

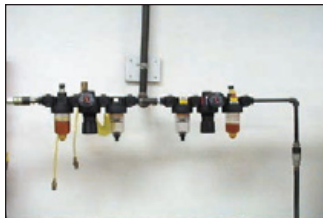
Overview

FRLs are filter, regulator, lubricator systems that clean and regulate the air flow in pneumatic air systems.

Why Use FRLs?

Excessive unregulated, unfiltered, unlubricated air pressure can increase equipment wear, resulting in higher maintenance costs and shorter tool life. FRLs are necessary to ensure that every tool is receiving a clean, lubricated supply of compressed air at the ideal pressure for optimum performance.

FRL Selection

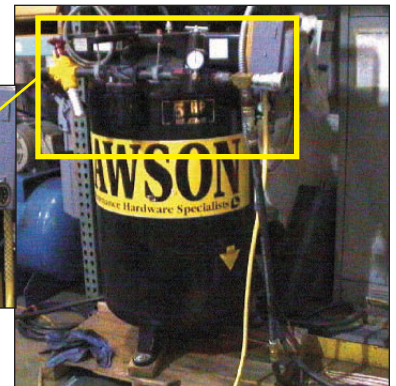
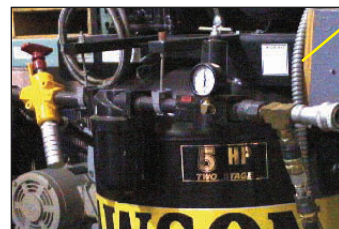
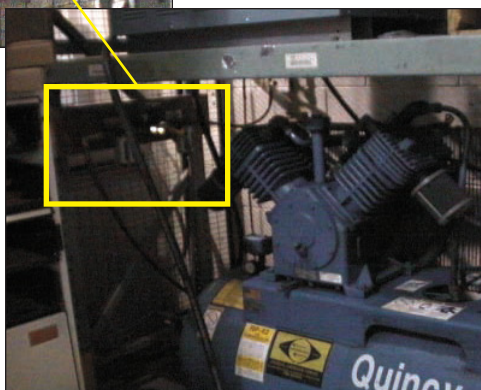


When selecting FRLs, it is important to know the air consumption of the tools that will be used. Please refer to the Pneumatic Tool Air Usage Quick Tip to help you determine how many cubic feet per minute (CFM) your system will have to supply.

Another consideration when selecting FRLs is pressure drop. Pressure drop is the drop in air pressure from the beginning of a pipe to its end. After passing through all of the components, the pressure that entered the FRL will be significantly reduced by the time it reaches the tool.

It is important to distinguish between PSI and CFMs. System pressure (PSI) creates tool torque, while system flow (CFM) creates tool speed.

Choosing FRL components based on their maximum CFM ratings listed in the Lawson catalog, is a quick and easy way to choose a system. If a more precise system is required, pressure drop must be factored in. Refer to the following pages for flow charts on each component to determine the pressure drop.



Filters



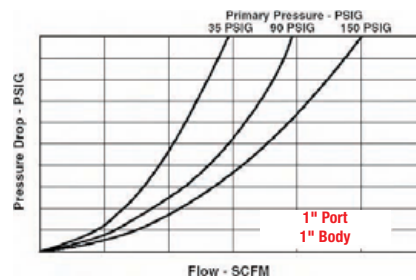
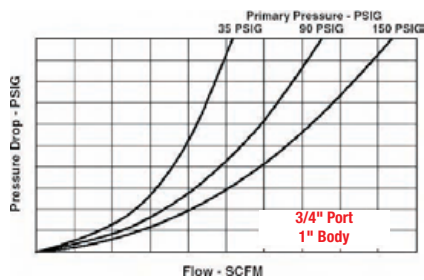
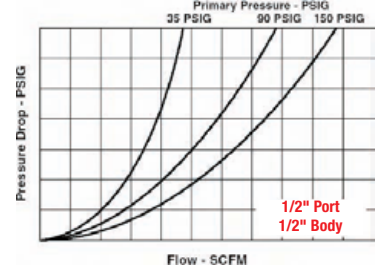
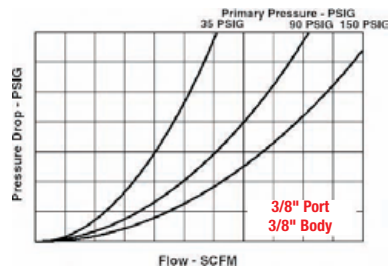
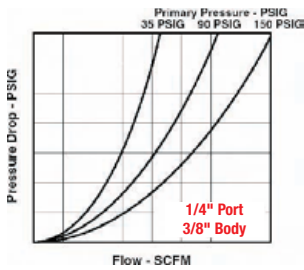
Air filters are designed to remove airborne solid contaminants, pipe scale, rust, pipe dope, etc., which may plug small orifices or cause excessive wear and premature failure of pneumatic components.

**Filter Selection
 Flow Charts**

After determining the CFM requirements of the system, refer to the flow charts below and select filter pipe size by choosing the curve that offers minimum pressure drop at desired flow in CFM.

How To Read Flow Charts

To read the flow charts, first determine the inlet pressure that will be used. Each graph contains three pressure curves. Find the appropriate flow you need on the horizontal plane. Find the intersection of the pressure curve and the CFM flow. Follow a horizontal path to find the pressure loss. If the pressure drop is out of the 2 to 5 PSIG range, select a different port size.



Coalescing Filters

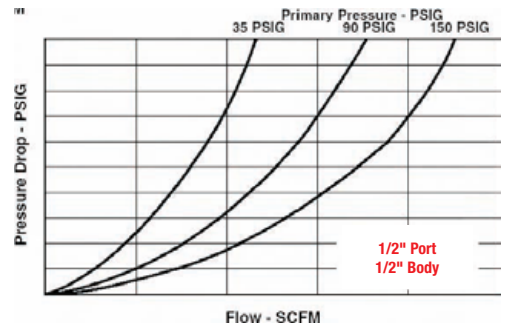
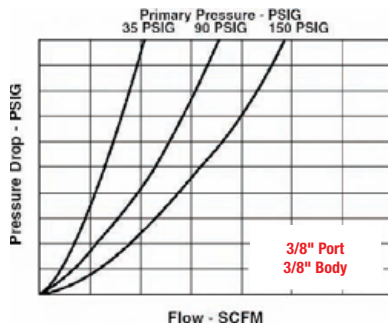
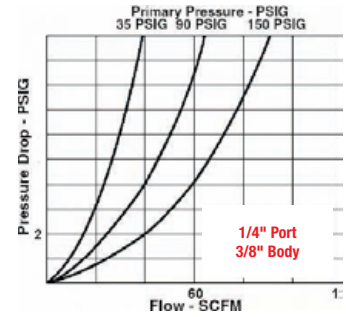
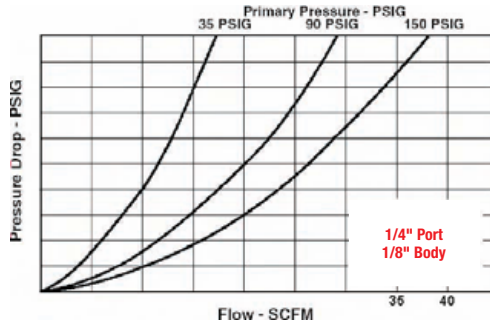


Coalescing filters are designed to remove aerosol particulates that are too small for a standard filter to capture. These filters provide oil-free air for applications such as spray painting, air gauging, pneumatic instrumentation, printing and packaging. Coalescing filters are designed to be used in conjunction with standard filters and are not designed to replace them.

Coalescing Filter Flow Charts

How To Read Flow Charts

To read the flow charts, first determine the inlet pressure that will be used. Each graph contains three pressure curves. Find the appropriate flow on the horizontal plane. Find the intersection of the pressure curve and the CFM flow. Follow a horizontal path to find the pressure loss. If the pressure drop is out of the 2 to 5 PSIG range, select a different port size.



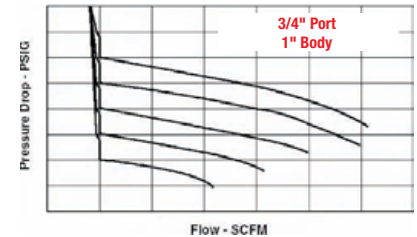
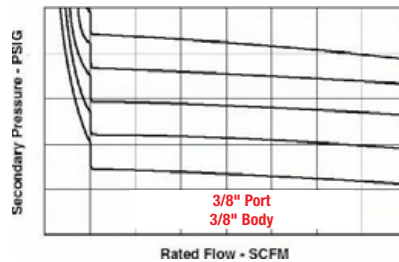
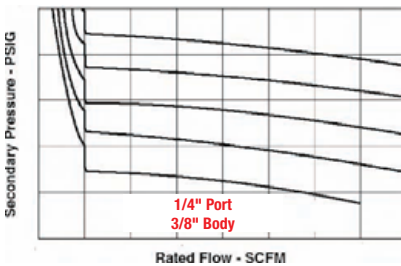
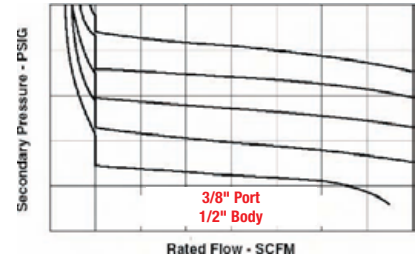
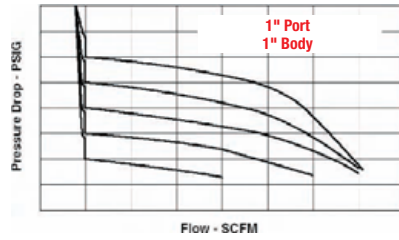
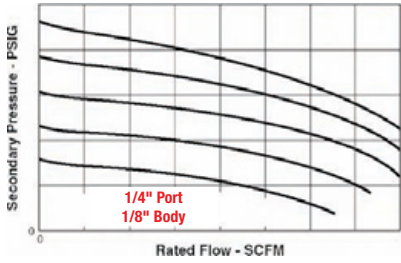
Regulators



Regulators govern line pressure changes and deliver a constant outlet pressure to the downstream air components. Lawson offers a rolling diaphragm style regulator, which offers a long service life and excellent accuracy.

Regulator Flow Charts

First determine the output pressure you need. Find the appropriate curve on the chart. Follow the curve until it intersects with the desired flow. The drop in the curve represents the pressure drop. In order to reach the desired pressure, you must add the pressure drop.



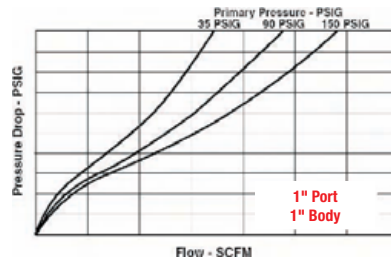
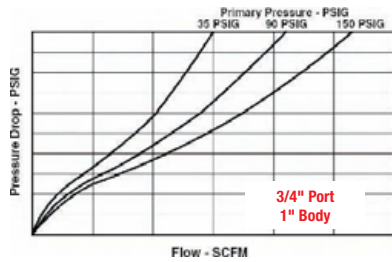
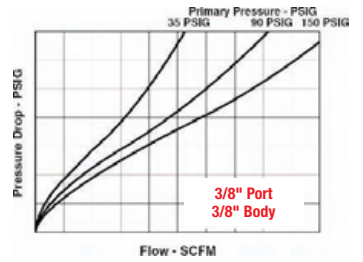
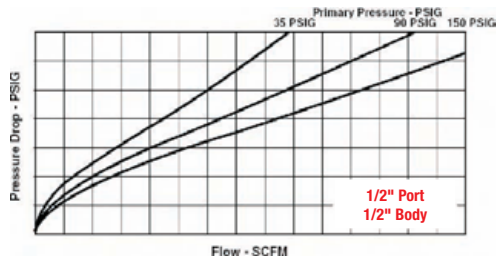
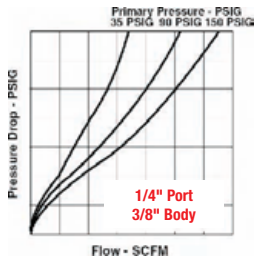
Lubricators



Many pneumatic system components and almost all pneumatic tools perform better when lubricated with oil. Lubricators inject an oil mist into the airstream to lubricate downstream air equipment for reduced friction and wear.

Lubricator Flow Charts

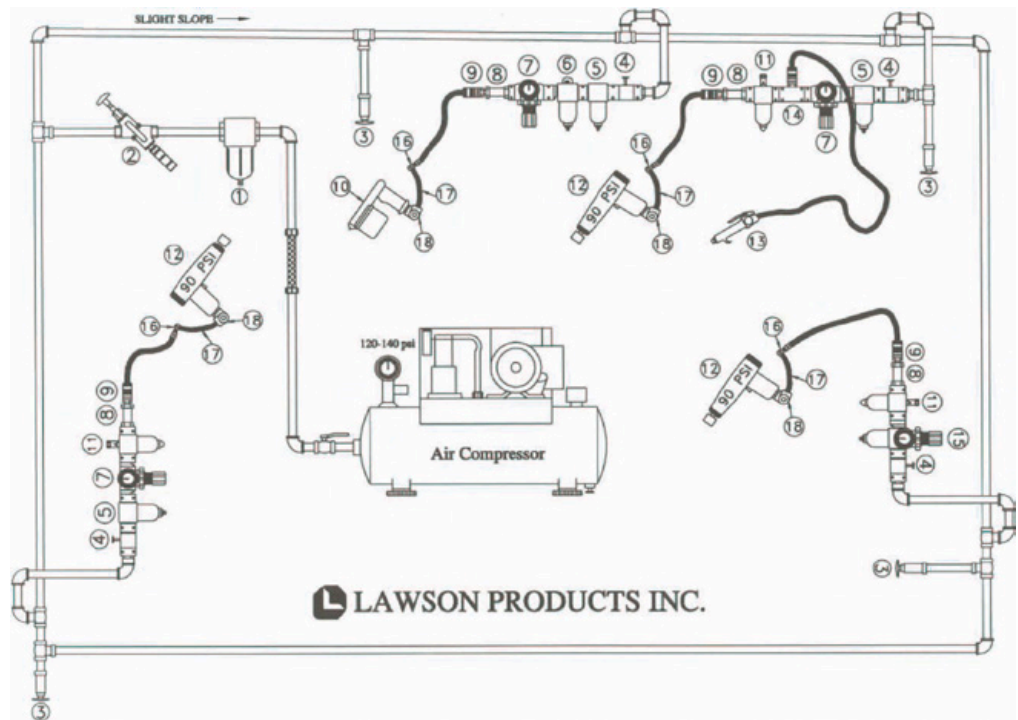
First determine the inlet pressure that will be used. Each graph contains three pressure curves. Find the appropriate flow on the horizontal plane. Find the intersection of the pressure curve and the CFM flow. Then follow a horizontal path to find the pressure drop. A pressure drop of 2 to 5 PSI is ideal. If the pressure drop is out of the 2 to 5 PSIG range, select a different port size.



FRL Installation and Maintenance Recommendations

- Always have an FRL installed into the air line just before the point of use for an air tool.
- Install a safety lockout valve before the filter for quick, local shut off of the air supply.
- Install an excess flow safety check valve after the FLR to prevent hose whip and injury.
- Each tool should have a lead-in hose so that connection and disconnection is at least 18" from the handle of the tool. This will extend the life of the coupler and nipple.
- Polycarbonate bowls are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow or temperatures above 125°F (51.5°C).
- Metal bowls can resist the effects of most solvents but should not be subjected to salt-laden atmospheres or used where strong acids or bases are present. Metal bowl guards are recommended for all applications to help protect a polycarbonate bowl from damage.

Typical Pneumatic Setup (Ceiling View)



- | | |
|--|-------------------------------|
| ① Primary Filter and/or Refrigerated Drier | ⑩ Paint Spray Gun |
| ② Main Safety Lockout | ⑪ Lubricator |
| ③ Drip Leg with 150 PSI Drain Cock | ⑫ Air Tool |
| ④ Local Safety Lockout | ⑬ Blow Gun |
| ⑤ Filter | ⑭ Manifold Block |
| ⑥ Coalescing Filter | ⑮ Filter/Regulator Combo Unit |
| ⑦ Regulator at 90 PSI | ⑯ Swing Coupler |
| ⑧ Excess Flow Check Valve | ⑰ Lead-In Hose |
| ⑨ Safety Coupler | ⑱ Swivel Coupler |