

High-Capacity VANGUARD Externally Piloted Regulators

PR180M Models Port Sizes: 3/4, 1, 1-1/4, 1-1/2



- ◇ Inline mounting.
- ◇ Diaphragm-type design.
- ◇ Self-relieving.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

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.

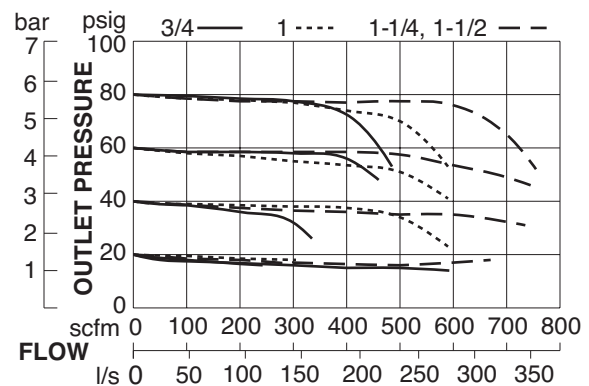
Seals: Nitrile.

Valve: Brass.

Valve Cap: Nylon.

FLOW CHART

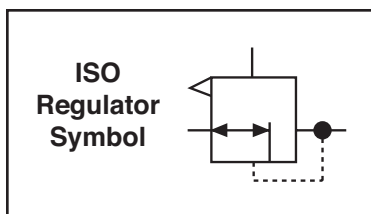
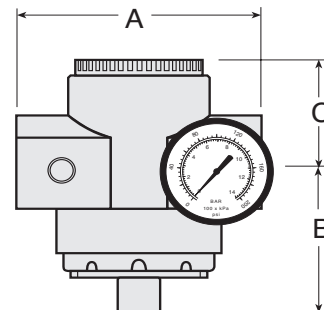
Inlet Pressure: 100 psig (7 bar)



DIMENSIONS inches (mm)

Ports	A	B	C	Depth †	Weight † lb (kg)
3/4 1	4.4 (111)	4.6 (112)	2.4 (62)	2.8 (71)	1.88 (0.85)
1-1/4 1-1/2	4.9 (124)	5.1 (129)	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 *

PORT SIZE		For BSPP port threads add W to the end of the model number.
3/4 NPTF	6	
1 NPTF	8	
1-1/4 NPTF	10*	GAUGE: Gauge is standard. Delete gauge Remove G
1-1/2 NPTF	12*	
1-1/16-12 UNF SAE	S12	OPTIONS
1-5/16-12 UNF SAE	S16	None Remove Y
1-5/8-12 UNF SAE	S20	Non-relieving A
1-7/8-12 UNF SAE	S24	

MOUNTING BRACKETS
See page 276.

* No mounting bracket available.

High-Capacity VANGUARD High-Relief Externally Piloted Regulators

PRH180M Models Port Sizes: 3/4, 1, 1-1/4, 1-1/2



High-Relief valves separate control air from exhaust air.

- ◇ Inline mounting.
- ◇ Diaphragm-type design.
- ◇ Self-relieving.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

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.

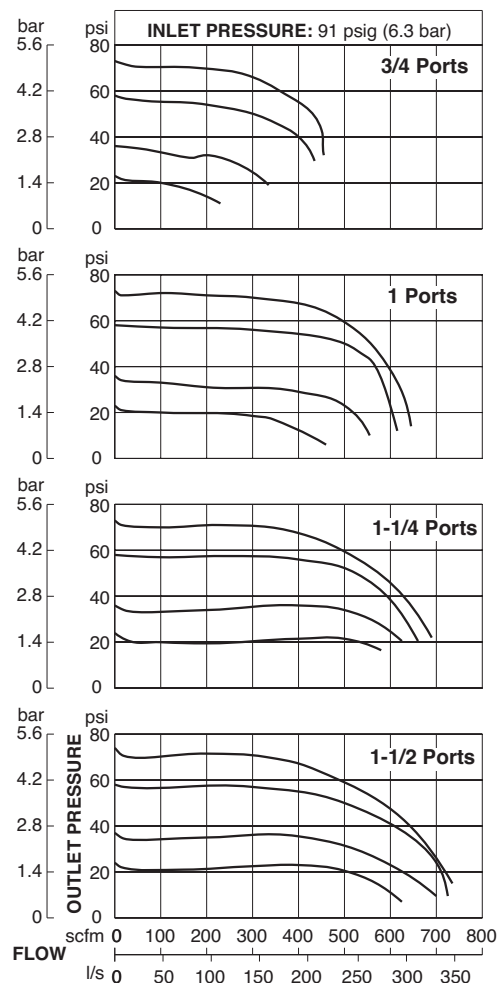
Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

Seals: Nitrile.

Valve: Brass.

Valve Cap: Nylon.

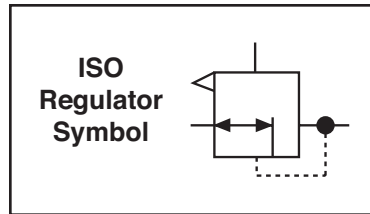
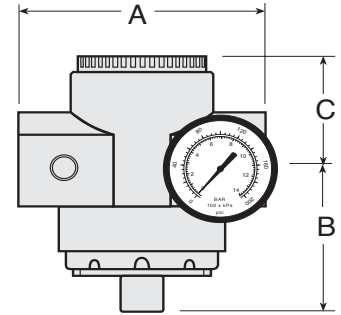
FLOW CHARTS



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)	1.88 (0.85)
1-1/4 1-1/2	4.9 (124)	5.1 (129)	2.1 (54)	2.8 (71)	2.25 (1.02)

† Less gauge.



Pressure REGULATORS

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 Y G *

PORT SIZE

- 3/4 NPTF 6
- 1 NPTF 8
- 1-1/4 NPTF 10*
- 1-1/2 NPTF 12*
- 1-1/16-12 UNF SAE S12
- 1-5/16-12 UNF SAE S16
- 1-5/8-12 UNF SAE S20
- 1-7/8-12 UNF SAE S24

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

GAUGE: Gauge is standard.
Delete gauge Remove G

OPTIONS
None Remove Y

MOUNTING BRACKETS
See page 276.

* No mounting bracket available.

High-Capacity VANGUARD Externally Piloted Regulators

**R200 Models
Port Sizes: 1-1/2, 2**



- ◇ Inline mounting.
- ◇ Piston-type design.
- ◇ Self-relieving.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

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 pilot regulator.

Pilot Ports: 1/4 NPTF.

Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

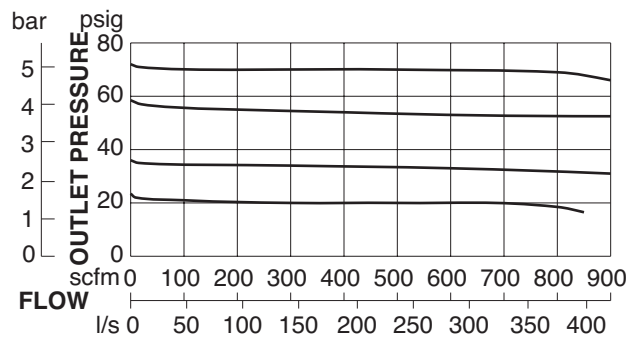
Seals: Nitrile; optional Viton seals.

Valve: Brass.

Valve Cap: Aluminum.

FLOW CHART

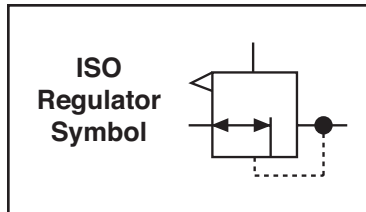
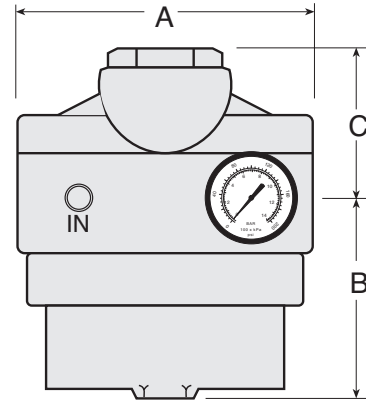
Inlet Pressure: 91 psig (6.3 bar)



DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
6.4 (162)	5.0 (127)	3.0 (76)	2.8 (71)	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 pilot operator such as R55-2, R56-2, or IR100-2 separately.

R200 - 12 Y G *

PORT SIZE

- 1-1/2 NPTF 12
- 2 NPTF 16
- 1-7/8-12 UNF SAE S24
- 2-1/2-12 UNF SAE S32

OPTIONS

- None Remove Y
- Non-relieving A
- Constant bleed Q
- Viton seals V

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

GAUGE: Gauge is standard.
Delete gauge Remove G

MOUNTING BRACKETS
See page 276.

SENTRY Acetal-Body Water Pressure Regulators

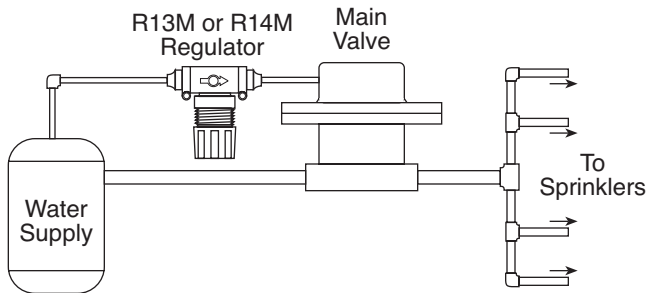
Also see brass-body water pressure regulators on pages 156-157.

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 BSPP threads.

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: Music wire.

Outlet Pressure: Adjustable up to 100 psig (7 bar); locking adjustment cap.

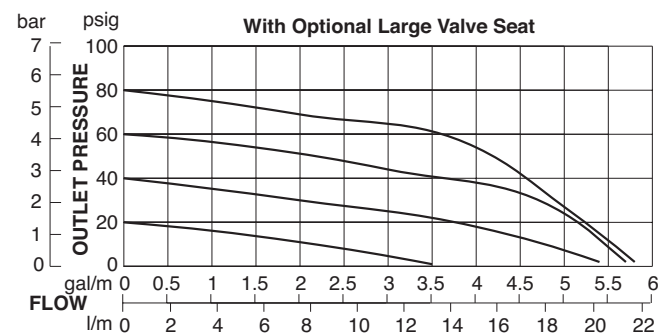
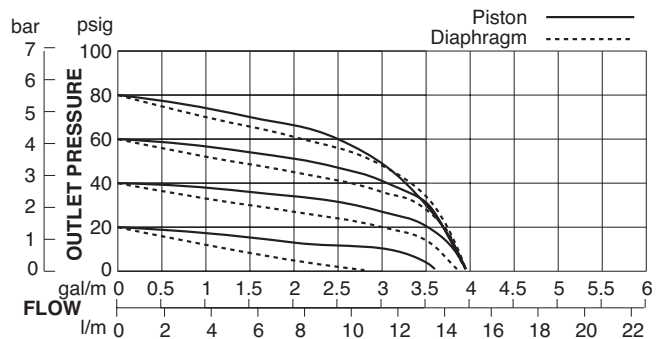
Panel Mounting: 1-3/16 inch (30 mm) hole required.

Pressure Gauge: Optional (0-160 psig).

Seals: Nitrile.

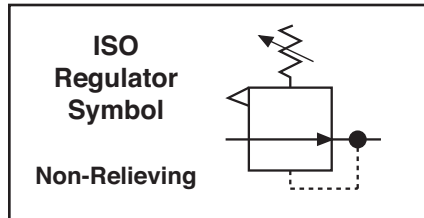
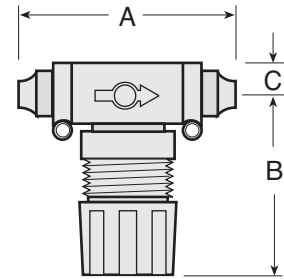
WATER FLOW CHARTS

Inlet Pressure: 100 psig (7 bar)



DIMENSIONS inches (mm)

Ports	A	B	C	Depth	Weight lb (kg)
1/8, 1/4	3.0 (76)	3.0 (76)	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 (66)	0.5 (13)	1.8 (45)	0.21 (0.09)
3/8	3.9 (99)	2.6 (66)	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 - 2 X A Y G *

REGULATOR TYPE

Piston type.....R13M
Diaphragm typeR14M

INLET PORT SIZE

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 Remove X
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

For BSPP port threads add W to the end of the model number if inlet and outlet ports are the same size..

GAUGE & PANEL MOUNTING NUT

No gauge or mtg nut..... Remove G
Gauge only (0-160 psig) G
Gauge plus plastic nut GP
Gauge plus hex plastic nut GPE
Plastic mounting nut only P
Hex mounting nut only PE

OPTIONS

None Remove Y
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 276.

MINIATURE Brass-Body Water Pressure Regulators

Also see acetal-body water pressure regulators on pages 154-155.



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: Acetal.

Fluid Media: Water

Inlet Pressure: 300 psig (21 bar) maximum.

Main Spring: Music wire.

Outlet Pressure: Adjustable up to 100 psig (7 bar).

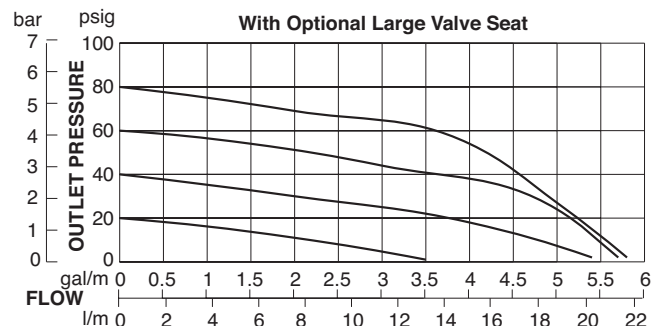
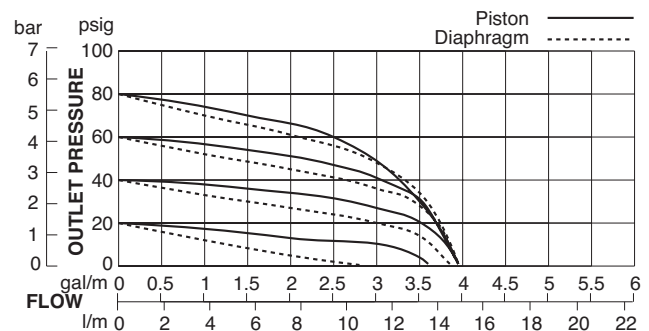
Pressure Gauge: 0 to 160 psig (10.3 bar); 1/8 NPT gauge ports front and rear.

Panel Mounting: 1-3/16 inch (30 mm) hole required.

Seals: Nitrile.

WATER FLOW CHARTS

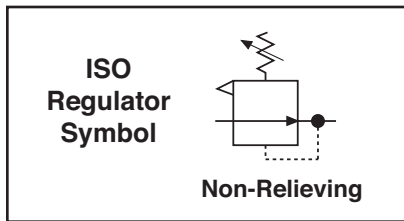
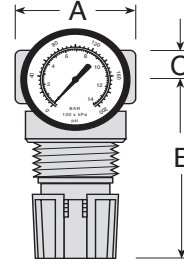
Inlet Pressure: 100 psig (7 bar)



DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	2.6 (65)	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 *

REGULATOR TYPE

Piston type..... R53MB
Diaphragm type..... R54MB

PORT SIZE

1/8 NPTF 1
1/4 NPTF 2

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

GAUGE & PANEL MOUNTING NUT

No gauge or mtg nut..... Remove G
Gauge only (0-160 psig) G
Gauge plus plastic nut..... GP
Gauge plus hex plastic nut..... GPE
Plastic mounting nut only P
Hex mounting nut only..... PE

OPTIONS

None..... Remove Y
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 276.

MINIATURE Relief Valves

RV56 Models Port Sizes: 1/8, 1/4



- ◇ 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: 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).

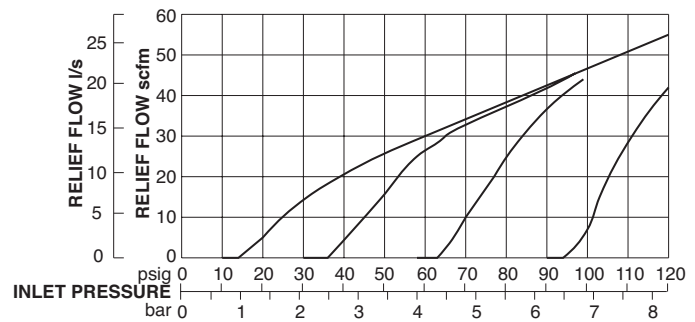
Minimum Relief Flow: 5 ml/minute.

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.

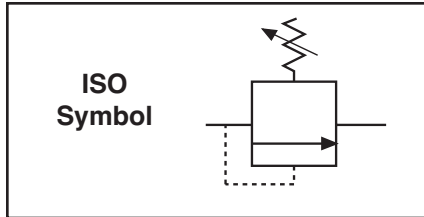
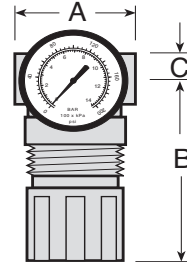
FLOW CHART



DIMENSIONS inches (mm)

A	B	C	Depth †	Weight † lb (kg)
1.6 (41)	2.6 (65)	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 *

PORT SIZE

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

OPTIONS

- None Remove Y
- Springs: (0-100 psig standard)

For optimum performance operating pressure should fall approximately in the middle of the spring range.

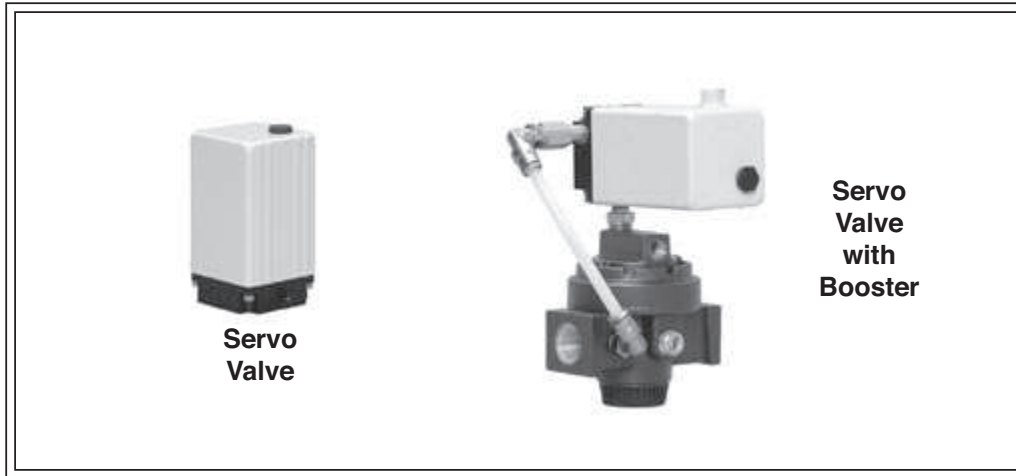
- 0-125 psig (0-8.6 bar)..... H
- 0-50 psig (0-3.4 bar)..... L
- 0-15 psig (0-1.0 bar)..... L15
- 0-30 psig (0-2.1 bar)..... L30

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

- GAUGE & PANEL MOUNTING NUT**
- Delete gauge Remove G
- Gauge plus mounting nut GP
- Mounting nut..... P

MOUNTING BRACKETS

See page 276.



SPECIFICATIONS

Accuracy: $< \pm 0.2\%$ 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: 4.75 k . Current: 100 .

Command Signal Voltage/Current:

0 – 10 VDC/4 – 20 ma.

C_v Rating: 0.04.

Electrical Connector: 6-pin Brad Harrison.

Fluid Media: Compressed air.

Housing: Aluminum; black anodized finish.

Input Pressure: Servo-valve With Regulator

29.9 in Hg to 300 psig (760 mm Hg to 21 bar).

Linearity/Hysteresis: $< \pm 0.15\%$ F.S. BFSL.

Minimum Closed End Volume: 1 in³.

Manifold: Brass.

Output Pressure: 0 to 100% of input pressure.

Repeatability: $< \pm 0.02\%$ F.S.

Seals: Fluorocarbon.

Supply Voltage/Current:

15 – 24 VDC/250 ma (required).

Transducer: Silicon, aluminum.

Valves: Nickel-plated brass.

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 $\pm 0.2\%$ F.S.
- ◇ 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.

Note: High-pressure servo-valve (≥ 150 psi) - inlet and exhaust ports reversed from picture shown.

ORDERING INFORMATION for SERVO-VALVE ONLY

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

ER-1 A 1 A 100

- CONNECTOR**
6-Pin Brad Harrison A
- COMMAND INPUT**
0-10 VDC 1
4-20 ma 2
- MONITOR SIGNAL**
0-10 VDC A
4-20 ma - sinking B
4-20 ma - sourcing C

- MAXIMUM CALIBRATED PRESSURE RANGE**
- | | |
|---------------------------|-----|
| 0-30 psig | 030 |
| 0-50 psig | 050 |
| 0-100 psig | 100 |
| 0-200 psig | 200 |
| 0-300 psig | 300 |
| 0-20 in Hg (vacuum) | V20 |
- Consult Master Pneumatic for any other pressure ranges.

Brass Inlet Filter...37 - 288 (recommended when purchasing servo-valve only)

NOTE: Cable must be ordered separately. See choices below.

ORDERING INFORMATION for SERVO-VALVE with VOLUME BOOSTER

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

B 1 2 A-ER-1 A 1 A 100

- REGULATOR**
PRH100 (1/4 to 3/4 ports) 1
PRH180M (3/4 to 1-1/2 ports) ... 2
- INLET/OUTLET PORTS**
- | | |
|------------------------------------|---|
| 1/4 NPTF (PRH100 only) | 2 |
| 3/8 NPTF (PRH100 only) | 3 |
| 1/2 NPTF (PRH100 only) | 4 |
| 3/4 NPTF (PRH100 & PRH180M) | 6 |
| 1 NPTF (PRH180M only) | 8 |
| 1-1/4 NPTF (PRH180M only) | J |
| 1-1/2 NPTF (PRH180M only) | K |
| 1/4 BSPP (PRH100 only) | B |
| 3/8 BSPP (PRH100 only) | C |
| 1/2 BSPP (PRH100 only) | D |
| 3/4 BSPP (PRH100 & PRH 180M) | E |
| 1 BSPP (PRH180M only) | F |
| 1-1/4 BSPP (PRH180M only) | G |
| 1-1/2 BSPP (PRH180M only) | H |

- MAXIMUM CALIBRATED PRESSURE RANGE**
- | | |
|------------------|-----|
| 0-30 psig | 030 |
| 0-50 psig | 050 |
| 0-100 psig | 100 |
- Consult Master Pneumatic for any other pressure ranges.
- MONITOR SIGNAL**
0-10 VDC A
4-20 ma B
- COMMAND INPUT**
0-10 VDC 1
4-20 ma 2
- PRESSURE GAUGE**
No gauge A
200-BDD gauge (0-200 psig) B |

Electronic gauge: Consult Master Pneumatic for information.

NOTE: Cable must be ordered separately. See choices below.

MOUNTING BRACKETS

Order mounting brackets separately.

Bracket for servo valve only: Part **ER-BRK-1**

Brackets for servo valve with volume booster:
See Regulator Mounting Brackets on page 276.

CABLES

Cable Length	Part Number
6 feet (1.8 m)	ER-CBL-6
12 feet (3.7 m)	ER-CBL-12
25 feet (7.5 m)	ER-CBL-25

Pressure REGULATORS

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 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. SAE threads are also available on GUARDSMAN, SERIES 380, and Full-Size VANGUARD models.

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	
SENTRY							
CFR10M, 11M models †	yes	X	X				164-165
MINIATURE							
CFR55M, 56M models	no	X	X				166-167
GUARDSMAN							
CFR60 models	yes		X	X	X		168-169
GUARDSMAN II							
BCFR70 models	yes		X	X	X		170-171
Full-Size VANGUARD							
CFR100 models	yes		X	X	X	X	172-173
Full-Size SERIES 380							
CFDR380 models	yes			X	X	X	174-175

† 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.

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.



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.



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.



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.



Integral
FILTER/REGULATORS

SENTRY Modular Integral Filter/Regulators



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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (10.3 bar); 1/8 NPT gauge ports front and rear.

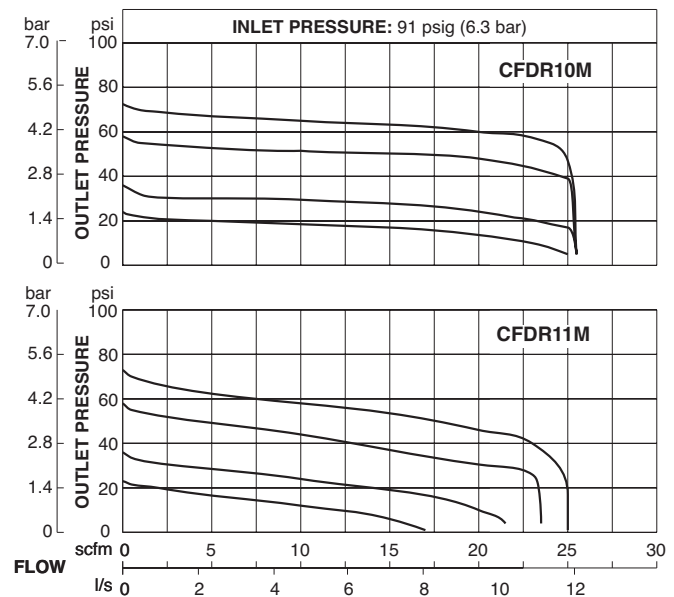
Panel Mounting: 1-3/16 inch (30 mm) hole required.

Seals: Nitrile.

CFDR10M, CFDR11M Models Port Sizes: 1/8, 1/4; Tube Fittings

- ◇ 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- μ 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.

FLOW CHARTS

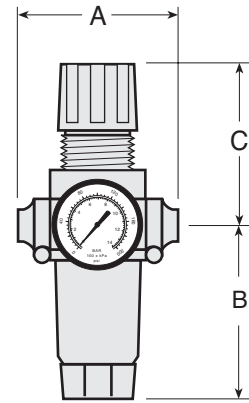


DIMENSIONS inches (mm)

Ports	A	B *	C	Depth †	Weight †
					lb (kg)
No Port	1.7 (43)	3.6 (92)	2.6 (67)	1.8 (45)	0.31 (0.15)
1/8, 1/4	3.0 (76)	3.6 (92)	2.6 (67)	1.8 (45)	0.53 (0.24)

Models below have quick-connect fittings for tubing.

1/4	3.4 (86)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)
3/8	3.9 (99)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)
4 mm	3.4 (86)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)
6 mm	3.4 (86)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)
8 mm	3.1 (79)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)
10 mm	3.9 (99)	3.6 (92)	2.6 (67)	1.8 (45)	0.51 (0.23)

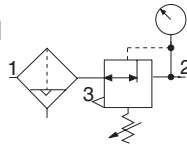


* Dimension with plastic filter bowl; with metal bowl is 3.8 (97).

† Less gauge.

ISO Filter/Regulator Symbol

Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ 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 - 2 X Y G *

BOWL TYPE
Plastic bowl Remove B
Metal bowl B

FILTER DRAIN
Internal automatic drain FD
Manual drain F

REGULATOR TYPE
Piston type R10M
Diaphragm type R11M

INLET PORT SIZE
None 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 Remove X
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

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

GAUGE & PANEL MOUNTING NUT
With 0-160 psig gauge Remove G
Delete gauge NG
Gauge plus plastic nut P
Gauge plus metal nut PN
Plastic nut only NGP
Metal nut only NGPN

OPTIONS
None Remove Y
Non-relieving A
Sintered bronze filter element:
5- μ m rating E5
20- μ m rating E4
40- μ 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(*)
Viton seals V

*Insert maximum limited pressure.

MOUNTING BRACKETS
See page 276.

Integral
FILTER/REGULATORS

MINIATURE Integral Filter/Regulators



CFDR55M, CFDR56M Models Port Sizes: 1/8, 1/4

- ◇ Filter and regulator consolidated in a single assembly.
- ◇ Inline mounting.
- ◇ 5- μ 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: Acetal.

Filter Drain:

Internal automatic drain; optional manual drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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.

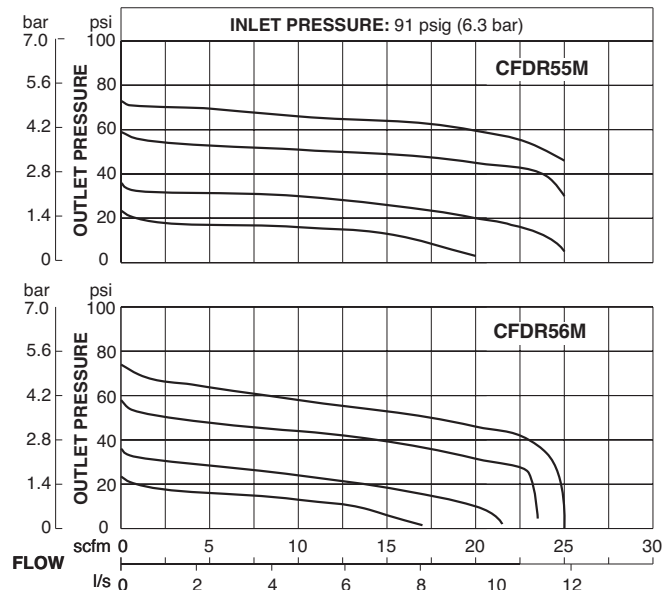
Outlet Pressure: Adjustable up to 100 psig (7 bar).

Pressure Gauge: 0 to 160 psig (10.3 bar); 1/8 NPT gauge ports front and rear.

Panel Mounting: 1-3/16 inch (30 mm) hole required.

Seals: Nitrile.

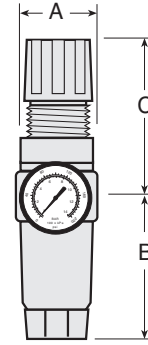
FLOW CHARTS



DIMENSIONS inches (mm)

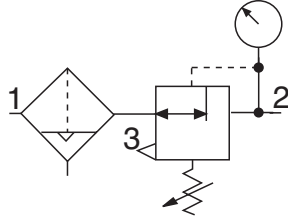
Bowl	Ports	A	B	C	Depth †	Weight † lb (kg)
Plastic	1/8, 1/4	1.6 (41)	3.6 (92)	2.6 (65)	1.6 (41)	0.53 (0.24)
Metal	1/8, 1/4	1.6 (41)	3.8 (97)	2.6 (65)	1.6 (41)	0.53 (0.24)

† Less gauge.



ISO Filter/Regulator Symbol

Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ 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 R55M - 2 Y G *

BOWL TYPE

Plastic bowl Remove B
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

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

GAUGE & PANEL MOUNTING NUT

With 0-160 psig gauge Remove G
Delete gauge NG
Gauge plus plastic nut P
Gauge plus metal nut PN
Plastic nut only NGP
Metal nut only NGPN

OPTIONS

None Remove Y
Non-relieving A
Small valve seat (provides lower flow, greater precision) C
Metal dome (threaded) D
Sintered bronze filter element:
5- μ m rating E5
20- μ m rating E4
40- μ 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(*)
No gauge ports NP
Viton seals V

*Insert maximum limited pressure.

MOUNTING BRACKETS
See page 276.

GUARDSMAN Modular Integral Filter/Regulators

CFDR60 Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Filter and regulator consolidated in a single assembly.
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 SAE or 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.

Dome and Knob: Acetal.

Filter Drain:

Internal automatic drain; optional manual drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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.

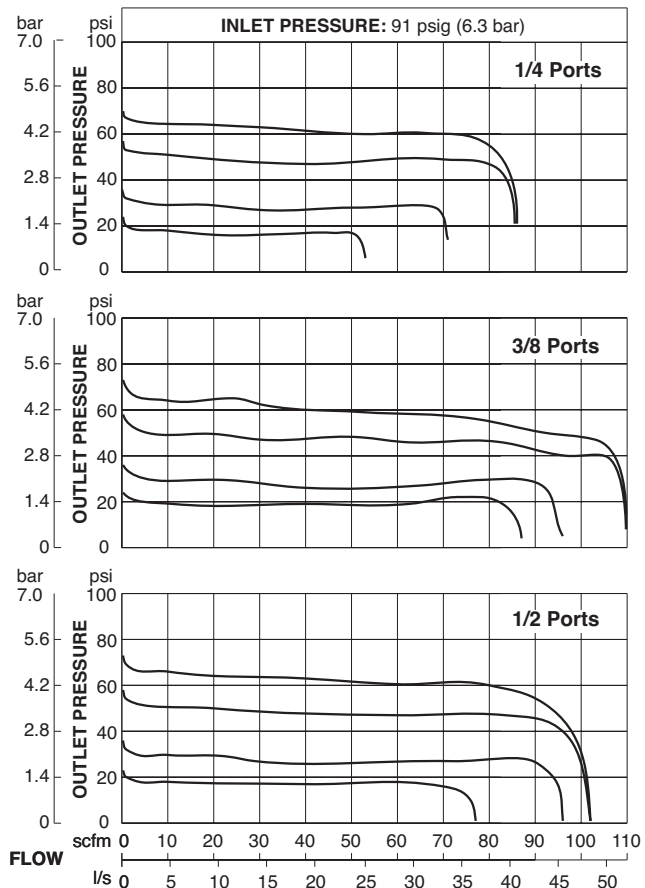
Outlet Pressure: Adjustable up to 100 psig (7 bar).

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

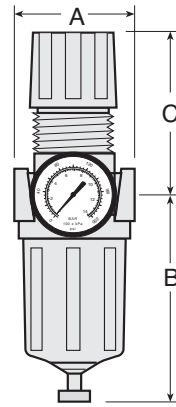
FLOW CHARTS



DIMENSIONS inches (mm)

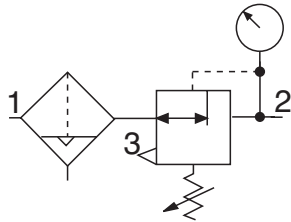
Bowl	A	B *	C **	Depth †	Weight † lb (kg)
Plastic	2.7 (67)	4.6 (116)	3.3 (83)	2.4 (60)	1.44 (0.65)
Metal	2.7 (67)	4.9 (123)	3.3 (83)	2.4 (60)	1.50 (0.68)

† Less gauge.



ISO Filter/Regulator Symbol

Automatic Drain
Self-relieving

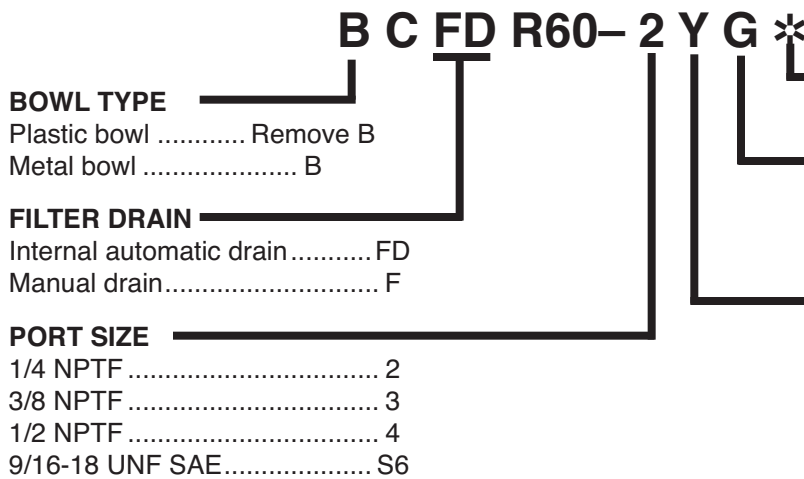


REPLACEMENT FILTER ELEMENT KITS

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

ORDERING INFORMATION

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



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

GAUGE & PANEL MOUNTING NUT

- With 0-200 psig gauge Remove G
- Delete gauge NG
- Gauge plus mounting nut P

OPTIONS

- None Remove Y
- Non-relieving A
- Sintered bronze filter element:
 - 5- μ m rating E5
 - 20- μ m rating E4
 - 40- μ m rating E3
- Adjusting springs:
 - 0-150 psig (0-10 bar) H
 - 0-50 psig (0-3.4 bar) L

MOUNTING BRACKETS
See page 276.

Integral
FILTER/REGULATORS

GUARDSMAN II Modular Integral Filter/Regulators

BCFDR70 Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Filter and regulator consolidated in a single assembly.
- ◇ Modular or inline mounting.
- ◇ 5- μ 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.
- ◇ Self-relieving piston-type regulator; non-relieving optional.
- ◇ Pressure gauge; two gauge ports.
- ◇ NPTF port threads; optional SAE or 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. Optional 10-ounce (300-ml) extended bowl.

Dome and Knob: Acetal.

Filter Drain:

Internal automatic drain; optional manual drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m or 40- μ m sintered bronze.

Fluid Media: Compressed air.

Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.
200 psig (14 bar) maximum.

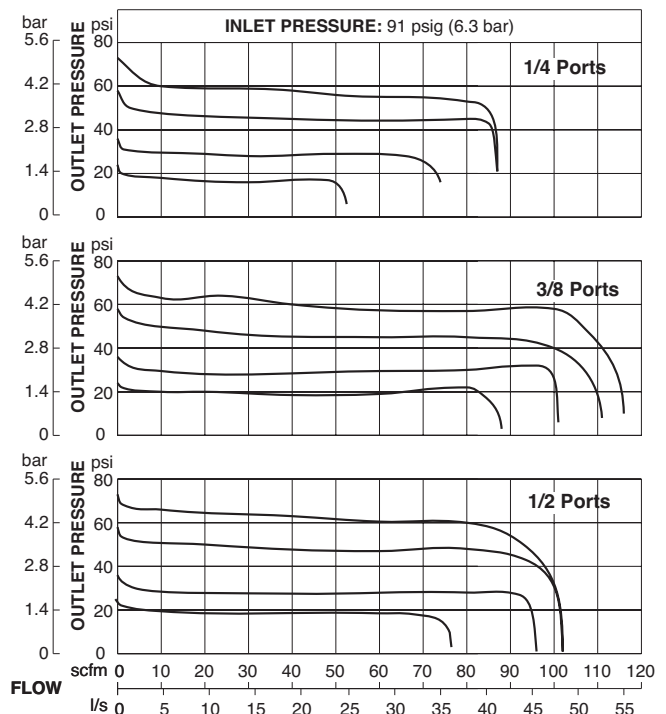
Outlet Pressure: Adjustable up to 100 psig (7 bar).

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.

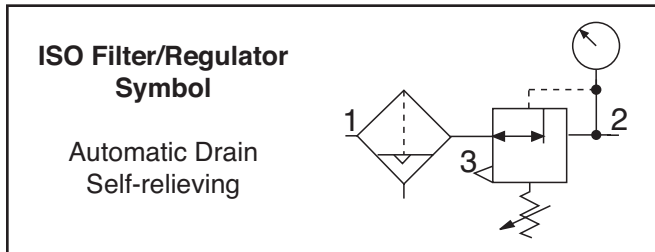
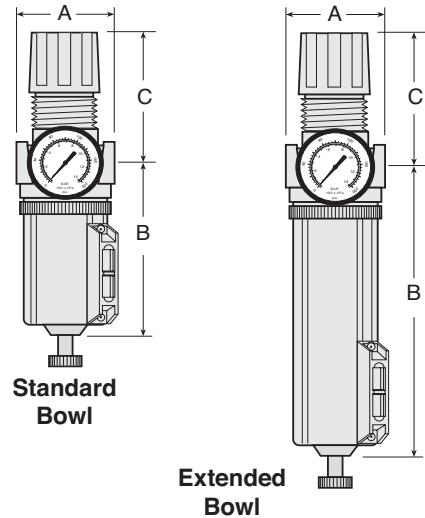
FLOW CHARTS



DIMENSIONS inches (mm)

Bowl	A	B	C	Depth †	Weight † lb (kg)
Standard	2.7 (67)	5.1 (129)	3.3 (83)	2.4 (60)	1.50 (0.68)
Extended	2.7 (67)	8.1 (206)	3.3 (83)	2.4 (60)	1.75 (0.80)

† Less gauge.



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA60F-03PE5
5- μ m bronze	KA60F-03E5
40- μ m 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 G *

FILTER DRAIN

- Internal automatic drain FD
- Manual drain F

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
- 9/16-18 UNF SAE S6

GAUGE

- With 0-200 psig gauge Remove G
- Delete gauge NG
- Panel mount nut P

OPTIONS

- None Remove Y
- Non-relieving A
- Sintered bronze filter element:
 - 5- μ m rating E5
 - 40- μ m rating E3
- Adjusting springs:
 - 0-150 p sig (0-10 bar) H
 - 0-50 psig (0-3.4 bar) L

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

MOUNTING BRACKETS
See page 276.

Integral
FILTER/REGULATORS

Full-Size VANGUARD Modular Integral Filter/Regulators

CFDR100 Models Port Sizes: 1/4, 3/8, 1/2, 3/4



- ◇ Filter and regulator consolidated in a single assembly.
- ◇ Modular assembly and mounting.
- ◇ 5- μ 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 or external Hydro-Jector drain.
- ◇ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◇ Pressure adjustment locking key.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or 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.

Filter Drain: Internal automatic drain; optional manual drain or external Hydro-Jector drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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.

Knob: Acetal.

Outlet Pressure: Adjustable up to 125 psig (8.6 bar).

Pressure Adjustment Locking Key: Removable.

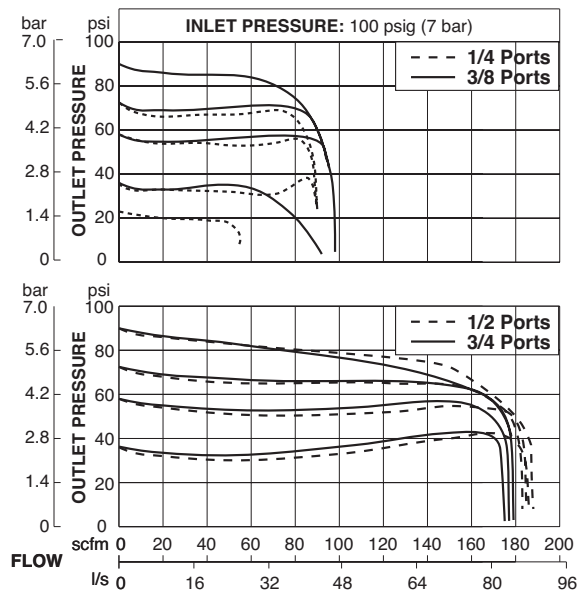
Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

Panel Mounting: 2-1/16 inch (52 mm) hole required.

Seals: Nitrile

FLOW CHARTS

Standard 5- μ m Element



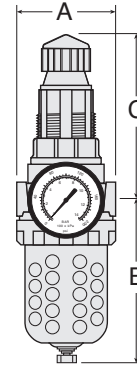
DIMENSIONS inches (mm)

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).

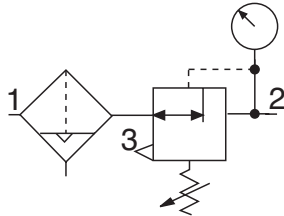
** Dome removal clearance: add 0.63 (16).

† Less gauge.



ISO Filter/Regulator Symbol

Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA103-3PE
5- μ m bronze	KA103-03 E5
20- μ m bronze	KA103-03E4
40- μ m 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 G *

BOWL TYPE

Plastic bowl Remove B

Metal bowl B

FILTER DRAIN

Internal automatic drain FD

Manual drain F

External Hydro-Jector drain FE

PORT SIZE

1/4 NPTF 2

3/8 NPTF 3

1/2 NPTF 4

3/4 NPTF 6

9/16-18 UNF SAE S6

3/4-16 UNF SAE S8

7/8-14 UNF SAE S10

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

GAUGE & PANEL MOUNTING NUT

With 0-200 psig gauge Remove G

Delete gauge NG

Panel mount nut P

OPTIONS

None Remove Y

Non-relieving A

Sintered bronze filter element:

5- μ m rating E5

20- μ m rating E4

40- μ m 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

Remove adjusting key JJ

Limit maximum psig setting

Above 50 psig (3.4 bar) M(*)

Below 50 psig (3.4 bar) ML(*)

Tee handle T

MOUNTING BRACKETS
See page 276.

Integral FILTER/REGULATORS

*Insert maximum limited pressure.

Full-Size SERIES 380 Modular Integral Filter/Regulators

CFDR380 Models Port Sizes: 3/8, 1/2, 3/4



- ◇ Filter (FD380) and regulator (R380) consolidated into a single space-saving assembly.
- ◇ Modular or inline mounting.
- ◇ 5- μ m-rated polyethylene filter element; optional 40- μ m element.
- ◇ Polycarbonate plastic bowl with steel shatter-guard; optional metal bowl with sight glass.
- ◇ Internal automatic drain; optional manual drain and other drain types.
- ◇ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◇ Pressure adjustment locking key; tamper-resistant pressure setting.
- ◇ Pressure gauge included; two gauge ports.
- ◇ NPTF port threads; optional SAE or 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 other drain types.

Cap Color: Black.

Filter Element: 5- μ m-rated polyethylene; optional 40- μ m element.

Fluid Media: Compressed air.

Inlet Pressure:

15 psig (1 bar) minimum with automatic 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.

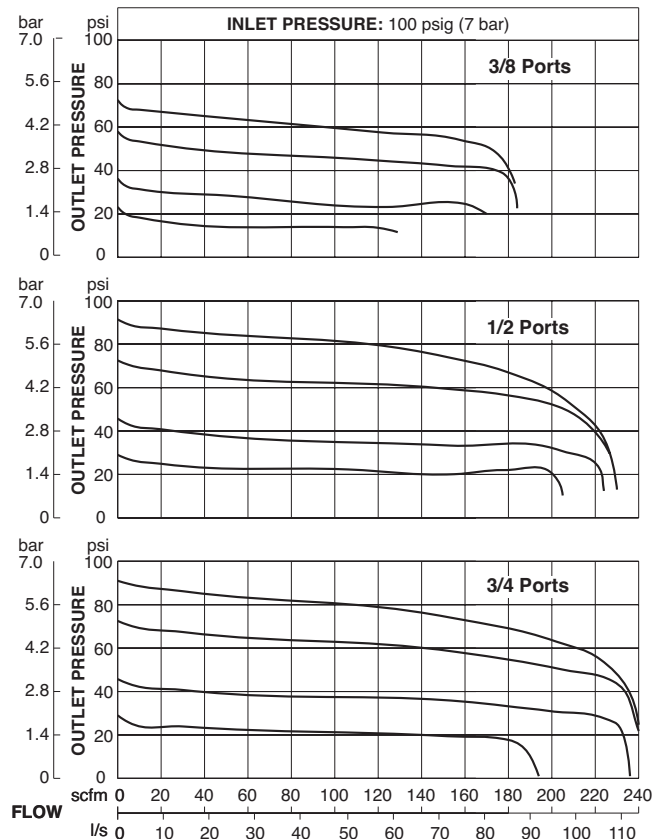
Pressure Gauge: 0 to 200 psig (14 bar); 1/4 NPT gauge ports front and rear.

Panel Mounting: 2.05-inch (52.1-mm) hole required.

Seals: Nitrile.

Valve: Brass.

FLOW CHARTS



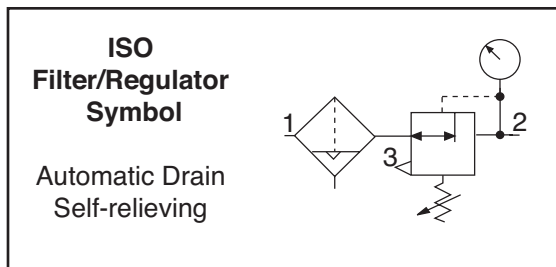
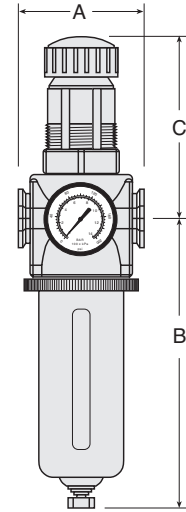
DIMENSIONS inches (mm)

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.

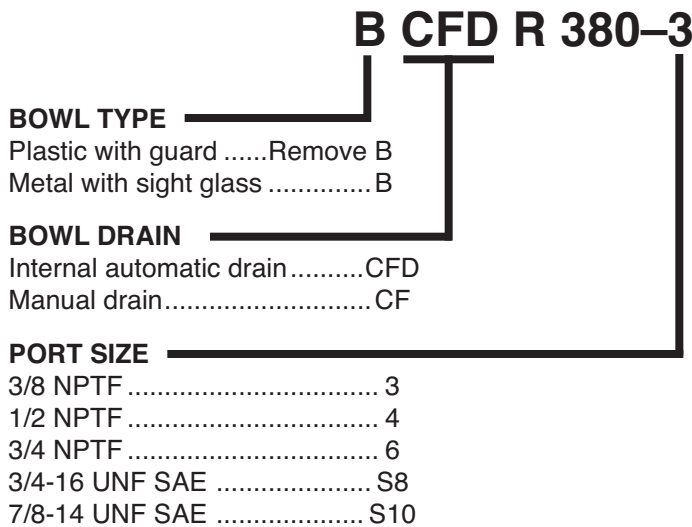


REPLACEMENT FILTER ELEMENT KITS

Element Rating	Kit Number
5- μ m (Std element)	A115-106PE5
40- μ m	A115-106PE3

ORDERING INFORMATION

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



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

GAUGE & PANEL MOUNTING NUT
Delete gauge Remove G
Panel mounting nut only P
Gauge plus mounting nut GP

OPTIONS
None Remove Y
Non-relieving A
40- μ m-rated filter element E3
Adjusting spring
0-175 psig (0-12 bar) H
Remove adjusting key JJ
Adjusting spring
0-50 psig (0-3.4 bar) L
Limit maximum psi setting
More than 50 psi M(*)
Less than 50 psi ML(*)
Tee handle T

*Insert maximum limited pressure.

MOUNTING BRACKETS
See page 276.

**Integral
FILTER/REGULATORS**

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 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.

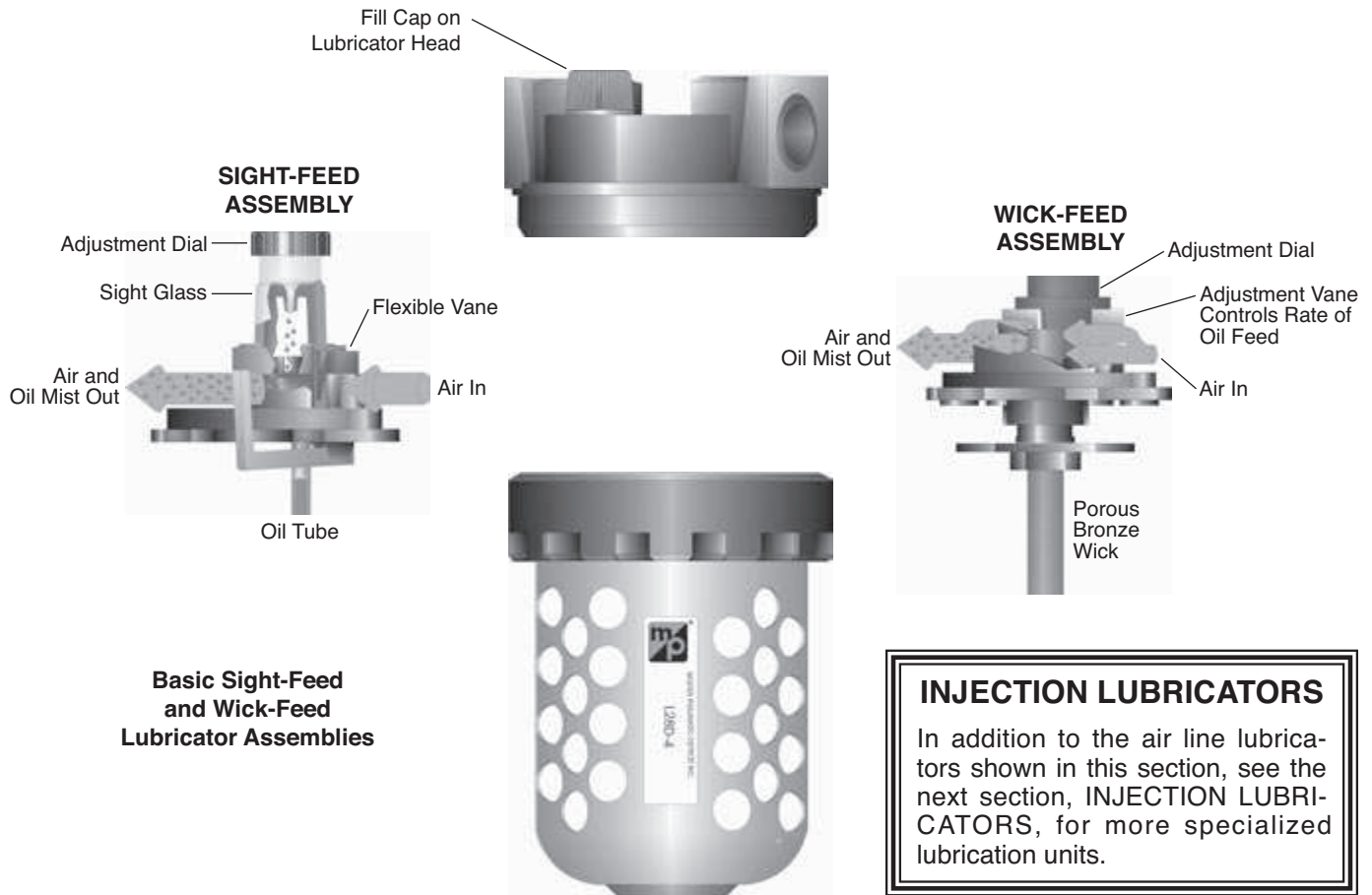
MINIATURE and High-Capacity VANGUARD lubricators are inline mounted only.

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
SENTRY †											
Wick-Feed L10 models	yes	X	X								178-179
MINIATURE											
Wick-Feed L50, L50Y models	no	X	X								180-181
GUARDSMAN											
Sight-Feed L60D models	yes		X	X	X						182-183
GUARDSMAN II											
Sight-Feed BL70D models	yes		X	X	X						184-185
Full-Size VANGUARD											
Sight-Feed L28D models	yes		X	X	X	X					186-187
Wick-Feed L28W models	yes		X	X	X	X					188-189
Full-Size SERIES 380											
Sight-Feed L380D models	yes			X	X	X					190-191
High-Capacity VANGUARD											
Sight-Feed L29D models	no					X	X	X	X		192-193
Wick-Feed L100 models	no					X	X				194-195
Sight-Feed BL237 models	no					X	X	X	X		196-197

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



Basic Sight-Feed and Wick-Feed Lubricator Assemblies

INJECTION LUBRICATORS
 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-CAPACITY 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.

Air Line LUBRICATORS

SENTRY Modular Lubricators

L10 Models Port Sizes: 1/8, 1/4; Tube Fittings



- ◇ 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.

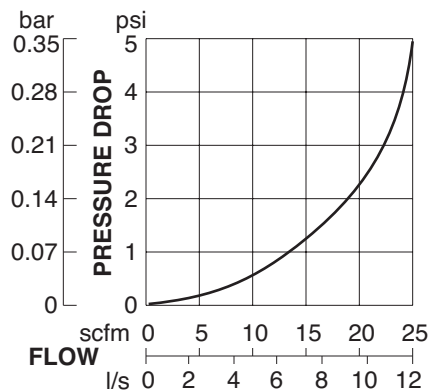
Inlet Pressure: 150 psig (10 bar) maximum.

Oil Adjustment: External, no shutoff.

Seals: Nitrile.

FLOW CHART

Inlet Pressure: 100 psig (7 bar)



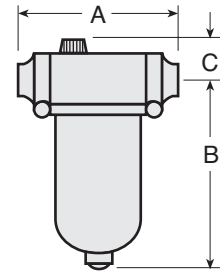
Minimum Flow: 1 scfm (0.47 l/s)

DIMENSIONS inches (mm)

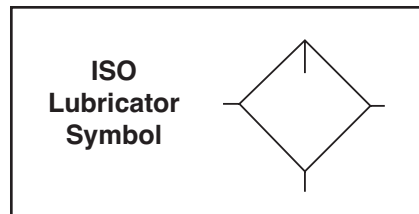
Ports	A	B †	C	Depth	Weight lb (kg)
No Port	1.7 (43)	3.6 (91)	0.9 (22)	1.8 (45)	0.17 (0.08)
1/8, 1/4	3.0 (76)	3.6 (91)	0.9 (22)	1.8 (45)	0.37 (0.17)

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 - 2 X Y *

BOWL TYPE

Plastic..... L10
Metal..... BL10

INLET PORT SIZE

None..... 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

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

OPTIONS

None..... Remove Y
Quick-fill Q-cap..... Q

OUTLET PORT SIZE

Same as inlet port..... Remove X

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 Lubricators

L50, L50Y Models Port Sizes: 1/8, 1/4



- ◇ 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:

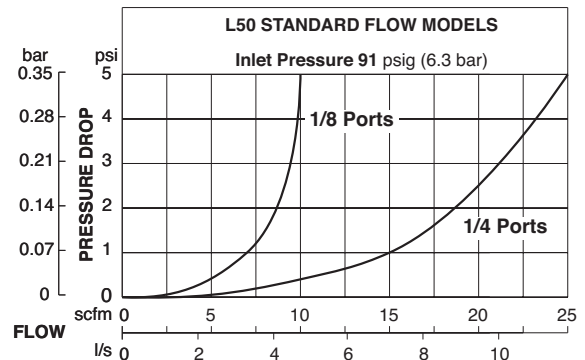
Plastic bowl: 150 psig (10 bar) maximum.

Metal bowl: 200 psig (14 bar) maximum.

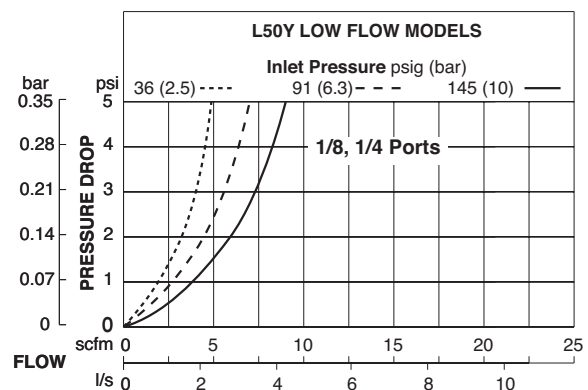
Oil Adjustment: Internal, tamper-proof.

Seals: Nitrile.

FLOW CHARTS



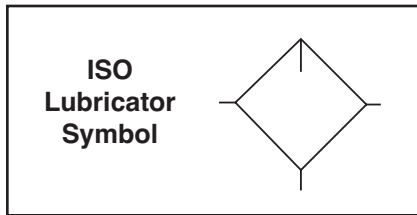
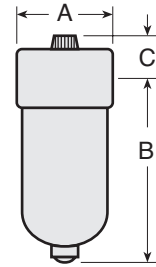
Minimum Flow: 1/8 port, 2 scfm (0.94 l/s)
1/4 port, 6 scfm (2.8 l/s)



Minimum Flow: 1 scfm (0.47 l/s)

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 *

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

OPTIONS

- None Remove X
- Quick-fill Q-cap Q

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

Air Line LUBRICATORS

GUARDSMAN Modular Lubricators

L60D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ 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 SAE or 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.

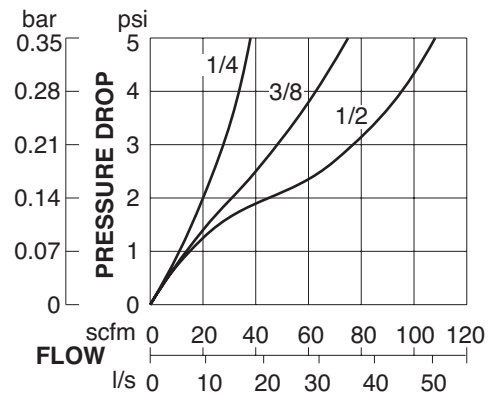
Oil Adjustment: External, tamper-resistant.

Sight Dome: Nylon.

Seals: Nitrile.

FLOW CHART

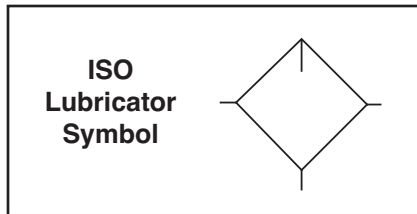
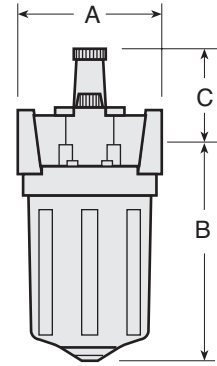
Inlet Pressure: 100 psig (7 bar)



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 *

BOWL TYPE

- Plastic..... L60D
- Metal..... BL60D

PORT SIZE

- 1/4 NPTF 2
- 3/8 NPTF 3
- 1/2 NPTF 4
- 9/16-18 UNF SAE..... S6

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

OPTIONS

- None Remove Y
- Quick-fill Q-cap Q

GUARDSMAN II Modular Lubricators

BL70D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ 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 SAE or 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.

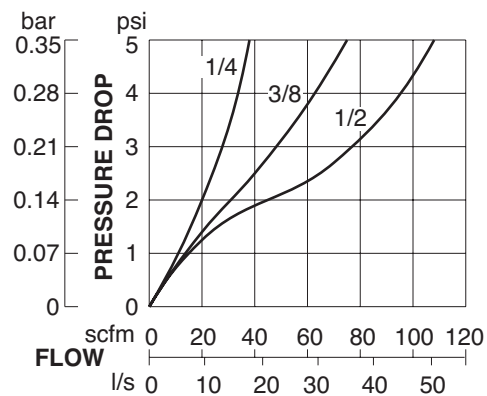
Oil Adjustment: External, tamper-resistant.

Seals: Nitrile.

Sight Dome: Nylon.

FLOW CHART

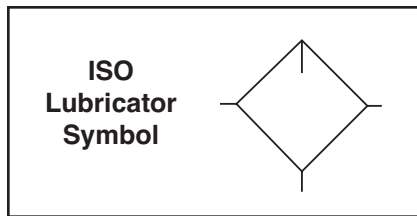
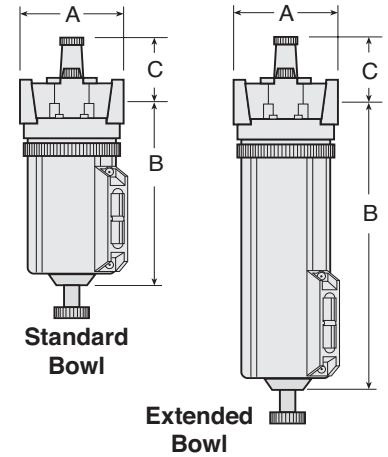
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 2 scfm (0.94 l/s)

DIMENSIONS inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Standard	2.7 (67)	5.1 (129)	1.8 (46)	2.4 (60)	1.25 (0.57)
Extended	2.7 (67)	8.2 (207)	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 *

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
 9/16-18 UNF SAE S6

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

OPTIONS

None Remove Y
 Quick-fill Q-cap Q

Full-Size VANGUARD Modular Lubricators

L28D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



- ◇ 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 SAE or 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.

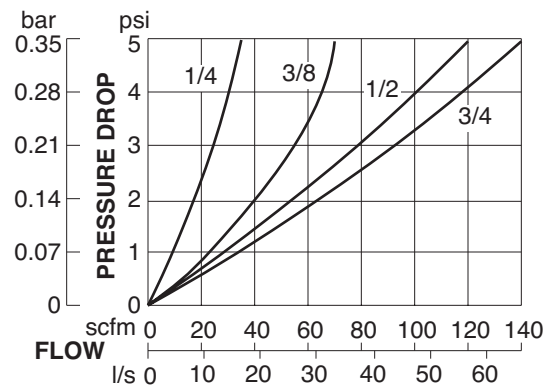
Oil Adjustment: External, tamper-resistant.

Seals: Nitrile.

Sight Dome: Nylon.

FLOW CHART

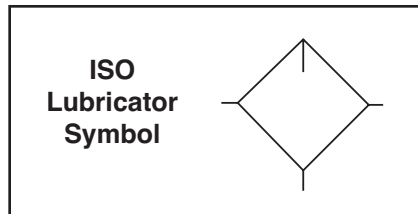
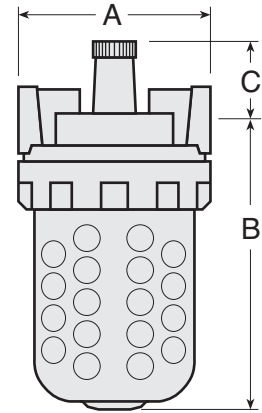
Inlet Pressure: 100 psig (7 bar)



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 *

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
- 9/16-18 UNF SAE S6
- 3/4-16 UNF SAE S8
- 7/8-14 UNF SAE S10

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

OPTIONS

- None Remove Y
- Quick-fill Q-cap Q

Full-Size VANGUARD Modular Lubricators

L28W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



- ◇ 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 SAE or 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.

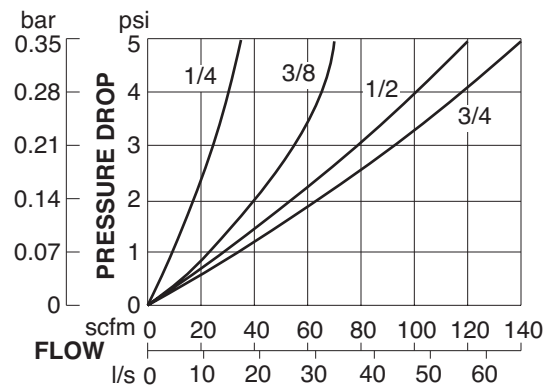
Metal bowl: 200 psig (14 bar) maximum.

Oil Adjustment: External.

Seals: Nitrile.

FLOW CHART

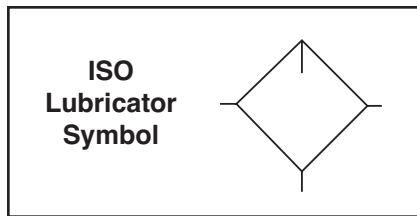
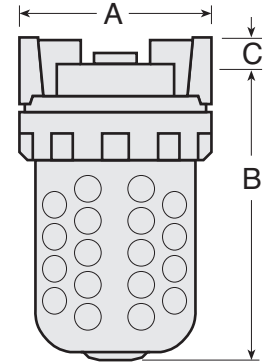
Inlet Pressure: 100 psig (7 bar)



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 *

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
- 9/16-18 UNF SAE S6
- 3/4-16 UNF SAE S8
- 7/8-14 UNF SAE S10

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

OPTIONS

- None Remove Y
- Quick-fill Q-cap Q

Full-Size SERIES 380 Modular Lubricators

L380D Models Port Sizes: 3/8, 1/2, 3/4



- ◇ 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 SAE or 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: 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: Accent grey. Yellow, red, and blue optional.

Fluid Media: Compressed air.

Inlet Pressure:

Plastic bowl: 150 psig (10 bar).

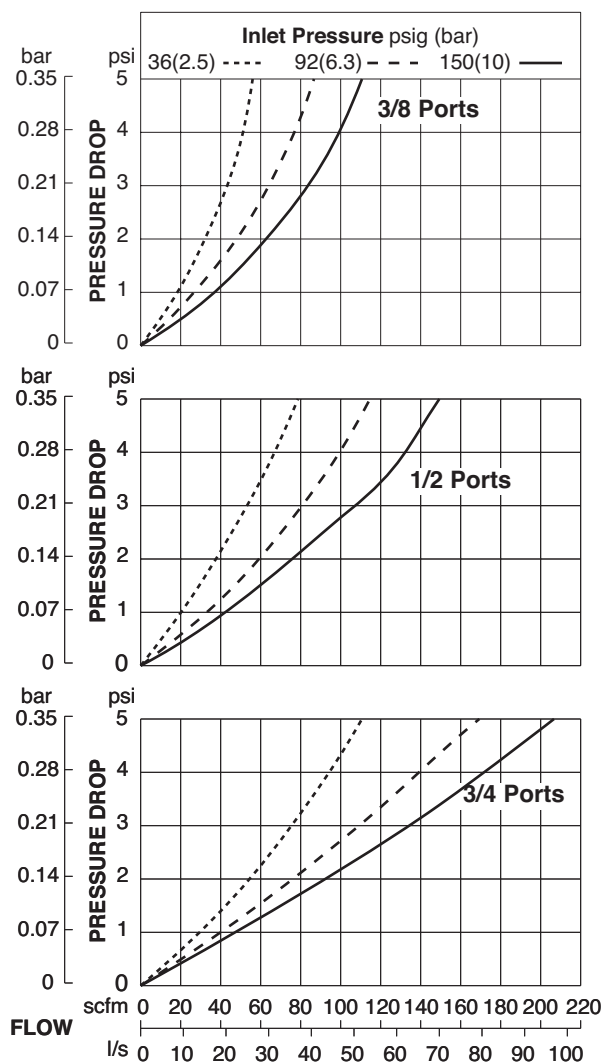
Metal bowl: 200 psig (14 bar).

Oil Adjustment: External; tamper resistant.

Seals: Nitrile.

Sight-Feed Dome: Nylon.

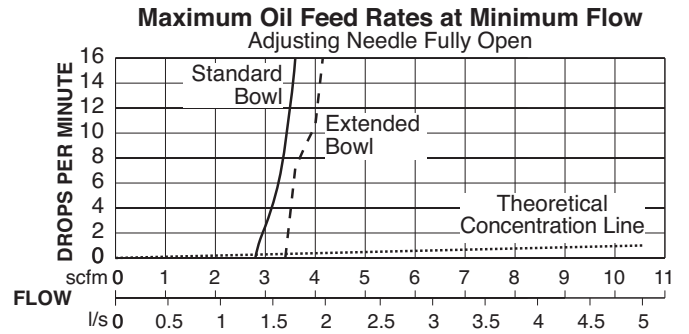
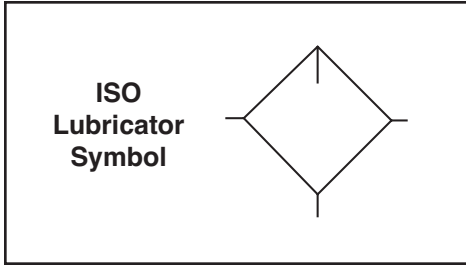
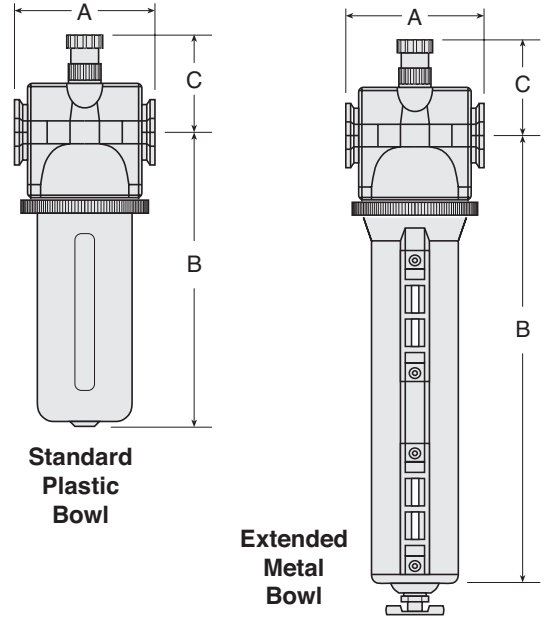
FLOW CHARTS



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

BOWL TYPE

- 9-Ounce plastic L380D
- 9-Ounce metal BL380D
- 15-Ounce metal BL380DH

PORT SIZE

- 3/8 NPTF 3
- 1/2 NPTF 4
- 3/4 NPTF 6
- 3/4-16 UNF SAE S8
- 7/8-14 UNF SAE S10

Y *

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

OPTIONS

- None Remove Y
- Cap color: Grey is standard.
- MP yellow C1
- Red C2
- Mid blue C3
- Quick-fill Q-cap Q

Air Line
LUBRICATORS

High-Capacity VANGUARD Lubricators

L29D Models Port Sizes: 3/4 to 1-1/2



- ◇ 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.
- ◇ NPTF port threads; optional SAE or 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.

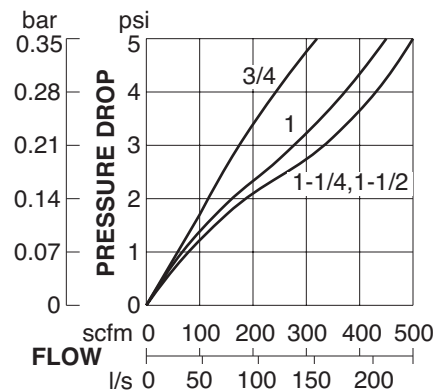
Oil Adjustment: External, tamper-resistant.

Seals: Nitrile.

Sight Dome: Nylon.

FLOW CHART

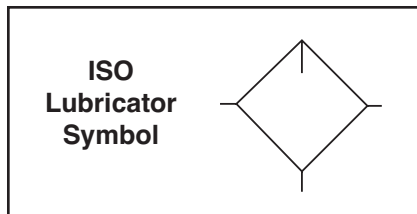
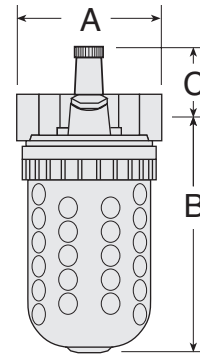
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 10 scfm (4.7 l/s)

DIMENSIONS inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Plastic	4.6 (118)	8.2 (208)	1.4 (37)	4.2 (106)	2.63 (1.21)
Metal	4.6 (118)	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 *

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
- 1-1/16-12 UNF SAE S12
- 1-5/16-12 UNF SAE S16
- 1-5/8-12 UNF SAE S20
- 1-7/8-12 UNF SAE S24

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

OPTIONS

- None Remove Y
- Quick-fill Q-cap Q

Air Line LUBRICATORS

High-Capacity VANGUARD Lubricators

L100 Models
Port Sizes: 3/4, 1



- ◇ 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 SAE or 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.

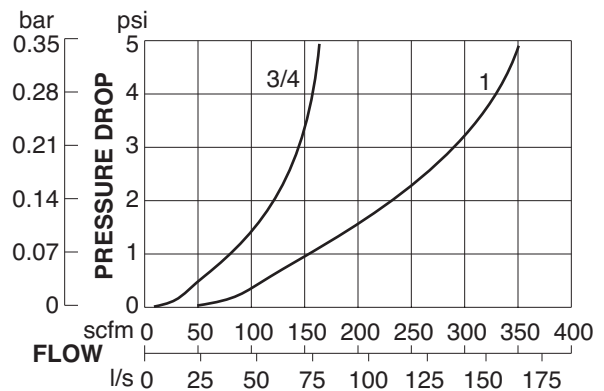
Oil Adjustment: Internal.

Seals: Nitrile.

Sight Dome: Nylon.

FLOW CHART

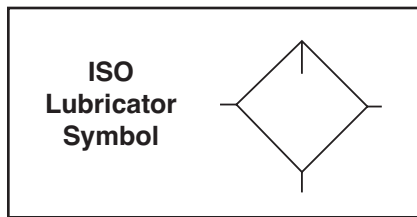
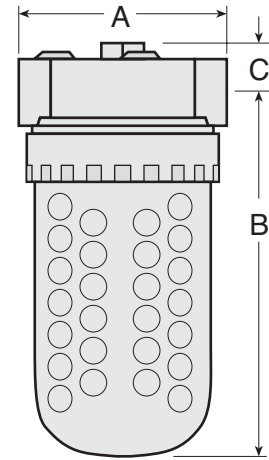
Inlet Pressure: 100 psig (7 bar)



Minimum Flow: 3/4 port, 25 scfm (12 l/s)
1 port, 35 scfm (16 l/s)

DIMENSIONS inches (mm)

Bowl	A	B	C	Depth	Weight lb (kg)
Plastic	4.3 (108)	7.7 (195)	0.8 (21)	4.3 (108)	2.88 (1.31)
Metal	4.3 (108)	8.2 (208)	0.8 (21)	4.3 (108)	3.00 (1.36)



ORDERING INFORMATION

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

L100 - 6 Y *

BOWL TYPE _____

Plastic L100

Metal BL100

PORT SIZE _____

3/4 NPTF 6

1 NPTF 8

1-1/16-12 UNF SAE S12

1-5/16-12 UNF SAE S16

OPTIONS

None Remove Y

Quick-fill Q-cap Q

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

**Air Line
LUBRICATORS**

High-Capacity VANGUARD Lubricators

BL237D Models Port Sizes: 3/4 to 1-1/2



- ◇ Inline mounting.
- ◇ Aluminum bowl with sight glass. Optional extended bowl.
- ◇ Sight-feed design.
- ◇ External adjusting knob; removable for tamper resistance.
- ◇ NPTF port threads; optional SAE or 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.

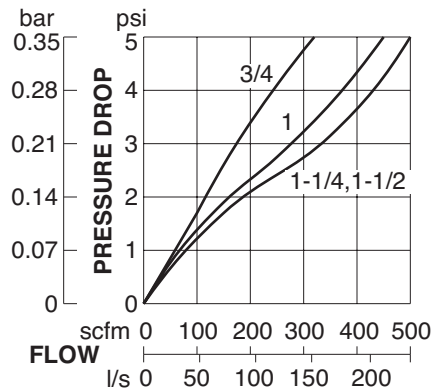
Inlet Pressure: 200 psig (14 bar) maximum.

Oil Adjustment: External, tamper-resistant.

Seals: Nitrile.

FLOW CHART

Inlet Pressure: 100 psig (7 bar)



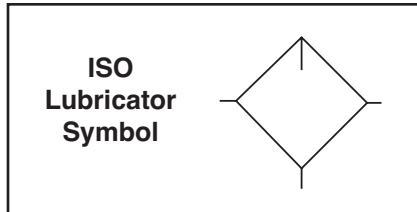
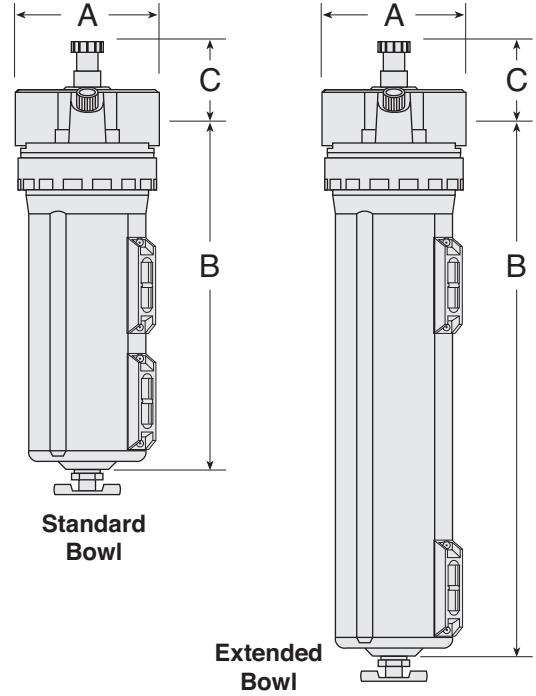
Minimum Flow: 35-Ounce bowl, 10 scfm (4.7 l/s)
62-Ounce bowl, 14 scfm (6.6 l/s)

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 *

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
- 1-1/16-12 UNF SAE S12
- 1-5/16-12 UNF SAE S16
- 1-5/8-12 UNF SAE S20
- 1-7/8-12 UNF SAE S24

OPTIONS

- None Remove Y
- Quick-fill Q-cap Q

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

Air Line LUBRICATORS

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

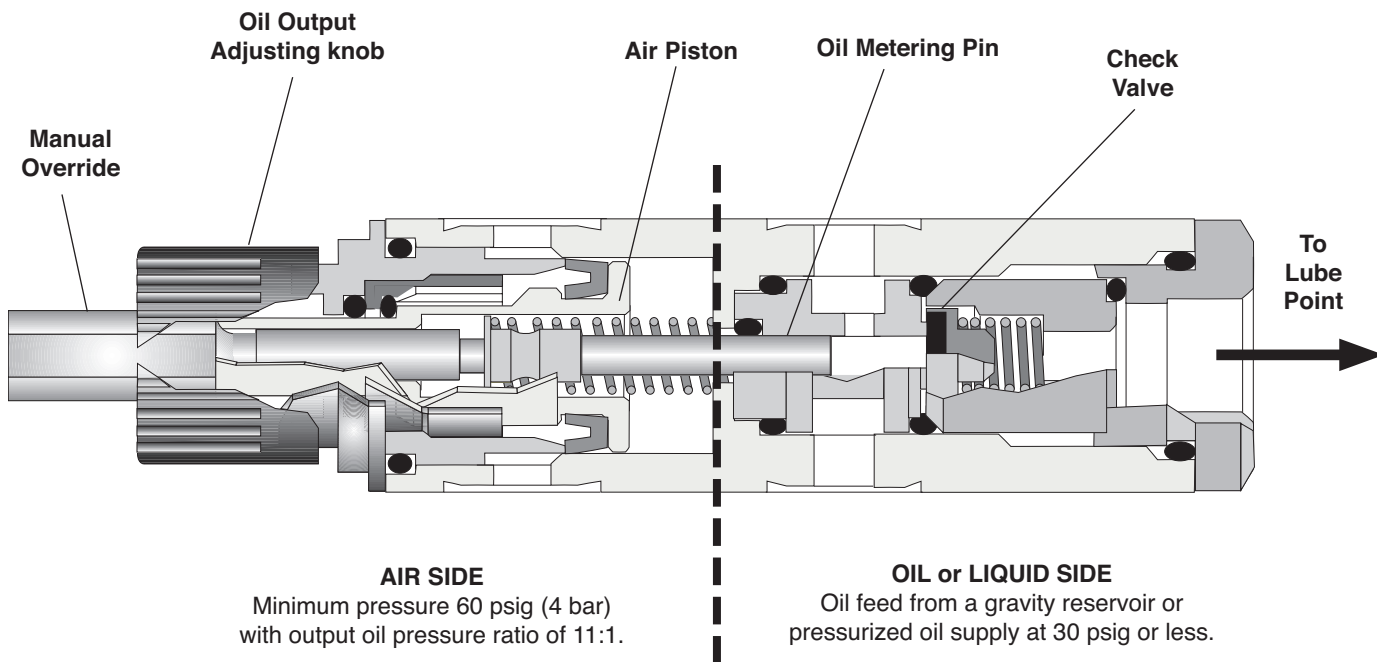
- ◇ **Actuated by air pulse (60 psig minimum).**
- ◇ **Choice of 3 output ratings: 1/2, 1 or 2 drops.**
- ◇ **Output adjustable in small increments.**
- ◇ **Positive displacement metering ensures precise oil delivery with each actuation.**
- ◇ **Modular assembly allows up to 10 Servo-Meters to be built 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.

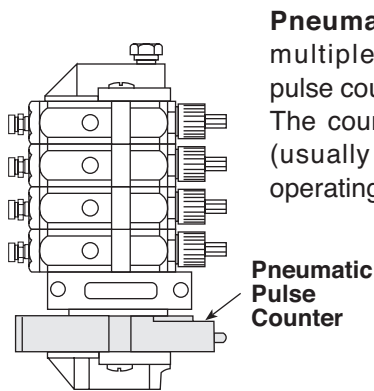
Although Servo-Meters are most commonly used to inject oil, they can also be used with other liquids. Before using them with other liquids, consult Master Pneumatic for advice on such applications.

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



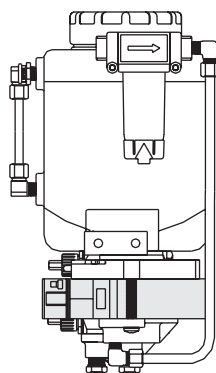
Pneumatic Pulse Counter. A multiple-point lubricator with pulse counter is shown at the left. The counter receives air pulses (usually from the output of an operating valve) and determines which of the pulses it will pass on to the Servo-Meter and so become an actuating signal. A ratcheting mechanism 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

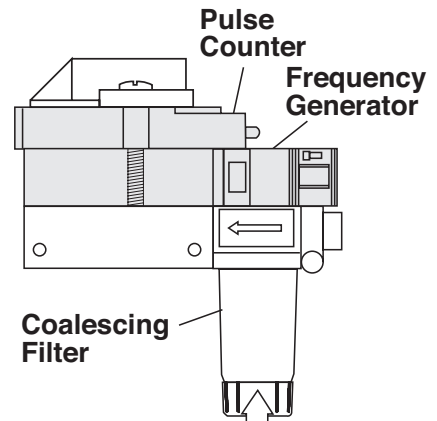
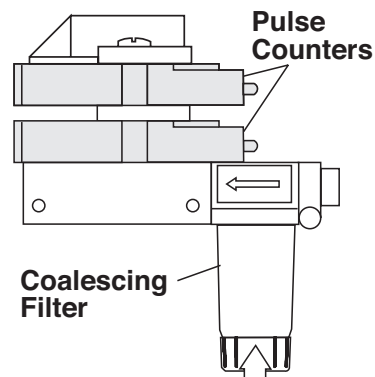
Series PC100 Controller. This is a stand-alone assembly of two pulse counters, and a coalescing filter to provide clean input air. A pulsed air input (usually from the output of an operating valve) is required. This controller can be used for a number of SERV-OIL units instead of having a counter in 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.

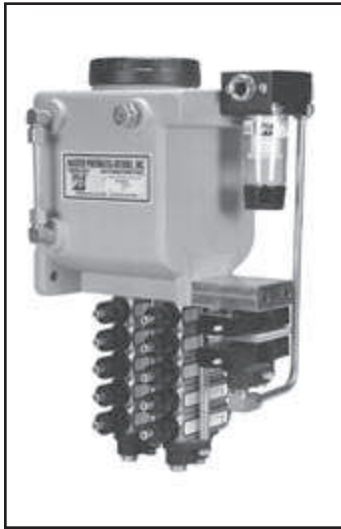
As explained above, the settings of the pulse counter and the frequency generator can produce actuating pulses in periods as long as five minutes.



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.



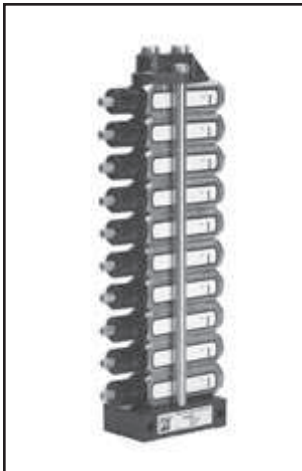
SINGLE-POINT DOWNSTREAM INJECTION LUBRICATOR

— 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.

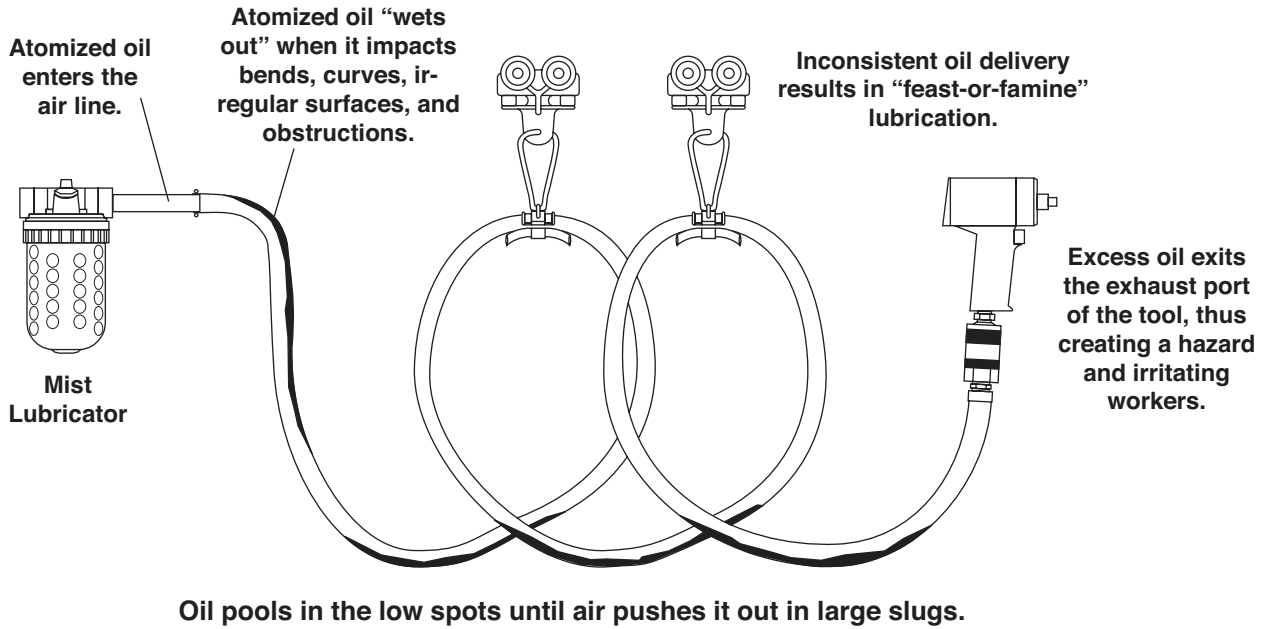


COMPLETE LUBRICATION SYSTEMS — All-in-one lubrication or coolant systems are engineered for many specialized requirements. See the descriptions of the SCORPION and VIPER systems at the end of this section.

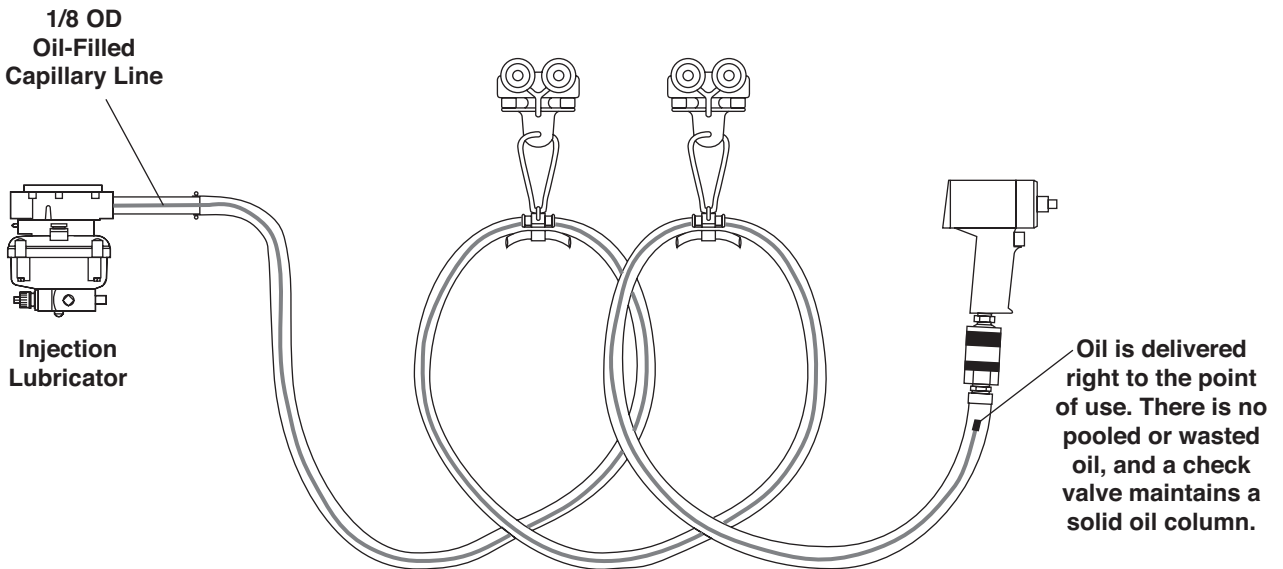
PNEUMATIC TOOL LUBRICATION

The Best Way to Do It!

CONVENTIONAL MIST LUBRICATION



INJECTION LUBRICATION



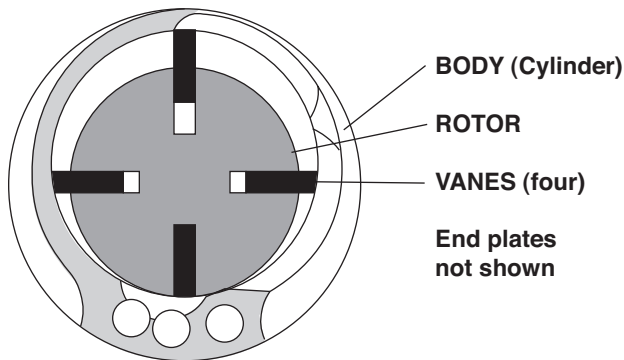
Consistent, Precision Lubrication Results in Consistent Torque and Tool Performance.

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.

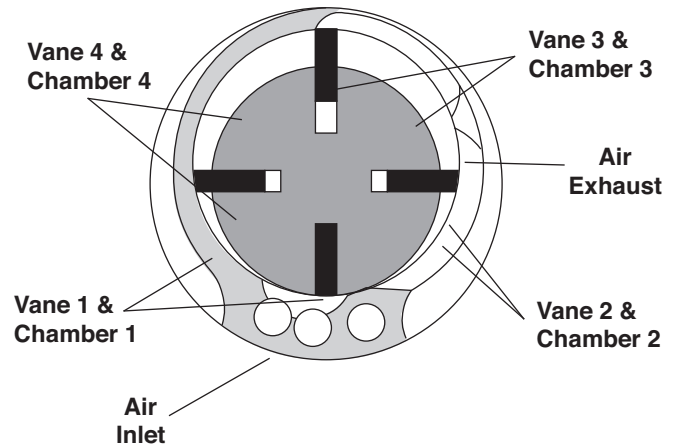


The motor body is usually of cast metal. Its inside diameter and is machined and polished to a high finish. The diameter and length of the body will determine the size and capacity of the motor. The rotor's diameter is about 85% of the inside diameter of the body, and has radial slots to accommodate 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.

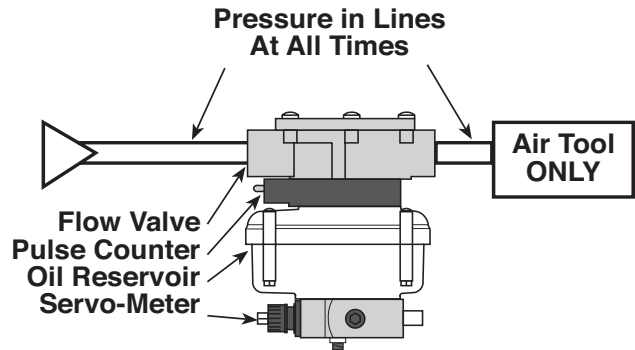
SERV-OIL Single-Point Injection Lubricators for Air Tools

Port Sizes: 1/2, 3/4



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 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 or outside the air line to within a short distance of the air tool.

SPECIFICATIONS

Air Flow: Maximum inlet pressure of 150 psig (10 bar) and a pressure drop of 3 psi (0.2 bar):

1/2 NPTF — 60 scfm (28 dm³/s)
3/4 NPTF — 90 scfm (43 dm³/s)

Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

Flow Valve: Zinc body.

Operating Pressure Range:

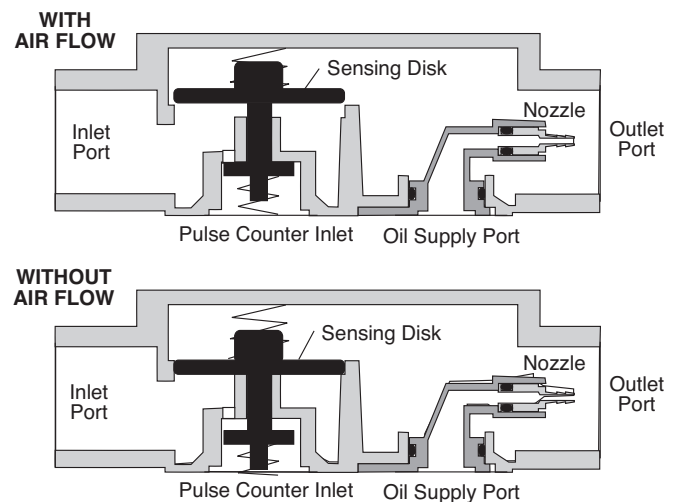
60-150 psig (4.1-10.3 bar)

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.



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.

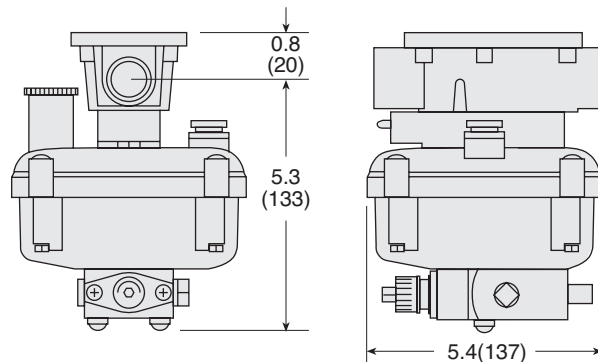
To actuate the Servo-Meter the signal received must have a pressure of at least 60 psig (4 bar). When actuated the Servo-Meter delivers a precise amount of oil to the nozzle in the outlet port of the flow valve, and is then carried by a nylon line to the air tool. A transparent sight indicator on one 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 increments of 1/50th of the maximum rating down to 1/10th of the maximum rating.

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)



To determine lubrication rates refer to page 289.

ORDERING INFORMATION

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

P A 6 4 0 4 1 Y *

OIL-FILLED TUBING

With 25 ft (8 m) of tubing ... Remove P
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

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

OPTIONS

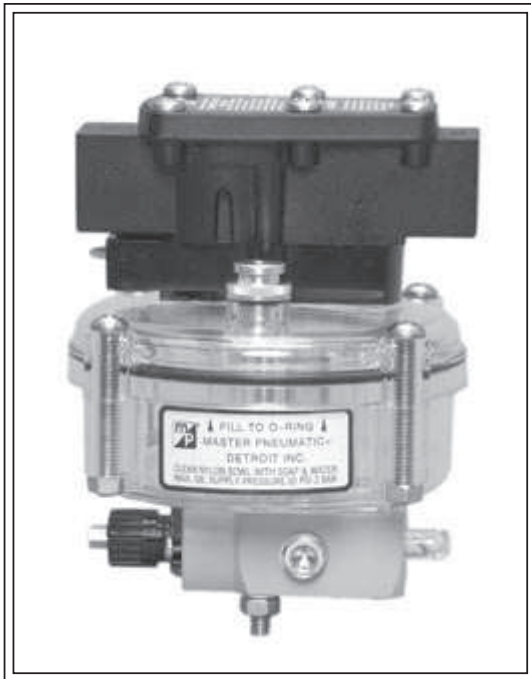
None Remove Y
Two pulse counters BB
Frequency controller..... F
M476R reservoir. Also specify 0
under RESERVOIR at left.... R

SERVO-METER RATING

One drop 1
Two drops..... 2
Half drop..... 5

SERV-OIL Downstream Injection Lubricators for Equipment *except* Air Tools

Port Sizes: 1/2, 3/4



SPECIFICATIONS

Air Flow: Maximum inlet pressure of 150 psig (10 bar) and a pressure drop of 3 psi (0.2 bar):

1/2 NPTF — 60 scfm (28 dm³/s)
 3/4 NPTF — 90 scfm (43 dm³/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.

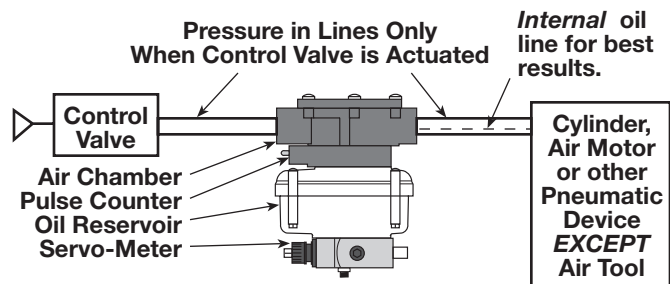
Tubing: Optional 25 feet (8 meters) of oil-filled tubing.

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.

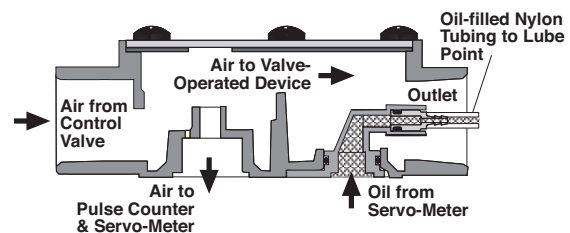
The downstream lubricator is not designed to work with air tools. For such applications see preceding pages .



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 can be installed at the end of the tubing to prevent air from entering the system.



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.

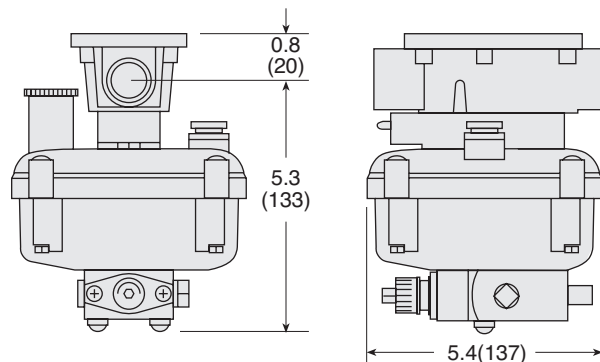
To actuate the Servo-Meter the signal received must have a pressure of at least 60 psig (4 bar). When actuated the Servo-Meter delivers a precise amount of oil to the nozzle in the outlet port of the flow valve, and thus on to the lubrication point. A transparent sight indicator on one end of the Servo-Meter 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 increments of 1/50th of the maximum rating down to 1/10th of the maximum rating.

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)



To determine lubrication rates refer to page 289.

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 *

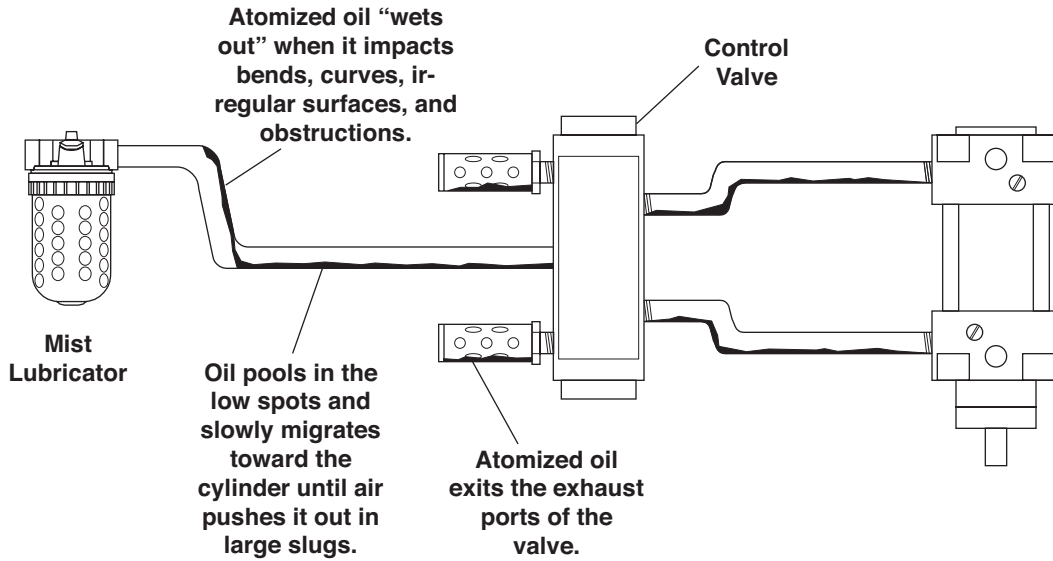
- OIL-FILLED TUBING** _____
 With 25 ft (8 m) of tubing ... Remove P
 Without tubing P
- RESERVOIR** _____
 With integral reservoir 4
 No integral reservoir. Also specify
 0 if ordering M476R reservoir
 under OPTIONS at right..... 0
- PORT SIZE** _____
 1/2 NPTF 4
 3/4 NPTF 6

- _____ **For BSPP port threads** add W to the end of the model number.
- _____ **OPTIONS**
 None Remove Y
 Two pulse counters BB
 Frequency controller..... F
 M476R reservoir. Also specify 0
 under RESERVOIR at left R
- _____ **SERVO-METER RATING**
 One drop 1
 Two drops..... 2
 Half drop..... 5

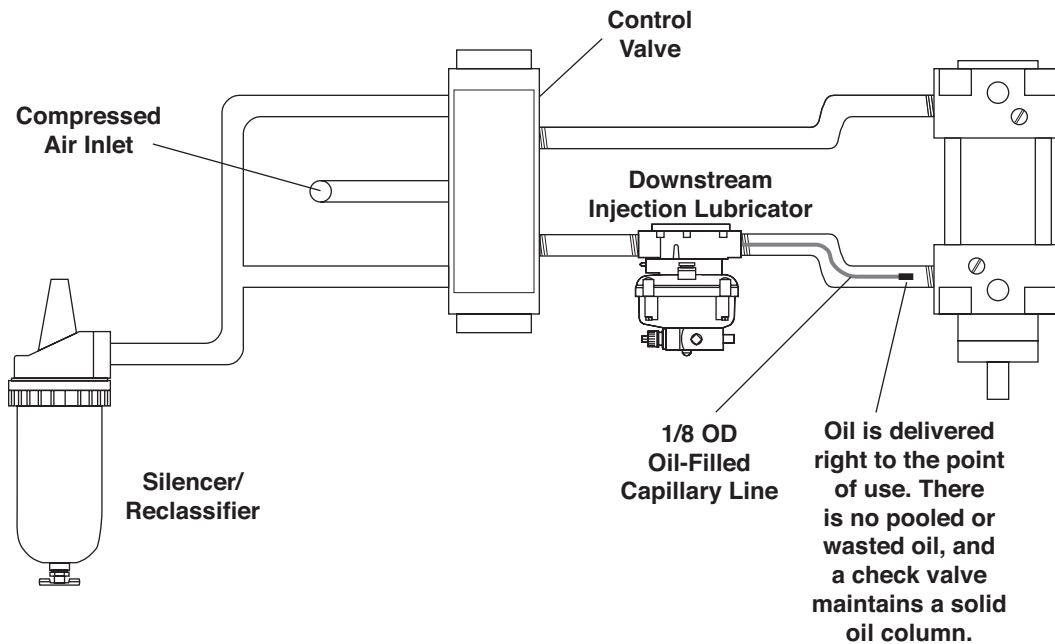
PNEUMATIC CYLINDER LUBRICATION

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- μm level, and this is much finer than is found in most air cylinder operations where only 40- μm 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.

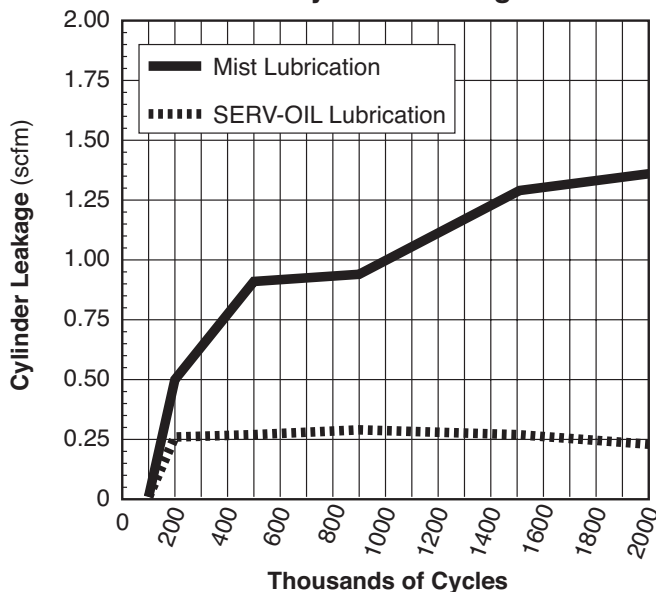
If the cylinders had been of conventional construction, and had air filtration been at the more common plant level (40- μm), cylinder wear could be expected to be much greater than that recorded in this test.

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.

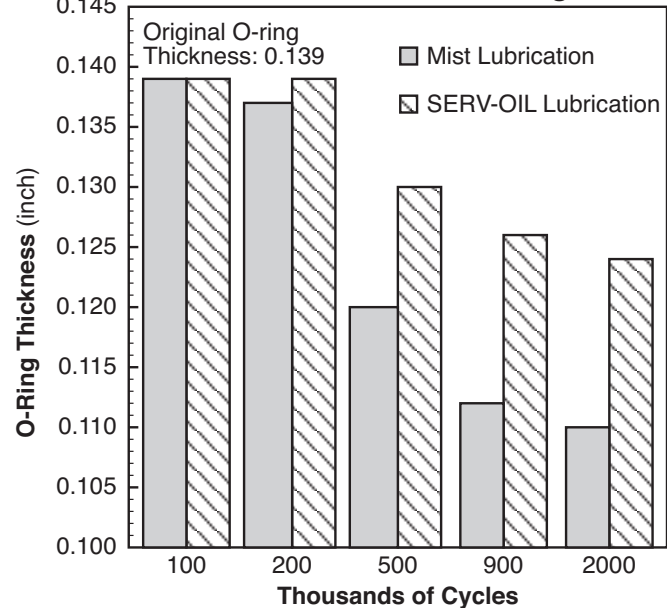
Wear in the cylinder during this test is exemplified by the O-ring wear shown in the graph below.

Effect of Lubrication on Cylinder Leakage



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.

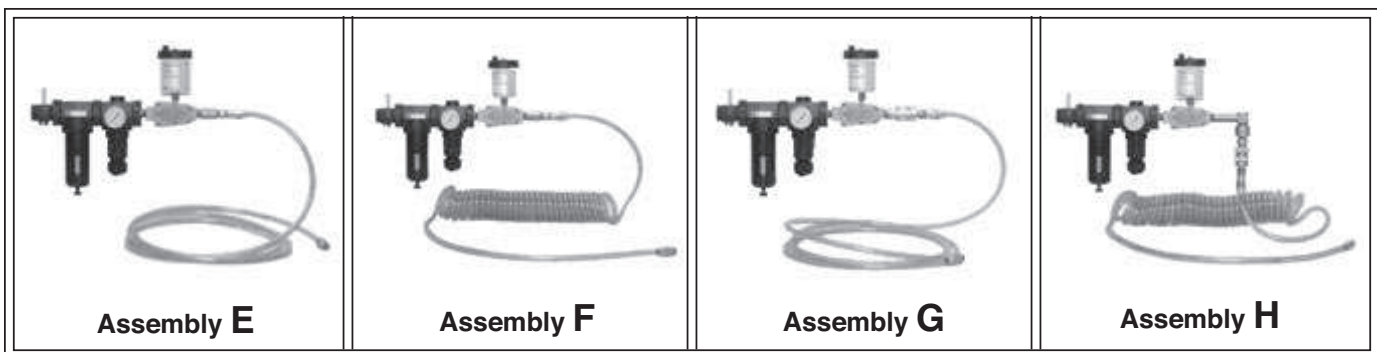
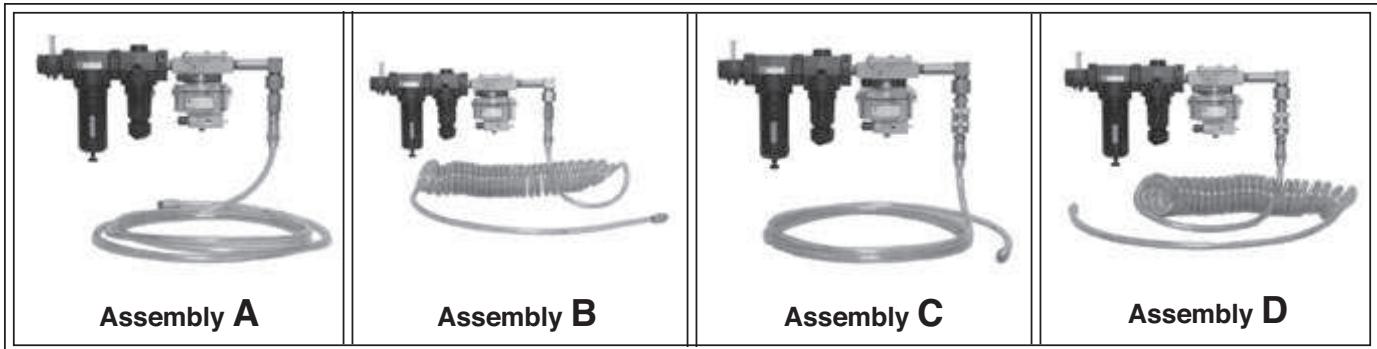
Effect of Lubrication on O-ring Wear



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.

FRL 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).

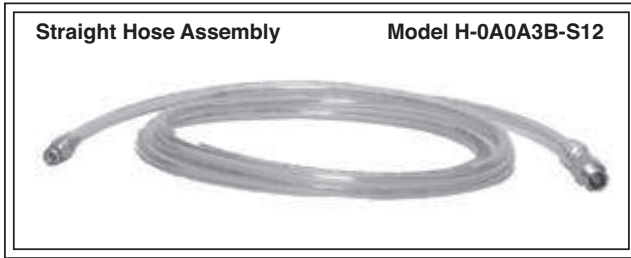
A variety of coaxial fittings and hose assemblies are available. Coaxial fittings allow the air and oil supplies to be connected simultaneously. Both quick connect/disconnect

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



Coiled Hose Assembly

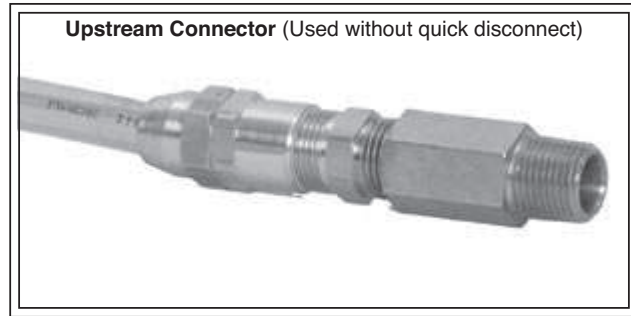
Model H-0A0A1B-C12

Upstream Connection
(From SPL)

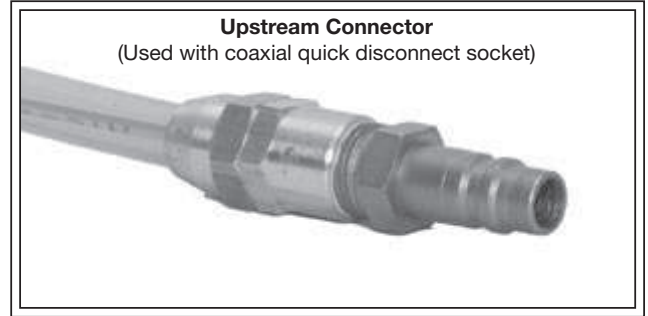
Downstream Connection
(To tool)

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 connection only)..... A
- 3/8 ID (1/2 and 3/4 upstream connections)..... B
- 1/2 ID (1/2 and 3/4 upstream connections)..... C

UPSTREAM CONNECTION

- 1/2 coaxial plug (Used with quick disconnect) 1
- 3/4 coaxial plug (Used with quick disconnect) 2
- 1/2 coaxial adaptor (1/2 male threaded end)..... 3
- 3/4 coaxial adaptor (3/4 male threaded end)..... 4
- 1/2 NPT male (non-coax - upstream barb installed in hose) 5
- 3/4 NPT male (non-coax - upstream barb installed in hose) 6

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
- 50 ft (15 m); if coiled, 36 ft (11 m) working length..... 50

HOSE TYPE

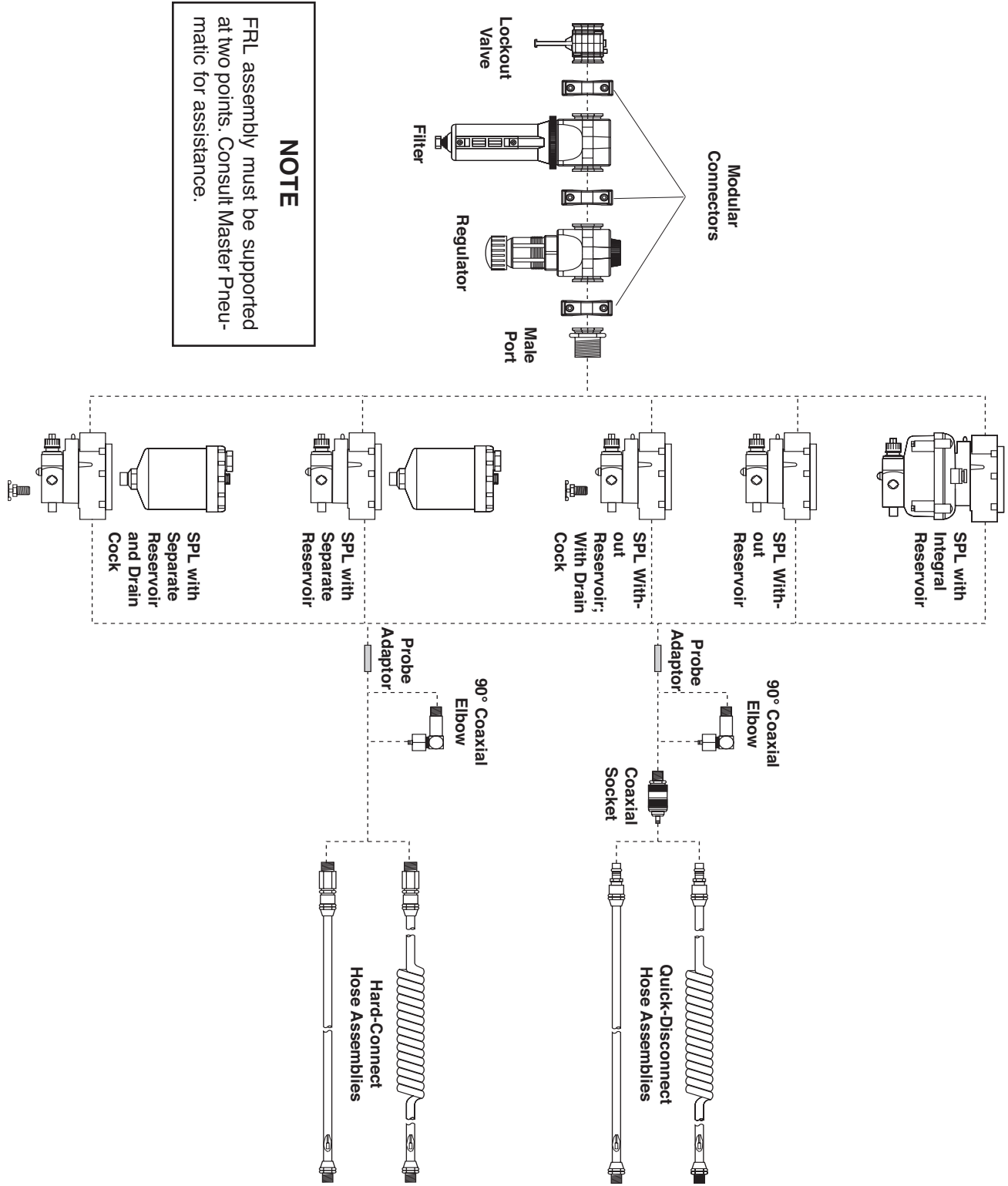
- Coiled (standard 18" upstream tail, 36" downstream tail)..... C
- For other tail lengths, consult factory*
- Straight..... S

DOWNSTREAM CONNECTION

- 3/8 male swivel (Used with 3/8 ID hose)..... B
- 1/4 male swivel (Used with 5/16 ID hose)..... C
- 1/2 male swivel (Used with 1/2 ID hose)..... D

FRL 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
 - PD640, 1-drop SM.....S
 - PD600, 1-drop SM.....T
 - PD600, 1-drop SM, M476R reservoir.....U
 - PD600, 1-drop SM, M476R reservoir, 1/4 drain cock.....V
 - PD600, 1-drop SM, 1/4 drain cock.....W
 - PD640, 2-drop SM.....X
 - PD600, 2-drop SM.....Y
 - PD600, 2-drop SM, M476R reservoir.....Z
 - PD600, 2-drop SM, M476R reservoir, 1/4 drain cock.....0
 - PD600, 2-drop SM, 1/4 drain cock.....1
 - PD640, 1/2-drop SM.....2
 - PD600, 1/2-drop SM.....3
 - PD600, 1/2-drop SM, M476R reservoir.....4
 - PD600, 1/2-drop SM, M476R reservoir, 1/4 drain cock.....5
 - PD600, 1/2-drop SM, 1/4 drain cock.....6
 - 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
- ELBOW**
- None.....A
 - 90° coaxial elbow.....B

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.

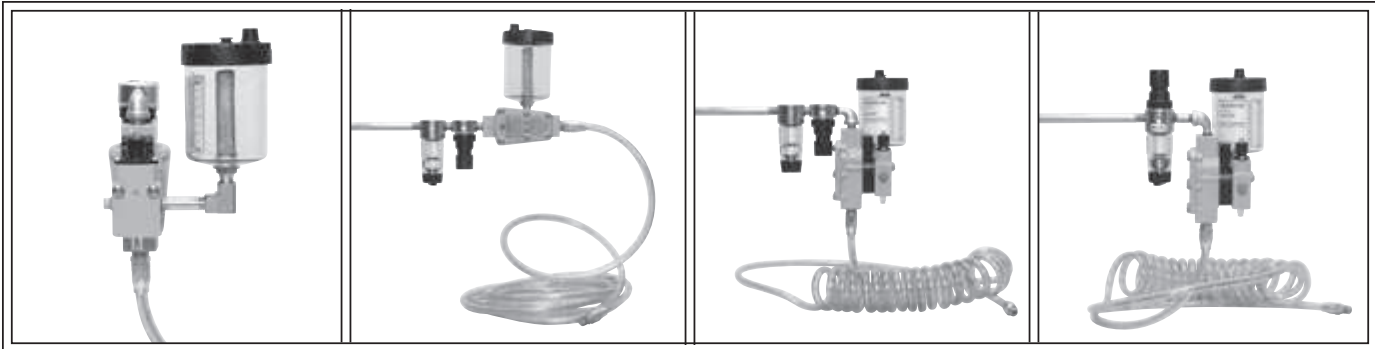
UPSTREAM CONNECTION

Direct connect coaxial male (not Q.D.).....	0
Direct connect coaxial Q.D. socket.....	1
Manual connect non-coaxial male (not Q.D.).....	2

(Elbow connection must be "A")

† 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



Assembly A

Assembly B

Assembly C

Assembly D

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.

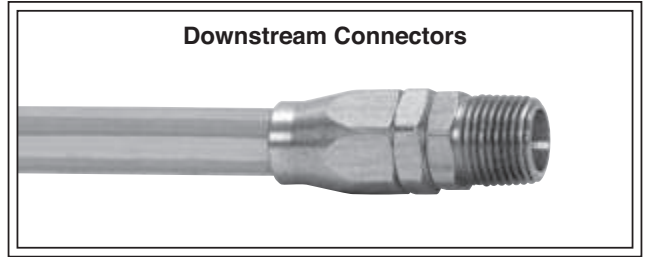
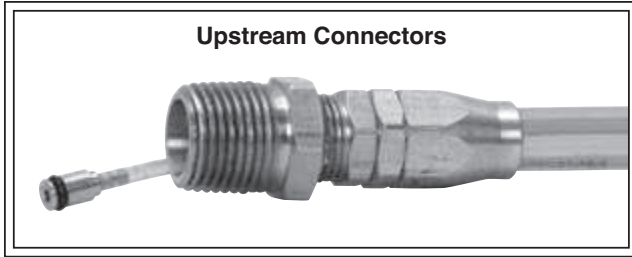
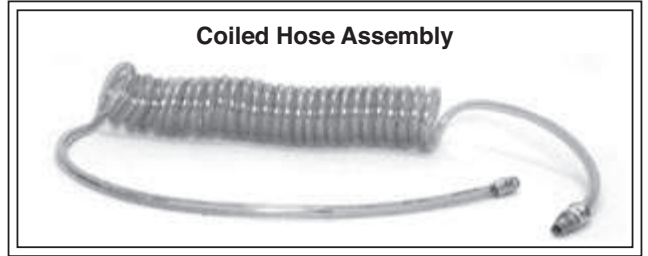
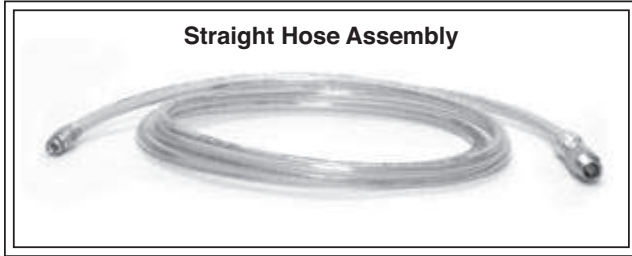
The coaxial hose assemblies are available with the internal oil capillary tube, including check valve, installed in either straight or coiled blue urethane hose. The standard hose lengths are 12- or 25-feet. Note that the coiled assemblies have a working length less than the overall length. Other hose 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



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 5/16 ID hose)

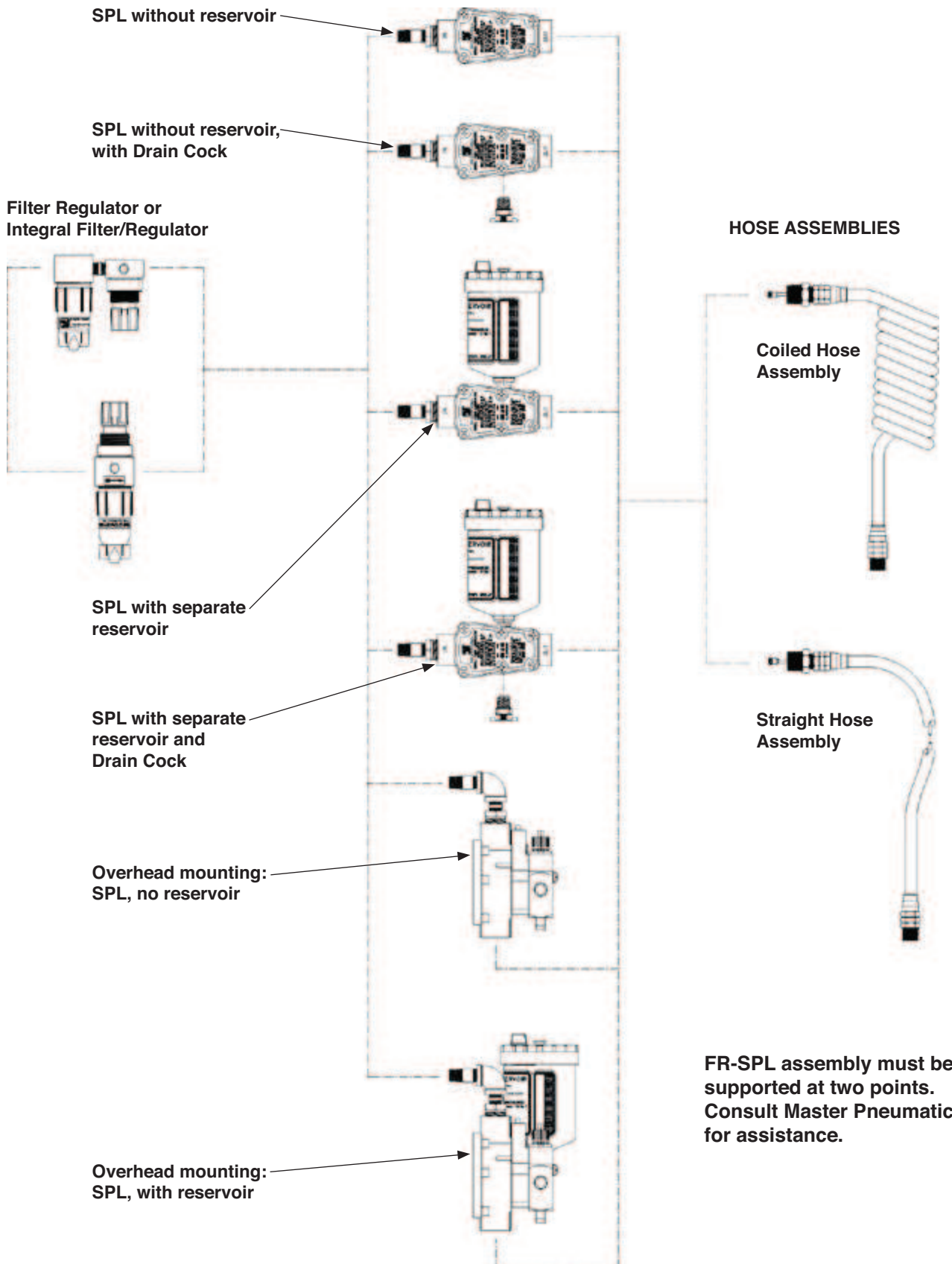
HOSE LENGTH

- 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*
- StraightS

LOW FLOW SPL HOSE ASSEMBLIES



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)	Overall Working	Code
-----------------	-----------	---------------	-----------------	------

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)

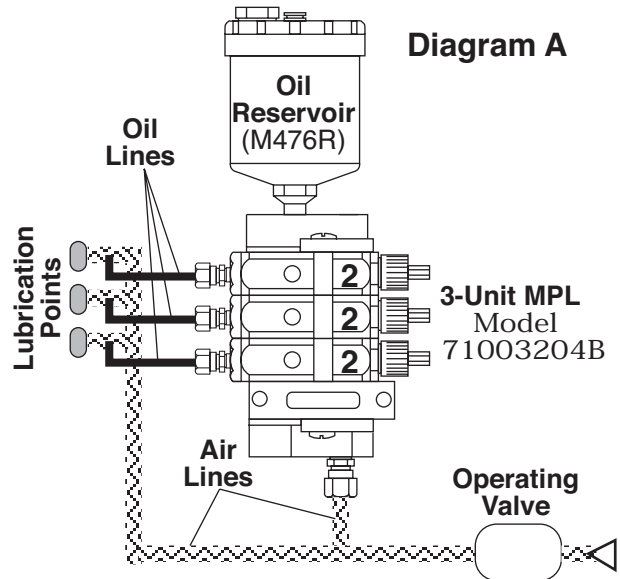
PA60045	C
PA60045, M476R reservoir	D
PA60045, M476R reservoir, 1/4" drain cock	E
PA60045, 1/4" drain cock	F
PA60045, 90° assembly	G
PA60045, 90° assembly, M476R reservoir	H
PD60045	K
PD60045, M476R reservoir	L
PD60045, M476R reservoir, 1/4" drain cock	M
PD60045, 1/4" drain cock	N
PD60045, 90° assembly	P
PD60045, 90° assembly, M476R reservoir	Q
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
PD60045BB, double counter	1
PD60045BB, M476R reservoir, double counter	2
PD60045BB, M476R reservoir, 1/4" drain cock, double counter	3
PD60045BB, 1/4" drain cock, double counter	4
PD60045BB, 90° assembly, double counter	5
PD60045BB, 90° assembly, M476R reservoir, double counter	6

Injection LUBRICATORS

† **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

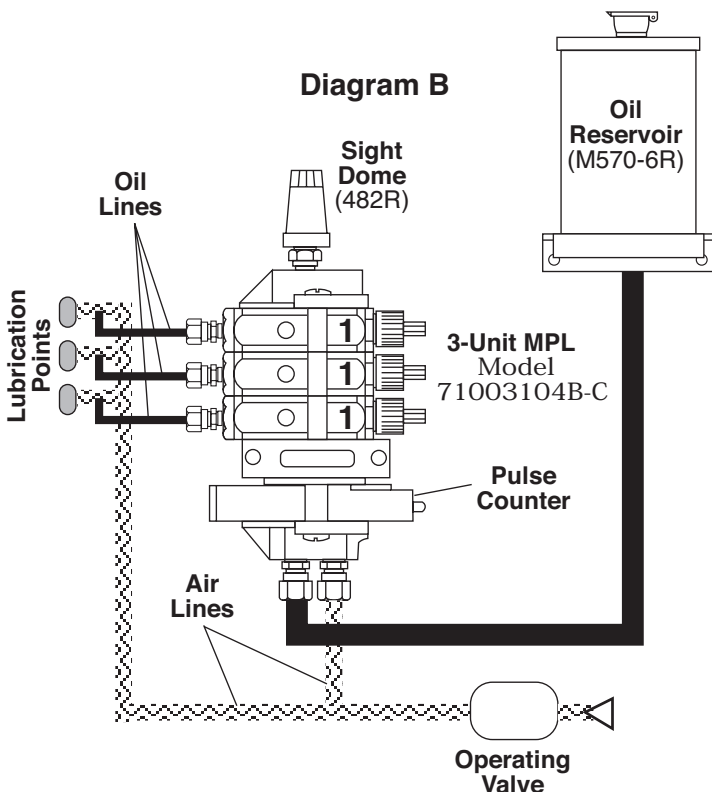


Diagram B at the left shows a circuit using three one-drop Servo-Meters, a pulse counter, and a remote one-quart oil reservoir. The actuating signal for the Servo-Meters is taken from the downstream side of the operating valve. The Servo-Meters can deliver from 1/10th drop to one drop of oil to each 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.

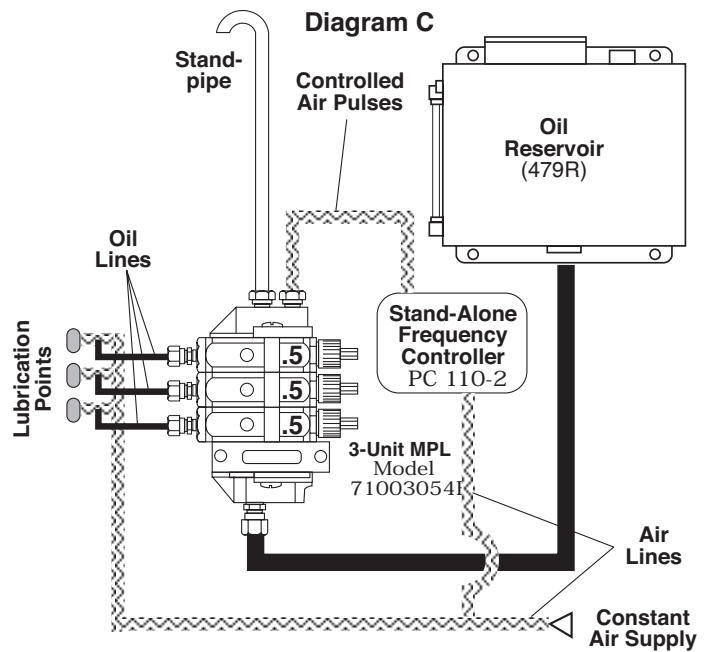
An additional Typical Application using a stand-alone frequency generator is shown on the following page.

TYPICAL MPL APPLICATION

With 1/2-Drop Servo-Meters, a Frequency Controller, and Remote Oil Reservoir

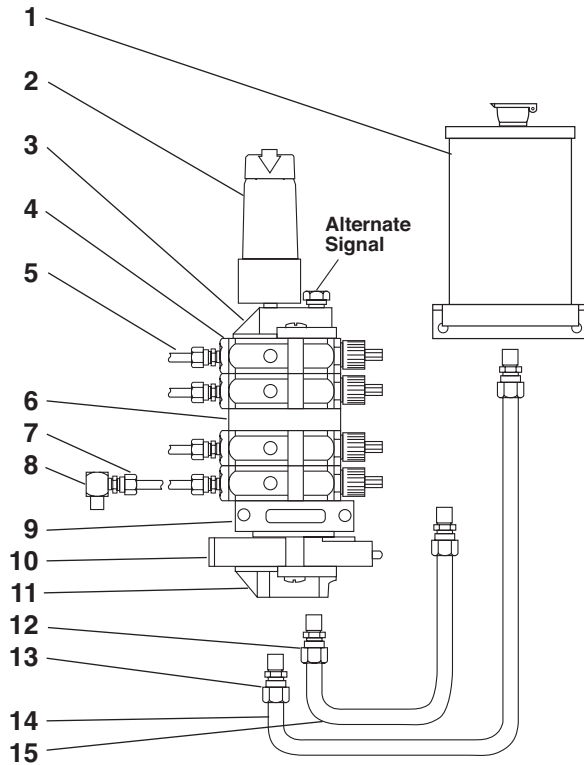
In diagram C at the right the MPL has 1/2-drop Servo-Meters which can supply from 1/20th drop to 1/2 drop of oil at each actuation. A 10-gallon metal oil reservoir is used. This reservoir could actually supply a number of similar MPL lubricating systems. Oil is introduced at the bottom of the assembly, and a standpipe 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.



Injection LUBRICATORS

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.

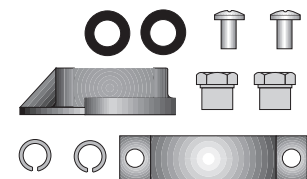
MPL ASSEMBLY KITS

Servo-Meter Kit (see footnotes)	70001##4B-@
Mounting/Assembly Kit	KA474-10

– Specify rating:
 1/2 drop05
 1 drop10
 2 drops.....20

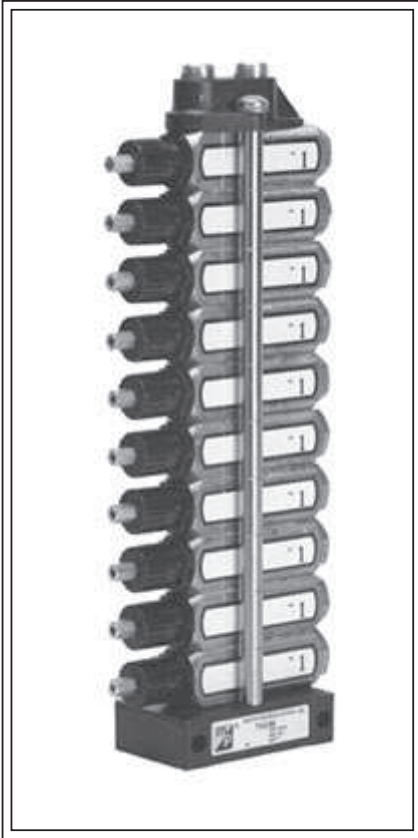
@ – Specify options.
 See OPTIONS under
 Ordering Information on
 following pages.

MPL Mounting Kit



SERV-OIL Multiple-Point Injection Lubricators

Series 710, 720



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).

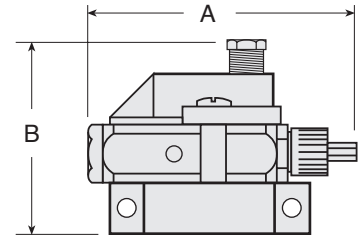
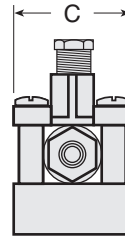
Reservoir: See page 222 for the various types of reservoirs available.

Servo-Meter: Brass body; acetal end caps. 1-Drop rating; optional 1/2-drop or 2-drop rating. Minimum operating air pressure: 60 psig (4 bar).

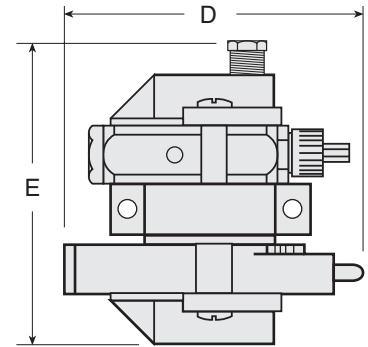
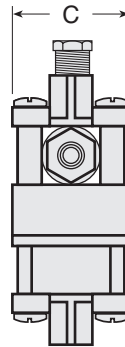
DIMENSIONS inches (mm)

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 4B-Y *

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

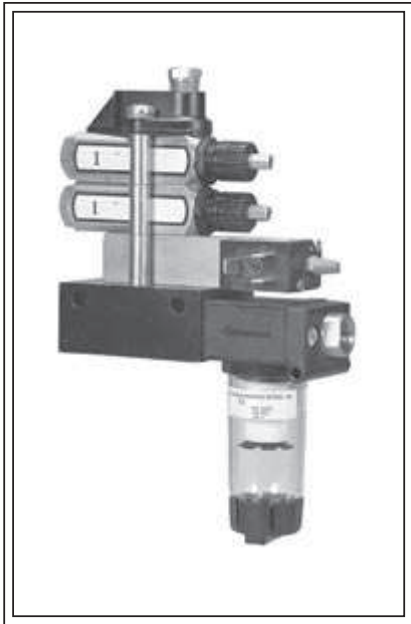
For BSPP port threads add W to the end of the model number.

OPTIONS

- None Remove Y
- Servo-Meter shutoff (Non-shutoff is standard) A
- 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

Electronically Controlled SERV-OIL Multiple-Point Lubricators

Series 7A0



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- μ 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; 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.

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.

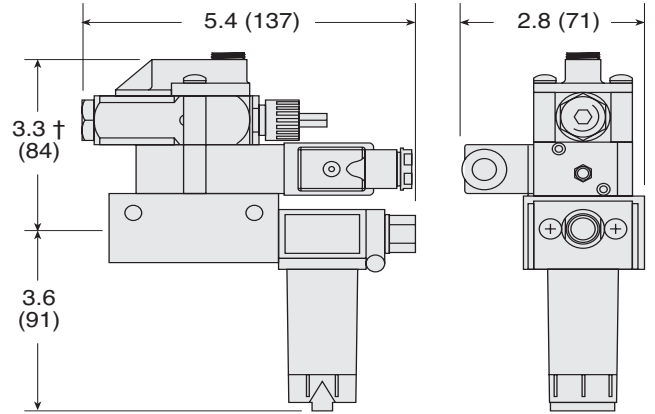
You have full control by coordinating with your own computer programming. This eliminates costly feast-or-famine lubrication.

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.

Injection
LUBRICATORS

ORDERING INFORMATION

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

7A0 01 05 4B-1 1 1 0 *

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

INLET PORT SIZE

1/8 NPTF 1
 1/4 NPTF 2

DIN 4360 Form B Option 1

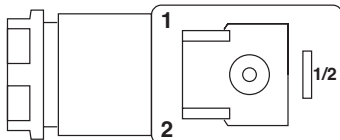
For BSPP port threads add W to the end of the model number.

FILTER

Standard Sentry filter 0
 No filter; female side port 1

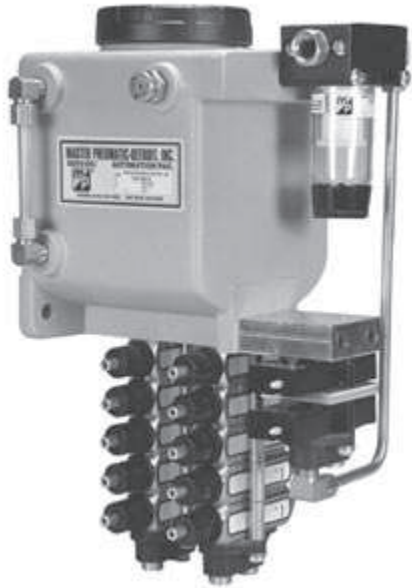
VOLTAGE

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.



**Automation Pac with Double-Counter Controller
For Use with Pulse Air Inlet Source**



**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- μ m coalescing filter for clean, long-life operation. The coalescing filter should be preceded by 5- μ m filtration to prolong the life of the coalescing element.

SPECIFICATIONS

Ambient/Media Temperature:

40° to 175°F (4° to 79°C).

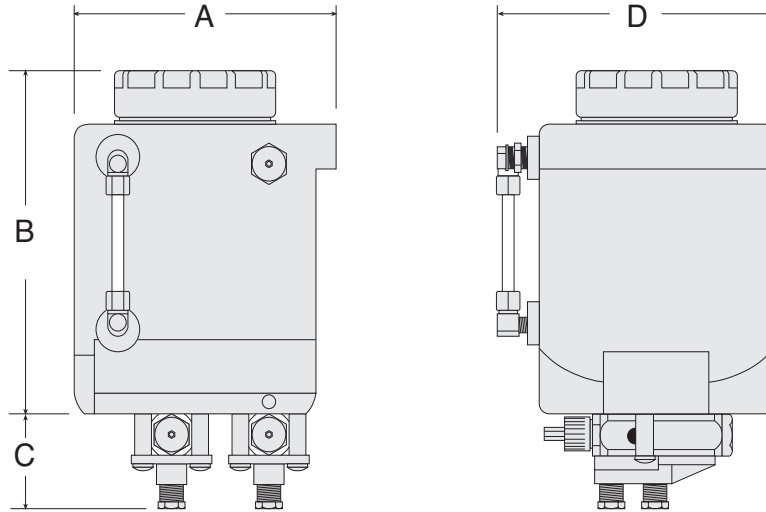
Reservoir: Aluminum; 0.5 gallon (1.9 liters) capacity.

Seals: Nitrile.

Servo-Meter: Brass body; acetal end caps.

Servo-Meter Operating Pressure:

60-150 psig (4.1-10.3 bar).



DIMENSIONS inches (mm)

A	B	C †	D	Weight lb (kg)
5.8 (147)	7.6 (193)	1.8 (46)	6.1 (155)	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 4B-Y *

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

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

OPTIONS

None Remove Y

Servo-Meter shutoff
(Non-shutoff is standard)..... A

Block plate B
(Consult Master Pneumatic)

Two pulse counters CC

Oil-end seals for Servo-Meter
(Buna N standard)

EPR E

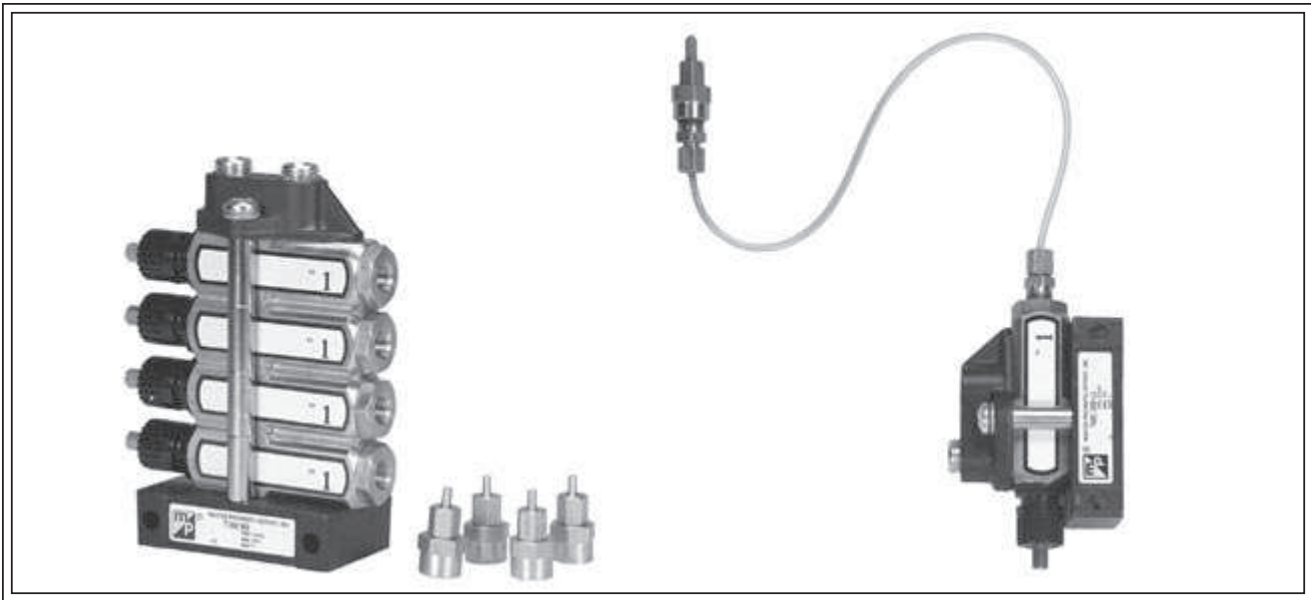
Viton V

Frequency controller F

Oil-level switches:

Low-level only G

High-level and low-level GG



The Series 740 liquid dispenser employs Servo-Meters to send precise amounts of liquid through nozzles for a distance up to 10 inches (250 mm). 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.

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; zinc end plates.

Servo-Meter Seals:

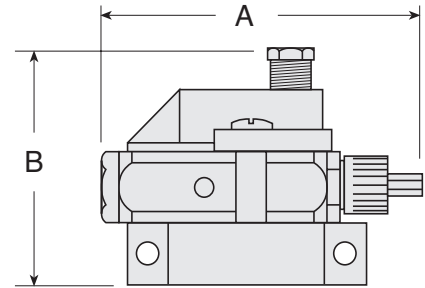
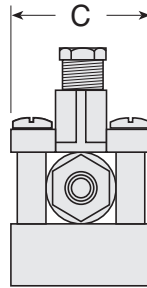
Nitrile on air end; viton on oil end.

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)

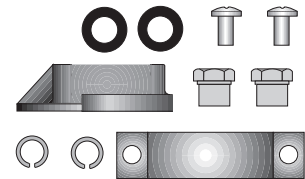
† Add 0.9 (23) for each additional Servo-Meter.



LIQUID DISPENSER ASSEMBLY KITS

Servo-Meter Kit (see footnotes)	70001##4B-@LV
Mounting/Assembly Kit	KA474-10
## – Specify rating: 1/2 drop.... 05 1 drop.... 10 2 drops.... 20	@ – Remove if non-shutoff A.....Shutoff

Mounting/Assembly Kit



SCORPION and LIQUID DISPENSERS

ORDERING INFORMATION

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

740 01 05 4B-Y LV *

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

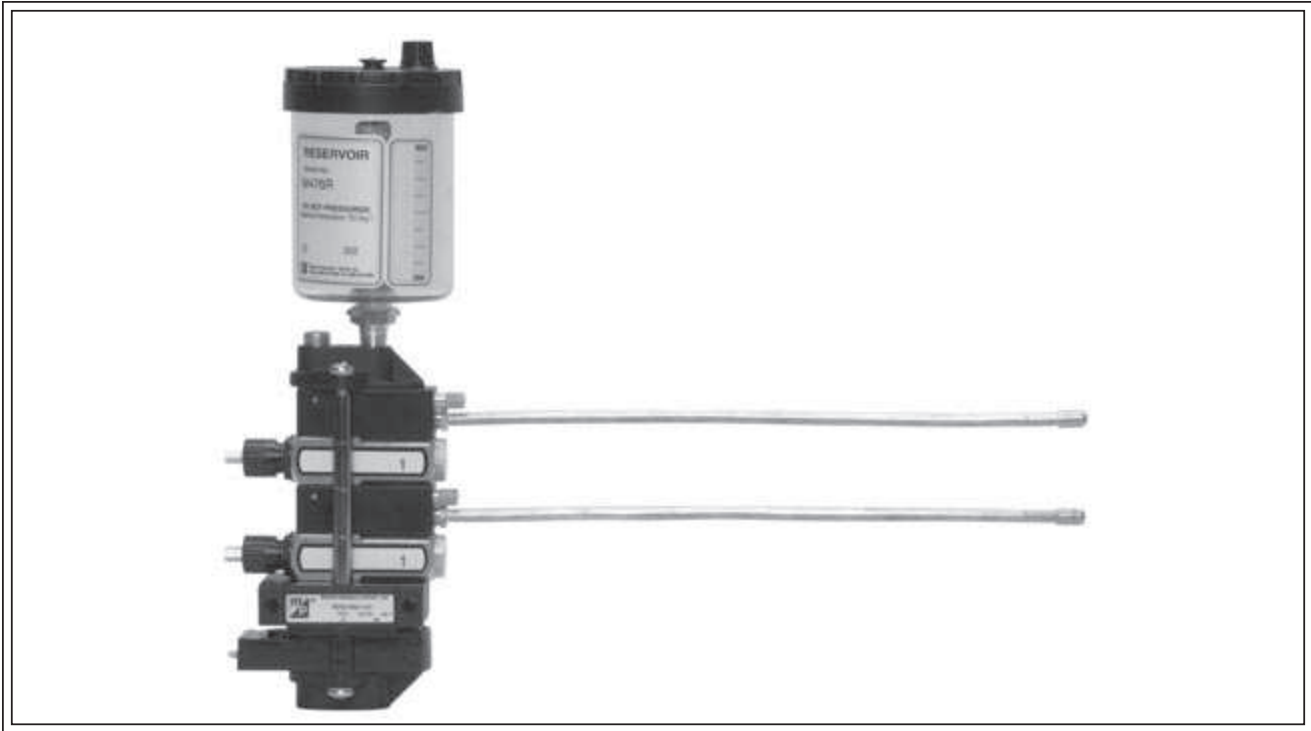
For BSPP port threads add W to the end of the model number.

OPTIONS

None Remove Y
 Servo-Meter shutoff (Non-shutoff is standard)..... A
 Pulse counters
 One C
 Two.....CC
 Oil End Seals for Servo-Meter
 EPR..... E
 Frequency controller..... F

SERV-OIL JETMASTER Liquid Dispenser Propels Conical Air-Liquid Jets

Series 750, 760



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

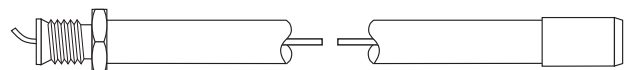
Assemblies may be ordered with up to five Servo-Meters and five nozzles. All can be actuated simultaneously by a single air signal of 60 psig (4 bar).

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.

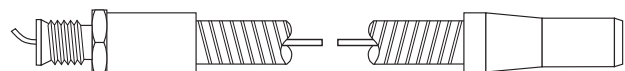
Nozzles

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.

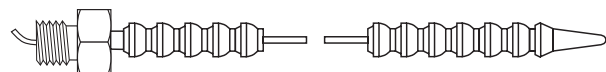
JETMASTER NOZZLE ASSEMBLIES



Semi-rigid Copper (Standard - suffix H)



Flexible Steel (Optional - suffix M)



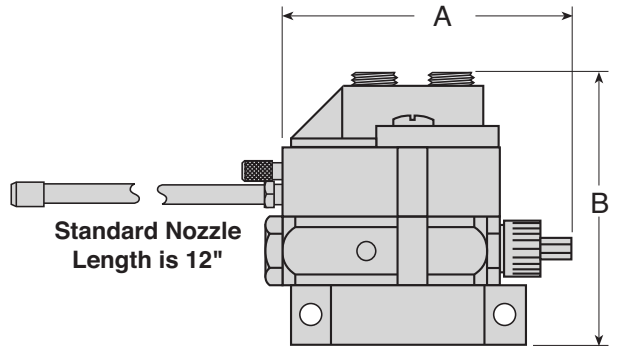
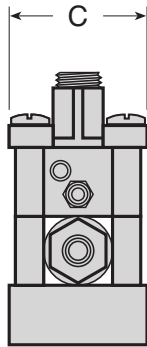
Flexible Plastic (Optional - suffix K)

*Contact M/P for fluid compatibility.

DIMENSIONS inches (mm)

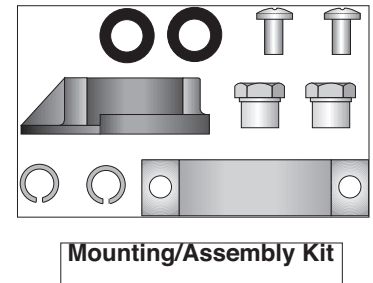
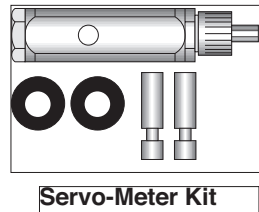
A	B †	C
3.5 (89)	3.4 (86)	1.8 (46)

† Add 0.9 (23) for each additional Servo-Meter.



LIQUID DISPENSER ASSEMBLY KITS

Servo-Meter Kit (see footnotes)	70001##4B-@LV
Mounting/Assembly Kit	KA474-10
## – Specify rating:	@ – Remove if non-shutoff
1/2 drop 05	A.....Shutoff
1 drop 10	
2 drops 20	



SCORPION and LIQUID DISPENSERS

ORDERING INFORMATION

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

750 01 05 5B – Y H (*) SV *

<p>JETMASTER SERIES</p> <p>Standard Jetmaster 750</p> <p>Jetmaster with heavy-duty mount..... 760</p> <p>NUMBER OF SERVO-METERS</p> <p>Specify by numerals from 01 to 05</p> <p>SERVO-METER RATING</p> <p>Half drop 05</p> <p>One drop 10</p> <p>Two drops 20</p>	<p>NOZZLE LENGTH</p> <p>Length of copper nozzle if other than 12"</p> <p>NOZZLE TYPE</p> <p>Standard 12" flexible copper nozzleH</p> <p>12" flexible plastic nozzleK</p> <p>12" flexible steel nozzle.....M</p> <p>OPTIONS</p> <p>None Remove Y</p> <p>Servo-Meter shutoff (Non-shutoff is standard)..... A</p> <p>Pulse counters</p> <p>One C</p> <p>Two..... CC</p> <p>Oil End Seals for Servo-Meter</p> <p>EPR..... E</p> <p>Frequency controller..... F</p>
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For BSPP port threads add W to the end of the model number.

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 PneuCool 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.

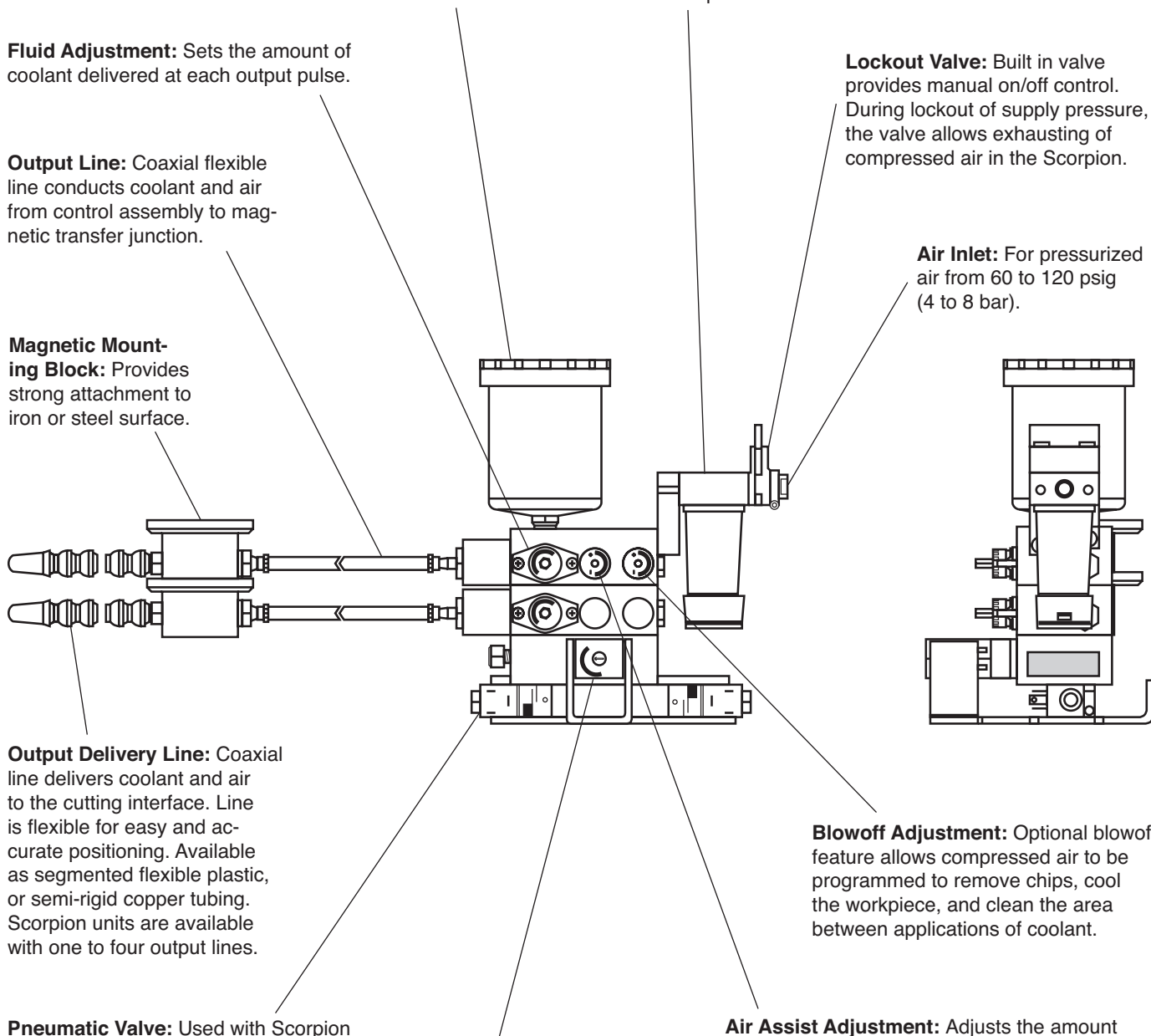
Output Delivery Line: Coaxial line delivers coolant and air to the cutting interface. Line is flexible for easy and accurate positioning. Available as segmented flexible plastic, or semi-rigid copper tubing. Scorpion units are available with one to four output lines.

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.

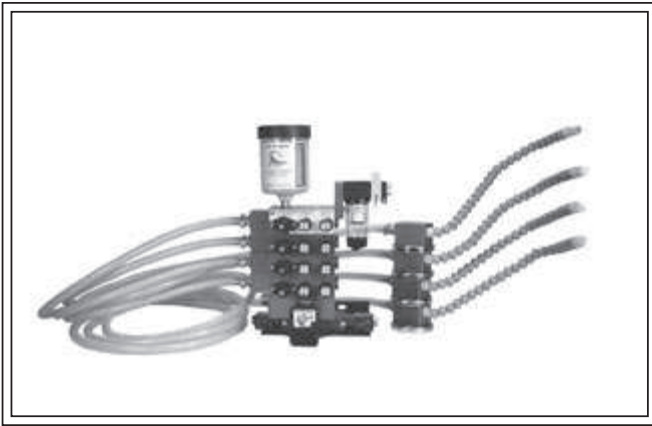


SCORPION and LIQUID DISPENSERS

SCORPION

Solenoid or Pneumatic Actuation

Series 800, 830, 850



- ◇ 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 0.027 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.

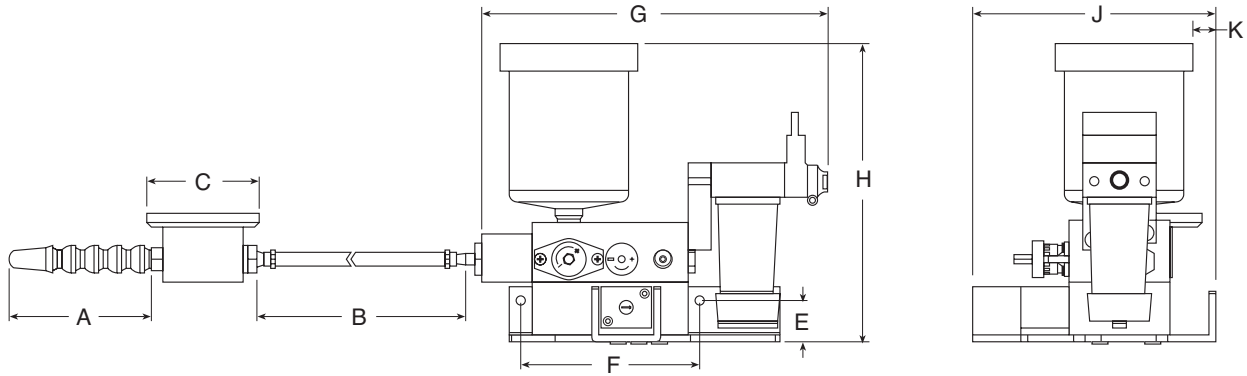
BASIC SYSTEMS

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)	—

SCORPION and LIQUID DISPENSERS

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

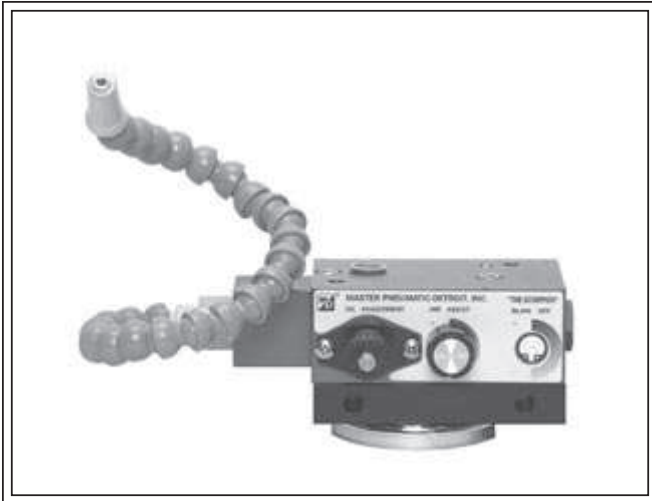
- 1/8 NPTF 1
- 1/4 NPTF 2
- 1/8 BSPP A
- 1/4 BSPP B

NOZZLE BASE ("C" in drawing above)

- Magnetic 0
- No base 1

SCORPION Jr. Pneumatic Actuation

Series 890



- ◇ 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 0.027 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.

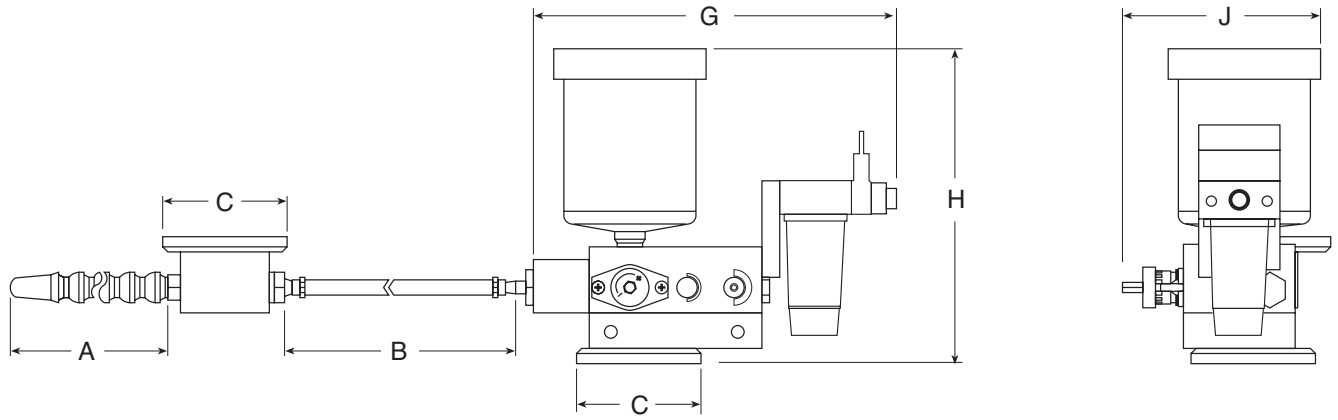
Model 8902: Two-injector system.

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)	—

SCORPION and LIQUID DISPENSERS

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

VIPER Chain Lubricators Electro-Pneumatic Actuation

Series 870



The VIPER is an engineered system used to deliver lubricant for a specific amount of time and at specific intervals. The most common application is lubricating chains. The volume of oil delivered and the frequency of delivery are both adjustable.

The TIMER uses an electronic time switch, which can be set with 24-hour and 7-day programming, with six on/off set points. Three block programs allow for different weekday schedules. A manual override is provided for ON or OFF to the next scheduled event. Standby operation is provided for a minimum of seven days with a built-in rechargeable NiCad battery.

- ◇ **Servo-Meter lubricant injector. 1-Drop capacity; optional 2-drop capacity.**
- ◇ **Up to four injectors and nozzles can be used.**
- ◇ **Snaplock® lubricant dispensing nozzle.**
- ◇ **Magnetic nozzle base.**
- ◇ **2-Quart capacity lubricant reservoir. Other optional capacities.**
- ◇ **Built-in lockout valve.**
- ◇ **NPTF port threads; optional BSPP threads.**

GENERAL SPECIFICATIONS

Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

Body Blocks: Anodized aluminum.

Hose: 6-feet long braided PVC. Longer or shorter hose in 1-foot increments.

Injector:

1-Drop-rated Servo-Meter; 0 to 0.027 ml per pulse. Optional 2-drop-rated Servo-Meter; 0 to 0.060 ml per pulse. Up to four injectors can be used.

Inlet Port:

1/4 NPTF; optional 1/8 NPTF. Optional BSPP threads.

Inlet Pressure: 60 to 120 psig (4 to 8 bar).

Lubricant Viscosity: 32–500 SUS @ 100°F (38°C).

Nozzle: Snaplock® with 12-inch flexible segmented plastic. Optional 18-inch or 24-inch lengths. Optional copper nozzles and fan tips.

Reservoir: 2-Quart capacity

Seals: Air, nitrile; oil, Viton.

TIMER SPECIFICATIONS

Accuracy: ± 4 minutes per year.

Ambient Temperature: -14° to 130°F (-25° to 54°C).

Display: LCD with TIME, AM/PM, ON/OFF, and DAY indicators.

Power Consumption: 4 VA.

Power Supply:

120 V 50/60 Hz. Other voltages available.

Standby System: Internal rechargeable NiCad battery supplies standby operations for a minimum of 7 days.

Switch Rating: SPDT relay.

16 A @ 120 VAC (resistive).

1/2 HP @ 120 VAC.

1 HP @ 240 VAC.

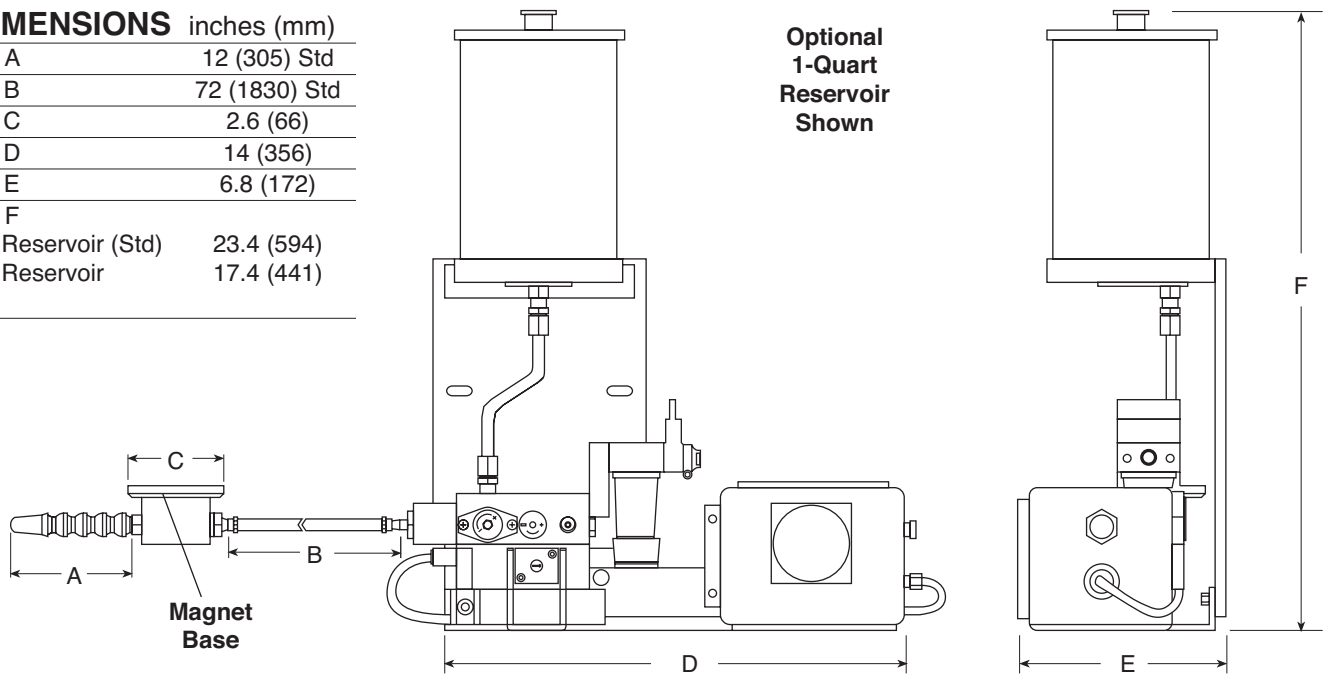
1000 watts tungsten @ 120/240 VAC.

Switch Timing:

Presets programmable in 1-minute increments.

UL Approved.

DIMENSIONS inches (mm)	
A	12 (305) Std
B	72 (1830) Std
C	2.6 (66)
D	14 (356)
E	6.8 (172)
F	
2-Qt Reservoir (Std)	23.4 (594)
1-Qt Reservoir	17.4 (441)



ORDERING INFORMATION

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

87 C B 1 1 3 0 2 T 06 K A 1

ELECTRICAL

- 110 volts 50/60 Hz mini plug..... C
- 24 VDC mini plug E

EXTENDED BRACKET

- For 1-qt and 2-qt reservoirs..... B
- No bracket (no reservoir)..... C

NUMBER OF INJECTORS/NOZZLES

Specify number from 1 to 4.

INJECTOR RATING

- 1 Drop (Std) 1
- 2 Drops 2
- 1/2 Drop 5

RESERVOIR

- No reservoir or mounting plate 1
- 1-Qt with mounting plate 2
- 2-Qt with mounting plate (Std)..... 3

NOZZLE BASE ("C" in drawing above)

- Magnetic 0
- No base 1

INLET PORT

- 1/8 NPTF 1
- 1/4 NPTF 2
- 1/8 BSPP A
- 1/4 BSPP B

NOZZLE

- Standard conical tip 1
- Fan tip 2

NOZZLE LENGTH

- 12 inches (305 mm) (Std)..... A
- 18 inches (457 mm)..... B
- 24 inches (610 mm)..... C
- 36 inches (914 mm)..... D

NOZZLE TYPE

- Snaplock® (Std) K
- Copper H

HOSE LENGTH

- None 00
- 6 Feet (1.8 m) (Std) 06
- Specify desired length (in feet) with two digits. For example, 08 for 8 feet, 12 for 12 feet **

HOSE TYPE

- Braided PVC hose (Std) T
- Teflon tubing with braided shielding with capillary tubing. (Copper cap tubing in all copper nozzle sections) ... S

INTEGRAL FILTER/REGULATOR plus LUBRICATOR ASSEMBLIES (FRLs)

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, 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 μm 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	
SENTRY							
VCFDRL10, 11 models †	yes	X	X				240-241
MINIATURE							
CFDRL55, 56 models	no	X	X				242-243
GUARDSMAN							
MVCFDRL60D models	yes		X	X	X		244-245
GUARDSMAN II							
BMVCFDRL70D models	yes		X	X	X		246-247
Full-Size VANGUARD							
MVCFDRL108D models	yes		X	X	X	X	248-249
MVCFDRL108W models	yes		X	X	X	X	250-251
Full-Size SERIES 380							
AAM3A0B1A1 models	yes			X	X	X	252-253

† 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, 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	
SENTRY										
VFDR10, 11 models †	yes	X	X							254-255
MINIATURE										
FDRL 55, 56	no	X	X							256-257
GUARDSMAN										
MVFDRL60D models	yes		X	X	X					258-259
GUARDSMAN II										
BMVFDRL70D models	yes		X	X	X					260-261
Full-Size VANGUARD Series										
MVFDRL108D models	yes		X	X	X	X				262-263
MVFDRL108W models	yes		X	X	X	X				264-265
Full-Size SERIES 380										
AAMV1A1B1A1 models	yes			X	X	X				266-267
High-Capacity VANGUARD										
FDRL180 models	no					X	X			268-269
FDRL189D models	no					X	X	X	X	270-271
BFDR1289D models	no							X	X	272-273

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

FRLs

SENTRY Modular FRLs Integral Filter/Regulators plus Lubricator

VCFDRL10 and 11 Models Port Sizes: 1/8, 1/4 Tube Fittings



- ◇ 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- μ 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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (10.3 bar); 1/8 NPT gauge ports front and rear.

Panel Mounting: 1-3/16 inch (30 mm) hole required.

Regulator Dome and Knob: Acetal.

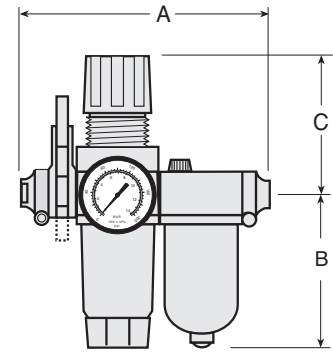
Seals: Nitrile.

AIR FLOW DATA

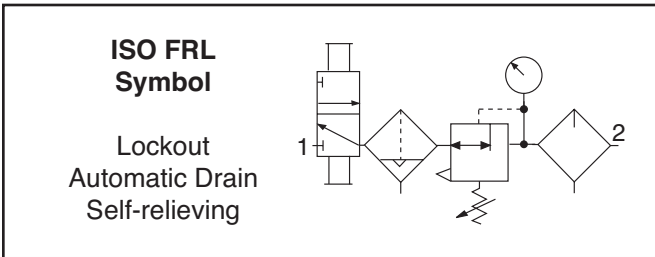
See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Ports	A *	B	C	Depth †	Weight lb (kg)
1/8, 1/4	5.2 (132)	3.6 (92)	2.6 (67)	1.8 (45)	0.57 (0.32)
Models below have quick-connect fittings for tubing.					
1/4	5.6 (142)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)
3/8	6.2 (157)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)
4 mm	5.7 (145)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)
6 mm	5.7 (145)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)
8 mm	5.3 (135)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)
10 mm	6.2 (157)	3.6 (92)	2.6 (67)	1.8 (45)	0.55 (0.31)



* Without V10 lockout valve deduct 0.6 (15) from dimension A.
 † Less gauge.



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ m 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 - 2 X Y G *

BOWL TYPE

Plastic bowl Remove B
 Metal bowl B

LOCKOUT VALVE

Delete valve Remove V

FILTER DRAIN

Internal automatic drain CFD
 Manual drain CF

REGULATOR TYPE

Piston type 10
 Diaphragm type 11

INLET PORT SIZE

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 Remove X

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

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

GAUGE & PANEL MOUNTING NUT

Delete gauge NG
 Gauge plus plastic nut P
 Gauge plus metal nut PN
 Gauge plus hex plastic nut PE

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:

5- μ m rating E5
 20- μ m rating E4
 40- μ 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
 Viton seals V

*Insert preset pressure.

FRLs

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- μ 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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (10.3 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.

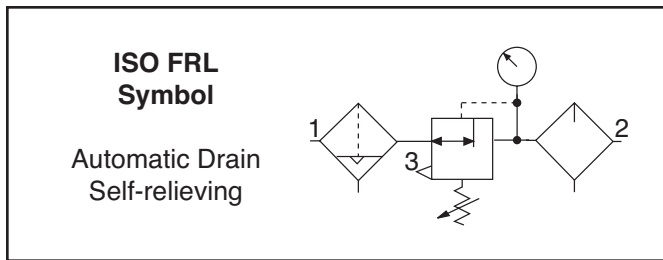
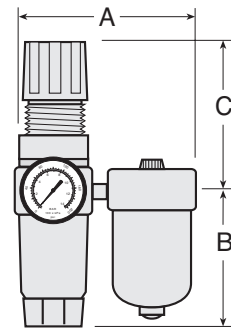
AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Bowl	A	B	C	Depth †	Weight lb (kg)
Metal	4.0 (101)	3.8 (97)	2.6 (67)	1.6 (41)	0.66 (0.30)
Plastic	3.7 (94)	3.6 (92)	2.6 (67)	1.6 (41)	0.66 (0.30)

† Less gauge.



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ m 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 *

BOWL TYPE

Plastic bowlRemove B
Metal bowlB

FILTER DRAIN

Internal automatic drain..... CFD
Manual drain..... CF

REGULATOR TYPE

Piston type.....55
Diaphragm type56

PORT SIZE

1/8 NPTF1
1/4 NPTF2

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

GAUGE & PANEL MOUNTING NUT

Delete gauge NG
Delete gauge & gauge ports.....NP
Plastic nut P
Metal nut.....PN
Hex plastic nut.....PE

OPTIONS

NoneRemove Y
Non-relieving regulator A
Sintered bronze filter element:

5- μ m rating E5
20- μ m rating E4
40- μ 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
Viton seals V

*Insert preset pressure.

FRLs

GUARDSMAN Modular FRLs Integral Filter/Regulators plus Lubricator

MVCFDRL60D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Filter and regulator consolidated in a single assembly (CFDR60); sight-feed lubricator (L60D); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 SAE or 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).

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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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

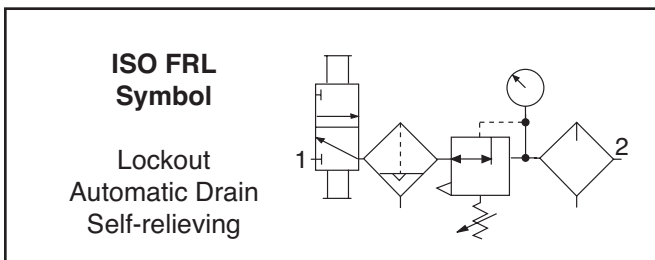
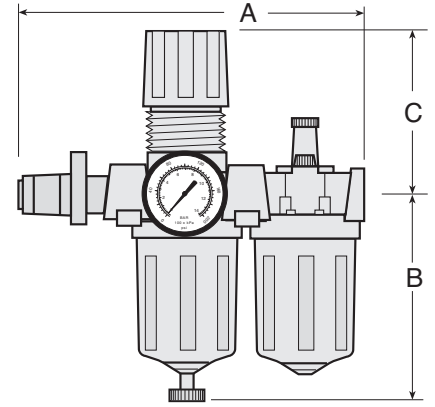
See Flow Charts for individual assembly components on preceding pages.

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- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ m 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 *

BOWL TYPE

Plastic bowl Remove B
 Metal bowl B

ASSEMBLY

Modular M
 Pipe nipple Remove M

LOCKOUT VALVE

Delete valve Remove V

FILTER DRAIN

Internal automatic drain CFD
 Manual drain CF

PORT SIZE

1/4 NPTF 2
 3/8 NPTF 3
 1/2 NPTF 4
 9/16-18 UNF SAE S6

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

GAUGE & PANEL MOUNTING NUT

Delete gauge NG
 Plastic nut P

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:
 5- μ m rating E5
 20- μ m rating E4
 40- μ 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

FRLS

GUARDSMAN II Modular FRLs Integral Filter/Regulators plus Lubricator

BMVCFDRL70D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Filter and regulator consolidated in a single assembly (BCFDR70); sight-feed lubricator (BL70D); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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.
- ◇ Self-relieving piston-type regulator; non-relieving optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

SPECIFICATIONS

Ambient/Media Temperature:

40° to 125°F (4° to 52°C).

Without lockout valve: 40° to 175°F (4° to 79°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.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m or 40- μ m sintered bronze.

Fluid Media: Compressed air.

Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.

150 psig (10 bar) maximum.

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

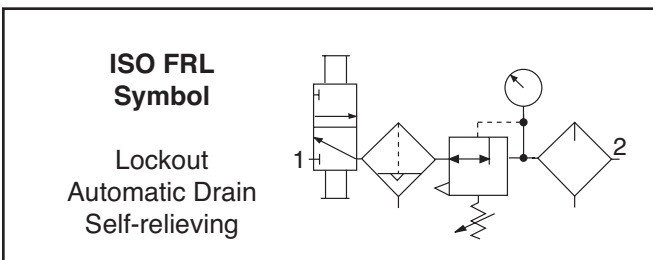
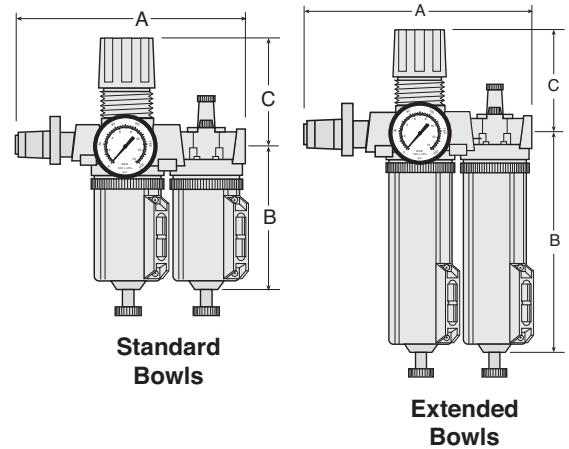
See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Bowl	A *	B	C	Depth †	Weight † lb (kg)
Standard	8.7 (221)	5.1 (129)	3.3 (83)	2.4 (60)	3.00 (1.36)
Extended	8.7 (221)	8.2 (207)	3.3 (83)	2.4 (60)	5.25 (2.39)

* 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- μ m polyethylene (Std element)	KA60F-03PE5
5- μ m bronze	KA60F-03E5
40- μ m 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 *

LOCKOUT VALVE

Delete valve.....Remove V

FILTER DRAIN

Internal automatic drain..... CFD
Manual drain.....CF

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
9/16-18 UNF SAE..... S6

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

GAUGE & PANEL MOUNTING NUT

Delete gaugeNG
Plastic nut..... P

OPTIONS

NoneRemove Y
Non-relieving regulator A
Sintered bronze filter element:
5- μ m rating E5
20- μ m rating E4
40- μ m rating E3
Adjusting springs:
0-150 psig (0-10 bar)H
0-50 psig (0-3.4 bar) L
Quick-fill lubricator Q-capQ

FRLS

VANGUARD Modular FRLs Integral Filter/Regulators plus Lubricator

MVCFDRL108D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



- ◇ Filter and regulator consolidated in a single assembly (CFDR100); sight-feed lubricator (L28D); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 or external Hydro-Jector drain.
- ◇ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or 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).

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 or external Hydro-Jector drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 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.

AIR FLOW DATA

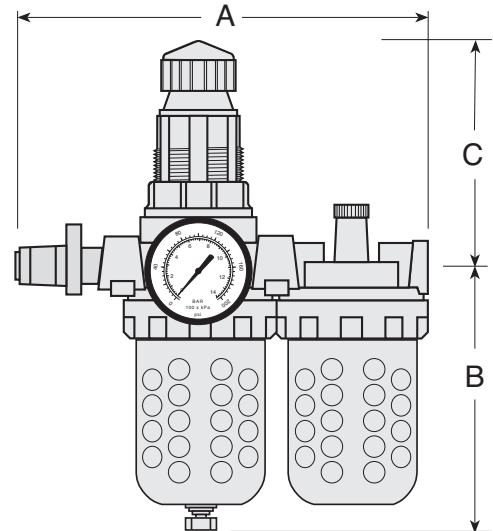
See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Bowls	A *	B	C	Depth †	Weight † 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)

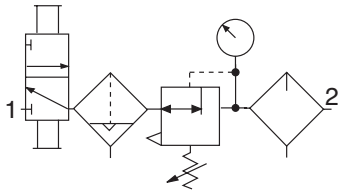
*Without V35 lockout valve deduct 3.8 (97) from dimension A.

† Less gauge.



ISO FRL Symbol

Lockout
Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA103-3PE
5- μ m bronze	KA103-3PE5
20- μ m bronze	KA103-3PE4
40- μ m bronze	KA103-3PE3

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 *

BOWL TYPE

Metal bowls B
 Plastic bowls..... Remove B

ASSEMBLY

Modular M
 Pipe nipple..... Remove M

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

Internal automatic drain CFD
 Manual drain..... CF
 External Hydro-Jector drain;
 only with metal bowl CFE

BOWL SIZE

Standard 8-ounce bowls..... 108D
 8-Ounce filter bowl &
 20-ounce lubricator bowl
 (metal bowls only) 108DH

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

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:
 5- μ m rating E5
 20- μ m rating E4
 40- μ m rating E3
 Adjusting springs:
 0-175 psig (0-12 bar) H
 0-50 psig (0-3.4 bar) L
 Remove adjusting key JJ
 Limit maximum psig setting:
 Above 49 psig (3.4 bar) M(*)
 Below 50 psig (3.4 bar) ML(*)
 Delete 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
 9/16-18 UNF SAE S6
 3/4-16 UNF SAE S8
 7/8-14 UNF SAE S10

FRLS

VANGUARD Modular FRLs Integral Filter/Regulators plus Lubricator

MVCFDRL108W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



- ◇ Filter and regulator consolidated in a single assembly (CFDR100); wick-feed lubricator (L28W); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 or external Hydro-Jector drain.
- ◇ Self-relieving diaphragm-type regulator; non-relieving optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or 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 or external Hydro-Jector drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 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.

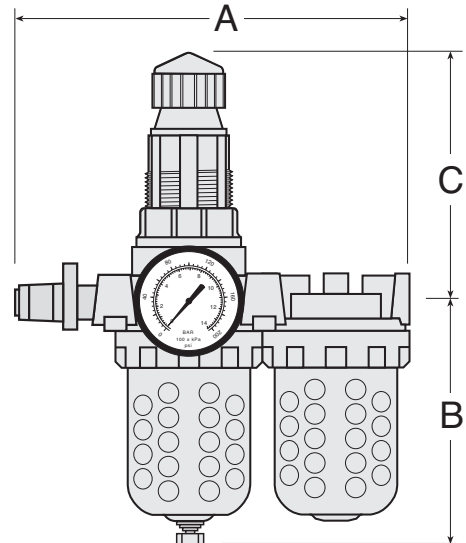
AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

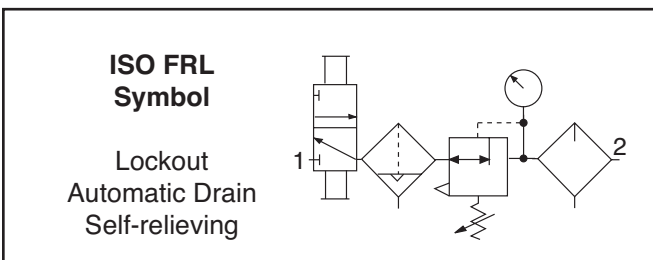
Bowls	A *	B	C	Depth †	Weight † lb (kg)
Plastic	10.5 (267)	5.8 (147)	3.3 (84)	3.5 (89)	5.94 (2.69)
Metal	10.5 (267)	6.4 (163)	3.3 (84)	3.5 (89)	7.74 (3.51)

*Without V35 lockout valve deduct 3.8 (97) from dimension A.
† Less gauge.



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA103-3PE
5- μ m bronze	KA103-3PE5
20- μ m bronze	KA103-3PE4
40- μ m bronze	KA103-3PE3



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 *

BOWL TYPE

Metal bowls B
Plastic bowls..... Remove B

ASSEMBLY

Modular M
Pipe nipple..... Remove M

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

Internal automatic drain CFD
Manual drain CF
External Hydro-Jector drain;
only with metal bowl CFE

BOWL SIZE

Standard 8-ounce bowls 108W

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

OPTIONS

None Remove Y
Non-relieving regulator A
Sintered bronze filter element:
5- μ m rating E5
20- μ m rating E4
40- μ m rating E3
Adjusting springs:
0-175 psig (0-12 bar) H
0-50 psig (0-3.4 bar) L
Remove adjusting key JJ
Limit maximum psig setting:
Above 49 psig (3.4 bar) M(*)
Below 50 psig (3.4 bar) ML(*)
Delete 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
9/16-18 UNF SAE S6
3/4-16 UNF SAE S8
7/8-14 UNF SAE S10

FRLs

Full-Size SERIES 380 FRLs Integral Filter/Regulators plus Lubricator

AAMV3A0B1A1 Models Port Sizes: 3/8, 1/2, 3/4



- ◇ Filter and regulator consolidated in a single assembly (CFDR380); sight-feed lubricator (L380D); lockout valve (V380).
- ◇ Modular or inline mounting.
- ◇ 5- μ m-rated polyethylene filter element; optional 40- μ m element.
- ◇ Aluminum bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◇ Internal automatic filter drain; optional manual 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 SAE or BSPP threads.

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, accent grey; yellow, red, and blue optional.

Filter Drain: Internal automatic drain; optional manual drain, or Warrior electronic drain.

Filter Element: 5- μ m-rated polyethylene; optional 40- μ m element.

Fluid Media: Compressed air.

Heads: Zinc.

Inlet Pressure:

15 psig (1 bar) minimum with automatic 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.

AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

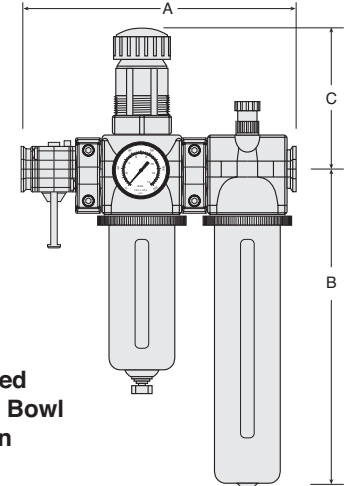
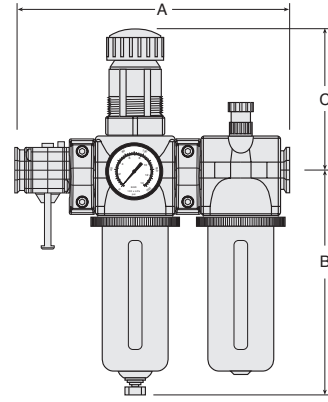
DIMENSIONS inches (mm)

Bowl	A *	B **	C	Depth †	Weight † 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.



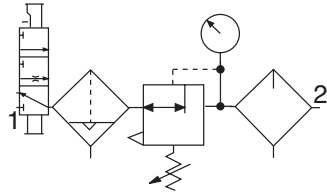
Extended
Lubricator Bowl
Shown

REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m (Std element)	A115-106PE5
40- μ m bronze	A115-106PE3

ISO FRL Symbol

Lockout
Automatic Drain
Self-relieving



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 290.

A A M V 3 A 0 B 1 A 1 3

LUBRICATOR CAP COLOR

Accent Grey (Std) ... A
MP Yellow B
Red C
Mid 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

Delete valve Remove V

FILTER/REGULATOR MODEL

CFR380 (0-125 psig and
5- μ m element) 3
CFR380-E3 (0-125 psig and
40- μ m element) 4
CFR380-H (0-175 psig and
5- μ m element) 6
CFR380-L (0-50 psig and
5- μ m element) 8

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
3/4-16 UNF SAE F
7/8-14 UNF SAE G

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

LUBRICATOR

L380D B
L380D-Q (with quick-fill cap) ... C

FRLS

SENTRY Modular FRLs Filter-Regulator-Lubricators

VFDRL10 and 11 Models Port Sizes: 1/8, 1/4 Tube Fittings



- ◇ 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- μ 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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (10.3 bar); 1/8 NPT gauge ports front and rear.

Panel Mounting: 1-3/16 inch (30 mm) hole required.

Regulator Dome and Knob: Acetal.

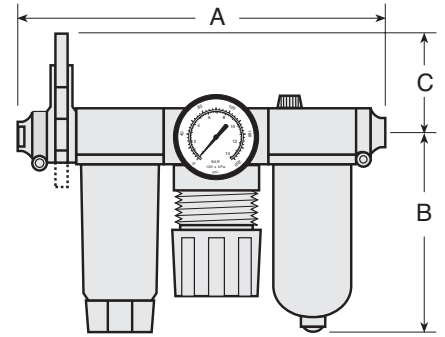
Seals: Nitrile.

AIR FLOW DATA

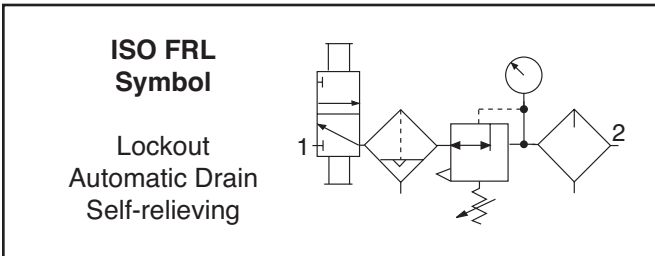
See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Ports	A **	B	C	Depth	Weight lb (kg)
1/8, 1/4	6.9 (175)	3.6 (92)	1.7 (43)	3.6 (92)	0.53 (0.24)
Models below have quick-connect fittings for tubing.					
1/4	7.3 (185)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
3/8	7.8 (198)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
4 mm	7.3 (185)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
6 mm	7.3 (185)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
8 mm	7.0 (178)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
10 mm	7.8 (198)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)



** Without V10 lockout valve deduct 0.6 (15) from dimension A.



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ 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 V FD RL 10 - 2 X Y G *

BOWL TYPE

Plastic bowls....Remove B
Metal bowlsB

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

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

REGULATOR TYPE

Piston type..... 10
Diaphragm type 11

INLET PORT SIZE

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 Remove X

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

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

GAUGE & PANEL MOUNTING NUT

Gauge only Remove G
Delete gauge NG
Gauge plus plastic nut P
Gauge plus metal nut PN
Gauge plus hex plastic nut PE

OPTIONS

None Remove Y
Non-relieving regulator A
Sintered bronze filter element:

5- μ m rating E5
20- μ m rating E4
40- μ 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
Viton seals V

*Insert preset pressure.

FRLS

MINIATURE FRLs Filter-Regulator-Lubricators

FDRL55 and 56 Models Port Sizes: 1/8, 1/4



- ◇ Individual filter (FD50); piston-type regulator (R55M) or diaphragm-type (R56M); and wick-feed lubricator (L50).
- ◇ Inline mounting.
- ◇ 5- μ 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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (10.3 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.

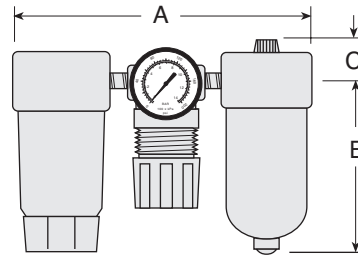
AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

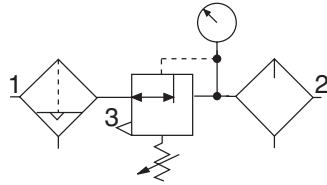
A	B	C	Depth †	Weight † lb (kg)
5.5 (140)	3.6 (90)	0.7 (17)	1.6 (41)	0.76 (0.34)

† Less gauge.



ISO FRL Symbol

Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA130-27PE5
5- μ m bronze	KA130-27E5
20- μ m bronze	KA130-27E4
40- μ 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 *

<p>BOWL TYPE</p> <p>Plastic bowls.....Remove B Metal bowls B</p> <p>FILTER DRAIN</p> <p>Internal automatic drain FD Manual drain..... F</p> <p>REGULATOR TYPE</p> <p>Piston type.....55 Diaphragm type56</p> <p>PORT SIZE</p> <p>1/8 NPTF 1 1/4 NPTF 2</p>	<p>For BSPP port threads add W to the end of the model number.</p> <p>GAUGE & PANEL MOUNTING NUT</p> <p>Gauge onlyRemove G Delete gauge NG Delete gauge & gauge ports..... NP Panel mounting nut: Plastic nut Add P Metal nut.....Add PN Hex nutAdd PE</p> <p>OPTIONS</p> <p>NoneRemove Y Non-relieving regulator A Sintered bronze filter element: 5-μm ratingE5 20-μm ratingE4 40-μm ratingE3 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</p>
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FRLs

GUARDSMAN Modular FRLs Filter-Regulator-Lubricators

MVFDRL60D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Individual filter (FD60); piston-type regulator (R60); sight-feed lubricator (L60D); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 SAE or 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- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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.

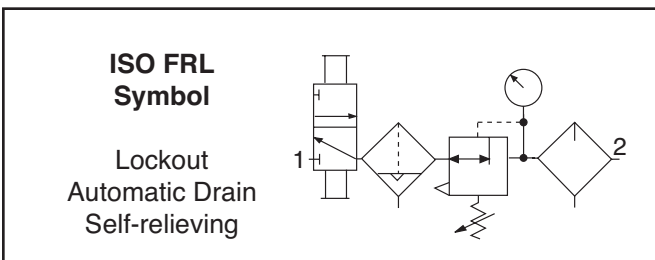
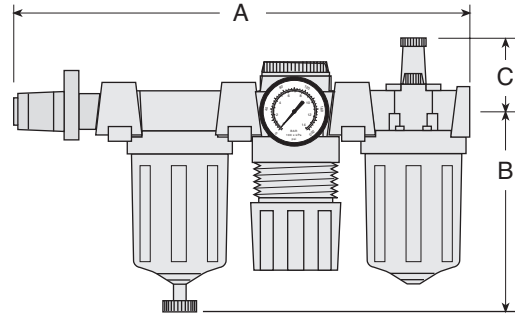
AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

A *	B	C	Depth	Weight 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- μ m polyethylene (Std element)	KA60F-03
5- μ m bronze	KA60F-03E5
20- μ m bronze	KA60F-03E4
40- μ 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 FD RL 60D - 2 Y NG *

BOWL TYPE

Plastic bowl Remove B
 Metal bowl B

ASSEMBLY

Modular M
 Pipe nipple..... Remove M

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

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

REGULATOR DOME

Acetal 60D
 Metal 65D

PORT SIZE

1/4 NPTF 2
 3/8 NPTF 3
 1/2 NPTF 4
 9/16-18 UNF SAE..... S6

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

GAUGE

Gauge..... Remove NG
 Delete gauge NG

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:
 5- μ m rating E5
 20- μ m rating E4
 40- μ 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

FRLs

GUARDSMAN II Modular FRLs Filter-Regulator-Lubricators

BMVFDRL70D Models Port Sizes: 1/4, 3/8, 1/2



- ◇ Individual filter (BFD70); piston-type regulator (R60); sight-feed lubricator (BL70D); lockout valve (V35)
- ◇ 5- μ 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.
- ◇ Self-relieving regulator; non-relieving optional.
- ◇ R75 regulator optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

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.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m or 40- μ m sintered bronze.

Fluid Media: Compressed air.

Heads: Zinc.

Inlet Pressure:

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

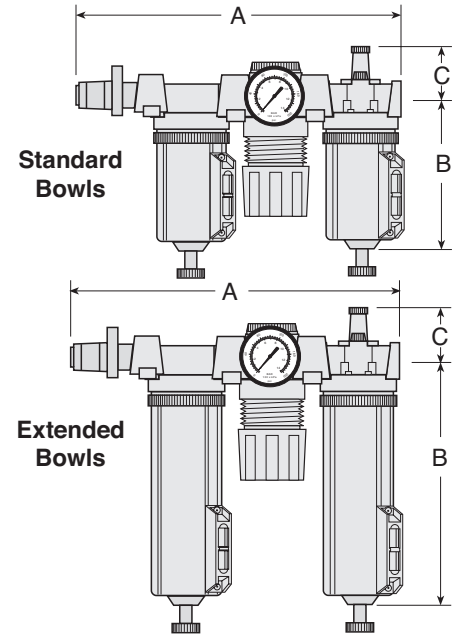
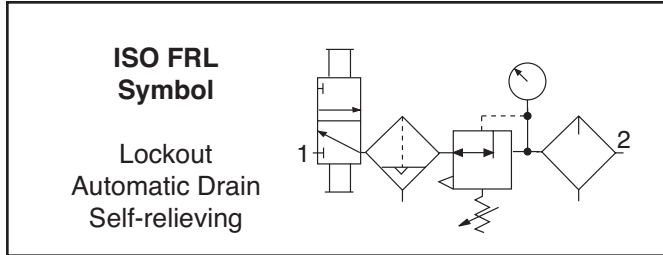
AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

Bowl	A *	B	C	Depth	Weight lb (kg)
Standard	12.3 (312)	5.1 (129)	3.3 (83)	2.4 (60)	5.00 (2.27)
Extended	12.3 (312)	8.1 (206)	3.3 (83)	2.4 (60)	5.50 (2.50)

* Without V35 lockout valve deduct 3.8 (97) from dimension A.

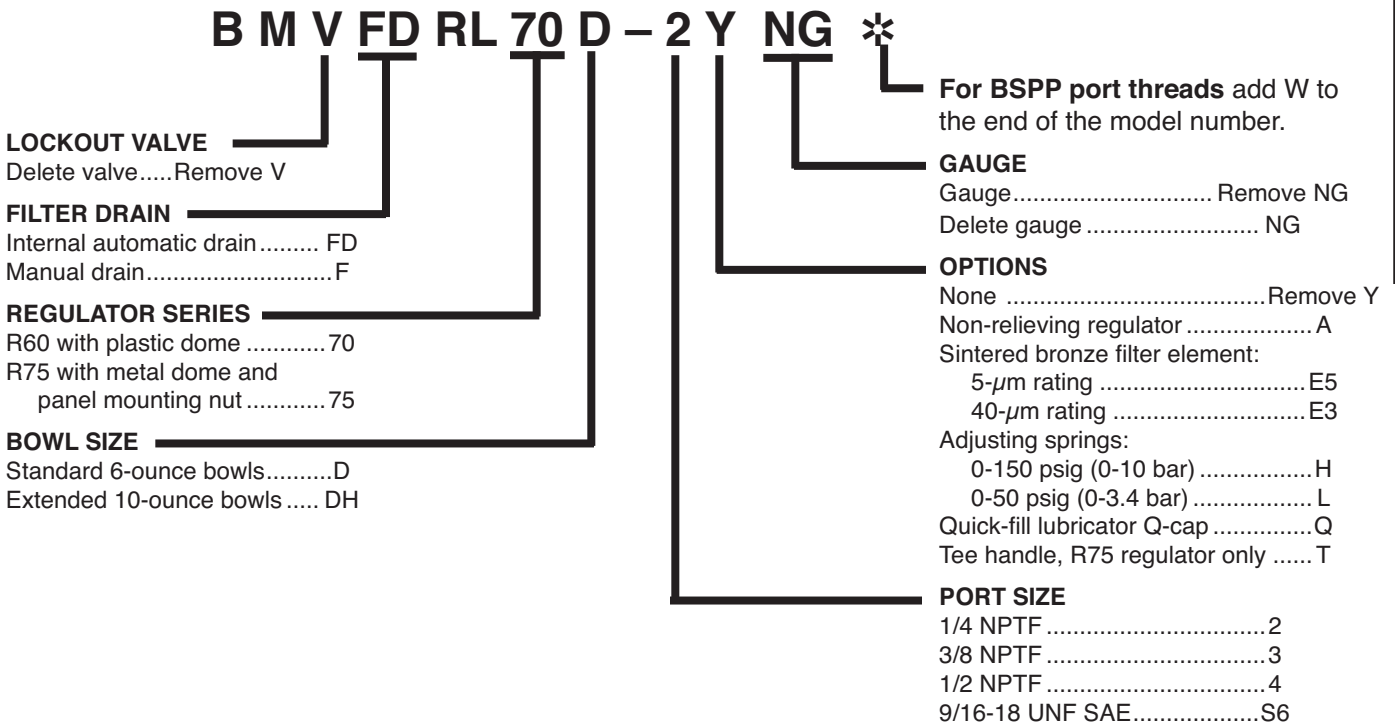


REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m polyethylene (Std element)	KA60F-03PE5
5- μ m bronze	KA60F-03E5
40- μ 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.



FRLs

Full-Size VANGUARD Modular FRLs Filter-Regulator-Lubricators

MVFDRL108D Models Port Sizes: 1/4, 3/8, 1/2, 3/4



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 or Warrior electronic drain.

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

Fluid Media: Compressed air.

Heads: Zinc.

Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.

125 psig (8.6 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.

Sight Dome: Clear nylon.

- ◇ Individual filter (FD100); diaphragm-type regulator (R100); sight-feed lubricator (L28D); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 or Warrior electronic drain.
- ◇ Self-relieving regulator; non-relieving optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

AIR FLOW DATA

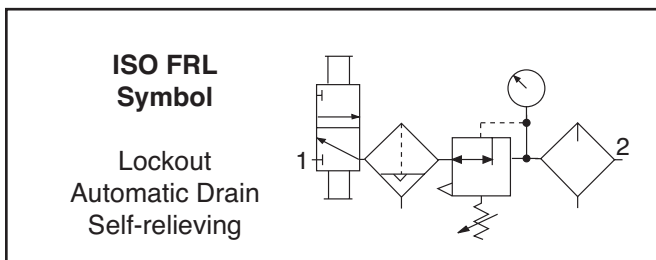
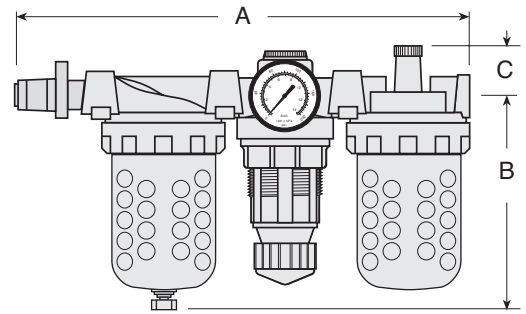
See Flow Charts for individual assembly components on preceding pages.

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- μ m polyethylene (Std element)	KA103-3PE
5- μ m bronze	KA103-3PE5
20- μ m bronze	KA103-3PE4
40- μ m bronze	KA103-3PE3

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 RL 108D - 2 Y *

BOWL TYPE

Metal bowls B
 Plastic bowls..... Remove B

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

Internal automatic drain FD
 Manual drain..... F
 Warrior electronic drain F2A

BOWL SIZE

Standard 8-ounce bowls..... 108D
 8-Ounce filter bowl &
 20-ounce lubricator bowl
 (metal bowls only) 108DH

PORT SIZE

1/4 NPTF 2
 3/8 NPTF 3
 1/2 NPTF 4
 3/4 NPTF 6X
 9/16-18 UNF SAE..... S6
 3/4-16 UNF SAE..... S8
 7/8-14 UNF SAE..... S10

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

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:
 5- μ m rating E5
 20- μ m rating E4
 40- μ m rating E3
 Adjusting springs:
 0-175 psig (0-12 bar) H
 0-50 psig (0-3.4 bar) L
 Remove adjusting key JJ
 Limit maximum psig setting:
 Above 49 psig (3.4 bar) M(*)
 Below 50 psig (3.4 bar) ML(*)
 Delete gauge NG
 Regulator tee handle T
 Quick-fill lubricator Q-cap Q

*Insert maximum limited pressure.

FRLs

Full-Size VANGUARD Modular FRLs Filter-Regulator-Lubricators

MVFDRL108W Models Port Sizes: 1/4, 3/8, 1/2, 3/4



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 or Warrior electronic drain.

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

Fluid Media: Compressed air.

Heads: Zinc.

Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.

125 psig (8.6 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.

- ◇ Individual filter (FD100); diaphragm-type regulator (R100); wick-feed lubricator (L28W); lockout valve (V35).
- ◇ Modular or inline mounting.
- ◇ 5- μ 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 or Warrior electronic drain.
- ◇ Self-relieving regulator; non-relieving optional.
- ◇ Pressure gauge.
- ◇ NPTF port threads; optional SAE or BSPP threads.

AIR FLOW DATA

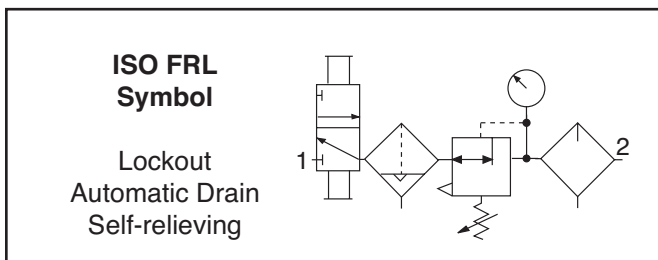
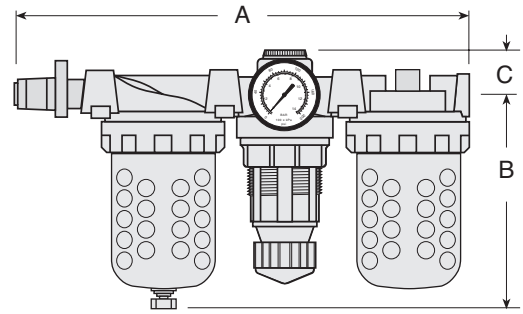
See Flow Charts for individual assembly components on preceding pages.

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- μ m polyethylene (Std element)	KA103-3PE
5- μ m bronze	KA103-3PE5
20- μ m bronze	KA103-3PE4
40- μ m bronze	KA103-3PE3

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 RL 108W - 2 Y *

BOWL TYPE

Metal bowls B
 Plastic bowls.... Remove B

LOCKOUT VALVE

Delete valve..... Remove V

FILTER DRAIN

Internal automatic drain FD
 Manual drain..... F
 Warrior electronic drain F2A

BOWL SIZE

Standard 8-ounce bowls..... 108W
 8-Ounce filter bowl &
 20-ounce lubricator bowl
 (metal bowls only) 108WH

PORT SIZE

1/4 NPTF 2
 3/8 NPTF 3
 1/2 NPTF 4
 3/4 NPTF 6X
 9/16-18 UNF SAE..... S6
 3/4-16 UNF SAE..... S8
 7/8-14 UNF SAE..... S10

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

OPTIONS

None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:

5- μ m rating E5
 20- μ m rating E4
 40- μ m rating E3

Adjusting springs:

0-175 psig (0-12 bar) H
 0-50 psig (0-3.4 bar) L
 Remove adjusting key JJ
 Limit maximum psig setting:

Above 49 psig (3.4 bar) M(*)
 Below 50 psig (3.4 bar) ML(*)
 Delete gauge NG
 Regulator tee handle T
 Quick-fill lubricator Q-cap Q

*Insert maximum limited pressure.

FRLs

Master Pneumatic-Detroit, Inc.

265

Full-Size SERIES 380 FRLs Filter-Regulator-Lubricators

AAMV1A1B1A1 Models Port Sizes: 3/8, 1/2, 3/4



- ◇ Individual filter (FD380); regulator (R380); lubricator (L380D); lockout valve (V380).
- ◇ Modular or inline mounting.
- ◇ 5- μ m-rated polyethylene filter element; optional 40- μ m element.
- ◇ Aluminum bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◇ Internal automatic filter drain; optional manual 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 SAE or BSPP threads.

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: Accent grey. Yellow, red, and blue optional.

Filter Drain: Internal automatic drain; optional manual drain or Warrior electronic drain.

Filter Element: 5- μ m-rated polyethylene; optional 40- μ m element.

Fluid Media: Compressed air.

Heads: Zinc.

Inlet Pressure:

15 psig (1 bar) minimum with automatic 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.

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).

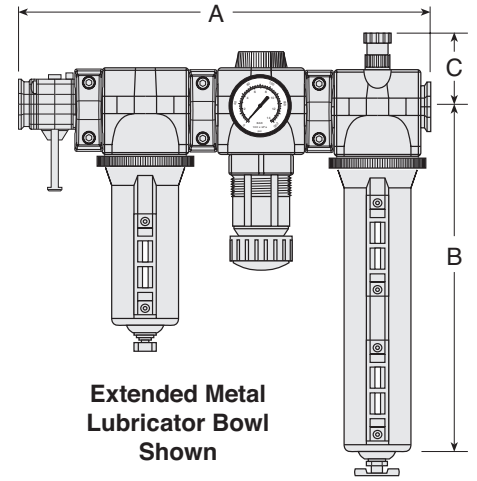
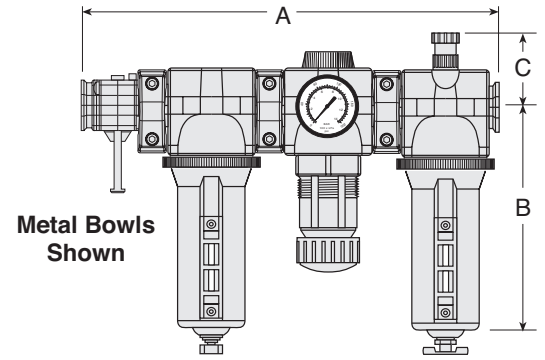
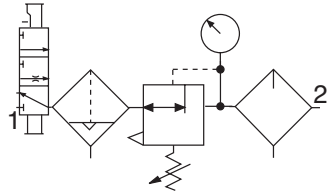
† Less gauge.

REPLACEMENT FILTER ELEMENT KITS

Element Type	Kit Number
5- μ m (Std element)	A115-106PE5
40- μ m bronze	A115-106PE3

ISO FRL Symbol

Lockout
Automatic Drain
Self-relieving



ORDERING INFORMATION

Change the letters in the sample model number below to specify the FRL you want.
To order with some of the other available options, see Ordering Information on page 290.

A A M V 1 A 1 B 1 A 1 3

CAP COLOR

Accent Grey (Std) ... A
MP Yellow B
Red C
Mid Blue D

BOWL TYPE

Two 9-ounce plastic A
Two 9-ounce metal B
9-Ounce metal on filter
and 15-ounce metal
on lubricator D

LOCKOUT VALVE

Delete valve Remove V

FILTER MODEL

F380 (5- μ m element) 1
F380-E3 (40- μ m element) .. 2

REGULATOR MODEL

R380 (0-125 psig) 1
R380-H (0-175 psig and
metal dome) 2
R380-L (0-50 psig) 7

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
3/4-16 UNF SAE F
7/8-14 UNF SAE G

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

LUBRICATOR MODEL

L380D B
L380D-Q (with Q-cap) C

High-Capacity VANGUARD FRLs Filter-Regulator-Lubricators

FDRL180 Models Port Sizes: 3/4, 1



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, external Hydro-Jector drain, or Warrior electronic drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (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.

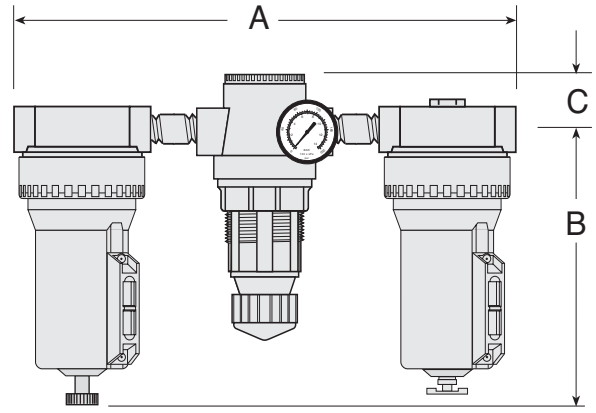
- ◇ Individual filter (FD100); piston-type regulator (R180M); wick-feed lubricator (L100).
- ◇ Inline mounting.
- ◇ 5- μ m-rated polyethylene filter element; optional sintered bronze elements.
- ◇ Metal bowls with clear nylon sight glass or polycarbonate plastic bowls with steel shatterguard.
- ◇ Internal automatic filter drain. Optional manual drain, 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.

DIMENSIONS inches (mm)

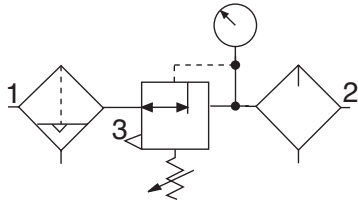
A	B	C	Depth	Weight lb (kg)
15.8 (401)	8.0 (204)	1.2 (31)	4.3 (108)	8.00 (3.64)



Metal Bowls Shown

**ISO FRL
Symbol**

Automatic Drain
Self-relieving

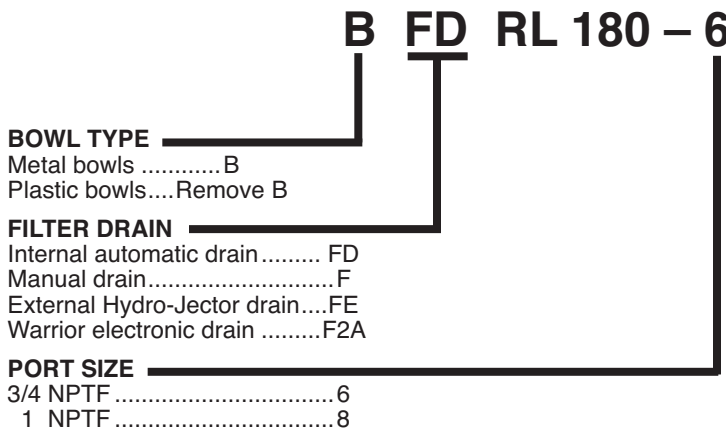


REPLACEMENT FILTER ELEMENT KITS

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

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.



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

OPTIONS

- None Remove Y
- Non-relieving regulator A
- Sintered bronze filter element:
 - 5- μ m rating E5
 - 20- μ m rating E4
 - 40- μ m rating E3
- Adjusting springs:
 - 0-175 psig (0-12 bar) H
 - 0-50 psig (0-3.4 bar) L
- Remove adjusting key JJ
- Delete bowl drain; 1/4 NPT female port instead LDC
- Limit maximum psig setting:
 - Above 49 psig (3.4 bar) M(*)
 - Below 50 psig (3.4 bar) ML(*)
- Delete gauge NG
- Regulator tee handle T
- Quick-fill lubricator Q-cap Q

*Insert maximum limited ressure.

FRLs

High-Capacity VANGUARD FRLs Filter-Regulator-Lubricators

FDRL189D Models Port Sizes: 3/4, 1



- ◇ Individual filter (FD100); piston-type regulator (R180M); wick-feed lubricator (L100).
- ◇ Inline mounting.
- ◇ 5- μ 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, 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, external Hydro-Jector drain, or Warrior electronic drain.

Filter Element: 5- μ m-rated polyethylene; optional 5- μ m, 20- μ m, or 40- μ 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 (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.

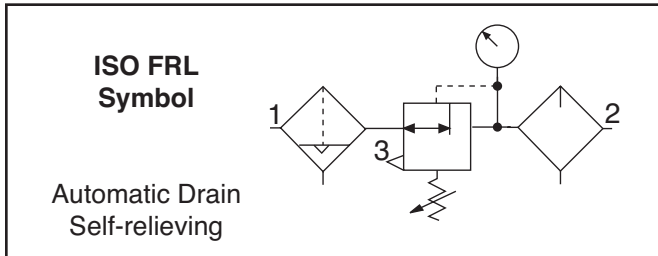
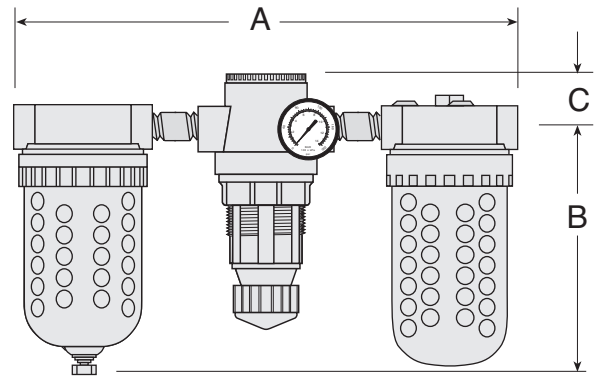
Seals: Nitrile.

AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

DIMENSIONS inches (mm)

A	B	C	Depth	Weight lb (kg)
15.8 (401)	8.0 (204)	1.2 (31)	4.3 (108)	8.00 (3.64)

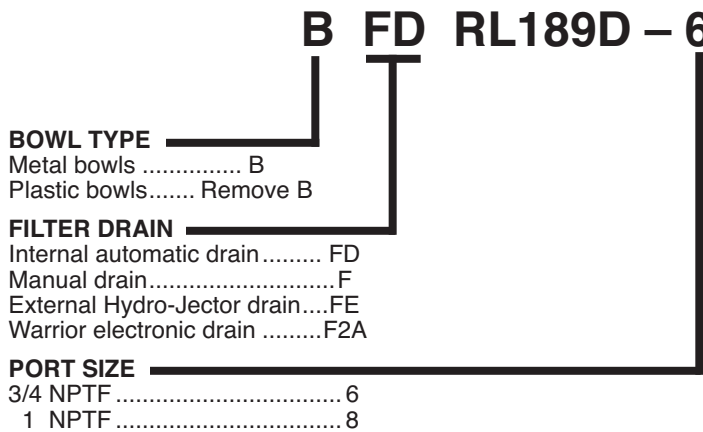


REPLACEMENT FILTER ELEMENT KITS

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

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.



- For BSPP port threads** add W to the end of the model number.
- OPTIONS**
- None Remove Y
 - Non-relieving regulator A
 - Sintered bronze filter element:
 - 5- μ m rating E5
 - 20- μ m rating E4
 - 40- μ m rating E3
 - Adjusting springs:
 - 0-150 psig (0-10 bar) H
 - 0-50 psig (0-3.4 bar) L
 - Remove adjusting key JJ
 - Delete bowl drain: 1/4 NPT female port instead LDC
 - Limit maximum psig setting:
 - Above 49 psig (3.4 bar) M(*)
 - Below 50 psig (3.4 bar).... ML(*)
 - Delete gauge NG
 - Regulator tee handle T
 - Quick-fill lubricator Q-cap Q
- *Insert maximum limited pressure.

FRLs

High-Capacity VANGUARD FRLs Filter-Regulator-Lubricators

BFDRL289D Models Port Sizes: 1-1/4, 1-1/2



- ◇ Individual filter (BFD200); piston-type regulator (R180); sight-feed lubricator (BL29D).
- ◇ Inline mounting.
- ◇ 40- μm -rated sintered bronze filter element; optional 5- μm sintered bronze element.
- ◇ Aluminum bowls with clear nylon sight glass. Optional extended lubricator bowl.
- ◇ Internal automatic filter drain. Optional manual 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:

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, external Hydro-Jector drain, or Warrior electronic drain.

Filter Element: 40- μm -rated sintered bronze; optional 5- μm sintered bronze.

Fluid Media: Compressed air.

Heads: Aluminum.

Inlet Pressure:

15 psig (1 bar) minimum with automatic drain.
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.

Regulator: Nylon dome; acetal knob. Aluminum dome with optional 0-150 psig spring.

Seals: Nitrile.

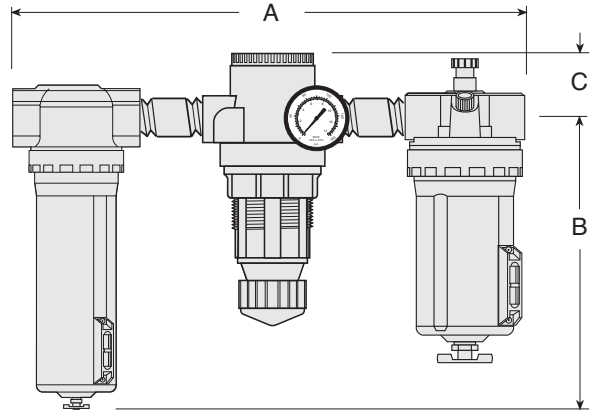
Sight Dome: Clear nylon.

AIR FLOW DATA

See Flow Charts for individual assembly components on preceding pages.

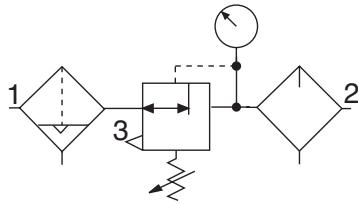
DIMENSIONS inches (mm)

A	B	C	Depth	Weight lb (kg)
15.8 (401)	10.6 (268)	2.1 (54)	4.3 (108)	8.00 (3.64)



ISO FRL Symbol

Automatic Drain
Self-relieving



REPLACEMENT FILTER ELEMENT KITS

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

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 RL289D - 10 Y NG *

FILTER DRAIN

Internal automatic drain..... FD
 Manual drain..... F
 External Hydro-Jector drain....FE
 Warrior electronic drainF2A

PORT SIZE

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

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

GAUGE

Gauge..... Remove NG
 Delete gauge NG

OPTIONS

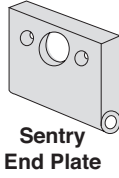
None Remove Y
 Non-relieving regulator A
 Sintered bronze filter element:
 5- μ m rating E5
 Adjusting springs:
 0-150 psig (0-10 bar) H
 0-50 psig (0-3.4 bar) L
 Remove adjusting key JJ
 Delete bowl drain; 1/4 NPT
 female port instead LDC
 Limit maximum psig setting:
 Above 49 psig (3.4 bar) M(*)
 Below 50 psig (3.4 bar)..... ML(*)
 Regulator tee handle T
 Quick-fill lubricator Q-cap Q

*Insert maximum limited ressure.

FRLs

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:



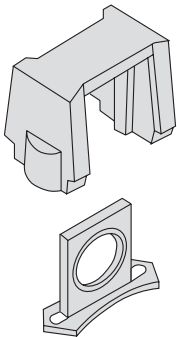
Item	Part Number	Quantity Required		
		1 Unit	2 Units	3 Units
End Plate	10R-10	2	2	2
Short Screw	10R-18	4	2	0
Long Screw	10R-19	0	2	4
Small O-ring	103-95	1	1	1
Large O-ring	33-53	1	2	3
Ports		See Chart at Right		

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

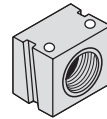
MODULAR CONNECTORS



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**.

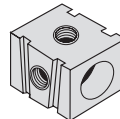
MODULAR FEMALE PORT



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

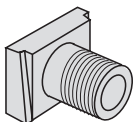
MODULAR EXTRA PORTS



Used before or after a modular unit to supply three auxiliary 1/4 ports.

Port Size	Female Port Part Number
All	30-13

MODULAR MALE PORT

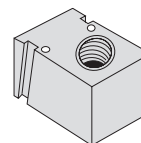
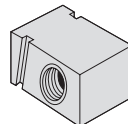


Used to connect modular units to non-modular units. Also allows right-angle connections by using the side ports or extra ports shown at the right.

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

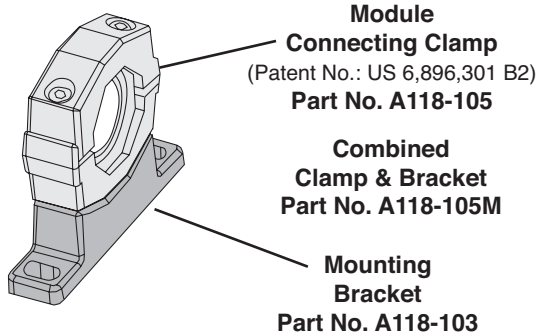
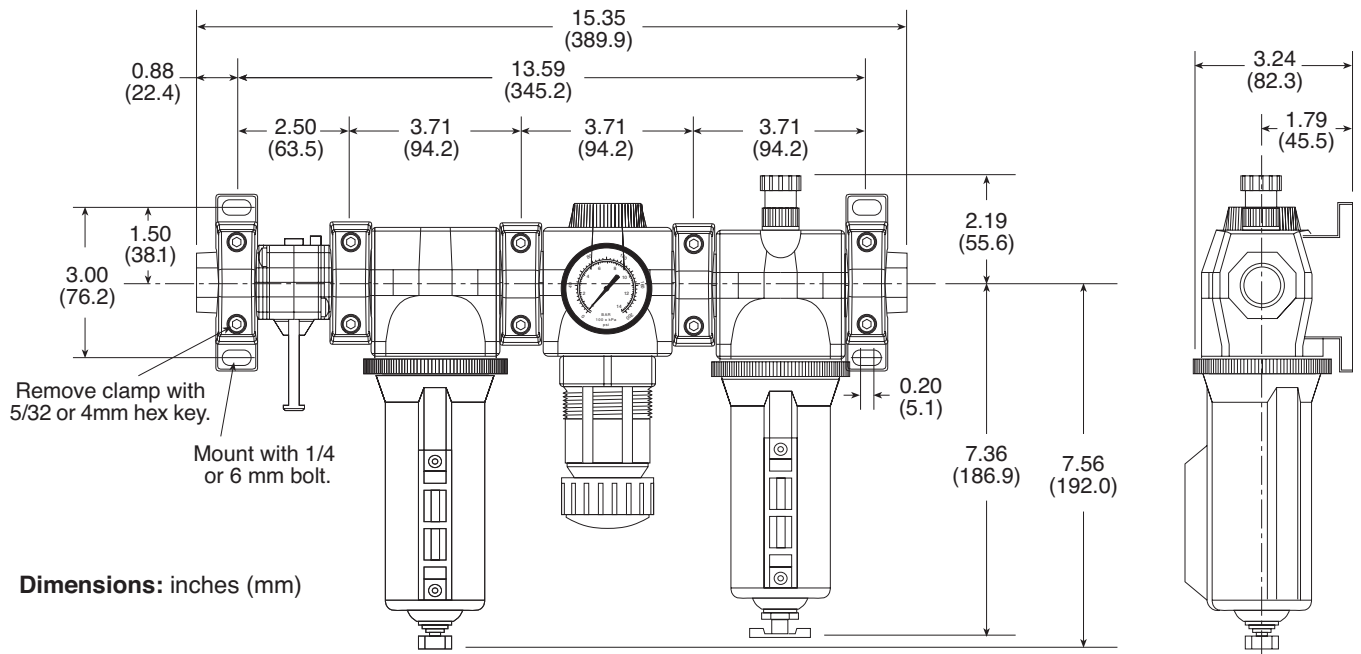
MODULAR SIDE PORTS

Provides a right-angle female port at front, back, top, or bottom.



Port Size	Port Position	Part Number
1/4	Front & Back	30-15-1/4
3/8	Front & Back	30-15-3/8
1/2	Front & Back	30-15-1/2
1/4	Top	30-16U-1/4
3/8	Top	30-16U-3/8
1/2	Top	30-16U-1/2
1/4	Bottom	30-16D-1/4
3/8	Bottom	30-16D-3/8
1/2	Bottom	30-16D-1/2

SERIES 380 Modular Accessories



CLAMP for MODULE CONNECTIONS

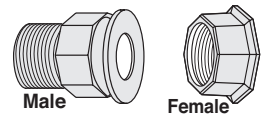
Specially designed clamps provide a quick and easy assembly or disassembly of Series 380 modules. Two allen-head bolts quickly tighten or loosen the clamp using a 5/32 or 4mm hex key. The clamp contains a plate carrying two O-rings to provide positive sealing between modules. Order clamp by part number **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**.

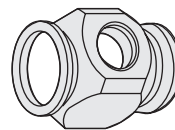
MALE and FEMALE END PORTS

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
3/8 NPTF	—	118-100-3
1/2 NPTF	118-109-4F	118-100-4
3/4 NPTF	118-109-6F	118-100-6

EXTRA PORT BLOCK



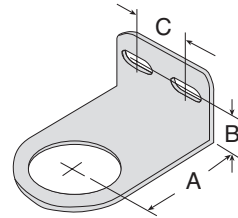
An extra port block can be placed between modules to provide two auxiliary 1/4 NPTF ports. Its mounting position can be rotated to obtain the most convenient operating orientation. If only one auxiliary port is to be used, the unused port must be closed with a pipe plug. (The inlet and outlet are not threaded.) Order with FRLs (see page 276) or order by the following part numbers:

Port Size	Part Number
1/4 NPTF	118-106-2
3/8 NPTF	118-106-3
1/2 NPTF	118-106-4

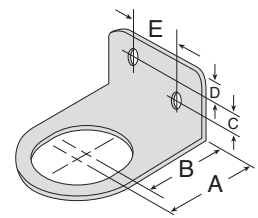
Mounting Accessories

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.



Guardsman, Guardsman II, R75, Series 380 and Vanguard



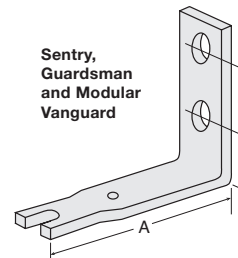
Sentry, Miniature

Usage	Part Numbers			Dimensions inches (mm)			Panel Mounting Hole Diameter inches (mm)
	Kit	Bracket	Nut	A	B	C	
GUARDSMAN, GUARDSMAN II	K60R-15	60R-15	60R-14P	2.38 (60)	1.00 (25)	1.50 (38)	1.56 (40)
R75	—	35-25	—	2.38 (60)	1.00 (25)	1.50 (38)	1.88 (48)
SERIES 380, VANGUARD	K37-71	37-71	37-32	2.38 (60)	1.00 (25)	1.50 (38)	2.06 (52)

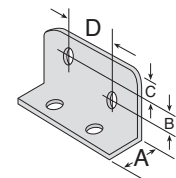
Usage	Kit	Bracket	Nut	A	B	C	D	E	Diameter inches (mm)
SENTRY, MINIATURE	A33-82	33-82	10R-26	1.375 (35)	1.125 (29)	0.31 (8)	0.31 (8)	.69 (17)	1.19 (30)

MODULAR MOUNTING BRACKETS

Two L-shaped metal brackets as shown at the right 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, Guardsman and Modular Vanguard

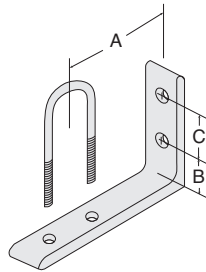


Miniature

Usage	Kit Number	Bracket Number	Dimensions inches (mm)			
			A	B	C	D
SENTRY	Mounts with screws, number 10R-19 (two required)					
GUARDSMAN and Modular VANGUARD	K30-08	30-08	2.25 (57)	0.88 (22)	1.00 (25)	—
MINIATURE	K50-01	50-01	0.63 (16)	0.31 (8)	0.31 (8)	.69 (17)

FRL INLINE MOUNTING PIPE BRACKETS

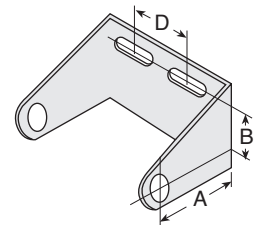
Two pipe brackets can be used for wall mounting of FRL assemblies that use pipe nipples to join the components. The bracket kits listed below include two sets of brackets.



Nipple Size	Kit Number	Dimensions inches (mm)		
		A	B	C
1/4	UMB-2	2.72 (28)	0.50 (13)	1.00 (25)
3/8	UMB-3			
1/2	UMB-4			
3/4	UMB-6	3.69 (94)	1.13 (29)	1.25 (32)
1	UMB-8			

MOUNTING BRACKETS for High-Capacity VANGUARD 3/4- and 1-INCH MODELS

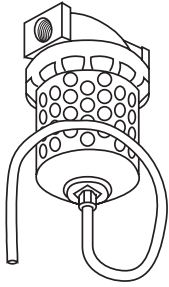
Individual filters and lubricators with 3/4- or 1-inch ports can be mounted to a vertical surface using the brackets listed below.



Pipe Size	Bracket Number	Dimensions inches (mm)		
		A	B	C
3/4	109-33-3/4	2.5 (64)	1.5 (38)	2.13 (54)
1	109-33-1	2.5 (64)	1.5 (38)	2.13 (54)

Note: No mounting brackets available for PR180M, PRH180M, 1-1/4" or 1-1/2".

TUBE-AWAY KITS

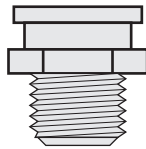


Tube-Away kits for VANGUARD and 380 Series filters with automatic drains are available to carry liquid drainage to a remote disposal point. Order by the part numbers below.

- 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**

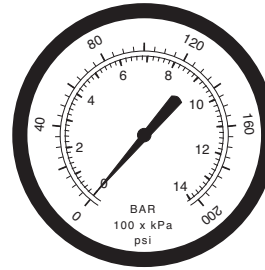
QUICK-FILL CAP FOR LUBRICATORS

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

PRESSURE GAUGES



Gauges are made with “shatterproof” 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
0–60 (0–4.1)	2 (51)	1/4	60BDD
0–200 (0–13.8)	2 (51)	1/4	200-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 (0-10.3)	1.5 (38)	1/8	70MDD

† Back mounting connection.

MINI MUFFLERS

An economical aid to noise reduction.

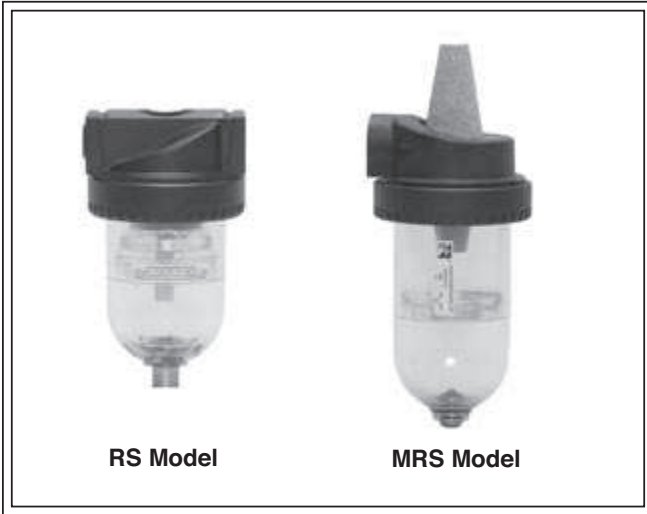


1/8"NPT and 1/4" NPT. Brass body, sintered bronze element.

Silencer/Reclassifiers

Port Size: 1/2 to 1

RS and MRS Models

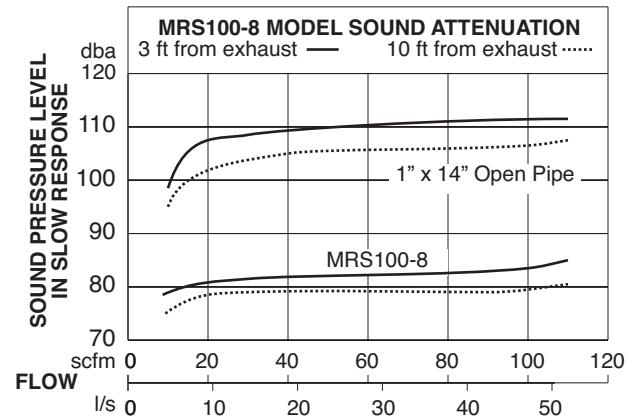
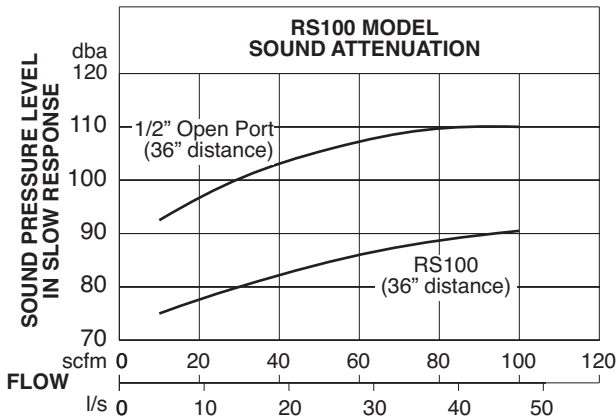


Silencer/reclassifiers are integral silencer and oil separation devices. When installed at the exhaust ports of pneumatic valves they reduce exhaust noise and capture lubricants contained in the exhausting air. They are used on valve-cylinder applications and on air tools with piped exhausts.

- ◇ 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.
- ◇ Both a drain cock and a 1/8 tube fitting are supplied for the manual or automatic draining of accumulated liquids.
- ◇ 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:

40° to 175°F (4° to 79°C).

Bowl: Polycarbonate plastic.

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)

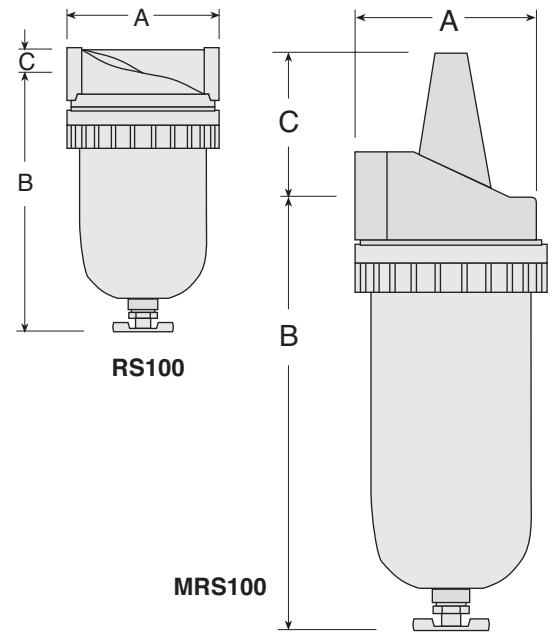
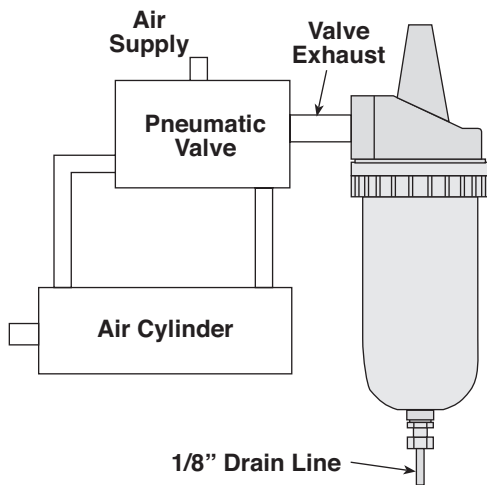
Port Size	Model Number	A	B	C	Depth	Weight lb (kg)
1/2	RS100-4	3.5 (89)	5.5 (140)	0.7 (18)	3.5 (89)	1.3 (0.59)
1/2	MRS100-4	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)
3/4	MRS100-6	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)
1	MRS100-8	4.2 (107)	8.4 (213)	2.7 (69)	4.2 (107)	2.8 (1.27)

REPLACEMENT ELEMENT KITS

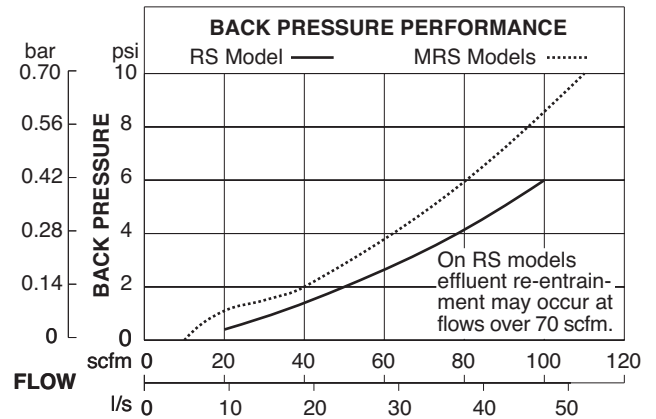
RS Models KA103-03E4

MRS Models KA109-32

TYPICAL INSTALLATION IN A VALVE-CYLINDER CIRCUIT



Absorbing Filters, Dryers,
Clean Air Packages



ORDERING INFORMATION^o

Change the letters in the sample model number below to specify the silencer/reclassifier you want.

B RS 100 - 4 Y *

BOWL TYPE _____

Metal bowl B
Plastic bowl Remove B

BOWL SIZE _____

8-Ounce (240-ml) bowl RS
16-Ounce (480-ml) bowl MRS

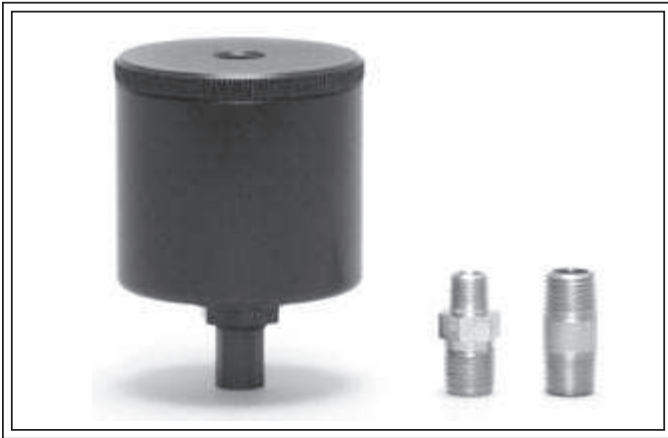
PORT SIZE _____

1/2 NPTF 4
3/4 NPTF (only with MRS bowl) 6
1 NPTF (only with MRS bowl) 8

Options:
For BSPP port threads add W to the end of the model number.
OPTIONS
None Remove Y
Bowl shatterguard SG

External Float-Actuated Drain Automatic Float Drain

BD130 Models
Port Sizes: 1/4, 1/2

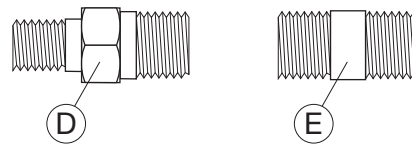
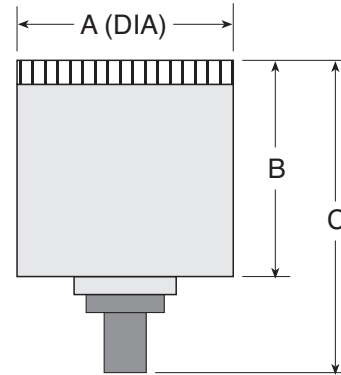


- ◇ Heavy-duty, corrosion proof
- ◇ Auto draining where pressure drop is not available

The automatic float drain attaches to the bottom of drain legs (or vertical air lines) to remove accumulated moisture automatically. It is also suitable for attachment to any VANGUARD or SERIES 380 filter; this requires the LDC (less drain cock) option. In addition, it can be used as the drain on Series 25 MP-Filenco dryer/filters.

The drain is a normally open, pilot-operated valve rated for 10-250 psig (0.7-17 bar) at temperatures up to 175°F (79°C). The valve is held closed by line pressure. The pilot valve is never submerged in water, and its discharge is operated by system air pressure. The float is extremely light; it cannot leak or hold fluid. All parts are corrosion proof.

The drain has a manual override to check proper functioning. Discharge is easily piped to a remote location. When the compressed air system is shut down, the valve returns to its normally open condition and water will drain by gravity.



DIMENSIONS inches (mm)

Bowl	A	B	C	Depth
BD130-2	2.5 (64)	2.4 (60)	3.3 (83)	2.5 (64)
BD130-4	2.5 (64)	2.4 (60)	3.3 (83)	2.5 (64)

PORT SIZES

Model Number	Inlet (NPTF)	Outlet Drain (NPTF)	Pipe Nipple (NPT)
BD130-2	1/4	1/8	(D) 1/4 x 1/8 (E) 1/4 x 1/4
BD130-4	1/2	1/8	Not supplied with product

Electronically Controlled WARRIOR Drain

The WARRIOR drain is designed to remove condensate from components in compressed air systems. Typical installations include compressors, dryers, receivers, driplegs, and filters.

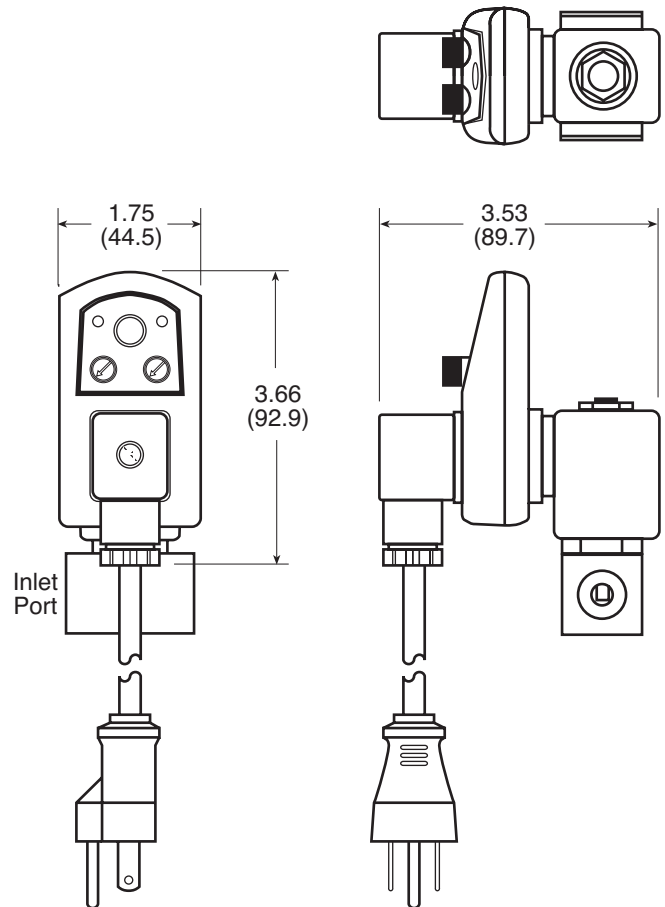
The drain consists of a timer and a valve. Electronic controls allow the draining interval to be set from 0.5 to 45 minutes, and the drain time from 0.5 to 10 seconds. Once set, draining action is automatic and requires no maintenance. This is important in constant-flow applications where there is no 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

Pipe Size*	Voltage	Drain Only Product Number
1/4 NPTF	115 VAC, 50/60 Hz	DED-115V-2
3/8 NPFT	115 VAC, 50/60 Hz	DED-115V-3
1/2 NPFT	115 VAC, 50/60 Hz	DED-115V-4
1/4 NPFT	24 VDC	DED-24V-2
3/8 NPFT	24 VDC	DED-24V-3
1/2 NPFT	24 VDC	DED-24V-4

* For BSPP threads, add W to the end of the product number.

Pressure/Vacuum Switches

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.**

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 211-2A

Adjustment Range

- 1 — 3-7 psig (0.07-.47 bar)
- 2 — 5-30 psig (0.34-2 bar)
- 4 — 25-100 psig (1.7-6.9 bar)

Circuit Type

- 1 — SPDT
- 2 — SPST normally open
(must use electrical connection 1 or 2)
- 3 — SPST normally closed
(must use electrical connection 1 or 2)

Electrical Connection

- 1 — 18-inch (450-mm) flying leads
- 2 — Flying leads & female weather pack
- 3 — DIN 43650A, male half only
- 4 — DIN 43650A cable clamp
- 5 — DIN 43650A 13-mm female conduit

Pipe Size

- 1 — 1/8 NPTF
- 2 — 1/4 NPTF. For 1/4 BSPP port threads add W to the end of the model number.
- S7 — 7/16-20 SAE

Options

- A — Viton diaphragm
- B — EPDM diaphragm
- C — 304 stainless steel housing
(1/4 NPTF or BSPP fitting only)
- D — Brass housing
(1/4 NPTF or BSPP fitting only)
- E — 10-ampere rating
- F — Gold electrical contacts
- G — DIN light 110 volt AC
- H — DIN light 12 volt DC
- J — DIN light 24 volt DC
- K — IP 68 cover for flying leads
(must use electrical connection 1 or 2)
- L — Adjustable with IP 68 protection



SPECIFICATIONS

Ambient/Media Temperature:

-40° to 180°F (-40° to 80°C).

Electrical: 5 ampere, 125, 250 VAC; 12, 24 VDC.

Housing: Glass-filled nylon. Brass, or stainless steel optional.

Maximum Overpressure: 350 psig (25 bar).

Repeatability: ± 2% of full set point range at 70°F (20°C) ambient temperature.

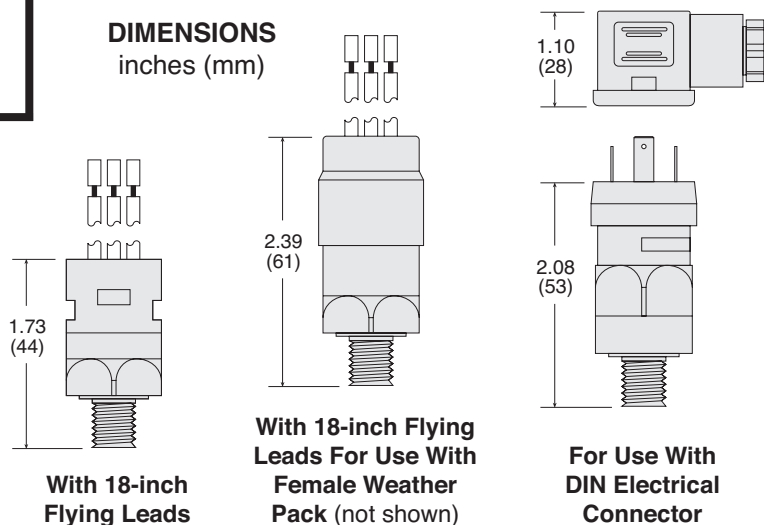
Weight: 0.3 lb (0.14 kg).

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.

DIMENSIONS

inches (mm)



MPS Pressure Sensors



- ◇ Panel mounting; inline mounting; modular assembly.
- ◇ Four operating pressure ranges:
 - Positive pressure..... 0 to 145 psi
 - Vacuum pressure..... 0 to -30 in Hg
 - Low pressure 0 to 14.7 psi
 - Compound..... -14.7 to 72.5 psi
- ◇ Two NPN or PNP (sourcing) and NPN (sinking) open collector.
- ◇ Output response time less than 2 milliseconds, or can be programmed.
- ◇ Switch point and high/low programming.
- ◇ Selectable units of measure:
 - (1) mm Hg, -bar, -kPa, in Hg.
 - (2) kgf/cm², PSI, bar, kPa.
- ◇ IP65 rated and CE marked.
- ◇ Uses air or non-corrosive gases.
- ◇ Displays error message.

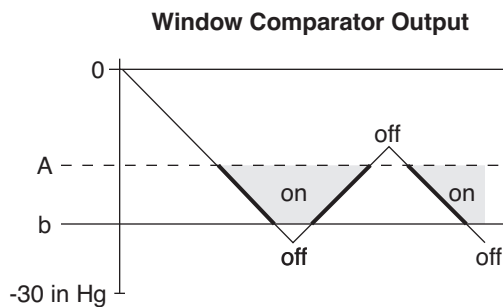
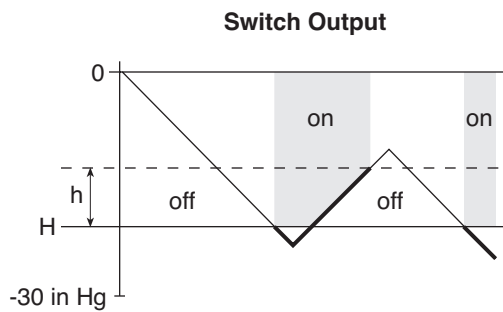
OUTPUT MODES

The MPS sensor has two independent NPN or PNP open collector output signals. An analog output is optional.

The Switch Output Mode (see diagram at the right) has a switch point programmed by the user at a specific pressure. The hysteresis range (h) adjustment controls the output signal from 0 to 100% below the switch point (H).

The Window Comparator Mode (see diagram at the right) provides two switchpoint settings (A) and (b) that control the output signals (NPN/PNP) between two pressures. This is referred to as the high/low setting.

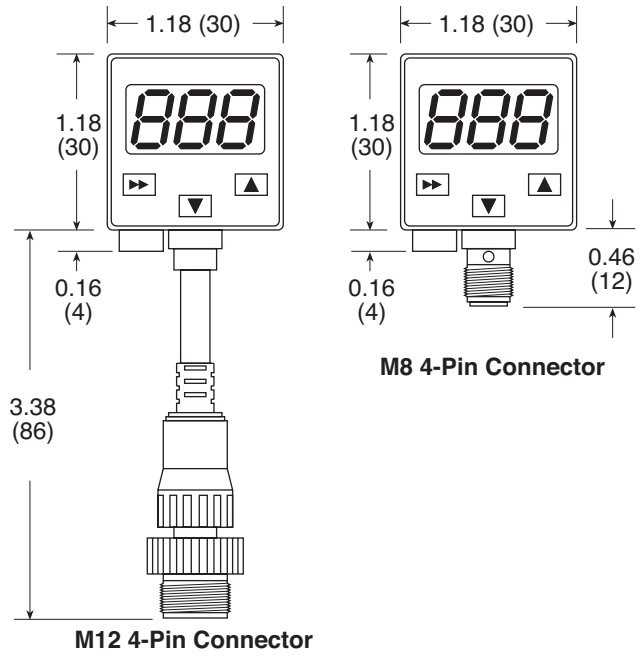
The optional analog output is calibrated to the pressure scale of the sensor.



(Continued on Next Page)

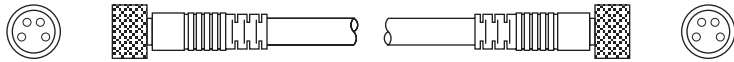
MPS Pressure Sensors (continued)

DIMENSIONS inches (mm)

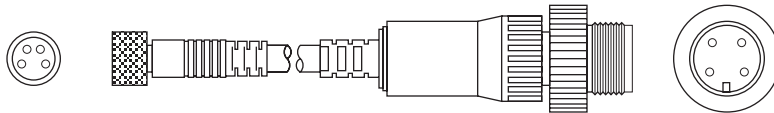


ACCESSORY CABLES

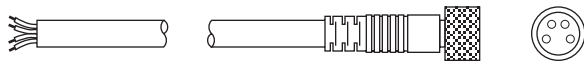
2-Meter Cables



Model 33-548-2M



Model 33-549-2M



Model 33-550-2M

ORDERING INFORMATION for MPS PRESSURE SENSOR (Without Regulator)

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

MPS - 1 A 1 A 1 A 0

PRESSURE SENSOR ASSEMBLY

Individual pressure sensor unit..... A
 Pressure sensor with 1/8" plug and
 brass hex fitting for regulators. B
 Pressure sensor with extra port and
 and one modular connector.
 (Guardzman & Vanguard modular
 units only) C

PRESSURE RANGE

0 to 145 psig (positive pressure) 0
 0 to 14.7 psig (low pressure) 1
 0 to -30 in Hg (vacuum) 2
 -14.7 to 72 psig (compound) 3

ELECTRICAL CONNECTOR

4-Pin, M8 A
 4-Pin, M12 B

CIRCUIT

NPN sinking output..... 0
 PNP sourcing output..... 1

PORT SIZE

1/8 NPTF A

ORDERING INFORMATION for MPS PRESSURE SENSOR WITH REGULATOR

Change the letters in the sample model number below to specify the regulator/sensor you want.

A 4 A-MPS-1 A 1 A 1 A 0

REGULATOR: Modular extra port and modular clamping included.

R60 (See pages 120-121)A
 R60-H (See pages 120-121) B
 R75 (See pages 122-123) C
 R75-H (See pages 122-123) D
 R100 (See pages 124-125) E
 R100-H (See pages 124-125)F
 IR100 (See pages 136-137) G
 IR100-H (See pages 136-137) H
 PR100 (See pages 144-145)J
 PR100-H (See pages 144-145) ... K

REGULATOR PORTS

3/8 NPTF3
 1/2 NPTF4
 3/4 NPTF (R100 regulators only)6
 3/8 BSPPC
 1/2 BSPPD
 3/4 BSPP (R100 regulators only)E

PRESSURE SENSOR ASSEMBLY

Individual pressure sensor unit..... A
 Pressure sensor with 1/8" plug and
 brass hex fitting for regulators. B
 Pressure sensor with extra port and
 and one modular connector.
 (Guardzman & Vanguard modular
 units only) C

ELECTRICAL CONNECTOR

4-Pin, M8 A
 4-Pin, M12 B

CIRCUIT

NPN sinking output..... 0
 PNP sourcing output..... 1

PORT SIZE

1/8 NPTF A

PRESSURE RANGE

0 to 145 psig (positive pressure) ... 0
 0 to 14.7 psig (low pressure) 1
 0 to -30 in Hg (vacuum) 2
 -14.7 to 72 psig (compound) 3

SERV-OIL Reservoirs

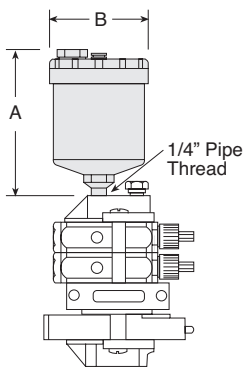
Servo-Meters can be supplied with oil by pressure systems (up to 30 psig) or gravity systems, although gravity systems are generally preferred. Remote reservoirs should be connected to the bottom port of the SERV-OIL equipment with a minimum 5/16" I.D. line.

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.

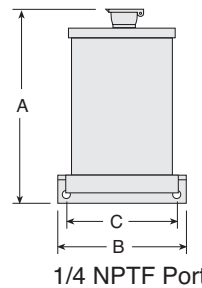
Capacities. Transparent reservoirs are available in 10-ounce (300-ml), 1-quart (960-ml), and 2-quart (1920-ml) capacities; metal reservoirs in 1-gallon (3.8-liter), 5-gallon (18.9-liter), and 10-gallon (38-liter) capacities. Metal reservoirs have an internal oil filter, sight tube, and filter breather 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.



Transparent Reservoir Shown on MPL

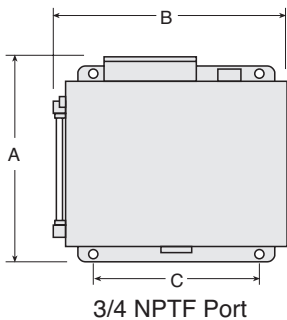
Part No.	Capacity†
M476R	10 oz (0.3 l) (7970 drops) (polycarbonate bowl)
M476RN	10 oz (0.3 l) (nylon bowl)
M476RP	10 oz (0.3 l) (polypropylene bowl)



Transparent Reservoir

Part No.	Capacity†
M570-6R	1 qt (0.9 l) (25,400 drops)
M570-12R	2 qt (1.9 l) (50,800 drops)

† One drop = 1/30 cc. Capacity in drops is at 90% of full capacity.



Metal Reservoir

Includes internal oil filter, sight tube, quick-fill fitting, and filter breather fill cap.

Part No.	Capacity†
473R	1 gal (3.8 l) (102,000 drops)
477R	5 gal (19 l) (508,000 drops)
479R	10 gal (38 l) (1,020,000 drops)

ACCESSORIES for RESERVOIRS

Low-Level Switch (not for 10-oz models):
Add suffix G to reservoir part number.

High- and Low-Level Switches (not for 10-oz models):
Add suffix GG to reservoir part number.

Sight Dome & Remote Indicator:
Side Mounting: Part M481R
Top Mounting: Part 482R

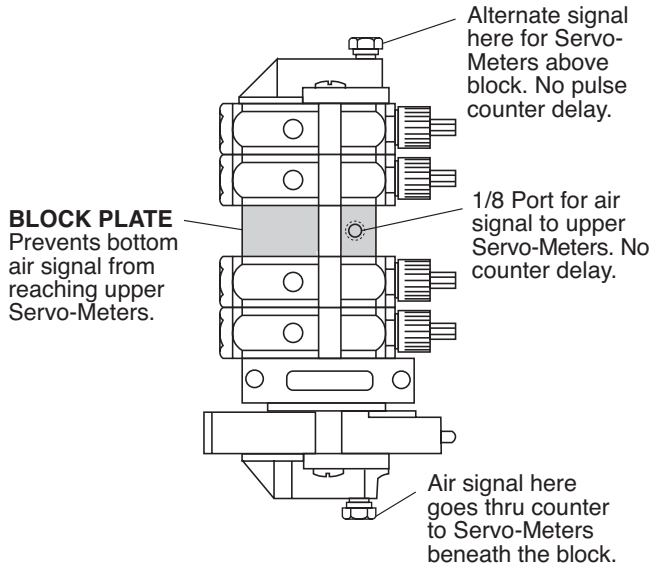
NOTE

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)			Depth
		A	B	C	
M476R	10 ounces	5.4 (137)	3.3 (84)	—	3.3 (84)
M476RN	10 ounces	5.4 (137)	3.3 (84)	—	3.3 (84)
M476RP	10 ounces	5.0 (127)	3.3 (84)	—	3.3 (84)
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)
473R	1 gallon	9.9 (251)	10.9 (276)	8.0 (203)	6.1 (154)
477R	5 gallons	17.9 (455)	14.9 (378)	12.0 (305)	6.1 (154)
479R	10 gallons	24.6 (625)	16.9 (429)	13.5 (343)	7.1 (180)

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 BSPP 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 BSPP 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
A01244	Elbow	1/8 Female	1/4 Male
A01242S	Straight	1/8 Female	1/8 Male
A01244S	Straight	1/8 Female	1/4 Male
A01284S	Straight	1/4 Female	1/4 Male

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.

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 BSPP threading

TUBING. Tubing lengths should be specified in meters (1 meter = 3-1/4 feet).

Tubing Part No.	Description	Usage
00942M	1/8" O.D. Nylon	Oil Delivery Lines
A00942M	1/8" O.D. Nylon, Filled and Capped	Oil Delivery Lines
00984M	1/4" O.D. Nylon	Air Signal Lines

SEAL 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 seals be replaced completely 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.

***PneuCool* COOLANT CONCENTRATE for SCORPION SYSTEMS**

PneuCool 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.

PneuCool 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 *PneuCool*. Highly concentrated *PneuCool* must be diluted with water before use. Recommended dilutions for various machining operations are shown below.

Machining Operation	Parts of Water to One Part of <i>PneuCool</i>
Boring, Drilling, Sawing, Reaming, Milling, Planing, Gear Cutting	20–30
Threading, Broaching	10–20
Grinding	30–60
Metalforming	0–5

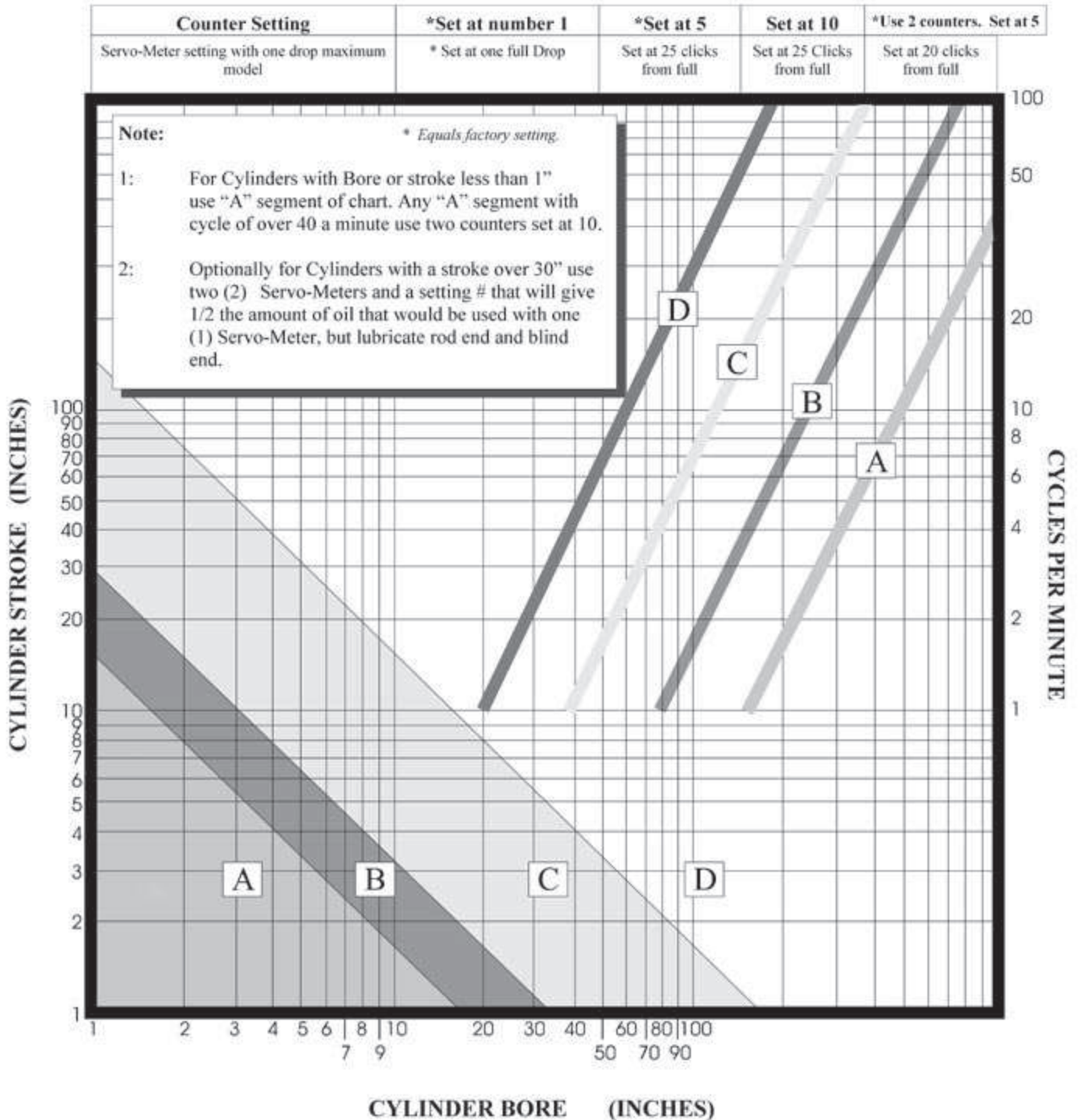
Order *PneuCool* by the following part numbers:

1 Gallon	PC-1GAL
5 Gallon	PC-5GAL

An 8-ounce sample is included with each *Scorpion* unit.



mp SERV-OIL PNEUMATIC INJECTION LUBRICATION



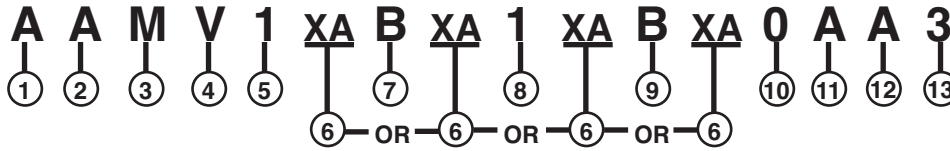
First identify where the bore and stroke intersect on the lower chart. With the appropriate letter use the cycles of the cylinder per minute and draw a line to intersect the A, B, C or D line on the upper chart. Draw a line vertically from there to the appropriate setting of the counter and Servo-Meter.

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.

SERIES 380 FRL ORDERING INFORMATION

The following ordering information must be used when options are required in addition to those shown on the SERIES 380 FRL pages of this catalog

Use the codes below to change the sample ordering number to specify the assembly you want.



① CAP COLOR

Accent Grey	A
MP Yellow	B
Red	C
Mid Blue	D

② BOWL TYPE (See ⑩ for drain options.)

All plastic	A
All metal	B
Extended metal bowls on coalescing filter and lubricator; standard metal bowl on G.P. filter	D

③ CONNECTION

Modular connectors	M
Pipe nipples	P

④ LOCKOUT VALVE

V380 Lockout valve	V
No lockout valve	Remove V

⑤ GENERAL PURPOSE FILTER (See ⑩ for drain options.)

No general purpose filter	0
F380 (5- μ m element)	1
CFR 380 (0-125 psig and 5- μ m element)	3
CFR 380-H (0-175 psig, metal dome, 5- μ m element)	6
CFR 380-L (0-50 psig, 5- μ m element)	8

⑥ ADDITIONAL PORTS

No port	Remove XA
1/4 NPTF extra port only	X0
1/4 NPTF extra port, pressure/vacuum switch PDA211-2, two 01986 plugs	XA
1/4 NPTF extra port, pressure/vacuum switch PDA212-2, two 01986 plugs	XB
1/4 NPTF extra port, pressure/vacuum switch PDA214-2, two 01986 plugs	XC
1/4 NPTF extra port, pressure/vacuum switch PDA215-2, two 01986 plugs	XD
3/8 NPTF extra port only	XE
1/2 NPTF extra port only	XF
1/4 NPTF extra port, pressure/vacuum switch PDA414-2, two 01986 plugs	XG
1/4 NPTF extra port, pressure/vacuum switch PDA411-2, two 01986 plugs	XJ
1/4 NPTF extra port, pressure/vacuum switch PDA413-2, two 01986 plugs	XK

Note: When an additional port will be included at either end of an assembly, you must select, from section 11. Select an INLET END port if additional port is FIRST component of the assembly. Select an OUTLET END port if additional port is last component of the assembly.

⑦ COALESCING FILTER (See ⑩ for drain options. See ⑫ for differential pressure gauge options.)

No coalescing filter	A
FC380 (0.3- μ m element)	B
FC380-E8 (0.01- μ m element)	C
FC380 (0.3- μ m element) and FC380-E9 (activated carbon cartridge)	D
FC380-E8 (0.01- μ m element) and FC380-E9 (activated carbon cartridge)	E

⑧ REGULATOR

No regulator	0
R380 (0-125 psig)	1
R380-H (0-175 psig and metal dome)	5
R380-L (0-50 psig)	7
R380-T (0-125 psig and tee handle)	C

⑨ LUBRICATOR

No lubricator	A
L380D	B
L380D-Q (with quick-fill Q-cap)	C
PA64041 or PA64061 SPL and 118-109-* male port. (Used only with 1/2 or 3/4 ports and modular connection M above)	D
PA64041 or PA64061 SPL. (Used only with 1/2 or 3/4 ports and pipe nipple connection P above.)	E
PA60041 or PA60061 SPL and 118-109-* male port. (Used only with 1/2 or 3/4 ports and modular connection M above.)	F
PA60041 or PA60061 SPL. (Used only with 1/2 or 3/4 ports and pipe nipple connection P above.)	G
PA64045 or PA64065 SPL and 118-109-* male port. (Used only with 1/2 or 3/4 ports and modular connection M above)	H
PA64045 or PA64065 SPL. (Used only with 1/2 or 3/4 ports and pipe nipple connection P above.)	J
PA60045 or PA60065 SPL and 118-109-* male port. (Used only with 1/2 or 3/4 ports and modular connection M above.)	K
PA60045 or PA60065 SPL. (Used only with 1/2 or 3/4 ports and pipe nipple connection P above.)	L

NOTE: "P" prefix on injection lubricator part number indicates that it is supplied without capillary tubing. Instead a probe adapter will be supplied within the assembly.

Continued on next page.

SERIES 380 FRL ORDERING INFORMATION

Continued from preceding page.

10 FILTER DRAINS

Manual on G.P. filter and coalescing filter	0
Internal automatic on G.P. filter and coalescing filter....	1
Warrior electronic on G.P. filter and coalescing filter (Only with metal bowls)	2
Internal automatic on G.P. filter and manual on coalescing filter	5

None	None	NO reed switch ...	E
200-BDD (0-200 psi).....	Large DPG with NC reed switch ...	Large DPG with NC reed switch ...	H
200-BDD (0-200 psi).....	None	Large DPG with NC reed switch ...	J
None	Large DPG with NC reed switch ...	Large DPG with NC reed switch ...	K
None	None	Large DPG with NC reed switch ...	L

11 INLET END PORT

OUTLET END 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
Back bracket only	Back bracket only	J
Female port with back bracket	Female port with back bracket	K
Back bracket only	Female port with back bracket	L
Female port with back bracket	Back bracket only	M
Male port with back bracket	Female port with back bracket	N

12 GAUGES: DPG means Differential Pressure Gauge.
NO means Normally Open.
NC means Normally Closed.

Regulator	G.P. Filter	Coalescing Filter	
None	None	None	0
200-BDD (0-200 psi)	None	None	1
60BDD (0-60 psi).....	None	None	2
200-BDD (0-200 psi) Small DPG	Small DPG	Small DPG.....	3
200-BDD (0-200 psi) Large DPG	Large DPG	Large DPG.....	4
200-BDD (0-200 psi)	None	Small DPG.....	5
200-BDD (0-200 psi)	None	Large DPG.....	6
None	Small DPG	Small DPG.....	7
None	Large DPG	Large DPG.....	8
None	None	Small DPG.....	9
None	None	Large DPG.....	A
200-BDD (0-200 psi).....	Large DPG with NO reed switch ...	Large DPG with NO reed switch ...	B
200-BDD (0-200 psi).....	None	Large DPG with NO reed switch ...	C
None	Large DPG with NO reed switch ...	Large DPG with NO reed switch ...	D
		Large DPG with	

13 PORT SIZES

3/8 NPTF	3
1/2 NPTF	4
3/4 NPTF	6
3/8 BSPP	C
1/2 BSPP	D
3/4 BSPP	E
3/4-16 UNF SAE (Not available with end port options) ..	F
7/8-14 UNF SAE (Not available with end port options) ..	G

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.

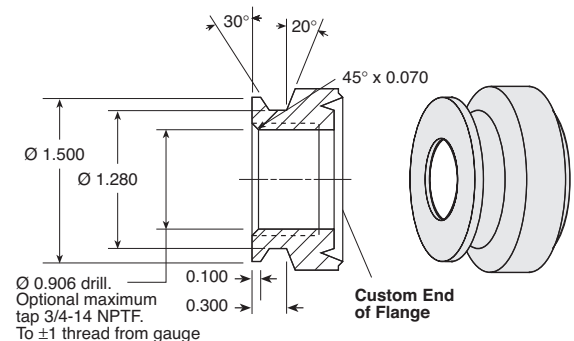
Some potential usage examples are:

Turned Series 380 flange on a valve body.

Special threads such as SAE connections with Series 380 flange.

Special auxiliary manifold blocks having Series 380 flange configuration.

Suitable materials for a custom port include aluminum, brass, steel, stainless steel, and zinc.



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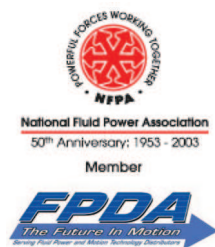
Water Removal



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