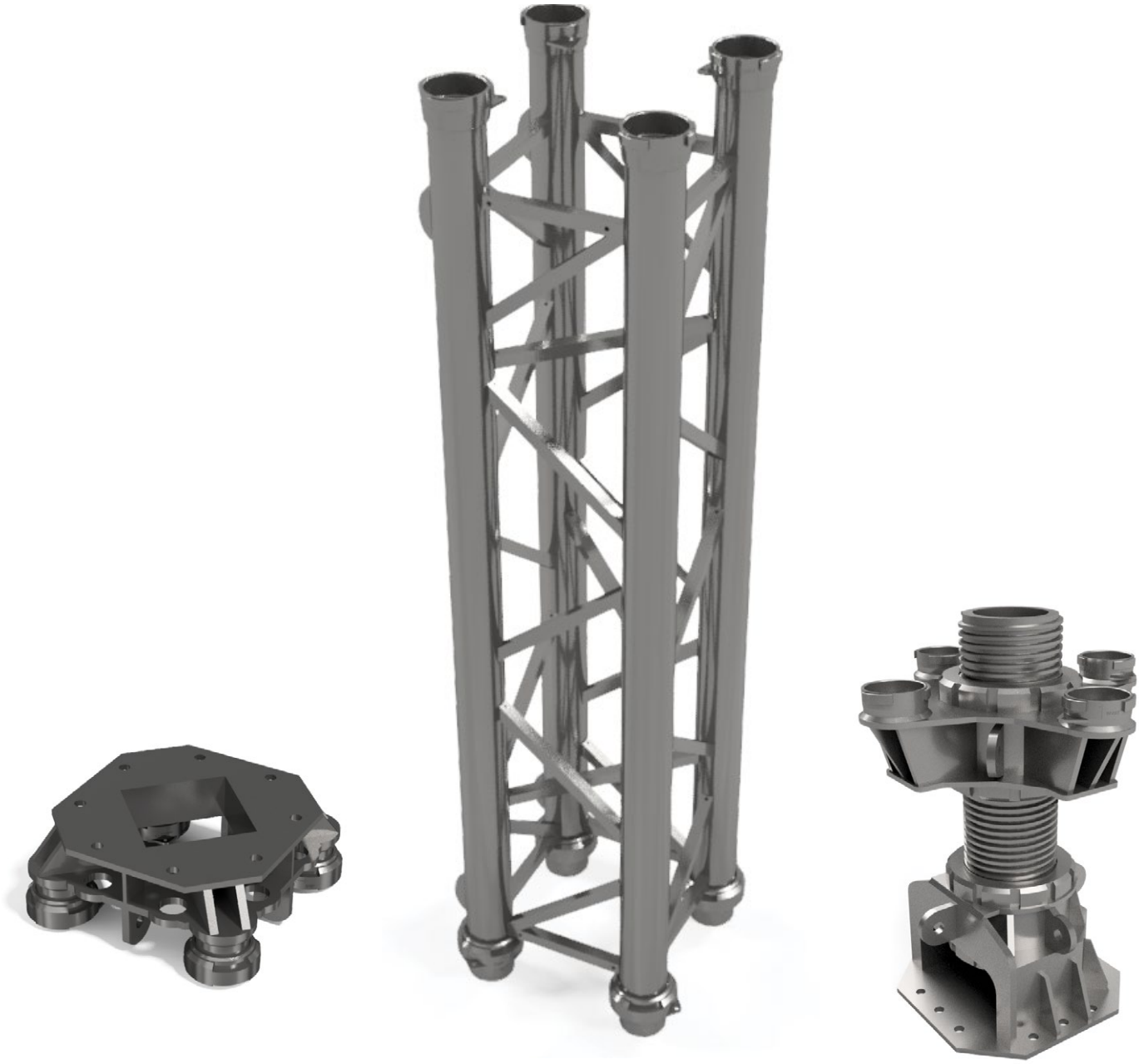

Quadshore™ 150

Heavy-duty propping system

Technical Data

Dec 2023 V1

Coates

ENGINEERING SOLUTIONS

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Contents

1. Preface

This document contains the technical data for patented Quadshore 150 propping system. It includes general information about Quadshore 150 followed by technical information of main modules, various types of Screw Jacks, Flat Head, Raking Bracket, Multi-Angle Bracket, Transfer Fixing Plate, Needle Beam Clamp, Universal Connector and Four-Legged Tower. It also contains various curves depicting Working Load Limits (WLL) of Quadshore 150 under both vertical and horizontal mounting conditions.

The certified Quadshore 150 is the outcome of the research partnership between Coates Engineering Solutions and Monash University. The contribution of both organisations, in particular the following persons, is acknowledged:

Coates Engineering Solutions

Mr Rafi Tchopourian
Mr Sudhir Raina
Mr Rex Turner

Monash University

Assoc. Prof. Amin Heidarpour
Mr Esmaeil Pournamazian Najafabadi

2. General Description

The patented Quadshore 150 (Q150) was developed to create a temporary structural support system consisting simple propping, raking struts and high-rise tower systems. A single Q150 leg can carry exceptional loads of up to 170 tonnes.

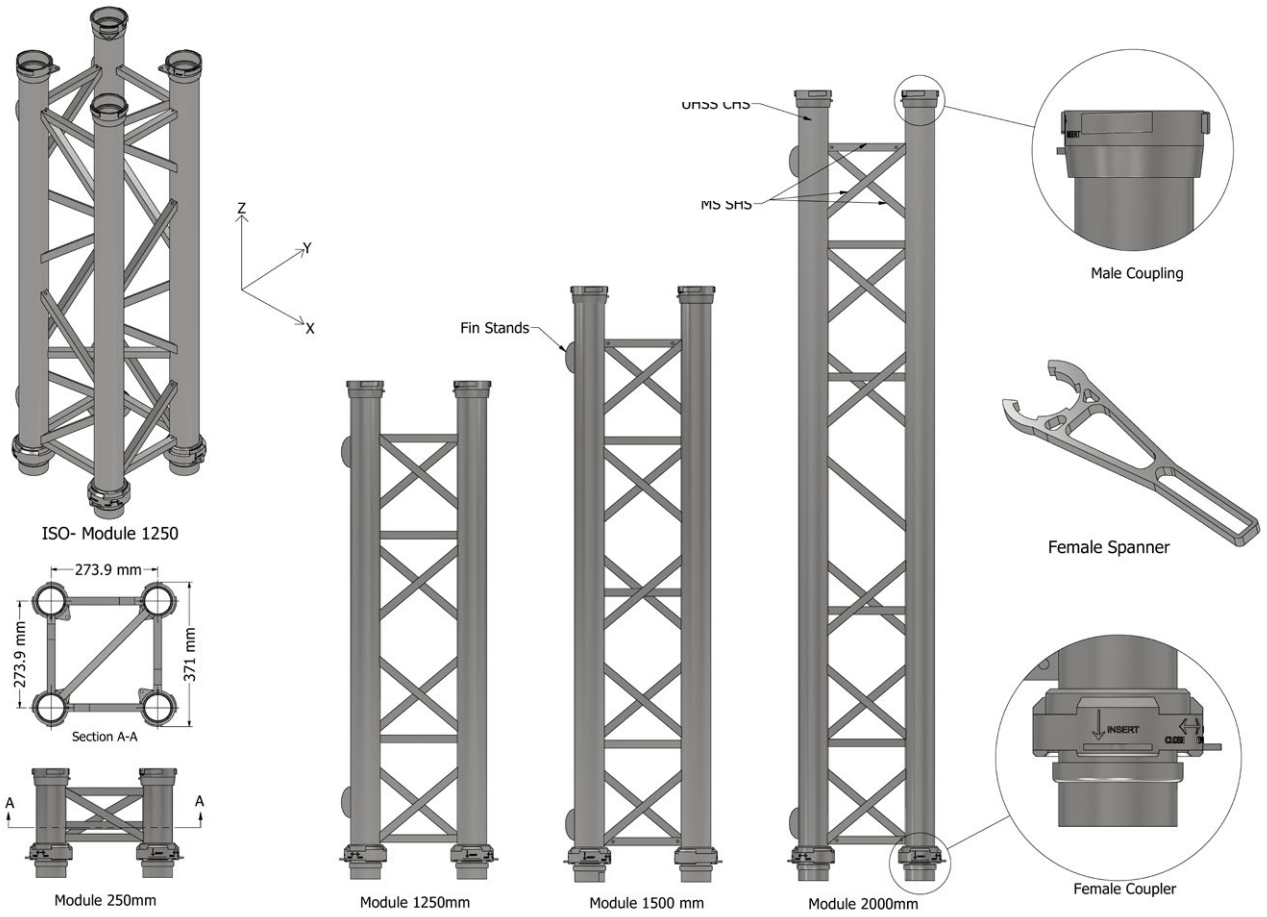
Main modules are made out of four ultra-high strength steel tubes plus laces, battens and diagonal holders. The modules are available in four lengths: 250mm, 1250mm, 1500mm and 2000mm. Modules are assembled using a state-of-the-art Twistlock Boltless Connection which increases assembly efficiency and decreases usage costs.

With the help of different complementary elements designed for Q150 modules, several assemblies can be formed for different applications as shown below.

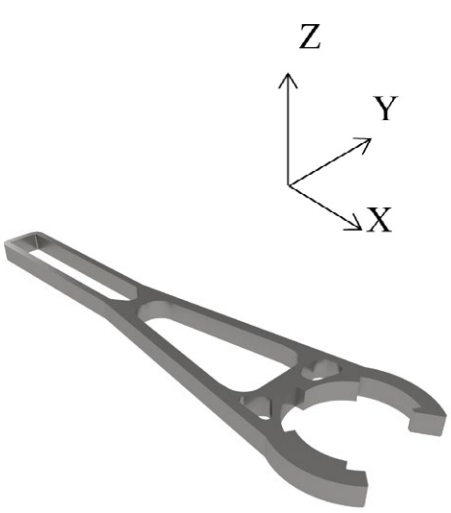
Class A | Class B | Class C | Class D | Class E

3. Main Modules

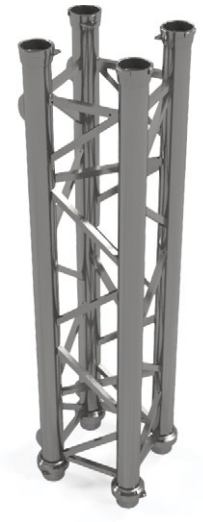
This section outlines different Q150 modules. Ultra-high strength steel (UHSS) circular hollow tubes were used as main load bearing elements of the modules brought together through square hollow section laces. Modules with lengths of 250mm, 1250mm, 1500mm and 2000mm are currently available for the Q150 system. These modules can be interconnected using the Twistlock Boltless Connections. A spanner can be used for ease of assembly/disassembly, if required. Fin stands exist on one side of modules for ease of assembly and sliding the modules on the ground.



Module	Weight
2000mm	60 kg
1500mm	46 kg
1250mm	40 kg
250mm	14 kg



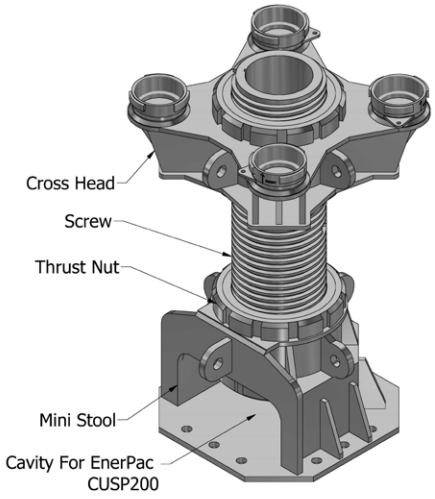
Female Coupler



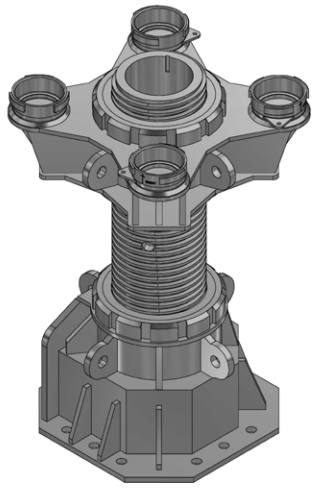
Isometric view Module 1500mm

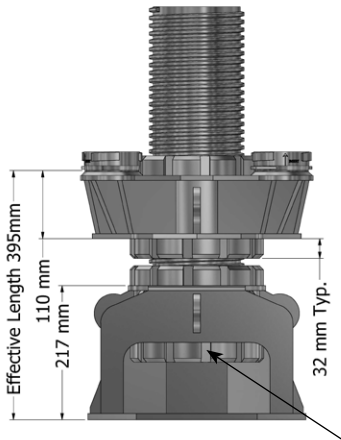
4. Base Jack

Base Jack (WLL = 170 tonne-force) is a heavy-duty screw jack used for adjusting Q150 props up to +/- 350 mm. The Base Jack is connected to prop modules and supporting substrate using the Cross Head and the Mini-Stool respectively. Fine length adjustment is done using the screw and 4 x Thrust Nuts. Max extension is 350mm. Thrust Nuts can be tightened using the Nut Spanner.



Isometric View


Isometric Rear View



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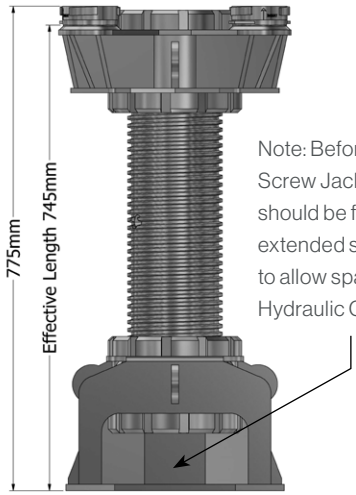
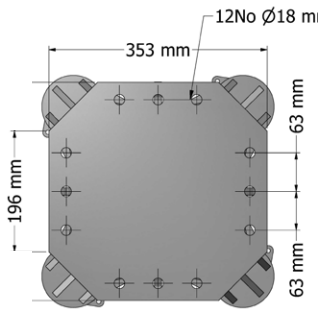


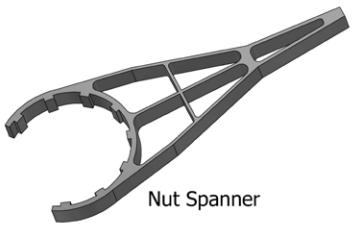
Fully Extended

Note: Before loading Screw Jack, Screw should be fully extended so as to allow space for Hydraulic Cylinder.

Note: Thrust Nut has to be removed before attempting any lift



Base Plate View



Component	Weight	Required to Build Base Jack
Cross Head	24.5 kg	1
Thrust Nut	7.3 kg	4
Screw	32.7 kg	1
Mini-Stool	26.0 kg	1

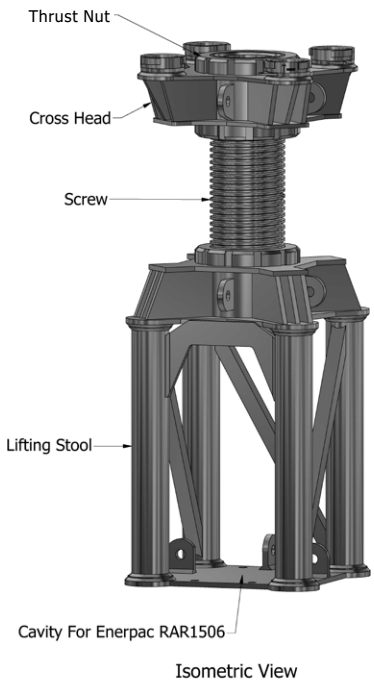
Mini-Stool can be connected to substrate through up to 12 x M16 bolts or anchors. The grade and number of bolts should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and substrate materials. The bolts or anchors should be evenly distributed on all four sides. The prop assembly can be unloaded with minimum effort using the Mini-Stool and CUSP200 Enerpac Hydraulic Cylinder. Prop assembly can be laterally braced using brace points on Cross Head and Mini-Stool.

5. Lifting Jack

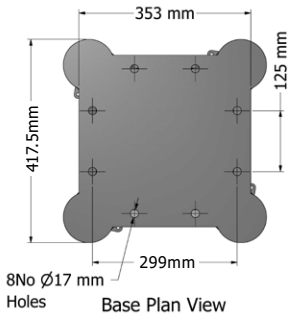
The Lifting Jack (WLL = 150 tonne-force) has similar functionality to the Base Jack. In this case, the Mini-Stool gets substituted with a Lifting Stool. Lifting Stool offers a larger cavity to put larger cylinders with higher strokes. Stool can be laterally braced using brace points.

Lifting Stool can be connected to substrate through up to 8 x M16 bolts or anchors. The grade and number of bolts should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and substrate materials. Bolts or anchors should be evenly distributed on all four sides.

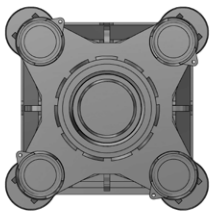
The prop assembly can be lifted, loaded and unloaded with minimum effort using the Lifting Jack and RAR1506 Enerpac Hydraulic cylinder. Prop assembly can be laterally braced using brace points on Cross Head and Lifting Jack.

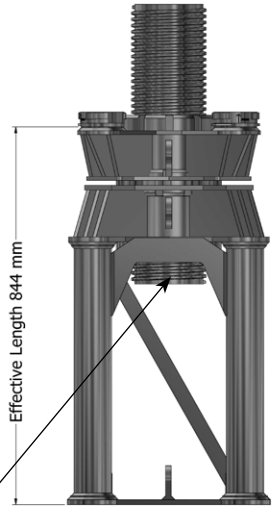


Isometric View



Base Plan View


Top View



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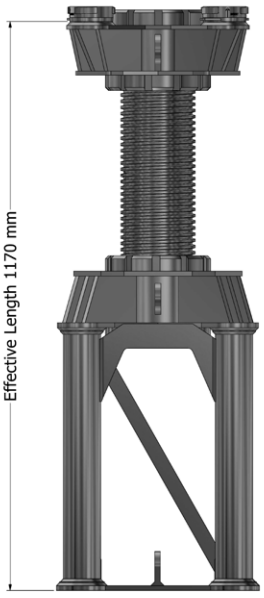


Fully Extended


Lifting Stool

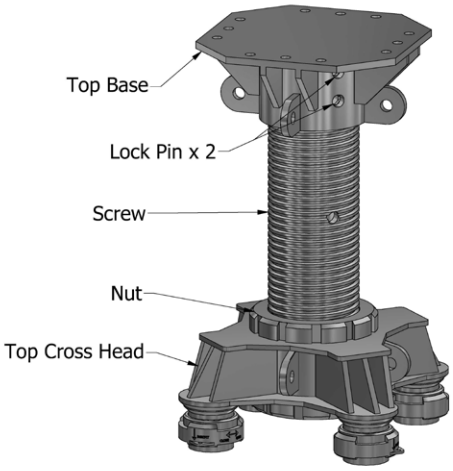
Note: Nut has to be removed before attempting any lift.

Component	Weight	Required to Build Lifting Jack
Cross Head	24.5 kg	1
Nut	7.3 kg	3
Screw	32.7 kg	1
Lifting Stool	60.0 kg	1

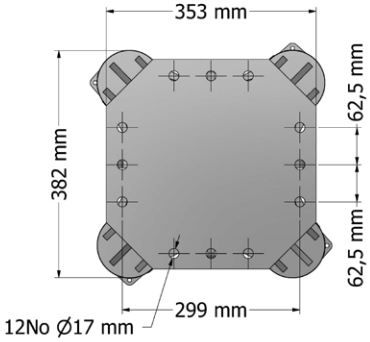

Nut Spanner

6. Top Jack

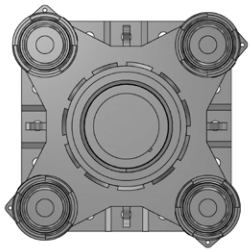
Top Jack (WLL = 170 tonne-force) is used to connect the propping system to substrate using simple jack base (see Assembly Class C). Lock Pin is made of ultra-high strength steel with grade H13/W302 (required when the Top Jack is used for a tension application). Bolts or anchors (according to design) should be evenly distributed on all four sides of the simple base for connecting to the structure. Top Jack can be connected to the main structure through 12 x M16 bolts or anchors. The grade and number of bolts should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and materials of the main structure.



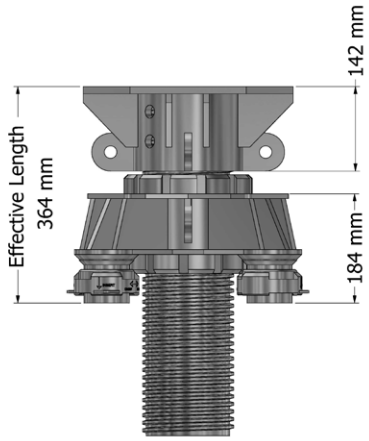
Isometric View



Plan Top Base



Plan Top Cross Head



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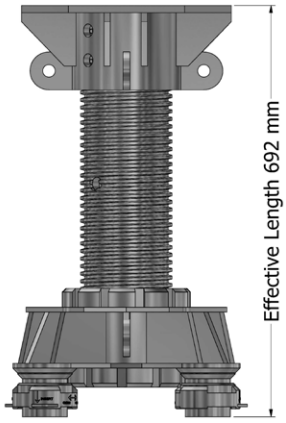
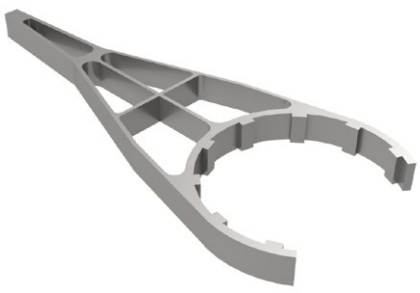


Fully Extended

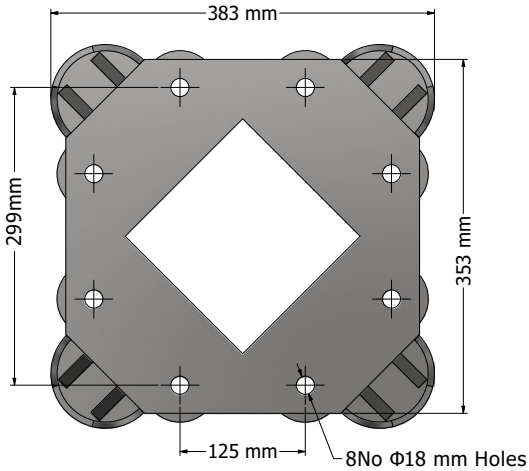
Component	Weight	Required to Build Lifting Jack
Top Cross Head	28 kg	1
Nut	7.3 kg	2
Screw	32.7 kg	1
Jack Base	17 kg	1



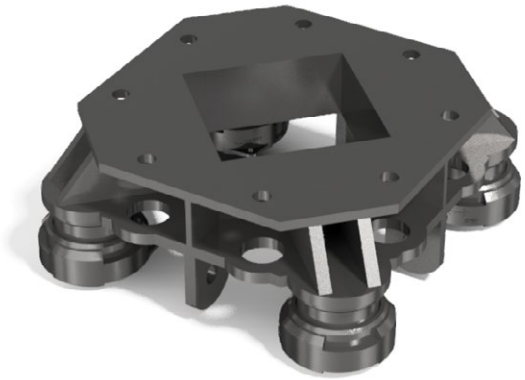
Nut Spanner

7. Flat Head

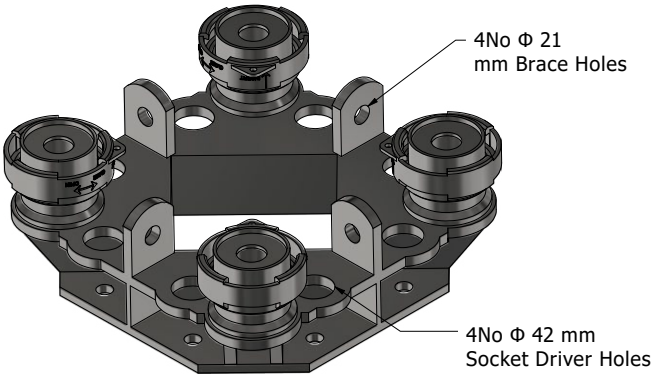
Flat Head (WLL = 170 tonne-force) is used to connect top of prop assembly to main structure using up to 8 x M16 bolts or anchors (See Assemblies Class A and B). The grade and number of bolts should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and materials of main structure. Bolts or anchors should be evenly distributed on all four sides.



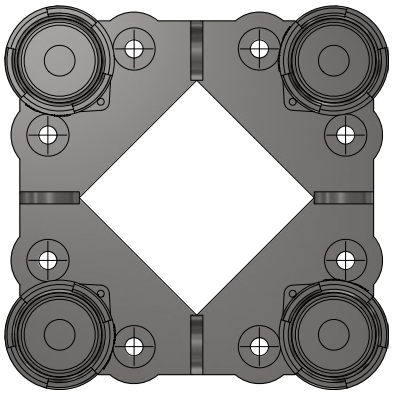
Top View



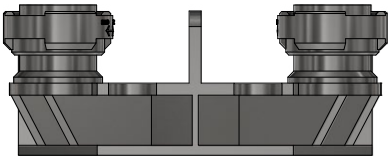
Isometric View



Isometric Bottom View



Bottom View



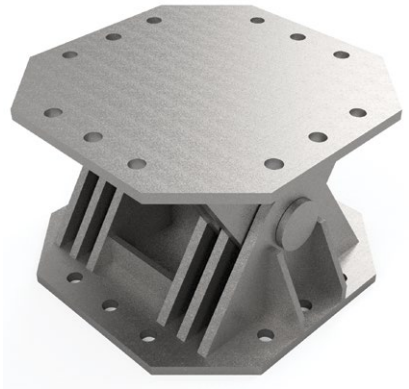
Side View

Component	Weight
Flat Head	28 kg

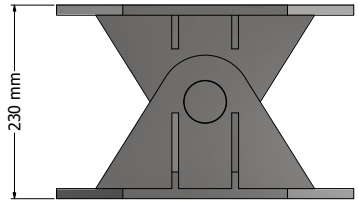
8. Raking Bracket

The Raking Bracket is designed to attach the propping system to the supports at an angle, rather than at 90 degrees. The bracket consists of two parts connected through a pivot pin. The Raking Bracket can be connected to substrate through up to 12 x M16 anchors. It can also be connected to the Mini-Stool, Simple Jack Base and Flat Head having the same M16 bolting pattern. Anchors and bolts in all connections (according to design) should be evenly spread on all four sides of the connection.

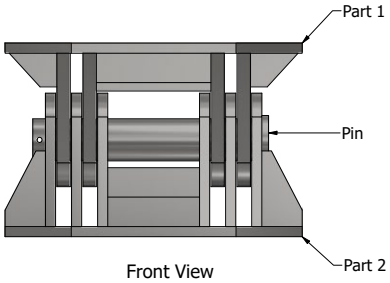
The Raking Bracket has been designed to transfer the Q150 loading without failure in its two parts or pin. Yet, the actual working load of the bracket is limited by the substrate bearing capacity, anchor bolts and its operational angle. The grade and number of bolts, as well as the actual working load, should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and substrate materials.



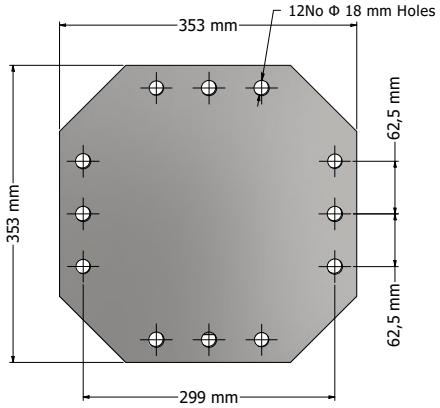
Isometric View



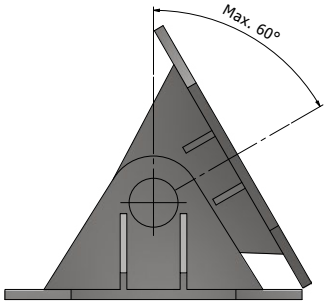
Side View



Front View



Plan View



Side View

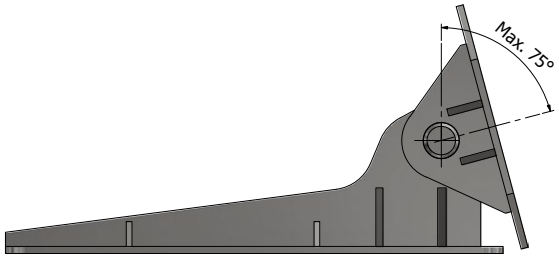
Component	Weight
Raking Bracket	53 kg

9. Multi-Angle Bracket

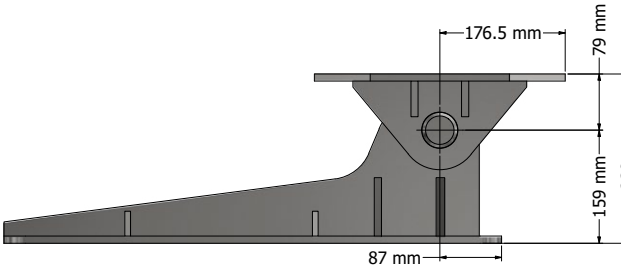
The Q150 Multi-Angle Bracket is designed to transfer high loads from a Q150 system at an angle as steep as 15 degrees to the horizontal. The Multi-Angle Bracket can be connected to a Mini-Stool, Simple Jack Base and Flat Head through 12 x M16 bolts on top plate. The bracket can be connected to suitable substrate through up to 12 x M20 plus 12 x M24 anchor bolts.

The Multi-Angle Bracket has been designed to transfer the Q150 loading without failure in its parts or pin. Yet, the actual working load of the bracket is limited by the substrate bearing capacity, anchor bolts and its operational angle. The grade and number of bolts as well as the actual working load should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and substrate materials.

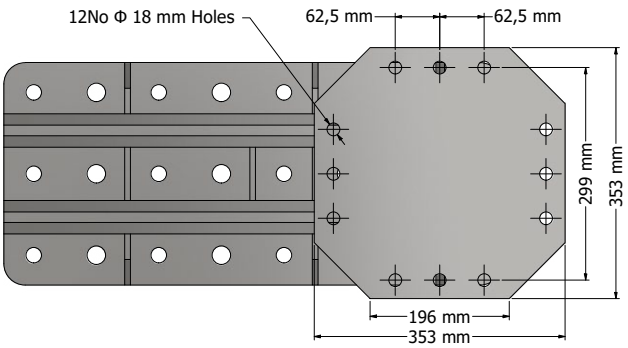
Isometric View



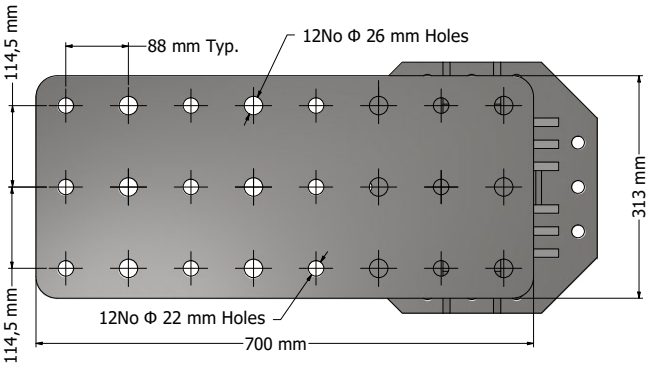
Side View



Side View



Top View

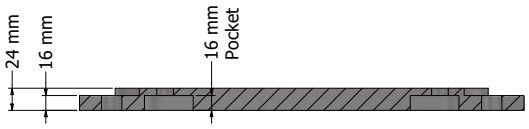


Bottom View

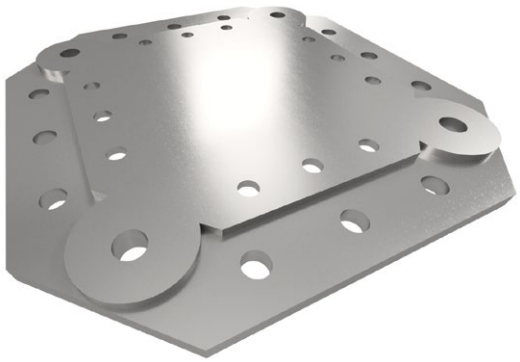
Component	Weight
Multi-Angle Bracket	71.5 kg

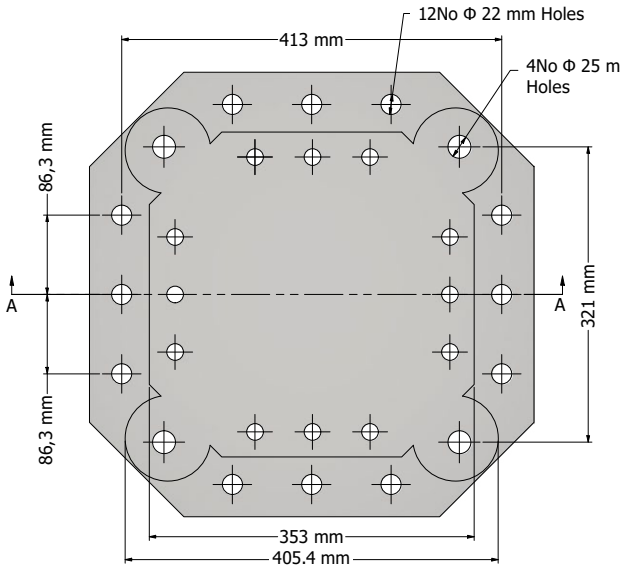
10. Transfer Fixing Plate

The Transfer Fixing Plate is used to connect Q150 end joints to substrate structures for ease of anchoring and better load transfer. It is designed to be compatible with Mini-Stool, Lifting Stool, Flat Head, Simple Jack Base and the Raking Bracket through 12 x M16 bolts. The bracket can be connected to substrate through up to 12 x M20 plus 4 x M24 bolts. The grade and number of bolts, as well as the actual working load, should be specified by a structural engineer experienced in design of temporary works based on loading and properties of bolts/anchors and substrate materials. Bolts or anchors should be evenly distributed on all four sides.

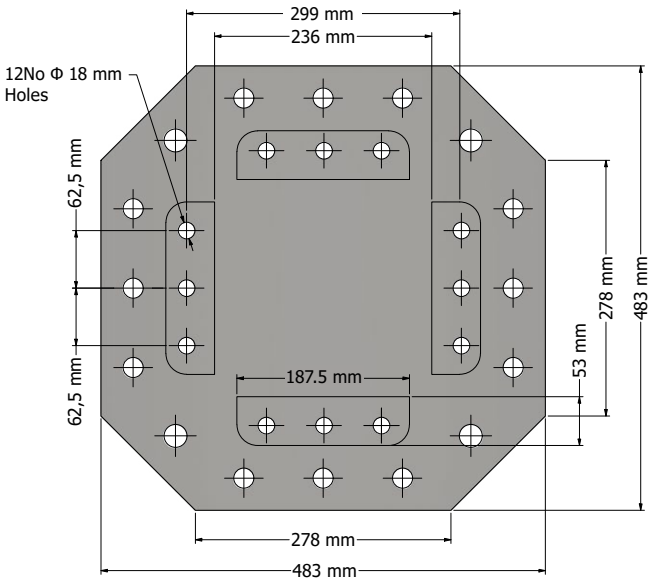


Section A-A


Isometric View



Top View



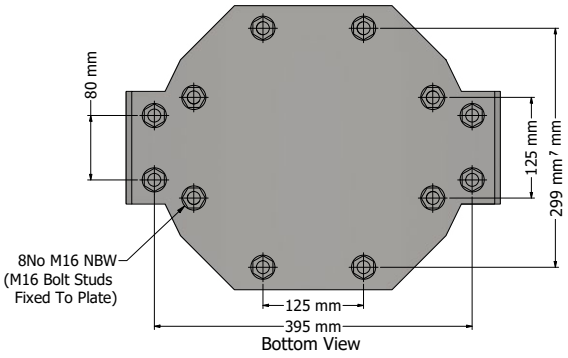
Bottom View

Component	Weight
Transfer Fixing Plate	30 kg

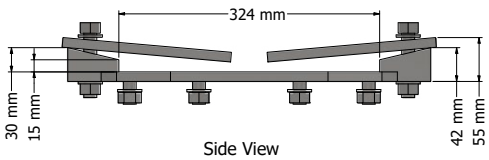
11. Needle Beam Fixing Clamp

The Q150 Needle Beam Clamp is designed to connect to the Flat Head through 8 x M16 bolts. This part is designated to grip to I-shaped beams with a flange width up to 324mm via 4 x M16 Bolts. All 8 x M16 bolts should be used for suitable load distribution. Washers are based on AS1237 and AS1252.

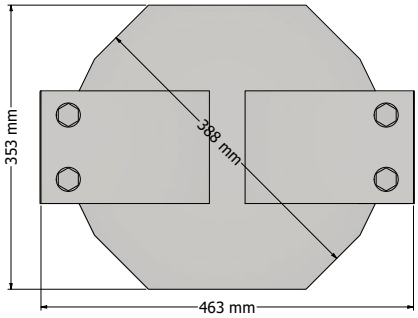
Note: Needle Beam Fixing Clamp is designed as a clamping device and is not suitable for transferring loads other than compression between the I-shaped beam and Q150 prop.



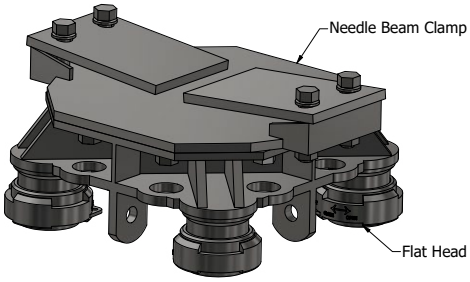
Bottom View



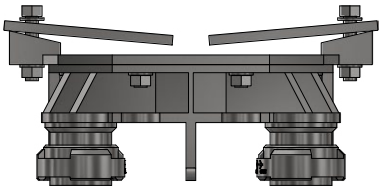
Side View



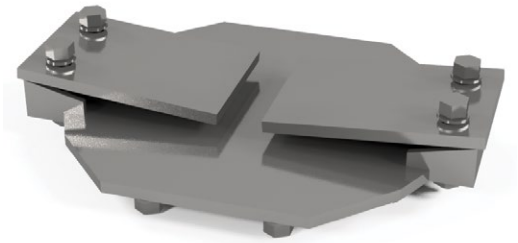
Top View



Assembled To Flat Head Isometric


Assembled To Flat Head Side View

Flat Head is shown for illustration purpose only


Isometric View

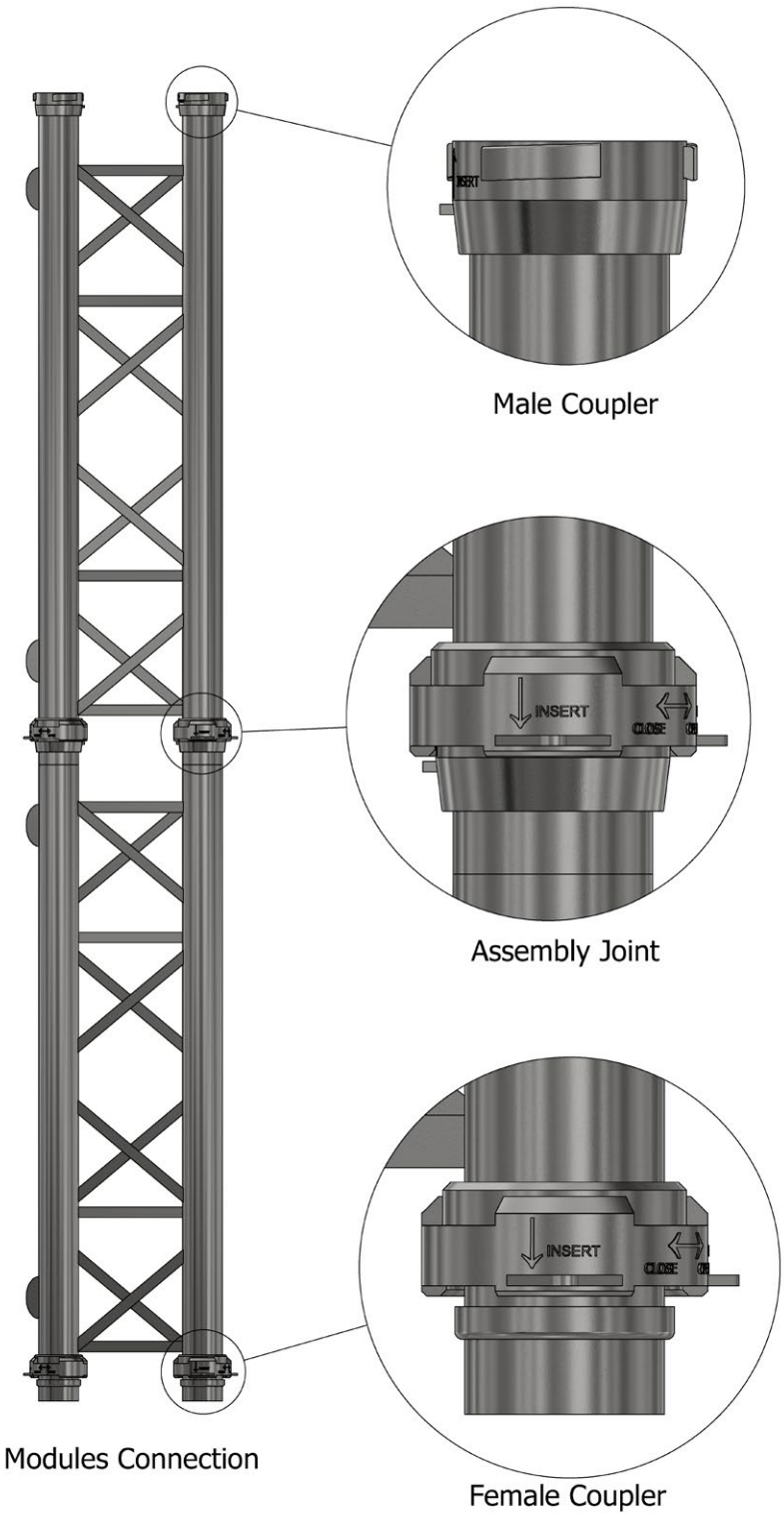
Component	Weight
Needle Beam Clamp	19 kg

Note: Needle Beam Clamp needs a Flat Heat for enabling connections with other Q150 modules.

12. Twistlock Boltless Connection Capacity

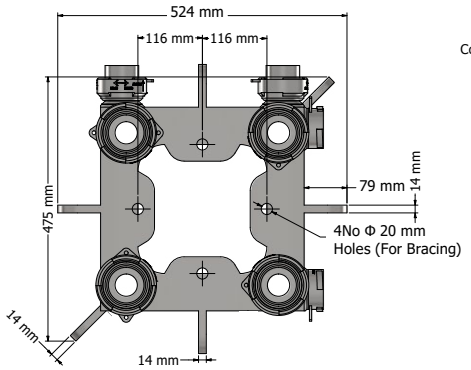
Q150 prop modules are connected to each other through four Twistlock Boltless Connections. Tensile working load limit of each connection is 125kN, as a result, the tensile working load of the Q150 props is 500kN. Each connection contains a male and a female coupler.

Note: It is not recommended to apply transverse load or uniformly distributed load on Q150 modules. Q150 modules are designed as axial load bearing elements with axial load eccentricities creating induced bending moments.

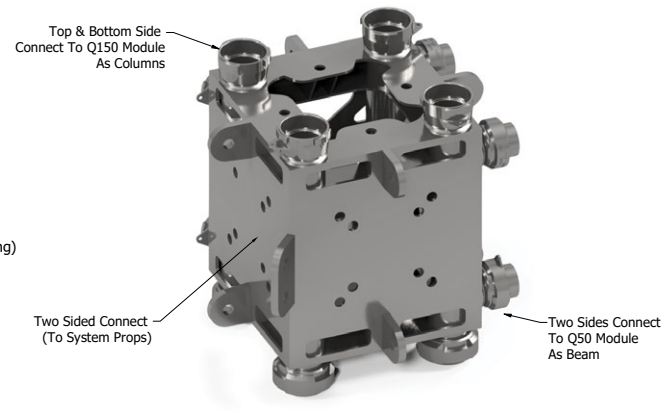


13. Quadshore Universal Connector

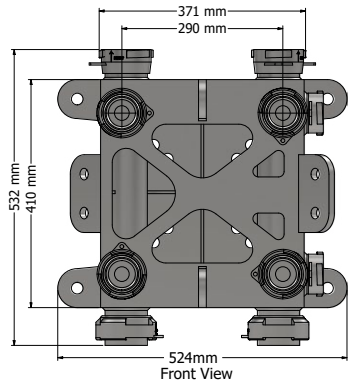
The Q150 Universal Connector is designed to work as the connecting member of the tower legs formed using Q150 props modules as columns. Tower leg connecting beams can be System 30 or 60 props or Quadshore 50. Braces up to 20 mm diameter or tilt props can be used to transfer lateral loads. The resultant panel zone is designed in most critical scenario considering simultaneous extreme loadings of beam and brace added to a loading combination for Q150 tower legs (see table below). For Q150 towers, an extensive structural analysis should be conducted considering second order effects, lateral loading, wind loading, etc. For any specific compressive capacity of Q150 towers, the number of bolts and their grade for connecting System 30/60 as beams and tilt props or DonoBrace as braces should be defined based on these detailed analyses. Prop assembly can be laterally braced using bracing points on universal connector.



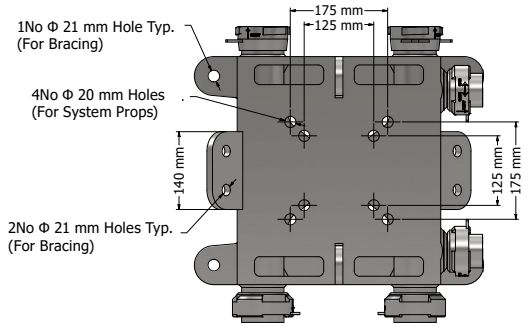
Top View



Isometric View



Front View



Side View

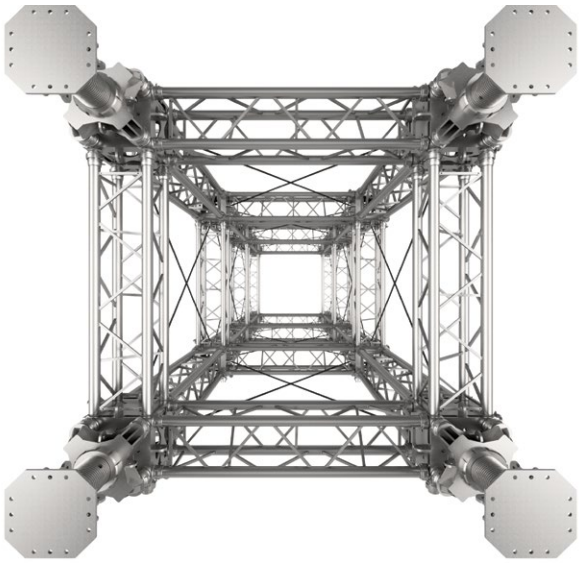
Component	Weight
Universal Connector	62 kg

Universal Connector working load combinations:

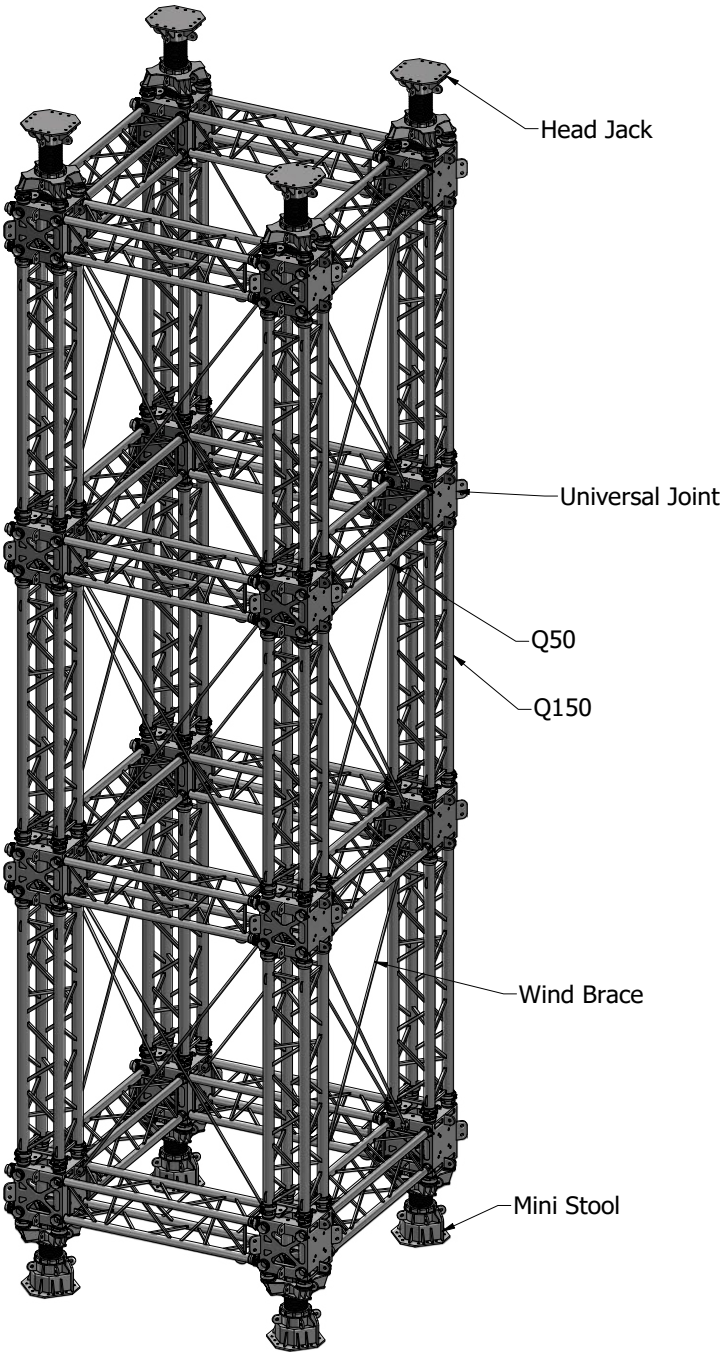
Allowable load combination for Q150 tower legs		Considered extremes for secondary elements		
		Beam		Brace
Axial Load (kN)	Bending Moment (kN.m)	Bending Moment (kN.m)	Axial Force (kN)	Axial Force (kN)
1500	0	40	120 (Compressive)	110 (Tensile)
1350	25			
1150	50			
950	68			

14. Four-Legged Tower

In addition to different single leg propping assemblies, tower forming capabilities are available for Q150 props. The Q150 towers are formed using Q150 modules as vertical elements and Q50 (or System 30/60 prop sections) as horizontal elements. Lateral forces are resisted using wind-braces or tilt props. The compressive capacity of the towers should be specified by a structural engineer experienced in the design of temporary works considering side load, wind loads, second order effects, etc.



Top Perspective

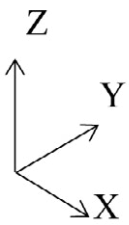


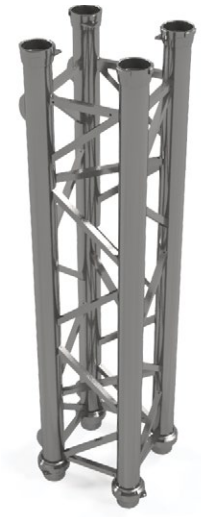
Tower Isometric View

15. Working Load Limits

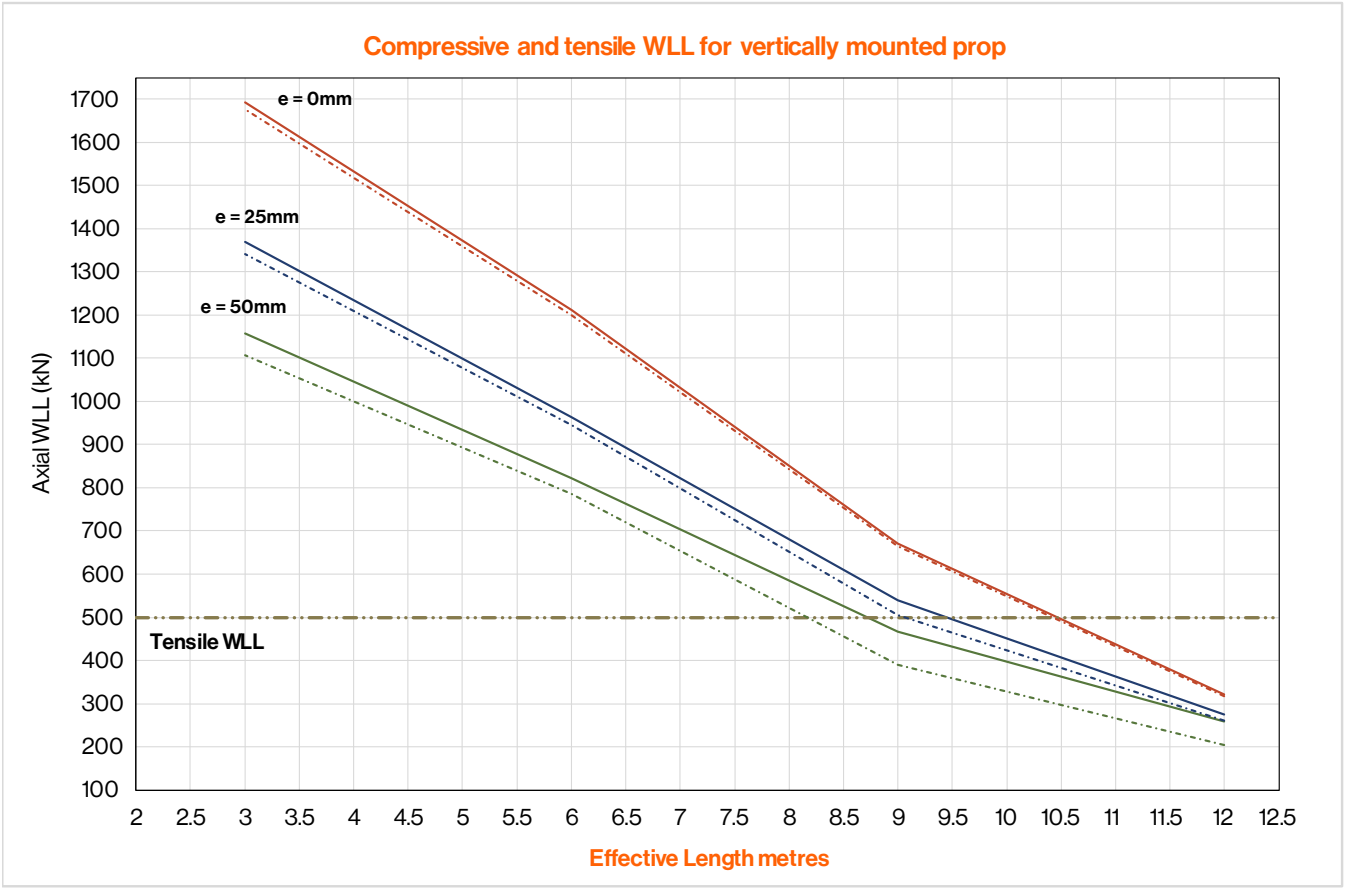
The working load limit of Q150 assembly classes A, C, D and E as shown in Part 2 were defined through extensive experimental testing in addition to finite element modelling. For Assembly Class B, the maximum compressive working load is limited by Lifting Stool and hydraulic jack to be 1500kN.

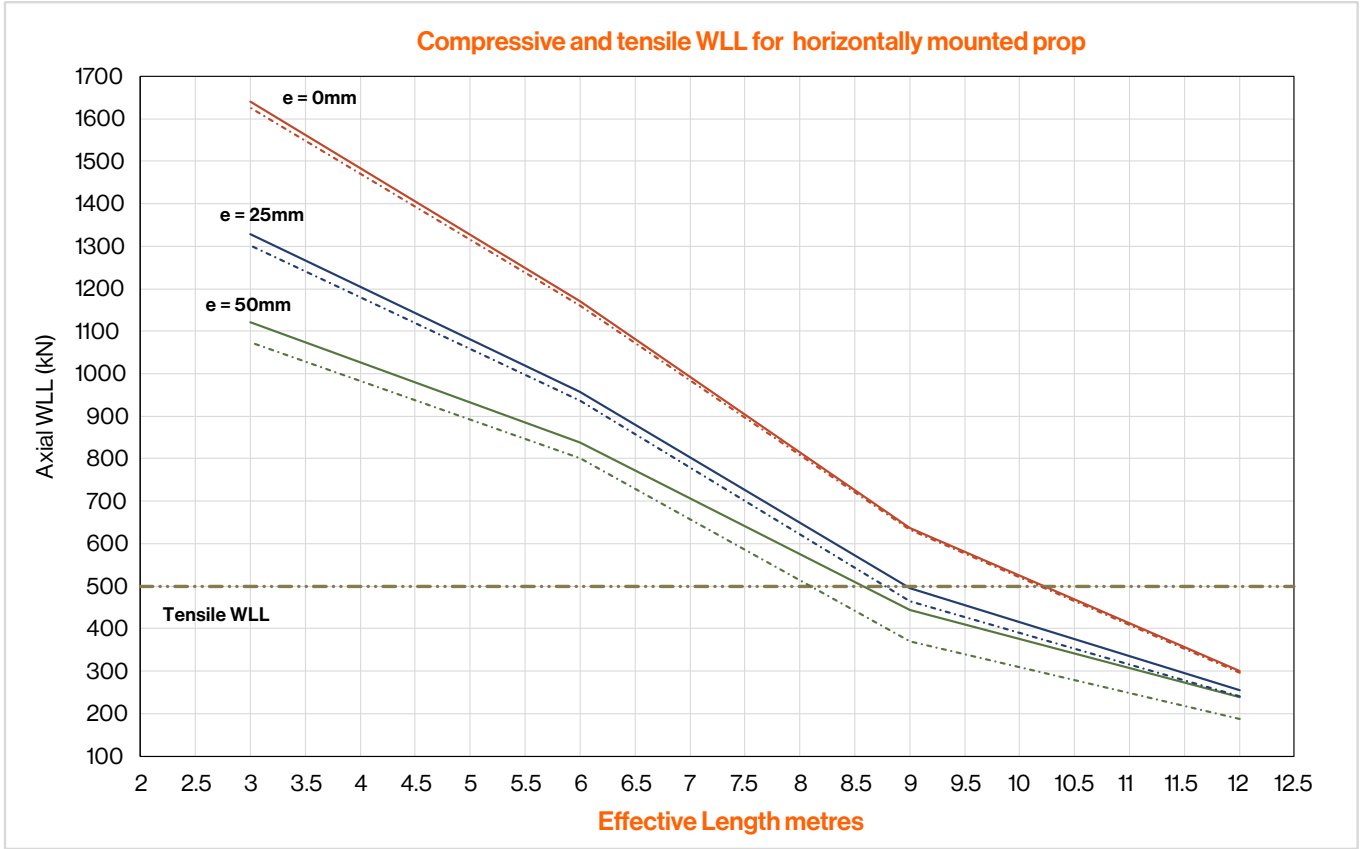
1. When Q150 props are used at an angle through Raking or Multi-Angle Brackets, the anchors or properties of the substrate will be the limiting factor. Therefore, anchor design and validation should be conducted by a structural designer.
2. Fixing at the base and top plates to be suitably capable of transferring loads. Theoretical model is pinned at each end.
3. Maximum capacity is with Q150 components in sound condition. Refer to Coates Engineering Solutions if components are damaged during site use.
4. Initial eccentricity due to the possibility of the strut being set L/400 out of plumb has been considered for all eccentricities of load.
5. Solid lines in the curves over page indicate the compressive WLL values when the eccentricity occurs in X-X or Y-Y axis. For the eccentricity in the diagonal direction (i.e. 45° respect to X-X or Y-Y) compressive WLL values obtained from broken lines should be used.





6. Added imperfection due to weight deflection is zero for vertically mounted props.
7. Designed in accordance with AS4600, AS4100, AS1170.0, AS1170.1, AS3610, and AS3850.
8. Limit State Conversion Factor of 1.5 is considered to obtain Working Load Limit capacities. Capacities based on theoretical values and destructive testing.
9. Tension capacity of 500kN is based on 4 engaging male and female couplers of Twistlock Boltless Connection.
10. This document may be revised without notice. Contact Coates Engineering Solutions for the latest information or for project specific enquiries.
11. The compressive capacity of assembly Class B is limited to 1500kN which is the hydraulic jack capacity for lifting.
12. Refer to Terms and Conditions of use within this document.


Compressive and tensile WLL for vertically mounted prop
e = 0mm
e = 25mm
e = 50mm
Tensile WLL
Axial WLL (kN)
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
12.5
Effective Length metres


Compressive and tensile WLL for horizontally mounted prop
e = 0mm
e = 25mm
e = 50mm
Tensile WLL
Axial WLL (kN)
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
12.5
Effective Length metres

16. Components for Assembly Class A

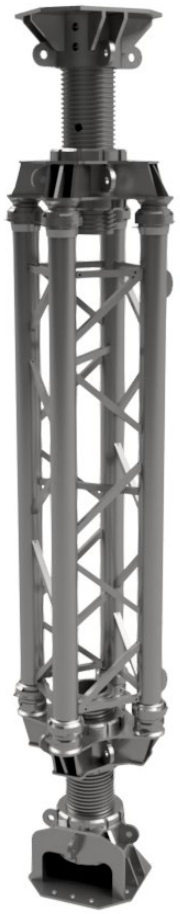
Prop Length (mm)		Required components										Total weight (kg)
						Base Jack						
min	max	Module 250mm	Module 1250mm	Module 1500mm	Module 2000mm	Screw	Nut	Cross Head	Mini stool	Linch Pin	Flat Head	
2795	3145	1	0	0	1	1	4	1	1	12	1	214
3045	3395	0	2	0	0	1	4	1	1	12	1	224
3295	3645	0	1	1	0	1	4	1	1	12	1	230
3545	3895	0	0	2	0	1	4	1	1	12	1	237
3795	4145	0	1	0	1	1	4	1	1	12	1	242
4045	4395	0	0	1	1	1	4	1	1	12	1	249
4295	4645	0	3	0	0	1	4	1	1	16	1	265
4545	4895	0	2	1	0	1	4	1	1	16	1	272
4795	5145	0	1	2	0	1	4	1	1	16	1	278
5045	5395	0	0	3	0	1	4	1	1	16	1	285
5295	5645	0	1	1	1	1	4	1	1	16	1	290
5545	5895	0	0	2	1	1	4	1	1	16	1	297
5795	6145	0	1	0	2	1	4	1	1	16	1	302
6045	6395	0	0	1	2	1	4	1	1	16	1	309
6295	6645	0	1	3	0	1	4	1	1	20	1	326
6545	6895	0	0	4	0	1	4	1	1	20	1	333
6795	7145	1	0	0	3	1	4	1	1	20	1	334
7045	7395	0	0	3	1	1	4	1	1	20	1	345
7295	7645	0	1	1	2	1	4	1	1	20	1	350
7545	7895	0	0	2	2	1	4	1	1	20	1	357
7795	8145	0	1	0	3	1	4	1	1	20	1	362
8045	8395	0	0	1	3	1	4	1	1	20	1	369
8295	8645	1	0	1	3	1	4	1	1	24	1	382
8545	8895	0	0	0	4	1	4	1	1	20	1	381
8795	9145	0	1	2	2	1	4	1	1	24	1	398
9045	9395	0	0	3	2	1	4	1	1	24	1	405
9295	9645	0	1	1	3	1	4	1	1	24	1	410
9545	9895	0	0	2	3	1	4	1	1	24	1	417
9795	10145	0	1	4	1	1	4	1	1	28	1	434
10045	10395	0	0	5	1	1	4	1	1	28	1	441
10295	10645	0	1	3	2	1	4	1	1	28	1	446
10545	10895	0	0	4	2	1	4	1	1	28	1	453
10795	11145	0	1	2	3	1	4	1	1	28	1	458
11045	11395	0	0	3	3	1	4	1	1	28	1	465
11295	11645	0	1	1	4	1	4	1	1	28	1	470
11545	11895	0	0	2	4	1	4	1	1	28	1	477
11795	12145	0	1	0	5	1	4	1	1	28	1	482

17. Components for Assembly Class B

Prop Length (mm)		Required components										Total weight (kg)
						Lifting Jack						
min	max	Module 250mm	Module 1250mm	Module 1500mm	Module 2000mm	Screw	Nut	Cross Head	Lifting Stool	Linch Pin	Flat Head	
2734	3084	1	0	1	0	1	4	1	1	12	1	231
2984	3334	2	0	1	0	1	4	1	1	16	1	245
3234	3584	1	0	0	1	1	4	1	1	12	1	243
3484	3834	0	2	0	0	1	4	1	1	12	1	253
3734	4084	0	1	1	0	1	4	1	1	12	1	259
3984	4334	0	0	2	0	1	4	1	1	12	1	266
4234	4584	0	1	0	1	1	4	1	1	12	1	271
4484	4834	0	0	1	1	1	4	1	1	12	1	278
4734	5084	0	3	0	0	1	4	1	1	16	1	294
4984	5334	0	2	1	0	1	4	1	1	16	1	301
5234	5584	0	1	2	0	1	4	1	1	16	1	307
5484	5834	0	0	3	0	1	4	1	1	16	1	314
5734	6084	0	1	1	1	1	4	1	1	16	1	319
5984	6334	0	0	2	1	1	4	1	1	16	1	326
6234	6584	0	1	0	2	1	4	1	1	16	1	331
6484	6834	0	0	1	2	1	4	1	1	16	1	338
6734	7084	0	1	3	0	1	4	1	1	20	1	355
6984	7334	0	0	4	0	1	4	1	1	20	1	362
7234	7584	1	0	0	3	1	4	1	1	20	1	363
7484	7834	0	0	3	1	1	4	1	1	20	1	374
7734	8084	0	1	1	2	1	4	1	1	20	1	379
7984	8334	0	0	2	2	1	4	1	1	20	1	386
8234	8584	0	1	0	3	1	4	1	1	20	1	391
8484	8834	0	0	1	3	1	4	1	1	20	1	398
8734	9084	1	0	1	3	1	4	1	1	24	1	411
8984	9334	0	0	0	4	1	4	1	1	20	1	410
9234	9584	0	1	2	2	1	4	1	1	24	1	427
9484	9834	0	0	3	2	1	4	1	1	24	1	434
9734	10084	0	1	1	3	1	4	1	1	24	1	439
9984	10334	0	0	2	3	1	4	1	1	24	1	446
10234	10584	0	1	4	1	1	4	1	1	28	1	463
10484	10834	0	0	5	1	1	4	1	1	28	1	470
10734	11084	0	1	3	2	1	4	1	1	28	1	475
10984	11334	0	0	4	2	1	4	1	1	28	1	482
11234	11584	0	1	2	3	1	4	1	1	28	1	487
11484	11834	0	0	3	3	1	4	1	1	28	1	494
11734	12084	0	1	1	4	1	4	1	1	28	1	499
11984	12334	0	0	2	4	1	4	1	1	28	1	506

18. Components for Assembly Class C

Prop Length (mm)		Required components											Total weight (kg)
min	max	Module 250mm	Module 1250mm	Module 1500mm	Module 2000mm	Screw	Nut	Cross Head	Mini Stool	Top Cross Head	Simple Jack Base	Linch Pin	
2503	3203	1	0	1	0	2	6	1	1	1	1	12	295
3253	3953	0	2	0	0	2	6	1	1	1	1	12	317
4003	4703	0	1	0	1	2	6	1	1	1	1	12	335
4753	5453	0	2	1	0	2	6	1	1	1	1	16	365
5503	6203	0	1	1	1	2	6	1	1	1	1	16	384
6253	6953	0	0	1	2	2	6	1	1	1	1	16	402
7003	7703	1	0	0	3	2	6	1	1	1	1	20	428
7753	8453	0	0	2	2	2	6	1	1	1	1	20	450
8503	9203	1	0	1	3	2	6	1	1	1	1	24	476
9253	9953	0	0	3	2	2	6	1	1	1	1	24	498
10003	10703	0	1	4	1	2	6	1	1	1	1	28	528
10753	11453	0	0	4	2	2	6	1	1	1	1	28	546
11503	12203	0	1	1	4	2	6	1	1	1	1	28	564



19. Components for Assembly Class D

Prop Length (mm)		Required components												Total weight kg)
min	max	Module 250mm	Module 1250mm	Module 1500mm	Module 2000mm	Screw	Nut	Cross Head	Mini stool	Flat Head	Raking Bracket	M16 bolts and nuts	Linch Pin	
2775	3125	0	0	0	1	1	4	1	1	1	2	16 or 24	8	306
3025	3375	1	0	0	1	1	4	1	1	1	2	16 or 24	12	320
3275	3625	0	2	0	0	1	4	1	1	1	2	16 or 24	12	329
3525	3875	0	1	1	0	1	4	1	1	1	2	16 or 24	12	336
3775	4125	0	0	2	0	1	4	1	1	1	2	16 or 24	12	342
4025	4375	0	1	0	1	1	4	1	1	1	2	16 or 24	12	348
4275	4625	0	0	1	1	1	4	1	1	1	2	16 or 24	12	354
4525	4875	0	3	0	0	1	4	1	1	1	2	16 or 24	16	371
4775	5125	0	2	1	0	1	4	1	1	1	2	16 or 24	16	378
5025	5375	0	1	2	0	1	4	1	1	1	2	16 or 24	16	384
5275	5625	0	0	3	0	1	4	1	1	1	2	16 or 24	16	391
5525	5875	0	1	1	1	1	4	1	1	1	2	16 or 24	16	396
5775	6125	0	0	2	1	1	4	1	1	1	2	16 or 24	16	403
6025	6375	0	1	0	2	1	4	1	1	1	2	16 or 24	16	408
6275	6625	0	0	1	2	1	4	1	1	1	2	16 or 24	16	415
6525	6875	0	1	3	0	1	4	1	1	1	2	16 or 24	20	432
6775	7125	0	0	4	0	1	4	1	1	1	2	16 or 24	20	439
7025	7375	1	0	0	3	1	4	1	1	1	2	16 or 24	20	440
7275	7625	0	0	3	1	1	4	1	1	1	2	16 or 24	20	451
7525	7875	0	1	1	2	1	4	1	1	1	2	16 or 24	20	456
7775	8125	0	0	2	2	1	4	1	1	1	2	16 or 24	20	463
8025	8375	0	1	0	3	1	4	1	1	1	2	16 or 24	20	468
8275	8625	0	0	1	3	1	4	1	1	1	2	16 or 24	20	475
8525	8875	1	0	1	3	1	4	1	1	1	2	16 or 24	24	488
8775	9125	0	0	0	4	1	4	1	1	1	2	16 or 24	20	487
9025	9375	0	1	2	2	1	4	1	1	1	2	16 or 24	24	504
9275	9625	0	0	3	2	1	4	1	1	1	2	16 or 24	24	511
9525	9875	0	1	1	3	1	4	1	1	1	2	16 or 24	24	516
9775	10125	0	0	2	3	1	4	1	1	1	2	16 or 24	24	523
10025	10375	0	1	4	1	1	4	1	1	1	2	16 or 24	28	540
10275	10625	0	0	5	1	1	4	1	1	1	2	16 or 24	28	547
10525	10875	0	1	3	2	1	4	1	1	1	2	16 or 24	28	552
10775	11125	0	0	4	2	1	4	1	1	1	2	16 or 24	28	559
11025	11375	0	1	2	3	1	4	1	1	1	2	16 or 24	28	564
11275	11625	0	0	3	3	1	4	1	1	1	2	16 or 24	28	571
11525	11875	0	1	1	4	1	4	1	1	1	2	16 or 24	28	576
11775	12125	0	0	2	4	1	4	1	1	1	2	16 or 24	28	583

See overleaf for image of Class D assembly.

*Number of M16 bolts and nuts required to attached Raking Bracket should be checked by designer.

**Prop Length for this assembly is measured as the distance between two Raking Bracket pin axes.

19. Components for Assembly Class D (cont.)

20. Components for Assembly Class E

Prop Length (mm)		Required components												Total weight (kg)
min	max	Module 250mm	Module 1250mm	Module 1500mm	Module 2000mm	Screw	Nut	Cross Head	Mini stool	Flat Head	Multi Angle Bracket	M16 bolts and nuts	Linch Pin	
2703	3053	0	0	0	1	1	4	1	1	1	2	16 or 24	8	342
2953	3303	1	0	0	1	1	4	1	1	1	2	16 or 24	12	355
3203	3553	0	2	0	0	1	4	1	1	1	2	16 or 24	12	365
3453	3803	0	1	1	0	1	4	1	1	1	2	16 or 24	12	371
3703	4053	0	0	2	0	1	4	1	1	1	2	16 or 24	12	378
3953	4303	0	1	0	1	1	4	1	1	1	2	16 or 24	12	383
4203	4553	0	0	1	1	1	4	1	1	1	2	16 or 24	12	390
4453	4803	0	3	0	0	1	4	1	1	1	2	16 or 24	16	406
4703	5053	0	2	1	0	1	4	1	1	1	2	16 or 24	16	413
4953	5303	0	1	2	0	1	4	1	1	1	2	16 or 24	16	419
5203	5553	0	0	3	0	1	4	1	1	1	2	16 or 24	16	426
5453	5803	0	1	1	1	1	4	1	1	1	2	16 or 24	16	431
5703	6053	0	0	2	1	1	4	1	1	1	2	16 or 24	16	438
5953	6303	0	1	0	2	1	4	1	1	1	2	16 or 24	16	443
6203	6553	0	0	1	2	1	4	1	1	1	2	16 or 24	16	450
6453	6803	0	1	3	0	1	4	1	1	1	2	16 or 24	20	468
6703	7053	0	0	4	0	1	4	1	1	1	2	16 or 24	20	474
6953	7303	1	0	0	3	1	4	1	1	1	2	16 or 24	20	476
7203	7553	0	0	3	1	1	4	1	1	1	2	16 or 24	20	486
7453	7803	0	1	1	2	1	4	1	1	1	2	16 or 24	20	492
7703	8053	0	0	2	2	1	4	1	1	1	2	16 or 24	20	498
7953	8303	0	1	0	3	1	4	1	1	1	2	16 or 24	20	504
8203	8553	0	0	1	3	1	4	1	1	1	2	16 or 24	20	510
8453	8803	1	0	1	3	1	4	1	1	1	2	16 or 24	24	524
8703	9053	0	0	0	4	1	4	1	1	1	2	16 or 24	20	522
8953	9303	0	1	2	2	1	4	1	1	1	2	16 or 24	24	540
9203	9553	0	0	3	2	1	4	1	1	1	2	16 or 24	24	546
9453	9803	0	1	1	3	1	4	1	1	1	2	16 or 24	24	552
9703	10053	0	0	2	3	1	4	1	1	1	2	16 or 24	24	558
9953	10303	0	1	4	1	1	4	1	1	1	2	16 or 24	28	576
10203	10553	0	0	5	1	1	4	1	1	1	2	16 or 24	28	582
10453	10803	0	1	3	2	1	4	1	1	1	2	16 or 24	28	588
10703	11053	0	0	4	2	1	4	1	1	1	2	16 or 24	28	594
10953	11303	0	1	2	3	1	4	1	1	1	2	16 or 24	28	600
11203	11553	0	0	3	3	1	4	1	1	1	2	16 or 24	28	606
11453	11803	0	1	1	4	1	4	1	1	1	2	16 or 24	28	612
11703	12053	0	0	2	4	1	4	1	1	1	2	16 or 24	28	618

See overleaf for image of Class E assembly.

20. Components for Assembly Class E (cont.)

Coates

Equipped for anything

Contact us

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