Tilt Prop and Knee Brace

Hazard and Risk Assessments

Before using this equipment, the job you are doing must be assessed for foreseeable hazards and risks and appropriate measures to eliminate, control or reduce those risks must be taken before you commence work.

Suggested PPE (Personal Protective Equipment):

Protective Gloves **Protective Footwear** **Hard Hat** **Eye wear**

Note: PPE must be suited to the risks and person(s) using the equipment.

Safety Instructions:

1. **Operating Instructions** – Before using this equipment ensure you have read the 'Operating Instructions' and taken note of the 'Hazards and Risks' detailed on this instruction sheet and taken all necessary steps to prevent injury.
2. **Personal Protective Equipment** – Use appropriate personal protective equipment for the job.
3. **Installation Advice** – The safe use and application of this equipment must be in accordance with AS3610, the Occupational Health and Safety Act, approved Codes of Practice and any other regulatory requirements. Consultation with a competent person or qualified engineer is advised.

HAZARD: Risk of Structural Collapse and Crushing

... Incorrectly installed or rated propping systems may cause structural collapse.

... Consultation with a qualified engineer is advised.

4. **Approved Components Only**– Only components and accessories that have been designed for use with safety brace system supplied by Shore Hire may be used.
5. **Particular Care** – Must be taken when using limit state capacities, the actual 'dead' and 'live' loads must be increased.
6. **Work Area**

i. During installation of propping system, ensure all bystanders are kept clear of work area.

ii. Installations that take place in close proximity to pedestrian or vehicle traffic should be barricaded to minimise risk of personal injury or property damage.

7. **Look Up and Live** – Stay clear of overhead wires and other obstructions when positioning and installing propping systems. Refer to local Regulatory Authorities for minimum power line clearances.

ix. **Avoid Body Strain**

i. If equipment is too heavy, ask for assistance when loading/unloading, positioning etc. or use mechanical device.

ii. Adopt recommended manual handling techniques e.g. keep a straight back when lifting and use your leg muscles to take the weight.

x. **Rated Load** – Do not exceed the props Working Load Limits. Refer to product 'Technical Data Sheets' (available from Shore Hire) for 'Allowable Compression & Propping Loads'.

xi. **Install the Props Correctly** – The design Engineer must ensure that the head of the brace is fixed to the panel and the foot is fixed to the slab or suitable footing.

xii. **Avoid Lateral Movement** – Be aware of lateral (sideways) movement of the propping system when supporting uneven or 'live' loads, or being subject to a sideways force e.g. being hit by machinery on site etc. Where possible bolt/ secure propping system in place.

xiii. **Adjust the Prop into the Load** – Use the screw jacks to raise/extend or lower the prop to the load. Do not hammer the prop into position.

xiv. **Equipment Inspections** – Prior to use and at regular intervals whilst in use, the propping system components should be inspected by a suitably competent person to ensure they have not been damaged when transported, craned, installed or while in position under load on site.

Any damaged equipment must be returned immediately to Shore Hire for inspection. Do not attempt to repair or modify any propping system equipment.

Operating Guide:

Tilt-Up Props are designed and manufactured as aids to support concrete wall sections against wind loads and, are NOT suitable for use in heavy load propping applications. There are NO known applications where tilt props can be used safely as vertical or horizontal primary supports for high load structures.

Tilt props must be installed strictly as per the engineers directions and the design drawings which must be prepared specifically for the task(s) at hand.

Important

The Tilt Prop T-lock that locks both the inner and outer tubes together has been manufactured and load tested to specifications. Substitution pins such as bolts, metal bars or other such objects **MUST NOT TO BE USED** in place of the sheer pin.

Sheer pins must be affixed and secured in such a manner that they cannot be removed by any means other than, a mechanical device or tool.

For full details on Tilt-Up Prop sheer pins, you must refer to AS3850.

Installation and Set-Out of Brace

i. Familiarise yourself with the National Code of practice

ii. Braces are to be installed with a minimum of two braces per panel fixed perpendicular to the panel. (see fig 10 & 11, extracts from the code)

iii. The Shore Hire Tilt-Up Prop/brace is to be installed only using components supplied by Shore Hire.

iv. Prior to installation of the tilt brace, each prop/brace shall be inspected for damage. Any prop/brace or component found to be damaged must not be installed and replaced with a replacement prop/brace.

v. It is recommended that only the T lock locking sheer pin system is used to lock the prop. The T lock is a purpose designed locking system to prevent sheer pins from being removed during tilt up construction.

vi. Braces/props are to be fixed to the panel before erection panels are erected.

vii. Panels and props/braces must be installed under engineers direction.

viii. Knee braces are to be installed where engineers design calls for it to support the load.

Safety Procedures

1. **DO NOT...** attempt to elevate loads using the **"Prop"–it is NOT a JACK.**
2. **DO NOT...** erect props on an unlevel foundation or unstable base/surface.
3. **DO NOT...** hammer loaded prop's into position by using the head or foot plates.
4. **DO NOT...** use tilt-up props for heavy load bearing vertical/horizontal applications.
5. **STORE...** all props and components neatly in the appropriate containers supplied.
6. **EMPLOY...** safe lifting techniques, use mechanical or two man lifts when handling.

PLEASE NOTE: Ensure all props are fully dismantled after use (if knee braces are attached) and place them in the stillage or prop container that has been provided for safe storage and transport.

Description

Used principally in pairs the tilt prop is the industry standard equipment for supporting heavy load concrete panels for major tilt-up construction.
Refer to **AS3850**, **AS/ANZ1170** and **AS3600** for regulations on "Tilt-Up Constructions" and The National Code of Practice for Precast, tilt-up and concrete elements in Building construction.

Tilt-Up props are essentially a brace against wind forces during the installation of concrete wall sections etc: Tilt-Props must never be used in the place of or, as a substitute to the standard vertical prop normally used for supporting heavy concentric loads.

IMPORTANT NOTICE

Shore Hire will accept no liability, either expressed or implied, for any loss, damage, or injury to any person or property where the hire plant/equipment is misused or, used for purposes not expressly specified by Shore Hire or the manufacturer. It is the customer's responsibility to ensure that properly qualified and experienced operators use the hire plant/equipment in the manner specified in this plant safety assessment.

Index

A & B - M20 Flange Bolt or

C - Rotation Head

D - High Strength Steel 'Outer'

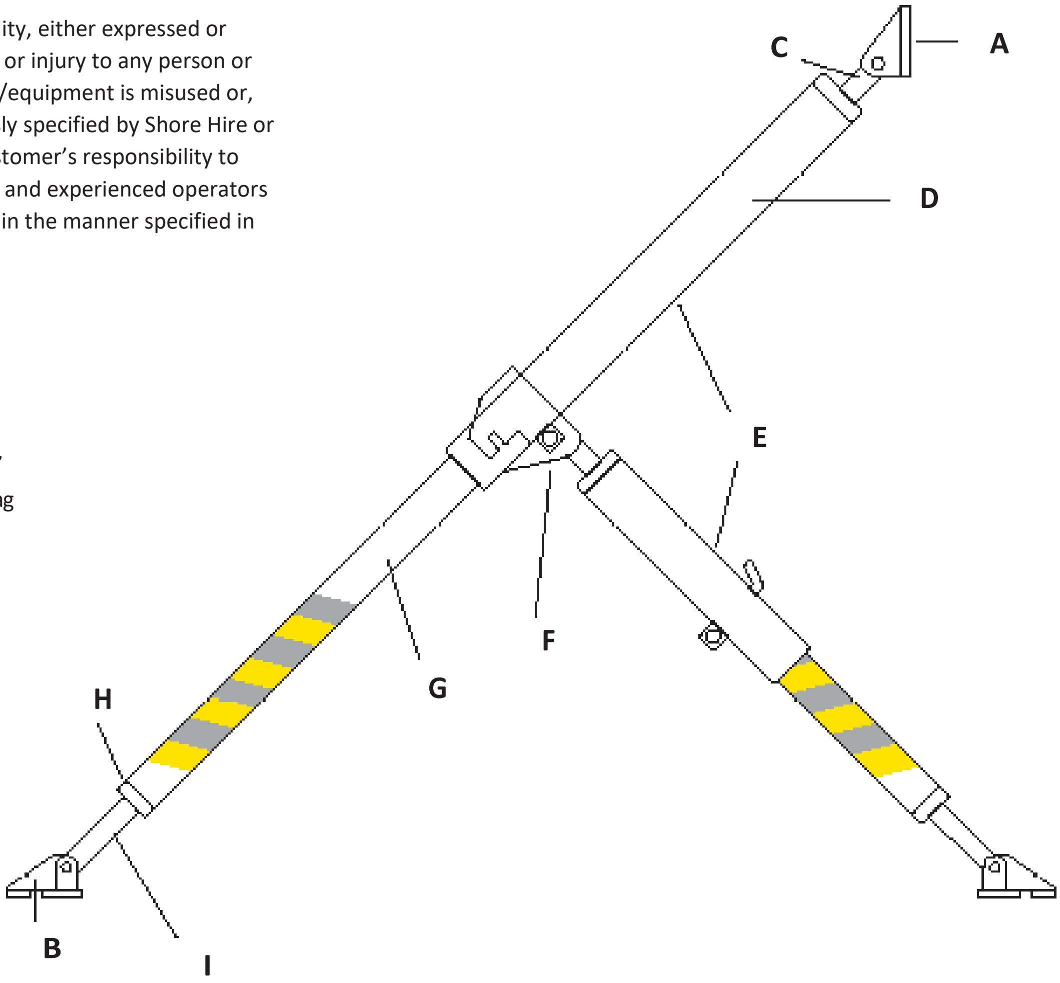
E - Identification and Safety Tag

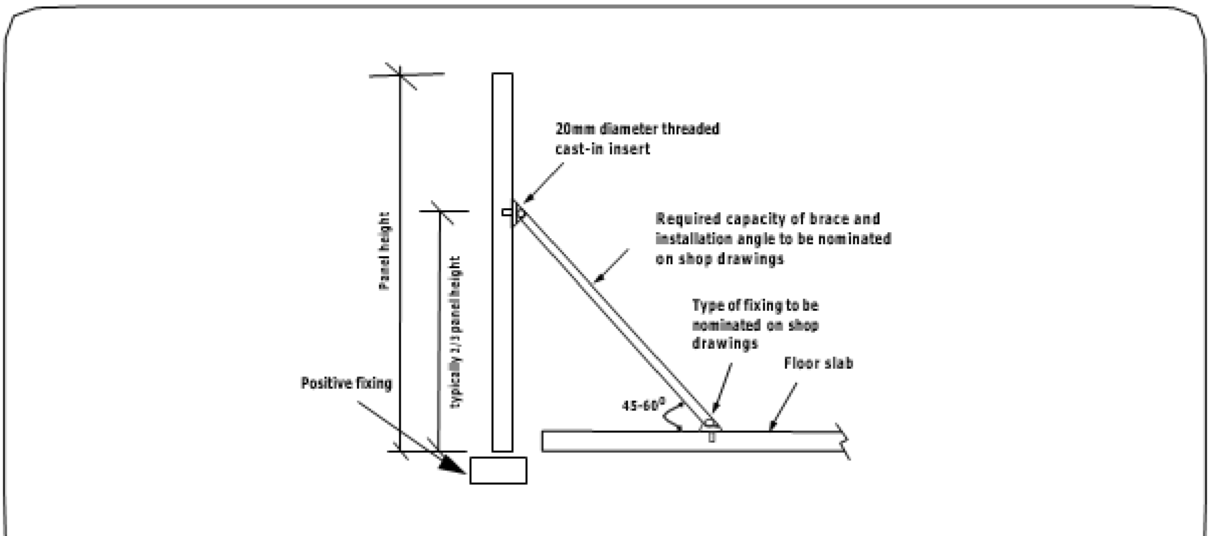
F - Sheer Pin (Rated)

G - High Strength Steel 'Inner'

H - Base (Locking) Nut

I - Captive Screw Adjustment





Courtesy of: WorkSafe Victoria, Industry Standard Precast and Tilt-Up Concrete for Buildings, 2001.[5]

Fig 10.
Concrete panel beacing, preferred arrangement

Bracing must be installed perpendicular to the concrete panel in the plan (**figure 11**). Skewed braces greater than +/- 5 degrees to perpendicular will reduce concrete panel stability. The design and installation of skewed braces will need to be carefully reviewed to consider any induced lateral and torsional forces to the panel.

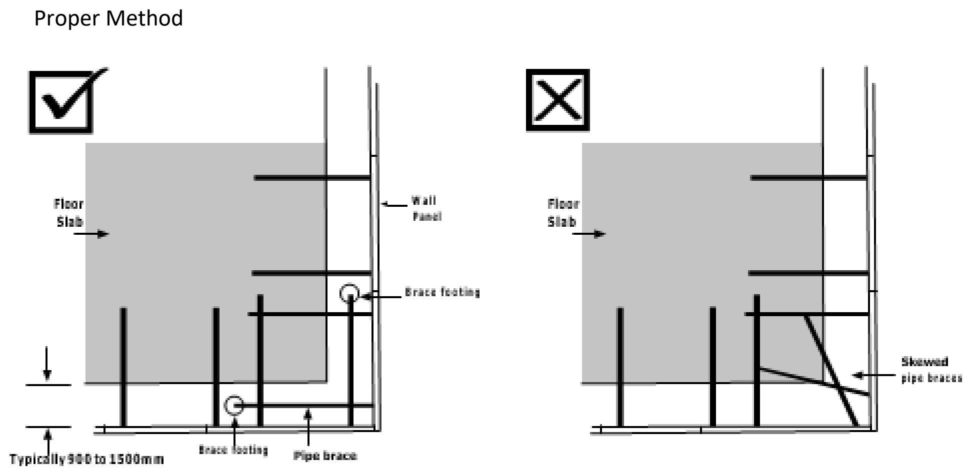
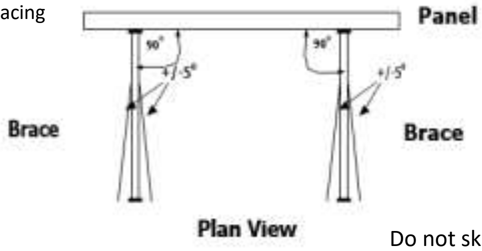


Fig 12. Corner bracing

Fig 11. Concrete panel bracing



Do not skew braces

SCAN ME FOR TECH DATA

RISK ASSESSMENT (1= HIGH RISK, 5 = LOW

Risk	Descripti	Contr
1	Erecting props on unstable/shifting foundation could cause a collapse seriously injuring personnel.	Always ensure base area is firm, clean and capable of supporting the load without shift or movement.
1	Overloading props creates a very high risk of collapse possibly causing, serious injury or death	Strictly follow the engineers advice. Do not overload props and always observe props 'load capacity'.
2	Erecting props without the correct "rated sheer pin" may cause system to buckle or collapse under load.	Adhere to engineering instructions, ensure props are only installed with the correct "sheer pin(s)".
3	Cuts and grazes from important handling procedures.	Observe safety procedures, always wear correct PPE.
2	Dropping units, trapping hands and feet, mishandling.	Follow safety procedures, use PPE and assisted lifts.
1	Putting lateral load on props by exceeding allowable skew from perpendicular. May cause prop to collapse/fail.	Do not exceed more than 5 °+/- from perpendicular (eg 262mm @3m) (see fig 11)