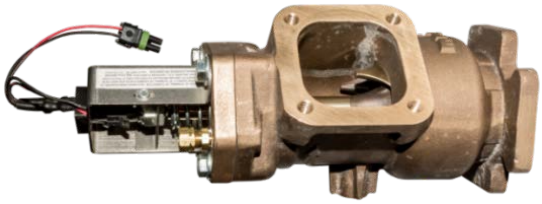

Use this guide, PL1165 (PG30), and PL742, (TPM) to repair a Hale Pressure Relief Valve (PG30). All referenced documents and plate (PL) drawings are available from the Tech Resource Center on the Hale website (https://www.haleproducts.com).

NOTES: If the PG30 portion of the Total Pressure Management system (TPM) operates correctly (discharges water to atmosphere) yet fails to provide the associated VALVE OPEN flashing indication, refer to Hale publication 101-0850-56-0 (QD, P, AND PG30 RELIEF VALVE SENSING SWITCH AND BRACKET INSTRUCTIONS) for instructions to remove and replace the bracket, flasher, and switch assembly portion of a Hale PG30.

If the original panel indicator was incandescent and has been replaced (replacements are LED) the flasher must be changed for the panel indicator to operate in flashing mode (indicating the PG30 is discharging water to atmosphere). Contact Hale Customer Service (800-533-3569) for the new flashers part number to order.

Recommended O-ring Lubricant: Synthetic Multi-Purpose Clear O-ring Lubricant (Synthetic NLGI Grade 2 Heavy Duty, Multi-Purpose)

Recommended Grease: Lithium Base Grease with 1% to 3% Molybdenum Disulfide (or equivalent)

Recommended thread locking compound: Loctite 242 (medium strength, all-purpose, removable, thixotropic, blue) (or equivalent) To remove thread locking compound, soak in methylene chloride and use mechanical abrasion (such as a wire brush).

Recommended Solvent: Safety Kleen® or Stoddard Solvent (or equivalent) (Use lime scale remover & soft bristle brush for mineral deposits)

Install all circlips (snap rings and e-clips) with the sharp edge in the direction of thrust support. If you examine the circlip closely you can determine which side has the sharp edge (one side will feel sharp and the other side will feel rounded).

Table 1. Applicable PG30 Kit

Kit Number	Description	Remarks
546-0730-51-0	P75 RV Repair Kit (O-Ring)	Kit contains a check valve, a nipple, O-rings, retaining rings, seals, diaphragm, and gaskets.

ATTENTION ⚠ WARNING

INDICATES A HAZARDOUS SITUATION, WHICH IF NOT AVOIDED COULD RESULT IN SERIOUS INJURY OR DEATH.

ATTENTION ⚠ CAUTION

INDICATES A POTENTIALLY HAZARDOUS SITUATION, WHICH IF NOT AVOIDED MAY RESULT IN MINOR OR MODERATE INJURY.

Table 2. Tools And Consumables List

Standard Tools	Special Tools	Consumables
PPE	Digital Multi Meter	Shop Rag(s) (As Required)
5/8-inch Socket and Ratchet	Spring Retainer	O-ring Lubricant (See NOTES, page 1.)
Hook (or angled) Hose Removal Tool (or Dental Pick)	Wooden Block (3-in Long Pc. of 2 x 2)	Safety Kleen® or Stoddard Solvent (or Equivalent) (See NOTES, page 1.)
Small Straight Blade Screwdriver		Grease (See NOTES, page 1.)
Small Snap Ring Plyers (Expansion)		Soft Bristle Brush
Non Marring Hammer		1/2-inch Washers (Quantity 6)
Torque Wrench (29 lb-ft.) (37 lb-ft.)		7/16–14 x 2-1/2 inch Long Bolt (Quantity 2)
		Loctite 242 (Medium Strength, All-Purpose, Removable, Thixotropic, Blue) (or Equivalent)

Perform the following bench procedure to remove and replace the selected components (see Table 1) of a Hale PG30. Finally install and test the repaired PG30 on the pump.

Take the Hale PG30 to a clean stable work surface. Clean valve assembly, all gasket mating surfaces, and pump mounting bolt threads thoroughly.

1. Fabricate special tool used to restrain spring safely while removing/replacing snap ring. See Figure 1.

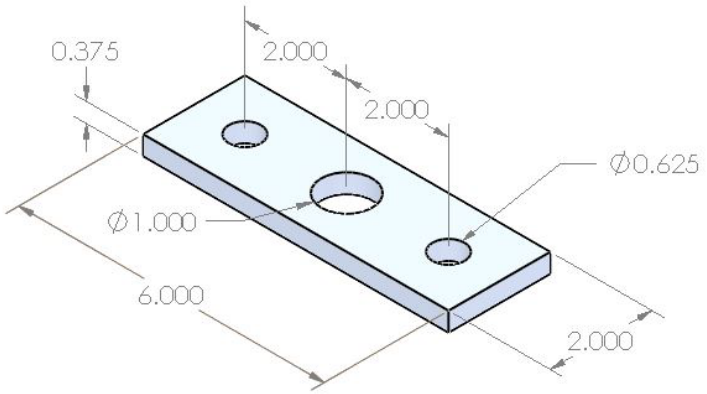

Figure 1

NOTES: Aluminum is easier to work with (drill) and just as safe as steel.

The center hole (1 inch recommended) must be larger than the snap ring AND smaller than the washer.

The two [2] bolt holes are intentionally larger than the bolt diameters however the hole placement must allow the screws to align with the threaded bolt holes in the PG30.

2. Using special tool, disassemble PG30 as follows.

ATTENTION ⚠ CAUTION REMOVING THE SNAP RING WITHOUT RESTRAINING THE SPRING POSES A STRIKE HAZARD. USE THE SPECIAL TOOL TO SAFELY RESTRAIN AND RELEASE THE SPRING WHILE REMOVING/REPLACING THE SNAP RING.

a. If TPM equipped, remove switch assembly (see cover left-hand picture). (Otherwise, remove two [2] of the four [4] PG30 cover screws.)

1) Note/match mark PG30 cover to body, and if applicable, switch assembly to PG30 cover.

2) Using 5/8-inch socket and ratchet (set CCW), loosen two [2] 7/16 –14 x 1-1/2 inch long switch to PG30 (or cover) screws.

3) Remove screws. (ONLY remove two [2] of the four [4] PG30 cover screws.)

4) If applicable, remove switch assembly.

b. Install special tool. See Figure 2.

1) Insert a 7/16–14 x 2-1/2 inch long bolt into each special tool 5/8-inch hole.
NOTE: Referred to as special tool screws.

2) Place six [6] 1/2-inch washers on each special tool screw.

3) Place special tool on PG30 so that 1-inch hole is over spring, snap ring, and washer and both special tool screws (with washers) are aligned with PG30 empty bolt holes (Where switch and/or cover screws were removed.)

Figure 2.

NOTE: **Align the 1-inch hole in the special tool to allow the e-clip but NOT the washer to pass thru the hole.**

4) Using 5/8-inch socket and ratchet (set CW), tighten special tool screws evenly until spring is compressed and snap ring is accessible for easy removal.

c. Using special tool, remove PG30 cover.

1) Using a small straight blade screwdriver, pry retainer (E-clip) off poppet shaft. See Figure 3.

2) Remove retainer.

3) Slowly and evenly, remove special tool screws. (Spring is now fully decompressed.)

4) Remove special tool.

5) Remove washer.

6) Remove spring.

7) Remove PG30 cover. (If required tap cover with non marring hammer to break gasket.)

Figure 3.

3. Remove and replace PG30 seals (three O-rings).

NOTE: **Placing the PG30 over a piece of wood (3 inch long piece of 2 x 2) prevents the control piston from lowering into the bore (aides with snap ring removal) while preventing the poppet from falling.**

a. Remove snap ring. See Figure 4.
   1) Using snap ring plyers, expand snap ring.
   2) Remove snap ring.
   3) Discard snap ring.
b. If used, remove wooden block. (See NOTE above.)
c. Lower and remove poppet.
d. Remove piston. (Push piston up and out of the bore.)
e. Using angled (or hooked) hose removal tool (or pick), remove following O-rings. See Figure 5.
   - outer piston seal
   - inner piston seal
   - inner cover seal

Figure 4.

Clean poppet, piston, valve assembly, all gasket mating surfaces, and bolt threads, thoroughly. Inspect piston and poppet for damage. Inspect poppet and seal for cuts, damage, wear, warpage, etc. Replace if damaged.

f. Lightly coat both piston O-ring groove areas and cover bore (O-ring grove area) with grease (prevents O-ring damage and aides assembly).
g. Install following O-rings. See Figure 5.
   - inner cover seal
   - inner piston seal
   - outer piston seal

Figure 5.

4. Assemble PG30 as follows.
   a. Install poppet. (Goes into opening of PG30, shaft towards cover. Use care NOT to damage poppet skirts.)
   b. Place PG30 over wooden block. (Positions poppet.)
   c. Grease poppet shaft and entire piston bore of PG30 with grease. (Prevents O-ring damage and aides assembly.)
   d. Orientate piston (with collar down - towards PG30 bore) and push piston over poppet shaft and into PG30 bore until seated on poppet shaft.

e. Install new snap ring. See Figure 4.

f. Install cover as follows.

1) Install new gasket. (Gasket sticks to valve body and notch aligns with notch in valve body.)

2) Orientate cover and push cover over poppet shaft until seated on valve body. **(NOTE: Plumbing fitting in cover must align with notch in valve body.)**

3) Install two [2] cover to valve body screws (with washers). **(NOTE: Place one bolt adjacent to plumbing fitting and the other 180° from the first.)**

g. Using special tool, install PG30 spring as follows.

1) Place large side of spring in recess in cover.

2) Place washer on spring.

3) Place special tool on spring and washer.

4) Hand start special tool screws.

5) Center spring and washer on poppet shaft.

6) Tighten special tool screws until bar contacts 1/2-inch washers.

7) Install retainer (E-clip) on poppet shaft.

8) Remove special tool.

h. If PMD/TPM equipped, install switch assembly. (Otherwise install the other two [2] cover to valve body screws.)

1) Align switch assembly as noted/match marked.

2) Install remaining two [2] cover screws.

i. Using 5/8-inch socket and torque wrench (set CW), torque four [4] 7/16 –14 x 1-1/2 inch long PG30 cover screws to 29 lb-ft.

5. Install PG30 as follows.

a. If TPM equipped, install sensing valve on PG30 as noted/match marked. (The sensing valve is typically mounted on the side of the PG30.)

1) Hand start sensing valve to PG30 bolt.

2) Using 5/8 inch socket and ratchet (set CW), tighten 7/16 –14 x 3-1/2 inch long sensing valve to PG30 bolt.

3) Verify plumbing connections are secure.

b. Install new PG30 to pump gasket.

c. Align PG30 to pump as noted/match marked.

d. Install PG30 mounting hardware. (Half-moon washers and screws.)

e. Connect plumbing according to notes/match marks.

f. Connect wiring according to notes/match marks.

g. Using 5/8 inch torque wrench, torque four [4] 7/16 –14 x 1-1/4 inch long PG30 to pump screws to 37 lb-ft.

6. Test PG30.

ATTENTION ⚠ WARNING **DURING TESTING, IT IS POSSIBLE TO SUPPLY GREATER PRESSURE THAN AN ATTACHED HOSE (OR OTHER EQUIPMENT) CAN WITHSTAND. ENSURE PRESSURE SUPPLIED TO THE HOSE/EQUIPMENT DOES NOT EXCEED THE PRESSURE AT WHICH THE HOSE/EQUIPMENT IS ANNUALLY TESTED BY THE DEPARTMENT.**

a. TPM equipped, perform the following:

NOTES: The VALVE OPEN WHEN LIT indicator ONLY flashes when the discharge pressure activates the QG (or PG40) and the system pressure actives the PG30. This should not occur if pumping from tank or draft. Troubleshoot TPM.

b. Setup apparatus to pump from hydrant.

c. Set white pressure indicator to a position slightly above normal operating pressure. (Typically, set indicator before increasing engine RPM.)

d. Obtain operating pressure (use discharge pressure gauge to monitor pressure).

e. Slowly, turn adjustment handwheel CCW until primary relief valve opens and gauge drops 10 to 15 psi.

NOTE: The indicator typically illuminates steady to indicate the internal bypass (QG or PG40) is active; however, turning the handwheel may bypass this stage.

f. Continue turning adjustment handwheel CCW until PG30 relief valve opens. The VALVE OPEN WHEN LIT indicator flashes and water discharges to atmosphere.

g. Turn adjustment handwheel CW until VALVE OPEN WHEN LIT indicator extinguishes, pressure returns to previous level, and then an additional 1/2 turn.

h. When testing is finished (and pump is no longer in operation), turn adjustment handwheel CW to a position slightly above normal operating pressure.

If the PG30 fails to discharge to atmosphere when the VALVE OPEN WHEN LIT (TPM) indicator flashes and the intake gauge indicates no vacuum the PG30 is NOT functioning.

If the PG30 is discharging water to atmosphere and the VALVE OPEN WHEN LIT (TPM) indicator is NOT flashing, the PG30 (or flasher) is NOT functioning.

If the PG30 (/TPM) does NOT function, troubleshoot the system to the cause. Refer to 101-0850-08-0, TPM SYSTEM INSTALLATION AND OPERATION MANUAL.

7. Perform a vacuum test (per NFPA 1911 or dry prime), if functional place apparatus in service in accordance with departmental procedures.