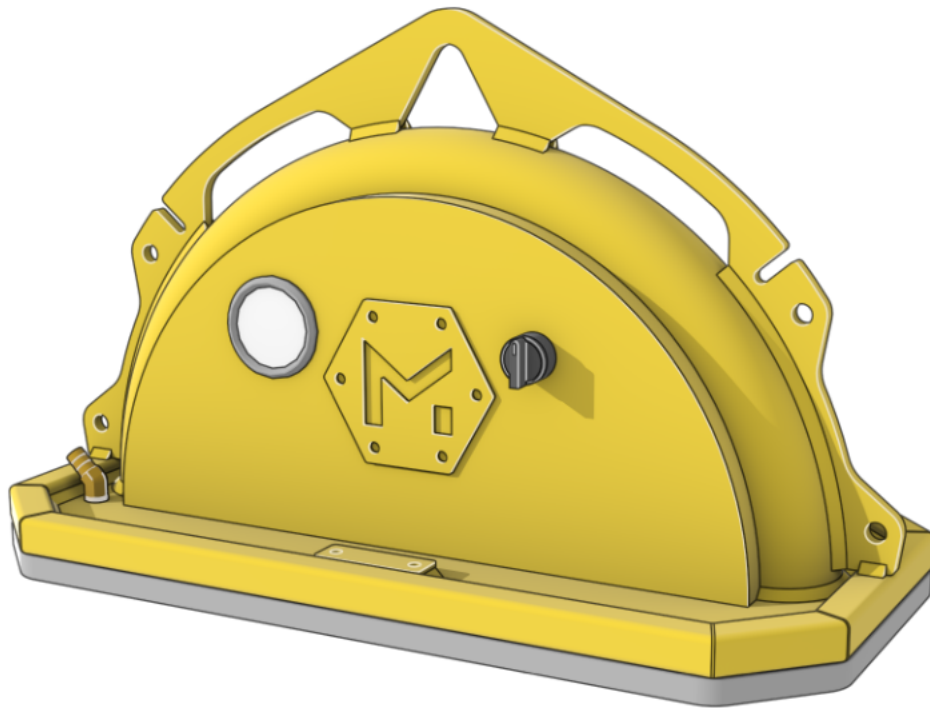




Micro Vacuum Lifter User Manual



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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 Micro lifting device. This operator's manual must always be available at the operation site or with the lifter. The Micro is made to handle nonporous, inanimate products, close to the ground, and not exceeding the stated capacity of the lifter unit.

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



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 the lifter unit.
- 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 lifter's rated capacity as marked on the lifter. Ensure the load is centered and does not cause the lifter to tilt.
- 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, including but not limited to the lifting unit and load.
- A handle with control valve and filter is required to operate the Micro.
- For manual lifting, always use the manual lift handles, and always lift with 2 people.
- When lifting using a crane or other equipment, use only a machine lift handle, which is designed to guide the load but not support weight.
- 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 Micro lifter or the battery pack in water.

1.3. Gauge

There is a vacuum pressure gauge on the front of the lifting unit. 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. When the gauge needle is not in this range, the load is not safe to lift. 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 MQUIP Micro is one of many vacuum lifting devices offered by MQUIP Group. The Micro assists in moving nonporous loads up to 454 kg (1,000 lb). Loads can be lifted by machine or manually depending on the handles attached. The Micro 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 and durability.

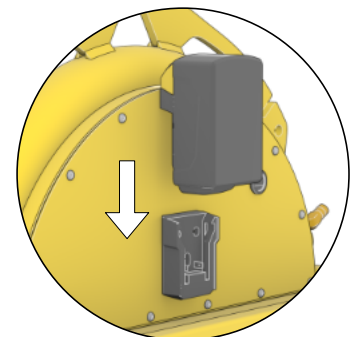
Central to the use of the Micro are the available handle sets, which integrate the filter and valve required for operation. A control handle must always be installed prior to use. Handles are available which facilitate either machine lifting or manual 2-person lifting.

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

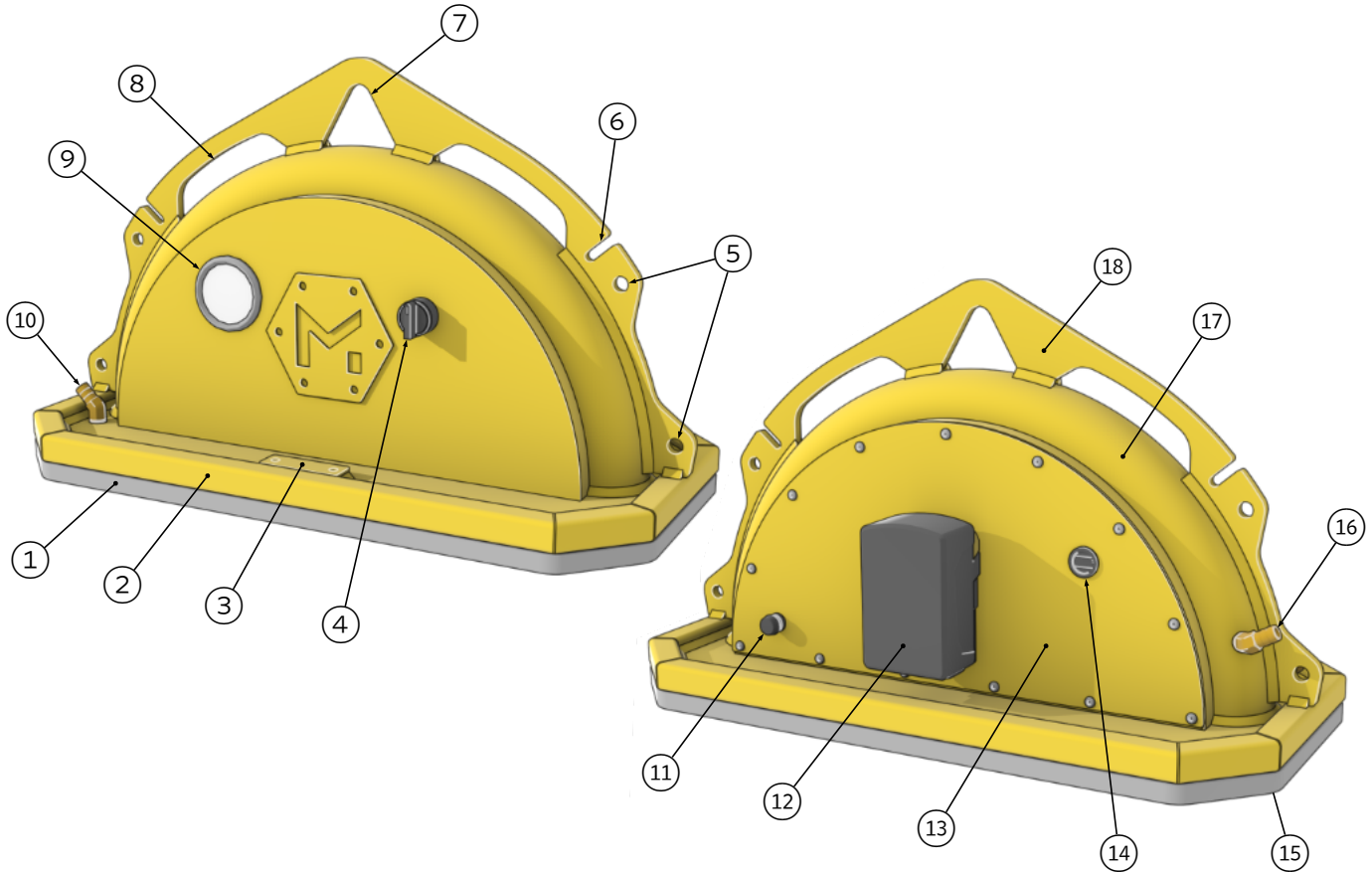
If any part of this manual is unclear, or there is an issue with the lifting unit, please contact our support staff at (905) 315 1955.

2.2. 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.



2.3. Main components

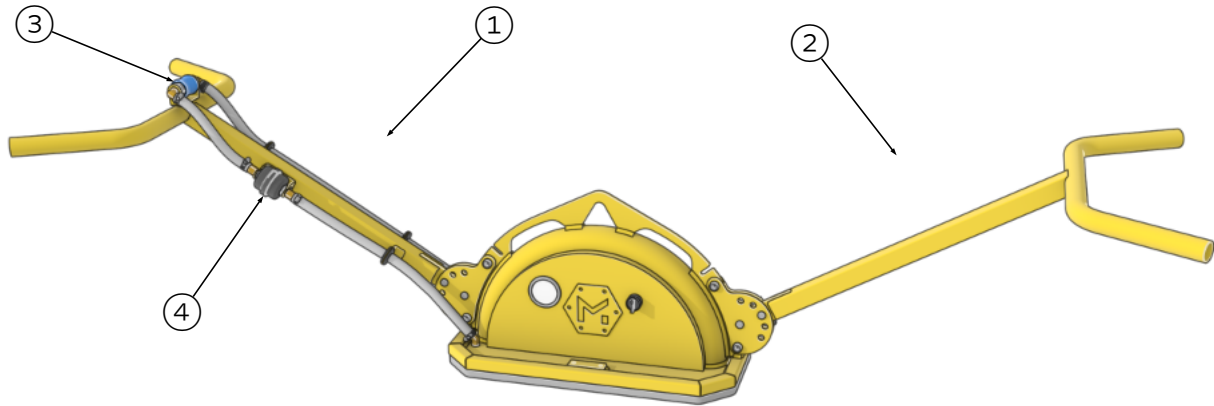


- | | |
|-----------------------------------|---|
| 1. Vacuum pad seal | 10. Hose connection - pad |
| 2. Vacuum pad tubing | 11. Fuse |
| 3. Front handle mount point | 12. 18V li-ion battery pack |
| 4. Main power switch | 13. Rear cover |
| 5. Side handle mount points | 14. Breather vent |
| 6. Secondary restraint chain slot | 15. Reservoir drain plug (underneath, both sides) |
| 7. Lift point | 16. Hose connection - reservoir |
| 8. Transport handles | 17. Vacuum reservoir tube |
| 9. Pressure gauge | 18. Chassis spine |

The Micro lifting unit contains electronic and pneumatic components which create a vacuum inside the reservoir tube (17). However, the control valve and filter needed to connect the reservoir to the vacuum pad are built into separate handle sets. Therefore, a control handle is always needed to operate the Micro. The next section will describe the various handles and their use.

3. Manual Lifting Handles

3.1. Overview

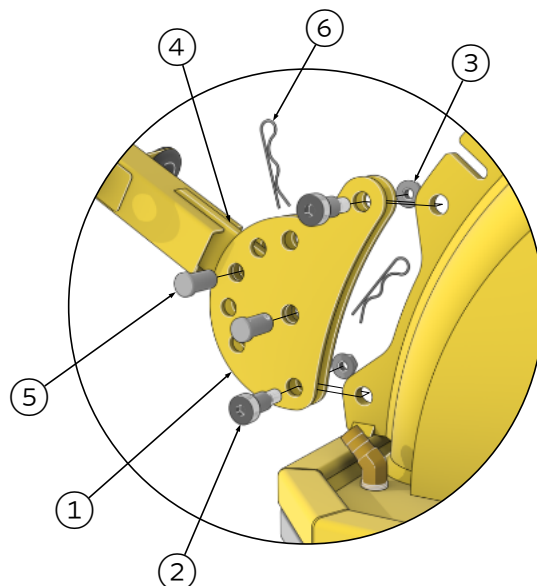


The manual lifting handle set includes a control handle ① and a non-control handle ②. The control handle features a slide valve ③ and an air filter ④.

3.2. Mechanical assembly

1. Position the side plates ① on the Micro and fasten them tightly with the shoulder screws ② and nuts ③.
2. Insert the handle shank ④ between the side plates ① and secure with clevis pins ⑤. Lock the clevis pins with hairpin cotter pins ⑥.

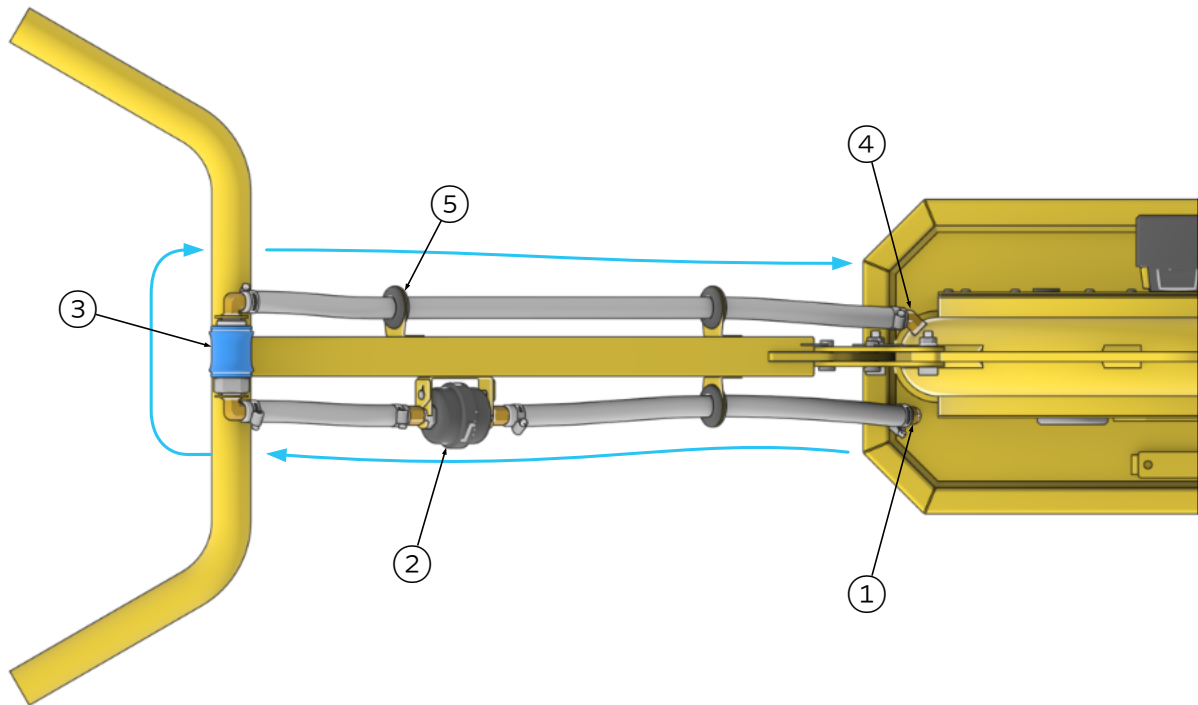
This process is the same for the control and non-control handles. The angle of the handles can be changed by removing the outermost clevis pin, pivoting the handle, and reinstalling the pin. The position shown (third hole from the bottom) provides the most ergonomic lifting.



3.3. Pneumatic assembly

The control handle pneumatics may arrive mostly assembled, leaving only the hose connection to be made during user assembly. It is important that the pneumatic components are connected in the correct order. Following the path of air flow during use, the order is:

Vacuum pad ① → Air filter ② → Slide valve ③ → Reservoir tube ④



The blue arrows show the flow of air during operation.

Ensure that the hex on the slide valve is towards the air filter/vacuum pad side, and that the hose passes through the grommets ⑤.

To attach the hose to the Micro, first slide hose clamps over the free ends of the hose. Then, push the hose over the barbed fittings. Position the hose clamps over the barbed fittings and tighten.

⚠ WARNING The handles must be carefully and correctly assembled! Ensure there are no leaks, kinks in the air hose, or loose bolts. Ensure that the slide valve is installed in the correct orientation. Safe operation of the Micro depends on proper control handle installation. Improper assembly can result in damage and/or sudden release of the load.

3.4. Operating instructions

Use the manual lifting handles to lift lightweight loads with 2 people. One person stands behind each handle, and the person behind the control handle is responsible for using the slide valve to collect and release the load. In this section, “left” and “right” are from the perspective of the user behind the control handle.

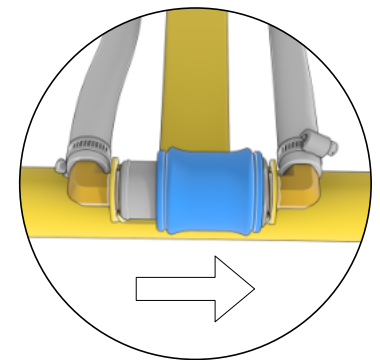
1. Close the slide valve by sliding it left (as shown on the next page). Ensure that the control handle and non-control handle are both properly installed per section 3.2 and section 3.3. Perform the “each lift” inspections (and others when appropriate) listed in section 5.2, Inspection.
2. Power on the lifter by inserting a charged battery pack and turning on the main power switch.
3. The vacuum pump will create a vacuum in the reservoir and turn off once it has created a sufficient vacuum. The pump may cycle to maintain a safe vacuum. When the pressure gauge reads a vacuum of at least -60 kPa, shown by the green zone on the gauge, the load is safe to lift.
4. 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 Micro and any supporting equipment.



WARNING

Do not exceed the rated capacity of the lifter! Doing so may damage the lifter and drop the load. Even if the lifter is not damaged, the load may suddenly be released.

5. 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.
6. Open the slide valve by sliding it to the right. The vacuum pad and reservoir are connected, and the vacuum pump will run to pull a vacuum through the pad, compressing the pad seal.
7. When sufficient vacuum has been reached, 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 right to collect load.



WARNING

If 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 6, Troubleshooting.

8. If the load is somewhat porous, the vacuum pump may run continuously. If 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 cautiously - low to the ground, and not for an extended period of time. If a fault occurs in this situation, there is very limited time to lower the load before the vacuum is lost.

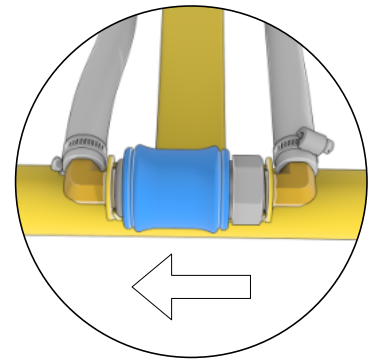


WARNING

It is critical to monitor the pressure gauge at all times during a lift. If 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.

9. Position and lower the load. Slide the valve to the left 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.

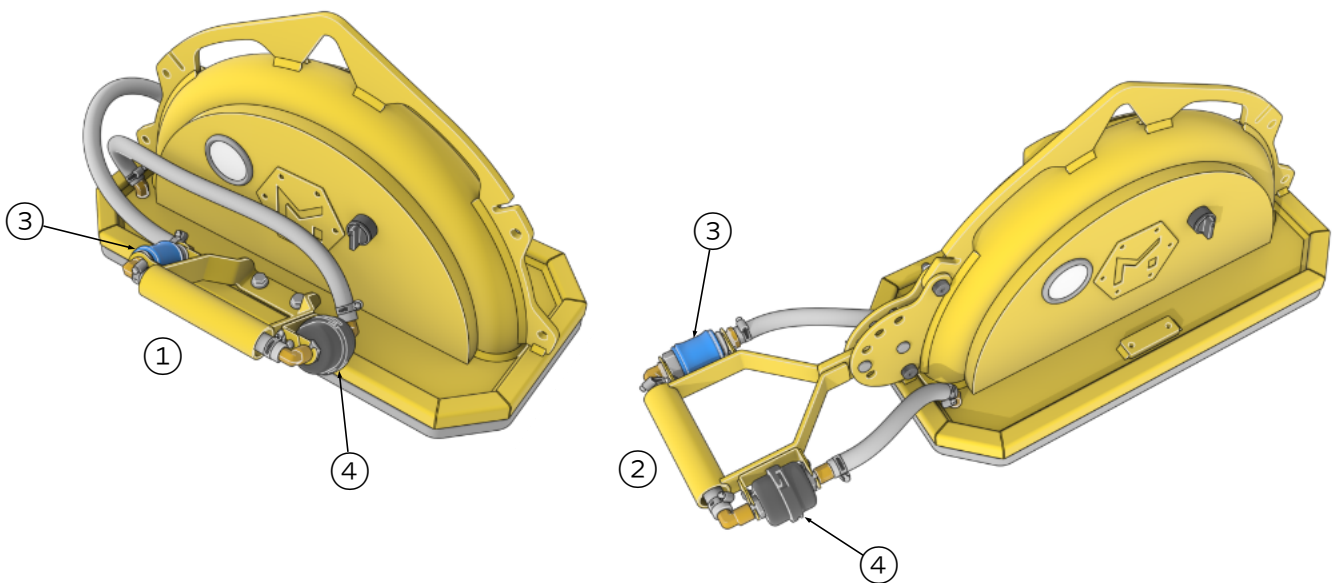


Slide left to release load.

4. Machine Lifting Handles

4.1. Overview

There are 2 handles which may be used to guide the Micro when it is being lifted by other equipment: the front stub handle ① and the side stub handle ②.



Both feature a slide valve ③ and an air filter ④. The front handle is fixed, while the angle of the side handle can be adjusted. Select the handle best suited to the orientation of the load. Only one of these handles can be used at a time.

4.2. Mechanical assembly

The side handle is assembled in the same way as the manual control handles, see section 3.2 for instructions.

To assemble the front handle, secure it to the front handle mount point using the included bolts.

4.3. Pneumatic assembly

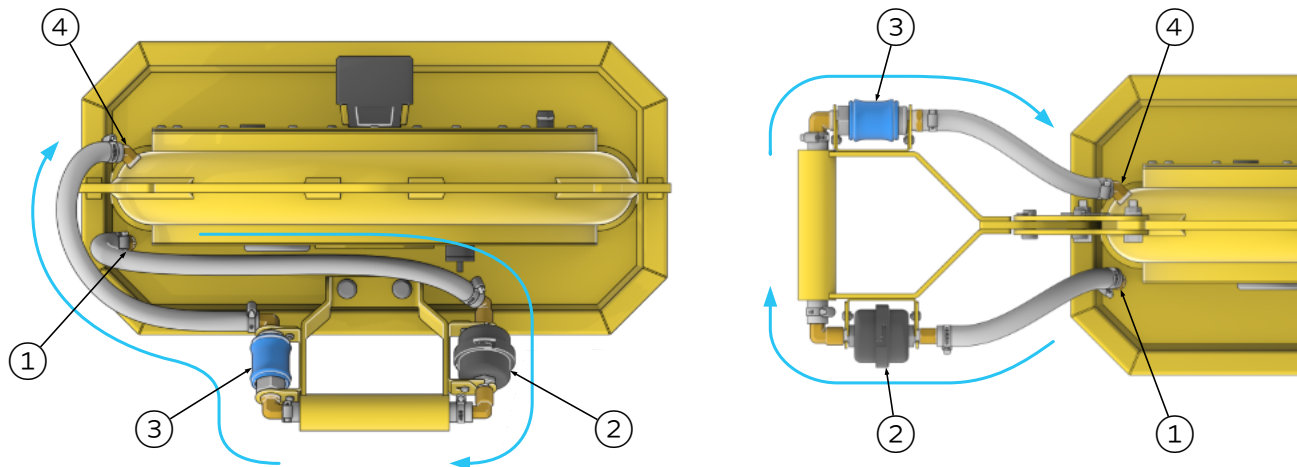
The pneumatics on both handles may arrive mostly assembled, leaving only the hose connection to be made during user assembly. It is important that the pneumatic components are connected in the correct order. Following the path of air flow during use, the order is:

Vacuum pad ① → Air filter ② → Slide valve ③ → Reservoir tube ④

The blue arrows show the flow of air during operation.

Ensure that the hex on the slide valve is towards the air filter/vacuum pad path.

To attach the hose to the Micro, first slide hose clamps over the free ends of the hose. Then, push the hose over the barbed fittings. Position the hose clamps over the barbed fittings and tighten.



⚠ WARNING The handles must be carefully and correctly assembled! Ensure there are no leaks, kinks in the air hose, or loose bolts. Ensure that the slide valve is installed in the correct orientation. Safe operation of the Micro depends on proper control handle installation. Improper assembly can result in damage and/or sudden release of the load.

4.4. Operating instructions

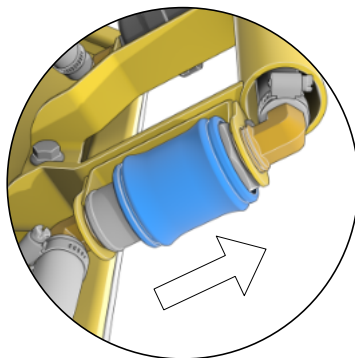
Use the machine lifting handles to guide and control the Micro while other lifting equipment fully supports the weight of the lifter and load.

WARNING Do not use the machine lifting handles to support the weight of the Micro or load! These handles are designed only to guide the load and control the Micro.

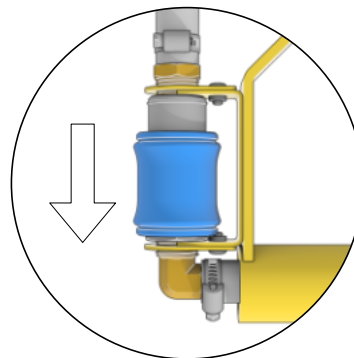
1. Close the slide valve by sliding it towards the Micro. Ensure that either the front or side stub control handle is properly installed per section 4.2 and section 4.3. Perform the “each lift” inspections (and others when appropriate) listed in section 5.2, Inspection.
2. Power on the lifter by inserting a charged battery pack and turning on the main power switch.
3. The vacuum pump will create a vacuum in the reservoir and turn off once it has created a sufficient vacuum. The pump may cycle to maintain a safe vacuum. When the pressure gauge reads a vacuum of at least -60 kPa, shown by the green zone on the gauge, the load is safe to lift.
4. 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 Micro and any supporting equipment. Use only the top central lift point to hoist the Micro with other lifting equipment.

WARNING Do not exceed the rated capacity of the Micro or supporting equipment! Doing so may damage the lifter and drop the load. Even if the lifter is not damaged, the load may suddenly be released.

5. 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.



Front handle:
Slide out to collect load.



Side handle:
Slide out to collect load.

6. Open the slide valve by sliding it out and away from the Micro. The vacuum pad and reservoir are connected, and the vacuum pump will run to pull a vacuum through the pad, compressing the pad seal.
7. When sufficient vacuum has been reached, 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.

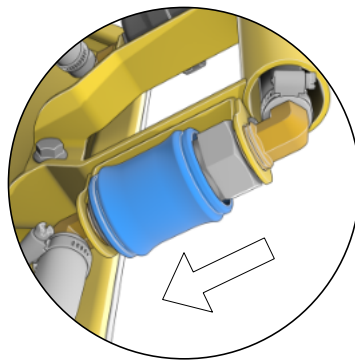
WARNING

If 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 6, Troubleshooting.

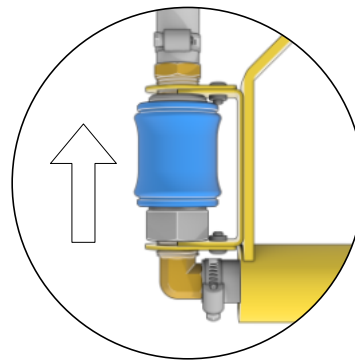
- If the load is somewhat porous, the vacuum pump may run continuously. If the pressure gauge indicates that the vacuum level is in the green safe zone, but the vacuum pump runs continuously, the load may be lifted cautiously - low to the ground (within 2 feet), and not for an extended period of time. 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 monitor the pressure gauge at all times during a lift. If 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.



Front handle:
Slide in to release load.



Side handle:
Slide in to release load.

- Position and lower the load. Slide the valve in towards the Micro 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.

5. Maintenance

5.1. 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 hoses and fittings are properly installed 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 454 kg or 1,000 lb. A visual inspection should be sufficient to see if any damage has occurred. Check for wear on the lift point, dents in the reservoir tube, and degradation of the enclosure seal. If maintenance is required, contact MQUIP Group.

Battery

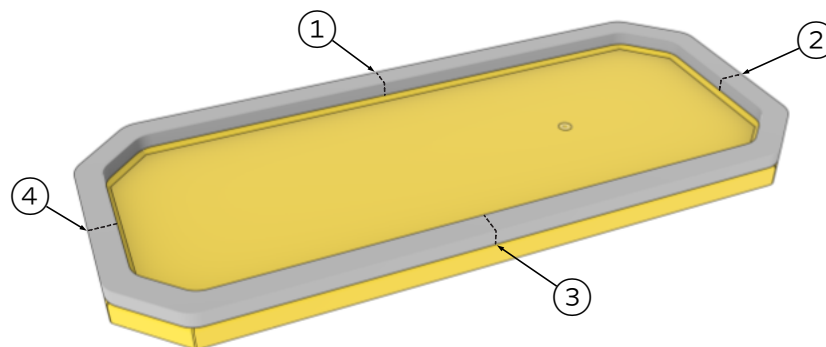
Li-Ion battery packs are available with either a 5 amp hour (Ah) or 9 Ah capacity. Charge all batteries with the supplied charger. If a battery does not hold a charge, contact MQUIP Group for replacement.

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 pad seal

Check the vacuum pad seal 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 chassis.

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.



5.2. 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 the pressure gauge is 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, handles, 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 plugs on the underside of the lifter.
- If the lifter has been used in a dusty environment for a prolonged period, replace the filter.
- Lubricate the slide valve if needed.
- Check that the pressure switch is actuating the pump at an appropriate set point (the pump should shut off partway into the green zone). 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 chassis, vacuum pad, and seal for cracks, corrosion, degradation, and excessive wear.
- Vacuum test the unit and ensure it maintains a proper working vacuum level.
- Check that the pressure switch is properly activating the pump.

- 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.

5.3. 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 manual handle set can also be used to move the lifter. The adjustable handles can be raised to the highest angle for storage.
3. 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.

6. 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: 5A, 5mm x 20mm, time delay glass tube fuse
	Loose wire, damaged connection or components.	Inspect components inside rear panel. 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 5.1, Components, Vacuum pad seal.
	The inline air intake filter is plugged, preventing effective airflow.	Replace the filter insert. Note that the filter cannot be cleaned.
	There is a leak in the air hose or fittings.	Check all air hose and connections. Tighten or seal leaking connections, and replace sections of leaking air hose.
	The battery is not charged.	Check the charge level on the battery and replace if needed.
	The pump turns off too early.	The pressure switch may be incorrectly set. Contact MQUIP Group for recalibration.
	Water in the air system is causing blockages.	Drain the reservoir through the reservoir plugs on the underside of the lifter.

7. Warranty

The Micro 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 seal, 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.

8. 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.

9. 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: 55 lb

Information	Value
Model	Micro
Serial number	
Date of construction	

10. Document Revisions

Revision	Date	Description
1	January 11, 2022	Initial publication.

11. Notes

