Air Line Regulators

Regulators

- Pipe Sizes 1/8 thru 2 Inch
- Flows to 1000 SCFM
- Pressures to 250 PSIG

Air regulators are designed to provide quick response and accurate pressure regulation for the most demanding industrial applications.

- Miniature 14R, Series, 1/8 and 1/4 Inch
- Economy 15R Series, 1/4 and 3/8 Inch
- Compact 06R Series, 1/4 thru 1/2 Inch
- Standard 07R Series, 3/8 thru 3/4 Inch
- Hi-Flow 08R Series, 3/4 thru 1-1/2 Inch
- Hi-Flow 09R, Series, 2 Inch
- Precision 27R, Series, 1/4 Inch
- Pilot Controlled 11R, 12R, 13R Series, 1/4 thru 1-1/2 Inch

Regulator Selection

1. Determine maximum system flow requirements.
2. Determine maximum allowable pressure drop at rated flow in SCFM.
3. Refer to flow chart and select regulator by choosing the curve that offers minimum pressure drop at desired flow in SCFM.
## Air Line Regulators
### Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>14R</th>
<th>15R</th>
<th>06R</th>
<th>11R</th>
<th>07R</th>
<th>12R</th>
<th>08R</th>
<th>13R</th>
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<th>27R</th>
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<td>PS709SB**</td>
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</table>

* Panel Mount Nut Included
** Includes Poppet

For Modular Kits & Hardware see Page 84-85
Air Line Regulators
Miniature 14R Series
1/8 & 1/4 Inch–Basic 1/8” Body

Features
- Unbalanced poppet standard.
- Solid control piston with lip seal for extended life.
- Non-rising adjusting knob.
- Compact, 2.9 inch (74 mm) high by 1.65 inch (42 mm) wide.
- Easily serviced.

Application
The 14R Miniature series regulators are designed to provide minimum pressure drop over a wide operating range. They feature an unbalanced poppet for reverse, flow applications, a solid control piston and lip seal for long, service-free operation. With a non-rising adjustment knob as standard, this series offers a very economical and attractively styled miniature package.

Operation
With the adjusting knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the adjusting knob clockwise applies a load to control spring (C). This load causes the piston (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the seat. Pressure in the downstream line is sensed below the control piston (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and control piston (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under piston (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the control piston (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the control piston (B) to move upward against control spring (C), open vent hole (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the relieving type regulator only.)

Specifications
Adjusting Nut: Brass
Adjusting Stem & Spring: Steel
Body: Zinc
Bonnet, Seat, Piston & Valve Poppet: Plastic
Gauge Ports: (Can Be Used For Full Flow) 1/8 Inch

Pressure & Temperature Rating:
- 0 to 250 PSIG (0 to 17 bar)
- 32°F to + 125°F (0°C to 52°C)

Port Threads: 1/8 & 1/4 Inch
Seals: Nitrile

Secondary Pressure Ranges:
- Standard Pressure 2-125 PSIG (.1 to 8.6 bar)
- Medium Pressure 1-30 PSIG (.07 to 2.0 bar)
- Medium Pressure 1-60 PSIG (.07 to 4.0 bar)
- Low Pressure 1-15 PSIG (.07 to 1.0 bar)

⚠️ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.
Air Line Regulators

Performance Characteristics

RELIEF AND FLOW CHARACTERISTICS
14R013FC

FLOW - SCFM
0 5 10 15 20 25 30 35 40

5 10 15 20 25 30 35 40

1/8 INCH PORTS
PRIMARY PRESSURE
100 PSIG (6.9 bar)

RELIEF AND FLOW CHARACTERISTICS
14R113FC

FLOW - SCFM
0 5 10 15 20 25 30 35 40

5 10 15 20 25 30 35 40

1/4 INCH PORTS
PRIMARY PRESSURE
100 PSIG (6.9 bar)

Ordering Information

14R 1 13 F * SB

Port Size Pressure Range Adjustment Designator

0–1/8 Inch

Without Gauge
10. 30 PSIG
11. 60 PSIG
12. 15 PSIG
13. 125 PSIG

With Gauge
15. 30 PSIG
16. 60 PSIG
17. 15 PSIG
18. 125 PSIG

Engineering Change
Designator

Will be entered at factory.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14R</td>
<td>1/8&quot;, 1/4&quot;</td>
<td>1.65</td>
<td>2.50</td>
<td>.38</td>
<td>1.56</td>
<td>.3 lb.</td>
</tr>
<tr>
<td></td>
<td>42 mm</td>
<td>63.5 mm</td>
<td>10 mm</td>
<td>40 mm</td>
<td>.14 kg</td>
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</table>

NOTE: 1.20 Dia. (31.0 mm) hole required for panel mounting.
Prep-Air II
Air Preparation Units

Air Line Regulators
Economy 15R Series
1/4 & 3/8 Inch–Basic 1/4" Body

Features
- Unique balanced poppet valve minimizes secondary pressure fluctuations.
- Solid control piston with resilient seat for service-free operation.
- Non-rising “locking” adjusting knob.
- Compact, 3.3 inch (84 mm) high by 2.12 inch (54 mm) wide.
- Easily serviced.

Application
The 15R Economy series regulators are designed to provide minimum pressure drop over a wide operating range. They feature a balanced poppet valve and solid control piston for long, service-free operation. With a non-rising adjustment knob as standard, this series offers a very economical and attractively styled package.

Operation
With the adjusting knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the adjusting knob clockwise applies a load to control spring (C). This load causes the piston (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the seat. Pressure in the downstream line is sensed below the control piston (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and control piston (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under piston (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the control piston (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the control piston (B) to move upward against control spring (C), open vent hole (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the relieving type regulator only.)

Port Thread: 1/4, 3/8 Inch
Pressures & Temperature Rating:
- 0 to 250 PSIG (0 to 17 bar)
- 32°F to +125°F (0°C to 52°C)

Secondary Pressure Ranges:
- Standard Pressure 2-125 PSIG (.1 to 8.6 bar)
- Medium Pressure 1-30 PSIG (.07 to 2.0 bar)
- Medium Pressure 1-60 PSIG (.07 to 4.0 bar)
- Low Pressure 1-15 PSIG (.07 to 1.0 bar)

Seals: Nitrile

Specifications
Adjusting Nut: Brass
Adjusting Stem & Spring: Steel
Body: Zinc
Bonnet, Seat, Piston & Valve Poppet: Plastic
Gauge Ports: (Can Be Used For Full Flow) 1/4 Inch

WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.
Performance Characteristics

Ordering Information

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Pressure Range</th>
<th>Adjustment</th>
<th>Engineering Change Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–1/4 Inch</td>
<td>Without Gauge</td>
<td>E. Non-Rising Knob,</td>
<td>Will be entered at factory.</td>
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<tr>
<td>2–3/8 Inch</td>
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<td></td>
<td>10. 30 PSIG</td>
<td>Y. Non-Rising Knob,</td>
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<td></td>
<td>11. 60 PSIG</td>
<td>Balanced Poppet, Non-Relieving</td>
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<td>12. 15 PSIG</td>
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<td></td>
<td>17. 15 PSIG</td>
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<tr>
<td></td>
<td>18. 125 PSIG</td>
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CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15R</td>
<td>1/4&quot;, 3/8&quot;</td>
<td>2.12</td>
<td>2.60</td>
<td>.70</td>
<td>2.00</td>
<td>.5 lb.</td>
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<tr>
<td></td>
<td>54 mm</td>
<td>66 mm</td>
<td>18 mm</td>
<td>51 mm</td>
<td>.23 kg</td>
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NOTE: 1.20 Dia. (31.0 mm) hole required for panel mounting.
Air Line Regulators  
Compact 06R Series  
1/4, 3/8 & 1/2 Inch–Basic 3/8" Body

Features
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Large reverse flow capability.
- Rolling diaphragm for extended life.
- Two high flow 1/4" gauge ports can be used as additional outlets.
- Easily serviced.
- Removable knob for panel mounting.

Application
The 06R series regulators are designed to provide quick response, and accurate pressure regulation for the most demanding industrial applications. The use of rolling diaphragm design results in significantly longer life, and therefore helps to eliminate maintenance and costly downtime. Rolling diaphragms and balanced poppets are used to provide accurate pressure regulation, and the built in capability of reverse flow without the use of check valves.

![Diagram of Air Line Regulator]

**Features**
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Large reverse flow capability.
- Rolling diaphragm for extended life.
- Two high flow 1/4" gauge ports can be used as additional outlets.
- Easily serviced.
- Removable knob for panel mounting.

**Operation**
With the knob (D) turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (C) is closed. Turning the knob clockwise applies a load to control spring (A). This load causes the diaphragm (B) and the valve poppet assembly (C) to move downward allowing flow across the seat area (H) created between the poppet assembly and the body. Pressure in the downstream line is sensed below the diaphragm (B) and offsets the load of spring (A). As downstream pressure rises, poppet assembly (C) and diaphragm (B) move upward until the area (H) is closed and the load of the spring (A) and pressure under diaphragm (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the diaphragm (B). The load of control spring (A) now causes the poppet assembly to move downward opening seat area (H) and allowing air to flow downstream. The flow of downstream air is metered by the amount of opening (H).

During low flow requirements, the amount of opening at the seal (H) is small, while at high flow it is large. The downstream pressure signal, which regulates the amount of opening, requires an adjustment over this range, in order to attempt a constant output. This adjustment is the orifice (G), which is sized and located in such a manner as to provide a compensation to the downstream pressure signal transmitted to the diaphragm. This effect is called aspiration and its effect is to maintain downstream pressure nearly constant over a wide range of flow demands.

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the diaphragm (B) to move upward against control spring (A), open vent hole (F) and vent the excess pressure to atmosphere through the hole in the bonnet (E). (This occurs in the standard relieving type regulator only.)

**Specifications**
- **Adjusting Stem:** Steel
- **Body:** Zinc
- **Bonnet, Piston Stem, Valve Poppet & Cap:** Plastic
- **Collar:** Plastic
- **Diaphragm:** Nitrile
- **Gauge Ports:** Two Ports – 1/4 Inch (Can be used as additional High Flow 1/4 Outlet Ports)
- **Knob:** Plastic
- **Port Threads:** 1/4, 3/8 & 1/2 Inch
- **Primary Pressure Rating:** Maximum Primary Pressure 250 PSIG (17 bar)
- **Seals:** Nitrile
- **Secondary Pressure Ranges:**
  - Standard Pressure 2-125 PSIG (.14 - 8.6 bar)
  - Low Pressure 1-60 PSIG (.07 - 4 bar)
  - High Pressure 5-250 PSIG (.34 - 17.3 bar)
- **Springs:**
  - Poppet: Stainless
  - Control: Steel
- **Temperature Rating:** 32°F to 175°F (0°C to 80°C)
Air Line Regulators

Performance Characteristics

Ordering Information

06R 1 13 A

Port Size

Pressure Range

Without Gauge

1. 60 PSIG

11. 125 PSIG

13. 250 PSIG

24. 30 PSIG Non-Adjustable

(Use with V option only)

With Gauge

16. 60 PSIG

18. 125 PSIG

21. 250 PSIG

Adjustment & Relieving

A. Non-Rising Knob/Relieving

L. Non-Rising Knob/Non-Relieving

V. Non-Adjustable, Relieving

Engineering Change Designator

Will be entered at factory.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>06R</td>
<td>1/4&quot;, 3/8&quot;, 1/2&quot;</td>
<td>2.81</td>
<td>4.69</td>
<td>1.39</td>
<td>2.74</td>
<td>1.6 lb.</td>
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<tr>
<td></td>
<td>71 mm 119 mm 35 mm 70 mm</td>
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<td>0.7 kg</td>
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NOTE:
2.00 Dia. (51 mm) minimum hole required for panel mounting. Maximum panel thickness 1/4".
Air Line Regulators
Standard 07R Series
3/8, 1/2 & 3/4 Inch–Basic 1/2" Body

Features
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Large reverse flow capability.
- Rolling diaphragm for extended life.
- Two high flow 1/4" gauge ports can be used as additional outlets.
- Easily serviced.
- Removable knob for panel mounting.

Application
The 07R series regulators are designed to provide quick response, and accurate pressure regulation for the most demanding industrial applications. The use of rolling diaphragm design results in significantly longer life, and therefore helps to eliminate maintenance and costly downtime. Rolling diaphragms and balanced poppets are used to provide accurate pressure regulation, and the built in capability of reverse flow without the use of check valves.

Operation
With the knob (D) turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (C) is closed. Turning the knob clockwise applies a load to control spring (A). This load causes the diaphragm (B) and the valve poppet assembly (C) to move downward allowing flow across the seat area (H) created between the poppet assembly and the body. Pressure in the downstream line is sensed below the diaphragm (B) and offsets the load of spring (A). As downstream pressure rises, poppet assembly (C) and diaphragm (B) move upward until the area (H) is closed and the load of the spring (A) and pressure under diaphragm (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the diaphragm (B). The load of control spring (A) now causes the poppet assembly to move downward opening seat area (H) and allowing air to flow downstream. The flow of downstream air is metered by the amount of opening (H).

During low flow requirements, the amount of opening at the seal (H) is small, while at high flow it is large. The downstream pressure signal, which regulates the amount of opening, requires an adjustment over this range, in order to attempt a constant output. This adjustment is the orifice (G), which is sized and located in such a manner as to provide a compensation to the downstream pressure signal transmitted to the diaphragm. This effect is called aspiration and its effect is to maintain downstream pressure nearly constant over a wide range of flow demands.

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the diaphragm (B) to move upward against control spring (A), open vent hole (F) and vent the excess pressure to atmosphere through the hole in the bonnet (E). (This occurs in the standard relieving type regulator only.)

Specifications
Adjusting Stem: Steel
Body: Zinc
Bonnet, Piston Stem, Valve Poppet & Cap: Plastic
Collar: Plastic
Diaphragm: Nitrile

Gauge Ports: Two Ports – 1/4 Inch (Can be used as additional High Flow 1/4 Outlet Ports)

Knob: Plastic
Port Threads: 3/8, 1/2 & 3/4 Inch
Primary Pressure Rating: Maximum Primary Pressure 250 PSIG (17 bar)

Seals: Nitrile
Secondary Pressure Ranges:
Standard Pressure 2-125 PSIG (.14 - 8.6 bar)
Low Pressure 1-60 PSIG (.07 - 4 bar)
High Pressure 5-250 PSIG (.34 - 17.3 bar)

Springs:
Poppet: Stainless
Control: Steel
Temperature Rating: 32°F to 175°F (0°C to 80°C)

WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.
Air Line Regulators

Performance Characteristics

Ordering Information

Port Size | Pressure Range
---|---
With Gauge: 16. 60 PSIG 18. 125 PSIG 21. 250 PSIG
3–1/2 Inch | Non-Rising Knob/ Will be entered at factory.
4–3/4 Inch | Non-Rising Knob/ Non-Relieving
| Non-Adjustable, Relieving

CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>07R</td>
<td>3/8&quot;, 1/2&quot;, 3/4&quot;</td>
<td>3.24</td>
<td>4.79</td>
<td>1.61</td>
<td>2.74</td>
<td>2.5 lb.</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>82</td>
<td>122</td>
<td>41</td>
<td>70</td>
<td>1.1 kg</td>
</tr>
</tbody>
</table>

NOTE: 2.00 Dia. (51 mm) minimum hole required for panel mounting. Maximum panel thickness 1/4".
Prep-Air II
Air Preparation Units

Air Line Regulators
Hi-Flow 08R Series
3/4, 1, 1-1/4 & 1-1/2 Inch–Basic 1" Body

Features

• Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
• Large reverse flow capability.
• Solid control piston for extended life.
• Two full flow 1/4" gauge ports can be used as additional outlets.
• Easily serviced.

Application

The 08R Hi-Flow series regulators are designed to provide quick response, and accurate pressure regulation for the most demanding Hi-Flow industrial applications. The unique solid piston was designed for long, service-free operation and will not rupture or tear under high cycle or other demanding applications.

⚠️ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.

Operation

With the T-handle turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the T-handle clockwise applies a load to control spring (C).

This load causes the piston (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the body. Pressure in the downstream line is sensed below the control piston (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and control piston (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under piston (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the control piston (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) and allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

During low flow requirements, the amount of opening at the seat (E) is small, while at high flows it is large. The downstream pressure signal, which regulates the amount of opening, requires an adjustment over this range, in order to attempt a constant output. This adjustment is the orifice (G), which is sized and located in such a manner as to provide a compensation to the downstream pressure signal transmitted to the piston. This effect is called aspiration and its effect is to maintain downstream pressure nearly constant over a wide range of flow demands.

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the control piston (B) to move upward against control spring (C), open vent hole (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the standard relieving type regulator only.)

Specifications

<table>
<thead>
<tr>
<th>Adjusting Stem &amp; Springs:</th>
<th>Piston, Cap:</th>
<th>Secondary Pressure Ranges:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>Plastic</td>
<td>Standard Pressure 2-125 PSIG (.14 to 8.6 bar)</td>
</tr>
<tr>
<td>Body:</td>
<td>Port Threads:</td>
<td>Low Pressure 1-60 PSIG (.07 to 4 bar)</td>
</tr>
<tr>
<td>Aluminum</td>
<td>3/4, 1, 1-1/4, 1-1/2 Inch</td>
<td>High Pressure 5-250 PSIG (.34 to 17.3 bar)</td>
</tr>
<tr>
<td>Bonnet, Piston Stem, Valve</td>
<td>Pressure &amp; Temperature Rating:</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>0 to 250 PSIG (0 to 17 bar)</td>
<td></td>
</tr>
<tr>
<td>Poppet &amp; Cap:</td>
<td>32°F to +175°F (0°C to 80°C)</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Seals:</td>
<td></td>
</tr>
<tr>
<td>Gauge Ports:</td>
<td>Nitrile</td>
<td></td>
</tr>
<tr>
<td>Two Ports – 1/4 Inch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Can be used as additional Full Flow 1/4 Outlet Ports)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Performance Characteristics

Ordering Information

Port Size
- 4–3/4 Inch
- 5–1 Inch
- 6–1–1/4 Inch
- 7–1-1/2 Inch

Pressure Range
- Without Gauge
  - 11. 60 PSIG
  - 13. 125 PSIG
  - 15. 250 PSIG
- With Gauge
  - 16. 60 PSIG
  - 18. 125 PSIG
  - 21. 250 PSIG

Adjustment
- A. T-Handle, Relieving
- L. T-Handle, Non-Relieving

CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of T-handle adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the T-handle is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>08R</td>
<td>3/4&quot;, 1&quot;</td>
<td>5.00</td>
<td>7.81</td>
<td>2.13</td>
<td>2.96</td>
<td>3.9 lb.</td>
</tr>
<tr>
<td></td>
<td>1-1/4&quot;, 1-1/2&quot;</td>
<td>127 mm</td>
<td>198 mm</td>
<td>54 mm</td>
<td>75 mm</td>
<td>1.8 kg</td>
</tr>
</tbody>
</table>
Air Line Regulators
Hi-Flow 09R Series
2 Inch–Basic 2" Body

Features
- Piston design for reduced downtime.
- High flow.
- Balanced poppet for quick and accurate regulation.
- Two full flow 1/4" gauge ports which can be used as additional outlets.
- Self relieving piston standard.

Application
The 09R Hi-Flow series regulators are designed to provide quick response, and accurate pressure regulation for the most demanding Hi-Flow industrial applications. The unique solid piston was designed for long, service-free operation and will not rupture or tear under high cycle or other demanding applications.

⚠️ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.

Operation
With the knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the knob clockwise applies a load to control spring (C).

This load causes the piston (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the body. Pressure in the downstream line is sensed below the control piston (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and control piston (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under piston (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the control piston (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) and allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

During low flow requirements, the amount of opening at the seat (E) is small, while at high flows it is large. The downstream pressure signal, which regulates the amount of opening, requires an adjustment over this range, in order to attempt a constant output. This adjustment is the orifice (G), which is sized and located in such a manner as to provide a compensation to the downstream pressure signal transmitted to the piston. This effect is called aspiration and its effect is to maintain downstream pressure nearly constant over a wide range of flow demands.

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the control piston (B) to move upward against control spring (C), open vent hole (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the standard relieving type regulator only.)

Specifications

<table>
<thead>
<tr>
<th>Adjusting Stem &amp; Springs:</th>
<th>Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body:</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Bonnet, Piston Stem, Valve Poppet &amp; Cap:</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Gauge Ports: Two Ports – 1/4 Inch (Can be used as additional Full Flow 1/4 Outlet Ports)</td>
<td></td>
</tr>
<tr>
<td>Piston, Cap: Plastic</td>
<td></td>
</tr>
<tr>
<td>Port Threads: 2 Inch</td>
<td></td>
</tr>
<tr>
<td>Pressure &amp; Temperature Rating:</td>
<td>0 to 250 PSIG (0 to 17 bar)</td>
</tr>
<tr>
<td>Seals: Nitrile</td>
<td></td>
</tr>
<tr>
<td>Secondary Pressure Ranges:</td>
<td>10-125 PSIG (.7 to 8.6 bar)</td>
</tr>
</tbody>
</table>
Air Line Regulators

Performance Characteristics

![Graph showing relief and flow characteristics](image)

Ordering Information

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Pressure Range</th>
<th>Adjustment</th>
<th>Engineering Change Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>8–2 Inch</td>
<td>13. 125 PSIG</td>
<td>B. Knob, Relieving M. Knob, Non-Relieving</td>
<td>Will be entered at factory.</td>
</tr>
</tbody>
</table>

CAUTION:

REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>09R</td>
<td>2&quot;</td>
<td>5.30</td>
<td>9.10</td>
<td>2.80</td>
<td>3.60</td>
<td>10.82 lb.</td>
</tr>
<tr>
<td></td>
<td>135 mm</td>
<td>231 mm</td>
<td>71 mm</td>
<td>91 mm</td>
<td>4.9 kg</td>
<td></td>
</tr>
</tbody>
</table>
Pilot Controlled Regulators
11R Series, 1/4, 3/8 & 1/2 Inch–Basic 3/8” Body
12R Series, 3/8, 1/2 & 3/4 Inch–Basic 1/2” Body
13R Series, 3/4, 1, 1-1/4 & 1-1/2 Inch–Basic 1” Body

Features
- Balanced poppet provides quick response and accurate pressure regulation.
- Pilot controlled regulators can be mounted “out of reach” with pilot regulator installed in a convenient location.
- Solid control piston for extended life.
- Two full flow 1/4” gauge ports can be used as additional outlets.
- Pilot port 1/4 Inch.

Application
The 11, 12, 13R series pilot operated regulators are designed to provide quick response and accurate pressure regulation from any remote installation in your compressed air system. Simply install a pilot regulator in a convenient location for your pilot air supply and operate with the built in dependability of a solid piston and balanced poppet design for long, service-free operation.

⚠️ WARNING
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.
Product rupture can cause serious injury.

Operation
With pressure supplied to the regulator inlet port and no pilot signal, the valve poppet assembly (B) is closed. Pressurizing the pilot port applies a load to control piston (A). This load causes the piston (A) and the valve poppet assembly (B) to move downward allowing flow across the seat area (F) created between the poppet assembly and the body. Pressure in the downstream line is sensed below the control piston (A) and offsets the load of piston (A). As downstream pressure rises, poppet assembly (B) and control piston (A) move upward until the area (F) is closed and the load of the piston (A) and pressure under piston (A) are in balance. A reduced outlet pressure has now been obtained. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the control piston (A). The load of control piston (A) now causes the poppet assembly to move downward opening seat area (F) and allowing air to flow downstream. The flow of downstream air is metered by the amount of opening (F).

During low flow requirements, the amount of opening at the seat (F) is small, while at high flows it is large. The downstream pressure signal, which regulates the amount of opening, requires an adjustment over this range, in order to attempt a constant output. This adjustment is the orifice (G), which is sized and located in such a manner as to provide a compensation to the downstream pressure signal transmitted to the piston. This effect is called aspiration and its effect is to maintain downstream pressure nearly constant over a wide range of flow demands.

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the control piston (A) to move upward against opening vent hole (D) and vent the excess pressure to atmosphere through the hole in the bonnet (C). (This occurs in the relieving type regulator only.)

Specifications

<table>
<thead>
<tr>
<th>Body &amp; Pilot Cap:</th>
<th>Zinc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge Ports:</td>
<td>Two Ports – 1/4 Inch (Can be used as additional Full Flow 1/4 Outlet Ports)</td>
</tr>
<tr>
<td>Master Regulator:</td>
<td>14R113F</td>
</tr>
<tr>
<td>Piston, Valve Poppet* &amp; Collar:</td>
<td>Plastic</td>
</tr>
</tbody>
</table>
| Port Threads:     | 11R – 1/4, 3/8 Inch  
12R – 1/2, 3/4 Inch  
13R – 3/4, 1, 1-1/4, 1-1/2 Inch |
| Pressure & Temperature Rating: | 0 to 250 PSIG (0 to 17 bar)  
32°F to +175°F (0°C to 80°C) |
| Secondary Pressure Ranges: | Will Follow “Pilot” Regular Pressure Setting |
| Springs:          | Steel |
| Seals:            | Nitrile |

–Aluminum Poppet in 13R Series
Pilot Controlled Regulators

Prep-Air II
Air Preparation Units

Performance Characteristics

Ordering Information

11R 2 15 P * SB

Port Size
11R
1–1/4 Inch
2–3/8 Inch
3–1/2 Inch
12R
2–3/8 Inch
3–1/2 Inch
4–3/4 Inch
13R
4–3/4 Inch
5–1 Inch
6–1–1/4 Inch
7–1–1/2 Inch

Options
Without Gauge
14. Non-Relieving Piston
15. Relieving Piston
With Gauge
19. Non-Relieving Piston
21. Relieving Piston

Engineering Change Designator
Will be entered at factory.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11R</td>
<td>1/4&quot;, 3/8&quot;, 1/2&quot;</td>
<td>2.81</td>
<td>3.05</td>
<td>1.39</td>
<td>2.74</td>
<td>1.3 lb.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>71 mm</td>
<td>77 mm</td>
<td>35 mm</td>
<td>70 mm</td>
<td>.58 kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>82 mm</td>
<td>80 mm</td>
<td>41 mm</td>
<td>70 mm</td>
<td>.91 kg</td>
</tr>
<tr>
<td>13R</td>
<td>3/4&quot;, 1&quot;</td>
<td>5.00</td>
<td>3.27</td>
<td>2.13</td>
<td>2.90</td>
<td>3.2 lb.</td>
</tr>
<tr>
<td></td>
<td>1-1/4&quot;, 1-1/2&quot;</td>
<td>127 mm</td>
<td>83 mm</td>
<td>54 mm</td>
<td>74 mm</td>
<td>1.5 kg</td>
</tr>
</tbody>
</table>
Air Line Regulators
Standard 27R Series
1/4 Inch–Basic 1/4” Body

Features
- Fine adjustment sensitivity.
- Good repeatability and minimal pressure drop.
- High flow capacity.
- Two full flow 1/4” gauge ports can be used as additional outlets.
- Rubberized, soft seat valve stem for long life.

Application
The 27R series precision provide quality performance for a wide range of pneumatic systems and equipment. Critical applications in which they are especially effective include:
- Air Gauging/Weighing
- Air Chucks
- Tensioning Controls
- Test Panels/Stations
- Air Spraying Guns
- Air Cylinders and Actuators
- Dancers and Calender Roll Loading
- Medical Equipment
- Electrical Microprocessor Processing
- Positioner Signal
- Valve Operators

Operation
Set the desired secondary pressure by turning the adjustment knob (A) clockwise. This action increases the regulating spring (B) force against the top of the diaphragm disc (C). When the spring force above exceeds the air pressure beneath the diaphragm (D), it is transmitted via the valve stem (E) and opens the valve. Air flow through the regulator now occurs. A specially designed aspirator tube (F) constantly transmits the secondary pressure to the underside of the diaphragm (D) so that, during flow conditions, any pressure drop can be compensated for. When flow is no longer required the outlet pressure increases slightly, allowing the diaphragm to rise, and the valve to close and pressure to be maintained.

On self-relieving models, if the outlet pressure beneath the diaphragm (D) should increase beyond the spring force, the diaphragm (D) will rise and the relief seal (G) between the diaphragm (D) and the valve stem (E) will be broken. The excess outlet pressure is then vented through the diaphragm orifice into the bonnet and subsequently to the atmosphere through an orifice (H) in the bonnet.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleed Rate:</td>
<td>2.0 SCFH</td>
</tr>
<tr>
<td>Body/Bonnet:</td>
<td>Zinc alloy, die cast, chromated</td>
</tr>
<tr>
<td>Diaphragm Seals:</td>
<td>Nitrile standard, Fluorocarbon optional</td>
</tr>
<tr>
<td>Effect of Supply Pressure Variation:</td>
<td>0.15 PSIG (0.01 bar) for 25 PSIG (1.7 bar) change in ( P_1 )</td>
</tr>
<tr>
<td>Exhaust Capacity:</td>
<td>0.25 SCFM (0.12 dm³/s) @ 5 PSIG (0.34 bar) increase in ( P_2 )</td>
</tr>
<tr>
<td>Flow Capacity:</td>
<td>27 SCFM (12.7 dm³/s) @ 100 PSIG (7.0 bar) ( P_1 ) and 20 PSIG (1.4 bar) ( P_2 )</td>
</tr>
<tr>
<td>Gauge Ports:</td>
<td>1/4 Inch</td>
</tr>
<tr>
<td>Port Threads:</td>
<td>1/4 Inch</td>
</tr>
<tr>
<td>Pressure &amp; Temperature Rating:</td>
<td>0 to 250 PSIG (0 to 17 bar) 32°F to +175°F (0.0°C to 80°C)</td>
</tr>
<tr>
<td>Relief Flow:</td>
<td>1.0 SCFM</td>
</tr>
<tr>
<td>Repeatability:</td>
<td>±0.02 PSIG (±0.014 bar)</td>
</tr>
<tr>
<td>Response:</td>
<td>250 ms – The valve will open to full flow and fill a volume of 1250 cm³</td>
</tr>
<tr>
<td>Sensitivity:</td>
<td>Less than 1&quot; water (0.036 PSIG: 0.002 bar)</td>
</tr>
<tr>
<td>Springs:</td>
<td>Regulating spring of zinc coated carbon steel: valve spring of stainless steel</td>
</tr>
<tr>
<td>Valve Seat:</td>
<td>Nitrile standard, Fluorocarbon optional</td>
</tr>
<tr>
<td>Valve Stem:</td>
<td>Brass</td>
</tr>
</tbody>
</table>
Air Line Regulators

Prep-Air II
Air Preparation Units

Performance Characteristics

Ordering Information

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Pressure Range</th>
<th>Adjustment</th>
<th>Engineering Change Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–1/4 Inch</td>
<td>10. 30 PSIG</td>
<td>B. Knob, Relieving</td>
<td>Will be entered at factory.</td>
</tr>
<tr>
<td></td>
<td>12. 15 PSIG</td>
<td>B. Knob, Relieving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. 125 PSIG</td>
<td>B. Knob, Relieving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14. 50 PSIG</td>
<td>B. Knob, Relieving</td>
<td></td>
</tr>
</tbody>
</table>

CAUTION:
REGULATOR PRESSURE ADJUSTMENT – The working range of knob adjustments is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Dimensions:

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size Inch</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>27R</td>
<td>1/4&quot;</td>
<td>2.69</td>
<td>4.81</td>
<td>1.25</td>
<td>2.13</td>
<td>1.7 lb.</td>
</tr>
<tr>
<td></td>
<td>68 mm</td>
<td>122 mm</td>
<td>32 mm</td>
<td>54 mm</td>
<td>.8 kg</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Max. panel thickness .50”. 1.28 Dia. (33 mm) minimum hole required for panel mounting.