

SERIES "PR" & "PRH" – PRESSURE REGULATORS INSTALLATION, MAINTENANCE & SEAL KIT INSTRUCTIONS

I. IMPORTANT – BEFORE INSTALLING

Series PR and PRH pressure regulators will prevent downstream pressure from exceeding the set pressure, when properly installed and used within the recommended ranges of pressure, temperature, and chemical compatibility. A Pressure Regulator *does not* maintain a specific downstream pressure if inlet pressure or flow is too low. The ultimate determination of material compatibility is previous successful use in the same application. See the Product Data Sheet or call our Technical Support for information about your application.

Caution: Quick closing valves installed downstream of the regulator may cause water hammer. This may cause leakage or seal damage. Plastic materials will degrade in ultraviolet (UV) light or sunlight. Polypropylene and PVDF (Kynar®) often look similar. Do not install in your system if you are not sure.

II. PRESSURE RATINGS

A. Maximum Inlet Pressures for Water*

Body Mat'l	Color	at		at		at Max. Temp.	
		77°F (25°C)	104°F (40°C)	104°F (40°C)	7 Bar	PSI @ °F	Bar @ °C
PVC	Dk. Gray	150 PSI 10 Bar	106 PSI 7 Bar	34 @ 140°F	2 @ 60°C		
CPVC	Lt. Gray	150 PSI 10 Bar	120 PSI 8 Bar	37 @ 180°F	2 @ 80°C		
Polypro	Trans. Wht.	150 PSI 10 Bar	120 PSI 8 Bar	40 @ 180°F	2 @ 80°C		
PVDF	Trans. Wht.	150 PSI 10 Bar	120 PSI 8 Bar	22 @ 280°F	1 @ 140°C		
PTFE	Opaq. Wht.	150 PSI 10 Bar	140 PSI 10 Bar	Consult Factory			

* or compatible chemical – ratings reduced for some applications
 Not rated for suction or vacuum. Min. Temperature 40°F (5°C).
 EPDM seals limited to 250°F (120°C), Buna-N to 200°F (95°C).
 See the Product Data Sheet or consult our Technical Support staff for more information.

B. Set Pressure Range: PR: 5-50 PSI (0.3 to 3 Bar)
 PRH: 30-125 PSI (2 to 8 Bar)

III. INSTALLATION

Install the valve in the proper flow direction as indicated by the flow label. The valve may be positioned vertically or horizontally. Proper installation should include pressure gauges mounted upstream and downstream of the regulator for pressure setting and verification.

Threaded Connections – Apply a suitable thread sealant (for example, PTFE Tape) to male tapered threads to assure a "leak-tight" seal. Assemble "hand-tight" followed by a quarter (1/4) turn with a strap wrench. Do not over tighten or use pipe wrenches on plastic pipe and components.

Caution: PTFE tape will "string" as pipe threads are joined. Loose "strings" could lie across the seating surface and prevent the valve from completely closing. To avoid this problem, clean out old tape, and do not apply tape to the first thread.

Caution: Connect to plastic pipe and fittings only; when using metal pipe, install an intervening plastic fitting. Metal pipe and straight threaded pipe tends to cut, stretch, and distort the plastic bodies, resulting in cracking or leaking over time.

Non-Threaded Connections – For solvent cementing or heat fusion, follow the instructions supplied with the cement or fusion equipment, or contact your distributor.

Mounting – These valves are designed to be supported by the piping. The piping must be properly supported, taking into account the weight of the valve, piping and process liquid.

IV. PRESSURE SETTING

Series PR and PRH sense downstream pressure; a pressure gauge should be installed at the outlet of the valve to accurately set the regulator. Downstream set pressure range is 10 to 125 PSI. The following procedure is for static (no flow) pressure setting. Under flow conditions, the outlet pressure may be slightly lower.

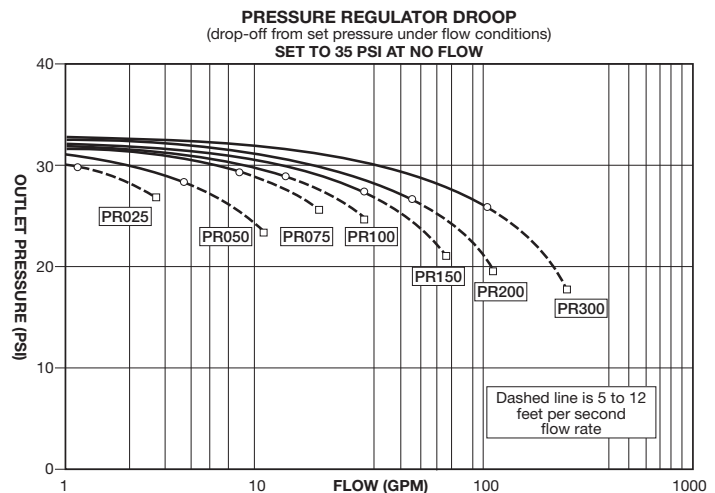
1. Install the regulator in the piping system. Close all downstream outlets to stop flow. The inlet pressure must be higher than the desired set pressure.
2. Loosen the locking nut on the adjusting screw assembly.
3. If the outlet pressure is too low, turn the screw clockwise (into the spring housing) until the set pressure is reached.
4. If the outlet pressure is too high, turn the screw counterclockwise (out of the spring housing) until the set pressure is reached. A downstream outlet valve must be opened to allow pressure to drop.
5. Tighten the locking nut to lock in the setting.

Pressure can also be set under dynamic (with flow) conditions using the same procedure. If pressure is set under dynamic conditions, outlet pressure will increase when downstream flow is reduced.

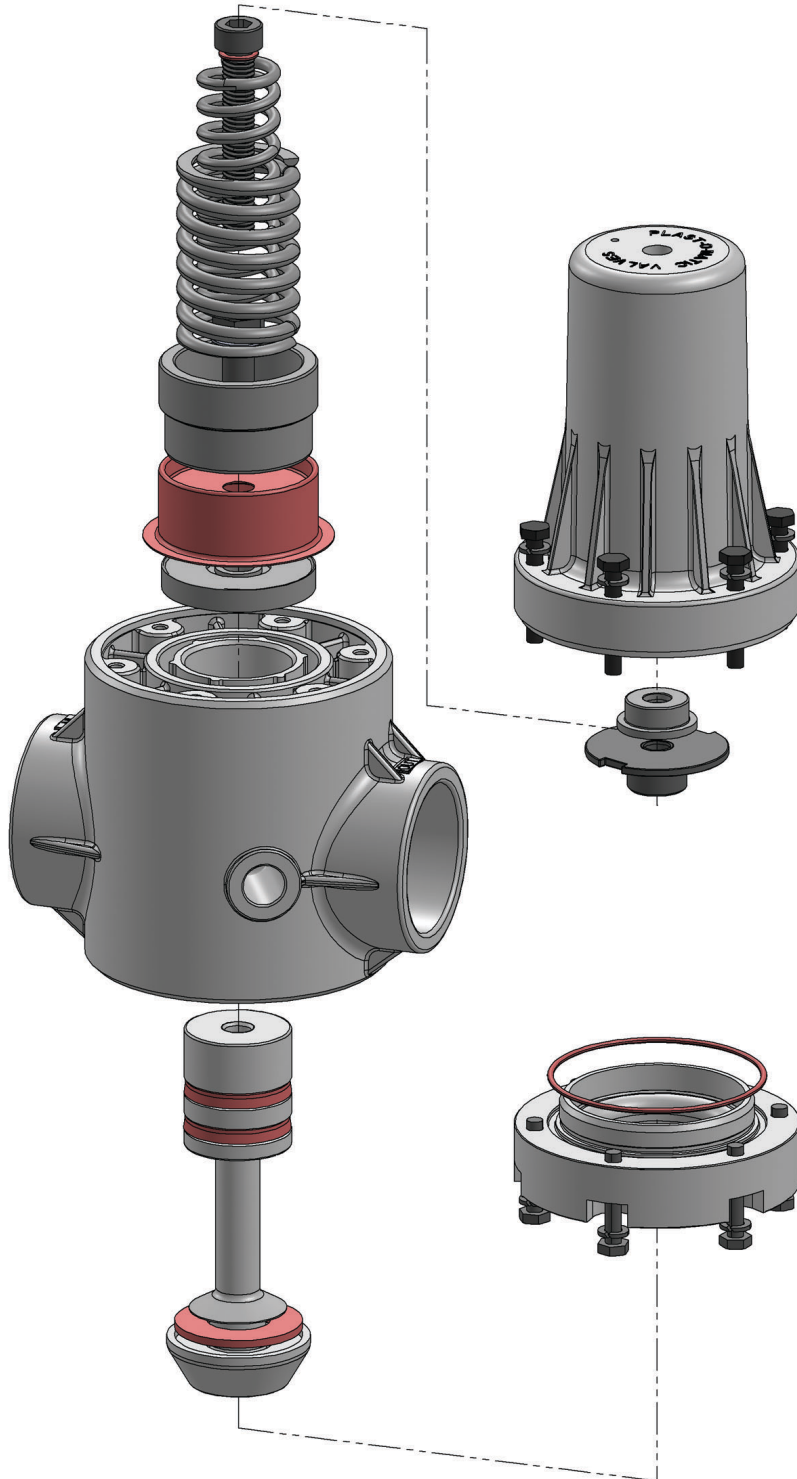
Note: Series PR and PRH are *non-relieving*. Outlet valves must be open to allow pressure to drop.

V. MAINTENANCE

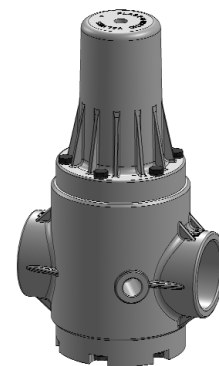
Plast-O-Matic recommends keeping a spare seal kit available for repairs. Seal life will vary in applications due to cycles, temperatures, pressures, chemicals, and concentration. Based on the application, a periodic inspection and maintenance plan should be established. The seal kit part number is "SK" plus the part number less the material suffix. For example, the seal kit for PR050V-PV is SKPR050V.



SERIES PR & PRH - PRESSURE REGULATORS SEAL KIT REPLACEMENT • PARTS & ASSEMBLY



2" PRHM shown in this illustration with non-rising stem. Many PR and PRH model regulators have an adjusting bolt and locking nut that extends above the spring housing (bonnet). Appearance of the spring housing and valve body vary in PR/PRH models, otherwise the configuration is the same.



Caution: Quick closing valves installed downstream of the regulator may cause water hammer. This may cause leakage or seal damage. It is best to close valves or equipment gradually to avoid these shocks.



SERIES PR & PRH - PRESSURE REGULATORS SEAL KIT REPLACEMENT INSTRUCTIONS

- Before disassembly, relieve pressure and drain fluid from the valve and piping to be opened. Take proper precautions to protect people and equipment from any residual liquid.
- Valves may be disassembled in place, that is, without removing the valve body from the pipeline. Take proper precautions.
- Disassemble the regulator in a clean environment. Prevent any dirt, grit, or fiber from getting onto the sealing surfaces or the moving parts.
- Do not scratch or damage plastic parts. Use a non-scratching probe such as an orangewood stick or ball end dental pick (burnisher) to remove and install U-cups and O-rings. Do not use pipe wrenches or vises, use a strap wrench when needed.
- Refer to the assembly diagram on page 3 of this sheet.
- Some models may not match the procedures exactly. Adapt and adjust the procedure according to your conditions. Contact Plast-O-Matic Technical Support if you need help.
- Refer to the regulator instruction sheet for installation to piping.

DISASSEMBLY

1. Remove the adjusting screw assembly.
2. Unscrew and remove the assembly screws.
3. Remove the spring housing, spring guide, spring, and end cap.
4. Hold the seat assembly and unscrew the piston screw or nut. (for PR050 and PRH050, lift up the rolling diaphragm and unscrew the piston and diaphragm retainer).
5. At this point the shaft is either attached to the seat assembly or the piston. If it is attached to the seat assembly, hold the shaft, unscrew and remove the seat assembly. Pull out the shaft towards the side where the spring was.
6. Disassemble and discard U-cups and O-rings. Clean out the grooves with a clean, soft cloth, then replace U-cups & O-rings. Use a ball end probe to position the U-cups if needed. Lubricate lightly if allowed.

ROLLING DIAPHRAGM INSTALLATION

1. Clean old Loctite from the screw and shaft.
2. Put the washer on the screw. Screw the screw into the piston. Tighten the screw and lock the screw securely in the piston.
3. Turn the diaphragm inside out (the rubberized side out, cloth side in).

continues above right

4. Fit the piston and screw into the diaphragm (small end first).
5. Pull the diaphragm over the piston to remove any wrinkles. Make sure the hole is centered.
6. Put the diaphragm retainer, and O-ring where required, on the other side.
7. Put the retainer O-ring over the screw.

REASSEMBLY

NOTE: Inspect all parts for dirt, scratches or damage. Rubber parts should be smooth and not twisted, wrinkled or creased. Make sure U-cups are installed in the direction shown in the figure with the flat side up towards the diaphragm and the open end towards the seat end. Have the necessary tools ready before beginning. Plast-O-Matic pressure regulators normally have the elastomers lubricated in the factory (unless a customer specifies otherwise). It is recommended that the elastomers (especially U-cups) are lubricated with a non-petroleum base lubrication.

1. Push the shaft into the body. Use a probe to compress U-cups if needed.
2. Put the seat gasket into the seat retainer. It should lay flat without waves or bumps. Screw the seat assembly onto the shaft.
3. Put a drop of Loctite on the screw going through the piston and diaphragm and screw the piston / diaphragm assembly into the shaft. Refer to the torque table.
4. Check the motion of the shaft: push up and down on the piston and seat. If the shaft moves smoothly, continue.
5. Using a spanner wrench on the seat retainer and a socket and torque wrench on the screw in the piston, tighten to the torque table recommendations.
6. Pull down the outer edge of the diaphragm to touch the body.

- MAKE SURE THAT THE RUBBER SIDE OF THE ROLLING DIAPHRAGM IS DOWN, AND THE CLOTH SIDE IS VISIBLE.
7. Replace the springs, spring housing, and flange. Be careful that the diaphragm rim is smooth between the spring housing and body.
 8. Replace the base plate and O-ring.
 9. Replace the screws, nuts, lock washers and so on. Tighten all screws in opposing pairs. Refer to the torque table.
 10. Screw the adjusting screw down to approximately the original position.



SERIES PR & PRH - PRESSURE REGULATORS SEAL KIT REPLACEMENT TORQUE & TOOL REQUIREMENTS

SUGGESTED FASTENER TORQUE (INCH POUNDS)

PR /PRH	PISTON	SEAT	TOP ASSY	BOTTOM
025	10	HT+ ¼ *	5	
050	HT	HT+ ¼ *	7	
075	100	50*	40	40
100	100	50*	40	40
150	150	150*	40	40
200	150	150*	40	40
300	150		40	40

HT+ ¼ = Hand tight plus ¼ turn

For Nm (newton-meters) divide by 9. For PTFE bodies, use half of the given torque.

*Seat torque is shown for non-lubricated seat. Make sure to compress the seat slightly.

TOOL REQUIREMENT

PR /PRH	PISTON	SEAT	TOP ASSY	BOTTOM
025	#2 PHILLIPS	HAND	5/16 H, #2 PHILLIPS	
050	HAND	HAND	3/8 H, #2 PHILLIPS	
075	¾ H, SW	¾ H, SW	7/16 H X 2	
100	¾ H, SW	¾ H, SW	7/16 H X 2	
150	¾ H, SW	¾ H, SW	7/16 H	7/16 H
200	¾ H, SW	¾ H, SW	7/16 H	7/16 H
300	¾ H, 2 7/8 W		7/16 H	7/16 H

H = WRENCH, SOCKET, OR NUTDRIVER (HEX SIZE GIVEN)

W = OPEN END WRENCH (HEX SIZE GIVEN)

SW = SPANNER WRENCH (STRAP WRENCH MAY ALSO BE USED IN MANY CASES)

