Instructions for Mounting 60 Series Ball Valves to 131/151, 133/153, or 135/155 Pneumatic Actuators

Tool List

Hex key: 1/8 in., 9/64 in., 5/32 in., 3/16 in., 5/16 in.
Open-end extension: 5/16 in., 3/8 in., 7/16 in., 9/16 in., 5/8 in., 3/4 in., 11/16 in., 15/16 in.
Torque wrench capable of 700 in.·lbs (79.1 N·m, 806 cm·kg)

⚠ WARNING
Before servicing any installed valve, you must
- **depressurize system**
- **cycle valve.**

⚠ WARNING
Residual material may be left in valve and system.

⚠ CAUTION
Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in leakage or premature valve failure.

Note: For a dual-mounted assembly, remove the wall mount bracket. On 131/151 or 133/153 actuators, press the provided roll pin into the top actuator shaft.

1. **Normally open 2-way assemblies:** place valve in the open position. **Normally closed 2-way assemblies:** place valve in the closed position. **Double-acting 2-way assemblies:** place valve in the closed position (standard factory assembly) unless open position is desired. **All others:** place valve in the desired position.
2. Remove the upper stem nut, stem spring (if present), stop plate (if present), handle, and grounding spring.
3. Remove the lower **stem nut**. Place the **lock tab** on the stem, tabs facing up.
4. Reinstall the lower **stem nut** and tighten according to the following table.

Valve Series	Torque, in.·lb (N·m, cm·kg)
62	25 (2.8, 29)
63	50 (5.7, 58)
65	100 (11.3, 115)
67	150 (17.0, 173)
68	150 (17.0, 173)

5. Bend the tabs of the lock tab up around the flats of the lower **stem nut**. If the tabs do not line up with the flats of the lower stem nut, tighten the stem nut until the tabs are aligned, not more than 1/6 turn.
6. Replace the **grounding spring**.
7. **4-bolt assemblies:** To ensure uniform flange to-body contact, loosen all 4 **body fasteners** and remove the top two fasteners.

   8-bolt assemblies: Loosen and remove the top two **body fasteners** on each side of the valve assembly. Set aside, except for 62 series.

⚠ CAUTION
Be careful to maintain flange-to-body contact in 8-bolt assemblies with Grafoil® flange seals. If seal is broken, the Grafoil flange seals must be replaced.

8. Remove the four **cap screws** from the actuator. Place the **mounting bracket** over the **roll pin** and position the **wall mount tab** toward the **rear** of the actuator.
9. Attach **mounting bracket** with the four **cap screws**. Tighten cap screws to:
   131/151: 20 in.·lbs (2.3 N·m, 23 cm·kg)
   133/153: 80 in.·lbs (9.0 N·m, 92 cm·kg)
   135/155: 230 n.·lbs (26 N·m, 265 cm·kg)
10. **For valves mounted to 131/151 or 133/153 actuators,** place the **coupling** on the valve **stem** with the cut away slots positioned toward the **actuator**. Finger-tighten the two **coupling cap screws** into the coupling.

    For valves mounted to 135/155 actuators, place the **coupling** onto the actuator shaft with the coupling pin hole positioned toward the **actuator**. Align the shaft pin hole and the coupling pin hole. The valve stem flats and coupling slot must be aligned, rotate the coupling 90° if necessary.
    Slide the **coupling pin** through the hole in the coupling and thread the **lock nut** onto the coupling pin. Hold the lock nut in place with a box wrench while torquing the coupling pin to 30 in.·lb (3.4 N·m, 34.6 cm·kg).

Note: It may be necessary to slightly spread the mounting bracket arms before assembling the valve to the actuator.

11. **For valves mounted to 131/151 or 133/153 actuators,** Align the fastener holes in the **mounting bracket** with those in the valve **flanges**. Postion the coupling screw holes towards an open area of the bracket and place the bracket / actuator assembly on the valve. Insert the top two fasteners (see following list).

    For valves mounted to 135/155 actuators, Align the fastener holes in the **mounting bracket** with those in the valve **flanges**. Place the bracket / actuator assembly on the valve. Insert the top two fasteners (see following list).

4-bolt valves: if valve was assembled with...
Studs—replace with 316 SS fasteners and nuts supplied.
Grade 8 carbon steel bolts (marked on head with six evenly spaced radial lines)—discard and replace with two longer grade 8 fasteners supplied.
304/316 SS bolts (marked on head B8 or B8M)—discard and replace with 316 SS fasteners and nuts supplied.

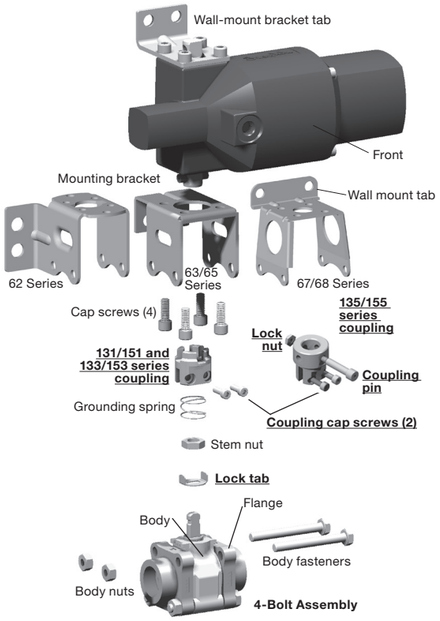
8-bolt valves:
62 series — replace with longer fasteners supplied.
63, 65, 67, 68 series — use original fasteners.

Note: Verify the grounding spring contacts both the valve body and the coupling after assembly.

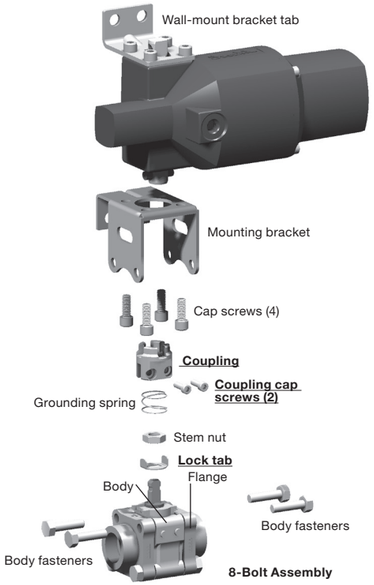
Kit contents are **bold** and underlined in the exploded view drawings.

Additional Kit Contents

- (2) 316 SS fasteners (4-bolt kit)
- (2) 316 SS hex nuts (4-bolt kit)
- (1) Roll pin (131/151, 133/153)
- (2) Longer grade 8 carbon steel fasteners (4-bolt kit)
- (4) Longer grade B7 carbon steel fasteners (62 series 8-bolt)
- (4) Longer 316 SS fasteners (62 series 8-bolt)



4-Bolt Assembly

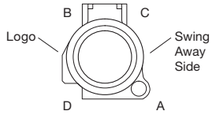


8-Bolt Assembly

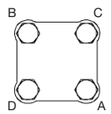
12. **4-bolt assemblies:** Tighten the nuts onto the bolts or studs so the flanges come into light contact with the body seals prior to torquing to ensure uniform flange-to-body contact.

    Note: To ensure uniform flange-to-body contact, do not tighten the bottom two fasteners until the top two fasteners have been tightened.

    Tighten the body fasteners according to the appropriate torque values chart in the alphabetical (crisscross) sequence shown. Repeat the sequence for each subsequent torque value.



4-Bolt Center Body



8-Bolt Center Body

8-bolt assemblies: Tighten the fasteners in the B and C positions on both sides of the valve according to the appropriate torque value table. Repeat the sequence for each subsequent torque value.
Verify that the torque on the fasteners in the A and D positions is equal to the torque value in the **5th** column.

13. **For valves mounted to 131/151 or 133/153 actuators,** position the **coupling** against the **roll pin** and tighten the **coupling cap screws** to
    131/151: 20 in.·lb (2.3 N·m, 23.0 cm·kg)
    133/153: 40 in.·lb (4.5 N·m, 46.1 cm·kg).
    Keep the coupling as level as possible without resting it on the **stem nut**.

    For valves mounted to 135/155 actuators, thread the **coupling cap screws** through the coupling and tighten to 60 in.·lb (6.8 N·m, 69.1 cm·kg).

14. Test for proper actuation and leak-tight integrity.

62, 63, 65, 67, 68 Series 4-Bolt Assembly Torque Values

Valve Series/ Body Material	Fastener Type/ Material	Torque, in.·lb (N·m, cm·kg)				
		1st	2nd	3rd	4th	5th
62/ carbon steel or SS	Bolts or studs/ carbon steel or SS	5 (0.57, 5.8)	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	40 (4.5, 46)
62/brass	Bolts/carbon steel	5 (0.57, 5.8)	10 (1.1, 12)	20 (2.3, 23)	30 (3.4, 35)	30 (3.4, 35)
63/ carbon steel or SS	Bolts or studs/ carbon steel or SS	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	100 (11.3, 115)	100 (11.3, 115)
63/brass	Bolts/carbon steel	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	60 (6.8, 69)	60 (6.8, 69)
65/ carbon steel or SS	Bolts or studs/ carbon steel or SS	25 (2.8, 29)	50 (5.7, 58)	100 (11.3, 115)	300 (33.9, 346)	300 (33.9, 346)
65/brass	Bolts/carbon steel	25 (2.8, 29)	50 (5.7, 58)	100 (11.3, 115)	180 (20.3, 207)	180 (20.3, 207)
67/ carbon steel	Bolts/carbon steel	35 (4.0, 40)	75 (8.5, 86)	150 (17.0, 173)	400 (45.2, 461)	400 (45.2, 461)
67/SS	Bolts or studs/SS	35 (4.0, 40)	75 (8.5, 86)	150 (17.0, 173)	300 (33.9, 346)	300 (33.9, 346)
68/ carbon steel	Bolts/carbon steel	40 (4.5, 46)	100 (11.3, 115)	200 (22.6, 230)	600 (67.8, 691)	600 (67.8, 691)
68/SS	Bolts or studs/SS	40 (4.5, 46)	100 (11.3, 115)	200 (22.6, 230)	500 (56.5, 576)	500 (56.5, 576)

Steam (S60P) or Thermal (T60M) Series Assembly Torque Values

Valve Series	Fastener Material	Torque, in.·lb (N·m, cm·kg)				
		1st	2nd	3rd	4th	5th
62	Carbon steel or SS	5 (0.57, 5.8)	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	40 (4.5, 46)
63		10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	100 (11.3, 115)	100 (11.3, 115)
65		25 (2.8, 29)	50 (5.7, 58)	100 (11.3, 115)	300 (33.9, 346)	300 (33.9, 346)
67		35 (4.0, 40)	75 (8.5, 86)	150 (17.0, 173)	400 (45.2, 461)	400 (45.2, 461)
68		40 (4.5, 46)	100 (11.3, 115)	200 (22.6, 230)	600 (67.8, 691)	600 (67.8, 691)

Fire (A60T) Series Assembly Torque Values

Valve Series/ Body Material	Fastener Type/ Material	Torque, in.·lb (N·m, cm·kg)						
		1st	2nd	3rd	4th	5th	6th	7th
63/carbon steel	Bolts/carbon steel	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	80 (9.0, 92)	125 (14.1, 144)	125 (14.1, 144)	–
63/SS	Bolts/SS	10 (1.1, 12)	20 (2.3, 23)	40 (4.5, 46)	100 (11.3, 115)	150 (17.0, 173)	150 (17.0, 173)	–
65/ carbon steel or SS	Bolts/ carbon steel or SS	25 (2.8, 29)	50 (5.7, 58)	100 (11.3, 115)	200 (22.6, 230)	300 (33.9, 346)	400 (45.2, 461)	400 (45.2, 461)
67/carbon steel	Bolts/carbon steel	35 (4.0, 40)	75 (8.5, 86)	150 (17.0, 173)	300 (33.9, 346)	375 (42.4, 432)	450 (50.9, 518)	450 (50.9, 518)
67/SS	Bolts or studs/SS	35 (4.0, 40)	75 (8.5, 86)	150 (17.0, 173)	300 (33.9, 346)	400 (45.2, 461)	500 (56.5, 576)	500 (56.5, 576)
68/ carbon steel or SS	Bolts/ carbon steel or SS	40 (4.5, 46)	100 (11.3, 115)	200 (22.6, 230)	500 (56.5, 576)	600 (67.8, 691)	700 (79.1, 806)	700 (79.1, 806)

Swagelok

MS-INS-60-AO , RevN, February 2025

Translations available on **www.swagelok.com**