

**INSTALLATION GUIDE**  
**NTS System 80**



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Issue No: 03 Issue date: April 2020	Sheet 1 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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# INSTALLATION GUIDE

## NTS System 80



### Introduction

A functional and cost effective hydraulic bracing system:

- System 80, heavy duty hydraulic bracing system – suiting larger sized cofferdams

Double acting hydraulic jacks, combine with a range of fixed length extensions & struts, to enable a quick installation and final removal. Unique, pre-cambered beams, enhancing clear span openings and minimising beam deflection when loaded.

### Assembly

All components should be laid on timber skids, outside of the excavation.

All lifting must be carried out by operatives trained as slinger/ banksman. Familiarisation of the loads is essential before lifting - ensure that suitable 2 leg or 4 leg chains are selected (recommend 13mm chains).

Due to the weight of the components, it is recommended that the minimum sheet thickness is 8mm and the sheet piles/ trench sheets are fully toed in.

Excavate to the required depth, as stated on the design, in order to install the first frame (usually a max of 1000mm).

The components can be lowered into the excavation, onto suitable timber skids or pre-installed gallows brackets.

Line up the connecting lugs and insert the pins, to form the continuous legs (ensure that back plates are also fully bolted at each connection. (Note if the crane/ excavator is capable, fully connected components can be lowered together).

The hydraulic ram is extended and retracted, using the NTS motorised pump. Connect the hoses, as described in the NTS Motorised Shoring Pump Guide.

Extend the rams to make connection across the four sides of the excavation. It is recommended that a pre-load of 100 Bar / 1500 psi is not exceeded. Check the frame for alignment and level - note the pre-camber in the waling beam will straighten when loaded.

Ensure that the design installation sequence is followed.

The system is compatible with knee bracing (using swivel units) and hydraulic struts, which are installed, once the four sided bracing system is installed and pumped out. Note: Struts have a maximum range of 200t up to 16m.

### Removal

Removal is a reverse of the installation, ensuring material is backfilled and compacted as the extraction proceeds.

### Maintenance

Prior to making entry to the supported excavation, ensure all components are fitted and show no signs of damage or fatigue or fluid/ pressure loss. Safe means of access/ egress should be provided, using NTS ladder access / ladders and Davit Systems.


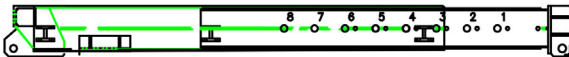




Issue No: 03 Issue date: April 2020	Sheet 2 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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### System 80 Technical Data

Hydraulic Ram Unit		
Material	Domex F <sub>y</sub> = 690N/mm <sup>2</sup>	
Length (Pin to Pin)	3,000mm – 4,000mm	
Weight	2,240kg	
Axial Hydraulic Capacity	150t	
Maximum Moment	1,150kNm	
Maximum Shear	2,000kN	
Maximum Axial Load	1,375kN	
Mechanical Unit		
Material	Domex F <sub>y</sub> = 690N/mm <sup>2</sup>	
Length (Pin to Pin)	4,600mm – 6,000mm	
Weight	2000kg	
Maximum Moment	1,150kNm	
Maximum Shear	2,000kN	
Maximum Axial Load	3,330kN	
1,250mm Waler		
Length	1,250mm	
Weight	1,120Kg	
3,000mm Waler		
Length	3,000mm	
Weight	1,360Kg	
7,000mm Waler		
Length	7,000mm	
Weight	2,225Kg	
10,000mm Waler		
Length	10,000mm	
Weight	2,925Kg	
Material	Domex F <sub>y</sub> = 690N/mm <sup>2</sup>	
Maximum Moment	1,280kNm	
Maximum Shear	2,310kN	
Maximum Axial Load	8,450kN	

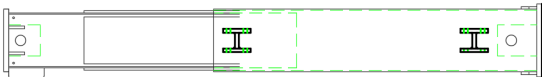
Issue No: 03 Issue date: April 2020	Sheet 3 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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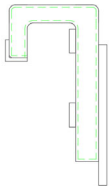
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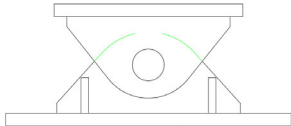


### System 80 Technical Data

Hydraulic Strut Ram Unit		
Material	Domex $F_y = 690\text{N/mm}^2$	
Length (Pin to Pin)	2,400mm – 4,000mm	
Weight	1,580kg	
Axial Hydraulic Capacity	150t	
Maximum Axial Load	1,375kN	

1,000mm Strut		
Length	1,000mm	
Weight	300Kg	
2,000mm Strut		
Length	2,000mm	
Weight	430Kg	
3,000mm Strut		
Length	3,000mm	
Weight	550Kg	
5,000mm Waler		
Length	5,000mm	
Weight	810Kg	
Material	F <sub>y</sub> = 345N/mm <sup>2</sup>	
Maximum Axial Load	2,891kN	

Waler to Strut Hanging Bracket		
Material	$F_y = 345\text{N/mm}^2$	
Weight	125kg	
Maximum Axial Load	4,180kN	

Waler to Strut Swivel Unit		
Material	$F_y = 345\text{N/mm}^2$	
Weight	400kg	
Maximum Shear	370kN	

Issue No: 03 Issue date: April 2020	Sheet 4 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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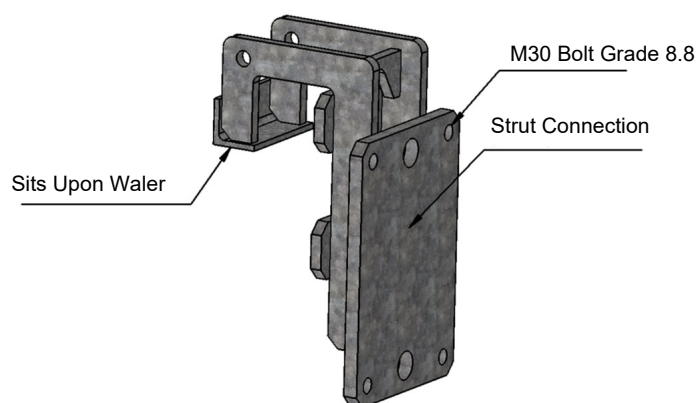
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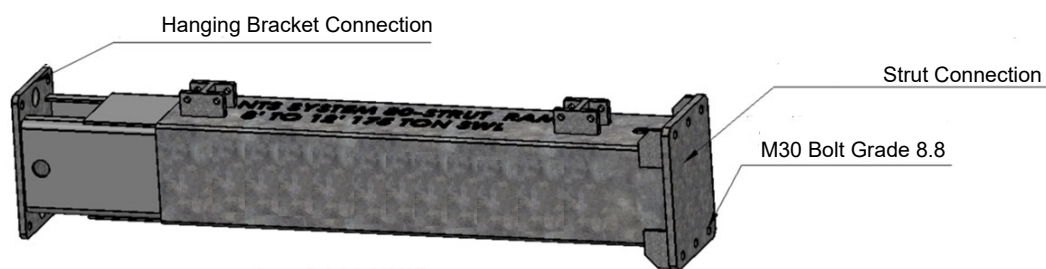


### System 80 Technical Data

#### Hanging Bracket



#### Hydraulic Strut Ram Unit



Issue No: 03 Issue date: April 2020	Sheet 5 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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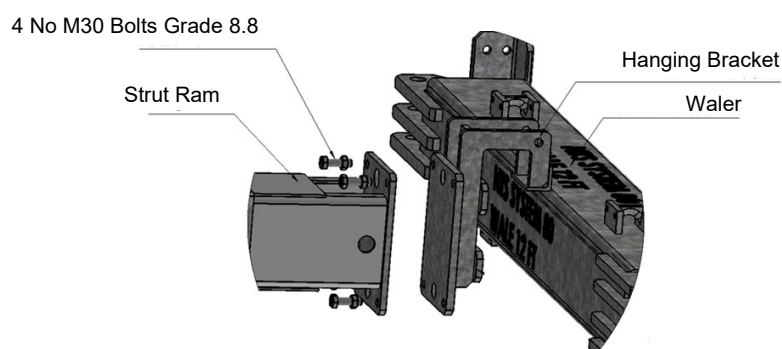
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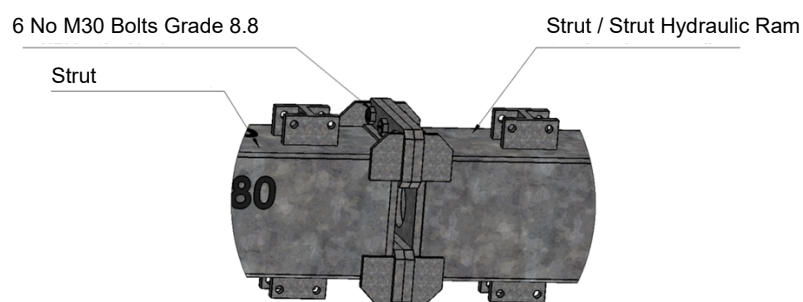
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### System 80 Technical Data - Connections

#### Hydraulic Strut Ram - Hanging Bracket



#### Strut - Strut or Hydraulic Ram



Issue No: 03 Issue date: April 2020	Sheet 6 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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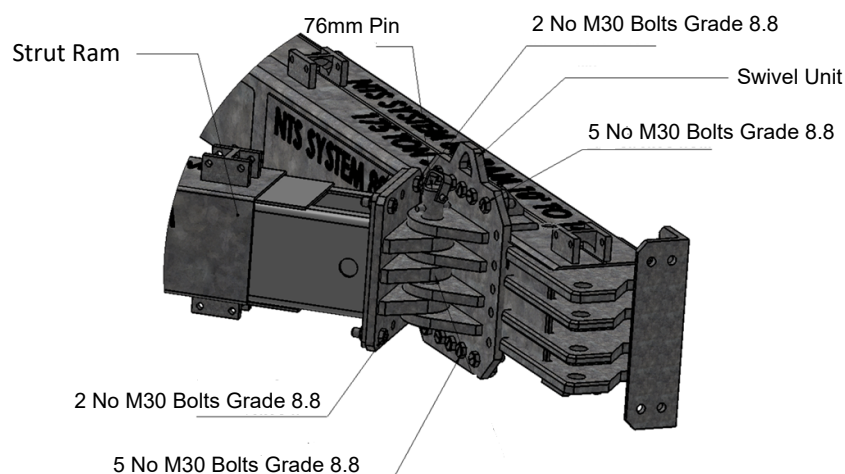
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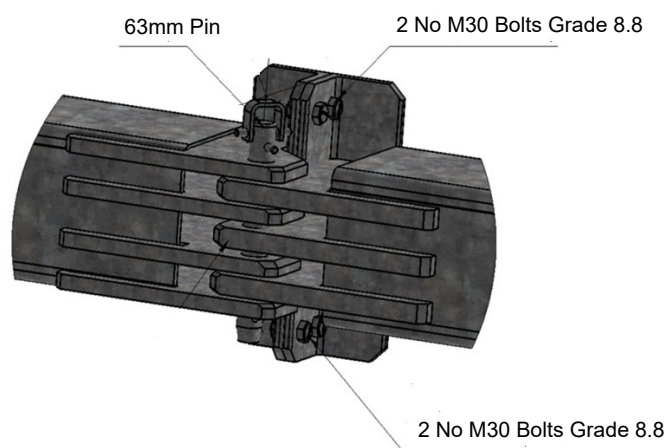


### System 80 Technical Data - Connections

#### Strut Ram - Swivel Unit - Waler - 1620kN SWL



#### Waler - Waler - 1128kN SWL



Issue No: 03 Issue date: April 2020	Sheet 7 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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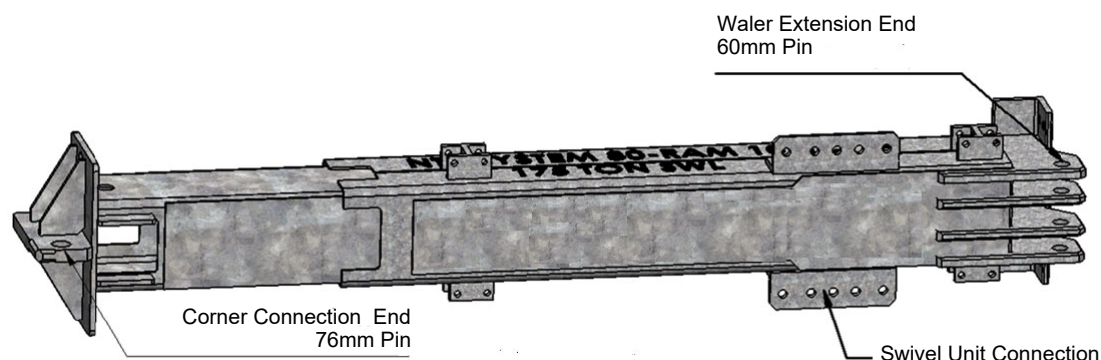
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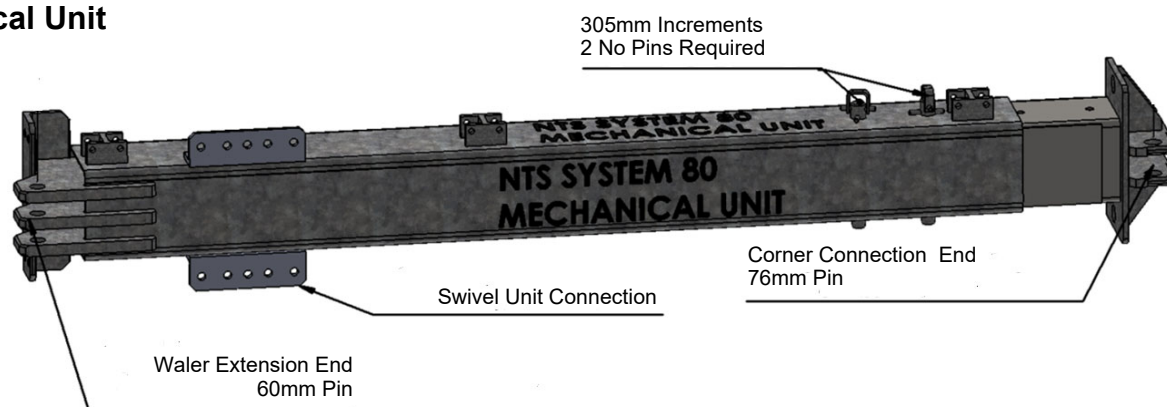
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### System 80 Technical Data

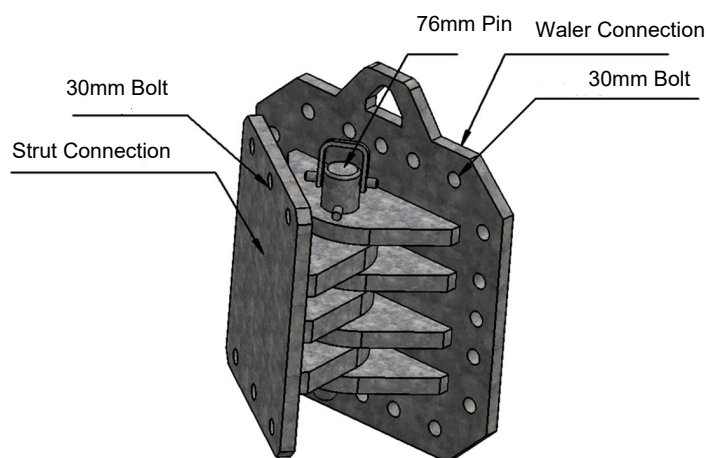
#### Hydraulic Ram Unit



#### Mechanical Unit



#### Swivel Unit



Issue No: 03 Issue date: April 2020	Sheet 8 of 9	National Trench Safety can support your project. Call our National Team - 03332 076 007
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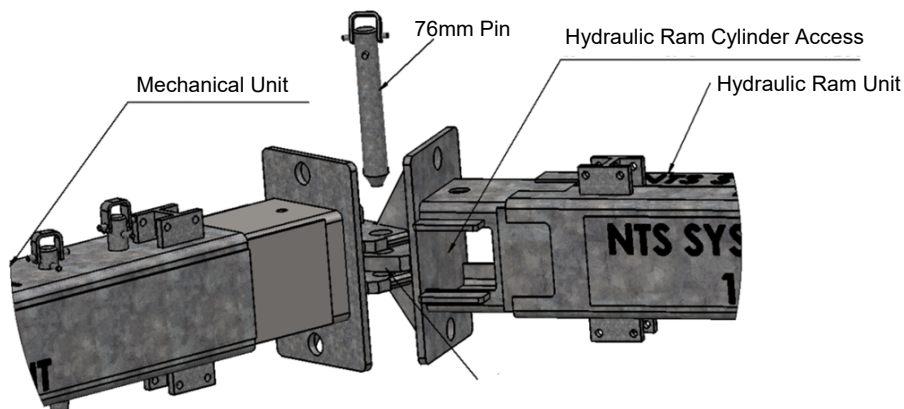
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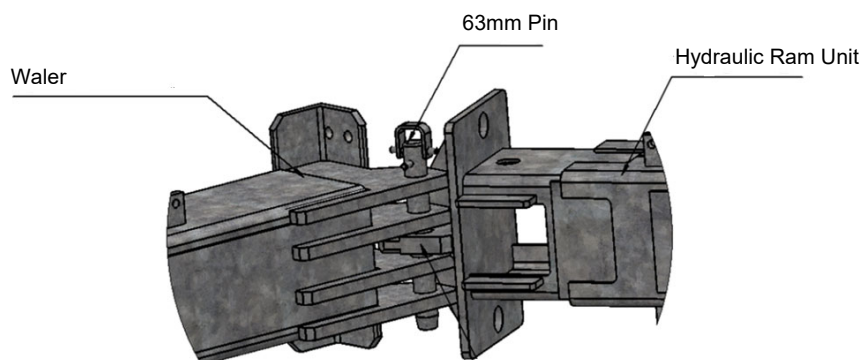
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### System 80 Technical Data - Connections

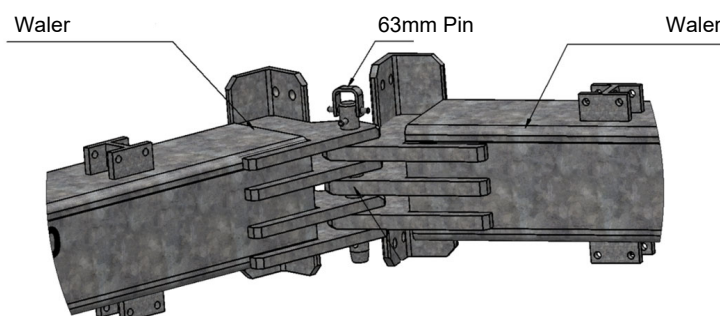
#### Mechanical Unit - Hydraulic Ram Unit - 540kN SWL



#### Waler - Hydraulic Ram Unit - 376kN SWL



#### Waler - Hydraulic Ram Unit - 1128 kN SWL



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