

# MASTER PNEUMATIC, INC.

## Filters, Regulators and Lubricators



## Serv-Oil and Injection Lubrication



## Clean Air Systems



## Custom Special Products



**Pneumatic Component Specialists**

**ISO 9001  
REGISTERED**



**MASTER PNEUMATIC, INC.**

# Master Pneumatic — The Most Respected Name in Pneumatic Products

For over 60 years Master Pneumatic has been bringing industry the finest in pneumatic products. Now we are proud to introduce our newest catalog showing the length and breadth of our product line. If any of your questions about our products are not answered here, your Master Pneumatic distributor will be pleased to assist you.

In addition to our fine products, we are well known for our commitment to customer service and satisfaction. Here are just a few of the reasons why our customers are pleased to deal with Master Pneumatic.

## WE HELP TO REDUCE YOUR INVENTORY NEEDS

Our "Just-in-Time" inventory program ensures a reliable supply of products to our wide network of distributors. This means that you don't have to maintain large stocks of parts. If a distributor should ever be temporarily out of any standard product, he can have it drop-shipped directly to you.

## ALL OUR PRODUCTS ARE FACTORY-TESTED

Our products are designed, produced, and then factory-tested so that they perform properly as soon as they are put into service. And this also means that they are built to give you long-term reliability. That is why Master Pneumatic products can be found in large and small plants in all parts of the world.

## WHEN PRODUCTS GO ABROAD, OUR SUPPORT GOES WITH THEM

We have been in export markets since 1960. Our products can be specified for overseas plants, or for use on OEM products shipped abroad, with the assurance that they are fully accepted, and supported by the worldwide network of Master Pneumatic distributors.

**We have been a proud member of the National Fluid Power Association for over forty years.**

## WE WORK WITH YOU ON YOUR NEEDS FOR CUSTOMIZED PRODUCTS

Designing specialized products to satisfy special needs is one of our recognized strong points. One of our sales engineers will be pleased to discuss any of your unique pneumatic problems and offer a cost-effective solution.

## SEE OUR SEVEN-YEAR WARRANTY

Our seven-year product warranty is shown below. It is your assurance of our commitment to your complete satisfaction with our products.

### SEVEN-YEAR WARRANTY

The Company warrants to the Purchaser that the equipment described in this catalog will be free from defects in material and workmanship for seven years. This warranty does not cover normal service parts (such as filter elements) or parts that fail due to chemical attack\*, abuse, improper service, or improper use. This warranty does not cover product not manufactured by Master Pneumatic, Inc. These products will be covered by the original manufacturer's warranty, if any. The foregoing warranty is exclusive and in lieu of all other warranties whether written, oral, express, or implied. There is NO WARRANTY OF MERCHANTABILITY OR FITNESS OF PURPOSE. If it appears within seven years from the date of shipment by the Company that the equipment has not met the warranties specified above and the purchaser notifies the Company promptly, the Company shall correct any defect, at its option, either by repairing any defective part or parts or by making available at the Company's plant a repaired or replacement part. Except as otherwise specified by manufacturer, these parts are specifically designed for compressed air service. Use with any other fluid must be approved by Master Pneumatic, Inc.

In no event will Master Pneumatic, Inc., be liable for business interruptions, loss of profits, harm, injury, damage, personal injury, cost of delay, or any special, indirect, incidental, or consequential losses, costs, or damages.

*\*It is extremely important that our products be used in a proper environment. Polycarbonate, acetal, nylon, ABS and other plastics are especially vulnerable to attack by certain chemicals and their fumes including compressor oils, cleaners, solvents, etc. When in doubt, please ask your chemical supplier if their products are injurious to the parts used in the Master Pneumatic products.*

**Please note the metal bowl options available in each product section.**

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# CUSTOM PRODUCTS

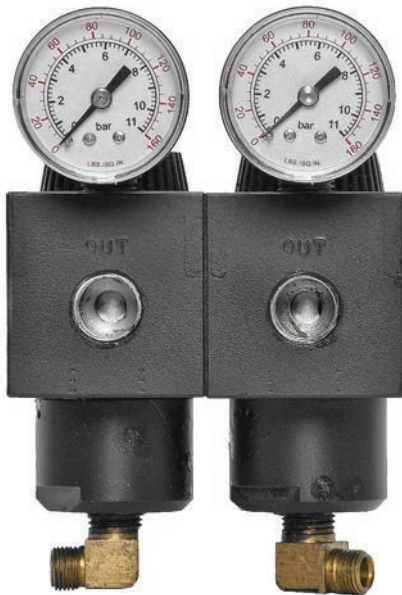
For many years Master Pneumatic has participated in the development and manufacture of custom filters, regulators and lubrication systems. Designed as solutions for specific application problems, these custom products have ranged from simple, standard product modifications, using existing parts and minimal engineering time, to others requiring specialty parts and extensive engineering time.

Our sales staff, manufacturing team, and experienced engineers work to produce quality products that meet required

specifications. Our manufacturing equipment allows for quick response, with tested prototypes, for customer evaluation.

The units shown here illustrate some of the more than 700 specialty products we have already offered. We encourage you to inquire about possible specialized solutions for your individual application situation. A custom product request form, that may be copied and faxed, has been included on the facing page. Please note that some custom product development may have minimum quantity requirements.

## PILOT OPERATED MANIFOLD REGULATOR



## CO<sub>2</sub> FILTER-RELIEF VALVE WITH CHECK



## COMBINATION START-RUN AND CONTROL VALVE



## SPECIAL ANODIZED FILTER

# MASTER PNEUMATIC, INC. SPECIAL PRODUCT REQUEST FORM

Fax Number: (586) 254-6055

Date of Request:

Requested by:

Company Name:

Phone Number:

Fax:

Customer Requirements:

---

## DESIGN REQUIREMENTS

Media Used in Product:

Inlet Pressure:

Outlet Pressure:

Flow:

scfm

Are Buna N Seals Acceptable:  Yes  No

Maximum Temp.:

Minimum Temp.:

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## MISCELLANEOUS INFORMATION

Is comparable product currently being used?:  Yes  No

Estimated Annual Usage:



# LOCKOUT VALVES and DELAYED-PRESSURE-BUILDUP VALVES

## OSHA Requirements Clearly State, “Energy Isolating Devices, Such As Lockouts, Are Now Required.”

Federal regulation 29 CFR 1910.147 of the Occupational Safety and Health Administration (OSHA) details safety requirements for the control of hazardous energy during “... the servicing and maintenance of machines and equipment in which the unexpected ... startup ... could cause injury ...” Here are a few other highlights from the regulation:

**ENERGY SOURCE.** “Any source of electrical, mechanical, hydraulic, pneumatic, thermal, or other energy.”

**LOCKOUT DEVICE.** “A device that utilizes a positive means such as a lock, whether key or combination, to hold an energy isolating device in the safe position ...”

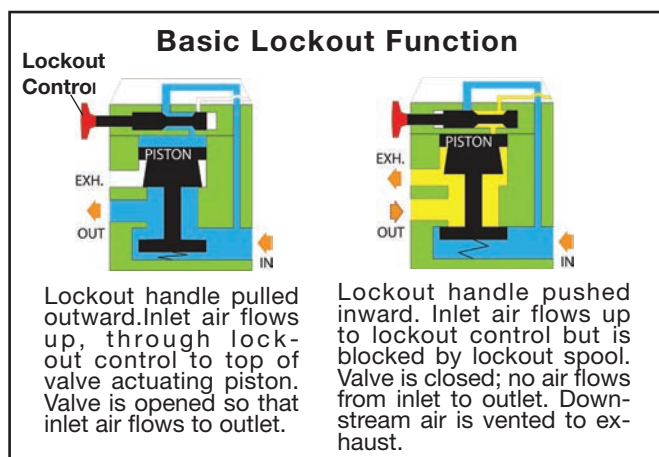
**PURPOSE.** “This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices . . . to prevent unexpected energization, startup or release of stored energy ...”

**TIMING.** “After October 31, 1989, whenever major replacement, repair, renovation or modification of machines or equipment are installed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device.”

In short, each piece of equipment must have a shutoff valve to isolate the equipment from its air supply. The shutoff valve must be lockable in the closed position so that it cannot inadvertently be opened. When closed the shutoff valve must have an exhaust port to exhaust downstream pressurized air.

### LOCKOUT VALVES

Lockout valves are offered in a full range of port sizes, and with different actuation modes. Each valve is designed to satisfy the OSHA requirements for energy isolation



### GUIDE to LOCKOUT VALVES and DELAYED-PRESSURE-BUILDUP VALVES

Valve Series	Port Sizes										Pages	
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2		
<b>SENTRY</b>												
V10 Lockout Models †	X	X										12-13
<b>GUARDSMAN</b>												
V35 Lockout Models		X	X	X	X							14-15
<b>VANGUARD Lockout</b>												
V40 Manual Models			X	X	X	X	X					16-19
V450 Manual Pilot Models						X	X	X	X	X	X	20-21
V460 Solenoid Pilot Models		X	X	X	X	X	X	X	X	X	X	22-23
<b>DELAYED PRESSURE BUILDUP</b>												
V470 Air Pilot Models		X	X	X	X	X						24-25
V475 Solenoid Pilot Models		X	X	X	X	X						26-27
V495 Models		X	X	X	X	X	X	X				28-29
<b>LOCKOUT plus DELAYED PRESSURE BUILDUP</b>												
V45M Manual Models			X	X	X							30-31
V380 Slide Lockout Models		X	X	X	X							32-33
V382 and V383 manual control high-flow exhaust lockout valve.		X	X	X	X							34-45
V480 Air Pilot Models		X	X	X	X	X						36-37
V485 Solenoid Pilot Models		X	X	X	X	X						38-39
<b>AUXILIARY VALVES</b> (Flow Control, Shuttle, Check)												
												40-49

† Also available with quick-connect tube fittings up to 10 mm.



and lockout. They are not, however, intended as emergency stop devices.

They lock out the supply air in a system with an easy pushing or sliding motion, and also exhaust downstream air pressure. Even after extended periods on standby, the valves are designed with seals and materials that allow the lockout

control to move smoothly into the lockout position.

All Master Pneumatic lockout valves can be secured in the closed position by means of a padlock so that the valve cannot be inadvertently opened to cause a potentially hazardous situation. Shown above is one of the manual lockout valves padlocked in the closed position.

#### **SENTRY V10 SLIDE LOCKOUT VALVE.**

This lockout valve was developed for use with the **SENTRY** series of modular **FRLs**. A slide controls the lockout function. Sentry modules and assemblies are available with this valve installed, or the valve can be retrofitted in the field.

As a separate component the **SENTRY** lockout valve is available with a choice of two pipe sizes and six sizes of quick-connect tube fittings.



#### **GUARDSMAN V35 SLEEVE LOCKOUT VALVE.**



This valve has a sliding sleeve to control the lockout function. A built-in slide latch holds the lockout control in the closed

position, and for further security the valve can be padlocked in this position. The valve has the built-in colors safety yellow and caution red to make the valve conspicuous in the workplace. The operating sleeve resists accidental shutoff, yet because it is Teflon-coated it slides without sticking even after a long period on standby.

The V35 valve is available in port sizes from 1/4 to 3/4 and with flow coefficients ( $C_v$ ) from 2.4 to 7.3.

#### **VANGUARD V40 MANUAL LOCKOUT VALVE**

The valve has a large red operating handle for high visibility. A short inward push of the handle closes off the flow of air, and quickly exhausts downstream air. The exhaust port is threaded for the installation of a silencer or a line for remote exhausting. Of course, the valve can be padlocked in the closed position.



The V40 valve is built in two body sizes with port sizes from 3/8 to 1-1/4. Flow coefficients ( $C_v$ ) range from 6 to 20 so that these valves are useful in a wide range of applications.

#### **VANGUARD V450 and V460 PILOTED VALVES with LOCKOUT CONTROL.**

Series V450 valves are air piloted valves, while the Series V460 valves employ a solenoid pilot. Both valves can be operated remotely. In other respects the valves are similar.



(continued on next page)

They are 3-way poppet valves with a lockout control interposed between the pilot signal and the valve's actuating poppet. The lockout control has a conspicuous red handle which, when pushed inward, cuts off the pilot signal and renders the valve inoperative. The handle can then be padlocked for complete safety.

The V450 valves are built in two body sizes with port sizes ranging from 1 to 2-1/2, and flow coefficients ( $C_v$ ) ranging from 23 to 70. The V460 valves are built in four body sizes with port sizes ranging from 1/4 to 2-1/2, and flow coefficients ( $C_v$ ) ranging from 2.5 to 70, making them suitable for nearly all applications. See individual product page for available voltages.

### DELAYED-PRESSURE-BUILDUP VALVES

When actuated, valves with the delayed-pressure-buildup (DPB) feature allow a gradual buildup of downstream air pressure. This allows cylinders and other work elements to move slowly and more safely into their normal working positions. After downstream pressure has reached a certain level the valve opens fully and downstream pressure is at its maximum level.

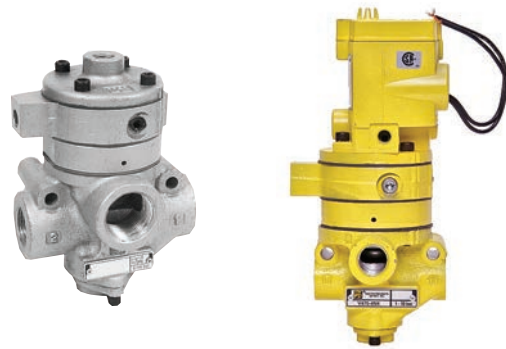
The DPB function is achieved by requiring the initial flow of air to pass through a restricted orifice so that the buildup of downstream pressure is slowed. The restricted orifice may be fixed or adjustable to control the rate of pressure buildup. The change of air flow from restricted to full flow is accomplished either manually or by a built-in timing device. The functioning of a basic valve with DPB is shown in the sketches at the bottom of the page.

Some of the DPB valves described below also have a lockout control, so that they serve the double functions of delayed-pressure-buildup and lockout control. Those with the added lockout feature can all be padlocked in the closed position.

### SERIES V470 and V475 DELAYED-PRESSURE-BUILDUP VALVES.

Series V470 valves are air piloted valves, while the Series V475 valves employ solenoid pilots to permit remote control. In other respects they are similar.

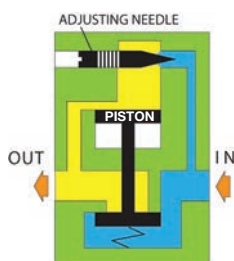
They are 3-way poppet valves with a DPB device interposed between the pilot signal and the valve's actuating poppet. An adjustable control determines the rate of delayed pressure buildup. There is also an exhaust port through which downstream air is exhausted when the valve is de-energized. Threads in the exhaust port allow the installation of a silencer or a line for remote exhaust-



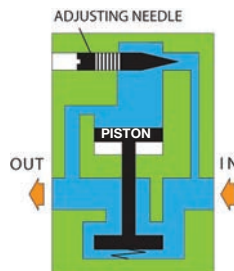
### DELAYED-PRESSURE-BUILDUP (DPB) FUNCTION

The illustrations below show the DPB function of a 2-way valve. They show the use of a restricted orifice to delay pressure buildup and to "time" the full opening of the valve. Three-way valves require a slightly more complex arrangement, and also have the advantage of a specific port for exhausting downstream air. See following pages for operating details of other DPB valves.

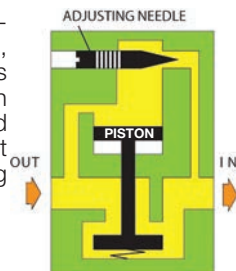
When air pressure is first applied to the inlet, air flow to the actuating piston is restricted by the needle. Downstream pressure gradually builds up at a rate determined by the needle setting.



When downstream pressure reaches a certain percentage of inlet pressure, it is enough to actuate the valve's piston and the inlet poppet opens. The valve is now open to full air flow.



When inlet pressure is removed, downstream air is exhausted through the inlet port and around the point of the adjusting needle.



ing. These valves should be used in conjunction with lockout valves.

They are built in two body sizes with port sizes ranging from 1/4 to 1, and flow coefficients ( $C_v$ ) ranging from 2.5 to 8. See individual product page for available voltages.

### SERIES V495 DELAYED-PRESSURE-BUILDUP VALVES.

A V495 valve is a 2-way valve with a **DPB** function. An adjustable restrictor within the valve determines the buildup rate of downstream air pressure. When downstream pressure reaches approximately 40% to 60% of inlet pressure, the valve shifts to the fully open position. The V495 valves should be used in conjunction with lockout valves.



The valves are made in three body sizes with ports ranging from 1/4 to 1-1/2, and flow coefficients ( $C_v$ ) from 2.3 to 29.

### SERIES V45M MANUAL LOCKOUT plus DELAYED-PRESSURE-BUILDUP VALVES.

When opened by an outward pull of its blue handle, the valve allows a gradual buildup of downstream air pressure. It opens to full flow when it's outlet pressure is 25 psi less than it's inlet pressure. An adjustable screw in the top of it's handle sets the rate of pressure buildup.

When the handle is pushed inward the valve's lockout function is like that of the V40 lockout valve described above. Inlet air is blocked, and downstream air is exhausted.

The valves have ports ranging from 3/8 to 3/4, and flow coefficients ( $C_v$ ) from 6 to 8.6.



### SERIES V380 SLIDE LOCKOUT plus DELAYED-PRESSURE-BUILDUP VALVES.

The V380 valve is specifically designed to be used with Series 380 **FRL's**. It is modularly connected to the FRL, and can be rotated to any of eight positions for the most convenient operation.

A sliding Delrin plate with a detent is used to go from the closed position, to the delayed-pressure-buildup position, and then to the fully open position. An override button must be depressed to move from the **DPB** position to the fully open position. If a fast start is required, the slide can be moved directly from the closed to the fully open position by holding the override button down, while lifting the slide.



### SERIES V480 and V485 LOCKOUT plus DELAYED-PRESSURE-BUILDUP VALVES.

Series V480 valves are air piloted valves, while the Series V485 valves employ solenoid pilots. Both allow remote control. In other respects the valves are similar.

They are 3-way poppet valves with both lockout and **DPB** devices interposed between the pilot signal and the valve's actuating piston. When the handle on the lockout control is pulled outward the **DPB** function allows a gradual buildup of downstream air pressure before the valve opens to full flow. An adjustable control determines the rate of pressure buildup. There is also an exhaust port through which downstream air is exhausted when the valve is de-energized or the lockout control is actuated. Threads in the exhaust port allow the installation of a silencer or a line for remote exhausting.

When the handle of the lockout control is pushed inward the valve's lockout function is like that of the V470 or V475 lockout valves described above. Inlet air is blocked, and downstream air is exhausted.

These valves are built in two body sizes with port sizes ranging from 1/4 to 1, and flow coefficients ( $C_v$ ) ranging from 2.5 to 8. See individual product page for available voltages.



# SENTRY Slide Lockout Valves

## V10 Models Port Sizes: 1/8, 1/4 Tube Fittings

Model Shown: V10-2



- ◆ 3-Way lockout valve specifically for use with **SENTRY FRL's**
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ Available pre-assembled on **FRL** assembly, or as a single component for retrofitting in the field.
- ◆ Can be padlocked only in the closed position.
- ◆ Slide moves smoothly even after long period on standby.
- ◆ **NPTF** port threads; optional **BSPP** threads or tube fittings.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Elastomers:** Nitrile.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum.

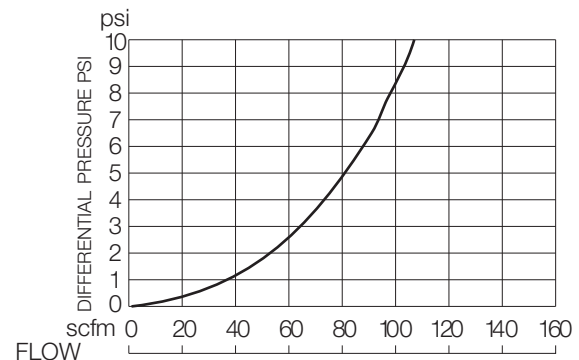
**Screws:** Zinc-plated steel.

**Slide:** Acetal.

**Valve Color:** Yellow.

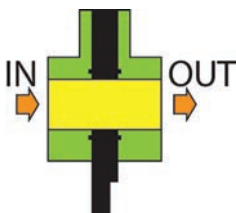
### FLOW CHART

Inlet Pressure: 100 psig (7 bar)



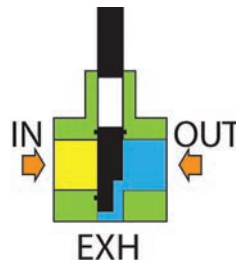
### VALVE OPERATION

#### VALVE OPEN



With the yellow slide depressed, supply air flows freely from inlet to outlet, and flow to the exhaust is blocked. The slide cannot be padlocked in the open position so that it is always ready for immediate closing.

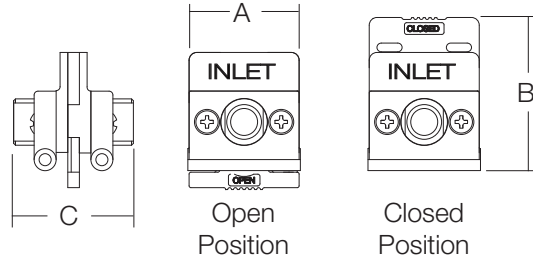
#### VALVE CLOSED



With the slide fully pushed out, supply air is blocked from the outlet, and downstream air is exhausted via the opening at the bottom of the valve. The slide can be padlocked in the closed position.

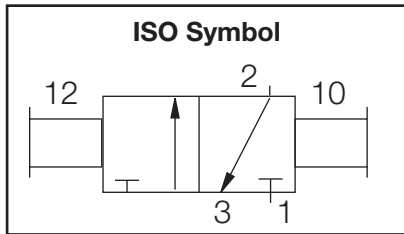
**DIMENSIONS** inches (mm)

Ports	A	B	C
No Ports	1.8 (45)	2.3 (57)	0.6 (14)
1/8, 1/4	1.8 (45)	2.5 (64)	2.0 (51)
<b>Models below have quick-connect fittings for tubing.</b>			
1/4	1.8 (45)	2.5 (64)	2.3 (58)
3/8	1.8 (45)	2.5 (64)	2.9 (74)
4 mm	1.8 (45)	2.5 (64)	2.5 (64)
6 mm	1.8 (45)	2.5 (64)	2.1 (53)
8 mm	1.8 (45)	2.5 (64)	2.1 (53)
10 mm	1.8 (45)	2.5 (64)	2.9 (74)

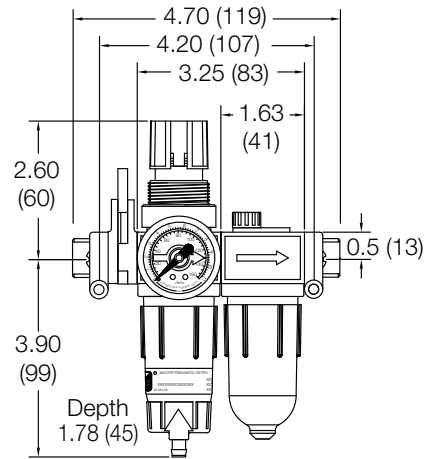


**ASSEMBLED SENTRY UNITS**

Assembled **SENTRY FRLs** with V10 lockout at the inlet can be ordered. Model VCFDRL10-2 is shown below.



**WALL MOUNTING:** To mount a complete valve with threaded ports or tube fittings, use two 10-24 x 2-1/4" pan-head Philips screws (Part number 10R-19)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the valve you want. To order V10 lockouts installed on a **SENTRY FRL**, see Options on **FRL** pages.

**V10 P - 1 X W**

**MOUNTING HOLE LOCATION**  
 Bottom mount (Standard) ..... Leave Blank  
 Top mount ..... P

**INLET PORT SIZE**  
 No Inlet and Outlet fittings..... Leave Blank  
 Includes seals and screws for retrofitting.

**Threaded:**  
 1/8 NPTF ..... -1  
 1/4 NPTF ..... -2

**Fittings for Tubing:**  
 1/4 ..... -04  
 3/8 ..... -06  
 4 mm ..... -M4  
 6 mm ..... -M6  
 8 mm ..... -M8  
 10 mm ..... -M10

**PORT TYPE**  
 As specified in **INLET PORT** .... Leave Blank  
 BSPP threads on both ports ..... W

**OUTLET PORT SIZE**  
 Same as inlet port.....Leave Blank

**Threaded:**  
 1/8 NPTF ..... 1  
 1/4 NPTF ..... 2

**Fittings for Tubing:**  
 1/4 ..... 04  
 3/8 ..... 06  
 4 mm ..... M4  
 6 mm ..... M6  
 8 mm ..... M8  
 10 mm ..... M10

# GUARDSMAN Sleeve Lockout Valves

# V35 Models Port Sizes: 1/4 to 3/4

Model Shown: V35-2



- ◆ 3-Way lockout valve specifically for use with **GUARDSMAN FRLs**.
- ◆ Each unit has a safety yellow barrel and a caution red slide.
- ◆ Can be padlocked only in the closed position.
- ◆ Sleeve rotates for most convenient location of padlock.
- ◆ Sleeve moves smoothly even after long period on standby.
- ◆ Controlled exhaust rate muffles exhaust noise.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**  
40° to 125°F (4° to 52°C).

**Body:** Nylon and Aluminum.

**Fluid Media:** Compressed air.

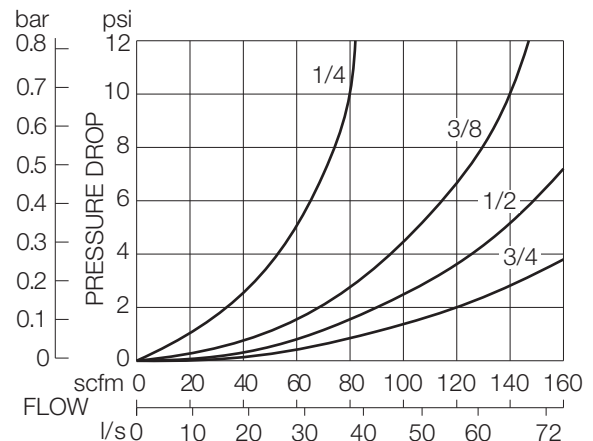
**Inlet Pressure:** 150 psig (10 bar) maximum.

**Lock Mechanism:** Nylon.

**Sleeve:** Aluminum.

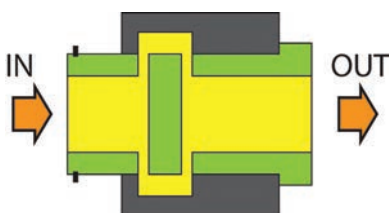
**Valve Color:** Safety yellow and caution red.

**FLOW CHART**  
Inlet Pressure: 100 psig (7 bar)



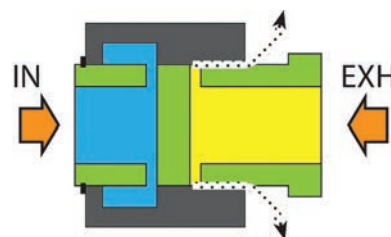
## VALVE OPERATION

### VALVE OPEN



With the sleeve in the open position (against the stop at the outlet port), supply air flows freely from inlet to outlet, and flow to the exhaust is blocked. The sleeve cannot be padlocked in the open position so that it is always ready for immediate closing.

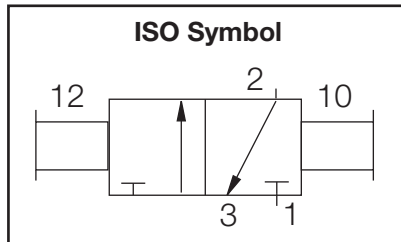
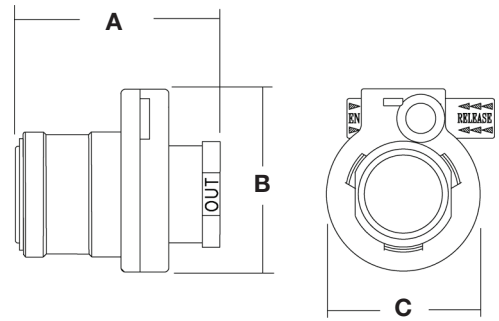
### VALVE CLOSED



With the sleeve in the closed position (against the stop at the inlet port), supply air is blocked from the outlet, and downstream air is exhausted to atmosphere. A built-in sliding latch can be used to keep the valve in the closed position. In addition the sleeve can be padlocked in the closed position.

**DIMENSIONS** inches (mm)

Port Size	Average $C_v$	A	B	C
1/4	2.4			
3/8	4.6	2.7	2.3	2.2
1/2	5.9	(68)	(59)	(56)
3/4	7.3			



**ORDERING INFORMATION**

Select the port size in the sample model number below to specify the valve you want.

**V35 - 2 W**

**PORT SIZE**

- 1/4 NPTF .....2
- 3/8 NPTF .....3
- 1/2 NPTF .....4
- 3/4 NPTF .....6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W



# VANGUARD Manual Lockout Valves

## V40 Models Port Sizes: 3/8 to 1-1/4



Model Shown: V40-3N8

- ◆ 3-Way spool lockout valve. Available in two body sizes and five port sizes.
- ◆ Large operating handle is red so it will be easily seen in the workplace.
- ◆ Can be padlocked only in the closed position.
- ◆ Spool moves smoothly even after a long period on standby.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 80°C).

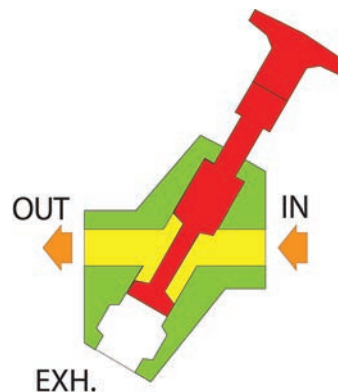
**Fluid Media:** Compressed air.

**Inlet Pressure:** 15 to 150 psig (1 to 10 bar).

### VALVE OPERATION

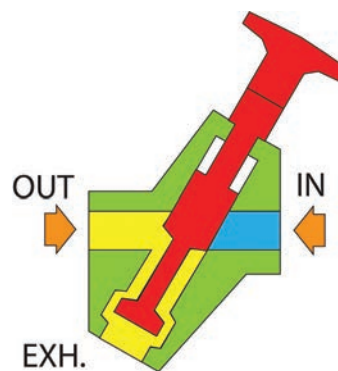
#### VALVE OPEN

With the red handle pulled outward, supply air flows freely from inlet to outlet, and flow to the exhaust is blocked. The sleeve cannot be padlocked in the open position so that it is always ready for immediate closing.



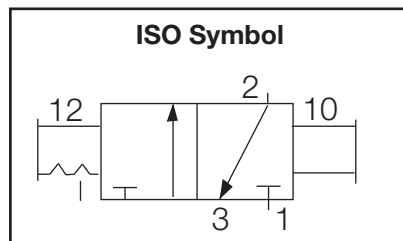
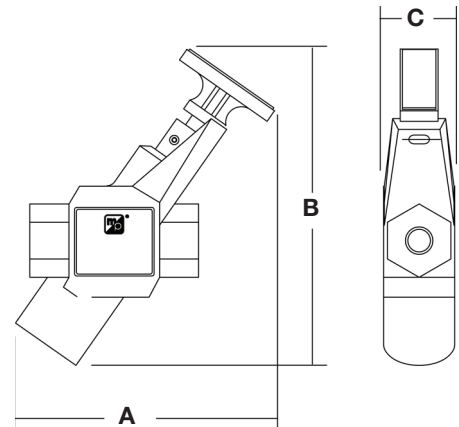
#### VALVE CLOSED

With a short inward push of the red handle, supply air is blocked from the outlet, and downstream air is exhausted to atmosphere via the exhaust port at the bottom of the valve. The valve can be padlocked in the closed position.



**DIMENSIONS** inches (mm)

Port Sizes		Average C <sub>v</sub>		A	B	C
In-Out	Exh	1 to 2	2 to 3			
3/8	3/4	6.0	8.0	6.4 (163)	8.8 (224)	2.0 (51)
1/2	3/4	7.1	8.3			
3/4	3/4	8.6	9.5			
3/4	1-1/4	13	12	7.7 (196)	10.8 (274)	2.3 (58)
1	1-1/4	13	14			
1-1/4	1-1/4	20	14			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V40 - 3 N6 W**

**INLET/OUTLET PORTS**

- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6
- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**EXHAUST PORT SIZE:**

- 3/4 exhaust port ..... N6  
for 3/8, 1/2, 3/4 inlet / outlet ports
- 1-1/4 exhaust port ..... N10  
for 3/4, 1, 1-1/4 inlet / outlet ports

# High-Flow VANGUARD Manual Lockout Valves

# V40 Models Port Sizes: 1-1/2 to 2



Model Shown: V40-12N16

- ◆ Easily identified by unique shape
- ◆ Lockable only in the **OFF** position
- ◆ Large exhaust port for rapid release of pressure.
- ◆ Special Teflon seals help to ensure "shift-ability" even after long periods of non-use.
- ◆ Positive action (2 positions only).
- ◆ Simple push/pull of the large red handle provides direct manual operations.
- ◆ Pressure sensing port allows installation of either the popup indicator or pressure switch to verify pressure downstream to the next obstruction is released.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 80°C).

### Fluid Media:

Compressed air. (5 micron recommended)

### Inlet Pressure:

15 to 300 psig (1 to 20 bar).

### Lock hole diameter:

0.38 inch (9.6 mm).

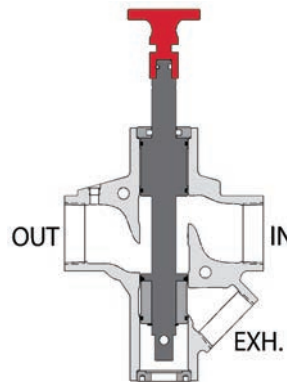
### Length of hole:

0.75 inch (19.1 mm).

## VALVE OPERATION

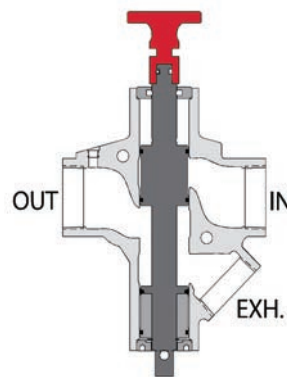
### VALVE OPEN

When the red handle is pulled out, supply air flows freely from inlet to outlet and flow to exhaust is blocked. A detent keeps the handle in the open position. The handle is not designed to be locked in this position, thereby providing for ready shut-off when necessary.



### VALVE CLOSED

With a short push of the red handle inward, the flow of supply air is blocked and downstream air is exhausted via the exhaust port while servicing or maintaining machinery. Padlock the valve in this position to prevent the handle from being pulled outward inadvertently to avoid potential for human injury while servicing machinery.



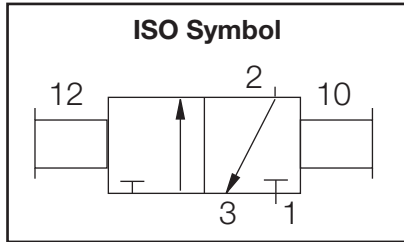
**DIMENSIONS** inches (mm)

**VALVE IN A CLOSED POSITION**

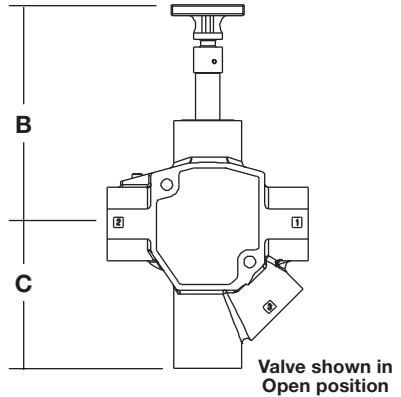
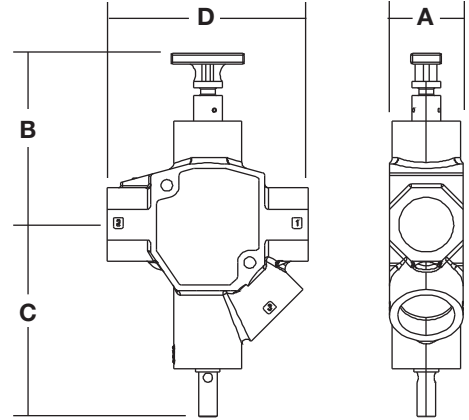
Port Sizes In-Out	Average C <sub>v</sub>		A	B	C	D	Weight lb (kg)
	In-out	Out-Exh					
1-1/2	38	47	3.00	6.98	7.84	8.2	8.2
2			(76.21)	(177.3)	(199.1)	(209)	(3.57)

**VALVE IN A OPENED POSITION**

Port Sizes In-Out	Average C <sub>v</sub>		A	B	C	D	Weight lb (kg)
	In-out	Out-Exh					
1-1/2	38	47	3.00	8.93	5.89	8.2	8.2
2			(76.21)	(226.8)	(149.6)	(209)	(3.57)



Valve shown in closed position



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V40- 12 N16 W**

**INLET/OUTLET PORTS**

- 1-1/2 NPTF ..... 12
- 2 NPTF..... 16

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSP threads ..... W

# VANGUARD Manual Pilot 3/2 Valves with Lockout Control

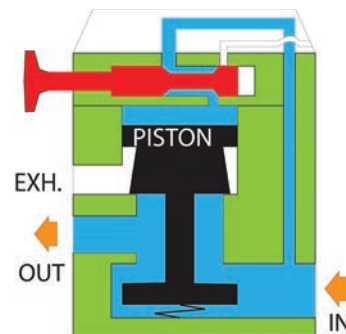
# V450 Models Port Sizes: 1 to 2-1/2

Model Shown: V450-8N12



- ◆ 3-Way poppet valve. Available in two body sizes and five port sizes.
- ◆ Large operating handle is red so it will be easily seen in the workplace.
- ◆ Can be padlocked only in the closed position.
- ◆ Lockout spool moves smoothly even after long period on standby.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

## VALVE OPERATION



### VALVE OPEN

With the red handle pulled outward, supply air flows to the top of the piston causing it to open the inlet poppet. Supply air then flows freely from inlet to outlet, and the exhaust port is blocked.

## SPECIFICATIONS

### Ambient/Media Temperature:

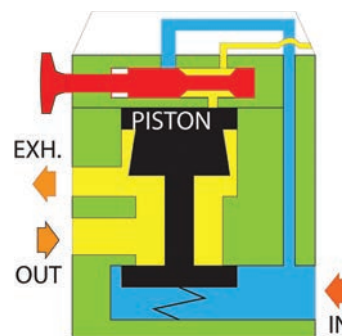
40° to 175°F (4° to 80°C).

**Fluid Media:** Compressed air.

**Inlet Pressure:** See DIMENSIONS for port sizes.

1-1/2 exhaust port: 15 to 150 psig (1 to 10 bar).

2-1/2 exhaust port: 30 to 150 psig (2 to 10 bar).

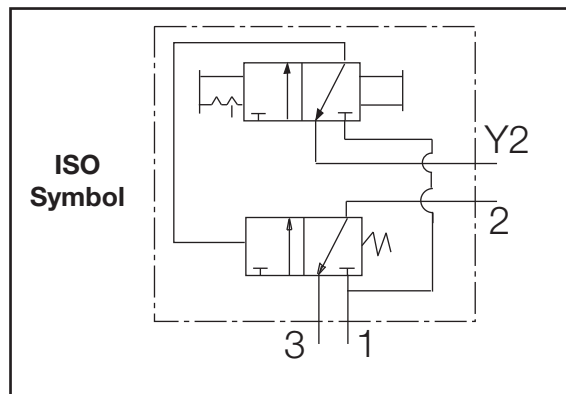
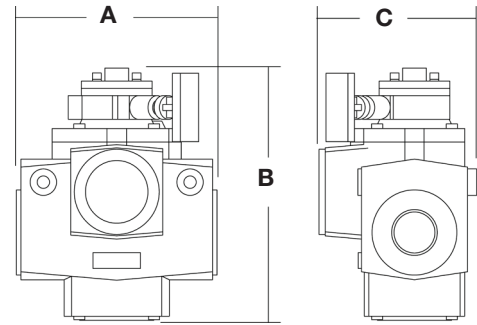


### VALVE CLOSED

With a short inward push of the red handle, supply air is blocked from the outlet, and downstream air is exhausted to atmosphere via the exhaust port. The valve can be padlocked in the closed position.

**DIMENSIONS** inches (mm)

Port Sizes In-Out	Exh	Average $c_v$		A	B	C
		1 to 2	2 to 3			
1	1-1/2	23	34			
1-1/4	1-1/2	30	32	7.6 (193)	8.5 (216)	6.6 (166)
1-1/2	1-1/2	30	31			
1-1/2	2-1/2	68	70			
2	2-1/2	70	70	8.8 (222)	10.5 (267)	7.1 (180)
2-1/2	2-1/2	70	71			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V450 - 8 N12 W**

**INLET/OUTLET PORTS**

- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12
- 2 NPTF ..... 16
- 2-1/2 NPTF ..... 20

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**EXHAUST PORT SIZE:**

- 1-1/2 exhaust port.....N12  
for 1, 1-1/4, 1-1/2 inlet / outlet ports
- 2-1/2 exhaust port.....N20  
for 1-1/2, 2, 2-1/2 inlet / outlet ports

# VANGUARD Solenoid Pilot 3/2 Valves with Lockout Control

# V460 Models Port Sizes: 1/4 to 2-1/2

Model Shown: V460-8N8



- ◆ 3-Way poppet valve. Available in four body sizes and nine port sizes.
- ◆ Solenoid pilot for remote control.
- ◆ Solenoids CSA approved.
- ◆ Large lockout handle is red so it will be easily seen in the workplace.
- ◆ Can be padlocked only in the closed position.
- ◆ Lockout spool moves smoothly even after long period on standby.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Media Temperature:

40° to 175°F (4° to 80°C).

### Ambient Temperature:

40° to 120°F (4° to 50°C).

**Fluid Media:** Compressed air.

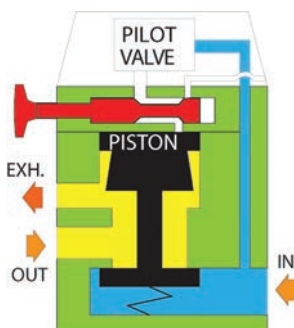
### Inlet Pressure:

15 to 150 psig (1 to 10 bar) except largest body which is 30 to 150 psig (2 to 10 bar).

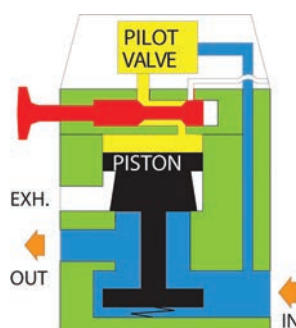
**Solenoid Voltages:** 110 volts 50/60 Hz standard.

Optional available voltages shown on following page.

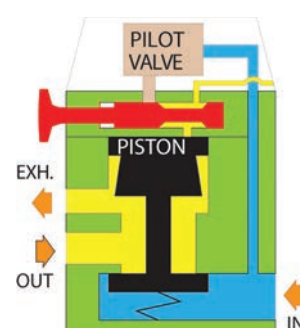
## VALVE OPERATION



With solenoid pilot de-energized the inlet poppet is always closed. Downstream air pressure is exhausted via the exhaust port.



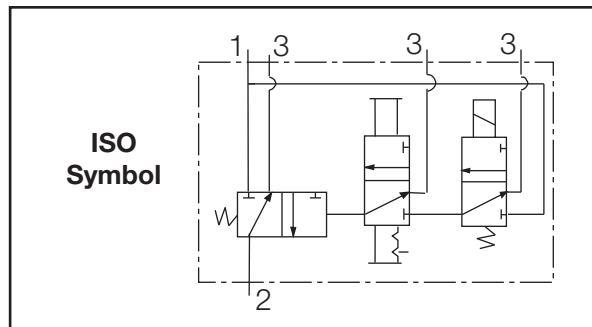
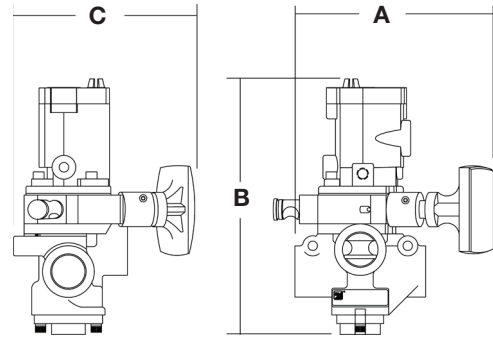
With solenoid pilot energized and the lockout handle pulled outward, pressure on the piston opens the inlet poppet and air flows freely from inlet to outlet. The exhaust port is closed.



With the lockout handle pushed inward air to the piston is cut off. The inlet poppet closes, and downstream air pressure is exhausted via the exhaust port.

**DIMENSIONS** inches (mm)

Port Sizes		Average $C_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
1/4	1/2	2.5	3.1			
3/8	1/2	3.6	5.3	6.1 (153)	8.2 (208)	6.3 (160)
1/2	1/2	3.3	5.3			
1/2	1	6.3	9.2			
3/4	1	7.7	11	6.6 (167)	8.9 (227)	6.3 (160)
1	1	8.0	12			
1	1-1/2	23	34			
1-1/4	1-1/2	30	32	7.6 (193)	11.5 (291)	6.6 (166)
1-1/2	1-1/2	30	31			
1-1/2	2-1/2	68	70			
2	2-1/2	70	70	8.8 (222)	13.4(339)	7.1 (180)
2-1/2	2-1/2	70	71			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V460 - A - 2 N4 W**

**VOLTAGE REQUIREMENT**

- 110/50Hz, 110-120/60Hz (AC)..... Leave Blank
- 12/50-60Hz (AC) ..... A
- 24/50-60Hz (AC) ..... B
- 48/50-60Hz (AC) ..... C
- 220/50, 220-240/60Hz (AC) ..... D
- 12v (DC) ..... E
- 24v (DC) ..... F
- 48v (DC) ..... G
- 120v (DC) ..... H

**INLET/OUTLET PORTS**

- 1/4 NPTF.....2
- 3/8 NPTF.....3
- 1/2 NPTF.....4
- 3/4 NPTF.....6
- 1 NPTF.....8
- 1-1/4 NPTF .....10
- 1-1/2 NPTF .....12
- 2 NPTF.....16
- 2-1/2 NPTF .....20

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

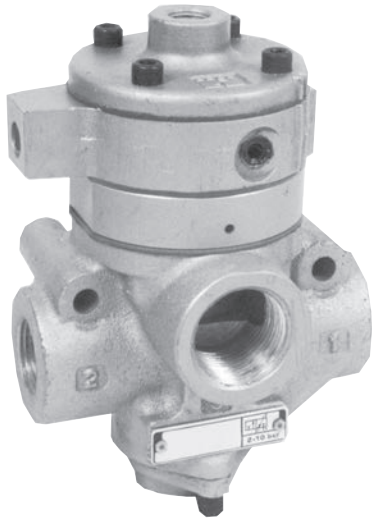
**EXHAUST PORT SIZE:**

- 1/2" exhaust port.....N4  
for 1/4, 3/8, 1/2 inlet / outlet ports
- 1" exhaust port.....N8  
for 1/2, 3/4, 1 inlet / outlet ports
- 1-1/2" exhaust port ..... N12  
for 1, 1-1/4, 1-1/2 inlet / outlet ports
- 2-1/2" exhaust port .....N20  
for 1-1/2, 2, 2-1/2 inlet / outlet ports



# VANGUARD Remote Air Pilot 3/2 Valves with V470 Models

## Delayed-Pressure-Buildup Function Port Sizes: 1/4 to 1



Model Shown: V470-2N4

- ◆ Delayed pressure buildup (DPB); rate of pressure buildup adjustable.
- ◆ 3-Way poppet valve. Available in two body sizes and five port sizes.
- ◆ Uses remote pilot control.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

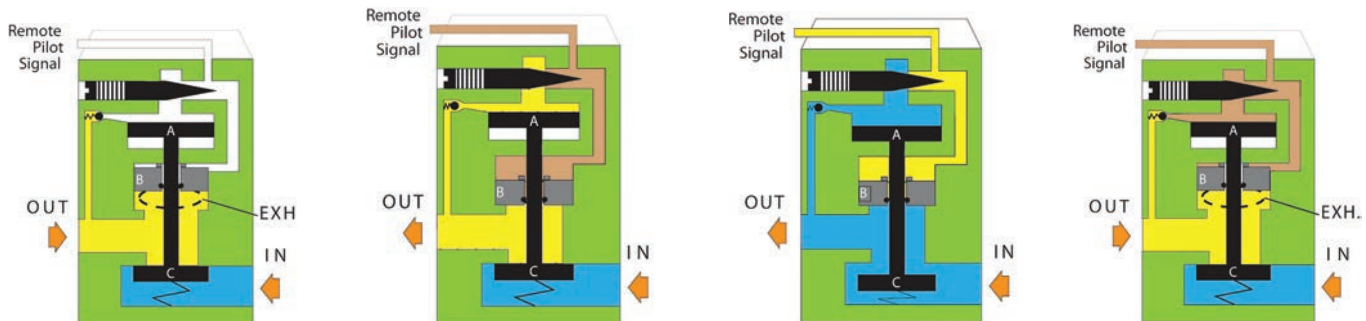
**Ambient/Media Temperature:**

40° to 175°F (4° to 80°C).

**Fluid Media:** Compressed air.

**Inlet Pressure:** 15 to 150 psig (1 to 10 bar).

### VALVE OPERATION



**No pilot signal.** Inlet air is blocked by poppet C. Piston B slides on the valve stem and is pushed upward if there is any downstream pressure. This opens the exhaust and vents the downstream line.

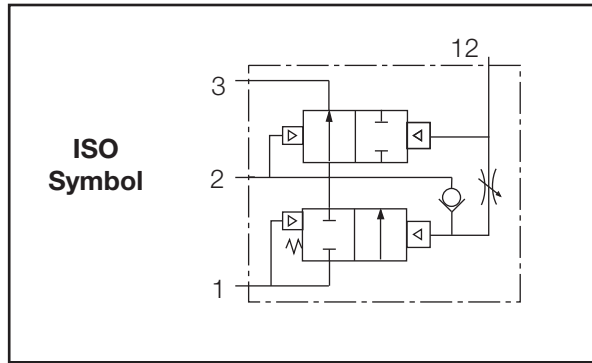
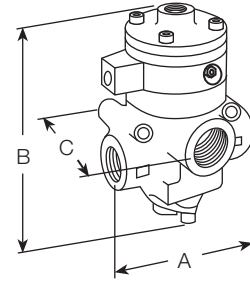
**Pilot signal applied.** Pilot air forces piston B downward to close exhaust port. Pilot air also flows past the metering pin, opens the ball check, and slowly pressurizes the outlet line. Pressure is also building up on piston A.

When the pressure on piston A reaches 50% of inlet pressure, the piston is forced downward, opening inlet poppet C. Full inlet pressure now flows freely to the outlet port.

**Pilot signal removed.** Air above pistons A and B is exhausted through the exhaust port of the remote pilot valve. Air above poppet C forces sliding piston B up so that the main exhaust port is opened and pressurized air is exhausted.

**DIMENSIONS** inches (mm)

Port Sizes		Average $C_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
1/4	1/2	2.5	3.1			
3/8	1/2	3.6	5.3	4.2 (107)	5.3 (136)	3.2 (79)
1/2	1/2	3.3	5.3			
1/2	1	6.3	9.2			
3/4	1	7.7	11	4.7 (118)	6.1 (155)	3.6 (92)
1	1	8.0	12			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V470 - 2 N4 W**

<p><b>INLET/OUTLET PORTS</b></p> <p>1/4 NPTF..... 2</p> <p>3/8 NPTF..... 3</p> <p>1/2 NPTF..... 4</p> <p>3/4 NPTF..... 6</p> <p>1 NPTF..... 8</p>	<p>└──┬──┘</p>	<p>└──┬──┘</p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave Blank</p> <p>BSPP threads ..... W</p> <p><b>EXHAUST PORT SIZE:</b></p> <p>1/2 exhaust port ..... N4</p> <p style="padding-left: 20px;">1/4, 3/8, 1/2 inlet / outlet ports</p> <p>1 exhaust port ..... N8</p> <p style="padding-left: 20px;">1/2, 3/4, 1 inlet / outlet ports</p>
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# VANGUARD Solenoid Pilot 3/2 Valves with V475 Models

## Delayed-Pressure-Buildup Function Port Sizes: 1/4 to 1

Model Shown: V475-4N4



- ◆ Delayed pressure buildup (DPB); rate of pressure buildup adjustable.
- ◆ 3-Way poppet valve. Available in two body sizes and five port sizes.
- ◆ Solenoid pilot allows remote control.
- ◆ Solenoids CSA approved.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Media Temperature:**

40° to 175°F (4° to 80°C).

**Ambient Temperature:**

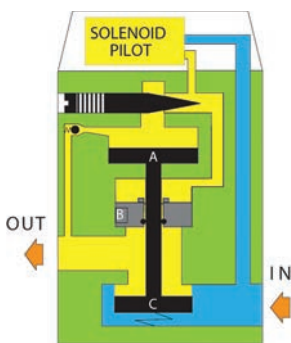
40° to 120°F (4° to 50°C).

**Fluid Media:** Compressed air.

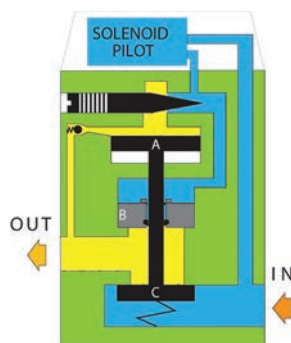
**Inlet Pressure:** 15 to 150 psig (1 to 10 bar).

**Solenoid Voltages:** 110 volts 50/60 Hz standard.  
Optional available voltages shown on following page.

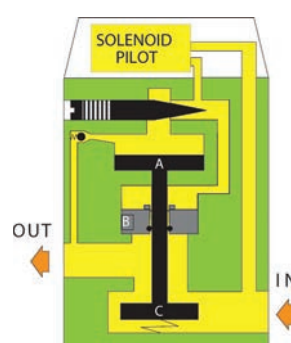
### VALVE OPERATION



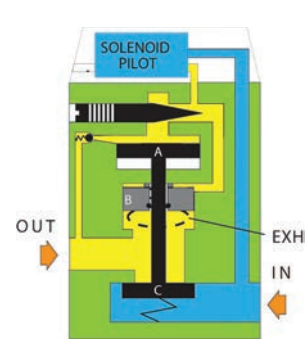
**Solenoid not energized.** Inlet air is blocked by poppet C. Piston B slides on the valve stem and is pushed upward if there is any downstream pressure. This opens the exhaust and vents the downstream line.



**Solenoid energized.** Pilot air forces piston B downward to close exhaust port. Pilot air also flows past the metering pin, opens the ball check, and slowly pressurizes the outlet line. Pressure is also building up on piston A.



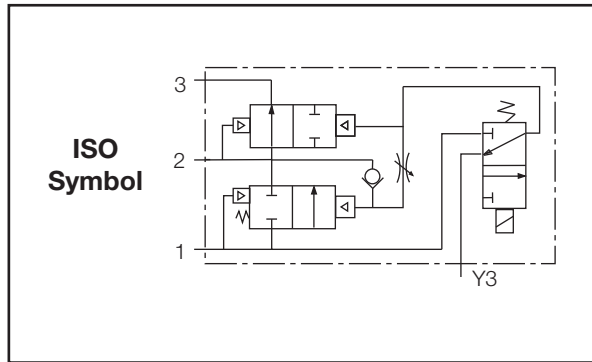
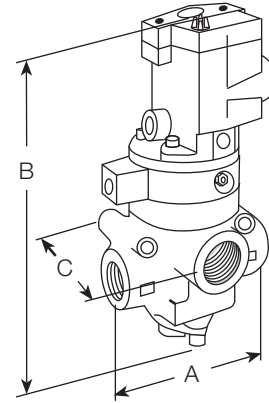
When the pressure on piston A reaches 50% of inlet pressure, the piston is forced downward, opening inlet poppet C. Full inlet pressure now flows freely to the outlet port.



**Solenoid de-energized.** Air above pistons A and B is exhausted through the exhaust port of the pilot valve. Air above piston C forces sliding piston B up so that the main exhaust port is opened and pressurized air is exhausted.

**DIMENSIONS** inches (mm)

Port Sizes		Average $C_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
1/4	1/2	2.5	3.1			
3/8	1/2	3.6	5.3	4.2 (107)	8.8 (224)	3.2 (79)
1/2	1/2	3.3	5.3			
1/2	1	6.3	9.2			
3/4	1	7.7	11	4.7 (118)	9.6 (243)	3.6 (92)
1	1	8.0	12			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V475 - A - 2 N4 W**

**VOLTAGE REQUIREMENT**

- 110/50Hz, 110-120/60Hz (AC)..... Leave Blank
- 12/50-60Hz (AC) ..... -A
- 24/50-60Hz (AC) ..... -B
- 48/50-60Hz (AC) ..... -C
- 220/50, 220-240/60Hz (AC) ..... -D
- 12v (DC) ..... -E
- 24v (DC) ..... -F
- 48v (DC) ..... -G
- 120v (DC) ..... -H

**INLET/OUTLET PORTS**

- 1/4 NPTF.....2
- 3/8 NPTF.....3
- 1/2 NPTF.....4
- 3/4 NPTF.....6
- 1 NPTF.....8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSP threads ..... W

**EXHAUST PORT SIZE:**

- 1/2" exhaust port.....N4  
for 1/4, 3/8, 1/2 inlet / outlet ports
- 1" exhaust port.....N8  
for 1/2, 3/4, 1 inlet / outlet ports

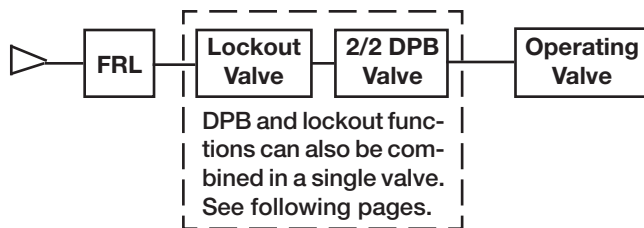
# VANGUARD 2/2 Valves with Delayed-Pressure-Buildup Function V495 Models Port Sizes: 1/4 to 1-1/2

Model Shown: V495-2



- ◆ Delayed pressure buildup (DPB); rate of pressure buildup adjustable.
- ◆ 2-Way poppet valve. Available in three body sizes and seven port sizes.
- ◆ Use in conjunction with a lockout valve to provide an exhaust port as well as the lockout function.
- ◆ NPTF port threads; optional BSPP threads.

## VALVE OPERATION



The lockout valve in the sketch above provides an exhaust port for exhausting downstream air when pressure is removed from the inlet of the 2/2 DPB valve.

## SPECIFICATIONS

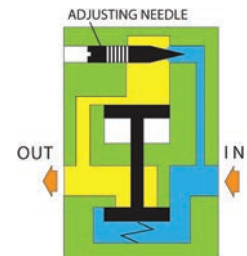
### Ambient/Media Temperature:

40° to 175°F (4° to 80°C).

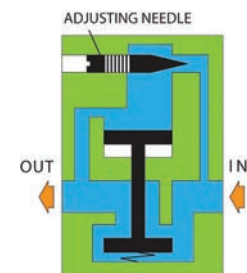
**Fluid Media:** Compressed air.

**Inlet Pressure:** 30 to 150 psig (2 to 10 bar).

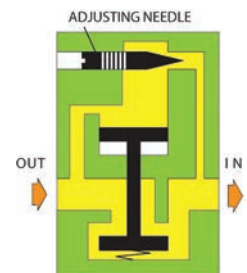
When air pressure is first applied to the inlet, air flow to the piston is restricted by the adjusting needle. Downstream air pressure gradually builds up at a rate determined by the setting of the adjusting needle.



When downstream air pressure reaches the range of 40% to 60% of inlet pressure, the valve element shifts to the full open position and there is full air flow to the downstream components. This condition continues as long as there is air pressure at the inlet.

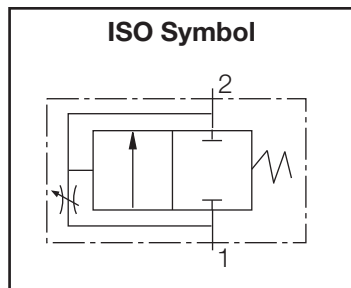
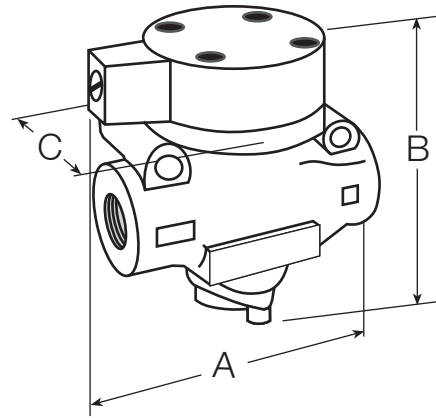


When inlet pressure is removed, the exhausting downstream air pressure keeps the inlet poppet open until the downstream pressure drops by approximately 90 percent. The remaining pressure is exhausted via the delay orifice. An upstream exhaust port (as in a separate lockout valve) is needed for proper operation.



**DIMENSIONS** inches (mm)

Port Size	Average $C_v$	A	B	C
1/4	2.3			
3/8	3.8	4.3 (108)	3.9 (99)	3.1 (79)
1/24.0				
1/2	7.7			
3/4	9.0	4.7 (119)	4.6 (116)	3.1 (79)
1 9.0				
1	24			
1-1/4	29	5.7 (146)	7.6 (193)	6.0 (153)
1-1/2	29			



**ORDERING INFORMATION**

Select the port size in the sample model number below to specify the valve you want.

**V495 - 2 W**

**INLET/OUTLET PORTS**

- 1/4 NPTF ( $C_v = 2.3$ ).....V495-2
- 3/8 NPTF ( $C_v = 3.8$ ).....V495-3
- 1/2 NPTF ( $C_v = 4.0$ ).....V495-4
- 1/2 NPTF ( $C_v = 7.7$ )..... V495M-4
- 3/4 NPTF ( $C_v = 9.0$ ).....V495-6
- 1 NPTF ( $C_v = 9.0$ ).....V495-8
- 1 NPTF ( $C_v = 24$ )..... V495M-8
- 1-1/4 NPTF ( $C_v = 29$ ) .....V495-10
- 1-1/2 NPTF ( $C_v = 29$ ) .....V495-12

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

# Manual Control Consolidated Lockout and DPB Valves

# V45M Models Port Sizes: 3/8, 1/2, 3/4

Model Shown: V45M-6N6



## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 80°C).

**Fluid Media:** Compressed air.

**Inlet Pressure:** 30 to 150 psig (2 to 10 bar).

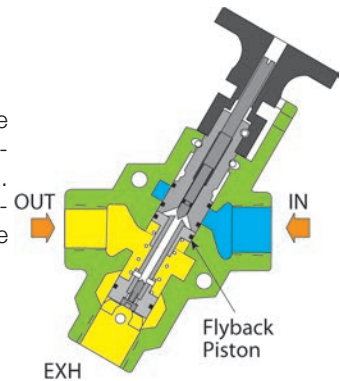


Valve Padlocked in Closed Position

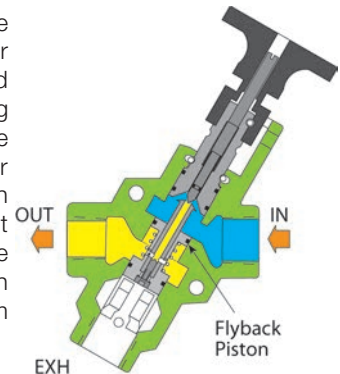
- ◆ 3-Way spool lockout valve with added delayed pressure buildup function.
- ◆ Large operating handle is blue so it will be easily seen in the workplace.
- ◆ Manual lockout control; valve can be padlocked only in the closed position.
- ◆ Adjustable rate of delayed pressure buildup.
- ◆ Spool moves smoothly even after a long period on standby.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

## VALVE OPERATION

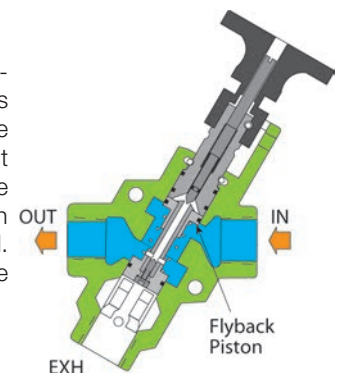
**Valve closed.** With the blue handle pushed inward, air pressure at the inlet is blocked. Pressurized air remaining downstream is exhausted through the exhaust port.



**Valve activated.** With the blue handle pulled outward, inlet air passes through the metered orifice (size set by adjusting screw) and begins to pressurize the outlet. High pressure inlet air on the top of the flyback piston prevents the spring behind it from sliding the piston along the spool. The position of the piston keeps the outlet blocked from the main flow of inlet air.

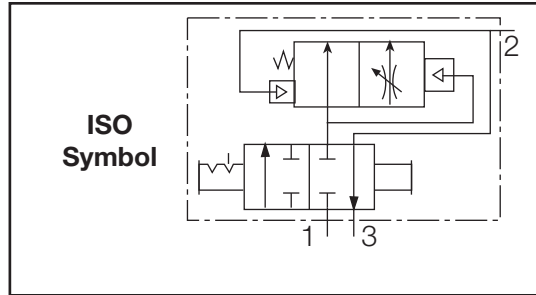
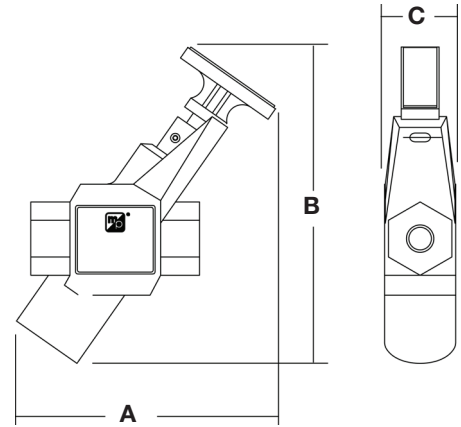


**Valve open.** Air through the metering orifice gradually increases the pressure on the spring side of the flyback piston. At about 25 psi less than inlet pressure the force on the piston is enough to slide it along the main spool. Inlet air then flows freely to the outlet.



**DIMENSIONS** inches (mm)

Port Sizes		Average $c_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
3/8	3/4	6.0	8.0			
1/2	3/4	7.1	8.3	6.4 (163)	8.8 (224)	2.0 (51)
3/4	3/4	8.6	9.5			



**ORDERING INFORMATION**

Select the port size in the sample model number below to specify the valve you want.

**V45M - 3 N6 W**

**INLET/OUTLET PORTS**

3/8 NPTF..... 3  
 1/2 NPTF..... 4  
 3/4 NPTF..... 6

**PORT TYPE**

NPTF threads ..... Leave Blank  
 BSPP threads ..... W



# Manual Control Consolidated Lockout and DPB Valves

# V380 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: V380-6

Patent No.: U.S. 6,893,002 B2

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body:** Die-cast zinc.

**Color:** Black body, yellow lockout sleeve.

**Fluid Media:** Compressed air.

**Elastomers:** Nitrile.

**Inlet Pressure:** 200 psig (13.8 bar) maximum.

**Ports:** Tapped inlet and outlet; untapped exhaust.

**Slide:** Acetal.

## VALVE OPERATION

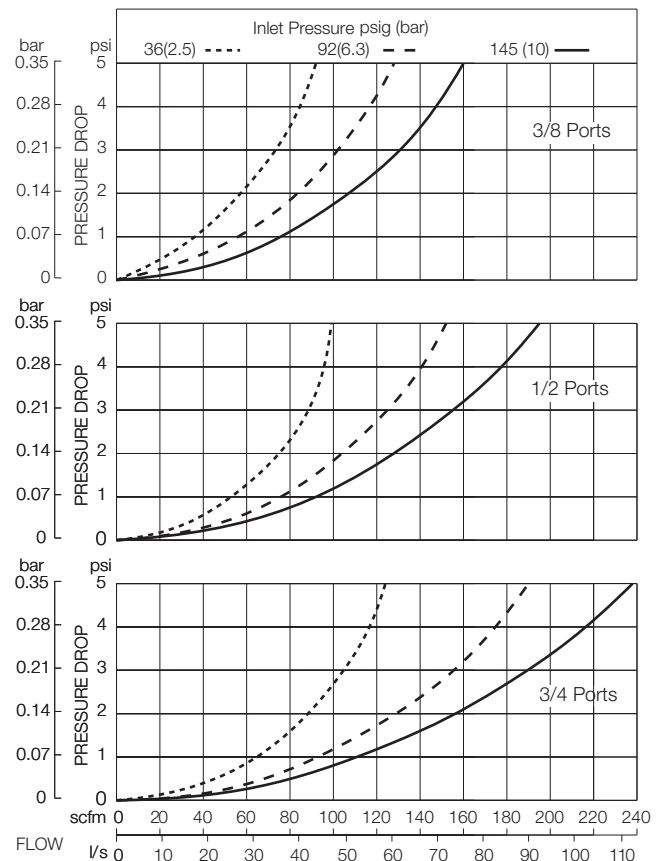
**Slide Fully Extended:** Inlet pressure blocked; downstream air exhausted to atmosphere.

**Slide Inserted to Detent:** Inlet air allowed to build up downstream pressure gradually through a 0.050-inch orifice.

**Detent Button Pressed and Slide Fully Inserted:** Full pressure applied to downstream line.

- ◆ Modular or inline mounting.
- ◆ Provides positive lockout of supply air and exhausting of downstream air.
- ◆ Provides delayed pressure buildup for safe starts.
- ◆ 3-Port valve.
- ◆ Can be padlocked only in the closed position.
- ◆ NPTF port threads; optional BSPP threads.

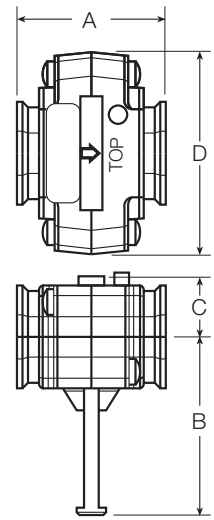
## FLOW CHARTS



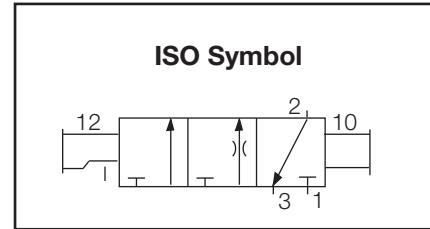
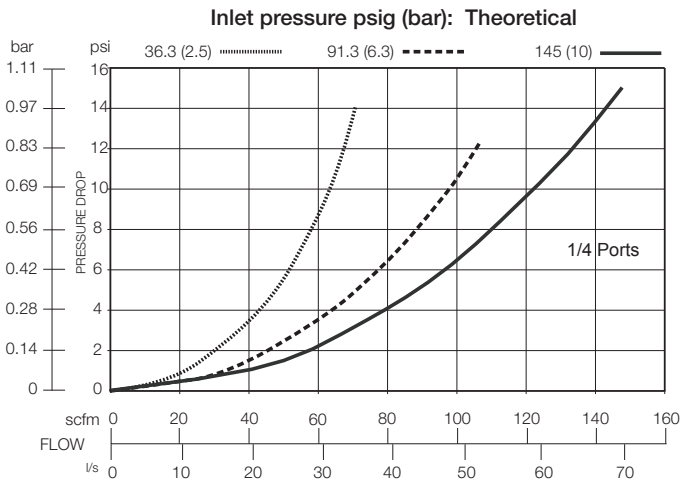
**DIMENSIONS** inches (mm)

Port Size	Average C <sub>v</sub>	A	B †	C	D
1/4	3.2				
3/8	5.8	2.3 (58)	2.6 (66)	0.9 (23)	2.9 (74)
1/2	7.0				
3/4	8.6				

Dimension with valve closed; with valve open, 2.3 (58).



**FLOW CHART**



**ORDERING INFORMATION**

Select the port size in the sample model number below to specify the valve you want.

**V380 - 3 W**

**INLET/OUTLET PORTS**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

# COMPACT Manual control high-flow / exhaust lockout valve and DPB (Delayed-Pressure-Buildup) lockout Valve

## V382 & V383 Models Port Sizes: 1/4, 3/8, 1/2, & 3/4



View shown (above) using padlock in closed position.

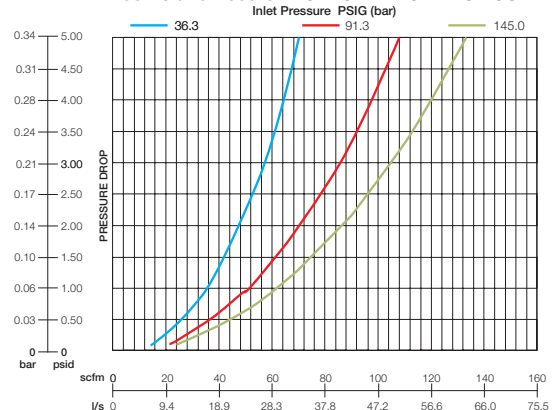
**Model Shown:** V383-4N6A0A  
With DPB option

- ◆ High-Flow threaded Exhaust port to accommodate muffler or a line for remote exhausting.
- ◆ Compact modular (series 380 and 350) or inline.
- ◆ Optional slow start (delayed-pressure-buildup) function.
- ◆ 3 ported valve.
- ◆ 1/8" downstream pressure ports.
- ◆ Options available to indicate downstream pressure.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ Carboxylated Buna O-Rings & Acetal Slide for low break away friction, even after a long standby period.
- ◆ **PUSH** to close, **PULL** to open (DPB-Pull to open as soft start, press button and continue to PULL for full flow).
- ◆ Preferred installation is downstream of F-R-L. **NOTE:** If installed up-stream of regulator, the regulator must be capable of Quick Exhaust (reverse flow).
- ◆ LOTO (lockout Tag out)

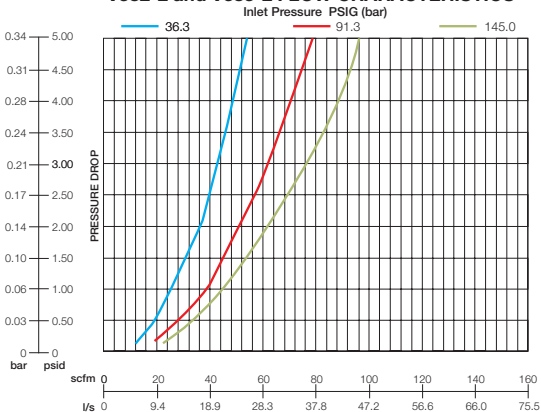
### SPECIFICATIONS

- Ambient/Media Temperature:** 40° to 175°F (4° to 79°C).
- Body:** Zinc.
- Color:** Black body, red lockout slide
- Fluid Media:** Compressed air.
- Inlet Pressure:** 200 psig (13.8 bar) maximum.
- Elastomers:** Nitrile.
- Ports:** Tapped inlet, outlet and exhaust ports.
- Slide:** Acetal.
- Maximum lock shank diameter:** 0.260.

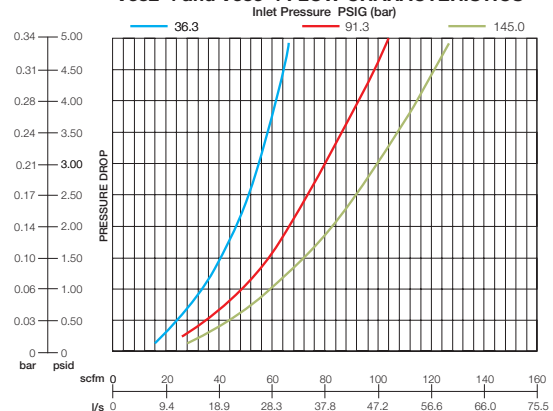
**V382-3 and V383-3 FLOW CHARACTERISTICS**



**V382-2 and V383-2 FLOW CHARACTERISTICS**



**V382-4 and V383-4 FLOW CHARACTERISTICS**



**DIMENSIONS** Inches (mm)

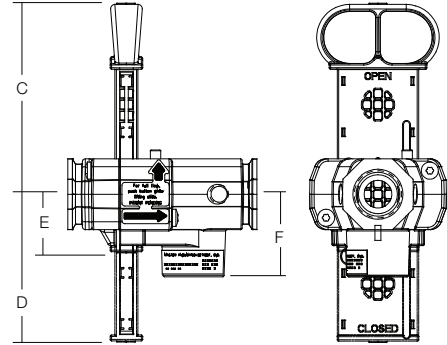
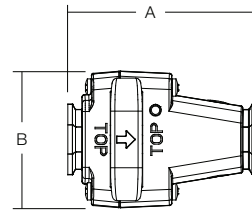
Port Sizes	A	B	C	D	E	F
All	4.01 (101.9)	2.90 (73.7)	4.05 (102.9)	3.14 (79.8)	1.24 (31.5)	1.75 (44.5)

Lockout slide hole diameter: 0.29.  
 Lockout accepts maximum padlock shackle diameter: 0.26  
 Maximum lockout hasp diameter: 0.26.

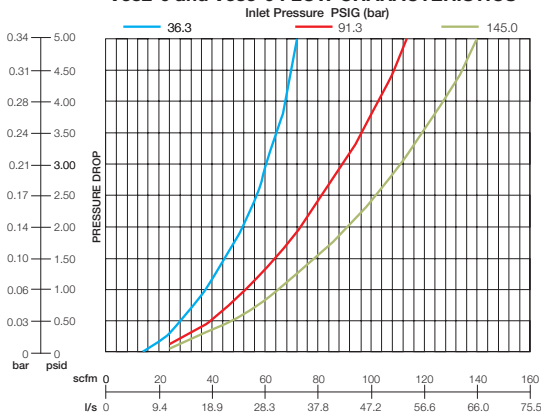
**Flow at 5 PSID**

	NFPA	36.3 SCFM	91.3 SCFM	145 SCFM
<b>V382-2</b>	CV = 3.7	53	78	96
<b>V382-3</b>	CV = 4.9	70	109	132
<b>V382-4</b>	CV = 4.9	67	103	128
<b>V382-6</b>	CV = 5.3	73	114	141

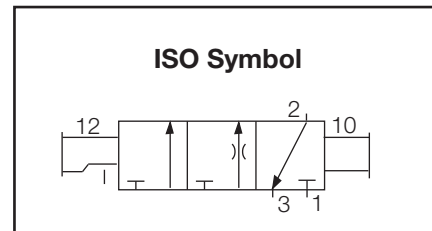
**NOTE:** These units can be padlocked in the closed position only.



**V382-6 and V383-6 FLOW CHARACTERISTICS**



**ISO Symbol**



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lockout valve you want.

**V38 3 - 3 N 6 A 1 A W**

**LOCKOUT TYPE**

- Lockout (Push-Pull) ..... 2
- Lockout with (0.050 Orifice) delayed- Pressure-Buildup function. .... 3

**INLET / OUTLET PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6

**EXHAUST PORTS**

- 3/4 NPTF ..... 6

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPF threads ..... W

**MUFFLER TYPE**

- None ..... A
- Muffler (M200-6) ..... B

**GAUGE OPTIONS**

- None ..... 0
- 0-30 PSI ..... 1
- 0-60 PSI ..... 2
- 0-160 PSI ..... 3
- Pressure sensor (118-122) ..... 4

# VANGUARD Remote Air Pilot 3/2 Valves with Lockout and DPB Functions

# V480 Models Port Sizes: 1/4 to 1

Model Shown: V480-8N8



- ◆ Manual lockout control; can be padlocked in the closed position.
- ◆ Delayed pressure buildup (DPB); rate of pressure buildup adjustable.
- ◆ 3-Way poppet valve. Available in two body sizes and five port sizes.
- ◆ Uses remote pilot control.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

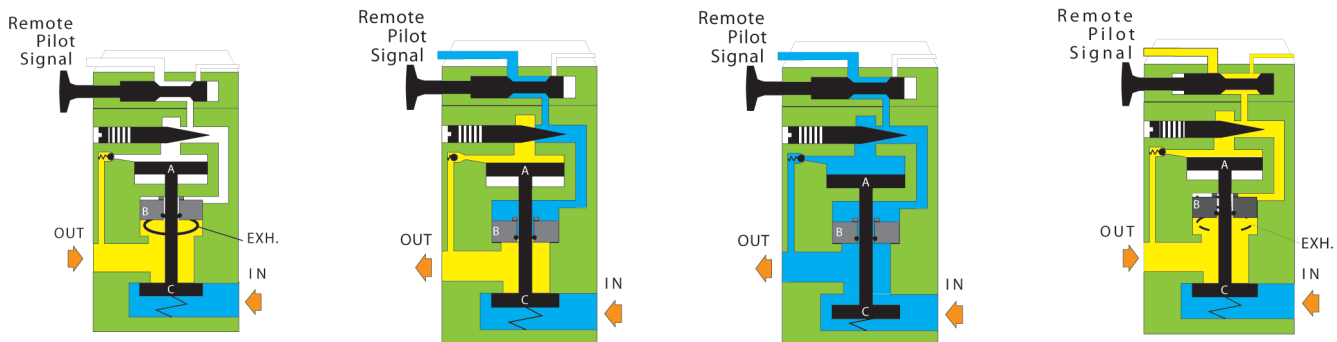
### Ambient/Media Temperature:

40° to 175°F (4° to 80°C).

**Fluid Media:** Compressed air.

**Inlet Pressure:** 15 to 150 psig (1 to 10 bar).

## VALVE OPERATION



**Lockout open and no pilot signal.** Inlet air is blocked by inlet poppet C. Any downstream pressure forces sliding piston B upward. This opens the exhaust port and vents the downstream air.

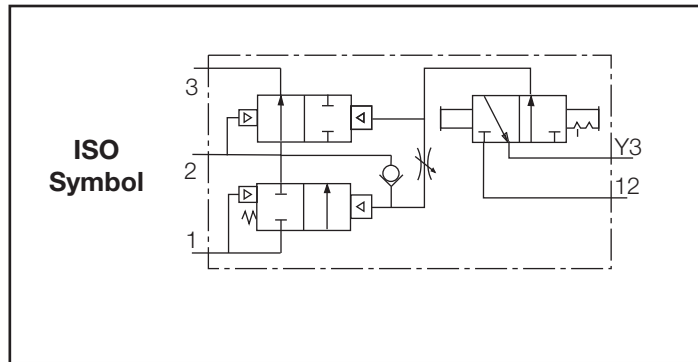
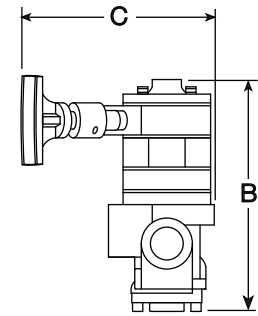
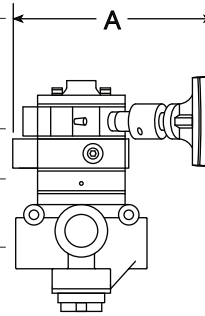
**Lockout open and pilot signal applied.** Pilot air forces piston B downward to close exhaust port. Pilot air also flows past the metering pin, opens the ball check, and slowly pressurizes the outlet line. Pressure is also building up on piston A.

When the pressure on piston A reaches 50% of inlet pressure, the piston is forced downward, opening inlet poppet C. Inlet air now flows freely to the outlet port.

**Lockout closed.** At any time the lockout handle can be pushed inward, closing off the flow of pilot air. Pilot air above pistons A and B is then vented through the exhaust port. Piston A moves upward closing inlet poppet C. Sliding piston B moves upward opening the exhaust port and venting the downstream line.

**DIMENSIONS** inches (mm)

Port Sizes		Average $c_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
1/4	1/2	2.5	3.1			
3/8	1/2	3.6	5.3	6.1 (153)	6.3 (161)	6.3 (161)
1/2	1/2	3.3	5.3			
1/2	1	6.3	9.2			
3/4	1	7.7	11	6.6 (167)	7.1 (180)	6.3 (161)
1	1	8.0	12			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V480 - 2 N4 W**

**INLET/OUTLETPORTS**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6
- 1 NPTF..... 8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**EXHAUST PORT SIZE:**

- 1/2 exhaust port ..... N4  
for 1/4, 3/8, 1/2 inlet / outlet ports.
- 1 exhaust port ..... N8  
for 1/2, 3/4, 1 inlet / outlet ports.

# VANGUARD Solenoid Pilot 3/2 Valves with Lockout and DPB Functions

# V485 Models Port Sizes: 1/4 to 1

Model Shown: V485-4N4



- ◆ Manual lockout control; can be padlocked in the closed position.
- ◆ Delayed pressure buildup (DPB); rate of pressure buildup adjustable.
- ◆ 3-Way poppet valve. Available in two body sizes and five port sizes.
- ◆ Uses solenoid pilot control.
- ◆ Solenoids CSA approved.
- ◆ Threaded exhaust port to accommodate a silencer or a line for remote exhausting.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Media Temperature:

40° to 175°F (4° to 80°C).

### Ambient Temperature:

40° to 120°F (4° to 50°C).

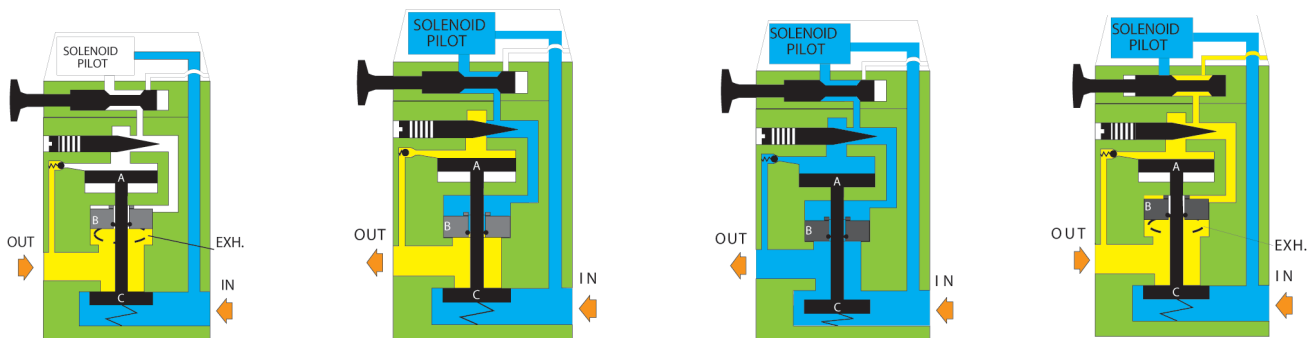
**Fluid Media:** Compressed air.

**Inlet Pressure:** 15 to 150 psig (1 to 10 bar).

**Solenoid Voltages:** 110 volts 50/60 Hz standard.

Optional available voltages shown on following page.

## VALVE OPERATION



**Lockout open and pilot not energized.** Inlet air is blocked by inlet poppet C. Any downstream pressure forces sliding piston B upward. This opens the exhaust port and vents the downstream air.

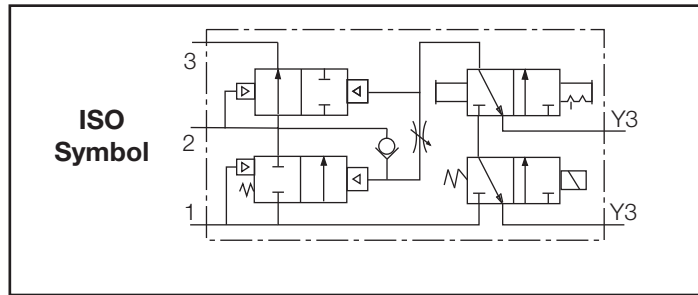
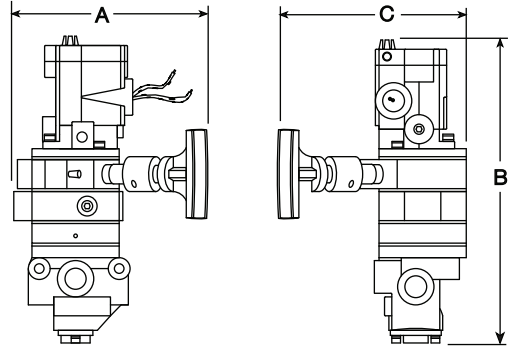
**Lockout open and pilot energized.** Pilot air forces piston B downward to close exhaust port. Pilot air also flows past the metering pin, opens the ball check, and slowly pressurizes the outlet line. Pressure is also building up on piston A.

When the pressure on piston A reaches 50% of inlet pressure, the piston is forced downward, opening inlet poppet C. Inlet air now flows freely to the outlet port.

**Lockout closed.** At any time the lockout handle can be pushed inward, closing off the flow of pilot air. Pilot air above pistons A and B is then vented through the exhaust port. Piston A moves upward closing inlet poppet C. Sliding piston B moves upward opening the exhaust port and venting the downstream line.

**DIMENSIONS** inches (mm)

Port Sizes		Average $c_v$		A	B	C
In-Out	Exh	1 to 2	2 to 3			
1/4	1/2	2.5	3.1			
3/8	1/2	3.6	5.3	6.1 (153)	9.8 (249)	6.3 (161)
1/2	1/2	3.3	5.3			
1/2	1	6.3	9.2			
3/4	1	7.7	11	6.6 (167)	10.6 (268)	6.3 (161)
1	1	8.0	12			



**ORDERING INFORMATION**

Select the port sizes in the sample model number below to specify the valve you want.

**V485 - A - 2 N4 W**

**VOLTAGE REQUIREMENT**

- 110/50Hz, 110-120/60Hz (AC)..... Leave Blank
- 12/50-60Hz (AC) ..... -A
- 24/50-60Hz (AC) ..... -B
- 48/50-60Hz (AC) ..... -C
- 220/50, 220-240/60Hz (AC) ..... -D
- 12v (DC) ..... -E
- 24v (DC) ..... -F
- 48v (DC) ..... -G
- 120v (DC) ..... -H

**INLET/OUTLET PORTS**

- 1/4 NPTF.....2
- 3/8 NPTF.....3
- 1/2 NPTF.....4
- 3/4 NPTF.....6
- 1 NPTF.....8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

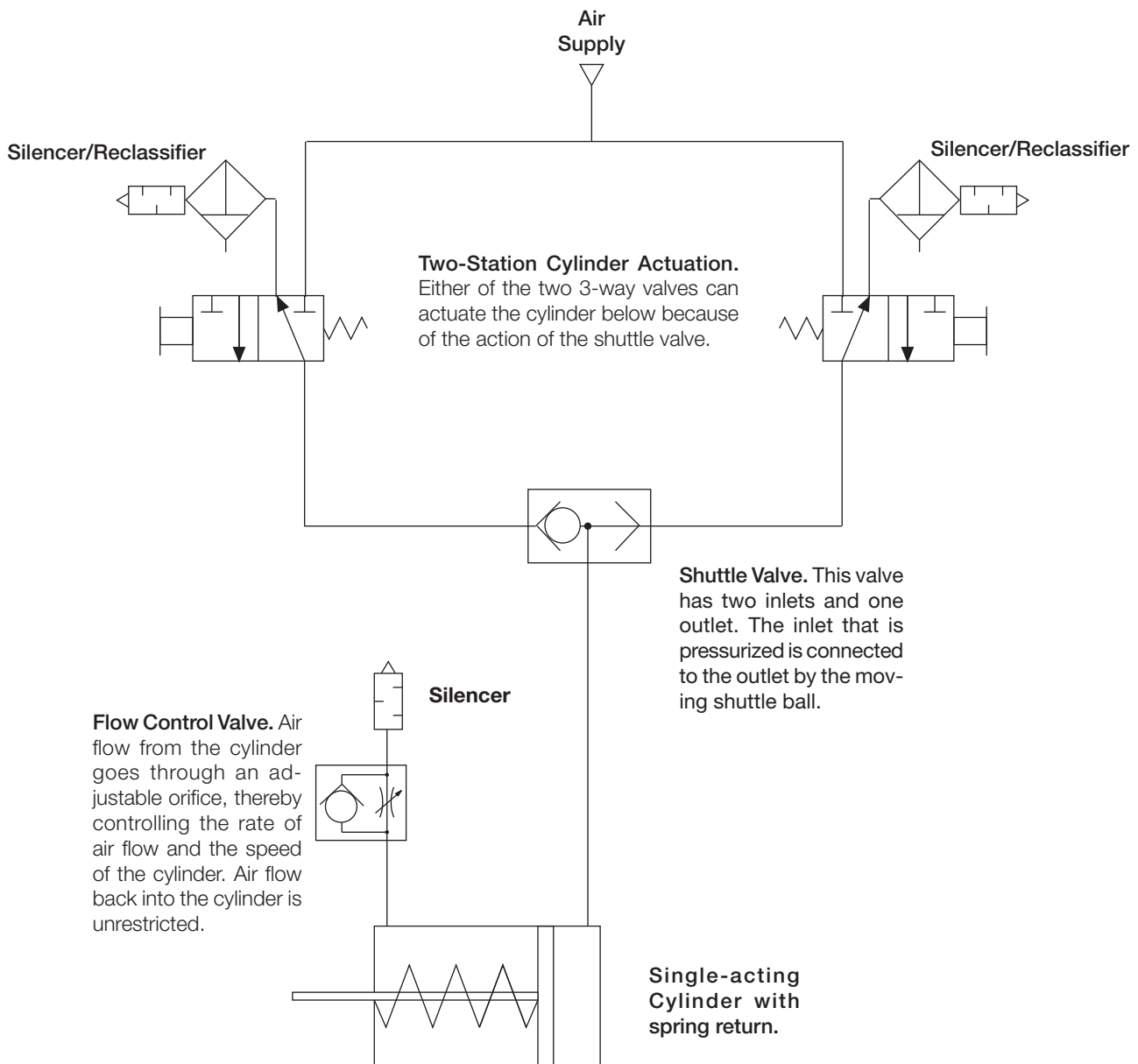
**EXHAUST PORT SIZE:**

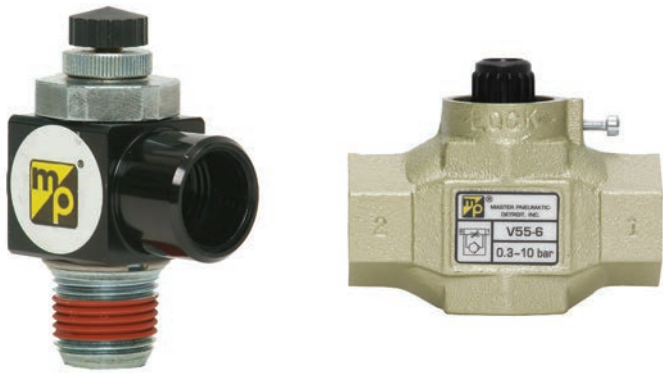
- 1/2" exhaust port.....N4  
for 1/4, 3/8, 1/2 inlet / outlet ports.
- 1" exhaust port.....N8  
for 1/2, 3/4, 1 inlet / outlet ports



# AUXILIARY EQUIPMENT

Auxiliary valves are those used in pneumatic circuits to make the major components of the circuit work with greater versatility and efficiency. An example of the use of auxiliary valves is shown in the simple pneumatic circuit below.





### FLOW CONTROL VALVES

Flow control valves have an adjustable orifice which restricts the flow of air in one direction through the valve. Free, unrestricted flow is allowed in the opposite direction. The restricted flow can be used at the outlet of a cylinder, for example, (see diagram on the facing page) to control the speed with which the cylinder's piston can move. Air returning to the cylinder is unrestricted. In such an application a flow control valve is sometimes called a speed control valve. For versatility in installation flow control valves are available for straight-through flow (V55 models) or for right-angle flow (V50 models).



### SHUTTLE VALVES

Shuttle valves have two inlet ports, but only one outlet port. The inlet port with the higher pressure is automatically connected to the outlet port. This allows an output signal to be initiated from two different locations. See circuit on the facing page.

SV20 shuttle valves are available with either 1/8 or 1/4 ports.



### CHECK VALVES

Check valves are flow actuated. They are used to allow air flow in one direction only, and to prevent flow in the opposite direction. V60 check valves are available with ports from 1/8 to 1.

# Shuttle Valves

# SV20 Models Port Size: 1/8, 1/4

Model Shown: SV20-2



- ◆ Valve has two inlets and one outlet. Valve is pressure actuated so that the inlet with the higher pressure is connected to the outlet.
- ◆ Nitrile or Teflon seals. Teflon seals are resistant to xylene and mek (*methyl ethylketone*).
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

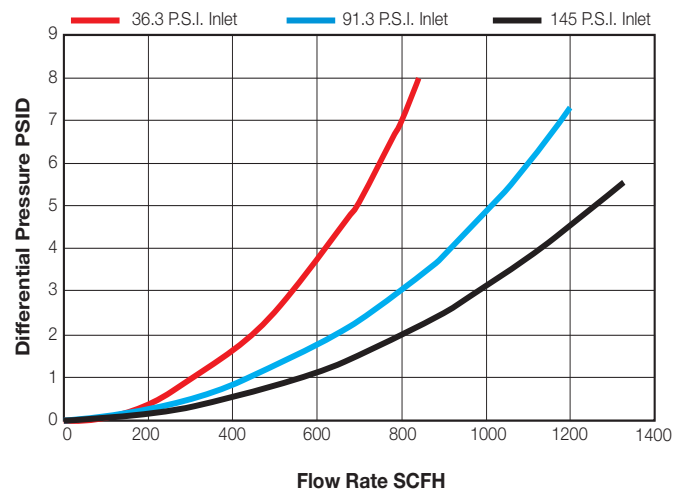
**Fluid Media:** Compressed air.

**Inlet Pressure:**

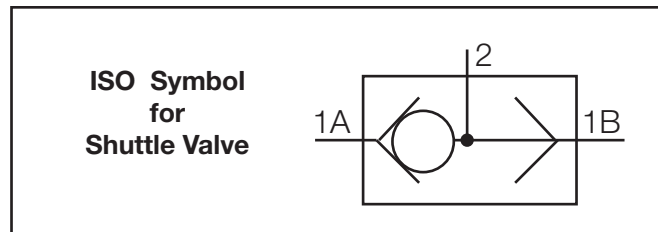
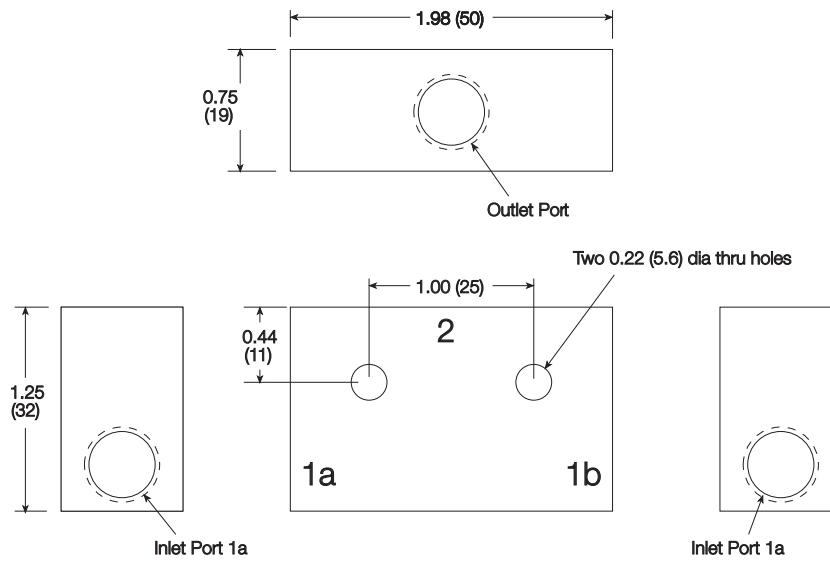
5 to 150 psig (0.3 to 10 bar) maximum.

**Seals:** Nitrile or Teflon.

## SV20-2 FLOW CHARACTERISTICS

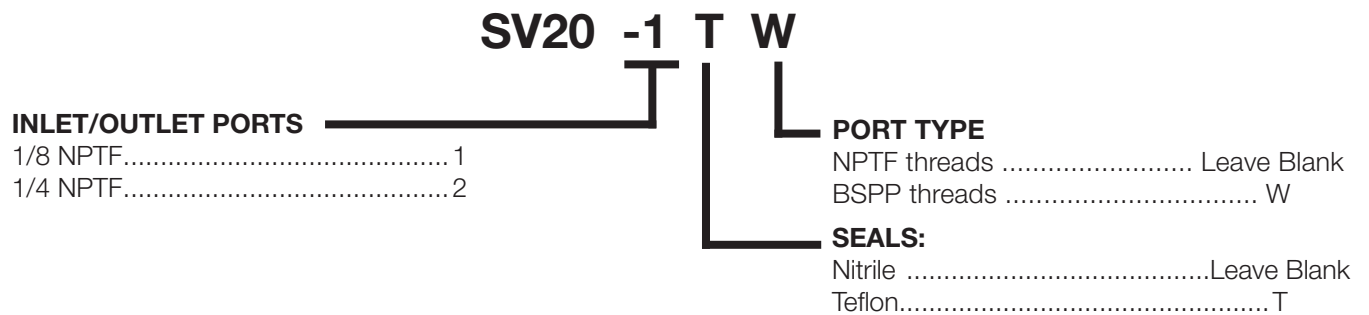


## DIMENSIONS inches (mm)



## ORDERING INFORMATION

Select the port sizes in the sample model number below to specify the valve you want.



# Right-Angle Flow Control Valves

## V50 Models Port Size: 1/8 to 1/2 and Tube Fittings

Model Shown: V50-4



- ◆ Screws directly into a cylinder port.
- ◆ Inlet port swivels for optimum placement.
- ◆ Models available with either knurled-knob adjustment or screwdriver-slot adjustment.
- ◆ Four body sizes.
- ◆ **NPTF** port threads; optional **BSPP** threads. Also push-on tube fittings.

### SPECIFICATIONS

**Ambient/Media Temperature:**

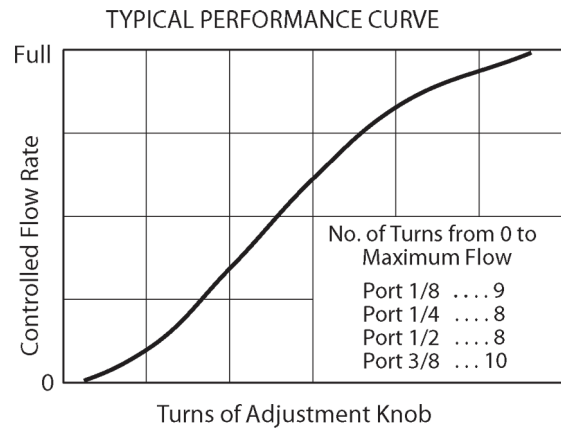
40° to 175°F (4° to 79°C).

**Flow Adjustment:** Knurled knob or screwdriver slot.

**Fluid Media:** Compressed air.

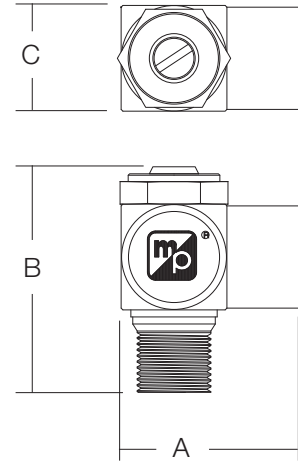
**Inlet Pressure:**

5 to 150 psig (0.3 to 10 bar) maximum.

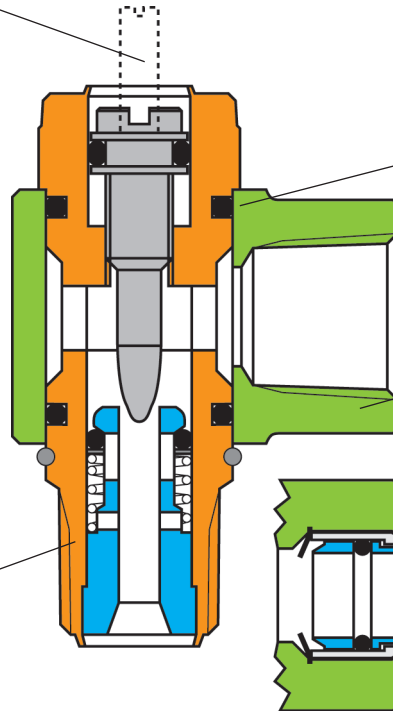


## DIMENSIONS inches (mm)

Port or Tube OD Size	Average C <sub>v</sub> (Full Flow)	Type of Adjustment	A	B	C
1/8	0.3	Slot	1.0 (25)	1.4 (36)	0.63 (16)
		Knob	1.0 (25)	1.9 (48)	0.63 (16)
1/4	0.6	Slot	1.3 (33)	1.6 (41)	0.79 (20)
		Knob	1.0 (25)	2.2 (56)	0.63 (16)
3/8	1.9	Slot	1.5 (38)	2.2 (56)	0.94 (24)
		Knob	1.5 (38)	3.0 (77)	0.94 (24)
1/2	2.8	Slot	1.9 (47)	2.7 (68)	1.2 (30)
		Knob	1.9 (47)	3.7 (93)	1.2 (30)



Flow adjustment by screw-driver slot or knurled knob (dotted line).



O-ring seals on adjusting stem provide friction to keep stem in its set position.

Inlet is a swivel port which rotates 360° for optimum placement.

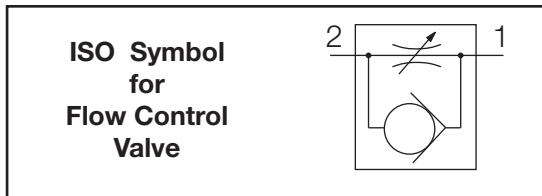
Threads are coated with pipe sealant. Screw directly into cylinder port.

Removable tubing release ring.

## ORDERING INFORMATION

Order by the model number given below.

For **BSPP** port threads add **W** to the end of the model number.



Port or Tube OD Size	Average C <sub>v</sub> (Full Flow)	Type of Adjustment	Model Numbers	
			Threaded Inlet	Tube Fitting
1/8	0.3	Slot	V50S-1	V50S-02
		Knob	V50-1	V50-02
1/4	0.6	Slot	V50S-2	V50S-04
		Knob	V50-2	V50-04
3/8	1.9	Slot	V50S-3	V50S-06
		Knob	V50-3	V50-06
1/2	2.8	Slot	V50S-4	—
		Knob	V50-4	—

# Inline Flow Control Valves

## V55 Models Port Size: 1/4 to 1-1/4



Model Shown: V55-6

- ◆ Straight-through design provides high air flow into a cylinder.
- ◆ Flow out of a cylinder can be precisely controlled. Adjustable flow can range from near zero to full flow.
- ◆ Adjustment control can be locked in position to prevent a change due to vibration.
- ◆ Three body sizes.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

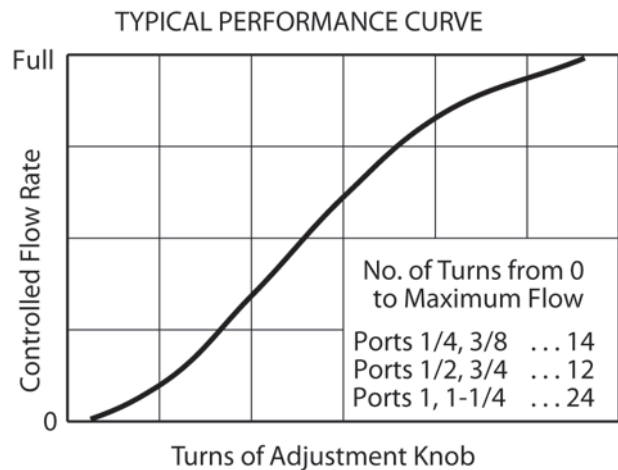
40° to 175°F (4° to 79°C).

**Body:** Aluminum with brass adjusting stem.

**Fluid Media:** Compressed air.

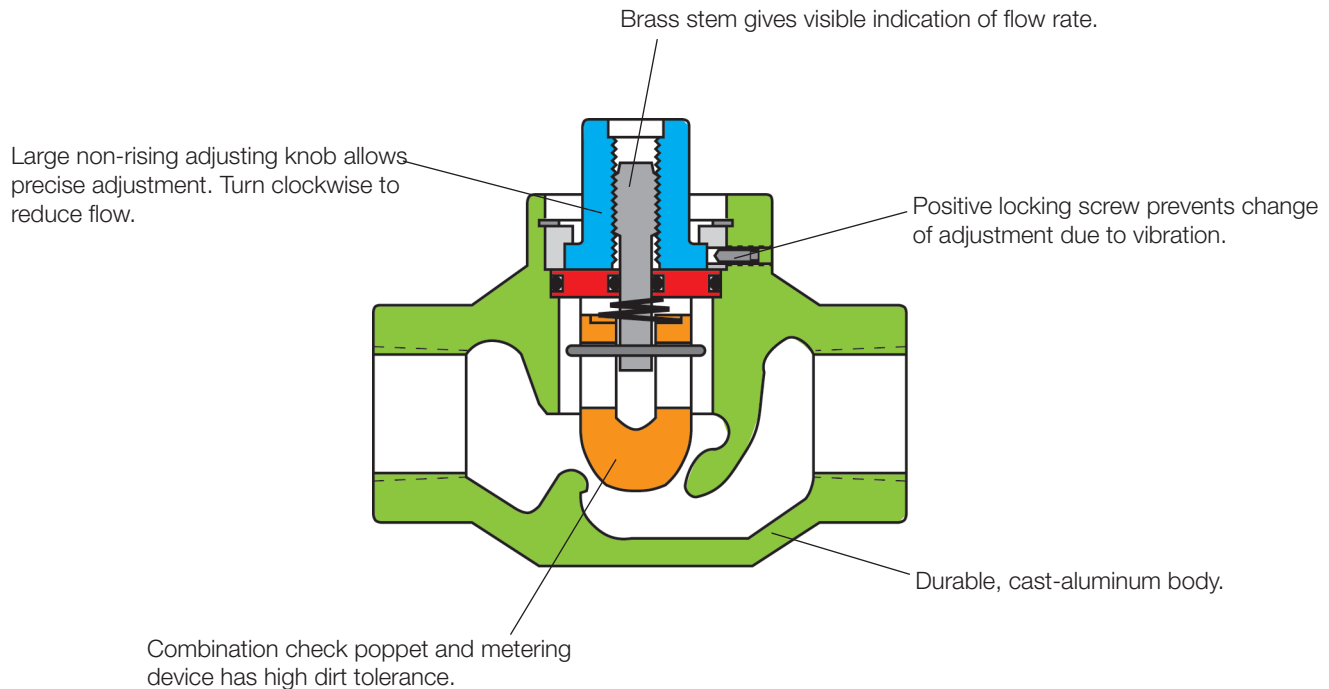
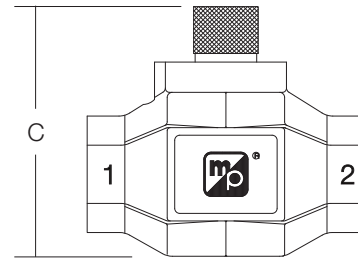
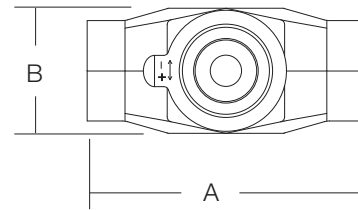
**Inlet Pressure:**

5 to 150 psig (0.3 to 10 bar) maximum.



**DIMENSIONS** inches (mm)

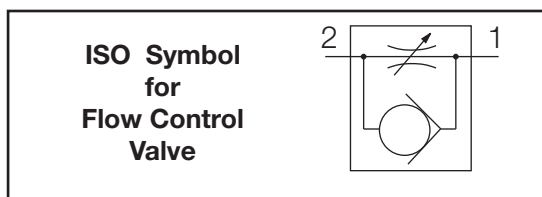
Port Size	Average $C_v$ (Full Flow)	A	B	C
1/4	2.3	2.8	1.3	2.5
3/8	2.6	(70)	(32)	(64)
1/2	7.5	3.8	1.6	3.1
3/4	8.3	(95)	(40)	(78)
1	17	5.0	2.5	4.4
1-1/4	22	(127)	(64)	(111)



**ORDERING INFORMATION**

Order by the model number given below.  
For BSPP port threads add W to the end of the model number.

Port Size	Average $C_v$ (Full Flow)	Model Number
1/4	2.3	V55-2
3/8	2.6	V55-3
1/2	7.5	V55-4
3/4	8.3	V55-6
1	17	V55-8
1-1/4	22	V55-10





# Check Valves

## V60 Models Port Size: 1/8 to 1

Model Shown: V60-4



- ◆ Flow-actuated so that they allow full air flow in one direction, but are fully closed to air flow in the opposite direction.
- ◆ Self-cleaning poppet design tolerates dirty air.
- ◆ NPTF port threads; optional BSPP threads.

Model Shown: V60-8



### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Fluid Media:** Compressed air.

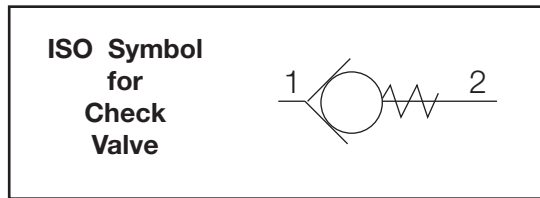
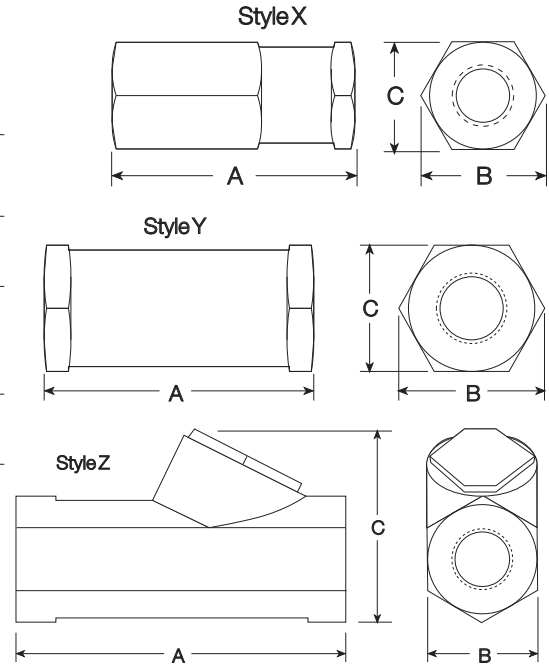
**Inlet Pressure:**

5 to 150 psig (0.3 to 10 bar) maximum.

**Cracking Pressure:** Less than 1.5 psi (0.1 bar).

DIMENSIONS inches (mm)

Valve Style	Port Size	Average C <sub>v</sub>	A	B	C	Weight lb (kg)
X	1/8	0.5	2.71	.2	1.0	0.5
	1/4	0.5	(69)	(30)	(25)	(0.23)
Y	1/4	2.9	2.8 (71)	1.6 (40)	1.4 (35)	0.5 (0.23)
	3/8	3.7	2.8 (71)	1.6 (40)	1.4 (35)	
	1/2	3.9	3.7 (94)	1.6 (40)	1.4 (35)	
Z	3/4	8.6	8.6	4.8	1.8	3.2 0.9
	1	8.3	(122)	(46)	(81)	(0.41)



**ORDERING INFORMATION**

Order by the model number given in the chart below.  
 For **BSPP** port threads add W to the end of the model number.

Valve Style	Port Size	Average C <sub>v</sub>	Model Number
X	1/8	0.5	V60-1
	1/4	0.5	V60-2
Y	1/4	2.9	V60M-2
	3/8	3.7	V60-3
	1/2	3.9	V60-4
Z	1/2	5.2	V60M-4
	3/4	8.6	V60-6
	1	8.3	V60-8
	1	17	V60M-8

# GENERAL PURPOSE FILTERS

## FILTER FUNCTION

General purpose compressed air filters remove water and particulate material from the air stream to protect downstream equipment from contamination. As air enters the filter, internal baffles create a swirling motion to the air so that entrained dirt and liquids are thrown against the sides of the filter bowl and then fall to the sump area at the bottom of the bowl.

Additional baffling keeps the air in the sump area relatively quiet; this ensures that the removed material is not returned to the air flow going to the filter element. The filter element will then collect smaller particles.

The most frequently used element in Master Pneumatic general purpose filters is rated at 5 µm, so that nearly all particles larger than 5 µm (*half the diameter of a human hair*) will be collected in the filter element.

## FILTER SELECTION

General purpose filter elements are available with 5-µm and 40-µm ratings; some units can also be provided with 20-µm-rated elements. The most efficient filter element is one selected by taking into consideration the dirtiness of the ambient air and the needed cleanliness of the air after filtration.

Some high-flow filters have 40-µm elements which are satisfactory for general piping. At point of use, and with smaller filters, the standard 5-µm element is most commonly used and recommended. See coalescing filters for finer filtration.

## GUIDE to GENERAL PURPOSE FILTERS

Filter Series	Modular Construction	Port Sizes										Pages
		1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2		
<b>SENTRY</b>												
FD10 models †	yes	X	X									54-55
<b>MINIATURE</b>												
FD50 models	no	X	X									56-57
F50S stainless steel models	no		X									58-59
<b>GUARDSMAN</b>												
FD60 models	yes		X	X	X							60-61
<b>GUARDSMAN II</b>												
BFD70 models	yes		X	X	X							62-63
<b>Modular</b>												
F5A350 models	yes		X	X	X							64-65
<b>Full-Size VANGUARD</b>												
FD100 models	yes		X	X	X	X						66-67
<b>Full-Size SERIES 380</b>												
FD380 models	yes			X	X	X						68-69
<b>High-Flow VANGUARD</b>												
FD100, BFD100 models	no					X	X	X	X	X		70-71
BF6A400 models	no							X	X	X		74-75
BFD200 models	no					X	X	X	X			72-73 & 76-77

† Also available with quick-connect tube fittings up to 10 mm.

## FILTER MAINTENANCE

Filters must be attended to on a regular basis in order to rid them of water and other contaminants. The use of an automatic drain is highly recommended because it greatly reduces the need for frequent individual attention. This is especially important if access to the filter is difficult, because difficult access makes it much more likely that regular maintenance will be overlooked. If a filter is equipped with a manual drain, accumulated water must be removed regularly so that it does not clog the filter.

Pressure drop across filter elements increases as they continue to remove dirt from the air. They should be inspected on a regular basis, and replaced to restore full efficiency.

Under average conditions filter elements should be replaced each year.

## CARE OF PLASTIC BOWLS

Plastic bowls are made of high-strength polycarbonate, a very tough transparent material. Bowls are intended for use with compressed air, but can be adversely affected if contaminants such as alcohol or liquified petroleum gas are in the intake air. Some compressor oils, solvent fumes, and other substances can attack the bowl and lead to failure.

When a bowl is cleaned (by wiping inside and outside with a clean dry cloth) it should be inspected for cracks or scarring on the surface. If either condition occurs it is an indication that the ambient air contains harmful substances, and the bowl should be replaced, preferably with a metal bowl.

Just a few of the substances that can harm polycarbonate bowls are: acetone, ammonia, benzene, brake fluids, carbon disulfide, carbon tetrachloride, ethyl acetate, ethylene glycol, Freon, lacquer thinner, nitrocellulose lacquer, sodium hydroxide, toluene, turpentine, and many others.

Small bowls (i.e., Sentry and Miniature bowls) do not need bowl guards. However, metal shatterguards are supplied with larger bowls and must always be used.

Never use polycarbonate bowls at temperatures above 125°F (52°C) or pressures above 150 psig (10 bar). For conditions exceeding these limits use metal bowls.

## BOWL DRAINS

Manual drains are the simplest bowl drains, but they require frequent attention to rid the bowl of accumulated water and dirt particles. If a filter is located where it is difficult to access, it might not be drained as often as it should be. For this reason, and to save a lot of maintenance manpower, automatic drains (see next page) are standard equipment and provide a cost-effective way to maximize filter performance and reduce maintenance.

Tube-Away kits (see **ACCESSORIES**) supply tubing for **VANGUARD** filters with automatic drains to carry water and dirt to a suitable drainage outlet.

**HYDRO-JECTOR** external drains (see next page) for **SERIES 380** and **VANGUARD** filters are for use wherever severe condensate problems exist. They operate automatically whenever liquid in the bowl raises the float activating the drain.

The **WARRIOR** drain (see **ACCESSORIES**) is electronically controlled, and allows filter draining to occur at specific intervals and for specific lengths of time.

## IMPORTANT NOTE

Before inspecting or servicing a filter (or any other pneumatic component) be sure that the pneumatic pressure to the component is shut off and exhausted, and cannot be inadvertently turned on.

# BOWL DRAINS

## MANUAL DRAIN

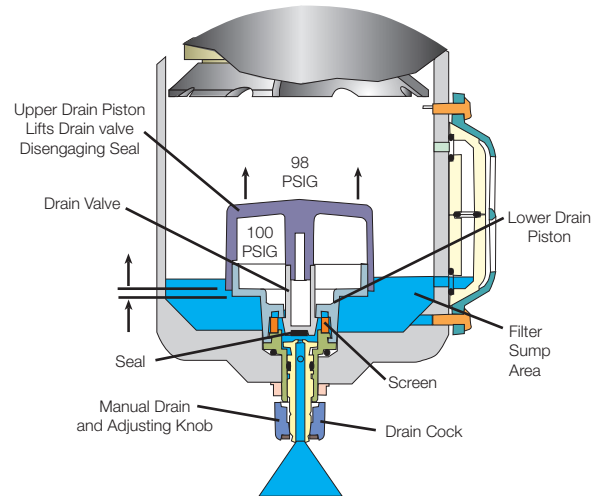
Manual drains are the simplest bowl drains, but they require frequent attention to rid the bowl of accumulated water and dirt particles. If a filter is located where it is difficult to access, it might not be drained as often as it should be. For this reason, and to save a lot of maintenance manpower, automatic drains are the standard equipment and provide a cost effective way to maximize filter performance and reduce maintenance.



Tube-Away kits supply tubing for filters with automatic drains to carry water and dirt to a suitable drainage outlet.

External drains for filters are used for use wherever severe condensate problems exist. They operate automatically whenever liquid in the bowl raises the float activating the drain.

automatic drain to expel accumulated liquid. The drain activates whenever the air supply is shut down and exhausted. An adjusting knob at the bottom of the filter on all products (except sentry and miniature series) can be set for sensitivity



## INTERNAL AUTOMATIC DRAIN

Manual draining is often inconvenient, and overlooked. Manual drains require frequent attention to rid the bowl of accumulated water and dirt particles. If a filter is located where it is difficult to access, it might not be drained as often as it should be. Automatic drains are standard on M/P Filters (D option), and we strongly recommend their use to improve filter effectiveness, lengthen service life, and reduce maintenance needs.



The automatic drain operates when liquids have accumulated in the filter bowl and a pressure drop of 2 psi (0.14 bar) or more occurs (e.g., when a valve or other device downstream is actuated). The pressure drop triggers the

## INTERNAL FLOAT DRAIN

Float drains are used as an alternative for continuous flow applications where pressure drop might only occur at the start of the duty cycle. When liquid is present the float will rise and the bowl will empty.

**Operating pressure:** 200 psig (13.8 bar) maximum and 30 psig (2.1 bar) minimum.

Internal float drain is available with plastic or brass drain stem.



## HYDRO-JECTOR EXTERNAL DRAINS

**HYDRO-JECTOR** drains are for use with the **SERIES 380** and **VANGUARD** filters wherever severe condensate problems exist. They can also be used to drain water separators, drip legs, and compressor receiver tanks. They operate with continuous, intermittent, or no air flow, and drain only when liquids are present.

Discharge rate is 300 gallons (1135 liters) per hour at 100 psig (6.9 bar). Flushing action is instantaneous with minimal air

loss compared to conventional drains. There is a manual override on the drain valve for clean-out and emergency use. **HYDRO-JECTOR** drains are available with 1/8 or 1/4 nipples. The 1/4 size is used with **SERIES 380** and **VANGUARD** filters.

The **HYDRO-JECTOR** is not recommended where heavy oil or foam is present, as can be the case in separators or large after-coolers.



**Model Shown:** E100-2

## A COST-EFFECTIVE SOLUTION TO THE REMOVAL OF WATER FROM A COMPRESSED AIR SYSTEM

Compressing ambient air to 100 psig creates air temperatures as high as 360°F (182°C) in the compressor cylinders. Typically, at this high temperature and with an air compressor rated at 450 scfm (210 l/s), the amount of water vapor generated will convert to 3.5 gallons (13 liters) of water for each hour of operation.

The hot air will be 100% saturated with water vapor, i.e., at its dew point. Even the smallest reduction in temperature will result in a “rain storm” within the compressed air system, and liquid water will accumulate. This water must be removed before it finds its way downstream where it can do considerable damage.

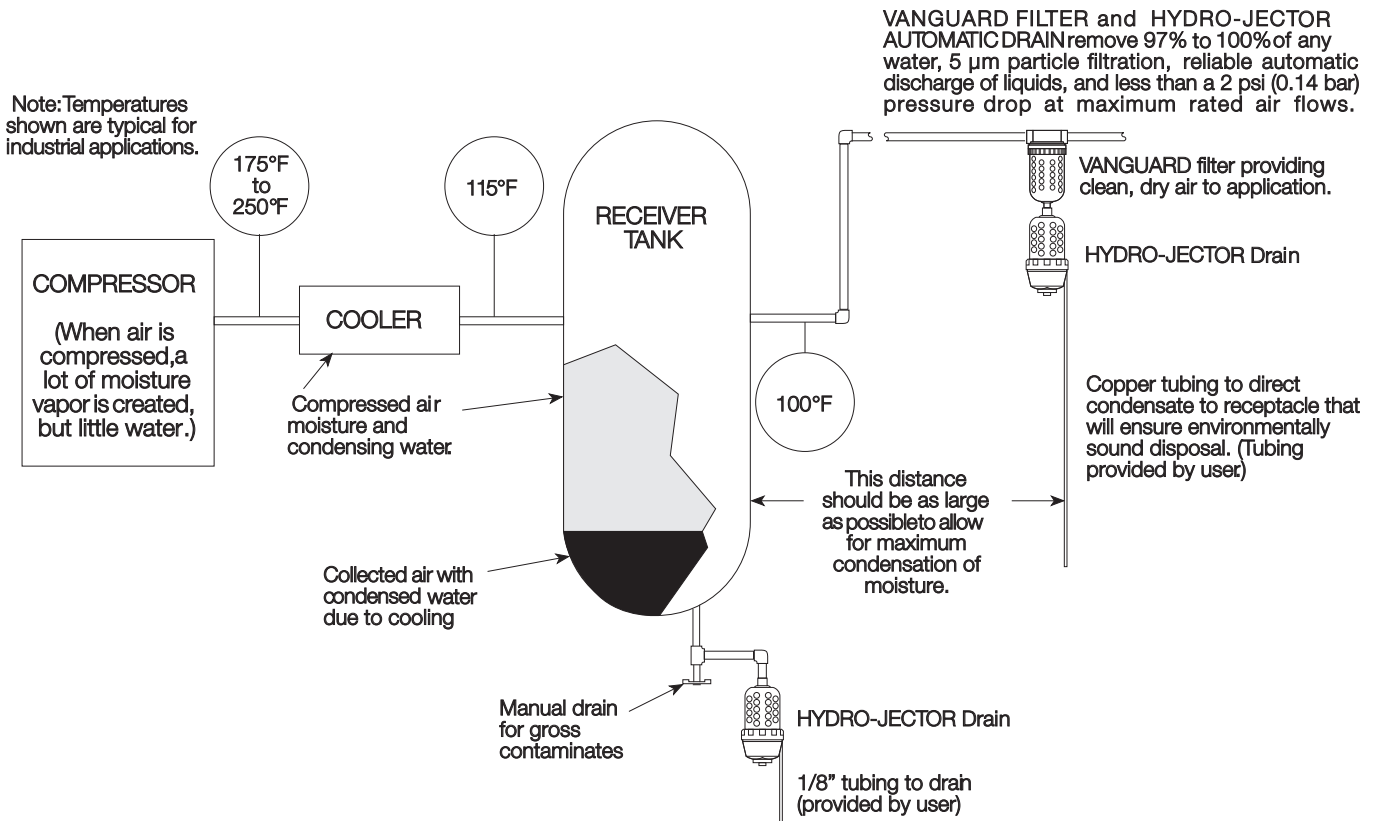
**VANGUARD** or **SERIES 380** heavy-duty filters paired with **HYDRO-JECTOR** drains provide a low-cost, and ef-

fective means for draining water from the system before it can do harm. Smaller plants, those with 100 to 500 scfm compressors, will find this an especially economical way to cope with the water problem.

**FILTER/HYDRO-JECTOR Installation:** The **VANGUARD** and **SERIES 380** filters must be ordered with the option designated “**LDC**”. This option removes the drain cock, and replaces it with a 1/4” threaded adapter. This will then receive the **HYDRO-JECTOR** drain which has a rubber spacer that goes between the filter and the drain.

See the sample compressor circuit below to see how the filter and **HYDRO-JECTOR** drains are used.

### TYPICAL COMPRESSOR CIRCUIT EMPLOYING HYDRO-JECTOR DRAINS



# SENTRY Modular General Purpose Filters

# FD10 Models Port Sizes: 1/8, 1/4; Tube Fittings



Model Shown: FD10-2

- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl; optional metal bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

### Body:

Acetal.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

### Bowl Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

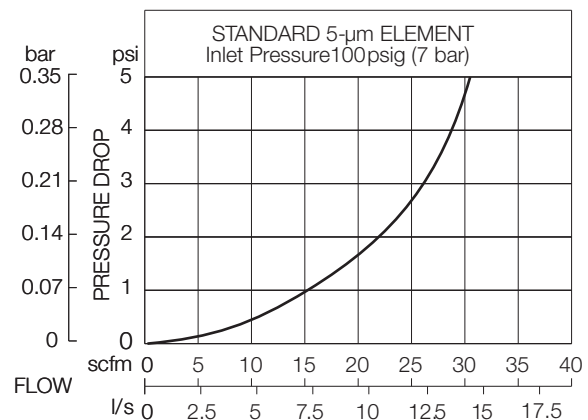
**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum.

**Seals:** Nitrile.

## FLOW CHART

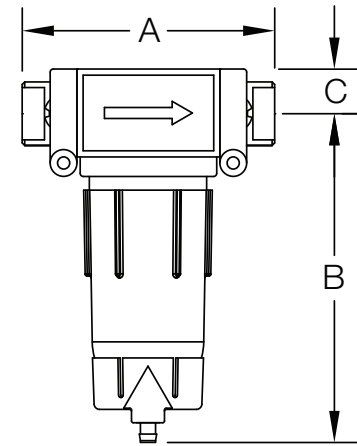


**DIMENSIONS** inches (mm)

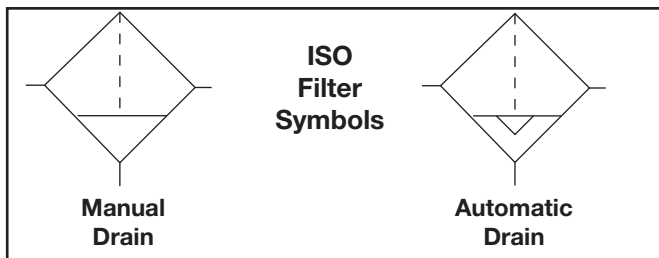
Ports	A	B †	C	Depth	Weight
					lb (kg)
No Port	1.7 (43)	3.9 (99)	0.5 (13)	1.8 (45)	0.27 (0.12)
1/8, 1/4	3.0 (76)	3.9 (99)	0.5 (13)	1.8 (45)	0.49 (0.22)

**Models below have quick-connect fittings for tubing.**

1/4	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
3/8	3.9 (99)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
4 mm	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
6 mm	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
8 mm	3.1 (79)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
10 mm	3.9 (99)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)



† Dimension for plastic bowl; metal bowl is 4.3 (109).



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze .....	KA130-27E5
20-µm bronze .....	KA130-27E4
40-µm bronze .....	KA130-27E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B FD 10 P - 2 X Y W**

**BOWL TYPE**

Plastic bowl ..... Leave Blank  
Metal bowl ..... B

**BOWL DRAIN**

Internal automatic drain ..... FD  
Manual drain ..... F

**MOUNTING HOLE LOCATION**

Bottom mount (standard) ..... Leave Blank  
Top mount ..... P

**INLET PORT SIZE**

No inlet & outlet ports ..... Leave Blank

**Threaded:**

1/8 NPTF ..... -1  
1/4 NPTF ..... -2

**Fitting for tubing:**

1/4 ..... -04  
3/8 ..... -06  
4mm ..... -M4  
6mm ..... -M6  
8mm ..... -M8  
10mm ..... -M10

**PORT TYPE**

As specified in **INLET PORT** .... Leave Blank  
**BSPB** threads on both ports .... W

**OPTIONS** (*More than one option can be chosen. Add in alphabetical order.*)

None ..... Leave Blank

**Polyethylene filter element:**

5-µm rating ..... Leave Blank

**Bronze filter element:**

5-µm rating ..... E5

20-µm rating ..... E4

40-µm rating ..... E3

No Drain (*lubricator bowl*) ..... LDC

Use manual drain option under

**BOWL DRAIN SECTION** as well.

**OUTLET PORT SIZE**

Same as inlet port ..... Leave Blank

**Threaded:**

1/8 NPTF ..... -1

1/4 NPTF ..... -2

**Fitting for tubing:**

1/4 ..... -04

3/8 ..... -06

4mm ..... -M4

6mm ..... -M6

8mm ..... -M8

10mm ..... -M10



# MINIATURE General Purpose Filters

# FD50 Models Port Sizes: 1/8, 1/4



Model Shown: FD50-2

- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl; optional metal bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

### Bowl Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

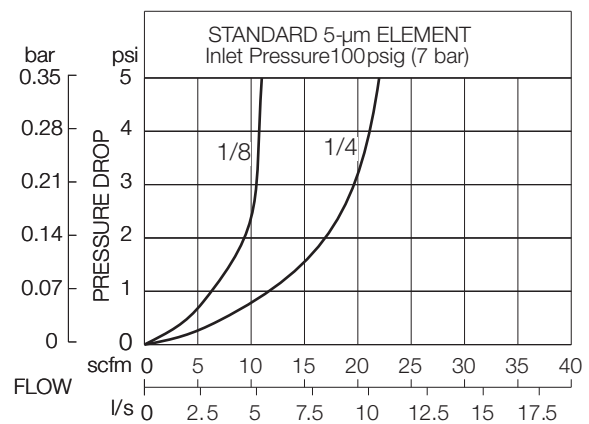
15 psig (1 bar) minimum with automatic drain.

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

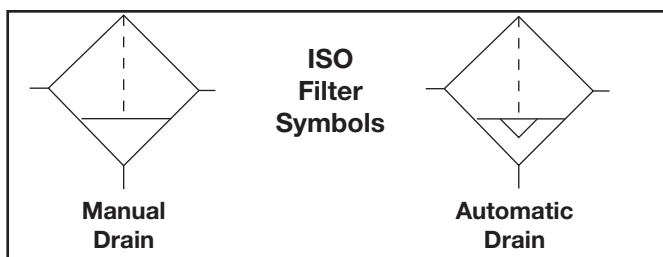
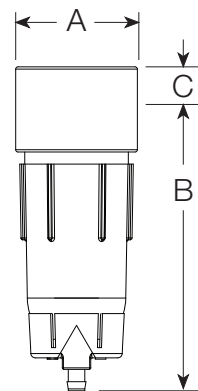
**Seals:** Nitrile.

## FLOW CHART



## DIMENSIONS inches (mm)

Bowl	Ports	A	B	C	Depth	Weight
						lb (kg)
Plastic	1/8, 1/4	1.6 (41)	3.9 (99)	0.4 (9.5)	1.6 (41)	0.33 (0.15)
Metal	1/8, 1/4	1.6 (41)	4.3 (109)	0.4 (9.5)	1.6 (41)	0.35 (0.16)



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA130-27PE5
5- $\mu$ m bronze .....	KA130-27E5
20- $\mu$ m bronze .....	KA130-27E4
40- $\mu$ m bronze .....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

B FD 50 - 2 Y W

**BOWL TYPE**

Plastic bowl ..... Leave Blank

Metal bowl ..... B

**BOWL DRAIN**

Internal automatic drain ..... FD

Manual drain ..... F

**PORT SIZE**

1/8 NPTF ..... 1

1/4 NPTF ..... 2

**PORT TYPE**

As specified in **INLET PORT** .... Leave Blank

**BSPP** threads on both ports ....W

**OPTIONS** (*More than one option can be chosen. Add in alphabetical order.*)

None ..... Leave Blank

**Polyethylene filter element:**

5- $\mu$ m rating ..... Leave Blank

**Bronze filter element:**

5- $\mu$ m rating ..... E5

20- $\mu$ m rating ..... E4

40- $\mu$ m rating ..... E3

No Drain (*lubricator bowl*) ..... LDC

Use manual drain option under **BOWL DRAIN SECTION** as well.

Tapped modified head to allow...T

50-01 bracket assembly.

# MINIATURE Stainless Steel General Purpose Filters

# F50S Models Port Size: 1/4

Model Shown: BF50S-2V



- ◆ Meets **NACE** specifications.
- ◆ High-strength stainless steel filter bowl. Stainless steel construction provides unique corrosion resistance.
- ◆ Viton elastomers throughout.
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Manual drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 150°F (4° to 66°C).

**Body:** Stainless steel.

**Bowl:** 2-Ounce (60-ml) capacity stainless steel.

**Bowl Drain:** Manual.

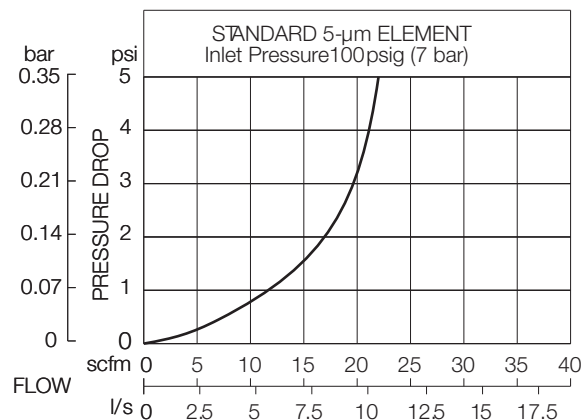
**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 0 to 200 psig (14 bar) maximum.

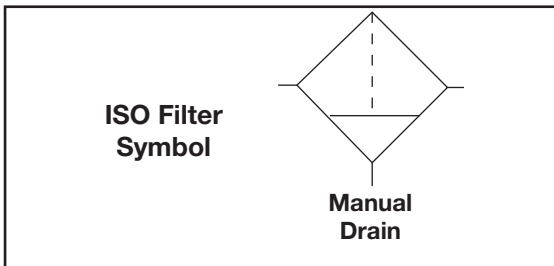
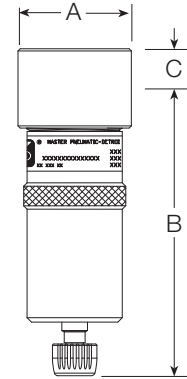
**Seals:** Viton

## FLOW CHART



**DIMENSIONS** inches (mm)

Bowl	Ports	A	B	C	Depth	Weight	
						lb (kg)	
Plastic	1/4	1.6 (41)	3.6 (92)	0.4 (9.5)	1.6 (41)	0.33 (0.15)	
Metal	1/4	1.6 (41)	4.3 (109)	0.4 (9.5)	1.6 (41)	0.35 (0.16)	



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze .....	KA130-27E5
20-µm bronze .....	KA130-27E4
40-µm bronze .....	KA130-27E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B F 50S - 2 Y V W**

**BOWL TYPE** \_\_\_\_\_

Plastic bowl ..... Leave Blank  
 Metal bowl ..... B

**PORT TYPE** \_\_\_\_\_

As specified in **INLET PORT** .... Leave Blank  
**BSPP** threads on both ports ....W

**OPTIONS** (*More than one option can be chosen. Add in alphabetical order.*)

None ..... Leave Blank

**Polyethylene filter element:**

5-µm rating ..... Leave Blank

**Bronze filter element:**

5-µm rating ..... E5  
 20-µm rating ..... E4  
 40-µm rating ..... E3

Tapped modified head to allow...T  
 50-01 bracket assembly.

# GUARDSMAN Modular General Purpose Filters

# FD60 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: FD60-2

- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl with zinc shatterguard; optional zinc bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

**Plastic Bowl:** 40° to 125°F (4° to 52°C).

**Metal Bowl:** 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 4-Ounce (120-ml) capacity polycarbonate plastic with zinc shatterguard; optional zinc bowl.

**Bowl Drain:**

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

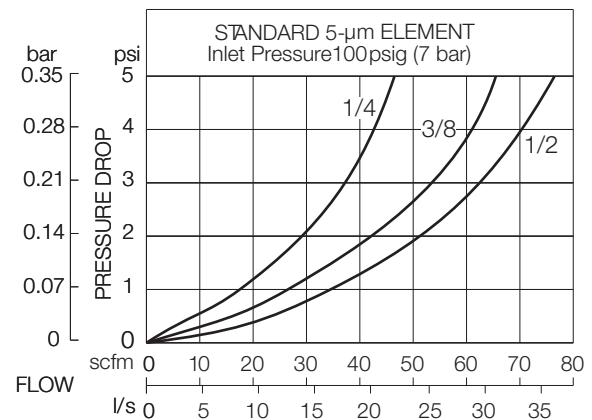
15 psig (1 bar) minimum with automatic drain.

**Plastic bowl:** 150 psig (10 bar) maximum.

**Metal bowl:** 200 psig (14 bar) maximum.

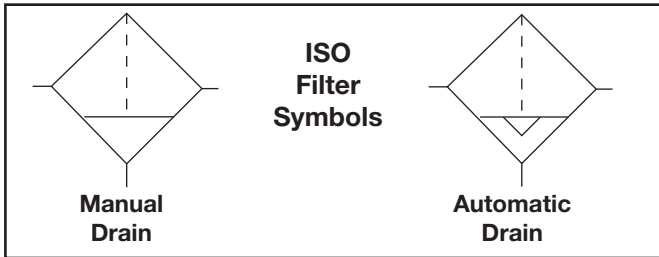
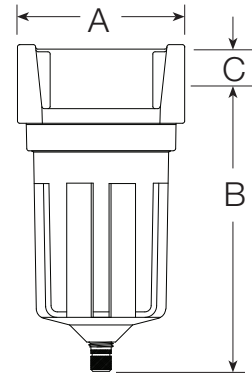
**Seals:** Nitrile.

## FLOW CHART



**DIMENSIONS** inches (mm)

Bowl	Ports	A	B	C	Depth	Weight
						lb (kg)
Plastic	1/4 – 1/2	2.7 (67)	4.8 (122)	0.6 (16)	2.4 (60)	1.13 (0.51)
Metal	1/4 – 1/2	2.7 (67)	4.9 (123)	0.6 (16)	2.4 (60)	1.50 (0.68)



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA60F-03
5- $\mu$ m bronze .....	KA60F-03E5
20- $\mu$ m bronze .....	KA60F-03E4
40- $\mu$ m bronze .....	KA60F-03E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B FD 60 - 2 Y W**

<p><b>BOWL TYPE</b></p> <p>Plastic bowl ..... Leave Blank</p> <p>Metal bowl ..... B</p> <p><b>BOWL DRAIN</b></p> <p>Internal automatic drain ..... FD</p> <p>Manual drain ..... F</p> <p><b>PORT SIZE</b></p> <p>1/4 NPTF ..... 2</p> <p>3/8 NPTF ..... 3</p> <p>1/2 NPTF ..... 4</p>	<p><b>PORT TYPE</b></p> <p>As specified in <b>INLET PORT</b> .... Leave Blank</p> <p><b>BSPP</b> threads on both ports ....W</p> <p><b>OPTIONS</b></p> <p><b>Polyethylene filter element:</b></p> <p>5-<math>\mu</math>m rating ..... Leave Blank</p> <p><b>Bronze filter element:</b></p> <p>5-<math>\mu</math>m rating ..... E5</p> <p>20-<math>\mu</math>m rating ..... E4</p> <p>40-<math>\mu</math>m rating ..... E3</p>
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# GUARDSMAN II Modular General Purpose Filters

# BFD70 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BFD70-4

- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Metal bowl with clear nylon sight glass. Bowl can be rotated for easy readability.
- ◆ Optional extended bowl for greater sump capacity.
- ◆ Internal automatic drain; optional manual and float drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 6-Ounce (180-ml) capacity aluminum with clear nylon sight glass. Bowl can be rotated for easy readability. Optional 10-ounce (300-ml) extended aluminum bowl for greater sump capacity.

### Bowl Drain:

Internal automatic drain; optional manual and internal float drain.

**Bowl Ring:** Nylon.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

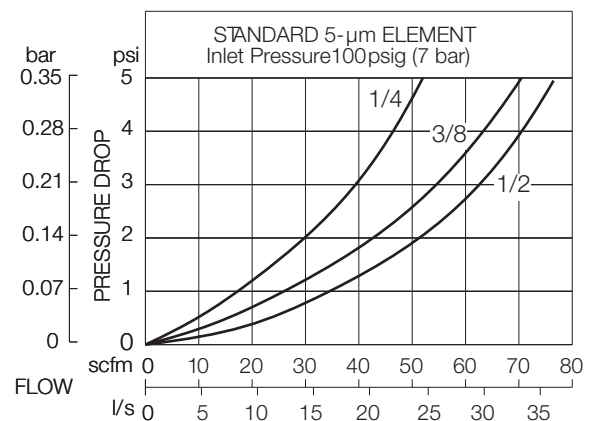
### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (42 bar) with float drain.

Maximum: 200 psig (14 bar)

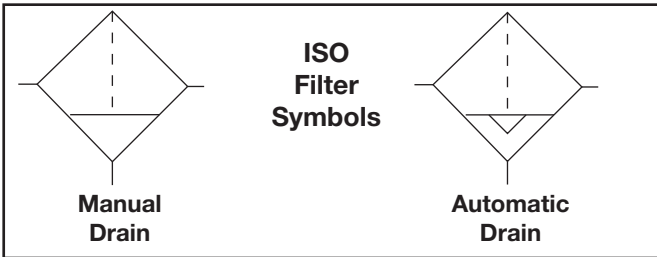
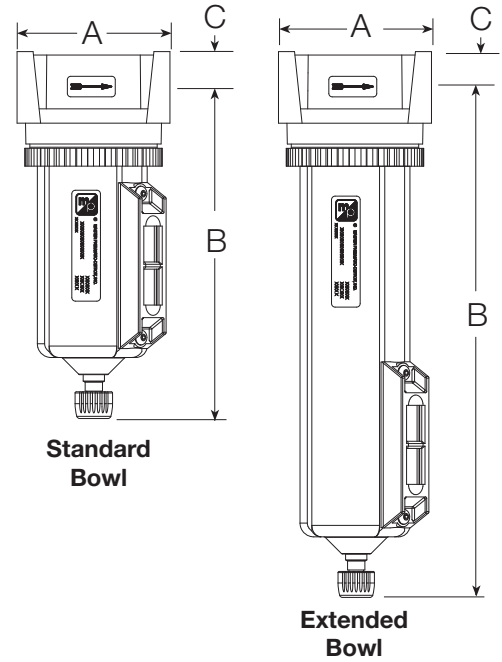
**Seals:** Nitrile.

## FLOW CHART



**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	2.7 (67)	6.5 (165)	0.6 (16)	2.4 (60)	1.25 (0.57)
Extended	2.7 (67)	9.5 (241)	0.6 (16)	2.4 (60)	1.50 (0.68)



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element)	A60F-03PE5
5- $\mu$ m bronze	KA60F-03E5
40- $\mu$ m bronze	KA60F-03E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**BFD 70 - 2 Y W**

**BOWL and DRAIN TYPE**

- Metal bowl, Internal automatic drain ..... BFD
- Metal bowl, Manual drain ..... BF
- Metal bowl, Internal Foat drain..... BF6A  
(brass stem)

**BOWL SIZE**

- Standard 6-ounce bowl ..... 70
- Extended 10-ounce bowl ..... 70H

**PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

**PORT TYPE**

- As specified in **INLET PORT** .... Leave Blank
- BSPP** threads on both ports ....W

**OPTIONS**

**Polyethylene filter element:**

- 5- $\mu$ m rating ..... Leave Blank

**Bronze filter element:**

- 5- $\mu$ m rating ..... E5
- 20- $\mu$ m rating ..... E4
- 40- $\mu$ m rating ..... E3



# SERIES 350 Modular General Purpose Filters

# F350 Models Port Sizes: 1/4, 3/8, 1/2



### Available Color Caps



Model Shown: F5A350-4C1

## SPECIFICATIONS

### Ambient/Media Temperature:

- Plastic bowl, manual drain 40° to 125°F (4° to 52°C)
- Plastic bowl, float drain 40° to 125°F (4° to 52°C)
- Metal bowl, manual drain 40° to 175°F (4° to 79°C)
- Metal bowl, float drain 40° to 175°F (4° to 79°C)

### Body:

Die-cast zinc.  
**Bowl:** 5.1-Ounce (151-ml) capacity polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal float drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to drain effluents. Optional manual drain.

**Cap Color:** yellow, Optional red, blue and grey.

**Differential Pressure Gauge:** Optional.

**Filter Element:** 5-µm-rated polyethylene; optional 5-µm-rated, 20-µm-rated or 40-µm-rated sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

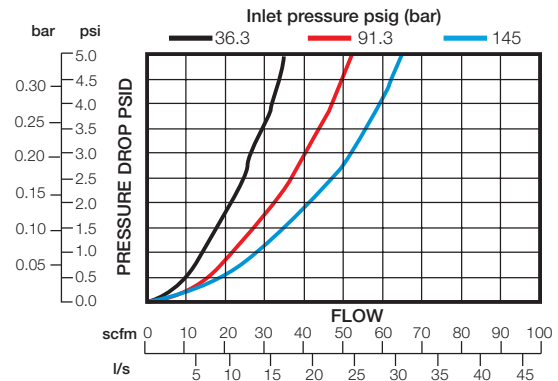
- Plastic bowl & manual drain: 0-150 psig (0-10 bar).
- Plastic bowl & Float drain: 30-150 psig (2-10 bar).
- Metal bowl & manual drain: 0-250 psig (0-17 bar).
- Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Seals:** Nitrile

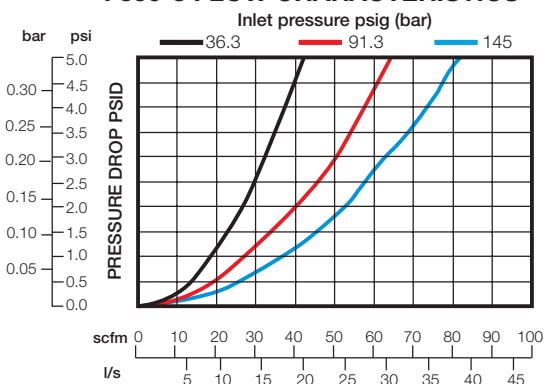
- ◆ Modular or inline mounting.
- ◆ Designed to remove particulate material to 5 micron from the airstream to protect downstream equipment.
- ◆ Optional bronze 5-µm-rated, 20-µm-rated, and 40-µm-rated. 5-µm-rated Polyethylene filter elements are standard.
- ◆ Superior removal of free water up to 98% efficiency
- ◆ Removal of effluents via manual or automatic float drains.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C)
- ◆ Color caps available for visual management systems. (Blue,red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHARTS (5-µm element)

### F350-2 FLOW CHARACTERISTICS



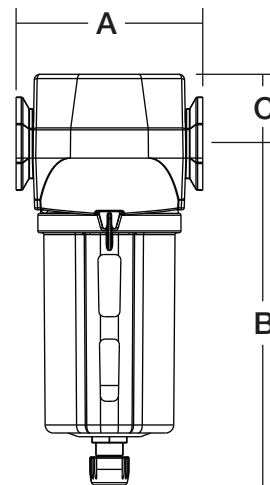
### F350-3 FLOW CHARACTERISTICS



## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Plastic	3.0 (76.2)	5.54 (140.6)	1.12 (28.3)	2.51 (63.8)	1.29 (0.59)
Metal	3.5 (76.2)	6.42 (163.1)	1.12 (28.3)	2.76 (70.1)	1.41 (0.64)

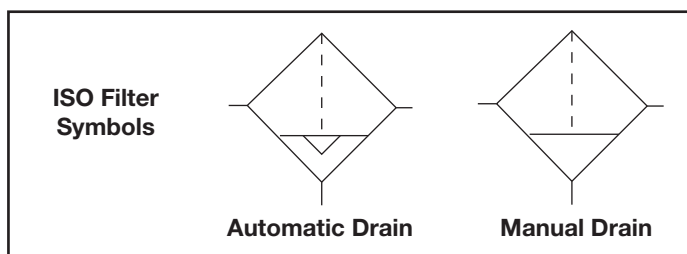
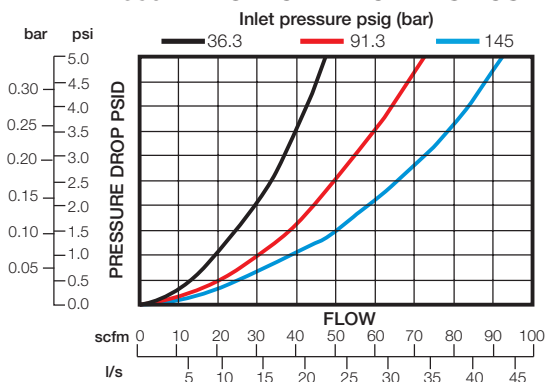
† Bowl removal clearance: add 3.1 (79).



### REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element) .....	A60F-03PE5
40-µm Bronze .....	A60F-03E3
5-µm Bronze .....	A60F-03E5
20-µm Bronze .....	A60F-03E4

### F350-4 FLOW CHARACTERISTICS



### ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**BF 350 S - 3 E5 W**

#### BOWL AND DRAIN TYPE

(Metal bowls contain a sight glass)

- Plastic bowl, manual drain ..... F
- Metal bowl, manual drain ..... BF
- Plastic bowl, internal float drain (plastic stem) ... F5A
- Metal bowl, internal float drain (brass stem) ..... BF6A

#### DIFFERENTIAL PRESSURE GAUGE

- No gauge (no gauge ports) ..... 350
- Differential pressure gauge ..... 350S

#### PORT SIZE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

#### PORT TYPE

- NPTF threads ..... Leave blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen.  
Add in alphabetical order.)

#### Cap color:

- Yellow (standard) ..... C1
- Red ..... C2
- Mid blue ..... C3
- Grey ..... Leave Blank

#### Polyethylene filter element:

- 5-µm rating ..... Leave Blank

#### Bronze filter element:

- 5-µm rating ..... E5
- 20-µm rating ..... E4
- 40-µm rating ..... E3

# Full-Size VANGUARD Modular General Purpose Filters

# FD100 Models Port Sizes: 1/4 to 3/4



Model Shown: FD100-2

- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl with steel shatterguard; optional metal bowl with clear nylon sight glass.
- ◆ Internal automatic drain; optional manual drain, float drain or external Hydro-Jector drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 8-Ounce (240-ml) capacity polycarbonate plastic with steel shatterguard; optional zinc bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain or external Hydro-Jector drain.

**Bowl Ring:** Aluminum.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

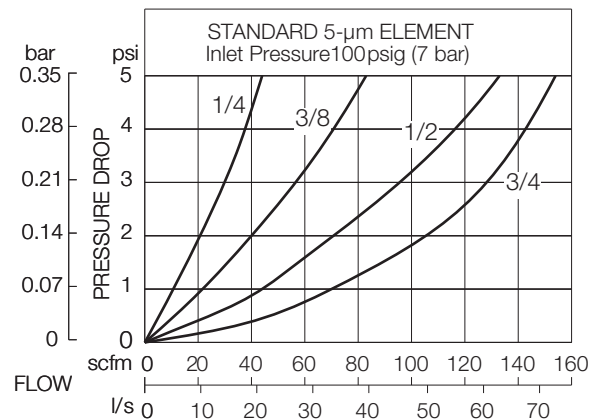
Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with float drain.

Plastic Bowl: 150 psig (10 bar) maximum.

Metal Bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

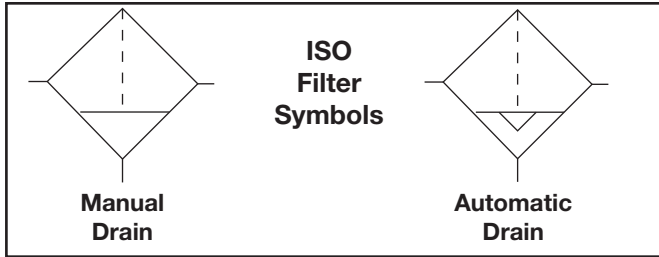
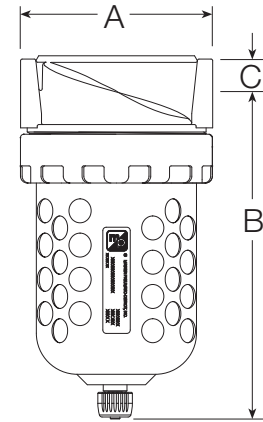
## FLOW CHART



## DIMENSIONS inches (mm)

Bowl	Ports	A	B †	C	Depth	Weight † lb (kg)
Plastic	1/4 – 3/4	3.5 (89)	5.8 (146)	0.6 (16)	3.5 (89)	1.93 (0.88)
Metal	1/4 – 3/4	3.5 (89)	6.4 (163)	0.6 (16)	3.5 (89)	2.90 (1.32)

† With Hydro-Jector external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.18 kg).



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element)	KA103-03PE5
5- $\mu$ m bronze	KA103-03E5
20- $\mu$ m bronze	KA103-03E4
40- $\mu$ m bronze	KA103-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**BFD 100 – 2 Y W**

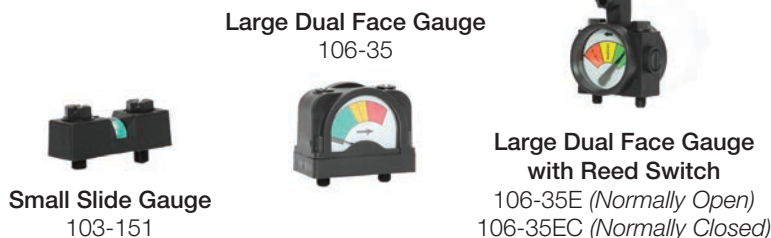
### BOWL AND DRAIN TYPE

- Plastic bowl, internal automatic drain ..... FD
- Metal bowl, internal automatic drain ..... BFD
- Plastic bowl, manual drain ..... F
- Metal bowl, manual drain ..... BF
- Plastic bowl, internal float drain ..... F5A  
(plastic stem)
- Metal bowl, internal float drain ..... BF6A  
(brass stem).

### DIFFERENTIAL PRESSURE GAUGE

- No gauge ..... 100
- Large gauge ..... 101L
- Small gauge ..... 101
- Large gauge with normally **OPEN** ..... 101E  
reed switch.
- Large gauge with normally **CLOSED** ..... 101E2  
reed switch.

### DIFFERENTIAL PRESSURE GAUGES



### PORT TYPE

- As specified in **INLET PORT** .... Leave Blank
- BSPB** threads on both ports ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank
- Polyethylene filter element:**
  - 5- $\mu$ m rating ..... Leave Blank
- Bronze filter element:**
  - 5- $\mu$ m rating ..... E5
  - 20- $\mu$ m rating ..... E4
  - 40- $\mu$ m rating ..... E3
- No bowl drain ..... LDC  
(1/4 NPT female port instead.  
Also use 'BF' option under **BOWL AND DRAIN TYPE** section.)

### PORT SIZE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6X

**Note:** '6X', 3/4 NPTF has smaller bowl capacity than '6' 3/4 NPTF.

# Full-Size SERIES 380 Modular General Purpose Filters

# FD380 Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps



Model Shown: FD380-6

- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional 40- $\mu$ m element.
- ◆ Polycarbonate plastic bowl with steel shatter-guard; optional metal bowl with sight glass.
- ◆ Internal automatic drain; optional manual drain, internal float drain, Hydro-Jector drain, or Warrior electronic drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Die-cast zinc.

**Bowl:** 9-Ounce (270-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to the drain. Optional manual drain, Internal float drain, Hydro-Jector drain, or Warrior electronic drain.

**Bowl Ring:** Nylon.

**Cap Color:** Grey, Yellow, red, and blue optional.

**Differential Pressure Gauge:** Optional.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m sintered bronze. or 40- $\mu$ m polyethylene

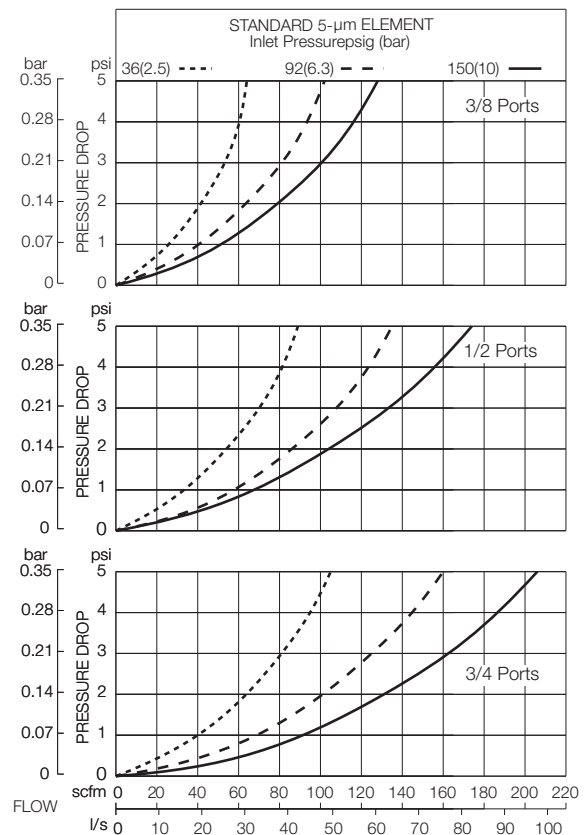
**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
Plastic bowl: 150 psig (10 bar).  
Metal bowl: 200 psig (14 bar).

**Seals:** Nitrile

## FLOW CHARTS (5- $\mu$ m element)



## DIMENSIONS inches (mm)

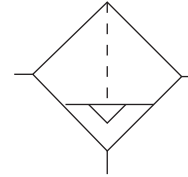
Bowl	A	B †	C	Depth	Weight lb (kg)
Plastic	3.5 (88)	7.7 (195)	1.1 (28)	2.9 (73)	2.13 (0.97)
Metal	3.5 (88)	7.6 (193)	1.1 (28)	3.1 (79)	2.13 (0.97)

† Bowl removal clearance: add 3.1 (79).

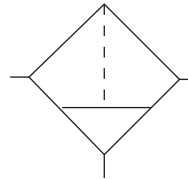
## REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element)	A115-106PE5
40-µm Polyethylene	A115-106PE3
5-µm Bronze	A115-106E5
20-µm Bronze	A115-106E4

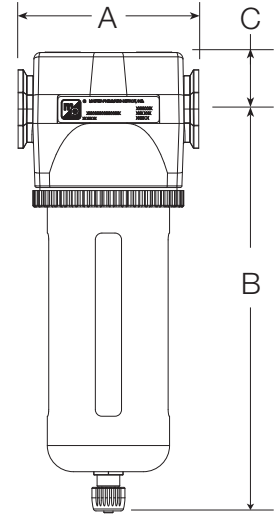
### ISO Filter Symbols



Automatic Drain



Manual Drain



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**BFD 380 - 3 Y W**

### BOWL AND DRAIN TYPE *(Metal bowls contain a sight glass)*

- Plastic bowl, internal automatic drain ..... FD
- Metal bowl, internal automatic drain ..... BFD
- Plastic bowl, manual drain ..... F
- Metal bowl, manual drain ..... BF
- Plastic bowl, internal float drain **(plastic stem)** ... F5A
- Metal bowl, internal float drain **(brass stem)** ..... BF6A
- Metal bowl, external Hydro-Jector drain ..... BFE  
*(LDC option is not needed; under OPTIONS)*
- Metal bowl, warrior electronic drain ..... BF2A

### DIFFERENTIAL PRESSURE GAUGE

- No gauge ..... 380
- Large gauge ..... 380L
- Small gauge ..... 380S
- Large gauge with normally **OPEN** reed switch.... 380E
- Large gauge with normally **CLOSED**..... 380E2  
reed switch

### PORT SIZE

- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6

### PORT TYPE

- NPTF threads ..... Leave blank
- BSPF threads ..... W

### OPTIONS *(More than one option can be chosen. Add in alphabetical order.)*

- None ..... Leave Blank

### Cap color:

- Grey ..... Leave Blank
- MP yellow ..... C1
- Red ..... C2
- Mid blue ..... C3

### Polyethylene filter element:

- 5-µm rating ..... Leave Blank
- 40-µm rating ..... E3

### Bronze filter element:

- 5-µm rating ..... E5
- 20-µm rating ..... E4
- No bowl drain ..... LDC

*(1/4 NPT female port instead. Also use 'BF' option under BOWL AND DRAIN TYPE section.)*

## DIFFERENTIAL PRESSURE GAUGES



Large Dual Face Gauge  
106-35



Small Slide Gauge  
103-151



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)

# High-Flow VANGUARD General Purpose Filters

# FD100 Models Port Sizes: 3/4, 1



Model Shown: FD100-8

- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl with steel shatterguard; optional metal bowl with clear nylon sight glass.
- ◆ Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).

Metal Bowl: 40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 16-Ounce (480-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Bowl Ring:** Aluminum.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

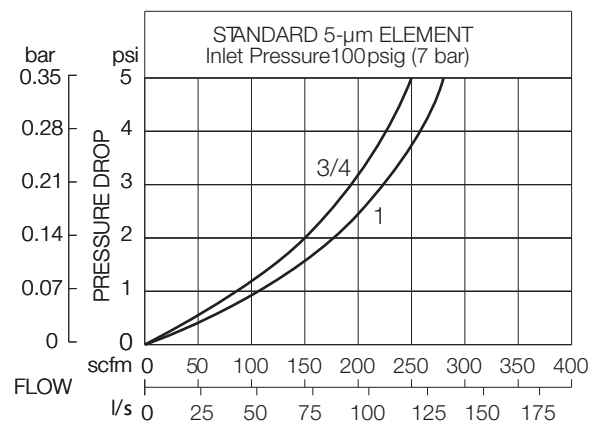
Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Plastic Bowl: 150 psig (10 bar) maximum.

Metal Bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

## FLOW CHART

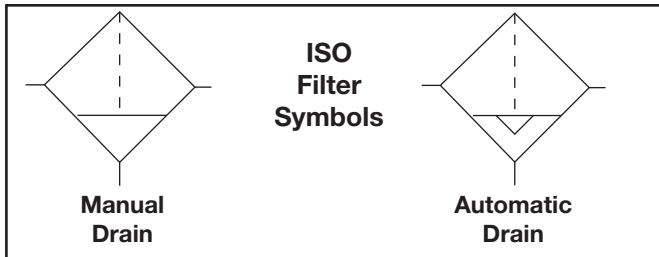
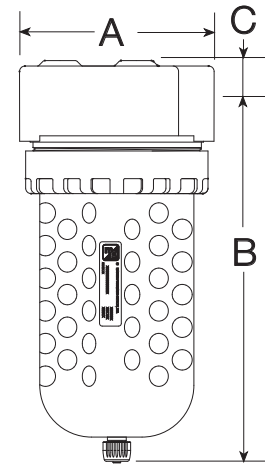


\* **Note:** "6", 3/4" NPTF has larger bowl capacity than "6x", 3/4" NPTF

## DIMENSIONS inches (mm)

Bowl	Ports	A	B †	C	Depth	Weight † lb (kg)
Plastic	3/4, 1	4.5 (114)	8.0 (203)	0.8 (21)	4.2 (106)	2.44 (1.11)
Metal	3/4, 1	4.5 (114)	8.3 (210)	0.8 (21)	4.2 (106)	3.25 (1.48)

† With Hydro-Jector external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.18 kg).



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element)	KA109-3PE
5-µm bronze	KA109-03E5
20-µm bronze	KA109-03E4
40-µm bronze	KA109-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

# BFD 100 - 6 Y W

### BOWL AND DRAIN TYPE

- Plastic bowl, internal automatic drain ..... FD
- Metal bowl, internal automatic drain ..... BFD
- Plastic bowl, manual drain ..... F
- Metal bowl, manual drain ..... BF
- Plastic bowl, internal float drain (**plastic stem**) ... F5A
- Metal bowl, internal float drain (**brass stem**) ..... BF6A
- Metal bowl, external Hydro-Jector drain ..... BFE  
(LDC option is not needed; under **OPTIONS**)
- Metal bowl, warrior electronic drain ..... BF2A

### DIFFERENTIAL PRESSURE GAUGE

- No gauge ..... 100
- Large gauge ..... 101
- Small gauge ..... 101S
- Large gauge with normally **OPEN** reed switch..... 101E
- Large gauge with normally **CLOSED**..... 101E2  
reed switch

### PORT SIZE

- 3/4 NPTF ..... 6
- Note:** '6', 3/4 NPTF has a larger bowl capacity than '6X' 3/4 NPTF.
- 1 NPTF ..... 8

### PORT TYPE

- As specified in **INLET PORT** ..... Leave Blank
- BSP** threads on both ports ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank

### Polyethylene filter element:

- 5-µm rating ..... Leave Blank

### Bronze filter element:

- 5-µm rating ..... E5
- 20-µm rating ..... E4
- 40-µm rating ..... E3

- No bowl drain ..... LDC

(1/4 NPT female port instead. Also use 'BF' option under **BOWL AND DRAIN TYPE** section.)

### DIFFERENTIAL PRESSURE GAUGES



Small Slide Gauge  
103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)



# High-Flow VANGUARD General Purpose Filters

# BFD200 Models Port Sizes: 3/4, 1



Model Shown: BFD200-6

- ◆ Inline mounting.
- ◆ 40- $\mu\text{m}$ -rated sintered bronze filter element; optional 5- $\mu\text{m}$ -rated sintered bronze element.
- ◆ Aluminum bowl with clear nylon sight glass.
- ◆ Optional differential pressure gauge.
- ◆ Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 35-Ounce (1 liter) aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** Optional.

**Filter Element:** 40- $\mu\text{m}$ -rated sintered bronze; optional 5- $\mu\text{m}$  sintered bronze.

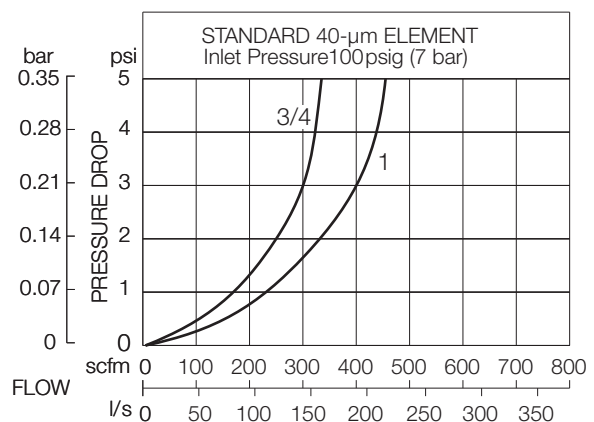
**Fluid Media:** Compressed air.

**Inlet Pressure:**

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
200 psig (14 bar) maximum.

**Seals:** Nitrile.

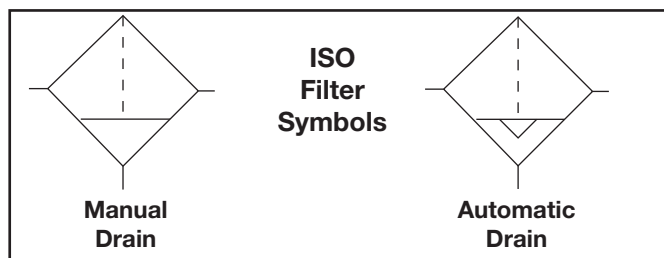
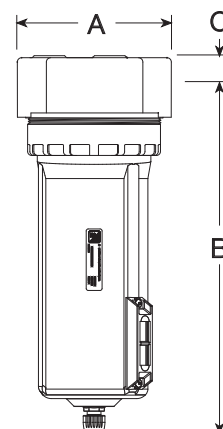
## FLOW CHART



**DIMENSIONS** inches (mm)

A	B †	C	Depth	Weight † lb (kg)
4.5 (114)	10.3 (263)	1.0 (25)	4.2 (106)	4.25 (193)

† With Hydro-Jector external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.18 kg).



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
40-µm bronze (Std element)	A114-106E3
5-µm bronze	A114-106E5

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**BFD 200 - 6 Y W**

**BOWL AND DRAIN TYPE**

- Metal bowl, internal automatic drain ..... BFD
- Metal bowl, manual drain ..... BF
- Metal bowl, internal float drain ..... BF6A  
(Brass stem).
- Metal bowl, external Hydro-Jector ..... BFE  
drain (LDC option is not needed;  
under **OPTIONS**).
- Metal bowl, warrior electronic drain ..... BF2A

**HEAD TYPE and DIFFERENTIAL PRESSURE GAUGE**

- No tapped ports on head, no gauge ..... 200
- Tapped ports on head, large gauge ..... 201
- Tapped ports on head, small gauge ..... 201S
- Tapped ports on head, large gauge ..... 201E  
with normally **open** reed switch.
- Tapped ports on head, large gauge ..... 201E2  
with normally **closed** reed switch.

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order).

- None ..... Leave blank
- 5-µm rating bronze element ..... E5
- 40-µm rating bronze element ... Leave blank
- Less drain cock ..... LDC  
(1/4 NPT female port instead. Also  
use 'BF' option under **BOWL AND  
DRAIN TYPE** section.)

**PORT SIZE**

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8

**DIFFERENTIAL PRESSURE GAUGES**



Small Slide Gauge  
103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)

# High-Flow VANGUARD General Purpose Filters

# BF6A400 Models Port Sizes: 1-1/4, 1-1/2, & 2



Model Shown: BF6A400-10

- ◆ Inline mounting.
- ◆ 40- $\mu\text{m}$ -rated sintered bronze filter element; optional 5- $\mu\text{m}$  sintered bronze element.
- ◆ Aluminum bowl.
- ◆ Internal float drain; optional manual drain or external Hydro-Jector drain.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

**Manual Drain:** 40° to 175°F (4° to 79°C).

**Float, hydro-jector drain:** 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 120-Ounce (3548-ml) capacity aluminum bowl.

**Bowl Drain:** Internal float drain; optional manual drain or external Hydro-Jector drain.

**Filter Element:** 40- $\mu\text{m}$ -rated sintered bronze; optional 5- $\mu\text{m}$  sintered bronze.

**Fluid Media:** Compressed air.

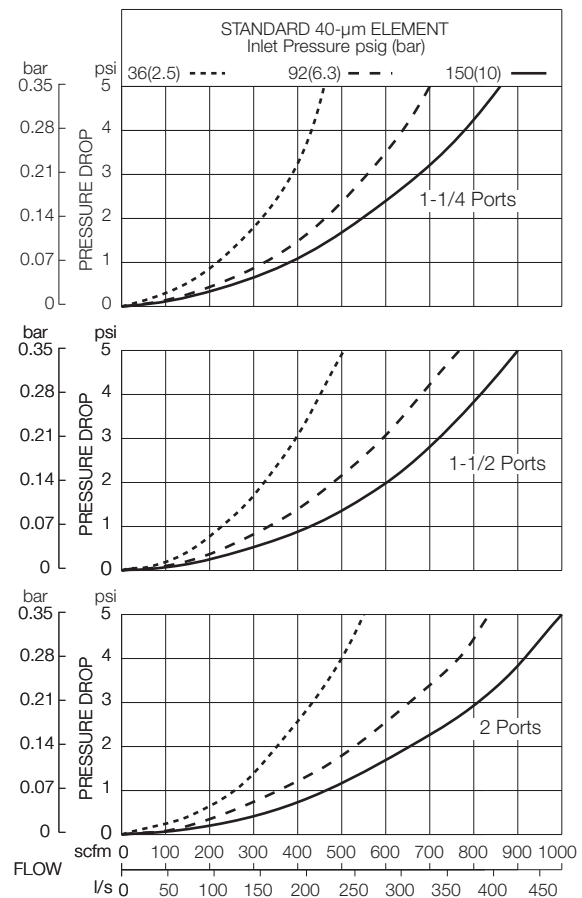
### Inlet Pressure:

**Float Drain:** 30 psig (2.1 bar) minimum. 200 psig (14 bar) maximum.

**Manual Drain:** 0 psig (0 bar) minimum. 300 psig (21 bar) maximum.

**Seals:** Nitrile.

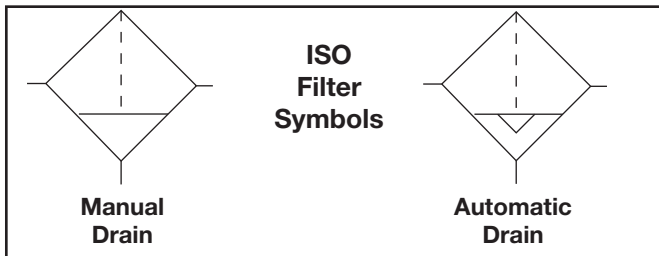
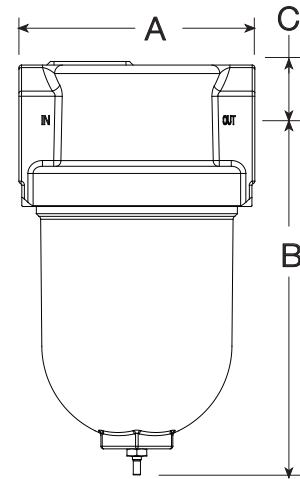
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B †	C	Depth	Weight † lb (kg)
8.1 (204.7)	12.0 (305)	2.4 (60.3)	8.0 (203.2)	17 (7.72)

† With Hydro-Jector external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.18 kg).



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
40-µm bronze (Std element)	K106-33
5-µm bronze	K106-33E5

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**BF6A 400L - 10 E5 W**

**DRAIN and BOWL TYPE**

- Metal bowl, Internal automatic float drain ... **BF6A**  
*(brass stem)*
- Metal bowl, manual drain ..... **BF**
- Metal bowl, less drain cock, external ..... **BF7AE**  
Hydro-Jector drain.
- Metal bowl, no drain *(less drain cock)* ..... **BF7A**
- Metal bowl, warrior electronic drain ..... **BF2A**

**HEAD TYPE and DIFFERENTIAL PRESSURE GAUGE**

- No tapped ports on head, no gauge ..... **400**
- Tapped ports on head, no gauge ..... **401**
- Tapped ports on head, large differential ..... **401L**  
pressure gauge.
- Tapped ports on head, Small differential ..... **401S**  
pressure gauge
- Tapped ports on head, Large differential ..... **401E**  
pressure gauge with normally open reed switch.
- Tapped ports on head, Large differential ..... **401E2**  
pressure gauge with normally closed reed switch.

**PORT TYPE**

- NPTF ..... Leave Blank
- BSPF ..... **W**

**ELEMENT TYPE**

- 5-µm rating bronze element ..... **E5**
- 40-µm rating bronze elemen ..... **E3**

**PORT SIZE**

- 1-1/4 NPTF ..... **10**
- 1-1/2 NPTF ..... **12**
- 2 NPTF ..... **16**

**DIFFERENTIAL PRESSURE GAUGES**

**Large Dual Face Gauge**  
106-35



**Large Dual Face Gauge with Reed Switch**  
106-35E (Normally Open)  
106-35EC (Normally Closed)

**Small Slide Gauge**  
K103-151



# High-Flow VANGUARD General Purpose Filters

# BFD200 Models Port Sizes: 1-1/4, 1-1/2



Model Shown: BFD200-10

## SPECIFICATIONS

**Ambient/Media Temperature:**  
40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 35-Ounce (1 liter) aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** Optional.

**Filter Element:** 40- $\mu$ m-rated sintered bronze; optional 5- $\mu$ m sintered bronze.

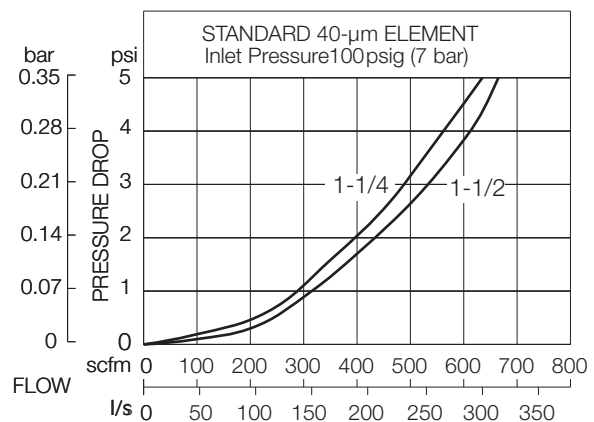
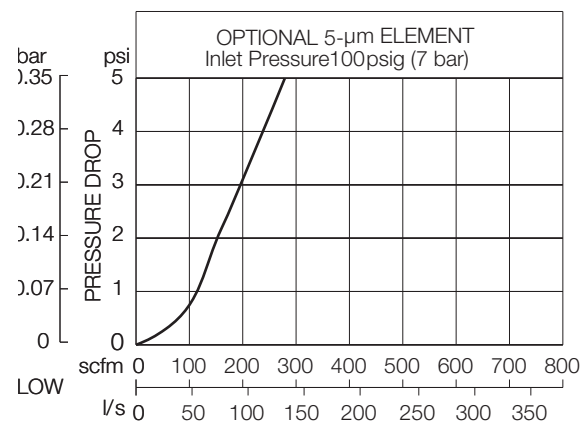
**Fluid Media:** Compressed air.

**Inlet Pressure:**  
Minimum: 15 psig (1 bar) with automatic drain 30 psig (2 bar) with float drain.  
200 psig (14 bar) maximum.

**Seals:** Nitrile.

- ◆ Inline mounting.
- ◆ 40- $\mu$ m-rated sintered bronze filter element; optional 5- $\mu$ m-rated sintered bronze element.
- ◆ Aluminum bowl with clear nylon sight glass.
- ◆ Optional differential pressure gauge.
- ◆ Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ **NPTF** port threads; optional or **BSPP** threads.

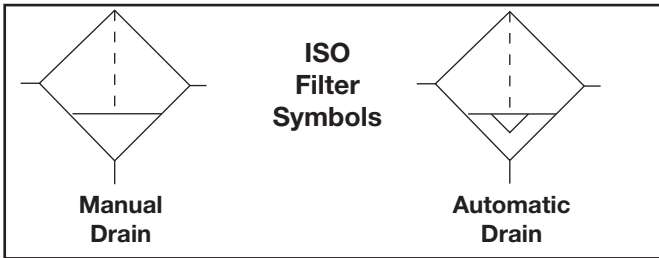
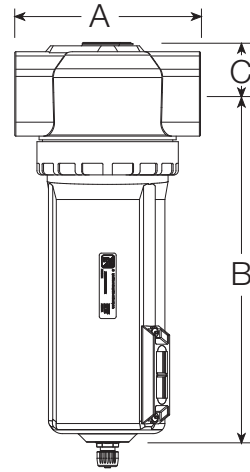
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B †	C	Depth	Weight † lb (kg)
5.5 (140)	10.7 (271)	1.4 (36)	4.2 (106)	4.50 (2.04)

† With Hydro-Jector external drain, dimension B is increased by 8.0 inches (203 mm), and weight is increased by 2.56 pounds (1.18 kg).



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
40-µm bronze (Std element)	A114-106E3
5-µm bronze	A114-106E5

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**BFD 200 - 10 Y W**

**BOWL AND DRAIN TYPE**

- Metal bowl, internal automatic drain ..... BFD
- Metal bowl, manual drain ..... BF
- Metal bowl, internal float drain ..... BF6A  
(Brass stem).
- Metal bowl, external Hydro-Jector ..... BFE  
drain (LDC option is not needed;  
under **OPTIONS**).
- Metal bowl, warrior electronic drain ..... BF2A

**HEAD TYPE and DIFFERENTIAL PRESSURE GAUGE**

- No tapped ports on head, no gauge ..... 200
- Tapped ports on head, large gauge ..... 201
- Tapped ports on head, small gauge ..... 201S
- Tapped ports on head, large gauge ..... 201E  
with normally **open** reed switch.
- Tapped ports on head, large gauge ..... 201E2  
with normally **closed** reed switch.

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order).

- None ..... Leave blank
- 5-µm rating bronze element ..... E5
- 40-µm rating bronze element ... Leave blank
- Less drain cock ..... LDC  
(1/4 NPT female port instead. Also  
use 'BF' option under **BOWL AND  
DRAIN TYPE** section.)

**PORT SIZE**

- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**DIFFERENTIAL PRESSURE GAUGES**



Small Slide Gauge  
103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)

# COALESCING FILTERS

A 0.3- $\mu\text{m}$ -rated coalescing filter element is standard in all coalescing units. They remove 99.99% of oil and solid contaminants larger than 0.3  $\mu\text{m}$ . An optional 0.01- $\mu\text{m}$ -rated element provides extremely fine filtration, but at some reduction in air flow. However, in **GUARDSMAN**, **GUARDSMAN II**, **SERIES 380**, and **VANGUARD** filters there are available extended bowls with higher capacity coalescing elements for significantly increased air flows.

Coalescing filters have epoxy-resin-coated, borosilicate, glass-fiber elements. Liquids and solids are removed from the air stream by several different actions, namely:



**IMPACTION:** Particles larger than 1  $\mu\text{m}$  collide with and adhere to the fibers of the element.

**INTERCEPTION:** Particles 0.3  $\mu\text{m}$  to 2  $\mu\text{m}$  in size are molecularly attracted to the fibers of the element, and this causes them to adhere.

**DIFFUSION:** Particles 0.001  $\mu\text{m}$  to 0.3  $\mu\text{m}$  in size move by random Brownian motion, thereby contacting and adhering to the fibers of the element.

**DRAINING:** Tiny droplets of oil coalesce (merge) until they form drops large enough to fall off the filter element and into the bowl sump. The automatic drain then expels them.

The filter element will continue to coalesce liquids until solid contaminants accumulated in the filter element cause the pressure drop across the element to become excessive. At this point the filter element must be changed. A built-in differential pressure gauge (see next page) will indicate when the point is reached that requires the element to be changed.

## GUIDE to COALESCING FILTERS

Filter Series	Modular Construction	Port Sizes										Pages
		1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2		
<b>SENTRY</b>												
FCD10 models †	yes	X	X									80-81
<b>MINIATURE</b>												
FCD50 models	no	X	X									82-83
<b>GUARDSMAN</b>												
FCD60 models	yes		X	X	X							84-85
<b>GUARDSMAN II</b>												
BFCD70 models	yes		X	X	X							86-87
<b>SERIES 350</b>												
F5A350 models	yes		X	X	X							88-89
<b>Full-Size VANGUARD</b>												
FCD101 models	yes		X	X	X	X						90-91
<b>Full-Size SERIES 380</b>												
FCD380 models	yes			X	X	X						92-93
<b>High-Flow VANGUARD</b>												
FCD101 models	no					X	X					94-95
BFC6A401 models	no							X	X	X		100-103
BFCD201 models	no					X	X	X	X			96-99

† Also available with quick-connect tube fittings up to 10 mm.

## DIFFERENTIAL PRESSURE GAUGES

**GUARDSMAN, SERIES 350, 380, and VANGUARD** coalescing filters include a differential pressure gauge which measures the pressure drop across the coalescing filter element. This monitors the condition of the coalescing element, and such a gauge should always be used with coalescing filters. When the pressure drop increases into the range of 7 to 10 psi (0.5 to 0.7 bar) the gauge indicates that the element must be changed. The types of gauges are shown below.



The Full-Size **VANGUARD** and **SERIES 380** filters use the small **K103-151** gauge kit. **GUARDSMAN** units use the **A60F-28** gauge kit. Series 350 units use the **A125-09** gauge kit. All three are slide-type gauges, and are color coded to show the condition of the coalescing element.

**Green** — Clean (Up to 7 psi)  
**Red** — Change (7 to 10 psi)



**High-Flow VANGUARD** filters employ the large **106-35** gauge as shown above. It is a dual face gauge color coded to show the condition of the coalescing element. Optionally available for other units.

**Green** — Clean (Up to 6 psi)  
**Yellow** — Change (6 to 9 psi)  
**Red** — Dirty (Over 9 psi)



The large gauge is also available with a reed switch: normally open (**106-35E**) or normally closed (**106-35EC**). See options for specific filters under Ordering Information. Gauge face readings are unchanged.

**Green** — Clean (Up to 6 psi)  
**Yellow** — Change (6 to 9 psi)  
**Red** — Dirty (Over 9 psi)

### IMPORTANT NOTE

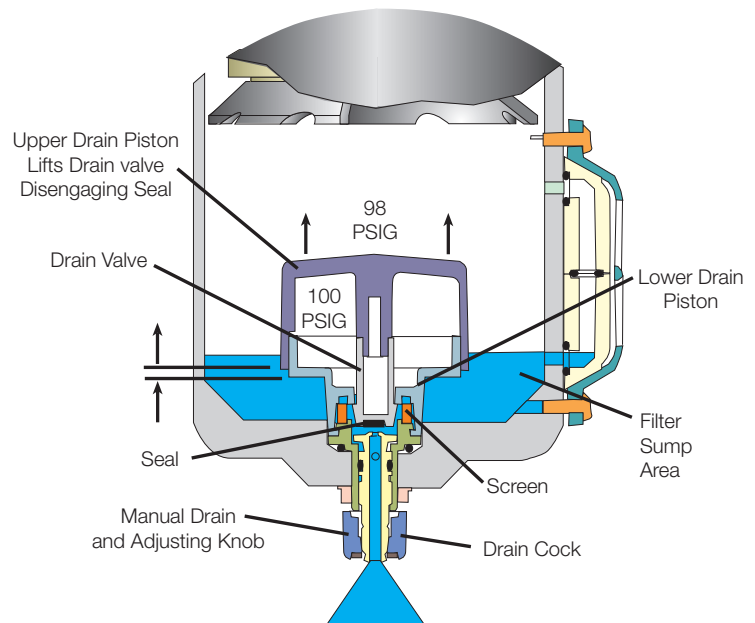
A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## INTERNAL AUTOMATIC BOWL DRAIN

Automatic drains are standard on Master Pneumatic coalescing filters and we strongly recommend their use to improve filter effectiveness, lengthen service life, and reduce maintenance needs.

The Master Pneumatic automatic drains operate when liquids have accumulated in the filter bowl and a pressure drop of 2 psi or more occurs (e.g., when a valve or other device is actuated). The pressure drop triggers the automatic drain to expel accumulated liquid.

The drain is also activated whenever the air supply is shut down and exhausted. Although the unit is set at the factory an adjusting knob at the bottom of the filter can be manually set for optimum performance with very high or low flows of air.





# SENTRY Modular Coalescing Filters

# FCD10 Models Port Sizes: 1/8, 1/4; Tube Fittings



Model Shown: FCD10-2

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

### Body:

Acetal.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

### Bowl Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

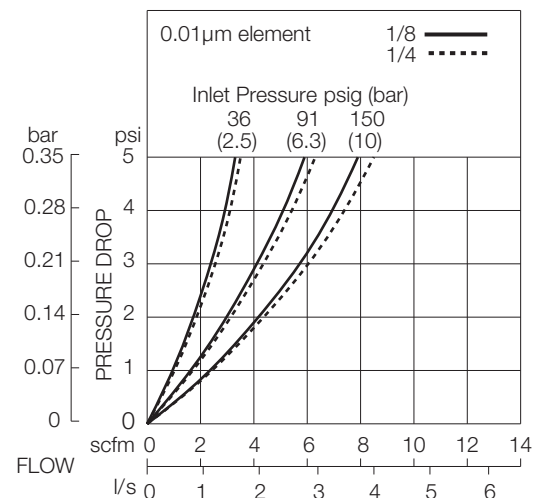
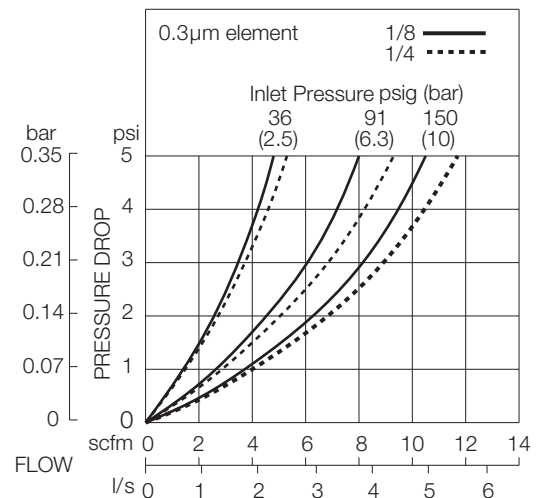
15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum.

**Seals:** Nitrile.

**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

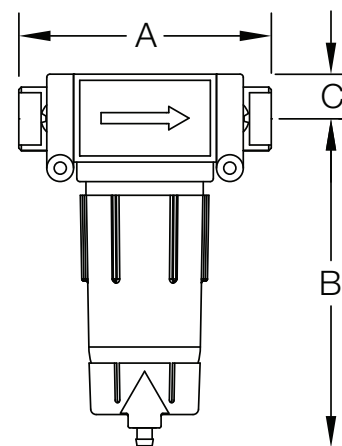
- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m-rated element.
- ◆ High-strength polycarbonate plastic filter bowl; optional aluminum bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHARTS

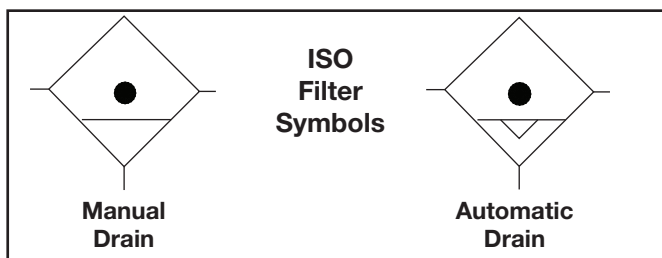


## DIMENSIONS inches (mm)

Ports	A	B †	C	Depth	Weight lb (kg)
No Port	1.7 (43)	3.9 (99)	0.5 (13)	1.8 (45)	0.27 (0.12)
1/8, 1/4	3.0 (76)	3.9 (99)	0.5 (13)	1.8 (45)	0.49 (0.22)
<b>Models below have quick-connect fittings for tubing.</b>					
1/4	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
3/8	3.9 (99)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
4 mm	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
6 mm	3.4 (86)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
8 mm	3.1 (79)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)
10 mm	3.9 (99)	3.9 (99)	0.5 (13)	1.8 (45)	0.47 (0.21)



† Dimension for plastic bowl; metal bowl is 4.3 (109).



## REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
0.3 µm (Std element).....	KA10F-09
0.01 µm	
For models with E8 option.....	KA10F-09E8

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**B FCD 10 P - 2 X Y W**

### BOWL TYPE

Plastic bowl ..... Leave blank  
Metal bowl.....B

### BOWL DRAIN

Internal automatic drain .....FCD  
Manual drain..... FC

### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

### INLET PORT SIZE

No inlet and outlet ports.. . Leave blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

### PORT TYPE

As specified in **INLET PORT**... Leave Blank  
BSPP threads on both ports..... W

### OPTIONS: (More than one option can be chosen. Add in alphabetical order)

None..... Leave Blank  
0.01-µm-rated coalescing .....E8 element  
No Drain (*Lubricator bowl*) ..... LDC  
(*Use manual drain option under BOWL DRAIN section as well*)

### OUTLET PORT SIZE

Same as inlet port ..... Leave Blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

# MINIATURE Coalescing Filters

# FCD50 Models Port Sizes: 1/8, 1/4



Model Shown: FCD50-2

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

### Bowl Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

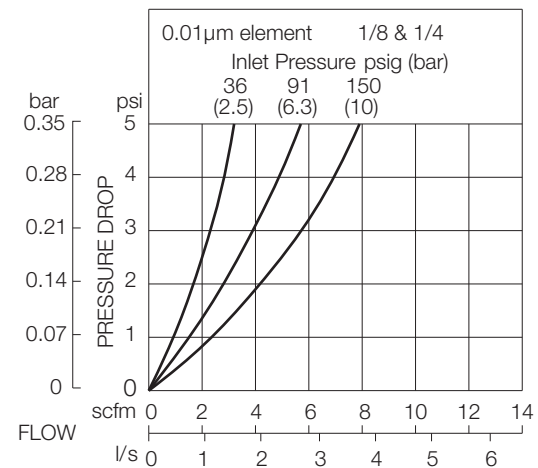
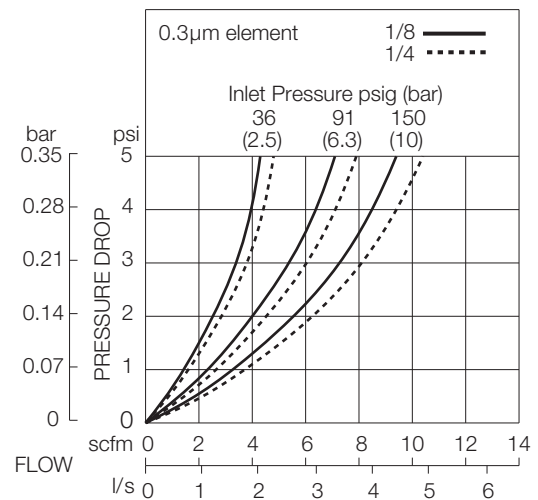
15 psig (1 bar) minimum with automatic drain.  
Plastic bowl: 150 psig (10 bar) maximum.  
Metal bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

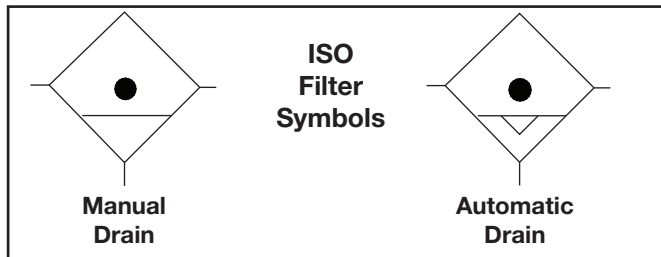
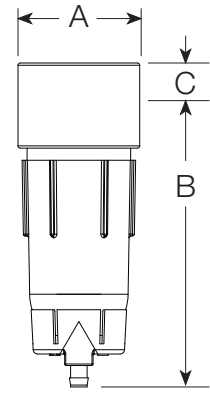
- ◆ Inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m-rated element.
- ◆ High-strength polycarbonate plastic filter bowl; optional metal bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## FLOW CHARTS



**DIMENSIONS** inches (mm)

Bowl	Ports	A	B	C	Depth	Weight lb (kg)
Plastic	1/8, 1/4	1.6 (41)	3.9 (99)	0.4 (9.5)	1.6 (41)	0.33 (0.15)
Metal	1/8, 1/4	1.6 (41)	4.3 (109)	0.4 (9.5)	1.6 (41)	0.35 (0.16)



**REPLACEMENT FILTER ELEMENT KITS**

Element Rating	Kit Number
0.3 µm (Std element).....	A10F-16
0.01 µm For models with E8 option.....	A10F-16E8

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B FCD 50 - 2 Y W**

**BOWL TYPE**

Plastic bowl..... Leave blank  
Metal bowl..... B

**BOWL DRAIN**

Internal automatic drain ..... FCD  
Manual drain..... FC

**PORT TYPE**

NPTF threads ..... Leave Blank  
BSPP threads ..... W

**OPTIONS:** *(More than one option can be chosen. Add in alphabetical order)*

None..... Leave Blank  
0.01-µm-rated coalescing ..... E8 element  
Tapped modified head to ..... T to allow 50-01 bracket assy.  
No Drain (Lubricator bowl) ..... LDC *(Use manual drain option under BOWL DRAIN section as well)*

**PORT SIZE**

1/8 NPTF..... 1  
1/4 NPTF..... 2

# GUARDSMAN Modular Coalescing Filters

# FCD60 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: FCD60-4

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).  
Metal Bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 4-Ounce (120-ml) capacity polycarbonate plastic with zinc shatterguard; optional zinc bowl.

### Bowl Drain:

Internal automatic drain; optional manual drain.

**Differential Pressure Gauge:** A60F-28.

**Filter Element:** 0.3- $\mu\text{m}$ -rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu\text{m}$ -rated element (reduces flow by 20%).

**Fluid Media:** Compressed air.

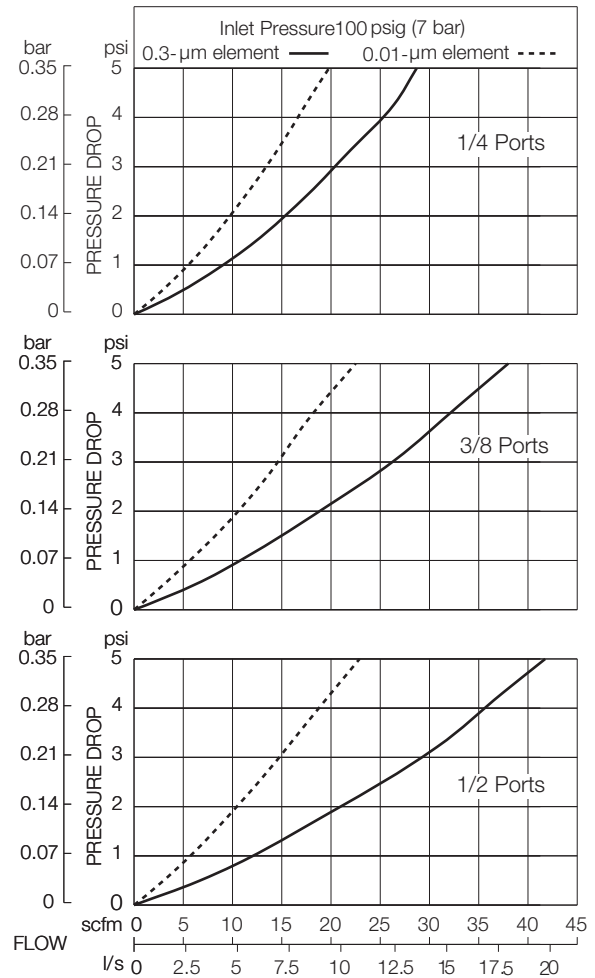
### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
Plastic bowl: 150 psig (10 bar) maximum.  
Metal bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

- ◆ Modular or inline mounting.
- ◆ 0.3- $\mu\text{m}$ -rated coalescing filter element; optional 0.01- $\mu\text{m}$ -rated element.
- ◆ High-strength polycarbonate plastic filter bowl with zinc shatterguard; optional zinc bowl.
- ◆ Differential pressure gauge to indicate when filter element needs changing.
- ◆ Internal automatic drain; optional manual drain.
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHARTS

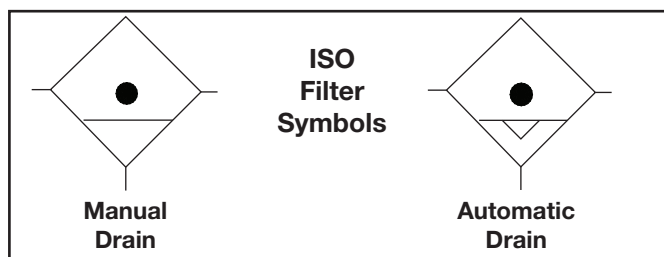
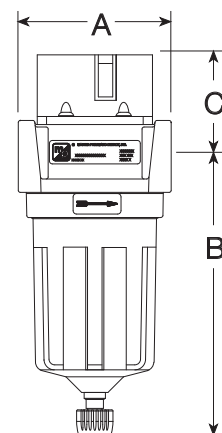


**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

### DIMENSIONS inches (mm)

Bowl	Ports	A	B	C	Depth	Weight lb (kg)
Plastic	1/4 – 1/2	2.7 (67)	4.8 (122)	1.8 (46)	2.4 (60)	1.13 (0.51)
Metal	1/4 – 1/2	2.7 (67)	4.8 (122)	1.8 (46)	2.4 (60)	1.65 (0.75)

**Note:** Remove 1.23 (31) from (C) dimension if no differential pressure gauge is ordered.



### REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
0.3 µm (Std element).....	60F-23
0.01 µm For models with E8 option.....	60F-23E8

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**B FCD 60 - 2 Y W**

<p><b>BOWL TYPE</b></p> <p>Plastic bowl..... Leave blank Metal bowl..... B</p> <p><b>BOWL DRAIN</b></p> <p>Internal automatic drain ..... FCD Manual drain..... FC</p> <p><b>PORT SIZE</b></p> <p>1/4 NPTF..... 2 3/8 NPTF..... 3 1/2 NPTF..... 4</p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave blank BSPP threads ..... W</p> <p><b>OPTIONS:</b> <i>(More than one option can be chosen. Add in alphabetical order)</i></p> <p>None ..... Leave blank 0.01-µm rating ..... E8 With differential pressure ..... Leave blank gauge. No differential pressure gauge .. NG</p>
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# GUARDSMAN II Modular Coalescing Filters

# BFCD70 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BFCD70-4

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 6-Ounce (180-ml) capacity aluminum with clear nylon sight glass. Bowl can be rotated for easy readability. Optional 10-ounce (300-ml) extended aluminum bowl has higher capacity filter element for increased air flow.

**Bowl Drain:**

Internal automatic drain; optional manual drain and internal float drain.

**Bowl Ring:** Nylon.

**Differential Pressure Gauge:** A60F-28.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element. Optional 0.01- $\mu$ m-rated element (reduces flow by 20%).

**Fluid Media:** Compressed air.

**Inlet Pressure:**

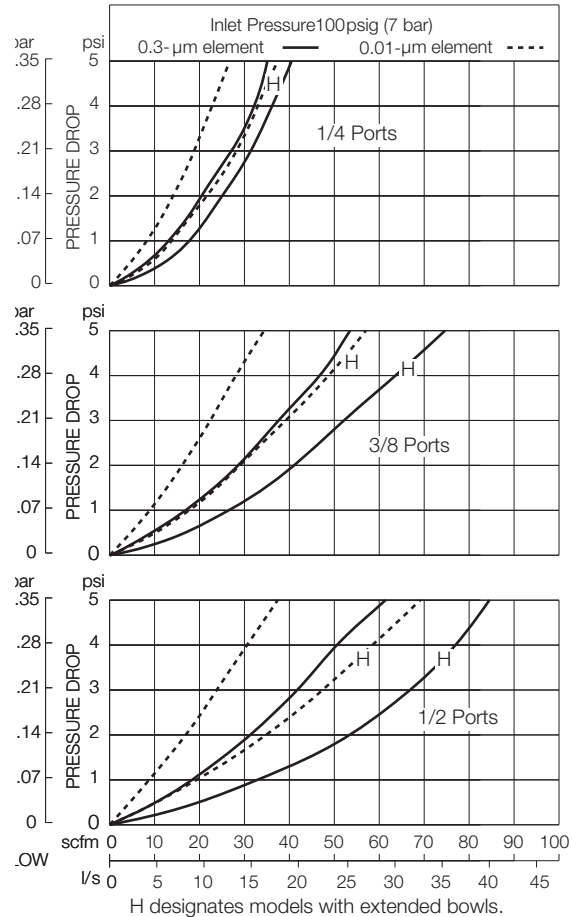
Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 200 psig (14 bar).

**Seals:** Nitrile.

- ◆ Modular or inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m-rated element.
- ◆ Aluminum bowl with clear nylon sight glass. Bowl can be rotated for easy readability.
- ◆ Optional extended bowl with higher flow filter element.
- ◆ Differential pressure gauge to indicate when filter element needs changing.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHARTS

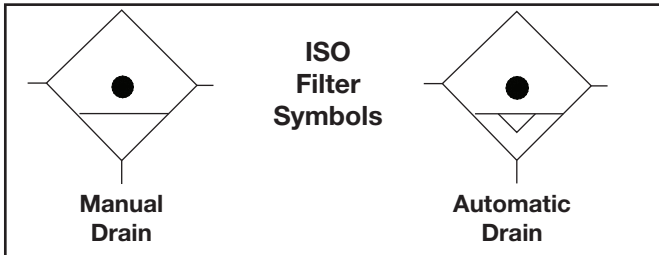
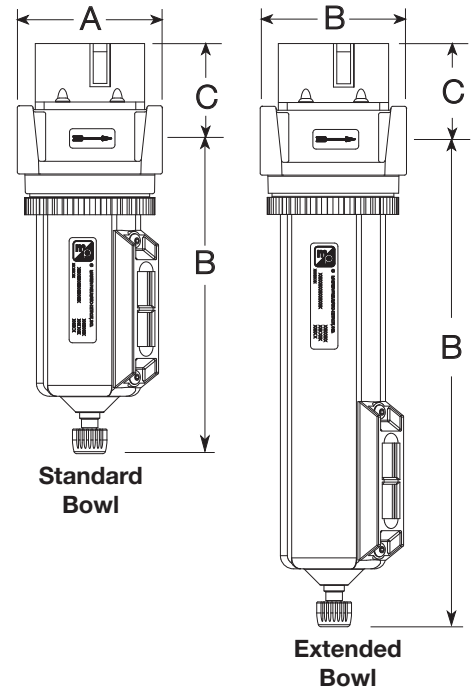


**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

**DIMENSIONS** inches (cm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	2.7 (67)	6.5 (165)	1.8 (45)	2.4 (60)	1.75 (0.80)
Extended	2.7 (67)	9.5 (241)	1.8 (45)	2.4 (60)	2.00 (0.91)

**Note:** Remove 1.23 (3.2) from (C) dimension if no differential pressure gauge is ordered.



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
0.3 µm Standard bowl (Std element).....	A60F-29
0.3 µm Extended bowl (Std element) .....	A60F-32
0.01 µm Standard bowl .....	A60F-29E8
0.01 µm Extended bowl.....	A60F-32E8

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B F C D 70 - 2 Y W**

**BOWL and DRAIN TYPE**

- Metal bowl, internal automatic drain ..... B F C D
- Metal bowl, manual drain ..... B F C
- Metal bowl, internal internal float drain ..... B F C 6 A  
(Brass stem).

**BOWL SIZE**

- Standard 6-ounce bowl ..... 70
- Extended 10-ounce bowl with higher flow ... 70 H  
filter element.

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPF threads ..... W

**OPTIONS:** (More than one option can be chosen. Add in alphabetical order)

- 0.3-µm rating ..... Leave blank
- 0.01-µm rating ..... E 8
- With differential pressure ..... Leave blank  
gauge.
- No differential pressure gauge .. N G

**PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4



# SERIES 350 Modular Coalescing Filters



## Available Color Caps



Model Shown: FC5A350-3C1

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl, manual drain 40° to 125°F (4° to 52°C)  
 Plastic bowl, float drain 40° to 125°F (4° to 52°C)  
 Metal bowl, manual drain 40° to 175°F (4° to 79°C)  
 Metal bowl, float drain 40° to 175°F (4° to 79°C)

**Body:** Die-cast zinc.

**Bowl:** 5.1-Ounce (151-ml) capacity polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass. Optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass and higher flow filter element.

**Bowl Drain:** Internal float drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to drain effluents. Optional manual drain.

**Cap Color:** yellow, Optional red, blue and grey.

**Differential Pressure Gauge:** A125-09

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber; optional 0.01- $\mu$ m-rated element (reduces flow by 20%).

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl & manual drain: 0-150 psig (0-10 bar).  
 Plastic bowl & Float drain: 30-150 psig (2-10 bar).  
 Metal bowl & manual drain: 0-250 psig (0-17 bar).  
 Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Seals:** Nitrile.

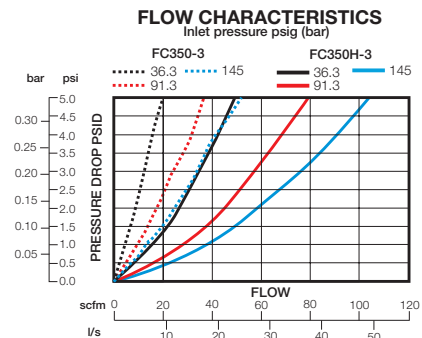
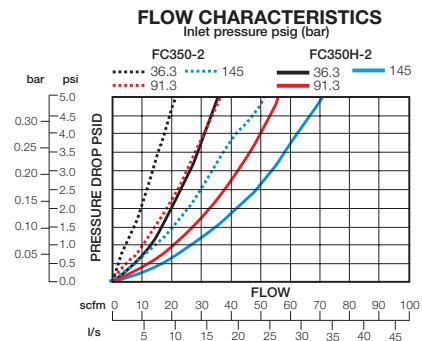
# FC350 Models

## Port Sizes: 1/4, 3/8, 1/2

- ◆ Modular or inline mounting.
- ◆ Designed to remove particulate material 99.98% of free oils and solid contaminants 0.3 microns and larger.
- ◆ Optional 0.01- $\mu$ m-rated element.
- ◆ Removal of effluents via manual or automatic drains.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175°F (79°C).
- ◆ Color caps available for visual management systems. (Blue, red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ Coalescent elements are absolute rated.
- ◆ Polycarbonate plastic bowl with shatterguard. Optional metal bowl.
- ◆ Differential pressure gauge to indicate when filter element needs changing.
- ◆ NPTF port threads; optional BSPP threads.

**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

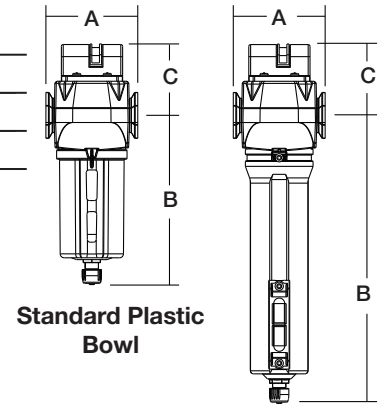
## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	3.0 (76.2)	5.54 (140.7)	2.33 (59.3)	2.51 (63.8)	1.30 (0.59)
Std metal	3.0 (76.2)	6.42 (163.1)	2.33 (59.3)	2.76 (70.1)	1.42 (0.65)
Ext metal	3.0 (76.2)	9.51 (241.6)	2.33 (59.3)	2.76 (70.1)	1.54 (0.70)

† Bowl (standard) removal clearance: add 3.1 (79)  
 † Bowl (extended) removal clearance: add 6.1 (155)



Standard Plastic Bowl

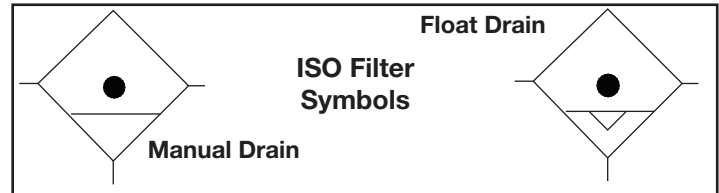
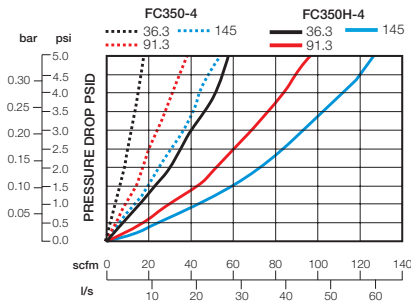
Extended Metal Bowl

### REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
0.3 µm Standard for plastic bowl	A60F-23
0.3 µm Standard for metal bowl	A60F-29
0.3 µm Extended for metal bowl	A60F-32
0.01 µm Standard for plastic bowl	A60F-23E8
0.01 µm Standard for metal bowl	A60F-29E8
0.01 µm Extended metal bowl	A60F-32E8

### FLOW CHARACTERISTICS

Inlet pressure psig (bar)



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the coalescing filter you want.

# BFC 350 H S - 3 E8 W

#### BOWL AND DRAIN TYPE

(Metal bowls contain a sight glass)

- Plastic bowl, manual drain ..... FC
- Metal bowl, manual drain ..... BFC
- Plastic bowl, internal float drain (plastic stem) ... FC5A
- Metal bowl, internal float drain (brass stem) ..... BFC6A

#### BOWL LENGTH

- Standard length ..... Leave Blank
  - Extended bowl length ..... H
- (Must be used with metal bowl option shown in BOWL AND DRAIN TYPE).

#### DIFFERENTIAL PRESSURE GAUGE

- No gauge (No gauge ports) ..... Leave Blank
- Differential pressure gauge ..... S

#### PORT TYPE

- NPTF threads ..... Leave blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order.)

#### Cap color:

- Yellow (standard) ..... C1
- Red ..... C2
- Mid blue ..... C3
- Grey ..... Leave Blank

#### Filter element: (borosilicate-glass-fiber)

- 0.3-µm rating ..... Leave Blank
- 0.01-µm rating ..... E8

#### PORT SIZE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

# Full-Size VANGUARD Modular Coalescing Filters

# FC101 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: FC101-2

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 8-Ounce (240-ml) capacity polycarbonate plastic with steel shatterguard; optional zinc bowl with clear nylon sight glass. Optional 20-ounce (600-ml) extended polycarbonate or zinc bowl has higher flow filter element.

**Bowl Drain:** Manual. Optional internal automatic drain and internal float drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** Small 103-151.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

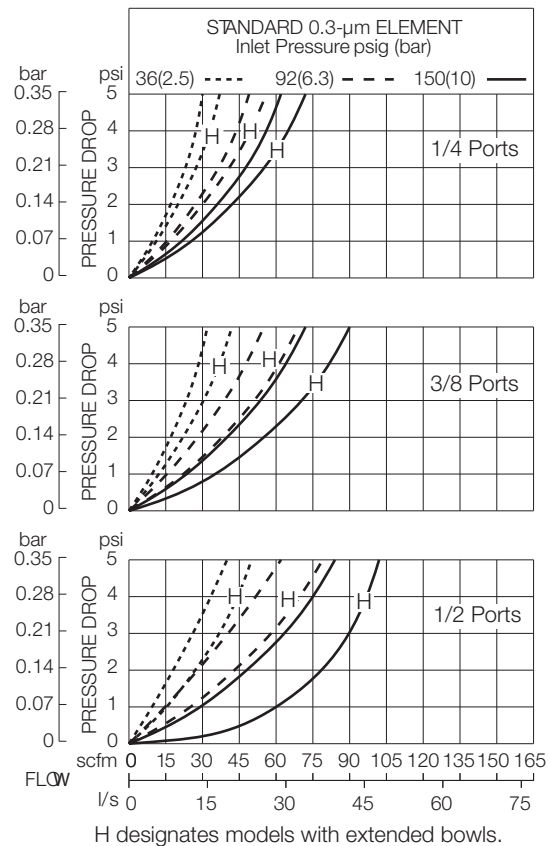
Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
Plastic Bowl: 150 psig (10 bar) maximum.  
Metal Bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

- ◆ Modular or inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m element.
- ◆ Differential pressure gauge.
- ◆ High-strength polycarbonate plastic filter bowl with steel shatterguard; optional metal bowl with clear nylon sight glass.
- ◆ Optional extended bowl with higher flow filter element.
- ◆ Manual filter drain; optional internal automatic drain and internal float drain.
- ◆ NPTF port threads; optional BSPP threads.

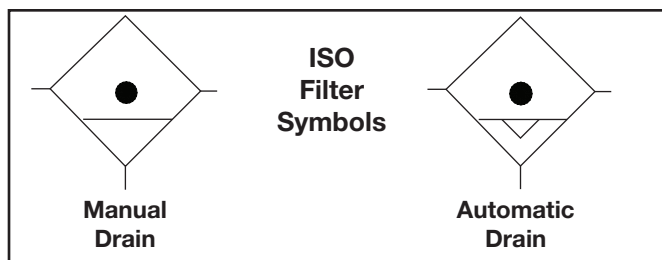
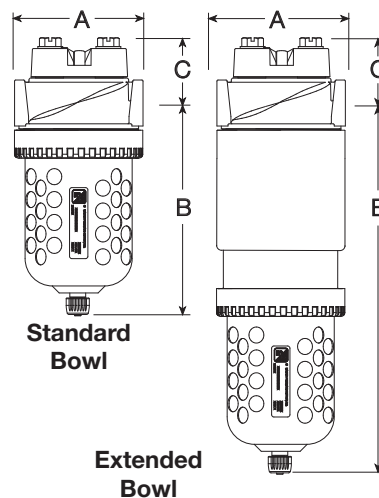
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	3.5 (89)	5.8 (146)	1.8 (45)	3.5 (89)	2.13 (0.95)
Extended	3.5 (89)	10.3 (260)	1.8 (45)	3.5 (89)	3.25 (1.54)



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
0.3 $\mu$ m Standard bowl (Std element).....	A103-160
0.3 $\mu$ m Extended bowl .....	A103-160L
Models with E8 option:	
0.01 $\mu$ m Standard bowl .....	A103-160E8
0.01 $\mu$ m Extended bowl .....	A103-160LE8

## BFC 101 - 2 Y W

### BOWL AND DRAIN TYPE

Plastic bowl, internal automatic drain .....	FCD
Metal bowl, internal automatic drain .....	BFCd
Plastic bowl, manual drain .....	FC
Metal bowl, manual drain .....	BFC
Plastic bowl, internal float drain .....	FC5A
Metal bowl, internal float drain .....	BFC6A

### BOWL SIZE and DIFFERENTIAL PRESSURE GAUGE

#### Standard Bowls:

Tapped ports on head, no gauge .....	101
(Add 'NG' option under <b>OPTION</b> section).	
Tapped ports on head, small gauge .....	101
Tapped ports on head, large gauge .....	101L
Tapped ports on head, large gauge .....	101E
with normally <b>OPEN</b> reed switch.	
Tapped ports on head, large gauge .....	101E2
with normally <b>CLOSED</b> reed switch.	

#### Extended Bowls:

Tapped ports on head, no gauge .....	101H
(Add 'NG' option under <b>OPTION</b> section).	
Tapped ports on head, small gauge .....	101H
Tapped ports on head, large gauge .....	101HL
Tapped ports on head, large gauge .....	101HE
with normally <b>OPEN</b> reed switch.	
Tapped ports on head, large gauge .....	101HE2
with normally <b>CLOSED</b> reed switch.	

### PORT TYPE

NPTF threads .....	Leave blank
BSPF threads .....	W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order.)

#### Filter element:

0.3- $\mu$ m rating .....	Leave Blank
0.01- $\mu$ m rating .....	E8

No bowl drain .....

LDC  
(1/4 NPT female port instead. Also use 'BFC' option under **BOWL and DRAIN TYPE** section.)

No differential gauge .....

NG  
(Add '101' option under **BOWL SIZE and DIFFERENTIAL PRESSURE GAUGE** section).

### PORT SIZE

1/4 NPTF .....	2
3/8 NPTF .....	3
1/2 NPTF .....	4

## DIFFERENTIAL PRESSURE GAUGES



Small Slide Gauge  
103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)

# Full-Size SERIES 380 Modular Coalescing Filters

# FCD380 Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps



Model Shown: FCD380S-4

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 175°F (4° to 79°C).

### Body:

Die-cast zinc.  
**Bowl:** 9-Ounce (270-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass. Optional 15-ounce (450-ml) extended aluminum bowl with a clear nylon sight glass and higher flow filter element.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain, or Warrior electronic drain.

### Bowl Ring: Nylon.

**Cap Color:** Grey. Yellow, red, and blue optional.

**Differential Pressure Gauge:** Small K103-151.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber; optional 0.01- $\mu$ m-rated element (reduces flow by 20%).

**Fluid Media:** Compressed air.

### Inlet Pressure:

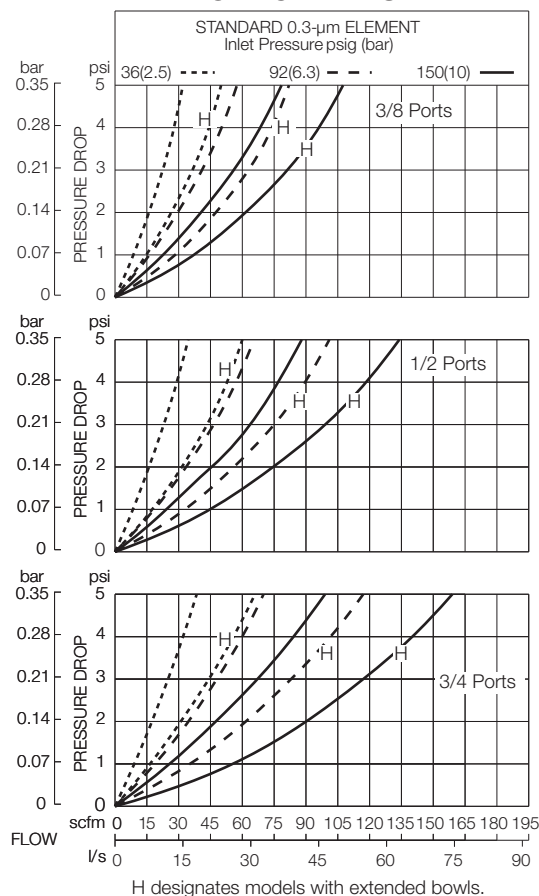
Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
Plastic bowl: 150 psig (10 bar).  
Metal bowl: 200 psig (14 bar).

**Seals:** Nitrile.

- ◆ Modular or inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m-rated element.
- ◆ Polycarbonate plastic bowl with steel shatter-guard; optional metal bowl with sight glass.
- ◆ Optional extended metal bowl with higher capacity filter element included.
- ◆ Differential pressure gauge to indicate when filter element needs changing.
- ◆ Internal automatic bowl drain; optional manual drain, internal float drain, or Warrior electronic drain.
- ◆ NPTF port threads; optional BSPP threads.

**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

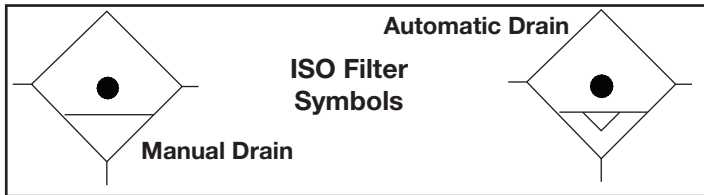
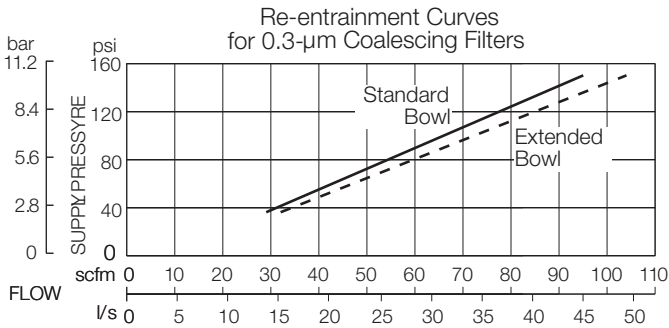
## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Polycarbonate	3.5 (88)	7.7 (195)	2.2 (55)	2.9 (73)	2.13 (0.97)
9-Ounce Metal	3.5 (88)	7.6 (193)	2.2 (55)	3.1 (79)	2.13 (0.97)
Extended Metal	3.5 (88)	11.2 (284)	2.2 (55)	3.1 (79)	2.31 (1.05)

† Bowl removal clearance: add 3.1 (79) for 9-ounce bowl; 6.1 (155) for extended bowl.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

# B F C D 380 S - 3 Y W

### BOWL AND DRAIN TYPE (Metal bowls contain a sight glass)

Plastic bowl, internal automatic drain	FCD
Metal bowl, internal automatic drain	B F C D
Plastic bowl, manual drain	FC
Metal bowl, manual drain	BFC
Plastic bowl, internal float drain (plastic stem)	FC5A
Metal bowl, internal float drain (brass stem)	BFC6A
Metal bowl, warrior electronic drain	BFC2A

### BOWL SIZE and DIFFERENTIAL PRESSURE GAUGE

#### Standard Bowls - 9 ounce:

Tapped ports on head, no gauge	380
Tapped ports on head, small gauge	380S
Tapped ports on head, large gauge	380L
Tapped ports on head, large gauge with normally OPEN reed switch.	380E
Tapped ports on head, large gauge with normally CLOSED reed switch.	380E2

#### Extended Bowls - 15 ounce high flow:

(Only available with metal bowl option. Also use 'B' options under BOWL AND DRAIN TYPE section.)

Tapped ports on head, no gauge	380H
Tapped ports on head, small gauge	380HS
Tapped ports on head, large gauge	380HL
Tapped ports on head, large gauge with normally OPEN reed switch.	380HE
Tapped ports on head, large gauge with normally CLOSED reed switch.	380HE2

### PORT TYPE

NPTF threads	Leave blank
BSPP threads	W

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

None ..... Leave Blank

#### Cap color:

Grey	Leave Blank
MP yellow	C1
Red	C2
Mid blue	C3

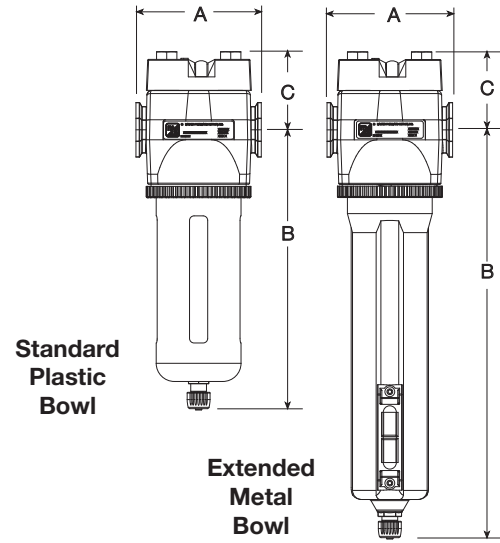
#### Filter element:

0.3-µm rating	Leave Blank
0.01-µm rating	E8
No bowl drain	LDC

(1/4 NPT female port instead. Also use 'BFC' option under BOWL AND DRAIN TYPE section.)

#### PORT SIZE

3/8 NPTF	3
1/2 NPTF	4
3/4 NPTF	6



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
0.3 µm Standard bowl	A115-117
0.3 µm Extended bowl	A115-118
0.01 µm Standard bowl	A115-117E8
0.01 µm Extended bowl	A115-118E8

# High-Flow VANGUARD Coalescing Filters



Model Shown: FCD101-6

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).

Metal Bowl: 40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 16-Ounce (480-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass.

### Bowl Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** 106-35.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with float drain.

Plastic Bowl: 150 psig (10 bar) maximum.

Metal Bowl: 200 psig (14 bar) maximum.

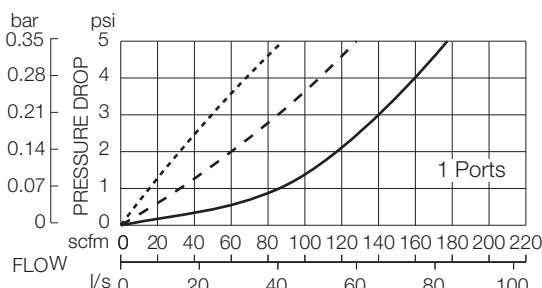
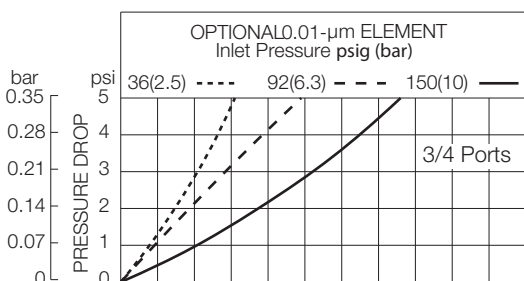
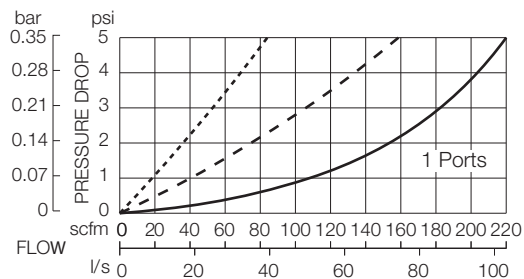
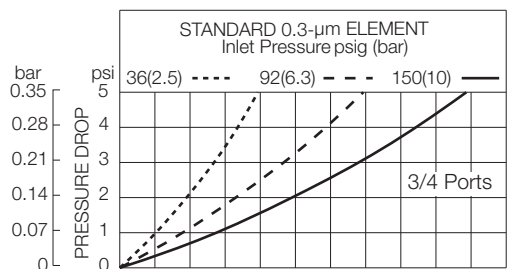
**Seals:** Nitrile.

# FCD101 Models Port Sizes: 3/4, 1

- ◆ Inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m element.
- ◆ Differential pressure gauge.
- ◆ High-strength polycarbonate plastic filter bowl with steel shatterguard; optional aluminum bowl with clear nylon sight glass.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ **NPTF** port threads; optional **BSP** threads.

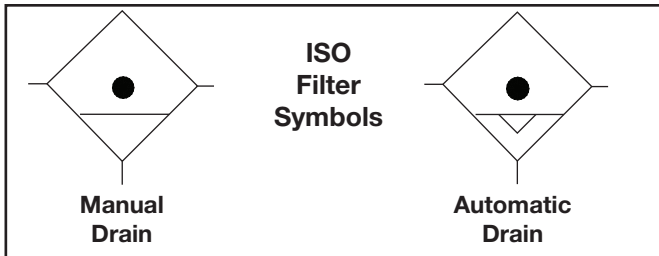
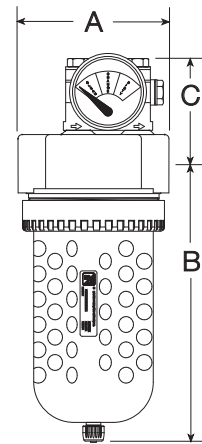
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## FLOW CHARTS



## DIMENSIONS inches (cm)

Bowl	A	B	C	Depth	Weight lb (kg)
Plastic	4.5 (114)	8.0 (203)	3.1 (78)	4.5 (114)	2.38 (1.09)
Metal	4.5 (114)	8.3 (210)	3.1 (78)	4.5 (114)	3.20 (1.46)



## REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
0.3 $\mu\text{m}$ (Std element)	A109-106
0.01 $\mu\text{m}$ For models with E8 option	A109-106E8

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**BFC D 101 - 6 Y W**

### BOWL AND DRAIN TYPE

- Plastic bowl, internal automatic drain ..... FCD
- Metal bowl, internal automatic drain ..... BFC D
- Plastic bowl, manual drain ..... FC
- Metal bowl, manual drain ..... BFC
- Plastic bowl, internal float drain ..... FC5A  
(*plastic stem*)
- Metal bowl, internal float drain ..... BFC6A  
(*brass stem*)

### DIFFERENTIAL PRESSURE GAUGE

- Tapped ports on head, no gauge ..... 101  
(Add 'NG' option under **OPTION** section).
- Tapped ports on head, small gauge ..... 101S
- Tapped ports on head, large gauge ..... 101
- Tapped ports on head, large gauge ..... 101E  
with normally **OPEN** reed switch.
- Tapped ports on head, large gauge ..... 101E2  
with normally **CLOSED** reed switch.

### PORT TYPE

- NPTF threads ..... Leave blank
- BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank

### Filter element:

- 0.3- $\mu\text{m}$  rating ..... Leave Blank
- 0.01- $\mu\text{m}$  rating ..... E8
- No bowl drain ..... LDC

(1/4 NPT female port instead. Also use 'BFC' or 'FC' option under **BOWL and DRAIN TYPE** section.)

- No differential gauge ..... NG

(Add '101' option under **BOWL SIZE and DIFFERENTIAL PRESSURE GAUGE** section).

### PORT SIZE

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8

## DIFFERENTIAL PRESSURE GAUGES



Small Slide Gauge  
103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)



# High-Flow VANGUARD Coalescing Filters



Model Shown: BFC201-6

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 35-Ounce (1050-ml) capacity aluminum bowl. Optional 62-ounce (1860-ml) extended aluminum bowl has higher capacity filter element for increased air flow.

### Bowl Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** Large 106-35.

**Filter Element:** 0.3- $\mu\text{m}$ -rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu\text{m}$ -rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
200 psig (14 bar) maximum.

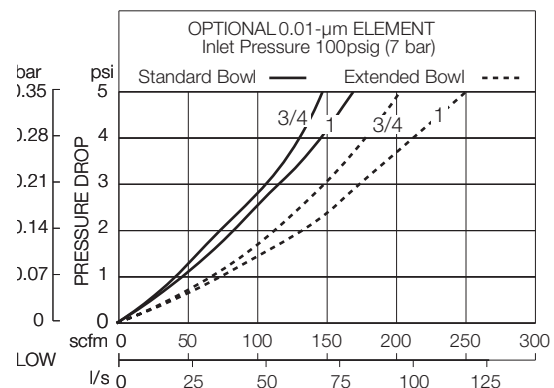
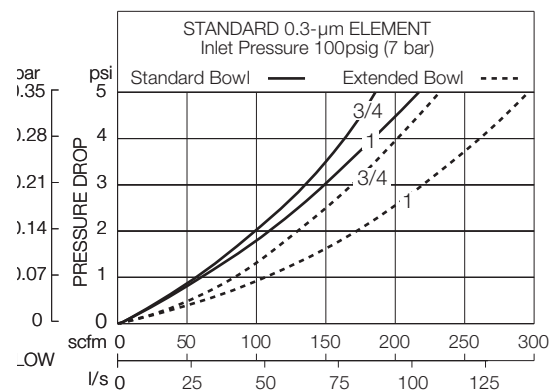
**Seals:** Nitrile.

# BFC201 Models Port Sizes: 3/4, 1

- ◆ Inline mounting.
- ◆ 0.3- $\mu\text{m}$ -rated coalescing filter element; optional 0.01- $\mu\text{m}$  element.
- ◆ Differential pressure gauge.
- ◆ Aluminum bowl.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

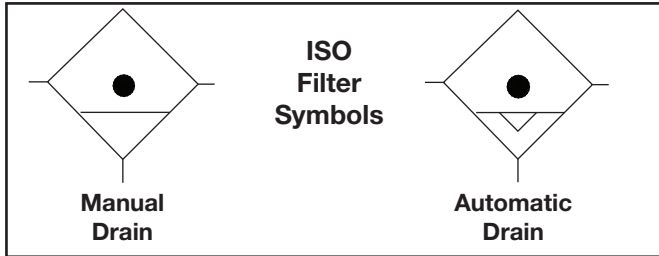
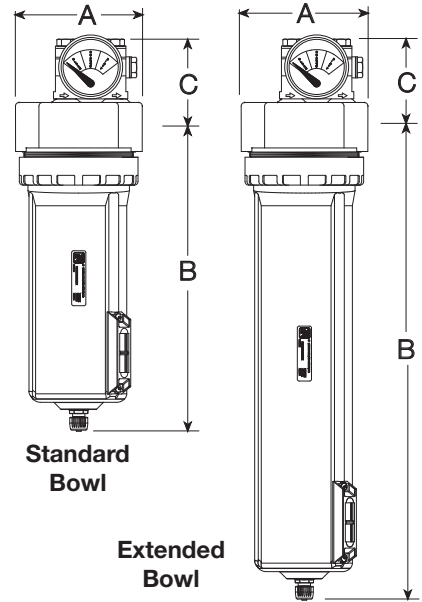
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	4.5 (114)	10.1 (257)	3.3 (83)	4.2 (106)	3.50 (1.59)
Extended	4.5 (114)	15.7 (399)	3.3 (83)	4.2 (106)	4.25 (1.91)



### ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**B F C D 201 - 6 Y W**

#### BOWL DRAIN

- Internal automatic drain ..... B F C D
- Manual Drain ..... B F C
- Internal Float drain (*brass stem*) ..... B F C 6 A

#### BOWL SIZE & DIFFERENTIAL PRESSURE GAUGE

- Standard bowl, no gauge..... 201  
Also add 'NG' under **Option Menu**.
- Standard bowl & large gauge ..... 201
- Standard bowl & small gauge ..... 201S
- Standard bowl & large gauge with .. 201E  
normally open reed switch.
- Standard bowl & large gauge with .. 201E2  
normally closed reed switch.
- Extended bowl, no gauge..... 201H  
Also add 'NG' under **Option Menu**.
- Extended bowl & large gauge ..... 201H
- Extended bowl & small gauge ..... 201HS
- Extended bowl & large gauge with .. 201HE  
normally open reed switch.
- Extended Bowl & large gauge with .. 201HE2  
normally closed reed switch.

#### PORT SIZE

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8

### REPLACEMENT FILTER ELEMENT KITS

Model	Element Rating	Kit Number
Standard bowl	0.3- $\mu$ m (Std element)	A114-112
With E8 option	0.01- $\mu$ m	A114-112E8
Extended bowl	0.3- $\mu$ m	A114-113
With E8 option	0.01- $\mu$ m	A114-113E8

#### PORT TYPE

- NPTF threads ..... Leave blank
- BSPF threads ..... W

**OPTIONS:** (*More than one option can be chosen. Add in alphabetical order*)

- None ..... Leave blank
- 0.3- $\mu$ m-rated element ..... Leave blank
- 0.01- $\mu$ m-rated element ..... E8
- No bowl drain ..... LDC  
*(1/4-NPT female port instead.)*  
Use 'BFC' option under **BOWL DRAIN** menu.
- No differential pressure gauge ... NG

#### DIFFERENTIAL PRESSURE GAUGES



**Small Slide Gauge**  
103-151



**Large Dual Face Gauge**  
106-35



**Large Dual Face Gauge with Reed Switch**  
106-35E (*Normally Open*)  
106-35EC (*Normally Closed*)

# High-Flow VANGUARD Coalescing Filters

# BFCD201 Models Port Sizes: 1-1/4, 1-1/2



Model Shown: BFCD201-10

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 35-Ounce (1050-ml) capacity aluminum bowl. Optional 62-ounce (1860-ml) extended aluminum bowl has higher capacity filter element for increased air flow.

### Bowl Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Bowl Ring:** Aluminum.

**Differential Pressure Gauge:** Large 106-35.

**Filter Element:** 0.3- $\mu$ m-rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

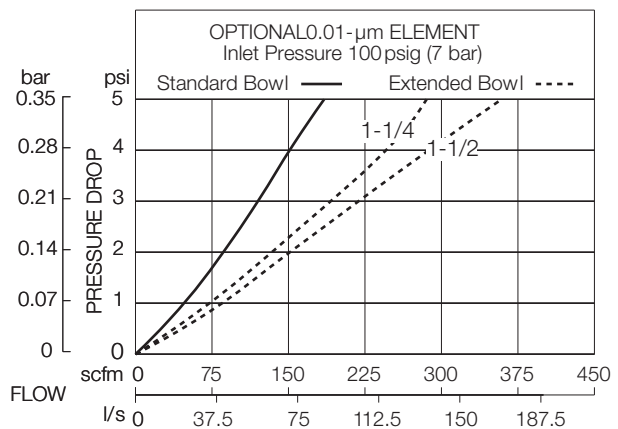
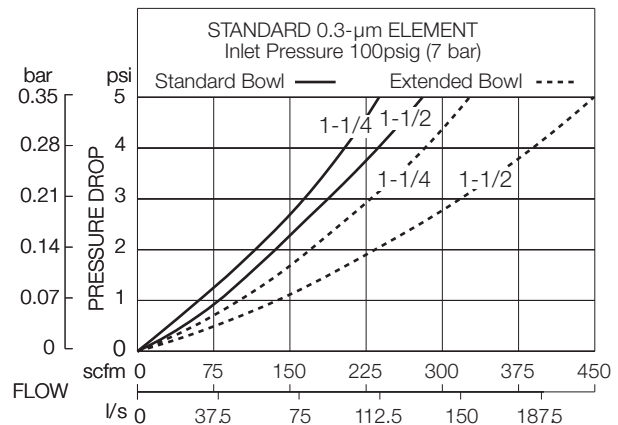
Maximum: 200 psig (14 bar)

**Seals:** Nitrile.

- ◆ Inline mounting.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m element.
- ◆ Differential pressure gauge.
- ◆ Aluminum bowl. Optional extended bowl with higher flow element.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ NPTF port threads; optional BSPP threads.

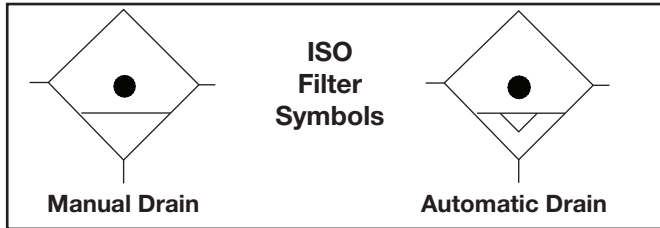
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## FLOW CHARTS



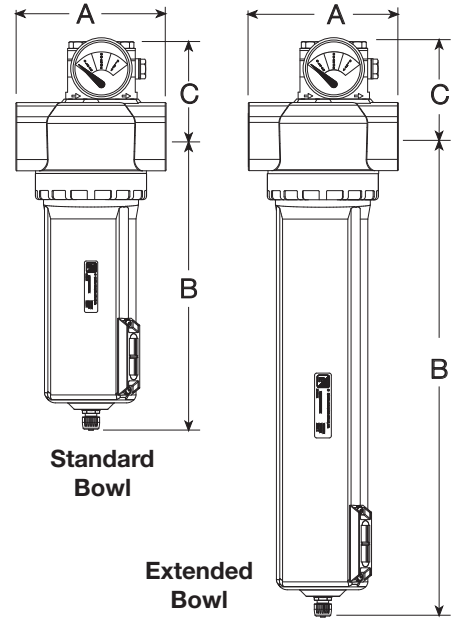
**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	5.5 (140)	10.6 (270)	3.7 (94)	4.2 (106)	4.31 (1.94)
Extended	5.5 (140)	16.2 (412)	3.7 (94)	4.2 (106)	5.00 (2.27)



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
0.3 µm Standard bowl (Std element)	A114-112
0.3 µm Extended bowl	A114-113
Models with E8 option:	
0.01 µm Standard bowl	A114-112E8
0.01 µm Extended bowl	A114-113E8



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B F C D 201 - 10 Y W**

**BOWL DRAIN**

- Internal automatic drain ..... B F C D
- Manual Drain ..... B F C
- Internal Float drain (*brass stem*) ..... B F C 6 A

**BOWL SIZE & DIFFERENTIAL**

**PRESSURE GAUGE**

- Standard bowl, no gauge..... 201  
Also add 'NG' under **Option Menu**.
- Standard bowl & large gauge ..... 201
- Standard bowl & small gauge ..... 201S
- Standard bowl & large gauge with ..... 201E  
normally open reed switch.
- Standard bowl & large gauge with ..... 201E2  
normally closed reed switch.
- Extended bowl, no gauge..... 201H  
Also add 'NG' under **Option Menu**.
- Extended bowl & large gauge ..... 201H
- Extended bowl & small gauge ..... 201HS
- Extended bowl & large gauge with ..... 201HE  
normally **open** reed switch.
- Extended Bowl & large gauge with ..... 201HE2  
normally **closed** reed switch.

**PORT TYPE**

- NPTF Threads ..... Leave blank
- BSPP Threads ..... W

**OPTIONS:** (*More than one option can be chosen. Add in alphabetical order*)

- None ..... Leave blank
- 0.3-µm-rated element ..... Leave blank
- 0.01-µm-rated element ..... E8
- No bowl drain ..... LDC

*(1/4-NPT female port instead.)*

Use 'BFC' option under **BOWL**

**DRAIN** menu.

- No differential pressure gauge ..... NG

**PORT SIZE**

- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**DIFFERENTIAL PRESSURE GAUGES**



**Small Slide Gauge**  
103-151



**Large Dual Face Gauge**  
106-35



**Large Dual Face Gauge with Reed Switch**  
106-35E (*Normally Open*)  
106-35EC (*Normally Closed*)

# High-Flow VANGUARD Coalescing Filters



Model Shown: BFC6A401L-10

## SPECIFICATIONS

**Ambient/Media Temperature:**

Manual drain: 40° to 175°F (4° to 79°C).

Float drain: 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 120-Ounce (3548ml) capacity aluminum bowl. Optional 230-ounce (6802ml) extended aluminum bowl has higher flow filter element.

**Bowl Drain:**

Internal automatic float drain; optional manual drain.

**Differential Pressure Gauge:** 106-35.

**Filter Element:** 0.3- $\mu\text{m}$ -rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu\text{m}$ -rated element.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

Float drain: 30 psig (2.1 bar) minimum 200 psig (14 bar) maximum.

Manual drain: 0 psig (0 bar) minimum 300 psig (21bar) maximum.

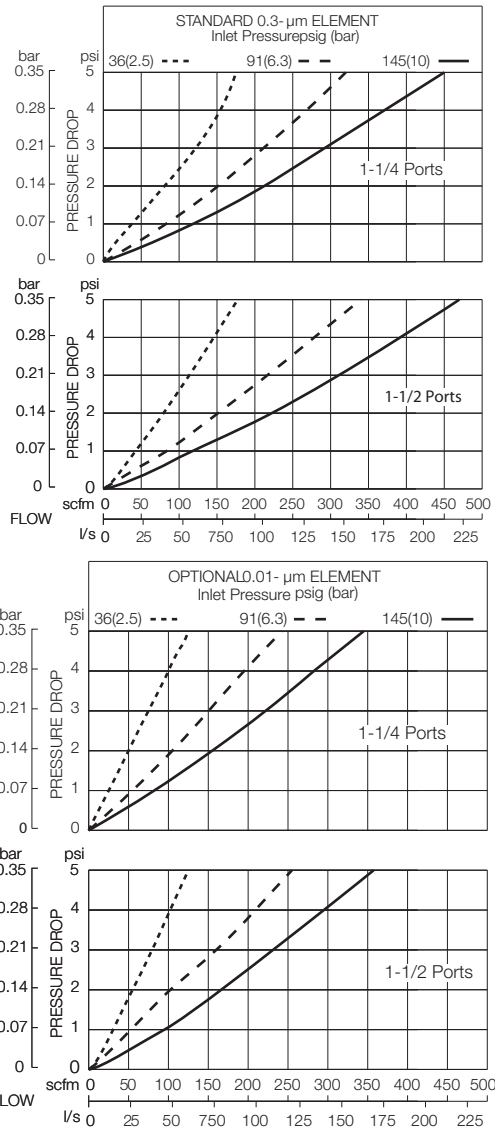
**Seals:** Nitrile.

# BFC6A401 Models Port Sizes: 1-1/4, 1-1/2

- ◆ Inline mounting.
- ◆ 0.3- $\mu\text{m}$ -rated coalescing filter element; optional 0.01- $\mu\text{m}$  element.
- ◆ Differential pressure gauge.
- ◆ Aluminum bowl.
- ◆ Optional extended bowl with higher capacity filter element for greater air flow.
- ◆ Internal float drain; optional manual drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

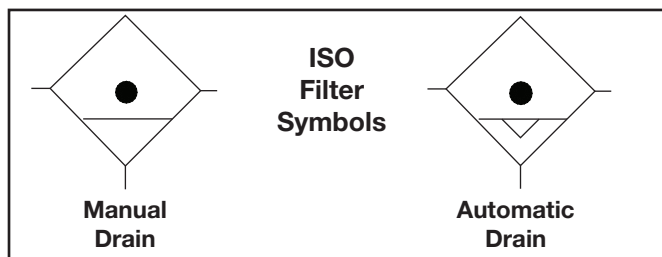
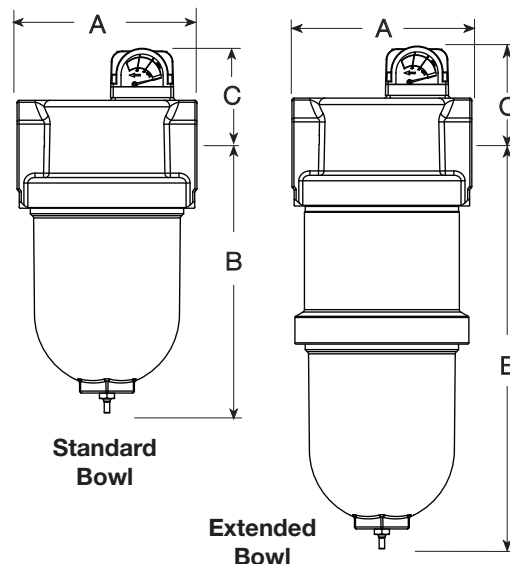
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

### FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B *	C	Depth	Weight * lb (kg)
Standard	8.1 (204.7)	12 (305.1)	4.6 (117.4)	8 (203.2)	17 (7.8)
Extended	8.1 (204.7)	18.3 (465.1)	4.6 (117.4)	8 (203.2)	26 (11.8)



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
0.3 µm Standard bowl (Std element)	A106-24
0.3 µm Extended bowl	A106-24L
Models with E8 option:	
0.01 µm Standard bowl	A106-24E8
0.01 µm Extended bowl	A106-24LE8

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

**B FC6A 401 H L - 10 E8 W**

### DRAIN TYPE

Internal automatic float drain (*brass stem*) ...FC6A  
 Manual Drain ..... FC  
 No drain (*less drain cock*) ..... FC7A

### BOWL SIZE

Standard Bowl ..... Leave Blank  
 Extended Bowl ..... H

### DIFFERENTIAL PRESSURE GAUGE

No gauge ..... Leave Blank  
 Large differential pressure gauge ... L  
 Small differential pressure gauge ... S  
 Large differential pressure gauge ... E  
 with normally open reed switch.  
 Large differential pressure gauge ... E2  
 with normally closed reed switch.

### PORT TYPE

NPTF ..... Leave Blank  
 BSPP ..... W

### ELEMENT TYPE

0.3-µm element ..... Leave Blank  
 0.01-µm element ..... E8

### PORT SIZE

1-1/4 NPTF ..... 10  
 1-1/2 NPTF ..... 12

## DIFFERENTIAL PRESSURE GAUGES



Small Slide Gauge  
K103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)

# High-Flow VANGUARD Coalescing Filters

# BFC6A401H Model Port Size: 2



Model Shown: BFC6A401HL-16

## SPECIFICATIONS

### Ambient/Media Temperature:

**Manual drain:** 40° to 175°F (4° to 79°C).

**Float drain:** 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 230-Ounce (6802ml) capacity aluminum bowl; has higher flow filter element.

### Bowl Drain:

Internal automatic float drain; optional manual drain.

**Differential Pressure Gauge:** 106-35.

**Filter Element:** 0.3- $\mu\text{m}$ -rated borosilicate-glass-fiber coalescing element; optional 0.01- $\mu\text{m}$ -rated element.

**Fluid Media:** Compressed air.

### Inlet Pressure:

**Float drain:** 30 psig (2.1 bar) minimum 200 psig (14 bar) maximum.

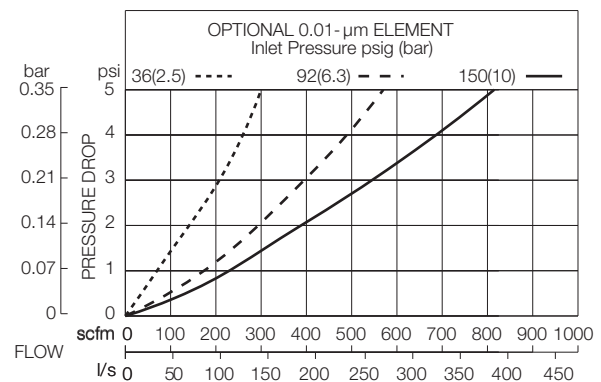
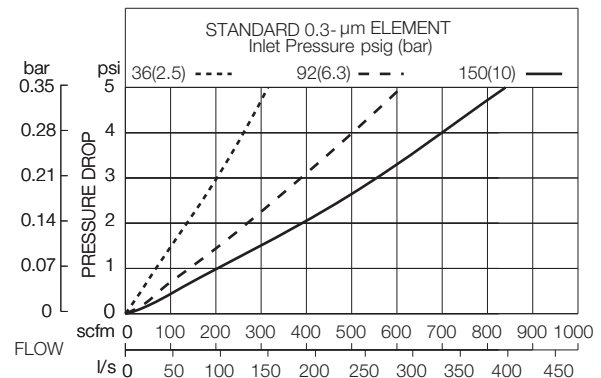
**Manual drain:** 0 psig (0 bar) minimum 300 psig (21 bar) maximum.

**Seals:** Nitrile.

- ◆ Inline mounting.
- ◆ 0.3- $\mu\text{m}$ -rated coalescing filter element; optional 0.01- $\mu\text{m}$  element.
- ◆ Differential pressure gauge.
- ◆ Aluminum bowl.
- ◆ Internal float drain; optional manual drain.
- ◆ **NPTF** port threads; optional **BSPP** threads.

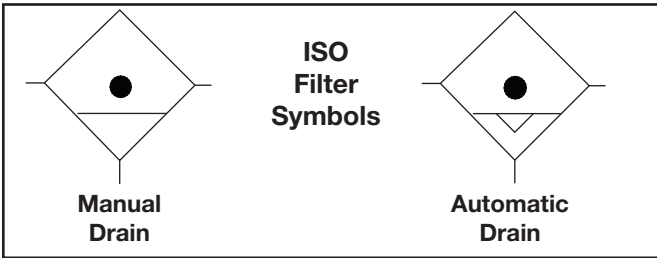
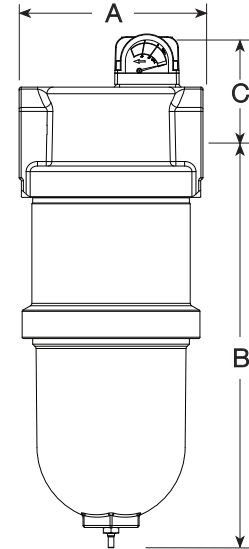
**APPLICATION NOTE:** A general purpose filter must be installed ahead of a coalescing filter to ensure good performance and to extend the life of the coalescing element.

## FLOW CHARTS



**DIMENSIONS** inches (cm)

A	B *	C	Depth	Weight * lb (kg)
8.1 (204.7)	18.3 (465.1)	4.6 (117.4)	8.0 (203.2)	26 (11.8)



**REPLACEMENT FILTER ELEMENT KITS**

Element Rating	Kit Number
0.3 µm (Std element).....	A106-24L
0.01 µm For model with E8 option.....	A106-24LE8

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**B FC6A 401H L - 16 E8 W**

**DRAIN TYPE**

- Internal automatic float drain (*brass stem*) ...FC6A
- Manual Drain ..... FC
- No drain (*less drain cock*) ..... FC7A

**DIFFERENTIAL PRESSURE GAUGE**

- No gauge ..... Leave Blank
- Large differential pressure gauge ... L
- Small differential pressure gauge ... S
- Large differential pressure gauge ... E
- with normally open reed switch.
- Large differential pressure gauge ... E2
- with normally closed reed switch.

**PORT TYPE**

- NPTF ..... Leave Blank
- BSPP ..... W

**ELEMENT TYPE**

- 0.3-µm element ..... Leave Blank
- 0.01-µm element ..... E8

**PORT SIZE**

- 2 NPTF ..... 16

**DIFFERENTIAL PRESSURE GAUGES**



Small Slide Gauge  
K103-151



Large Dual Face Gauge  
106-35



Large Dual Face Gauge  
with Reed Switch  
106-35E (Normally Open)  
106-35EC (Normally Closed)



# ADSORBING FILTERS, DRYERS, CLEAN AIR PACKAGES

## OIL REMOVAL ADSORBING FILTERS



The adsorbing filters are designed to remove vapors from the air line that cannot be removed by a coalescing filter. They produce air that is virtually free of oil and hydrocarbons as required by industries such as food processing, electronics, and instrumentation.

The filter cartridges contain activated carbon to adsorb hydrocarbon vapors and odors from alcohols, esters, and ketones. An optional extended bowl includes a higher capacity adsorbing cartridge which allows as much as 50 percent greater air flow.

Series **BFC70-E9** adsorbing filters have aluminum bowls and are offered with 1/4, 3/8, or 1/2 ports. Series **FC350-E9** and the **FC380-E9** units have either polycarbonate plastic or aluminum bowls. The **FC350-E9** are offered with 1/4, 3/8, or 1/2 ports. The **FC380-E9** are offered with 3/8, 1/2, or 3/4 ports.

An adsorbing filter should always be preceded by a particulate filter and a coalescing filter. Such an assembly is one of Master Pneumatic's Clean Air Packages which will provide air with no more oil than 10 mg/m<sup>3</sup> or 0.008 ppm.

## CLEAN AIR PACKAGES



In critical applications when vapor impurities are a potential problem, the installation of a Clean Air Package provides the solution. Ultra clean air is provided by using the particulate filters as the first line of defense against gross contaminants found in all air lines. Elements remove

solid particles larger than 5 micron, while automatic drains eliminate liquid water and oil emulsions that collect in the sump area. The particulate filter serves as a pre-filter to extend the life of the more costly coalescing element used for the next stage of filtration.

The coalescing filter element will further clean the air of residual oil mists, aerosols, and minute particles, larger than 0.3 micron. A standard differential pressure gauge warns when the pressure drop exceeds 8 to 10 psi, indicating that the coalescing element should be changed.

Finally, the adsorber filter will provide air, virtually free of oil and most hydrocarbons. It effectively eliminates odors from freons, alcohols, esters, ketones, and up to 99% of most hydrocarbons.

Clean Air Packages are available with port sizes ranging from 1/4 to 1.

## MP-FILENCO DRYER/FILTERS

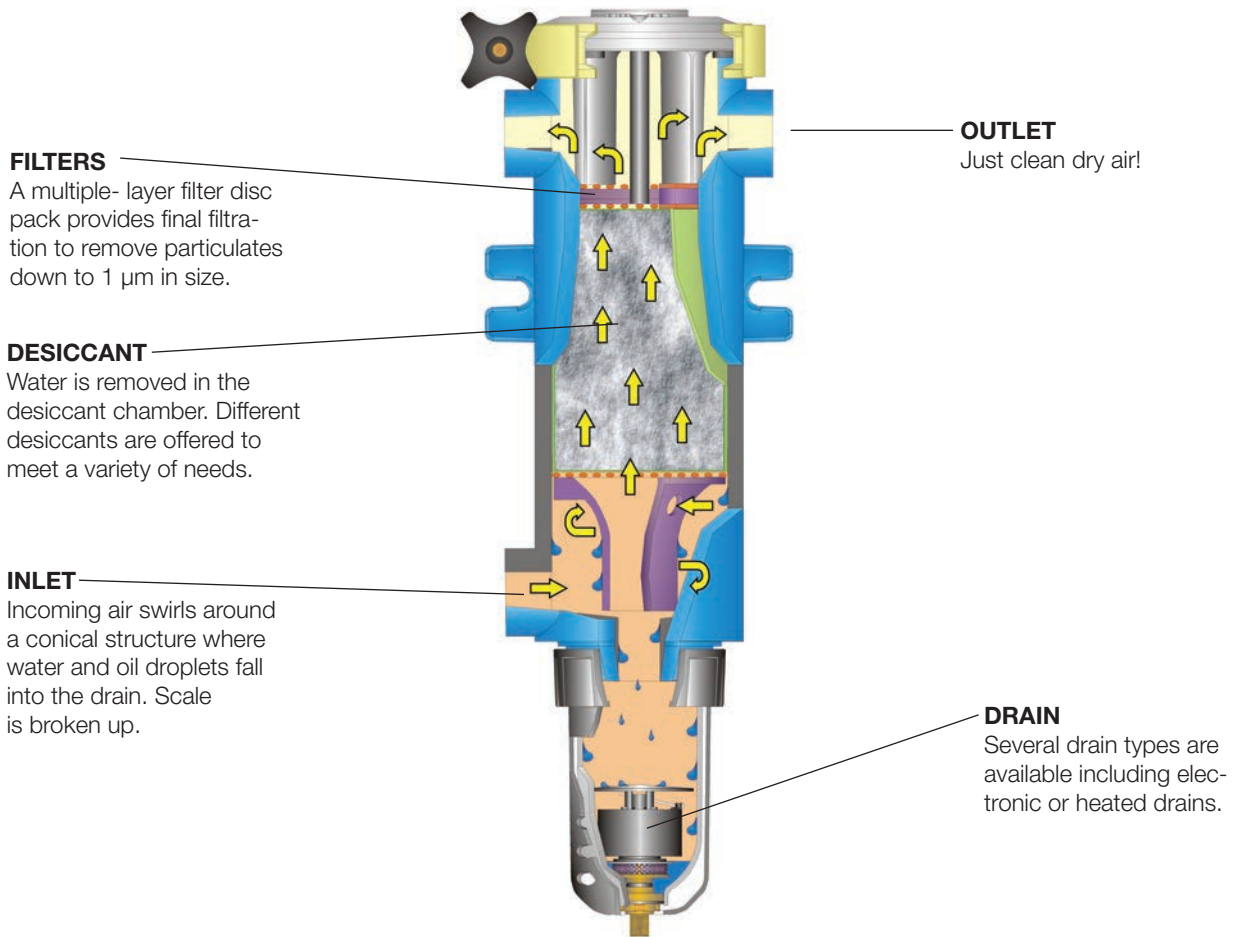


Many compressed air systems require point-of-use cleaning and drying of the air to supplement a central system. Dryer/filters do this extremely well because of their triple-action cleaning process and their ability to substantially reduce pressure dew points.

Available desiccants for these units include clay, clay with activated carbon, and molecular sieves for as much as 80° dew point suppression.

Automatic drains are strongly recommended, although there are a variety of options offered — from simple manual drains to the Warrior electronic drain.

# MP-FILENCO DRYER CROSS SECTION



## GUIDE to ADSORBING FILTERS, DRYERS and CLEAN AIR PACKAGES

Product	Port Sizes						Pages
	1/4	3/8	1/2	3/4	1	1-1/2	
<b>ADSORBING FILTERS</b>							
BFC70-E9	X	X	X				106-107
FC350-E9	X	X	X				108-109
FC380-E9		X	X	X			110-111
<b>CLEAN AIR PACKAGES</b>							
Guardman II	X	X	X				112-113
Series 350	X	X	X				114-115
Series 380		X	X	X			116-117
High-flow BFD FCD100				X	X		118-119
<b>MP-FILENCO DRYER/FILTERS</b>							
Series 25	X						120-121
Series 36		X					122-123
Series 38			X				122-123
Series 418					X		124-125
Series 625						X	126-127
Series 832							X 126-127

# GUARDSMAN II Modular Oil Vapor Removal (Adsorbing) Filters



Model Shown: BFC70-4E9

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 6-Ounce (180-ml) capacity aluminum. Optional 10-ounce (300-ml) extended aluminum bowl has higher flow filter cartridge.

**Bowl Drain:** Manual.

**Bowl Ring:** Nylon.

**Filter Cartridge:** Activated carbon.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 200 psig (14 bar) maximum.

**Seals:** Nitrile.

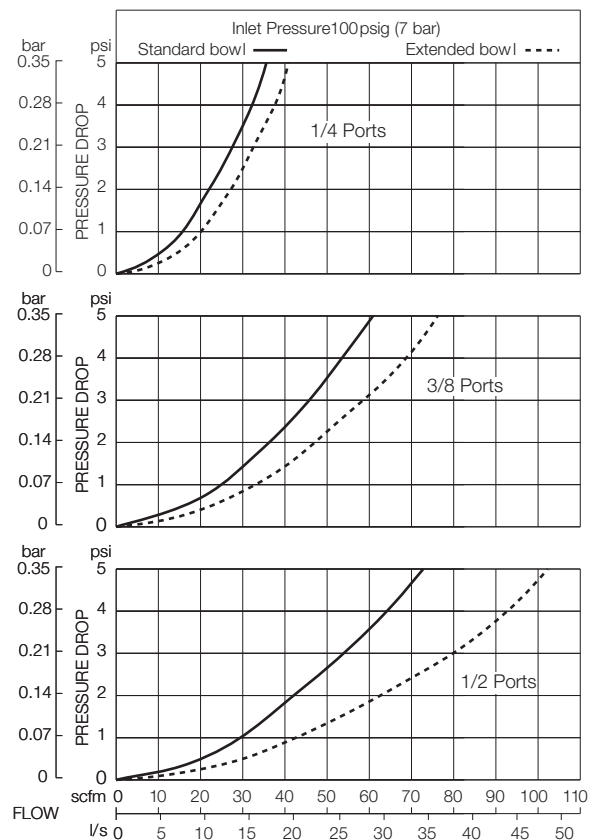
# BFC70-E9 Models Port Sizes: 1/4, 3/8, 1/2

The adsorbing filter is designed to remove vapors from the air line that cannot be removed by a coalescing filter. It produces air virtually free of oil and hydrocarbons as required by industries such as food processing, electronics, and instrumentation.

An adsorbing filter must be preceded by a coalescing filter, and these filters should be preceded by a general purpose filter. Such a trio of filters constitutes a Clean Air Package that will provide air with no more than 0.01 mg of oil per cubic meter. For such clean air assemblies see following pages.

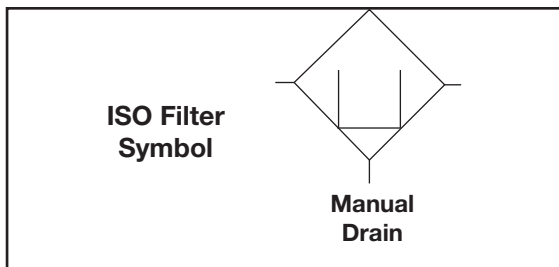
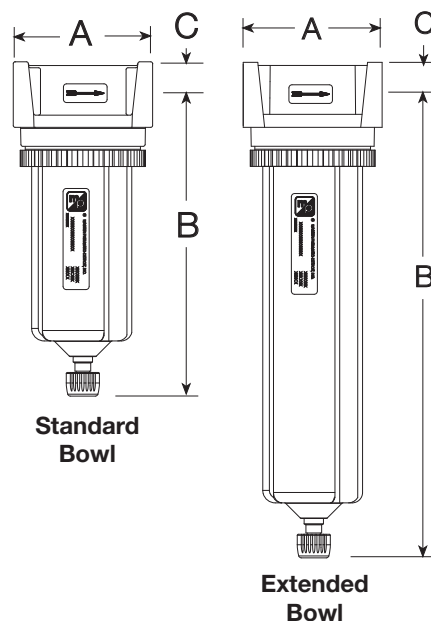
- ◆ Modular or inline mounting.
- ◆ Filter cartridge contains activated carbon
- ◆ Aluminum bowl. Optional extended bowl with higher flow cartridge.
- ◆ Manual drain.
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHARTS



**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	2.7 (67)	6.5 (165)	0.63 (16)	2.4 (60)	1.50 (0.68)
Extended	2.7 (67)	9.5 (241)	0.63 (16)	2.4 (60)	1.75 (0.80)



**REPLACEMENT FILTER ELEMENT KITS**

Bowl	Kit Number
Standard (Std cartridge) .....	A60F-29E9
Extended.....	A60F-32E9

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.

**BFC 70 - 2 E9 W**

**BOWL SIZE**

Standard 6-ounce bowl..... 70  
 Extended 10-ounce bowl ..... 70H  
 with higher flow filter cartridge

**PORT TYPE**

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

**PORT SIZE**

1/4 NPTF..... 2  
 3/8 NPTF..... 3  
 1/2 NPFT..... 4

# SERIES 350 Modular Oil Vapor Removal (Adsorbing) Filters



Model Shown: FC350-4C1E9

## Available Color Caps



## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl, manual drain 40° to 125°F (4° to 52°C) Metal bowl, manual drain 40° to 175°F (4° to 79°C)

**Bowl:** 5.1-Ounce (151-ml) capacity Polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass. Optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass and extended flow filter element.

**Bowl Drain:** Manual drain.

**Cap Color:** yellow, Optional red, blue and grey.

**Filter Cartridge:** Activated carbon with urethane seals.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl & manual drain: 0-150 psig (0-10 bar).

Plastic bowl & Float drain: 30-150 psig (2-10 bar).

Metal bowl & manual drain: 0-250 psig (0-17 bar).

Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Seals:** Nitrile.

# FC350-E9 Models Port Sizes: 1/4, 3/8, 1/2

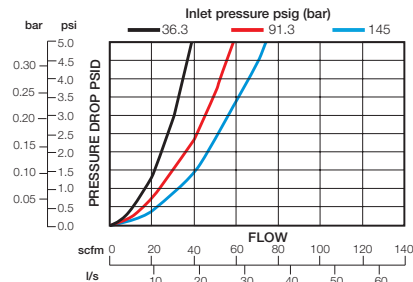
The adsorbing filter is designed to remove vapors from the air line that cannot be removed by a coalescing filter. It produces air free of oil and hydrocarbons as required by industries such as food processing, electronics, and instrumentation. An adsorbing filter preceded by a coalescing filter and a general purpose filter constitute a Clean Air Package as shown on the following pages.

- ◆ Modular or inline mounting.
- ◆ Designed to remove oil vapor that cannot be removed by a coalescent filter. Also removes odors and tastes.
- ◆ Filter cartridge contains activated carbon.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to or at 175° F. (79° C.).
- ◆ Color caps available for visual management systems. (Blue, red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ Polycarbonate plastic bowl with shatterguard. Optional metal bowl.
- ◆ NPTF port threads; optional BSPP threads.

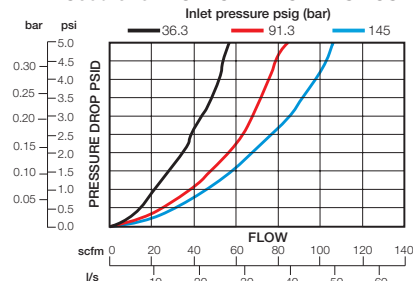
**APPLICATION NOTE:** General purpose and coalescing filter must be installed upstream of the Adsorbing filter to ensure good performance and to extend the life of the element.

## FLOW CHARTS

### FC350-2E9 FLOW CHARACTERISTICS



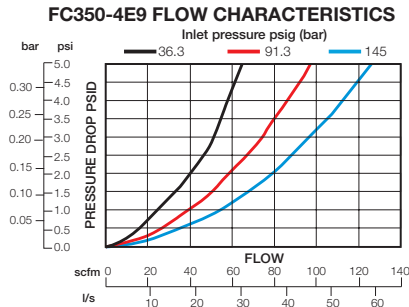
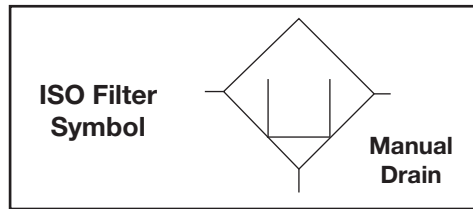
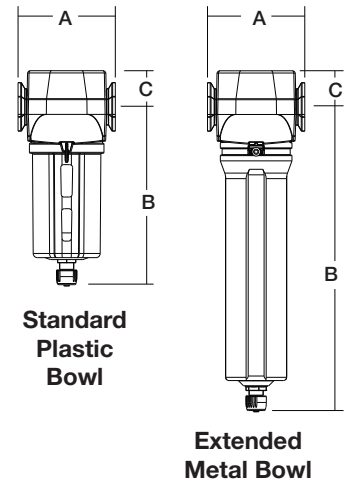
### FC350-3E9 FLOW CHARACTERISTICS



## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	3.0 (76.2)	5.54 (140.7)	1.12 (28.3)	2.51 (63.8)	1.29 (0.59)
Std metal	3.0 (76.2)	6.42 (163.1)	1.12 (28.3)	2.76 (70.1)	1.41 (0.64)
Ext metal	3.0 (76.2)	9.51 (241.6)	1.12 (28.3)	2.76 (70.1)	1.54 (0.70)

† Bowl (standard) removal clearance: add 3.1 (79)  
 † Bowl (extended) removal clearance: add 6.1 (155)



## REPLACEMENT FILTER ELEMENT KITS

Bowl Size	Kit Number
Standard (Std element).....	A60F-29E9
Extended.....	A60F-32E9

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter you want.

# BFC 350 H - 3 C1 E9 W

**BOWL AND DRAIN TYPE**

- Plastic bowl, manual drain ..... FC
- Metal bowl, manual drain ..... BFC

**BOWL LENGTH**

- Standard length ..... Leave Blank
- Extended bowl length ..... H  
(Must be used with metal bowl option shown in **BOWL AND DRAIN TYPE**).

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPF threads ..... W

**OPTIONS**

**Cap color:**

- Yellow (standard) ..... C1
- Red ..... C2
- Mid blue ..... C3
- Grey ..... Leave Blank

**PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

# Full-Size SERIES 380 Modular Oil Vapor Removal (Adsorbing) Filters

# FC380-E9 Models Port Sizes: 3/8, 1/2, 3/4



### Available Color Caps

**Yellow**  
(optional)



**Red**  
(optional)



**Blue**  
(optional)



**Grey**  
(standard)



Model Shown: FC380-6E9

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 9-Ounce (270-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl.

Optional 15-ounce (450-ml) extended aluminum bowl includes a higher capacity adsorbing cartridge.

**Bowl Drain:** Manual.

**Bowl Ring:** Nylon.

**Cap Color:** Grey, Yellow, red, and blue optional.

**Filter Cartridge:** Activated carbon with urethane seals.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

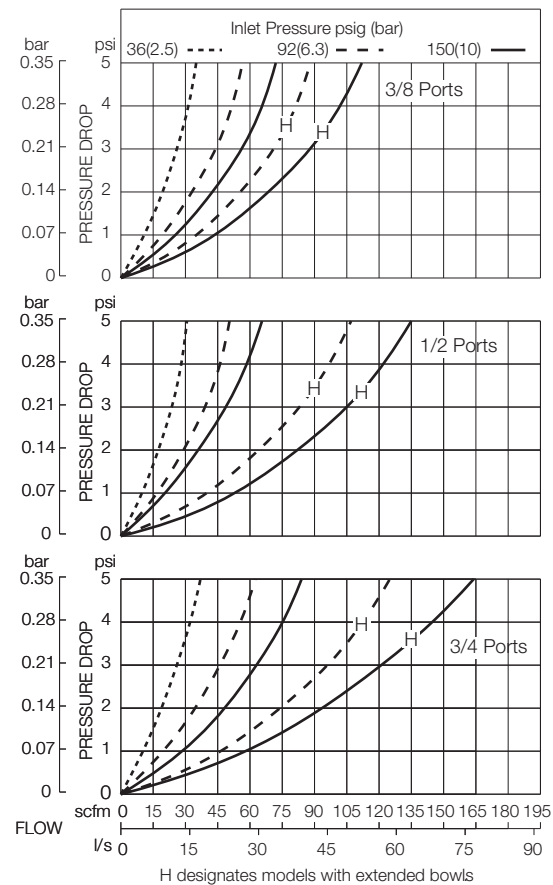
Metal bowl: 200 psig (14 bar) maximum.

**Seals:** Nitrile.

The adsorbing filter is designed to remove vapors from the air line that cannot be removed by a coalescing filter. It produces air free of oil and hydrocarbons as required by industries such as food processing, electronics, and instrumentation. An adsorbing filter preceded by a coalescing filter and a general purpose filter constitute a Clean Air Package as shown on the following pages.

- ◆ Modular or inline mounting.
- ◆ Filter cartridge contains activated carbon.
- ◆ Polycarbonate plastic bowl with steel shatter-guard; optional aluminum bowl. Optional extended aluminum bowl with higher flow filter cartridge.
- ◆ Manual drain.
- ◆ NPTF port threads; optional BSPP threads.

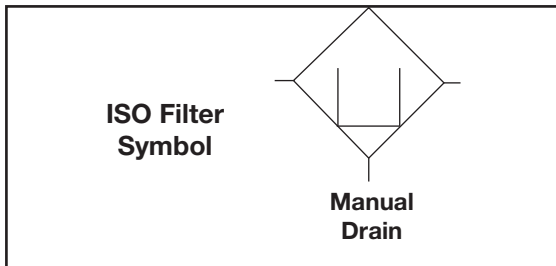
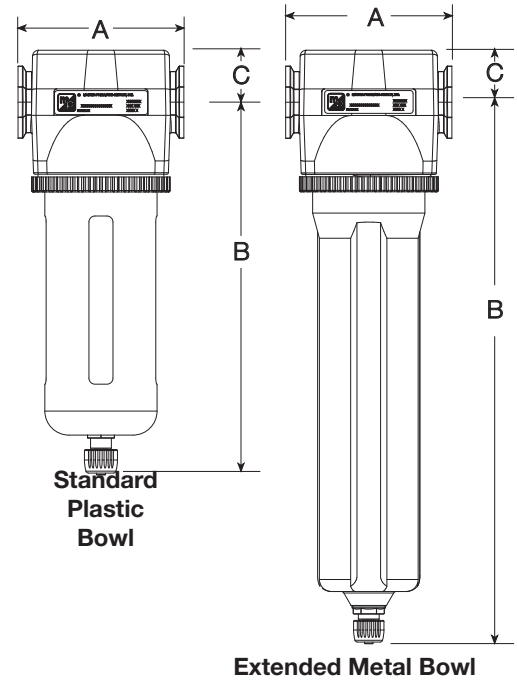
## FLOW CHARTS



**DIMENSIONS** inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Polycarbonate	3.5 (88)	7.7 (195)	1.1 (28)	2.9 (73)	2.13 (0.97)
9-Ounce Metal	3.5 (88)	7.6 (193)	1.1 (28)	3.1 (79)	2.13 (0.97)
Extended Metal	3.5 (88)	11.2 (284)	1.1 (28)	3.1 (79)	2.31 (1.05)

† Bowl removal clearance: add 3.1 (79) for 9-ounce bowl; 6.1 (155) for extended bowl.

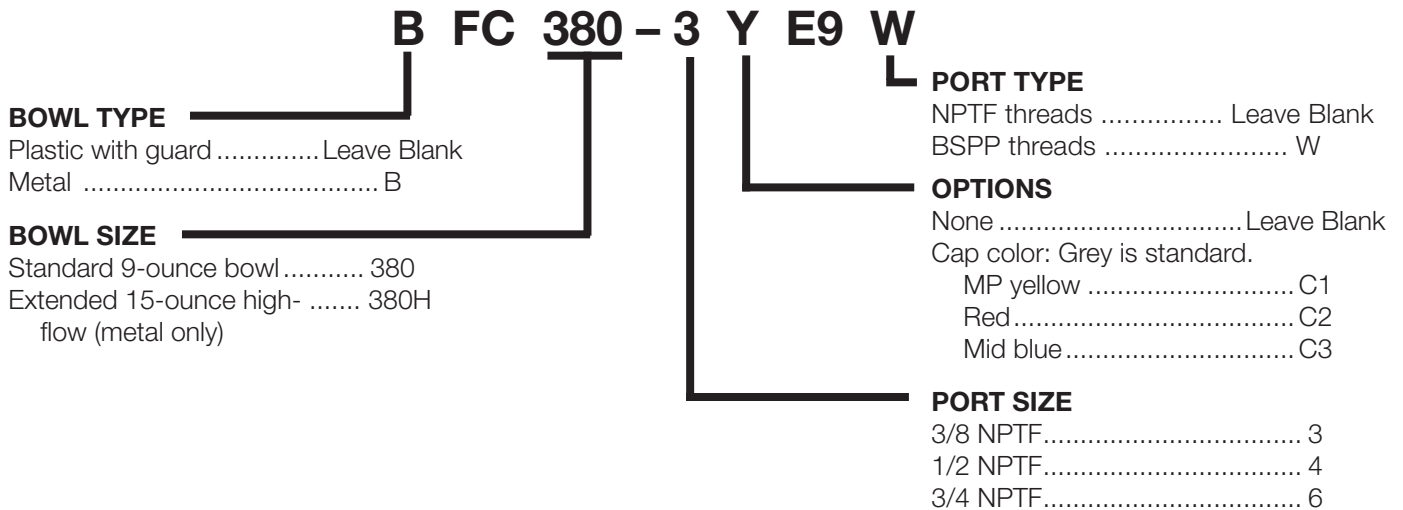


**REPLACEMENT FILTER ELEMENT KITS**

Bowl Size	Kit Number
Standard (Std element).....	A115-117E9
Extended .....	A115-118E9

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter you want.





# GUARDSMAN II

## Clean Air Package



Model Shown: BMFDFCDFC70-4E9

# BMFDFCDFC70-E9 Models

## Port Sizes: 1/4, 3/8, 1/2

- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene general purpose filter element.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m element.
- ◆ Metal bowls. Clear nylon sight glass on general purpose and coalescing filters. Bowls rotatable for easy readability.
- ◆ Optional extended bowls include higher capacity filter elements for coalescing and adsorbing filters.
- ◆ Internal automatic filter drain for general purpose and coalescing filters. Manual drain for adsorbing filter.
- ◆ Differential pressure gauge on coalescing filter to indicate when filter element needs changing.
- ◆ NPTF port threads; optional BSPP threads.

These assemblies consist of three filters: a general purpose filter, a coalescing filter, and an adsorbing filter. The general purpose filter removes gross contaminants, while the coalescing filter removes oil mists, aerosols, and minute particles. Finally, the adsorbing filter virtually eliminates odors from Freons, alcohols, esters, ketones, and up to 99% of most hydrocarbons.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

Bowls: 6-Ounce (180-ml) capacity aluminum. Clear nylon sight glass on general purpose and coalescing filters. Bowls are rotatable for easy readability. Optional 10-ounce (300-ml) extended aluminum bowls have higher flow elements for coalescing and adsorbing filters.

**Bowl Ring:** Nylon.

**Filter Bowl Drains:**

Internal automatic drains for general purpose and coalescing filters; manual drain for adsorbing filter.

**Filter Elements:** General purpose: 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m sintered bronze. Coalescing: 0.3- $\mu$ m-rated borosilicate glass fiber; optional 0.01- $\mu$ m-rated element.

**Adsorbing:** Activated carbon with urethane seals.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

Minimum: 15 psig (1 bar).  
Maximum: 200 psig (14 bar).

### AIR FLOW and CONSTRUCTION DATA

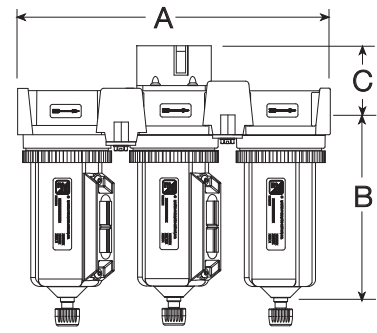
See Flow Charts and Specifications for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

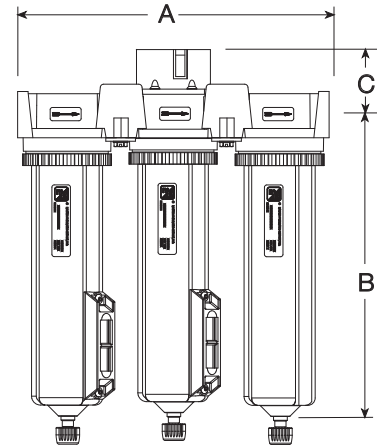
Bowl	A	B	C	Depth	Weight lb (kg)
Standard	8.4 (213)	6.5 (165)	1.8 (45)	2.4 (60)	5.00 (2.27)
Extended	8.4 (213)	9.5 (241)	1.8 (45)	2.4 (60)	5.25 (2.39)

## REPLACEMENT FILTER ELEMENT KITS

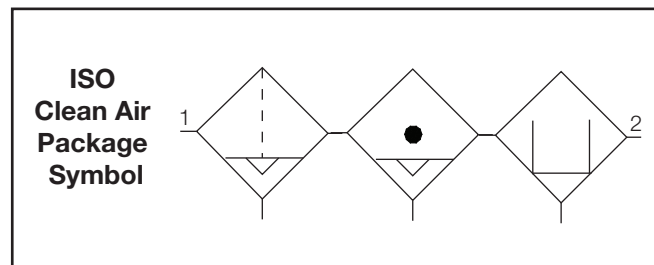
Element	Model Usage	Kit Number
5- $\mu$ m Plastic (Std)	General purpose filter	A60F-03PE5
5- $\mu$ m Bronze	General purpose filter	KA60F-03E5
0.3- $\mu$ m (Std)	Standard bowl	A60F-29
Coalescing	Extended bowl	A60F-32
0.01- $\mu$ m	Standard bowl	A60F-29E8
Coalescing	Extended bowl	A60F-32E8
Adsorbing	Standard bowl	A60F-29E9
	Extended bowl	A60F-32E9



Standard  
Bowls



Extended  
Bowls



## ORDERING INFORMATION

If product number exceeds 15 characters consult factory for new number:

**BMFDFCDFC 70 - 2 Y E9 W**

### BOWL SIZE

Standard 6-ounce bowls ..... 70  
 Extended 10-ounce bowls..... 70H

### PORT SIZE

1/4 NPTF..... 2  
 3/8 NPTF..... 3  
 1/2 NPTF..... 4

### PORT TYPE

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

### OPTIONS

None ..... Leave Blank  
 5- $\mu$ m sintered bronze general  
 purpose filter element..... E5  
 0.01- $\mu$ m coalescing filter ..... E8  
 element

# SERIES 350 Modular Clean Air Package

# BAG1D0A6A93 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BAG1D0A6A93

The general purpose filter in this assembly removes gross contaminants, while the coalescing filter removes oil mists, aerosols, and minute particles. Finally, the adsorbing filter effectively eliminates odors from Freons, alcohols, esters, ketones, and up to 99% of most hydrocarbons.

## SPECIFICATIONS

### Ambient/Media Temperature

Plastic bowl, manual drain 40° to 125°F (4° to 52°C)

Plastic bowl, float drain 40° to 125°F (4° to 52°C)

Metal bowl, manual drain 40° to 175°F (4° to 79°C)

Metal bowl, float drain 40° to 175°F (4° to 79°C)

**Body:** Die-cast zinc.

**Bowl:** 5.1-Ounce (151-ml) capacity polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass. (*For coalescing and adsorber filter only*) optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass and higher flow filter element.

### Bowl Drain

**filter and coalescing filter:** Internal float drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to drain effluents. Optional manual drain.

**Adsorber filter:** Manual drain only.

**Cap Color:** yellow, Optional red, blue and grey.

**Differential Pressure Gauge:** Cannot be added in the field.

### Elements:

**Filter:** 5-µm-rated polyethylene.

**Coalescing:** 0.3-µm-rated borosilicate-glass-fiber; optional 0.01-µm-rated element (reduces flow by 20%).

**Adsorbing:** Activated carbon with urethane seals.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl & manual drain: 0-150 psig (0-10 bar).

Plastic bowl & Float drain: 30-150 psig (2-10 bar).

Metal bowl & manual drain: 0-250 psig (0-17 bar).

Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Seals:** Nitrile

## GENERAL

- ◆ Modular or inline mounting.
- ◆ Color caps available for visual management systems. (Blue, red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ **NPTF** port threads; optional **BSPP** threads.
- ◆ Polycarbonate plastic bowl with shatterguard. Optional metal bowl.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C).

## FILTER INFORMATION

- ◆ Designed to remove particulate material to 5 micron from the airstream to protect downstream equipment.
- ◆ Optional bronze 5-µm-rated, 20-µm-rated, and 40-µm-rated. 5-µm-rated Polyethylene filter elements are standard.
- ◆ Superior removal of free water up to 98% efficiency
- ◆ Removal of effluents via manual or automatic float drains.

## COALESCING FILTER

- ◆ Designed to remove particulate material 99.98% of free oils and solid contaminants 0.3 microns and larger.
- ◆ Optional 0.01-µm-rated element.
- ◆ Removal of effluents via manual or automatic drains.
- ◆ Coalescent elements are absolute rated.
- ◆ Optional differential pressure gauge to indicate when filter element needs changing.

## ADSORBING FILTER

- ◆ Designed to remove oil vapor that cannot be removed by a coalescent filter. Also removes odors and tastes.
- ◆ Filter cartridge contains activated carbon.

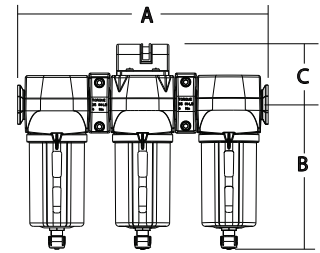
## AIR FLOW and CONSTRUCTION DATA

See Flow Charts and Specifications for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	9.58 (243.3)	5.54 (140.7)	2.38 (59.3)	2.51 (63.8)	4.3 (2.0)
Std metal	9.58 (243.3)	6.42 (163.1)	2.38 (59.3)	2.76 (70.1)	4.6 (2.1)
Ext metal	9.58 (243.3)	9.51 (241.6)	2.38 (59.3)	2.76 (70.1)	4.9 (2.2)

† **Bowl (standard) removal clearance:** add 3.1 (79)  
 † **Bowl (extended) removal clearance:** add 6.1 (155)



Standard Plastic Bowls

### REPLACEMENT ELEMENT KITS

#### Filter Elements:

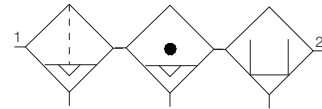
5-µm Polyethylene (Std element)	A60F-03PE5
40-µm Bronze	A60F-03E3
5-µm Bronze	A60F-03E5
20-µm Bronze	A60F-03E4

#### Coalescing Elements:

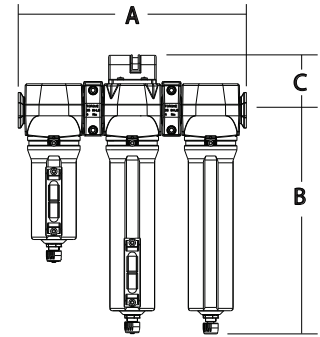
0.3 µm Standard for plastic bowl	A60F-23
0.3 µm Standard for metal bowl	A60F-29
0.3 µm Extended for metal bowl	A60F-32
0.01 µm Standard for plastic bowl	A60F-23E8
0.01 µm Standard for metal bowl	A60F-29E8
0.01 µm Extended metal bowl	A60F-32E8

#### Adsorbing Elements:

Standard (Std element)	A60F-29E9
Extended	A60F-32E9



ISO Clean Air Package Symbol



Extended Metal Bowls

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the Clean Air Package you want.

<b>B A G1 D 0A 6 A 9 3</b>	
<p><b>CAP COLOR</b></p> <ul style="list-style-type: none"> <li>Yellow (standard) ..... B</li> <li>Red ..... C</li> <li>Mid blue ..... D</li> <li>Grey ..... A</li> </ul> <p><b>BOWL TYPE</b></p> <ul style="list-style-type: none"> <li>All plastic standard bowls ..... A</li> <li>All metal standard bowls ..... B</li> <li>All metal standard bowl filter, extended ..... D</li> <li>metal bowls on coalescing and adsorber.</li> </ul> <p><b>COALESCING AND ADSORBER FILTERS</b></p> <ul style="list-style-type: none"> <li>FC350 and FC350-E9 ..... D</li> <li>FC350-E8 and FC350-E9 ..... E</li> </ul> <p><b>DRAIN TYPE</b></p> <ul style="list-style-type: none"> <li>Manual drain on all bowls ..... 0</li> <li><b>Plastic Bowl only:</b> Float drain on filter and coalescing, manual ..... 6</li> <li>drain on adsorber (plastic stem).</li> <li><b>Plastic Bowl only:</b> Float drain on filter, manual drain on ..... 7</li> <li>coalescing and adsorber (plastic stem).</li> <li><b>Metal Bowl only:</b> Float drain on filter and coalescing, manual ..... 8</li> <li>drain on adsorber.</li> <li><b>Metal Bowl only:</b> Float drain on filter, manual drain on ..... 9</li> <li>coalescing and adsorber.</li> </ul>	<p><b>PORT SIZE</b></p> <ul style="list-style-type: none"> <li>1/4 NPTF ..... 2</li> <li>3/8 NPTF ..... 3</li> <li>1/2 NPTF ..... 4</li> <li>1/4 BSPP ..... B</li> <li>3/8 BSPP ..... C</li> <li>1/2 BSPP ..... D</li> </ul> <p><b>DIFFERENTIAL PRESSURE GAUGE</b></p> <ul style="list-style-type: none"> <li>No gauge ..... 0</li> <li>Gauge on filter and coalescing filter ..... 7</li> <li>Gauge on Coalescing filter ..... 9</li> </ul> <p><b>EXTERNAL PORTS, MOUNTING BRACKETS</b></p> <ul style="list-style-type: none"> <li>No mounting bracket ..... A</li> <li>Mounting bracket ..... J</li> <li>Female external ports with ..... K</li> <li>mounting brackets</li> </ul>

## Full-Size SERIES 380 Modular Clean Air Package



Model Shown: AAM1D0A1J9D

The general purpose filter in this assembly removes gross contaminants, while the coalescing filter removes oil mists, aerosols, and minute particles. Finally, the adsorbing filter effectively eliminates odors from Freons, alcohols, esters, ketones, and up to 99% of most hydrocarbons.

### SPECIFICATIONS

**Ambient/Media Temperature:**

**Plastic bowls:** 40° to 125°F (4° to 52°C).

**Metal bowls:** 40° to 175°F (4° to 79°C).

**Bowls:** 9-Ounce (270-ml) capacity polycarbonate plastic bowls with steel shatterguards. Optional aluminum bowls; clear nylon sight glass on general purpose and coalescing units. Optional 15-ounce (450-ml) extended aluminum bowls with higher flow elements for coalescing and adsorbing filters.

**Cap Color:** Grey. Yellow, red, blue optional.

**Filter Drains:** Internal automatic drains for general purpose and coalescing filters; manual drain for adsorbing filter.

**Filter Elements:**

**General Purpose:** 5-µm-rated polyethylene.

Coalescing: 0.3-µm-rated borosilicate glass-fiber; optional 0.01-µm-rated element.

**Adsorbing:** Activated carbon with urethane seals.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

15 psig (1 bar) minimum with automatic drain.

**Plastic bowls:** 150 psig (10 bar) maximum.

**Metal bowls:** 200 psig (14 bar) maximum.

## AAM1D0A1A9 Models Port Sizes: 3/8, 1/2, 3/4

- ◆ General purpose filter (FD380) with 5-µm-rated polyethylene filter element.
- ◆ Coalescing filter with 0.3-µm-rated coalescing element; optional 0.01-µm element.
- ◆ Adsorbing filter with activated carbon element.
- ◆ Modular or inline mounting.
- ◆ Polycarbonate plastic bowls with steel shatterguards; optional metal bowls.
- ◆ Optional extended metal bowls for coalescing and adsorbing filters include higher flow filter elements.
- ◆ Internal automatic drains for general purpose and coalescing filters. Manual drain for adsorbing filter.
- ◆ Differential pressure gauge on coalescing filter to indicate when element needs changing.
- ◆ NPTF port threads; optional BSPP threads.

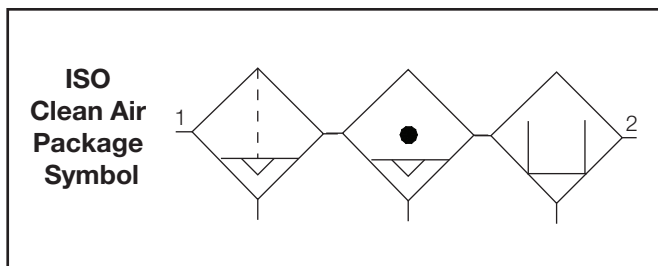
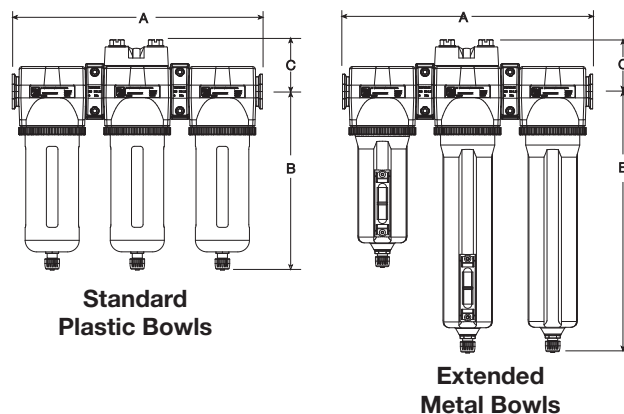
### AIR FLOW and CONSTRUCTION DATA

See Flow Charts and Specifications for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowls	A	B †	C	Depth	Weight lb (kg)
Standard	10.9 (276)	7.7 (195)	2.2 (55)	2.9 (73)	6.63 (3.01)
Extended	10.9 (276)	11.2 (284)	2.2 (55)	2.9 (73)	7.00 (3.18)

† Bowl removal clearance: add 3.4 (86) for 9-ounce bowl;  
6.1 (155) for extended bowl.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
<b>General Purpose</b>	
5-μm (Std element) .....	A115-106PE5
<b>Coalescing:</b>	
0.3 μm Standard bowl (Std element) ....	A115-117
0.3 μm Extended bowl.....	A115-118
0.01 μm Standard bowl .....	A115-117E8
0.01 μm Extended bowl .....	A115-118E8
<b>Adsorbing:</b>	
Standard bowl (Std cartridge) .....	A115-117E9
Extended bowl.....	A115-118E9

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the Clean Air Package you want.

<p><b>CAP COLOR</b></p> <p>Grey A</p> <p>Yellow..... B</p> <p>Red ..... C</p> <p>Blue ..... D</p> <p><b>BOWL TYPE</b></p> <p>9-Ounce plastic ..... A</p> <p>9-Ounce metal ..... B</p> <p>Metal: 9-ounce general purpose ... D filter; 15-ounce coalescing and adsorbing filters</p> <p><b>COALESCING FILTER ELEMENT</b></p> <p>0.3-μm element (Std) ..... D</p> <p>0.01-μm element ..... E</p> <p><b>DRAIN TYPES</b></p> <p>Manual drain for general purpose ... 0 and coalescing filters</p> <p>Internal automatic drain for ..... 1 general purpose and coalescing filters</p>	<p><b>A A M 1 D 0 A 1 A 9 6</b></p>	<p><b>PORT SIZE</b></p> <p>3/8 NPTF..... 3</p> <p>1/2 NPTF..... 4</p> <p>3/4 NPTF..... 6</p> <p>3/8 BSPP ..... C</p> <p>1/2 BSPP ..... D</p> <p>3/4 BSPP ..... E</p> <p><b>DIFFERENTIAL PRESSURE GAUGES:</b> For additional gauge options see page 291.</p> <p>No gauge on coalescing filter..... 0</p> <p>Small gauge (K103-151) on ..... 9 coalescing filter (standard)</p> <p>Large gauge (106-35) on ..... A coalescing filter</p> <p><b>PORTS &amp; MOUNTING BRACKETS</b></p> <p>No end ports or brackets..... A</p> <p>Mounting brackets only ..... J</p> <p>Female end ports with ..... K mounting brackets</p>
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# HIGH-FLOW VANGUARD Clean Air Package

# BDFCD100-E8 Models Port Sizes: 3/4, 1



**Model Shown:** BDFCD100-8E8

These assemblies consist of two filters: a general purpose filter, and a coalescing filter. The general purpose filter removes gross contaminants, while the coalescing filter removes oil mists, aerosols, and minute particles.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowls:** 16-Ounce (480-ml) capacity aluminum. Clear nylon sight glass on general purpose and coalescing filters. Bowls are rotatable for easy readability.

**Bowl Ring:** Aluminum.

**Filter Bowl Drains:**

Internal automatic drains for general purpose and coalescing filters.

**Filter Elements:** General purpose: 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m sintered bronze.  
Coalescing: 0.3- $\mu$ m-rated borosilicate glass fiber; optional 0.01- $\mu$ m-rated element.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

Minimum: 15 psig (1 bar).  
Maximum: 200 psig (14 bar).

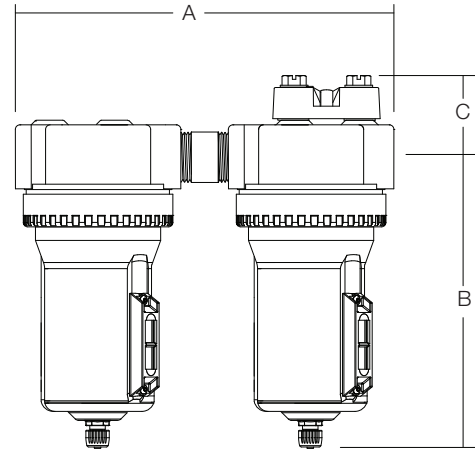
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene general purpose filter element.
- ◆ 0.3- $\mu$ m-rated coalescing filter element; optional 0.01- $\mu$ m element.
- ◆ Metal bowls. Clear nylon sight glass on general purpose and coalescing filters. Bowls rotatable for easy readability.
- ◆ Internal automatic filter drain for general purpose and coalescing filters.
- ◆ Differential pressure gauge on coalescing filter to indicate when filter element needs changing.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## AIR FLOW and CONSTRUCTION DATA

See Flow Charts and Specifications for individual assembly components on preceding pages.

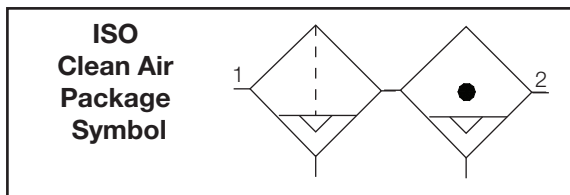
## DIMENSIONS inches (mm)

A	B	C	Depth	Weight lb (kg)
10 (255)	7.8 (199)	2.3 (58)	4.2 (106)	5.00 (2.27)



### REPLACEMENT FILTER ELEMENT KITS

Element	Model Usage	Kit Number
5-µm Plastic (Std)	General purpose filter	KA109-3PE
5-µm Bronze	General purpose filter	KA109-03E5
0.3-µm (Std)	Coalescing filter	A109-106
0.01-µm	Coalescing filter	A109-106E8



### ORDERING INFORMATION

If product number exceeds 15 characters consult factory for new number:

**B FD FCD 100 S - 6 E5 E8 W**

#### FILTER BOWL DRAIN

- Internal automatic drain..... FD
- Manual drain ..... F
- Internal float drain (*brass stem*) .... F6A

#### COALESCING FILTER BOWL DRAIN

- Internal automatic drain..... FCD
- Manual drain ..... FC
- Internal float drain (*brass stem*) .... FC6A

#### DIFFERENTIAL PRESSURE GAUGE

- No gauge ..... Leave Blank  
(Add **NG** option after **COALESCING FILTER ELEMENT TYPE**.)
- Large differential pressure gauge ... Leave Blank
- Small differential pressure gauge ... S
- Large differential pressure gauge ... E  
with normally open reed switch.
- Large differential pressure gauge ... E2  
with normally closed reed switch.

#### PORT TYPE

- NPTF ..... Leave Blank
- BSPP ..... W

#### COALESCING ELEMENT TYPE

- 0.3-µm element ..... Leave Blank
- 0.01-µm element ..... E8

#### FILTER ELEMENT TYPE

- 5 micron bronze ..... E5 element.
- 5 micron polyethylene .. Leave Blank element.

#### PORT SIZE

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8

#### DIFFERENTIAL PRESSURE GAUGES



**Small Slide Gauge**  
K103-151



**Large Dual Face Gauge**  
106-35



**Large Dual Face Gauge  
with Reed Switch**  
106-35E (*Normally Open*)  
106-35EC (*Normally Closed*)



# MP-FILENCO Dryer/Filters

**Series 25**  
**Port Size: 1/4**



**Model Shown:** CD25-2D3M

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Drain:** Automatic drain; optional manual or electronic drains.

**Desiccant:** Choice of three.

**Flow Rate:** 7 scfm (3.3 l/s).

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum. Consult Master Pneumatic for higher pressure ratings.

Many compressed air systems require point-of-use cleaning and drying of the air to supplement a central system. MP-Fileenco dryer/filter units perform superbly because of their triple-action cleaning process and their ability to reduce the pressure dew point. See the sketch on page 95 for a cross-section view of a typical dryer/filter.

The filtering and drying functions result in super clean, super dry air. Several drain options and choices of desiccants are available to suit various operating needs.

## DESICCANTS

The desiccants in **MP-Fileenco** dryer/filters have the ability to drop the pressure dew point thereby preventing the recurrence of water in the air system. They also adsorb sulfur compounds that form abrasive, gummy varnish or shellac. Three different desiccants are available.

**CLAY DESICCANT (CD)** — This is a general purpose desiccant which produces initial dew point depressions of 20 to 25 degrees Fahrenheit. It is effective for removing both water and oil, and requires no air preparation. Life expectancy is up to three months, depending on humidity, flow rate, and frequency of use.

**CLAY DESICCANT WITH ACTIVATED CARBON (CDC)** — This desiccant provides a higher degree of air purification than the plain clay desiccant. A layer of activated carbon produces slightly lower initial dew points, and also provides better removal of noxious gases and oil aerosols.

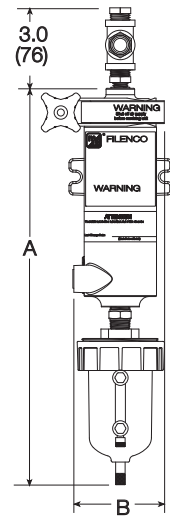
**MOLECULAR SIEVE DESICCANT (MS)** — Highly porous alumina-silicate complexes in this desiccant produce exceptionally low pressure dew points, as much as 80 Fahrenheit degrees initially. A dryer/filter with this desiccant must be preceded by a coalescing filter. The presence of oil in the air will contaminate the molecular sieve material and greatly reduce its efficiency. The coalescing pre-filter, of course, should be preceded by a general purpose filter.

**DIMENSIONS** inches (mm)

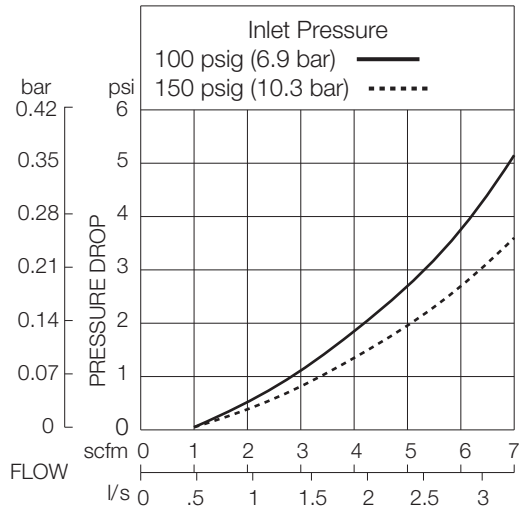
Series	A with Drain						B	Depth
	A No Drain	D1, D2 D3, D4	D6	D7	D8			
25	7.0 (178)	12.3 (311)	10.5 (267)	11.6 (295)	9.5 (241)	2.6 (67)	3.5 (89)	

Lbs (Kg)	CD25	MS25	CDC25
<b>Approx. Weight</b>	2.11 (0.96)	2.11 (0.96)	2.11 (0.96)



**FLOW CHART**



**REPLACEMENT DESICCANT ELEMENT KITS**

Description	Quantity (per case)	Kit Number
Clay Desiccant Elements		
Series 25	4	CD-25NRE
Clay with Activated Carbon		
Series 25	4	CDC-25NRE
Molecular Sieve Elements		
Series 25	4	MS-25NRE

Note: Replacement kits include parts for both the older and current designs of filter discs.

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the dryer/filter you want.

**CD 25-2 D1 M W**

**DESICCANT**

- Clay ..... CD
- Clay with carbon ..... CDC
- Molecular sieve ..... MS

**DRAIN**

- None ..... Leave Blank
- Polycarbonate bowl; plastic bowl guard:
  - Manual drain PGM-25 ..... D1
  - Automatic float drain ..... D2
  - PGA-25
- Metal bowl with sight glass:
  - Manual drain MSM-25 ..... D3
  - Automatic float drain ..... D4
  - MBA-25
- Air poppet (actuator required);
  - 24v heated drain; ..... D6
  - temperature controlled
- Air poppet with 24v adjustable ..... D7
- cycle heated electronic timer
- Warrior electronic 115vac drain ..... D8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**MOISTURE INDICATOR**

- None ..... Leave Blank
- With moisture indicator ..... M
- MI375

# MP-FILENCO Dryer/Filters

## Series 36 and 38 Port Sizes: 3/8 and 1/2



Model Shown: CD36-3D1M



Model Shown: CD38-3D1M

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Drain:** Automatic drain; optional manual or electronic drains.

**Desiccant:** Choice of three.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum. Consult Master Pneumatic for higher pressure ratings.

**Mounting:** Flanges and front ports for flush mounting.

Many compressed air systems require point-of-use cleaning and drying of the air to supplement a central system. MP-Fileenco dryer/filter units perform superbly because of their triple-action cleaning process and their ability to reduce the pressure dew point. See the sketch on page 95 for a cross-section view of a typical dryer/filter.

The filtering and drying functions result in super clean, super dry air. Several drain options and choices of desiccants are available to suit various operating needs. Units have flanges and front ports for flush mounting.

### DESICCANTS

The desiccants in MP-Fileenco dryer/filters have the ability to drop the pressure dew point thereby preventing the recurrence of water in the air system. They also adsorb sulfur compounds that form abrasive, gummy varnish or shellac. Three different desiccants are available.

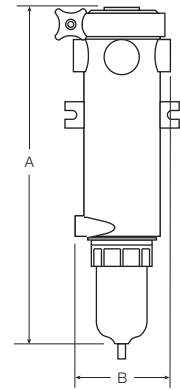
**CLAY DESICCANT (CD)** — This is a general purpose desiccant which produces initial dew point depressions of 20 to 25 degrees Fahrenheit. It is effective for removing both water and oil, and requires no air preparation. Life expectancy is up to three months, depending on humidity, flow rate, and frequency of use.

**CLAY DESICCANT WITH ACTIVATED CARBON (CDC)** — This desiccant provides a higher degree of air purification than the plain clay desiccant. A layer of activated carbon produces slightly lower initial dew points, and also provides better removal of noxious gases and oil aerosols.

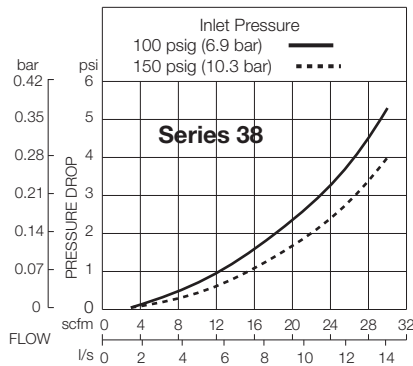
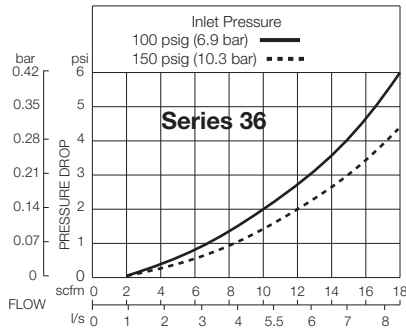
**MOLECULAR SIEVE DESICCANT (MS)** — Highly porous alumina-silicate complexes in this desiccant produce exceptionally low pressure dew points, as much as 80 Fahrenheit degrees initially. A dryer/filter with this desiccant must be preceded by a coalescing filter. The presence of oil in the air will contaminate the molecular sieve material and greatly reduce its efficiency. The coalescing pre-filter, of course, should be preceded by a general purpose filter.

## DIMENSIONS inches (mm)

Series	A with Drain						
	A No Drain	D1, D2 D3, D4	D6	D7	D8	B	Depth
36	9.5 (241)	13.5 (343)	12.3 (311)	13.4 (295)	12.4 (314)	4.0 (102)	5.0 (127)
38	11.5 (178)	15.5 (311)	14.3 (362)	15.4 (391)	14.4 (314)	4.5 (114)	5.0 (127)



### FLOW CHARTS



Lbs (Kg)	CD36	MS36	CDC36
<b>Approx. Weight</b>	5 (2.27)	5 (2.27)	5 (2.27)
Lbs (Kg)	CD38	MS38	CDC38
<b>Approx. Weight</b>	6 (2.7)	6 (2.7)	6 (2.7)

### REPLACEMENT DESICCANT ELEMENT KITS

Description	Quantity (per case)	Kit Number
<b>Clay Desiccant Elements</b>		
Series 36	4	CD-36NRE
Series 38	4	CD-38NRE
<b>Clay with Activated Carbon</b>		
Series 36	4	CDC-36NRE
Series 38	4	CDC-38NRE
<b>Molecular Sieve Elements</b>		
Series 36	4	MS-36NRE
Series 38	4	MS-38NRE

Note: Replacement kits include parts for both the older and current designs of filter discs.

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the dryer/filter you want.

CD 36-3 D1 M W

#### DESICCANT

Clay..... CD  
 Clay with carbon..... CDC  
 Molecular sieve..... MS

#### SIZE

3/8 NPTF — 18 scfm ..... 36-3  
 1/2 NPTF — 30 scfm ..... 38-4

#### PORT TYPE

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

#### MOISTURE INDICATOR

None ..... Leave Blank  
 With moisture indicator ..... M  
 (MI375)

#### DRAIN

None ..... Leave Blank  
 Polycarbonate bowl; plastic bowl guard:  
     Manual drain PGM ..... D1  
     Automatic float drain ..... D2  
     PGA  
 Metal bowl with sight glass:  
     Manual drain MSM ..... D3  
     Automatic float drain ..... D4  
     MBA  
 Air poppet (actuator required);  
     24v heated drain; temperature  
     controlled ..... D6  
 Air poppet with 24v adjustable ..... D7  
     cycle heated electronic timer  
 Warrior electronic 115vac drain ..... D8

# MP-FILENCO Dryer/Filters

**Series 418**  
**Port Size: 1**



**Model Shown:** CD418-8D1M

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Drain:** Automatic drain; optional manual or electronic drains.

**Desiccant:** Choice of three.

**Flow Rate:** 70 scfm.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum. Consult Master Pneumatic for higher pressure ratings.

**Mounting:** Flanges and front ports for flush mounting.

Many compressed air systems require point-of-use cleaning and drying of the air to supplement a central system. MP-Fileenco dryer/filter units perform superbly because of their triple-action cleaning process and their ability to reduce the pressure dew point. See the sketch on page 95 for a cross-section view of a typical dryer/filter.

The filtering and drying functions result in super clean, super dry air. Several drain options and choices of desiccants are available to suit various operating needs. Units have flanges and front ports for flush mounting.

## DESICCANTS

The desiccants in **MP-Fileenco** dryer/filters have the ability to drop the pressure dew point thereby preventing the recurrence of water in the air system. They also adsorb sulfur compounds that form abrasive, gummy varnish or shellac. Three different desiccants are available.

**CLAY DESICCANT (CD)** — This is a general purpose desiccant which produces initial dew point depressions of 20 to 25 degrees Fahrenheit. It is effective for removing both water and oil, and requires no air preparation. Life expectancy is up to three months, depending on humidity, flow rate, and frequency of use.

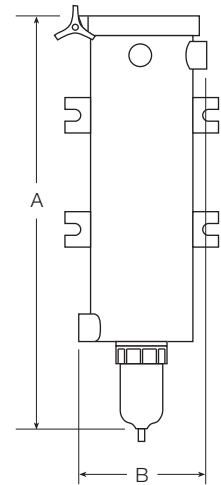
**CLAY DESICCANT WITH ACTIVATED CARBON (CDC)** — This desiccant provides a higher degree of air purification than the plain clay desiccant. A layer of activated carbon produces slightly lower initial dew points, and also provides better removal of noxious gases and oil aerosols.

**MOLECULAR SIEVE DESICCANT (MS)** — Highly porous alumina-silicate complexes in this desiccant produce exceptionally low pressure dew points, as much as 80 Fahrenheit degrees initially. A dryer/filter with this desiccant must be preceded by a coalescing filter. The presence of oil in the air will contaminate the molecular sieve material and greatly reduce its efficiency. The coalescing pre-filter, of course, should be preceded by a general purpose filter.

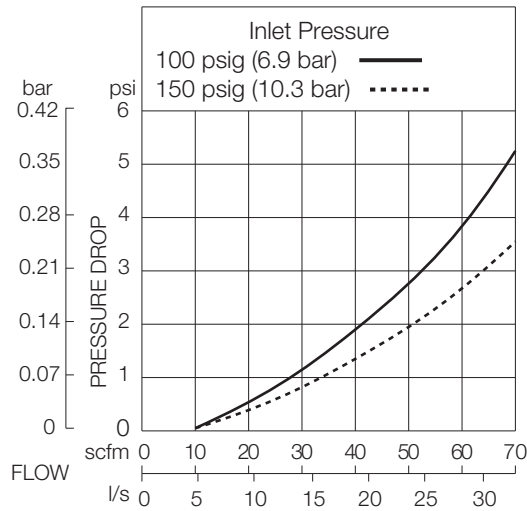
**DIMENSIONS** inches (mm)

Series	A with Drain						B	Depth
	A	D1, D2	D3, D4	D6	D7	D8		
418	No Drain							
	20 (508)	24 (610)	22.8 (578)	23.9 (606)	22.9 (581)	6.0 (152)	6.5 (165)	

Lbs (Kg)	CD418	MS418	CDC418
<b>Approx. Weight</b>	15.4 (7)	15.4 (7)	15.4 (7)



**FLOW CHARTS**



**REPLACEMENT DESICCANT ELEMENT KITS**

Description	Quantity (per case)	Kit Number
Clay Desiccant Elements		
Series 418.....	4	CD-418NRE
Clay with Activated Carbon		
Series 418.....	4	CDC-418NRE
Molecular Sieve Elements		
Series 418.....	4	MS-418NRE

Note: Replacement kits include parts for both the older and current designs of filter discs.

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the dryer/filter you want.

**CD 418-8 D1 M W**

**DESICCANT**

- Clay CD
- Clay with carbon..... CDC
- Molecular sieve..... MS

**DRAIN**

- None Remove D1
- Polycarbonate bowl; plastic bowl guard:
  - Manual drain PGM ..... D1
  - Automatic float drain ..... D2
  - PGA
- Metal bowl with sight glass:
  - Manual drain MSM..... D3
  - Automatic float drain MBA..... D4
- Air poppet (actuator required); ..... D6
  - 24v heated drain; temperature controlled
- Air poppet with 24v adjustable ..... D7
  - cycle heated electronic timer
- Warrior electronic 115vac drain ..... D8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**MOISTURE INDICATOR**

- None..... Leave Blank
- With moisture indicator..... M
- MI750

# MP-FILENCO Dryer/Filters

## Series 625 and 832 Port Sizes: 1-1/2 and 2



Model Shown: CD625-12D1M

Model Shown: CD832-16D1M

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Drain:**

Automatic drain; optional manual or electronic drains.

**Desiccant:** Choice of three.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum. Consult Master Pneumatic for higher pressure ratings.

**Mounting:** Flanges and front ports for flush mounting.

Many compressed air systems require point-of-use cleaning and drying of the air to supplement a central system. MP-Fileenco dryer/filter units perform superbly because of their triple-action cleaning process and their ability to reduce the pressure dew point. See the sketch on page 95 for a cross-section view of a typical dryer/filter.

The filtering and drying functions result in super clean, super dry air. Several drain options and choices of desiccants are available to suit various operating needs. Units have flanges and front ports for flush mounting.

### DESICCANTS

The desiccants in MP-Fileenco dryer/filters have the ability to drop the pressure dew point thereby preventing the recurrence of water in the air system. They also adsorb sulfur compounds that form abrasive, gummy varnish or shellac. Three different desiccants are available.

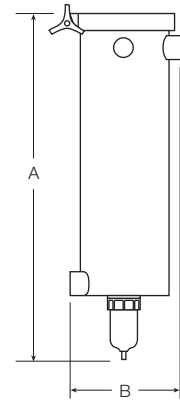
**CLAY DESICCANT (CD)** — This is a general purpose desiccant which produces initial dew point depressions of 20 to 25 degrees Fahrenheit. It is effective for removing both water and oil, and requires no air preparation. Life expectancy is up to three months, depending on humidity, flow rate, and frequency of use.

**CLAY DESICCANT WITH ACTIVATED CARBON (CDC)** — This desiccant provides a higher degree of air purification than the plain clay desiccant. A layer of activated carbon produces slightly lower initial dew points, and also provides better removal of noxious gases and oil aerosols.

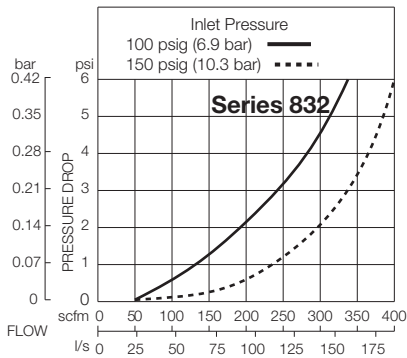
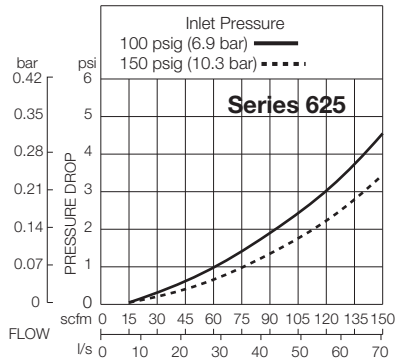
**MOLECULAR SIEVE DESICCANT (MS)** — Highly porous alumina-silicate complexes in this desiccant produce exceptionally low pressure dew points, as much as 80 Fahrenheit degrees initially. A dryer/filter with this desiccant must be preceded by a coalescing filter. The presence of oil in the air will contaminate the molecular sieve material and greatly reduce its efficiency. The coalescing pre-filter, of course, should be preceded by a general purpose filter.

## DIMENSIONS inches (mm)

SeriesNo	A with Drain						Depth
	A Drain	D1, D2 D3, D4	D6	D7	D8	B	
625	21.3	25.3	24.0	25.1	24.1	8.5	8.0
	(540)	(641)	(610)	(638)	(616)	(216)	(203)
832	34	38	37.5	39.6	37.6	10	10.5
	(864)	(965)	(953)	(1007)	(956)	(254)	(267)



### FLOW CHARTS



Lbs (Kg)	CD625	MS625	CDC625
<b>Approx. Weight</b>	27.7 (12.6)	27.7 (12.6)	27.7 (12.6)
Lbs (Kg)	CD832	MS832	CDC832
<b>Approx. Weight</b>	63.9 (29)	63.9 (29)	63.9 (29)

### REPLACEMENT DESICCANT ELEMENT KITS

Description	Quantity (per case)	Kit Number
<b>Clay Desiccant Elements</b>		
Series 625.....	2	CD-625NRE
Series 832.....	1	CD-832NRE
<b>Clay with Activated Carbon</b>		
Series 625.....	2	CDC-625NRE
Series 832.....	1	CDC-832NRE
<b>Molecular Sieve Elements</b>		
Series 625.....	2	MS-625NRE
Series 832.....	1	MS-832NRE

Note: Replacement kits include parts for both the older and current designs of filter discs.

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the dryer/filter you want.

**DESICCANT**

- Clay.....CD
- Clay with carbon.....CDC
- Molecular sieve.....MS

**SIZE**

- 1-1/2 NPTF — 150 scfm ....625-12
- 2 NPTF — 300 scfm.....832-16

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**MOISTURE INDICATOR**

- None ..... Leave Blank
- With moisture indicator ..... M
- MI750

**DRAIN**

- None ..... Leave Blank
- Polycarbonate bowl; plastic bowl guard:
  - Manual drain PGM ..... D1
  - Automatic float drain ..... D2
  - PGA
- Metal bowl with sight glass:
  - Manual drain MSM ..... D3
  - Automatic float drain ..... D4
  - MBA
- Air poppet (actuator required); ..... D6
- 24v heated drain; temperature controlled
- Air poppet with 24v adjustable ..... D7
- cycle heated electronic timer
- Warrior electronic 115vac drain ..... D8



# PRESSURE REGULATORS

Master Pneumatic regulators are made in a wide range of sizes to suit nearly all industrial requirements for pneumatic pressure regulation. Good pressure regulation is essential to the efficient use of pneumatic equipment. A compressor may supply air at 150 psig, but most of the equipment will operate best at lower pressures. A cylinder, for example, may develop sufficient force for its purpose with 50-psig air. Remember that compressed air is costly, so using higher air pressure than necessary is wasteful, and may also shorten the life of the cylinder. A general purpose pressure regulator is the answer for greater economy and efficiency.



Regulators are of two basic designs. Piston design provides highest air flow; diaphragm design provides high sensitivity and quick response. All regulators are self-relieving, but a non-relieving option is available. A pressure gauge is standard, and gauge ports are at the front and the rear of each unit.

In addition there are precision regulators in all port sizes for applications demanding extra precision in the regulation of air pressure, plus regulators for remote, external piloting.

## MODULAR or INLINE MOUNTING

**SENTRY, GUARDSMAN, SERIES 350, SERIES 380,** and **Full-Size VANGUARD** regulators are of modular design. Regulators are connected to filters or lubricators by special modular connectors which seal the faces between units. They may also be inline mounted with pipe nipples. **MINIATURE** and **High-Capacity VANGUARD** regulators are inline mounted only.

## SENTRY REGULATORS

Port sizes 1/8 and 1/4 or fittings for tubing up to 10 mm. Modular units have durable plastic, corrosion-resistant bodies. A non-relieving version can be used with water, oil, and many other liquids.

## GUIDE to REGULATORS and SERVO VALVES

REGULATOR SERIES	MODULAR	PORTS	PAGES
<b>SENTRY †</b>			
General Purpose <b>R10M, R11M</b> models	yes	1/8, 1/4	130-131
Water Pressure <b>R13M, R14M</b> models	yes	1/8, 1/4	186-187
External piloted <b>PR11M</b> models	yes	1/8, 1/4	162-163
<b>MINIATURE</b>			
General Purpose <b>R55M, R56M</b> models	no	1/8, 1/4	132-133
Stainless Steel <b>R56S</b> models	no	1/4	134-135
Precision <b>R57M</b> models	no	1/8, 1/4	154-155
Externally Piloted <b>PR56M</b> models	no	1/8, 1/4	164-165
Water Pressure <b>R53MB, R54MB</b> models	no	1/8, 1/4	188-189
Relief Valves <b>RV56</b> models	no	1/8, 1/4	160-191
CO <sub>2</sub> Miniature relief valve <b>CX</b> models	no	1/8, 1/4	192-193
CO <sub>2</sub> Miniature <b>CX</b> models	no	1/8, 1/4	136-137
High pressure model	no	1/8, 1/4, 3/8	142-143
<b>GUARDSMAN</b>			
General Purpose <b>R60</b> models	yes	1/4, 3/8, 1/2	138-139
<b>GUARDSMAN II</b>			
General Purpose <b>R75</b> models	yes	1/4, 3/8, 1/2	140-141
<b>350 SERIES</b>			
General Purpose <b>R350</b> models	yes	1/4, 3/8, 1/2	144-145
<b>Full-Size VANGUARD</b>			
General Purpose <b>R100</b> models	yes	1/4, 3/8, 1/2, 3/4	146-147
Precision <b>IR100</b> models	yes	1/4, 3/8, 1/2, 3/4	158-159
External Pilot <b>PR100</b> models	yes	1/4, 3/8, 1/2, 3/4	170-171
High relief externally pilot <b>HPR100</b>	no	1/4, 3/8, 1/2, 3/4	174-175
External relief pilot <b>PRH100</b> models	yes	1/4, 3/8, 1/2, 3/4	172-173
<b>Full-Size SERIES 380</b>			
General Purpose <b>R380</b> models	yes	3/8, 1/2, 3/4	148-149
Precision <b>IR380</b> models	yes	3/8, 1/2, 3/4	156-157
External pilot <b>PR380</b> models	yes	3/8, 1/2, 3/4	166-167
External relief pilot <b>PRH380</b> models	no	3/8, 1/2, 3/4	168-169
<b>High-Flow VANGUARD</b>			
General Purpose <b>R180, M</b> models	no	3/4, 1, 1-1/4, 1-1/2	150-153
Precision <b>IR180M</b> models	no	3/4, 1, 1-1/4, 1-1/2	160-161
External Pilot <b>PR180M</b> models	no	3/4, 1, 1-1/4, 1-1/2, 2	176-177
External Pilot <b>R200</b> models	no	1-1/2, 2	182-183
External pilot <b>PR300</b> models	no	3	184-185
High-relief externally pilot <b>HPR180</b>	no	3/4, 1, 1-1/4	180-181
External relief pilot <b>PRH180m</b> models	no	3/4, 1, 1-1/4, 1-1/2	178-179
Electro-Pneumatic Servo Valves	no		194-196

† Also available with quick-connect tube fittings up to 10 mm.

## MINIATURE REGULATORS

Port sizes 1/8, 1/4. Aluminum-bodied units for inline mounting. Same performance characteristics as the **SENTRY** models. Brass or stainless steel bodies, and water pressure models are also available.

**PRECISION MINIATURE** regulators are available to provide outstanding pressure control at relatively low cost. A large diaphragm area gives high sensitivity, and a small valve seat gives greater precision and little variation in outlet pressure from fluctuations in supply pressure. With an inlet pressure of 100 psig (7 bar), repeatability is within 1/4 psig. Regulated pressure range is 0–60 psig (0–4.1 bar). Optional springs allow other pressure ranges.

## GUARDSMAN REGULATORS

Port sizes 1/4, 3/8, 1/2. Modular units in a balanced-valve, piston design with very quick response for fast-cycling valves and cylinders. Two sub-series: **R60** models with durable plastic dome, and **R75** models with high-strength metal dome for more severe environments. Regulation performance is essentially the same.

## SERIES 350, SERIES 380 and VANGUARD REGULATORS

Port sizes 1/4 to 3/4. Modular units with diaphragm design for sensitivity and accurate pressure regulation. An adjustment-locking key to prevent tampering is standard.

Full-Size **VANGUARD SERIES 350**, and **SERIES 380 PRECISION** regulators are also available. They are of diaphragm design, and were developed to give superior torque control with pneumatic tools. However, they are well suited to many other applications because of their ability to regulate very high air flows with great precision. They will hold regulated pressure within 3 psig (0.2 bar), and repeatability is within 0.5 psig (0.034 bar). For torque control and applications that cannot tolerate over-pressurization, regulated pressure can be limited to 85 psig (5.9 bar). Air from a constant bleed, which is important to the precision of these units, is normally inaudible.

## HIGH-FLOW VANGUARD REGULATORS

Port sizes 3/4 to 1-1/2. Inline mounting and piston design are featured in these high-air-flow models. An adjustment-locking key to prevent tampering is standard.

**PRECISION** High-Capacity regulators are also available. They are of diaphragm design, and have essentially the same precise operating characteristics as the Full-Size **VANGUARD** precision regulators described above. Their larger port sizes, however, make them the choice for very high-air-flow applications.

## EXTERNALLY PILOTED REGULATORS

Regulators operated with external pilots are as precise as the external pilot regulators used. A 1/4" R55M pilot regulator (or R57M precision model) provides an accurately controlled air spring for excellent regulation. The pilot control regulator can be installed at a distance from the main regulator for convenience in making adjustments.



Full-Size **VANGUARD PRH100** modular external relief piloted regulators use a diaphragm design for high sensitivity. They provide air flows up to 160 scfm (94 l/s) in applications where low pressure drop and/or remote adjusting are desired.

**High-Flow PR180 VANGUARD** external piloted regulators and **High-Flow PRH180 VANGUARD** external relief piloted regulators are of diaphragm design, and provide air flows up to 600 scfm (284 l/s).

**High-Flow R200 VANGUARD** Regulators provide air flows up to 1000 scfm (474 l/s). For fast response, good sensitivity, and long service life they employ a piston traveling in a hard-anodized, Teflon-impregnated, metal cylinder. A high-flow, self-relieving valve is built into the main regulator.

## RELIEF VALVES

Relief valves are set for a desired maximum system pressure, and inserted in a tee downstream of regulated pressure to prevent over-pressurization of the system beyond the relief valve setting. Relief valves are adjustable from 1 to 125 psig (0.07 to 8.6 bar). Optional springs are available for other pressure ranges. If pressure exceeds the relief valve setting it will dump system air to atmosphere or to a valve to provide a warning signal.



Port sizes 1/8 and 1/4. A pressure gauge is standard equipment.

## ELECTRO-PNEUMATIC SERVO VALVES



Electro-pneumatic servo valves employ the latest in closed loop control technology. Flow rate is typically one scfm, but when used with a volume booster a flow rate in excess of 1,000 scfm can be achieved.

# SENTRY Modular General Purpose Regulators

# R10M, R11M Models Port Sizes: 1/8, 1/4; Tube Fittings



Model Shown: R10M-2G

- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ Piston-type design (R10M models) or diaphragm-type (R11M models).
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads or fittings for tubing up to 10 mm.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Acetal.

**Dome and Knob:** Acetal

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

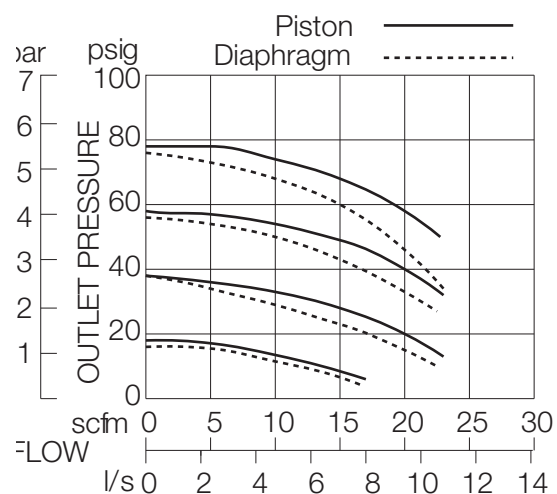
**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

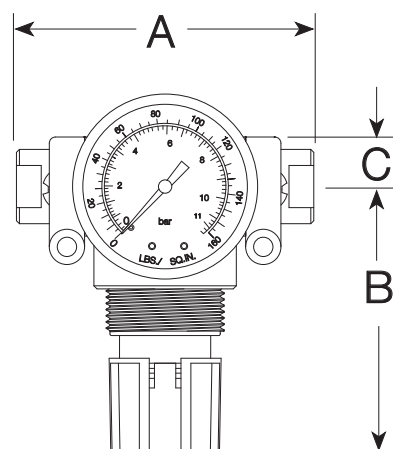
## FLOW CHART

Inlet Pressure: 100 psig (7 bar)

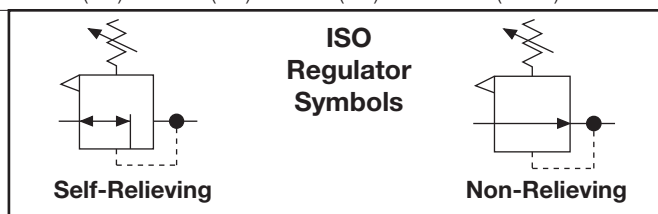


## DIMENSIONS inches (mm)

Ports	A	B	C	Depth †	Weight † lb (kg)
No Port	1.7 (43)	2.6 (67)	0.5 (13)	1.8 (45)	0.21 (0.09)
1/8, 1/4	3.0 (76)	2.6 (67)	0.5 (13)	1.8 (45)	0.43 (0.19)
<b>Models below have quick-connect fittings for tubing.</b>					
1/4	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.21 (0.09)
3/8	3.9 (99)	2.6 (67)	0.5 (13)	1.8 (45)	0.21 (0.09)
4 mm	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
6 mm	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
8 mm	3.1 (79)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
10 mm	3.9 (99)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)



† Less gauge.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the regulator you want.

# R10M P - 2 X Y G W

### REGULATOR TYPE

Piston type .....R10M  
Diaphragm type.....R11M

### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

### INLET PORT SIZE

No Inlet and Outlet ports.... Leave blank

#### Threaded:

1/8 NPTF ..... -1  
1/4 NPTF ..... -2

#### Fittings for Tubing:

1/4 ..... -04  
3/8 ..... -06  
4 mm ..... -M4  
6 mm ..... -M6  
8 mm ..... -M8  
10 mm ..... -M10

### OUTLET PORT SIZE

Same as inlet port ..... Leave Blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

### MOUNTING BRACKETS

See page 346.

### PORT TYPE

As specified in **INLET PORT**... Leave Blank  
BSPB threads on both ports ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

Delete gauge ..... Leave Blank  
0-160 PSI Gauge ..... G  
Plastic mounting nut ..... P  
Metal mounting nut..... PN  
Hex plastic mounting nut ..... PE

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving ..... A  
Springs: (0-100 psig standard)  
For optimum performance operating pressure should fall approximately in the middle of the spring range.  
0-125 psig (0-8.6 bar) ..... H  
0-50 psig (0-3.4 bar) ..... L  
0-8 psig (0-0.6 bar) ..... L8  
0-15 psig (0-1 bar) ..... L15  
0-30 psig (0-2.1 bar) ..... L30  
Tamper-resistant spinning ..... MV(\*)  
knob (psig preset)  
Viton seals..... V

\*Insert maximum limited pressure.

# MINIATURE General Purpose Regulators

# R55M, R56M Models Port Sizes: 1/8, 1/4



Model Shown: R56M-2G

- ◆ Inline mounting.
- ◆ Piston-type design (**R55M** models) or diaphragm-type (**R56M** models).
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.
- ◆ Miniature regulators have the ability to reverse flow.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Aluminum.

**Dome and Knob:** Glass Filled Nylon and Acetal.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

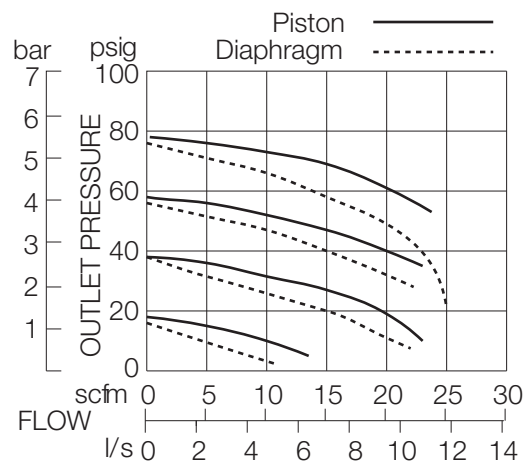
**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

## FLOW CHART

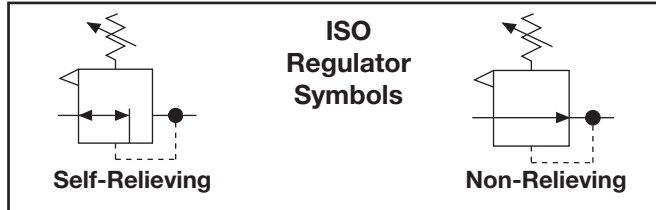
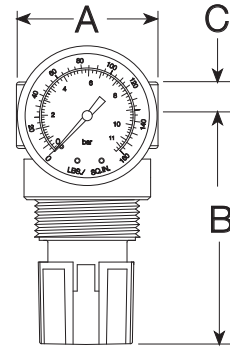
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	2.7 (68)	0.4 (10)	1.6 (41)	0.24 (0.11)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R55M B - 2 Y G W**

**REGULATOR TYPE**

- Piston type .....R55M
- Diaphragm type.....R56M

**BODY MATERIAL TYPE**

- Aluminum ..... Leave Blank
- Brass ..... B

**PORT SIZE**

- 1/8 NPTF..... 1
- 1/4 NPTF..... 2

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-160 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut..... PN
- Hex plastic mounting nut ..... PE

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None..... Leave Blank
- Non-relieving .....A
- Small valve seat .....C
- Metal dome (threaded).....D
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 0-125 psig (0-8.6 bar) .....H
- 0-50 psig (0-3.4 bar) .....L
- 0-8 psig (0-0.6 bar) .....L8
- 0-15 psig (0-1 bar) .....L15
- 0-30 psig (0-2.1 bar) .....L30

Tamper-resistant spinning

knob (psig preset).....MV(\*)

No gauge ports ..... NP

Viton seals .....V

\*Insert maximum limited pressure.

**MOUNTING BRACKETS**

See page 346.

# MINIATURE Stainless Steel General Purpose Regulators

# R56S Models Port Sizes: 1/4



Model Shown: R56S-2V

- ◆ Stainless steel construction provides unique corrosion resistance.
- ◆ Viton elastomers throughout.
- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Stainless steel.

**Dome and Knob:** Glass Filled Nylon and Acetal.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

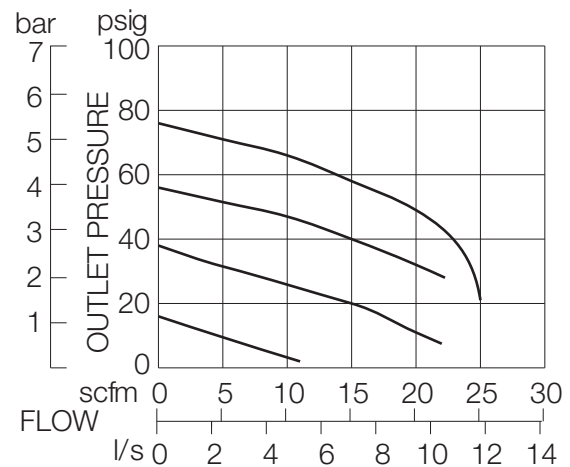
**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Viton.

## FLOW CHART

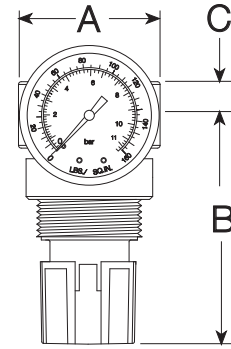
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
1.6 (41)	2.7 (68)	0.4 (10)	1.6 (41)	0.24 (0.11)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R56S - 2 Y V G W**

**PORT SIZE**

1/4 NPTF..... 2

**PORT TYPE**

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
 Plastic mounting nut ..... P  
 Metal mounting nut..... PN  
 Hex plastic mounting nut ..... PE

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

None..... Leave Blank  
 Non-relieving ..... A

Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

0-125 psig (0-8.6 bar) ..... H

0-50 psig (0-3.4 bar) ..... L

0-15 psig (0- 1 bar)..... L15

0-30 psig (0-2.1 bar) ..... L30

**MOUNTING BRACKETS**

See page 346.



# CO<sub>2</sub> MINIATURE Regulators

# CX (CO<sub>2</sub>) Models Port Sizes: 1/8, 1/4



Model Shown: CX-2B0A1A0-2AG

- ◆ Inline mounting.
- ◆ Available in relieving and non-relieving diaphragm designs.
- ◆ Outstanding control at relatively low cost
- ◆ Pressure gauge optional.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

-40° to 175°F (-40° to 79.4°C).

**Body and dome:** Aluminum. Optional anodized coating

**Fluid Media:** CO<sub>2</sub>, inert gases

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar). standard. Optional pressure ranges available.

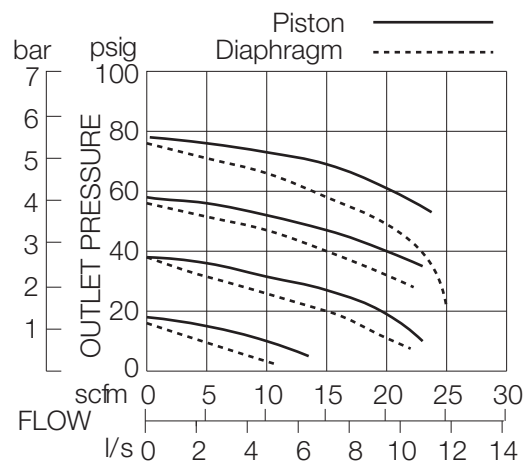
**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear. Optional gauges sold separately.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Neoprene seals and o-rings. Nitrile diaphragm; optional Nitrile seals, o-rings, and diaphragm.

## FLOW CHART

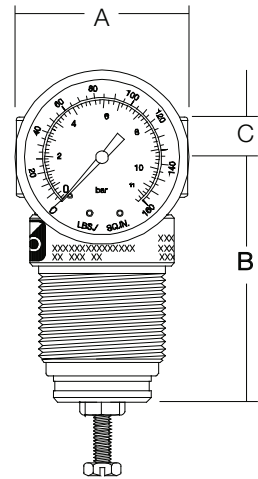
Inlet Pressure: 100 psig (7 bar)



## DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	2.28 (58)	0.4 (10)	1.6 (41)	0.30 (0.14)

† Less gauge.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the CO<sub>2</sub> regulator you want.

### REGULATOR TYPE

Relieving diaphragm ..... 0  
Non-relieving diaphragm ..... 1

### GAUGE OPTION

No Gauge ..... Leave blank  
Gauge 0-160 psig ..... G

### PORT TYPE

NPTF threads ..... Leave blank  
BSPB threads ..... W

**CX- 0 A 0 A 0 A 0- 2 A G W**

### ANODIZED TYPE

None ..... A  
Clear Anodized head and ..... B  
dome.

### DOMES TYPE

Threaded metal dome ..... 0  
Stainless steel adjustment  
screw and stainless steel nut.

### O-RING AND SEAL MATERIAL

Neoprene seals and o-rings, .. 0  
and nitrile diaphragm.  
Nitrile seals, o-rings and ..... 1  
diaphragm.

### SPRING RANGES

0-100 psig (0-7 bar) ..... A  
0-175 psig (0-12.1 bar) ..... B  
0-125 psig (0-8.6 bar) ..... C  
0-50 psig (0-3.4 bar) ..... D  
0-8 psig (0-0.6 bar) ..... E  
0-15 psig (0-1 bar) ..... F  
0-30 psig (0-2.1 bar) ..... H

### PORT SIZE

1/8-NPTF ..... 1  
1/4-NPTF ..... 2

### PANEL MOUNT NUTS

None ..... A  
Plastic nut ..... B  
Plastic hex nut ..... C  
Metal nut \* ..... D

\* If anodize is chosen, then panel mount nut will be the same color.

# GUARDSMAN Modular General Purpose Regulators

# R60 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: R60-4G

- ◆ Modular or inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Zinc.

**Cap:** Nylon.

**Dome and Knob:** Acetal.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 250 psig (17 bar) maximum.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

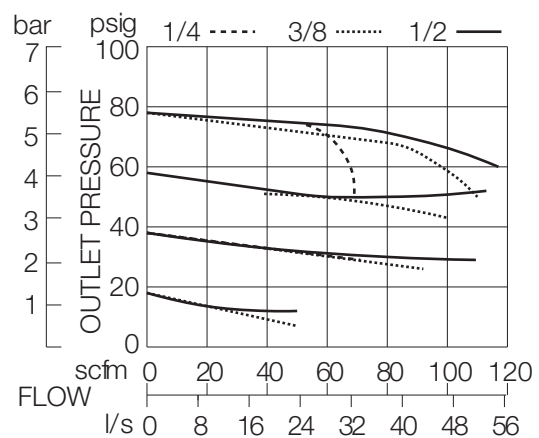
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Seals:** Nitrile.

## FLOW CHART

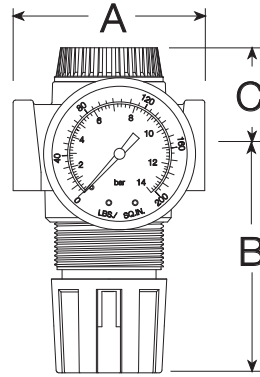
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

				Weight †
A	B	C	Depth †	lb (kg)
2.7 (67)	3.3 (83)	1.3 (33)	1.8 (45)	1.0 (0.46)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R60 - 2 Y G W**

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4

**OPTIONS** (More than one option can be chosen)

- None .....
- Leave Blank
- Non-relieving ..... A
- Internal bypass-reverse flow..... E
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 0-150 psig (0-10 bar) ..... H
- 0-50 psig (0-3.4 bar) ..... L

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G
- Plastic Mounting nut ..... P
- Metal Mounting nut .....PN

**MOUNTING BRACKETS**  
See page 346.

# GUARDSMAN II Modular General Purpose Regulators

# R75 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: R75-4G

- ◆ Modular or inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Extra-strength metal dome.
- ◆ Pressure gauge.
- ◆ Panel mounting nut.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Knob:** Acetal.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:**

Nut included. 1-7/8 inch (48 mm) hole required.

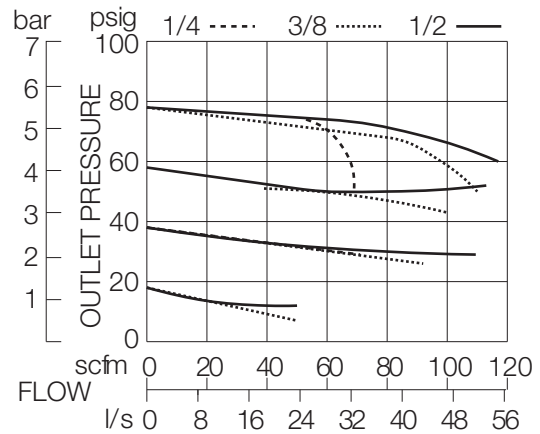
**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Nylon.

## FLOW CHART

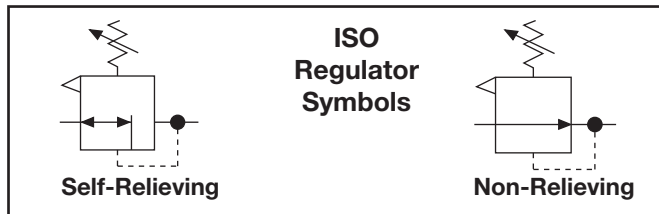
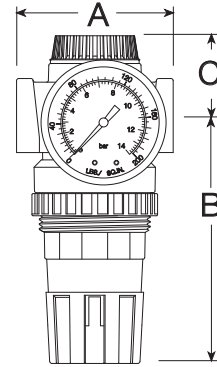
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

				Weight †
A	B	C	Depth †	lb (kg)
2.7 (67)	4.2 (107)	1.4 (35)	2.1 (52)	1.13 (0.51)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R75 - 2 Y G W**

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Adjustment-locking key ..... B
- Internal bypass-reverse flow ..... E
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 0-200 psig (0-14 bar) ..... H
- 0-50 psig (0-3.4 bar) ..... L

Tee handle..... T

**MOUNTING BRACKETS**

See page 346.

# HIGH PRESSURE 400 psi Maximum Inlet Regulator

# R67 Models Port Sizes: 1/8, 1/4, 3/8

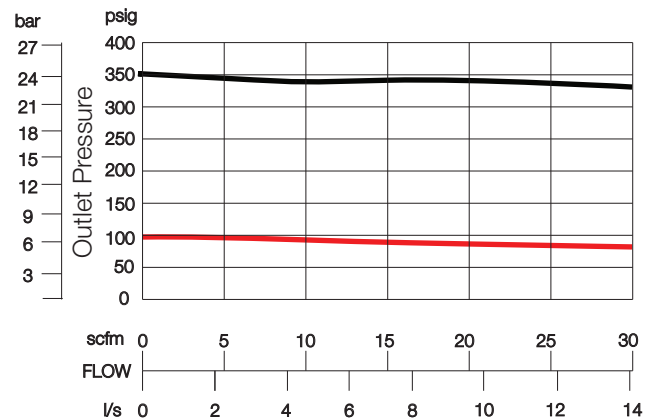


Model Shown: R67-3G1

- ◆ 400 PSIG maximum inlet pressure
- ◆ Pressure adjustment has a locking feature (Locknut).
- ◆ Self-relieving; non-relieving optional.
- ◆ Extra-strength metal dome.
- ◆ Aluminum body and dome; piston operation design
- ◆ NPTF port threads; optional BSPP threads.

## FLOW CHART

R67-3 Flow Characteristics using a 0-400 psig main spring and a 400 psig inlet



## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body and Dome:** Aluminum

**Fluid Media:** Compressed air.

**Inlet Pressure:** 400 psig (27.5 bar) maximum.

**Knob:** Glass filled Nylon.

**Outlet Pressure:** Adjustable up to 390 psig (26 bar); optional 0-100 psig (7 bar) and 0-200 psig (14 bar).

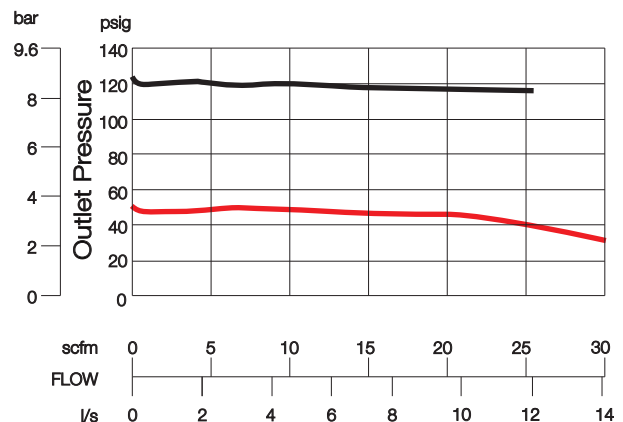
**Pressure Gauge:** 0 to 200 psig (0 to 14 bar); optional 0 to 600 psig (0 to 41 bar); 1/4-NPTF gauge ports on front and rear of head.

**Seals and O-rings:** Nitrile; optional Viton.

**Panel Mounting:** 1-9/16 inch (40mm) hole required.

## FLOW CHART

R67-3 Flow Characteristics using a 0-200 psig main spring and a 400 psig inlet

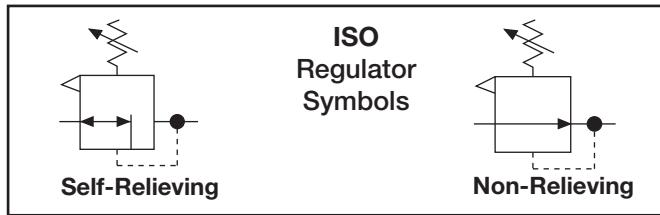
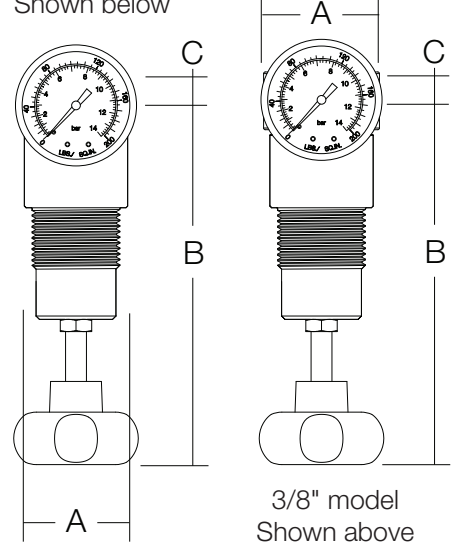


**DIMENSIONS** inches (mm)

Port Size	A	B	C	Depth †	Weight † lb (kg)
1/8-NPTF	1.9	7.3 max	0.4	1.9	1.15
1/4-NPTF	(47)	(186 max)	(10)	(47)	(0.53)
3/8-NPTF	2.1	7.4 max	0.5	2.1	1.30
	(54)	(188 max)	(13)	(54)	(0.59)

† Less Gauge

1/8" and 1/4" model  
Shown below



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R67- 3 Y G1 PN W**

**PORT SIZE**

- 1/8 NPTF..... 1
- 1/4 NPTF..... 2
- 3/8 NPTF..... 3

**OPTIONS**

- (More than one option can be chosen)
- None ..... Leave Blank
  - Non-relieving ..... A
  - Small Valve Seat ..... C
  - Springs: (0-390 psig standard)
  - For optimum performance operating pressure should fall approximately in the middle of the spring range.
  - 0-100 psig (0- 7 bar) ..... L100
  - 0-200 psig (0- 14 bar) ..... L200
  - Viton O-rings and seals..... V

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**PANEL MOUNT OPTION**

- None ..... Leave Blank
- Metal mounting nut..... PN

**GAUGE OPTIONS**

- None ..... Leave Blank
- 0-200 psig 1/4" Gauge..... G
- 0-600 psig 1/4" Gauge ..... G1



# Full-Size SERIES 350 Modular General Purpose Regulators



Model Shown: R350-3G

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Nylon.

**Knob:** Acetal

**Fluid Media:** Compressed Air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable up to 150 psig (10 bar); optional adjusting springs.

**Optional Pressure Adjustment locking key:** removable

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4-NPT gauge ports front and rear.

**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile.

**Self-relieving:** Non-relieving optional.

**Valve:** Brass

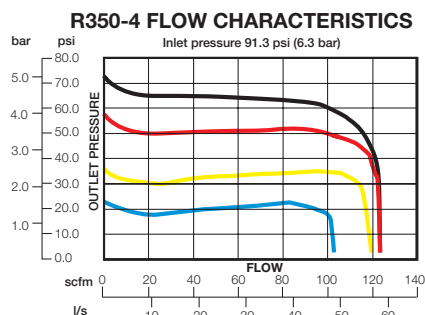
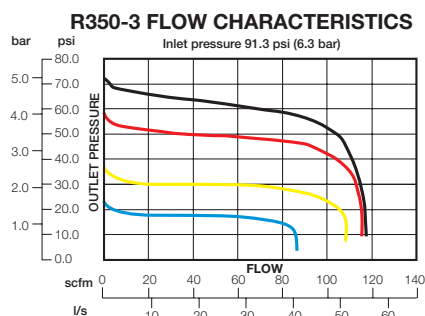
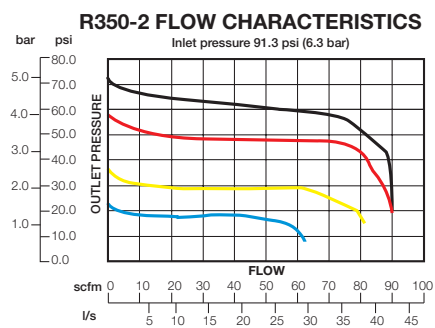
**Valve Cap:** Nylon.

## R350 Models

### Port Sizes: 1/4, 3/8, 1/2

- ◆ Modular or inline mounting. Modular mounting allows regulators to be positioned at 45° increments for ease in adjustment.
- ◆ Superior pressure regulation - diaphragm type regulator
- ◆ Self relieving design; large diaphragm sensing area; non-relieving optional.
- ◆ Optional Pressure adjustment locking key; tamper resistant pressure setting.
- ◆ Inlet rated to 300 psig (21 bar)
- ◆ Reverse flow option.
- ◆ Pressure gauge.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPP threads.

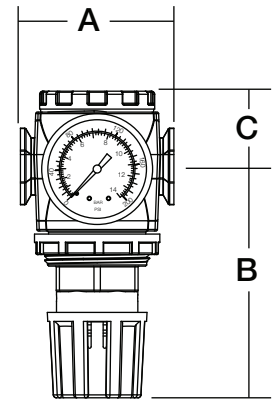
## FLOW CHARTS



## DIMENSIONS inches (mm)

A	B	C	Depth	Weight lb (kg)
3.0 (76.2)	4.52 (114.9)	1.46 (37)	2.51 (63.8)	1.9 (0.86)

**Panel mounting:** 2-1/16" (52mm) hole required.  
**Dome removal clearance:** add 0.575 (14.6)  
**Cap removal clearance:** add 0.750 (19.1)  
 Dimensions above reflect less gauge.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the regulator you want.

# R350 - 3 A G W

**PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

**PORT TYPE**

- NPTF threads ..... Leave blank
- BSPP threads ..... W

**OPTIONS** (more than one can be chosen.

- Add in alphabetical order).
- None ..... Leave blank
  - Relieving ..... Leave blank
  - Non-relieving ..... A
  - Locking knob ..... B
  - Reverse flow ..... E

**OPTIONS** (more than one can be chosen.

- Add in alphabetical order).
- None ..... Leave Blank
  - Pressure gauge ..... G
  - Mounting nut ..... P

**SPRINGS:**

- 0-200 psig (0-13 bar) ..... H
- 0-150 psig (0-10 bar) std ..... Leave blank
- 0-100 psig (0-6 bar) ..... L100
- 0-50 psig (0-3 bar) ..... L
- Limit maximum psig setting ..... M\*
- Tee Handle ..... T

\* insert maximum limited pressure.

**MOUNTING BRACKETS**

See page 346.

# Full-Size VANGUARD Modular General Purpose Regulators

# R100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: R100-6G

- ◆ Modular or inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ Pressure adjustment locking key.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:**

Nylon; aluminum with optional 0-175 psig spring.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Knob:** Acetal.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

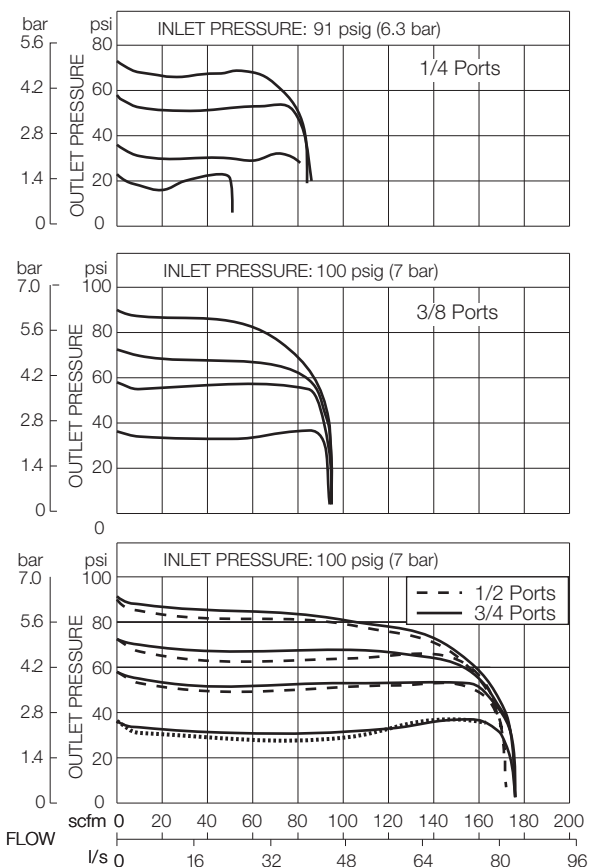
**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Nylon.

## FLOW CHARTS



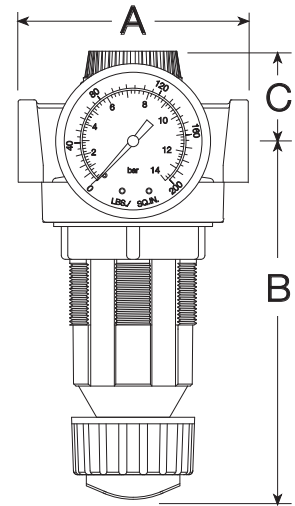
**DIMENSIONS** inches (mm)

				Weight †
A	B *	C **	Depth †	lb (kg)
3.5 (89)	5.8 (146)	1.3 (33)	2.8 (71)	2.06 (0.92)

\* Dome removal clearance: add 0.63 (16).

\*\* Cap removal clearance: add 0.5 (13).

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R100 - 2 Y G W**

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G
- Mounting nut ..... P

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None.....Leave Blank
- Non-relieving ..... A
- Internal bypass–reverse flow ..... E
- Springs: (0-125 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

0-175 psig (0-12 bar) ..... H\*\*

0-50 psig (0-3.4 bar) ..... L

0-20 psig (0-1.4 bar)..... L20

Metal Dome ..... MD

Limit maximum psig setting .... M\*

Tee handle..... T

Viton Seals ..... V

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome

**MOUNTING BRACKETS**

See page 346.

# Full-Size SERIES 380 Modular General Purpose Regulators

# R380 Models Port Sizes: 3/8, 1/2, 3/4

## Available Color Caps



Model Shown: R380-6G



- ◆ Modular or inline mounting. Modular mounting allows regulators to be positioned at increments of 45° for ease in adjustment.
- ◆ Self-relieving diaphragm design; large diaphragm sensing ratio; non-relieving optional.
- ◆ Pressure gauge.
- ◆ Pressure adjustment locking key; tamper-resistant pressure setting.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

### Body:

Zinc.

### Dome:

Nylon; aluminum with optional 0-175 psig spring.

### Cap Color:

Grey. Yellow, red, and blue optional.

Fluid Media: Compressed air.

### Inlet Pressure:

300 psig (21 bar) maximum.

### Knob:

Acetal

### Outlet Pressure:

Adjustable up to 125 psig (8.6 bar); optional adjusting springs.

### Pressure Adjustment Locking Key:

Removable.

### Pressure Gauge:

0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

### Panel Mounting:

2-1/16 inch (52 mm) hole required.

### Seals:

Nitrile.

### Self-relieving:

Non-relieving optional.

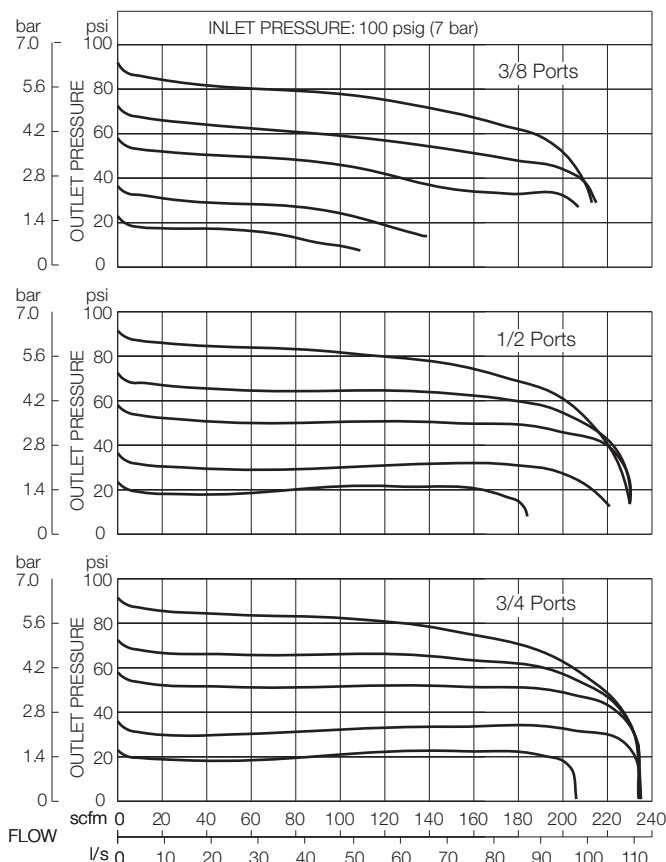
### Valve:

Brass.

### Valve Cap:

Nylon.

## FLOW CHARTS



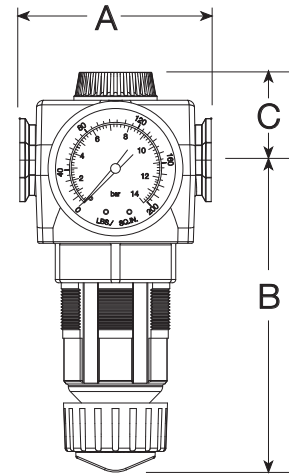
**DIMENSIONS** inches (mm)

				Weight †
A	B *	C **	Depth †	lb (kg)
3.5 (87)	5.6 (142)	1.6 (40)	2.9 (73)	2.56 (1.16)

\* Dome removal clearance: add 0.625 (16).

\*\* Cap removal clearance: add 0.50 (13).

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R380 - 3 Y G W**

**PORT SIZE**

- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Cap color: Grey is standard.
  - MP yellow ..... C1
  - Red..... C2
  - Mid blue..... C3
- Internal bypass - reverse flow E
- Springs: (0-125 psig standard)
  - For optimum performance operating pressure should fall approximately in the middle of the spring range.
  - 0-175 psig (0-12 bar) ..... H\*\*
  - 0-50 psig (0-3.4 bar) ..... L
  - 0-20 psig (0-1.4 bar)..... L20
- Metal Dome ..... MD
- Limit maximum psig setting ..... M\*
- Tee handle..... T

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G
- Mounting nut ..... P

**MOUNTING BRACKETS**

See page 346.

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

# High-Flow VANGUARD General Purpose Regulators

## R180M Models Port Sizes: 3/4, 1



Model Shown: R180M-6G

- ◆ Inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ Pressure adjustment locking key.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Dome:**

Nylon; aluminum with optional 0-150 psig spring.

Fluid Media: Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Knob:** Acetal

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

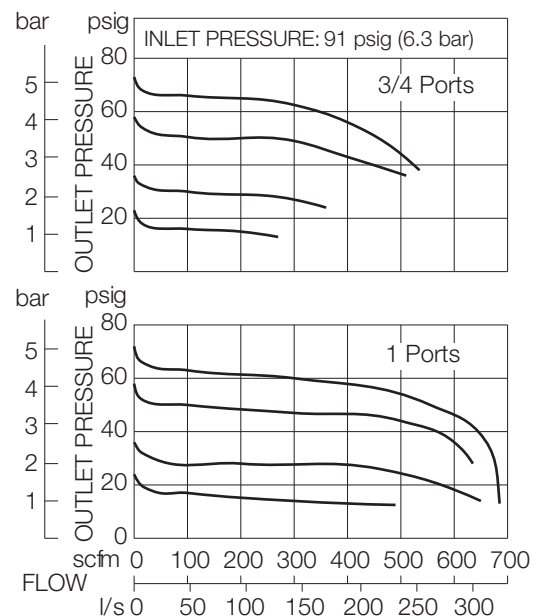
**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile.

**Valve:** Aluminum.

**Valve Cap:** Nylon.

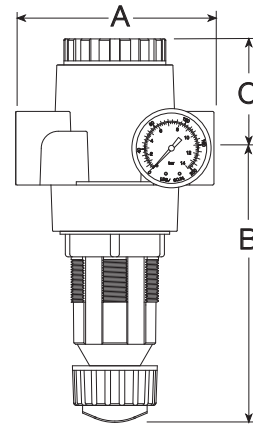
### FLOW CHARTS



**DIMENSIONS** inches (mm)

				Weight †
A	B *	C **	Depth †	lb (kg)
4.4 (111)	6.1 (154)	2.4 (62)	2.8 (71)	2.19 (0.99)

\* Dome removal clearance: add 0.63 (16).  
 \*\* Cap removal clearance: add 0.65 (16.5).  
 † Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R180M - 6 Y G W**

**PORT SIZE**

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G
- Mounting nut ..... P

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Internal bypass–reverse flow ..... E
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

0-150 psig (0-10 bar) ..... H\*\*

0-50 psig (0-3.4 bar) ..... L

0-20 psig (0-1.4 bar) ..... L20

Metal Dome ..... MD

Limit maximum psig setting .... M\*

Tee handle ..... T

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

**MOUNTING BRACKETS**

See page 346.



# High-Flow VANGUARD General Purpose Regulators

# R180 Models Port Sizes: 1-1/4, 1-1/2



Model Shown: R180-10G

- ◆ Inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ Pressure adjustment locking key.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Dome:**

Nylon; aluminum with optional 0-150 psig spring.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Knob:** Acetal

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

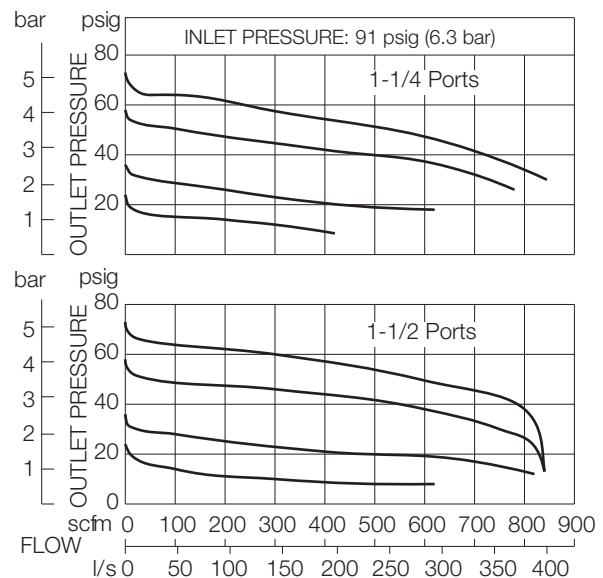
**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile.

**Valve:** Aluminum.

**Valve Cap:** Nylon.

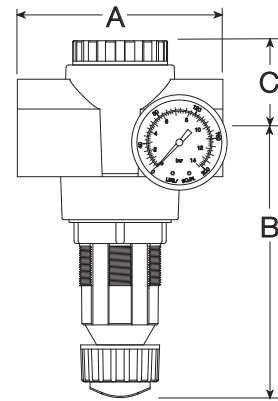
## FLOW CHARTS



**DIMENSIONS** inches (mm)

				Weight †
A	B *	C **	Depth †	lb (kg)
4.9 (124)	6.4 (162)	2.1 (54)	2.8 (71)	2.5 (1.14)

\* Dome removal clearance: add 0.63 (16).  
 \*\* Cap removal clearance: add 0.65 (16.5).  
 † Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R180 - 10 Y G W**

**PORT SIZE**

- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-200 psig Gauge ..... G
- Mounting nut ..... P

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None.....Leave Blank
- Non-relieving ..... A
- Internal bypass–reverse flow ..... E
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 0-150 psig (0-10 bar) ..... H\*\*
- 0-50 psig (0-3.4 bar) ..... L

- Metal Dome ..... MD
- Limit maximum psig setting .... M\*
- Tee handle..... T

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

**MOUNTING BRACKETS**

See page 346.

# MINIATURE Precision Regulators

# R57M Models Port Sizes: 1/8, 1/4



Model Shown: R57M-2G

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ Repeatability  $\pm 0.25$  psig (0.017 bar)

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Body:** Aluminum.

**Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable up to 50 psig (3.4 bar).  
Adjustable up to 60 psig (4.14 bar) with optional springs.  
With inlet pressure of 100 psig (7 bar) repeatability is within 0.25 psig

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

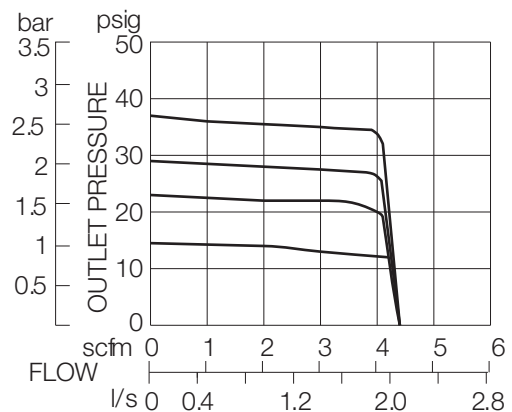
**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

**Self-relieving:** Non-relieving optional.

## FLOW CHART

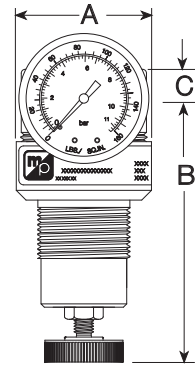
Inlet Pressure: 91 psig (6.3 bar)



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
1.8 (44)	3.4 (86)	0.4 (10)	1.8 (44)	0.38 (0.16)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R57M - 2 Y G W**

**PORT SIZE**

- 1/8 NPTF..... 1
- 1/4 NPTF..... 2

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None..... Leave Blank
- Non-relieving ..... A

Springs: (0-50 psig standard)  
For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 0-60 psig (0-4.1 bar) ..... H
- 0-20 psig (0-1.4 bar) ..... L20
- 0-10 psig (0-0.7 bar) ..... L10
- 0-5 psig (0-0.3 bar) ..... L5
- No gauge ports ..... NP
- Viton seals..... V

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-160 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut..... PN
- Hex plastic mounting nut ..... PE

**MOUNTING BRACKETS**  
See page 346.

# Full-Size SERIES 380 Modular Internally Piloted Precision Regulators

## IR380 Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps



Model Shown: IR380-6G



Yellow  
(optional)

Red  
(optional)

Blue  
(optional)

Grey  
(standard)

- ◆ Modular or inline mounting.
- ◆ Self-relieving diaphragm design.
- ◆ Repeatability  $\pm 0.5$  psi (0.034 bar).
- ◆ Easy finger adjustment. No overshoot or undershoot when adjusting.
- ◆ Constant air bleed for high accuracy.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body and Dome:** Zinc.

**Bonnet and Knob:** Glass Filled Nylon and Acetal.

**Constant Air Bleed Rate:** 0.18 – 0.33 scfm at 80 psi secondary pressure

**Fluid Media:** Compressed air.

**Inlet Pressure:** 250 psig (17 bar) maximum.

**Outlet Pressure:** Adjustable 15 –200 psig (1– 13.7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

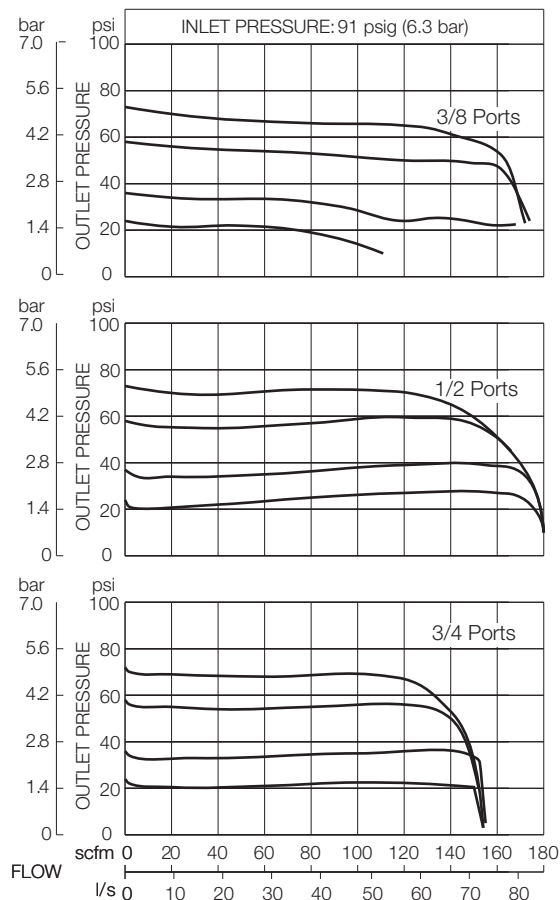
**Panel Mounting:** 1-3/16 (30 mm) hole required.

**Seals:** Nitrile.

**Self-relieving**

**Valve:** Brass.

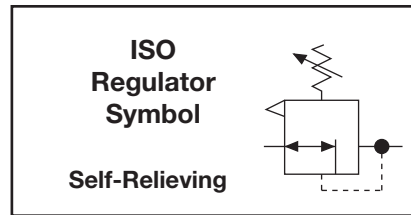
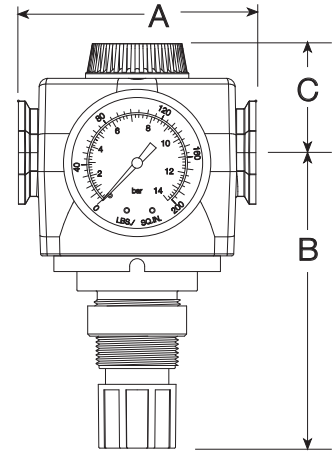
### FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight † lb (kg)
3.5 (87)	4.8 (122)	1.6 (41)	2.9 (73)	2.3 (1.0)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**IR380 - 3 Y G W**

**PORT SIZE**

- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-200 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut..... PN
- Hex plastic mounting nut ..... PE

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank

**Cap color:** Grey is standard.

- MP yellow .....C1
- Red .....C2
- Mid blue .....C3

**Springs:** (15-200 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

- 15-250 psig (1-17 bar) .....H
- 15-100 psig (1-7 bar) .....L

**MOUNTING BRACKETS**

See page 346.

# Full-Size VANGUARD Modular Internally Piloted Precision Regulators

## IR100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: R100-6G

- ◆ Modular or inline mounting.
- ◆ Self-relieving diaphragm design.
- ◆ Easy finger adjustment. No overshoot or undershoot when adjusting.
- ◆ Constant air bleed for accuracy.
- ◆ Repeatability  $\pm 0.5$  psi ( $\pm 0.034$  bar).
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body and Dome:** Zinc.

**Bonnet and Knob:** Glass Filled Nylon and Acetal.

**Constant Air Bleed Rate:** 0.18 – 0.33 scfm at 80 psi secondary pressure

**Fluid Media:** Compressed air.

**Inlet Pressure:** 250 psig (17 bar) maximum.

**Outlet Pressure:** Adjustable 15 – 200 psig (1 – 14 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 (30 mm) hole required.

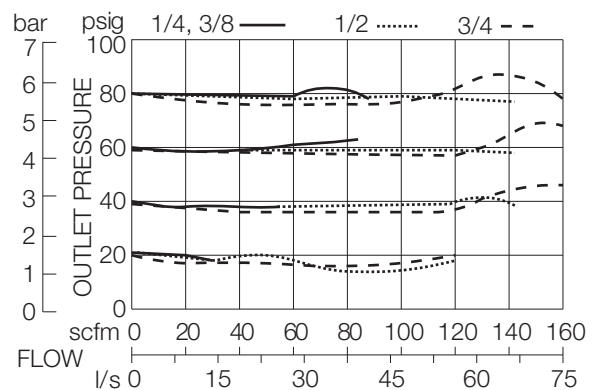
**Seals:** Nitrile.

**Self-relieving**

**Valve:** Brass.

### FLOW CHART

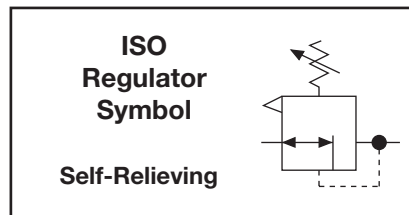
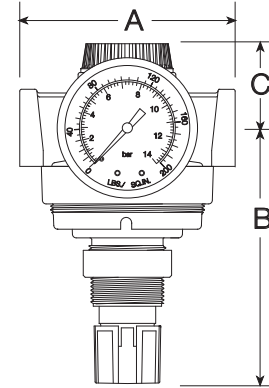
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS inches (mm)**

A	B	C	Depth †	Weight † lb (kg)
3.5 (89)	4.2 (106)	1.3 (33)	2.8 (71)	2.06 (0.92)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**IR100 - 2 Y G W**

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-200 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut..... PN
- Hex plastic mounting nut ..... PE

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None.....Leave Blank
- 1.75-inch (4.5 cm) diameter adjusting knob with removable locking key .....B
- Springs: (15-200 psig standard)
  - For optimum performance operating pressure should fall approximately in the middle of the spring range.
  - 15-250 psig (1-17 bar) .....H
  - 15-100 psig (1-7 bar) .....L

**MOUNTING BRACKETS**  
See page 346.



# High-Flow VANGUARD Internally Piloted Precision Regulators

## IR180M Models Port Sizes: 3/4, 1, 1-1/4, 1-1/2



**Model Shown:**  
IR180M-8G

**Model Shown:**  
IR180M-10G

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving.
- ◆ Constant air bleed for accuracy.
- ◆ Repeatability  $\pm 0.5$  psi ( $\pm 0.034$  bar).
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bonnet and Knob:** Glass Filled Nylon and Acetal.

**Constant Air Bleed Rate:** 0.18 – 0.33 scfm at 80 psi secondary pressure

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:**

Adjustable 15 to 200 psig (1 to 14 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 (30 mm) hole required.

**Seals:** Nitrile.

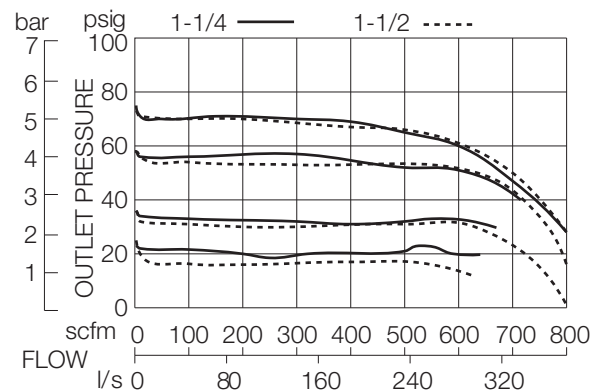
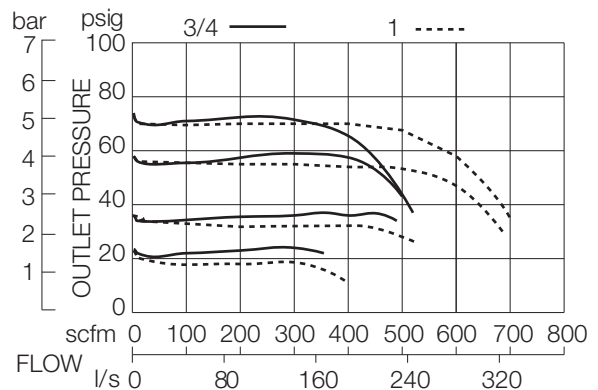
**Self-relieving**

**Valve:** Aluminum.

**Valve Cap:** Nylon.

### FLOW CHART

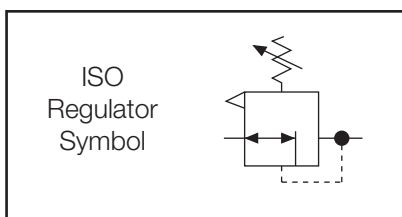
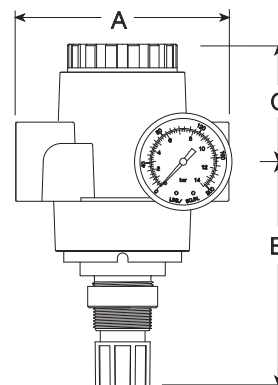
Inlet Pressure: 91 psig (6.3 bar)



**DIMENSIONS** inches (mm)

Ports	A	B	C	Depth †	Weight † lb (kg)
3/4 1	4.4 (111)	4.6 (112)	2.4 (62)	2.8 (71)	2.0 (0.91)
1-1/4 1-1/2	4.9 (124)	4.9 (125)	2.1 (54)	2.8 (71)	2.38 (1.08)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**IR180M - 6 Y G W**

**PORT SIZE**

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-200 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut ..... PN
- Hex plastic mounting nut ..... PE

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 1.75-inch (4.5 cm) diameter  
adjusting knob with  
removable locking key ..... B
- Springs: (15-200 psig standard)
- For optimum performance operating  
pressure should fall approximately in  
the middle of the spring range.
- 15-250 psig (1-17 bar) ..... H
- 15-100 psig (1-7 bar) ..... L

**MOUNTING BRACKETS**  
See page 346.

# SENTRY Modular Externally Piloted Regulators

# PR11M Models Port Sizes: 1/8, 1/4 Tube Fittings



Model Shown: PR11M-1G

- ◆ Inline mounting.
- ◆ Diaphragm type design
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Acetal.

**Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 150 psig (10 bar) maximum.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

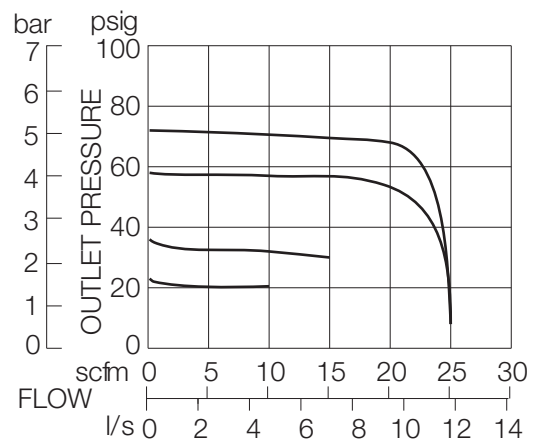
**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

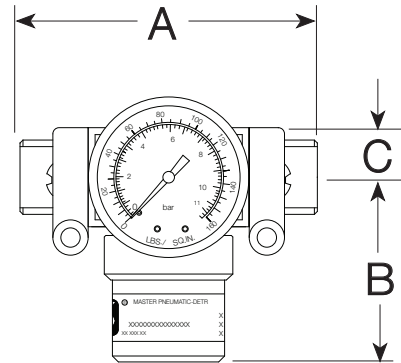
## FLOW CHART

Inlet Pressure: 91 psig (6.3 bar)



## DIMENSIONS inches (mm)

Ports	A	B	C	Depth †	Weight † lb (kg)
No Port	1.7 (43)	1.3 (49)	0.5 (13)	1.8 (45)	0.23 (0.11)
1/8	1.7 (43)	1.3 (49)	0.5 (13)	1.8 (45)	0.45 (0.20)
1/4	3.0 (76)	1.3 (49)	0.5 (13)	1.8 (45)	0.41 (0.19)
<b>Models below have quick-connect fittings for tubing.</b>					
1/4	3.4 (86)	1.3 (49)	0.5 (13)	1.8 (45)	0.33 (0.15)
3/8	3.9 (99)	1.3 (49)	0.5 (13)	1.8 (45)	0.47 (0.22)
4 mm	3.4 (86)	1.3 (49)	0.5 (13)	1.8 (45)	0.33 (0.15)
6 mm	3.4 (86)	1.3 (49)	0.5 (13)	1.8 (45)	0.33 (0.15)
8 mm	3.1 (79)	1.3 (49)	0.5 (13)	1.8 (45)	0.33 (0.15)
10 mm	3.9 (99)	1.3 (49)	0.5 (13)	1.8 (45)	0.45 (0.21)



† Less gauge.

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the regulator you want.

### PR11M P - 2 X Y G W

#### REGULATOR TYPE

Diaphragm type .....R11M

#### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

#### INLET PORT SIZE

No Inlet and Outlet ports.... Leave blank

##### Threaded:

1/8 NPTF ..... -1  
1/4 NPTF ..... -2

##### Fittings for Tubing:

1/4 ..... -04  
3/8 ..... -06  
4 mm ..... -M4  
6 mm ..... -M6  
8 mm ..... -M8  
10 mm ..... -M10

#### OUTLET PORT SIZE

Same as inlet port ..... Leave Blank

##### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

##### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

#### PORT TYPE

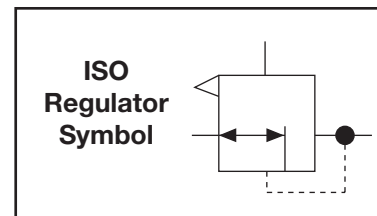
As specified in **INLET PORT**... Leave Blank  
BSPP threads on both ports ..... W

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

Delete gauge ..... Leave Blank  
0-160 PSI Gauge ..... G

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving ..... A



#### MOUNTING BRACKETS

See page 346.

# MINIATURE Externally Piloted Regulators

# PR55M, PR56M Models Port Sizes: 1/8, 1/4



Model Shown: PR56M-1G

- ◆ Inline mounting.
- ◆ Piston-type design (**PR55M** models) or diaphragm-type design (**PR56M** models)
- ◆ Self-relieving; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body and Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

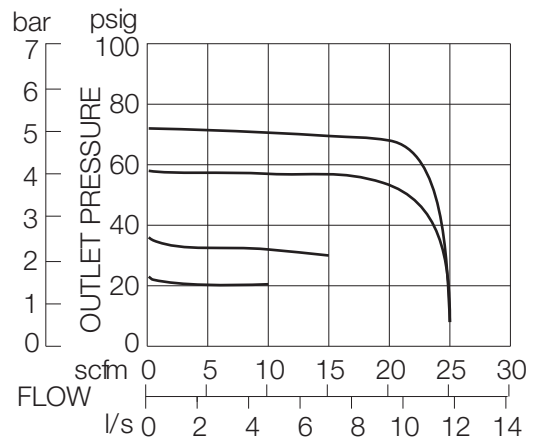
**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Seals:** Nitrile.

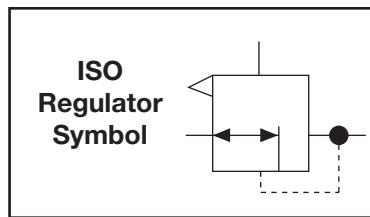
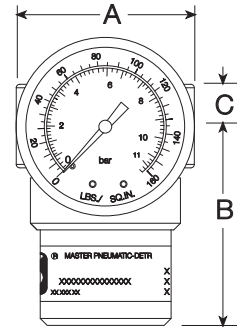
## FLOW CHART

Inlet Pressure: 91 psig (6.3 bar)



**DIMENSIONS** inches (mm)

				Weight
A	B	C	Depth	lb (kg)
1.6 (41)	1.8 (46)	0.38 (9.5)	1.6 (41)	0.25 (0.11)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**PR56M - 2 Y G W**

<p><b>REGULATOR TYPE</b></p> <p>Piston ..... PR55M Diaphragm ..... PR56M</p> <p><b>PORT SIZE</b></p> <p>1/8 NPTF ..... 1 1/4 NPTF ..... 2</p> <p><b>OPTIONS</b></p> <p>None..... Leave Blank Non-relieving ..... A</p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave Blank BSPP threads ..... W</p> <p><b>GAUGE</b></p> <p>None ..... Leave Blank 0-160 PSI Gauge ..... G</p>
--	--

**No mounting bracket available.**

# Full-Size SERIES 380 Modular Externally Piloted Regulators

# PR380 Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps



Model Shown: PR380-6G

- ◆ Modular or inline mounting.
- ◆ Self-relieving diaphragm design.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable 0 – 250 psig (0 – 17 bar).

**Pilot Ports:** 1/4 NPTF

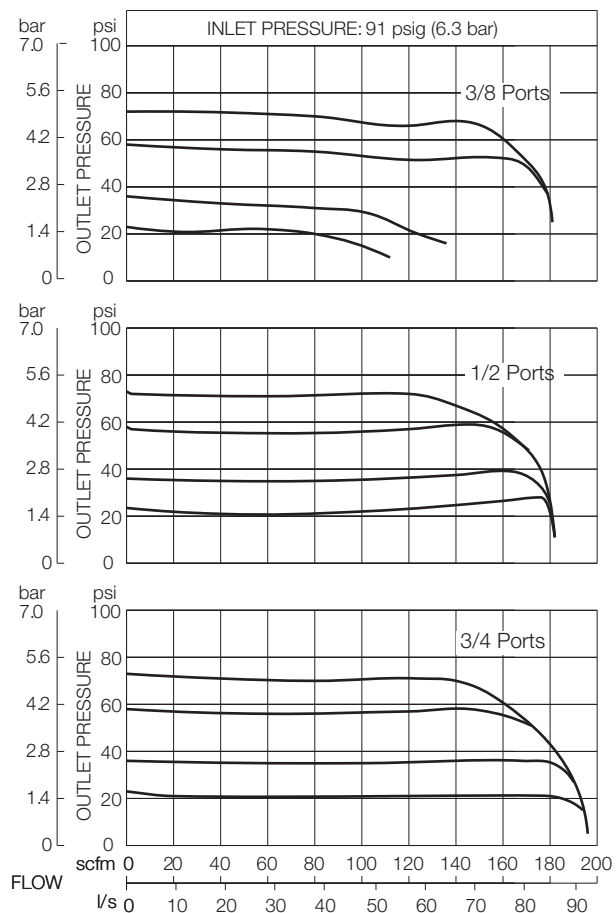
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Nylon.

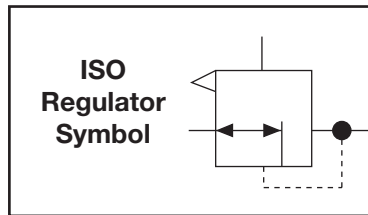
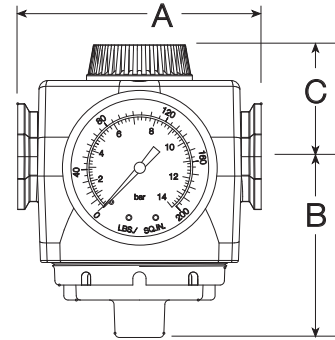
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight † lb (kg)
3.5 (87)	2.4 (62)	1.6 (40)	2.9 (73)	2.20 (1.00)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**PR380 - 3 Y G W**

**PORT SIZE**

- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPB threads ..... W

**OPTIONS**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Cap Color: Grey is standard
- MP yellow ..... C1
- Red..... C2
- Mid blue..... C3

**MOUNTING BRACKETS**

See page 346.



# Full-Size SERIES 380 Modular External Relief Piloted Regulator

## PRH380 Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps



Model Shown: PRH380-6G

- ◆ Modular or inline mounting.
- ◆ Self-relieving diaphragm design.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable 0 – 250 psig (0 – 17 bar).

**Pilot Ports:** 1/4 NPTF

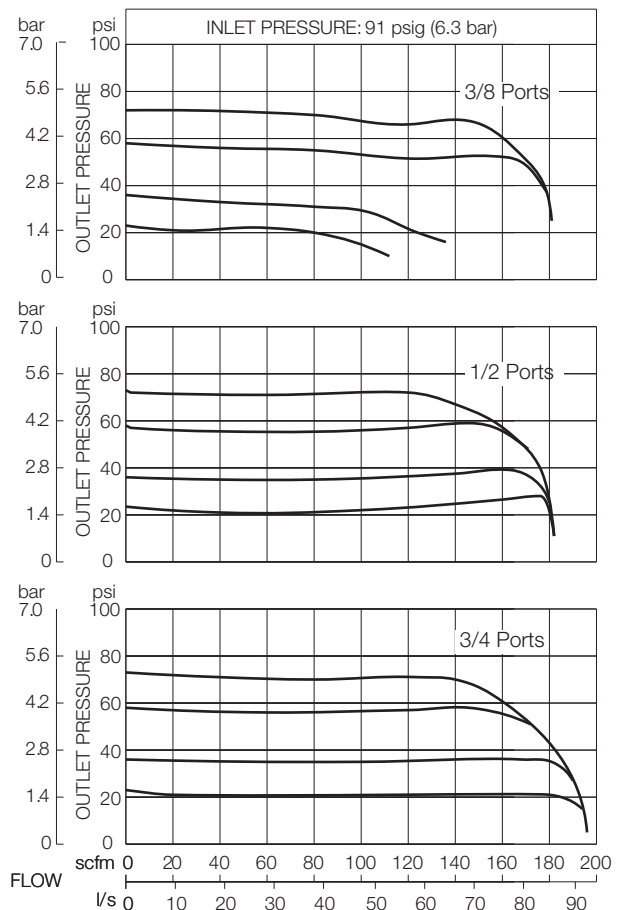
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Nylon.

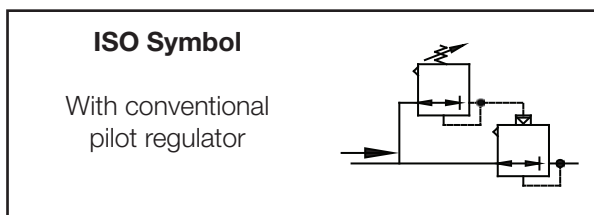
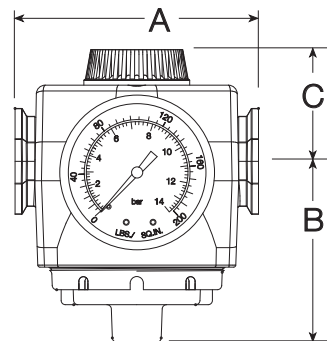
### FLOW CHARTS



**DIMENSIONS** inches (mm)

				Weight †
A	B	C	Depth †	lb (kg)
3.5 (87)	2.4 (62)	1.6 (40)	2.9 (73)	2.20 (1.00)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**PRH380 - 3 Y G W**

**PORT SIZE**

- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSP threads ..... W

**OPTIONS**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Cap Color: Grey is standard
- MP yellow ..... C1
- Red ..... C2
- Mid blue ..... C3

**MOUNTING BRACKETS**  
See page 346.

# Full-Size VANGUARD Modular Externally Piloted Regulators

# PR100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: PR100-6G

- ◆ Modular or inline mounting.
- ◆ Self-relieving diaphragm design.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable 0 – 200 psig (0 – 14 bar).

**Pilot Ports:** 1/4 NPTF

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

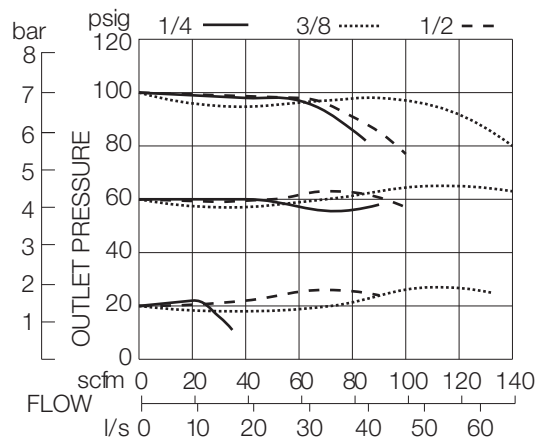
**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Nylon.

## FLOW CHARTS

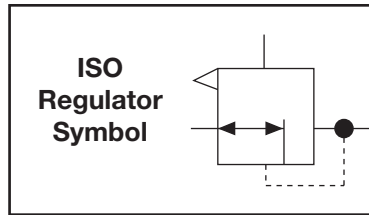
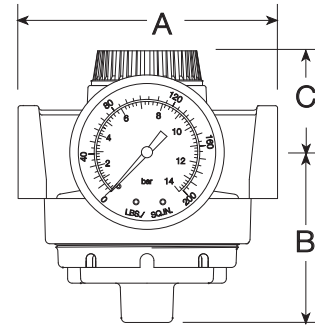
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
3.5 (89)	2.4 (62)	1.3 (33)	2.8 (71)	2.06 (0.92)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**PR100 - 2 Y G W**

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G

**OPTION**

- None ..... Leave Blank
- Non-relieving ..... A

**MOUNTING BRACKETS**  
See page 346.

# Full-Size VANGUARD Modular External Relief Piloted Regulator

# PRH100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: PRH100-6G

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** Adjustable 0 – 200 psig (0 – 14 bar).

**Pilot Ports:** 1/4 NPTF

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile; optional Viton seals.

**Valve:** Brass.

**Valve Cap:** Nylon.

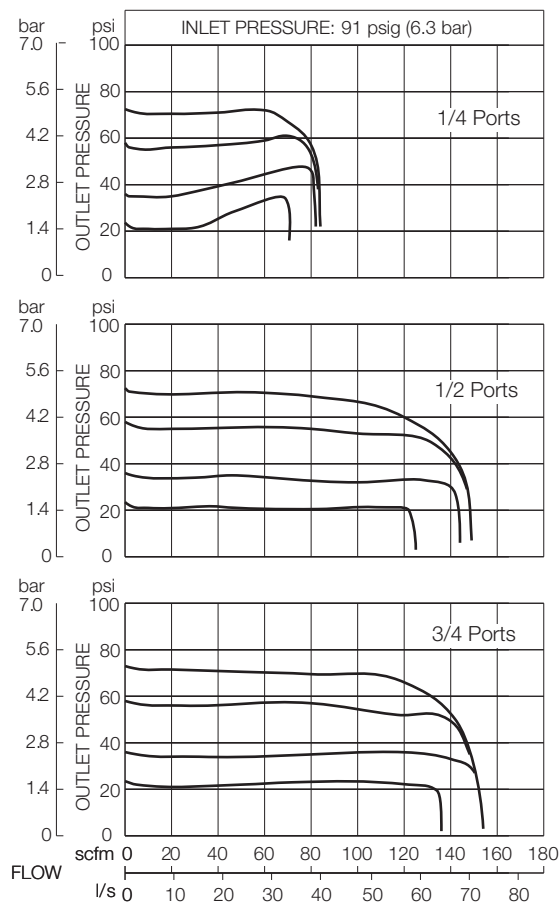
External relief piloted regulators separate control air from exhaust air.

- ◆ Modular or inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

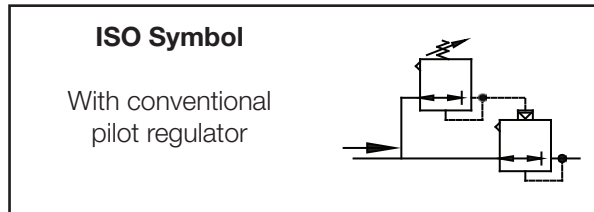
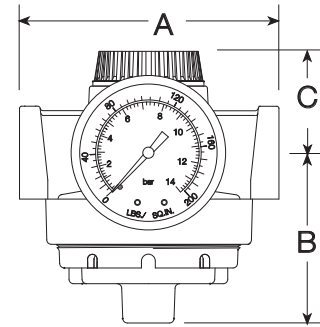
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
3.5 (89)	2.4 (62)	1.3 (33)	2.8 (71)	2.06 (0.92)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**PRH100 - 2 Y G W**

<b>PORT SIZE</b>		<b>PORT TYPE</b>	
1/4 NPTF.....	2	NPTF threads .....	Leave Blank
3/8 NPTF.....	3	BSP threads .....	W
1/2 NPTF.....	4	<b>OPTION</b>	
3/4 NPTF.....	6	None .....	Leave Blank
		0-200 PSI Gauge .....	G
		<b>OPTION</b>	
		None .....	Leave Blank
		Viton seals.....	V

**MOUNTING BRACKETS**  
See page 346.

# Full-Size VANGUARD High-Relief Externally Piloted Regulator



Model Shown: HPR100-3G1

## SPECIFICATIONS

### Ambient/Media Temperature:

0° to 158°F (-18° to 70°C).

**Body and Dome:** Aluminum.

**Seals:** Nitrile.

**Valve:** Brass.

**Valve Cap:** Glass filled Nylon.

**Fluid Media:** Compressed air.

### Inlet Pressure:

10 psig (0.7 bar) minimum.

400 psig (27.6 bar) maximum.

**Outlet Pressure:** 0 to 250 psig (0 to 17.3 bar).

**Pilot Ports:** 1/4 NPTF.

**Pressure Gauge:** 0 to 200 psig (0 to 14 bar);

Optional 0 to 600 psig (0 to 41.4 bar).

1/4-NPTF Inlet/Outlet ports, 1/4-NPTF gauge ports.

3/8-NPTF Inlet/Outlet ports, 3/8-NPTF gauge ports.

1/2-NPTF Inlet/Outlet ports, 1/2-NPTF gauge ports.

## HPR100 Models Port Sizes: 1/4, 3/8, & 1/2

Designed for systems that require high-relief and pressure regulation. Can be installed in an inaccessible location with a control regulator in an accessible location.

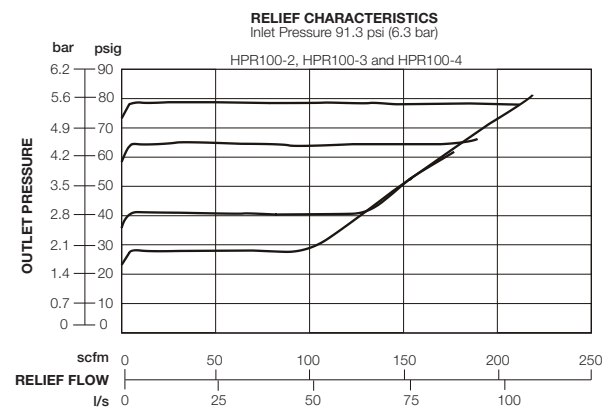
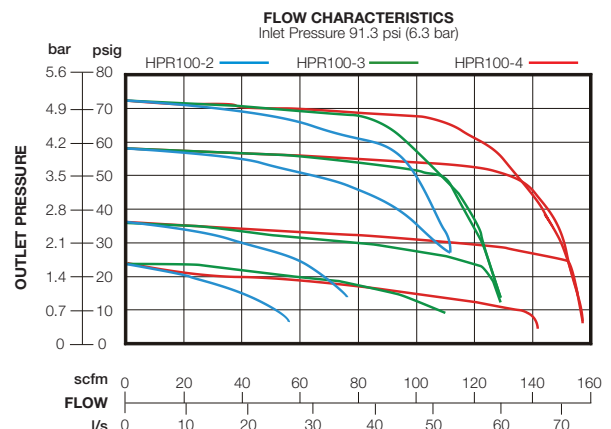
- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Optional pressure gauges.
- ◆ Flow rates exceed 150 scfm.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ High relief characteristics up-to 200 scfm.

**Note:** Pilot (control) regulators (ordered separately).

◆ General purpose applications order **R56M-2, R60-2, R67-2, R100-2, or R380-3**

◆ Precision applications order **IR100-2, R57M-2, IR380-3 or ER valve.**

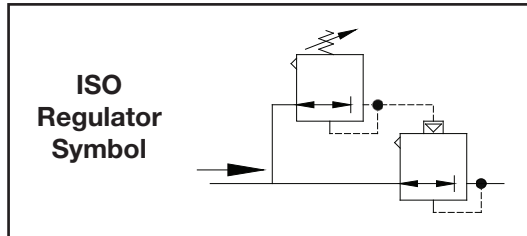
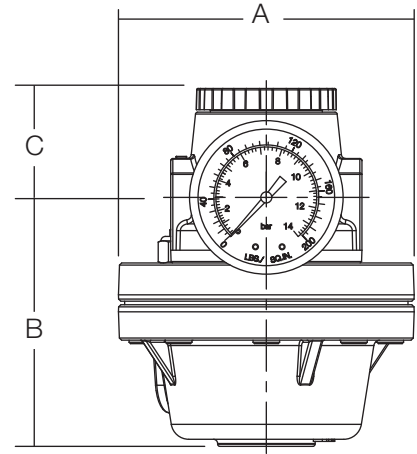
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
4.18 (106.0)	3.52 (89.3)	1.54 (39.1)	4.18 (106)	4.84 (2.2)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**HPR100 - 3 G W**

**PORT and GAUGE PORT SIZE**

- 1/4-NPTF Inlet/Outlet ..... 2
- 1/4-NPTF gauge ports.
- 3/8-NPTF Inlet/Outlet ..... 3
- 3/8-NPTF gauge ports.
- 1/2-NPTF Inlet/Outlet ..... 4
- 1/2-NPTF gauge ports.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge \* ..... G
- 0-600 PSI Gauge \* ..... G1

\* = Reducing bushings are used in any gauge ports other than 1/4". Port size 3/8 and 1/2 will require bushings. (see accessories page for gauge kits with bushings).



# High-Flow VANGUARD Externally Piloted Regulators

# PR180M Models Port Sizes: 3/4, 1, 1-1/4, 1-1/2



Model Shown: PR180M-6G

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.
- ◆ @ 80 psi with 15 psi back pressure the relief is 6.25 scfm - Needs control regulator that relieves more than this.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** 0 to 200 psig (0 to 14 bar).

**NOTE:** Outlet pressure depends on the selection of the pilot regulator.

**Pilot Ports:** 1/4 NPTF.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

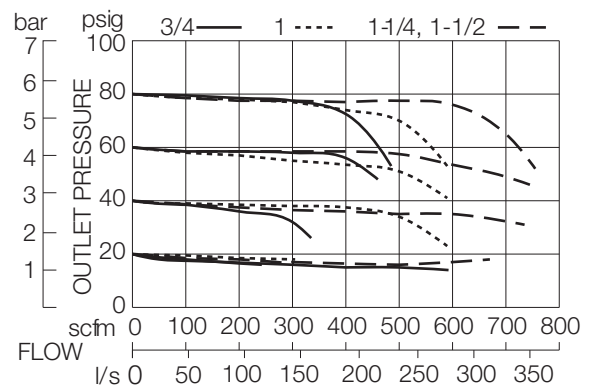
**Seals:** Nitrile.

**Valve:** Aluminum.

**Valve Cap:** Nylon.

## FLOW CHART

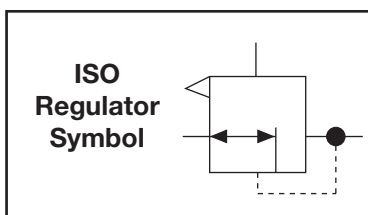
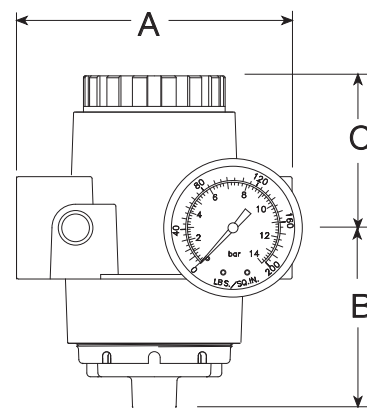
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

Ports	A	B	C	Depth †	Weight † lb (kg)
3/4 1	4.4 (111)	2.9 (74)	2.4 (62)	2.8 (71)	1.88 (0.85)
1-1/4 1-1/2	4.9 (124)	3.2 (81)	2.1 (54)	2.8 (71)	2.25 (1.02)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**PR180M - 6 Y G W**

<p><b>PORT SIZE</b></p> <p>3/4 NPTF ..... 6</p> <p>1 NPTF ..... 8</p> <p>1-1/4 NPTF ..... 10*</p> <p>1-1/2 NPTF ..... 12*</p>	<p><b>Y</b></p>	<p><b>G</b></p>	<p><b>W</b></p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave Blank</p> <p>BSP threads ..... W</p> <p><b>OPTION</b></p> <p>None ..... Leave Blank</p> <p>0-200 PSI Gauge ..... G</p> <p><b>OPTION</b></p> <p>None ..... Leave Blank</p> <p>Non-relieving ..... A</p>
---	-----------------	-----------------	-----------------	--

\* No mounting bracket available.

# High-Flow VANGUARD External Relief Piloted Regulator

## PRH180M Models Port Sizes: 3/4, 1, 1-1/4, 1-1/2



Model Shown: PRH180M-8G

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Dome:** Zinc.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** 0 to 200 psig (0 to 14 bar).

**Pilot Ports:** 1/4 NPTF.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile.

**Valve:** Aluminum.

**Valve Cap:** Nylon.

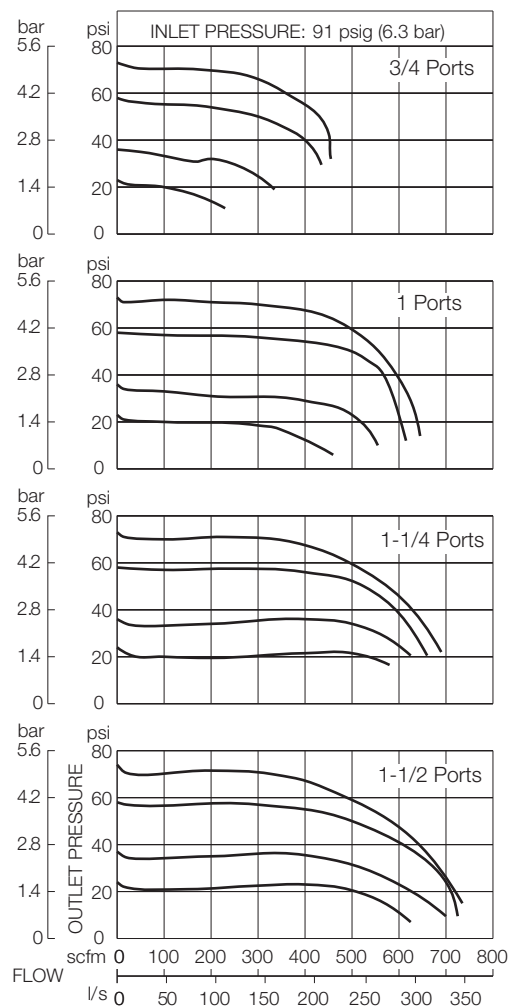
**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

High-Flow external relief piloted regulator separate control air from exhaust air.

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Self-relieving.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.
- ◆ @ 80 psi with 15 psi back pressure the relief is 10 scfm.

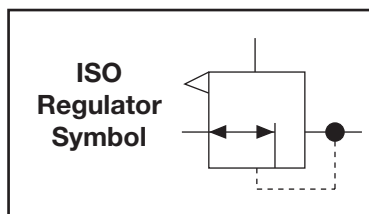
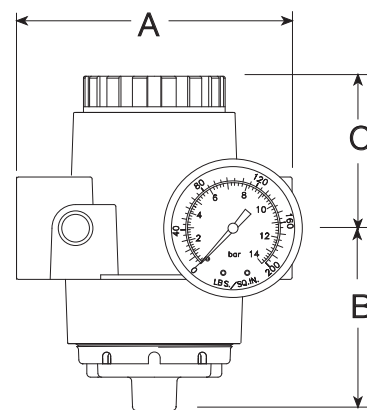
### FLOW CHARTS



**DIMENSIONS** inches (mm)

Ports	A	B	C	Depth †	Weight †
					lb (kg)
3/4	4.4	2.9	2.4	2.8	1.88
1	(111)	(74)	(62)	(71)	(0.85)
1-1/4	4.9	3.2	2.1	2.8	2.25
1-1/2	(124)	(81)	(54)	(71)	(1.02)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2, R56-2,** or **IR100-2** separately.

**PRH180M - 6 G W**

**PORT SIZE**

- 3/4 NPTF..... 6
- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10\*
- 1-1/2 NPTF ..... 12\*

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G

\* No mounting bracket available.

# High-Flow VANGUARD High-Relief Externally Piloted Regulator

# HPR180 Models Port Sizes: 3/4, 1 & 1-1/4



Model Shown: HPR180-8G1

## SPECIFICATIONS

### Ambient/Media Temperature:

0° to 158°F (-18° to 70°C).

### Body and Dome: Zinc.

### Seals: Nitrile.

### Valve: Brass.

### Valve Cap: Glass filled Nylon.

### Fluid Media: Compressed air.

### Inlet Pressure:

10 psig (0.7 bar) minimum.

400 psig (27.6 bar) maximum.

### Outlet Pressure: 0 to 250 psig (0 to 17.3 bar).

### Pilot Ports: 1/4 NPTF.

### Pressure Gauge: 0 to 200 psig (0 to 14 bar);

Optional 0 to 600 psig (0 to 41.4 bar).

3/4-NPTF Inlet/Outlet ports, 1/2-NPTF gauge ports.

1-NPTF Inlet/Outlet ports, 1/2-NPTF gauge ports.

1-1/4-NPTF Inlet/Outlet ports, 1/2-NPTF gauge ports.

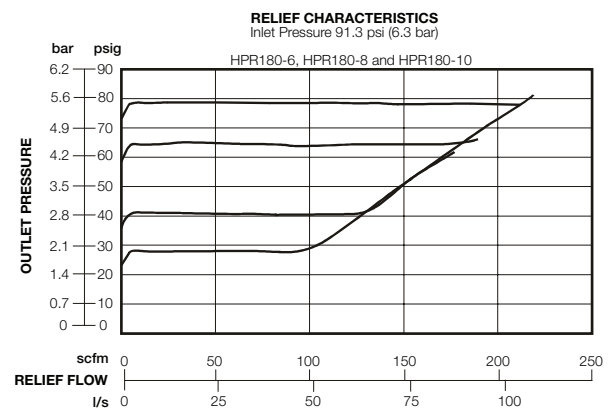
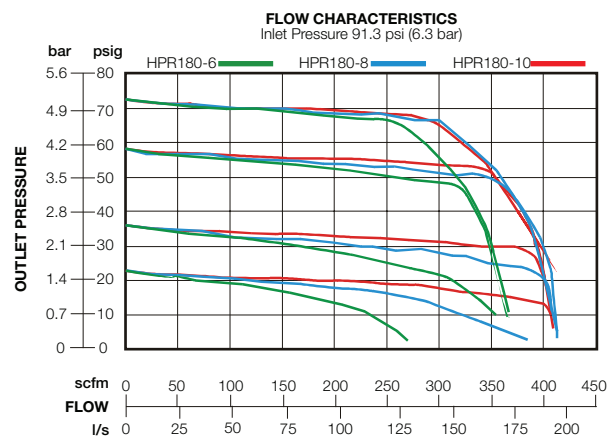
Designed for systems that require high flow, relief and pressure regulation. Can be installed in an inaccessible location with a control regulator in an accessible location.

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Optional pressure gauges.
- ◆ Flow rates exceed 400 scfm.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ High relief characteristics up-to 200 scfm.

**Note:** Pilot (control) regulators (ordered separately).

- ◆ General purpose applications order **R56M-2, R60-2, R67-2, R100-2, or R380-3**
- ◆ Precision applications order **IR100-2, R57M-2, IR380-3 or ER valve.**

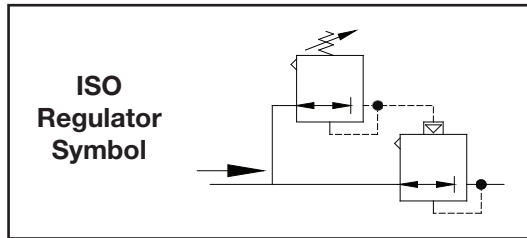
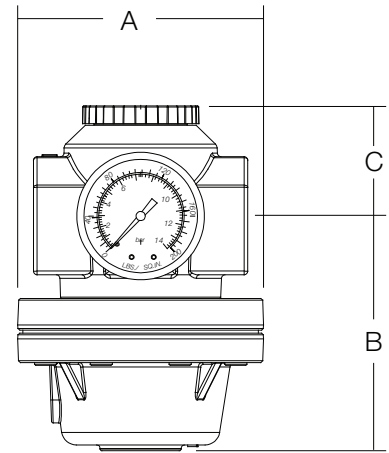
## FLOW CHARTS



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight †
				lb (kg)
4.18 (106.0)	3.99 (101.3)	1.87 (47.5)	4.18 (106)	6.44 (3.0)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a pilot operator such as **R55-2**, **R56-2**, or **IR100-2** separately.

**HPR180 - 10 G W**

**PORT and GAUGE PORT SIZE**

- 3/4 NPTF Inlet/Outlet ..... 6  
1/2-NPTF gauge ports.
- 1 NPTF Inlet/Outlet ..... 8  
1/2-NPTF gauge ports.
- 1-1/4 NPTF Inlet/Outlet ..... 10  
1/2-NPTF gauge ports.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge \* ..... G
- 0-600 PSI Gauge \* ..... G1

\* = Reducing bushings are used in any gauge ports other than 1/4".

# High-Flow VANGUARD Externally Piloted Regulators

# R200 Models Port Sizes: 1-1/2, 2



Model Shown: R200-12G

- ◆ Inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body and Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** 0 to 200 psig (0 to 14 bar).

**NOTE:** Outlet pressure depends on the selection of the control regulator.

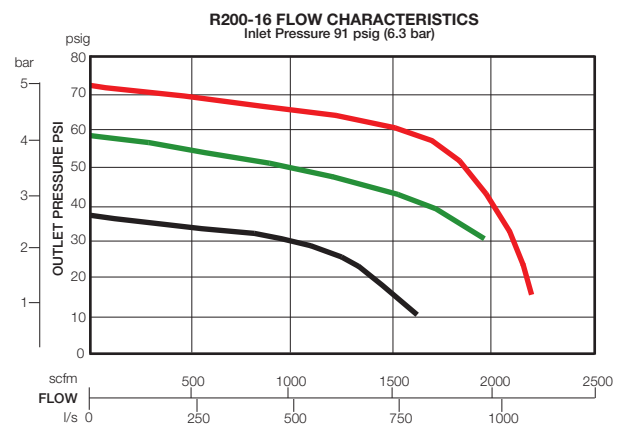
**Pilot Ports:** 1/4 NPTF.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile; optional Viton seals.

**Valve:** Brass.

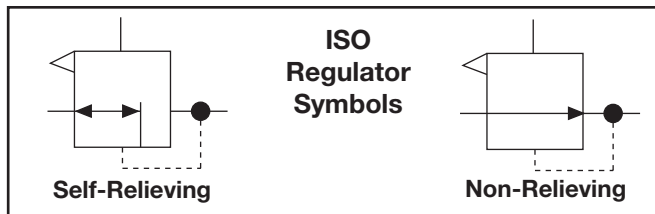
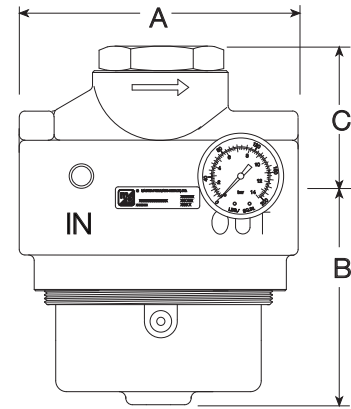
**Valve Cap:** Aluminum.



**DIMENSIONS** inches (mm)

				Weight †
A	B	C	Depth †	lb (kg)
6.4 (162)	5.0 (127)	3.0 (76)	5.8 (147)	8.94 (4.06)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a control regulator such as R55M, R56M, R57M, R100, R380, IR100, or IR130 separately.

**R20 0 - 12 Y G W**

**REGULATOR TYPE**

- Standard Regulator ..... 0
- Standard Regulator with ..... 2
- internal bias spring and gauge
- port plugged.

**PORT SIZE**

- 1-1/2 NPTF ..... 12
- 2 NPTF ..... 16

**OPTIONS** (*More than one option can be chosen*)

- None ..... Leave Blank
- Non-relieving ..... A
- Constant bleed ..... Q
- Option '0' must be chosen**
- under REGULATOR TYPE.**
- Viton seals ..... V

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G



# High-Flow VANGUARD Externally Piloted Regulators

## PR300 Models Port Sizes: 3



Model Shown: PR300-24G

- ◆ Inline mounting.
- ◆ Piston-type design.
- ◆ Self-relieving.
- ◆ Pressure gauge.
- ◆ Optional remote sensing.
- ◆ Aluminum body and dome.
- ◆ Flow rates exceeding 4,000 SCFM
- ◆ **NPTF** port threads; optional **BSPP** threads.

**Note:** Pilot (control) regulators (order separately).

- ◆ General purpose applications order R56M-2, R60-2, R67-2, R100-2, or R380-3
- ◆ Precision applications order IR100-2, R57M-2, IR380-3 or ER valve

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body and Dome:** Aluminum.

**Fluid Media:** Compressed air.

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Outlet Pressure:** 0 to 200 psig (0 to 14 bar).

**NOTE:** Outlet pressure depends on the selection of the control regulator.

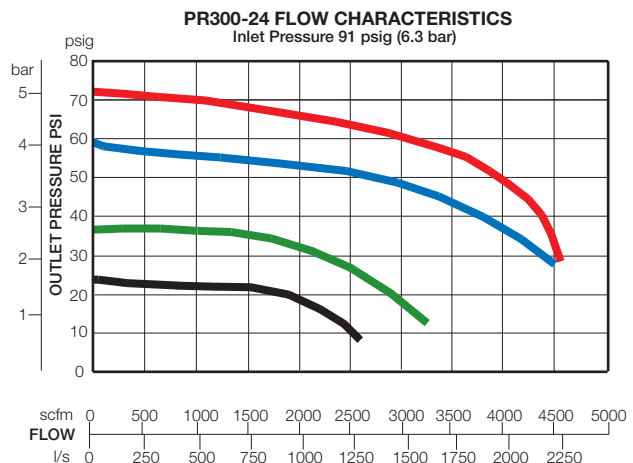
**Pilot Ports:** 1/4 NPTF.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile, Optional Viton

**Valve:** Aluminum.

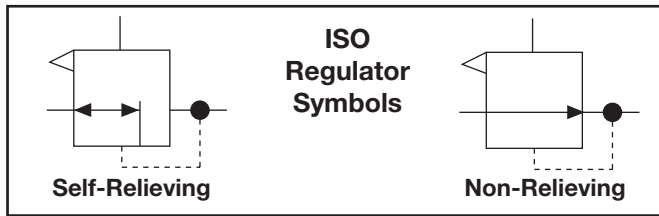
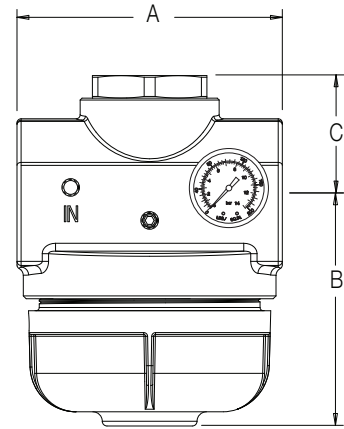
**Valve Cap:** Aluminum.



**DIMENSIONS** inches (mm)

A	B	C	Depth †	Weight † lb (kg)
8.40 (214)	7.36 (187)	3.74 (95)	8.00 (203)	21.7 (9.88)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**NOTE:** Order a control regulator such as R55M, R56M, R57M, R100, R380, IR100, or IR380 separately.

**PR30 0 - 24 A G W**

**REGULATOR TYPE**

- Standard Regulator ..... 0
- Remote Sensing Regulator ..... 1
- Standard Regulator with .....2  
internal Bias spring and gauge  
port plugged.
- Remote Sensing Regulator .....3  
with internal Bias spring and  
gauge port plugged.

**PORT SIZE**

- 3 NPTF ..... 24

**OPTIONS**

- Relieving ..... Leave Blank
- Non-relieving ..... A
- Constant bleed ..... Q
- Option '0' must be chosen  
under REGULATOR TYPE.**
- Viton Seals ..... V

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**GAUGE OPTION**

- None ..... Leave Blank
- 0-200 PSI Gauge ..... G

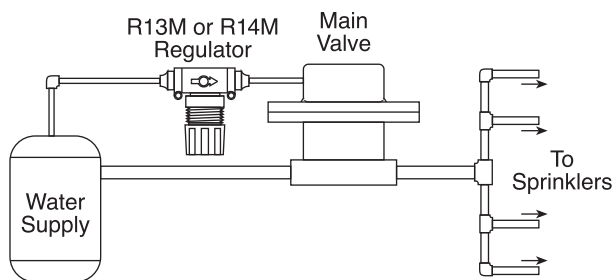
# SENTRY Acetal-Body Water Pressure Regulators

Also see brass-body water pressure regulators on pages 156-157.



Model Shown: R13M-M10

## TYPICAL APPLICATION IN AN IRRIGATION SYSTEM



## SPECIFICATIONS

### Ambient/Media Temperature:

35° to 125°F (1.7° to 52°C).

**Body:** Acetal.

**Dome and Knob:** Acetal.

**Fluid Media:** Water.

**Inlet Pressure:** 150 psig (10 bar) maximum.

**Main Spring:** Stainless Steel.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar); locking adjustment cap.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Pressure Gauge:** Optional (0-160 psig).

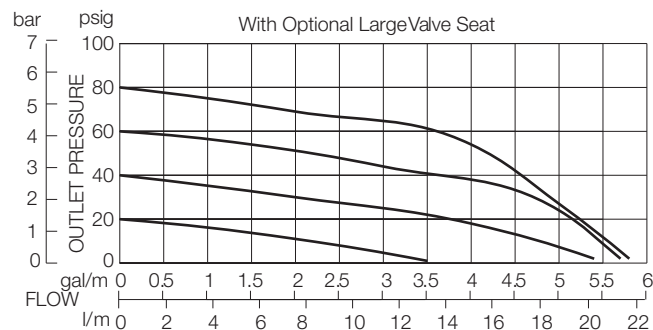
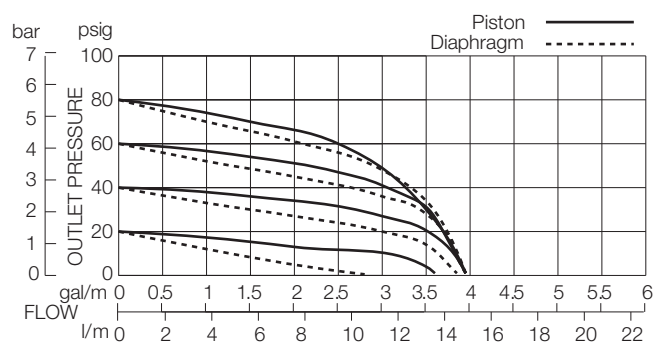
**Seals:** Nitrile.

# R13M, R14M Models Port Sizes: 1/8, 1/4; Tube Fittings

- ◆ Designed to set pilot pressure of the water for the main valve in a sprinkler system. See diagram below.
- ◆ Piston-type design (R13M models) or diaphragm-type (R14M models).
- ◆ Non-relieving.
- ◆ Corrosion-resistant construction.
- ◆ Optional large valve seat for water flows up to six gallons per minute.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ **NPTF** port threads; optional **BSPB** threads.

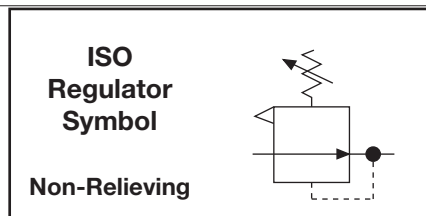
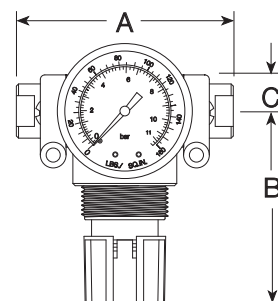
## WATER FLOW CHARTS

Inlet Pressure: 100 psig (7 bar)



## DIMENSIONS inches (mm)

Ports	A	B	C	Depth	Weight lb (kg)
1/8, 1/4	3.0 (76)	2.6 (67)	0.5 (13)	1.8 (45)	0.43 (0.19)
Models below have quick-connect fittings for tubing.					
1/4	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.21 (0.09)
3/8	3.9 (99)	2.6 (67)	0.5 (13)	1.8 (45)	0.21 (0.09)
4 mm	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
6 mm	3.4 (86)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
8 mm	3.1 (79)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)
10 mm	3.9 (99)	2.6 (67)	0.5 (13)	1.8 (45)	0.41 (0.18)



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the regulator you want.

# R13M P - 2 X A L Y W

### REGULATOR TYPE

Piston type .....R13M  
Diaphragm type.....R14M

### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

### INLET PORT SIZE

No Inlet and Outlet Ports .... Leave Blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

### OUTLET PORT SIZE

Same as inlet port ..... Leave Blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

### MOUNTING BRACKETS

See page 346.

### PORT TYPE

As specified in **INLET PORT** ... Leave Blank  
BSP threads on both ports..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
0-160 psig Gauge ..... G  
Plastic nut ..... P  
Hex plastic nut..... PE  
Metal Panel Mount Nut ..... PN

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None. .... Leave Blank  
Large Delrin valve seat..... C1  
Springs: (0-100 psig standard)  
For optimum performance operating pressure should fall approximately in the middle of the spring range.  
0-125 psig (0-8.6 bar) ..... H  
0-50 psig (0-3.4 bar) ..... L  
0-30 psig (0-2.1 bar) ..... L30  
Rear gauge port only ..... R

# MINIATURE Brass-Body Water Pressure Regulators

Also see acetal-body water pressure regulators on pages 154-155.



Model Shown: R53MB-2G

# R53MB, R54MB Models Port Sizes: 1/8, 1/4

- ◆ Inline mounting.
- ◆ Piston-type design (R53MB models) or diaphragm-type (R54MB models).
- ◆ Optional large valve seat for water flows up to 6 gallons per minute.
- ◆ Non-relieving.
- ◆ Brass body for corrosion resistance.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Body:** Brass.

**Dome and Knob:** Glass Filled Nylon and Acetal.

**Fluid Media:** Water

**Inlet Pressure:** 300 psig (21 bar) maximum.

**Main Spring:** Stainless Steel.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

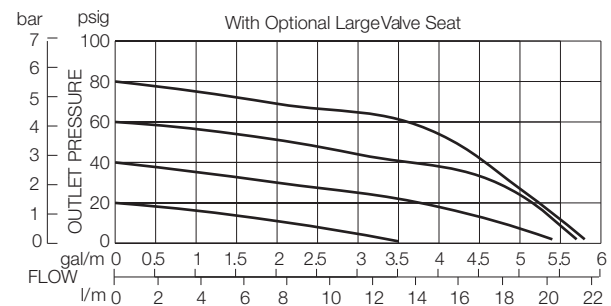
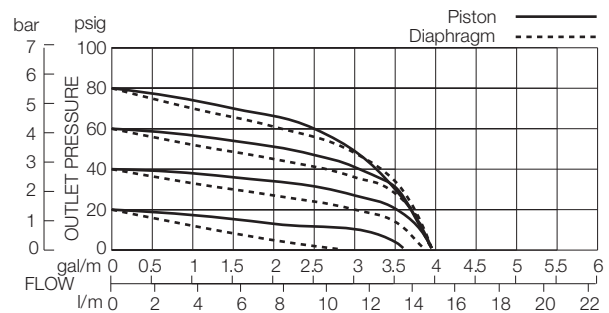
**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

## WATER FLOW CHARTS

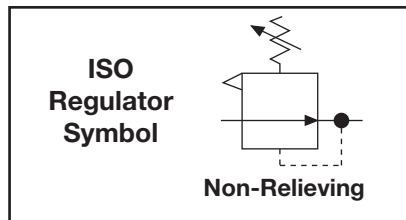
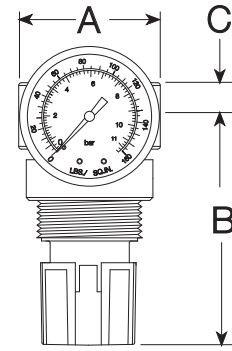
Inlet Pressure: 100 psig (7 bar)



**DIMENSIONS** inches (mm)

				Weight †
A	B	C	Depth †	lb (kg)
1.6 (41)	2.7 (68)	0.4 (10)	1.6 (41)	0.24 (0.11)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the regulator you want.

**R53MB - 2 A Y G W**

**REGULATOR TYPE**

- Piston type ..... R53MB
- Diaphragm type ..... R54MB

**PORT SIZE**

- 1/8 NPTF ..... 1
- 1/4 NPTF ..... 2

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPB threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- 0-160 psig Gauge ..... G
- Plastic nut ..... P
- Hex plastic nut ..... PE
- Metal mounting nut ..... PN

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Large Delrin valve seat ..... C1
- Springs: (0-100 psig standard)
  - For optimum performance operating pressure should fall approximately in the middle of the spring range.
  - 0-125 psig (0-8.6 bar) ..... H
  - 0-50 psig (0-3.4 bar) ..... L
  - 0-30 psig (0-2.1 bar) ..... L30
  - Rear gauge port only ..... R

**MOUNTING BRACKETS**

See page 346.

# MINIATURE Relief Valves

# RV56 Models Port Sizes: 1/8, 1/4



Model Shown: RV56-2G

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Aluminum.

**Dome and Knob:** Glass Filled Nylon and Acetal.

**Fluid Media:** Compressed air.

**Relieving Range:** 1 to 100 psig (0.07 to 6.9 bar).

**Maximum Relief Flow Range:**

10 to 30 scfm (4.7 to 14 l/s) with a pressure differential of 10 to 15 psi (0.7 to 1 bar).

**Minimum Relief Flow:** 5 ml/minute.

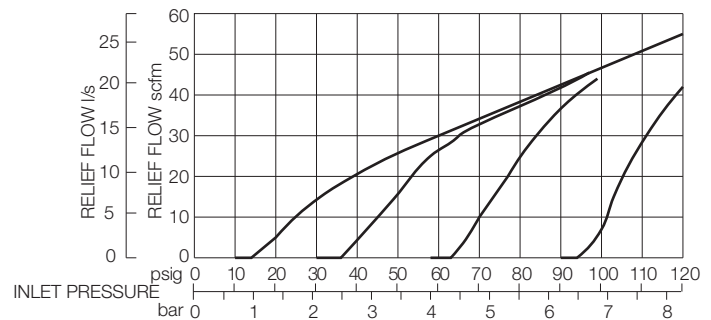
**Pressure Gauge:** 0 to 160 psig (11 bar); 1-1/2 inch dial face; 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

**Maximum Inlet Pressure:** 300 P.S.I.

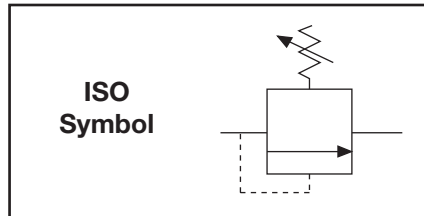
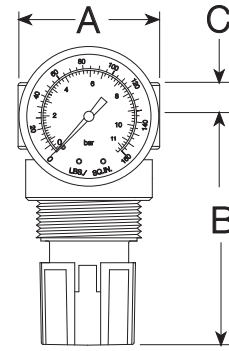
## FLOW CHART



**DIMENSIONS inches (mm)**

<b>A</b>	<b>B</b>	<b>C</b>	<b>Depth †</b>	<b>Weight †</b> lb (kg)
1.6 (41)	2.7 (68)	0.4 (10)	1.6 (41)	0.38 (0.16)

† Less gauge.



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the relief valve you want.

**RV56 - 2 Y G W**

**PORT SIZE**

- 1/8 NPTF..... 1
- 1/4 NPTF..... 2

**OPTIONS**

- None. .... Leave Blank
- Springs: (0-100 psig standard)
  - For optimum performance operating pressure should fall approximately in the middle of the spring range.
  - 0-125 psig (0-8.6 bar) ..... H
  - 0-50 psig (0-3.4 bar) ..... L
  - 0-15 psig (0-1.0 bar) ..... L15
  - 0-30 psig (0-2.1 bar) ..... L30

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- Delete gauge ..... Leave Blank
- 0-160 PSI Gauge ..... G
- Plastic mounting nut ..... P
- Metal mounting nut..... PN
- Hex plastic mounting nut ..... PE

**MOUNTING BRACKETS**

See page 346.



# CO<sub>2</sub> MINIATURE Relief Valve

# CX (CO<sub>2</sub>) Models Port Sizes: 1/8, 1/4



Model Shown: CX-2B0B2A0-2CG

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Outstanding control at relatively low cost
- ◆ Pressure gauge optional.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media temperature:

-40° to 125°F (-40° to 52°C).

**Body and dome:** Aluminum. Optional anodized coating

**Fluid media:** CO<sub>2</sub>, inert gases

**Relieving range:** 1-100 psig (0.07 to 6.9 bar).  
standard; other ranges are available.

**Maximum relief flow range:** 10 to 30 scfm (4.7 to 14 l/s) with a pressure differential of 10 to 15 psi (0.7 to 1 bar).

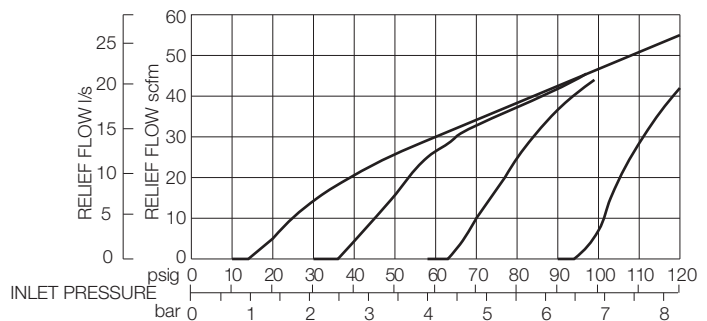
**Pressure gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear. Optional gauges sold separately.

**Panel mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Neoprene seals, o-rings and diaphragm.

**Maximum inlet pressure:** 250 psi

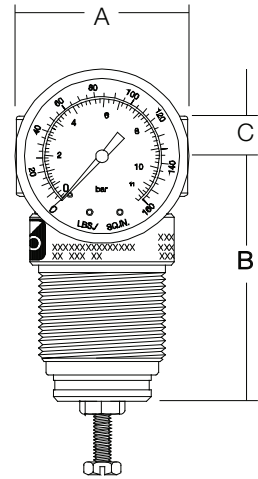
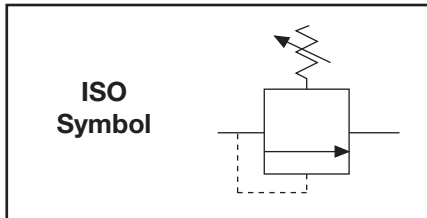
## FLOW CHART



## DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	2.28 (58)	0.4 (10)	1.6 (41)	0.30 (0.14)

† Less gauge.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the CO<sub>2</sub> relief valve you want.

**CX- 2 A 0 B 2 A 0- 2 C G W**

### ANODIZED TYPE

None ..... A  
Clear Anodized head and ..... B  
dome.

### DOMES TYPE

Threaded metal dome ..... 0  
Stainless steel adjustment screw and  
stainless steel nut.  
Threaded plastic dome ..... 1  
standard adjustment knob.  
Non threaded metal dome ..... 3  
Stainless steel adjustment screw and  
stainless steel nut. (cannot be used with  
panel mount nut)

### O-RING AND SEAL MATERIAL

Neoprene seals, o-rings, ..... 2  
and diaphragm.  
Nitrile seals, o-rings and ..... 1  
diaphragm.

### GAUGE OPTION

No Gauge ..... Leave blank  
Gauge 0-160 psig ..... G

### PORT TYPE

NPTF threads ..... Leave blank  
BSPF threads ..... W

### SPRING RANGES

0-250 psig (0-17.3 bar) ..... J  
0-125 psig (0-8.6 bar) ..... C  
0-50 psig (0-3.4 bar) ..... D  
0-15 psig (0-1 bar) ..... F  
0-30 psig (0-2.1 bar) ..... H

### PORT SIZE

1/8-NPTF ..... 1  
1/4-NPTF ..... 2

### PANEL MOUNT NUTS

None ..... A  
Plastic nut ..... B  
Plastic hex nut ..... C  
Metal nut \* ..... D

\* If anodize is chosen, then panel  
mount nut will be the same color.

# Electro-Pneumatic Servo Valves

# ER Series



Servo Valve

Model Shown: ER-1A2C200



**37-288**  
Brass Inlet Filter  
(Included when purchasing a servo-valve.)



Servo Valve with Booster

Model Shown: B2JA-ER-1A2C200

## SPECIFICATIONS

**Accuracy (servo valve with booster):**  $< \pm 2.5\%$  F.S.

**Analog Monitor Signal:**

**Voltage:** 0 – 10 VDC @ 20 ma maximum.

**Current:** 4 – 20 ma sinking (sourcing optional).

**Ambient/Media Temperature:**

32° to 158°F (0° to 70°C).

**Command Signal Impedance:**

**Voltage:** 4.7 k $\Omega$  . Current: 100  $\Omega$  .

**Command Signal Voltage/Current:**

0 – 10 VDC/4 – 20 ma.

**Electrical Connector:** 6-pin Brad Harrison.

**Fluid Media:** Compressed air.

**Housing:** Aluminum; powder coated.

**Input Pressure: Servo-valve With Regulator**

29.9 in Hg to 300 psig (760 mm Hg to 21 bar).

**Linearity/Hysteresis (servo valve with booster):**

$< \pm 2.0\%$  F.S. BFSL.

**Manifold:** Brass.

**Output Pressure:** 0 to 200 P.S.I..

**Repeatability (servo valve with booster):**

$< \pm 0.6\%$  F.S.

**Seals:** Fluorocarbon.

**Supply Voltage/Current:**

15 – 24 VDC/250 ma (required).

**Transducer:** Silicon, aluminum.

**Valves:** Nickel-plated brass.

**Note:** High-pressure servo-valve ( $\geq 175$  psi) - inlet and exhaust ports reversed from picture shown.

**"ER-" without booster accuracy:**  $< \pm 0.2\%$  F.S.

Linearity / Hysteresis:  $< \pm 0.15\%$  F.S. BFSL

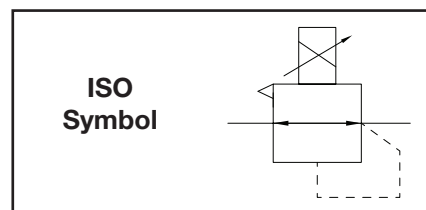
**Repeatability:**  $< \pm 0.02\%$  F.S.

The Series ER servo valve is Master Pneumatic's latest product using closed loop control technology. It incorporates many important standard features.

Standard flow rate of the valve is typically one scfm maximum. When used with a volume booster a flow rate in excess of 1,000 scfm can be achieved.

Check the items below to see how cost-effective these valves can be in your plant.

- ◆ Fits into very small space.
- ◆ Accurate to  $\pm 2.5\%$  F.S. (with booster)
- ◆ 0 – 10 VDC analog monitor output.
- ◆ NEMA 4 1P65 rating.
- ◆ Accepts analog command signal inputs.
- ◆ Servo-valve with regulator: control pressure ranges from vacuum to 300 psig.
- ◆ Valve is insensitive to shock, vibration, or mounting position.
- ◆ Easily repairable in the field.



## ORDERING INFORMATION for SERVO-VALVE ONLY

Change the letters in the sample model number below to specify the electro-pneumatic servo valve you want.

### ER-1 A 1 A 100

**LOOP**

- Single loop ..... 1
- Double loop ..... 2

**PIN CONNECTOR**

- 6 Pin Brad Harrison Connector ..... A

**COMMAND INPUT / TRANSDUCER FEEDBACK.**

- 0-10 VDC / no feedback ..... 1  
(Use '1' option under 'LOOP' section).
- 4-20 MA / no feedback ..... 2  
(Use '1' option under 'LOOP' section).
- 0-10 VDC / 4-20 MA ..... 3  
(Use '2' option under 'LOOP' section  
Pressure transducer must be ordered  
separately. See below).
- 4-20 MA / 4-20 MA ..... 4  
(Use '2' option under 'LOOP' section  
Pressure transducer must be ordered  
separately. See below).
- 0-10 VDC / 0-10 VDC ..... 5  
(Use '2' option under 'LOOP' section  
Pressure transducer must be ordered  
separately. See below).
- 4-20 MA / 0-10 VDC ..... 6  
(Use '2' option under 'LOOP' section  
Pressure transducer must be ordered  
separately. See below).

**MAX INLET / MAX CALIBRATED RANGE VAC-500 PSIG**

- Max Inlet: 35 PSI, 0-30 PSI ..... 030
- Max Inlet: 110 PSI, 0-50 PSI ..... 050
- Max Inlet: 110 PSI, 0-100 PSI ..... 100
- Max Inlet: 190 PSI, 0-100 PSI ..... A01
- Max Inlet: 330 PSI, 0-200 PSI ..... 200
- Max Inlet: 330 PSI, 0-300 PSI ..... 300
- 0-20 in.Hg (Vac) ..... V20  
(this option not available with volume  
booster)

Consult factory for pressure ranges not starting at "0" or any unspecified adjusting ranges not shown above.

**MONITOR SIGNAL**

- 0-10 VDC ..... A
- 4-20 MA - Sinking ..... B
- 4-20 MA - Sourcing ..... C

**NOTE:** Cable must be ordered separately.  
Transducer feed back on option 'LOOP' must be ordered separately. See choices below.

## Electro-Pneumatic Servo Valves Accessories

## ER- Series



**ER-SPS100**  
Switching power supply.



**CABLES**  
(6 pin Brad harrison connector).  
**ER-CBL-6** (6ft)  
**ER-CBL-12** (12ft)  
**ER-CBL-24** (24ft)

**PRESSURE TRANSDUCERS**

- ER-DSI100-H24** (0-100 PSI, 4-20MA with 6FT cable)
- ER-DSI200-H24** (0-200 PSI, 4-20MA with 6FT cable)
- ER-DSI100-H251** (0-100 PSI, 4-20MA with 20FT cable)
- ER-DSI200-H251** (0-200 PSI, 4-20MA with 20FT cable)

- ER-DSY100-H24** (0-100 PSI, 0-10VDC with 6FT cable)
- ER-DSY200-H24** (0-200 PSI, 0-10VDC with 6FT cable)
- ER-DSY100-H251** (0-100 PSI, 0-10VDC with 20FT cable)
- ER-DSY200-H251** (0-200 PSI, 0-10VDC with 20FT cable)

**MOUNTING BRACKETS**

- ER-BRK-1** (Used with Electro-Pneumatic Servo Valve only)

Brackets that are used with the servo valve and volume booster see mounting bracket section page.

## ORDERING INFORMATION for SERVO-VALVE with VOLUME BOOSTER

Change the letters in the sample model number below to specify the servo valve you want.

### REGULATOR

PRH100 .....	1
PRH180M .....	2
HPR100 (High-relief) .....	3
HPR180 (High-relief) .....	4

### INLET / OUTLET PORTS

Use '1' or '3' option under 'REGULATOR' section only)

1/4-NPTF .....	2	1/4-BSPP .....	B
3/8-NPTF .....	3	3/8-BSPP .....	C
1/2-NPTF .....	4	1/2-BSPP .....	D

Use '1', '2', or '4' option under 'REGULATOR' section only)

3/4-NPTF .....	6	3/4-BSPP .....	E
----------------	---	----------------	---

Use '2' or '4' option under 'REGULATOR' section only)

1-NPTF .....	8	1-BSPP .....	F
1-1/4-NPTF .....	J	1-1/4-BSPP .....	G

Use '2' option under 'REGULATOR' section only)

1-1/2-NPTF .....	K	1-1/2-BSPP .....	H
------------------	---	------------------	---



Model Shown: B2JA-ER-1A2C200

**B 1 2 A -ER- 1 A 1 A 100**

### LOOP

Single loop .....	1
Double loop .....	2

### PIN CONNECTOR

6 Pin Brad Harrison Connector .....	A
-------------------------------------	---

### COMMAND INPUT / TRANSDUCER FEEDBACK.

0-10 VDC / no feedback .....	1	(Use '1' option under 'LOOP' section).
4-20 MA / no feedback .....	2	(Use '1' option under 'LOOP' section).
0-10 VDC / 4-20 MA .....	3	(Use '2' option under 'LOOP' section Pressure transducer must be ordered separately. See below).
4-20 MA / 4-20 MA .....	4	(Use '2' option under 'LOOP' section Pressure transducer must be ordered separately. See below).
0-10 VDC / 0-10 VDC .....	5	(Use '2' option under 'LOOP' section Pressure transducer must be ordered separately. See below).
4-20 MA / 0-10 VDC .....	6	(Use '2' option under 'LOOP' section Pressure transducer must be ordered separately. See below).

### GAUGES

no gauge .....	A
200-BDD (0-200 PSI) .....	B
600-BDD (0-600 PSI) .....	C
30BDD (0-30 PSI) .....	D
60BDD (0-60 PSI) .....	E

### MAX INLET / MAX CALIBRATED RANGE

Max Inlet: 35 PSI, 0-30 PSI .....	030
Max Inlet: 110 PSI, 0-50 PSI .....	050
Max Inlet: 110 PSI, 0-100 PSI .....	100

Consult factory for any other pressure ranges.

### MONITOR SIGNAL

0-10 VDC .....	A
4-20 MA - Sinking .....	B
4-20 MA - Sourcing .....	C

**NOTE:** Cable must be ordered separately.  
Transducer feed back on option 'LOOP' must be ordered separately. See choices below.

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intentionally left blank**

# INTEGRAL FILTER/REGULATORS

The integration of a general purpose filter and a pressure regulator into a single module provides the compactness needed where space is limited. These integral filter/regulators are offered by Master Pneumatic in port sizes from 1/8 up to 3/4 along with models equipped with quick-connect fittings for tubing from 1/4 up to 10 mm.

The regulator is the top portion of the assembly, and the filter is the bottom portion. All sizes have essentially the same operating characteristics as their corresponding individual filters and regulators.

All filter/regulators include an internal automatic filter drain and a pressure gauge as standard equipment. Regulators are self relieving, and have gauge ports front and rear. Non-relieving models are also available.

Available options are the same as those for the corresponding individual filters and regulators. They include regulating springs for various pressure ranges, metal filter bowls, and sintered bronze filter elements in several µm ratings.

## MODULAR or INLINE MOUNTING

**SENTRY, GUARDSMAN, SERIES 350, SERIES 380,** and **Full-Size VANGUARD** integral filter/regulators

are of modular design. Units can be connected to lubricators by special modular connectors which seal the faces between units. They may also be inline mounted with pipe nipples. **MINIATURE** filter/regulators are designed for inline mounting only.

All units are available with either **NPTF** or **BSPP** port threads.

## SENTRY FILTER/REGULATORS

Port sizes 1/8 and 1/4 or fittings for tubing up to 10 mm. Modular units have durable plastic, corrosion-resistant bodies. Units are available with either piston or diaphragm type regulators. A non-relieving version can be used with water, oil, and many other liquids.



### GUIDE to INTEGRAL FILTER/REGULATORS

Filter/Regulator Series	Modular Construction	Port Sizes					Pages
		1/8	1/4	3/8	1/2	3/4	
<b>SENTRY</b>							
CFDR10M, 11M models †	yes	X	X				200-201
<b>MINIATURE</b>							
CFDR55M, 56M models	no	X	X				202-203
CX (CO <sub>2</sub> ) models	no	X	X				216-217
<b>GUARDSMAN</b>							
CFDR60 models	yes		X	X	X		204-205
<b>GUARDSMAN II</b>							
BCFDR70 models	yes		X	X	X		206-207
<b>SERIES 350</b>							
CF5AR350 models	yes		X	X	X		210-211
<b>Full-Size VANGUARD</b>							
CFDR100 models	yes		X	X	X	X	212-213
<b>Full-Size SERIES 380</b>							
CFDR380 models	yes			X	X	X	214-215

† Also available with quick-connect fittings for tubing up to 10 mm.



### MINIATURE FILTER/REGULATORS

Port sizes 1/8 and 1/4. Built to the same performance standards as the **SENTRY** units, but are non-modular and at lower cost.

### GUARDSMAN FILTER/REGULATORS

Port sizes 1/4, 3/8, and 1/2. Standard polycarbonate plastic filter bowl has a zinc die-cast shatterguard. A zinc bowl is optionally available. Regulator is a self-relieving piston type; non-relieving also available.



### GUARDSMAN II FILTER/REGULATORS

Port sizes 1/4, 3/8, and 1/2. Standard aluminum filter bowl with clear nylon sight glass. Extra-capacity bowl optionally available. Regulator is a self-relieving piston type; non-relieving also available.

### Full Size VANGUARD FILTER/REGULATORS

Port sizes 1/4 through 3/4. Polycarbonate plastic filter bowl with steel shatterguard standard. Optional zinc bowl with clear nylon sight glass. Regulator is a self-relieving diaphragm type; non-relieving also available. Includes pressure adjustment locking key to prevent tampering.



### SERIES 380 FILTER/REGULATORS

Port sizes 3/8, 1/2, 3/4. Polycarbonate plastic filter bowl with steel shatterguard standard. Optional aluminum bowl with clear nylon sight glass. Regulator is a self-relieving diaphragm type; non-relieving also available. Includes pressure adjustment locking key to prevent tampering.





# SENTRY Modular Integral Filter/Regulators

# CFDR10M, CFDR11M Models Port Sizes: 1/8, 1/4; Tube Fittings



Model Shown: CFDR10M-2

- ◆ Filter and regulator consolidated in a single assembly.
- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl; optional metal bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ Piston-type regulator (CFDR10M models) or diaphragm-type (CFDR11M models).
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Body:** Acetal.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

**Dome and Knob:** Acetal.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum.

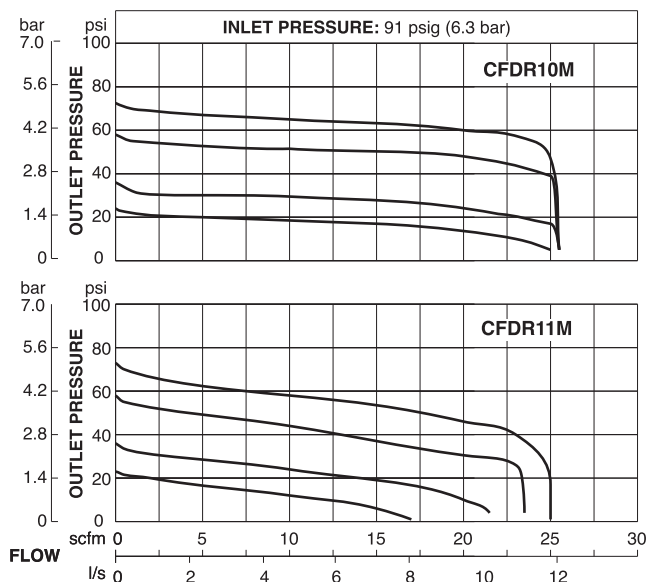
**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

## FLOW CHARTS

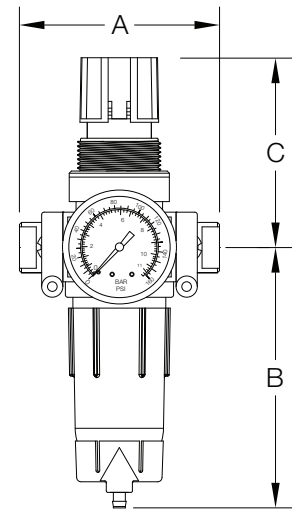


## DIMENSIONS inches (mm)

Ports	A	B *	C	Depth †	Weight † lb (kg)
No Port	1.7 (43)	3.9 (99)	2.6 (67)	1.8 (45)	0.31 (0.15)
1/8, 1/4	3.0 (76)	3.9 (99)	2.6 (67)	1.8 (45)	0.53 (0.24)
Models below have quick-connect fittings for tubing.					
1/4	3.4 (86)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)
3/8	3.9 (99)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)
4 mm	3.4 (86)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)
6 mm	3.4 (86)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)
8 mm	3.1 (79)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)
10 mm	3.9 (99)	3.9 (99)	2.6 (67)	1.8 (45)	0.51 (0.23)

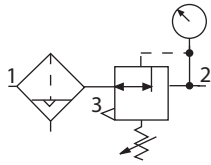
\* Dimension with plastic filter bowl; with metal bowl is 4.3 (109).

† Less gauge.



### ISO Filter/Regulator Symbol

**Automatic Drain  
Self-relieving**



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA130-27PE5
5- $\mu$ m bronze .....	KA130-27E5
20- $\mu$ m bronze .....	KA130-27E4
40- $\mu$ m bronze .....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

# B C FD R10M P - 2 X Y P W

### BOWL TYPE

Plastic bowl ..... Leave Blank  
Metal bowl ..... B

### FILTER DRAIN

Internal automatic drain ..... FD  
Manual drain ..... F

### REGULATOR TYPE

Piston type ..... R10M  
Diaphragm type ..... R11M

### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

### INLET PORT SIZE

No Inlet and Outlet Ports ..... Leave blank

#### Threaded:

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

#### Fittings for Tubing:

1/4 ..... 04  
3/8 ..... 06  
4 mm ..... M4  
6 mm ..... M6  
8 mm ..... M8  
10 mm ..... M10

### OUTLET PORT SIZE

Same as inlet port ..... Leave Blank

#### Threaded:

1/8 NPTF ..... -1  
1/4 NPTF ..... -2

#### Fittings for Tubing:

1/4 ..... -04  
3/8 ..... -06  
4 mm ..... -M4  
6 mm ..... -M6  
8 mm ..... -M8  
10 mm ..... -M10

### PORT TYPE

As specified in **INLET PORT**... Leave Blank  
BSPP threads on both ports ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-160 psig Gauge ..... Leave Blank  
No psig Gauge ..... NG  
Plastic nut ..... P  
Metal nut ..... PN  
Hex plastic mounting nut ..... PE

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving ..... A  
Sintered bronze filter element:  
5- $\mu$ m rating ..... E5  
20- $\mu$ m rating ..... E4  
40- $\mu$ m rating ..... E3  
Adjusting springs:  
0-125 psig (0-8.6 bar) ..... H  
0-50 psig (0-3.4 bar) ..... L  
0-8 psig (0-0.6 bar) ..... L8  
0-15 psig (0-1.0 bar) ..... L15  
0-30 psig (0-2.1 bar) ..... L30  
No Drain (*lubricator bowl*) ..... LDC  
(Use *Manual Drain Option under BOWL DRAIN section as well*)  
Tamper-resistant spinning ..... MV(\*)  
knob (psig preset)  
Viton seals ..... V

\*Insert maximum limited pressure.

### MOUNTING BRACKETS

See page 346.

# MINIATURE Integral Filter/Regulators

# CFDR55M, CFDR56M Models Port Sizes: 1/8, 1/4



Model Shown: CFDR56M-2

- ◆ Filter and regulator consolidated in a single assembly.
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl; optional aluminum bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ Piston-type regulator (CFDR55M models) or diaphragm-type (CFDR56M models).
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Body:** Aluminum.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

**Dome and Knob:** Glass Filled Nylon and Acetal.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
Plastic bowl: 150 psig (10 bar) maximum.  
Metal bowl: 200 psig (14 bar) maximum.

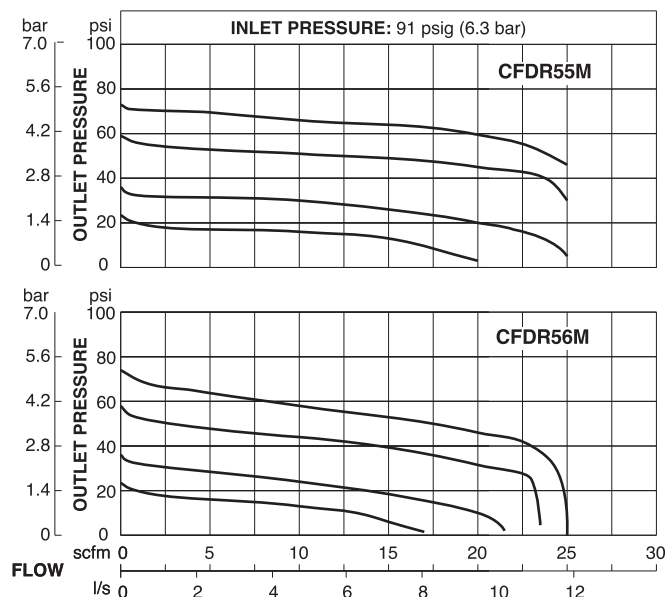
**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Nitrile.

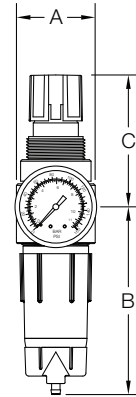
## FLOW CHARTS



## DIMENSIONS inches (mm)

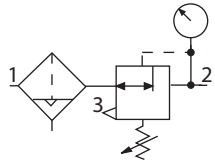
Bowl	Ports	A	B	C	Depth †	Weight †
						lb (kg)
Plastic	1/8, 1/4	1.6 (41)	3.9 (99)	2.6 (67)	1.6 (41)	0.53 (0.24)
Metal	1/8, 1/4	1.6 (41)	4.3 (109)	2.6 (67)	1.6 (41)	0.53 (0.24)

† Less gauge.



### ISO Filter/Regulator Symbol

**Automatic Drain  
Self-relieving**



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze.....	KA130-27E5
20-µm bronze.....	KA130-27E4
40-µm bronze.....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

**B C FD R55M - 2 Y P W**

### BOWL TYPE

Plastic bowl..... Leave Blank  
Metal bowl..... B

### FILTER DRAIN

Internal automatic drain..... FD  
Manual drain..... F

### REGULATOR TYPE

Piston type..... R55M  
Diaphragm type..... R56M

### PORT SIZE

1/8 NPTF..... 1  
1/4 NPTF..... 2

### PORT TYPE

NPTF threads..... Leave Blank  
BSPF threads..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-160 psig Gauge..... Leave Blank  
No psig Gauge..... NG  
Plastic nut..... P  
Metal nut..... PN  
Hex plastic mounting nut..... PE

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None..... Leave Blank  
Non-relieving..... A  
Small valve seat (provides lower flow, greater precision)..... C  
Metal dome (threaded)..... D  
Sintered bronze filter element:  
5-µm rating..... E5  
20-µm rating..... E4  
40-µm rating..... E3

### Adjusting springs:

0-125 psig (0-8.6 bar)..... H  
0-50 psig (0-3.4 bar)..... L  
0-8 psig (0-0.6 bar)..... L8  
0-15 psig (0-1.0 bar)..... L15  
0-30 psig (0-2.1 bar)..... L30

No Drain (lubricator bowl)..... LDC  
(Use Manual Drain Option under BOWL DRAIN section as well)

Tamper-resistant spinning knob (psig preset)..... MV(\*)

No gauge ports..... NP  
Viton seals..... V

\*Insert maximum limited pressure.

### MOUNTING BRACKETS

See page 346.

# GUARDSMAN Modular Integral Filter/Regulators

# CFDR60 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: CFDR60-3

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).  
Metal Bowl: 40° to 125°F (4° to 52°C).

**Body:** Zinc.

**Bowl:** 4-Ounce (120-ml) capacity polycarbonate plastic with zinc shatterguard; optional zinc bowl.

**Dome and Knob:** Acetal.

### Filter Drain:

Internal automatic drain; optional manual drain.

Filter Element: 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
Plastic bowl: 150 psig (10 bar) maximum.  
Metal bowl: 200 psig (14 bar) maximum.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

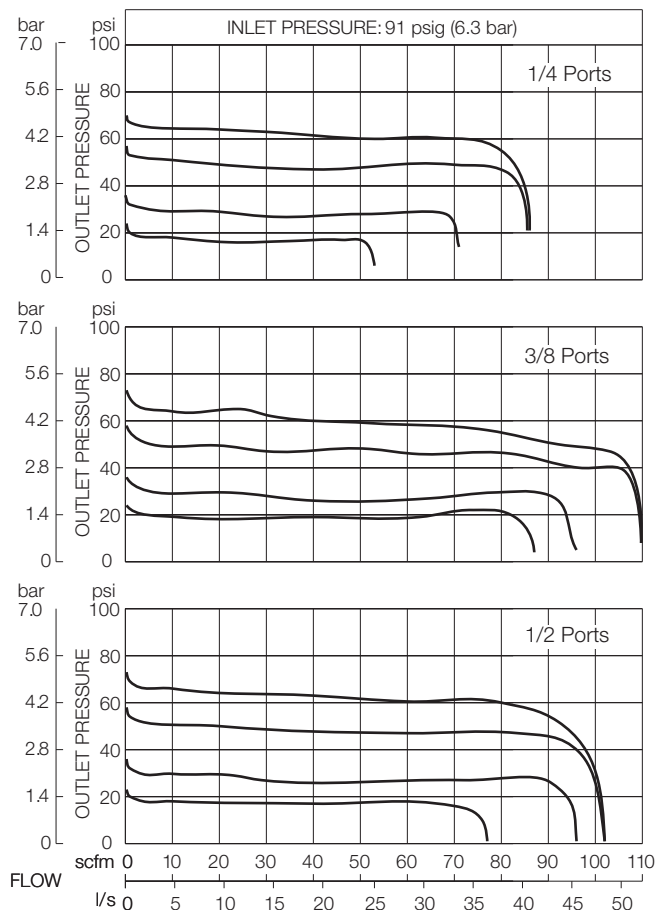
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Seals:** Nitrile

- ◆ Filter and regulator consolidated in a single assembly.
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl with zinc shatterguard; optional zinc bowl.
- ◆ Internal automatic drain; optional manual drain.
- ◆ Self-relieving piston-type regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

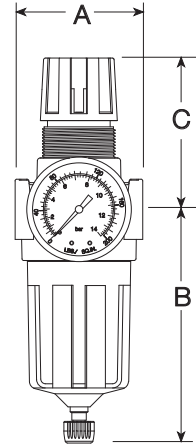
## FLOW CHARTS



**DIMENSIONS** inches (mm)

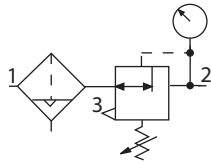
Bowl	A	B *	C **	Depth †	Weight †
					lb (kg)
Plastic	2.7 (67)	4.6 (116)	3.3 (83)	2.4 (60)	1.44 (0.65)
Metal	2.7 (67)	4.9 (123)	3.3 (83)	2.4 (60)	1.50 (0.68)

† Less gauge.



**ISO Filter/Regulator Symbol**

**Automatic Drain  
Self-relieving**



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA60F-03
5-µm bronze.....	KA60F-03E5
20-µm bronze.....	KA60F-03E4
40-µm bronze.....	KA60F-03E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter/regulator you want.

**B C FD R60- 2 Y P W**

**BOWL TYPE**

Plastic bowl..... Leave Blank  
Metal bowl..... B

**FILTER DRAIN**

Internal automatic drain ..... FD  
Manual drain..... F

**PORT SIZE**

1/4 NPTF..... 2  
3/8 NPTF..... 3  
1/2 NPTF..... 4

**PORT TYPE**

NPTF threads ..... Leave Blank  
BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

0-200 psig Gauge ..... Leave Blank  
No psig Gauge ..... NG  
Plastic Mounting nut ..... P  
Metal Mounting nut ..... PN

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

None..... Leave Blank  
Non-relieving ..... A  
Sintered bronze filter element:  
5-µm rating ..... E5  
20-µm rating ..... E4  
40-µm rating ..... E3  
Adjusting springs:  
0-150 psig (0-10 bar) ..... H  
0-50 psig (0-3.4 bar) ..... L

**MOUNTING BRACKETS**

See page 346.

# GUARDSMAN II Modular Integral Filter/Regulators

# BCFDR70 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BCFDR70-4

- ◆ Filter and regulator consolidated in a single assembly.
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Aluminum bowl with clear nylon sight glass. Bowl can be rotated for easy readability.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ Self-relieving piston-type regulator; non-relieving optional.
- ◆ Pressure gauge; two gauge ports.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C)

### Body:

Zinc.

**Bowl:** 6-Ounce (180-ml) capacity aluminum with clear nylon sight glass. Optional 10-ounce (300-ml) extended bowl.

### Dome and Knob:

Acetal.

### Bowl Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.  
200 psig (14 bar) maximum.

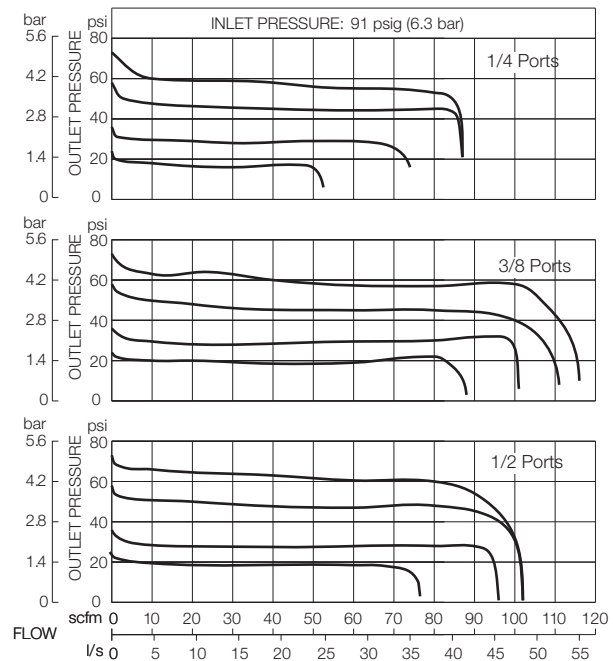
**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Seals:** Nitrile.

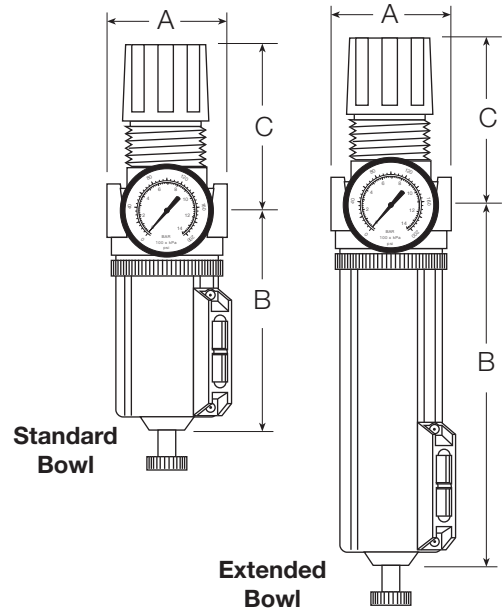
## FLOW CHARTS



**DIMENSIONS** inches (mm)

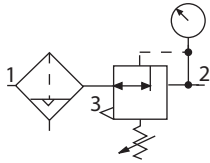
Bowl	A	B	C	Depth †	Weight †
					lb (kg)
Standard	2.7 (67)	5.9 (151)	3.3 (83)	2.4 (60)	1.50 (0.68)
Extended	2.7 (67)	8.9 (227)	3.3 (83)	2.4 (60)	1.75 (0.80)

† Less gauge.



**ISO Filter/Regulator Symbol**

**Automatic Drain  
Self-relieving**



**REPLACEMENT FILTER ELEMENT KITS**

Element Type	Kit Number
5-µm polyethylene (Std element)	KA60F-03PE5
5-µm bronze	KA60F-03E5
40-µm bronze	KA60F-03E3

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the filter/regulator you want.

**BC FD R 70 - 2 Y P W**

**FILTER DRAIN**

- Internal automatic drain ..... FD
- Manual drain..... F
- Internal float drain ..... F6A  
(Brass Stem)

**BOWL SIZE**

- Standard 6-ounce bowl ..... 70
- Extended 10-ounce bowl ..... 70H

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- 0-200 psig Gauge ..... Leave Blank
- No psig Gauge ..... NG
- Mounting nut ..... P

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Non-relieving ..... A
- Sintered bronze filter element:
  - 5-µm rating ..... E5
  - 40-µm rating ..... E3
- Adjusting springs:
  - 0-150 p sig (0-10 bar) ..... H
  - 0-50 psig (0-3.4 bar) ..... L

**MOUNTING BRACKETS**

See page 346.



# SERIES 350 Modular Integral Filter/Regulators

# CFR350 Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: CF5AR350-3G

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C)

Metal bowl: 40° to 175°F (4° to 79°C)

**Body:** Zinc.

**Dome:** Nylon

**Bowl:** 5.1-Ounce (151-ml) polycarbonate plastic with nylon shatterguard; optional 6.0-Ounce (177-ml) aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal float drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to drain effluents. Optional manual drain.

**Filter Element:** 5-µm-rated polyethylene; optional 5-µm-rated and 40-µm-rated bronze element.

**Fluid Media:** Compressed air. Inlet Pressure:

Plastic bowl & manual drain: 0-150 psig (0-10 bar).

Plastic bowl & Float drain: 30-150 psig (2-10 bar).

Metal bowl & manual drain: 0-250 psig (0-17 bar).

Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Outlet Pressure:** Adjustable up to 150 psig (10 bar); optional adjusting springs.

**Optional Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 2-1/16-inch (52-mm) hole required.

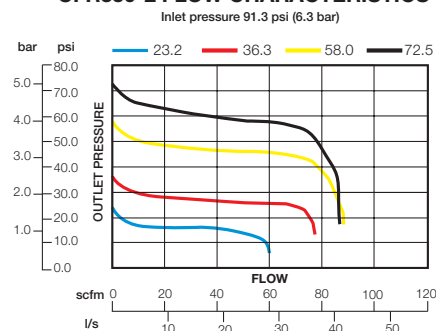
**Seals:** Nitrile.

**Valve:** Brass.

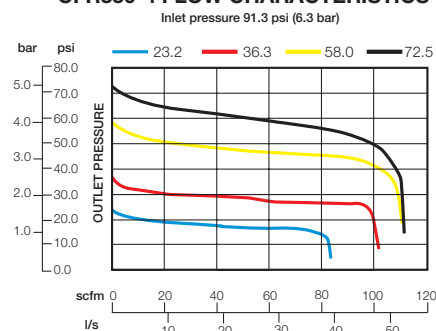
- ◆ Modular or inline mounting.
- ◆ Designed to remove particulate material down to 5 micron from the airstream to protect downstream equipment.
- ◆ Optional bronze 5-µm-rated, 20-µm-rated, and 40-µm-rated. 5-µm-rated polyethylene filter elements are standard.
- ◆ Superior water removal up to 98% efficiency - free water.
- ◆ Removal of effluents via manual or automatic float drains.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C.).
- ◆ Superior pressure regulation - diaphragm type regulator
- ◆ Self relieving design; large diaphragm sensing ratio; non-relieving optional.
- ◆ Optional pressure adjustment locking key; tamper resistant pressure setting.
- ◆ Reverse flow option.
- ◆ Pressure gauge.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPB threads.

## FLOW CHARTS

### CFR350-2 FLOW CHARACTERISTICS

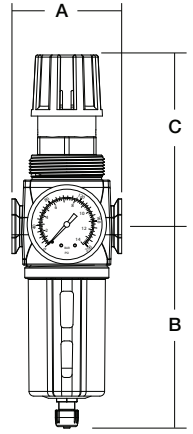


### CFR350-4 FLOW CHARACTERISTICS



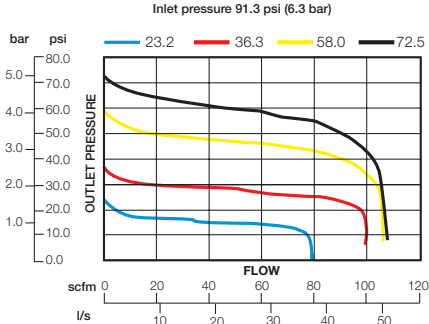
## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	3.0 (76.2)	5.54 (140.6)	4.68 (119)	2.51 (63.8)	1.98 (0.90)
Std metal	3.0 (76.2)	6.37 (161.8)	4.68 (119)	2.76 (70.1)	2.17 (0.99)



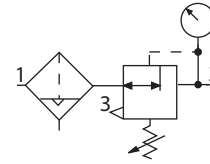
**Panel Mounting:** 2-1/16" (52mm) hole required.  
**† Bowl (standard) removal clearance:** add 3.1 (79)  
**‡ Bowl (extended) removal clearance:** add 6.1 (155)  
 Dimensions above reflect less gauge.

### CFR350-3 FLOW CHARACTERISTICS



### ISO Filter/Regulator Symbol

**Automatic Drain  
Self-relieving**



### REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element) .....	A60F-03PE5
40-µm Bronze .....	A60F-03E3
5-µm Bronze .....	A60F-03E5
20-µm Bronze .....	A60F-03E4

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

BCFR 350 - 3 E5 G W

#### BOWL AND DRAIN TYPE

- Plastic bowl, manual drain ..... CFR
- Plastic bowl, internal float drain (plastic stem) ..... CF5AR
- Metal bowl, manual drain ..... BCFR
- Metal bowl, internal float drain (metal stem)..... BCF6AR

#### PORT SIZE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4

#### PORT TYPE

- NPTF threads ..... Leave blank
- BSPF threads ..... W

#### OPTIONS

- None ..... Leave Blank
- Pressure gauge ..... G
- Mounting nut ..... P

**OPTIONS** (more than one can be chosen.  
Add in alphabetical order).

- None ..... Leave blank
- Relieving ..... Leave blank
- Non-relieving ..... A
- Locking knob ..... B
- Reverse flow ..... QE

#### Filter Elements

- 5-µm-rated (polyethylene) ..... Leave blank
- 5-µm-rated (bronze) ..... E5
- 20-µm-rated (bronze) ..... E4
- 40-µm-rated (bronze) ..... E3

#### SPRINGS:

- 0-200 psig (0-13 bar) ..... H
- 0-150 psig (0-10 bar) std .... Leave blank
- 0-100 psig (0-6 bar) ..... L100
- 0-50 psig (0-3 bar) ..... L
- Limit maximum psig setting ..... M\*
- Tee Handle ..... T

\* insert maximum limited pressure.

### MOUNTING BRACKETS

See page 346.

# Full-Size VANGUARD Modular Integral Filter/Regulators

# CFDR100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: CFDR100-6

- ◆ Filter and regulator consolidated in a single assembly.
- ◆ Modular assembly and mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic filter bowl with steel shatterguard; optional metal bowl with clear nylon sight glass.
- ◆ Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◆ Pressure adjustment locking key.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowl: 40° to 125°F (4° to 52°C).

Metal Bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 8-Ounce (240-ml) capacity polycarbonate plastic with steel shatterguard; optional zinc bowl with clear nylon sight glass.

**Dome:** Nylon. Aluminum with option H spring.

**Bowl Drain:** Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

**Knob:** Acetal.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

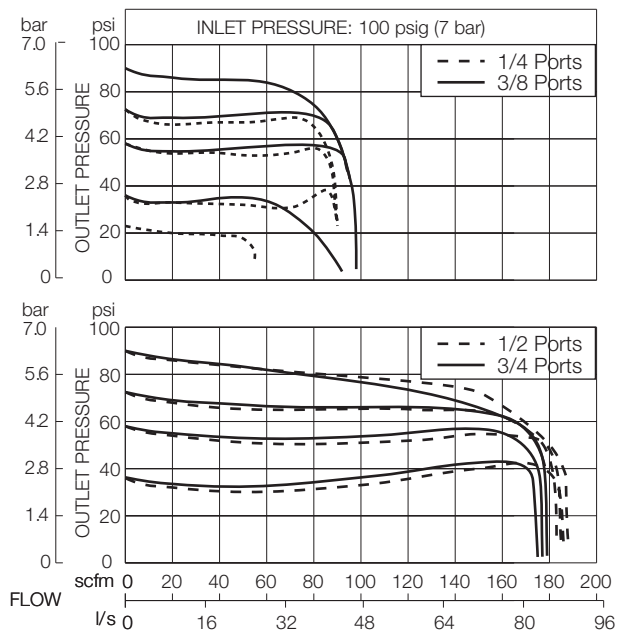
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile

## FLOW CHARTS

Standard 5- $\mu$ m Element



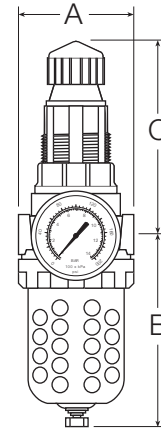
## DIMENSIONS inches (mm)

Bowl	A	B *	C **	Depth †	Weight †
					lb (kg)
Plastic	3.5 (89)	5.8 (146)	5.8 (146)	3.5 (89)	2.50 (1.15)
Metal	3.5 (89)	6.4 (163)	5.8 (146)	3.5 (89)	2.55 (1.17)

\* Bowl removal clearance: add 3.1 (79).

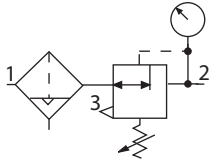
\*\* Dome removal clearance: add 0.63 (16).

† Less gauge.



### ISO Filter/Regulator Symbol

**Automatic Drain  
Self-relieving**



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA103-03PE5
5-µm bronze .....	KA103-03E5
20-µm bronze.....	KA103-03E4
40-µm bronze.....	KA103-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

**B C FD R100-2 Y P W**

### BOWL TYPE

Plastic bowl..... Leave Blank  
Metal bowl..... B

### FILTER DRAIN

Internal automatic drain ..... FD  
Manual drain..... F  
Internal float drain ..... F5A  
**(Plastic stem)**, use 'leave blank'  
option under '**BOWL TYPE**'.  
Internal float drain ..... F6A  
**(Brass stem)**, use 'B' option  
under '**BOWL TYPE**'.  
External Hydro-Jector drain ..... FE

### PORT SIZE

1/4 NPTF..... 2  
3/8 NPTF..... 3  
1/2 NPTF..... 4  
3/4 NPTF..... 6

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

0-200 psig Gauge ..... Leave Blank  
No psig Gauge ..... NG  
Mounting nut ..... P

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving ..... A  
Sintered bronze filter element:  
5-µm rating ..... E5  
20-µm rating ..... E4  
40-µm rating ..... E3

Adjusting springs:

0-20 psig (0-1.4 bar) ..... L20  
0-175 psig (0-12 bar) ..... H\*\*  
0-50 psig (0-3.4 bar) ..... L

Less Drain Cock ..... LDC  
(1/4-NPT female port instead.

Use Manual drain option under  
**BOWL DRAIN** section)

Metal Dome ..... MD  
Limit maximum psig setting .... M\*  
Tee handle ..... T

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

### MOUNTING BRACKETS

See page 346.

# Full-Size SERIES 380 Modular Integral Filter/Regulators

# CFDR380 Models Port Sizes: 3/8, 1/2, 3/4



Model Shown: CFDR380-G

- ◆ Filter (FD380) and regulator (R380) consolidated into a single space-saving assembly.
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional 40- $\mu$ m element.
- ◆ Polycarbonate plastic bowl with steel shatter-guard; optional metal bowl with sight glass.
- ◆ Internal automatic drain; optional manual drain and internal float drain.
- ◆ Self-relieving diaphragm-type regulator; non-relieving diaphragm-type optional.
- ◆ Pressure adjustment locking key; tamper-resistant pressure setting.
- ◆ Pressure gauge included; two gauge ports.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bonnet:**

**Nylon;** aluminum with optional 0-175 psig spring.

**Bowl:** 9-Ounce (270-ml) polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass.

**Bowl Drain:** Internal automatic drain; optional manual drain and internal float drain.

**Cap Color:** Black.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 40- $\mu$ m element.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Plastic bowl: 150 psig (10 bar).

Metal bowl: 200 psig (14 bar).

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar); optional adjusting springs.

**Pressure Adjustment Locking Key:** Removable.

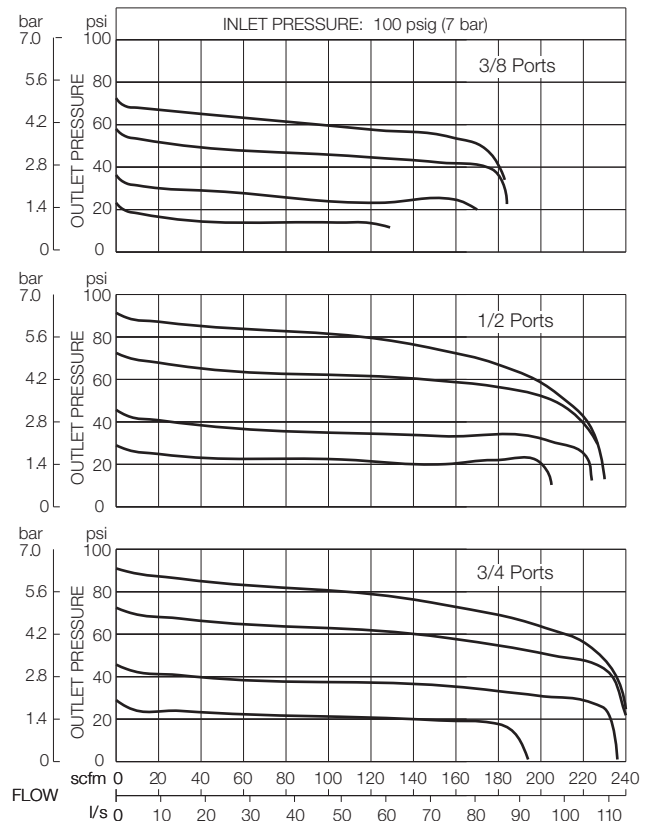
**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 2.05-inch (52.1-mm) hole required.

**Seals:** Nitrile.

**Valve:** Brass.

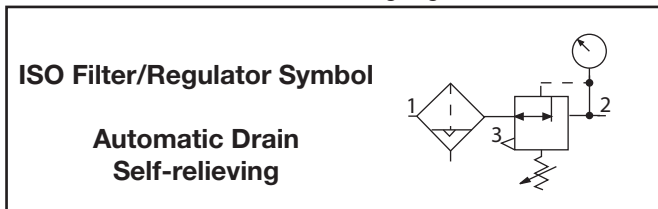
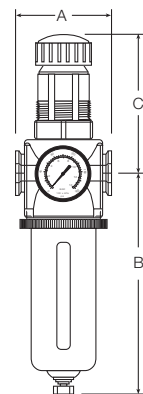
## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B *	C **	Depth †	Weight †
					lb (kg)
Polycarbonate	3.5 (88)	7.7 (195)	5.4 (137)	2.9 (73)	3.69 (1.68)
Metal	3.5 (88)	7.6 (193)	5.4 (137)	2.9 (73)	3.69 (1.68)

\* Bowl removal clearance: add 3.1 (79).  
 \*\* Dome removal clearance: add 0.63 (16).  
 † Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element) .....	A115-106PE5
40-µm Polyethylene .....	A115-106PE3
5-µm Bronze .....	A115-106E5
20-µm Bronze .....	A115-106E4

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

# BCFDR 380-3 Y G W

### BOWL AND DRAIN TYPE

- Plastic bowl, manual drain ..... CFR
- Metal bowl, manual drain ..... BCFR
- Plastic bowl, automatic drain ..... CFDR
- Metal bowl, automatic drain ..... BCFDR
- Plastic bowl, internal float drain (**plastic stem**) ... CF5AR
- Metal bowl, internal float drain (**brass stem**) ..... BCF6AR

### PORT SIZE

- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6

### PORT TYPE

- NPTF threads ..... Leave blank
- BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank
- Panel mounting nut ..... P
- 0-200 psig gauge ..... G

### OPTIONS (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank
- Non-relieving ..... A

### Polyethylene filter element:

- 5-µm rating ..... Leave Blank

### Bronze filter element:

- 5-µm rating ..... E5
- 20-µm rating ..... E4
- 40-µm rating ..... E3
- 0-175 psig (0-12 bar) ..... H\*\*

### Adjusting spring:

- 0-50 psig (0-3.4 bar) ..... L
- Less drain cock ..... LDC

(1/4-NPTF female port instead.

use manual drain option under

**BOWL DRAIN** section and only

available in Metal Bowl under

**BOWL TYPE**).

Metal dome ..... MD

Limit maximum psig setting ..... M\*

Tee handle ..... T

## MOUNTING BRACKETS

See page 346.

\* Insert maximum limit pressure.

\*\* H option spring includes metal dome.

# CO<sub>2</sub> MINIATURE

## Integral Coalescent Filter & Relief Valve

# CX (CO<sub>2</sub>) Models

## Port Sizes: 1/8, 1/4



Model Shown: CX-3B1B0A0-2AG

- ◆ Inline mounting.
- ◆ Diaphragm-type design.
- ◆ Outstanding control at relatively low cost
- ◆ Pressure gauge optional.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media temperature:**

-40° to 125°F (-40° to 52°C).

**Body and dome:** Aluminum. Optional anodized coating

**Fluid media:** CO<sub>2</sub>, inert gases

**Shutdown pressure range:** 1-175 psig (0 to 12 bar). standard; other ranges are available.

**Flow range:** 0 to 20 scfm.

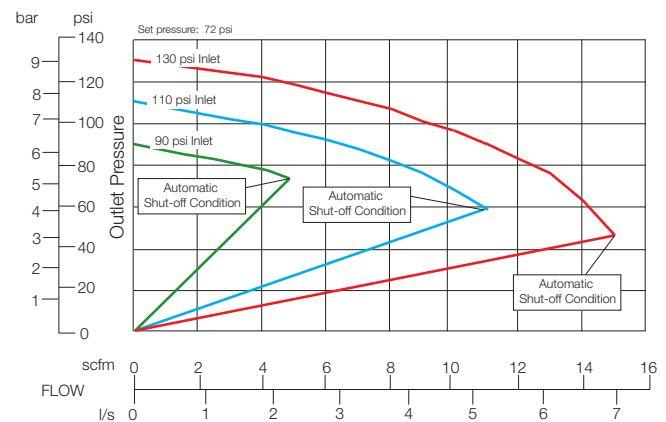
**Pressure gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear. Optional gauges sold separately.

**Panel mounting:** 1-3/16 inch (30 mm) hole required.

**Seals:** Neoprene seals and O-rings. Nitrile diaphragm.

**Maximum inlet pressure:** 200 psi

### FLOW CHART

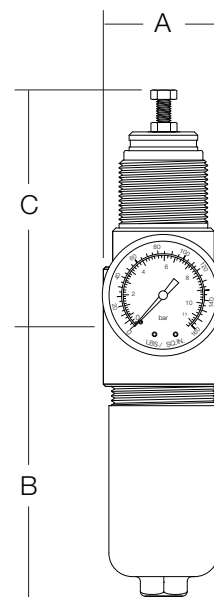
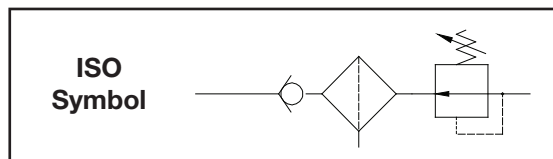


The Automatic Shut-off Condition was measured 4 inches from the Outlet port. Hose length can be compensated for by decreasing the difference between the inlet and the set point pressures to account for pressure drop of hose.

## DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	3.56 (90)	2.68 (68)	1.6 (41)	0.60 (0.27)

† Less gauge.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the CO<sub>2</sub> Integral Coalescent filter / relief valve you want.

**CX- 3 B 1 B 0 A 0- 2 A G W**

### ANODIZED TYPE

None ..... A  
Clear Anodized head and ..... B  
dome.

### DOME TYPE

Threaded metal dome ..... 1  
and metal bowl (no drain).  
Stainless steel adjustment  
screw and stainless steel nut.

### O-RING AND SEAL MATERIAL

Neoprene seals, o-rings, ..... 0  
and Nitrile diaphragm.  
Nitrile seals, o-rings and ..... 1  
diaphragm.

### GAUGE OPTION

No Gauge ..... Leave blank  
Gauge 0-160 psig ..... G

### PORT TYPE

NPTF threads ..... Leave blank  
BSPB threads ..... W

### SPRING RANGES

0-125 psig (0-8.6 bar) ..... C  
0-50 psig (0-3.4 bar) ..... D  
0-15 psig (0-1 bar) ..... F  
0-30 psig (0-2.1 bar) ..... H

### PORT SIZE

1/8-NPTF ..... 1  
1/4-NPTF ..... 2

### PANEL MOUNT NUTS

None ..... A  
Plastic nut ..... B  
Plastic hex nut ..... C  
Metal nut \* ..... D

\* If anodize is chosen, then panel  
mount nut will be the same color.



# AIR LINE LUBRICATORS

## LUBRICATOR FUNCTION

Air line lubricators are designed to introduce atomized oil into the air line so that downstream mechanisms can be adequately lubricated. Lubricators should be adjusted so that the minimum amount of oil to lubricate the equipment is used. Excess oil will simply be blown into the atmosphere and pollute the environment.

There are two basic designs used in Master Pneumatic lubricators: sight-feed design and wick-feed design. Illustrations of these two types of assembly are shown on the facing page.

### SIGHT-FEED LUBRICATORS

Air flows through a flexible-vane automatic flow sensor that creates a small pressure differential between the air passage and the oil reservoir. This differential causes oil to move up a riser tube, through an adjustable metering valve, and then to drip into a transparent dome and the air stream. This oil is “atomized” by the air stream, and carried down the air line to the points of lubrication.

Sight-feed lubricators are easy to adjust, and an indicator on the sight dome measures the amount of oil dispensed. The adjusting knob can be removed to make the lubricator “tamper-resistant.”

All working parts are in an easily replaceable cartridge.

Note: Not recommended for valve and cylinder circuits (see **INJECTION LUBRICATORS** section).

### WICK-FEED LUBRICATORS

In a wick-feed lubricator one end of a porous bronze wick is saturated with oil in the reservoir. Capillary action causes the oil to travel up the wick. Oil is stripped off the upper portion of the wick by the air flow, and maintains a constant oil-to-air ratio. This ratio can be varied by manual adjustment. Units will not shut off, even with dirt and moisture in the reservoir. However, air must be shut off when filling the reservoirs of these models.

### MODULAR or INLINE MOUNTING

**SENTRY**, **GUARDSMAN**, **SERIES 350**, **SERIES 380**, and **Full-Size VANGUARD** lubricators are of modular design. They are connected to other units by special modular connectors which seal the faces between units. They may also be inline mounted with pipe nipples.

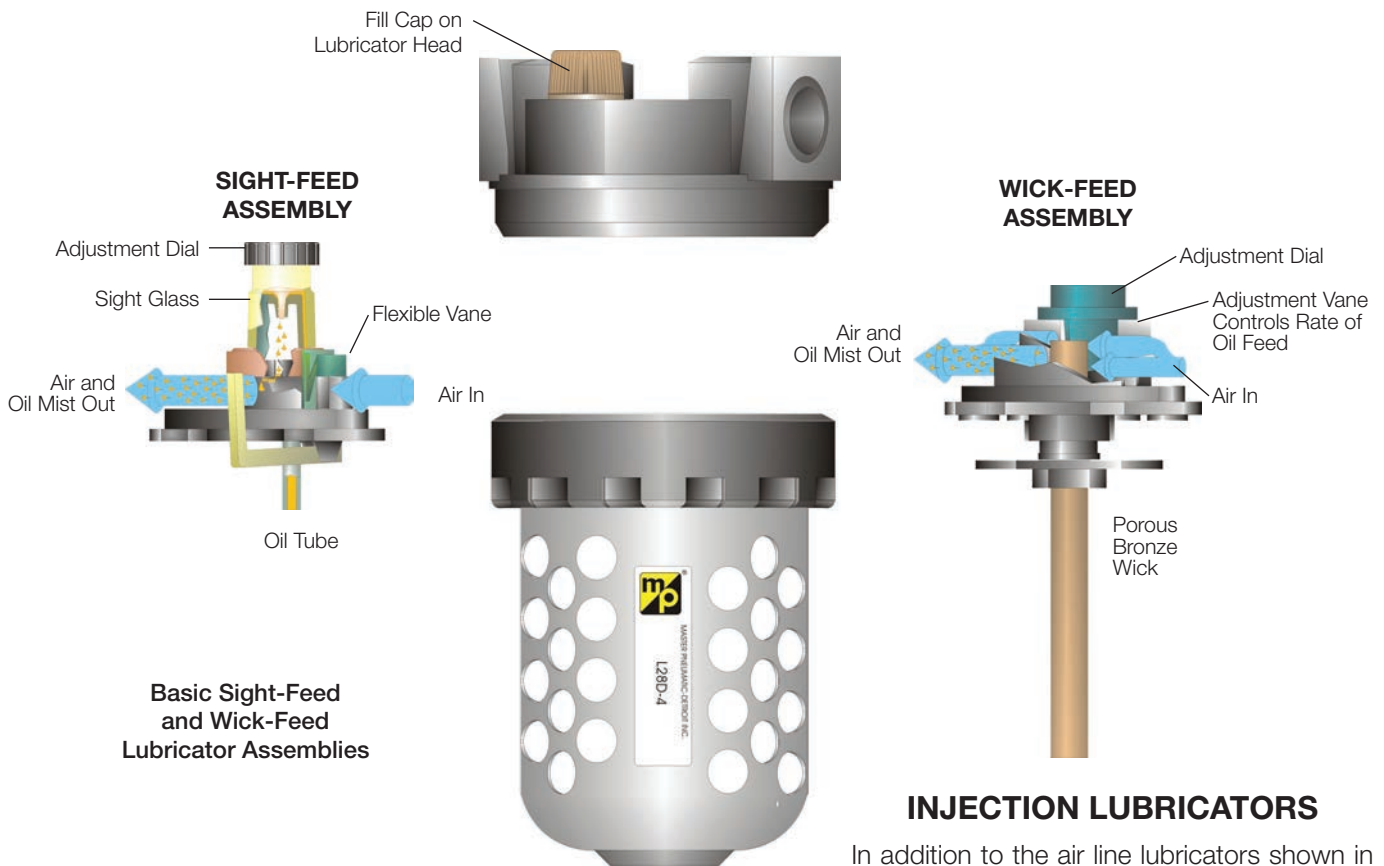
**MINIATURE** and **High-Flow VANGUARD** lubricators are inline mounted only.

## GUIDE to AIR LINE LUBRICATORS

For precision controlled lubrication see **INJECTION LUBRICATORS** section.

Regulator Series	Modular Construction	Port Sizes						Pages		
		1/8	1/4	3/8	1/2	3/4	1 1-1/4		1-1/2	2
<b>SENTRY †</b>										
Wick-Feed L10 models	yes	X	X							220-224
<b>MINIATURE</b>										
Wick-Feed L50, L50Y models	no	X	X							222-223
<b>GUARDSMAN</b>										
Sight-Feed L60D models	yes		X	X	X					224-225
<b>GUARDSMAN II</b>										
Sight-Feed BL70D models	yes		X	X	X					226-227
<b>SERIES 350</b>										
L350D models	yes		X	X	X					228-229
<b>Full-Size VANGUARD</b>										
Sight-Feed L28D models	yes		X	X	X	X				230-231
Wick-Feed L28W models	yes		X	X	X	X				232-233
<b>Full-Size SERIES 380</b>										
Sight-Feed L380D models	yes			X	X	X				234-235
<b>High-Flow VANGUARD</b>										
Sight-Feed L29D models	no					X	X	X	X	236-237
Wick-Feed L100 models	no					X	X			238-239
Sight-Feed BL237 models	no					X	X	X	X	240-241

† Also available with quick-connect tube fittings up to 10 mm.



In addition to the air line lubricators shown in this section, see the next section, **INJECTION LUBRICATORS**, for more specialized lubrication units.

### SENTRY LUBRICATORS

Port sizes 1/8 and 1/4 or fittings for tubing up to 10 mm. Wick-feed design and modular assembly. Made of durable, corrosion-resistant acetal. Polycarbonate or aluminum bowl. Air flow to 25 scfm (12 l/s). 2-Ounce (60-ml) bowl capacity.

### MINIATURE LUBRICATORS

Port sizes 1/8 and 1/4. Wick-feed design and inline mounting only. Aluminum head with polycarbonate or aluminum bowl. Air flow to 25 scfm (12 l/s). 2-Ounce (60-ml) bowl capacity. Special low-flow models are designed to deliver oil in situations where air flow is less than 1 scfm.

### GUARDSMAN LUBRICATORS

Series L60D with port sizes 1/4, 3/8, 1/2. Sight-feed design and modular or inline mounting. Polycarbonate bowl with zinc die-cast shatterguard or zinc bowl. Air flow to 110 scfm (52 l/s). 4-Ounce (120-ml) bowl capacity.

### GUARDSMAN II LUBRICATORS

Series BL70D with port sizes 1/4, 3/8, 1/2. Sight-feed design and modular or inline mounting. Zinc head. Aluminum bowl with clear nylon sight glass. Air flow to

110 scfm (52 l/s). 6-Ounce (180-ml) and 10-ounce (300-ml) bowl capacities.

### SERIES 380 LUBRICATORS

Port sizes 3/8, 1/2, 3/4. Sight-feed design and modular or inline mounting. Zinc head. Aluminum bowl with clear nylon sight glass. Air flow to 170 scfm (80 l/s). 9-Ounce (270-ml) and 15-ounce (450-ml) bowls.

### FULL-SIZE VANGUARD LUBRICATORS

Port sizes 1/4, 3/8, 1/2. Either wick-feed or sight-feed design; modular or inline mounting. Air flows up to 140 scfm (66 l/s). Zinc head. Polycarbonate bowl with steel shatterguard or zinc bowl. 8-Ounce (240-ml) or 20-ounce (600-ml) zinc bowls available.

### HIGH-FLOW VANGUARD LUBRICATORS

Port sizes 3/4 to 1-1/2. Either wick-feed or sight-feed design; inline mounting only. Air flows up to 500 scfm (235 l/s). Aluminum head. Polycarbonate bowl with steel shatterguard or aluminum bowl. 16-Ounce (480-ml), 35-ounce (1030-ml), or 62-ounce (1830-ml) bowls.

# SENTRY Modular Lubricators

# L10 Models Port Sizes: 1/8, 1/4; Tube Fittings



Model Shown: L10-2

- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ Wick-feed design.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body:** Acetal.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

**Fluid Media:** Compressed air.

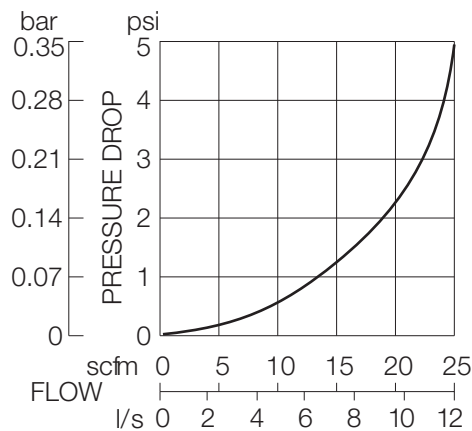
**Inlet Pressure:** 150 psig (10 bar) maximum.

**Oil Adjustment:** External, no shutoff.

**Seals:** Nitrile.

## FLOW CHART

Inlet Pressure: 100 psig (7 bar)

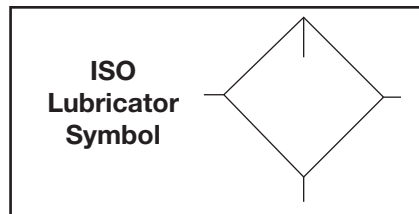
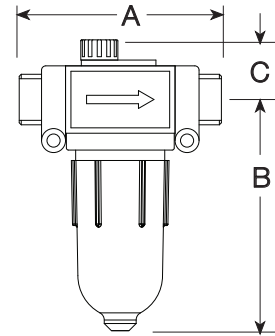


Minimum Flow: 1 scfm (0.47 l/s)

## DIMENSIONS inches (mm)

Ports	A	B †	C	Depth	Weight lb (kg)
No Port	1.7 (43)	3.6 (91)	0.9 (22)	1.8 (45)	0.17 (0.08)
1/8, 1/4	3.0 (76)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
Models below have quick-connect fittings for tubing.					
1/4	3.4 (86)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
3/8	3.9 (99)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
4 mm	3.4 (86)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
6 mm	3.4 (86)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
8 mm	3.1 (79)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)
10 mm	3.9 (99)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)

† Dimension is for plastic bowl; metal bowl is 3.8 (97).



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the lubricator you want.

L10 P - 2 X Y W

<p><b>BOWL TYPE</b></p> <p>Plastic ..... L10</p> <p>Metal..... BL10</p> <p><b>MOUNTING HOLE LOCATION</b></p> <p>Bottom mount (Standard) ..... Leave Blank</p> <p>Top mount ..... P</p> <p><b>INLET PORT SIZE</b></p> <p>No Inlet and Outlet Ports. .. Leave blank</p> <p><b>Threaded:</b></p> <p>1/8 NPTF ..... 1</p> <p>1/4 NPTF ..... 2</p> <p><b>Fittings for Tubing:</b></p> <p>1/4 ..... 04</p> <p>3/8 ..... 06</p> <p>4 mm ..... M4</p> <p>6 mm ..... M6</p> <p>8 mm ..... M8</p> <p>10 mm ..... M10</p>	<p><b>PORT TYPE</b></p> <p>As specified in <b>INLET PORT</b>... Leave Blank</p> <p>BSPP threads on both ports..... W</p> <p><b>OPTIONS</b></p> <p>None ..... Leave Blank</p> <p>Quick-fill Q-cap..... Q</p> <p><b>OUTLET PORT SIZE</b></p> <p>Same as inlet port ..... Leave Blank</p> <p><b>Threaded:</b></p> <p>1/8 NPTF ..... 1</p> <p>1/4 NPTF ..... 2</p> <p><b>Fittings for Tubing:</b></p> <p>1/4 ..... 04</p> <p>3/8 ..... 06</p> <p>4 mm ..... M4</p> <p>6 mm ..... M6</p> <p>8 mm ..... M8</p> <p>10 mm ..... M10</p>
--	---

# MINIATURE Lubricators

# L50, L50-Y Models Port Sizes: 1/8, 1/4



Model Shown: L50-2

- ◆ Inline mounting.
- ◆ High-strength polycarbonate plastic bowl; optional aluminum bowl.
- ◆ Low-flow models (L50Y) are designed to deliver oil in extremely low-flow (less than 1 scfm) situations.
- ◆ Wick-feed design in both standard-flow and low-flow lubricators.
- ◆ Internal tamper-proof adjustment.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 150°F (4° to 66°C).

**Body:** Aluminum.

**Bowl:** 2-Ounce (60-ml) capacity polycarbonate plastic; optional aluminum bowl.

**Fluid Media:** Compressed air.

### Inlet Pressure:

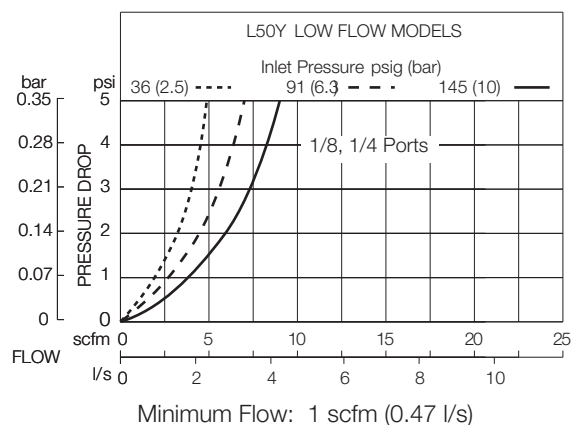
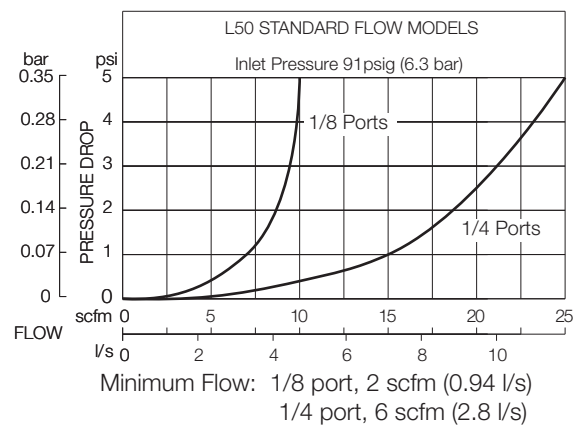
Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

**Oil Adjustment:** Internal, tamper-proof.

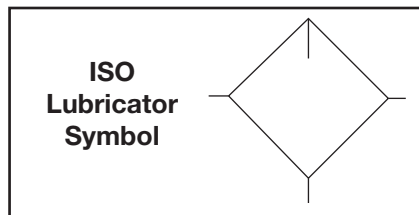
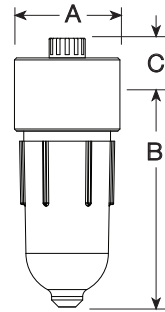
**Seals:** Nitrile.

## FLOW CHARTS



**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight
					lb (kg)
Plastic	1.6 (41)	3.6 (91)	0.7 (17)	1.6 (41)	0.21 (0.10)
Metal	1.6 (41)	3.8 (97)	0.7 (17)	1.6 (41)	0.21 (0.10)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L50 - 2 X W**

**BOWL TYPE**

- Plastic (standard flow)..... L50
- Plastic (low flow).....L50-Y
- Metal (standard flow) ..... BL50
- Metal (low flow)..... BL50-Y

**PORT SIZE**

- 1/8 NPTF..... 1
- 1/4 NPTF..... 2

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS:** *(More than one option can be chosen. Add in alphabetical order)*

- None ..... Leave Blank
- Quick-fill Q-cap..... Q
- Tapped modified head to ..... T to allow 50-01 bracket assy.

# GUARDSMAN Modular Lubricators

# L60D Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: L60D-2

- ◆ Modular or inline mounting.
- ◆ High-strength polycarbonate plastic bowl with zinc shatterguard. Optional zinc bowl.
- ◆ Sight-feed design.
- ◆ External tamper-resistant adjustment.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).  
Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 4-Ounce (120-ml) polycarbonate plastic with zinc shatterguard; optional zinc bowl.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.  
Metal bowl: 200 psig (14 bar) maximum.

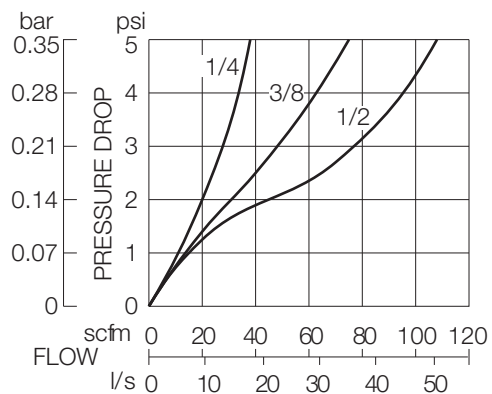
**Oil Adjustment:** External, tamper-resistant.

**Sight Dome:** Nylon.

**Seals:** Nitrile.

## FLOW CHART

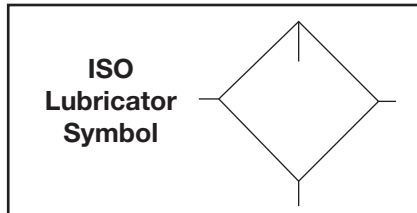
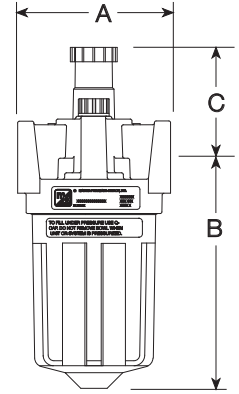
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 2 scfm (0.94 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight
					lb (kg)
Plastic	2.7 (67)	4.1 (103)	1.8 (46)	2.4 (60)	1.06 (0.48)
Metal	2.7 (67)	4.1 (103)	1.8 (46)	2.4 (60)	1.50 (0.68)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L60D - 2 Y W**

<p><b>BOWL TYPE</b></p> <p>Plastic ..... L60D</p> <p>Metal..... BL60D</p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave Blank</p> <p>BSP threads ..... W</p>	
<p><b>PORT SIZE</b></p> <p>1/4 NPTF..... 2</p> <p>3/8 NPTF..... 3</p> <p>1/2 NPTF..... 4</p>	<p><b>OPTIONS</b></p> <p>None ..... Leave Blank</p> <p>Quick-fill Q-cap..... Q</p>	



# GUARDSMAN II Modular Lubricators

# BL70D Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BL70D-2

- ◆ Modular or inline mounting.
- ◆ Aluminum bowl with clear nylon sight glass. Bowl can be rotated for easy readability. Optional extended bowl.
- ◆ Sight-feed design.
- ◆ External adjusting knob; removable for tamper resistance.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:**

6-Ounce (180-ml) capacity aluminum bowl with clear nylon sight glass. Bowl can be rotated for easy readability. Optional 10-ounce (300-ml) extended aluminum bowl.

**Bowl Ring:** Nylon:

**Fluid Media:** Compressed air.

**Inlet Pressure:**

200 psig (14 bar) maximum.

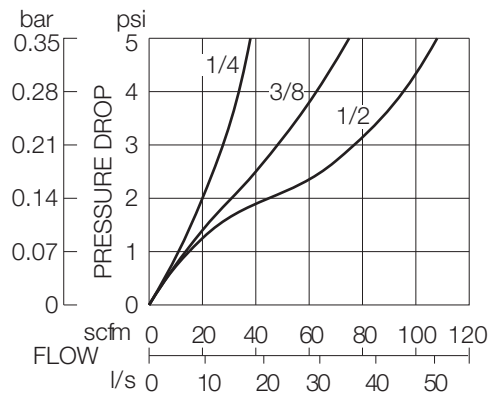
**Oil Adjustment:** External, tamper-resistant.

**Seals:** Nitrile.

**Sight Dome:** Nylon.

## FLOW CHART

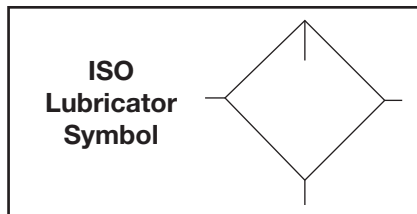
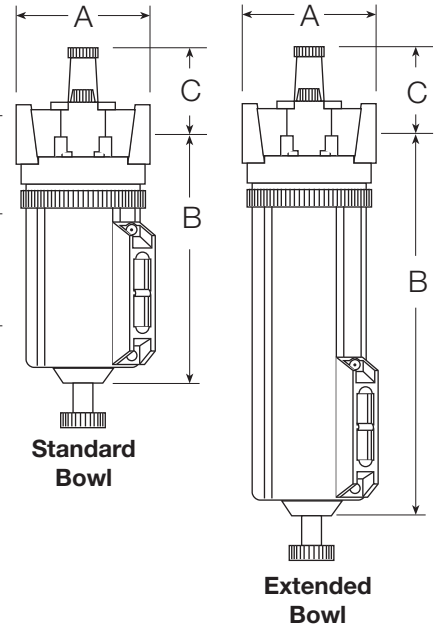
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 2 scfm (0.94 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	2.7 (67)	5.9 (151)	1.8 (46)	2.4 (60)	1.25 (0.57)
Extended	2.7 (67)	8.9 (227)	1.8 (46)	2.4 (60)	1.50 (0.68)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**BL 70D - 2 Y W**

**BOWL SIZE**

Standard 6-ounce bowl ..... 70D  
 Extended 10-ounce bowl ..... 70DH

**PORT SIZE**

1/4 NPTF..... 2  
 3/8 NPTF..... 3  
 1/2 NPTF..... 4

**PORT TYPE**

NPTF threads ..... Leave Blank  
 BSP threads ..... W

**OPTIONS**

None ..... Leave Blank  
 Quick-fill Q-cap..... Q

# SERIES 350 Modular Lubricators

# L350D Models

Port Sizes: 1/4, 3/8, 1/2



Model Shown: L350D-3C1

## Available Color Caps

Yellow  
(standard)



Red  
(optional)



Blue  
(optional)



Grey  
(optional)



## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C)

Metal bowl: 40° to 175°F (4° to 79°C)

**Body:** Zinc.

**Bowl:** 5.1-Ounce (151-ml) capacity polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass. Optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass.

**Cap Color:** yellow, Optional red, blue and grey.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 250 psig (17 bar) maximum.

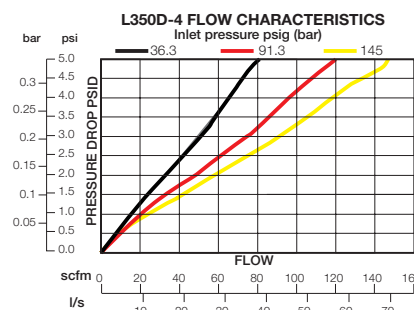
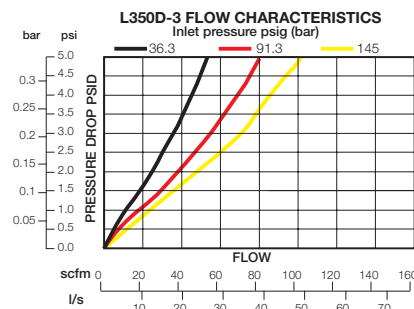
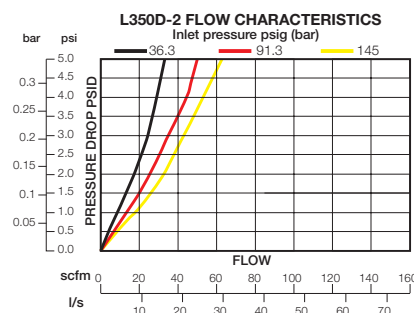
**Oil Adjustment:** External; tamper resistant.

**Seals:** Nitrile.

**Sight-Feed Dome:** Nylon.

- ◆ Modular or inline mounting
- ◆ Sight feed design; transparent dome to show oil delivery.
- ◆ External oil delivery adjusting knob, removable for tamper resistance.
- ◆ Polycarbonate bowl with shatterguard; optional metal bowl with nylon sight glass.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C.).
- ◆ Color caps available for visual management systems. (Blue, red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPP threads.

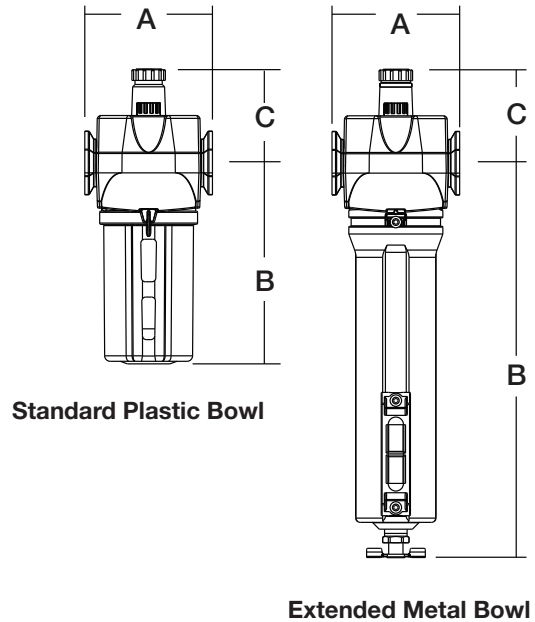
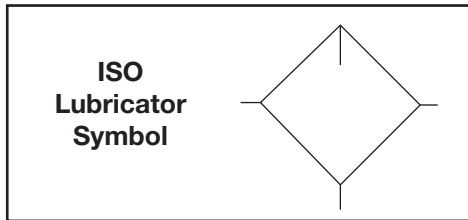
## FLOW CHARTS



**DIMENSIONS** inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	3.0 (76.2)	4.72 (119.9)	2.21 (56.1)	2.51 (63.8)	1.30 (0.59)
Std metal	3.0 (76.2)	6.02 (152.9)	2.21 (56.1)	2.76 (70.1)	1.42 (0.65)
Ext metal	3.0 (76.2)	9.37 (238)	2.21 (56.1)	2.76 (70.1)	1.54 (0.70)

† Bowl (standard) removal clearance: add 3.1 (79)  
 † Bowl (extended) removal clearance: add 6.1 (155)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**BL 350D H - 3 C1 W**

<p><b>BOWL TYPE</b></p> <p>Plastic bowl ..... L</p> <p>Metal bowl ..... BL</p> <p><b>BOWL TYPE</b></p> <p>Standard length ..... Leave Blank</p> <p>Extended bowl length ..... H</p> <p>(Must be used with metal bowl option shown in BOWL and DRAIN TYPE)</p> <p><b>PORT TYPE</b></p> <p>1/4 NPTF ..... 2</p> <p>3/8 NPTF ..... 3</p> <p>1/2 NPTF ..... 4</p>	<p><b>PORT TYPE</b></p> <p>NPTF threads ..... Leave blank</p> <p>BSPP threads ..... W</p> <p><b>OPTIONS</b></p> <p>Cap color</p> <p>MP yellow (standard) ..... C1</p> <p>Red ..... C2</p> <p>Mid blue ..... C3</p> <p>Grey ..... Leave blank</p>
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# Full-Size VANGUARD Modular Lubricators

# L28D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: L28D-3

- ◆ Modular or inline mounting.
- ◆ High-strength polycarbonate plastic bowl with steel shatterguard. Optional zinc bowl with sight glass.
- ◆ Sight-feed design.
- ◆ Optional 20-ounce extended bowl.
- ◆ External adjusting knob; removable for tamper resistance.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 8-Ounce (240-ml) capacity polycarbonate plastic with steel shatterguard; optional zinc bowl with sight glass. Optional 20-ounce (600-ml) extended polycarbonate or zinc bowl.

**Bowl Ring:** Aluminum.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

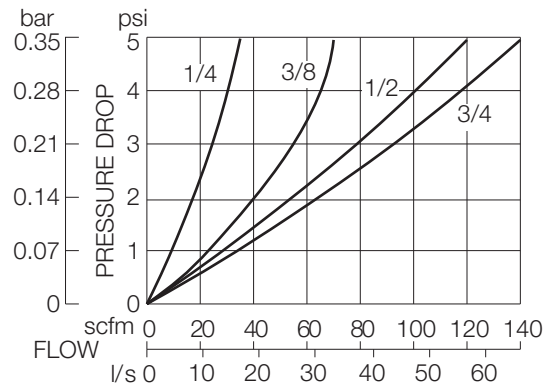
**Oil Adjustment:** External, tamper-resistant.

**Seals:** Nitrile.

**Sight Dome:** Nylon.

## FLOW CHART

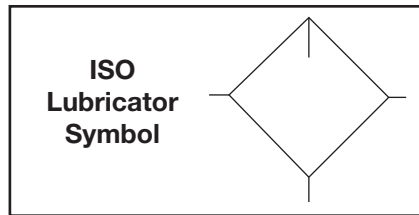
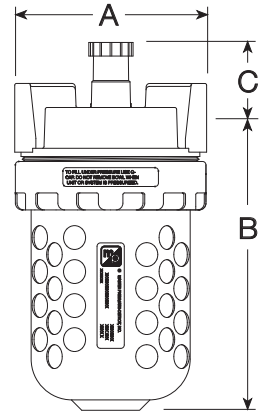
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 2 scfm (0.94 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard Plastic	3.5 (89)	5.2 (132)	1.3 (32)	3.5 (89)	2.06 (0.94)
Extended Plastic	3.5 (89)	9.7 (246)	1.3 (32)	3.5 (89)	3.75 (1.70)
Standard Metal	3.5 (89)	5.3 (135)	1.3 (32)	3.5 (89)	2.90 (1.32)
Extended Metal	3.5 (89)	9.8 (249)	1.3 (32)	3.5 (89)	4.65 (2.11)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L28D - 2 Y W**

**BOWL TYPE**

- 8-Ounce plastic ..... L28D
- 8-Ounce metal ..... BL28D
- 20-Ounce plastic ..... L28DH
- 20-Ounce metal ..... BL28DH

**PORT SIZE**

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 3/4 NPTF ..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS**

- None ..... Leave Blank
- Quick-fill Q-cap ..... Q

# Full-Size VANGUARD Modular Lubricators

# L28W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: L28W-4

- ◆ Modular or inline mounting.
- ◆ High-strength polycarbonate plastic bowl with steel shatterguard. Optional zinc bowl.
- ◆ Wick-feed design.
- ◆ External adjusting knob.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Adjusting Knob:** Acetal.

**Body:** Zinc.

**Bowl:** 8-Ounce (240-ml) capacity polycarbonate plastic with steel shatterguard. Optional zinc bowl.

**Bowl Ring:** Aluminum.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

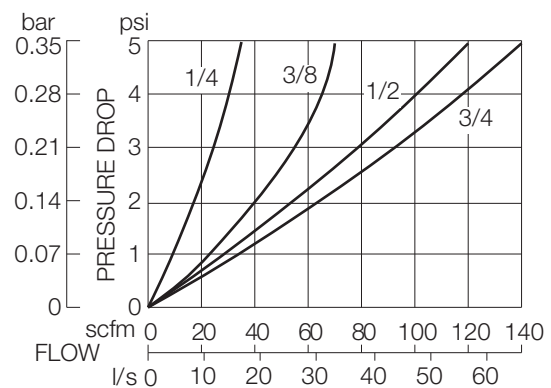
Metal bowl: 200 psig (14 bar) maximum.

**Oil Adjustment:** External.

**Seals:** Nitrile.

## FLOW CHART

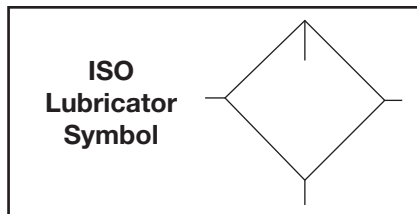
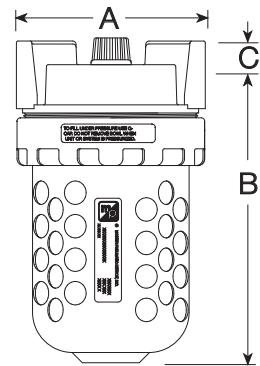
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 6 scfm (2.8 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight
					lb (kg)
Plastic	3.5 (89)	5.2 (132)	0.7 (17)	3.5 (89)	2.25 (1.02)
Metal	3.5 (89)	5.3 (135)	0.7 (17)	3.5 (89)	2.85 (1.30)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L28W - 2 Y W**

**BOWL TYPE**

- 8-Ounce plastic .....L28W
- 8-Ounce metal .....BL28W

**PORT SIZE**

- 1/4 NPTF..... 2
- 3/8 NPTF..... 3
- 1/2 NPTF..... 4
- 3/4 NPTF..... 6

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS**

- None ..... Leave Blank
- Quick-fill Q-cap..... Q



# Full-Size SERIES 380 Modular Lubricators

# L380D Models Port Sizes: 3/8, 1/2, 3/4

### Available Color Caps

Yellow  
(optional)



Red  
(optional)



Blue  
(optional)



Grey  
(standard)



Model Shown: L380D-6

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Zinc.

**Bowl:** 9-Ounce (270-ml) capacity polycarbonate plastic with steel shatterguard; optional aluminum bowl with clear nylon sight glass.

Optional 15-ounce (450-ml) extended aluminum bowl with two clear nylon sight glasses.

**Bowl Ring:** Nylon.

**Cap Color:** Grey, Yellow, red, and blue optional.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar).

Metal bowl: 200 psig (14 bar).

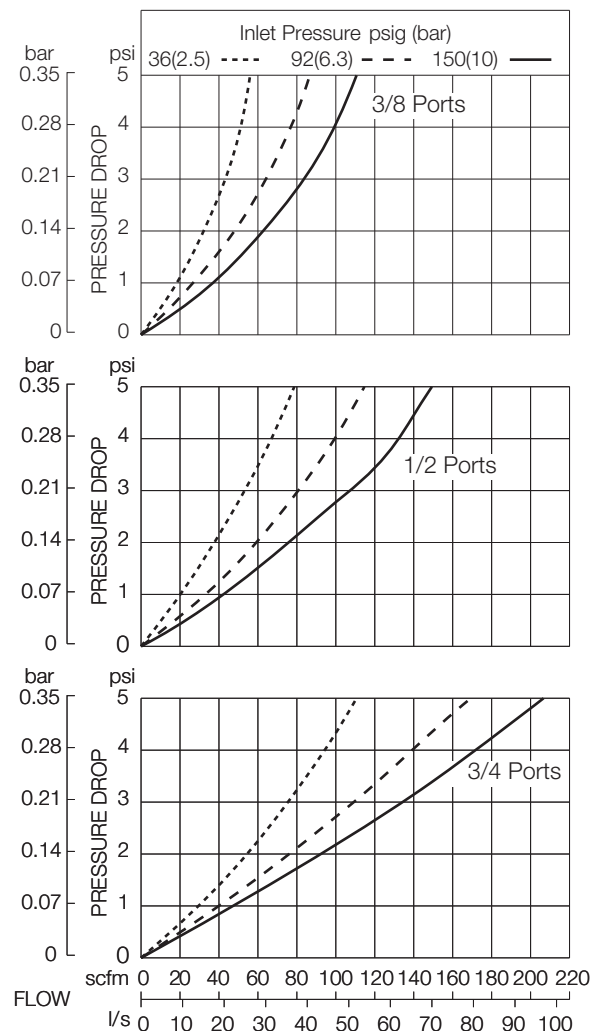
**Oil Adjustment:** External; tamper resistant.

**Seals:** Nitrile.

**Sight-Feed Dome:** Nylon.

- ◆ Modular or inline mounting.
- ◆ Sight-feed design; transparent dome shows how much oil is being dispensed.
- ◆ External adjusting knob, removable for tamper resistance.
- ◆ Polycarbonate plastic bowl with steel shatter-guard; optional aluminum bowl with sight glass.
- ◆ Optional extended metal bowl.
- ◆ All working parts can be replaced with a single service cartridge.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ All Optional low level switch.

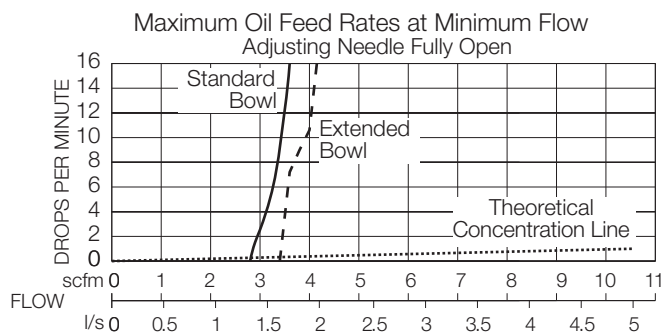
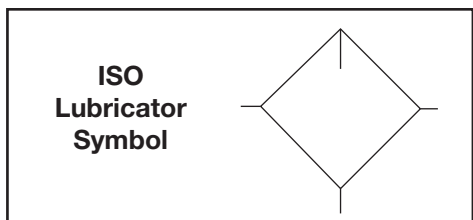
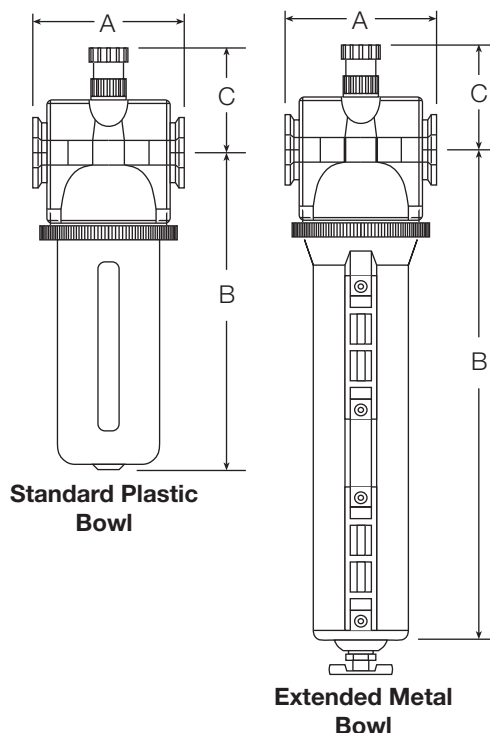
## FLOW CHARTS



## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight
					lb (kg)
9-Ounce Plastic	3.5 (88)	7.1 (179)	2.2 (56)	2.9 (73)	2.0 (0.91)
9-Ounce Metal	3.5 (88)	7.4 (188)	2.2 (56)	3.1 (79)	2.0 (0.91)
Extended Metal	3.5 (88)	10.6 (269)	2.2 (56)	3.1 (79)	2.2 (1.00)

† Bowl removal clearance: add 3.1 (79) for 9-ounce bowl; 6.1 (155) for extended bowl.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the lubricator you want.

**L380D - 3 Y W**

### BOWL TYPE

9-ounce plastic ..... L380D  
 9-ounce metal ..... BL380D  
 15-ounce metal ..... BL380DH

### PORT TYPE

3/8 NPTF ..... 3  
 1/2 NPTF ..... 4  
 3/4 NPTF ..... 6

### PORT TYPE

NPTF threads ..... Leave blank  
 BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order).

None ..... Leave blank  
 Cap color  
 Grey ..... Leave blank  
 MP yellow ..... C1  
 Red ..... C2  
 Mid blue ..... C3  
 Quick-fill cap ..... Q  
 Low level switch ..... S

When choosing this option, the metal bowl option must be ordered.

# High-Flow VANGUARD Lubricators

# L29D Models Port Sizes: 3/4 to 1-1/2



Model Shown: L29D-8

- ◆ Inline mounting.
- ◆ High-strength polycarbonate plastic bowl with steel shatterguard. Optional aluminum bowl with sight glass.
- ◆ Sight-feed design.
- ◆ External adjusting knob; removable for tamper resistance.
- ◆ Optional low level switch is available on metal bowls
  
- ◆ NPTF port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 16-Ounce (480-ml) capacity polycarbonate plastic with steel shatterguard. Optional aluminum bowl with sight glass.

**Bowl Ring:** Aluminum.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

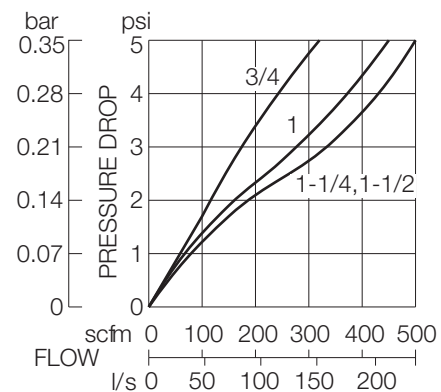
**Oil Adjustment:** External, tamper-resistant.

**Seals:** Nitrile.

**Sight Dome:** Nylon.

## FLOW CHART

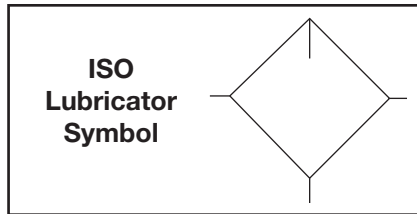
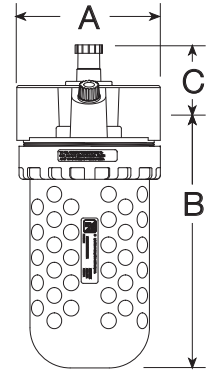
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 10 scfm (4.7 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight
					lb (kg)
Plastic	4.3 (108)	8.2 (208)	1.4 (37)	4.2 (106)	2.63 (1.21)
Metal	4.3 (108)	7.3 (185)	1.4 (37)	4.2 (106)	2.85 (1.30)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L29D - 6 Y W**

**BOWL TYPE**

- Plastic ..... L29D
- Metal ..... BL29D

**PORT SIZE**

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPP threads ..... W

**OPTIONS**

- None ..... Leave Blank
- Quick-fill Q-cap ..... Q
- Low level switch; ..... S  
only available with metal bowl option

# High-Flow VANGUARD Lubricators

## L100 Models Port Sizes: 1



Model Shown: L100-8

- ◆ Inline mounting.
- ◆ High-strength polycarbonate plastic bowl with steel shatterguard. Optional aluminum bowl with sight glass.
- ◆ Wick-feed design.
- ◆ Internal adjustment.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowl: 40° to 125°F (4° to 52°C).

Metal bowl: 40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 16-Ounce (480-ml) capacity polycarbonate plastic with steel shatterguard. Optional aluminum bowl with sight glass.

**Bowl Ring:** Aluminum.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

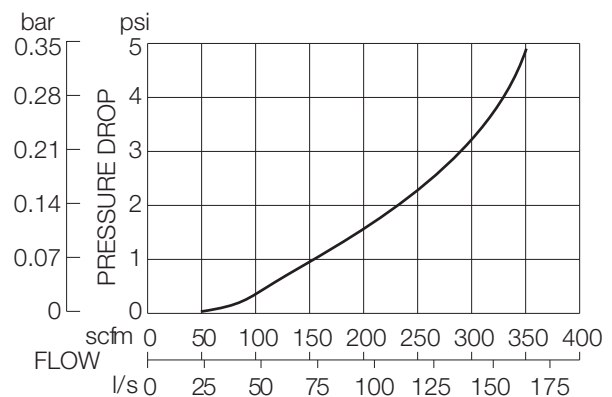
**Oil Adjustment:** Internal.

**Seals:** Nitrile.

**Sight Dome:** Nylon.

## FLOW CHART

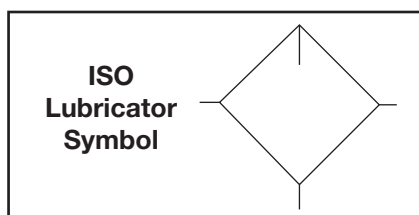
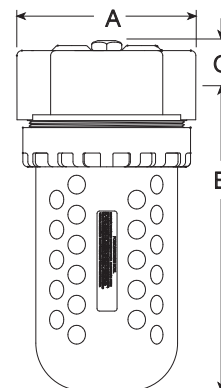
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 1 port, 35 scfm (16 l/s)

**DIMENSIONS** inches (mm)

Bowl	A	B	C	Depth	Weight
					lb (kg)
Plastic	4.5 (114)	7.7 (195)	0.8 (21)	4.2 (106)	2.88 (1.31)
Metal	4.5 (114)	8.2 (208)	0.8 (21)	4.2 (106)	3.00 (1.36)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**L100 - 8 Y W**

**BOWL TYPE**

Plastic ..... L100  
 Metal.....BL100

**PORT SIZE**

1 NPTF ..... 8

**PORT TYPE**

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

**OPTIONS**

None ..... Leave Blank  
 Quick-fill Q-cap..... Q

# High-Flow VANGUARD Lubricators

# BL237D Models Port Sizes: 3/4 to 1-1/2



Model Shown: BL237D-12

- ◆ Inline mounting.
- ◆ Aluminum bowl with sight glass. Optional extended bowl.
- ◆ Sight-feed design.
- ◆ External adjusting knob; removable for tamper resistance.
- ◆ Optional low level switch is available
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Body:** Aluminum.

**Bowl:** 35-Ounce (1030-ml) capacity aluminum bowl with sight glass. Optional 62-ounce (1830-ml) extended aluminum bowl with two sight glasses.

**Bowl Ring:** Aluminum.

**Fluid Media:** Compressed air.

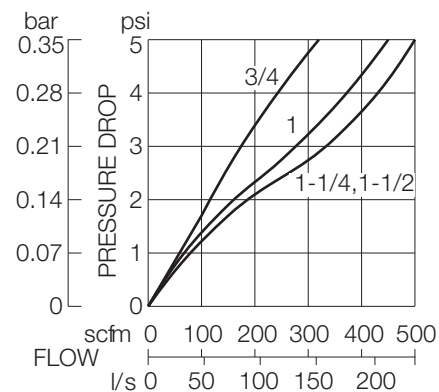
**Inlet Pressure:** 200 psig (14 bar) maximum.

**Oil Adjustment:** External, tamper-resistant.

**Seals:** Nitrile.

## FLOW CHART

Inlet Pressure: 100 psig (7 bar)



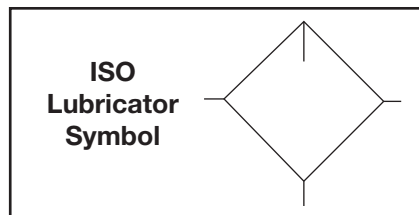
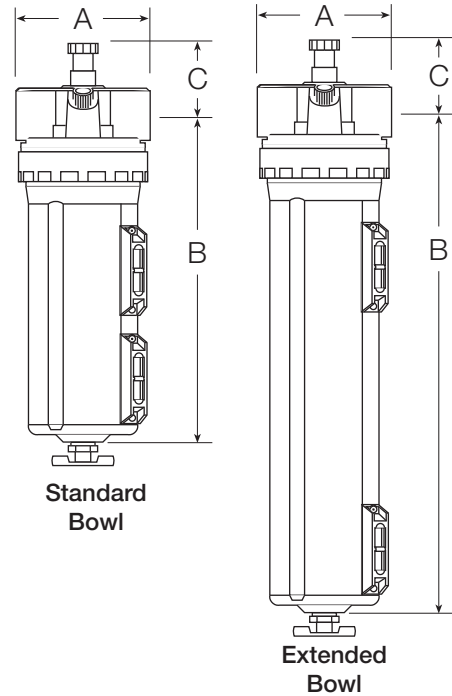
Minimum Flow: 35-Ounce bowl, 10 scfm (4.7 l/s)  
62-Ounce bowl, 14 scfm (6.6 l/s)

**DIMENSIONS** inches (mm)

Port	A	B	C	Depth	Weight
					lb (kg)
3/4	4.3	10.2	2.0	4.2	2.56
1	(108)	(259)	(51)	(106)	(1.16)
1-1/4	4.3	10.6	1.6	4.2	2.56
1-1/2	(108)	(268)	(41)	(106)	(1.16)

**The following have extended bowls:**

3/4	4.3	15.8	2.0	4.2	3.38
1	(108)	(400)	(51)	(106)	(1.64)
1-1/4	4.3	16.1	1.6	4.2	3.38
1-1/2	(108)	(410)	(41)	(106)	(1.64)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the lubricator you want.

**BL237D - 6 Y W**

**BOWL SIZE**

- Standard 35-ounce ..... BL237D
- Extended 62-ounce ..... BL237DH

**PORT SIZE**

- 3/4 NPTF ..... 6
- 1 NPTF ..... 8
- 1-1/4 NPTF ..... 10
- 1-1/2 NPTF ..... 12

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPB threads ..... W

**OPTIONS**

- None ..... Leave Blank
- Quick-fill Q-cap ..... Q
- Low level switch ..... S



# SERV-OIL® INJECTION LUBRICATORS

## WHAT IS SERV-OIL?

**SERV-OIL** is the most advanced system for the precision lubrication of pneumatic equipment. It has been used for over thirty years to provide lubrication to all kinds of pneumatic equipment and various fixtures, bearings, slides, and ways. It overcomes the control problems that can be encountered with conventional mist lubricators. It also ensures proper lubrication of pneumatic components in complex circuits, and accurately delivers lubricant to points at a long distance from the lubricator.

Positive-displacement oil injectors, called Servo-Meters, are the heart of **SERV-OIL** equipment. They put pre-determined, precise amounts of oil right at the points where lubrication is needed. By comparison, mist lubricators lack the precision and control of a **SERV-OIL** system. Extensive tests have shown that when a conventional mist lubricator is installed upstream of a control valve, much of the oil dispensed by the lubricator is exhausted to atmosphere through the exhaust port of the control valve. This is inefficient, and also contributes significantly to pollution of plant air.

With **SERV-OIL** equipment the amount of oil used is greatly reduced and lubrication is more effective because of the accuracy with which the oil is delivered. Briefly: **SERV-OIL** lubricates the component, not the area!



### Servo-Meter: Key Element in SERV-OIL Equipment

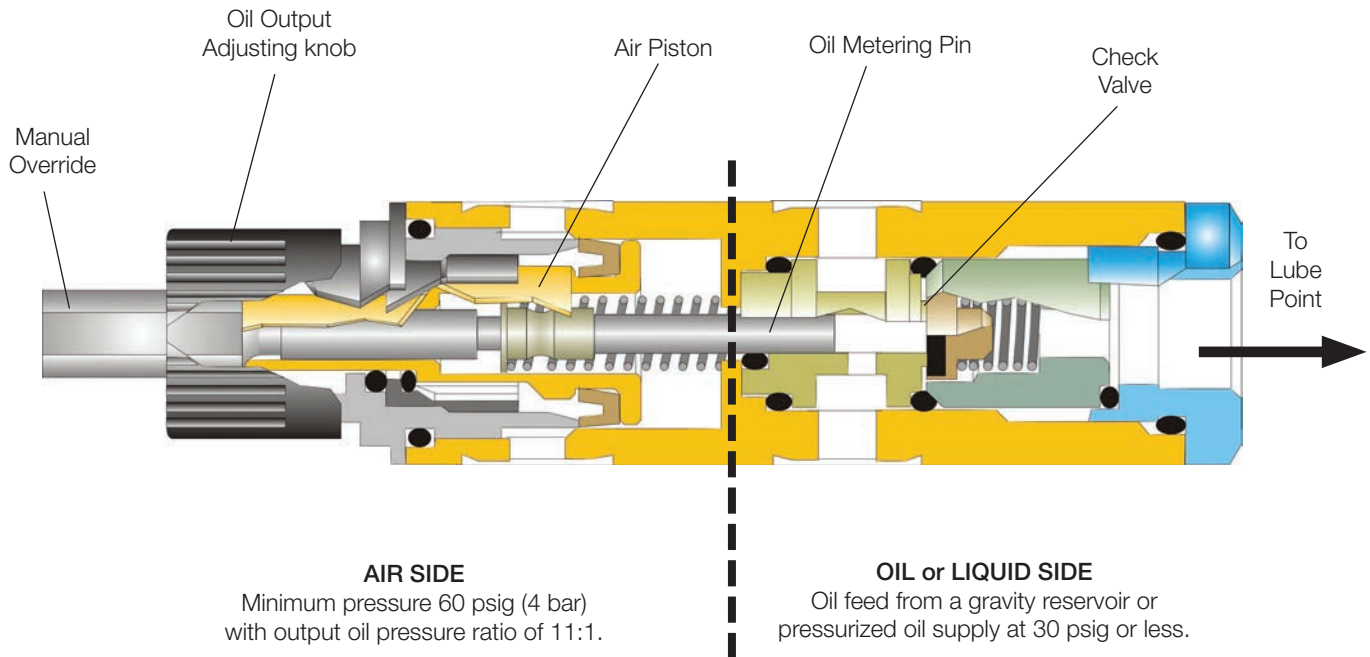
- ◆ Actuated by air pulse (60 psig minimum).
- ◆ Choice of 3 output ratings: 1/2, 1 or 2 drops.
- ◆ Output adjustable in small increments.
- ◆ Positive displacement metering ensures precise oil delivery with each actuation.
- ◆ Modular assembly allows up to 10 Servo-Meters to be built into a single assembly.
- ◆ Servo-Meters easily added or removed from multiple-unit assemblies.

## DO YOU NEED SERV-OIL?

If any **ONE** of the following statements describes a situation in your plant, you can reap long-term dividends by the use of **SERV-OIL** equipment.

- ◆ We repair air tools because the vanes are worn and the cylinders and rotors are scored due to insufficient lubrication.
- ◆ The appearance of fog or mist lubrication is a hazard in our plant.
- ◆ Over-lubrication costs us money because of the stringent requirements for disposing of used lubricants.
- ◆ Air cylinders in our plant become sluggish because of varnish or other contaminants.
- ◆ Torque control in our air tools is variable and doesn't meet our requirements.
- ◆ We set pressure regulators higher than the work requires just to overcome stiction in valves, cylinders, or other air components.
- ◆ If one pump fails in our lubrication system, the performance of other pumps is adversely affected.
- ◆ Sometimes lubricators are turned off, or the lubrication adjustments have been tampered with by unauthorized personnel. Such tampering removes lubrication control from the proper hands.
- ◆ We use flood coolants to lubricate taps and drills. The cost and environmental impact of this have not been considered.
- ◆ It would be to our advantage to know exactly what lubrication is being provided, and when to fill our lubricator reservoirs.

# SERVO-METER: Key SERV-OIL Module



**Cutaway Drawing of SERVO-METER**

Servo-Meters are the key modules in all the **SERV-OIL** equipment. They are precision, positive-displacement liquid injectors which are actuated by an air pressure signal of at least 60 psig (4 bar). 1/8-Inch oil-filled nylon line carries the injected oil from each Servo-Meter to a point of lubrication. Servo-Meters in single-point lubricators have a flow-actuated ball in the sight indicator at one end of the Servo-Meter to give visual verification of oil delivery. Ball check valves at the ends of the nylon lines ensure that the lines and the oil sides of the Servo-Meters remain full of oil and free of air.

Servo-Meters are available in three capacities: maximum flows of 1/2 drop, 1 drop, and 2 drops. A Servo-Meter is adjustable so that the maximum amount can be reduced in increments of 1/50th of its rated capacity as shown in the following chart: (Note: 1 drop = 1/30 cc.)

Maximum Output	Reducing Increments	Minimum Output
1/2 drop	1/100 drop	1/20 drop
1 drop	1/50 drop	1/10 drop
2 drops	1/25 drop	1/5 drop

With the aid of pulse counters and the controllers described on the next page, lubrication can be reduced even further by selecting the frequency of oil injection.

**SERV-OIL** equipment described on the following pages may be designed for either single Servo-Meter service or multiple (up to twenty) Servo-Meter service. Servo-Meters are made for modular assembly so that the equipment using multiple Servo-Meters can have them added or removed very simply.

**SERV-OIL** units employing multiple Servo-Meters use the same oil supply and the same air signals. An accessory block plate can be used in a stack of Servo-Meters to allow the use of two different air signals. All the Servo-Meters will continue to use the same oil supply. See **SERV-OIL** Accessories on page 223 for further details.

Although Servo-Meters are most commonly used to inject oil, they can also be used with other liquids. Before using them with other liquids, consult Master Pneumatic for advice on such applications.

# SERVO-METER Controllers

Servo-Meters can be set to dispense widely different amounts of oil on each actuation. In addition, every SERV-OIL unit employs a controller to regulate the frequency with which the Servo-Meter(s) in the unit are actuated. This control of both the amount and frequency of lubrication makes for the greatest efficiency and economy of use of lubricants.

Controllers range from simple pulse counters to units that create the pulses that actuate the Servo-Meters.

## INTEGRATED CONTROLLERS



**Pneumatic Pulse  
Controller**

**Pneumatic Pulse Counter.** A multiple-point lubricator with pulse counter is shown at the left. The counter receives air pulses (usually from the output of an operating valve) and determines which of the pulses it will pass on to the Servo-Meter and so become an actuating signal. A ratcheting mechanism in the counter can be set to make an actuating signal of every pulse, every 5th pulse, or every 10th pulse.

Pulse counters can be paired in tandem so that lubrication frequency can be reduced to as little as every 100th pulse.

**Frequency Generator.** This all-pneumatic device requires a steady supply of input air, and is used most often where on-off air-input pulses are not available. From the steady air input the generator produces output pulses to actuate Servo-Meters. This type of controller is shown at the right as an integrated part of an Automation Pac assembly.

A frequency generator's output is most accurate when producing pulses with a period of 1 to 30 seconds. The generator can be combined with a pulse counter to produce a final pulse output with periods from 1 second to 5 minutes. The actuating pulse frequency in seconds of



the pulse counter and frequency generator combination is equal to the pulse counter setting (1, 5, or 10) multiplied by the frequency generator setting (1 to 30).

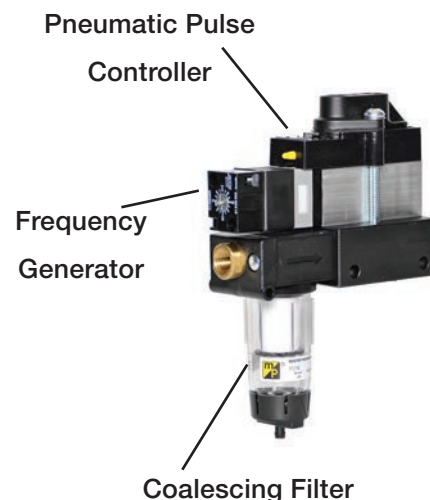
## STAND-ALONE CONTROLLERS



**Series PC100 Controller.** This is a stand-alone assembly of two pulse counters, and a coalescing filter to provide clean input air. A pulsed air input (usually from the output of an operating valve) is required. This controller can be used for a number of **SERV-OIL** units instead of having a counter in each of the individual units. This provides greater economy and superior control.

**Series PC110 Controller.** This is a stand-alone assembly that combines a pulse counter, a frequency generator, and a coalescing filter to provide clean input air. A steady flow of input air is required. The steady flow is converted into controlled pulses to actuate Servo-Meters.

As explained above, the settings of the pulse counter and the frequency generator can produce actuating pulses in periods as long as five minutes.



# The SERV-OIL Family of Products

## AUTOMATION PAC –

This is a self-contained assembly consisting of an oil reservoir, up to 20 Servo-Meters, and frequency controller. It is supplied ready for installation in a pneumatic circuit, with only ball checks, fittings, and tubing being required accessories. The Automation Pac will provide precision lubrication for valves, cylinders, fixtures, and machine tools using pneumatic components.



## SINGLE-POINT INJECTION LUBRICATOR for AIR TOOLS –

This unit is specifically designed to lubricate air tools. It cannot be used for other lubrication. For other single-point lubrication see the Downstream Lubricator below.



## SINGLE-POINT DOWNSTREAM INJECTION LUBRICATOR –

The downstream lubricator is installed in an air line going to cylinders, air motors, or other pneumatic equipment except air tools. See above for air tools. A small nylon line carries oil from the lubricator to the desired point of lubrication. Most commonly the nylon line runs inside the air line.



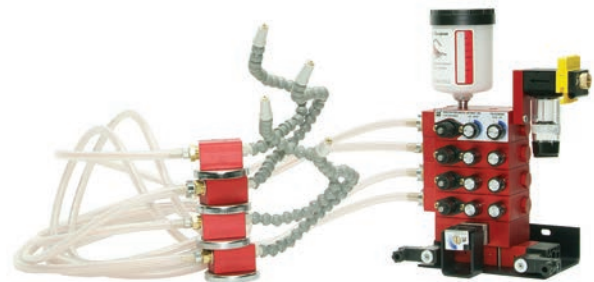
## MULTIPLE POINT INJECTION LUBRICATORS –

Up to ten Servo-Meters can be assembled to provide precision lubrication for up to ten lubrication points. All Servo-Meters use the same oil and air sources.



## LIQUID-ONLY EJECTOR –

A Servo-Meter is terminated with a nozzle through which a precise amount of liquid can be ejected up to ten inches. Assemblies of up to 10 Servo-Meters can be used.

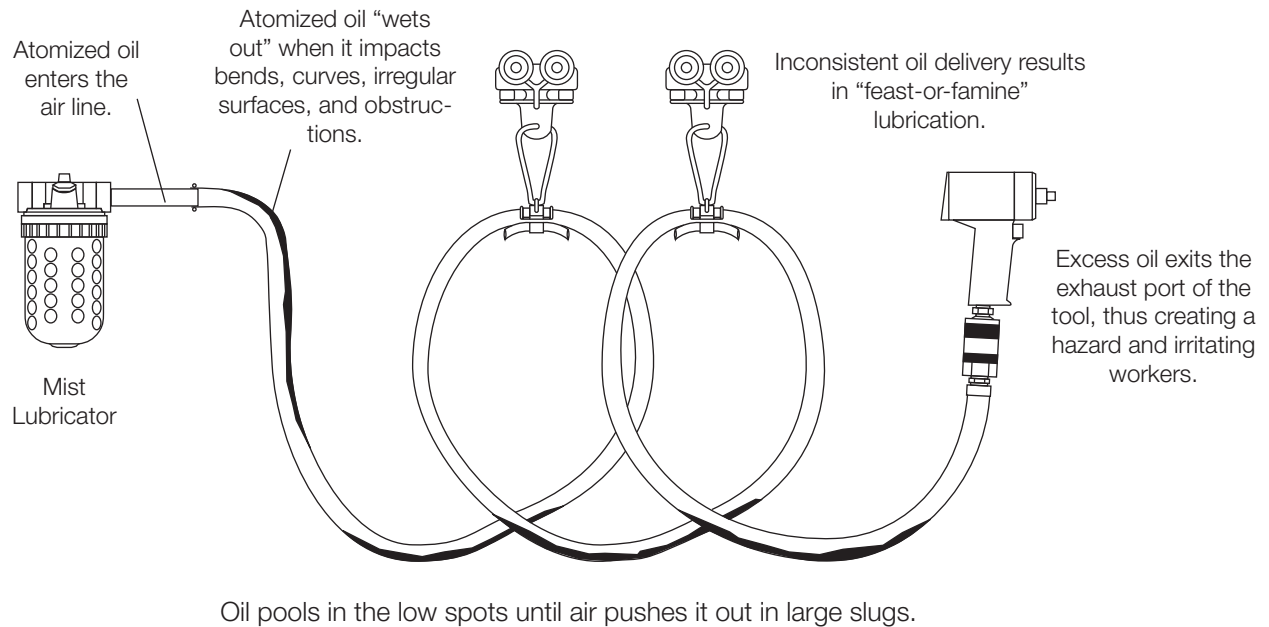


**COMPLETE LUBRICATION SYSTEMS –** All-in-one lubrication or coolant systems are engineered for many specialized requirements. See the descriptions of the **SCORPION** systems at the end of this section.

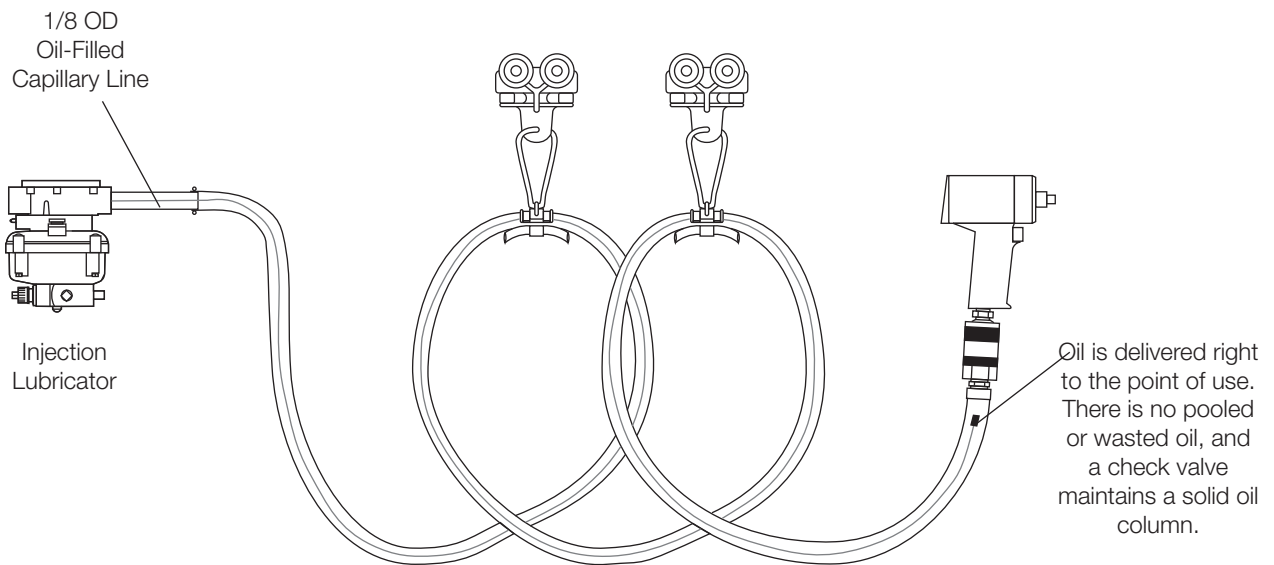
# PNEUMATIC TOOL LUBRICATION

## The Best Way to Do It!

### CONVENTIONAL MIST LUBRICATION



### INJECTION LUBRICATION



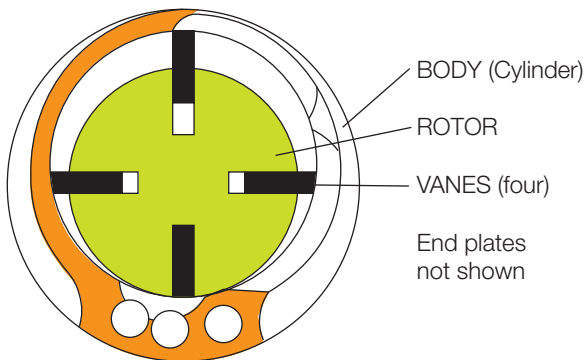
Consistent, Precision Lubrication Results in Consistent Torque and Tool Performance.

# The Importance of SERV-OIL to Air Tools

Air tools are very economical devices for tightening threaded fasteners. They are usually smaller and lighter than similar electric or hydraulic tools, and have the advantage of being able to stall without suffering motor damage. However, understanding the mechanics of an air tool will make it clear why it requires consistent, controlled lubrication.

## CONSTRUCTION

The most common motor design used in air tools is the rotary vane type. A typical cross section of such a motor is shown below.

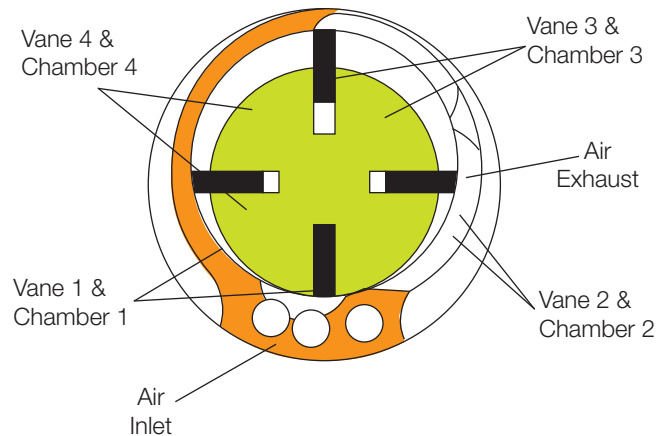


The motor body is usually of cast metal. Its inside diameter and length are machined and polished to a high finish. The diameter and length of the body will determine the size and capacity of the motor. The rotor's diameter is about 85% of the inside diameter of the body, and has radial slots to accommodate the four vanes. The vanes are as long as the rotor, and are linen-based, phenolic resin strips. The two end plates are made of a soft metal. They support the rotor shaft and serve as dynamic seals.

Note that the cylinder inside diameter and the rotor diameter have different center points. The difference is such that the two surfaces will be tangent where the bottom of the rotor touches the cylinder. Note also that the vanes slide in the rotor slots so that they maintain contact with the cylinder. This contact can be maintained by springs beneath each vane, or, more commonly, by air pressure.

## WORK CYCLE

Referring to the diagram below we can follow a work cycle of the air motor.



Vaness divide the space between the rotor and cylinder into four chambers. Chamber 1 includes the inlet port. When pressurized air enters chamber 1 it causes the rotor to turn clockwise. When vane 2 clears the inlet port, chamber 2 is pressurized and the rotation continues. As each chamber reaches the exhaust port its pressure is exhausted. A positive pressure differential between the chambers on the left and those on the right must be maintained in order for the rotor to rotate.

Maintaining a good seal between chambers is the function of the vanes. The most important seal points are where the vanes contact the cylinder, with the seal of the bottom vane being the most critical. It is here that the pressure differential between the inlet and exhaust sides of the motor must be maintained. If the seal points leak, the pressure differential drops, and the motor loses torque.

The wear of the seals is magnified by hit-or-miss lubrication. Without oil the vanes take a beating, and eventually crack and chip. The chips score the cylinder and rotor, and may even wedge themselves between vanes and cylinder. The air motor is approaching uselessness!

The **SERV-OIL** Single Point Lubricator is specifically designed to inject a predetermined amount of oil at the inlet of the air tool every time it cycles. Maximum performance. Extended life. Reduced maintenance. Less downtime. Improved torque control. These are all the result of **PRECISE, CONSISTENT LUBRICATION.**

# SERV-OIL Single-Point Injection Lubricators for Air Tools

Port Sizes: 1/2, 3/4



Model Shown: A64061

## SPECIFICATIONS

**Air Flow:** Maximum inlet pressure of 150 psig (10 bar) and a pressure drop of 3 psi (0.2 bar):  
 1/2 NPTF — 4-60 scfm (2-28 dm<sup>3</sup>/s)  
 3/4 NPTF — 4-90 scfm (2-43 dm<sup>3</sup>/s)

**Ambient/Media Temperature:**  
 40° to 125°F (4° to 52°C).

**Flow Valve:** Zinc body.

**Operating Pressure Range:**  
 60-150 psig (4.1-10.3 bar)

**Pulse Counter:** Adjustable to operate the Servo-Meter on every cycle, every 5th cycle, or every 10th cycle.

**Reservoir:** Integral, unpressurized. 10-Ounce (300-ml) capacity transparent nylon with quick-fill cap. Optional M476R reservoir. Integral reservoir can be eliminated if a central-fill system is employed

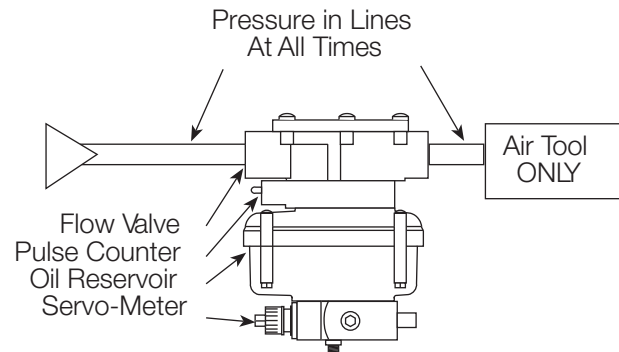
**Servo-Meter:** Aluminum body; acetal end caps. 1-Drop rating; optional 1/2-drop or 2-drop rating. Transparent sight indicator gives visual verification of oil delivery.

**Tubing:** Optional 25 feet (8 meters) of oil-filled tubing and 420-160 check valve.

**Oil Viscosity Range:** 31-1000 @ 100°F (37.8°C)

The single-point lubricator (**SPL**) is specifically designed to lubricate air tools. It cannot be used for general lubrication of components other than air tools. For other single-point applications see the single-point downstream lubricator or multipoint lubricators on the following pages.

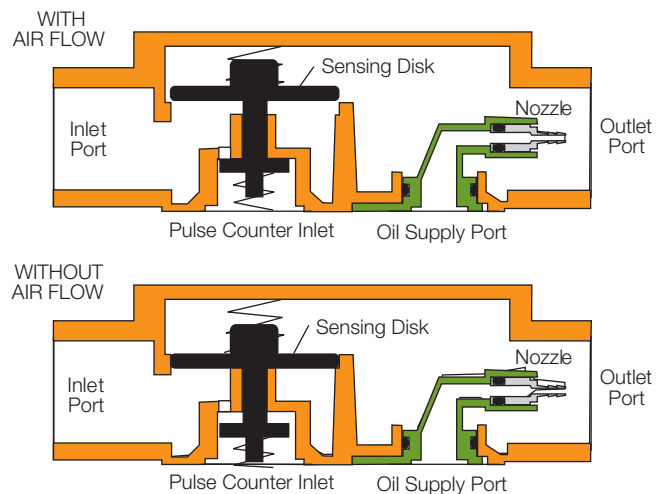
An **SPL** is installed in the air supply line upstream of the air tool. When the tool is cycled the **SPL** injects a precise amount of oil at the air inlet of the tool. Both the amount of oil and the frequency of injection are adjustable.



Sub-Assemblies and Installation of SPL

The four sub-assemblies shown in the drawing above make up the **SPL**.

**Flow Valve.** The air supply line is connected to the inlet of the flow valve. 1/8-Inch nylon tubing is connected to the nozzle in the outlet port, and then runs inside the air line to within a short distance of the air tool. A check valve must be installed on the end of the 1/8" nylon tube.



SPL Flow Valve  
 (continued on next page)

When the air tool is at rest, no air flows in the valve. When the tool is triggered the differential pressure across the sensing disk opens a passage to the pulse counter.

**Pulse Counter.** When the air tool is triggered the pulse counter receives an air signal from the flow valve. A three-position switch on the counter is set to allow the air signal to proceed to the Servo-Meter on every cycle, every 5th cycle, or every 10th cycle. This is one of the means of controlling the amount of lubrication that will be supplied to the air tool.

**Servo-Meter.** The Servo-Meter is an air-actuated, positive-displacement oil pump. It injects oil with each signal from the pulse counter. These signals can be every time, every 5th time, or every 10th time the air tool is triggered. The frequency is determined by the setting of the pulse counter.

To actuate the Servo-Meter the signal received must have a pressure of at least 60 psig (4 bar). When actuated the Servo-Meter delivers a precise amount of oil to the nozzle in the outlet port of the flow valve, and is then carried by a nylon line to the air tool. A transparent sight indicator on one end of the Servo-Meter gives visual verification of oil delivery.

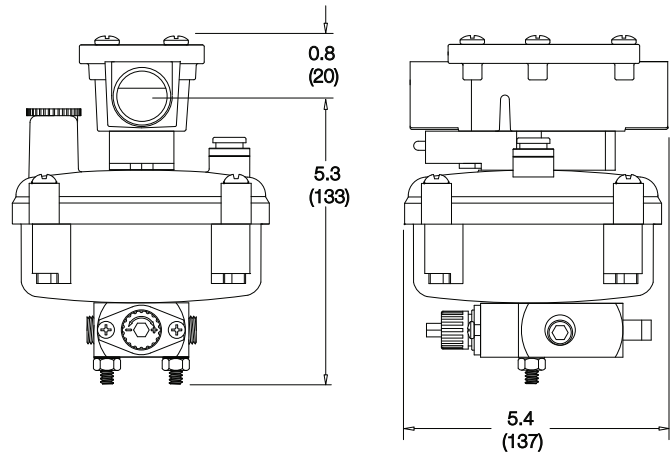
By means of the adjusting knob on the end of the Servo-Meter, oil delivery can be reduced in precise increments from the maximum rating down to 10% of the maximum rating. (30% for 2 drop units.)

**Oil Reservoir.** The integral oil reservoir is made of tough, transparent nylon, and has a capacity of 10 ounces (300

ml). It has a quick-fill cap, and since the reservoir is not pressurized it can be filled at any time. It can also be used with a central-fill system. Gravity fill is recommended, but fill pressure can be up to 30 psig (2 bar).

An SPL can be ordered without an integral reservoir, in which case a sight-dome air eliminator is available for use with a central-fill system.

**DIMENSIONS** inches (mm)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the SPL you want.

**P A6 4 0 4 1 Y W**

**OIL-FILLED TUBING**

With 25 ft (8 m) of tubing ..... Leave Blank  
and 420-160 check valve.  
Without tubing..... P

**RESERVOIR**

With integral reservoir ..... 4  
No integral reservoir. Also specify  
0 if ordering **M476R** reservoir  
under **OPTIONS** at right..... 0

**PORT SIZE**

1/2 NPTF..... 4  
3/4 NPTF..... 6

**PORT TYPE**

NPTF threads ..... Leave Blank  
BSP threads ..... W

**OPTIONS** (*More than one option can be chosen*)

None ..... Leave Blank  
Two pulse counters ..... BB  
Frequency controller ..... F  
M476R reservoir. Also specify 0  
under **RESERVOIR** at left..... R

**SERVO-METER RATING**

One drop (0.030 ml) ..... 1  
Two drops (0.060 ml) ..... 2  
Half drop (0.015 ml) ..... 5



# SERV-OIL Downstream Injection Lubricators for Equipment *except* Air Tools

Port Sizes: 1/2, 3/4



Model Shown: D64061

## SPECIFICATIONS

**Air Flow:** Maximum inlet pressure of 150 psig (10 bar) and a pressure drop of 3 psi (0.2 bar):

1/2 NPTF — 4-60 scfm (2-28 dm<sup>3</sup>/s)

3/4 NPTF — 4-90 scfm (2-43 dm<sup>3</sup>/s)

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Flow Valve:** Zinc body.

**Operating Pressure Range:**

60-150 psig (4.1-10.3 bar)

**Pulse Counter:** Adjustable to operate the Servo-Meter on every cycle, every 5th cycle, or every 10th cycle.

**Reservoir:** Integral, unpressurized. 10-Ounce (300-ml) capacity transparent nylon with quick-fill cap. Optional M476R reservoir. Integral reservoir can be eliminated if a central-fill system is employed

**Servo-Meter:** Aluminum body; acetal end caps. 1-Drop rating; optional 1/2-drop or 2-drop rating. Transparent sight indicator gives visual verification of oil delivery.

**Tubing:** Optional 25 feet (8 meters) of oil-filled tubing and 420-160 check valve.

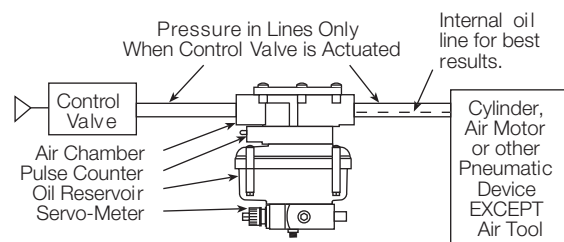
**Oil Viscosity Range:** 31-1000 @ 100°F (37.8°C)

The downstream injection lubricator is specifically designed to overcome the shortcomings of the conventional mist lubricator installed upstream of a control valve. Laboratory and field tests have shown that a mist lubricator installed in the conventional manner results in much of the lubricating oil being exhausted to atmosphere through the exhaust port of the control valve.

Oil that passes through the valve tends to coalesce and cling to the wall of the air line where it simply moves back and forth with each valve cycle.

The SERV-OIL downstream injection lubricator eliminates these shortcomings. It is installed downstream of the control valve and uses a small nylon line to carry the lubricant right to the desired lubrication point. This assures dependable lubrication for cylinders, air motors, or other pneumatic equipment.

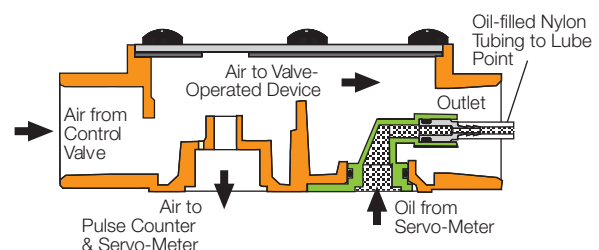
The downstream lubricator is not designed to work with air tools. For such applications see preceding pages .



Sub-Assemblies and Installation of Downstream Lubricator

The four sub-assemblies shown in the drawing above make up the downstream lubricator.

**Air Chamber.** The air line supplying the cylinder (or other device to be lubricated) is connected to the inlet port of the air chamber. 1/8-Inch nylon tubing is connected to the nozzle in the outlet port, and then runs inside the air line to within a short distance of the cylinder port. A check valve must be installed at the end of the tubing.



Air Chamber of Downstream Lubricator

Pulse Counter. When the control valve is actuated the pulse counter receives an air signal from the air chamber. A three-position switch on the counter is set to allow the air signal to proceed to the Servo-Meter on every cycle, every 5th cycle, or every 10th cycle. This is one of the means of controlling the amount of lubrication that will be dispensed by the Servo-Meter.

Servo-Meter. The Servo-Meter is an air-actuated, positive-displacement oil pump. It injects oil with each signal from the pulse counter. These signals can be every time, every 5th time, or every 10th time the control valve is actuated. The frequency is determined by the setting of the pulse counter.

To actuate the Servo-Meter the signal received must have a pressure of at least 60 psig (4 bar). When actuated the Servo-Meter delivers a precise amount of oil to the nozzle in the outlet port of the flow valve, and thus on to the lubrication point. A transparent sight indicator on one end of the Servo-Meter gives visual verification of oil delivery.

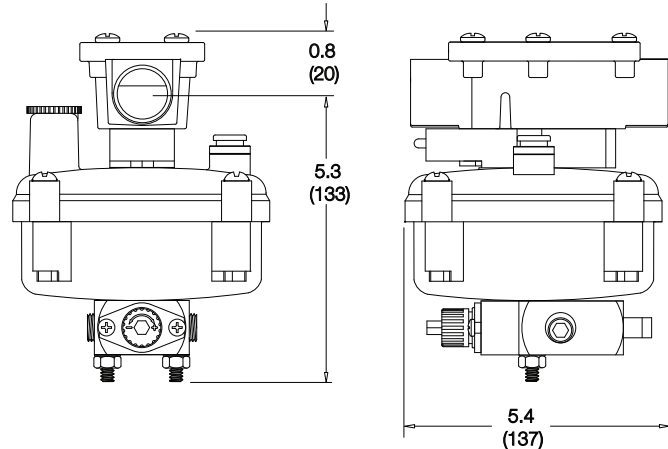
By means of the adjusting knob on the end of the Servo-Meter, oil delivery can be reduced in precise increments from of the maximum rating down to 10% of the maximum rating. (30% for 2 drop units)

Oil Reservoir. The integral oil reservoir is made of tough, transparent nylon, and has a capacity of 10 ounces (300 ml). It has a quick-fill cap, and since the reservoir is not

pressurized it can be filled at any time. It can also be used with a central-fill system. Gravity fill is recommended, but fill pressure can be up to 30 psig (2 bar).

A downstream lubricator can be ordered without an integral reservoir, in which case a sight-dome air eliminator is available for use with a central-fill system.

**DIMENSIONS** inches (mm)



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the downstream lubricator you want.

**P D6 4 0 4 1 Y W**

**OIL-FILLED TUBING**

With 25 ft (8 m) of tubing ..... Leave Blank  
and 420-160 check valve.

Without tubing..... P

**RESERVOIR**

With integral reservoir ..... 4

No integral reservoir. Also specify  
0 if ordering M476R reservoir  
under **OPTIONS** at right ..... 0

**PORT SIZE**

1/2 NPTF..... 4

3/4 NPTF..... 6

**PORT TYPE**

NPTF threads ..... Leave Blank

BSPF threads ..... W

**OPTIONS** (*More than one option can be chosen*)

None ..... Leave Blank

Two pulse counters ..... BB

Frequency controller ..... F

M476R reservoir. Also specify 0  
under **RESERVOIR** at left..... R

**SERVO-METER RATING**

One drop (0.030 ml) ..... 1

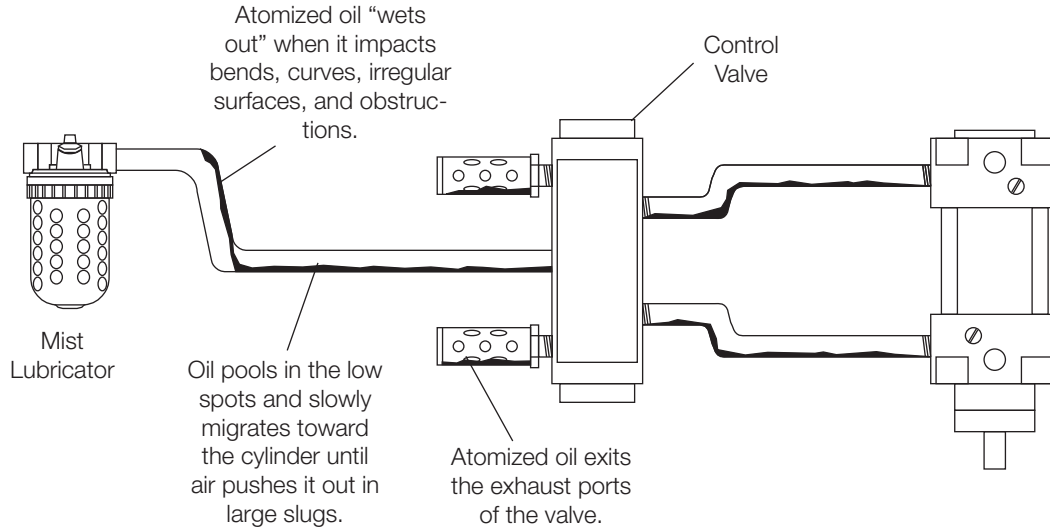
Two drops (0.060 ml) ..... 2

Half drop (0.015 ml) ..... 5

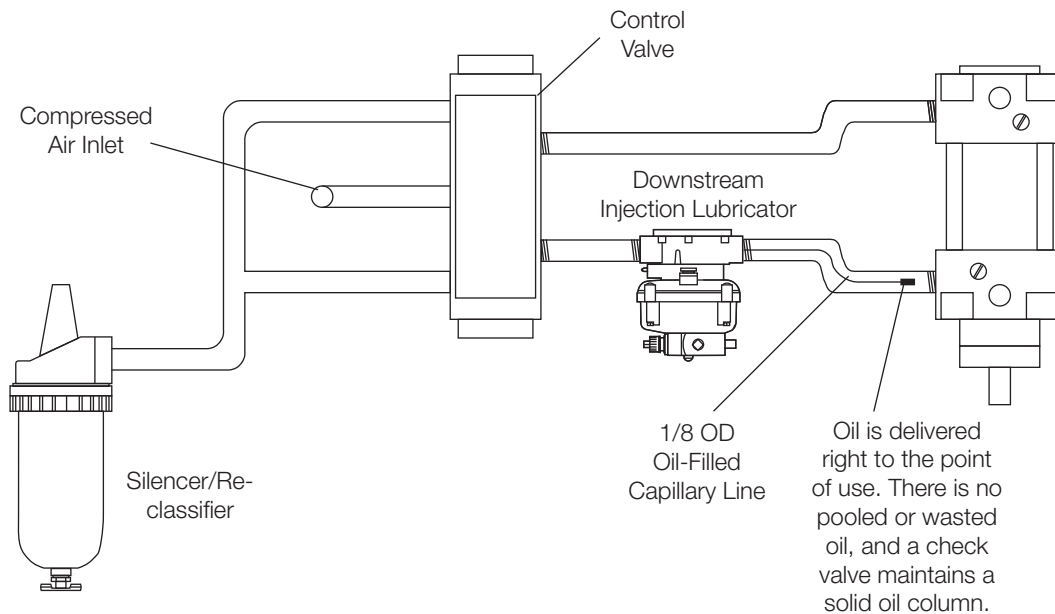
# PNEUMATIC CYLINDER LUBRICATION

Extend Cylinder Life and Decrease Downtime

## CONVENTIONAL MIST LUBRICATION



## INJECTION LUBRICATION

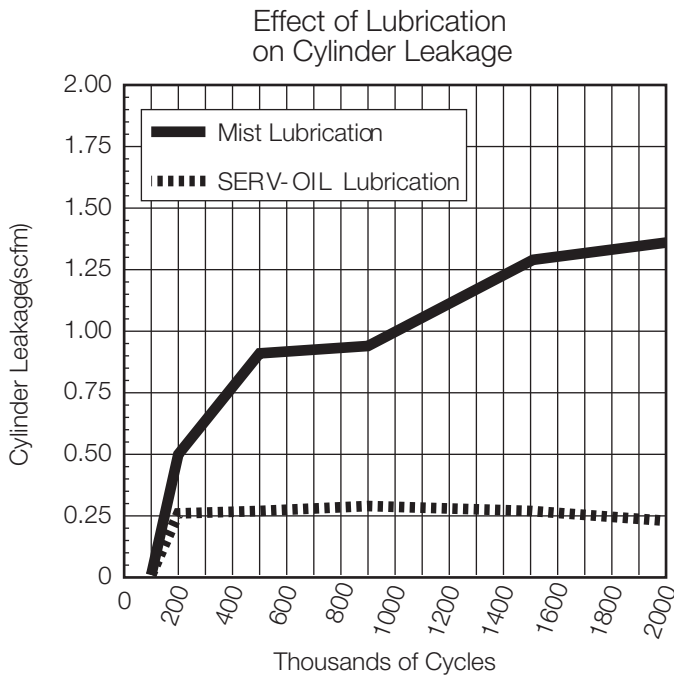


# Cylinder Lubrication: Mist vs. SERV-OIL

A test was conducted for a major automotive plant to compare the effectiveness of mist type and SERV-OIL injection type lubricators. The test used special dual lip piston weld cylinders, and was conducted over a period of three and a half months. Cylinders were run for approximately 14 hours at a time. Both types of lubricators were adjusted to dispense the equivalent of one-tenth drop of oil for each 10 cylinder cycles.

Triple-filtered air was used in this test, and when the cylinders were disassembled at the end of the test no visible foreign particles were found in the cylinders. Filtration was at the 0.3- $\mu$ m level, and this is much finer than is found in most air cylinder operations where only 40- $\mu$ m filtration is common.

At the end of each daily test run, an air flow meter was attached to each cylinder to measure rod end leakage while the cylinders were still warm. The findings are displayed in the graph below.



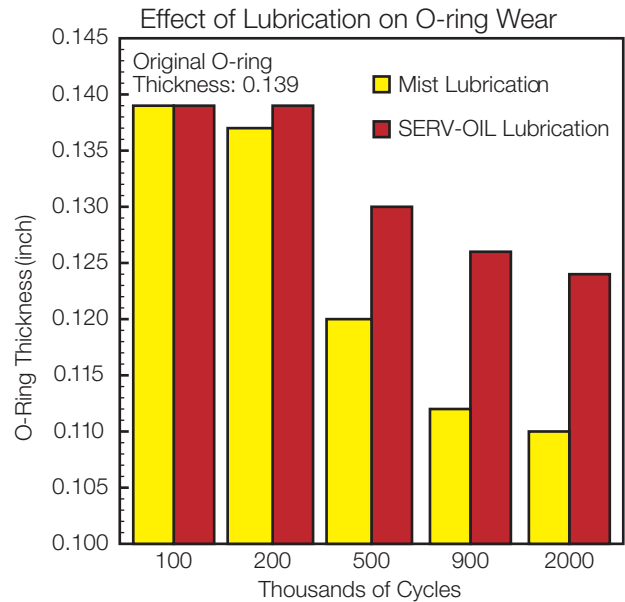
The cylinder leakage graph above displays the results at intervals up to 2 million cycles, the cycle count for the entire test. Air bypass around the piston can be seen to be significantly greater with mist type lubrication. This bypass is a failure that directly affects the force and speed of a cylinder. With SERV-OIL lubrication bypass loss is small, and essentially constant after establishing a low initial loss level.

If the cylinders had been of conventional construction, and had air filtration been at the more common plant level (40- $\mu$ m), cylinder wear could be expected to be much greater than that recorded in this test.

With the use of SERV-OIL injection lubrication, it is guaranteed that lubricant is reaching the cylinder at the rod end. Oil is carried from the SERV-OIL injector to the lubrication point by 1/8-inch nylon tubing inside the air line. The rod, therefore, is well lubricated and as a result, due to the piston's extended resting period (usually directly under the retract air supply port), the piston also receives a beneficial delivery of lubricant.

The longer and more tortuous the air pathway from control valve to cylinder, the less effective the mist lubricator becomes. Oil tends to coalesce on the air line walls and puddle in low points. Much of the oil can also be blown into the atmosphere from the valve's exhaust port, so that it serves no purpose in lubricating the cylinder, but does create a health hazard.

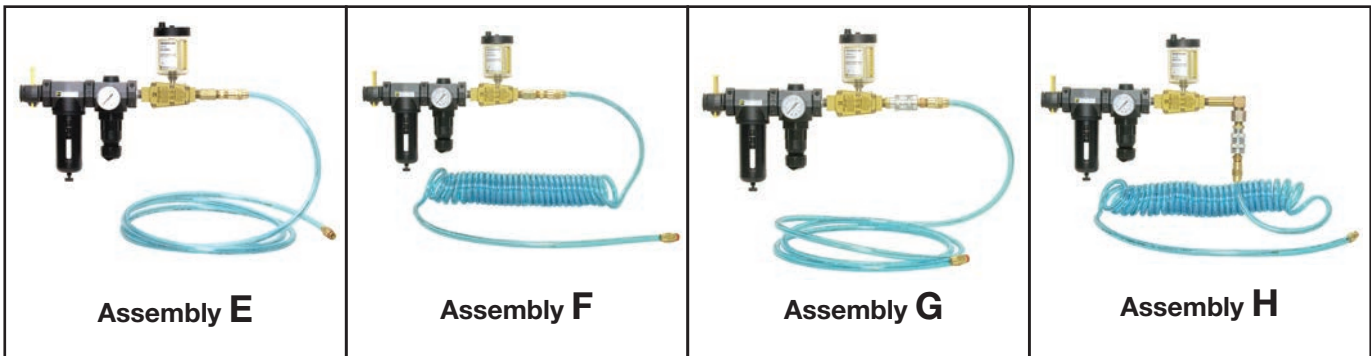
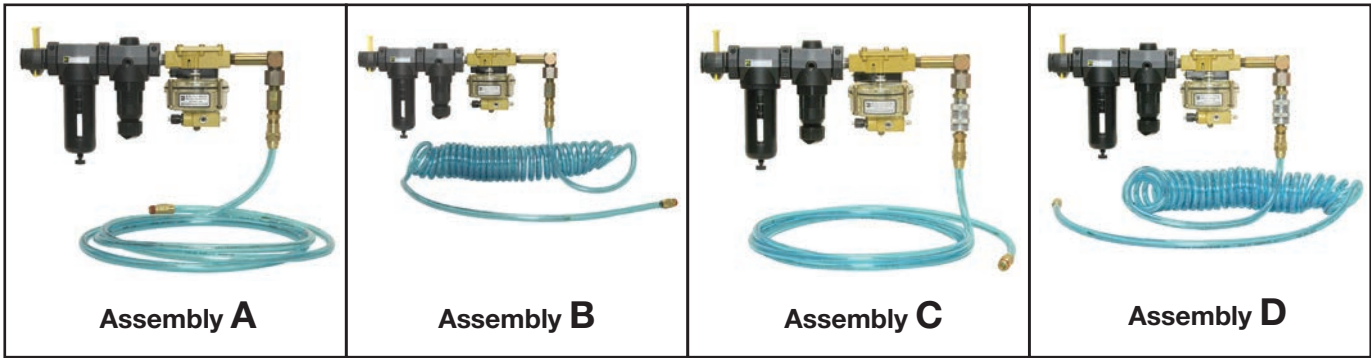
Wear in the cylinder during this test is exemplified by the O-ring wear shown in the graph below.



As shown in this graph, an initial O-ring thickness of 0.139 inch was reduced by little more than 10% after two million cycles using SERV-OIL lubrication. With mist lubrication, the O-ring wear was nearly twice as great.

\* See page 289 for Cylinder Lubrication Rate chart.

# FILTER & REGULATOR with SPL and HOSE ASSEMBLIES



**SERV-OIL** single point lubricators (**SPLs**) have been used for decades to provide economical, precision lubrication to pneumatic devices. They lubricate just the points needing lubrication, not the hose or pipe supplying air to the device

The illustrations above are but a small sample of the available **FRL** combinations using single point lubricators. All those shown are for lubricating **AIR TOOLS** only. The injection lubricators used here are not designed for bi-directional flow, and so are **NOT** to be used with air cylinders or air motors. Where bi-directional flow is involved the downstream **SPLs** on pages 206-207 would be used.

In the above assemblies the lubricators can be fitted with integral oil reservoirs (assemblies A-D), or can be supplied from external reservoirs (assemblies E-H).

A variety of coaxial fittings and hose assemblies are available. Coaxial fittings allow the air and oil supplies to be connected simultaneously. Both quick connect/disconnect

versions and **NPT** pipe models are offered. Some assemblies (A-D and H) include a 90-degree coaxial elbow for use where the lubricator is installed overhead.

The coaxial hose assemblies are available with the internal oil capillary tube, including check valve, installed in either straight or coiled blue urethane hose. The standard hose lengths are 12-, 25-, and 50-feet. Note that the coiled assemblies have a working length less than the overall length. Working lengths are shown with the Ordering Information on page 211, 213 and 215. Other hose lengths can be made to the user's exact specifications. Consult the Master Pneumatic Sales Department.

Coiled hose assemblies are typically used in applications where the **SPL** is overhead and the amount of hose on the floor needs to be minimized.

# HOSE ASSEMBLIES

Straight Hose Assembly

Model H-0A0A3B-S12



Upstream Connection  
(From SPL)

Downstream Connection  
(To tool)

Coiled Hose Assembly

Model H-0A0A1B-C12



Upstream Connection  
(From SPL)

Downstream Connection  
(To tool)

**Upstream Connector** (Used without quick disconnect)



**Upstream Connector**  
(Used with coaxial quick disconnect socket)



## HOSE for SPLs ORDERING INFORMATION

Change the letters in the sample model number below to specify the hose assembly you want.

**H-0A0 A 1 C - C 12**

### HOSE MATERIAL

Urethane ..... 0  
Reinforced urethane ..... 1

### HOSE DIAMETER

5/16 ID (1/2 upstream ..... A  
connection only)  
3/8 ID (1/2 and 3/4 upstream ... B  
connections)  
1/2 ID (1/2 and 3/4 upstream ... C  
connections)

### UPSTREAM CONNECTION

1/2 coaxial plug (Used with ..... 1  
quick disconnect)  
3/4 coaxial plug (Used with ..... 2  
quick disconnect)  
1/2 coaxial adaptor (1/2 male ..... 3  
threaded end)  
3/4 coaxial adaptor (3/4 male ..... 4  
threaded end)  
1/2 NPT male (non-coax - upstream... 5  
barb installed in hose)  
3/4 NPT male (non-coax - upstream... 6  
barb installed in hose)

### HOSE LENGTH

12 ft (3.7 m); if coiled, 9 ft (2.7 m) ..... 12  
working length  
25 ft (7.6 m); if coiled, 18 ft (5.5 m) ... 25  
working length  
50 ft (15 m); if coiled, 36 ft (11 m) ..... 50  
working length

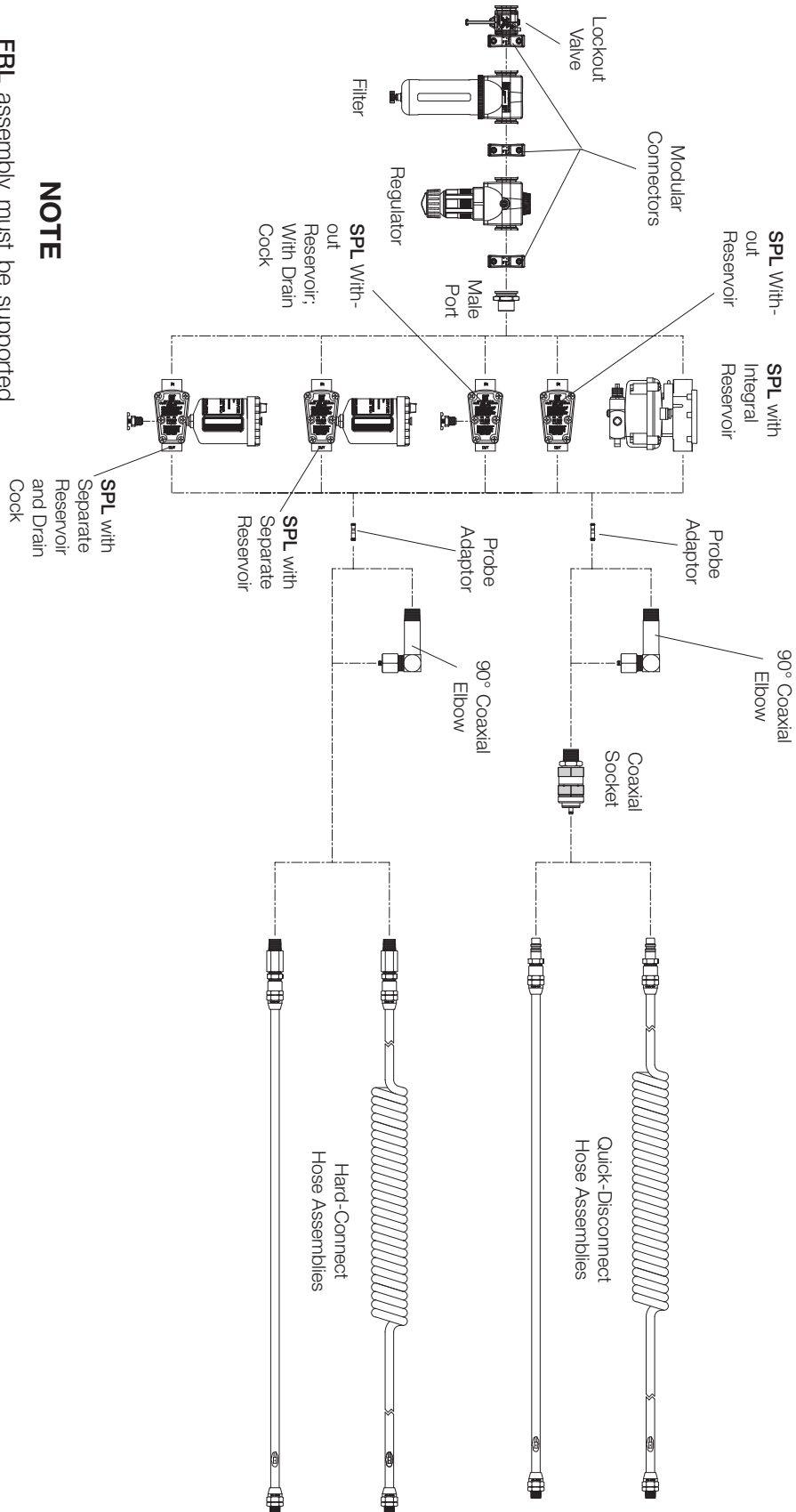
### HOSE TYPE

Coiled (standard 18" upstream ..... C  
tail, 36" downstream tail)  
*For other tail lengths, consult factory*  
Straight ..... S

### DOWNSTREAM CONNECTION

3/8 male swivel (Used with ..... B  
3/8 ID or 5/16 hose)  
1/4 male swivel (Used with ..... C  
3/8 ID or 5/16 ID hose)  
1/2 male swivel (Used with ..... D  
1/2 ID hose)  
1/2 ID female ridged ..... E

# FILTER & REGULATOR ASSEMBLY WITH SPL and HOSE



**NOTE**  
 FRL assembly must be supported at two points. Consult Master Pneumatic for assistance.

## FRL (with SPL) ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL assembly you want.

# HA-0 A 0 B 0 A 0 B-A00

### MODULAR LOCKOUT VALVE

None ..... 0  
V380 ..... 1

### MODULAR FILTER (See pg 48)

None ..... A  
FD380 ..... B  
F380 ..... C  
BFD380 ..... D  
BF380 ..... E

### MODULAR REGULATOR (See pg 126)

None ..... 0  
R380-G, 0-200 psi gauge, and  
modular male port ..... 1  
R380 and modular male port ..... 2

### † LUBRICATOR (See pp 204, 206)

SM designates Servo-Meter

PA640, 1-drop SM ..... B  
PA600, 1-drop SM ..... C  
PA600, 1-drop SM, M476R reservoir ..... D  
PA600, 1-drop SM, M476R  
reservoir, 1/4 drain cock ..... E  
PA600, 1-drop SM, 1/4 drain cock ..... F  
PA640, 2-drop SM ..... G  
PA600, 2-drop SM ..... H  
PA600, 2-drop SM, M476R reservoir ..... J  
PA600, 2-drop SM, M476R  
reservoir, 1/4 drain cock ..... K  
PA600, 2-drop SM, 1/4 drain cock ..... L  
PA640, 1/2-drop SM ..... M  
PA600, 1/2-drop SM ..... N  
PA600, 1/2-drop SM, M476R reservoir ..... P  
PA600, 1/2-drop SM, M476R  
reservoir, 1/4 drain cock ..... Q  
PA600, 1/2-drop SM, 1/4 drain cock ..... R  
PA640\*1BB, 1 drop, double counter ..... 7  
PA640\*2BB, 2 drop, double counter ..... 8  
PA640\*5BB, 1/2-drop, double counter ..... 9

### PORT SIZE

1/2 NPTF ..... 4  
3/4 NPTF ..... 6

### HOSE ASSEMBLIES

No hose assembly. .... B-A00

Assembly Number	Hose Type	Length ft (m)		Code
		Overall	Working	

#### URETHANE HOSE

*Includes 3/8 male swivel downstream connection:*

H-0A0B*B-C12	3/8 ID coiled	12 (3.7)	9 (2.7)	... B-C12
H-0A0B*B-C25	3/8 ID coiled	25 (7.6)	18 (5.5)	... B-C25
H-0A0B*B-C50	3/8 ID coiled	50 (15)	36 (11)	... B-C50
H-0A0B*B-S12	3/8 ID straight	12 (3.7)	12 (3.7)	... B-S12
H-0A0B*B-S25	3/8 ID straight	25 (7.6)	25 (7.6)	... B-S25
H-0A0B*B-S50	3/8 ID straight	50 (15)	50 (15)	... B-S50

*Includes 1/4 male swivel downstream connection (for use with 1/2 ports only):*

H-0A0A*C-C12	5/16 ID coiled	12 (3.7)	9 (2.7)	... C-C12
H-0A0A*C-C25	5/16 ID coiled	25 (7.6)	18 (5.5)	... C-C25
H-0A0A*C-C50	5/16 ID coiled	50 (15)	36 (11)	... C-C50
H-0A0A*C-S12	5/16 ID straight	12 (3.7)	12 (3.7)	... C-S12
H-0A0A*C-S25	5/16 ID straight	25 (7.6)	25 (7.6)	... C-S25
H-0A0A*C-S50	5/16 ID straight	50 (15)	50 (15)	... C-S50

#### REINFORCED URETHANE HOSE

*Includes 3/8 male swivel downstream connection:*

H-0A1B*B-C12	3/8 ID coiled	12 (3.7)	9 (2.7)	... E-C12
H-0A1B*B-C25	3/8 ID coiled	25 (7.6)	18 (5.5)	... E-C25
H-0A1B*B-C50	3/8 ID coiled	50 (15)	36 (11)	... E-C50
H-0A1B*B-S12	3/8 ID straight	12 (3.7)	12 (3.7)	... E-S12
H-0A1B*B-S25	3/8 ID straight	25 (7.6)	25 (7.6)	... E-S25
H-0A1B*B-S50	3/8 ID straight	50 (15)	50 (15)	... E-S50

*Includes 1/4 male swivel downstream connection (for use with 1/2 ports only):*

H-0A1A*C-C12	5/16 ID coiled	12 (3.7)	9 (2.7)	... F-C12
H-0A1A*C-C25	5/16 ID coiled	25 (7.6)	18 (5.5)	... F-C25
H-0A1A*C-C50	5/16 ID coiled	50 (15)	36 (11)	... F-C50
H-0A1A*C-S12	5/16 ID straight	12 (3.7)	12 (3.7)	... F-S12
H-0A1A*C-S25	5/16 ID straight	25 (7.6)	25 (7.6)	... F-S25
H-0A1A*C-S50	5/16 ID straight	50 (15)	50 (15)	... F-S50

\*Upstream connection.

#### UPSTREAM CONNECTION

Direct connect coaxial adaptor threaded male ..... 0  
Coaxial plug (used with quick disconnect socket) ..... 1  
Manual connect non-coaxial male (not Q.D.) ..... 2  
(Elbow connection must be "A")  
No hose assembly attached ..... 3

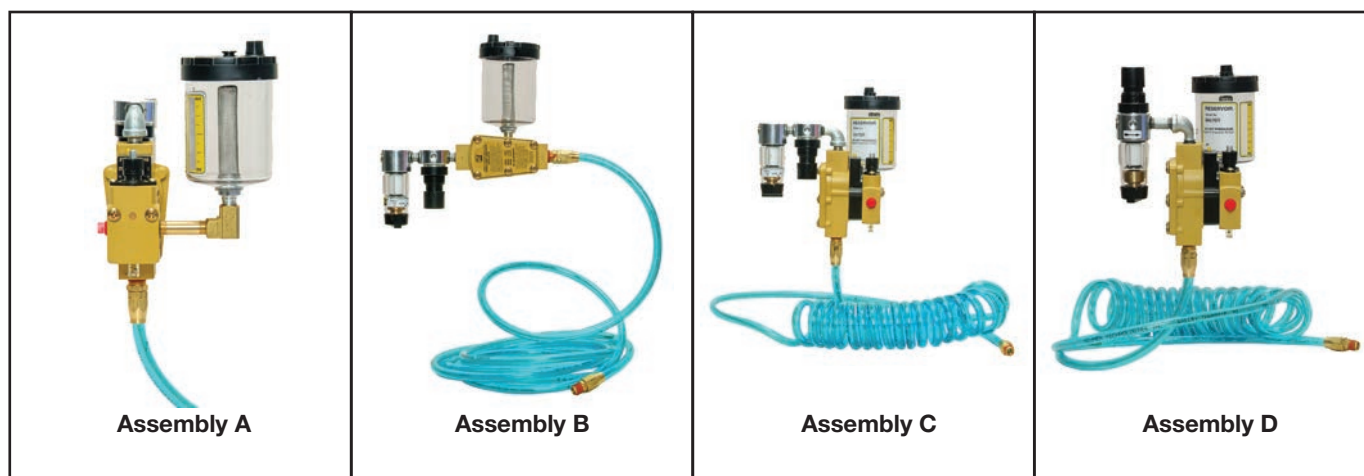
#### ELBOW

None ..... A  
90° coaxial elbow ..... B  
Direct connect coaxial Quick Disconnect ..... C  
Socket  
Direct connect coaxial Quick Disconnect ..... D  
socket and 90 degree coaxial elbow  
(Pipe size reflected in port size option)

† NOTE: "P" prefix on lubricator part number indicates that it is supplied without capillary tubing. Instead a probe adapter will be supplied within this assembly.



## LOW FLOW SPL HOSE ASSEMBLIES



**SERV-OIL** single point lubricators (**SPLs**) have been used for decades to provide economical, precision lubrication to pneumatic devices. They lubricate just the points needing lubrication, not the hose or pipe supplying air to the device.

The low flow **FR-SPL** assembly has been designed to offer a more economical, lower flow **FR-SPL** assembly at the same time supplying the accuracy and reliability that customers have come to rely on with our standard **FR-SPL** assemblies.

The illustrations above are but a small sampling of the available **FR-SPL** combinations using single point lubricators. All those shown are for lubricating **AIRTOOLS** requiring low flow operation only. The injection lubricators used here are not designed for bi-directional flow, and are **NOT** to be used with air cylinders or air motors. Where bi-directional flow is involved the downstream **SPLs** on pages 206-207 would be used.

In the above assemblies the lubricators can be fitted with external oil reservoirs (assemblies A-D) or without the external oil reservoir for applications using central fill oil delivery systems.

The low flow **FR-SPL** assemblies are supplied with a 1/4" NPT inlet port. The outlet port is 1/2" NPT. The downstream hose fitting is supplied with a 1/4" NPT male swivel. Depending on the installation, these

**FR-SPL** low flow assemblies can be ordered in a straight inline design or a 90 degree version allowing these assemblies to be mounted overhead in a workstation.

The coaxial hose assemblies are available with the internal oil capillary tube, including check valve, installed in either straight or coiled blue urethane hose. The standard hose lengths are 12- or 25-feet. Note that the coiled assemblies have a working length less than the overall length. Other hose lengths can be made to the user's exact specifications. Consult the Master Pneumatic Sales Department.

Coiled hose assemblies are typically used in applications where the **SPL** is overhead and hose on the floor needs to be eliminated, or at least minimized. A 90 Degree **FR-SPL** design is recommended to prevent the hose from crimping during operations when the design is called out to be mounted overhead.

### INJECTION LUBRICATION vs. MIST LUBRICATION

- ◆ Increased tool life 2-1/2 – 3x
- ◆ Reduce tool repair cost by 50 – 90%
- ◆ Provide constant lubrication for constant torque
- ◆ Use less oil AND minimize oil discharge in tool exhaust

# HOSE ASSEMBLIES

Straight Hose Assembly



Coiled Hose Assembly



Upstream Connectors



Downstream Connectors



## HOSE for LOW FLOW FR-SPLs ORDERING INFORMATION

Change the letters in the sample model number below to specify the hose assembly you want.

**H-0A 0 A5C - C 12**

### HOSE MATERIAL

Urethane ..... 0  
Reinforced Urethane..... 1

### HOSE DIAMETER:

5/16 ID (1/2 upstream connection only)

### UPSTREAM CONNECTION:

1/2-NPT male (non-coax –  
upstream barb on capillary tube  
installed in hose)

### DOWNSTREAM CONNECTION:

1/4 male swivel (used with 3/8 ID or 5/16 ID  
hose)

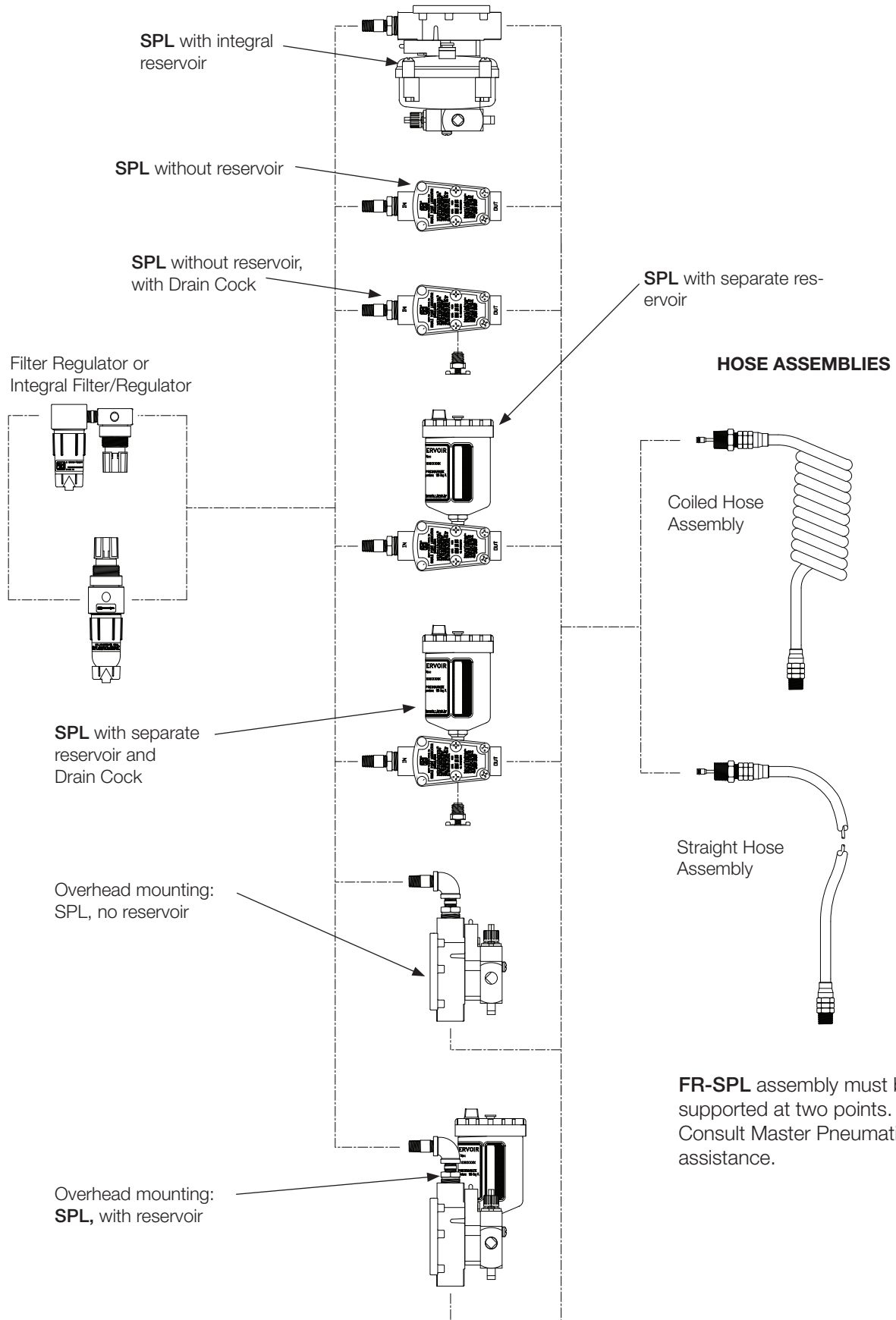
### HOSE LENGTH

12 ft (3.7 m); if coiled, 9 ft (2.7 m)  
working length..... 12  
25 ft (7.6 m); if coiled, 18 ft (5.5 m)  
working length..... 25

### HOSE TYPE

Coiled (standard 18" upstream  
straight tail, 36" downstream  
straight tail).....C  
*For other tail lengths, consult factory*  
Straight.....S

# LOW FLOW SPL HOSE ASSEMBLIES



**FR-SPL** assembly must be supported at two points. Consult Master Pneumatic for assistance.

# LOW FLOW AIR TOOL LUBRICATION SYSTEM ORDERING INFORMATION

Change the letters in the sample model number below to specify the assembly you want.

## HB-0 A 0 A 4 A 2 A-C12

### FILTER AND FILTER/REGULATOR OPTIONS

- FD50-2 ..... B
- F50-2 ..... C
- BFD50-2 ..... D
- BF50-2 ..... E
- CFDR55M-2NG ..... F
- CFDR55M-2 ..... G
- CFR55M-2NG ..... H
- CFR55M-2 ..... J
- CFDR56M-2NG ..... K
- CFDR56M-2 ..... L
- CFR56M-2NG ..... M
- CFR56M-2 ..... N
- BCFDR55M-2NG ..... P
- BCFDR55M-2 ..... Q
- BCFR55M-2NG ..... R
- BCFR55M-2 ..... S
- BCFDR56M-2NG ..... T
- BCFDR56M-2 ..... U
- BCFR56M-2NG ..... V
- BCFR56M-2 ..... W

### REGULATOR

- None ..... 0
- R55M-2 ..... 1
- R55M-2G ..... 2
- R56M-2 ..... 3
- R56M-2G ..... 4

### HOSE ASSEMBLIES

No hose assembly. .... B-A00

Assembly Number	Hose Type	Length ft (m)		Code
		Overall	Working	

#### URETHANE HOSE

**Includes 1/4 male swivel downstream connection:**

H-0A0A5C-C12	5/16 ID coiled	12 (3.7)	9 (2.7) .....	C-C12
H-0A0A5C-C25	5/16 ID coiled	25 (7.6)	18 (5.5) .....	C-C25
H-0A0A5C-S12	5/16 ID straight	12 (3.7)	12 (3.7) ....	C-S12
H-0A0A5C-S25	5/16 ID straight	25 (7.6)	25 (7.6) ....	C-S25

#### REINFORCED URETHANE HOSE

**Includes 1/4 male swivel downstream connection:**

H-0A1A5C-C12	5/16 ID coiled	12 (3.7)	9 (2.7) .....	F-C12
H-0A1A5C-C25	5/16 ID coiled	25 (7.6)	18 (5.5) .....	F-C25
H-0A1A5C-S12	5/16 ID straight	12 (3.7)	12 (3.7) .....	F-S12
H-0A1A5C-S25	5/16 ID straight	25 (7.6)	25 (7.6) .....	F-S25

#### † LUBRICATOR (See pp 204, 206)

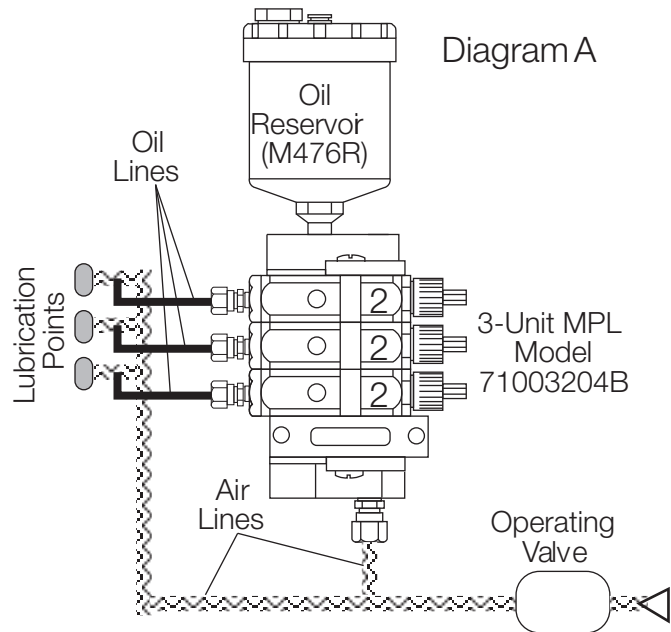
**(1/2" port size and 1/2" drop only)**

PA60045	.....	C
PA60045, M476R reservoir	.....	D
PA60045, M476R reservoir, 1/4" drain cock	.....	E
PA60045, 1/4" drain cock	.....	F
PA60045, 90° assembly	.....	G
PA60045, 90° assembly, M476R reservoir	.....	H
PA60045BB, double counter	.....	S
PA60045BB, M476R reservoir, double counter	.....	T
PA60045BB, M476R reservoir, 1/4" drain cock, double counter	.....	W
PA60045BB, 1/4" drain cock, double counter	.....	X
PA60045BB, 90° assembly, double counter	.....	Y
PA60045, 90° assembly, M476R reservoir, double counter	.....	Z

† **NOTE:** "P" prefix on lubricator part number indicates that it is supplied without capillary tubing. Instead a probe adapter will be supplied within this assembly.

## TYPICAL MPL APPLICATION With 2-Drop Servo-Meters and Integral Oil Reservoir

Diagram A at the right shows a simple circuit using three 2-drop Servo-Meters and an integral oil reservoir. The actuating signal for the Servo-Meters is taken from the downstream side of the operating valve. Each actuation of the valve causes the Servo-Meters to inject oil at three different specific lubrication points. The Servo-Meters can be set to inject as little as 1/5th drop or as much as 2 drops per cycle. No controller is required in this application.



## TYPICAL MPL APPLICATION With 1-Drop Servo-Meters, a Pulse Counter, and Remote Oil Reservoir

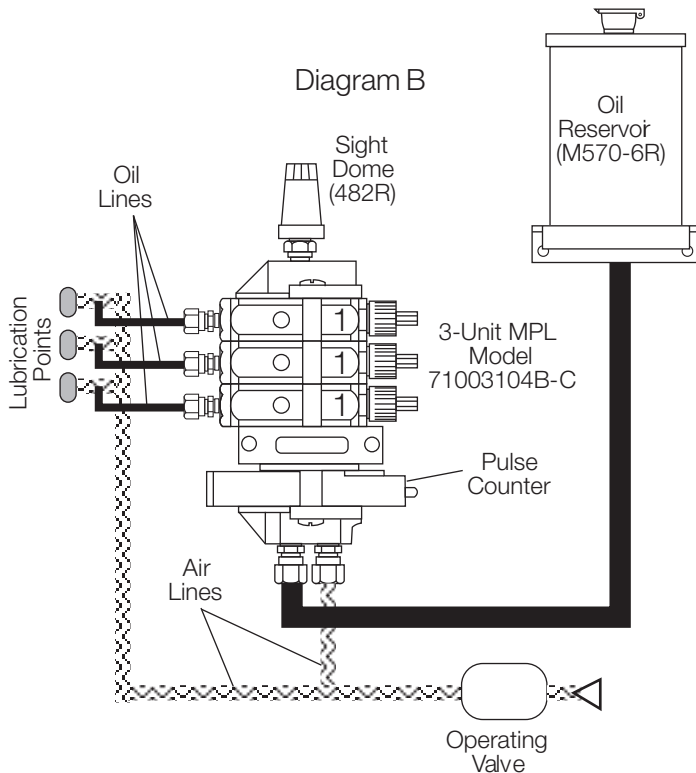


Diagram B at the left shows a circuit using three one-drop Servo-Meters, a pulse counter, and a remote one-quart oil reservoir. The actuating signal for the Servo-Meters is taken from the downstream side of the operating valve. The Servo-Meters can deliver from 1/10th drop to one drop of oil to each of the three different lubrication points. The pulse counter can be set to reduce lubrication by allowing only every 5th or 10th air pulse from the operating valve to actuate the Servo-Meters. For even greater reduction of the lubricating frequency, two pulse counters acting in tandem can be used.

Note the use of a sight dome to vent air from the system.

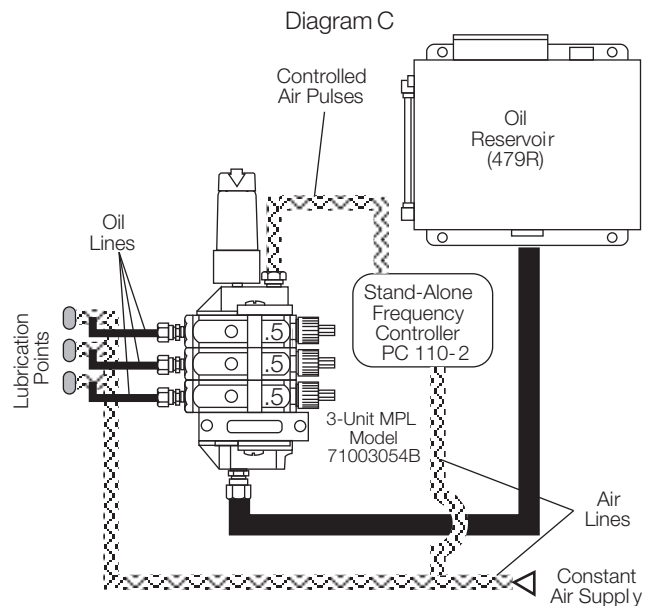
**An additional Typical Application using a stand-alone frequency generator is shown on the following page.**

## TYPICAL MPL APPLICATION

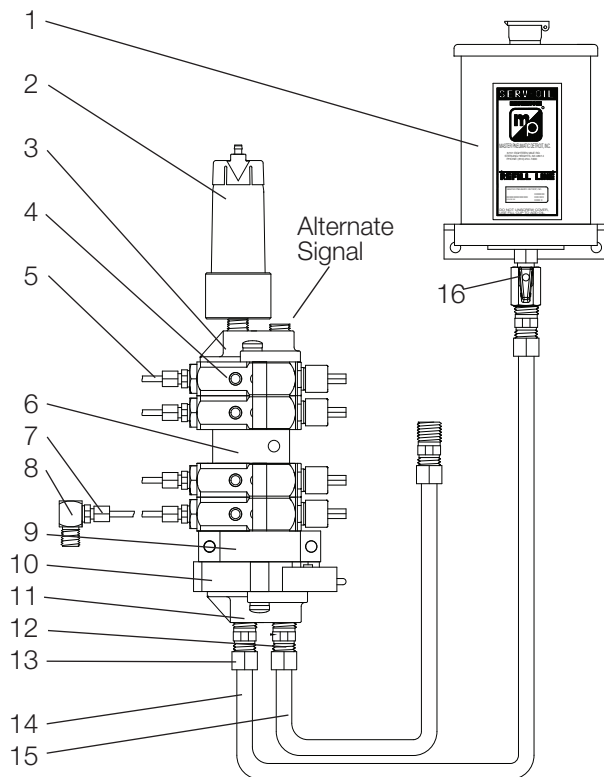
### With 1/2-Drop Servo-Meters, a Frequency Controller, and Remote Oil Reservoir

In diagram C at the right the **MPL** has 1/2-drop Servo-Meters which can supply from 1/20th drop to 1/2 drop of oil at each actuation. A 10-gallon metal oil reservoir is used. This reservoir could actually supply a number of similar **MPL** lubricating systems. Oil is introduced at the bottom of the assembly, and a sight dome is used to prevent airlock of the Servo-Meters.

A stand-alone frequency controller determines how often the Servo-Meters will inject oil. This can be as often as every second or as infrequent as every five minutes. Air for the controller is from a constant, no-pulse source which the controller will use to create the actuating pulses for the Servo-Meters. The air signal can be introduced at either the top or the bottom of the assembly.



## ASSEMBLY OF MPL SYSTEMS



1. Oil reservoir
2. Sight dome for venting air manually and to give visual confirmation of oil in Servo-Meters. Part **482R**.
3. Mounting clamp.
4. Servo-Meter.
5. Prefilled 1/8" nylon oil delivery line. Part **A00942M**.
6. Block plate. Block plate with seals and hardware is kit number **K474-07T**. See page 287.
7. Tube connector. Part **00142W**
8. Ball check valve. One required for inlet to tee before air valves. See page 287 for types and sizes.
9. Mounting plate.
10. Pneumatic pulse counter.
11. Mounting clamp.
12. Tube connector. Part **00184W**.
13. Tube connector. Part **001124W**.
14. Oil supply line; 3/8" nylon tubing. Part **009126-M**. Larger size can be used.
15. Air signal line; 1/4" nylon tubing. Must be from on-off source, usually downstream of operating valve. Part **00984M**. Note: When using a pulse counter, the air signal must first go to the counter, then to the Servo-Meters.
16. 476-40 Ball valve

### MPL ASSEMBLY KITS

Servo-Meter Kit (see footnotes)	70001##4B-@
Mounting/Assembly Kit	KA474-10

## – Specify rating:  
 1/2 drop .....05  
 1 drop.....10  
 2 drops.....20

@ – Specify options.  
 See **OPTIONS** under  
**Ordering Information** on  
 following pages.



**MPL Mounting Kit**

# SERVO-METERS

## Add-on injectors / replacement kits



Model: 70001104B (Bolts and washers not shown)



Model: 70001104A (Bolts and washers not shown)



Model: 70G01104A (Bolts and washers not shown)



Model: 70E01104B (Bolts and washers not shown)



456-138



456-139



456-140

Fittings above are shown attached to housings that have the M5 x 0.8-6h tapped hole on side on unit.



Standard end cap



Solid end cap



Micro Dial

### SERVO-METER KITS FOR SERV-OIL MULTIPLE-POINT INJECTION LUBRICATORS.

Series 710 and 720

**70 0 01 10 4 B - A W**

#### EXTRA PORTING and MICRO DIAL OPTIONS

- Standard Servo-Meter no options ..... 0
- M5 x 0.8H tapped air hole on breather end of ..... D housing **456-138** brass plug and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... E housing **456-139** 90 degree fitting and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... F housing **456-140** Straight fitting and **SOLID** washers.
- Micro Dial ..... G
- M5 x 0.8H tapped air hole on breather end of ..... H housing **456-139** 90 degree fitting and **SOLID** washers. Micro Dial.

#### SERVO-METER RATING

- Half drop ..... 05
- Full drop ..... 10
- Two drops ..... 20

#### SERVO-METER HOUSING MATERIAL

- Brass housing..... B
- Aluminum housing ..... A
- Nickle plated housing ..... N

#### PORT TYPE

- NPTF ..... Leave Blank
- BSPB ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None (remove dash) ..... Leave Blank
- Servo-meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Oil end seals (**EPR**) ..... E
- Oil end seals (**Neoprene**) ..... N
- Oil end seals (**Viton**) ..... V
- Oil end seals (**Buna N standard**) ..... Leave Blank

# SERVO-METERS

## Add-on injectors / replacement kits

### SERVO-METER KITS FOR SERV-OIL ELECTRONICALLY CONTROLLED MULTIPLE-POINT INJECTION LUBRICATORS.

Series 7A0

**70 0 01 10 4 B - W**

**EXTRA PORTING and MICRO DIAL**

**OPTIONS**

Standard Servo-Meter no options ..... 0  
 Micro Dial ..... G

**SERVO-METER RATING**

Half drop ..... 05  
 Full drop ..... 10  
 Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

Brass housing..... B  
 Aluminum housing ..... A  
 Nickle plated housing ..... N

**PORT TYPE**

NPTF ..... Remove '-'  
 BSPP ..... W

### SERVO-METER KITS FOR AUTOMATION PACS

Series 730

**70 0 01 10 4 B - A W**

**EXTRA PORTING and MICRO DIAL**

**OPTIONS**

Standard Servo-Meter no options ..... 0  
 M5 x 0.8H tapped air hole on breather end of ..... D housing **456-138** brass plug and **SOLID** washers.  
 M5 x 0.8H tapped air hole on breather end of ..... E housing **456-139** 90 degree fitting and **SOLID** washers.  
 M5 x 0.8H tapped air hole on breather end of ..... F housing **456-140** Straight fitting and **SOLID** washers.  
 Micro Dial ..... G  
 M5 x 0.8H tapped air hole on breather end of ..... H housing **456-139** 90 degree fitting and **SOLID** washers. Micro Dial.

**SERVO-METER RATING**

Half drop ..... 05  
 Full drop ..... 10  
 Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

Brass housing..... B  
 Aluminum housing ..... A  
 Nickle plated housing ..... N

**PORT TYPE**

NPTF ..... Leave Blank  
 BSPP ..... W

**OPTIONS** (*More than one option can be chosen. Add in alphabetical order*)

None (*remove dash*) ..... Leave Blank  
 Servo-meter shutoff ..... A  
 Non-shutoff ..... Leave Blank  
 Oil end seals (**EPR**) ..... E  
 Oil end seals (**Neoprene**) ..... N  
 Oil end seals (**Viton**) ..... V  
 Oil end seals (**Buna N standard**) .... Leave Blank



# SERVO-METERS

## Add-on injectors / replacement kits

### SERVO-METER KITS FOR LIQUID DISPENSERS

Series 740 and 770

**70 0 01 10 4 B - A L V W**

**EXTRA PORTING and MICRO DIAL OPTIONS**

- Standard Servo-Meter no options ..... 0
- M5 x 0.8H tapped air hole on breather end of ..... D housing **456-138** brass plug and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... E housing **456-139** 90 degree fitting and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... F housing **456-140** Straight fitting and **SOLID** washers.
- Micro Dial ..... G
- M5 x 0.8H tapped air hole on breather end of ..... H housing **456-139** 90 degree fitting and **SOLID** washers. Micro Dial.

**SERVO-METER RATING**

- Half drop ..... 05
- Full drop ..... 10
- Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

- Brass housing..... B
- Aluminum housing ..... A
- Nickle plated housing ..... N

**PORT TYPE**

- NPTF ..... Leave Blank
- BSPP ..... W

**OPTIONS**

- Oil end seals (**EPR**) ..... Leave Blank  
(Add E using other **OPTION**)
- Oil end seals (**Viton**) ..... V

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None (remove dash) ..... Leave Blank
- Servo-meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Oil end seals (**EPR**) ..... E

### SERVO-METER KITS FOR JETMASTER LIQUID DISPENSERS

Series 750 and 760

**70 0 01 10 5 B - E S V**

**EXTRA PORTING and MICRO DIAL OPTIONS**

- Standard Servo-Meter no options ..... 0
- M5 x 0.8H tapped air hole on breather end of ..... D housing **456-138** brass plug and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... E housing **456-139** 90 degree fitting and **SOLID** washers.
- M5 x 0.8H tapped air hole on breather end of ..... F housing **456-140** Straight fitting and **SOLID** washers.
- Micro Dial ..... G
- M5 x 0.8H tapped air hole on breather end of ..... H housing **456-139** 90 degree fitting and **SOLID** washers. Micro Dial.

**SERVO-METER RATING**

- Half drop ..... 05
- Full drop ..... 10
- Two drops ..... 20

**OPTIONS**

- Oil end seals (**EPR**) ..... Leave Blank  
(Add E using other **OPTION**)
- Oil end seals (**Viton**) ..... V

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None (remove dash) ..... Leave Blank
- Servo-meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Oil end seals (**EPR**) ..... E

**SERVO-METER HOUSING MATERIAL**

- Brass housing..... B
- Aluminum housing ..... A
- Nickle plated housing ..... N

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intentionally left blank**

# SERV-OIL Multiple-Point Injection Lubricators

## Series 710, 720



Model Shown: 71003104B

Up to 10 Servo-Meters can be assembled to make up a multiple point lubricator (MPL). Assembled MPLs can be ordered, or they can be assembled by the user employing the Servo-Meter and Assembly/Mounting Kits shown on the facing page. Master Pneumatic recommends that you order factory-assembled MPLs. The cost is economical, your installation time is greatly reduced, and you are assured of reliable performance because both the components and the assemblies have been factory-tested.

The frequency of oil injection can be controlled by using one of the pulse counters or frequency controllers detailed on page 200.

Series 710 factory assemblies employ two mounting holes. When a very rigid mounting is needed, order Series 720 which employs heavy-duty mounting plates with four mounting holes.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Controller:** See page 200 for the various types of controllers available.

**Operating Pressure:** 60-150 psig (4.1-10.3 bar).

**Reservoir:** See page 222 for the various types of reservoirs available.

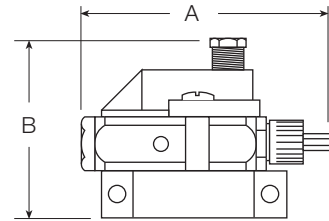
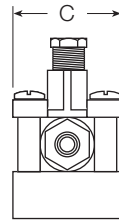
**Servo-Meter:** Brass body; optional Aluminum and Nickel plated housings; acetal end caps. 1-Drop rating; optional 1/2-drop or 2-drop rating. Minimum operating air pressure: 60 psig (4 bar).

**Oil Viscosity Range:** 31-1000 @ 100°F (37.8°C)

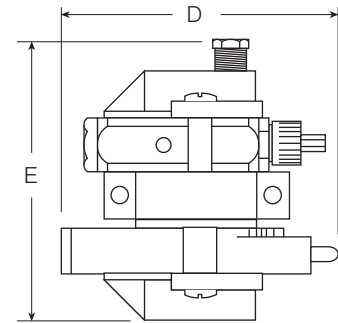
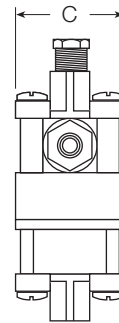
**DIMENSIONS** inches (mm)

A	B †	C	D	E †
3.9 (99)	2.5 (64)	1.8 (46)	4.1 (104)	4.3 (109)

† Add 0.9 (23) for each additional Servo-Meter.



**Without Pulse Counter**



**With Pulse Counter**

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the MPL you want.

**710 01 05 4 B - Y W**

**MPL SERIES**

- Standard MPL assembly..... 710
- MPL assembly with heavy-duty mount..... 720

**NUMBER OF SERVO-METERS**

Specify by numerals from 01 to 10

**SERVO-METER RATING**

- Half drop ..... 05
- One drop ..... 10
- Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

- Brass housing ..... B
- Aluminum housing ..... A
- Nickel plated brass housing, ..... N clamp and mounting plate.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Servo-Meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Block plate; indicate position from top with \* ..... B\*
- Pulse counter
  - One ..... C
  - Two ..... CC
- Oil End Seals (Buna N standard)
  - EPR ..... E
  - Neoprene ..... N
  - Viton ..... V
- Frequency controller ..... F
- and one pulse counter
- Frequency controller only ..... F1

# Electronically Controlled SERV-OIL Multiple-Point Lubricators

## Series 7A0



Model Shown: 7A001204B-2110

The electronically controlled multiple-point lubricator has a 3-way solenoid-controlled valve to produce the actuating signals for the Servo-Meters (up to four may be used.). This allows lubrication control to be interfaced with other system electronics, so that the frequency of oil injection is under precise control.

**Servo-Meters.** Up to four can be included in the assembly with ratings of 1/2, 1, or 2 drops. Each Servo-Meter output is adjustable down to just 10 percent of its rating. Because of their modular construction Servo-Meters can be easily added or removed from the assembly.

**Pneumatic Valve.** A solenoid-actuated, 3-way valve provides the air pressure to actuate the Servo-Meters. Inlet pressure must be at least 60 psig (4 bar). Available solenoid voltage options are 24-, 110-, or 220-volts AC and 12-, 24-, or 110-volts DC.

**Oil Supply.** Oil can be supplied from a central reservoir, or an optional integral reservoir. Integral reservoirs are available in 10-ounce (part **M476R**), one-quart (part **M570-6R**), or two-quart (**M570-12R**) capacities.

**Air Filter.** A general-purpose Sentry filter can be included in the assembly, but is not required if external air filtration is adequate, i.e., has at least 40- $\mu$ m filtration.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Operating Pressure:** 60-150 psig (4.1-10.3 bar).

**Pneumatic Valve:** Solenoid actuated 3-way. Electrical: 24-, 120-, 220-volts 50/60 Hz; 12-, 24-, 110-volts DC.

**Servo-Meter:** Brass body; optional Aluminum and Nickel plated housings; acetal end caps. 1-Drop rating; optional 1/2-drop or 2-drop rating. Minimum operating air pressure: 60 psig (4 bar). Transparent sight indicator gives visual verification of oil delivery.

**Oil Viscosity Range:** 31-1000 @ 100°F (37.8°C)

## IMPORTANT SERIES 7A0 BENEFITS

Modular design provides Servo-Meters, solenoid valve, and air filter in a complete package with easy add-on capability.

There is no need to purchase additional valves or other components. Simply pipe up an air supply and plug in the **MPL** package.

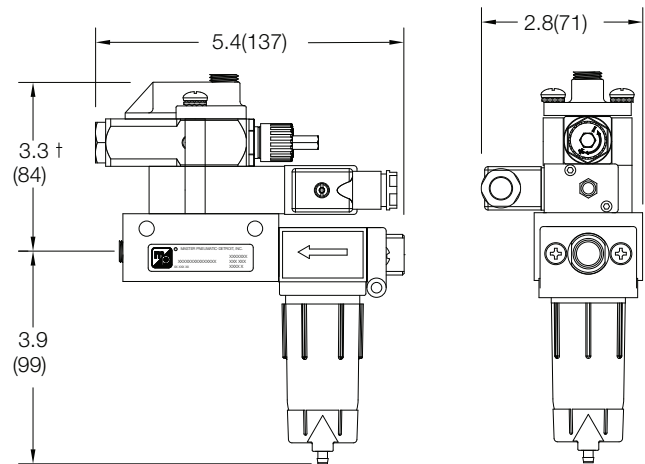
You have full control by coordinating with your own computer programming. This eliminates costly feast-or-famine lubrication.

## EASY ORDERING FOR SERIES 7A0

Model Number	Servo-Meters	Inlet Port
7A00#054B-11XY	1/2 drop	1/8 NPTF
7A00#054B-21XY	1/2 drop	1/4 NPTF
7A00#104B-11XY	1 drop	1/8 NPTF
7A00#104B-21XY	1 drop	1/4 NPTF
7A00#204B-11XY	2 drops	1/8 NPTF
7A00#204B-21XY	2 drops	1/4 NPTF

# – Insert quantity of Servo-Meters (1 to 4).  
 X – Insert voltage number (see Ordering Information below).  
 Y – Insert filter number (see Ordering Information below).

## DIMENSIONS inches (mm)



† ADD 0.9 (23) FOR EACH ADDITIONAL SERVO-METER

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the **MPL** you want.

# 7A0 01 05 4 B - 1 1 1 0 W

### MPL SERIES

**NUMBER OF SERVO-METERS**  
 Specify by numerals  
 from 01 to 04

### SERVO-METER RATING

Half drop ..... 05  
 One drop ..... 10  
 Two drops ..... 20

### SERVO-METER HOUSING MATERIAL

Brass housing ..... B  
 Aluminum housing ..... A  
 Nickel plated brass housing, ..... N  
 clamp and mounting plate.

### INLET PORT SIZE

1/8 NPTF ..... 1  
 1/4 NPTF ..... 2

### DIN 4360 Form B Option ..... 1

### PORT TYPE

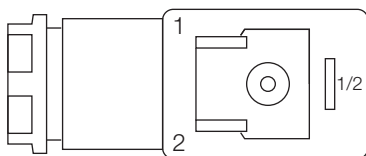
NPTF threads ..... Leave Blank  
 BSPP threads ..... W

### FILTER

Standard Sentry filter ..... 0  
 No filter; female side port ..... 1

### VOLTAGE

120 volts, 50/60 Hz ..... 1  
 24 volts, DC ..... 2  
 24 volts, 50/60 Hz ..... 3  
 220 volts, 50/60 Hz ..... 4  
 12 volts, DC ..... 5  
 110 volts, DC ..... 6



Normal Polarity:

1 = (+) positive, high  
 2 = (-) negative, neutral  
 1/2 = chassis ground

**NOTE:** Optional automotive standard to mini plug is available. Consult Master Pneumatic.

# SERV-OIL Automation Pacs

# Series 730

Model Shown: 73010104B-CC



**Automation Pac with Double-Counter Controller  
For Use with Pulse Air Inlet Source**

Model Shown: 73010104B-F



**Automation Pac with Frequency Controller  
For Use with Constant Air Inlet Source**

A **SERV-OIL** Automation Pac is a self-contained assembly of oil reservoir, up to 20 Servo-Meters, and a controller. It is supplied ready for installation in a pneumatic circuit, with only ball checks, fittings, and tubing being required. The Automation Pac will provide precision lubrication for up to 20 points on valves, cylinders, fixtures, automation equipment, and machine tools using pneumatic components.

**Oil Reservoir.** The Automation Pac oil reservoir is made of cast aluminum, and has a capacity of 1/2 gallon (1.9 liters). It has a built-in oil strainer, a transparent sight tube, a quick-fill cap, and a screw-on lid.

If the Automation Pac is located where the oil level cannot easily be determined visually, electrical oil-level switches are available. There are both high-level and low-level switches. They can be connected to a remote electrical control for automatic filling of the reservoir.

**Controllers:** (See page 200.) Double pulse counters, with or without a frequency generator, can be used to control the frequency of oil injection. These can be integrated into the assembly, or be in the form of stand-alone controllers. A stand-alone controller can be employed to control the injection frequency of several Automation Pacs.

In either case actuation pulses from the system control valve initiate the oil injection function. The controller then is set so the actual oil injection could be every cycle, or every 5, 10, 25, 50, or 100 cycles of the control valve.

Both types of controller are supplied with a 0.3- $\mu$ m coalescing filter for clean, long-life operation. The coalescing filter should be preceded by 5- $\mu$ m filtration to prolong the life of the coalescing element.

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 175°F (4° to 79°C).

**Reservoir:** Aluminum; 0.5 gallon (1.9 liters) capacity.

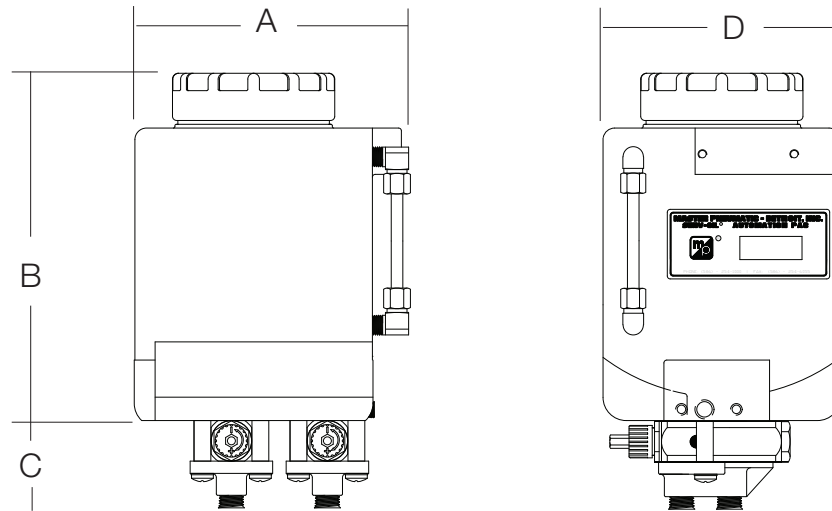
**Seals:** Nitrile.

**Servo-Meter:** Brass body; optional Aluminum and Nickel Plated brass; acetal end caps.

**Servo-Meter Operating Pressure:**

60-150 psig (4.1-10.3 bar).

**Oil Viscosity Range:** 31-1000 @ 100°F (37.8°C)



**DIMENSIONS** inches (mm)

				<b>Weight</b>	
<b>A</b>	<b>B</b>	<b>C †</b>	<b>D</b>	<b>lb (kg)</b>	
5.1 (130)	7.6 (193)	1.8 (46)	5.1 (130)	6.6 (3.0)	

† Dimension for single Servo-Meter. For each additional Servo-Meter add 0.9 (23).

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the Automation Pac you want.

**730 01 05 4 B -Y W**

**AUTOMATION PAC SERIES**

**NUMBER OF SERVO-METERS**

Specify by numerals  
from 01 to 20

**SERVO-METER RATING**

- Half drop ..... 05
- One drop ..... 10
- Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

- Brass housing ..... B
- Aluminum housing ..... A
- Nickel plated brass housing ..... N  
and clamp.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPB threads ..... W

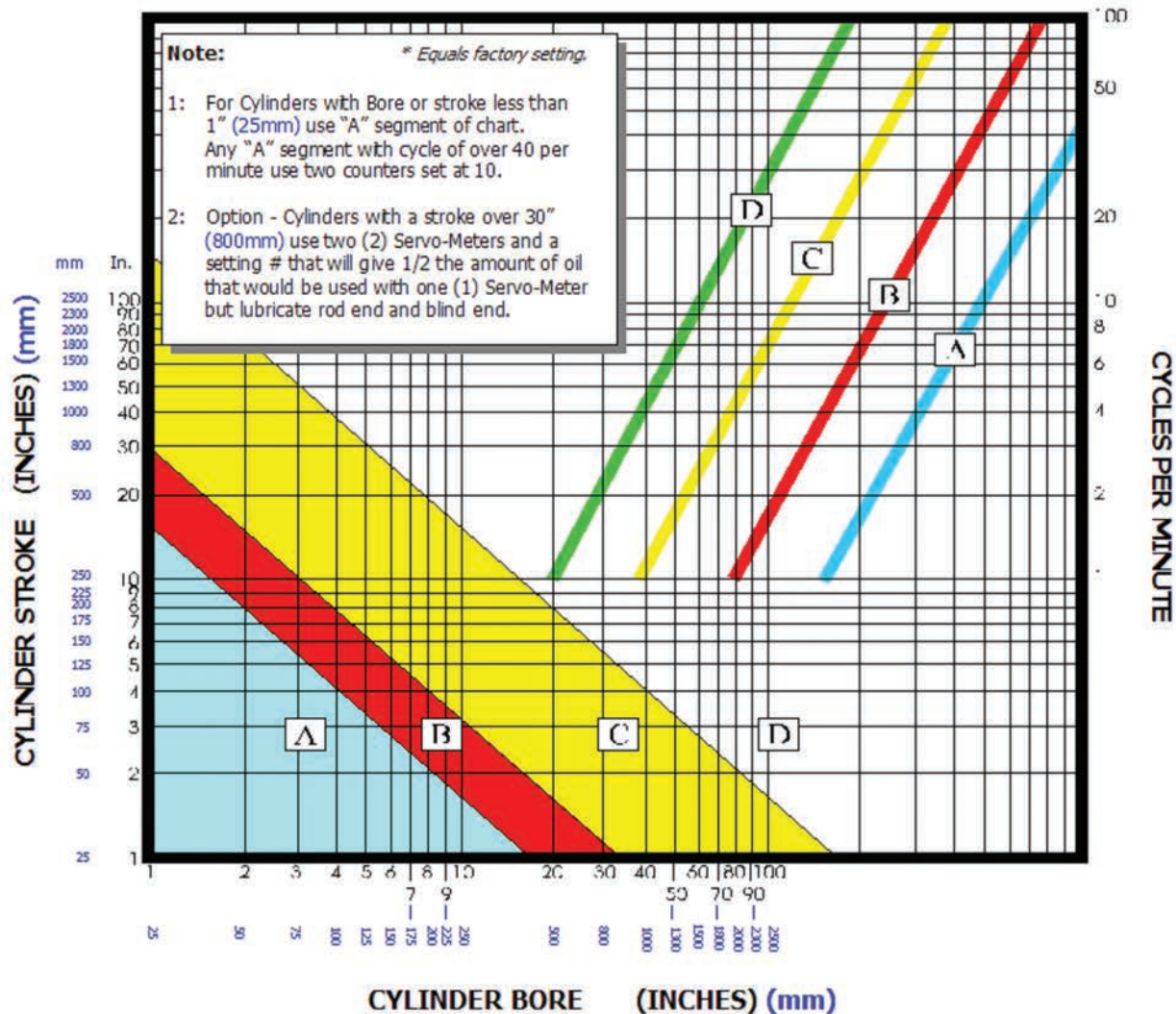
**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Servo-Meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Block plate ..... B  
(Consult Master Pneumatic)
- Two pulse counters ..... CC
- Oil-end seals for Servo-Meter  
(Buna N standard)
- EPR ..... E
- Viton ..... V
- Frequency controller ..... F  
and one pulse counter
- Frequency controller only ..... F1
- Oil-level switches:
- Low-level only ..... G
- High-level and low-level ..... GG



# Serv-Oil PNEUMATIC INJECTION LUBRICATION CHART

Counter Setting	Set at number 1	*Set at 5	Set at 10	Use 2 counters. Set at 5
Servo-Meter setting with <b>one drop (.030 ml)</b> maximum model	Set at one full Drop	Set at 25 clicks from full	Set at 25 Clicks from full	Set at 20 clicks from full



First identify where the bore and stroke intersect on the lower chart. With the appropriate letter use the cycles of the cylinder per minute and draw a line to intersect the A, B, C or D line on the upper chart. Draw a line vertically from there to the appropriate setting of the counter and Servo-Meter.

**Example:** Cylinder with 4" bore and 5" stroke falls into the "B" segment of the selection chart. If the operating rate of the cylinders is 15 per minute, the counter setting should be at 10 and the injector (*Servo-Meter*) knob turned counter - clockwise 25 clicks.

To increase Servo-Meter output, turn volume control knob clockwise. **NOTE:** This chart is a tool for establishing a baseline only. Specific applications may require more or less fluid output.

MASTER PNEUMATIC - DETROIT, INC. SERV-OIL ACTUATOR SELECTION CHART.

## MULTIPLE POINT LUBRICATOR'S (MPL's) with M476 RESERVOIR



71001104B-C with M476R reservoir



71002104A with M476R reservoir

# Liquid Dispensers

# Series 740, 770



Model Shown: 74004204B-ALV

## SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Inlet Pressure:** 60 to 120 psig (4 to 8 bar).

**On/Off Control:** Manual.

**Servo-Meter Body:** Brass Body; optional Aluminum and Nickel plated brass; zinc end plates.

**Servo-Meter Seals:**

Nitrile on air end; viton on oil end.

The Series 740 liquid dispenser employs Servo-Meters to send precise amounts of liquid through nozzles. It is primarily used where liquid without entrained air is wanted, and a precisely controlled jet is not required. Up to 10 Servo-Meters can be used in a single assembly. A pressure of at least 60 psig (4 bar) is required for actuation.

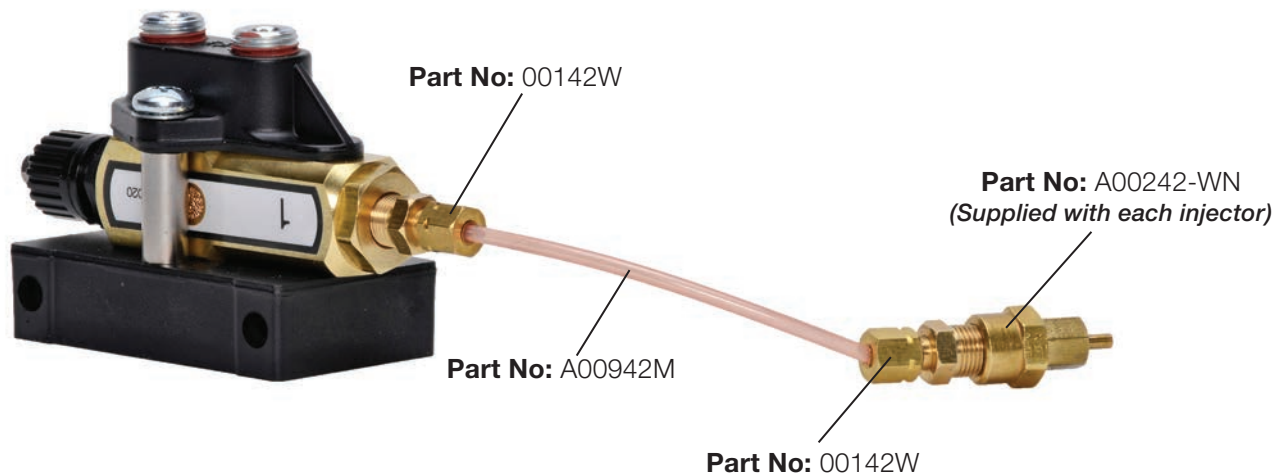
1/8-Inch O.D. nylon tubing carries the oil from a Servo-Meter to a nozzle [5/64" (2-mm) orifice] located near the delivery point.

**Install a liquid-only dispenser so that the Servo-Meters are vertical and the outlets are at the top.** This helps to eliminate air from the system. The nozzles need to be secured in place with a clamp or similar means.

Series 740 factory assemblies employ two mounting holes. When a very rigid mounting is needed, order Series 770 which employs heavy-duty mounting plates with four mounting holes.

Liquid dispenser assemblies can be ordered, or they can be assembled by the user employing the Servo-Meter and Assembly/Mounting Kits shown on the facing page.

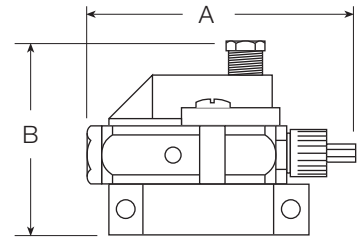
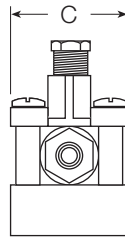
*Master Pneumatic recommends that you order factory-assembled dispensers. The cost is economical, your installation time is greatly reduced, and you are assured of reliable performance because both the components and the assemblies will have been factory-tested.*



**DIMENSIONS** inches (mm)

A	B †	C
3.9 (99)	2.5 (64)	1.8 (46)

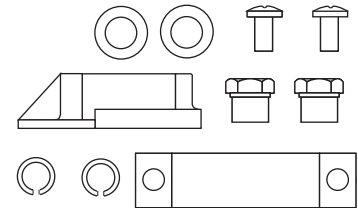
† Add 0.9 (23) for each additional Servo-Meter.



**LIQUID DISPENSER ASSEMBLY KITS**

Mounting/Assembly Kit KA474-10

Mounting/Assembly Kit



**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the Liquid Dispenser you want.

**740 01 05 4 B - Y L V W**

**LIQUID EJECTOR SERIES**

- Assembly with standard mount ..... 740
- Assembly with heavy-duty mount..... 770

**NUMBER OF SERVO-METERS**

Specify by numerals from 01 to 10

**SERVO-METER RATING**

- Half drop ..... 05
- One drop ..... 10
- Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

- Brass housing ..... B
  - Aluminum housing ..... A
  - Nickel plated brass housing, ..... N
- clamp and mounting plate.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPB threads ..... W

**OPTION**

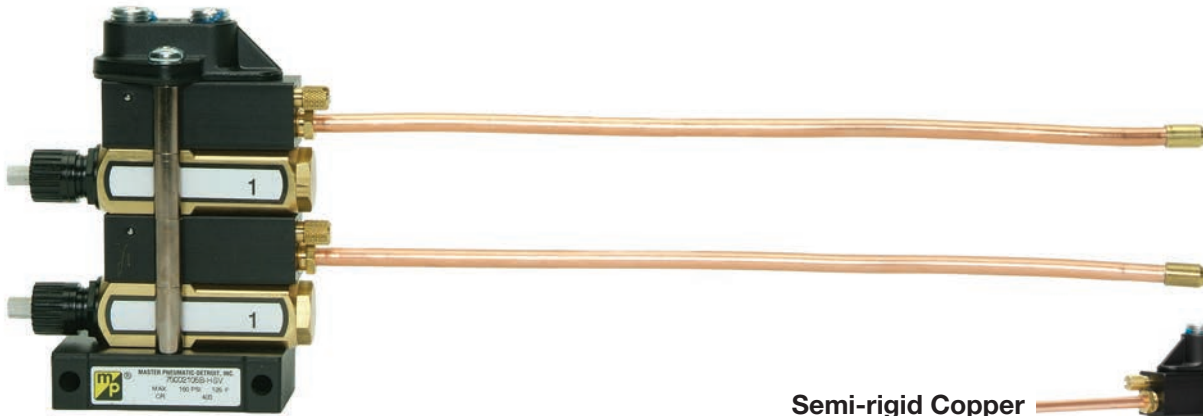
- Oil end seals for Servo-Meter
- Viton ..... V
- EPR ..... Leave Blank
- (Add E using other option Location)

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

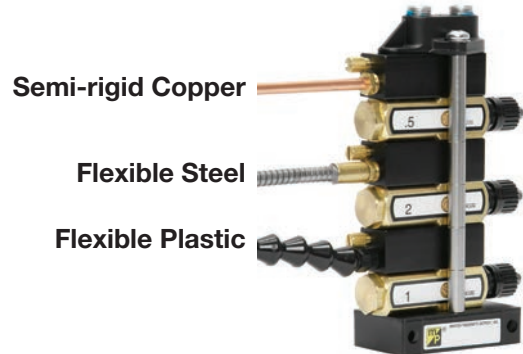
- None ..... Leave Blank
- Servo-Meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Pulse counters
- One ..... C
- Two ..... CC
- Oil End Seals for Servo-Meter
- EPR ..... E
- Frequency controller ..... F
- and one pulse counter
- Frequency controller only ..... F1

# SERV-OIL JETMASTER Liquid Dispenser Propels Conical Air-Liquid Jets

**Series 750,  
760**



**Model Shown:** 75002105B-HSV



**Semi-rigid Copper**

**Flexible Steel**

**Flexible Plastic**

The Serv-Oil Jetmaster Liquid Dispenser is used for the controlled application of many types of liquids. Light, chemically non-aggressive spindle lubricating oil, however, is the most commonly used liquid\*.

The Jetmaster employs a Servo-Meter and a nozzle to propel a conical air-liquid jet up to 10 inches (25 cm) with pinpoint accuracy, and with no drip or overspray. The amount of liquid and the amount of air in the jet are independently adjustable. The Jetmaster is actuated by an air pulse (usually from a valve), and controllers are available to determine the frequency with which a jet is propelled. Viton seals are standard.

### Multiple Jetmaster Dispensers

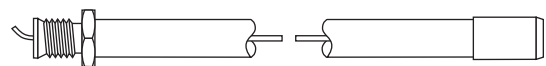
Assemblies may be ordered with up to five Servo-Meters and five nozzles. All can be actuated simultaneously by a single air signal of 60 psig (4 bar).

To increase the amount of liquid in a single jet, multiple Servo-Meters can feed through a single nozzle. Consult Master Pneumatic for further information.

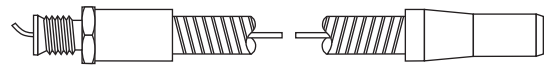
### Nozzles

Twelve-inch nozzles are standard, but other lengths can be special ordered. The standard copper tube nozzles can be bent in any direction to dispense liquid at the point of need. Teflon tubing running through the nozzle carries the liquid to the nozzle end where it is propelled from the tubing by the air jet passing around it. An air metering adjustment screw is provided for each nozzle.

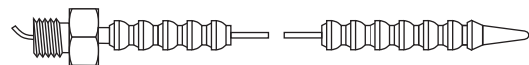
### JETMASTER NOZZLE ASSEMBLIES



**Semi-rigid Copper** (Standard - suffix H)



**Flexible Steel** (Optional - suffix M)



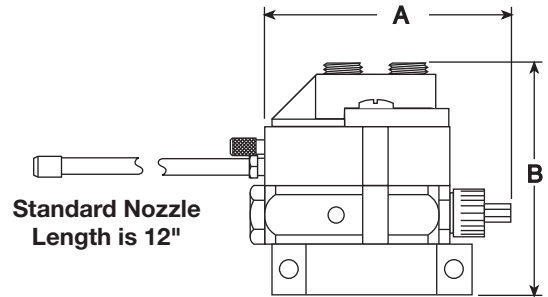
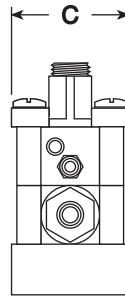
**Flexible Plastic** (Optional - suffix K)

\*Contact M/P for fluid compatibility.

**DIMENSIONS** inches (mm)

A	B †	C
3.5 (89)	3.4 (86)	1.8 (46)

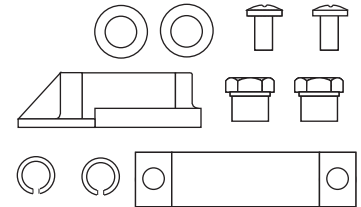
† Add 0.9 (23) for each additional Servo-Meter.



**LIQUID DISPENSER ASSEMBLY KITS**

Mounting/Assembly Kit

KA474-10



**Mounting/Assembly Kit**

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the Liquid Dispenser you want.

**750 01 05 5 B - Y H 00 S V W**

**JETMASTER SERIES**

- Standard Jetmaster ..... 750
- Jetmaster with heavy-duty mount ..... 760

**NUMBER OF SERVO-METERS**

Specify by numerals from 01 to 05

**SERVO-METER RATING**

- Half drop ..... 05
- One drop ..... 10
- Two drops ..... 20

**SERVO-METER HOUSING MATERIAL**

- Brass housing ..... B
- Aluminum housing ..... A
- Nickel plated brass housing, ..... N clamp and mounting plate.

**PORT TYPE**

- NPTF threads ..... Leave Blank
- BSPF threads ..... W

**OPTION**

- Oil end seals for Servo-Meter
  - Viton ..... V
  - EPR ..... Leave Blank (Add E using other option Location)

**NOZZLE LENGTH**

Length of copper nozzle if other than 12"

**NOZZLE TYPE**

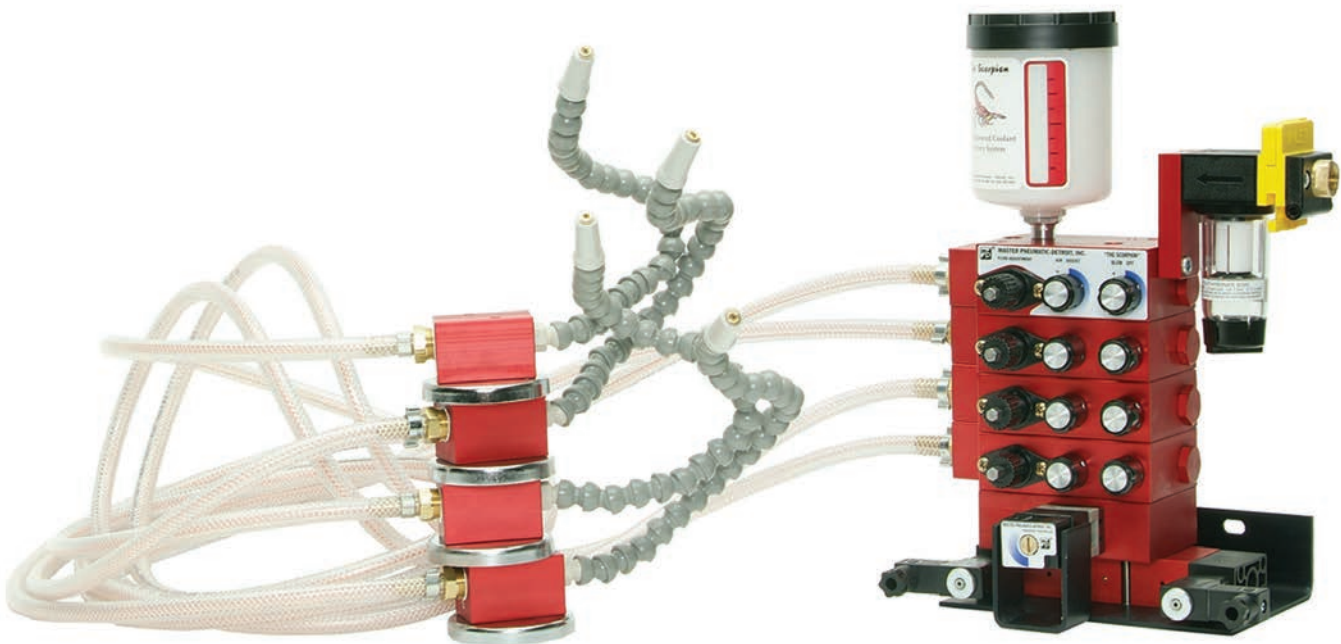
- Standard 12" flexible copper nozzle ..... H
- 12" flexible plastic nozzle ..... K
- 12" flexible steel nozzle ..... M

**OPTIONS** (More than one option can be chosen. Add in alphabetical order)

- None ..... Leave Blank
- Servo-Meter shutoff ..... A
- Non-shutoff ..... Leave Blank
- Pulse counters
  - One ..... C
  - Two ..... CC
- Oil End Seals for Servo-Meter
  - EPR ..... E
- Frequency controller ..... F and one pulse counter
- Frequency controller only ..... F1

# SCORPION

Liquid dispensers are used where precise control of the delivery of liquids such as water or coolant is required. Specially adapted positive-displacement Servo-Meters inject precisely controlled amounts of liquid at designated intervals.



The Scorpion is a compact, pneumatically controlled system for the delivery of coolant to cutting edges in precisely controlled amounts and frequency. It is a cost-effective solution to the waste management problems created by flood coolants.

When used in machining and grinding operations the Scorpion directs a precise amount of coolant and air directly onto the tool's cutting edges.

An optional blowoff feature programs compressed air to remove chips, cool the workpiece, and clean the area between applications of coolant. Injection of coolant and the air blowoff feature operate independently for flexible control.

On/off control is either pneumatic or electric, the latter allowing the Scorpion to be interfaced with external electronic controls.

# SCORPION Features

**Coolant Reservoir:** 10-ounce capacity standard; optional capacities up to 2 quarts. Remote 5-gallon reservoir also available. See DasCool 2357 Coolant Concentrate (page 286). For use with other liquids, consult Master Pneumatic.

**Air Filter:** 5-Micron filter element assures essential clean air to the Scorpion unit.

**Fluid Adjustment:** Sets the amount of coolant delivered at each output pulse.

**Lockout Valve:** Built in valve provides manual on/off control. During lockout of supply pressure, the valve allows exhausting of compressed air in the Scorpion.

**Output Line:** Coaxial flexible line conducts coolant and air from control assembly to magnetic transfer junction.

**Air Inlet:** For pressurized air from 60 to 120 psig (4 to 8 bar).

**Magnetic Mounting Block:** Provides strong attachment to iron or steel surface.

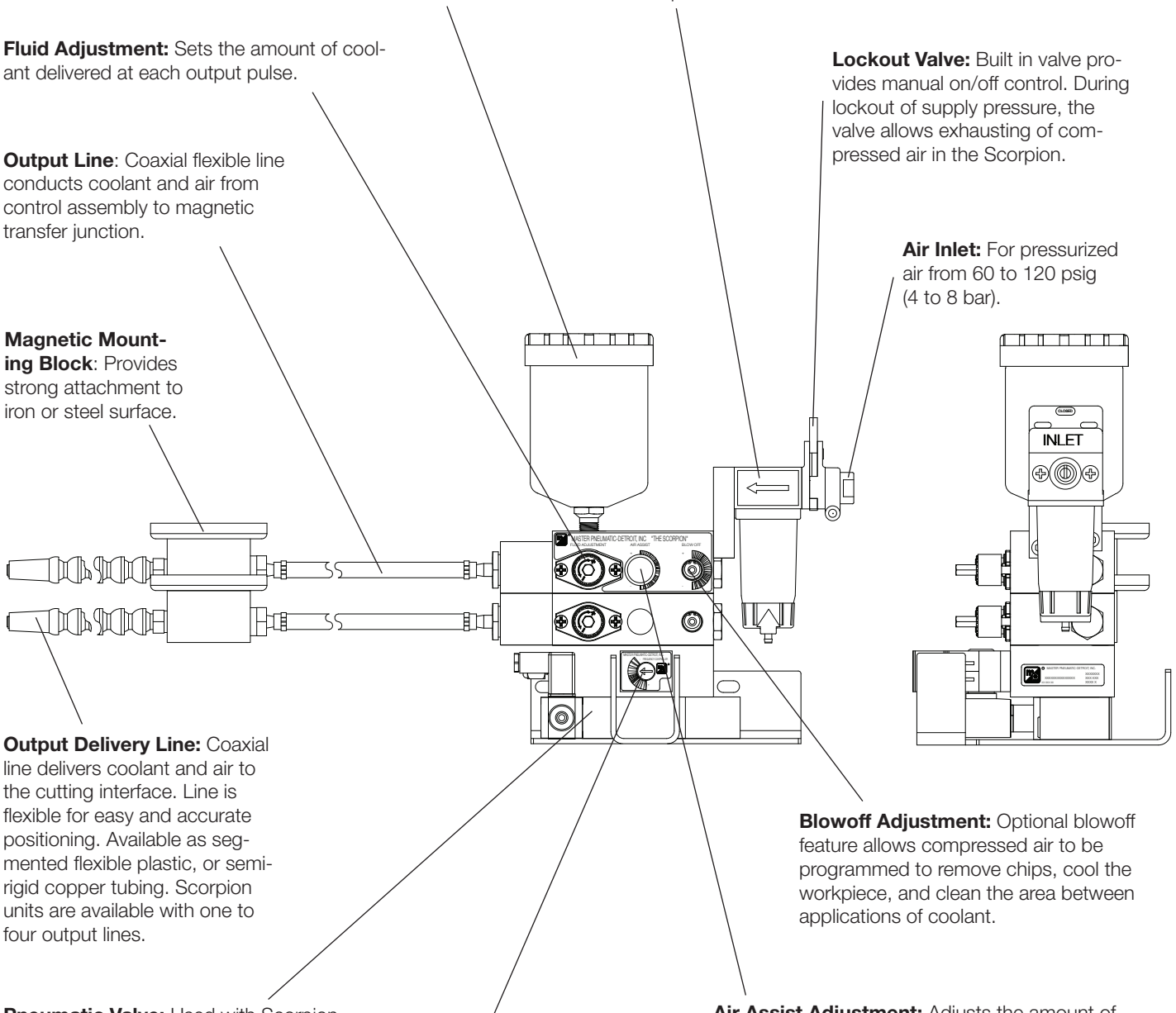
**Output Delivery Line:** Coaxial line delivers coolant and air to the cutting interface. Line is flexible for easy and accurate positioning. Available as segmented flexible plastic, or semi-rigid copper tubing. Scorpion units are available with one to four output lines.

**Pneumatic Valve:** Used with Scorpion units with optional blowoff control. Provides on/off and blowoff control, and permits interfacing with external controls.

**Frequency Control:** Adjusts frequency of output pulses, i.e., coolant injection.

**Air Assist Adjustment:** Adjusts the amount of air in the coolant/air output mixture. Aids in directing the coolant flow, and helps to keep the work area clean.

**Blowoff Adjustment:** Optional blowoff feature allows compressed air to be programmed to remove chips, cool the workpiece, and clean the area between applications of coolant.

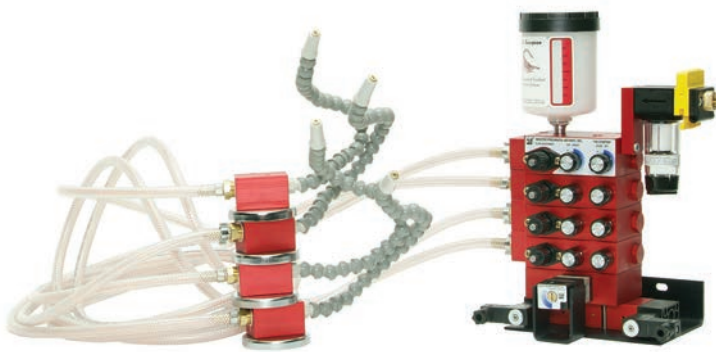




# SCORPION

## Solenoid or Pneumatic Actuation

## Series 800, 830, 850



Model Shown: 8504

- ◆ Servo-Meter injector. 1-Drop capacity; optional 2-drop and 1/2-drop capacities.
- ◆ Up to four injectors and nozzles can be used.
- ◆ Patented blowoff feature.
- ◆ Snaplock® coolant dispensing nozzle. Optional copper nozzles.
- ◆ Braided PVC hose.
- ◆ Magnetic nozzle base.
- ◆ 10-Ounce capacity coolant reservoir.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body Blocks:** Anodized aluminum.

**Hose:** 6-Ft braided PVC; longer or shorter hose optional in 1-foot increments.

**Injector:** 1-Drop-rated Servo-Meter; 0 to 0.030 ml per pulse. Optional 2-drop-rated Servo-Meter; 0 to 0.060 ml per pulse. Injection frequency up to 100 pulses per minute.

**Inlet Port:**

1/4 NPTF; optional 1/8 NPTF and BSPP threads.

**Inlet Pressure:** 60 to 120 psig (4 to 8 bar).

**Nozzle:** Snaplock® with 12-inch flexible segmented plastic. Optional 18-inch or 24-inch lengths. Optional copper nozzles.

**On/Off Control:** Manual. Optional solenoid control with or without blowoff feature.

**Reservoir:** Integral semi-clear polypropylene with 10-ounce (300 ml) capacity. Optional 1-quart and 2-quart capacities. Also no-reservoir option for use with remote reservoir.

**Seals:** Air, nitrile; oil, Viton.

**Solenoid Voltages:** (With optional solenoid)

110 or 220 volts, 50/60 Hz; 24 volts D.C.

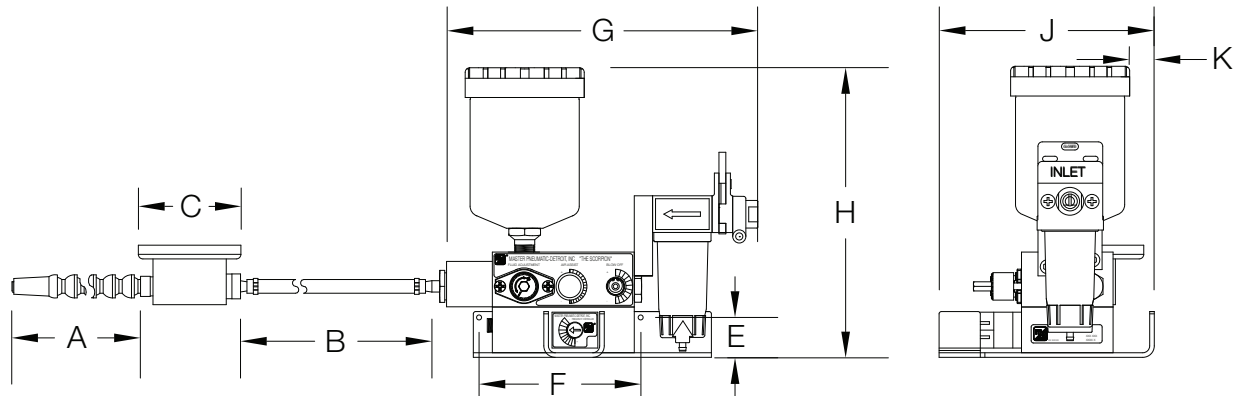
### BASIC SYSTEMS

Three basic Scorpion systems are described below. They will satisfy the requirements of most coolant applications, and can be ordered by the 4-digit numbers given in the descriptions. However, to order a system with additional options see Ordering Information on the facing page.

**System 8001:** Single nozzle with manual on/off control. Can be ordered with 2, 3, or 4 nozzles by changing the last digit to the number of nozzles wanted. For example, a 3-nozzle system would be ordered by number 8003.

**System 8301:** Single nozzle with solenoid on/off control. 110 volts, 50/60 Hz. Can be ordered with 2, 3, or 4 nozzles by changing the last digit to the number of nozzles wanted. For example, a 4-nozzle system would be ordered by number 8304.

**System 8501:** Single nozzle with solenoid on/off control with blowoff feature. 110 volts, 50/60 Hz. Can be ordered with 2, 3, or 4 nozzles by changing the last digit to the number of nozzles wanted. For example, a 2-nozzle system would be ordered by number 8502.



**DIMENSIONS** inches (mm)

Dimension	Manual On/Off	Solenoid On/Off	Solenoid On/Off Plus Blowoff	Add for Each Additional Nozzle Assembly
A	12 (305) Std.	12 (305) Std.	12 (305) Std.	—
B	72 (1829) Std.	72 (1829) Std.	72 (1829) Std.	—
C	2.62 (67)	2.62 (67)	2.62 (66.7)	—
E	0.9 (23)	0.9 (23)	0.9 (23)	—
F	4.4 (112)	4.4 (112)	4.4 (112)	—
G	8.3 (211)	8.3 (211)	8.3 (211)	—
H	7.4 (188)	9.1 (231)	9.1 (231)	1.3 (33)
J	5.9 (150)	5.9 (150)	5.9 (150)	—
K	0.5 (13)	0.5 (13)	0.5 (13)	—

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the Scorpion assembly you want.

**80 0 A 1 1 0 0 1 T 06 K A 1**

#### ON/OFF ACTUATION

- Manual ..... 80
- Solenoid ..... 83
- Solenoid with blowoff ..... 85

#### SOLENOID VOLTAGE

- No solenoid (Series 80 only) ..... 0
- 110 volts, 50/60 Hz (Series 83, 85) ..... C
- 220 volts, 50/60 Hz (Series 83, 85) ..... F
- 24 volts, D.C. (Series 83, 85) ..... E

#### BRACKETS

- With standard bottom bracket only ..... A
- With standard bottom bracket plus extended back bracket ..... D

#### NUMBER OF NOZZLES

Specify number from 1 to 4.

#### INJECTOR RATING

- 1 Drop (Standard) ..... 1
- 2 Drops ..... 2
- 1/2 drop ..... 5

#### RESERVOIR:

- 10-Ounce capacity ..... 0
- No reservoir ..... 1
- 1 Qt with mounting plate ..... 2
- 2 Qt with mounting plate ..... 3

#### NOZZLE TIP

- Standard conical nozzle ..... 1
- Fantip nozzle ..... 2

#### PLASTIC NOZZLE LENGTH

- 12 inches (305 mm) ..... A
- 18 inches (457 mm) ..... B
- 24 inches (610 mm) ..... C

#### NOZZLE TYPE

- Copper ..... H
- Snaplock® ..... K

#### HOSE LENGTH

- Standard PVC (6 feet) ..... 06
- Specify desired length (in feet) with two digits. For example, 08 for 8 feet, 12 for 12 feet ..... \*\*

#### INLET PORT with SENTRY FILTER

- 1/8 NPTF ..... 1
- 1/4 NPTF ..... 2
- 1/8 BSPP ..... A
- 1/4 BSPP ..... B

#### NOZZLE BASE ("C" in drawing above)

- Magnetic ..... 0
- No base ..... 1

# SCORPION Jr. Pneumatic Actuation

## Series 890



Model Shown: 8901

- ◆ Operated by pneumatic pulse.
- ◆ Up to four injectors and nozzles can be used.
- ◆ Servo-Meter injector. 1-Drop capacity; optional 2-drop and 1/2-drop capacities.
- ◆ Snaplock® coolant dispensing nozzle. Optional copper nozzles.
- ◆ Optional magnetic nozzle base.
- ◆ Optional 10-ounce capacity coolant reservoir.
- ◆ NPTF port threads; optional BSPP threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Body Blocks:** Anodized aluminum.

**Hose:** Optional 6 feet long braided PVC. Longer or shorter hose in 1-foot increments.

**Injector:** 1-Drop-rated Servo-Meter; 0 to 0.030 ml per pulse. Optional 2-drop-rated Servo-Meter; 0 to 0.060 ml per pulse. Up to four injectors can be used. Injection frequency up to 100 pulses per minute.

**Inlet Port:**

1/8 NPTF; optional 1/4 NPTF. Optional BSPP threads.

**Inlet Pressure:** 60 to 120 psig (4 to 8 bar).

**Nozzle:** Snaplock® with 12-inch flexible segmented plastic. Optional 18-inch or 24-inch lengths. Optional copper nozzles and fan tips.

**On/Off Control:** Manual.

**Reservoir:** Optional integral clear plastic with 10-ounce (300 ml) capacity.

**Seals:** Air, nitrile; oil, Viton.

### BASIC SYSTEMS

Four basic Scorpion Jr. systems are described below. They will satisfy the requirements of many coolant applications, and can simply be ordered by the 4-digit model numbers given in the descriptions. However, to order a system with additional options see Ordering Information on the facing page.

**Model 8901:** One-injector system.

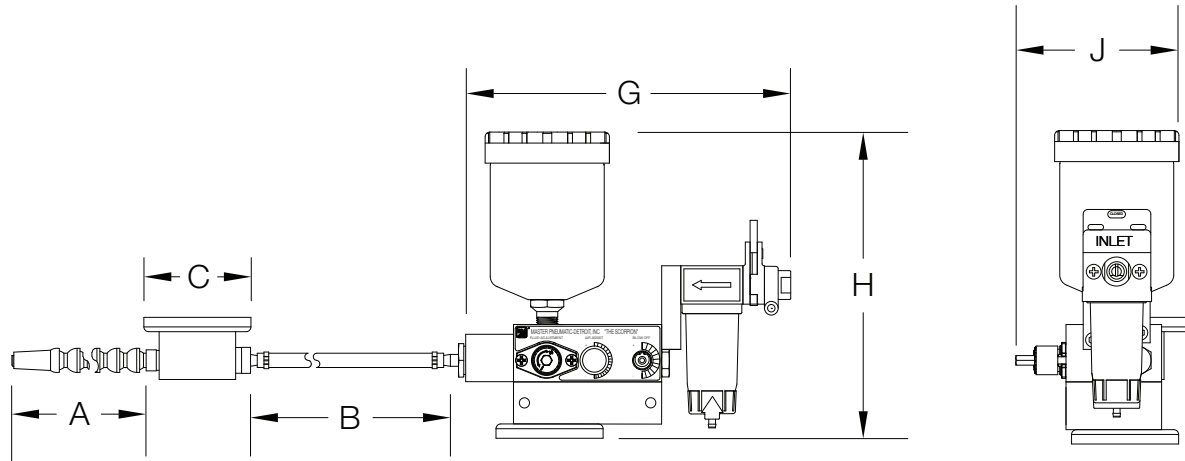
**Model 8902:** Two-injector system.

**Model 8903:** Three-injector system.

**Model 8904:** Four-injector system

Each of the above includes:

- 1/8 NPTF inlet port
- One-drop injectors
- 12-Inch Snaplock® nozzle
- No filter



**DIMENSIONS** inches (mm)

Dimension		Add for Each Additional Nozzle Assembly
A	12 (305) Std.	—
B	72 (1830) Std.	—
C	2.6 (66)	—
G	5.3 (135)	—
H	7.2 (183)	1.3 (33)
J	4.3 (109)	—

**ORDERING INFORMATION**

Change the letters in the sample model number below to specify the Scorpion Jr. assembly you want.

**8900 1 1 0 0 1 A 00 K B 1**

**NUMBER OF INJECTORS/NOZZLES**

Specify number from 1 to 4.

**INJECTOR RATING**

- 1 Drop (standard)..... 1
- 2 Drops ..... 2
- 1/2 Drop..... 5

**RESERVOIR**

- 10-Ounce capacity ..... 0
- None ..... 1
- 10-Ounce capacity (no coolant)..... 4

**MOUNTING BLOCK BASE** (See C in dimensional drawing above.)

- Magnetic ..... 0
- No base ..... 1

**INLET PORT and FILTER**

- 1/8 NPTF (with Sentry filter) ..... 1
- 1/4 NPTF (with Sentry filter) ..... 2
- 1/8 NPTF (without filter) ..... 0
- 1/8 BSPP (with Sentry filter)..... A
- 1/4 BSPP (with Sentry filter)..... B
- 1/8 BSPP (without filter)..... C
- 1/4 BSPP (without filter)..... D

**NOZZLE**

- Standard conical tip..... 1
- Fan tip ..... 2

**NOZZLE LENGTH**

- 12 inches (305 mm)..... A
- 18 inches (457 mm)..... B
- 24 inches (610 mm)..... C
- 36 inches (914 mm)..... D

**NOZZLE TYPE**

- Copper ..... H
- Snaplock® ..... K

**HOSE LENGTH**

- None ..... 00
- 6 Feet (1.8 m) with base C in dimensional drawing above ..... 06
- Specify desired length (in feet) with two digits. For example, 08 for 8 feet, 12 for 12 feet ..... \*\*

**HOSE TYPE**

- None ..... A
- Braided PVC hose ..... T

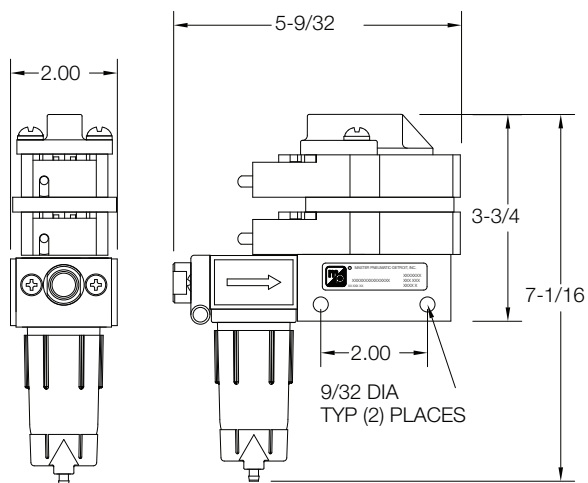
# SERVO-METER Controller

# PC100 Models Port Sizes: 1/4



Model Shown: PC100-2

The **PC100** controller has been designed to supply a consistent and accurate way of lubrication. This is done by providing an actuation every 1, 5, 10, 25, 50 or 100 pulses supplied off the inlet air. The inlet air must also be in the form of an on-off signal as would be received from downstream of an operating valve. This controller allows the pulse of air to be actuated at as little as 100 times in inlet air signal and is most often used to control lubrication in M/P's Serv-Oil systems.



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

### PC100-2 W

#### PORT TYPE

- 1/4 NPTF ..... Leave Blank
- 1/4 BSPP ..... W

# SERVO-METER Controller

# PC110 Models Port Sizes: 1/4

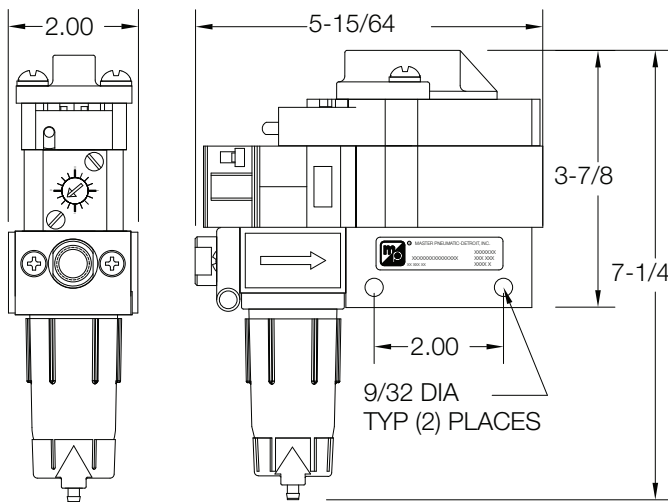


Model Shown: PC110-2

The **PC110** frequency controller has been designed for anyone that has a **constant inlet air supply** and needs an actuation every 1, 5 or 10 pulses of air (The pulse of air can be adjusted from 1 to 300 seconds.)

The **PC110** frequency controller is designed to take a constant air delivery and change it into a controllable pulse of air that will actuate attached counter and provide a range of air impulses from once a second to once every three hundred seconds or five minutes for consistent pulse. First, the frequency generator is adjusted clockwise with a stop watch. The sensitivity is most accurate between 1 to 60 seconds, according to M/P Engineering tests. The pneumatic counter is factory set at five but adjustable by forcing the pointer with a screwdriver into the alternate positions of one and ten. Multiply the frequency generator times (1, 5 or 10) the counter settings to get the range of air pulses. Counter settings: **1=1-30 seconds, 5=5-150 seconds, and 10=10-300 seconds.**

The frequency controller is supplied standard with one pneumatic counter, frequency generator and **FC10** coalescent filter to provide 0.3 micron air supply. A five micron air supply (*available with the standard Master pneumatic filters should provide to assure long life and cartridge in the coalescent filter.*)



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

### PC110-2 W

#### PORT TYPE

- 1/4 NPTF ..... Leave Blank
- 1/4 BSPP ..... W

# INTEGRAL FILTER/REGULATOR plus LUBRICATOR ASSEMBLIES (CFRLs)

The integration of a general purpose filter and a pressure regulator into a single module provides the compactness needed where space is limited. These integral filter/regulators are offered by Master Pneumatic in port sizes from 1/8 up to 3/4 along with **SENTRY** models equipped with quick-connect fittings for tubing from 1/4 up to 10 mm.

When an integral filter/regulator is paired with a lubricator, joined either by a modular connector or a pipe nipple, the assembly makes a complete **FRL** with nothing lost in performance, but with the advantage of compactness to fit in tight spaces.

All filter/regulators include an internal automatic filter drain and a pressure gauge as standard equipment, and regulators are either self-relieving or non-relieving. **SENTRY**, **GUARDSMAN**, **SERIES 350** and **SERIES 380** assemblies include a lockout valve for added safety.

Available options are the same as those for the corresponding individual filters, regulators, and lubricators. They include regulating springs for various pressure ranges, metal filter bowls, and sintered bronze filter elements in several  $\mu\text{m}$  ratings, as well as quick-fill caps for the lubricators. All assemblies, except Miniatures, now include a lockout valve for increased safety.



## GUIDE to INTEGRAL FILTER/REGULATORS plus LUBRICATORS

Series	Modular Construction	Port Sizes					Pages
		1/8	1/4	3/8	1/2	3/4	
<b>SENTRY</b>							
VCFDRL10, 11 models †	yes	X	X				290-291
<b>MINIATURE</b>							
CFDRL55, 56 models	no	X	X				292-293
<b>GUARDSMAN</b>							
MVCFDRL60D models	yes		X	X	X		294-295
<b>GUARDSMAN II</b>							
BMVCFDRL70D models	yes		X	X	X		296-297
<b>SERIES 350</b>							
BAGV3A0B6A13 models	yes		X	X	X		298-303
<b>Full-Size VANGUARD</b>							
MVCFDRL108D models	yes		X	X	X	X	304-305
MVCFDRL108W models	yes		X	X	X	X	306-307
<b>Full-Size SERIES 380</b>							
AAM3A0B1A1 models	yes			X	X	X	308-313

† Also available with quick-connect fittings for tubing up to 10 mm.

# FILTER-REGULATOR-LUBRICATOR ASSEMBLIES (FRLs)

FRL assemblies offer an enormous variety of combinations to fit the needs of almost every filtration, pressure regulation, and lubrication requirement. The FRLs shown in this catalog cover only a portion of these needs in port sizes from 1/8 to 1-1/2. Featured are the configurations most widely used, but FRLs in many other configurations are readily assembled.

All standard **SENTRY**, **GUARDSMAN**, **SERIES 350**, **Full-Size VANGUARD**, and **SERIES 380** assemblies now include a lockout valve for added safety.

General purpose filter-regulator-lubricator assemblies are the most widely used, but other combinations meet a variety of needs. For example, where air line lubrication is not needed, a filter-regulator combination may be sufficient. This can consist of an individual filter and regulator or a compact integral filter/regulator.



## GUIDE to FILTER-REGULATOR-LUBRICATOR COMBINATIONS

Series	Modular Construction	Port Sizes								Pages	
		1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2		
<b>SENTRY</b>											
VFDRL 10, 11 models †	yes	X	X								314-315
<b>MINIATURE</b>											
FDRL 55, 56	no	X	X								316-317
<b>GUARDSMAN</b>											
MVFDRL60D models	yes		X	X	X						318-319
<b>GUARDSMAN II</b>											
BMVFDRL70D models	yes		X	X	X						320-321
<b>SERIES 350</b>											
BAGV1A1B6A13 models	yes		X	X	X						322-327
<b>Full-Size VANGUARD Series</b>											
MVFDRL108D models	yes		X	X	X	X					328-329
MVFDRL108W models	yes		X	X	X	X					330-331
<b>Full-Size SERIES 380</b>											
AAMV1A1B1A1 models	yes			X	X	X					332-337
<b>High-Flow VANGUARD</b>											
FDRL180 models	no					X	X				338-339
FDRL189D models	no					X	X	X	X		340-341
BFDRDL289D models	no							X	X		342-343

† Also available with quick-connect tube fittings up to 10 mm.



# SENTRY Modular FRLs

## Integral Filter/Regulators plus Lubricator

# VCFDRL10 and 11 Models

## Port Sizes: 1/8, 1/4 Tube Fittings



Model Shown: VCFDRL10-2

- ◆ Filter and regulator consolidated in a single assembly (**CFDR10M** or **CFDR11M**); wick-feed lubricator (**L10**); lockout valve (**V10**).
- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic bowls or aluminum bowls.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Piston-type regulator (**CFDRL10** models) or diaphragm-type (**CFDRL11** models).
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C).

**Bowls:** 2-Ounce (60-ml) capacity polycarbonate plastic bowls or aluminum bowls.

**Filter Drain:**

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Filter/Regulator & Lubricator Bodies:** Acetal.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum.

**Oil Adjustment:** External, no shutoff.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Regulator Dome and Knob:** Acetal.

**Seals:** Nitrile.

#### AIR FLOW DATA

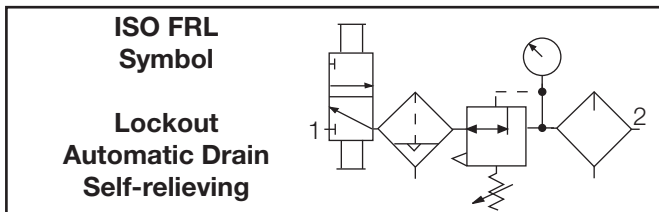
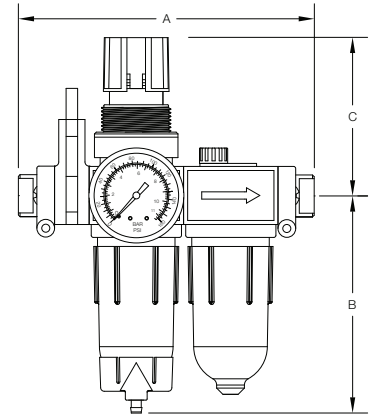
See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Ports	A *	B #	C	Depth †	Weight lb (kg)
1/8, 1/4	5.2 (132)	3.9 (99)	2.6 (67)	1.8 (45)	0.57 (0.32)
<b>Models below have quick-connect fittings for tubing.</b>					
1/4	5.6 (142)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)
3/8	6.2 (157)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)
4 mm	5.7 (145)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)
6 mm	5.7 (145)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)
8 mm	5.3 (135)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)
10 mm	6.2 (157)	3.9 (99)	2.6 (67)	1.8 (45)	0.55 (0.31)

\* Without V10 lockout valve deduct 0.6 (15) from dimension A.  
 † Less gauge.

# Dimension for plastic bowl; metal bowl is 4.3 (109).



### REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze .....	KA130-27E5
20-µm bronze .....	KA130-27E4
40-µm bronze .....	KA130-27E3

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

## B V CFD RL 10 P - 2 X Y P W

#### BOWL TYPE

Plastic bowl.....Leave Blank  
 Metal bowl..... B

#### LOCKOUT VALVE

V10 Valve ..... V  
 No valve ..... Leave Blank

#### FILTER DRAIN

Internal automatic drain .....CFD  
 Manual drain.....CF

#### REGULATOR TYPE

Piston type ..... 10  
 Diaphragm type..... 11

#### MOUNTING HOLE LOCATION

Bottom mount (Standard) .... Leave Blank  
 Top mount ..... P

#### INLET PORT SIZE

No inlet and outlet ports ..... Leave Blank  
 Threaded:  
   1/8 NPTF.....1  
   1/4 NPTF.....2  
 Fittings for Tubing:  
   1/4.....04  
   3/8.....06  
   4 mm.....M4  
   6 mm.....M6  
   8 mm.....M8  
   10 mm.....M10

#### OUTLET PORT SIZE

Same as inlet port .... Leave Blank  
 Threaded:  
   1/8 NPTF..... 1  
   1/4 NPTF..... 2  
 Fittings for Tubing:  
   1/4..... 04  
   3/8..... 06  
   4 mm..... M4  
   6 mm..... M6  
   8 mm..... M8  
   10 mm..... M10

#### PORT TYPE

As specified in **INLET PORT** .. Leave Blank  
 BSPP threads on both ports ..... W

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-160 psig Gauge ..... Standard  
 No Gauge..... NG  
 Plastic mounting nut..... P  
 Metal mounting nut.....PN  
 Hex plastic mounting nut..... PE

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
 Non-relieving regulator..... A  
 Sintered bronze filter element:  
   5-µm rating..... E5  
   20-µm rating..... E4  
   40-µm rating..... E3

#### Adjusting springs:

0-125 psig (0-8.6 bar)..... H  
 0-50 psig (0-3.4 bar)..... L  
 0-8 psig (0-0.6 bar)..... L8  
 0-15 psig (0-1.0 bar)..... L15  
 0-30 psig (0-2.1 bar)..... L30

#### Tamper-resistant spinning

knob (psig preset) ..... MV(\*)  
 Quick-fill lubricator Q-cap ..... Q  
 Viton seals ..... V

\*Insert preset pressure.

# MINIATURE FRLs

## Integral Filter/Regulators plus Lubricator

# CFDRL55 and 56 Models

## Port Sizes: 1/8, 1/4



- ◆ Filter and regulator consolidated in a single assembly (**CFDR55M** or **CFDR56M**); wick-feed lubricator (**L50**).
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic bowls or aluminum bowls.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Piston-type regulator (**CFDRL55** models) or diaphragm-type (**CFDRL56** models).
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads or fittings for tubing up to 10 mm.

### SPECIFICATIONS

**Ambient/Media Temperature:**

**Plastic bowls:** 40° to 125°F (4° to 52°C).

**Metal bowls:** 40° to 175°F (4° to 79°C).

**Bodies:** Aluminum for filter/regulator and lubricator.

**Bowls:** 2-Ounce (60-ml) capacity polycarbonate plastic bowls or aluminum bowls.

**Filter Drain:**

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

15 psig (1 bar) minimum with automatic drain.

Plastic bowls: 150 psig (10 bar) maximum.

Metal bowls: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** Internal; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Regulator Dome and Knob:** Glass Filled Nylon and Acetal.

**Seals:** Nitrile.

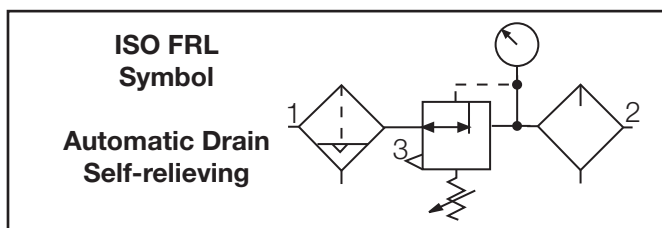
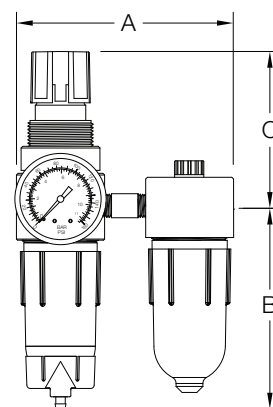
#### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A	B	C	Depth †	Weight lb (kg)
Plastic	3.7 (94)	3.9 (99)	2.6 (67)	1.6 (41)	0.66 (0.30)
Metal	4.0 (101)	4.3 (109)	2.6 (67)	1.6 (41)	0.66 (0.30)

† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze.....	KA130-27E5
20-µm bronze.....	KA130-27E4
40-µm bronze.....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

# B CFD RL 55 - 2 Y X W

### BOWL TYPE

Plastic bowl.....Leave Blank  
Metal bowl.....B

### FILTER DRAIN

Internal automatic drain..... CFD  
Manual drain.....CF

### REGULATOR TYPE

Piston type.....55  
Diaphragm type.....56

### PORT SIZE

1/8 NPTF.....1  
1/4 NPTF.....2

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPB threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-160 psig Gauge ..... Standard  
No Gauge..... NG  
No Gauge Ports on Head ..... NP  
Plastic mounting nut..... P  
Metal mounting nut.....PN  
Hex plastic mounting nut .....PE

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None .....Leave Blank  
Non-relieving regulator.....A  
Sintered bronze filter element:  
5-µm rating.....E5  
20-µm rating.....E4  
40-µm rating.....E3  
Adjusting springs:  
0-125 psig (0-8.6 bar).....H  
0-50 psig (0-3.4 bar)..... L  
0-8 psig (0-0.6 bar)..... L8  
0-15 psig (0-1.0 bar)..... L15  
0-30 psig (0-2.1 bar)..... L30  
Tamper-resistant spinning  
knob (psig preset) ..... MV(\*)  
Quick-fill lubricator Q-cap .....Q  
Viton seals..... V

\*Insert preset pressure.

# GUARDSMAN Modular FRLs Integral Filter/Regulators plus Lubricator

# MVCFDRL60D Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: MVCFDRL60D-2

- ◆ Filter and regulator consolidated in a single assembly (CFDR60); sight-feed lubricator (L60D); lockout valve (V35).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength zinc bowl or polycarbonate plastic bowl with shatterguard.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Self-relieving piston-type regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Bodies:** Zinc for filter/regulator and lubricator.

**Bowls:** 4-Ounce (120-ml) capacity zinc bowls or polycarbonate plastic bowls with zinc shatterguards.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum. With metal bowls but no lockout valve: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Regulator Dome and Knob:** Acetal.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

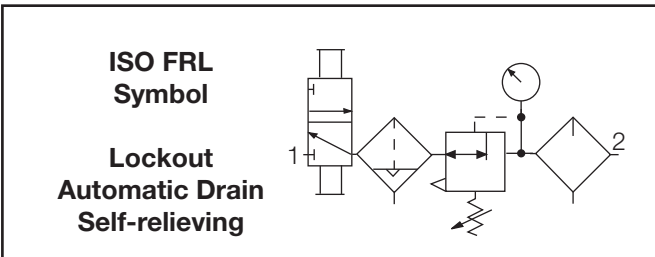
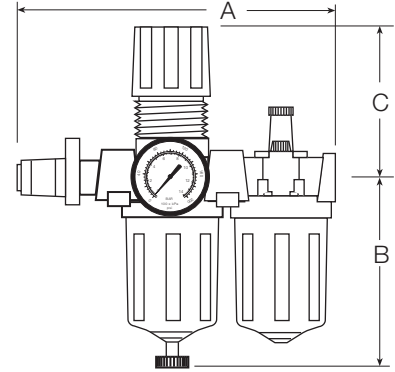
### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A *	B	C	Depth †	Weight lb (kg)
Metal	8.7 (221)	4.6 (116)	3.3 (83)	2.4 (61)	2.94 (1.34)
Plastic	8.7 (221)	4.6 (116)	3.3 (83)	2.4 (61)	2.94 (1.34)

\* Without V35 lockout valve deduct 3.8 (97) from dimension A.  
† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze.....	KA130-27E5
20-µm bronze.....	KA130-27E4
40-µm bronze.....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.  
**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

### B M V CFD RL60D - 2 Y X W

#### BOWL TYPE

Plastic bowl.....Leave Blank  
Metal bowl..... B

#### ASSEMBLY

Modular.....M  
Pipe nipple.....Leave Blank

#### LOCKOUT VALVE

V35 Valve..... V  
No valve.....Leave Blank

#### FILTER DRAIN

Internal automatic drain..... CFD  
Manual drain.....CF

#### PORT SIZE

1/4 NPTF.....2  
3/8 NPTF.....3  
1/2 NPTF.....4

#### PORT TYPE

NPTF threads..... Leave Blank  
BSPP threads..... W

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-200 psig Gauge..... Standard  
No Gauge.....NG  
Plastic Mounting nut..... P  
Metal Mounting nut..... PN

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None.....Leave Blank  
Non-relieving regulator..... A  
Sintered bronze filter element:  
5-µm rating.....E5  
20-µm rating.....E4  
40-µm rating.....E3  
Adjusting springs:  
0-150 psig (0-10 bar).....H  
0-50 psig (0-3.4 bar)..... L  
Quick-fill lubricator Q-cap.....Q

# GUARDSMAN II Modular FRLs

## Integral Filter/Regulators plus Lubricator

# BMVCFDRL70D Models

## Port Sizes: 1/4, 3/8, 1/2



Model Shown: BMVCFDRL70D-2

- ◆ Filter and regulator consolidated in a single assembly (**BCFDR70**); sight-feed lubricator (**BL70D**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Aluminum bowls with clear nylon sight glass. Bowls can be rotated for easy readability.
- ◆ Optional extended bowls provide greater filter sump and lubricator capacities.
- ◆ Internal automatic filter drain; optional manual drain and internal float drain.
- ◆ Self-relieving piston-type regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Bodies:** Zinc for filter/regulator and lubricator.

**Bowls:** 6-Ounce (180-ml) capacity aluminum bowls with clear nylon sight glass. Optional 10-ounce (300-ml) bowls. Bowls can be rotated for easy readability.

**Bowl Rings:** Nylon.

### Filter Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 150 psig (10 bar) .

Without lockout valve: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Regulator Dome and Knob:** Acetal.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

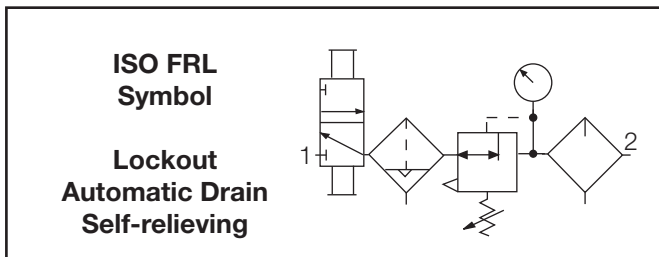
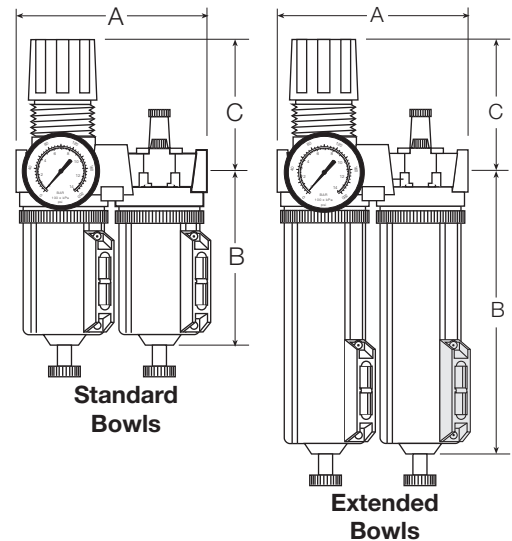
## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A *	B	C	Depth †	Weight †
					Ib (kg)
Standard	8.7 (221)	5.9 (151)	3.3 (83)	2.4 (60)	3.00 (1.36)
Extended	8.7 (221)	8.9 (227)	3.3 (83)	2.4 (60)	5.25 (2.39)

\* Without V35 lockout valve deduct 3.8 (97) from dimension A.  
 † Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA60F-03PE5
5-µm bronze.....	KA60F-03E5
40-µm bronze.....	KA60F-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.  
 NOTE: For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V CFD RL 70D - 2 Y X W**

### LOCKOUT VALVE

V35 valve ..... V  
 No valve ..... Leave Blank

### FILTER DRAIN with METAL BOWLS

Internal automatic drain ..... CFD  
 Manual drain..... CF  
 Float drain (Metal stem) ..... CF6A

### BOWL SIZE

Standard 6-ounce bowls ..... 70D  
 Extended 10-ounce bowls....70DH

### PORT SIZE

1/4 NPTF..... 2  
 3/8 NPTF..... 3  
 1/2 NPTF..... 4

### PORT TYPE

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

0-200 psig Gauge ..... Standard  
 No gauge ..... NG  
 Plastic nut ..... P

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
 Non-relieving regulator..... A  
 Sintered bronze filter element:  
 5-µm rating..... E5  
 20-µm rating..... E4  
 40-µm rating..... E3  
 Adjusting springs:  
 0-150 psig (0-10 bar)..... H  
 0-50 psig (0-3.4 bar)..... L  
 Quick-fill lubricator Q-cap ..... Q



# SERIES 350 CFRLs

## Integral Filter/Regulator plus Lubricator

# BAGV3A1B6A13 Models

## Port Sizes: 1/4, 3/8, 1/2



Model Shown: BAGV3A1B6A13

### SPECIFICATIONS

**Ambient/Media Temperature:**

Plastic bowl: 40° to 125°F (4° to 52°C)

Metal bowl: 40° to 175°F (4° to 79°C)

**Body:** Zinc.

**Dome:** Nylon

**Bowl:** 5.1-Ounce (151-ml) polycarbonate plastic with nylon shatterguard; optional 6.0-Ounce (177-ml) aluminum bowl with clear nylon sight glass. Lubricator bowl only; optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass.

**Filter Bowl Drain:** Internal float drain; optional manual drain.

**Filter Element:** 5-µm-rated polyethylene; optional 5-µm-rated and 40-µm-rated bronze element.

**Fluid Media:** Compressed air.

**Filter Inlet Pressure:**

Plastic bowl & manual drain: 0-150 psig (0-10 bar).

Plastic bowl & Float drain: 30-150 psig (2-10 bar).

Metal bowl & manual drain: 0-250 psig (0-17 bar).

Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Lubricator Inlet Pressure:**

Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 250 psig (17 bar) maximum.

**Outlet Pressure:** Adjustable up to 150 psig (10 bar); optional adjusting springs.

**Optional Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 2-1/16-inch (52-mm) hole required.

**Seals:** Nitrile.

**Valve:** Brass.

**Lubricator Cap Color:** yellow. Optional red, blue and grey.

**Oil Adjustment:** External; tamper resistant.

**Sight-Feed Dome:** Nylon.

### Available Color Caps

**Yellow**  
(standard)



**Red**  
(optional)



**Blue**  
(optional)



**Grey**  
(optional)



### GENERAL

- ◆ Modular or inline mounting.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Polycarbonate bowl with shatterguard; optional metal bowl with nylon sight glass.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C.).

### INTEGRAL FILTER/REGULATOR

- ◆ Designed to remove particulate material down to 5 micron from the airstream to protect downstream equipment.
- ◆ Optional bronze 5-µm-rated, 20-µm-rated, and 40-µm-rated. 5-µm-rated polyethylene filter elements are standard.
- ◆ Superior water removal up to 98% efficiency - free water.
- ◆ Removal of effluents via manual or automatic float drains.
- ◆ Superior pressure regulation - diaphragm type regulator
- ◆ Self relieving design; large diaphragm sensing ratio; non-relieving optional.
- ◆ Optional pressure adjustment locking key; tamper resistant pressure setting.
- ◆ Pressure gauge.

### LUBRICATOR

- ◆ Sight feed design; transparent dome to show oil delivery.
- ◆ External oil delivery adjusting knob, removable for tamper resistance.
- ◆ Color caps available for visual management systems. (Blue, red, yellow and grey). Consult factory for custom colors.

### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	8.76 (222.50)	5.54 (140.7)	4.68 (118.9)	2.90 (73.7)	4.7 (2.1)
Std metal	8.76 (222.50)	6.42 (163.1)	4.68 (118.9)	2.90 (73.7)	5.1 (2.3)

**Panel Mounting:** 2-1/16" (52mm) hole required.

**Lockout:** Without V380 lockout valve deduct 2.3 (58) from dimension A.

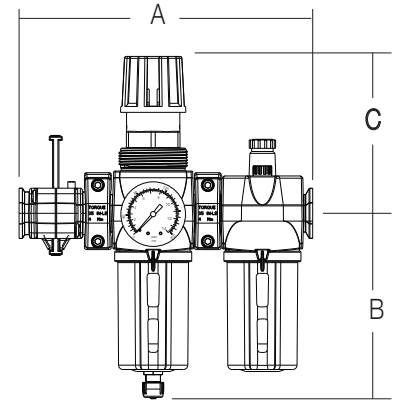
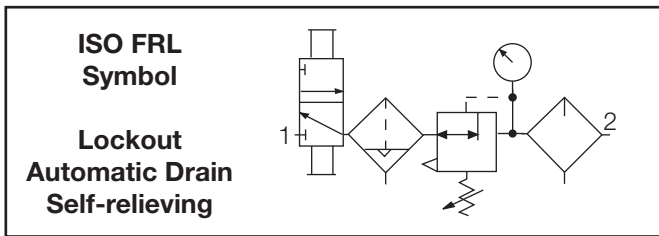
† **Bowl (standard) removal clearance:** add 3.1 (79)

† **Bowl (extended) removal clearance:** add 6.1 (155)

Dimensions above reflect less gauge.

### REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element) .....	A60F-03PE5
40-µm Bronze .....	A60F-03E3
5-µm Bronze .....	A60F-03E5
20-µm Bronze .....	A60F-03E4



### ORDERING INFORMATION

Change the letters in the sample model number below to specify the CFR + L you want.  
To order with some of the other available options, see Ordering Information on page 300.

## B A G V 3 A 0 B 6 A 1 3

#### LUBRICATOR CAP COLOR

- Yellow (standard) ..... B
- Red ..... C
- Blue ..... D
- Grey ..... A

#### BOWL TYPE

- All standard plastic ..... A
- All standard metal ..... B
- All metal bowls. Standard CFR ..... D
- Extended Lubricator.

#### VALVE OPTION

- No valve ..... Leave blank
- V380 shutoff valve ..... V

#### INTEGRAL FILTER/REGULATOR

- CFR350 ..... 3
- CFR350-E3 ..... 4
- CFR350-A (non-relieving) ..... 5
- CFR350-H (0-200 psig) ..... 6
- CFR350-L (0-50 psig) ..... 8
- CFR350-P (with panel mount nut) .. 9
- CFR350-E4 ..... L

#### PORT TYPE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 1/4 BSPP ..... B
- 3/8 BSPP ..... C
- 1/2 BSPP ..... D

#### REGULATOR GAUGE

- None ..... 0
- 200-BDD (0-200 psi) ..... 1
- 60BDD (0-60 psi) ..... 2

#### MOUNTING BRACKETS

- None ..... A
- Back brackets ..... J

#### CFR350 DRAIN TYPE

- Manual..... 0
- Plastic bowl, Float drain ..... 6  
(plastic stem).
- Metal bowl, Float drain ..... 8  
(Brass stem).

#### LUBRICATOR

- L350D ..... B
- L350D-Q (with Q-Cap) ..... C

# SERIES 350 CFRL WITH ADDITIONAL OPTIONS

Change the letters in the sample model number below to specify the **CFRL** you want.

Product will be assembled in order of model number chosen.

**NOTE:** For model number longer than 15 characters please consult Master Pneumatic.

**B A G V 3 X A 1 X A 0 X A 1 X A V 0 1 0 0 A 3**

## CAP COLOR

Yellow (standard) ..... B  
 Red ..... C  
 Blue ..... D  
 Grey ..... A

## BOWL TYPE

All Plastic ..... A  
 All Metal ..... B  
 Extended metal bowl on ..... D  
 coalescent filter and  
 Lubricator. Standard metal  
 bowl on filter  
 Extended metal bowl ..... E  
 on lubricator. Standard  
 Metal bowl on filter and  
 coalescent filter.

## LOCKOUT VALVE

No V380 valve ..... Leave Blank  
 V380 valve ..... V

**Note:** a V380 lockout valve is not necessary when ordering assembly with V382, V383 or V384 Valve but if needed, can be ordered. Consult factory for coding.

V382 and V383 Valves are coded later in model number.

## INTEGRAL FILTER / REGULATOR

(Drain options are coded later in model number.)

None ..... 0  
 CFR350 ..... 3  
 CFR350-E3 ..... 4  
 CFR350-A ..... 5  
 CFR350-H ..... 6  
 CFR350-L ..... 8  
 CFR350-P ..... 9  
 V383-N6A4A and CFR350-QE .... B  
 V383-N6A4B and CFR350-QE .... C  
 V383-N6A0A and CFR350-QE .... D  
 V383-N6A0B and CFR350-QE .... E  
 V382-N6A4A and CFR350-QE .... F  
 V382-N6A4B and CFR350-QE .... G  
 V382-N6A0A and CFR350-QE .... H  
 V382-N6A0B and CFR350-QE .... J  
 CFR350-E4 ..... L

## ADDITIONAL PORT (optional location 2)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

## COALESCENT FILTER

None ..... A  
 FC350 ..... B  
 FC350-E8 ..... C  
 FC350 and FC350-E9 ..... D  
 FC350-E8 and FC350-E9 ..... E  
 FC350 and FC350-E8 ..... H

## ADDITIONAL PORT (optional location 1)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

# SERIES 350 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

**B A G V 3 X A 1 X A 0 X A 1 X A V 0 1 0 0 A 3**

**ADDITIONAL PORT** (optional location 3)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**LUBRICATOR and LUBRICATION**

- None ..... A
- L350D ..... B
- L350D-Q ..... C
- PA640\*1, 118-109-\* male port, and A-00942M prefilled tubing.... D
- PA600\*1, 118-109-\* male port, and A-00942M prefilled tubing .... F
- PA640\*5, 118-109-\* male port, and A-00942M prefilled tubing .... H
- PA600\*5, 118-109-\* male port, and A-00942M prefilled tubing .... K

**NOTE:** Option D, F, H, and K can only be used with 1/2 inlet and outlet ports and modular connections).

**ADDITIONAL PORT** (optional location 4)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**V382, V383 and V384 LOCKOUT VALVE**

- None ..... Leave Blank
- V383-N6A4A (with pressure sensor) ..... V01
- V383-N6A4B (with pressure sensor and muffler)..... V02
- V383-N6A0A ..... V03
- V383-N6A0B (with muffler) ..... V04
- V382-N6A4A (with pressure sensor) ..... V09
- V382-N6A4B (with pressure sensor and muffler)..... V10
- V382-N6A0A ..... V11
- V382-N6A0B (with muffler) ..... V12
- V382-N6A3A (with 0-160 psig gauge) ..... V17
- V382-N6A3B (with 0-160 psig gauge and muffler)..... V18

# SERIES 350 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## B A G V 3 X A 1 X A 0 X A 1 X A V 0 1 0 0 A 3

### DRAIN TYPE FOR INTEGRAL FILTER / REGULATOR AND COALESCING FILTER

Manual drain on filter and coalescing filter .....	0
Float drain (plastic stem) on filter and coalescing filter .....	6
(used with plastic bowls type only)	
Float drain (plastic stem) on filter and manual drain on coalescing filter .....	7
(used with plastic bowls type only)	
Float drain (brass stem) on filter and coalescing filter .....	8
(used with metal bowl type only).	
Float drain (brass stem) on filter and manual drain on coalescing filter .....	9
(used with metal bowl type only)	

### INLET BLOCK PORT - and - OUTLET BLOCK PORT

None .....	None .....	A
Female .....	Female .....	B
Male .....	Male .....	C
Male .....	Female .....	D
Female .....	Male .....	E
None .....	Female .....	F
None .....	Male .....	G
Female .....	None .....	H
Male .....	None .....	I
None with back bracket .....	None with back bracket .....	J
Female with back bracket .....	Female with back bracket .....	K
None with back bracket .....	Female with back bracket .....	L
Female with back bracket .....	None with back bracket .....	M
Male with back bracket .....	Female with back bracket .....	N

### REGULATOR GAUGE - and - COALESCING FILTER GAUGE

None .....	None .....	0
200-BDD (0-200 PSIG) .....	None .....	1
60BDD (0-60 PSIG) .....	None .....	2
200-BDD (0-200 PSIG) .....	Differential pressure gauge .....	5

# SERIES 350 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## B A G V 3 X A 1 X A 0 X A 1 X A V 0 1 0 0 A 3

### INLET PORT - and - OUTLET PORT

1/4-NPTF .....	1/4-NPTF .....	2
3/8-NPTF .....	3/8-NPTF .....	3
1/2-NPTF .....	1/2-NPTF .....	4
1/4-BSPP .....	1/4-BSPP .....	B
3/8-BSPP .....	3/8-BSPP .....	C
1/2-BSPP .....	1/2-BSPP .....	D

Consult factory for mixed inlet and outlet port sizes. Note: when mixed inlet and outlet port sizes are chosen, the largest port size will be used on each product. Example Inlet = 3/8" and outlet = 1/2" then each product, ie: filter, regulator etc. would be 1/2" ports.

### SERIES 350/380 CUSTOMIZED INTERFACE

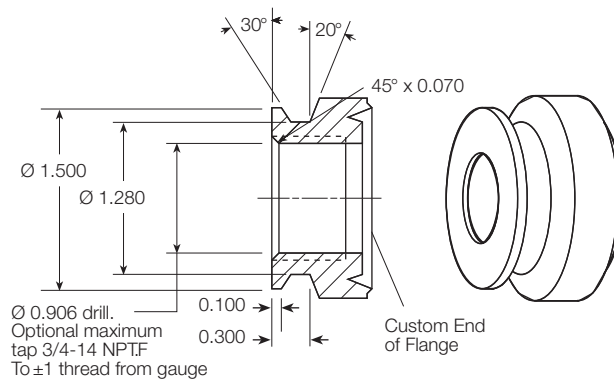
With this simple turned flange, users can easily customize their own products to interface directly with Series 350/380 modules using the clamp shown on page 275 (part number **A118-105**). See sketch below for dimensions.

Some potential usage examples are:

Turned Series 350/380 flange on a valve body.

Special auxiliary manifold blocks having Series 350/380 flange configuration.

Suitable materials for a custom port include aluminum, brass, steel, stainless steel, and zinc.



# VANGUARD Modular FRLs Integral Filter/Regulators plus Lubricator

## MVCFDRL108D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown:  
MVCFDRL108D-6

### SPECIFICATIONS

**Ambient/Media Temperature:**

40° to 125°F (4° to 52°C). With metal bowls but no **lockout valve**: 40° to 175°F (4° to 79°C).

**Bodies:** Zinc for filter/regulator and lubricator.

**Bowls:** 8-Ounce (240-ml) capacity zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard. Optional 20-ounce (600-ml) extended lubricator bowl.

**Bowl Rings:** Nylon.

**Filter Drain:**

Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Inlet Pressure:**

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 150 psig (10 bar) . With metal bowls but no lockout valve: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator:** Nylon dome; acetal knob.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

- ◆ Filter and regulator consolidated in a single assembly (**CFDR100**); sight-feed lubricator (**L28D**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

### AIR FLOW DATA

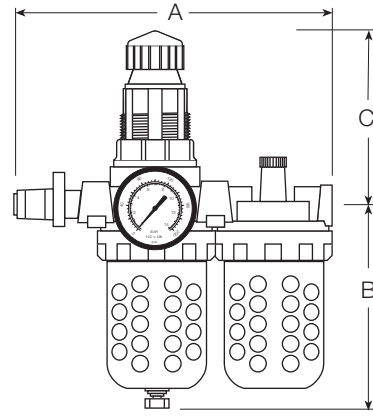
See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowls	Weight †				
	A *	B	C	Depth †	lb (kg)
Std. Plastic	10.5 (267)	5.8 (147)	3.3 (84)	3.5 (89)	5.94 (2.69)
Std. Metal	10.5 (267)	6.4 (163)	3.3 (84)	3.5 (89)	7.74 (3.51)
Extended Metal	10.5 (267)	9.8 (249)	3.3 (84)	3.5 (89)	9.63 (4.37)

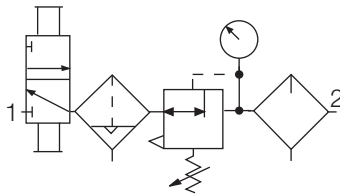
\*Without V35 lockout valve deduct 3.8 (97) from dimension A.

† Less gauge.



**ISO FRL Symbol**

**Lockout Automatic Drain Self-relieving**



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA103-03PE5
5-µm bronze .....	KA103-03E5
20-µm bronze.....	KA103-03E4
40-µm bronze.....	KA103-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V CFD RL 108D - 2 Y W**

### BOWL TYPE

Metal bowls ..... B  
Plastic bowls ... leave Blank

### ASSEMBLY

Modular ..... M  
Pipe nipple ..... Leave Blank

### LOCKOUT VALVE

V35 Valve ..... V  
No valve ..... Leave Blank

### FILTER DRAIN

Internal automatic drain ..... CFD  
Manual drain ..... CF  
Internal float drain (**plastic stem**) ..... CF5A  
(Must be ordered with plastic bowl option under **BOWL TYPE**).  
Internal float drain (**brass stem**) ..... CF6A  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
External Hydro-Jector drain; ..... CFE  
(Must be ordered with metal bowl option under **BOWL TYPE**).

### BOWL SIZE

Standard 8-ounce bowls ..... 108D  
8-Ounce filter bowl &  
20-ounce lubricator bowl  
(metal bowls only) ..... 108DH

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator..... A  
Sintered bronze filter element:  
5-µm rating ..... E5  
20-µm rating ..... E4  
40-µm rating ..... E3  
Adjusting springs:  
0-175 psig (0-12 bar) ..... H\*\*  
0-50 psig (0-3.4 bar) ..... L  
Metal Dome ..... MD  
Limit maximum psig setting .... M\*  
0-200 psig Gauge ..... Standard  
No gauge ..... NG  
Regulator tee handle ..... T  
Quick-fill lubricator Q-cap ..... Q

### PORT SIZE

1/4 NPTF ..... 2  
3/8 NPTF ..... 3  
1/2 NPTF ..... 4  
3/4 NPTF ..... 6

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome

For external and additional modular port options see numbering chart on 344 page.



# VANGUARD Modular FRLs Integral Filter/Regulators plus Lubricator

# MVCFDRL108W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



**Model Shown:**  
MVCFDRL108W-4

- ◆ Filter and regulator consolidated in a single assembly (**CFDR100**); wick-feed lubricator (**L28W**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or external Hydro-Jector drain.
- ◆ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

## SPECIFICATIONS

### **Ambient/Media Temperature:**

40° to 125°F (4° to 52°C). With metal bowls but no lockout valve: 40° to 175°F (4° to 79°C).

**Bowls:** 8-Ounce (240-ml) capacity zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.

**Bowl Rings:** Aluminum.

### **Filter Drain:**

Internal automatic drain; optional manual drain, internal float drain, or external Hydro-Jector drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Zinc.

### **Inlet Pressure:**

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

150 psig (10 bar) maximum. With metal bowls but no **lockout valve:** 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator:** Nylon dome; acetal knob.

**Seals:** Nitrile.

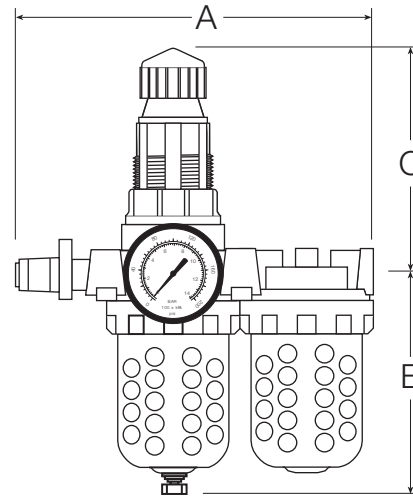
## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

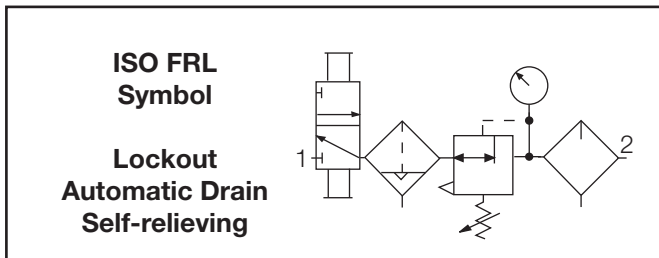
Bowls	A *	B	C	Depth †	Weight †
					Lb (kg)
Plastic	10.5 (267)	5.8 (147)	3.3 (84)	3.5 (89)	5.94 (2.69)
Metal	10.5 (267)	6.4 (163)	3.3 (84)	3.5 (89)	7.74 (3.51)

\*Without V35 lockout valve deduct 3.8 (97) from dimension A.  
† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA103-03PE5
5-µm bronze .....	KA103-03E5
20-µm bronze.....	KA103-03E4
40-µm bronze.....	KA103-03E3



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V CFD RL 108W - 2 Y W**

### BOWL TYPE

Metal bowls ..... B  
Plastic bowls ... Leave Blank

### ASSEMBLY

Modular ..... M  
Pipe nipple ..... Leave Blank

### LOCKOUT VALVE

V35 Valve ..... V  
None .. Leave Blank

### FILTER DRAIN

Internal automatic drain ..... CFD  
Manual drain ..... CF  
Internal float drain (**plastic stem**) ..... CF5A  
(Must be ordered with plastic bowl option under **BOWL TYPE**).  
Internal float drain (**brass stem**) ..... CF6A  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
External Hydro-Jector drain; ..... CFE  
(Must be ordered with metal bowl option under **BOWL TYPE**).

### BOWL SIZE

Standard 8-ounce bowls ..... 108W

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator..... A  
Sintered bronze filter element:  
5-µm rating..... E5  
20-µm rating..... E4  
40-µm rating..... E3  
Adjusting springs:  
0-175 psig (0-12 bar)..... H\*\*  
0-50 psig (0-3.4 bar)..... L  
Metal Dome ..... MD  
Limit maximum psig setting .... M\*  
0-200 psig Gauge ..... Standard  
No gauge ..... NG  
Regulator tee handle ..... T  
Quick-fill lubricator Q-cap ..... Q

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome

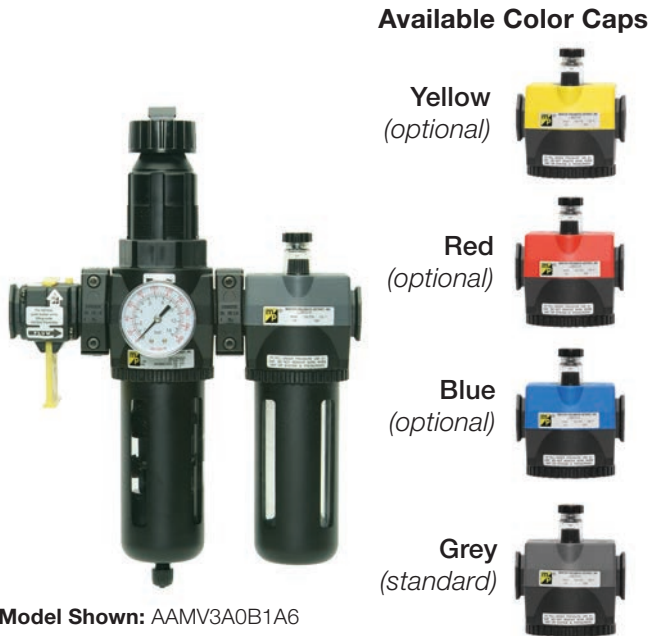
### PORT SIZE

1/4 NPTF..... 2  
3/8 NPTF..... 3  
1/2 NPTF..... 4  
3/4 NPTF..... 6

For external and additional modular port options see numbering chart on 344 page.

# Full-Size SERIES 380 FRLs Integral Filter/Regulators plus Lubricator

# AAMV3A0B1A1 Models Port Sizes: 3/8, 1/2, 3/4



Model Shown: AAMV3A0B1A6

## SPECIFICATIONS

### Ambient/Media Temperature:

Metal bowls: 40° to 175°F (4° to 79°C).

Plastic bowls: 40° to 125°F (4° to 52°C).

**Bowls:** 9-Ounce (270-ml) capacity aluminum bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard. Optional 15-ounce (450-ml) extended aluminum lubricator bowl with two clear nylon sight glasses.

**Cap Colors:** Filter/regulator, black only. Lubricator, grey; yellow, red, and blue optional.

**Filter Drain:** Internal automatic drain; optional manual drain, internal float drain, or Warrior electronic drain.

**Filter Element:** 5-µm-rated polyethylene; optional 40-µm element.

**Fluid Media:** Compressed air.

Heads: Zinc.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Metal bowls: 200 psig (13.7 bar) maximum.

Plastic bowls: 150 psig (10 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator Valve:** Brass.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

- ◆ Filter and regulator consolidated in a single assembly (**CFDR380**); sight-feed lubricator (**L380D**); lockout valve (**V380**).
- ◆ Modular or inline mounting.
- ◆ 5-µm-rated polyethylene filter element; optional 40-µm element.
- ◆ Aluminum bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or Warrior electronic drain.
- ◆ Optional extended aluminum lubricator bowl with sight glasses.
- ◆ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◆ Pressure gauge; two gauge ports.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

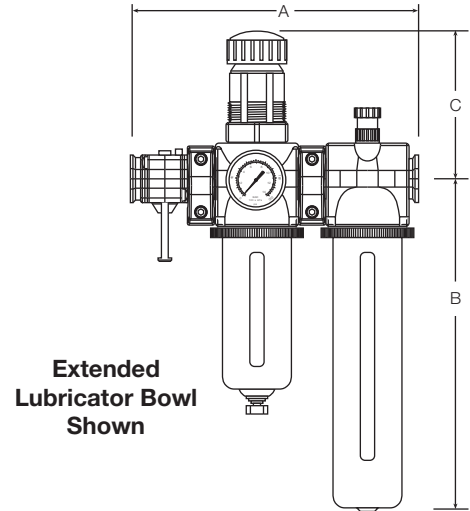
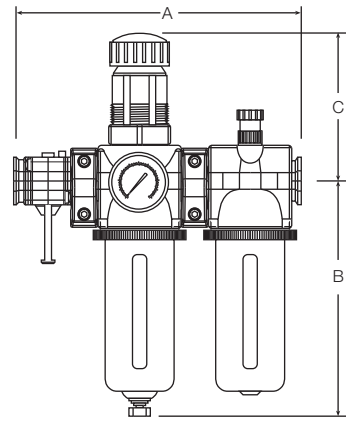
## DIMENSIONS inches (mm)

Bowl	Dimensions				Weight †
	A *	B **	C	Depth †	lb (kg)
Standard	9.6 (244)	7.7 (195)	5.4 (137)	2.9 (73)	5.81 (2.64)
Extended	9.5 (241)	10.6 (269)	5.4 (137)	2.9 (73)	6.00 (2.73)

\* Without V380 lockout valve deduct 2.3 (58) from dimension A.

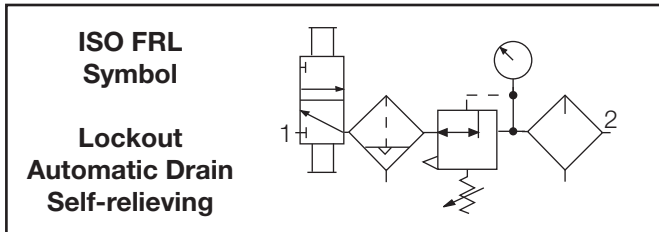
\*\* Bowl removal clearance: For 9-ounce plastic bowl add 4.2 (107).  
For 9-ounce metal bowl add 4.1 (104).  
For extended bowl add 6.1 (155).

† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm (Std element)	A115-106PE5
40-µm bronze	A115-106PE3



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the F/R + L you want.  
To order with some of the other available options, see Ordering Information on page 296.

**A A M V 3 A 0 B 1 A 1 3**

### LUBRICATOR CAP COLOR

Grey (Std) .....A  
Yellow .....B  
Red .....C  
Blue .....D

### BOWL TYPE

Two 9-ounce plastic .....A  
Two 9-ounce metal .....B  
9-Ounce metal on F/R and  
15-ounce on lubricator ...D

### LOCKOUT VALVE

None .....Leave Blank  
V380 Valve .....V

### FILTER/REGULATOR MODEL

CFR380 (0-125 psig and ..... 3  
5-µm element)  
CFR380-E3 (0-125 psig and ... 4  
40-µm element)  
CFR380-H (0-175 psig and ..... 6 \*  
5-µm element)  
CFR380-L (0-50 psig and ..... 8  
5-µm element)

\* H option spring  
includes metal  
dome

### PORT SIZE

3/8 NPTF .....3  
1/2 NPTF .....4  
3/4 NPTF .....6  
3/8 BSPP .....C  
1/2 BSPP .....D  
3/4 BSPP .....E

### GAUGES

None .....0  
200-BDD (0-200 psig) .....1  
60BDD (0-60 psig) .....2

### MOUNTING OPTIONS

No end ports .....A  
Mounting brackets only .....J  
Female ports and  
mounting brackets .....K

### FILTER DRAIN

Manual .....0  
Internal automatic .....1  
Warrior electronic .....2  
Internal float drain .....6

### LUBRICATOR

L380D .....B  
L380D-Q (with quick-fill cap) .....C

# SERIES 380 CFRL WITH ADDITIONAL OPTIONS

Change the letters in the sample model number below to specify the **CFRL** you want.  
 Product will be assembled in order of model number chosen.

**NOTE:** For model number longer than 15 characters please consult Master Pneumatic.

**A B M V 3 XA 1 XA 0 XA 1 XA V01 0 0 A 3**

## CAP COLOR

Grey (Std) .....A  
 Yellow .....B  
 Red .....C  
 Blue .....D

## BOWL TYPE

All Plastic .....A  
 All Metal .....B  
 Extended metal bowl on ..... D  
 coalescent filter and  
 Lubricator. Standard metal  
 bowl on filter  
 Extended metal bowl .....E  
 on lubricator. Standard  
 Metal bowl on filter and  
 coalescent filter.

## LOCKOUT VALVE

No V380 valve ..... Leave Blank  
 V380 valve ..... V

**Note:** a V380 lockout valve is not necessary when ordering assembly with V382, V383 or V384 Valve but if needed, can be ordered. Consult factory for coding.

V382 and V383 Valves are coded later in model number.

## INTEGRAL FILTER / REGULATOR

(Drain options are coded later in model number.)

None ..... 0  
 CFR380 ..... 3  
 CFR380-E3 ..... 4  
 CFR380-A ..... 5  
 CFR380-H ..... 6  
 CFR380-L ..... 8  
 CFR380-P ..... 9  
 V383-N6A4A and CFR380-QE .... B  
 V383-N6A4B and CFR380-QE .... C  
 V383-N6A0A and CFR380-QE .... D  
 V383-N6A0B and CFR380-QE .... E  
 V382-N6A4A and CFR380-QE .... F  
 V382-N6A4B and CFR380-QE .... G  
 V382-N6A0A and CFR380-QE ..... H  
 V382-N6A0B and CFR380-QE .... J  
 CFR380-E4 ..... L

## ADDITIONAL PORT (optional location 2)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

## COALESCENT FILTER

None ..... A  
 FC380 ..... B  
 FC380-E8 ..... C  
 FC380 and FC380-E9 ..... D  
 FC380-E8 and FC380-E9 ..... E  
 BFC380-LDC (used with metal bowl type only) ..... F  
 BFC380-LDC and BFC380-E9LDC (used with metal bowl type only) ..... G  
 FC380 and FC380-E8 ..... H

## ADDITIONAL PORT (optional location 1)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

# SERIES 380 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

**A B M V 3 XA 1 XA 0 XA 1 XA V01 0 0 A 3**

**ADDITIONAL PORT (optional location 3)**

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ....XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**LUBRICATOR and LUBRICATION**

- None ..... A
- L380D ..... B
- L380D-Q ..... C
- PA640\*1, 118-109-\* male port, and A-00942M prefilled ..... D  
tubing.
- PA600\*1, 118-109-\* male port, and A-00942M prefilled ..... F  
tubing.
- PA640\*5, 118-109-\* male port, and A-00942M prefilled ..... H  
tubing.
- PA600\*5, 118-109-\* male port, and A-00942M prefilled ..... K  
tubing.

**NOTE:** Option D, F, H, and K can only be used with 1/2 and 3/4 inlet and outlet ports and modular connections).

**ADDITIONAL PORT (optional location 4)**

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ....XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**V382, V383 and V384 LOCKOUT VALVE**

- None ..... Leave Blank
- V383-N6A4A (with pressure sensor) ..... V01
- V383-N6A4B (with pressure sensor and muffler)..... V02
- V383-N6A0A ..... V03
- V383-N6A0B (with muffler) ..... V04
- V382-N6A4A (with pressure sensor) ..... V09
- V382-N6A4B (with pressure sensor and muffler)..... V10
- V382-N6A0A ..... V11
- V382-N6A0B (with muffler) ..... V12
- V382-N6A3A (with 0-160 psig gauge) ..... V17
- V382-N6A3B (with 0-160 psig gauge and muffler) ..... V18

# SERIES 380 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## A B M V 3 XA 1 XA 0 XA 1 XA V01 0 0 A 3

### DRAIN TYPE FOR INTEGRAL FILTER / REGULATOR AND COALESCING FILTER

Manual drain on filter and coalescing filter .....	0
Automatic drain on filter and coalescing filter .....	1
Warior drain on filter and coalescing filter (used with metal bowl type only) .....	2
Metal bowl hydro-jecton in filter, auto drain on coalescing filter .....	4
(used with metal bowl type only)	
Automatic drain on filter. Manual drain on coalescing filter .....	5
Float drain (plastic stem) on filter and coalescing filter .....	6
(used with plastic bowls type only)	
Float drain (plastic stem) on filter and manual drain on coalescing filter .....	7
(used with plastic bowls type only)	
Float drain (brass stem) on filter and coalescing filter .....	8
(used with metal bowl type only).	
Float drain (brass stem) on filter and manual drain on coalescing filter .....	9
(used with metal bowl type only)	

### INLET BLOCK PORT - and - OUTLET BLOCK PORT

None .....	None .....	A
Female .....	Female .....	B
Male .....	Male .....	C
Male .....	Female .....	D
Female .....	Male .....	E
None .....	Female .....	F
None .....	Male .....	G
Female .....	None .....	H
Male .....	None .....	I
None with back bracket .....	None with back bracket .....	J
Female with back bracket .....	Female with back bracket .....	K
None with back bracket .....	Female with back bracket .....	L
Female with back bracket .....	None with back bracket .....	M
Male with back bracket .....	Female with back bracket .....	N

### REGULATOR GAUGE - and -

None .....
200-BDD (0-200 PSIG) .....
60BDD (0-60 PSIG) .....
200-BDD (0-200 PSIG) .....
200-BDD (0-200 PSIG) .....
None .....
None .....
200-BDD (0-200 PSIG) .....
None .....
200-BDD (0-200 PSIG) .....
None .....

### COALESCING FILTER GAUGE

None .....	0
None .....	1
None .....	2
<b>Small</b> Differential pressure gauge .....	5
<b>Large</b> Differential pressure gauge .....	6
<b>Small</b> Differential pressure gauge .....	9
<b>Large</b> Differential pressure gauge .....	A
<b>Large</b> Differential pressure gauge .....	C
with normally <b>open</b> reed switch	
<b>Large</b> Differential pressure gauge .....	E
with normally <b>open</b> reed switch	
<b>Large</b> Differential pressure gauge .....	J
with normally <b>closed</b> reed switch	
<b>Large</b> Differential pressure gauge .....	L
with normally <b>closed</b> reed switch	

# SERIES 380 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## A B M V 3 XA 1 XA 0 XA 1 XA V01 0 0 A 3

### INLET PORT - and - OUTLET PORT

3/8-NPTF .....	3/8-NPTF .....	3
1/2-NPTF .....	1/2-NPTF .....	4
3/4-NPTF .....	3/4-NPTF .....	6
3/8-BSPP .....	3/8-BSPP .....	C
1/2-BSPP .....	1/2-BSPP .....	D
3/4-BSPP .....	3/4-BSPP .....	E

Consult factory for mixed inlet and outlet port sizes. Note: when mixed inlet and outlet port sizes are chosen, the largest port size will be used on each product. Example Inlet = 3/8" and outlet = 1/2" then each product, ie: filter, regulator etc. would be 1/2" ports.

### SERIES 380 CUSTOMIZED INTERFACE

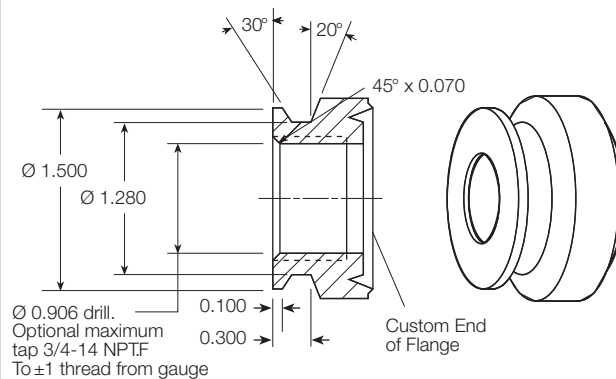
With this simple turned flange, users can easily customize their own products to interface directly with Series 380 modules using the clamp shown on page 275 (part number **A118-105**). See sketch below for dimensions.

Some potential usage examples are:

Turned Series 380 flange on a valve body.

Special auxiliary manifold blocks having Series 380 flange configuration.

Suitable materials for a custom port include aluminum, brass, steel, stainless steel, and zinc.





# SENTRY Modular FRLs Filter-Regulator-Lubricators

# VFDRL10 and 11 Models Port Sizes: 1/8, 1/4 Tube Fittings



Model Shown: VFDRL10-2

- ◆ Individual filter (**FD10**); piston-type regulator (**R10M**) or diaphragm-type (**R11M**); wick-feed lubricator (**L10**); lockout valve (**V10**).
- ◆ Modular assembly and mounting.
- ◆ Threaded ports or quick-connect fittings for tubing up to 10 mm in diameter.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic bowls or aluminum bowls.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

**Bodies:** Acetal.

**Bowls:** 2-Ounce (60-ml) capacity polycarbonate plastic bowls or aluminum bowls.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum.

**Oil Adjustment:** External, no shutoff.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Regulator Dome and Knob:** Acetal.

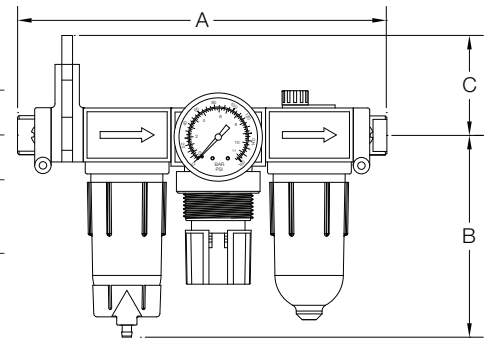
**Seals:** Nitrile.

### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

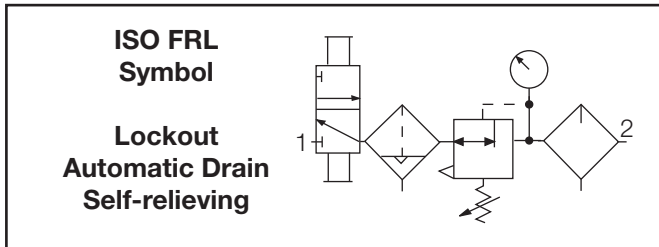
## DIMENSIONS inches (mm)

Ports	A **	B †	C	Depth	Weight lb (kg)
1/8, 1/4	6.9 (175)	3.9 (99)	1.7 (43)	3.6 (92)	0.53 (0.24)
<b>Models below have quick-connect fittings for tubing.</b>					
1/4	7.3 (185)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)
3/8	7.8 (198)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)
4 mm	7.3 (185)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)
6 mm	7.3 (185)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)
8 mm	7.0 (178)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)
10 mm	7.8 (198)	3.9 (99)	1.7 (43)	3.6 (92)	0.50 (0.23)



\*\* Without V10 lockout valve deduct 0.6 (15) from dimension A.

† Dimension for plastic bowl: metal bowl is 4.3 (109).



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA130-27PE5
5-µm bronze .....	KA130-27E5
20-µm bronze .....	KA130-27E4
40-µm bronze .....	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.  
NOTE: For model numbers longer than 15 characters, please consult Master Pneumatic.

### B V FD RL 10 P - 2 X Y G W

#### BOWL TYPE

Plastic bowls ...Leave Blank  
Metal bowls ..... B

#### LOCKOUT VALVE

V10 valve .....V  
None ..... Leave Blank

#### FILTER DRAIN

Internal automatic drain .....FD  
Manual drain..... F

#### REGULATOR TYPE

Piston type ..... 10  
Diaphragm type..... 11

#### MOUNTING HOLE LOCATION

Bottom mount (Standard) ..... Leave Blank  
Top mount ..... P

#### INLET PORT SIZE

No inlet and outlet ports .....Leave Blank  
Threaded:  
1/8 NPTF ..... 1  
1/4 NPTF ..... 2  
Fittings for Tubing:  
1/4..... 04  
3/8..... 06  
4 mm.....M4  
6 mm.....M6  
8 mm.....M8  
10 mm.....M10

#### OUTLET PORT SIZE

Same as inlet port .... Leave Blank  
Threaded:  
1/8 NPTF ..... 1  
1/4 NPTF ..... 2  
Fittings for Tubing:  
1/4..... 04  
3/8..... 06  
4 mm.....M4  
6 mm.....M6  
8 mm.....M8  
10 mm..... M10

#### PORT TYPE

As specified in **INLET PORT**... Leave Blank  
BSPP threads on both ports ..... W

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
0-160 PSI Gauge ..... G  
Plastic Panel Mount Nut ..... P  
Metal Panel Mount Nut ..... PN  
Hex Plastic mounting nut ..... PE

#### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator..... A  
Sintered bronze filter element:  
5-µm rating..... E5  
20-µm rating..... E4  
40-µm rating..... E3

#### Adjusting springs:

0-125 psig (0-8.6 bar)..... H  
0-50 psig (0-3.4 bar)..... L  
0-8 psig (0-0.6 bar)..... L8  
0-15 psig (0-1.0 bar)..... L15  
0-30 psig (0-2.1 bar)..... L30

#### Tamper-resistant spinning

knob (psig preset) ..... MV(\*)  
Quick-fill lubricator Q-cap ..... Q  
Viton seals..... V

\*Insert preset pressure.

# MINIATURE FRLs

## Filter-Regulator-Lubricators

# FDRL55 and 56 Models

## Port Sizes: 1/8, 1/4



Model Shown: FDRL56-2

- ◆ Individual filter (**FD50**); piston-type regulator (**R55M**) or diaphragm-type (**R56M**); and wick-feed lubricator (**L50**).
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength polycarbonate plastic bowls **or** aluminum bowls.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowls: 40° to 125°F (4° to 52°C).

Metal bowls: 40° to 175°F (4° to 79°C).

**Bowls:** 2-Ounce (60-ml) capacity polycarbonate plastic bowls or aluminum bowls.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Aluminum.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.

Plastic bowls: 150 psig (10 bar) maximum.

Metal bowls: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** Internal; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 160 psig (11 bar); 1/8 NPT gauge ports front and rear.

**Panel Mounting:** 1-3/16 inch (30 mm) hole required.

**Regulator Dome and Knob:** Glass Filled Nylon and Acetal.

**Seals:** Nitrile.

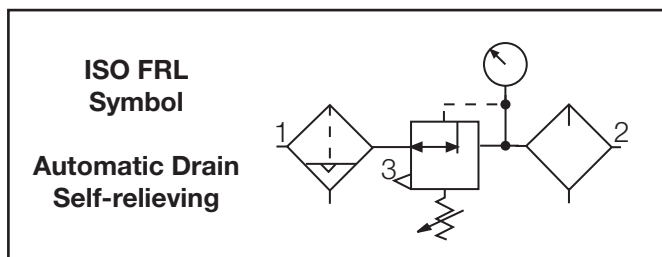
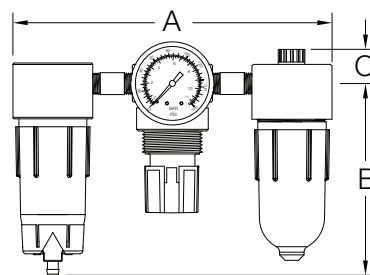
### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

	A	B	C	Depth †	Weight lb (kg)
Plastic	5.5 (140)	3.9 (99)	0.7 (17)	1.6 (41)	0.76 (0.34)
Metal	5.5 (140)	4.3 (109)	0.7 (17)	1.6 (41)	

† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element)	KA130-27PE5
5- $\mu$ m bronze	KA130-27E5
20- $\mu$ m bronze	KA130-27E4
40- $\mu$ m bronze	KA130-27E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B FD RL 55 - 2 Y G W**

### BOWL TYPE

Plastic bowls ..... Leave Blank  
Metal bowls ..... B

### FILTER DRAIN

No Filter ..... Leave Blank  
Internal automatic drain ..... FD  
Manual drain ..... F

### REGULATOR

No Regulator ..... Leave Blank  
Regulator ..... R

### LUBRICATOR

No Lubricator ..... Leave Blank  
Lubricator ..... L

### REGULATOR TYPE

No Regulator ..... 50  
Piston type ..... 55  
Diaphragm type ..... 56

### PORT SIZE

1/8 NPTF ..... 1  
1/4 NPTF ..... 2

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPB threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
0-160 PSI Gauge ..... G  
Plastic Panel Mount Nut ..... P  
Metal Panel Mount Nut ..... PN  
Hex Plastic mounting nut ..... PE

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator ..... A  
Sintered bronze filter element:  
5- $\mu$ m rating ..... E5  
20- $\mu$ m rating ..... E4  
40- $\mu$ m rating ..... E3

### Adjusting springs:

0-125 psig (0-8.6 bar) ..... H  
0-50 psig (0-3.4 bar) ..... L  
0-8 psig (0-0.6 bar) ..... L8  
0-15 psig (0-1.0 bar) ..... L15  
0-30 psig (0-2.1 bar) ..... L30

### Tamper-resistant spinning

knob (psig preset) ..... MV(\*)

Quick-fill lubricator Q-cap ..... Q

Tapped modified head to ..... T  
to allow 50-01 bracket assy.

Both on Filter and Lubricator.

Viton seals ..... V

\*Insert preset pressure.

# GUARDSMAN Modular FRLs Filter-Regulator-Lubricators

# MVFDRL60D Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: MVFDRL60D-3G

- ◆ Individual filter (**FD60**); piston-type regulator (**R60**); sight-feed lubricator (**L60D**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ High-strength zinc bowls **or** polycarbonate plastic bowls with shatterguard.
- ◆ Internal automatic filter drain; optional manual drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C). With metal bowls but no lockout valve: 40° to 175°F (4° to 79°C).

**Bowls:** 4-Ounce (120-ml) capacity zinc bowls or polycarbonate plastic bowls with zinc shatterguard.

### Filter Drain:

Internal automatic drain; optional manual drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Zinc.

### Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.  
150 psig (10 bar) maximum. With metal bowls but no lockout valve: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** 1-9/16 inch (40 mm) hole required.

**Regulator Dome and Knob:** Acetal. Optional metal regulator dome.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

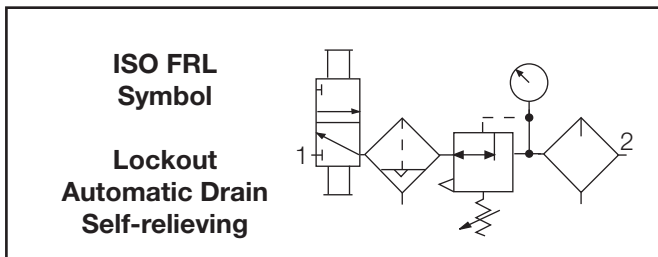
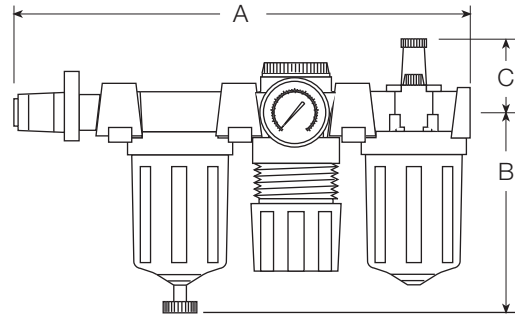
## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

				Weight
A *	B	C	Depth	lb (kg)
12.3 (312)	4.6 (117)	1.8 (46)	2.8 (71)	3.75 (1.70)

\*Without V35 lockout valve deduct 3.8 (97) from dimension A.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element)	KA60F-03
5- $\mu$ m bronze	KA60F-03E5
20- $\mu$ m bronze	KA60F-03E4
40- $\mu$ m bronze	KA60F-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

NOTE: For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V F D R L 60 D - 2 Y N G W**

### BOWL TYPE

Plastic bowl.....Leave Blank  
Metal bowl..... B

### ASSEMBLY

Modular.....M  
Pipe nipple.....Leave Blank

### LOCKOUT VALVE

V35 valve..... V  
No valve..... Leave Blank

### FILTER DRAIN

No Filter..... Leave Blank  
Internal automatic drain.....FD  
Manual drain..... F

### REGULATOR

No Regulator..... Leave Blank  
Regulator.....R

### LUBRICATOR (1)

No Lubricator..... Leave Blank  
Lubricator.....L

### REGULATOR DOME

No Regulator.....60  
Acetal.....60  
Metal.....65

### LUBRICATOR (2)

No Lubricator..... Leave Blank  
Lubricator..... D

### PORT TYPE

NPTF threads..... Leave Blank  
BSPP threads..... W

### GAUGE

Gauge.....Leave Blank  
No gauge..... NG  
Plastic Panel Mounting nut..... P  
Metal Panel Mounting nut..... PN

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None.....Leave Blank  
Non-relieving regulator.....A  
Sintered bronze filter element:  
5- $\mu$ m rating..... E5  
20- $\mu$ m rating..... E4  
40- $\mu$ m rating..... E3  
Adjusting springs:  
0-150 psig (0-10 bar).....H  
0-50 psig (0-3.4 bar)..... L  
Quick-fill lubricator Q-cap.....Q

### PORT SIZE

1/4 NPTF..... 2  
3/8 NPTF..... 3  
1/2 NPTF..... 4

# GUARDSMAN II Modular FRLs Filter-Regulator-Lubricators

# BMVFDRL70D Models Port Sizes: 1/4, 3/8, 1/2



Model Shown: BMVFDRL70D-4

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 125°F (4° to 52°C) with V35 lockout valve.  
40° to 175°F (4° to 79°C) with R75 regulator and without V35 lockout valve.

**Bowls:** 6-Ounce (180-ml) capacity aluminum with clear nylon sight glass. Optional 10-ounce (300-ml) extended bowls. Bowls can be rotated for easy readability.

**Bowl Rings:** Nylon.

### Filter Drain:

Internal automatic drain; optional manual drain and internal float drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Zinc.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2bar) with internal float drain.  
Maximum: 150 psig (10 bar) .  
Without lockout valve: 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Panel Mounting:** Nut included only with R75 lubricator; 1-9/16 inch (40 mm) hole required.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

- ◆ Individual filter (**BFD70**); piston-type regulator (**R60**); sight-feed lubricator (**BL70D**); lockout valve (**V35**)
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Aluminum bowls with clear nylon sight glass. Bowls can be rotated for easy readability.
- ◆ Optional extended bowls provide greater filter sump and lubricator capacities.
- ◆ Internal automatic filter drain; optional manual drain an internal float drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ **R75** regulator optional.
- ◆ Pressure gauge.
- ◆ **NPTF** port threads; optional **BSPP** threads.

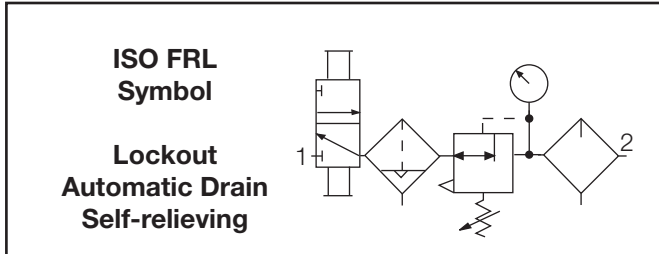
## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A *	B	C	Depth	Weight
					Ib (kg)
Standard	12.3 (312)	5.9 (151)	3.3 (83)	2.4 (60)	5.00 (2.27)
Extended	12.3 (312)	8.9 (227)	3.3 (83)	2.4 (60)	5.50 (2.50)

\* Without V35 lockout valve deduct 3.8 (97) from dimension A.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA60F-03PE5
5- $\mu$ m bronze.....	KA60F-03E5
40- $\mu$ m bronze.....	KA60F-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the **FR L** you want.  
**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V FD R L 70 D - 2 Y NG W**

### LOCKOUT VALVE

No valve ..... Leave Blank  
 V35 valve ..... V

### FILTER DRAIN with METAL BOWLS

No filter ..... Leave Blank  
 Internal automatic drain ..... FD  
 Manual drain..... F  
 Float drain (metal stem) ..... F6A

### REGULATOR (1)

No Regulator ..... Leave Blank  
 Regulator ..... R

### LUBRICATOR

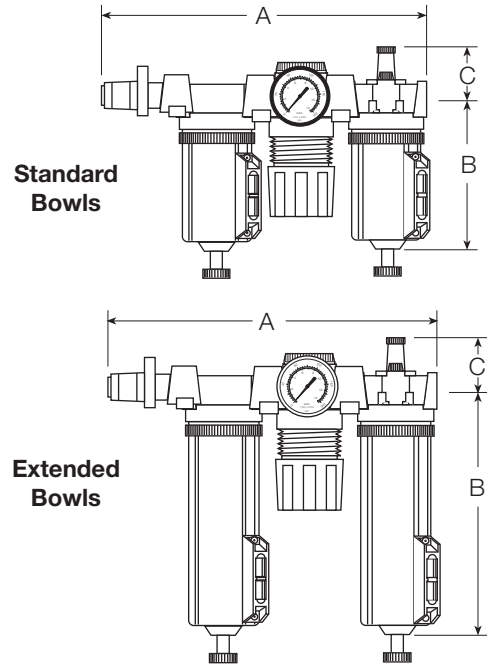
No Lubricator ..... Leave Blank  
 Lubricator ..... L

### REGULATOR (2)

No Regulator ..... 70  
 R60 with plastic dome..... 70  
 R75 with metal dome and ..... 75  
 panel mounting nut

### FILTER AND LUBRICATOR BOWL SIZE

Standard 6-ounce bowls (with lubricator) ..... D  
 Standard 6-ounce bowls (without lubricator) ..... Leave Blank  
 Extended 10-ounce bowls (with lubricator) ..... DH  
 Extended 10-ounce bowls (without lubricator) ..... H



### PORT TYPE

NPTF threads ..... Leave Blank  
 BSPF threads ..... W

### GAUGE

0-200 psig Gauge ..... Leave Blank  
 No gauge ..... NG

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
 Non-relieving regulator..... A  
 Sintered bronze filter element:  
 5- $\mu$ m rating ..... E5  
 40- $\mu$ m rating ..... E3  
 Adjusting springs:  
 0-150 psig (0-10 bar) ..... H  
 0-50 psig (0-3.4 bar) ..... L  
 Quick-fill lubricator Q-cap ..... Q  
 Tee handle, R75 regulator only ..... T

### PORT SIZE

1/4 NPTF ..... 2  
 3/8 NPTF ..... 3  
 1/2 NPTF ..... 4



# Full-Size SERIES 350 FRLs

## Filter-Regulator-Lubricators

# BAGV101B6A13 Models

## Port Sizes: 1/4, 3/8, 1/2



Model Shown: BAGV1A1B6A13

### Available Color Caps



**Yellow** (Standard)  
**Red** (optional)  
**Blue** (optional)  
**Grey** (Optional)

### SPECIFICATIONS

#### Ambient/Media Temperature:

Plastic bowl, manual drain 40° to 125°F (4° to 52°C)  
 Plastic bowl, float drain 40° to 125°F (4° to 52°C)  
 Metal bowl, manual drain 40° to 175°F (4° to 79°C)  
 Metal bowl, float drain 40° to 175°F (4° to 79°C)  
 Regulator ranges are dependant upon bowl type above.

#### Body: Zinc.

**Filter and Lubricator Bowl:** 5.1-Ounce (151-ml) capacity polycarbonate plastic with nylon shatterguard; optional 6.0 ounce (177-ml) aluminum bowl with clear nylon sight glass. Lubricator bowl has an optional 10-ounce (300-ml) extended aluminum bowl with clear nylon sight glass.

**Filter Bowl Drain:** Internal float drain; by removing the adjustment knob, a 3/16" (5mm) flexible tube can be connected to drain effluents. Optional manual drain.

**Filter and Lubricator Cap Color:** yellow, Optional red, blue and grey.

**Differential Pressure Gauge:** Optional.

**Filter Element:** 5-µm-rated polyethylene; optional 5-µm-rated, 20-µm-rated or 40-µm-rated sintered bronze.

**Fluid Media:** Compressed air.

#### Inlet Pressure:

Plastic bowl & manual drain: 0-150 psig (0-10 bar).  
 Plastic bowl & Float drain: 30-150 psig (2-10 bar).  
 Metal bowl & manual drain: 0-250 psig (0-17 bar).  
 Metal bowl & Float drain: 30-200 psig (2-14 bar).

**Regulator Dome:** Nylon.

**Knob:** Acetal

**Outlet Pressure:** Adjustable up to 150 psig (10 bar); optional adjusting springs.

**Optional Pressure Adjustment locking key:** removable

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4-NPT gauge ports front and rear.

**Panel Mounting:** 2-1/16 inch (52 mm) hole required.

**Seals:** Nitrile.

**Self-relieving:** Non-relieving optional.

**Valve:** Brass

**Valve Cap:** Nylon.

**Oil Adjustment:** External; tamper resistant.

**Sight-Feed Dome:** Nylon.

### GENERAL

- ◆ Modular or inline mounting.
- ◆ Filter and lubricator; Polycarbonate plastic bowl with steel shatterguard; optional metal bowl with sight glass.
- ◆ Inlet pressure rated at 250 psig (17 bar) with metal bowls up to 175° F. (79° C)
- ◆ Filter and Lubricator; Color caps available for visual management systems. (Blue,red, yellow and grey). Consult factory for custom colors.
- ◆ Front mounted modular clamping design with encapsulated screws.
- ◆ Compatible with modular 380 series of products.
- ◆ NPTF port threads; optional BSPP threads.

### FILTER

- ◆ Designed to remove particulate material to 5 micron from the airstream to protect downstream equipment.
- ◆ Optional bronze 5-µm-rated, 20-µm-rated, and 40-µm-rated. 5-µm-rated Polyethylene filter elements are standard.
- ◆ Superior removal of free water up to 98% efficiency
- ◆ Removal of effluents via manual or automatic float drains.

### REGULATOR

- ◆ Modular mounting allows regulators to be positioned at 45° increments for ease in adjustment.
- ◆ Superior pressure regulation - diaphragm type regulator
- ◆ Self relieving design; large diaphragm sensing area; non-relieving optional.
- ◆ Optional Pressure adjustment locking key; tamper resistant pressure setting.
- ◆ Inlet rated to 300 psig (21 bar)
- ◆ Reverse flow option.
- ◆ Pressure gauge.

### LUBRICATOR

- ◆ Sight feed design; transparent dome to show oil delivery.
- ◆ External oil delivery adjusting knob, removable for tamper resistance.

### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A	B †	C	Depth	Weight lb (kg)
Std plastic	12.02 (305.4)	5.54 (140.7)	2.21 (56.2)	2.90 (73.7)	6.1 (2.8)
Std metal	12.02 (305.4)	6.42 (163.1)	2.21 (56.2)	2.90 (73.7)	6.4 (2.9)

**Panel Mounting:** 2-1/16" (52mm) hole required.

**Lockout:** Without V380 lockout valve deduct 2.3 (58) from dimension A.

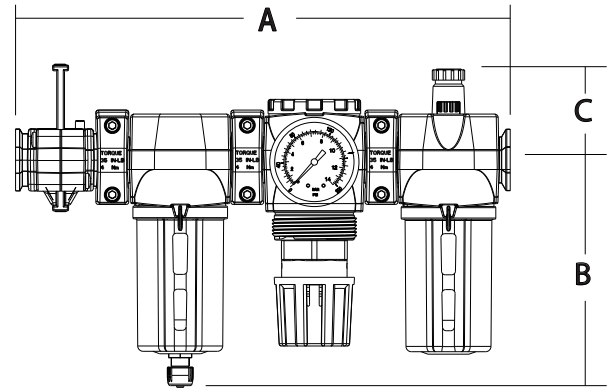
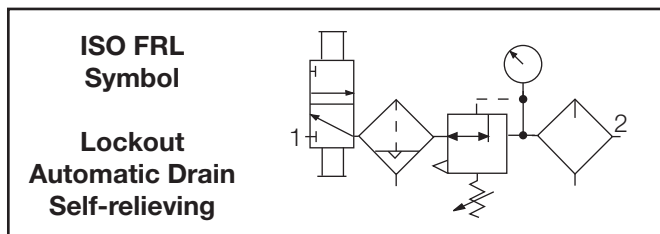
† **Bowl (standard) removal clearance:** add 3.1 (79)

† **Bowl (extended) removal clearance:** add 6.1 (155)

Dimensions above reflect less gauge.

### REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5-µm Polyethylene (Std element) .....	A60F-03PE5
40-µm Bronze .....	A60F-03E3
5-µm Bronze .....	A60F-03E5
20-µm Bronze .....	A60F-03E4



### ORDERING INFORMATION

Show below is a basic series 350 ordering chart. If non standard options is needed then use the complete numbering chart shown on the next couple of pages, (pgs 274-277)

## B A G V 1 0 1 B 6 A 1 3

#### LUBRICATOR CAP COLOR

- Yellow (standard) ..... B
- Red ..... C
- Blue ..... D
- Grey ..... A

#### BOWL TYPE

- All standard plastic ..... A
- All standard metal ..... B
- All metal bowls. Standard ..... D
- filter and regulator, Extended Lubricator.

#### VALVE OPTION

- No valve ..... Leave blank
- V380 shutoff valve ..... V

#### FILTER

- F350 ..... 1
- F350-E3 ..... 2
- F350-E4 ..... K

#### REGULATOR

- R350 ..... 1
- R350-A ..... 4
- R350-H ..... 5
- R350-L ..... 7
- R350-P ..... A
- R350-E ..... D

#### PORT TYPE

- 1/4 NPTF ..... 2
- 3/8 NPTF ..... 3
- 1/2 NPTF ..... 4
- 1/4 BSPP ..... B
- 3/8 BSPP ..... C
- 1/2 BSPP ..... D

#### REGULATOR GAUGE

- None ..... 0
- 200-BDD (0-200 psi) ..... 1
- 60BDD (0-60 psi) ..... 2

#### MOUNTING BRACKETS

- None ..... A
- Back brackets ..... J

#### FILTER DRAIN TYPE

- Manual..... 0
- Plastic bowl, Float drain ..... 6
- (plastic stem).
- Metal bowl, Float drain ..... 8
- (Brass stem).

#### LUBRICATOR

- L350D ..... B
- L350D-Q (with Q-Cap) ..... C

# SERIES 350 FRL WITH ADDITIONAL OPTIONS

Change the letters in the sample model number below to specify the **FRL** you want.  
Product will be assembled in order of model number chosen.

**NOTE:** For model number longer than 15 characters please consult Master Pneumatic.

**B A G V 3 X A A X A 1 X A B X A V 0 1 6 A 1 3**

## CAP COLOR

Yellow (standard) .....B  
Red .....C  
Blue .....D  
Grey .. .....A

## BOWL TYPE

All Plastic .....A  
All Metal .....B  
Extended metal bowl on ..... D  
coalescent filter and  
Lubricator. Standard metal  
bowl on filter  
Extended metal bowl .....E  
on lubricator. Standard  
Metal bowl on filter and  
coalescent filter.

## LOCKOUT VALVE

No V380 valve ..... Leave Blank  
V380 valve ..... V

**Note:** a V380 lockout valve is  
not necessary when ordering  
assembly with V382, V383 or  
V384 Valve but if needed, can be  
ordered. Consult factory for coding.

V382 and V383 Valves are coded  
later in model number.

## FILTER

(Drain options are coded later in model  
number.)

None ..... 0  
F350 ..... 1  
F350-E3 ..... 2  
F350-E4 ..... L

## REGULATOR

None ..... 0  
R350 ..... 1  
R350-A ..... 4  
R350-H ..... 5  
R350-L ..... 7  
R350-P ..... A  
R350-E ..... D  
V382-\*N6A4A with R350-E (valve pressure sensor) ..... K  
V382-\*N6A4B with R350-E (valve with pressure sensor ..... L  
and muffler).  
V382-\*N6A0A with R350-E ..... M  
V382-\*N6A0B with R350-E (valve with muffler) ... ..... N

## ADDITIONAL PORT (optional location 2)

None ..... Leave Blank  
1/4-NPTF extra port only ..... X0  
1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
3/8-NPTF extra port only ..... XE  
1/2-NPTF extra port only ..... XF  
1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

## COALESCENT FILTER

None ..... A  
FC350 ..... B  
FC350-E8 ..... C  
FC350 and FC350-E9 ..... D  
FC350-E8 and FC350-E9 ..... E  
FC350 and FC350-E8 ..... H

## ADDITIONAL PORT (optional location 1)

None ..... Leave Blank  
1/4-NPTF extra port only ..... X0  
1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
3/8-NPTF extra port only ..... XE  
1/2-NPTF extra port only ..... XF  
1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

# SERIES 350 FRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## B A G V 3 X A A X A 1 X A B X A V 0 1 6 A 1 3

### ADDITIONAL PORT (optional location 3)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

### LUBRICATOR and LUBRICATION

- None ..... A
- L350D ..... B
- L350D-Q ..... C
- PA640\*1, 118-109-\* male port, and A-00942M prefilled tubing.... D
- PA600\*1, 118-109-\* male port, and A-00942M prefilled tubing .... F
- PA640\*5, 118-109-\* male port, and A-00942M prefilled tubing .... H
- PA600\*5, 118-109-\* male port, and A-00942M prefilled tubing .... K

**NOTE:** Option D, F, H, and K can only be used with 1/2 inlet and outlet ports and modular connections).

### ADDITIONAL PORT (optional location 4)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

### V382, V383 and V384 LOCKOUT VALVE

- None ..... Leave Blank
- V383-N6A4A (with pressure sensor) ..... V01
- V383-N6A4B (with pressure sensor and muffler)..... V02
- V383-N6A0A ..... V03
- V383-N6A0B (with muffler) ..... V04
- V382-N6A4A (with pressure sensor) ..... V09
- V382-N6A4B (with pressure sensor and muffler)..... V10
- V382-N6A0A ..... V11
- V382-N6A0B (with muffler) ..... V12
- V382-N6A3A (with 0-160 psig gauge) ..... V17
- V382-N6A3B (with 0-160 psig gauge and muffler)..... V18

# SERIES 350 FRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## B A G V 3 X A A X A 1 X A B X A V 0 1 6 A 1 3

### DRAIN TYPE FOR INTEGRAL FILTER / REGULATOR AND COALESCING FILTER

Manual drain on filter and coalescing filter .....	0
Float drain (plastic stem) on filter and coalescing filter .....	6
(used with plastic bowls type only)	
Float drain (plastic stem) on filter and manual drain on coalescing filter .....	7
(used with plastic bowls type only)	
Float drain (brass stem) on filter and coalescing filter .....	8
(used with metal bowl type only).	
Float drain (brass stem) on filter and manual drain on coalescing filter .....	9
(used with metal bowl type only)	

### INLET BLOCK PORT - and - OUTLET BLOCK PORT

None .....	None .....	A
Female .....	Female .....	B
Male .....	Male .....	C
Male .....	Female .....	D
Female .....	Male .....	E
None .....	Female .....	F
None .....	Male .....	G
Female .....	None .....	H
Male .....	None .....	I
None with back bracket .....	None with back bracket .....	J
Female with back bracket .....	Female with back bracket .....	K
None with back bracket .....	Female with back bracket .....	L
Female with back bracket .....	None with back bracket .....	M
Male with back bracket .....	Female with back bracket .....	N

### REGULATOR GAUGE - and - COALESCING FILTER GAUGE

None .....	None .....	0
200-BDD (0-200 PSIG) .....	None .....	1
60BDD (0-60 PSIG) .....	None .....	2
200-BDD (0-200 PSIG) .....	Differential pressure gauge .....	5

# SERIES 350 CFRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## B A G V 3 X A A X A 1 X A B X A V 0 1 6 A 1 3

### INLET PORT - and - OUTLET PORT

1/4-NPTF .....	1/4-NPTF .....	2
3/8-NPTF .....	3/8-NPTF .....	3
1/2-NPTF .....	1/2-NPTF .....	4
1/4-BSPP .....	1/4-BSPP .....	B
3/8-BSPP .....	3/8-BSPP .....	C
1/2-BSPP .....	1/2-BSPP .....	D

Consult factory for mixed inlet and outlet port sizes. Note: when mixed inlet and outlet port sizes are chosen, the largest port size will be used on each product. Example Inlet = 3/8" and outlet = 1/2" then each product, ie: filter, regulator etc. would be 1/2" ports.

### SERIES 350/380 CUSTOMIZED INTERFACE

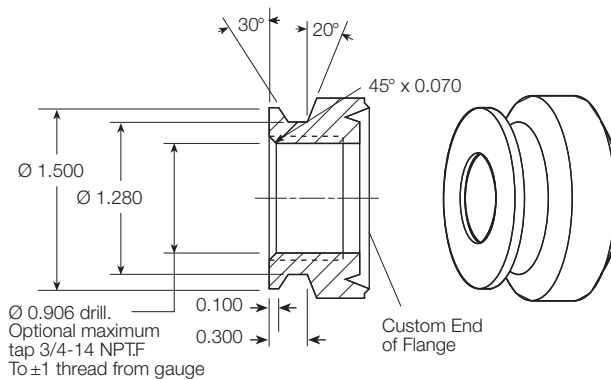
With this simple turned flange, users can easily customize their own products to interface directly with Series 350/380 modules using the clamp shown on page 275 (part number **A118-105**). See sketch below for dimensions.

Some potential usage examples are:

Turned Series 350/380 flange on a valve body.

Special auxiliary manifold blocks having Series 350/380 flange configuration.

Suitable materials for a custom port include aluminum, brass, steel, stainless steel, and zinc.



# Full-Size VANGUARD Modular FRLs Filter-Regulator-Lubricators

## MVFDRL108D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: MVFDRL108D-4

### SPECIFICATIONS

#### Ambient/Media Temperature:

Plastic bowls: 40° to 125°F (4° to 52°C).

Metal bowls with V35 lockout valve:

40° to 150°F (4° to 66°C).

Metal bowls without V35 lockout valve:

40° to 175°F (4° to 79°C).

**Bowls:** 8-Ounce (240-ml) capacity zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard. Optional 20-ounce (600-ml) extended metal lubricator bowl.

**Bowl Rings:** Aluminum.

#### Filter Drain:

Internal automatic drain; optional manual drain, internal float drain or Warrior electronic drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Zinc.

#### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 150 psig (10 bar). With metal bowls but no

**lockout valve:** 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator:** Nylon dome; acetal knob.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

- ◆ Individual filter (**FD100**); diaphragm-type regulator (**R100**); sight-feed lubricator (**L28D**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Zinc bowls with clear nylon sight glass **or** polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or Warrior electronic drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

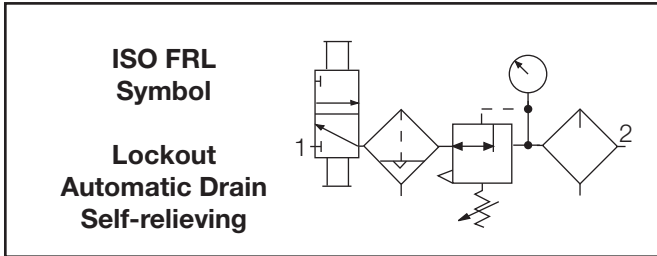
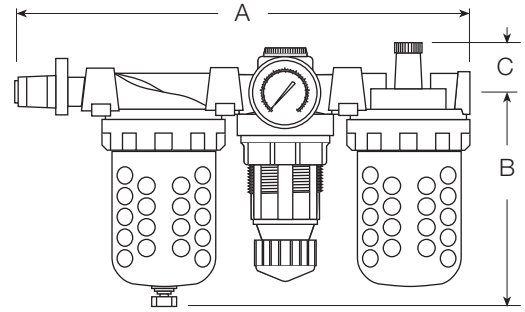
### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A **	B	C	Depth †	Weight † lb (kg)
8-Oz Metal	13.9 (353)	6.4 (163)	1.3 (33)	2.8 (71)	7.06 (3.20)
8-Oz Plastic	13.9 (353)	5.8 (147)	1.3 (33)	2.8 (71)	7.06 (3.20)
20-Oz Metal	13.9 (353)	9.8 (249)	1.3 (33)	2.8 (71)	7.45 (3.39)

\*\* Without V35 lockout valve deduct 3.8 (97) from dimension A.  
† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element)	KA103-03PE5
5-µm bronze	KA103-03E5
20-µm bronze	KA103-03E4
40-µm bronze	KA103-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V FD R L 10 8D - 2 Y W**

### BOWL TYPE

Metal bowls ..... B  
Plastic bowls ... Leave Blank

### LOCKOUT VALVE

No valve ..... Leave Blank  
V35 valve ..... V

### FILTER DRAIN

No filter ..... Leave blank  
Internal automatic drain ..... FD  
Manual drain ..... F  
Internal float drain (**plastic stem**) ..... F5A  
(Must be ordered with plastic bowl option under **BOWL TYPE**).  
Internal float drain (**brass stem**) ..... F6A  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
External Hydro-Jector drain; ..... FE  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
Warrior electronic drain; ..... F2A  
(Must be ordered with metal bowl option under **BOWL TYPE**).

### REGULATOR

No Regulator ..... Leave Blank  
Regulator ..... R

### LUBRICATOR

No Lubricator ..... Leave Blank  
Lubricator ..... L

### FILTER WITH DIFFERENTIAL GAUGE OPTION

Only applies to standard filter option above. Coalescent options are setup separately in another section.

No filter ..... 1  
Standard filter no tapped head ..... 1

Anyone requiring a filter and/or coalescing filter with a differential pressure gauge, contact factory for number.

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator ..... A  
Sintered bronze filter element:  
5-µm rating ..... E5  
20-µm rating ..... E4  
40-µm rating ..... E3  
Adjusting springs:  
0-175 psig (0-12 bar) ..... H \*\*  
0-50 psig (0-3.4 bar) ..... L  
Metal Dome ..... MD  
Limit maximum psig setting .... M\*  
Delete gauge ..... NG  
Regulator tee handle ..... T  
Quick-fill lubricator Q-cap ..... Q

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

### PORT SIZE

1/4 NPTF ..... 2  
3/8 NPTF ..... 3  
1/2 NPTF ..... 4  
3/4 NPTF ..... 6X

### BOWL SIZE

Standard 8-ounce bowls ..... 8D  
(with lubricator)  
Standard 8-ounce bowls ..... 0  
(No lubricator)  
8-Ounce filter bowl & ..... 8DH  
20-ounce lubricator bowl  
(metal bowls only).

For external and additional modular port options see numbering chart on 345 page.



# Full-Size VANGUARD Modular FRLs Filter-Regulator-Lubricators

## MVFDRL108W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



Model Shown: MVFDRL108W-4

### SPECIFICATIONS

#### Ambient/Media Temperature:

Plastic bowls: 40° to 125°F (4° to 52°C).

Metal bowls with V35 lockout valve:

40° to 150°F (4° to 66°C).

Metal bowls without V35 lockout valve:

40° to 175°F (4° to 79°C).

**Bowls:** 8-Ounce (240-ml) capacity zinc bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard. Optional 20-ounce (600-ml) extended lubricator bowl.

**Bowl Rings:** Aluminum.

#### Filter Drain:

Internal automatic drain; optional manual drain, internal float drain, or Warrior electronic drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

Fluid Media: Compressed air.

**Heads:** Zinc.

#### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 150 psig (10 bar) with metal bowls but no lockout valve; 200 psig (13.7 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator:** Nylon dome; acetal knob.

**Seals:** Nitrile.

- ◆ Individual filter (**FD100**); diaphragm-type regulator (**R100**); wick-feed lubricator (**L28W**); lockout valve (**V35**).
- ◆ Modular or inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Zinc bowls with clear nylon sight glass **or** polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or Warrior electronic drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

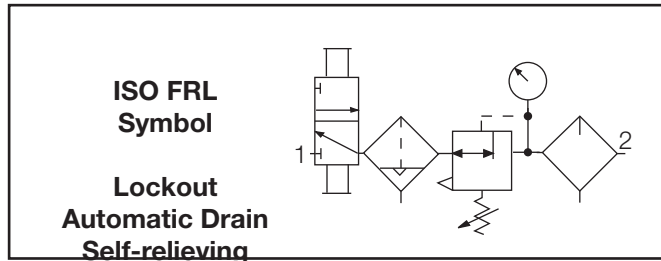
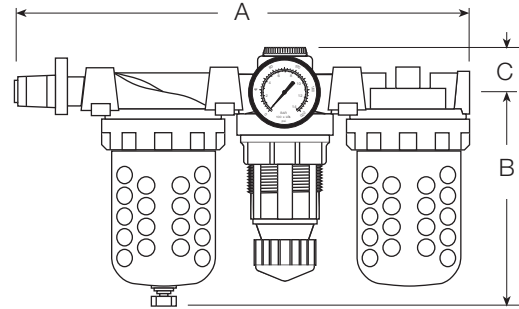
### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowl	A **	B	C	Depth †	Weight † lb (kg)
8-Oz Metal	13.9 (353)	6.4 (163)	1.3 (33)	2.8 (71)	7.06 (3.20)
8-Oz Plastic	13.9 (353)	5.8 (147)	1.3 (33)	2.8 (71)	7.06 (3.20)
20-Oz Metal	13.9 (353)	9.8 (249)	1.3 (33)	2.8 (71)	7.45 (3.39)

\*\* Without V35 lockout valve deduct 3.8 (97) from dimension A.  
† Less gauge.



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm polyethylene (Std element).....	KA103-03PE5
5-µm bronze .....	KA103-03E5
20-µm bronze.....	KA103-03E4
40-µm bronze.....	KA103-03E3

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B M V F D R L 10 8W - 2 Y W**

For external and additional modular port options see numbering chart on 345 page.

### BOWL TYPE

Metal bowls.....B  
Plastic bowls ...Leave Blank

### LOCKOUT VALVE

No valve .....Leave Blank  
V35 valve ..... V

### FILTER DRAIN

No filter ..... Leave blank  
Internal automatic drain ..... FD  
Manual drain ..... F  
Internal float drain (**plastic stem**) ..... F5A  
(Must be ordered with plastic bowl option under **BOWL TYPE**).  
Internal float drain (**brass stem**) ..... F6A  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
External Hydro-Jector drain; ..... FE  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
Warrior electronic drain; ..... F2A  
(Must be ordered with metal bowl option under **BOWL TYPE**).

### REGULATOR

No Regulator ..... Leave Blank  
Regulator ..... R

### LUBRICATOR

No Lubricator ..... Leave Blank  
Lubricator ..... L

### FILTER WITH DIFFERENTIAL GAUGE OPTION

Only applies to standard filter option above. Coalescent options are setup separately in another section.

No filter ..... 1  
Standard filter no tapped head ..... 1

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTIONS (More than one option can be chosen. Add in alphabetical order)

None ..... Leave Blank  
Non-relieving regulator.....A  
Sintered bronze filter element:  
5-µm rating .....E5  
20-µm rating.....E4  
40-µm rating.....E3

### Adjusting springs:

0-175 psig (0-12 bar).....H \*\*  
0-50 psig (0-3.4 bar).....L

Metal Dome ..... MD  
Limit maximum psig setting .... M\*  
Delete gauge ..... NG  
Regulator tee handle ..... T  
Quick-fill lubricator Q-cap .....Q

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

### PORT SIZE

1/4 NPTF.....2  
3/8 NPTF.....3  
1/2 NPTF.....4  
3/4 NPTF.....6X

### FILTER AND LUBRICATOR BOWL SIZE

Standard 8-ounce bowls ..... 8W  
(with lubricator).  
Standard 8-ounce bowls ..... 0  
(without lubricator).  
8-Ounce filter bowl & ..... 8WH  
20-ounce lubricator bowl  
(metal bowls only)

Anyone requiring a filter and/or coalescing filter with a differential pressure gauge, contact factory for number.

# Full-Size SERIES 380 FRLs Filter-Regulator-Lubricators

# AAMV1A1B1A1 Models Port Sizes: 3/8, 1/2, 3/4



Model Shown: AAMV1A1BJ16

### Available Color Caps



Yellow

(optional)

Red

(optional)

Blue

(optional)

Grey

(standard)

## SPECIFICATIONS

### Ambient/Media Temperature:

Metal bowls: 40° to 175°F (4° to 79°C).

Plastic bowls: 40° to 125°F (4° to 52°C).

Bowls: 9-Ounce (270-ml) capacity aluminum bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard. Optional 15-ounce (450-ml) extended aluminum lubricator bowl with two clear nylon sight glasses.

**Bowl Rings:** Nylon.

**Cap Color:** Grey. Yellow, red, and blue optional.

**Filter Drain:** Internal automatic drain; optional manual drain, internal float drain, or Warrior electronic drain.

**Filter Element:** 5-µm-rated polyethylene; optional 40-µm element.

**Fluid Media:** Compressed air.

**Heads:** Zinc.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Metal bowls: 200 psig (13.7 bar) maximum.

Plastic bowls: 150 psig (10 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 125 psig (8.6 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

- ◆ Individual filter (FD380); regulator (R380); lubricator (L380D); lockout valve (V380).
- ◆ Modular or inline mounting.
- ◆ 5-µm-rated polyethylene filter element; optional 40-µm element.
- ◆ Aluminum bowls with clear nylon sight glass **or** polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain; optional manual drain, internal float drain, or Warrior electronic drain.
- ◆ Optional extended aluminum lubricator bowl with sight glasses.
- ◆ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◆ Pressure gauge; two gauge ports.
- ◆ NPTF port threads; optional BSPP threads.

### AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

## DIMENSIONS inches (mm)

Bowls	A *	B **	C	Depth †	Weight †
					lb (kg)
9-Oz Plastic	13.4 (340)	7.7 (195)	2.2 (56)	2.9 (73)	6.94 (3.15)
9-Oz Metal	13.4 (340)	7.6 (193)	2.2 (56)	3.1 (79)	6.94 (3.15)
Ext Metal	13.4 (340)	10.6 (269)	2.2 (56)	3.1 (79)	7.13 (3.24)

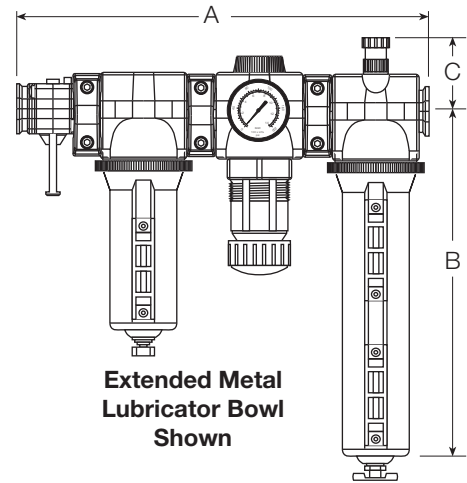
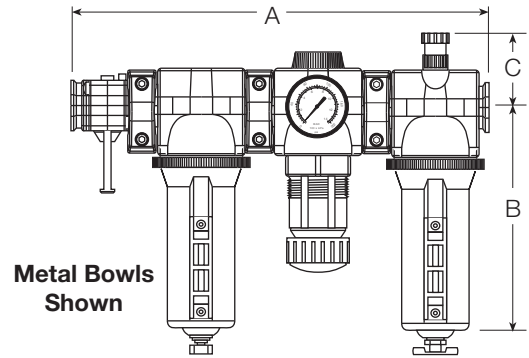
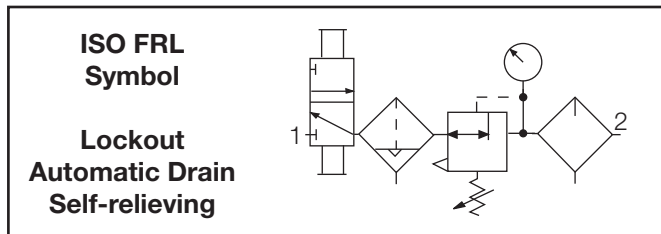
\* Without V380 lockout valve deduct 2.5 (64) from dimension A.

\*\* Bowl removal clearance: For 9-ounce bowls add 3.4 (86).  
For extended bowl add 6.1 (155).

† Less gauge.

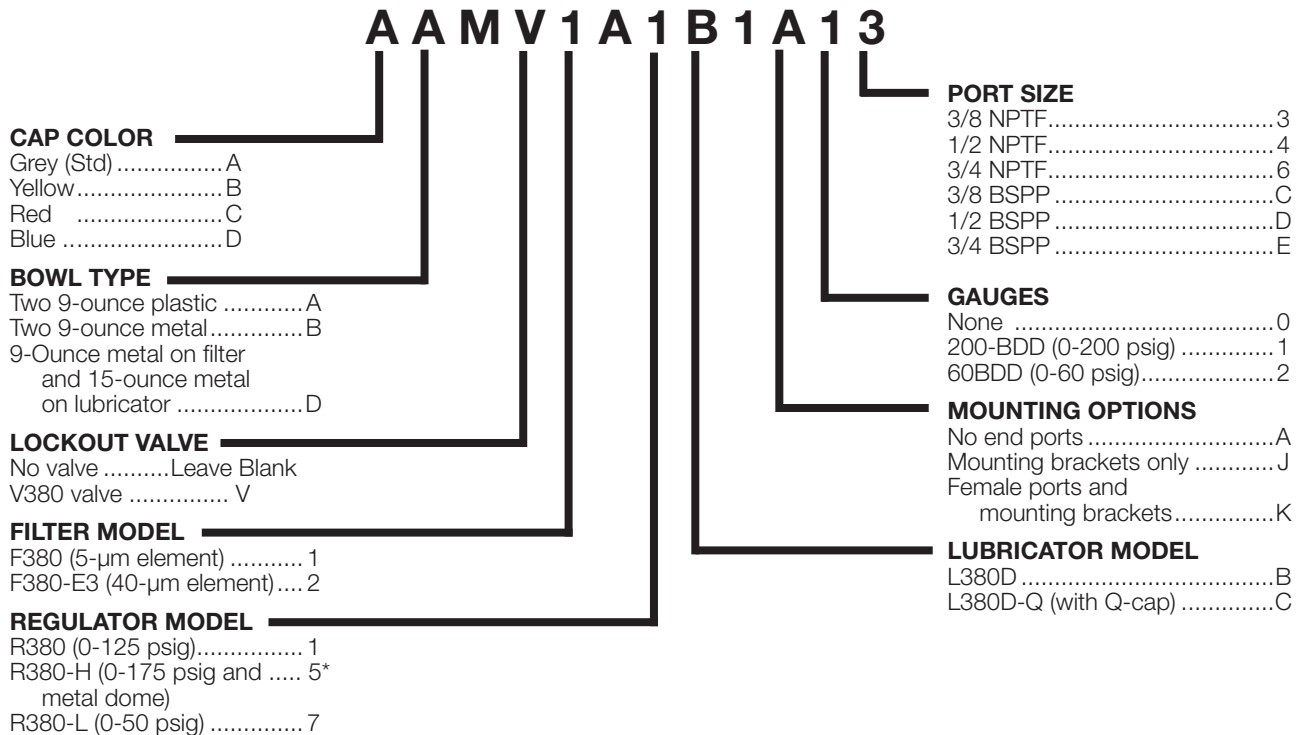
## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5-µm (Std element) .....	A115-106PE5
40-µm bronze .....	A115-106PE3



## ORDERING INFORMATION

Show below is a basic series 380 ordering chart. If non standard options is needed then use the complete numbering chart shown on the next couple of pages, (pgs 274-277)



\* H option spring includes metal dome.

# SERIES 380 FRL WITH ADDITIONAL OPTIONS

Change the letters in the sample model number below to specify the **FRL** you want.

Product will be assembled in order of model number chosen.

**NOTE:** For model number longer than 15 characters please consult Master Pneumatic.

**A B M V 1 XA 1 XA 1 XA 1 XA V01 0 0 A 3**

## CAP COLOR

Grey (Std) ..... A  
 Yellow ..... B  
 Red ..... C  
 Blue ..... D

## BOWL TYPE

All Plastic ..... A  
 All Metal ..... B  
 Extended metal bowl on ..... D  
 coalescent filter and  
 Lubricator. Standard metal  
 bowl on filter  
 Extended metal bowl ..... E  
 on lubricator. Standard  
 Metal bowl on filter and  
 coalescent filter.

## LOCKOUT VALVE

No V380 valve ..... Leave Blank  
 V380 valve ..... V

**Note:** a V380 lockout valve is not necessary when ordering assembly with V382, V383 or V384 Valve but if needed, can be ordered. Consult factory for coding.

V382 and V383 Valves are coded later in model number.

## FILTER or INTEGRAL FILTER

**REGULATOR** (Drain options are coded later in model number.)

None ..... 0  
 F380 ..... 1  
 F380-E3 ..... 2  
 BF380-LDC (only with metal ..... A  
 bowl type).  
 V383-N6A4A and CFR380-QE .... B  
 V383-N6A4B and CFR380-QE .... C  
 V383-N6A0A and CFR380-QE .... D  
 V383-N6A0B and CFR380-QE .... E  
 V382-N6A4A and CFR380-QE .... F  
 V382-N6A4B and CFR380-QE .... G  
 V382-N6A0A and CFR380-QE .... H  
 V382-N6A0B and CFR380-QE .... J  
 F380-E4 ..... K

## REGULATOR

None ..... 0  
 R380 ..... 1  
 IR380 ..... 2  
 PR380 ..... 3  
 R380-A ..... 4  
 R380-H ..... 5  
 IR380-H ..... 6  
 R380-L ..... 7  
 IR380-L ..... 8  
 R380-P ..... A  
 IR380-P ..... B  
 R380-T ..... C  
 R380-E ..... D  
 R380-ET ..... E  
 V383-N6A4A and R380-E ..... F  
 V383-N6A4B and R380-E ..... G  
 V383-N6A0A and R380-E ..... H  
 V383-N6A0B and R380-E ..... J  
 V382-N6A4A and R380-E ..... K  
 V382-N6A4B and R380-E ..... L  
 V382-N6A0A and R380-E ..... M  
 V382-N6A0B and R380-E ..... N

## ADDITIONAL PORT (optional location 2)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

## COALESCENT FILTER

None ..... A  
 FC380 ..... B  
 FC380-E8 ..... C  
 FC380 and FC380-E9 ..... D  
 FC380-E8 and FC380-E9 ..... E  
 BFC380-LDC (used with metal bowl type only) ..... F  
 BFC380-LDC and BFC380-E9LDC (used with metal ..... G  
 bowl type only).  
 FC380 and FC380-E8 ..... H

## ADDITIONAL PORT (optional location 1)

None ..... Leave Blank  
 1/4-NPTF extra port only ..... X0  
 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA  
 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB  
 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC  
 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD  
 3/8-NPTF extra port only ..... XE  
 1/2-NPTF extra port only ..... XF  
 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG  
 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ  
 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

# SERIES 380 FRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

**A B M V 1 XA 1 XA 1 XA 1 XA V01 0 0 A 3**

**ADDITIONAL PORT** (optional location 3)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**LUBRICATOR and LUBRICATION**

- None ..... A
- L380D ..... B
- L380D-Q ..... C
- PA640\*1, 118-109-\* male port, and A-00942M prefilled ..... D  
tubing.
- PA600\*1, 118-109-\* male port, and A-00942M prefilled ..... F  
tubing.
- PA640\*5, 118-109-\* male port, and A-00942M prefilled ..... H  
tubing.
- PA600\*5, 118-109-\* male port, and A-00942M prefilled ..... K  
tubing.

**NOTE:** Option D, F, H, and K can only be used with 1/2 and 3/4 inlet and outlet ports and modular connections).

**ADDITIONAL PORT** (optional location 4)

- None ..... Leave Blank
- 1/4-NPTF extra port only ..... X0
- 1/4-NPTF extra port, PDA211-2, qty (2) 1/4-NPTF plugs ... XA
- 1/4-NPTF extra port, PDA212-2, qty (2) 1/4-NPTF plugs ... XB
- 1/4-NPTF extra port, PDA214-2, qty (2) 1/4-NPTF plugs ... XC
- 1/4-NPTF extra port, PDA215-2, qty (2) 1/4-NPTF plugs ... XD
- 3/8-NPTF extra port only ..... XE
- 1/2-NPTF extra port only ..... XF
- 1/4-NPTF extra port, PDA414-2, qty (2) 1/4-NPTF plugs ... XG
- 1/4-NPTF extra port, PDA411-2, qty (2) 1/4-NPTF plugs ... XJ
- 1/4-NPTF extra port, PDA413-2, qty (2) 1/4-NPTF plugs ... XK

**V382, V383 and V384 LOCKOUT VALVE**

- None ..... Leave Blank
- V383-N6A4A (with pressure sensor) ..... V01
- V383-N6A4B (with pressure sensor and muffler)..... V02
- V383-N6A0A ..... V03
- V383-N6A0B (with muffler) ..... V04
- V382-N6A4A (with pressure sensor) ..... V09
- V382-N6A4B (with pressure sensor and muffler)..... V10
- V382-N6A0A ..... V11
- V382-N6A0B (with muffler) ..... V12
- V382-N6A3A (with 0-160 psig gauge) ..... V17
- V382-N6A3B (with 0-160 psig gauge and muffler)..... V18

# SERIES 380 FRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## A B M V 1 XA 1 XA 1 XA 1 XA V01 0 0 A 3

### DRAIN TYPE FOR FILTER AND COALESCING FILTER

Manual drain on filter and coalescing filter .....	0
Automatic drain on filter and coalescing filter .....	1
Warior drain on filter and coalescing filter (used with metal bowl type only) .....	2
Metal bowl hydro-jecton in filter, auto drain on coalescing filter .....	4
(used with metal bowl type only)	
Automatic drain on filter. Manual drain on coalescing filter .....	5
Float drain (plastic stem) on filter and coalescing filter .....	6
(used with plastic bowls type only)	
Float drain (plastic stem) on filter and manual drain on coalescing filter .....	7
(used with plastic bowls type only)	
Float drain (brass stem) on filter and coalescing filter .....	8
(used with metal bowl type only).	
Float drain (brass stem) on filter and manual drain on coalescing filter .....	9
(used with metal bowl type only)	

### INLET BLOCK PORT - and - OUTLET BLOCK PORT

None .....	None .....	A
Female .....	Female .....	B
Male .....	Male .....	C
Male .....	Female .....	D
Female .....	Male .....	E
None .....	Female .....	F
None .....	Male .....	G
Female .....	None .....	H
Male .....	None .....	I
None with back bracket .....	None with back bracket .....	J
Female with back bracket .....	Female with back bracket .....	K
None with back bracket .....	Female with back bracket .....	L
Female with back bracket .....	None with back bracket .....	M
Male with back bracket .....	Female with back bracket .....	N

### REGULATOR GAUGE

- and -

### FILTER GAUGE

- and -

### COALESCING FILTER GAUGE

None .....	None .....	None .....	0
200-BDD (0-200 PSIG) .....	None .....	None .....	1
60BDD (0-60 PSIG) .....	None .....	None .....	2
200-BDD (0-200 PSIG) .....	<b>Small</b> Differential pressure gauge .....	<b>Small</b> Differential pressure gauge .....	3
200-BDD (0-200 PSIG) .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	4
200-BDD (0-200 PSIG) .....	None .....	<b>Small</b> Differential pressure gauge .....	5
200-BDD (0-200 PSIG) .....	None .....	<b>Large</b> Differential pressure gauge .....	6
None .....	<b>Small</b> Differential pressure gauge .....	<b>Small</b> Differential pressure gauge .....	7
None .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	8
None .....	None .....	<b>Small</b> Differential pressure gauge .....	9
None .....	None .....	<b>Large</b> Differential pressure gauge .....	A
200-BDD (0-200 PSIG) .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	B
	with normally <b>open</b> reed switch	with normally <b>open</b> reed switch	
200-BDD (0-200 PSIG) .....	None .....	<b>Large</b> Differential pressure gauge .....	C
		with normally <b>open</b> reed switch	
None .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	D
	with normally <b>open</b> reed switch	with normally <b>open</b> reed switch	
None .....	None .....	<b>Large</b> Differential pressure gauge .....	E
		with normally <b>open</b> reed switch	
200-BDD (0-200 PSIG) .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	H
	with normally <b>closed</b> reed switch	with normally <b>closed</b> reed switch	
200-BDD (0-200 PSIG) .....	None .....	<b>Large</b> Differential pressure gauge .....	J
		with normally <b>closed</b> reed switch	
None .....	<b>Large</b> Differential pressure gauge .....	<b>Large</b> Differential pressure gauge .....	K
	with normally <b>closed</b> reed switch	with normally <b>closed</b> reed switch	
None .....	None .....	<b>Large</b> Differential pressure gauge .....	L
		with normally <b>closed</b> reed switch	

# SERIES 380 FRL WITH ADDITIONAL OPTIONS

Continued from preceding page.

## A B M V 1 XA 1 XA 1 XA 1 XA V01 0 0 A 3

INLET PORT	- and -	OUTLET PORT	COMMENTS
3/8-NPTF .....		3/8-NPTF .....	3
1/2-NPTF .....		1/2-NPTF .....	4
3/4-NPTF .....		3/4-NPTF .....	6
3/8-BSPP .....		3/8-BSPP .....	C
1/2-BSPP .....		1/2-BSPP .....	D
3/4-BSPP .....		3/4-BSPP .....	E

Consult factory for mixed inlet and outlet port sizes. Note: when mixed inlet and outlet port sizes are chosen, the largest port size will be used on each product. Example Inlet = 3/8" and outlet = 1/2" then each product, ie: filter, regulator etc. would be 1/2" ports.

### SERIES 380 CUSTOMIZED INTERFACE

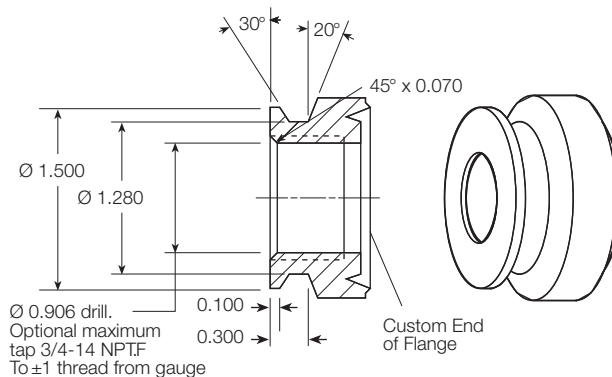
With this simple turned flange, users can easily customize their own products to interface directly with Series 380 modules using the clamp shown on page 275 (part number **A118-105**). See sketch below for dimensions.

Some potential usage examples are:

Turned Series 380 flange on a valve body.

Special auxiliary manifold blocks having Series 380 flange configuration.

Suitable materials for a custom port include aluminum, brass, steel, stainless steel, and zinc.





# High-Flow VANGUARD FRLs Filter-Regulator-Lubricators

# FDRL180 Models Port Sizes: 3/4, 1



Model Shown: FDRL180-6

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowls: 40° to 125°F (4° to 52°C).

Metal bowls with V35 lockout valve:

40° to 150°F (4° to 66°C).

Metal bowls without V35 lockout valve:

40° to 175°F (4° to 79°C).

**Bowls:** 16-Ounce (480-ml) capacity aluminum bowls with sight glass or polycarbonate plastic bowls with steel shatterguard.

**Bowl Rings:** Aluminum.

### Filter Drain:

Internal automatic drain; optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Aluminum.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Plastic bowls: 150 psig (10 bar) maximum.

Metal bowls: 200 psig (14 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Seals:** Nitrile.

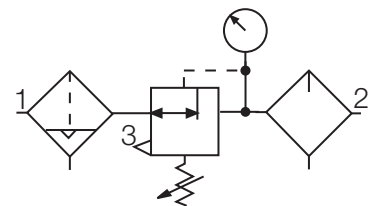
- ◆ Individual filter (**FD100**); piston-type regulator (**R180M**); wick-feed lubricator (**L100**)
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Metal bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain. Optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge
- ◆ **NPTF** port threads; optional **BSPP** threads.

## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

### ISO FRL Symbol

Automatic Drain  
Self-relieving



## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA109-3PE
5- $\mu$ m bronze .....	KA109-03E5
20- $\mu$ m bronze .....	KA109-03E4
40- $\mu$ m bronze .....	KA109-03E3

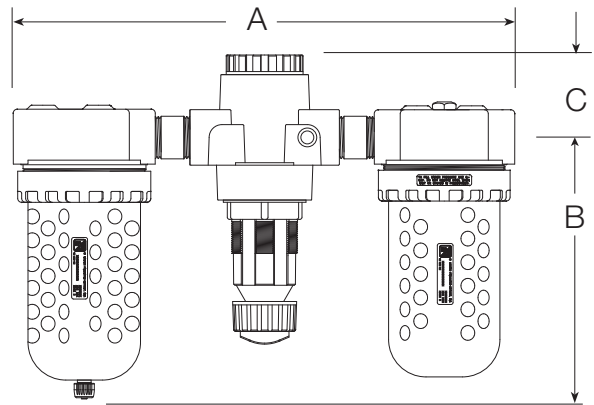
## DIMENSIONS inches (mm)

DIMENSIONS inches (mm)				Weight	
A	B	C	Depth	lb (kg)	
15.8	8.0	1.2	4.3	8.00	
(401)	(204)	(31)	(108)	(3.64)	

## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.



### DIFFERENTIAL PRESSURE GAUGE for COALESCENT FILTER

Consult factory for differential pressure gauges on filters or no gauge on coalescing filters.

No coalescent filter .....	Leave Blank
Tapped ports on head, small gauge .....	S
Tapped ports on head, large gauge .....	Leave Blank
Tapped ports on head, large gauge .....	E
with normally <b>OPEN</b> reed switch.	
Tapped ports on head, large gauge .....	E2
with normally <b>CLOSED</b> reed switch.	

### REGULATOR

No Regulator .....	0
Regulator .....	8

### BOWL TYPE for FILTER, COALESCENT FILTER, and LUB

Metal bowls .....	B
Plastic bowls .....	Leave Blank

### FILTER DRAIN

No filter .....	Leave blank
Internal automatic drain .....	FD
Manual drain .....	F
Internal float drain ( <b>plastic stem</b> ) .....	F5A
(Must be ordered with plastic bowl option under <b>BOWL TYPE</b> ).	
Internal float drain ( <b>brass stem</b> ) .....	F6A
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	
External Hydro-Jector drain; .....	FE
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	
Warrior electronic drain; .....	F2A
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	

### COALESCENT FILTER DRAIN

No coalescing filter .....	Leave blank
Internal automatic drain .....	FCD
Manual drain .....	FC
Internal float drain ( <b>plastic stem</b> ) .....	FC5A
(Must be ordered with plastic bowl option under <b>BOWL TYPE</b> ).	
Internal float drain ( <b>brass stem</b> ) .....	FC6A
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	
External Hydro-Jector drain; .....	FCE
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	
Warrior electronic drain; .....	FC2A
(Must be ordered with metal bowl option under <b>BOWL TYPE</b> ).	

### PORT TYPE

3/4 NPTF .....	6
1 NPTF .....	8

**OPTIONS** (More than one option can be chosen. Add in alphabetical order.)

None .....	Leave Blank
0-200 psig Gauge .....	Leave Blank
Mounting nut .....	P

### PORT TYPE

NPTF .....	Leave Blank
BSPP .....	W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order.)

None .....	Leave Blank
Non-relieving regulator .....	A

### Polyethylene filter element:

5- $\mu$ m rating .....	Leave Blank
-------------------------	-------------

### Bronze filter element:

5- $\mu$ m rating .....	E5
20- $\mu$ m rating .....	E4
40- $\mu$ m rating .....	E3

### Coalescent Filter element:

0.3- $\mu$ m rating .....	Leave Blank
0.01- $\mu$ m rating .....	E8

### Springs - regulator: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

0-150 psig (0-10 bar) .....	H**
0-50 psig (0-3.4 bar) .....	L
0-20 psig (0-1.4 bar) .....	L20

No bowl drain for filter and ..... LDC coalescent filter (1/4 NPT female port instead. Also use 'B' option under

### 'BOWL TYPE for FILTER, COALESCENT FILTER, and LUB' section.)

Metal regulator dome .....	MD
No regulator gauge for .....	NG
Quick-fill Q-cap for lubricator .....	Q
Tee handle for regulator .....	T

\*\* H option spring includes metal dome.

### LUBRICATOR

No Lubricator .....	Leave Blank
Lubricator .....	L

### REGULATOR

No Regulator .....	Leave Blank
Regulator .....	R

**B FD FC R L 1 8 0 S - 6 A P W**

# High-Flow VANGUARD FRLs Filter-Regulator-Lubricators

# FDRL189D Models Port Sizes: 3/4, 1



Model Shown: FDRL189D-8

- ◆ Individual filter (FD100); piston-type regulator (R180M); sight feed design lubricator (L29D).
- ◆ Inline mounting.
- ◆ 5- $\mu$ m-rated polyethylene filter element; optional sintered bronze elements.
- ◆ Metal bowls with clear nylon sight glass **or** polycarbonate plastic bowls with steel shatterguard.
- ◆ Internal automatic filter drain. Optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional BSPP threads.

## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic bowls: 40° to 125°F (4° to 52°C).  
Metal bowls: 40° to 175°F (4° to 79°C).

**Bowls:** 16-Ounce (480-ml) capacity aluminum bowls with sight glass or polycarbonate plastic bowls with steel shatterguard.

**Bowl Rings:** Aluminum.

### Filter Drain:

Internal automatic drain; optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.

**Filter Element:** 5- $\mu$ m-rated polyethylene; optional 5- $\mu$ m, 20- $\mu$ m, or 40- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Aluminum.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Plastic bowls: 150 psig (10 bar) maximum.

Metal bowls: 200 psig (14 bar) maximum.

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

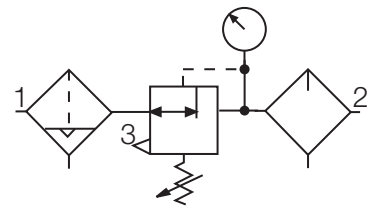
**Seals:** Nitrile.

## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

### ISO FRL Symbol

Automatic Drain  
Self-relieving

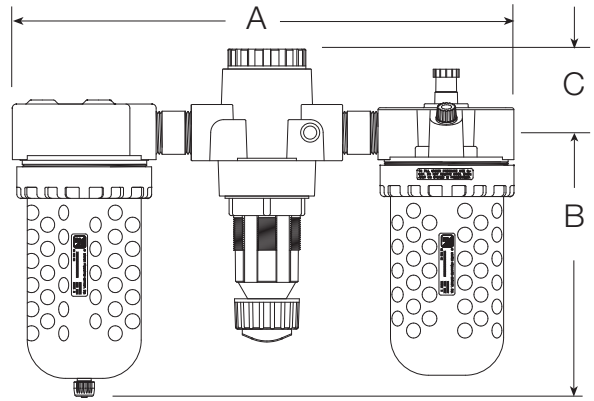


## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- $\mu$ m polyethylene (Std element).....	KA109-3PE
5- $\mu$ m bronze .....	KA109-03E5
20- $\mu$ m bronze .....	KA109-03E4
40- $\mu$ m bronze .....	KA109-03E3

## DIMENSIONS inches (mm)

				Weight
A	B	C	Depth	lb (kg)
15.8 (401)	8.0 (204)	1.4 (37)	4.3 (108)	8.00 (3.64)



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B FD R L 1 8 9D - 6 Y W**

### BOWL TYPE

Metal bowls..... B  
Plastic bowls..... Leave Blank

### FILTER DRAIN

No filter ..... Leave blank  
Internal automatic drain ..... FD  
Manual drain ..... F  
Internal float drain (**plastic stem**) ..... F5A  
(Must be ordered with plastic bowl option under **BOWL TYPE**).  
Internal float drain (**brass stem**) ..... F6A  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
External Hydro-Jector drain; ..... FE  
(Must be ordered with metal bowl option under **BOWL TYPE**).  
Warrior electronic drain; ..... F2A  
(Must be ordered with metal bowl option under **BOWL TYPE**).

### REGULATOR

No Regulator ..... Leave Blank  
Regulator ..... R

### LUBRICATOR

No Lubricator ..... Leave Blank  
Lubricator..... L

### FILTER WITH DIFFERENTIAL GAUGE OPTION

*Only applies to standard filter option above. Coalescent options*

*are setup separately in another section.*

No Filter ..... 1  
Standard filter no tapped head ..... 1

**Anyone requiring a filter and/or coalescing filter with a differential pressure gauge, contact factory for number.**

### REGULATOR

No Regulator ..... 0  
Regulator ..... 8

### LUBRICATOR

No Lubricator ..... 0  
Lubricator..... 9D

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTIONS

*(More than one option can be chosen. Add in alphabetical order)*

None ..... Leave Blank

Non-relieving regulator.....A

Sintered bronze filter element:

5-µm rating ..... E5

20-µm rating ..... E4

40-µm rating ..... E3

Adjusting springs:

0-150 psig (0-10 bar).....H \*\*

0-50 psig (0-3.4 bar).....L

Delete bowl drain: 1/4 NPT

female port instead .....LDC

Metal dome .....MD

Limit maximum psig setting .....M\*

Delete gauge .....NG

Regulator tee handle .....T

Quick-fill lubricator Q-cap .....Q

\* Insert maximum limited pressure.

\*\* H option spring includes metal dome.

### PORT SIZE

3/4 NPTF.....6

1 NPTF.....8

# High-Flow VANGUARD FRLs Filter-Regulator-Lubricators

# BFDRL289D Models Port Sizes: 1-1/4, 1-1/2



Model Shown: BFDRL289D-12

## SPECIFICATIONS

### Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

**Bowls:** 35-Ounce (1 liter) capacity aluminum bowls with clear nylon sight glass. Optional 62-ounce (1830-ml) capacity extended lubricator bowl with two sight glasses.

**Bowl Rings:** Aluminum.

### Filter Drain:

Internal automatic drain. Optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.

**Filter Element:** 40- $\mu$ m-rated sintered bronze; optional 5- $\mu$ m sintered bronze.

**Fluid Media:** Compressed air.

**Heads:** Aluminum.

### Inlet Pressure:

Minimum: 15 psig (1 bar) with automatic drain, 30 psig (2 bar) with internal float drain.

Maximum: 200 psig (14 bar).

**Oil Adjustment:** External; tamper-resistant.

**Outlet Pressure:** Adjustable up to 100 psig (7 bar).

**Pressure Adjustment Locking Key:** Removable.

**Pressure Gauge:** 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

**Regulator:** Nylon dome; acetal knob. Aluminum dome with optional 0-150 psig spring.

**Seals:** Nitrile.

**Sight Dome:** Clear nylon.

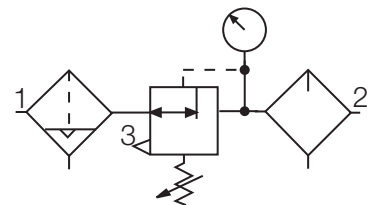
- ◆ Individual filter (**BFD200**); piston-type regulator (**R180**); sight-feed lubricator (**BL29D**).
- ◆ Inline mounting.
- ◆ 40- $\mu$ m-rated sintered bronze filter element; optional 5- $\mu$ m sintered bronze element.
- ◆ Aluminum bowls with clear nylon sight glass. Optional extended lubricator bowl.
- ◆ Internal automatic filter drain. Optional manual drain, internal float drain, external Hydro-Jector drain, or Warrior electronic drain.
- ◆ Self-relieving regulator; non-relieving optional.
- ◆ Pressure gauge.
- ◆ NPTF port threads; optional **BSPP** threads.

## AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

### ISO FRL Symbol

Automatic Drain  
Self-relieving

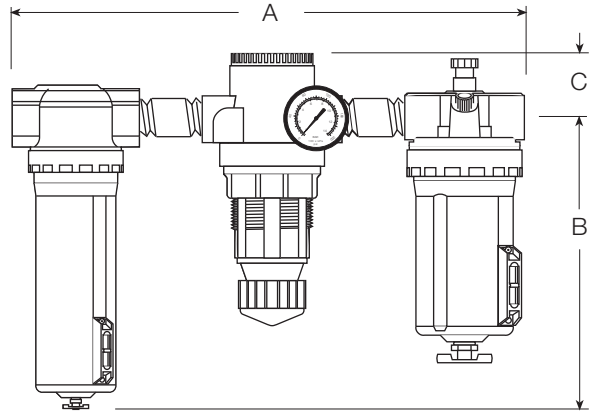


## REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
40- $\mu$ m bronze (Std element) .....	A114-106E3
5- $\mu$ m bronze .....	A114-106E5

## DIMENSIONS inches (mm)

				Weight
A	B	C	Depth	lb (kg)
15.8 (401)	10.6 (268)	2.1 (54)	4.3 (108)	8.00 (3.64)



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.

**NOTE:** For model numbers longer than 15 characters, please consult Master Pneumatic.

**B FD R L 2 8 9D - 10 Y NG W**

### FILTER DRAIN

Internal automatic drain .....FD  
 Manual drain.....F  
 Internal float drain .....F6A  
 (Brass stem).  
 External Hydro-Jector drain .....FE  
 Warrior electronic drain.....F2A

### REGULATOR

No Regulator ..... Leave Blank  
 Regulator ..... R

### LUBRICATOR

No Lubricator ..... Leave Blank  
 Lubricator..... L

### FILTER WITH DIFFERENTIAL GAUGE OPTION

*Only applies to standard filter option above. Coalescent options are setup separately in another section.*

No Filter ..... 1  
 Standard filter no tapped head ..... 2

**Anyone requiring a filter and/or coalescing filter with a differential pressure gauge, contact factory for number.**

### REGULATOR

No Regulator ..... 0  
 Regulator ..... 8

### LUBRICATOR

No Lubricator ..... 0  
 Lubricator..... 9D

### PORT SIZE

1-1/4 NPTF ..... 10  
 1-1/2 NPTF ..... 12

### PORT TYPE

NPTF threads ..... Leave Blank  
 BSPP threads ..... W

### GAUGE

0-200 psig Gauge .....Leave Blank  
 No gauge ..... NG

**OPTIONS** (*More than one option can be chosen. Add in alphabetical order*)

None .....Leave Blank  
 Non-relieving regulator.....A  
 Sintered bronze filter element:  
     5-µm rating..... E5  
 Adjusting springs:  
     0-150 psig (0-10 bar)..... H \*\*  
     0-50 psig (0-3.4 bar)..... L  
 Delete bowl drain; 1/4 NPT  
     female port instead .....LDC  
 Metal Dome ..... MD  
 Limit maximum psig setting ..... M\*  
 Regulator tee handle ..... T  
 Quick-fill lubricator Q-cap .....Q

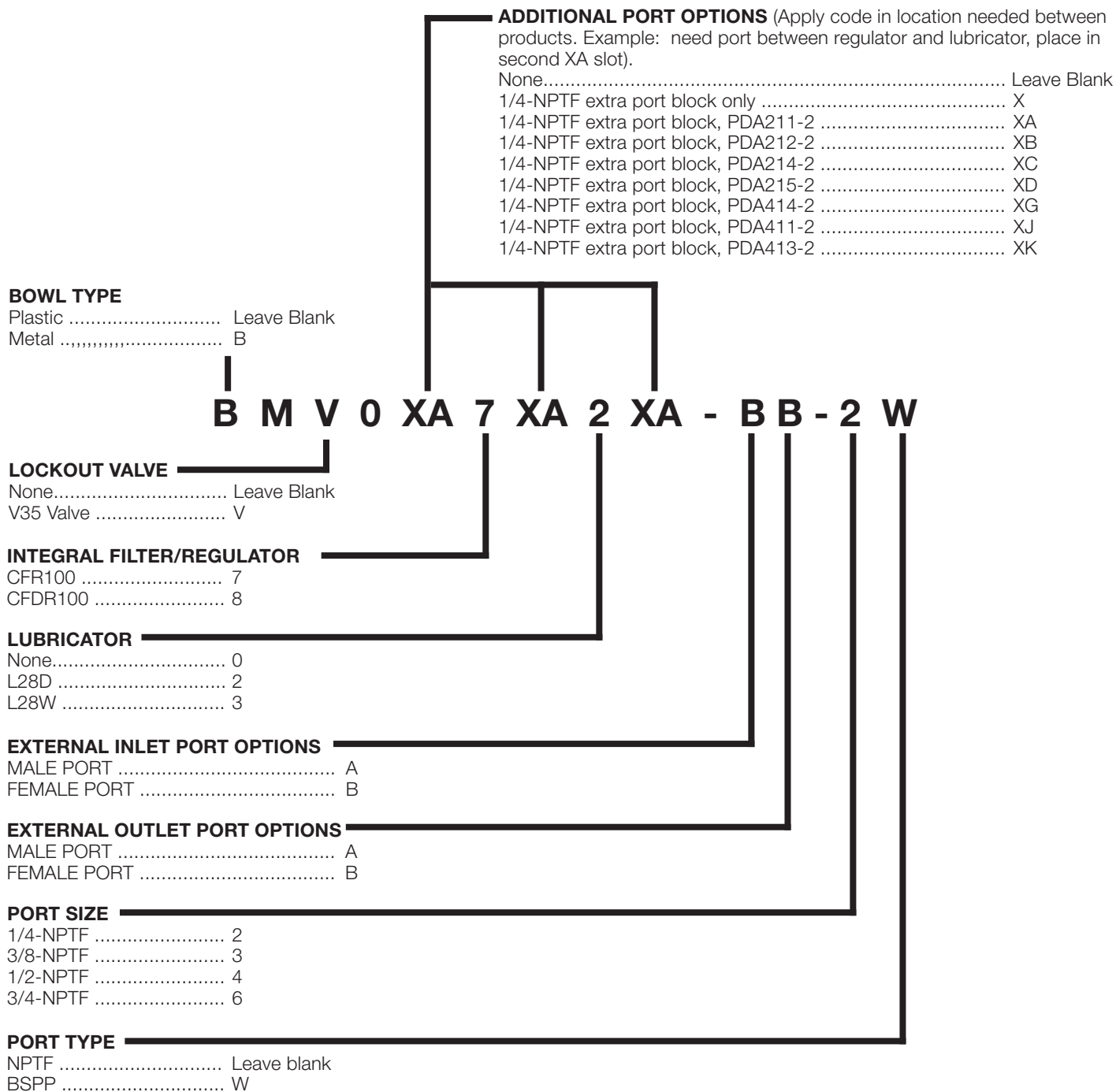
\* Insert maximum limited ressure.

\*\* H option spring includes metal dome.

# Full-Size VANGUARD MODULAR with ADDITIONAL OPTIONS

## Integral Filter-Regulator-Lubricator assemblies

MVCFDRL108 assemblies requiring modular external and internal ports.



# Full-Size VANGUARD MODULAR with ADDITIONAL OPTIONS

## Filter-Regulator-Lubricator assemblies

MVFDRL108 assemblies requiring modular external and internal ports.

**ADDITIONAL PORT OPTIONS** (Apply code in location needed between products. Example: need port between regulator and lubricator, place in second XA slot).

- None..... Leave Blank
- 1/4-NPTF extra port block only ..... X
- 1/4-NPTF extra port block, PDA211-2 ..... XA
- 1/4-NPTF extra port block, PDA212-2 ..... XB
- 1/4-NPTF extra port block, PDA214-2 ..... XC
- 1/4-NPTF extra port block, PDA215-2 ..... XD
- 1/4-NPTF extra port block, PDA414-2 ..... XG
- 1/4-NPTF extra port block, PDA411-2 ..... XJ
- 1/4-NPTF extra port block, PDA413-2 ..... XK

**BOWL TYPE**

- Plastic ..... Leave Blank
- Metal ..... B

**B M V 3 XA 3 XA 2 XA - B B - 2 W**

**LOCKOUT VALVE**

- None..... Leave Blank
- V35 Valve ..... V

**FILTER and COALESCING FILTER**

- None..... 0
- F100 ..... 3
- FD100 ..... 4
- FC100 ..... 5
- FD100 and FC101 ..... 6

**REGULATOR**

- None..... 0
- R100 ..... 3
- IR100 ..... 4

**LUBRICATOR**

- None..... 0
- L28D ..... 2
- L28W ..... 3

**EXTERNAL INLET PORT OPTIONS**

- MALE PORT ..... A
- FEMALE PORT ..... B

**EXTERNAL OUTLET PORT OPTIONS**

- MALE PORT ..... A
- FEMALE PORT ..... B

**PORT SIZE**

- 1/4-NPTF ..... 2
- 3/8-NPTF ..... 3
- 1/2-NPTF ..... 4
- 3/4-NPTF ..... 6

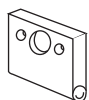
**PORT TYPE**

- NPTF ..... Leave blank
- BSPP ..... W



## SENTRY Modular Accessories

Sentry modular units use end plates secured with screws to hold the ports in place, and also to serve as mounting brackets. Short screws secure the end plates when a single module is used; long screws when two or more modules are used. Parts required for assembly are as follows:



Sentry End Plate

Item	Part Number	Quantity Required		
		1 Unit	2 Units	3 Units
End Plate	10R-10	2	2	2
Short Screw	10R-18	4	2	0
Long Screw	10R-19	0	2	4
Small O-ring	103-95	1	1	1
Large O-ring	33-53	1	2	3
Ports		See Chart at Right		

Sentry assemblies can be fitted with either threaded pipe ports or ports for tubing. The sizes available are shown below. Two ports required for each assembly.

PIPE PORTS		TUBING PORTS	
Pipe Size	Port Number	Tubing Size	Port Number
G 1/8	10R-21-1/8W	1/4	A10R-21-04
G 1/4	10R-21-1/4W	3/8	A10R-21-06
1/8 NPT	10R-21-1/8	4 mm	A10R-21-M4
1/4 NPT	10R-21-1/4	6 mm	A10R-21-M6
		8 mm	A10R-21-M8
		10 mm	A10R-21-M10

## GUARDSMAN and VANGUARD Modular Accessories



### MODULAR CONNECTORS

**GUARDSMAN** and **VANGUARD** modular components can be joined or removed quickly with these specially designed connectors. Each connector includes an O-ring assembly which forms an air-tight seal between modules. **FRL** and other assemblies include the required modular connectors between components, unless the assembly has been specifically ordered for connection with pipe nipples.

Connectors can be ordered as part number KA30-04.

### MODULAR MALE PORT

Used to connect modular units to non-modular units. Also allows right-angle connections by using the side ports or extra ports shown at the right.



Port Size	Male Port Part Number
1/4	30-11-1/4
3/8	30-11-3/8
1/2	30-11-1/2
3/4	30-11-3/4

### MODULAR FEMALE PORT

Used to connect modular units to piping at inlet or outlet.



Port Size	Female Port Part Number
1/4	30-12-1/4
3/8	30-12-3/8
1/2	30-12-1/2
3/4	30-12-3/4

### MODULAR EXTRA PORTS

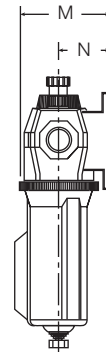
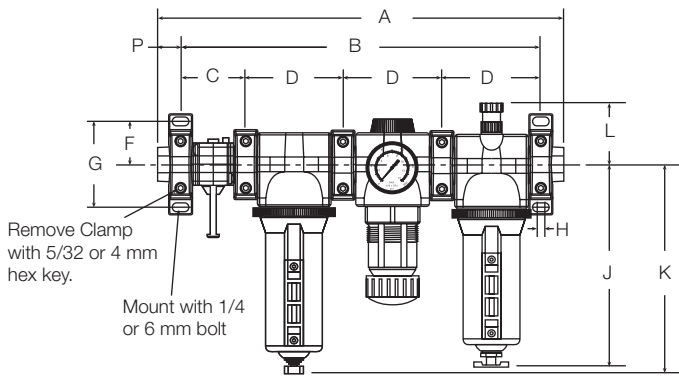
Used before or after a modular unit to supply three auxiliary 1/4 ports.



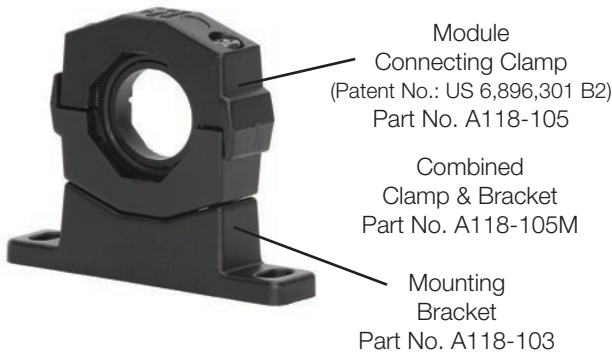
Port Size	Female Port Part Number
All	30-13

# SERIES 350 and 380 Modular Accessories

Dimensions: inches (mm)



	350	380
<b>A</b>	13.78 (350.1)	15.35 (389.9)
<b>B</b>	12.02 (305.4)	13.59 (345.2)
<b>C</b>	2.5 (63.5)	2.5 (63.5)
<b>D</b>	3.28 (83.3)	3.71 (94.2)
<b>F</b>	1.50 (38.1)	1.50 (38.1)
<b>G</b>	3.00 (76.2)	3.00 (76.2)
<b>H</b>	0.20 (5.1)	0.20 (5.1)
<b>J</b>	6.02 (152.9)	7.36 (186.9)
<b>K</b>	6.42 (163.1)	7.56 (192.0)
<b>L</b>	2.21 (73.7)	2.19 (55.6)
<b>M</b>	3.05 (77.5)	3.24 (82.3)
<b>N</b>	1.79 (45.5)	1.79 (45.5)
<b>P</b>	0.88 (22.4)	0.88 (22.4)



## CLAMP for MODULE CONNECTIONS

Specially designed clamps provide a quick and easy assembly or disassembly of Series 350 and 380 modules. Two allen-head bolts quickly tighten or loosen the clamp using a 5/32 or 4mm hex key. The clamp contains a plate carrying two O-rings to provide positive sealing between modules. Order clamp by part number A118-105. Combined clamp and bracket (below) can be ordered by part number A118-105M.

## MOUNTING BRACKET

Two brackets are normally used to mount an FRL to a vertical surface. The mounting bracket attaches to the module-connecting clamp (see above) with a single screw. Each bracket then employs two bolts (1/4" or 6mm) to connect the assembly to the mounting surface. Order bracket and screw by part number A118-103. Combined bracket and clamp (above) can be ordered by part number A118-105M.

## MALE and FEMALE END PORTS

Either male or female end ports can be attached to threaded inlet and outlet lines. This allows all modules of an FRL assembly to be removed easily and quickly without having to unthread the end modules. The end ports are attached to the modules with clamps (see at left). End ports can be included in an assembled FRL or ordered separately by the following part numbers:



Port Size	Male Number	Female Number
1/4 NPTF	118-109-2F	118-100-2
3/8 NPTF	118-109-3F	118-100-3
1/2 NPTF	118-109-4F	118-100-4
3/4 NPTF	118-109-6F	118-100-6

## EXTRA PORT BLOCK



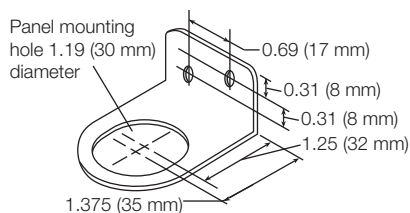
An extra port block can be placed between modules to provide two auxiliary 1/4 NPTF ports. Its mounting position can be rotated to obtain the most convenient operating orientation. If only one auxiliary port is to be used, the unused port must be closed with a pipe plug. (The inlet and outlet are not threaded.) Order with FRLs or order by the following part numbers:

Port Size	Part Number
1/4 NPTF .....	118-106-2
1/4-BSPP .....	118-106-2W
3/8 NPTF .....	118-106-3
3/8-BSPP .....	118-106-3W
1/2 NPTF .....	118-106-4
1/2-BSPP .....	11-106-4W

# Mounting Accessories

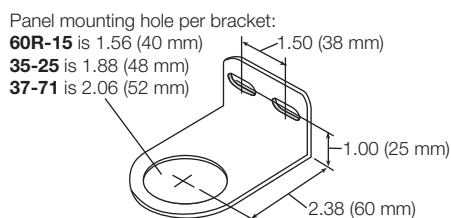
## REGULATOR MOUNTING BRACKETS

Regulators and integral filter/regulators can be mounted to a surface with a bracket that attaches to the regulator. Brackets and mounting nuts can be ordered separately or in a kit which includes both bracket and mounting nut.



### SENTRY and MINIATURE

Kit: A33-82, Bracket: 33-82, Nut: 10R-26



### GUARDSMAN and GUARDSMAN II

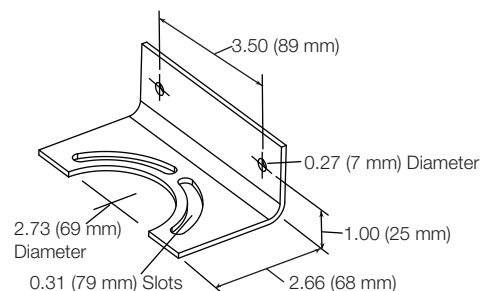
Kit: K60R-15, Bracket: 60R-15, Nut: 60R-14P

### R75 SERIES

Kit: None, Bracket: 35-25, Nut: None

### SERIES 380 and VANGUARD

Kit: K37-71, Bracket: 37-71, Nut: 37-345F

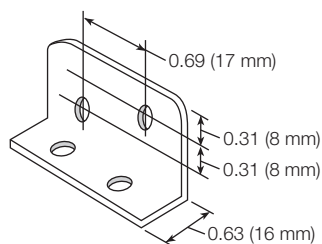


### HPR100 and HPR180

Kit: A37-381, Bracket: 37-.364, Nut: None

## MODULAR MOUNTING BRACKETS

Two L-shaped metal brackets as shown below can be used for wall mounting of modular FRLs or Clean Air Packages. A single bracket can be used to mount individual filters or lubricators. Kits include two brackets and four screws for attaching the brackets to the modules.



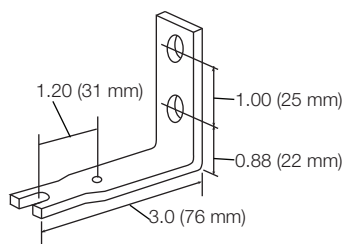
### SENTRY

Screws: 10R-19 (2 required), Bracket: None

### MINIATURE

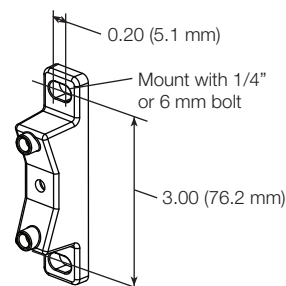
Kit: K50-01, Bracket: 50-01

Note: miniature can only be used in conjunction with 'T' suffix option on FD50, FCD50, and L50 products.



### GUARDSMAN and Modular VANGUARD

Kit: K30-08, Bracket: 30-08

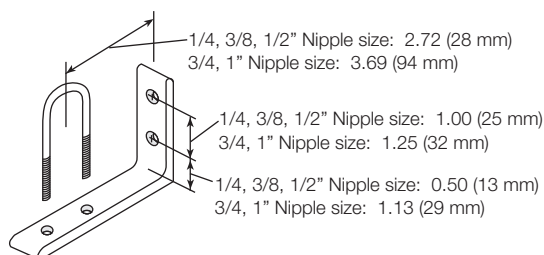


### 380 SERIES

Kit: A118-103, Bracket: None

## FRL INLINE MOUNTING PIPE BRACKETS

Two pipe brackets can be used for wall mounting of FRL assemblies that use pipe nipples to join the components. The bracket kits listed below include two sets of brackets.



### ALL PIPED ASSEMBLIES

Nipple size: 1/4" Kit: UMB-2

Nipple size: 3/8" Kit: UMB-3

Nipple size: 1/2" Kit: UMB-4

Nipple size: 3/4" Kit: UMB-6

Nipple size: 1" Kit: UMB-8

Note: No mounting brackets available for PR180M, PRH180M, 1-1/4" or 1-1/2".

## TUBE-AWAY KITS



Tube-Away kits for GUARDSMAN, VANGUARD and 380 Series filters with automatic drains are available to carry liquid drainage to a remote disposal point. Order by the part numbers below.

- With 3-ft (1-meter) tubing .....K802-21-3
- With 6-ft (2-meter) tubing .....K802-21-6
- With 12-ft (4-meter) tubing .....K802-21-12

## QUICK-FILL CAP FOR LUBRICATORS

Quick-fill caps (Q-caps) are check-valve fittings for filling lubricators. They can be ordered as a lubricator option, and are also available by the following part numbers.



Usage	Part Number	Threads
MINIATURE SENTRY GUARDSMAN	A203-8BH	3/8-24
SERIES 380	KA117-109	1/2-13
VANGUARD	A204-8BH	1/2-13

## QUICK-FILL HOSE COUPLER



### A10001

1/8-NPTF  
Female Connector

The quick-fill hose coupler is used on the end of a oil fill hose assembly to attach to a Quick-Fill Cap. This allows easier oil refills on a lubricator. See each product breakdown chart for available order options.

Quick-Fill caps can be ordered either on the product or purchased separately (Shown above).

## PRESSURE GAUGES



Gauges are made with “shatter-proof” plastic faces for use in rugged environments. Large numerals show psig in black and bar in red. Heavy duty construction of bourdon and indicator dial. Accuracy is within 2 to 3 percent.

All regulators and assemblies with regulators include a gauge with a range of 0–200 psig (0–13.8 bar). **SENTRY** and **MINIATURE** models have a 1/8 NPT connection, and 1-1/2 inch diameter gauge face. All other models have a 1/4 NPT pipe connection, and the gauge face is 2 inches (51 mm) in diameter. Gauges are also available by the following part numbers.

Pressure Range psig (bar)	Dial Diameter inch (mm)	Pipe † Connection NPT	Part Number
0-30 (0-2.1)	2 (51)	1/4	30BDD
0-60 (0-4.1)	2 (51)	1/4	60BDD
0-200 (0-13.8)	2 (51)	1/4	200-BDD
0-600 (0-41.4)	2 (51)	1/4	600-BDD
0-30 (0-2.1)	1.5 (38)	1/8	30MDD
0-60 (0-4.1)	1.5 (38)	1/8	60MDD
0-160 (0-11)	1.5 (38)	1/8	70MDD

† Back mounting connection.

## PRESSURE GAUGES For HPR100 and HPR180 Models



Following kits reflect reducer bushing with pressure gauges to fit all required gauge ports for both series. See **HPR100** and **HPR180** pages for details on port sizes required.

PORT SIZE	RANGE	GAUGE KIT
1/4-NPTF	0-200 PSI	A200-BDD-2
1/4-BSPT	0-200 PSI	A200-BDD-2W
3/8-NPTF	0-200 PSI	A200-BDD-3
3/8-BSPT	0-200 PSI	A200-BDD-3W
1/2-NPTF	0-200 PSI	A200-BDD-4
1/2-BSPT	0-200 PSI	A200-BDD-4W
1/4-NPTF	0-600 PSI	A600-BDD-2
1/4-BSPT	0-600 PSI	A600-BDD-2W
3/8-NPTF	0-600 PSI	A600-BDD-3
3/8-BSPT	0-600 PSI	A600-BDD-3W
1/2-NPTF	0-600 PSI	A600-BDD-4
1/2-BSPT	0-600 PSI	A600-BDD-4W

# Mufflers - Silencers

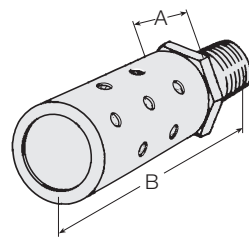
## M200 and M201 Models Port Size: 1/8 to 2-1/2



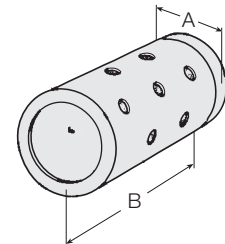
Model Shown: M200-6



Model Shown: M201-16



**Male pipe threads**  
For ports 1/8 through 1-1/4



**Female pipe threads**  
For ports 1-1/4 through 2-1/2

### DIMENSIONS

Port Size	NPT Threads	Avg. C <sub>v</sub>	A Inches (mm)	B Inches (mm)	Weight lb (kg)
1/8	Male	2.0	0.8 (21)	2.2 (56)	0.3 (0.1)
1/4	Male	2.7	0.8 (21)	2.2 (56)	0.3 (0.1)
3/8	Male	3.2	0.8 (21)	2.2 (56)	0.3 (0.1)
3/8	Male	4.9	1.3 (32)	3.8 (96)	0.5 (0.2)
1/2	Male	5.9	1.3 (32)	3.8 (96)	0.5 (0.2)
3/4	Male	5.9	1.3 (32)	3.8 (96)	0.5 (0.2)
3/4	Male	13.5	2.0 (51)	5.6 (142)	1.5 (0.7)
1	Male	16.7	2.0 (51)	5.6 (142)	1.5 (0.7)
1-1/4	Male	17.4	2.0 (51)	5.6 (142)	1.5 (0.7)
1-1/4	Female	37	2.5 (64)	5.9 (149)	2.3 (1.0)
1-1/2	Female	37	2.5 (64)	5.9 (149)	2.3 (1.0)
2	Female	54	3.0 (77)	7.3 (185)	3.5 (1.6)
2-1/2	Female	65	4.0 (102)	6.9 (173)	3.5 (1.6)

### Noise control solutions for air exhaust.

The muffler-silencers substantially reduce exhaust noise levels yet produce little back pressure. Typical impact noise reduction is in the 20-25 dB range.

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the Muffler you want.

**M20 0-4 W**

#### THREAD and PORT TYPE

- 1/8" C<sub>v</sub>: 2.0 Male thread ..... 0-1
- 1/4" C<sub>v</sub>: 2.7 Male thread ..... 0-2
- 3/8" C<sub>v</sub>: 3.2 Male thread ..... 0-3
- 3/8" C<sub>v</sub>: 4.9 Male thread ..... 0M-3
- 1/2" C<sub>v</sub>: 5.9 Male thread ..... 0-4
- 3/4" C<sub>v</sub>: 5.9 Male thread ..... 0-6
- 3/4" C<sub>v</sub>: 13.5 Male thread ..... 0M-6
- 1" C<sub>v</sub>: 16.7 Male thread ..... 0-8
- 1-1/4" C<sub>v</sub>: 17.4 Male thread ..... 0-10
- 1-1/4" C<sub>v</sub>: 37 female thread ..... 1-10
- 1-1/2" C<sub>v</sub>: 37 female thread ..... 1-12
- 2" C<sub>v</sub>: 54 female thread ..... 1-16
- 2-1/2" C<sub>v</sub>: 65 female thread ..... 1-20

#### PORT TYPE

- NPTF threads ..... Leave blank
- BSP\* threads ..... W

\* BSPP threads on M201 and BSPT threads on M200 mufflers.

# Mufflers - Silencers Kits

# A118-125 (M201) Models Port Size: 1-1/2 to 2-1/2



Model Shown: A118-125-16

For dimensional specifications  
see page 308.

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the Muffler you want.

**A118-125- 16 W**

**THREAD and PORT TYPE**

1-1/4" C <sub>V</sub> : 37 .....	10
1-1/2" C <sub>V</sub> : 37 .....	12
2" C <sub>V</sub> : 54 .....	16
2-1/2" C <sub>V</sub> : 65 .....	20

**PORT TYPE**

NPTF threads .....	Leave blank
BSPP threads .....	W

# Mini Mufflers

# M5 and M10 Models Port Size: 1/8



**M10-1**

1/8" NPT brass body with  
sintered bronze element



**M5-1**

1/8" NPT brass body with sin-  
tered bronze element. Designed  
to fit internally into 1/8" port



**03982B**

1/8" NPT to 1/4" NPT  
reducer

# Silencer/Reclassifiers

# RS and MRS Models Port Size: 1/2 to 1



Model Shown: RS100-4

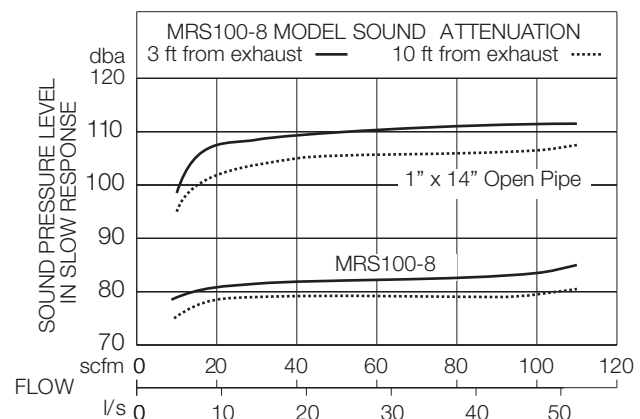
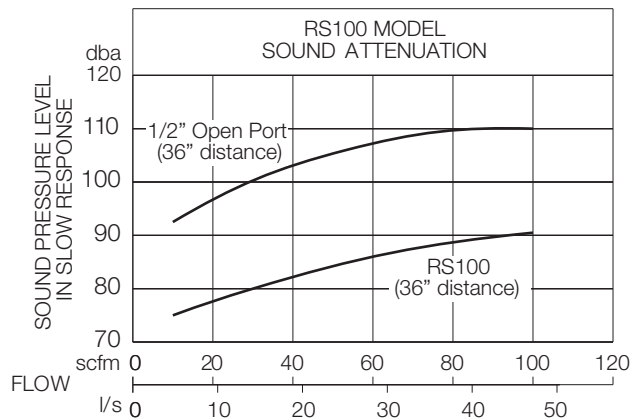
Model Shown: MRS100-8

Silencer/reclassifiers are integral silencer and oil separation devices. When installed at the exhaust ports of pneumatic valves they reduce exhaust noise and capture lubricants contained in the exhausting air. They are used on valve-cylinder applications and on air tools with piped exhausts.

- ◆ Exhaust noise is reduced to 80 to 85 dba under standard steady-state test conditions.
- ◆ Peak impact noise is reduced to 106 to 108 dba.
- ◆ A drain cock is supplied for manual or automatic draining of accumulated liquids. An optional 1/8 tube fitting (00142W) is available for automatic draining.
- ◆ NPTF port threads; optional BSPP threads.

## SOUND ATTENUATION DATA

Constant-flow tests were conducted in a 14' x 22' room with a 14' ceiling. Sound pressure levels were recorded using a B & K precision impulse sound meter (model 22045), a 1-inch microphone (DB0375), a flexible extension rod (UA0196), and a random incidence corrector (UA0055). Test system as mounted on the 14-foot wall with exhaust port 4 feet from the 14-foot wall.



## SPECIFICATIONS

### Ambient/Media Temperature:

Plastic Bowls: 40° to 125°F (4° to 51°C).  
RS Metal Bowls: 40° to 175°F (4° to 79°C).

**Bowl:** Polycarbonate plastic. Optional steel shatterguard

**Element:** Sintered bronze.

**Fluid Media:** Compressed air.

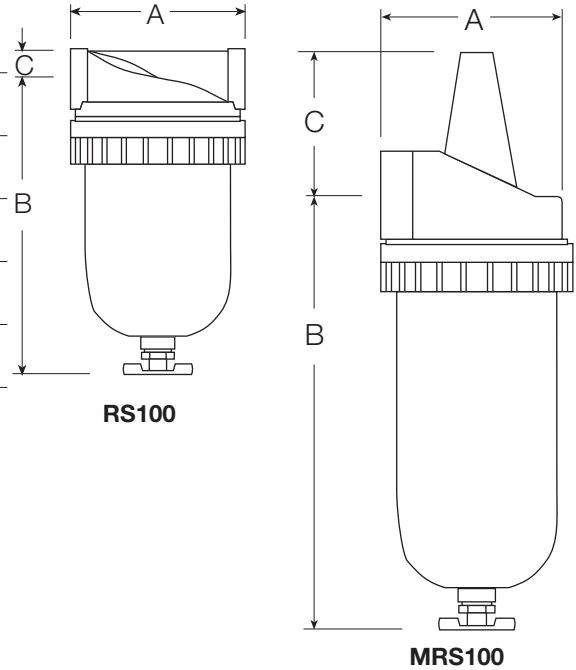
### Inlet Pressure:

5 to 150 psig (0.3 to 10 bar) maximum.

**See back pressure performance data on the facing page.**

## DIMENSIONS inches (mm)

Port Size	Model Number	A	B	C	Depth	Weight lb (kg)
1/2	RS100-4	3.5 (89)	5.5 (140)	0.7 (18)	3.5 (89)	1.3 (0.59)
1/2	MRS100-4	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)
3/4	MRS100-6	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)
1	MRS100-8	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)

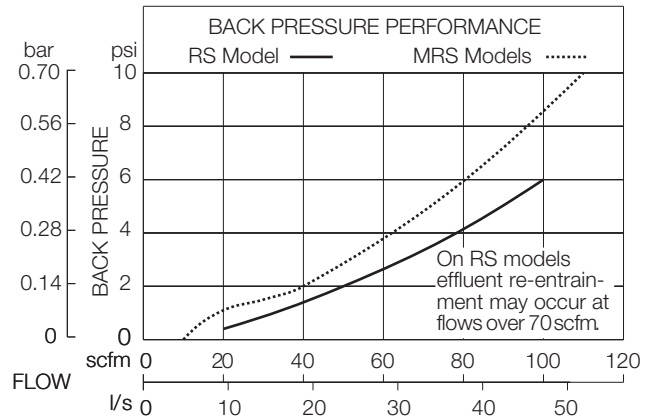
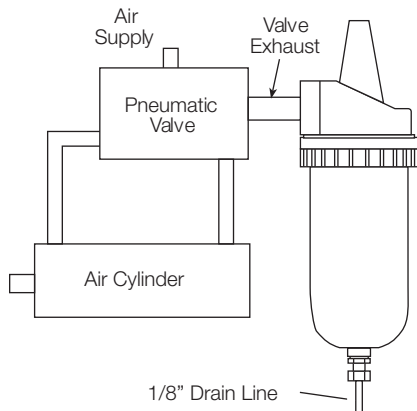


## REPLACEMENT ELEMENT KITS

RS Models . . . . . KA103-03E4

MRS Models . . . . . KA109-32

## TYPICAL INSTALLATION IN A VALVE-CYLINDER CIRCUIT



## ORDERING INFORMATION

Change the letters in the sample model number below to specify the silencer/reclassifier you want.

**B RS 100 - 4 Y W**

### BOWL TYPE

Metal bowl..... B  
Plastic bowl..... Leave Blank

### BOWL SIZE

8-Ounce (240-ml) bowl..... RS  
16-Ounce (480-ml) bowl..... MRS

### PORT SIZE

1/2 NPTF..... 4  
3/4 NPTF (only with MRS bowl) ..... 6  
1 NPTF (only with MRS bowl) ..... 8

### PORT TYPE

NPTF threads ..... Leave Blank  
BSPP threads ..... W

### OPTION

None ..... Leave Blank  
Bowl shatterguard ..... SG



# Hydro-Jector External Drain

# E100 Models Port Sizes: 1/8 & 1/4

When the hydro-jector is installed into a filter drain, use the supplied rubber spacer between both products. This will allow greater stability with the Hydro-Jector.

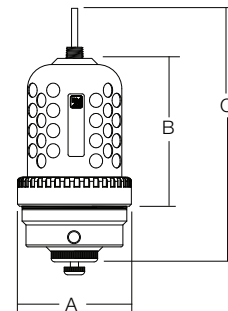


Model Shown: E100-2

### DIMENSIONS inches (mm)

Ports	A	B	C	Depth	Weight lb (kg)
1/8	3.5 (89)	4.2 (106)	8.3 (211)	3.5 (89)	2.6 (1.2)
1/4 †	3.5 (89)	4.2 (106)	8.3 (211)	3.5 (89)	2.6 (1.2)

† Use 1/4" port option for attaching to 380, and VANGUARD series filters.



### ORDERING INFORMATION

Change the letters in the sample model number below to specify the Hydro-Jector you want.

**B E100 - 2**

**BOWL TYPE** \_\_\_\_\_

Polycarbonate bowl with shatterguard ..... Leave Blank  
 Metal bowl ..... B

**PORT SIZE** \_\_\_\_\_

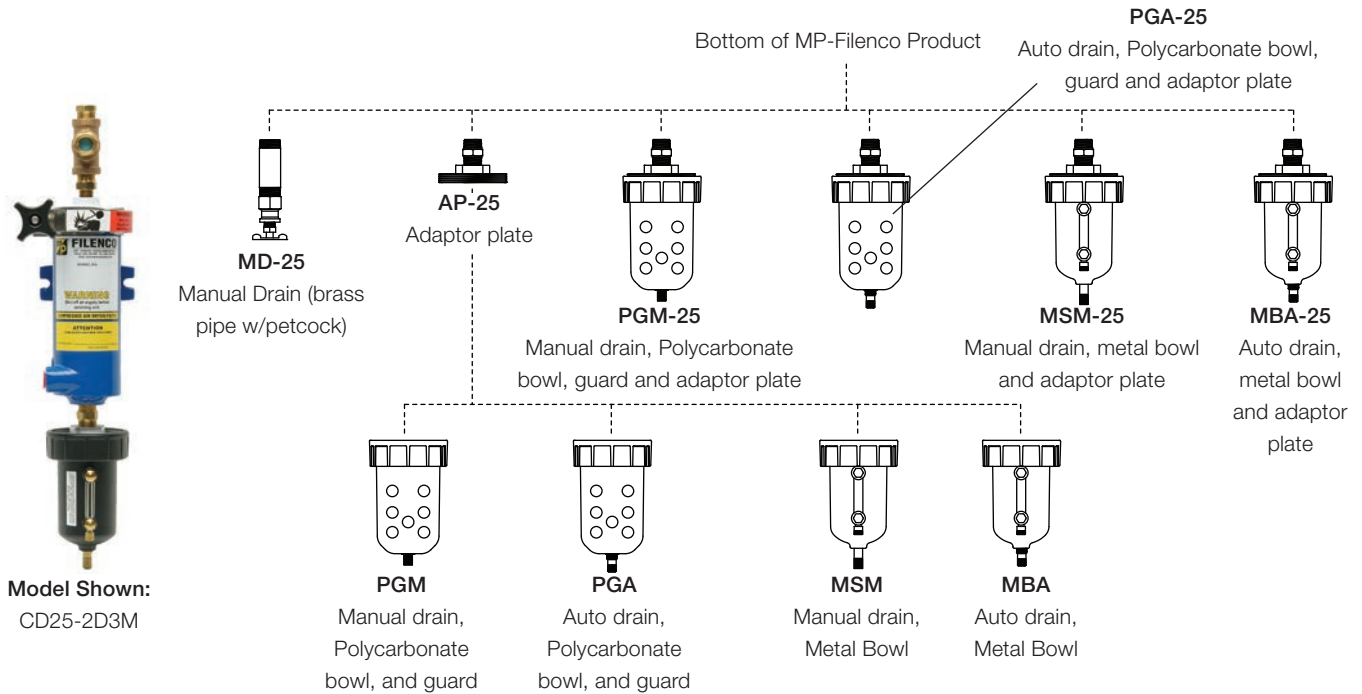
1/8 NPTF ..... 1  
 1/4 NPTF ..... 2 \*

\* When ordering to fit on 380 or VANGUARD series use '2'.

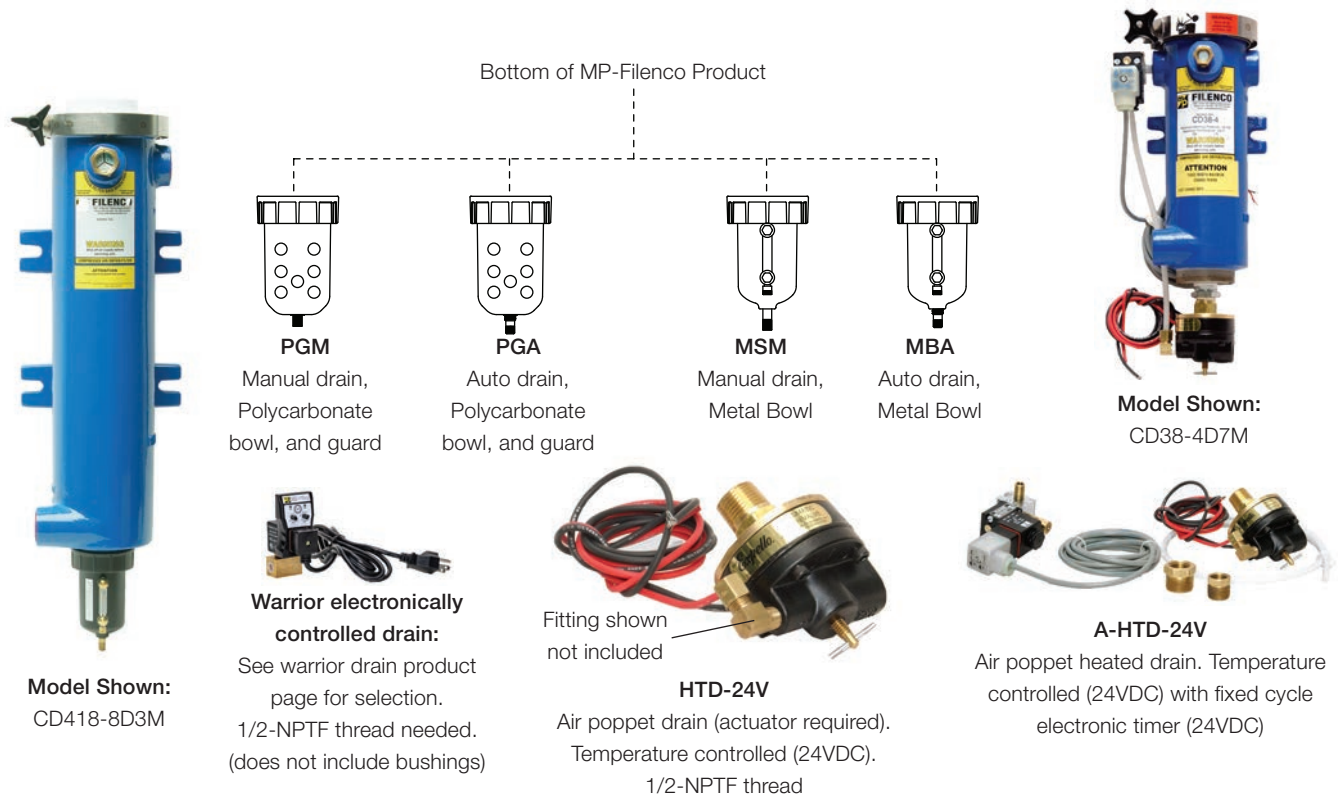
This product is not available in BSPP.

# MP-Filenco Drains Replacement kits

# 25 Series Models



# MP-Filenco 36, 38, 418 625 & 832 Series Models Drains Replacement kits



# ELECTRONICALLY CONTROLLED Warrior Drain

# DED Models Port Sizes: 1/4 to 1/2



Model Shown: DED-115V-2

- ◆ Viton seals in the valve to ensure long life and resistance to synthetic oils.
- ◆ O-ring seals on timer cycle adjusters to ensure water resistant sealing IP65
- ◆ Fully Automatic - No maintenance.
- ◆ Manual TEST switch (micro switch)
- ◆ CD tested, UL Recognized.
- ◆ Small compact design.
- ◆ NPTF port threads; optional BSPP threads.
- ◆ Other voltages available

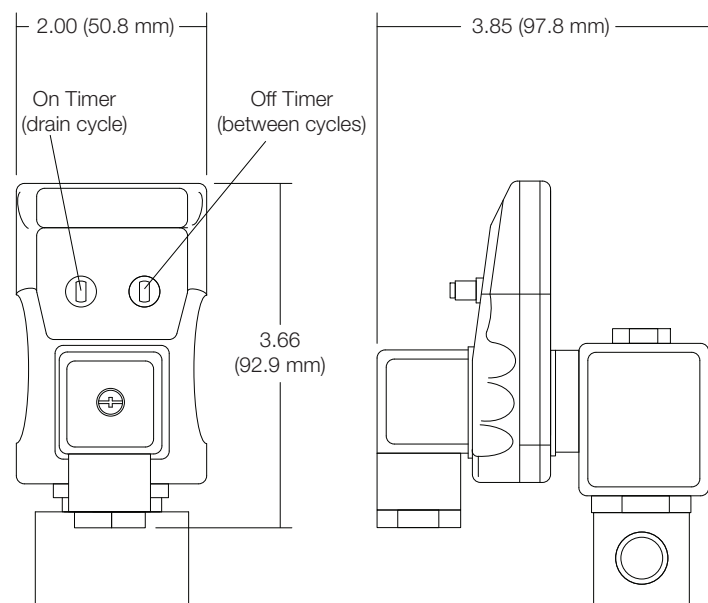
The **WARRIOR** drain is designed to remove condensate from components in compressed air systems. Typical installations include compressors, dryers, receivers, driplegs, and filters.

The drain consists of a timer and a valve. Electronic controls allow the draining interval to be set from 0.5 to 45 minutes, and the drain time from 0.5 to 10 seconds. Once set, draining action is automatic and requires no maintenance. This is important in constant-flow applications where there is no on-off action to trigger a standard automatic drain.

## SPECIFICATIONS

- Drain Time:** Adjustable 0.5 to 10 seconds.
- Drain Interval:** Adjustable 0.5 to 45 minutes.
- Current Consumption:** 4 ma maximum.
- Ambient Temperature:** 35° to 130°F (2° to 54°C).
- Media Temperature:** 35° to 190°F (2° to 88°C).
- Electrical Connection:** DIN 43650A, ISO 440/6952.
- Valve Type:** 2/2 direct acting, normally closed.
- Valve Body:** Forged brass; 3/16-inch (4.8 mm) orifice.
- Maximum Pressure:** 230 psig (16 bar).

## DIMENSIONS inches (mm)



## ORDERING INFORMATION

Change the numbers in the sample model number below to specify the switch you want.

# DED- 115V - 2 W

**VOLTAGE**

115 VAC, 50/60 Hz .....	115V
24 VDC .....	24V
230 VAC .....	230V

**PORT TYPE**

NPT threads .....	Leave Blank
BSP threads .....	W

**PORT SIZE**

1/4-NPTF .....	2
3/8-NPTF .....	3
1/2-NPTF .....	4

### Replacement Drain Kits for M/P Filters: Plastic Bowls



This replacement kit contains a Warrior Drain, Pipe nipple and correct plastic bowl assembly with shatterguard.

# DED- 115 - F100

**VOLTAGE**

115 VAC, 50/60 Hz .....	115
24 VDC .....	24V
230 VAC .....	230

**REPLACEMENT BOWL**

F100 ( <i>Vanguard 1/4 to 3/4</i> ) .....	F100X
F100 ( <i>High Flow 3/4 to 1</i> ) .....	F100
FC101 ( <i>Vanguard 1/4 to 1/2</i> ) ...	FC101X
FC101 ( <i>High Flow 3/4 to 1</i> ) .....	FC101

### Replacement Drain Kits for M/P Filters: Metal Bowls

This replacement kit contains a Warrior Drain and pipe nipple.



# DED- 115 - BF100

**VOLTAGE**

115 VAC, 50/60 Hz .....	115
24 VDC .....	24V
230 VAC .....	230

**REPLACEMENT BOWL**

BF100 ( <i>1/4" to 1"</i> ) .....	BF100
BFC101 ( <i>1/4" to 1"</i> ) .....	
BF200 ( <i>3/4" to 1-1/2"</i> ) .....	
BFC201 ( <i>3/4" to 1-1/2"</i> ) .....	

# PRESSURE / VACUUM Switches

# PDA Models Port Sizes: 1/8, 1/4



Model Shown: PDA414-2

Pressure/Vacuum switches can provide an electrical signal to warn or prevent over- or under-pressurization which can be harmful to a machine or process. The pressure is adjustable. Switches are sealed, vibration resistant, and built to provide reliable protection. They can be either direct or remotely mounted. Switches are available in three basic configurations:

Flying leads with 18-inch (450-mm) wires.  
Flying leads with female weather pack.  
For use with DIN connectors.

## Modular Installation

Any of the pressure valves can be incorporated into any of the **GUARDSMAN, SERIES 380, or VANGUARD** modular **FRL** assemblies. For information about such installations, contact Master Pneumatic.

## SPECIFICATIONS

### Ambient/Media Temperature:

-40° to 180°F (-40° to 80°C).

### Electrical:

5 ampere at 125 / 250 VAC

5 ampere at 12 / 24 VDC

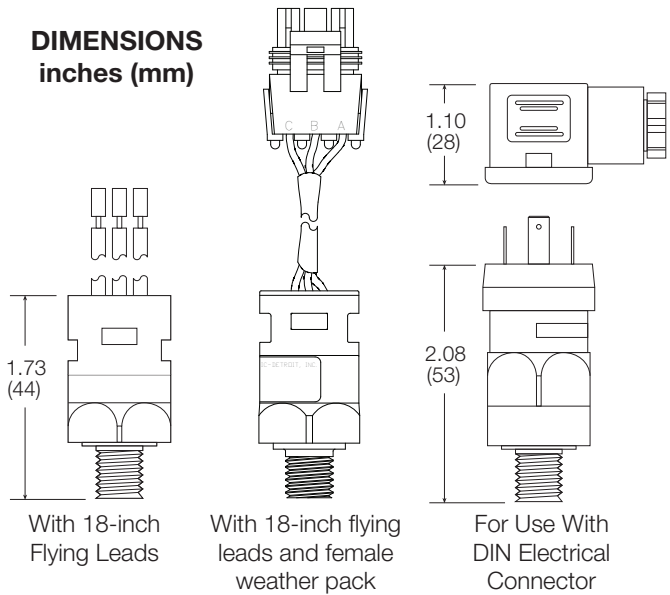
**Housing:** Glass-filled nylon.

**Pressure Fitting:** Brass, optional stainless steel

**Maximum Overpressure:** 350 psig (25 bar).

**Repeatability:** ± 2% of full set point range at 70°F  
(20°C) ambient temperature.

**Weight:** 0.3 lb (0.14 kg).



**ORDERING INFORMATION**

Change the numbers in the sample model number below to specify the switch you want. These switches can also be ordered with FRL units. For vacuum applications consult Master Pneumatic.

**PDA 2 1 1 - 2 A W**

**ADJUSTMENT RANGE**

- 3-7 psig (0.2-0.5 bar) ..... 1
- 5-30 psig (0.35-2 bar) ..... 2
- 25-100 psig (1.7-6.9 bar) ..... 4

**CIRCUIT TYPE**

- SPDT ..... 1
- SPST normally open ..... 2  
(must use **electrical connection 1 or 2**)
- SPST normally closed ..... 3  
(must use **electrical connection 1 or 2**)

**ELECTRICAL CONNECTION**

- 18-inch (450-mm) flying leads ..... 1
- Flying leads & female weather pack ..... 2
- DIN 43650A, male half only ..... 3
- DIN 43650A cable clamp ..... 4
- DIN 43650A 1/2-inch (13-mm) ..... 5  
female conduit

**PIPE SIZE**

- 1/8 NPT ..... 1
- 1/8 BSP (Brass pressure fitting only) ..... 1  
See port type for additional add-on
- 1/4 NPT. .... 2
- 1/4 BSP ..... 2  
See port type for additional add-on
- 7/16-20 SAE ..... S7

**PORT TYPE**

- NPT threads ..... Leave Blank
- BSP threads ..... W

**OPTIONS**

- Viton diaphragm ..... A
- EPDM diaphragm ..... B
- 10-ampere rating ..... E
- Gold electrical contacts ..... F
- DIN light 110 volt AC ..... G  
(must be used along with option 4 under **Electrical Connection** section)
- DIN light 12 volt DC ..... H  
(must be used along with option 4 under **Electrical Connection** section)
- DIN light 24 volt DC ..... J  
(must be used along with option 4 under **Electrical Connection** section)
- 316 Stainless Steel ..... M  
pressure fitting

# SERV-OIL Reservoirs Sight Dome

# M481R, 482R Models Port Sizes: 1/4



Model Shown: 482R

Servo-Meters can be supplied with oil by pressure systems (**up to 30 psig**) or gravity systems, although gravity systems are generally preferred. Remote reservoirs should be connected to the bottom port of the **SERV-OIL** equipment with a minimum 5/16" I.D. line.

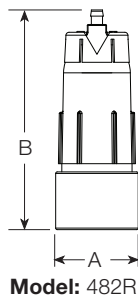
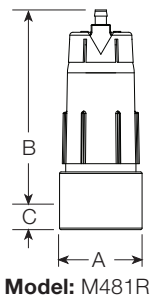
Stand-pipes should be installed from the top of the equipment and extend above the reservoir for gravity systems to prevent airlock of the Servo-Meters.

Sight domes are available to vent air from the system, and to confirm visually the presence of oil. Pressure-fill systems should be vented, or use low velocity recirculation of the oil supply.

For a detail explanation on operation and use, see pages 232 and 233.

### NOTE

For most applications Master Pneumatic recommends a light spindle oil that is not chemically aggressive. (150-1200 ssu viscosity).



### DIMENSIONS inches (mm)

Bowl	Port Location	A	B	C	Depth	Weight lb (kg)
M481R	1/4 (side)	1.6 (41)	3.9 (99)	0.4 (9.5)	1.6 (41)	0.33 (0.15)
482R	1/4 (Bottom)	1.6 (41)	4.3 (109)	---	1.6 (41)	0.33 (0.15)

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the filter/regulator you want.

**M481R W**

#### PORT LOCATION AND SIZE

1/4-NPTF inlet/outlet ports size location ..... M481R  
 1/4-NPTF Port location bottom ..... 482R

#### PORT TYPE

1/4 NPTF ..... Leave Blank  
 1/4 BSPP ..... W

# SERV-OIL Reservoirs

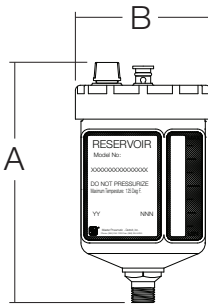
## Transparent container

# M476R Models

## Port Sizes: 1/4



Model Shown: M476R



Servo-Meters can be supplied with oil by pressure systems (**up to 30 psig**) or gravity systems, although gravity systems are generally preferred. Remote reservoirs should be connected to the bottom port of the **SERV-OIL** equipment with a minimum 5/16" I.D. line.

Stand-pipes should be installed from the top of the equipment and extend above the reservoir for gravity systems to prevent airlock of the Servo-Meters.

Sight domes are available to vent air from the system, and to confirm visually the presence of oil. Pressure-fill systems should be vented, or use low velocity recirculation of the oil supply.

### NOTE

For most applications Master Pneumatic recommends a light spindle oil that is not chemically aggressive. (150-1200 ssu viscosity).

### RESERVOIR DIMENSIONS

Part No.	Capacity	Dimensions inches (mm)		
		A	B	Depth
M476R	10 ounces	5.4 (137)	3.3 (84)	3.3 (84)
M476RP	10 ounces	5.0 (127)	3.3 (84)	3.3 (84)

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the reservoir you want.

## M476R

## E W

#### BOWL TYPE

- Polycarbonate 10 oz (0.3 l) bowl (**Standard**) ..... M476R  
(7970 drops) with manual vent and fill plug.
- Nylon Bowl 10 oz (0.3 l) bowl with manual vent and ..... M476RN  
fill plug.
- Polypropylene bowl, no fill plug, automatic vent ..... M476RP

#### PORT TYPE

- 1/4 NPTF ..... Leave Blank
- 1/4 BSPT ..... W

**OPTIONS** (More than one option can be chosen. Add in alphabetical order.)

- None ..... Leave Blank
- EPR O-rings ..... E
- Q-Cap ..... Q  
(Cannot be ordered with option 'P' under **BOWL TYPE** section)
- No label ..... U
- Viton O-rings ..... V

† One drop = 1/30 cc. Capacity in drops is at 90% of full capacity.



# SERV-OIL Reservoirs

## Transparent container

# M570R Models

## Port Sizes: 1/4



Model Shown: M570-6R

Model Shown: M570-12R

Sight domes are available to vent air from the system, and to confirm visually the presence of oil. Pressure-fill systems should be vented, or use low velocity recirculation of the oil supply.

M570R transparent reservoirs are available in, 1-quart (960-ml), and 2-quart (1920-ml) capacities.

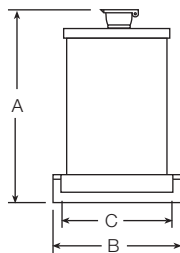
**Level Switches.** When the reservoir is located where the oil level cannot easily be determined visually, electrical oil level switches can be used. Both low-level and high-level switches are available. The switches can be connected to a remote electrical control for automatic filling.

Servo-Meters can be supplied with oil by pressure systems (**up to 30 psig**) or gravity systems, although gravity systems are generally preferred. Remote reservoirs should be connected to the bottom port of the **SERV-OIL** equipment with a minimum 5/16" I.D. line.

Stand-pipes should be installed from the top of the equipment and extend above the reservoir for gravity systems to prevent airlock of the Servo-Meters.

**NOTE**

For most applications Master Pneumatic recommends a light spindle oil that is not chemically aggressive. (150-1200 ssu viscosity).



### RESERVOIR DIMENSIONS

Part No.	Capacity	Dimensions inches (mm)			
		A	B	C	Depth
M570-6R	1 quart	7.6 (193)	5.4 (137)	4.6 (117)	4.8 (122)
M570-12R	2 quarts	13.6 (345)	5.4 (137)	4.6 (117)	4.8 (122)

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the reservoir you want.

**M570 - 6 R GG W**

**RESERVOIR SIZE**

- 1 quart (960-ml), 25,400 drops ..... 6
- 2 quart (1920-ml), 50,800 drops .... 12

† One drop = 1/30 cc. Capacity in drops is at 90% of full capacity.

**PORT TYPE**

- 1/4 NPTF ..... Leave Blank
- 1/4 BSPP ..... W

**OPTIONS**

- None ..... Leave blank
- Low level switch ..... G
- High and low level switch ..... GG

# SERV-OIL Reservoirs

## Metal container

# 473R, 477R, 479R Models

## Port Sizes: 3/4



Model Shown: M473R

Sight domes are available to vent air from the system, and to confirm visually the presence of oil. Pressure-fill systems should be vented, or use low velocity recirculation of the oil supply.

Metal reservoirs in 1-gallon (3.8-liter), 5-gallon (18.9-liter), and 10-gallon (38-liter) capacities. Metal reservoirs have an internal oil filter, sight tube, and filter breather fill cap. All reservoirs have quick-fill fittings.

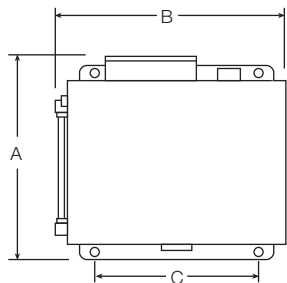
**Level Switches.** When the reservoir is located where the oil level cannot easily be determined visually, electrical oil level switches can be used. Both low-level and high-level switches are available except for 10-ounce reservoirs. The switches can be connected to a remote electrical control for automatic filling.

Servo-Meters can be supplied with oil by pressure systems (**up to 30 psig**) or gravity systems, although gravity systems are generally preferred. Remote reservoirs should be connected to the bottom port of the **SERV-OIL** equipment with a minimum 5/16" I.D. line.

Stand-pipes should be installed from the top of the equipment and extend above the reservoir for gravity systems to prevent airlock of the Servo-Meters.

### NOTE

For most applications Master Pneumatic recommends a light spindle oil that is not chemically aggressive. (150-1200 ssu viscosity).



### RESERVOIR DIMENSIONS

Part No.	Capacity	Dimensions inches (mm)			
		A	B	C	Depth
473R	1 gallon (3.8 l)	9.9 (251)	10.9 (276)	8.0 (203)	6.1 (154)
477R	5 gallons (18.9 l)	17.9 (455)	14.9 (378)	12.0 (305)	6.1 (154)
479R	10 gallons (38-l)	25 (635)	16.9 (429)	13.5 (343)	7.1 (180)

### ORDERING INFORMATION

Change the letters in the sample model number below to specify the reservoir you want.

**47 3 R G W**

#### RESERVOIR SIZE

- 1 gallon (3.8 l), 102,000 drops ..... 3
- 5 gallons (19 l), 508,000 drops ..... 7
- 10 gallons (38 l), 1,020,000 drops .. 9

† One drop = 1/30 cc. Capacity in drops is at 90% of full capacity.

#### PORT TYPE

- 3/4 NPTF ..... Leave Blank
- 3/4 BSPP ..... W

#### OPTIONS

- None ..... Leave blank
- Low level switch ..... G
- High and low level switch ..... GG

# SERV-OIL SPL Tool and Downstream Single Point Lubricator

# Used with A600, A640, D600, & D640

To realize the maximum benefits of the Single Point Lubricator (SPL), an internal oil capillary tube must be connected to the outlet of the SPL and terminate with a check valve to insure a solid column of oil.



**Model Shown:** Located on page 337

(See **TUBING** section for the available part numbers)

The capillary tubing is sold by the meter with **(A00942M)** and without oil **(00942M)**. It is to be attached to a Single Point Lubricator on one end and have the **420-160** Check Valve installed on the other end. This tubing is to be installed inside the hose or pipe connecting the **SPL** to the pneumatic device being lubricated.



**Model Shown:** 456-148

(The check valves shown are not supplied with this part)

The **456-148** tool is to be used with the **456-147M** Pliers for installing the **420-160** Check Valve on the oil capillary tubing. It is also used to hold the brass barb (remove from the outlet of the Single Point Lubricator) to attach the oil capillary tubing, for ease of installation in the **SPL**.



**Model Shown:** 456-147M

The bent-nose pliers shown **(456-147M)** are specially designed for attaching the oil capillary tubing to the brass barb in the outlet port of the Single Point Lubricator and the Check Valve that needs to be installed on the end of the oil capillary tubing. They have a slot milled into the jaws to hold the tubing without crushing it.

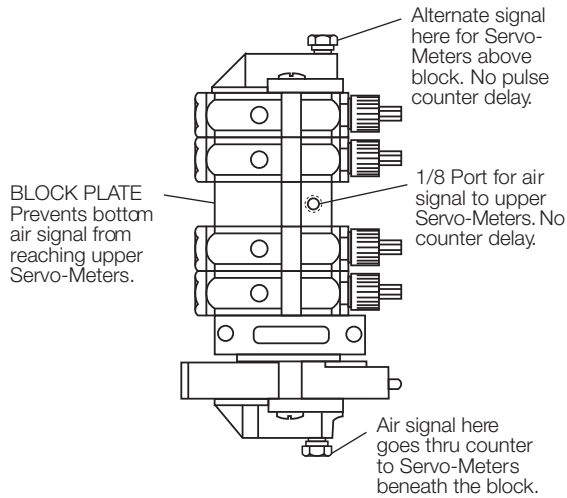


**Model Shown:** 420-160

The **420-160** Check Valves are to be installed on the end of the oil filled capillary tube. This holds the oil in the tubing until the Single Point Lubricator is operated, dispensing a precise amount of fluid in to the airstream near the inlet of the pneumatic device to be lubricated.

# SERV-OIL Accessories

**BLOCK PLATE.** Used between Servo-Meters in a stack to block air signals. Different actuating air signals can then be used for the two groups of Servo-Meters separated by the block plate. The oil supply, however, is not blocked by the plate.



Block Plate Kit with **NPT** threads .....K474-07T  
Includes all necessary seals and assembly hardware. For **BSPF** threads add suffix **W** to part number.

**CHECK VALVES.** Used at lubrication point to keep air out of oil lines. **NPT** threads, Nitrile seals. For **BSPF** threads add suffix **W** to the part number; for Viton seals add suffix letter **V**. Both straight check valves and right-angle elbow valves are available.

Part No.	Type	Inlet	Outlet
A01242	Elbow	1/8 Female	1/8 Male
A01242L *	Elbow	1/8 Female	1/8 Male
A01244	Elbow	1/8 Female	1/4 Male
A01242S	Straight	1/8 Female	1/8 Male
A01242SL *	Straight	1/8 Female	1/8 Male
A01244S	Straight	1/8 Female	1/4 Male
A01284S	Straight	1/4 Female	1/4 Male
A01284SL *	Straight	1/4 Female	1/4 Male

\* = Lower cracking pressure.



**Type:** Straight  
**Model Shown:** A01242S



**Type:** Elbow  
**Model Shown:** A01242

**PULSE COUNTER KIT for MPLs.** A pulse counter can be set to actuate Servo-Meters on every operating cycle, every 5th cycle, or every 10th cycle. Counter Kit KA418-04M includes a counter, and all necessary seals and hardware for mounting.

# Used with MPLs

## CONNECTORS for TUBING

Connector Part No.	Description	Usage
00142W	1/8" NPT x 1/8"	Nylon or Copper Oil Delivery Lines
00182W	1/8" NPT x 1/4"	Nylon or Copper Oil Delivery Lines
001124W	1/4" NPT x 3/8"	Nylon or Copper Air Signal or Oil Delivery Lines
02942M	Double Barbed Connector for Splicing 1/8" Tubing	Oil Delivery Lines

Note: Tube fittings are not available with **BSPF** threading

**TUBING.** Tubing lengths should be specified as shown below:

Tubing Part No.	Description	Usage
<b>NON-FILLED TUBING</b>		
00942M-*	1/8" O.D. Nylon	Oil Delivery Lines
B00942M-@	1/8" O.D. Nylon	Oil Delivery Lines
B00942F-#	1/8" O.D. Nylon	Oil Delivery Lines
00984M	1/4" O.D. Nylon	Air Signal Lines

**PRE-FILLED TUBING** (tubing is filled and capped)

A00942M-@	1/8" O.D. Nylon,	Oil Delivery Lines
A00942F-#	1/8" O.D. Nylon,	Oil Delivery Lines

\* = 1 inch of tubing. Ex: -12 = 12 inches.

@ = 1 meter of tubing. Ex: -12 = 12 meters

# = 1 Foot of tubing. Ex: -12 = 12 feet.

**CHECK VALVE FOR TUBING** (Check valve is necessary for proper function): 420-160

## REPLACEMENT KITS for SERVO-METERS.

Seals for the air end are Nitrile; seals for the oil end are available in three different materials: Nitrile, Viton, or Ethylpropylene. For satisfactory service it is recommended that replacement kits can be installed on both the air end and the oil end.

Servo-Meter	Buna-N Seals for Air End	Buna-N† Seals for Oil End
1/2 Drop, Non-shutoff	KA457-37M-5	KA457-12-5I
1/2 Drop, Shutoff	KA457-38M-5	KA457-12-5I
1 Drop, Non-shutoff	KA457-37M-1	KA457-12-1I
1 Drop, Shutoff	KA457-38M-1	KA457-12-1I
2 Drops, Non-shutoff	KA457-37M-2	KA457-12-2I
2 Drops, Shutoff	KA457-38M-2	KA457-12-2I

† For Oil End Seals only: Add suffix **V** for Viton seals. Add suffix **E** for **EPR** seals.

# **DasCool 2357 COOLANT CONCENTRATE** for **SCORPION SYSTEMS**

**DasCool 2357** is a semi-synthetic, water-soluble coolant concentrate specially formulated for **Scorpion** systems. It has effective pressure- and friction-reducing properties for the optimum balance of cooling and lubrication. It also provides rust protection and reduces tool wear by reducing friction and temperature. These same features also increase machining accuracy by reducing thermal expansion of tool and workpiece.

**DasCool 2357** can be used with all types of metals, but is especially effective with aluminum alloys. It is available in one-gallon and five-gallon containers, and is very economical because of the precision delivery of **Scorpion** systems.

There is no chlorine, phosphorus, active sulphur, silicones, phenols, or nitrates in **DasCool 2357**. Highly concentrated **DasCool 2357** must be diluted with water before use. Recommended dilutions for various machining operations are shown below.

<b>Machining Operation</b>	<b>Parts of Water to One Part of <i>DasCool 2357</i></b>
Boring, Drilling, Sawing, Reaming, Milling, Planing, Gear Cutting.....	20-30
Threading, Broaching.....	10-20
Grinding.....	30-60
Metallforming.....	0-5

Order **DasCool 2357** by the following part numbers:

- 1 Gallon ..... PC-1GAL
- 5 Gallon ..... PC-5GAL

An 8-ounce sample is included with each **Scorpion** unit.

**Model Shown:** PC-1GAL



**Model Shown:** PC-8oz



**Model Shown:** PC-5GAL

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