12" spaced joists are within the ceiling, it is possible to fix all four turntable fixings across two joists, as shown in the image.



Ensure that section 7.4.1 has been complete for the alignment and fixing positions for the turntable, within this section the joist pilot holes will have been drilled and ready for turntable installation. 12.0x100mm coach bolts will be used to fix the turntable to the joists. This can only be done once the turntable has been mounted onto the ceiling. See section 7.5 for turntable mounting.

This fixing method can also be used when joists are spaced larger than 12" if noggins have been installed. Noggins can only be installed by an approved builder and must be pre-installed, this is arranged during the installation assessment. Refer to section 1.7 for further information building works requirements. Below is an image example of a turntable fixing using noggins. The same mounting process will remain the same. Ensure that within section 7.4.1 the noggins are also provided with the pilot hole.



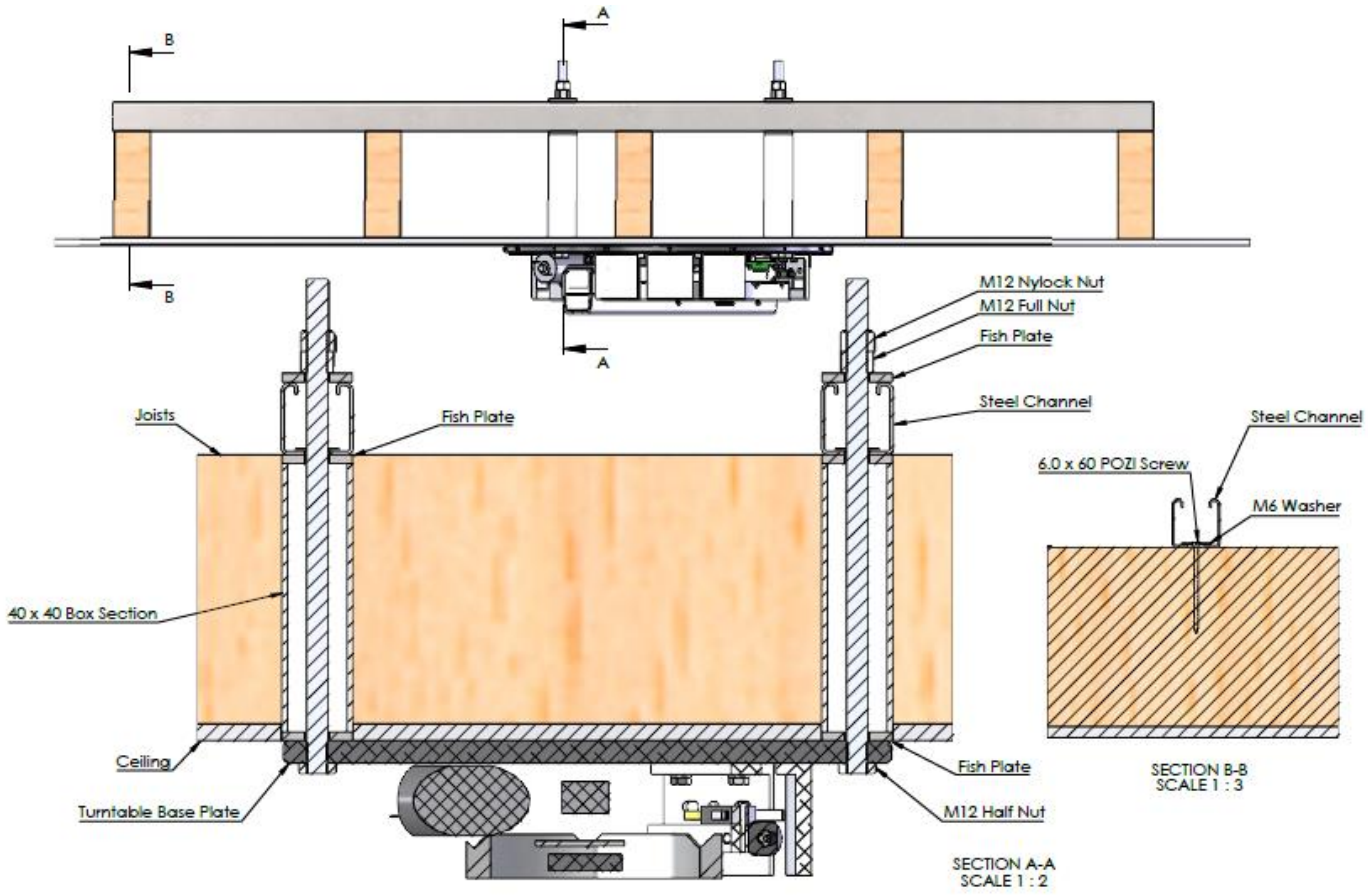
Fixing Method 2 – Ceiling with Loft Space Available

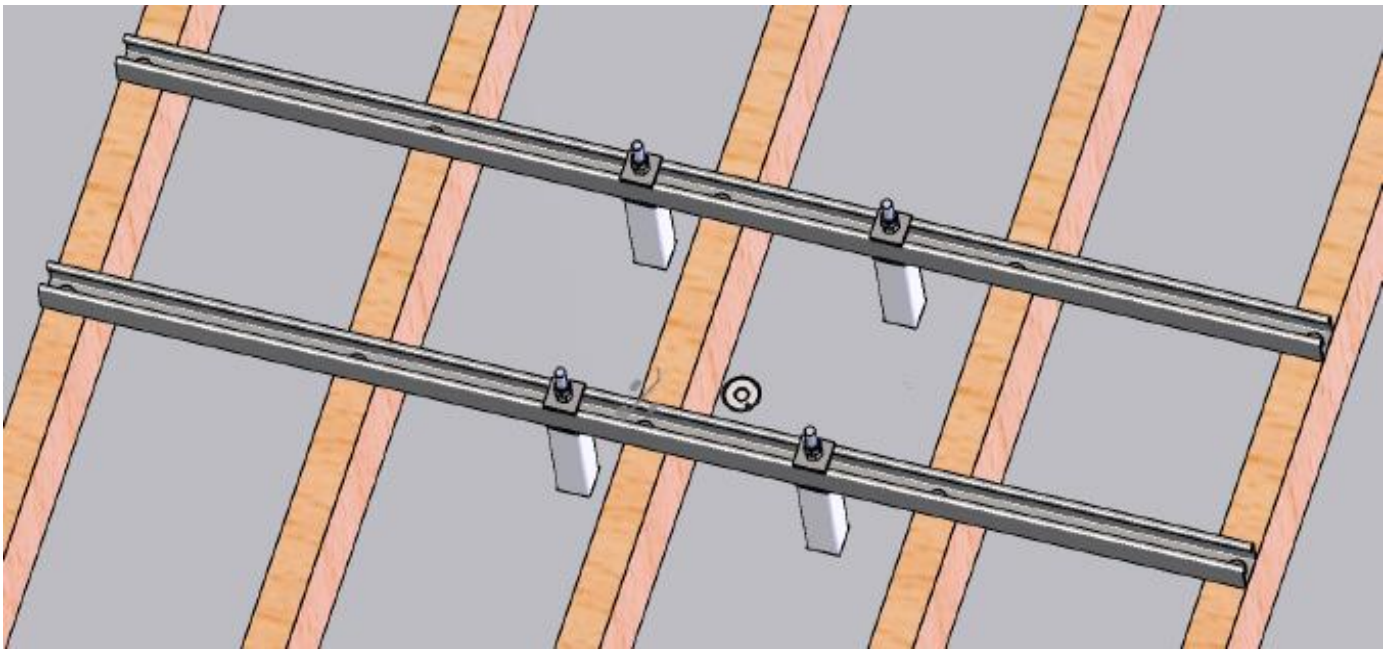
When loft space is available and at least one of the four fixing cannot be fixed directly into a joist, the following method is the best solution for fixing the turntable to the ceiling. For additional guidance along with this section, refer to section 3.2.1 for track installation into timber. Ensure to first refer to section 7.4.1 to align and mark the fixing positions of the turntable.

1. The installer must enter the loft space and locate the holes drilled into the ceiling between the joists.
2. Inspect the loft space for obstacles that may cause an issue to the installation of the steel channel.
3. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
4. See section 3.1.4 for a solution on avoiding obstacles such as piping. (this can be used as a guidance for turntable installation.
5. A piece of steel channel must be cut to length to secure one or two fixing points (depending on the scenario) and span over an additional joist at either end from the fixings. (refer to diagram for reference).
6. When spanning across joists, single steel channel will suffice.
7. Place the steel channel onto the joists directly over the turntable fixing points, refer to section 1.6.7 for information on how to even uneven joists.
8. Repeat step 7 for each fixing point.
9. Under normal conditions, two pieces of steel channel will be required to run parallel, securing one or two fixings each. (refer to diagram for reference)
10. Secure the steel channel to the joist using the 6x60 wood screws and an M6x25 penny washer.
11. Ensure to fix the steel channel at each joist the steel channel is spanning over.
12. A piece of threaded bar must now be cut to length which will suspend the turntable from the steel channel. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
13. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the turntable, this is the ceiling height.
14. Insert the threaded bar through the steel channel, lock the threaded bar off at both ends by placing a fish plate and two half nuts on either side of the steel channel.
15. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
16. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
17. The turntable is ready for mounting.

(note: the turntable should be mounted at the same time as the box section as there is nothing securing the box section in place)

Repeat all relevant steps to fix each turntable fixing points. Ensure the gap between the mounting positions remain 12" (305mm) for successful turntable installation.


A
B
B
A
M12 Nylock Nut
M12 Full Nut
Fish Plate
Steel Channel
Joists
Fish Plate
Steel Channel
6.0 x 60 POZI Screw
M6 Washer
40 x 40 Box Section
Ceiling
Turntable Base Plate
Fish Plate
M12 Half Nut
SECTION B-B
SCALE 1 : 3
SECTION A-A
SCALE 1 : 2



Fixing Method 3 – Ceiling with No Loft Space Available

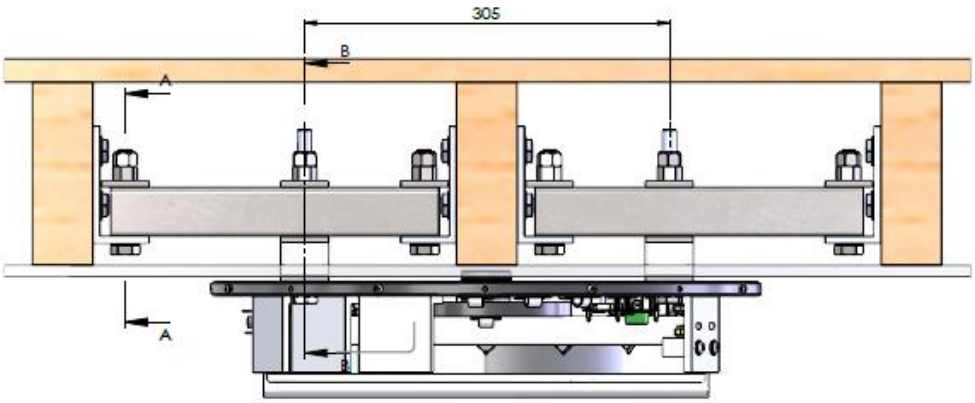
When no loft space is available and at least one of the four fixing cannot be fixed directly into a joist, the following method is the best solution for fixing the turntable to the ceiling. For additional guidance along with this section, refer to section 3.3.1 for track installation into timber. Ensure to first refer to section 7.4.1 to align and mark the fixing positions of the turntable.

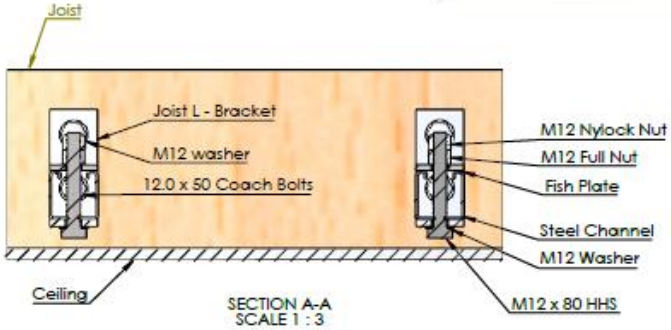
1. The installer must enter the room upstairs and remove the floorboards directly above the turntable fixing points.
2. Inspect the fixing location for any obstacles such as wiring or piping that may cause an issue, ensure to avoid obstacles where possible.
3. Inspect the condition of the joists, ensure they are suitable and no damage that may cause an issue to safety or function to the joist is present. (e.g. Rotten, cracked)
4. On the inside of the joists, joist hanger brackets are used to fix a bridging steel channel.
5. On both joists, pilot holes must be drilled into the inner face where the joist hanger bracket coach bolts are to be fitted. Using the profile of the joist hanger bracket to locate the correct fixing point, drill two holes for each bracket a depth of 1.97" (50mm) and a diameter of 8mm.
6. Once the first joist hanger is marked out, use a laser to perfectly align the opposite joist hanger position and drill the pilot holes.
7. Secure the joist hangers into position on the inner joist face using the given 12.0x50mm coach bolts.
8. A piece of steel channel can now be cut to length to bridge between the two joist hangers.
9. When spanning between two joists, single steel channel will suffice.
10. Place the steel channel onto the joist hangers.
11. The steel channel can be secured by placing an M12x80 bolt through the bottom of the joist hanger and through the steel channel. (ensure to place an M12 washer onto the bolt first)
12. Secure the bolt to the steel channel using a fish plate and two half nuts.
13. A piece of threaded bar must now be cut to length which will suspend the turntable from the steel channel. Each threaded bar will vary in length depending on the joist and ceiling height. Ensure to allow additional thread for the fixings.
14. A piece of 40x40 box section must be cut to length to fit from the bottom of the steel channel to the top face of the turntable, this is the ceiling height.
15. Insert the threaded bar through the steel channel, lock the threaded bar off at both ends by placing a fish plate and two half nuts on either side of the steel channel.
16. From the centre of the ceiling fixing hole, the 40x40 box section profile must be cut out.
17. Place the box section through the ceiling and onto the threaded bar, the box section should become flush with the steel channel and the ceiling.
18. The turntable is ready for mounting.

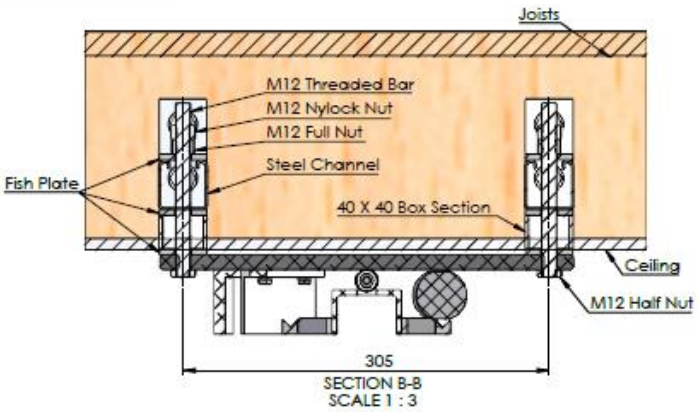
(note: the turntable should be mounted at the same time as the box section as there is nothing securing the box section in place)

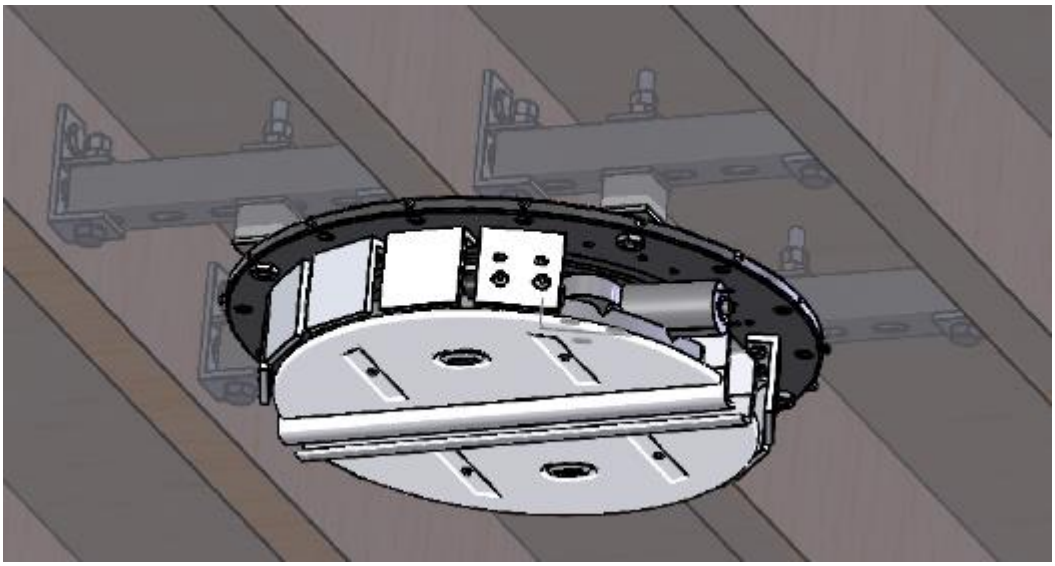
Repeat all relevant steps to fix each turntable fixing points. Ensure the gap between the mounting positions remain 12" (305mm) for successful turntable installation.

Below is a typical example of a turntable being fitted using this method in combination with fixing directly to the joists.


305
B
A
A


Joist
Joist L - Bracket
M12 washer
12.0 x 50 Coach Bolts
M12 Nylock Nut
M12 Full Nut
Fish Plate
Steel Channel
M12 Washer
M12 x 80 HHS
Ceiling
SECTION A-A
SCALE 1 : 3


Joists
M12 Threaded Bar
M12 Nylock Nut
M12 Full Nut
Steel Channel
Fish Plate
40 X 40 Box Section
Ceiling
M12 Half Nut
305
SECTION B-B
SCALE 1 : 3

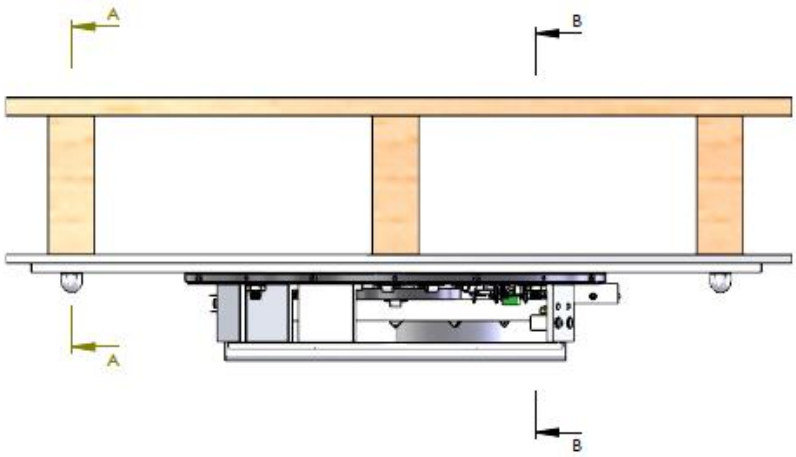


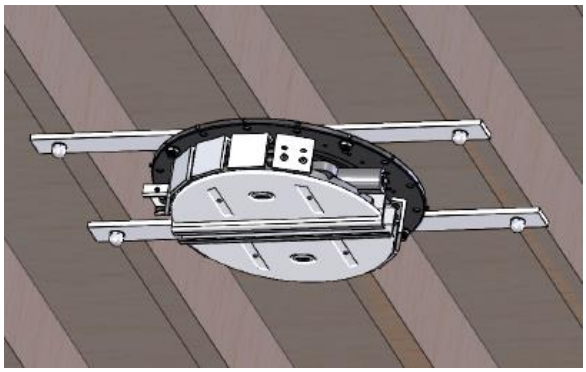
Fixing Method 4 – Ceiling with No Access to Joists

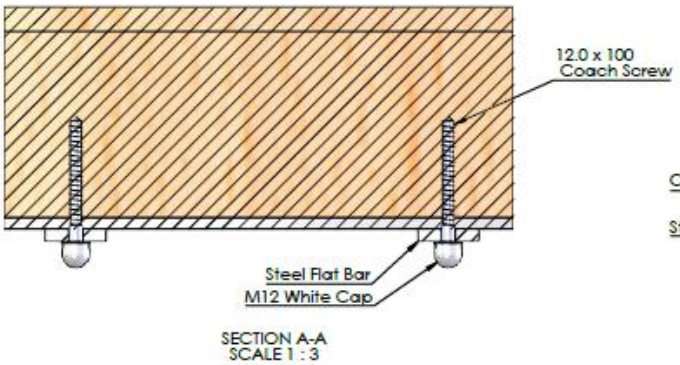
When there is no access to the joists above and at least one of the four fixing cannot be fixed directly into a joist, the following method is the best solution for fixing the turntable to the ceiling. For additional guidance along with this section, refer to section 3.5 for track installation into timber. Ensure to first refer to section 7.4.1 to align and mark the fixing positions of the turntable.

1. From section 7.4.1, the turntable fixing location has been determined. From here the centre of the two joists either side of the turntable fixing location should be marked out.
2. Use a laser to ensure that the two joists are marked out horizontally.
3. Drill out the two joist positions with a 6mm diameter drill bit to a depth of 90mm.
4. A piece of steel bar must be cut to length to be fixed to the ceiling between the joists.
5. Once the steel bar is cut, the two fixing positions must be marked out and drilled to 12.5mm.
6. The marked-out position of the turntable fixing must also be drilled out from the steel bar.
7. Place the M12x45 bolt through the centre hole of the steel bar from its top face. (the bolt head will sit inside the ceiling)
8. The M12x45 bolt is what the turntable will be fitted to during mounting.
9. Place the steel bar up onto the ceiling and secure using the 12x100 coach bolts.
10. When the turntable requires fixings directly into the joist, it will share the same fixing point as the steel bar, they can both be secured during turntable mounting.

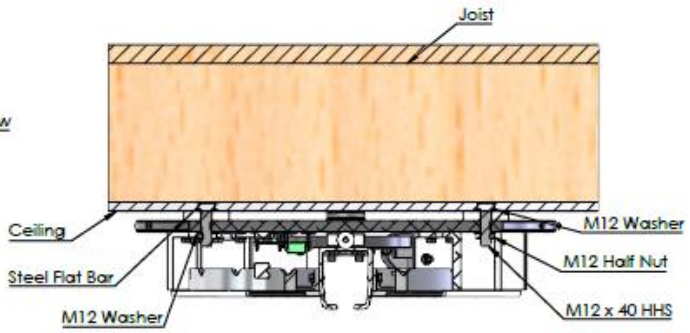
Repeat all relevant steps for all turntable fixings, ensure the gap between the fixings remain 305mm for successful turntable mounting.







SECTION A-A
SCALE 1 : 3



SECTION B-B
SCALE 1 : 4

7.5 Mounting the Turntable onto the Fixings

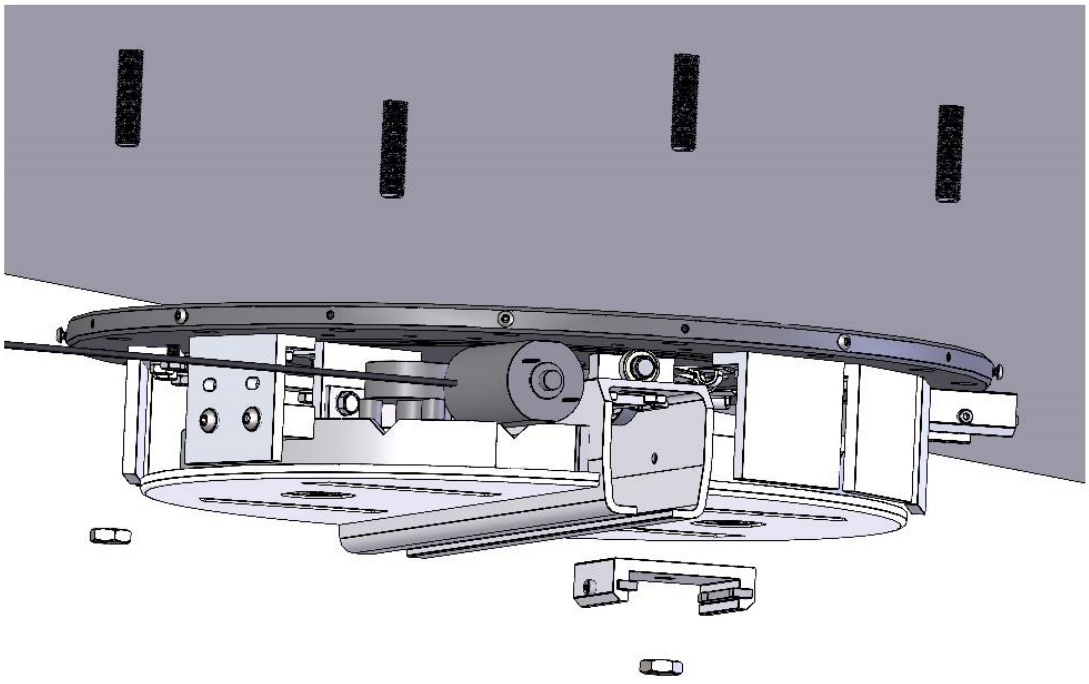
The section below will instruct the correct method of mounting the turntable onto the fixings. See previous sections to mark out a location and install the turntable fixings, this is essential before attempting to mount a turntable to the ceiling.
There are two methods of fixing the turntable to the ceiling, this is dependent on the fixings used previously. The turntable is either fixed to the threaded bar or is fixed to the joist using a coach bolt.

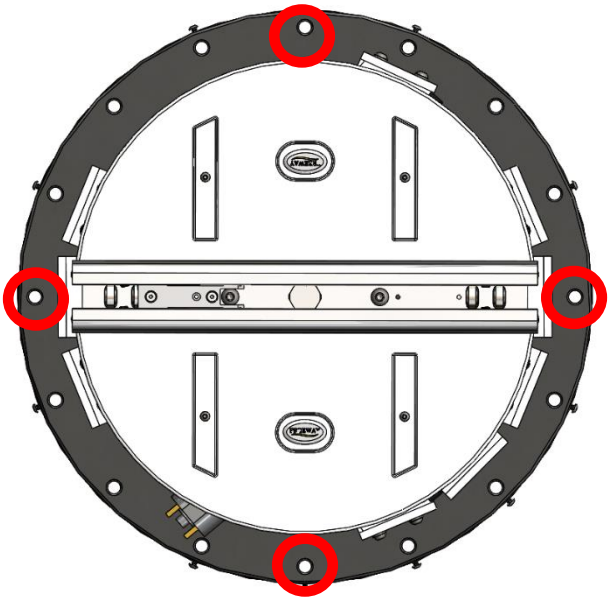
As explained in section 7.2, the turntable will be fitted into 4 mounting holes in the base plate. These fixings must be parallel and opposite to each other. It is usually preferred to fix the turntable directly to the base plate fixings, but this is not always possible due to the locations of the track brackets, these can clash with the fixing point, depending on where the take-off tracks are required. When this occurs, the fixings must also pass through the track brackets.

7.5.1 Mounting the Turntable onto the Threaded Bar

This section will explain the method of fixing the turntable directly to the threaded bars.

1. Place a half nut onto the thread of each threaded bar up into the ceiling, this should be above the height of the turntable installation.
2. The turntable fixing points must be drilled out using a 12mm dill piece to remove the thread on the base plate.
3. The turntable can be raised up to the ceiling in its desired orientation, (this should have been pre-determined due to where the runoff track positions have been installed) and placed onto the threaded bar fixing points.
4. Place the turntable up against the ceiling.
5. The ceiling may be causing an obstruction to the bearing in the centre of the turntable. If this occurs, a circle of material must be removed from the ceiling, 1.77" (45mm) in diameter and 0.39" (10mm) in depth. This will allow the turntable to fit flush onto the ceiling.
6. When the ceiling is not level, shim washers can be placed onto the threaded bar between the ceiling and the base plate to level the turntable out.
7. Secure the turntable by tightening an M12 half nut onto the threaded bar below the base plate.
8. When the fixing has been placed through the track bracket, an M12 half nut is essential to allow track installation later.
9. Tighten the pre-installed (step 1) half nut to the top of the base plate, this nut will fit within the ceiling.
10. With both half nuts installed either side of the base plate, the turntable cannot move.

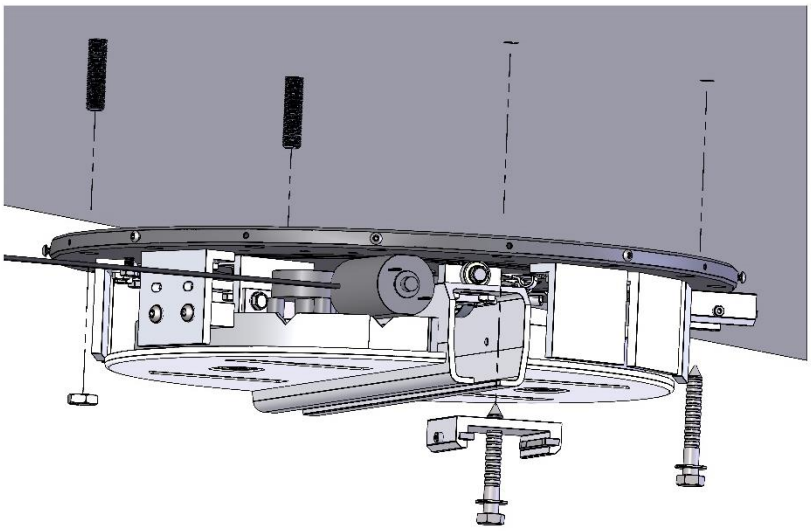




7.5.2 Mounting the Turntable directly to the Joist

When the turntable fixings points are to be fixed directly into the joist above. Threaded bar cannot be used to fix the turntable. Coach bolts are the recommended solution. As instructed in section 7.4.2 – method 1 fixing, the fixing points in the joist should have been determined and drilled to 6mm diameter and 90mm deep.
When there are a mix of direct joist fixings and threaded bar fixings, follow section 7.5.1 to mount the turntable onto the threaded bar fixings first, then proceed to mount directly onto the joist.

1. The turntable fixing points must be drilled out using a 12mm dill piece to remove the thread on the base plate.
2. Align the turntable fixing holes with the pre-drilled holes within the joist.
3. Ensure that the turntable is aligned in its desired orientation, (this should have been pre-determined due to where the runoff track positions have been installed).
4. The ceiling may be causing an obstruction to the bearing in the centre of the turntable. If this occurs, a circle of material must be removed from the ceiling, 1.77" (45mm) in diameter and 0.39" (10mm) in depth. This will allow the turntable to fit flush onto the ceiling.
5. When the ceiling is not level, shim washers can be placed between the ceiling and base plate fixing points to level the turntable out.
6. Secure the turntable directly to the joist by screwing in coach bolts through the mounting holes and into the joist fixing locations.
7. The coach bolts must be fixed flush against the base plate, with a washer in between.
8. The coach bolt can also be used when fixing through a track bracket.



7.6 Setting up a Turntable for Installation

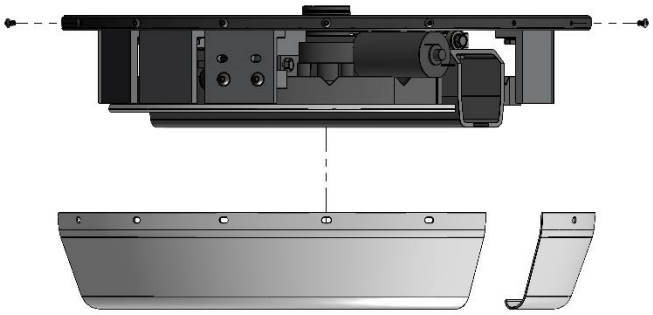
For each installation of a turntable, the setting up will vary, this will also depend on whether a powered turntable or a manual turntable is used. As mentioned previously, the manual provides a maximum of 14 track runoffs and the powered provides 10.
Depending on the number of tracks linked to the turntable for installation, a set-up is required for the install.

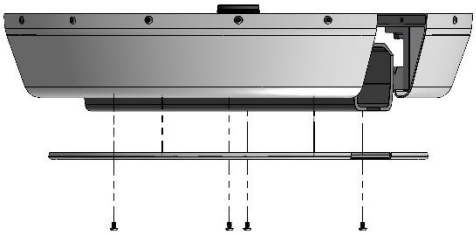
7.6.1 Removing the Covers

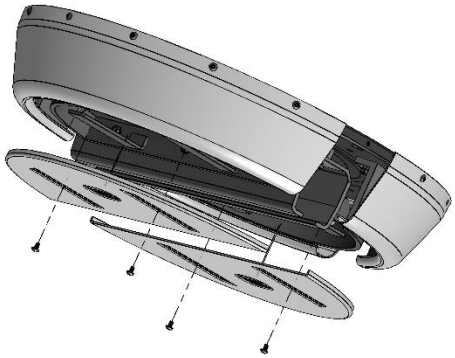
To gain access to the internals of the turntable, the covers must be removed. Follow the procedure below to remove the covers from the product.

1. Using a 2.5mm Allen key, remove all the fixings around the external cover. Ensure to grab the screw and the washer.
2. To remove the bottom covers, use a 2.5mm Allen key to release the four screws and washers.

Refitting is a reversal of the removal process.





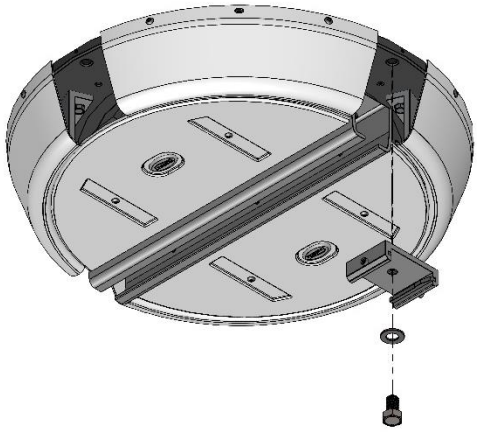


7.6.2 Fixing the Track Brackets

For a turntable a single 55mm unthreaded track bracket must be used. Fix a track bracket at all locations where a track is intended to link with the turntable.

1. Align the track bracket with the mounting hole on the base plate. Ensure that the track bracket is aligned in the correct orientation to allow the track to be fitted in its intended direction.
2. Place an M12 bolt through the track bracket and into the mounting hole.
3. Ensure to place a washer in between.

Removal is a reversal of the fitting process.



7.6.3 Adjusting the L-Brackets

The L-brackets must be fitted at all mounting positions where a track bracket has not been installed. This is to stop a ceiling lift from traversing of the turntable. The follow the process will instruct on how to remove and fix a turntable L-bracket.

1. Using a 10mm spanner, remove the two bolts securing the L-bracket to the base plate. Ensure to grab the washer also.
2. To fit an L-bracket, ensure that the bracket is fitted in the correct orientation. See images below.

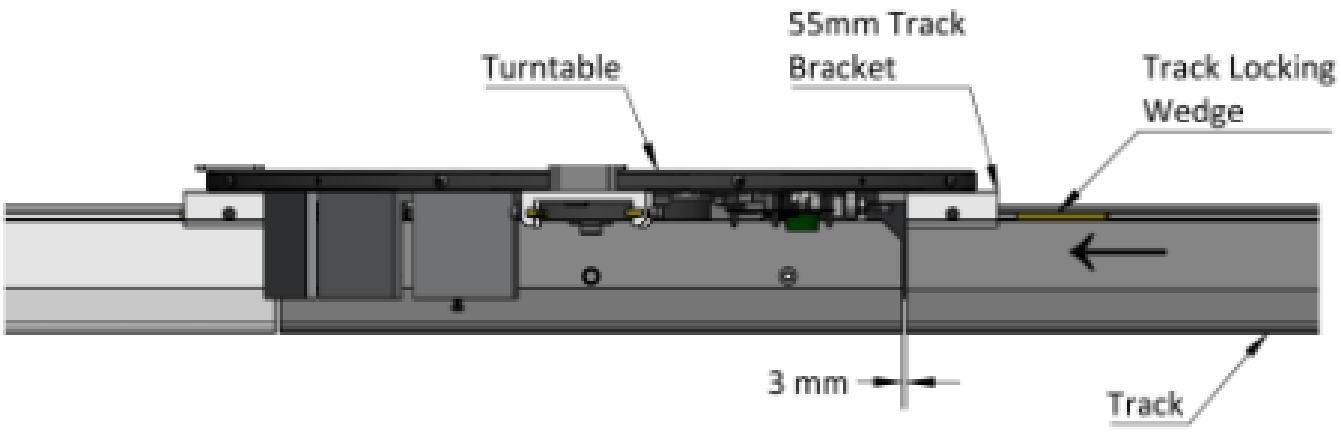
7.7 Aligning the Runoff Tracks with the Turntable

The track can be installed onto the track bracket in the same fashion as described in section 8.0 – ceiling track fixing. Along with that guidance, ensure to follow the additional information below that are specific to the turntable and will overrule section 10.0

When fixing the ceiling track systems around a turntable, it is critical to remember that the turntable track will be 12mm lower in height than the standard installation height of a ceiling track. Therefore, the ceiling track system must be lowered in height. Follow the process below to align runoff tracks.

Ensure that the turntable has already been set up correctly for the install, see section 7.6.

1. As the turntable track height is 0.47" (12mm) lower than a standard ceiling track installation. When installing the standard ceiling track, place 0/47" (12mm) nylon spacers between the ceiling and the track bracket to remove the height difference. If the ceiling is not level, refer to section 1.6.3.
2. When fixing the ceiling track system, the turntable must be used as a reference fixing point to ensure that the ceiling track system will align with the positioning of the turntable.
3. Fix the track onto the turntable track bracket as described in section 10.0
4. The ceiling track systems that are fixed to the turntable track brackets must be aligned as close to the turntable track as possible, there should be between 0.12" (3mm) gap between the tracks to allow the rotating turntable track to rotate without making contact, the gap should be no larger for the safety of the track transition.
5. The ceiling track can be adjusted within its fixing in the track by loosening the M3 screws in the bracket, there is no need to remove the wedges.
6. Once the tracks have been aligned, the turntable fixing has been completed.



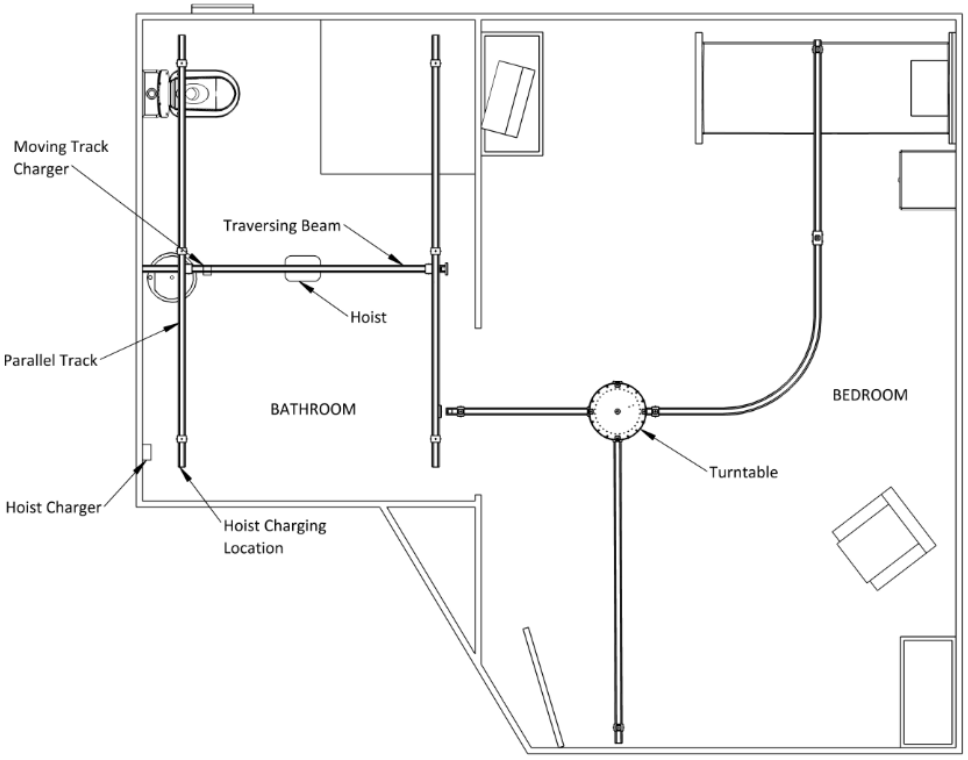
8 H-System Installation

The h-system consists of three ceiling tracks, two of which are installed onto the ceiling in a parallel fashion while the third is spanning between the two tracks and is able to traverse along the length of the fixed tracks. The third track is fitted onto h-system trolleys on both fixed tracks.

The h-system has two options, this includes a manual h-system and a powered h-system.

The manual h-system is required to be manually traversed along the parallel tracks by the end user. The user does this by pulling on the ceiling lift carry bar in the direction they wish to traverse.
The powered h-system is driven using the ceiling lift handset, the ceiling lift handset is provided with traversing buttons which traverse the h-system back and forth along the parallel tracks.

Depending on the track type used, and the safe working load applied to the system, the maximum spanning distances will vary. See section 1 for track spanning distances.



The h-system is compatible with all track types supplied by prism. This is excluding track bends. The h-system allows the user to be transferred anywhere along the “h” cross sectional area. Allowing much more freedom.

An h-system can be designed to transfer between rooms, where doorways can be opened up and walls can be modified. Walls and doorways must be modified by a qualified builder. For further information on building modifications, refer to section 1.7. See the image below for an example of a two-room h-system.

8.1 Fixing the Parallel Tracks

For the correct procedure on fixing the parallel ceiling track, refer to the relevant ceiling track bracket and fixings installation process. This will depend on the type of material the h-system is being installed into. For concrete refer to section 2.0, for timber, refer to section 3.0.
Once track brackets have been installed, refer to section 8.0 for track installation.

When fixing the two-parallel track for an h-system, there are a few additional factors to consider:

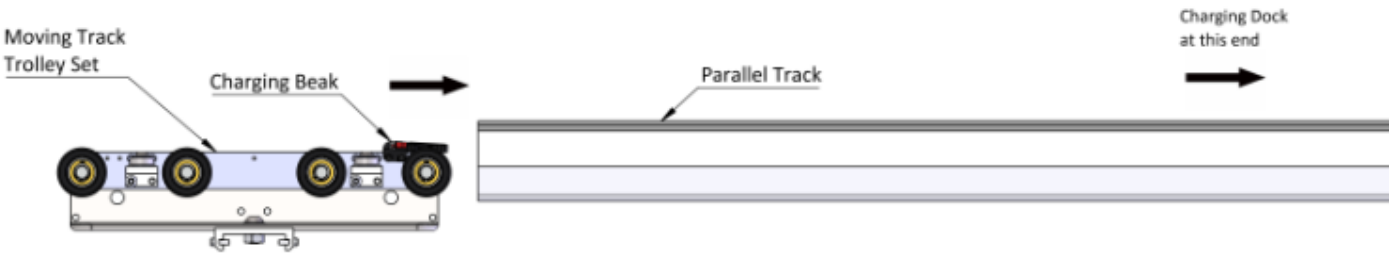
The first factor that is essential for the function of the h-system is that the two tracks are perfectly parallel, this is important as the moving track in between jam if the distance between the two fixing where to increase or decrease along the system. It is also important to leave at least 9.84" (250mm) between one parallel track and the side wall to allow easier removal of ceiling lift for servicing.

The second factor is the distance between the two parallel tracks. As the moving track will only be fixed to the two parallel tracks, the maximum span of the track must be considered. The moving track, track type must be considered depending on the spanning distance between its two fixings, and the chosen SWL to be applied to the track. See section 1 – straight track fixing requirements to ensure that the maximum span of the chosen track type is not exceeded.

Once the positions of the track system have been determined, the room must be assessed for obstacles. Refer to section 1 on ceiling track room assessment to ensure that the fixing of tracks is suitable. In addition to this, the following point must be considered: ensure that no obstacles will cause an issue to the fixing of the moving track between the two parallel, this can include obstacles such as projectors, low hanging light fixings etc. A clear traversing path must be available for the h-system.

Another factor to consider are the h-system trolleys. The trolleys must be placed into the parallel tracks, during some cases of fixed track installation, the track can be fixed from one end of the room to the other, not allowing any space for the trolleys to be inserted afterwards. Always ensure to place the trolley into both parallel track systems before closing the track system off, either against the wall or before placing the end stop, end cap and safety bolt.

The trolley which includes the charging beak, must be align in the direction that the charging dock is fixed. (ensure that the trolley will dock into the charging dock at the chosen docking location)
The other trolley can be inserted into the track in either orientations.



The installation of the h-system charging dock on the parallel track is the same as a typical charging dock would be. Refer to section ceiling lift installation manual for parallel track charging dock installation.

8.1.1 Fixing the Charging Beak to the Trolley

One of the two trolleys will require the charging beak to be assembled onto the trolley. This trolley will be inserted into the parallel track where the (parallel) charging dock is located. To fix the charging beak, follow the procedure below:

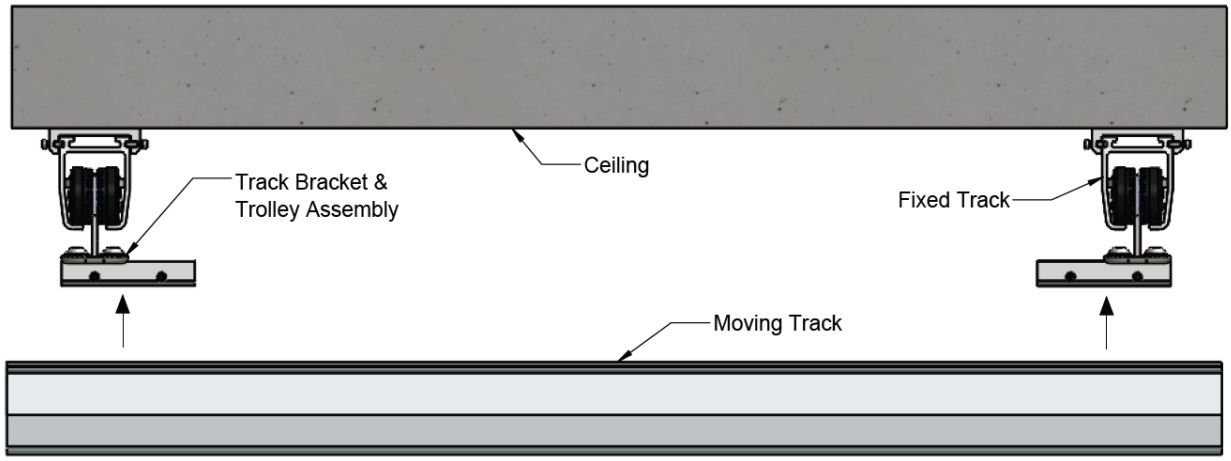
1. Align the beak with the trolley fixing holes facing outward from the trolley centre.
2. Fix the beak using the given screws and secure with the two nyloc nuts on the back face.
3. Route the charging wire to the centre of the trolley and run the wire down the inside face of the trolley. (the face towards the moving track).
4. The wire can be secured by securing the provided cable ties through the fixing holes in the trolley.
5. The (moving track) charging dock can be allowed to hang for now and will be inserted into the moving track once the track is installed.
6. Insert the trolley into the parallel track.

8.2 Fixing the Moving Track

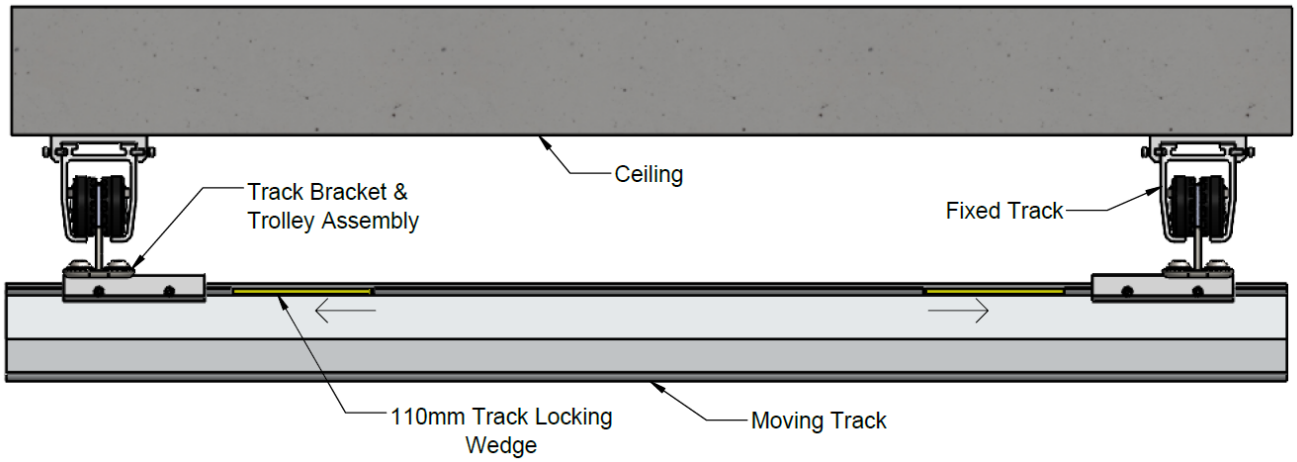
Fixing the moving track onto the trolleys is very similar to fixing a fixed track to a track bracket, other than the fact the trolley is not fixed in place. See below on track installation onto the h-system trolleys.

The single track, double track and heavy-duty track are all installed in the same fashion shown below.

Raise the track and align the top face with the trolley track brackets as shown, ensure that each track bracket aligns perfectly with the track.



Once the track is aligned, the track locking wedges are required to secure the track, a total of four wedges must be fitted, two either side as shown and are inserted in the opposite directions. Once the wedges have been fitted, the two M3 screws on either side of the track bracket must be tightened to secure the track.

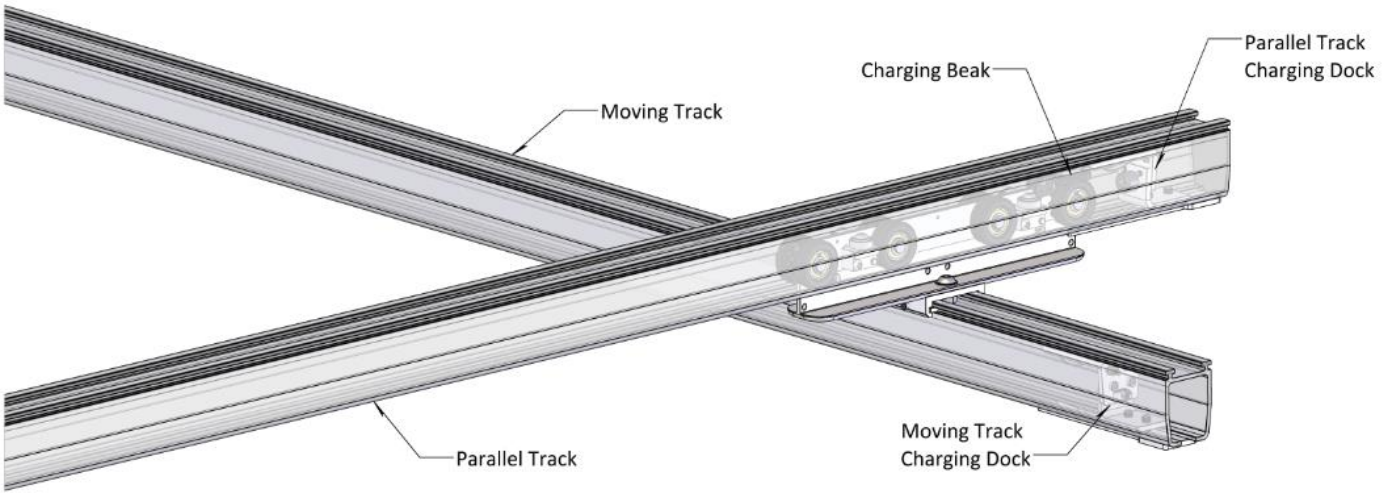


Refer to section 10 for the installation of the end cap, end stops and safety bolt.

8.2.1 Fixing the Charging Dock onto the Moving Track

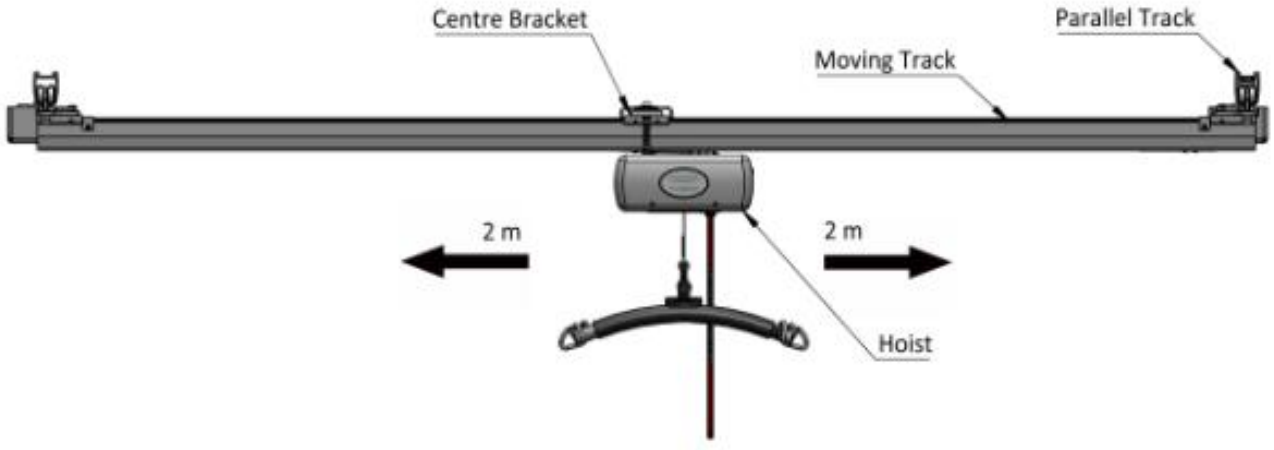
The procedure below will instruct on how to fix the charging dock onto the moving track and how to link the dock with the h-system trolley charging beak. Refer to section 8.1.1 before fixing the charging dock to the moving track.

1. Place the charging dock into the moving track with the dock facing inward.(If ceiling lift variant is QRT or Powered turntable, swop out the moving track charging dock with variant changing dock).
2. Ensure you wire the charger to the Parallel charging dock.
3. Ensure to place the dock at the end of the track where the h-system trolley with the charging beak is located.
4. Secure the dock in place by tightening the bolts. A 5mm Allen key is required.
5. Route the charging wire through the bottom of the track and up to the top face, using self-adhesive retaining clips on the top of the track up towards the trolley.



8.3 Powered H-System

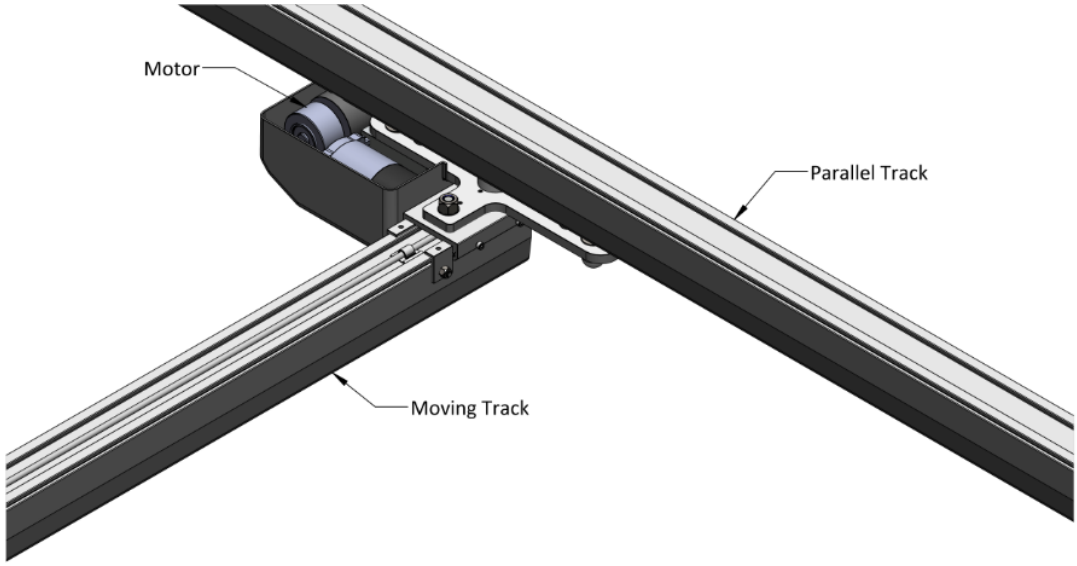
The powered h-system is an option of an h-system that can be driven using the ceiling lift handset, the ceiling lift handset is provided with traversing buttons which traverse the h-system back and forth along the parallel tracks. The powered h-system is only suitable for a 13ft (4m) moving track span, as the ceiling lift cannot traverse further than 2m either side of the centre bracket. The h-system must not allow a larger travel distance for the ceiling lift, this can be ensured by either installing a 13ft (4m) wide h-system or placing end stop 13ft (4m) apart from the centre point of the track.



8.3.1 Powered H-System Additional Fixings

The powered h-system requires additional fixings over the manual h-system, see the fixing methods below for powered h-system.

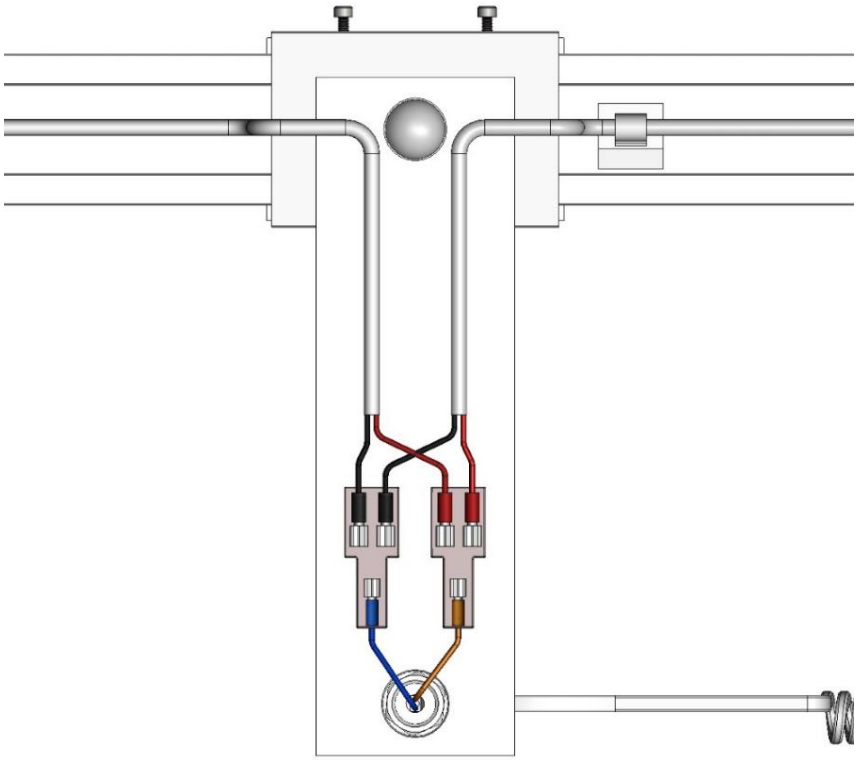
The two trolleys are provided with driving motors to allow the moving track to traverse. The driving motors must be facing inward towards the moving track when installed. This will allow for a wider h-system when installing up against a wall.



The powered h-system will be fitted with a centre bracket which is the connection point for the ceiling lift communications cable and the traversing motors, the bracket is fixed onto the track in the same fashion as a standard track bracket, place the centre bracket at the centre of the moving track, this will allow the maximum traversing distance for the ceiling lift. The top plate on the centre bracket should be orientated to suit the ceiling lift, i.e. The closest orientation to the communications port.

The wires from the two trolley motors must now be routed along the top of the moving track into the connector ports. The wires can be secured on the top face of the moving track using self-adhesive clips.

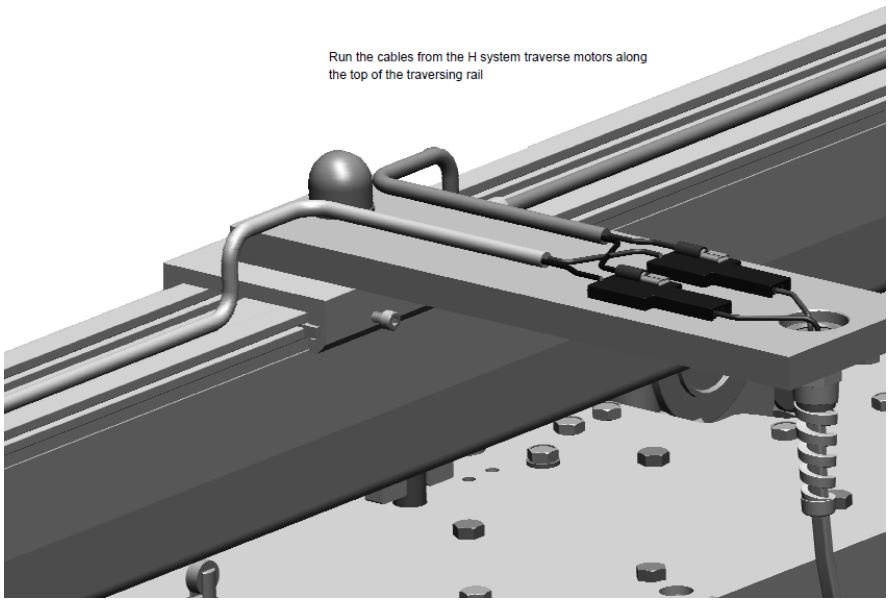
When the motor wires reach the centre bracket, they both split into two connector wires, these will plug into their separate connector ports. The red wires for the individual motors can go into either of the connector ports, while the black will go into the other port, these wires must not be mixed.



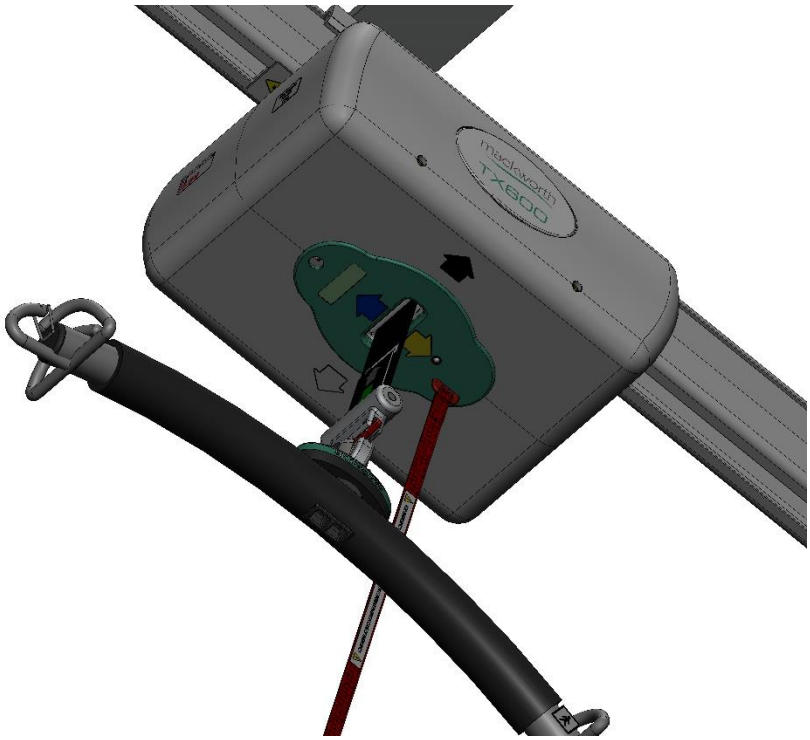
Once the motor wires are plugged into the ports, the ceiling lift can be inserted into the moving track and placed at the centre of the track.

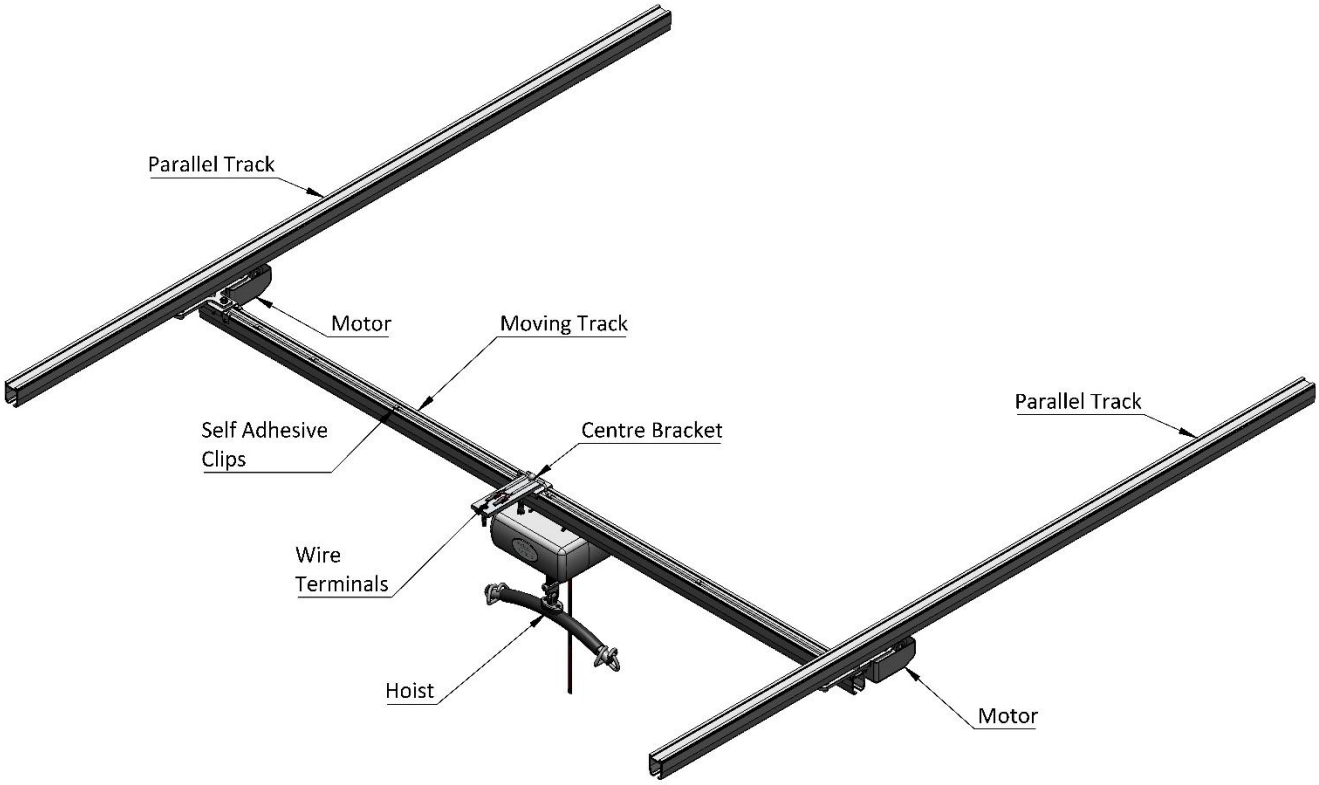
The ceiling lift communications port must be attached to the centre bracket, remove the plastic nut on the communications port and place the port through the centre bracket fixing point, secure the port by reattaching the plastic nut onto the port.

The communications port wire splits into two connectors, attach the brown wire to the red wire connector port, and the blue wire to the black wire connector port. See the image above.



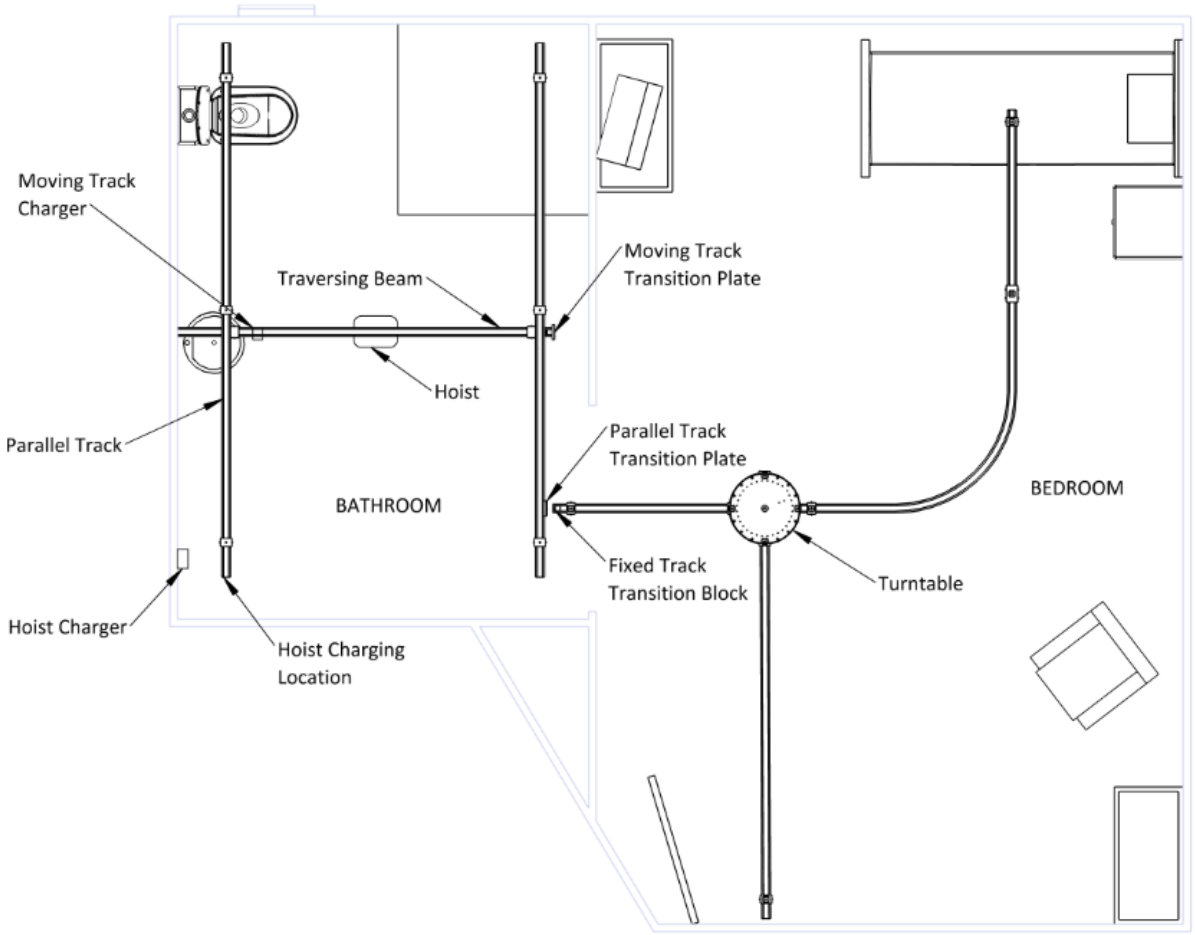
On the underside of the ceiling track ceiling lift, there will be a black and white arrows showing the direction of travel for the moving track, these arrows should correspond with the ceiling lift handset activation, ensure that when the handset is operated, the powered h-system will traverse in the correct direction.


mackworth
TX6000


Parallel Track
Motor
Moving Track
Self Adhesive Clips
Centre Bracket
Parallel Track
Wire Terminals
Hoist
Motor

9 Transition Gate Installation

The transition gate provides a means to transition from an h-system to a separate fixed track system as shown in the image below. The transition gate allows a safe transition between two tracks as the locking end stops fitted to both tracks will only open once the two tracks have properly aligned and locked together. The transition gate provides additional freedom of movement for the user as they can transition from one track system to another.



To install a transition gate, two types of track systems must be installed, this includes the h-system and a fixed track system. Refer to section 8.0 for h-system installation and 2.0 for fixed track installation into concrete or 3.0 for fixed track installation into timber.

While referring to the referred sections, additional information must be considered when a transition gate is intended to be installed. See the details below.

The location where the transition gate is fitted must be observed and ensure that no obstacles are preventing installation. To avoid an obstacle, the installation of the h-system must be considered with the transition gate in mind, the moving track of an h-system is not permitted to overhang further than 80mm from its final fixing when fitting a transition gate. Therefore, ensure that there are no obstacles within the vicinity of the overhanging track and fixed track for safe installation.
The moving track is required to have an overhang of 85mm from its trolley fixing to allow the transition blocks to lock in place.

When installing a transition gate, the obvious important factor is to ensure that the h-system moving track and the fixed track align with each other perfectly to allow a transition to take place.
It is recommended but not required for the h-system to be installed prior to the fixed track for simpler installation. It is required that the fixed track is within 3.39-3.43" (86-87mm) of the h-system parallel track to ensure that the spanning track does not overhang further than permitted.

It is also required that the fixed track does not overhang further than 4.92" (125mm) from its final fixing. This is to ensure that no deflection occurs when traversing a ceiling lift between the two tracks. For additional stability, the single track is required to have a second track bracket no more than 17.7" (450mm) from the first bracket.

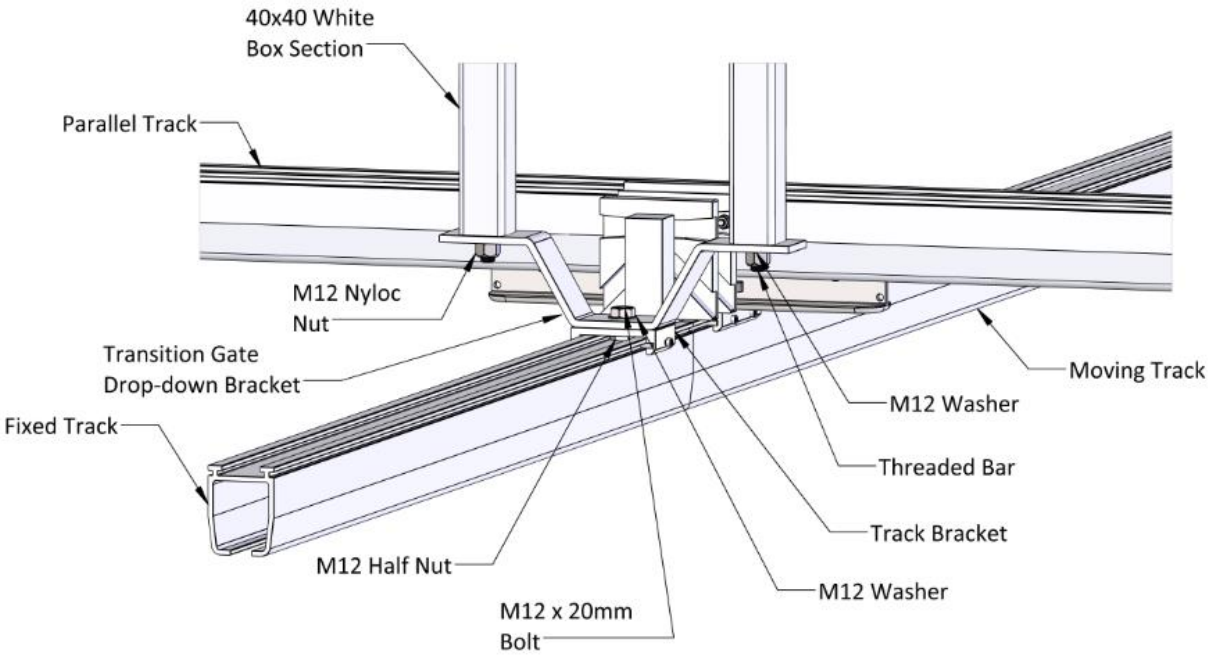
Depending on the track types used for the h-system, including the parallel and moving track, the height of the fixed track must be lowered to suit. This will require white box section as described within the fixing method.

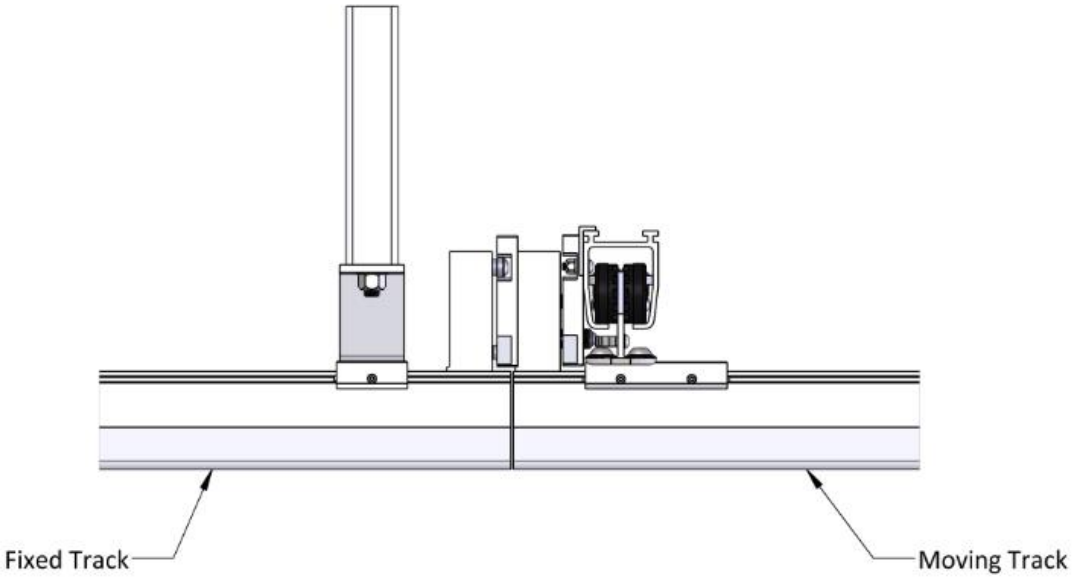
When installing a transition gate with a fixed single track and a moving single track, you will require the transition gate kit – 100054.
When installing a transition gate with a fixed single track and a moving heavy duty track you will require the heavy duty transition gate kit – 100070.
The assembly of these two kits vary slightly, see section 9.1 for assembly details.

An additional requirement for fixed lowered track regarding transition gates, is the fixing method of the first fix point. The first fixing will require a transition gate drop-down bracket to provide additional stability and strength against lateral movement. Follow the process below for the installation process of this fixing.

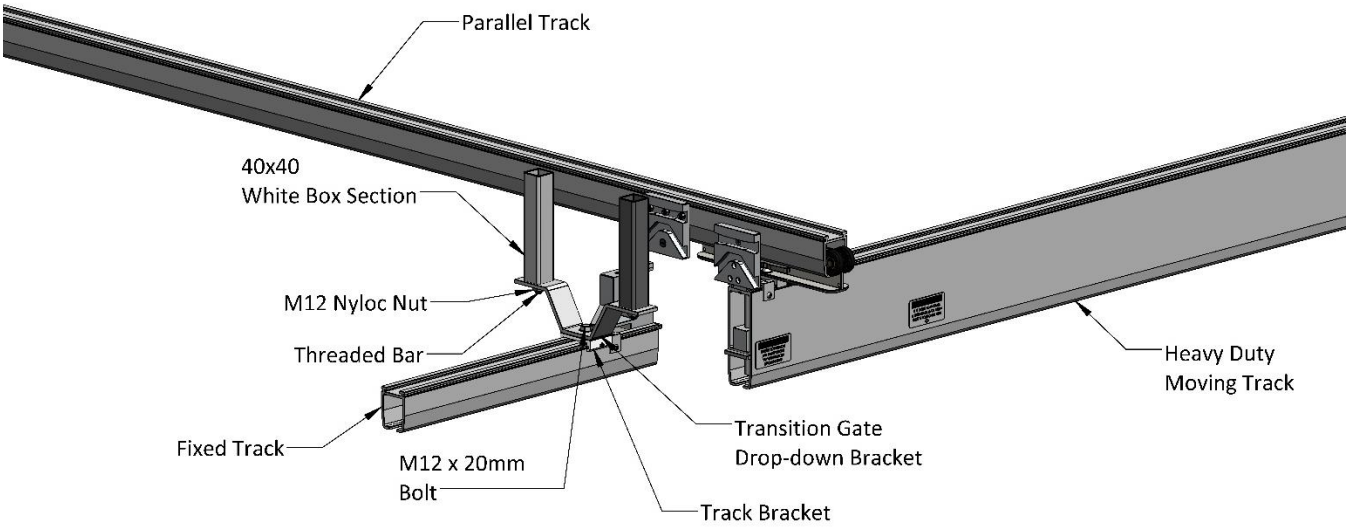
1. Following the standard fixing method required to fix the fixed track to the ceiling, e.g zykon, threaded bar, two fixing points 9.45" (240mm) from each other (centre to centre) are required to be able to fix the drop-down bracket.
2. Two pieces of white box section (following the lowered track requirements) must be cut to length between the concrete/timber/steel fixing point and the drop-down bracket height requirement.
3. Place the white box section onto the threaded bars.
4. Place the drop-down bracket flush against the box sections, securing below with an M12 washer and nyloc nut at both fixing points.
5. Secure the track bracket to the drop-down bracket using an M12x20 bolt with a washer on the drop-down bracket upper face.
6. Ensure to secure the bolt using Loctite 270, and place a half nut under the track bracket.

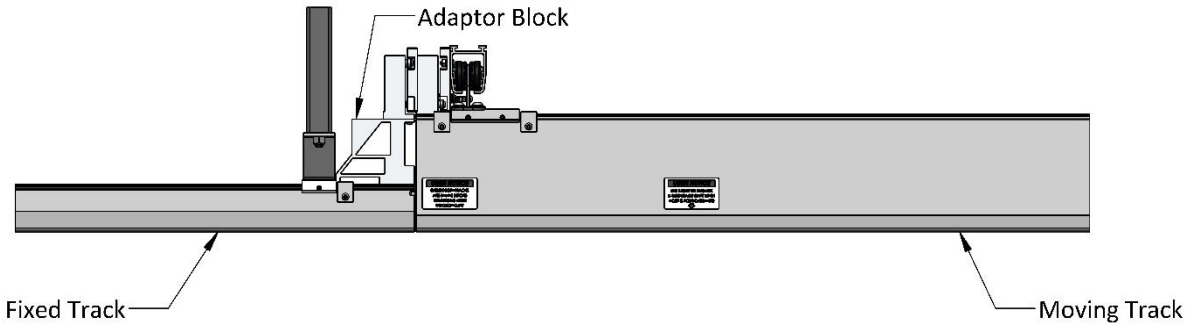
Single Track Transition Gate Installation



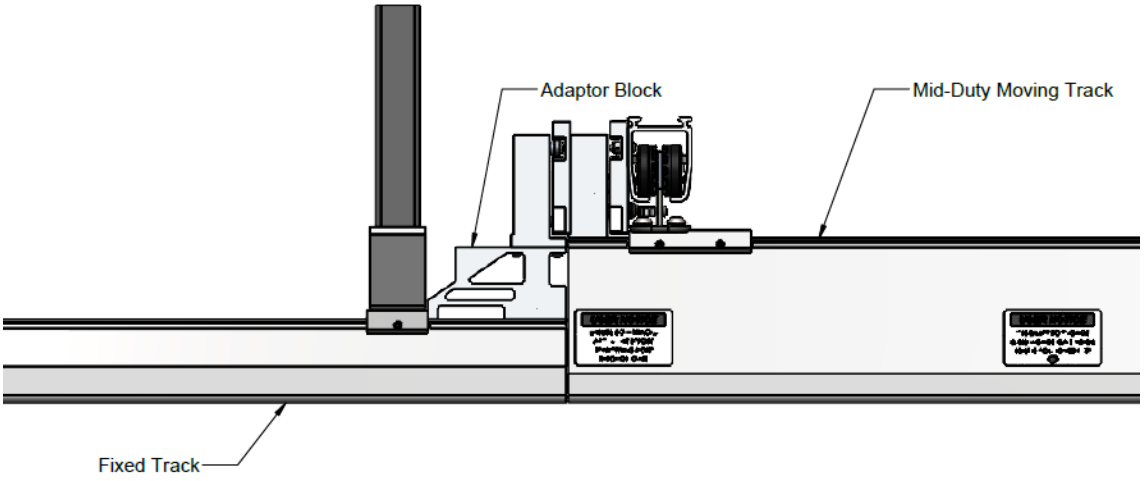


Heavy-Duty Track Transition Gate Installation





Mid-Duty Track Transition Gate Installation



During the alignment process of the two systems, the following point must be ensured:
The fixed track position can be altered as long as the final track bracket is within 125mm from the transition.
Adjust the track by loosening the two M3 screws on either side of the bracket to ensure that there is a transitioning gap of **no less than 0.04" (1mm) and no more than 0.08" (2mm)** between the two tracks.
Once both systems track brackets have been installed, the h-system parallel track may be fitted to the ceiling following section 10.0 on track installation.

Before fixing the moving track and the transitioning fixed track, the transition gate assembly must be fitted to the tracks.

When an h-system includes a transition gate, it is essential that the charging dock assembly is placed at the opposite end of the track system. See the image above for reference.

Key Factors of a Transition Gate:

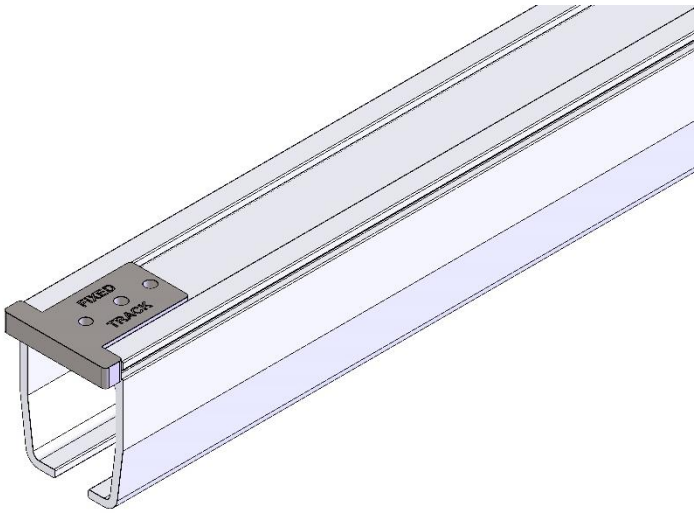
- Used to transition from an h-system to a fixed track system.
- Moving track must have an 3.35" (85mm) overhang from fixing. (to allow transition gate to function)
- Fixed track must not overhang further than 4.92" (125mm) from final fixing.
- The fixed track requires a second track fixing no more than 17.7" (450mm) from the final fixing.
- The transition gap between the two tracks must be no less than 0.04" (1mm) and no more than 0.08" (2mm).
- Fixed track must be lowered to suit the height of the moving track.
- The fixed track first fixing point requires a transition gate drop down bracket for additional stability.

9.1 Fixing the Transition Gate

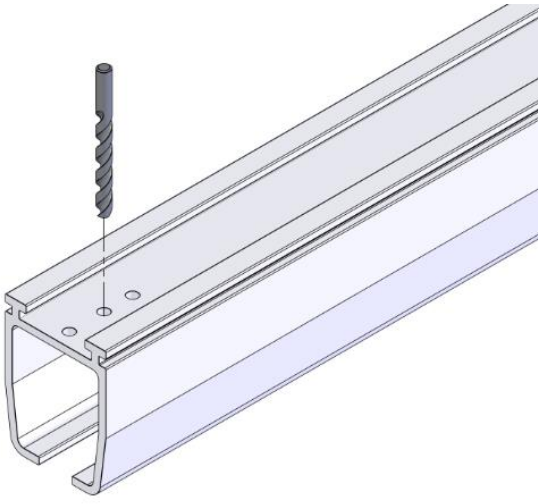
See below the assembly instructions of the transition gate onto the three tracks. Follow each step in sequence to ensure correct assembly.

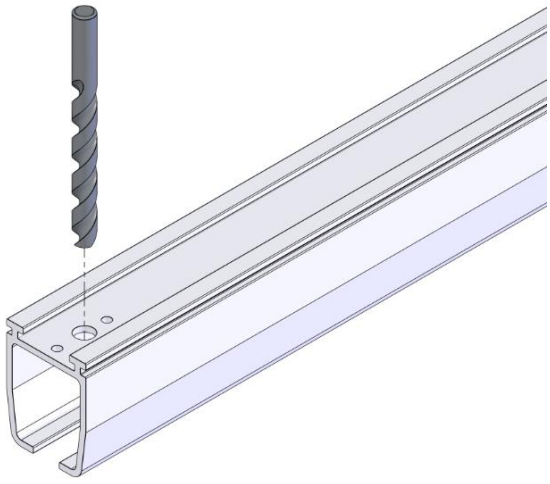
9.1.1 Fixed Track Transition Gate Assembly (Standard Transition Gate)

Starting with the fixed track piece, a template piece with “fixed track” engraved onto it must be placed on the top of the track as shown in the image below.



Using a marker pen, mark out the three holes from the template piece. Proceed to drill the three holes using a 6mm drill bit for the two outer holes and a 13mm drill for the centre hole.



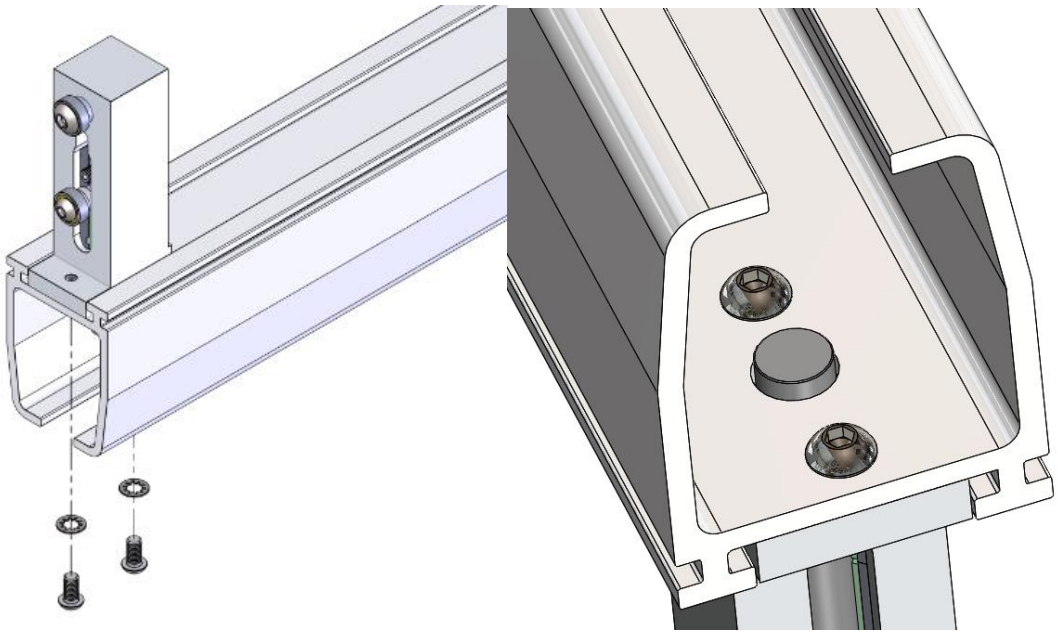


Using a combination between a file and a deburring tool, tidy up all the drilled holes.

Align the fixed track transition gate block with the drilled holes, the safety bolt should be placed through the 13mm hole. See image below for correct orientation.

Secure the fixed track transition block using the given M6 screws and washers, these should be fitted inside the track as shown using a 4mm Allen key.

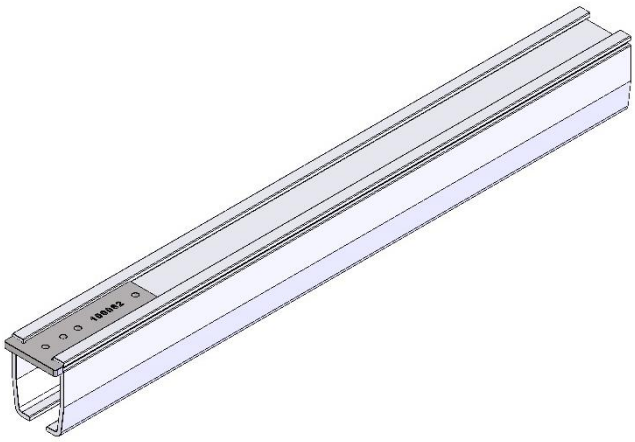
The fixed track transition gate block is now fitted onto the fixed track.



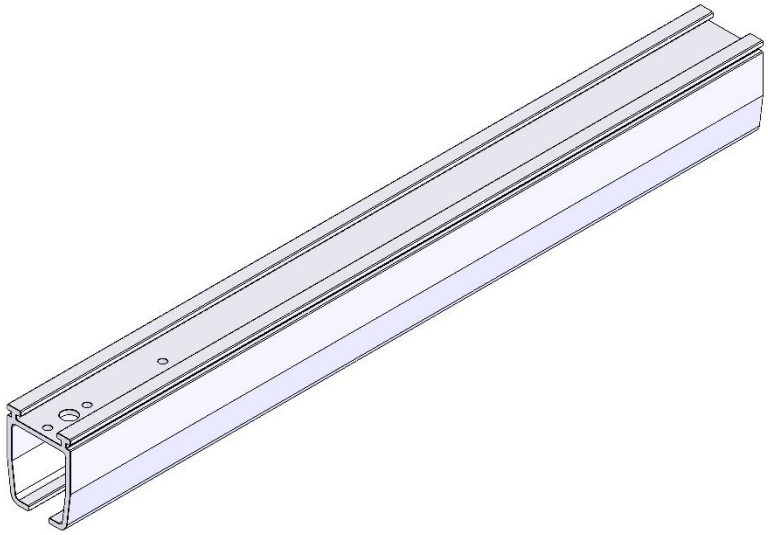
The fixed track can be installed onto the ceiling following the track installation section. Refer to section 10.0

9.1.2 Fixed Track Transition Gate Assembly (Mid-Duty & Heavy Duty Transition Gate)

Starting with the fixed track piece, a template piece with “100062” engraved onto it must be placed on the top of the track as shown in the image below.



Using a marker pen, mark out the four holes from the template piece. Proceed to drill the first, third and fourth hole using a 6mm drill bit, the second hole must be drilled to a diameter of 13mm.

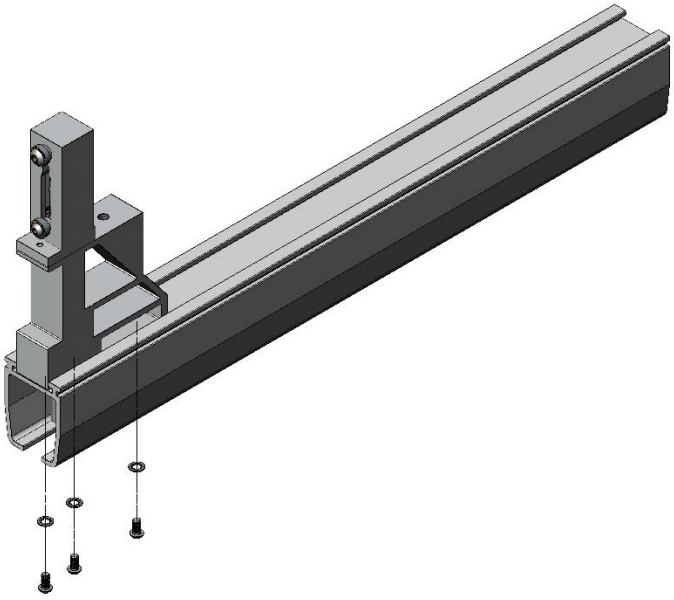


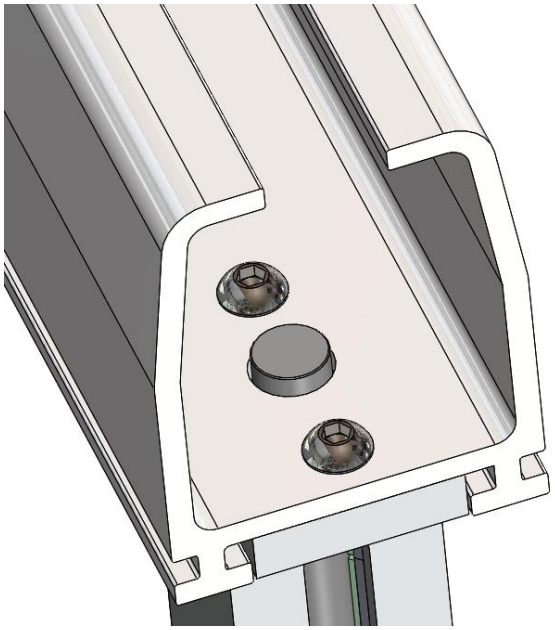
Using a combination between a file and a deburring tool, tidy up all the drilled holes.

Align the fixed track transition gate block with the drilled holes, the safety bolt should be placed through the 13mm hole. See image below for correct orientation.

Secure the fixed track Mid-Duty and heavy duty transition block using the given M6 screws and washers, these should be fitted inside the track as shown using a 4mm Allen key.

The fixed track Mid-Duty and heavy duty transition gate block is now fitted onto the fixed track.

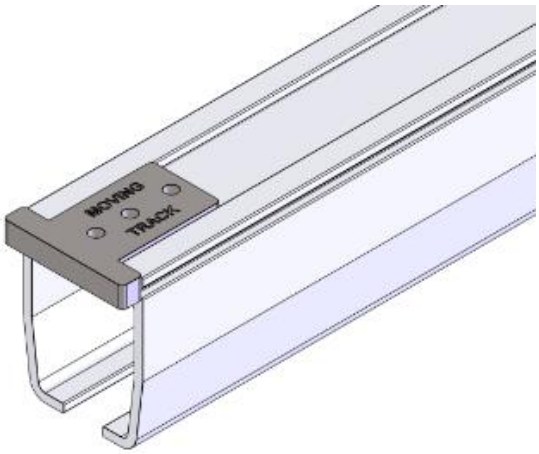




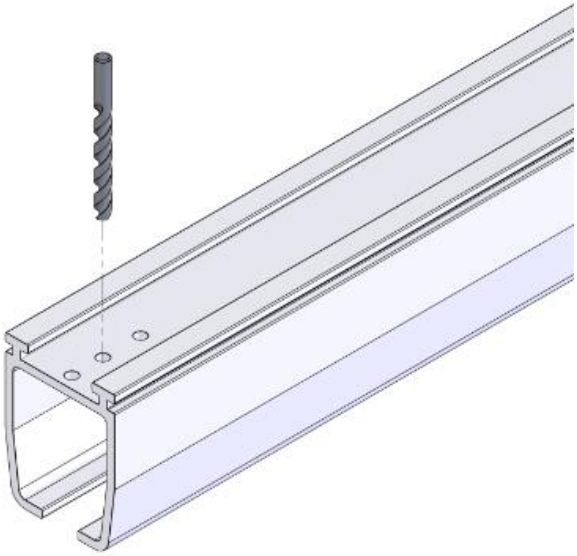
The fixed track can be installed onto the ceiling following the track installation section. Refer to section 10.0

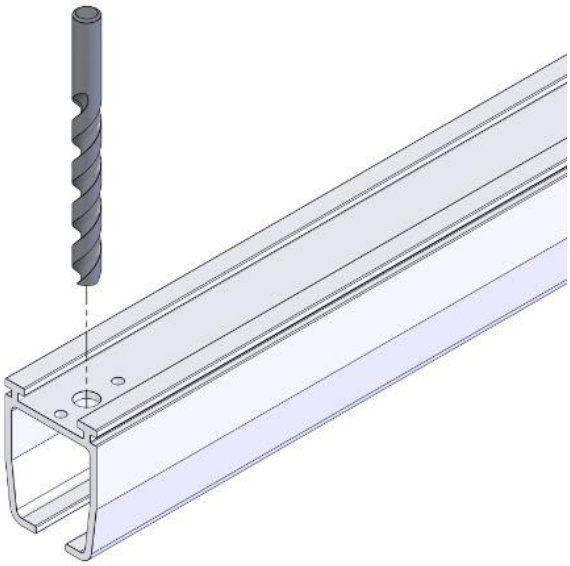
9.1.3 Moving Track Transition Gate Assembly (Standard Transition Gate)

For the moving track, place the “moving track” template onto the top face of the track as shown in the image below.



Using a marker pen, mark out the three holes from the template piece. Proceed to drill the three holes using a 6mm drill bit for the two outer holes and a 13mm drill for the centre hole.

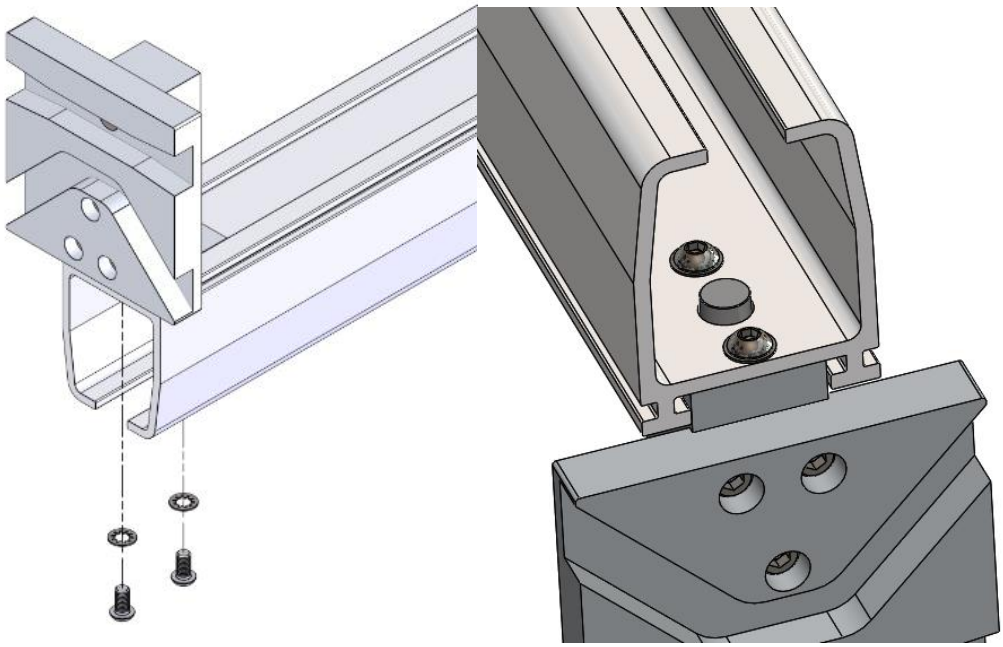




Using a combination between a file and a deburring tool, tidy up all the drilled holes.

Align the moving track transition gate block with the drilled holes, the safety bolt should be placed through the 13mm hole. See image below for correct orientation.

Secure the moving track transition plate using the given M6 screws and washers, these should be fitted inside the track as shown using a 4mm Allen key.

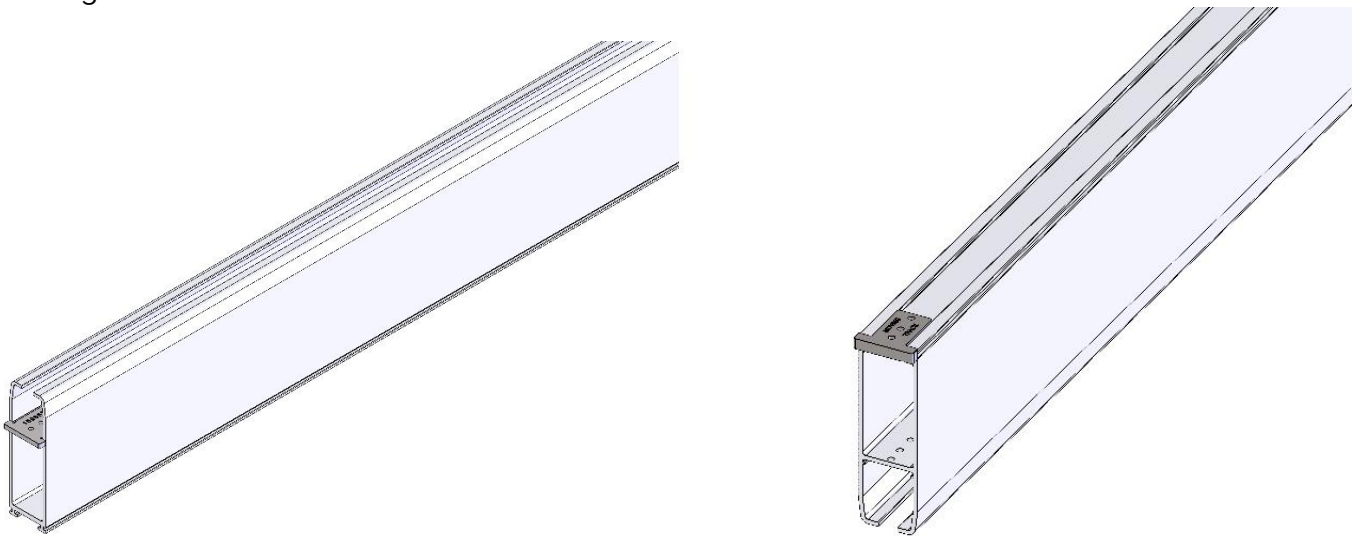


The moving track transition plate is now fitted onto the moving track

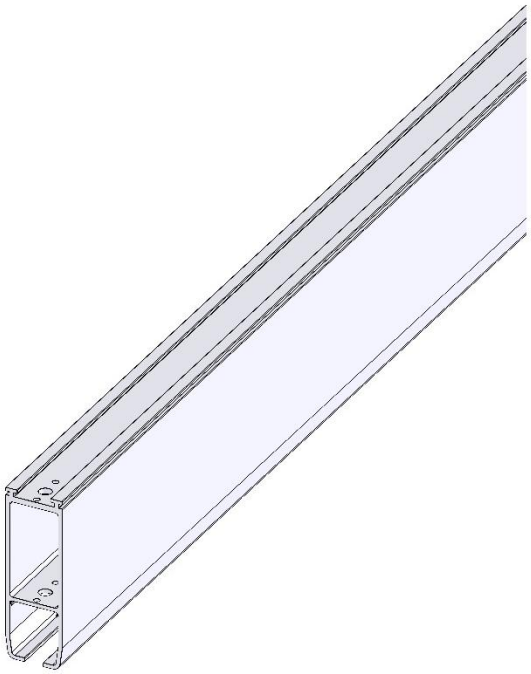
The moving track can be installed onto the h-system parallel tracks following the h-system moving track installation. Refer to section 8.2.

9.1.4 Moving Track Transition Gate Assembly (Mid-Duty & Heavy Duty Transition Gate)

For the moving track, place the “moving track” template onto the top face and inner face of the track as shown in the image below.



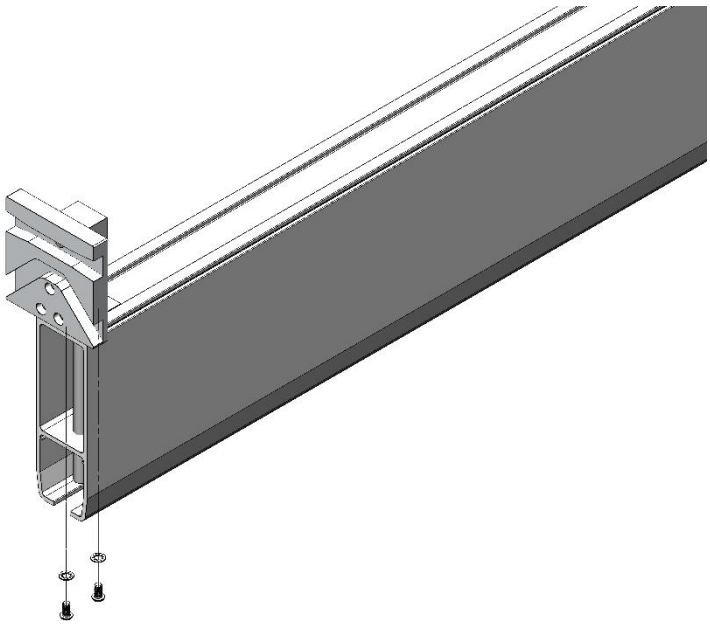
Using a marker pen, mark out the three holes from the template piece. Proceed to drill the three holes using a 6mm drill bit for the two outer holes and a 13mm drill for the centre hole.



Using a combination between a file and a deburring tool, tidy up all the drilled holes.

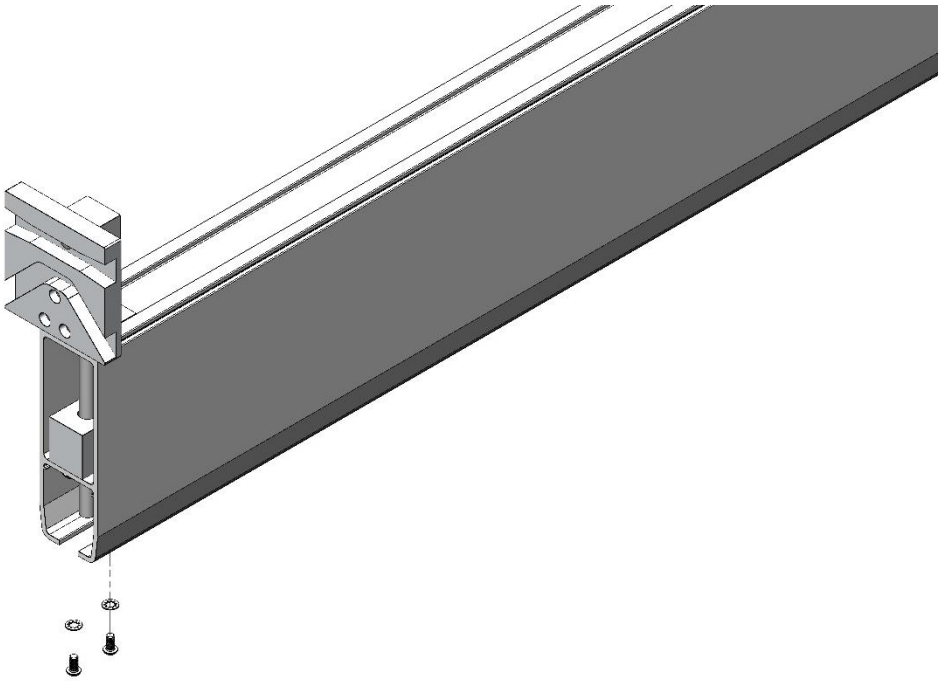
Align the moving track Mid-Duty & heavy duty transition gate block with the drilled holes, the safety bolt should be placed through the 13mm hole. See image below for correct orientation.

Secure the moving track transition plate using the given M6 screws and washers, these should be fitted inside the track as shown using a 4mm Allen key.



The moving track transition plate is now fitted onto the moving track

Place the transition gate guiding block onto the top face of the inner track profile as shown. This is secured from below using the given M6 screws and washers, use a 4mm Allen key to secure.

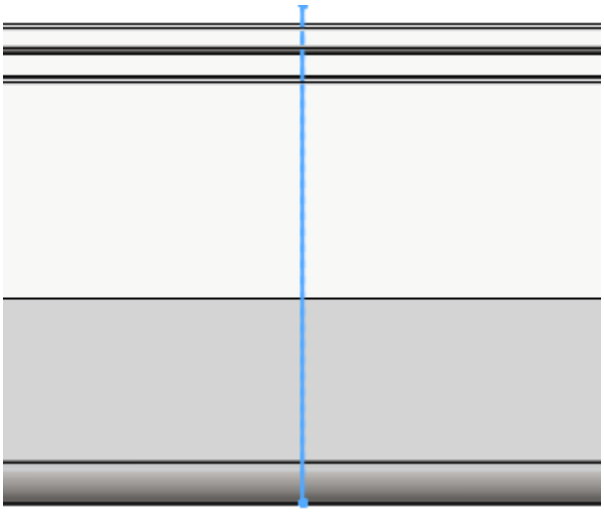


The moving track can be installed onto the h-system parallel tracks following the h-system moving track installation. Refer to section 8.2.

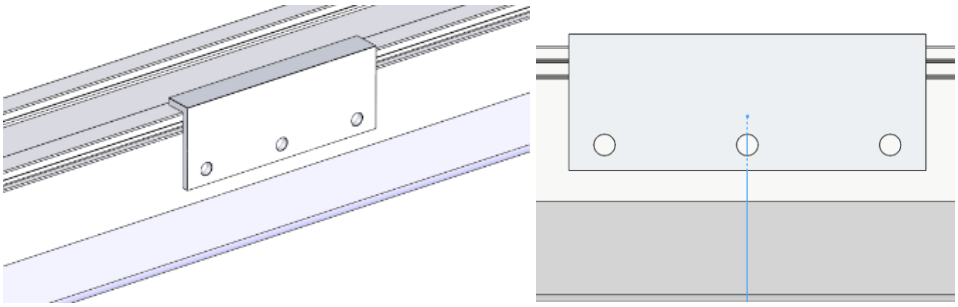
9.1.5 Parallel Track Transition Gate Assembly

This section can only be followed once all tracks have been installed to the ceiling, this includes the fixed track, the two parallel tracks and the moving track.

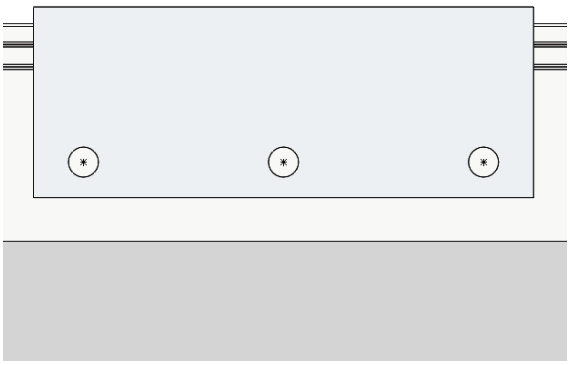
The placement of parallel track transition plate must be aligned perfectly central with the centre of the fixed track, this can be done using a laser. Mark out the alignment on the track using a marker pen.



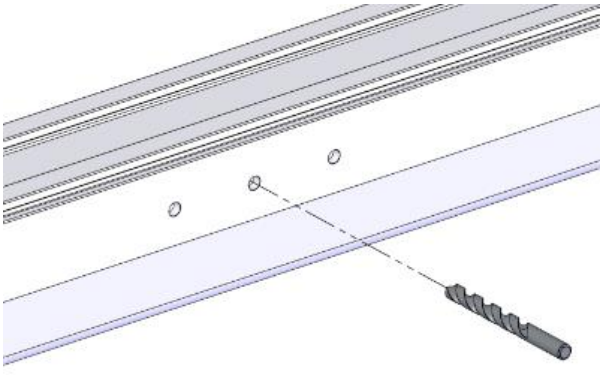
The parallel track template piece centre hole must be aligned with the marked line as shown.



Mark out the three holes from the template with a marker pen.

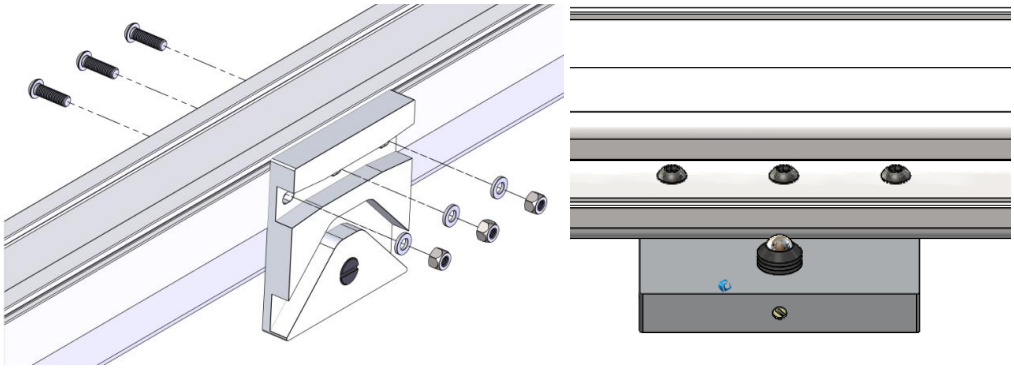


Drill out the three holes using a 6mm drill bit.



Using a combination between a file and a deburring tool, tidy up all the drilled holes.

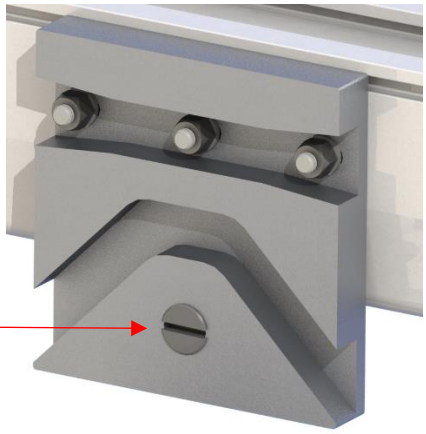
Align the parallel track transition gate plate with the drilled holes. Secure the plate with the given M6 screws, washers and M6 nyloc nuts. See image below for correct orientation.

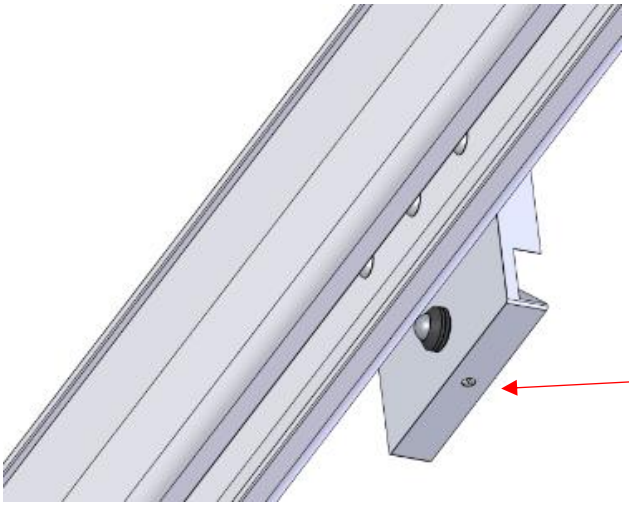


The ball bearing must be adjusted to suit the h-system trolley to allow the locking system to function. The ball bearing can be adjusted from the front using a flat screwdriver. Adjust until the contact point is secure when

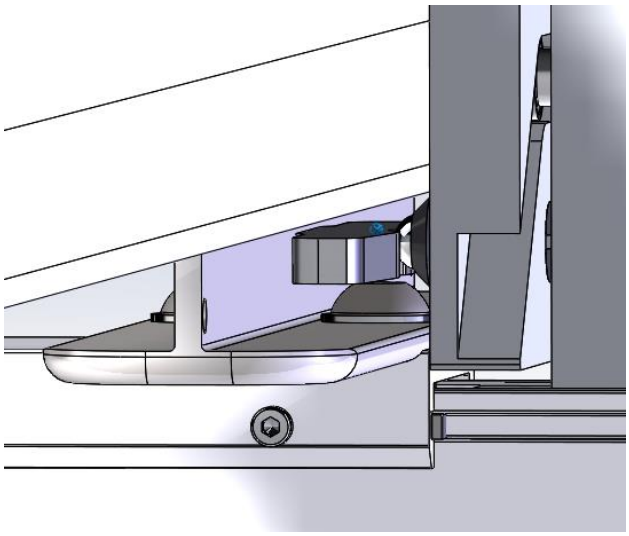
using the transition gate. Too tight will not allow the transition gate to traverse, while too loose will not lock in position when the transition is in use. The small grub screw shown in the second image below is used to lock the position of the ball bearing adjustment. See images below.

Adjust Ball Bearing Here





Tighten Here



The adjustment of the ball bearing to contact the trolley must be done while the moving track is under maximum load to ensure that the system is functioning correctly.

Transition gate assembly is complete.

10 Installing the Ceiling Track

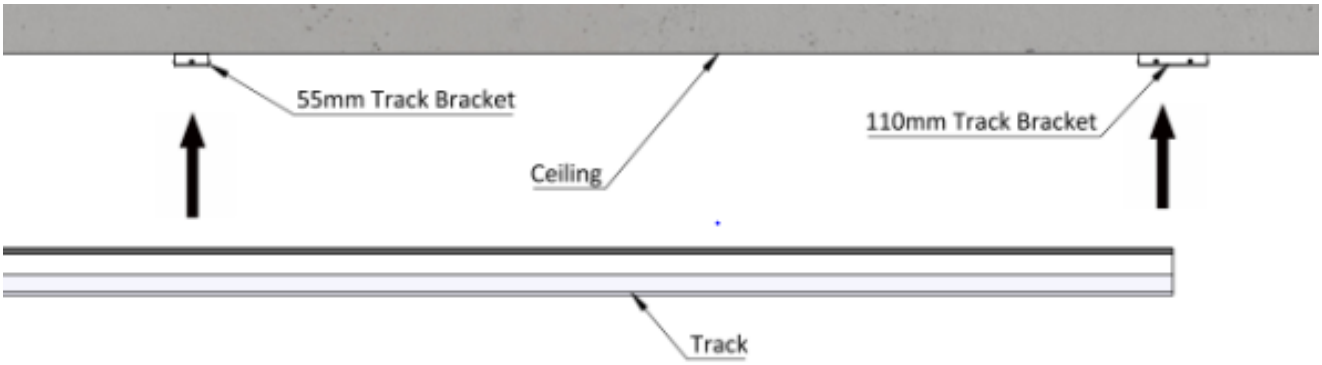
This following section will provide the correct information for installing a ceiling track to the track brackets. For every track type, the overhang must never exceed 9.84" (250mm) from the final track bracket.

10.1 Installing Straight Track and Track Bends into the Brackets

The single track, double track, heavy-duty track and inset tracks are all installed in the same fashion shown below. The only difference being the amount of fixings required. This can be determined by referring to the table in section 1 – straight track fixing instructions.

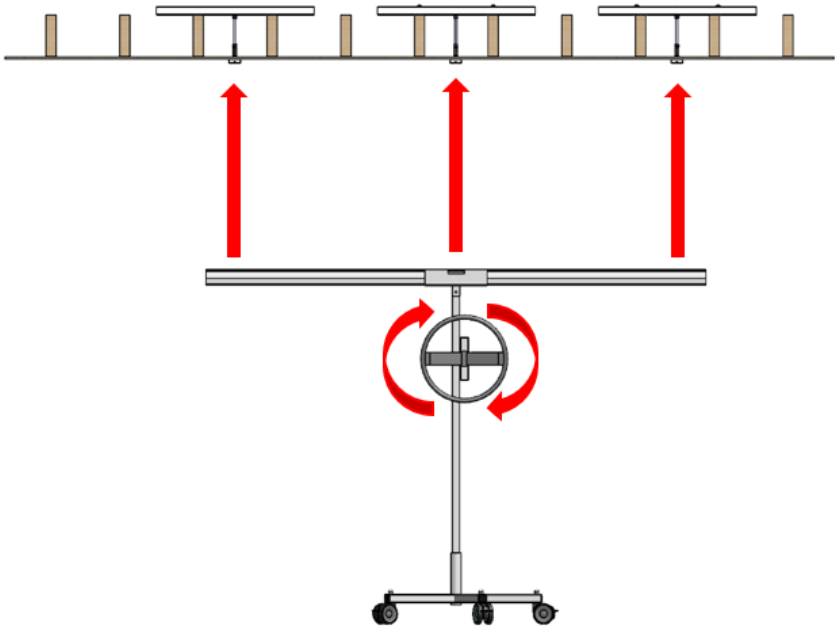
10.1.1 Standard Track Installation

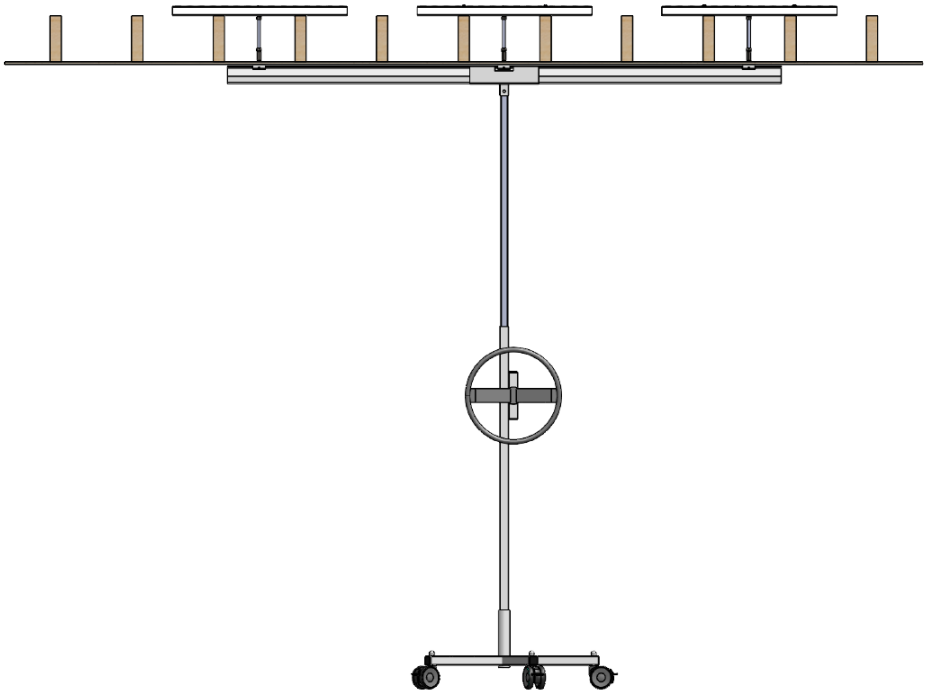
A standard track installation would require two people to raise the track and align the top face with the track brackets as shown in the image. Ensure that each track bracket aligns with the track profile correctly and allows the track wedges to be fitted correctly.



10.1.2 Assisted Track Installation

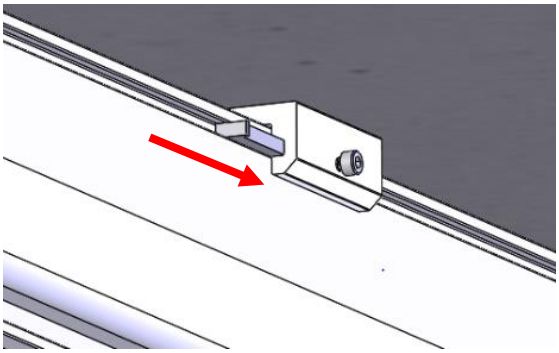
To install the track system alone (one person install), a track lifting device can be purchased which will raise the track to the desired height. This device is operated by rotating the wheel until the track has raised aligned. See image below for reference.



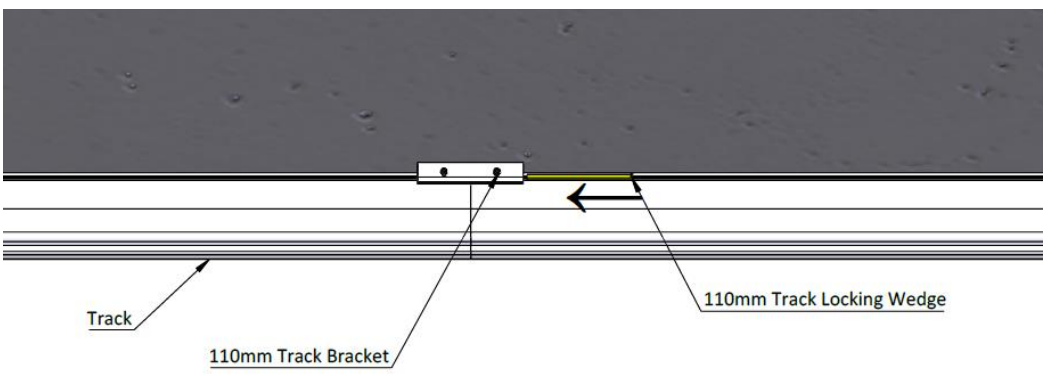


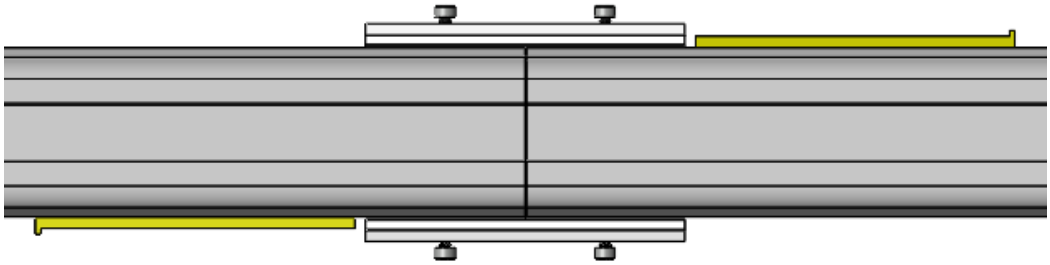
10.1.3 Fitting the track wedges

Once the track is aligned, the track wedges are required to secure the track, a total of two wedges must be fitted, one on either side as shown, and are inserted in the opposite directions. Once the wedges have been fitted, the M3 screws on either side of the track bracket must be tightened to secure the track.



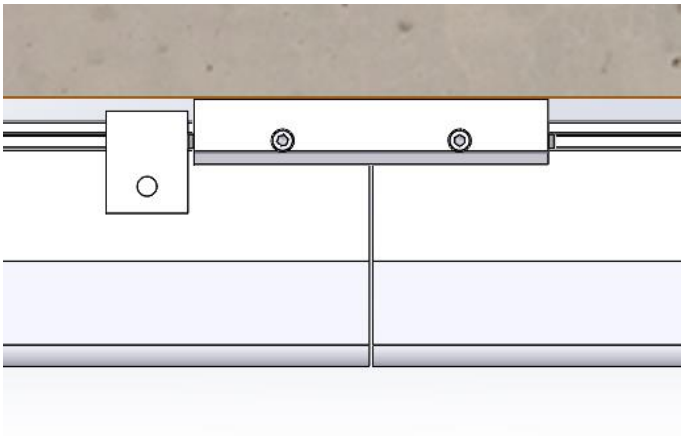
When two tracks are linking, they will both align at a double track bracket (110mm long), they must evenly share the bracket (55mm of each track) and are fitted using two 110mm wedges. The same fitting process is used. See image below for reference. The two linking tracks must be up against each other or not be further than 1mm apart. A total of two wedges are required to be fitted, one on either side of the bracket as shown. When fitting the 110mm wedges, they should be fitted in the opposite direction on either side of the track.

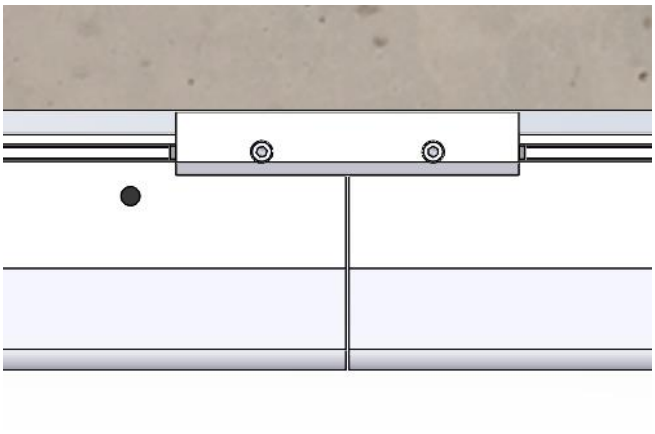




Once the wedges have been fitted, the four M3 screws on either side of the track bracket must be tightened to secure the track.

To finalise the track bracket fixing, a track lock plate is required for each installed track wedge. To fix the lock plate, align it up against the track bracket in the orientation shown in the diagram. The lock plate must be fixed against the face where the track wedge can be removed. Once the bracket is aligned, mark the centre hole onto the track using a marker pen. Drill the marked position out using a 6mm drill piece. Tidy the drilled hole using a deburring tool.
To secure the lock plate in position, place the M6x16mm screw through the hole and lock plate from within the track, and secure with the given nyloc nut. A 3mm Allen key and 10mm spanner are required.

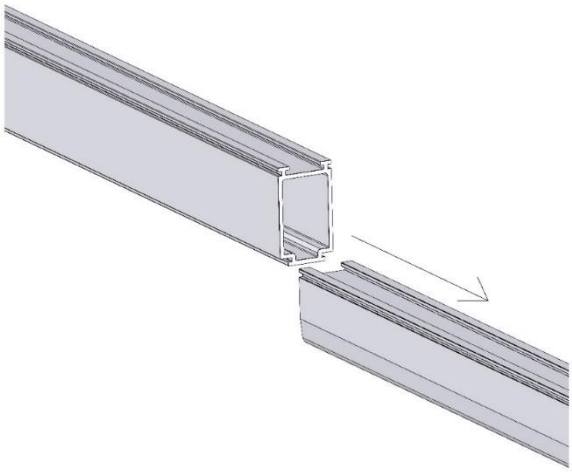




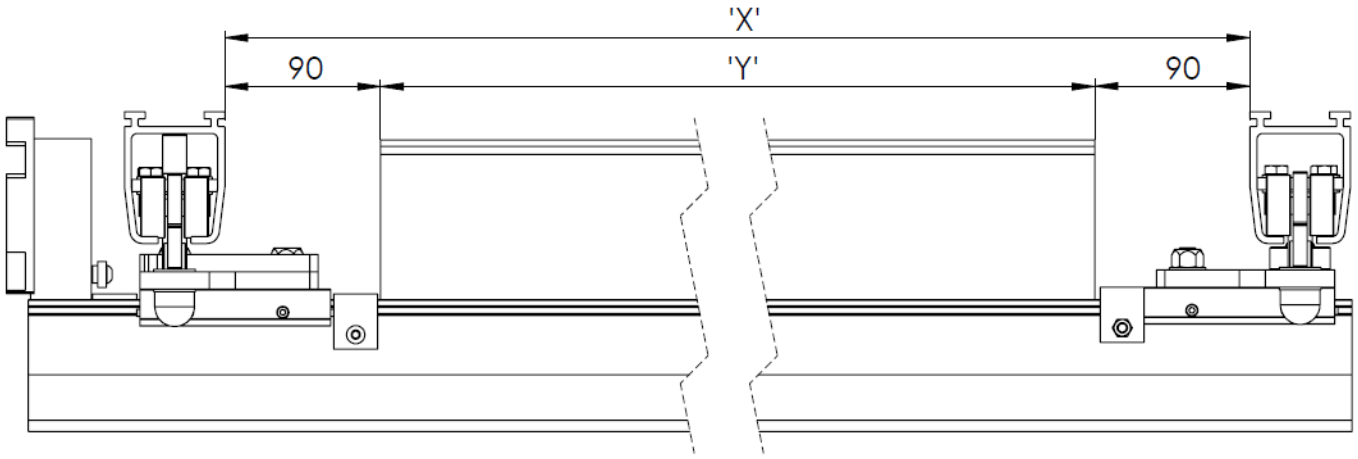
10.1.4 Additional Requirements for Double Track Installation

The double track is two tracks being doubled up for additional strength to increase the maximum span between fixings. This track is usually used for h-systems.

The bottom half of the track is a standard single track and the track will be installed onto the track brackets following the same procedure as 10.1.
The top half of the track is to be installed onto the bottom track by sliding it onto its profile, as shown in the image.



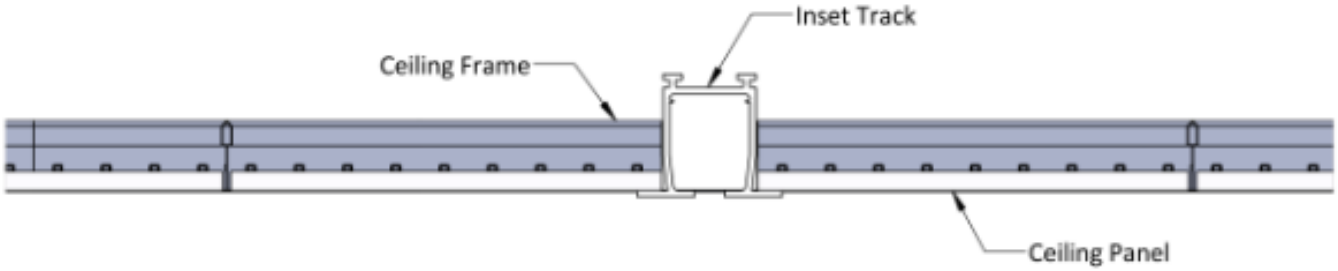
The top half-track must be cut shorter to allow the h-system trolley track bracket fixing to attach to the bottom track. The top half-track should be cut to a length as close to the h-system trolley fixing brackets as possible, to provide maximum strength.
To determine the length the top half-track, the distance between the two parallel tracks of the h-system must be measured, and 7.1" (180mm) must be removed from this measurement to determine the length. See the image below for reference.

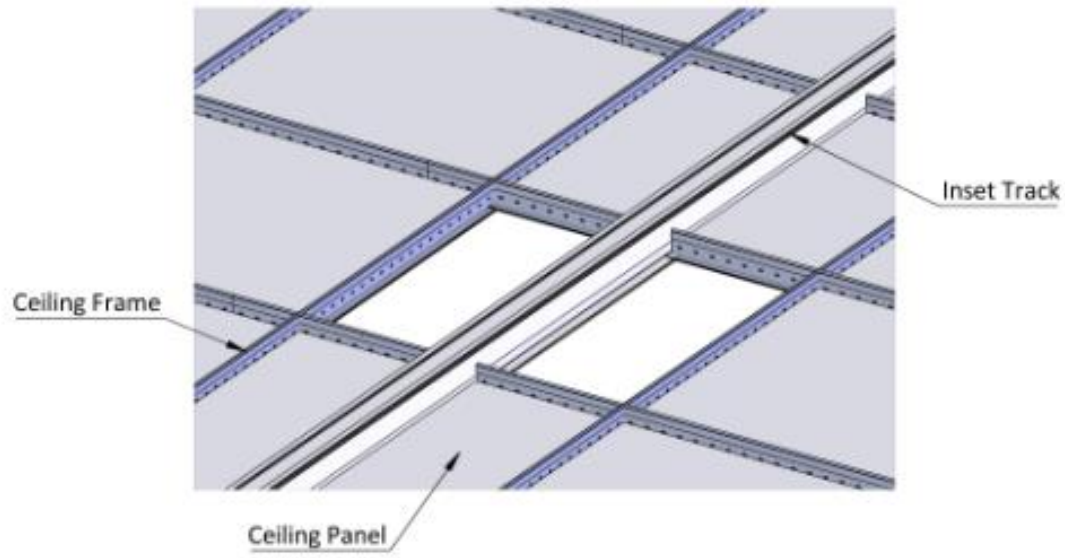


10.1.5 Additional Requirements for Inset Track

The inset track will be installed onto the track bracket in the same fashion as the single and heavy-duty track. The inset track is designed to allow the false ceiling tiles to sit on the bottom of the track as shown below. Follow the procedure below to install the inset track.

1. Remove the necessary false ceiling tiles as to access the track brackets.
2. Follow section 10.1 to install the track to the brackets.
3. The false ceiling tiles must be placed onto the track.
4. Cut the false ceiling tiles to size to fit them neatly onto the track.



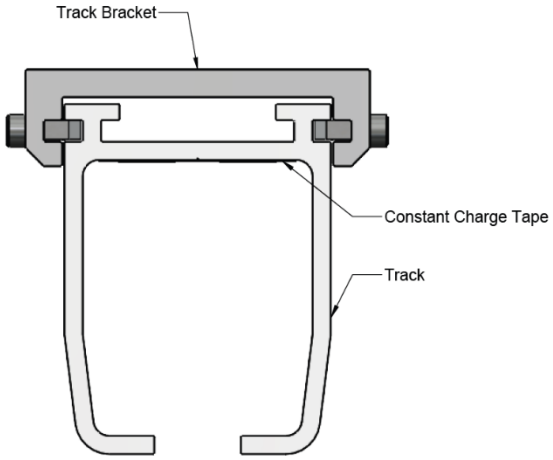


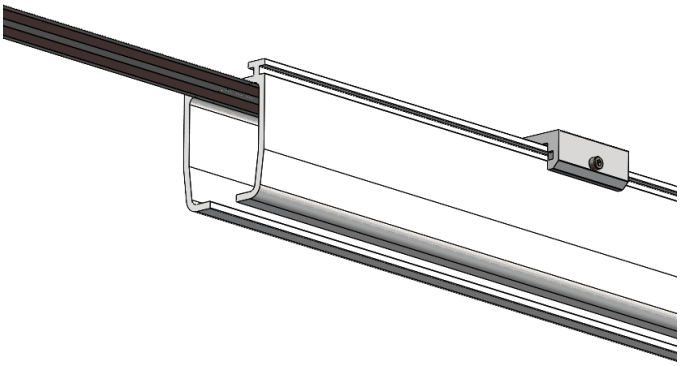
10.2 Constant charge systems

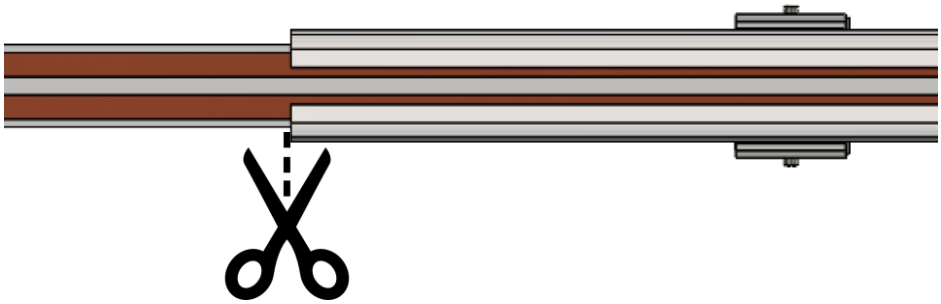
Track systems which require constant charge will require the strips to be fitted to the track prior to installing the track onto the ceiling. There are two options of constant charge strips, with the tape being the simpler method of install. See below on fitting instructions.

10.2.1 Constant charge systems – Tape Style

1. To attach the constant charge strip to the roof of the track, you will need remove the backing off the tape to expose the adhesive strip.
2. Once the constant charge tape is ready, position it flush at one end of the track centrally and press down to adhere it to the track.
3. Pull the tape through the track until you reach the total length of the track.
4. Pull it taut (ensuring it is still located in the centrally) and adhere it to the total length of the track.



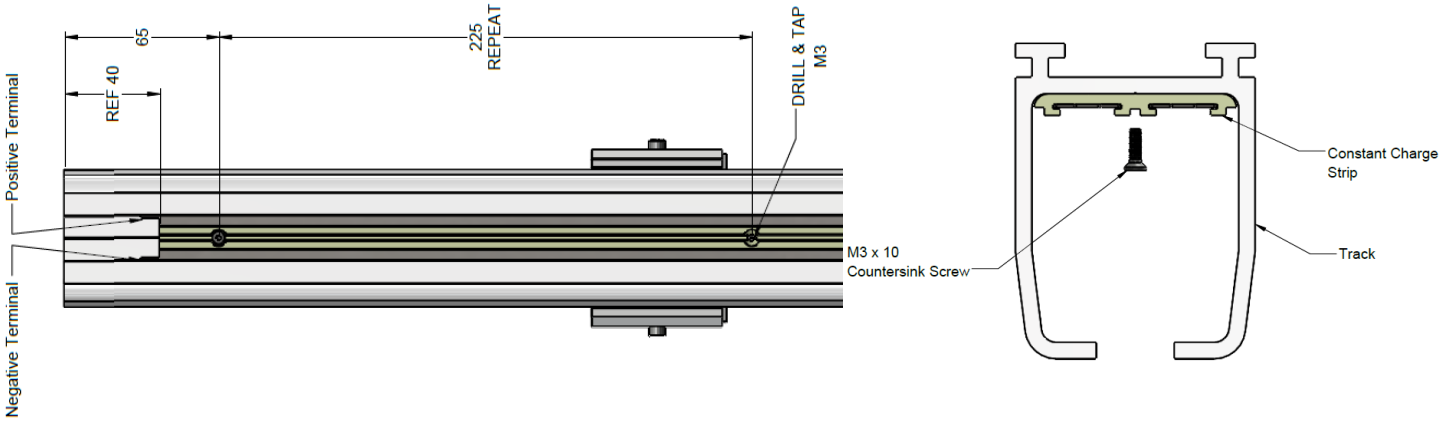




10.2.2 Constant charge systems – Insert Style

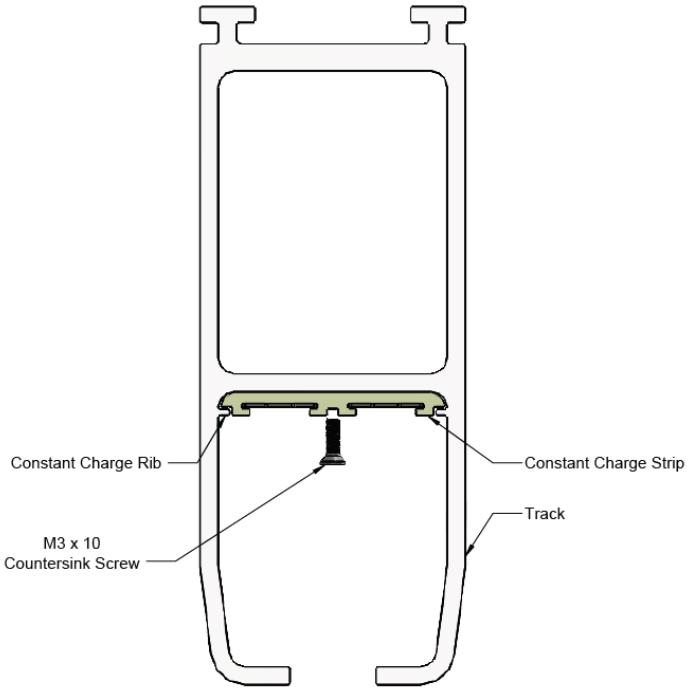
Single Track

1. To attach the constant charge strip to the roof of the single track, you will need to drill, tap and counter sink M3 holes every 8.86" (225mm) along the centre of the plastic strip and track.
2. Cut the strip to the length of the track system and secure in place with a M3 x 10 counter sink screws.
3. Place a positive and negative sticker on either side of the track to determine a positive and negative terminal for the charge strips.



Mid-Duty and Heavy-Duty Track

1. To attach the constant charge strip to the mid-duty and heavy-duty track, slide the constant charge strip between the roof of the track and the constant charge ribs.
2. Cut the strip to the length of the track system and fix in position with a M3 x 10 countersink screw at either end of the track.
3. Place a positive and negative sticker on either side of the track to determine a positive and negative terminal for the charge strips.

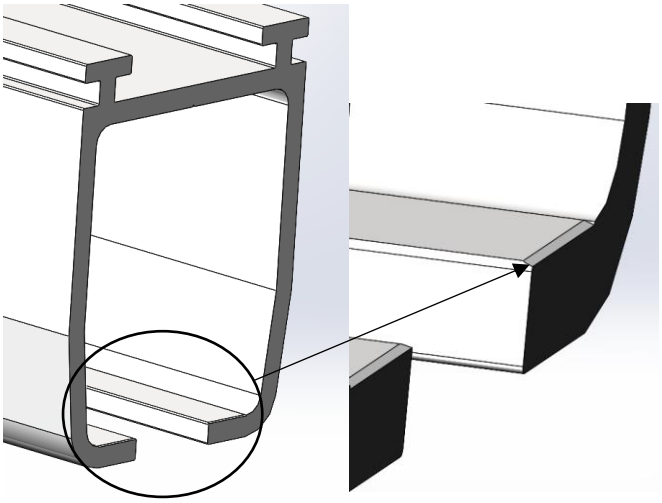


10.3 Finalising the Track Installation

This section will cover the final steps of installing the track system. This includes fitting the safety components along with some finishing touches to the track edges.

10.3.1 File Track Edge

When installing any track into a 110mm bracket, transition gate or turntable, to ensure the ceiling lift transitions smoothly between each track, use a flat file to chamfer the track (in the below location) ensure there isn't any square edge present.

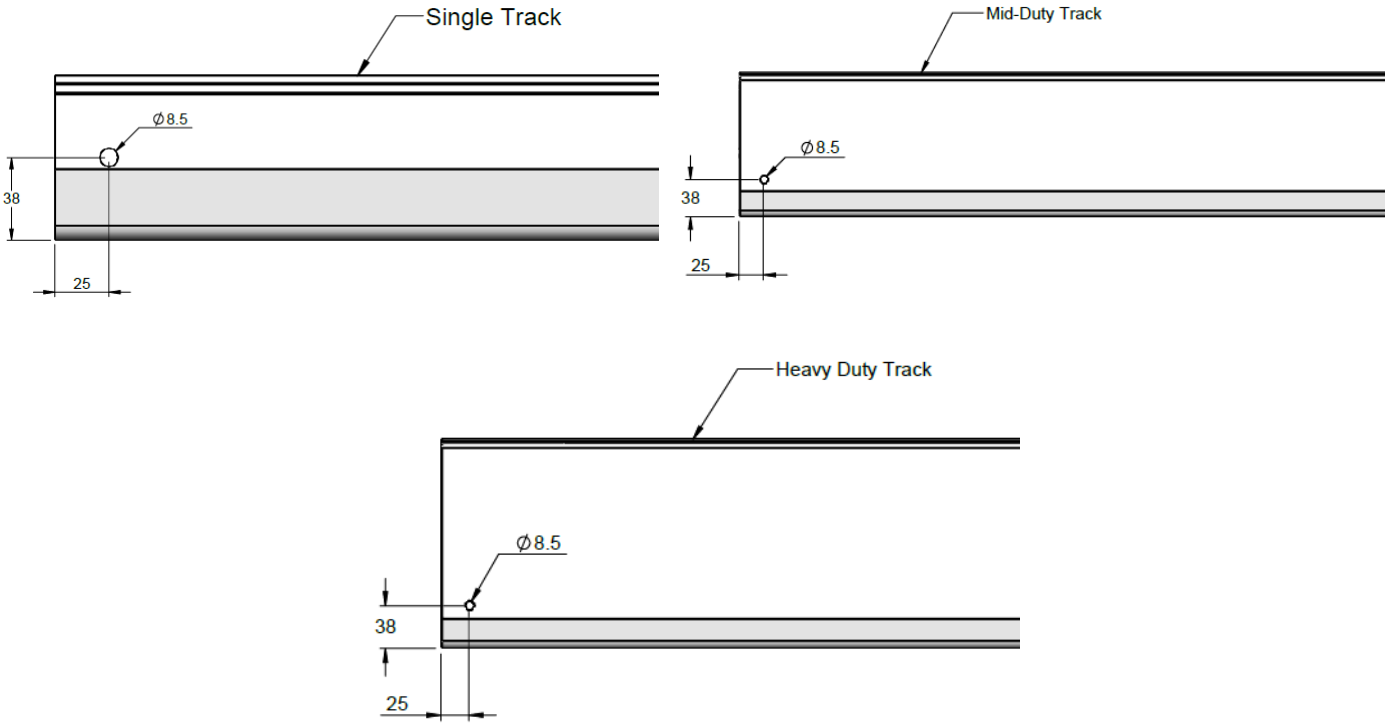


10.3.2 Safety Components

To close of the track system, a safety bolt, end stop and end cap is required at either end of the system. If the ceiling lift is being installed at the same time, then the charging dock will replace an end stop at one end, (not applicable for constant charge systems).

Standard Track & Insert Constant Charge Systems

To fit the safety bolt, an 8.5mm hole must be drilled through the track 25mm from the end. For standard systems, see diagrams below on hole location.

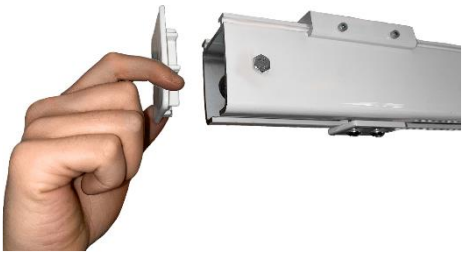


After drilling the safety bolt hole, slide the end stop into the track with the bumper facing inward. The end stop can be secured by clamping the end stop together within the track. This is done using a 5mm Allen Key on the two bolts. The end stop should be secured close to the end of the track system, but leaving enough space for the safety bolt behind.



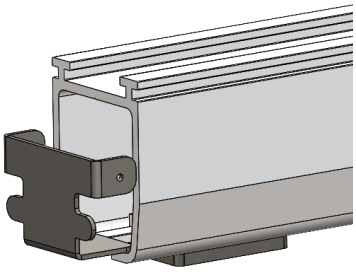
Once the end stop is secured, the safety bolt and end cap can be fitted. Place the rubber bumper inside the track, aligning it with the drilled hole and place the given bolt through the track and bumper and secure at the other end with the nut. This is done using two 13mm combination spanners. The end cap is push fitted into the track profile as shown below.

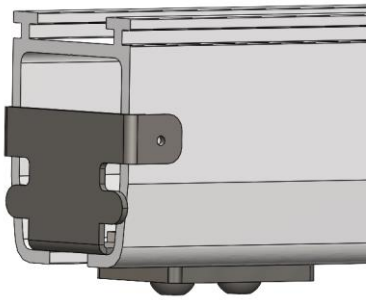


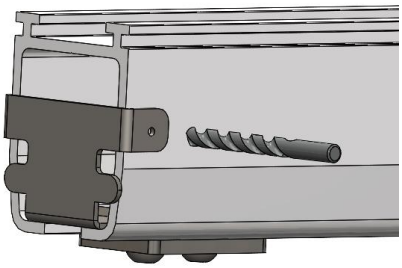



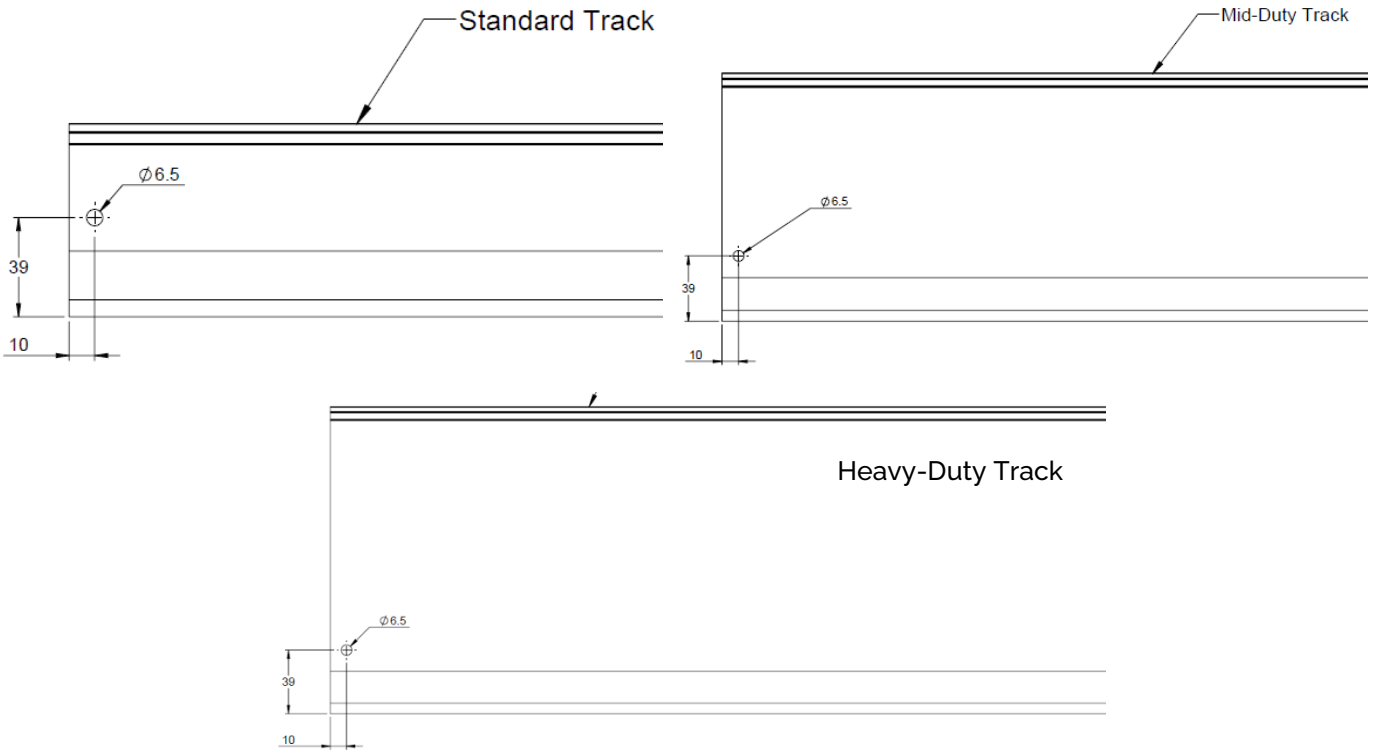

Constant Charge Track (Strip Version) Systems

To fit the safety bolt, an 6.5mm hole must be drilled through the track, a drill template is available to align and drill a pilot hole (3mm). If this is not at hand, use the diagrams below to correctly position the hole.

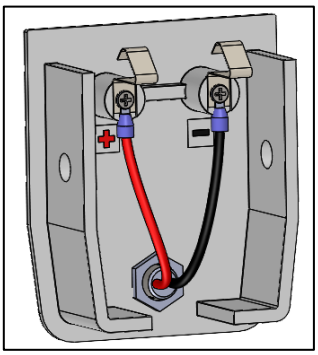


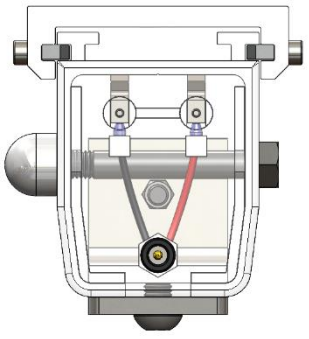






For constant charge track systems, a variant end cap is used, fitted with contact terminals which contact the charge strips on the inside of the track, the end cap is push-fitted into the track profile as normal, but is secured in place with the safety bolt as shown, the safety bolt is not fitted with a rubber bumper as it's not required.





Note: Old style constant charge follows the same method as the standard end cap. See above for details.

11 Testing

Once the full installation of the ceiling track system is complete, load testing is an essential final step to prove the system is installed correctly and safely.

Depending on the safe working load (SWL) the track is labelled as, this will be the SWL of the ceiling lift installed. The track must be loaded with 150% of the SWL to ensure that the system is safe for use.

The ceiling lift should not be used to raise this load as it is not permitted to do so. Follow the procedure below to safely load test the track system.

1. Insert a trolley set into the track system.
2. Attach a block and tackle to the trolley.
3. A weight stack/trolley should be placed directly below the block and tackle and attached.
4. Raise the load off the floor, no higher than 300mm.
5. Traverse the load across the full track system, from one end stop to the other.
6. Where h-systems are installed, traverse the ceiling lift along the moving track as well as traversing the moving track along the parallel tracks, ensure that the load has been placed at both ends of the moving track to test the moving track traversing ability as well as the structural integrity of the parallel tracks installation.
7. Where transition gates are installed, ensure to test the transition of the load between at the gate to ensure that it is smooth and functional.
8. Where turntables are installed, ensure to test the transition of the load between the turntable and the fixed track, the transition should be smooth and functional.
9. Test the turntable is able to rotate smoothly with the track system SWL. This is the ceiling lift SWL.
10. For a full track system that includes track bends, turntables and straight track, the load should be traversed around the full system to ensure that the structural integrity is secure.
11. Once completing the full testing procedure, remove the load, block and tackle and trolley from the system.
12. The system fixings should be inspected for any damage that causes concert to safety and function. E.g. Cracks and deformation.

See table below for list of safe working loads and their test loads

System SWL	Load Test
287lb (130kg)	430lb (195kg)
353lb (160kg)	530 (240kg)
440lb (200kg)	661lb (300kg)
600lb (272kg)	900lb (408kg)
838lb (380kg)	1257lb (570kg)

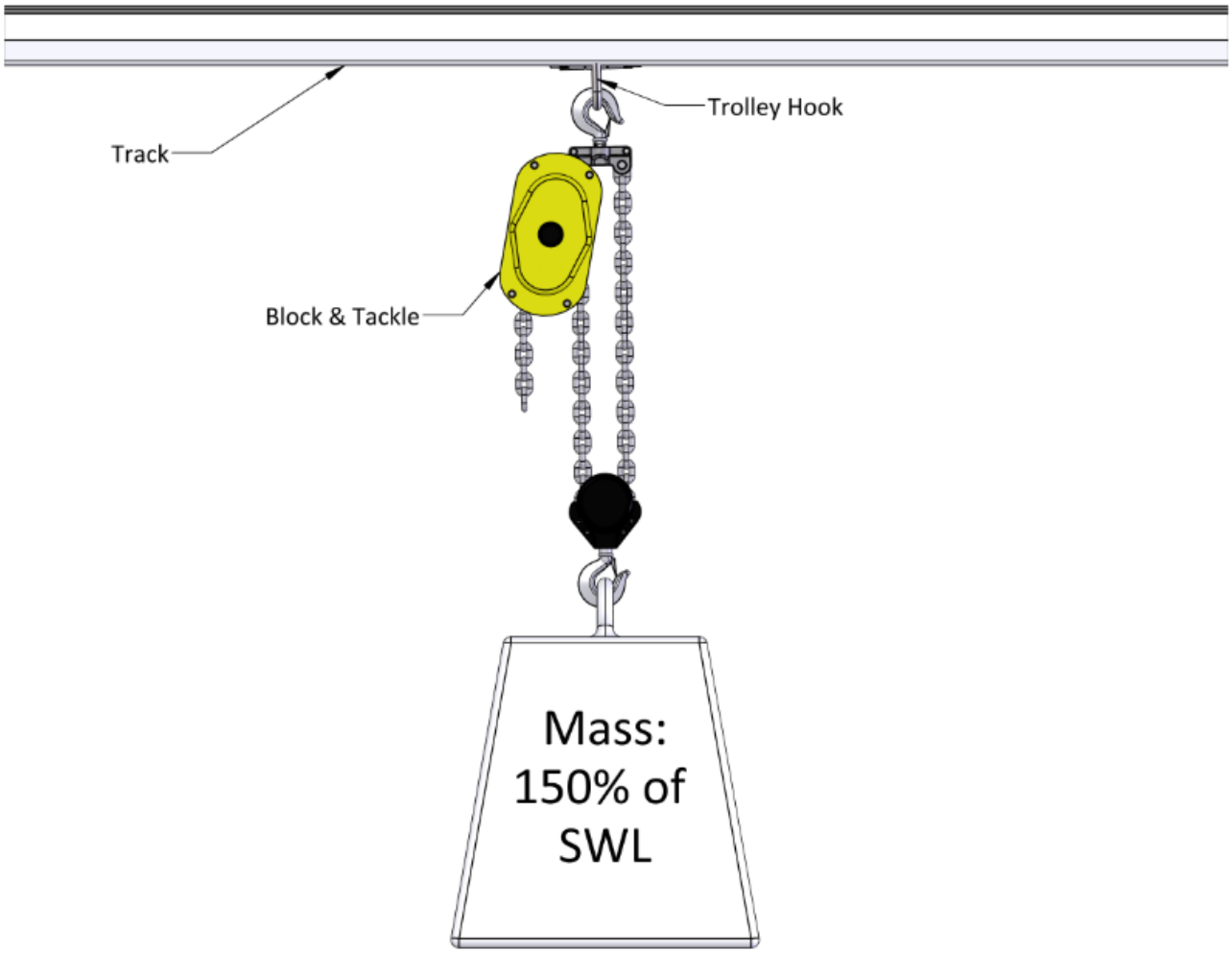
Testing a wall to wall track system will become an issue due to the inaccessibility of the track. While installing the ceiling lift, the test trolley should also be inserted at the same time. From here the test procedure above can be completed. At the end of the testing procedure, the track must be removed from one wall bracket fixing to allow the trolley to be removed, ensure to fix the track back onto the wall bracket once completed. Following this the track must be re-loaded to the ceiling lift SWL by attaching the load to the ceiling lift and traversing along the track system.

When the load test is complete, the test engineer must fill out the load test certificate. Ensure to correctly fill out the details required on the sheet.
When completing the load test on the ceiling track system, the client should be present, both the test engineer and the client must both sign the load test certificate to confirm the load test occurred.

Once this is all complete, a load test sticker must be applied to the track, this sticker will confirm that the track has been load tested to 150% the SWL of the system, it will also require the date and test engineer signature to be written.

If at any point in the future the track system is used for a higher rated ceiling lift, the track system must be re-tested to the requirements of the table above.

The track loading of 150% is required following the requirements of section 7.5 of BS EN ISO 10535:2006.



Mackworth USA Contact details:

Address: 54 West Industrial Drive O'Fallon, MO 63366 USA

Telephone Number: 314-889-1000

Website: www.mackworthusa.com

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54 West Industrial Drive
O'Fallon, MO 63366 USA