

Tate Forte LEC



EN 15804:2012
+ A2:2019



EN 13501-1:2018
Class A1

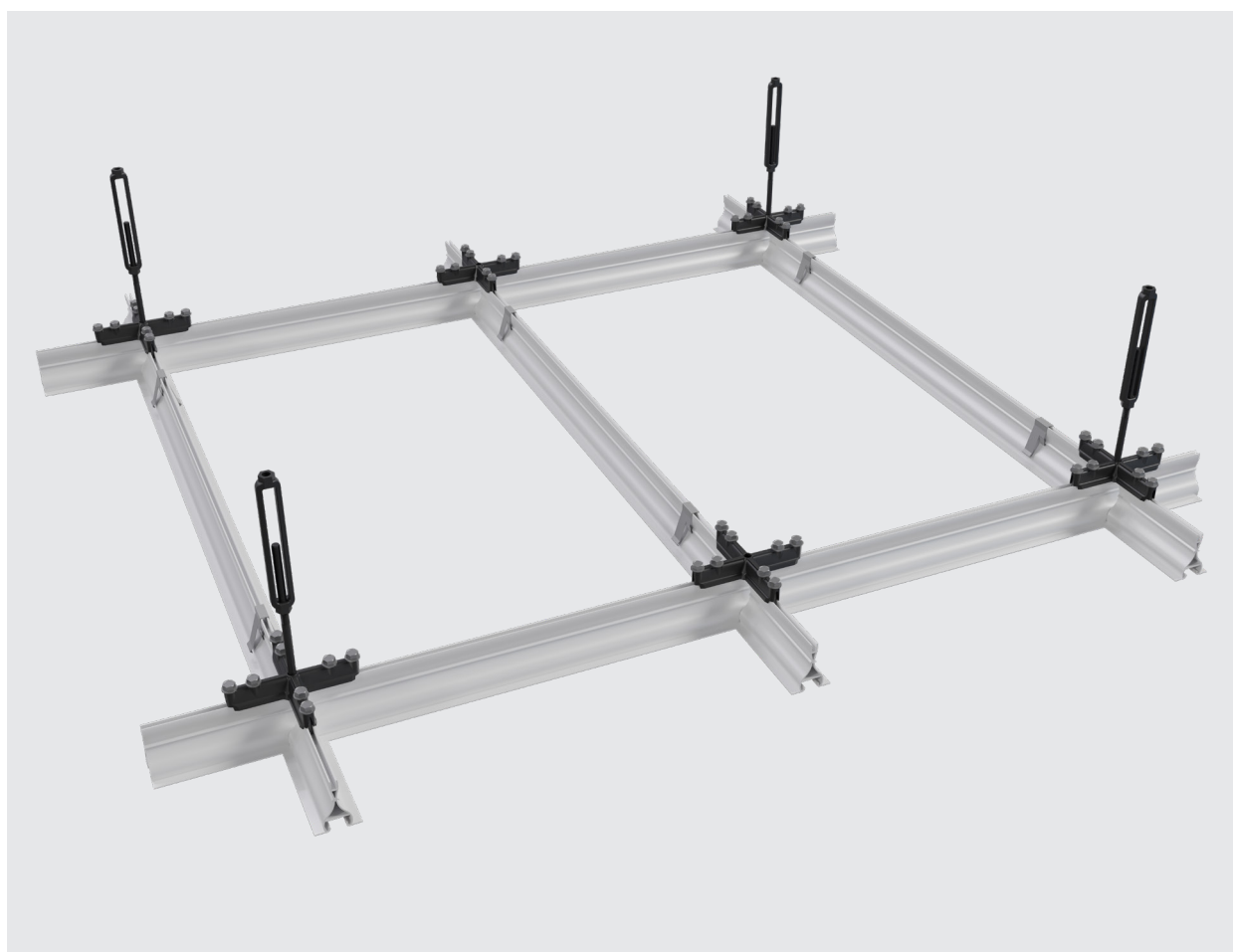


EN ISO 10140-2:2010



EN 12114:2000

Installation Manual



Please ensure you use the most up-to-date version of the Installation Manual available on our website. This manual pertains specifically to the installation of Tate Forte LEC in the EMEA region. Installation procedures may vary in other regions.

tateglobal.com



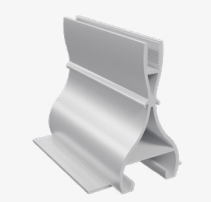
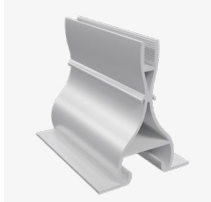
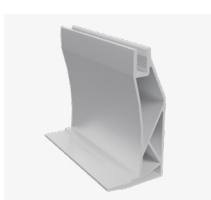
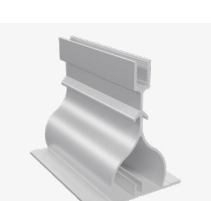
Please note we reserve the right to change specification or design and supply products which may differ from those described and illustrated without notice and without liability.

Tate.[®]

Contents

Component Overview	5
Coped Structural Tees 1.2m	6
Main Runners 3.6	6
XL Connector	7
Straight Connector	7
Perimeter Connector Corner	8
Connector	8
M8-35 Bolt (DIN 6931) Fire	9
rated Gasket	9
Double Spring Clip Security	10
Clip for Metal Tiles	10
Turnbuckle M10	11
Light In ill	12
Perimeter Profile	12
Step By Step Installation	13
Tools	13
Design & Setting out Consideration	14
Perimeter Installation	15
Option 1 – Stick type installation	17
Option 2 – Ladder type installation	21
Tiles Installation	24

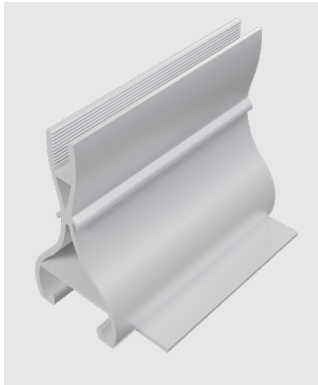
Component Overview

	Coped structural tee 1.2m Coped standard structural tee.		Main runner 3.6m All main runner splice points need to be supported by a connector with a hanger above it. Each nut must be fully engaged on a single profile on the bottom channel.
	XL connector Standard connector junction. Connector has a pin on the bottom surface to match the notches on the Main runner.		Straight connector Used on all structural profiles connected to perimeter profiles, adjacent to the perimeter connector, to provide support via a turn buckle connection to the building structure
	Perimeter connector The connector is used for 3-ways connections as the ending element of the system.		Corner connector The connector is used only in non load bearing applications. Allowable joint angles 88-92°. Two threaded holes for drop rods.
	Fire rated gasket 3x10mm, class B2 (DIN 4102-1)		Security clip for metal tiles Security clip for holding metal tiles.
	M8-35 Bolt (DIN 6921) DIN 6921. Hex head screw with serrated flange. Used for all connectors.		Double spring clip for metal tiles Double spring clips for a standard Tate ceiling tile. Provides access by removing tiles from below.
	Turnbuckle M10 M10 Turnbuckle with a starter rod is used to connect the structural ceiling with M10 threaded rods.		Perimeter Profile A perimeter profile can be used at the datahall perimeter or around obstructions.
	Light Infill Non-structural lightweight profile with closed face bottom channel.		

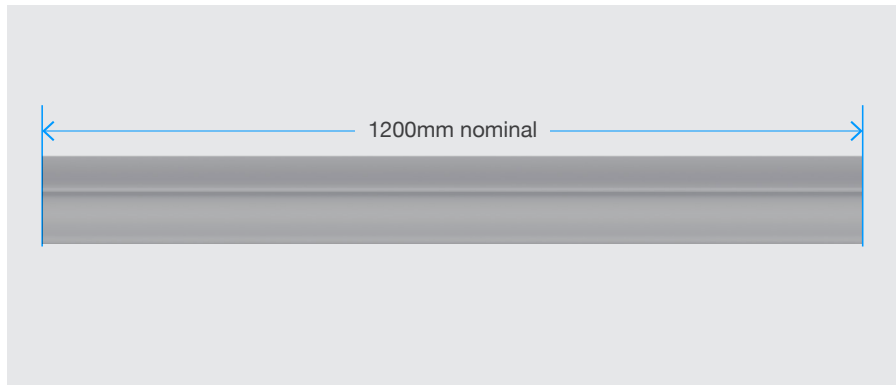
Component Overview

Coped Structural Tee 1.2m

Structural tees are extrusions of 1200mm nominal length. Structural tees are coped at their edges to interface with the main runners creating a 1200x600 mm grid.



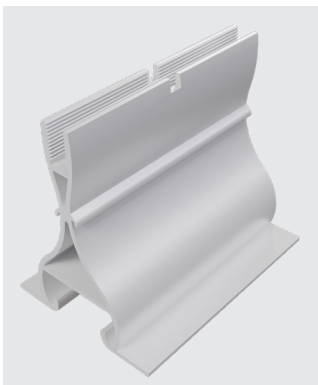
Coped Structural Tee



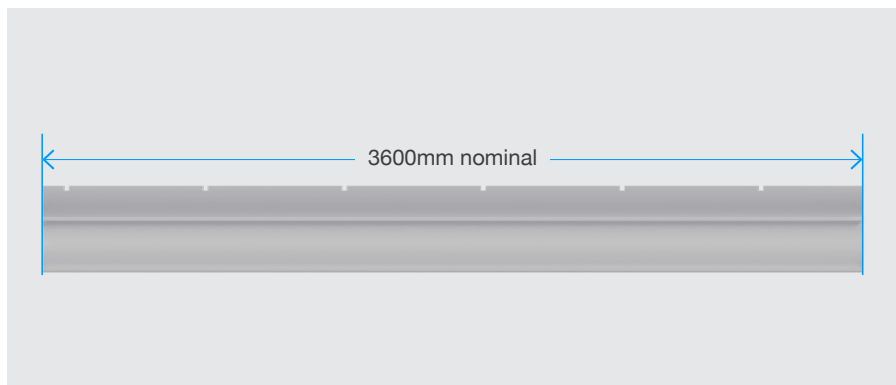
Main Runner 3.6

Main runners act as the principal structure in the structural ceiling grid system.

All main runners come in 3600mm lengths and are notched every 600mm to align the connection of the structural tees. Distance between main runners is 1200mm to allow a coped structural tee to sit between them creating a ceiling grid of 1200x600mm.



Notched Main Runner



Component Overview

XL Connector

4-way connector used at:

1. Splice point between main runners on a standard 1200x600 grid configuration. (Only with Droprod)
2. Junction between structural tees and main runners.

The XL connector has a pin that, when inserted into the main runner's notch, ensures alignment of the ceiling grid system.

Please refer to Tate Forte's standard details for further information and diagrams.



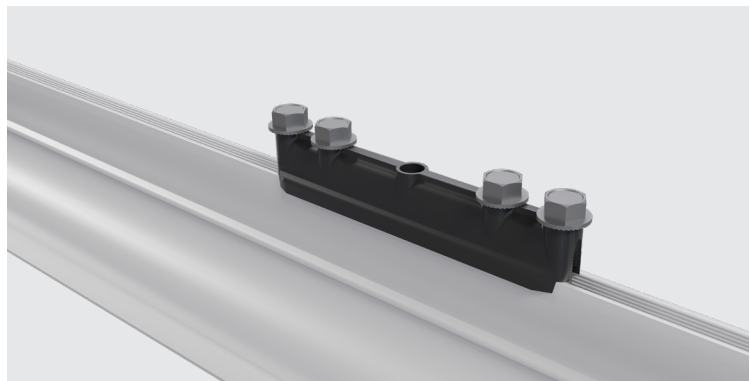
Straight Connector

Used on all structural profiles connected to perimeter profiles, adjacent to the perimeter connector, to provide support via a turnbuckle connection to the building structure. When used in this scenario, it is always installed with a hanger connecting back to the building structure.

When the straight connector is installed at the junction between main runners, it can be installed as follows:

1. With a hanger connecting back to the building structure.
2. Without a hanger.

Please refer to Tate Forte's standard details for further information and diagrams.



Component Overview

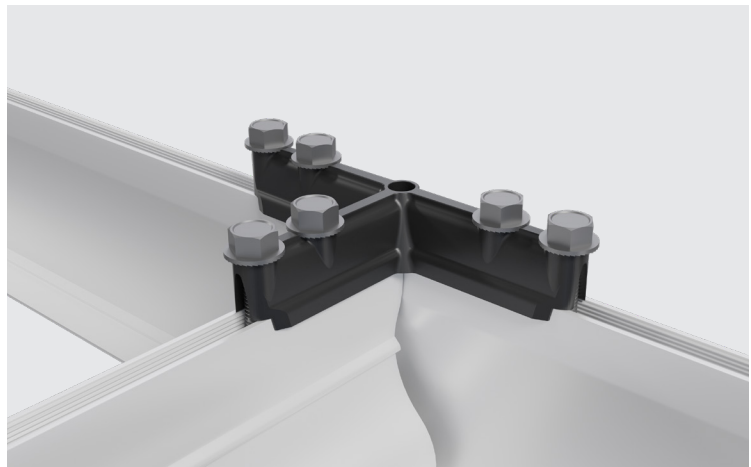
Perimeter Connector

3-way connector used for all junctions finishing at the perimeter

This connector does not have a pin allowing for flexibility in the perimeter connections.

Any perimeter connector requires a straight connector to be placed adjacent to it with a drop rod connection.

Please refer to Tate Forte's standard details for further information and diagrams.



Corner Connector

2-way connector used at the junction point of 2 intersecting perimeter profiles. The connector is used only in non load bearing applications. The allowable joint angle is between 88 and 92 deg.

This connector has 2 possible turnbuckle positions to allow for flexibility in hanger installation.

Any connector adjacent to a corner connector requires a drop rod connection.

Please refer to Tate Forte's standard details for further information and diagrams.



Component Overview

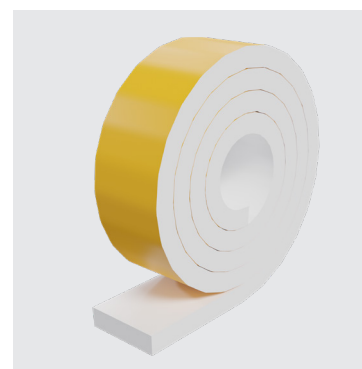
M8-35 Bolt (DIN 6931)

DIN 6921. Hex head screw with serrated flange. Used for all connectors.



Fire Rated Gasket

3x10mm, class B2 (DIN 4102-1)



Component Overview

Double Spring Clip

Clips for Metal Tiles. The Spring on them allow the tiles to be installed and/or removed from under the ceiling.

Spring clips are to be used with metal tiles with a folded edge of 16mm.

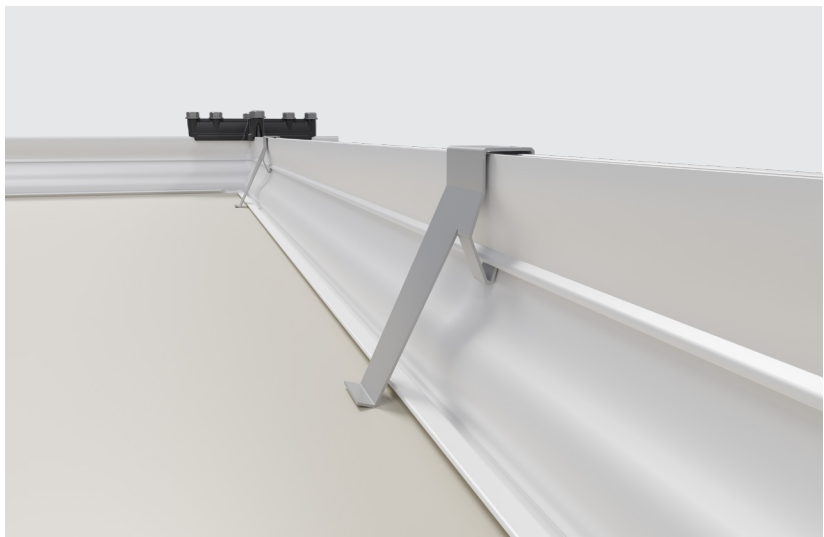
The fold on the clip secures onto the central lip of the profile making installation easier as additional screws are not needed.

Spring Clips are not suitable if the tiles have been cut or when using mineral tiles.



Security Clip for Metal Tiles

Security clip for holding metal tiles where Spring Clips are not adequate. The tile must be installed prior to the clips. Once installed, removing the tile requires the removal of the clip.



Component Overview

Turnbuckle M10

A turnbuckle with an M10 starter rod is provided. Hanger configurations of the Tate Forte system vary project specific, please refer to the technical data sheet for performance details.

Made from hot dip galavanised forged steel, turnbuckles allow the hangers to be properly set and aligned. Turnbuckles connect the connectors from the Tate Forte system to the top threaded rods (supplied by others).

Turnbuckle + starter rod minimum height is 290mm.

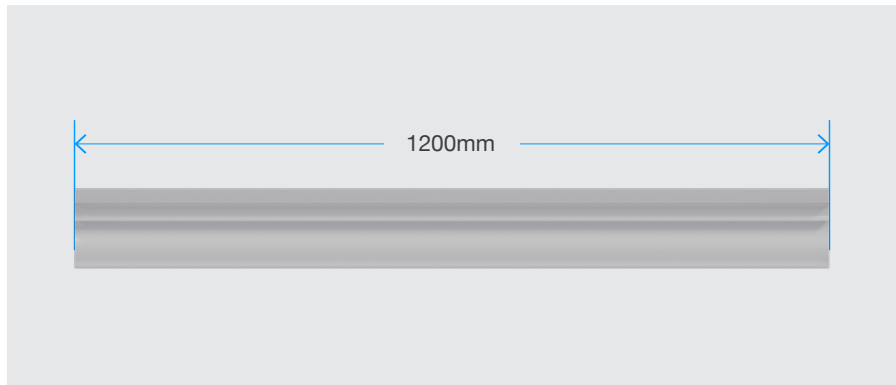
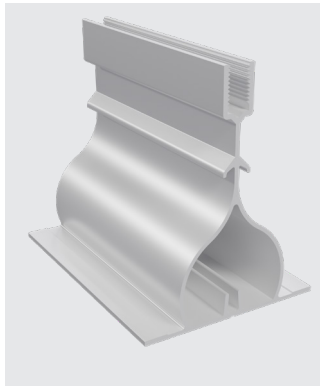


Component Overview

Light Infill

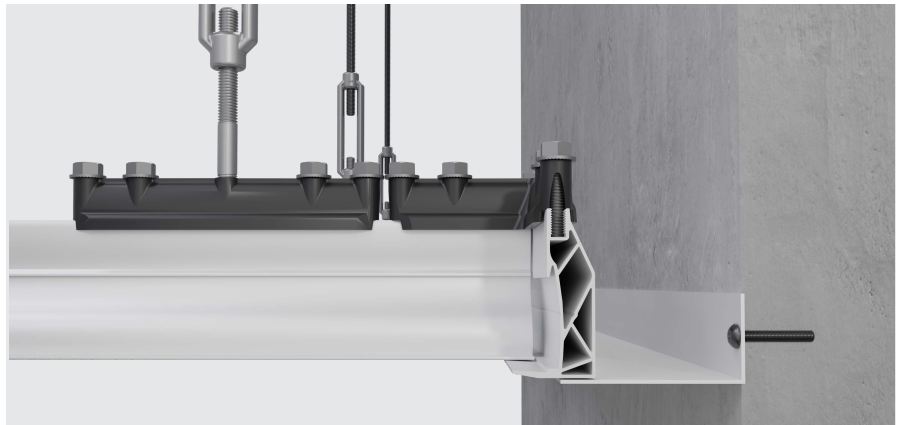
Light infill is a closed face profile for places where the 4.4 kN load bearing capacity is not required. Profile length is 1.2 m and can be used instead of structural tees.

The profile allows the installation of light weight fixtures up to 15kg per profile using 4.8 or 5.5mm diameter self-tapping screws.



Perimeter Profile

The perimeter profile is a closed face profile that is installed at the perimeter of the room and around columns. It can be directly attached to the wall or flushed with an L angle. The perimeter profile flange fits under the Tate main runner or structural tee ensuring air leakage and structural integrity of the system.



Step By Step Installation - Tools

Tools to Ensure Correct Torque:



All bolt connections to the top slot of Tate Forte should be tightened to a recommended torque value of 12 Nm, using a torque limiting screw gun or torque wrench. Used principally for tightening nuts on drop rod connections.



A torque adapter is another alternative tool to ensure the correct torque in all connections. It can be connected to any bit holder and be equipped with any socket/bit for all bolt applications. It allows for the required torque of 12 Nm to be applied to any bolts connection to the top channel of a Tate Forte profile. Used principally for bolt connections. Not to be used with 'impact mode' for power tools.

Step By Step Installation - Design & Setting out Considerations

Before installation of Tate Forte, please ensure the following items have been taken into consideration.

1. Every turnbuckle connection to the building structure must be able to support a load of 9kN. This load transmitted through the turnbuckle has no factor of safety. Ensure the connection to the building structure has been adequately designed with the relevant safety factor.
2. Site-specific seismic requirements must be identified and addressed at the design stage. Seismic requirements are outside Tate's scope and are the responsibility of the relevant stakeholder. Tate can provide technical support or input upon request to help interpret or align with these requirements.
3. Perform the appropriate load check for all loads connected to a Tate Forte ceiling system. This will ensure that the position and value of these loads are within Tate's safety guidelines. Load checks should be performed every time a modification to the initial load configuration changes throughout the design and installation phases of a project.
4. A usual Tate Forte Hanger configuration requires a layout of 1.2m x 1.2m. Ensure that the connections to the building structure allows the positioning and the adequate load bearing capacity for these hangers.
5. Please consider the hanger position in regards to the perimeter profile when setting out. Refer to Tate Forte's Standard Details document for more information.
6. Tate's recommendation is to use a floating perimeter when services are passing through the ceiling close to a wall.
7. Any openings or interruptions of the continuous layout of the ceiling requires additional hanger support.

Refer to "Tate Forte's Standard Detail" document for more information.

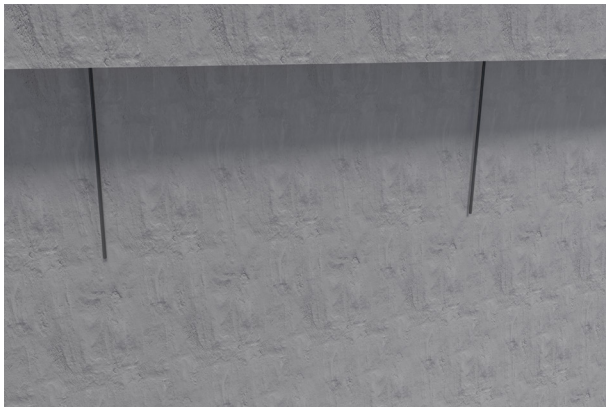
Step By Step Installation - Perimeter Installation

Option 1 – Fixed Perimeter

Where the wall composition and layout of the ceiling grid allows it, the Tate Forte fixed perimeter profile can be screwed directly onto the wall. The fasteners connecting the perimeter profile to the wall are supplied by others.

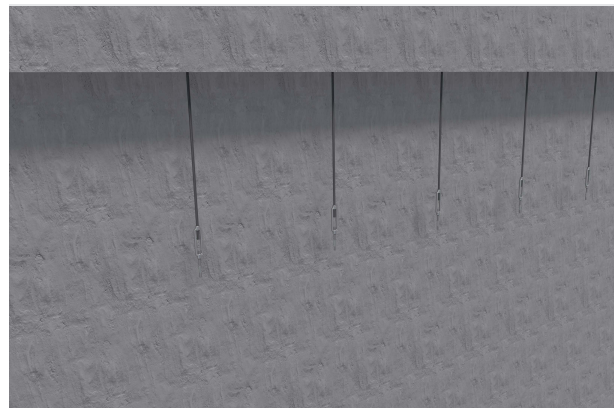
Fixed perimeter profiles come in 3.6m lengths.

Step 1



Mark location points of the straight connector hangers, ensuring adequate distance from the wall to fit L-angle and perimeter profile is considered. Fix threaded rods to the building structure.

Step 2



Connect the turnbuckle and starter rod to the previously installed threaded rods.

Step 3



Screw in the straight connectors to the starter rod - engage the starter rod fully into the connector.

Step 4



Lift the required main runners/cross tees to meet the hangers. Using Tate's supplied screws, tighten to the required torque of 12 Nm.

Step By Step Installation - Perimeter Installation

Step 5

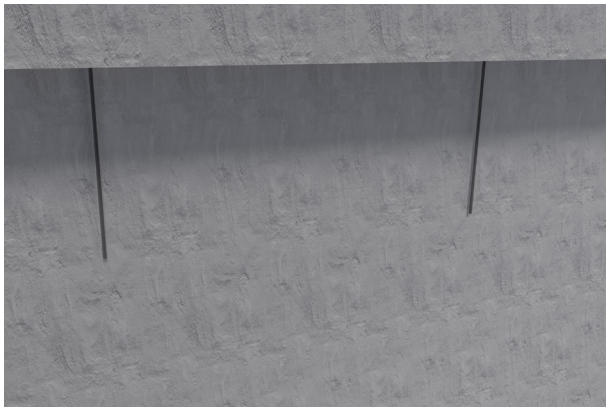


Lift the perimeter profile, and connect to the hung profiles using perimeter connectors adjacent to the straight connectors. Using Tate's supplied screws, tighten to the required torque of 12 Nm. Then screw the perimeter directly onto the wall by drilling into the middle of the profile.

Step By Step Installation - Perimeter Installation

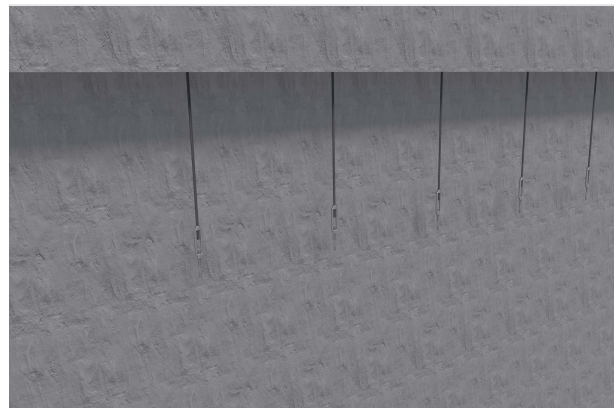
Option 2 – Floating Perimeter

Step 1



Mark location points of the straight connector hangers, ensuring adequate distance from the wall to fit L-angle and perimeter profile is considered. Fix threaded rods to the building structure.

Step 2



Connect the turnbuckle and starter rod to the previously installed threaded rods.

Step 3



Screw in the straight connectors to the starter rod - engage the starter rod fully into the connector.

Step 4



Lift the required main runners/cross tees to meet the hangers. Using Tate's supplied screws, tighten to the required torque of 12 Nm.

Step By Step Installation - Perimeter Installation

Step 5



Lift the perimeter profile, and connect to the hung profiles using perimeter connectors adjacent to the straight connectors. Using Tate's supplied screws, tighten to the required torque of 12 Nm.

Step 6



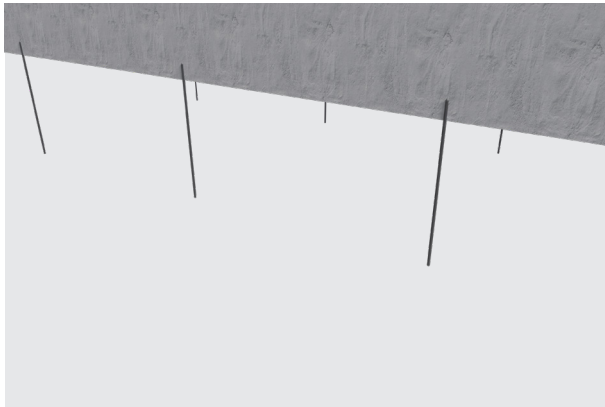
If there is a gap between the perimeter profile and the wall, this will need to be filled to ensure air tightness. Tate supplies L angles that can be fixed directly to the wall.

Step By Step Installation - Option 1: Stick Fixing

Option 1 – Stick type installation

Hanger configurations of the Tate Forte system can be project specific, and may vary from the standard 1200x1200mm configuration. Please refer to the technical data sheet for performance details.

Step 1



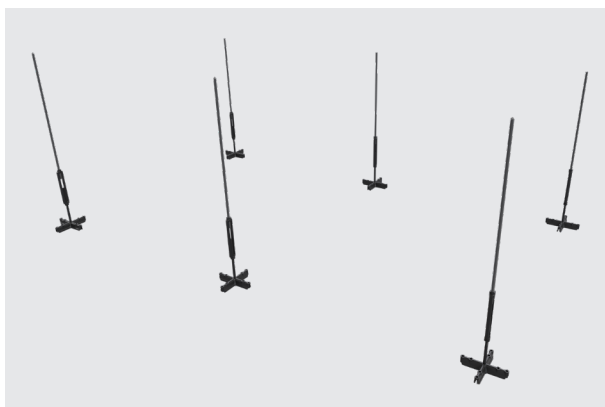
Mark location points of hangers and fix threaded rods (supplied by others) to the building structure.

Step 2



Connect the turnbuckle+starter rod to the previously installed threaded rods.

Step 3



Screw in the connectors to the starter rod - Engage the starter rod fully into the connector.

Note:

Please select the correct connector attending to the below:

- *Junction between structural tees and main runners -XL Connector*
- *Along the perimeter - perimeter connector and an adjacent straight connector*
- *At corners - Corner Connector*
- *For any other location along the profile - Straight Connector*

For more information refer to Forte Standard Detail Document

*Go to "Installation Guide - Installing the perimeter" for further details

Step By Step Installation - Option 1: Stick Fixing

Step 4



Install main runners at 1.2 m distance. main runners are not symmetric. Always install them in the same position to keep the notches at 600mm apart

Step 5

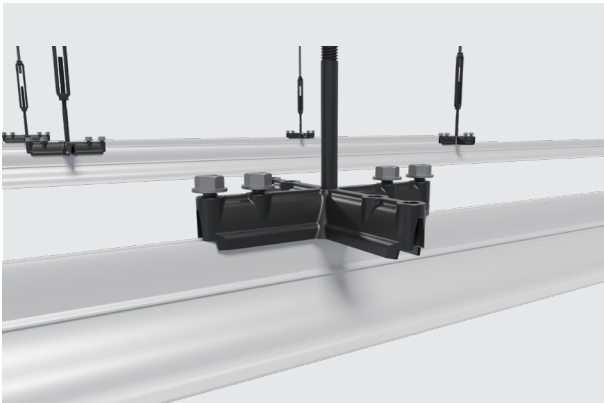


Align the notches on the main runner with the XL connectors. The pin and ribs of the connector will ensure alignment.

Note:

When correctly in place, the connector should not be able to slide along the main runner.

Step 6



Using only Tate's supplied screws, hand tight the screws to keep the main runners in place.

Install the bolts only halfway for easy installation of structural tees.

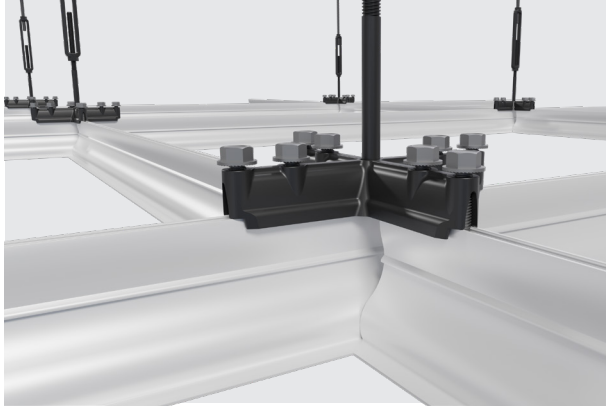
Step 7



All Splice points require supported connector above. (Connector with drop rod installed)

Step By Step Installation - Option 1: Stick Fixing

Step 8



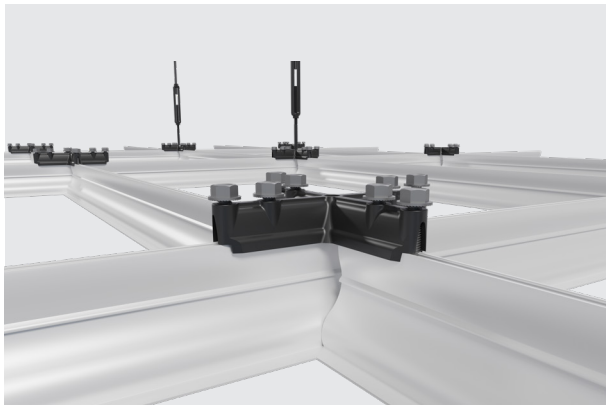
Install the structural tees aligned with the connectors every 1.2 m.

Step 9



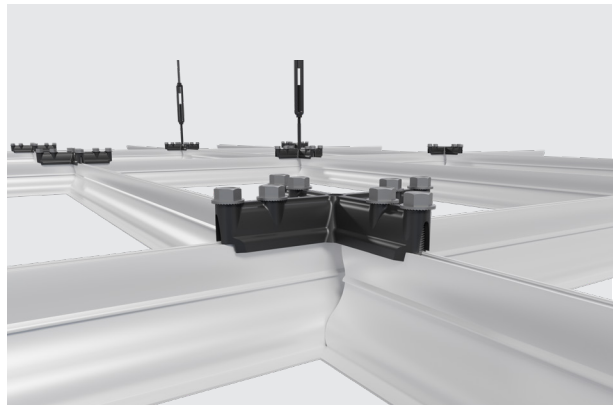
Tighten all screws to the correct 12 Nm torque.

Step 10



Place the remaining structural tees at 600mm distance. Hold in place by using a XL connector at the junction point with the main runners.

Step 11



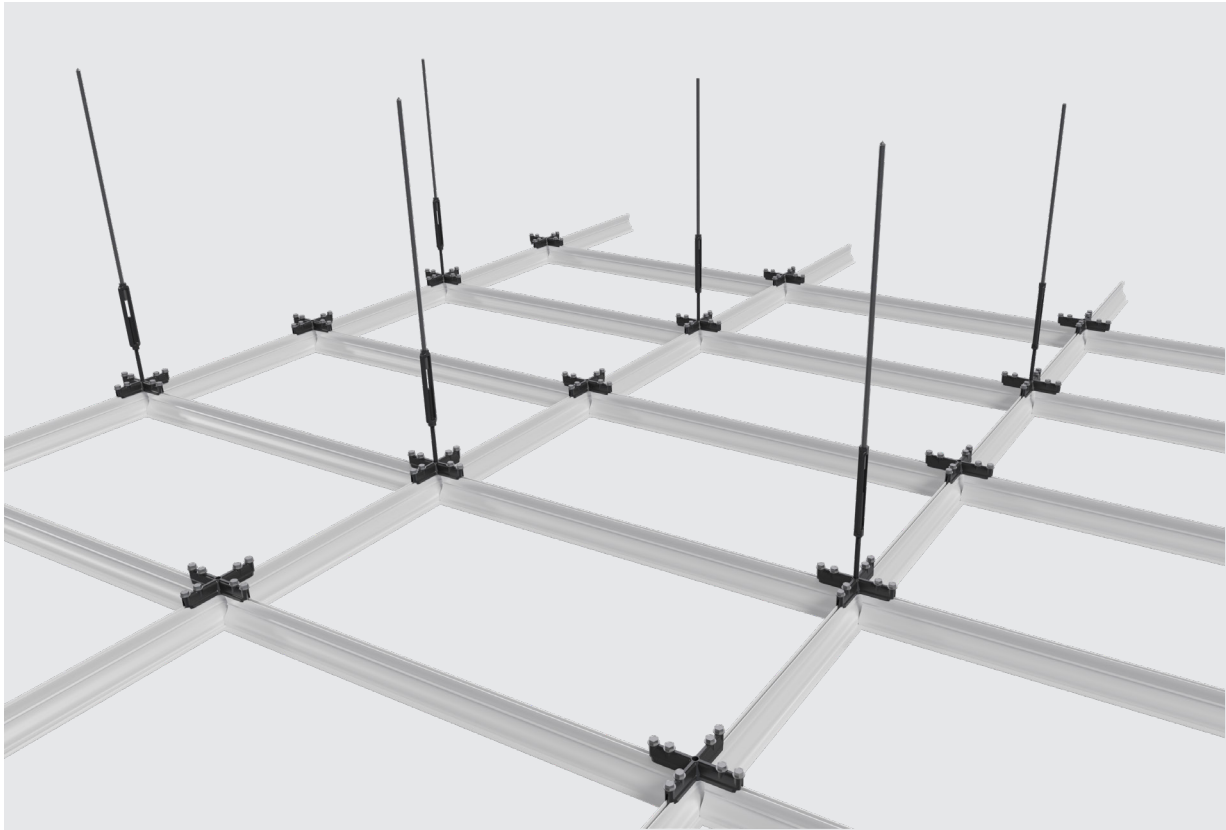
Using only Tate supplied screws, tighten all to the correct 12 Nm torque.

Note:

The notches on the main runner indicate the structural tee position.

Step By Step Installation - Option 1: Stick Fixing

Step 12



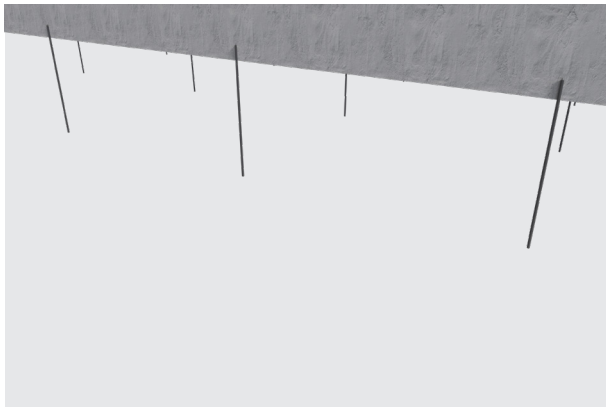
Repeat the process until all structural tees have been installed.

Step By Step Installation - Option 2: Ladder

Option 2 – Ladder type installation

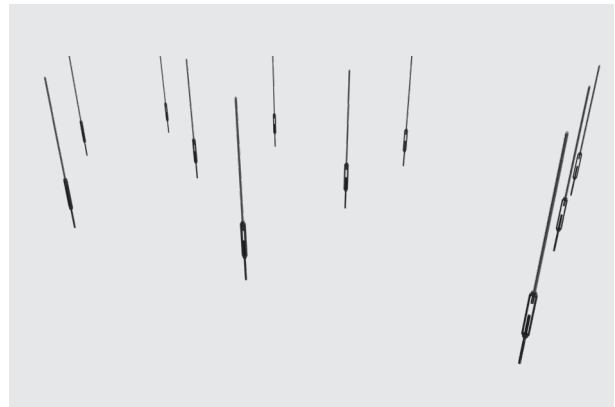
Hanger configurations of the Tate Forte system can be project specific, and may vary from the standard 1200x1200mm configuration. Please refer to the technical data sheet for performance details.

Step 1



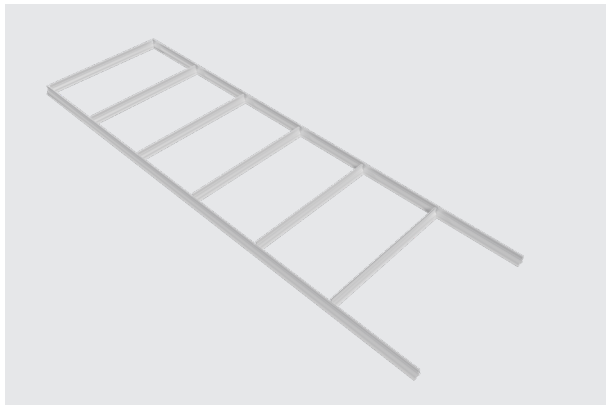
Mark location points of hangers and fix threaded rods (supplied by others) to the building structure.

Step 2



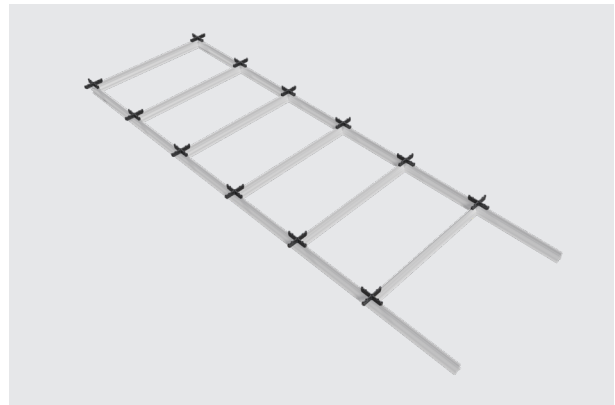
Connect the turnbuckle+starter rod to the previously installed threaded rods.

Step 3



Assemble 2 main runners and 6 structural tees on the ground. Refer to the illustration above.

Step 4



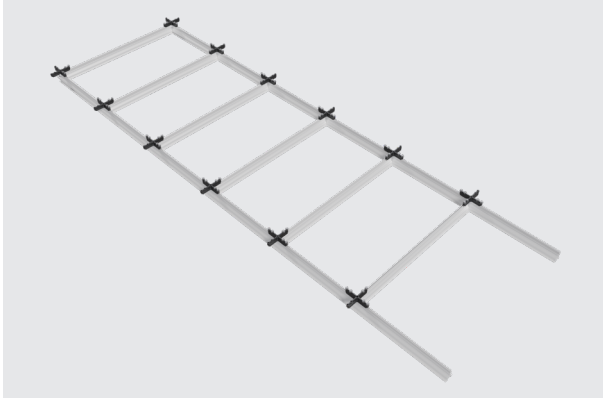
Lay an XL connector at the junction between the structural tees and main runners. The notches on the main runners indicate the junction point.

Note:

When correctly in place, the connector should not be able to slide along the main runner.

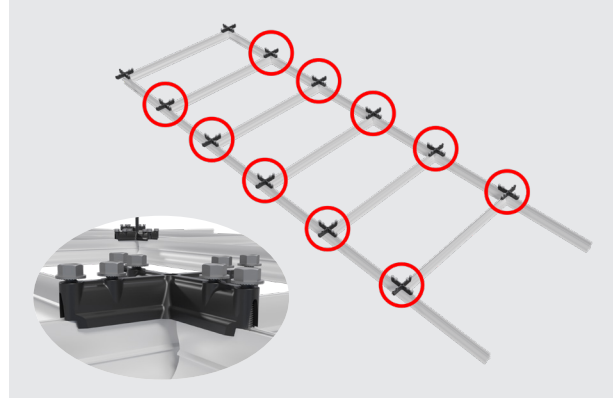
Step By Step Installation - Option 2: Ladder

Step 5



Using Tate's supplied screws, hand tight the screws to secure the connections.

Step 6

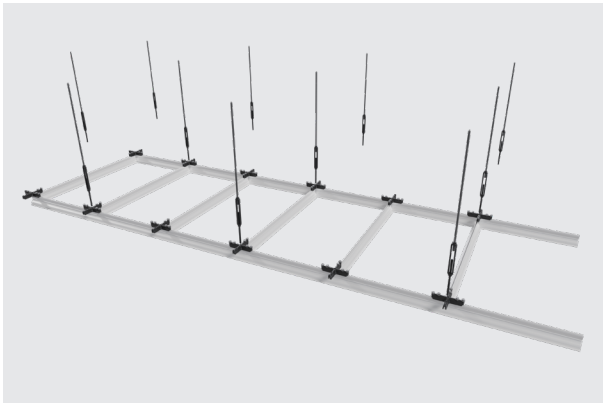


For ease of installation, do not fully tighten cross connectors at interior single sided junctions (shown in red).

Remember to tighten at 12 Nm once the ceiling is assembled (see: Step 11).

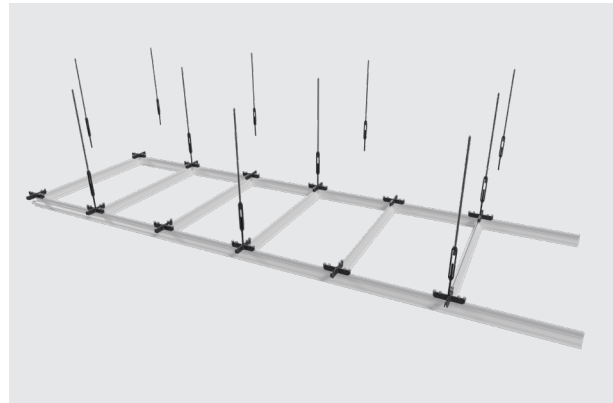
Tate Forte allows for different configurations. Structural tees can be spaced 600mm or 1200mm (centre to centre). Tate Forte's grid can include closed face profiles for non-structural requirements.

Step 7



Lift the assembly to reach the desired height of the ceiling.

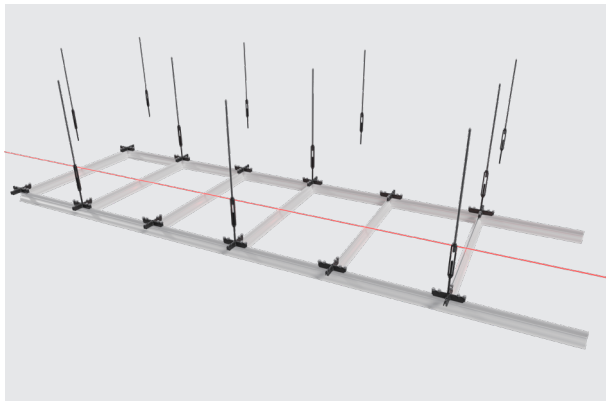
Step 8



Connect the starter rod to the connectors
- Engage the thread fully.

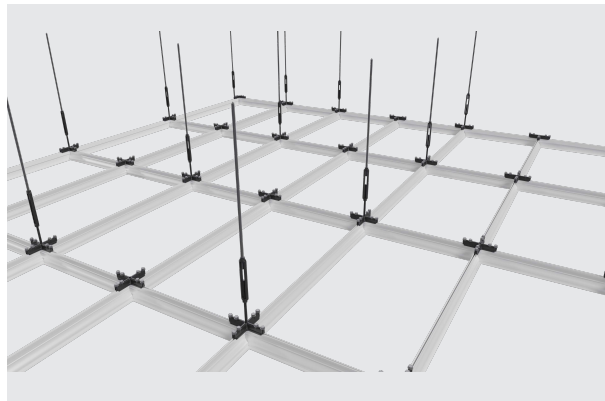
Step By Step Installation - Option 2: Ladder

Step 9



Using a laser, adapt the height of the ceiling turning the turnbuckle so that it is levelled.

Step 10



Repeat steps 3-10 until the whole ceiling grid is finished.

Step By Step Installation - Tile Installation

The table below shows the tile size depending on Tate Forte's grid configuration.

Span (centre to centre of structural tees)	Tile Size
1200	1155 x 1155 $\pm$ 3mm
600	1155 x 550 $\pm$ 3mm

Tate Forte has central wings to secure the tile's clips without additional screws to the top channel.

Appropriate clips need to be selected to suit different types of tiles. Refer to the above component description or contact a Tate representative for further information.

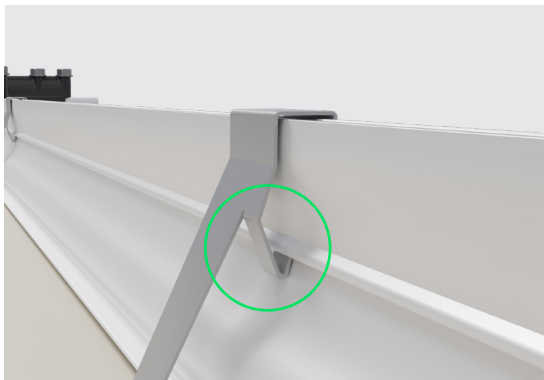
Tate provides gasket for air tightness purposes. Installation of this gasket is recommended to be done prior installation of the ceiling Grid.

Tate recommends the following number of clips per tile.

Tile size (nominal)	Clips on long side	Clips on short side	Total*
1200mm x 1200mm	2	2	8
1200mm x 600mm	2	0	4

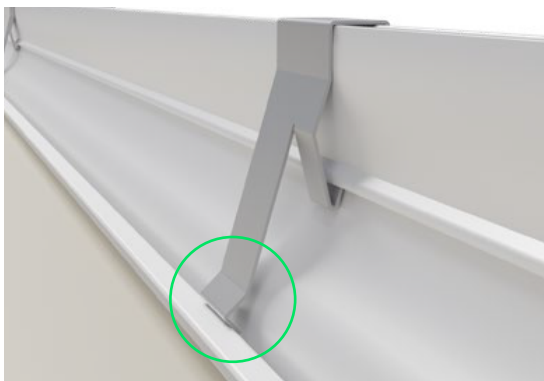
* The adequate number of clips should be decided according to the operating pressure of the data centre.

Clip Installation



Install the clips pressing them into the profile by hand, lightly tapping them in position.

The clips must clip into the wings on either side of the profile as shown in the image.



When spring clips are used, they must be installed before the tile, ensuring the spring is aligned with the tile edge.

This clip allows for easy access above the ceiling.

Tate

Unit 2 Kylemore Park W
Kylemore, Dublin 10, D10 KH30, Ireland
T: +353 (0)1 685 6518



Please note we reserve the right to change specification or design and supply products which may differ from those described and illustrated without notice and without liability.

Tate.[®]