

air prep

# 12 Series

Miniature FRLs



# numatics®

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- Low Cost
- Lightweight
- Low Profile
- OEM Modification Available
- 1/8 or 1/4 NPT, G, or R Threads
- Diverter Block Available
- Compact Size

- Black Anodized Aluminum Heads
- Can Be Installed as Modular or Individual
- Variety of Bowls and Drains
- Shut-Off Available



## Miniature FRL Series



F12B-02 pictured

### Particulate Filter F12B Series

Primary air filters are designed to separate liquid, water, rust, pipe scale, and debris from air lines. They should be installed upstream of the regulator and/or lubricator to prevent contamination from reaching other components.

Water is removed mechanically by the deflector which causes the air to move in a swirling motion. The condensed water droplets are then centrifugally impounded upon the ID of the bowl then fall down past the quiet zone baffle to the water sump. Dry air passes through the sintered element utilizing depth filtration and removes debris down to specified micron size.



ANSI SYMBOL

### Features

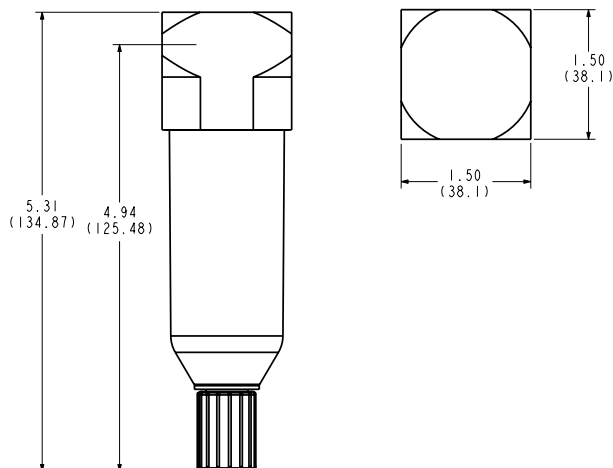
- 5 micron sintered elements standard
- Can be installed as modular or individual unit
- Includes screws and o-rings for modular connection
- Polycarbonate bowl standard

### Specifications

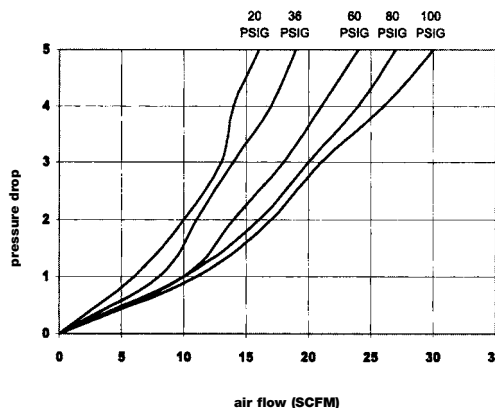
BOWL	POLYCARBONATE BOWL	METAL BOWL
Temperature Range (°F)	40-120	40-120
Temperature Range (°C)	4-50	4-50
Max. Pressure (PSIG)	150	200
Max. Pressure (BAR)	10	14
12 Series (Weight, lbs.)	0.22	0.25
12 Series (Weight, kg)	0.10	0.11

### Dimensions

top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters



### Flow Rates



### How to Order

**F 12 B - 01 JM \_ \_**

#### Model

F = Filter

#### Series

12 = 1.5 oz Bowl

#### Element

B = 5 Micron Element

#### Threads

- = NPTF

G = G Tap (BSPP)

R = PT (BSPT)

#### Options

B = Flexible Drain

J = External Pulse Drain

M = Metal Bowl

Q = Metal Manual Drain

R = Manual Lever Drain

#### Port Size

01 = 1/8

02 = 1/4

NEED MORE PARTS AND INFORMATION?

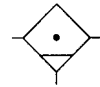
- See page 11 for information on ordering replacement parts.



F12D-02 pictured

### Coalescing Filter F12 Series

The coalescing filter is utilized when either clean air is required or longer component life is desired. This type of filter removes water and oil aerosols. It works differently than the particulate filter; dirty air enters the element from the center and passes through a field of glass fibers which cause the aerosols to form into droplets which are heavier than the surrounding air. The droplets grow larger as they pass through the element and gravity causes the oil drops to drain to the sump of the bowl. With the harmful oil varnishes and contaminant that attack seals and gaskets removed, the valve or cylinder is much less likely to stick. To maximize the life of a coalescing filter it should always be used after a 5 micron particulate filter or with the optional prefilter.



ANSI SYMBOL

### Features

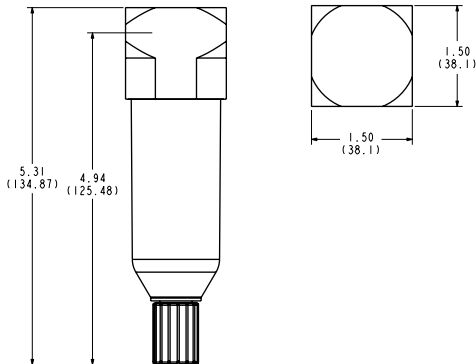
- Cartridge element design
- Inner and outer support cores prevent element from crushing in either flow direction
- Can be installed as modular or individual unit
- Includes screws and o-rings for modular connection
- Polycarbonate bowl standard

### Specifications

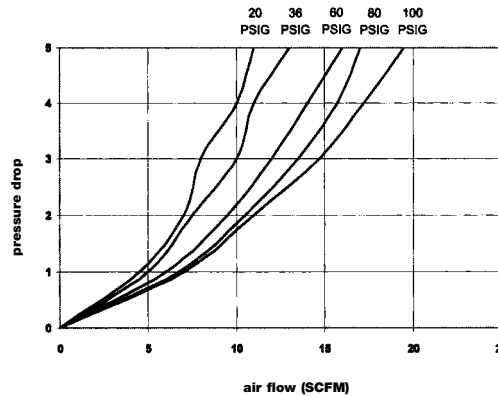
BOWL	POLYCARBONATE BOWL	METAL BOWL
Temperature Range (°F)	40-120	40-120
Temperature Range (°C)	4-50	4-50
Max. Pressure (PSIG)	150	200
Max. Pressure (BAR)	10	14
12 Series (Weight, lbs.)	0.23	0.26
12 Series (Weight, kg)	0.10	0.12

### Dimensions

top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters



### Flow Rates



### How to Order

**F 12 D - 02 DR \_ \_**

#### Model

F = Filter

#### Series

12 = 1.5 oz Bowl

#### Element

- C = 0.7 Micron Coarse Coalescer
- D = 0.3 Micron Fine Coalescer
- E = 0.1 Micron Ultra Fine Coalescer
- F = Vapor Adsorber

#### Threads

- = NPTF
- G = G Tap (BSPP)
- R = PT (BSP)

#### Options

- B = Flexible Drain
- D = 3 Micron Internal Prefilter
- J = External Pulse Drain
- M = Metal Bowl
- Q = Metal Manual Drain
- R = Manual Lever Drain

#### Port Size

- 01 = 1/8
- 02 = 1/4

### NEED MORE PARTS AND INFORMATION?

- See page 11 for information on ordering replacement parts.

### Recommended Uses

**C grade element**, identified by its blue drain layer, is a coarse filter for large amounts of water, rust, pipe scale, and hydrocarbons. Excellent for environments that have severe contamination. Can be used for lubricated or 'dry' systems. Ideal for mainline filtration of plant air.

**D grade element**, identified by its green drain layer, is a fine filter for cylinder or valves - especially when the circuit is being run without lubrication ('dry'). Excellent filter for desiccant or regenerative style dryers.

**E grade element**, identified by its red drain layer, is an ultra fine filter for oil-free instrumentation air, blow molding, food and drug packaging, electronics applications, and other applications requiring maximum contamination removal.

**F grade element**, identified by its white drain layer, is an adsorbing filter that utilizes activated carbon to deodorize compressed air. Typically it is used to protect worker environments, food and drug applications, and instrumentation for analytical instruments. Life expectancy is approximately 3 months at rated flow.

### Prefilter Option - Suffix 'D'

Models using the C, D, or E grade elements can be equipped with an optional 3 micron internal prefilter. The prefilter provides additional protection for the fine borosilicate fibers. For most applications, a separate 5 micron particulate filter is not required.



## Miniature FRL Series

### Regulator R12 Series

Regulators are used to reduce pressure to a required working pressure. Utilizing optimum pressure can save companies both component life and many dollars in compressed air costs.

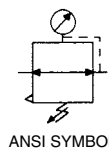
Regulators consist of a diaphragm which floats between a main spring (top) and a valve (bottom). By turning the adjustment handle clockwise, the main spring is forced onto the rubber diaphragm which, in turn, is pressed onto the valve stem.

When the spring pressure becomes greater than the air pressure in the control chamber below the diaphragm, the valve is forced down and flow begins.

As flow continues, the pressure begins to build and air, via the aspirator tube, fills the control chamber and forces the diaphragm upward. As forces balance, the small spring under the valve piston causes the valve to close. The cycle continues in a balanced process of reducing or increasing flow based upon the downstream pressure.



R12R-02 pictured



### Features

- High flow in compact size
- Locking adjustment knob
- Three different pressure ratings available
- Relieving or non-relieving models
- Can be installed as modular or individual unit
- Standard output pressure 0-125 PSIG

### Piston Operator – Style ‘P’

The 12 Series is offered with an optional Piston Operator. A Piston Regulator will achieve extremely high cycle rates with limited wear.

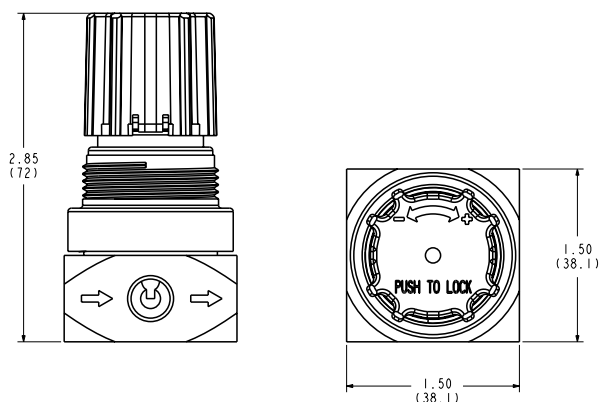
### Specifications

Temperature Range (°F)	40-120
Temperature Range (°C)	4-50
Max. Pressure (PSIG)	200
Max. Pressure (BAR)	14
12 Series (Weight, lbs.)	0.25
12 Series (Weight, kg)	0.11
Body Material	Aluminum

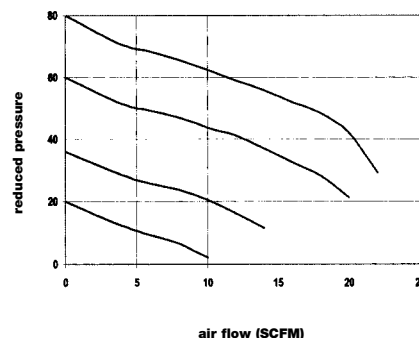
### Dimensions

top dimensions = inches

bottom dimensions (in parenthesis) = millimeters



### Flow Rates – based on 100psi inlet



### How to Order

**R 12 R - 01 GT**

<b>Model</b>	R = Regulator	<b>Options</b>	G = Gauge
<b>Series</b>	12 = 12 Series	I = 0-25 PSIG Output	L = 0-60 PSIG Output
<b>Style</b>	R = Relieving N = Non-Relieving P = Piston Operator	P = Panel Mount Nut	T = Tamper Resistant
<b>Threads</b>	- = NPTF G = G Tap (BSPP) R = PT (BSPT)	<b>Port Size</b>	01 = 1/8 02 = 1/4

NEED MORE PARTS AND INFORMATION?

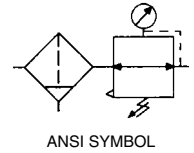
- See page 11 for information on ordering replacement parts.



P12B-02 pictured

### Particulate Filter/Regulator P12B Series

The integral part of the filter/regulator ('piggyback') is a two station component designed to filter and regulate compressed air when cost and space are of primary concern. As wet, dirty air enters, it immediately flows through the air deflector, causing the air to move in a swirling motion. After condensed water is centrifugally removed, air passes through the filter and into the regulator. The high pressure of the air is systematically reduced via the adjustment spring and valve and exits the housing as clean and dry air that is ready to work at the specified pressure.



### Features

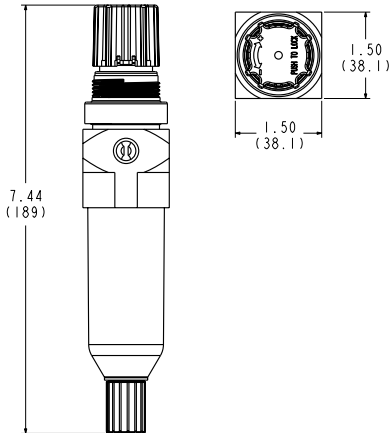
- 5 micron element standard
- Can be installed as individual or modular unit
- Non-rising knob
- Optional metal bowl
- Standard output pressure 0-125 PSIG

### Specifications

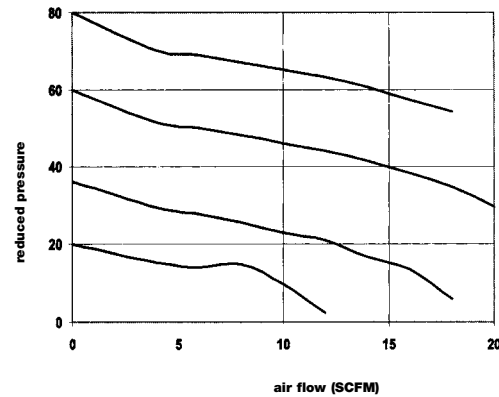
	POLYCARBONATE BOWL	METAL (ZINC) BOWL
Temperature Range (°F)	40-120	40-120
Temperature Range (°C)	4-50	4-50
Max. Pressure (PSIG)	150	200
Max. Pressure (BAR)	10	14
12 Series (Weight, lbs.)	0.34	0.36
12 Series (Weight, kg)	0.15	0.16

### Dimensions

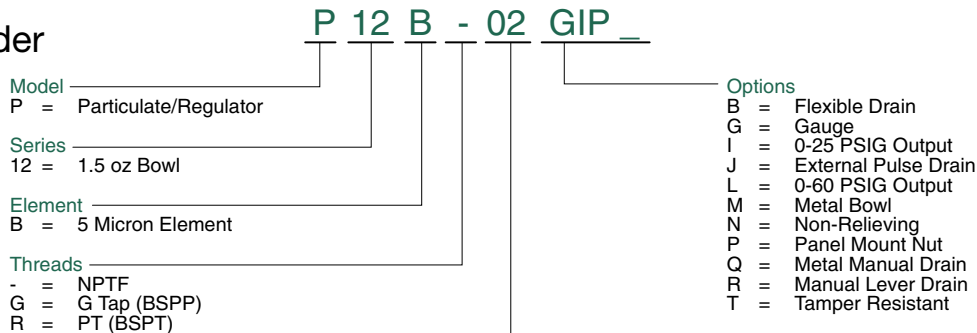
top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters



### Flow Rates – based on 100psi inlet



### How to Order



### NEED MORE PARTS AND INFORMATION?

- See page 11 for information on ordering replacement parts.

Note: To order a piston style filter/regulator, add "P" to the model number. (example: P12BP-02GIP)

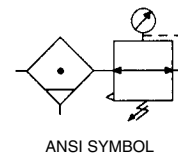


## Miniature FRL Series



### Coalescing Filter/Regulator C12 Series

The Numatics C Series Coalescer/Regulator is a two station point of use air preparation system designed to provide superior filtration and regulation in one compact housing. The C Series combines a multiple support cartridge style borosilicate glass element with a pilot balanced regulator to assure the maximum performance of downstream components. Available with four different element grade choices, the C Series Coalescer/Regulator can be outfitted to attack and remove the exact type of contamination that is critical to a specific application.



#### Features

- Cartridge element design
- Inner/outer support cores prevent element from crushing in either flow direction
- Can be installed as individual or modular unit
- Four element grades available
- Non-rising knob

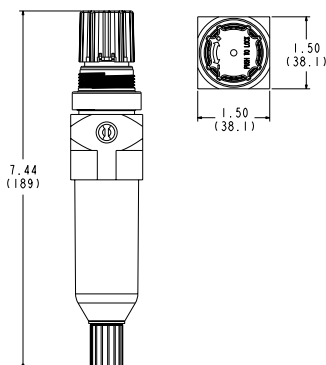
#### Specifications

	POLYCARBONATE BOWL	METAL (ZINC) BOWL
Temperature Range (°F)	40-120	40-120
Temperature Range (°C)	4-50	4-50
Max. Pressure (PSIG)	150	200
Max. Pressure (BAR)	10	14
12 Series (Weight, lbs.)	0.35	0.16
12 Series (Weight, kg)	0.37	0.17

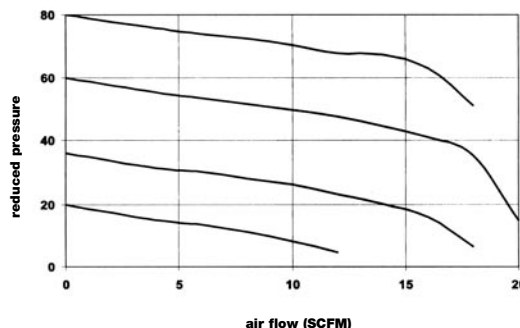
C12D-02 pictured

#### Dimensions

top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters



#### Flow Rates – based on 100psi inlet



#### How to Order

**C 12 D - 01 DG \_ \_**

**Model**  
C = Coalescer/Regulator

**Series**  
12 = 1.5 oz. Bowl

**Element**  
C = 0.7 Micron Coarse Coalescer  
D = 0.3 Micron Fine Coalescer  
E = 0.1 Micron Ultra Fine Coalescer  
F = Vapor Adsorber

**Threads**  
- = NPTF  
G = G Tap (BSPP)  
R = PT (BSPT)

Note: All BSPP (G tap) and BSPT (R tap) models use BSPT gauge threads.

#### Options

- B = Flexible Drain
- D = 3 Micron, Internal Pleated Prefilter
- G = Gauge
- I = 0-25 PSIG Output
- J = External Pulse Drain
- L = 0-60 PSIG Output
- M = Metal Bowl
- N = Non-Relieving
- P = Panel Mount Nut
- Q = Metal Manual Drain
- R = Manual Lever Drain
- T = Tamper Resistant

**Port Size**  
01 = 1/8  
02 = 1/4

Note: To order a piston style filter/regulator, add "P" to the model number. (example: C12DP-01DG)

#### Recommended Uses

See 12 Series Miniature Coalescing Filter page (page 5) for element grade options and uses.

#### Prefilter Option – Suffix 'D'

Models using the C, D, or E grade elements can be equipped with an optional 3 micron internal prefilter. The prefilter provides additional protection for the fine borosilicate fibers. For most applications, a separate 5 micron particulate filter is not required.

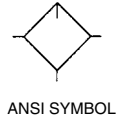
#### NEED MORE PARTS AND INFORMATION?

- See page 11 for information on ordering replacement parts.



### Lubricator L12L Series

Usually mounted third in the FRL Series, the lubricator is designed to inject oil aerosols into the airstream of a pneumatic circuit. As air flows from the regulator, some air is diverted from the main orifice to pressurize the bowl. This forces oil up the siphon tube past a flow check and into the integral valve/sight dome. The oil film then drops through the valve and into the atomization chamber at a rate that is automatically proportional to the air flow. This virtually eliminates the need for readjustment.



### Features

- Lubrication to begin at less than 2 SCFM
- Tamper-resistant knob standard
- Optional metal bowl
- Can be mounted as individual or modular unit
- Button head fill optional
- Atomizing chamber develops longer life aerosols

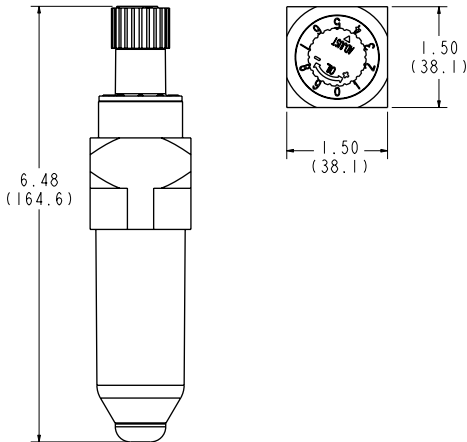
### Specifications

	POLYCARBONATE BOWL	METAL (ZINC) BOWL
Temperature Range (°F)	40-120	40-120
Temperature Range (°C)	4-50	4-50
Max. Pressure (PSIG)	150	200
Max. Pressure (BAR)	10	14
12 Series (Weight, lbs.)	0.25	0.27
12 Series (Weight, kg)	0.11	0.12
Body Material	Aluminum	Aluminum

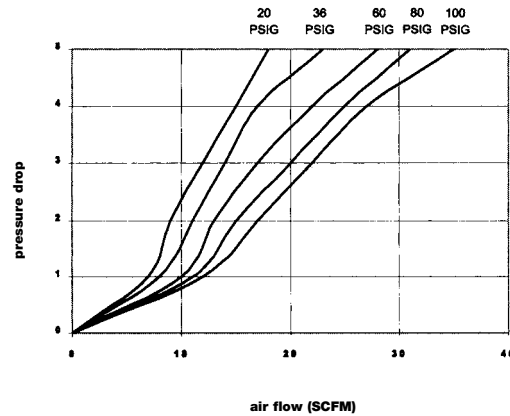
L12L-02 pictured

### Dimensions

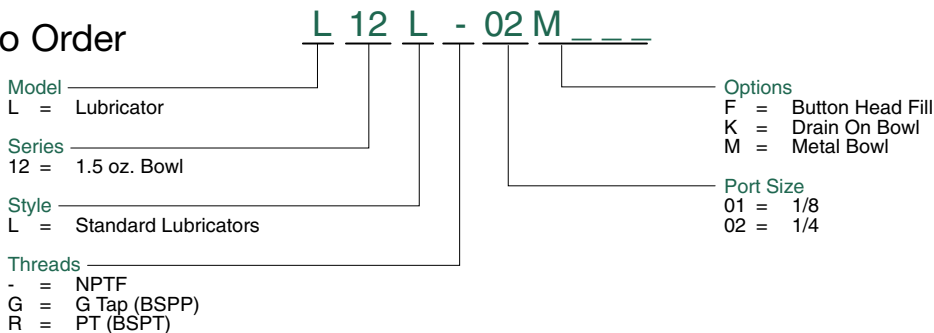
top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters



### Flow Rates – based on 100psi inlet



### How to Order



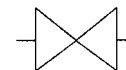
NEED MORE PARTS AND INFORMATION?

- See page 11 for information on ordering replacement parts.



## Miniature FRL Series

### Shut-Off Valve VS12 Series



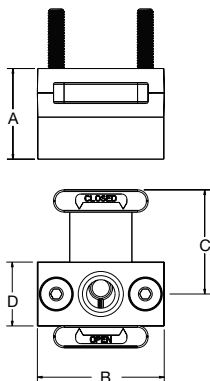
ANSI SYMBOL



The 12 Series Shut-Off Valve is an easy and inexpensive way to add shut off capability to an FRL. The valve includes a lockout feature designed for a padlock to prevent unauthorized downstream pressurization during maintenance. The shut off valve is usually mounted first in the assembly.

Max. inlet pressure: 200 PSI (13.7 bar)

- Relieves downstream pressure when closed
- Lockout feature prevents unauthorized pressurization of system
- Can be mounted as individual or modular unit



SERIES	NPTF	MODEL #S			DIMENSIONS				PORTS
		BSPP	BSPT	A	B	C	D		
12	VS12-01	VS12G01	VS12R01	1.0 (25)	1.5 (38)	1.25 (32)	0.75 (19.0)	1/8	
12	VS12-02	VS12G02	VS12R02	1.0 (25)	1.5 (38)	1.25 (32)	0.75 (19.0)	1/4	
12	VS12-01E*	VS12G01E*	VS12R01E*	1.0 (25)	1.5 (38)	1.25 (32)	0.75 (19.0)	1/8	
12	VS12-02E*	VS12G02E*	VS12R02E*	1.0 (25)	1.5 (38)	1.25 (32)	0.75 (19.0)	1/4	

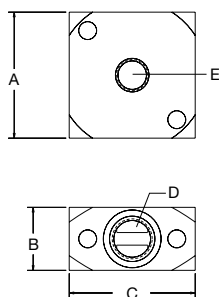
\*NOTE: When ordering the 12 Series Shut Off Valve as a stand-alone component, add the suffix 'E' to the model number.

### Diverter Block DK12 Series



Designed to give FRLs total versatility, the diverter block mounts directly inline with the FRL combination. Additional components can then be manifold mounted in a compact manner that doesn't cause excessive pressure drop. There are two available ports per unit; both are tapped for standard service.

Max. inlet pressure: 200 PSI (13.7 bar)



SERIES	MODEL #			DIMENSIONS					PORTS
	NPTF	BSPP	BSPT	A	B	C	D	E	
12	DK12-02	DK12G02	DK12R02	1.50 (38.0)	0.75 (19.0)	1.50 (38.0)	1/4	1/8	Tapped 1/4 NPTF In & Out with two 1/8 NPTF branches



### Coalescing Filter & Filter/Regulator

#### > Element Replacement Kits Filter/Regulators

includes filter element only

kit #	description
EKF12C	12 Series, 0.7 micron element
EKF12CD	12 Series, 0.7 micron element with prefilter
EKF12D	12 Series, 0.3 micron element
EKF12DD	12 Series, 0.3 micron element with prefilter
EKF12E	12 Series, 0.1 micron element
EKF12ED	12 Series, 0.1 micron element with prefilter
EKF12F	12 Series, adsorbing element

#### > Bowl Replacement Kits Filter & Filter/Regulators

includes bowl and o-ring

kit #	description
BKF12	12 Series, polycarbonate bowl
BKF12M	12 Series, metal bowl

To order the bowl replacement kit with a drain, specify the drain suffix in the kit number (keeping suffixes in alphabetical order). For example, to order an autodrain with a BKF12 kit, order as **BKF12B**. To order an external pulse drain with a BKF32M kit, order as **BKF12JM**. Drain suffixes are as follows: A=autodrain, B=flexible drain, J=external pulse drain, Q=metal manual drain, R>manual lever drain.

#### > Bowl Replacement Kits Lubricators

includes bowl and o-ring

kit #	description
BKL12	12 Series, polycarbonate bowl
BKL12M	12 Series, metal bowl

To order the bowl replacement kit with a drain or buttonhead fill, specify the appropriate suffix in the kit number (keeping suffixes in alphabetical order). For example, to order a drain with a BKL12 kit, order as **BKF12K**. To order a buttonhead fill with a BKL22M kit, order as **BKL22FM**. Drain suffixes are as follows: F=buttonhead fill, K=drain.

#### > Replacement Drain Kits

kit #	description
BKF02	flexible drain (includes drain ass'y)
DKF02	standard drain (inc. drain ass'y)
JKF02	external pulse drain (inc. drain, bushing, clip, o-ring)
QKF02	metal manual drain (inc. drain, bushing, clip, o-ring)
RKF02	manual lever drain (inc. drain, bushing, clip, o-ring)

### Particulate Filter & Filter/Regulator

#### > Element Replacement Kits Filter/Regulators

includes filter element only

kit #	description
EKF12B	12 Series, 5 micron element

#### > Filter Repair Kits

includes Turbo-Flo, element retainer, quiet zone baffle, deflector retainer

kit #	description
RKF12B	12 Series, 5 micron element

### FLEXIBLOK® Regulator

#### > Regulator Repair Kits Filter/Regulators

includes bonnet and adjustment knob

kit #	description
RKC12	12 Series, cage kit

#### > Diaphragm Repair Kits

includes diaphragm and inner valve

kit #	description
RKR12R	12 Series, relieving kit
RKR12N	12 Series, non-relieving kit

#### > Piston Repair Kits

includes piston, U-cup seal, relief seal

kit #	description
PKR12R	12 Series, relieving kit
PKR12N	12 Series, non-relieving kit

#### > Replacement Adjustment Knob Kits

includes adjustment knob only

kit #	description
R12-03	12 Series, adjustment knob

### FLEXIBLOK® Lubricator

#### > Lubricator Dome Repair Kits

includes adjustment knob and adjustment assembly

kit #	description
RKL12T	12 Series, lub. dome repair kit

#### > Replacement Adjustment Knob Kits

includes adjustment knob only

kit #	description
L32-06	12 Series, adjustment knob

#### > Shut-Off Valve Repair Kits

includes slide and 2 o-rings

kit #	description
RKSV12	12 Series, shut-off valve repair kit

#### > Mounting Bracket

includes bracket and panel nut

kit #	description
PK12	12 Series mounting bracket

#### > Screw & O-Ring Replacement Kits

kit #	description
KAVS12-06	12 Series, inc. 2 81mm tie rods, 2 106mm tie rods, 4 nuts
BKAVS12-06	12 Series, inc. 20 81mm tie rods, 20 106mm tie rods, 40 nuts
KG12	12 Series, inc. 2 screws, 1 o-ring (M4 x 12mm)
KGB12	12 Series bulk pack, inc. 100 screws, 50 o-rings (M4 x 12mm)

# NUMATICS®

World Class Supplier  
of Pneumatic Components



## World Headquarters

**Numatics Incorporated**  
Phone: 248-887-4111  
Fax: 248-887-9190

## UNITED STATES

**Numatics – Air Preparation**  
Phone: 810-667-3900  
Fax: 810-667-3902

## Numatics – Valves

Phone: 248-887-4111  
Fax: 248-887-9190

## Numatics – Miniature Valves

Phone: 248-960-1400  
Fax: 248-960-2160

## Numatics – Cylinders

Phone: 615-771-1200  
Fax: 615-771-1201

## Numatics – Rodless Cylinders

Phone: 519-452-1777  
Fax: 519-452-3995

## Numatics – Automation

Phone: 440-934-3200  
Fax: 440-934-2288

## CANADA

**Ontario**  
Numatics, Ltd.  
Phone: 519-452-1777  
Fax: 519-452-3995

## Quebec

Numatics, Ltd.  
Phone: 514-332-6444  
Fax: 514-332-9273

## British Columbia

Numatics, Ltd.  
Phone: 604-574-0401  
Fax: 604-574-3713

## EUROPE

### Germany – European Headquarters

Numatics GmbH  
Phone: 011-49-22 41-31 60-0  
Fax: 011-49-22 41-31 60 40

### Hungary

Numatics Kft.  
Phone: 011-36-13 82 21 35  
Fax: 011-36-12 04 39 47

## EUROPE

### England

Numatics Limited  
Phone: 011-44-1525-37 07 35  
Fax: 011-44-1525-38 25 67

### France

Numatics s.a.r.l.  
Phone: 011-33-1 41 21 48 88  
Fax: 011-33-1 41 21 48 89

### Italy

Numatics srl  
Phone: 011-39-030-373 19 99  
Fax: 011-39-030-373 19 81

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Numatics B.V.  
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Fax: 011-31-418-65 29 43

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Fax: 011-34-93-221 35 14

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Fax: 011-52-222-284 6179

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Fax: 011-55-12-351 1958

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Numatics Australia Pty. Ltd.  
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Fax: 011-61-3-95 63 85 11

### Taiwan – Asian Headquarters

Numatics Co, Ltd. Asia  
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