

# Type 78

## High Flow Air Regulator Series

### Features

- Bellofram Rolling Diaphragm Provides Low-Friction, Long Life Service
- Available in 3/8, 1/2, 3/4, and 1 NPT and BSPT
- Output Gauge Ports are 1/4 NPT
- Options: Low-bleed, Non-relieving, Tamper Resistant Cover, Square-head Adjustment, T-handle Adjustment, Epoxy Paint, Tapped Supply Gauge Port, and Tapped Exhaust
- Mounting Brackets and Repair Kits Available
- Output Ranges are 0-2, 0-10, 0-30, 0-60, 0-125 PSIG 0-0.1, 0-0.7, 0-2.1, 0-4.1, 0-8.6 BAR
- Maximum Supply Pressure is Rated at 400 PSIG / 27.6 BAR
- Flow rates of well over 200 SCFM

### Description

The Type 78 regulator is specifically designed for applications that require large flow capability and accurate pressure control. This regulator offers low droop, high accuracy, and fine adjustment sensitivity. The use of a Bellofram rolling diaphragm provides greater sensitivity and improved accuracy. The Type 78 offers a balanced pintle, which minimizes output pressure changes caused by fluctuations in supply pressure. Careful design and quality materials throughout assure long, trouble-free operation. The rugged die-cast zinc and aluminum housings are pressure tested to assure safe operation, and are designed to withstand harsh and abusive environments. This durability is attributed to a chemical conversion coating of all cast components and a vinyl paint finish.

With a maximum supply pressure of up to 400 PSIG/27.6 BAR and output ranges up to 125 PSIG/8.6 BAR, the Type 78 can achieve flow rates of well over 200 SCFM. It can be panel or pipe mounted.



### Operation

Marsh Bellofram's Type 78 is a direct acting, diaphragm-operated regulator. Once set to a desired output pressure, this precision regulator maintains the setting permanently. The range spring, which has been compressed by the adjustment knob, causes the pintle to move downward, opening the supply valve and allowing air flow. The pressure builds up against the control diaphragm until the supply valve closes. This is the equilibrium or set pressure, which is closely maintained under changes in operating conditions in the following manner:

#### Downstream Pressure Drop

A drop in downstream pressure reduces the diaphragm pressure force, upsetting the equilibrium condition. This unbalance causes the supply valve to open until the pressure builds up once more to the equilibrium condition.

#### Downstream Pressure Increase

An increase in downstream pressure acts on the diaphragm, causing the relief seat in the diaphragm assembly to lift and open. The excess pressure is exhausted through the vent port until the output pressure is restored to the set point. The relief valve then closes.

#### Changes in Forward Flow

Under forward flow conditions, the range spring force is balanced by the diaphragm pressure force, with the supply valve open just enough to maintain the required forward flow. When high flow occurs, a specially designed aspirator helps maintain downstream pressure and compensates for droop.



**Type 78**  
Pressure Regulator Series



The Type 78 regulator is specifically designed for applications that require large flow capability and accurate pressure control.

Type 78	
Sensitivity	Less than 1" water column
Flow Capacity	See Performance Curves
Exhaust Capacity	14 SCFM at 5 PSIG / 0.3 BAR above 20 PSIG / 1.4 BAR set point (0-30 PSIG / 0-2.1 BAR range unit)
Air Consumption	less than 12 SCFH at 125 PSIG / 8.6 BAR output pressure
Effect of Supply Pressure on Regulated Pressure	less than $\pm 0.35$ PSIG / 0.02 BAR for a supply variation of 100 PSIG / 6.9 BAR
Supply Pressure Max	400 PSIG / 27.6 BAR
Weight	Approx. 5 lbs.
Materials of Construction	Body: Die Cast Zinc Bonnet: Die Cast Aluminum Alloy Knob: Phenolic Plastic, Plated Steel Diaphragms: Nitrile Elastomers with Dacron Fabric Other Internal Materials: Brass, Stainless Steel, and Zinc
Mounting Options	Pipe or Panel