KEEP FOR FUTURE REFERENCE

# SERVICE MANUAL

**INTENDED FOR USE BY SKILLED TECHNICAL PROFESSIONALS • READ AND UNDERSTAND BEFORE SERVICING**

## AC-VOLTAGE POWER SYSTEM

Stock number: 35275

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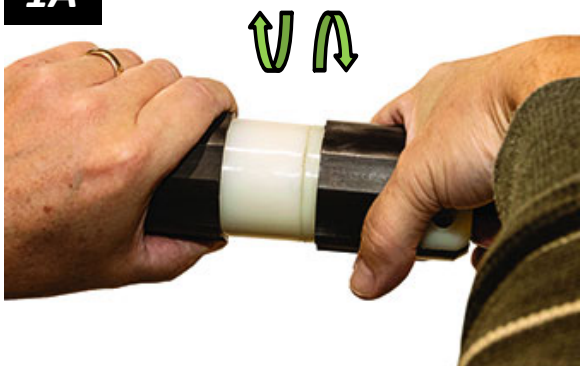
# BEFORE SERVICING LIFTER

***Disconnect power source before servicing lifter.***

Disconnect the electrical connectors (figs. 1A-B).

***1A***



***1B***

Service personnel must read and understand the lifter's *OPERATING INSTRUCTIONS* – especially "INSPECTIONS AND TESTS" and "MAINTENANCE" sections – before servicing the vacuum lifter. Many of the following discussions assume knowledge of the *OPERATING INSTRUCTIONS*.

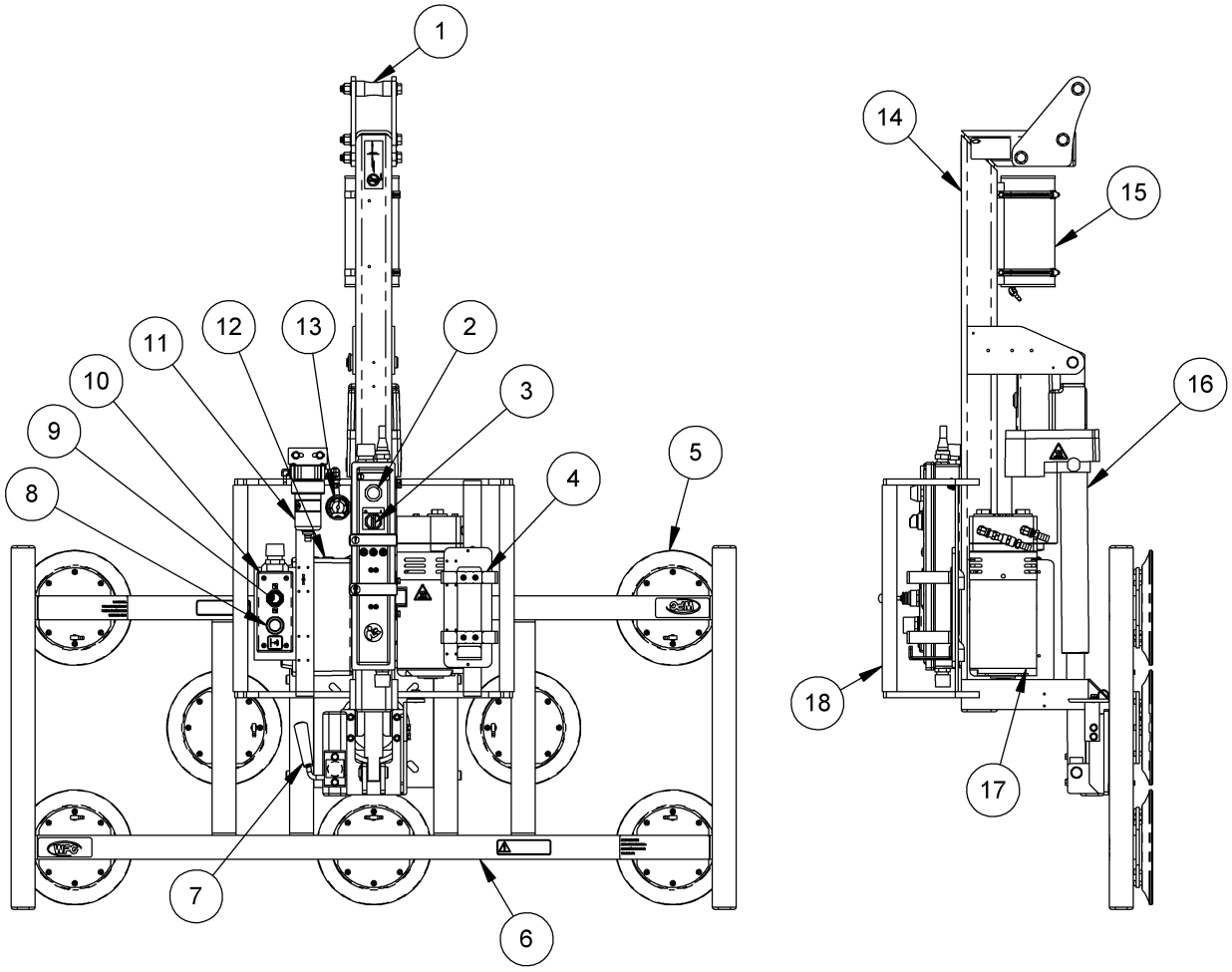
*Note: The relevant wiring diagrams are shown in the lifter's OPERATING INSTRUCTIONS, for reference when servicing or troubleshooting the lifter.*

## SERVICE SCHEDULE

Service must be performed whenever a deficiency is indicated by routine inspections or tests. Follow the "INSPECTIONS AND TESTS" section of the *OPERATING INSTRUCTIONS*. Any service warranted must be performed before resuming normal operation of the lifter.

# SERVICE FEATURES

Features shown here are underlined on their first appearance in each section to follow.




| | | | | | |
|---|---|---|---|---|---|
| 1 | LIFT POINT | 2 | VACUUM LIFT LIGHT | 3 | POWER SWITCH |
| 4 | PENDANT BASKET | 5 | VACUUM PAD | 6 | PAD FRAME |
| 7 | ROTATION RELEASE LEVER | 8 | VACUUM RELEASE BUTTON[1] | 9 | TILT TOGGLE SWITCH |
| 10 | MOVABLE CONTROL PENDANT | 11 | AIR FILTER | 12 | Enclosure w/ VACUUM SWITCH |
| 13 | VACUUM GAUGE | 14 | LIFT BAR | 15 | VACUUM RESERVE TANK |
| 16 | TILT ACTUATOR | 17 | VACUUM PUMP | 18 | CONTROL HANDLE |

1..... Some lifters have a lever-style Vacuum Control Valve instead of a Vacuum Release Button.

*Note: A standard MRPT89AC is shown.[1]*

1..... Some components may not be relevant or they may have a different location, depending on the lifter in question.

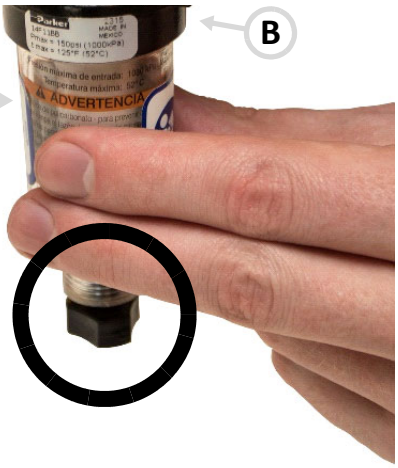
# AIR FILTER MAINTENANCE – 1 OZ BOWL SIZE

***Inspect each <u>air filter</u> regularly, and service when necessary.***

Immediately remove liquid or other contaminates found in the filter bowl (A in fig. 1A), to prevent contact with the filter element (C in fig. 2A).

***Never use bowl drain (circled in fig. 1A) to remove liquid, because this could cause air leak.***

**1A**




Replace the filter element whenever:

- It has an overall dirty appearance.
- There is a noticeable increase in the time required to attain full vacuum.

## Filter Service Procedure

1) Unscrew the bowl (item A in fig. 1A) from the body (item B in fig. 1A) of the <u>air filter</u>.

   *Note: To protect air-line fittings from damage, hold the body while turning the bowl.*

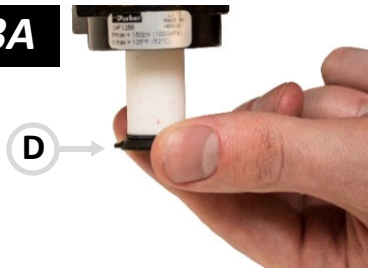
2) Determine whether the filter element (item C in fig. 2A) needs to be replaced (see above).

   - *If so*, proceed to *step 3*.
   - *If not*, remove any liquid or contaminates from the bowl; clean the old bowl seal (see *step 4* on next page) with mild soap and water; and skip to *step 6*.

**2A**


3) Carefully unscrew the element holder (item D in fig. 3A) and remove all internal parts (fig. 3B).

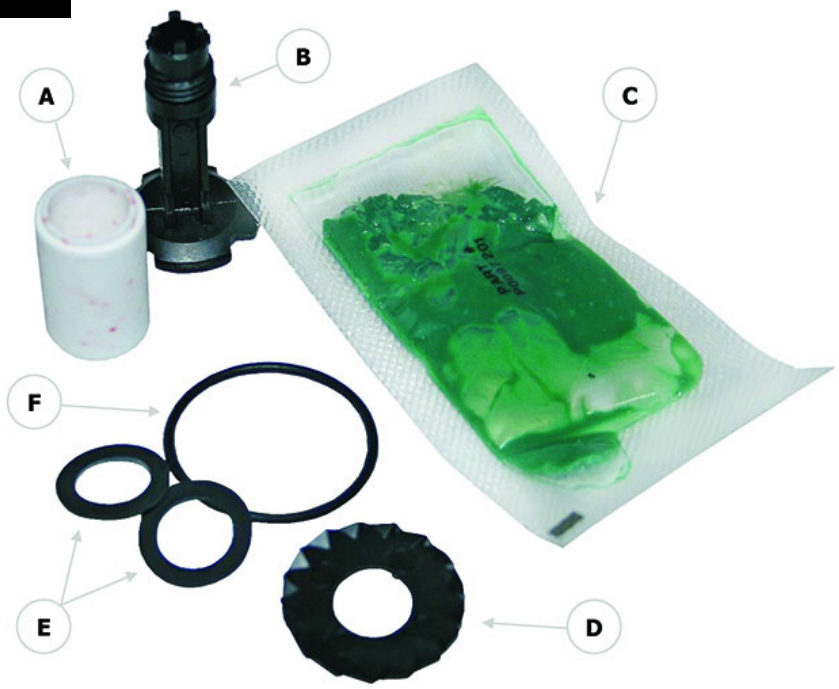
**3A**




**3B**

4) Identify the parts in the Filter Element Kit **(#16134)**, including the element (item A in fig. 4A), element holder (B), lubricant (C), deflector (D), element gaskets (E), bowl seal (F). Then dispose of the corresponding old parts.

***4A***




5) Place the new element gaskets, element and deflector on the element holder as shown in fig. 5A. Then screw the assembly back into the filter body.

   *Note: Tighten gently – finger-tight.*

***5A***

6) Clean the bowl, using mild soap and water only.

   ***Caution:*** *Do not use any other cleaning agents.*

7) Lubricate the new or cleaned bowl seal using a mineral-based oil or grease, such as that provided in the filter element kit.

   ***Caution:*** *Do not use synthetic oils, such as esters, and do not use silicones.*

   Then place the bowl seal around the rim of the bowl.

8) Screw the bowl back into the body. Hand-tighten only.

   ***Caution:*** *Do not contaminate the filter element with lubricant from the bowl seal.*

Perform the "Vacuum Test" to be certain the air filter does not leak (see "INSPECTIONS AND TESTS: TESTING" in the lifter's *OPERATING INSTRUCTIONS*).

*Note: Repeat this procedure for any other filter of the same type.*

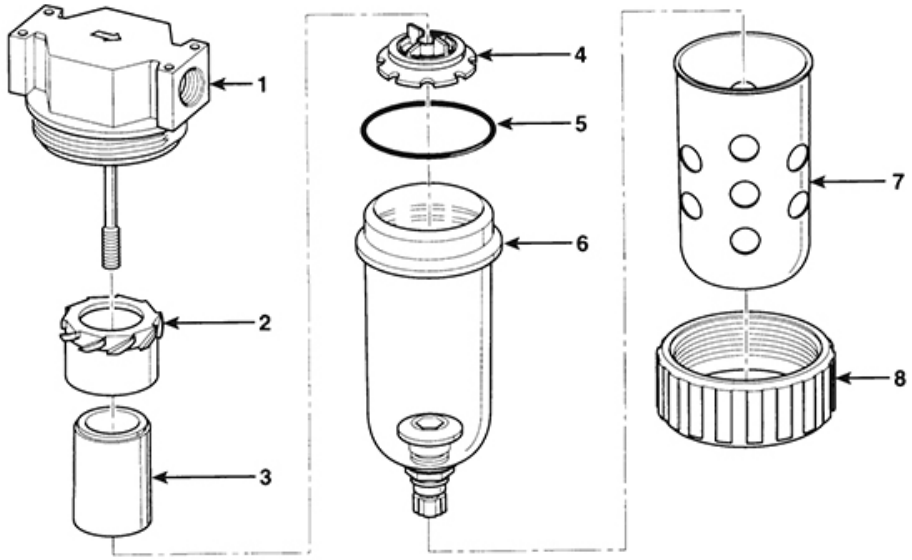
# AIR FILTER MAINTENANCE – 4.4 OZ BOWL SIZE

***Inspect each air filter regularly, and service when necessary.***

Immediately remove liquid found in the filter bowl, to prevent contact with the filter element.

***Never use bowl drain to remove liquid, because this could cause air leak.***

**1A**




Replace the element whenever:

- It has an overall dirty appearance.
- There is a noticeable increase in the time required to attain full vacuum.

*Note: The Filter Element Kit **(#16132)** includes an element (item 3 in fig. 1A), a bowl seal (item 5) and lubricant (not shown).*

## Filter Service Procedure

1) Unscrew the threaded collar (item 8 in fig. 1A) from the body (item 1) of the air filter.

   *Note: To protect air-line fittings from damage, hold the body while turning the collar.*

2) Remove the bowl guard (item 7) and the bowl (item 6).
3) Determine whether the filter element (item 3) needs to be replaced (see above).
   - *If so*, proceed to *step 4*.
   - *If not*, remove any liquid or contaminates from the bowl; clean the old bowl seal (item 5) with mild soap and water; and skip to *step 8*.
4) Unscrew the baffle (item 4), and remove the element and deflector (item 2).
5) Discard the old element and bowl seal (item 5).
6) Clean the bowl and all remaining internal parts, using mild soap and water only.

   ***Caution:** Do not use any other cleaning agents.*

7) Install the deflector and a new filter element. Then screw the baffle back on to hold the element in place.

   *Note: Tighten gently – finger-tight.*

8) Lubricate the new or cleaned bowl seal, using a mineral-based oil or grease, such as that provided in the filter element kit.

   ***Caution:*** *Do not use synthetic oils, such as esters, and do not use silicones.*

   Then place the bowl seal around the rim of the bowl.

9) Install the bowl back onto the body.

   ***Caution:*** *Do not contaminate the filter element with lubricant from the bowl seal.*

10) Install the bowl guard and the collar.

    *Note: Tighten the collar with 28-32 in-lbs [316-362 N-cm] of torque.*

11) Perform the "Vacuum Test" to be certain the air filter does not leak (see "INSPECTIONS AND TESTS: TESTING" in the lifter's *OPERATING INSTRUCTIONS*).

*Note: Repeat this procedure for any other filter of the same type.*

# VACUUM PUMP MAINTENANCE – MODEL 0523

> ***Before proceeding with any maintenance, disconnect power source and allow pump to cool.***

## Disassembly/Reassembly Procedure

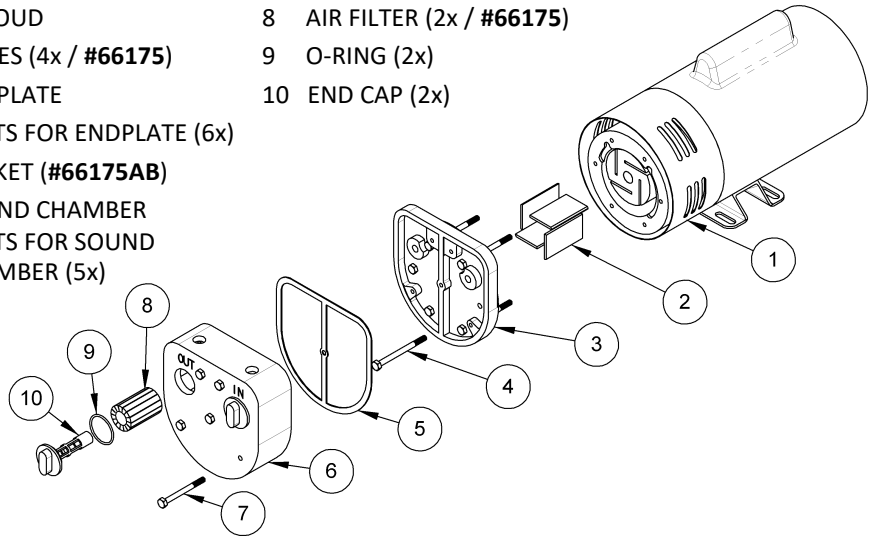
*(includes replacing air filters, vanes and gasket; see "REPLACEMENT PARTS" on page 16)*

1) Remove the end caps, O-rings and air filters from the sound chamber of the vacuum pump.

2) Remove the five bolts and remove the sound chamber.

   *Note: If any liquid is discovered in the sound chamber, thoroughly dry all interior surfaces of the pump prior to reassembly.*

1 SHROUD
2 VANES (4x / **#66175**)
3 ENDPLATE
4 BOLTS FOR ENDPLATE (6x)
5 GASKET (**#66175AB**)
6 SOUND CHAMBER
7 BOLTS FOR SOUND CHAMBER (5x)
8 AIR FILTER (2x / **#66175**)
9 O-RING (2x)
10 END CAP (2x)




3) Remove the six bolts from the endplate, and separate the endplate from the rotor housing. The shroud surrounding the rotor housing will loosen as well.

4) Note the orientation of the bevel on the vanes for step 5. Then remove the vanes by sliding them out the end of the rotor. If needed, rotate the rotor by hand to position the vanes for easier access.

5) Make sure that the rotor and housing are clean and free of debris. Orient the new vanes like the old ones by matching the bevel. Then insert the new vanes by sliding them into the empty slots in the rotor.

6) Reinstall the endplate and secure it with the six bolts previously removed.

7) Remove the gasket, and make sure that the contact surfaces between the endplate and sound chamber are clean. Install a new gasket and reinstall the sound chamber. Then secure the sound chamber with the five bolts previously removed.

8) Replace the air filters. Then reinstall the O-rings and end caps.

# VACUUM PUMP MAINTENANCE – MODEL 3032 OR 2032

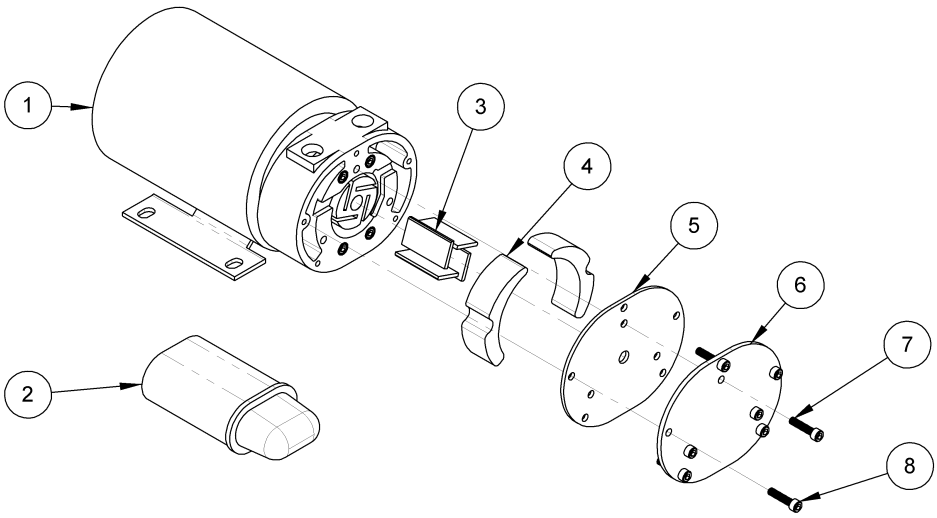
*(for pump nos. 3032-101A-G609X; 2032-101-G616X)*

> ***Before proceeding with any maintenance, disconnect power source and allow pump to cool.***

If the vacuum pump takes too long to attain full vacuum, it may require maintenance, as directed in the following disassembly/ reassembly procedure. Service or replace air filters and vanes as necessary to obtain acceptable pump performance (see Pump Vanes/Filters Kits in "REPLACEMENT PARTS" on page 16).

*Note: Inspect air filters after no more than 500 hours of operation; dirty filters must be cleaned or replaced.*

1) Remove the retainer bolts from the vacuum pump.
2) Remove the retainer plate and insert plate by lightly tapping on them with a small hammer. *Note: Do not use a screwdriver to remove these plates, because it could damage them.*



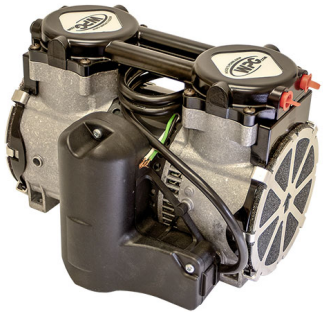

| | | | |
|---|---|---|---|
| 1 | MOTOR W/ ROTOR HOUSING | 2 | CAPACITOR |
| 3 | VANES (4x) | 4 | AIR FILTERS (2x) |
| 5 | INSERT PLATE | 6 | RETAINER PLATE |
| 7 | LONG RETAINER BOLT (3x) | 8 | SHORT RETAINER BOLT (5x) |

3) Before removing the existing vanes, note the direction of the beveled edge, in order to install the new vanes in the same orientation. Do not try to remove the rotor, because it can only be serviced by the manufacturer.
4) Spray the bore and rotor with a suitable, nonpetroleum-based flushing solvent. Use a clean, dry cloth to remove flushing solvent from these parts.
5) Place the new vanes in the rotor slots with the beveled edge in the correct orientation (see step 3). *Note: Vanes may become damaged or broken if installed incorrectly.*

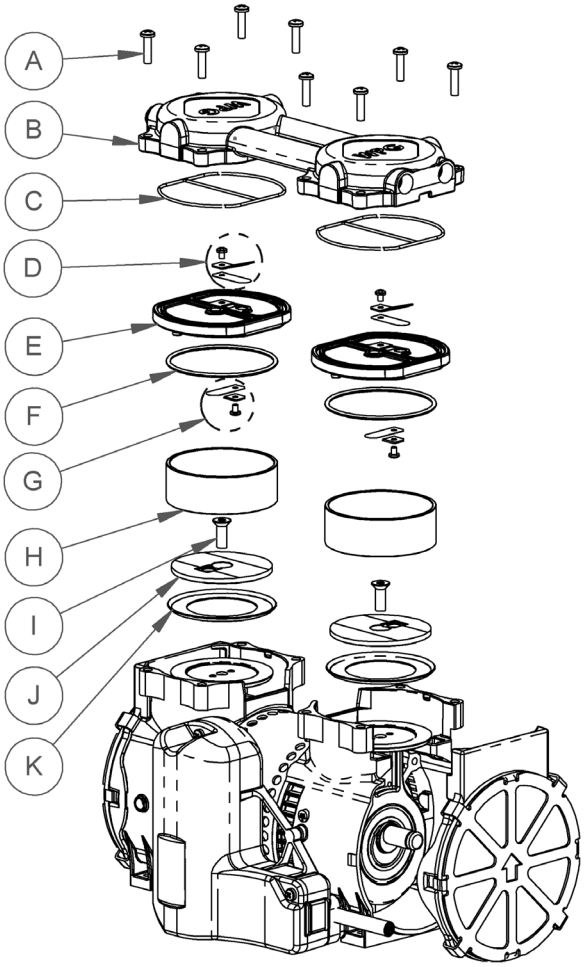
6) If the air filters appear dirty, clean them with soapy water or replace them altogether, depending on their condition. After cleaning the filters, dry them with compressed air. Since moisture can damage the pump, be sure to avoid introducing any moisture into the pump. When the filters are completely dry, reinstall them in the rotor housing. Otherwise, install new filters.
7) Place a sheet of fine emery cloth on a smooth, flat surface and rub both sides of the insert plate on the emery cloth to remove any burrs. Use a clean, dry cloth to remove any dust from the insert plate. Reinstall the insert plate, placing the unused side facing the pump vanes.
8) Repeat step 7 with the face of the retainer plate. Use a clean, dry cloth to remove any dust from the retainer plate and reinstall it.
9) Reinstall the retainer bolts and tighten them to 28-36 in-lbs (3.1-4.1 N-m) of torque.

# VACUUM PUMP MAINTENANCE – MODEL MP27

***Before proceeding with any maintenance, disconnect power source and allow pump to cool.***



If the vacuum pump takes too long to attain full vacuum, clean the exterior of the pump and replace worn parts as necessary to obtain acceptable pump performance (see "REPLACEMENT PARTS" on page 16).




| Reference | Availability | Quantity | Description |
|---|---|---|---|
| A | ☐ | 8 | Head Screw |
| B | ☐ | 2 | Head |
| C | ■ | 2 | Head O-ring |
| D | ■ | 2 | Exhaust Valve Kit (valve flapper, restraint and screw) |
| E | ☐ | 2 | Valve Plate |
| F | ■ | 2 | Sleeve O-Ring |
| G | ■ | 2 | Intake Valve Kit (valve flapper, keeper and screw) |
| H | ■ | 2 | Cylinder Sleeve |
| I | ■ | 2 | Retainer Screw |
| J | ☐ | 2 | Retainer Plate |
| K | ■ | 2 | Piston Cup |

☐ Nonstocked Item
■ Included in service kit **#66179AM**

## Removing the Heads and Valve Plates

1) Remove the head screws (A) and the pump heads (B). Note the orientation of the heads for reassembly.
2) Carefully separate the valve plates (E) from the bottom of the pump heads (B) and the top of the cylinder sleeves (H). Note the orientation of the plate tabs for reassembly.
3) Remove the head O-rings (C) and sleeve O-rings (F), and discard them.

## Replacing the Intake Valves and Sleeve O-Rings

4) Remove the old valve screws, keepers and flappers (G) and discard them.
5) Clean the lower surfaces of the valve plates (E) with a soft cloth.
6) Install the new valve flappers, keepers (so “X” is visible) and screws (G) as shown. Tighten the screws with 18 in-lbs [2 N-m] of torque.
7) Install new sleeve O-rings (F) in the valve plates (E). Make sure to seat them firmly in the grooves.

## Replacing the Exhaust Valves and Head O-Rings

8) Remove the old valve screws, restraints and flappers (D) and discard them.
9) Clean the upper surfaces of the valve plates (E) with a soft cloth.
10) Install the new valve flappers, restraints and screws (D) as shown. Tighten the screws with 18 in-lbs [2 N-m] of torque.
11) Install new head O-rings (C) in the valve plates (E). Make sure to seat them firmly in the grooves, without any twists.

## Disassembling the Piston Assemblies

12) Remove the retainer screws (I) and discard them. Note the position of the recesses in the retainer plates (J) for reassembly.
13) Remove the cylinder sleeves (H), retainer plates (J) and piston cups (K). Discard the sleeves and cups.
14) Clean the retainer plates (J) and tops of the piston rods.

## Replacing the Sleeves and Cups

15) Place a new cylinder sleeve (H) over one piston rod.
16) Insert a new piston cup (K) into the sleeve (H) and push the cup down to the piston rod.
17) Reinstall a retainer plate (J) on the piston rod, making sure to position it correctly.
18) Install a new retainer screw (I) and tighten the screw with 55 in-lbs [6.2 N-m] of torque.
19) Repeat steps 15–18 with the other piston assembly.

## Installing the Valve Plates and Heads

20) Make sure the cylinder sleeves (H) are seated firmly against the pump housing. Then place the assembled valve plates (E) in the correct orientation on the sleeves, making sure they fit into the corresponding O-ring grooves.

21) Place the heads (B) in the correct orientation on the valve plates (E), making sure the plate tabs fit in corresponding head notches.

22) Install the head screws (A) and tighten them with 55 in-lbs [6.2 N-m] of torque in a crisscross pattern.

# VACUUM SWITCH ADJUSTMENT

The vacuum switch turns the vacuum lift light on and off as needed to indicate whether the lifter has attained sufficient vacuum for lifting the maximum load weight, as shown on the vacuum gauge (see "OPERATION: TO ATTACH THE PADS TO A LOAD: Reading the Vacuum Gauge" in lifter's *OPERATING INSTRUCTIONS*).

If the switch is adjusted correctly, the lift light turns on only *after* vacuum becomes sufficient for lifting; and turns off again *before* vacuum becomes insufficient for lifting.[1,2] Adjust the vacuum switch when necessary:

1) Use the 1/4" open-end wrench provided to turn the adjustment screw (circled in fig. 1A) about 1/6th turn at a time:

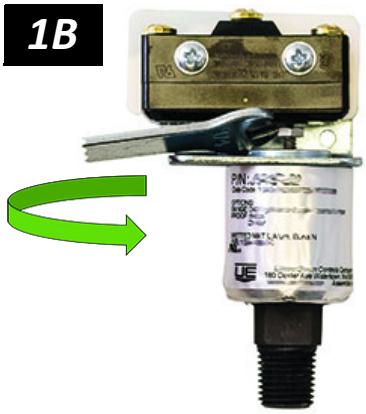
   - To make the lift light turn *off* at a *greater* vacuum level, turn the screw *counterclockwise* (fig. 1B).

   - To make the lift light turn *on* at a *lesser* vacuum level, turn the screw *clockwise* (fig. 1C).

2) Check lift light activity in relation to the vacuum level.[3] Continue to make incremental adjustments until the vacuum switch is functioning correctly.

**1A**

**1B**



**1C**

1..... If the lift light turns on *before* vacuum is sufficient for lifting, replace the air filter's element (see "AIR FILTER MAINTENANCE – 1 OZ BOWL SIZE" on page 4 or "AIR FILTER MAINTENANCE – 4.4 OZ BOWL SIZE" on page 6). If the lift light does *not* turn on *after* vacuum is sufficient for lifting, replace the light bulb (see "REPLACEMENT PARTS" on page 16).

2..... In order to observe lifter functions while vacuum is decreasing, it may be necessary to create a controlled leak in the vacuum system.

3..... In order to test the adjustment accurately, release the vacuum pads completely before reattaching them to a test surface.

# LINEAR TILT ACTUATOR ADJUSTMENT

The tilt actuator is prelubricated and should not require additional lubrication.[1]

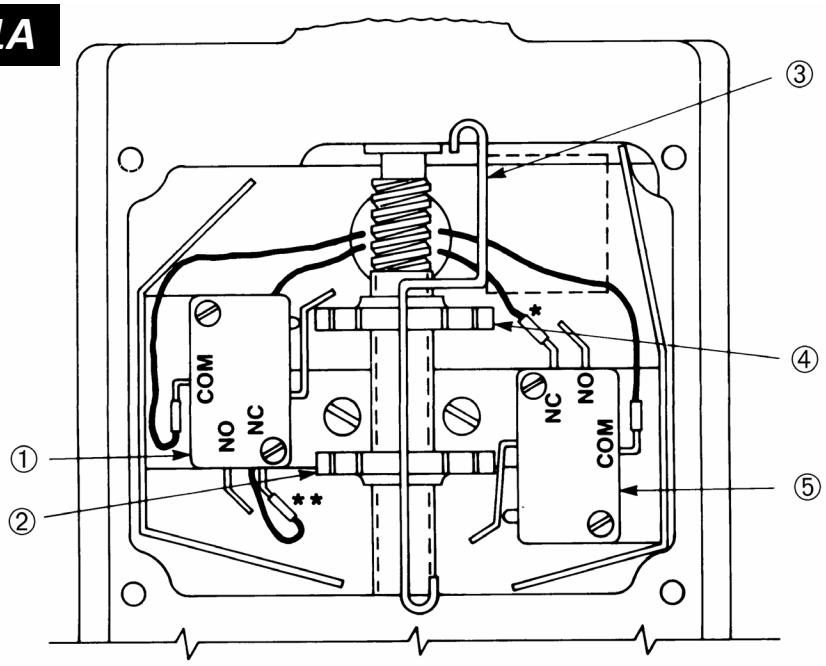
The actuator has an intermittent-duty type motor. If the actuator is operated more than 20% of the time or runs continuously for more than 5 minutes, a thermal overload relay will break the power circuit. It then takes about 10 minutes before the motor cools sufficiently for the thermal relay to close and restore power.

The brake is preset and should provide consistent braking for the tilt function. However, if the brake friction surfaces become worn (indicated by excessive drift), contact WPG for rebuilding.

The limit switches, which control the stroke length, also are preset and should not need adjustment. However, if adjustment is required, proceed as follows:

1) Remove the appropriate cover plate (on actuator head, facing screw shaft side) to expose the limit switches (items 1 and 5 in fig. 1A).
2) Engage the actuator until it reaches the correct retracted or extended position (depending on adjustment needed). Stop the actuator before any parts of the vacuum lifter come in contact with each other.
3) Remove the nut restrainer (item 3).

***1A***




4) Turn the appropriate limit switch nut (item 2 or item 4) as needed to activate the limit switch, allowing for drift.
5) Check actuator travel and readjust if necessary. Then reinstall the nut restrainer and cover plate.

1..... If the actuator is not used for a week or more at a time, oil may begin to separate from the lubricant and leak out. Although this condition is not detrimental to the actuator, you can avoid it by simply running the actuator for a few cycles each week.

# REPLACEMENT PARTS

| Stock No. | Description | Qty. |
|---|---|---|
| 95500AM | Vacuum Pump – Rotary Vane Type – 4 SCFM – 100/120/240 V AC | 1 |
| 93039 | Vacuum Pump – Rotary Vane Type – 2.5 SCFM – 240 V AC | 1 |
| 93038 | Vacuum Pump – Rotary Vane Type – 2.5 SCFM – 120 V AC | 1 |
| 66207 | Pump Vanes/Filters Kit (for pump 93039) | 1 |
| 66205 | Pump Vanes/Filters Kit (for pump 93038) | 1 |
| 66179AM | Pump Service Kit (for pumps 66126, 66126AM) | 1 |
| 66175AB | Pump Gasket (for pump 95500AM) | 1 |
| 66175 | Pump Vanes/Filters Kit (for pump 95500AM) | 1 |
| 66126AM | Vacuum Pump – Wobble Piston – 5 SCFM – 240 V AC | 1 |
| 66126 | Vacuum Pump – Wobble Piston – 5 SCFM – 120 V AC | 1 |
| 65277 | Vacuum Control Valve with Lever (for MRTA8-AC) | 1 |
| 65275 | Vacuum Control Valve with Lever (for FLEX-AC, MR4-AC, MTA4/8-AC) | 1 |
| 65264M | Valve Adapter (for MTA2-AC vacuum release button) | 1 |
| 65261 | Vacuum Control Valve – 4-Way (for MTA2-AC vacuum release button) | 1 |
| 65258 | Push Button (for MTA2-AC vacuum release button) | 1 |
| 65234 | Solenoid Valve – 240 V AC – 6 W (for FLEX-AC, MR4-AC, MTA2-AC) | 1 |
| 65231 | Solenoid Valve – 120 V AC – 6 W (for CFPT-9AC, MRPT89AC, VLGG-AC) | 2 |
| 65226 | Solenoid Valve – 120 V AC – 6 W (for FLEX-AC, MR4-AC, MTA2-AC) | 1 |
| 65212AM | Check Valve – 1/4 NPT – 0.15 PSI (for MTA2-AC) | 1 |
| 65212 | Check Valve – 1/4 NPT – 1.00 PSI | 1 |
| 65211AM | Check Valve – 1/8 NPT – 0.15 PSI | 1 |
| 64952 | Actuator – 1500 lbs – 12" Stroke – 120 V AC (for MRPT89AC, PT10/1410TAC) | 1 |
| 64951 | Actuator – 1500 lbs – 12" Stroke – 240 V AC (for MRPT89AC, PT10/1410TAC) | 1 |
| 64950 | Actuator – 1500 lbs – 6" Stroke – 120 V AC (for CFPT-9AC) | 1 |
| 64948 | Actuator – 1500 lbs – 6" Stroke – 240 V AC (for CFPT-9AC) | 1 |
| 64461 | Circuit Breaker – 10 A | 1 |
| 64459MZ | Circuit Breaker – 8 A | 1 |
| 64459 | Circuit Breaker – 5 A | 1 |
| 64355 | Adjustable Time Delay Relay – 18-240 V AC – 1.5 A (for pump 93038) | 1 |
| 64289 | Bulb – 24 V – Bayonet (for vacuum lift light on CFPT-9AC, MRPT89AC, VLGG-AC) | 1 |
| 64284 | Bulb – 6.3V – Bayonet (for vacuum lift light on MRTA8-AC) | 1 |
| 64262 | Green Lens (for vacuum lift light) | 1 |
| 64236 | Vacuum Switch – 1/4 NPT | 1 |
| 64191 | Contact Block (for rotary power switch) | 1 |
| 64176 | Power Switch – On/Off Toggle (for MR4-AC, MTA2-AC) | 1 |
| 56052 | Solenoid Valve Manifold Assembly – 24 V AC (for CFPT-9AC, MRPT89AC, PT10/1410TAC, VLGG-AC) | 1 |
| 20270 | 1/4" Open-End Wrench (for adjusting vacuum switch) | 1 |
| 16134 | Filter Element Kit (for 1 oz bowl size air filter) | 1 |
| 16132 | Filter Element Kit (for 4.4 oz bowl size air filter) | 1 |
| 15930 | Vacuum Gauge – 1/4 NPT – LM Type (for MTA2-AC, VLGG-AC) | 1 |
| 15910 | Vacuum Gauge – 1/8 NPT – CBM Type (for other models) | 1 |
| 15650 | 360° Rotating Union – 1/4 NPT (for MR4-AC, MRPT89AC) | 1 |

*See **OPERATING INSTRUCTIONS** for additional parts.*

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