

Maintenance Instructions for T60M Thermal Series Ball Valves

MS-INS-T60M
CP Revision H
May, 2008

Kit Contents:

Seats (2)	Packing
Stem bearings (3)	Packing supports (2)
Stem springs (3)	Lubricant
Ball	Sealant*
Flange seals (2)	Back seat (2)
Material Safety Data Sheets	Instruction sheet

* T67M & T68M kits do not contain sealant.

NOTE:

- **Do not remove flange seals from package until ready to use. The MS-LT-RTV103 sealant for the 63 and 65 series has a suggested minimum cure time of 24 hours for maximum performance.**
- **Refer to Fig. 1 exploded view throughout the disassembly and reassembly instructions.**

WARNING: Before servicing any installed valve, you must

- depressurize system
- cycle valve

WARNING: Residual material may be left in the valve and system.

- Loosen and remove the eight body bolts.
 - Remove center body from between the flange ends.
 - Remove and discard both sets of flange seals, back seats, and seats.
 - Rotate the ball to the closed position. Remove and discard the ball.
 - Clean the flange knurling and the sealing surface groove areas of the center body.
Be careful not to scratch the components. Be sure sealing areas are free of old sealant.
- NOTE: To replace ball and seats only, skip to step 23 and continue.**
(Note the handle position, as it must be replaced in the same position)
- Using the handle to retain the stem, use a wrench and remove the top stem nut, stem spring, stop plate, handle, and grounding spring.
 - Discard stem spring and set aside remaining components for reuse.
 - Using the handle to retain the stem, loosen and remove the lower stem nut. Set aside for reuse.
 - Remove the stem springs, gland, and upper stem bearing. Discard stem springs and upper stem bearing. Set aside gland for reuse.
 - Being careful not to scratch the packing bore area or the stem, pry the packing and packing supports out through the packing bore of the valve.
 - Discard packing and packing supports.
 - Keeping the stem flats parallel to the flange sealing surfaces, push stem down into center body, tilt and remove.
 - Remove remaining stem bearings from stem and discard.
 - Clean the stem and packing bore area of the valve center body and set aside for reuse.

- Lubricate the center body packing bore area, the stem shank, stem shoulder, and both sides of each stem bearing with the MS-LT-WL7 lubricant. **NOTE:** If using a stainless steel stem and nut, lubricate the threads on both components with MS-LT-WL7.
- Place two (2) stem bearings onto the stem. Tilt the stem with the stem flats parallel to the flange sealing surface and insert into the center body packing bore.
- Place the packing components into the packing bore in the following order: *lower packing support, packing, upper packing support, stem bearing, and gland.* For proper positioning, refer to exploded view drawing.
- Install the two stem springs. The first one positioned concave side DOWN, the second concave side UP.
- Thread the lower stem nut onto the stem.
- Using the handle to retain the stem, tighten the lower stem nut as noted in the chart below.

Valve Series	T63M	T65M	T67M	T68M
Torque Value in. lb (N·m)	75 (8.5)	150 (17.0)	200 (22.6)	200 (22.6)

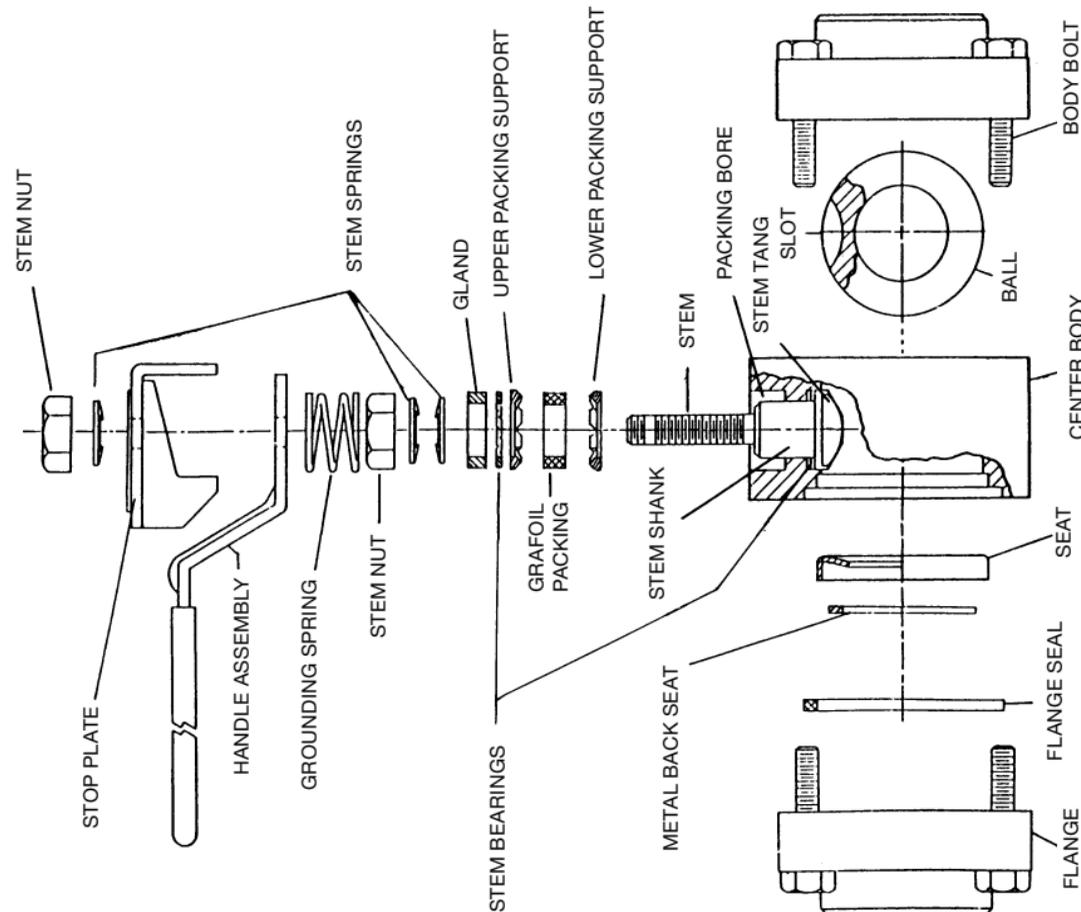
- Place the grounding spring, handle, stop plate, stem spring (concave side UP) and upper stem nut on the stem.
- Using the handle to retain the stem, tighten the upper stem nut to the value listed in the torque chart in step 20.
- Lubricate the exterior of the new ball with a **heavy, even coat** of MS-LT-WL13 lubricant.
- Place the ball into the center body so that its slot engages the stem tang. Rotate ball 90° to the open position.

Follow steps 25 through 37—ONE SIDE AT A TIME.

NOTE: For T67M and T68M skip to step 27.

NOTE: MS-LT-RTV103 sealant has a suggested minimum cure time of 24 hours for maximum performance.

Fig.1 Exploded View



Swagelok®

www.swagelok.com

25. Open the appropriate sealant package, remove the cap and attach the syringe tip to the syringe.
26. Using the syringe, lay a bead of the appropriate sealant in the corner of the center body flange seal groove area, in a continuous circle, leaving no gaps. Refer to Fig. 2. Approximate bead size is 1/16 in. diameter for all series. Sealant should be no larger than 1/3 the height of the groove and no more than 1/3 the width of the groove.
27. For T67M and T68M, apply a thin even coat of MS-LT-WL7 lubricant to the entire flange seal.
28. Carefully and evenly, place and press the flange seal into the center body cavity. T67M and T68M series

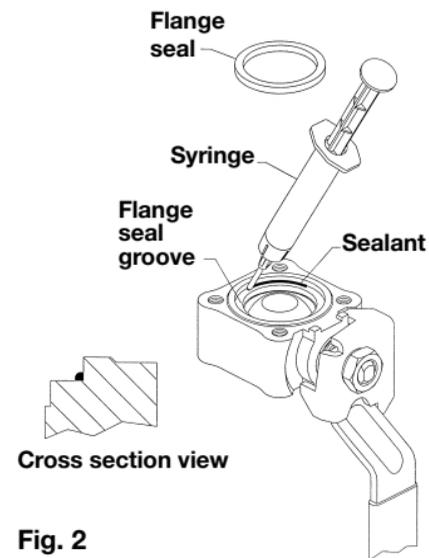


Fig. 2

- flange seals have a thin stainless steel cap with a thin Grafoil® backsheet that must face away from the ball.
29. Without getting sealant/lubricant on the ball, spread any extruded sealant/lubricant evenly around the internal diameter of the flange seal.
 30. Apply a **heavy, even coat** of MS-LT-WL13 lubricant to the rounded side of the new seat.
 31. Insert the seat, with the rounded side towards the ball and the concave side away from the ball, into the center body.
 32. Install the back seat into the concave side of the seat. Be sure back seat is flat and does not slip out during assembly.

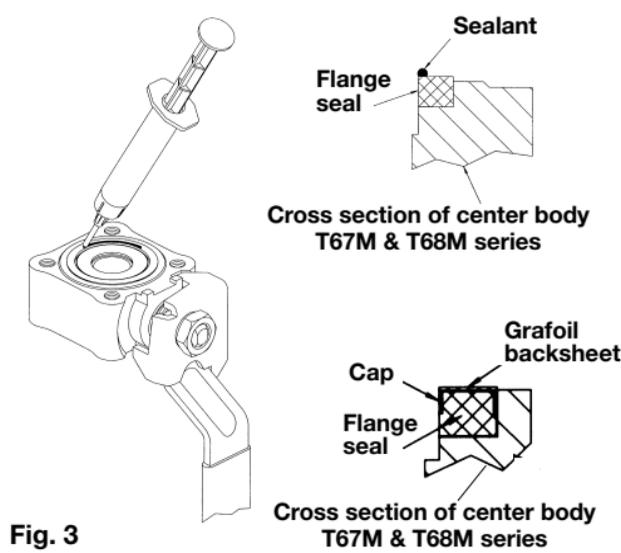
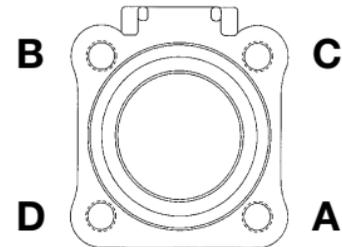


Fig. 3

NOTE: For T67M and T68M skip to step 34.

33. Apply another bead of sealant to the top of the flange seal, in a continuous circle, leaving no gaps. Refer to Fig. 3. Sealant bead should be the same size as the bead made in step 26. Be careful the sealant does not touch the ball.
34. If flanges are welded into system, repeat steps 25 through 33 for the opposite side before proceeding to step 35. Skip step 38.
35. Position flange against the center body. **DO NOT ALLOW THE FLANGE TO SLIDE AROUND ON THE CENTER BODY.**
36. Apply MS-LT-NNS-1 lubricant to the first 13 to 15 threads of the body bolts.
37. Thread lubricated body bolts through the flange and into the center body and tighten finger-tight.
38. Repeat steps 25 through 37 for the second flange and flange seal installation (opposite side of valve).
39. Torque the body bolts according to the **Torque Sequence** illustration shown. (Sequence is alphabetical).

Torque Sequence



40. Tighten the body bolts to the value listed in the 1st column of the **Torque Chart** according to the Valve Series. Repeat the torque sequence, in the alphabetical pattern, to the values listed in the 2nd, 3rd, 4th and 5th columns of the **Torque Chart**.

Torque Chart

Valve Series	Torque Value in. · lb (N·m)				
	1st	2nd	3rd	4th	5th
T63M	10 (1.1)	20 (2.3)	40 (4.5)	100 (11.3)	100 (11.3)
T65M	25 (2.8)	50 (5.7)	100 (11.3)	300 (33.9)	300 (33.9)
T67M	35 (4.0)	75 (8.5)	150 (17.0)	400 (45.2)	400 (45.2)
T68M	40 (4.5)	100 (11.3)	200 (22.6)	600 (67.8)	600 (67.8)

Swagelok®

www.swagelok.com

©1987, 1990, 1994, 1998, 1999, 2008
Swagelok Company
Grafoil—TM UCAR Carbon Company inc.

Fig. 1 Exploded View

