

KEEP FOR FUTURE REFERENCE



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OPERATING INSTRUCTIONS



MODEL NUMBERS: MRT49DC,
MRT4HV11DC, MRT411LDC

SERIAL NUMBER: _____
(please see serial label and record number here)



**MANUAL ROTATOR / TILTER
DC-VOLTAGE**



***READ ALL INSTRUCTIONS AND SAFETY RULES
BEFORE OPERATING THIS LIFTER***



DESIGNED FOR MATERIALS-HANDLING PROFESSIONALS

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
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SPECIFICATIONS

Description: 	Designed for use with hoisting equipment, MRT4-DC lifters use vacuum to support loads, as well as manual 360° rotation and manual 90° tilt to position loads.		
Model Number:	MRT49DC	MRT4HV11DC	MRT411LDC
Vacuum Pads: ¹ (4 each, standard rubber)	9" [23 cm] nom. diameter (Model VPFS9)	10" [25 cm] nom. diameter, lipped (Model HV11)	11" [28 cm] nom. diameter, lipped (Model G3370)
Pad Spread: ²	----- (to outer edges) -----		
Length – Maximum:	75¼" [192 cm]	77¼" [197 cm]	78¼" [199 cm]
– Minimum:	29¾" [76 cm]	31¾" [81 cm]	32¾" [83 cm]
Width – Maximum:	46½" [119 cm]	48½" [124 cm]	49½" [126 cm]
– Minimum:	12¾" [33 cm]	14¾" [38 cm]	15¾" [40 cm]
Maximum Load Capacity: ³			
Per-Pad: 	125 lbs [56.5 kg]	150 lbs [68 kg]	175 lbs [80 kg]
Total:	500 lbs [225 kg]	600 lbs [270 kg]	700 lbs [320 kg]
Lifter Weight: 	≈135 lbs [62 kg]		
Power System:	12 volts DC, 10 amps		
Battery Run-Time:	7 amp-hours		
Rotation Capability: 	Manual, 360°, with latching at each ¼ turn (when required)		
Tilt Capability: 	Manual, 90°, with automatic locking in vertical position		
Options:	See separate instructions about options.		
Maximum Operating Elevation: 	6,000' [1,828 m]		
Operating Temperatures: 	32° to 104° F [0° to 40° C]		
Service Life:	20,000 lifting cycles, when used and maintained as intended ⁴		
ASME Standard BTH-1:	Design Category "B", Service Class "0" (see www.WPG.com for more information)		

!!-CE-!! Note: This symbol appears only when a CE Standard is *different* from other applicable standards. CE requirements are mandatory in the European Union, but may be optional elsewhere.

¹ Available with other rubber compounds for special purposes (see www.WPG.com).

² The illustrations under ASSEMBLY: TO CHANGE THE PAD FRAME CONFIGURATION show the Pad Spread for all approved pad frame configurations.

³ 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.

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

SAFETY



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



Use the lifter only in an approved OPERATING ENVIRONMENT (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 remove or obscure safety labels.



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).



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



Do not lift cracked or broken glass.



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



Do not lift a load if any vacuum indicator shows inadequate vacuum (see OPERATION).



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 lift a load over people.



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



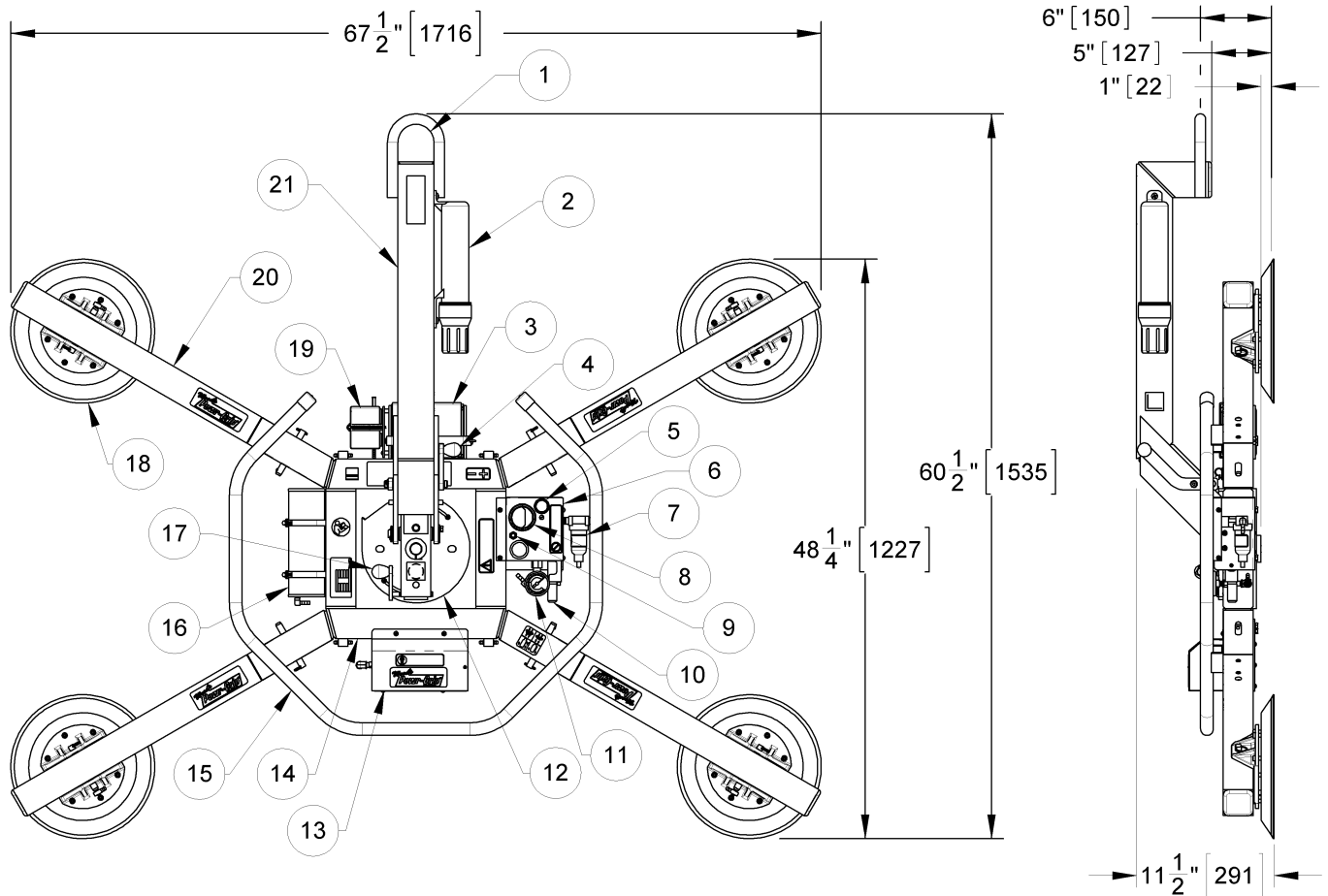
Before servicing the lifter, place the power control in the inactive position and, when possible, disconnect the power source. (Only applicable to powered lifters)



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

OPERATING FEATURES

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



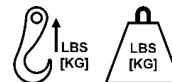
- | | | |
|---|---------------------------------|---------------------------|
| 1 LIFT POINT | 7 AIR FILTER | 15 CONTROL HANDLE |
| 2 INSTRUCTIONS CANISTER | 8 BATTERY GAUGE | 16 VACUUM RESERVE TANK |
| 3 BATTERY | 9 BATTERY TEST BUTTON | 17 ROTATION RELEASE LEVER |
| 4 TILT RELEASE LEVER | 10 VALVE HANDLE | 18 VACUUM PAD |
| 5 LOW VACUUM WARNING LIGHT | 11 VACUUM GAUGE | 19 BATTERY CHARGER |
| 6 Enclosure with <u>VACUUM SWITCH</u>
and <u>LOW VACUUM WARNING BUZZER</u>
(optional) | 12 ROTATION WEAR PLATE | 20 EXTENSION ARM |
| | 13 Cover for <u>VACUUM PUMP</u> | 21 LIFT BAR |
| | 14 PAD FRAME | |

Note: The standard model MRT411LDC is shown here.
Although some of the following photos do not show this specific lifter,
they all illustrate how this kind of lifter functions.

ASSEMBLY

- 1) Remove all vacuum lifter restraints and save them with the shipping container for future use.
- 2) Suspend the lifter from appropriate hoisting equipment:

2.1) 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.

2.2) Disengage any tilt locks or latches, and raise the lift bar.



2.3) Attach the hoisting hook to the lift point.



Make sure hook has restraining latch (circled).

Make sure the hook does not interfere with the load, using rigging as needed.



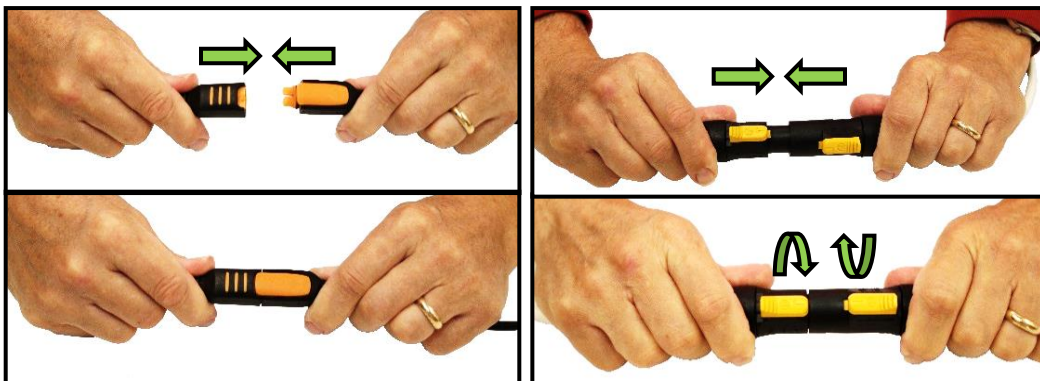
Only use rigging rated for Maximum Load Capacity plus Lifter Weight.



2.4) Use the hoisting equipment to remove the lifter from the shipping container. Avoid damaging the vacuum pads.

- 3) Connect the electrical connectors.

If applicable, install the 9-volt battery for the warning buzzer as directed in the WARNING BUZZER BATTERY TEST (see MAINTENANCE).



- 4) Assemble the pad frame for optimal load support (see next section). Remove the pad covers and save them for future use.

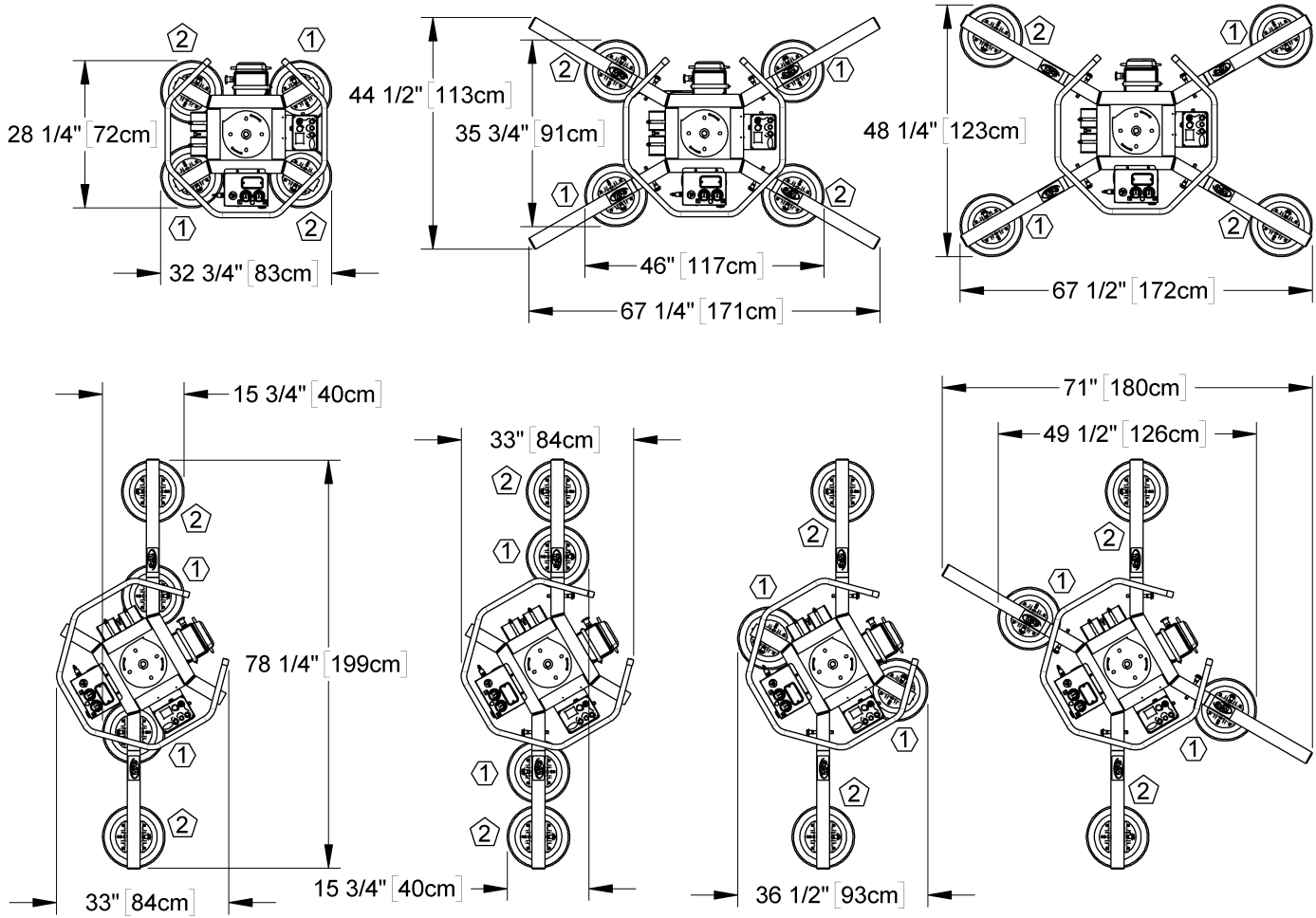


- 5) Before you place the lifter in service, perform Operational and Load Tests (see MAINTENANCE).

To CHANGE THE PAD FRAME CONFIGURATION

Various pad frame configurations enable the lifter to match different load dimensions. The following illustrations show all approved configurations.

Caution: If the lifter is equipped with a dual vacuum system, connect the vacuum pads to the 2 circuits (marked "1" and "2"), as shown.

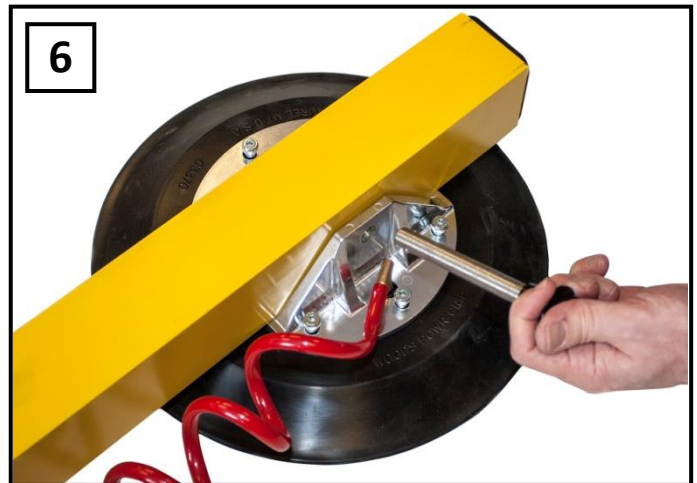


! *Use only approved pad frame configurations.*

- 1) Choose an approved configuration to maximize support across the load surface and to minimize load overhang (see INTENDED USE: LOAD CHARACTERISTICS).
- 2) Install or remove the extension arms and reposition the movable pad mounts as needed (see next section).

! *Securely position vacuum hoses to avoid damage during lifter operation.*

Installing or Removing Extension Arms and Repositioning Vacuum Pads

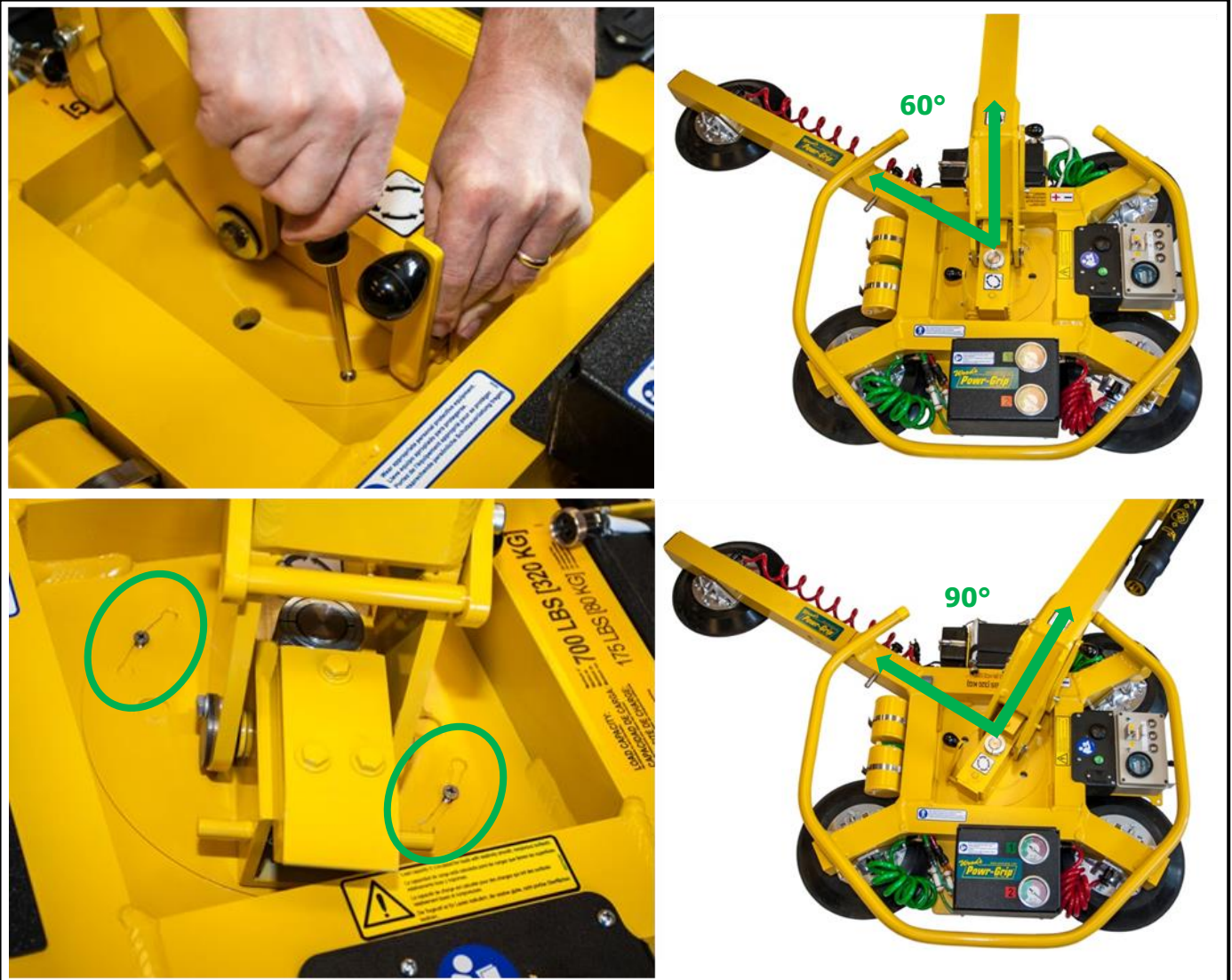


- 1) Remove the cotterless hitch pin that secures the movable pad mount to the pad frame.
- 2) Remove the vacuum pad from the pad frame.
- 3) Insert the extension arm into the pad frame.
- 4) Use a cotterless hitch pin to secure the extension arm.
- 5) Position the pad mount on the extension arm.
- 6) Use a cotterless hitch pin to secure the pad mount.

Notes: Repeat or reverse these steps to assemble or disassemble the pad frame as needed. Store removed components in a clean, dry location.

Using Secondary Rotation Stops

Align the secondary rotation stops for correct use of the pad frame in long, narrow configurations:



- 1) Loosen the 2 screws that secure the rotation wear plate.
- 2) Rotate the wear plate to align with the secondary rotation stops.
- 3) Tighten the screws securely.




Note: Reverse these steps to realign the primary rotation stops.

INTENDED USE

LOAD CHARACTERISTICS

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

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

- 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.⁵ To determine whether the load is too porous or rough, perform a Load Suitability Test as directed in TO ATTACH THE PADS TO A LOAD (see OPERATION).
- The load's contact surface must be able to obtain a friction coefficient of 1 with the lifter's vacuum pads, or the capacity should be derated appropriately (see MAINTENANCE).
- The load's surface temperature must not exceed the Operating Temperatures.⁶ 
- The load's *minimum* length and width are determined by the Pad Spread (see SPECIFICATIONS).
- The load's *maximum* length and width are determined by the allowable overhang.⁷
- 1" [2.5 cm] is the allowable thickness of loads at the Maximum Load Capacity.⁸ 

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.⁹

⁵ Although concave vacuum pads can also attach to some curved loads, curvature can reduce the lifting capacity. Contact Wood's Powr-Grip for more information.

⁶ Vacuum pads made from a heat-resistant rubber compound can enable you to lift loads with higher surface temperatures. Contact Wood's Powr-Grip or an authorized dealer for more information.

⁷ 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 Wood's Powr-Grip or an authorized dealer for more information.

⁸ However, the allowable thickness increases as load weight decreases. Contact Wood's Powr-Grip for more information.

⁹ Alternative rubber compounds are available for these purposes. Contact Wood's Powr-Grip or an authorized dealer for more information.

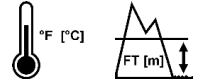
OPERATING ENVIRONMENT

Make sure the vacuum lifter is intended for use in each work environment, given the following restrictions:



Never use lifter in dangerous environments.

- 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.
- The work environment is limited by the Maximum Operating Elevation and Operating Temperatures.



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

- Moisture reduces the slip resistance of vacuum pads and, as a result, the lifting capacity.



Moisture can result in reduced lifting capacity.

- The lifter is not designed to be watertight. Do not submerge the lifter or use it in wet weather.

DISPOSAL OF THE LIFTER

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

Note: Special disposal regulations may apply to the battery.

OPERATION

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



Read all directions and safety rules before using lifter.

- Be trained in all industry and regulatory standards for lifter operation in your region.



Always wear appropriate personal protective equipment.

- Follow trade association guidelines about precautions needed for each load material.

Performing Inspections and Tests



Always check battery energy before using lifter
(see MAINTENANCE).

- Follow INSPECTION SCHEDULE and TESTING (see MAINTENANCE).
- Always perform a VACUUM TEST before placing a lifter in service (see MAINTENANCE).
- ***Examine air filter regularly and service when needed.***



Service the air filter whenever the bowl contains liquid or other contaminants, or the element appears dirty (see AIR FILTER MAINTENANCE in *SERVICE MANUAL*).



Make sure warning buzzer can be heard over noise at operator position.

- If applicable, make sure the low vacuum warning buzzer is clearly audible at the maximum distance between the operator and the lifter, despite any barriers or obstacles.¹⁰



¹⁰ Maximum alarm volume is 103 dBA at 2' [60 cm]. If applicable, consult EN 7731 to make sure the warning buzzer complies with CE Standards.

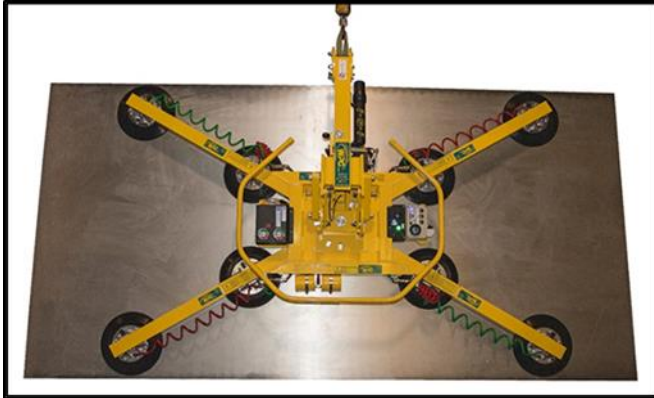
TO ATTACH THE PADS TO A LOAD

Positioning the Lifter on the Load

- 1) Make sure the contact surfaces of the load and vacuum pads are clean (see MAINTENANCE).



- 2) Center the pad frame on the load.¹¹



- 3) Make sure all vacuum pads will fit on the load and will be loaded evenly. Use the Per-Pad Load Capacity for reference.
- 4) Place the vacuum pads in contact with the load surface.



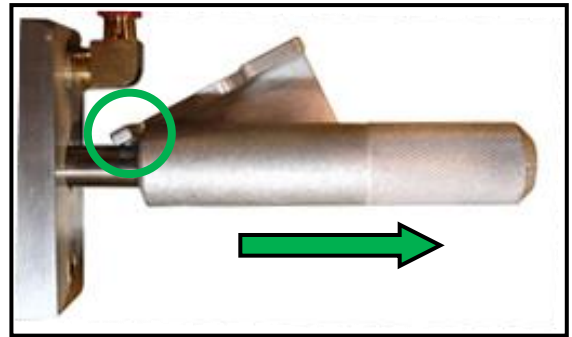
¹¹ The lifter is designed to handle the maximum load weight when the load's center of gravity is positioned within 2" [5 cm] of the lifter's rotation axis. Uncentered loads may rotate or tilt unexpectedly.

Sealing the Pads on the Load

Pull the valve handle outward **until it latches** (circled) in the "attach" position (↩).

! **Keep valve handle in "attach" position throughout lift.**

The vacuum pump will turn on, the low vacuum warning light will remain lit, and (if applicable) the low vacuum warning buzzer will sound until the vacuum pads seal. This is normal.

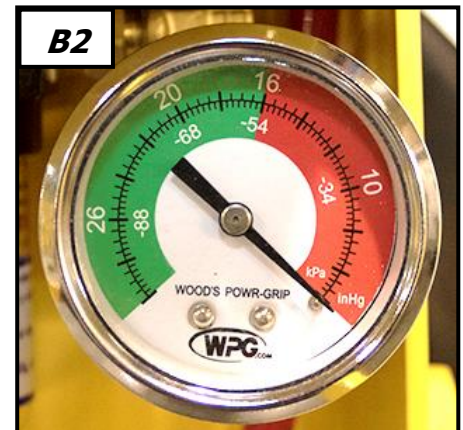


Press the lifter firmly against the load to help the pads begin to seal.¹²

Reading the Vacuum Gauge

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

- **Green** range: Vacuum level is sufficient to lift the maximum load weight (figure B1).
- **Red** range: Vacuum level is **not** sufficient to lift the maximum load weight (figure B2).



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.

¹² Although a vacuum pad may become distorted during shipping or storage, this condition should correct itself with continued use.

Vacuum Level on Optimal Surfaces

When the lifter is attached to *clean, smooth, nonporous* surfaces, it should be able to maintain sufficient vacuum for lifting, except when used above the Maximum Operating Elevation.

If it does not:



- Make sure the vacuum switch is adjusted correctly (see *SERVICE MANUAL*).
- When necessary, check for faults in the vacuum generating system (see MAINTENANCE: VACUUM TEST).

Vacuum Level on Other Surfaces

When the lifter is attached to *contaminated, rough or porous* surfaces, it may not be able to maintain sufficient vacuum for lifting, due to leakage at the vacuum pads.¹³ In this case:

- Thoroughly clean the load surface and the vacuum pads (see MAINTENANCE).
- When necessary, perform a Load Suitability Test:
 - 1) Make sure the lifter's vacuum generating system is functioning correctly (see MAINTENANCE).
 - 2) Attach the vacuum pads to the load as previously directed.
 - 3) After the vacuum pump stops running, disconnect the battery connector (see AFTER USING THE LIFTER).¹⁴
 - 4) Raise the load a minimal distance, to make sure it is supported by the lifter.



Take precautions in case load should fall during test.

- 5) Watch the vacuum gauge for 5 minutes: ***The lifter must maintain a minimum vacuum level of 10" Hg [-34 kPa].*** If not, the load is not suitable for this lifter.¹⁵
- 6) Lower the load after 5 minutes or whenever the vacuum level is less than 10" Hg [-34 kPa].

¹³ Contaminated loads can also cause the vacuum pump to run frequently or continuously. Since excessive pumping quickly reduces battery energy, clean the load whenever possible.

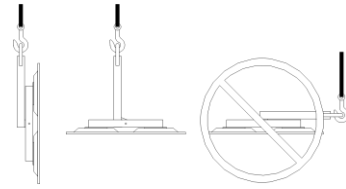
¹⁴ Move the valve handle to the "release" position (power *off*) before reconnecting the battery.

¹⁵ Certain load materials are too rough or porous to pass this test. However, where CE Standards do not apply, the lifter may be allowed to lift such loads. Contact Wood's Powr-Grip for more information.

To LIFT AND MOVE THE LOAD



Lift bar must be vertical to lift load.



Interpreting the Warning Light and Optional Warning Buzzer

When the vacuum lifter is ready to lift the Maximum Load Capacity, the vacuum pump turns off temporarily to conserve battery energy, the low vacuum warning light turns off, and (if applicable) the low vacuum warning buzzer turns off.



Never lift load unless warning devices turn off, because this could result in load release and personal injury.

Watching Vacuum Indicators

Watch the low vacuum warning light and the vacuum gauge throughout the entire lift.



Make sure vacuum indicators remain completely visible.

When air leaks into the vacuum system, the vacuum pump turns on and off, along with the warning light and (if applicable) the low vacuum warning buzzer. This is necessary to maintain sufficient vacuum for lifting.

When this happens, make sure the vacuum gauge shows a level of 16" Hg [-54 kPa] or greater. If it does not:

1) Keep everyone away from a suspended load until it can be safely lowered to a stable support.



Stay clear of any suspended load while indicators warn of low vacuum.

2) Stop using the lifter until the cause of the vacuum loss can be identified:

- Perform the VACUUM TEST and inspect the vacuum pads for damage (see MAINTENANCE).
- When necessary, inspect the entire vacuum generating system.

3) Correct any faults before resuming normal operation of the lifter.

Controlling the Lifter and Load

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

Use the control handle to keep the lifter and load in the required position.

Once there is enough clearance, you may rotate or tilt the load (see OPERATION).



In Case of Power Failure

A vacuum reserve tank helps maintain vacuum temporarily in case of a failure in the battery or electrical system.



Stay clear of any suspended load during 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 condition of vacuum pads and the LOAD CHARACTERISTICS (see MAINTENANCE and INTENDED USE).

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.

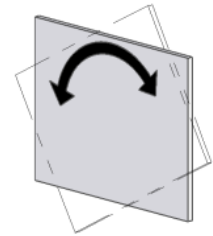
To ROTATE THE LOAD



Never disengage rotation and tilt latches at the same time, because this could result in load damage or personal injury.



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

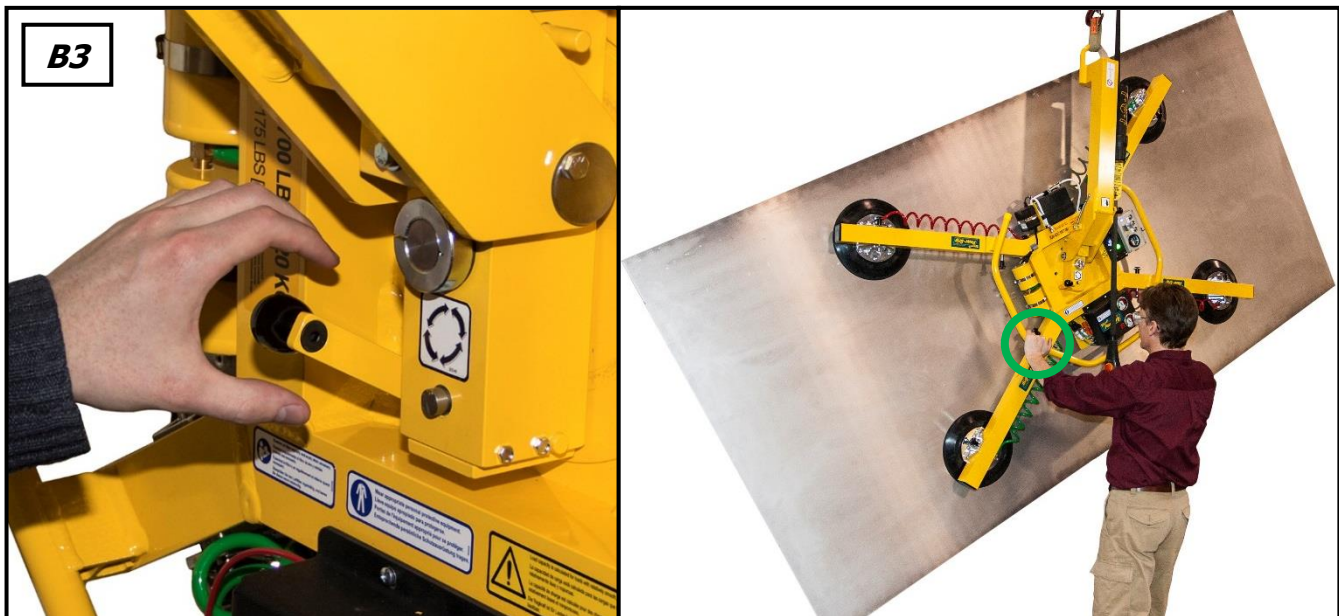


- 1) Make sure the load has enough clearance to rotate without contacting anyone or anything.
- 2) Use the control handle to keep the load under control at all times (circled in figure B3).



Unbalanced loads may rotate unexpectedly when latch is disengaged.

- 3) Pull the rotation release lever 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.

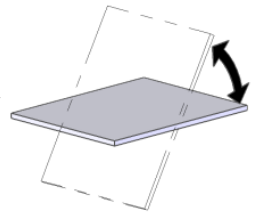
TO TILT THE LOAD



Never disengage rotation and tilt latches at the same time, because this could result in load damage or personal injury.



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



- 1) Make sure the load has enough clearance to tilt without contacting anyone or anything.
- 2) Use the control handle to keep the load under control at all times (circled in figure B4).



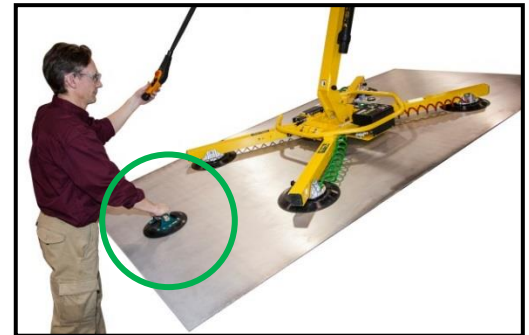
Unbalanced loads may tilt unexpectedly when latch is disengaged.

- 3) If the pad frame is latched, pull the tilt release lever to disengage the tilt latch, and tilt the load as required.



Note: See INTENDED USE: LOAD CHARACTERISTICS about allowable load overhang.

- 4) A load with overhang may force you to release the handle as the load approaches the flat position. In this case, use hand cups or other appropriate means to control the load.



Note: The pad frame automatically latches when tilted to the vertical position.

TO RELEASE THE PADS FROM THE LOAD



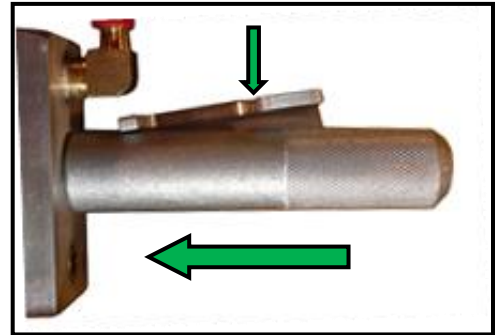
Make sure load is at rest and fully supported before releasing vacuum pads.

- 1) Press the lever to release the latch, and push the valve handle inward to the "release" position (|→|).



Do not move lifter until pads disengage completely from load, because this could result in load damage or personal injury.

- 2) Before you lift another load, perform the Every-Lift Inspection (see MAINTENANCE).



AFTER USING THE LIFTER

- 1) Leave the valve handle in the "release" position (|→| / power off).

Caution: Do not set lifter on surfaces which could soil or damage vacuum pads.

- 2) Use the hoisting equipment to lower the vacuum lifter gently onto a stable support. Then detach the hoisting hook from the lift point.
- 3) To transport the lifter, secure it in the original shipping container.



Storing the Lifter

- 1) Use the covers supplied to keep the vacuum pads clean.

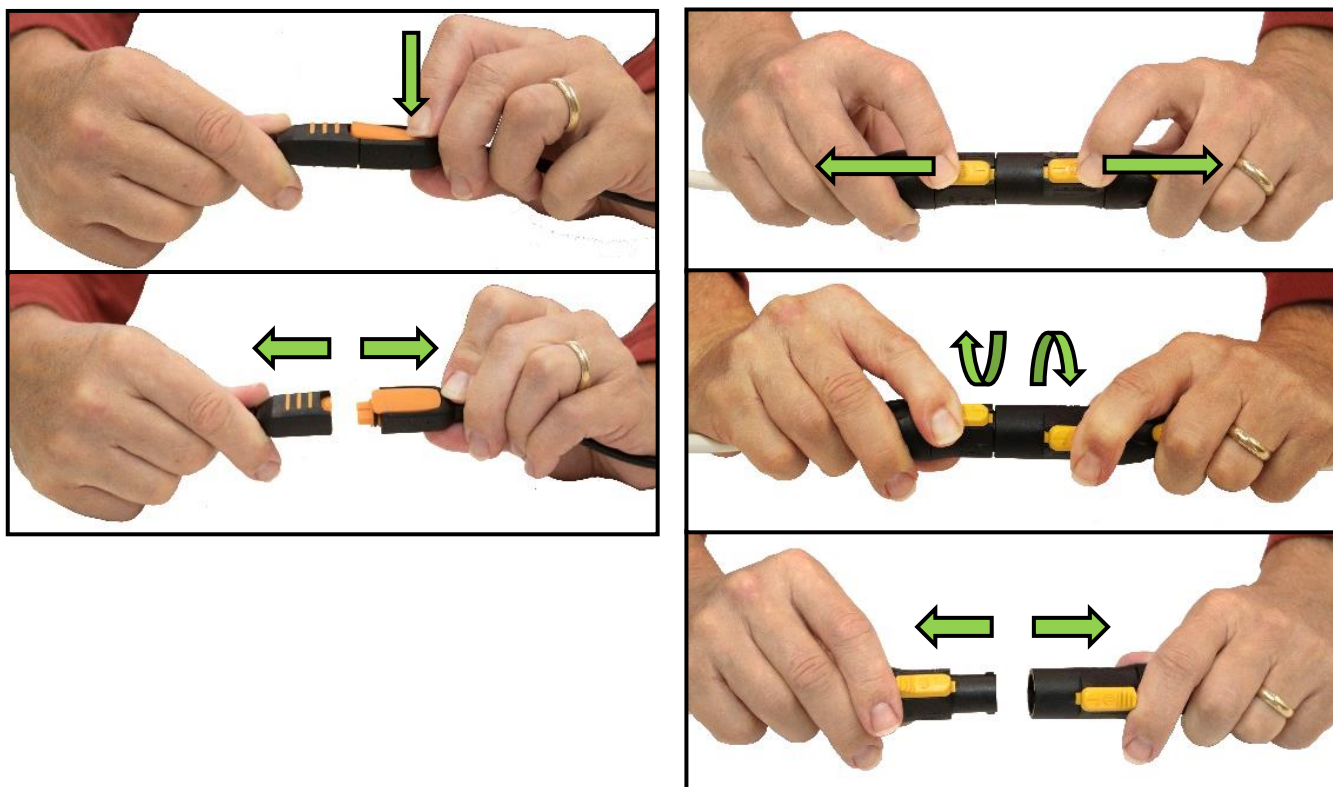
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!!-CE-!! To prevent the lifter from tipping over on relatively horizontal surfaces, place the vacuum pads face-down on a clean, smooth, flat surface. Then lower the lift bar and place a support under the lift point.

=====

- 2) Charge the battery completely and repeat every six months (see MAINTENANCE).

3) Disconnect the electrical connectors to prevent battery discharge.



4) Store the lifter in a clean, dry location. Store the battery between 32° and 70° F [0°–21° C]. Avoid storage above 100° F [38° C].

MAINTENANCE



Disconnect battery before servicing lifter.

Notes: Refer to ***SERVICE MANUAL #36110*** when applicable. See final section for wiring diagrams.

INSPECTION SCHEDULE

Perform inspections according to the following frequency schedule.¹⁶ If any fault is found, correct it and perform the next most frequent inspection before using the vacuum lifter.

Action	Every Lift	Frequent ¹⁷ (20-40 hours)	Periodic ¹⁸ (250-400 hours)
Examine the <u>vacuum pads</u> for contaminates or damage.	✓	✓	✓
Examine the load surface for contaminates or debris.	✓	✓	✓
Examine the controls and indicators for damage.	✓	✓	✓
Check the <u>battery</u> for adequate charge.	✓	✓	✓
Examine the lifter's structure for damage.		✓	✓
Examine the vacuum system for damage (including <u>vacuum pads</u> , fittings and hoses).		✓	✓
Examine the <u>air filter</u> for conditions requiring service.		✓	✓
Perform the VACUUM TEST.		✓	✓
Check for unusual vibrations or noises while operating the lifter.		✓	✓

¹⁶ Details about these inspections can be found in the following sections (eg, VACUUM PAD MAINTENANCE, BATTERY ASSESSMENT, VACUUM TEST) or the *SERVICE MANUAL*.

¹⁷ The Frequent Inspection is also required whenever the lifter is out of service for 1 month or more.

¹⁸ The Periodic Inspection is also required whenever the lifter is out of service for 1 year or more. If necessary, return the lifter to Wood's Powr-Grip or an authorized dealer for repair (see LIMITED WARRANTY).

Action	Every Lift	Frequent ¹⁷ (20-40 hours)	Periodic ¹⁸ (250-400 hours)
Examine the entire lifter for evidence of: <ul style="list-style-type: none"> • looseness, excessive wear, excessive corrosion • deformation, cracks, dents to structural or functional components • cuts in vacuum pads or hoses • any other hazardous conditions 			✓
Inspect the entire electrical system for damage, wear or contamination that could be hazardous, in compliance with all local codes and regulatory standards. <i>Caution: Use appropriate cleaning methods for each electrical part, as specified by codes and standards. Improper cleaning can damage parts.</i>			✓
Keep a written record of all Periodic Inspections.			✓

Infrequent Use

If a lifter is used less than 1 day in a 2-week period, perform the Periodic Inspection *before each use*.

TESTING

Perform the following tests when you place the lifter in service *initially* and *following any repair*.¹⁹ Correct any fault and retest before using the lifter.

Operational Tests

- Perform the VACUUM TEST following.
- Test all features and functions of the lifter (see OPERATING FEATURES, OPERATION and MAINTENANCE).

¹⁹ Details about these tests can be found in the following sections (eg, BATTERY ASSESSMENT, VACUUM TEST) or the *SERVICE MANUAL*.

Load Test

Confirm that the lifter can lift the Maximum Load Capacity:²⁰



- 1) Place a test load with appropriate LOAD CHARACTERISTICS (see INTENDED USE) in the upright position on a stable support.²¹
- 2) Attach the vacuum pads to the load as previously directed.
- 3) After the vacuum pump stops running, disconnect the battery connector (see OPERATION: AFTER USING THE LIFTER).²²
- 4) Raise the load a minimal distance, to make sure it is supported by the lifter.



Take precautions in case load should fall during test.

- 5) Lower the load for release after 5 minutes. The load must not slip or fall during this time. If it does, perform a VACUUM TEST and inspect each vacuum pad (see VACUUM PAD MAINTENANCE). Correct any fault found and retest the lifter.

BATTERY ASSESSMENT

Before every lift and after each workday, use the battery gauge to determine whether the battery needs to be charged (see next section).²³



Never use lifter unless battery energy appears in green range.

- While the valve handle is in the “attach” position (← / power *on*), the battery gauge automatically shows battery energy (except while vacuum pump is running²⁴).
- While the valve handle is in the “release” position (→ / power *off*), use the battery test button (circled) to check the battery energy.²⁵



²⁰ An equivalent simulation may also be used. Contact Wood's Powr-Grip for more information.

²¹ Flat Lifters are exempt from this requirement.

²² Move the valve handle to the “release” position (power *off*) before reconnecting the battery.

²³ If the pump is running or the battery charger is connected to an AC power source, the reading on the battery gauge will not be accurate.

²⁴ After the vacuum pump stops running, the battery gauge requires a few moments to stabilize before it shows an accurate energy level.

²⁵ If the lifter has not been used since the battery was charged, the battery gauge may falsely show a high energy level. This “surface charge” dissipates after the pump runs for about one minute, allowing the gauge to show accurate energy.

BATTERY RECHARGE

Charge the battery whenever the battery gauge shows reduced energy (see previous section).

Caution: Make sure valve handle is in "release" position (|→) / power off).

 **Make sure power source is equipped with ground fault circuit interrupter.**

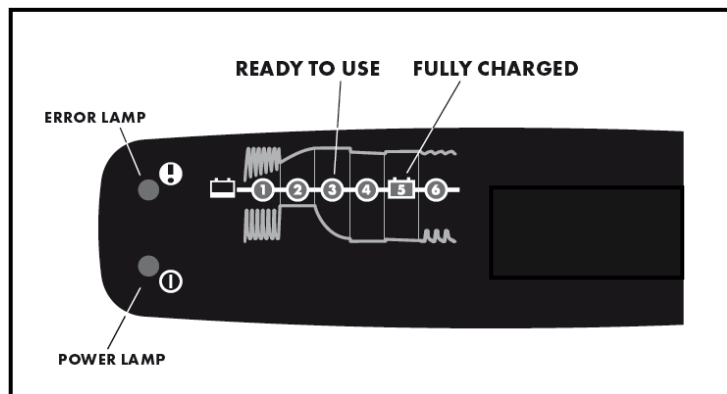
Identify the input voltage marked on the battery charger, and plug it in to an appropriate power source.²⁶

The power lamp (Φ) turns on when the charger is functioning. Consult the six-stage display to determine the charging status. The battery can be used after stage 3 and is fully charged at stage 5.

Normally, the battery should take no more than 8 hours to charge completely.²⁷ If not, check for the following faults:

- Power lamp (Φ) flashes: Charger is not connected to battery; reconnect charger (see ASSEMBLY).
- Error lamp (!) turns on immediately: Battery leads connected to wrong poles; reverse battery leads.
- Charging stops at stage 1 or 4, and error lamp (!) turns on: Battery is no longer functioning; replace battery (see REPLACEMENT PARTS).

Before you return the lifter to service, recheck the battery as previously directed.




²⁶ Any external power supply must conform to all applicable local codes.

²⁷ The charger automatically reduces the charging rate when the battery is fully charged.

VACUUM PAD MAINTENANCE

Pad-to-Load Friction Coefficient

 The friction coefficient represents the lifter's ability to resist load slippage.²⁸ The Maximum Load Capacity assumes a friction coefficient of 1.0, based on 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.***²⁹

Long-term exposure to heat, chemicals or UV light can reduce the friction coefficient of vacuum pads. Replace pads every 2 years or more often, when necessary.

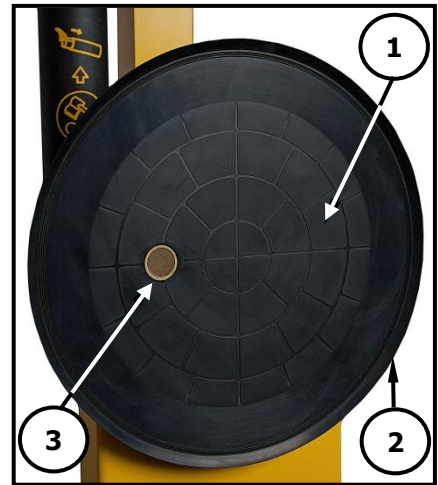
Pad Inspection

Inspect each vacuum pad according to the preceding INSPECTION SCHEDULE and TESTING, and correct the following faults before using the lifter (see REPLACEMENT PARTS when applicable):

- Contaminates on the face (1) or sealing edges (2) (see Pad Cleaning).
- Filter screen (3) missing from face.
- Nicks, cuts or abrasions in sealing edges.

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

- Wear, stiffness or glaze.



Pad Cleaning

- 1) Regularly clean the face of each vacuum pad, 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 the pad face clean, using a clean sponge or lint-free cloth to apply the cleanser.³⁰
- 4) Allow the pad to dry completely before using the lifter.




²⁸ Flat Lifters are exempt from this requirement.

²⁹ If necessary, contact Wood's Powr-Grip for help in conducting a friction test.

³⁰ 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 Wood's Powr-Grip or an authorized dealer for assistance.

VACUUM TEST

Test the vacuum system for leakage according to the preceding INSPECTION SCHEDULE and TESTING.

- 1) Clean the face of each vacuum pad as previously directed.
- 2) Use a test load with weight equal to the Maximum Load Capacity, a clean, smooth, nonporous surface and other appropriate LOAD CHARACTERISTICS (see INTENDED USE).³¹ 
- 3) Attach the lifter to the test load as previously directed. After the vacuum pump stops running, the vacuum level should appear in the green range on the vacuum gauge (if not, see VACUUM SWITCH ADJUSTMENT in *SERVICE MANUAL*).
- 4) Raise the load a minimal distance, to make sure the vacuum pads are loaded to capacity, and disconnect the battery connector (see OPERATION: AFTER USING THE LIFTER).³²



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.* Lower the load after 5 minutes or whenever a lifter fails the test.



Never use a lifter that has failed the VACUUM TEST.

- 6) Correct any fault in the vacuum system before using the lifter.

³¹ The load surface should have either a flat surface or no more curvature than the lifter is designed for, if any.

³² Move the valve handle to the "release" position (power *off*) before reconnecting the battery.

REPLACEMENT PARTS

Stock No.	Description	Qty.
65441	Vacuum Hose – 0.245" ID x 3/8" OD x 48" Length – Coiled	4
65440	Vacuum Hose – 0.245" ID x 3/8" OD (sold by the foot [approx 30.5 cm])	*
65014	Pad Spring – Wave Type (for HV11 pad)	4
65010	Pad Spring – Coil Type (for VPFS9 & G3370 pads)	4
64716	Battery Charger – 0.8 Amp – 240 V AC – Australian Type	1
64715	Battery Charger – 0.8 Amp – 240 V AC	1
64714	Battery Charger – 0.8 Amp – 100 / 120 V AC	1
64664	Battery – 12 V DC – 7 Amp-Hours	1
64283	Bulb – 13 V – Bayonet (for low vacuum warning light)	1
59086NC	Battery Connector – Twin Lead	1
59028	Movable Pad Mount – 2-1/2" Tubing Size	4
54390NC	Power Lead	1
53120	Pad Fitting – Elbow – 5/32" ID	4
53114	Hose Fitting – Coupler – 1/4" Barb	4
49646T	Vacuum Pad – Model G3370 / 11" [28 cm] Diameter – Lipped	4
49605T	Vacuum Pad – Model HV11 / 10" [25 cm] Diameter – Lipped	4
49506TA	Vacuum Pad – Model VPFS9 / 9" [23 cm] Diameter	4
49180	End Plug – 3" x 3" x 1/4" Tubing Size	1
49150	End Plug – 2-1/2" x 2-1/2" x 1/4" Tubing Size	4
36110	Service Manual – 12 V DC – 1 SCFM – Single Vacuum System – Manual Valve	1
29353	Pad Cover	4
15792	Tilt or Rotation Release Lever Knob	2
15632	Pad Filter Screen – Small (for VPFS9 pad)	4
15630	Pad Filter Screen – Large (for G3370 & HV11 pads)	4
13532	Cotterless Hitch Pin – 1/2" x 4"	8
10900	Shoulder Bolt – Socket Head – 5/16" x 1/2" x 1/4-20 Thread (for mounting pads)	24

* Quantity as required.

See ***SERVICE MANUAL #36110*** for additional parts.

***SERVICE ONLY WITH IDENTICAL REPLACEMENT PARTS,
AVAILABLE AT WPG.COM OR THROUGH AN AUTHORIZED WPG DEALER***

LIMITED WARRANTY

Wood's Powr-Grip® (WPG) products 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 a period of one year from the date of purchase.

If a problem develops during the warranty period, follow the instructions hereafter to obtain warranty service. If inspection shows that the problem is due to defective workmanship or materials, WPG will repair the product without charge.

WARRANTY DOES NOT APPLY WHEN:

- modifications have been made to the product after leaving the factory;
- rubber portions have been cut or scratched during use;
- repairs are required due to abnormal wear and tear; and/or
- the product has been damaged, misused, or neglected.

If a problem is not covered under warranty, WPG will notify the customer of costs prior to repair. If the customer agrees to pay all repair costs and to receive the repaired product on a C.O.D. basis, WPG then will proceed with repairs.

TO OBTAIN REPAIRS OR WARRANTY SERVICE

For purchases in *North America*:

Contact the Technical Service Department at Wood's Powr-Grip. When factory service is required, ship the complete product – prepaid – along with your name, address and phone number to the street address hereafter.

For purchases in *all other localities*:

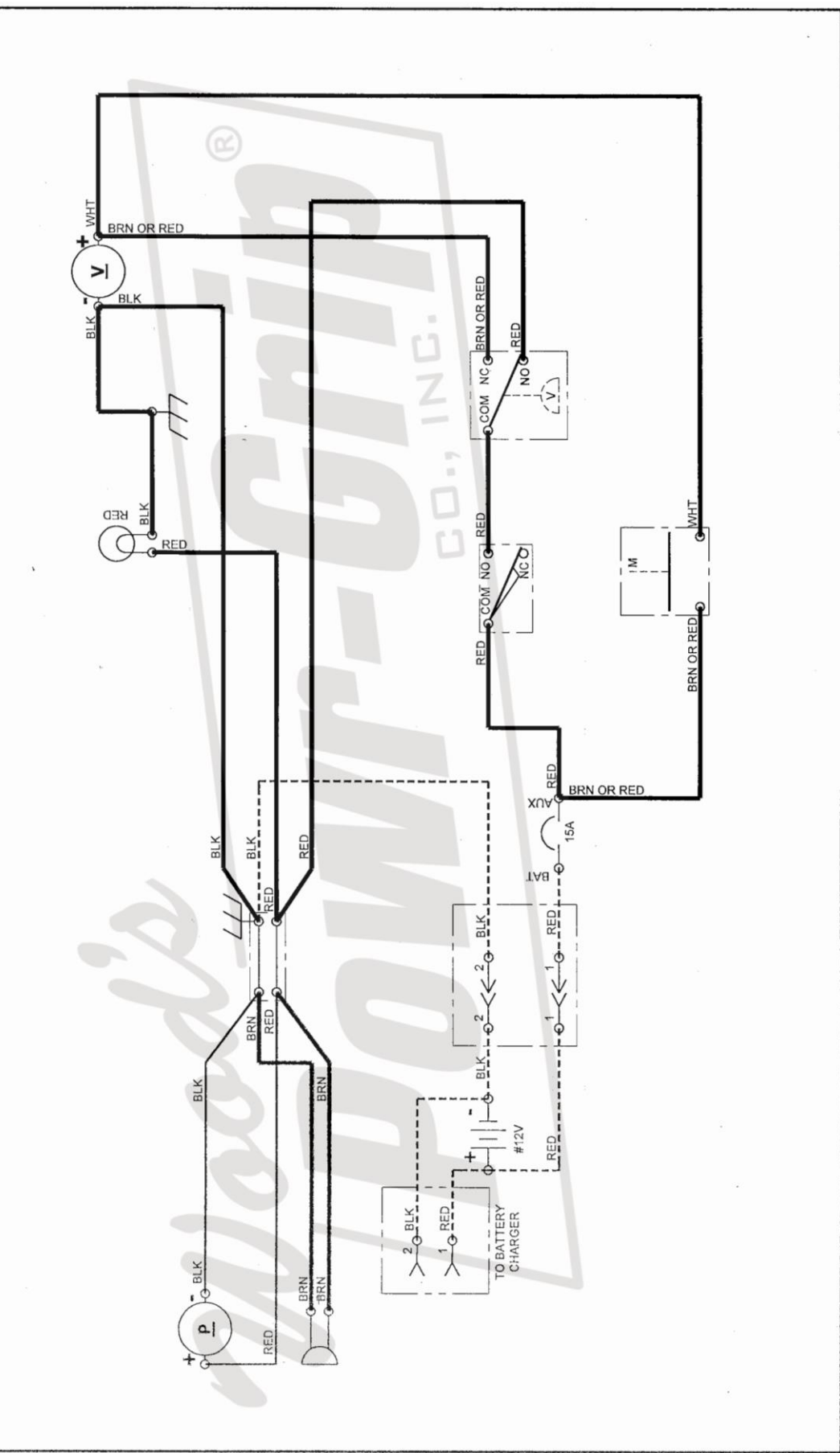
Contact your dealer or the Technical Service Department at Wood's Powr-Grip for assistance.

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

406-628-8231 (phone)
800-548-7341 (phone)
406-628-8354 (fax)

TYPE: STANDARD WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW. LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE. --- 14AWG --- N/A --- --- 16AWG --- NOTE #1:	DIRECTORY: H:\Working\IS\DV\705-DCP\UECN 3011\705-W01 [D-W01]
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DRAWN: L. RENNER DATE: 06/04/2003	1 SCFM DC VACUUM PACKAGE N/A PIEZOELECTRIC BUZZER WIRING DIAGRAM D705-W01 [D-W01]
CHECKED: <i>CR</i> DATE: 12-11-12	SIZE: A SCALE: NONE REV.: 4 ECN NUMBER: 3011 DATE: 11/14/2012 BY: RAS EST. WEIGHT: N/A
APPROVED: <i>Clmn</i> DATE: 12-12-12	

NOTES:
 1) 16AWG OR 20AWG WIRE, BASED ON VACUUM PUMP USED.



FILE DIRECTORY:
STANDARD
FILE SHEET:
705-W06 [W06]

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1 SCFM DC VACUUM PACKAGE

1 SCFM DC VACUUM SYSTEM WIRING SCHEMATIC, POWERCON D705-W06 [W06]

SIZE: A	SCALE: NONE	REVISION: 02.A	ECN NUMBER: 4170	ECN DATE: 11/02/2016	ECN BY: JAC	EST. WEIGHT: N/A
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WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.

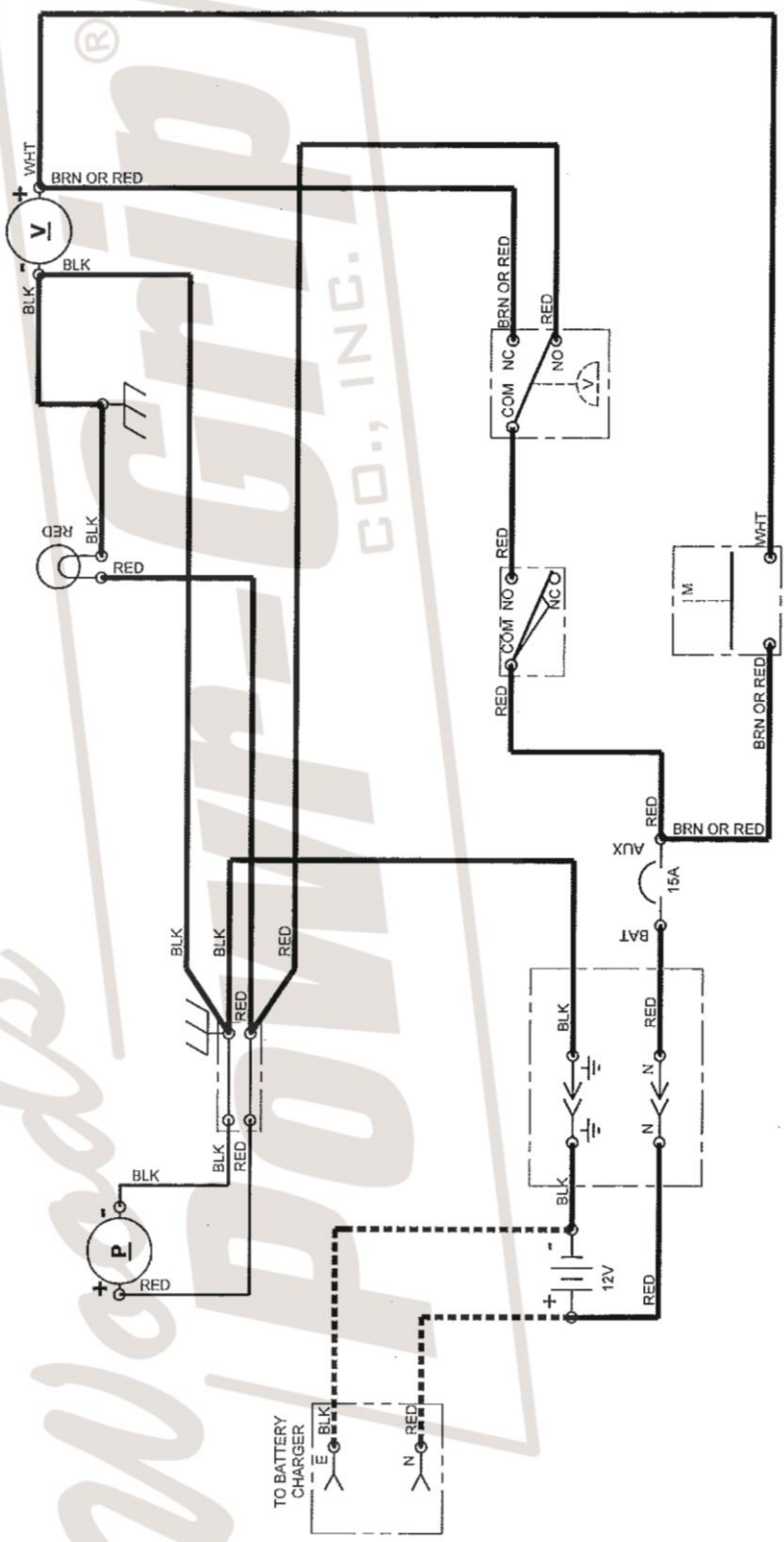
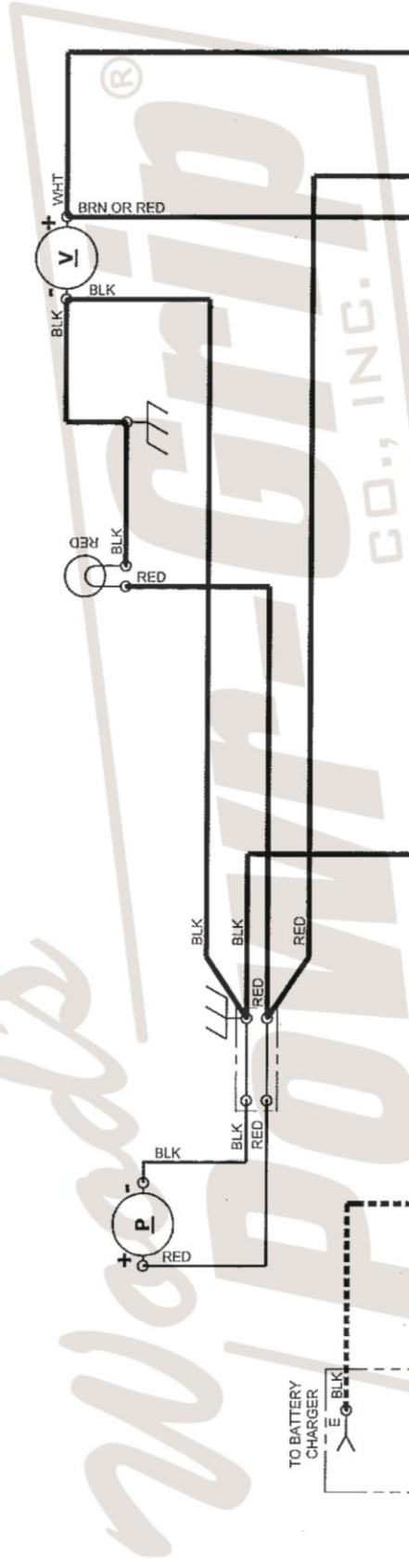
LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE:
 N/A N/A
 16AWG 16AWG
 18AWG 18AWG
 20AWG 20AWG

PRODUCT MANAGER: KEITH B.
 DATE: 10/27/2016

CHECKED: *Ch*
 APPROVED: *Conr*
 DATE: 11-30-16



NOTES:
 (1) 16 AWG OR 20 AWG WIRE, BASED ON VACUUM PUMP USED.



835- W01 [W01]		FILE DIRECTORY:	835
TYPE: STANDARD		FILE (SHEET):	
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WPG			
700LB MANUAL-ROTATOR/FILTER			
N/A			
SVS DC VACUUM PACKAGE WIRING SCHEMATIC			
D835-W01 [W01]			
SIZE: A	SCALE: NONE	REVISION: 02A	ECN BY: CCH
ECN NUMBER: 4161	ECN DATE: 10/13/2016	EST. WEIGHT: N/A	
WIRE LEGEND: CONTROLLED BY WIRING SYMBOLS DRAWING EXCEPT AS NOTED AND BELOW.			
LINE STYLES AND WIDTHS FOR WIRE UNLESS NOTED OTHERWISE.			
N/A 18AWG N/A NOTE #1 18AWG N/A N/A N/A 18AWG			
PRODUCT MANAGER: SEAN E.		DATE: 08/15/2016	
CHECKED: <i>SE</i>		10-18-16	
APPROVED: <i>AM</i>		10-18-16	

NOTES:
 1) 18AWG OR 20AWG WIRE, BASED ON VACUUM PUMP USED.

WPG ASC

