

Solmetric Module Lift Instructions

Thank you for purchasing the Solmetric Module Lift. Please read the following instructions and safety warnings before using. The following parts are included with your Module Lift kit:

- Pulley Assembly
- Rope (60 or 80 foot long)
- Module Handle assembly
- 3 Ramps
- Canvas Carrying Bag

Introduction:

The Solmetric Module Lift is designed to help you safely and quickly transport a solar PV module on to a roof. The system uses your existing Werner or Louisville fiberglass extension ladder.

The Pulley Assembly is attached to the top of the ladder and includes a Brake that prevents the module from sliding back down the ladder. The Module Handle, which includes two "Hook" shaped features, engages the edge of a PV module frame. "Teeth" in the Hook slots minimize lateral sliding of the module in the slots.

The Module Lift is intended to be used by two operators. An operator at the bottom engages the Hooks with a single module and pulls the Rope to raise the module. An operator at the top removes the module from the Hooks and releases the Brake to allow the Module Handle to slide back down the ladder. The Module Handle is weighted to ease in the lowering. The module slides along the outer-facing surface of the ladder rails. "Ramps" allow the module to slide over obstructions along the outer surface such as the step between ladder sections, protruding ladder guide brackets, and rafter straps.

In this document, a **Warning** identifies hazardous conditions and procedures that are dangerous to the user and could lead to property damage, injury, or death.

Warning: *The Module Lift is compatible only with Werner and Louisville fiberglass extension ladders. Other ladders are not approved for use with the Module Lift and may cause damage, injury, or death. Do not use the Module Lift with aluminum ladders.*

Setup

1. Inspect the Module Lift components to verify they are still safe to use. Verify:

- Rope is not cut or frayed.
- Module Handle is not bent or bowed and hooks are not bent, worn, or broken.
- Teeth (screw threads) inside Hook slots are not worn or contaminated with debris.
- Ramps are not cracked, broken, or worn.
- Chain couplers are tight.
- Brake prevents Handle from lowering without lifting the Brake handle.

Warning: *Do not use the Module Lift if any components are damaged or not safe to use.*

2. Set up the ladder.

- Use the proper lean angle (4:1 angle or 75° relative to the ground). Ladder must be plumb side-to-side.
- Extend ladder 3 rungs above the roof edge for a one-story building, and 5 rungs above for a two-or-more story building.
- Secure the top of the ladder to the eave using ladder straps.

Warning: *If the angle of the ladder is not correct, or the top of the ladder is not secured to the eave, the ladder may tip back when the rope is pulled causing damage, injury, or death.*

3. Hang the Pulley Assembly on the top rung of the ladder.

- The Rope must be threaded around the Pulley so that the loose end is exiting on the right side.
- The Rope and Module Handle should be on the outside of the ladder (i.e. the side facing away from the building).
- Secure the Elastic Toggle around the top rung to hold the Pulley in place.



4. Hang ramp for ladder straps.

If ladder straps are around the rails, hang a Ramp on the rung just above the ladder straps. This ramp can be eliminated if the ladder straps attach to a rung rather than the rails.

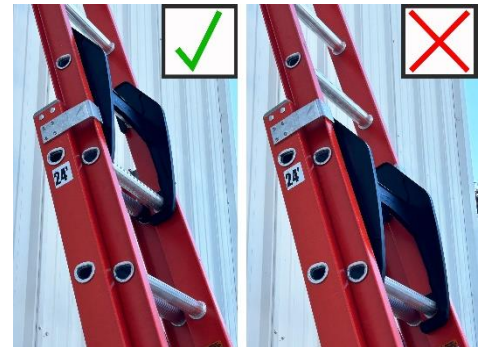


Warning: Ramp must be positioned so that when a module slides up the rails of the ladder, it will not make contact with a ladder strap.

5. Hang ramp above guide brackets.

- Hang a second Ramp on the rung just above the ladder guide brackets (typically at the top of the lower ladder section).
- Do not hang the ramp below the bracket.

Warning: Ramp must be positioned so that when a module slides up the rails of the ladder, it will not make contact with the bracket.



6. Hang Ramp below step between sections.

Hang a third Ramp on the rung just below the step between ladder sections (typically at the bottom of the upper ladder section).

Warning: Do not hang the ramp on the bottom rung of the upper ladder section or the module may get hung up on the ramp and could become dislodged from the Module Handle and fall.



Warning: Do not drop the Ramps from the ladder because they may break.

Warning: Do not operate near energized equipment or power lines.

Raising Modules to Roof

1. Attach module.

The operator at the bottom of the ladder attaches the Module Handle in the middle of the long side of a single module with the module in landscape orientation.

- The module glass must be facing the ladder.
- The thin edge of the module frame engages in the two Slots of the Hooks.
- Have some tension on the Rope to hold Hooks in place.
- Visually verify that the module frame is fully seated in the Hook Slots by looking through the opening.



2. Raise Module.

The operator at the bottom then pulls the Rope to raise the module.

- The operator at the bottom should stand within one step from the base of the ladder.
- The rope should be pulled down, not out from the ladder, otherwise the ladder could be pulled away from the building.
- Wear gloves and a hard hat.
- Stop pulling when the top of the module is just above the roof line so that there is slack in the rope below the pulley.



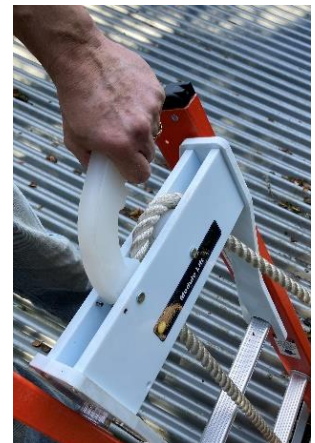
3. Remove Module.

Wearing proper fall protection, the operator at the top removes the module from the Hooks by either directly lifting the module and allowing the Hooks to slip off, or by first lifting the Module Handle with one hand and then lifting the module with the other.



4. Release Break.

The operator at the top releases the brake to lower the Module Handle back down to the bottom of the ladder.



Warning: Do not operate the Module Lift in windy conditions or the module may be lifted off the ladder causing property damage, injury, or death.

Warning: Do not stand under the ladder or at the base of the ladder when a module is being raised, unless you are the one raising it.

Warning: Do not place your foot or any part of your body on the ladder while pulling a module up. If for some reason the module were to slide down uncontrollably, injury or death may occur.

Warning: Do not climb ladder when ramps are in place.

Lowering Modules to Ground

The process above for raising modules to the roof can be reversed to lower modules from the roof to the ground (e.g. during an un-install).

1. Attach Module. The operator at the top secures the module to the Module Handle and, holding the Module Handle, positions module on ladder rails.	2. Release Break. The operator at the top verifies that the operator at the bottom is ready with a good grip on the rope and then releases the brake.
3. Lower Module The operator on the bottom lowers the module by slowly letting out the Rope while the operator at the top holds the brake fully released.	4. Remove Module. The operator at the bottom removes the module from the Hooks.
5. Raise Handle. The operator at the bottom pulls the rope to raise the empty Module Handle back up to the top. Getting the handle past a step between ladder sections may require pulling the rope quickly to “jump the gap” between the ramp and the next ladder section and avoid hanging up.	

Warning: Do not use the brake to lower the module because it is difficult to control the rate of decent, and also it will wear out the brake and/or the rope.

Warning: Good communication between the operator at the top and the operator at the bottom is critical to coordinate the lowering of the module and avoid an un-controlled slide of the module.

Warning: When lowering a module it is critical that the module not become hung up as it is sliding down, otherwise tension in the rope may be lost and the module may become disengaged from the Module Handle. Ensure proper ramp positioning.

Disassembly

Disassemble the Module Lift system in the reverse order of setup, starting by removing the lowest Ramp and working up. Lower the Pully Assembly by the rope so you don't have to carry it down the ladder. Do not drop any parts.

For questions, contact our technical support department at:

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