

Catalog FRL-PAI-3/USA





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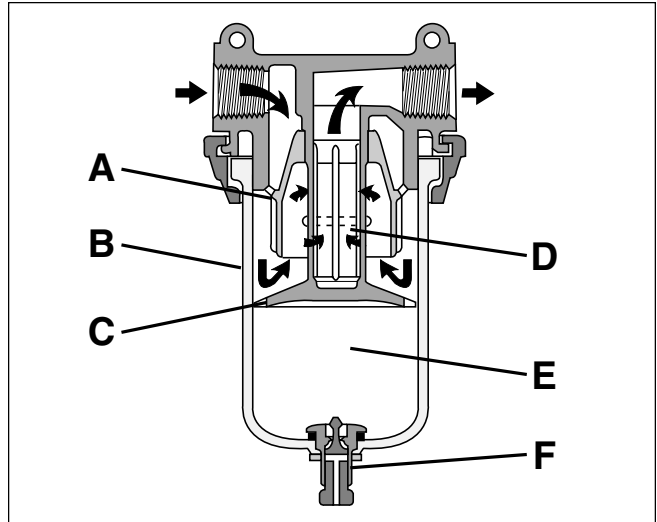
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Features

- Excellent water removal efficiency
- Unique deflector plate that creates swirling of the air stream ensuring maximum water and dirt separation.
- 30 micron reusable element standard.
- Quick release bowl mechanism.
- Fingertip operated drain.
- Optional internal automatic drain.
- Easily disassembled for servicing without the use of tools.
- Metal bowl guard recommended.

Application

The Compact Series Filters are designed to remove airborne solid contaminants, pipe scale, rust, pipe dope, etc., which may plug small orifices or cause excessive wear.

Operation

First Stage Filtration:

Air enters at inlet port and flows through deflector (A) which causes a swirling action. Liquids and coarse particles are forced to the bowl interior wall (B) by the centrifugal action of the swirling air. They are then carried down the bowl by the force of gravity. The baffle (C) separates the lower portion of the bowl into a "quiet zone" (E) where the removed liquid and particles collect, unaffected by the swirling air, and are therefore not reentrained into the flowing air.

Second Stage Filtration:

After liquids and large particles are removed in the first stages of filtration, the air flows through element (D) where smaller particles are filtered out. The filtered air then passes downstream. Collected liquids and particles in the "quiet zone" (E) should be drained before their level reaches a height where they would be reentrained in the flowing air. This can be accomplished by unscrewing the drain valve (F) slightly until the liquid begins to drain.

Specifications

Body: Zinc

Bowls Available:

Transparent Polycarbonate

Bowl Guard: Metal

Bowl Capacity: 5 ounces

Deflector: Acetal

Drains:

Manual - Twist Type

Body & Stem: Plastic

Seals: Nitrile

Automatic - Float Type

Body & Float: Plastic

Seals: Nitrile

Springs & Push Rod: Stainless Steel

Operating Pressure Range:

	PSIG	bar	kPa
Minimum	10	0.7	69
Maximum	250	17.2	1,724

Filter & Element:

30 Micron Edge Type Standard - Nylon and Acetal

Lock Ring: Zinc

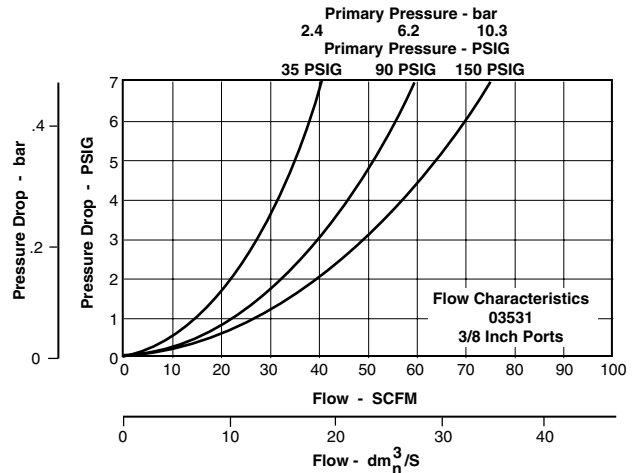
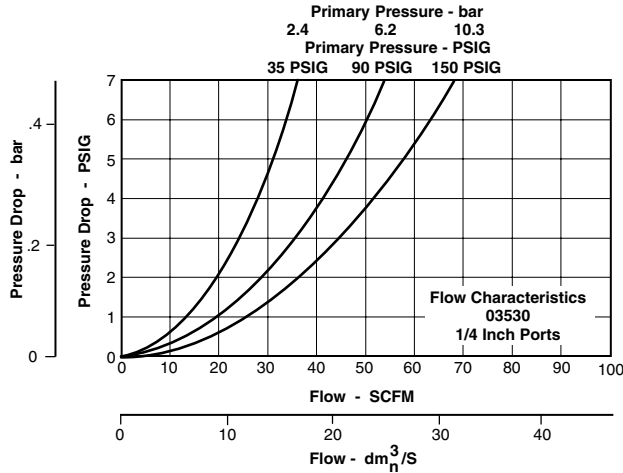
Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum		150	10.3
			1,034

Operating Temperature Range:

Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)

Port Threads: 1/4 & 3/8 Inch

Seals: Nitrile



Port Size	Polycarbonate Bowl 30 Micron Manual Drain	Polycarbonate Bowl Metal Bowl Guard 30 Micron Manual Drain	Polycarbonate Bowl 30 Micron Internal Automatic Drain
1/4 Inch	035301000B	035301100B	035301200B
3/8 Inch	035311000B	035311100B	—

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

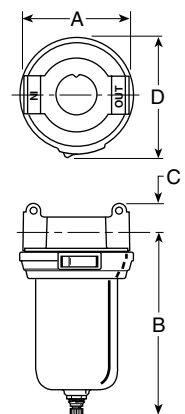
Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

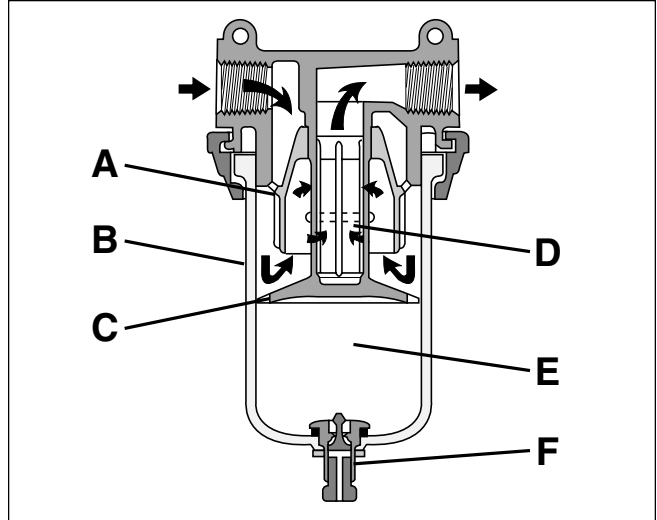
Metal bowl guards are recommended for all applications.

Kits & Parts

- Automatic Drain PS506P
- Bowl Guard 035300100B
- Bowl O-ring 027097202B
- Manual Drain PS512P
- Pipe Mounting Bracket 009020400B
- Polycarbonate Bowl w/ Manual Drain 035300500B
- 30 Micron Element 035307030B



Model	Port Size Inch	A	B	"B" With Auto. Drain	C	D	Weight
03530	1/4"	2.94	5.51	5.44	0.85	3.47	1.70 lb.
03531	3/8"	75mm	140mm	138mm	22mm	88mm	0.88 kg.



Features

- Excellent water removal efficiency.
- Unique deflector plate that creates swirling of the air stream ensuring maximum water and dirt separation.
- 30 micron reusable element standard.
- Quick release bowl mechanism.
- Fingertip operated drain.
- Optional internal and external automatic drains.
- Easily disassembles for servicing without the use of tools.
- Metal bowl guard recommended.

Application

The Standard Series Filters are designed to remove airborne solid contaminants, pipe scale, rust, pipe dope, etc., which may plug small orifices or cause excessive wear.

Operation

First Stage Filtration:

Air enters at inlet port and flows through deflector (A) which causes a swirling action. Liquids and coarse particles are forced to the bowl interior wall (B) by the centrifugal action of the swirling air. They are then carried down the bowl wall by the force of gravity. The baffle (C) separates the lower portion of the bowl into a "quiet zone" (E) where the removed liquid and particles collect, unaffected by the swirling air, and are therefore not reentrained into the flowing air.

Second Stage Filtration:

After liquids and large particles are removed in the first stages of filtration, the air flows through element (D) where smaller particles are filtered out. The filtered air then passes downstream. Collected liquids and particles in the "quiet zone" (E) should be drained before their level reaches a height where they would be reentrained in the flowing air. This can be accomplished by unscrewing the drain valve (F) slightly until the liquid begins to drain.

Specifications

Body: Zinc

Bowls Available:

- Transparent Polycarbonate
- Metal (Zinc) with Glass Sight Gauge

Bowl Guard: Metal

Bowl Capacity: 9 ounces

Deflector: Acetal

Drains:

- Manual - Twist Type
 - Body & Stem: Plastic
 - Seals: Nitrile

Automatic - Float Type (Internal)

- Body & Float: Plastic
- Seals: Nitrile
- Springs & Push Rod: Stainless Steel

Operating Pressure Range:	PSIG	bar	kPa
Minimum	10	0.7	69
Maximum	250	17.2	1,724

Filter Element & Baffle:

30 Micron Edge Type Standard - Nylon and Acetal

Lock Ring: Zinc

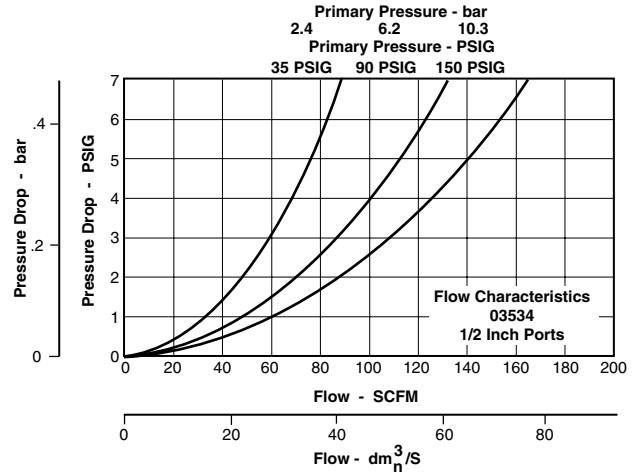
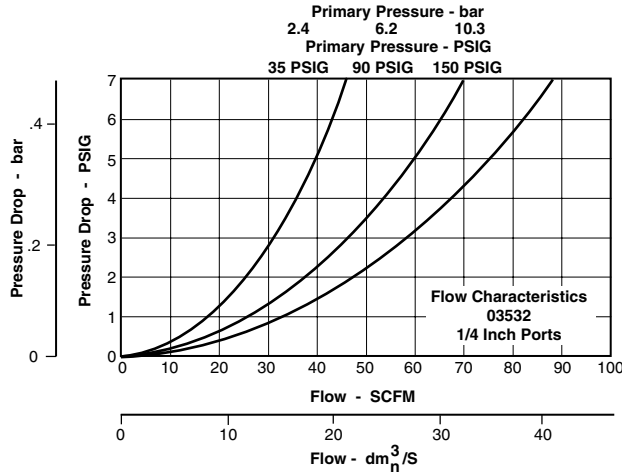
Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034
Metal Bowl - Maximum	250	17.2	1,724

Operating Temperature Range:

- Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)
- Metal Bowl: +32°F (0°C) to +165°F (+74°C)

Port Threads: 1/4, 3/8 & 1/2 Inch

Seals: Nitrile



Port Size	Polycarbonate Bowl 30 Micron Manual Drain	Polycarbonate Bowl Metal Bowl Guard 30 Micron Manual Drain	Polycarbonate Bowl 30 Micron Internal Automatic Drain	Polycarbonate Bowl Metal Bowl Guard 30 Micron Internal Automatic Drain	Metal Bowl Sight Gauge 30 Micron Manual Drain	Metal Bowl Sight Gauge Internal Automatic Drain
1/4 Inch	035321000B	035321100B	—	—	035323000B	—
3/8 Inch	035331000B	035331100B	—	—	035333000B	—
1/2 Inch	035341000B	035341100B	035341200B	035341300B	035343000B	035343200B

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

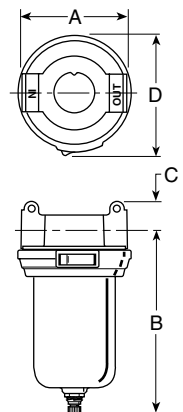
Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

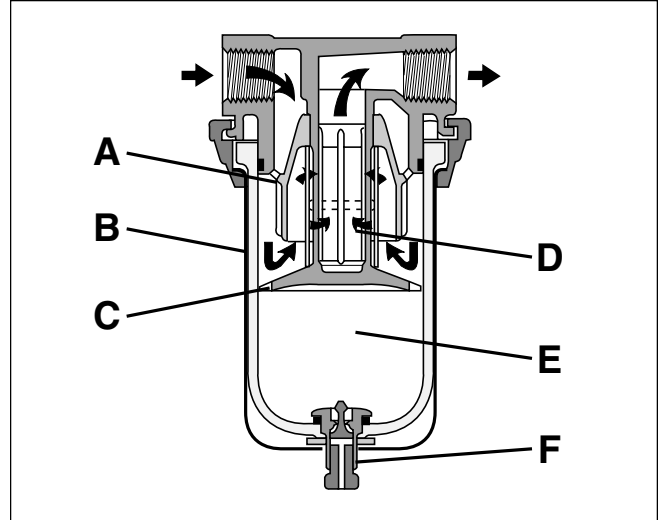
Metal bowl guards are recommended for all applications.

Kits & Parts

- Automatic Drain PS506P
- Bowl Lock Ring 035827502B
- Bowl Guard 035320100B
- Bowl O-ring 034547240B
- Deflector 035327002B
- Manual Drain PS512P
- Metal Bowl w/Sight Gauge & Manual Drain 035320400B
- Pipe Mounting Bracket 009020400B
- Polycarbonate Bowl w/ Manual Drain 035320500B
- 30 Micron Element 035327030B



Model	Port Size Inch	A	B	"B" With Auto. Drain	C	D	Weight
03532	1/4"	3.53	6.42	6.37	0.98	4.06	2.50 lb.
03533	3/8"						
03534	1/2"	90mm	163mm	162mm	25mm	103mm	1.13 kg.



Features

- Excellent water removal efficiency.
- Unique deflector plate that creates swirling of the air stream ensuring maximum water and dirt separation.
- 30 micron reusable element standard.
- Quick release bowl mechanism.
- Fingertip operated drain.
- Optional internal and external automatic drains.
- Easily disassembled for servicing without the use of tools.
- Shown with standard metal bowl guard.

Application

The Full Size Series Filters are designed to remove airborne solid contaminants, pipe scale, rust, pipe dope, etc., which may plug small orifices or cause excessive wear.

Operation

First Stage Filtration:

Air enters at inlet port and flows through deflector (A) which causes a swirling action. Liquids and coarse particles are forced to the bowl interior wall (B) by the centrifugal action of the swirling air. They are then carried down the bowl wall by the force of gravity. The baffle (C) separates the lower portion of the bowl into a “quiet zone” (E) where the removed liquid and particles collect, unaffected by the swirling air, and are therefore not reentrained into the flowing air.

Second Stage Filtration:

After liquids and large particles are removed in the first stages of filtration, the air flows through element (D) where smaller particles are filtered out. The filtered air then passes downstream. Collected liquids and particles in the “quiet zone” (E) should be drained before their level reaches a height where they would be reentrained in the flowing air. This can be accomplished by unscrewing the drain valve (F) slightly until the liquid begins to drain.

Specifications

Body: Zinc

Bowls Available:

- Transparent Polycarbonate
- Metal (Zinc) with Glass Sight Gauge

Bowl Capacity: 19 ounces

Bowl Guard: Metal

Deflector: Acetal

Drains:

- Manual - Twist Type
 - Body & Stem: Plastic
 - Seals: Nitrile

- Automatic - Float Type
 - Body & Float: Plastic
 - Seals: Nitrile
 - Springs & Push Rod: Stainless Steel

Operating Pressure Range:	PSIG	bar	kPa
Minimum	10	0.7	69
Maximum	250	17.2	1,724

Filter Element & Baffle:

30 Micron Edge Type Standard - Nylon and Acetal

Lock Ring: Zinc

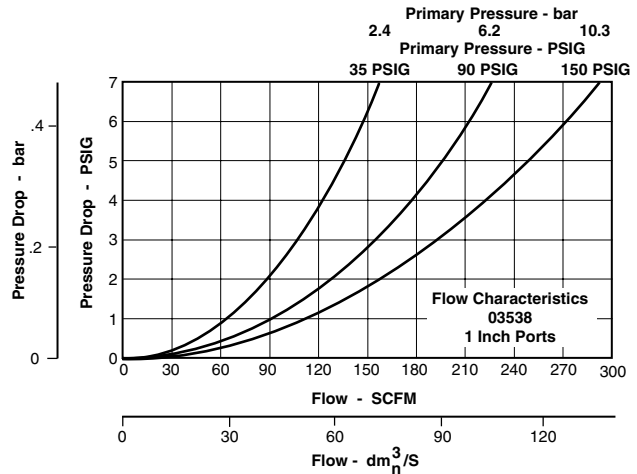
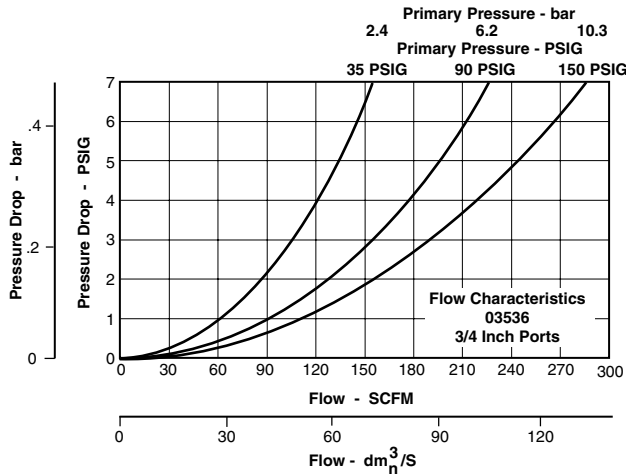
Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034
Metal Bowl - Maximum	250	17.2	1,724

Operating Temperature Range:

- Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)
- Metal Bowl: +32°F (0°C) to +165°F (+74°C)

Port Threads: 3/4 & 1 Inch

Seals: Nitrile



Port Size	Polycarbonate Bowl Metal Bowl Guard 30 Micron Manual Drain	Polycarbonate Bowl Metal Bowl Guard 30 Micron Internal Automatic Drain	Metal Bowl Sight Gauge 30 Micron Manual Drain
3/4 Inch	035361100B	035361300B	035363000B
1 Inch	035381100B	035381300B	035383000B

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

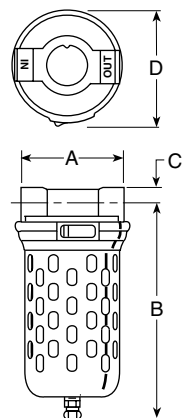
Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

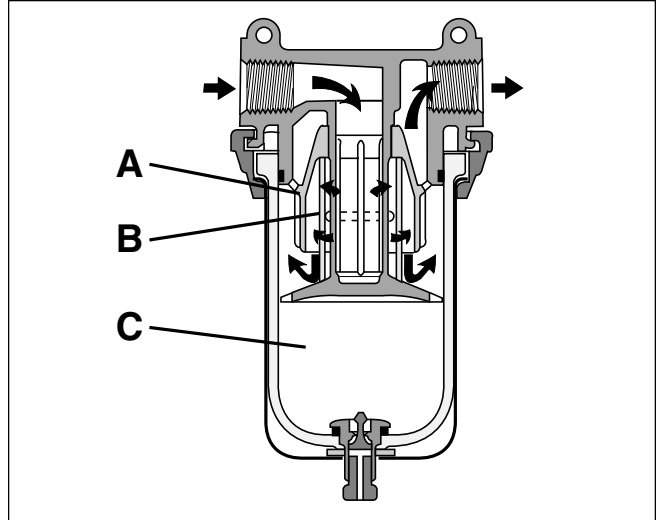
Metal bowl guards are recommended for all applications.

Kits & Parts

- Automatic Drain PS506P
- Bowl Lock Ring 035867501B
- Bowl Guard 035360100B
- Bowl O-ring 034547247B
- Manual Drain PS512P
- Metal Bowl w/Sight Gauge & Manual Drain 035360400B
- Pipe Mounting Bracket 009060400B
- Polycarbonate Bowl w/ Manual Drain 035360500B
- 30 Micron Element 035367030B



Model	Port Size Inch	A	B	"B" With Auto. Drain	C	D	Weight
03536	3/4"	4.25	8.50	8.56	0.81	4.66	4.20 lb.
03538	1"	108mm	216mm	217mm	21mm	118mm	1.91 kg.



Features

- Removes liquid aerosols and sub-micron particles.
- Liquids gravitate to the bottom of the element and will not re-enter the airstream.
- Oil free air for critical applications, such as air gauging and pneumatic instrumentation and controls.
- Grade 6 element, 99.97% DOP efficiency.
- Quick release bowl mechanism.
- Fingertip operated drain. Optional automatic drain.
- Easily disassembled for servicing without the use of tools.
- Metal bowl guard standard.

Application

The Standard Series Coalescer is designed to remove liquid aerosols and sub-micron particles which may affect or contaminate production downstream in a pneumatic system.

Operation

The contaminated air enters the element interior (A) and is forced through a thick membrane of “borosilicate” glass fibers coated with epoxy. Flow then passes through the element, and at this stage 99.97% of the sub micronic particles have been removed from the air stream. The tiny droplets coalesce together and are collected from the filter element by the outer drain layer (B).

The clean, filtered air now passes through and out into the pneumatic system. The air line coalescing filter removes liquid aerosols and sub-micron particulate matter.

Collected liquids and particles in the “quiet zone” (C) should be drained before their level reaches a height where they would be reentrained in the flowing air.

Specifications

Body: Zinc

Bowls Available:
 Transparent Polycarbonate

Bowl Capacity: 9 ounces

Bowl Guard: Metal

Drains:
 Manual - Twist Type
 Body & Stem: Plastic
 Seals: Nitrile

Filter Element:
 Borosilicate & Felt Glass Fibers 99.97% DOP efficiency.
 Largest Solid Particle Passed: 0.01 Microns

Lock Ring: Zinc

Operating Pressure Range:

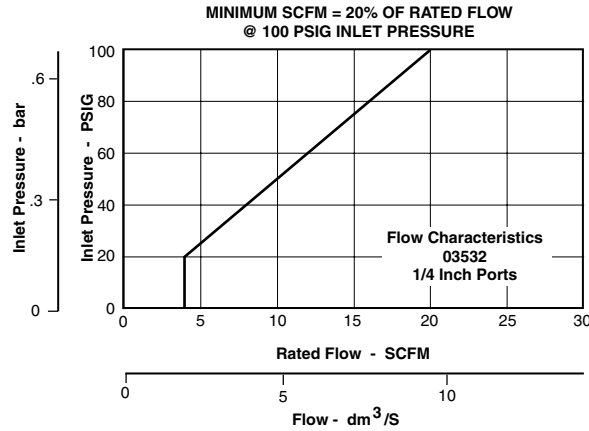
	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034

Operating Temperature Range:
 Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)

Operation:
 Normal Operating Pressure Drop 2 PSIG.
 Maximum Recommended Pressure Drop 10 PSIG
 (Element should be replaced)

Port Threads: 1/4 Inch

Seals: Nitrile



	Polycarbonate Bowl Metal Bowl Guard Grade 6 Manual Drain
Port Size	Manual Drain
1/4 Inch	035321182B

CAUTION:

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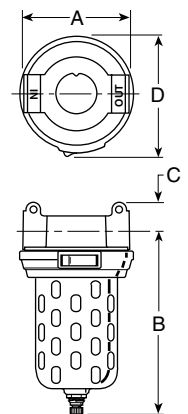
Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

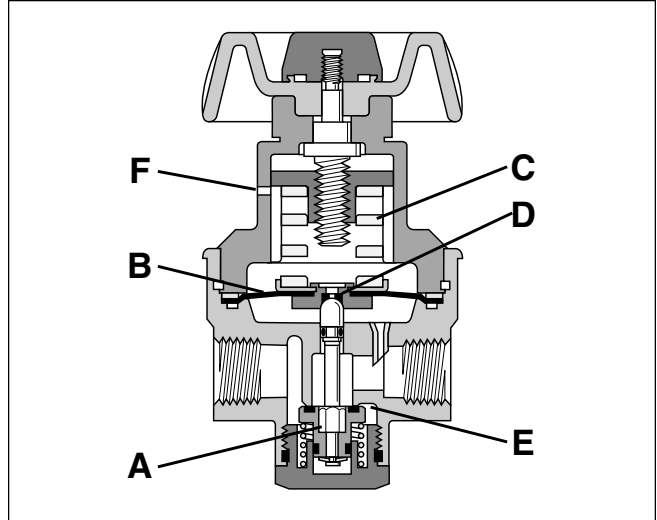
Metal bowl guards are recommended for all applications.

Kits & Parts

- Bowl Lock Ring 035827502B
- Bowl Guard 035320100B
- Bowl O-ring 034547240B
- Grade 6 Element 035327521
- Manual Drain PS512P
- Pipe Mounting Bracket 009020400B
- Polycarbonate Bowl w/ Manual Drain 035320500B



Model	Port Size Inch	A	B	"B" With Auto. Drain	C	D	Weight
03532	1/4"	3.53	6.42	6.37	0.98	4.06	2.50 lb.
		90mm	163mm	162mm	25mm	103mm	1.13 kg.



Features

- Non-rising adjusting/locking style knob.
- Diaphragm design for good repeatability, response and sensitivity.
- Balanced poppet.
- Two full flow gauge ports.

Application

The Compact Series Regulators are designed to provide minimum pressure drop over a wide operating range. The regulators feature a balanced poppet and diaphragm operation for good repeatability, response and sensitivity. With a non-rising knob as standard, this series offers an attractively styled package.

⚠ Do not attach to pressurized gas bottles.

Operation

With the adjusting knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the adjusting knob clockwise applies a load to control spring (C). This load causes the diaphragm (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the seat. Pressure in the downstream line is sensed below the diaphragm (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and the diaphragm (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under the diaphragm (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the diaphragm (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the diaphragm (B) to move upward against control spring (C), open vent hold (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the relieving type regulator only.)

Specifications

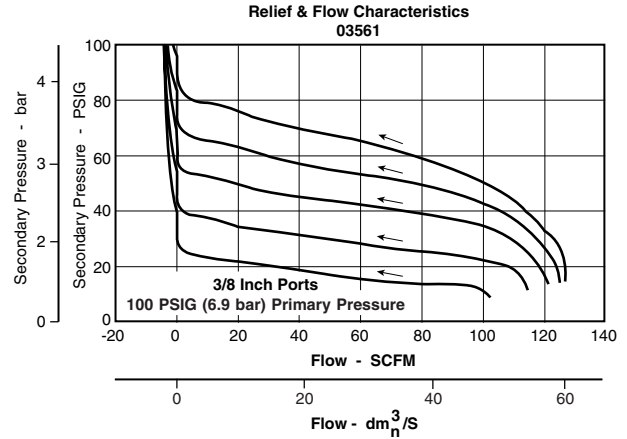
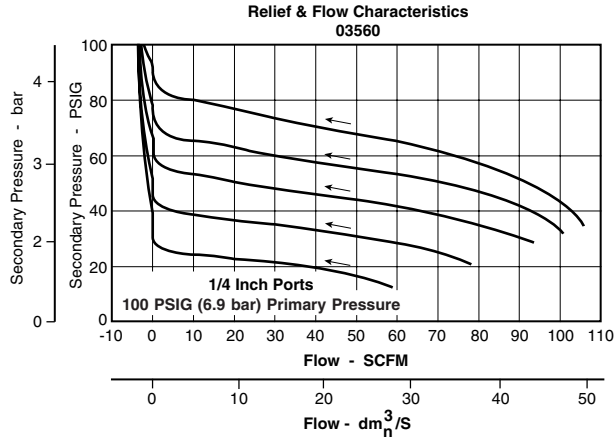
Adjusting Nut: Zinc
Adjusting Stem & Spring: Steel
Biased Spring: Stainless Steel
Body: Zinc
Bonnet: Acetal
Control Knob: Plastic
Diaphragm: Fabric Reinforced Nitrile
Gauge Ports: 1/4 Inch

Operating Pressure Range:	PSIG	bar	kPa
Primary:			
Maximum	300	20.7	2,069

Operating Pressure Range (cont):	PSIG	bar	kPa
Secondary:			
50 PSIG Spring	Minimum	5	0.3
	Maximum	50	3.4
125 PSIG Spring	Minimum	5	0.3
	Maximum	125	8.6
250 PSIG Spring	Minimum	5	0.3
	Maximum	250	17.2
			1,724

Operating Temperature Range: +32°F (0°C) to +165°F (+74°C)

Plug: Brass
Port Threads: 1/4 & 3/8 Inch
Seals: Nitrile
Valve Poppet: Brass
Valve Poppet Seal: Fluorocarbon



Port Size	5 to 50 PSIG Relieving Without Gauge	5 to 125 PSIG Relieving Without Gauge
1/4 Inch	035601000B	035602000B
3/8 Inch	—	035612000B

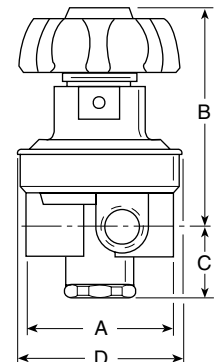
CAUTION:

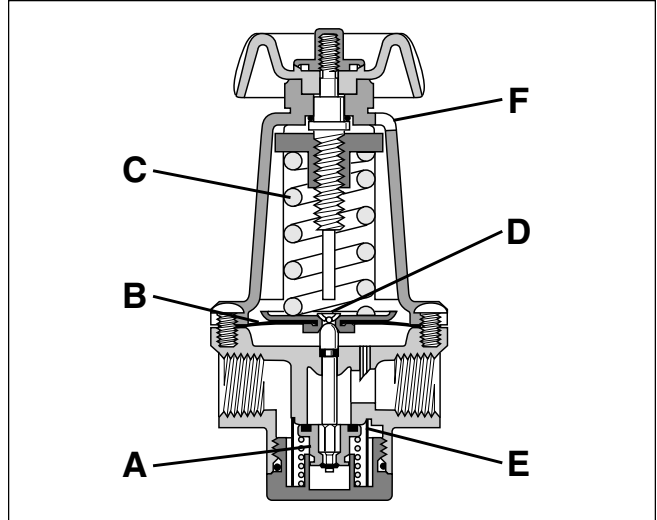
REGULATOR PRESSURE ADJUSTMENT - The working range of the knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Kits & Parts

- Panel Mount Nut 035620602B
- Pipe Mounting Bracket 009020400B
- Relieving Service Kit 035608000B
- Right Angle Mounting Bracket 035620400B
- 60 PSIG Gauge K4520N14060
- 160 PSIG Gauge K4520N14160
- 300 PSIG Gauge K4520N14300

Model	Port Size Inch	A	B	C	D	Mtg. Hole Diameter	Weight
03560	1/4"	2.44	3.66	1.22	2.66	1.19	1.60 lb.
03561	3/8"	62mm	93mm	31mm	67mm	30mm	.73 kg.





Features

- Non-rising adjusting/locking style knob.
- Diaphragm design for good repeatability, response and sensitivity.
- Balanced poppet.
- Two full flow gauge ports.

Application

The Standard Series Regulators are designed to provide minimum pressure drop over a wide operating range. The regulators feature a balanced poppet and diaphragm operation for good repeatability, response and sensitivity. With a non-rising knob as standard, this series offers an attractively styled package.

⚠ Do not attach to pressurized gas bottles.

Operation

With the adjusting knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the adjusting knob clockwise applies a load to control spring (C). This load causes the diaphragm (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the seat. Pressure in the downstream line is sensed below the diaphragm (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and the diaphragm (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under the diaphragm (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the diaphragm (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the diaphragm (B) to move upward against control spring (C), open vent hold (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the relieving type regulator only.)

Specifications

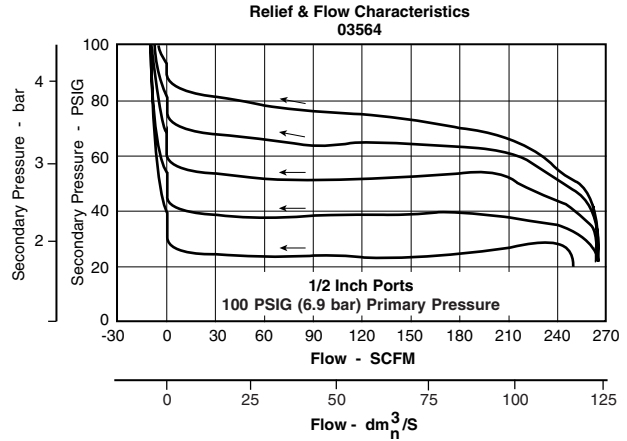
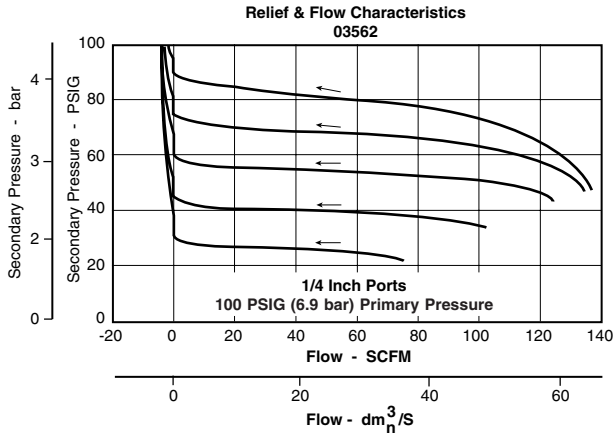
Adjusting Nut: Zinc
Adjusting Stem & Spring: Steel
Biased Spring: Stainless Steel
Body: Zinc
Bonnet: Zinc
Control Knob: Plastic
Diaphragm: Fabric Reinforced Nitrile
Gauge Ports: 1/4 Inch

Operating Pressure Range:	PSIG	bar	kPa
Primary:			
Maximum	300	20.7	2,069

Operating Pressure Range (cont.):	PSIG	bar	kPa
Secondary:			
50 PSIG Spring	Minimum 5	0.3	34
	Maximum 50	3.4	345
125 PSIG Spring	Minimum 5	0.3	34
	Maximum 125	8.6	862
250 PSIG Spring	Minimum 5	0.3	34
	Maximum 250	17.2	1,724

Operating Temperature Range: +32°F (0°C) to +165°F (+74°C)

Plug: Brass
Port Threads: 1/4, 3/8 & 1/2 Inch
Seals: Nitrile
Valve Poppet: Brass
Valve Poppet Seal: Fluorocarbon



Port Size	5 to 50 PSIG Relieving Without Gauge	5 to 125 PSIG Relieving Without Gauge	5 to 250 PSIG Relieving Without Gauge
1/4 Inch	035621000B	035622000B	—
3/8 Inch	035631000B	035632000B	035633000B
1/2 Inch	035641000B	035642000B	035643000B

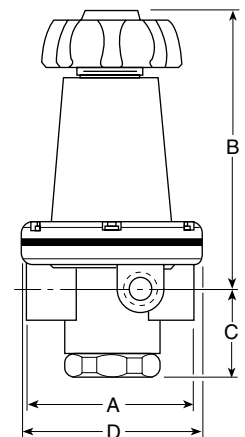
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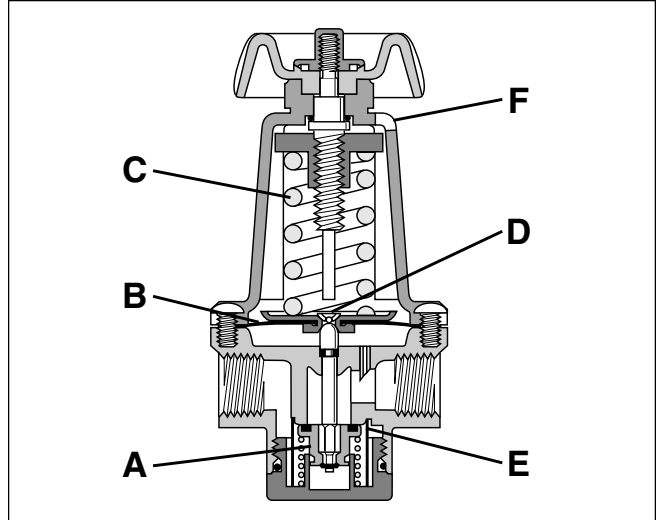
REGULATOR PRESSURE ADJUSTMENT - The working range of the knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Kits & Parts

- Panel Mount Nut 035620602B
- Pipe Mounting Bracket 009020400B
- Relieving Service Kit 035628000B
- Relieving Service Kit - High Pressure 5-250 PSIG ... 035628010B
- Right Angle Mounting Bracket 035620400B
- 60 PSIG Gauge K4520N14060
- 160 PSIG Gauge K4520N14160
- 300 PSIG Gauge K4520N14300

Model	Port Size Inch	A	B	C	D	Mtg. Hole Diameter	Weight
03562	1/4"	3.22	5.19	1.66	3.39	1.19	3.70 lb.
03563	3/8"	82mm	132mm	42mm	86mm	30mm	1.68 kg.
03564	1/2"						





Features

- Non-rising adjusting/locking style knob.
- Diaphragm design for good repeatability, response and sensitivity.
- Balanced poppet.
- Two full flow gauge ports.

Application

The Full Size Series Regulators are designed to provide minimum pressure drop over a wide operating range. The regulators feature a balanced poppet and diaphragm operation for good repeatability, response and sensitivity. With a non-rising knob as standard, this series offers an attractively styled package.

⚠ Do not attach to pressurized gas bottles.

Operation

With the adjusting knob turned fully counterclockwise (no spring load), and pressure supplied to the regulator inlet port, the valve poppet assembly (A) is closed. Turning the adjusting knob clockwise applies a load to control spring (C). This load causes the diaphragm (B) and the valve poppet assembly (A) to move downward allowing flow across the seat area (E) created between the poppet assembly and the seat. Pressure in the downstream line is sensed below the diaphragm (B) and offsets the load of spring (C). As downstream pressure rises, poppet assembly (A) and the diaphragm (B) move upward until the area (E) is closed and the load of the spring (C) and pressure under the diaphragm (B) are in balance. A reduced outlet pressure has now been obtained, depending on spring load. Creating a demand downstream, such as opening a valve, results in a reduced pressure under the diaphragm (B). The load of control spring (C) now causes the poppet assembly to move downward opening seat area (E) allowing air to flow to meet the downstream demand. The flow of downstream air is metered by the amount of opening (E).

Should downstream pressure exceed the desired regulated pressure, the excess pressure will cause the diaphragm (B) to move upward against control spring (C), open vent hold (D), and vent the excess pressure to atmosphere through the hole in the bonnet (F). (This occurs in the relieving type regulator only.)

Specifications

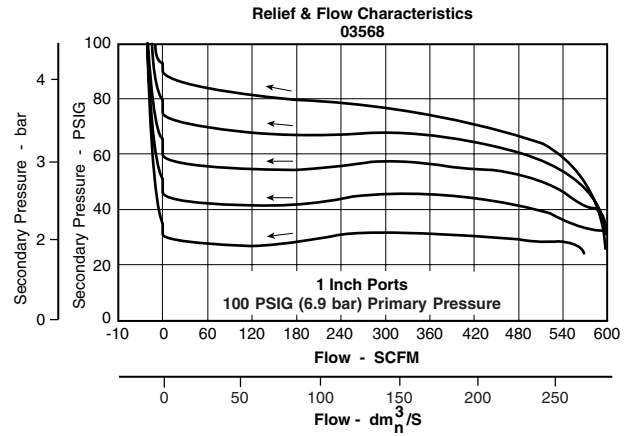
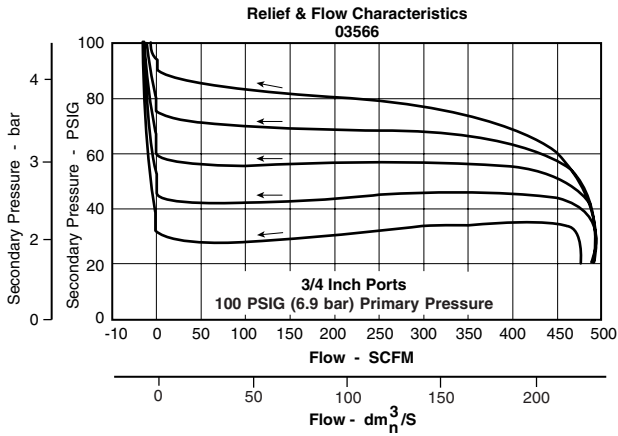
- Adjusting Nut:** Zinc
- Adjusting Stem & Spring:** Steel
- Biased Spring:** Stainless Steel
- Body:** Zinc
- Bonnet:** Zinc
- Control Knob:** Plastic
- Diaphragm:** Fabric Reinforced Nitrile
- Gauge Ports:** 1/4 Inch

Operating Pressure Range:	PSIG	bar	kPa
Primary:			
Maximum	300	20.7	2,069

Operating Pressure Range (cont.):	PSIG	bar	kPa
Secondary:			
125 PSIG Spring			
Minimum	5	0.3	34
Maximum	125	8.6	862
250 PSIG Spring			
Minimum	5	0.3	34
Maximum	250	17.2	1,724

Operating Temperature Range: +32°F (0°C) to +165°F (+74°C)

- Plug:** Brass
- Port Threads:** 3/4 & 1 Inch
- Seals:** Nitrile
- Valve Poppet:** Brass
- Valve Poppet Seal:** Fluorocarbon



Port Size	5 to 125 PSIG Relieving Without Gauge	5 to 250 PSIG Relieving Without Gauge
3/4 Inch	035662000B	035663000B
1 Inch	035682000B	035683000B

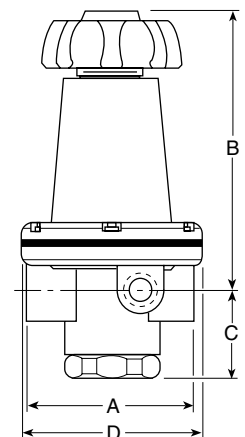
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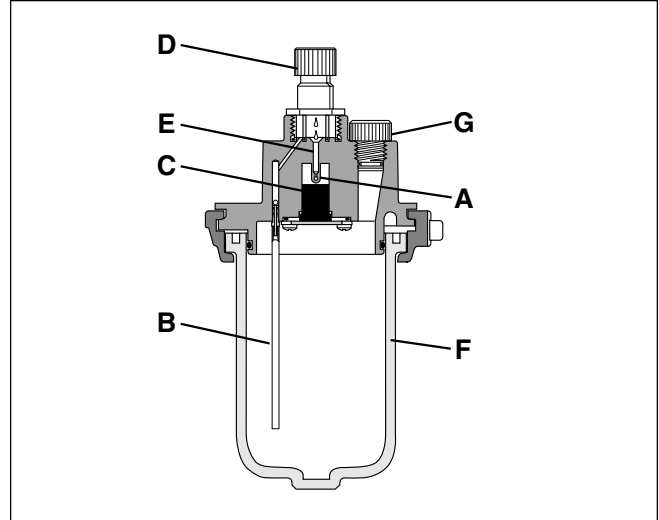
REGULATOR PRESSURE ADJUSTMENT - The working range of the knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.

Kits & Parts

- Panel Mount Nut 035620602B
- Pipe Mounting Bracket 009060400B
- Relieving Service Kit 035668000B
- Relieving Service Kit - High Pressure 5-250 PSIG ... 035668010B
- Right Angle Mounting Bracket 035620400B
- 160 PSIG Gauge K4520N14160
- 300 PSIG Gauge K4520N14300

Model	Port Size Inch	A	B	C	D	Mtg. Hole Diameter	Weight
03566	3/4"	4.19	6.78	1.72	4.63	1.19	6.60 lb.
03568	1"	106mm	172mm	44mm	117mm	30mm	2.99 kg.





Features

- Proportional oil delivery over a wide range of air flow.
- Precision needle valve assures repeatable oil delivery and provides simple adjustments.
- Transparent sight dome for 360° visibility.
- Fill under pressure.
- Quick release bowl mechanism.
- Metal bowl guards are recommended for polycarbonate bowls.

Application

The Compact Series Mist Lubricator is designed to provide lubrication for applications in a pneumatic system such as air valves, air cylinders and air tools.

Operation

Air flowing through the unit goes through two paths. At low flow rates the majority of the air flows through the venturi section (A). The rest of the air opens the flapper (C). The velocity of the air flowing through the venturi section (A) creates a pressure drop. This lower pressure allows the oil to be forced from the reservoir through the pickup tube (B) and travels up to the metering screw (D). The rate of oil delivery is then controlled by adjusting the metering screw (D). Oil flows past the metering screw (D) and forms a drop in the nozzle tube (E). As the oil drops back into the venturi section (A), it is broken up into fine particles. It is then mixed with the air flowing past the flapper (C) and is carried downstream. As the air flow increases, the flapper (C) will open more fully. This additional flow will assure that the oil delivery rate will increase linearly with the increase of air flow.

To fill lubricator with oil without turning the line pressure off, first remove the fill plug (G) to relieve pressure from the bowl (F), then either pour oil through fill plug hole or remove bowl (F) and pour oil directly into the bowl.

Specifications

Body: Zinc

Bowl:

Transparent Polycarbonate

Drain:

Manual - Twist Type

Body & Stem: Plastic

Seals: Nitrile

Minimum Flow for Lubrication: 1.0 SCFM at 100 PSIG

Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034

Operating Temperature Range:

Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)

Port Threads: 1/4 & 3/8 Inch

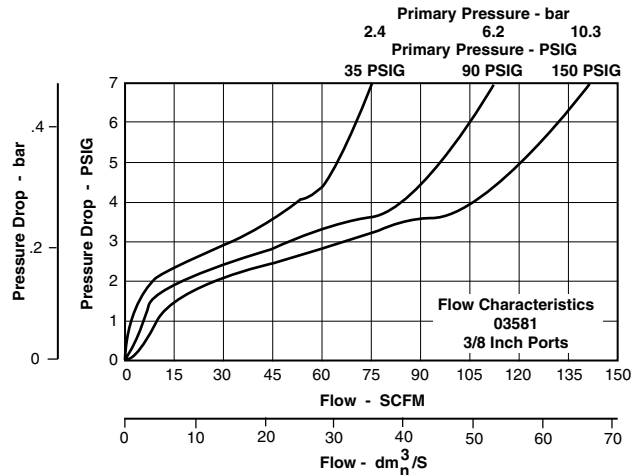
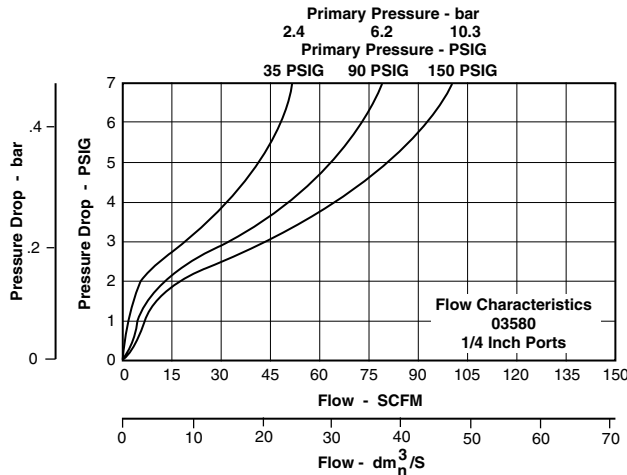
Seals: Nitrile

Sight Dome: Transparent Polycarbonate

Suggested Lubricant: F442 Oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F and an aniline point greater than 200°F.

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)



Port Size	Polycarbonate Bowl	Polycarbonate Bowl Metal Bowl Guard
1/4 Inch	035801000B	035801100B
3/8 Inch	035811000B	035811100B

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

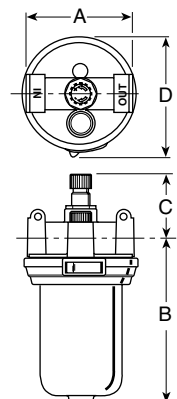
TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

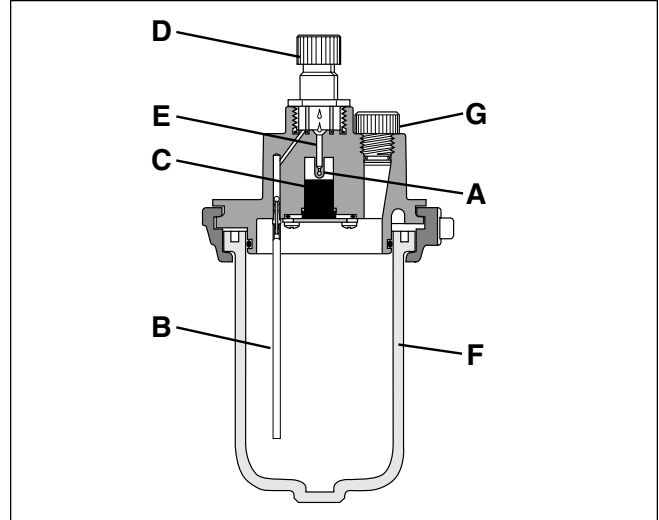
Metal bowl guards are recommended for all applications.

Kits & Parts

- Air Line Oil (1 Gallon) F442002
- Air Line Oil (12 Quart Case) F442003
- Air Line Oil (5 Gallon Case) F442005
- Bowl Guard 035300100B
- Bowl O-ring 027097202B
- Fill Plug 035807011B
- Pipe Mounting Bracket 009020400B
- Polycarbonate Bowl 035307004B
- Service Kit 035808050B
- Sight Dome Assembly 035807150B

Model	Port Size Inch	A	B	C	D	Weight
03580	1/4"	2.94	4.88	2.03	3.47	1.90 lb.
03581	3/8"	75mm	124mm	52mm	88mm	.86 kg.





Features

- Proportional oil delivery over a wide range of air flow.
- Precision needle valve assures repeatable oil delivery and provides simple adjustments.
- Transparent sight dome for 360° visibility.
- Fill under pressure.
- Quick release bowl mechanism.
- Metal bowl guards are recommended for polycarbonate bowls.

Application

The Standard Series Mist Lubricator is designed to provide lubrication for applications in a pneumatic system such as air valves, air cylinders and air tools.

Operation

Air flowing through the unit goes through two paths. At low flow rates the majority of the air flows through the venturi section (A). The rest of the air opens the flapper (C). The velocity of the air flowing through the venturi section (A) creates a pressure drop. This lower pressure allows the oil to be forced from the reservoir through the pickup tube (B) and travels up to the metering screw (D). The rate of oil delivery is then controlled by adjusting the metering screw (D). Oil flows past the metering screw (D) and forms a drop in the nozzle tube (E). As the oil drops back into the venturi section (A), it is broken up into fine particles. It is then mixed with the air flowing past the flapper (C) and is carried downstream. As the air flow increases, the flapper (C) will open more fully. The additional flow will assure that the oil delivery rate will increase linearly with the increase of air flow.

To fill lubricator with oil without turning the line pressure off, first remove the fill plug (G) to relieve pressure from the bowl (F), then either pour oil through fill plug hole or remove bowl (F) and pour oil directly into the bowl.

Specifications

Body: Zinc

Bowls Available:

- Transparent Polycarbonate
- Metal (Zinc) with Glass Sight Gauge

Bowl Capacity: 9 ounces

Drain:

- Manual - Twist Type
- Body & Stem: Plastic
- Seals: Nitrile

Minimum Flow for Lubrication: 1.0 SCFM at 100 PSIG

Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034
Metal Bowl - Maximum	250	17.2	1,724

Operating Temperature Range:

- Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)
- Metal Bowl: +32°F (0°C) to +165°F (+74°C)

Port Threads: 1/4, 3/8 & 1/2 Inch

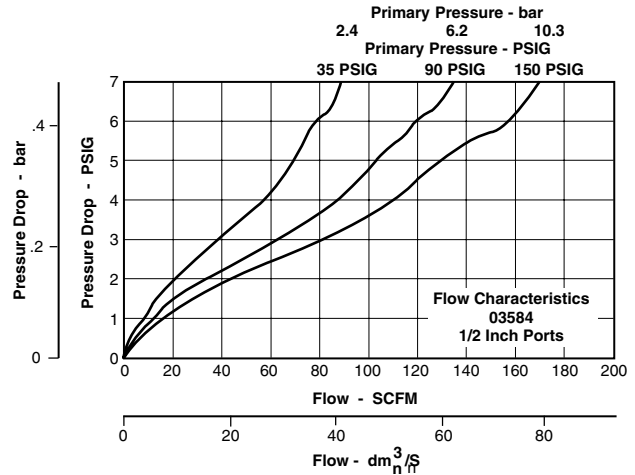
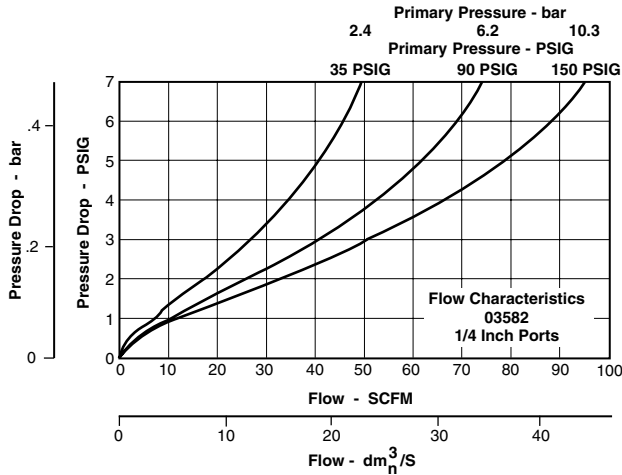
Seals: Nitrile

Sight Dome: Transparent Polycarbonate

Suggested Lubricant: F442 Oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F and an aniline point greater than 200°F.

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)



Port Size	Polycarbonate Bowl	Polycarbonate Bowl Metal Bowl Guard	Metal Bowl Sight Gauge
1/4 Inch	035821000B	035821100B	035823000B
3/8 Inch	035831000B	035831100B	035833000B
1/2 Inch	035841000B	035841100B	035843000B

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

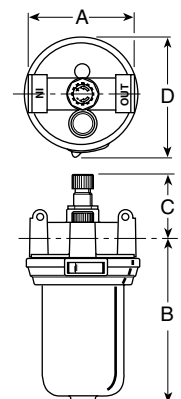
TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

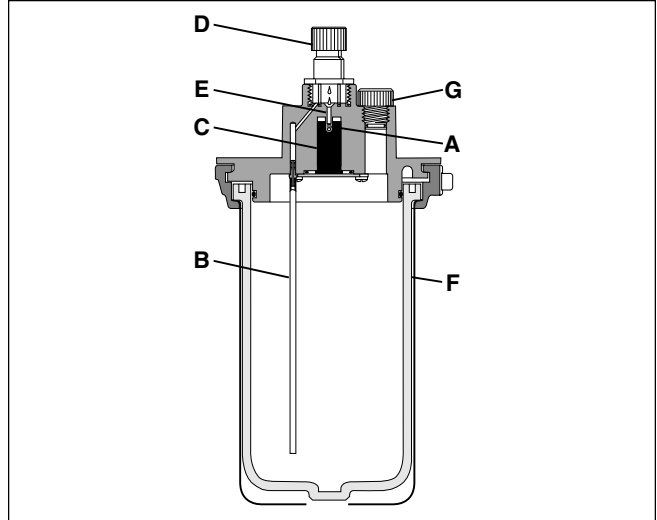
Metal bowl guards are recommended for all applications.

Kits & Parts

- Air Line Oil (1 Gallon) F442002
- Air Line Oil (12 Quart Case) F442003
- Air Line Oil (5 Gallon Case) F442005
- Bowl Lock Ring 035827502B
- Bowl O-ring 034547240B
- Fill Plug 035807011B
- Metal Bowl w/Sight Gauge & Manual Drain 035320400B
- Pipe Mounting Bracket 009020400B
- Polycarbonate Bowl 035327004B
- Service Kit 035828050B
- Sight Dome Assembly 035807150B
- Siphon Tube 035850003B

Model	Port Size Inch	A	B	C	D	Weight
03582	1/4"	3.53	5.69	2.22	4.06	2.70 lb.
03583	3/8"	90mm	144mm	56mm	103mm	1.22 kg.
03584	1/2"					





Features

- Proportional oil delivery over a wide range of air flow.
- Precision needle valve assures repeatable oil delivery and provides simple adjustments.
- Transparent sight dome for 360° visibility.
- Fill under pressure.
- Quick release bowl mechanism.
- Shown with standard metal bowl guard.

Application

The Full Size Series Mist Lubricator is designed to provide lubrication for applications in a pneumatic system, such as air valves, air cylinders and air tools.

Operation

Air flowing through the unit goes through two paths. At low flow rates the majority of the air flows through the venturi section (A). The rest of the air opens the flapper (C). The velocity of the air flowing through the venturi section (A) creates a pressure drop. This lower pressure allows the oil to be forced from the reservoir through the pickup tube (B) and travels up to the metering screw (D). The rate of oil delivery is then controlled by adjusting the metering screw (D). Oil flows past the metering screw (D) and forms a drop in the nozzle tube (E). As the oil drops back into the venturi section (A), it is broken up into fine particles. It is then mixed with the air flowing past the flapper (C) and is carried downstream. As the air flow increases, the flapper (C) will open more fully. This additional flow will assure that the oil delivery rate will increase linearly with the increase of air flow.

To fill lubricator with oil without turning the line pressure off, first remove the fill plug (G) to relieve pressure from the bowl (F), then either pour oil through fill plug hole or remove bowl (F) and pour oil directly into the bowl.

Specifications

Body: Zinc

Bowls Available:

- Transparent Polycarbonate
- Metal (Zinc) with Glass Sight Gauge

Bowl Capacity: 19 ounces

Drain:

- Manual - Twist Type
- Body & Stem: Plastic
- Seals: Nitrile

Minimum Flow for Lubrication: 1.0 SCFM at 100 PSIG

Operating Pressure Range:	PSIG	bar	kPa
Polycarbonate Bowl - Maximum	150	10.3	1,034
Metal Bowl - Maximum	250	17.2	1,724

Operating Temperature Range:

- Polycarbonate Bowl: +32°F (0°C) to +120°F (+49°C)
- Metal Bowl: +32°F (0°C) to +165°F (+74°C)

Port Threads: 3/4 & 1 Inch

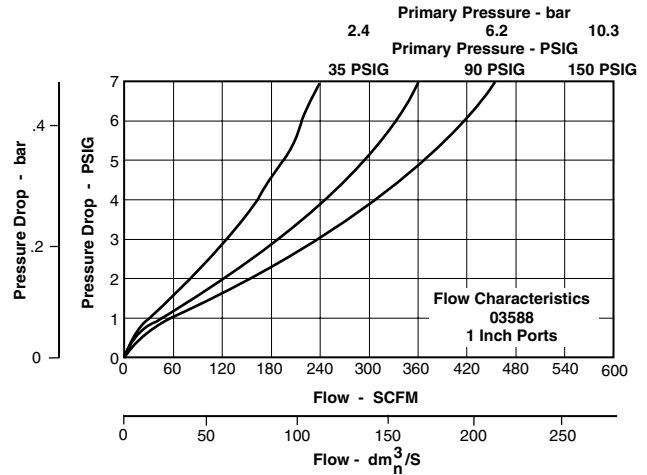
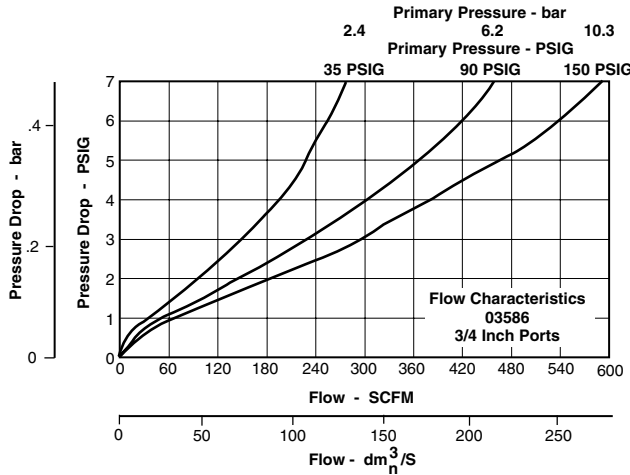
Seals: Nitrile

Sight Dome: Transparent Polycarbonate

Suggested Lubricant: F442 Oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F and an aniline point greater than 200°F.

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)



Port Size	Polycarbonate Bowl Metal Bowl Guard	Metal Bowl Sight Gauge
3/4 Inch	035861100B	035863000B
1 Inch	035881100B	035883000B

CAUTION:

Polycarbonate bowls, being transparent and tough, are ideal for use with Filters and Lubricators. They are suitable for use in normal industrial environments, but should not be located in areas where they could be subjected to direct sunlight, an impact blow, nor temperatures outside of the rated range. As with most plastics, some chemicals can cause damage. Polycarbonate bowls should not be exposed to chlorinated hydrocarbons, ketones, esters and certain alcohols. They should not be used in air systems where compressors are lubricated with fire-resistant fluids such as phosphate ester and di-ester types.

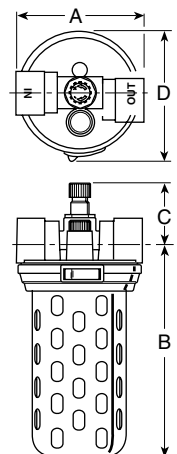
Metal bowls are recommended where ambient and/or media conditions are not compatible with polycarbonate bowls. Metal bowls resist the action of most such solvents but should not be used where strong acids or bases are present or in salt laden atmospheres. Consult the factory for specific recommendations where these conditions exist.

TO CLEAN POLYCARBONATE BOWLS USE MILD SOAP AND WATER ONLY! DO NOT use cleansing agents such as acetone, benzene, carbon tetrachloride, gasoline, toluene, etc., which are damaging to this plastic.

Metal bowl guards are recommended for all applications.

Kits & Parts

- Air Line Oil (1 Gallon) F442002
- Air Line Oil (12 Quart Case) F442003
- Air Line Oil (5 Gallon Case) F442005
- Bowl Guard 035360100B
- Bowl Lock Ring 035867501B
- Bowl O-ring 034547247B
- Fill Plug 035807011B
- Metal Bowl w/Sight Gauge & Manual Drain 035360400B
- Pipe Mounting Bracket 009060400B
- Polycarbonate Bowl 035367004B
- Service Kit 035868050B
- Sight Dome Assembly 035807150B
- Siphon Tube 035850004B



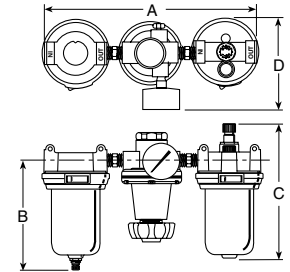
Model	Port Size Inch	A	B	C	D	Weight
03586	3/4"	4.25	7.91	2.18	4.66	4.20 lb.
03588	1"	108mm	201mm	56mm	118mm	1.91 kg.

Three-Unit Compact FRL



Port Size	Polycarbonate Bowls 30 Micron Manual Drain 5 to 125 PSIG Relieving	Polycarbonate Bowls Metal Bowl Guards 30 Micron Manual Drain 5 to 125 PSIG Relieving
	1/4 Inch	009001000B
3/8 Inch	009011000B	009011100B

Metal bowl guards are recommended.
 Gauges ordered separately.



Dimensions

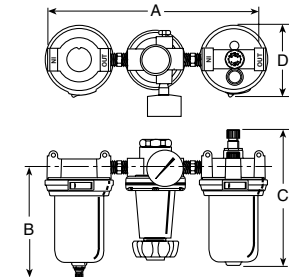
Model	Port Size Inch	A	B	C	D	Weight
00900	1/4"	9.69	5.51	6.91	2.77	5.50 lb.
		247mm				
00901	3/8"	9.50	140mm	175mm	70mm	2.49 kg.
		241mm				

Three-Unit Standard FRL



Port Size	Polycarbonate Bowls 30 Micron Manual Drain 5 to 125 PSIG Relieving	Polycarbonate Bowls Metal Bowl Guards 30 Micron Manual Drain 5 to 125 PSIG Relieving	Polycarbonate Bowls Metal Bowl Guards 30 Micron Internal Automatic Drain 5 to 125 PSIG Relieving
	1/4 Inch	009021000B	—
3/8 Inch	009031000B	—	—
1/2 Inch	009041000B	009041100B	009041300B

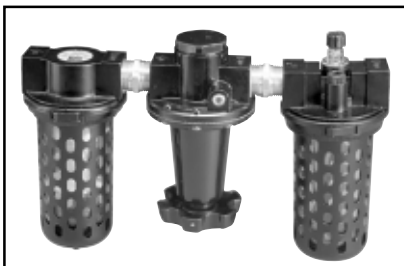
Metal bowl guards are recommended.
 Gauges ordered separately.



Dimensions

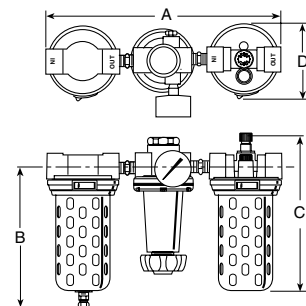
Model	Port Size Inch	A	B	C	D	Weight
00902	1/4"	11.66	6.42	7.91	3.03	9.10 lb.
		296mm				
00903	3/8"	11.47	163mm	201mm	77mm	4.13 kg.
		291mm				
00904	1/2"	11.77	163mm	201mm	77mm	4.13 kg.
		299mm				

Three-Unit Full Size FRL



Metal bowl guards are standard.
 Gauges ordered separately.

Port Size	Polycarbonate Bowls Metal Bowl Guards 30 Micron Manual Drain 5 to 125 PSIG Relieving
	1/4 Inch
3/8 Inch	009081100B

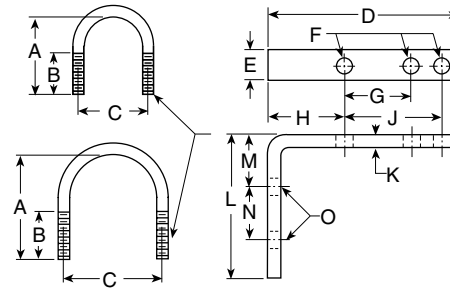


Dimensions

Model	Port Size Inch	A	B	C	D	Weight
00906	3/4"	14.19	8.50	10.09	3.55	15.60 lb.
		360mm				
00908	1"	14.44	216mm	256mm	90mm	7.08 kg.
		367mm				

Pipe Mounting Bracket

Model		A	B	C
009020400B	Inches	1.63	0.94	1.38
	mm	41	24	35
009060400B	Inches	2.19	1.06	2.00
	mm	56	27	51



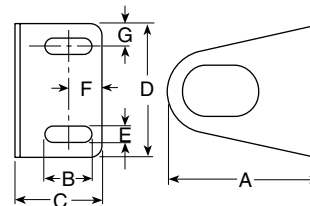
009020400B

009060400B

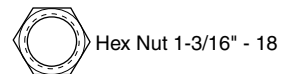
	D	E	F	G	H	J	K	L	M	N	O
Inches	4.00	0.63	0.31	1.38	1.56	2.00	0.25	3.00	1.06	1.13	0.34
mm	102	16	8	35	40	51	6	76	27	29	9

Right Angle Mounting Bracket

	A	B	C	D	E	F	G
Inches	3.50	1.03	2.00	3.00	0.34	0.78	0.50
mm	89	26	51	76	9	20	13



035620400B



Offer Of Sale

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6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter,

discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



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