

**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, 40-1663. 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 18, the inside diameters of the seal cages 21 and 23, the flat sealing surfaces of the seal rings 22 and 24 and the flat surfaces of the flow plates 27. 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 a blunt ended rod for seating backup rings, (step 3), medium strength (blue) threadlocker (step 6) and a flat spacer about 3/32" thick for reinstalling the main and vent flanges (step 7 and 9).

### Disassembly

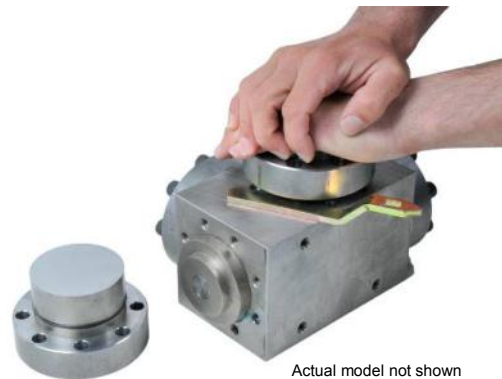
1. To relieve the compression on the internal operator springs (15,16) loosen the lock handle 12 and rotate the adjustment handle 13 counter-clockwise until the resistance is fully relieved. Springs must be loose to safely remove the adjustment head.



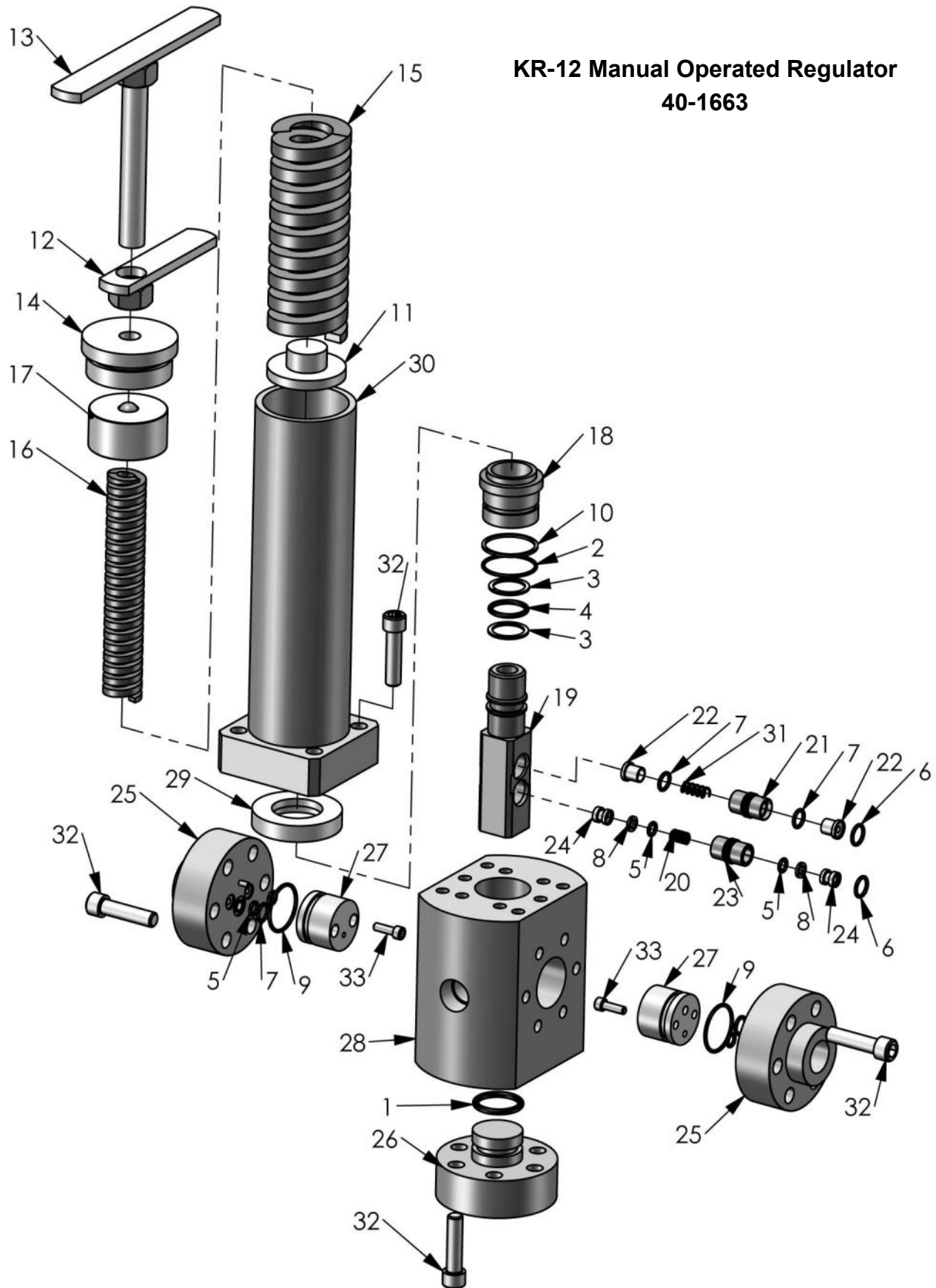
2. With a 5/16" Allen wrench, loosen and remove the socket head cap screws. Remove the adjustment head 30 and spring assembly by lifting and tilting and holding the spring plate 11 to clear the piston guide 18. Remove springs, guide and spring plate and clean barrel and all parts.
3. Remove the flange screws from the flanges 25. Carefully remove these flanges and attached flow plates.
4. Remove the flow plates from the flanges 25 by unscrewing the screws 33. Do not place the flow plates lapped side down on any hard surface.
5. From both sides of the body, remove the seal cage assemblies (seal rings, springs and cages) 21 and 23. Carefully set these aside.
6. Remove the lower flange 26 by removing the screws 32.
7. Using a soft tool, lightly tap the seal container 19 from the bottom to loosen the piston guide 18 from the body. Lift this assembly through the top of the body.
8. Remove all o-rings and back-up rings. Clean all parts with a degreaser and wipe with clean rags.
9. Inspect all lapped surfaces for scratches, dings or dull spots that would prevent them from re-use. Inspect the bores of the body and piston guide 18 for linear scratches that would propagate leaks.
3. Assemble the seal rings and springs into the seal cages (do not scratch the sealing surface of the seal ring or the bore of the seal cage) and install into the seal container.  
  
Note: the I.D.'s of the seal container where the seal cages are installed are not sealing surfaces and do not have to be scratch and imperfection free.
4. Slide the piston guide over the piston end of the seal container and snug it down.
5. 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.
6. Install the flow plates on their respective flanges, using the screws and medium strength (blue) threadlocker. The flanges also must have the o-rings seated in the face grooves before attaching the flanges to the flow plates. Use rags to protect the flow plate lapped surface and edges.
7. Important! To protect the seal rings in the seal container during reassembly, ease the flow plate into the body using a 3/32" thick spacer between the flange and the body to prevent over-travel. Orient the flanges so that the flow plates are aligned properly on the vertical axis of the body: Inlet port down and vent port up. Inlet is normally on the left of the outlet port.

## 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.



Actual model not shown



8. Insert the socket head screws and tighten evenly around the flange. The flow plate should be in light contact with the seal rings.
9. Important! In the same way, install the other flange using the spacer to prevent the flow plate from hitting the seal rings. Orient the flange before seating it against the seal rings. Evenly tighten all socket screws.



Actual model not shown

10. Install the bottom flange with the o-ring, evenly tightening all screws.
11. Reassemble the springs, spring plate and guide into the barrel of the adjustment head using a light coat of grease. Lower the operator assembly with screws onto the body and evenly tighten the socket screws.
12. Rotate the handle down to its original position and set the lock nut. The regulator is now ready for normal operation. Some adjustment of the operator may be necessary to achieve the desired output. To increase pressure, rotate the handle clockwise, to decrease pressure rotate the screw counter-clockwise. Always tighten the lock nut after setting the regulator.

Kit contents:

- a. (40-1548) O-ring Kit; o-rings & backups
- b. (40-1668) Seal Kit; O-ring Kit plus seal rings & springs
- c. (40-1653) Minor Repair Kit; Seal Kit, flow plates & screws
- d. (40-1547) Major Repair Kit; Minor Repair Kit & seal container

Part #	Description	Qty	Kit
1	23-1141	O-Ring	1 a
2	23-a325	O-Ring	1 a
3	23-1331	Backup Ring	2 a
4	23-1332	O-Ring	1 a
5	23-1335	O-Ring	6 a
6	23-1343	O-Ring	2 a
7	23-1344	O-Ring	4 a
8	23-1345	Backup Ring	2 a
9	23-1346	O-Ring	2 a
10	23-1433	Backup Ring	1 a
11	40-0134	Spring Plate	1
12	40-0135	Lock Handle	1
13	40-0136	Adjusting Handle	1
14	40-0140	Plug, Adjustment Head	1
15	40-0143	Spring, Outer	1
16	40-0144	Spring, Inner	1
17	40-0300	Spring Guide	1
18	40-0330	Piston Guide	1
19	40-0331	Seal Container	1 d
20	40-0332	Spring	1 b
21	40-0333	Seal Cage, Vent	1 b
22	40-0334	Seal Ring, Vent	2 b
23	40-0335	Seal Cage, Inlet	1 b
24	40-0336	Seal Ring, Supply	2 b
25	40-0337	Flange, KR-12	2
26	40-0339	Flange, Lower	1
27	40-0340	Flow Plate, Supply & Vent	2 c
28	40-0341	Body	1
29	40-0345	Adapter	1
30	40-0388	Adjustment Head	1
31	40-0863	Spring	1 c
32	50-0069	Screw	22
33	50-0084	Screw	4 d