

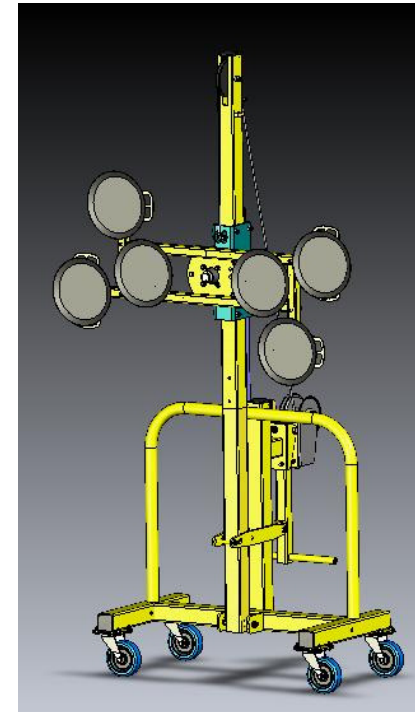


QUATTROLIFTS MULE

Operating Procedures

Operation, Safety and Maintenance Instructions

www.quattrolifts.com



**READ THIS BOOKLET BEFORE USE
KEEP IN A SAFE PLACE**



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PRE-USE CHECK OF THE QUATTROLIFT MULE - Make multiple copies			
IMPORTANT: CHECK THE FOLLOWING ITEMS BEFORE EACH USE			
Please place a tick against each <i>item</i> to check and make comments where necessary regarding corrective action.			
DO NOT USE THE MACHINE IF ANY OF THE FOLLOWING ITEMS ARE DAMAGED	OK	Not OK	Comments
Vacuum cups - the rubber cup edges for damage (cut or bent) & the filter is in place			
Vacuum cups - the vacuum pump and air lines are working . Attach the Mule vacuum cups to glass that is on a dolly and turn the pump switch to ATTACH and observe if the needle moves to the GREEN zone. Wait until the needle starts to move back towards the RED zone. The vacuum pump should re-start BEFORE the needle reaches the RED zone.			
Vacuum cups - the arms holding the cups (for weld fractures or dents)			
Castors - the brakes work effectively (engage the brake and move the Mule to see if the wheel locks; make sure the castor brake locks securely and does not disengage.			
Winch - Unwind the cable and make sure that the cable is firmly attached to the winch drum.			
Winch - Inspect the cable for damage or fraying then rewind the cable back onto the winch drum with the cable under hand held tension			
Winch - Handle (general inspection for damage)			
Sliding head - Head slides up and down easily when winding the winch.			
Sliding head - test the emergency brake by using two people to manually lift the sliding head and the emergency brake should lock suspending the sliding head while the cable is NOT under tension			
Rotating Head - Inspect the nylon cable that it is not frayed and the Rotating Head spins freely			
Rotating Head - Check that the locking pin slides in and out easily.			
Battery & Power Cables - Ensure Voltmeter needle is above 11 Volts and test and tag all power cords as required by your Health & Safety Regulations.			

EMPLOYER TO COMPLETE WITH EACH EMPLOYEE LIKELY TO USE THE MULE

Prior to allowing any employee to use the Mule, you and the employee should sign and file a copy of this page to help ensure that the Mule is used and maintained as outlined in the **Quattrolifts Mule Operating Procedure**.

The Mule will only be used and maintained as stated in the "Quattrolifts Mule Operating Procedure"

If you or your employees are unsure of any facet of the use of the Mule contact your distributor or Quattrolifts directly or via their website for further information.

I _____
(Employee's Name)

have read and understand the "Quattrolifts Mule Operating Procedures" and will use the Mule as stated in the "Quattrolifts Mule Operating Procedures"

Employer to Sign

Employee to Sign

Date

OVERVIEW

The Quattrolifts Mule, with the 6 vacuum cups in operation, is designed to assist glaziers handle glass weighing up to 660 lbs inside a shop, warehouse or factory with smooth ground. The Mule can be used to load glass onto truck ledges, dollies and edgework machines.

After the operators have been trained and are competent in its use, the functions listed in this manual can be performed using the Quattrolifts Mule. The appropriate procedures MUST be read and understood before using the Mule in any situation.

As a minimum, the employer must initially allocate at least two people when using the Mule until they both feel confident with its use. Quattrolifts recommends that for glass weighing in excess of 300 lbs two people should be used to move the Mule with glass.

WORKING LIMITS OF THE MULE

The Mule...

- Requires competent people for its safe operation
- Can lift 660lbs with six (6) vacuum cups in operation.
- Can lift 550lbs with four (4) vacuum cups in operation.
- Can lift 330lbs with two (2) vacuum cups in operation.
- Can lift laminated or tempered glass up to 180" . Lifting glass in excess of these dimensions may cause the Mule to become unstable and may cause the glass and machine to tip.

Generally, one person can operate the Mule if the glass weighs less than 300 lbs and the ground is smooth.

ASSEMBLING THE MULE

It is recommended that a forklift or overhead crane is used to assist with assembling the Mule. The Mule can be assembled in two configurations depending on the design, machine layout or limitations within your working environment.

1. The **Mule can be assembled without Counterweights** by using the Front Extension Legs. This will make the Mule easier to move (because it is lighter) however the footprint is larger 39" x 39" and the front legs may become an obstruction when moving into a tilt table or storage rack
2. The **Mule with Counterweights** has a smaller footprint of 24" x 39" and will be more maneuverable in smaller areas.

ASSEMBLING THE MULE - CONT.....

Mule Without Counterweights

Without Counterweights, the silver Front Leg Extensions will be used (see photo A)

1. Lift the Mule by forklift or overhead crane using the Mule handle bar as a lifting point
2. Attach the rear castors using the bolts and nuts supplied.
3. Slide the silver Front Extension Legs and lock them with the large black bolt and nut.
4. Lower the Mule onto the castors
5. Insert the top mast into the base column (be sure that the cable is on the top pulley).
6. Attach the steering handle
7. Wind up the cable on the winch so the cable is evenly layered (to prevent cable damage)
8. Recharge the battery



Mule With Counterweights (photo B)

1. Lift the Mule by forklift or overhead crane using the Mule handle bar as a lifting point
2. Remove the two castors from the silver Front Extension Legs.
3. Attach the front and rear castors using the bolts and nuts supplied on the base of the Mule (as seen in photo B)
4. Lower the Mule onto the castors
5. Insert the top mast into the base column (be sure that the cable is on the top pulley).
6. Attach the steering handle
7. Remove the bolt which locks the Counterweight Swing Arm
8. Calculate the required counterweight based on using:

2 Lbs Counterweight for 4 Lbs Glass

9. Wind up the cable on the winch so the cable is evenly layered (to prevent cable damage)
10. Recharge the battery



ROUTINE MAINTENANCE OF THE QUATTROLIFT MULE PERFORMED BY AN ACCREDITED REPAIRER

CONTACT YOUR RETAILER – The Mule should be inspected every 6 months to ensure all critical components are in good working order and is safe to use. Failure to check these items could result in the Mule failing and causing an injury.

The following items MUST be checked:

Frame

- Inspect the frame for weld fractures or rust or dents
- All bolts and nuts are in place and in good condition
- Pulley is in good condition
- Counterweight arm swings without restriction

Vacuum cups

- the cup edges for damage (i.e. cut or bent)
- the vacuum pump and air lines are working (each vacuum cup attached to glass to ensure vacuum is maintained)
- the arm holding the vacuum cups (for weld fractures or dents)
- Ensure the battery voltmeter maintains charged between 11 & 13 V

Castors

- the wheels for damage (cut or worn)
- the brakes work effectively (with a sheet of glass on the Mule lock each castor and push the frame to ensure the wheel doesn't turn)
- Axle bolts are tight and in good condition

Winch

- While pulling on the cable unwind the winch handle (counter clockwise) and inspect the cable for fraying or damage
- Handle (general inspection for damage)
- Winch winds easily

Sliding head

- Head slides up and down easily when winding the winch (check the rollers moving up and down the mast)
- Test the sliding head emergency brake by using two people to manually lift the sliding head and the emergency brake should lock suspending the sliding head while the cable is NOT under tension

Rotating Head

- Inspect the cable attached to the Rotating Head locking pin to ensure that it is not frayed
- Inspect the frame for weld fractures or rust or dents
- Test the locking pin to ensure it works well when rotating a load

DISCLAIMER

The Mule **MUST** be used in accordance with these Operating Procedures. Prior to the use of the Quattrolifts Mule all operators **MUST** read carefully and understand the Quattrolifts Mule Operating Procedures. Prior to performing a task with the Mule conduct an appropriate Risk Assessment. Quattrolifts will not be liable for any personal injury or property damage if the Mule is not used strictly in accordance with the procedures as set out in this Manual.

Perform a *“PRE-USE CHECK OF THE QUATTROLIFT MULE”* as directed on page 15 before using the Mule daily. If you identify any problems notify your distributor immediately.

LIMITED WARRANTY

The Quattrolifts Mule and its associated components (referred to as the “Product”) are carefully constructed, thoroughly inspected at various stages of production, and individually tested. They are warranted to be free from defects in workmanship and materials for one year from the date of purchase. If a problem develops during the warranty period, the complete product and/or component **must** be returned to the Quattrolifts Distributor (*at customers expense*). If inspection shows that the problem is due to defective workmanship or materials, the product will be repaired or replaced without charge and returned at the expense of Quattrolifts.

WARRANTY WILL ONLY APPLY WHEN:

The Product is operated in strict accordance with “Quattrolifts Operating Procedure”. The Product is serviced and maintained as recommended in the “Quattrolifts Mule Operating Procedure” and that the appropriate service records are maintained.

WARRANTY DOES NOT APPLY WHEN:

- 2.1 Repairs are required due to abnormal wear and tear.
- 2.2 The product has been abused, misused or neglected.
- 2.3 Alterations have been made to the Product.

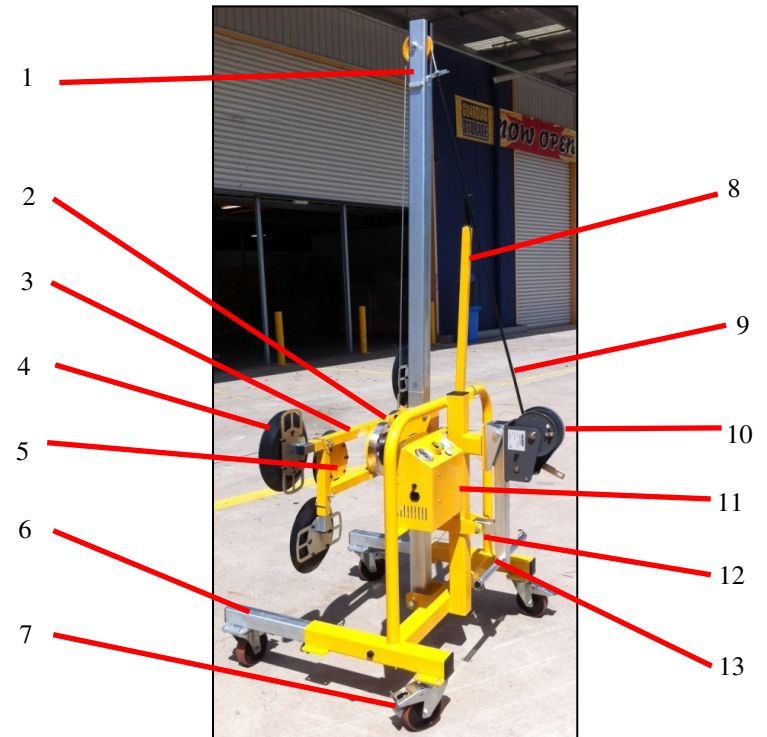
WARRANTY DOES NOT APPLY TO:

- 3.1 The vacuum lifters and cables.
- 3.2 Any defect which is caused by any modifications made to the Product without the written consent of Quattrolifts.

A problem not covered under warranty (*see items 2 and 3*) will be corrected automatically, unless the customer includes a written request for notification of costs prior to repair. Otherwise the customer assumes all responsibility for repair costs and agrees to receive the repaired Product on a ‘fee-for-service’ basis.

TO OBTAIN WARRANTY SERVICE: Call your Distributor and notify them of the defect

MULE & ROTATING HEAD COMPONENTS



LEGEND

- | | |
|--|---|
| <ul style="list-style-type: none"> 1. Mast & top pulley 2. Sliding head 3. Rotating Head (with spring loaded locking pin on other side) 4. Four large vacuum cups, each which can be removed 5. Two smaller vacuum cups that cannot be removed 6. Front Leg Extensions which are removable (allows for the Mule to be used without counterweights) | <ul style="list-style-type: none"> 7. Four castors with brakes 8. Fold down steering handle 9. Cable guard 10. Winch 11. Control panel and battery pack 12. Counterweight arm locking bolt 13. Counterweight arm |
|--|---|

IMPORTANT SAFETY PRECAUTIONS

- Do not lift any glass or material that the vacuum cups cannot attach to securely (see page 7).
- DO NOT USE THE MULE OVER GROUNDS THAT ARE INCLINED, SOFT OR CAUSE THE MULE WHEELS TO SINK OR MAKE THE MULE AND GLASS UNSTABLE.
- All operators of the Mule must read and understand these Operating Procedures carefully. The MULE MUST ONLY BE USED BY COMPETENT USERS.
- Operators of the Mule must not wear loose clothing and MUST have long hair tied back or under a cap.
- Ensure that there is sufficient lighting for operators of the Mule to read the control panel and see the glass engage with the vacuum cups
- DO NOT USE THE MULE TO LIFT GLASS THAT IS UNSTABLE OR MAY BREAK potentially injuring a person.
- The metric weight of glass can be calculated by using this formula:
WEIGHT (KG) = Width (mtr) x Length (mtr) x Thickness (mm) x 2.5

PERSONAL PROTECTIVE EQUIPMENT (PPE)

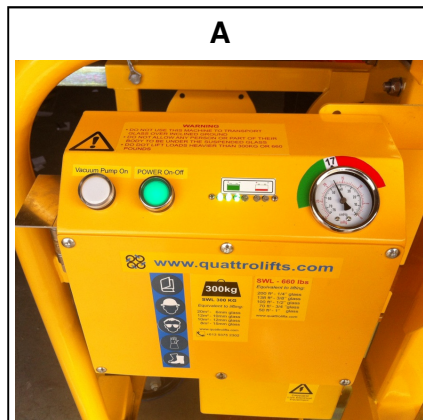
Consult with your employer to identify what PPE you must wear when handling and installing glass using the Quattrolifts Mule.

As a minimum all users must wear: **Safety glasses; Safety Helmet, Glaziers Gloves; Safety shoes; Wrist cuffs.**

CHARGING MULE BATTERY

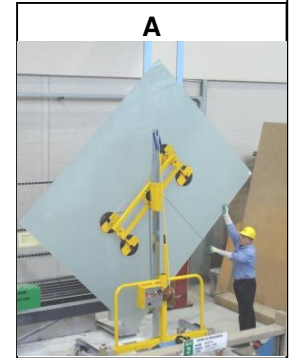
When you assemble the Mule, the battery will need to be recharged if the LED Indicator lights are RED. Remove the battery located under the Control Panel and attach the charger for at least FOUR hours.

The battery is fully charged when the Voltmeter displays three GREEN LIGHTS .



ROTATING GLASS WITH THE MULE

- Ensure that the two rear castors are locked so the Mule cannot move.
- Ensure that the needle on the vacuum gauge is in the GREEN zone above 17.
- In order to rotate glass safely, ensure that the vacuum cups are attached to the middle of the glass (see photo A).



NOTE: if the Mule is not attached to the middle of the glass, then safely place the glass down and re-attach the cups in the middle of the glass or use a second and third operator if required, to assist with rotation.

- The operators MUST stand behind (Mule side of) the glass when rotating the glass and NEVER in the same plane of the glass (should the vacuum cups release, the glass will fall potentially injuring an operator).
- Lift the glass edge slightly to release the pressure on the Rotating Head locking pin.
- ALWAYS rotate the glass SLOWLY.
- The locking pin is spring loaded so it will need to be pulled out until the desired position is reached.
- Slowly allow the locking pin to lock back into position.

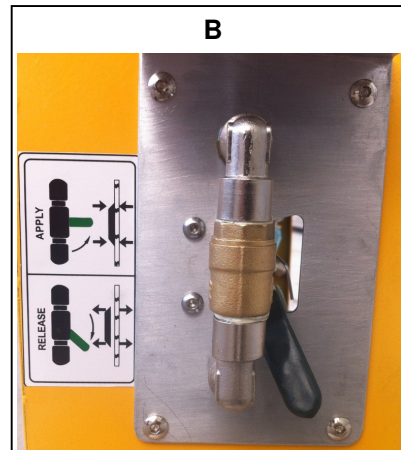
DO NOT LET THE GLASS ROTATE FREELY OUT OF CONTROL

RELEASING GLASS FROM THE MULE

- Move the Mule to the edgework machine or truck ledge.
- Ensure that the lower edge of the glass is directly above the ledge and using the winch start to lower the glass down (see photo A).
- Once the glass edge rests on the ledge, the mast will start to tip forward until the glass rests against the rack.
- Lock the rear castors
- You will notice that the tension in the winch cable will lessen indicating that the weight of the glass is being transferred to the ledge.



- Once the glass is resting against the rack and the winch cable is off tension, then the glass can be released.
- Move the vacuum switch to RELEASE (photo B) and the cups will slowly come off and the mast will move vertically.
- Once the Mule has safely released the glass, it can be moved away.



IMPORTANT SAFETY PRECAUTIONS

GLASS OVERHANG

The amount of allowable overhang of glass once the vacuum cups are attached to the glass will depend on the glass thickness and whether the glass has been damaged. Always thoroughly check the glass edges for chips or damage that may cause the glass to break as it is being handled by the Mule

If the glass is not damaged then the maximum overhang from the edge of the glass to the nearest vacuum cup edge is 50" see photo E – this distance MUST NOT exceed 50"

DO NOT USE THE MULE TO LIFT GLASS THAT IS UNSTABLE OR MAY BREAK.

MAKE SURE THAT THE GLASS IS CLEAN BEFORE ATTACHING THE MULE VACUUM CUPS



Before moving or handling glass with the Mule ensure that:

- the ground is clear of debris that may make the Mule unstable
- the area is clear of pedestrians
- a risk assessment is completed to reduce the risk of an injury
- the glass is clean and safe to lift
- the glass has been inspected and is stable and safe to lift
- the environment is NOT WINDY
- the battery is sufficiently charged (with the arrow on the Voltmeter reading above 11V)
- there are no overhead power lines or electrical cables

IMPORTANT SAFETY PRECAUTIONS

We at Quattrolifts have worked extensively to ensure that the risk of injury from using the Mule is minimised. The Mule should always be used and maintained (see page 15 for daily checks and page 13 for routine maintenance) as indicated in this MANUAL.

All people using the Mule **MUST** wear their Personal Protective Equipment (PPE) - see page 6.

WORKING POSITION

When operating the Mule, the operators **MUST** stand behind the glass (on the Mule control panel side as seen in photo A) and **NEVER** stand in the same plane or in front of the glass. By standing behind the glass the operators are in a safer position should the vacuum cups release and the glass fall.

VACUUM CUPS

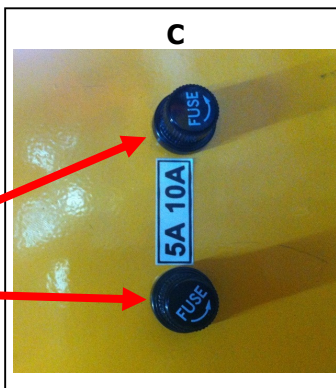
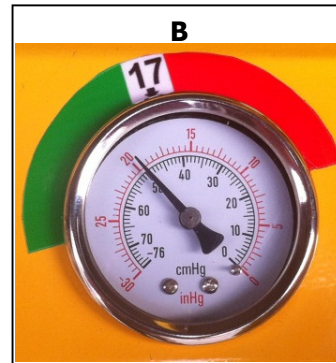
When operating the MULE check the vacuum gauge on the control panel often and ensure that the needle is in the GREEN ZONE above 17 (see photo B). If the needle is in the red zone, lower the glass as soon as safely possible and perform a Pre-Use Check (page 15).

FUSES

There are 2 fuses on the right side of the Control Box that need to be inspected.

A **10 Amp** fuse is for the Vacuum Pump

A **5 Amp** fuse is for the relay switch



USING THE QUATTROLIFT MULE TO LIFT & MOVE GLASS

- Make sure the glass is clean of dust so the vacuum cups will attach securely
- Press the power button so the light is ON
- Move the vacuum switch on the left side of the Control Panel to ATTACH
- Move the Mule to the glass and wind the winch up or down to position the center of the Rotating Head onto the middle of the glass.
- With one hand push the mast forward until all vacuum cups create a seal on the glass (see photo A).
- Observe the Vacuum Gauge Needle on the Control panel
- Once the arrow on the vacuum gauge moves to 17 or in the green zone, the glass is safe to lift (photo B).
- Lock the front and rear castors
- The operator then can slowly wind the winch to lift the glass.
- The first movement will be for the mast to move vertical before the glass lifts.
- Once the glass is securely attached to the Mule, lower the glass as safe as possible
- Release the castor brakes
- Fold down the steering handle and the Mule can be moved (see photo C).
- Use two people to move glass weighing more than 300 lbs

The MULE is NOT to be used on grounds that are inclined, soft and uneven that may cause the Mule to lose stability.

