



# RAPID TIE SYSTEMS & FORMWORK ACCESSORIES

# RAPID TIE SYSTEMS

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## Revisions

Issue	Description	Date
D	Sheet 9. Section 1.7 Flange Water Bar - Cast	03-05-2018
	Sheet 10. Section 1.8 Flange Water Bar on Assembly	
	Sheet 20. Section 1.22 Airodek lower restraint unit	
	Sheet 35. Section 4.7 HD Wall Bracket for Support Bracket	
	Sheet 37. Section 6.0 All Threaded rods	
C	Sheet 35. Section 4.6. Bolt specification	18-08-2016
	Sheet 35. Section 4.7. Bolt specification	

# RAPID TIE SYSTEMS

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## Component Reference Guide

Code	Description	Weight (kg.)	Sheet
ADX20020	Airodek Lower Restraint Unit	4.28	20
TRX10012	All Threaded Rod M12 Gr8.8 /m	0.73	37
TRX10016	All Threaded Rod M16 Gr8.8 /m	1.33	37
TRX10020	All Threaded Rod M20 Gr8.8 /m	2.10	37
TRX10024	All Threaded Rod M24 Gr8.8 /m	3.35	37
HTX10013	Anchor Screw Extractor Key Arm	3.60	34
HTX10014	Anchor Screw Extractor Key Head M20	0.30	34
HTX10015	Anchor Screw Extractor Key Head M24	0.34	34
HTX10023	Anchor Screw Extractor Key Head M30	0.40	34
HTX20120	Anchor Screw M20 x 120	0.68	32
HTX20140	Anchor Screw M20 x 140	0.85	32
HTX20200	Anchor Screw M20 x 200	1.08	32
HTX24140	Anchor Screw M24 x 140	0.82	32
HTX24200	Anchor Screw M24 x 200	1.17	32
HTX24280	Anchor Screw M24 x 280	1.63	32
HTX30330	Anchor Screw M30 x 330	2.28	32
HTX30400	Anchor Screw M30 x 400	2.77	32
BTM60001	Bar Tie Steel Cone 15mm	0.58	17
BTX10012	Concrete Anchor	0.37	13
FAM16145	Concrete Anchor Bolt M16 x 45	0.23	37
BTX10015	Connector 15mm Rapid Tie	0.41	11
BTX10002	Connector Ø20mm - Rapid Tie	0.91	29
MNU10001	Eyebolt M20	0.44	33
MNU10002	Eyebolt M24	1.00	33
BTX10028	Flanged Water Bar - Cast	0.50	9
BTX10006	Knock On Nut - Hi Load	0.51	27
BTX10001	Knock On Wing Nut	0.33	6
MSX10044	Megashor Brace Coupler	3.55	19
BTX10008	Plastic Cone - Hi Load Ø26mm	0.01	30
BTX10025	Plastic Reducer	0.01	10
SSX10039	Porthole Bearing	2.00	8
BTM10250	Rapid Bar Tie 15mm x 0.25m	0.36	5
BTM10500	Rapid Bar Tie 15mm x 0.50m	0.72	5
BTM10750	Rapid Bar Tie 15mm x 0.75m	1.08	5
BTX10100	Rapid Bar Tie 15mm x 1.00m	1.44	5
BTX10150	Rapid Bar Tie 15mm x 1.50m	2.12	5
BTX10175	Rapid Bar Tie 15mm x 1.75m	2.48	5
BTX10200	Rapid Bar Tie 15mm x 2.00m	2.83	5
BTX10250	Rapid Bar Tie 15mm x 2.50m	3.54	5
BTX10300	Rapid Bar Tie 15mm x 3.00m	4.32	5
BTM13500	Rapid Bar Tie 15mm x 3.50m	5.04	5
BTM14000	Rapid Bar Tie 15mm x 4.00m	5.76	5
BTM14500	Rapid Bar Tie 15mm x 4.50m	6.48	5
BTM15000	Rapid Bar Tie 15mm x 5.00m	7.20	5
BTM14000	Rapid Bar Tie 15mm x 4.00m	5.76	5
BTM14500	Rapid Bar Tie 15mm x 4.50m	6.48	5
BTM15000	Rapid Bar Tie 15mm x 5.00m	7.20	5

# RAPID TIE SYSTEMS

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## Component Reference Guide

Code	Description	Weight (kg.)	Sheet
BTM15500	Rapid Bar Tie 15mm x 5.50m	7.92	5
BTX10580	Rapid Bar Tie 15mm x 5.80m	8.50	5
BTX10750	Rapid Bar Tie 15mm x 7.50m	11.00	5
BTX40100	Rapid Bar Tie 20mm x 1.00m	2.47	26
BTX40150	Rapid Bar Tie 20mm x 1.50m	3.70	26
BTX40200	Rapid Bar Tie 20mm x 2.00m	4.90	26
BTX40600	Rapid Bar Tie 20mm x 6.00m	14.79	26
BTX10030	Rapid Bar Tie Fork End	1.34	12
BTX10034	Rapid Tie Claw 15mm	3.22	14
SIM18573	Rapid Tie Claw Bridge - Long	9.34	15
SIM18572	Rapid Tie Claw Bridge - Short	1.73	15
BTX10017	Rapid Tie Hexagon Nut 50mm	0.16	11
BTM00002	Rapid Tie Hi-Load Flanged Water Bar	1.30	29
BTM21000	Rapid Tie Hi-Load Plastic Tube 26/30mm/m	0.15	30
BTM00006	Rapid Tie Hi-Load Reducer for Flanged Water Bar	0.01	30
BTM61000	Rapid Tie Kwikfix	2.86	13
BTU10013	Rapid Tie Nut 20mm	0.51	31
BTX10003	Rapid Tie Plastic Cone 15mm	0.01	10
BTM10019	Rapid Tie Plastic Tube/m	0.22	10
BTX50700	Rapid Tie She Bolt 700mm	1.50	16
BTX50725	Rapid Tie She Bolt 725mm	1.75	16
RCX10007	Rapidclimb Wall Bracket	13.26	35
BTX10011	Ribbed Water Bar Connector	0.54	9
HTU10014	Waler Plate - Angle 3/4"	1.32	8
BTM10004	Waler Plate - Heavy Duty - Painted	1.76	6
BTX10029	Waler Plate - Hi Load	6.84	27
RCM10008	HD Wall Bracket for Support Bracket (ME)	7.74	35
SSM00060	Wall Shear Bracket	5.90	36
BTX10010	Weld on Anchor 15mm	0.50	12



# RAPID TIE SYSTEMS

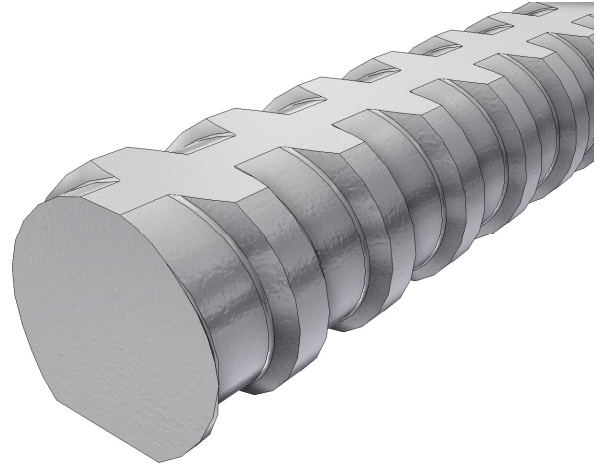
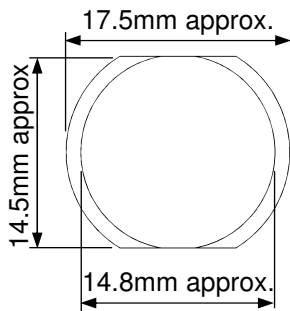
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## 1.0 Ø15mm Rapid Tie System - Components

### 1.1 Rapid Bar Tie Ø15mm - 1.44 kg/m

A high tensile steel hot rolled bar incorporating a continuous, intermittent coarse pitch thread.



Safe Working Load on Tension = **110kN**

Code	Description	Weight (kg.)
BTM10250	Rapid Bar Tie 15mm x 0.25m	0.36
BTM10500	Rapid Bar Tie 15mm x 0.50m	0.72
BTM10750	Rapid Bar Tie 15mm x 0.75m	1.08
BTX10100	Rapid Bar Tie 15mm x 1.00m	1.44
BTX10150	Rapid Bar Tie 15mm x 1.50m	2.12
BTX10175	Rapid Bar Tie 15mm x 1.75m	2.48
BTX10200	Rapid Bar Tie 15mm x 2.00m	2.83
BTX10250	Rapid Bar Tie 15mm x 2.50m	3.54
BTX10300	Rapid Bar Tie 15mm x 3.00m	4.32
BTM13500	Rapid Bar Tie 15mm x 3.50m	5.04
BTM14000	Rapid Bar Tie 15mm x 4.00m	5.76
BTM14500	Rapid Bar Tie 15mm x 4.50m	6.48
BTM15000	Rapid Bar Tie 15mm x 5.00m	7.20
BTM15500	Rapid Bar Tie 15mm x 5.50m	7.92
BTX10580	Rapid Bar Tie 15mm x 5.80m	8.50
BTX10750	Rapid Bar Tie 15mm x 7.50m	11.00

#### Notes:

- Rapid Bar Tie shall not be welded.
- Rapid Bar Tie shall not be hot dipped galvanized.
- Rapid Bar Tie shall not be used to raise or lower loads.
- Rapid Bar Ties are not ideal for Shear load applications.

Ultimate Tensile Strength (UTS) =  $1100\text{N/mm}^2$

Yield Stress =  $900\text{N/mm}^2$

Cross Sectional Area =  $180\text{mm}^2$

Elongation =  $0.028\text{mm/m/kN}$

# RAPID TIE SYSTEMS

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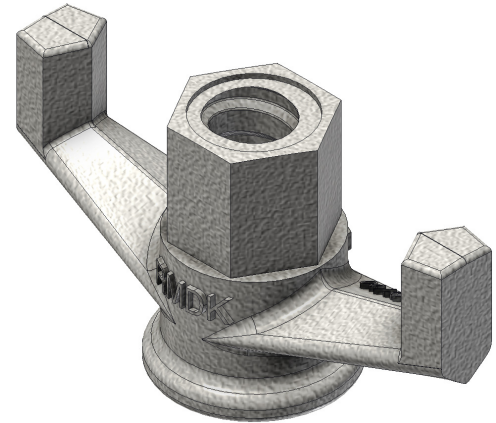
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## Ø15mm Rapid Tie System - Components

### 1.2 Knock On Wing Nut (BTX10001) - 0.33kg.

Malleable cast iron nut. The hexagon head facilitates use of a spanner and the wings allow the item to be rotated using a hammer or levered with a length of reinforcing bar.

Finish: Self Colour

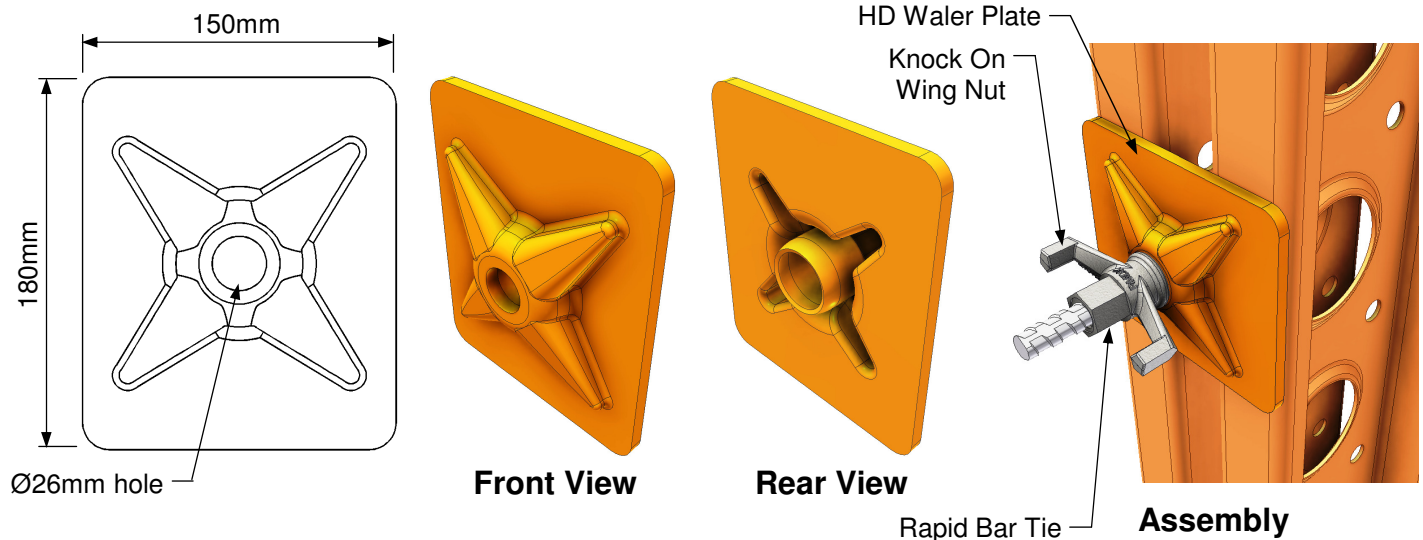


Safe Working Load on Tension = **110kN**.

### 1.3 Waler Plate - Heavy Duty - Painted (BTM10004) - 1.76kg.

Pressed steel Waler Plate designed to distribute the load of the Rapid Bar Tie into the supporting member.

Finish: Painted



Safe Working Load = **90kN** when used with Superslim Soldiers  
(Refer to 1.3.1 for Combined Loading Graph - Sheet 7)

Safe Working Load = **110kN** when used with Steel Channels.

# RAPID TIE SYSTEMS

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## Ø15mm Rapid Tie System - Components

### 1.3.1 Beams with Compression Flanges Restrained

The Superslim Soldier is a lightweight member and it is not generally appropriate to use established design codes for beam analysis. Performance of the unit has been derived from a combination of calculation and extensive load testing. Due to the presence of various web perforations, performance is affected by both shear stiffness and the bending stiffness of the member. Analysis of beam deflection is complex, for deflection calculation by simplistic analysis, reduced EI value of  $3200\text{kNm}^2$  gives good correlation with the more rigorous analysis.

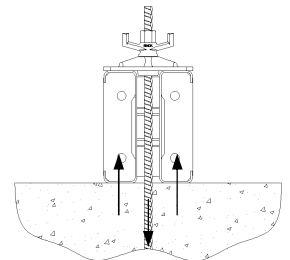
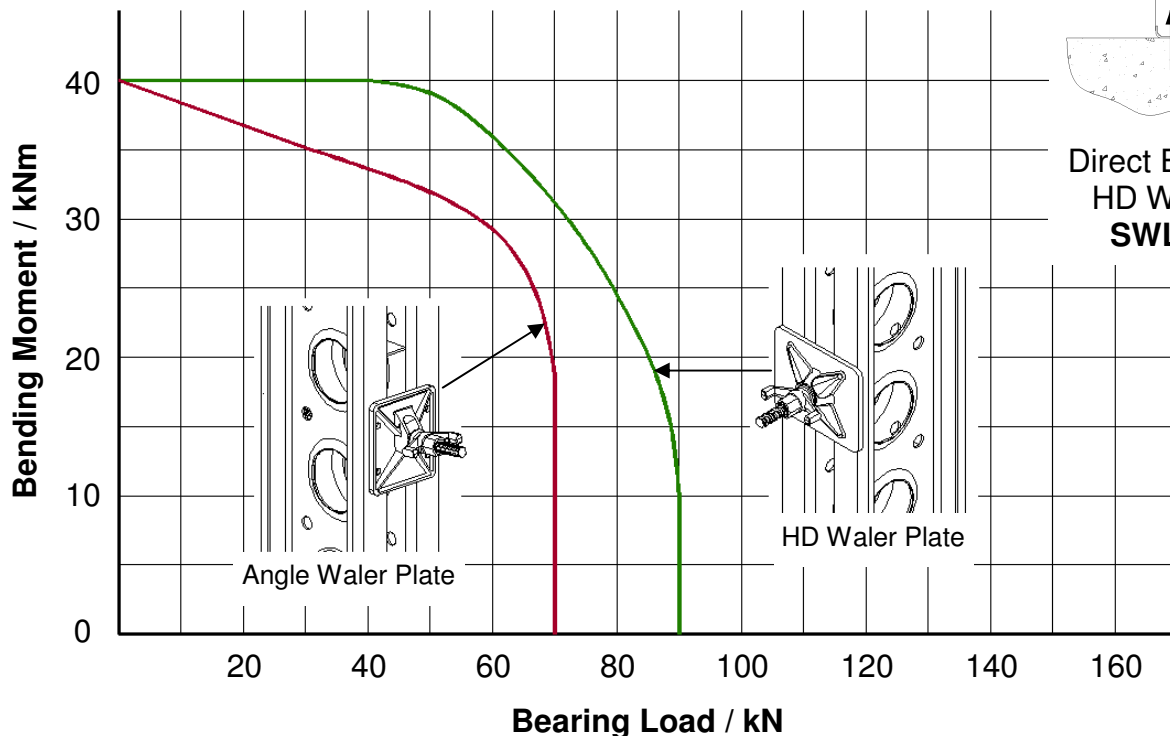
When used as a beam it is important that the Soldier is restrained laterally at load points and supports. On a shutter this lateral restraint is provided by the face contact material, backing members and specified connections between the components acting as a stiff diaphragm to restrain the connection flange of the Superslim. Integral intermittent welded web stiffeners in the Superslim transfer this lateral restraint to the unconnected flanges. When used as an isolated beam it is normal to provide lateral restraint using scaffold tubes coupled to the flanges of the Soldier. When lateral restraint is not provided refer to 1.1.5 of Superslim Technical Data for Safe Working Loads.

When bending on the weak axis, the Soldier should be treated as two individual channel members, each with a moment of resistance of  $3.12\text{kNm}$ . Individual loads act on the single channel and transfer the forces through the welded stiffeners to the other channel.

### Combined Loading

Performance under conditions of combined bending and bearing can be checked using the graph below.

#### Rapid Bar Tie Ø15mm with Angled & HD Waler Plate & Superslim Soldier



Direct Bearing with  
HD Waler Plate  
SWL = 70kN

Note: Above graph is extracted from Superslim Soldier Technical Data.

# RAPID TIE SYSTEMS

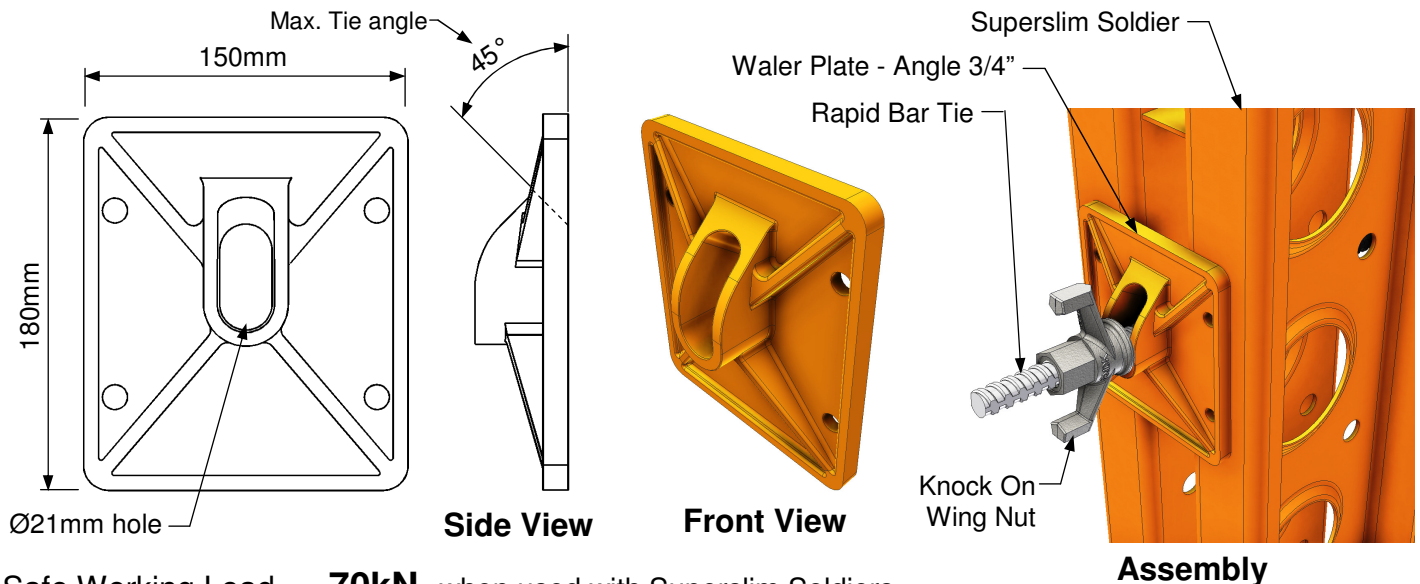
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## Ø15mm Rapid Tie System - Components

### 1.4 Waler Plate - Angle 3/4" (HTU10014) - 1.32kg.

A cast iron Waler Plate used with Ø15mm Rapid Bar Tie where the tie is not perpendicular to the Soldier or Waling member. Finish: Painted



Safe Working Load = **70kN** when used with Superslim Soldiers.

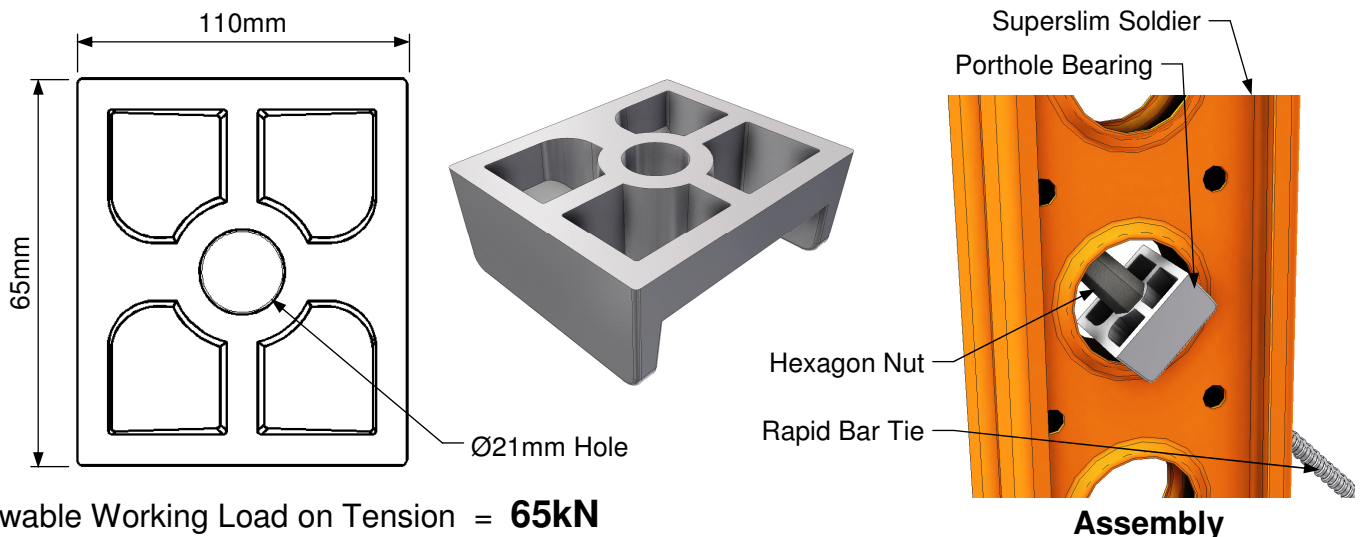
(Refer to 1.3.1 for Combined Loading Graph - Sheet 7)

#### Notes:

- When using the Angle Waler Plate with a Superslim Solider, provide a stop to prevent the plate from sliding along the soldier for tie angles greater than 6 degrees.
- Angle Waler Plates are not weldable.

### 1.5 Porthole Bearing (SSX10039) - 2.00kg.

Enable connection of Ø15mm Rapid Bar Tie or M20 All Threaded Rod to the Porthole of a Superslim Soldier at any angle. Finish: Self Colour



Allowable Working Load on Tension = **65kN**

# RAPID TIE SYSTEMS

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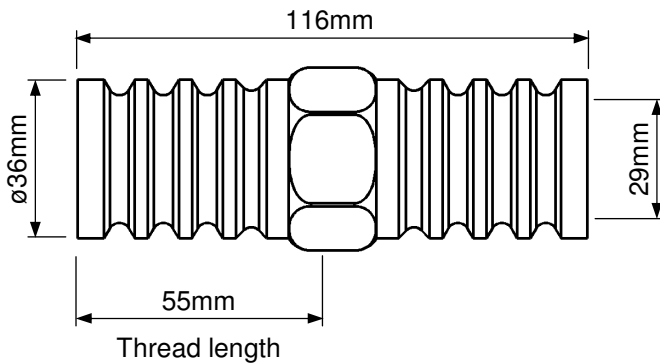


## Ø15mm Rapid Tie System - Components

### 1.6 Ribbed Water Bar Connector (BTX10011) - 0.54kg.

A cast connector incorporating an impermeable core and ribbed external surface.

Finish: Self colour



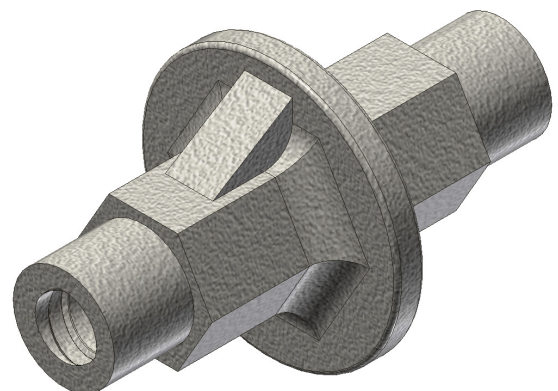
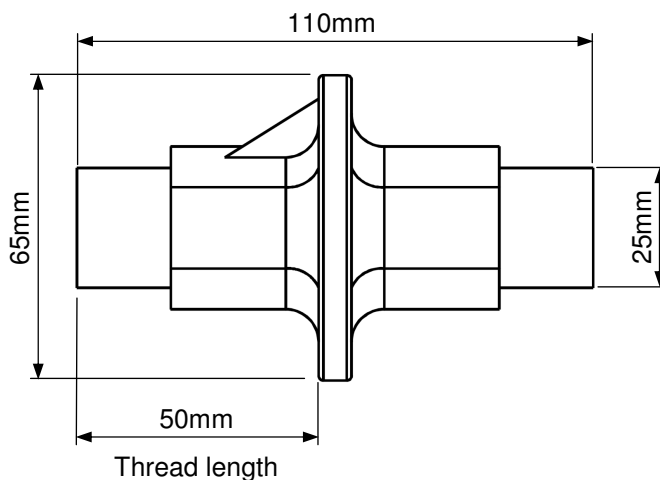
Safe Working Load = **110kN**

Maximum Water Pressure = 300kPa *or* 30m Head *or* 3 Bar

### 1.7 Flanged Water Bar - Cast (BTX10028) - 0.50kg.

A cast iron connector, incorporating an impermeable core and flange.

Finish: Self colour



Safe Working Load = **100kN**

Maximum Water Pressure = 300kPa *or* 30m Head *or* 3 Bar



# RAPID TIE SYSTEMS

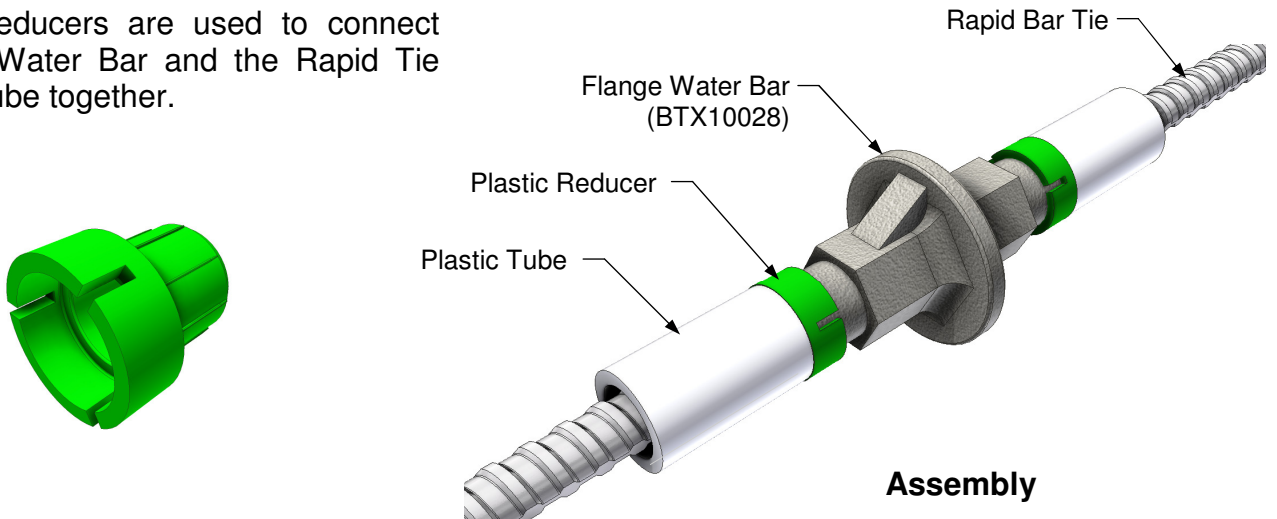
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## Ø15mm Rapid Tie System - Components

### 1.8 Plastic Reducer (BTX10025) - 0.01kg.

These Reducers are used to connect Flanged Water Bar and the Rapid Tie Plastic Tube together.



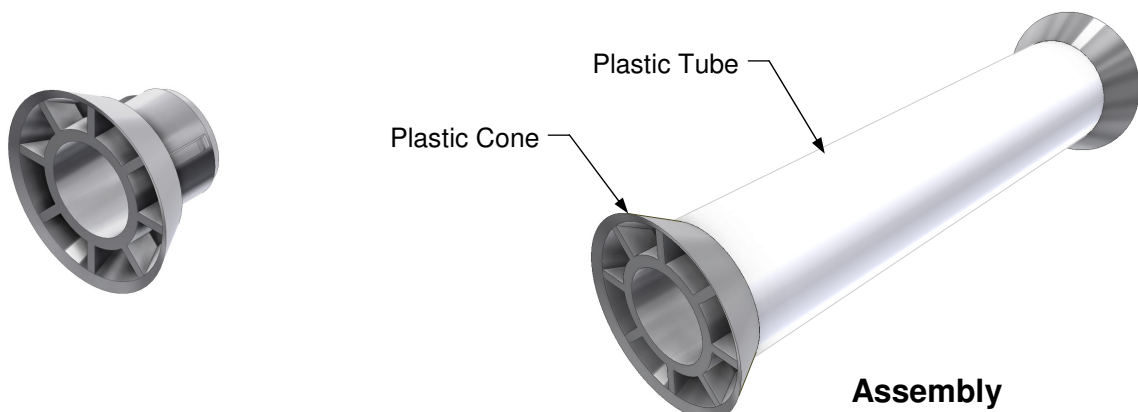
### 1.9 Rapid Tie Plastic Tube/m (BTM10019) - 0.22kg.

This rigid Plastic Tube is cut to length on site and used to sheath the ø15mm Bar Tie from wet concrete.



### 1.10 Rapid Tie Plastic Cone 15mm (BTX10003) - 0.01kg.

Recoverable Plastic Cone used at each end of the plastic conduit tubes.



# RAPID TIE SYSTEMS

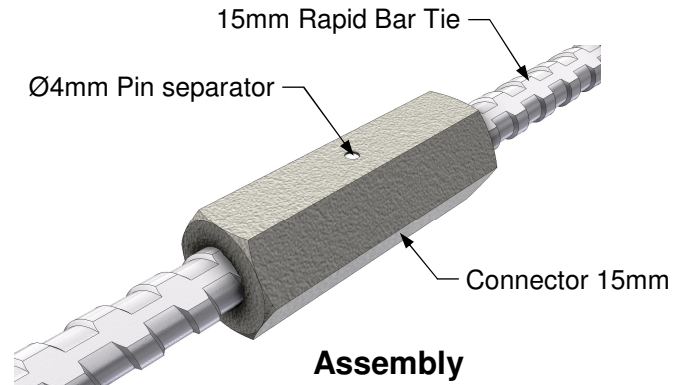
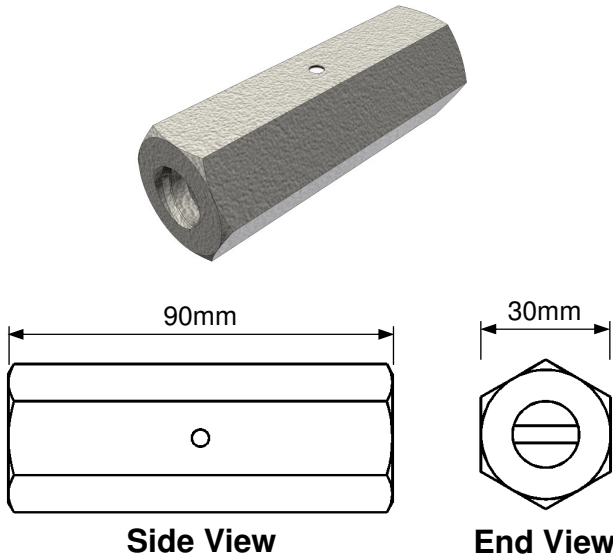
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## Ø15mm Rapid Tie System - Components

### 1.11 Connector 15mm Rapid Tie (BTX10015) - 0.41kg.

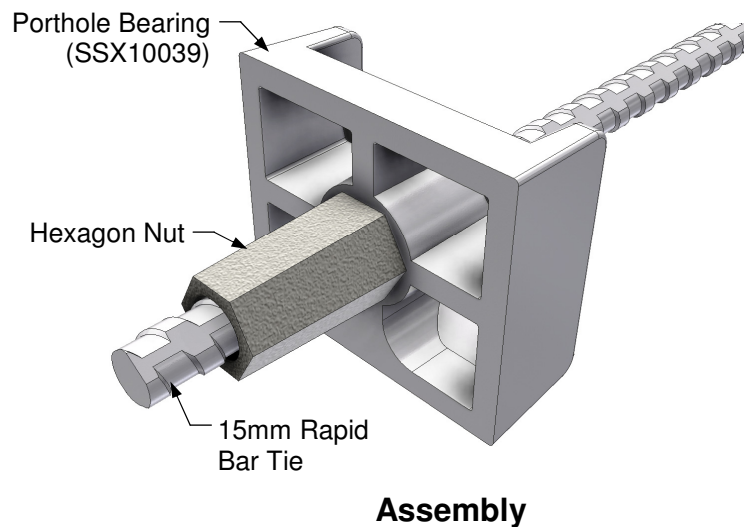
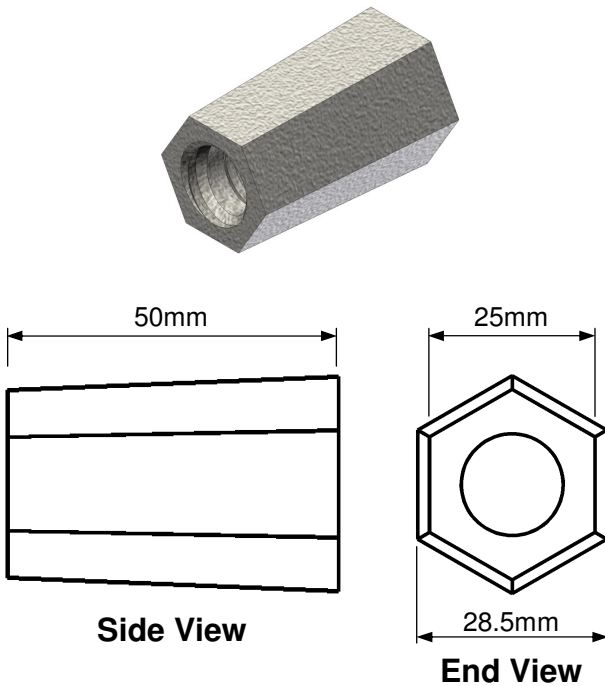
A 90mm long steel member, threaded inside to connect two Ø15mm Rapid Bar Ties end to end with a gap provided by Ø4mm pin at the middle.



Safe Working Load = **100kN**

### 1.12 Rapid Tie Hexagon Nut 50mm (BTX10017) - 0.16kg.

Malleable cast iron Hexagon Nut designed to resist the full working load in the bar.



Assembly Safe Working Load = **65kN**

Safe Working Load = **110kN**

# RAPID TIE SYSTEMS

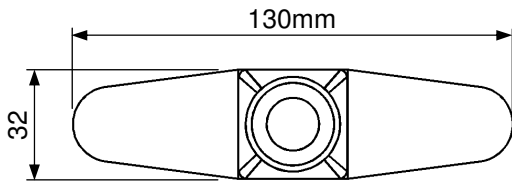
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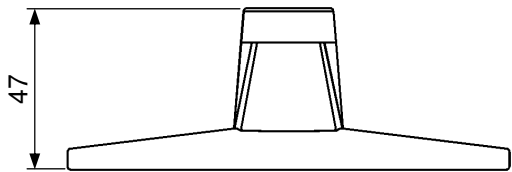
## Ø15mm Rapid Tie System - Components

### 1.13 Weld on Anchor 15mm (BTX10010) - 0.50kg.

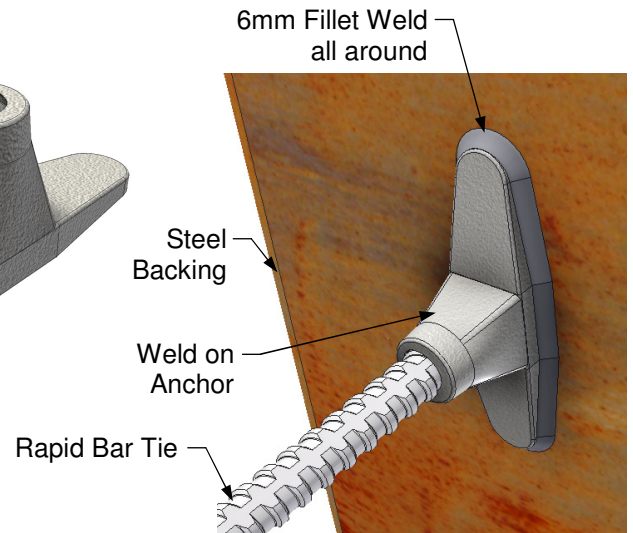
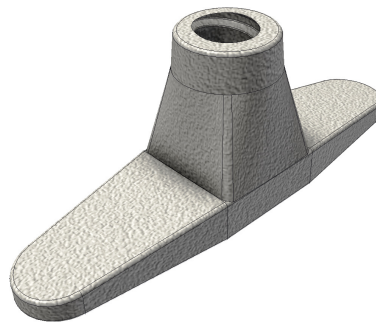
A forged steel anchor which enables a load in the bar of 90kN to be achieved when fully welded to a steel member with 6mm fillet weld all around.



Plan View



Side View

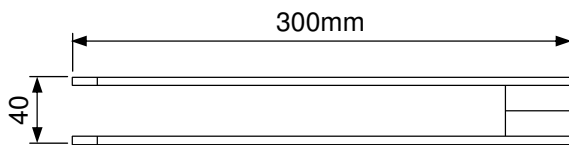


Assembly

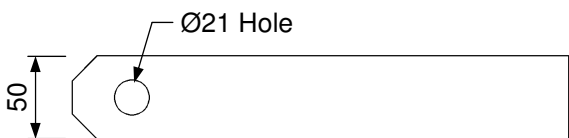
Safe Working Load = **90kN**

### 1.14 Rapid Bar Tie Fork End (BTX10030) - 1.34kg.

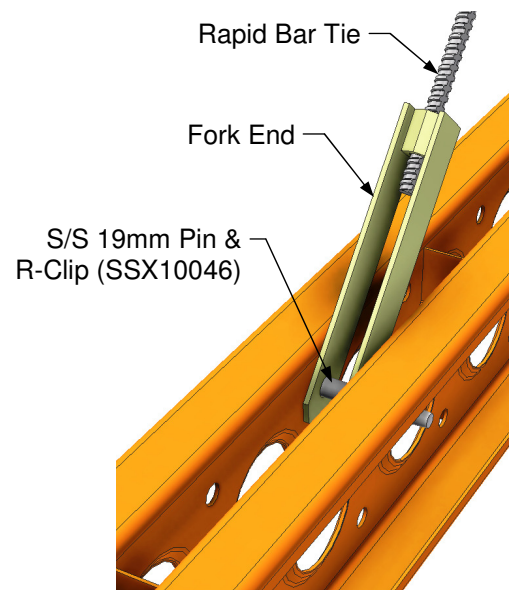
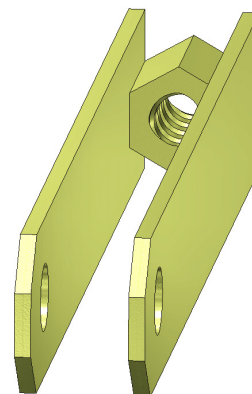
The Rapid Bar Tie connects to the Fork End through the Hex Nut. The Fork End is connected to the Superslim using Ø19mm Pin & R-Clip, through the Ø21mm holes on the webs of the Soldiers.



Plan View



Side View



Assembly

Safe Working Load = **45kN**

# RAPID TIE SYSTEMS

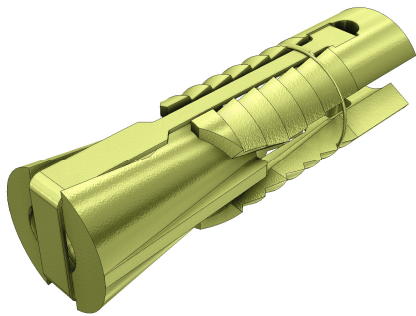
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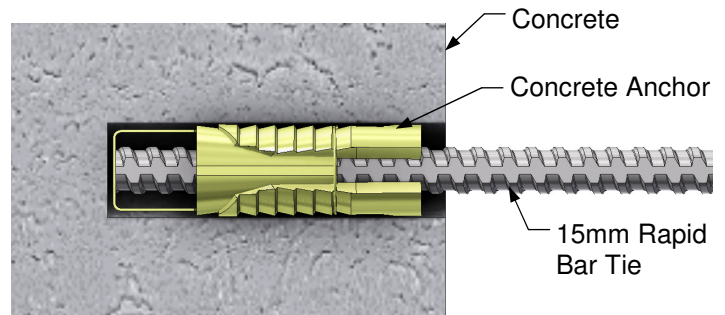
## Ø15mm Rapid Tie System - Components

### 1.15 Concrete Anchor (BTX10012) - 0.37kg.

A drill in anchorage that enables an allowable working load of **80kN** to be achieved.



#### Application



Safe Working Load (in suitably drilled concrete) = **80kN**

Length of anchor = 120mm

Drilled hole size = 36mm nominal diameter (38mm max.)

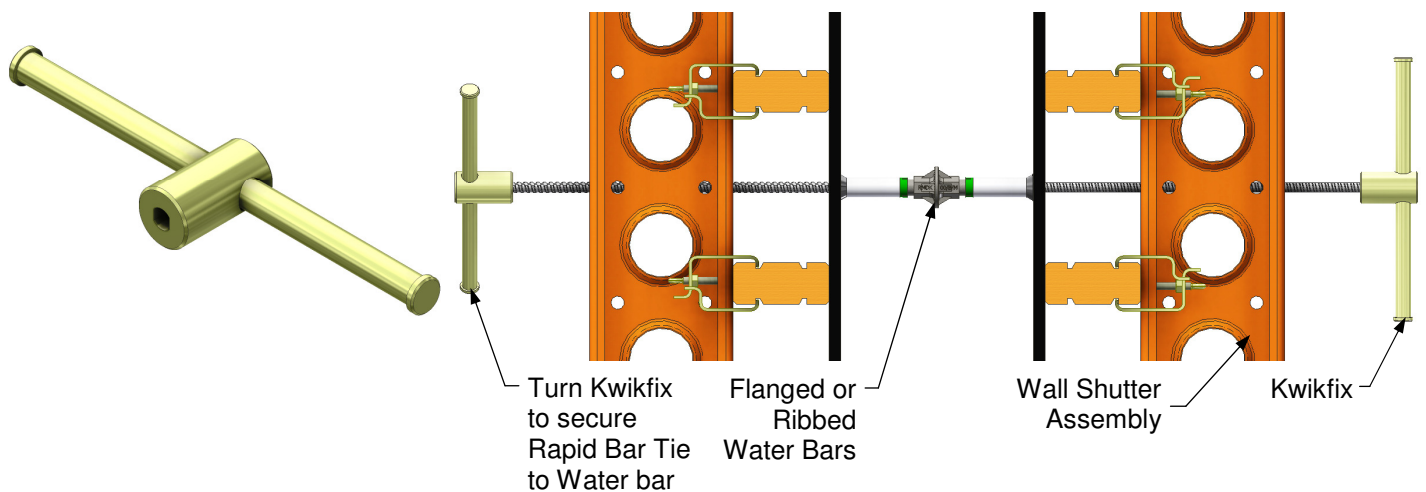
Minimum depth of drilled hole = 230mm

Minimum concrete strength = 30N/mm<sup>2</sup>

### 1.16 Rapid Tie Kwikfix Tool (BTM61000) - 2.86kg.

Used to fix the Rapid Bar Tie securely to the Flanged or Ribbed Water Bar by turning from both sides in double sided wall form applications.

#### Application





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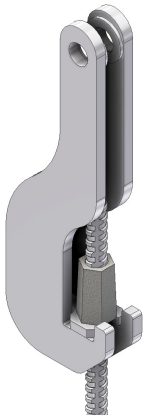
## Ø15mm Rapid Tie System - Components

### 1.17 Rapid Tie Claw 15mm (BTX10034) - 3.22kg.

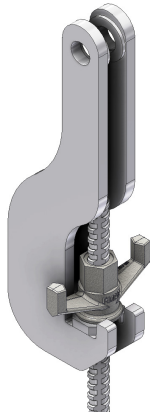
Used to connect Rapid Bar Tie bracing to Megashor Shafts, Superslim Soldiers, Brace Plates, Plan Brace Cleats, Megatruss Nodes, Megatruss End Bearers and Half Portal Frames.

The tensile and shear capacity of the Superslim to Megashor connection must be checked in accordance with Megashor Technical Data.

Note: When using Rapid Bar Tie bracing with high lateral loads and horizontal deflection of the structure must be checked, as well as the loads carried by all structural members and connections.



Bar Tie Hexagon Nut (BTX10017) for spanner adjustment.

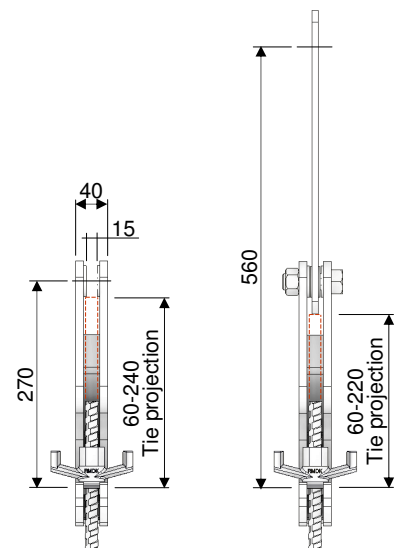


Bar Tie Wing Nut (BTX10001) used at one end to aid spanner adjustment at the other end.



Bar Tie Claw Extension 300mm (BTX10038) - 1.38kg

When using the Bar Tie Claw Extension, ensure that the reinforced end is connected to the Bar Tie Claw



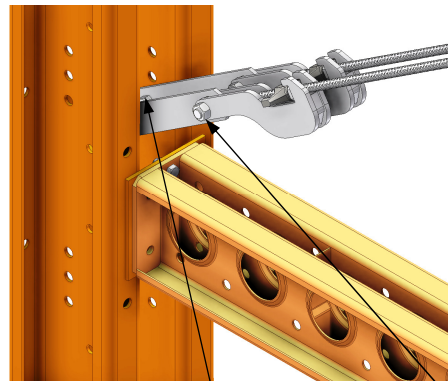
### Applications

SWL = 50kN



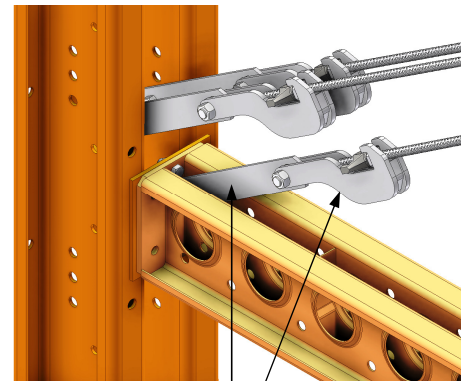
Connect using 1No. S/S 19mm Pin & R-Clip (SSX10046)

SWL = 64kN



Connect using 2No. M20x40 Gr8.8 Bolt & Nut (BBX20040 & BNX00020)

SWL = 114kN



Bar Tie Claw Extension

Bar Tie Claw



# RAPID TIE SYSTEMS

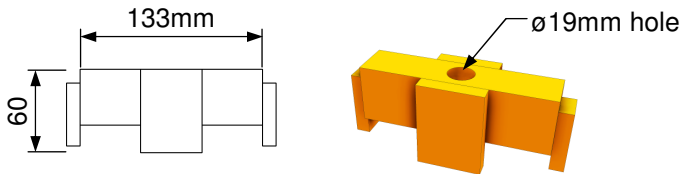
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## Ø15mm Rapid Tie System - Components

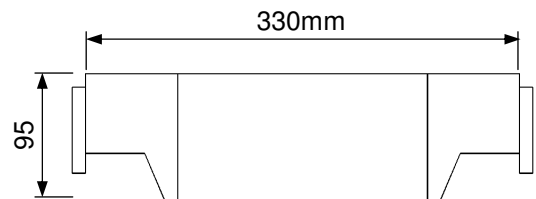
### 1.18 Rapid Tie Claw Bridges

Used to connect Bar Tie Claws and to receive a single Rapid Bar Tie that passes through the ø19mm hole located at the centre of the Claw Tie Bridges.

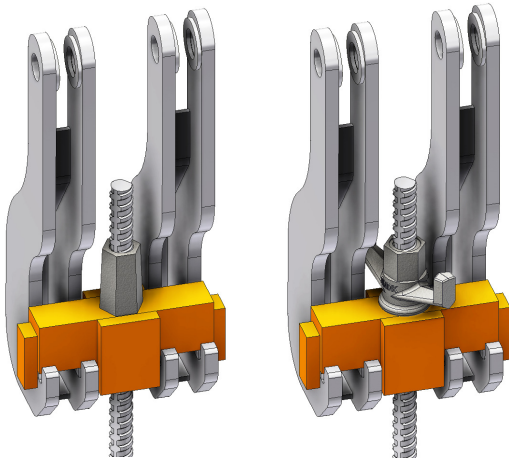


\* Rapid Tie Claw Bridge Short  
(SIM18572) - 1.73kg

\* Sale only items

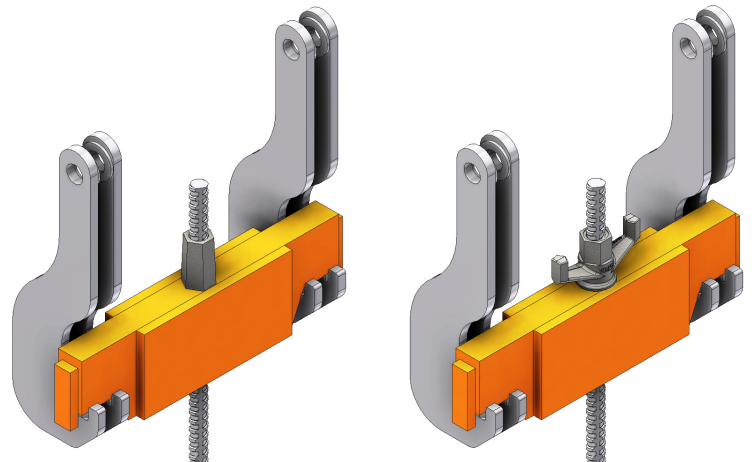


\* Rapid Tie Claw Bridge Long  
(SIM18573) - 9.34kg



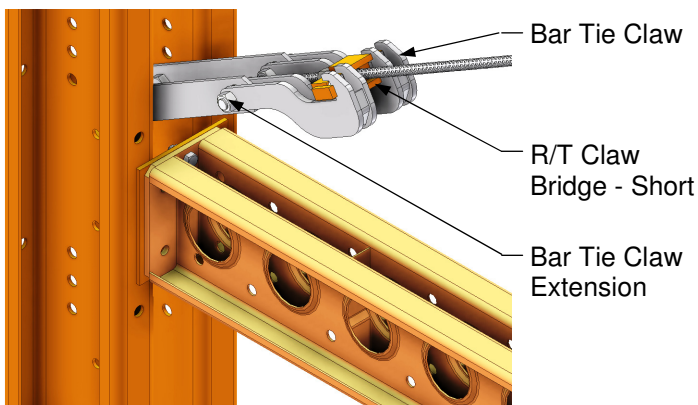
Bar Tie Hexagon Nut (BTX10017) for spanner adjustment.

Bar Tie Wing Nut (BTX10001) used at one end to aid spanner adjustment at the other end.

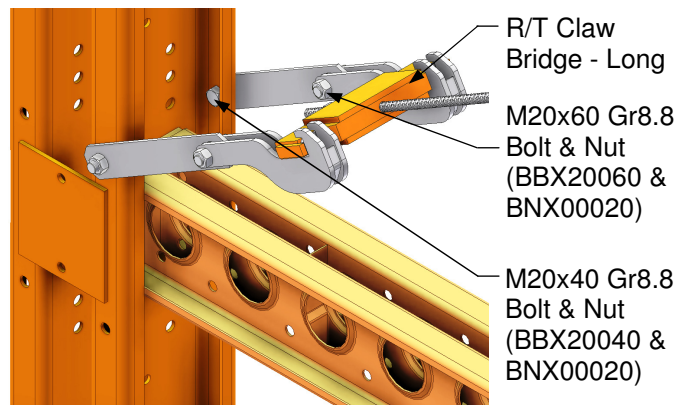


### Applications

SWL = 64kN



SWL = 64kN



# RAPID TIE SYSTEMS

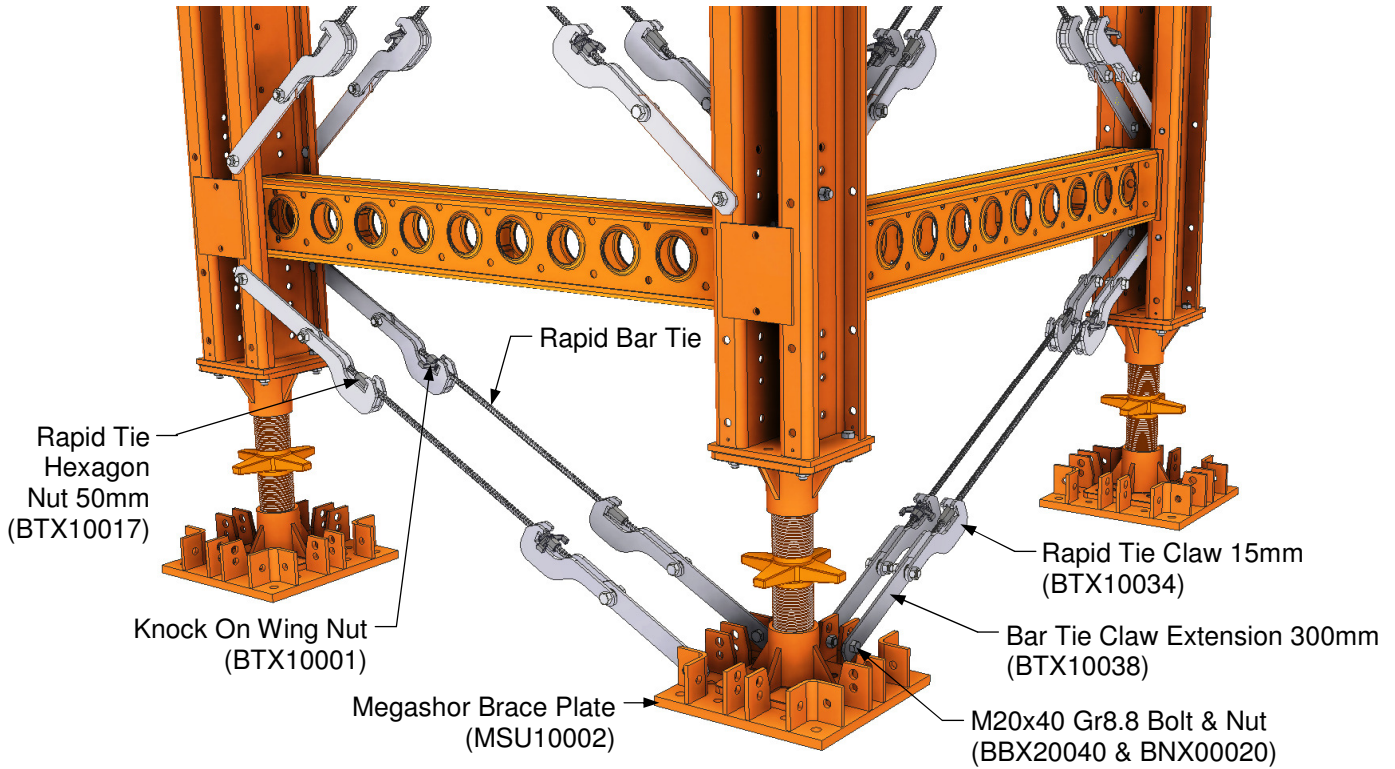
## & FORMWORK ACCESSORIES



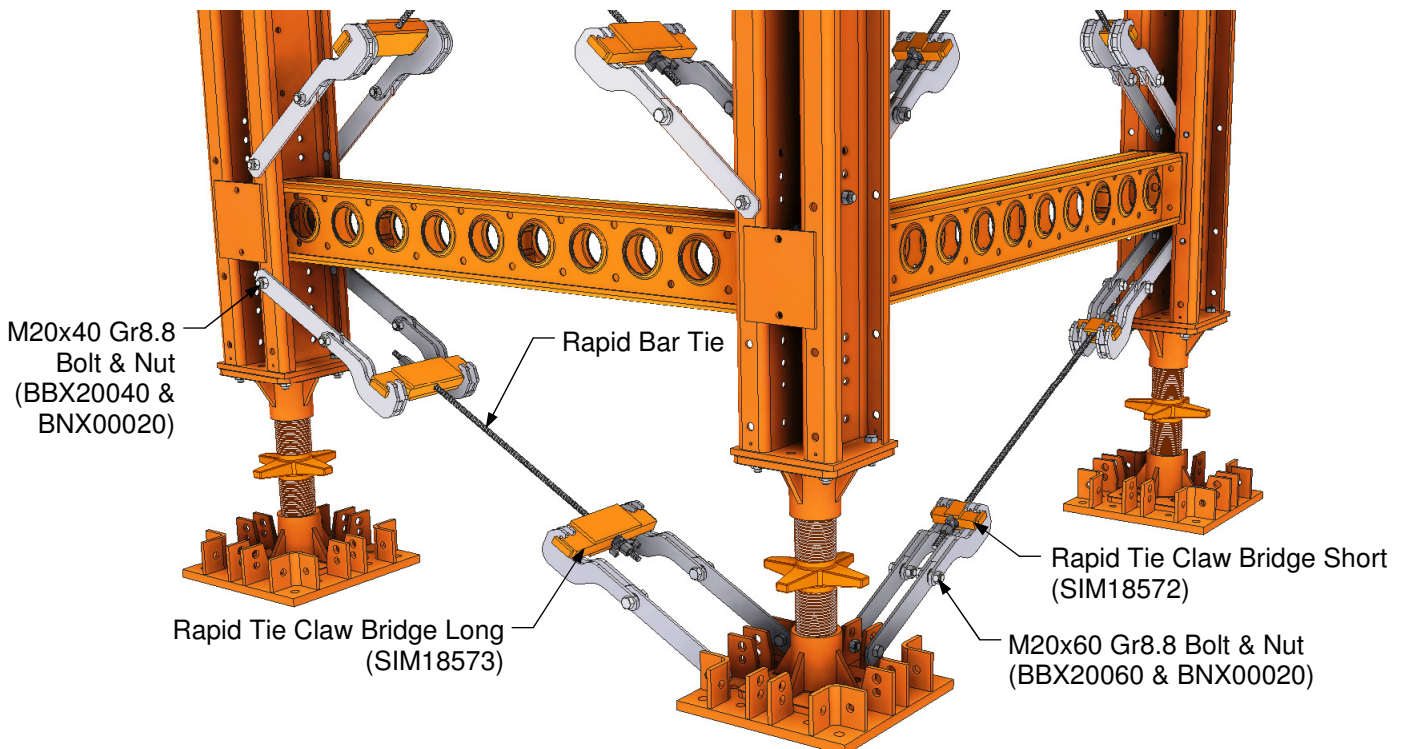
### Ø15mm Rapid Tie System - Components

#### Applications with Megashor Brace Plate (MSU10002)

#### Option 1 - with Rapid Tie Claws and Bar Tie Claw Extension



#### Option 2 - with Rapid Tie Claws, Bar Tie Claw Extension and Bridges



# RAPID TIE SYSTEMS

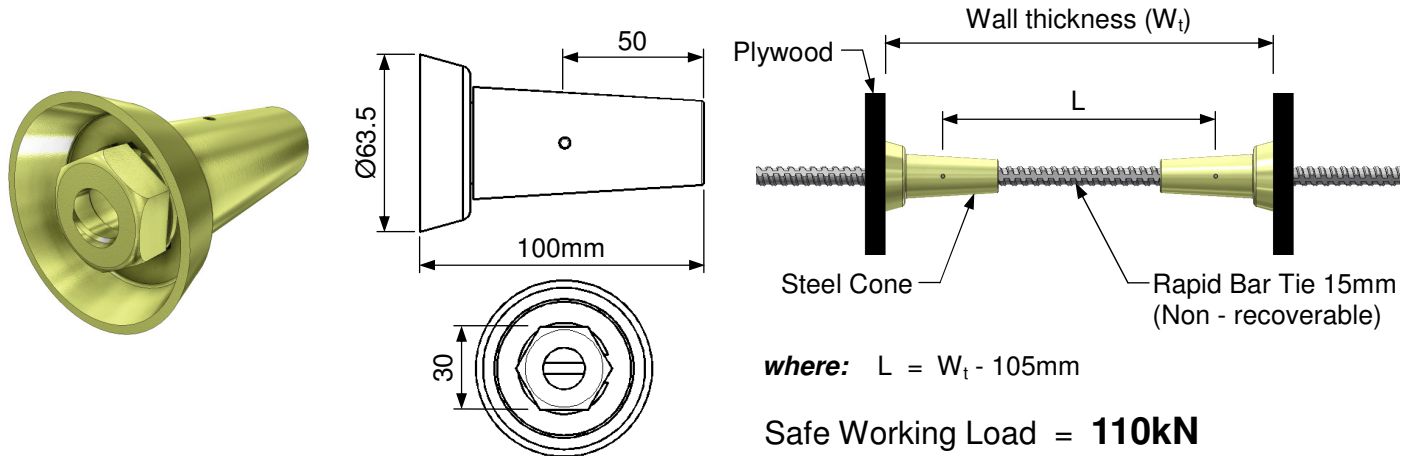
& FORMWORK ACCESSORIES



## Ø15mm Rapid Tie System - Components

### 1.19 Bar Tie Steel Cone 15mm (BTM60001) - 0.58kg.

Recoverable Steel Cones are used with lost Bar Tie where a water tight structure is required.



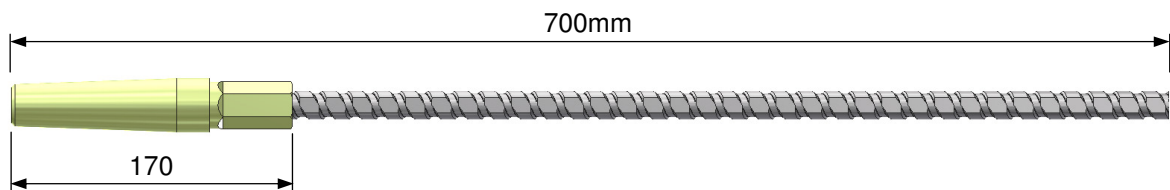
Note: For watertight structures Ribbed / Flange water bars are required to be used.

### 1.20 Rapid Tie She Bolt (BTX50700 & BTX50725)

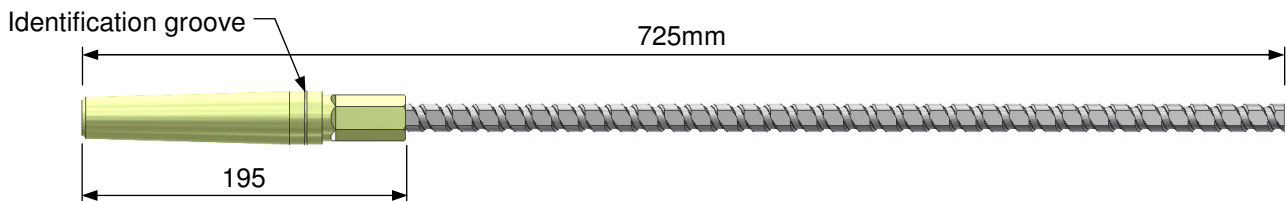
Rapid Tie She Bolt allows the Rapid Tie System to be used as a non-recoverable tie. This arrangement is very useful for water tight structures. An added advantage on double faced formwork is the ability to pass the assembled tie system through both formwork faces from one side after the forms have been erected.

The Rapid Tie She Bolt system can also be used on single faced formwork.

Two types of Rapid Tie She Bolts are available, designed to give 50mm or 75mm cover to the 'lost' Rapid Tie.



Rapid Tie She Bolt 700mm (BTX50700) - 1.50kg



Rapid Tie She Bolt 725mm (BTX50725) - 1.75kg

Safe Working Load = 110kN



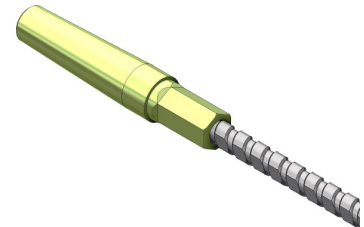
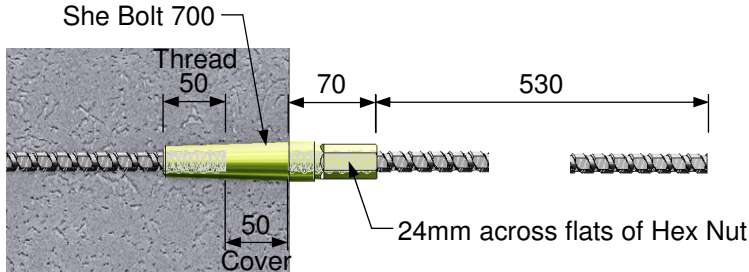
# RAPID TIE SYSTEMS

& FORMWORK ACCESSORIES

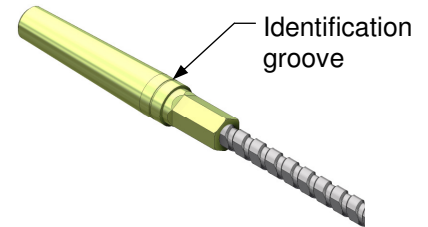
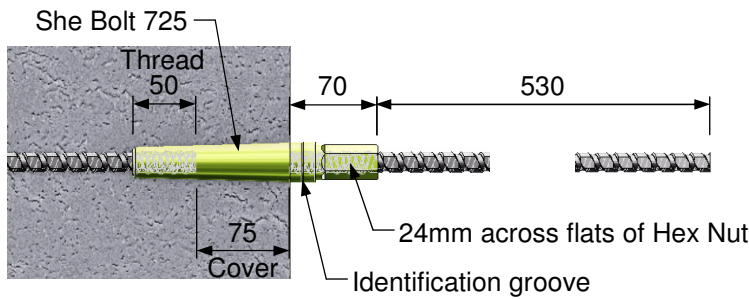


## Ø15mm Rapid Tie System - Components

### Rapid Tie She Bolt Details and Applications

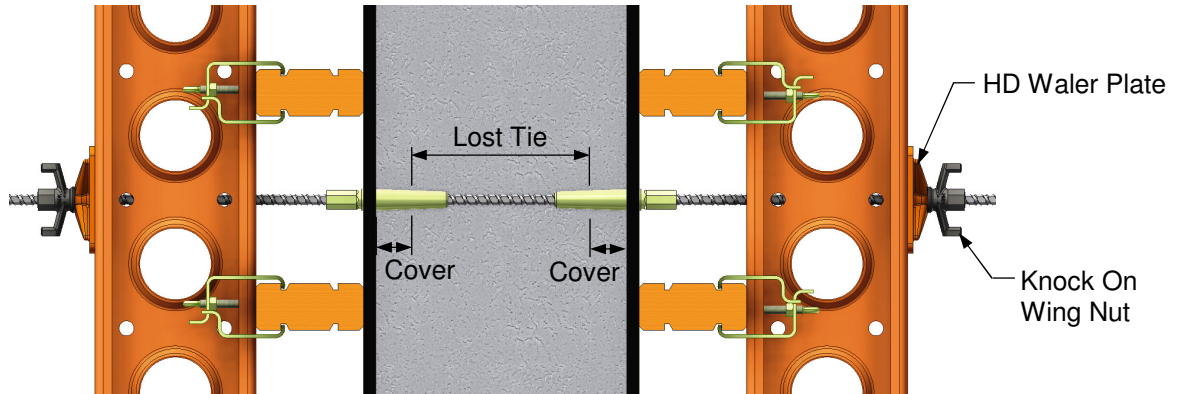


Rapid Tie She Bolt 700



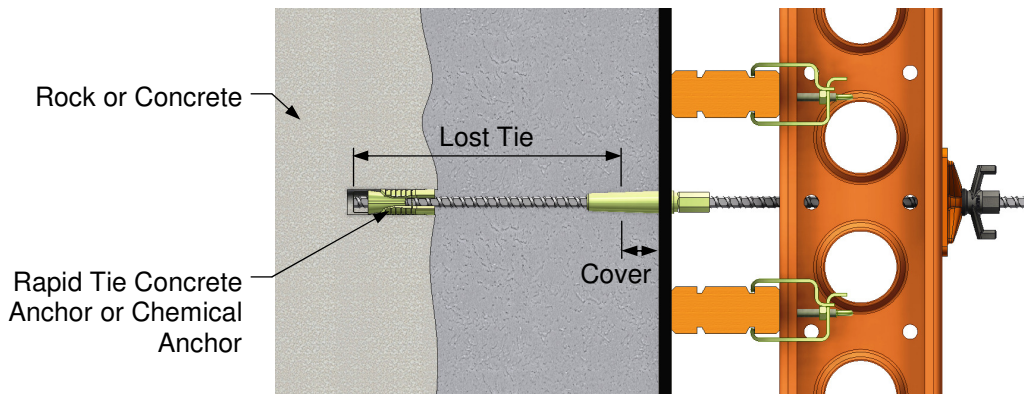
Rapid Tie She Bolt 725

### Applications



DOUBLE FACED FORMWORK

(Assembly SWL = 90kN)



SINGLE FACED FORMWORK  
(Securing into rock or concrete)

(Assembly SWL = 80kN)

# RAPID TIE SYSTEMS

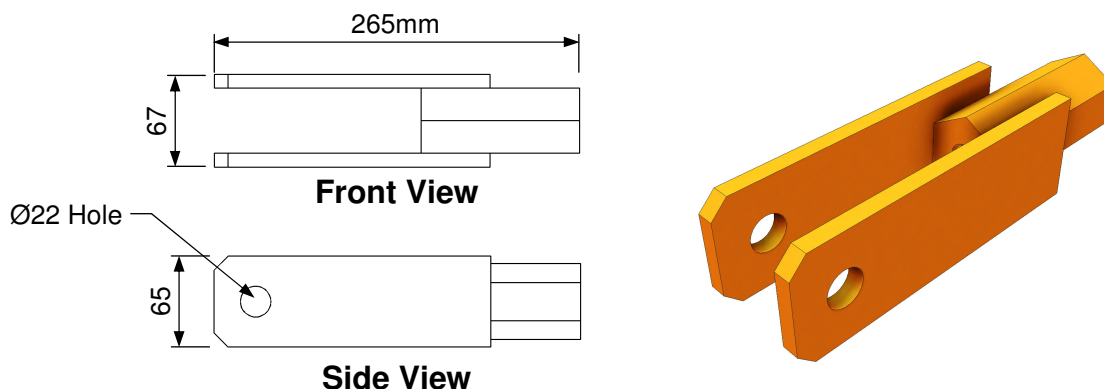
& FORMWORK ACCESSORIES



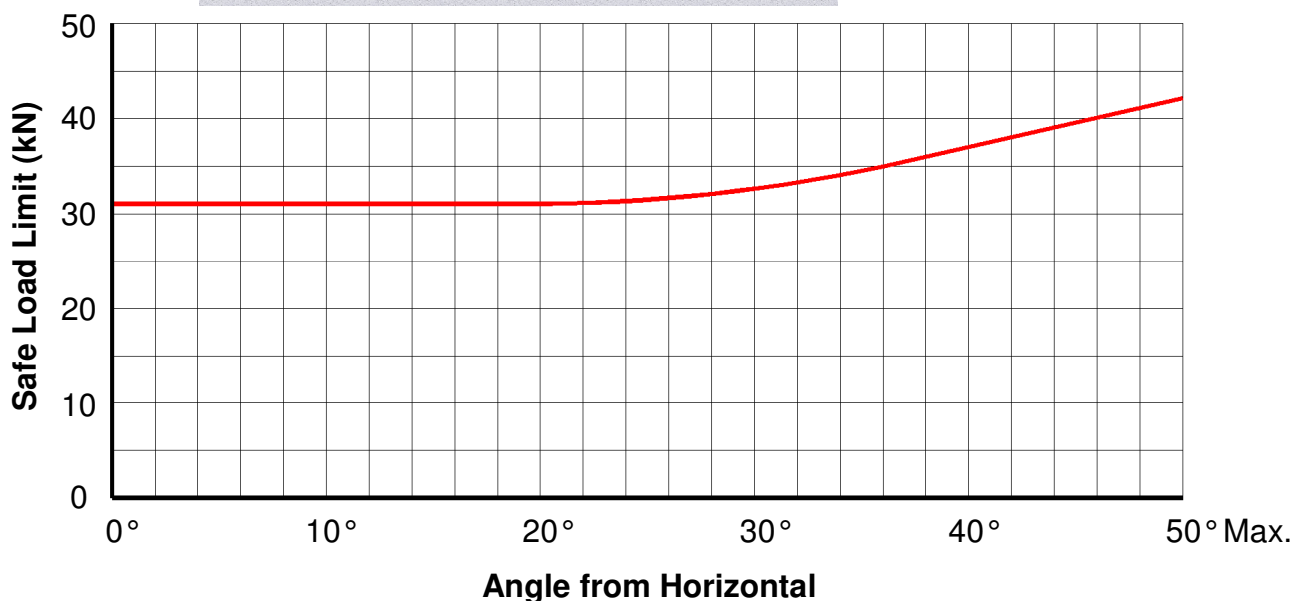
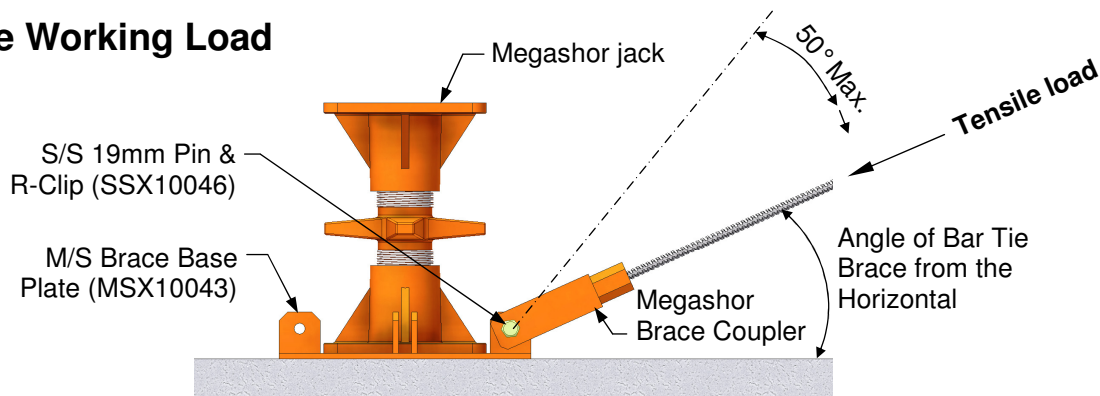
## Ø15mm Rapid Tie System - Components

### 1.21 Megashor Brace Coupler (MSX10044) - 3.55kg.

Used with Megashor Brace Base Plate to brace the extended Megashor Leg or Jack.



### Safe Working Load



Note: Above graph extracted from Australian Megashor Technical Data - TD009.



# RAPID TIE SYSTEMS

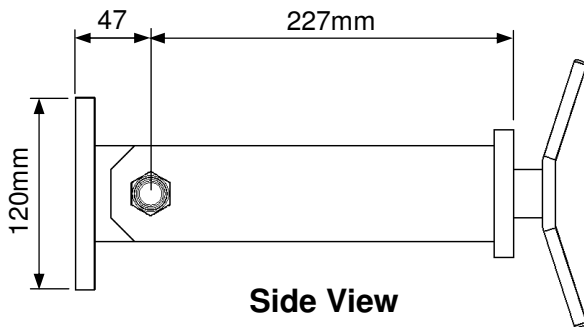
& FORMWORK ACCESSORIES



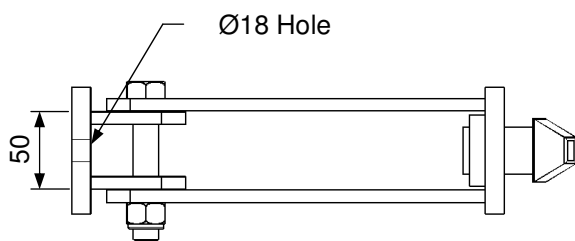
## Ø15mm Rapid Tie System - Components

### 1.22 Airotek Lower Restraint Unit (ADX20020) - 4.28kg.

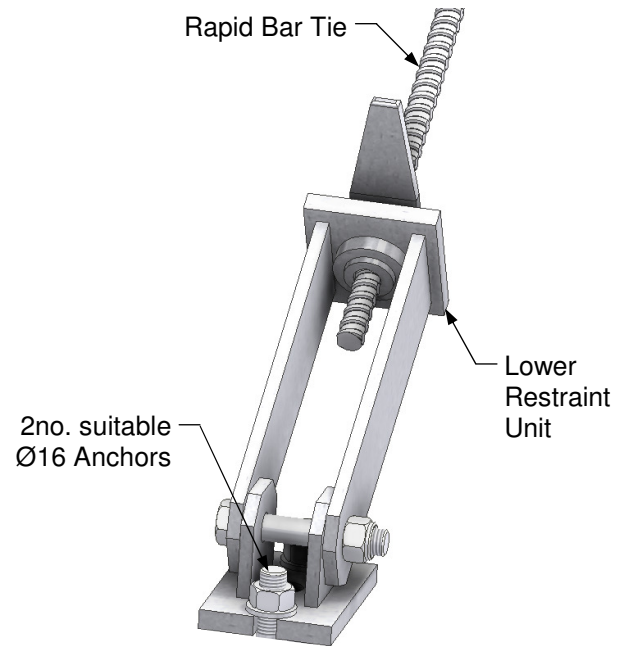
This unit holds the Rapid Bar Tie used in tie-back applications of table forms to prevent overturning. The integrated winged nut is adjusted to tension the bar.



Side View

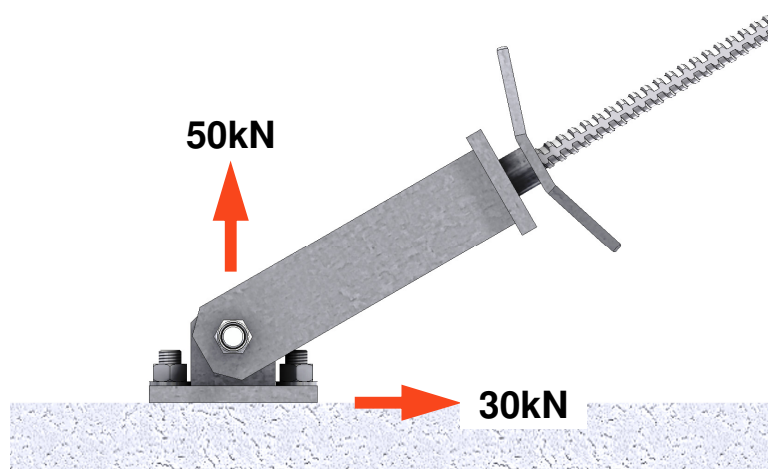


Front View



Assembly

## Safe Working Load



**Note:** Actual combined capacity will be dependant upon both Anchors used and footing.

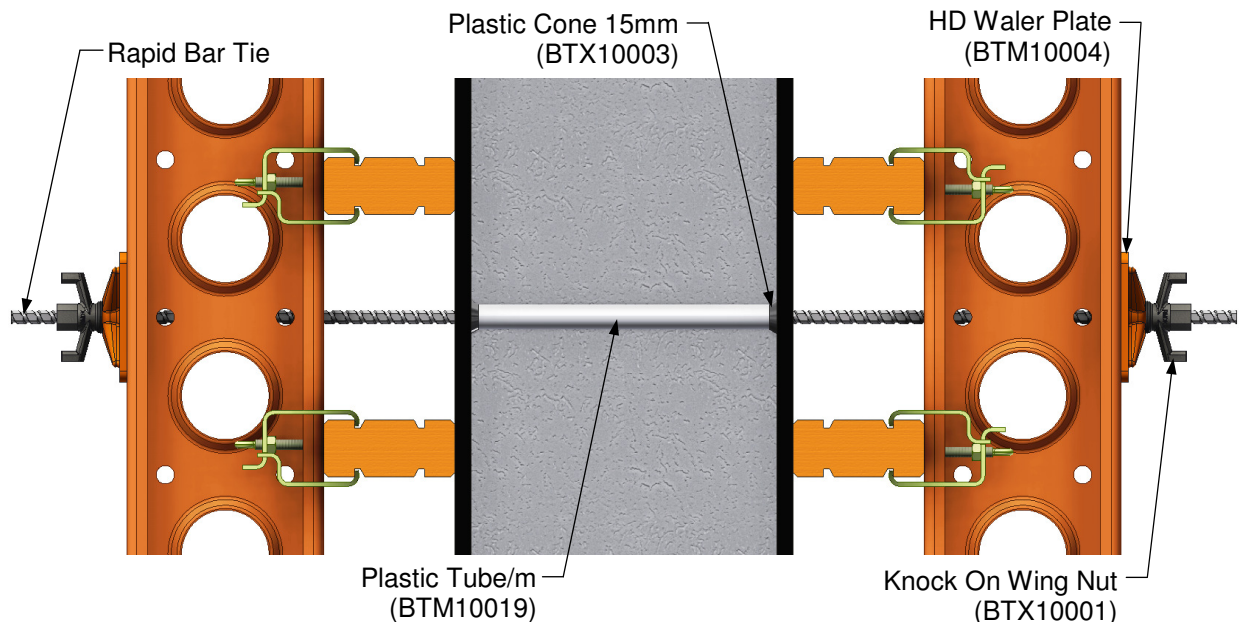
# RAPID TIE SYSTEMS

& FORMWORK ACCESSORIES



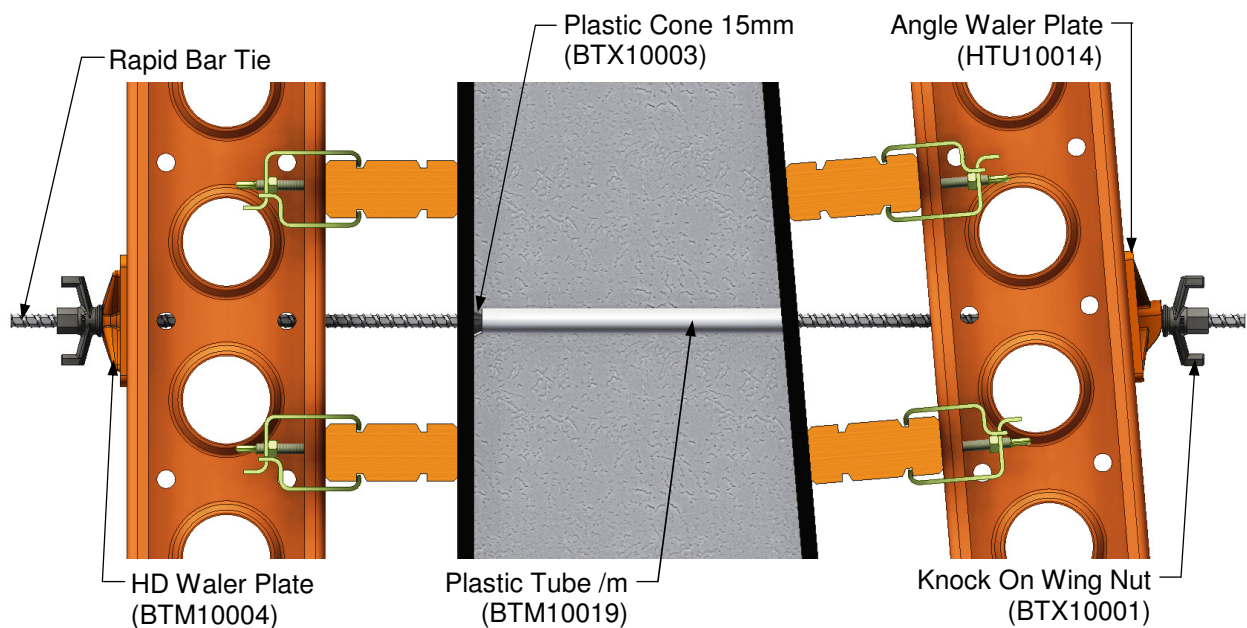
## 2.0 Ø15mm Rapid Tie System - Standard Applications

### 2.1 Double sided wall formwork with HD Waler Plate



Assembly Safe Working Load = **90kN** (refer to 1.3.1 for Combined Loading Graph - Sheet 7)

### 2.2 Double sided wall formwork with Angle waler plate



Assembly Safe Working Load = **70kN** (refer to 1.3.1 for Combined Loading Graph - Sheet 7)

**Note:** When using the Angle Waler Plate with a Superslim Solider, provide a stop to prevent the plate from sliding along the soldier for tie angles greater than 6 degrees.

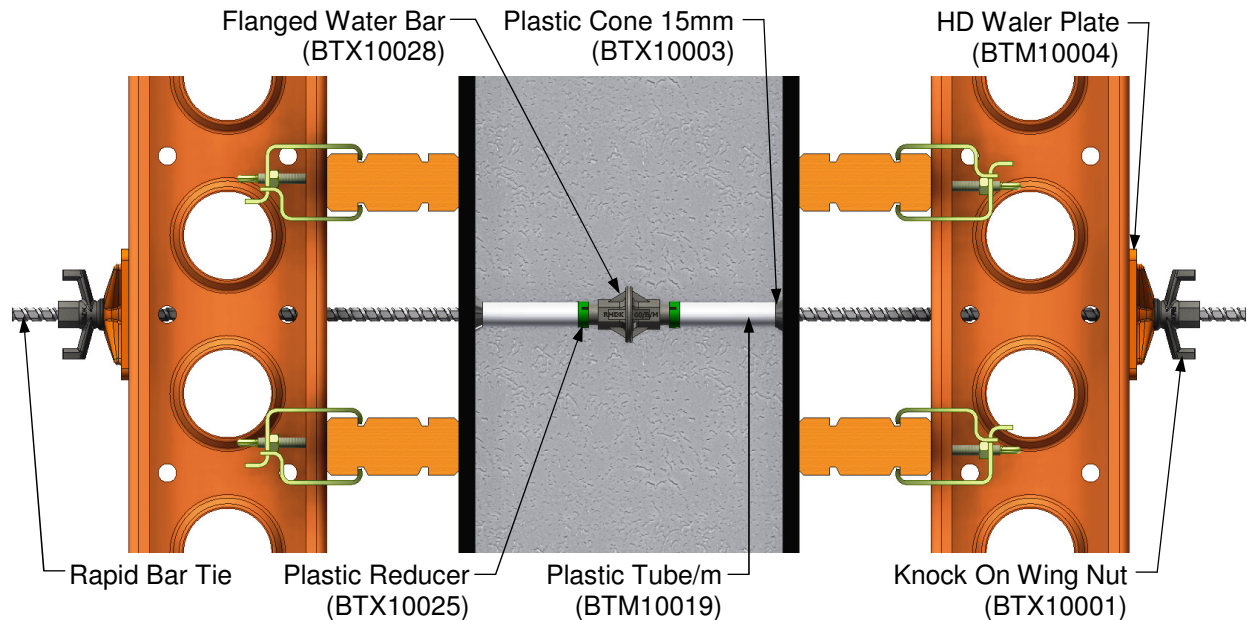
# RAPID TIE SYSTEMS

& FORMWORK ACCESSORIES



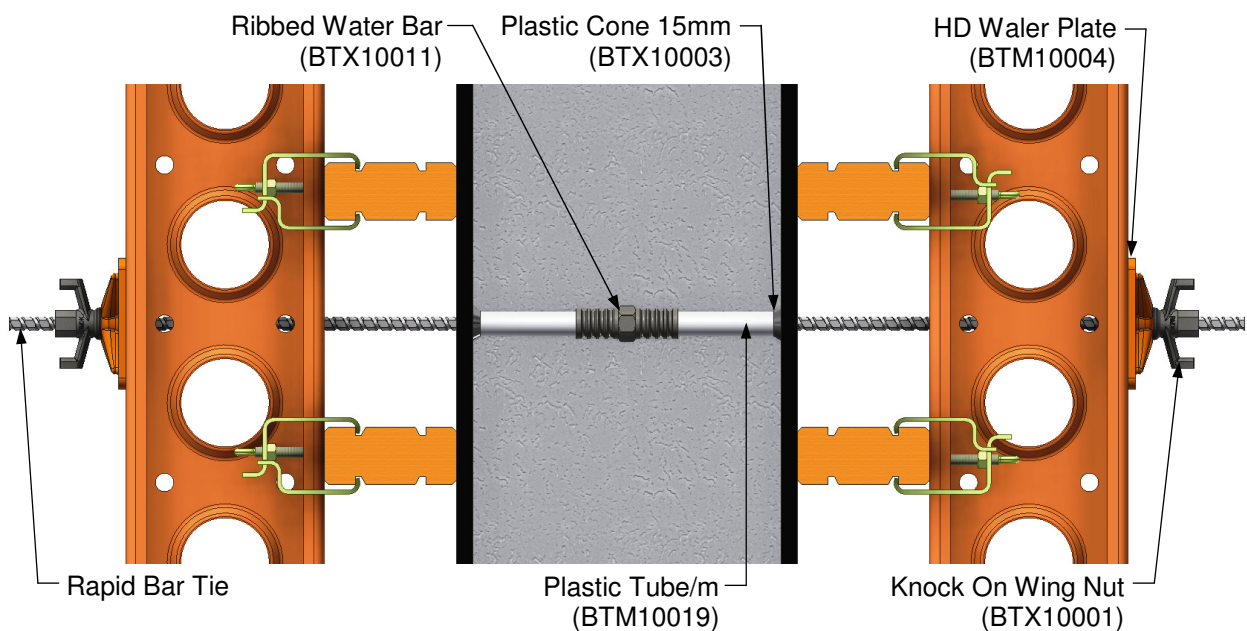
## Ø15mm Rapid Tie System - Standard Applications

### 2.3 Double sided wall formwork with Flanged Water Bar



Assembly Safe Working Load = **90kN** (refer to 1.3.1 for Combined Loading Graph - Sheet 7)

### 2.4 Double sided wall formwork with Ribbed Water Bar

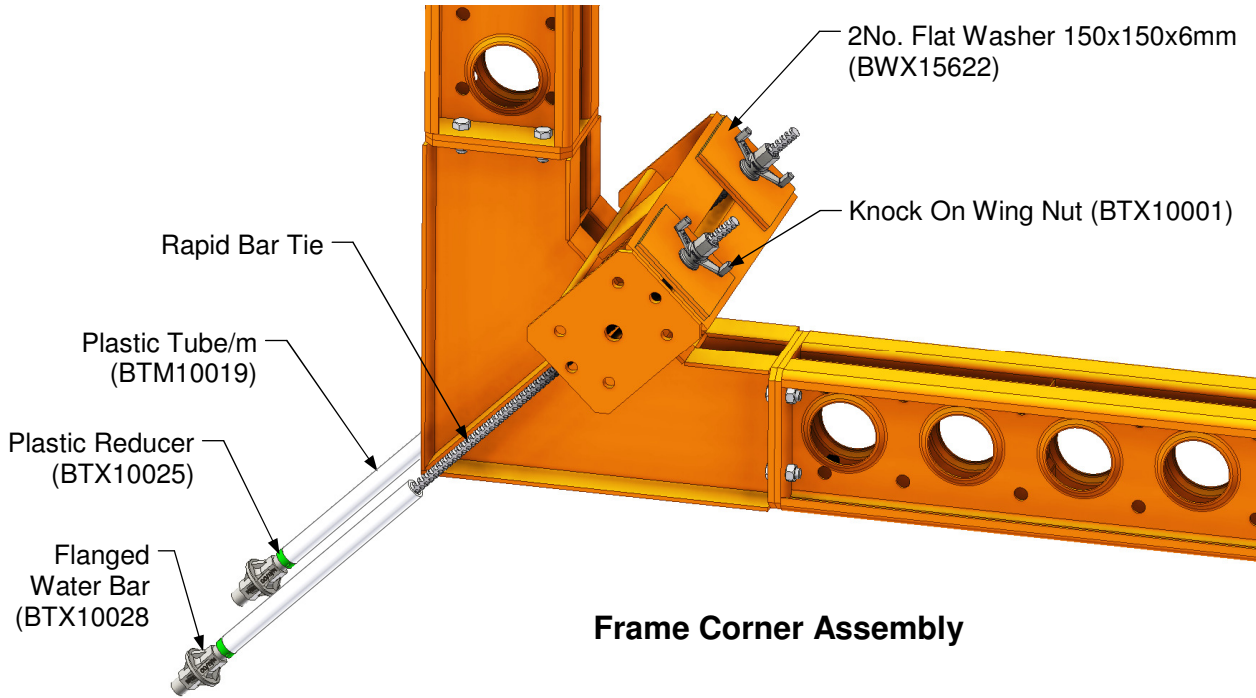


Assembly Safe Working Load = **90kN** (refer to 1.3.1 for Combined Loading Graph - Sheet 7)



## Ø15mm Rapid Tie System - Standard Applications

### 2.5 Single Sided Wall Formwork - Typical Tie Anchor Arrangements

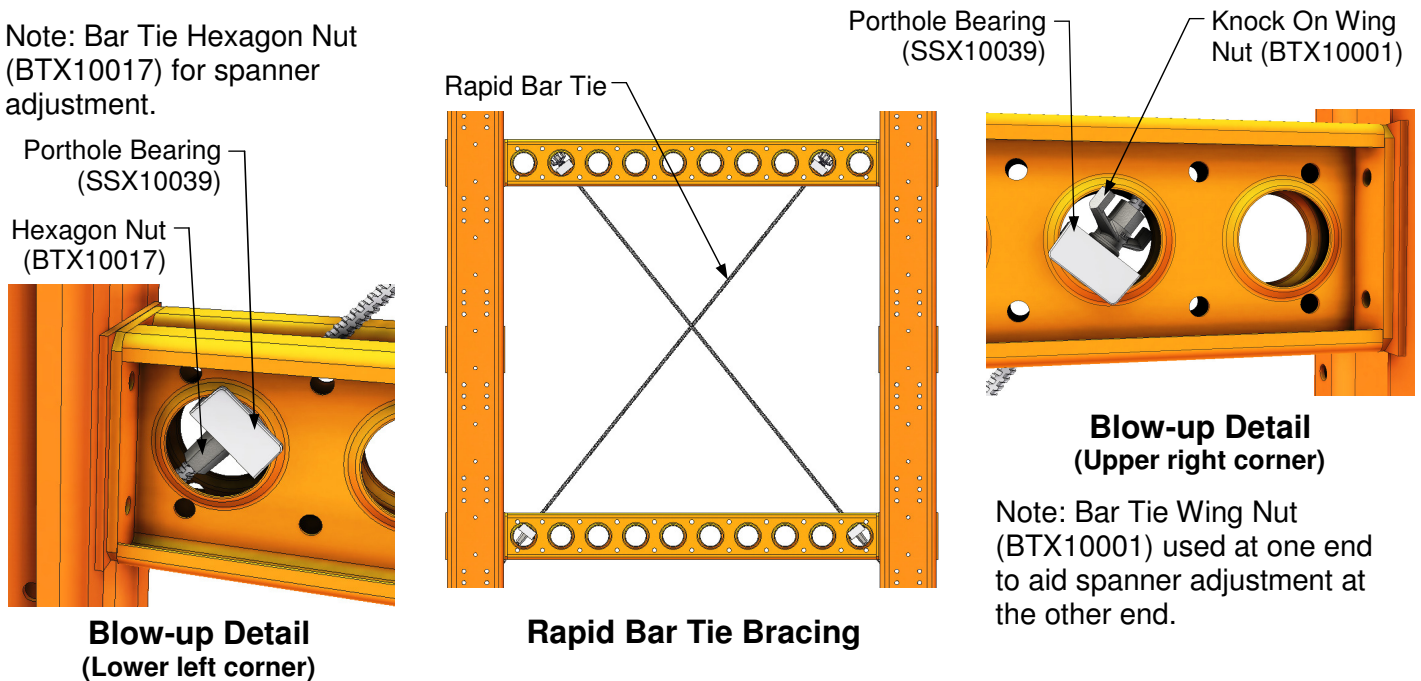


**Frame Corner Assembly**

Assembly Safe Working Load = **190kN** (95kN per Tie)

### 2.6 Rapid Bar Tie with Porthole Bearings

Note: Bar Tie Hexagon Nut (BTX10017) for spanner adjustment.



**Blow-up Detail (Lower left corner)**

**Rapid Bar Tie Bracing**

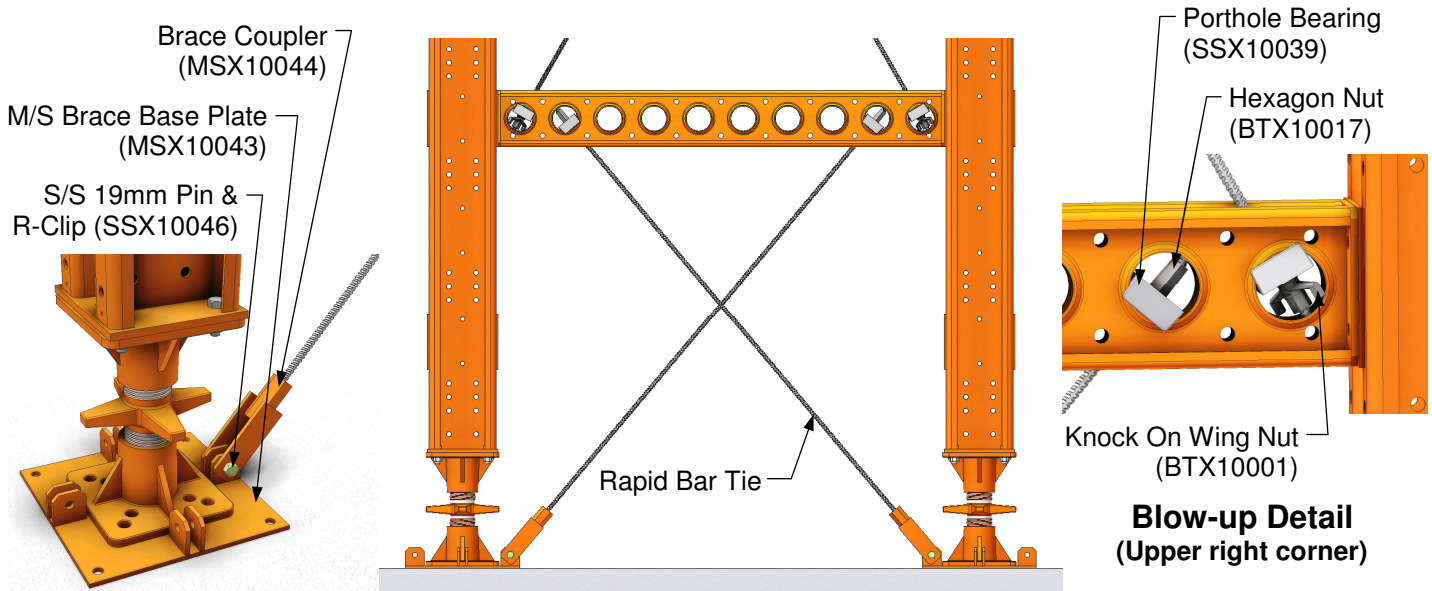
**Blow-up Detail (Upper right corner)**

Note: Bar Tie Wing Nut (BTX10001) used at one end to aid spanner adjustment at the other end.

Assembly Safe Working Load = **65kN**

## Ø15mm Rapid Tie System - Standard Applications

### 2.7 Rapid Bar Tie with Brace Coupler and Megashor Brace Base Plate

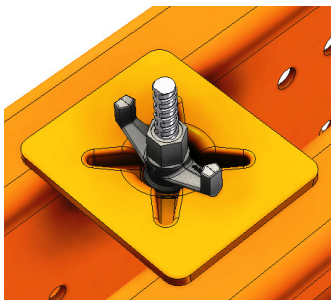
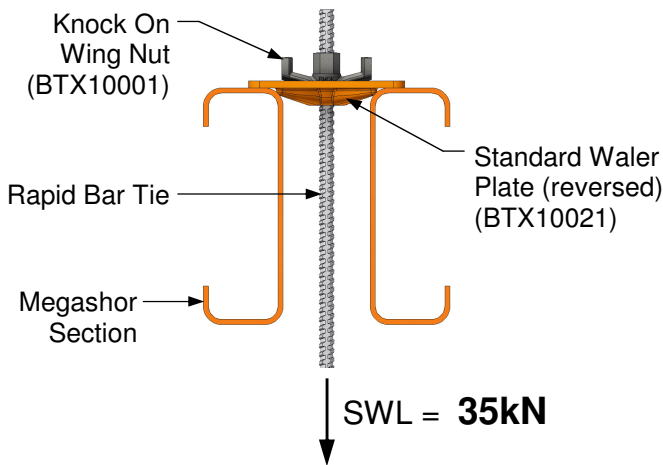


**Rapid Bar Tie Bracing**

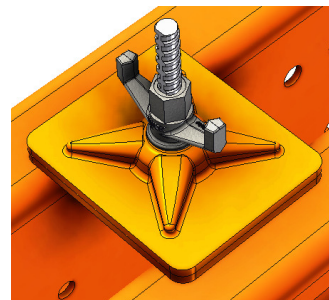
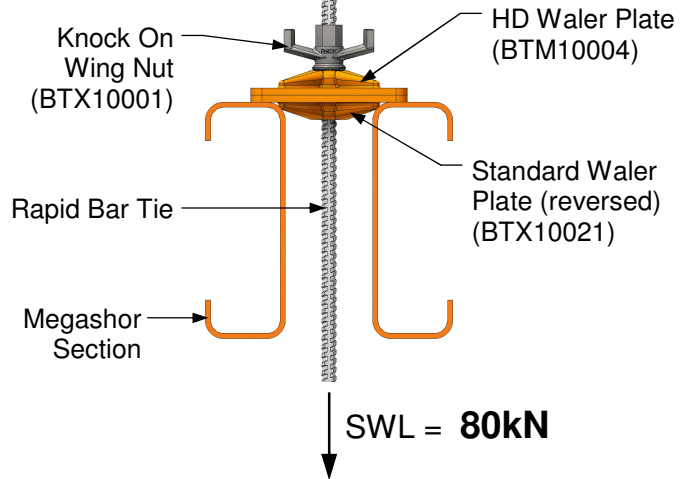
Assembly Safe Working Load = *refer graph on sheet 19*

### 2.8 Rapid Bar Tie and Accessories with Megashor

#### Arrangement A.



#### Arrangement B.





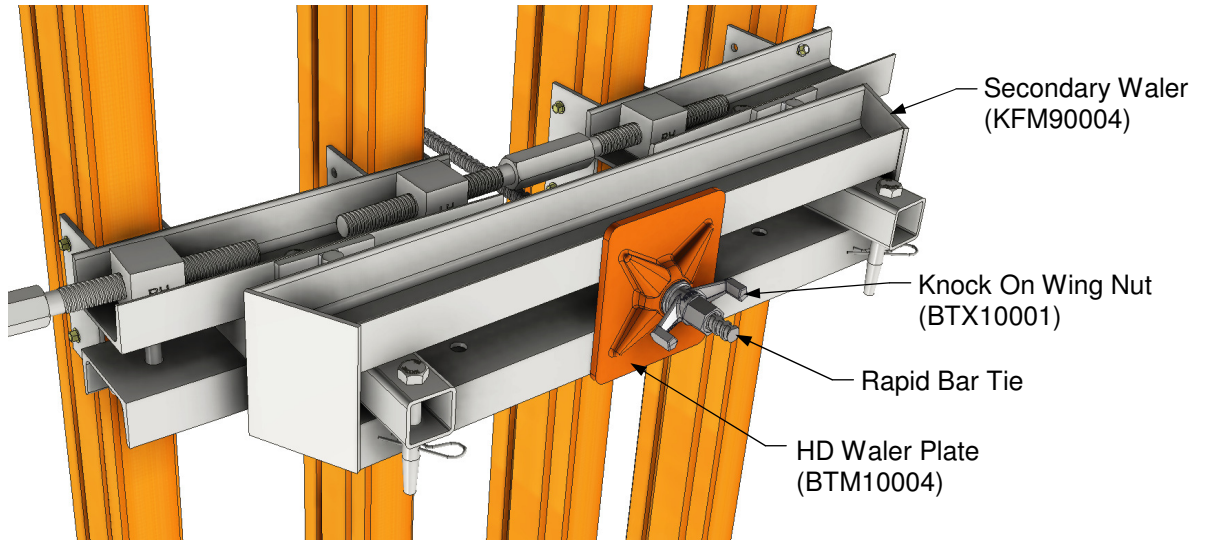
# RAPID TIE SYSTEMS

& FORMWORK ACCESSORIES



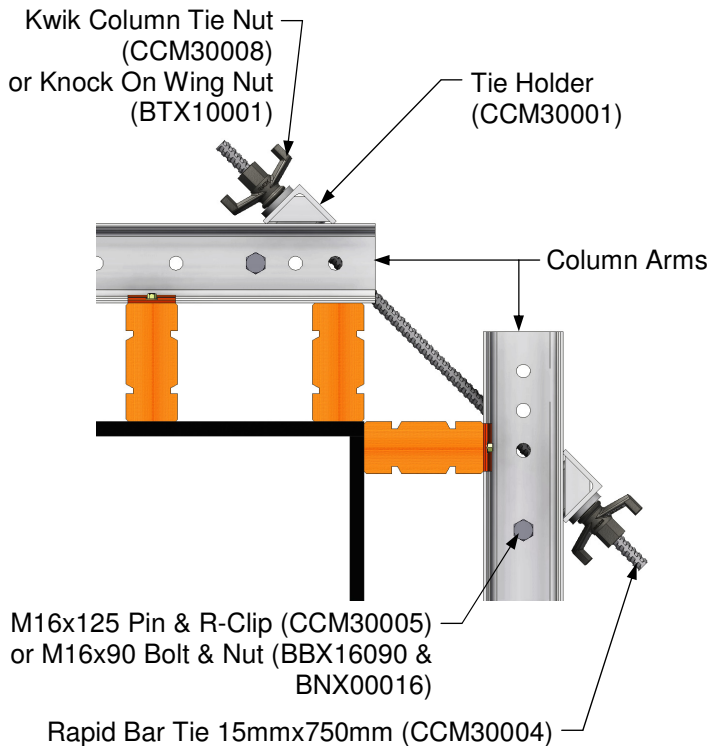
## Ø15mm Rapid Tie System - Standard Applications

### 2.9 Rapid Bar Tie with Kwikflex



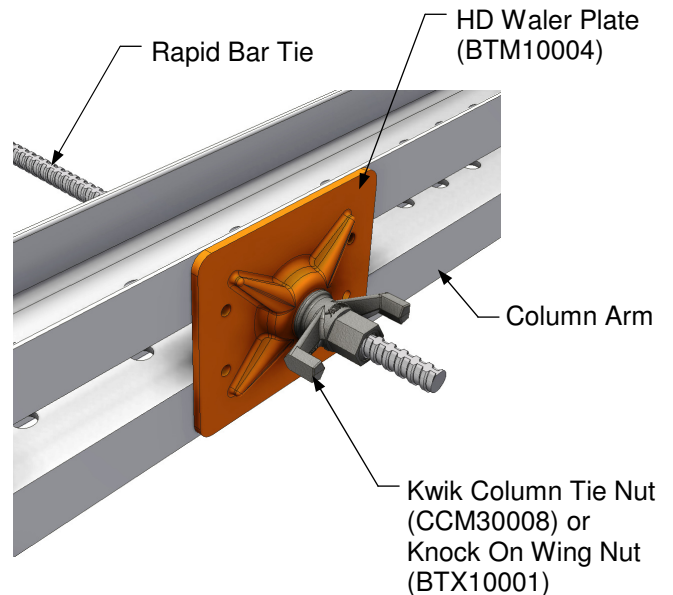
Assembly Safe Working Load = **80kN**

### 2.10 Rapid Bar Tie with Kwik Column



#### Corner Tie Detail

Assembly Safe Working Load = **46kN**



#### Tie through Column Arm

Assembly Safe Working Load = **62kN**

# RAPID TIE SYSTEMS

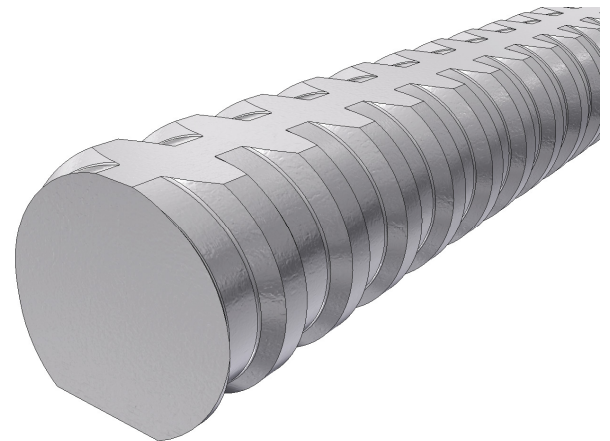
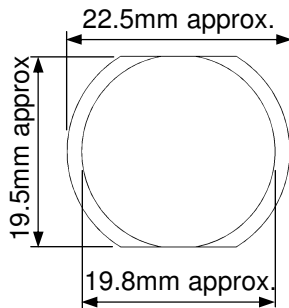
& FORMWORK ACCESSORIES



## 3.0 Ø20mm Rapid Tie System - Components

### 3.1 Rapid Bar Tie Ø20mm - 2.7 kg/m

A high tensile steel hot rolled bar incorporating a continuous, intermittent coarse pitch thread.



Safe Working Load on Tension = **215kN.**

Code	Description	Weight (kg.)
BTX40100	Rapid Bar Tie 20mm x 1.00m	2.47
BTX40150	Rapid Bar Tie 20mm x 1.50m	3.70
BTX40200	Rapid Bar Tie 20mm x 2.00m	4.90
BTM40550	Rapid Bar Tie 20mm x 5.50m	14.67
BTX40600	Rapid Bar Tie 20mm x 6.00m	14.79

#### Notes:

- Rapid Bar Tie shall not be welded.
- Rapid Bar Tie shall not be hot dipped galvanized.
- Rapid Bar Tie shall not be used to raise or lower loads.
- Rapid Bar Ties are not ideal for Shear load applications

Ultimate Tensile Strength (UTS) =  $1080\text{N/mm}^2$

Yield Stress =  $900\text{N/mm}^2$

Cross Sectional Area =  $319\text{mm}^2$

Elongation =  $0.016\text{mm/m/kN}$

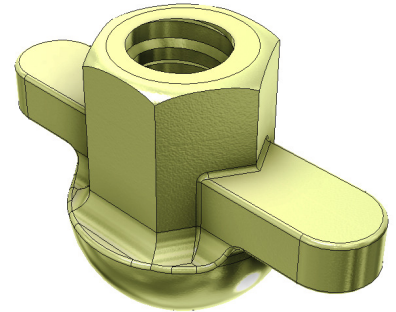
## Ø20mm Rapid Tie System - Components

### 3.2 Knock On Nut - Hi Load (BTX10006) - 0.51kg.

Forged iron nut for Ø20mm Rapid Bar Tie. The hexagon head facilitates use of a spanner and two wings allow the item to be rotated using a hammer.

Finish: Electrodeposited coating (Yellow)

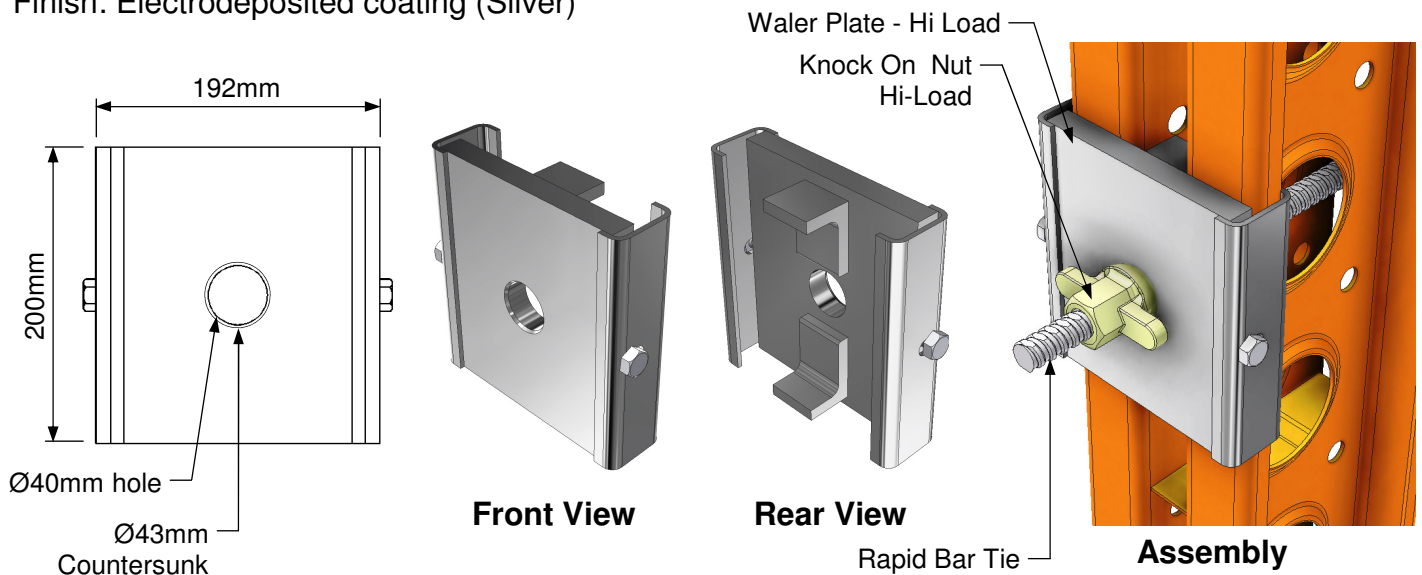
Safe Working Load on Tension = **215kN**.



### 3.3 Waler Plate - Hi Load (BTX10029) - 6.84kg.

This item enables a 160kN load, achieved in Ø20mm Rapid Bar Tie, to be supported on Superslim Soldier

Finish: Electrodeposited coating (Silver)

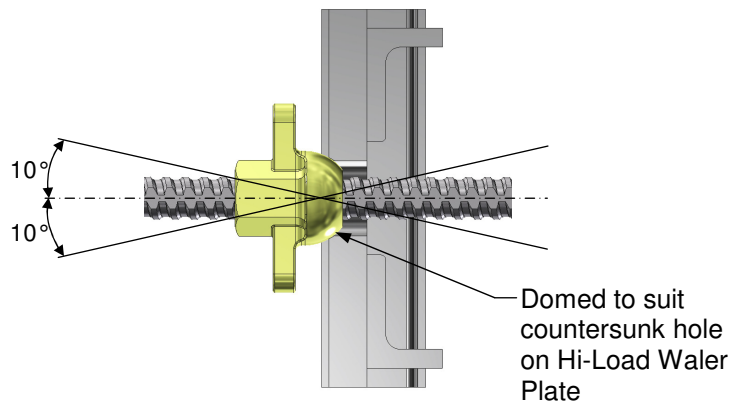


Safe Working Load = **160kN** when used with Superslim Soldiers.

*(Refer to 3.3.1 for Combined Loading Graph - Sheet 28)*

### Battered Walls

To cater for battered walls the countersunk in the Hi-Load waler plate permits a 10° angle to be accommodated when using the Hi-Rapid tie knock-on wing nut. This represents a 1:6 batter.



### Ø20mm Rapid Tie System - Components

#### 3.3.1 Beams with Compression Flanges Restrained

The Superslim Soldier is a lightweight member and it is not generally appropriate to use established design codes for beam analysis. Performance of the unit has been derived from a combination of calculation and extensive load testing. Due to the presence of various web perforations, performance is affected by both shear stiffness and the bending stiffness of the member. Analysis of beam deflection is complex, for deflection calculation by simplistic analysis, reduced EI value of 3200kNm<sup>2</sup> gives good correlation with the more rigorous analysis.

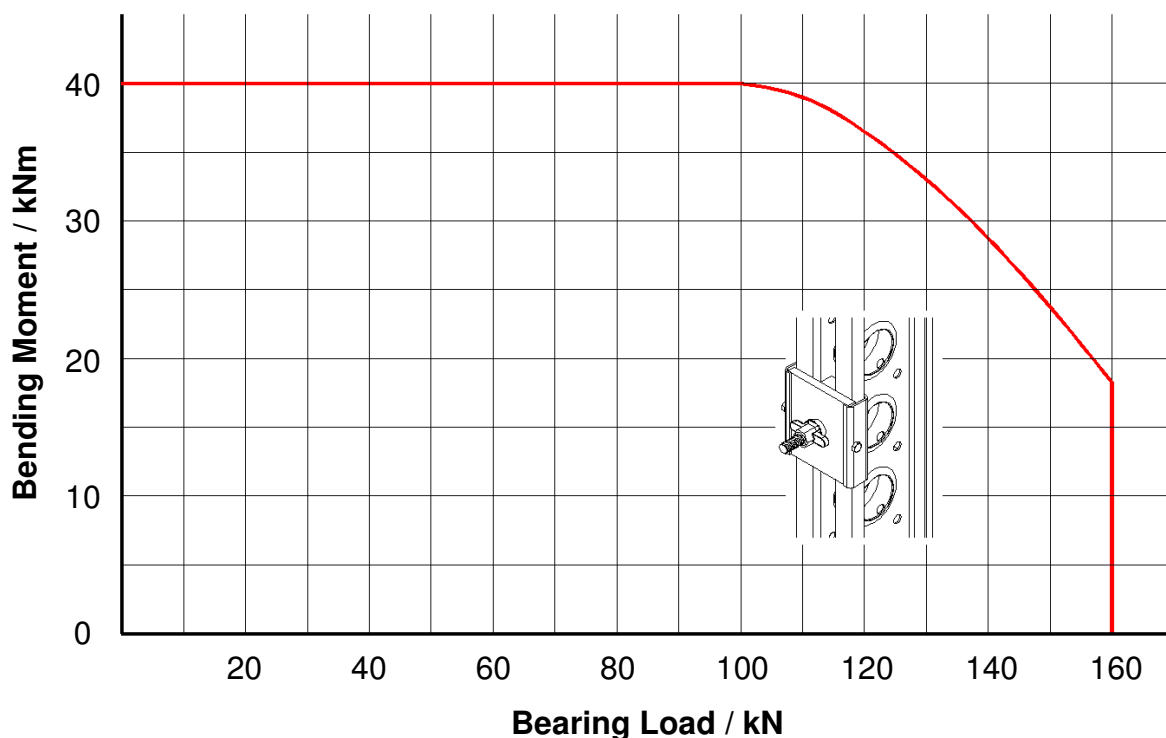
When used as a beam it is important that the Soldier is restrained laterally at load points and supports. On a shutter this lateral restraint is provided by the face contact material, backing members and specified connections between the components acting as a stiff diaphragm to restrain the connection flange of the Superslim. Integral intermittent welded web stiffeners in the Superslim transfer this lateral restraint to the unconnected flanges. When used as an isolated beam it is normal to provide lateral restraint using scaffold tubes coupled to the flanges of the Soldier. When lateral restraint is not provided refer to 1.1.5 of Superslim Technical Data for Safe Working Loads.

When bending on the weak axis, the soldier should be treated as two individual channel members, each with a moment of resistance of 3.12kNm. Individual loads act on the single channel and transfer the forces through the welded stiffeners to the other channel.

#### Combined Loading

Performance under conditions of combined bending and bearing can be checked using the graph below.

#### Rapid Bar Tie Ø20mm with Waler Plate - Hi Load and Superslim Soldier



Note: Above graph extracted from Superslim Soldier Technical Data.

# RAPID TIE SYSTEMS

& FORMWORK ACCESSORIES

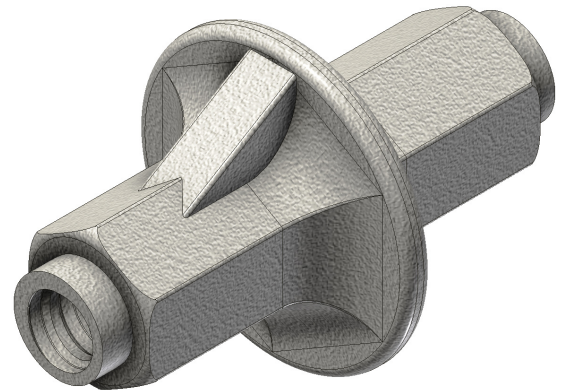
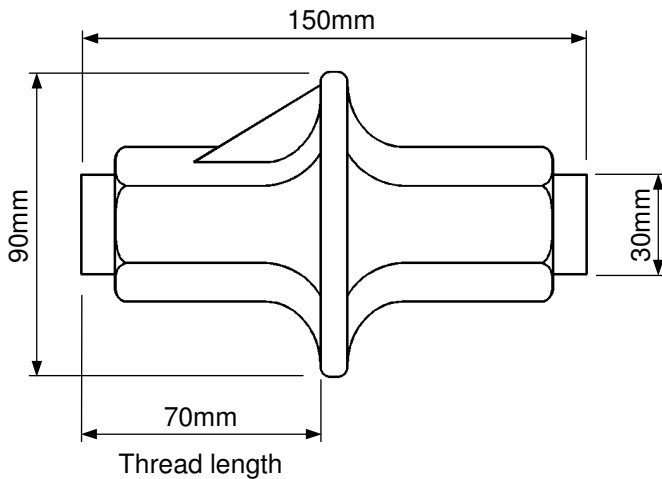


## Ø20mm Rapid Tie System - Components

### 3.4 Rapid Tie Hi-Load Flanged Water Bar (BTM00002) - 1.30kg.

A cast connector for Ø20mm Rapid Bar Tie incorporating an impermeable core and flanges.

Finish: Self colour

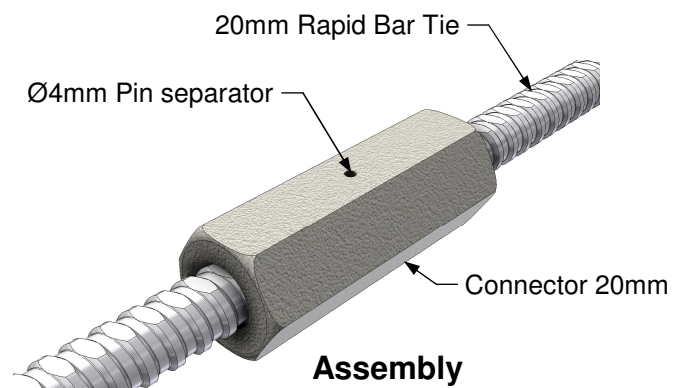
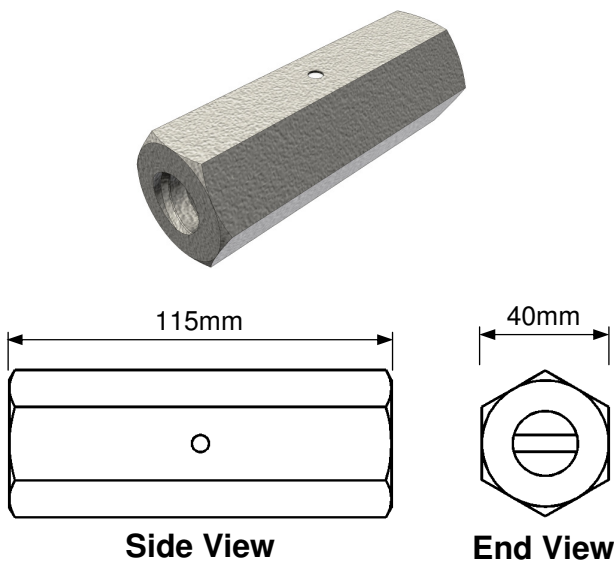


Safe Working Load = **200kN**

Maximum Water Pressure = 700kPa *or* 70m Head *or* 7 Bar

### 3.5 Connector Ø20mm - Rapid Tie (BTX10002) - 0.91kg.

115mm long Steel member, round or hexagon in section, threaded inside to connect Ø20mm Rapid Bar Ties end to end, with a gap provide by Ø4mm pin at the middle.



Safe Working Load = **215kN**



# RAPID TIE SYSTEMS

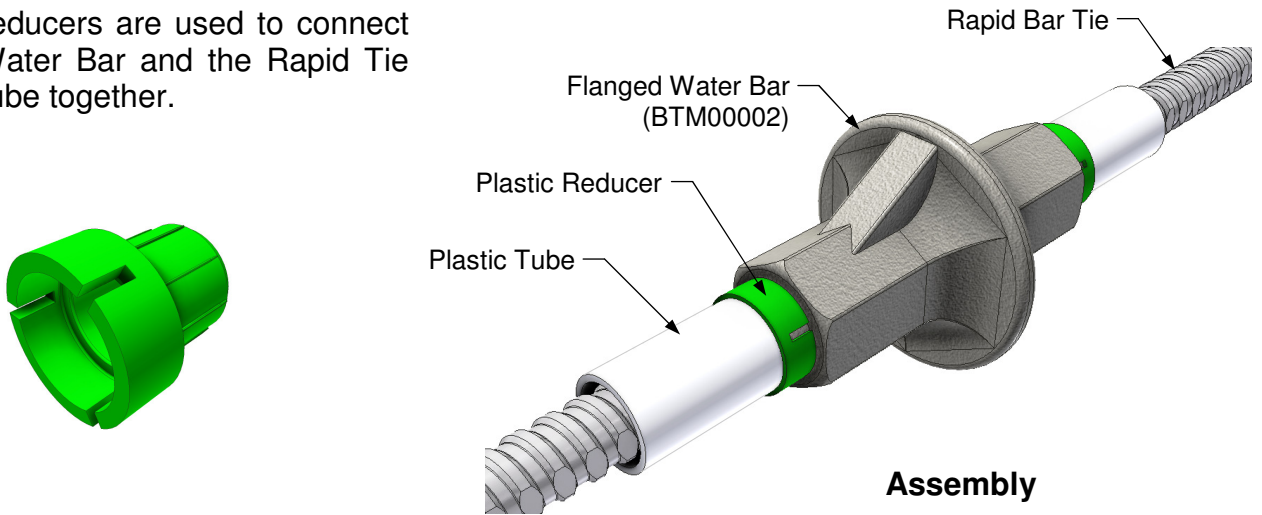
& FORMWORK ACCESSORIES



## Ø20mm Rapid Tie System - Components

### 3.6 Rapid Tie Hi-Load Reducer for Flanged Water Bar (BTM00006) - 0.01kg.

These Reducers are used to connect Flange Water Bar and the Rapid Tie Plastic Tube together.



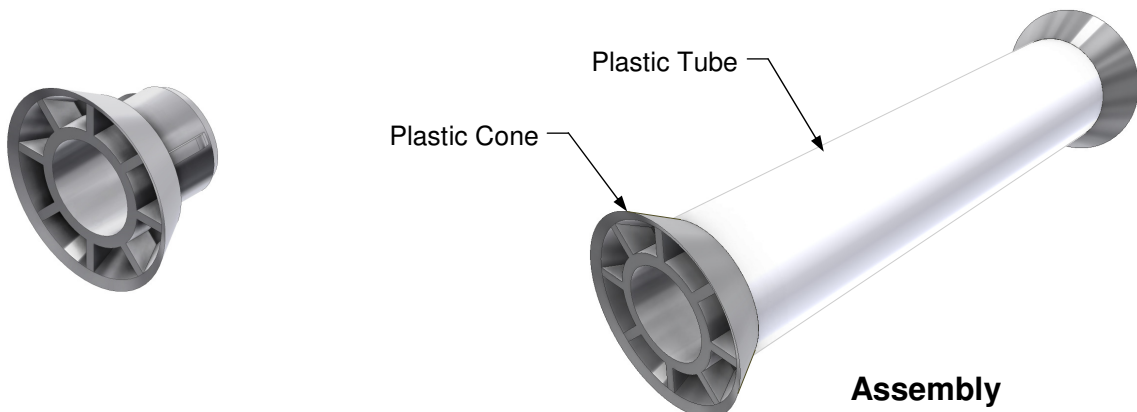
### 3.7 Rapid Tie Hi-Load Plastic Tube 26/30mm/m (BTM21000) - 0.15kg.

Rigid Plastic Tube of Ø30mm outside diameter and Ø26mm inside diameter to sheath the Ø20mm Rapid Bar Tie from wet concrete.



### 3.8 Plastic Cone - Hi Load Ø26mm (BTX10008) - 0.01kg.

Recoverable Plastic Cone used at each end of the plastic conduit tubes.

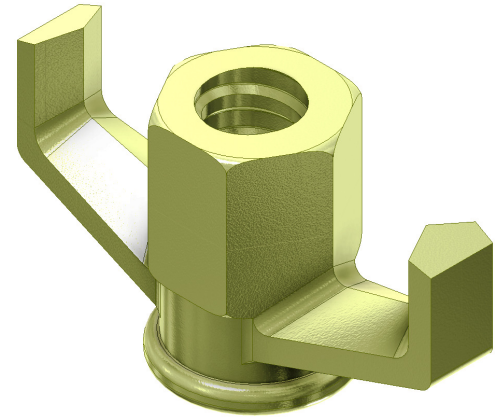


### Ø20mm Rapid Tie System - Components

#### 3.9 Rapid Tie Wing Nut 20mm (BTU10013) - 0.51kg.

Malleable cast iron nut. The hexagon head facilitates use of a spanner and the wings allow the item to be rotated using a hammer or levered with a length of reinforcing bar.

Finish: Electrodeposited coating (Yellow)



Safe Working Load on Tension = **150kN.**

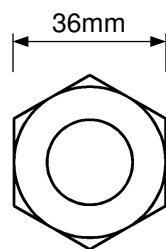
#### Notes:

- To be used with suitable Flat Washers and Twin Channels.
- With Flat Washers and Superslim Soldiers **SWL = 75kN.**
- Not to be used with Hi-Load Waler Plate (BTX10029).

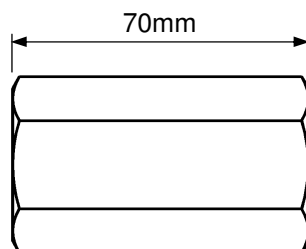
#### 3.10 Nut - Hexagon 20mm Bar (BTX10005) - 0.40kg.

70mm long Steel Hexagon Nut to be used in constraint spaces where Wing Nuts do not fit and adjustment with a spanner required.

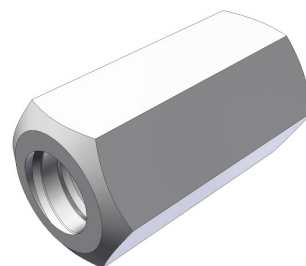
Finish: Self Colour



End View



Side View



Safe Working Load = **160kN**

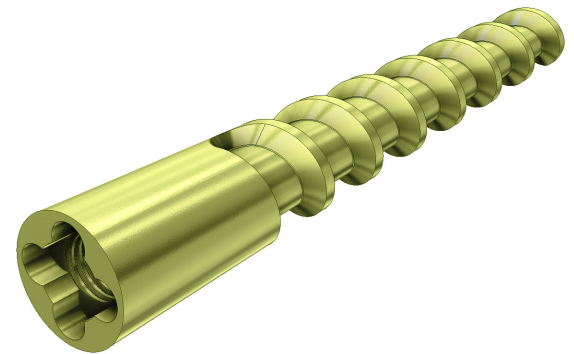
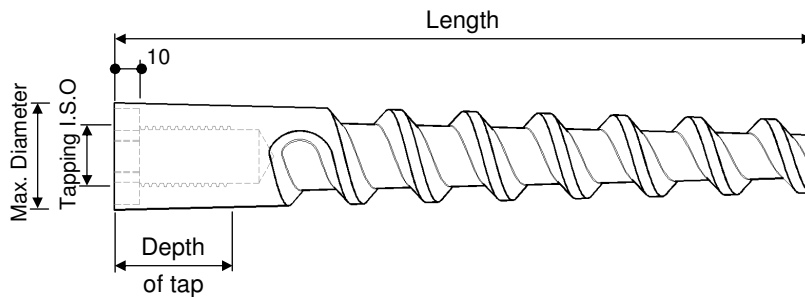
# RAPID TIE SYSTEMS

## & FORMWORK ACCESSORIES

### 4.0 Anchor Screws and Accessories

#### 4.1 Anchor Screws

Anchor Screws are used to secure formwork to concrete. Also used for handling / lifting of Precast Units. They can easily withdrawn and repositioned.



Code	Length (mm)	Tapping I.S.O (mm)	Depth of Tap (mm)	Max. Dia. (mm)	SWL in Tension (kN)	Weight (kg)
HTX20120	120	M20	33	43	30	0.68
HTX20140	140	M20	33	43	30	0.85
HTX20200	200	M20	33	43	43	1.08
HTX24140	140	M24	41	43	30	0.82
HTX24200	200	M24	41	43	43	1.17
HTX24280	280	M24	41	43	80	1.63
HTX30330*	330	M30	52	47	100	2.28
HTX30400*	400	M30	52	50	120	2.77

\* *Made to order items.*

#### Notes:

- Loads tabulated above relate to a concrete strength of 21N/mm<sup>2</sup>.
- SWL is determined from tests with a Safety Factor of **2.0** on failure.

# RAPID TIE SYSTEMS

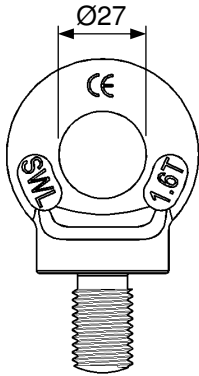
& FORMWORK ACCESSORIES



## Anchor Screws and Accessories

### 4.2 Eyebolt M20 (MNU10001) - 0.44kg.

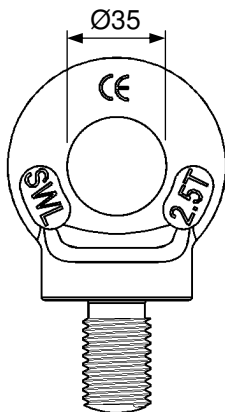
Suit M20 Anchor Screws for lifting purpose. Threads are ISO.



SWL = **1.6 Tonnes** (for vertical lifting only)

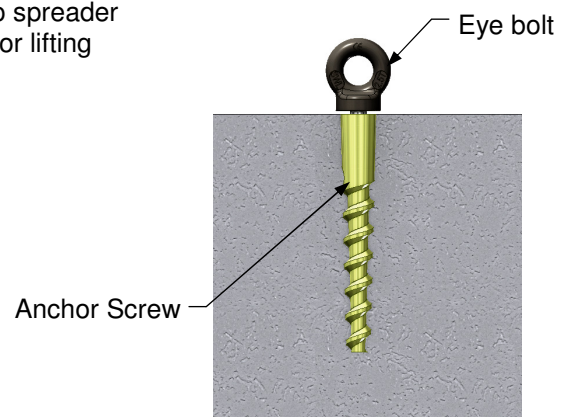
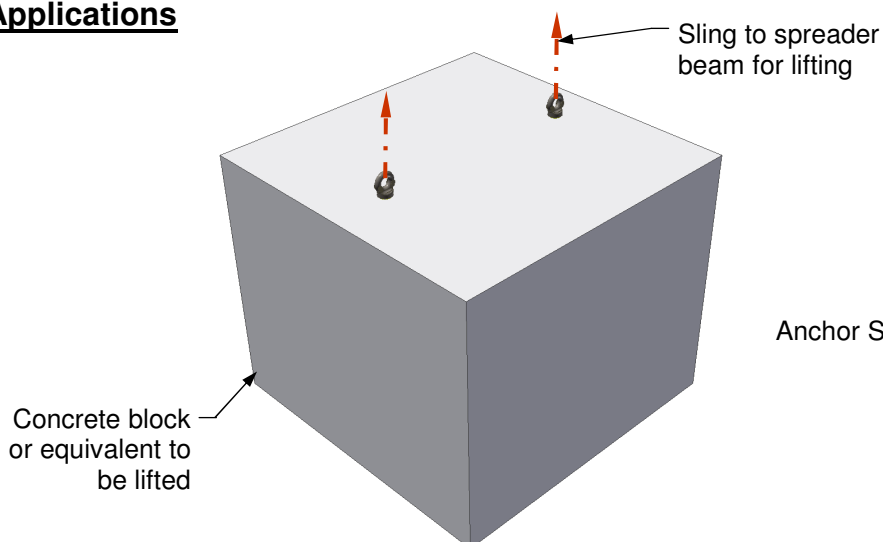
### 4.3 Eyebolt M24 (MNU10002) - 1.0kg.

Suit M24 Anchor Screws for lifting purpose. Threads are ISO.



SWL = **2.5 Tonnes** (for vertical lifting only)

## Applications



**Section thru Anchor Screw  
Blow-up Detail**

# RAPID TIE SYSTEMS

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## Anchor Screws and Accessories

### 4.4 Anchor Screw Extractor Key Arm (HTX10013) - 3.60kg.

Used to extract Anchor Screws through Key Heads.

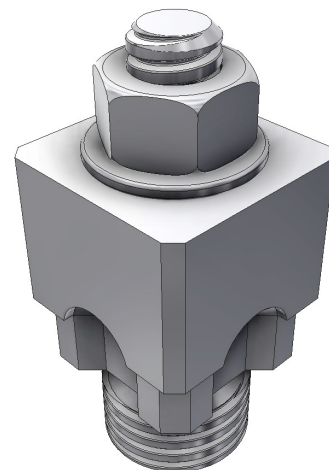


### 4.5 Anchor Screw Extractor Key Heads

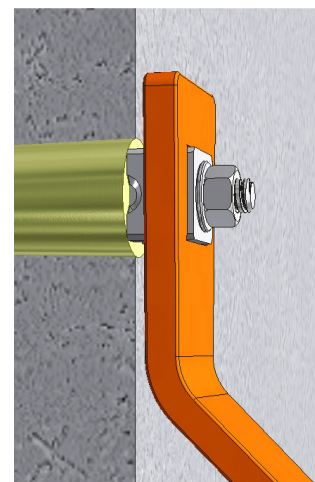
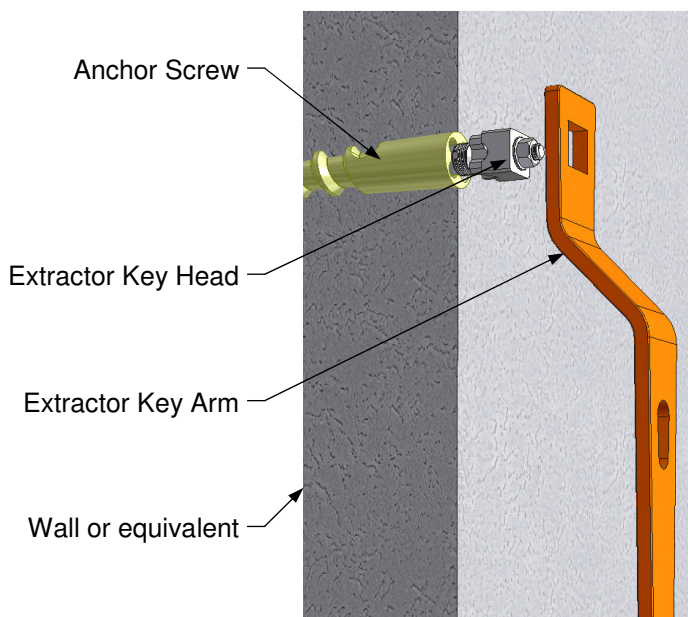
Key Head M20 (HTX10014) - 0.30kg.

Key Head M24 (HTX10015) - 0.34kg.

Key Head M30 (HTX10023) - 0.40kg.



## Application



**Extracting Anchor Screw  
Blow-up Detail**



# RAPID TIE SYSTEMS

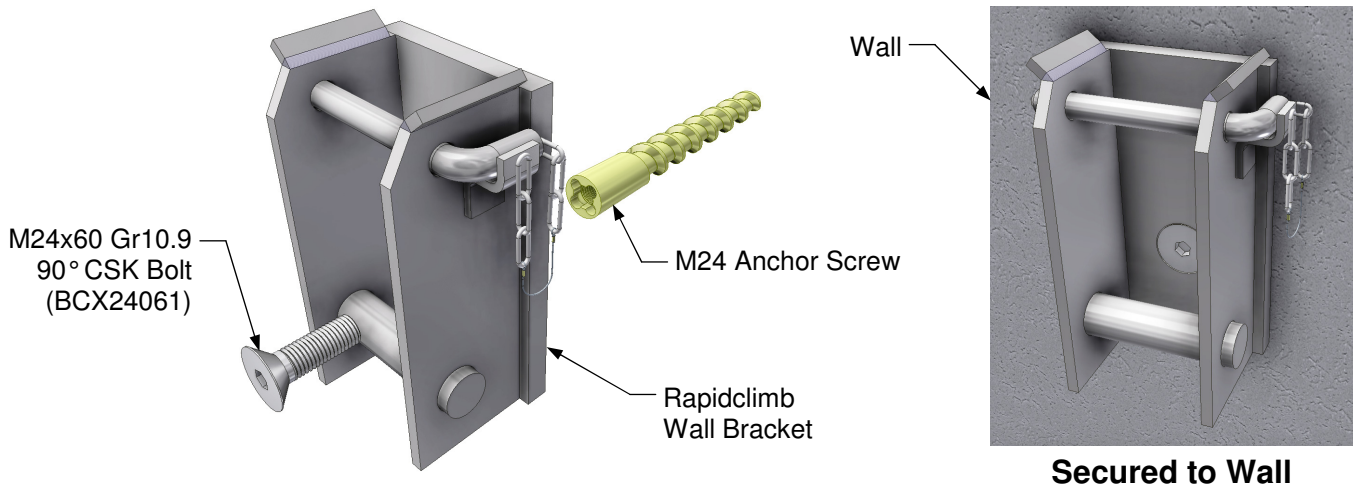
& FORMWORK ACCESSORIES



## Anchor Screws - Applications

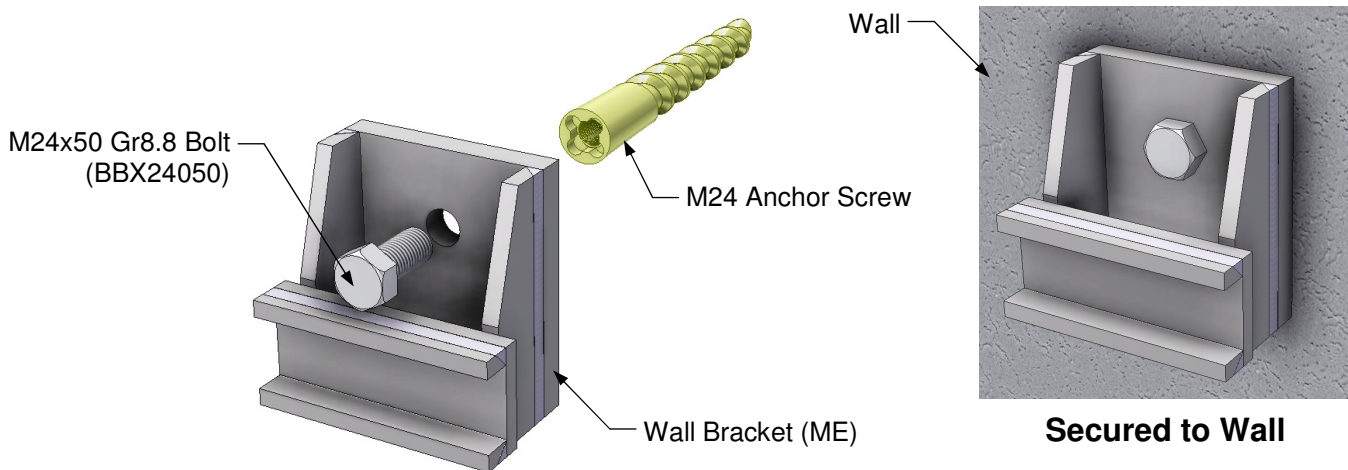
### 4.6 Rapidclimb Wall Bracket (RCX10007) - 13.26kg.

Used to secure Rapidclimb Wall Bracket Assembly to concrete structure. Fixed with an **M24x60 Gr10.9 self colour bolt with 90 degree countersunk head** to the previously cast-in Anchor Screw.



### 4.7 HD Wall Bracket for Support Bracket (ME) (RCM10008) - 7.74kg.

Used to secure Middle East Support Brackets to concrete structure. Fixed with an **M24x50 Gr8.8 bolt** to the previously cast-in Anchor Screw.



# RAPID TIE SYSTEMS

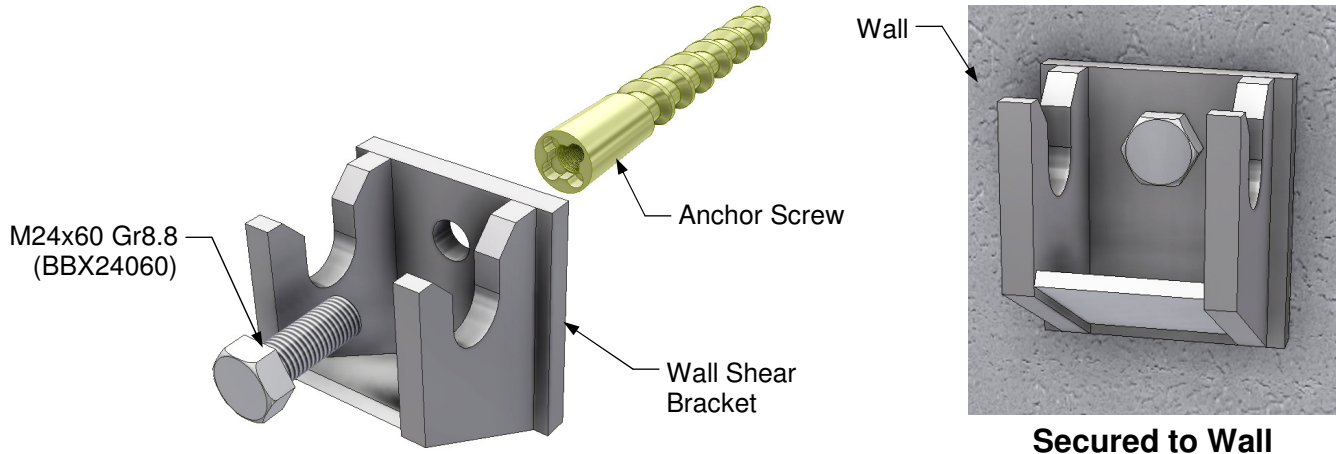
& FORMWORK ACCESSORIES



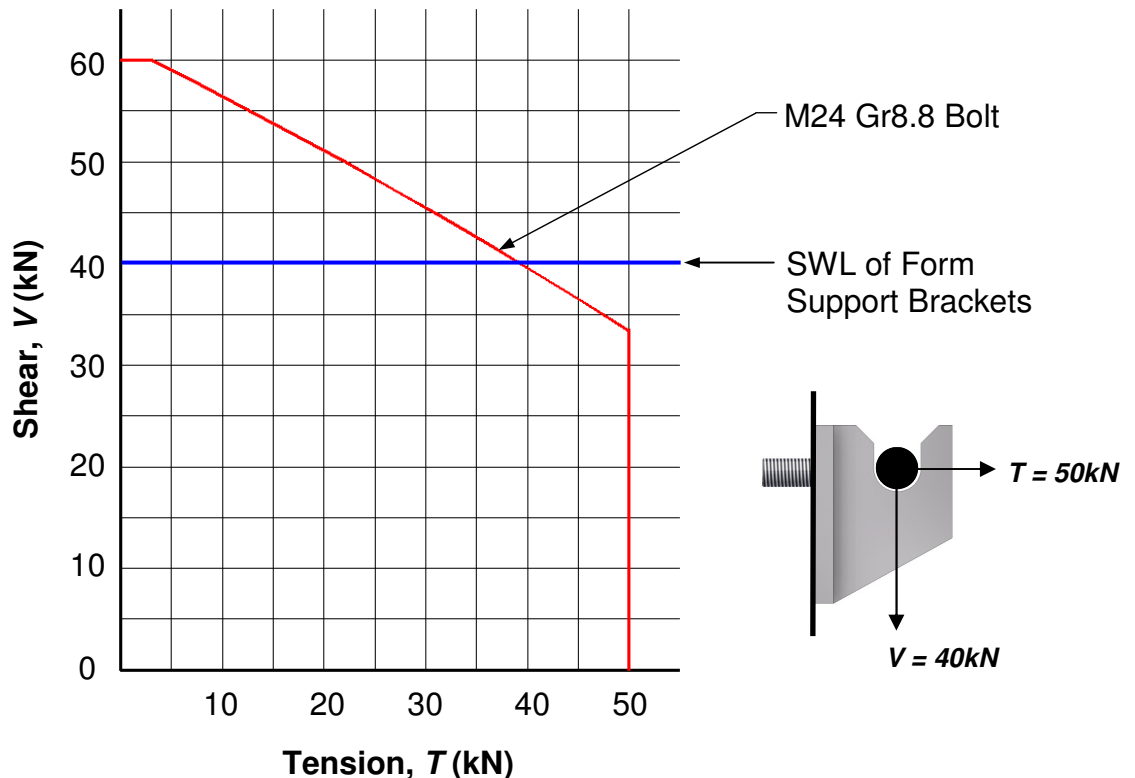
## Anchor Screws - Applications

### 4.8 Wall Shear Bracket (SSM00060) - 5.9kg.

Used to secure Australian jump wallform with or without roll back system to concrete structure. Fixed with an M24x60 Gr8.8 Bolt to the previously cast in Anchor.



### Wall Shear Bracket Safe Working Load



The above graph shows the Safe Working Load for the Wall Shear Bracket when subjected to a combination of vertical & horizontal forces.

This graph applies for the Wall Shear Bracket (SSM00060) used with either Form Shear Bracket (SSM00061) or the Form Support Bracket (SSA10165).

# RAPID TIE SYSTEMS

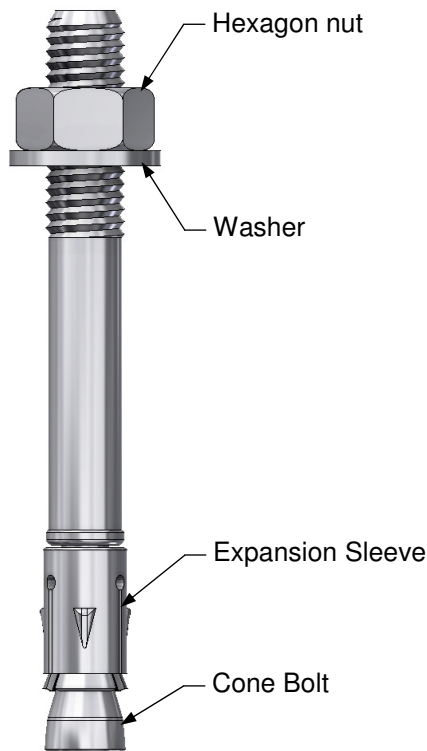
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## 5.0 Propbolt

### Concrete Anchor through Bolt M16x145 (FAM16145) - 0.23kg.

Zinc plated steel anchors for non cracked concrete. Suitable for various light duty anchorage applications.



Safe Working Load on Tension = **16.5kN**

Safe Working Load on Shear = **26.8kN**

#### Combined Loading

$$\left( \frac{\text{Actual Shear Load}}{\text{Allowable Shear Load}} \right)^{1.5} + \left( \frac{\text{Actual Tensile Load}}{\text{Allowable Tensile Load}} \right)^{1.5} \leq 1$$

#### Anchor Details

Hole diameter (concrete)	16mm
Min. Hole diameter (fixture)	18mm
Max. Thickness of fixture	25mm
Min. Depth of drill hole in concrete	104mm #
Required torque moment	100Nm
Min. Concrete slab thickness	160mm
Min. Centres of bolt	120mm*
Min. Edge distance	90mm

# Assumes fixture thickness of 25mm.

For thinner fixtures Depth of drill hole will increase.

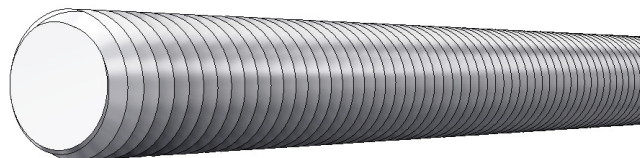
\* Assumes installation in reinforced concrete. For plain concrete minimum edge distance for stated shear performance = 1 metre

#### Note:

Concrete Strength of C20/25

## 6.0 All Threaded Rods

Fully threaded grade 8.8 rods, suitable for various use including shear applications.



Code	Description	Weight (kg/m)
TRX10012	All Threaded Rod M12 Gr8.8 /m	0.73
TRX10016	All Threaded Rod M16 Gr8.8 /m	1.33
TRX10020	All Threaded Rod M20 Gr8.8 /m	2.1
TRX10024	All Threaded Rod M24 Gr8.8/m	3.35

Description	SWL on Tension (kN)		SWL on Shear (kN)
	Formwork applications	Other applications	
All Threaded Rod M12 Gr8.8 /m	31	23	16
All Threaded Rod M16 Gr8.8 /m	58	45	29
All Threaded Rod M20 Gr8.8 /m	91	70	46
All Threaded Rod M24 Gr8.8/m	131	98	66

# RAPID TIE SYSTEMS

## & FORMWORK ACCESSORIES



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