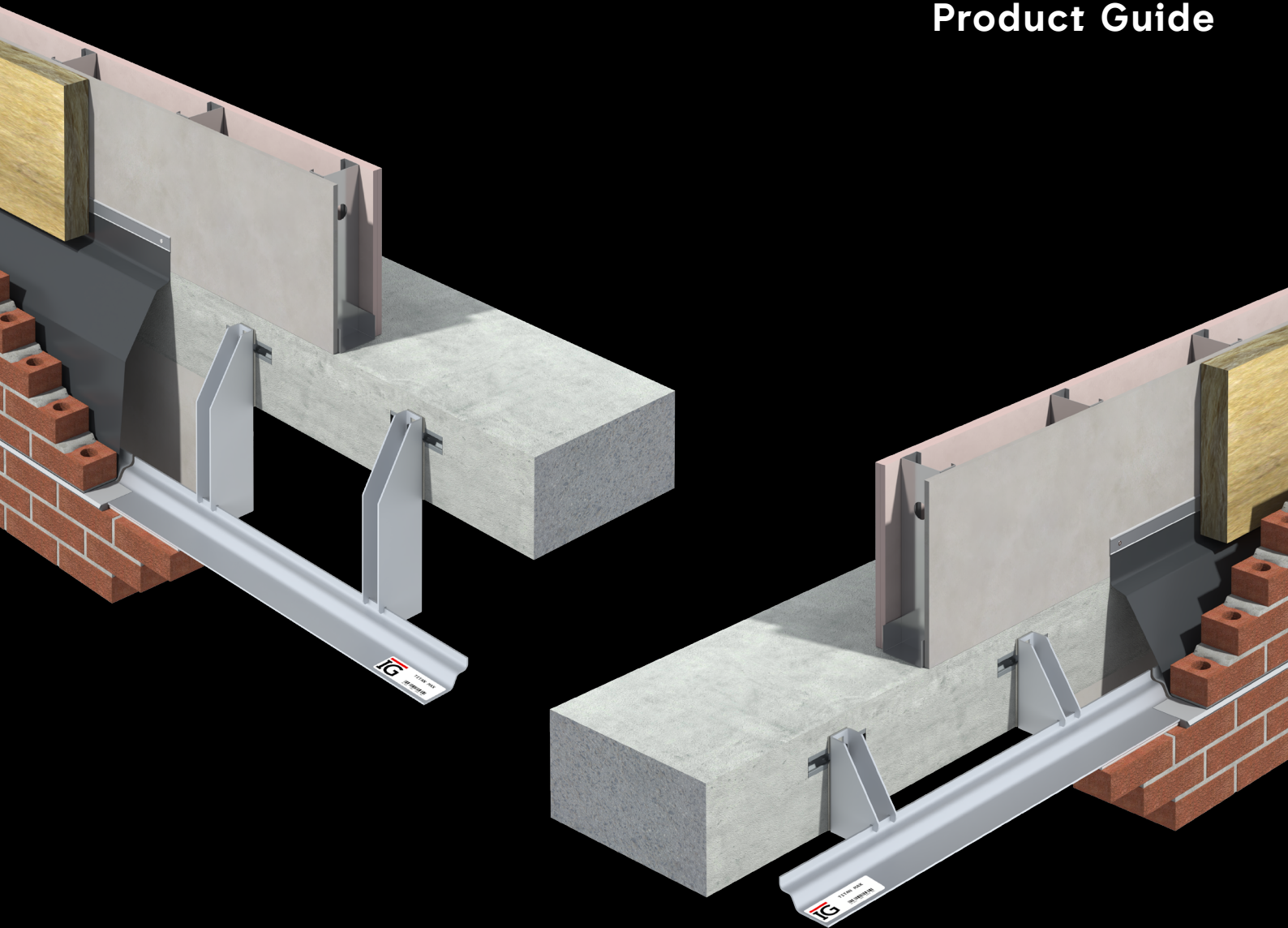


TITAN^{MAX}

Product Guide



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

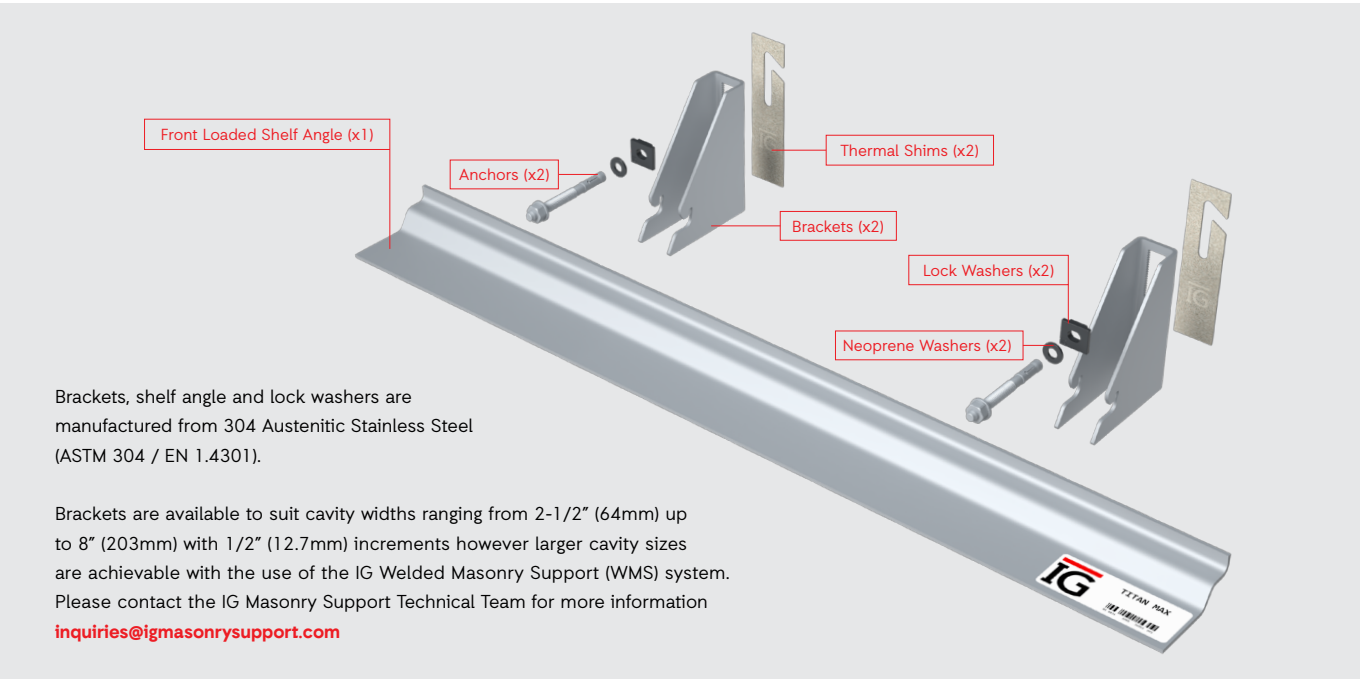
A complete ex-stock stainless steel system, TITAN MAX is engineered to meet the industry’s demand for speed of construction and contains components suitable for a wide range of cavity widths.

Benefits of TITAN MAX

- Ex-stock product
- Complete system supplied
- 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, neoprene washers, lock washers, thermal shims and anchors.



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's 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 the IG Masonry Support 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 surface and clearly cordoned off for visibility. The manufacturer recommends that all goods stored onsite be covered, with the cover removed only immediately prior to installation.

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

System Specifications

IG Masonry Support offers seven TITAN MAX systems:



TITAN MAX 270 is capable of supporting a masonry parapet.



TITAN MAX 410 - 680 can support one story of masonry.



TITAN MAX 860 can support two stories of masonry.

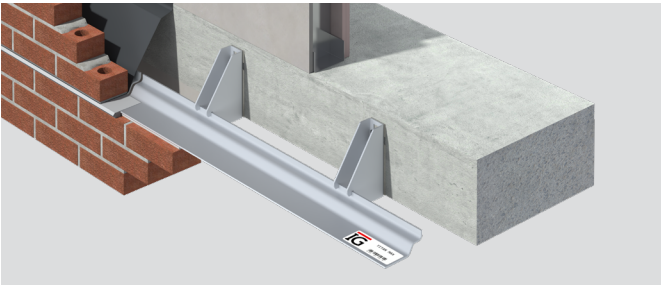
Table 1: Approved TITAN MAX System Specifications										
SYSTEM TYPE	MAXIMUM UNFACTORED LOAD		MAXIMUM ALLOWABLE VENEER HEIGHT		ANGLE LENGTH		NOMINAL LENGTH*		BRACKET CENTRES	
TITAN MAX 270	270 lb/ft	3.94 kN/m	7.2 ft	2.17 m	59-1/2 in	1511 mm	60 in	1524 mm	30 in	762 mm
TITAN MAX 410	410 lb/ft	5.98 kN/m	10.9 ft	3.29 m	55-1/2 in	1410 mm	56 in	1422 mm	28 in	711 mm
TITAN MAX 480	480 lb/ft	7.00 kN/m	12.8 ft	3.85 m	51-1/2 in	1308 mm	52 in	1321 mm	26 in	661 mm
TITAN MAX 530	530 lb/ft	7.73 kN/m	14 ft	4.25 m	47-1/2 in	1207 mm	48 in	1219 mm	24 in	609 mm
TITAN MAX 620	620 lb/ft	9.05 kN/m	16.5 ft	4.97 m	43-1/2 in	1105 mm	44 in	1118 mm	22 in	559 mm
TITAN MAX 680	680 lb/ft	9.92 kN/m	18.1 ft	5.45 m	39-1/2 in	1003 mm	40 in	1016 mm	20 in	508 mm
TITAN MAX 860	860 lb/ft	12.55 kN/m	22.9 ft	6.89 m	31-1/2 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 11 for further details.

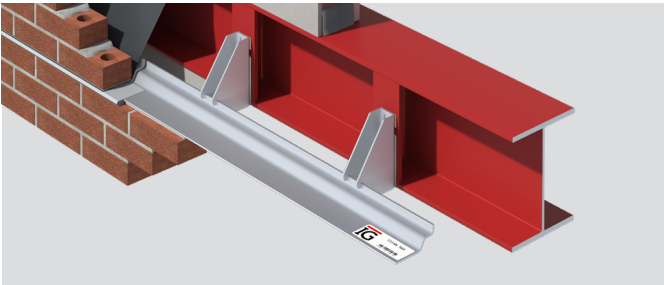
*Allowance for a 1/2" (12mm) gap between shelf angles

Fixing options

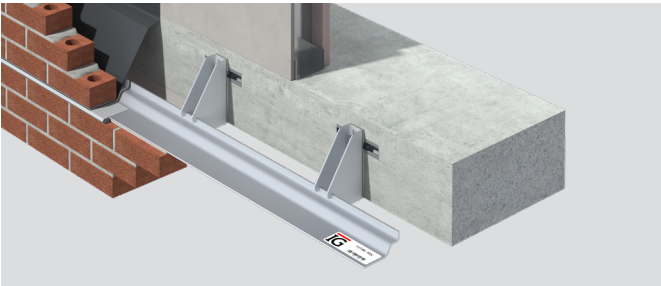
TITAN MAX can be fixed to:



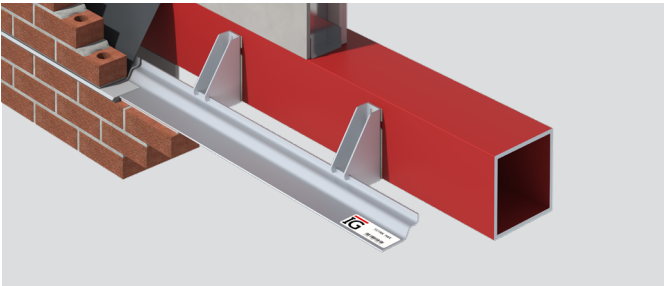
(a) Concrete slab



(b) I-beam with Wing Plates

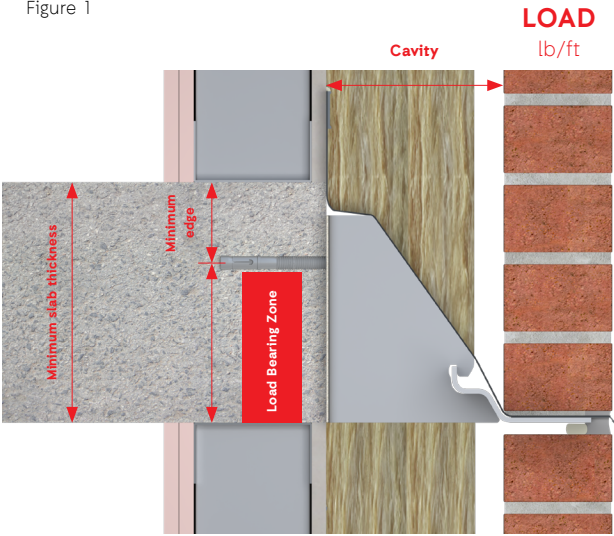


(c) Cast-in Anchor Channel Inserts



(d) Box section

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, we offer a dropper solution. Please contact the IG Masonry Support Technical Team.

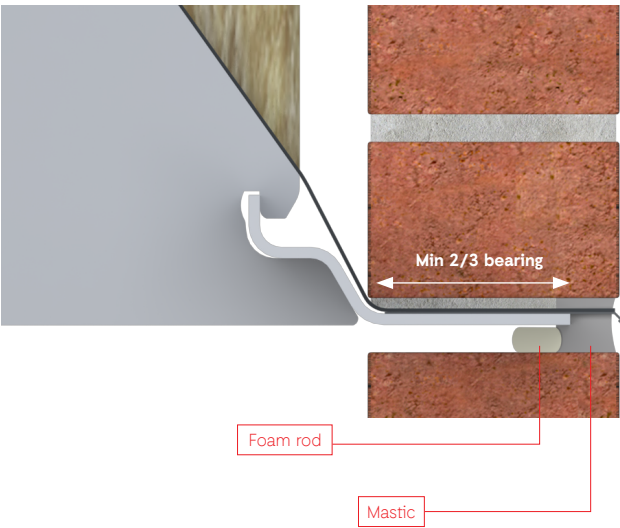
Brickwork Overhang

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 in Canada.

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's 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

Shimming (X)

IG shims are used to provide a thermal break or to accommodate small increases in cavity widths. All shims must come into contact with the full 'Load Bearing Zone' of the bracket against the support structure.

The total number of shims used must not exceed either the thickness of the anchor or a maximum of three thermal and stainless-steel shims. Shimming guidance is supplied on IG's Approval and Construction Issue Drawings and must be followed to achieve the design capacity of TITAN MAX.

Shims for Thermal Break

Each bracket for TITAN MAX is supplied with one thermal shim in a thickness of 5/64" (2mm). For the shim to act as an effective thermal break, it must be installed directly in contact with the support structure.

Shims for Adjustment

Two types of shims can be used for adjustability and are available on request. Any additional shim(s) used for adjustability must be installed between the thermal shim and the bracket.

Stainless Steel Shims

Stainless steel shims are available in a thickness of 5/32" (4mm) and 1/4" (6mm).

Up to two stainless steel shims can be used per bracket, provided guidance is given by the IG Masonry Support Technical Team.



Nylon Shims

Nylon shims are designed to interlock with each other and with the bracket serration. Nylon shims are available in thickness of 1/4" (6mm).

Up to four nylon shims can be used per bracket, provided guidance is given by the IG Masonry Support Technical Team.

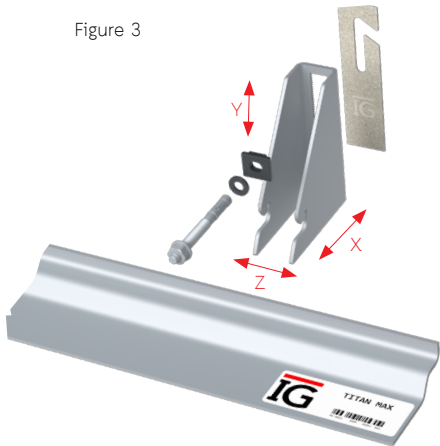


Figure 3



Thermal Shim

Examples of Cavity Adjustment using the Same Bracket Type (X)

Figure 4

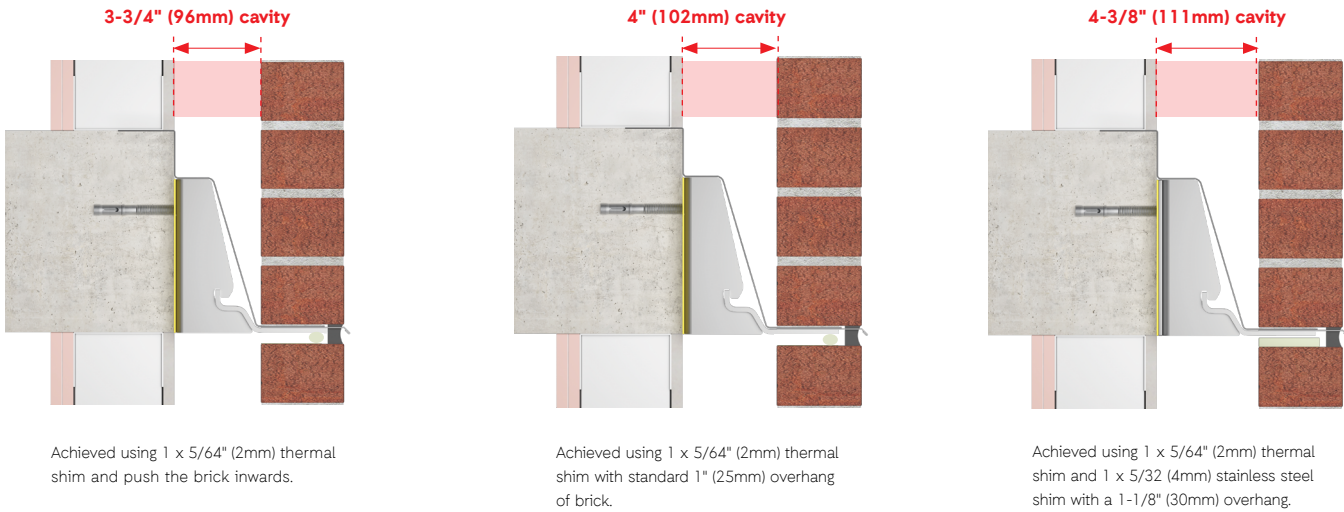


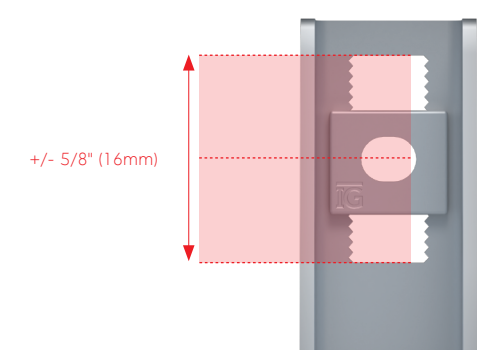
Figure 4 based on a 3-5/8" (90mm) brick

Vertical Adjustment (Y)

Vertical adjustment of up to +/- 5/8" (16mm) is offered by means of a toothed lock washer which 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 lock washer also offers fine adjustment by rotating it through 180 degrees; this is achieved by the offset hole in the lock washer.

Figure 5



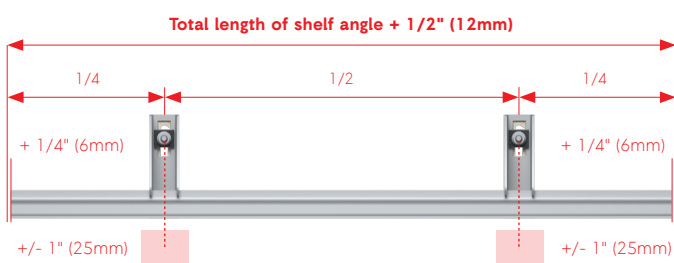
Lateral Adjustment (Z)

Two brackets per shelf angle should be used, with the only exception being at corners, where three brackets are required.

To achieve the correct bracket spacing, add a nominal 1/2" (12mm) to the overall shelf angle length. Then space the brackets using a 1/4-1/2-1/4 pattern along this length. Brackets can be adjusted up to +/- 1" (25 mm) from these positions. This adjustment allows for repositioning if a drill hole clashes with reinforcing bars or if pre-drilled steel is slightly misaligned.

The lock washer also offers fine lateral adjustment through its oval-shaped hole.

Figure 6



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

Positioning the Bracket

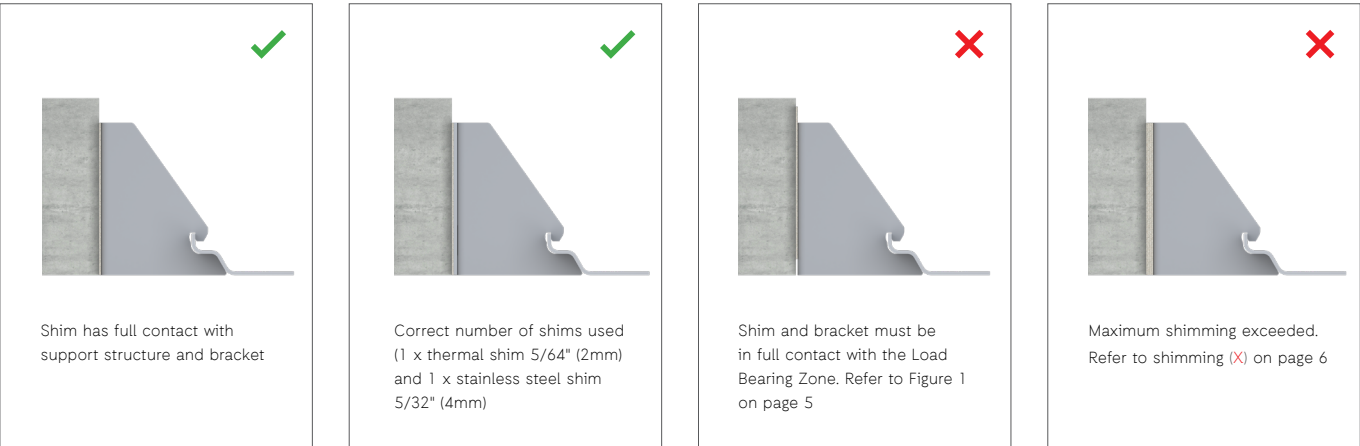


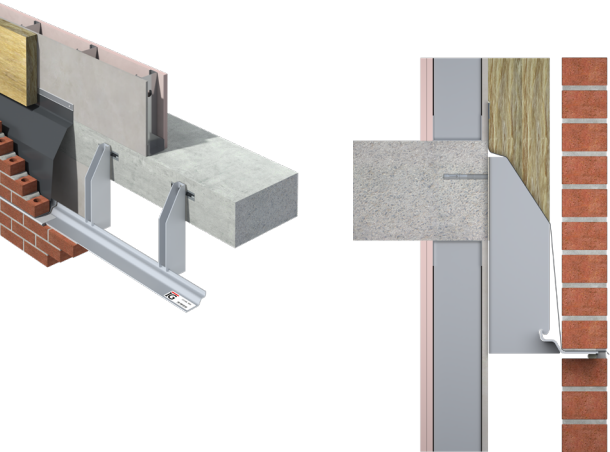
Figure 7

i Brackets must be installed at the correct level, ensuring full contact between the 'Load Bearing Zone' and the support structure. Only IG shims can be used with TITAN MAX. If the bracket needs to extend below the slab, a dropper system may be used, please consult the IG Masonry Support Technical Team.

Dropper Systems

A dropped TITAN MAX system may be used when the bracket needs to extend below the slab. Dropping the bracket position allows for greater versatility in meeting complex design or thermal continuity requirements while still maintaining structural performance.

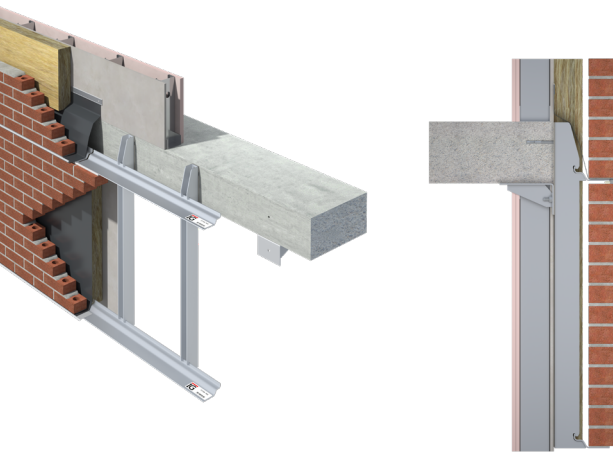
For further guidance or project-specific support, please contact the IG Masonry Support Technical Team.



Double-Shelf Systems

A double-shelf TITAN MAX system may be used in heavier veneer zones where the bracket drop below the slab is significant. This setup helps distribute the load more evenly, reducing stress on the lower shelf and enhancing overall structural performance.

For further guidance or project-specific support, please contact the IG Masonry Support Technical Team.



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.

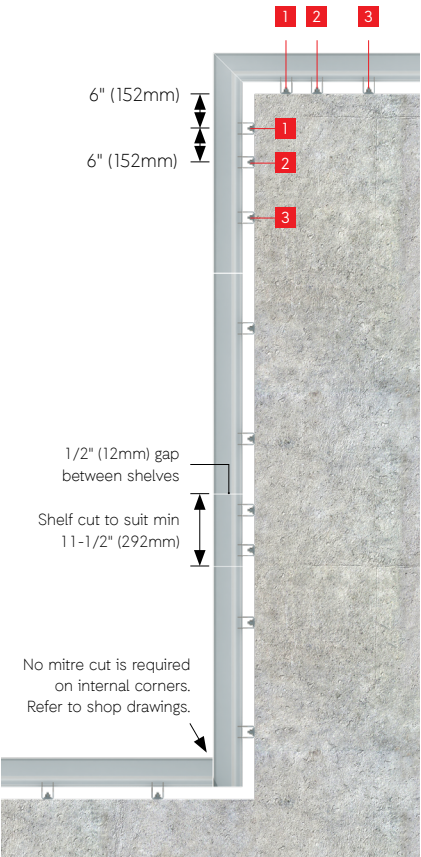


Figure 8

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.

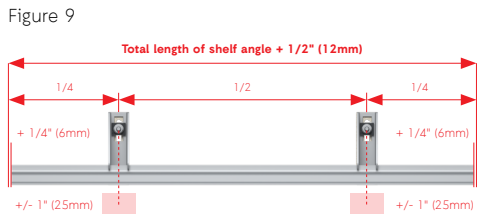


Figure 9

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

IG recommends using mortar that complies with ASTM C270 and following either the Brick Industry Association (BIA) guidelines or local building codes.

Thermal Performance

The TITAN MAX system delivers outstanding thermal efficiency for exterior insulated steel-frame walls with brick veneer. Testing shows up to 36% lower linear transmittance than comparable systems and 90% lower than traditional folded angles. See table 2 for performance details and refer to the IG Masonry Support website for a full thermal analysis report.

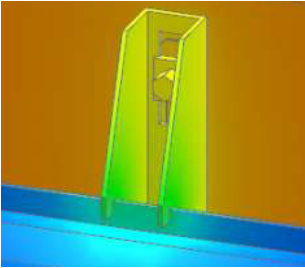


Figure 10

Table 2: Evaluated Thermal Performance								
SHELF ANGLE SUPPORT SYSTEM	EXTERIOR INSULATION			CLEAR FIELD		OVERALL DETAIL		INTERMEDIATE FLOOR LINEAR TRANSMITTANCE ψ BTU/H FT °F (W/M K)
	TYPE	THICKNESS IN (MM)	NOMINAL R-VALUE FT2·HR·°F/BTU (M2·°K/W)	U-VALUE BTU/H·FT2·°F (W/M2·°K)	R-VALUE H·FT2·°F/BTU (M2·°K/W)	U-VALUE BTU/H·FT2·°F (W/M2·°K)	R-VALUE H·FT2·°F/BTU (M2·°K/W)	
TITAN MAX	Mineral Wool	4 (102)	R-16.8 (2.96 RSI)	0.062 (0.353)	R-16.1 (2.84 RSI)	0.066 (0.376)	R-15.1 (2.66 RSI)	0.036 (0.062)
TITAN MAX	Spray Foam	4 (102)	R-24.0 (4.23 RSI)	0.051 (0.287)	R-19.8 (3.49 RSI)	0.055 (0.310)	R-18.3 (3.23 RSI)	0.035 (0.061)
DIRECT ANCHOR	Mineral Wool	4 (102)	R-16.8 (2.96 RSI)	0.062 (0.353)	R-16.1 (2.84 RSI)	0.093 (0.525)	R-10.8 (1.90 RSI)	0.337 (0.583)
DIRECT ANCHOR	Spray Foam	4 (102)	R-24.0 (4.23 RSI)	0.051 (0.287)	R-19.8 (3.49 RSI)	0.082 (0.466)	R-12.2 (2.15 RSI)	0.351 (0.608)

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 3 below), to ensure the design requirements for the product are met. Only use anchors specified within this guide.

Table 3: Approved Anchors							
ANCHOR TYPE	FIXING TO	HOLE DIAMETER		EMBEDMENT DEPTH		TORQUE	
HILTI - KWIK BOLT TZ2 1/2" x 4-1/2"	Concrete*	1/2 in	12.7 mm	2-1/2 in	63.5 mm	40 lb/ft	54 Nm
HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	Concrete*	9/16 in	14.28 mm	6-3/8 in	162mm	30 lb/ft	40 Nm
HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	Grout-filled CMU**	9/16 in	14.28 mm	6-3/8 in	162 mm	30 lb/ft	40 Nm
HBC-C-N M12 8.8F	HILTI HAC-V-35 Channel	—	—	3-9/16 in	91 mm	55 lb/ft	75 Nm
Set Screw M12	Steel - Wing Plates	9/16 in	14 mm	—	—	54 lb/ft	73 Nm
Blindbolt - HD Bolt M12	Steel - Box Section	1/2 in	12.7 mm	—	—	22 lb/ft	30 Nm

*Minimum concrete compressive strength C30/37 [MPa] or 4000 [Psi]

**Minimum grout compressive strength 1500 [Psi]



Scan for more information
on compatible HILTI fixings.



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 the IG Masonry Support Technical Team for more information.

Table 4: TITAN MAX 270 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)
HBC-C-N M12 8.8F	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)
Set Screw M12	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)
Blindbolt - HD Bolt M12	270 (3.94)									243 (3.55)	215 (3.15)	203 (2.96)

*Fixing to concrete **Fixing to Grout-filled CMU

Table 5: TITAN MAX 410 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	410 (5.98)									368 (5.38)	327 (4.78)	307 (4.49)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	410 (5.98)									368 (5.38)	327 (4.78)	307 (4.49)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	410 (5.98)							390 (5.70)		368 (5.38)	327 (4.78)	307 (4.49)
HBC-C-N M12 8.8F	410 (5.98)									368 (5.38)	327 (4.78)	307 (4.49)
Set Screw M12	410 (5.98)									368 (5.38)	327 (4.78)	307 (4.49)
Blindbolt - HD Bolt M12	410 (5.98)									368 (5.38)	327 (4.78)	307 (4.49)

*Fixing to concrete **Fixing to Grout-filled CMU

Table 6: TITAN MAX 480 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	480 (7.00)									430 (6.30)	383 (5.60)	360 (5.25)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	480 (7.00)									430 (6.30)	383 (5.60)	360 (5.25)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	480 (7.00)					470 (6.80)	450 (6.50)	440 (6.40)	430 (6.27)	411 (6.0)	383 (5.60)	360 (5.25)
HBC-C-N M12 8.8F	480 (7.00)									430 (6.30)	383 (5.60)	360 (5.25)
Set Screw M12	480 (7.00)									430 (6.30)	383 (5.60)	360 (5.25)
Blindbolt - HD Bolt M12	480 (7.00)									430 (6.30)	383 (5.60)	360 (5.25)

Table 7: TITAN MAX 530 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	530 (7.73)								520 (7.58)	477 (6.96)	423 (6.18)	397 (5.80)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	530 (7.73)									477 (6.96)	423 (6.18)	397 (5.80)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	530 (7.73)				520 (7.58)	510 (7.44)	490 (7.15)	480 (7.00)	460 (6.70)	450 (6.56)	423 (6.18)	397 (5.80)
HBC-C-N M12 8.8F	530 (7.73)									477 (6.96)	423 (6.18)	397 (5.80)
Set Screw M12	530 (7.73)									477 (6.96)	423 (6.18)	397 (5.80)
Blindbolt - HD Bolt M12	530 (7.73)									477 (6.96)	423 (6.18)	397 (5.80)

Table 8: TITAN MAX 620 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	620 (9.05)							590 (8.60)	560 (8.17)	540 (7.88)	496 (7.24)	465 (6.79)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	620 (9.05)									558 (8.15)	496 (7.24)	465 (6.79)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	620 (9.05)		610 (8.90)	590 (8.60)	570 (8.30)	550 (8.00)	540 (7.88)	520 (7.58)	500 (7.29)	490 (7.15)	470 (6.85)	460 (6.71)
HBC-C-N M12 8.8F	620 (9.05)									558 (8.15)	496 (7.24)	465 (6.79)
Set Screw M12	620 (9.05)									558 (8.15)	496 (7.24)	465 (6.79)
Blindbolt - HD Bolt M12	620 (9.05)									558 (8.15)	496 (7.24)	465 (6.79)

Table 9: TITAN MAX 680 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	680 (9.92)							650 (9.48)	620 (9.05)	600 (8.75)	544 (7.94)	509 (7.44)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	680 (9.92)									611 (8.93)	544 (7.94)	509 (7.44)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	680 (9.92)		670 (9.77)	650 (9.48)	630 (9.19)	610 (8.90)	590 (8.60)	570 (8.30)	550 (8.00)	540 (7.88)	520 (7.50)	509 (7.44)
HBC-C-N M12 8.8F	680 (9.92)									611 (8.93)	544 (7.94)	509 (7.44)
Set Screw M12	680 (9.92)									611 (8.93)	544 (7.94)	509 (7.44)
Blindbolt - HD Bolt M12	680 (9.92)									611 (8.93)	544 (7.94)	509 (7.44)

Table 10: TITAN MAX 860 - Loading Table - lb/ft (kN/m)												
CAVITY SIZES (MM)												
ANCHOR TYPE	2-1/2" (63)	3" (76)	3-1/2" (89)	4" (102)	4-1/2" (114)	5" (127)	5-1/2" (140)	6" (152)	6-1/2" (165)	7" (178)	7-1/2" (191)	8" (203)
HILTI - KWIK BOLT TZ2 1/2" x 4 1/2"	860 (12.55)				840 (12.25)	810 (11.82)	760 (11.09)	720 (10.50)	690 (10.07)	650 (9.48)	610 (8.90)	580 (8.47)
*HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	860 (12.55)						830 (12.11)	800 (11.67)	760 (11.09)	700 (10.21)	670 (9.77)	640 (9.34)
**HILTI - HY 200-R V3 + HAS-E-55 1/2" x 8"	790 (11.53)	770 (11.23)	740 (10.80)	720 (10.50)	700 (10.21)	680 (9.92)	660 (9.63)	640 (9.30)	620 (9.05)	600 (8.75)	580 (8.46)	560 (8.17)
HBC-C-N M12 8.8F	860 (12.55)									700 (10.21)	670 (9.77)	640 (9.34)
Set Screw M12	860 (12.55)									700 (10.21)	670 (9.77)	640 (9.34)
Blindbolt - HD Bolt M12	860 (12.55)									700 (10.21)	670 (9.77)	640 (9.34)

*Fixing to concrete **Fixing to Grout-filled CMU

NOTE Table 4 - 10 - All loadings considered unfactored.

Additional installation material



For step-by-step installation guides and video installation guides, please visit igmasonrysupport.com/us or scan the QR code.

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