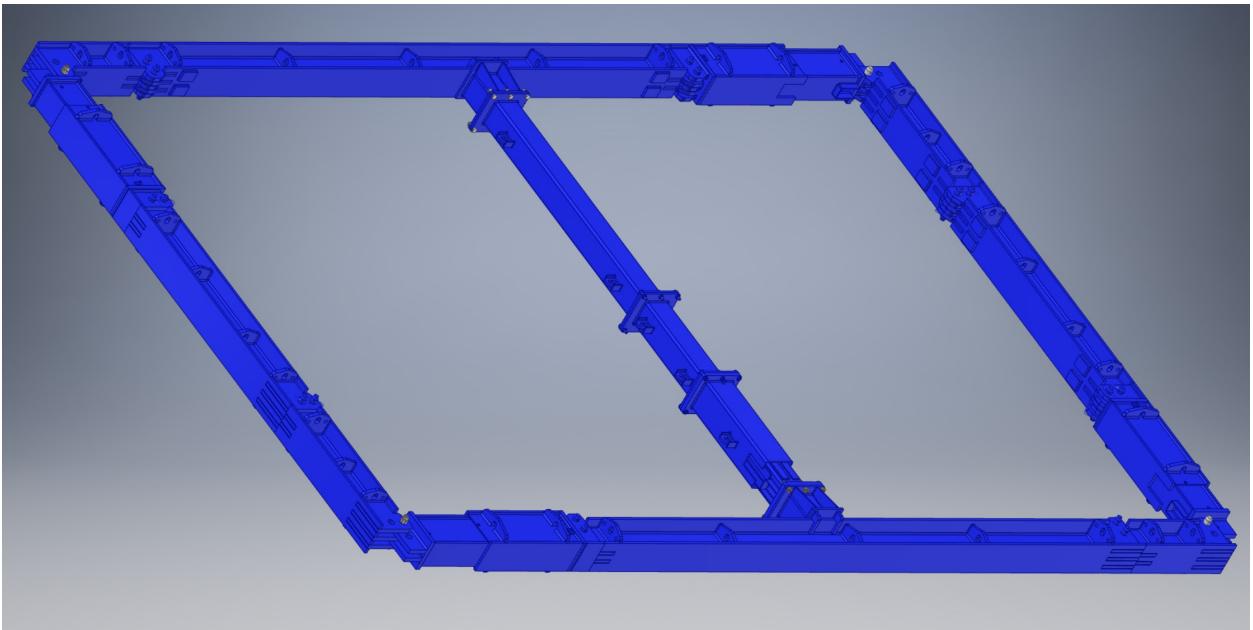




TRENCHING & SHORING

Ultra – 300 Brace Technical Data Sheets

Metric Specification



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Introduction

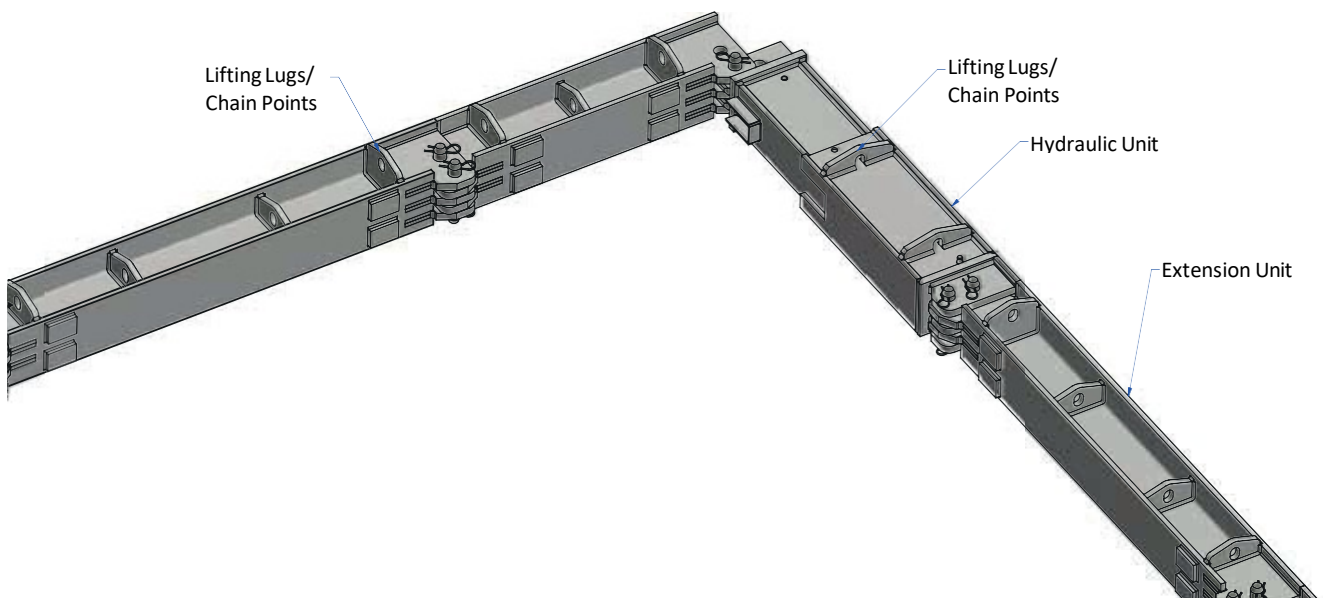
This technical data sheet is intended to provide basic information for users of the GAP Group Ultra-300 Frames and draw the client's attention to the aspect of Ultra-300 Assembly, weight, size, planning and lifting operations and installation which need to be considered in compiling method statements.

GAP's Ultra-300 Frame is intended to be used as a temporary waling system to a sheeted excavation and it is not intended to be used for other purposes. This frame has a 4-way hydraulic adjustment to suit the required plan dimensions.

Design

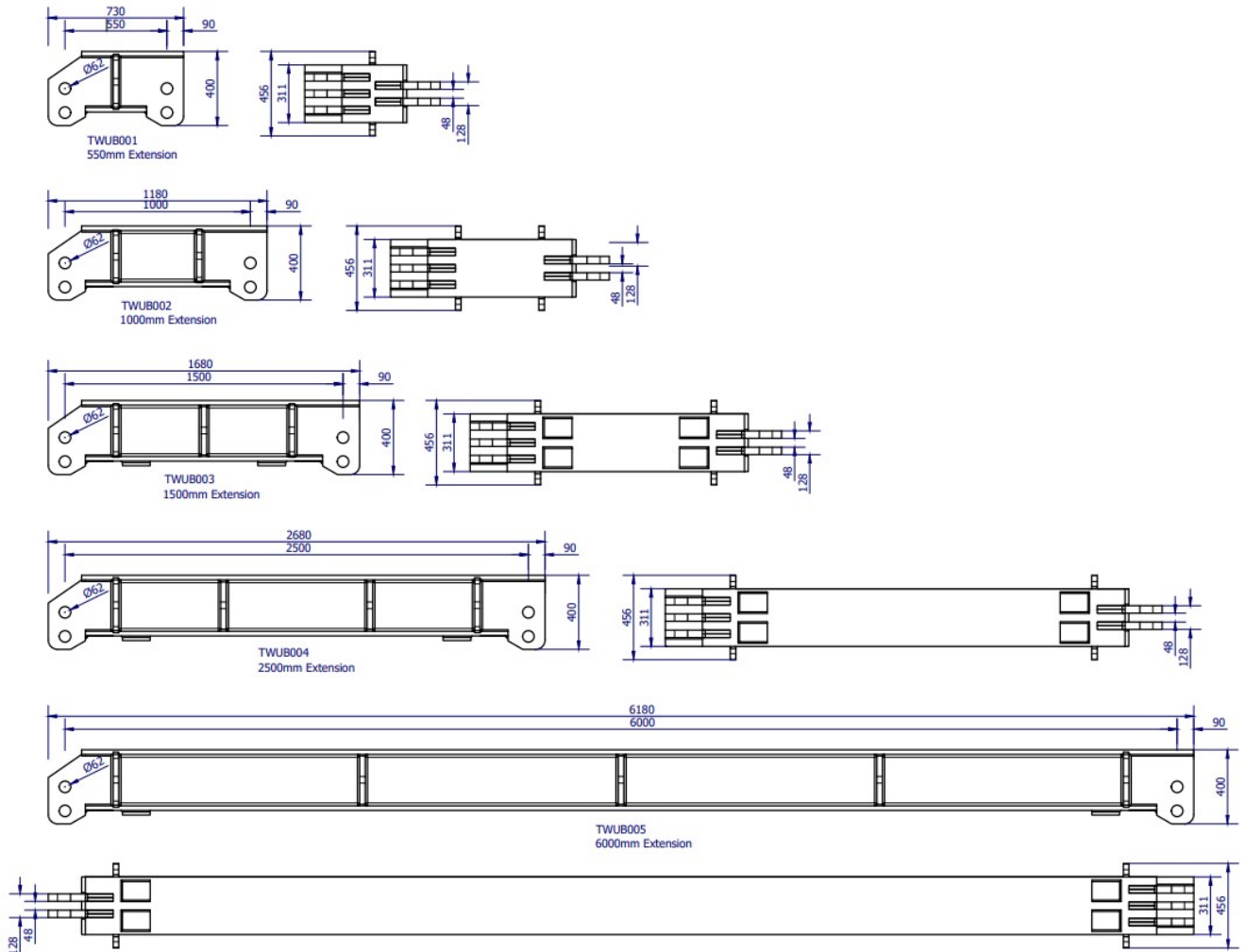
No information on design is included in this booklet, clients are strongly advised to ensure that a qualified person is employed to provide a suitable design for the excavation schemes requiring the use of Ultra-300 products.

Component Identification



Ultra-300 Extensions

TWUB001	ULTRA 300 EXTENSION 550mm	240kg
TWUB002	ULTRA 300 EXTENSION 1000mm	350kg
TWUB003	ULTRA 300 EXTENSION 1500mm	450kg
TWUB004	ULTRA 300 EXTENSION 2500mm	600kg
TWUB005	ULTRA 300 EXTENSION 6000mm	1200kg
TWUB006	ULTRA 300 HYDRAULIC RAM	625kg
TWUB007	ULTRA 300 PIN	2kg
TWUB016	ULTRA 300 HOOK END PLATE ASSEMBLY	83kg
TWUB018	ULTRA 300 DIESEL PUMP	
TWUB019	ULTRA 300 CORNER UNIT (KNEE BRACE)	108kg

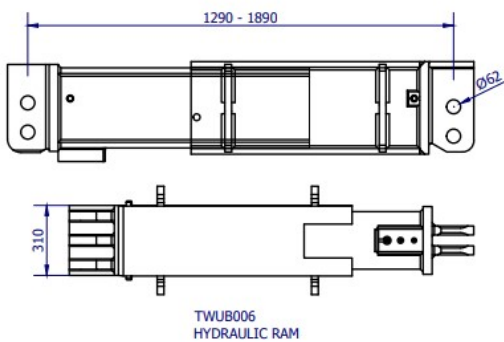


Allowable Rail Moment of the beam is 816.2kNm, allowable intermediate joint moment is 816.2kNm (Sagging) and 285.1kNm (Hogging), joint shear capacity is 712kN, Shear capacity is 600kN.

Section Properties (Beam):

Extension Unit:	1no.	305 x 305 x 158 UC to Gr2355
Extension Joints:	2No.	60Ø pins to EN16T
Corner Joint:	1no.	60Ø pin to EN16T
Ram Outer Section:	1no.	Box Construction comprising of 2no 25mm Flanges and 2no 10mm webs to S355
Ram Inner Section:	1no.	Box Construction comprising of 2no 25mm Flanges and 2no 10mm webs to S355
Area (Gross):		201.0cm ²
Flange Thickness:		25mm
Web Thickness:		15.8mm
Steel Grade:		S355
I xx:		38847cm ⁴
I yy:		12569cm ⁴
R xx (Radius of Gyration):		13.9cm
R yy:		7.9cm
Z xx (Plastic):		2680cm ³
Z yy (Plastic):		1230cm ³
EI xx:		81.4MNm ²
EI yy:		26.4MNm ²
V max xx:		769.8kN
M max xx (Plastic):		816.2kNm
M max xx Joint (Sagging):		816.2kNm
M max yy:		374.6kNm
M max xx (Hogging):		285.1kNm

Ultra-300 Hydraulic Unit (Ram)



Description	Weight (kg)
Pi 60 dia x 350mm	2.0kg

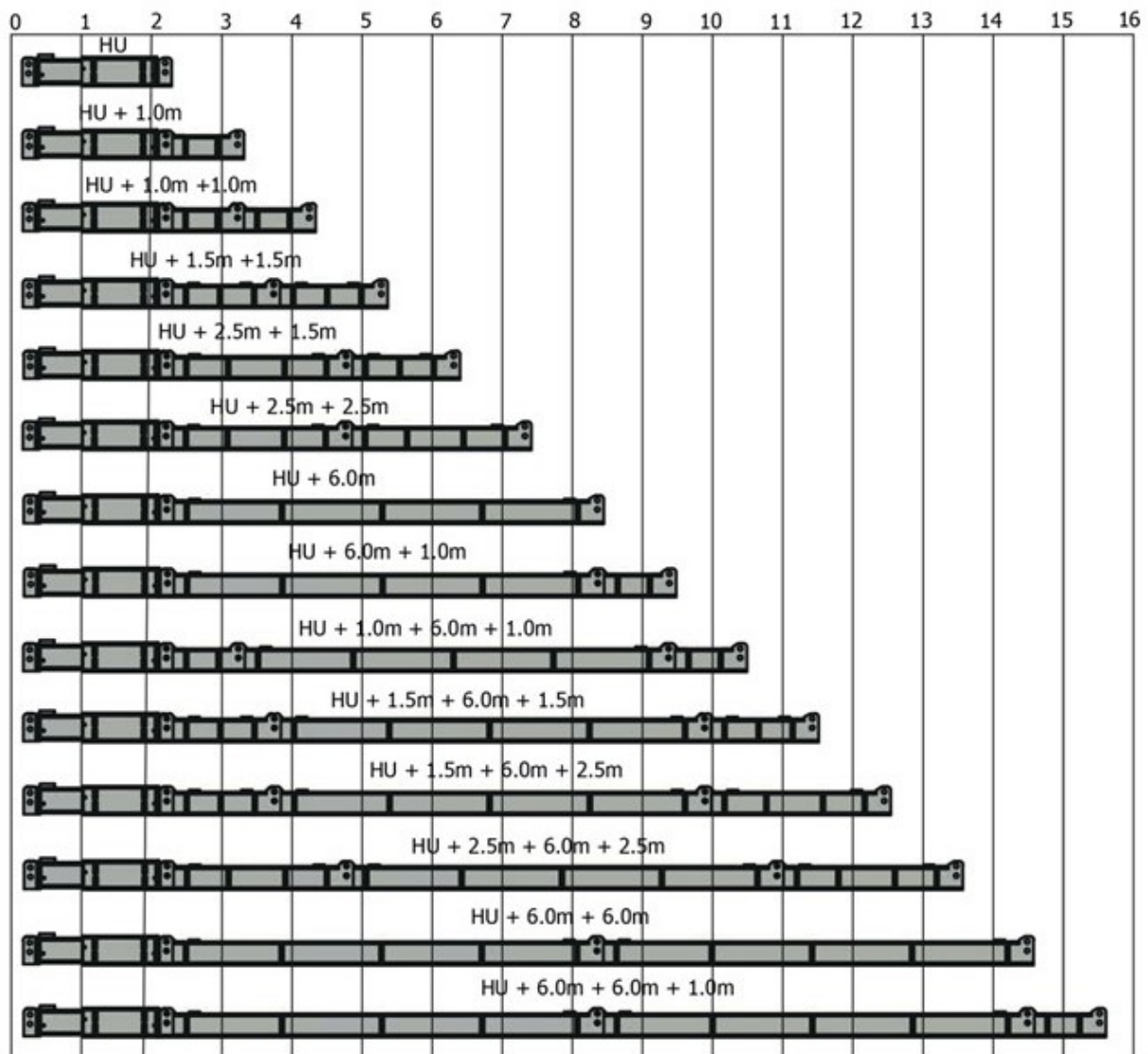
Allowable axial load is 600kN with 600mm stroke.

Section Properties (Ram):

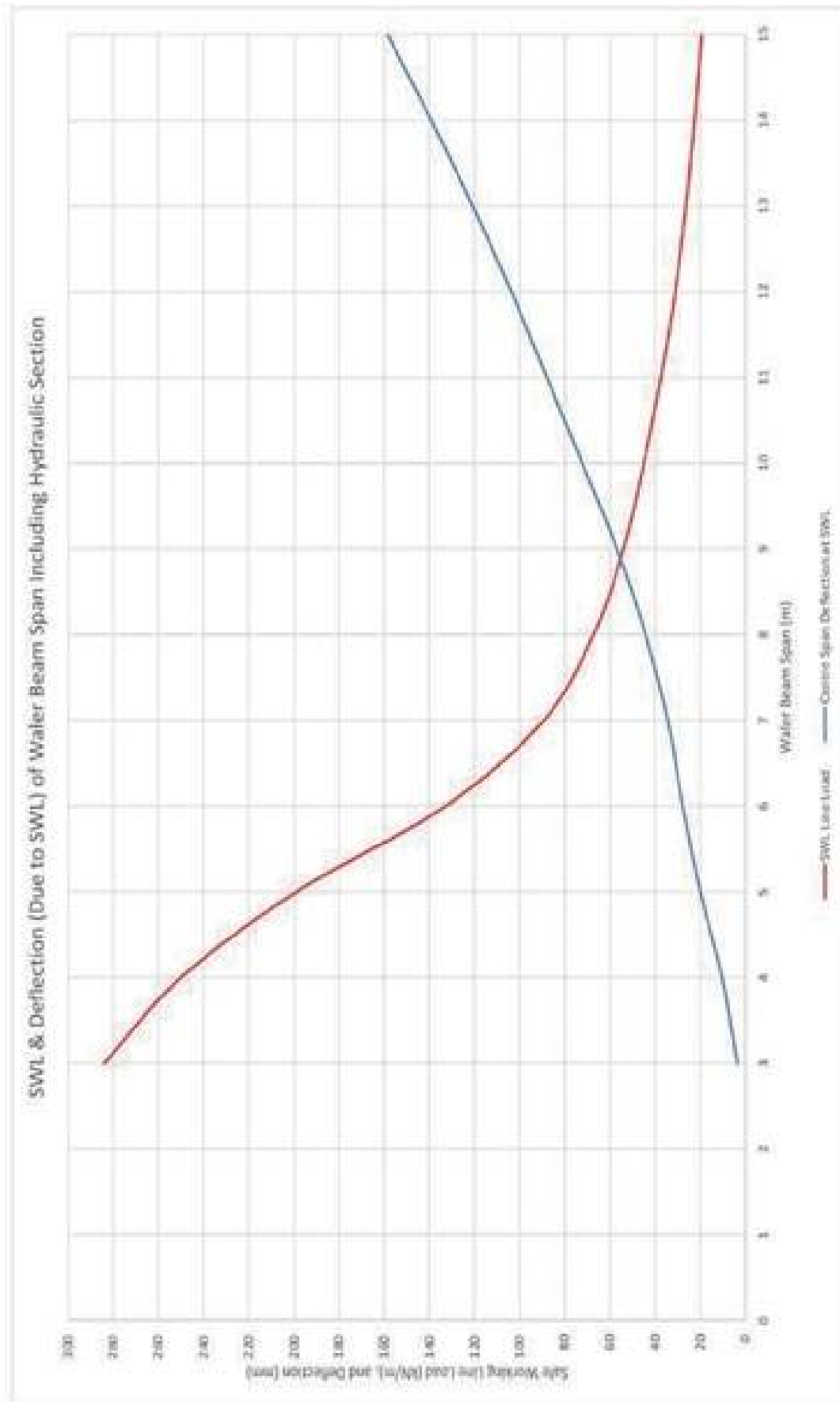
Area (Gross):	188.5cm ²
Flange Thickness:	25mm
Web Thickness:	10mm

Steel Grade:	S355
I xx:	39507cm ⁴
I yy:	13963cm ⁴
R xx:	14.5cm
R yy:	8.6cm
Z xx:	2257.5cm ³
Z yy:	900.8cm ³
EI xx:	83.0MNm ²
EI yy:	29.3MNm ²
V max xx:	832.2kN
M max xx:	395kNm
M max xx Joint (Sagging):	395kNm
M max xx (Hogging):	285.1kNm

Extension Configuration:



Loading Chart:

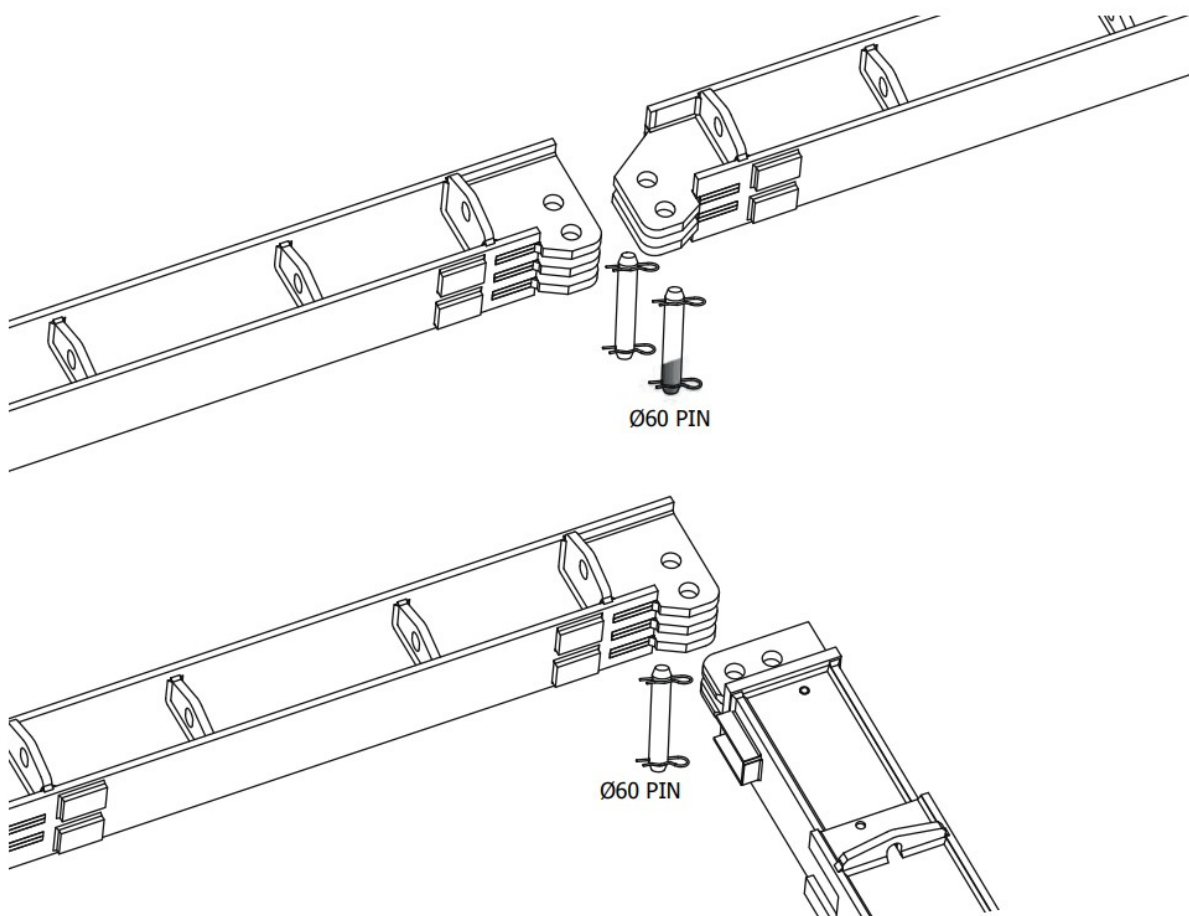


Frame Adjustment

Ultra-300 incorporates a double acting hydraulic ram which allows full hydraulic adjustment of the frame over the full range of the legs, i.e., 600mm. The rams are extended and retracted by using the hydraulic hand pump and hoses supplied.

Assembly Details:

To assemble the frame, corners need to be connected using one 60mm diameter pin complete with spring retention clip as supplied. The legs should be as level as possible during assembly to make it easier to assemble the joint. The main extension joints will be connected with two numbers of 60mm diameter pins with spring retention clip as shown below. The minimum angle of connection at the corner between the Ram and extension is **60°** and maximum **180°**.



Plant & Lifting

A suitable appliance is required for off-loading and installation. For off-loading, there needs to be sufficient clearance under the main hook to allow lifting with a safe angle between the lifting slings. If the legs are not lifted into the excavation, then the appliance should be located a safe distance from the edge of the excavation and the lifts, and the radii checked against the safe lifting capabilities of the appliance.

Handling

The Ultra-300 should only be lifted with a suitable 4-leg lifting chain. N.B. DO NOT under any circumstances attempt to lift the Ultra-300 braces with the hanging chains supplied as they are only designed to act as a safety back up support in the unlikely event of a hydraulic ram failure.

Ultra-300 Cross Strut Technical Data Sheet

This technical data sheet is intended to provide basic information for users of the GAP Group Ultra-300 Cross Strut and draw the client's attention to the aspect of Ultra-300 Cross Strut Assembly, weight, size, planning and lifting operations and installation which need to be considered in compiling method statements.

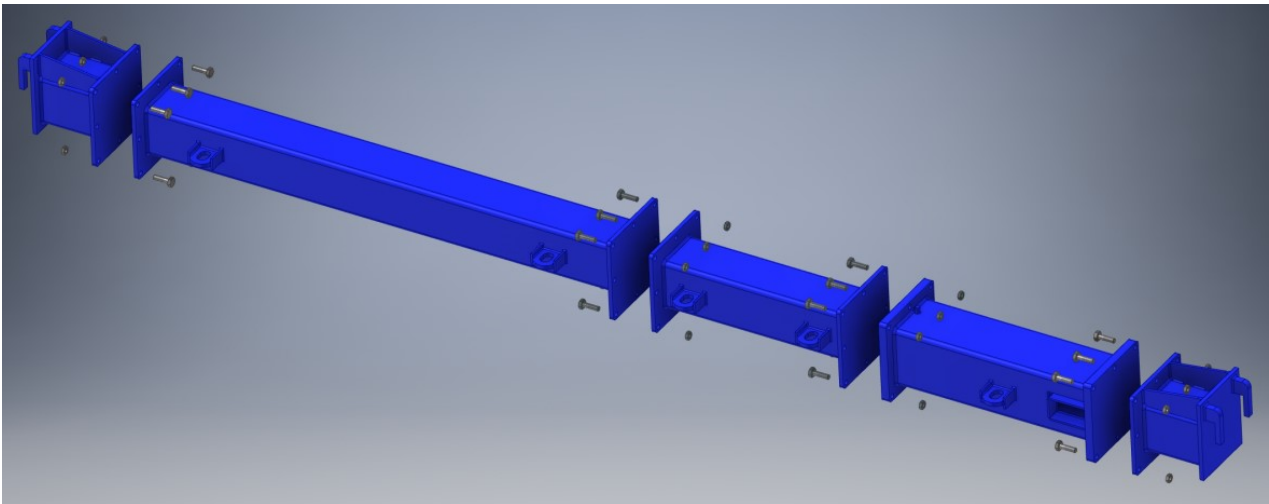
GAP's Ultra-300 Cross Strut is intended to be used as part of temporary waling system to a sheeted excavation and it is not intended to be used for other purposes.

Safe Working Loads:

Axial:

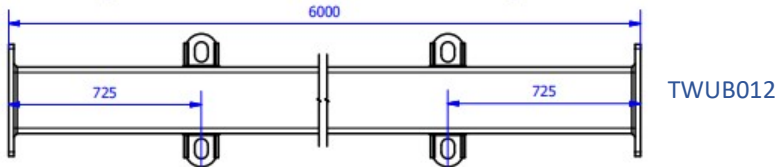
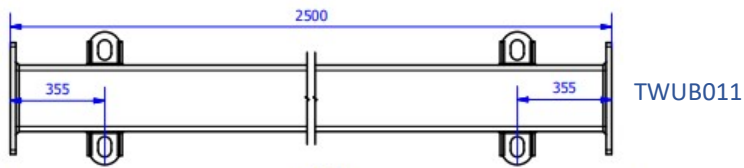
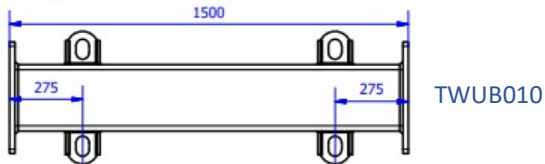
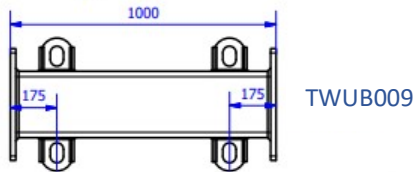
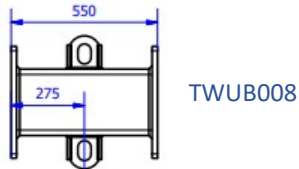
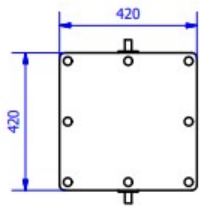
Hydraulic Ram Unit: 600kN

Component Identification



Ultra-300 Cross Brace Extensions

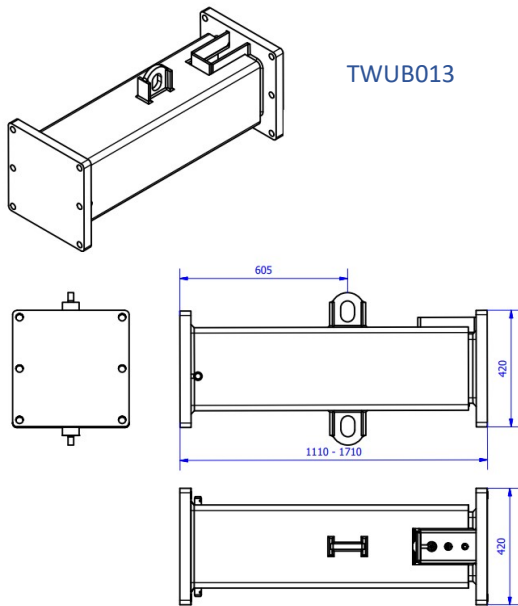
TWUB007	ULTRA 300 PIN	2kg
TWUB008	ULTRA 300 CROSS BRACE EXTENSION 550mm	98kg
TWUB009	ULTRA 300 CROSS BRACE EXTENSION 1000mm	136kg
TWUB010	ULTRA 300 CROSS BRACE EXTENSION 1500mm	172kg
TWUB011	ULTRA 300 CROSS BRACE EXTENSION 2500mm	246kg
TWUB012	ULTRA 300 CROSS BRACE EXTENSION 6000mm	502kg
TWUB013	ULTRA 300 CROSS BRACE HYDRAULIC RAM	503kg
TWUB016	ULTRA 300 HOOK END PLATE ASSEMBLY	83kg
TWUB019	ULTRA 300 CORNER UNIT (KNEE BRACE)	108kg



Section Properties:

Extension Unit:	SHS 250 x 8
Extension Joint:	6no. M24 x 80mm HEX Bolt
I xx:	7455cm ⁴
I yy:	7455cm ⁴
R xx (Radius of Gyration):	9.86cm
R yy:	9.86cm
Z xx (Plastic):	596cm ³
Z yy (Plastic):	596cm ³
EI xx:	15655kNm ²
EI yy:	15655kNm ²
Accidental Load:	10kN

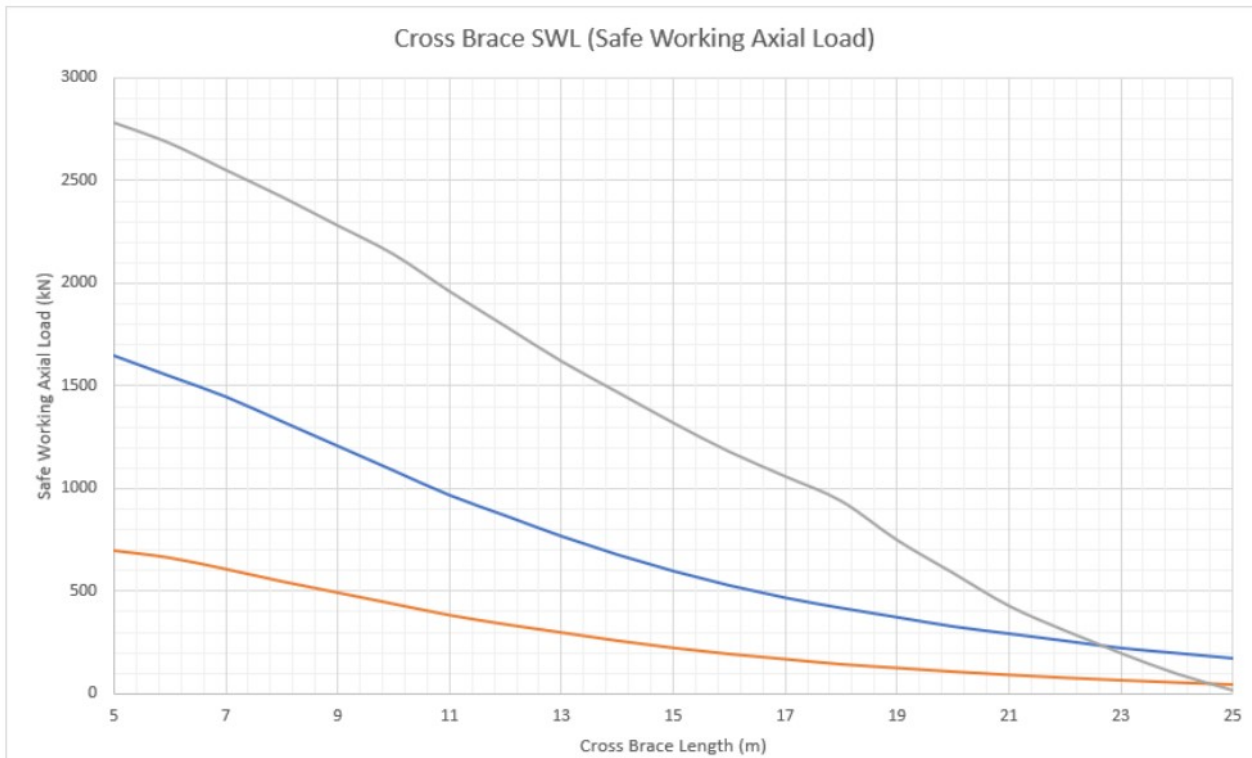
Ultra-300 Cross Brace Hydraulic Unit:



Section Properties:

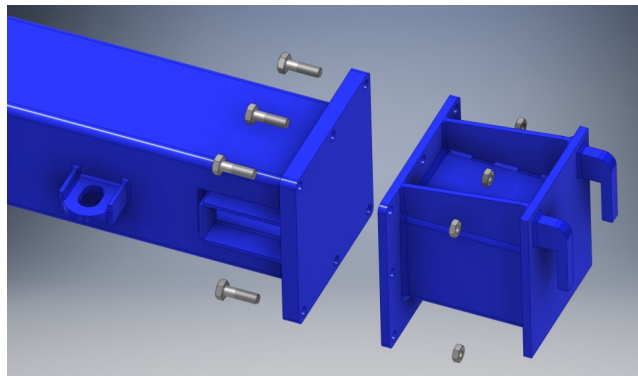
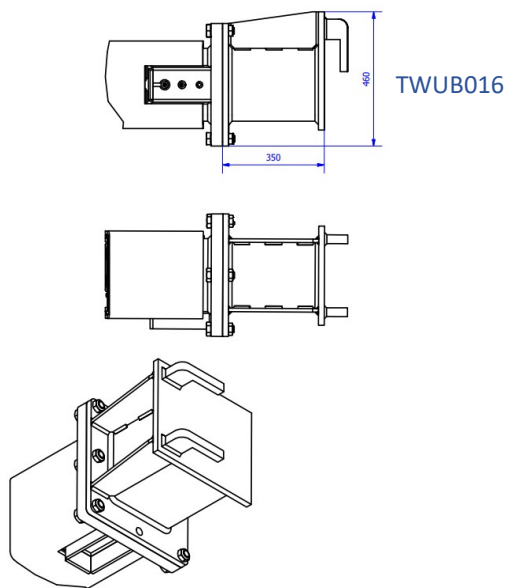
Area: Gross	188.0cm ²
Flange Thickness:	25mm
Web Thickness:	10mm
Steel Grade:	S355
I _{xx} :	13963cm ⁴
I _{yy} :	39507cm ⁴
R _{xx} (Radius of Gyration):	8.6cm
R _{yy} :	14.5cm
Z _{xx} (Plastic):	900cm ³
Z _{yy} (Plastic):	2257cm ³
EI _{xx} :	29322kNm ²
EI _{yy} :	82965kNm ²

Extension Loading Chart:



Cross Strut Connection:

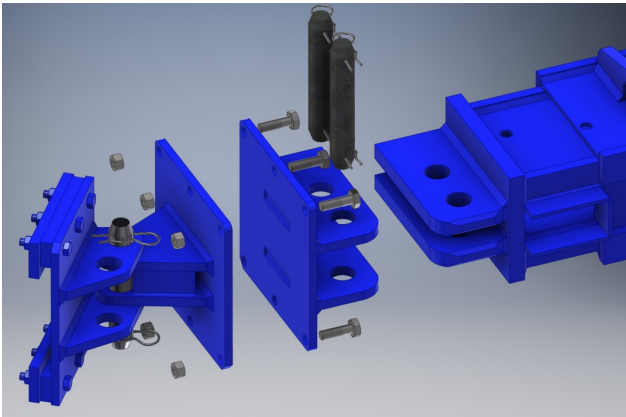
To assemble the Cross Strut to frame, the Hook End Plate (TWUB016) to be connected with the Cross Brace Extension at each end using 6no. M24x 80mm Bolts.



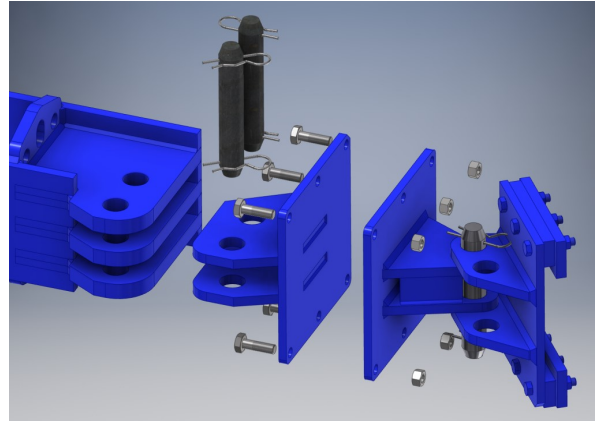
Knee Brace Connection:

There are two different approaches to create a Knee Brace.

Option 1: Using Ultra-300 Brace Frame as a knee brace, simply by attaching the 2-Finger Adapter (TWUB019) with Hydraulic unit end and 3-Finger Adapter with Ultra-300 Extension with 2no. 60mm diameter pins with spring retention clip, then using 6no M20 x 80mm Bolts to connect with Knee Brace Corner Adapter (TWUB019).

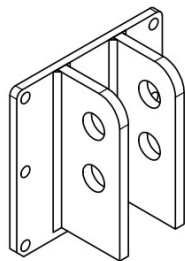
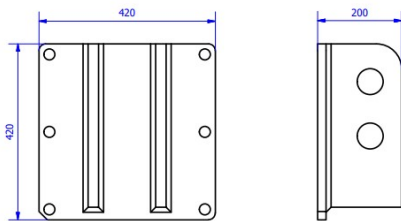


Hydraulic Ram with 2-Finger Adapter

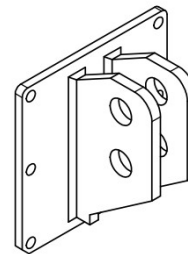
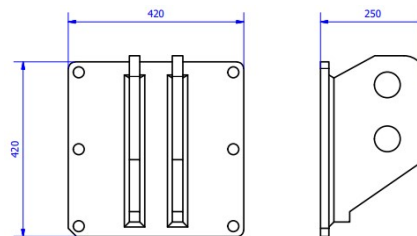


Extension Unit with 3-Finger Adapter

Note: Torque setting for the bolts should be 590NM.

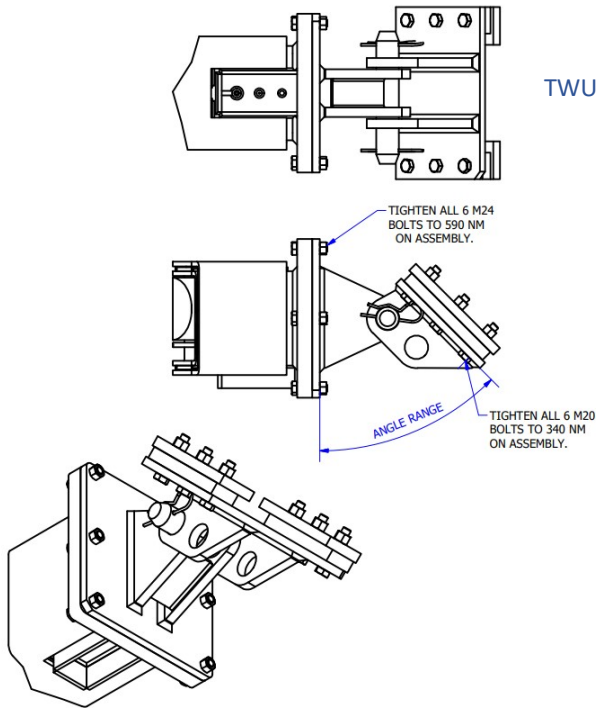


2-Finger Adapter

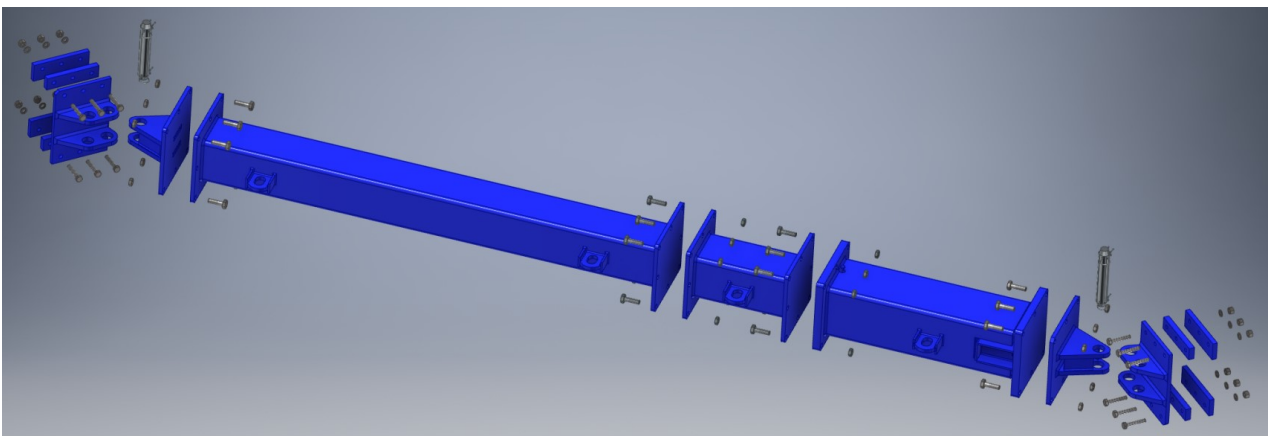


3-Finger Adapter

Option 2: Cross Brace strut can be connected directly with Knee Brace Adapter (TWUB019) using 6no. M24 x 80mm Bolts.



Section Properties	SWL
Shear Stop Capacity	609 kN
Pin Shear	1537 kN
Angle Range	30° – 60°
Accidental Load	10 kN
Journals Max Bearing	968 kN



Diesel Hydraulic Pump (TWUB018):

Specifications:

- Capacity of shoring Fluid Tank: 55 litres
- Capacity of Fuel Tank: 3.3L
- Capacity of Oil Sump: 1.1L
- Fuel Type: Diesel (not biodiesel)
- Engine Oil Type: SAE 10W30, API Grade CD or Higher

Safety Notes:

- Do not operate the engine in a confined space – Diesel fumes can kill.
- Place the pump unit on firm level ground.
- Engine components will become hot during use and may cause severe burns.
- Wear appropriate PPE when filling the pump unit with Shoring Fluid, Diesel and Engine Oil.
- Do not lift the pump unit manually use the lifting points or fork skids.

Checks before delivery to site:

- Ensure sufficient fuel in the fuel tank – running the tank dry may result in air in the fuel lines causing the engine to stop working.
- Ensure sufficient shoring fluid is in the shoring fluid tank – running the tank dry may result in air in the hydraulic hoses and/rams which may cause hydraulic failure.
- Check engine oil level (black cap).
- Ensure all hoses have been charged with shoring fluid.
- Ensure pull start cord in good condition.
- Check lifting eyes and cage for damage.
- Ensure operating instructions accompany the pump unit.
- Battery fully charged.

Daily Checks on site:

- Ensure sufficient fuel in the tank for the day – running the tank dry may result in air in the fuel lines causing the engine to stop working.
- Ensure sufficient shoring fluid ins in the shoring fluid tank for the day – running the tank dray may result in air in the hydraulic hoses and /rams which may cause hydraulic failure.
- Check engine oil level.
- Ensure pull start cord in good condition.
- Check lifting eyes and cage for damage.
- Diesel level

Starting the engine – key switch:

- Ensure the flow direction valve is in the neutral position.
- Open the fuel tap.
- Ensure the throttle level is midway.
- Turn key quarter turn clockwise. Release when engine starts.
- **Make sure key is in Off Position once started.**

Starting the engine – Manually:

- Ensure the flow direction valve is in the neutral position.
- Open the fuel tap.
- Ensure the throttle level is midway. Pull the recoil cable until resistance then release.
- Apply the decompression level. (Red lever adjacent to air filter).
- Pull the recoil cord family and consistently using both hands.
- Decompression level resets automatically. Must be set on each pull.

Stopping the engine:

- Ensure the flow direction valve is in the neutral position.
- Ensure the flow direction valve is in the “stop” hand position.
- When engine stops close the fuel tap.

Pump Operation – Brace Leg Extension:

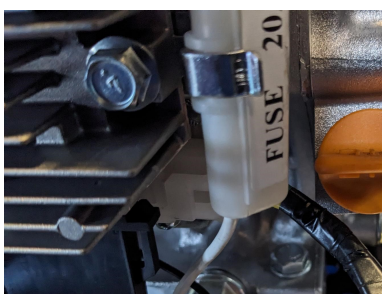
- Connect the hoses to the pump manifold – male to male and female to female.
- Connect the hoses to the ram – male to male and female to female.
- Ensure all connections are properly made otherwise the brace leg will not work.
- Open the lock off valve on the brace leg approx. 2x turns from closed.
- Fully open the throttle on the pump unit and move the lever on the flow control valve to advance (extends ram).
- Operate the pump unit until gauge reading of 1500 psi is achieved.
- Close the lock off valve – do not over tighten.
- Move the flow control valve to the neutral position.
- Repeat for the other brace legs.

Operating the pump – Leg Retraction:

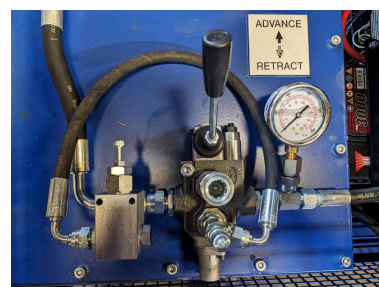
- Connect the hoses to the pump manifold – male to male and female to female.
- Connect the hoses to the ram – male to male and female to female.
- Ensure all connections are properly made otherwise the brace leg will not work.
- Open the lock off valve on the brace leg approx. 2x turns from closed.
- Fully open the throttle on the pump unit and set the level on the flow control valve to retract (closes ram).
- Retract the brace leg.
- Move the flow control valve to the neutral position.
- Repeat for the other brace legs.



Shoring Fluid Red Cap



Oil Dip Stick



Advance/Retract Lever Arm



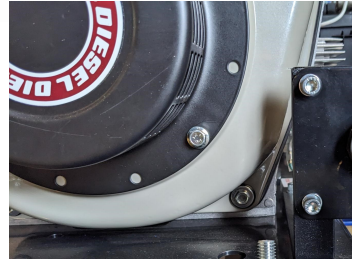
Fuel Cap



Throttle Lever



Shoring Gauge



Key Switch