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GENERAL METHOD OF MOVING LOG CABIN MOBILE HOME

Keops Interlock Log Cabin Mobile Homes are assembled onto a structural timber chassis.

For the purposes of this document, the longest dimension of the mobile home is always referred to as the 'Length' and the shortest dimension of the mobile home is always referred to as the 'width'

Keops Ltd. offer two different type of chassis depending on site conditions. We offer one type of chassis for circumstances where the mobile home will be sited on a level flat hardstanding, and another type of chassis for circumstances where a flat/level hardstanding is not an option due to ground undulations. In this circumstance we create a 'raised' chassis.

Description Of The Chassis – Chassis directly onto a concrete hardstanding

- The chassis comprises of a network of 150mm x 50mm structural joists, spanning the 'width' of the unit.
- Joists measure the exact width dimension of the unit for example, if the unit width measures 6500mm, then the joists will also measure 6500mm.
- Joists are doubled up under the two end walls of the unit.
- In every position in which an internal wall or a roof truss travels in the 'width' direction, the joists are doubled.
- Once all the above joists are positioned, then intermittent joists are positioned with no more than 500mm unsupported distance between them.
- Once the series of joist network (the chassis) is created, closure joists measuring 150mm x 50mm span the length of the unit.



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- These closure timbers are fastened into the end grains of the joists spanning the width. This is referred to as the 'outrigger timbers'
- The walls of the unit sit on the ends of the joists spanning the width.
- An annis rail is positioned above the closure joist where it meets the wall of the unit.

Description Of The Chassis – Raised structural chassis

- The chassis comprises of firstly 200mm x 75mm timbers all around the perimeter of home, and across the width (shortest dimension) in all positions where a partition wall or a roof truss is positioned, or so that max distance between 200mm x 75mm timbers does not exceed 2.0meters.
- This first phase of the chassis creates 'Grids'
- Within each grid and spanning the longest direction, 150mm x 50mm timbers are used and are positioned at no more than 610mm centres.
- On situations where the ground is uneven, large timber legs are attached to the chassis with structural Spax screws. These will be attached to all 200mm x 75mm timbers, and positioned at no more than 2.0m distances.
- Legs are trimmed to length to deal with slope of the land.
- On top of the joist network, a perimeter 11mm x 50mm PT timber is affixed to the 200mm x 75mm timbers, and then within that perimeter 11mm OSB is laid.



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- The structural timber chassis serves as would a pallet under a machine for example.

Description of Lifting Scenario.

It is the structural chassis that needs to be lifted with the cabin upon it and it is the structural chassis that provides support to the cabin whilst in transit straddling a vehicle flat bed trailer.

Due to the quantity of the joists network and the strategic positioning of the joist network it ensures that the weight of the cabin can be shared by the total number of beams and by this method each beam is operating well within its stress and deflection capability.

When it comes to lifting, this can be carried out in one of two ways:

1. If the chassis is positioned directly onto a flat level hardstanding, then eyebolts are screwed into the two outrigger timbers at the positions of each joist spanning the width. These eyebolts will be affixed through the outrigger timbers into the end grains of the joists. During a lifting phase, you are entitled to make minor adaptations such as attaching eyebolts to the chassis.
2. If the chassis is elevated off the ground by the use of legs or other, then large heavy duty lifting straps are slung under the chassis at the same intervals as the positioned 200mm x 75mm timbers spanning the width of the home.

Continuation of option 1.

- As described in the description of the chassis. These 150mm x 50mm timber beams are all positioned at no more than 0.5m unsupported centres. This rational is two fold. The first aspect pertains to not exceeding potential deflection tolerances of the timbers, and secondly for when the Eye bolt and therefore the quantity of eye bolts



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required means that come the lift, we know that even in worst case scenarios the lifting eye bolt will be well within working (lifting) tolerances.

- Once eyebolts are positioned, steel cables are attached to the eyebolts, which are then attached to 'The lifting rig'
- The lifting rig consists of Longitudinal lifting beams, which are attached to a transverse lifting beam.
- It is important that the longitudinal lifting beams are positioned outside of the eaves roof overhangs of the mobile home, so to prevent a potential crushing of the roof structure when the lift is carried out.
- The crane (size of which is dependant on how far the lifting boom needs to travel) lifts the lifting beam and picks the home along with its chassis up, and onto the back of a trailer.

Continuation of option 2.

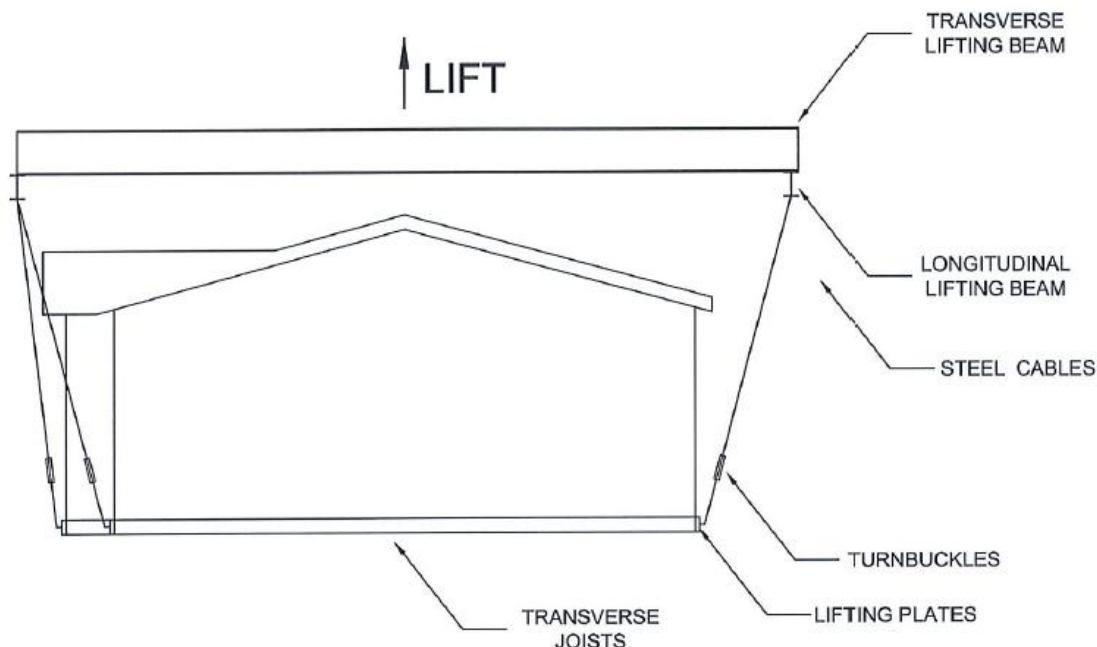
- As described in the description of the chassis. These 200mm x 75mm timber beams are all positioned at no more than 2m centres for the purposes of creating the grids. This rational is two fold. The first aspect pertains to not exceeding potential deflection tolerances of the timbers, and secondly for when the heavy duty lifting straps and therefore the quantity of heavy duty lifting straps required means that come the lift, we know that even in worst case scenarios the lifting heavy duty straps will be well within working (lifting) tolerances.
- Once the straps are in situ these simply travel up to the same lifting rig as in option 1.
- The straps are attached to the longitudinal lifting beam and the transverse lifting beam



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- It is important that the longitudinal lifting beams are positioned outside of the eaves roof overhangs of the mobile home, so to prevent a potential crushing of the roof structure when the lift is carried out.
- The crane (size of which is dependant on how far the lifting boom needs to travel) lifts the lifting beam and picks the home along with its chassis up.
- Once elevated off the ground, the legs are removed.
- Once legs are removed the chassis is positioned onto the trailer.

Below is a drawing showing the type of lifting rig described, with the eye bolts (lifting plates) and steel cables. We have prepared the drawing based on mobile homes with 'porches' to show the worst case scenario, of how this would be achieved. The majority of Keops mobile homes will not have a porch.



For lifting straps substitute lifting plates/turnbuckles/steel cables for heavy duty lifting straps.



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In Both Scenarios.

The Mobile Home Log Cabin in any scenario is not anchored to the ground. It is only connected by services which shall be disconnected before lifting.

It is acknowledged that some timber framing type structures suffer from “racking” effects and may distort longitudinally during a lifting process. In contrast, the log cabin type structure does not suffer the same racking effects. Indeed, such a deficiency can be totally disregarded for log cabins.

The log cabin type structures once assembled provide excellent resistance to distortion during a lift. It can be shown that the long walls of log cabins can be considered as very deep beams in themselves which will not deflect significantly as to be damaging to the structure. Additionally, there is added stiffening influence from the longitudinal roof beams and the structural chassis side member. Furthermore, the method of load transfer is balanced to ensure no part of the Mobile Home receives a disproportionate amount of lift.

In transit a typical 13.6 m trailer will accommodate 26 tonnes. A typical Keops Mobile Home 13.0 m in length and max. width will weigh approx. 10 tonnes, so well within the capacity of the trailer, and equally well within the lifting capacity of a crane.

A Mobile Home will be wider than the trailer but the structural chassis beam members are effectively “built in” under the cabin on the trailer and cantilever beyond the trailer sides to support the sides of the cabin.

There may be a slight deflection of the cantilevered beams, but due to the balanced spread of load all beams will deflect a similar amount and therefore no differential deflection is created that might otherwise be detrimental to the integrity of the structure.

Once onboard, the Mobile Home shall be suitably strapped to the flat bed trailer.



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In transit the Mobile Home may be subjected to wind forces and combined effects of wind and snow. The structural in itself is capable of withstanding such conditions in a static situation which can be applied to the Mobile Home in transit and therefore demonstrates structural integrity during the move.

Offloading is a reverse procedure.

