

KEV Series Regulators Maintenance Instructions



Kit Contents

Diaphragm Sensing Kit (pressure control ranges 0 to 500 psig [0 to 34.4 bar] and lower)



Poppet spring



Poppet



Seat



Seat retainer



Diaphragm



Lubricant

Piston Sensing Kit (pressure control ranges 0 to 1000 psig [0 to 68.9 bar] and higher)



Poppet spring



Poppet



Seat



Seat retainer



Body seal and spring



Piston seal and spring



Piston seal retainer



Lubricant

Symbols










Discard



Lightly lubricate

Tools Required

Tool	Size	Component
Vise 	-	Body
Socket 	5/16 in. or 8 mm	Seat retainer
	11/16 in. or 17 mm	Antitamper nut
Crow foot 	2 in. or 50 mm	Cap ring
Open end wrench 	2 in. or 50 mm	Cap ring
	9/32 in. or 7 mm	Stem
Torque wrench 	Capable of 117 ft·lb (160 N·m)	Seat retainer, Cap ring
Tool Kit		
Piston seal insertion tool 	-	Piston seal and spring
Body seal insertion tool 	-	Body seal and spring

Note: See *Pressure Regulators*, MS-02-230, for tool kit ordering information. Tool kits are needed only with piston sensing assemblies.

⚠ WARNING

Before removing a regulator from the system for service, you must

- depressurize system
- purge the system to remove any residual system media left in the regulator
- isolate the power supply.

⚠ WARNING

Ensure the electrical power to the heater is disconnected.

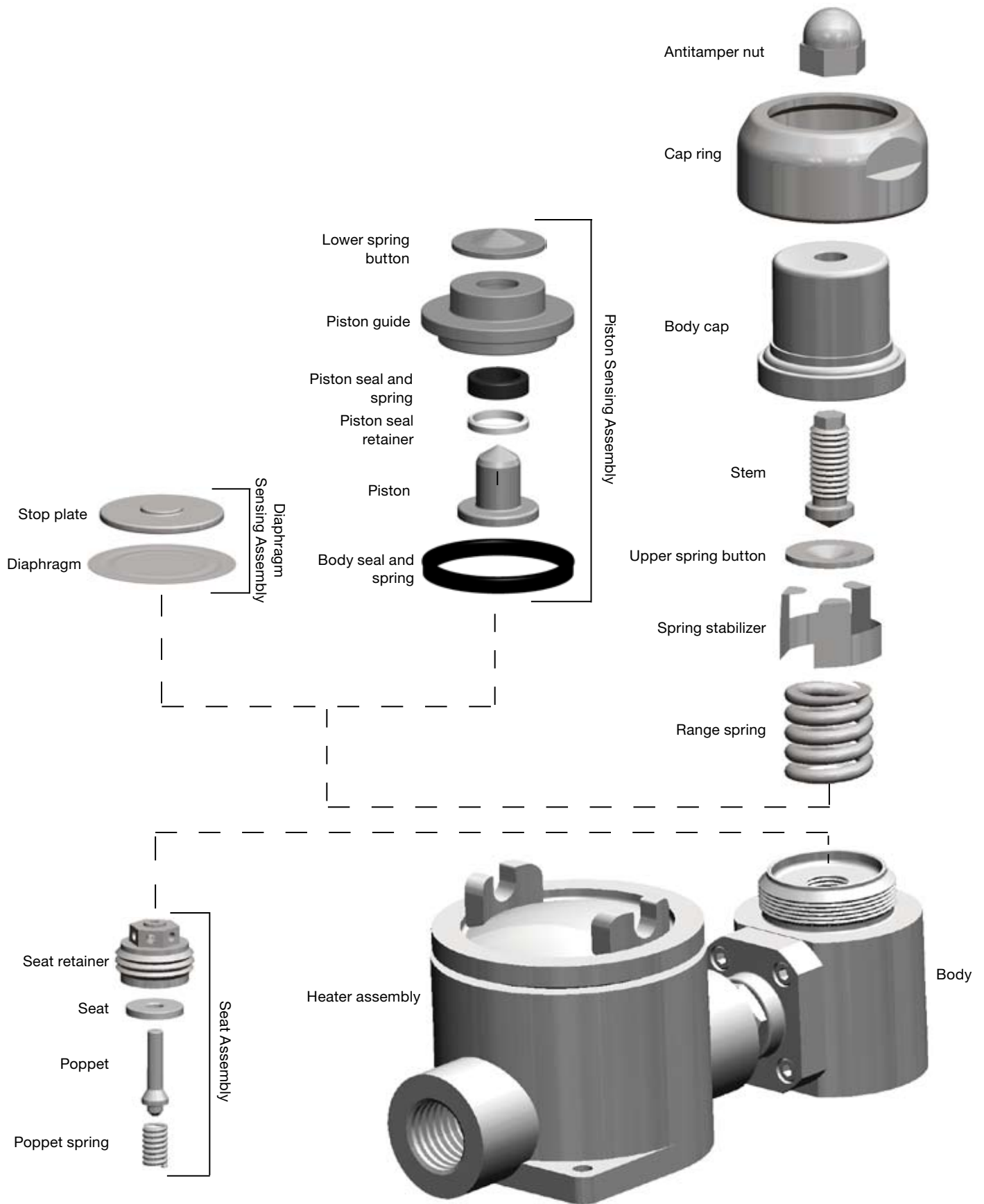
⚠ WARNING

Remove the regulator from any hazardous or potentially explosive environments before servicing.

NOTICE

The following instructions assume the repair facility complies with IEC 60079-19, *Explosive Atmospheres - Equipment Repair*, and personnel are competent to work with electrical equipment and any applicable certification and safety requirements.

Exploded View



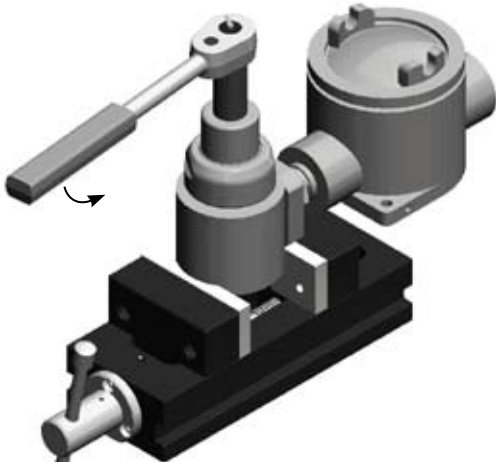
Note: Pressure control ranges 0 to 500 psig (0 to 34.4 bar) and lower contain the diaphragm sensing assembly.

Pressure control ranges 0 to 1000 psig (0 to 68.9 bar) and higher contain the piston sensing assembly.

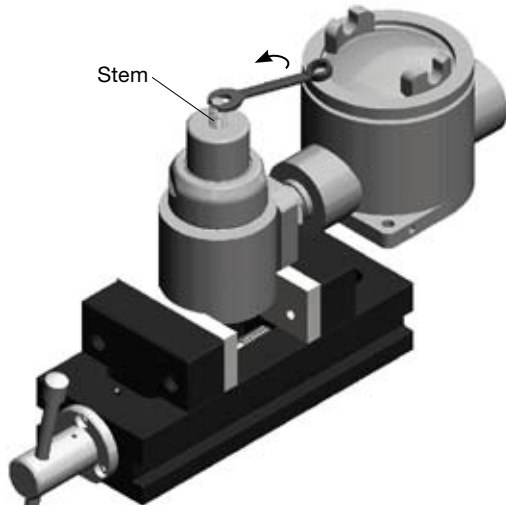
Note: The spring stabilizer is not included in 0 to 3000 psig (0 to 206 bar) and 0 to 3600 psig (0 to 248 bar) assemblies.

Disassembly

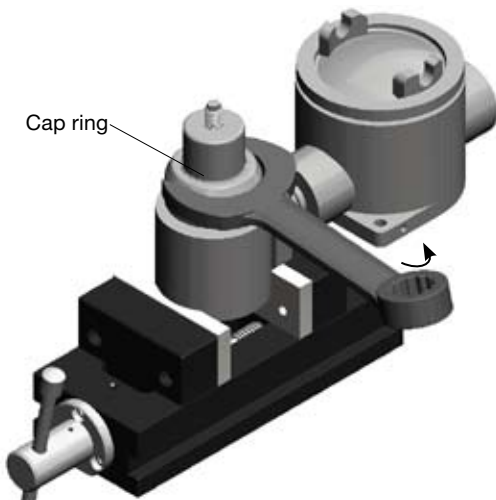
1. Place the regulator in a vise.
2. Loosen and remove the **antitamper nut**.



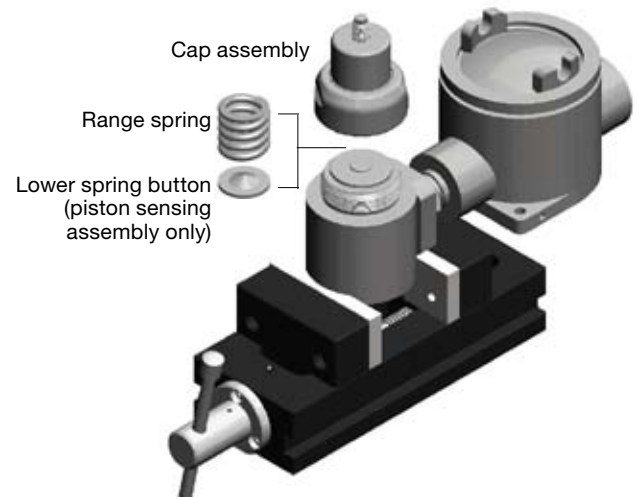
3. Turn the **stem** counter clockwise until it stops.



4. Loosen the **cap ring**.



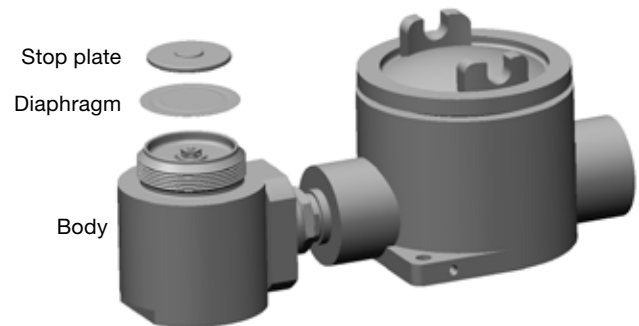
5. Remove the **cap assembly** from the body.
Note: The **range spring** and the **lower spring button** (piston sensing assembly) may fall from the **cap assembly** when lifted. Set aside for later use.



6. *Diaphragm sensing assemblies only:* Remove the **diaphragm** and the **stop plate**. Invert the body and tap on hard surface if necessary.

NOTICE

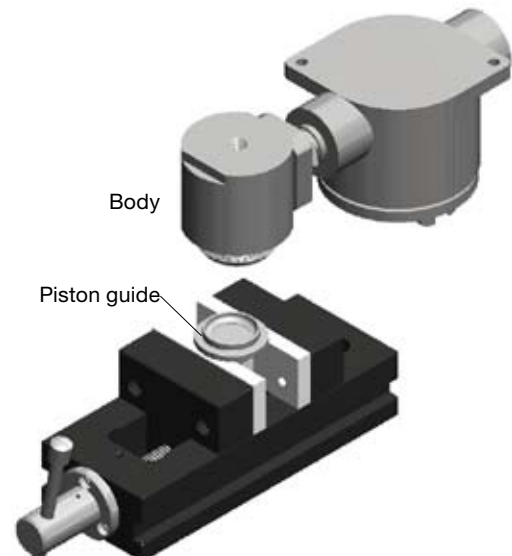
Do not damage the diaphragm sealing face on the body. Leakage could result.



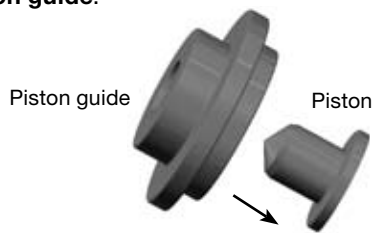
7. *Piston sensing assemblies only:* Lightly grip the **piston guide** in the vise and remove the **body**.

NOTICE

Twist the body gently to avoid body seal and spring damage. Leakage could result.



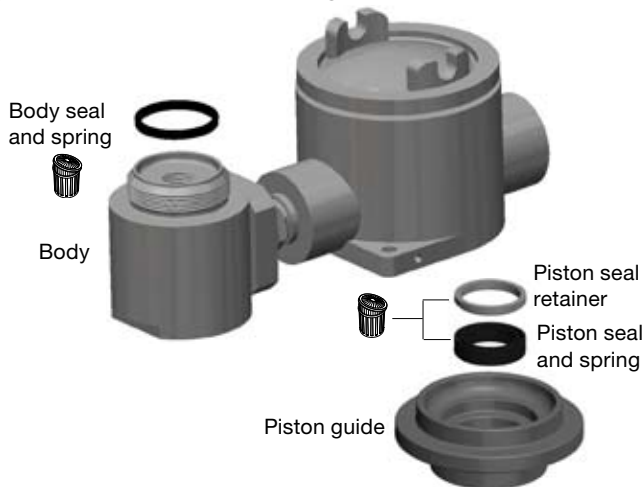
8. *Piston sensing assemblies only:* Push the **piston** out of the **piston guide**.



9. *Piston sensing assemblies only:* Remove the **piston seal and spring** and the **piston seal retainer** from the **piston guide**, and the **body seal and spring** from the **body**.

NOTICE

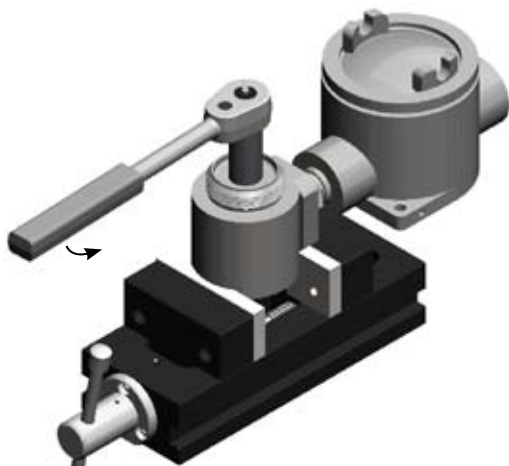
Be careful not to scratch the inside of the piston guide and the body. Leakage could result.



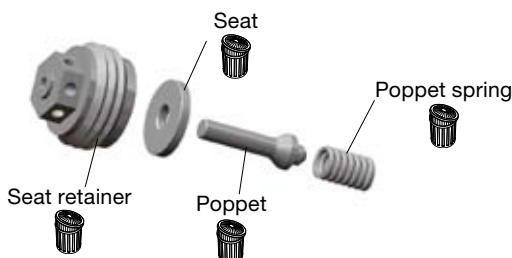
10. Loosen and remove the **seat assembly**.

NOTICE

Be careful not to scratch the inside of the body. Leakage could result.



11. Remove and discard the **poppet spring**, the **poppet** and the **seat** from the **seat retainer**.



Reassembly

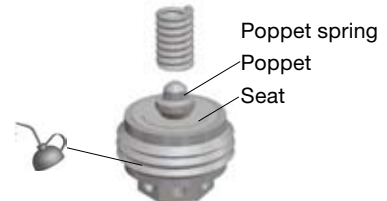
NOTICE

Ensure all parts and tools are free of debris or damage.

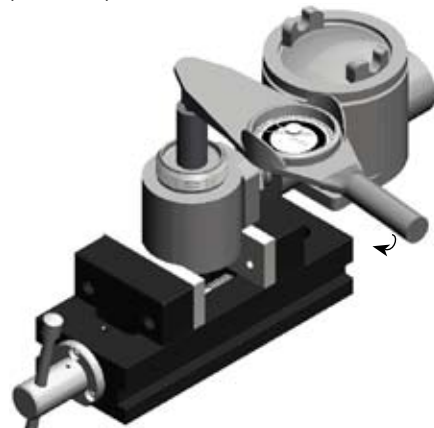
12. Insert the **seat** into the **seat retainer** with the **groove** facing away from the seat retainer.



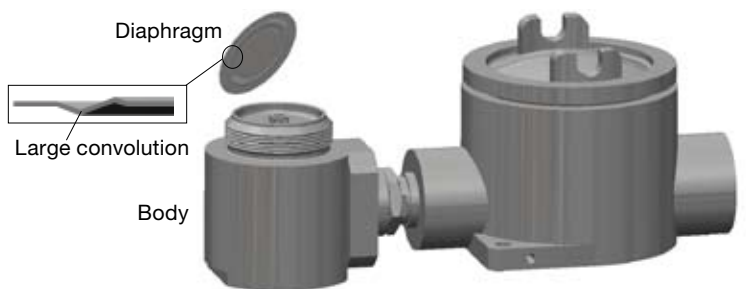
13. Place the **poppet** through the **seat**. Then place the **poppet spring** onto the exposed end of the poppet.



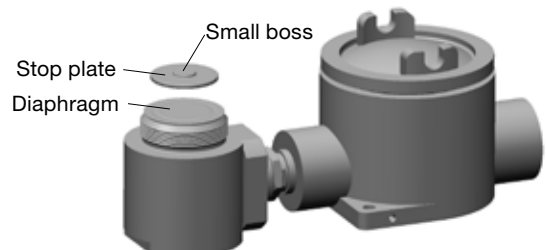
14. Thread the **seat assembly** into the **body** and tighten to 13 ft-lb (17.5 N·m).



15. *Diaphragm sensing assemblies only:* Install the **diaphragm** on the **body** with the **large convolution** facing towards the body.

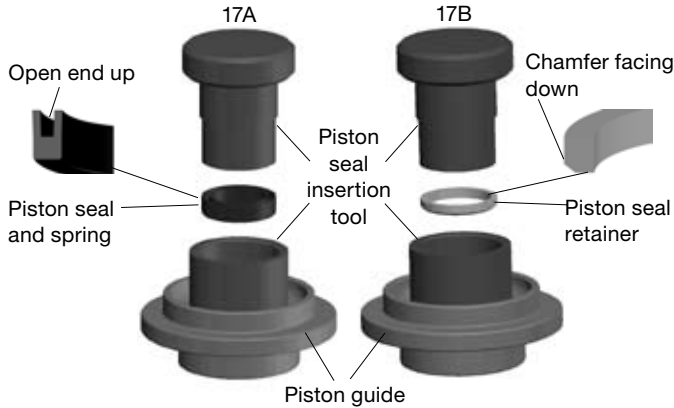


16. *Diaphragm sensing assemblies only:* Install the **stop plate** with the **small boss** facing away from the **diaphragm**.



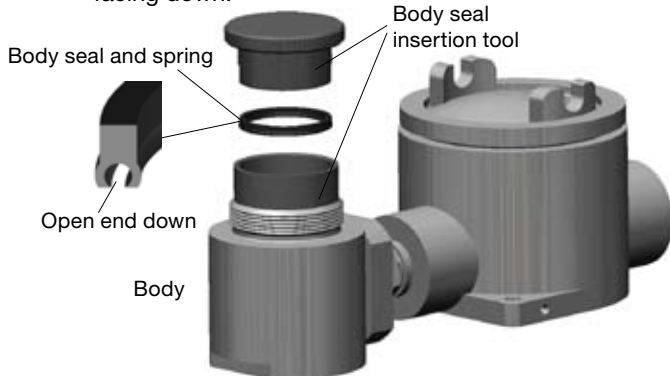
17. *Piston sensing assemblies only:* Insert the bottom of the **piston seal insertion tool** into the **piston guide**. Insert the **piston seal and spring** into the piston guide and use the top part of the piston seal insertion tool to press the seal into place (17A). Then insert the **piston seal retainer**, pressing it into place using the top part of the piston seal insertion tool (17B).

Note: The open end of the **piston seal and spring** should be facing up. The chamfer of the **piston seal retainer** should be placed against the piston seal and spring.

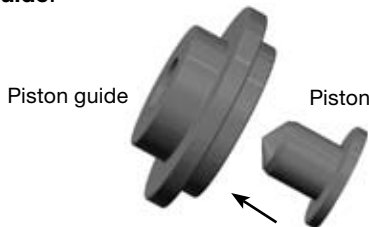


18. *Piston sensing assemblies only:* Insert the bottom of the **body seal insertion tool** into the **body**. Insert the **body seal and spring** and use the top part of the body seal insertion tool to press the seal into place.

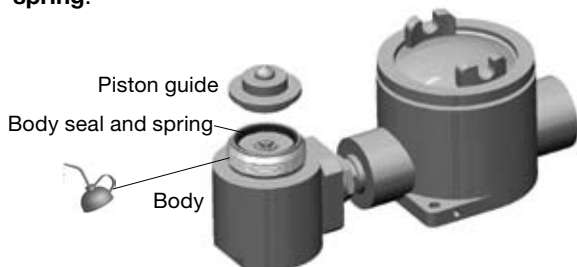
Note: The open end of the body seal and spring should be facing down.



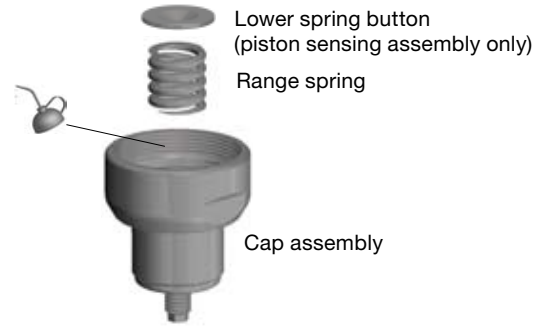
19. *Piston sensing assemblies only:* Push the **piston** into the **piston guide**.



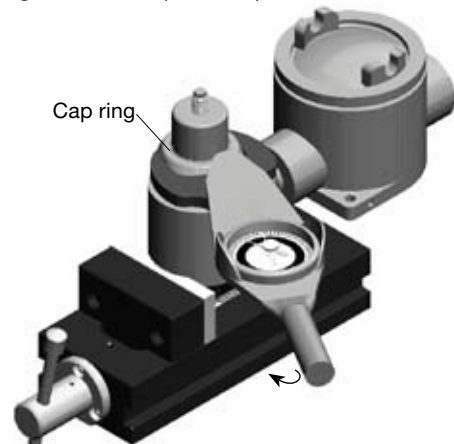
20. *Piston sensing assemblies only:* Push the **piston guide** onto the body until it fully engages with the **body seal and spring**.



21. Reinsert the **range spring** and the **lower spring button** (piston sensing assembly only) into the **cap assembly** if necessary.

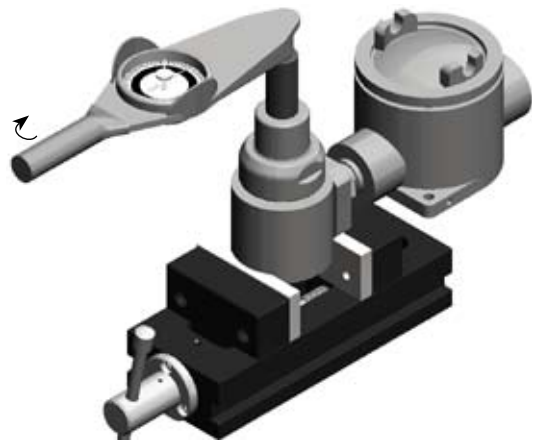


22. Thread the cap assembly onto the body and tighten the **cap ring** to 117 ft-lb (160 N-m).



23. Test the regulator for proper operation.

24. After the set outlet pressure is reached, thread the antitamper nut onto the stem. Then tighten the nut to 10 to 12.5 ft-lb (13.5 to 17 N-m).



For additional information, see www.swagelok.com.