OPERATING MANUAL

XpressJack

Operating manual is intended to provide basic information for users of the SafeXTrench system and to draw the client's attention to the practical aspects of XpressJack operational procedures and basic maintenance which need to be considered when compiling method statements, risk assessments and safe system of works. It is assumed that clients are familiar with general safe practices applicable to this type of work. It is advisable, before commencing installation, to read the notes and to become familiar with the procedures Involved when using the SafeXTrench system.

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Description

The XpressJack is a lightweight and compact trench shoring unit for depths up to 2.0 m and **Stable Ground Conditions.** The system is ideally suited for laying and repairing house service connection as well as gas, electric cable, sewerage and water pipes.

Two opposite lightweight composite panel length with intermediate hydraulic strutting are pushed against the trench wall, covered by the plywood if necessary.

- **One unit consists 1 set of :**
  2 pcs plywood, tiltable composite panel conceive of right & left panel, 2 hydraulic struts with hose which are fixed to panel enable adjust the length.
- **Trench depths up to max 2.0 m.**
- **18mm waterproof plywood @ 1.2 m width x 2.0 m height.**
- **Composite Steel Panel length 2.0 m.**
- **Strut clearance height is 0.7 m or 1.0 m with plank wood.**
- **Trench width is min. 1150mm to max 2050mm.**

The great advantages of the Xpress Jack:

- **Low weight.**
- **Only 2 workers required for the installation.**
- **Backhoe or mini excavator required.**
- **Cost-saving**

General Guidance Notes

Safe System of Work

- Peraturan – Peraturan Keselamatan Dan Kesihatan Perkerjaan (Kerja Pembinaan) (Reka Bentuk Dan Pengurusan2024).
- Occupational Safety and Health (Construction Work) (Design and Management) (Regulations 2024) require that a safe system of work is adopted to carry out the works on site.
- These guidance notes are intended to draw the client's attention to practical aspects of SafeXTrench. XpressJack components during use and basic maintenance which need to be considered when completing method statements for a safe system of work.

Access, Hard standing Areas and Site Storage

- Suitable firm, level, dry areas should be made available on site for storage and pre-assembly work.
- The weights of components and assemblies are given in this guide.
- If stacking XpressJack panel & hydraulic components ensure they are supported with timber skids to avoid bending, and those items are strapped down for stability especially in high winds.
- Smaller components should be stored in skips/bins.

Personnel

- XpressJack system should only be installed and removed by competent persons in strict accordance with a design & installation sequence.
- The competent person shall be experienced and knowledgeable of trenching and excavation procedures, the use of hydraulic shoring system, soils identification, and the JKKP & CIDB guidelines.
- The competent person shall continually monitor the excavation for signs of deterioration such as seepage of water or flowing soil into the excavation. Changing soil conditions may require adjustments to the shoring system.

Equipment

- Ensure all quick release valves are functional and all strut pins in place and secured using the retaining clips provided prior to commencing works.
- No vertical or horizontal loads shall be applied to the hydraulic cylinders.
- Ensure gloves and eye protection when using hydraulics.

WARNINGS:

- XpressJack systems rely solely upon soil arching theory to support trench walls. Therefore, never enter a trench unless fully preloaded XpressJack panel are securely installed either side of the point of entry.
- The faces of the excavation shall be straight and near vertical. Shoring members must bear on firm soil or solid fill.
- No matter how much care is taken during the installation and removal of XpressJack system some ground movement will occur in the areas immediately surrounding the excavation. Great care must be taken when specifying these system for use adjacent to existing structures and services.
- It is recommended that ends of trench runs be battered back at a safe angle.
- Do not work underneath service crossings unless an engineered support system is correctly Installed, or the service has been inspected and confirmed to be stable by a competent person.
- Do Not butt panel back-to-back across an excavation.

Access & Egress and Edge Protection

- Safe access / egress, edge protection (for personnel) and barrier protection (for plant) should always be considered. Always place ladders between loaded jacks.
- A competent person should inspect the means of access and egress regularly. Individual wale rail, panel & jack should be visually inspected for damage, excessive deflection, or loss of cylinder pressure prior to entering the excavation.
- Check trench service crossings for any soils or materials (including boulders, concrete or road construction) that could dislodge and fall / collapse onto operatives and if identified ensure that a jack is placed to prevent this or that an exclusion zone is established.

During Installation Works

- Installation is normally carried out using the dig and drop excavation method by lowering the assembled. Units to the correct installation level and pre-loading each jack in turn to ensure that the units are pressed firmly against the trench walls and cannot slip. Approximately pre-load pressure of 1500 psi to apply, and it must remain constant. If the soil is soft or gives, the trench may be unsafe and should not be entered.
- Units should always be installed square and plumb to the excavation walls ensuring the jacks bear directly onto firm soil. if this is not possible any gaps must be securely packed by using hardwood wedges or suitable dry soil or sand material to ensure pre-loading of the jacks imparts compressive forces into the soil.
- XpressJack is not suitable for the dig and push excavation technique.

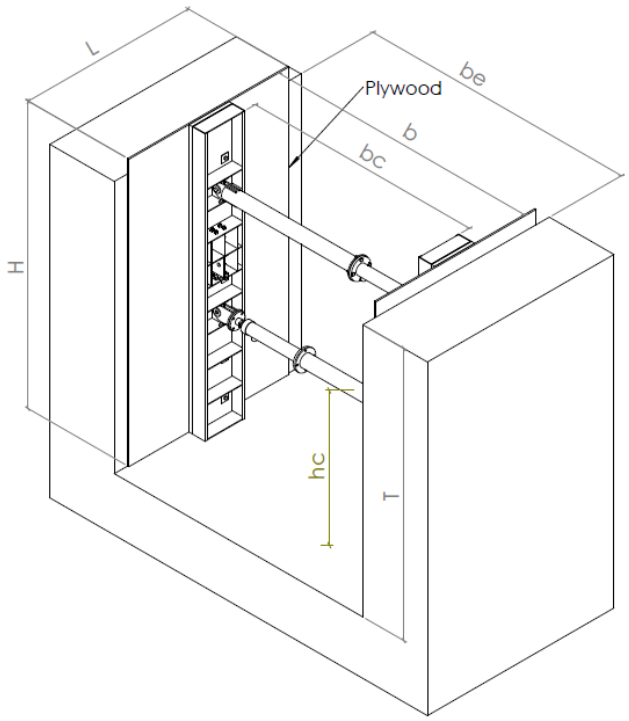
After Installation Works

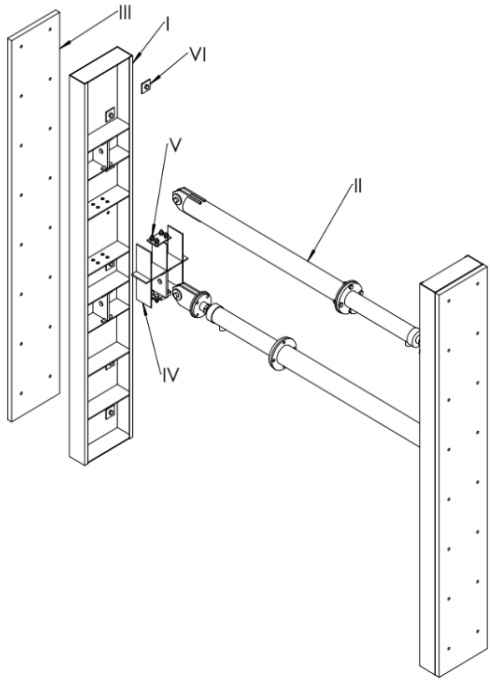
- A competent person shall inspect each excavation and its protective system daily before personnel begin work, and as conditions change, including after rainstorms or other events that could increase hazards. Prior to removal of systems all hydraulic cylinders must be released and retracted, and systems pried clear of the trench wall, to avoid the need for excessive extraction forces and to avoid damaging the jack.

Return of Equipment Off-Hire

- Clients should ensure that on removal, the equipment is returned clean and assembled as supplied.
- Ensure all equipment is loaded to the satisfaction of the vehicle driver and is securely restrained to the vehicle bed.

System Drawing





b	Trench width
bc	Trench width clearance
be	Trench width excavate
hc	Panel height clearance
H	Panel height
T	Trench depth

I. Panel
II. Hydraulic strut
III. *Wood plank – only soft soil condition & subjected to engineer design
IV. Bracket
V. Strut connector
VI. Bolt, nut & washer

Technical Parameter

Trench Depth & Height

H - Panel height (m)	T- max Trench depth (m)	h_c – panel height clearance (m)
2.0	2.0	0.70
2.0	2.0	1.0

Plywood Thickness 18mm

Plywood		Allowed earth Pressure (kN / m2)	Plywood quantity
Width (m)	Height (m)		
1.2	2.0	33	1
1.2	2.0	41	2 *soft soil

Trench Width

	Width(mm)			
Strut length	Trench b	Excavation be	Trench Clearance bc	Jack Compressive Forced kN
988	1200-1400	1250-1450	1050-1250	50
1288	1500-1700	1550-1750	1350-1550	50
1688	1900-2100	1950-2150	1750-1950	50

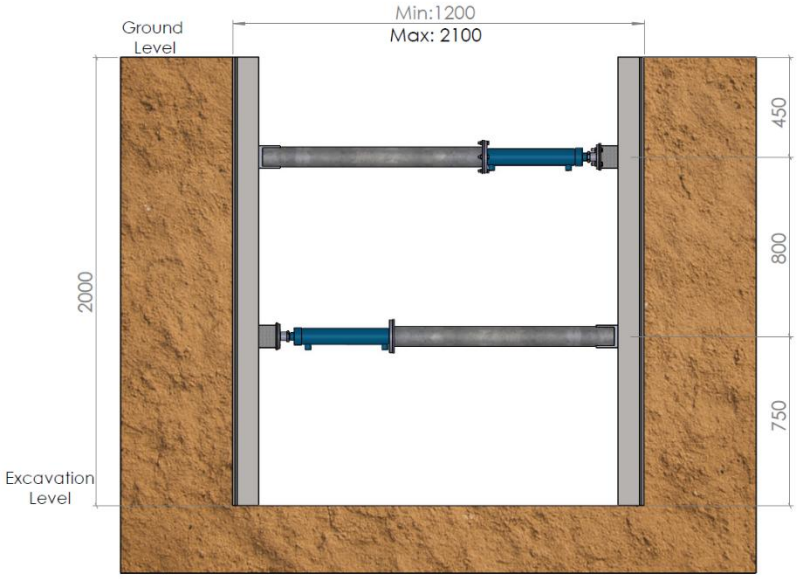
- If your project requires dimension can be outside of our standard range, we offer customized strut length tailored to your need.

XpressJack 1 set

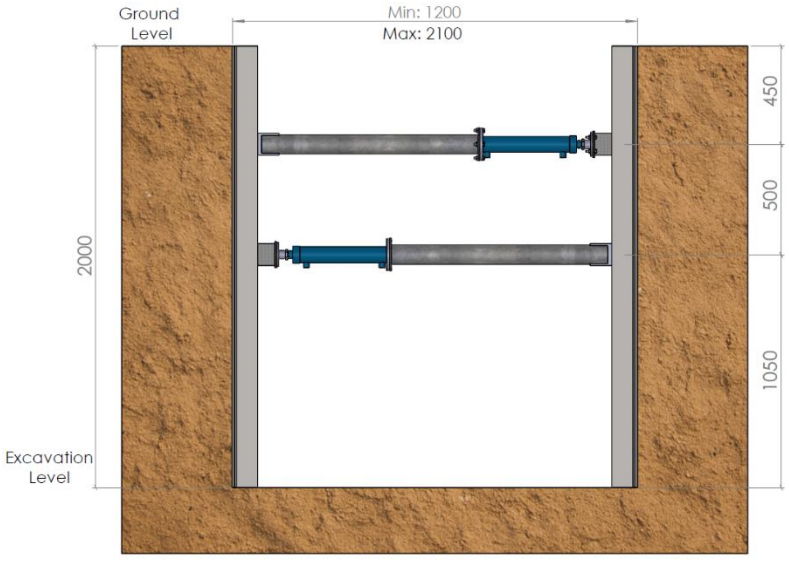
No	Description	Weight (kg/pcs)	Qty
1	Hydraulic hand pump	18	1
2	1.5 m hydraulic hose	1	2
3	3 m hydraulic hose	1.75	2
4	4 m hydraulic hose	2.25	2
5	Control valve block	5.7	2
6	Release tool & hook	2	2
7	Hydraulic strut	26	2
8	Panel	32.5	2
9	Plywood	21	2
10	Timber plank 25mm	12	2

Component Identification

XpressJack for excavations up to 2.0 m deep allow installation of utilities services, such as piping, plumbing, sewerage, electric cables, and etc. Due to the soil arch created by the hydraulic struts, XpressJack making them an efficient solution for longer trench runs. Designed for use in compacted made ground, firm, cohesive and medium soil which is generally self-supporting in the short term and where no ground water is present.
XpressJack can be used with and without plywood backing. If required plywood sheeting shall normally be 18 mm thick. The plywood is not intended as a structural member, but only as a device of prevention of local raveling or sloughing of the trench face between the shores. When plywood sheeting is used, it shall extend to the top of the excavation.



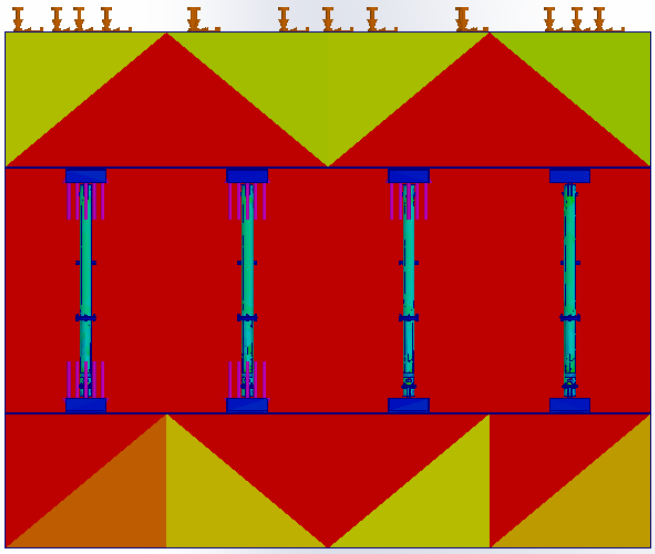
hc – Panel height clearance – 700mm



hc - Panel height clearance – 1000mm

PRODUCT USER GUIDE

The image below shows the general concept of soil arching:



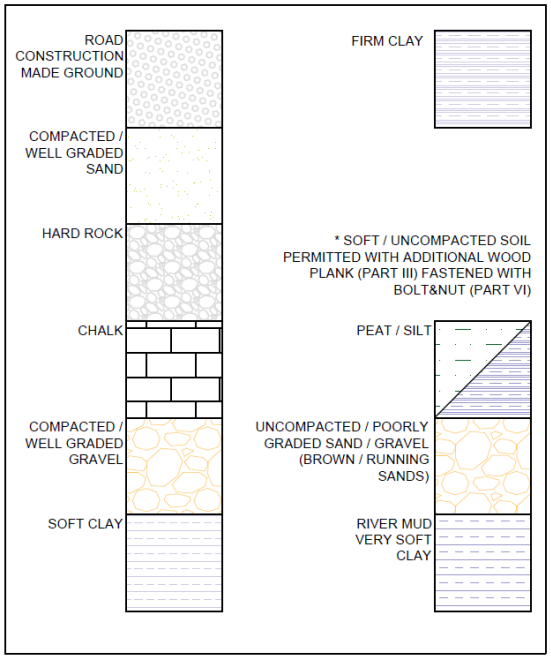
The general design for XpressJack is to assume that the soil to one half spacing between units on each side acts as a panel loaded with the active soil pressures and surcharges above the depth of the excavation.

Colored zones showing the distribution of load and the arching effect between XpressJack units.

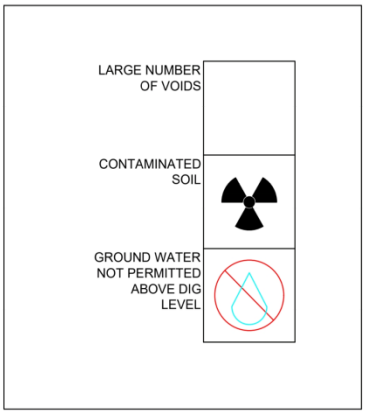
Pre-jacking recommended:
- Pre-load: 750-1500 PSI
- Customer may wish to consider utilizing backing boards

Where XpressJack should be used:

PERMITTED

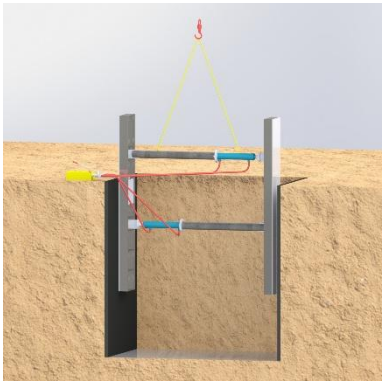


NOT PERMITTED

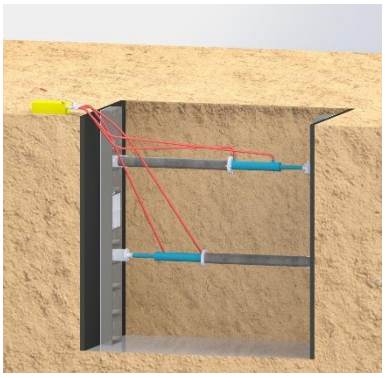


Typical Site Assembly – Installation & Extraction

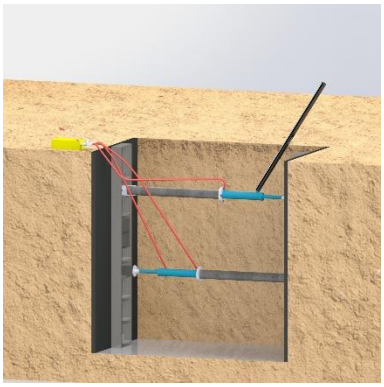
1) XpressJack components.



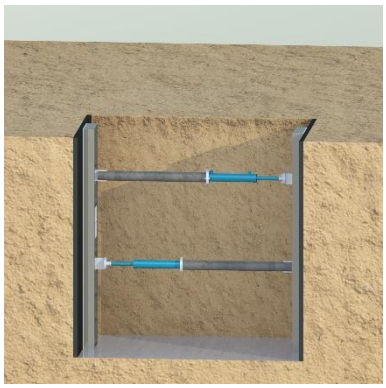
2) Place the plywood into the excavated trench. Then lift the tilted trench box panels into the trench. The jack shall be pre-connected with hydraulic hoses.



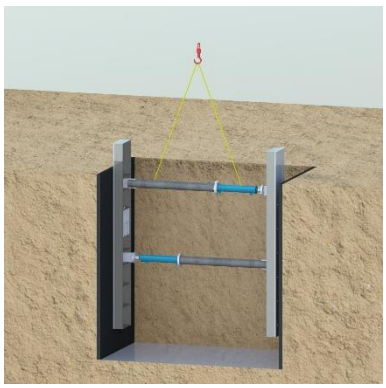
3) Once the shoring is in the correct position, pump the hydraulic jack to about 1500 psi as indicated on the pressure gauge, and ensure the pressure is maintained. Ensure the jack remains horizontal, allow to maintains at max 1 vertical to 5 horizontals (1V:10H).



4) Insert the release tool through the handle and engage it on the jack valve. Remove the hydraulic hoses without personnel entering the unstable trench.



5) The excavation is safe for personnel to enter and inspect the installed shoring system. If necessary, adjust the jack and/or plywood to meet the requirements of trained excavation personnel.



6) Retract the hydraulic jack to dismantle the shore, then lift the panel sets out of the trench. Clean and safely store the Xpress Jack and manual pump. Ensure all ancillary parts are accounted for and recorded to prevent loss.

PPE, Dos & Don’ts

Basic Maintenance

→ Regularly check that all pins are in place and clips fitted.
→ Replace damaged components.
→ Remove debris from pins and clips.
→ Avoid laterally loading the struts-either by hanging them or accidentally striking them with site plant.

Personal Protective Equipment (PPE)


Safety helmet


Safety goggles


Hand gloves


Safety boots


Safety vest

Dos and Don’ts

- DO use a ladder to enter the working space between the struts of the shield.
- DO wear PPE to minimize the risk of head injury.
- DO ensure that the excavation operator is aware of your intentions.
- DO ensure that unsupported part of the trench is safely battered.

- Do NOT climb up or down the struts.
- Do NOT use any unsupported part of the trench for access.
- Do NOT move the system when personnel are inside it.