

Transtilt™

Operations Manual for

Loading

Load Restraint

Un-Loading

Empty Travel

Maintenance

Disclaimer

(APPENDIX "A" References)

(APPENDIX "B" General Arrangement of Transtilt Device)

Loading

MAIN POINTS

- Maximum gross load of rig is 42.5t
 - Maximum weight on each set of wheels
 - Steer, single axel 6.0t
 - Prime mover drive, dual axel 16.5t
 - Trailer, tri axel 20.0t
- | | |
|-------|--------------|
| TOTAL | <u>42.5t</u> |
|-------|--------------|
- The Transtilt cradle can carry a maximum of 5 panels, but the total rig gross load and the maximum axel loads cannot exceed the weight totals above.
 - The load should be carried as close to the centre of gravity of the trailer as possible to give best load distribution. This is achieved by positioning the upright section in the furthest forward position as the longest panel to be carried allows. Refer below for panel length ranges.
 - The Transtilt cradle can be configured to carry panels of nominal lengths in the following 3 ranges:
 - Up to 6.0m
 - From 6.0m to 8.0m
 - From 8.0m to 10.0m
 - The maximum height of the load carried cannot exceed 4.3m. This equates to a nominal maximum panel height of 3.0m, allowing for room for lashing.
 - Panels of thickness varying from 100mm to a maximum of 250mm can be carried.
 - The panels should be loaded symmetrically from the centre out.
Note:
 - If one panel is carried place it in the centre.
 - If two panels carried, leave the centre empty and place the panels in the cradle each side of the centre.
 - If three panels carried, leave the two outside cradles empty.
 - If four panels carried, leave the centre cradle empty.
 - Load the panels in the reverse sequence that you require them to be unloaded.
 - When positioning the panels on the cradle it is important to “push home” the panel in the vertical upright section of the cradle. Note this section has a 45 degree splayed mouth so the varying thickness panels can be carried. The addition of two hardwood timber wedges at the top rear of each panel will add to the stability of thin panels.
 - If the cradle is going to be used to rotate/spin panels the temporary braces could be fixed to the panels prior to loading. Note that two adjacent panels with props should not face each other as there may not be sufficient clearance between them when fixed into position on the cradle.

Load Restraint

MAIN POINTS

- The load (panels) must be restrained from shifting during transport in every direction. The capacities of the load restraint system must achieve the minimum totals as detailed following:
 - 20% of the load weight UPWARD
 - 80% of the load weight FORWARD
 - 50% of the load weight REARWARD
 - 50% of the load weight SIDEWAYS
- The frame of the cradle is designed to restrain the load against rearward and sideways movement. The cradle sections are fixed to the trailer via international standard container locks. Note it is important to check that the container locks have all been correctly engaged. There are four in the rear upright section and two in each horizontal segment. Also each section is bolted together, ensure bolts are correctly fitted.
- The upward restraint is provided by a lashing chain and associated tensioning device that is placed over the top of each panel individually. This chain shall be placed at the middle of the panel in its horizontal position. Note that there are vertical shackle locations evenly spaced along the cradle support frames for this purpose. Also note that the use of a 1.8-3.6m extension ladder or similar should be used to assist in placing chains over the panel. We recommend a short section of aluminium angle, or thick rubber, be placed over each side of the top of the panel edge under the chain to avoid damage to the panel.
- The forward restraint is provided by a lashing chain and associated tensioning device that is held in position by a support post placed at the front or nose of each individual panel. Note that there are angled (45 degrees) shackle locations evenly spaced along the cradle support frame. Select the most suitable pair to achieve a chain angle to the horizontal of between 30 & 50 degrees.
- We recommend the use of lashing chains and associated hardware that give a safe load of 6.5t. Note that this lashing hardware shall comply with the relevant Australian Standards and should be tested, marked and certified in accordance with the same.
- It is important to tension the lashing chain so that all slack is removed.
- It is important to always check the load restraint you require. If you are carrying a large panel that exceeds the required upward and forward capacity of your standard chain/hardware the easiest solution is to add another chain. Make sure you lash to a different shackle position so as to avoid overloading the shackle point.
- Note if temporary props are fitted to the panels the lashing chains can be run over them. This will not affect the load capacity of the lashing chains to any significant degree.
- Finally the two cross brace chains fitted to the rear of the vertical legs shall be connected and “snug” tensioned ready for transport.

Un-Loading

MAIN POINTS

- The cradle/trailer shall be positioned on flat, level and stable ground prior to unloading
- Suitable clearances shall be provided and safety barriers and signs shall be used in accordance with the project safety guidelines.
- There are two methods to unload a panel. The method used is dependent on the final in service position of the panel. Note that the panels should be unloaded in the reverse sequence as they are loaded, that is alternate outside panels working your way to the centre. It is important to remember that if you are rotating/spinning panels that there can be no panel on the adjacent outside cradle. This is because vertical arms are locked/pinned to the adjacent inside cradle upright. When you rotate an inside cradle upright the outside upright will come with it.
- If only using method (1) the rear cross brace chains can stay in place. For method (2) the cross brace chains have to be disconnected from their bottom fixing point. It is important that they are kept clear from beneath the rotating arms if this section is mounted forward on the trailer.
- Method (1) - Horizontal Unloading:
 - Unloading a panel in its horizontal position.*
 - This is unloading and placing a panel in the same orientation as it is transported.
 - Here the crane can be located wherever is convenient.
 - There typically will be two or four edge lift anchors on the top of the panel (placed about the centre of gravity of the panel) to lift & place it.
- Method (2): - Rotational Unloading:
 - Unloading a panel by rotation.*
 - This is unloading the panel by using the unique rotating cradle of the Transtilt device.
 - Here it is strongly recommended that the crane should be located at the rear of the trailer in line with the long axis of the panel. This gives the crane driver direct vision to keep the crane cable in good vertical alignment with the panel as it rotates. Also in the other plane (perpendicular to the panel) the dogman should ensure that the crane cable be kept in good vertical alignment above the lifting points of the panel as it rotates.
 - Note that adequate clear space (recommended 4.0m) from the rear of the trailer to the crane or any other obstacle should be allowed for the rotating arms of the cradle to swing down.
 - As the rotating arms move a set of restraint arms will unfold and hold the rotation to a maximum rotation angle of 90 degrees.

- There typically will be two edge lift anchors in the front/top edge of the panel (place about the centre of gravity of the panel).
- It is important that the crane rigging have a single pulley arrangement that allows the cable to equally share the load that in turn allows the panel to hang true vertical once it is rotated and lifted clear of the cradle.
- It is important to note that when the centre of gravity of the rotating panel is directly above the axel of the rotating arms the panel can “roll through”. This is normal and the movement is dampened by the special hydraulic cylinders at the rear of the cradle.
- It is possible to carry and unload panels on the same load via method (1) and (2). Note that an empty adjacent vertical cradle leg will rotate at the same time as an inner one is rotating if it is in its normal transport position.
- When rotating panels some or all of the rotating arms of the cradle will be in their open position. After unloading is complete the rotating arms are rotated by the crane back to their normal transport position. The crane can hook onto the top shackle of each outer arm and lift them through there rotation. Note that as they go past their balance point they will free-fall to the normal position. The special hydraulic cylinders located on the rear or the arms will slow/cushion (but not stop) this free-fall. It is important that personnel are kept well clear of the arms as they return to their position.

Empty Travel

- The front panel chain supports can be located in the bottom rail of the rotating arms.
- A lashing chain should be placed over the arms and posts to hold them in place during empty transport. It is important that a chain lashes down these arms as they are evenly balanced and could rotate whilst empty if sufficient force is somehow applied.
- Ensure that all container locks are correctly engaged where applicable.

Maintenance

Maintenance Operation	Minimum Cycle
Grease regularly the grease points on the cradle	Every twenty uses
Rotate arms	Fortnightly if they have not been used in operation
Check operation of hydraulic cylinders as arms are rotated. That is both opening & closing. Note resistance should be evident at the later end of each swing.	Fortnightly
Spray the bear metal sections of the hydraulic cylinders with protective lubricant (WD40 or equivalent) to protect from corrosion and lubricate exposed edge of seals.	Weekly
Check hydraulic cylinders for leaks	Every operational use
Check rotating arms for straightness	Weekly
Inspect all welds visually for fatigue cracking	Monthly
Inspect all welds via suitable ultrasonic or equal test	Annually

Note:

If damage or leaks are discovered contact the manufacturer for repair assistance and advice.

Disclaimer

- **It is the responsibility of the owner/operator of the Transtilt Cradle and trailer combination that all Australian Standards and statutory rules and regulations applicable are complied with in the relevant state or territory where the device is used.**
- **The design and operation of the Transtilt cradle does not extend to the individual design of the pre-cast panels it carries.**
- **The panels and associated lifting inserts shall be designed and certified by a suitable qualified Engineer to withstand all possible loads imposed on it during manufacture, handling, lifting, transport and deployment.**
- **Lashing chains and accessories shall be designed , certified and maintained as per the relevant Australian Standards and other applicable statutory requirements.**
- **Cranes and associated lifting gear used in conjunction with the Transtilt Device shall be designed, certified and maintained as per the relevant Australian Standards and other applicable statutory bodies requirements.**
- **Safety management and procedures of the company and/or organisation and/or personnel using the Transtilt Cradle shall be in accordance with current Occupational Health & Safety legislation of the relevant Australian State or Territory.**

APPENDIX

“A”

References:

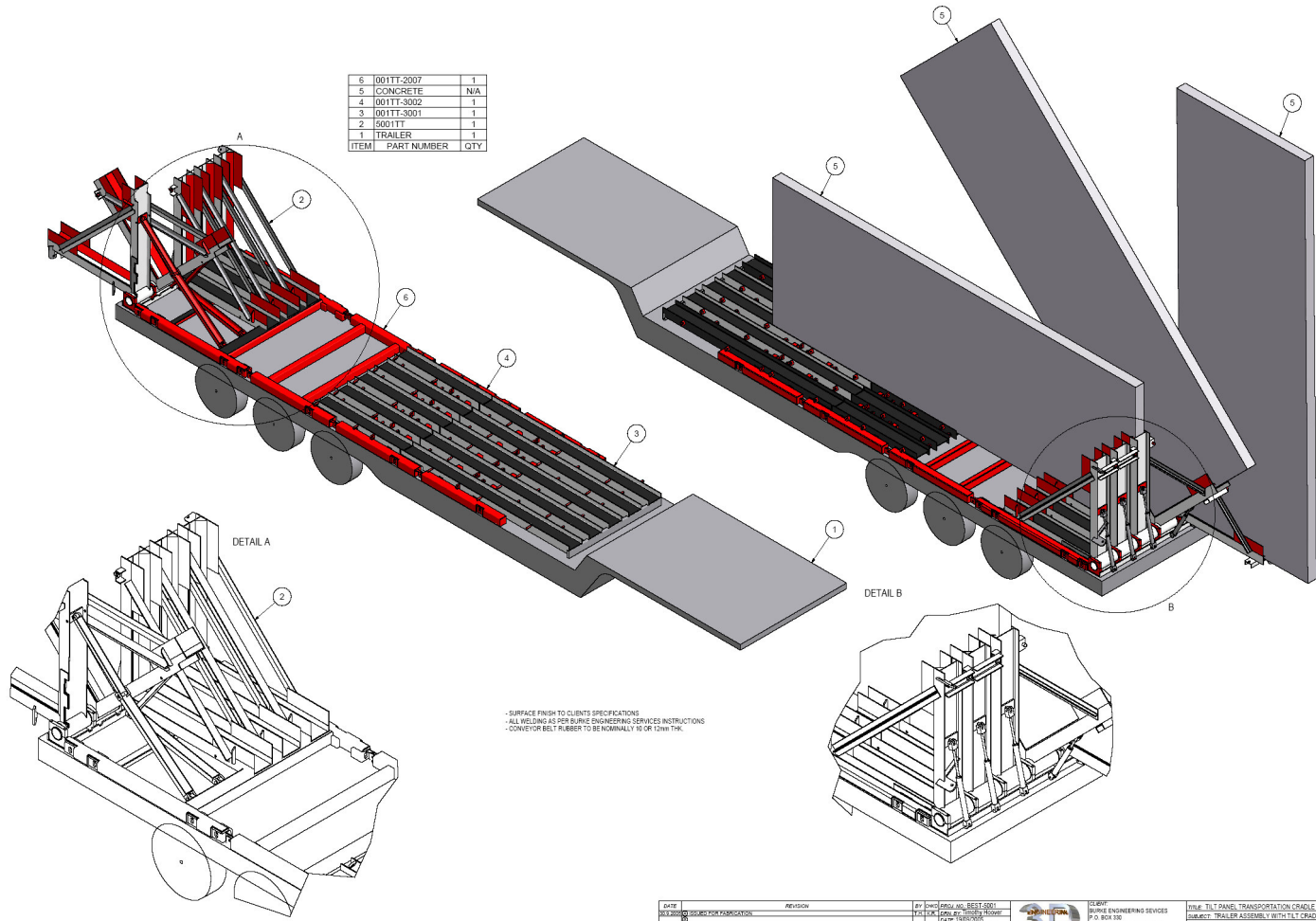
1. Heavy Vehicle Drivers Handbook
2. National Heavy Vehicle Reform – Heavy Vehicle Mass, Loading and Access
3. Australian Standard AS3850
4. Precast Concrete Handbook – National Precast Association of Australia

APPENDIX

“B”

***GENERAL ARRANGEMENT OF
TRANSTILT™ DEVICE***

6	001TT-2007	1
5	CONCRETE	N/A
4	001TT-3002	1
3	001TT-3001	1
2	5001TT	1
1	TRAILER	1
ITEM	PART NUMBER	QTY



- SURFACE FINISH TO CLIENTS SPECIFICATIONS
 - ALL WELDING AS PER BURNE ENGINEERING SERVICES INSTRUCTIONS
 - CONVEYOR BELT RUBBER TO BE NOMINALLY 10 OR 12mm THK

DATE	REVISION	BY	CHKD	DRN	SCALE	PROJECT
15/08/2024	ISSUED FOR FABRICATION	BY: [Signature]	CHKD: [Signature]	DRN: [Signature]	1:1	TRAILER ASSEMBLY
100% COMPANET CONTROLLED BY BURNE ENGINEERING SERVICES BURNE ENGINEERING SERVICES P.O. BOX 330 EAST MAITLAND N.S.W. 2023 PH: 02 4933 9900 FAX: 02 4933 9999				TRAILER TRANSPORTATION CRADLE SUBJECT: TRAILER ASSEMBLY (A/C 111) - CRADLE DRAWING: MAIN ASSEMBLY SHEET NO: 1 OF 2 DRAWING NO: 5001A-TT-001		