MEGR-198H Instruction Manual

MEGR-198H BACKPRESSURE REGULATOR/RELIEF VALVE

Instruction Manual- **Look Inside For:**

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Form #904 Rev A

Applications

Superheated Steam
Steam Tracing
Nitrogen Purging
Boiler Feed Water
Process Chemicals
Cooling Water
Test Fixtures
Wash Tanks
Sterilizers/Autoclaves
Fuel and Oil Lines
Pneumatic Supply

Introduction

The MEGR-198H backpressure regulator is a manual, direct acting, self-operating, spring loaded, large capacity adjustable relief valve. It monitors upstream pressure and opens to relieve excess pressure when the upstream pressure increases above a set point. As a backpressure regulator, the upstream pressure is monitored and released downstream when the set point is exceeded. Relief pressure ranges are 15 to 200 PSIG for the MEGR-198H.

How It Works

The force of the range spring acting against the diaphragm is opposed by the force of the relief pressure acting against the opposite side of the diaphragm. Until the force of the relief pressure overcomes the force of the range spring acting against the diaphragm, the MEGR-198H main valve will remain closed. After the relief pressure force overcomes the force of the range spring acting on the main valve, the main valve will open pressure from the inlet port and allow it to flow into the outlet port. Once this pressure decreases beneath the set point of the range spring, the main valve closes again.

Materials of Construction

Body	Iron
Bonnet	Iron
Diaphragm	Stainless Steel
Valve Plug	Stainless Steel with Nitrile

Specifications

Maximum Inlet	300 PSIG
Pressure Ranges	SEE TABLE 1
Port Sizes	3/4" NPT
	1" NPT
Orifice Sizes	3/4" NPT-9/16"
	1" NPT-9/16"
End Connections	NPT
Temperature Range - Nitrile	-20°F TO 200° F
	-29°C TO 93° C
Approximate Weight	20 lbs (9.1 kg) for 3/4" NPT
	20 lbs (9.1 kg) for 1" NPT
Shutoff Classification	Class VI

Installation

Qualified personnel should perform installation, operation and maintenance in accordance with NFPA 54 & 58 and other local, State and Federal Regulations. The regulator can be mounted in any position, however the flow through the body must be in the direction from inlet to outlet (as marked by the arrow on the body). It is important that the drilled bonnet vent remain unobstructed at all times. Also make sure to position the regulator to prevent any contamination, rain and debris from entering the drilled bonnet vent. Prior to installation, inspect the regulator and the piping lines for any debris or contamination. Apply pipe compound to the male pipe threads prior to installation. After installation, periodically inspect the regulator for damage, especially after any overpressure condition.

Warning!

If the MEGR-198H operates beyond the listed specifications, it may cause damage to the internal parts, up to and including blowing a hole in the diaphragm. Please periodically check the drilled bonnet vent to see if any sort of leakage is occurring. If so, safely remove the regulator from the line and inspect for damage.

Start-Up and Adjustment

Warning!

The use of pressure gauges to prevent overpressure conditions, which might cause personal injury or equipment damage, is highly recommended. Before starting up the regulator, relieve the downstream pressure on the diaphragm. Failure to do so may result in personal injury or equipment damage.

When starting up the MEGR-198H, slowly open the upstream shutoff valve, and then slowly open the downstream shutoff valve. Check all piping and connections for leaks before making any final pressure adjustments. The nameplate provides the range of allowable pressure settings. For pressure settings outside the allowable range, change to the appropriate range spring and remember to change the nameplate accordingly. When changing the range spring, make sure that the diaphragm is properly installed and not damaged. Check the unit for external leakage after rebuilding.

Before applying pressure to the "In" port of the MEGR-198H, make sure that some range spring force is established as the adjusting screw is rotated. Clockwise rotation of the adjusting screw will increase the relief pressure setpoint; counterclockwise rotation of the adjusting screw will decrease the relief pressure setpoint. Then, slowly apply pressure to the "In" port of the MEGR-198H and rotate the adjusting screw until the desired relief pressure set point it reached.

Note: The use of a pressure-measuring device is highly recommended when making any pressure adjustments with the regulator.

Maintenance

Severity of conditions and the requirement of both state and federal laws determine the frequency to which the regulators need to be inspected. Debris in the process line, exterior damage, and normal wear could require the replacement of parts such as the diaphragm. The procedures below will provide assistance when attempting to replace these parts.

Warning!

When attempting any inspection or disassembly, relieve all pressure from the MEGR-198H and its adjacent piping so as to prevent personal injury or equipment damage as a result of an explosion or sudden pressure release.

To Access the Range Spring:

1. Loosen the Jam Nut (Item #15) and turn the Adjusting Screw (Item #10) until there is no spring force being applied.

2. Unscrew the Build Screws (Item #19) and lift the Bonnet (Item #2) off of the regulator.

3. Remove the Spring Guide (Item #12) and the Range Spring (Item #7). If the output pressure range is being changed, place new Range Spring on the Piston (Item #17) and reassemble by reversing the above steps and torque the Build Screws to the Torque Spec on Table 2.

To Access the Diaphragm Assembly and Valve Plug:

1. If the Diaphragm Assembly and Valve Plug need to be accessed, disassemble the top half of the regulator by performing the steps above. Carefully remove the Diaphragm Assembly and Valve Plug (Item #4) by lifting the Diaphragm Assembly straight up out of the Valve Plug Guide (Item #13) counterbore. Be careful not to drop the Valve Plug and damage the outer diameter.

2. Inspect the Diaphragm (Item #8) in the Diaphragm Assembly. If it is a metal diaphragm unit, there should be two diaphragms in the unit. If there is any damage to the Diaphragm, disassemble the Diaphragm Assembly and replace the Diaphragm. For metal diaphragms, the Diaphragms must have their concave part facing up. The Lock Nut (Item # 16) must be tightened according to the Torque Spec provided in Table 2.

3. Inspect the Gasket (Item #11 – metal to metal units only) for damage. If there is any visible damage, replace the Gasket.

4. Inspect the Valve Plug. If the Valve Plug is metal at the sealing surface and there are nicks on that surface, replace the Valve Plug. If the Valve Plug has an O-Ring (Item #9) at the sealing surface, replace the O-Ring if it is cut or punctured. A medium strength Threadlocker should be used to reseal the Machine Screw (Item #21) into the Valve Plug.

5. Reassemble the unit.

To Access the Orifice:

1. Remove the Valve Plug Guide (Item # 13) from the Body (Item #1).

2. Inspect the sealing surface of the Orifice (Item #3) inside the Body. If there is damage to the sealing surface, remove the Orifice from the Body and replace.

3. If no other maintenance is required, reassemble the pieces in reverse order from the previous steps and torque the Orifice, Valve Plug Guide and Build Screws to the Torque Spec provided in Table 2. Make sure to reapply Never-Seez® to the threads of the Orifice and the Valve Plug Guide. Make sure to apply Lubriplate to the threads of the Adjustment Screw.

4. Before tightening the Build Screws down and applying the torque in Table 2, make sure to drive the Adjusting Screw down to engage the spring force and pick up the slack of the Diaphragm Assembly.
   Set the desired output pressure and tighten down Jam Nut until it is snug with the Bonnet.

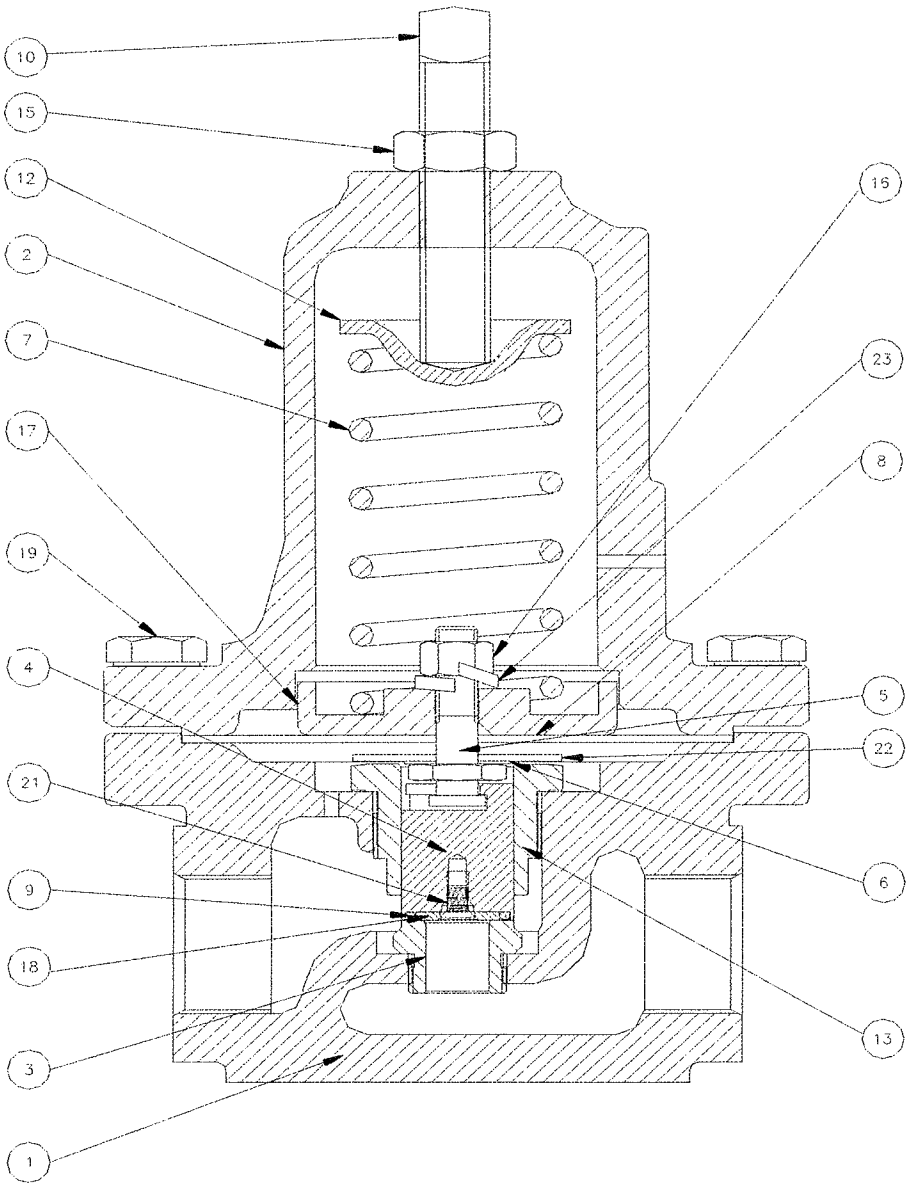
MEGR-198H Parts List		
Item	**Description**	**Qty**
1	Iron Body, 3/4" NPT Iron Body, 1" NPT	1
2	Iron Bonnet, drilled	1
3	Orifice, 416 Comp.	1
4	Valve Plug	1
5	Pusher Post	1
6	Diaphragm Assembly Gasket	1
7	Range Spring	1
8	Diaphragm, 302SS	2
9	O-Ring, Nitrile	1
10	Adjusting Screw	2
12	Spring Guide	1
13	Valve Plug Guide	1
14	Nameplate, not shown	1
15	Jam Nut	1
16	Lock Nut	1
17	Piston	1
18	O-Ring Retainer	1
19	Build Screw	8
20	Drive Screw, not shown	2
21	Machine Screw	1
22	Washer	1
23	Lockwasher	1

Table 1: MEGR-198H Range Springs

Port Size NPT (inches)	Spring Range		Spring Color	Wire Diameter	
	PSI	BAR		in	mm
3/4 and 1	15-35	1.03-2.07	Yellow	0.218	5.54
	25-75	1.72-5.17	Green	0.235	5.97
	70-140	4.83-10.34	Red	0.281	7.14
	130-200	8.96-13.79	Blue	0.468	11.89

Table 2: MEGR-198H Torque Specifications

Port Size NPT (inches)	Diaphragm Nut ft-lbs	Build Screws ft-lbs	Orifice ft-lbs	Valve Plug Guide ft-lbs
3/4 and 1	10 to 15	24 to 30	33 to 42	90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