

MTLD™ - Mass Timber Lifting Device

WARNING: Do not use the MTLD unless a qualified licensed/certified building design professional/architect or a licensed professional engineer ("Designer") has prepared detailed plans that specify the exact placement of each MTLD and the Model Number of the Simpson Strong-Tie® screws that must be used to attach the MTLD to the mass timber element being lifted. Before using the MTLD, you must read and understand all instructions and safety guidelines contained herein or provided with the MTLD device. You should also review all related information published by Simpson Strong-Tie (available at strongtie.com/MTLD) and the manufacturers of any related accessories or equipment. Failure to follow such instructions or the applicable OSHA provisions can lead to property damage, bodily injury and death.

Designer obligations

A Designer must consider all relevant load information, the location and type of attachment points, the type of rigging needed, load distribution, anchor end and edge distances and all other lifting requirements.

Use only specified screws that a Designer has determined have appropriate corrosion resistance, diameter, length, geometry, design and load rating. The Designer must specify the model number of one of the following Simpson Strong-Tie screws: SSH12.0xL or ESCRFTC12.0xL. Use of any other screw may result in failure.

Screws must be new, unused, and installed according to Simpson Strong-Tie's instructions. A Designer must verify that the specifications for the MTLD and attachment screws exceed the minimum load values required to safely lift the weight of the mass timber element you intend to lift. See Technical Engineering Bulletin TEB-C-LIFTING for important information related to the design and use of the MTLD.

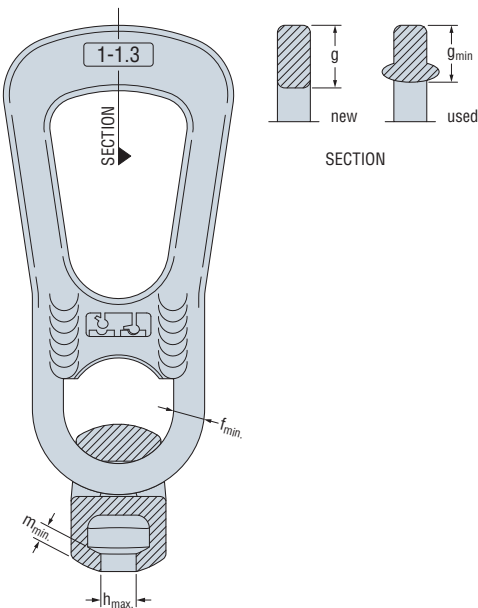
Safety precautions

- Before using the MTLD, ensure that you have read and understood all instructions and safety guidelines, including all applicable installation, operation and maintenance requirements.
- Follow all safety laws and procedures, including all applicable provisions of the Directive 2006/42/EC on machinery.
- All rigging and lifting shall be done by qualified personnel only, who are responsible for ensuring a safe work environment and for conducting safety checks prior to each use.
- Make sure the MTLD and all equipment is in good working condition and free from any damage, defects and debris.
- Wear appropriate personal protective equipment (PPE), including gloves and safety glasses.

WARNING: The MTLD must be measured and inspected prior to each use. If inspection reveals any damage, wear, elongation, bending, cuts or cracks, the MTLD must not be used and should be discarded immediately. See illustrations below and on subsequent pages. Prior to reuse of the MTLD, certain dimensions (h_{max} , m_{min} , f_{min} , g_{min}) must be measured. If the measurement indicates that the MTLD should be replaced based on the key dimensional limits in the table below, the MTLD must not be used and should be discarded immediately.

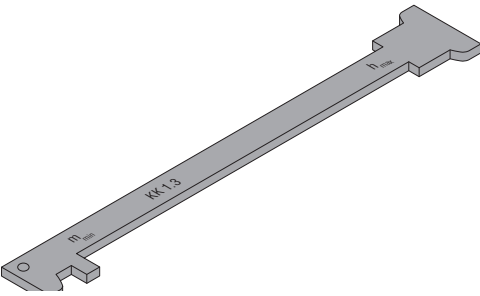
Table 1
Key Dimensional Limits

h_{max} (mm)	m_{min} (mm)	f_{min} (mm)	g_{min} (mm)
13.5	5.5	10.8	19.8



MTLD-GAUGE

The MTLD-GAUGE tool has been provided with every MTLD purchase and can be used to facilitate some of the wear measurement checks of the lifting device. The tool aids the check of internal rim width (h_{max}) and the lip thickness (m_{min}). You must also measure certain dimensions (f_{min} and g_{min}) using calipers or other appropriate means.

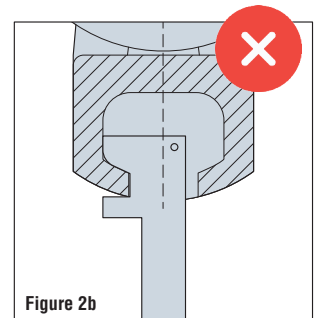
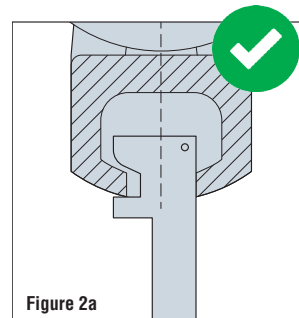
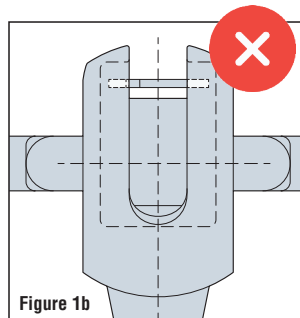
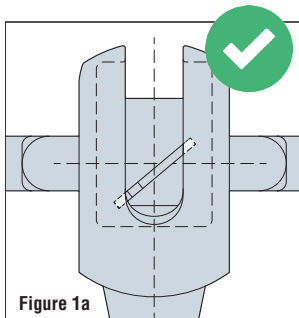
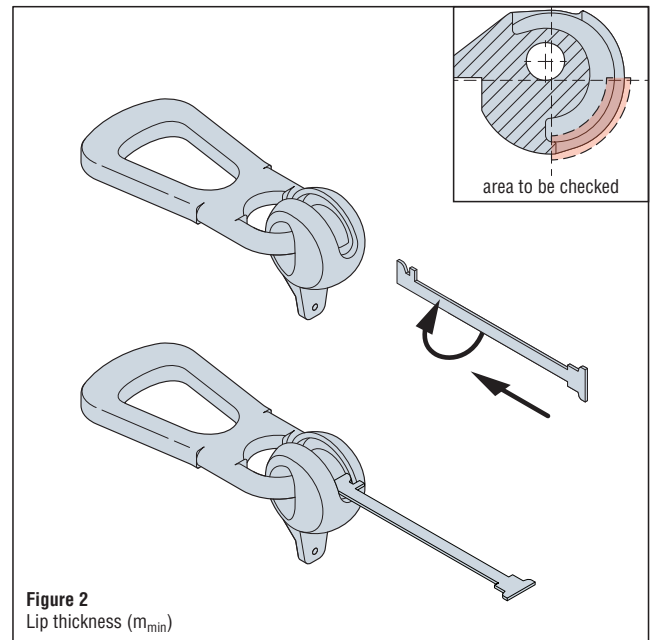
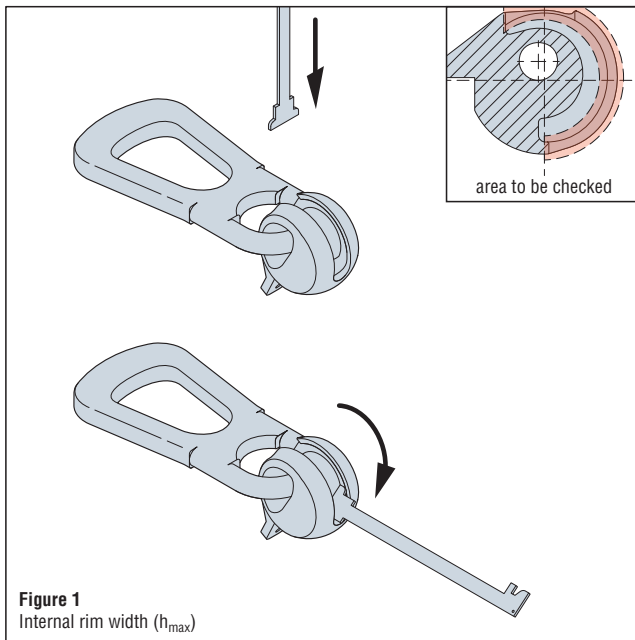


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Instructions for use of the MTLD-GAUGE tool

The internal rim width must be checked for the dimensional limits provided in Table 1. Insert the end of the MTLD-GAUGE tool labeled " h_{max} " into the slot of the sphere. The tool must not be able to be turned horizontal at any point along the slot. If this is possible, the MTLD must be replaced and cannot be used anymore.

The lip thickness must be checked for the dimensional limits provided in Table 1. Insert the end of the MTLD-GAUGE tool labeled " m_{min} " around the lip. If the back of the notch on the gauge can touch the side of the lip, the MTLD must be replaced and cannot be used anymore.



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Visual inspection prior to each reuse

The MTLD must not be used and should be discarded immediately if inspection reveals any of the deformities illustrated below.



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Attachment points and screws

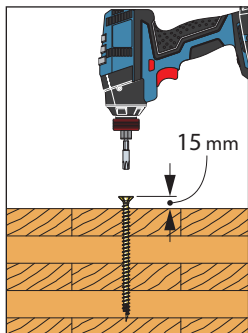
1. Before installing the MTLD or any screws or hardware, ensure that you have read and understood the instructions and other information contained herein.
2. The MTLD and the Simpson Strong-Tie model number screws specified by the Designer must be installed strictly in accordance with the Designer's instructions and all information and instructions contained herein.
3. If the mass timber element has any defect or deformity (e.g., crack, knot, gouge) near the specified screw location, consult with the Designer and do not attempt to install the MTLD.
4. If the wood in the mass timber element splits upon insertion of the screw, consult with the Designer and do not attempt to install the MTLD.
5. The screws must be driven securely into the mass timber element so that the top of the screw head is at 15mm from the surface of the wood.

15mm is the required distance between the top of the screw and the timber surface to achieve the required load capacity and have sufficient clearance to wrap around the screw head.
6. Careful attention must be paid to the specific orientation of the MTLD and the permissible load direction. The tab on the cylindrical attachment must point in the direction of the sling. See illustrations below.

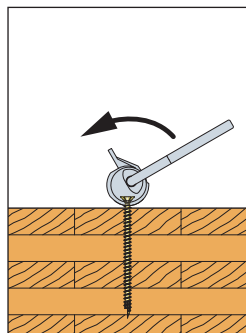
WARNING: Use only new Simpson Strong-Tie® screws with the Model Number that has been specified by the Designer. The screws must be installed strictly in accordance with the instructions below. The screws used to install the MTLD may only be used once to ensure safety and proper system capacity. Use of any other screws or failure to follow the instructions set forth herein can lead to damage, including property damage, bodily injury and death.

Installation with screw at 90 degrees

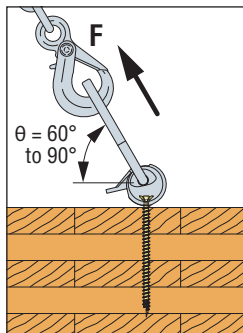
1. Install the specified Simpson Strong-Tie screw into the wood member to be lifted. The top of the screw head should extend 15mm from the surface of the wood to allow for the device to wrap around the screw head (see figure A1).
2. Place the mouth of the device over the head of the screw and rotate the cylindrical attachment to lock onto the screw head (see figure B1).
3. Attach the sling or chains to the loop on the device. The tab on the cylindrical attachment must be pointing in the direction of the sling (see figure C1).
4. Repeat steps 1–3 at other lifting points as required by the rigging design and plans.
5. Ensure the load is shared between lifting points and ensure the slings are at the correct angle as required by the rigging design and plans.
6. After lifting is complete, rotate the cylindrical attachment to unlock the device from the screw head (see figure D1).
7. Remove and discard the screws after a single lift. Screws are not permitted to be reinstalled or reused on multiple lifts. As an alternative to removing the screw, it can be driven completely into the wood (see figure E1).



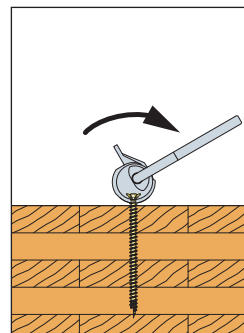
A1. Install Screw



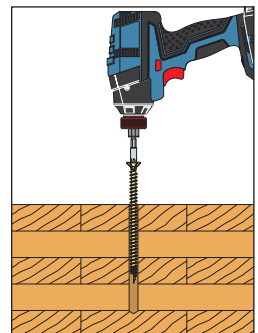
B1. Attach MTLD to screw



C1. Attach rigging to MTLD and lift



D1. After lift, detach MTLD from screw

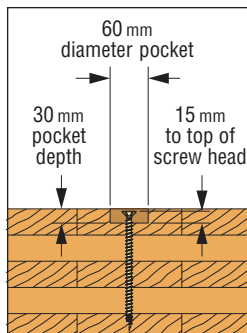


E1. Remove screw or drive flush with surface

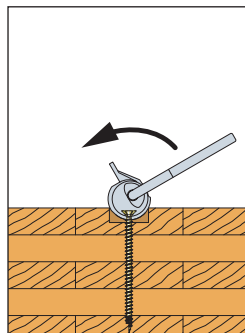
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Installation with screw at 90 degrees and milled pocket

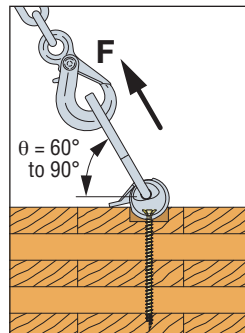
1. Mill a 60mm diameter pocket approximately 30mm deep into the surface of the wood member to be lifted (see figure A2).
2. Install the specified Simpson Strong-Tie® screw into the wood member to be lifted. The top of the screw head should extend 15mm from the surface of the wood to allow for the device to wrap around the screw head.
3. Place the mouth of the device over the head of the screw and rotate the cylindrical attachment to lock onto the screw head (see figure B2).
4. Attach the sling or chains to the loop on the device. The tab on the cylindrical attachment must be pointing in the direction of the sling (see figure C2).
5. Repeat steps 1–4 at other lifting points as required by the rigging design and plans.
6. Ensure the load is shared between lifting points and ensure the slings are at the correct angle as required by the rigging design and plans.
7. After lifting is complete, rotate the cylindrical attachment to unlock the device from the screw head (see figure D2).
8. Remove and discard the screws after a single lift. Screws are not permitted to be reinstalled or reused on multiple lifts. As an alternative to removing the screw, it can be left in place (see figure E2).



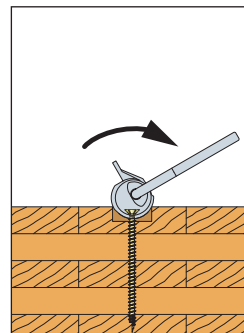
A2. Install Screw



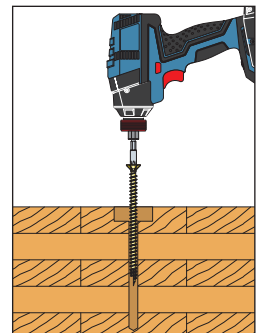
B2. Attach MTLD to screw



C2. Attach rigging to MTLD and lift



D2. After lift, detach MTLD from screw



E2. Remove screw or drive flush with surface

WARNING: Failure to follow the instructions below can lead to property damage, bodily injury and death.

1. Preparing the MTLD and rigging hardware

- a. Set up the mass timber element to be lifted on a stable and level surface.
- b. Do not use the MTLD unless you have followed the inspection and measurement guidelines and have confirmed that the MTLD meets the requirements for reuse.
- c. Position the MTLD only in accordance with the Designer's instructions and specifications. Use only new, unused screws that have been specified by the Designer.
- d. After installing each MTLD in accordance with all applicable Simpson Strong-Tie instructions, ensure that it is securely attached to prevent unintended movement during operation.
- e. It is important to avoid uneven load sharing between effective lift points. If the load is uneven or improperly distributed, inform the Designer and do not attempt to lift the mass timber element.
- f. Follow all maintenance and usage instructions applicable to the rigging assembly, including any anchors, hardware, chains, hooks and hoists.
- g. Inspect the rigging hardware, chains, hooks and hoists for any signs of wear or damage. Replace them if necessary.
- h. Follow all instructions for properly attaching the rigging hardware, chains, hooks and hoists to the lifting points. Ensure they are securely fastened.

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2. Assessing the lifting area and environment

- a. Clear the area around the mass timber element where the lifting will take place. Remove any obstacles or debris that could interfere with the operation.
- b. Ensure there is enough space to maneuver and position the mass timber element safely.
- c. Do not lift directly over people on or around the jobsite.
- d. Do not use if high winds, rain, moisture, snow, ice or other environmental conditions could impact lifting.

3. Lifting the mass timber element

- a. Ensure that the crane operator is properly trained and follows all safety precautions.
- b. Gradually raise the mass timber element strictly in accordance with all applicable recommended safety or operating procedures. Lift the mass timber element smoothly and steadily, avoiding sudden or jerky motions.
- c. Do not lift unbalanced loads. If the load is not distributed evenly, stop immediately and consult with the Designer.
- d. Loads shall not be lifted higher than necessary or be left suspended unattended.
- e. Maintain clear communication with any other personnel involved in the lifting operation or on premises to ensure everyone is aware of the movement and any potential hazards. All personnel shall know the standard crane directing signals.
- f. Keep an eye on the mass timber element as it is lifted to ensure it remains balanced and stable throughout the process.
- g. If the operator notices any irregularities (e.g., cracking noises), the mass timber element should be set down immediately in a safe and careful manner.
- h. For safety, no person should ride on the mass timber element during lifting. Always maintain a safe distance and ensure no one is underneath the mass timber element when it is being lifted. Failure to comply poses a serious risk of injury.
- i. Stay alert. Do not lift the mass timber element when you are tired, distracted or under the influence of drugs, alcohol or medication causing diminished control.

4. Positioning the mass timber element

- a. Carefully guide the mass timber element into its intended position, aligning it with the corresponding structure or supports.
- b. If necessary, have additional trained personnel assist in guiding and positioning the mass timber element accurately.
- c. Once the mass timber element is securely in place, carefully detach the lifting chains, hooks, hoists or other rigging equipment from the mass timber element and release the MTLD in accordance with all applicable instructions and safety procedures.
- d. Remove and discard (do not reuse) the screw that was used to attach the MTLD to the mass timber element.

Alternatively, the Designer may approve options to abandon the screw by driving the screw flush with the mass timber surface or leaving it in place if it was installed in a routed pocket.

5. Post-lifting inspections

- a. Inspect the lifted mass timber element and the MTLD for any signs of damage or misalignment.
- b. If any issues are detected, do not proceed with the installation, and consult the appropriate professionals for further guidance.

Remember, these instructions are general guidelines, and it is crucial to consult the specific usage instructions and safety precautions provided by Simpson Strong-Tie and all manufacturers of related machinery or equipment. Always prioritize safety and seek professional assistance if needed.