

INTENDED FOR USE BY PROFESSIONAL EQUIPMENT OPERATORS

# OPERATING INSTRUCTIONS



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**! READ AND UNDERSTAND BEFORE  
OPERATING THIS EQUIPMENT**

APPLICABLE TO SERIAL NUMBERS 20231001  
AND LATER. FOR EARLIER NUMBERS,  
SEARCH WPG'S [ARCHIVE](#).



## MANUL ROTATOR, AC-VOLTAGE

Model numbers: MR49AC (shown),  
MR411LAC

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

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# SPECIFICATIONS

<b>Product Description</b>	Designed for use with hoisting equipment, MR4-AC lifters support loads using vacuum and manipulate loads using manual 360° rotation motions.	
<b>Model Numbers</b>	MR49AC	MR411LAC
<b>Vacuum Pads</b> (4 each; standard rubber <sup>1</sup> )	9" [23 cm] nominal diameter (Model VPFS9)	11" [28 cm] nominal diameter, lipped (Model G3370)
<b>Maximum Pad Spread</b> (to outer edges)	23½" x 29½" [60 cm x 75 cm]	26" x 32" [66 cm x 81 cm]
 <b>Maximum Load Capacity</b> <sup>2</sup>	Per pad: 125 lbs [56.5 kg] Total: 500 lbs [225 kg]	Per pad: 175 lbs [80 kg] Total: 700 lbs [320 kg]
 <b>Lifter Weight</b>	100 lbs [45 kg]	105 lbs [48 kg]
<b>Power Source</b>	See serial number plate for specific AC voltage, frequency and amperage.	
 <b>Rotation Capability</b>	Manual, 360°, with automatic locking at each ¼ turn (when required)	
<b>Product Options</b>	<i>Available with a Linear Pad Frame.</i> <sup>3</sup> Lifter Weight increases by 13 lbs [6 kg]. <i>Available with a Vacuum Lift Light.</i> Lifter Weight increases by 10 lbs [5 kg]. <i>Available with Individual Pad Shutoffs.</i> See separate instructions about other options.	
 <b>Operating Elevation</b>	Up to 6,000' [1,828 m]	
 <b>Operating Temperatures</b>	32° to 104° F [0° to 40° C]	
<b>Service Life</b>	20,000 lifting cycles, when used and maintained as intended. <sup>4</sup>	
<b>ASME Standard BTH-1</b>	Design Category "B", Service Class "0"	
<b>Troubleshooting Guide</b>	<a href="#">TST-016_GENERIC_LEAK_TEST_rev_2014-086</a>	

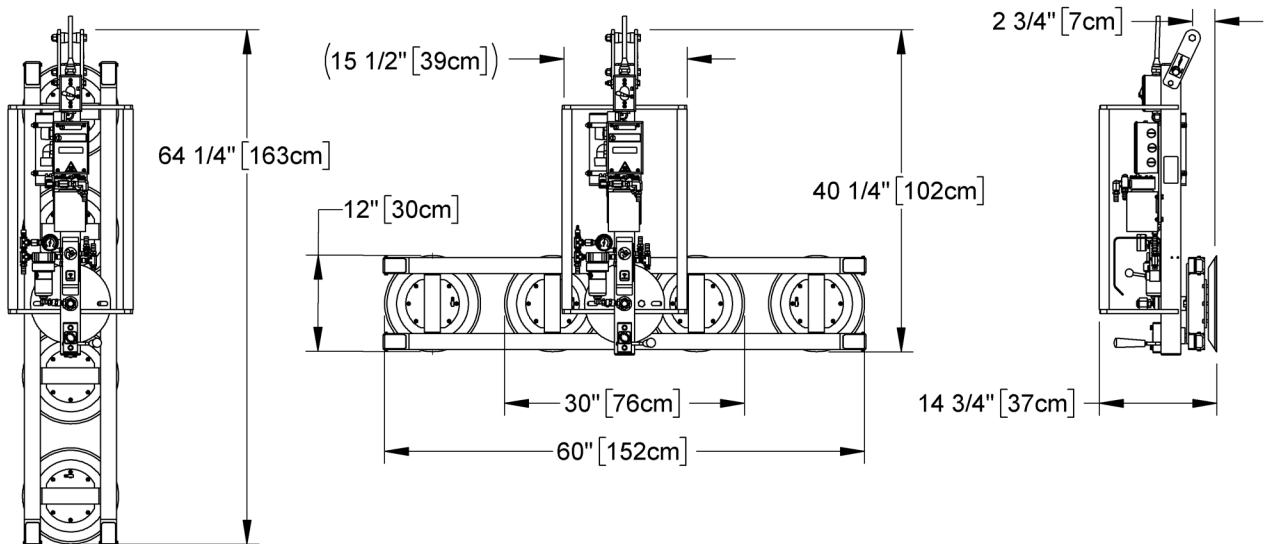
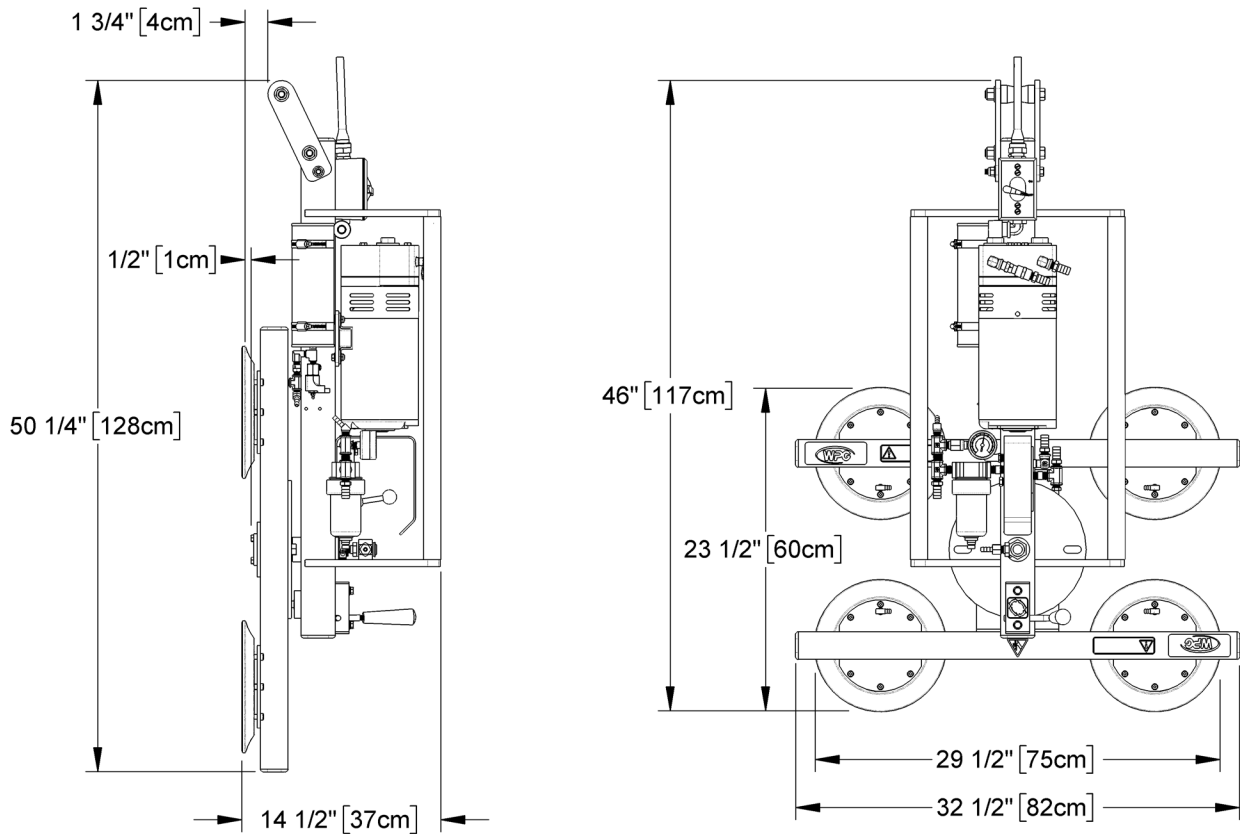
1..... Available with other rubber compounds for special purposes (see [wpg.com](#)).

2..... The Maximum Load Capacity is rated at a vacuum of 16" Hg [-54 kPa] on clean, smooth, nonporous flat surfaces with a friction coefficient of 1. Pad compound, load rigidity, strength, surface conditions, overhang, angle, center of gravity and temperature can also affect the lifting capacity. A "qualified person" should evaluate the effective lifting capacity for each use (see definition under "Rated Load Test").

3..... If a lifter has a Linear Pad Frame, the Maximum Pad Spread is 12" x 60" [31 cm x 153 cm].

4..... Vacuum pads, filter elements and other wear-out items are excluded.

# SPECIFICATIONS



*Notes: A model MR49AC (standard) is shown at top. A model MR411LACO (with optional Linear Pad Frame) is shown at bottom.*

# SAFETY



Wear personal protective equipment that is appropriate for the load material. Follow trade association guidelines.



Do not remove or obscure safety labels.



Do not make any modifications to the lifter (see “LIMITED WARRANTY”).



Use the lifter only in an approved “OPERATING ENVIRONMENT” (see “INTENDED USE”).



Make sure to consider all possible effects of “INDIRECT LOADING” on lifting capacity (see “INTENDED USE”).



Do not use a lifter that is damaged, malfunctioning, or missing parts.



Do not use a lifter if the sealing edge of any vacuum pad is cut or otherwise damaged.



Do not use a lifter to lift cracked or broken glass.



Do not exceed the Maximum Load Capacity or lift loads the lifter is not designed for (see “INTENDED USE”).



Do not use a lifter if the Maximum Load Capacity or any safety label appears to be missing or obscured.



Make sure the contact surfaces of the load and vacuum pads are clean before attaching the lifter (see “MAINTENANCE”).



Position the vacuum pads correctly on the load before lifting (see “OPERATION”).



Do not lift a load if any vacuum indicator shows inadequate vacuum.



Keep unauthorized personnel away from the lifter, to avoid injury in case of an unintended load release.



Do not touch the vacuum release controls during a lift.



Do not allow people to ride on the lifter or the load.



Do not lift a load higher than necessary or leave suspended loads unattended.



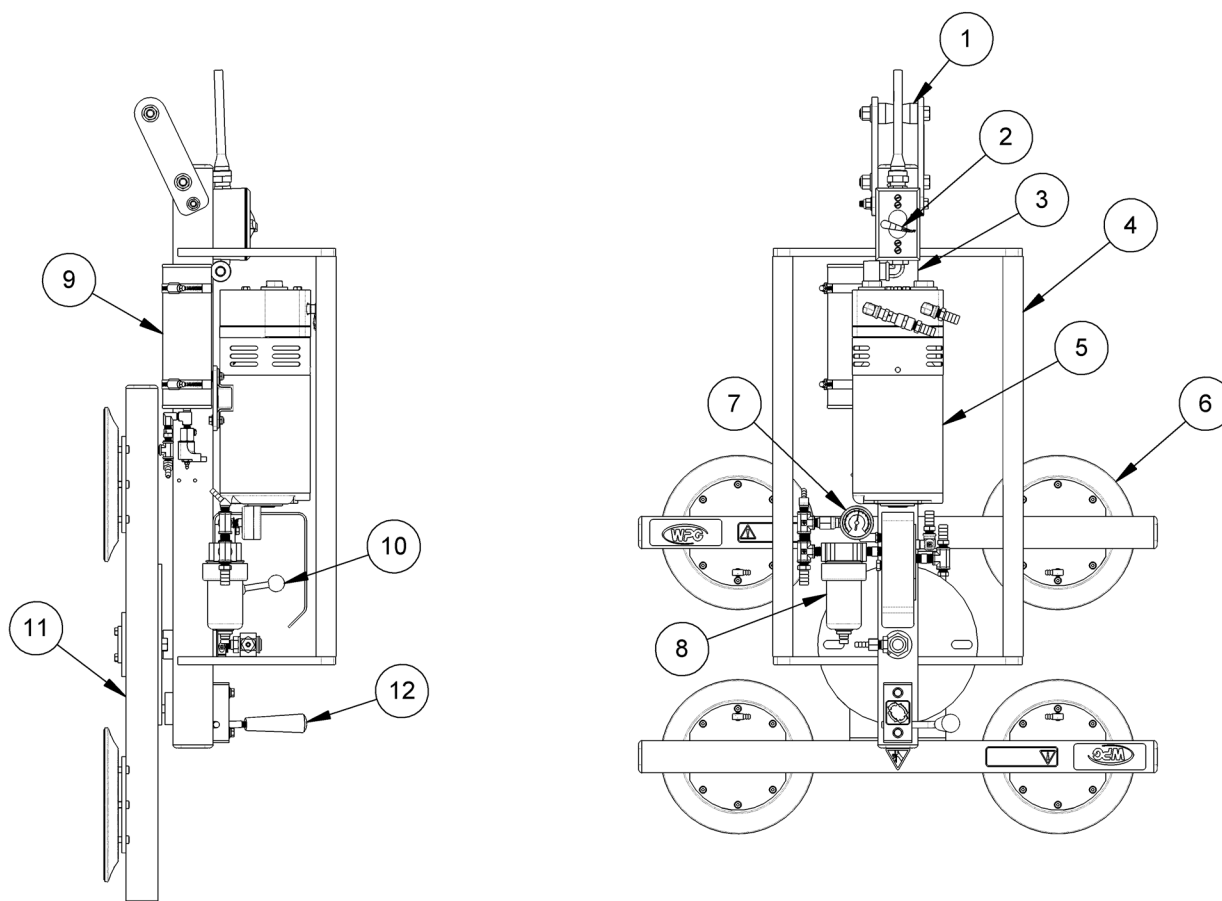
Do not position a loaded or unloaded lifter over people.



Before servicing a powered lifter, place the power control in the inactive position and, when possible, disconnect the power source.

# OPERATING FEATURES

Features shown here are underlined> on their first appearance in each section following.



- |    |                      |    |              |    |                        |
|----|----------------------|----|--------------|----|------------------------|
| 1  | LIFT POINT           | 2  | POWER SWITCH | 3  | LIFT BAR               |
| 4  | CONTROL HANDLE       | 5  | VACUUM PUMP  | 6  | VACUUM PAD             |
| 7  | VACUUM GAUGE         | 8  | AIR FILTER   | 9  | VACUUM RESERVE TANK    |
| 10 | VACUUM CONTROL VALVE | 11 | PAD FRAME    | 12 | ROTATION RELEASE LEVER |

Not shown: PARKING FEET

*Note: A standard MR49AC is shown. Although some of the following photos do not show this specific lifter, they all illustrate how this kind of lifter functions.*

For information about specific parts, see [“REPLACEMENT PARTS”](#) and/or any separate instructions for Product Options.



# ASSEMBLY

- 1) Remove all shipping materials and save them with the shipping container for future use.
- 2) Connect the power cable:



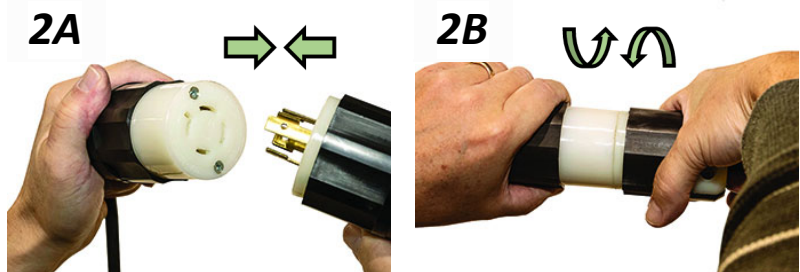
***Make sure power source has ground fault circuit interrupter.***

- 2.1) Wire the female connector provided to an appropriate power source, as indicated on the label attached.



***Wiring must be performed by qualified service personnel, taking all appropriate safety precautions.***

- 2.2) Route the power cable so that it does not become damaged during operation.
- 2.3) Insert the power cable's male connector into the female connector and twist to secure them together (figs. 2A-B).



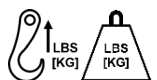
- 3) Adjust the lift point to optimize the lifter's hang angle (fig. 3A):<sup>1</sup>

- 3.1) Remove the retaining bolt and loosen the pivot bolt.
- 3.2) Move the lift point to the appropriate position.
- 3.3) Reinstall the retaining bolt and tighten both bolts securely.



- 4) Suspend the lifter from appropriate hoisting equipment:

- 4.1) Select a crane and/or hoist rated for the Maximum Load Capacity plus the Lifter Weight.



***Note: Any lifter use must comply with all statutory or regulatory standards for hoisting equipment in your region.***

1..... Moving the lift point *forward* (away from operator) helps keep the hang angle vertical while the lifter is *loaded*; moving the lift point *rearward* (towards operator) helps keep the hang angle vertical while the lifter is *unloaded*.

# ASSEMBLY

- 4.2) Manually move the lifter upright until it rests on the pad frame's integrated parking feet (circled in fig. 4A). Avoid damaging the vacuum pads.

4A



- 4.3) Attach the hoisting hook to the lift point (fig. 4B).



**Make sure hook has restraining latch (see arrow in fig. 4C).**

4B



4C



4D



*Note: Use rigging (fig. 4D) as needed to make sure the hook does not interfere with the load.*



**Only use rigging rated for Maximum Load Capacity plus Lifter Weight.**

- 4.4) Use the hoisting equipment to remove the lifter from the shipping container. Avoid damaging the vacuum pads.
- 5) Remove the pad covers (fig. 5A) and save them for future use.

5A



- 6) Perform tests as required under “**TESTING**”.

## LOAD CHARACTERISTICS

Make sure the vacuum lifter is intended to handle each load according to these requirements:



**Do NOT lift explosives, radioactive substances or other hazardous materials.**

- The load weight must not exceed the Maximum Load Capacity.
- The load must be a single piece of relatively nonporous material with a flat and relatively smooth contact surface.<sup>1, 2</sup> To determine whether the load is too porous or rough, perform the “[Lifter/Load Compatibility Test](#)”.
- The load's contact surface must be able to obtain a friction coefficient of 1 with the lifter's vacuum pads (see “[Pad-to-Load Friction Coefficient](#)”). Otherwise, the capacity should be derated appropriately.
- The load's surface temperature must not exceed the Operating Temperatures.<sup>3</sup>
- The load's *minimum* length and width are determined by the current Pad Spread (see “SPECIFICATIONS”).
- The load's *maximum* length and width are determined by its allowable overhang.<sup>4</sup>
- 1" [2.5 cm] is the allowable thickness at Maximum Load Capacity.<sup>5</sup>



*Note: Standard vacuum pads can stain or deform load surfaces with light colors or soft coatings. Test such surfaces for damaging effects before using the lifter on them.<sup>6</sup>*

1..... Although concave vacuum pads can also attach to some curved loads, curvature can reduce lifting capacity. Contact WPG for more information.

2..... A “single piece” of material includes curtainwall assemblies, unitized glazing systems and similar construction units.

3..... Vacuum pads made from a heat-resistant rubber compound can enable you to lift loads with higher surface temperatures. Contact WPG or an authorized dealer for more information.

4..... The allowable overhang is the amount of load material that can extend sideways beyond the vacuum pads without breaking or otherwise being damaged. This depends on the load material, its thickness, and the angle of handling (if any). Since every material has different physical properties, the allowable overhang must be evaluated separately for each load type. Contact WPG or an authorized dealer for more information.

5..... However, the allowable thickness increases as load weight decreases. Contact WPG for more information.

6..... Alternative rubber compounds are available for these purposes. Contact WPG or an authorized dealer for more information.

## INDIRECT LOADING

Make sure to account for dynamic loading or other inadvertent loading that can negatively affect lifting capacity, such as:

- Weight amplification that results when a loaded vacuum lifter abruptly starts/stops moving, changes direction or bounces up and down (eg, when a telehandler transports a loaded lifter across rough terrain).
- External force that effectively increases the weight of a lifter's attached load (eg, when a load of sheet material reacts to wind gusts).



**Indirect loading can reduce lifting capacity.**

## OPERATING ENVIRONMENT

Make sure the lifter is suitable for each work environment, given the following restrictions:

- This lifter is not intended for any environment that is dangerous to the operator or damaging to the lifter. Avoid environments containing explosives, caustic chemicals and other dangerous substances.

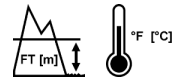


**Never use lifter in dangerous environments.**



**Metal particles and similar environmental contaminants could result in vacuum pump failure.**

- The work environment is limited by the Operating Elevation and Operating Temperatures.<sup>1, 2</sup>
- The lifter is not designed to be watertight. Do not use it in rain or other unsuitable conditions.



**Moisture can reduce lifting capacity.**

**CE/UKCA** — A secondary positive holding device is required to lift loads on construction sites.

## DISPOSAL OF THE LIFTER

After the Service Life of the lifter has ended (see “SPECIFICATIONS”), dispose of it in compliance with all local codes and applicable regulatory standards.

1..... Although lifter use may be possible at higher elevation, lifting capacity is reduced whenever the lifter is unable to attain vacuum in the green range on the vacuum gauge. Contact WPG for more information.

2..... Special provisions may allow the lifter to operate outside the specified temperature range. Contact WPG for more information.

## BEFORE USING THE LIFTER

Determine whether the vacuum lifter is capable of each intended task (see “SPECIFICATIONS” and “[INTENDED USE](#)”). Then complete the following preparations:

### Taking Safety Precautions

- Be trained in all industry and regulatory standards for lifter operation in your region.
- Follow trade association guidelines about precautions needed for each load material.



***Read all directions and safety rules before using lifter.***



***Always wear appropriate personal protective equipment.***

### Performing Inspections and Tests

- Follow the “[INSPECTION SCHEDULE](#)” and “[TESTING](#)”.
- Service the air filter whenever its bowl contains liquid or other contaminants or its element appears dirty (see “AIR FILTER MAINTENANCE” in [SERVICE MANUAL](#)).<sup>1</sup>



***Examine air filter regularly and service when needed.***

1..... Lifters used on wet load surfaces must be equipped with 2 or more filters connected *in series*. See “[OPERATING ENVIRONMENT](#)” for restrictions.

# OPERATION

## TO USE THE OPTIONAL PAD SHUTOFFS

Each pad shutoff on the pad frame controls the vacuum line to the adjacent vacuum pad. Activating or deactivating the airflow at specific pads enables the lifter to handle loads with different weights and dimensions (see “SPECIFICATIONS”) or to avoid holes in the load surface.

To support the maximum load weight and larger load dimensions, all pads must be activated; for smaller weights and dimensions, some pads may be deactivated, ***provided that the lifter still has sufficient capacity to support the load*** (see “LOAD CHARACTERISTICS”).



***Closing any pad shutoff reduces lifting capacity.***

To activate a pad, open the shutoff valve (ie, place lever *parallel* with vacuum line — fig. 1A).



To deactivate a pad, close the shutoff valve (ie, place lever *perpendicular* to vacuum line — fig. 1B).



To calculate the lifting capacity when some pads are deactivated, consult the Per-Pad Load Capacity and multiply by the number of pads currently activated. Always activate pads in a symmetrical configuration and use as many pads as possible for each load being lifted, to maximize lifting capacity and to minimize load overhang.



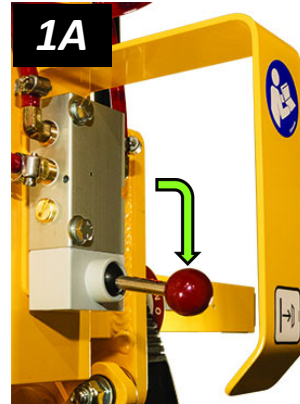


# OPERATION

## To ATTACH THE PADS TO A LOAD

### Generating Airflow

- 1) Make sure the lever on the vacuum control valve is in the “release” position (|→ — fig. 1A).
- 2) Place the power switch in the “on” position (| — fig. 2A), to engage the vacuum pump.



The lifter is designed for the pump to run continuously. Placing the power switch in the “off” position (○) during lifter operation could result in a load release and personal injury (see “In Case of a Power Failure”).



**Keep pump running throughout lift.**

### Positioning the Lifter on the Load

**Caution:** Attach this lifter only to vertically oriented loads.

- 1) Make sure the contact surfaces of the load and vacuum pads are clean (fig. 1B; see “Pad Cleaning”).

**1B**



- 2) Center the pad frame on the load (fig. 2B).<sup>1</sup>

**2B**



**Always center pad frame on load.**

**3B**



- 3) Make sure all vacuum pads will fit on the load and will be loaded evenly (fig. 3B). Consult the Per-Pad Load Capacity.



1..... The lifter is designed to handle the maximum load weight when the load’s center of gravity is positioned within 2" [5 cm] of the pad frame’s center point. Uncentered loads may rotate unexpectedly.

# OPERATION

- 4) Place the vacuum pads in contact with the load surface.

## Sealing the Pads on the Load

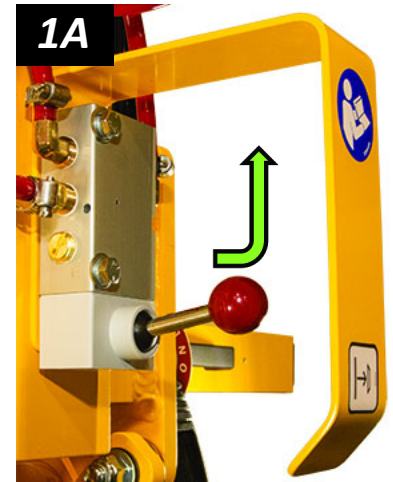
- 1) Place the lever on the vacuum control valve in the “attach” position (↩ — fig. 1A), to draw air immediately at the vacuum pads.<sup>1</sup>



**Keep valve lever in “attach” position throughout lift.**

Any interruption of airflow during lifter operation could cause a load release and personal injury.

- 2) Make sure the vacuum pads seal completely against the load.<sup>2</sup>



## Reading the Vacuum Gauge

A vacuum gauge shows the current vacuum level in positive inches of Hg and negative kPa:

- **Green range** ( $\geq 16$ " Hg [ $\leq -54$  kPa]): Vacuum level is sufficient to lift the maximum load weight (fig. 1B).
- **Red range** ( $< 16$ " Hg [ $> -54$  kPa]): Vacuum level is **not** sufficient to lift the maximum load weight (fig. 1C).

If it takes more than 5 seconds for the vacuum level to reach 5" Hg [-17 kPa], press on any vacuum pad that has not yet sealed.

Once the pads have sealed, the lifter should be able to maintain sufficient vacuum for lifting, except when used above the maximum Operating Elevation.<sup>3</sup> If it does not, perform the “**Vacuum Test**”.



1..... Do not place the valve lever in the “attach” position until the pads are contacting the load.  
2..... Although a vacuum pad may become distorted during shipping or storage, this condition should correct itself with continued use.  
3..... If the lifter is used above the maximum Operating Elevation (see “SPECIFICATIONS”), it may not be able to maintain sufficient vacuum for lifting. Contact WPG for more information.

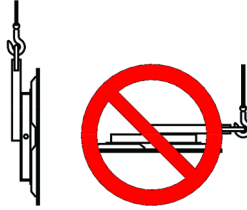


# OPERATION

## TO LIFT AND MOVE THE LOAD



***Never lift load when lifter is in horizontal orientation.***



## Interpreting the Vacuum Gauge and Optional Lift Light



Vacuum is sufficient to lift the Maximum Load Capacity whenever vacuum registers in the green range on the vacuum gauge.

*Note: If the lifter has a vacuum lift light, it also turns on.*



***Never lift load unless vacuum gauge registers in the green range and optional lift light turns on, because premature lifting could result in load release and personal injury.***

## Monitoring the Vacuum Gauge and Optional Lift Light

Monitor the vacuum gauge and the optional vacuum lift light (fig. 1A) throughout the entire lift.

1A



***Make sure vacuum gauge and optional lift light remain completely visible.***

The vacuum pump runs continuously to maintain sufficient vacuum for lifting the maximum load weight.

However, if the ***vacuum gauge shows a level less than 16" Hg [greater than -54 kPa] and the optional lift light turns off:***

- 1) Keep everyone away from a suspended load until it can be safely lowered to a stable support.
- 2) Stop using the lifter until the cause of the vacuum loss can be identified: Conduct the “[Pad Inspection](#)” and perform the “[Vacuum Test](#)”.
- 3) Correct any faults before resuming normal operation of the lifter.



***Stay clear of any suspended load while gauge and optional light warn of insufficient vacuum.***

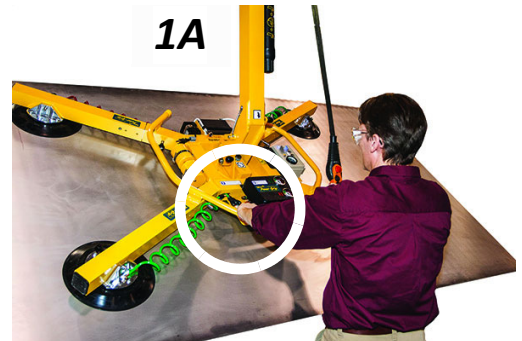
# OPERATION

## Controlling the Lifter and Load

When the lifter is ready, use the hoisting equipment to raise the lifter and load as needed.

Use a control handle (circled in fig. 1A) to keep the lifter and load in the required position.

Once there is enough clearance, you may move the load as required.



***Never allow any pad shutoff to be opened or closed while lifting, because this could result in a load release and personal injury.***

## In Case of a Power Failure

A vacuum reserve tank helps maintain vacuum temporarily in the event of a power failure. Although the lifter is designed to support the load for at least 5 minutes without power, this depends on many factors, including the “[LOAD CHARACTERISTICS](#)” and the condition of the vacuum pads (see “[VACUUM PAD MAINTENANCE](#)”).

If a power failure occurs, keep everyone away from a suspended load until it can be safely lowered to a stable support. Correct any faults before resuming normal operation of the lifter.



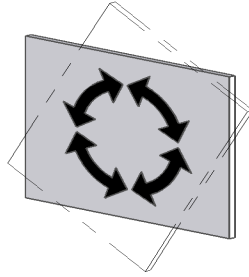
***Stay clear of any suspended load during power failure.***

# OPERATION

## TO ROTATE THE LOAD



***Make sure load is positioned correctly on lifter (as previously directed).***



- 1) Make sure the load has enough clearance to rotate without contacting anyone or anything.



***Keep hands and fingers away from pinch points between pad frame and lift bar.***

- 2) Use the pad frame (circled in fig. 2A) or other appropriate means to keep the load under control at all times.



***Unbalanced loads may rotate unexpectedly when rotation latch is disengaged.***

- 3) Move the rotation release lever downward (fig. 3A) to disengage the rotation latch, and rotate the load as required.



- 4) To stop load motion, let go of the rotation release lever and guide the load to the next stop.

*Note: Whenever rotation is not required, keep the rotation latch engaged, to prevent load damage or personal injury.*

# OPERATION

## TO RELEASE THE PADS FROM THE LOAD



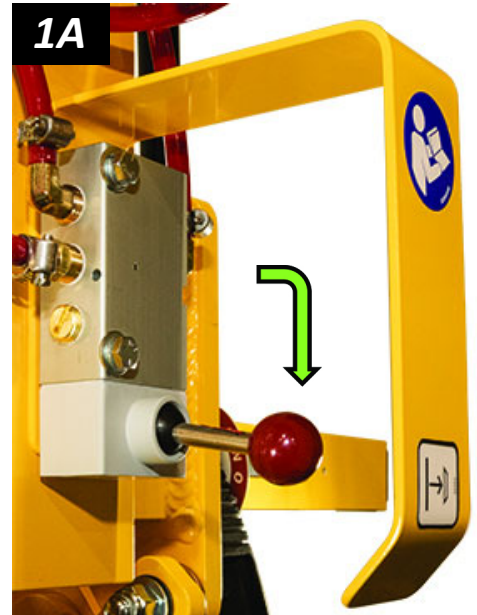
***Make sure load is at rest and fully supported before releasing vacuum pads.***

- 1) Move the lever on the vacuum control valve to the “release” position (|→ — fig. 1A), to break the vacuum seal.



***Do not move lifter until pads release completely, because such movement could result in load damage or personal injury.***

- 2) After the load is successfully released, move the lifter away.
- 3) Before you lift another load, perform the Every-Lift Inspection (see “[INSPECTION SCHEDULE](#)”).



## AFTER USING THE LIFTER

- 1) Place the power switch in the “off” position (○ — fig. 1B).
- 2) Use the hoisting equipment to lower the lifter gently onto a stable support. Then detach the hoisting hook from the lift point.

***Caution:* Do not set the lifter on surfaces that could soil or damage vacuum pads.**



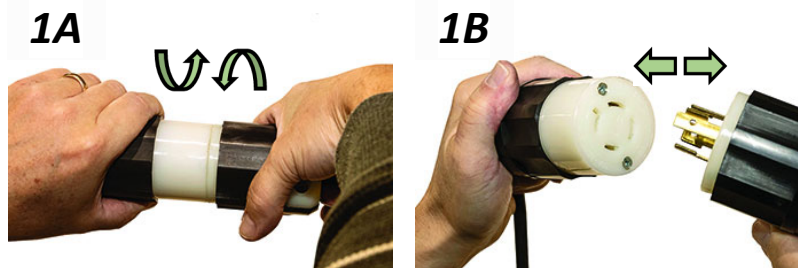
# OPERATION

*Note: Parking feet (circled) on the pad frame can be used to support an unloaded lifter when not suspended. Make sure the lifter leans securely against an appropriate support that does not contact the vacuum pads.*



## Storing the Lifter

- 1) Disconnect the power cable (fig. 1A-1B).



- 2) Use the covers supplied to keep the vacuum pads clean (fig. 2A).

**CE/UKCA** — To prevent the lifter from tipping over on relatively horizontal surfaces, place the vacuum pads facedown on a clean, smooth, flat surface. Be careful to protect the vacuum pads while tilting it to the horizontal position. Then place a support under the lift point.



- 3) Store the lifter in a clean, dry location.

## Transporting the Lifter

Secure the lifter in the original shipping container with the original shipping materials or equivalent.



# INSPECTIONS AND TESTS

## INSPECTION SCHEDULE

Perform inspections according to the following frequency schedule. If any fault is found, correct it and perform the next most frequent inspection before using the vacuum lifter.

*Note: If a lifter is used less than 1 day in a 2-week period, perform the Periodic Inspection before using it.*

Action	Every Lift	Frequent <sup>1</sup> (every 20-40 hrs)	Periodic <sup>2</sup> (every 250-400 hrs)
Examine <u>vacuum pads</u> for contaminants or damage (see <a href="#">“Pad Inspection”</a> ).	✓	✓	✓
Examine load surface for contaminants or debris.	✓	✓	✓
Examine controls and indicators for damage.	✓	✓	✓
Examine lifter’s structure for damage.		✓	✓
Examine vacuum system for damage (including <u>vacuum pads</u> , fittings and hoses).		✓	✓
Examine <u>air filter</u> for conditions requiring service (see “AIR FILTER MAINTENANCE” in <a href="#">SERVICE MANUAL</a> ).		✓	✓
Perform <a href="#">“Vacuum Test”</a> .		✓	✓
Check for unusual vibrations or noises while operating lifter.		✓	✓
Examine entire lifter for evidence of: <ul style="list-style-type: none"> <li>• looseness, excessive wear or excessive corrosion</li> <li>• deformation, cracks, dents to structural or functional components</li> <li>• cuts in vacuum pads or hoses</li> <li>• any other hazardous conditions</li> </ul>			✓
Inspect entire electrical system for damage, wear or contamination that could be hazardous, in compliance with all local codes and regulatory standards. <b>Caution:</b> Use appropriate cleaning methods for each electrical part, as specified by codes and standards. Improper cleaning can damage parts.			✓

1..... The Frequent Inspection is also required whenever the lifter has been out of service for 1 month or more.

2..... The Periodic Inspection is also required whenever the lifter has been out of service for 1 year or more. Keep a written record of all Periodic Inspections. If necessary, return the lifter to WPG or an authorized dealer for repair (see [“REGISTRATION AND LIMITED WARRANTY”](#)).

## TESTING

Perform the following test to determine whether or not a load surface is too porous or rough:

### Lifter/Load Compatibility Test<sup>1</sup>

- 1) Make sure the vacuum generating system is functioning correctly (see “[Vacuum Test](#)”).
- 2) Thoroughly clean the load surface and the vacuum pads (see “[Pad Cleaning](#)”).
- 3) Place the load in the upright position on a stable support.
- 4) Attach the vacuum pads to the load as previously directed.
- 5) After the vacuum level appears in the green range on the vacuum gauge, place the power switch in the “off” position (○).
- 6) Raise the load a minimal distance, to make sure it is supported by the lifter.
- 7) Watch the vacuum gauge: ***Starting from a vacuum level of 16" Hg [-54 kPa], the lifter must maintain a vacuum level greater than 12" Hg [less than -41 kPa] for 5 minutes.***<sup>2</sup> If not, lifting this load requires additional precautions (eg, a load sling). Contact WPG for more information.
- 8) Lower the load *after* 5 minutes or *before* the vacuum level diminishes to 12" Hg [increases to -41 kPa].



***Take precautions in case load should fall during test.***

1..... The “[Pad-to-Load Friction Coefficient](#)” can affect the outcome of this test.

2..... Under CE and UKCA requirements, the lifter must maintain a vacuum level ***greater than 8" [less than -27 kPa]***.


# INSPECTIONS AND TESTS


Perform the following tests before placing the lifter in service *initially, following any repair,* when directed in the “*INSPECTION SCHEDULE*”, or *whenever necessary*:


## Operational Tests


Test all features and functions of the lifter (see “OPERATING FEATURES” and “OPERATION”).

## Vacuum Test

- 1) Clean the faces of the vacuum pads (see “*Pad Cleaning*”).
- 2) Use a test load with weight equal to the Maximum Load Capacity, a clean, smooth, nonporous surface and other appropriate “*LOAD CHARACTERISTICS*”.<sup>1</sup> 
- 3) Attach the lifter to the test load as previously directed.
- 4) After the vacuum level appears in the green range on the vacuum gauge, raise the load a minimal distance and place the power switch in the “off” position (○). 

 ***Take precautions in case load should fall during test.***
- 5) Watch the vacuum gauge: *The vacuum level should not decrease by more than 4" Hg [-14 kPa] in 5 minutes.*
- 6) Lower the load after 5 minutes or whenever a lifter fails the test, and release the load as previously directed. 

 ***Never use lifter that has failed test.***
- 7) Qualified service personnel must correct any fault in the vacuum system before returning the lifter to service. 

 ***This service must be performed by qualified service personnel.***


1..... The load should have either a flat surface or no more curvature than the lifter is designed for, if any.



# INSPECTIONS AND TESTS

## Rated Load Test<sup>1</sup>

The following steps must be performed or supervised by a qualified person:<sup>2</sup>

- 1) Use a test load that weighs 125% ( $\pm 5\%$ ) of the Maximum Load Capacity and has the appropriate “LOAD CHARACTERISTICS”. 
- 2) Attach the vacuum pads to the load as previously directed.
- 3) Position the load to produce the greatest stress on the lifter consistent with “INTENDED USE”.
- 4) Raise the load a minimal distance and leave it suspended for 2 minutes.
- 5) Once the test is completed, lower the load for release as previously directed.
- 6) Inspect the lifter for any stress damage, and repair or replace components as necessary to successfully pass the test.
- 7) Prepare a written report of the test and keep it on file.



***Take precautions in case load should fall during test.***



***Never use lifter that has failed test.***

1..... An equivalent simulation may also be used. Contact WPG for more information.

2..... A “qualified person” has successfully demonstrated the ability to solve problems relating to the subject matter and work, either by possessing a recognized degree in an applicable field or a certificate of professional standing, or by possessing extensive knowledge, training and experience.

Note: Refer to **SERVICE MANUAL #35275** when applicable.

## VACUUM PAD MAINTENANCE

### Pad-to-Load Friction Coefficient

The friction coefficient represents the lifter's ability to resist load slippage. The Maximum Load Capacity is based on a friction coefficient of 1, as determined by testing of clean, new, standard rubber vacuum pads on clean, dry, regular glass. ***If the lifter is used under any other conditions, a qualified person must first determine the effective lifting capacity.***<sup>1</sup>

Long-term exposure to heat, chemicals or UV light can damage vacuum pads. Replace pads every 2 years or more often when necessary.

### Pad Inspection

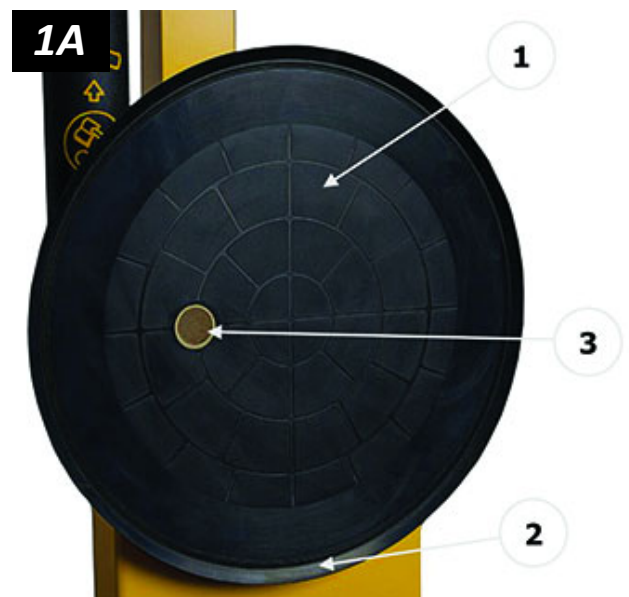
Inspect each vacuum pad (fig. 1A) according to the “**INSPECTION SCHEDULE**” and correct the following faults before using the lifter (see “**REPLACEMENT PARTS**”, when applicable):

- Contaminants on the face (item 1 in fig. 1A) or sealing edges (item 2 in fig. 1A).
- Filter screen (item 3 in fig. 1A) missing from face.



**Replace any pad that has damaged sealing edges.**

- Nicks, cuts, deformation or abrasions in sealing edges.
- Wear, stiffness or glaze.



1..... A “qualified person” has successfully demonstrated the ability to solve problems relating to the subject matter and work, either by possessing a recognized degree in an applicable field or a certificate of professional standing, or by possessing extensive knowledge, training and experience.

## Pad Cleaning

- 1) Regularly clean the face of each vacuum pad (fig. 1A), using soapy water or other mild cleansers to remove oil, dust and other contaminants.



***Never use harsh chemicals on vacuum pad.***

Solvents, petroleum-based products (including kerosene, gasoline and diesel fuel) or other harsh chemicals can damage vacuum pads.



***Never use rubber conditioners on vacuum pad.***

Many rubber conditioners can leave a hazardous film on vacuum pads.

- 2) Prevent liquid from entering the vacuum system through the suction hole on the pad face.
- 3) Wipe each pad face clean, using a clean sponge or lint-free cloth to apply the cleanser.<sup>1</sup>
- 4) Allow each pad to dry completely before using the lifter.

**1A**



<sup>1</sup>..... A brush with bristles *that do not harm rubber* can help remove contaminants clinging to sealing edges. If these cleaning methods are not successful, contact WPG or an authorized dealer for assistance.

# REPLACEMENT PARTS

Stock No.	Description	Qty.
93012	Pad Shutoff Valve Assembly (assembly only)	4
93011	Pad Shutoff Valve Assembly (retrofit assembly kit)	4
65444	Vacuum Hose – 1/2" ID x 0.748" OD – Clear	*
65440	Vacuum Hose – 0.245" ID x 3/8" OD – Red	*
65438	Vacuum Hose – 1/8" ID x 1/4" OD – White	*
65301	Handle Grip Foam	*
65010	Pad Spring – Coil Type (for VPFS9 & G3370 pads)	4
64284	Bulb – 6.3 V – Bayonet (for optional vacuum lift light)	1
64262	Green Lens (for optional vacuum lift light)	1
53132	Hose Fitting – Tee – 5/32" ID	2
53120	Pad Fitting – Elbow – 3/64" ID	4
49646T	Vacuum Pad – Model G3370 / 11" [28 cm] Diameter, Lipped (for MR411LAC)	4
49506TA	Vacuum Pad – Model VPFS9 / 9" [23 cm] Diameter (for MR49AC)	4
49150	End Plug – 2-1/2" x 2-1/2" x 1/4" Tubing Size	2
49122	End Plug – 2" x 2" x 1/4" Tubing Size	4
35275	Service Manual – AC	1
29353	Pad Cover	4
15794	Handle for Rotation Release Lever	1
15632	Pad Filter Screen – Small (for VPFS9 pad)	4
15630	Pad Filter Screen – Large (for G3370 pads)	4
10900	Shoulder Bolt – Socket Head – 5/16" x 1/2" x 1/4-20 Thread (for mounting pads)	24

\*Length as required; sold by the inch (approx 2.5 cm).

See **SERVICE MANUAL #35275** for additional parts.

**SERVICE ONLY WITH IDENTICAL REPLACEMENT PARTS,  
AVAILABLE AT [WPG.COM](http://WPG.COM) OR THROUGH AN AUTHORIZED WPG DEALER**

# REGISTRATION AND LIMITED WARRANTY

## TO REGISTER THIS WPG PRODUCT

Go to the [PRODUCT REGISTRATION](#) page at [wpg.com](#) and complete the form. Registration keeps you advised of important updates and notifications, and simplifies inquiries to WPG regarding your product. Registration is **not** required to activate your Limited Warranty (see next section).

## ABOUT THE LIMITED WARRANTY



*Note: Read the [WARRANTY RETURN FORM](#) at [wpg.com](#) for important details about the Limited Warranty.*

Wood's Powr-Grip® (WPG) products are warranted to be free from defects in manufacturing and materials for 1 year from the date of purchase.

If a problem develops during the warranty period, follow the instructions below to obtain warranty service. If inspection shows that the product has a defect, WPG will repair or replace the product without charge.



## Obtaining Warranty Service or Repair Service

**For customers in the U.S. and Canada:** Go to the [EXCHANGES, REPAIRS, & WARRANTIES](#) page at [wpg.com](#) and click the applicable link. Alternatively, you may contact the WPG Technical Service Department (see contact information at right).

**For customers in all other localities:** Contact the WPG Technical Service Department (see contact information at right) or your dealer for assistance.

**Address:**

Wood's Powr-Grip Co., Inc.  
908 West Main St.  
Laurel, MT 59044 USA

**Email:**

[contactus@wpg.com](mailto:contactus@wpg.com)

**Phone:**

800-548-7341 or 406-628-8231

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**MANUL ROTATOR,  
AC-VOLTAGE**

Model numbers: MR49AC, MR411LAC





D/08A-W01 [A-W01]

[illegible]

### WIRING SCHEMATIC FOR SPECIFIC WIRE GAUGE.

VARIES AS REQUIRED.

WIRING SHOWN FROM WIRE CONNECTION END.

1. *What is the purpose of this study?*  
 2. *What are the research objectives?*  
 3. *What is the research design?*  
 4. *What are the variables?*  
 5. *What are the hypotheses?*  
 6. *What are the results?*  
 7. *What are the conclusions?*  
 8. *What are the limitations?*  
 9. *What are the implications?*  
 10. *What are the future research directions?*

GRN



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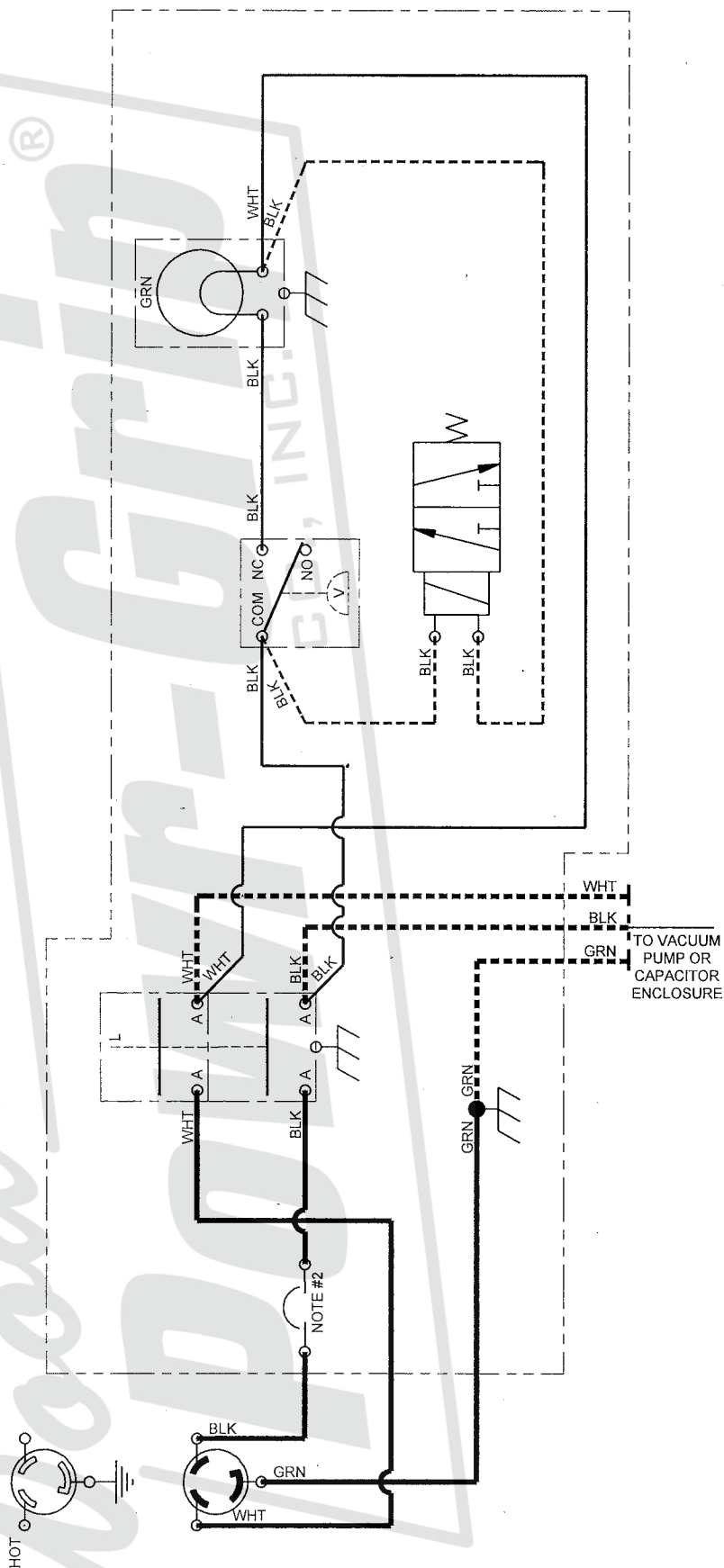
Variable	Mean	SD	Min	Max
Age	38.5	12.5	25	65
Gender	0.5	0.5	0	1
Marital status	0.7	0.5	0	1
Education	12.5	2.5	9	16
Income	1500	500	1000	2500
Health status	0.8	0.4	0	1
Employment status	0.6	0.5	0	1
Life satisfaction	4.5	1.5	1	7
Depression	0.3	0.5	0	1
Stress	3.5	1.5	1	7
Quality of life	5.5	1.5	1	7

[illegible]

1:33 PM - 09/24/2024

NOTES:

- 1) SEE PUMP WIRING SCHEMATIC FOR SPECIFIC WIRE GAUGE.
- 2) BREAKER RATING VARIES AS REQUIRED.
- 3) POWER CONNECTORS SHOWN FROM WIRE CONNECTION END.





WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.		TYPE: <b>STANDARD</b>		FILE DIRECTORY: FILE [SHEET]:		790 790-W01 [W01]	
LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE: ..... N/A ..... N/A ..... 18GA ..... N/A ..... N/A ..... 16GA ..... N/A ..... N/A		THIS DRAWING IS THE PROPERTY OF WOOD'S POWR-GRIP CO., INC. IT IS LOANED WITH THE UNDERSTANDING THAT NEITHER IT NOR ANY INFORMATION CONTAINED THEREIN WILL BE COPIED, PUBLISHED OR TRANSMITTED TO OTHERS WITHOUT EXPRESS WRITTEN PERMISSION.		WOOD'S POWR-GRIP CO., INC. LAUREL MONTANA U.S.A.		WPG	
PRODUCT MANAGER: KELLY K.		700LB MANUAL-ROTATOR N/A		ECN NUMBER: 6002		ECN BY: CCH	
CHECKED: <i>CK</i>		DATE: 03/06/1991		REVISION: 01.A		EST. WEIGHT: N/A	
APPROVED: <i>CK</i>		12-07-22		SIZE: A		ECN DATE: 11/22/2022	
		12-07-22					

- NOTES:
- (1) INSTALL THE POWER WIRE CONNECTOR PER CONTACT LABELS (WHEN AVAILABLE), USE SCREW COLOR CONVENTION OTHERWISE.
  - (2) IF GREEN WIRE IS UNAVAILABLE, SUBSTITUTE WITH GREEN W/YELLOW STRIPE.

