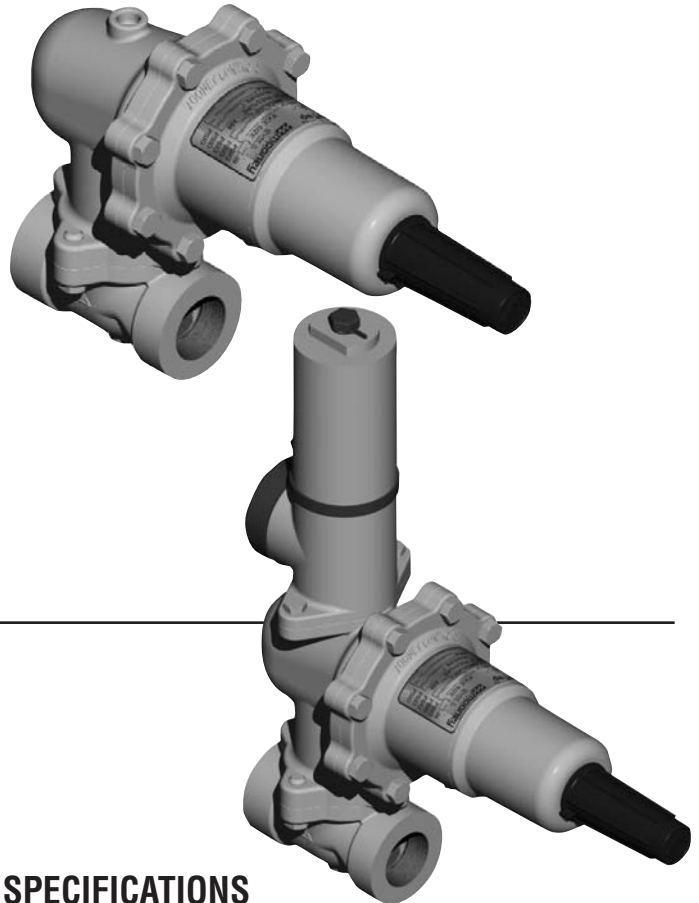


INSTALLATION/OPERATION/MAINTENANCE MANUAL FOR FLOWTAP™ REGULATORS

SCOPE

This manual provides installation, operation and maintenance instructions for FlowTap™ Regulators. The manual is divided into the following sections:

Product Description	1
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PRODUCT DESCRIPTION

FlowTap™ Regulators are economical and easy to maintain self-operated pressure reducing regulators designed to control natural gas, air and a variety of other gases. Five spring ranges and orifice sizes for control set points up to 250 psi are available.

FlowTap™ Regulators are offered in three different configurations:

FlowTap™ - Standard: This is the standard design which internally senses outlet pressure to maintain an accurate control set point.

FlowTap™ - M (Monitor/Remote Sense): This design allows for remote sensing of the control pressure through a 1/4" NPT connection and control line connected 8 to 10 pipe diameters downstream of the regulator.

FlowTap™ - R (Relief): This design features a full capacity relief* valve attached to the diaphragm case assembly to protect the downstream system from over-pressurization eliminating the need for a separate relief valve.

* Refer to inlet pressure limitations and relief capacity charts

SPECIFICATIONS

FlowTap™ Models

Model	Stock Number
1" NPT	FT-1
1" NPT with Relief	FT-1R
1" NPT Monitor/Remote Sense	FT-1M
3/4" NPT	FT-2
3/4" NPT with Relief	FT-2R
3/4" NPT Monitor/Remote Sense	FT-2M

Table 1

SPECIFICATIONS

FlowTap™ Spring Ranges

Spring Range	Color	Part #
5-20 psig	Yellow	040-038-01
15-40 psig	Green	040-039-01
30-80 psig	Red	040-040-01
50-125 psig	Orange	040-041-01
100-250 psig	Dark Blue	040-042-01

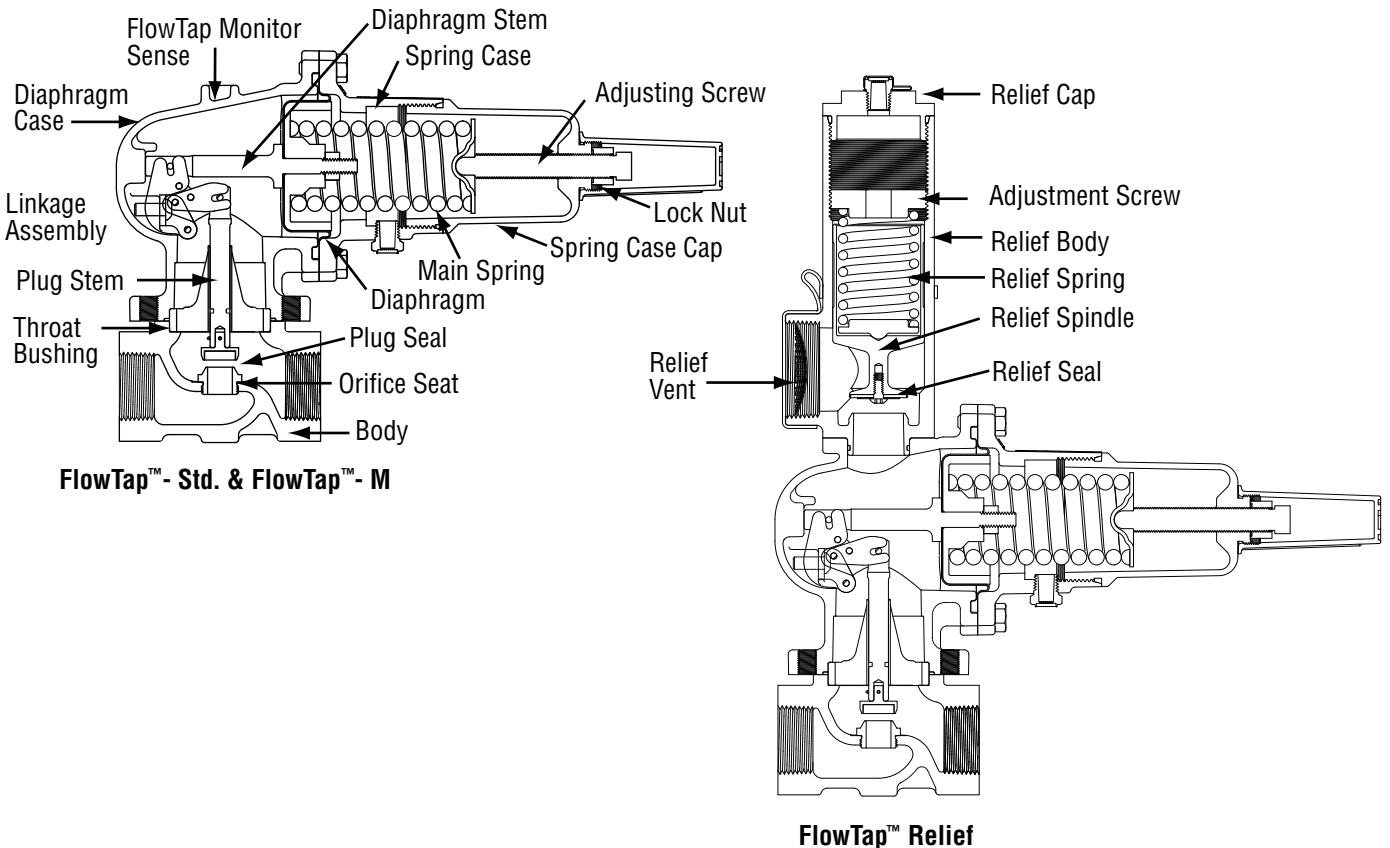
* All springs adjust between 0 psi and the high published set point for each spring. The published range is to help users select the best spring for operational performance by set point.

Table 2a

FlowTap™ Pressure Ratings

Orifice	Max Inlet (psig)	Max Outlet (Standard & Relief Models)	Max Outlet Body (FlowTap-Monitor/Ext.Sense Model Only) (psig)	Max Sense/Diaphragm Casing (All Models)	Max Spring Case (All Models)	Max Diff. (All Models) (psig)	Temperature
1/8"	1000	250 psig	1000	250 psig	250 psig	1000	Working: -20°F-150°F Emergency: -40°F-175°F
3/16"	1000		1000				
1/4"	900		900				
3/8"	400		400				
1/2"	250		250				

Table 3



FlowTap™ - Relief Accessory Spring Ranges

Relief Spring Range	Color	Part #
40-60 psig	Stainless	040-043-01
60-75 psig	White	040-045-01

NOTE: The FlowTap-R cannot control set pressures greater than the relief set pressure.

Table 2b

HYDROSTATIC TESTING

The FlowTap™ valve body may be tested in the line using a special cover to replace the FlowTap™ actuator assembly to isolate pressure in the valve body only.

Do not exceed a hydrostatic pressure of 1500 psi in the valve body. Contact your factory representative for parts numbers and procedures if necessary.

NAMEPLATE INFORMATION

The nameplate lists specific information pertaining to the model number of the FlowTap™ Regulator.

FlowTap™	mooney
FT- <input type="text"/>	<small>CONROLS</small>
	<small>Dresser, Inc.</small>
	<small>SALT LAKE CITY, UTAH</small>
BODY SIZE: <input type="text"/>	ORIFICE SIZE: <input type="text"/> -IN
SPRING RANGE: <input type="text"/>	PSIG
MAX INLET PRESSURE: <input type="text"/>	PSIG
MAX OUTLET PRESSURE: 250	PSIG
MAX DIFF PRESSURE: <input type="text"/>	PSID
RELIEF RANGE: <input type="text"/>	PSIG
MFG DATE: <input type="text"/>	

INSTALLATION

WARNING

Personal injury, equipment damage, or leakage due to explosion of accumulated gas or bursting of pressure containing parts may result if this valve/regulator is over-pressured or is installed where service conditions could exceed the limits given in the specification of this manual or on the nameplate, or where conditions exceed any ratings of the adjacent piping or piping connections. Verify the limitations provided in Tables 1, 2a, 2b, & 3.

Additionally, physical damage to the valve/regulator could cause personal injury and/or property damage due to explosion of leaking or accumulated gas. To avoid such injury and damage, install the regulator in a safe location.

- PERSONNEL:** Installation of the FlowTap™ Regulator should be made by qualified personnel familiar with high pressure piping and self operated pressure reducing regulators.
- LOCATION:** Installation of the FlowTap™ Regulator should be in a safe location away from areas where physical damage could occur due to vehicles or tampering. Avoid areas where ice, snow, flooding, and lightening could affect the regulators. The FlowTap™ Regulator should be installed in a location with adequate ventilation and easy emergency access.

WARNING

Gas Regulators installed in confined or enclosed spaces should be provided with adequate ventilation to prevent the possibility of gas buildup or accumulation from leaks and venting. Leaks or vented gas may accumulate causing personal injury, death, or property damage. The regulator enclosure should be vented to a safe area away from air intakes, or any hazardous location. The vent lines and stacks must be protected against condensation and clogging.

- PRIOR INSPECTION:** Inspect the FlowTap™ Regulator for any damage that might have occurred in shipping prior to installation of the valve. Make sure there is no debris in the inlet or outlet valve body connections. Make sure the pressure ratings listed on the nameplate match application conditions.
- ORIENTATION:** The FlowTap™ Regulator may be installed in any position as long as flow is in the direction of the flow arrow that is cast on the valve body. The best position is one that provides easiest access for spring adjustment and maintenance. The relief configuration should be installed such that gas can be safely vented to atmosphere.
- PIPE COMPOUND:** Apply ample pipe sealing compound starting two or three threads back from the end of the pipe prior to threading the joint.

WARNING

The FlowTap™ Regulator has a ductile iron valve body. **DO NOT WELD** on the FlowTap valve body.

- 6. SPRING CASE VENT:** The spring case is vented to atmosphere and can be oriented in any position on the diaphragm case. The threaded vent port with bug vent assembly should **not** be oriented such that moisture can easily collect in the spring case assembly. Do not plug the vent port or the regulator will not properly control.

REMOTE VENT LINE: The vent port is threaded (1/4" NPT) to allow a remote vent line to be connected and vented to a remote location. The vent piping should be at least a 3/8" tubing and be as short as possible with a minimum number of elbow or bends. The vent line should be protected from rain, snow and/or debris that could plug the vent line and prevent proper operation of the FlowTap™ Regulator.

- 7. RELIEF VENT (Relief Version):** The Relief Vent should be oriented such that gas can be safely vented to atmosphere. The relief vent can be oriented in four different positions by changing the position of the diaphragm case on the valve body (refer to page 8 for instructions to change orientation). *The relief vent (FlowTap™-R) position can not be rotated 180° on the diaphragm case.*

REMOTE RELIEF VENT LINE: The relief vent port is tapped (1-1/2" NPT) to allow piping to be connected and vented to a remote location. Connected piping should be 1-1/2" or larger. The relief vent piping should be as short as possible with a minimum number of elbows or bends. Protect the relief pipe from rain, snow or debris that could plug the relief line and prevent operation of the relief valve. Support the relief vent piping as necessary.

WARNING

Connecting the relief vent port to piping smaller than 1-1/2" may limit relief capacity.

- 8. ACTUATOR ORIENTATION:** The actuator can be oriented in four positions on the valve body to accommodate space and ease of maintenance constraints. Refer to the maintenance instructions on page 8 to change the orientation.
- 9. HEATING ENCLOSURES:** Catalytic heater enclosures can be used to limit the effects of wet gas freezing in the FlowTap™ Regulator and causing a failure. Contact your area representative for recommended manufacturers.

WARNING

Do not overheat the FlowTap™ Regulator in excess of its maximum temperature rating (175°F Emergency). If the valve is overheated, completely disassemble and inspect the FlowTap™ Regulator for damage that may have occurred to seals and other components.

- 10. CONTROL LINES (FlowTap™- M - Monitor/Remote Sense Model only):** The control line is a static sense line (no flow) and should be connected to a point 8 to 10 pipe diameters downstream of the FlowTap™ Regulator away from elbows or areas where turbulence can effect control of the regulator. 3/8" or 1/2" tubing can be used for all set point ranges. If a valve is installed in the sense line, it should be a full-open type. Avoid needle valves that may limit regulator sensitivity and speed of response. Refer to the Troubleshooting section of this manual for other recommendations regarding sensitivity or speed of response.
- 11. INTERSTAGE PIPING:** FlowTap™ Regulators are designed to work in applications where space constraints may limit the available piping between regulators. Whenever possible maximize the volume between regulators and allow for gauge connections on the interstage piping. Gauge connections in this section of pipe can be a great tool during start-up, maintenance and troubleshooting. If the pressure between two FlowTap™ Regulators is being controlled allow approximately 1 ft. (12 inches) of piping between regulators.

OVERPRESSURE PROTECTION – ALL MODELS

All FlowTap™ Regulators have an outlet pressure rating less than the inlet pressure rating. If the inlet pressure can exceed the outlet pressure rating (250 psig) then some form of over pressure protection is required. To avoid injury or damage, provide pressure relieving or pressure limiting devices (as required by Title 49, Part 192, of the U.S. code of Federal Regulations, by the National Fire Codes of the National Fire Protection Association, or by other applicable codes) to prevent service conditions from exceeding the pressure ratings of the FlowTap™ Regulator. If the FlowTap™ Relief model is used, verify the relief has sufficient capacity for the application conditions.

START UP AND OPERATION

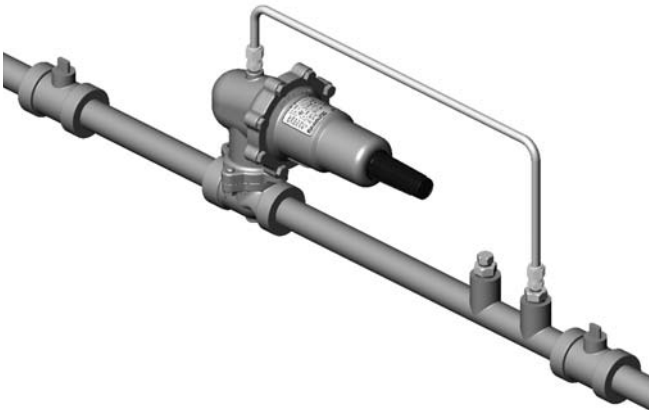
The following procedures are suggested for start-up and operation of the FlowTap™ Regulator. Only qualified personnel familiar with high pressure gas systems and self-operated regulators should perform these procedures.

Single Pressure Reducing Regulator (Standard and Monitor/Remote Sense Models)

FlowTap™ - Std.



FlowTap™ - M



NOTE: This procedure assumes the use of gauges installed in the upstream/downstream piping to monitor pressure. It is also assumed that the piping and regulator is completely depressurized between upstream and downstream block valves.

WARNING

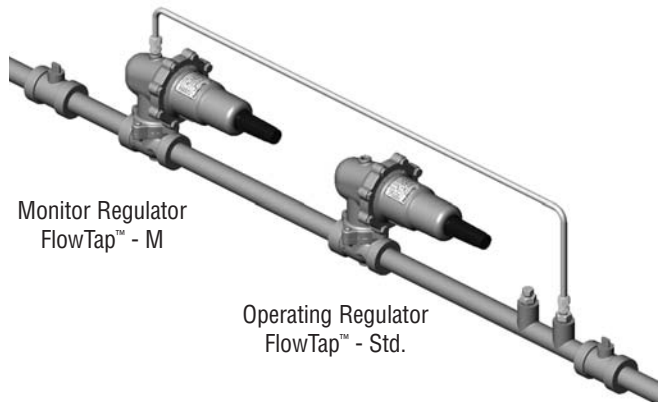
Do not exceed 250 psi in the downstream piping or damage may occur to the FlowTap™ Regulator.

1. Back off the set point adjusting screw to fully relieve all the spring compression.
2. **[Flowtap Monitor/Remote Sense Model]** If installed open the hand valves in the control lines.
3. Crack open the downstream block valve or open a vent in the piping downstream of the FlowTap™ Regulator.

4. Slowly open the upstream block valve to pressurize the FlowTap™ Regulator. The FlowTap™ Regulator should lock up (shut off).
5. Slowly increase the spring compression by turning the adjusting screw clockwise. (Use a 9/16" wrench) until the desired downstream set pressure is achieved.
6. Check regulator lock-up by slowly closing the downstream block valve or vent valve. The valve should shut off at a pressure slightly above the set pressure.
7. Slowly re-open the downstream block valve.
8. Tighten the lock nut on the adjusting screw to prevent tampering or vibration from changing the set point of the FlowTap™ Regulator.

NOTE: There must be more than 2 psi in the spring case in order for the FlowTap™ Regulator to shut off completely with the adjusting screw at zero compression.

Standby Monitor



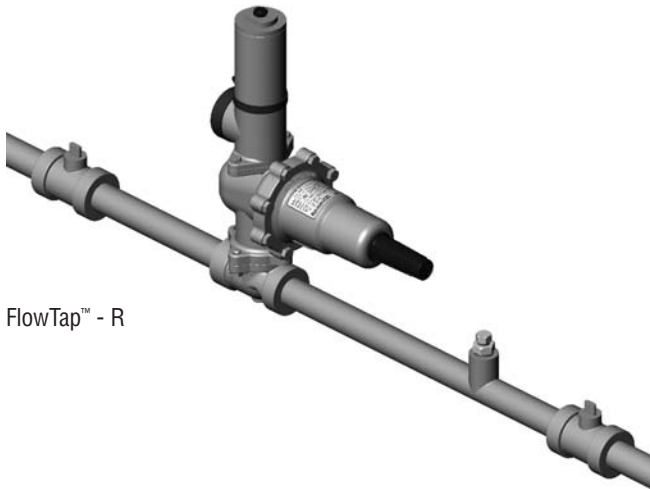
NOTE: This procedure is based on the 1st regulator being the monitor regulator and the 2nd regulator being the operating regulator.

This procedure assumes the use of gauges installed in the upstream/ downstream piping to monitor pressure. It is also assumed that the piping and regulator is completely depressurized between upstream and downstream block valves.

1. Back off the set point adjusting screw (counterclockwise) to fully relieve all the spring compression for the upstream monitor FlowTap™ Regulator.
2. Increase the set point of the downstream regulator to a high setting above the desired set point.

3. If installed open the hand valves in the control line.
4. Crack open the downstream block valve or open a vent in the piping downstream of the FlowTap™ Regulator.
5. Slowly open the upstream block valve to pressurize the upstream monitor FlowTap™ Regulator. The upstream FlowTap™ Regulator should lock up (shut off).
6. Slowly increase the set point of the upstream FlowTap™ Regulator by turning the adjusting screw clockwise. (Use a 9/16" wrench) until the desired monitor over-ride set pressure is achieved.
7. Slowly decrease the set point (counterclockwise) of the downstream operating FlowTap™ Regulator until the desired station set pressure is achieved.
8. Check regulator station lock-up by slowly closing the downstream block valve or vent valve. The station should shut off at a pressure slightly above the set pressure of the operating regulator.
9. Slowly re-open the downstream block valve to commission the station.
10. Tighten the lock nut on the adjusting screws to prevent tampering or vibration from changing the set point of the FlowTap™ Regulators.

Single Regulator with Relief



FlowTap™ - R

This procedure assumes the use of gauges installed in the upstream/downstream piping to monitor pressure. It is also assumed that the piping and regulator is completely depressurized between upstream and downstream block valves.

NOTE: Cracking pressure for the relief device should be set 10 psi above the FlowTap™ Regulator set point. Expect a 5 psi build up above relief set pressure for

full capacity of the relief device to be achieved. Expect a re-seat pressure 5 psi below the relief set pressure.

1. Back off the set point adjusting screw of the valve to fully relieve all the spring compression.
2. Increase the set point of the relief accessory. Remove the relief cap and use a 1/2" wrench socket extension to increase relief set point.
3. Crack open the downstream block valve in the piping downstream of the FlowTap™ Regulator.
4. Slowly open the upstream block valve to pressurize the FlowTap™ Regulator. The FlowTap™ Regulator should lock up (shut off).
5. Slowly increase the set point of the regulator by turning the adjusting screw clockwise. (Use a 9/16" wrench) until the desired downstream relief cracking relief pressure is achieved.
6. Slowly decrease the set point (counterclockwise) of the relief device until a small amount of gas is released from the relief vent. The relief is now set.
7. Slowly decrease the set point (counterclockwise) of the FlowTap™ Regulator until the desired set pressure is achieved (at least 5 psi below relief re-seat pressure).
8. Check regulator lock-up by slowly closing the downstream block valve or vent valve. The valve should shut off.
9. Slowly re-open the downstream block valve.
10. Tighten the lock nut on the adjusting screw to prevent tampering or vibration from changing the set point of the FlowTap™ Regulator.

Alternate Method For Setting the Relief

This procedure assumes the use of gauges installed in the upstream/downstream piping to monitor pressure. It is also assumed that the piping and regulator is completely depressurized between upstream and downstream block valves.

NOTE: This method assumes there is a downstream block valve with a tapping point between the regulator and block valve.

1. Back off the FlowTap™ Regulator set point adjusting screw to fully relieve all the spring compression and shut-off the FlowTap™ Regulator.
2. Increase the set point of the relief device. Remove the relief cap and use a 1/2" wrench socket extension to increase relief set point (clockwise).

3. Slowly open the upstream block valve to pressurize the FlowTap™ Regulator. The FlowTap™ Regulator should lock up (shut off).
4. Use an external pressure source and increase the pressure between the FlowTap™ Regulator and the downstream block valve until the desired relief set point is achieved.
5. Slowly decrease the set point (counterclockwise) of the relief accessory until a small amount of gas is released from the vent. The relief valve is now set.
6. Safely remove the external pressure source. Vent the pressure between the FlowTap™ Regulator and the downstream block valve to atmosphere or open the downstream block valve.
7. Slowly increase the set point (clockwise) of the FlowTap™ Regulator until the desired set pressure is achieved (at least 5 psi below relief re-seat pressure).
8. Check regulator lock-up by slowly closing the downstream block valve or vent valve. The valve regulator should shut off at a pressure slightly above the regulator set pressure.
9. Slowly re-open the downstream block valve.
10. Tighten the lock nut on the adjusting screw to prevent tampering or vibration from changing the set point of the FlowTap™ Regulator.

MAINTENANCE

Regulator parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends on severity of service conditions or the requirements of local, state, and federal/governmental regulations. Be certain that the nameplate(s) are updated to accurately indicate any field changes in equipment, materials, service conditions, or pressure settings.

WARNING

Before disassembly, make sure the regulator has been isolated from the process by closing block valves on the inlet and outlet side of the FlowTap™ Regulator. Make sure the sense line valve is also closed (FlowTap™ - M Version). Safely release pressure from the inlet and outlet sides of the FlowTap™ Regulator as well as the sense line, diaphragm casing and other connected piping. Failure to complete these steps may result in personal injury and/or property damage.

The following maintenance procedures are provided:

NOTE: The FlowTap™ Regulator valve body does not need to be removed from the pipe for maintenance.

FlowTap™ – Std./Internal Sense, FlowTap™ – Monitor/ External Sense, FlowTap™ – Relief

1. Simple Soft Seat Inspection/Replace and Orifice Inspection/Replacement.
2. Complete Overhaul. Replacement of all rubber components and the orifice.

Refer to page 17-18 for complete parts list.

FlowTap™ - Relief Assembly

1. Inspection and seal replacement of the Relief Assembly.

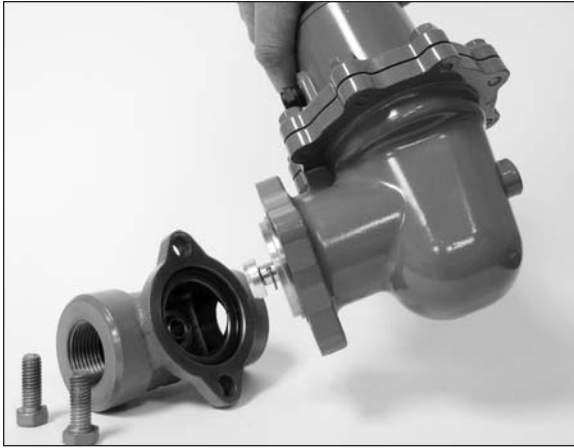
Simple Orifice Inspection/Replacement and/or Plug Seal Inspection/Replacement

NOTE: This procedure applies to all versions of the FlowTap™ Regulator.

1. Remove the plastic adjusting screw cap by hand.
2. Use a 3/4" wrench and loosen the adjusting screw nut.
3. Use a 9/16" wrench and loosen the adjusting screw until the spring compression is released.



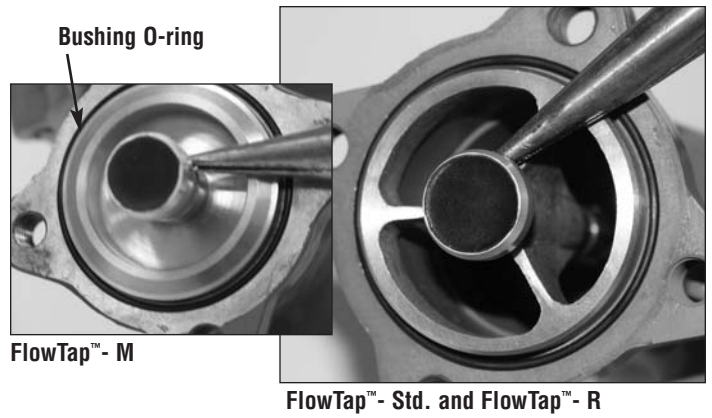
- Use a 9/16" wrench to loosen and remove both cap screws holding the actuator assembly to the regulator body.
- Remove the actuator assembly from the valve body.



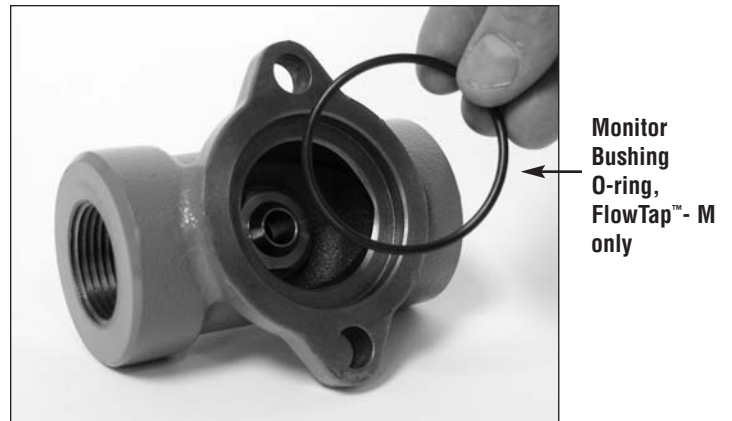
- Inspect the orifice seat for nicks or defects that could effect shut off. Use a 1" socket to remove the orifice **if necessary**. If the orifice is replaced use a small quantity of pipe dope on the orifice seat threads as a thread seal.



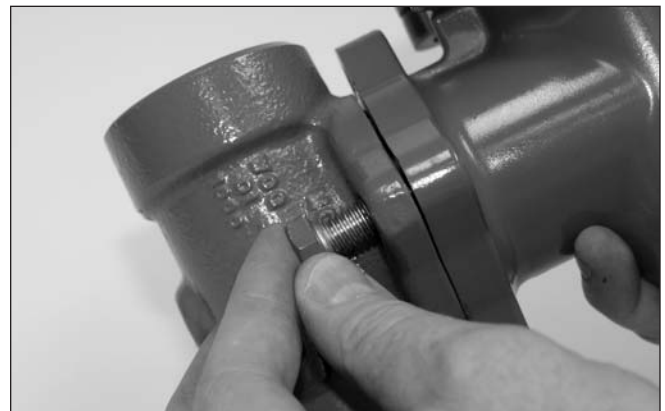
- Inspect the plug seal attached to the plug stem for defects or wear on the rubber. It is normal to see a permanent indentation on the rubber seat. If the rubber is cut or damaged it should be replaced. If the orifice is changed then a new plug seal and seat o-ring are recommended. The plug seal can be removed by pulling the retainer clip holding it to the plug stem. Replace the plug seal assembly and re-install the retainer clip on the valve plug.



- Lubricate the bushing o-ring (and the monitor busing o-ring if applicable) and install on the diaphragm case. Re-install the actuator assembly onto the valve body.



- The actuator assembly can be oriented in four positions, choose the one that best fits the application. (Recommendations on pages 3 & 4). Put a small amount of anti-seeze compound on the cap screw threads. Tighten the bolts evenly. Use a torque wrench to tighten to 9-10 ft lbs.



- Place the regulator into service.

NOTE: If the orifice seat is changed to a new size make sure the application conditions do not exceed pressure ratings of the FlowTap™ Regulator (refer to specifications on page 2).

COMPLETE OVERHAUL – ALL VERSIONS.

Replacement of all diaphragm, all o-rings, orifice seat and plug seal assembly.

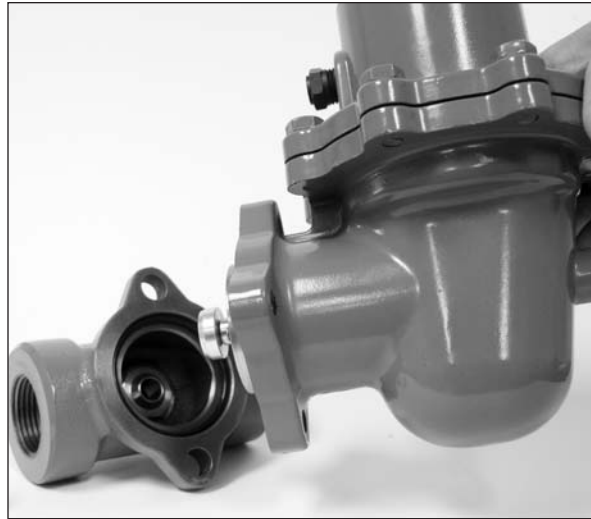
1. Remove the plastic adjusting screw cap by hand.
2. Use a 3/4" wrench to loosen the adjusting screw nut.
3. Use a 9/16" wrench to loosen the adjusting screw until all mainspring compression is released.



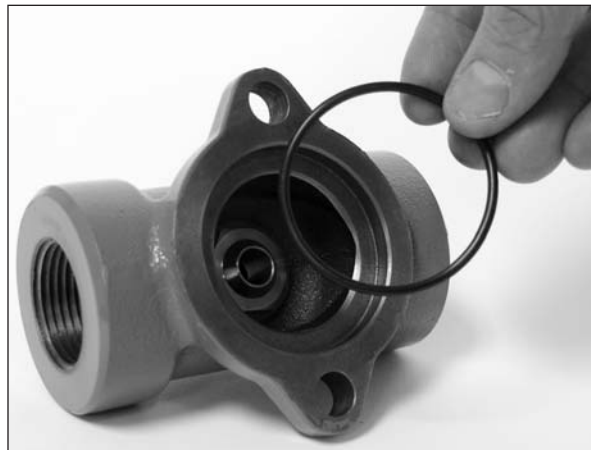
4. The upper spring case cap can be loosened and removed by hand. Set it aside.



5. Remove the main spring and spring follower.
6. Use a 9/16" wrench to loosen and remove both cap screws holding the actuator assembly to the regulator body.
7. Pull the actuator assembly off the valve body.



8. FlowTap™- M only: Discard the monitor bushing o-ring.



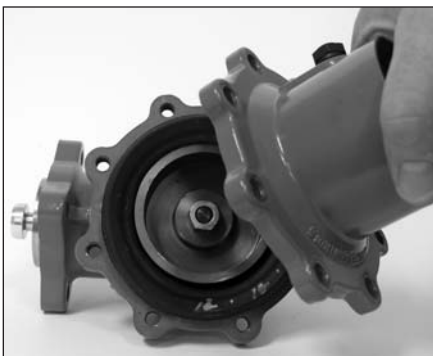
9. Discard the bushing o-ring



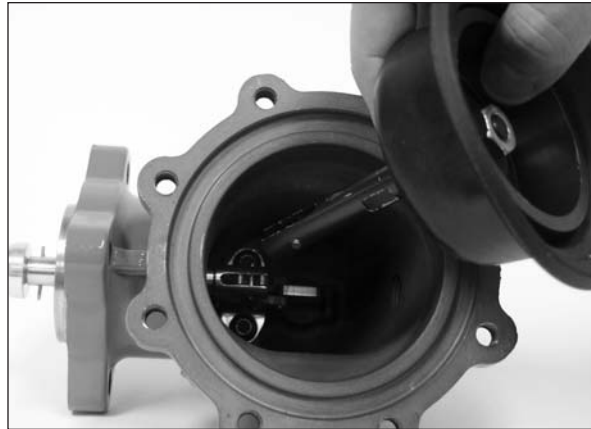
10. Use a 1" socket to remove the orifice if necessary. Replace with a new orifice seat. Use a small quantity of pipe dope on the orifice seat threads.



11. Use a 1/2" wrench to loosen and remove the eight cap screws holding the lower spring case to the diaphragm case and set it aside.



12. Carefully remove the aluminum diaphragm plate, diaphragm and diaphragm stem assembly.

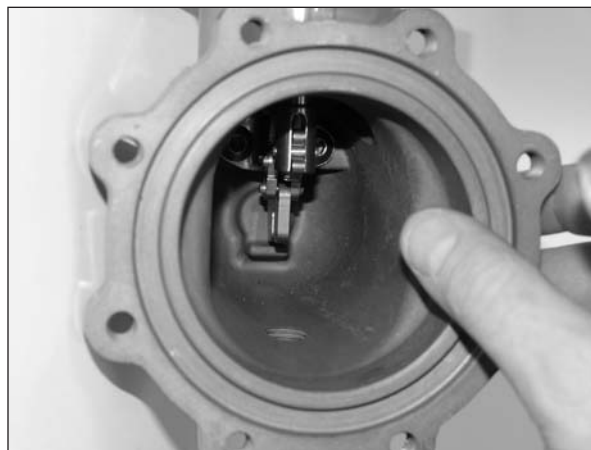


13. Use a 1/2" wrench to loosen the diaphragm assembly nut and set it aside. Hold the stem with a 3/8" wrench.

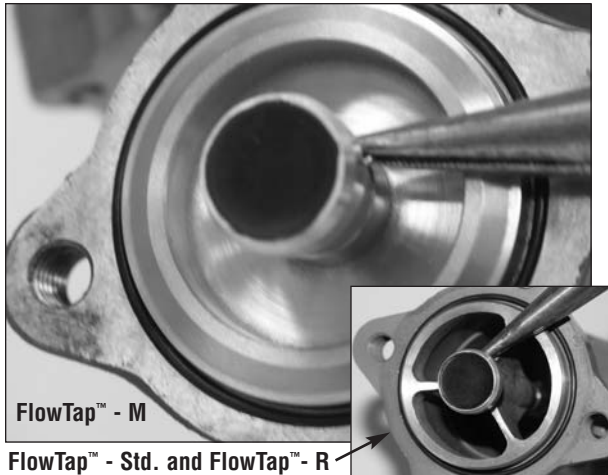


14. Inspect the linkage assembly for abnormal wear. Make sure it is anchored securely to the diaphragm casing.

NOTE: Use a flashlight if necessary to inspect the linkage.



15. Remove and discard the plug seal assembly by pulling the retainer clip holding it to the plug stem.



16. Remove the bushing stem o-ring and throat bushing from the diaphragm case by sliding off the plug stem.



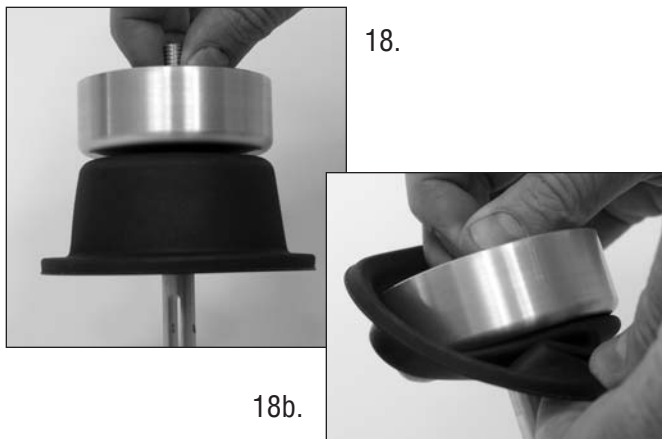
17. After the bushing and plug stem is removed they can be separated. Replace the stem o-ring. Lubricate the o-ring with Parker® Super O-Lube.



RE-ASSEMBLY

18. Install a new diaphragm onto the threaded stem and then Diaphragm Plate.

18b. Invert the diaphragm onto the diaphragm plate such that the sealing lip faces the linkage side of the stem.



19. Use a wrench and tighten the nut on the diaphragm assembly to 60-70 in.-lbs. Hold the stem with a 3/8" wrench.



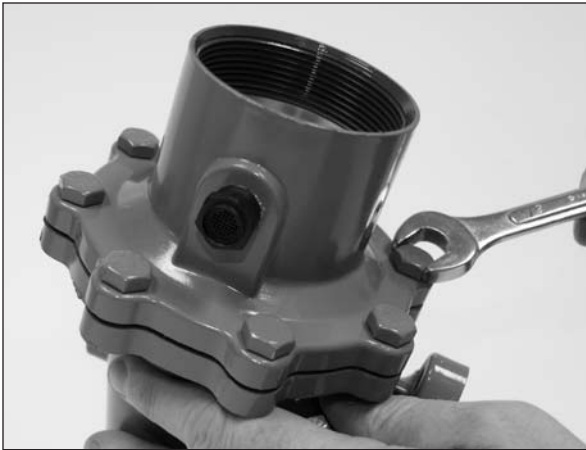
20. Install the diaphragm stem and diaphragm assembly into the diaphragm case such that the stem is evenly aligned into the linkage assembly.

NOTE: Rotate the diaphragm assembly to locate the center. The linkage must be centered to prevent binding.

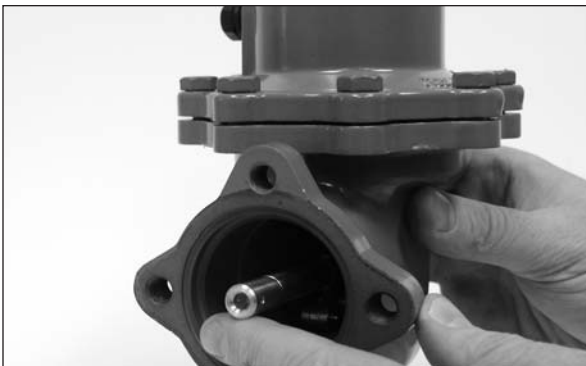


21. Re-install the lower spring case onto the diaphragm case and tighten all eight cap screws evenly using a criss-cross pattern. Tighten the cap screws evenly to a torque of 5- 6 ft. lbs.

NOTE: The vent can be oriented in any position, the best being one that prevents moisture from easily entering the spring case when the FlowTap™ Regulator is installed.



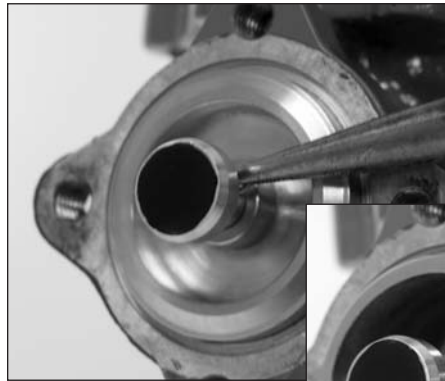
22. FlowTap™- M Version: Install the plug stem onto the linkage assembly.



22. FlowTap™-M Version: Install the bushing.



23. Install the plug seal on the plug stem. Use need nose pliers to install the retainer clip.



24. Lubricate the bushing o-ring and re-install the actuator assembly onto the valve body.

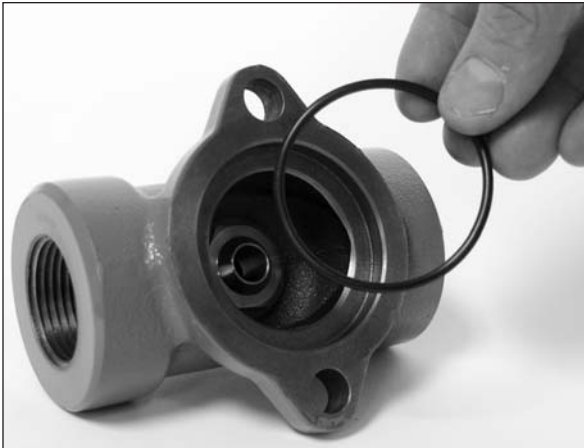


FlowTap™- M

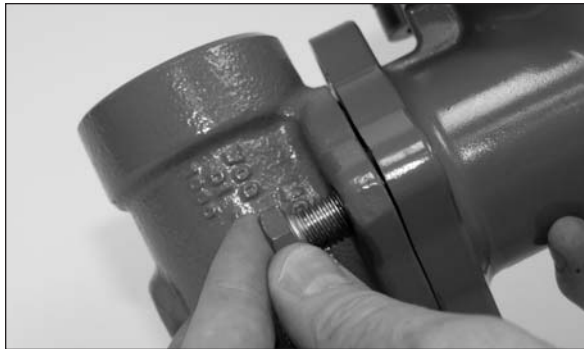


FlowTap™ - Std. and FlowTap™- R

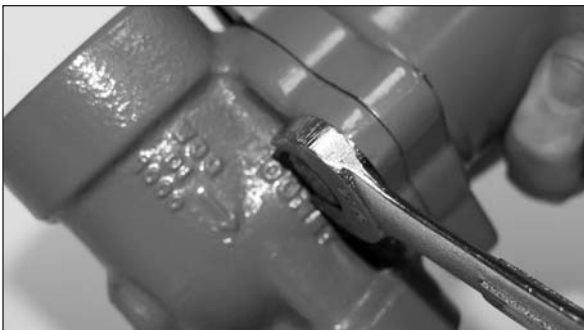
25. FlowTap™-M Version: Lubricate the monitor bushing o-ring and install onto the valve body.



26. Install the actuator onto the valve body.



27. Put a small amount of anti-seize compound on the bolt threads. Use a torque wrench and tighten the cap screws that hold the actuator assembly to the valve body evenly to 9-10 ft lbs.



28. Re-install the main spring over the spring boss on the diaphragm plate. Re-install the spring follower onto the top of the spring. A small amount of grease can be put into the spring follower to make the adjusting screw easier to turn.



29. Replace the o-ring on the spring case cap. Lubricate the o-ring with an o-ring grease or a silicon based general lubricant.

30. Thread the spring case onto the lower spring case assembly. The threads of the spring case can be lubricated with grease.



31. Place the regulator into service.

NOTE: If the orifice seat is changed to a new size make sure the application conditions do not exceed pressure ratings of the FlowTap™ Regulator (refer to specifications on page 2).

FLOWTAP™ - R: RELIEF ASSEMBLY

Inspection and seal replacement of the Relief Assembly.

1. Use a 1" Wrench to remove the relief cap.



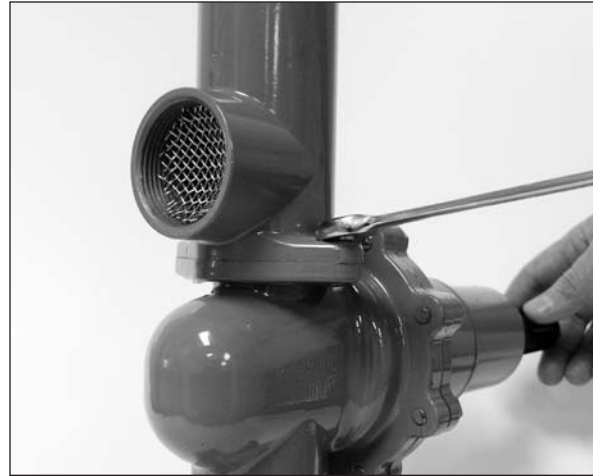
2. Replace relief cap o-ring. Lubricate with an o-ring-grease or silicon based lubricant.
3. Use a 1/2 socket extension to remove the relief adjustment screw.



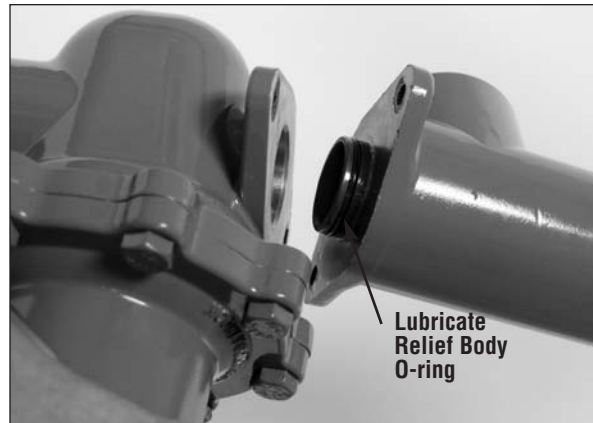
4. Remove the spring.



5. Use a 7/16" wrench to remove the cap screws holding the Relief Assembly to the diaphragm case.



6. Remove and replace the relief body o-ring. Lubricate the o-ring with general lubricant.



7. Remove the relief spindle assembly.



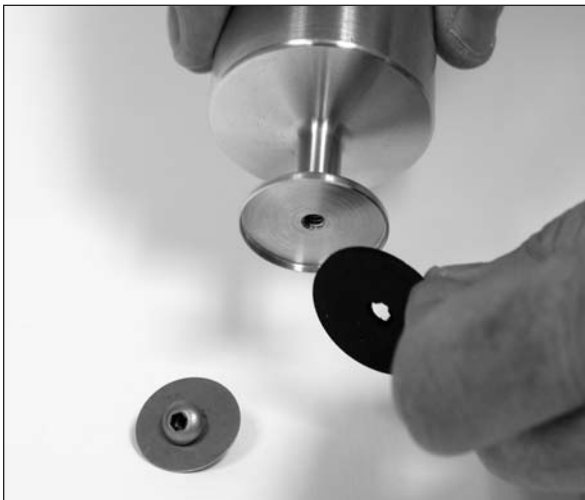
8. Inspect the seat machined into the relief body and make sure there are no defects that could effect relief shut-off.



9. Use an 1/8" Allen wrench to remove the screw holding the seal assembly onto the spindle.



10. Remove the washer and replace the relief seal.
11. Replace washer then apply Loctight 24 3 to screw and tighten onto spindle until snug. Do not overtighten and cause relief seal to flex or buckle.



12. Insert the relief spring button into the spindle (button down).



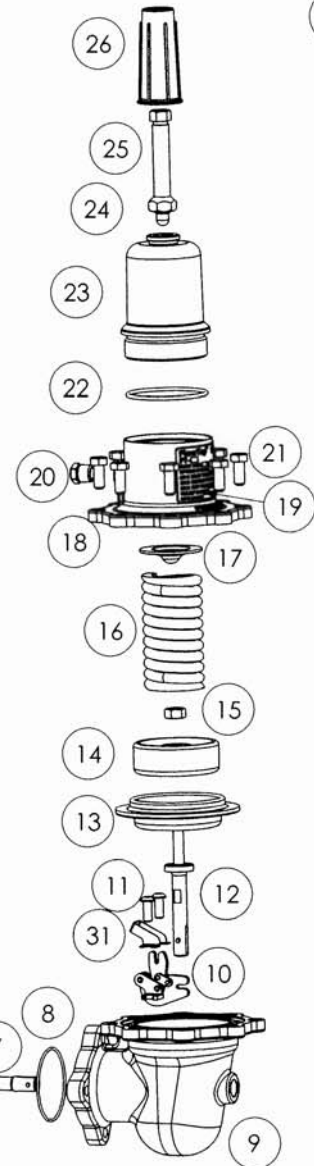
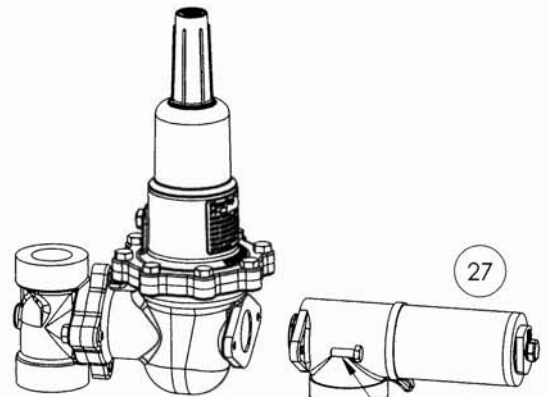
13. Re-install the spring
14. Re-install the adjusting screw.
15. Replace the relief cap assembly.
16. Install the Relief Assembly onto the diaphragm case. Tighten cap screws to approximately 3-4 ft. lbs.

TROUBLESHOOTING

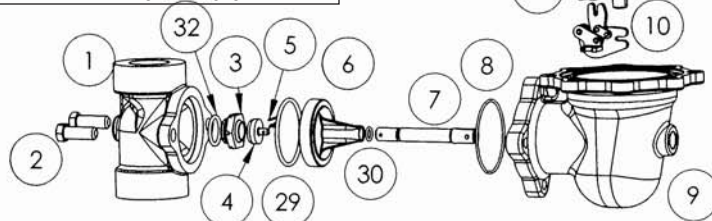
Problem	Solution
The regulator will not shut-off.	FlowTap™ (All Models) Check Orifice Seat and Plug Seal for abnormal wear and replace as necessary (Refer to maintenance procedures).
The regulator will not open.	Check for freezing of liquid in the gas or hydrate formation by disassembling the regulator to see if the orifice is blocked. (Refer to maintenance procedures).
The regulator is un-stable and cycles several times per minute or per second.	<p>FlowTap™ (All Models): Check to make sure all vent connections are not blocked.</p> <p>FlowTap™ - Std.: Change to the next highest main spring range.</p> <p>FlowTap™ - M: Change sense line location and/or change the spring to the next highest main spring range.</p> <p>FlowTap™ - M: Install a needle valve on the sense line to dampen sensitivity (Make sure NOT to fully close the needle valve or the regulator will not function properly).</p> <p>FlowTap™ - R: Change to the next highest main spring range.</p>
The regulator set point drops off.	Check sizing. Make sure the regulator has enough capacity for the application. Expect 5-13% droop (decrease) from set point for self operated regulators of this type for full capacity to be achieved.
The regulator will not achieve set point.	<p>Make sure the correct main spring is installed.</p> <p>Check sizing. Make sure the regulator has enough capacity for the application.</p>
The relief will not open at the set pressure.	<p>Check to make sure the vent port on the relief cap is not blocked.</p> <p>Verify the downstream pressure.</p>
The relief will not shut-off.	Make sure the regulator set pressure is below the relief set point. Check the relief seal for damage (Refer to maintenance instructions).

FLOWTAP PARTS LIST

ITEM	Description	Material	Part Number	QTY
1	Body, FlowTap	Ductile Iron		1
	1"-NPT		501-002-01	
	3/4"-NPT		501-003-01	
	1"-NPT with Inlet Tap		501-032-01	
	3/4"-NPT with Inlet Tap		501-033-01	
2	Cap Screw	Stainless Steel	030-033-01	2
	(3/8-16 UNC X 1" Gr 8)			
3	Orifice Seat	Stainless Steel		1
	1/8"			
	3/16"			
	1/4"			
	3/8"			
	1/2"			
4	Plug Seal Assembly	Aluminum/Nitrile	501-018-01	1
5	Plug Seal Retainer Clip	Stainless Steel	501-051-01	1
6	Throat Bushing	Bronze	501-007-01	1
	Standard			
	Monitor/External Sense		501-008-01	
7	Stem Plug	Brass		1
	Standard			
	Monitor/External Sense			
8	O-ring, Bushing	Nitrile	021-034-01	1
9	Diaphragm Case	Aluminum	501-004-01	1
	Standard			
	Relief			
	Monitor/External Registration			
10	Linkage Assembly	Stainless Steel	501-020-01	1
11	Button Head Screw	Stainless Steel	030-045-01	2
12	Diaphragm Stem	Aluminum	501-061-01	1
13	Diaphragm	Nitrile	501-010-01	1
14	Diaphragm Plate	Aluminum	501-012-01	1
15	Nut, Hex. (5/16-18 UNC)	Stainless Steel	033-007-01	1
16	Main Spring	Music Wire		1
	FlowTap 5-20 psi Spring - Yellow			
	FlowTap 15-40 psi Spring - Green			
	FlowTap 30-80 psi Spring - Red			
	FlowTap 50-125 psi Spring - Orange			
	FlowTap 100-250 psi Spring - Blue			
17	Main Spring Follower		501-014-01	1
18	Spring Case	Aluminum	501-006-01	1
19	Nameplate, Sticker	Aluminum	501-049-01	1
20	Bug Vent	Plastic	201-072-01	1
21	Cap Screw (5/16-18 UNC X 3/4" Gr 8)	Stainless Steel	030-029-01	8
22	Spring Case Cap O-ring			
23	Spring Case Cap	Aluminum	501-046-01	1
24	Nut, Self sealing (1/2-20 UNC)	Steel/Nitrile	033-001-01	1
25	Adjusting Screw	Plated Steel	501-013-01	1
26	Adjusting Screw Cap	ABS	501-050-01	1
27	Relief Assembly (Relief Version Only)	Aluminum	501-100-01	1
28	Cap Screw (1/4-20 X .75")	Stainless Steel	030-050-01	2
	(Relief Version Only)			
29	Monitor Bushing O-ring	Nitrile	021-134-01	1
	(Ext. Sense only)			
30	Stem O-ring	Nitrile	021-011-01	1
	Monitor/External Sense			
	Monitor/External Sense		021-107-01	1
31	Pin Retainer (Relief Version Only)	Plated Steel	501-072-01	1
32	O-ring, Seat	Nitrile	021-116-01	1



NOTE: Boxed items are recommended spare parts.
Parts kits are listed on page 18.



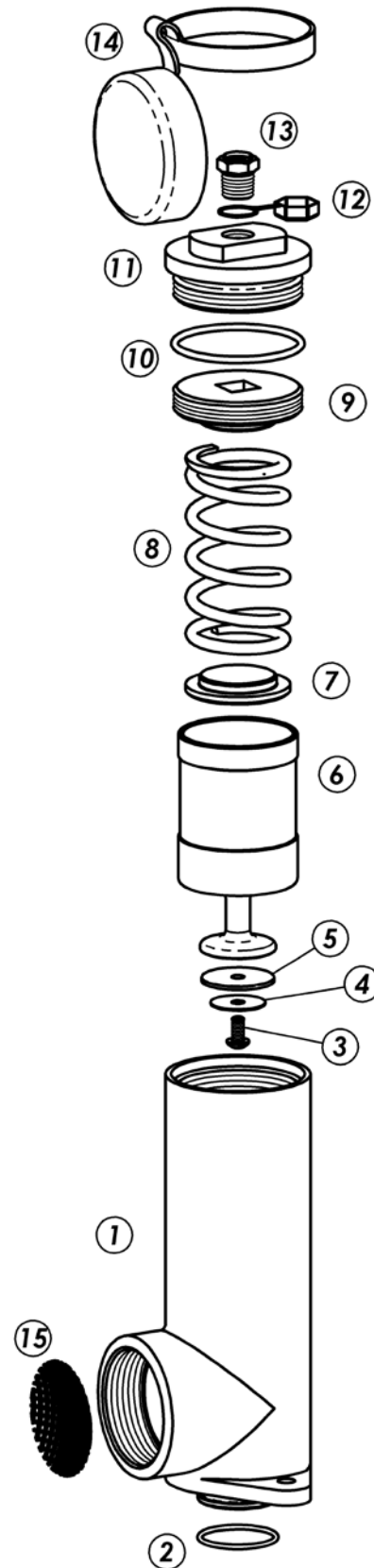
FLOWTAP RELIEF ASSEMBLY PARTS LIST

ITEM	Description	Material	Part Number	QTY
1	Relief Body	Aluminum	501-036-01	1
2	O-Ring	Nitrile	021-024-01	1
3	Cap Screw, 10-24 X .375" Long	Steel	030-047-01	1
4	Washer	Stainless Steel	034-018-01	1
5	Relief Seal	Nitrile	501-041-01	1
6	Relief Spindle	Brass	501-038-01	1
7	Relief Spring Button	Aluminum	501-039-01	1
8	Spring			
	40-60 psi, FlowTap - Silver	Stainless Steel	040-043-01	1
	60-75 psi, FlowTap - White	Stainless Steel	040-045-01	1
9	Relief Adjustment Screw	Aluminum	501-043-01	1
10	O-Ring	Nitrile	021-134-01	1
11	Relief Cap	Aluminum	501-042-01	1
12	Bug Vent Weather Cap	Vinyl	501-040-01	1
13	Bug Vent	Plastic	201-072-01	1
14	Relief Vent Weather Cap	Vinyl	501-045-01	1
15	Relief Bug Screen	Stainless Steel	501-044-01	1

FLOWTAP REPAIR KITS

16	FlowTap-Std. Kit (includes items: 4, 8, 13, 22 from page 17)	501-095-01	1
17	FlowTap-M Kit (includes items: 4, 8, 13, 22, 29 and 30 from page 17)	501-095-02	1
18	FlowTap-R Kit (includes items: 4, 8, 13, 22 from page 17 and items 2, 5 and 10 from page 18)	501-095-03	1

NOTE: Boxed items are recommended spare parts.



WARRANTY

LIMITED WARRANTY: Seller warrants title and that the goods manufactured by the Seller will be free from defects in materials and workmanship under normal use and service until the expiration of the earlier of twelve (12) months from the date of initial operation or eighteen (18) months from the date of shipment by Seller. Resale goods shall carry only the warranty extended by the original manufacturer to the original purchaser. If, within thirty (30) days after Buyer's discovery of any warranty defects, Buyer notifies Seller in writing, Seller shall, at its option, promptly repair or replace F.O.B. point of manufacture, that portion of the goods found by Seller to be defective. Goods repaired and parts replaced during the original warranty period shall be in warranty for the remainder of the original warranty period. This warranty is the only warranty made by Seller and can only be amended by a written instrument signed by an officer of Seller. Subject to this warranty and except as expressly provided **IN SALES LITERATURE, DRESSER MOONEY CONTROLS, DRESSER INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE PRODUCTS.**

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