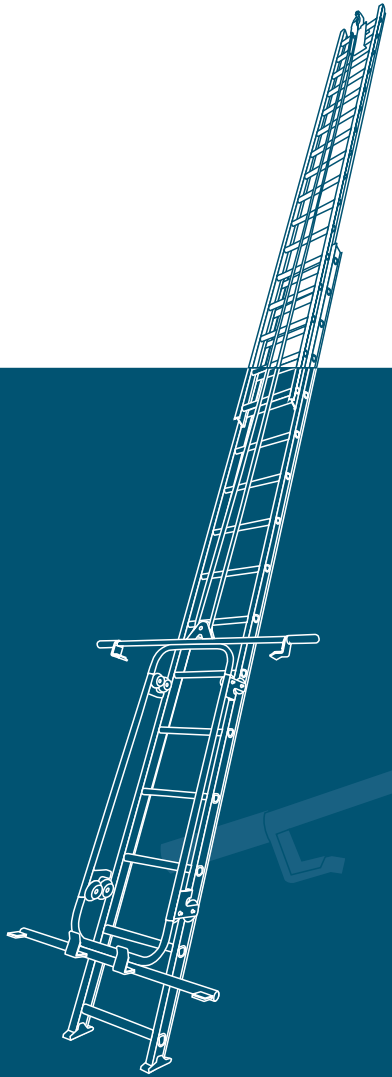
FUEL SOLAR LIFT



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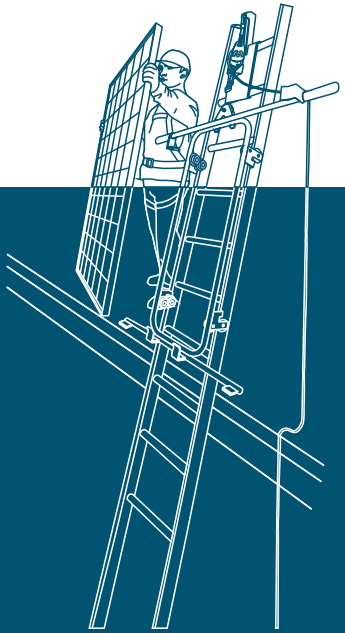
Overview



The FUEL™ Solar Lift is a lightweight and portable solution for hand-hoisting solar panels to a roof. It works on Grade 1 aluminum extension ladders available in North America using two operators: a ground operator for hoisting the panels, and a roof operator for unloading the panels.

For lifting non-panel loads such as racking, tools, ballasts, etc., FUEL provides a separate CarryALL™ attachment.

Carefully review the manual before using the FUEL Solar Lift.

**The information provided herein is specific and limited to the operation of the FUEL Solar Lift. It is expected that users are otherwise in compliance with applicable safety standards and regulations for their industry.*

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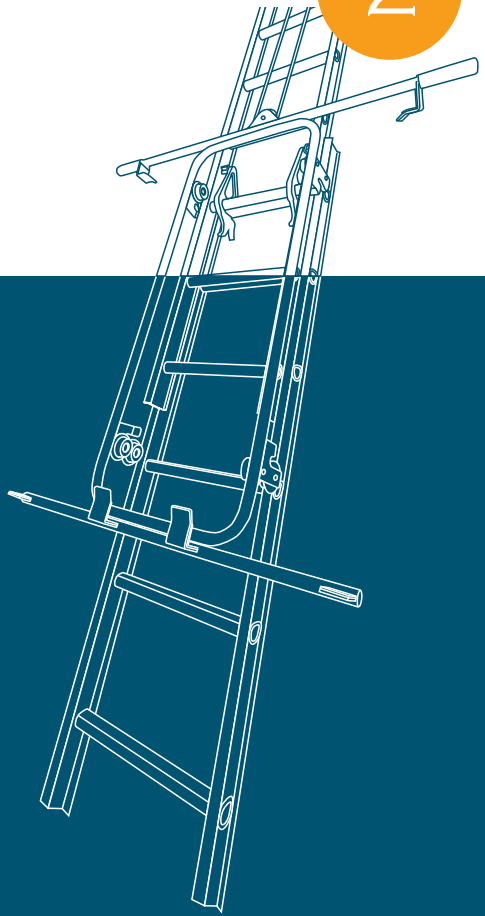
The FUEL Solar Lift accommodates the transition between the ladder sections with its unique stacked double-wheel system. The lower wheels in each of the wheel assemblies roll along the rails of the base section of the ladder. As the ladder transitions to the fly section, those lower wheels slot into the I-beam channel of the fly section helping to lock the trolley in place on the ladder, while the upper wheels roll along the rail of the fly section of the ladder.

To provide additional stability, outer flanges on the wheels limit lateral movement. As well, a retaining tab on each of the wheel plates hooks under the rail of the fly section, further stabilizing the loaded trolley on the upper section of the ladder.



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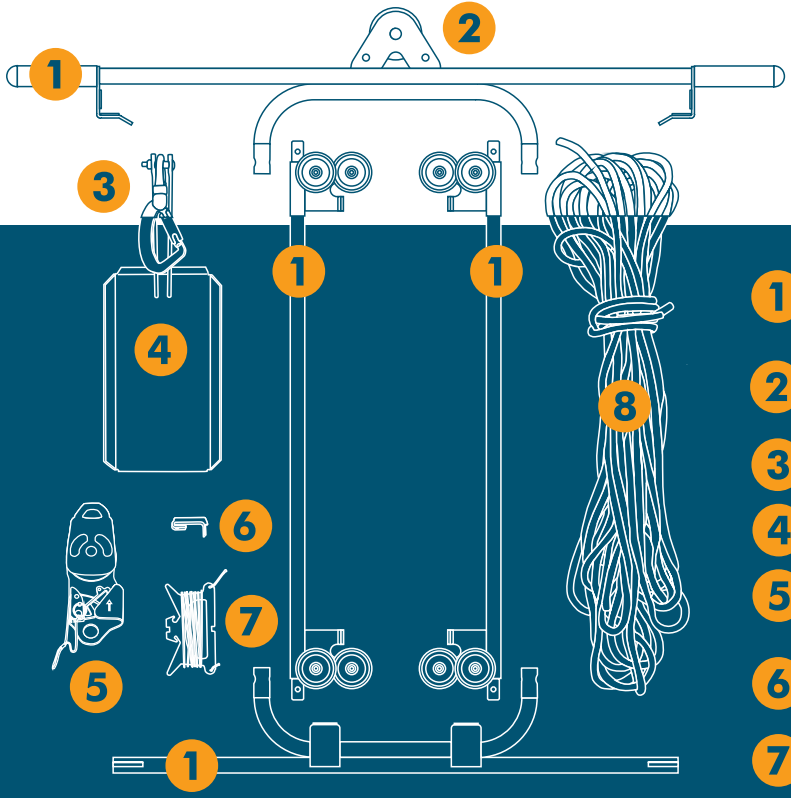
Components



1. Trolley sections with bolts and nuts
2. Trolley pulley with quick-set pulley pin
3. Swivel carabiner
4. Hanger
5. Progress capture pulley
6. Brake release line guide
7. Brake release line
8. Hoist rope

Compatible Ladders

At this time, the FUEL Solar Lift is tested and approved to work with the following Grade 1 aluminum extension ladders:

- Sturdy 7700, A132 and AR-387 series
- Louisville AE3200 series
- Featherlite FL2120 series
- Werner D1300-2 series

As verification testing is ongoing, please contact the FUEL™ Solar Lift website for the most up to date list of compatible ladders.

fuelsolarlift.com

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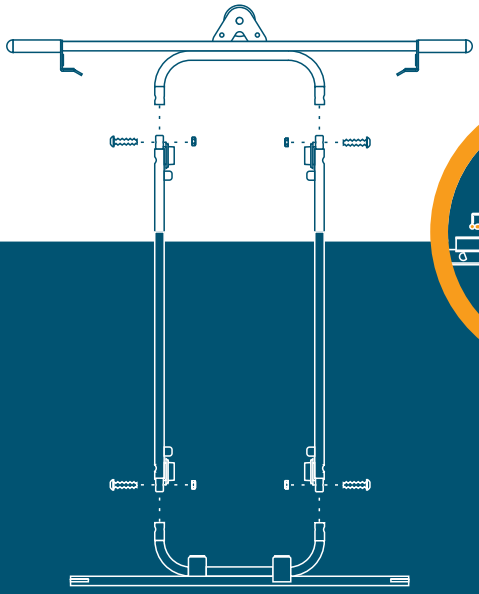
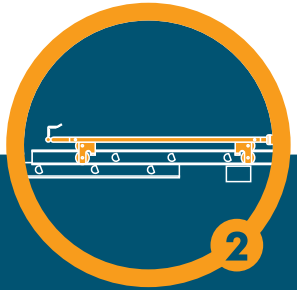
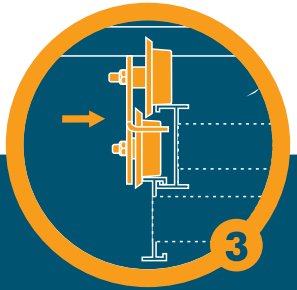
Ladder Preparation

The lower end caps on the ladder fly section must be notched out or removed to allow the wheels to pass into the channel formed by the fly section.

Any suitable method for notching or removing the end caps may be used. For example, a cordless saw may be used to slice off the bottom portion of the end caps, or they can be removed entirely by drilling out the rivets holding the caps in place.







1. Loosely connect the 4 sections with the supplied nuts and bolts.

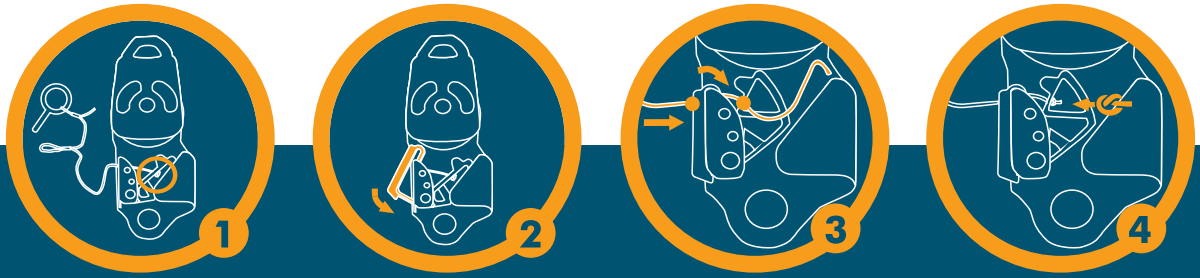
2. Place the trolley on the extension section of your ladder as it is laying on a flat surface with a block under the extension section to allow the ladder to sit level or at a slight incline.

3. Push the trolley to one side until the wheel flange contacts the edge of the ladder. Tighten the bolt on that side.

   Repeat for the other side.

The wheel plates should now be square to ensure smooth operation on the ladder. Readjust as necessary.

7 Brake Release Line Guide Installation



The brake line release guide is to be installed on the progress capture pulley in order to prevent excessive wear on the cam release cord.

1. Untie the red cam release cord and remove cord from progress capture pulley.
2. Clip the guide onto the progress capture pulley.
3. Thread the cam release cord through the aligned holes on the brake release guide and the side of progress capture pulley, and through the cam lock.
4. Securely tie the cam release cord into a double knot. that will prevent the cam release cord from slipping through the holes on the progress capture pulley. Test the knot by pulling hard on the cam release cord.

Rope setup on progress capture pulley

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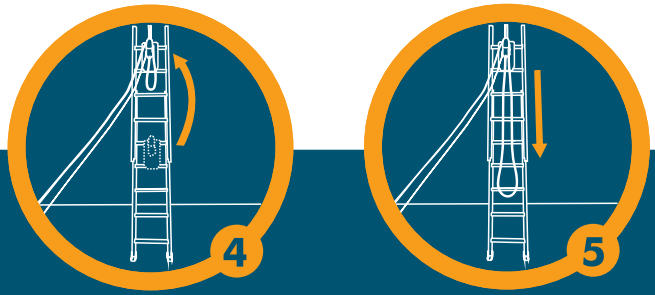
1. Tie one end of the hoist rope onto progress capture pulley, using a suitable knot such as a bowline or figure-eight knot.
2. Thread other end of rope through the progress capture pulley. This will create a loop that will later be attached to the trolley pulley.
3. Tie the brake release line onto the red cam-release cord on the progress capture pulley.

9 Hanging progress capture pulley setup on ladder

1. Place the hanger on ladder at shoulder height for a comfortable working position.

2. Open the swivel carabiner gate by pulling the sleeve down, twisting it, then pushing the gate open.

3. Attach the progress capture pulley. The gate will auto-close after releasing.

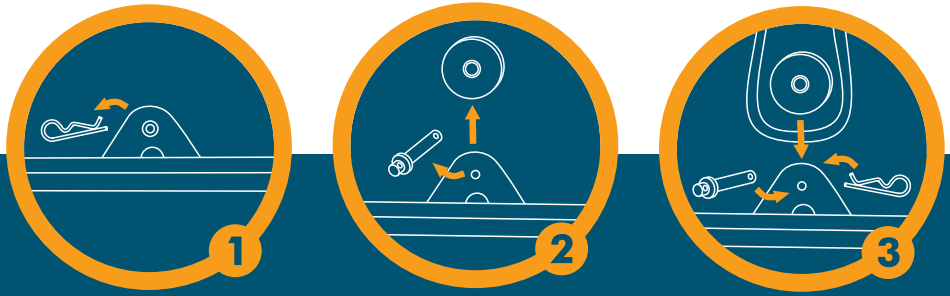


4 Bring the hanger with the progress capture pulley setup to the top of the extended ladder. You can do this while maintaining three points of contact with the ladder by placing the hanger on the ladder as high up as you can reach, climbing a few steps up the ladder, then taking the hanger and placing it as high up the ladder as you can reach again. Repeat until hanger is at top of ladder.

CAUTION! In order to prevent tripping, do not climb up or down the ladder with the ropes hanging over the rungs. Drape ropes over side of ladder when climbing.

5 Extend the rope loop to the ground by pulling on the brake release line as you pull the rope backward through the pulley.

11 Attaching rope setup on the trolley pulley



1. Remove the cotter pin from the trolley pulley pin.
2. Remove the trolley pulley pin and pulley.
3. Place the rope loop extending from the hanger around the pulley. Slide pulley with rope looped around it into pulley holder on the trolley.

   Replace trolley pulley pin (front).

   Replace the cotter pin (back).

The FUEL Solar Lift requires two workers: a ground operator to raise and lower the trolley, and a roof operator to remove panels loaded on the trolley or to load panels to be removed from the roof. Gloves are recommended for operators handling the rope.

The lift is designed to carry single panels up to 1,300 mm wide x 2,400 mm long x 40 mm thick and has a load rating of 45 kg (100 lbs) with a maximum recommended overhead load limit of 30 kg (65 lbs).

The lift should not be used at wind speeds over 35 km/hour.

Before use, all components should be inspected to ensure it is properly assembled and to check for signs of wear.

Each time the lift is set up, the operators must perform a test lift without a load along the full length of the ladder as described on page 17 of this manual to ensure that the ladder and lift have been properly set up and the trolley runs smoothly.

The ladder side rails must be clear of any obstructions. Standoffs or any ladder accessories that block the outer side rails must be removed or replaced with non-blocking accessories.

The ladder sections must be sufficiently overlapped to prevent bending when running the lift.

Verify that the ladder is level, straight, and secure. This is important for the smooth running of the trolley.

The top of the ladder should always be tied off while using the lift.

15 Operating brake release

1. To release the brake, first raise the trolley slightly by pulling on the hoist rope.
2. Pull the brake release line.
3. Continue pulling the brake release line to maintain the brake in the released position. Lower the trolley by feeding the hoist rope through the progress capture pulley.

When lowering a loaded trolley, the roof operator can pull the brake release line to allow the ground operator to maintain two hands on the hoist rope.

The brake automatically locks when the user lets go of the brake release line.

If the trolley is not moving smoothly on the ladder, please check the following:

Confirm that the ladder is compatible with the FUEL Solar Lift. See page 4 of this manual for list of compatible ladders

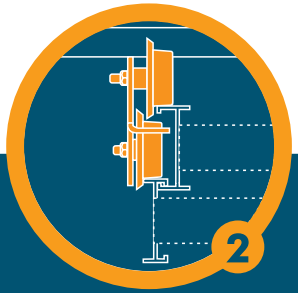
Inspect the ladder setup. Please refer to page 14 of this manual for a detailed checklist of the requirements for ladder setup.

Inspect the trolley to make sure that it is properly assembled with the wheels completely square to the ladder.

Inspect the trolley to make sure that it is not bent or damaged.

Please contact support@fuelinnovate.com if any of the components are bent or damaged, or if further troubleshooting assistance is required.

17 Test lift without solar panel



This procedure must be completed every time the FUEL solar lift is set up to make sure it has been properly assembled, and that the trolley runs smoothly along the length of the ladder. The trolley must be unloaded for this procedure.

1. Lean the trolley against the ladder with lower wheels resting on the ladder rail, and positioned between the first and second ladder rungs.

2. The wheel flanges should be positioned outside the lip of the rail.

3. Standing directly in front of and close to the ladder, pull steadily on the hoist rope to hoist the trolley to the top, pulling down, not out.

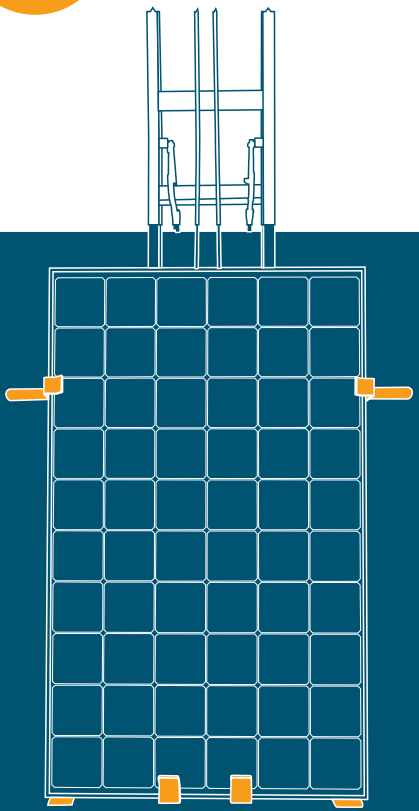
Although the progress capture pulley has a self-locking brake, a grip on the hoist rope should be maintained at all times.

Confirm that the ladder is extended high enough for the lower trolley wheels to be at the roof line. If not, extend the ladder further to raise the hanger, within safety limits. Do not lift the top of the trolley past the knot.

4. Lower trolley. Please refer to the instructions for operating the brake release on page 15 of this manual.

If the trolley does not operate smoothly for any part of the test lift, please refer to the troubleshooting guide on page 16.

19 Loading and hoisting a solar panel



1. Place the panel in portrait orientation inside the bottom clips and centered on the trolley.
2. The side handle clips are connected to each other by a bungee. Pull each handle outward and rotate to position clips in front of the panel.
3. Inspect the panel to ensure it is retained by the bottom and side clips.

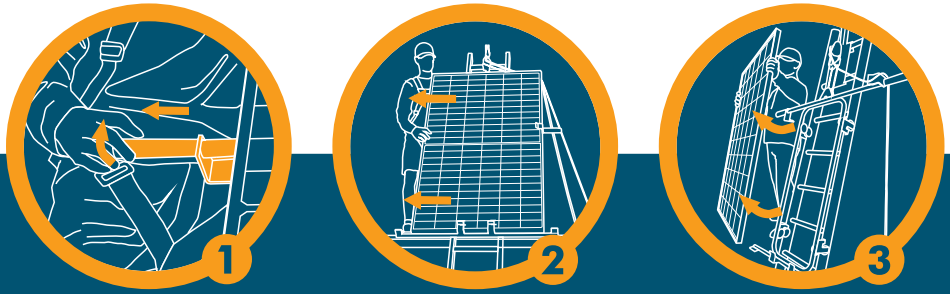
4 Inspect behind the loaded trolley to ensure that the bottom trolley wheels are sitting on the ladder rail and the wheel flanges are outside of the ladder rail.

5 Hoist the loaded trolley as described for the test lift.

CAUTION! If for any reason the trolley is not running smoothly on the ladder, immediately lower and inspect the ladder and equipment. DO NOT use excessive pulling force to overcome a setup problem.

6 If for any reason a loaded trolley needs to be lowered, such as excessive wind speeds or if removing panels from the roof, the roof worker should release the brake by pulling the brake release rope while the bottom worker controls the hoist rope.

21 Unloading a Solar Panel



1. Release one handle clip and move the rope behind the panel if necessary.
2. Slide panel to the unclipped side and while it keeping it fully supported by the back and bottom of the trolley.
3. With both hands firmly holding the panel pivot around the ladder to fully remove the panel from the trolley onto the roof.

CAUTION! Do not lean on the trolley at any point in the process. Although it is secured to the ladder, it is not a fall protection device.

Care & Maintenance

The FUEL Solar Lift components should be kept clean and stored in a manner that will not cause damage. All parts should be inspected regularly to be in good working order and free from rust, wear, etc.

Please also refer to the manufacturer's information for specific use, care and maintenance information for the following:

Progress Capture Pulley
https://0hkdqok.short.gy/isc.pcp

Swivel Carabiner
https://0hkdqok.short.gy/isc.cara

Hoist Rope
https://0hkdqok.short.gy/petzl

The hoist rope must be retired if it shows signs of wear. In addition, the maximum life of the rope is 10 years from the manufacture date, after which time it must be retired regardless of condition.

If wear is observed on the hoist rope or red cam lock release cord, please contact FUEL for a replacement (support@fuelsolarlift.com).

If wear or damage is observed on any other component, please contact FUEL support: support@fuelsolarlift.com

Warranty

The FUEL Solar Lift includes a limited warranty that covers defects in workmanship and materials of the components manufactured by FUEL Innovation Design & Manufacturing Inc. (FUEL) for a period of 1 year from the delivery date under normal use during the warranty period. During the warranty period FUEL will repair or replace, at no charge, components that prove defective. This warranty does not apply in cases of misuse, unauthorized modifications or alterations, improper use, improper maintenance, accidents, negligence, damage or if the product is used for a purpose that it was not designed for.

If you discover a defect, contact FUEL at support@fuelsolarlift.com

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