



MP375 Hydraulic Strut (c/w Optional Failsafe Clamp)



Important Notes

All excavation work must be thoroughly planned and a risk assessment completed before work commences on site.

These instructions form guidance for the MP375 Strut. All stages of assembly, installation, pressurisation and removal must be supervised by a Groundforce engineer.

The equipment used in this manual must not be modified in any way without the express permission of Groundforce

All contractor's personnel involved the use of this equipment must be fully briefed and adequately supervised by a competent person.

All hires for this equipment will be accompanied by a scheme specific general arrangement drawing. This must be read in conjunction with these instructions.

THIS USER GUIDE IS NOT CONTROLLED WHEN PRINTED



A 3D video animation showing hydraulic strut typical installation methodology is available to [watch now](#) on our YouTube channel.

**IF IN ANY DOUBT SEEK FURTHER ADVICE:
ON FREEPHONE - 0800 000 345**



Certification Number 14419
ISO 9001 • ISO 14001 • ISO 45001

Rev	Date	Comments	Initial
1.8	19-05-23	CE/UKCA update	DSW



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SAFETY

Common Symbols and Meanings

Safety Note: It is recommended that hand and eye protection are used when operating hydraulic equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
	Use eye protection
	Wear protective gloves
	Wear head protection
	Wear protective footwear

WARNING SYMBOLS	
	General warning
	Crushing of hands
	Hot surface or oil

Introduction

The MP375 is a modular format heavy-duty hydraulically activated strut consisting of a hydraulic ram unit with a 965mm stroke for fine length adjustment. For higher load and/or longer span applications, it is possible to combine the hydraulic unit with extension pieces using appropriate adaptor components. Swivel end bearing units allow for various strutting alignments within an excavation with or without waling beams.

The MP375 has a practical operating range of 3.2m to 35.0m and can withstand working loads up to 375 tonnes at shorter spans. The hydraulic extension and retraction of the ram is made using a hand operated or motorised pump with two hoses connected to the ram via quick release couplings located to one side of the hydraulic unit.

If required for additional security, a Failsafe Clamp can be fitted to engage in the concentric grooves machined into the inner sleeve tube. In the unlikely event of a hydraulic failure, the clamp will act as a stop to prevent significant contraction of the prop. (see page 8).

Note: this equipment should only be in the temperature range -20°C to +40°C unless otherwise stated.

Equipment Identification

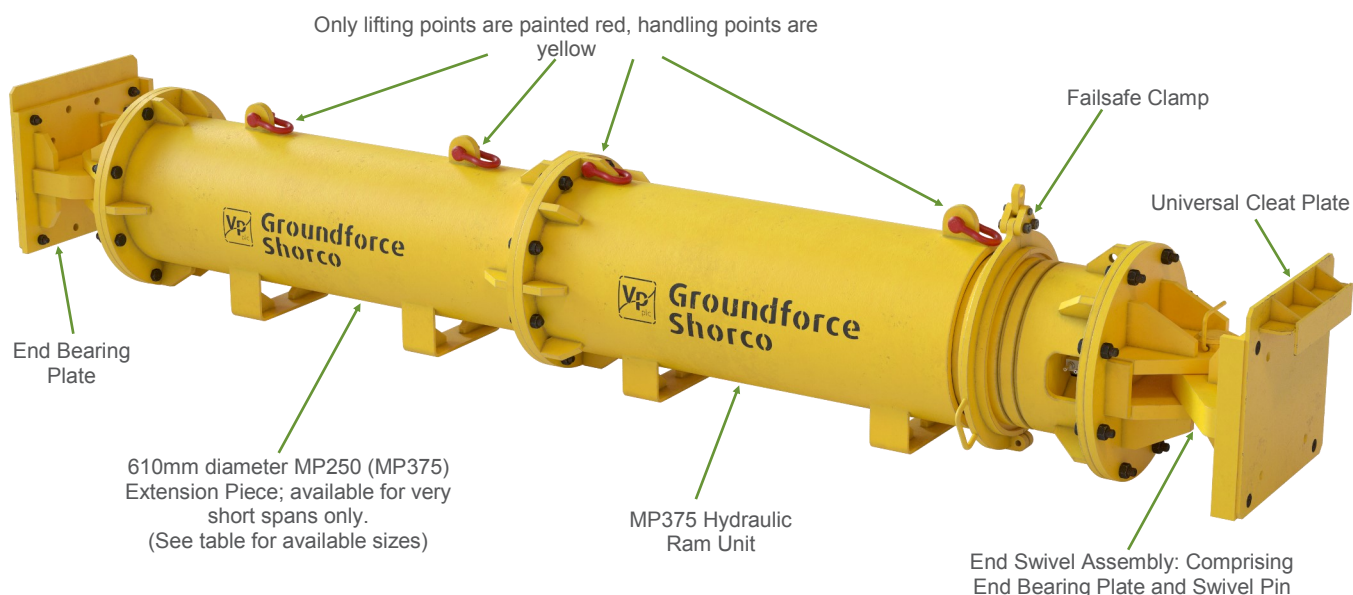
Important Note on Motorised Pumps

The 'Hydraulic Oil' Motorised Pump, which is housed in a blue cage, **must** be used with the MP375 - **IT IS ALSO ESSENTIAL THAT THE CORRECT HYDRAULIC OIL IS USED**. Hydraulic oil is supplied in 5 litre containers marked "Millmax 32 HV". COSHH datasheets are available on request. Using the wrong fluid may cause irreparable damage to the pump. For identification of this pump, see the image below:

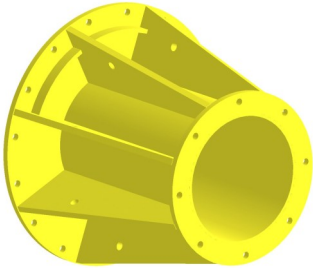
For detailed instructions on how to use the Motorised Pump, see the 'Hydraulic Oil Motorised Shoring Pump' user guide which you can [download as a pdf](#) from the GF Technical Library.



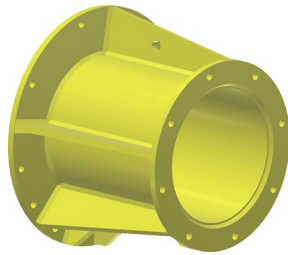
Note: The Hydraulic Oil Motorised Pump is housed in a **BLUE CAGE**



Ancillary Components



Euro to Standard Adaptor
(610mm -1016mm)



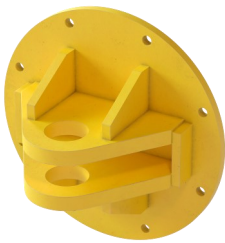
MP375 Adaptor
(610mm to 813mm)



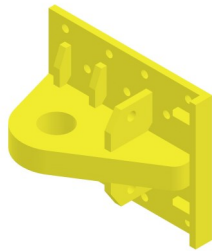
Universal Cleat Plate



Failsafe Clamp



MP375 Bolted Flange
Swivel Plate



MP375 Multi Angle End
Bearing Plate



MP375 Swivel Pin

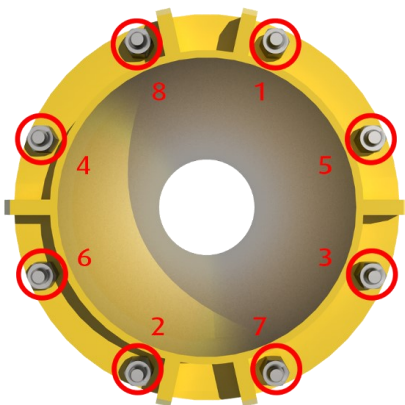


MP375 Load Sensing
Pin

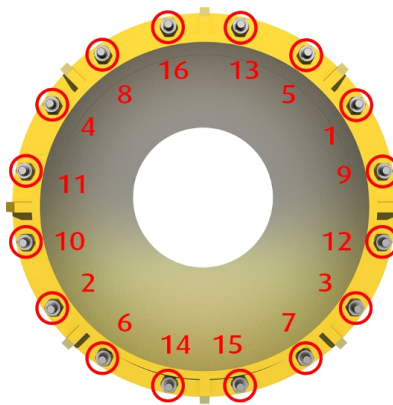
Bolt Tightening Sequence



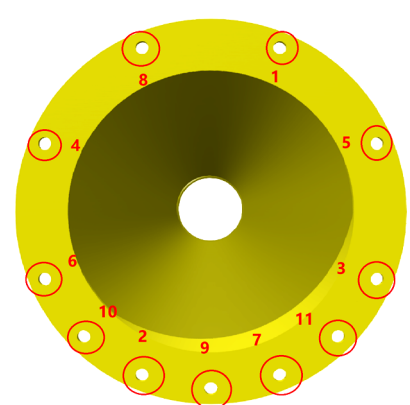
Safety Note: If strut assembly is to be carried out on site, use only bolts supplied by Groundforce (M30 x 100mm grade 10.9 c/w flat washer). Tightening torque is 1500Nm (1100ft lb) Spanner/socket size is 46mm. All MP375 hydraulic unit flange plate connections should be made using **M30 x 110mm** Grade 10.9 un-plated nut and bolt assemblies.



Diagonal tightening
sequence for an eight hole
flange or tube connection.



Diagonal tightening sequence
for a sixteen hole flange or
tube connection.



Diagonal tightening sequence
for an eleven hole flange or
tube connection.

Note:

On shorter spans, there may be difficulty accessing nuts **2** and **7** on an 8 hole flange or nuts **14** and **15** on a 16 hole flange when attempting to use a Torque Wrench and Multiplier. This is due to obstructions caused by the strut foot.

If access is difficult, it is permissible to use a 'Slogging Spanner' in conjunction with a lump hammer to tighten the nuts.

Always follow the diagonal tightening sequence shown wherever possible.

Item No.	Description
SIA.SSW46	46mm Ring Slogging Spanner Wrench

Equipment Specification

Item Code	Description	Weight (kg)
HS375.HUL	MP375 Hydraulic Strut Unit	3270
HS250.EX05H	MP250 Hyd Strut Extn 0.5m (HD)	300
HS250.EEXESA	MP250 Euro to Std Adaptor	850
HS375.EXSTD813	MP375 Std to 813 Adaptor	525
HS375.FP	MP375 Bolted Flange Swivel Plate	250
HS375.SP	MP375 Swivel Pin	30
HS375.MAEP	MP375 Multi Angle End Bearing Plate	280
HS375.EBP	MP375 End Bearing Plate - (older model 45°)	260
HS250.SSAH	MP250 Super to Std Adaptor (HD)	950
HS375.FSC	MP375 Failsafe Clamp	80
HS250.UC	MP250 Universal Cleat	20

Optional Items

Item Code	Description	Length (m)	Weight (kg)
HS250.EEX1	MP250 Euro Strut Extn 1.0m	1.0	750
HS250.EEX2	MP250 Euro Strut Extn 2.0m	2.0	1260
HS250.EEX3	MP250 Euro Strut Extn 3.0m	3.0	1810
HS250.EEX5	MP250 Euro Strut Extn 5.0m	5.0	2800
HS250.EEX6	MP250 Euro Strut Extn 6.0m	6.0	3350
HS250.EEX10	MP250 Euro Strut Extn 10.0m	10.0	5340

Optional Items

Item Code	Description	Length (m)	Weight (kg)
HS375.EX1	MP375 Hyd Strut Extn 1.0m (813 OD)	1.0	592
HS375.EX2	MP375 Hyd Strut Extn 2.0m (813 OD)	2.0	907
HS375.EX4	MP375 Hyd Strut Extn 4.0m (813 OD)	4.0	1532
HS375.EX8	MP375 Hyd Strut Extn 8.0m (813 OD)	8.0	2785
HS375.EX12	MP375 Hyd Strut Extn 12.0m (813 OD)	12.0	4023

Notes on Lifting and Handling



Safety Note: No attempt must be made to lift assemblies or sub-assemblies greater than 30m long without a detailed lift plan being supplied by Groundforce, otherwise there is a risk of overloading individual lifting points or bolted connections.



These components are very heavy. It is essential to have a detailed lifting and installation/removal plan in place prior to commencing work. Components must be lifted from the correct lifting points provided. All lifting equipment must have current test certificates and appropriate working load limit values.

Note: The weight of an assembled strut is concentrated towards the end incorporating the hydraulic unit. The slinging positions should be adjusted by trial lifts until a near horizontal lift is achieved.

Consideration must be given to the capacities of the individual red lifting points welded to the equipment when preparing the lifting plan. (see table below)

Description	Individual Lifting Point Capacity (tonnes)
MP375 Hydraulic Strut Unit	12
Super Tube Extn	12
Euro Strut Extn	12



Safety Note:
it is ultimately the responsibility of the user to provide a safe method of access to and egress from excavations.



- Always work from a detailed lifting plan
- Ensure adequate capacity of the lifting equipment
- Know the weight of the load
- Adjust slings so that struts are lifted horizontally
- Ensure the safe lift angle of chains is not exceeded
- Do not exceed the capacity of individual lifting points

- Use clear and precise hand signals
- Be aware of personnel in the vicinity
- Use tag lines to control load
- Ensure all lifting equipment has valid certification
- Do not use damaged lifting points
- Report damaged lifting points and equipment

Installation



Safety Notes: Extreme care and adequate precautions must be taken to prevent trapping fingers during all stages of work.



Important Notes:

If struts are bearing against steel beams, it is essential that the connection details are designed by a qualified engineer. It is recommended that the seating area of the strut is clean and marked prior to installing the strut.

MP375 struts are generally used for strutting between concrete pile caps: these instructions have been written with this in mind. **Note:** MP375 struts will usually be supplied with a Hydraulic Oil Motorised Shoring Pump to speed and simplify installation.

It is recommended that the strut be fully assembled outside the excavation prior to lowering into place. Alternatively, should site restrictions dictate, then the strut can be assembled from within the excavation.

Steps 1 and 2 apply only to struts delivered to site in component form or part assembled:

1. Assemble the appropriate components in the correct order and orientation with the lifting points to the top. Ensure that the End Bearing Plate is assembled to the Bolted Flange Swivel Plate through the central swivel hole. Ensure that all mating flanges are clean and all bolts in every flange are fitted in a diagonally opposite sequence (see page 3). Do not attempt to lift the assembled strut until this is done. The bolts should be re-checked for tightness once the strut is off the ground.



Safety Note: If strut assembly is to be carried out on site, use only bolts supplied by Groundforce (M30 x 100mm grade 10.9 c/w flat washer). Tightening torque is 1500Nm (1100ft lb) Spanner / socket size is 46mm. All MP375 hydraulic unit flange plate connections should be made using M30 x 110mm Grade 10.9 un-plated nut and bolt assemblies.



2. Cleats are not required when the struts bear directly against a concrete beam or similar. The End Bearing Plate/Adaptor Plate must be bolted directly to the beam through pre-drilled holes in either plate. **Note:** The connection details must be designed by a qualified engineer.
3. Open the cover of the hydraulic coupling protective housing and identify the couplings (see below). Ensure the Lock-off Valve is open by two full turns anti-clockwise using the tool provided. Wipe clean all coupling faces and connect both pump hoses to the strut cylinder block. Slide the retaining collar of the female coupling backwards whilst pushing the coupling onto the male coupling on the strut cylinder block; the retaining collar will snap forward to make the connection. It may be practical at this stage to disconnect the hoses from the pump until the strut is near to its intended location.

Lock-off Valve



View of the hydraulic couplings through the strut housing

Note: It is important that the Lock-off Valve is not tightened in excess of 10Nm, therefore only use the Lock-off Tool provided to hand tighten.



Lock-off Valve Tool



Installation Cont...

4. If not already done, connect both pump hoses to the pump block and move the lever on the pump to the 'Ram Out' position to expand the strut.
5. Adjust the overall length of the strut to suit the required span between the capping beams (or to within approximately 150mm of this dimension).
6. Attach the lifting chain to the appropriate strut lifting eyes, maintaining a maximum angle of 45 degrees between the chain legs and offer the strut into position. **Note:** The centre of gravity of the strut is towards the hydraulic end.
7. Gradually lower the strut into position against the capping beam. With the strut still suspended by chains, align the holes in one end bearing plate with the pre-drilled holes in the capping beam and fix the strut into position. Using fine adjustment, further extend the strut so that the opposite end bearing plate can also be attached to the capping beam.
8. Once positive contact is made between the concrete beam and strut, use the pump to expand the strut to the specified pre-load, typically 1000 to 1500psi (~70 to ~100bar[#]) as indicated on the pump pressure gauge. **Do not exceed 1500psi (~100bar[#]).** Close the Lock-off valve using the tool provided by turning clockwise; **DO NOT OVERTIGHTEN THE LOCK OFF VALVE.** (see note on page 6) **Note:** the valve is fully closed when lock nut is seated on the body of valve. **Note:** Pre-load is not a critical part of the structural capacity and governed by the limitations of the pumping equipment.
9. Release the pressure in the hoses by moving the lever on the pump block to the central neutral position and the pressure gauge drops to zero. Remove the hoses from the strut cylinder block by sliding the retaining collars on the female couplings backwards. Close the protective housing cover.
10. It is strongly recommended that Restraining Chains are used as a secondary support measure. These should be attached to the End Swivel Plate and an appropriate support point on or above the capping beam. Remove the lifting chains.

Restraining Chains

Safety Notes:



Restraining chains are not certified and must not be used for any lifting operations.
Restraining chains act as a back up means of support in the unlikely event of hydraulic failure.
It is essential that certified lifting chains are used to take the weight of equipment before depressurising the hydraulic rams.



Restraining Chain Assembly	
Item Code	Weight (kg)
MG.REST	7.0



Safety Note: Connection must be made by securing to the waler beam or other suitable point.
Struts must be securely supported by means other than the restraining chains before installation or during removal.



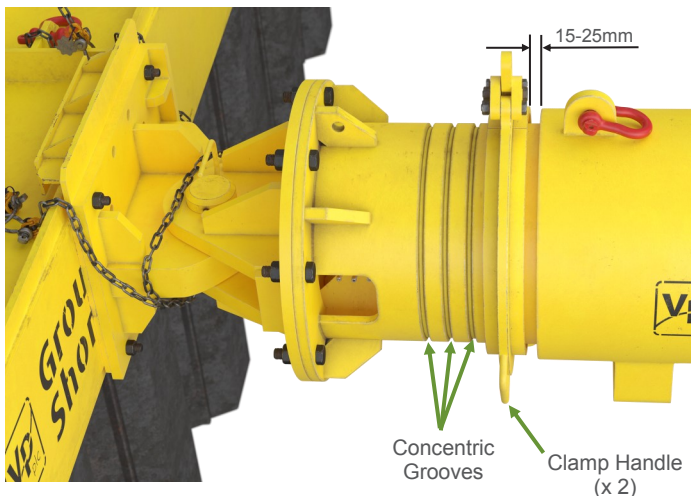
[#] 1 bar = 100 kPa

Failsafe Clamp (optional)

If specified, a Failsafe Clamp will be provided as part of the strut assembly, the purpose of the clamp is to act as a “buffer stop”. In the unlikely event of hydraulic failure of the ram, the outer sleeve will contract a small amount until it contacts the clamp body, the latter is keyed into grooves machined in the inner sleeve which will prevent further movement. The teeth in the clamp are asymmetric positioned to allow two alternative clamp positions. The clamp should be installed over the inner sleeve so as to leave a gap of approximately 15-25mm to the face of the over sleeve as shown in the drawing below. The clamp is attached as per the sequence below once the MP375 strut has been installed.



Safety Note: The lifting eye attached to the top of the Failsafe Clamp **must** only be used to lift the Failsafe Clamp and under no circumstances be used as a lifting point once fitted to the MP375 Hydraulic Ram unit.



1. Using a certified lifting chain, raise the clamp to a point directly above the grooved area of the Hydraulic Ram unit.

2. Identify the two grooves that are nearest to the face of the outer sleeve of the ram unit.

3. Using the two handles, open the clamp and lower it to slot into the previously identified two grooves.

4. Allow the clamp to close the around the grooves and check that the gap is between 15-25mm, shown left

5. If the gap is out of the 15-25mm limit, adjustment can be made by raising the clamp and swivelling it through 180°. **Note:** The lifting eye must remain uppermost.

6. When the gap is set between 15-25mm, secure the clamp by hand tightening using the two M20 nuts and bolts provided. **Note:** “spanner tight” is sufficient.

Note: the grooves machined into the inner sleeve are concentric grooves and not a screw thread

Removal (Strut Retraction)

Important Note:

Do not open the Lock-off Valve until the hoses are reconnected.

- 1 Upon completion of the permanent works, ensure the excavation is back-filled to the underside of the strut and the surround material is fully compacted and a competent person has given authorisation to remove the strut.
2. Make provision for adequate support to the strut before attempting removal, preferably slung by the lifting chains.



Safety Note: If the Failsafe Clamp has been fitted, this **MUST** be removed prior to retracting the ram. Release the two M20 nuts and bolts then pry the Failsafe Clamp halves apart before lifting the Failsafe Clamp clear of the inner sleeve.



Note: If the hoses are difficult to connect, it is likely that the Lock-off valve has been opened prematurely. Proceed as follows: ensure that the Lock-off Valve is closed using the tool provided (see note on page 6). Position the hollow end of the tool over the end of the male coupling and gently tap the other end of the tool to release the residual pressure; the hoses should then connect easily.

Removal (Strut Retraction) Cont...

4. Working from a safe area, open the hydraulic coupling protective cover and reconnect both hoses to the strut cylinder block by sliding the retaining collars as previously described in point 3 of 'Installation'.
5. If not already done, reconnect both pump hoses to the pump block by sliding the retaining collars backwards following the same procedure as described earlier. Move the lever on the pump to the 'Ram In' position and gradually open the Lock-off Valve with the tool provided to release the pressure from within the strut. After the pressure has been released, unscrew the Lock-off Valve by two full turns. With the weight of the strut being taken by the lifting device, retract the strut by pumping until the strut is clear of the walings and can be lifted clear of the excavation.



Note: Maximum retraction pressure **MUST NOT** exceed 1500psi (100bar)[#]



6. Before finally lowering the strut to the ground, fully retract the strut, ensuring that the hydraulic coupling housing cover plate lines up with the hydraulic outer sleeve cut out to prevent damage to the plate. If this cannot be easily achieved then do not fully retract the strut. Disconnect the hoses from the strut cylinder block by sliding the retaining collars backwards on the female couplings. Close the protective cover and secure with the clips provided.



Safety Note:

Any sign of damage or fluid loss or hydraulic systems failure during use must be notified to Groundforce immediately.



Note: Waste fluids should be disposed of safely with due regard to local regulations

[#] 1 bar = 100 kPa

MP375 Operating Range/Weight Chart - Ø813 Extensions

The MP375 strut assembly has a modular format comprising a hydraulic ram unit bolted to a series of fixed length tubular extension pieces to obtain the desired length. Swivel end units are incorporated at each end of the strut to facilitate a zero-moment connection to the supporting wall or waling beam. The chart below shows standard configurations of the strut and relevant data. The list is not exhaustive as other permutations of extension piece combinations are possible depending on the availability of specific equipment. **Note:** 0.5m HD infill extensions can be incorporated at the non-adjustable end to increase the overlap between strut configurations.

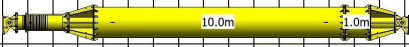
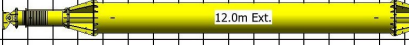
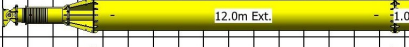
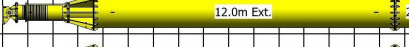
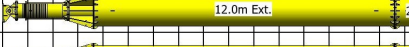
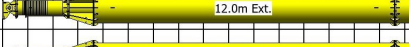
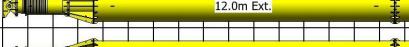
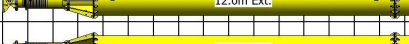
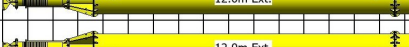
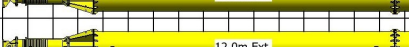
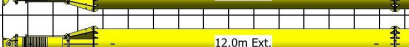
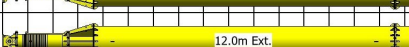
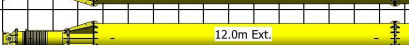
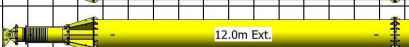
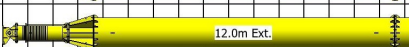
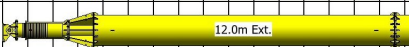
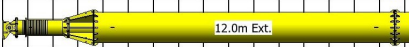
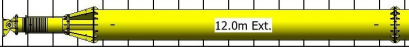
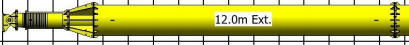
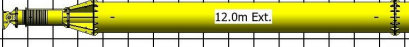
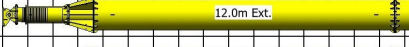
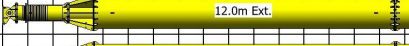
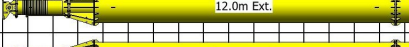
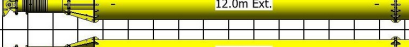
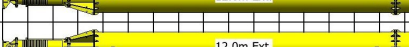
Strut Ref	Operating Range (m)		Weight (kg)	STRUT LENGTH BETWEEN BEARING FACES																																																							
	MIN.	MAX.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26																														
0	3.2	4.0	4430	<table><tr><th colspan="2">Schedule of Component Weights:</th></tr><tr><th>Description</th><th>Weight per item (kg)</th></tr><tr><td>MP375 Hydraulic Unit</td><td>3270</td></tr><tr><td>Multi Purpose End Bearing Plate</td><td>280</td></tr><tr><td>Bolted Flange Swivel Plate</td><td>250</td></tr><tr><td>Swivel Pin (load pin)</td><td>40</td></tr><tr><td>Failsafe Clamp</td><td>80</td></tr><tr><td>Std to 813 Tapered Adaptor</td><td>525</td></tr><tr><td>0.5m Ø610 HD Extension</td><td>275</td></tr><tr><td>813 / 1.0m Extension</td><td>592</td></tr><tr><td>813 / 2.0m Extension</td><td>907</td></tr><tr><td>813 / 4.0m Extension</td><td>1532</td></tr><tr><td>813 / 8.0m Extension</td><td>2785</td></tr><tr><td>813 / 12.0m Extension*</td><td>4023</td></tr><tr><td colspan="2">*denotes limited availability</td></tr></table>																										Schedule of Component Weights:		Description	Weight per item (kg)	MP375 Hydraulic Unit	3270	Multi Purpose End Bearing Plate	280	Bolted Flange Swivel Plate	250	Swivel Pin (load pin)	40	Failsafe Clamp	80	Std to 813 Tapered Adaptor	525	0.5m Ø610 HD Extension	275	813 / 1.0m Extension	592	813 / 2.0m Extension	907	813 / 4.0m Extension	1532	813 / 8.0m Extension	2785	813 / 12.0m Extension*	4023	*denotes limited availability	
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MP375 Hydraulic Unit	3270																																																										
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Bolted Flange Swivel Plate	250																																																										
Swivel Pin (load pin)	40																																																										
Failsafe Clamp	80																																																										
Std to 813 Tapered Adaptor	525																																																										
0.5m Ø610 HD Extension	275																																																										
813 / 1.0m Extension	592																																																										
813 / 2.0m Extension	907																																																										
813 / 4.0m Extension	1532																																																										
813 / 8.0m Extension	2785																																																										
813 / 12.0m Extension*	4023																																																										
*denotes limited availability																																																											
1	4.2	5.0	4730																																																								
2	5.2	6.0	4920																																																								
3	6.2	7.0	6200																																																								
4	7.2	8.0	6733																																																								
5	8.2	9.0	7083																																																								
6	9.2	10.0	7347																																																								
7	10.2	11.0	7697																																																								
8	11.2	12.0	8230																																																								
9	12.2	13.0	8580																																																								
10	13.2	14.0	8577																																																								
11	14.2	15.0	8927																																																								
12	15.2	16.0	9460																																																								
13	16.2	17.0	9810																																																								
14	17.2	18.0	9804																																																								
15	18.2	19.0	10514																																																								
16	19.2	20.0	10687																																																								
17	20.2	21.0	11037																																																								
18	21.2	22.0	11301																																																								
19	22.2	23.0	11651																																																								
20	23.2	24.0	12184																																																								
21	24.2	25.0	12534																																																								

Schedule of Component Weights:	
Description	Weight per item (kg)
MP375 Hydraulic Unit	3270
Multi Purpose End Bearing Plate	280
Bolted Flange Swivel Plate	250
Swivel Pin (load pin)	40
Failsafe Clamp	80
Std to 813 Tapered Adaptor	525
0.5m Ø610 HD Extension	275
813 / 1.0m Extension	592
813 / 2.0m Extension	907
813 / 4.0m Extension	1532
813 / 8.0m Extension	2785
813 / 12.0m Extension*	4023

*denotes limited availability

MP375 Operating Range/Weight Chart - Super Tube extensions

With the use of tapered adaptor pieces, the MP375 hydraulic unit can be connected to Ø1220mm x 16mm wall thickness Supertube extension pieces so as to be able to span much greater lengths without the need for mid-span support. The standard swivel end units are again incorporated at each end of the strut to facilitate a zero-moment connection to the supporting wall or waling beam. The chart below shows standard configurations of the strut and relevant data when used with Supertubes. The list is not exhaustive as other permutations of extension piece combinations are possible depending on the availability of specific equipment. However, note that 0.5m HD infill extensions can be incorporated at the non-adjustable end to increase overlap between strut configurations.

Strut Ref	Operating Range (m)		Weight (kg)	STRUT LENGTH BETWEEN BEARING FACES																																													
	MIN.	MAX.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44		
13	16.2	17.0	12250																																													Schedule of Component Weights:	
14	17.2	18.0	12550																																													Description	Weight per item (kg)
15	18.2	19.0	13200																																													MP375 Hydraulic Unit	3270
16	19.2	20.0	13650																																													Multi Purpose End Bearing Plate	280
17	20.2	21.0	14300																																													Bolted Flange Swivel Plate	250
18	21.2	22.0	14650																																													Swivel Pin (load pin)	40
19	22.2	23.0	15300																																													Failsafe Clamp	80
20	23.2	24.0	15750																																													Std to "Super" Tapered adaptor	1100
21	24.2	25.0	16400																																													1.0m "Super" Extension	700
22	25.2	26.0	16650																																													2.0m "Super" Extension	1100
23	26.2	27.0	17300																																													4.0m "Super" Extension	2100
24	27.2	28.0	17600																																													8.0m "Super" Extension	4100
25	28.2	29.0	18250																																													10.0m "Super" Extension	5050
26	29.2	30.0	18550																																														
27	30.2	31.0	19200																																														
28	31.2	32.0	19650																																														
29	32.2	33.0	20300																																														
30	33.2	34.0	20650																																														
31	34.2	35.0	21300																																														
32	35.2	36.0	21750																																														
33	36.2	37.0	22400																																														
34	37.2	38.0	22650																																														
35	38.2	39.0	23300																																														
36	39.2	40.0	23600																																														
37	40.2	41.0	24250																																														
38	41.2	42.0	24550																																														
39	42.2	43.0	25200																																														
40	43.2	44.0	25650																																														

Do	Do Not
✓ Have a lifting plan in place before installation ✓ Visually check all safety critical parts as listed below prior to each use and replace if necessary: • Lifting eyes, Handling points • Hydraulic couplings and Lock-off valve • Lifting equipment (e.g. chains and slings) ✓ Prepare a detailed site specific method statement before installation and removal ✓ Ensure the strut is adequately located onto the bearing surface and always use a designed and approved connection to support both ends of each strut ✓ Clean and oil the hose couplings before making connections ✓ Only use this equipment in temperature range –20°C to +40°C ✓ Only use the red painted points for lifting ✓ Inspect struts regularly and check overall strut alignment after installation ✓ Adequately support strut sub-assemblies during installation and removal ✓ Ensure all flange joint bolts are of the correct grade and are torqued to the specified value ✓ Take care to protect the strut from accidental strikes, concrete accumulation, etc ✓ Take care to avoid trapping fingers at all stages of work ✓ Ensure you are using Hydraulic Oil (not shoring fluid) for the Motorised Shoring Pump ✓ Remove the Failsafe Clamp before retracting the ram ✓ Store all equipment in a safe manner when not in use or when ready for collection. Ensure equipment stability and protection from damage, away from site activity	✗ Laterally load the strut from the side ✗ Use bolts other than those supplied by Groundforce for any flange connection ✗ Strike or impact the strut ✗ Allow debris to accumulate on the strut ✗ Exceed the stated installation pressure ✗ Use Hydraulic Oil other than that supplied by Groundforce ✗ Use uncertified lifting equipment ✗ Attempt to remove the strut under load ✗ Relocate the equipment once it is installed ✗ Suspend or store materials on the struts ✗ Over-tighten the Lock-off valve (see note on page 6) ✗ Swap between different types of Motorised pump (the shoring/hydraulic fluid will be cross-contaminated) ✗ Use the lifting eye on the Failsafe Clamp to lift anything other than the clamp itself ✗ Attempt to lift assemblies greater than 30m long without a lift plan being supplied by Groundforce ✗ Retract the ram against an installed Failsafe Clamp: the Failsafe Clamp must be removed before retracting the ram

Groundforce Training Services offer a wide range of courses primarily for those working in utilities, construction and civil engineering. From short duration health and safety awareness to more complex or specialist safety consultancy solutions.

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