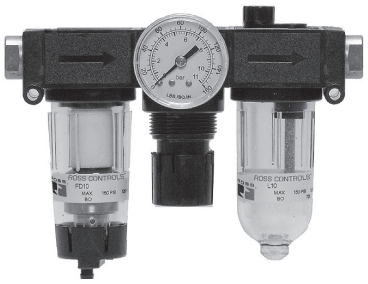
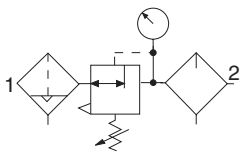
Port Sizes: 1/8 & 1/4 – Flow to 22 scfm

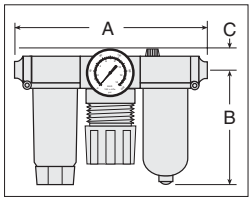


Combination with PISTON Type Regulator - Fill Port Lubricator#				
Port Size	Automatic Drain		Manual Drain	
	Polycarbonate Bowl	Metal Bowl	Polycarbonate Bowl	Metal Bowl
	Model Number	Model Number	Model Number	Model Number
With THREADED PORTS				
1/8 NPTF	5B01C0115	5B01C0216	5B01C0315	5B01C0416
1/8 G	D5B01C0115	D5B01C0216	D5B01C0315	D5B01C0416
1/4 NPTF	5B02C0115	5B02C0216	5B02C0315	5B02C0416
1/4 G	D5B02C0115	D5B02C0216	D5B02C0315	D5B02C0416
With Quick Connect TUBE FITTINGS				
1/4	5B03C0115	5B03C0216	5B03C0315	5B03C0416
3/8	5B04C0115	5B04C0216	5B04C0315	5B04C0416
4mm	5B05C0115	5B05C0216	5B05C0315	5B05C0416
6mm	5B06C0115	5B06C0216	5B06C0315	5B06C0416
8mm	5B07C0115	5B07C0216	5B07C0315	5B07C0416
10mm	5B08C0115	5B08C0216	5B08C0315	5B08C0416

#Change the ninth digit to "7" **for quick fill lubricator** cap e.g., 5B01C0117.

ISO Symbol
FRL
Automatic Drain
Self-relieving



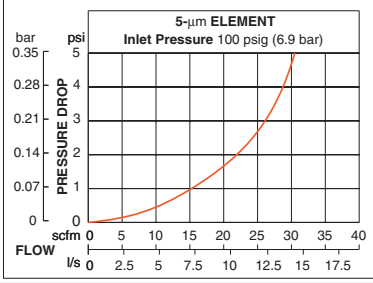


Port Size	Dimensions inches (mm)				Weight †
	A	B**	C	Depth †	lb (kg)
1/8, 1/4 (NPTF or G)	6.3 (160	3.6 (92)	1.7 (43)	3.6 (92)	0.53 (0.24)
Models below have quick-connect tube fittings.					
1/4	6.7 (170)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
3/8	7.2 (183)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
4, 6 mm	6.7 (170)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
8 mm	6.4 (163)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
10 mm	7.2 (183)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)

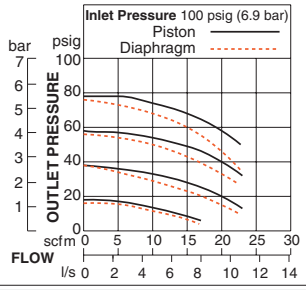
** Dimension for polycarbonate filter bowl; metal bowl is 3.8 (97).
† Less gauge.

REPLACEMENT FILTER ELEMENTS		
Element Rating	Element Material	Model Number
5-µm - Standard	Polyethylene	933K77
5-µm - Optional	Sintered Bronze	R-KA130-27E5
20-µm - Optional	Sintered Bronze	R-KA130-27E4
40-µm - Optional	Sintered Bronze	R-KA130-27E3

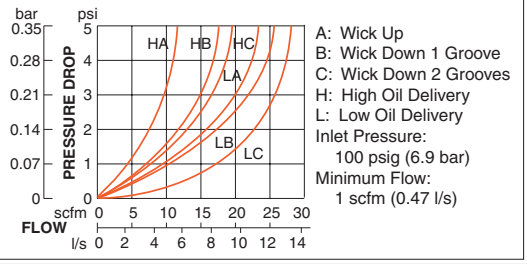
Filter FLOW CHART



Regulator FLOW CHART



Lubricator FLOW CHART



A: Wick Up
B: Wick Down 1 Groove
C: Wick Down 2 Grooves
H: High Oil Delivery
L: Low Oil Delivery
Inlet Pressure:
100 psig (6.9 bar)
Minimum Flow:
1 scfm (0.47 l/s)

Accessories ordered separately, refer to page E6.3-4.

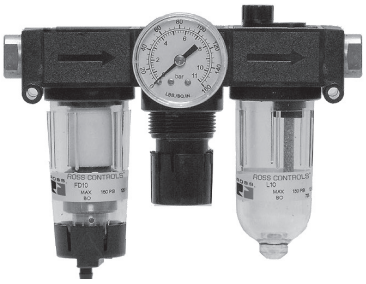
STANDARD SPECIFICATIONS (for units on this page):

Construction Design	Filter – Fiber Regulator – Piston Lubricator - Wick-Feed
Temperature	**Ambient/Media:** **Polycarbonate Bowl:** 40° to 125°F (4° to 52°C) **Metal Bowl:** 40° to 175°F (4° to 80°C)
Fluid Media	Compressed air
Operating Pressure	**Automatic Drain Models** **Polycarbonate Bowl:** Up to 150 psig (up to 10 bar) **Metal Bowl:** Up to 200 psig (up to 14 bar)
	Manual Drain Models **Polycarbonate Bowl:** 0 to 150 psig (0 to 10 bar) **Metal Bowl:** 0 to 200 psig (0 to 14 bar)
Outlet Pressure	Adjustable up to 100 psig (7 bar)
Pressure Adjustment	**Locking Key:** Removable

Filter Drain	Internal Automatic or Manual
Pressure Gauge	0 to 60 psig (0 to 11 bar); 1/8 NPT gauge ports front and rear
Oil Adjustment	External; no shutoff
Panel Mounting	1-3/16 inch (30 mm) hole required
Construction Material	**Filter Element:** 5-micron rated polyethylene
	Filter/Regulator & Lubricator Bodies: Acetal
	Bowls: 2-oz (60-ml) polycarbonate bowls or aluminum bowls
	Regulator Dome and Knob: Acetal
	Seals: Nitrile

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

Port Sizes: 1/8 & 1/4 – Flow to 22 scfm

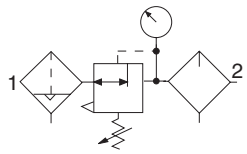


Combination with DIAPHRAGM Type Regulator - Fill Port Lubricator#				
Port Size	Automatic Drain		Manual Drain	
	Polycarbonate Bowl	Metal Bowl	Polycarbonate Bowl	Metal Bowl
	Model Number	Model Number	Model Number	Model Number
*With THREADED PORTS**				
1/8 NPTF	5B01C0125	5B01C0226	5B01C0325	5B01C0426
1/8 G	C5B01C0125	C5B01C0226	C5B01C0325	C5B01C0426
1/4 NPTF	5B02C0125	5B02C0226	5B02C0325	5B02C0426
1/4 G	C5B02C0125	C5B02C0226	C5B02C0325	C5B02C0426
With Quick Connect TUBE FITTINGS				
1/4	5B03C0125	5B03C0226	5B03C0325	5B03C0426
3/8	5B04C0125	5B04C0226	5B04C0325	5B04C0426
4mm	5B05C0125	5B05C0226	5B05C0325	5B05C0426
6mm	5B06C0125	5B06C0226	5B06C0325	5B06C0426
8mm	5B07C0125	5B07C0226	5B07C0325	5B07C0426
10mm	5B08C0125	5B08C0226	5B08C0325	5B08C0426

#Change the ninth digit to "7" for **quick fill lubricator** cap e.g., 5B01C0127.

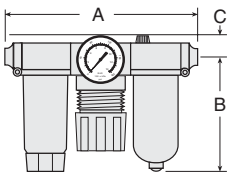
ISO Symbol
FRL

Automatic Drain
Self-relieving



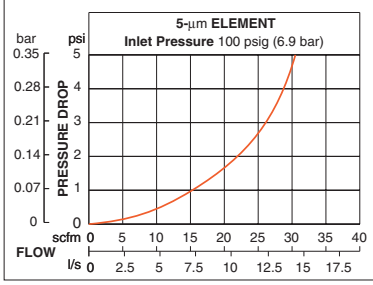
Port Size	Dimensions inches (mm)				Weight † lb (kg)
	A	B**	C	Depth †	
1/8, 1/4	6.3 (160	3.6 (92)	1.7 (43)	3.6 (92)	0.53 (0.24)
Models below have quick-connect tube fittings.					
1/4	6.7 (170)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
3/8	7.2 (183)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
4, 6 mm	6.7 (170)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
8 mm	6.4 (163)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)
10 mm	7.2 (183)	3.6 (92)	1.7 (43)	3.6 (92)	0.50 (0.23)

** Dimension for polycarbonate filter bowl; metal bowl is 3.8 (97).
† Less gauge.

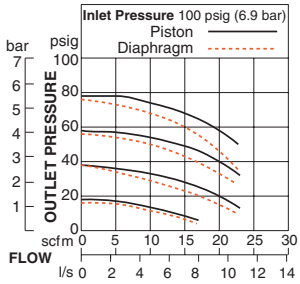


REPLACEMENT FILTER ELEMENTS		
Element Rating	Element Material	Model Number
5-µm - Standard	Polyethylene	933K77
5-µm - Optional	Sintered Bronze	R-KA130-27E5
20-µm - Optional	Sintered Bronze	R-KA130-27E4
40-µm - Optional	Sintered Bronze	R-KA130-27E3

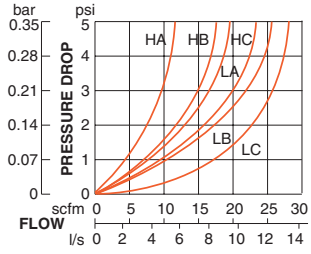
Filter FLOW CHART



Regulator FLOW CHART



Lubricator FLOW CHART



A: Wick Up
B: Wick Down 1 Groove
C: Wick Down 2 Grooves
H: High Oil Delivery
L: Low Oil Delivery
Inlet Pressure:
100 psig (6.9 bar)
Minimum Flow:
1 scfm (0.47 l/s)

Accessories ordered separately, refer to page E6.3-4.

STANDARD SPECIFICATIONS (for units on this page):

Construction Design	Filter – Fiber Regulator – Diaphragm Lubricator - Wick-Feed
Temperature	**Ambient/Media:** **Polycarbonate Bowl:** 40° to 125°F (4° to 52°C) **Metal Bowl:** 40° to 175°F (4° to 80°C)
Fluid Media	Compressed air
Operating Pressure	**Automatic Drain Models** **Polycarbonate Bowl:** Up to 150 psig (up to 10 bar) **Metal Bowl:** Up to 200 psig (up to 14 bar) **Manual Drain Models** **Polycarbonate Bowl:** 0 to 150 psig (0 to 10 bar) **Metal Bowl:** 0 to 200 psig (0 to 14 bar)

Outlet Pressure	Adjustable up to 100 psig (7 bar)
Filter Drain	Internal Automatic or Manual
Pressure Gauge	0 to 60 psig (0 to 11 bar); 1/8 NPT gauge ports front and rear
Oil Adjustment	External; no shutoff
Panel Mounting	1-3/16 inch (30 mm) hole required
Construction Material	**Filter Element:** 5-micron rated polyethylene **Filter/Regulator & Lubricator Bodies:** Acetal **Bowls:** 2-oz (60-ml) polycarbonate bowls or aluminum bowls **Regulator Dome and Knob:** Acetal **Seals:** Nitrile

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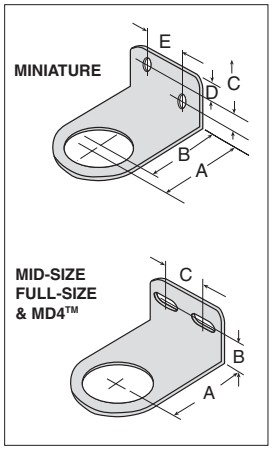
Mounting Screws for BANTAM Models

Usage Models	Kit Number
BANTAM	859K77

BANTAM models mounts with long screws that extend through end plates.

Mounting Brackets for Regulators and Integrated Filter/Regulators

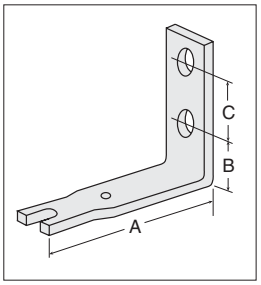
Regulators and integrated filter/regulators can be mounted to a surface with a bracket that attaches to the regulator. Brackets and mounting panel nuts can be ordered separately or in a kit which includes both bracket and mounting panel nut.



Usage Models	Model Number			Dimensions inches (mm)					
	Kit	Bracket	Panel Nut	A	B	C	D	E	Panel Mounting Hole Diameter
MINIATURE	873K77	872K77	874K77	1.375 (35)	1.125 (29)	0.31 (8)	0.31 (8)	0.69 (17)	1.19 (30)
MID-SIZE	876K77	875K77	877K77	2.38 (60)	1.00 (25)	1.50 (38)	–	–	1.56 (40)
MD3™	R-A127-11	–	R-127-11	2.38 (60)	1.00 (25)	1.50 (38)	–	–	2.06 (52)
FULL-SIZE, MD4™	879K77	878K77	880K77	2.38 (60)	1.00 (25)	1.50 (38)	–	–	2.06 (52)

Modular Mounting Brackets for Filters, Regulators, Lubricators, FRL's, or Clean Air Packages

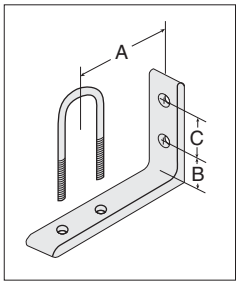
Two L-shaped metal brackets as shown at the right can be used for wall mounting of modular FRLs or Clean Air Packages. A single bracket can be used to mount individual filters or lubricators. Kits include two brackets and four screws for attaching the brackets to the modules.



Usage Models	Kit Number	Dimensions inches (mm)			
		A	B	C	D
MID-SIZE & FULL-SIZE	915K77	3.0 (76)	0.88 (22)	1.00 (25)	1.20 (31)

FRLs In-line Mounting Pipe Brackets

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

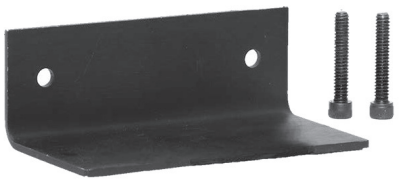


Nipple Size	Kit Number	Dimensions inches (mm)		
		A	B	C
1/4	887K77	2.72 (28)	0.50 (13)	1.00 (25)
3/8	888K77	2.72 (28)	0.50 (13)	1.00 (25)
1/2	889K77	2.72 (28)	0.50 (13)	1.00 (25)
3/4	890K77	3.69 (94)	1.13 (29)	1.25 (32)
1	891K77	3.69 (94)	1.13 (29)	1.25 (32)

Bracket Assembly Kit for HIGH-RELIEF Pilot Operated Regulator

High-Relief Pilot Operated Regulator with 1/4- thru 1¼ inch ports can be mounted to a vertical surface using a bracket assembly kit.

Kit Number	R-A37-381



MID-SIZE and FULL-SIZE Units

The modular designs of the MID-SIZE and FULL-SIZE series offer maximum flexibility in customizing FRLs assemblies. As shown at the right, connector kits are required to interconnect units. Various port kits (shown below) can be used to connect the assemblies to the inlet and outlet piping. Note that all FRLs components have threaded ports so that conventional pipe fittings may be used where desired.

Female Port Block

Used to connect to piping at inlet or outlet.

Port Size	Model Number	
	NPTF Threads	G Threads
1/4	897K77	D897K77
3/8	898K77	D898K77
1/2	899K77	D899K77
3/4	900K77	D900K77

Male Port Block

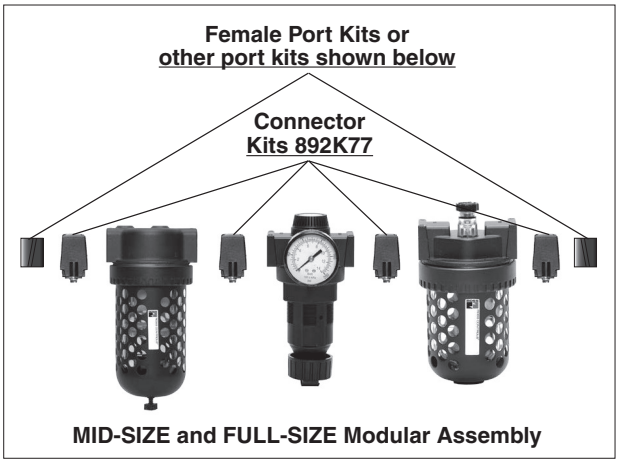
Used to connect modular to non-modular units.

Port Size	Model Number	
	NPTF Threads	G Threads
1/4	893K77	D893K77
3/8	894K77	D894K77
1/2	895K77	D895K77
3/4	896K77	D896K77

Connector Kit

Used to connect units to one another as well as to any of the ports shown on this page.

Kit Number	892K77



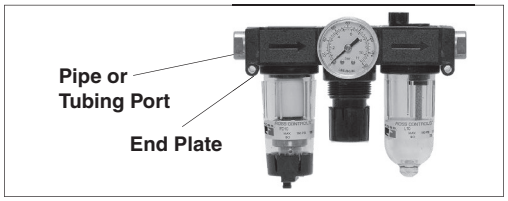
MID-SIZE and FULL-SIZE Modular Assembly

BANTAM Units

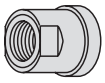
BANTAM modular units use end plates secured with screws to hold the pipe or tubing ports (see below), and also to serve as mounting brackets. Short screws are used to secure the end plates when a single BANTAM unit is used. If two or more units are combined, long screws extend through an end plate and thread into the next unit.

Screw kits required are as follows:

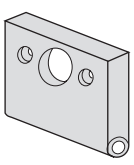
Single Unit: Two short screw kits.
Two-Unit Combination: One each short screw kit and long screw kit.
Three-Unit Combination: Two long screw kits.



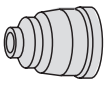
Pipe Ports	
Port Size	Model Number
1/8 NPTF	862K77
1/4 NPTF	863K77
1/8 BSPP	D864K77
1/4 BSPP	D865K77



Pipe Ports	
Kit Description	Model Number
END PLATE (1)	857K77
Short Screw (2)	858K77
Long Screw (2)	859K77
Small O-Ring (for inlet or mating ports)	860K77
Large O-Ring (for outlet or mating ports)	861K77



Tube Ports	
Port Size	Model Number
1/4	866K77
3/8	867K77
4 mm	868K77
6 mm	869K77
8 mm	870K77
10 mm	871K77



E
E6

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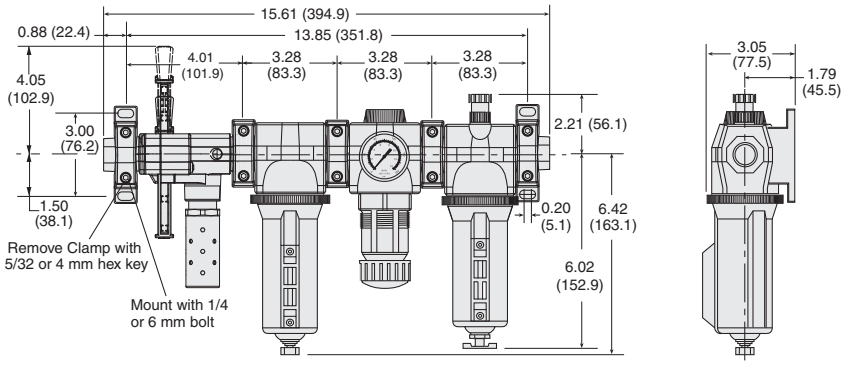
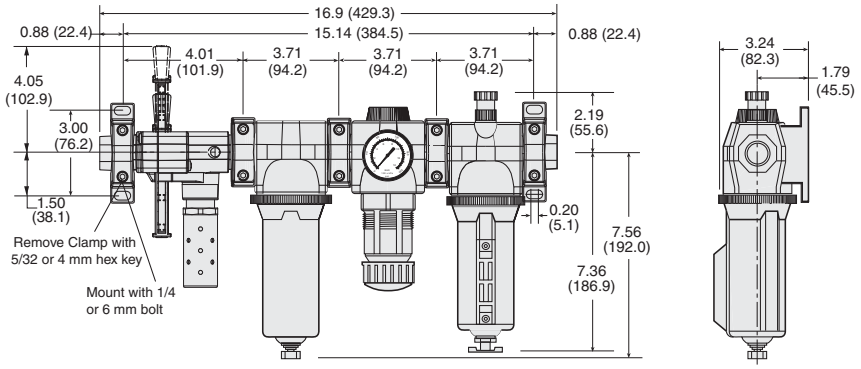
Dimensions: inches (mm)

MD3™ Series



MD4™ Series



Mounting Brackets & Clamp for Module Connections

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.
Specially designed clamps provide a quick and easy assembly or disassembly of MD3™ 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.

Bracket, Screw, and Clamp

Module Connecting Clamp

Mounting Bracket

Mounting Brackets & Clamp for Module Connections	
Description	**Model Number**
Bracket and Screw	R-A118-103
Module Connecting Clamp	R-A118-105
Bracket, Screw, and Clamp	R-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 model numbers:

End Ports				
Type	**Port Size**	**Model Number**		
		NPTF Threads	**G Threads**	
Female	1/4	R-118-100-2	R-118-100-2W	
	3/8	R-118-100-3	R-118-100-3W	
	1/2	R-118-100-4	R-118-100-4W	
	3/4	R-118-100-6	R-118-100-6W	
Male	1/4	R-118-109-2F	R-118-109-2FW	
	3/8	R-118-109-3F	R-118-109-3FW	
	1/2	R-118-109-4F	R-118-109-4FW	
	3/4	R-118-109-6F	R-118-109-6FW	

Extra Port Blocks

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.)

Port Size	Model Number	
	NPTF Threads	**G Threads**
1/4	R-118-106-2	R-118-106-2W
3/8	R-118-106-3	R-118-106-3W
1/2	R-118-106-4	R-118-106-4W

E

E6

Analog Pressure Gauges

	Type/Material	Port Size	Model Number Thread NPT	Model Number Thread G	Pressure Range psig (bar)	Case Diameter inches (mm)
Pressure Gauges (Center Back Mounting)	Standard Aluminum	1/8	5400A1002	D5400A1002	0-160 (0-11)	1.7 (43)
		1/4	5400A2010	D5400A2010	0-60 (0-4)	2.0 (51)
		1/4	5400A2011	D5400A2011	0-200 (0-14)	2.0 (51)
		1/4	5400A2012	D5400A2012	0-300 (0-20)	2.0 (51)
	Liquid Filled Stainless Steel	1/4	5400A2014	D5400A2014	0-160 (0-11)	2.5 (64)
		1/4	5400A2015*	D5400A2015*	0-160 (0-11)	2.0 (51)
	*Green shade between 40-70 psi (2.7-4.8 bar).					

Differential Pressure Gauges

DIFFERENTIAL PRESSURE GAUGE TYPE/SERIES	Small Slide Gauge R-A60F-28	Small Slide Gauge R-K103-151	Large Dual Face Gauge R-106-35	Large Dual Face Gauge with Reed Switch (Normally Open) R-106-35E	Large Dual Face Gauge with Reed Switch (Normally Closed) R-106-35EC
FILTERS					
BANTAM	–	–	–	–	–
MINIATURE	–	–	–	–	–
MID-SIZE	–	–	–	–	–
MD3™		–	–	–	–
FULL-SIZE	–	–	–	–	–
MD4™	–				
HIGH-CAPACITY	–	–	–	–	–
COALESCING FILTERS					
BANTAM	–	–	–	–	–
MINIATURE	–	–	–	–	–
MID-SIZE		–	–	–	–
FULL-SIZE	–				
MD3™		–	–	–	–
MD4™	–				
HIGH-CAPACITY	–				
OIL VAPOR REMOVAL (ADSORBING) FILTERS					
MD3™	–	–	–	–	–
MD4™	–	–	–	–	–
CLEAN AIR PACKAGES					
MD3™		–	–	–	–
MD4™	–				

E
E6

IMPORTANT NOTE: Please read carefully and thoroughly all of the **CAUTIONS, WARNINGS** on the inside back cover.

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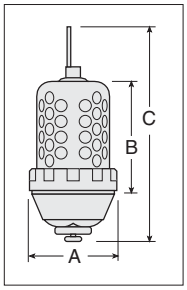
External Automatic Drains

Pipe Size	Model Number*	
	Polycarbonate Bowl**	Metal Bowl
1/8	5057B1001	5058B1001
1/4*	5057B2001	5058B2001

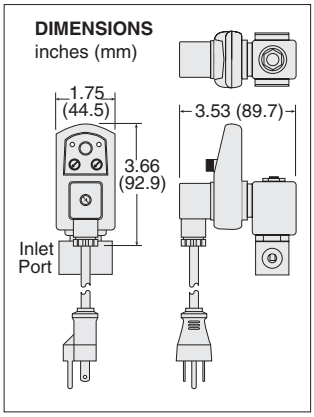
*Use 1/4 size with FULL-SIZE, HIGH-CAPACITY, MD3™ & MD4™ filters.
Use kit 1076K77 to convert standard bowl to accept auto drain unit.
**Available for FULL-SIZE filters only. Polycarbonate bowl includes metal bowl guard.

Port Size	Dimensions inches (mm)			Weight lb (kg)
	A	B	C	
1/8, 1/4	3.5 (89)	4.2 (107)	8.3 (211)	2.6 (1.2)



Electronically Controlled Drain

Pipe Size	Voltage	Model Number	
		NPTF Threads	G Threads
1/4	24 volts DC	R-DED-24V-2	R-DED-24V-2W
3/8	24 volts DC	R-DED-24V-3	R-DED-24V-3W
1/2	24 volts DC	R-DED-24V-4	R-DED-24V-4W
1/4	110-120 volts AC, 50/60 Hz	R-DED-115V-2	R-DED-115V-2W
3/8	110-120 volts AC, 50/60 Hz	R-DED-115V-3	R-DED-115V-3W
1/2	110-120 volts AC, 50/60 Hz	R-DED-115V-4	R-DED-115V-4W



STANDARD SPECIFICATIONS (for electronically controlled drain):

Drain Time	Adjustable 0.5 to 10 seconds
Drain Interval	0.5 to 45 minutes
Current Consumption	Maximum 4 ma
Temperature	**Ambient:** 35° to 130°F (2° to 54°C)
	Media: 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 (15.8 bar)

Silencers

Port Size	Thread Type	Model Number*		Avg. C_v	Dimensions inches (mm)		Weight lb (kg)
		NPT Threads	R Threads		Width	Length	
3/8	Male	5500A3003	D5500A3003	4.3	1.3 (32)	3.5 (88)	0.2 (0.1)
3/4	Male	5500A5013	D5500A5013	5.1	1.3 (32)	3.6 (92)	0.2 (0.1)
3/4	Male	5500A5003	D5500A5003	11.5	2.0 (51)	5.3 (135)	0.6 (0.3)

Flow Media: Filtered air.
Pressure Range: 0 to 290 psig (0 to 20 bar) maximum.

Category	Series	Bowl Type	Element Rating	Element Material	Model Number
Filters	Bantam & Miniature	Standard	5-µm	Polyethylene	933K77
			5-µm	Sintered Bronze	R-KA130-27E5
			20-µm	Sintered Bronze	R-KA130-27E4
			40-µm	Sintered Bronze	R-KA130-27E3
	MID-SIZE	Standard	5-µm	Polyethylene	936K77
	MD3™	Standard	5-µm	Polyethylene	R-A60F-03PE5
			5-µm	Sintered Bronze	R-A60F-03E5
			20-µm	Sintered Bronze	R-A60F-03E4
			40-µm	Sintered Bronze	R-A60F-03E3
	FULL-SIZE	Standard	5-µm	Polyethylene	939K77
			5-µm	Sintered Bronze	R-KA103-03E5
			20-µm	Sintered Bronze	R-KA103-03E4
			40-µm	Sintered Bronze	R-KA103-03E3
	MD4™	Standard	5-µm	Polyethylene	R-A115-106PE5
			5-µm	Sintered Bronze	R-A115-106E5
			20-µm	Sintered Bronze	R-A115-106E4
			40-µm	Polyethylene	R-A115-106PE3
	HIGH-CAPACITY Flow to 275 scfm	Standard	5-µm	Polyethylene	1010K77
			5-µm	Sintered Bronze	R-KA109-03E5
			20-µm	Sintered Bronze	R-KA109-03E4
			40-µm	Sintered Bronze	R-KA109-03E3
	HIGH-CAPACITY Flow to 660 scfm	Standard	5-µm	Sintered Bronze	1656K77
			40-µm	Sintered Bronze	R-A114-106E3
	HIGH-CAPACITY Flow to 1000 scfm	Standard	5-µm	Sintered Bronze	942K77
			40-µm	Sintered Bronze	944K77
Coalescing Filters	Bantam & Miniature	Standard	0.3-µm	Borosilicate-glass-fiber	945K77
			0.01-µm	Borosilicate-glass-fiber	R-A-10F-16E8
	MID-SIZE	Standard	0.3-µm	Borosilicate-glass-fiber	R-A60F-29
		Extended	0.3-µm	Borosilicate-glass-fiber	R-A60F-32
		Standard	0.01-µm	Borosilicate-glass-fiber	R-A60F-29E8
		Extended	0.01-µm	Borosilicate-glass-fiber	R-A60F-32E8
	MD3™	Polycarbonate	0.3-µm	Borosilicate-glass-fiber	R-A60F-23
		Metal	0.3-µm	Borosilicate-glass-fiber	R-A60F-29
		Extended Metal	0.3-µm	Borosilicate-glass-fiber	R-A60F-32
		Polycarbonate	0.01-µm	Borosilicate-glass-fiber	R-A60F-23E8
		Metal	0.01-µm	Borosilicate-glass-fiber	R-A60F-29E8
		Extended Metal	0.01-µm	Borosilicate-glass-fiber	R-A60F-32E8
	FULL-SIZE	Standard	0.3-µm	Borosilicate-glass-fiber	947K77
		Extended	0.3-µm	Borosilicate-glass-fiber	R-A103-160L
		Standard	0.01-µm	Borosilicate-glass-fiber	948K77
		Extended	0.01-µm	Borosilicate-glass-fiber	R-A103-160LE8
	MD4™	Standard	0.3-µm	Borosilicate-glass-fiber	R-A115-117
		Extended	0.3-µm	Borosilicate-glass-fiber	R-A115-118
		Standard	0.01-µm	Borosilicate-glass-fiber	R-A115-117E8
		Extended	0.01-µm	Borosilicate-glass-fiber	R-A115-118E8
	HIGH-CAPACITY Flow to 220 scfm	Standard	0.3-µm	Borosilicate-glass-fiber	949K77
			0.01-µm	Borosilicate-glass-fiber	R-A109-106E8
	HIGH-CAPACITY Flow to 295 & 450 scfm	Standard	0.3-µm	Borosilicate-glass-fiber	R-A114-112
		Extended	0.3-µm	Borosilicate-glass-fiber	R-A114-113
		Standard	0.01-µm	Borosilicate-glass-fiber	R-A114-112E8
		Extended	0.01-µm	Borosilicate-glass-fiber	R-A114-113E8
	HIGH-CAPACITY Flow to 465 scfm	Standard	0.3-µm	Borosilicate-glass-fiber	952K77
		Extended	0.3-µm	Borosilicate-glass-fiber	953K77
		Standard	0.01-µm	Borosilicate-glass-fiber	R-A106-24E8
		Extended	0.01-µm	Borosilicate-glass-fiber	R-A106-24LE8
	HIGH-CAPACITY Flow to 840 scfm	Extended	0.3-µm	Borosilicate-glass-fiber	953K77
			0.01-µm	Borosilicate-glass-fiber	R-A106-24E8
Oil Vapor Removal Filters	MD3™	Standard	–	Borosilicate-glass-fiber	R-A60F-29E9
		Extended	–	Borosilicate-glass-fiber	R-A60F-32E9
	MD4™	Standard	–	Borosilicate-glass-fiber	R-A115-117E9
		Extended	–	Borosilicate-glass-fiber	R-A115-118E9
Silencers Reclassifiers	Port Size 1/2	Standard	20-µm	Sintered Bronze	940K77
	Port Size 3/4, 1		100-µm	Sintered Bronze	981K77

E

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Lubricants, Polycarbonate Bowl Cautions

Compatible Lubricants

Although air line lubrication is not required for most ROSS valves, other mechanisms in the system may need such lubrication. When a lubricator is used, it should be supplied only with oils which are compatible with the materials used in the valves for seals and poppets. Generally speaking, these are petroleum base oils with oxidation inhibitors, and aniline point between 180°F (82°C) and 220°F (104°C) and an ISO 32, or lighter, viscosity. Oils with phosphate type additives, such as zinc dithiophosphate, must be avoided because they can harm polyurethane valve components.
The best oils to use in pneumatic systems are those specifically compounded for air line lubricator service.

Cautions on the Use of Polycarbonate Bowls

Use Only with Compressed Air. Filters and lubricators with polycarbonate bowls are specifically designed for compressed air service, and their use with any other fluid (liquid or gas) is a misapplication. The use with or injection of certain hazardous fluids in the system (e.g., alcohol or liquefied petroleum gas) could be harmful to the polycarbonate bowl or result in a combustible condition or hazardous leakage. Before using with a fluid other than air, or for nonindustrial applications, or for life support systems, consult ROSS.
Use Metal Bowl Guard When Supplied. A metal bowl guard is supplied with all but the smallest bowls, and must always be used to minimize danger from fragmentation in the event of failure of a polycarbonate bowl.
Avoid Harmful Substances. Some compressor oils, chemical cleaners, solvents, paints, and fumes will attack polycarbonate bowls and can cause bowl failure. Do not use with or near these materials. When a bowl becomes dirty, replace the bowl or wipe it with a clean dry cloth. Immediately replace any polycarbonate bowl which is crazed, cracked, or deteriorated.

Substances HARMFUL to Polycarbonate Bowls

Acetaldehyde
Acetic acid
Acetone
Acrylonitrile
Ammonia
Ammonium fluoride
Ammonium hydroxide
Ammonium sulfide
Anaerobic adhesives & sealants
Antifreeze
Benzene
Benzoic acid
Benzyl alcohol
Brake fluids
Bromobenzene
Butyric acid
Carbolic acid
Carbon disulfide
Carbon tetrachloride
Caustic potash solution
Caustic soda solution
Chlorobenzene
Chloroform
Cresol
Cyclohexanol
Cyclohexanone
Cyclohexene
Dimethyl formamide
Dioxane
Ethane tetrachloride
Ethyl acetate
Ethyl ether
Ethylamine
Ethylene chlorohydrin
Ethylene dichloride
Ethylene glycol
Formic acid
Freon (refrigerant & propellant)
Gasoline (high aromatic)
Hydrazine
Hydrochloric acid
Lacquer thinner
Methyl alcohol
Methylene chloride
Methylene salicylate
Milk of lime (CaOH)
Nitric acid
Nitrobenzene
Nitrocellulose lacquer
Phenol
Phosphorous hydroxyl chloride
Phosphorous trichloride
Propionic acid
Pyridine
Sodium hydroxide
Sodium sulfide
Styrene
Sulfuric acid
Sulfural chloride
Tetrahydronaphthalene
Thiophene
Toluene
Turpentine
Xylene
Perchlorethylene

Trade Names of Substances HARMFUL to Polycarbonate Bowls

• Atlas Perma-Guard • Buna N • Cellulube #150 & #220 • Crylex #5 cement • Eastman 910 • Garlock 98403 (polyurethane) • Haskel 568-023 • Hilgard Company's hil phene • Houghton & Co. oil 1120, 1130, 1055 • Houtosafe 1000 • Kano Kroil • Keystone penetrating oil #2 • Loctite 271, 290, 601 • Loctite Teflon sealant • Marvel Mystery Oil • Minn. Rubber 366Y • National Compound N11 Nylock VC-3 • Parco 1306 Neoprene • Permabond 910 • Petron PD287 • Prestone • Pydraul AC • Sears Regular Motor Oil • Sinclair oil "Lily White" • Stauffer Chemical FYRQUEL 150 • Stillman SR 269-75 (polyurethane) • Stillman SR 513-70 (neoprene) • Tannergas • Telar • Tenneco anderol 495 & 500 oils • Titon • Vibra-tite • Zerex

CAUTIONS, WARNINGS and STANDARD WARRANTY

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure that all sources of energy are turned off, the entire pneumatic system is shut off and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).

2. All ROSS products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any installation can be tampered with or need servicing after installation, persons responsible for the safety of others or the care of equipment must check every installation on a regular basis and perform all necessary maintenance.

3. All applicable instructions should be read and complied with before using any fluid power system in order to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use. If you have any questions, call your nearest ROSS location listed on the cover of this document.

4. Each ROSS product should be used within its specification limits. In addition, use only ROSS parts to repair ROSS products.

WARNING: Failure to follow these directions can adversely affect the performance of the product or result in the potential for human injury or damage to property.

FILTRATION and LUBRICATION

5. Dirt, scale, moisture, etc. are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. ROSS recommends a filter with a 5-micron rating for normal applications.

6. All standard ROSS filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Do *not* fail to use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition, hazardous leakage, and the potential for human injury or damage to property. Immediately replace a crazed, cracked, or deteriorated bowl. When bowl gets dirty, replace it or wipe it with a clean dry cloth.

7. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum based oils with oxidation inhibitors, an aniline point between 180°F (82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks human injury, and/or damage to property.

AVOID INTAKE/EXHAUST RESTRICTION

8. Do not restrict the air flow in the supply line. To do so could reduce the pressure of the supply air below the minimum requirements for the valve and thereby cause erratic action.

9. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

WARNING: ROSS expressly disclaims all warranties and responsibility for any unsatisfactory performance or injuries caused by the use of the wrong type, wrong size, or an inadequately maintained silencer installed with a ROSS product.

POWER PRESSES

10. Mechanical power presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

ENERGY ISOLATION/EMERGENCY STOP

11. Per specifications and regulations, ROSS **L-O-X®** and **L-O-X®** with **EEZ-ON®** operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

STANDARD WARRANTY

All products sold by ROSS CONTROLS are warranted for a one-year period [with the exception of all Filters, Regulators and Lubricators ("FRLs") which are warranted for a period of seven years] from the date of purchase to be free of defects in material and workmanship. ROSS' obligation under this warranty is limited to repair or replacement of the product or refund of the purchase price paid solely at the discretion of ROSS and provided such product is returned to ROSS freight prepaid and upon examination by ROSS is found to be defective. This warranty becomes void in the event that product has been subject to misuse, misapplication, improper maintenance, modification or tampering.

THE WARRANTY EXPRESSED ABOVE IS IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES AND ROSS EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES EITHER EXPRESSED OR IMPLIED WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ROSS MAKES NO WARRANTY WITH RESPECT TO ITS PRODUCTS MEETING THE PROVISIONS OF ANY GOVERNMENTAL OCCUPATIONAL SAFETY AND/OR HEALTH LAWS OR REGULATIONS. IN NO EVENT IS ROSS LIABLE TO PURCHASER, USER, THEIR EMPLOYEES OR OTHERS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM A BREACH OF THE WARRANTY DESCRIBED ABOVE OR THE USE OR MISUSE OF THE PRODUCTS. NO STATEMENT OF ANY REPRESENTATIVE OR EMPLOYEE OF ROSS MAY EXTEND THE LIABILITY OF ROSS AS SET FORTH HEREIN.