

# MASONEILAN®

## Instrument Supply Pressure Regulators Instruction Model 78 Series

Instruction  
No EY 78404 E  
02/01



# INSTRUCTION MANUAL

## Product Description

The 78 Series pressure regulators are compact, lightweight, high-performance pressure reducing valves. They are used primarily for supplying a stable source of air to process control equipment such as current to pneumatic transducers and control valve positioners.

## Features and Benefits

- Excellent pressure regulation.
- Lock screw ensures output pressure remains at desired value.
- Small size and light weight allows the regulator to be nipple mounted in most installations, eliminating need for mounting bracket. A mounting bracket is available if required.
- Two pressure gauge ports allow installation of gauge on either side for flexibility when mounting.
- Soft seat plug on main valve provides positive shutoff.
- Sintered polyethylene filters provide 5 micron filtration rating (2 micron optional).
- Stainless steel drain.
- Corrosion resistant finish and stainless assembly hardware permit use in corrosive environments.

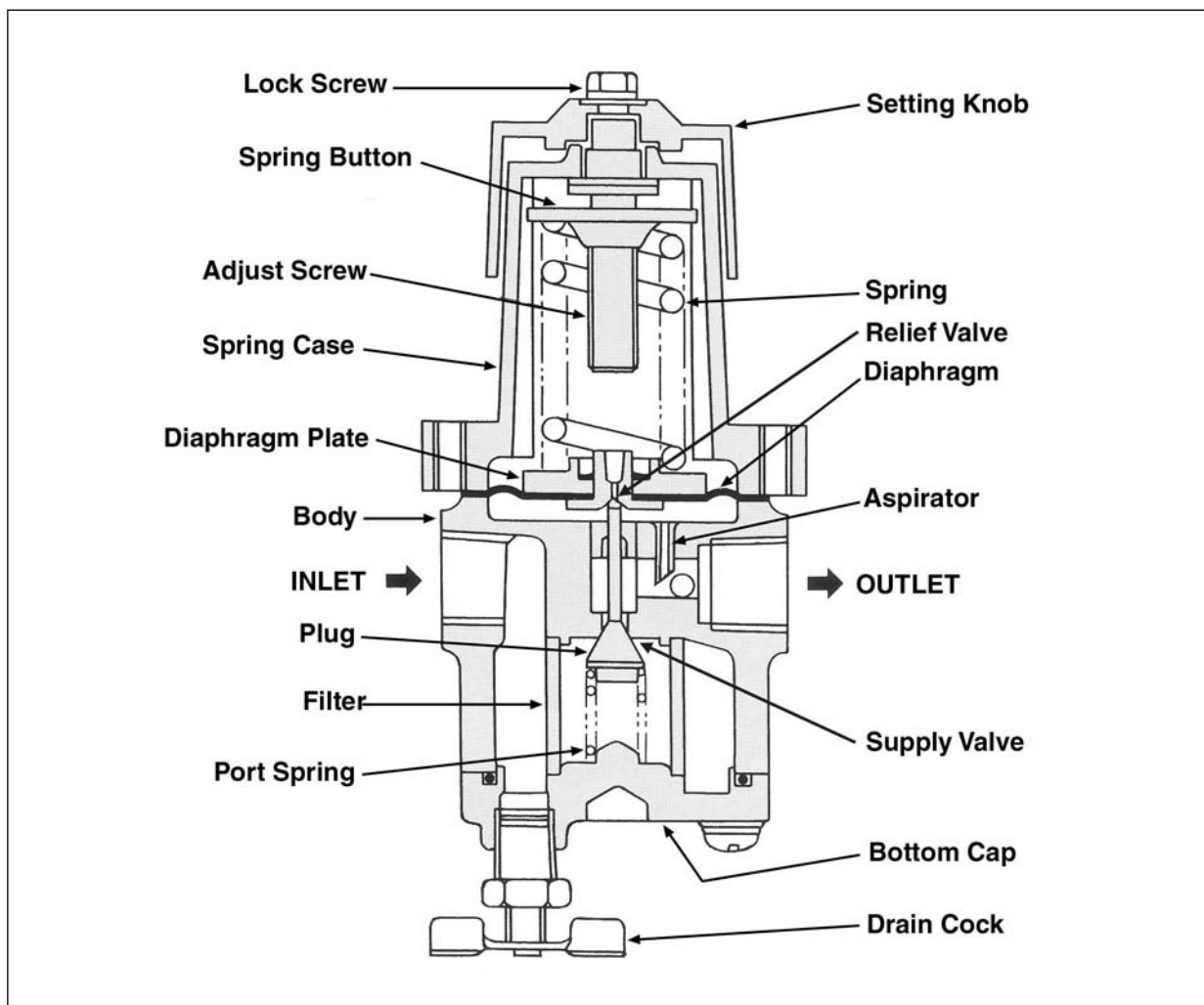
## Numbering System

Model Number	Pressure Range	Description
78-4	5-40 psi (35-280 kPa), (0.35-2.8 bar)	Air Loading with Relief and Filter
78-40	5-100 psi (35-700 kPa), (0.35-7 bar)	Air Loading with Relief and Filter

## Principle of Operation

Rotation of the pressure setting knob compresses the range spring against the diaphragm plate, opening the main supply valve. As the outlet pressure increases, it flows through the aspirator and acts on the lower side of the diaphragm causing it to move upward until it balances the force of the range spring. This balanced condition maintains constant output pressure with changes in supply pressure and output load. If the output pressure rises above the set pressure, the relief valve opens and bleeds the excess pressure to atmosphere.

Should dirt or other foreign substance lodge under the inlet valve seat resulting in increased outlet pressure, the additional pressure exerted on the diaphragm will cause the relief valve to open, relieving the excess air through the relief valve seat and spring case vent to atmosphere.



*Figure 1 - Cut-away View of 78 Series Pressure Regulator*




## WARNING

The relief valve feature should not be confused with any auxiliary safety valve which might be needed for complete protection of air operated equipment. It is intended only to provide more uniform controlled pressure and to permit adjusting the outlet pressure downward without venting the line.

## Specifications

Inlet Pressure Rating	215 psi (1.5Mpa, 15 bar) maximum
Pressure Set Range	5-40 psi (35-280 kPa, .35-2.8 bar) 5-100 psi (35-700 kPa, 0.35-7 bar)
Connection	1/4 NPT or Rc
Rated Cv	0.25
Filter Element	Sintered Porous Polyethylene (5μ)
Ambient Temperature Range	-40° to +83° C (-40° to +182° F)
Air Consumption	0.004 scfm (100 sccm)
Weight	1 lb.
Materials of Construction	See figure 2 and table 2

**Tableau 1 - Specifications**

 <b>WARNING</b>	<b>Do not install this Regulator in air lines which exceed 215 psi pressure (1.5 Mpa, 15 bar).</b>
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## Installation

Clean the lines thoroughly to remove all dirt, scale or other foreign matter before installing the regulator. Install with flow in direction of flow arrows on regulator body. Regulator should be installed as close as possible to device utilizing the reduced pressure to minimize pressure drop. Do not use piping or tubing smaller than the regulator connections since this will restrict flow and reduce capacity.


It is recommended that pressure gauges be installed on the inlet and outlet sides of the regulator as an aid in adjusting the pressure and in monitoring of working pressures.


## Operation

Prior to applying supply pressure, loosen knob lock screw (see figure 1) and turn pressure set knob counterclockwise. Turn on supply pressure. Output pressure should be zero. Slowly rotate set knob clockwise until desired pressure is reached. Tighten knob locking screw to ensure that pressure remains set at desired value. When changing output from a higher to lower pressure, initially go to lower than desired pressure, then increase to desired pressure. Re-tighten knob lock-screw.

## Maintenance

It is recommended that the drain cock be opened at regular intervals to drain any fluid that may have collected in the dripwell. The interval between draining will have to be determined based on the actual rate of accumulation of fluid.

 <h3 style="margin: 0;">WARNING</h3>	<p><b>Prior to performing maintenance on the regulator, shut off the inlet and outlet pressures and remove the spring compression by turning the adjusting screw fully counterclockwise. Open the drain cock carefully to relieve any retained pressure and drain the dripwell. It is recommended that the regulator be removed from the line for repairs.</b></p>
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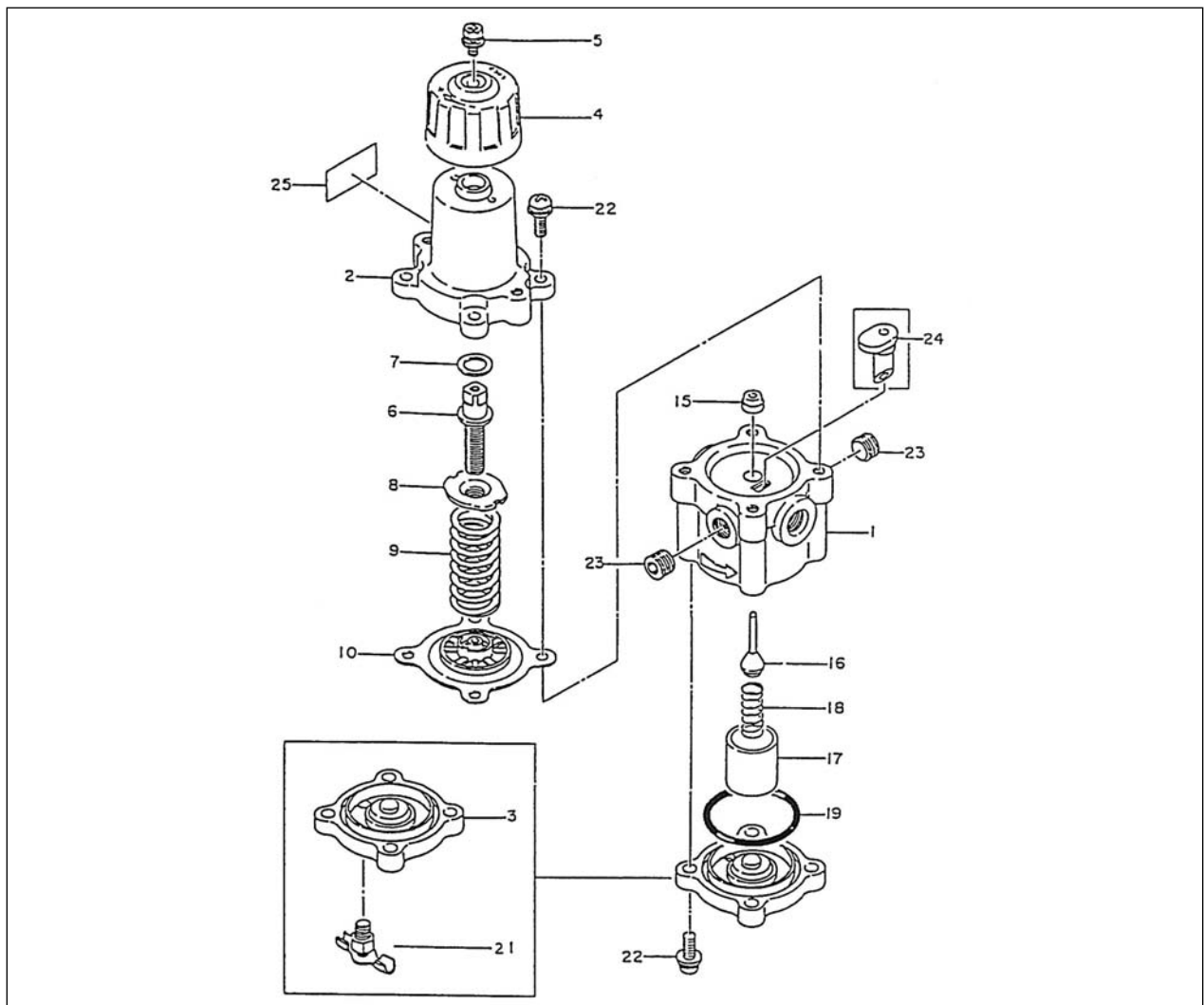
 <h3 style="margin: 0;">CAUTION</h3>	<p><b>When draining the dripwell, open the draincock slowly and collect the fluid in a suitable container for safe disposal.</b></p>
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### NOTE:

- Considering the high labor costs involved in replacing internal parts, it may be more economical to stock complete units.
- Care must be taken to avoid damage to the plug and stem assembly.

## Troubleshooting

If at any time the regulator fails to function properly it is recommended to replace rather than repair the device.



**Figure 2 - Construction Diagram**

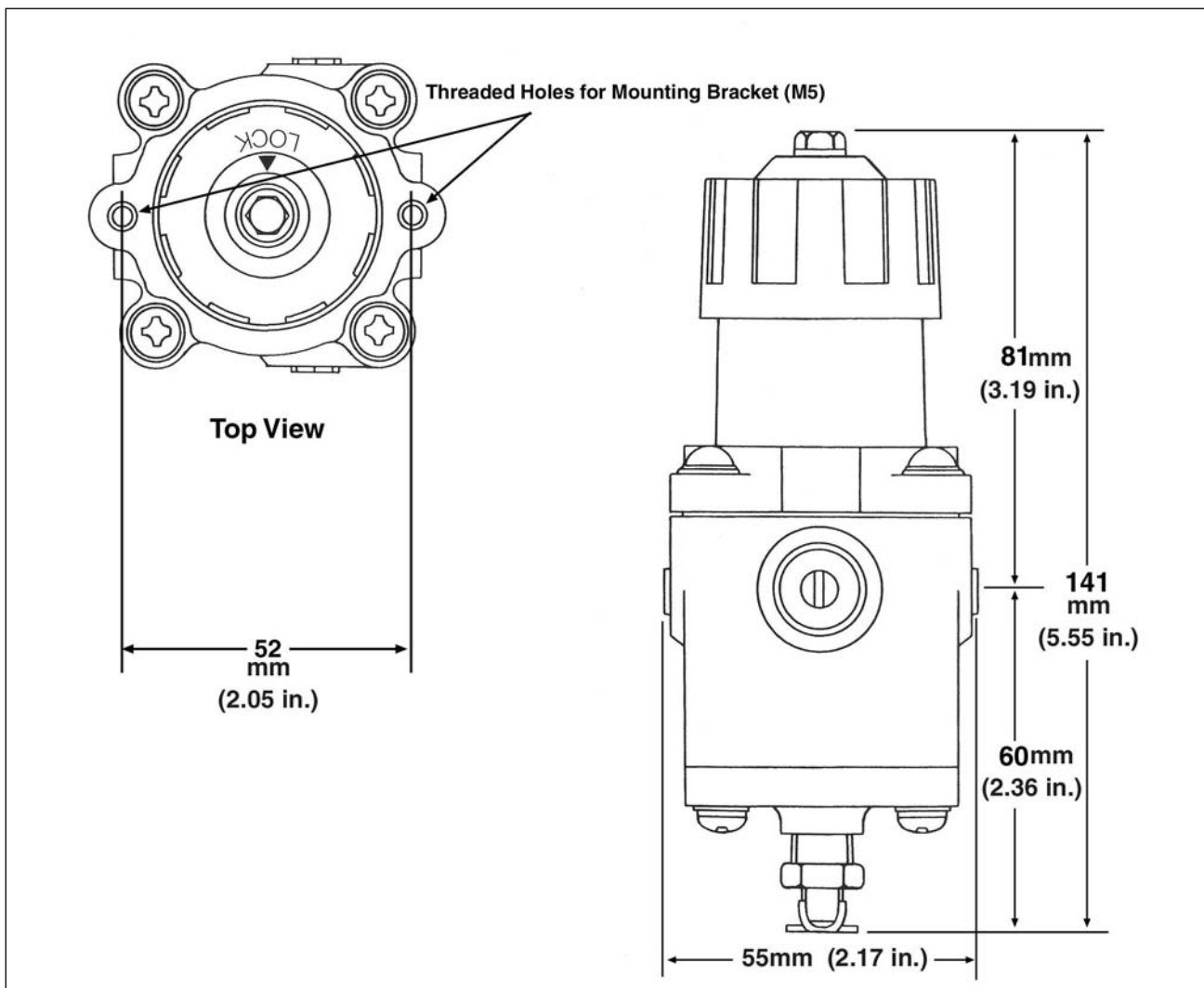
## Materials of Construction

No.	Part	Standard Material	No.	Part	Standard Material
1	Body	Aluminum Die Casting	16 *	Plug	Neoprene/416 Stainless Steel
2	Spring Casing	Aluminum Die Casting	17 *	Filter	Sintered Polyethylene
3	Bottom Cap	Aluminum Die Casting	18 *	Port Spring	Stainless Steel
4	Knob	VALOX 420	19 *	"O"-ring	NBR
5	Lock Screw	Stainless Steel	20		
6	Adjusting Screw	Stainless Steel	21	Drain Cock	Stainless Steel
7	Spacer	VALOX 420	22	Screw	Stainless Steel
8	Spring Button	Zn-Cr plated Carbon Steel	23	Pipe Plug	Chrome Molydenum Steel
9	Spring	Coated Spring Steel	24	Aspirator	VALOX 325
10	Diaphragm *	NBR	25	Nameplate	Aluminum
15	Plug Guide	VALOX 325			

**Table 2 - Materials of Construction**

\* Recommended Spare Parts

## Dimensions



**Figure 3 - Installation Dimensions**

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