

# Marshall Excelsior



## Gas Connections

### MEGR-S1202 Series 2nd Stage-Low Pressure Regulators

#### Instruction Manual- Look Inside For:

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## Applications

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Compressors, Gas Engines, Service Regulators

## Introduction

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The MEGR-S1202 series pressure regulator is a manual, direct acting, self-operating, spring loaded, adjustable regulator. These are used in applications where pressure reduction is required. The regulator will reduce the risk of “shock” from abrupt changes of downstream conditions. This can help prevent safety equipment from shutting an operation down.

## How It Works

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When there is increased pressure under the diaphragm resulting from a decrease in the downstream requirement, the pusher post will move the valve disk so that it is closer to the orifice. This will reduce the gap between these two components and lower the gas flow. Conversely, when the downstream demand is increased and the pressure under the diaphragm is reduced, the valve disk is moved away from the orifice due to the force of the spring. This will increase the flow of gas through the valve disk/orifice gap.

The MEGR-S1202 series has a relief spring which will separate the diaphragm from the seat. This opening sends all extra pressure out of the regulator through a screened vent in the bonnet. This series also has relief in case of abnormal operation. This is established through the use of a relief stem, which will contact with the closing cap. Once the relief stem contacts with the closing cap, the diaphragm will continue to rise, but the stem will remain stable. This will cause the relief to open and discharge the pressure inside the regulator.

## Materials of Construction

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Adjusting Screw	Aluminum
Body	Iron
Bonnet	Aluminum
Closing Cap	Aluminum
Diaphragm	Nitrile
Housing	Aluminum
Molded Seat Assembly	Nitrile
O-Ring	Nitrile
Upper/Lower Spring Seat	Aluminum

## Specifications

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Maximum Inlet Pressure	20-30 PSIG
Maximum Emergency Outlet	15 PSIG
Port Sizes	1-1/2" NPT
	2" NPT
Orifice Size	3/4"
	1"
End Connections	NPT
Temperature Range	-40° F to 200° F
	-40° C to 93° C
Approximate Weight	26 lbs (11.8 kg)

## Installation

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Qualified personnel only should perform installation, operation and maintenance per NFPA 54 & 58 and 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 bonnet vent remain unobstructed at all times. Also make sure to position the regulator to prevent any contamination, rain and debris from entering the 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-S1202 series regulator 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 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

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### 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 regulator, 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-S1202 series regulators, make sure that some range spring force is established as the adjusting screw is rotated. Clockwise rotation of the adjusting screw will increase the output pressure set-point; counterclockwise rotation of the adjusting screw will decrease the output pressure set-point. Then, slowly apply pressure to the “In” port of the regulator and rotate the adjusting screw until the desired output pressure set-point is reached.

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

## **Maintenance**

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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 regulator 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. Remove the Closing Cap (Item #5) and Closing Cap Gasket (Item #6) from the Spring Case (Item #1). If the Gasket looks damaged, replace it.
2. Remove the Adjusting Screw (Item #3) from the Spring Case.
3. Remove the Range Spring (Item #2) from the Bonnet. Inspect the Range Spring for damage. If the output pressure range is being changed, place the new Range Spring on the Diaphragm Head (Item #9), change the Nameplate (Item #28) to call out the new pressure range and reassemble by reversing the above steps.

#### **To Access the Diaphragm:**

1. If the Diaphragm Assembly needs to be inspected, disassemble the top half of the regulator by performing the steps above. Remove the Cap Screws (Item #19) and Hex Nuts (Item #20). Lift the Spring Case (Item #1) off of the Diaphragm Assembly. Carefully remove the Diaphragm Assembly by sliding the Diaphragm Assembly off of the Lever (Item #14).
2. Inspect the Diaphragm (Item #8) in the Diaphragm Assembly. If there is any damage to the Diaphragm, disassemble the Diaphragm Assembly.
3. Remove the Cap Screw/Stem (Item #26) from the Diaphragm Assembly. Remove the Upper/Lower Spring Seat (Item #7), Diaphragm Head and Pusher Post (Item #10) from the Diaphragm Assembly. Inspect the Diaphragm. If the Diaphragm is damaged, replace and reassemble the Diaphragm Assembly. Remember to torque the Cap Screw/Stem to the correct torque specifications as shown in Table 3.
4. Reassemble the unit. Remember to torque the Cap Screws to the correct torque specification as shown in Table 3.

#### **To Access the Orifice and Seat Assembly:**

1. Remove the Cap Screws (Item #22) from the Union Rings (Item #12) and Body (Item #25).
2. Inspect the O-Ring (Item #23) on the Lower Casing (Item #11). If damaged, replace.
3. If the Seat Assembly (Item #21) is damaged, unscrew from the Valve Stem (Item #17) and replace. Make sure to torque the Seat Assembly to the torque specification provided in Table 3.
4. Inspect the Orifice (Item #24) inside the Body. If the Orifice is damaged, remove and replace. Torque the Orifice to the correct torque specification provided in Table 3.
5. If there are no other problems apparent, reassemble the unit in reverse order of the above steps. Make sure to torque the Cap Screws.

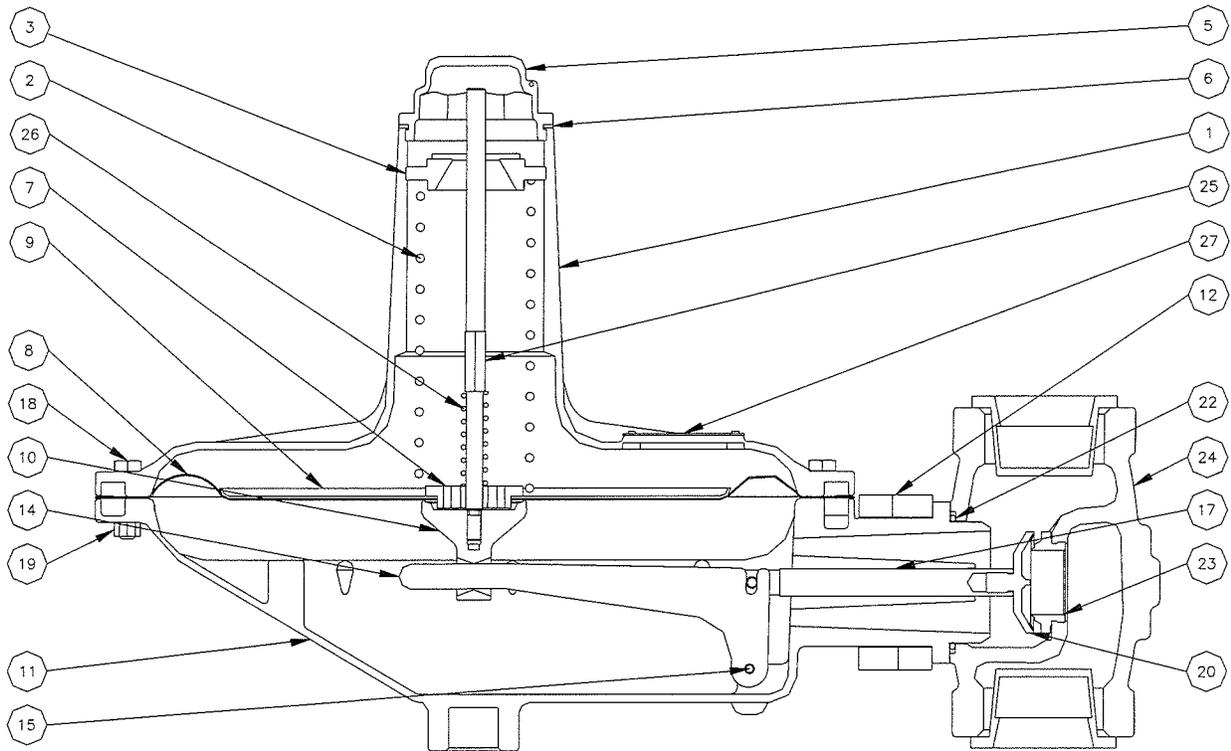
<b>Table 2: Range Springs</b>		
Spring Range	Color	Wire ø
2-4.5 WC (.005-.011 bar)	Brown	.112" (2.84mm)
3.5-6.5 WC (.009-.016 bar)	Red	.118" (3.00mm)
5-9 WC (.012-.022 bar)	Black	.135" (3.43mm)
8.5-18 WC (.021-.045 bar)	White	.162" (4.11mm)
14-30 WC (.035-.075 bar)	Dark Green	.181" (4.60mm)

<b>Table 3: Torque Specifications</b>			
Orifice ft-lbs	Union Ring Bolts ft-lbs	Build Screws ft-lbs	Lever Screws in-lbs
40	25	25	20

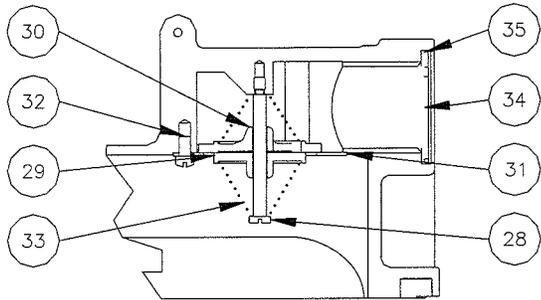
<b>Table 3: Torque Specifications</b>			
Orifice ft-lbs	Union Ring Bolts ft-lbs	Build Screws ft-lbs	Lever Screws in- lbs

## MEGR-S1202 Series Part List

Item	Description	Qty
1	Spring Case	1
2	Range Spring	1
3	Adjusting Screw	1
5	Closing Cap	1
6	Closing Cap Gasket	1
7	Upper/Lower Spring Seat	1
8	Diaphragm, Nitrile	1
9	Diaphragm Head	1
10	Pusher Post	1
11	Lower Casing Assembly	1
12	Union Ring	2
13	Spring Pin	1
14	Lever	1
15	Pin	1
16	Machine Screw	2
17	Valve Stem Assembly	1
18	Cap Screw	12
19	Nex Nut	12
20	Disk Holder Assembly	1
21	Cap Screw	2
22	O-Ring, Nitrile	1
23	Orifice, 1/4"	1
	Orifice, 3/8"	
	Orifice, 1/2"	
	Orifice, 3/4"	
	Orifice, 1"	
	Orifice, 1-3/16"	
24	Iron Body, 2" NPT	1
	Steel Body, 2" NPT	
	Iron Body, 1.5" NPT	
	Steel Body, 1.5" NPT	
	Iron Body, 1.25" NPT	
	Steel Body, 1.25" NPT	
	Iron Body, 1.5 x 2" NPT	
	Steel Body, 1.5 x 2" NPT	
25	Stem	1
26	Relief Valve Spring	1
27	Nameplate	1
28	Flapper Stem	1
29	Lower Flapper	1
30	Upper Flapper	1
31	Seat Ring	1
32	Self-Tapping Screw	3
33	Vent Port Spring	2
34	Screen	1
35	Snap Ring	1



**Vent Port**



**Top View**

