



# AIR PREPARATION EQUIPMENT

<u>MAXIMATIC® FILTER-REGULATOR-LUBRICATORS</u>	<u>329 - 332</u>
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## Maximatic Filters, Regulators & Lubricators

Maximatic FRLs condition and prepare compressed air for use in fluid power systems. Pneumatic applications with properly conditioned air will operate longer, cost less and improve system efficiency. Clippard offers five different sizes from #10-32 to 1" NPT of Filter, Regulators, Lubricators and combination units. Their modular design and interconnecting brackets provide flexibility and facilitates simple field installation and/or modification.

**Filters.** Filters capture solid particulate and remove water by "spinning" the air centrifugally. Water and larger particles are thrown against the side of the bowl where they condense and/or fall to the lower part of the bowl. Smaller particles are captured as the air flows through the filter element.

**Regulators.** Controlling pressure is an important requirement in all systems. Maximatic Regulators are adjustable from 7 to 125 psig. For applications requiring better resolution, 7 to 30 or 7 to 60 psig models with spring are available. The #10-32 size is a piston-style due to its small size, while the 1/8" to 1" are a diaphragm design.

**Lubricators.** Pneumatic actuators and valves perform better and last longer when properly lubricated. The bowl serves as a reservoir for the oil and supplies oil through the pick-up tube when pressurized. The amount of oil dispersed is controlled by an adjustable needle valve.

- Body Material:** Die Cast Aluminum
- Maximum Operating Pressure:** 150 psig
- Regulating Range:** 125 psig standard, 30 psig and 60 psig optional
- Regulator Type:** Relieving
- Filter Drain:** Semi-Automatic Differential or Optional Automatic Drain. When the air supply is below 7 psig, the semi-automatic drain will open.
- Bowl Material:** Polycarbonate standard up to 4Z model/size. Metal bowl standard on 4A and 5B models/sizes. Aluminum Cast with sight glass available.
- Bowl Guard:** Steel on models indicated
- Filtration:** 25 micron sintered brass filter standard, 5 micron optional
- Temperature Range:** 32 to 130°F (-0 to 54°C)

## Ordering Guide

<b>Type</b>	<b>Enter</b>	<b>Enter</b>							
FRL	.FRL	Filter	.F	<input type="text"/>					
Stacking FRL	.FRLS	Regulator	.R		<input type="text"/>				
Stacking Filter-Regulator	.FRS	Lubricator	.L						
<b>Body/Port Size</b>	<b>Enter</b>	<b>Enter</b>							
#10-32	.1N	3/8" NPT (High Flow)	.4W						
1/8" NPT	.2P	1/2" NPT	.4Z						
1/4" NPT (Standard Flow)	.2Q	3/4" NPT	.4A						
1/4" NPT (High Flow)	.3Q	1" NPT	.5B						
3/8" NPT (Standard Flow)	.3W								
<b>Options</b>									
		Automatic Drain (D)			Metal Bowl (M)		30 psig (P30)	5 Micron Filter (F5)	
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This numbering schematic is shown for illustration purposes only. All possible configurations are not available—For standard models, see the products illustrated in this catalog.

Example: MM  -  -



# MAXIMATIC® FILTER-REGULATOR-LUBRICATORS

#10-32 through 1" NPT ports available

Large selection of convenient mounting hardware offered

All FRL components are a modular design which allow easy connection and disconnection of the components for simple installation and maintenance.

Pressure Gauge allows for easy viewing

Die Cast Aluminum Body

Easy-to-view sight glasses standard on all metal bowls

Flow rates from 3 scfm to 280 scfm

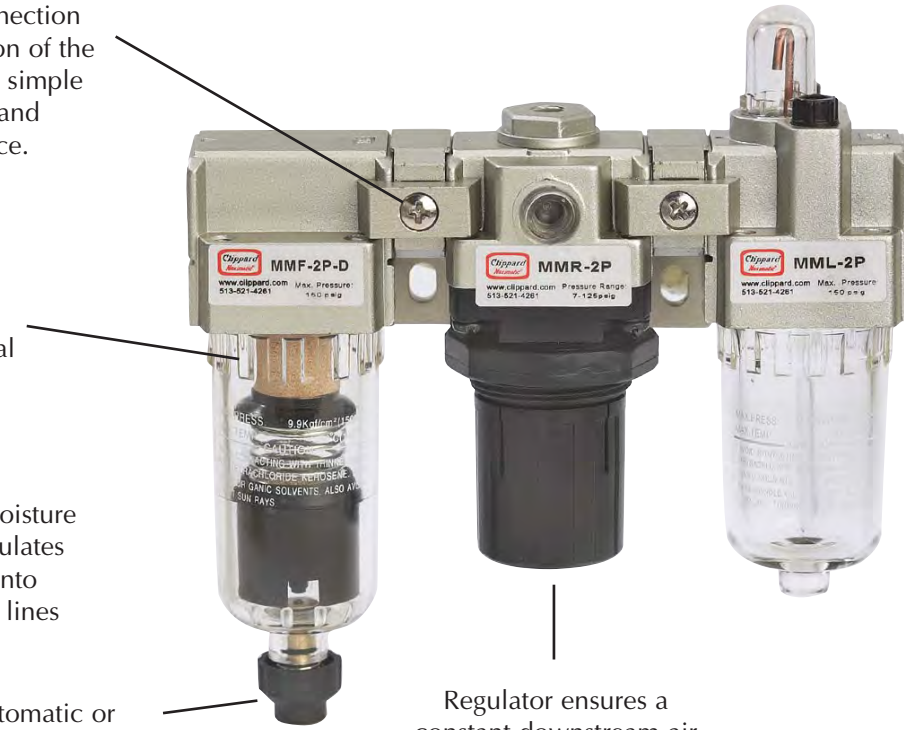
Lubricators increase component life by dispensing oil into the airline supply

25 micron filters standard, 5 micron optional

Filters prevent moisture and solid particulates from getting into compressed air lines

Semi-Automatic or Automatic Drain

Regulator ensures a constant downstream air line pressure



**Bowl Shield**

Polycarbonate bowls are standard on all filters and lubricators. Bowl shields are standard on MMF/MML 4A and 5B. An optional metal bowl is available for filters and lubricators.



**Metal Bowl**

# MAXIMATIC® FILTER-REGULATOR-LUBRICATORS



**MMFRL-2P-D**  
FRL with Polycarbonate Bowls  
and Auto Drain



**MMFRL-3W**  
FRL with Bowl Shields

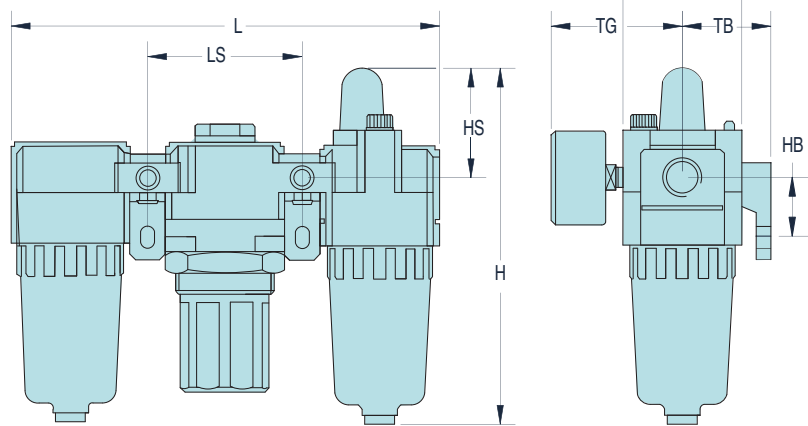
Combination FRLs provide air filtration, regulation and lubrication in one unit for easy mounting and installation. Includes L brackets and gauge.

**Bowl:** Polycarbonate standard. Steel bowl shields provided on models indicated. Metal bowls with sight glasses also available, add “-M” to the Part Number.

**Regulating Range:** 7 to 100 psig on MMFRL-1N, 7 to 125 psig on all others. 30 and 60 psig ranges also available, add “-P30” or “-P60” to the end of the Part Number.

**Drain:** Semi-Automatic standard on MM-FRLS-3 series. Manual standard on all others. Optional Automatic Drain

available—add “-D” to the Part Number. Drains not available on Lubricators. Filtration: 25 micron filter standard. Add “-F5” to the end of the Part Number for an optional 5 micron filter.



Drawing shown with Polycarbonate Bowl without Shield or Auto Drain

Dim.	MMFRL-4Z					
	MMFRL-1	MMFRL-2	MMFRL-3	MMFRL-4W	MMFRL-4A	MMFRL-5B
H	3.33 (84.6)	4.92 (125.0)	6.16 (156.5)	7.54 (191.5)	7.60 (193.0)	10.69 (271.5)
HB	0.79 (20.1)	0.94 (23.9)	1.39 (35.3)	1.57 (40.0)	1.57 (39.9)	1.97 (50.0)
HS	1.00 (25.4)	1.50 (38.1)	1.50 (38.1)	1.61 (40.9)	1.61 (40.9)	1.89 (48.0)
L	3.58 (90.9)	5.51 (140.0)	7.13 (181.1)	9.37 (238.0)	9.96 (253.0)	11.81 (300.0)
LS	1.3 (33.0)	1.97 (50.0)	2.52 (64.0)	3.31 (84.1)	3.50 (88.9)	4.13 (104.9)
TB	0.98 (24.9)	1.18 (30.0)	1.61 (41.0)	1.97 (50.0)	1.97 (50.0)	2.75 (69.9)
TG	1.02 (25.9)	2.24 (57.0)	2.39 (60.7)	2.58 (65.5)	2.74 (69.6)	2.97 (75.4)
TR	0.98 (24.9)	1.57 (40.0)	2.09 (53.1)	2.76 (70.1)	2.76 (70.1)	3.54 (89.9)

Part No.	Port	Gauge Port	Flow Rate	Bowl Shield	Gauge
<b>MMFRL-1N</b>	#10-32	1/16" NPT	3 scfm	no	PG-10-160J
<b>MMFRL-2P</b>	1/8" NPT	1/8" NPT	18 scfm	no	PG-15-160P
<b>MMFRL-2Q</b>	1/4" NPT	1/8" NPT	18 scfm	no	PG-15-160P
<b>MMFRL-3O</b>	1/4" NPT	1/8" NPT	70 scfm	yes	PG-15-160P
<b>MMFRL-3W</b>	3/8" NPT	1/8" NPT	70 scfm	yes	PG-15-160P
<b>MMFRL-4W</b>	3/8" NPT	1/4" NPT	140 scfm	yes	PG-20-160Q
<b>MMFRL-4Z</b>	1/2" NPT	1/4" NPT	140 scfm	yes	PG-20-160Q
<b>MMFRL-4A-M*</b>	3/4" NPT	1/4" NPT	160 scfm	yes	PG-20-160Q
<b>MMFRL-5B-M*</b>	1" NPT	1/4" NPT	180 scfm	yes	PG-20-160Q

\* Metal bowl standard



# MAXIMATIC® STACKING FRLs



**MMFRLS-2Q-D**  
Stacking FRL with  
Polycarbonate Bowls  
and Auto Drain



**MMFRLS-3Q-D**  
Stacking FRL with Bowl  
Shields and Auto Drain



Stacking FRLs provide air filtration, regulation and lubrication in one unit for easy mounting and installation.

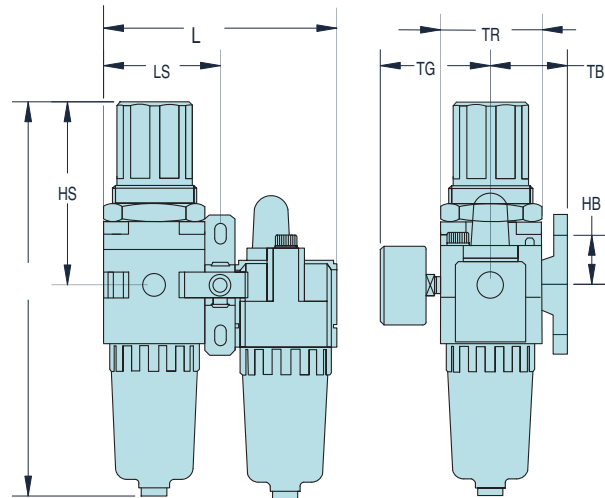
- Includes L bracket and gauge

**Bowl:** Polycarbonate standard. Steel shield provided on models indicated. Metal bowls with sight gauges also available, add “-M” to the end of the Part Number.

**Regulating Range:** 7 to 100 psig on MMFRLS-1N, 7 to 125 psig on all others. 30 and 60 psig ranges also available, add “-P30” or “-P60” to the end of the Part Number.

**Drain:** Semi-Automatic standard on MMFRLS-3/4/5 series. Manual standard on all others. Optional Automatic Drain available—add “-D” to Part Number.

**Filtration:** 25 micron filter standard. Add “-F5” to the end of the Part Number for an optional 5 micron filter.



Drawing shown  
without Shield  
or Auto Drain

Dim.	MMFRLS-4Z					
	MMFRLS-1	MMFRLS-2	MMFRLS-3	MMFRLS-4W	MMFRLS-4A	MMFRLS-5B
H	4.31 (109.5)	6.48 (164.6)	8.31 (211.1)	10.31 (261.9)	10.51 (267.0)	13.31 (338.1)
HB	0.79 (20.1)	0.94 (23.9)	1.38 (35.1)	1.57 (39.9)	1.57 (39.9)	1.97 (50.0)
HS	1.99 (50.5)	3.07 (78.0)	3.64 (92.5)	4.41 (112.0)	4.49 (114.0)	4.57 (116.1)
L	2.28 (57.9)	3.54 (89.9)	4.61 (117.1)	6.06 (153.9)	6.46 (164.1)	7.68 (195.1)
LS	1.14 (29.0)	1.77 (45.0)	2.30 (58.4)	3.03 (77.0)	3.23 (82.0)	3.84 (97.5)
TB	0.98 (24.9)	1.18 (30.0)	1.61 (40.9)	1.97 (50.0)	1.97 (50.0)	2.75 (69.9)
TG	1.02 (25.9)	2.24 (56.9)	2.39 (60.7)	2.58 (65.5)	2.74 (69.6)	2.97 (75.4)
TR	0.98 (24.9)	1.57 (39.9)	2.09 (53.1)	2.76 (70.1)	2.76 (70.1)	3.54 (89.9)

Part No.	Port	Gauge Port	Flow Rate		Bowl Shield	Gauge
<b>MMFRLS-1N</b>	#10-32	1/8" NPT	3 scfm	90 l/min	no	PG-10-160J
<b>MMFRLS-2P</b>	1/8" NPT	1/8" NPT	18 scfm	500 l/min	no	PG-15-160P
<b>MMFRLS-2Q</b>	1/4" NPT	1/8" NPT	18 scfm	500 l/min	no	PG-15-160P
<b>MMFRLS-3Q</b>	1/4" NPT	1/8" NPT	60 scfm	1,700 l/min	yes	PG-15-160P
<b>MMFRLS-3W</b>	3/8" NPT	1/8" NPT	60 scfm	1,700 l/min	yes	PG-15-160P
<b>MMFRLS-4W</b>	3/8" NPT	1/4" NPT	105 scfm	3,000 l/min	yes	PG-20-160Q
<b>MMFRLS-4Z</b>	1/2" NPT	1/4" NPT	105 scfm	3,000 l/min	yes	PG-20-160Q
<b>MMFRLS-4A-M*</b>	3/4" NPT	1/4" NPT	140 scfm	4,000 l/min	yes	PG-20-160Q
<b>MMFRLS-5B-M*</b>	1" NPT	1/4" NPT	180 scfm	5,000 l/min	yes	PG-20-160Q

\* Metal bowl standard

# MAXIMATIC® STACKING FILTER-REGULATORS



**MMFRS-3Q**  
Stacking Filter-Regulator  
with Bowl Shield & Semi-  
Automatic Drain



**MMFRS-2P**  
Stacking Filter-Regulator  
with Polycarbonate Bowl  
& Manual Drain



Stacking Filter-Regulator combinations provide air filtration and precise regulation in a single unit for easy mounting and installation where space is limited.

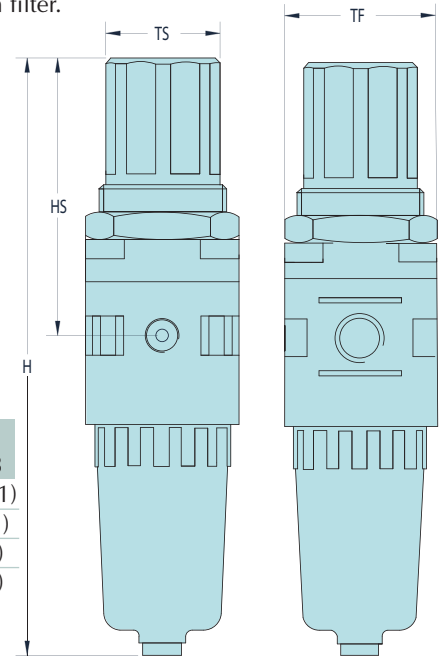
- Includes bracket and gauge (see Page 340 for dimensions).

**Regulating Range:** 7 to 100 psig on MMFRS-1N, 7 to 125 psig on all others. 30 and 60 psig ranges also available, add “-P30” or “-P60” to the end of the Part Number.

**Bowl:** Polycarbonate standard. Bowl shield provided on models indicated. Metal bowl with sight gauge also available, add “-M” to the Part Number.

**Differential Drain:** Semi-Automatic standard on MMFRS-3/4/5 series; Manual standard on all other models. When supply pressure is below 7 psig on all MMFRS-3 and MMFRS-4 models without metal bowls, the standard drain will open. An optional Automatic Drain available—add “-D” to Part Number (not available with MMFRS-4A-M).

**Filtration:** 25 micron filter standard. Add “-F5” to the end of the Part Number for an optional 5 micron filter.



Dim.	MMFRS-1N	MMFRS-2Q	MMFRS-3W	MMFRS-4Z	MMFRS-4W	MMFRS-4A	MMFRS-5B
H	4.31 (109.5)	6.48 (164.6)	8.31 (211.0)	10.31 (261.9)	10.51 (267.0)	13.31 (338.1)	
HS	1.99 (50.5)	3.07 (78.0)	3.64 (92.5)	4.41 (112.0)	4.49 (114.0)	4.57 (116.1)	
TF	0.98 (24.9)	1.57 (39.9)	2.09 (53.1)	2.76 (70.1)	2.76 (70.1)	3.54 (89.9)	
TS	1.10 (27.9)	1.34 (34.0)	1.37 (40.0)	2.13 (54.1)	2.13 (54.1)	2.13 (54.1)	

Part No.	Port	Gauge Port	Flow Rate	Bowl Shield	Gauge
<b>MMFRS-1N</b>	#10-32	1/16" NPT	3 scfm	no	PG-10-160J
<b>MMFRS-2P</b>	1/8" NPT	1/8" NPT	19 scfm	no	PG-15-160P
<b>MMFRS-2Q</b>	1/4" NPT	1/8" NPT	19 scfm	no	PG-15-160P
<b>MMFRS-3Q</b>	1/4" NPT	1/8" NPT	70 scfm	yes	PG-15-160P
<b>MMFRS-3W</b>	3/8" NPT	1/8" NPT	70 scfm	yes	PG-15-160P
<b>MMFRS-4W</b>	3/8" NPT	1/4" NPT	140 scfm	yes	PG-20-160Q
<b>MMFRS-4Z</b>	1/2" NPT	1/4" NPT	140 scfm	yes	PG-20-160Q
<b>MMFRS-4A-M*</b>	3/4" NPT	1/4" NPT	160 scfm	yes	PG-20-160Q
<b>MMFRS-5B-M*</b>	1" NPT	1/4" NPT	195 scfm	yes	PG-20-160Q

\* Metal bowl standard



# MAXIMATIC® FILTERS



**MMF-3Q-D**  
Filter with Bowl  
Shield & Auto  
Drain



**MMF-2Q**  
Filter with  
Polycarbonate  
Bowl & Manual  
Drain



**MMF-2Q-D**  
Filter with  
Polycarbonate Bowl &  
Automatic Drain



**MMF-2Q-MD**  
Filter with Metal  
Bowl & Manual  
Drain

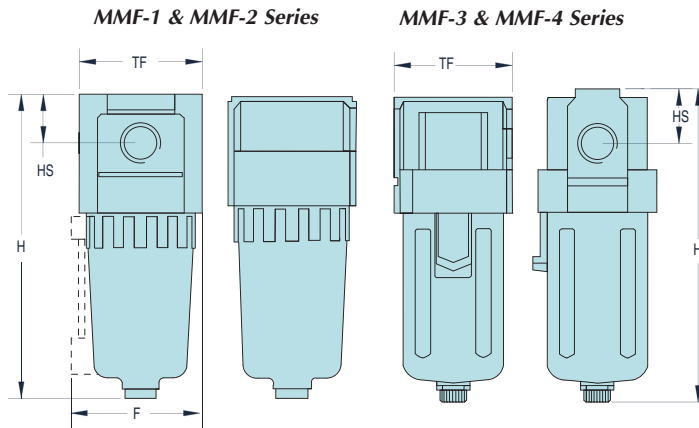
Maximatic® filters remove moisture and contaminants, and provide air filtration through a 25 micron filter. Replacement 25 micron and 5 micron filters are available.

- Semi-automatic drain standard on MMFRLS-3/4/5 series. Manual drain standard on all others. Optional Automatic Drain available—add “-D” to Part Number.

**Bowl:** Polycarbonate standard. Cast steel shield provided on models indicated. Metal bowl with sight gauge also available, add “-M” to the end of the Part Number.

**Filtration:** 25 micron filter standard. Add “-F5” to Part Number for optional 5 micron filter.

Filter	F	H	HS	TF
<u>MMF-1</u>	--	2.60 (66.0)	0.28 (7.1)	0.98 (24.9)
<u>MMF-2</u>	1.81 (50.0)	3.84 (97.5)	0.43 (10.9)	1.57 (39.9)
<u>MMF-3</u>	2.26 (57.4)	5.22 (132.6)	0.55 (14.0)	2.09 (53.1)
<u>MMF-4W/4Z</u>	3.00 (76.2)	6.63 (168.4)	0.71 (18.0)	2.76 (70.1)
<u>MMF-4A-M</u>	3.00 (76.2)	6.79 (172.5)	0.79 (19.8)	2.76 (70.1)
<u>MMF-5B-M</u>	3.00 (76.2)	9.74 (247.4)	0.94 (23.9)	3.54 (89.9)



**MAXIMUM**  
Value. ←  
→ Performance.

Part No.	Port	Flow Rate	Bowl Shield
<u>MMF-1N</u>	#10-32	4 scfm 110 l/min	no
<u>MMF-2P</u>	1/8" NPT	26 scfm 750 l/min	no
<u>MMF-2Q</u>	1/4" NPT	26 scfm 750 l/min	no
<u>MMF-3Q</u>	1/4" NPT	70 scfm 2,000 l/min	yes
<u>MMF-3W</u>	3/8" NPT	70 scfm 2,000 l/min	yes
<u>MMF-4W</u>	3/8" NPT	140 scfm 4,000 l/min	yes
<u>MMF-4Z</u>	1/2" NPT	140 scfm 4,000 l/min	yes
<u>MMF-4A-M*</u>	3/4" NPT	210 scfm 6,000 l/min	n/a
<u>MMF-5B-M*</u>	1" NPT	245 scfm 7,000 l/min	n/a

\* Metal bowl standard

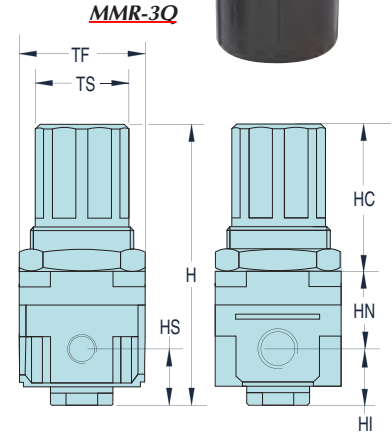
Maximatic® Regulators provide precise air regulation from 7 to 125 psig. The adjustment knob must be pulled out to adjust the pressure, preventing accidental adjustment. Maximum inlet pressure is 150 psig. Includes bracket and gauge.

**Regulating Range:** 7 to 100 psig standard on MMR-1N, and 7 to 125 psig on all others. 30 and 60 psig ranges also available, add “-P30” or “-P60” to the end of the Part Number.



Dim.	MMR-4Z					
	MMR-1	MMR-2	MMR-3	MMR-4W	MMR-4A	MMR-5
H	2.42 (61.5)	3.74 (95.0)	4.80 (121.8)	5.89 (149.6)	6.06 (153.9)	6.61 (168.0)
HS	0.43 (10.9)	0.67 (17.0)	1.38 (35.0)	1.48 (37.6)	1.59 (40.4)	1.89 (47.3)
HC	1.12 (28.4)	1.86 (47.2)	2.26 (57.4)	2.78 (70.6)	2.78 (70.6)	2.83 (71.9)
HN	0.75 (19.1)	1.00 (25.4)	1.30 (33.0)	1.44 (36.6)	1.44 (36.6)	1.87 (47.5)
HI	0.43 (10.9)	0.65 (16.5)	1.34 (34.0)	1.43 (36.3)	1.43 (36.3)	1.70 (43.2)
TF	0.98 (24.9)	1.57 (39.9)	2.09 (53.1)	2.76 (70.1)	2.76 (70.1)	3.54 (89.9)
TS	1.10 (27.4)	1.34 (34.0)	1.57 (39.9)	2.13 (54.1)	2.13 (54.1)	2.13 (54.1)

Part No.	Port	Gauge Port	Flow Rate		Gauge
<u>MMR-1N</u>	#10-32	1/16" NPT	4 scfm	100 l/min	<u>PG-10-160I</u>
<u>MMR-2P</u>	1/8" NPT	1/8" NPT	19 scfm	550 l/min	<u>PG-15-160P</u>
<u>MMR-2Q</u>	1/4" NPT	1/8" NPT	19 scfm	550 l/min	<u>PG-15-160P</u>
<u>MMR-3Q</u>	1/4" NPT	1/8" NPT	88 scfm	2,500 l/min	<u>PG-15-160P</u>
<u>MMR-3W</u>	3/8" NPT	1/8" NPT	88 scfm	2,500 l/min	<u>PG-15-160P</u>
<u>MMR-4W</u>	3/8" NPT	1/4" NPT	140 scfm	4,000 l/min	<u>PG-20-160Q</u>
<u>MMR-4Z</u>	1/2" NPT	1/4" NPT	140 scfm	4,000 l/min	<u>PG-20-160Q</u>
<u>MMR-4A</u>	3/4" NPT	1/4" NPT	210 scfm	6,000 l/min	<u>PG-20-160Q</u>
<u>MMR-5B</u>	1" NPT	1/4" NPT	280 scfm	8,000 l/min	<u>PG-20-160Q</u>



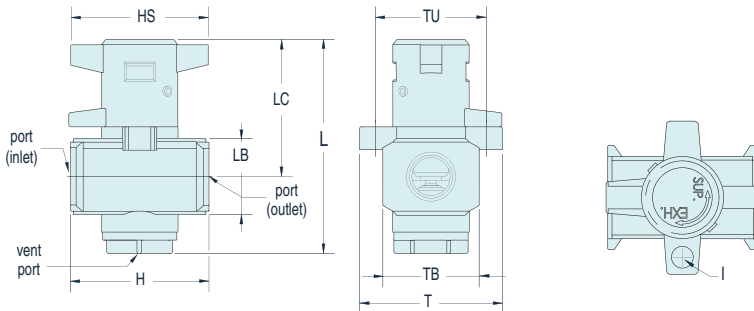
## RELIEVING SHUT-OFF/LOCK OUT VALVES

Maximatic Shut-Off/Lock Out valves may be used in conjunction with Maximatic FRLs to provide a method of turning off the air supply. Cleaning or replacing filters, adding oil to the lubricator or other maintenance steps can be made without the air supply present. The valve can also be locked in the “off” position (lock not provided) to prevent accidental pressurizing.

**Medium:** Air  
**Input Pressure:** 150 psig

**Air Flow:** See table below  
**Mounting:** In-line

**Material:** Die Cast Aluminum



Dim.	MMSV-3QP	MMSV-3WQ	MMSV-3ZW
	MMSV-3PP	MMSV-3QQ	MMSV-3WW
L	2.44 (62.0)	3.07 (78.0)	3.32 (84.3)
H	1.58 (40.1)	2.09 (53.1)	2.76 (70.1)
TB	1.10 (27.9)	1.18 (30.0)	1.42 (36.1)
T	1.62 (41.1)	2.10 (53.3)	2.10 (53.3)
TU	1.26 (32.0)	1.63 (41.4)	1.63 (41.4)
LC	1.57 (39.9)	1.95 (49.5)	2.08 (52.8)
LB	0.87 (22.1)	1.10 (27.9)	1.42 (36.1)
HS	1.58 (40.1)	1.77 (45.0)	1.77 (45.0)
I	0.24 (10.2)	0.29 (7.4)	0.29 (7.4)

Part No.	Port	Vent Port	Air Flow (cfm) @ 100 psig	For Use with FRL, Filter-Regulator, Filter & Regulator Series:					
				MMFRL-2	MMFRLS-2	MMFR-2	MMFRS-2	MMF-2	MMR-2
<u>MMSV-3PP</u>	1/8" NPT	1/8" NPT	18	MMFRL-2	MMFRLS-2	MMFR-2	MMFRS-2	MMF-2	MMR-2
<u>MMSV-3QP</u>	1/4" NPT	1/8" NPT	25	MMFRL-2	MMFRLS-2	MMFR-2	MMFRS-2	MMF-2	MMR-2
<u>MMSV-3QQ</u>	1/4" NPT	1/4" NPT	60	MMFRL-3	MMFRLS-3	MMFR-3	MMFRS-3	MMF-3	MMR-3
<u>MMSV-3WQ</u>	3/8" NPT	1/4" NPT	90	MMFRL-3	MMFRLS-3	MMFR-3	MMFRS-3	MMF-3	MMR-3
<u>MMSV-3WW</u>	3/8" NPT	3/8" NPT	120	MMFRL-4	MMFRLS-4	MMFR-4	MMFRS-4	MMF-4	MMR-4
<u>MMSV-3ZW</u>	1/2" NPT	3/8" NPT	180	MMFRL-4	MMFRLS-4	MMFR-4	MMFRS-4	MMF-4	MMR-4





# MAXIMATIC® LUBRICATORS



**MML-3W**  
Lubricator with  
Bowl Shield



**MML-2P**  
Lubricator with  
Polycarbonate  
Bowl



**MML-2Q-M**  
Lubricator with  
Metal Bowl

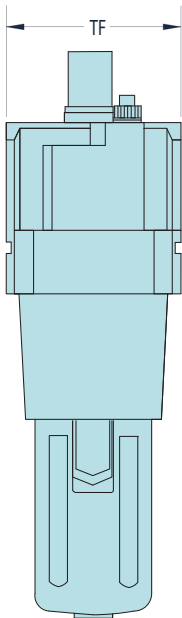
These inexpensive direct-flow lubricators provide lubrication to downstream valves and actuators

**Bowl:** Polycarbonate standard. Steel Shield provided on models as indicated. Metal bowl with sight glass also available, add “-M” to the Part Number.

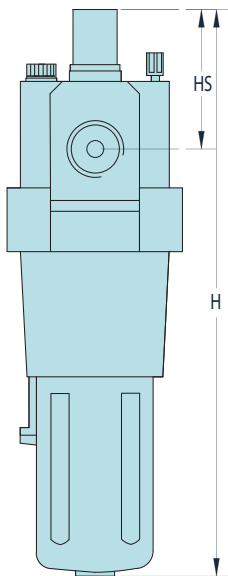


## Mounting Hardware

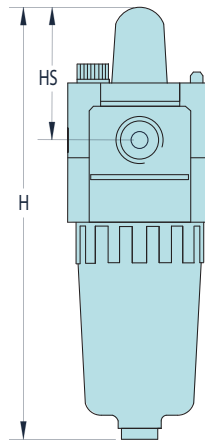
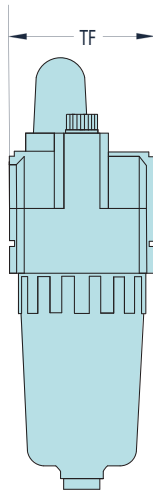
For a complete offering of mounting hardware, spacers, replacement bowls and other accessories, see [pages 337 through 339](#).



MML-3, MML-4 & MML-5 Series



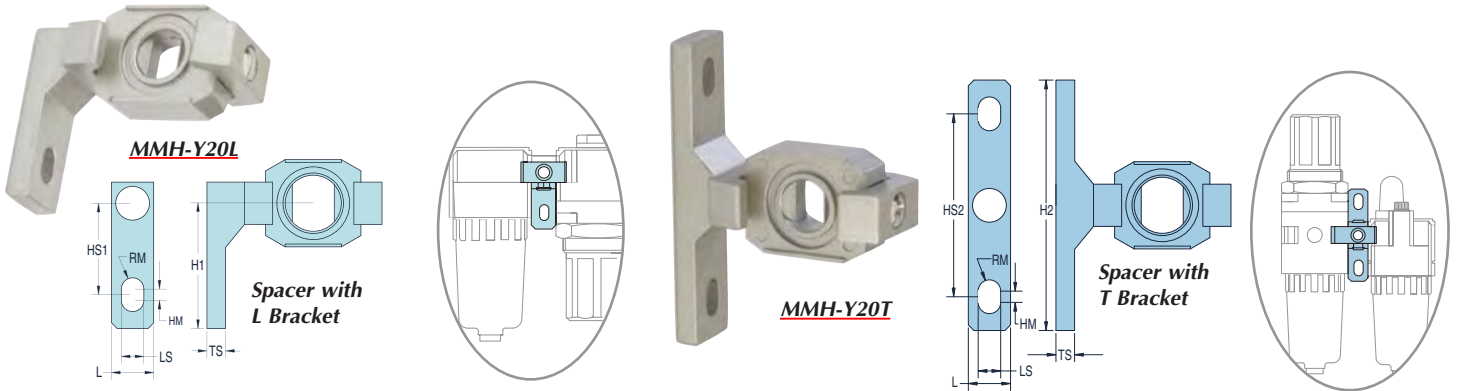
MML-1 & MML-2 Series



## Lubricator Bowl Fluid Capacity

Model	Bowl #	Capacity
MML-2	<a href="#">27057-2</a>	0.8 oz./24 ml (cc)
MML-3	<a href="#">27058-3</a>	2.3 oz./68 ml (cc)
MML-4	<a href="#">27058-4</a>	6.2 oz./183 ml (cc)

Part No.	Port	Flow Rate		Bowl Shield	Dimensions		
					H	HS	TF
<a href="#">MML-1N</a>	#10-32	3 scfm	90 l/min	no	3.21 (81.5)	1.00 (25.4)	0.98 (24.9)
<a href="#">MML-2P</a>	1/8" NPT	28 scfm	800 l/min	no	4.80 (121.9)	1.50 (38.1)	1.57 (39.9)
<a href="#">MML-2Q</a>	1/4" NPT	28 scfm	800 l/min	no	4.80 (121.9)	1.50 (38.1)	1.57 (39.9)
<a href="#">MML-3Q</a>	1/4" NPT	60 scfm	1,700 l/min	yes	5.59 (142.0)	1.50 (38.1)	2.09 (53.1)
<a href="#">MML-3W</a>	3/8" NPT	60 scfm	1,700 l/min	yes	5.59 (142.0)	1.50 (38.1)	2.09 (53.1)
<a href="#">MML-4W</a>	3/8" NPT	180 scfm	5,000 l/min	yes	6.97 (177.0)	1.61 (40.9)	2.76 (70.1)
<a href="#">MML-4Z</a>	1/2" NPT	180 scfm	5,000 l/min	yes	6.97 (177.0)	1.61 (40.9)	2.76 (70.1)
<a href="#">MML-4A</a>	3/4" NPT	220 scfm	6,300 l/min	yes	6.97 (177.0)	1.54 (39.1)	2.76 (70.1)
<a href="#">MML-5B</a>	1" NPT	245 scfm	7,000 l/min	yes	10.00 (254.0)	1.77 (45.0)	3.54 (89.9)



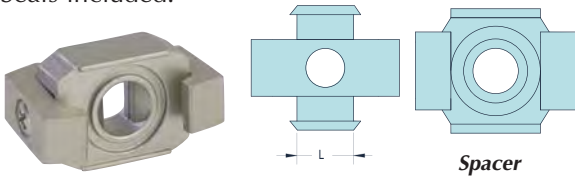
## Mounting Hardware for Combination Units

To convert individual Filter, Regulator and Lubricators into combination units. Seals included.

FRL Series	Spacer with L Bracket	Spacer with T Bracket	Dim.	MMH-Y10L	MMH-Y20L	MMH-Y30L	MMH-Y40L	MMH-Y50L	MMH-Y60L
	MMH-Y10L	MMH-Y10T		MMH-Y10T	MMH-Y20T	MMH-Y30T	MMH-Y40T	MMH-Y50T	MMH-Y60T
FRL-1	<a href="#">MMH-Y10L</a>	<a href="#">MMH-Y10T</a>	H1	1.06 (27.0)	1.30 (33.0)	1.77 (45.0)	1.97 (50.0)	1.97 (50.0)	2.48 (63.0)
FRL-2	<a href="#">MMH-Y20L</a>	<a href="#">MMH-Y20T</a>	H2	2.13 (54.0)	2.60 (66.0)	3.54 (90.0)	3.94 (100.0)	3.94 (100.0)	4.96 (26.0)
FRL-3	<a href="#">MMH-Y30L</a>	<a href="#">MMH-Y30T</a>	L	0.47 (12.0)	0.59 (15.0)	0.63 (16.0)	0.87 (22.0)	0.87 (22.0)	0.91 (23.0)
FRL-4W/4Z	<a href="#">MMH-Y40L</a>	<a href="#">MMH-Y40T</a>	LS	0.18 (4.5)	0.22 (5.5)	0.28 (7.0)	0.35 (9.0)	0.35 (9.0)	0.47 (12.0)
FRL-4A	<a href="#">MMH-Y50L</a>	<a href="#">MMH-Y50T</a>	HM	0.12 (3.0)	0.12 (3.0)	0.16 (4.0)	0.16 (4.0)	0.16 (4.0)	0.16 (4.0)
FRL-5	<a href="#">MMH-Y60L</a>	<a href="#">MMH-Y60T</a>	TS	0.20 (5.0)	0.20 (5.0)	0.28 (7.0)	0.28 (7.0)	0.28 (7.0)	0.41 (10.5)
			RM	0.09 (2.3)	0.11 (2.8)	0.14 (3.5)	0.18 (4.5)	0.18 (4.5)	0.24 (6.0)
			HS1	0.79 (20.0)	0.94 (24.0)	1.38 (35.0)	1.57 (40.0)	1.57 (40.0)	1.97 (50.0)
			HS2	1.57 (40.0)	1.89 (48.0)	2.76 (70.0)	3.15 (80.0)	3.15 (80.0)	3.94 (100.0)

## Spacers

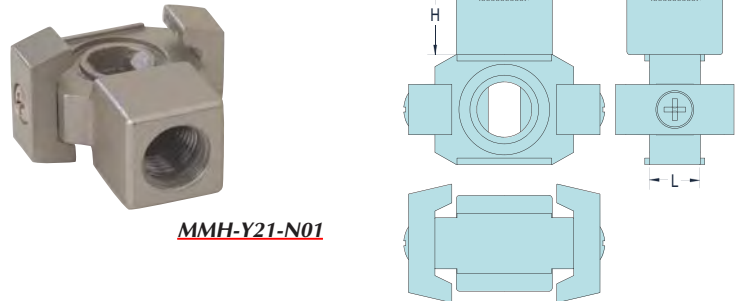
To convert individual Filter, Regulator and Lubricators into combination units without mounting brackets. Seals included.



Series	Part No.	"L" Dimension
FRL-1	<a href="#">MMH-Y10</a>	0.32 (8.1)
FRL-2	<a href="#">MMH-Y20</a>	0.41 (10.4)
FRL-3	<a href="#">MMH-Y30</a>	0.44 (11.2)
FRL-4W/4Z	<a href="#">MMH-Y40</a>	0.55 (14.0)
FRL-4A	<a href="#">MMH-Y50</a>	0.57 (14.5)
FRL-5	<a href="#">MMH-Y60</a>	0.61 (15.5)

## Spacers with Auxiliary Port

Provides parallel port between components.

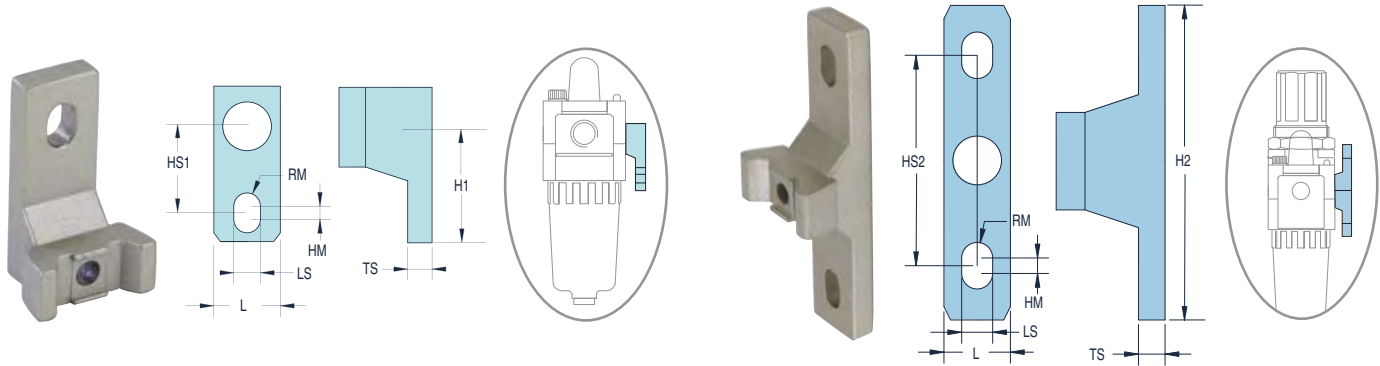


FRL Series	Spacer with Port	Spacer with L Bracket & Port	Spacer with T Bracket & Port	L	Dimension H	W
FRL-2	<a href="#">MMH-Y21-N01 (1/8")</a>	<a href="#">MMH-Y21L-N01 (1/8")</a>	<a href="#">MMH-Y21T-N01 (1/8")</a>	0.41 (10.4)	0.69 (17.5)	0.76 (19.3)
	<a href="#">MMH-Y21-N02 (1/4")</a>	<a href="#">MMH-Y21L-N02 (1/4")</a>	<a href="#">MMH-Y21T-N02 (1/4")</a>	0.41 (10.4)	0.69 (17.5)	0.76 (19.3)
FRL-3	<a href="#">MMH-Y31-N01 (1/8")</a>	<a href="#">MMH-Y31L-N01 (1/8")</a>	<a href="#">MMH-Y31T-N01 (1/8")</a>	0.44 (11.2)	0.64 (16.3)	0.75 (19.1)
	<a href="#">MMH-Y31-N02 (1/4")</a>	<a href="#">MMH-Y31L-N02 (1/4")</a>	<a href="#">MMH-Y31T-N02 (1/4")</a>	0.44 (11.2)	0.64 (16.3)	0.75 (19.1)
FRL-4W/4Z	<a href="#">MMH-Y41-N02 (1/4")</a>	<a href="#">MMH-Y41L-N02 (1/4")</a>	<a href="#">MMH-Y41T-N02 (1/4")</a>	0.55 (14.0)	0.71 (18.0)	0.94 (23.9)
	<a href="#">MMH-Y41-N03 (3/8")</a>	<a href="#">MMH-Y41L-N03 (3/8")</a>	<a href="#">MMH-Y41T-N03 (3/8")</a>	0.55 (14.0)	0.71 (18.0)	0.94 (23.9)
FRL-5	<a href="#">MMH-Y61-N03 (3/8")</a>	<a href="#">MMH-Y61L-N03 (3/8")</a>	<a href="#">MMH-Y61T-N03 (3/8")</a>	0.61 (15.5)	0.79 (20.1)	1.18 (30.0)
	<a href="#">MMH-Y61-N04 (1/2")</a>	<a href="#">MMH-Y61L-N04 (1/2")</a>	<a href="#">MMH-Y61T-N04 (1/2")</a>	0.61 (15.5)	0.79 (20.1)	1.18 (30.0)



## T & L Brackets

L brackets are included with the purchase of combination FRLs, to convert to T, use T bracket only. If no bracket is furnished, use T or L bracket with MMH-YXX spacer (ordered separately).



FRL Series	L Bracket Part No.	FRL Series	L Bracket Part No.
1	<a href="#">MMH-B110L</a>	4W/4Z	<a href="#">MMH-B410L</a>
2	<a href="#">MMH-B210L</a>	4A	<a href="#">MMH-B510L</a>
3	<a href="#">MMH-B310L</a>	5	<a href="#">MMH-B610L</a>

FRL Series	T Bracket Part No.	FRL Series	T Bracket Part No.
1	<a href="#">MMH-B110T</a>	4W/4Z	<a href="#">MMH-B410T</a>
2	<a href="#">MMH-B210T</a>	4A	<a href="#">MMH-B510T</a>
3	<a href="#">MMH-B310T</a>	5	<a href="#">MMH-B610T</a>

Dim.	MMH-B110T MMH-B110L	MMH-B210T MMH-B210L	MMH-B310T MMH-B310L	MMH-B410T MMH-B410L	MMH-B510T MMH-B510L	MMH-B610T MMH-B610L
H1	1.06 (27.0)	1.30 (33.0)	1.77 (45.0)	1.97 (50.0)	1.97 (50.0)	2.48 (63.0)
H2	2.13 (54.0)	2.60 (66.0)	3.54 (90.0)	3.94 (100.0)	3.94 (100.0)	4.96 (126.0)
L	0.47 (12.0)	0.59 (15.0)	0.63 (16.0)	0.87 (22.0)	0.87 (22.0)	0.91 (23.0)
LS	0.18 (4.5)	0.22 (5.5)	0.28 (7.0)	0.35 (9.0)	0.35 (9.0)	0.47 (12.0)
HM	0.12 (3.0)	0.12 (3.0)	0.16 (4.0)	0.16 (4.0)	0.16 (4.0)	0.16 (4.0)
TS	0.20 (5.0)	0.20 (5.0)	0.28 (7.0)	0.28 (7.0)	0.28 (7.0)	0.41 (10.5)
RM	0.09 (2.3)	0.11 (2.8)	0.14 (3.5)	0.18 (4.5)	0.18 (4.5)	0.24 (6.0)
HS1	0.79 (20.0)	0.94 (24.0)	1.38 (35.0)	1.57 (40.0)	1.57 (40.0)	1.97 (50.0)
HS2	1.57 (40.0)	1.89 (48.0)	2.76 (70.0)	3.15 (80.0)	3.15 (80.0)	3.94 (100.0)

## Replacement Bowls

All metal bowls come complete with a sight glass.

Filter	Poly. Bowl with Manual Drain	Poly. Bowl with Auto Drain	Metal Bowl with Manual Drain	Metal Bowl with Auto Drain
MMF-1 Series	<a href="#">27055-1</a>	---	---	---
MMF-2 Series	<a href="#">27055-2</a>	<a href="#">27055-2-A</a>	<a href="#">27059-2</a>	<a href="#">27059-2-A</a>
MMF-3 Series	<a href="#">27055-3</a>	<a href="#">27056-3-A</a>	<a href="#">27059-3</a>	<a href="#">27059-3-A</a>
MMF-4/5 Series	<a href="#">27055-4</a>	<a href="#">27056-4-A</a>	<a href="#">27059-4</a>	<a href="#">27059-4-A</a>

Lubricator	Poly. Bowl	Metal Bowl
MML-1 Series	<a href="#">27057-1</a>	---
MML-2 Series	<a href="#">27057-2</a>	<a href="#">27060-2</a>
MML-3 Series	<a href="#">27057-3</a>	<a href="#">27060-3</a>
MML-4 Series	<a href="#">27057-4</a>	<a href="#">27060-4</a>
MML-5 Series	<a href="#">27057-5</a>	<a href="#">27060-5</a>

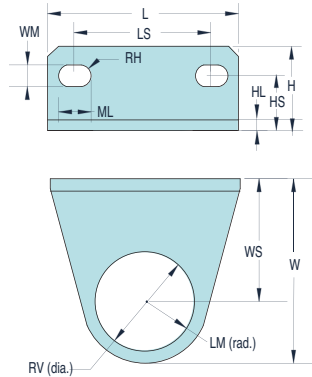




## Replacement Mounting Hardware for Regulators & Stacked Filter-Regulators

Brackets are included with the purchase of these components.

Regulator	Bracket Part No.
MMR-1N/MMFRS-1N	<a href="#">MMH-B120</a>
MMR-2P/2Q	<a href="#">MMH-B220</a>
MMFRS-2P/2Q	<a href="#">MMH-B220</a>
MMR-3Q/3W	<a href="#">MMH-B320</a>
MMFRS-3Q/3W	<a href="#">MMH-B320</a>
MMR-4W/4Z/4A	<a href="#">MMH-B420</a>
MMFRS-4W/4Z/4A	<a href="#">MMH-B420</a>
MMR-5B	<a href="#">MMH-B420</a>
MMFRS-5B	<a href="#">MMH-B420</a>



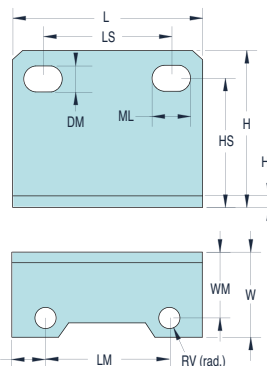
Dim.	MMH-B120	MMH-B220	MMH-B320	MMH-B420
L	1.57 (40.0)	2.17 (55.0)	2.09 (53.0)	2.76 (70.0)
LS	1.10 (28.0)	1.34 (34.0)	1.57 (40.0)	2.13 (54.0)
H	0.67 (17.0)	1.05 (26.7)	0.93 (23.6)	1.15 (29.2)
HS	0.43 (11.0)	0.75 (19.0)	0.55 (14.0)	0.71 (18.0)
W	1.49 (37.8)	1.97 (50.0)	2.52 (64.0)	3.12 (79.2)
WS	0.98 (25.0)	1.18 (30.0)	1.55 (39.0)	1.94 (49.2)
RV	0.81 (20.5)	1.32 (33.5)	1.67 (42.5)	2.07 (52.5)
LM	0.48 (12.3)	0.79 (20.0)	0.98 (25.0)	1.18 (30.0)
ML	0.26 (6.5)	0.60 (15.2)	0.31 (7.9)	0.41 (10.4)
WM	0.18 (4.5)	0.21 (5.4)	0.26 (6.5)	0.33 (8.5)
RH	0.09 (2.3)	0.11 (2.7)	0.13 (3.3)	0.17 (4.3)
HL	0.08 (2.0)	0.08 (2.0)	0.08 (2.0)	0.08 (2.0)



## Mounting Hardware for Lubricators & Filters

No brackets are furnished with Lubricators or Filters. Comes with hardware to mount bracket to MMF/MML.

Filter/ Lubricator	Bkt. Mtg. Thread	Bracket Part No.
MMF-2P	M4	<a href="#">MMH-B240</a>
MML-2P	M4	<a href="#">MMH-B240</a>
MMF-3	M4	<a href="#">MMH-B340</a>
MML-3	M4	<a href="#">MMH-B340</a>
MMF-4Z/4W	M5	<a href="#">MMH-B440</a>
MML-4Z/4W	M5	<a href="#">MMH-B440</a>
MMF-4A	M5	<a href="#">MMH-B540</a>
MML-4A	M5	<a href="#">MMH-B540</a>
MMF-5	M6	<a href="#">MMH-B640</a>
MML-5	M6	<a href="#">MMH-B640</a>

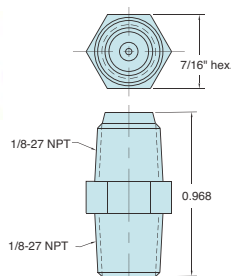


Dim.	MMH-B240	MMH-B340	MMH-B440	MMH-B540	MMH-B640
L	1.58 (40.1)	2.09 (53.0)	2.76 (70.0)	2.76 (70.0)	3.54 (90.0)
LS	1.06 (27.0)	1.59 (40.4)	2.12 (53.8)	2.13 (54.0)	2.60 (66.0)
DM	0.21 (5.3)	0.26 (6.6)	0.34 (8.64)	0.34 (8.64)	0.43 (10.9)
H	1.18 (30.0)	1.51 (38.4)	1.85 (47.0)	1.89 (48.0)	2.50 (63.5)
HS	0.95 (24.1)	1.24 (31.5)	1.49 (37.8)	1.53 (38.9)	2.03 (51.6)
W	0.74 (18.8)	0.95 (24.1)	1.22 (31.0)	1.24 (31.5)	1.69 (43.0)
RV	0.18 (4.5)	0.17 (4.3)	0.22 (5.5)	0.22 (5.5)	0.26 (6.5)
LM	1.03 (26.2)	1.39 (35.3)	1.85 (47.0)	1.79 (45.5)	2.37 (60.2)
ME	0.27 (6.9)	0.35 (8.9)	0.45 (11.4)	0.48 (12.2)	0.59 (15.0)
ML	0.33 (8.4)	0.32 (8.0)	0.41 (10.4)	0.41 (10.4)	5.12 (13.0)
WM	0.56 (14.2)	0.77 (19.6)	0.77 (19.6)	0.79 (20.1)	0.43 (11.0)
HL	0.08 (2.0)	0.08 (2.0)	0.87 (22.1)	0.09 (2.3)	0.13 (3.2)

### 1/8" NPT Filter



1/8" NPT hex nipple with 40 micron filter / strainer, can be used as a muffler.

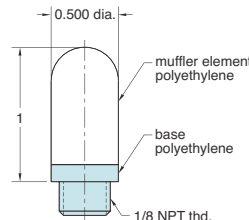


Part No.	Description
<a href="#">9002-01</a>	1/8" NPT Filter

### Muffler



The 3849-1 muffler is constructed of durable polyethylene with a 1/8" NPT male thread.



Part No.	Description
<a href="#">3849-1</a>	Muffler

### Filter Elements

All Maximatic filters come standard with a 25 micron sintered brass filter element and baffle, however 5 micron filters are also available. Add "-F5" to the end of the filter Part Number for 5 micron. Replacement filters with baffles are also offered below.

Filter Series	5 micron	25 micron
MMF-1	<a href="#">27021</a>	<a href="#">27050</a>
MMF-2	<a href="#">27022</a>	<a href="#">27051</a>
MMF-3	<a href="#">27023</a>	<a href="#">27052</a>
MMF-4	<a href="#">27024</a>	<a href="#">27053</a>
MMF-5	<a href="#">27025</a>	<a href="#">27054</a>



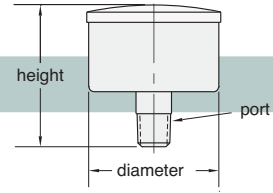
# GAUGES



Gauge measures pneumatic system pressure. Stud mounted.



## Pressure Gauges



**Range:** Scale reading up to 160 psig/11 bar.  
See chart.

**Construction:** Steel case (nickel-plated on PG-101-NP). Plastic face. Dial shows two ranges; psig in black, bars in red. Built-in pressure snubber.

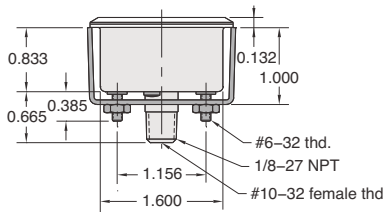
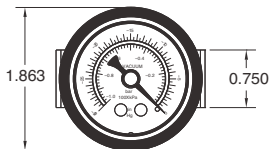
**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT

**Mounting:** Stud mount using 1/8" NPT center stud

Part No.	Diameter	Height	Port (OD)	Range	
				psig	Bar
<u>PG-10-30J*</u>	1"	1.003"	1/16" NPT	0 to 30	0 to 2
<u>PG-10-60J*</u>	1"	1.003"	1/16" NPT	0 to 60	0 to 4
<u>PG-10-160J*</u>	1"	1.003"	1/16" NPT	0 to 160	0 to 11
<u>PG-15-30P</u>	1.5"	1.540"	1/8" NPT	0 to 30	0 to 2
<u>PG-15-60P</u>	1.5"	1.540"	1/8" NPT	0 to 60	0 to 4
<u>PG-101-BK*</u>	1.625"	1.670"	1/8" NPT	0 to 100	0 to 6.9
<u>PG-101-NP*</u>	1.625"	1.670"	1/8" NPT	0 to 100	0 to 6.9
<u>PG-15-160P</u>	1.5"	1.540"	1/8" NPT	0 to 160	0 to 11
<u>PG-20-30Q</u>	2"	1.680"	1/4" NPT	0 to 30	0 to 2
<u>PG-20-60Q</u>	2"	1.680"	1/4" NPT	0 to 60	0 to 4
<u>PG-20-160Q</u>	2"	1.680"	1/4" NPT	0 to 160	0 to 11

\* I.D. - tapped for #10-32 fitting

## Vacuum Gauge



Gauge measures pneumatic vacuum pressure. Mounting bracket included.

**Range:** Scale reading from 0 to 30 in.Hg. and 0 to -1 bar

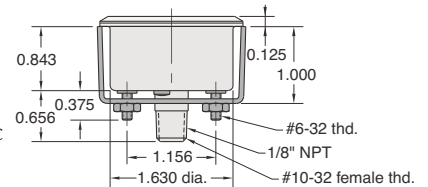
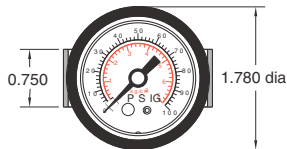
**Construction:** Nickel-plated steel case. Plastic face. Dial shows two ranges; Hg in black, bars in red. Built-in pressure snubber.

**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT  
I.D. - tapped for #10-32 fitting

**Mounting:** Stud mount using 1/8" NPT center stud or panel mount using the zinc plated steel bracket supplied.

Part No.	Description
<u>VG-30</u>	Vacuum Gauge

## Pressure Gauge



Gauge measures pneumatic system pressure. Mounting bracket included.

**Input Pressure:** Scale reading from 0 to 100 psig and 0 to 6.9 bar

**Construction:** Nickel-plated steel case. Plastic face. Dial shows two ranges; psig in black, bars in red. Built-in pressure snubber.

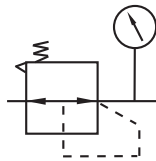
**Ports:** Connection located at rear is double threaded O.D. - male thread 1/8" NPT  
I.D. - tapped for #10-32 fitting

**Mounting:** With zinc plated steel bracket supplied

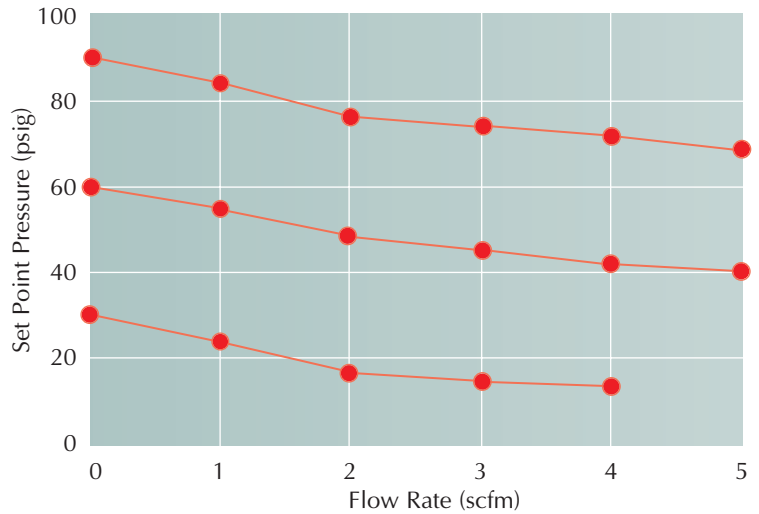
Part No.	Description
<u>PG-100</u>	Pressure Gauge

## Flow Rate vs. Set Point Pressure @ 100 psig Supply Pressure

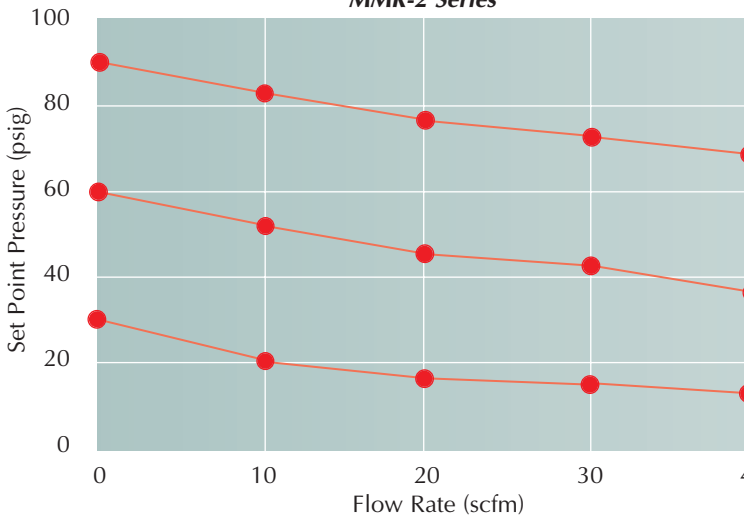
- Find the required flow rate in the graphs below.
- Determine the desired set point pressure.
- With a suggested pressure drop of <15 psig, determine which Regulator size provides the required flow rate.



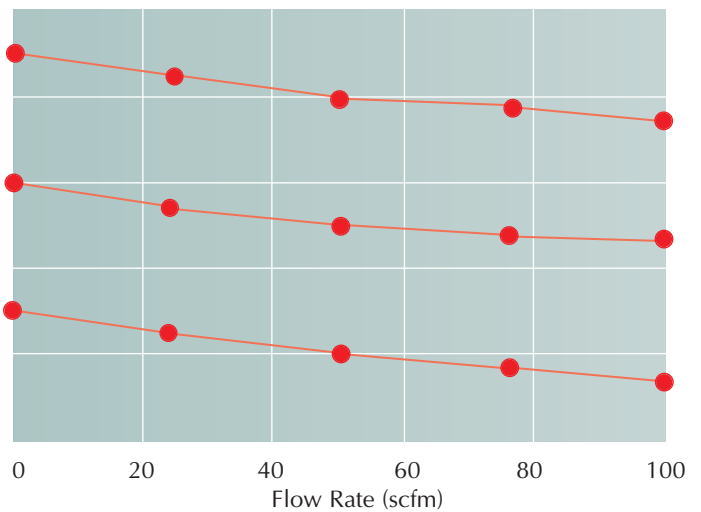
**MMR-1 Series**



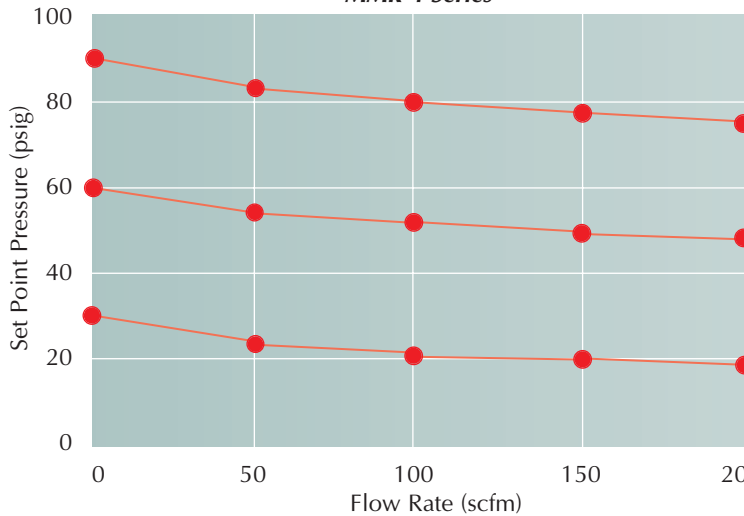
**MMR-2 Series**



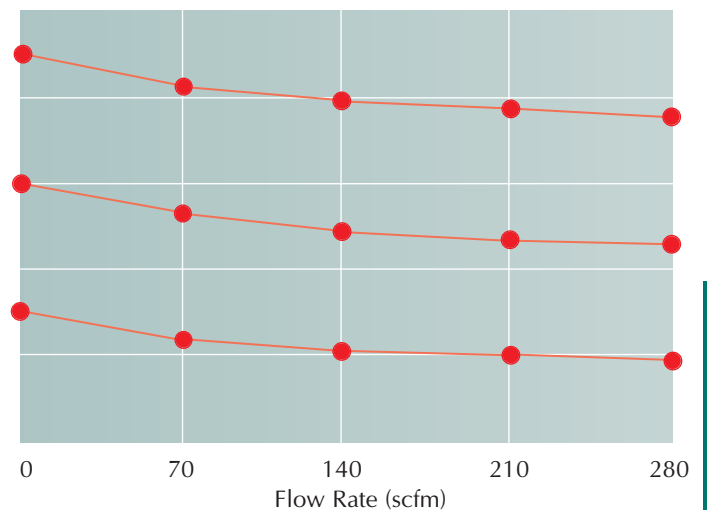
**MMR-3 Series**



**MMR-4 Series**



**MMR-5 Series**



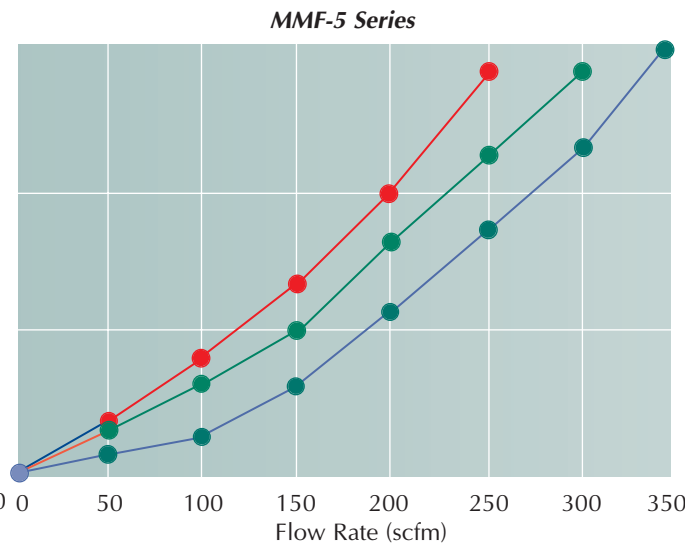
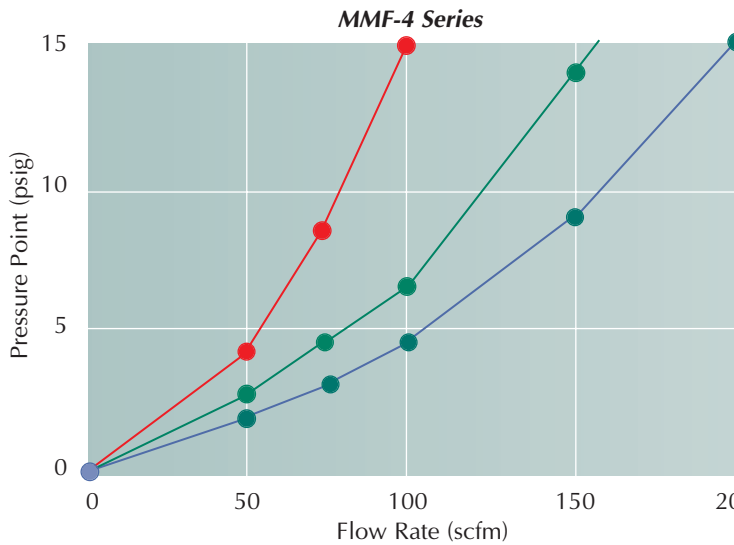
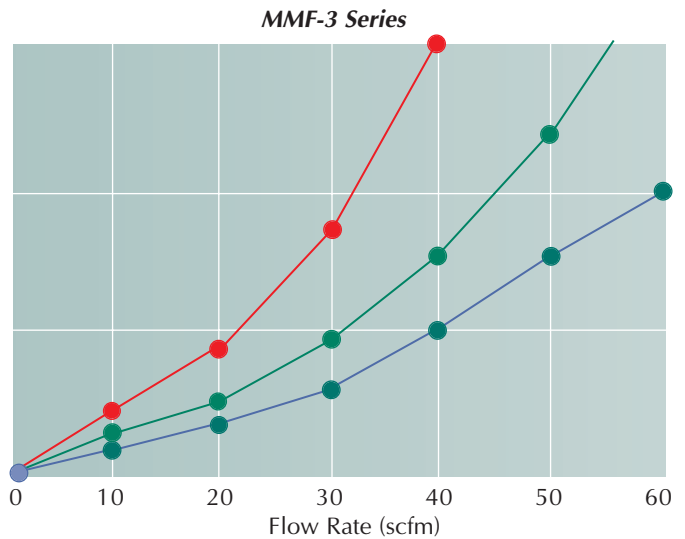
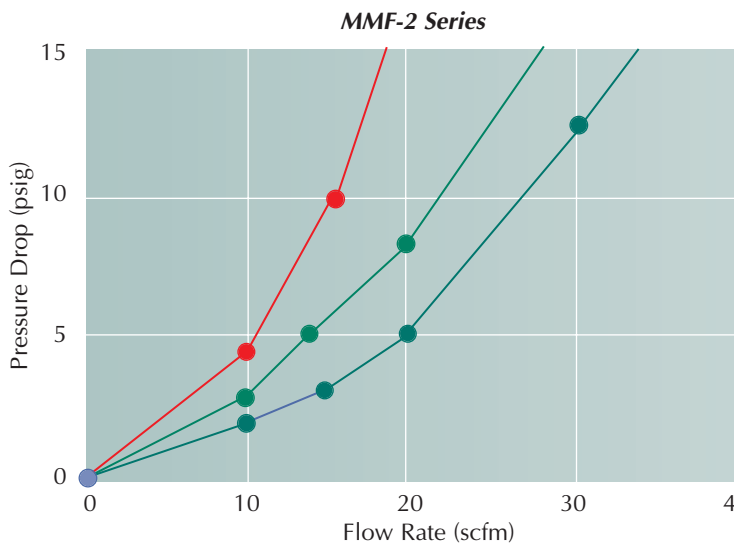
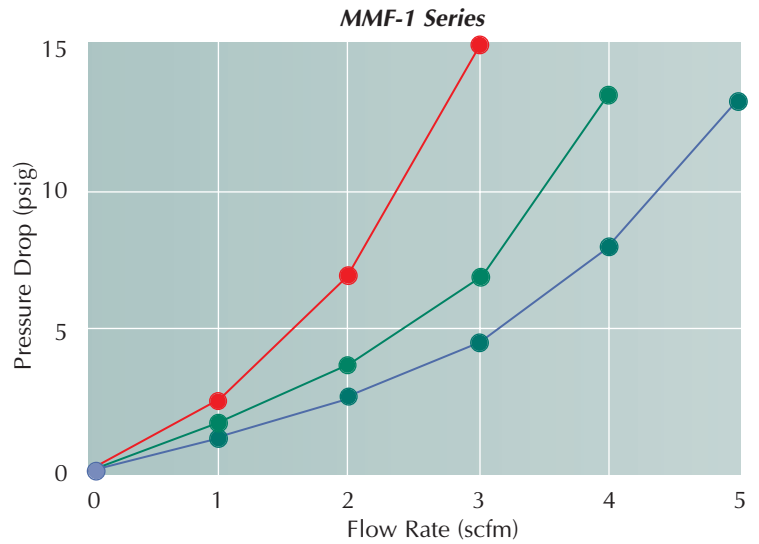
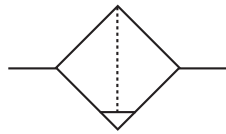


# MAXIMATIC® FILTERS

Flow Rate vs. Set Pressure Drop @ 30 ●●●, 60 ●●● & 90 ●●● psig Supply Pressure

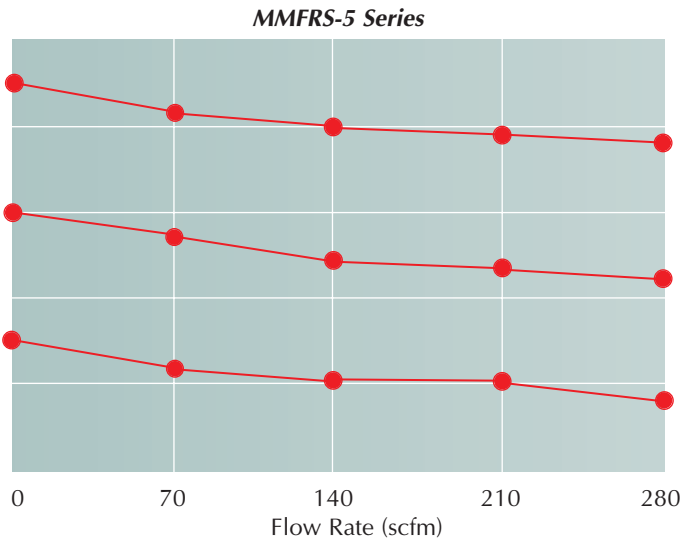
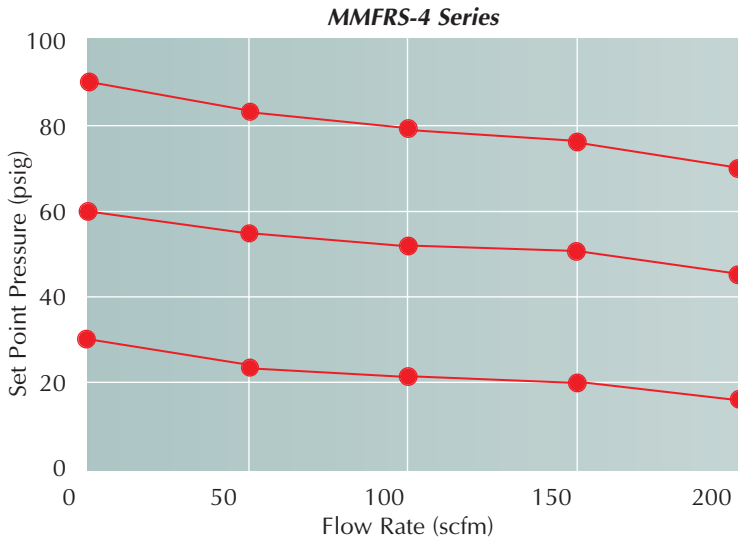
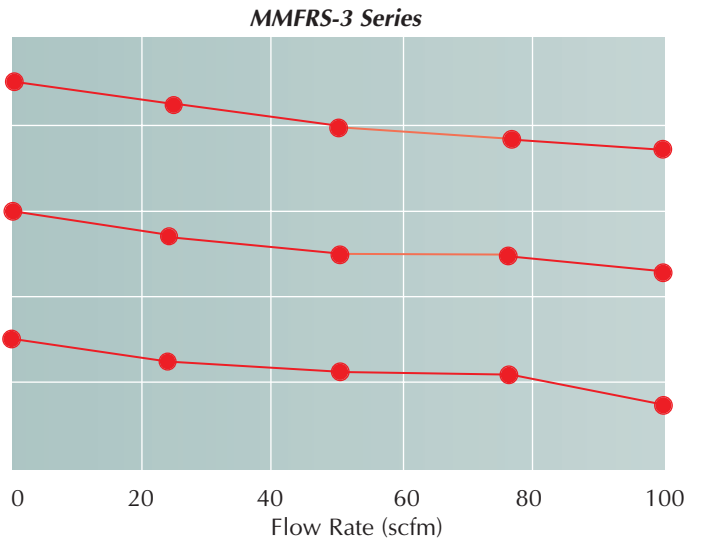
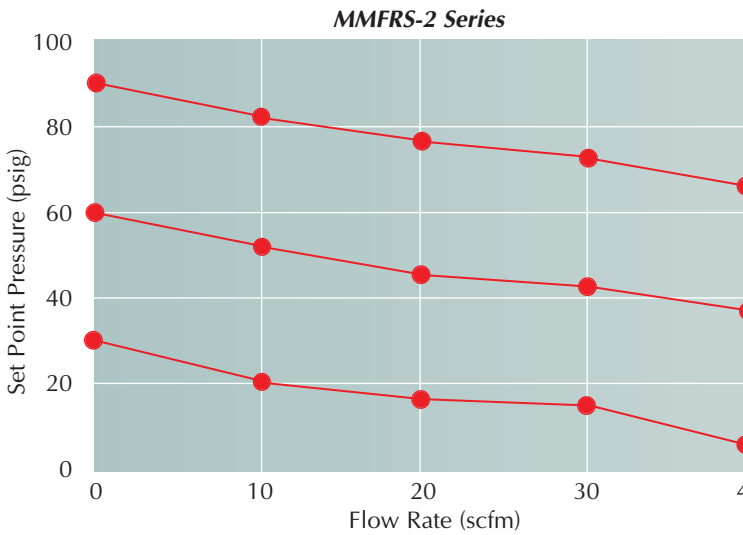
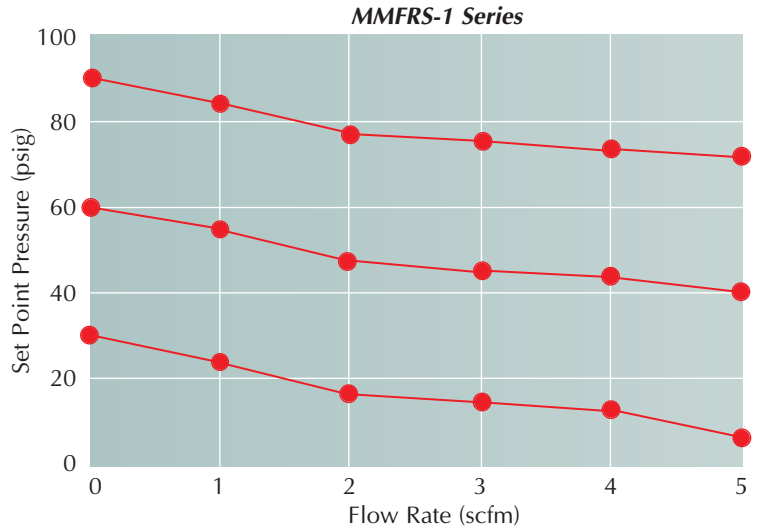
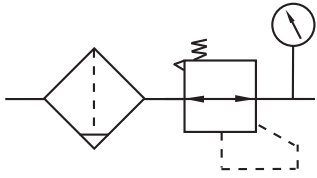


- Find the required flow rate in the graphs below.
- Determine the desired set point pressure.
- With a suggested pressure drop of <15 psig, determine which Filter size provides the required flow rate.



## Flow Rate vs. Set Point Pressure @ 100 psig Supply Pressure

- Find the required flow rate in the graphs below.
- Determine the desired set point pressure.
- With a suggested pressure drop of <15 psig, determine which Filter-Regulator size provides the required flow rate.



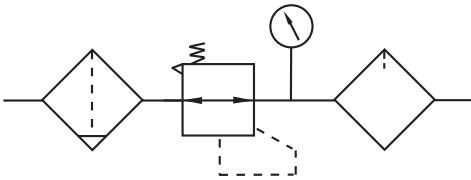




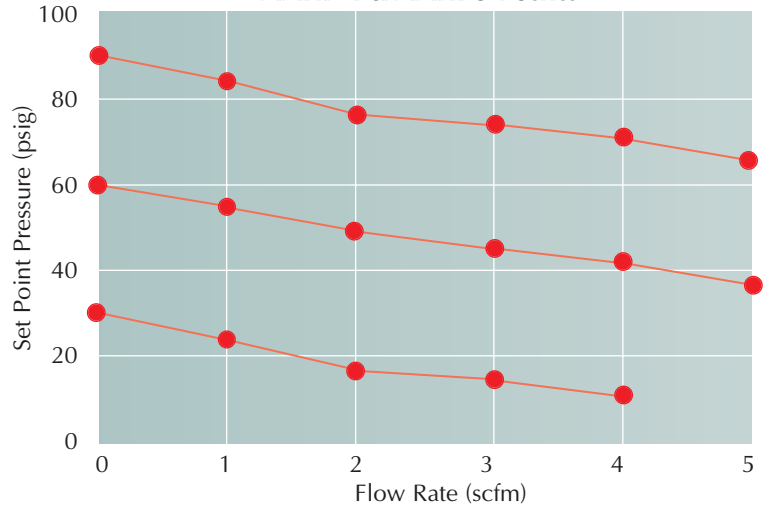
# MAXIMATIC® FILTER-REGULATOR-LUBRICATORS

## Flow Rate vs. Set Point Pressure @ 100 psig Supply Pressure

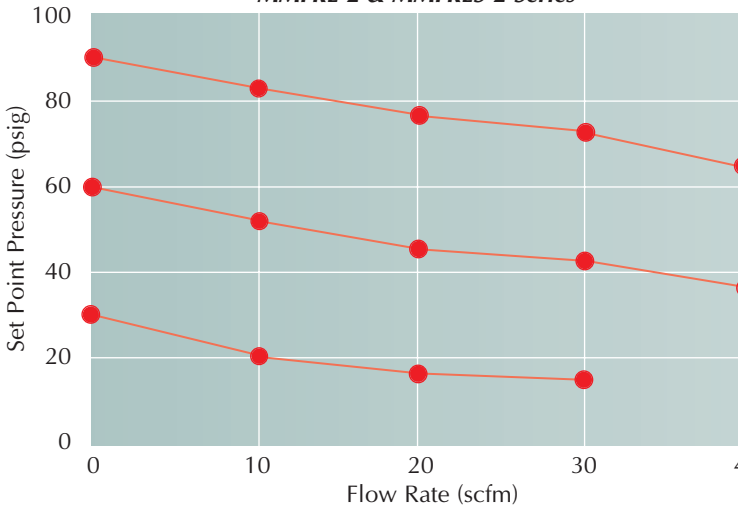
- Find the required flow rate in the graphs below.
- Determine the desired set point pressure.
- With a suggested pressure drop of <15 psig, determine which FRL size provides the required flow rate.



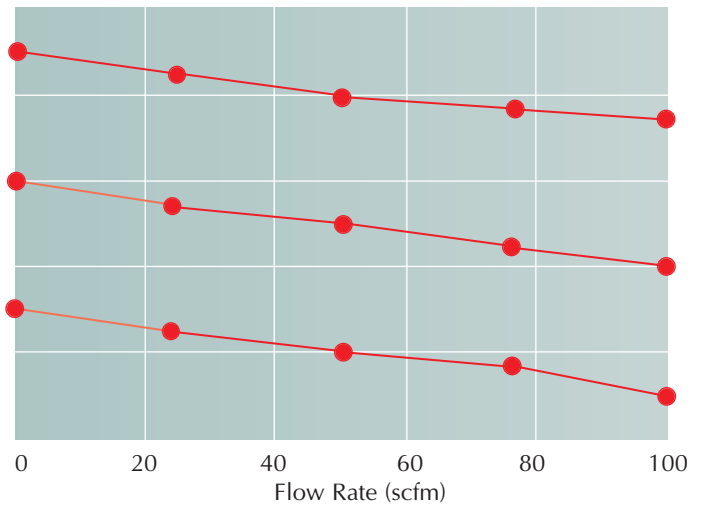
### MMFRL-1 & MMFRLS-1 Series



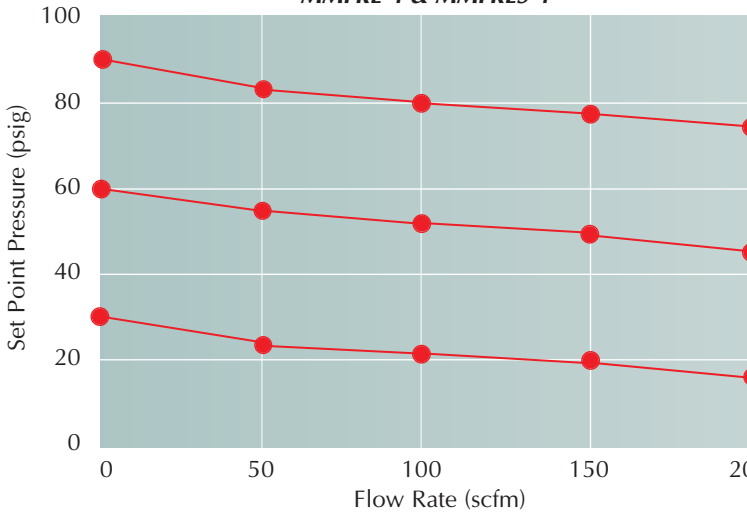
### MMFRL-2 & MMFRLS-2 Series



### MMFRL-3 & MMFRLS-3 Series



### MMFRL-4 & MMFRLS-4



### MMFRL-5 & MMFRLS-5 Series

