



INSTALLATION MANUAL

SOLAR ENERGY STATION

INTRODUCTION

The PIVO I LEKLA multi-purpose autonomous solar energy station you have purchased has various components, some of which are pre-assembled, while others require assembly directly at the installation site.

- Lifting and storage base
- Charge storage batteries
- Electrical and solar cabling
- Electrical and electronic connection components
- Controller
- Pole
- Lamp and/or other accessories (e.g. camera)
- Solar panel support system
- Solar panel

IMPORTANT!

Please carefully read this installation guide, it contains important information and notes regarding the installation and start-up of your PIVO I LEKLA multi-purpose autonomous solar energy station.

A certified technician (electrician, engineer) must install this product in accordance with the applicable electrical and building codes.

Do not modify the structure or any of the components of this product.

Make sure you have the latest version of this installation guide. If in doubt, visit our web site lekla.ca or contact us at LEKLA 819-769-0350.

DANGER ! Safety Warning

Although the electrical voltages present are low (less than 50 V), the electrical current generated by the batteries can be several hundred amperes.

Safety devices have been provided for this product. However, improper handling of this product could cause injury or material damage to the various components).

Ensure that handling and installation of the PIVO I LEKLA Multi-Purpose Energy Station is carried out by qualified technicians.



STEP 1

BEFORE INSTALLATION: IDENTIFICATION OF EACH GROUP OF ELEMENTS, AS WELL AS THE PARTS THAT COMPOSE THEM

Verify and count each part included with your PIVO | LEKLA Multi-Purpose Energy Station according to the following check-list :

ITEM NO	DESCRIPTION	POIDS UNITAIRE kg / lb	QUANTITÉ
1	Lifting and storage base includes 4 to 6 12 V batteries, controller and interconnection wiring to the pole	500 / 1100	1
2	Pole, includes the interconnection wiring between the base and various equipment	96 / 212	1
3	Other accessories (see purchase slip)	6,4 / 14	1
4	Other accessories (see purchase slip)		
5	Solar panel support includes wiring to the pole	8 / 18	1
6	Solar panel, includes U-bolts and brackets	19 / 42	1
7	Lifting eye nuts		2

* Should a part be missing, please call 819-769-0350.

STEP 2

SOIL PREPARATION AND GROUNDING THE BASE OF THE PIVO | LEKLA MULTI-PURPOSE AUTONOMOUS SOLAR ENERGY STATION (PART No. 1)

IMPORTANT! Proper base grounding of the PIVO | LEKLA Multi-Purpose Autonomous Energy Station is essential to ensure that the energy station is safe. The installer (contractor) is responsible of determine a base grounding and installation procedure that complies with current standards and to refer to a geotechnical study if required.

Hoisting points

To ensure safe hoisting of the lifting and storage base, use at least 2 of the 4 3/4-10 UNC threaded rods that serve as an anchor point to the pole. It is recommended that two lifting eye nuts with 3/4-10 UNC threads and a suitable sling be placed on two threaded rods.

Refer to Figure 1 for choice of hoisting points.



Figure 1

Figure 1: Top view of the lifting and storage base with lifting eye nuts

Figure 2: Lifting and storage base as a whole. System weight of 500 kg/1100 lbs



Figure 2

IMPORTANT: To avoid breakage or malfunction, handle the lifting system with care as it contains the assembled batteries and control box.

SOIL PREPARATION PRIOR TO DIGGING

Prior to digging or excavating the ground for the PIVO | LEKLA Multi-Purpose Autonomous Energy Station, make sure that its installation does not compromise or alter in any way the integrity of existing power lines or underground equipment on site and that the work can be carried out in complete safety, without risk of electrocution, explosion, leakage or collapse.

It is therefore your duty to inform yourself of the presence of underground pipes (sewer, water, gas, etc.), electricity, telephone lines, tv cable by contacting the agencies concerned. If the work is carried out near a surface drain or manhole, make sure to inform yourself with competent services that the installation of the PIVO | LEKLA will in no way alter them.

Finally, if the work is carried out near overhead and/or underground power lines, make sure, before starting the work, to secure the perimeter if necessary and provide a safe distance for your equipment to avoid any risk of electrocution.

NOTE : Location of the base of the Autonomous Energy Station and identification of the type of soil are the responsibility of the client and in no case the responsibility of LEKLA.

DIGGING OR EXCAVATING RECOMMENDATIONS FOR THE INSTALLATION OF THE LIFTING AND STORAGE BASE

The recommended diameter of the hole is 610 mm (24 in.), which is the smallest diameter required for optimal installation conditions. It is important to respect the 1657 mm (65 in.) depth of support at the base of the pole.

The arrow on the cylinder represents the position of the service door when the base is open. It also serves as a reference to correctly position the bolts when installing the pole, so that the accessories (camera, light, etc.) are correctly oriented (Figure 3).

NOTE: It is suggested to locally compact the soil around the periphery of the cylindrical tube as fill material, such as rock dust, is added.

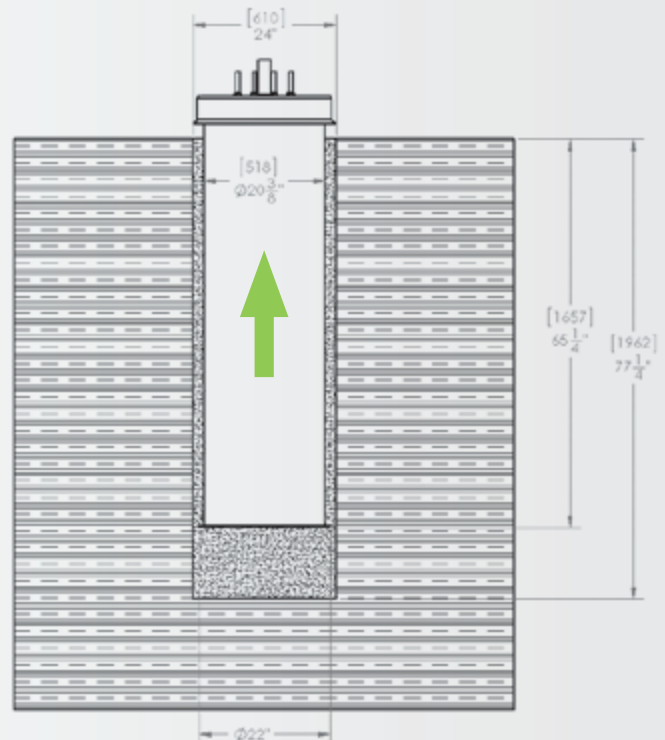


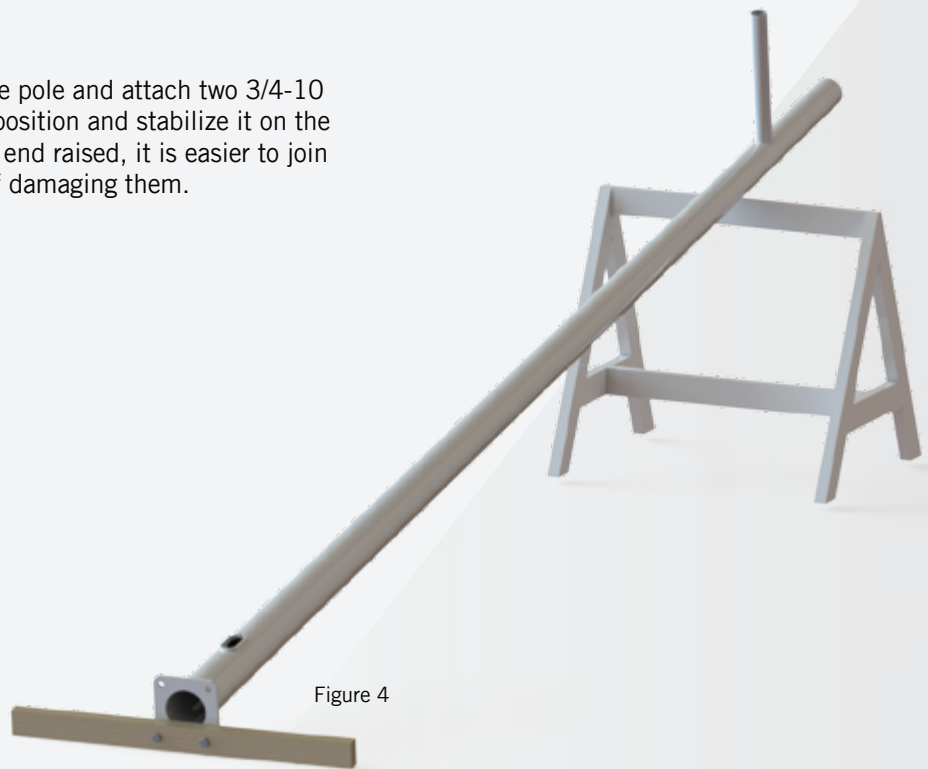
Figure 3

Figure 3: Typical installation of PIVO | LEKLA Multi-Purpose Autonomous Energy Station base.e

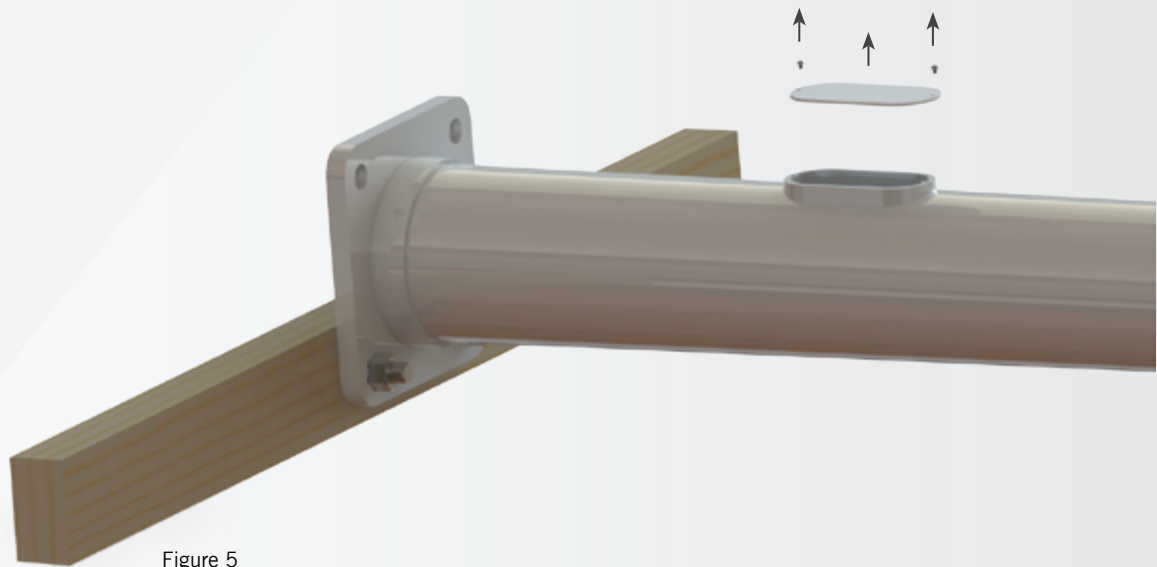
STEP 3

POLE PREPARATION

1. Place a beam at the base of the pole and attach two 3/4-10 X 4 in. long bolts to hold it in position and stabilize it on the trestle (Figure 4). With the top end raised, it is easier to join the components without risk of damaging them.



2. Unscrew the cover of the service door located at the bottom of the pole with the locking key. It will serve as a connection point for the wiring (Figure 5).



3. Remove the protective membrane covering the support and the panel; pass all wiring through the top opening of the pole. The solar panel wiring (black/white wire pair) should reach the service opening at the base of the pole. Insert the solar panel support into the pole, being careful not to pinch the wires (Figure 6).

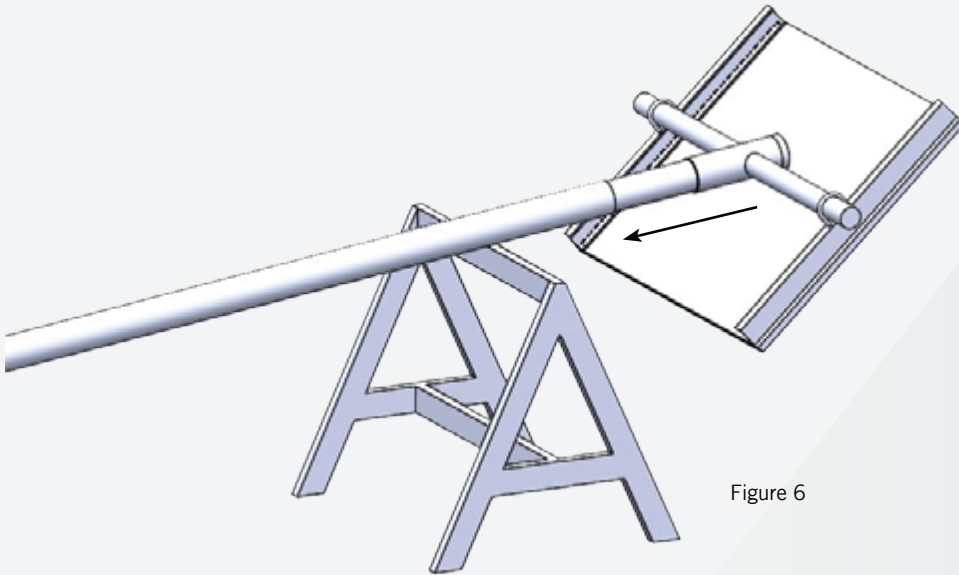


Figure 6

STEP 4

LUMINAIRE ATTACHMENT TO THE POLE (Part No. 3 optional)

Fixing the luminaire is facilitated as the end of the tube for its connection is within easy reach. Untie the cable coming out of the arm for the luminaire and connect the cable from the arm to the luminaire. Push the wire back inside the arm making a loop (Figure 7.1) to create a loose in the wires. This loop will make it easier to disconnect the luminaire if necessary (Figure 7).



Example of a wire loop in the arm

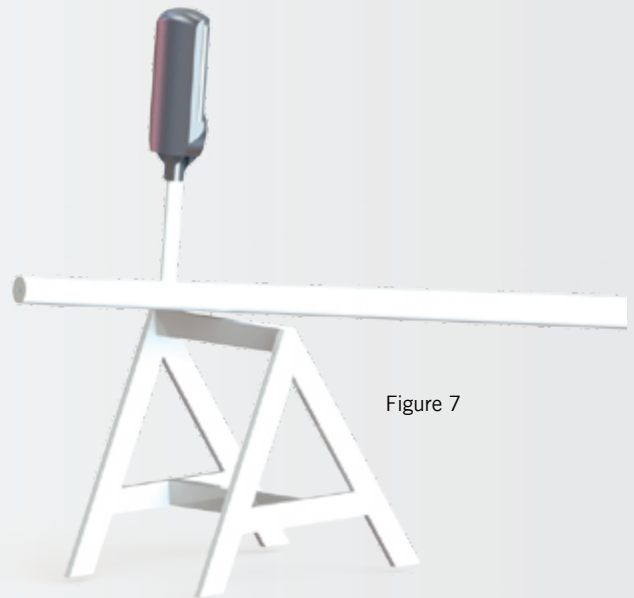


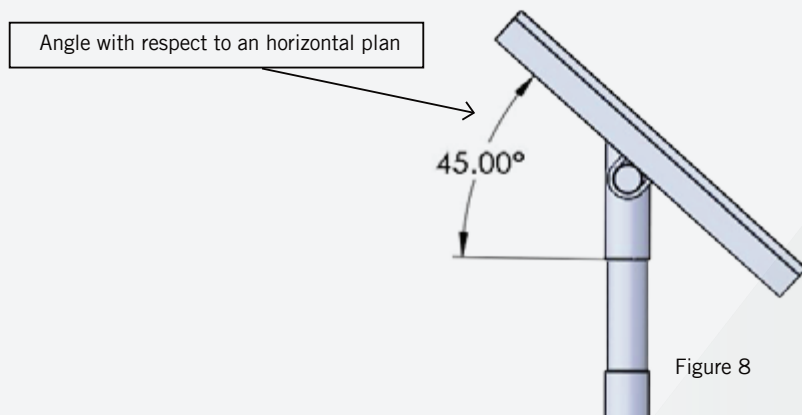
Figure 7

Figure 7: Positioning the luminaire on the end of the 60 mm (2-3/8 in.) diameter connecting tube

STEP 5

SOLAR PANEL ELEVATION ANGLE ADJUSTMENT* (Part No.6)

Make sure that the panel is at an angle of 55 to 60° with respect to an horizontal plane as if the pole were standing vertically and the wires were falling towards the base of the pole. Then tighten the U-bolts to lock it in place. The angle suggested is suitable for most regions of Quebec, see the project data sheet or contact LEKLA for more information on the location of the installation (Figure 8).

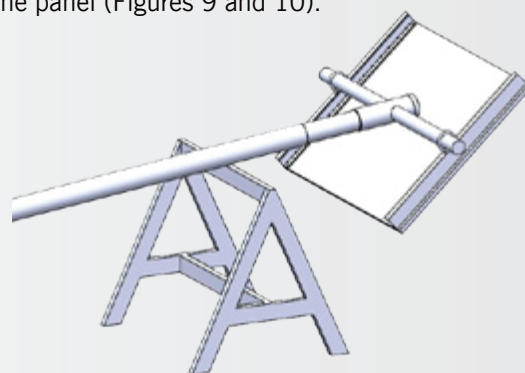
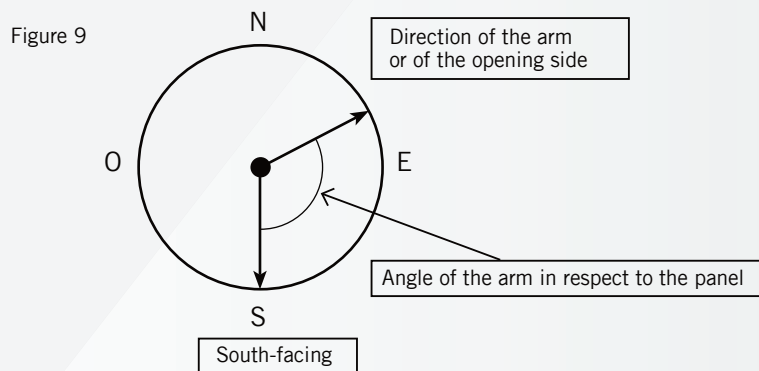


It is possible to use the website www.suncalc.org to simulate the sun's position in relation to the location of your solar installation and to see if there are any surrounding obstacles that could affect it, given the differences the sun's position at different times of the year.

STEP 6

AZIMUTH 180° ADJUSTEMENT, SOUTH-FACING (Part No.6)*

According to the geographical location of the installation, the angle between the arm or the side of the opening and the solar panel must be adjusted so that the solar panel faces south. Secure the hexagonal nuts to fix the support to the pole and connect the wires between the support and the panel (Figures 9 and 10).



example of 180° between the arm and the face of the solar panel (arm faces north and the solar panel faces south.)

*N. B. If the installation is done from a bucket truck, it is possible to make these adjustments once the pole is installed.

STEP 7

PLACING THE POLE ON ITS BASE

Remove the two lifting eye nuts located on top of the lifting and storage base to allow positioning of the pole. Then place four locknuts, four 3/4-10 UNC nuts on the threaded rods followed by four 3/4" flat washers (Figure 11 and 12).

Once the pole is assembled, take out the cables through the service door; the red/black wire pair from the batteries, the white/black wire pair from the solar panel and the cable for each of the equipment (for the equipment, refer to the list on the custom diagram of your PIVO I LEKLA). Then place a sling around the pole at the junction of the pole or at the balance point, if there is no pole. Lift the pole with lifting equipment. Once the pole is lifted off the ground and held in a nearly vertical position, remove the beam attached to the base of the pole.

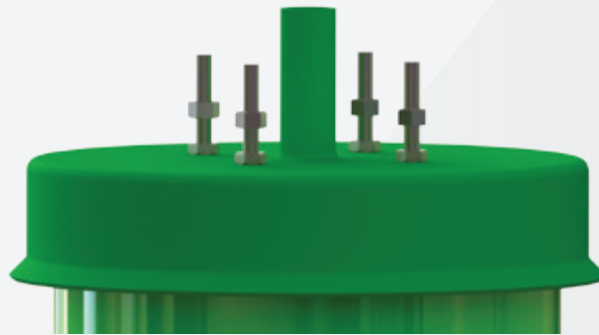


Figure 11

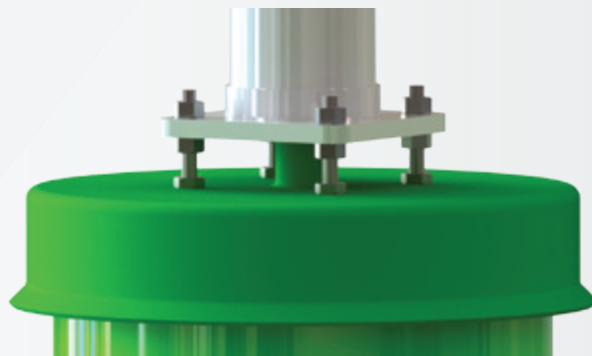


Figure 12

Figure 11 : Top view of the lifting and storage base with the addition of 4 clamping nuts 3/4-10 UNC on the threaded rods.

Figure 12: Top view of the lifting and storage base with 3/4-10 UNC clamping nuts on the threaded rods and the assembled pole.
Level the pole by its base.

STEP 8

INSTALLATION OF THE POLE AND BASE COVER

Bring the pole closer to the fixing bolts. Carefully unpack the wires from the lifting base and insert them into the pole by leading them out through the service door.

Once all the wires have been inserted, carefully mount the pole vertically, making sure not to pinch the wires.

Fasten with four 3/4 in. flat washers followed by four 3/4-10 UNC nuts and four locknuts on the threaded rods. Level the pole before firmly tightening to secure it in place. Position the base cover.

STEP 9

LIFTING THE BASE FOR START-UP

Connect the hydraulic hoses to the pump and carry out the lifting procedure making sure that the components included in the base and/or the control box have not been damaged during transport or installation. Make sure that the red/black, orange/black and yellow/black connector pairs are not connected to the controller in the control box.

STEP 10

VOLTAGE CONTROL CHECK PRIOR TO START-UP

Check for voltage on the white/black wire pairs coming from the solar panel using a multimeter. It should be more than 30 V. On the red/black wire pair equipped with a fuse holder, install the 20 A fuse. Measure the battery voltage with a multimeter. It should be around 25 V.

If the voltage readings meet the requirements, place the 5 A fuse(s) on the accessory cables and connect the two red/black wire pairs, the two white/black wire pairs and the accessory connector(s) to each other according to their identification label.

STEP 11

ANTENNA INSTALLATION FOR THE CONTROLLER (INTERNAL OR EXTERNAL) - for the option equipped with a remote interactive controller

If the controller is supplied with an internal antenna (small black T about 4 in.), remove the backing paper from the adhesive behind the antenna and attach the antenna as high as possible to the inside of the pole.

If the controller is supplied with an external antenna, the coaxial cable (black wire with gold connector) must be fed through the PIVO freestanding base using an electrician fish tape and connected to the controller using the cable clamp pre-installed on the control box.

STEP 12

STARTING THE CHARGE CONTROLLER

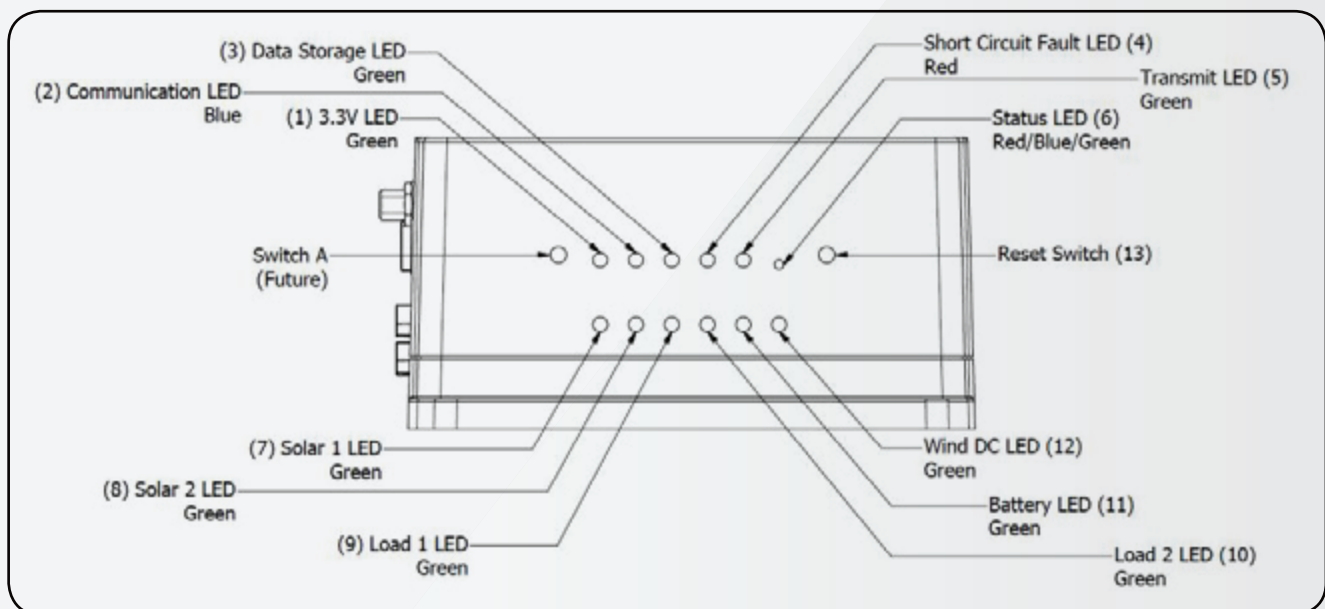
Connect the cables to the controller in the following order:

The connectors of the red/black wire pair on the batteries, the orange/black wire pair on Load 1 and/or Load 2 according to the identification label and the yellow/black wire pair on Solar 1.

In the event of a disconnection, please proceed in the reverse order.

If everything is working correctly, the green battery LED indicator and the Solar 1 LED indicator will light up.

The diagram below displays and identifies all the LED indicators.



At this stage, the PIVO I LEKLA should be functional. It will be possible to remotely perform a variety of tests and to generate management reports from the ILLUMIENCE web site of ClearBlue technologies.

In case of problems, contact the LEKLA service center at 819-769-0350

STEP 13

END OF INSTALLATION AND START-UP

YOUR PIVO LEKLA MULTI-PURPOSE AUTONOMOUS ENERGY STATION IS NOW FUNCTIONAL.

ANNEX 1

POLE LIFTING PROCEDURE

- Access to the battery storage system is discreet and secure.
- Two hydraulic hoses located at the base of the pole are equipped with quick couplings and coupled to one another.
- Access the hoses by removing the cover of the service door located approximately 18 in. from the base of the pole (Figure 1).
- Grasp the end of the hoses with your hand, pull the two quick couplings out of the pole and uncouple them.
- Depending on the choice you made when acquiring your PIVO I LEKLA Multi-Purpose Autonomous Energy Station, connect the two quick couplers on the drum to the portable hydraulic unit.
- Place the hydraulic valve in the mounted position and activate the hydraulic unit to allow the center tube to be lifted into the base.
- Once the mechanism is at its maximum height, deactivate the lift valve. The mechanism becomes stationary.
- Extend the two orange safety stands so that they rest against the 660 mm (22 in.) cylinder wall (Figures 2 and 3).
- When the pole is lifted 450 mm (17.7 in.) off the ground, the control box and the battery storage area can be accessed.
- In order to lower the pole using the portable unit, retract the safety stands and lower the pole to its base.
- Once on the base, uncouple the hydraulic connections of the handheld unit from the lifting base and couple the pair for each piece of equipment to avoid dust contamination.
- Reinsert the hoses of the lifting system inside the pole and close the service door cover.
- Take care to have a cloth or absorbent fabric to collect any oil drops that may have escaped when uncoupling the quick couplings.

STEPS

Remove the cover from the service door at the base of the pole to gain access to the pole lifting hoses (Figure 1).

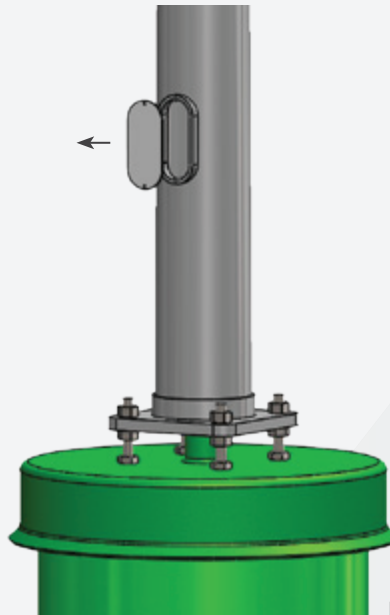


Figure 1

Note that the safety stands are in the retracted position for both ascendant and descending manoeuvres (Figure 2). View of the extended safety stands (Figure 3)

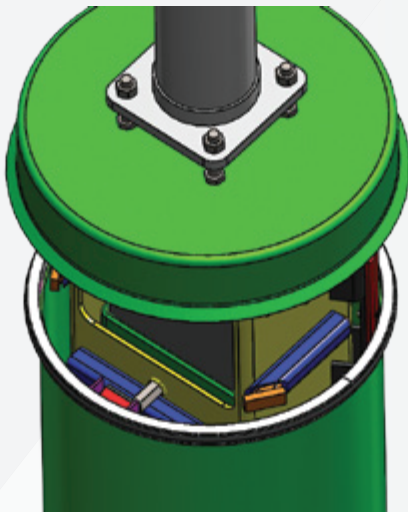


Figure 2

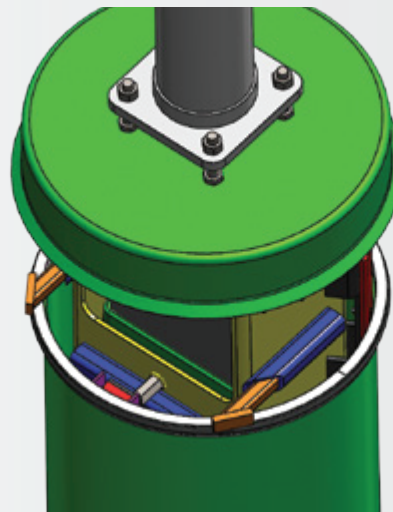


Figure 3

ANNEX 2

BATTERIES LIFTING MECHANISM MOVING PROCEDURE

The lifting mechanism for handling the batteries can be easily and manually operated.
This is how it works:

FOR THE LIFTING OPERATION

- Disconnect the connectors from the controller as specified in the installation section. Remove the fasteners above the control box carefully pull it out and supporting it with a sling or rope in order to clear the opening.
- The lifting system is located to your right when you are positioned in front of the battery storage hatch (Figure 1).
- A 15/16 in. hex nut is located at the center of the protective cover on the right.
- Use a 15/16 in. hex socket with 1/2 in. grip, a 5 in. extension, and a 14-16 in. long hinged handle.
- Place the hex socket over the hex nut.
- Turn the end of the hinged handle counter clockwise. The battery magazine lifts up to provide access to the stacking cases and batteries.

POUR LA DESCENTE

- Both hands are required for the lowering operation. The right hand rotates the hinged handle and the left hand operates the release lever.
- Hold the hinged handle firmly, rotate it slightly counterclockwise and press the release lever down to release it from the gears. Rotate the articulated handle half a turn and release the lever. By releasing the lever, the lifting system is secured.
- Turn the hinged handle half a turn to facilitate the lowering operation.
- Once the mechanism has been pressed against the base of the tube, remove the tools used for the lowering operation.
- Put the control box back in its place and reconnect it.

NOTE: In the event of a sudden drop (descent) of the mechanism, immediately release the release lever to secure the system. A compression spring located under the release lever will immobilize the system, as its end will instantly lock into the gear to secure it.

TOOLS REQUIRED

Tools required for lifting and lowering the batteries.



Insert the 15/16 in. socket in the center of the box.

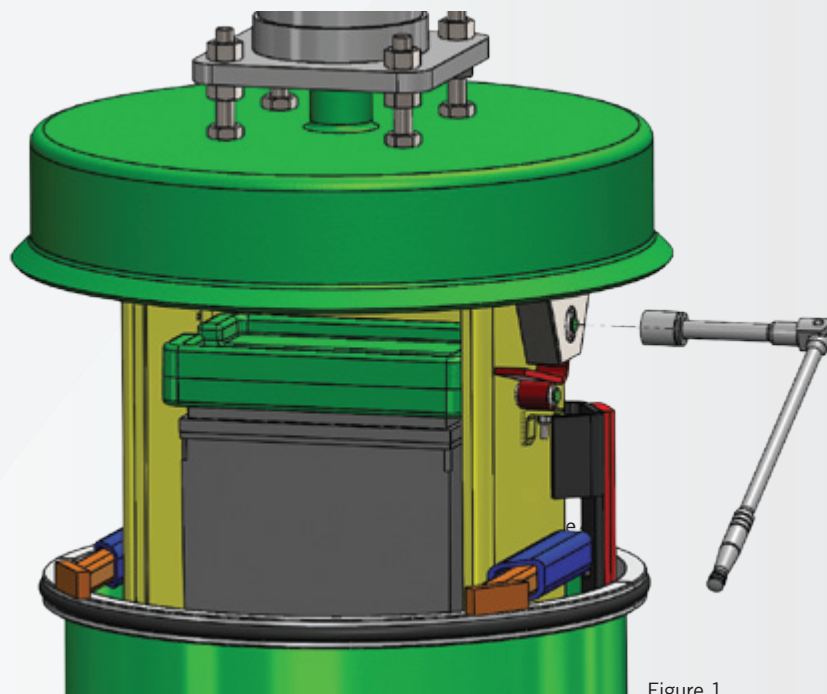


Figure 1

STEP 1

Apply force to the end of the hinged handle to raise the batteries.

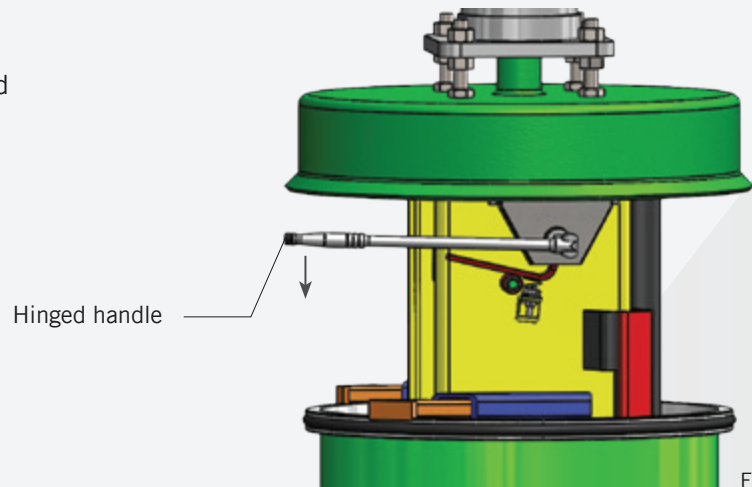


Figure 2

STEP 2

To release the safety handle, apply force to the end of the articulated handle and to the end of the release lever.

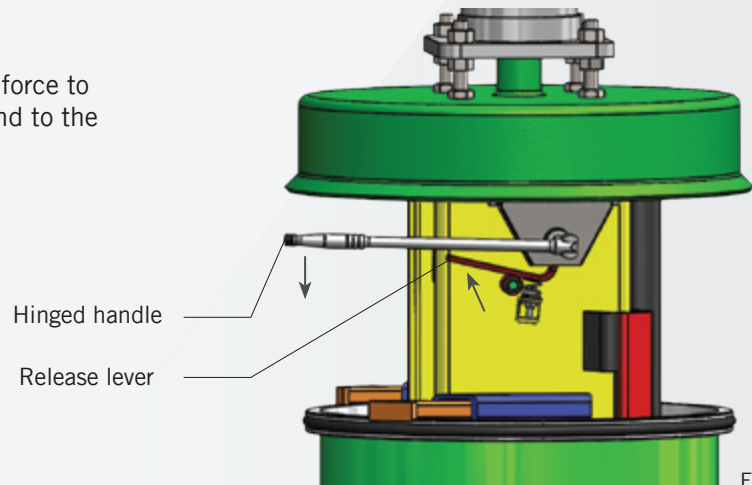


Figure 3

STEP 3

Hold the release lever and the end of the hinged handle while letting it rotate clockwise.

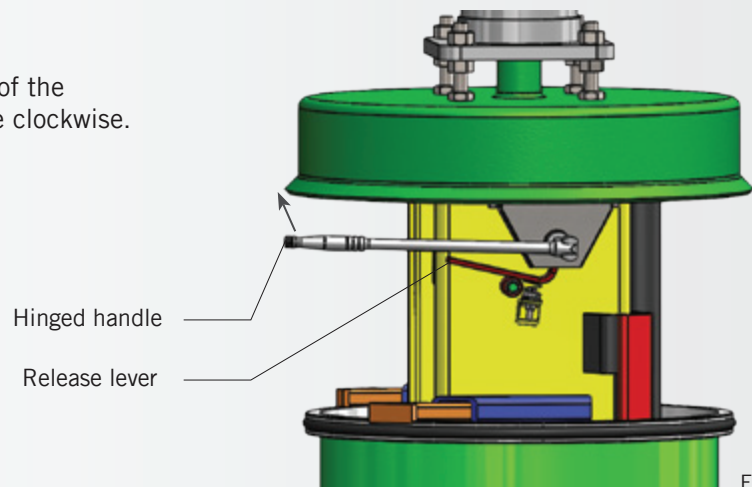


Figure 4

ANNEX 3

PROCÉDURE DE REMPLACEMENT DES SANGLES DE LEVAGE

STEP 1

Note : Lock the tray before removing the straps.

Use the two 88 in. long flat lifting straps supplied by LEKLA.

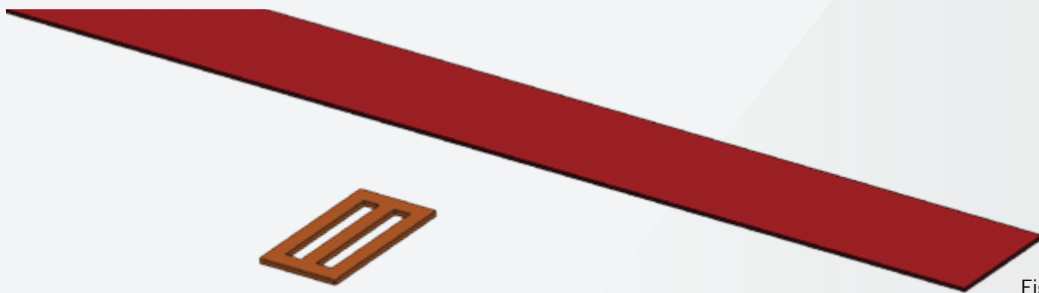


Figure 1

STEP 2

Thread the lifting strap into the lock buckle.

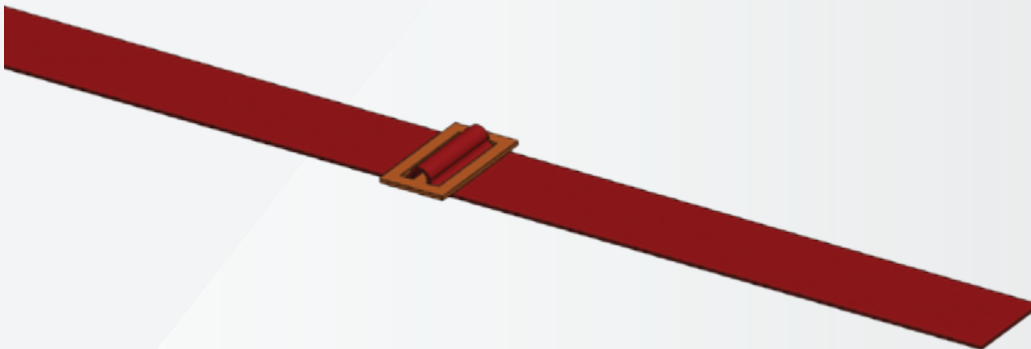


Figure 2

Figure 1 : View of the lift strap as well as the lock buckle

Figure 2 : First thread, the securing buckle is placed at a distance of approximately 8" from the end of the buckle.

STEP 3

Place the lifting strap

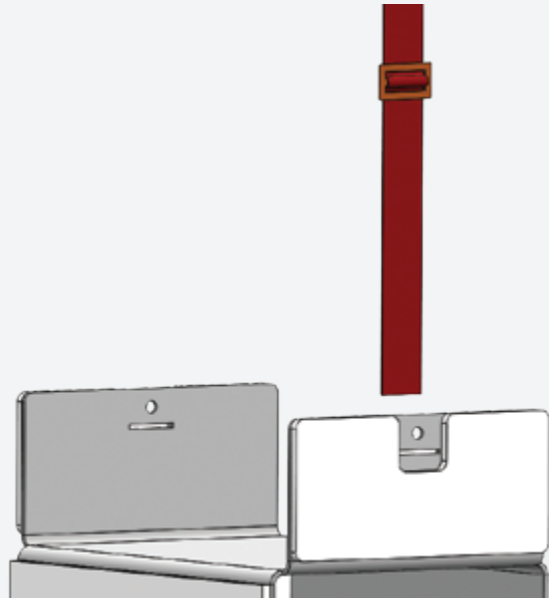


Figure 3

STEP 4

Thread the end of the lifting strap through the opening in the lifting tray.

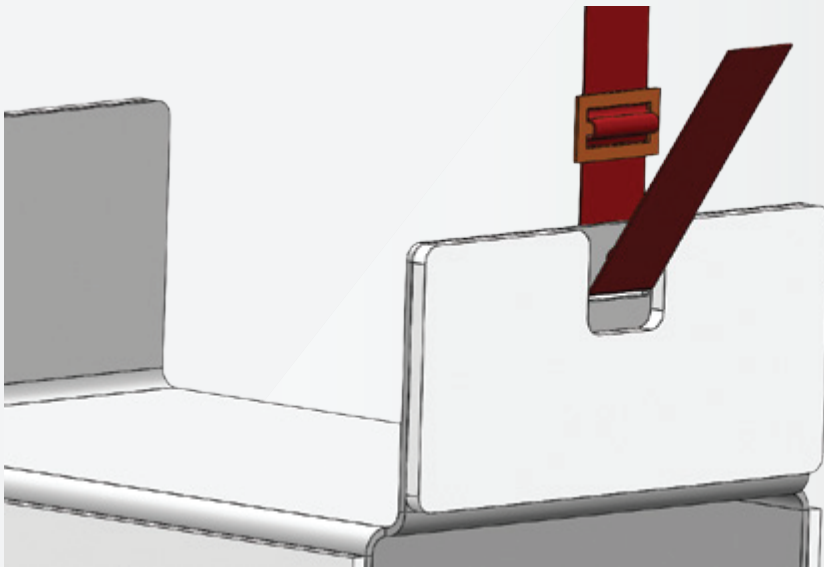


Figure 4

Figure 3 : View of the lift strap with respect to the lifting tray, note the direction of the buckle

Figure 4 : Threading of the lift strap

STEP 5

Thread the dead end through the lock buckle a second time.

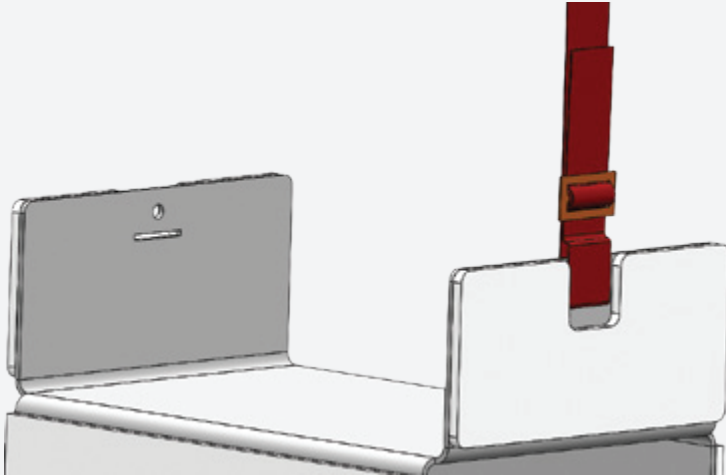


Figure 5

STEP 6

Thread the dead end through the fastening loop a third time.

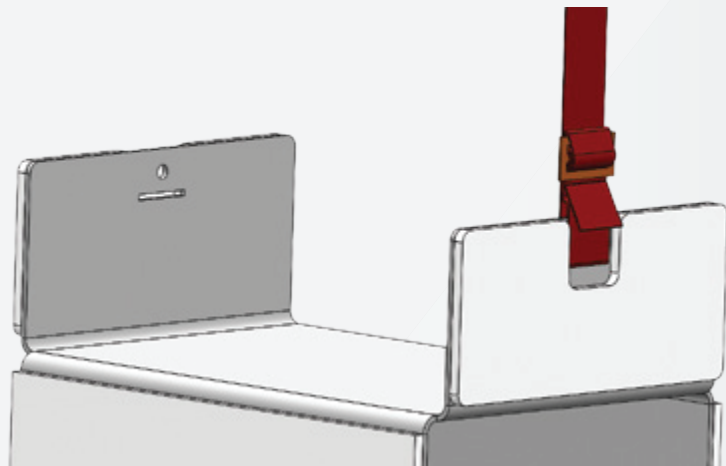


Figure 6

STEP 7

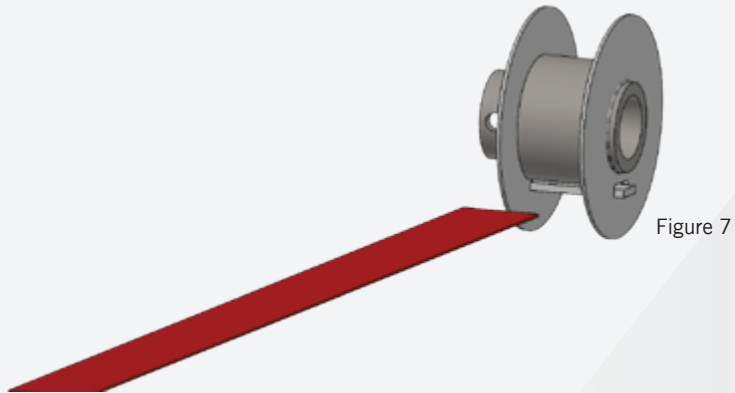
Proceed exactly the same way with the other lifting strap and the other lock buckle on the opposite side of the lifting tray.

Figure 5 : Second threading of the dead end through the lock buckle.

Figure 6 : Third threading of the dead end through the lock buckle to secure and prevent slipping.

STEP 8

With both straps securely attached to the lifting tray, proceed to insert the two lifting straps into the ratchet lift mechanism. Position the spool as shown in the illustration before inserting the lifting straps



STEP 9

Insert the strap into the retaining pulley of the ratchet lift mechanism, securing it between the shaft and the plate.

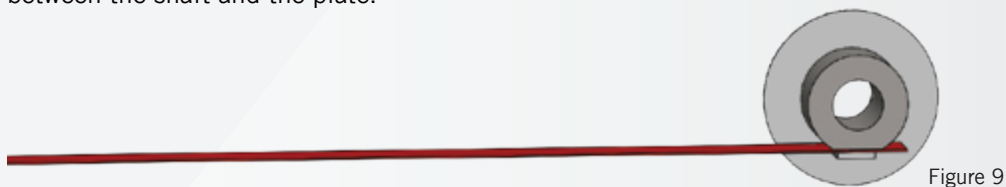


Figure 7 : Strap at the entry of the ratchet lift mechanism. Right side of the spool of the ratchet lift system.

Figure 8 : Right side of the spool and strap before insertion.

Figure 9 : Sectional view of the strap passing through the lifting mechanism with the strap positioned between the center shaft and the plate.

STEP 10

Rotate the lifting system's retaining pulley 90° to allow the adjustments of the two retaining pulleys.

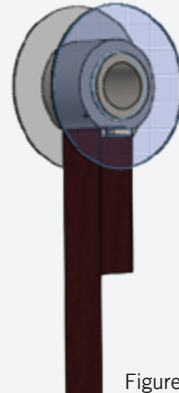


Figure 10



Figure 11

STEP 11

Take an object such as a piece of log to adjust both sides of the lifting system. Pull the log towards you so that the straps are parallel to each other to ensure uniform lifting. Leave enough slack to allow for a first turn of the strap before lifting the tray.

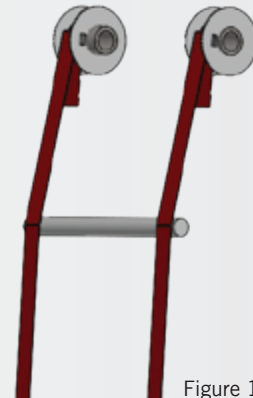


Figure 12

STEP 12

Make sure to have an equal strap length on both pulleys for the first turn in order to obtain a levelled lift.

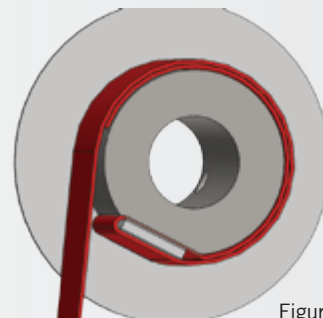


Figure 13

Figure 10 : In order to provide better overview of the hidden side, one of the retaining rings is shown in transparency. The strap goes through the retaining pulley. The distance from the dead end is of at least 3 in. Other adjustments will be made further on.

Figure 11 : The view of the front retaining ring is shown in transparency to reveal the dead end on the back of the pulley.

Figure 13 : Sectional view demonstrating the first turn of the lifting strap on the retaining pulley.

REQUIRED EQUIPMENT

- Wrench fits 1¼ in.
- Channel lock pliers
- Cutting pliers
- Long nose pliers
- Knife
- Measuring tape
- Hexagonal key set
- Flat and star tip screwdriver set (or multi-bit screwdriver)
- Key 12 in. long fits 1¼ in.
- Level
- Inclinator or angle protractor
- Drive hinge handle ½ in.
- Socket 15/16 in. for ½ in. drive
- Extension bar 5 in. for ½ in. drive
- Electrician fish tape
- Multimeter
- Electrical tape
- Tie wrap fasteners
- Slings, 200 lb or more
- Compass or GPS orientation system
- Hydraulic pump with 1/8 NPT coupling
- Rags or absorbent fabric