

1 Qwik-Fix™ Angle (Masonry Support System)



1.1 When to use Masonry Support Systems

Masonry and brick panels must be restricted in size to avoid facade cracking due to differential expansion and compressive stress fracturing. Differential expansion is caused by thermal fluctuations and moisture absorption. Qwik-Fix™ recommends masonry support angles should be provided at every single or second storey level when a building exceeds 9 metres in height. For masonry panel design guidance please refer to BS 5628: Part 1: 2005 or the IStructE manual for Eurocode 6.



Fig. 1

1.2 System Overview

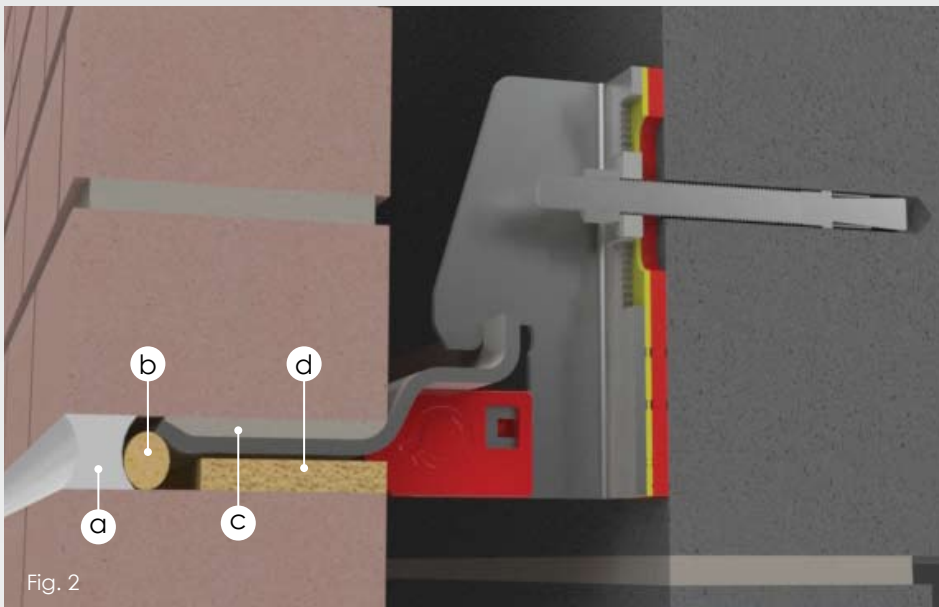


Fig. 2

- a. Silicon Soft Joint
- b. Compressible Backing Rod
- c. Mortar
- d. Compressible Filler

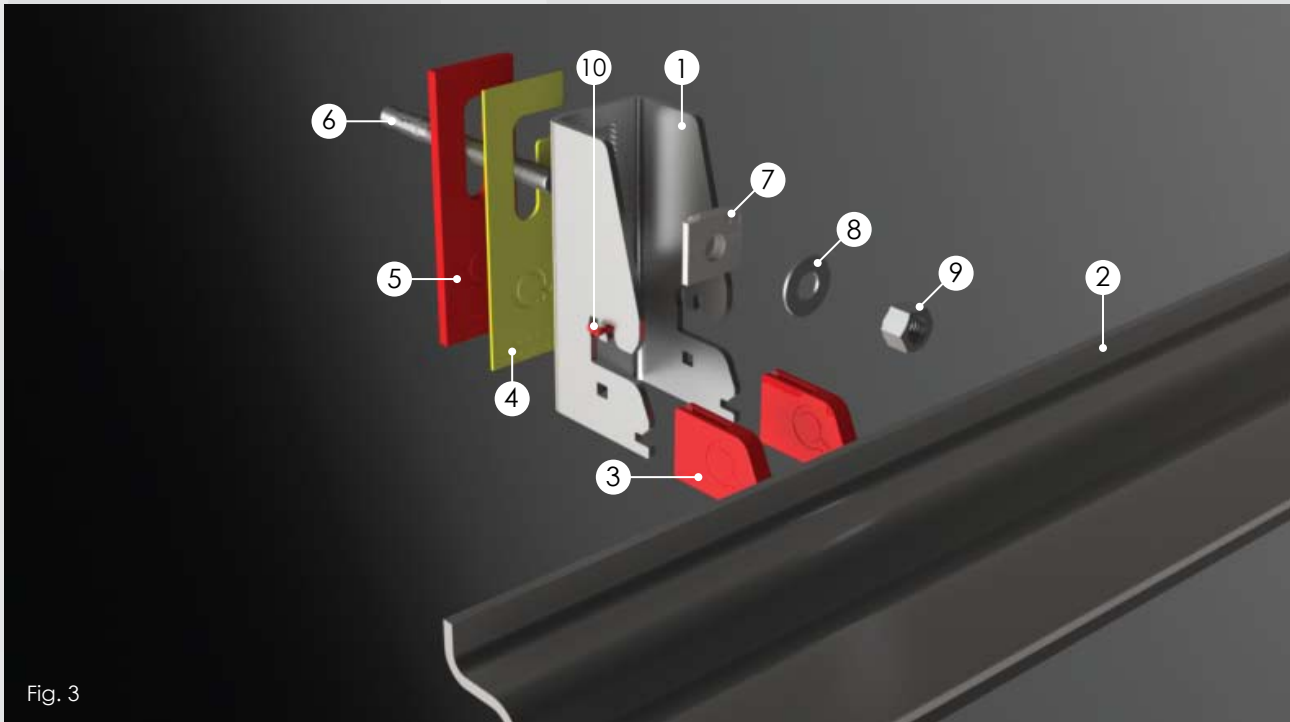
Materials:

Bracket, Lock Washer: 304 austenitic stainless steel (EN 1.4301)

Angle Section: LDX 2101 duplex stainless steel (EN 1.4162)

Extender Shoes, Isolators & Shims: Nylon 66

1 Qwik-Fix™ Angle (Masonry Support System) continued

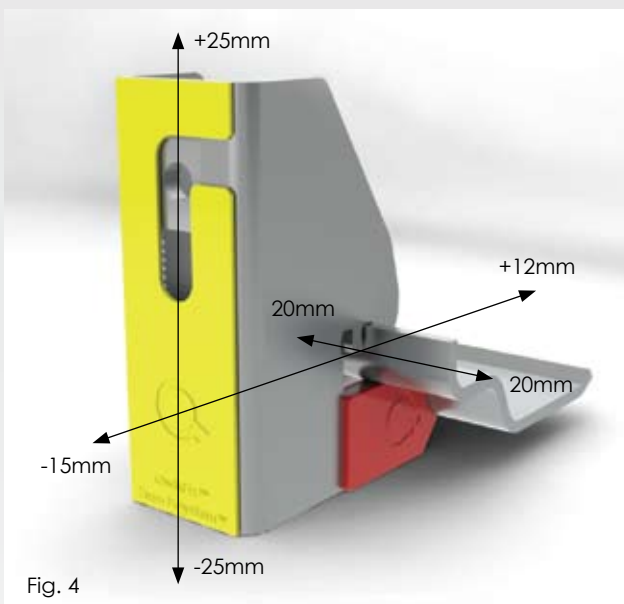


Qwik-Fix™ Angle assembly; exploded view

- | | | |
|-------------------------------|---------------------------------|-------------------|
| 1. Adjustable Support Bracket | 5. 6mm Extension Shim* | 9. M12 Lock Nut |
| 2. Shelf Angle Section | 6. A4 Stainless M12 Fixing Bolt | 10. Restraint Peg |
| 3. Extension Shoe* | 7. Adjustable Lock Washer | |
| 4. 2mm Isolation Shim | 8. M12 Washer | |

Adjustment Tolerances

Qwik Fix™ Angle masonry support system provides significant adjustability in all three planes to ensure that building tolerances can be accommodated and contact with reinforcing bar can be avoided.



The indexed aperture at the back of the bracket allows up to 25mm of accurate adjustment in either direction on the vertical plane, without slippage.

Qwik-Fix™ Angle is the first masonry support system to provide integrated adjustment across the cavity in both directions, without the use of shims (patent pending). If shims are required, overall fixing thicknesses should not exceed those specified in Section 3. Qwik-Fix™ Isolators (provided as standard) and packing shims provide favourable insulation, minimise thermal bridging and help prevent against bi-metallic corrosion.

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.3 Design Considerations

1.3.1 Fixing and Restraint Considerations

The minimum expansion gap should be at least 12mm where there is a single storey height of brickwork below the support system. The gap should be increased by 1mm for every additional metre in panel height.

Wall ties should support the panel no more than 300mm above and below the shelf angle.

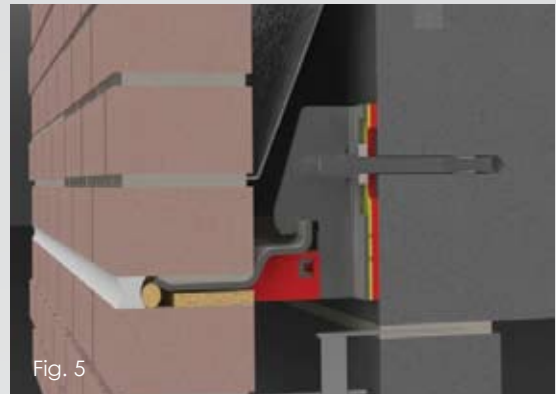


Fig. 5

1.3.2 Setting Out

System Ref	Factored Load (kN/m)	Nominal Length of Angle (mm)	Brackets per Angle Length	Nominal Bracket Centres (mm)
K02	1 to 2	2000mm	2	1000mm
K04	3 to 4	1800mm	2	900mm
K06	5 to 6	1500mm	2	750mm
K10	7 to 10	1200mm	2	600mm
K12	11 to 12	1100mm	2	550mm
K14	13 to 14	1000mm	2	500mm
K16	15 to 16	900mm	2	450mm
K18	17 to 18	1000mm	3	330mm
K20	19 to 20	600mm	2	300mm

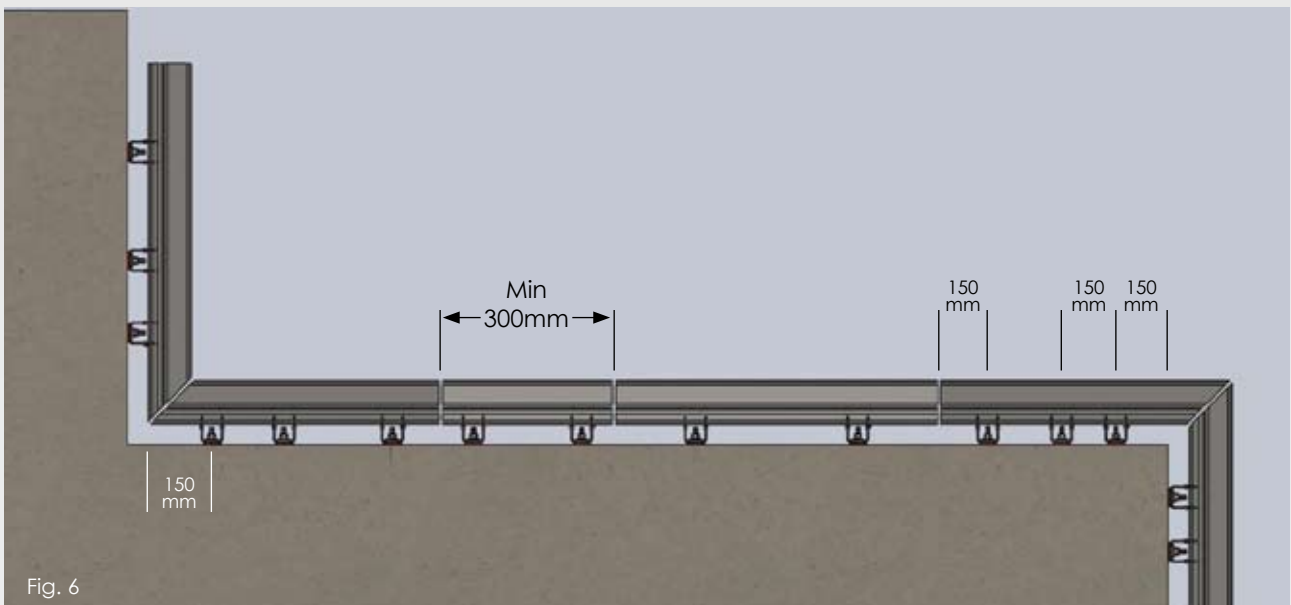


Fig. 6

While standard lengths of straight angle may be cut on site to ensure they fit, corner units should never be cut. Straight sections should not be cut to less than 300mm if supported by two brackets. Individual brackets can be provided for filling narrower gaps and for use on radius walls.

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4 How to Specify Qwik Fix™ Angle

Building a system specification for Qwik-Fix™ Angle is a simple process. By following the format set out in the example below, you can provide us with all the required information.

Formatting Example:

	Sample Value	Resultant Specification	Page (Section)
Load/ Cavity	14kN/m 130	K14 K14-130	4 (1.4.1)
Supporting Structure	Concrete	K14-130-CN	5 (1.4.2)
Fixing Detail	Chemical Anchor in	K14-130-CN-CA	6 (1.4.3)
Angle Arrangement	Standard Non Welded Angle	K14-130-CN-CA-SA	9 (1.4.4)
Extras	Plaster Key	K14-130-CN-CA-SA-PK	10 (1.4.5)

This specification will read as follows: Quick-Fix™ Angle K14-130-CN-CACR-SA-PK

Continue to Page 5 and start building your system specification.

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4.1 Cavity Width/Loading

Cavity Width

All standard Qwik-Fix™ Angle configurations are suitable for cavity widths ranging from **70mm to 200mm**. Brackets for narrower cavities can be fabricated on a case by case basis. When designing for cavity widths greater than 150mm in width, we recommend you contact the Qwik-Fix™ technical department for design assistance on fixing details.

Loading

Qwik Fix™ Angle is supplied in configurations to accommodate design loads ranging between 1kN/m and 20kN/m.

Qwik-Fix™ Angle is suitable for use with most outer leaf materials: brickwork, fairface blockwork, rendered blockwork, exterior insulation panels, cut stone and reconstituted stone.

Calculating Loads:

Masonry Load Assumptions for Brick, Block & Render below are per BS 648 (1964). Qwik-Fix™ recommends referring to manufacturers guidelines for exact values.

Material	Density kg/m ³	Unfactored Panel Load kN/m ²	*Factored Panel Load kN/m ²
Blockwork & Medium Density Clay Brickwork (100mm wide)	2150	2.15	3.01
Blockwork & Medium Density Clay Brickwork (215mm wide)	2150	4.62	6.50
Sand & Cement Render (12.7mm thick)	1888	0.24	0.34
High Density Clay Brickwork	2327	2.33	3.30

*** Factored Panel Load = (Unfactored Characteristic Load x 1.4 Factor of Safety)**

An overall partial safety factor for action of g = 1.4 is used. The partial safety factors for action depend on the type of loading and shall be taken from the national regulations. According to the British National Annex of Eurocode: Basis of Structural Design (BSEN1990), the partial safety factor is gG = 1.35 for permanent actions and gQ = 1.5 for variable actions.

$$\text{Design Load (kN/m)} = [\text{Factored Panel Load (kN/m}^2\text{)} \times \text{Panel Height (m)}]$$

Factored Load Range (kN/m)	Specify As Follows:
1-2	K02 - Cavity Width [mm]
3-4	K04 - Cavity Width [mm]
5-6	K06 - Cavity Width [mm]
7-10	K10 - Cavity Width [mm]
11-12	K12 - Cavity Width [mm]
13-14	K14 - Cavity Width [mm]
15-16	K16 - Cavity Width [mm]
17-18	K18 - Cavity Width [mm]
19-20	K20 - Cavity Width [mm]

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4.2 Support Structure

Qwik-Fix™ Angle can be fixed to concrete, steel and blockwork.

Adequate support at the heel of the bracket is a critical consideration when designing masonry support systems because failure to support the heel correctly could result in unacceptable deflection at the toe of the angle.

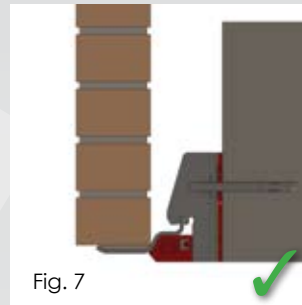


Fig. 7

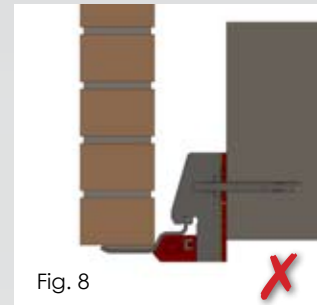


Fig. 8



Fig. 9

Fixing Back to Concrete: [Specify CN]

- Concrete Standards: Working loads are based on a concrete of minimum class C20/25, to BS EN 206-1.
- Edge Distances & Spacing: Please refer to Section 1.4.3 of this guide for information on fixing points and methods.
- Minimum Reinforcement: To be designed in accordance with BS 8110, or Eurocode 2.

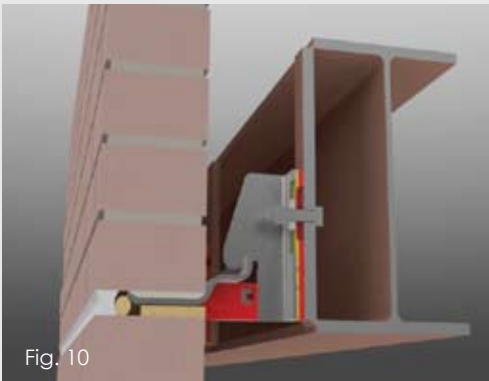


Fig. 10

Fixing Back to Steel: [Specify ST]

Qwik-Fix™ Angle can be fixed back to uncased steel. The structural edge member must be designed to minimise deflections and accommodate the torsional forces created by eccentric loading from the brickwork.

Bi metallic corrosion and thermal bridging is minimised by using the Qwik-Fix™ Isolation Shim, which comes with every system as standard.



Fig. 11

Fixing Back to Block: [Specify BL]

If fixing to blockwork walls is unavoidable, said walls must be designed by an engineer to take the resultant ultimate loads. Due to the variance in block densities, on site testing is required in all cases.

1 Qwik-Fix™ Angle (Masonry Support System) continued

Concrete Post-Fix – Mechanical Expansion Bolt:
[Specify EB]



Fig. 14

	(EB) FAZ II 12/20 A4 High Performance Bolt
Design Tensile Load (kN)	10.67
Design Shear Load (kN)	23.6
Minimum Edge Distance (mm)*	55
Minimum Spacing (mm)*	50
Maximum Fixing Thickness (mm)	20
Material	A4 Stainless
Design Method	ETAG 001 Annex C
European Technical Approval No.	01/0015

Concrete Post-Fix – Chemical Anchor:
[Specify CA]



Fig. 15

	(CA) FHB II-A S A4 M 12 x 75/25 High Performance Anchor
Resin Capsule	FHB 11-PF 12.75
Design Tensile Load (kN)	15.59
Design Shear Load (kN)	26.96
Minimum Edge Distance (mm)*	40
Minimum Spacing (mm)*	40
Maximum Fixing Thickness (mm)	25
Curing Time @ Temp. (mins)	
-5°C – 0°C	8
1°C – 10°C	6
10°C – 20°C	4
≥20°C	2
Design Method	ETAG 001 Annex C
European Technical Approval No.	05/164

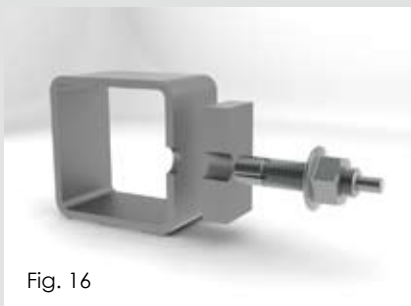
* Loads shown are based on C20/25 concrete without axial spacing and edge influences. Where factors apply please contact the Qwik-Fix™ technical department for guidance.

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4.3 (b) Fixings for Steel

Blind Fixing: [Specify BF]

When fixing to blind box section, Qwik-Fix™ recommends the use of the peg bolt, which is at least as strong as a standard bolt and can be installed very efficiently.



Peg Bolt	(BF) M12 A4
Minimum Overall Length (mm)	Fixing Thickness (mm) + 18
Design Tensile Load (kN)	9.8
Factor of Safety – Tensile Load*	5:1
Design Shear Load (kN)	32.6
Factor of Safety – Shear Load*	1.5:1
Drill Hole Diameter (mm)*	12
Minimum Spacing (mm)	35
Minimum Edge Distances (mm)	12

* The Peg Bolt should not be anchored to irregular shaped holes or holes with clearances of greater than +0.1mm.

Open Fixing: [Specify OF]



The standard solution when fixing back to uncased steel, the M12 stainless bolt can be used with all Qwik-Fix™ Angle configurations.

Set Screws	(OF) M12 A4
Design Tensile Load (kN)	25.2
Design Shear Load (kN)	17.4

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4.4 Angle Arrangements

Standard Non Welded Angle: [Specify SA]

Our signature system, Qwik-Fix™ Angle is fully adjustable on three planes and therefore mitigates for any complications which may arise on site. Added strength in the angle section gives engineers peace of mind and allows brackets to be spaced at up to 20% wider centres when compared with rival systems. Patent Pending.

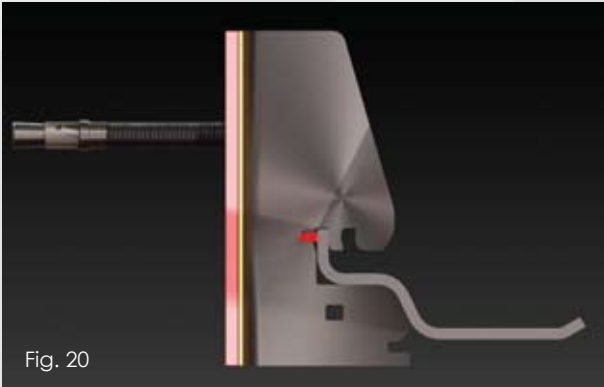


Fig. 20

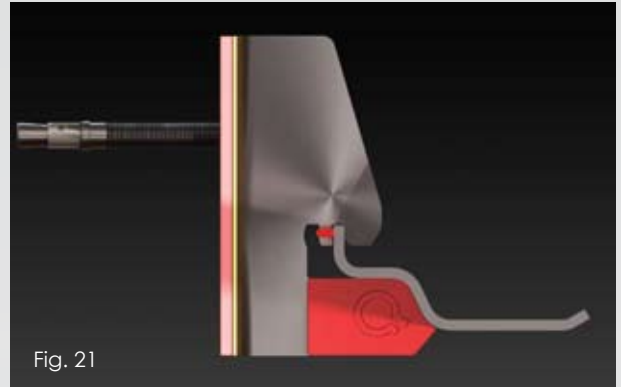


Fig. 21

Welded Angle: [Specify WLD]

Welded systems are fabricated to engineers' specifications on a case by case basis. Design assistance can be provided by the Qwik-Fix technical teams, if required. As with non welded systems, Qwik-Fix™ isolation shims are provided with welded systems as standard.

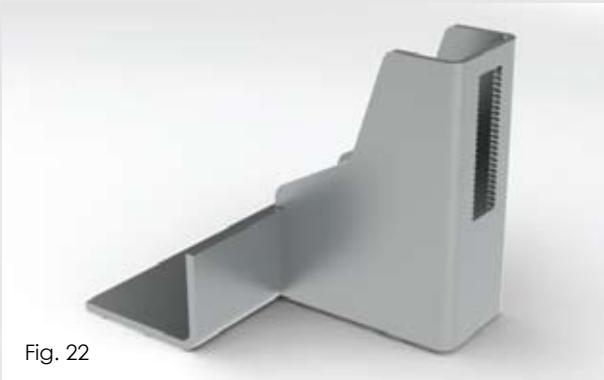


Fig. 22

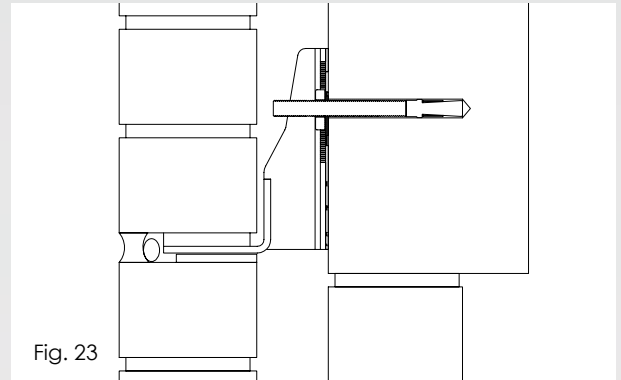


Fig. 23

Inverted Angle: [Specify INV]

Inverted systems are also fabricated to engineers' specifications on a case by case basis. Design assistance can be provided by the Qwik-Fix™ technical teams and isolation shims will be provided. Inverted systems allow for secure fixing if the expansion gap must be positioned close to the top or above the floor slab.



Fig. 24

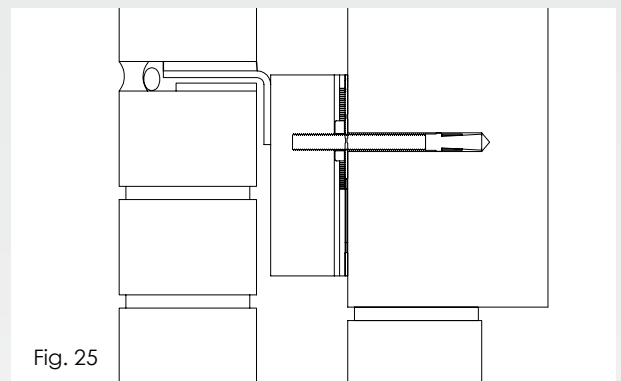


Fig. 25

1 Qwik-Fix™ Angle (Masonry Support System) continued

1.4.5 Extras - Specialist & Ancillary Products

Tall Dropper Brackets: [Specify DB]

Dropper brackets may be required if the specified support level is to be substantially lower than the floor slab. Dropper brackets are designed and fabricated on a case by case basis. Please contact the Qwik-Fix™ technical department for design assistance.



Fig. 26

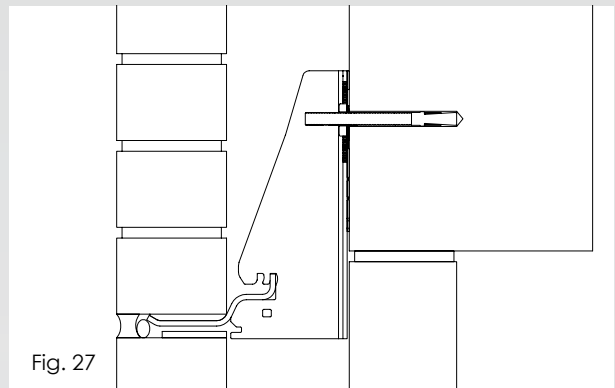


Fig. 27

Flush Non Welded Angle/Bracket: [Specify FB]

A flush angle and bracket arrangement is required if you wish to leave the stainless steel support angle exposed over an opening. Please contact the Qwik-Fix™ technical department for design assistance.



Fig. 28

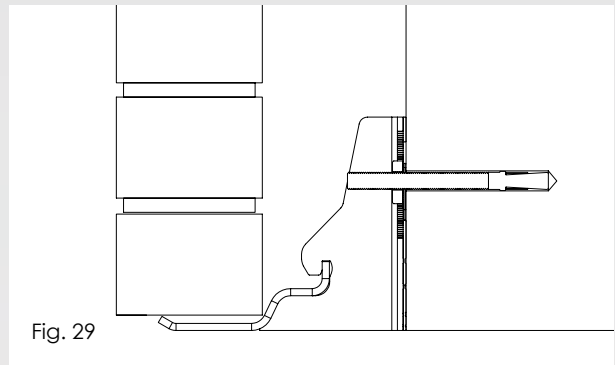


Fig. 29

Plaster Key: [Specify PK]

If you do not wish to leave stainless steel exposed in an opening, a profiled stainless steel strip is welded to the underside of the support angle so as to provide a key for retaining plaster or render. The plaster key is a standard item which requires no specific design and it can be used with any bracket type or angle arrangement.



Fig. 30

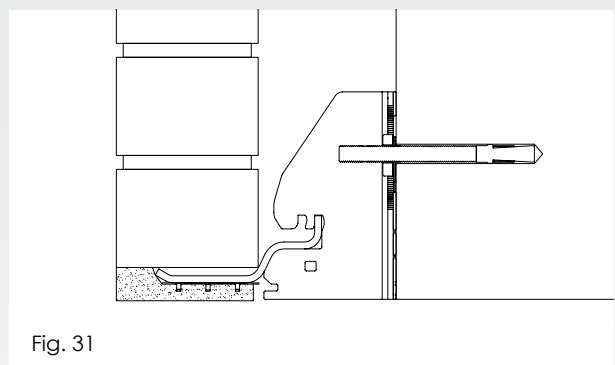


Fig. 31

1 Qwik-Fix™ Angle (Masonry Support System) continued

Individual Brackets: [Specify IB]

Individual brackets are designed to conform to BS EN 845-1 and provide masonry support above expansion gaps on radius walls and may be used as infill pieces on straight runs in certain circumstances. Individual brackets should be specified separately, citing loading specification, cavity width, supporting structure, desired fixing method and outside wall radius if applicable.

Example: You require Individual Brackets to carry a 14kN/m factored load over a 130mm cavity. You want to fix to a concrete slab using a high performance expansion bolt. The outside radius of your veneer wall is 3350mm. You require 6.5 linear metres of this specification:

Specify: Qwik-Fix™ Angle IB-K14-130-CN-EB-R3350 x 6.5 linear metres

