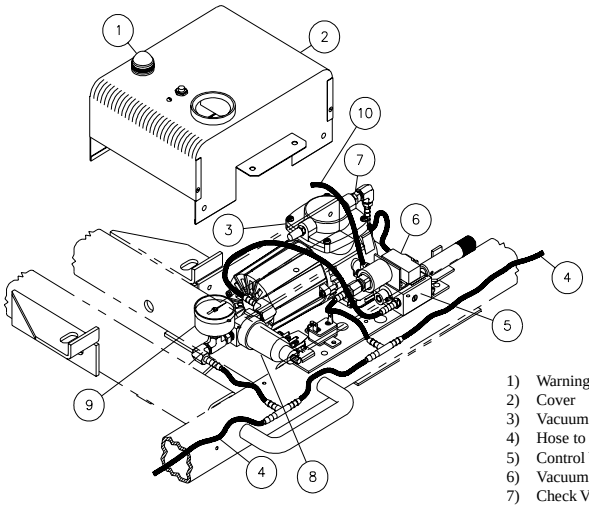
Wood's Powr-Grip CO., INC.

Isolating Vacuum Leaks:

DC Powr-Frames

Guide to Troubleshooting and Repair



1) Warning Light
2) Cover
3) Vacuum Pump
4) Hose to Vacuum Pads
5) Control Valve / Handle
6) Vacuum Switch
7) Check Valve
8) Air Filter
9) Vacuum Gauge
10) Hose to Vacuum Tank

Severe leakage is evidenced by a lifter's inability to draw full vacuum while attached to clean, smooth, nonporous surfaces. In such cases, the vacuum pump runs continuously and the red low vacuum warning light remains illuminated.

Moderate leakage is indicated by intermittent cycling of the vacuum pump and warning light during a lift. If the vacuum generating system turns on more than once every 10 minutes, leakage is serious enough to warrant repairing the lifter's vacuum system.

To locate the cause of leakage, begin by inspecting the vacuum pads, fittings and hoses of the entire vacuum system. Look for contamination, cuts or abrasions on pad faces, damaged fittings, cracks or cuts in hoses, and loose hoses at connection points. If leakage is severe, it also may be possible to pinpoint the source by carefully listening for airflow at each pad and along the length of the vacuum lines. Do not apply soapy water to fittings or vacuum hoses in an attempt to find leaks, since it will only be drawn inside the vacuum system.

If the source of leakage is not immediately evident, the various sections of the entire vacuum system must be systematically isolated to determine the leakage point, as follows:

Preliminary Test

This test determines whether leakage is located in the vacuum generating system (including filter assembly) or the pad system.

1) Remove both of the vacuum hoses marked "to vacuum pads" from the outside ends of the barbed T fittings (see figure).
2) Cap the open ends of both T fittings, to seal off the vacuum generating system from the pad system.
3) Activate the vacuum generating system (pull handle of control valve).
4) Observe the pump and warning light activity, to locate the general area of leakage:
   - If the pump and light *turn off and remain off*, this indicates the vacuum generating system does *not* leak, so the leakage is in the pad system. Proceed to the Pad System Tests.
   - If the pump and light *continue to cycle or stay on continually*, this indicates the vacuum generating system *does* leak. Proceed to the Vacuum Generating System Tests.

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Products are manufactured under an ISO 9001 quality management system

Pad System Tests

Isolate the vacuum pads, fittings and vacuum line sections until the leak point can be located, as follows:

1) Reconnect the vacuum lines from the vacuum generating system to the pad system.
2) Remove each pad fitting, disconnecting all the pads from the vacuum system.
3) Cap all the pad fittings, to seal off the vacuum lines.
4) Activate the vacuum generating system and observe the pump and warning light activity:
   - If the pump and light *turn off and remain off*, the leakage is in one or more pads. Reconnect one pad to its vacuum line and retest. If indications of leakage resume, replace that pad. Continue testing until all pads have been reconnected and all defective pads have been replaced.
   - If the pump and light *continue to cycle or stay on continually*, the leakage is in the fittings or vacuum lines. Fittings may be tested in the same manner as the pads, by removing each fitting from its vacuum line and plugging the hose. Vacuum line sections may be tested by moving up each line (toward vacuum generating system) to the next fitting, removing the hose and plugging it at the fitting. Continue until all fittings and lines are tested or the leak is located.

Vacuum Generating System Tests

The most likely leak points in the vacuum generating system are the filter assembly, check valve or control valve. Leave the T fittings sealed off, and test these items as follows:

Test the filter assembly for leakage:

CAUTION: Disconnect the battery before removing the vacuum generating system cover.

1) Carefully remove the vacuum generating system cover and lay it to one side, so that exposed wire terminals do not touch any conductive material.
2) Remove the hose from the barbed fitting on the control valve (which leads directly to the air filter), and remove the hose from the T fitting barb that leads directly to the vacuum gauge (see figure).
3) Connect a short section of hose directly between the open ends of the control valve fitting and the T fitting. (The gauge will no longer register any vacuum, since it has been by-passed.)
4) Reconnect the battery and activate the vacuum generating system.
5) Observe the pump and warning light activity:
   - If the pump and light *turn off and remain off*, the leak is in the filter assembly. Reattach the hoses in their original locations and make certain the filter bowl is tight; then retest. ***CAUTION: Do not use any tools to tighten the bowl; it should only be finger-tight.*** If leakage persists, service the filter according to the filter maintenance section of the instructions manual, and check for loose or cracked fittings.
   - If the pump and light *continue to cycle or stay on continually*, the leak is not in the filter assembly. Test the check valve, as follows.

Test the check valve for leakage:

1) Cap the barbed fitting on the side of the filter assembly adjacent to the vacuum gauge.
2) The check valve is screwed directly into the pump head, followed immediately by a 90° barbed fitting. Remove the hose from this barbed fitting and connect a short section of hose directly between the pump head fitting and the barbed fitting opposite the gauge on the filter assembly.
3) Activate the vacuum generating system and allow the pump to run until vacuum registers in the green range on the vacuum gauge. Then turn off the vacuum generating system, and watch the gauge. It will indicate any leakage of air through the check valve.
   - If the gauge registers leakage, remove the hose connecting to the pump and unscrew the check valve with barbed fitting from the pump head. Soak the check valve in alcohol and use a pressure nozzle to clean out any contamination (blow through in direction of arrow on valve). If the check valve is functioning correctly, there will be relatively free airflow in one direction, but it will be impossible to draw any air the other way. Reinstall the check valve on the pump and retest. If the check valve still leaks, replace it and reattach all hoses in their original locations.
   - If the gauge does not register leakage, reattach all hoses in their original locations. If no leakage has been detected in either the filter assembly or the check valve, the leakage is likely to be in the control valve. In this case, contact Wood's Powr-Grip or an authorized dealer for assistance.

Additional Information

There are various ways to approach leak-testing this lifter. For further suggestions or information, please contact Wood's Powr-Grip Co, Inc.