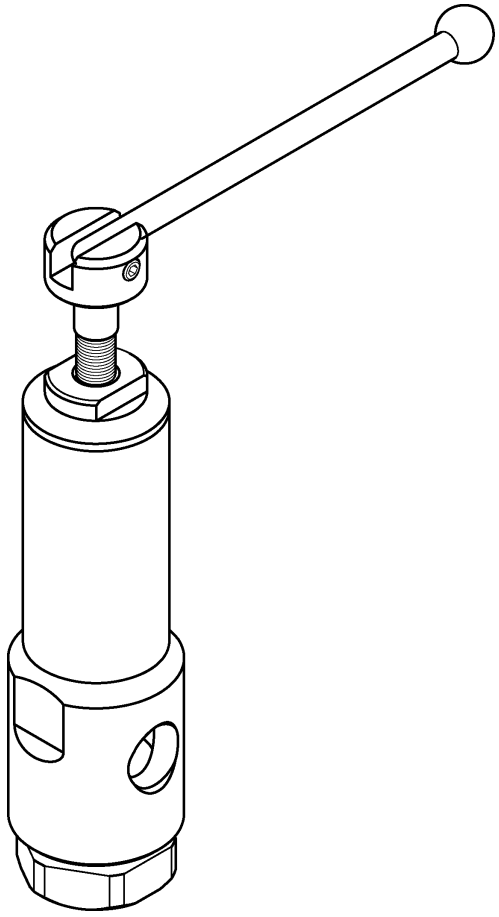
Jetstream
Subsidiary of Federal Signal Corporation

Product Instructions

Hand-Adjustable Pressure Regulator



Part Number	Inlet	Outlet	Maximum Pressure
P/N 55515	¾ inch NPT Male	1" NPT Female	15,000 psi (1000 Bar)
P/N 55570	20K Male	1" NPT Female	20,000 psi (1400 Bar)
P/N 55525	40K Male	1" NPT Female	40,000 psi (2750 Bar)

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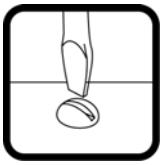
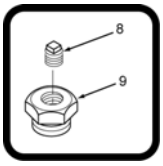
Important!

This document contains important safety information. Read carefully and retain for future reference.

Contents





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Section 1. Introduction

This product instruction provides installation, operation, maintenance, and troubleshooting information for the Hand-Adjustable Pressure Regulator. Also included are an illustrated parts list and applicable safety information.

1.1 Models Covered

There are three different models of the Hand-Adjustable Pressure Regulator covered in this Product Instruction:

- P/N 55515
- P/N 55570
- P/N 55525

The three models are identical in appearance and operation.

1.2 General Description

The Hand-Adjustable Pressure Regulator features a cartridge-based design. This allows all parts subject to normal wear to be easily field replaceable using simple hand tools.

The Hand-Adjustable Pressure Regulator is normally mounted on the pump's fluid end. The Pressure Regulator's function is to control pump output pressure. This is done by adjusting the Pressure Regulator to obtain the desired output pressure. The Pressure Regulator is easily adjusted using the handle.

Excess water is captured and routed to a low pressure drain via a hose, or back to a holding tank.

The Pressure Regulator can also be mounted remotely. A remote-mount configuration allows the operator to adjust the output pressure at the blast site, rather than at the pump. The Pressure Regulator features an oil filled plunger cavity inside the body, providing a smoother damped response when flow requirements change and reducing overall wear in the system.

1.3 Specifications

Specifications for the Hand-Adjustable Pressure Regulator are shown in Table 1.

Table 1. Hand-Adjustable Pressure Regulator Specifications

P/N 55515		
	Maximum Pressure	15,000 psi (1,000 Bar)
	Maximum Flow Rate	50 GPM (189 LPM)
	Dimensions	Length: 13 in (33 cm), Diameter: 3 in (7.6 cm)
	Weight	14.5 lb (6.6 Kg)
P/N 55570		
	Maximum Pressure	20,000 psi (1,400 Bar)
	Maximum Flow Rate	30 GPM (113 LPM)
	Dimensions	Length: 13 in (33 cm), Diameter: 3 in (7.6 cm)
	Weight	14.5 lb (6.6 Kg)
P/N 55525		
	Maximum Pressure	40,000 psi (2,750 Bar)
	Maximum Flow Rate	15 GPM (57 LPM)
	Dimensions	Length: 13 in (33 cm), Diameter: 3 in (7.6 cm)
	Weight	14.5 lb (6.6 Kg)

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Section 2. Safety Information

! WARNING !

Ensure that all operators are thoroughly trained in the proper operation of all components in the waterblast system before beginning use of any products.

Never operate a waterblast unit without properly installed guards covering all moving components of the drive system.

Never put hands near moving parts when the waterblast unit is in use.

Always back regulator adjuster out fully before stopping unit. Begin blasting at low pressure and slowly increase until desired pressure is reached.

! WARNING !

If routing the relief water back to the tank, check the temperature from time to time to ensure the water temperature does not exceed 120 degrees Fahrenheit. This could cause pump cavitation and/or damage from trapped vapor.

Do not attempt to connect a high pressure hose to the 1" NPT Female Outlet port on the body as this will cause a burst failure of the assembly and/or severe injury and death. Maximum outlet pressure is 125 psi.

Never operate the regulator at a pressure higher than that of the lowest rated component in the system. This can also result in a burst failure of the component causing severe injury or death.

A rupture disc set at 1.4 times operating pressure must be used as a secondary relief device.

Section 3. Installation

3.1 Manifold Mounting

Follow the steps below to install the Hand-Adjustable Pressure Regulator on the pump manifold.

a . Apply anti-seize compound on all threaded connections to prevent galling of Stainless Steel components.

b . Wrap all tapered pipe threads with three to four turns of Teflon tape, again to help sealing and reduce galling.

c . Install Regulator as shown in the illustration.

d . Install hose barb or quick disconnect fitting in 1" discharge port and tighten securely.

NOTE:
The low pressure connection hose must be rated for a minimum operating pressure 125 psi and be at least ¾" (20mm) inside diameter. Maximum length for the hose should be no longer than 10 ft (3 meters). Recommended hose ID is 1" (25 mm) especially for flows over 25 GPM.

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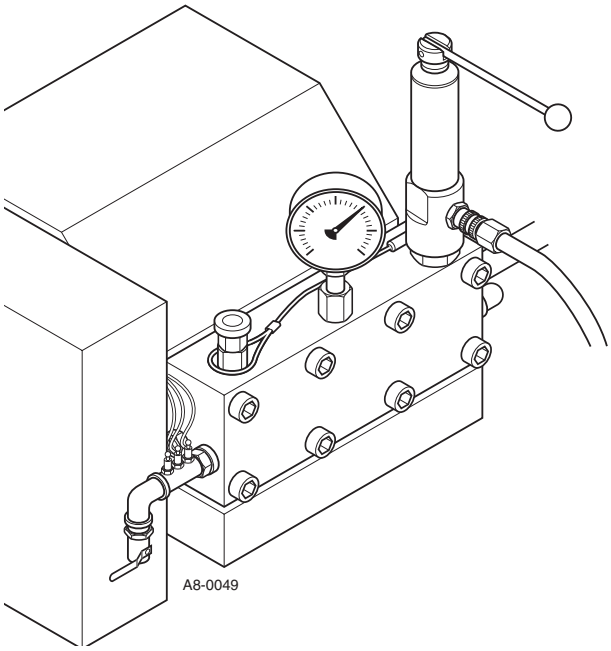

Figure 1. Manifold Installation

3.2 Remote Mounting

WARNING !

Installation of lower pressure rated components could result in severe injury or death should one of them fail.

If desired, the Pressure Regulator can be mounted some distance from the pump to allow better operator access. Ensure that the proper parts are used.

A high pressure tee, hose, and fittings can be used to mount the Regulator remotely as shown in the illustration.

l hoses and fittings used to mount the Pressure Regulator should be pressure rated at least equal to or higher than the Regulator itself. For most remote installations, the relief water should be dumped to a suitable drain.

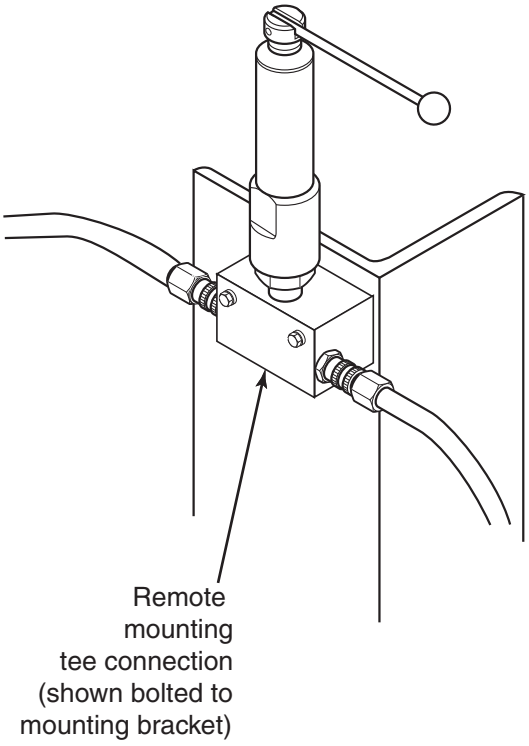

Figure 2. Remote Installation

Section 4. Operation

Consult operating instructions for the waterblast unit for detailed operating procedures. Start out by engaging the waterblast unit's PTO and blasting at low pressure. While observing pressure gauge, slowly turn the hand crank clockwise to increase pressure until desired blast pressure is reached. Cycle waterblast guns and/or foot valves on and off, and check for pressure fluctuations or improper regulator operation causing cycling or resonation inside the valve.

When finished blasting, turn Pressure Regulator adjustment handle counter-clockwise to lower system pressure to near zero.

In freezing conditions, protect unit and regulator by draining water from system and flushing with anti-freeze.

Section 5. Maintenance

Scheduled maintenance of the Hand-Adjustable Pressure Regulator is shown in Table 2.

Table 2. Maintenance Schedule

Task	Frequency
Inspection	Daily
Oil Change	After every 1000 hours of use

5.1 Inspection

Perform the following inspection daily.

WARNING!

Do NOT use your hand or fingers to check around fittings while unit is at operating pressure as this may cause severe bodily injury if a high pressure jet is encountered.

a. Visually check for leaks at high pressure joints.

b. Stand away from the area and visually check all high pressure areas.

c. Stop and repair regulator if any leaks are found.

d. Start unit at low pressure and slowly increase operating pressure until desired blast pressure is reached. Inspect all joints for leaks.

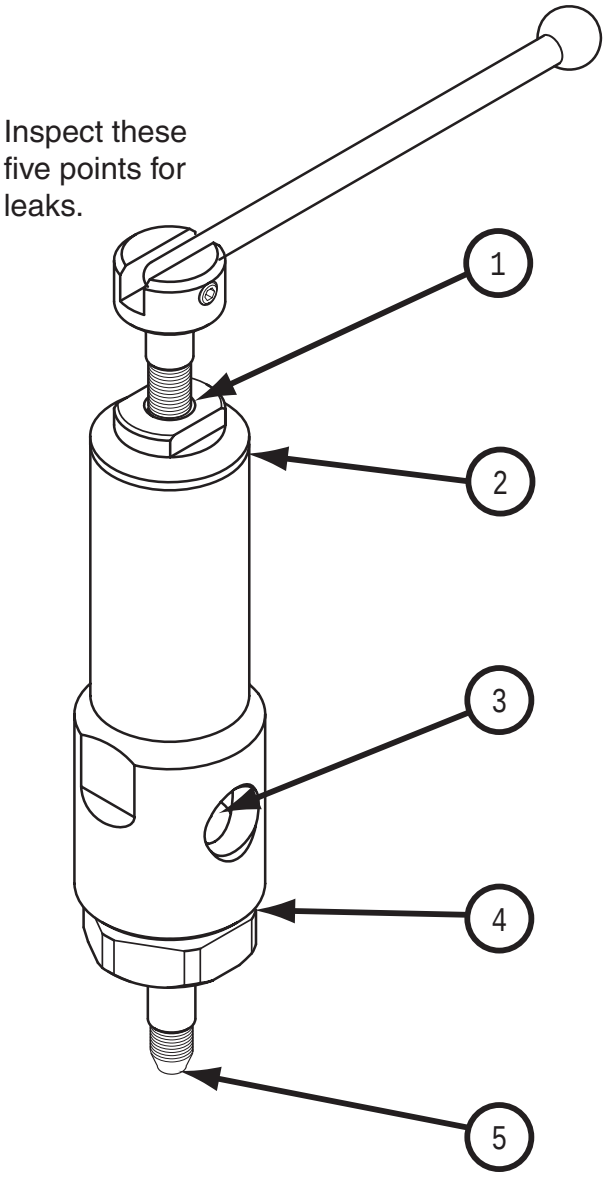

Figure 3. Inspection Points

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5.2 Oil Change

a. Unscrew high pressure base and cartridge from regulator body.

b. Remove adjuster cap and lever assembly from body by unscrewing counter-clockwise (See Figure 4).

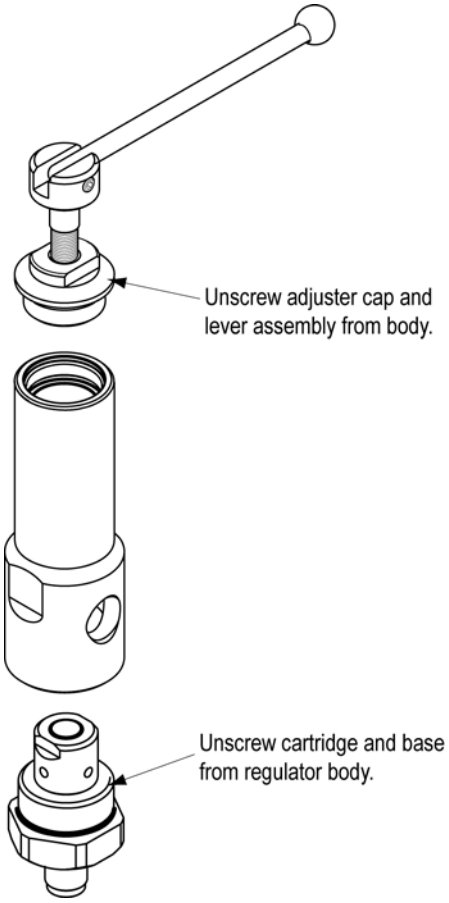

Figure 4. Initial Disassembly

c. With a clean tray or tub to catch debris, turn body upside down and push out spring plunger and springs (See Figure 5). There should be 20 disc springs in addition to the plunger that are removed. Clean all components in solvent and blow dry.

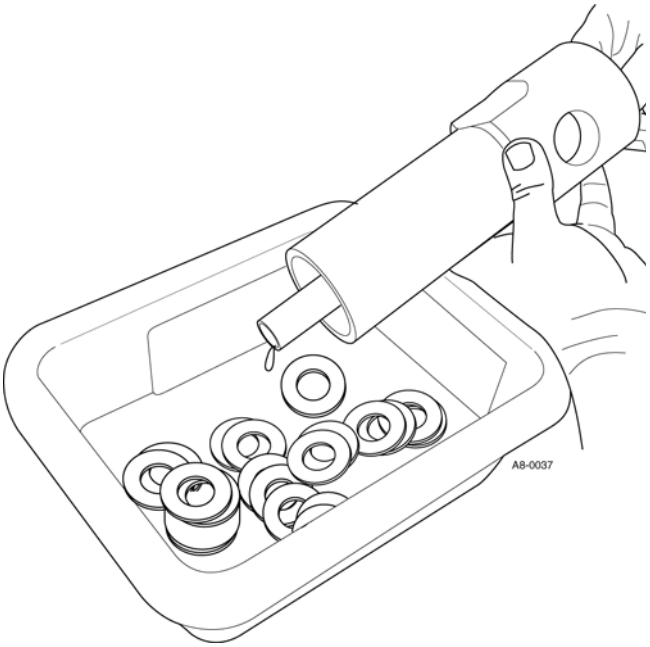

Figure 5. Spring Plunger & Spring Removal

d. Inspect plunger, seals, and body for wear and damage (See Figure 6). Replace seals if cuts, wear, or other damage is found.

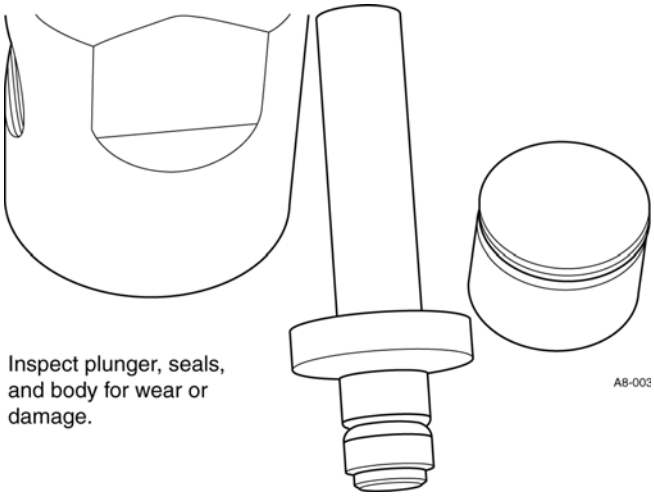

Figure 6. Plunger & Seals Inspection

e. Insert spring plunger into body as shown until plunger seals contact body (See Figure 7). Turn body upside down while supporting spring plunger.

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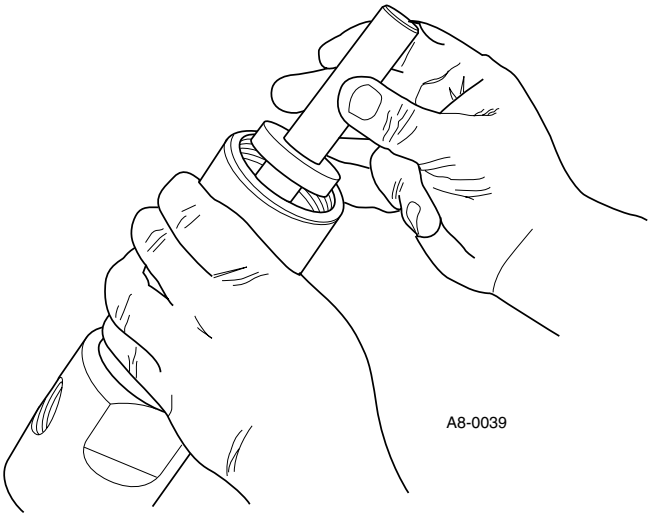

Figure 7. Spring Plunger Installation

f. Retract plunger slightly so that a small opening is created between the body and plunger (See Figure 8).

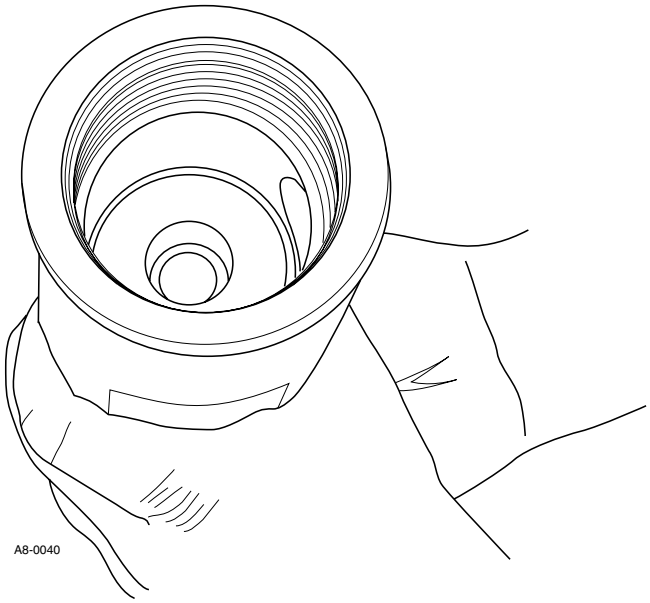

Figure 8. Retracting the Plunger

g. Over a clean tub or pan, pour the recommended 10W-40 oil into the opening until the cavity is full and all air has been purged. Push plunger upward to close the opening and engage the plunger seals into the bore (See Figure 9).

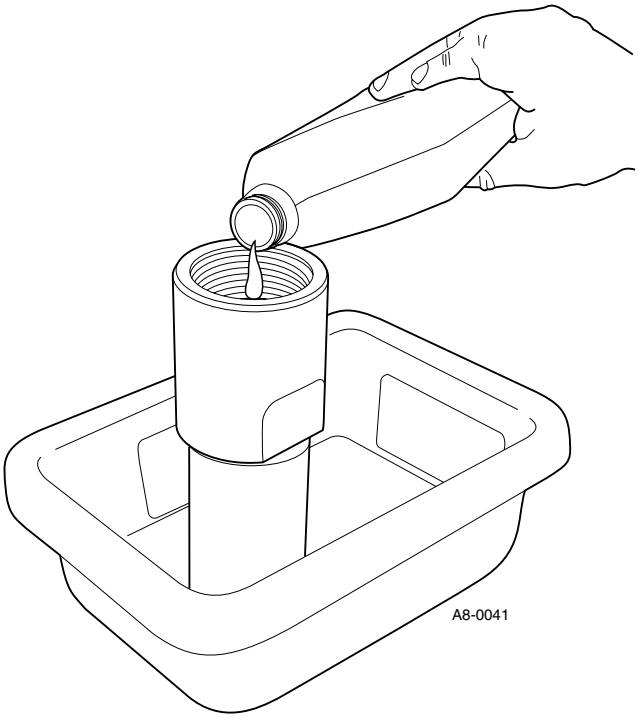

Figure 9. Fill With Oil

h. Flip the body over and continue to force the spring plunger downward so that the O-ring seals are fully engaged in the bore. Most or all of the trapped air should be now be evacuated (See Figure 10).

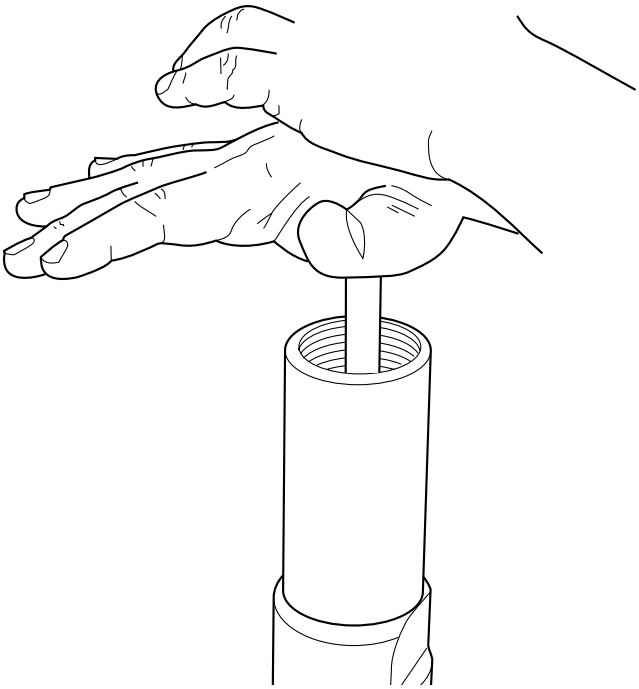

Figure 10. Force Plunger Down

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i. Reinstall the high pressure base and cartridge assembly and tighten securely. Push spring plunger down with a suitable device so that plunger contacts valve cartridge.

j. Begin stacking the disc springs in an alternating fashion as shown with the spring OD contacting the flange and cap surfaces (See Figure 11).

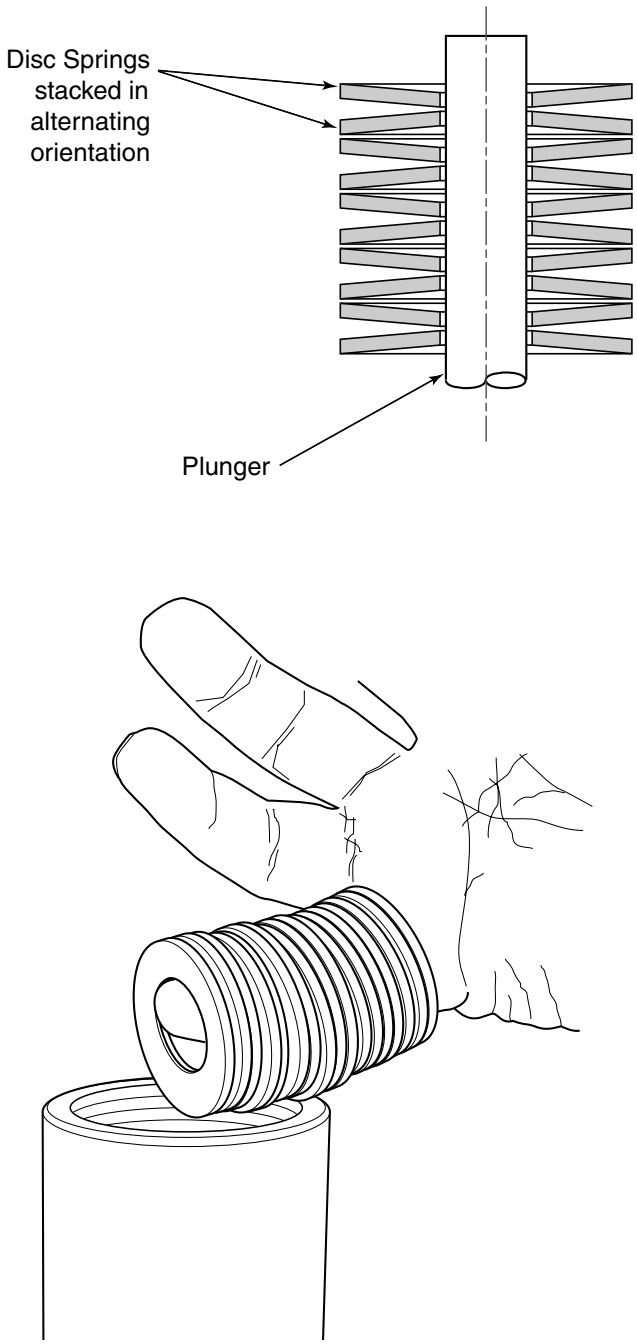

Figure 11. Stacking Disc Springs

NOTE:
Overall length for the assembly should be 2.720" +/- .030". Replace the springs if the dimensions fall outside this range.

k. Fill cavity with 10W-40 oil until the last spring is just totally covered (See Figure 12). Do not overfill as this will cause problems with the regulating accuracy and may result in over pressurization.

l. Install spring pusher with O-ring end last and tighten adjuster cap and lever assembly firmly.

m. The unit is now ready for operation.

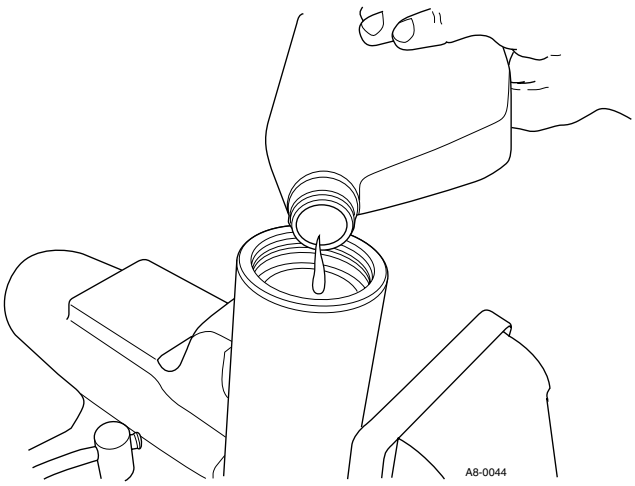

Figure 12. Filling Cavity

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Section 6. Troubleshooting

Symptom	Probable Cause	Corrective Action
Regulator does not reach operating pressure.	Valve seat cartridge worn out	Replace cartridge
	Spring discs worn or damaged	Replace springs
Regulator makes chattering or "screaming" noises	Oil level too low	Check oil level and refill as needed
	Cartridge damaged	Replace cartridge
Regulating pressure inconsistent	Valve seat cartridge damaged	Replace cartridge
	Spring plunger binding	Replace spring plunger
	Bypass hose too small or too long	Replace hose with 1" minimum I.D. and proper length
Oil leaking from regulator	O-ring seals damaged	Replace O-rings where necessary

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Section 7. Repair

7.1 Valve Cartridge Replacement

If operating pressure cannot be attained, replace cartridge as follows:

a. Turn the adjustment lever counterclockwise to the low pressure position.

b. Unscrew high pressure base from body as shown (See Figure 13).

c. Remove valve cartridge from high pressure base. Inspect base for any erosion or other high pressure water damage.

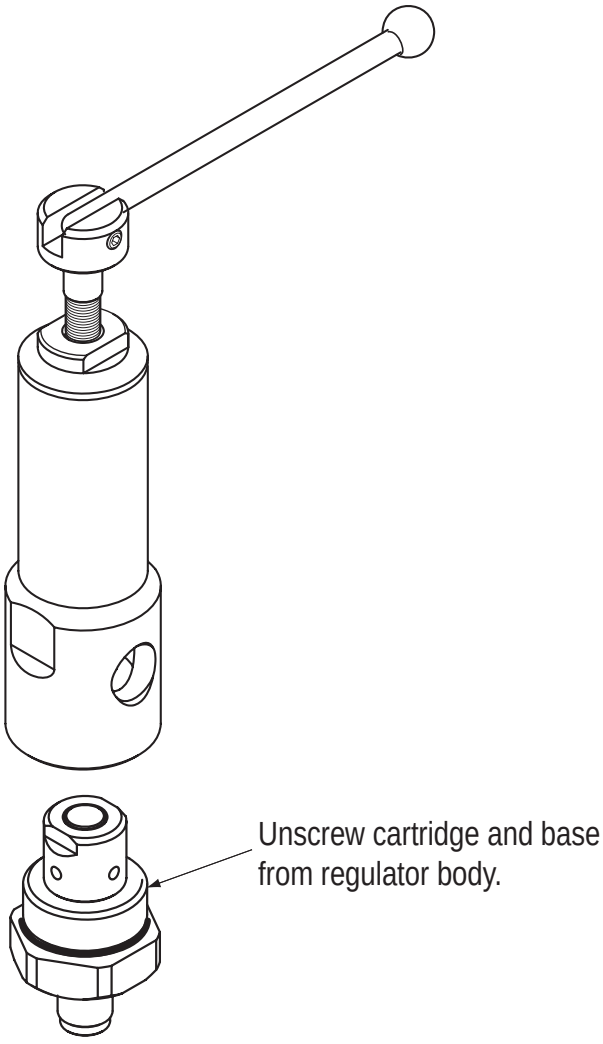

Figure 13. Removing Base

NOTE:
Different pressure range cartridges have different diameter threads, and will not fit into a base with the incorrect pressure rating.

d. Install new valve cartridge.

e. Assemble high pressure base into body and tighten securely. The unit is now ready for operation.

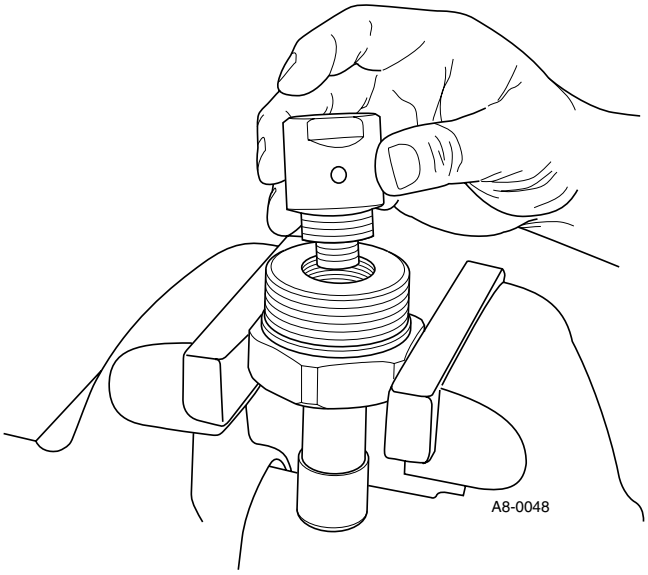

Figure 14. Installing Cartridge

Section 8. Parts List

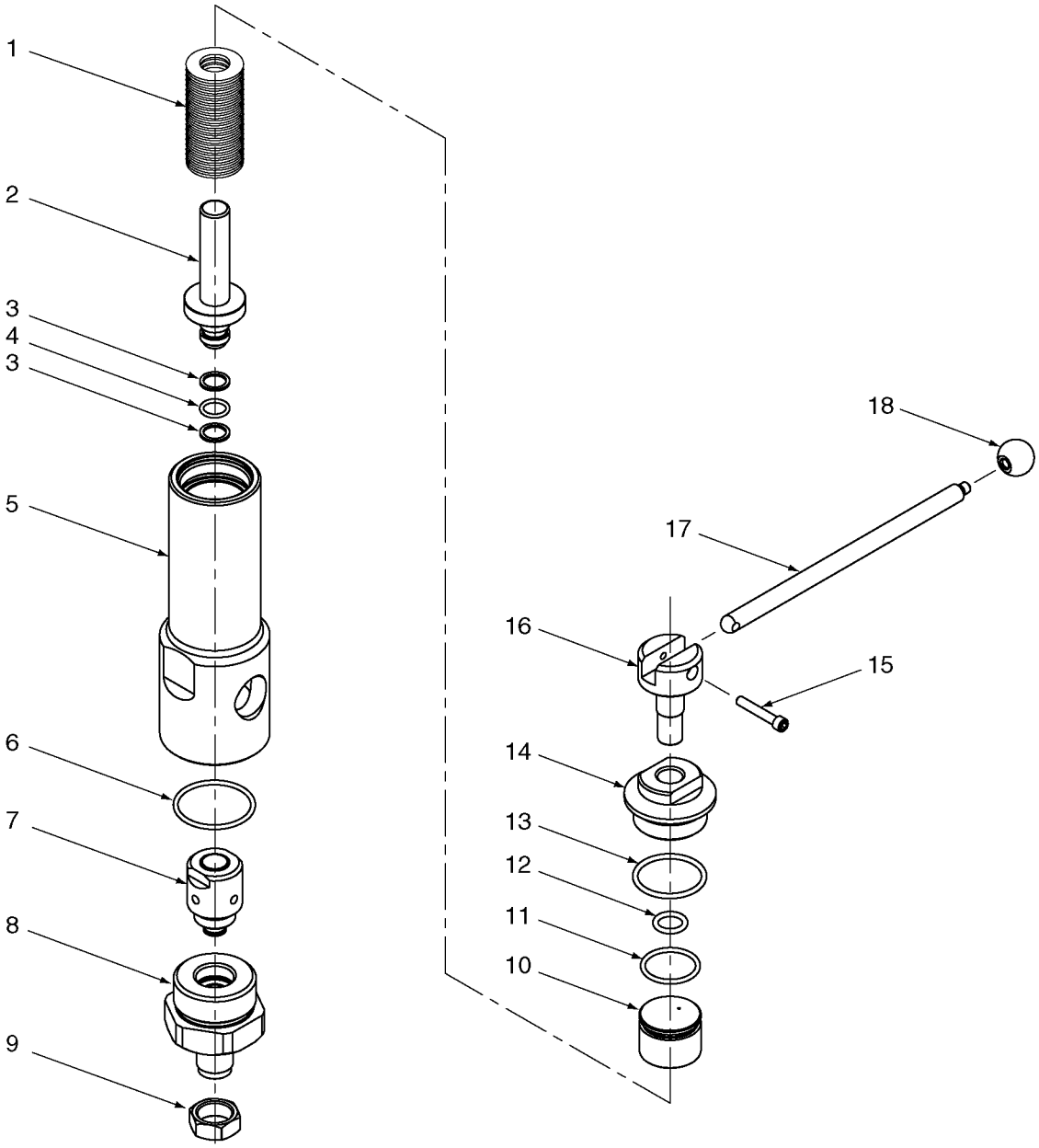

Figure 1-1. Hand-Adjustable Pressure Regulator Parts Diagram

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Table 3. Hand-Adjustable Pressure Regulator Parts List

Item	Description	Part Number	Qty
1	SPRING, DISC, REGULATOR	70127	20
2	PLUNGER, SPRING, REGULATOR	55519	1
3	O-RING, SPRING PLUNGER	25740	1
4	RING, BU, SPRING PLUNGER	70125	2
5	BODY, REGULATOR	55521	1
6	O-RING, BASE	26416	1
7	CARTRIDGE ASSEMBLY, 15,000 PSI (1000 BAR)	55530	1
	CARTRIDGE ASSEMBLY, 20,000 PSI (1400 BAR)	55540	1
	CARTRIDGE ASSEMBLY, 40,000 PSI (2750 BAR)	55545	1
8	BASE, REGULATOR, 15,000 PSI (1000 BAR)	55516	1
	BASE, REGULATOR, 20,000 PSI (1400 BAR)	55567	1
	BASE, REGULATOR, 40,000 PSI (2750 BAR)	55518	1
9	NUT, JAM, REGULATOR, 20,000 PSI ONLY	51929	1
10	PUSHER, SPRING, REGULATOR	55522	1
11	O-RING, PUSHER, SPRING	25125	1
12	O-RING, END CAP, I.D.	25212	1
13	O-RING, END CAP, O.D.	25165	1
14	CAP, END, REGULATOR	55523	1
15	CAPSCREW, PIVOT HANDLE	27680	1
16	ADJUSTER, REGULATOR	55524	1
17	HANDLE, REGULATOR	55531	1
18	BALL	70130	1
	OIL, SYNTHETIC, 10W-40	28682	0.25 QT (0.237 liter)

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