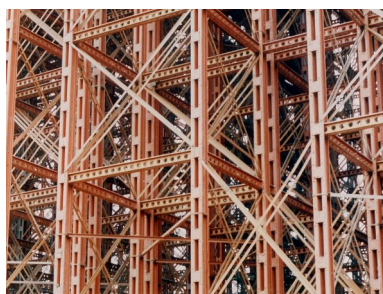


# Technical Data Sheets

## Metric Specification



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# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

R·M·D  
KWIKFORM

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## Rapid Reference – Megashor Components

Code	Description	Weight	Page
BNU10050	Prop Brace Pin M24/M20	0.430 kg	42
BNU12001	Nut - M12 Hexagon Plated	0.0100 kg	28
BNU12009	Set Pin - M12x40 gr8.8 plated	0.0500 kg	28
BNU16001	M16 Hexagon Nut – Gr 8.8 ZP	0.0300 kg	75
BNU16007	M16 x 40 Set Pin – Gr 8.8 ZP	0.300 kg	75
BNU16009	M16 x 60 Bolt – Gr 8.8 ZP	0.110 kg	75
BNU20001	M20 Hexagon Nut – Gr 8.8 ZP	0.0600 kg	75
BNU20003	Washer - M20 Round	0.0300 kg	19
BNU20005	M20 x 40 Set Pin – Gr 8.8 BZP	0.270 kg	75
BNU20010	M20 x 60 C/Sink Set Pin – Gr 8.8 ZP	0.180 kg	75
BNU20011	M20 x 60 Bolt – Gr 8.8 ZP	0.280 kg	75
BNU20013	M20 x 80 Bolt & Nut gr 8.8	0.290 kg	51
BNU20015	M20 x 100 Bolt - Gr 8.8	0.320 kg	38
BNU20016	M20x130 Bolt gr8.8 BZP	0.40 kg	57
BNU24001	M24 Hexagon Nut	0.0300 kg	49
BNU24008	M24x180 gr8.8 BZP Hex Bolt	0.73 kg	57
BNU42001	M42x200 gr8.8 Bolt ZP (Short Thread)	2.76 kg	56
BNU42002	M42 Nut gr8	0.59 kg	56
BNX20018	75x75x6x22xPlate Washer	0.265 kg	48
BNX20019	75x75x6x26 Plate Washer	0.265 kg	48
BNX20023	Plate Washer 90 x 90 x 15 x 18	0.920 kg	54
BNX20024	Megashor Chord Spacer	0.510 kg	70
BNX20027	M20 x 45 Set Pin gr8.8 BZP Csk	0.170 kg	27
BNX20028	M20 x 50 Bolt gr8.8 BZP	0.180 kg	75
BNX20030	M20 x 90 Bolt gr8.8 BZP	0.280 kg	28
BNX20100	M20 High Yield Pin	0.410 kg	75
BNX24002	M24 x 110 Bolt gr 8.8 BZP	0.480 kg	49
BNX52001	M52 Hex Nut 8.8 Galv.	1.09 kg	61
BNX52002	M52 x 160 gr8.8 Socket Cap Screw.	3.00 kg	61
BTX10001	Knock-on Wing Nut	0.322 kg	52
BTX10002	Connector 20mm Rapid Tie	0.910 kg	62
BTX10004	Waler Plate - Heavy Duty	1.76 kg	52
BTX10017	Nut - Hexagon 50mm	0.16 kg	27
BTX10021	Waler Plate - Standard	1.35 kg	52
BTX10030	Rapid Bar Tie Forkend	1.34 kg	64
FAU10024	Conical Bolt Box B12	0.0800 kg	48
FAU10025	Conical Bolt Box B15	0.170 kg	48
HGX10053	Wedge Release Jack 168/268	33.0 kg	39
MSU10002	Megashor Brace Plate	60.3 kg	44
MSU10003	Megashor Brace Cleat Plan	1.46 kg	33
MSU10005	Megashor 90 Degree Corner	68.8 kg	57
MSU10006	Megashor Push Pull Prop Adaptor	19.0 kg	57
MSU10007	Megashor Push Pull Tilt Plate	48.9 kg	56
MSU10008	Megashor Push Pull Jack R/H	74.8 kg	56
MSU10009	Megashor Push Pull Jack L/H	74.7 kg	56
MSU20004	Megashor Heavy Duty Tie Beam	39.1 kg	75
MSX10003	Flat Brace 60 x 8mm Per Metre	3.69 kg/m	28
MSX10005	Vernier Brace Long Inner Galv	11.5 kg	28
MSX10006	Vernier Brace Long Outer Galv	11.0 kg	28

## Rapid Reference – Megashor Components

Code	Description	Weight	Page
MSX10009	Megashor Header Beam 950mm	150 kg	74
MSX10010	Megashor Header Beam 3300mm	670 kg	73
MSX10011	Megashor Jack 410 – 620mm	65.9 kg	34
MSX10012	Megashor End Plate	9.47 kg	37
MSX10013	Megashor Half Portal Frame	454 kg	50
MSX10014	Megashor Header Beam 3810mm	1038 kg	72
MSX10015	Megashor Header Beam 5000mm	1322 kg	72
MSX10017	Megashor Hydraulic Unit	146 kg	40
MSX10019	Megatruss Intermediate Bearer	13.2 kg	69
MSX10021	Megashor Bearing Plate 40mm	26.2 kg	38
MSX10022	Megashor Jack Spanner	20.1 kg	36
MSX10024	Megashor Joint Stiffener	8.40 kg	61
MSX10026	Megashor Rocking Head 180mm	47.9 kg	43
MSX10027	Megashor Truss Connector	15.4 kg	59
MSX10028	Megatruss End Bearer	112 kg	67
MSX10030	Megatruss Node	67.3 kg	63
MSX10033	Vernier Brace Short Inner Galv	5.29 kg	28
MSX10034	Vernier Brace Short Outer Galv	7.23 kg	28
MSX10055	Megashor Header Beam 950mm With Slots	150 kg	74
MSX10090	Megashor Leg 90mm	22.0 kg	8/10
MSX10270	Megashor Leg 270mm	30.3 kg	8/10
MSX10450	Megashor Leg 450mm	45.2 kg	8/10
MSX10900	Megashor Leg 900mm	65.4 kg	8/10
MSX11800	Megashor Leg 1800mm	113 kg	8/10
MSX12700	Megashor Leg 2700mm	161 kg	8/10
MSX15400	Megashor Leg 5400mm	305 kg	8/10
MSY10001	Megashor Lift Point 35kN	1.79 kg	55
SBX 67000	UB 356 x 171 x 67kg x 4570mm	338 kg	71
SBX 67270	UB 356 x 171 x 67kg x 2700mm	205 kg	71
SBX 67360	UB 356 x 171 x 67kg x 3600mm	269 kg	71
SBX 67610	UB 356 x 171 x 67kg x 6100mm	452 kg	71
SBX 67764	UB 356 x 171 x 67kg x 7640mm	567 kg	71
SFX10018	Half Coupler	0.0400 kg	27
SSU10003	Superslim 90 Degree Corner	8.66 kg	53
SSU10011	Superslim R Clip 5 x 100mm	0.0340 kg	75
SSU10013	Prop Tube End Link	2.88 kg	49
SSX10039	Porthole Bearing	1.21 kg	27
SSX10040	Superslim End Plate	2.94 kg	20
SSX10051	Short Prop Tube End Link	1.77 kg	49
SSX10090	Superslim Soldier 90mm	7.32 kg	20
SSX10360	Superslim Soldier 360mm	12.0 kg	20
SSX10540	Superslim Soldier 540mm	15.2 kg	20
SSX10720	Superslim Soldier 720mm	18.7 kg	20
SSX10900	Superslim Soldier 900mm	22.0 kg	20
SSX11800	Superslim Soldier 1800mm	38.8 kg	20
SSX12700	Superslim Soldier 2700mm	55.4 kg	20
SSX13600	Superslim Soldier 3600mm	72.2 kg	20
TRX10024	M24 A.T.Rod gr 4.6 per metre	3.35 kg	48

# MEGASHOR

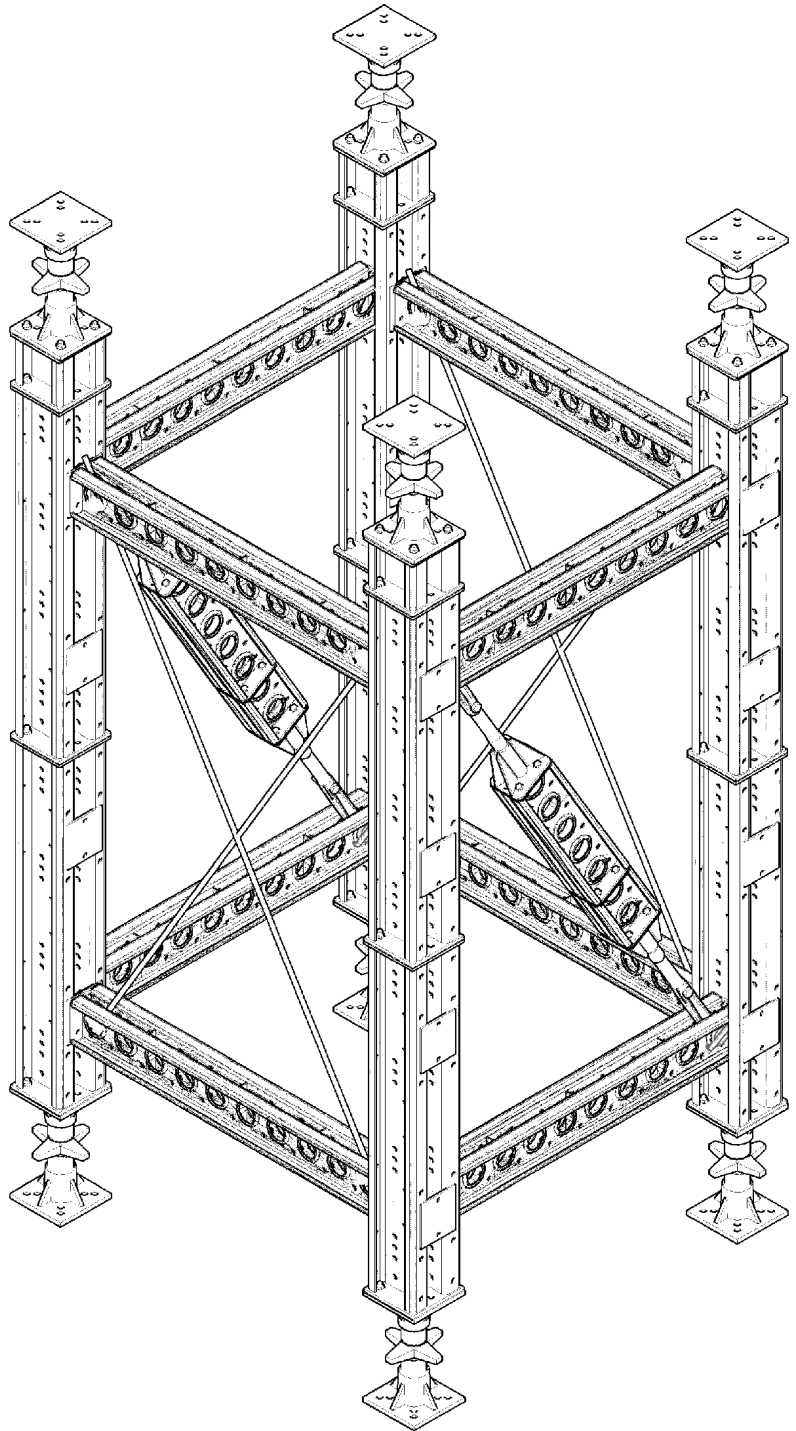
HEAVY DUTY SUPPORT SYSTEM



## Introduction

Megashor is a heavy duty modular propping system designed for axial loads of up to 750kN.

A versatile modular system with a full range of accessories, Megashor can be assembled into props, heavy lifting towers, frames and trusses. Its 750kN axial load capacity provides solutions for: heavy duty shoring, long span girders, façade retention, travelling slab and tunnel formwork, excavation support etc.



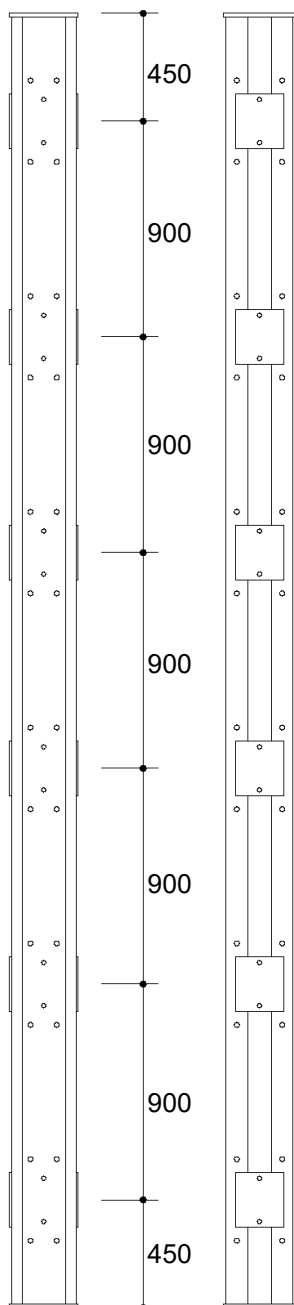
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

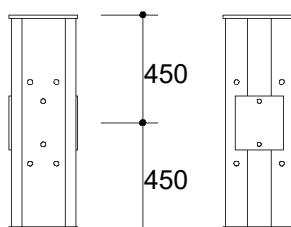


## 1.1.1. Megashor Leg Mk1

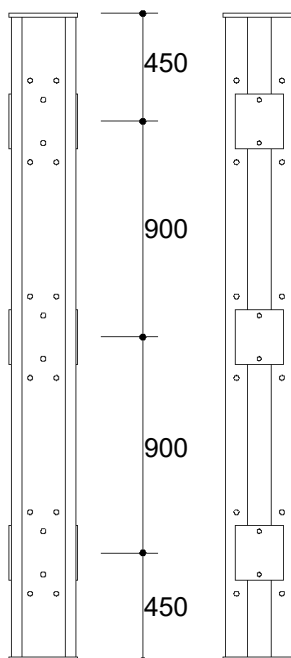
Code	Description	Weight
MSX15400	Megashor Leg 5400mm	305 kg
MSX12700	Megashor Leg 2700mm	161 kg
MSX11800	Megashor Leg 1800mm	113 kg
MSX10900	Megashor Leg 900mm	65.4 kg
MSX10450	Megashor Leg 450mm	45.2 kg
MSX10270	Megashor Leg 270mm	30.3 kg
MSX10090	Megashor Leg 90mm	22.0 kg
MSX10012	Megashor End Plate	9.47 kg



5400mm



900mm



2700mm

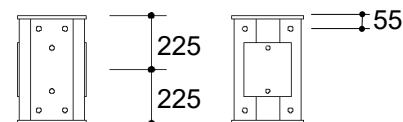
— 15mm End Plate



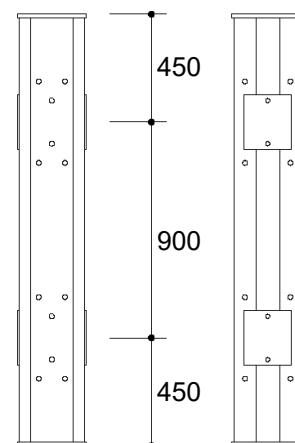
90mm



270mm



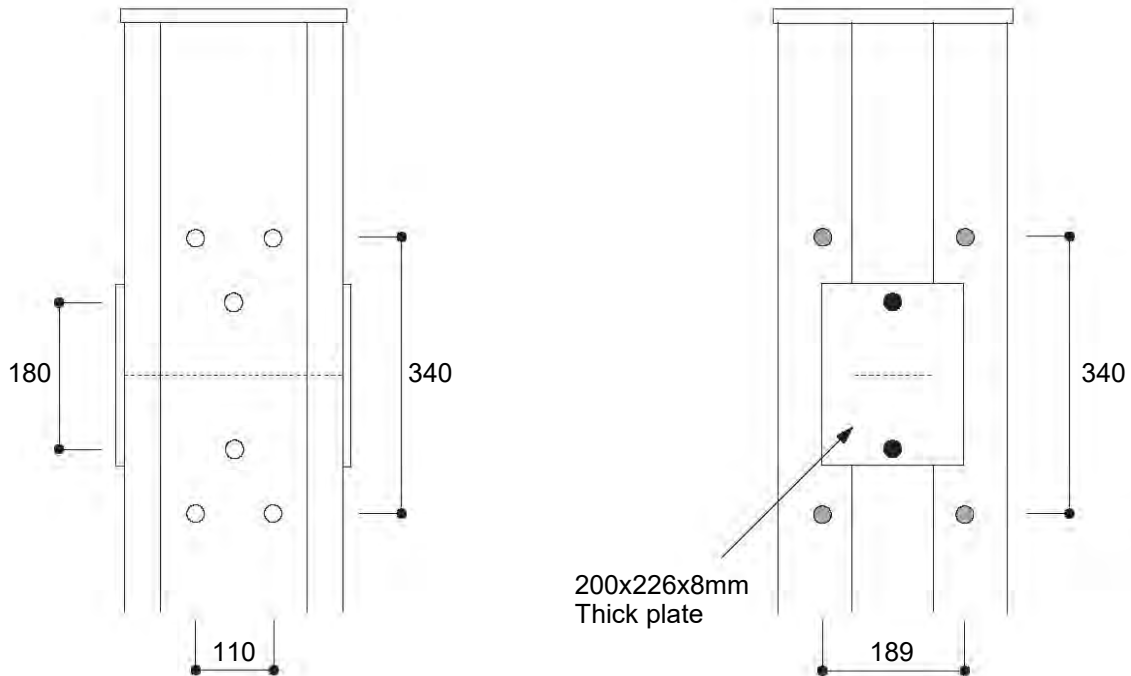
450mm



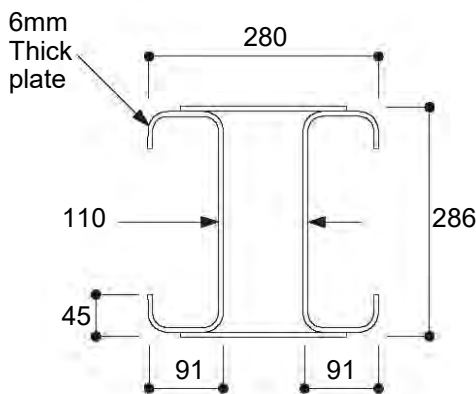
1800mm



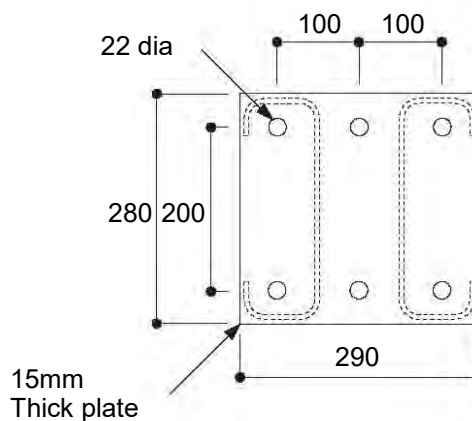
## 1.1.2. Megashor Leg Mk1. Details



- 18mm dia holes max. plain 16mm dia fastener bearing load 22.5kN per
- 18mm dia holes max. plain 16mm dia fastener bearing load 32kN per hole
- 21mm dia holes max. plain 20mm dia fastener bearing load 34kN per hole
- 21mm dia holes max. plain 20mm dia fastener bearing load 34kN per hole



**Typical Section**



**Detail on End Plate**

# MEGASHOR

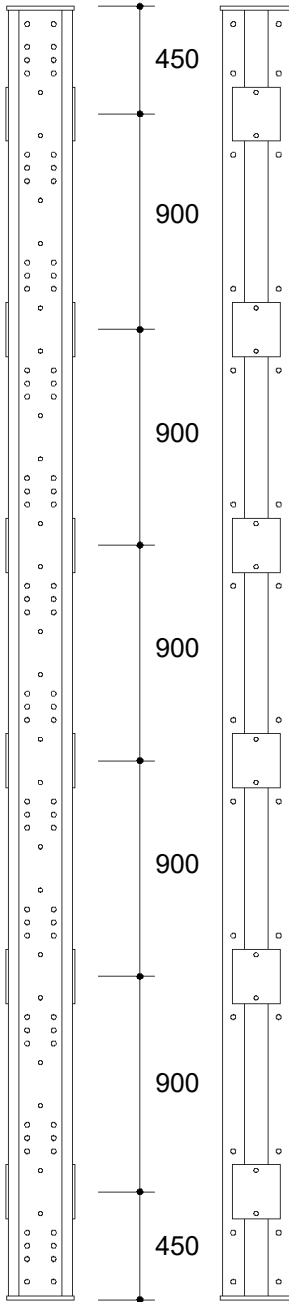
HEAVY DUTY SUPPORT SYSTEM



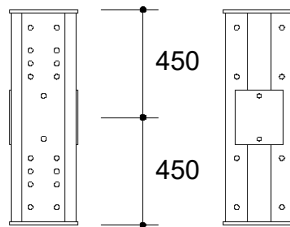
## 1.1.3. Megashor Leg Mark 2.

Code	Description	Weight
MSX15400*	Megashor Leg 5400mm	305 kg
MSX12700*	Megashor Leg 2700mm	161 kg
MSX11800*	Megashor Leg 1800mm	113 kg
MSX10900*	Megashor Leg 900mm	65.4 kg
MSX10450*	Megashor Leg 450mm	45.2 kg
MSX10270*	Megashor Leg 270mm	30.3 kg
MSX10090*	Megashor Leg 90mm	22.0 kg

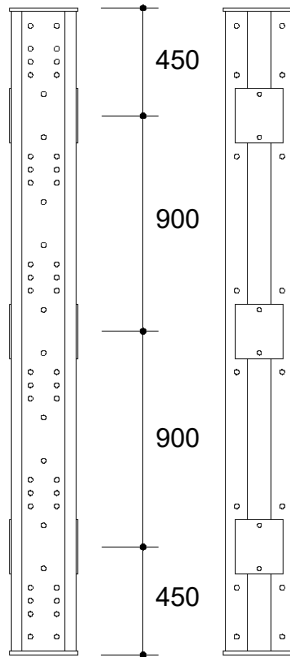
\* Mark 1 and Mark 2 Shafts have the same code numbers. If Mark 2 Shafts are required please specify Megashor Mark 2 When ordering.



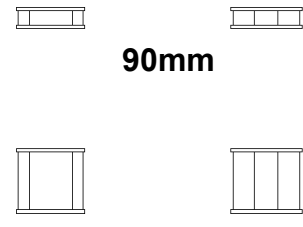
5400mm



900mm



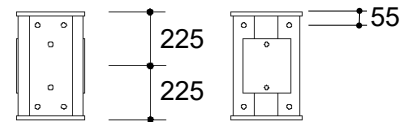
2700mm



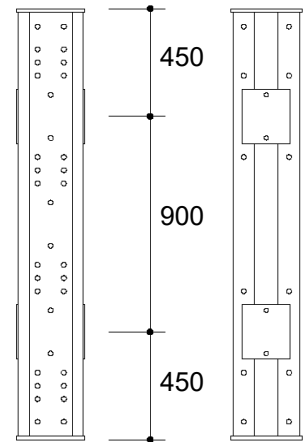
90mm



270mm

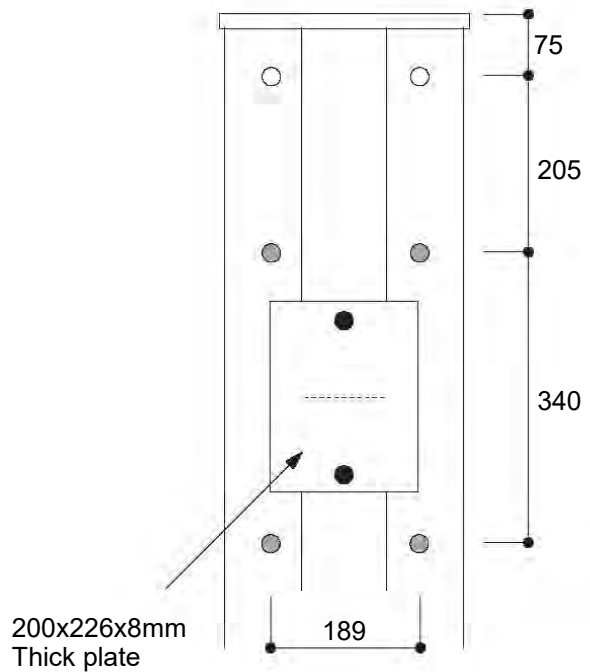
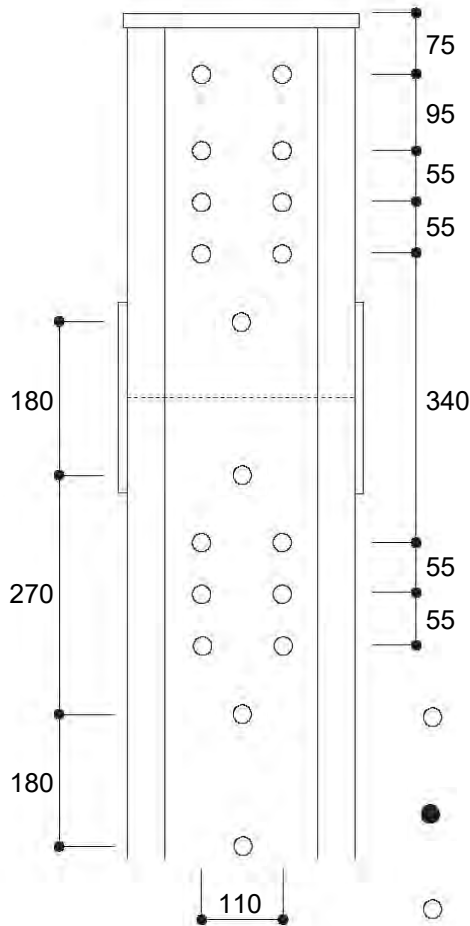


450mm

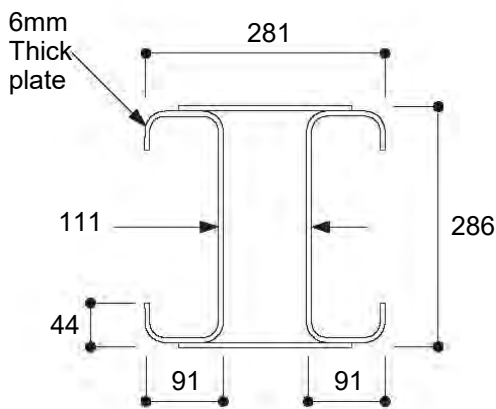


1800mm

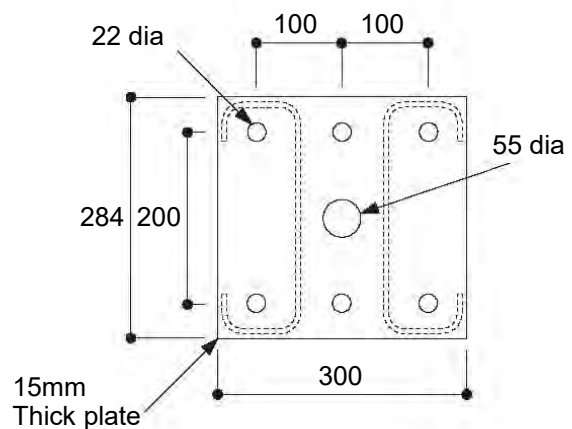
## 1.1.4. Megashor Leg Mk2. Details



- 18mm dia holes max. plain 16mm dia fastener bearing load 22.5kN per hole
- 18mm dia holes max. plain 16mm dia fastener bearing load 32kN per hole
- 21mm dia holes max. plain 20mm dia fastener bearing load 34kN per hole
- 21mm dia holes max. plain 20mm dia fastener bearing load 34kN per hole



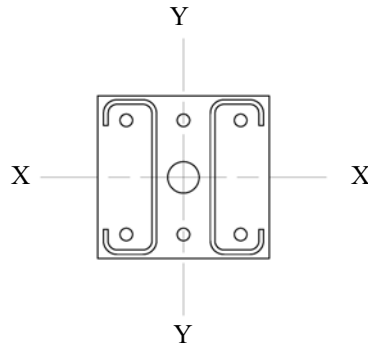
**Typical Section**



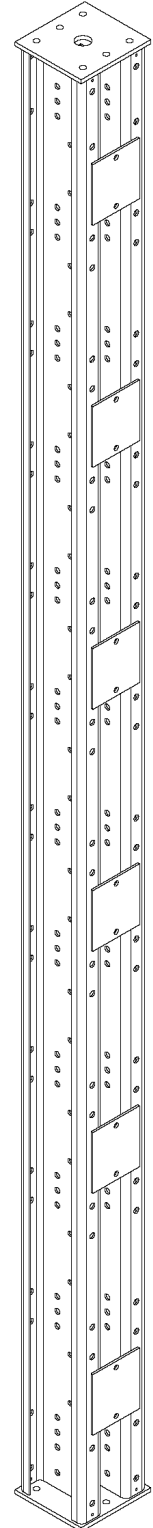
**Detail on End Plate**

## 1.1.5. Megashor MK1 & MK2 Section Properties

A combination of mathematical analysis in accordance with BS5950 pt 5 and load testing have yielded the section properties below.



Area	58.45 cm <sup>2</sup>
I <sub>xx</sub>	5981 cm <sup>4</sup>
I <sub>yy</sub>	4289 cm <sup>4</sup>
r <sub>xx</sub>	10.14 cm
r <sub>yy</sub>	8.56 cm
Z <sub>xx</sub>	443 cm <sup>3</sup>
Z <sub>yy</sub>	306 cm <sup>3</sup>
EI <sub>xx</sub>	12560 kNm <sup>2</sup>
EI <sub>yy</sub>	5085 kNm <sup>2</sup>
M <sub>max x</sub>	67.5 kNm
M <sub>max y</sub>	45.0 kNm
Max Shear parallel to Y-Y	262 kN
Max Shear parallel to X-X	101 kN
Self weight	0.542 kN/m run
Max Joint bending moment X-X axis	56 kNm (6 Bolt connection)
Max Joint bending moment Y-Y axis	44 kNm (6 Bolt connection)
Max Joint bending moment X-X axis	38 kNm (4 Corner Bolt connection)
Max Joint bending moment Y-Y axis	35 kNm (4 Corner Bolt connection)
Axial Shortening	8.14 x 10 <sup>-4</sup> mm/m/kN



**All capacities are unfactored allowable loads.**

For higher load or stiffness requirements a small fleet of Megashor Plus Shafts are available.

Megashor Plus has a maximum axial load capacity of 1400kN.

For further details contact UK Head Technical Office.

## 1.1.6. Megashor Allowable Axial Compressive Loads

Allowable axial compressive loads are given for loads eccentric at both ends 10, 25, 38 and 50mm on the following 4 graphs.

Appropriate eccentricities for various arrangements in conjunction with Megashor are given below.

Megashor Jack (MSX10011) to Megashor  
Megashor Rocking Head (MSX10026) to Megashor  
Megashor End Plate (MSX10012) to foundation  
with grout } 10mm

Any of the above to foundation without grout 50mm

Where different load eccentricities are present at either end use the maximum value.

Where Megashor sections are bolted directly to header or wailing beams without rocking heads a frame analysis shall be carried out and the Megashor section checked in combined compression and bending.

### Combined Bending Moment and Compressive Loads

Combined cases can be checked using the equation  $\frac{M}{M_{max}} + \frac{P}{P_{max}} \leq 1$

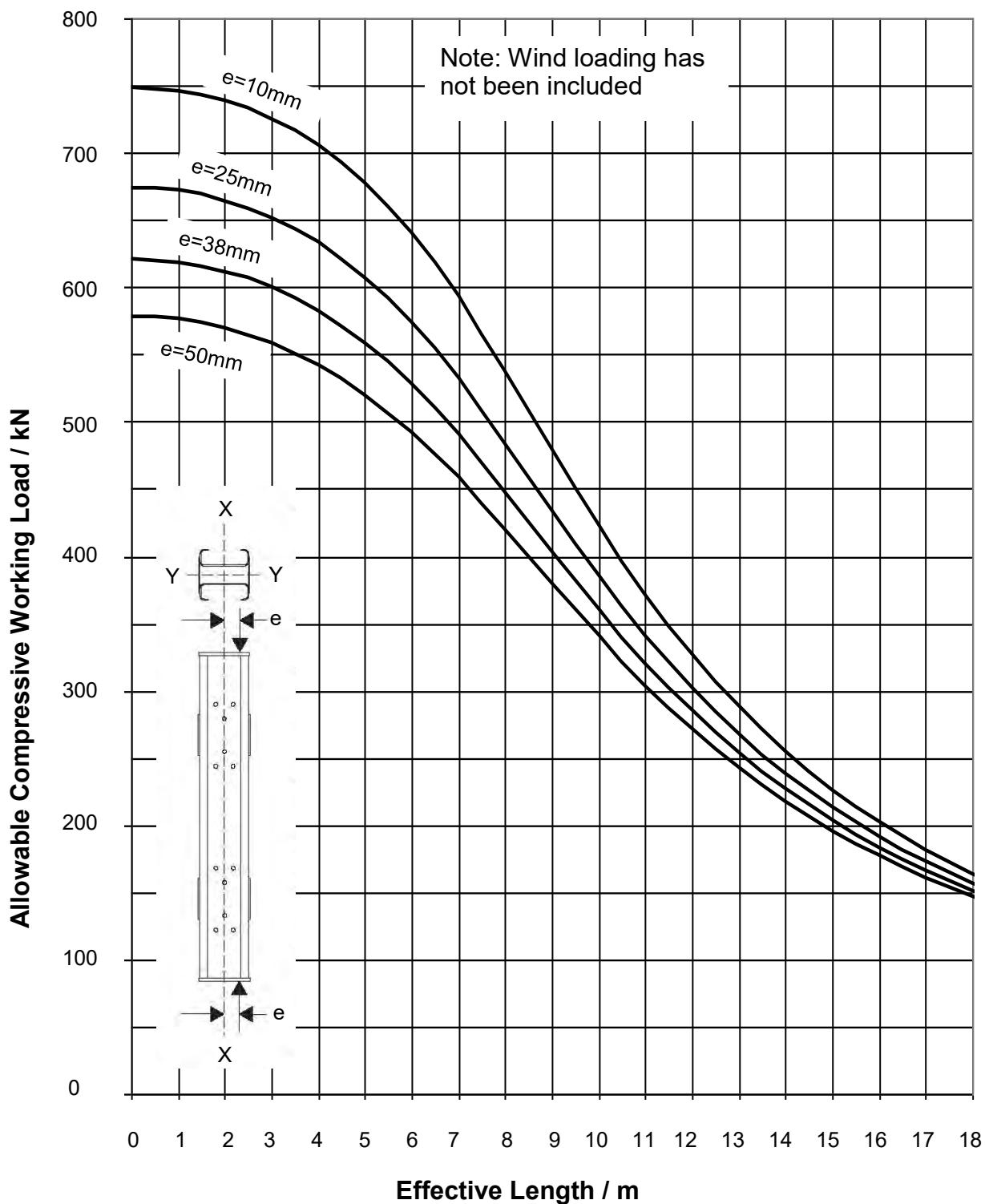
Where M is the applied bending moment, M<sub>max</sub> is the maximum allowable bending moment. P is the applied axial compressive load and P<sub>max</sub> is the maximum allowable axial load at a particular effective length.

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.1.6.1. Vertical Megashor Axial AWL XX Axis

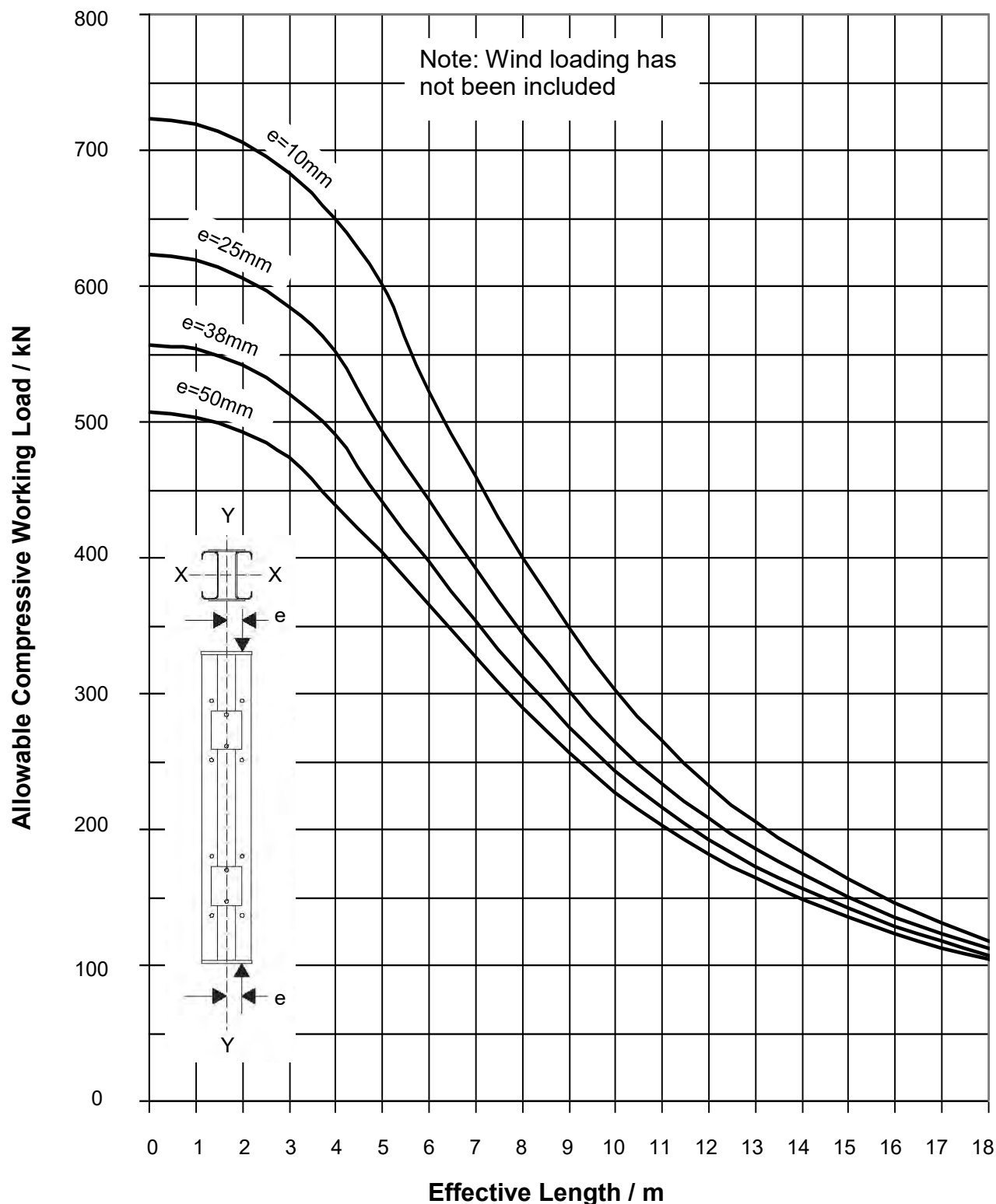


# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.1.6.2. Vertical Megashor Axial AWL YY Axis

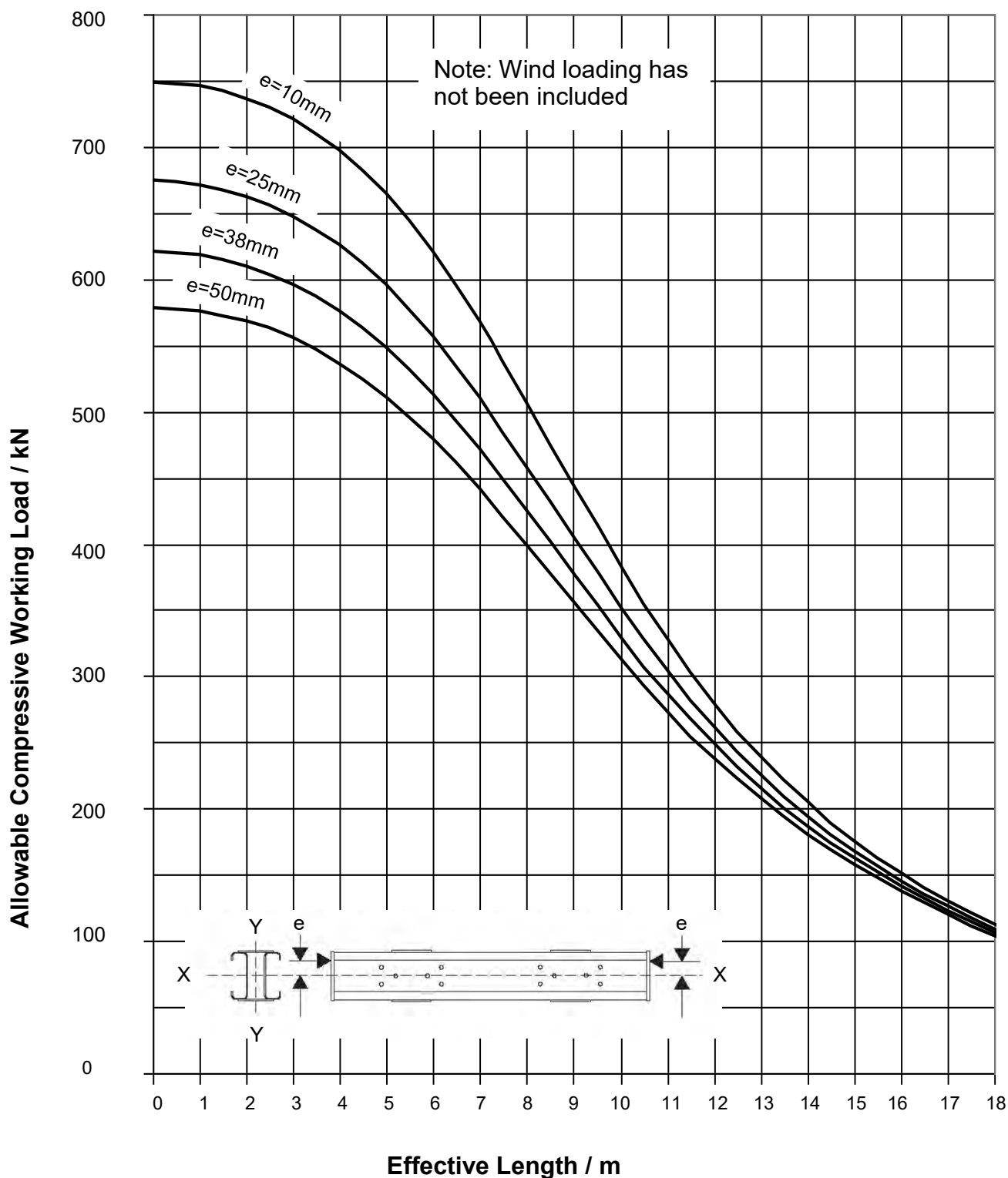


# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

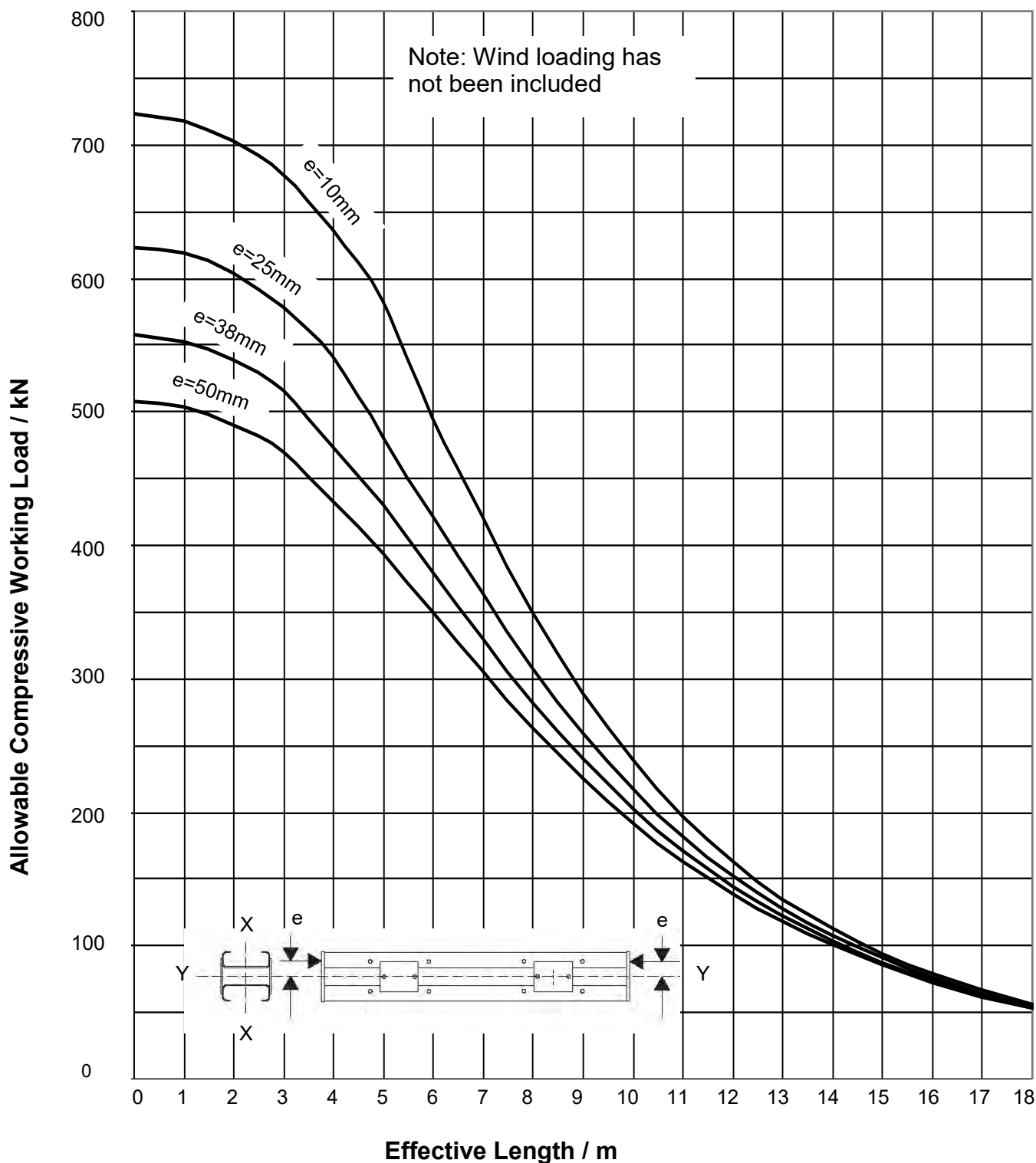


## 1.1.6.3. Horizontal Megashor Axial AWL XX Axis (Web vertical plane)





## 1.1.6.4. Horizontal Megashor Axial AWL YY Axis (Web horizontal plane)



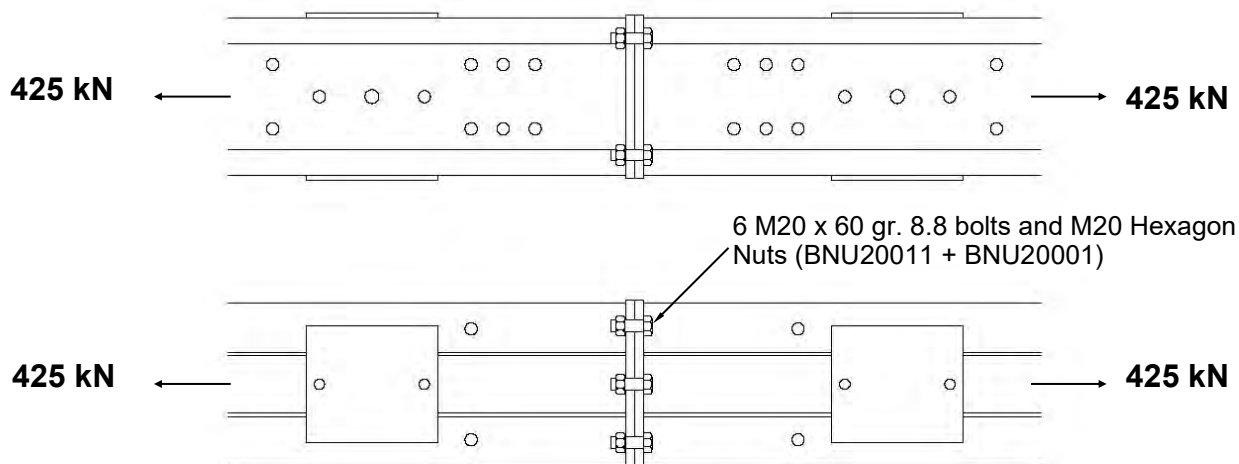
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



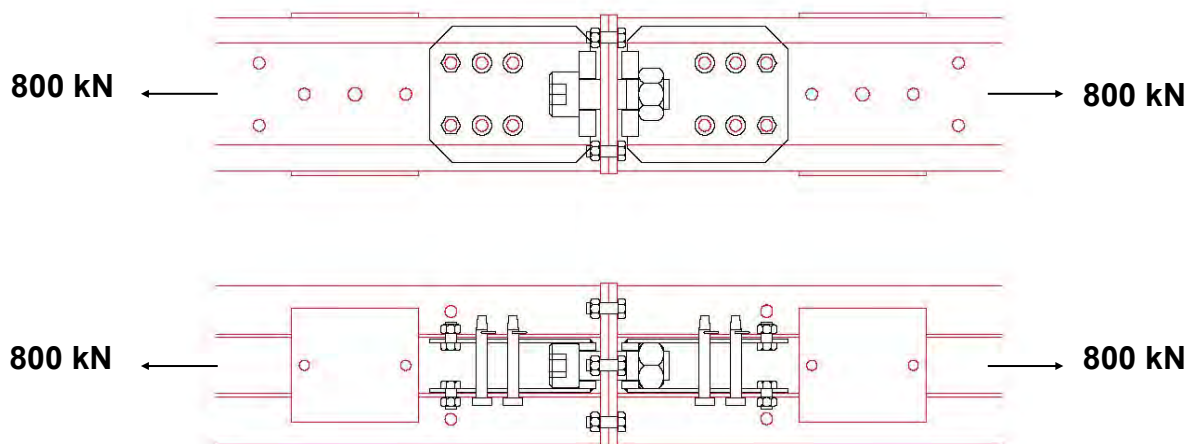
## 1.1.7. Megashor Joints Allowable Axial loads in Tension

Plain joint – Mk 1 or Mk 2 shafts.



**Note:** When 4 M20 x 60 gr. 8.8 bolts are used in the corner holes **AWL = 285 kN**

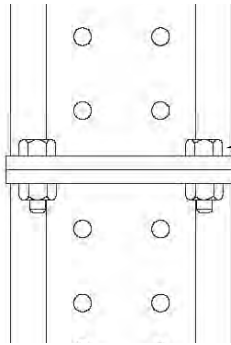
Stiffened Joint – Mk 2 shafts only.



See later 1.5.12. for connection details.

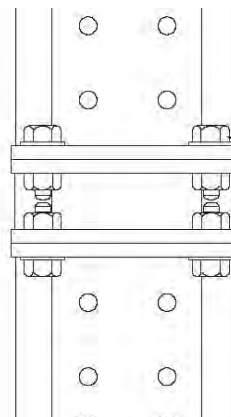
## 1.1.8. Megashor Joints Bolting

### Standard connection



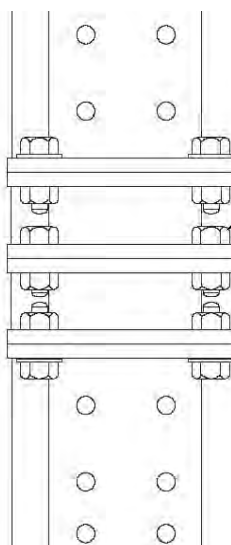
6 M20 x 60 Gr. 8.8 Bolts and M20 Hexagon Nuts (BNU20011 + BNU20001)

### Single 90mm Megashor connection



6 M20 x 60 Gr. 8.8 Bolts and M20 Hexagon Nuts (BNU20011 + BNU20001) plus 6 Washer – M20 Round (BNU20003) to avoid clash between ends of bolts

### Multiple 90mm Megashor connections



M20 x 50 Gr. 8.8 Bolts and M20 Hexagon Nuts (BNX20028 + BNU20001)

Connection as single 90mm Megashor

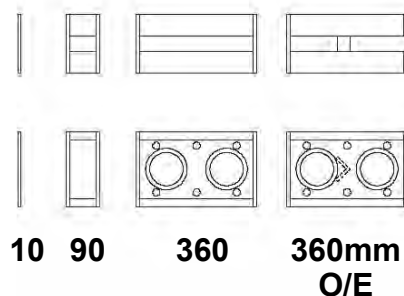
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

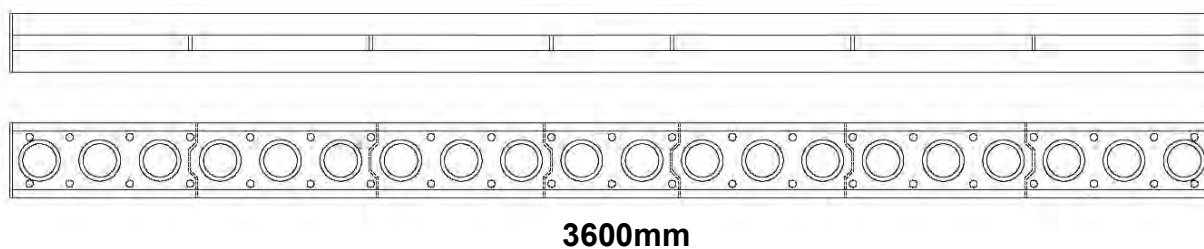
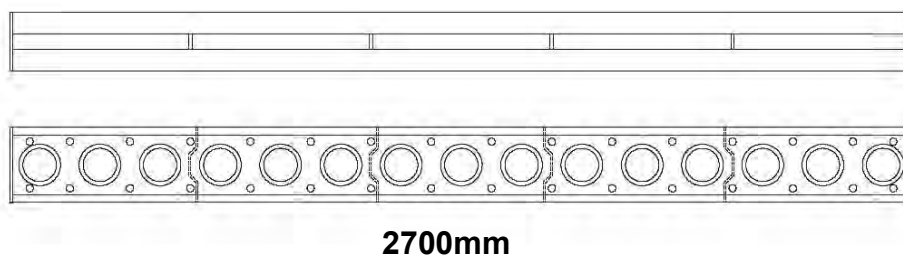
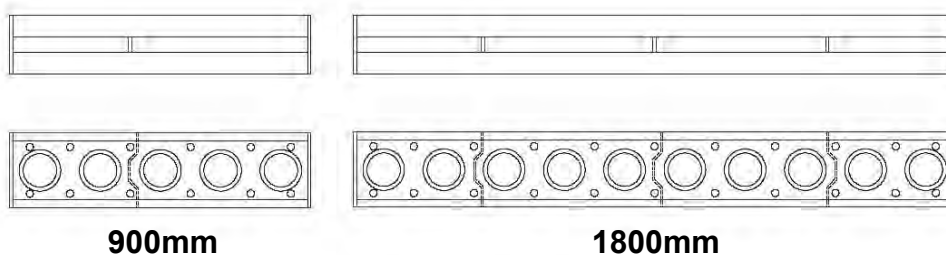
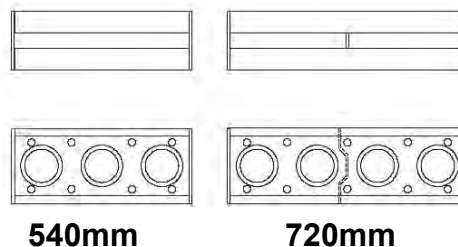


## 1.2.1. Superslim Soldier Ledgers

Code	Description	Weight
SSX13600	Superslim Soldier 3600mm	72.2 kg
SSX12700	Superslim Soldier 2700mm	55.4 kg
SSX11800	Superslim Soldier 1800mm	38.8 kg
SSX10900	Superslim Soldier 900mm	22.0 kg
SSX10720	Superslim Soldier 720mm	18.7 kg
SSX10540	Superslim Soldier 540mm	15.2 kg
SSX10360	Superslim Soldier 360mm	11.9 kg
SSX10090	Superslim Soldier 90mm	7.3 kg
SSX10040	Superslim End Plate 10mm	2.9 kg



**Note:** The positions of stiffener plates in hire fleet soldiers may vary. Soldiers shown are post 1994 version. Ensure 7 Hole end plate soldiers are used with Megashor legs. If Megashor legs are to be spaced by 360mm, ensure 360 O/E superslims are not substituted.

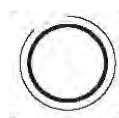
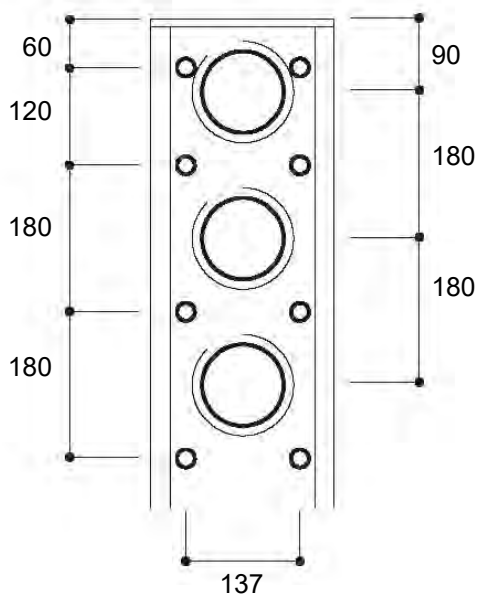


# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



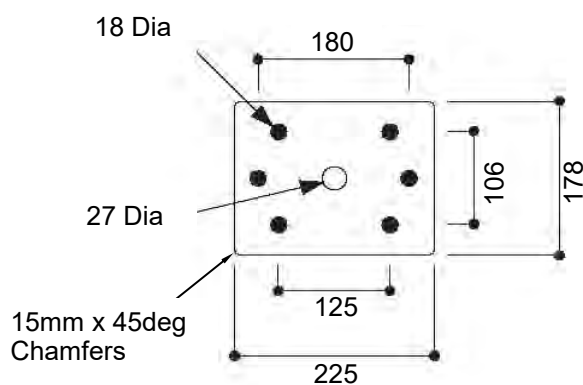
## 1.2.2. Superslim Soldier Punchings and Geometry



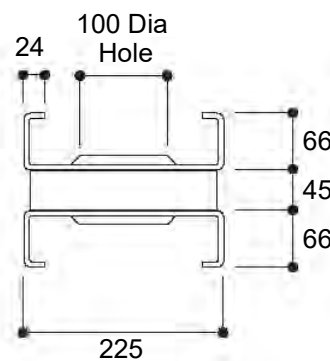
100mm diameter porthole:  
allowable bearing on both  
webs 65kN



21mm diameter hole:  
Allowable bearing load on  
both webs 54kN with 20mm  
plain shank pin or bolt



Detail on End Plate  
10mm thick



Typical section

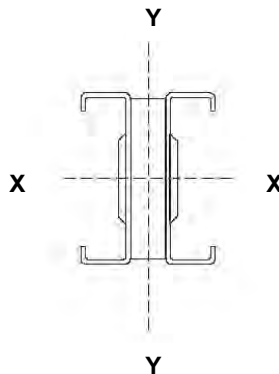
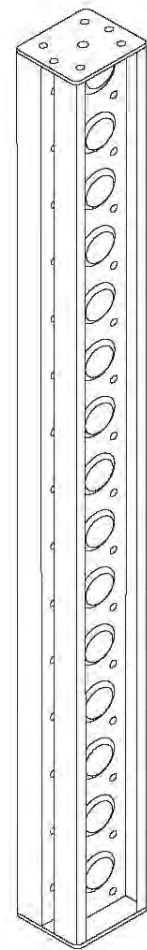
**Note:** Soldiers manufactured pre 1994 do not contain the end plate holes at 180mm centres. If

## 1.2.3. Superslim Soldier Section Properties

Soldier characteristics

Area: Gross	26.06 cm <sup>2</sup>
Area: Nett	19.64 cm <sup>2</sup>
I <sub>xx</sub>	1916 cm <sup>4</sup>
I <sub>yy</sub>	658 cm <sup>4</sup>
r <sub>xx</sub>	9.69 cm
r <sub>yy</sub>	5.70 cm
Z <sub>xx</sub>	161 cm <sup>3</sup>
Z <sub>yy</sub>	61 cm <sup>3</sup>
EI <sub>xx</sub>	4020 kNm <sup>2</sup>
EI <sub>yy</sub>	300 kNm <sup>2</sup>
G <sub>Axx</sub>	17350 kN
M <sub>max x</sub>	40 kNm
M <sub>max y</sub>	6.24 kNm
Mean compressive yield stress	370 N/mm <sup>2</sup>
Self weight	0.195 kN/m run

**All capacities are unfactored allowable loads, with a minimum factor of safety of 1.65 on yield and 2.0 on failure.**

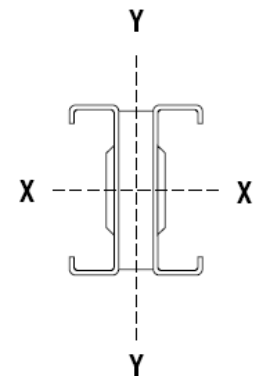
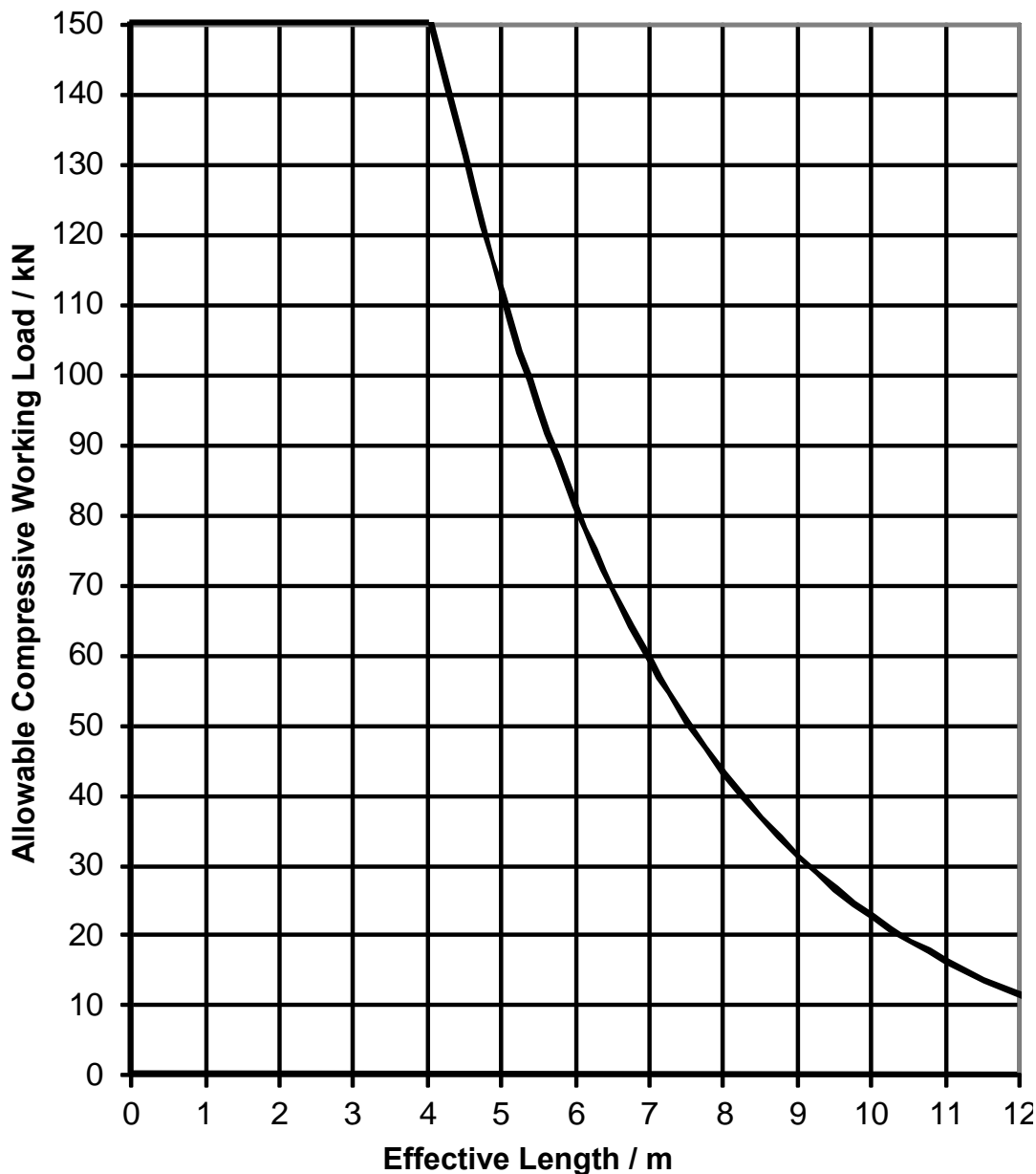


## 1.2.4. Superslim Soldier Ledgers – Allowable Working Loads in Compression, Buckling about YY Axis

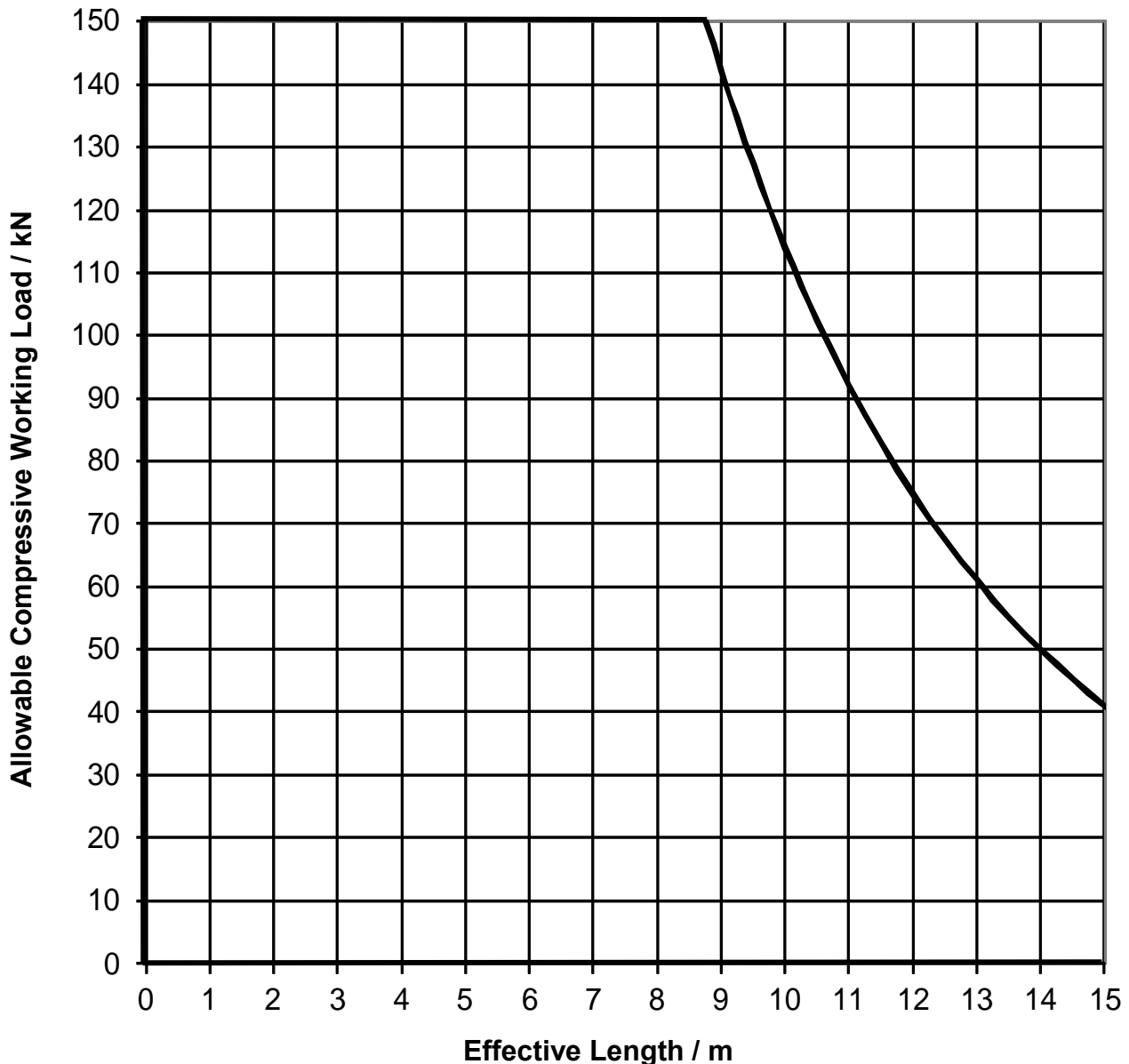
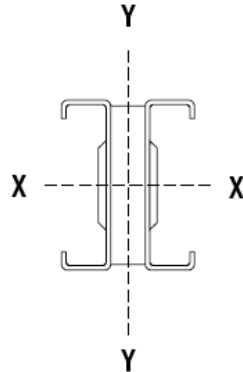
Allowable load has been determined with the Superslim Soldier orientated with the webs horizontal and eccentricity loaded 10mm off the weak axis.

The end connection between Superslim Soldier and Megashor reduces the effective length of the Superslim Shaft by restraining it in rotation.

See Superslim Data Sheets for Allowable Working Loads in other applications.



## 1.2.5. Superslim Soldier Ledgers – Allowable Working Loads in Compression, Buckling about the XX Axis

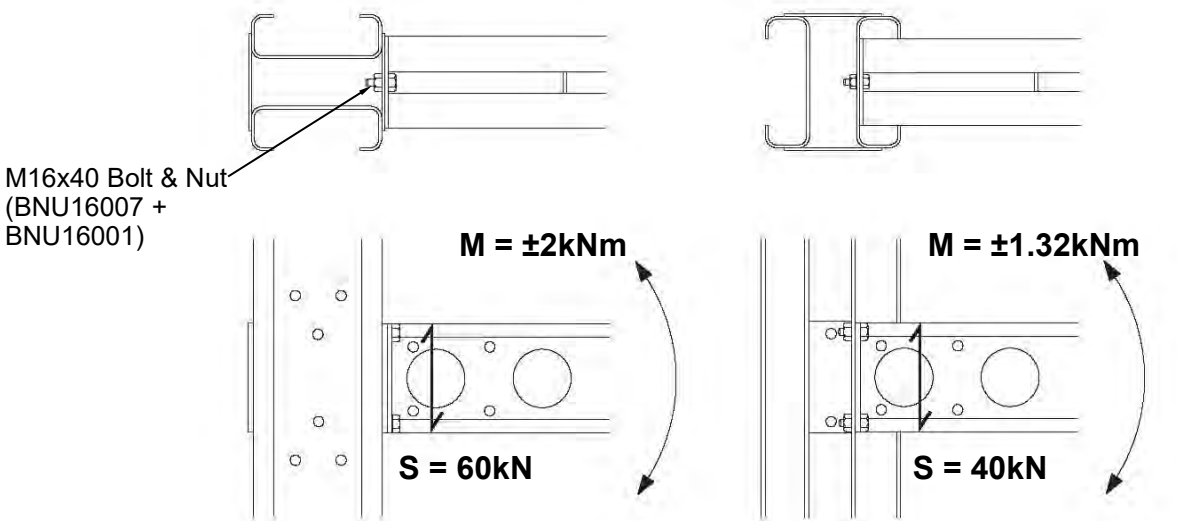




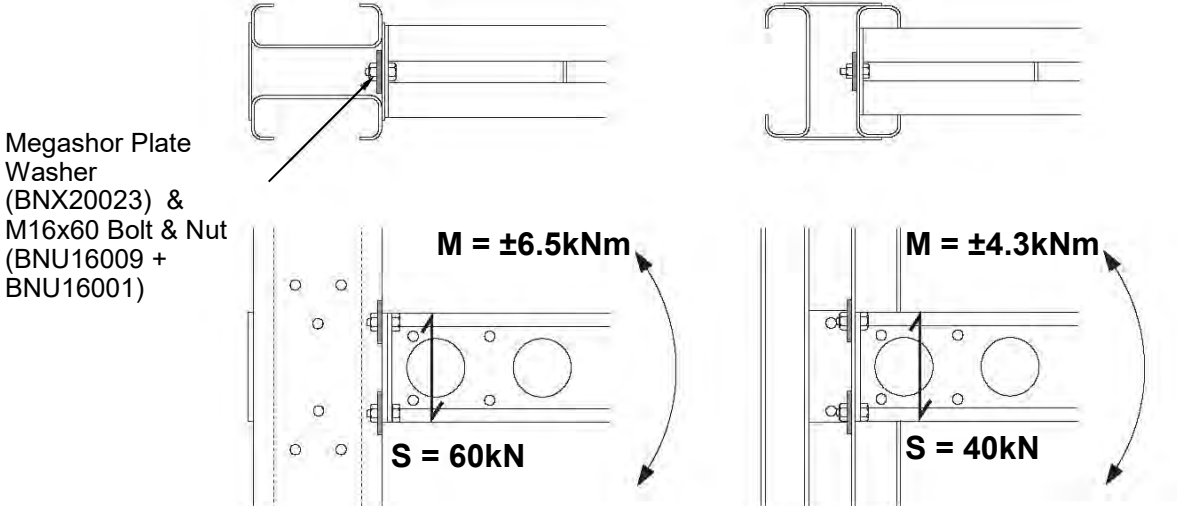
## 1.2.6. Superslim to Megashor Connection Bending & Shear Capacity

Superslim Soldiers are attached at node points using twin M16 grade 8.8 fixings. The standard connection consists of 2 no. M16 x 40 grade 8.8 set pins & M16 hexagon nuts. The stiffened connection consists of 2 no. 90 x 90 x 15 plate washers, M16 x 60 bolts and M16 hexagon nuts

### Plain Connection



### Stiffened Connection



Soldier connection to Megashor batten plate

Soldier connection to Megashor web

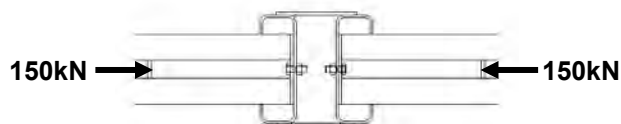
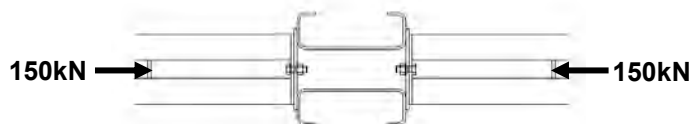
$$\text{Combined Stresses: } \frac{\text{Applied Shear}}{\text{Allowable Shear}} + \frac{\text{Applied Moment}}{\text{Allowable Moment}} \leq 1.4$$

## 1.2.7. Tensile and Compressive Capacity at Node Points

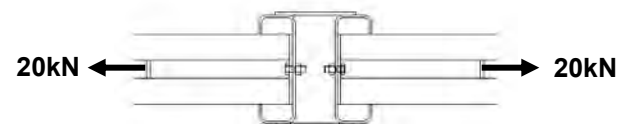
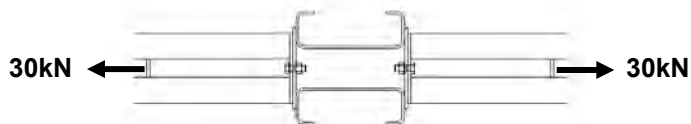
In the design of towers with tension bracing fixed to the Megashor legs, horizontal members are in compression. The maximum allowable compressive load applied to a node by a Soldier ledger is 150kN.

The forces generated at node points depend upon the configuration of the bracing. The following figures give the allowable loads at the interface of horizontal and vertical members.

### Compressive loads



### Tensile loads



### Stiffened connection

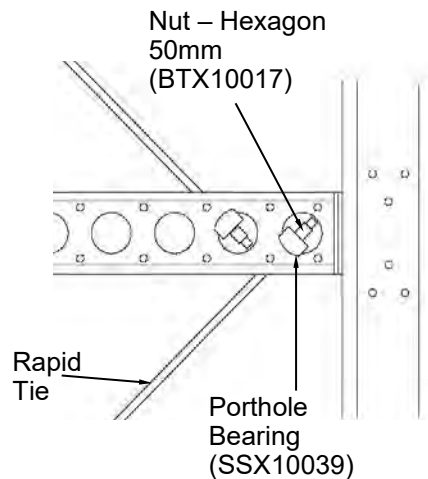


Megashor Plate  
Washer (BNX20023)  
M16 x 60 bolt & nut  
(BNU16009 + BNU16001)

## 1.3.1. Rapid Bar Tie Braces

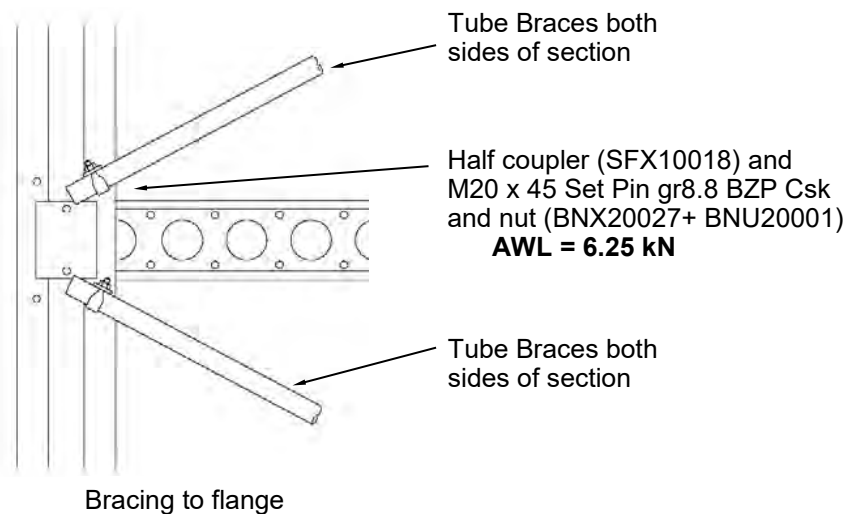
Used to brace between the soldier ledgers. The tensile and shear capacity of the Superslim to Megashor connection must be checked, in accordance with 1.5.8. and 1.5.9. as well as the maximum brace load into the soldier porthole (65kN).

**Note:** When using Rapid Bar Tie bracing with high lateral loads the horizontal deflection, tensile, shear & moment performance of the structure must be checked.



## 1.3.2. Scaffold Tube Braces

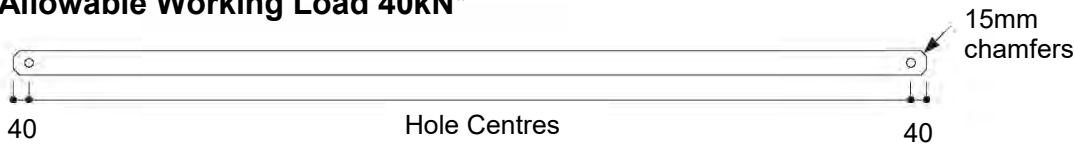
When Megashors are lightly loaded, scaffold tube bracing can be used. Tubes are connected to node points using half couplers. Braces are used in pairs, the allowable load in the brace is dependant upon the slip value of the coupler and the length of the tube. The capacity of braces should be checked in accordance with BS5975.



**Note:** It is not possible to connect tubes between the Megashor webs with half couplers.

### 1.3.3. Steel Flat Braces/m (MSX10003) weight 3.69kg/m

Allowable Working Load 40kN\*



60 x 8mm mild steel flat tension brace with 22mm diameter end holes. Connect in crossed pairs to the 21mm dia. holes in Megashor shafts via M20 x 40 gr. 8.8 set pins and nuts (BNU20005 + BNU20001) or in single crossed pairs to the small holes in Superslim Soldier ledgers via M20 x 90 bolt and nut (BNX20030 + BNU20001).

Hole centres may be determined from 1.3.6, 1.3.7 and 1.3.8.

Each brace supplied on hire attracts an alteration charge – Flat Brace 60 x 8 Alteration (MSU10001).

### 1.3.4. Adjustable Vernier Braces

Allowable Working Load 40kN\*

Used on the top and/or bottom of a tower where the presence of screw jacks necessitates a brace with adjustable length. Braces operate on the Vernier principle, holes at 24 and 26mm centres interact to give a brace adjustable in steps of 2mm. Braces are set to the correct length prior to erection and may be tightened in-situ when the structure is complete using a podger bar.



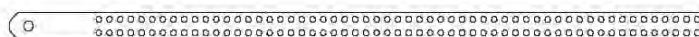
#### Long Outer Galv (MSX10006)



#### Long Inner Galv (MSX10005)



#### Short Outer Galv (MSX10034)

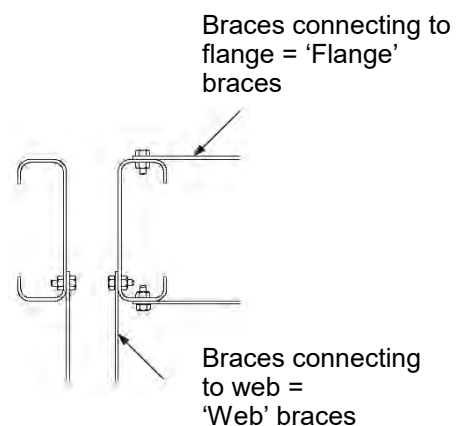


#### Short Inner Galv (MSX10033)

The braces are fixed to length using 2 No. M12 x 40 Grade 8.8 set pins and nuts (BNU12009+BNU12001).

The following combinations of components cover a brace range from 1800 to 5600mm:

1. Short Outer and Short Inner 1800 to 2902mm
2. Long Outer and Short Inner 2682 to 3800mm
3. Long Outer and Long Inner 3600 to 5600mm



**Flat Brace Connection Detail**

\*AWL when attached to Megashor is 34kN per brace (68kN per pair).

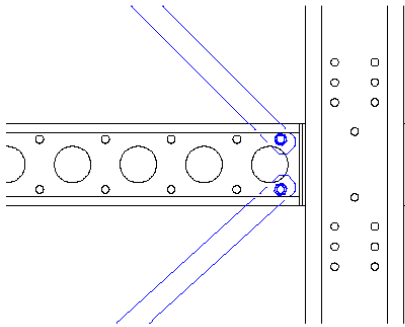
\*AWL when attached to Soldier ledgers is 30kN per brace.

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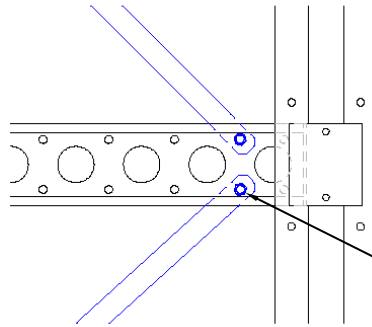
HEAVY DUTY SUPPORT SYSTEM



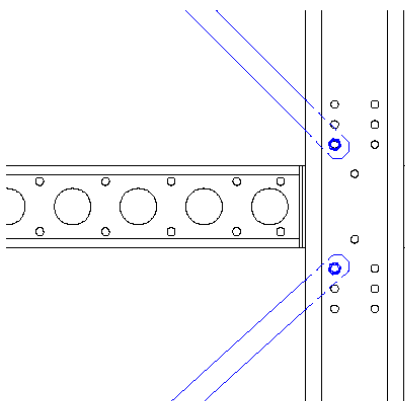
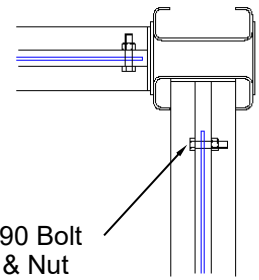
## 1.3.5. Steel Flat Brace Configurations



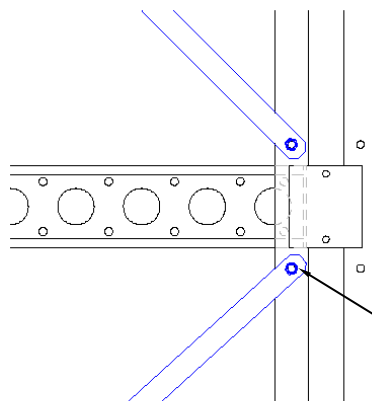
**Megashor Single Flat Bracing**



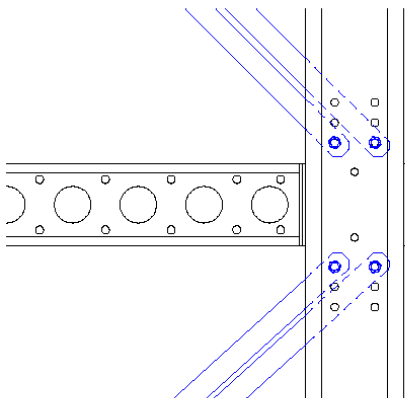
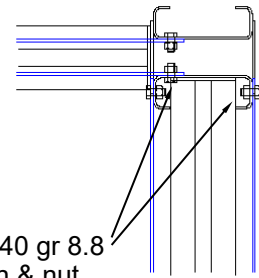
M20x90 Bolt  
gr8.8 & Nut  
(BNX20030 +  
BNU20001)



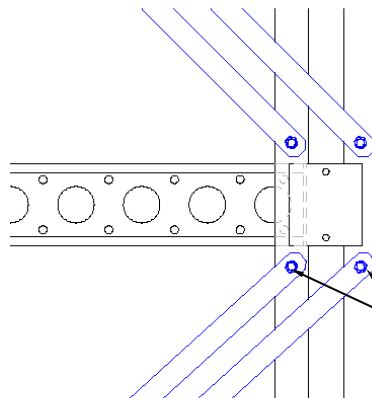
**Megashor Twin Flat Bracing**



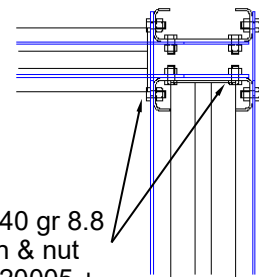
M20x40 gr 8.8  
Setpin & nut  
(BNU20005 +  
BNU20001)



**Megashor Quad Flat Bracing**



M20x40 gr 8.8  
Setpin & nut  
(BNU20005 +  
BNU20001)



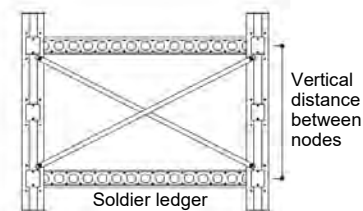
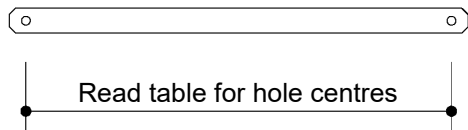
**Note:** Take care to avoid clashes between braces used at right angles to each other when

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## 1.3.6. Flange Braces



**Vertical distance between Megashor nodes**

	900	1800	2700	3600	4500	5400
900	995	1675	2499	3362	4240	5126
990	1070	1721	2530	3385	4259	5142
1080	1148	1771	2564	3411	4297	5158
1170	1227	1823	2600	3438	4301	5176
1260	1308	1878	2639	3468	4325	5196
1350	1390	1936	2681	3499	4350	5217
1440	1473	1997	2725	3533	4377	5240
1530	1556	2059	2771	3569	4406	5264
1620	1641	2124	2819	3606	4437	5290
1710	1725	2190	2869	3646	4469	5317
1800	1811	2258	2921	3687	4502	5345
1890	1897	2327	2975	3730	4538	5375
1980	1983	2398	3031	3774	4574	5406
2070	2069	2470	3088	3820	4612	5438
2160	2156	2543	3147	3868	4652	5472
2250	2243	2617	3207	3917	4693	5506
2340	2330	2692	3269	3968	4735	5543
2430	2418	2768	3332	4020	4779	5580
2520	2505	2845	3396	4073	4824	5618
2610	2593	2923	3461	4128	4870	5658
2700	2681	3001	3528	4184	4917	5699
2790	2769	3080	3595	4241	4966	5741
2880	2857	3160	3663	4299	5016	5784
2970	2946	3240	3733	4358	5066	5828
3060	3034	3320	3803	4418	5118	5873
3150	3123	3401	3874	4479	5171	5920
3240	3211	3483	3946	4542	5225	5967
3330	3300	3565	4018	4605	5280	6015
3420	3389	3647	4091	4669	5336	6064
3510	3477	3730	4165	4734	5393	6114
3600	3566	3813	4240	4799	5451	6165
3690	3655	3896	4315	4866	5509	6217
3780	3744	3980	4390	4933	5569	6270
3870	3833	4063	4466	5001	5629	6323
3960	3922	4147	4543	5069	5690	6378
4050	4011	4232	4620	5139	5752	6433
4140	4100	4316	4698	5208	5814	6489
4230	4190	4401	4776	5279	5877	6545
4320	4279	4486	4854	5350	5941	6603
4410	4368	4571	4933	5422	6006	6661
4500	4457	4657	5012	5494	6071	6720
4590	4547	4742	5092	5567	6137	6780
4680	4636	4828	5172	5640	6204	6840
4770	4725	4914	5252	5713	6271	6901
4860	4815	5000	5333	5788	6338	6962
4950	4904	5086	5414	5862	6406	7024
5040	4994	5172	5495	5937	6475	7087
5130	5083	5259	5576	6013	6544	7150
5220	5172	5345	5658	6088	6614	7214
5310	5262	5432	5740	6165	6684	7279
5400	5351	5519	5822	6241	6755	7344

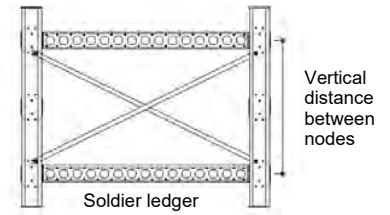
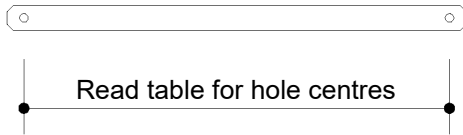
Length of Soldier Ledger

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## 1.3.7. Web Braces



**Vertical distance between Megashor nodes**

	900	1800	2700	3600	4500	5400
900	1213	1814	2594	3433	4297	5173
990	1294	1868	2632	3462	4320	5193
1080	1375	1926	2673	3494	4345	5214
1170	1458	1986	2717	3527	4372	5236
1260	1541	2048	2763	3562	4401	5260
1350	1626	2112	2810	3599	4431	5285
1440	1710	2178	2860	3639	4463	5312
1530	1796	2245	2912	3679	4496	5340
1620	1881	2315	2966	3722	4531	5369
1710	1967	2385	3021	3766	4568	5400
1800	2054	2457	3078	3812	4605	5432
1890	2141	2530	3137	3860	4645	5466
1980	2228	2604	3197	3908	4686	5500
2070	2315	2679	3258	3959	4728	5536
2160	2402	2755	3321	4011	4771	5573
2250	2490	2831	3385	4064	4816	5612
2340	2578	2909	3450	4118	4862	5651
2430	2665	2987	3516	4174	4909	5692
2520	2754	3066	3583	4230	4957	5733
2610	2842	3145	3651	4288	5007	5776
2700	2930	3225	3720	4347	5057	5820
2790	3018	3306	3790	4407	5109	5865
2880	3107	3387	3861	4468	5162	5911
2970	3195	3468	3933	4530	5216	5958
3060	3284	3550	4005	4593	5270	6006
3150	3373	3632	4078	4657	5326	6055
3240	3462	3715	4152	4722	5383	6105
3330	3550	3798	4226	4787	5440	6156
3420	3639	3881	4301	4854	5499	6208
3510	3728	3965	4377	4921	5558	6260
3600	3817	4048	4453	4989	5618	6314
3690	3906	4132	4529	5057	5679	6368
3780	3995	4217	4606	5126	5741	6423
3870	4085	4301	4684	5196	5803	6479
3960	4174	4386	4762	5266	5866	6535
4050	4263	4471	4840	5337	5930	6593
4140	4352	4556	4919	5409	5994	6651
4230	4441	4642	4998	5481	6060	6709
4320	4531	4727	5078	5554	6125	6769
4410	4620	4813	5158	5627	6192	6829
4500	4709	4899	5238	5700	6259	6890
4590	4799	4985	5318	5774	6326	6951
4680	4888	5071	5399	5849	6394	7013
4770	4978	5157	5480	5924	6463	7076
4860	5067	5243	5562	5999	6532	7139
4950	5156	5330	5643	6075	6602	7203
5040	5246	5416	5725	6151	6672	7267
5130	5335	5503	5807	6227	6742	7332
5220	5425	5590	5890	6304	6813	7397
5310	5515	5677	5972	6382	6885	7463
5400	5604	5764	6055	6459	6957	7530

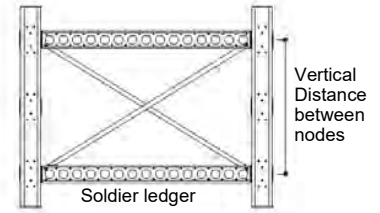
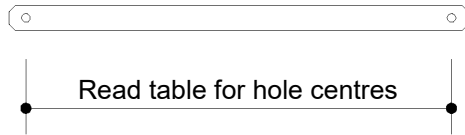
Length of Soldier Ledger

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.3.8. Soldier Braces



Vertical distance between Megashor nodes

	900	1800	2700	3600	4500	5400
900	1091	1837	2679	3550	4432	5320
990	1157	1877	2707	3571	4449	5334
1080	1226	1920	2737	3594	4467	5350
1170	1298	1967	2770	3619	4488	5367
1260	1372	2016	2805	3646	4509	5385
1350	1447	2068	2843	3675	4533	5405
1440	1525	2123	2883	3706	4558	5426
1530	1603	2180	2925	3739	4585	5449
1620	1683	2240	2970	3774	4614	5473
1710	1764	2301	3016	3811	4644	5498
1800	1845	2364	3065	3849	4675	5525
1890	1927	2429	3115	3889	4708	5553
1980	2010	2495	3167	3931	4743	5582
2070	2094	2563	3220	3974	4779	5613
2160	2178	2632	3276	4019	4816	5645
2250	2263	2702	3333	4066	4855	5678
2340	2347	2774	3391	4113	4895	5712
2430	2433	2846	3450	4163	4937	5748
2520	2518	2920	3511	4213	4980	5784
2610	2604	2994	3573	4265	5024	5822
2700	2690	3070	3637	4318	5069	5861
2790	2777	3146	3701	4373	5115	5902
2880	2864	3222	3767	4428	5163	5943
2970	2950	3300	3833	4485	5211	5985
3060	3037	3378	3900	4543	5261	6028
3150	3125	3456	3969	4601	5312	6073
3240	3212	3536	4038	4661	5364	6118
3330	3299	3615	4108	4722	5417	6165
3420	3387	3695	4178	4784	5470	6212
3510	3475	3776	4250	4846	5525	6260
3600	3563	3857	4322	4909	5581	6309
3690	3651	3938	4395	4974	5637	6360
3780	3739	4020	4468	5039	5695	6411
3870	3827	4102	4542	5104	5753	6462
3960	3915	4185	4617	5171	5812	6515
4050	4003	4267	4692	5238	5872	6568
4140	4092	4350	4768	5306	5933	6623
4230	4180	4434	4844	5374	5994	6678
4320	4269	4517	4920	5444	6056	6733
4410	4357	4601	4997	5513	6119	6790
4500	4446	4685	5075	5584	6182	6847
4590	4535	4769	5153	5654	6246	6905
4680	4623	4854	5231	5726	6311	6964
4770	4712	4938	5310	5798	6376	7023
4860	4801	5023	5389	5870	6442	7083
4950	4890	5108	5468	5943	6509	7143
5040	4979	5193	5548	6017	6576	7205
5130	5068	5279	5628	6090	6643	7266
5220	5157	5364	5708	6165	6712	7329
5310	5246	5450	5788	6239	6780	7392
5400	5335	5536	5869	6314	6849	7455

Length of Soldier Ledger



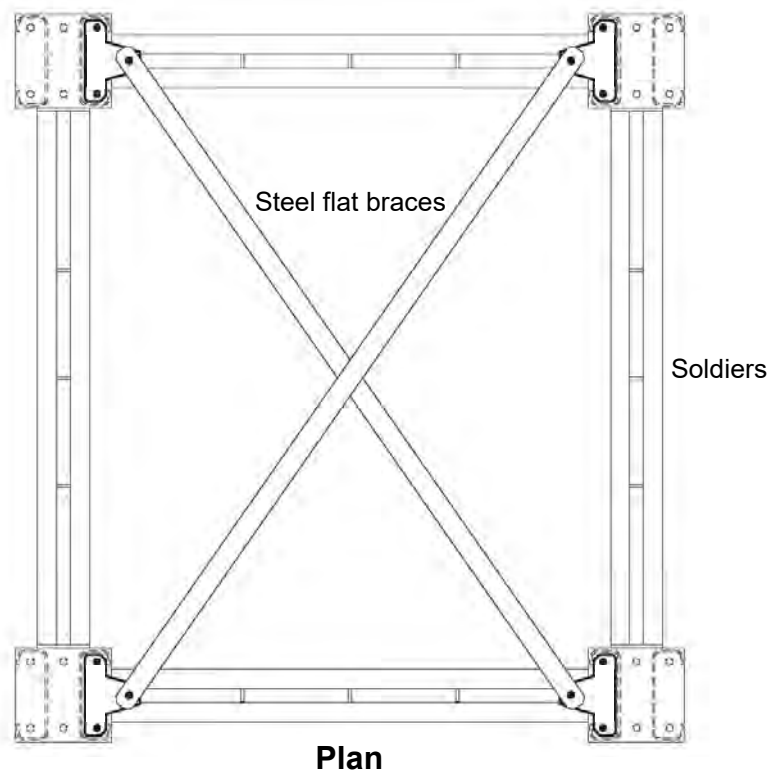
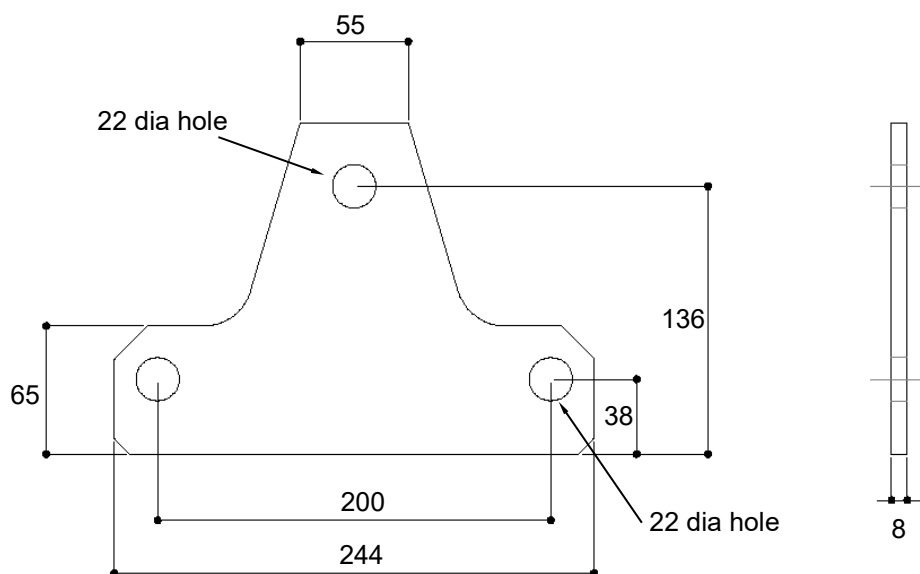
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.3.9. Megashor Plan Brace Cleat (MSU10003) weight = 1.46 kg

Used to attach plan braces to Megashor towers at joints between Megashor legs.



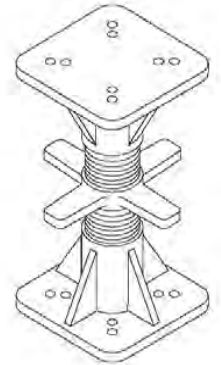
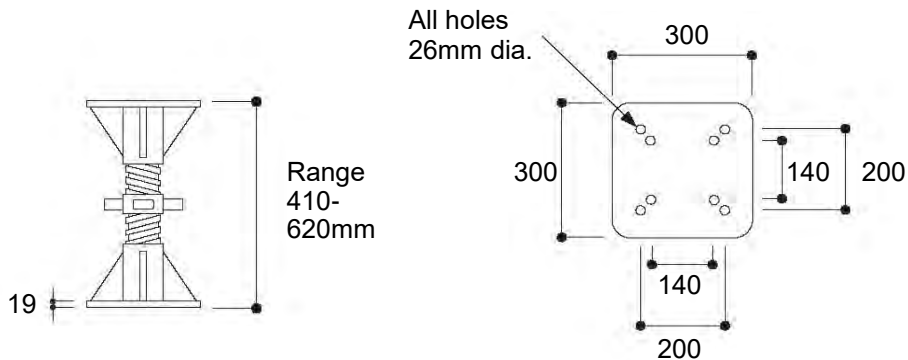
Maximum load in 60 x 8 flat braces and Plan Bracing Cleat 40kN.

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

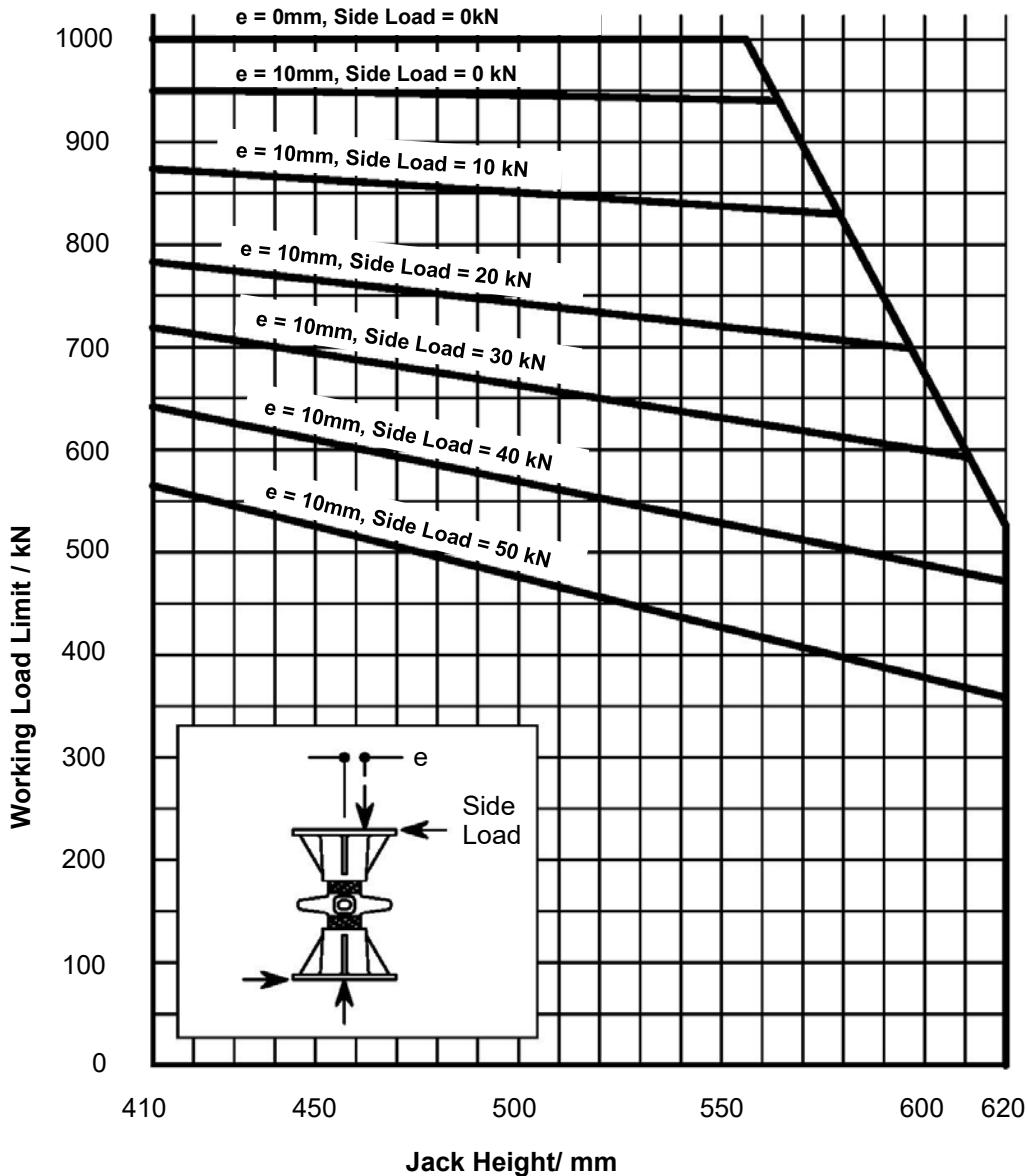


## 1.4.1. Megashor Jack 410 – 620mm (MSX10011) weight = 65.9 kg



### Load Capacities of Jack with Solid Spindles

Ensure both ends are equally extended



Jacks in tension –  
AWL = 200kN

## 1.4.2. Loading and Unloading

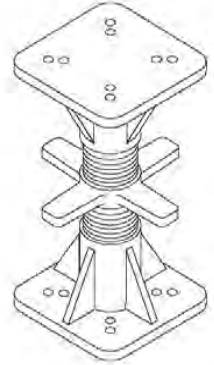
Maximum axial compressive jack loads unloaded by the various methods are as below.

### A. Unloading

- |   |        |
|---|--------|
| 1. Megashor Jack spanner*                         | 500kN  |
| 2. Application of sledge hammer to spindle lugs*  | 650kN  |
| 3. Application of sledge hammer to spindle lugs + | 1000kN |

\* Ensure threads are well greased.

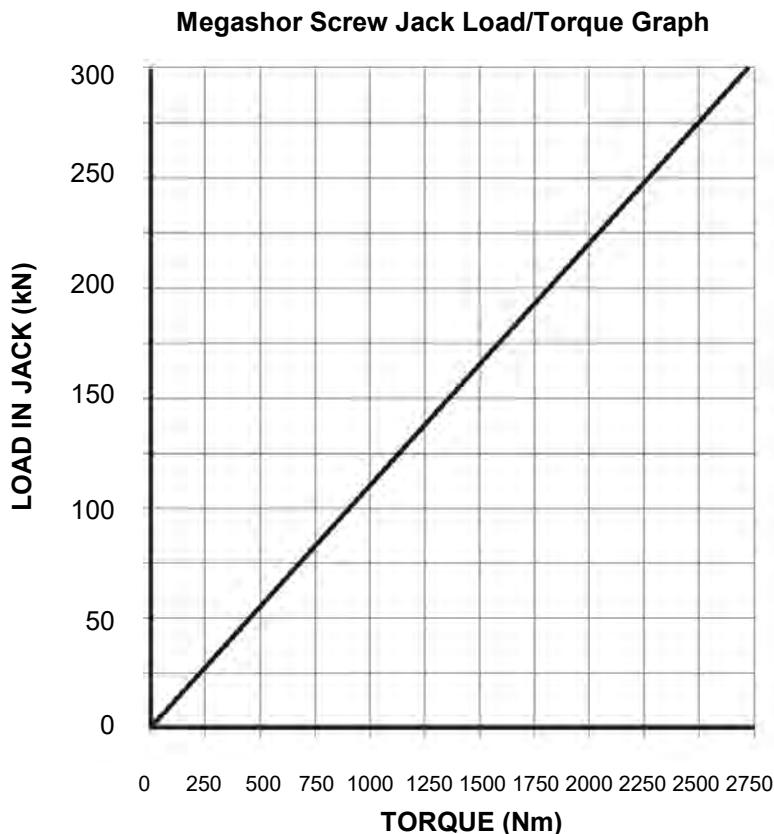
+ Dismantle jack entirely before use. Clean all four thread surfaces and coat liberally with Molyslip OGL grease prior to reassembly. Details available from RMD Kwikform.



### B. Loading

By application of a controlled torque via the Megashor Jack Spanner (MSX10022), known loads up to 300kN can be applied (see 1.4.3 )

Torque is determined from the graph below or the equation:  **$T_p = 9W$**   
 where  **$T_p$**  is the Torque applied to the jack spindle (Nm)  
 **$W$**  is the load in the jack (kN)



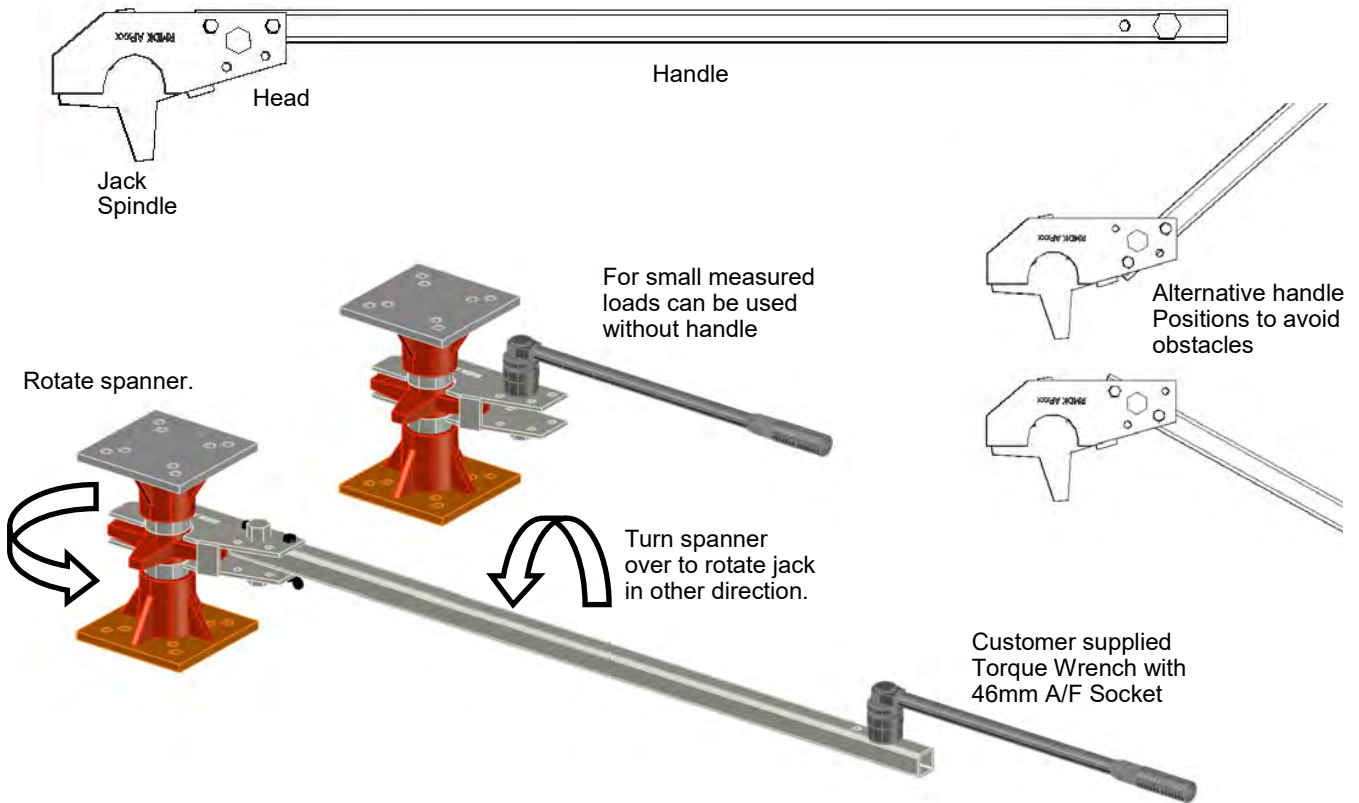
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

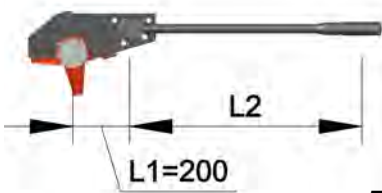


## 1.4.3. Megashor Jack Spanner (MSX10022) weight = 20.1 kg

Used alone for applying and removing loads in Megashor Jack (MSX10011), or with a Torque Wrench to apply a known pre-load with an accuracy of +/-10% \*



To determine torque required for jack preload .

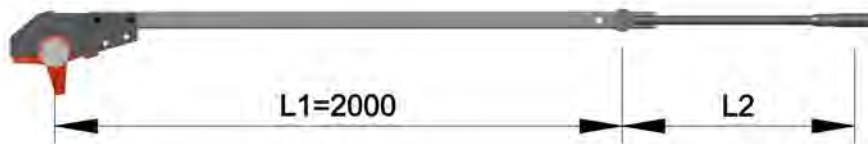


$L_1 = 200\text{mm}$  without handle  
 $L_1 = 2000\text{mm}$  with handle

Typical Wrench lengths  
 150-700Nm Torque wrench  $L_2=1090\text{mm}$   
 300-1000Nm Torque wrench  $L_2=1475\text{mm}$

Load in Jack =  $W$  (KN)  
 Torque applied at Jack spindle =  $T_p$  (Nm)  
 Torque measured on Wrench =  $T_w$  (Nm)

The torque measured on the Torque wrench is determined from the formula:  
 $T_w = T_p (L_2 / L_1 + L_2)$  where  $T_p = 9W$



Example for a Jack preload of 200KN

$$T_p = 9W = 9 \times 200 = 1800\text{Nm}$$

$$L_1 = 2000\text{mm}, L_2 = 1090\text{mm}$$

$$T_w = T_p (L_2 / L_1 + L_2) = 1800 \times 1090 / 3090 = 635\text{Nm}$$

- Unloading Megashor Jacks at loads up to 500kN\*
- Controlled application of loads in Megashor Jacks up to 300kN\* see 1.4.2.

\* ensure threads on Megashor Jack are well greased.

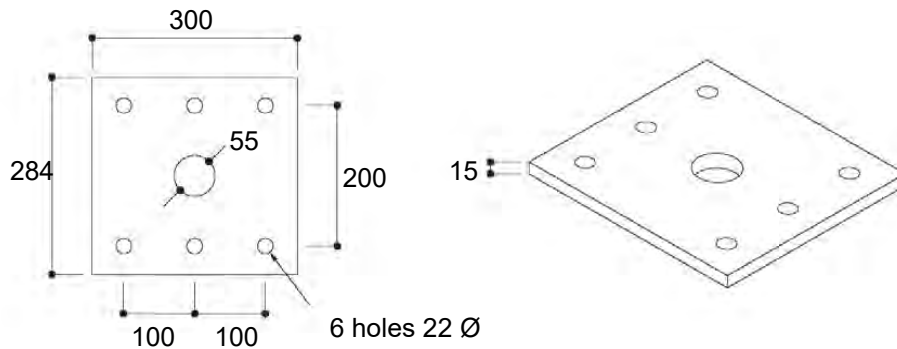
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



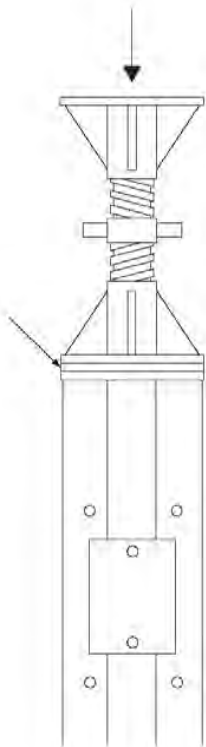
## 1.4.4. Megashor End Plate (MSX10012) weight = 9.47 kg

Used as a pack in Megashor makeups or between Megashor Jack (MSX10011) and Megashor to enhance load transfer.



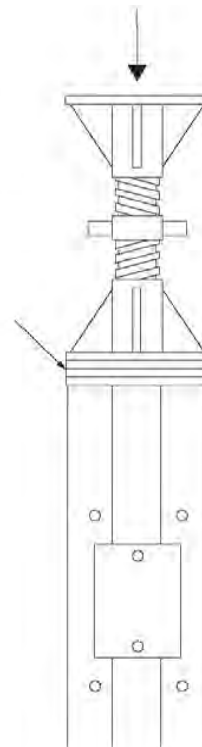
450kN < Load < 500kN

One Megashor End Plate bolted through with M20 x 90 gr 8.8 bolts and nuts (BNX20030 + BNU20001)



500kN < Load < 540kN

Two Megashor End Plates bolted through with M20 x 90 gr 8.8 bolts and nuts (BNX20030 + BNU20001)



For loads less than 450kN a plain joint can be used.

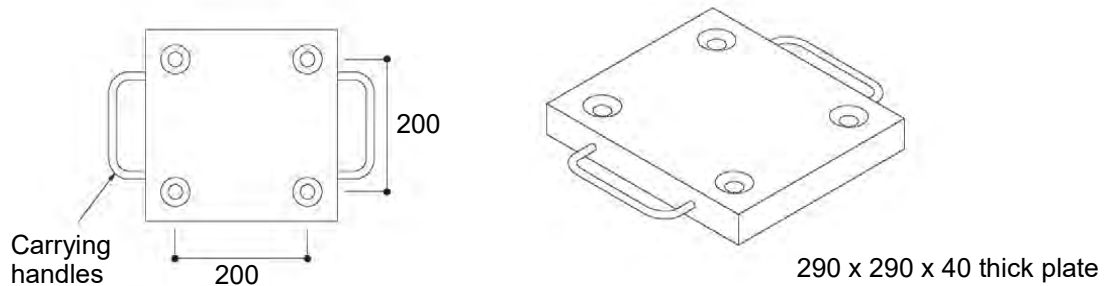
# MEGASHOR

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## 1.4.5. Megashor Bearing Plate 40mm (MSX10021) weight = 26.2 kg

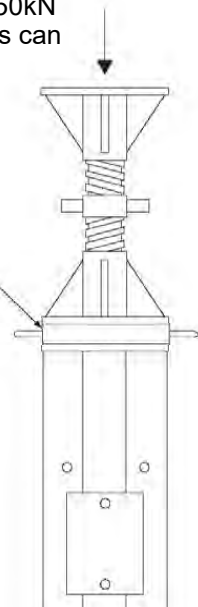
Used between Megashor shafts and Megashor Jack (MSX10011) for loads over 450 kN or as a spreader plate for a hydraulic jack. Also between Megashor Jacks (MSX10011) and Megashor Rocking Heads (MSX10026) for loads over 800 kN.



### 450kN < Load

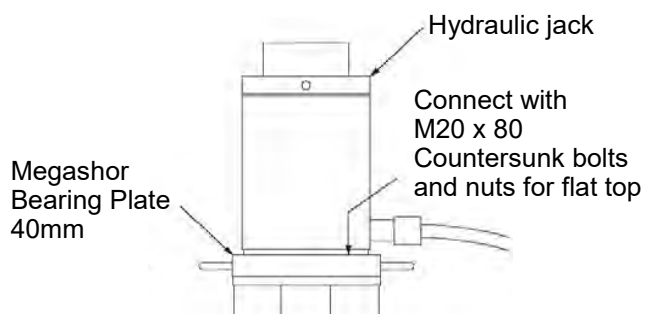
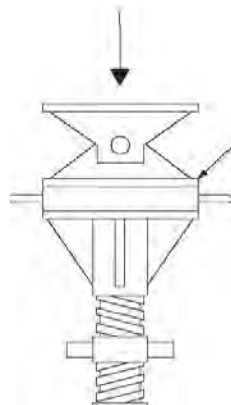
For loads between 450kN and 540kN end plates can be used (see 1.4.4).

Connect through Megashor Bearing Plate 40mm with M20 x 100 bolt and nuts (BNU20015 + BNU20001).



### 800kN < Load

Connect through with M20 x 100 bolts (BNU20015)



# MEGASHOR

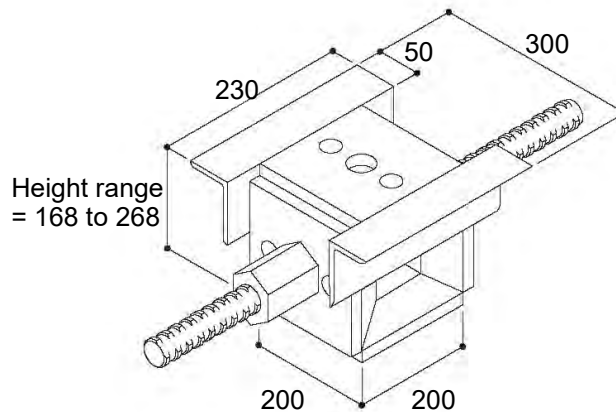
HEAVY DUTY SUPPORT SYSTEM



## 1.4.6. Wedge Release Jack – 168 - 268mm (HGX10053) weight = 33.0 kg

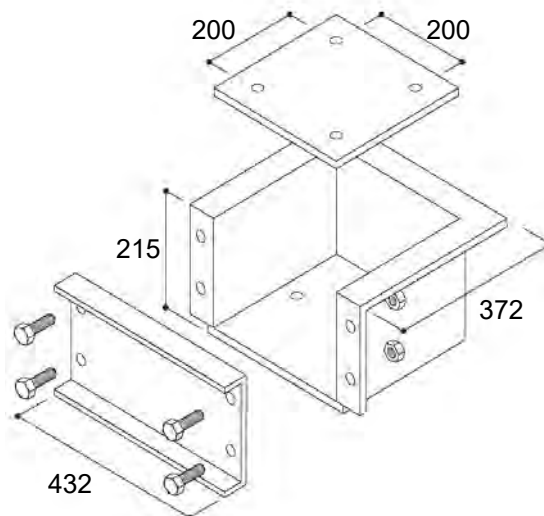
Used where a low headroom jack is preferred. Special adaption may be required for incorporation into Megashor schemes – refer to RMD Kwikform Technical Office for details.

**AWL = 420kN.**



## 1.4.7. 1000kN Sand Jack

Used with bagged kiln dried sand for rapid striking of fully loaded Megashor legs where little control is needed. Available to special order only.



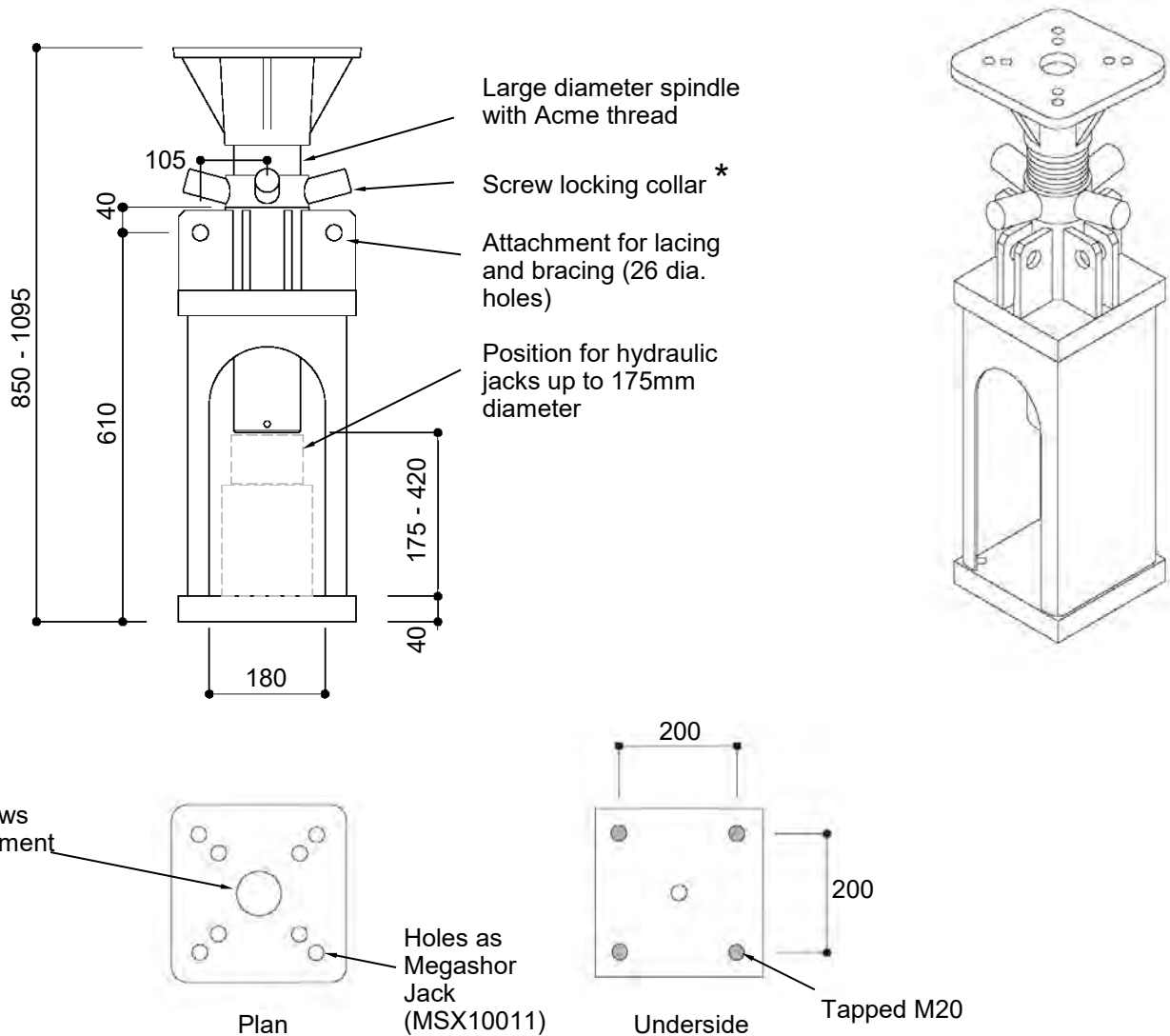
# MEGASHOR

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## 1.4.8. Megashor Hydraulic Unit (MSX10017) weight = 146 kg

Used in conjunction with hydraulic jacks that may subsequently be removed to enable controlled removal or application of load in Megashor structures and/or controlled raising or lowering of loads.



\* Do not hammer the handles on the screw locking collar to release the load. Re-insert a hydraulic jack and activate it to free the load from the locking collar before rotating.

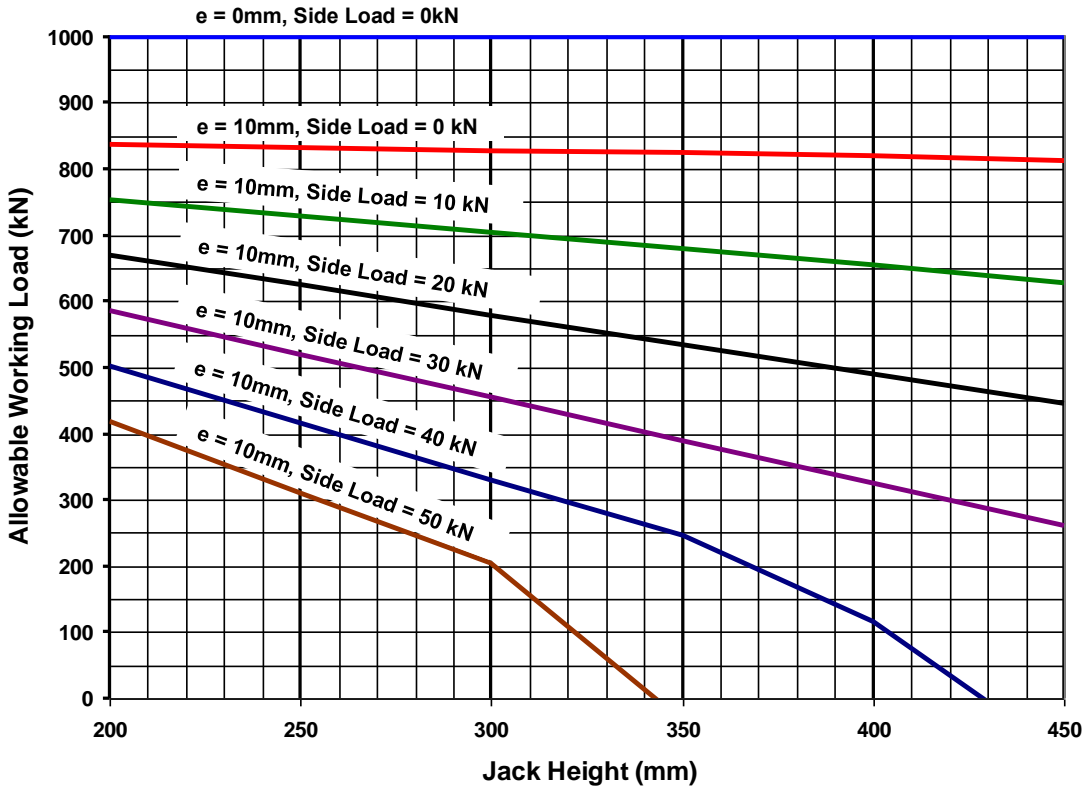
For load capacities refer to charts 1.4.8.1



## 1.4.8.1 Megashor Hydraulic Unit Loading Charts.

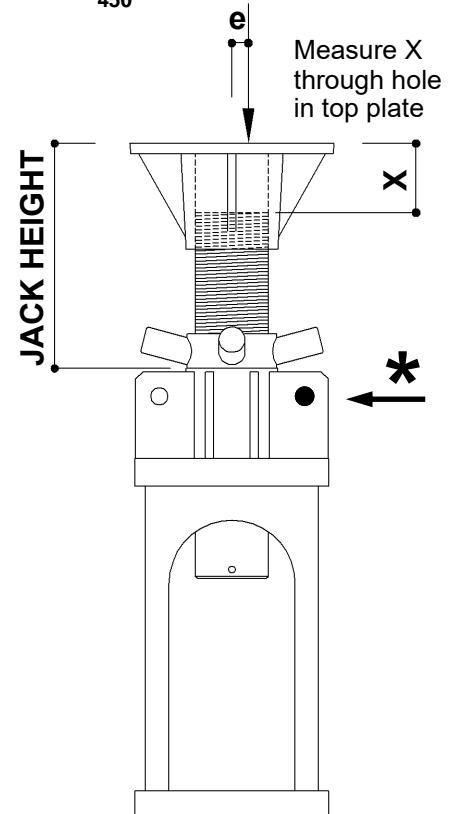
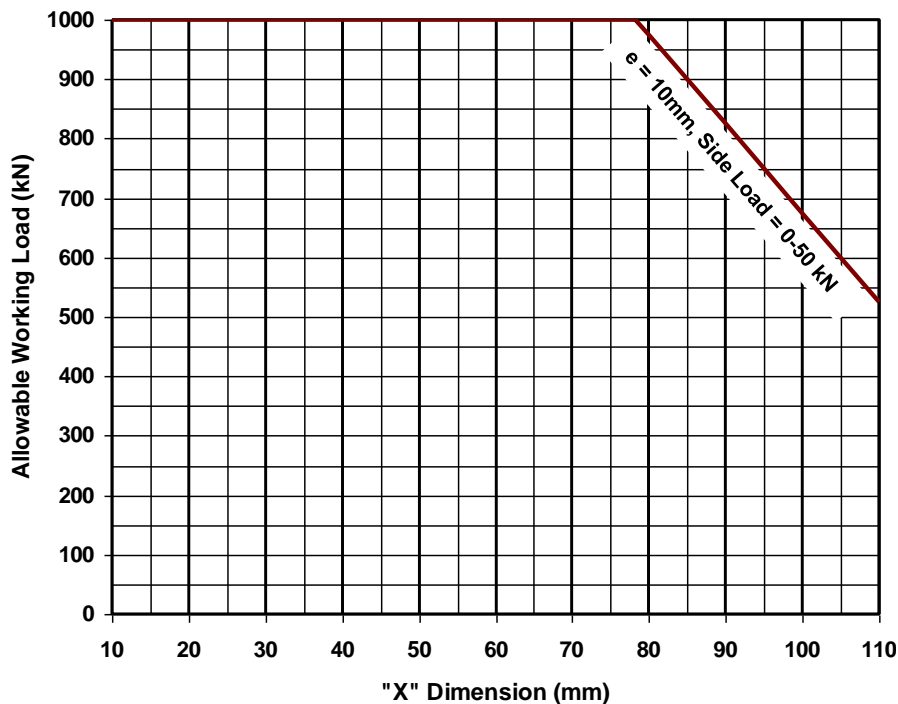
Read both charts and take the minimum value to establish allowable working load. Data is valid only if unit is laterally restrained at asterisked point.

### A. Combined Axial and Bending Actions to Jack Stem



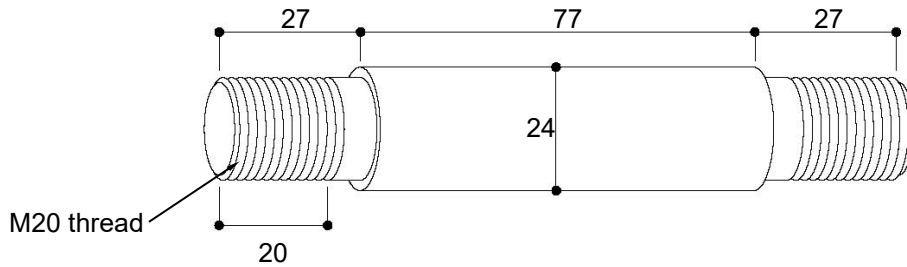
Note: Performance of Megashor Shaft may limit.

### B. Thread Engagement with Top Plate



## 1.4.9. Prop Brace Pin – M24/M20 (BNU10050) weight = 0.43 kg

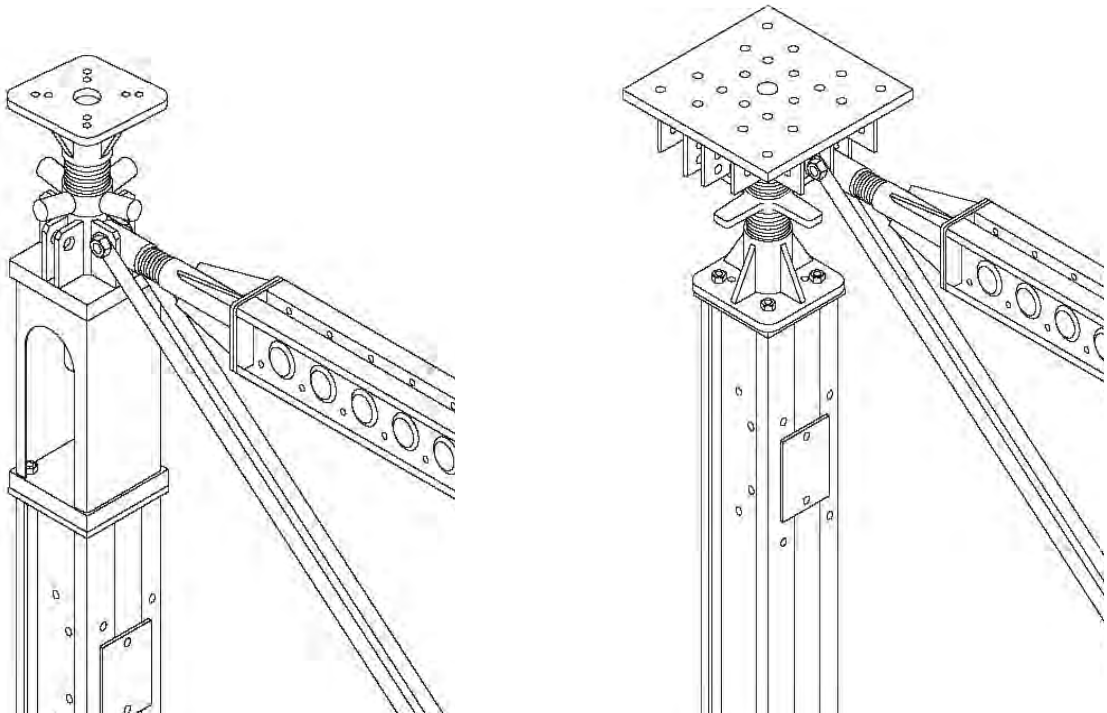
Used for connecting heavy duty Push Pull Props and twin 60 x 8 flat braces through the same fastener.



Uses include:

- Connection to Megashor Hydraulic Units (MSX10017)
- Connection to Megashor Brace Plate (MSU10002)
- Maximum shear load in M20 section  $2 \times 58 = 116\text{kN}$
- Maximum shear load in M24 section  $2 \times 84 = 168\text{kN}$

Safe working loads of connected components may limit capacity



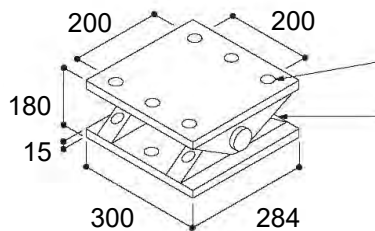
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.4.10. Megashor Rocking Head 180mm (MSX10026) weight = 47.9 kg

Used for connecting Megashor or steel components at an angle or in order to eliminate eccentricity or moment transfer at a support or joint.



22 Ø holes in top plate

Tapped holes in bottom plate to receive M20 bolts.

**NOTE:** First 15mm of plate is not threaded. Ensure bolt is sufficiently long to achieve 15mm of thread engagement. i.e. 30mm into bottom plate.

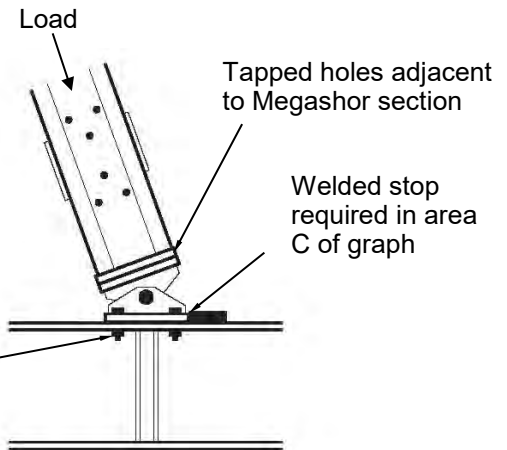
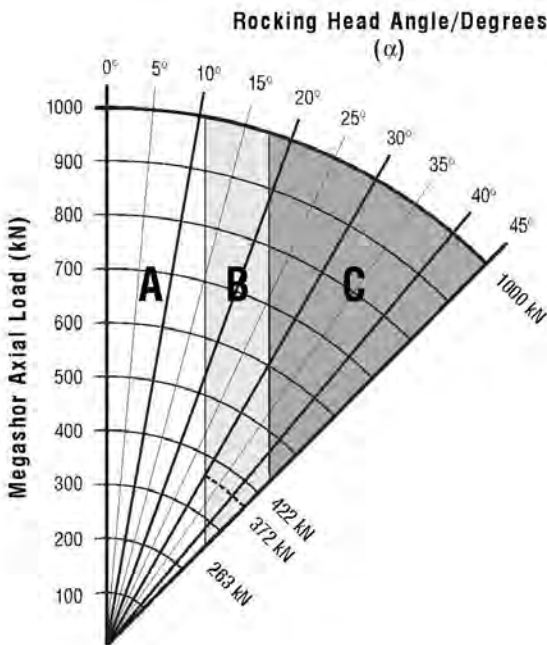
Maximum angle of tilt = 45 degrees

### IMPORTANT

When the rocking head is used to support a header beam the tapped holes must be connected to the Megashor section NOT THE HEADER BEAM. Header Beams should be fully web stiffened adjacent to Rocking Heads. **Note:** rocking heads may be used in either orientation relative to Megashor without reduction in AWL.

### Bolted Connection to Header Beams.

Megashor loads are limited to areas within the envelopes below.



Bolted connection. Note for area B ensure bolt heads are on Rocking Head side of connection

- A** - 4 No. M20x60 grade 8.8 Bolts (Shear across bolt thread root)
- B** - 4 No. M20x70 grade 10.9 Bolts (Shear across bolt shaft)
- C** - Welded stop on connected member to resist full shear load

e.g. Using 4 No. M20x60 grade 8.8 Bolts, the maximum load capacity in a 30 degree connection

is 372 kN – read from the graph above.

**AWL in tension is 250 kN.**

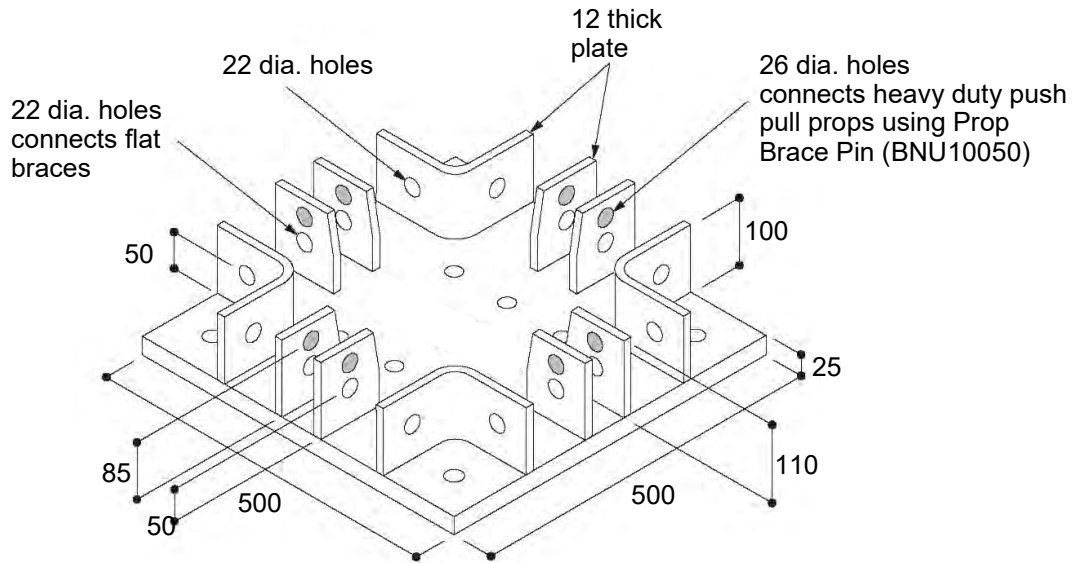
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



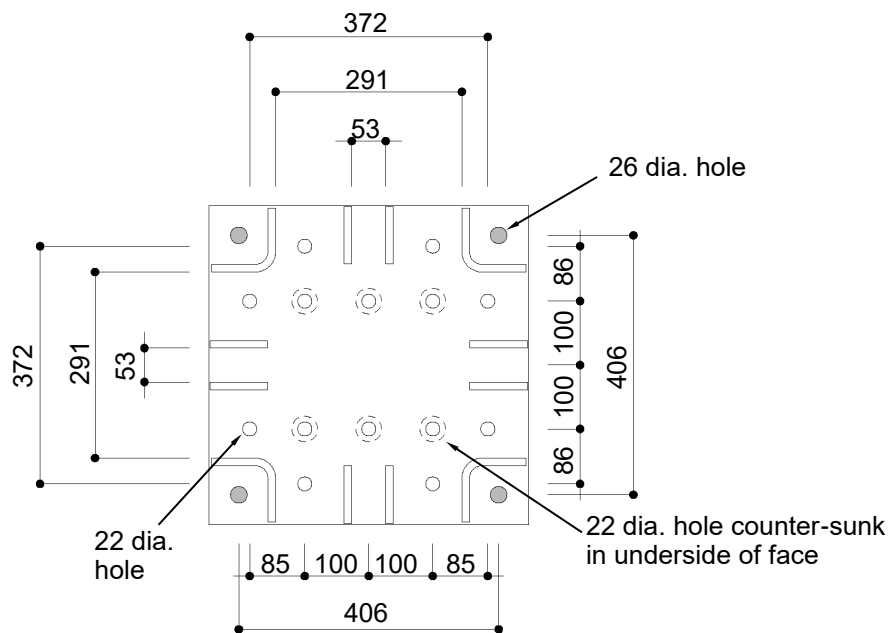
## 1.4.11. Megashor Brace Plate (MSU10002) weight = 60.3 kg

Used to spread load from Megashor legs at ground level and for the attachment of flat braces and/or heavy duty push pull props. Also used to anchor Megashor legs down to a foundation in tensile applications.



○ 22 dia. holes

● 26 dia. holes



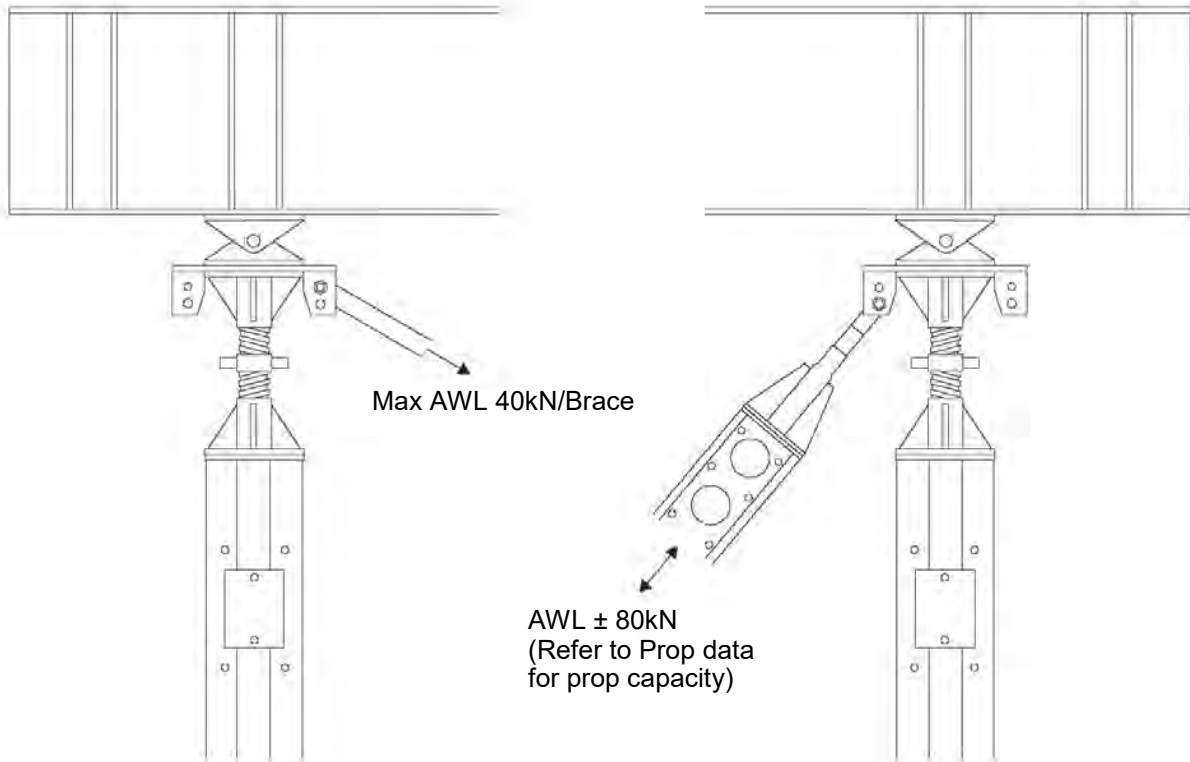
## 1.4.12. Brace Plate and Rocking Head Connection

**Max Safe Working Load of Brace Plate lugs = 40kN/lug.**

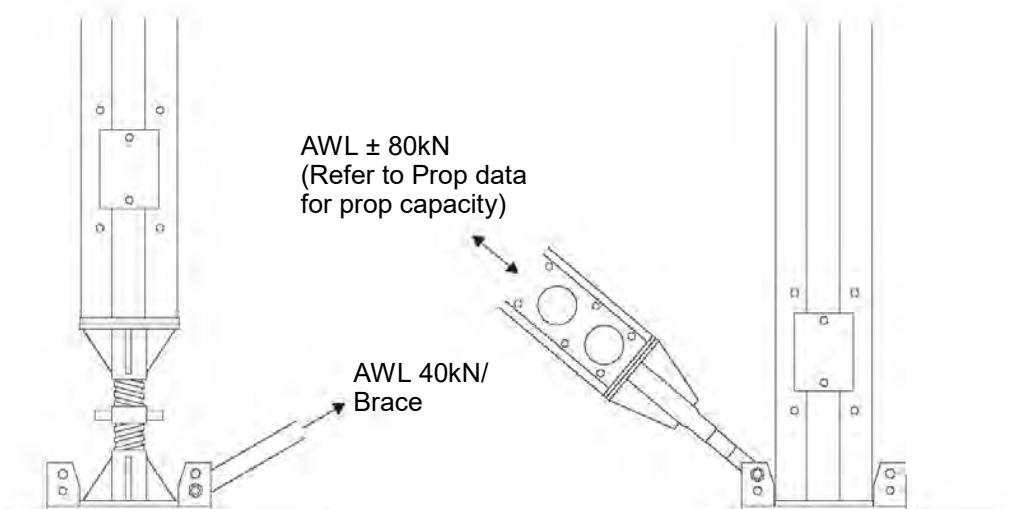
May be reduced depending upon brace angle (see 1.4.13).



Note: Check the effect of any brace loads that may result in bending moments in the Megashor jack



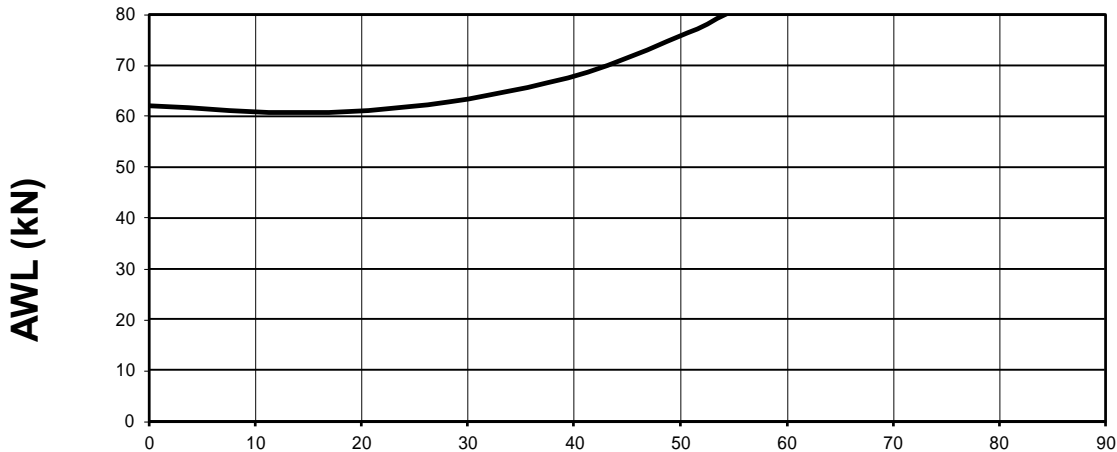
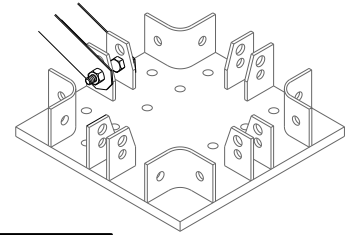
Brace Plate used at head of Megashor



Brace Plate used at base of Megashor

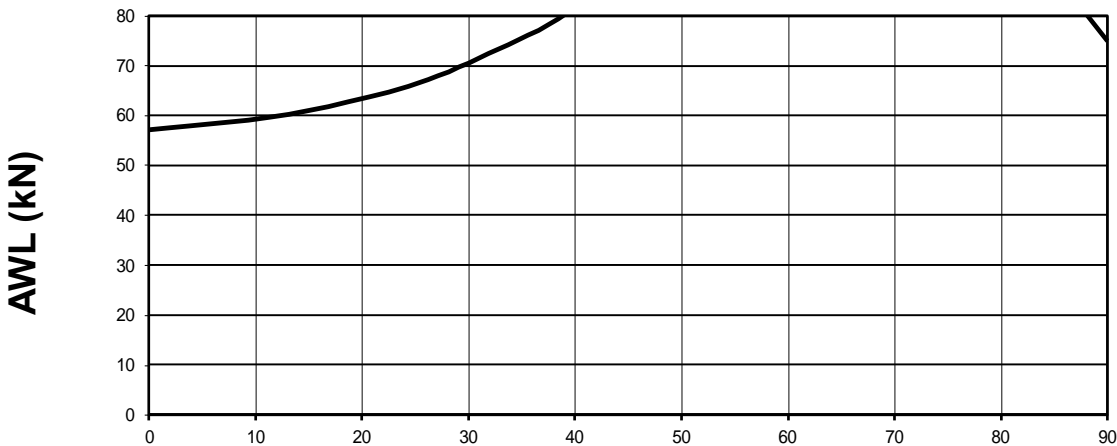
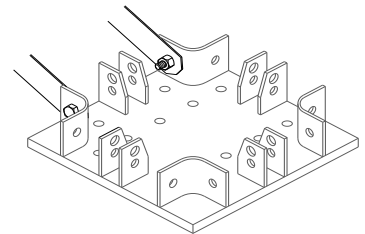
## 1.4.13. Brace Plate Allowable Loads on Lugs

**AWL in a Pair of Braces Connected to Middle Lugs via 22mm dia. Holes**



**Angle in degrees between brace and plate**

**AWL in a Pair of Braces Connected to Corner Lugs via 22mm dia. Holes**



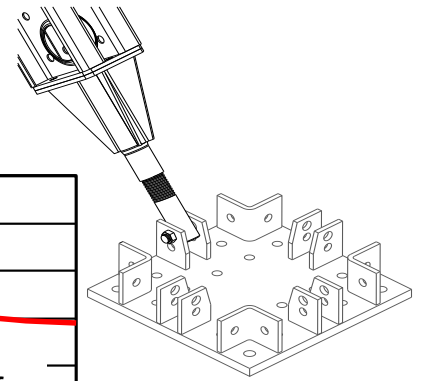
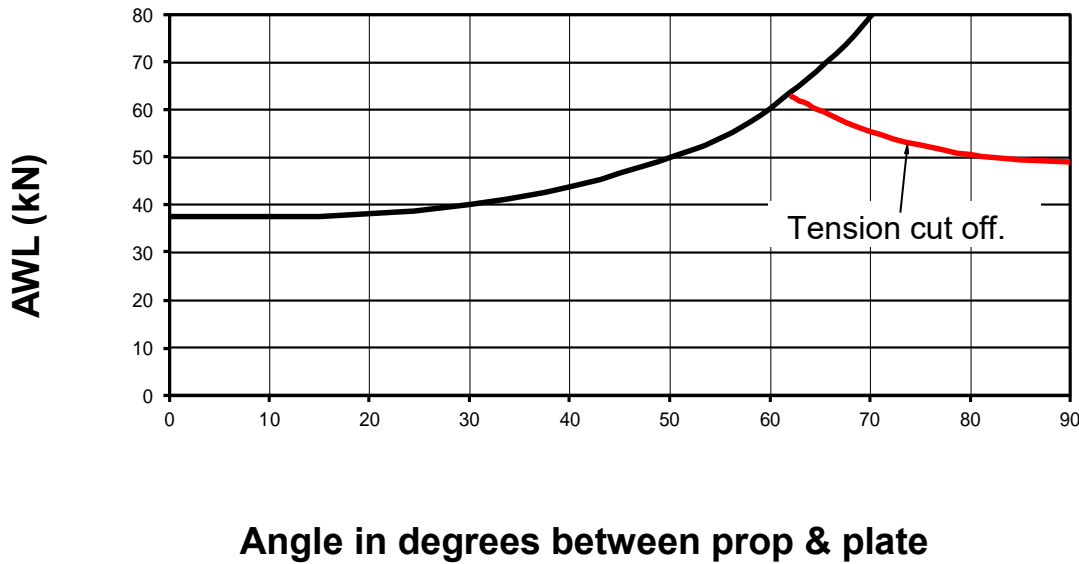
**Angle in degrees between brace and plate**

# MEGASHOR

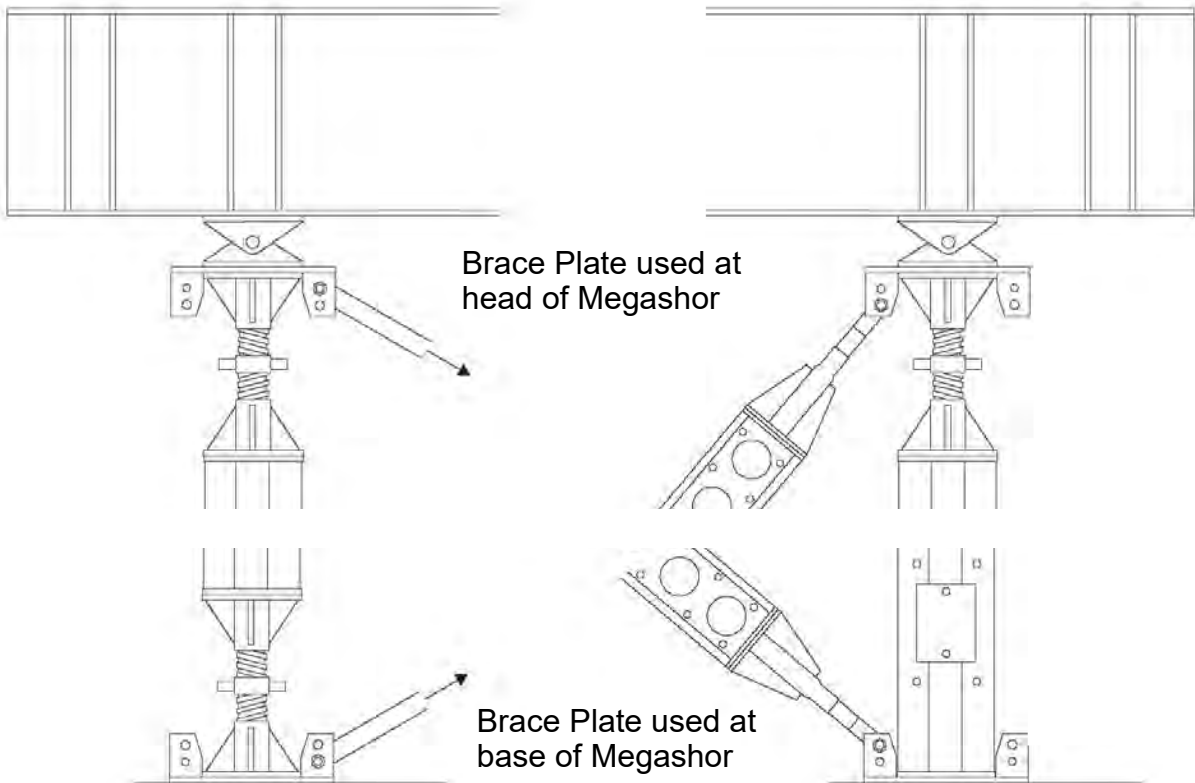
HEAVY DUTY SUPPORT SYSTEM



## AWL in a Single Prop Connected to Middle Lugs via 26mm dia. Holes



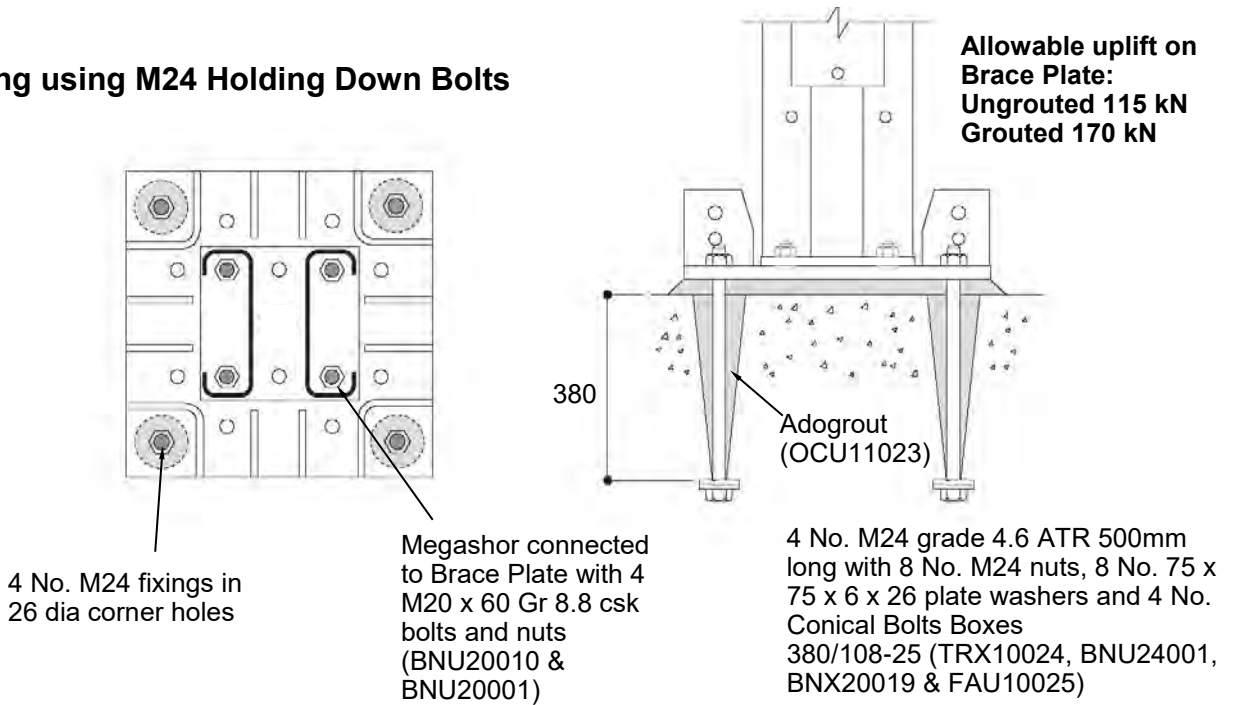
## Brace Plate Applications



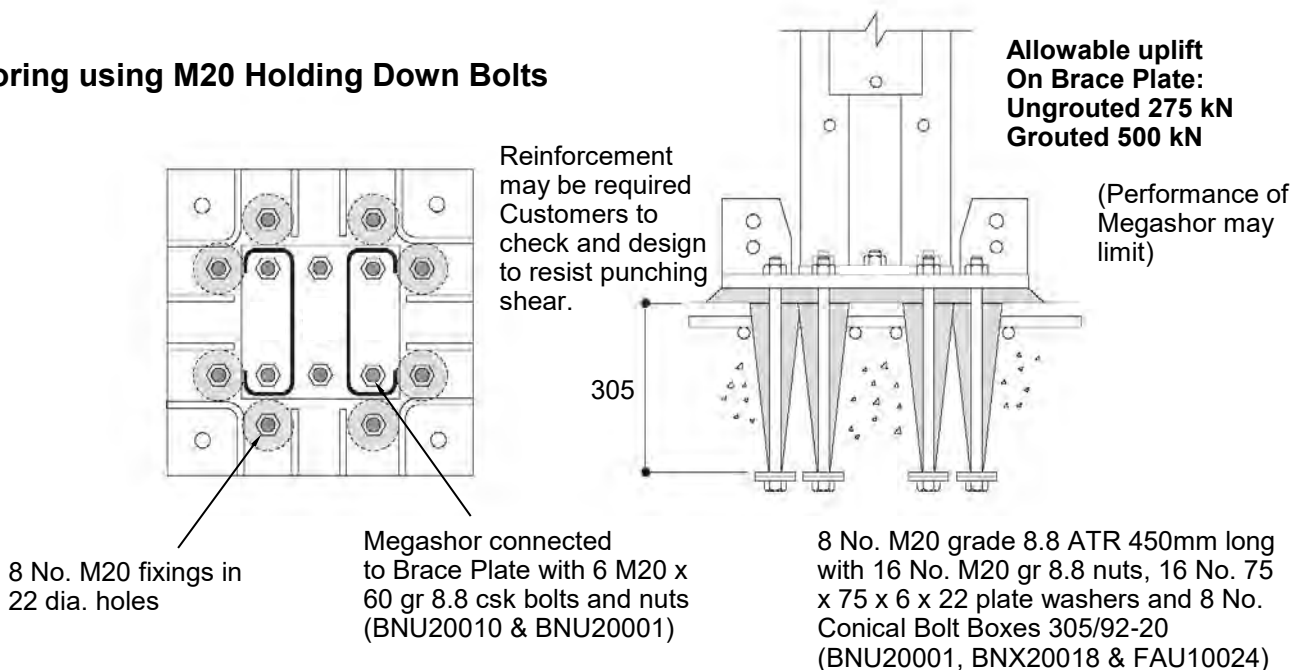
## 1.4.14. Brace Plate as a Holding Down Plate

The holes in the unit may be used to anchor the Megashor structure down to a foundation. Allowable Working Loads in tension vary with the bolting and grouting configuration.

### Anchoring using M24 Holding Down Bolts



### Anchoring using M20 Holding Down Bolts



**Note:** Concrete cube strength shall be a minimum of 30N/mm<sup>2</sup> prior to application of load.



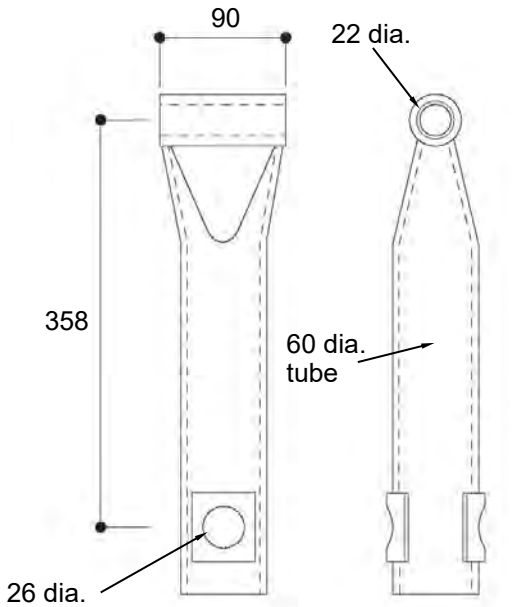
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

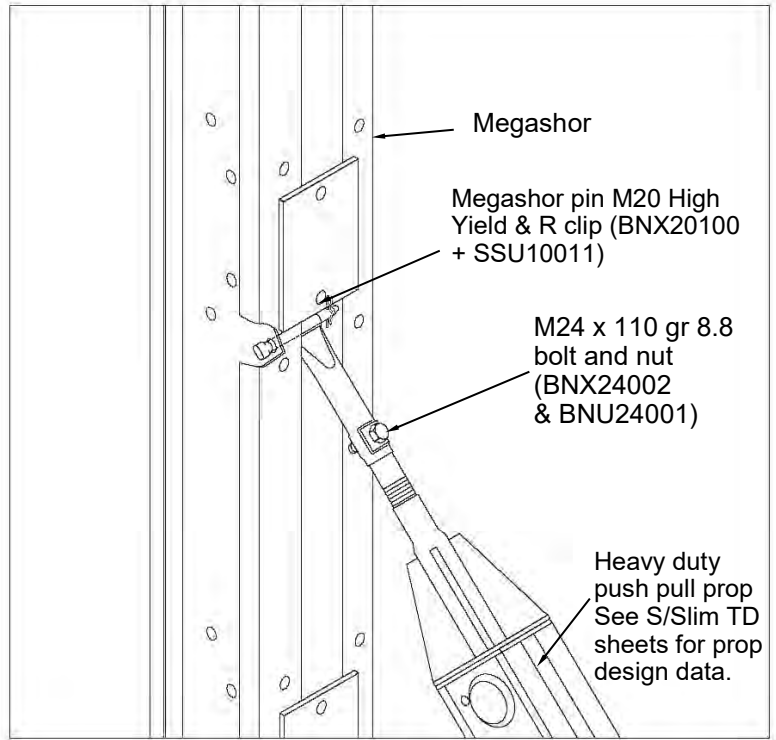


## 1.5.1. Prop Tube End Link (SSU10013) weight = 2.88 kg

Used to connect Super Slim Push Pull Props to Megashor shafts.

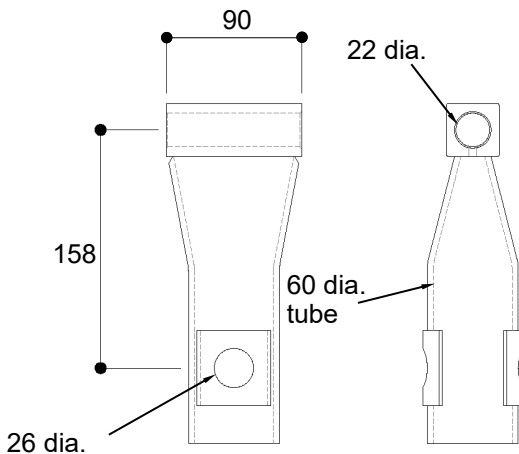


For Max Allowable Working Load see graph (below)



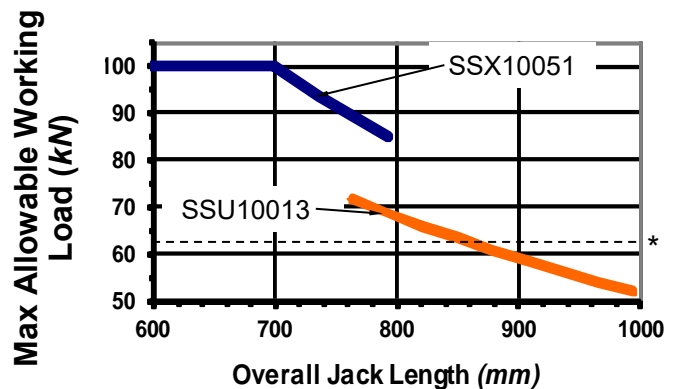
## 1.5.2. Short Prop Tube End Link (SSX10051) weight = 1.77 kg

Used to connect Super Slim Push Pull Props to Megashor shafts when compression loads greater than can be provided by the above item are required.  
Connection to Megashor leg and Superslim Jack as detailed above



For Max Allowable Working Load see graph (right)

## 1.5.3 Tube End Link Loading Graph



\* Note: Capacity of Prop Tube End Link limited by bearing on Megashor to 68kN

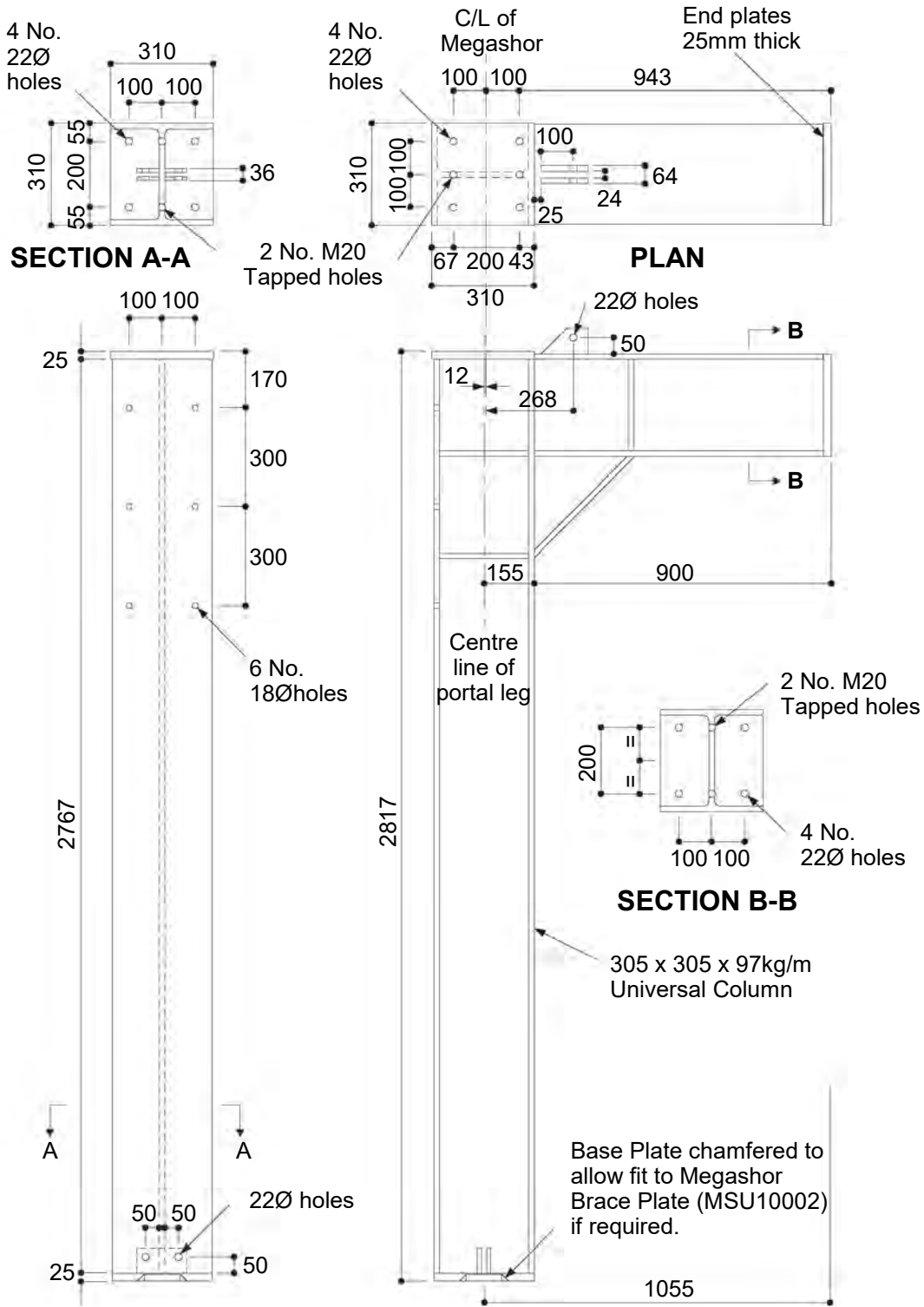
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



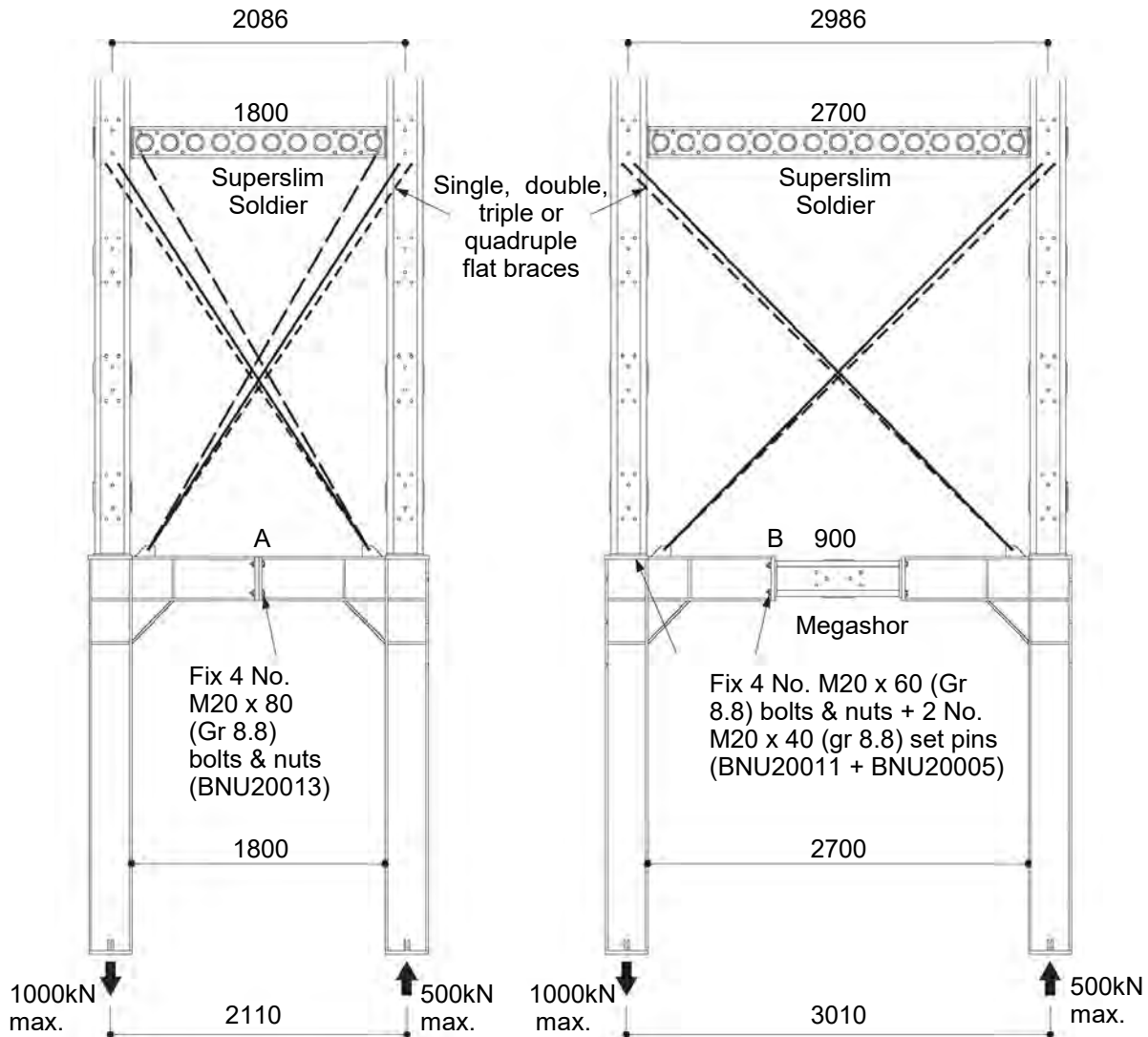
## 1.5.4. Megashor Half Portal Frame (MSX10013) weight = 454 kg

Used with Megashor in façade retention schemes where pedestrian access is required beneath the support framework. For application details refer to item 2.4.

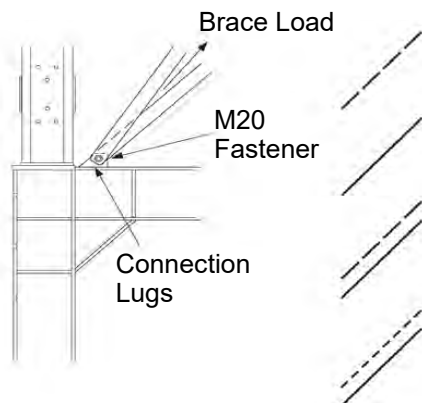


# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



Maximum bending moment capacity at **A** = 44 kNm  
 Maximum bending moment capacity at **B** = 66 kNm



**Brace Connection**

**Brace Loads**

Braces	Brace Max Load	Bolt at Connection	Code
1 No. 60 x 8 flat between lugs	30 kN	M20 x 90 (Gr. 8.8)	BNX20030+ BNU20001
2 No. 60 x 8 flat outside lugs	62 kN	M20 x 100 (Gr. 8.8)	BNU20015+ BNU20001
2 No. 60 x 8 flat outside + 1 No. 60 x 8 inside lugs	92 kN	M20 x 100 (Gr. 8.8)	BNU20015+ BNU20001
2 No. 60 x 8 outside + 2 No. 60 x 8 inside	124 kN	M20 x 100 (Gr. 8.8)	BNU20015+ BNU20001

Note: capacity of Superslim Soldier ledgers must be checked

# MEGASHOR

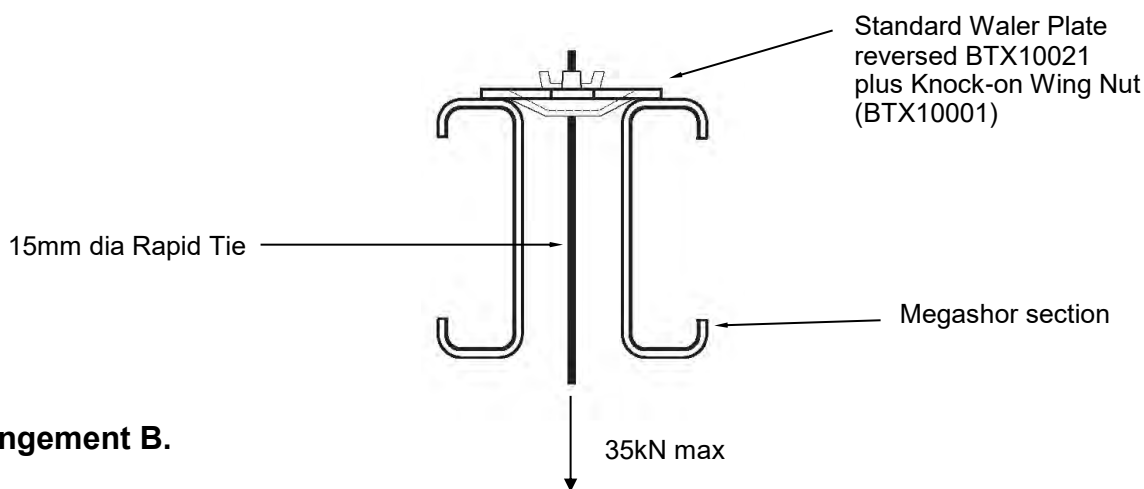
HEAVY DUTY SUPPORT SYSTEM



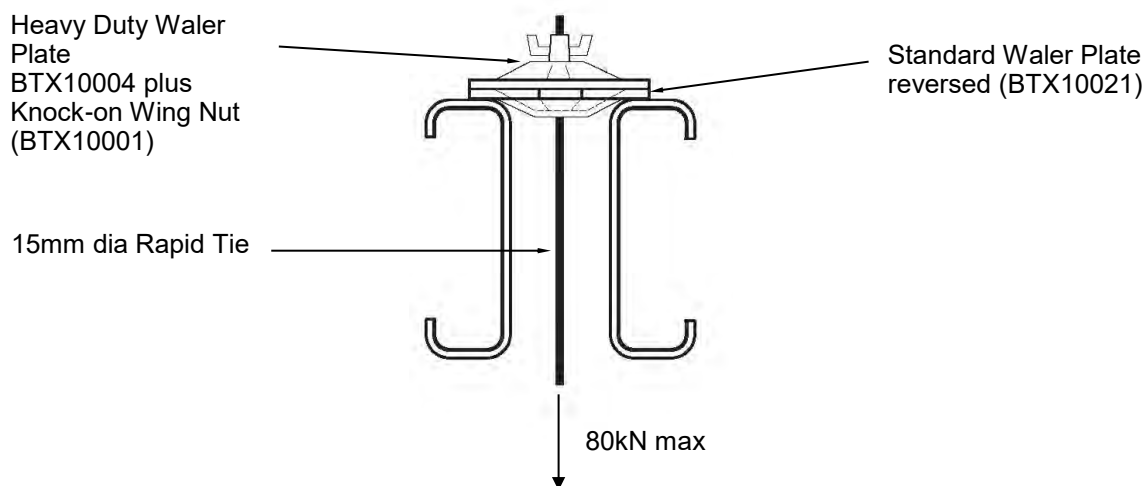
## 1.5.5. Megashor with RMD Kwikform Tie Systems

Allowable Working Loads for ties with various arrangements of waler plate are as below.

### Arrangement A.



### Arrangement B.



# MEGASHOR

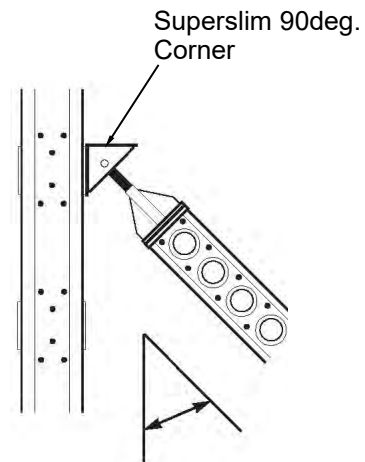
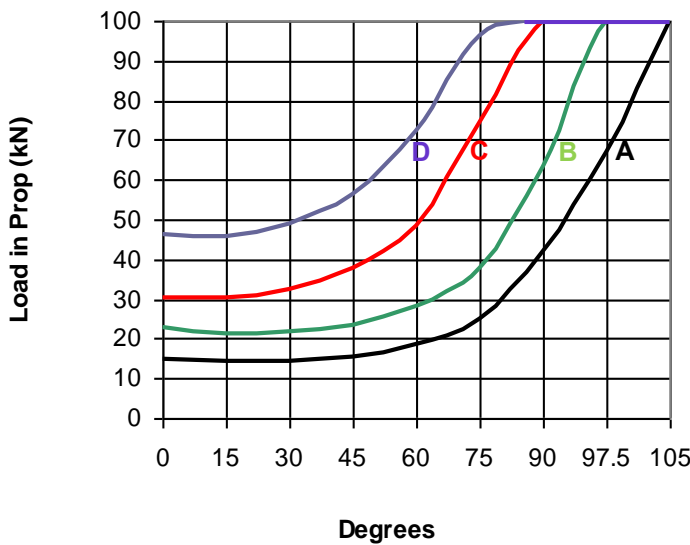
HEAVY DUTY SUPPORT SYSTEM



## 1.5.6. Superslim 90 degree Corner (SSU10003) weight = 8.66kg

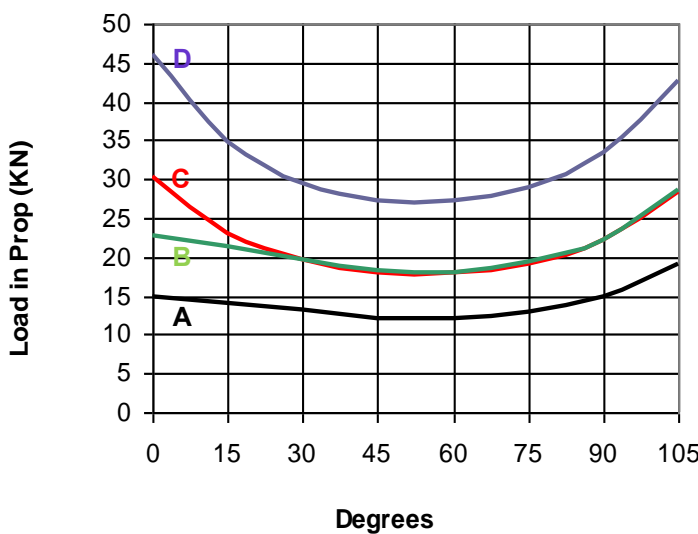
When Prop Corner Angles are bolted to batten plates or webs of Megashor shafts to enable connection of Super Slim Push-pull Props, the Push-pull Prop axial load is restricted to the values within the envelopes below.

**Prop In Compression**



Angle between Push-pull Prop and Megashor

**Prop In Tension**



- Web - Standard Connection (A)**
- Batten Plate - Standard Connection (B)**  
2 No. M16x40 8.8 Set Pins (BNU16007)  
2 No. M16 Hexagon Nuts (BNU16001)
- Web - Stiffened Connection (C)**
- Batten Plate - Stiffened Connection (D)**  
2 No. M16x60 8.8 Bolt & Nut (BNU16009)  
2 No. Megashor Washers (BNX20023)

E.g. for a Prop connected to the batten plate in tension at an angle to the Megashor shaft of 45 degrees, the Allowable Working Load is 18kN for a plain and 27kN for stiffened connection.

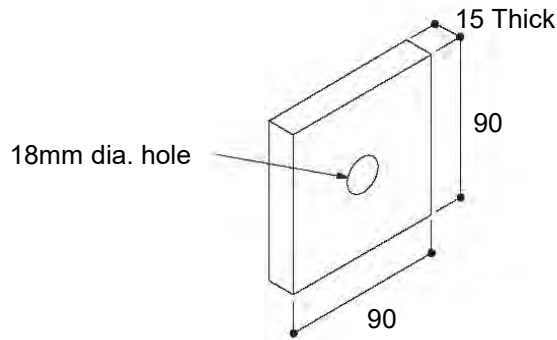
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.5.7. Megashor Plate Washer (BNX20023) weight = 0.92kg

2 No. may be used with M16 x 60 grade 8.8 bolts and nuts to stiffen Super Slim to Megashor connection.



Code	Description	Weight
BNX20023	Megashor Plate Washer	0.92 kg
BNU16009	Bolt/Nut M16 x 60 Gr. 8.8 ZP	0.11 kg
BNU16001	M16 Hexagon Nut - Gr 8.8 ZP	0.03 kg

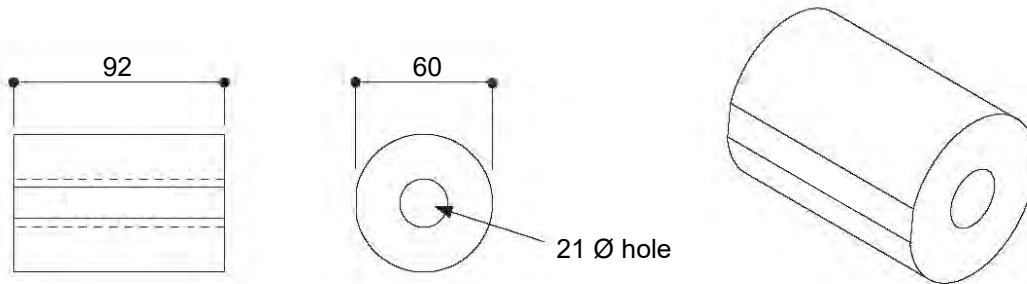
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

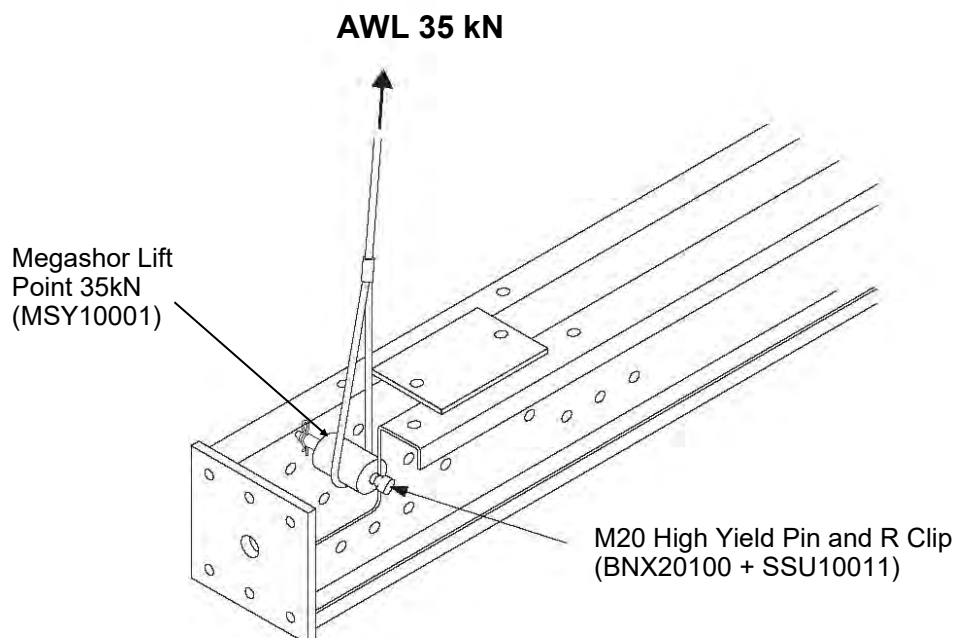


## 1.5.8. Megashor Lift Point 50kN (MSY10001) weight = 1.79 kg

Used to provide a dedicated lifting point for Megashor structures.



Code	Description	Weight
MSY10001	Megashor Lift Point 35kN	1.79 kg
BNX20100	Megashor Pin M20 High Yield	0.40 kg
SSU10011	Superslim R Clip 5 x 100mm	0.03 kg



# MEGASHOR

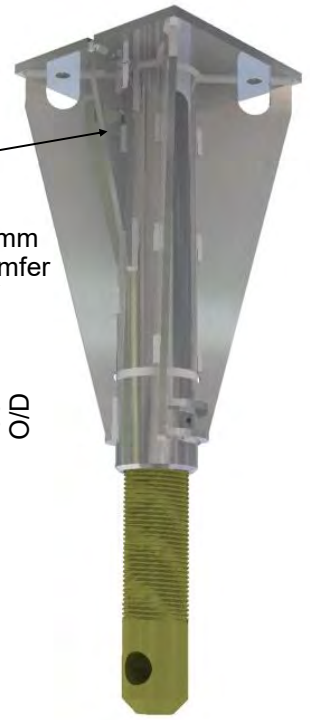
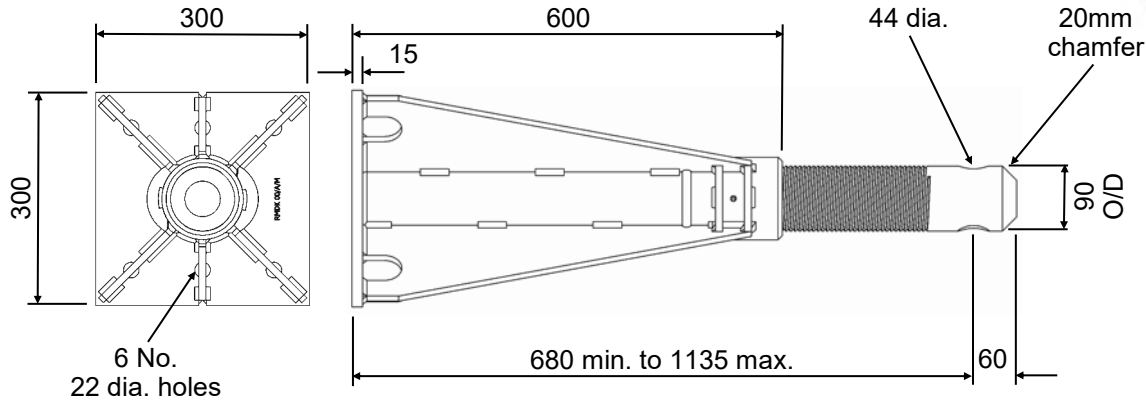
HEAVY DUTY SUPPORT SYSTEM



## 1.5.9. Megashor Prop Jacks

Used in pairs at the end of Megashor Push Pull Props.

(Left and right hand thread units can be identified by the welded on 'L' or 'R' on the smaller triangular plates).

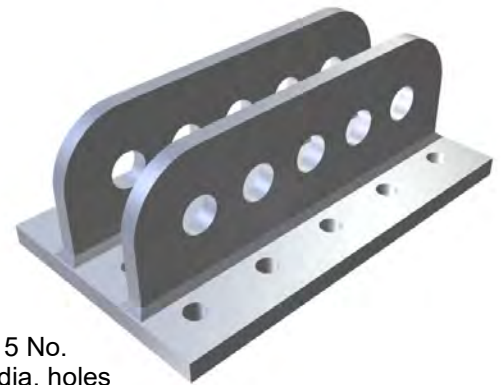
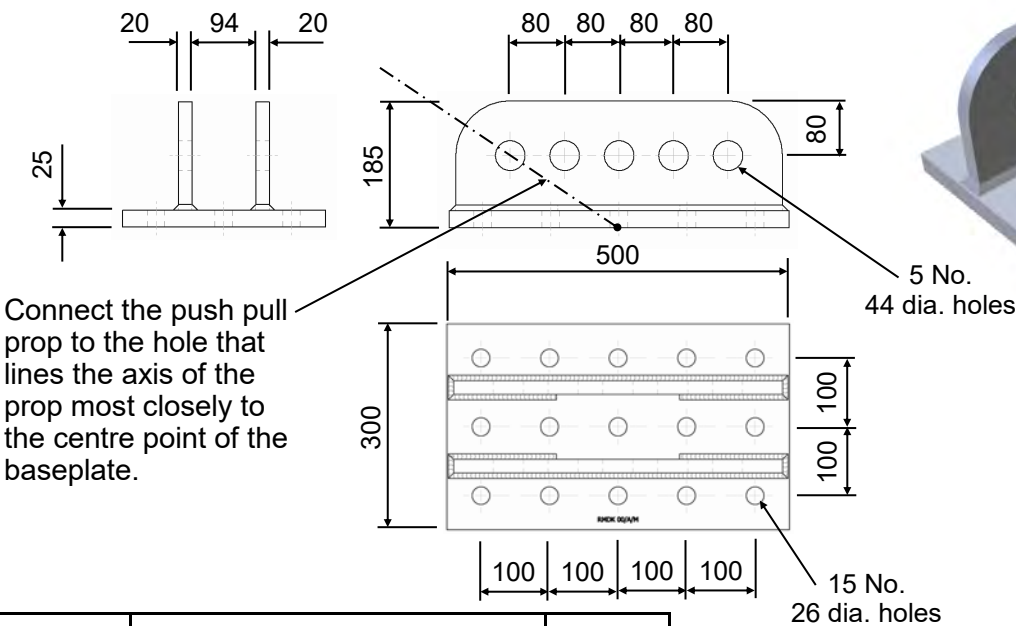


Allowable Working Load  $\pm$  500kN

Code	Description	Weight
MSU10008	Megashor Push Pull Jack R/H	74.8 kg
MSU10009	Megashor Push Pull Jack L/H	74.7 kg

## 1.5.10. Megashor Push Pull Tilt Plate (MSU10007) weight 48.9kg

Used to connect a Push Pull Prop to a flat surface.



Allowable Working Load  $\pm$  500kN

Code	Description	Weight
MSU10007	Megashor Push Pull Tilt Plate	48.9 kg
BNU42001	M42x200 gr8.8 Bolt ZP (Short Thread)	2.76 kg
BNU42002	M42 Nut gr8	0.59 kg



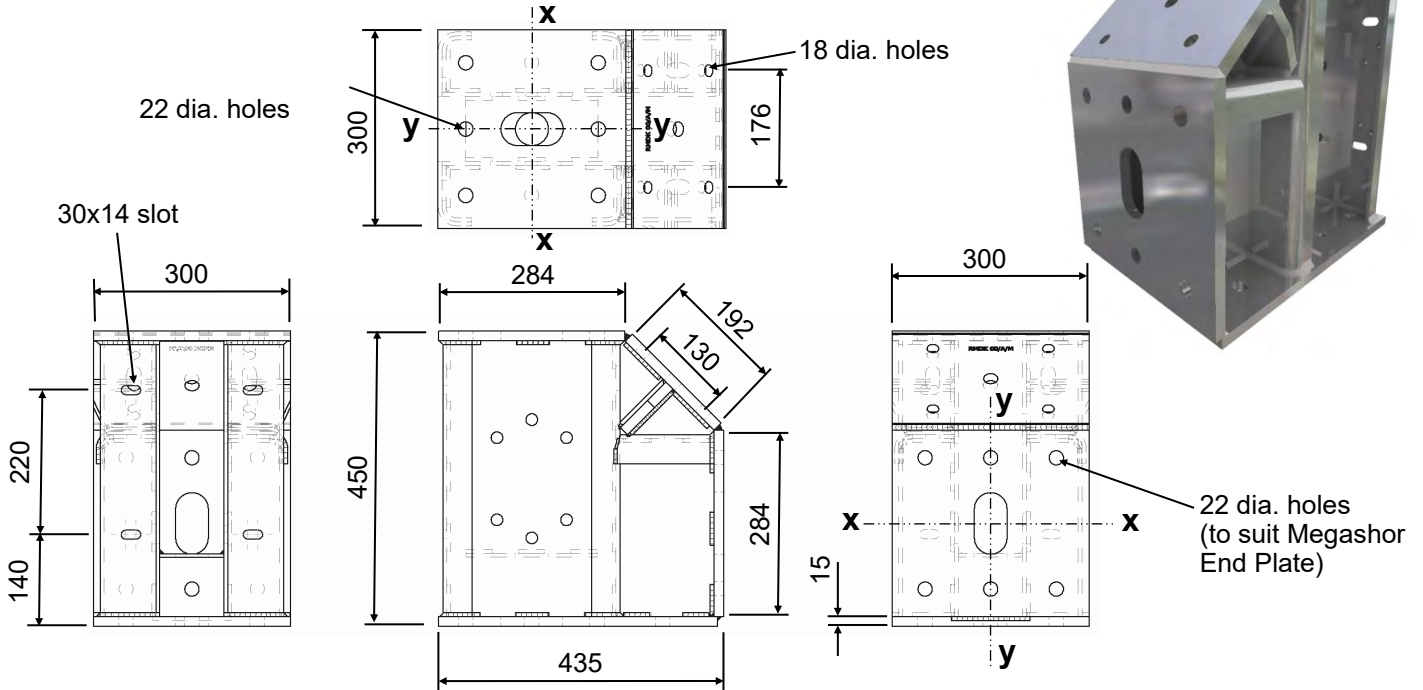
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.5.11. Megashor 90 Degree Corner (MSU10005) weight 68.8kg

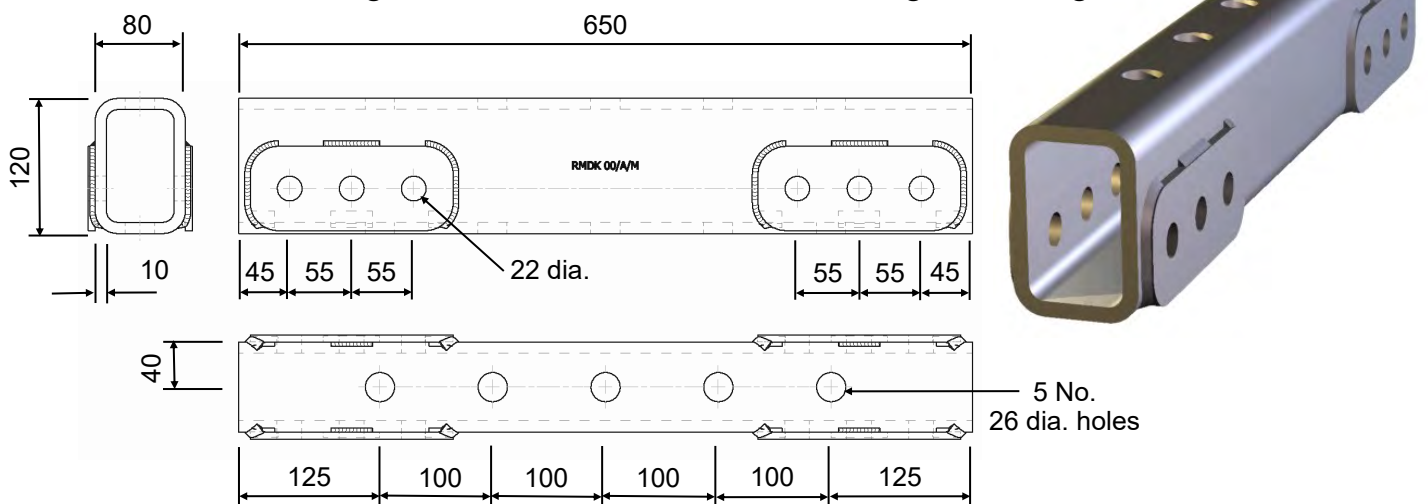
Used to connect Megashor Legs at right angles.



**AWL: 500kN Tension. 1000kN Compression. BM at Joint: x-x axis 66kNm, y-y axis 52kNm**

## 1.5.12. Megashor Push Pull Adaptor (MSU10006) weight 19.0kg

Used to connect Megashor Push Pull Tilt Plate to Megashor Leg.



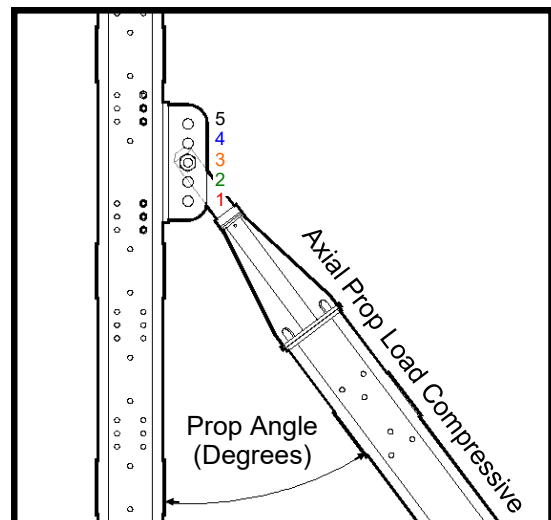
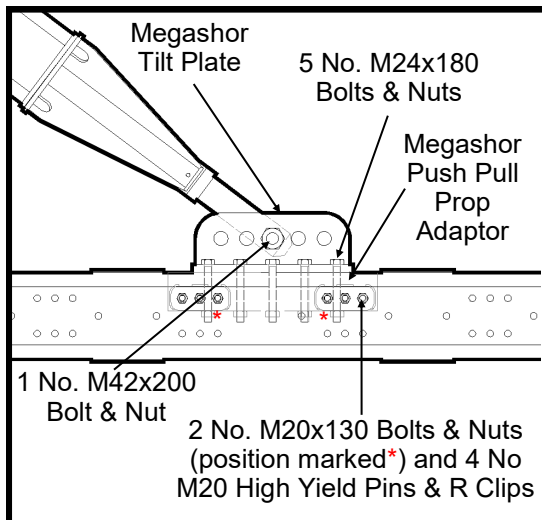
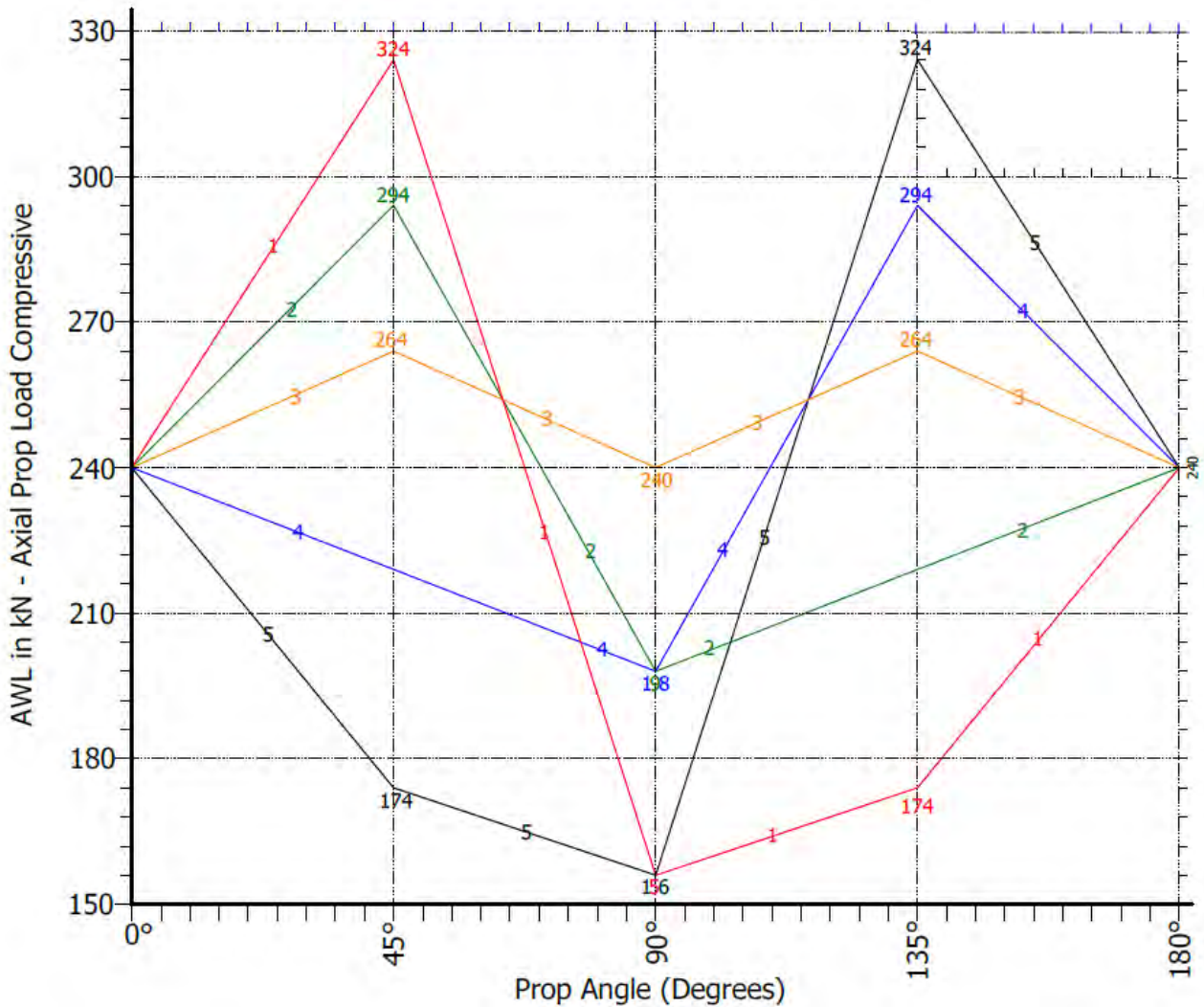
Code	Description	Weight
MSU10006	Megashor Push Pull Adaptor	19.0 kg
BNU20016	M20x130 Bolt gr8.8 BZP	0.40 kg
BNU20001	M20 Hex Nut gr8 BZP	0.06 kg
BNU24008	M24x180 gr8.8 BZP Hex Bolt	0.73 kg
BNU24001	M24 Hex Nut gr8 BZP	0.06 kg
BNX20100	Megashor Pin M20 High Yield	0.40 kg
SSU10011	R Clip	0.03 kg

**Can only be used with Mk2 Megashor**

**For Allowable Working Load of connected Megashor Tilt Plate and Push Pull Props see graph on sheet 58**

## 1.5.13. Allowable Working Loads in Megaprop Bracket Assembly

When used with Megashor Push Pull Prop Adaptor - compression loads shown



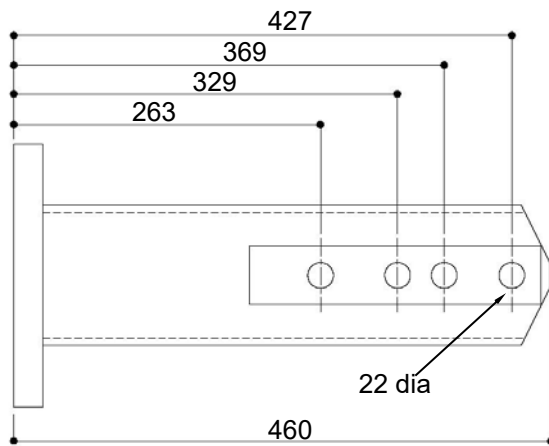
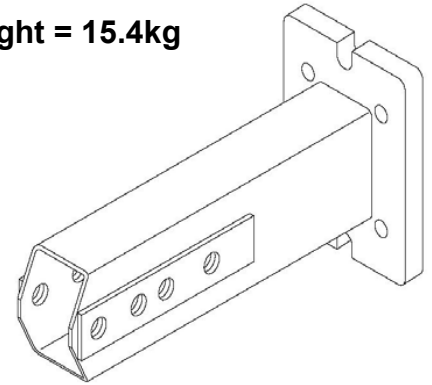
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

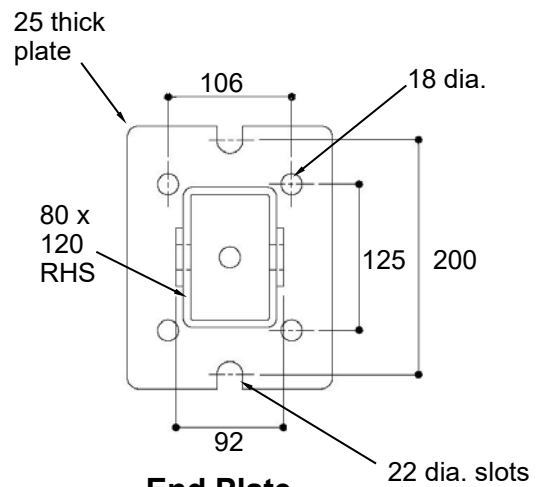


## 1.5.14. Megashor Truss Connector (MSX10027) weight = 15.4kg

Used to make Megashor trusses primarily in façade retention applications.



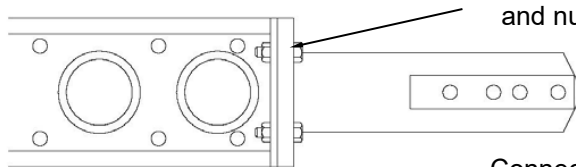
Elevation



End Plate

The unit connects to either Superslim Soldiers or Megashor End Plates.

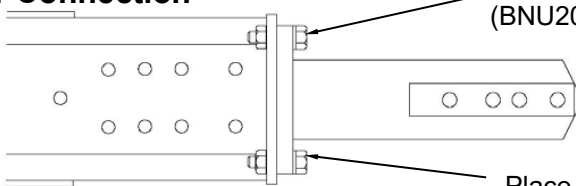
### Superslim Connection



Connect with 4 No. M16 x 60 grade 8.8 bolts and nuts (BNU16009, BNU16001)

**AWL ± 100 kN \***

### Megashor Connection



Connect to central holes in Megashor and plate with 2 No. M20 x 80 grade 8.8 bolts and nuts and 2 No. M20 round washers (BNU20013, BNU20001 + BNU20003)

**AWL ± 100 kN \***

Place washer under head of bolt



Note: \* Bearing in Megashor web holes restricts AWL to ± 68kN

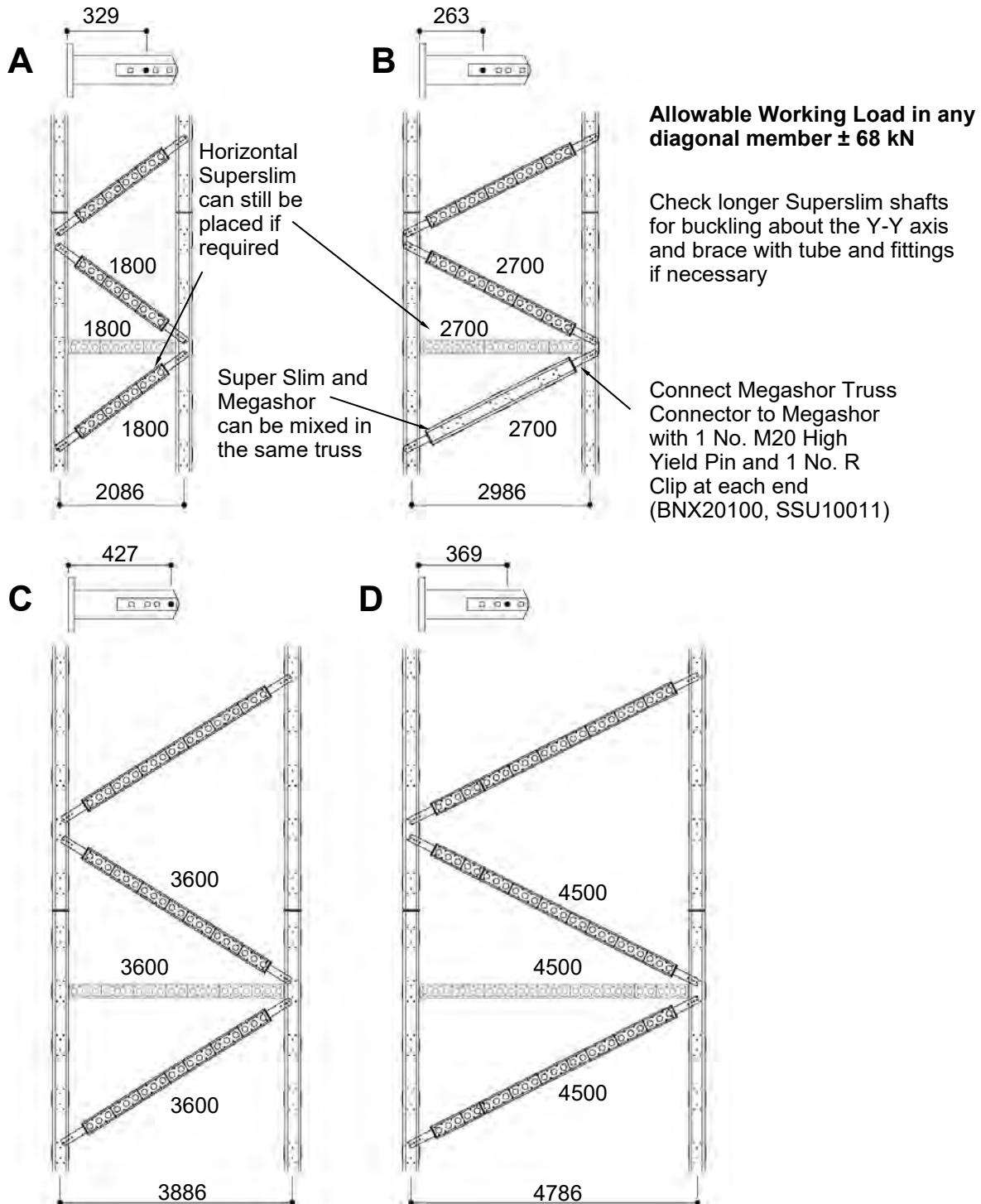
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.5.15. Megashor Truss Connector – Applications

Using the different holes in the unit, Megashor trusses of various depth can be formed.



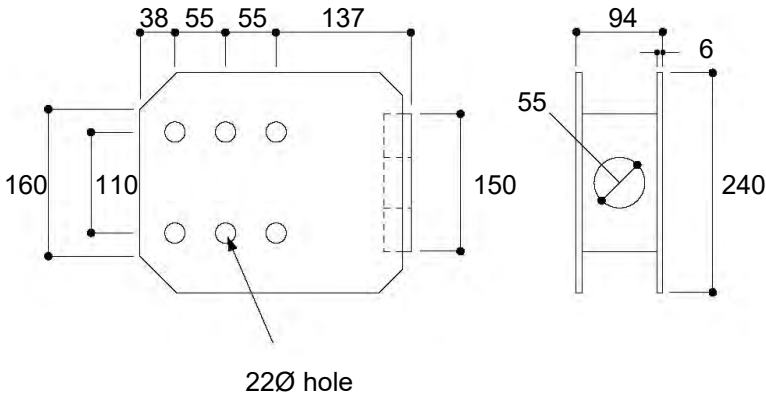
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



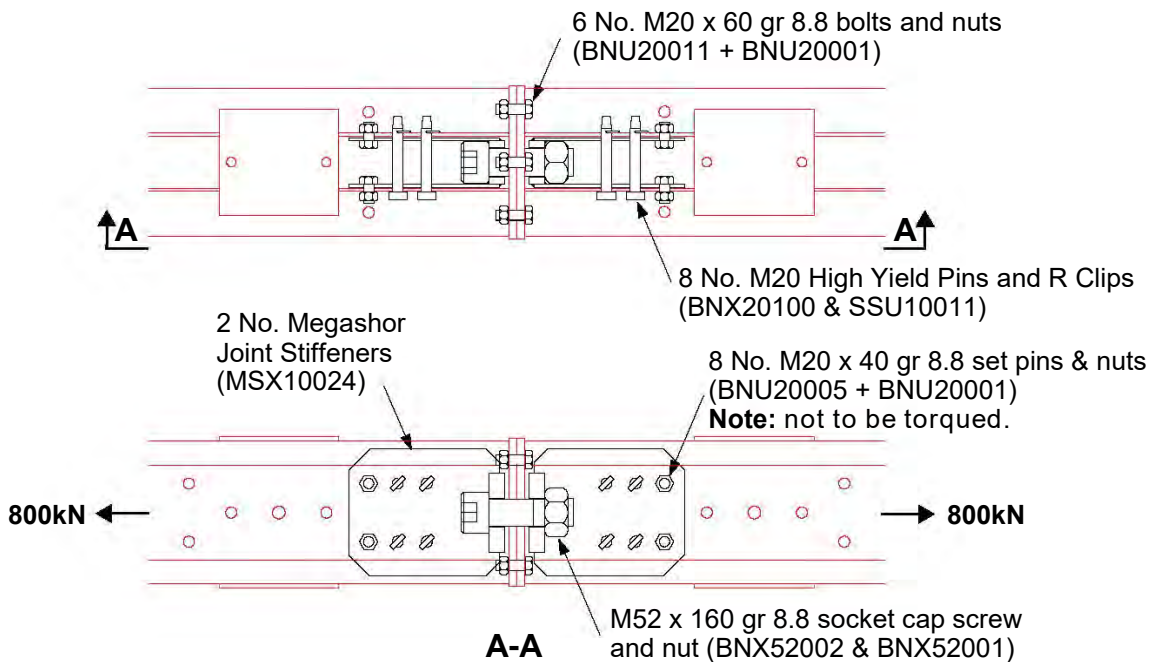
## 1.5.16. Megashor Joint Stiffener (MSX10024) weight = 8.40 kg

Used in pairs to increase the tensile capacity of a joint between Mk2 Megashor sections.



Code	No.	Description	Weight
MSX10024	2	Megashor Joint Stiffener	8.52 kg
BNX52002	1	M52 x 160 Grd 8.8 Socket Screw	3.00kg
BNX52001	1	M52 Hex Nut 8.8 Galv	1.09 kg
BNU20011	6	Bolt – M20 x 60 gr 8.8	0.28 kg
BNU20005	8	M20 x 40 Set Pin gr 8.8	0.15 kg
BNU20001	14	M20 Hex Nut	0.06 kg
BNX20100	8	Megashor M20 High Yield Pin	0.40 kg
SSU10011	8	Superslim R Clip 5 x 100mm	0.03 kg

Items for full assembly as shown below



**Note: in tensile applications all fasteners joining shafts end to end shall be torqued to 300 Nm.**

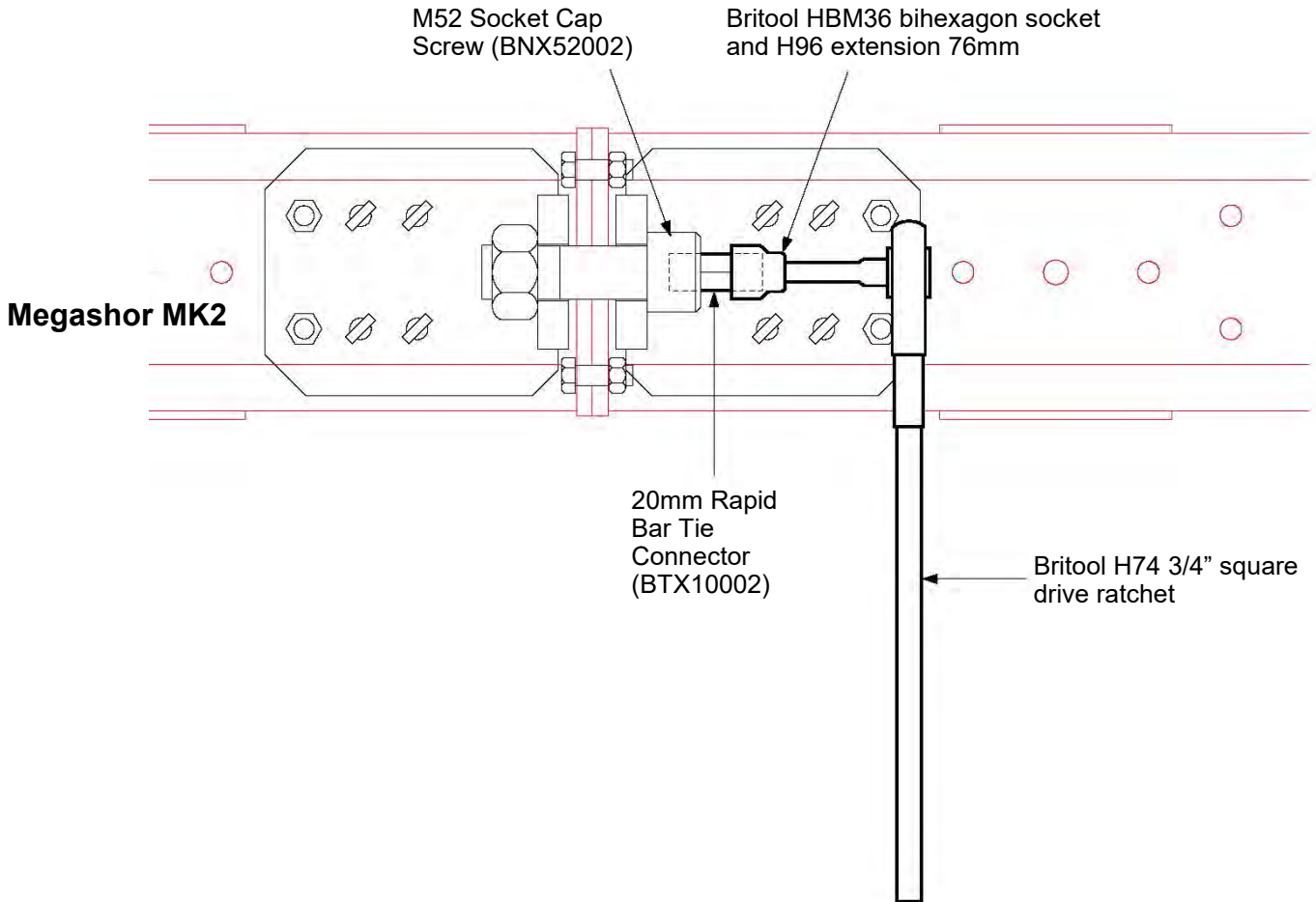
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.5.17. Megashor M52 Tools

Used to tighten M52 gr 8.8 Socket Cap Screws on Megashor MK2



Britool is a brand name of Facom Tools, available from:

**Facom UK Limited**, Walsall Road, Cannock, Staffordshire WS11 3JR, UK  
Tel: +44 (0) 1922 702000 Fax: +44 (0) 1922 702087

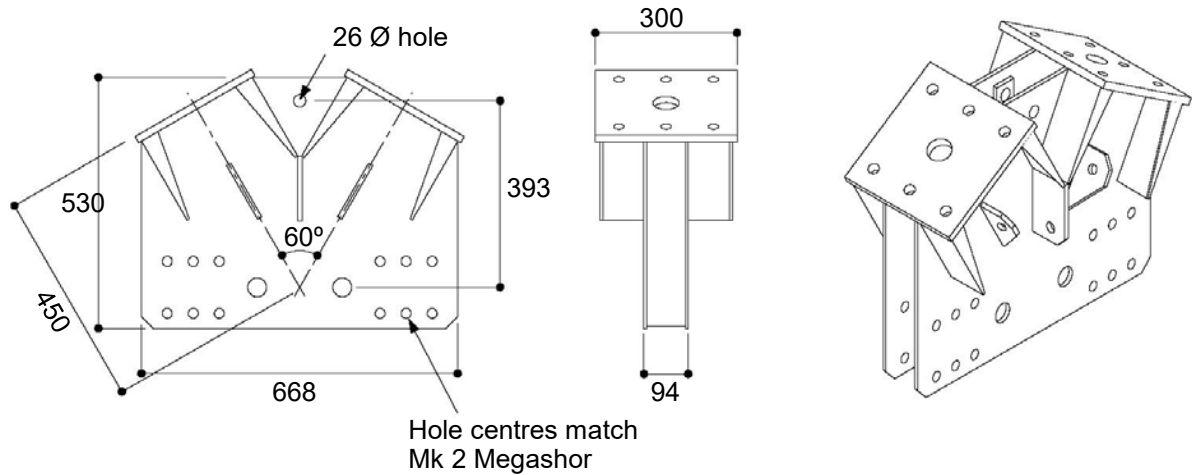
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 1.5.18. Megatruss Node (MSX10030) weight = 67.3 kg

Used with Mk 2 Megashor sections to make Megatruss girders

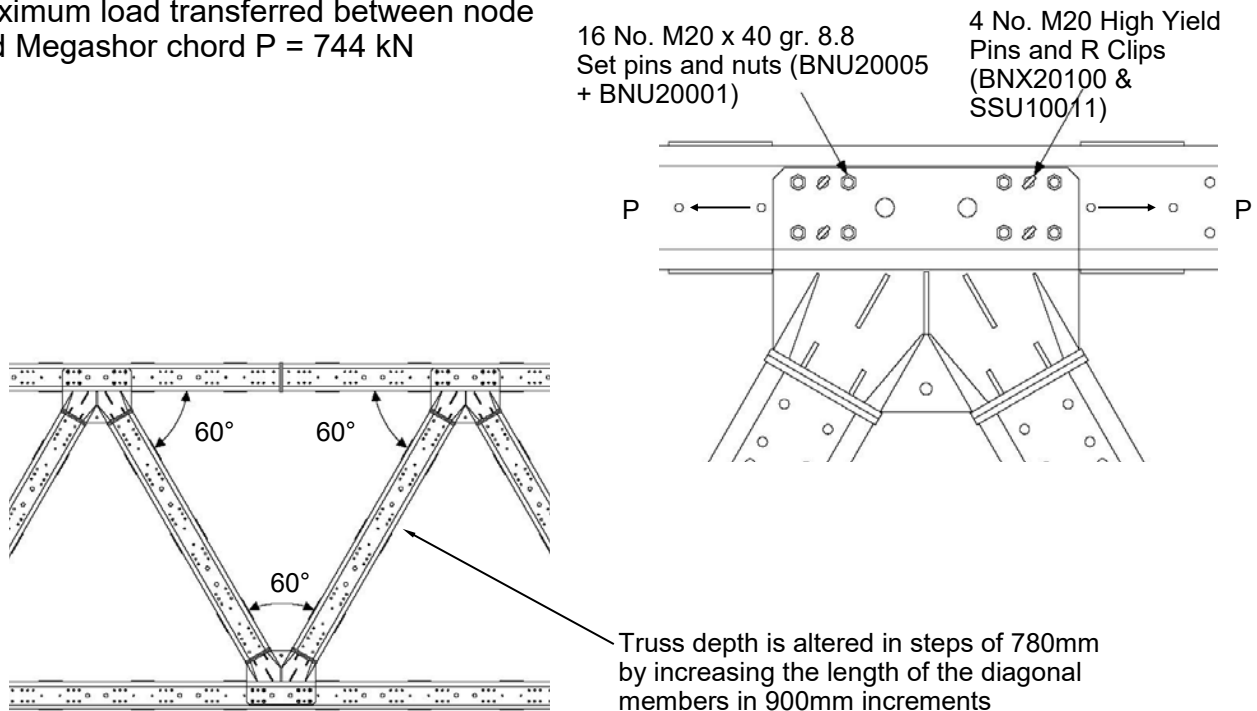


## 1.5.19. Megatruss Node Connections – Node to Chords

Maximum load transferred between node and Megashor chord  $P = 744 \text{ kN}$

16 No. M20 x 40 gr. 8.8  
Set pins and nuts (BNU20005  
+ BNU20001)

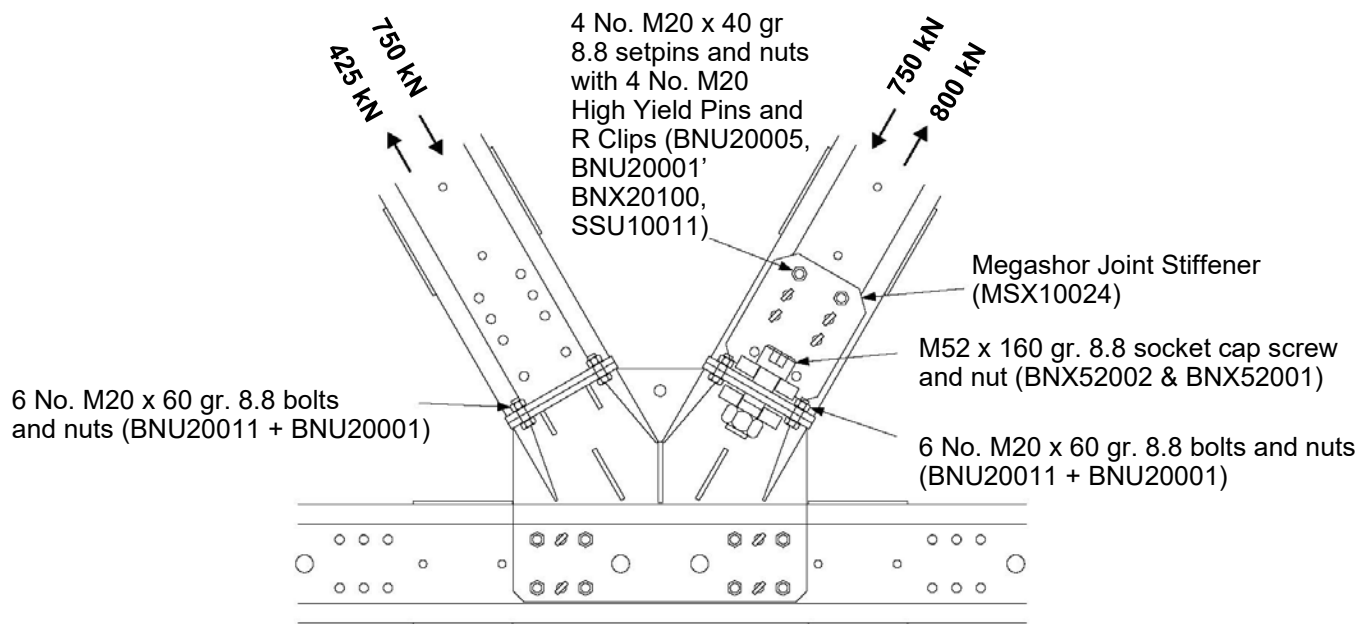
4 No. M20 High Yield  
Pins and R Clips  
(BNX20100 &  
SSU10011)



## 1.5.20. Megatruss Node Connections – Node to Diagonals

Plain connection AWL = 425 kN tension  
750 kN compression

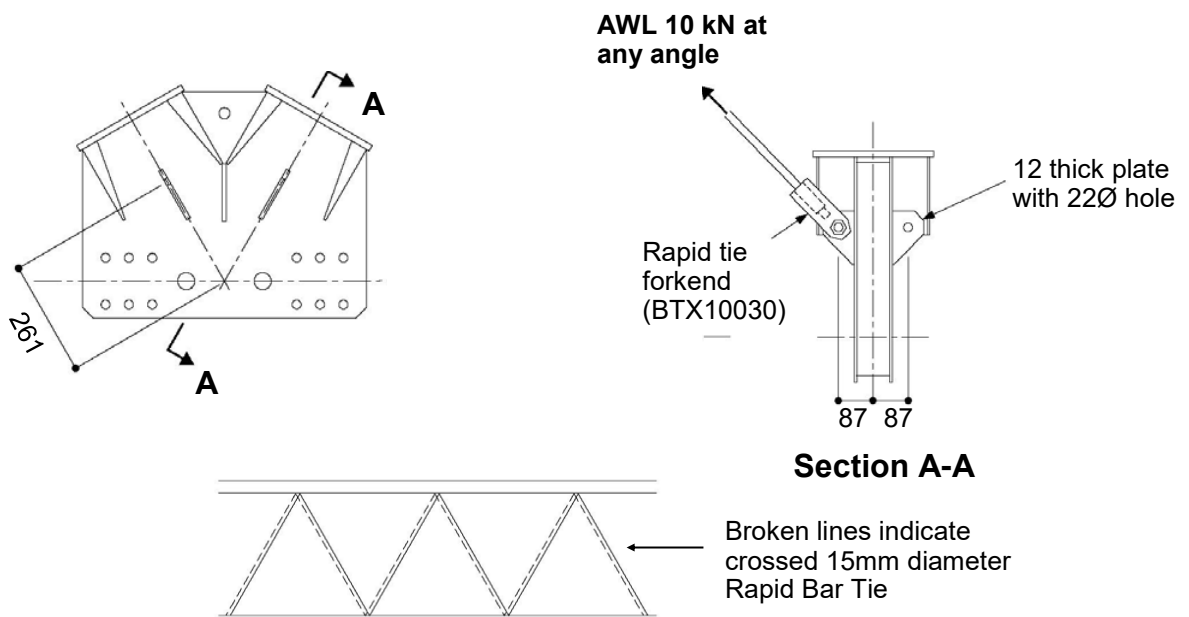
Stiffened connection AWL = 800 kN tension  
750 kN compression



**Note:** The fasteners connecting the diagonals to the node shall be tightened to a torque of 300Nm. See section 1.1 for Allowable Working Loads in Megashor shafts.

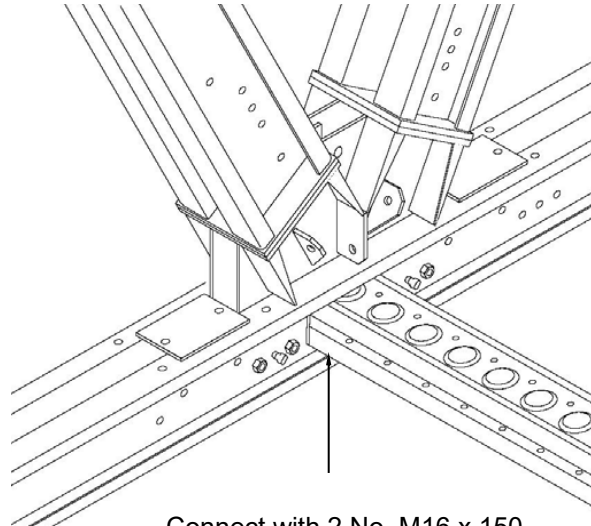
## 1.5.21. Megatruss Node Connections – Node to Cross Brace

Enables 15mm diameter Rapid Bar Tie to be connected.





## 1.5.22. Megatruss Node Connections – Node to Ledger



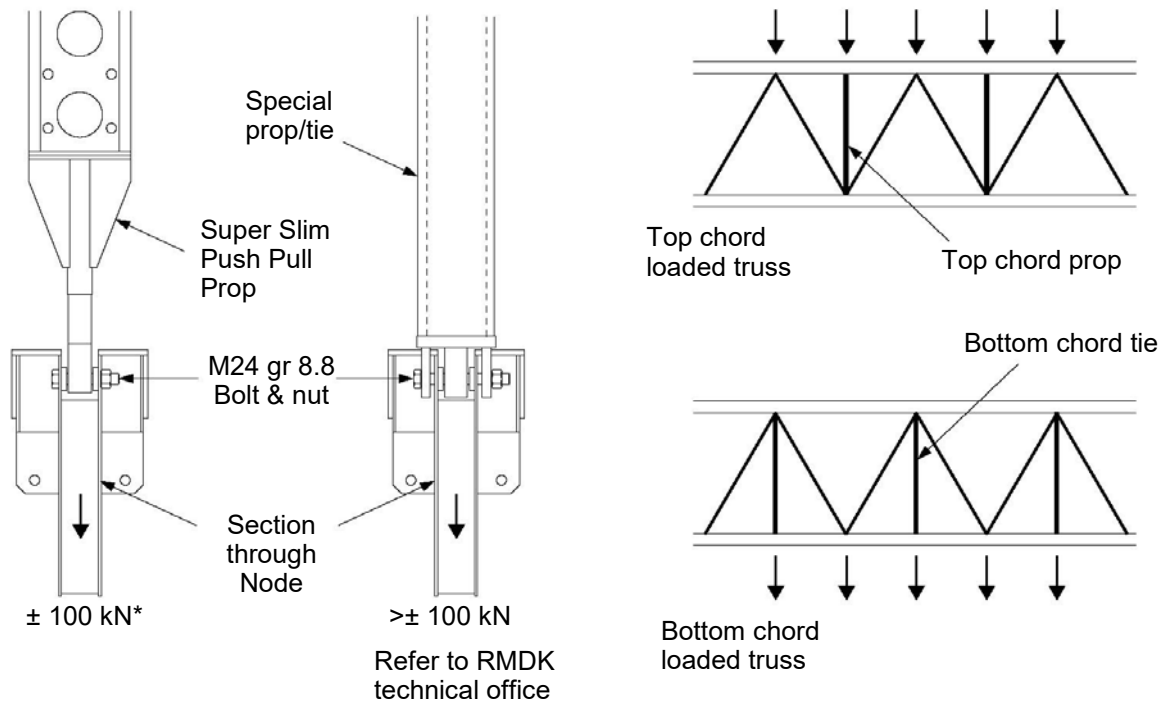
Connect with 2 No. M16 x 150 grade 8.8 bolts and nuts

Superslim Soldiers used as ledgers between trusses

The capacity of the ledgers should be calculated by reference to the Superslim Soldier technical data.

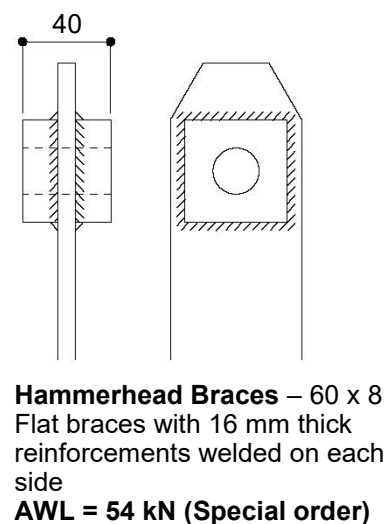
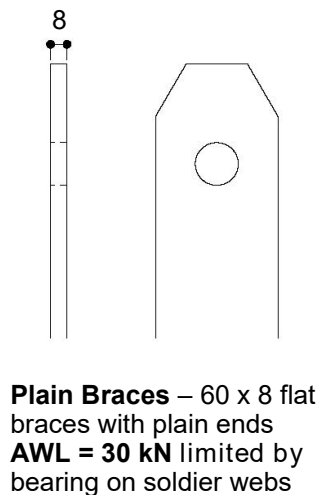
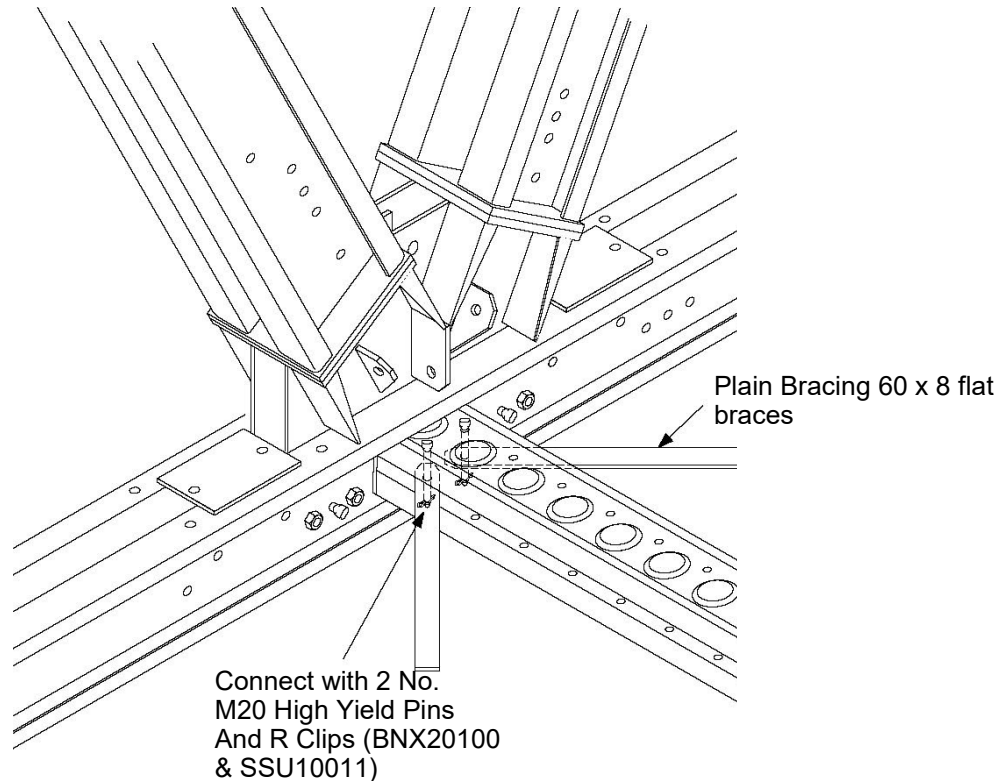
## 1.5.23. Megatruss Node Connections – Node to Prop/Tie

Super Slim Heavy Duty Push Pull Props may be used to prop/tie trusses for loads up to 100 kN\*. For loads in excess of this a specially fabricated prop/tie is required, refer to RMD Kwikform Technical Office.



\* See Super Slim Soldier technical data for performance envelope for Soldier props

## 1.5.24. Megatruss Node Connections – Ledger to Plain Brace



**Higher Loads** – Loads up to 100 kN may be carried into a single 21 diameter hole in the Soldier shaft by use of M20 high yield round washers welded to the webs of the Soldier – refer to RMD Kwikform for details. The maximum load in the body of a 60 x 8 flat brace is 82 kN. For higher loads use 60 x 10 braces.

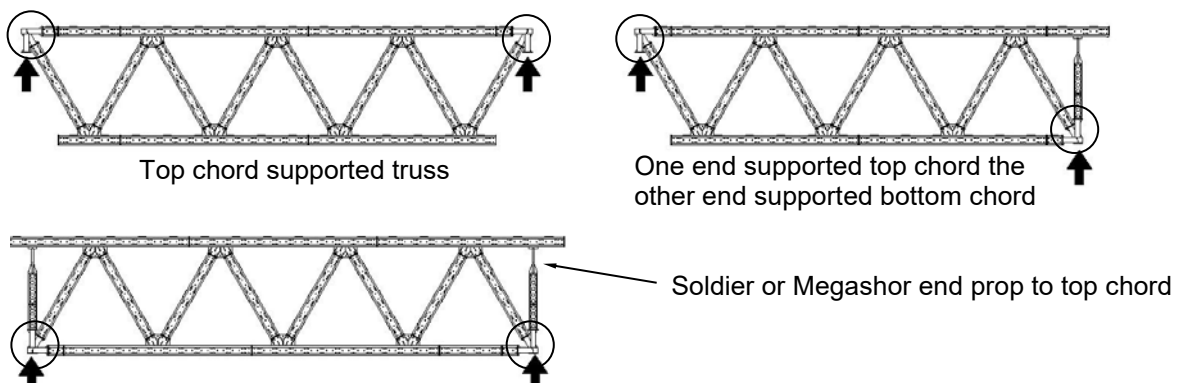
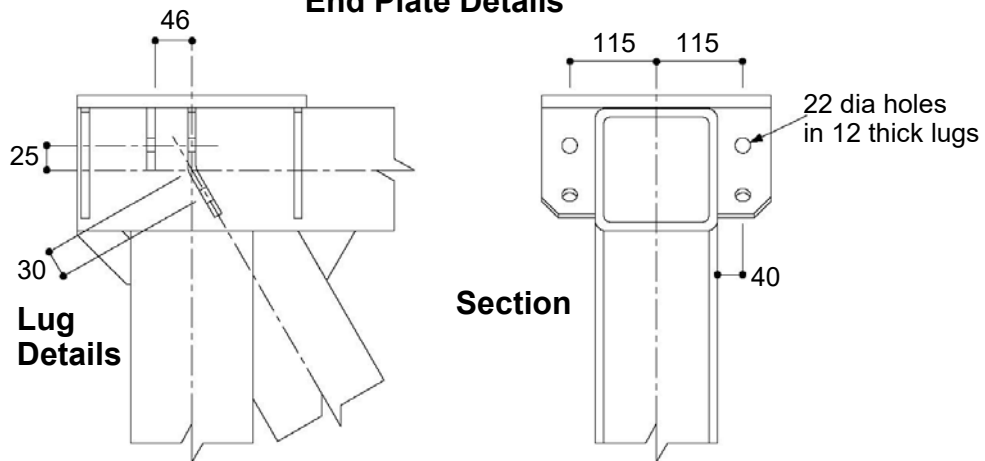
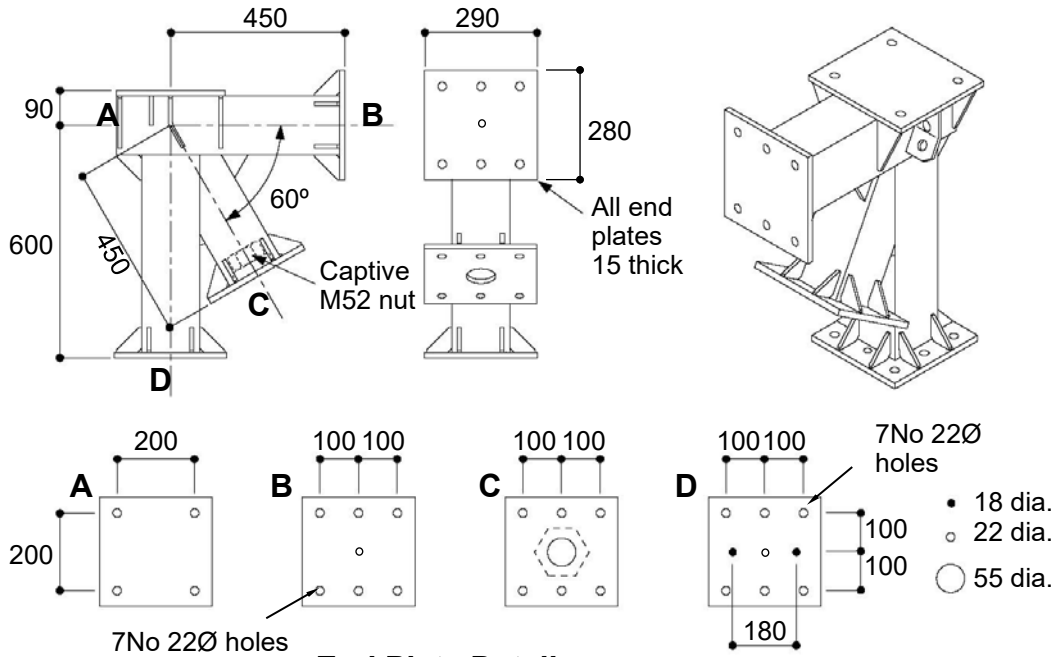
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

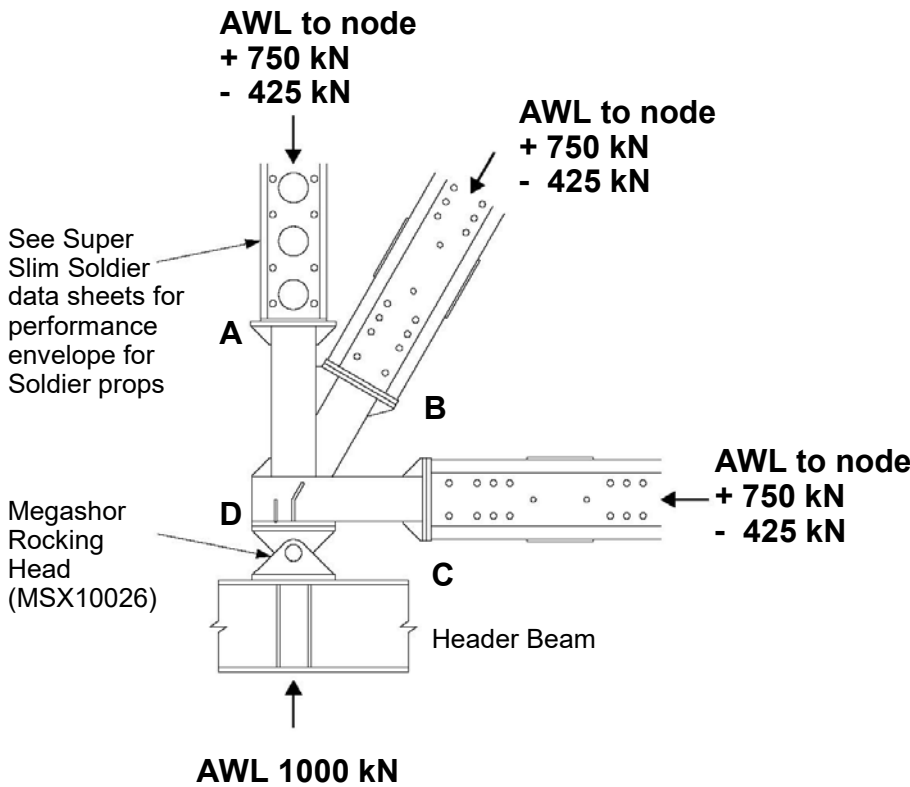


## 1.5.25. Megatruss End Bearer (MSX10028) weight = 112 kg

Used for support at the end of Megatrusses.



## 1.5.26. Megatruss End Bearer Connections – Bottom Chord Supported Truss



### Connection at A

Soldier: 2 No. M16 x 40 gr. 8.8  
Set pins and nuts (BNU16007 & BNU16001)  
Megashor: 6 No. M20 x 60 gr 8.8 bolts and nuts (BNU20011)

### Connection at B & C

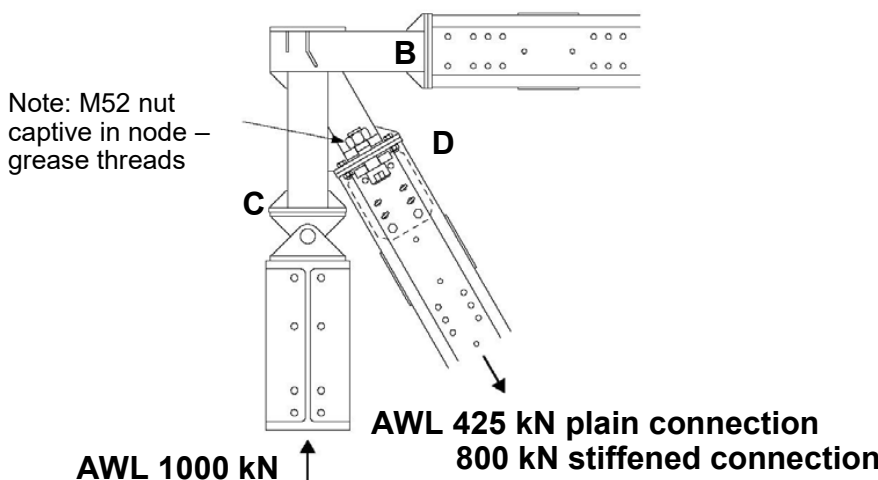
6 No. M20 x 60 gr. 8.8 bolt and nut (BNU20011)

### Connection at D

4 No. M20 x 40 gr. 8.8 set pins & nuts (BNU20005 + BNU20001)

## 1.5.27. Megatruss End Bearer Connections – Top Chord Supported Truss

Torque the fasteners to all tension joints to 300 Nm.



### Connection at B and C

See above

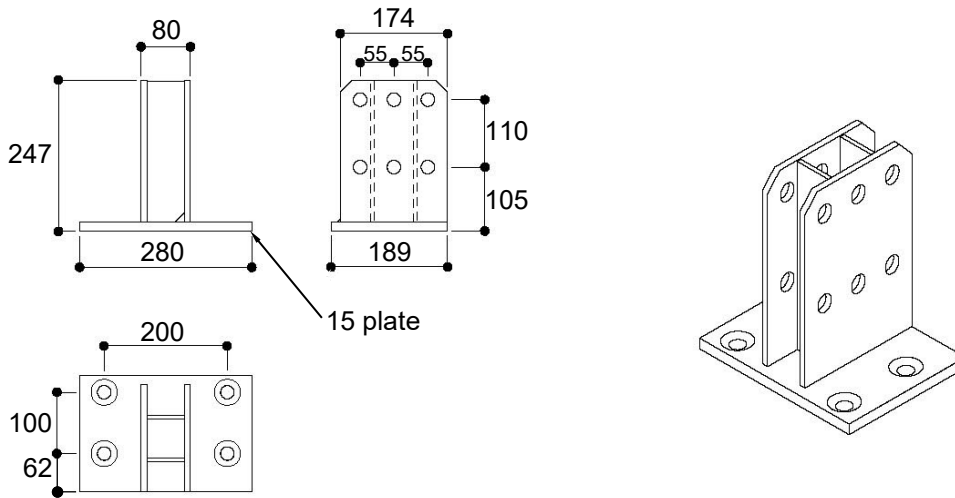
### Connection at D

Plain connection: as B above.  
Stiffened connection:  
6 No. M20 x 60 gr 8.8 bolts and nuts (BNU20011)  
Megashor Joint Stiffener (MSX10024)  
4 No. M20 x 40 gr. 8.8 set pins & nuts (BNU20005 + BNU20001)  
4 No. M20 high yield pins and R clips (BNU20100 & SSU10011)  
M52 x 160 gr. 8.8 socket cap screw (BNX52002)

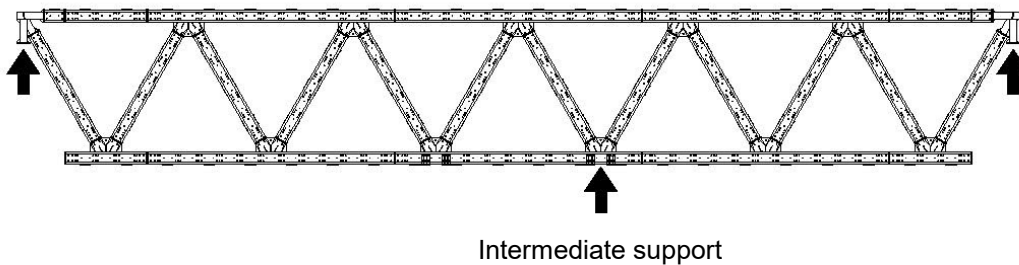
**Note:** In all applications there is a need to provide adequate lateral bracing to the end bays of trusses – refer to RMD Kwikform Technical Office for details.

## 1.5.28. Megatruss Intermediate Bearer (MSX10019) weight = 13.2 kg

Used in pairs with 950mm Megashor beam to provide a support part way along the bottom boom of a truss.

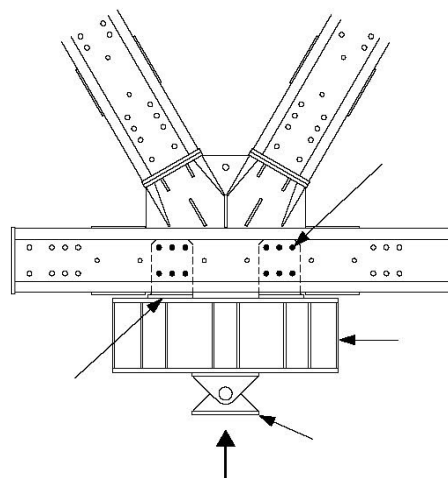


**AWL = 744 kN per pair of bearers**



## 1.5.29. Megatruss Intermediate Bearer Connections

Connect Intermediate Bearers Megashor Header Beam 950r with 8 No. M20 x 60 gr. 8.8 C/SK S.Pins and nuts (Code



Connect intermediate bearers to node and bottom chord with 12 No. M20 high yield pins and R clips

Megashor Header Beam 950mm(MSX10009)

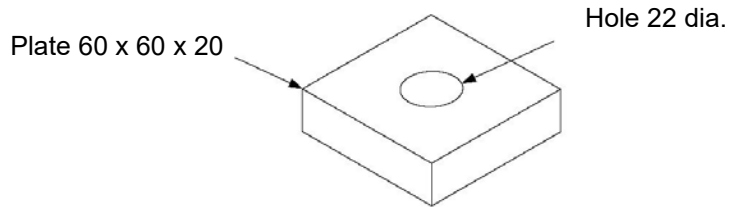
Megashor Rocking Head

**AWL 744 kN**

## 1.5.30. Megashor Chord Spacer (BNX20024) weight = 0.51 kg

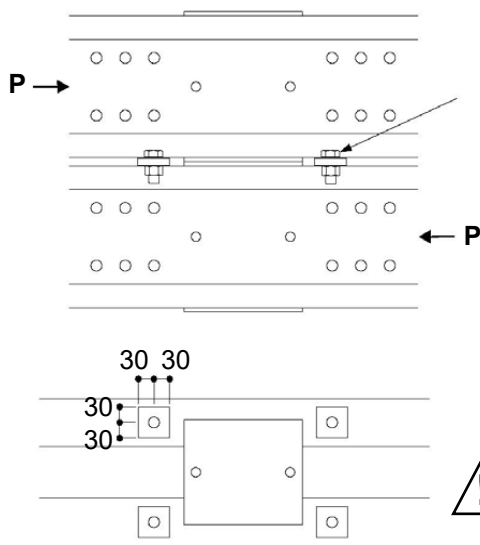
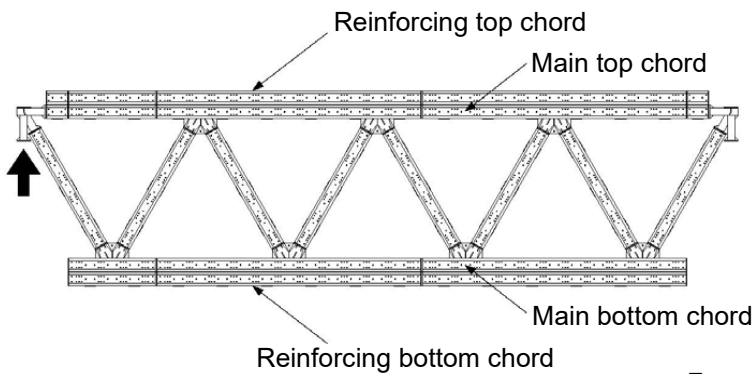
Used to connect a reinforcing chord to the upper or lower beam of a Megatruss.

**Note:** Plate has a shot blasted



## 1.5.31. Megatruss Double Chord Connections – Chord to Chord

Used to transfer shear between main and reinforcing chords.



For each fixing use:  
 M20 x 70 HSFG bolt and nut  
 M20 hardened washer  
 M20 load indicator washer.  
 Install in accordance with manufacturer's specification

### Allowable load transfer P per HSFG bolt:

Paint removed and clean	<b>46kN</b>
Wire brushed galvanised	<b>32kN</b>
Un-wire brushed galvanised	<b>20kN</b>



Note: Remove paint finish to painted Megashor locally as left prior to assembly using HSFG bolts.

**Minimum Area for Paint Removal**

Other methods are available – refer to RMD Kwikform Technical Office

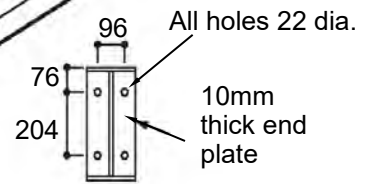
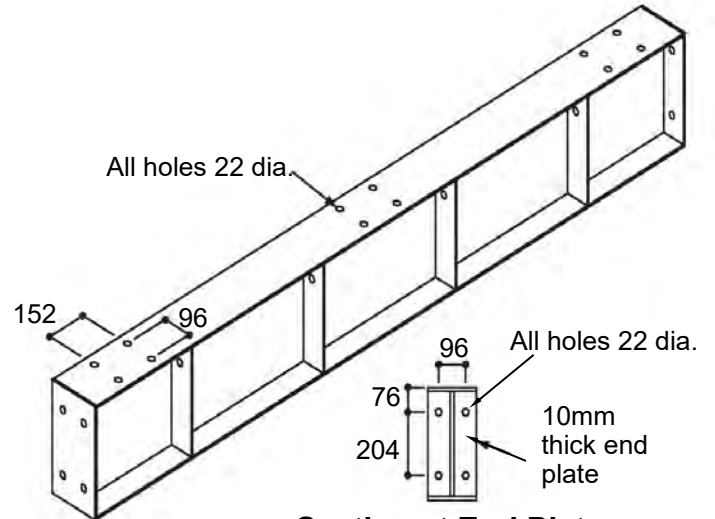
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

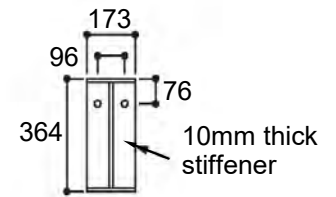


## 1.6.1. 356 x 171 x 67 kg/m UB (grade S275)

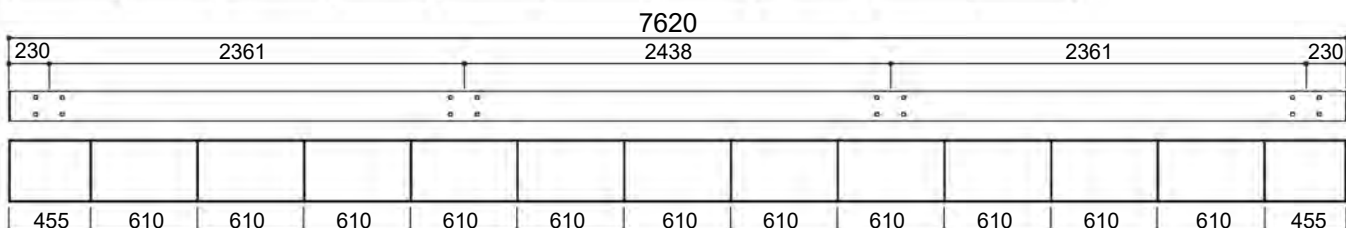
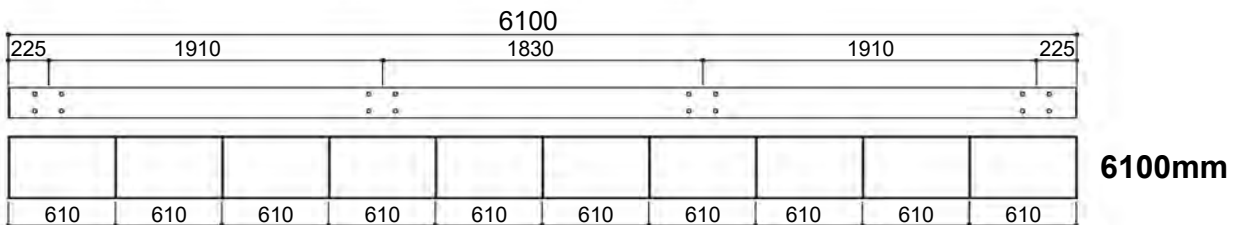
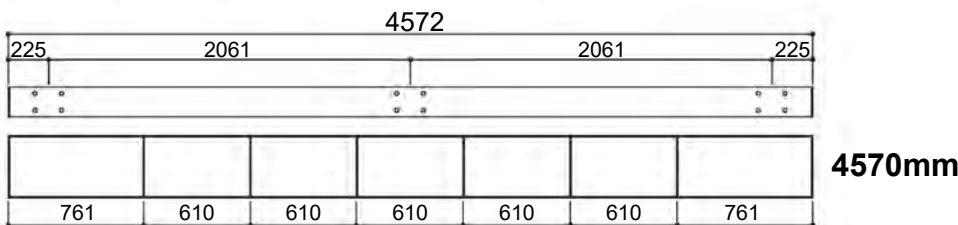
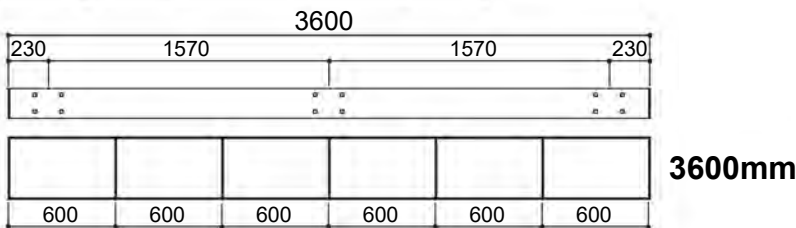
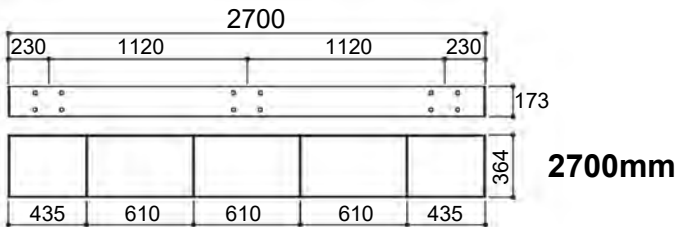
Code	Description	Weight
SBX67270	UB 356 x 171 x 67kg x 2700mm	205 kg
SBX67360	UB 356 x 171 x 67kg x 3600mm	269 kg
SBX67000	UB 356 x 171 x 67kg x 4570mm	338 kg
SBX67610	UB 356 x 171 x 67kg x 6100mm	452 kg
SBX67764	UB 356 x 171 x 67kg x 7620mm	567 kg



Section at End Plate



Section at Stiffener



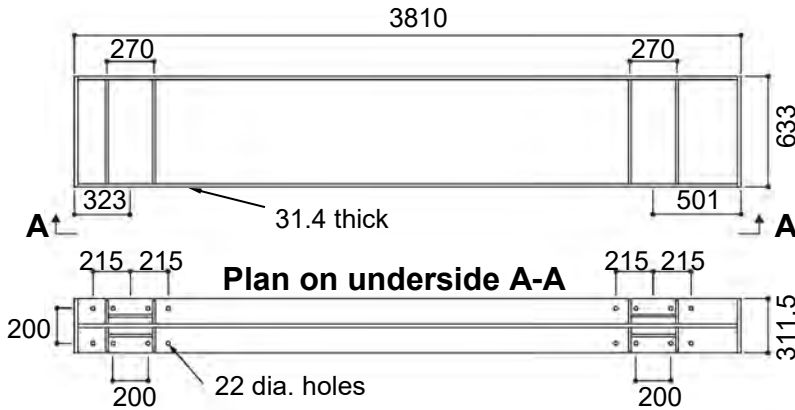
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

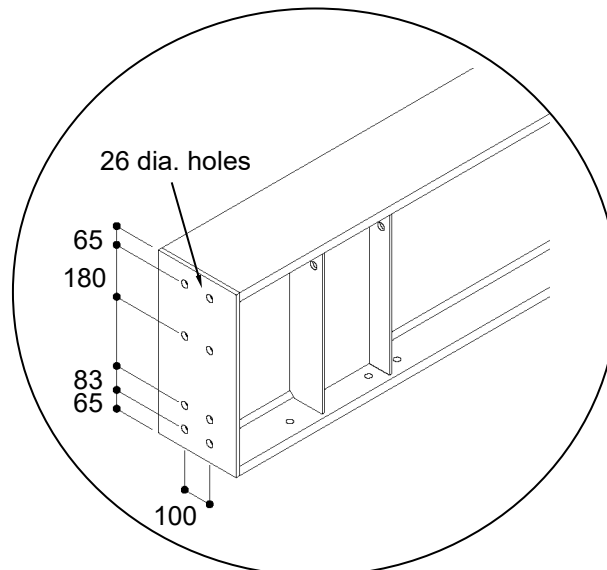
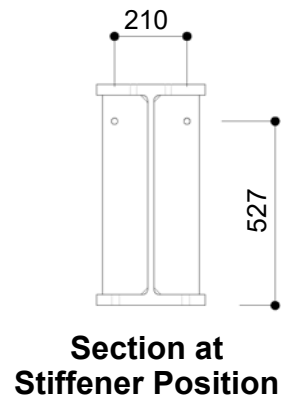
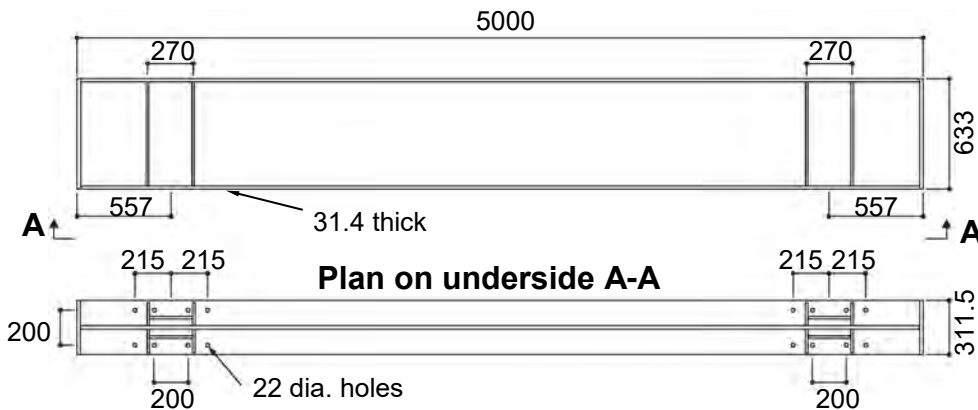


## 1.6.2. 610 x 305 x 238kg UB (grade S275)

Megashor Header Beam 3810mm (MSX10014) weight = 1038 kg



Megashor Header Beam 5000mm (MSX10015) weight = 1322 kg



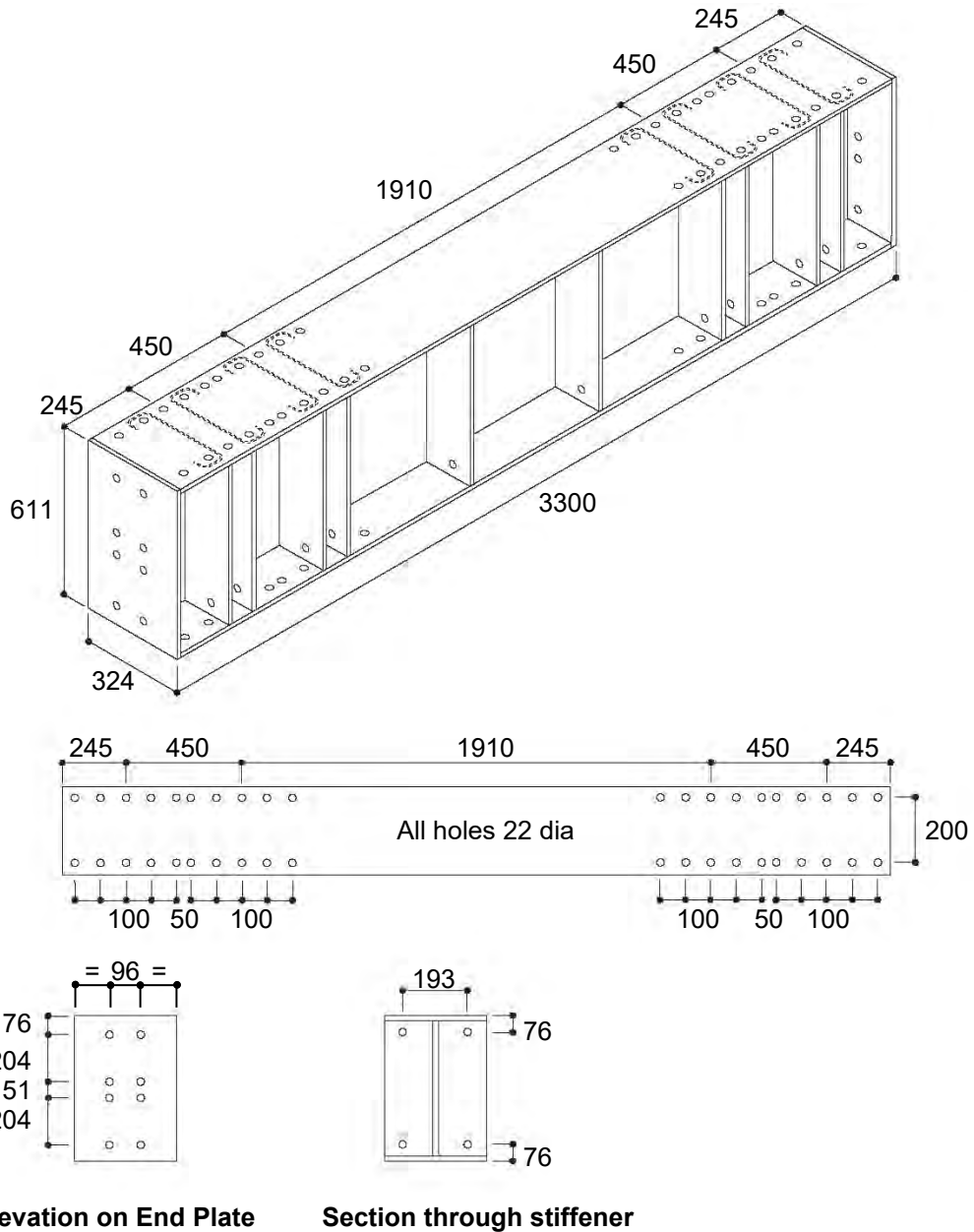


# MEGASHOR

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## 1.6.3. Megashor Header Beam 3300mm (MSX10010) weight = 670 kg



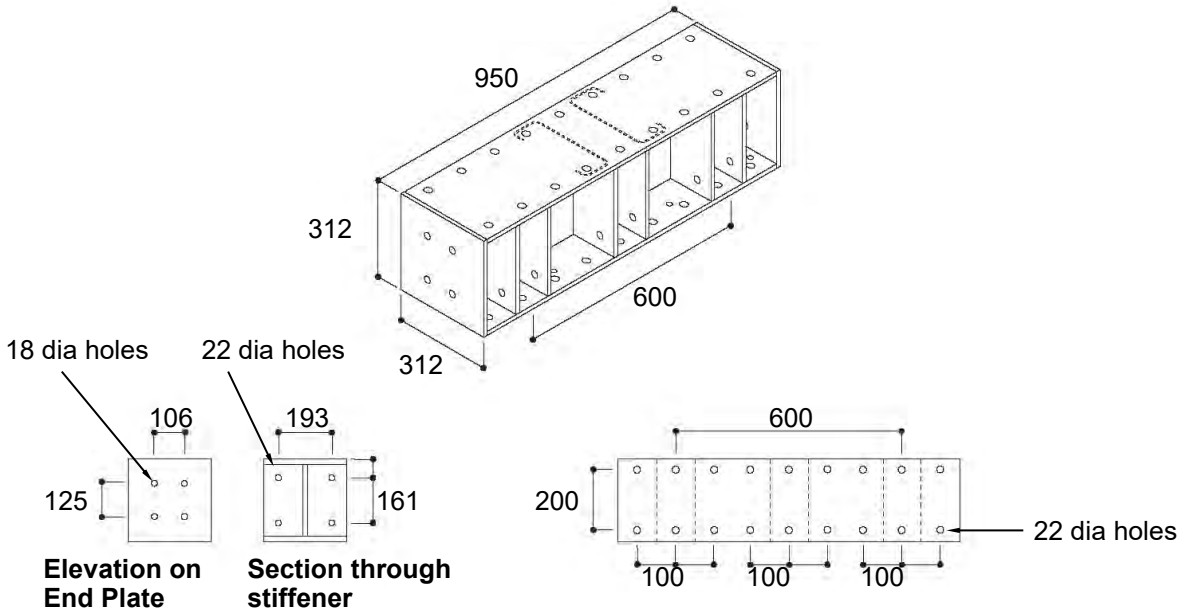
Section is ASTM A6/AGM 610 x 324 x 155 kg/m  
Equivalent to UB 610 x 305 x 149 kg (grade S275)

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



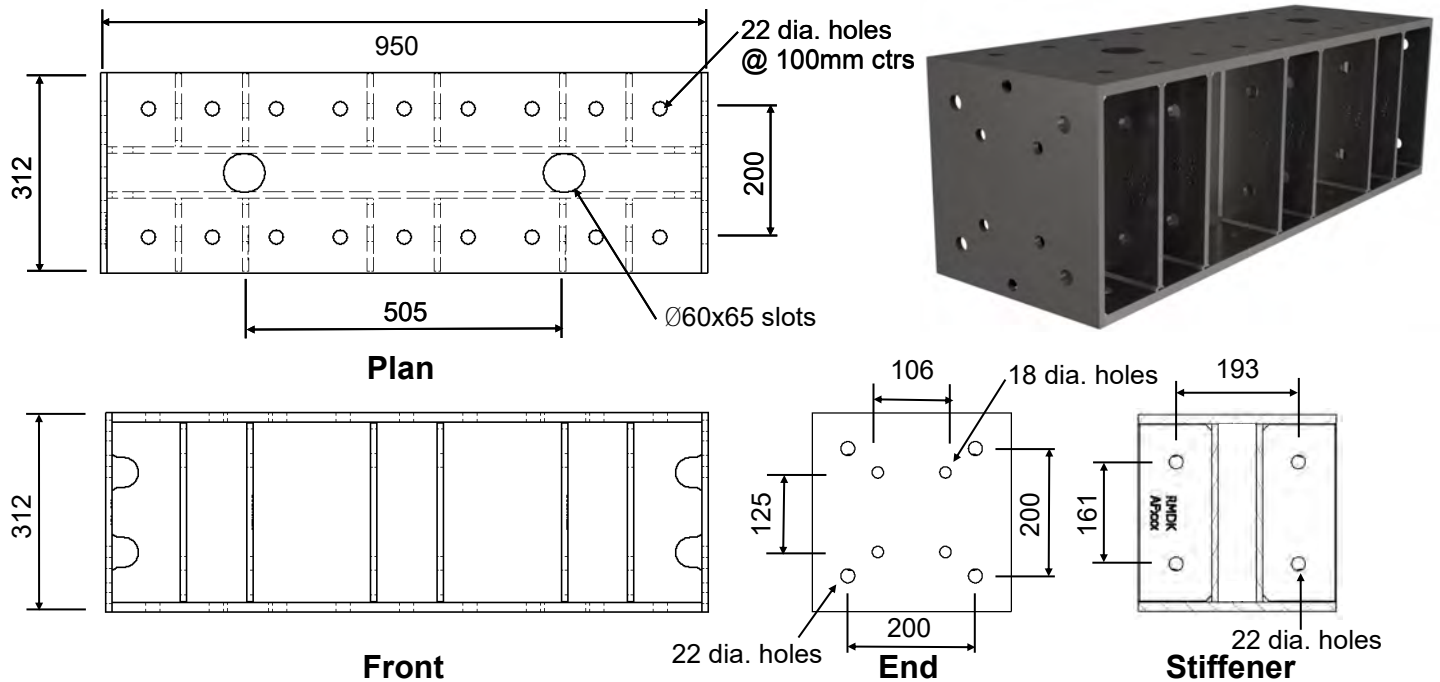
## 1.6.4. Megashor Header Beam 950mm (MSX10009) weight = 150 kg



Beam manufactured from 305 x 305 x 126 kg/m UBP (grade S275)

## 1.6.5. Megashor Header Beam 950mm With Slots (MSX10055) weight = 150kg

Used in Megashor 505 Single Sided Formwork.



Beam fabricated as a plate girder with 15mm flanges and twin 10mm webs (grade S275)

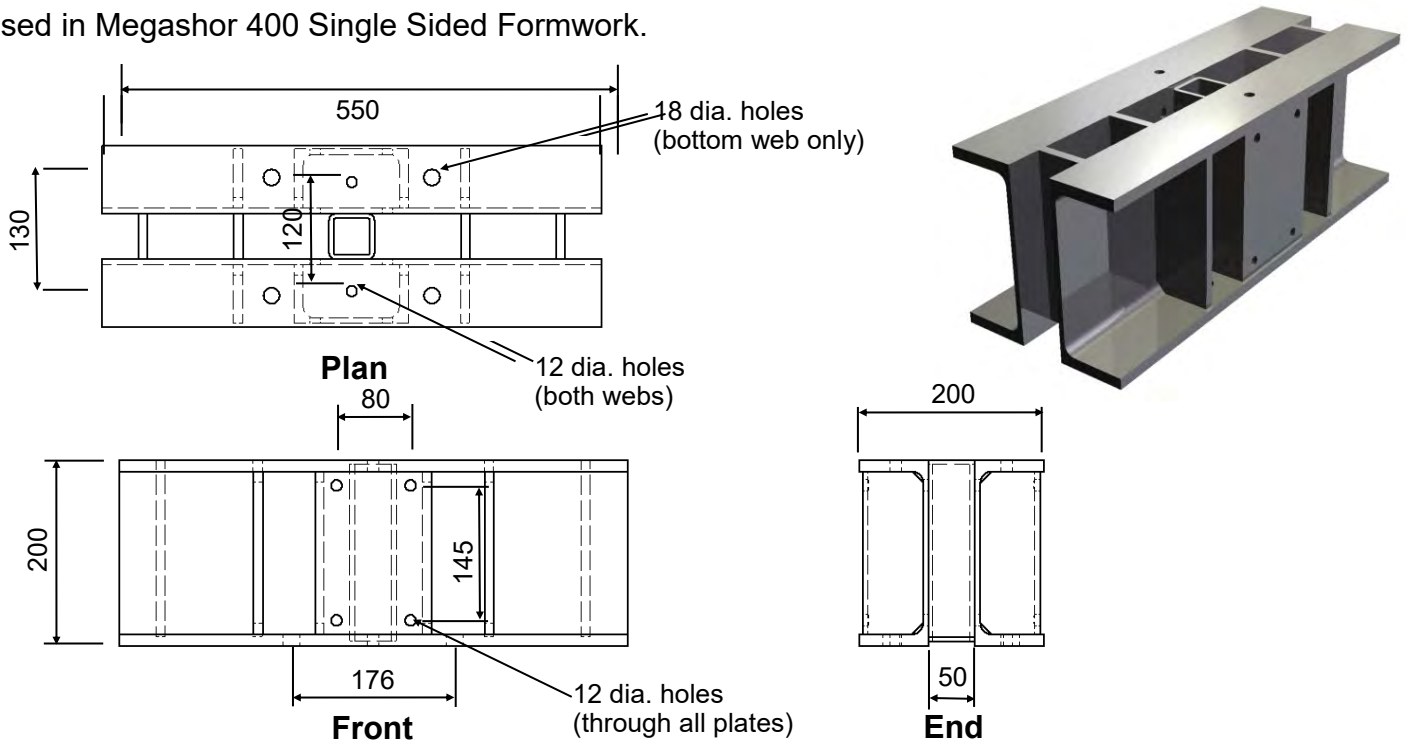
# MEGASHOR

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## 1.6.6. Megashor Heavy Duty Tie Beam (MSU20004) weight = 39.1kg

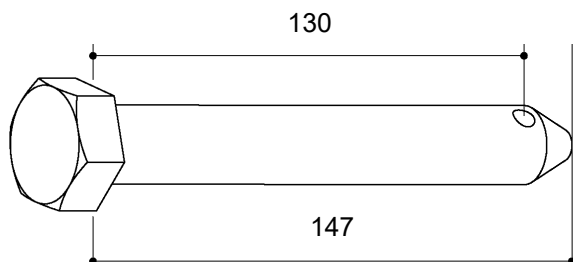
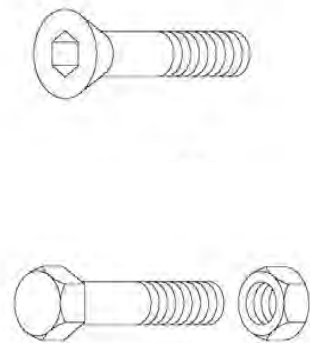
Used in Megashor 400 Single Sided Formwork.



**Allowable Working Load 2 x 250kN tie loads at 400mm c/c spaced evenly about centreline**

## 1.7.1. Fasteners

Code	Description	Weight
BNU20005	M20 x 40 Set Pin – Grade 8.8 ZP	0.27 kg
BNU20011	M20 x 60 Bolt – Grade 8.8 ZP	0.28 kg
BNU20010	M20 x 60 C/Sink Set Pin Gr 8.8 ZP	0.18 kg
BNU16007	M16 x 40 Set Pin – Grade 8.8 ZP	0.09 kg
BNU16009	M16 x 60 Bolt – Grade 8.8 ZP	0.11 kg
BNU16001	M16 Hexagon Nut – Grade 8.8 ZP	0.03 kg
BNU20001	M20 Hexagon Nut – Grade 8.8 ZP	0.06 kg
BNX20028	M20 x 50 Bolt – Grade 8.8 ZP	0.18 kg
BNX20100	M20 High Yield Pin	0.40 kg
SSU10011	Superslim R Clip 5 x 100mm	0.03 kg



Superslim R Clip 5 x 100mm

M20 High Yield Pin and Superslim R Clip

**AWL in double shear 100 kN - Bearing in Megashor webs limits load capacity to 68kN.**

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM

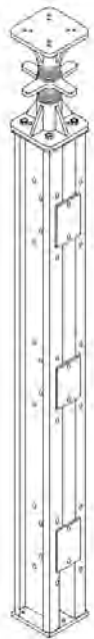


## 2.0.0. Applications:

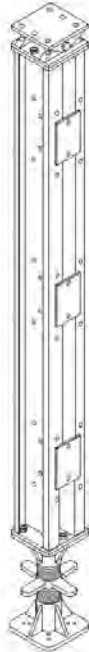
Megashor is a versatile system with a wide range of applications. The following are some of the many possible arrangements, when used vertically and horizontally. Designs are carried out using the recommendations of BS5975:Code of practice for temporary works procedures and the permissible stress design of falsework.

For further assistance on any Megashor application please contact our Technical Office.

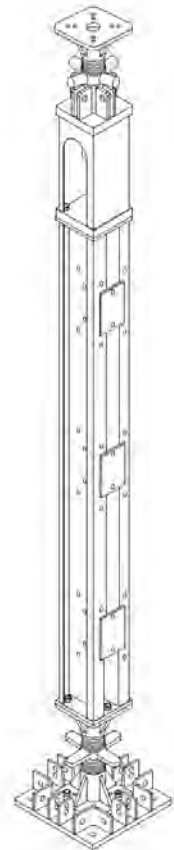
## 2.1.0. Vertical Applications: Individual Props



**Jack Head Prop**



**Rocking Head and Jack Base Prop**



**Hydraulic Head and Jack with Base Plate**

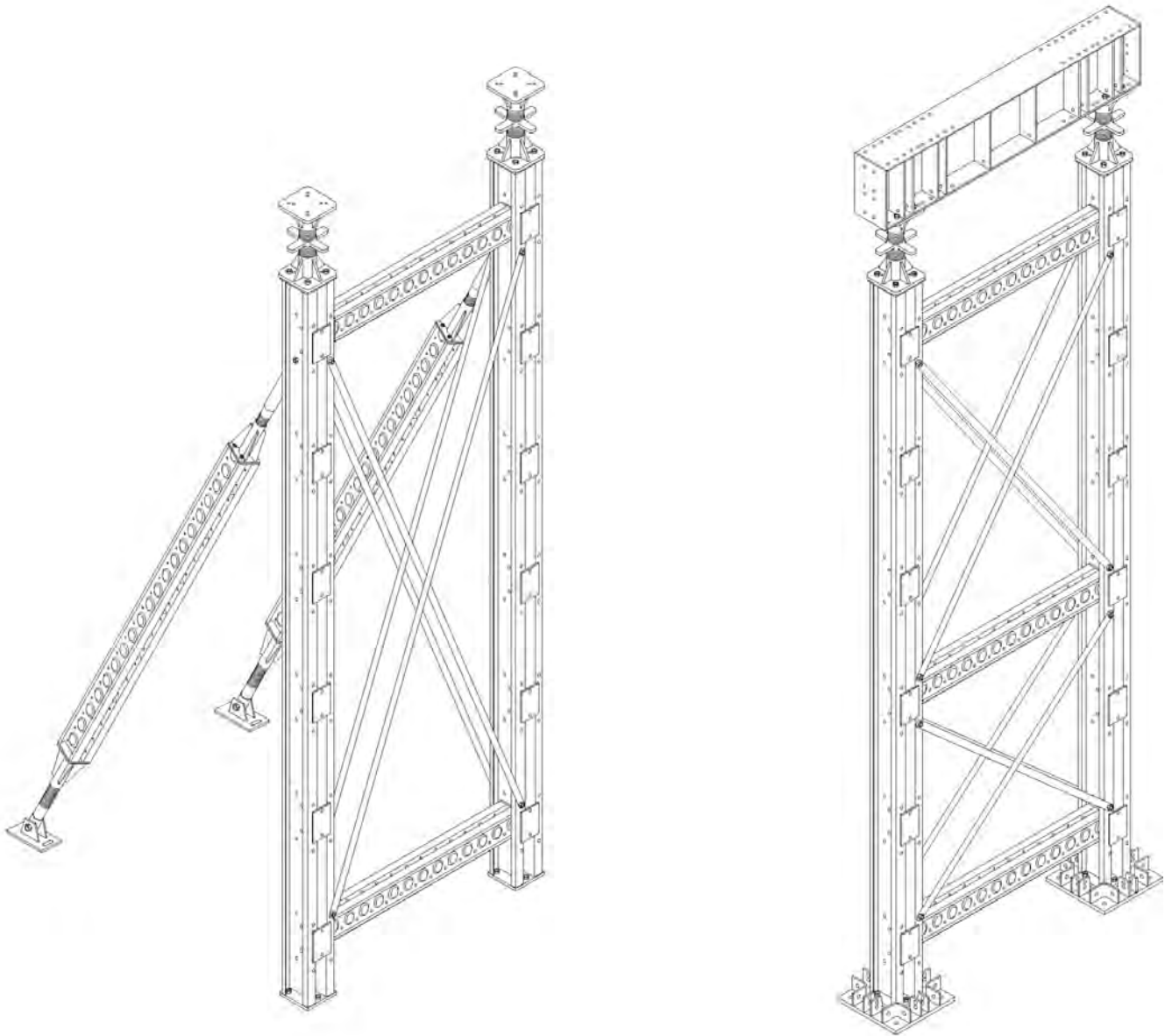
**Note: Megashor Bearing Plate 40mm or End Plates are required between Megashor Jacks and Legs at higher loads – see item 1.4.4. & 1.4.5.**

# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 2.1.1 Vertical Applications: Trestles



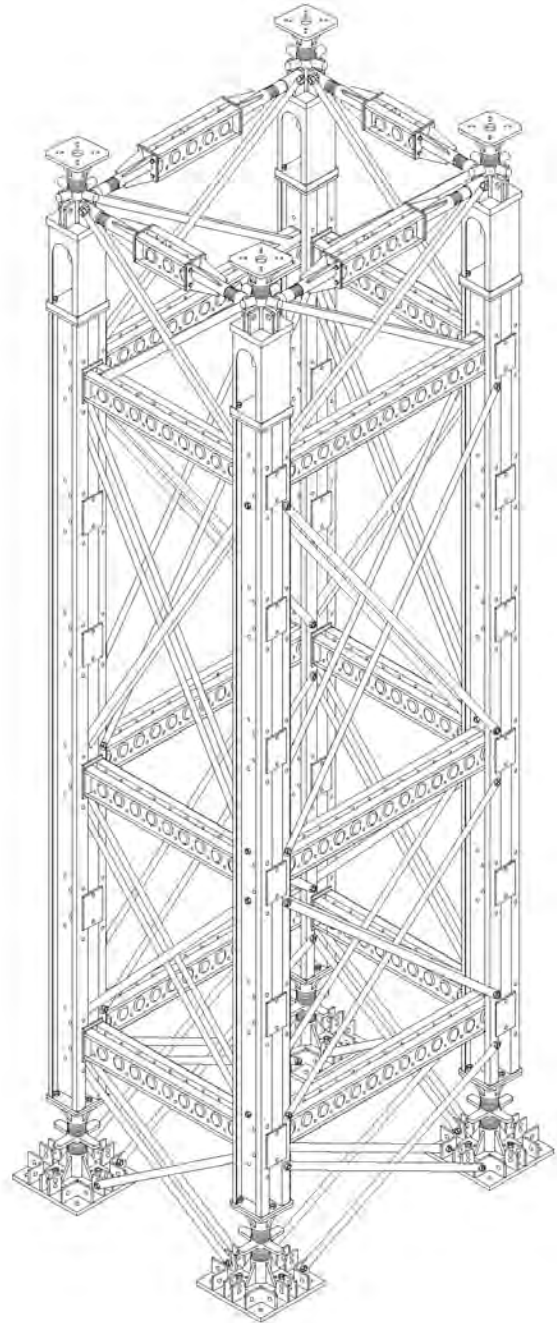
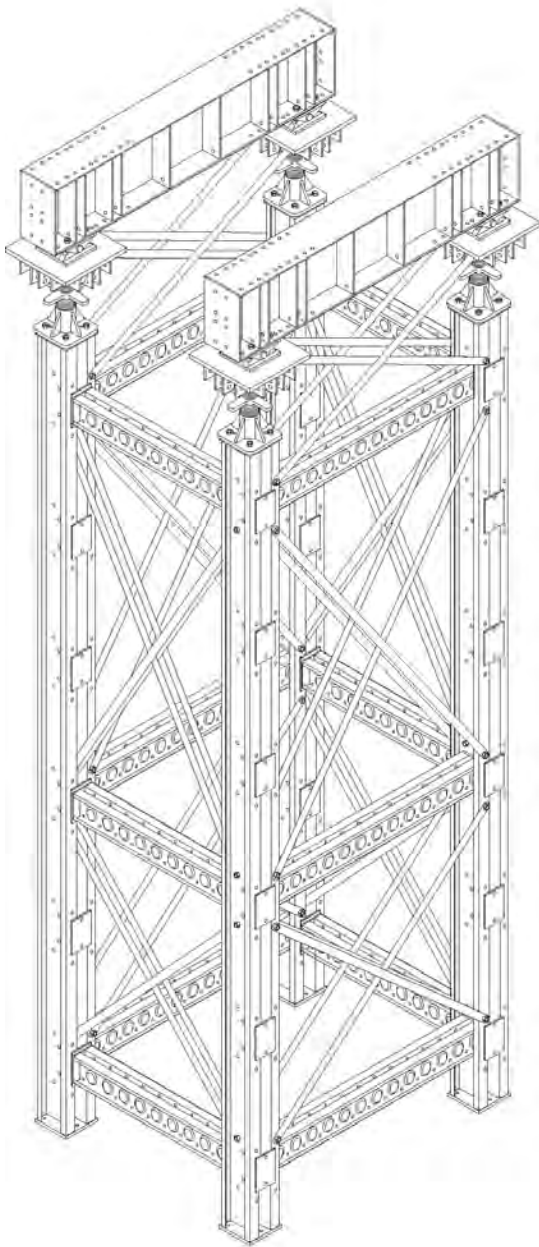
**Note: Megashor Bearing Plate 40mm or End Plates are required between Megashor Jacks and Legs at higher loads – see 1.4.4. & 1.4.5.**

# MEGASHOR

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R·M·D  
KWIKFORM

## 2.1.2. Vertical Applications: Towers



**Note: Megashor Bearing Plate 40mm or End Plates are required between Megashor Jacks and Legs at higher loads – see 1.4.4. & 1.4.5.**

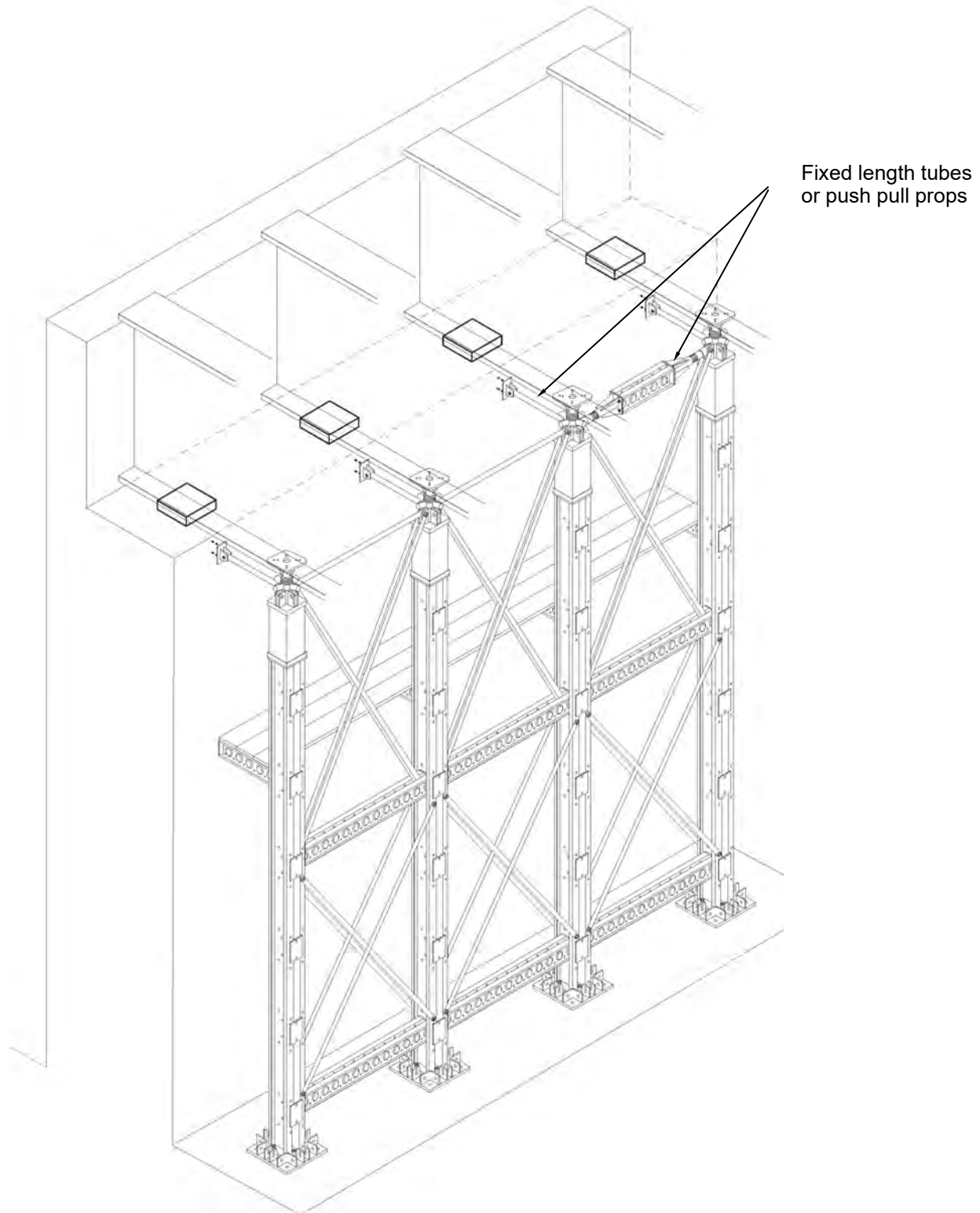
# MEGASHOR

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## 2.1.3. Vertical Applications: Bridge Abutments

**Note:** Handrailing and toe boards to access omitted for clarity.

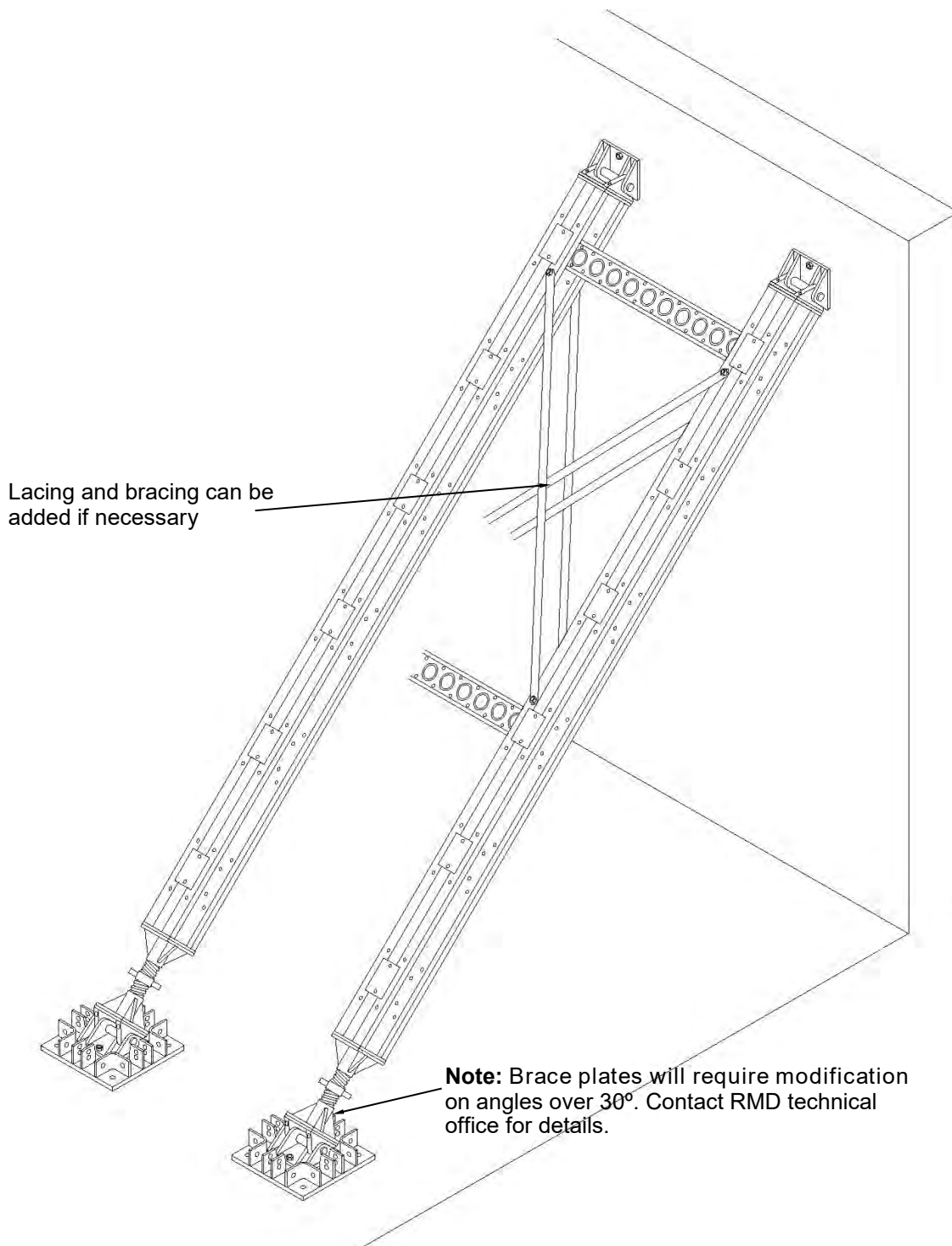


# MEGASHOR

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## 2.2.0. Inclined Props: 45° Support



**Note: Megashor Bearing Plate 40mm or End Plates are required between Megashor Jacks and Legs at higher loads – see 1.4.4. & 1.4.5.**

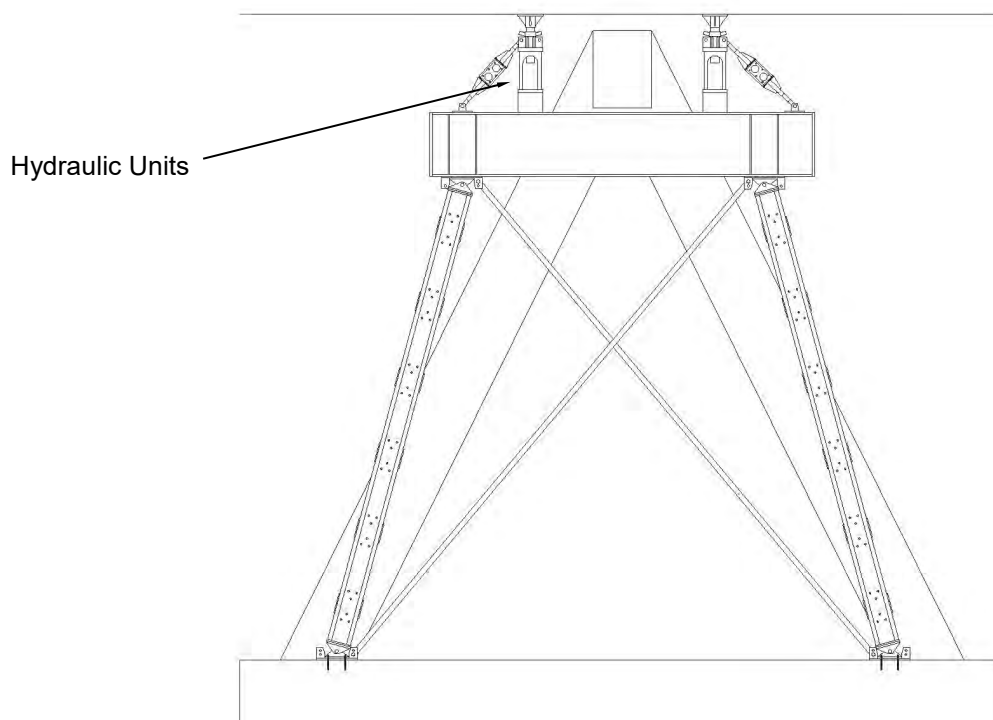
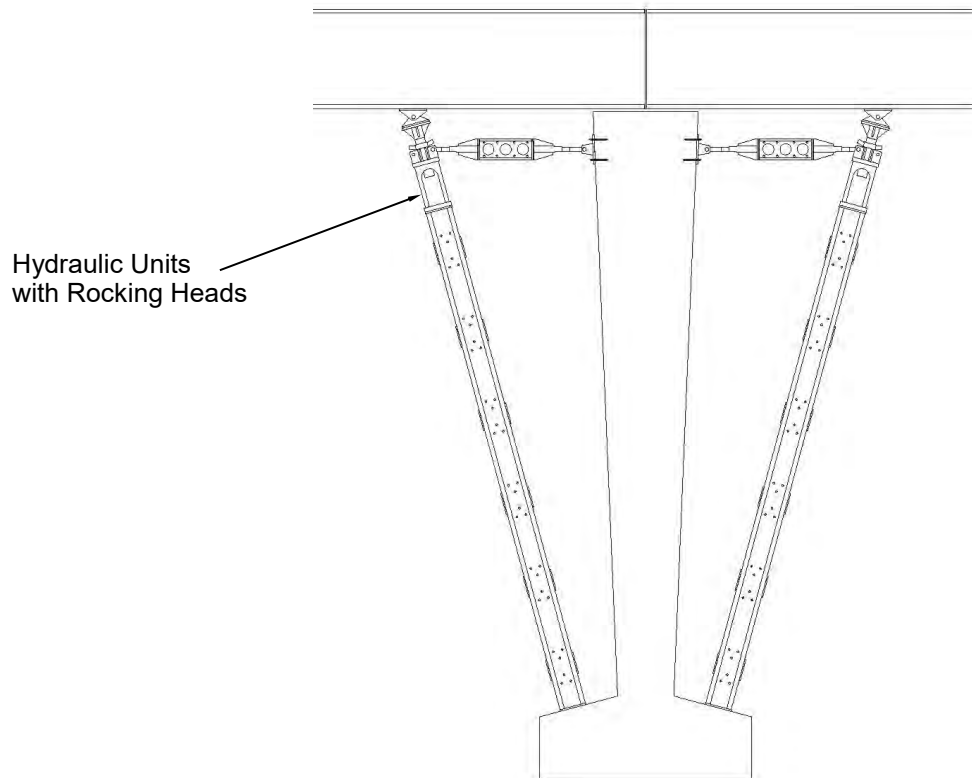


# MEGASHOR

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## 2.2.1. Inclined Props: Bridge Abutments



# MEGASHOR

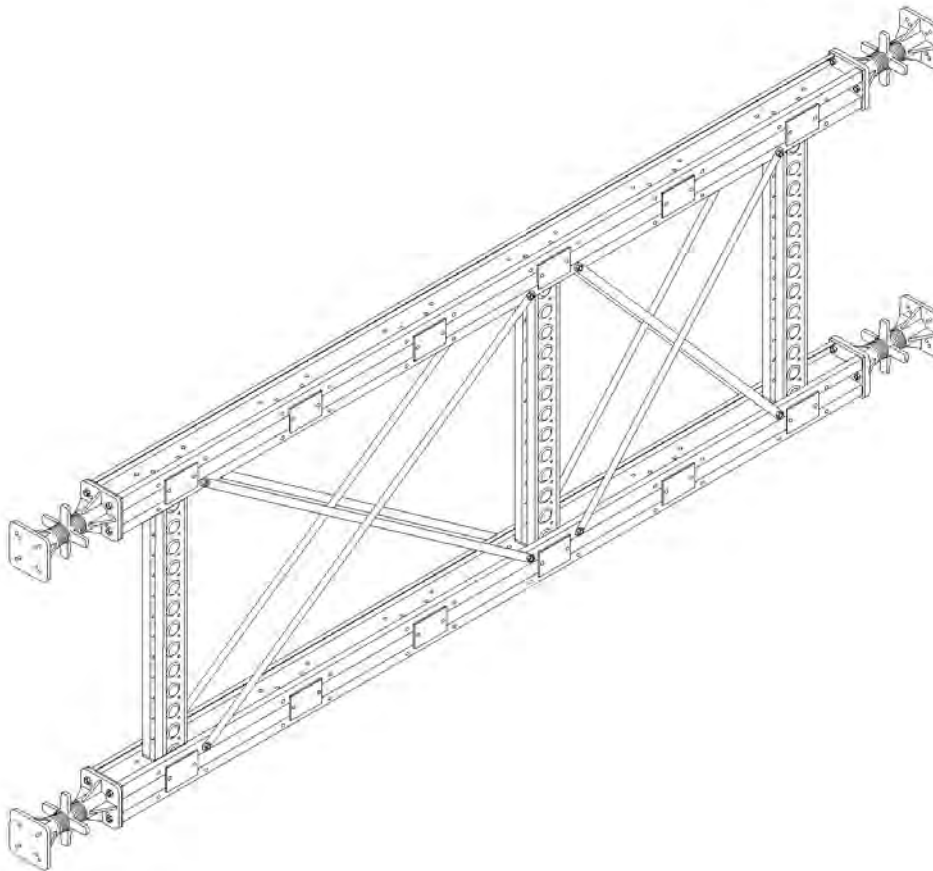
HEAVY DUTY SUPPORT SYSTEM



## 2.3.0. Horizontal Applications: Single



## 2.3.1. Horizontal Applications: High Capacity

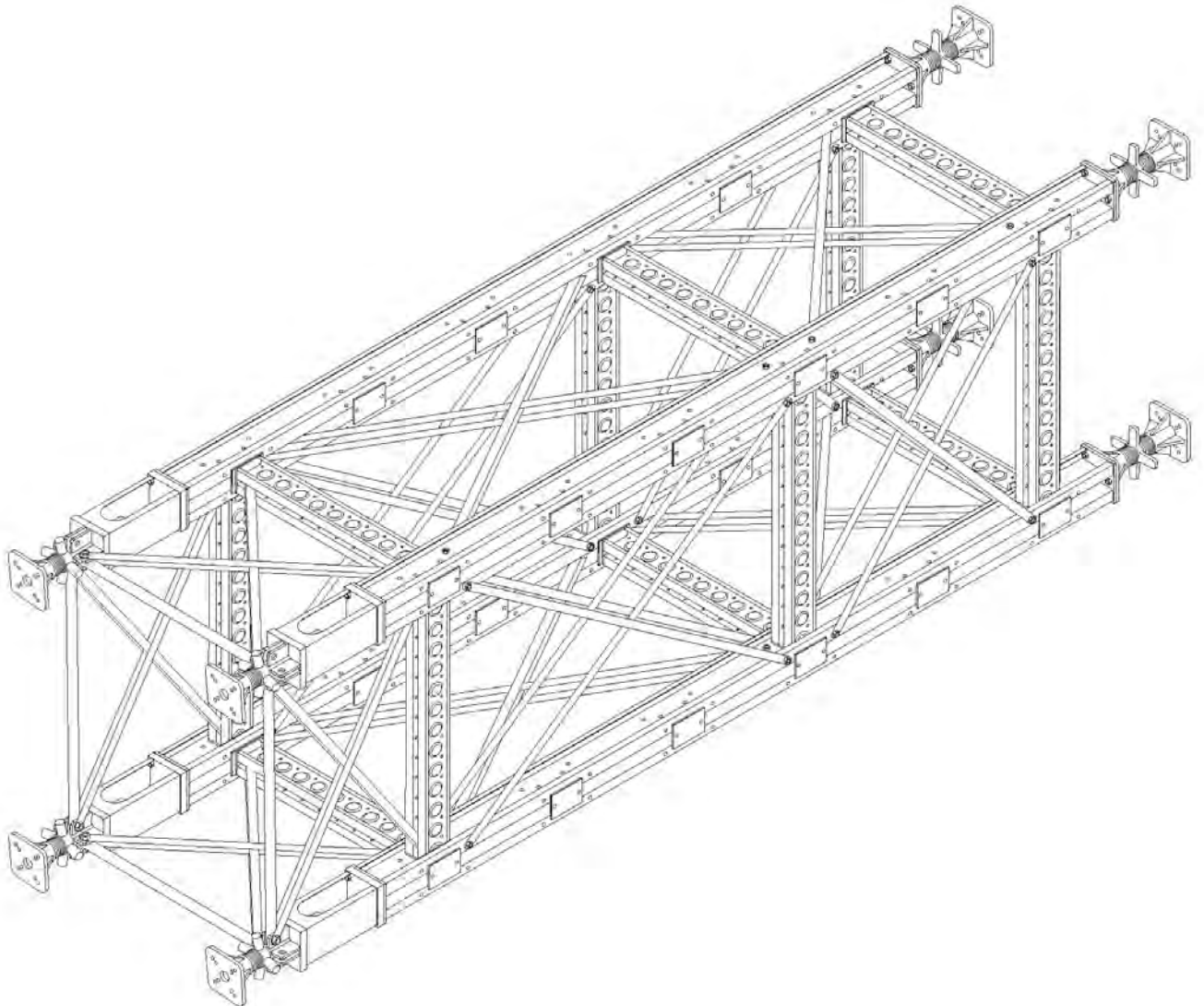


# MEGASHOR

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## 2.3.2. Horizontal Applications: Hydraulic Flying Shores

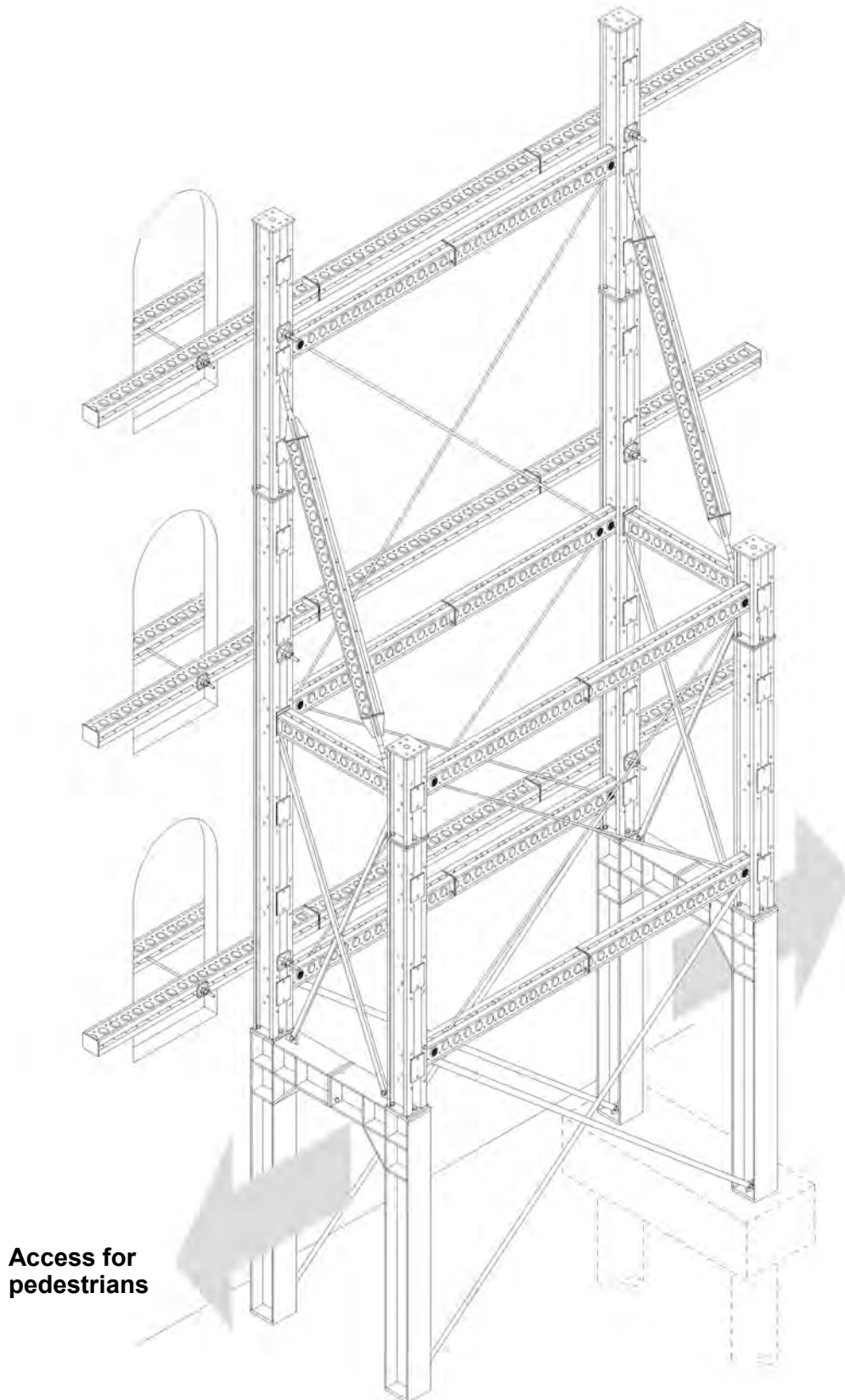


# MEGASHOR

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## 2.4. Façade Retention:



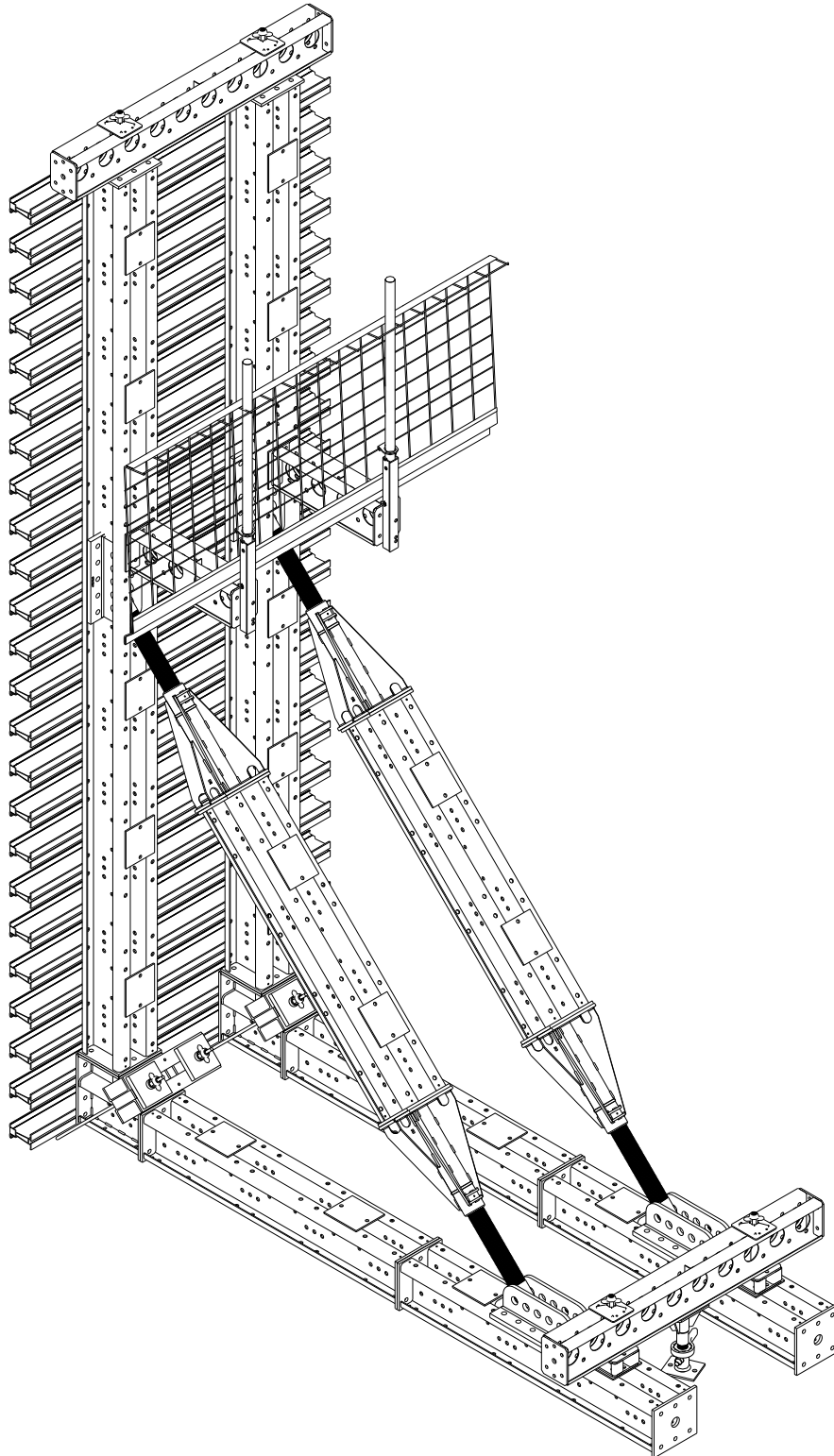
Access for pedestrians

# MEGASHOR

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## 2.5.0 Formwork: 400 Single Sided

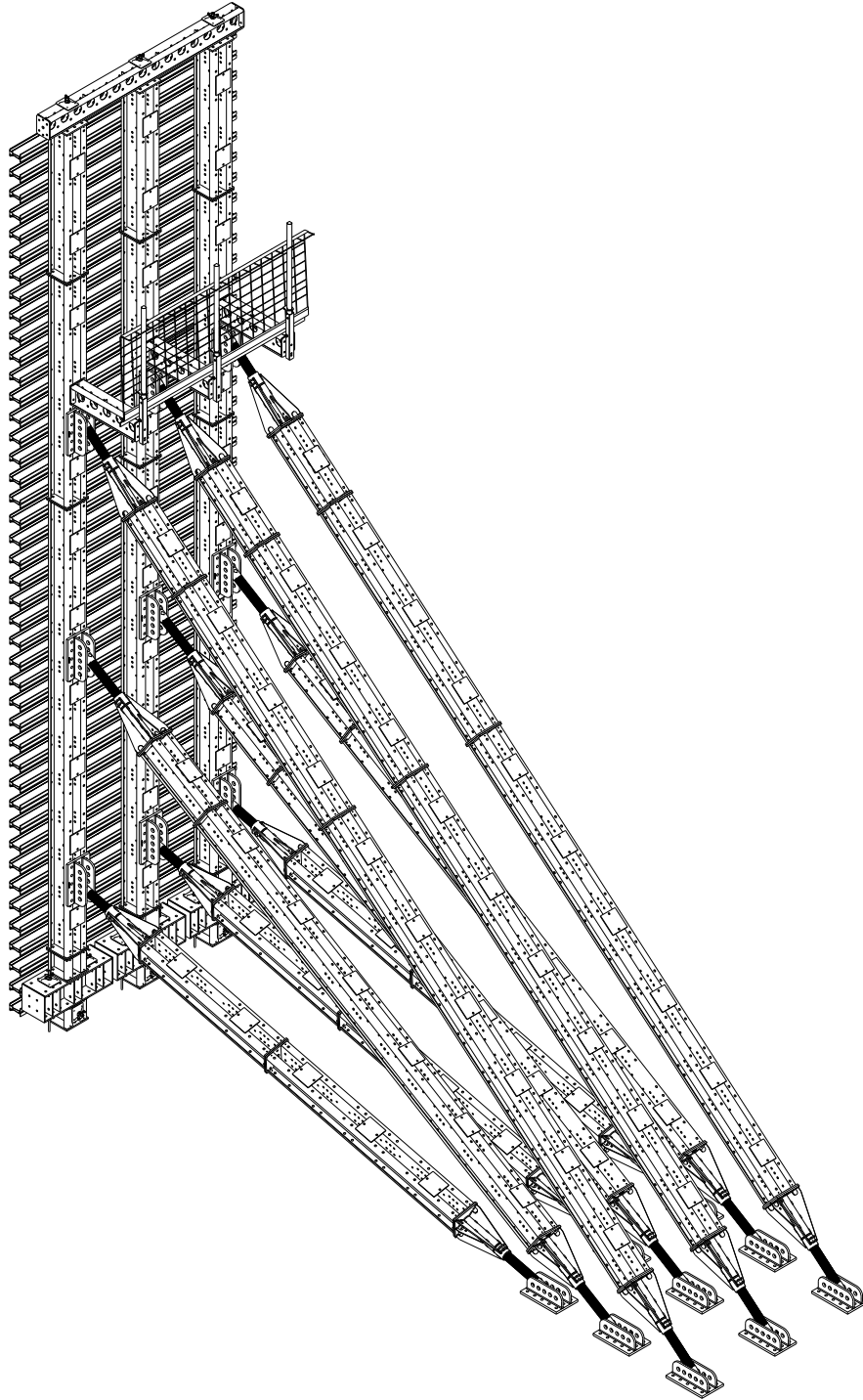


# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



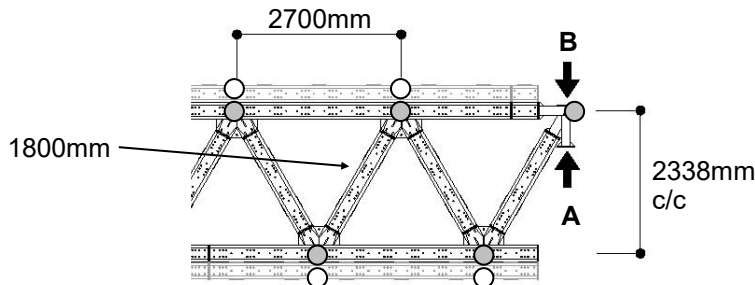
## 2.5.1 Formwork: 505 Single Sided



## 2.6.0. Megatruss – Notes on Design

The joints between Megatruss elements are stiff and the truss acts structurally as if it were fully welded. Frame analysis shall be carried out and members and joints checked for Bending Moments, Axial, Shear, Bearing and Local Buckling Stresses as well as any coincident combination of the above. Where possible loads should be applied at node points to reduce local bending in the truss chords. Bearing on truss chords should be eliminated where possible by carrying loads directly into Megatruss nodes and chord props/ties. Refer to RMD Kwikform Technical Office for details.

### 2.6.1. Megatruss 2700mm



- Indicates points of lateral restraint to main truss chords
- Indicates points of lateral restraint to reinforcing chords

Technical Data	Single Chord	Double Chord
<b>Axial Loads – individual members</b>		
Maximum Compression in chords	680 kN	1360 kN
Maximum Tension in chords	425 kN	850 kN
- plain joints	800 kN	1600 kN
- stiffened joints	680 kN	680 kN
Maximum Compression in diagonals	680 kN	680 kN
Maximum Tension in diagonals	425 kN	425 kN
- plain joints	800 kN	800 kN
- stiffened joints		
<b>Bending Moments</b>		
Unstiffened joints	994 kNm	1987 kNm
Stiffened joints	1590 kNm	3180 kNm
<b>End Reaction *</b>		
Supported at A		
- plain joints	368 kN	368 kN
- stiffened joints	693 kN	693 kN
Supported at B	589 kN	589 kN

Allowable loads and moments are approximate. Carry out frame analysis to check capacity of all individual members and joints.

Experience has shown that at least 20% of the structural capacity of the truss members is used up by local rather than global bending effects. This will be much increased if bearing loads are present on truss chords or if loads are not supported at node points.

\* The end reactions given are derived from the AWL of the end diagonal. If an end prop is used as shown in 1.5.21 the values of **A** and **B** can be increased provided the load in the end diagonal is checked.

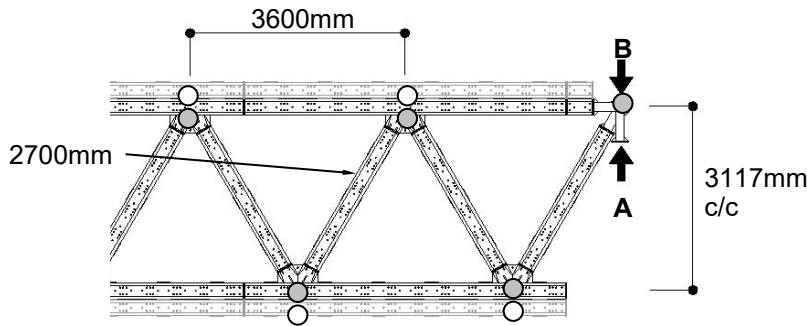
# MEGASHOR

HEAVY DUTY SUPPORT SYSTEM



## 2.6.2. Megatruss 3600mm

- Indicates points of lateral restraint to main truss chords
- Indicates points of lateral restraint to reinforcing chords



Technical Data	Single Chord	Double Chord
<b>Axial Loads – individual members</b>		
Maximum Compression in chords	650 kN	1300 kN
Maximum Tension in chords	425 kN	850 kN
# Maximum Compression in diagonals	800 kN	1600 kN
Maximum Tension in diagonals	650 kN	650 kN
	700 kN	700 kN
	425 kN	425 kN
	800 kN	800 kN
<b>Bending Moments</b>		
Unstiffened joints	1325 kNm	2649 kNm
Stiffened joints	2026 kNm	4052 kNm
<b>End Reaction *</b>		
Supported at <b>A</b>	368 kN	368 kN
	693 kN	693 kN
# Supported at <b>B</b>	563 kN	563 kN
	606 kN	606 kN

Allowable loads and moments are approximate. Carry out frame analysis to check capacity of all individual members and joints.

Experience has shown that at least 20% of the structural capacity of the truss members is used up by local rather than global bending effects. This will be much increased if bearing loads are present on truss chords or if loads are not supported at node points.

# Condition M: AWL in the YY axis governs.

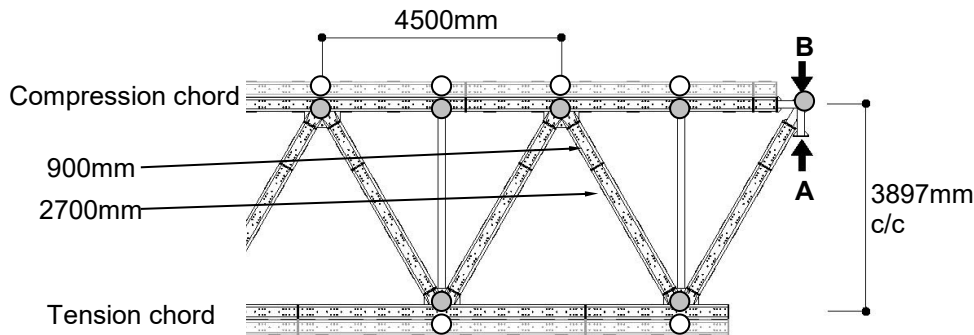
Condition N: Diagonal laced and braced in the YY axis, AWL in the XX axis governs.

\* The end reactions given are derived from the AWL of the end diagonal. If an end prop is used as shown in 1.5.21 the value of **A** and **B** can be increased provided the load in the end diagonal is checked.



### 2.6.3. Megatruss 4500mm

- Indicates points of lateral restraint to main truss chords
- Indicates points of lateral restraint to reinforcing chords



Technical Data	Single Chord	Double Chord
<b>Axial Loads – individual members</b>		
Maximum Compression in chords	690 kN	1380 kN
Maximum Tension in chords	425 kN	850 kN
# Maximum Compression in diagonals	800 kN	1600 kN
Maximum Tension in diagonals	620 kN	620 kN
	675 kN	675 kN
	425 kN	425 kN
	800 kN	800 kN
<b>Bending Moments</b>		
Unstiffened joints	1656 kNm	3312 kNm
Stiffened joints	2689 kNm	5378 kNm
<b>End Reaction *</b>		
Supported at <b>A</b>	368 kN	368 kN
# Supported at <b>B</b>	693 kN	693 kN
	537 kN	537 kN
	585 kN	585 kN

Allowable loads and moments are approximate. Carry out frame analysis to check capacity of all individual members and joints.

Experience has shown that at least 20% of the structural capacity of the truss members is used up by local rather than global bending effects. This will be much increased if bearing loads are present on truss chords or if loads are not supported at node points.

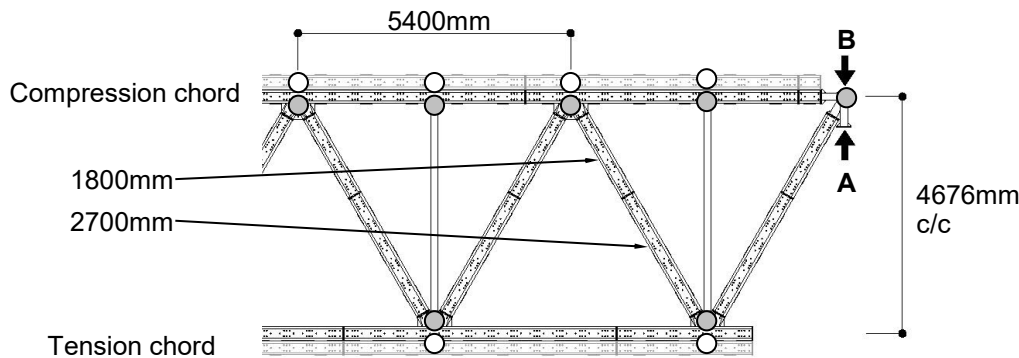
# Condition M: AWL in the YY axis governs.

Condition N: Diagonal laced and braced in the YY axis, AWL in the XX axis governs.

\* The end reactions given are derived from the AWL of the end diagonal. If an end prop is used as shown in 1.5.21 the value of **A** and **B** can be increased provided the load in the end diagonal is checked.

### 2.6.4. Megatruss 5400mm

- Indicates points of lateral restraint to main truss chords
- Indicates points of lateral restraint to reinforcing chords



Technical Data	Single Chord	Double Chord
<b>Axial Loads – Individual members</b>		
Maximum Compression in chords	685 kN	1370 kN
Maximum Tension in chords	425 kN	850 kN
# Maximum Compression in diagonals	- plain joints	800 kN
	- stiffened joints	800 kN
Maximum Tension in diagonals	- condition M	555 kN
	- condition N	635 kN
Maximum Tension in diagonals	- plain joints	425 kN
	- stiffened joints	800 kN
<b>Bending Moments</b>		
Unstiffened joints	1987 kNm	3975 kNm
Stiffened joints	3203 kNm	6406 kNm
<b>End Reaction *</b>		
Supported at A		
# Supported at B	- plain joints	368 kN
	- stiffened joints	693 kN
# Supported at B	- condition M	481 kN
	- condition N	550 kN

Allowable loads and moments are approximate. Carry out frame analysis to check capacity of all individual members and joints.

Experience has shown that at least 20% of the structural capacity of the truss members is used up by local rather than global bending effects. This will be much increased if bearing loads are present on truss chords or if loads are not supported at node points.

# Condition M: AWL in the YY axis governs.

Condition N: Diagonal laced and braced in the YY axis, AWL in the XX axis governs.

\* The end reactions given are derived from the AWL of the end diagonal. If an end prop is used as shown in 1.5.21 the value of A and B can be increased provided the load in the end diagonal is checked.

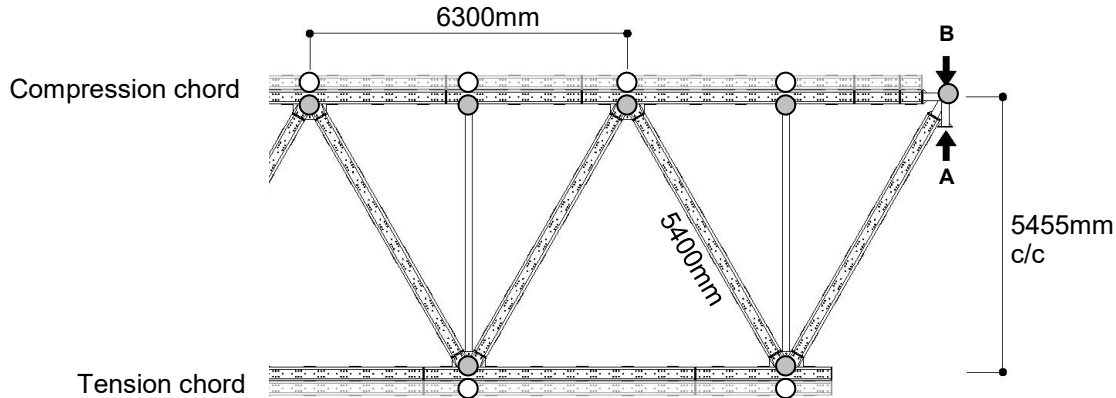
# MEGASHOR

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## 2.6.5. Megatruss 6300mm

- Indicates points of lateral restraint to main truss chords
- Indicates points of lateral restraint to reinforcing chords



Technical Data	Single Chord	Double Chord
<b>Axial Loads – individual members</b>		
Maximum Compression in chords	670 kN	1340 kN
Maximum Tension in chords	425 kN	850 kN
# Maximum Compression in diagonals	- plain joints	800 kN
	- stiffened joints	1600 kN
Maximum Tension in diagonals	- condition M	465 kN
	- condition N	590 kN
# Supported at A	- plain joints	425 kN
	- stiffened joints	800 kN
<b>Bending Moments</b>		
Unstiffened joints	2318 kNm	4637 kNm
Stiffened joints	3655 kNm	7310 kNm
<b>End Reaction *</b>		
# Supported at A	- plain joints	368 kN
	- stiffened joints	693 kN
# Supported at B	- condition M	403 kN
	- condition N	511 kN

Allowable loads and moments are approximate. Carry out frame analysis to check capacity of all individual members and joints.

Experience has shown that at least 20% of the structural capacity of the truss members is used up by local rather than global bending effects. This will be much increased if bearing loads are present on truss chords or if loads are not supported at node points.

# Condition M: AWL in the YY axis governs.

Condition N: Diagonal laced and braced in the YY axis, AWL in the XX axis governs.

\* The end reactions given are derived from the AWL of the end diagonal. If an end prop is used as shown in 1.5.21 the value of **A** and **B** can be increased provided the load in the end diagonal is checked.

## 3.0. Assembly Guidance

For detailed erection guidance refer to the RMD Kwikform Equipment Guidance Notes for your specific application or the scheme specific guidance notes provided by the RMD Kwikform Technical Office.

### 3.1. Megashor

1. Ensure Megashor shafts bolted end to end are orientated so the webs of all sections are parallel.
2. Megashor screw jacks may be unloaded manually by striking the spindle lugs. For release of loads over 500kN Jacks should be fully dismantled before use. Coat all four-thread surfaces with Moly slip OGL lubricant (available from RMD Kwikform) and reassemble.
3. Crossed tension braces bolted to Megashor shafts should be used in pairs in both directions. One of each pair attached to each side of the Megashor section.
4. Ensure Megashor rocking heads are attached such that the tapped holes are bolted to the Megashor section.
5. If, subsequent to assembly, gaps are present between end plates, fill with low viscosity cementitious grout.
6. The customer is to ensure that the loads applied to the end plates of Megashor shafts or accessories by hydraulic jacks or otherwise are suitably spread and placed to avoid local over-stress of the section.
7. Some components weigh over 25kg. Plan lifts in accordance with best practice and locally applicable regulations.

### 3.2. Megatruss

1. Notes for assembly of Megashor equally apply to Megatruss.
2. Ensure all fasteners at a joint are located hand tight prior to fully tightening any at that joint.
3. Position all elements and fasteners to each section of the truss hand tight prior to fully tightening.
4. Torque all fasteners that join Megashor legs end to end, end to Megatruss Nodes or Megatruss End Bearers to 300Nm.
5. Support trusses by the bottom chord batten plates during assembly. Provide adequate temporary lateral restraints. Avoid bearing loads to the bottom chord batten plates in excess of 150 kN.
6. Ensure trusses are braced as shown to restrain compression chords and resist lateral loads
7. Ensure trusses are lifted in a safe manner, refer to RMD Kwikform Technical Office. Lift girder from the node points at or near third points on span. Maximim length of single girder for lifting is 12.6 metres. Preferably, and in any case for longer spans, girders should be braced together and lifted in pairs.

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