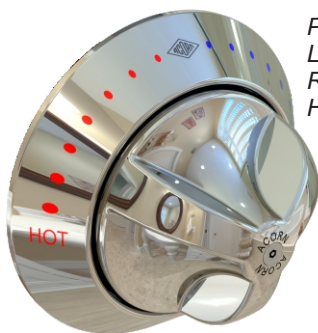




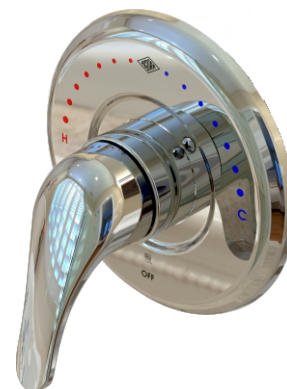
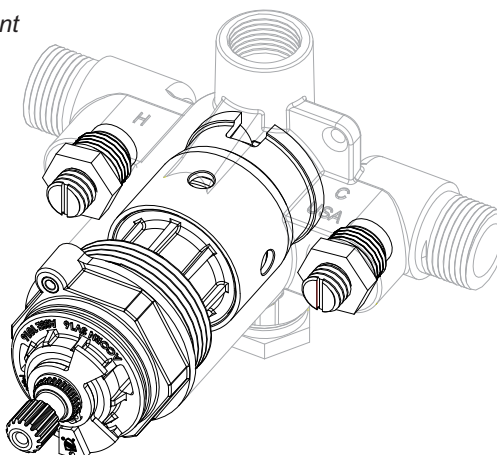
ACORN ENGINEERING COMPANY
P.O. BOX 3527
CITY OF INDUSTRY, CA 91744
UNITED STATES OF AMERICA
WWW.ACORNENG.COM

RSV16 Retro-Fit Cartridge **Acorn Controls SV16 Valve Cartridge**

*Patented ADA Compliant
Ligature and Vandal
Resistant Tri-Lever
Handle*



RSV16 TRIM



RSV16-LVR TRIM

Patent Pending

FOR TECHNICAL ASSISTANCE

1.800.743.8259

fieldservice@acorneng.com



NOTES TO THE INSTALLER:

1. Please leave this documentation with the owner of the fixture when finished.
- 2. PLEASE READ THIS ENTIRE BOOKLET BEFORE BEGINNING THE INSTALLATION. FAILURE TO COMPLETELY READ AND UNDERSTAND CONTENTS MAY RESULT IN DAMAGE TO VALVE COMPONENTS WHICH MAY CAUSE VALVE TO MALFUNCTION AND VOID WARRANTY.**
3. Check your installation for compliance with plumbing and other applicable codes.

LIMITED WARRANTY **UNITED STATES AND CANADA**

Acorn Controls warrants that its products are free from defects in material or workmanship under normal use and service for a period of one year from date of shipment. Acorn's liability under this warranty shall be discharged solely by replacement of repair of defective material, provided Acorn is notified in writing within one year from date of shipment, F.O.B. Industry, California.

This warranty does not cover installation or labor charges and does not apply to materials, which have been damaged by other causes such as mishandling or improper care or abnormal use. The repair or replacement of the defective materials shall constitute the sole remedy of the Buyer and the sole remedy of Acorn under this warranty. Acorn shall not be liable under any circumstances for incidental, consequential or direct charges caused by defects in materials, or any delay in the repair or replacement thereof. This warranty is in lieu of all other warranties expressed or implied. Product maintenance instructions are issued with each unit and disregard or non-compliance with these instructions will constitute an abnormal use condition and void the warranty.



WARNING:

Thoroughly read all installation instructions and product safety information before beginning the installation of this product.

FAILURE TO READ AND FOLLOW PROPER INSTALLATION AND MAINTENANCE INSTRUCTIONS MAY RESULT IN PRODUCT FAILURE WHICH CAN CAUSE PROPERTY DAMAGE, PERSONAL INJURY AND/OR DEATH.

Acorn Controls is not responsible for damages resulting from improper installation and/or maintenance. Installation of this valve shall be in accordance with ***Uniform Plumbing Code***.

TO ENSURE ACCURATE AND RELIABLE OPERATION OF THIS PRODUCT, IT IS ESSENTIAL TO:

- Implement an annual maintenance program to ensure proper operation and temperature setting of valve(s).

SUPPLIES REQUIRED:

(Not provided by Acorn)

1. Allen wrenches for lever handle and bonnet set screws.
2. Snap-ring pliers with pins less than 0.03"



IMPORTANT

- To ensure proper installation review the manual thoroughly to verify rough-ins before beginning any work.
- Installation and field adjustment are the responsibility of the installer.
- Maximum water pressure is 125 psi (8.62 bars). Maximum inlet hot water temperature is 180°F (82°C). Temperature adjustment range is 85-115°F (29-46°C). Valve assembly must be drained prior to being subjected to freezing temperatures. Valve includes integral checks stops.

To see a video to assist you in the installation of the RSV16 Retrofit Valve, use the link provided here:

<http://www.acorneng.com/acorn-controls-faqs#RSV16>



CARTRIDGE, CHECK STOP AND TRIM REMOVAL:

1. Turn off hot and cold water supply.
2. Remove existing valve trim handle and escutcheon to expose valve body and check stop assemblies.
3. Close stops by turning **check adjusting screws 16** clockwise until **check seal 20** is seated
4. Remove existing bonnet and cartridge assembly from valve body. See **Figure 1**.
 - On Powers valves unscrew valve bonnet counter-clockwise. Remove bonnet and cartridge assembly.
 - On SV16 Controls valves first remove the **retaining ring 3** with snap ring pliers and **temperature stop washers 4** from **valve stem 9**. Loosen **set screw 6** to allow the **valve bonnet 7** to be unscrewed. Remove **valve bonnet 7**, **valve stem 9**, and **cartridge 11** by unscrewing **valve bonnet 7** counter-clockwise.
5. Inspect valve casting checking for corrosion or cracks in valve body. Clean internal valve body of all debris. Ensure cartridge seat at base of body is clean and smooth for O-ring seal. See **Figure 2**.
6. Slowly open **check adjusting screws 16** relieving line water pressure. Towel may be required to soak up water remaining in lines. Unscrew **check caps 14** counter clockwise and remove **check stop assembly items 14-20**, this is similar on both Powers and SV16 Controls valves. Carefully remove stops and internal components (components may fall behind wall or panel). See **Figure 3**.

CHECK-STOP INSTALLATION:

7. Assemble new **check stop assembly items 14-20**. First insert **check adjusting screw 16** and **O-ring 17** into **check cap 14** and **O-ring 15** onto **check cap 4** if not already done. **Check adjusting screw 16** should be screwed into **check cap 14** completely prior to installing into casting. Install **check seal 20** onto **check plunger 19**. Install check assembly **check spring 18** and **check plunger 19** into valve body and tighten **check cap 14** firmly until check cap **O-ring 15** is seated into valve body. Screw **check adjusting screw 16** clockwise until **check seal 20** is bottomed out on valve seat. See **Figure 4**.

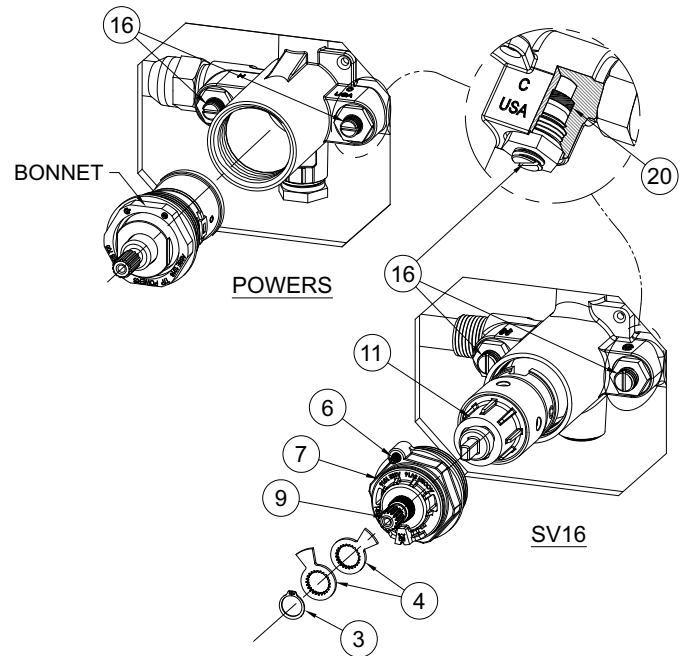


FIGURE 1

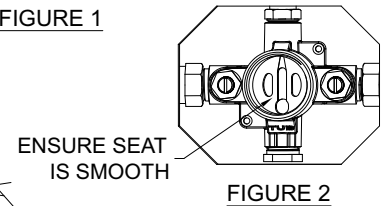


FIGURE 2

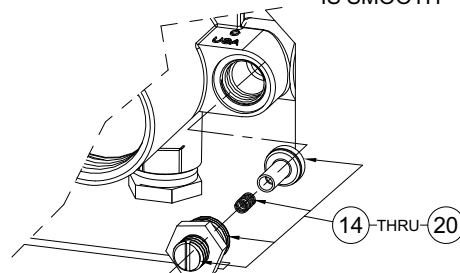


FIGURE 3

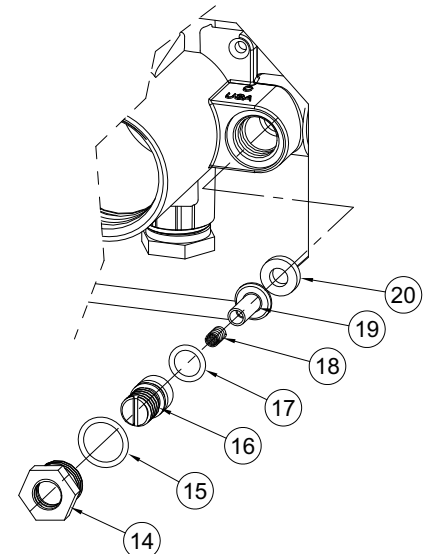


FIGURE 4

CARTRIDGE INSTALLATION:

8. Inspect valve **cartridge 11** ensuring that 'D' shaped grooves have cartridge screen **O-rings 13** in them and that stainless steel **screens 12** are seated. See **Figure 4**.
9. Insert **cartridge 11** into valve body. Ensure the 'C' (see detail) on the side of cartridge housing is on the cold water supply side of valve casting. Take note of the rib on the bottom of **cartridge 11** (between the screens) and the slot in the bottom of valve body are aligned. This is so when the cartridge is installed, it seats in the valve casting and cartridge will not rotate. See **Figures 4 and 5**.
10. With valve stem **O-ring 10** assembled onto **valve stem 9**, slide **valve stem 9** onto cartridge stem while holding in place. See **Figure 5**.
11. Inspect valve bonnet **set screw 6** and ensure it is in the backed out position. Slide bonnet **O-ring 8** over threaded area on bonnet and seat in groove. See **Figure 6**.
NOTE: For optional Lever Handle slide **O-ring 5** into groove on the top of **bonnet 7**.
12. Thread valve **bonnet 7** into valve casting turning clock wise. Apply pressure on top of stem while screwing **valve bonnet 7** into place. This will keep cartridge from slipping out of slot while bonnet is threaded into place. Tighten **valve bonnet 7** onto valve body firmly (180 In-Lbs) Tighten **set screw 6** with 1/16" Allen wrench firmly (75 In Oz). This will prevent **valve bonnet 7** from coming loose during use. See **Figure 7**.

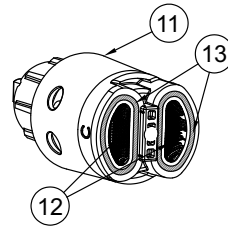


FIGURE 4

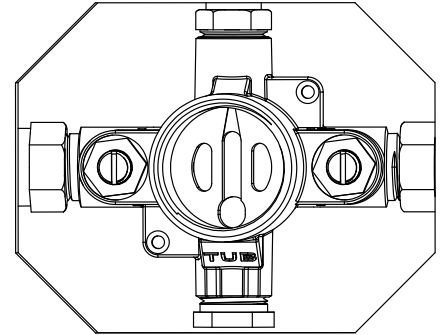


FIGURE 5

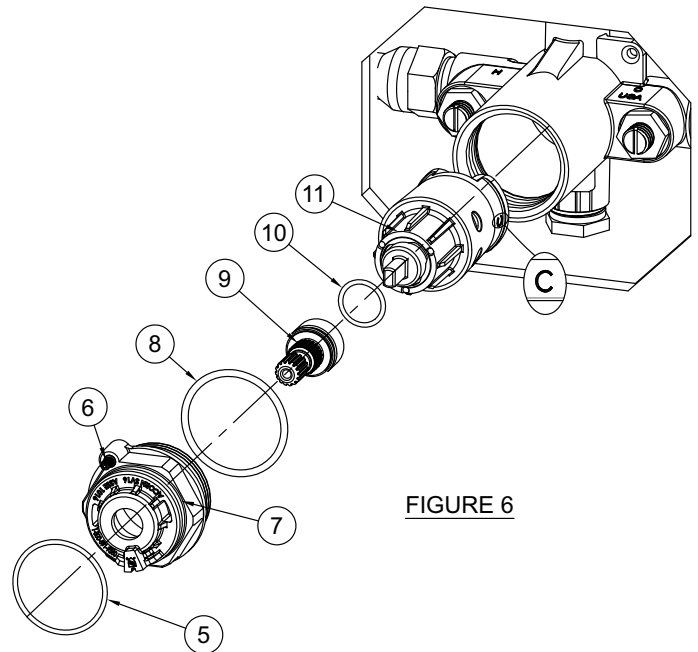


FIGURE 6

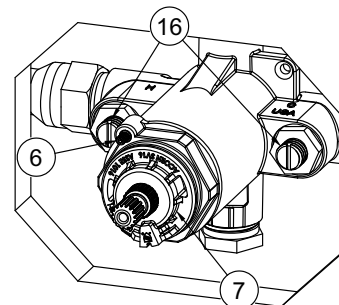


FIGURE 7

OFF POSITION SETTING:

13. Turn on hot and cold water supply. Open both check stop assemblies by turning check **adjustment screw 16** counter-clockwise until screw tops out. Check for leaks around bonnet and stop assemblies at this time.
14. Using handle, rotate **valve stem 9** clockwise two full turns. Continue to slowly turn handle clockwise until water flow stops. Then continue to rotate handle clockwise an additional 90 Deg. (1/4 turn) then stop. Turn back counter-clockwise slowly until the water flow completely stops.
15. With the flow of water now shut off, place the first **temperature stop washer 4** on the **valve stem 9** keyed on the counter-clockwise side as close to the bonnet stop as possible. See **Figure 8**.
16. Once **temperature stop washer 4** is installed slightly open valve by turning stem with handle counter-clockwise and then back clockwise until first **temperature stop washer 4** hits stop on valve bonnet. At this time ensure that water is shut off completely to shower head.
17. If not, rotate stop one tooth either way and repeat step 16 until the water flow is shut off and the **temperature stop washer 4** is against the valve bonnet stop.

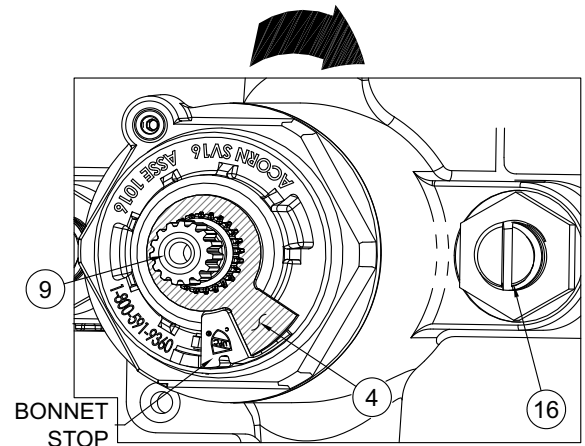


FIGURE 8

HIGH LIMIT TEMPERATURE SETTING:

18. Rotate external **stem 9** with handle counter-clockwise measuring water temperature with a thermometer until the high limit temperature is reached. (Recommend 105° to 110 °F)
19. Place the second **temperature stop washer 4** on the **valve stem 9** keyed on the clockwise side as close to the valve bonnet stop as possible. Rotate counter-clockwise until it is fully against bonnet stop (full hot). See **Figure 9**.
20. At full hot use thermometer to verify required high limit temperature is reached.
21. With valve in the "ON" position and water running install the **retaining ring 3** with snap ring pliers. Confirm snap ring is inserted properly on groove of stem. (When water is running the external **stem 9** is pushed outward increasing the exposure of the snap ring groove.) See **Figure 10**.

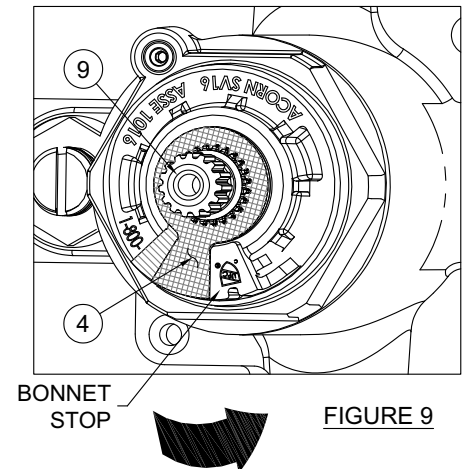


FIGURE 9

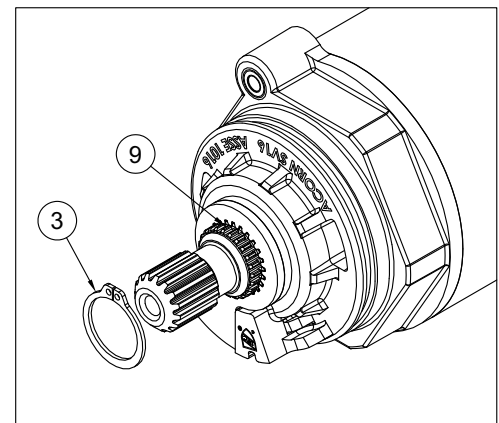


FIGURE 10

TRIM INSTALLATION:

RSV16

- Attach **escutcheon gasket 27** to the back of **Tri-Lever handle escutcheon 26** by removing adhesive protection film and attaching as shown **Figure 11**.
Note: Ensure **escutcheon gasket 27** is at bottom of **Tri-Lever handle escutcheon 26**.
- Attach **valve body gasket 28** to valve body with gap on top as shown **Figure 12**.
- Place **Tri-Lever handle escutcheon 26** over valve body and against finish wall and secure with **oval head screws 25**.
- Place **stem insert 24** onto **valve stem 9** and then **Tri-Lever handle 23** onto **stem insert 24**.
- Assemble **Tri-Lever handle 23** with **Tri-Lever handle screw 22** using **center reject bit 21** provided.

NOTE: **Tri-Lever handle 23** handle may be adjusted 1/4" up and down by rotating **stem insert 24** 90 Degrees inside **Tri-Lever handle 23** handle. See **Detail 1**.

RSV16-LVR

- Attach **escutcheon gasket 27** and **trim plate center gasket 25** onto back of **lever handle escutcheon 32** by removing adhesive protection film and attaching as shown **Figure 13**.
Note: Ensure open end of **escutcheon gasket 27** is at bottom of **lever handle escutcheon 32**.
- Install external bonnet **O-ring 8** onto **valve bonnet 7**.
- Slide **valve sleeve 31** onto valve body.
- Place **lever handle escutcheon 32** with gaskets over **valve sleeve 31** and against finish wall and secure with **oval head screws 25**.
- Push **lever handle 30** onto **valve stem 9** and secure with **cup pint set screw 29**. See **Figure 14**.

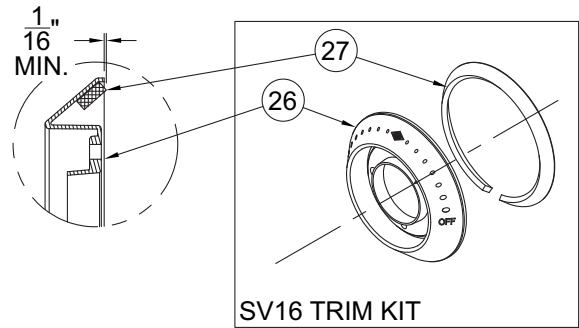


FIGURE 11

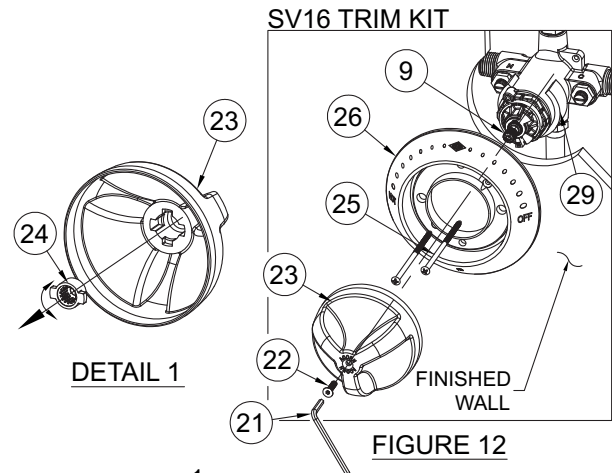


FIGURE 12

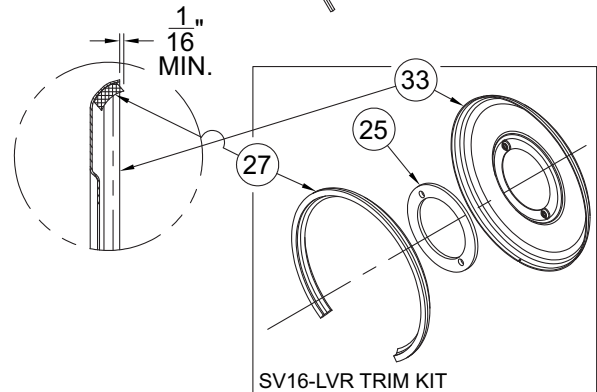


FIGURE 13

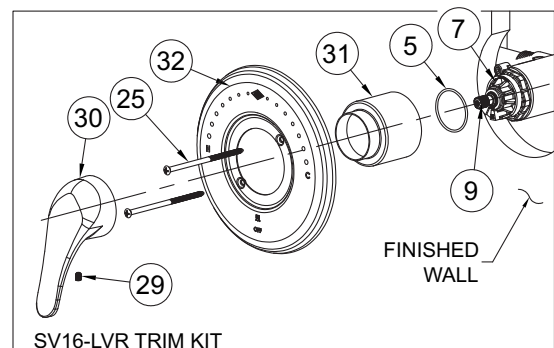
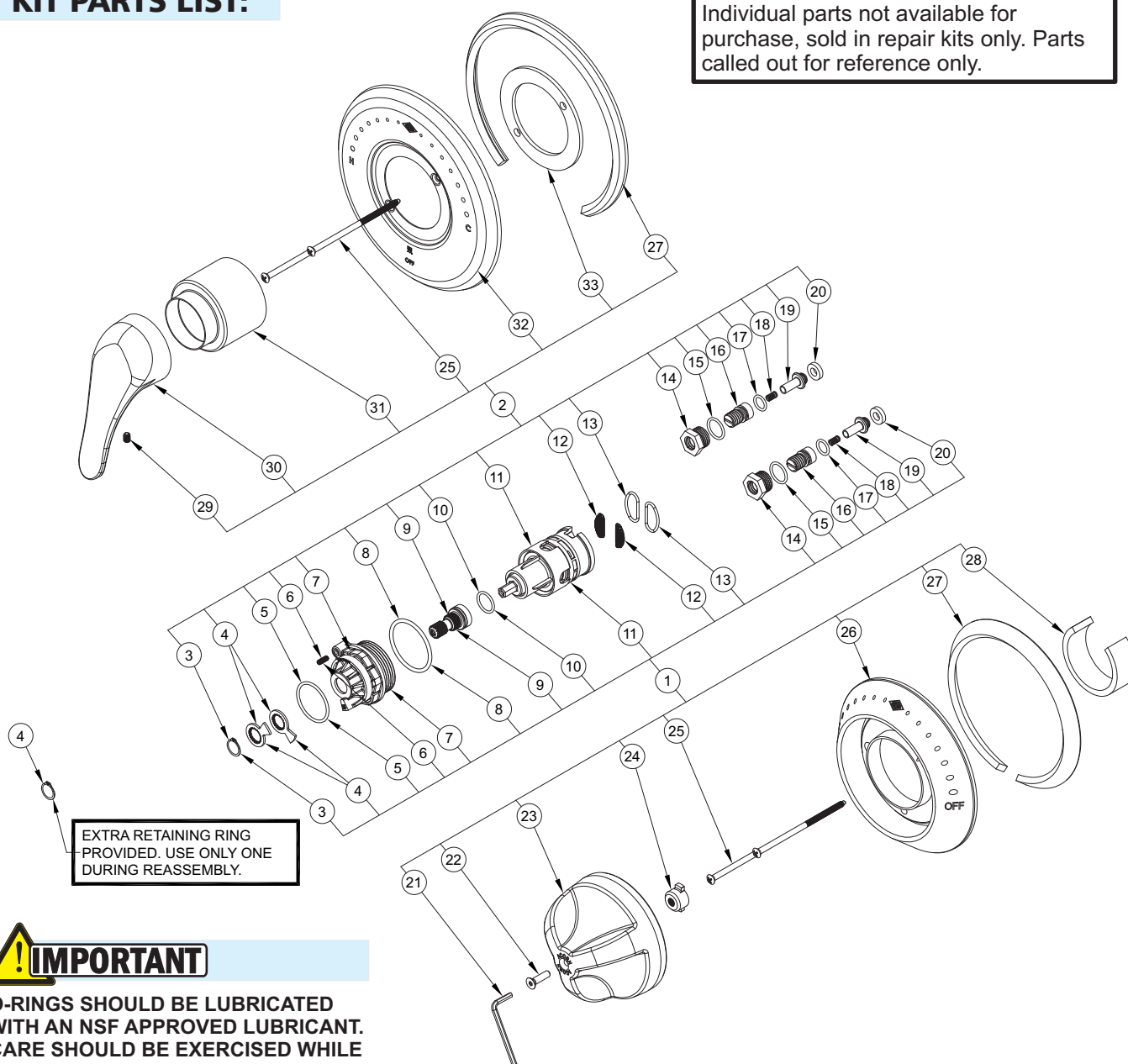


FIGURE 14

KIT PARTS LIST:

NOTE:

Individual parts not available for purchase, sold in repair kits only. Parts called out for reference only.



! IMPORTANT

O-RINGS SHOULD BE LUBRICATED WITH AN NSF APPROVED LUBRICANT. CARE SHOULD BE EXERCISED WHILE INSERTING COMPONENTS INTO VALVE BODY DURING REASSEMBLY.

ITEM	KIT NUMBER	DESCRIPTION	ITEM	KIT NUMBER	DESCRIPTION
1	RSV16	RETRO-FIT KIT w/ TRI-LEVER HANDLE	2	RSV16-LVR	RETO-FIT KIT w/ LEVER HANDLE
ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
3	RETAINING RING (x2)	14	CHECK CAP (x2)	25	OVAL HEAD SCREWS (x2)
4	TEMPERATURE STOP RINGS (x2)	15	CHECK CAP O-RING (x2)	26	TRI-LEVER HANDLE ESCUTCHEON
5	EXTERNAL BONNET O-RING	16	CHECK ADJUST SCREW (x2)	27	ESCUTCHEON GASKET
6	SET SCREW	17	CHECK ADJUST SCREW O-RING (x2)	28	VALVE BODY GASKET
7	VALVE BONNET	18	CHECK SPRING (x2)	29	CUP POINT SET SCREW
8	BONNET O-RING	19	CHECK PLUNGER (x2)	30	LEVER HANDLE
9	VALVE STEM	20	CHECK SEAL (x2)	31	VALVE SLEEVE
10	VALVE STEM O-RING	21	5/32" CENTER REJECT ALLEN WRENCH	32	ESCUTCHEON, LEVER HANDLE
11	CARTRIDGE	22	TRI-LEVER HANDLE SCREW	33	TRIM PLATE CENTER GASKET
12	STAINLESS STEEL SCREENS (x2)	23	TRI-LEVER HANDLE		
13	CARTRIDGE SCREEN O-RINGS (x2)	24	STEM INSERT		