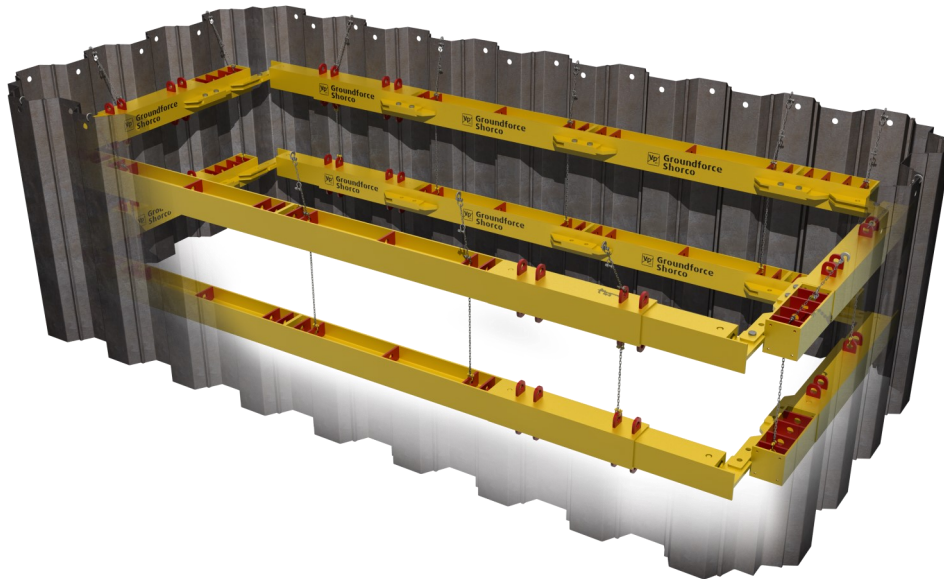




## Mega Brace



### Important Notes

All excavation work must be thoroughly planned before work commences on site to identify hazards and assess risk

These instructions form guidance for the Mega Brace. Non-standard applications should be approved by a suitably qualified engineer

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

Ensure all personnel engaged in installation operations are properly briefed and adequately supervised by a competent person

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

**THIS USER GUIDE IS NOT CONTROLLED WHEN PRINTED**



A 3D animation showing the Mega Brace 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 • ISO14001 • ISO45001

Rev	Date	Comments	Initial
2.1	23/03/23	CE/UKCA update	DSW




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Beckwith Knowle, Otley Road,  
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## SAFETY

### Common Symbols and Meanings

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

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

WARNING SYMBOLS	
	General warning
	Crushing of hands

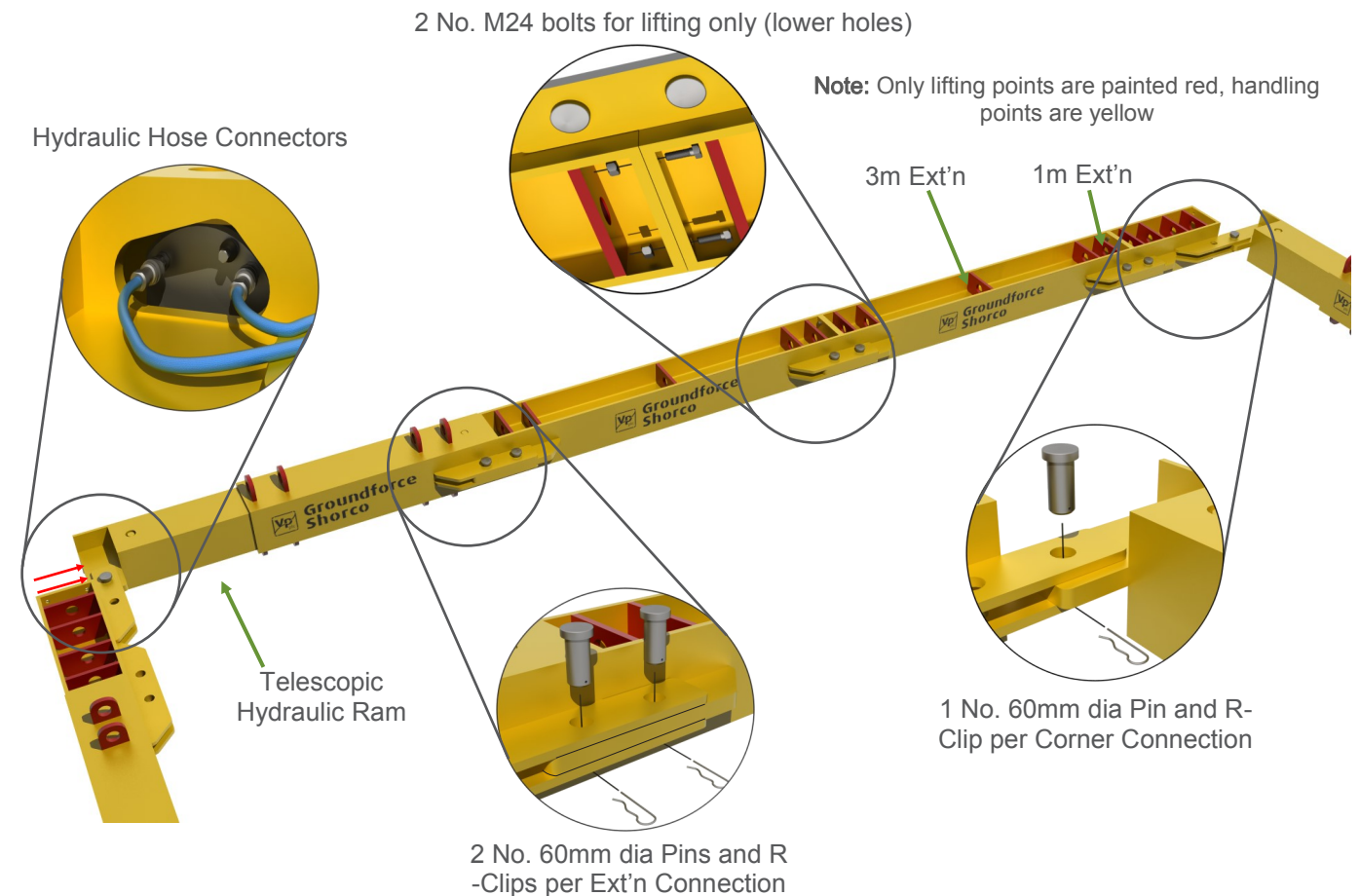
## Introduction

The Mega Brace is a high load capacity modular hydraulic bracing system designed to support square, rectangular or multi-sided excavations ranging from 3.0m to 20.0m+ in plan. It comprises a hydraulic unit for fine length adjustment connected to a series of modular fixed length extension pieces for course length adjustment, connected via a simple double pinned splice. The fixed length extensions can be connected to form a continuous heavy-duty waling beam when used as part of an internally strutted frame.

The hydraulic extension and retraction of the brace 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.

**Note:** Certain elements are colour coded in UGs and on the equipment. If the user has difficulty distinguishing colours, then they should refer to their supervisor.

## Equipment Identification



Each frame leg consists of a telescopic hydraulically operated ram section and a combination of fixed length extension pieces (see table below) to suit the required leg length.

**Hydraulic Ram Section:** The hydraulic section has a 1000mm hydraulic stroke that allows fine adjustment of the overall leg length. (40t and 50t versions available)

**Intermediate Extension Pieces:** The fixed length extension pieces are pinned together in the required combination to allow rough adjustment of the overall length.

Item Code	Component Description	Weight (kg)
MG.RAM	Hydraulic Ram (3m - 4m)	1120
MG.EX005	Mega Brace Extn 0.5m	200
MG.EX01	Mega Brace Extn 1.0m	410
MG.EX015	Mega Brace Extn 1.5m	585
MG.EX03	Mega Brace Extn 3.0m	760
MG.EX05	Mega Brace Extn 5.0m	1120
MG.EX07	Mega Brace Extn 7.0m	1485
MG.EX10	Mega Brace Extn 10.0m	2075

**Note:**

It is essential that any required frame leg is assembled in the correct component order, as shown on the scheme arrangement drawing.

If this information is unavailable, please contact Groundforce Technical Services Department.

## Notes on Lifting and Handling



**Safety Note:** No attempt must be made to lift assemblies or sub-assemblies without a detailed lifting plan in place, otherwise there is a risk of overloading individual lifting points or bolted connections.

**Mega Brace 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 brace 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.

**Note:** Lifting points painted red must only be used when the equipment is elevated clear of the ground: designated yellow points are limited to manoeuvring and positioning of equipment.



**Safety Note:**

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



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Always work from a detailed lifting plan</li> <li>• Ensure adequate capacity of the lifting equipment</li> <li>• Know the weight of the load</li> <li>• Adjust slings so that struts are lifted horizontally</li> <li>• Ensure the lift angle of chains is not exceeded</li> <li>• Do not exceed the capacity of individual lifting points</li> </ul> | <ul style="list-style-type: none"> <li>• Use clear and precise hand signals</li> <li>• Be aware of personnel in the vicinity</li> <li>• Use tag lines to control load</li> <li>• Ensure all lifting equipment has valid certification</li> <li>• Do not use damaged lifting points</li> <li>• Report damaged lifting points and equipment</li> </ul> |
|--|--|

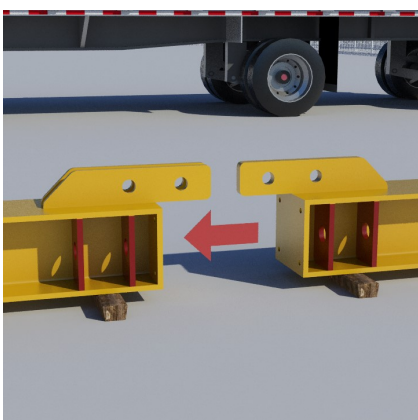
## Assembly

**Note:** Frames can either be assembled within the excavation or lifted in as a complete frame. This will depend on the weight and capacity of the lifting device.

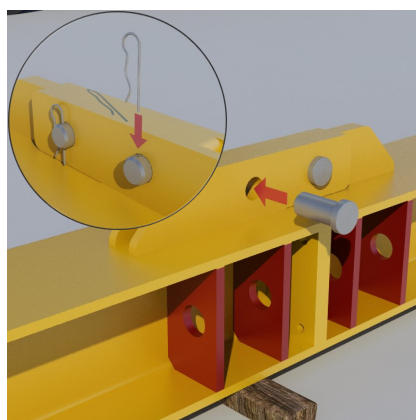


**Safety Notes:** Extreme care and adequate precautions must be taken to prevent trapping fingers during assembly.

Components must be lifted from the correct red lifting points provided. All lifting equipment must have current test certificates and the Working Load Limit (WLL) clearly marked.



1. Assemble the extensions by sliding together the two blade connectors.



2. Align two pin holes and connect the extensions by inserting the pin and R Clips provided.



Underside view

3. Complete the connection by securing two M24 lower bolts only. This prevents over-stressing of the blades during lifting and installation. These must be slacked off once installed.

4. Repeat the above 3 steps for all subsequent legs.

## Installation

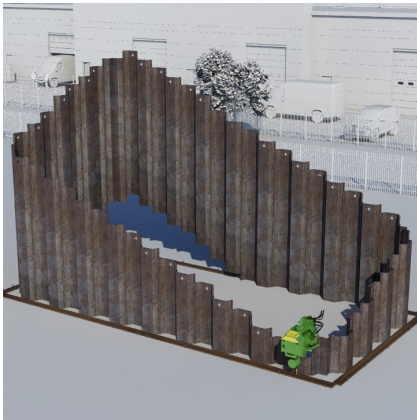


**Safety Notes:** Extreme care and adequate precautions must be taken to prevent trapping fingers during all stages of work.

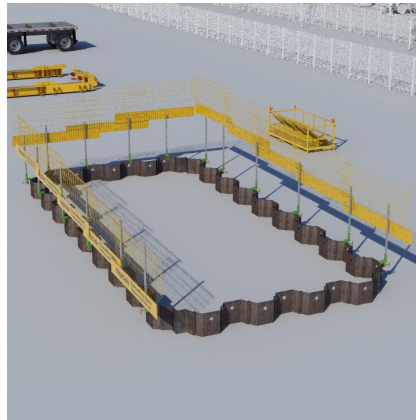


### Note on Installation:

The method of installation will vary depending on ground conditions and the plant used. Groundforce recommends pre-driving of sheets wherever possible. However, 'Dig and Push' may also be appropriate depending on the ground conditions. Please contact the Groundforce Technical Department for further advice. The contractor should undertake a detailed site safety risk assessment prior to undertaking any shoring work.



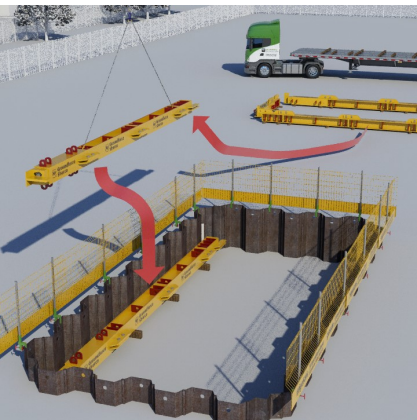
1. Ideally pre-drive to full depth if ground conditions permit. Alternatively, use the 'dig and push' method.



2. Edge protection should be connected to the trench sheets. Leave an opening to allow for excavator access.



3. Excavate to a depth of approximately one metre or 200mm below the required level of the upper frame.



4. Using a certified 2 leg lifting chain, connect to the red lifting eyes. Lift and lower the first completed leg into place on level timber bearers.

4(a) Alternatively, if lowering a complete frame into the excavation, it is necessary to pump out each leg in turn to approximately 150mm smaller than the excavated dimensions; allowing for the width of the trench sheets.



A Motorised Shoring Pump 3D animation is available to [watch now](#) on our YouTube channel.



5. A Motorised Shoring Pump should then be used to expand and retract the hydraulic leg. (manual pump available)



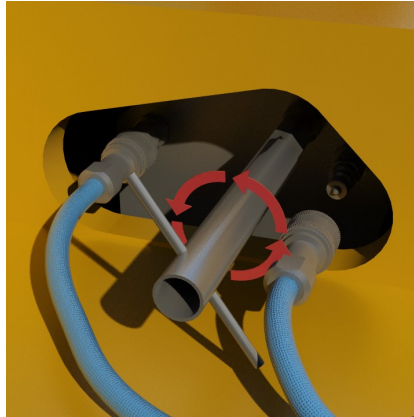
**Safety Note:** Operatives must be positioned clear of the excavator slewing zone. Never stand directly beneath any elevated equipment.



## Installation Cont...



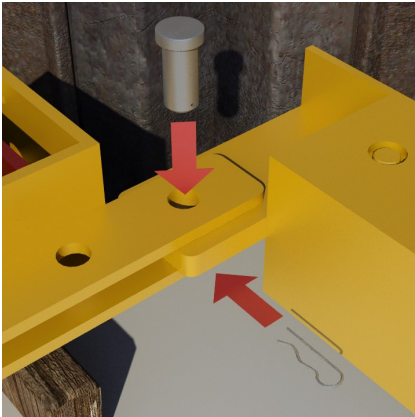
6. Attach both hydraulic hoses to the 'ram out' and 'ram in' coupling on the Motorised Pump.



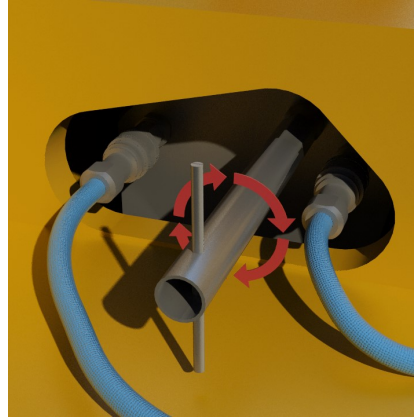
7. Attach the opposite end of the hoses to the two couplings on the hydraulic leg. Use the tool provided to open the lock off valve by turning it anti-clockwise.



8. Start the pump engine and move the lever to the 'ram out' position to expand the hydraulic leg. **Note:** If the leg retracts, swap the hoses over on the pump and continue.



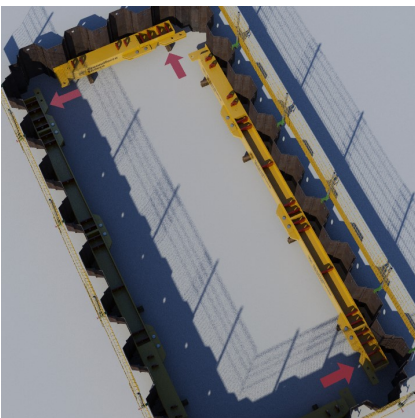
9. When the pin holes are in alignment, connect the two legs using the corner pin and R-Clip provided. Repeat this process to connect the remaining corners.



10. Close the lock off valve by using the tool provided to turn clockwise. **Note:** Do not overtighten the lock-off valve.



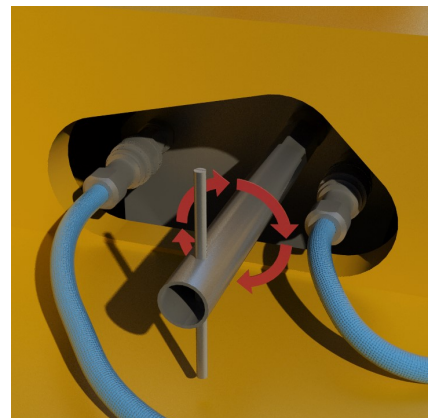
11. Once the lock off valve is closed, return the lever on the pump to the central neutral position.



12. Repeat points 7-11 to expand and connect the remaining legs using the corner pins and R-Clips.



13. With all legs now connected, open the lock off valve and pressurise the brace against the trench sheets to approximately 1000psi (~70bar<sup>#</sup>) unless otherwise stated.



14. For each leg in turn, close the lock-off valve by turning clockwise, return the pump lever to the neutral position and disconnect the hoses from the frame. Do not overtighten the lock-off valve.

**Notes:** Pre-load is not a critical part of the structural capacity and governed by the limitations of the pumping equipment. The lock-off valve is fully closed when the lock nut is seated on the body of valve.

## Installing Restraint Chains



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



1. Attach the restraining chains provided between the hanging points on the frame and the top of the sheets at the locations specified in the scheme specific drawings.

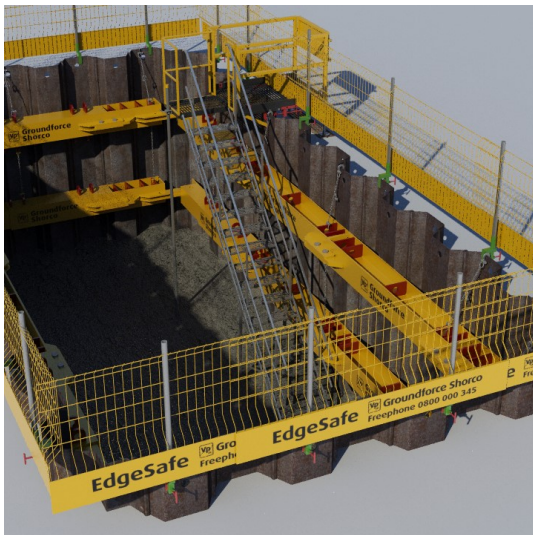
Restraining Chain Assembly	
Item Code	Weight (kg)
MG.REST	7.0

2. Continue excavation to the second level position as stated on the scheme specific design. If 'dig and push', progressively drive sheets as the excavation continues.

3. For subsequent levels of frame(s), repeat from step 4 of the installation process. Ensure the legs/frames are retracted sufficiently to enable them to pass through the upper frame(s). **Note:** Always fit restraining chains between each level of frame and from the uppermost frame to the top of the trench sheets.

## Site Safety

**Safety Note:** Edge protection and ladder access should be installed as soon as possible to provide a safe working environment.



A SiteSafe Solutions 3D animation is available to [watch now](#) on our YouTube channel.

An EdgeSafe 3D animation with SiteSafe solutions is available to [watch now](#) on our YouTube channel.

A LadderSafe Systems 3D animation is available to [watch now](#) on our YouTube channel.

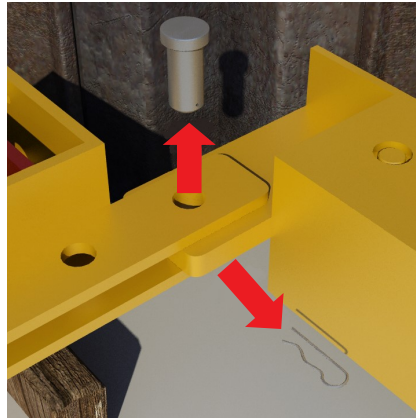
**Note:** Waste fluids should be disposed of safely with due regard to local regulations

## Removal

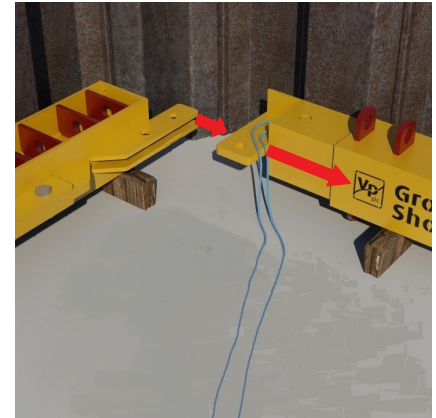
**Note:** Depending on the capacity of the lifting equipment, it may be necessary to break down the components in the excavation.



1. Backfill to the underside of the lower frame.



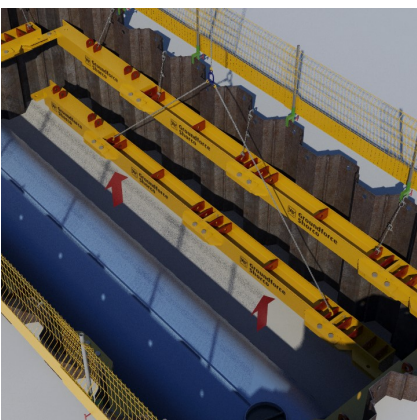
2. Re-connect the hoses between the Motorised Pump and the legs to depressurise the lower frame, then remove the corner pin and R-Clip.



3. Continue depressurising to fully separate the legs, setting the pump lever to the 'ram in' position. Repeat this process for the remaining corners.



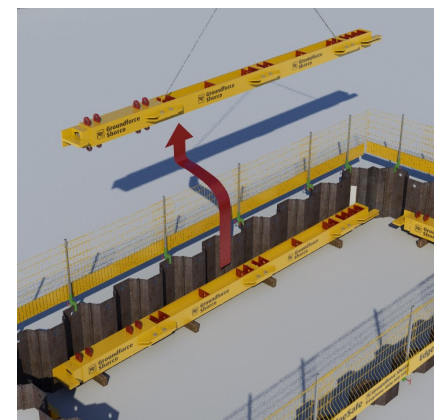
**Safety Notes:** Operatives must be positioned clear of the excavator slewing zone during this operation. Never stand directly beneath any elevated equipment.



4. Once the legs are disconnected, they can be lifted clear of the excavation. Take care to avoid striking the upper frames when lifting through.



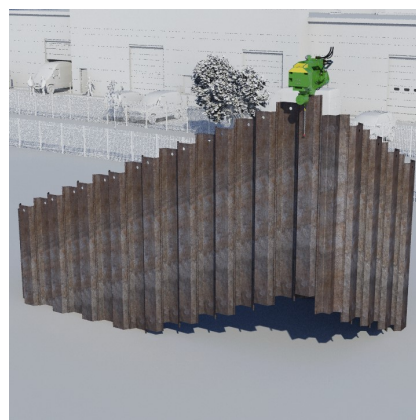
5. Continue backfilling and compacting to the underside of the top frame.



6. Repeat steps 2 and 3 of the removal process; removing each leg separately.



7. Reinstatement can then continue to ground level.



8. Remove the edge protection and withdraw the trench sheets using appropriate equipment.

**Note:** The Groundforce SheetMaster can be effectively used to safely pitch, drive and extract sheets. Please ask for details.



A SheetMaster 3D animation is available to [watch now](#) on our YouTube channel.




Do	Do Not
<ul style="list-style-type: none"> <li>✓ Have a lifting plan in place before installation</li> <li>✓ Visually check all safety critical parts as listed below prior to each use and replace if necessary:               <ul style="list-style-type: none"> <li>• Lifting eyes, Handling points</li> <li>• Hydraulic couplings and Lock-off valve</li> <li>• Lifting equipment (e.g. chains and slings)</li> </ul> </li> <li>✓ Only use this equipment in temperature range –20°C to +40°C</li> <li>✓ Read and understand the scheme drawing (if supplied) before starting work</li> <li>✓ Read and understand the Motorised Shoring Pump user guide</li> <li>✓ Inspect all components at the start of every shift</li> <li>✓ Prepare a lifting plan, assess weights correctly and use appropriately certified lifting equipment during installation and removal</li> <li>✓ Only use the red painted points for lifting</li> <li>✓ Ensure all pins, clips and bolts are correctly fitted</li> <li>✓ Install the frame level, the correct way up and in accordance with the scheme drawing</li> <li>✓ Use only lifting points for chain attachment</li> <li>✓ Provide edge protection and ladder access/egress</li> <li>✓ Attach a minimum of four restraining chains; one in each corner or as indicated on the scheme drawing</li> <li>✓ Keep personnel clear of excavator slewing zone</li> <li>✓ Always use a banksman</li> <li>✓ Locate underground services before excavating</li> <li>✓ Take care to avoid trapping fingers at all stages of work</li> <li>✓ 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</li> </ul>	<ul style="list-style-type: none"> <li>✗ Exceed the stated installation pressure</li> <li>✗ Use bolts other than those supplied by Groundforce for any connection</li> <li>✗ Over tighten lock off valves (light nip only)</li> <li>✗ Use pins and bolts other than those supplied by Groundforce</li> <li>✗ Use Shoring Fluid or Hydraulic Oil other than supplied by Groundforce</li> <li>✗ Install cross struts in positions other than specified on the scheme drawing</li> <li>✗ Allow excessive amounts of spoil to collect on top of the frame members</li> <li>✗ Use excessive force during installation/removal</li> <li>✗ De-pressurise frame components without adequate support (other than provided by the restraining chains) being in place</li> <li>✗ Drag the frame out of the ground without releasing the pressure</li> <li>✗ Stand directly under any elevated equipment</li> <li>✗ Strike the frame during excavation</li> <li>✗ Operate the motorised shoring pump from within the excavation</li> </ul>

**EXCAVATION TRAINING AVAILABLE**

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### Appreciation of Excavation Safety

The theoretical safety course is mapped to both EUSR and the National Occupational Standards and introduces the learner to the basics of working around excavations. Designed as an awareness course, particular emphasis is provided to key aspects of managing and/or overseeing excavation work. [Visit the course page](#) for more details.

**The one day course can accommodate up to 20 delegates per day**