IG | Masonry Support

TITAN MAX

Product Guide

IG Masonry Support's TITAN MAX is a high-performance masonry support system designed to give maximum adjustability onsite.

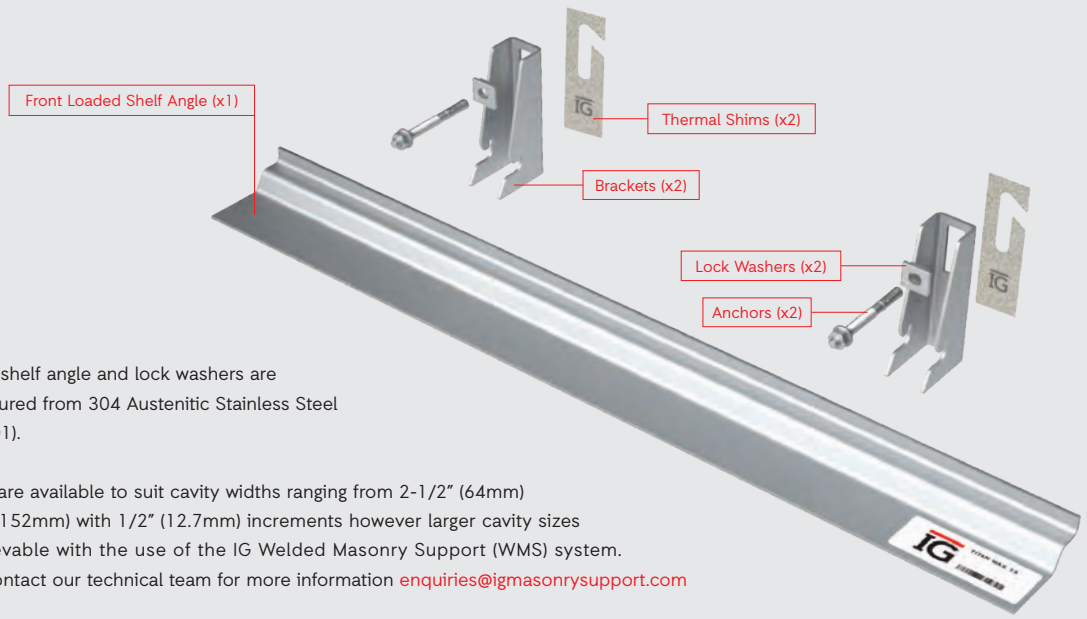
A complete off-the-shelf stainless steel system, TITAN MAX is engineered to meet the industry's demand for speed of construction and contains components suitable for a wide range of cavity widths.

Benefits of TITAN MAX

- Complete system supplied
- Available off-the-shelf
- Ease of installation, front-fit loading
- Increased adjustability
- 60% lighter than traditional methods
- 90% reduction in onsite labour
- Thermally efficient
- Corrosive resistant, manufactured from stainless steel

Introduction

TITAN MAX comprises a shelf angle, brackets, lock washers, shims and anchors.



Brackets, shelf angle and lock washers are manufactured from 304 Austenitic Stainless Steel (EN 1.4301).

Brackets are available to suit cavity widths ranging from 2-1/2" (64mm) up to 6" (152mm) with 1/2" (12.7mm) increments however larger cavity sizes are achievable with the use of the IG Welded Masonry Support (WMS) system. Please contact our technical team for more information enquiries@igmasonrysupport.com

Support structure

(The concrete or steel frame that TITAN MAX is fixed to)

The suitability of the support structure is crucial to the performance of TITAN MAX. Please ensure the support structure is adequately designed by the Project Structural Engineer.

Before the system is installed, the support structure must be checked for alignment, both horizontally and vertically. If the support structure is outside the adjustment range of the system outlined within this document, please consult with our technical team for advice.

Safety

While TITAN MAX is easy to handle, components are produced from steel plates and may have sharp edges. Care should be taken when handling components and suitable protective equipment should be worn at all times.

Storage

All goods received must be stored on a level area and cordoned off so that they are clearly visible. It is the manufacturer's recommendation that the goods stored onsite should be covered. The cover should only be removed prior to installation.

To achieve the design capacity of TITAN MAX, the system must be installed in the correct manner.

System specifications

IG Masonry Support offers two TITAN MAX systems:

TITAN MAX 7.5
has the capability to carry one storey of masonry.

TITAN MAX 12.5
has the capability to carry up to two stories of masonry.

Table 1: Approved TITAN MAX System Specifications

SYSTEM TYPE	MAXIMUM UNFACTORED LOAD		MAXIMUM ALLOWABLE VENEER HEIGHT		ANGLE LENGTH*		NOMINAL LENGTH**		BRACKET CENTRES	
TITAN MAX 7.5	514 LB/FT	7.5 KN/M	12.5 FT	3.8 M	47-1/2 IN	1207 MM	48 IN	1219 MM	24 IN	610 MM
TITAN MAX 12.5	856 LB/FT	12.5 KN/M	20.7 FT	6.3 M	35-1/2 IN	902 MM	36 IN	914 MM	18 IN	457 MM

Loads may be restricted by cavity size and anchor type - please refer to Declaration of Performance (DOP) on page 10 for further details.

* Including 1/2" (12mm) gap between shelf angles

** Allowance for a 1/2" (12mm) gap between shelf angles

Anchor specifications

The anchor is the most important component involved in achieving the design capacity of TITAN MAX.

It is crucial anchors are installed in accordance with the manufacturer guidelines and torque settings (see table below), to ensure the design requirements for the product are met. Only use anchors specified within this guide.

Table 2: Approved Anchors

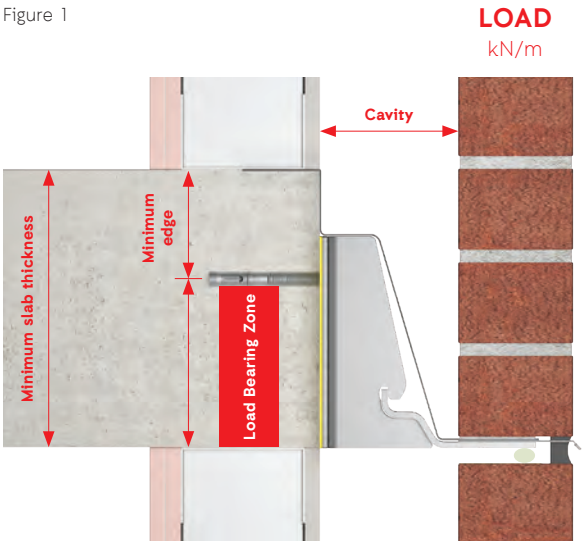
ANCHOR TYPE	FIXING TO	HOLE DIAMETER		EMBEDMENT DEPTH		TORQUE	
HILTI - KWIK BOLT TZ2	C30/37 [MPa] or 4350 [Psi]*	1/2 IN	12.7 MM	2-1/2IN	63.5 MM	40 FT-IB	54 NM
HILTI - HIT-HY 200 + HAS-R (Injection Resin) Injection gun not included	C30/37 [MPa] or 4350 [Psi]*	9/16 IN	14.28 MM	5-5/16 IN	135 MM	30 FT-IB	40 NM
HILTI - HVU2 + HAS (Resin Capsule)	C30/37 [MPa] or 4350 [Psi]*	9/16 IN	14.28 MM	4-1/4 IN	108 MM	30 FT-IB	41 NM
Tap Bolt/Set Screw	Steel (wing plates)	17/32 IN	13.49 MM	—	—	57 FT-IB	76 NM
Blind Bolt - HD Bolt	Steel (box section)	1/2 IN	12.7 MM	—	—	22 FT-IB	30 NM
HBC-C 8.8F, M12 X 60MM	Cast-in Channel (HAC 40)*	—	—	—	—	18.5 FT-IB	25 NM

*Minimum concrete compressive strength C30/37 [MPa] or 4350 [Psi]

HILTI

Scan for more information on compatible HILTI fixings.

Figure 1



Load Bearing Zone

The bracket 'Load Bearing Zone' (i.e. the distance between the anchor and the bottom heel of the bracket) must have full contact with the support structure and shim(s).

Reduction of the 'Load Bearing Zone' will reduce the design capacity of the system and may result in excessive deflection and anchor failure.

Never allow the heel of the bracket to project below the support structure. If you require the bracket to drop below the support structure, please contact our technical team.

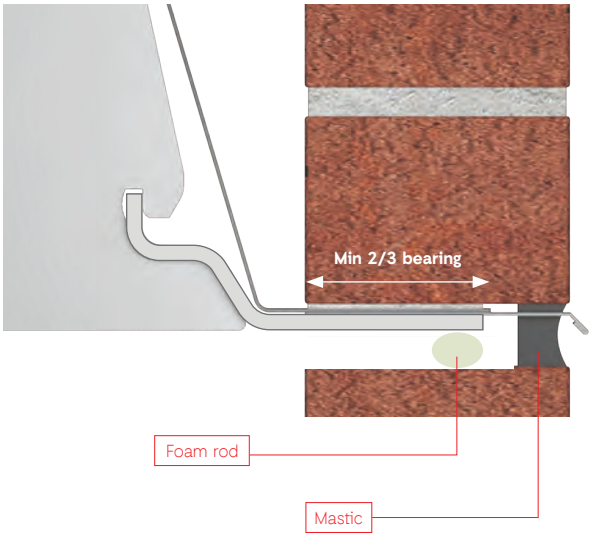
Brickwork overhang

Brickwork overhang must not exceed 1/3 of the brick width. A minimum masonry bearing of 2/3 on the shelf must be maintained unless otherwise stated by the manufacturer. It is therefore recommended that the bricks are positioned close to the back edge of the shelf angle (see figure 2).

Wall ties

Wall ties are crucial to the performance of all masonry support systems. The recommended minimum spacing for wall ties is one tie per 2.67 square feet of wall area, spaced no more than 32" (813mm) horizontally and 18" (457mm) vertically in the U.S.; 24" (610mm) horizontally x 32" (813mm) vertically as per Canadian Standards Association.

Figure 2



Foam rod

This allows for the thermal expansion and movement of the brickwork. A lipped brick may be installed to reduce the overall height of this mastic joint.

Positioning the shelf

The underside of the shelf angle should be positioned to allow for settlement that may occur as a result of the vertical dead load imposed by the masonry and to accommodate expansion of brickwork below. Please consult with your Project Structural Engineer to determine this measurement.

Adjustability

TITAN MAX provides adjustability across all three planes (X,Y & Z), to ensure that building tolerances can be accommodated and contact with reinforcing bar can be avoided.

(X) Shimming (Y) Vertical adjustment (Z) Lateral adjustment

Figure 3

Shimming (X)

To accommodate a small increase in cavity width, shims can be inserted between the support structure and the bracket. Thermal shims are available in a thickness of 5/64" (2mm) and stainless steel shims are available in a thickness of 5/32" (4mm).

- The combined thickness of shims used per bracket should never exceed half of the outside diameter of the anchor or 1/4" (6mm), whichever is less.
- The collective number of shims that can be used should never exceed two (1 x thermal shim and 1 x stainless steel shim).
- Shims must support, and come into contact with the full 'Load Bearing Zone' of the bracket against the support structure.

5/64" (2mm) thermal shims are provided as standard with TITAN MAX. Additional stainless steel shims are available upon request.

Stainless Steel Shim

Thermal Shim

Table 3: Approved Adjustability

CAVITY SIZE ACHIEVABLE	UNIT	CAVITY SIZES (D)								BRICK OVERHANG (A)	STANDARD THERMAL SHIM (B)	MAX ADDITIONAL STAINLESS STEEL SHIM (C)
STANDARD CAVITY SIZE		**64**	**76**	**89**	**102**	**114**	**127**	**140**	**152**	**25**	**2**	**0**
Min cavity size achievable	MM	58	70	83	96	108	121	134	146	19	2	0
Max cavity size achievable		73	85	98	111	123	136	149	161	30	2	4
STANDARD CAVITY SIZE		**2-1/2**	**3**	**3-1/2**	**4**	**4-1/2**	**5**	**5-1/2**	**6**	**1**	**5/64**	**0**
Min cavity size achievable	IN	2-1/4	2-3/4	3-1/4	3-3/4	4-1/4	4-3/4	5-1/4	5-3/4	4/5	5/64	0
Max cavity size achievable		2-7/8	3-3/8	3-7/8	4-3/8	4-7/8	5-3/8	5-7/8	6-3/8	1-1/5	5/64	5/32

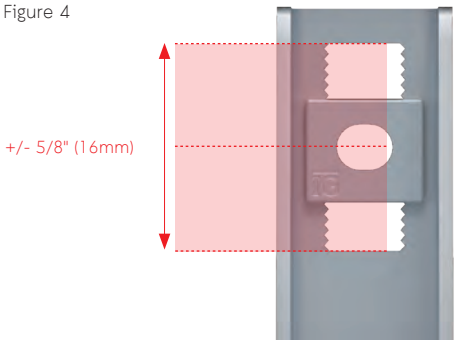
For maximum adjustability, maximize brickwork overhang and insert 5/32" (4mm) stainless steel shim between the bracket and thermal shim.

Table 3 is based on a minimum top concrete edge of 3" (75mm), minimum slab thickness of 9" (225mm) and a minimum 'Load Bearing Zone' of 4-3/4" (120mm).

Vertical adjustment (Y)

Vertical adjustment is offered by means of a toothed lock washer. This is inserted into the serrated slot in the support bracket. It can then be adjusted vertically to move the bracket higher or lower if required. The serrated area at the back of the bracket allows up to +/- 5/8" (16mm) of adjustment in either direction on the vertical plane. The lock washer also offers fine adjustment by rotating it through 180 degrees; this is achieved by the offset hole in the lock washer.

Figure 4



Lateral adjustment (Z)

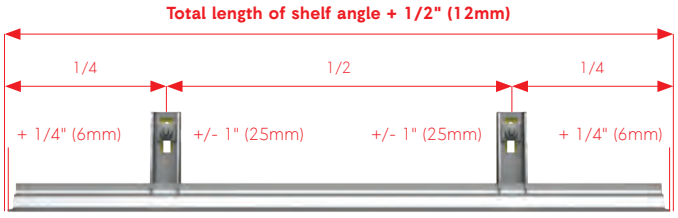
TITAN MAX is designed to have two brackets per shelf angle (the only variation from this is on a corner where three brackets will be introduced).

To achieve the correct bracket spacing, add a nominal 1/2" (12mm) to the shelf angle length and then space ¼-½-¼ along this measurement. The maximum adjustment from these positions is +/- 1" (25mm). This allows the bracket position to be moved if the drill hole position clashes with reinforcing bar preventing drilling, or for pre-drilled steel that is slightly offset from its required position.

The lock washer also provides lateral adjustment via the oval-shaped hole in the washer. The anchor can be moved laterally to allow for fine adjustment.

Note Nominal shelf angle length = shelf angle + 1/2" (12mm).

Figure 5



Maximum cavity adjustment with same bracket type

TITAN MAX can accommodate onsite variations in the cavity width. See Table 3: Approved Adjustability on page 6 for more information.

Figure 6

Achieved using 1 x 5/64" (2mm) thermal shim and push the brick inwards.

Achieved using 1 x 5/64" (2mm) thermal shim with standard 1" (25mm) overhang of brick.

Achieved using 1 x 5/64" (2mm) thermal shim and 1 x 5/32 (4mm) stainless steel shim with a 1-1/5" (30mm) overhang.

Figure 6 based on a 3-5/8" (90mm) brick

Positioning the bracket

Figure 7

Brackets must be installed at the correct level making sure the back of the bracket ('Load Bearing Zone') is in full contact with the support structure. Only IG shims can be used with TITAN MAX.

External corners

When installing TITAN MAX at an external corner, you will require two mitred shelf angles. Standard shelf angles can be cut on-site to suit project requirements.

Each shelf angle consists of three support brackets and they are positioned as follows:

Bracket 1

Bracket positioned 6" (152mm) in from corner of the support structure.

Bracket 2

Bracket positioned a further 6" (152mm) from bracket 1.

Bracket 3

Positioned towards the other end of the shelf, drawings can be provided upon request.

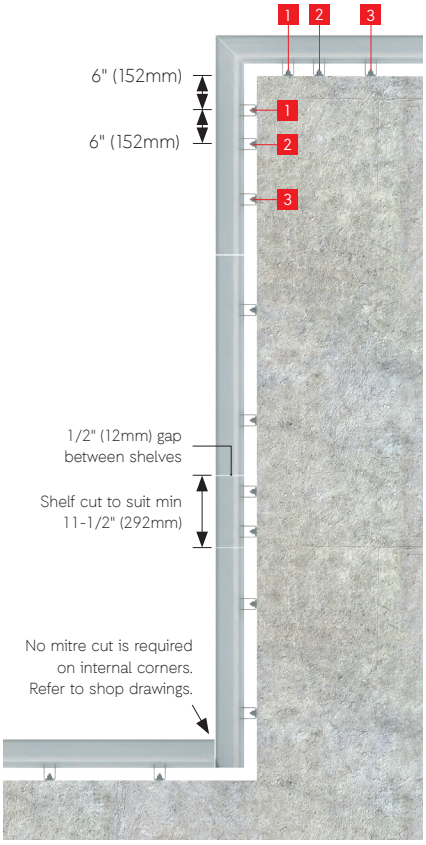


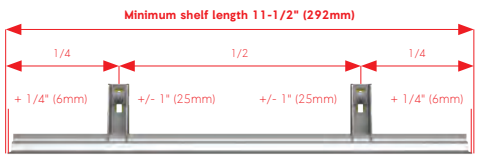
Figure 8

Site cutting

TITAN MAX has a standard shelf angle which can be cut on site to suit. Any cut or reduced length must still be supported by a minimum of two brackets.

The minimum length that the shelf can be trimmed down to is 11-1/2" (292mm) with the minimum bracket spacing of 6" (152mm). If the required space is less than 11-1/2" (292mm) then two shelves will have to be cut.

Figure 9



Bi-metallic corrosion

Bi-metallic corrosion can occur when stainless steel and carbon steel are in direct contact with each other in a damp environment. This can be avoided by isolating the two metals.

IG Masonry Support supply a thermal shim as standard, which must be located between the back of the bracket and support beam. Powder coated lock washers and neoprene washers are also available upon request from the IG Masonry Support technical team.

Required building method

One course of brick should be built on the masonry support shelf angle (which includes a thru-wall flashing and a drip edge) and given adequate time to cure. A further five courses of brickwork should then be built and tied to the structure of the building, again given adequate time to cure. This will allow the masonry to form a rigid structure above the shelf angle.

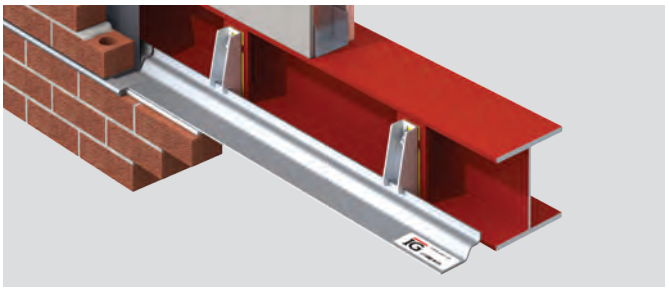
The maximum height of masonry constructed each day above this rigid structure should not exceed 59" (1500mm), giving 1-2 days curing time before any future building.

Fixing options

TITAN MAX can be fixed to:

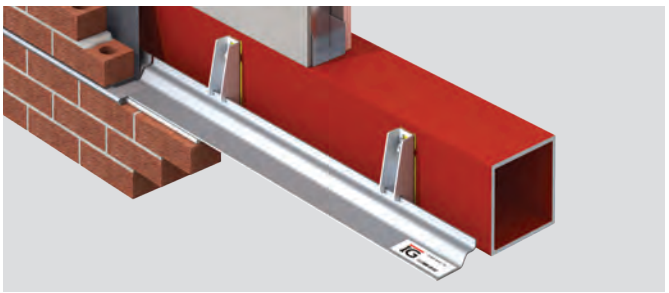
Figure 10

A Concrete slab



B I-beam with Wing Plates

C Cast-in Channel



D Box section

Declaration of Performance (DOP)

The tables below detail TITAN MAX specifications, based on a 3-5/8" (92mm) brick width however the system is suitable for various brick widths. Please contact our technical team for more information.

Table 4: TITAN MAX 7.5 - Loading Table - lb/ft (kN/m)

	CAVITY SIZES							
ANCHOR TYPE	**2-1/2" (64mm)**	**3" (76mm)**	**3-1/2" (89mm)**	**4" (102mm)**	**4-1/2" (114mm)**	**5" (127mm)**	**5-1/2" (140mm)**	**6" (152mm)**
HILTI - KWIK BOLT TZ2	514 lb/ft (7.5 kN/m)							
HILTI - HIT-HY 200 + HAS-R (Injection Resin)*	514 lb/ft (7.5 kN/m)							
HILTI - HVU2 + HAS (Resin Capsule)	514 lb/ft (7.5 kN/m)							
HILTI - HAC-40	514 lb/ft (7.5 kN/m)							
Tap Bolt/Set Screw	514 lb/ft (7.5 kN/m)							
Blindbolt - HD Bolt	514 lb/ft (7.5 kN/m)							

*Injection gun not included

Table 5: TITAN MAX 12.5 - Loading Table - lb/ft (kN/m)

	CAVITY SIZES							
ANCHOR TYPE	**2-1/2" (64mm)**	**3" (76mm)**	**3-1/2" (89mm)**	**4" (102mm)**	**4-1/2" (114mm)**	**5" (127mm)**	**5-1/2" (140mm)**	**6" (152mm)**
HILTI - KWIK BOLT TZ2	856 lb/ft (12.5 kN/m)					829 lb/ft (12.1 kN/m)	788 lb/ft (11.5 kN/m)	754 lb/ft (11 kN/m)
HILTI - HIT-HY 200 + HAS-R (Injection Resin)*	856 lb/ft (12.5 kN/m)					829 lb/ft (12.1 kN/m)	788 lb/ft (11.5 kN/m)	754 lb/ft (11 kN/m)
HILTI - HVU2 + HAS (Resin Capsule)	856 lb/ft (12.5 kN/m)			815 lb/ft (11.9kN/m)	774 lb/ft (11.3 kN/m)	733 lb/ft (10.7 kN/m)	692 lb/ft (10.1 kN/m)	664 lb/ft (9.7 kN/m)
HILTI - HAC-40	856 lb/ft (12.5 kN/m)							829 lb/ft (12.1 kN/m)
Tap Bolt/Set Screw	856 lb/ft (12.5 kN/m)							829 lb/ft (12.1 kN/m)
Blindbolt - HD Bolt	856 lb/ft (12.5 kN/m)							829 lb/ft (12.1 kN/m)

*Injection gun not included

NOTE Table 4 and 5 - All loadings considered unfactored.

TITAN MAX

Additional installation material

For a video installation guide, please visit **igmasonrysupport.com** or scan the QR code. Alternatively please refer to the supporting documentation supplied with this guide.

IG | Masonry Support

The IG Masonry Support technical team are on hand to provide support when installing TITAN MAX. Please call T +1 (647) 262 6583 or email enquiries@igmasonrysupport.com

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