



# Air Preparation Units

Parker-Watts QIX Series  
Filters, Regulators, Lubricators  
Catalog 0306

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
**pneumatics**  
process control  
sealing & shielding



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**CAUTION:**

Polycarbonate bowls and sight dome, 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 and sight dome should not be exposed to chlorinated hydro-carbons, 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.**

**WARNING**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

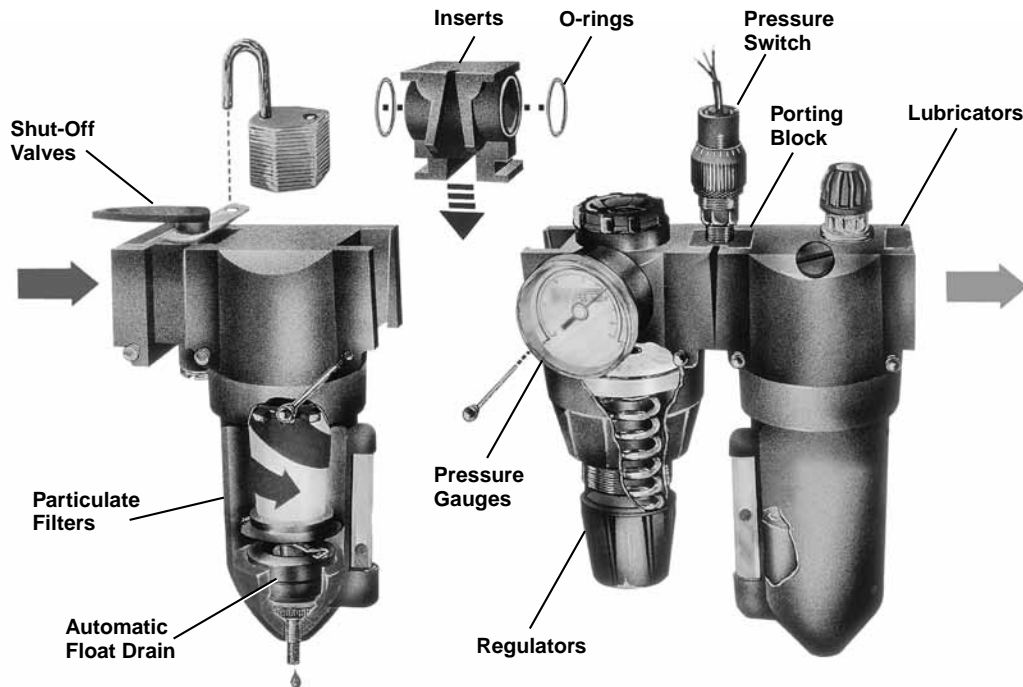
The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Offer of Sale**

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated on the separate page of this document entitled "Offer of Sale".

## QIX Modular FRL System

### Quick Insert Xchange



### QIX is the Premium FRL System for the Demanding, High Performance Manufacturer

Addressing the needs of the production-oriented plant more than a decade ago, WATTS FluidAir pioneered a break through in FRL technology. The QIX Series of high flow, generously sized filters, regulators lubricators and accessories.

Designed around the parameters of one inch pipe, every QIX component is manufactured with wide open internal porting for maximum efficiency and optimum performance at flow rates up to 250 SCFM.

### QIX Means Less Downtime

Qix is short for "Quick Insert eXchange". By means of removable connector -inserts, any QIX unit easily adapts to a variety of pipe sizes ranging from 1" down to 1/4". Each time you change pipe size or units, you change only the insert - not the filter, regulator, or lubricator. Pull two pins with a pair of pliers and your change is made in seconds.

### QIX Means Less Inventory Plus Simplified Specification, Ordering and Service

The QIX concept enables you to stock one basic size filter, regulator or lubricator module along with an assortment of economical insert kits. You save as much as 50% on inventory. Working with fewer part numbers, you simplify engineering specs, lessen purchasing efforts and improve overall service.

### Durable Textured Finish

All QIX components are powder coated to ensure a hard, durable finish.

### Particulate Filters (F20)

Deflector plate insures maximum water removal while 40 micron element eliminates damaging particulate matter. Oil-removing coalescing filters (F21) are also available.

One-piece rugged metal bowls with sight gauge and bright liquid level indicating float are standard on all filters and lubricators.

### Regulators (R20)

Accurate high-flow regulators are equipped with positive snap lock, push / pull adjusting knobs for easy operation. Bayonet style spring cage is removed with only the push of a button. Piston and o-ring is replaceable in seconds, using standard pliers.

### Lubricators (L20)

Bypass valve system provides consistent lubrication under variable flow conditions. Removable adjusting knob renders the lubricator tamperproof (standard). QIX lubricators are fillable under pressure.

### Inserts

All QIX components connect using inserts, o-rings and pins. Pins are easily removed using standard pliers. No special tools are required.

Threaded end inserts, 1/4" through 1", make it easy to replace a complete FRL in seconds without breaking pipe connections. Also allows you to stock only one FRL for all your 1/4" through 1" plant needs.

### Shut-Off Valves (IK20V)

Isolate downstream equipment with three-way lockable shutoff valve. Complies with OSHA Standard 29 CFR Part 1910. Vented to relieve downstream pressure in off position.

### Automatic Float Drain

Optional automatic float drain removes condensate as required. Manual drain is standard.

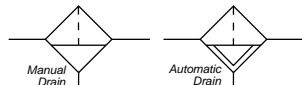
### Pressure Switch

Low cost miniature pressure switch easily integrates into your QIX system via a porting block. The switch provides an electric signal when set pressure is achieved.

### Porting Block

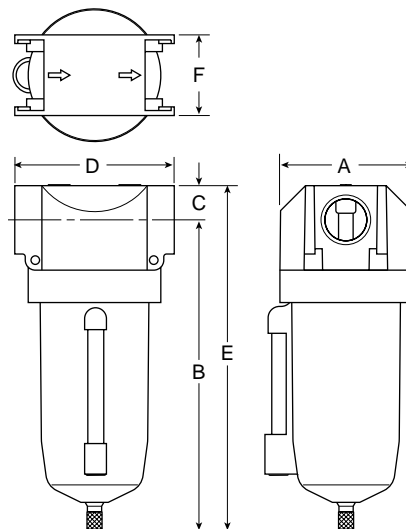
Insert style porting blocks are available with 1/4" NPT branch lines. They allow the mounting of a pressure switch or branching off a non-lubricated line.

## F20 & F21 QIX Particulate & Coalescing Filters



### Features

- Unique Interchangeable QIX Inserts Allow One Module to Accommodate 5 Port Sizes 1/4", 3/8", 1/2", 3/4", 1"
- For Heavy Duty Applications with Minimum Pressure Drop Requirement
- Excellent Water Removal Efficiency
- Available in Both Particulate (F20) and Coalescing (F21) Configurations
- Metal Bowl with Sightgauge Standard
- Manual Drain Standard. Automatic Float Drain Optional
- High Flow - 180 SCFM for 3/4" & 1" Sizes (F20)  
20 SCFM (F21 Coalescing)



F20 & F21 Filter Dimensions						
A	B	C	D*	D**	E	F
2.90 (74)	6.82 (173)	.75 (19)	3.50 (89)	4.50 (114)	7.58 (192)	1.77 (45)

inches (mm)

\* 1/4 thru 3/4 Inch Port Insert Size

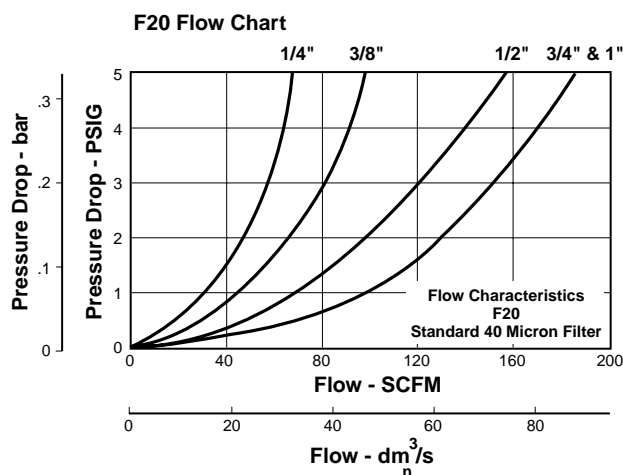
\*\* 1 Inch Port Insert Size

## Ordering Information

<div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> <span style="border: 1px solid black; padding: 2px 10px;">F</span> <span style="border: 1px solid black; padding: 2px 10px;">20</span> <span style="border: 1px solid black; padding: 2px 10px;">—</span> <span style="border: 1px solid black; padding: 2px 10px;">00</span> <span style="border: 1px solid black; padding: 2px 10px;">W</span> <span style="border: 1px solid black; padding: 2px 10px;">J</span> <span style="border: 1px solid black; padding: 2px 10px;">/**</span> </div>						
<b>Filter Types</b> <b>20 Particulate</b> <b>21 Coalescing</b>	<b>Port Threads</b> — NPT G* BSPP <small>*If ordering BSPP Port Inserts Separately - Order "-00" Unit</small>	<b>Port Size</b> <b>00 No Port Inserts</b> <b>02 1/4 Inch</b> <b>03 3/8 Inch</b> <b>04 1/2 Inch</b> <b>06 3/4 Inch</b> <b>08 1 Inch</b>	<b>Elements</b> <b>J F20 40 Micron</b> G F20 5 Micron J* F21 .01 Micron Coalescing <small>* Only Available with F21</small>	<b>Optional Drain</b> R Internal Auto Float Drain	<b>Engineering Change Designator</b> Will be entered at factory.	

BOLD ITEMS ARE MOST POPULAR.

## Technical Information



## QIX F20 &amp; F21 Kits &amp; Accessories

## Drains –

Automatic Float Drain .....	SA602MD
Automatic Pulse Drain .....	4212
Semi-Automatic "Overnight" Drain .....	SA602A7
(Drains automatically under zero pressure)	

**Bowl Kit** ..... BKF21WA

**Bowl Sightgauge Repair Kit** ..... RKB605WB

**Combination Connector** ..... IK20CC  
(Connects 2 QIX units together)

**Combination Porting Block** ..... IK20CP  
(same as IK20CC, except with 1/8" top branch outlet)

## Element Kits –

Particulate (F20) 40 micron .....	EKF20A
Particulate (F20) 5 micron .....	EKF20VA
Coalescing (F21) .01 micron .....	EKF601J

**Mounting brackets (pair)** ..... MK20-0100  
(Mounts directly to port inserts)

## Port Insert Kits (includes o-rings &amp; pins) NPT –

1/4" Port Size .....	IK20Y
3/8" Port Size .....	IK20X
1/2" Port Size .....	IK20A
3/4" Port Size .....	IK20B
1" Port Size .....	IK20C

**Shut-off Valve w/lockout (for inlet)** ..... IK20V

## Specifications

**Bowl Capacity** ..... 10 oz.

## Filter Element Rating –

"J" (F20 particulate) .....	40 micron
"G" (F20 particulate) .....	5 Micron
"J" (F21 coalescing) .....	.01 Micron

**Maximum Pressure** ..... 250 PSIG  
With Autodrain ..... 175 PSIG

## Port Threads / Inserts –

00 .....	No Port Inserts
02 .....	1/4"
03 .....	3/8"
04 .....	1/2"
06 .....	3/4"
08 .....	1"

**Temperature Range** ..... 40°F to 150°F (4.4°C to 65.6°C)  
With Auto Drain ..... 40°F to 125°F (4.4°C to 52°C)

**Weight** ..... 2.1 lb  
(For total weight add .1 lb for port inserts)

## Materials of Construction

<b>Body</b> .....	Zinc
<b>Bowl</b> .....	Zinc
<b>Drain</b> .....	Brass
<b>Filter Element –</b>	
Particulate .....	Polypropylene
Coalescing .....	Borosilicate Fibers
<b>Thread Inserts</b> .....	Zinc
<b>Seals</b> .....	Buna-N
<b>Sightgauge</b> .....	Nylon

## R20 & R21 QIX Regulators



### Features

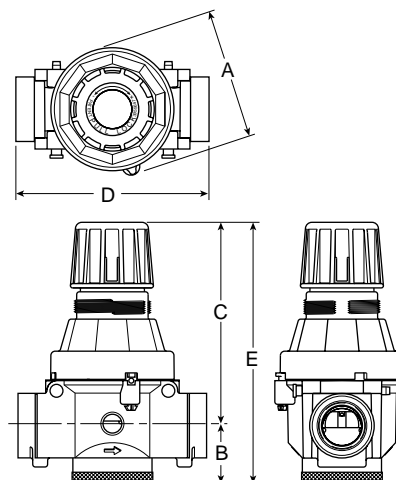
- Unique Interchangeable QIX Inserts Allow One Module to Accommodate 5 Port Sizes 1/4", 3/8", 1/2", 3/4", 1"
- Piston Operated for High Flow Performance
- Secondary Aspiration Plus Balanced Poppet Provides Quick Response and Accurate Pressure Regulation
- Panel Mountable
- High Flow: 250 SCFM for 3/4" & 1" Port Sizes

### R20 Features

- Push-to-Lock, Pull-to-Adjust, Remove-for-Tamper-Resistant Knob Feature

### R21 Features

- Heavy Duty Tee Handle Adjustment



**R20 / R21 Regulator Dimensions**

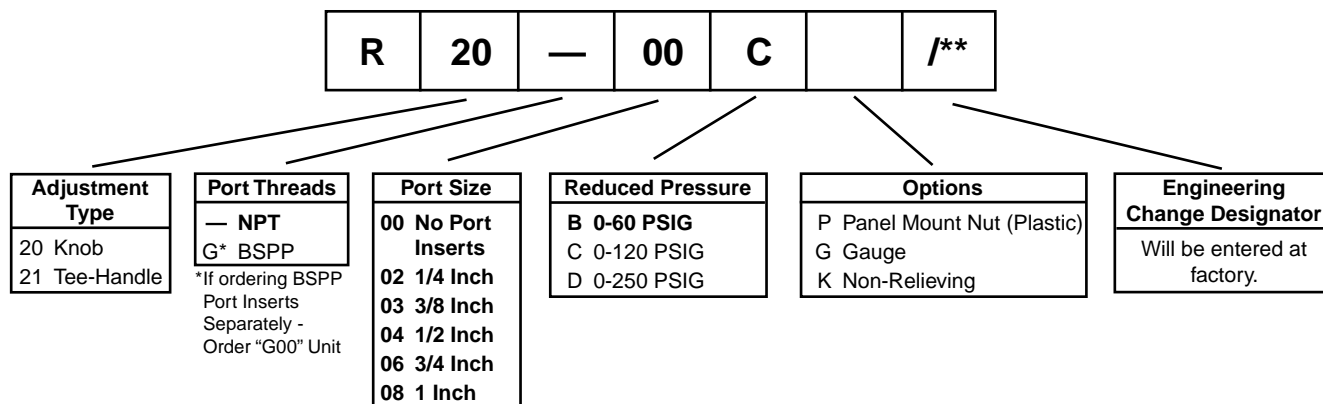
A	B	C	D*	D**	E
<b>R20</b>					
3.03 (77)	.75 (86)	4.70 (119)	3.50 (89)	4.50 (114)	6.10 (155)
<b>R21</b>					
3.03 (77)	.75 (86)	5.58 (142)	3.50 (89)	4.50 (114)	6.33 (161)

inches (mm)

\* 1/4 thru 3/4 Inch Port Insert Size

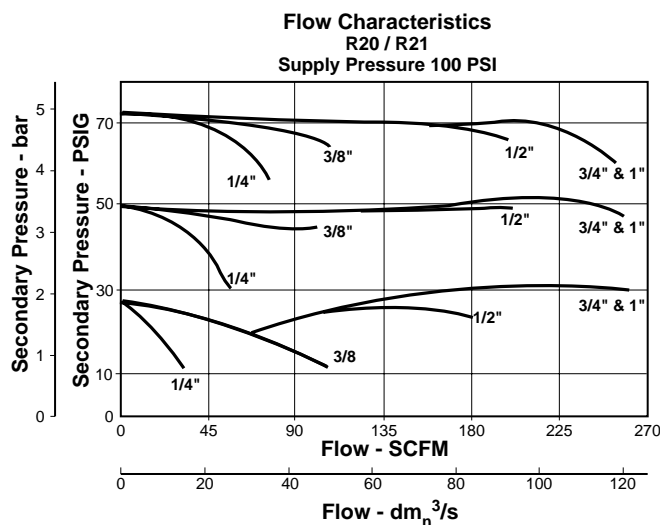
\*\* 1 Inch Port Insert Size

## Ordering Information



**BOLD ITEMS ARE MOST POPULAR.**

## Technical Information

**⚠ WARNING**

Product rupture can cause serious injury.  
Do not connect regulator to bottled gas.  
Do not exceed maximum primary pressure rating.

**⚠ CAUTION:**

**REGULATOR PRESSURE ADJUSTMENT** – The working range of 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. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

## QIX R20 &amp; R21 Kits &amp; Accessories

**Combination Connector** ..... IK20CC  
(Connects 2 QIX units together)

**Combination Porting Block** ..... IK20CP  
(same as IK20CC, except with 1/8" top branch outlet)

**Mounting brackets (pair)** ..... MK20-0100  
(Mounts directly to port inserts)

**Wall Mounting Bracket** ..... SAR10A57  
(Uses panel mount threads - includes plastic panel mount nut)

**Panel Mount Nut –**  
Plastic ..... R10X51-P  
Aluminum ..... R10X51-A

**Port Insert Kits (includes o-rings & pins) NPT –**

1/4" Port Size ..... IK20Y  
3/8" Port Size ..... IK20X  
1/2" Port Size ..... IK20A  
3/4" Port Size ..... IK20B  
1" Port Size ..... IK20C

**Repair Kit - Internal Parts (Piston, Innervalue, Seals)**

Relieving ..... RKR20A  
Non-Relieving (K) ..... RKR20KA

**Spring Cage Kit –**

R20 ..... CKR20A  
R21 ..... CKR21Y

**Shut-off Valve w/lockout (for inlet)** ..... IK20V

## Specifications

**Gauge Ports** ..... (2) 1/4"

**Maximum Pressure** ..... 300 PSIG

**Port Threads / Inserts –**

00 ..... No Port Inserts  
02 ..... 1/4"  
03 ..... 3/8"  
04 ..... 1/2"  
06 ..... 3/4"  
08 ..... 1"

**Reduced Pressure Range –**

"B" ..... 0-60 PSIG  
"C" ..... 0-120 PSIG  
"D" ..... 0-250 PSIG

**Temperature Range** ..... 40°F to 150°F

**Weight** ..... 2.6 lb  
(For total weight add .1 lb for port inserts)

## Materials of Construction

**Adjusting Knob** ..... (R/B 20) Acetal

**Adjusting Screw (all)** ..... Steel

**Body** ..... Zinc

**Bottom Plug** ..... Brass

**Innervalue** ..... Brass

**Piston** ..... Nylon

**Seals** ..... Buna-N

**Spring Cage** ..... Zinc

**Springs** ..... Steel

**Thread Inserts** ..... Zinc

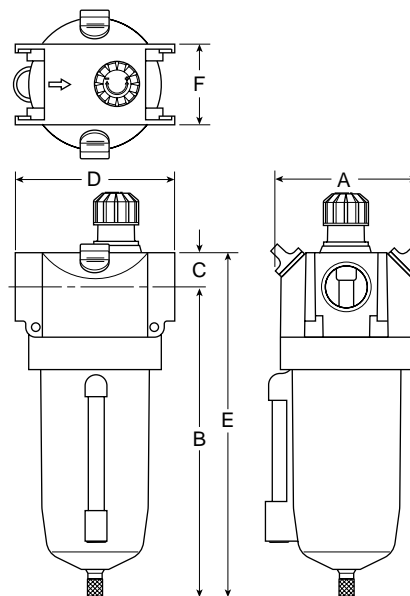


## L20 QIX Lubricators



### Features

- Unique Interchangeable QIX Inserts Allow One Module to Accommodate 5 Port Sizes 1/4", 3/8", 1/2", 3/4", 1"
- High Flow Venturi and By-pass Valve to Minimize Pressure Drop and Ensure Consistent Lubrication at All Rated Flows
- Excellent Water Removal Efficiency
- Tamper Resistant Removable Drip Control Knob
- Manual Drain Standard
- High Flow: 250 SCFM for 3/4" & 1" Port Sizes



L20 Filter Dimensions						
A	B	C	D*	D**	E	F
3.13 (80)	6.82 (173)	2.04 (52)	3.50 (89)	4.50 (114)	8.86 (228)	1.77 (45)

inches (mm)

\* 1/4 thru 3/4 Inch Port Insert Size

\*\* 1 Inch Port Insert Size

## Ordering Information

<b>L</b>	<b>20</b>	<b>—</b>	<b>00</b>	<b>W</b>		<b>/**</b>
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Port Threads
— NPT
G* BSPP

\*If ordering BSPP  
Port Inserts  
Separately  
- Order "-00" Unit

Port Size
<b>00</b> No Port Inserts
<b>02</b> 1/4 Inch
<b>03</b> 3/8 Inch
<b>04</b> 1/2 Inch
<b>06</b> 3/4 Inch
<b>08</b> 1 Inch

Options
H Button Head Fill Fitting

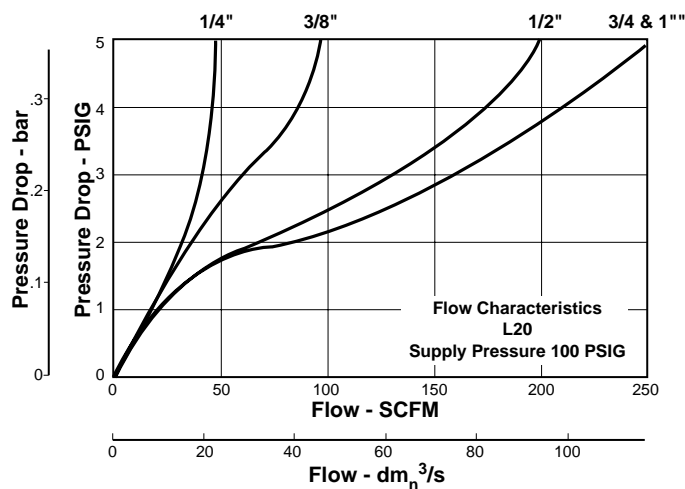
Engineering Change Designator
Will be entered at factory.

BOLD ITEMS ARE MOST POPULAR.





## Technical Information



## QIX L20 Kits &amp; Accessories

Bowl Kit .....	BKF21WA
Bowl Sightgauge Repair Kit .....	RKB605WB
Button Head Fill Fitting .....	L606C14
(M14 male thread)	
Combination Connector .....	IK20CC
(Connects 2 QIX units together)	
Drip Control Repair Kit .....	RKL100
Internal By-pass Repair Kit .....	RKL20A
Mounting Brackets (pair) .....	MK20-0100
Port Insert Kits (includes o-rings & pins) NPT –	
1/4" Port Size.....	IK20Y
3/8" Port Size.....	IK20X
1/2" Port Size.....	IK20A
3/4" Port Size.....	IK20B
1" Port Size.....	IK20C
Shut-off Valve w/lockout (for inlet) .....	IK20V

## Specifications

Bowl Capacity .....	10 oz.
Maximum Pressure .....	250 PSIG

## Port Threads / Inserts –

00 .....	No Port Inserts
02 .....	1/4"
03 .....	3/8"
04 .....	1/2"
06 .....	3/4"
08 .....	1"

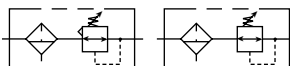
Temperature Range ..... 40°F to 150°F

Weight ..... 3.3 lb  
(For total weight add .1 lb for port inserts)

## Materials of Construction

Body .....	Zinc
Bowl .....	Zinc
Drain .....	Brass
Drip Control .....	Polyurethane
Seals .....	Buna-N
Sightgauge .....	Nylon
Thread Inserts .....	Zinc

## B20 & B21 QIX Filter / Regulators



### Features

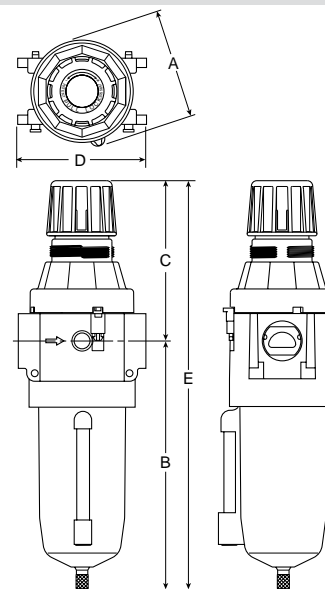
- Unique Interchangeable QIX Inserts Allow One Module to Accommodate 5 Port Sizes 1/4", 3/8", 1/2", 3/4", 1"
- Piston Operated Regulator for High Flow Performance
- Excellent Water Removal Efficiency
- Secondary Aspiration Plus Balanced Poppet Provides Quick Response and Accurate Pressure Regulation
- Excellent Water Removal Efficiency
- Manual Drain Standard
- Automatic Drain Optional
- Panel Mountable
- High Flow: 250 SCFM for 3/4" & 1" Port Sizes

### B20 Features

- Push-to-Lock, Pull-to-Adjust, Remove-for-Tamper Resistant Knob Feature

### B21 Features

- Heavy Duty Tee Handle Adjustment



**B20 / B21 Dimensions**

A	B	C	D*	D**	E
<b>B20</b>					
3.03 (77)	6.82 (173)	4.45 (113)	3.50 (89)	4.50 (114)	11.27 (286)
<b>B21</b>					
3.03 (77)	6.82 (86)	5.58 (142)	3.50 (89)	4.50 (114)	12.40 (315)

inches (mm)

\* 1/4 thru 3/4 Inch Port Insert Size

\*\* 1 Inch Port Insert Size

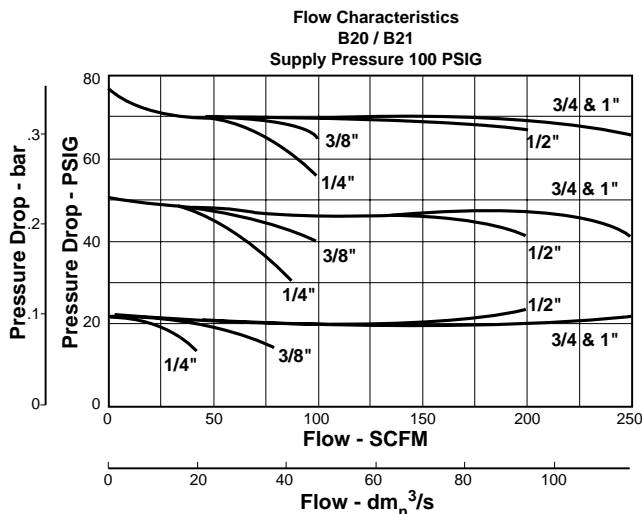
## Ordering Information

<b>B</b>	<b>20</b>	<b>—</b>	<b>00</b>	<b>W</b>	<b>J</b>	<b>C</b>	<b>/**</b>
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Adjustment Type	Port Threads	Port Size	Elements	Reduced Pressure Range	Drains and Options	Engineering Change Designator
20 Knob 21 Tee Handle	— NPT G* BSPP * If ordering BSPP Port Inserts Separately - Order "G00" Unit	00 No Port Inserts 02 1/4 Inch 03 3/8 Inch 04 1/2 Inch 06 3/4 Inch 08 1 Inch	G 5 Micron J 40 Micron	B 0-60 PSIG C 0-125 PSIG D 0-250 PSIG	G Gauge K Non-Relieving P Panel Mount Nut (Plastic) R Internal Auto Float Drain	Will be entered at factory.

**BOLD ITEMS ARE MOST POPULAR.**

## Technical Information

**⚠ WARNING**

Product rupture can cause serious injury.  
Do not connect regulator to bottled gas.  
Do not exceed maximum primary pressure rating.

**⚠ CAUTION:**

**REGULATOR PRESSURE ADJUSTMENT** – The working range of 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. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

## QIX B20 &amp; B21 Kits &amp; Accessories

**Drains –**

Automatic Float Drain .....	SA602MD
Automatic Pulse Drain .....	4212
Semi-Automatic "Overnight" Drain .....	SA602A7
(Drains automatically under zero pressure)	

**Bowl Kit** ..... BKF21WA

**Bowl Sightgauge Repair Kit** ..... RKB605WB

**Combination Connector** ..... IK20CC  
(Connects 2 QIX units together)

**Combination Porting Block** ..... IK20CP  
(same as IK20CC, except with 1/8" top branch outlet)

**Element Kits–**

Particulate (F20) 40 micron .....	EKF20A
Particulate (F20) .....	5 micron EKF20VA

**Mounting Brackets (pair)** ..... MK20-0100

**Panel Mount Nut –**

Plastic.....	R10X51-P
Aluminum.....	R10X51-A

**Port Insert Kits (includes o-rings & pins) NPT –**

1/4" Port Size.....	IK20Y
3/8" Port Size.....	IK20X
1/2" Port Size.....	IK20A
3/4" Port Size.....	IK20B
1" Port Size.....	IK20C

**Repair kit - internal parts (piston, innervalue, seals) –**

Relieving.....	RKR20A
Non-Relieving (K) .....	RKR20KA

**Spring Cage Kit –**

R20.....	CKR20A
R21.....	CKR21Y

**Wall Mounting Bracket** ..... SAR 20A57  
(uses panel mount threads - includes plastic panel mount nut)

## Specifications

**Bowl Capacity** ..... 10 oz.

**Filter Element Rating –**

"J" (particulate) .....	40 micron
"G" (particulate) .....	5 Micron

**Gauge Ports (2)** ..... 1/4"

**Maximum Pressure** ..... 250 PSIG  
With Auto Drain ..... 175 PSIG

**Port Threads / Inserts –**

00 .....	No Port Inserts
02 .....	1/4"
03 .....	3/8"
04 .....	1/2"
06 .....	3/4"
08 .....	1"

**Reduced Pressure Range –**

"B".....	0-60 PSIG
"C".....	0-120 PSIG
"D".....	0-250 PSIG

**Temperature Range** ..... 40°F to 150°F (4.4°C to 65.6°C)  
With Auto Drain ..... 40°F to 125°F (4.4°C to 52°C)

**Weight** ..... 4.5 lb  
(For total weight add .1 lb for port inserts)

## Materials of Construction

**Adjusting Knob (R/B 20)** ..... Acetal

**Adjusting Screw (all)** ..... Steel

**Body** ..... Zinc

**Bottom Plug** ..... Brass

**Bowl** ..... Zinc

**Drain** ..... Brass

**Filter Element (particulate)** ..... Polypropylene

**Innervalue** ..... Brass

**Piston** ..... Nylon

**Seals** ..... Buna-N

**Sightgauge** ..... Nylon

**Spring Cage** ..... Zinc

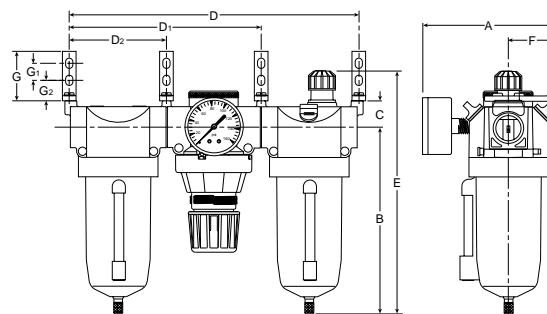
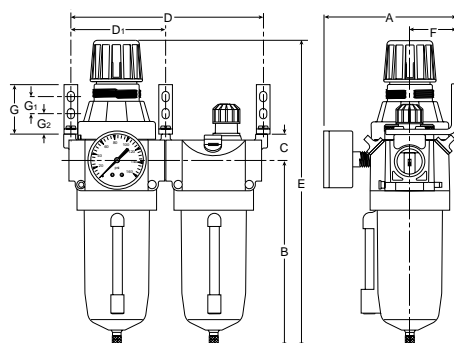
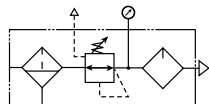
**Springs** ..... Steel

**Thread Inserts** ..... Zinc

## QIX Combinations – C20 / C21 Series

- See individual component pages for details.
- Gauges included on combinations.

### Three-Unit Combo



**C20-BL**



**C20-FRL**

#### C20-FRL Dimensions

A	B	C	D*	D**	D <sub>1</sub>
4.78 (121)	6.83 (173)	.96 (24)	10.60 (269)	10.70 (271)	7.13 (181)
D <sub>2</sub>	E	F	G	G <sub>1</sub>	G <sub>2</sub>
3.57 (91)	8.89 (226)	1.69 (43)	1.81 (46)	.75 (19)	.63 (16)

#### C20-BL Dimensions

A	B	C	D*	D**	D <sub>1</sub>
4.78 (121)	6.83 (173)	.96 (24)	7.31 (186)	7.41 (188)	3.57 (91)
E	F	G	G <sub>1</sub>	G <sub>2</sub>	
11.27 (286)	1.69 (43)	1.81 (46)	.75 (19)	.63 (16)	

inches (mm)

\* 1/4 thru 3/4 Inch Port Insert Size

\*\* 1 Inch Port Insert Size

### Ordering Information

<b>C</b>	<b>20</b>	<b>—</b>	<b>02</b>	<b>FRL</b>	<b>W</b>	<b>J</b>	<b>C</b>	<b>W</b>	<b>/**</b>
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Adjustment Type
<b>20</b> Knob
21 Tee Handle

Port Threads
— NPT
G* BSPP
* If ordering BSPP Port Inserts Separately - Order "G00" Unit

Port Size
<b>02</b> 1/4 Inch
<b>03</b> 3/8 Inch
<b>04</b> 1/2 Inch
<b>06</b> 3/4 Inch
<b>08</b> 1 Inch

Combination
<b>BL</b> 2-Unit
<b>FRL</b> 3-Unit

Regulator Reduced Pressure Range
<b>B</b> 0-60 PSIG
<b>C</b> 0-125 PSIG
<b>D</b> 0-250 PSIG

Engineering Change Designator
Will be entered at factory.

Elements
<b>G</b> 5 Micron
<b>J</b> 40 Micron

Drains and Options
<b>K</b> Non-Relieving
<b>R</b> Internal Auto Float Drain



#### CAUTION:

**REGULATOR PRESSURE ADJUSTMENT** – The working range of 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. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

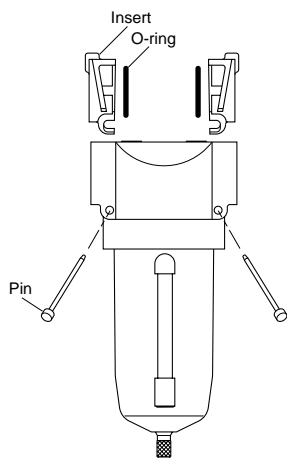
**BOLD ITEMS ARE MOST POPULAR.**

## QIX Accessories

### QIX Port Insert Kits & Accessories

Port Insert Kits (includes o-rings & pins) NPT BSPP

Port Size	NPT	BSPP
1/4"	IK20Y	IK20YG
3/8"	IK20X	IK20XG
1/2"	IK20A	IK20AG
3/4"	IK20B	IK20BG
1"	IK20C	IK20CG
<b>Combination Connector</b> (connects 2 QIX units together)	IK20CC	IK20CC
<b>Combination Porting Block</b> (same as IK20CC, except with 1/4" top branch outlet)	IK20CP	IK20GCP
<b>IK20CP Porting Block and 1908 Pressure Switch</b>	PST20	—

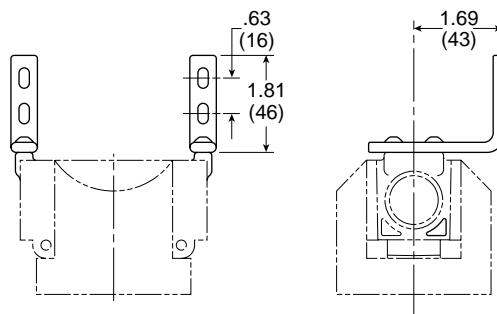


**Port Insert Assembly**

### QIX MK20 Mounting Brackets

Part Number: MK20-0100

Kit contains 2 brackets and 4 screws



### QIX IK20V Shut-Off Valve

This modular, 3-way ball valve attaches between the port insert and the inlet side of any QIX component. This valve shuts off the air pressure and vents the downstream pressure through a 1/8" NPTF port in the bottom of the valve.

**The valve comes standard with a "lockout" feature as required by OSHA Standard 1910.147**

Valve adds 1.4" to width of system.



## Inline Bronze Filters



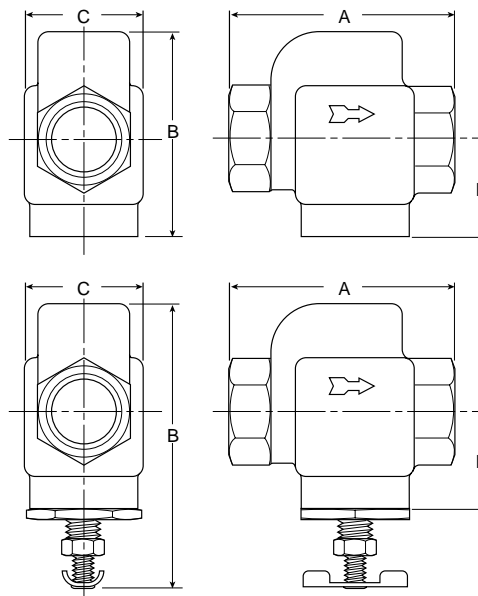
137



137A

### Features

- All Bronze Unit
- Designed for Applications where Fine Straining of Air is Required
- Porous Bronze Element Strains Out Particles Larger than 90 Microns (.0035 Inch)



Port Size	90 Micron Element*	
	No Drain	With Manual Petcock Drain
1/4"	<b>137-02</b>	137-02A
3/8"	<b>137-03</b>	137-03A
1/2"	<b>137-04</b>	<b>137-04A</b>

\* Add "V" Suffix for 5 Micron Element.

In-Line Bronze Filters			
A	B	C	D
<b>With No Drain</b>			
2.63 (66.7)	2.38 (60)	1.41 (35.7)	1.16 (29.4)
<b>With Manual Twist Drain</b>			
2.63 (66.7)	3.19 (81)	1.84 (46.8)	1.16 (29.4)

inches (mm)

## Replacement Elements

5 Micron .....	137AY77-5
20 Micron .....	137AY77-20
90 Micron .....	RK137Y

## Specifications

Maximum Pressure ..... 300 PSIG

### Performance –

Pressure Drop (PSIG) at Various Conditions

Flow	5	10	15	20	25
Supply Pressure 100 PSIG	.05	.15	.06	1.20	1.70
Supply Pressure 150 PSIG	.02	.10	.30	.70	1.00

### Weight –

1/4" & 3/8" .....	.9 lb. (0.41 kg) / Unit
	44 lb. (19.96 kg) / 48-Unit Master Pack
1/2" .....	1.1 lb. (0.49 kg) / Unit
	54 lb. (24.49 kg) / 48-Unit Master Pack

## Materials of Construction

Body ..... Bronze

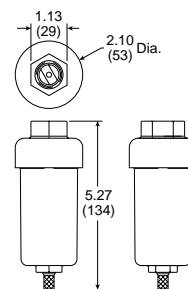
### Element –

Standard .....	90 Micron Porous Bronze
Optional .....	5 Micron Porous Bronze

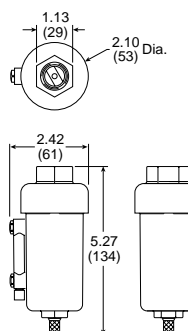
Seals ..... Buna N

**D11-04 Tank Drain****Features**

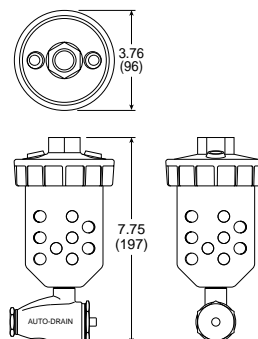
- Metal Bowl without Sight Glass
- Port Size – 1/2 Inch NPTF
- Minimum Supply Pressure – 30 PSIG
- Maximum Supply Pressure – 175 PSIG
- Max. Operating Temperature – 125° F (52° C)
- Body – Zinc
- Bowl – Zinc
- Seals – Buna-N
- Bowl Capacity – 4 oz.
- Weight per Unit – 1 lb.
- Master Pack Quantity – 24
- Master Pack Weight – 25 lbs.

**D11-04W Tank Drain****Features**

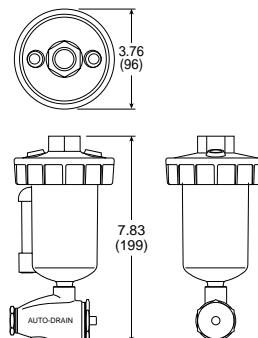
- Metal Bowl with Sight Glass
- Port Size – 1/2 Inch NPTF
- Minimum Supply Pressure – 30 PSIG
- Maximum Supply Pressure – 175 PSIG
- Max. Operating Temperature – 125° F (52° C)
- Body – Zinc
- Bowl – Zinc
- Seals – Buna-N
- Bowl Capacity – 4 oz.
- Weight per Unit – 1 lb.
- Master Pack Quantity – 24
- Master Pack Weight – 25 lbs.

**608-04D Tank Drain****Features**

- Polycarbonate Bowl with Polyethylene Bowl Guard
- Port Size – 1/2 Inch NPTF
- Minimum Supply Pressure – 30 PSIG
- Maximum Supply Pressure – 150 PSIG
- Max. Operating Temperature – 125° F (52° C)
- Body – Aluminum
- Bowl – Polycarbonate
- Seals – Buna-N
- Bowl Capacity – 8 oz.
- Weight per Unit – 2 lb.
- Master Pack Quantity – 8
- Master Pack Weight – 17 lbs.

**608-04DW Tank Drain****Features**

- Metal Bowl with Sight Glass
- Port Size – 1/2 Inch NPTF
- Minimum Supply Pressure – 30 PSIG
- Maximum Supply Pressure – 255 PSIG
- Max. Operating Temperature – 125° F (52° C)
- Body – Aluminum
- Bowl – Zinc
- Seals – Buna-N
- Bowl Capacity – 8 oz.
- Weight per Unit – 2 lb.
- Master Pack Quantity – 8
- Master Pack Weight – 17 lbs.





# Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

## **WARNING:**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:**

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

## 1. GENERAL INSTRUCTIONS

- 1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- 1.3. Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See [www.iso.org](http://www.iso.org) for ordering information.
- 1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
  - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
  - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
  - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
  - Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices:** Safety devices should not be removed, or defeated.
- 1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.
- 1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to [www.parker.com](http://www.parker.com), for telephone numbers of the appropriate technical service department.

## 2. PRODUCT SELECTION INSTRUCTIONS

- 2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- 2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:
  - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
  - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, ketones, esters or certain alcohols.
  - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

## Safety Guide

**2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

- 2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
  - Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
  - Consult product labeling or product literature for pressure rating limitations.

### 3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

- 3.1. Component Inspection:** Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.
- 3.2. Installation Instructions:** Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at [www.parker.com](http://www.parker.com).
- 3.3. Air Supply:** The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

### 4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

- 4.1. Maintenance:** Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.
- 4.2. Installation and Service Instructions:** Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at [www.parker.com](http://www.parker.com).
- 4.3. Lockout / Tagout Procedures:** Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)
- 4.4. Visual Inspection:** Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
  - Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
  - Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
  - Any observed improper system or component function: Immediately shut down the system and correct malfunction.
  - Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

**Caution: Leak detection solutions should be rinsed off after use.**

- 4.5. Routine Maintenance Issues:**
- Remove excessive dirt, grime and clutter from work areas.
  - Make sure all required guards and shields are in place.
- 4.6. Functional Test:** Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.
- 4.7. Service or Replacement Intervals:** It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
  - Government and / or industrial standards.
  - When failures could result in unacceptable down time, equipment damage or personal injury risk.
- 4.8. Servicing or Replacing of any Worn or Damaged Parts:** To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
  - Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
  - Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
  - Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
  - After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
  - Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.
- 4.9. Putting Serviced System Back into Operation:** Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

## Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods or work described will be referred to as "Products".

**1. Terms and Conditions.** Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at [www.parker.com/saleterms/](http://www.parker.com/saleterms/). Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.

**2. Price Adjustments; Payments.** Prices stated on Seller's quote or other documentation offered by Seller are valid for 30 days, and do not include any sales, use, or other taxes unless specifically stated. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and is due 30 days from the date of invoice or such other term as required by Seller's Credit Department, after which Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

**3. Delivery Dates; Title and Risk; Shipment.** All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

**4. Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

**5. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.

**6. LIMITATION OF LIABILITY.** UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.

**7. User Responsibility.** The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

**8. Loss to 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 consecutive years have elapsed without Buyer ordering the items 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. Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. 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 Products, 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.

**10. Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

**11. Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright

infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

**12. Cancellations and Changes.** Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

**13. Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

**14. Force Majeure.** Seller does not assume the risk 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, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

**15. Waiver and Severability.** Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

**16. Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) the dissolves or liquidates all or a majority of its assets.

**17. Governing Law.** This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

**18. 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 Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this Agreement 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product 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 Products 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 Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

**19. Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

**20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act.** Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which the Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

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