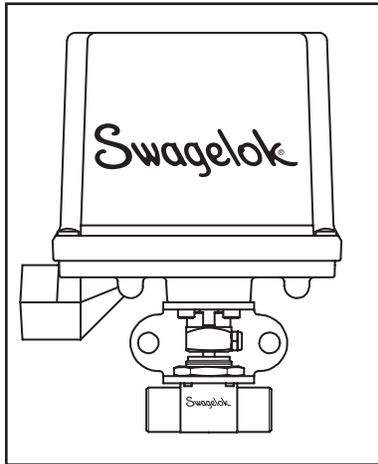




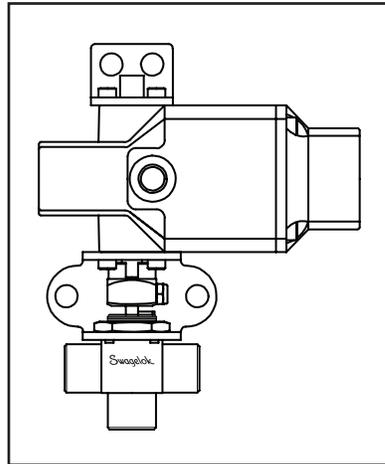
Mounting Instructions

**40G Series, 40 Series,
AFS Series, and SK Series Ball Valves**
to 140 Series Electric Actuators
130 / 150 Series Pneumatic Actuators
121 Series Pneumatic Actuators

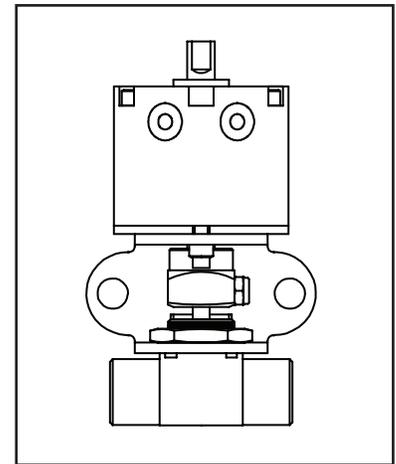
**140 Series
Electric Actuator**



**130 / 150 Series
Pneumatic Actuators**



**121 Series
Pneumatic Actuators**



140 Series Electric Actuators 40G Series, 40 Series, and SK Series Valves

⚠ WARNING
Before servicing any installed valve, you must

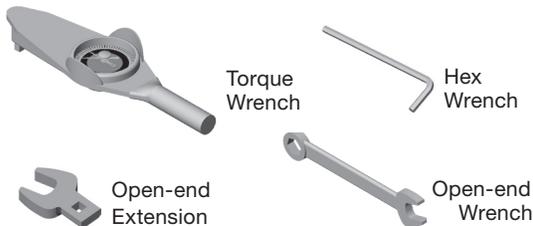
- depressurize system
- cycle valve

⚠ WARNING
Residual material may be left in the 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.

⚠ CAUTION
Do not use these actuators on vented ball valves. The drive shaft of these actuators rotates in one direction.

Tool Requirements



⚠ Not CE marked.

Valve Series	Panel Nut	Cap Screw	Handle Set Screw	Lock Nut
	Open-end Extension	Hex Wrench	Hex Wrench	Open-end Wrench
41 / 42 41G / 42G	3/4 in.	9/64 in.	5/64 in.	5/16 in.
43 / 43G	1 in.	9/64 in.	3/32 in.	5/16 in.
SK	1 in.	9/64 in.	3/32 in.	5/16 in.
43Y / 43Z	1 1/8 in.	9/64 in.	3/32 in.	5/16 in.
44	1 1/4 in.	9/64 in.	1/8 in.	3/8 in.
45	1 3/4 in.	9/64 in.	5/32 in.	3/8 in.

Refer to the appropriate exploded view drawing during the assembly procedure.

1. Remove the set screw (not shown), handle (not shown), and **panel nut** from the valve.
2. On **3-way** and **5-way** model actuators only, the **positioning paint dot** should be located on the **conduit** side of the actuator.
3. Remove the four **cap screws** from the actuator.
4. Place the **mounting bracket** over the **roll pin** and position the **wall mount tab** to the rear of the actuator.
5. Attach the **mounting bracket** to the actuator with the four **cap screws**. Tighten cap screws to 50 in.-lb (5.6 N-m) (58 cm·kg).
6. Set the **coupling** onto the actuator **roll pin**, enclosing the roll pin with the **cut away slots** of the coupling.
7. Place the **panel nut** on the **coupling** and hold in place.
8. Orient the **valve** to the actuator as follows:

2-way

Place the valve in the closed position and the **Swagelok logo** towards the **front** of the actuator.

3-way

Place the valve's open orifice towards the **conduit** and the **Swagelok logo** towards the **front** of the actuator.

4-way

Place **port #2** towards the front of the actuator and align the **stem flat** as follows:

43 series: **stem flat** towards the conduit

45 series: **larger stem flat** towards the **rear** of the actuator

5-way

Place **port #5** towards the **front** of the actuator and the **larger stem flat** towards the **conduit**.

9. Place the **valve bonnet** through the **mounting bracket**, **panel nut**, and **coupling**.
2-way and 3-way assemblies, center the valve between the locating lugs of the bracket.
4-way and 5-way assemblies, align the **locating lugs** of the bracket with the positioning holes in the valve body.

Note: The coupling pin hole and the larger **stem flat** should be aligned. Lift the **coupling** from the **roll pin** and turn until aligned as necessary.

10. Thread the **panel nut** onto the **valve bonnet** and tighten to the specified torque.

Valve Series	Torque Required		
	in.-lb	N-m	cm·kg
41 / 42. 41G / 42G	50	5.6	58
43, 43G	60	6.8	69
SK	60	6.8	69
44	80	9.0	92

11. Slide the **coupling pin** into the **coupling**. Loosely assemble the **lock nut** onto the coupling pin.
12. Slightly move the **coupling** away from the **valve body**. Be certain the **roll pin** is enclosed by the coupling **cut away slots**. Tighten the **lock nut** to the specified torque.

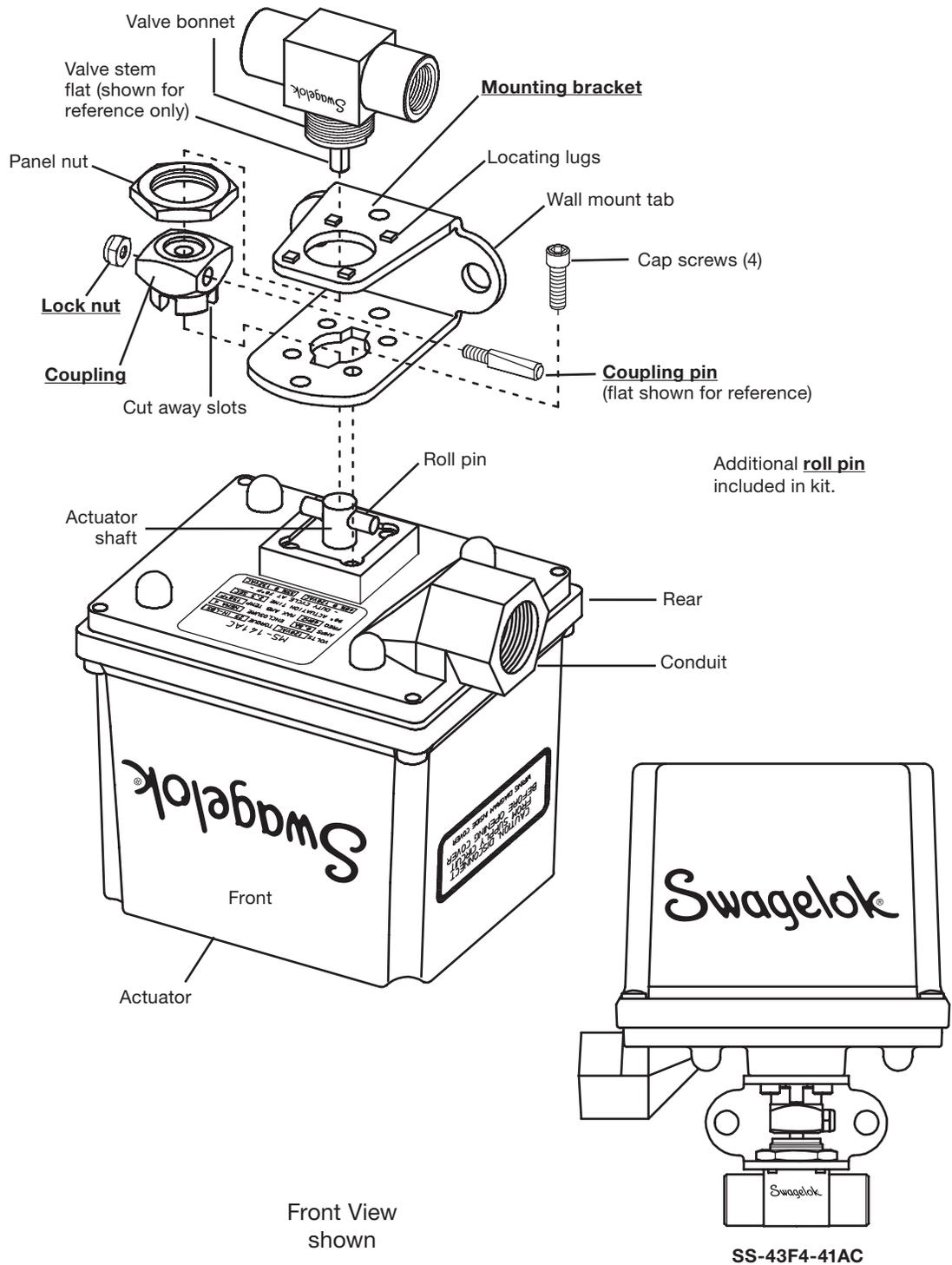
Valve Series	Torque Required		
	in.-lb	N-m	cm·kg
41 / 42 / 43 41G / 42G / 43G	6	0.68	6.9
SK	6	0.68	6.9
44	10	1.1	12

13. Test for proper operation and leak-tight integrity.

140 Series Electric Actuators on 2-way Valves

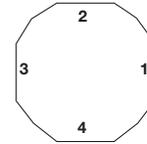
Note: View depicts valve assembled to actuator in the valve open position.

Kit contents are bold and underlined.

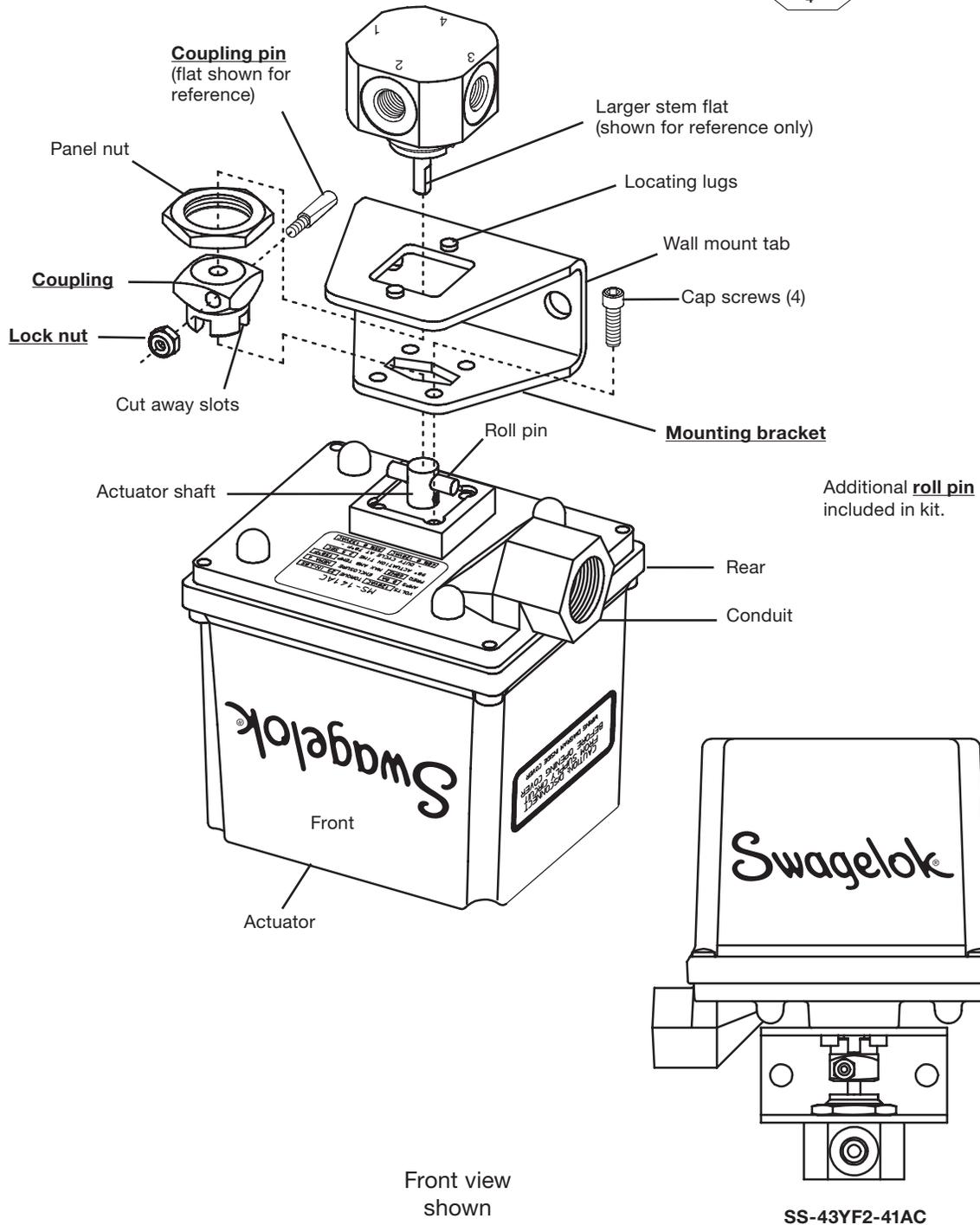


140 Series Electric Actuators on 4-way Valves

Port Numbers
Bottom view of body

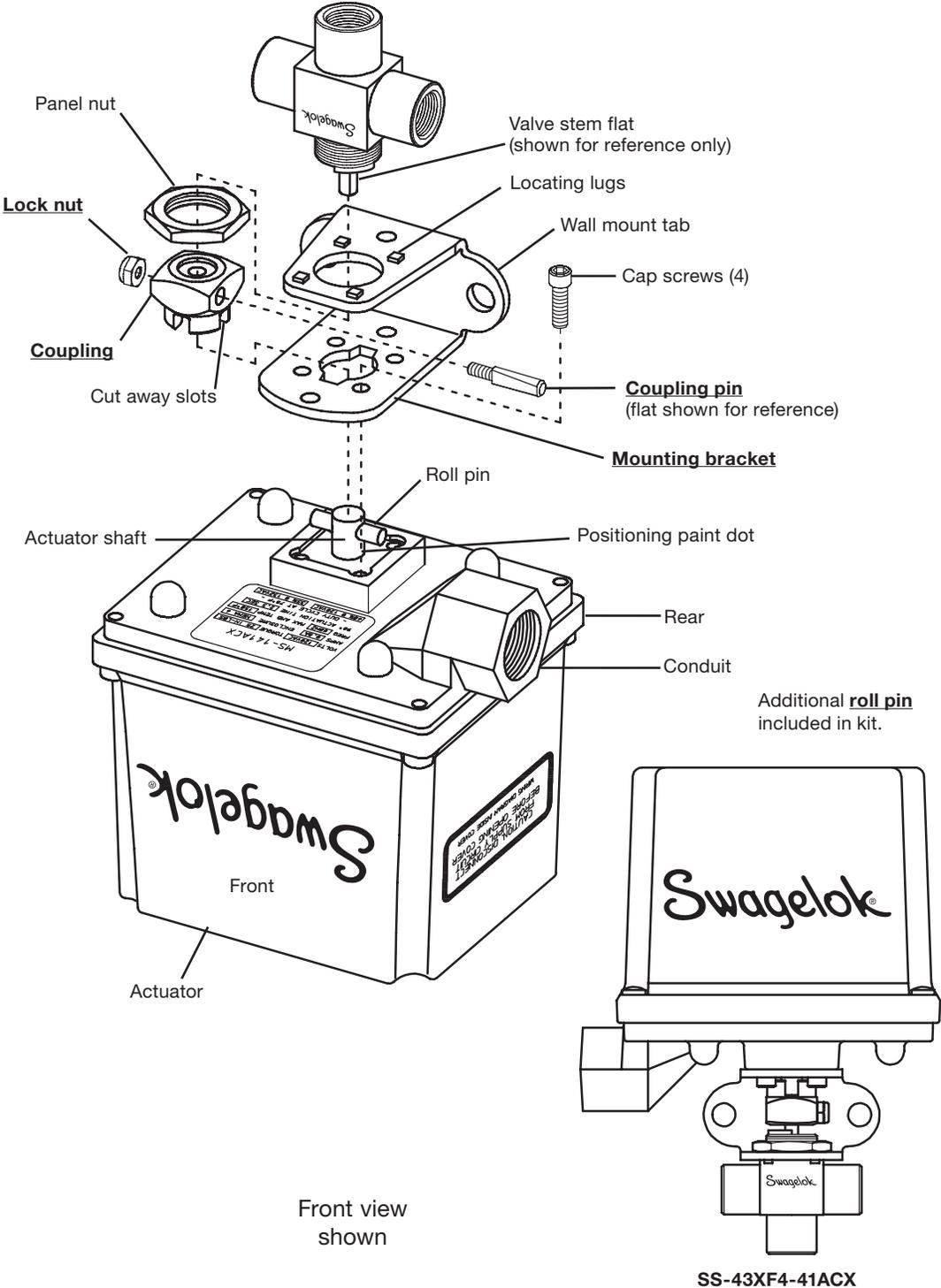


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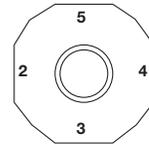
140 Series Electric Actuators on 3-way Valves

Kit contents are bold and underlined.

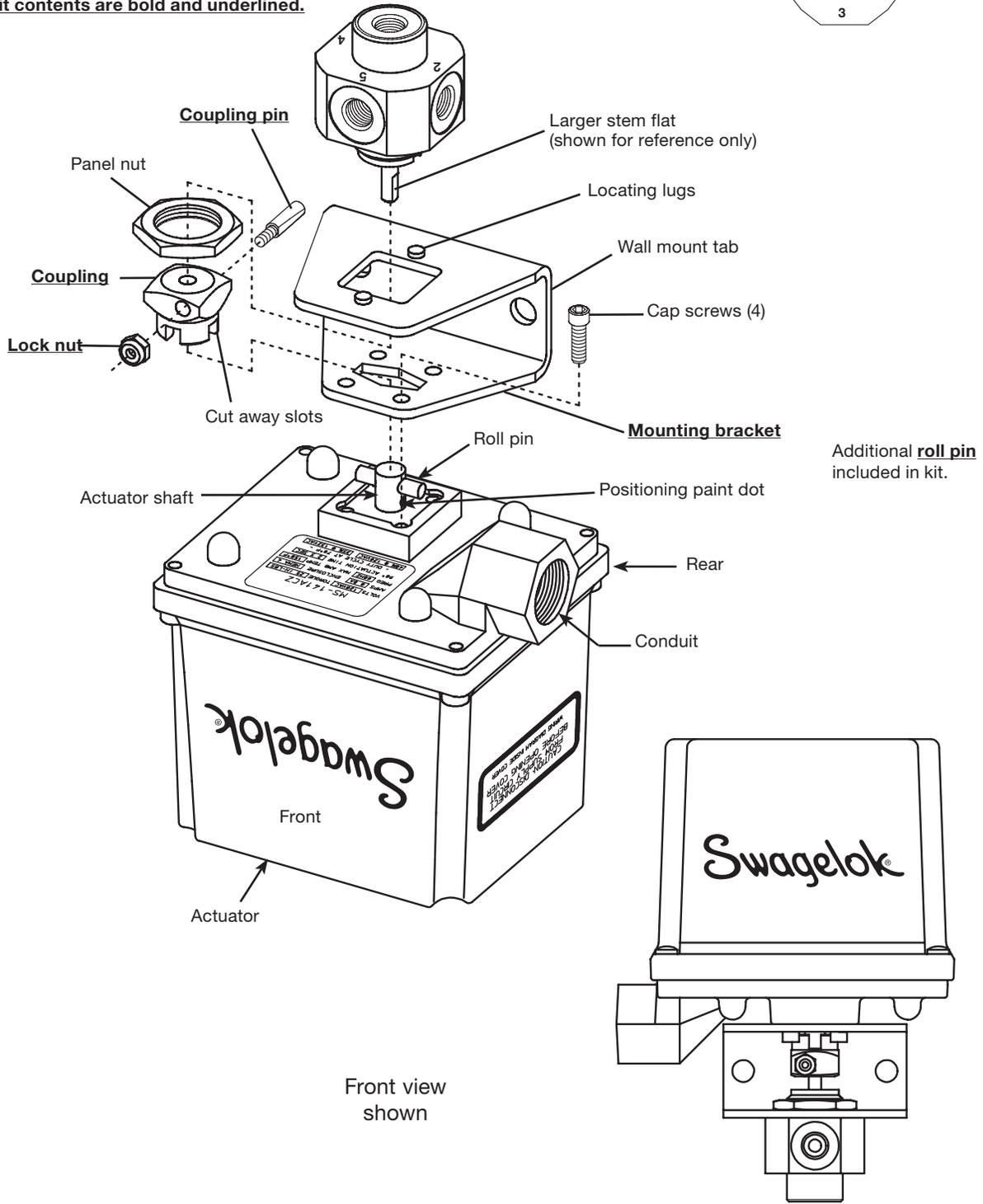


140 Series Electric Actuators on 5-way Valves

Port Numbers
Bottom view of body



Kit contents are bold and underlined.



Front view shown

SS-43ZF2-41ACZ

130 / 150 Series Pneumatic Actuators 40G Series, 40 Series, AFS Series, and SK Series Valves

⚠ WARNING
 Before servicing any installed valve, you must

- depressurize system
- cycle valve

⚠ WARNING
 Residual material may be left in the 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.

Tool Requirements

Open-end Extension



Valve Series	Panel Nut
	Open-end extension
41 / 41G 42 / 42G	3/4 in.
43 / 43G	1 in.
SK	1 in.
43Y / 43Z	1 1/8 in.
44	1 1/4 in.
45	1 3/4 in.
AFS	1 3/4 in.



Actuator Series	Cap Screw	Lock Nut
	Hex Wrench	Open-end Wrench
131 / 151	9/64 in.	5/16 in.
133 / 153	3/16 in.	3/8 in.
135 / 155	5/16 in.	3/8 in.

Valve Series	Handle Set Screw
	Hex Wrench
41 / 41G 42 / 42G	5/64 in.
43 / 43G	3/32 in.
SK	3/32 in.
44	1/8 in.
45	5/32 in.
AFS	5/32 in.

Single-mounted Assemblies

1. Actuate the valve as follows:
 - 2-way, normally closed: closed
 - 2-way, normally open: open
 - 2-way, double acting: closed
 - 3-way: point orifice towards actuator tail
2. Remove the set screw (not shown), handle (not shown), and **panel nut** from the valve.

3. Remove the four **cap screws** from the actuator. Place the **mounting bracket** over the actuator **roll pin**, and position the **wall mount tab** to the rear of the actuator by rotating the mounting bracket 90°.
4. Attach the **mounting bracket** to the actuator with the four **cap screws**. Tighten cap screws to:

Actuator Series	Torque Required		
	in.-lb	N-m	cm-kg
131 / 151	20	2.3	23
133 / 153	80	9.0	92
135 / 155	230	26	265

5. Set the **coupling** onto the actuator **roll pin**, enclosing the roll pin with the **cut away slots** of the coupling.
6. Align the **valve** with the actuator as listed below.

Valve Pattern	Valve / Actuator Alignment
2-way	Handle-stop side of body faces front of actuator
3-way	
Vented assemblies	Vent port faces front of actuator; actuator shaft fully rotated counterclockwise from top view
4-way	Port 2 faces front of actuator
6-way	Ports 5 and 6 face front of actuator
5-way	Port 5 faces front of actuator
7-way	Ports 3 and 4 face front of actuator

Note: The coupling pin hole and the **valve stem flat** should be aligned. Lift the **coupling** from the actuator and turn until aligned as necessary.

7. Place the **panel nut** on the **coupling** and hold in place.
8. Insert the valve **bonnet** through the **mounting bracket**, **panel nut**, and **coupling**.
9. Thread the **panel nut** onto the valve **bonnet** and tighten to the specified torque.

Valve Series	Torque Required		
	in.-lb	N-m	cm-kg
41 / 42 41G / 42G	50	5.6	58
43 / 43G	60	6.8	69
SK	60	6.8	69
44	80	9.0	92
45	100	11.3	115
AFS	100	11.3	115

10. With the **coupling pin flat** and the **valve stem flat** aligned, slide the **coupling pin** into the **coupling**.

12. Loosely assemble the **lock nut** onto the **coupling pin**.
13. Move the **coupling** slightly away from the valve body and packing bolt. Tighten the **lock nut** to the specified torque.

Valve Series	Torque Required		
	in.-lb	N·m	cm·kg
41 / 42 / 43 41G / 42G / 43G	6	0.68	6.9
SK	6	0.68	6.9
44 / 45	10	1.1	12
AFS			

14. Attach the **wall mount bracket** to the opposite side of the pneumatic actuator.
15. Test for proper operation and leak-tight integrity.

Dual-mounted Assemblies

For 2-way and 3-way valves only

1. Remove the **wall mount bracket** from the actuator and press the **roll pin** into the **actuator shaft** hole.
2. Actuate each of the two valves to the position noted in the following tables.

2-way: Straight and Angle Pattern

3-way: XH Pattern

Actuation Mode	Lower Valve Stem Position	Upper Valve Stem Position
Normally closed	Closed	Closed
Normally open	Open	Open
Double acting	Closed	Closed

2-way: L Pattern

Stem Type	Lower Valve Stem Position	Upper Valve Stem Position
All double-flat style stems	Large stem flat facing cap of actuator	Large stem flat facing front of actuator
All standard stems (except 43 series)	Stem flat facing cap of actuator	Stem flat facing front of actuator
43 series standard stems	Stem flat facing rear of actuator	Stem flat facing tail of actuator

3-way: X pattern

Stem Type	Lower Valve Stem Position	Upper Valve Stem Position
All double-flat style stems	Large stem flat facing back of actuator	Large stem flat facing back of actuator
All standard stems (except 43 series)	Stem flat facing back of actuator	Stem flat facing back of actuator
43 series standard stems	Stem flat facing tail of actuator	Stem flat facing cap of actuator

3-way: XL pattern

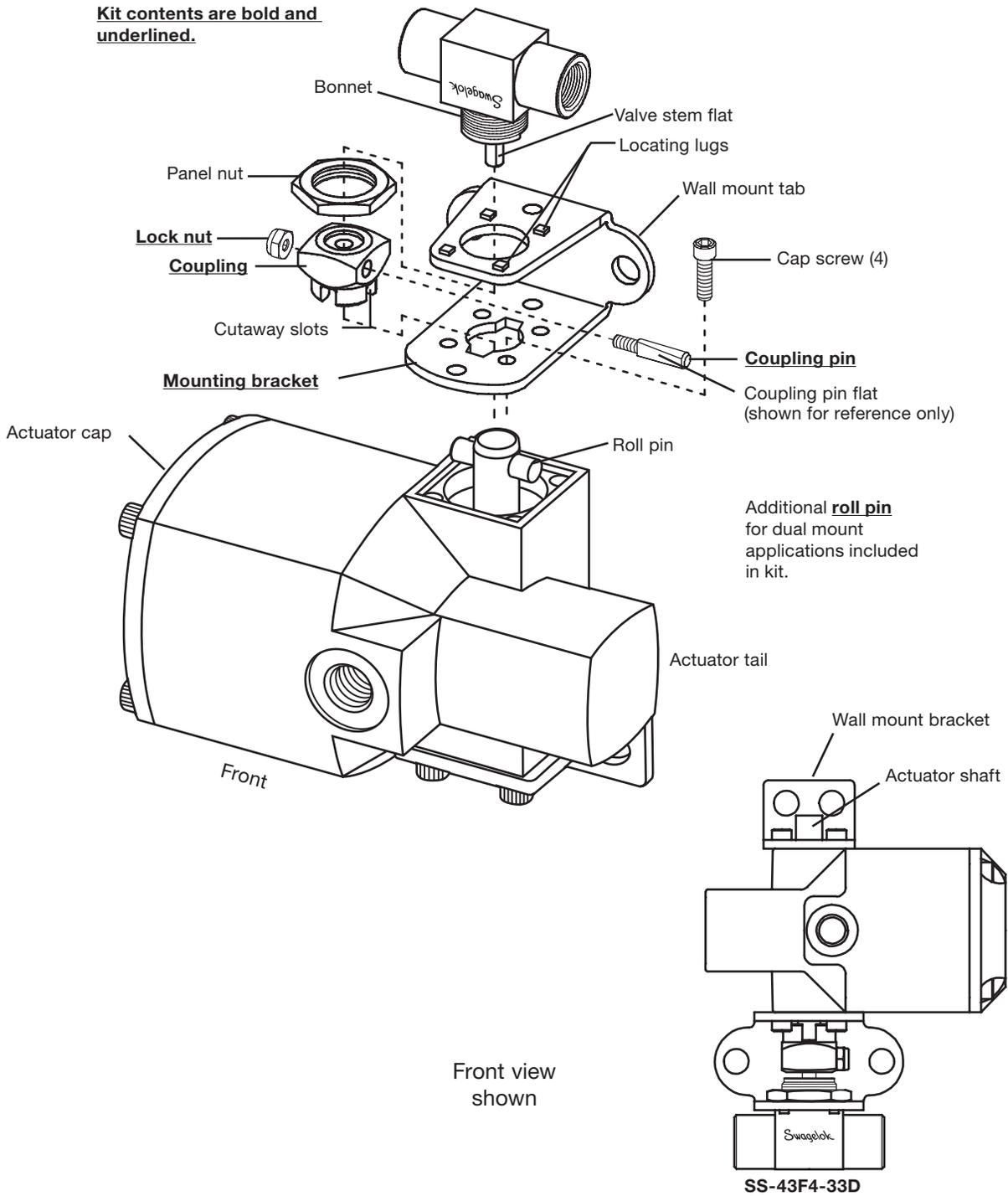
Stem Type	Lower Valve Stem Position	Upper Valve Stem Position
All double-flat style stems	Large stem flat facing tail of actuator	Large stem flat facing back of actuator
All standard stems (except 43 series)	Stem flat facing tail of actuator	Stem flat facing back of actuator
43 series standard stems	Stem flat facing front of actuator	Stem flat facing cap of actuator

3. Follow steps 2 through 13 for single-mounted assemblies to mount each valve to the actuator.

130 / 150 Series Pneumatic Actuators

Note: View depicts a single mounted-assembly to actuator in the valve open position.

Kit contents are bold and underlined.



121 Series Pneumatic Actuators 40G and 40 Series Valves

⚠ WARNING

- Before servicing any installed valve, you must
- depressurize system
 - cycle valve

⚠ WARNING

Residual material may be left in the 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.

Tool Requirements



Valve Series	Panel Nut	Cap Screw	Handle Set Screw	Lock Nut
	Open-end Extension	Hex Wrench	Hex Wrench	Open-end Wrench
41 /42 41G / 42G	3/4 in.	9/16 in.	5/64 in.	5/16 in.

Note: Swagelok 121 series pneumatic actuators are only available in a double-acting mode (90° actuation.) Any valve mounted to this actuator should be mounted in the closed position and should require only 90° actuation (2-way straight pattern ball valves).

1. Remove the set screw (not shown), handle (not shown), and the **panel nut** from the valve.
2. Place the **black washer** over the **roll pin**.
3. Place the **mounting bracket** over the **roll pin**, and position the **wall mount tab** to the rear of the actuator by rotating the mounting bracket 90°.

Note: The actuator shaft roll pin should be positioned so the end of the roll pin is toward the front of the actuator, directly above the air inlet and outlet holes. (This serves as an indicator of the closed valve position.) You may need to cycle the actuator shaft by hand to be in this position.

4. Attach the **mounting bracket** to the actuator with (2) **cap screws**. Tighten to 30 in.·lb (3.4 N·m) (35 cm·kg).
5. Set the **coupling** onto the actuator **roll pin**, enclosing the roll pin with the **cut away slots** of the coupling.
6. Place the **panel nut** on the coupling and hold in place.

7. With the valve body parallel to the **actuator shaft flat**, insert the **valve bonnet** through the mounting bracket.

Note: The **coupling pin hole** and the **valve stem flat** should be aligned. Lift the **coupling** from the **roll pin** and turn until aligned as necessary.

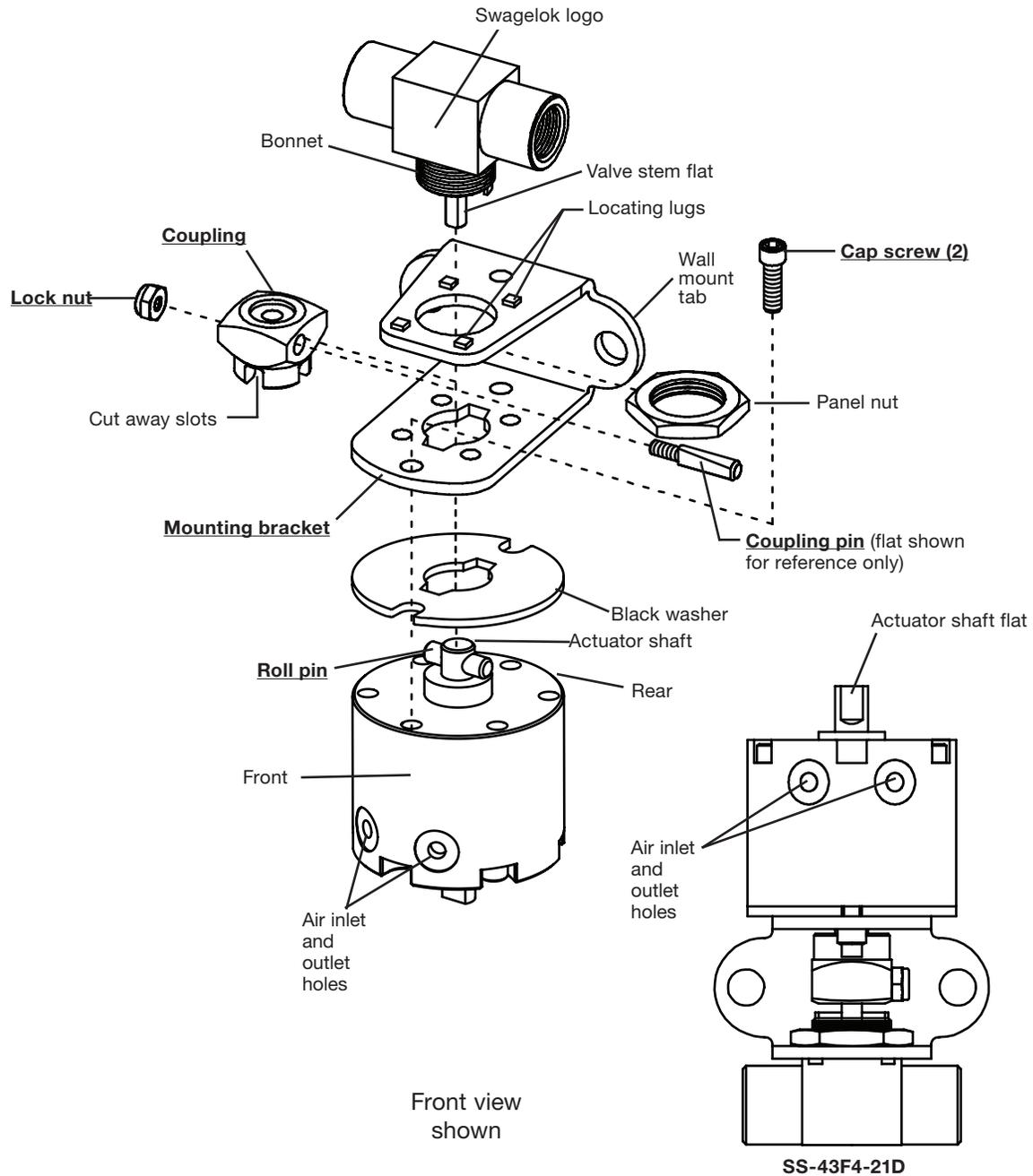
8. Thread the **panel nut** onto the valve body and tighten to 50 in.·lb (5.6 N·m, 58 cm·kg).
9. With the **coupling pin flat** and the **valve stem flat** aligned with each other, slide the **coupling pin** into the coupling pin hole. Loosely assemble the **lock nut** onto the **coupling pin**.
10. Move the **coupling** slightly away from the valve body and packing bolt. Tighten the **lock nut** to 6 in.·lb (0.68 N·m) (6.9 cm·kg).
11. Test for proper operation and leak-tight integrity.

Note: Air line connections are 10-32 female straight thread.

121 Series Pneumatic Actuators

Note: View depicts a single mounted-assembly to actuator in the valve open position.

Bracket kit contents are bold and underlined.



Actuator Kit Contents

- Black washer
- #10-32 Hose fitting (2)

⚠ WARNING

Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.