

Only qualified personnel should perform maintenance.



Be sure that system pressure has been VENTED prior to disassembly.

All instructions, illustrations and item numbers refer to the manual operated regulator, 40-1698. Refer to specific installation drawing for corresponding items.

Repair Procedure

Preparation

1. Prepare a clean surface for disassembly, free of dust, grease, grit, etc. A vise is not necessary, but helpful. Have rags, degreasing solvent and lubricant available.
2. Critical surfaces to protect during disassembly are the inside diameter of the piston guide 30, the inside diameters of the seal container 28, the flat sealing surfaces of the seal rings 11 and 13 and the flat surfaces of the flow plates 23 and 24. Lapped surfaces should NEVER come in contact with any hard surface.
3. All O-rings and back-up rings are recommended to be replaced at a minimum. See the parts list for kit contents.
4. Special tools used in assembly include a blunt ended rod for seating backup rings, (step 4), medium strength (blue) threadlocker (step 7) and a flat spacer about 3/16" thick for reinstalling the inlet and vent flanges (step 8 and 10).

Disassembly

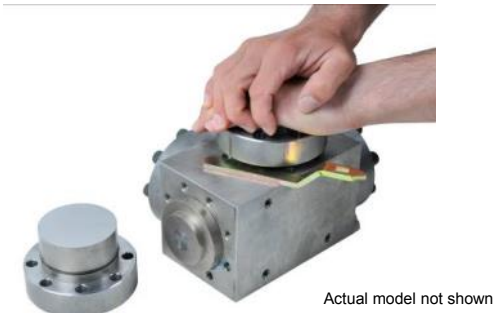
1. To relieve the compression on the internal operator springs (20, 21) loosen the lock handle 17 and rotate the adjustment handle 18 counter-clockwise until the resistance is fully relieved. Springs must be loose to safely remove the adjustment head.



2. With a 5/16" Allen wrench, loosen and remove the socket head cap screws. Remove the adjustment head 27 and spring assembly by lifting and tilting and holding the spring plate 16 to clear the piston guide 30. Remove springs, guide 25 and spring plate 16 and clean barrel and all parts.
3. Remove the flange screws 34 from the inlet flanges 31. Carefully remove these flanges and attached inlet flow plates 23.
4. Remove the flange screws 34 from the vent flanges 31. Carefully remove these flanges and attached vent flow plates 24.
5. Remove the flow plates from each by unscrewing the screws 33. Do not place the flow plates lapped side down on any hard surface.
6. From both sides of the body, remove the seal rings (11,13), valve cage 14 and springs (12,15) from the seal container. Carefully set these aside.
7. Remove the outlet flange 32 by removing the screws 34.
8. Remove the lower flange 22 by removing the screws 34.
9. Using a soft tool, lightly tap the seal container from the bottom to loosen the piston guide from the body. Lift this assembly through the top of the body.
10. Remove the piston 29 from the seal container 28 by removing the screw 36. Take care not to scratch the bores of the seal container.
11. Remove all o-rings and back-up rings. Clean all parts with a degreaser, wiping with clean rags.
12. Inspect all lapped surfaces for scratches, dings or dull spots that would prevent them from re-use. Inspect the bores of the seal container for linear scratches that would propagate leaks.

Reassembly

1. Before replacing the seals and rebuilding the regulator, apply a light coating of lubricant.
2. Replace all o-rings and back-up rings on seal rings, flow plates, piston, piston guide and flanges, lubricating generously.
3. Install the piston on the seal container, using the screw, applying medium strength threadlocker.
4. Carefully install the valve cage, wave spring and vent seal ring from one side of the seal container, then repeat with the supply seal ring and spring. Use a soft, blunt tool to help compress the back-up ring to engage in the hole. From the opposite side, install the springs. Then install the opposite seal rings.
5. Snug the piston guide over the piston.
6. Slide the seal container assembly down into the top of the regulator body, making sure the seal container faces are parallel with the opposing ports and the notch faces the outlet.
7. Install the o-rings seated in the face grooves before attaching the flanges to the flow plates, using the screws and medium strength (blue) threadlocker. Use rags to protect the flow plate lapped surface and edges.
8. **Important!** To protect the seal rings in the seal container during reassembly, ease the inlet flow plates into the body using a 3/16" thick spacer between the flange and the body to prevent over-travel. Orient the flange so that the retaining screws are parallel with the bottom of the body. Remove the spacer.
9. Insert the screws and tighten screws in a cross bolt pattern around the adapter flanges. The inlet flow plate should be in light contact with the seal rings.



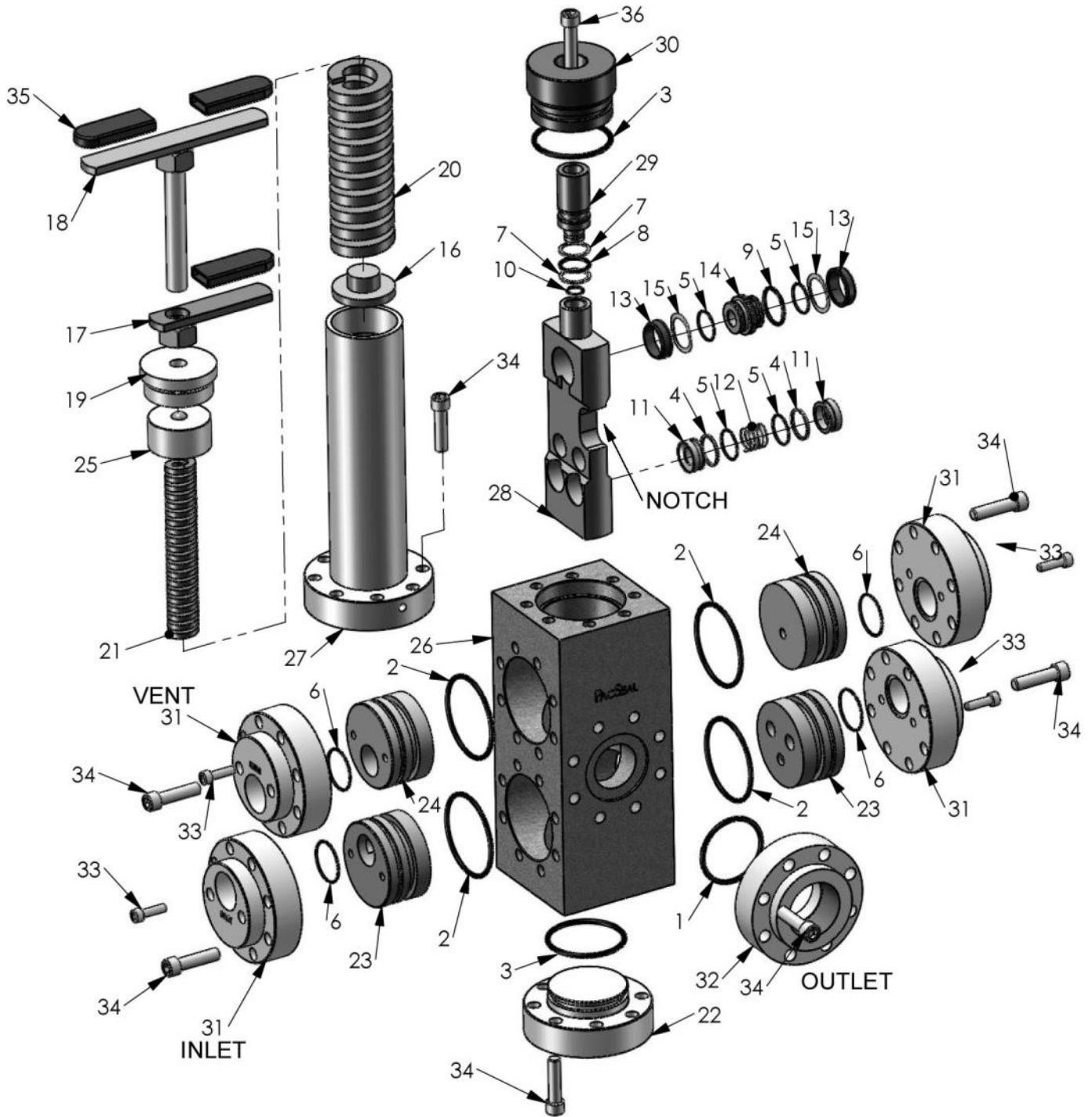
10. **Important!** In the same way, install the opposite flange using the spacer to prevent the flow plate from hitting the seal rings. Orient the flange before seating it against the seal rings as shown on the drawing. Evenly tighten all screws.
11. Install the inlet flanges with their o-rings.
12. Repeat steps 8-10 for the vent flow plates and flanges.
13. Install the outlet flange and bottom flange with their o-rings, evenly tightening all screws. Stand the regulator upright on the lower flange.
14. Place the spring plate on top of the piston guide, then install the adjustment head, aligning bolt holes and using a cross bolt pattern tighten the bolts.
15. Apply grease on both springs and install into adjustment head. Slide the spring guide into the adjustment head. Use anti-seize or grease to the plug threads and carefully thread into the head. Apply grease to the adjustment handle and install into plug, but do not engage with the spring.
16. Once the regulator is installed in the system, the output is to be adjusted to the desired set point by rotating the handle clockwise. Secure with lock handle.

ID	Part #	Description	Qty	Kit
1	23-1126	O-RING	1	a
2	23-1263	O-RING	4	a
3	23-1319	O-RING	2	a
4	23-1322	BACK-UP RING	4	a
5	23-1323	O-RING	6	a
6	23-1325	O-RING	4	a
7	23-1331	BACK-UP RING	2	a
8	23-1332	O-RING	1	a
9	23-1334	O-RING	1	a
10	23-1343	O-RING	1	a
11	40-0014	SEAL RING, SUPPLY	4	b
12	40-0110	SPRING, SUPPLY	2	b
13	40-0113	SEAL RING, VENT	2	b
14	40-0114	VALVE CAGE	1	b
15	40-0115	WAVE SPRING	2	b
16	40-0134	SPRING PLATE	1	
17	40-0135	LOCKING HANDLE	1	
18	40-0136	ADJUSTMENT HANDLE	1	
19	40-0140	PLUG, SEALING	1	
20	40-0143	SPRING, OUTER GREEN	1	
21	40-0144	SPRING, INNER GREEN	1	
22	40-0197	FLANGE, LOWER	1	
23	40-0285	FLOW PLATE, SUPPLY	2	c
24	40-0286	FLOW PLATE, VENT	2	c
25	40-0300	SPRING GUIDE	1	
26	40-0323	BODY	1	
27	40-0383	ADJUSTMENT HEAD	1	
28	40-0714	SEAL CONTAINER	1	d
29	40-0717	PISTON	1	
30	40-0718	PISTON GUIDE	1	
31	40-1383	FLANGE, INLET & VENT	4	
32	40-1384	FLANGE, OUTLET	1	
33	50-0066	SCREW	8	
34	50-0069	SCREW	56	
35	50-0239	HANDLE GRIP	3	
36	50-0331	SCREW	1	

Kit contents:

- a. (40-1540) O-ring Kit
- b. (40-1568) Seal Kit, includes O-ring Kit
- c. (40-1541) Minor Repair Kit, includes Seal Kit
- d. (40-1686) Major Repair Kit, includes Minor Repair Kit

KR-150 Manual Operated Regulator
40-1968



Troubleshooting

The KR regulators with manual operation in general are not a precision device. There are large friction forces from the shear seals which are balanced by the springs. There is constant movement within the valve which translates into observed pressure fluctuations.

Excessive fluctuation may mean there is a leak elsewhere in the system for which the regulator is compensating.

To properly set the regulator, you need to open and close the outlet a few times for it to settle on the set pressure.

Technician Notes: