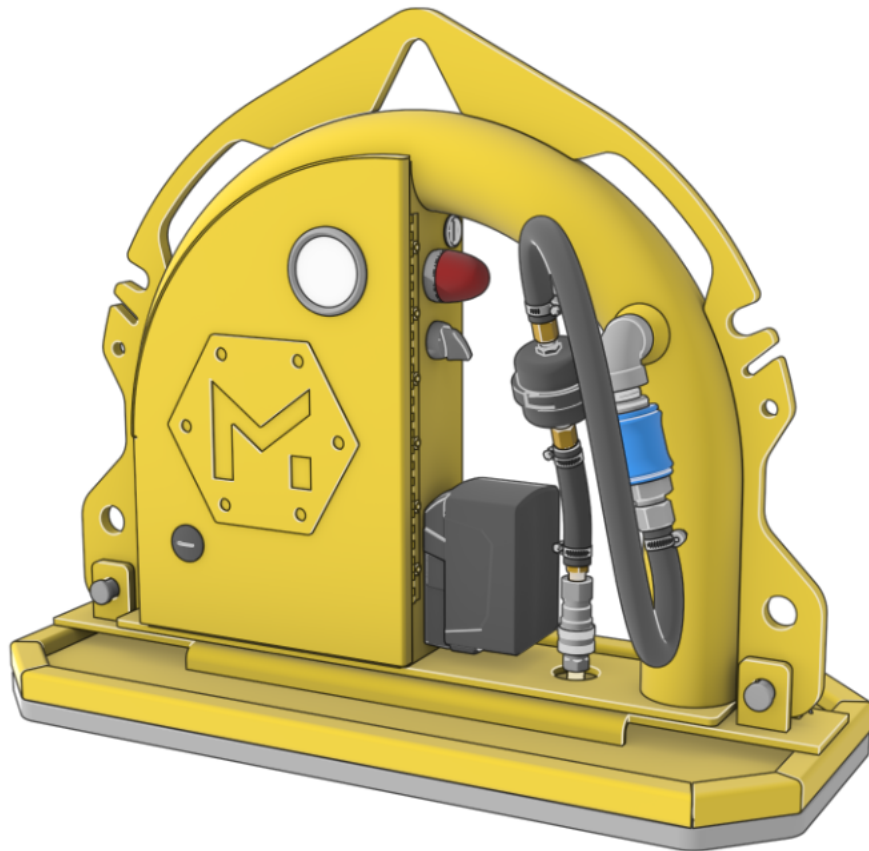




Mini Mk2 Vacuum Lifter User Manual



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1. Safety



Read and understand this manual and all safety instructions before using this product. Failure to do so can result in serious injury or death.

This document is intended for current and future operators of the Mini Mk2 lifting device. This operator's manual must always be available at the operation site or with the lifter. The Mini Mk2 is made to handle nonporous, inanimate products, close to the ground, and not exceeding the stated capacity of the attached vacuum pad nor the rated capacity of the lifter unit chassis.

Ensure all operators are familiar with this lifting device and all applicable health and safety rules and regulations within the local jurisdiction and associated workplace. MQUIP Group Inc. takes no responsibility for the inappropriate or negligent use of this lifting device or associated products.

The product shall only be used by personnel who have fully read and understood the contents of this user manual.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

1.1. Explanation of safety warnings

DANGER

Danger indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

Warning indicates a hazardous situation that, if not avoided, may result in death or serious injury.

CAUTION

Caution indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

NOTICE

Indicates information considered important, but not hazard related.

1.2. General safety rules



DANGER Improper use of lifting equipment can result in serious injury and death! Read all instructions carefully and use caution during each lift. These general safety rules and all safety warnings in this manual must be adhered to at all times.

- Always wear personal protective equipment that is appropriate for the material being handled and the operating site.
- Do not exceed the labelled safe working load of either the vacuum suction unit or the attached vacuum pad.
- Remain clear of the load whenever it is elevated. Never place any part of your body underneath the load.
- Loads must be lifted in the true horizontal orientation to achieve the pad's rated horizontal capacity as marked on the vacuum pad. Ensure the load is centered and does not cause the lifter to tilt.
- A separate vertical lifting capacity is marked on the vacuum pad, which is 50% of the rated horizontal lift capacity. Do not exceed the vertical lifting capacity when using the vertical lift points.
- Loads must be handled close to the ground.
- Do not drag loads across the ground.
- Do not lift or lower load faster than 1 m/s or 3 ft/s.
- All movements with the lifter while supporting loads should be executed with smooth and steady controls.
- Do not perform abrupt or fast movements when moving loads.
- Ensure that the vacuum lifting device is not used in explosive/hazardous environments.
- The supporting lift equipment must be rated to lift more than the sum weight of all components being lifted: the lifting unit, vacuum pad, and load.
- Load must be clear of dirt, debris, mud, water, and any other objects or substances that would impede effective sealing of the vacuum pad to the surface of the load.
- Load must be free of contaminants that may adversely affect the vacuum seal material, such as chemicals or oils.
- Operating temperature range is -20°C to 60°C (-4°F to 140°F).
- Do not submerge the battery pack in water.

1.3. Alarms

This lifting device is equipped with a red warning light and an audible buzzer. These should be maintained in good working conditions at all times. They indicate whether sufficient vacuum has been achieved to lift the load rating listed on the vacuum pad. When these alarms are off and the pressure gauge needle is between -100 and -60 kPa (see below), the load is safe to lift. When these alarms are on, the load is not safe to lift.

Also refer to the pressure gauge on the lifting unit front. The gauge shows a vacuum range from -100 to 0 kPa. When the gauge needle indicates a vacuum of between -100 and -60 kPa, the load is safe to lift and the alarms should turn off. The gauge is marked with a green safe zone between -100 and -60 kPa. If the safe zone marking is not present, contact MQUIP Group and do not use the vacuum lifter.

2. Overview

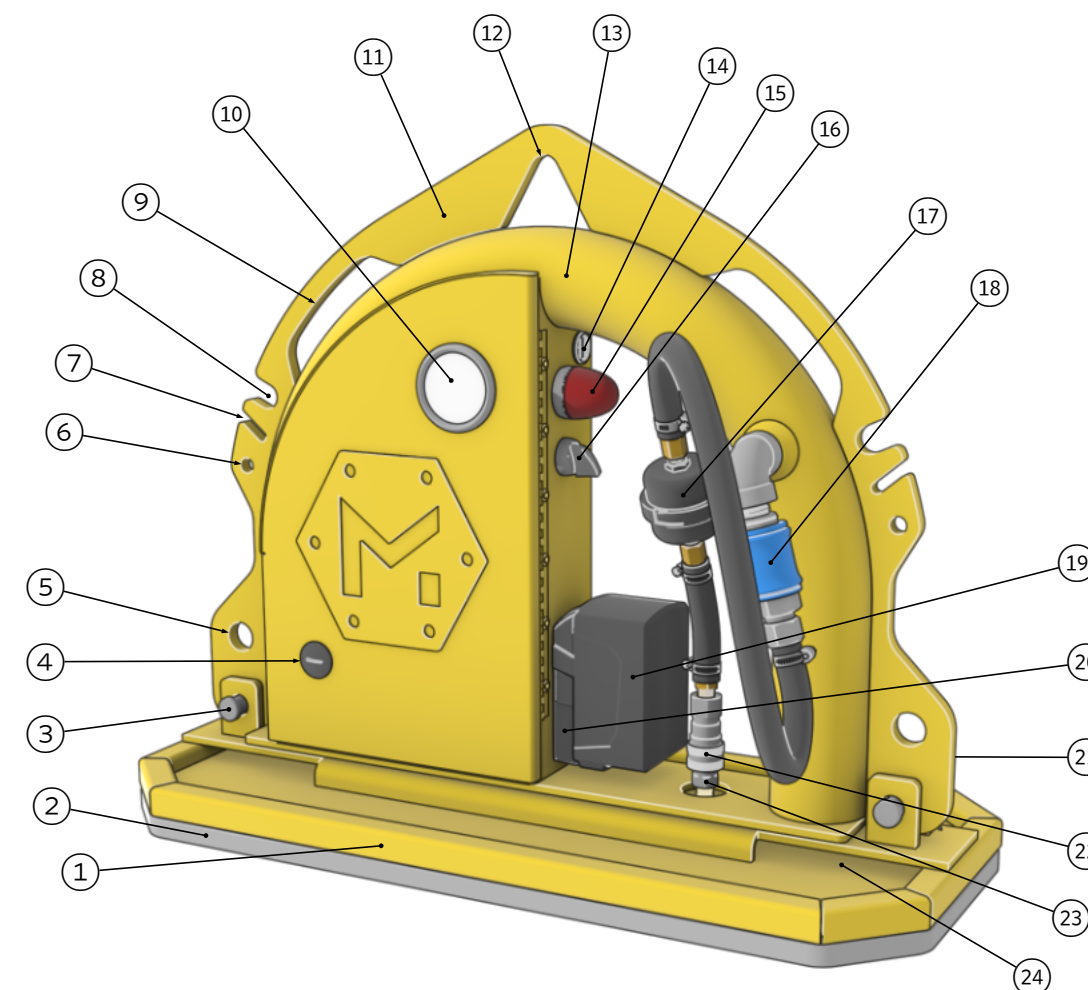
2.1. Description

The MQIP Mini Mk2 is one of many vacuum lifting devices offered by MQIP Group. The Mini Mk2 assists in moving nonporous loads up to 1,000 kg (2,200 lb), depending on the vacuum pad attached and lifting orientation. Loads can be lifted in horizontal or vertical orientations, by machine, or with the optional handle sets. The Mini Mk2 is powered by a Li-Ion battery pack which can be easily swapped out and recharged when depleted. It also features a sealed electronics enclosure and reinforced chassis spine for enhanced reliability.

This document will outline how to safely use, maintain, and troubleshoot the Mini Mk2. Before operating the lifter, ensure that you and any other users have thoroughly read and understood this manual and its safety instructions.

If any part of this manual is unclear, or there is an issue with the lifting unit, please contact our support staff at (905) 315 1955.

2.2. Main components



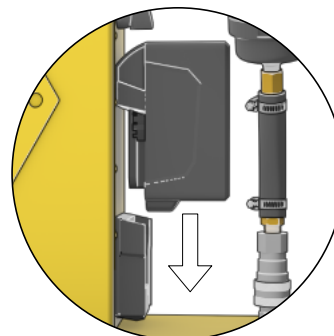
- | | |
|---------------------------------------|--------------------------------------|
| 1. Vacuum pad (70 x 30 shown) | 13. Vacuum reservoir tube |
| 2. Vacuum pad seal | 14. Breather vent |
| 3. Vacuum pad clevis pin & cotter pin | 15. LED alarm light & buzzer |
| 4. Enclosure cam lock | 16. Main power switch |
| 5. Vertical lift point | 17. Inline air intake filter |
| 6. Accessory attachment point | 18. Slide valve |
| 7. Secondary restraint chain slot | 19. 18v Li-Ion battery pack |
| 8. Vacuum hose restraint slot | 20. Battery mount |
| 9. Transport handles | 21. Reservoir drain plug (at rear) |
| 10. Pressure gauge | 22. Hose socket (lifter side) |
| 11. Chassis spine | 23. Hose plug (pad side) |
| 12. Horizontal lift point | 24. Vacuum pad hand hold (some pads) |

3. User Assembly

The vacuum lifter has been assembled and tested at the factory, and only minor final assembly is required.

3.1. Insert the battery

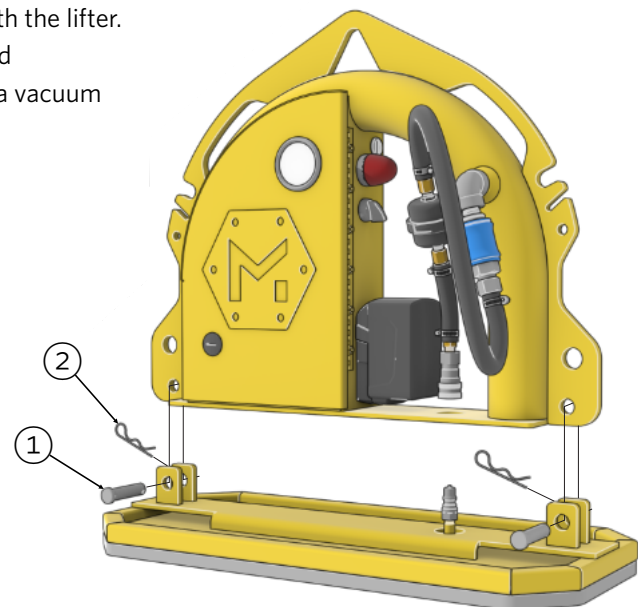
One or more battery packs may have been included with the lifter. These will need to be fully charged before first use. A charge indicator button and gauge on each battery pack are used to check the charge level. Once charged, press the buttons on the side of the pack and slide the battery down onto the battery mount. Release the side buttons and ensure the battery pack clicks into place. To remove, press the side buttons and lift the battery up and off the mount.



3.2. Attaching pads

One or more vacuum pads may have been included with the lifter. These vacuum pads are available in a range of sizes and capacities for different lifting applications. To connect a vacuum pad with the Mini Mk2 lifter unit:

1. Remove the clevis pins ① located towards the bottom of the lifter by removing the two hairpin cotter pins ② which secure the clevis pins in place.
2. Use the transport handles to lower the lifter unit onto a vacuum pad.
3. Line up the holes and insert the clevis pins, then secure these with the hairpin cotter pins.
4. Connect the vacuum hose socket to the pad hose plug.



To disconnect a pad from the lifter unit, follow the above steps in reverse.

CAUTION Never attempt to connect or disconnect a vacuum pad or battery when a load is being lifted or when the lifter is suspended. Always change vacuum pads or battery packs with the lifter and pad placed on the ground.

WARNING The vacuum pad has separate horizontal and vertical lift capacities marked. Older vacuum pads may only have the horizontal lifting capacity marked. The maximum capacity for vertical lifting is 50% of the rated horizontal lifting capacity. Do not install or use a vacuum pad with missing lifting capacity markings!

4. Operating Instructions

4.1. Lifting

1. Ensure the slide valve is closed by sliding it upwards away from the vacuum pad. Check that the vacuum pad is securely connected to the lifter with clevis and hairpin cotter pins, and that the vacuum hose socket is properly connected to the plug on the vacuum pad. Perform the "each lift" inspections (and others when appropriate) listed in section 6.2, Inspection.
2. Power on the lifter by inserting a charged battery pack and turning on the main power switch.
3. The vacuum pump will run, creating a vacuum in the reservoir. The LED alarm light will turn on and the buzzer will sound at this time indicating it is not safe to lift.

WARNING If the alarm light and buzzer do not initially turn on, do not use the lifter. Contact MQUIP Group for repair or replacement.

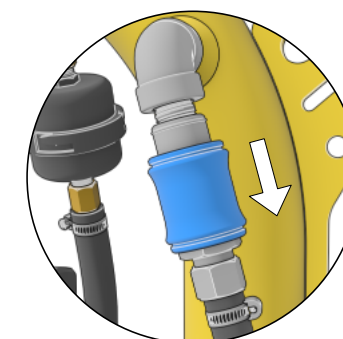
4. When the internal pressure switch detects the vacuum has reached -60 kPa, the alarm light and buzzer will turn off. The vacuum pump may cycle to maintain a safe vacuum.
5. Prepare the load for lifting. Ensure the lifting surface is clean, dry, nonporous, and flat. Double check that the load is within the capacity of the attached vacuum pad and any supporting equipment.

WARNING When lifting a load in a horizontal orientation, do not exceed the rated horizontal capacity of the vacuum pad. When performing a vertical lift, do not exceed the rated vertical capacity of the vacuum pad, which is 50% of the horizontal capacity. Both lifting capacities will be marked on the pad. The lifter is not designed to lift at other angles between horizontal and vertical.

6. Lower the lifter onto the load, ensuring that the entirety of the vacuum seal sits completely on the lifting surface. Also ensure that the load is centered so it does not tilt the lifter when suspended.

CAUTION When performing a horizontal lift, it is recommended to use a lifting shackle on the top lift point of the Mini Mk2. When performing a vertical lift, it is mandatory that a lifting shackle is fitted to the vertical lift point in use.

7. Open the slide valve by sliding it downwards towards the vacuum pad. The vacuum pump will run to pull a vacuum through the pad, compressing the pad seal. The alarm light and buzzer may turn on while the pump works to maintain the vacuum.
8. When sufficient vacuum has been reached, the alarm light and buzzer will turn off, and the pressure gauge needle will be inside the green safe zone. The pump may run periodically to maintain the vacuum and stay in the safe vacuum range for lifting.



Slide down to collect load.

WARNING If the alarm light and/or buzzer remain on, or the pressure gauge needle is not in the green safe zone, do not attempt to lift. Make sure the battery is charged and the lifting surface

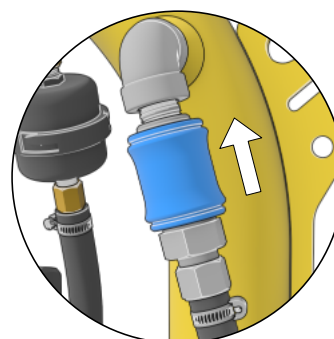
is clean and nonporous. See section 7, Troubleshooting.

- If the load is somewhat porous, the vacuum pump may run continuously. If the alarm light and buzzer turn off and the pressure gauge indicates that the vacuum level is in the green safe zone, but the vacuum pump runs continuously, the load may be lifted only low to the ground (within 2 feet). If a fault occurs in this situation, there is very limited time to lower the load before the vacuum is lost.

WARNING It is critical to be mindful of the pressure gauge and alarm conditions. If the alarm light or buzzer activate, or the pressure gauge needle leaves the green safe zone, carefully but quickly lower the load to the ground and determine the reason for the loss of vacuum. In vertical lifting, always lift slowly and check for sliding of the load.

- Position and lower the load, checking that slack exists in the lifting line when the load is fully seated. Pull the slide valve upwards away from the vacuum pad to close the reservoir-pad vacuum connection and release the pad's grip on the load.

WARNING Never adjust the slide valve while a load is suspended. Vacuum will be lost and the load will be released. Protect the slide valve from snagging, dropped items, or other hazards.



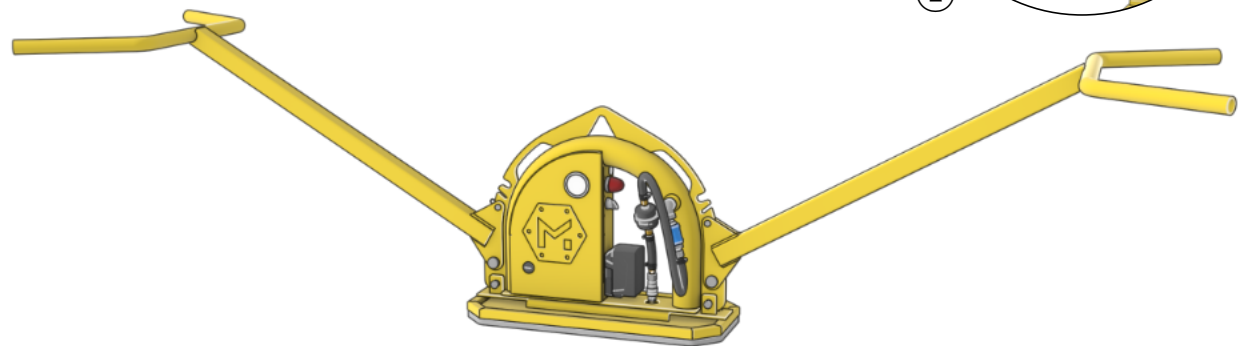
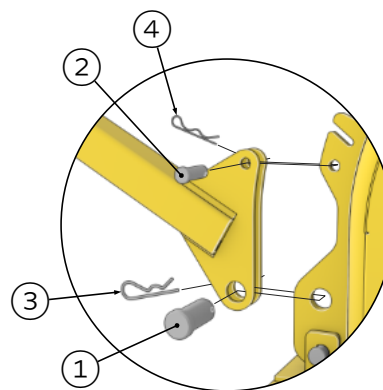
Slide up to release load.

5. Accessories

5.1. Fixed handle

A fixed handle set is available from MQUIP Group. Two handles can be used, one on each side of the lifter, to lift loads manually. Or, one may be used to guide loads lifted by other equipment. To attach a fixed handle:

- Remove the two steel clevis pins ① & ② from the handle by first removing the two hairpin cotter pins ③ & ④ which secure the clevis pins in place.
- Line up the holes in the handle with the vertical lift point and accessory attachment point holes.

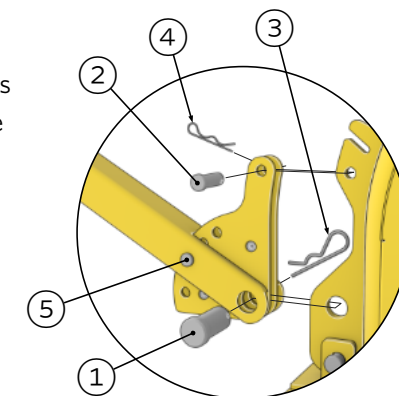


- Insert the two clevis pins and secure with the hairpin cotter pins.

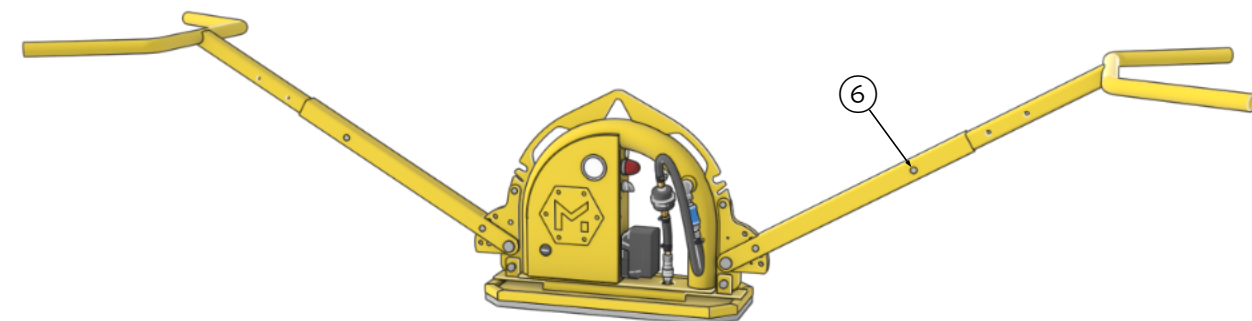
5.2. Adjustable handle

An adjustable handle set is available from MQUIP Group. These can be used similarly to the fixed handles, but provide angle and length adjustments. To attach an adjustable handle:

- Remove the two steel clevis pins ① & ② from the handle by first removing the two hairpin cotter pins ③ & ④ which secure the clevis pins in place. Note that the handle arm and pin plate may come apart; ensure that the angle adjustment pin ⑤ is in place.
- Line up the holes in the handle with the vertical lift point and accessory attachment point holes in the chassis spine.
- Insert the two clevis pins and secure with the hairpin cotter pins.



Once attached, the handle can be adjusted to 6 different angles in 15° increments and 4 different lengths in 4" increments. To adjust the handle angle, remove and replace the pin marked ⑤. To adjust the length, remove and replace the pin marked ⑥. For storage, adjust the handles to the highest angle and shortest length.



6. Maintenance

6.1. Components

Vacuum pump

The pump should be virtually maintenance-free. If the vacuum pump takes an abnormally long time to reach optimal vacuum, check that all filters are clean and do not need replacement, and ensure all pipes are properly fitted and sealed. Contact MQUIP Group for repair or replacement if it is suspected that the pump is leaking internally.

Chassis

The chassis is built to handle a maximum capacity of up to 1,000 kg or 2,200 lb with the proper vacuum pad attached. A visual inspection should be sufficient to see if any damage has occurred. Check for wear on lift points,

dents in the reservoir tube, and degradation of enclosure seals. If maintenance is required, contact MQUIP Group.

Battery

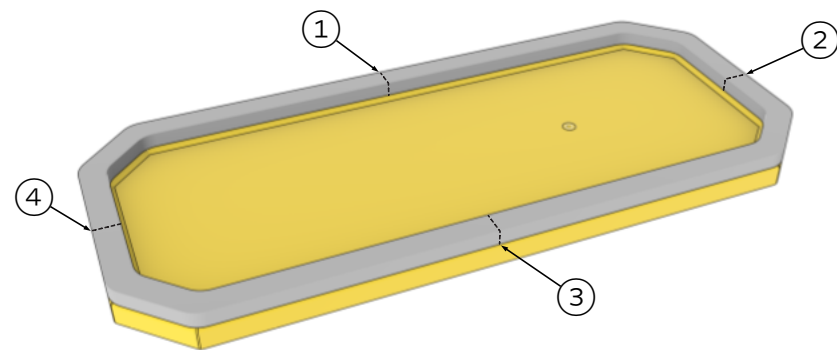
Supplied with the Mini Mk2 are 2 Li-Ion battery packs with 5 amp hour (Ah) capacity. Together these 2 batteries will provide all day operation without charging downtime. A 9 Ah battery is also available for extended time between battery swaps. Charge all batteries with the supplied charger. If a battery does not hold a charge, contact MQUIP Group for replacement.

WARNING As a Li-Ion battery pack loses charge, it maintains its power output until very close to the moment it is completely discharged. You may not be able to hear the pump strength/volume go down, which would indicate a low battery condition. Always check the battery charge level with the indicator on the battery pack prior to each lift to ensure there is enough charge. If a battery pack does not hold a charge, contact MQUIP Group for replacement.

Vacuum pads

Check the vacuum pad and seals condition at the beginning of every work shift. If any cut or damage is present on the seal, do not use the lifter, and replace the seal immediately. The seal is inexpensive and can be easily removed from the vacuum pad. The steel pad does not need to be replaced unless it has sustained damage.

To replace the seal, use a flat blunt tool to force the seal into the slot on the underside of the pad. Ensure the ends meet at one of the straight sections where shown, and glue the ends together to form a continuous airtight seal.



6.2. Inspection

WARNING For safe operation of the lifter, it is critical that these inspections are performed. Conduct inspections at the following intervals:

Each lift

- Visually inspect the lifter for damage to the chassis or pad.
- Ensure the battery is properly inserted and sufficiently charged.
- Check that the vacuum seal is not compromised.
- Ensure that alarms and gauges are fully operational.
- Ensure that the pump sounds strong and maintains vacuum on the material to be lifted.

Daily checks

- Ensure that a sufficient number of batteries are available and charged for the work to be performed.
- Examine the lifter, all pads, and connection points for any evidence of looseness, excessive wear, deformation, cracks, corrosion, dents to structure, or damage to functional components which may have occurred during use or transport.
- Check for damage to air hose and inline components. If found, contact MQUIP Group for repair or replacement.
- Check for water or debris inside the enclosure. If found, remove the battery and fully dry and clean all components. Check for gaps in the enclosure seal and repair.
- Before first lift, test the lifter on the ground with the material to be used and ensure a proper seal is made and a safe level of vacuum is produced.

Weekly checks

- Drain reservoir of moisture through the reservoir drain plug on the rear of the lifter.
- If the lifter has been used in a dusty environment for a prolonged period, replace the filter.
- Lubricate the side valve if needed.
- Check that pressure switches are actuating the pump and alarms at proper set points. Contact MQUIP Group for adjustment if errors are found.

Annual checks

If the lifter is not used for over a year, these checks should be conducted by a certified technician. Contact MQUIP Group for details.

- Check wear on all lift points. If significant wear, or any bending or damage is found, the unit should be replaced.
- Visually inspect the vacuum pads and seals for cracks, corrosion, degradation, and excessive wear.
- Vacuum test the unit and ensure it maintains a proper working vacuum level.
- Check that the high and low pressure sensors are properly activating the pump and alarms.
- Check the vacuum pump, air hose, and fittings for leaks.
- If batteries do not maintain a charge, or have sustained damage or corrosion, dispose of them properly (see section 9, Battery disposal) and replace.
- Conduct a load test by suspending a load low to the ground and check for any other issues.

6.3. Travel & storage

To transport the product safely:

1. Make sure that the lifting device is switched off and the battery is removed. Clean the lifter if needed.
2. With 2 people, use the transport handles on the chassis spine to lift the device. The fixed or adjusted handle sets can also be used to move the lifter. The adjustable handles can be raised to the highest angle and

shortest length for storage.

- If placed in a vehicle, properly tie down the lifter and secure any handles, if fitted.

If the lifter will not be used for a long period, store in a dry, temperature-controlled area. Perform the inspection checks above before returning to use.

Some vacuum pads feature hand holds on the left and right side under the main crossbeam. For larger pads, lift with 2 people using these hand holds when the pad is not attached to the lifter.

7. Troubleshooting



WARNING

When troubleshooting issues, ensure the lifter is safely lowered. If the enclosure needs to be opened, switch off the lifter and remove the battery.

Issue	Possible cause	Solution
Pump does not turn on.	Battery not installed or switch not turned on.	Ensure the battery is properly inserted and the switch is turned on.
	Battery not charged.	Check the battery charge level and swap for a charged battery pack.
	Fuse is blown.	Replace fuse.
	Loose wire, damaged connection or components.	Inspect cabinet. Contact MQUIP Group for repairs.
Lifter is not reaching or maintaining -60 kPa for a safe lift.	Load is too porous.	Check the lifter on a completely nonporous surface, like a steel plate. Do not lift loads that are too porous. A turbine lifter may be required, contact MQUIP Group for recommendations.
	Pad is partially off the load, creating an opening.	Ensure the seal is properly positioned over the lifting surface.
	Roughness or irregularities on the lifting surface are causing leaks.	Lightly pressing down on the lifter may help form a complete seal. Do not lift loads that are too irregular to form a complete seal.
	Dust, dirt, debris, liquids, or other materials prevent a proper seal.	Clean the lifting surface well before lifting.
	The vacuum seal is cracked, split, or drying.	Replace the seal. See section 6.1, Components, Vacuum pads.
	The inline air intake filter is plugged, preventing effective airflow.	Replace the filter. Note that the filter cannot be cleaned.
	The hose socket and plug are not fully engaged, causing a leak.	Ensure the connection is clean and properly seated.
	The battery is not charged.	Check the charge level on the battery and replace if needed.
	The pump turns off too early.	The pressure switches may be incorrectly set. Contact MQUIP Group for recalibration.
Water in the air system is causing blockages.	Drain the reservoir through the reservoir plug at the rear of the lifter.	

8. Warranty

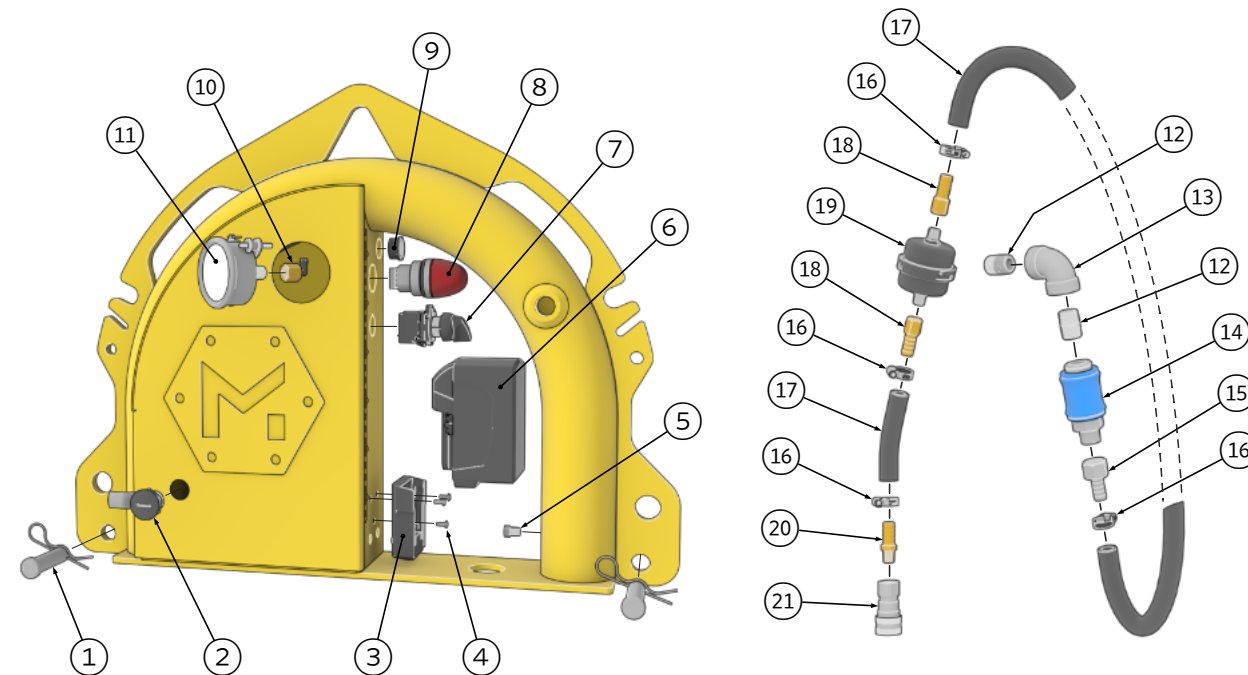
The Mini Mk2 vacuum lifter is covered by a 1 year limited warranty on workmanship and quality. Items not covered by the warranty include consumables such as the vacuum pad seals, battery packs, filters, and any damage through the neglectful or improper use of the vacuum lifter.

The warranty will be voided if the product is not operated, serviced, and inspected according to this manual. Repairs under warranty may only be carried out by qualified personnel after consulting MQUIP Group. Any modifications to the product or the use of non-original parts will void the warranty.

9. Battery disposal

The product contains a lithium ion battery. Batteries may not be disposed of with domestic waste. They may contain toxic heavy metals and are subject to hazardous waste regulations. To dispose of the battery, please contact your local battery recycling depot for environmentally safe disposal.

10. Replacement parts



Item	Qty.	Description
1	2	5/8" x 2 1/2" clevis pin with cotter pin
2	1	Cam latch
3	1	Battery mount
4	3	#8-32 x 3/8" button head cap screw
5	1	1/8" NPT pipe drain plug (rear)
6	1	Li-Ion battery pack
7	1	22mm panel mount lever switch, SPST-NO
8	1	LED alarm light and buzzer
9	1	Breather vent
10	1	90° push connect elbow, 5/32" tube OD x 1/4" NPT female
11	1	Liquid filled vacuum gauge
12	2	SCH 80 1/2" NPT x 1 1/8" steel pipe
13	1	SCH 80 1/2" NPT 90° elbow
14	1	Slide valve
15	1	Barbed hose fitting, straight, 1/2" tube ID x 1/2" NPTF female
16	4	Worm drive clamp, 5/16" width, 5/16" to 1 1/16" ID
17	26 in	PVC plastic air tubing with steel wire coil, 1/2" ID x 13/16" OD

Item	Qty.	Description
18	2	Barbed hose fitting, straight, ½" tube ID x ¼" NPTF female
19	1	Inline air intake filter
20	1	Barbed hose fitting, straight, ½" tube ID x ¼" NPTF male
21	1	ISO-B hose coupling, ¼ size, sleeve-lock socket, ¼ NPTF female

11. Product & order information

Standards: ASME B30.20 using ULC/CSA approved components.

Harmonized code: 8428.90

Made in Canada with domestic and imported parts.

Self weight, lifter only (without pad): 60 lb

Information	Value
Model	Mini Mk2
Serial number	
Date of construction	

Vacuum pads

Vacuum pad	Size		Horizontal lifting capacity at -60 kPa		Self weight		Included
	cm	in	kg	lb	kg	lb	
90/45	90 x 45	35½ x 17¾	1,000	2,200	33	73	
60/60	60 x 60	23½ x 23½	906	1,995	21.3	45	
90/30	90 x 30	35½ x 11¾	636	1,400	20	45	
70/30	70 x 30	27½ x 11¾	454	1,000	13	29	
40/40	40 x 40	15¾ x 15¾	363	800	11	24	
60/25	60 x 25	23½ x 10	300	660	11	24	
30/30	30 x 30	11¾ x 11¾	187	412	9	20	
85/14	85 x 14	33½ x 5½	292	643	10	22	
91.5/11.5	91.5 x 11.5	36 x 4½	159	350	13	28	

12. Document revisions

Revision	Date	Description
1	March 15, 2021	Initial publication.

13. Notes

