



Air Control Valves

P2LAX – 1/8" P2LBX – 1/4" P2LCX – 3/8" P2LDX – 1/2"

Section H www.parker.com/pneu/vikingx



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BOLD ITEMS ARE MOST POPULAR.

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Single Solenoid

Single Pressure At Inlet Port 1:

De-energized position - Solenoid operator #14 de-energized. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5. Energized position - Solenoid operator #14 energized. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Single Remote Pilot

Single Pressure At Inlet Port 1:

#12

Normal position - Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5. Operated position – Maintained air signal at port 14.

Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Double Solenoid



Single Pressure At Inlet Port 1:

Solenoid operator #14 energized last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected to exhaust port 3.

Solenoid operator #12 energized last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.



to exhaust port 3.

Single Pressure At Inlet Port 1:

Momentary air signal at port 14 last. Pressure at inlet port 1 connected to outlet port 4. Outlet port 2 connected

Momentary air signal at port 12 last. Pressure at inlet port 1 connected to outlet port 2. Outlet port 4 connected to exhaust port 5.



Double Solenoid 3-Position

With #12 operator energized - inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator energized - inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Closed Center

All ports blocked in the center position.

Vented Center

Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Pressurized Center

Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.



Double Remote Pilot 3-Position

With #12 operator signaled - inlet port 1 connected to cylinder port 2, cylinder port 4 connected to exhaust port 5.

With #14 operator signaled - inlet port 1 connected to cylinder port 4, cylinder port 2 connected to exhaust port 3.

Closed Center

All ports blocked in the center position.

Vented Center

Cylinder ports 2 and 4 connected to exhaust ports 3 and 5 in center position. Port 1 is blocked.

Pressurized Center

Pressure port 1 connected to cylinder ports 2 and 4, and exhaust ports 3 and 5 blocked in center position.



Specifications

P2LAX	P2LAX: 0.7 Cv
P2LBX	P2LBX: 1.3 Cv
P2LCX	P2LCX: 2.5 Cv
P2LDX	P2LDX: 2.7 Cv

Materials of Construction

- Valve Body: Anodized Aluminum
- Spool: Aluminum & Nitrile Rubber
- End Caps: Anodized Aluminum
- Coils: Thermoplastic
- Fasteners: Stainless Steel

Operating Temperature

- Normal: 14°F to 122°F (-10°C to 50°C)
- Extreme: -40°F to 158°F (-40°C to 70°C)

Operating Pressure

 Normal: Vacuum to 145 PSIG (Vacuum to 10 bar) TREME

TREME

• Extreme: Vacuum to 232 PSIG (Vacuum to 16 bar)

Ports

P2LAX: 1/8" NPT & BSPP

- P2LBX: 1/4" NPT & BSPP
- P2LCX P2LCX: 3/8" NPT & BSPP
- P2LDX: 1/2" NPT & BSPP

Compliance / Approval

- IP65 Rated
- ATEX Option Available

Solenoids

- 2.5 to 7.3 Watt Conduit, Grommet, 22mm & 30mm 3-Pin (DIN 43650), Hazardous Duty, Intrinsically Safe
- 12VDC to 240VAC

Mounting

- Inline
- IEM Aluminum Bar



P2LAX Double Solenoid, Inline, 14 End Energized



P2LBX Double Solenoid, 3-Position APB Shown De-energized



P2LCX Single Solenoid, Inline, Spring Return Shown De-energized



P2LDX Single Solenoid, Inline, Spring Return Shown De-energized



Exhaust





Double Solenoid

2-Position

Single Solenoid 2-Position





P2LAX	P2LAX591ESHDDB47	121/00	
	P2LAX591ESHDDG47	IZVDC	0704
	P2LAX591ESHDDB48	241/00	0.7 CV
	P2LAX591ESHDDG48	24000	
P2LBX	P2LBX592ESHDDB47	121/00	
	P2LBX592ESHDDG47	IZVDC	1204
	P2LBX592ESHDDB48	241/00	1.5 CV
	P2LBX592ESHDDG48	24000	
P2LCX	P2LCX593ESHDDB47	121/00	
	P2LCX593ESHDDG47	12000	25 04
	P2LCX593ESHDDB48	241/00	2.5 60
	P2LCX593ESHDDG48	24000	
P2LDX	P2LDX594ESHDDB47	121/00	
	P2LDX594ESHDDG47	12000	27.04
	P2LDX594ESHDDB48	241/DC	2.7 60
	P2LDX594ESHDDG48	24000	





P2LAX	P2LAX591EEHDDB47		
	P2LAX591EEHDDG47	12VDC	0.7.0.
	P2LAX591EEHDDB48	241/00	0.7 CV
	P2LAX591EEHDDG48	24000	
P2LBX	P2LBX592EEHDDB47	10/00	
	P2LBX592EEHDDG47	IZVDC	1204
	P2LBX592EEHDDB48		1.3 CV
	P2LBX592EEHDDG48	24VDC	
P2LCX	P2LCX593EEHDDB47	121/00	
	P2LCX593EEHDDG47	12000	25.04
	P2LCX593EEHDDB48	241/00	2.5 CV
	P2LCX593EEHDDG48	24000	
P2LDX	P2LDX594EEHDDB47	121/00	
	P2LDX594EEHDDG47	12000	2704
	P2LDX594EEHDDB48		2.7 60
	P2LDX594EEHDDG48	24VDC	

Double Solenoid

3-Position All Ports Blocked







TREME



	All Ports Blocked		
P2LAX	P2LAX691EEHDDG47	12VDC	0.5.01
	P2LAX691EEHDDG48	24VDC	0.5 CV
P2LBX	P2LBX692EEHDDG47	12VDC	0.0.04
	P2LBX692EEHDDG48	24VDC	0.9 CV
P2LCX	P2LCX693EEHDDG47	12VDC	1 0 0 1
	P2LCX693EEHDDG48	24VDC	1.0 CV
P2LDX	P2LDX694EEHDDG47	12VDC	10.00
	P2LDX694EEHDDG48	24VDC	1.9 CV



Center Exhaust			
P2LAX	P2LAX891EEHDDG47	12VDC	0.5.01
	P2LAX891EEHDDG48	24VDC	0.5 CV
P2LBX	P2LBX892EEHDDG47	12VDC	0.0.04
	P2LBX892EEHDDG48	24VDC	0.9 CV
P2LCX	P2LCX893EEHDDG47	12VDC	1000
	P2LCX893EEHDDG48	24VDC	1.0 CV
P2LDX	P2LDX894EEHDDG47	12VDC	10.00
	P2LDX894EEHDDG48	24VDC	1.9 CV

NOTE: See Page H5 for Valve Description.





NOTE: P2LCX and P2LDX Solenoid Operated Valves have a maximum pressure rating of 175 PSIG (12 bar).

BOLD ITEMS ARE MOST POPULAR.



*Not Available with 3-Position Valves.



Single Remote Pilot 2-Position



0.7 Cv

1.3 Cv

2.5 Cv

2.7 Cv

Double Remote Pilot 2-Position



, TREME





P2LAX591PS

P2LBX592PS

P2LCX593PS

P2LDX594PS

Mar. 1	
a star	
- 1100 - 1100	
- Ar	100

#12

P2LAX	P2LAX591PP	0.7 Cv
P2LBX	P2LBX592PP	1.3 Cv
P2LCX	P2LCX593PP	2.5 Cv
P2LDX	P2LDX594PP	2.7 Cv

P2LAX

P2LBX

P2LCX

P2LDX

3-Position All Ports Blocked 3-Position Center Exhaust

#14 --- Þ

All Ports Blocked





All Ports Blocked		
P2LAX691PP	0.5 Cv	P2LAX P2
P2LBX692PP	0.9 Cv	P2LBX P2
P2LCX693PP	1.8 Cv	P2LCX P2
P2LDX694PP	1.9 Cv	P2LDX P

#12



Center Exhaust		
P2LAX	P2LAX891PP	0.5 Cv
P2LBX	P2LBX892PP	0.9 Cv
P2LCX	P2LCX893PP	1.8 Cv
P2LDX	P2LDX894PP	1.9 Cv

NOTE: See Page H7 for Valve Description.



P2LAX

P2LBX

P2LCX

P2LDX

Manual & Remote Air Pilot Operated Valves

Vacuum to 232 PSIG (Vacuum to 16 bar) -40°F to 158°F (-40°C to 70°C)



7

8

	Operators / Return
PP	Double Remote Pilot
PS*	Single Remote Pilot, Spring Return
VS*	Spring Return Lever, 2-Position, 90° to Ports, P2LA Only
VV*	Lever, Detent, 2-Position, 90° to Ports, P2LA Only
11	Spring Centered Lever, 3-Position, 90° to Ports, P2LA Only
22	Lever, Detent, 3-Position, 90° to Ports, P2LA Only
* Not A	railable with 3-Position Valves

		Main Port Thread
1	1	G1/8 (P2LA)
1	2	G1/4 (P2LB)
1	3	G3/8 (P2LC)
1	4	G1/2 (P2LD)
9	1	1/8" NPT (P2LA)
9	2	1/4" NPT (P2LB)
9	3	3/8" NPT (P2LC)
9	4	1/2" NPT (P2LD)

BOLD ITEMS ARE MOST POPULAR.

3-Position Valve PC

3-Position Valve CE





REME



Double Solenoid

Single Solenoid 2-Position



P2LAX	P2LAX591ESNDDB49		
	P2LAX591ESNDDG49	24000	0704
	P2LAX591ESNDDB53	1201/00	0.7 CV
	P2LAX591ESNDDG53	120VAC	
P2LBX	P2LBX592ESNDDB49		
	P2LBX592ESNDDG49	24000	1204
	P2LBX592ESNDDB53	1201/00	1.5 CV
	P2LBX592ESNDDG53	120VAC	
P2LCX	P2LCX593ESNDDB49	241/00	
	P2LCX593ESNDDG49	24000	25.04
	P2LCX593ESNDDB53	1201/40	2.5 60
	P2LCX593ESNDDG53	120VAC	
P2LDX	P2LDX594ESNDDB49	241/00	
	P2LDX594ESNDDG49	24000	2704
	P2LDX594ESNDDB53	1201/00	2.7 60
	P2LDX594ESNDDG53	120VAC	





P2LAX	P2LAX591EENDDB49	24VDC	
	PZLAX59TEENDDG49		07 CV
	P2LAX591EENDDB53	1201/40	0.7 00
	P2LAX591EENDDG53	120040	
P2LBX	P2LBX592EENDDB49	241/00	
	P2LBX592EENDDG49	24000	1204
	P2LBX592EENDDB53	1201/40	1.5 CV
	P2LBX592EENDDG53	120VAC	
P2LCX	P2LCX593EENDDB49		
	P2LCX593EENDDG49	24000	25 04
	P2LCX593EENDDB53	1201/00	2.5 CV
	P2LCX593EENDDG53	120040	
P2LDX	P2LDX594EENDDB49	241/00	
	P2LDX594EENDDG49	24000	2704
	P2LDX594EENDDB53	1201/00	2.7 00
	P2LDX594EENDDG53	120VAC	

Double Solenoid

3-Position All Ports Blocked 3-Position Center Exhaust



	All Ports Blocked		
P2LAX	P2LAX691EENDDG49	24VDC	0.5.00
	P2LAX691EENDDG53	120VAC	0.5 CV
P2LBX	P2LBX692EENDDG49	24VDC	0.0.0
	P2LBX692EENDDG53	120VAC	0.9 CV
P2LCX	P2LCX693EENDDG49	24VDC	1 0 0 1
	P2LCX693EENDDG53	120VAC	1.0 CV
P2LDX	P2LDX694EENDDG49	24VDC	10.00
	P2LDX694EENDDG53	120VAC	1.9 CV



Center Exhaust			
P2LAX	P2LAX891EENDDG49	24VDC	
	P2LAX891EENDDG53	120VAC	0.5 CV
P2LBX	P2LBX892EENDDG49	24VDC	0.0.04
	P2LBX892EENDDG53	120VAC	0.9 CV
P2LCX	P2LCX893EENDDG49	24VDC	1 0 0 /
	P2LCX893EENDDG53	120VAC	1.8 CV
P2LDX	P2LDX894EENDDG49	24VDC	10.04
	P2LDX894EENDDG53	120VAC	1.9 CV

NOTE: See Page H9 for Valve Description.





Single & Double Solenoid Operated Valves Vacuum to 145 PSIG (Vacuum to 10 bar) 14°F to 122°F (-10°C to 50°C) 91 || E | Α 5 S X G **49 P2** D Valve Size Voltage / Frequency 1/8" А 42 1/4" В 45 C 3/8' 47* 1/2" D 48' 49 53 57 Valve Type / Function Blank Internal Pilot Supply to Solenoid * Only Available with Enclosures "A", "B" & "G" 2-Position Valve 5 Additional voltages are available upon request. **3-Position Valve APB** 6 Contact Customer Support for more information. 3-Position Valve PC 7 **3-Position Valve CE** 8 Enclosures / Lead Length External Pilot Supply to Solenoids through Ports #12 & #14 30mm Square 3-Pin - ISO 4400 2-Position Valve Ν А Form A (Male Only) 3-Position Valve APB Ρ 22mm Rectangular 3-Pin -3-Position Valve PC Q в Type B Industrial (Male Only) 3-Position Valve CE R E* Intrinsically Safe, FM / CSA F Hazardous Duty, FM / CSA G Grommet - 18" Leads Н 1/2" NPT Conduit - 18" Leads **Main Port Thread** Solenoid Pilot Operator Less Coil Ν G1/8 (P2LA) 11 *Only Available with Voltage Code "49" & Override Option "A". G1/4 (P2LB) 12 G3/8 (P2LC) 13 Overrides G1/2 (P2LD) 14 No Override A* 1/8" NPT (P2LA) 91 С Flush - Locking 1/4" NPT (P2LB) 92 D Extended Non-Locking 3/8" NPT (P2LC) 93 *Only Available with Enclosure Option "E". 1/2" NPT (P2LD) 94 Solenoid Pilot Type **12 End Operator** D **Pilot Exhaust Vented** Double Solenoid Operated Valve E Ν Tapped Pilot Exhaust (M5) Single Solenoid Spring Return S*

24VAC

12VDC

120VAC

240VAC

12 VDC Mobile

24 VDC Mobile 24VDC

Valve Less Coil

BOLD ITEMS ARE MOST POPULAR.



*Not Available with 3-Position Valves



BOLD ITEMS ARE MOST POPULAR,





Length Option A) not available on IEM Bar Manifold P2LAX or P2LBX.

IEM Bar Manifolds



Manifold Only	Manifold Assembly	## – stations
P2LAXMAXN##NP	AAP2LAXMAXN##NP	02 to 12
P2LBXMAXN##NP	AAP2LBXMAXN##NP	02 to 12
P2LCXMAXN##NP	AAP2LCXMAXN##NP	02 to 12

- · Utilizes Inline mount Viking Xtreme Series valves.
- Kits include: (1) Manifold, (2) Valve Hold Down Bolts per Station, (3) O-rings per Station.
- Note: All IEM bar manifolds are 4-Way only with internal pilot air supply. External pilot supply thru a common "X" port not available.



Manifold Bolts

(1) Plate, (2) Screws, (3) O-rings

Blanking Plate

Kit Number

P2LAXK20P

P2LBXK20P

P2LCXK20P

Туре

P2LAX

P2LBX

P2LCX

Kit includes:

Туре	Kit Number	Qty.
P2LAX	P2LAXK87P	12
P2LBX	P2LBXK87P	12
P2LCX	P2LCXK87P	12

Manifold O-rings

Туре	Kit Number	Qty.
P2LAX	P2LAXK84P	30
P2LBX	P2LBXK84P	18
P2LCX	P2LCXK84P	12







22mm Solenoid Pilot Operators & Coils



22mm Solenoid Pilot Options

The P2FP13*4* (NC) 3/2 solenoid pilot operators are designed for piloting pneumatic control valves with compressed air or other inert gases.

The P2FP operator is available for Normal operating pressures up to 10 bar or the Xtreme maximum operating pressure of 16 bar and wide band voltage tolerances required for mobile applications.

Corrosion Resistant Design

The pilot valve body is manufactured in thermoplastic PA6 material and the core tube brass / stainless steel. The plunger / core is made from stainless steel and the valve seats from FKM.

Solenoid Pilot Exhaust

These operators all exhaust out of the top of the core tube which is tapped M5. The standard solenoid nut fitted to the core tube is a diffuser nut which allows the exhaust to escape to atmosphere. This nut also minimizes ingress of dirt into the valve through this port. The alternative plastic knurled nut can be specified (refer to part number system) if the exhaust air needs captured and piped away using the M5 tapped port.

Mobile Applications

Viking Xtreme valves are tested to +5g shock and vibration. Solenoid operated valves are designed to operate with wide voltage tolerance bands within the ambient temperature ranges stated in the technical section.

Coils

Coils are wound with enameled copper wire, having a temperature index of 1800C with class F insulation (1550C) and are encapsulated in Thermoplastic resin. When fitted with suitable connector and correct gasket, they give protection to IP65.

ATEX



ATEX is a European Directive (94/9/EC) valid for products to be used within an explosive atmosphere.

Both ATEX certified solenoid, remote pilot and manual operated valves, as well as complete solenoid pilot assemblies are available. See page H13 for a complete list of valves available. For specific information regarding ATEX certification please visit www.parker/pneumatics.

Manual Override Options

The pilot operators can be supplied with locking or nonlocking manual override. The standard manual override is the monostable (spring return) extended brass override. Alternatively the bistable (locking) override can be specified as an alternative for the Normal duty 10 bar option.

Spares

Solenoid operators are available as spares complete with mounting screws and seals. Coils and connectors should be ordered separately unless ATEX certified and intrinsically safe is needed. ATEX certified operators and coils must be ordered together.

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavorable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors / cable plugs with LEDs include this type of circuit protection.

Materials

Pilot Valve

Body	Polyamide
Armature Tube:	
Normal Pilot Operator	Brass
Extreme Pilot Operator	Stainless Steel
Plunger & Core	Corrosion resistant Cr-Ni Steel
Seals	FKM (Viton™)
Screws	Stainless Steel
Coil	
Encapsulation Material	Thermoplastic





Pilot Operator Kits





Solenoid Kits

P2F C	A	4	49
Type Solenoid Kit C			42
Enclosures / Lead Length			47* 48*
30mm Square 3-Pin – ISO 4400 Form A (Male Only) 22mm Rectangular 3-Pin – Type B Industrial (Male Only)	A B		49 53
Hazardous Duty, FM / CSA	F*		57
Grommet - 18" Leads	G		Blank
1/2" NPT Conduit - 18" Leads	Н		* Only Av
Grommet 72" Leads	Q		Addition
1/2" Conduit 72" Leads	R		CONTACT

* Only Available with Voltage Codes "45", "49", "53" & "57". Not for use with the Xtreme Version (-40°C to 70°C).

	Voltage / Frequency
42	24VAC
45	12VDC
47*	12 VDC Mobile
48*	24 VDC Mobile
49	24VDC
53	120VAC
57	240VAC
Blank	Valve Less Coil
* Only Availab	le with Enclosures "A", "B" & "G".

Additional voltages are available upon request. Contact Customer Support for more information.

Solenoid Enclosures

Overrides



Option A 30mm Square, 3-Pin ISO 4400, DIN 43650A



Option B 22mm Rectangular, 3-Pin DIN, Type B Industrial



Option G & Q Grommet, 18" or 72" Leads



Option H & R 1/2" Conduit, 18" or 72" Leads

BOLD OPTIONS ARE MOST POPULAR

Parker Hannifin Corporation Pneumatic Division Richland, Michigan www.parker.com/pneumatics

Solenoid Information (Solenoids are rated for continuous duty.)

Voltage			Enclosure "A"		Enclosure "B" to "R"			
ſ	Code	AC AC		DC	Power	Holding	Power	Holding
	Code	60Hz	50Hz		Consumption	(Amps)	Consumption	(Amps)
ſ	42	24	22		3.9VA	.14	7.3VA	.31
	45	_	_	12	2.6W	.21	4.6W	.37
ſ	47*	—	—	12	6.2W	.52	5.5W	.46
	48*	—	—	24	6.8W	.29	6.0W	.25
	49	—	_	24	2.7W	.11	4.8W	.20
	53	120	110	_	4.1VA	.04	6.3VA	.05
	57	240	230	_	3.7VA	.02	6.4VA	.03
,	Mobile	voltages.	Solenoid	Voltage C	haracteristics for all	coils located o	on page 19.	

ATEX Certified Single & Double Solenoid Operated Valves Vacuum to 145 PSIG (Vacuum to 10 bar) 14°F to 122°F (-10°C to 50°C)



ATEX Certified Solenoid Pilot Assemblies



NOTE: All Kits include a 3 Meter Sealed Cable with Assembly.





Intrinsically Safe Solenoid Valves ("E" Option)

Hazardous Location Class:

Class I; Groups A, B, C & D

Class II; Groups E, F, & G

Class III; Div. I

For use in low voltage (24VDC) Intrinsically Safe applications. NO OTHER VOLTAGE IS APPROVED.

Comes standard with non-lighted solenoid connector.

Must be connected to an FM approved Barrier.

For dimensions, reference standard solenoid models. Maximum internally piloted valve pressure is 115 PSIG. Pressures to 145 PSIG can be used when external pilot is utilized and pilot pressure is limited to 115 PSIG.



Intrinsically Safe Solenoid Pilot Assembly Kits

Part Number	Description
P2FS13N1AE49	24VDC

Hazardous Duty Solenoid Valves ("F" Option)

Hazardous Location Class:

Class I; Zone I EX, M, II & T4

Class I; Groups A, B, C, & D

Class II & III; Div. I, Groups E, F, & G

Comes standard with 1/2" conduit connection.

Voltage Range = $+10^{\circ}$ +/- 10%

Ambient Temp. Range = -20°C (-4°F) to 60°C (140°F) Duty Factor = 100% IP65 Rated (with Connected Conduit Connector)

Notes:

- 1. Maximum non-hazardous location voltage not to exceed 250V RMS.
- 2. Connect per Barrier Manufacturers instructions.
- 3. Factory Mutual requires connections per ISA RP 12.6 instructions.
- 4. CSA requires "Installation to be in accordance with the Canadian Electrical Code, Part I."



Option F Hazardous Duty FM / CSA

Internal to External Pilot Conversion (Size A & B Only)

To convert from Internal to External Pilot Valve, simply remove the (2) fasteners that attach the end cap to the valve body. Rotate the end cap 180° and attach back to the valve body. For single solenoid valves, only the 14-End needs to be rotated. For double solenoid valves, both ends must be converted for proper function.

The 12 & 14-Ports are always tapped no matter what Valve Type / Function is selected. For Internal Pilot Function, ports do NOT need to be plugged.





Tab Orientation of End Cap for Spring Return and External (Remote) Pilot Valve.



Operating Temperature

- Normal 14°F to 122°F (-10°C to 50°C)
- Extreme.....-40°F to 158°F (-40°C to 70°C)

Flow Rating

Valve Size	Port Size	2-Position	3-Position
P2LAX	1/8"	0.7	0.5
P2LBX	1/4"	1.3	0.9
P2LCX	3/8"	2.5	1.8
P2LDX	1/2"	2.7	1.9

Operating Pressure Maximum: Normal.....145 PSIG (10 bar) Extreme.....232 PSIG (16 bar)

Minimum:

	Minimum PSIG (bar)			
valve Type - Internal Pilot	P2LAX	P2LBX	P2LCX	P2LDX
Single Sol - Spring Return	46	51	51	51
	(3.2)	(3.5)	(3.5)	(3.5)
Single Remote Pilot -	46	51	51	51
Spring Return	(3.2)	(3.5)	(3.5)	(3.5)
Double Solenoid -	22	22	22	22
2-Position	(1.5)	(1.5)	(1.5)	(1.5)
Double Remote Pilot -	22	22	22	22
2-Position	(1.5)	(1.5)	(1.5)	(1.5)
Double Solenoid - 3-Position	55	55	55	55
(APB, PC, CE)	(3.8)	(3.8)	(3.8)	(3.8)
Double Remote Pilot - 3-Position	55	55	55	55
(APB, PC, CE)	(3.8)	(3.8)	(3.8)	(3.8)

Valve Type - External Pilot	P2LAX	P2LBX	P2LCX	P2LDX
All Viking Series		Vac	uum	

Response Time

			Volu	ıme		
Valve Size	Port Size	0 Cu. In. Test Chamber		20 Cu. Chai	n. Test 1ber	
0120	0120	Fill (mSec)	Exhaust (mSec)	haust Fill Ex 1Sec) (mSec) (r		
2-Position	Single Sole	noid / Sprir	ng Return			
P2LAX	1/8"	17.3	18.0	111.1	210.7	
P2LBX	1/4"	19.4	19.7	62.8	92.2	
2-Position	2-Position Double Solenoid					
P2LAX	1/8"	12.0	12.9	108.7	213.7	
P2LBX	1/4"	13.4	13.5	56.9	86.4	



Non-mobile Coils

+10% / -10% for all Coils with Normal and Extreme Operators

Mobile Coils - Normal Pilot Operator

22mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

		Operating Temperature				
nlet bar)		-10°C	+10°C	+50°C		
l e	3	+30 / -25%	+30 / -20%	+25 / -15%		
imu ssu	6	+30 / -30%	+30 / -25%	+25 / -20%		
Pre	8	+30 / -30%	+30 / -30%	+25 / -25%		
	10	+30 / -30%	+30 / -30%	+25 / -30%		

30mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

		Operating Temperature				
nlet ɔar)		-10°C	+10°C	+50°C		
l e (l	3	+30 / -30%	+30 / -30%	+25 / -30%		
imu ssu	6	+30 / -30%	+30 / -30%	+25 / -30%		
Min Pre:	8	+30 / -30%	+30 / -30%	+25 / -30%		
	10	+30 / -30%	+30 / -30%	+25 / -30%		

Mobile Coils - Extreme Pilot Operator

22mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

:	Operating Temperature					
nlet bar)		-40°C	+10°C	+50°C	+70°C	
lm l	4	+30 / -25%	+30 / -25%	+30 / -10%	+20 / -10%	
imu ssu	8	+30 / -30%	+30 / -25%	+30 / -15%	+20 / -15%	
Min Pre	12	+30 / -30%	+30 / -30%	+30 / -15%	+20 / -15%	
	16	+30 / -30%	+30 / -30%	+30 / -20%	+20 / -20%	

30mm 12 & 24VDC - Mobile (47 & 48 Voltage Code)

		Operating Temperature					
nlet bar)		-40°C	+10°C	+50°C	+70°C		
m l le (4	+30 / -30%	+30 / -30%	+25 / -30%	+15 / -30%		
imu ssu	8	+30 / -30%	+30 / -30%	+25 / -30%	+15 / -30%		
Pre	12	+30 / -30%	+30 / -30%	+25 / -30%	+15 / -30%		
	16	+30 / -30%	+30 / -30%	+25 / -30%	+15 / -30%		

Note: All table ratings are based on 100% continuous duty and 5G shock vibration. At 50% continuous duty all ratings are +30% / -30% for all Temperatures and Pressures.



Female Electrical Connectors / Accessories 30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure "A")

Connector	Connector with 6' (2m) Cord	Description
PS2028BP	PS2028JBP	Unlighted
PS203279BP	PS2032J79BP*	Light - 6-48V, 50/60Hz, 6-48VDC
PS203283BP	PS2032J83BP*	Light – 120V/60Hz
PS203283BP	N/A	Light – 240V/60Hz



* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 8 to 10mm (0.31 to 0.39 Inch); Contact Spacing: 18mm

22mm Rectangular 3-Pin – Type B Industrial
(Use with Enclosure "B")ConnectorConnector
with 6' (2m) CordDescriptionPS2429BPPS2429JBPUnlightedPS243079BPPS2430J79BP*Light – 24V60Hz, 24VDC



* LED with surge suppression.

PS2430J83BP*

N/A

PS243083BP

PS243087BP

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed. Engineering Data:

Light - 120V/60Hz

Light - 240V/60Hz

Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

Exhaust Mufflers

Pipe Thread	Part Number
M5	P6M-PAC5
1/8" NPT	EM12
1/4" NPT	EM25
3/8" NPT	EM37
1/2" NPT	EM50



P6M - Plastic; EM - Sintered Bronze

Plastic Silencers

Thread	Part Number		Α	В
Size	NPT	BSPT	(mm)	(mm)
M5	AS-5		.43 (11)	.32 (8)
1/8"	ASN-6	AS-6	1.57 (40)	.63 (16)
1/4"	ASN-8	AS-8	2.56 (65)	.83 (21)
3/8"	ASN-10	AS-10	3.35 (85)	.98 (25)
1/2"	ASN-15	AS-15	3.74 (95)	1.18 (30)





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Viking Xtreme Series Valves Fittings & Exhaust Protectors

Exhaust Protector



Features

- 1/8 and 1/4 NPT male sizes
- Fitted with a Brass Pipe Adapter and a Fluorocarbon Membrane
- Resistant to Rust, Clog, Wash Down and Contamination

Applications

These protectors are intended for mobile applications, quick venting applications and alternative exhaust port breathers that require protection against clogging.

Ideal for valves exposed to harsh environmental conditions (which can cause a "caking up" in the exhaust pipe ports where the bronze mufflers or breather vents are installed).

Particularly suitable for time-sensitive applications such as axle-lift suspensions or pushers or tag axles.

Specifications

Operating Pressure	0 – 150 PSIG
	(0 to 10 bar, 0 to 1034 kPa)
Operating Temperature	-40°F to 158°F (-40°C to 70°C)
Material:	
Body and Pipe Adapter	Brass
Membrane	Fluorocarbon

Flow Data (SCFM)

Part Number	Size	60 PSIG Inlet	90 PSIG Inlet	125 PSIG Inlet
E90016	1/8"	40.1	56.5	75.5
E90017	1/4"	44.6	62.7	83.5





68PM Male Connector



		• · · = · ·		
Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PM-2-1	1/8	1/16	3/82	0.93
68PM-2-2	1/8	1/8	7/16	0.88
68PM-5/32-1	5/32	1/16	3/8	0.95
68PM-5/32-2	5/32	1/8	7/16	0.74
68PM-5/32-4	5/32	1/4	9/16	0.99
68PM-3-1	3/16	1/16	7/16	0.95
68PM-3-2	3/16	1/8	7/16	0.92
68PM-3-4	3/16	1/4	9/16	1.10

68PMT Male Connector





Part No.	Tube Size	Pipe Thread (NPTF)	C Hex	L
68PMT-4-2	1/4	1/8	1/2	1.06
68PMT-4-4	1/4	1/4	9/16	1.19
68PMT-4-6	1/4	3/8	3/4	1.27
68PMT-6-2	3/8	1/8	3/4	1.37
68PMT-6-4	3/8	1/4	3/4	1.43
68PMT-6-6	3/8	3/8	3/4	1.33
68PMT-6-8	3/8	1/2	7/8	1.38
68PMT-8-4	1/2	1/4	7/8	1.72
68PMT-8-6	1/2	3/8	7/8	1.52
68PMT-8-8	1/2	1/2	7/8	1.44
68PMT-10-6	5/8	3/8	1	1.88
68PMT-10-8	5/8	1/2	1	1.88
68PMT-12-8	3/4	1/2	1-3/16	2.03

169PMNS Male Elbow Non-Swivel 90°



Part No.	Tube Size	Pipe Thread (NPTF)	Wrench Flats	I	N
169PMNS-2-2	1/8	1/8	3/8	0.86	0.68
169PMNS-5/32-2	5/32	1/8	3/8	0.88	0.68
169PMNS-3-2	3/16	1/8	3/8	0.75	0.67
169PMNS-3-4	3/16	1/4	1/2	0.74	0.93



169PMT Male Elbow Swivel 90°



		Pipe				
Part	Tube	Thread	Wrench	В		
No.	Size	(NPTF)	Flats	Hex	L	Ν
169PMT-4-2	1/4	1/8	13/32	7/16	0.84	1.21
169PMT-4-4	1/4	1/4	13/32	9/16	0.84	1.43
169PMT-4-6	1/4	3/8	13/32	11/16	0.84	1.43
169PMT-6-2	3/8	1/8	9/16	9/16	1.11	1.41
169PMT-6-4	3/8	1/4	9/16	9/16	1.11	1.58
169PMT-6-6	3/8	3/8	9/16	11/16	1.11	1.58
169PMT-6-8	3/8	1/2	9/16	7/8	1.11	1.79
169PMT-8-4	1/2	1/4	11/16	5/8	1.27	1.73
169PMT-8-6	1/2	3/8	11/16	3/4	1.27	1.81
169PMT-8-8	1/2	1/2	11/16	7/8	1.27	1.96
169PMT-10-6	5/8	3/8	7/8	3/4	1.53	2.03
169PMT-10-8	5/8	1/2	7/8	7/8	1.53	2.18

169PMTL Male Elbow Long Non-Swivel 90°





		Pipe				
Part	Tube	Thread	Wrench	в		
No.	Size	(NPTF)	Flats	Hex	L	Ν
169PMTL-6-4	3/8	1/4	9/16	9/16	1.06	1.63
169PMTL-6-6	3/8	3/8	9/16	7/8	1.19	2.50
169PMTL-6-8	3/8	1/2	9/16	7/8	1.19	2.50
169PMTL-8-8	1/2	1/2	11/16	7/8	1.22	2.50
169PMTL-10-8	5/8	1/2	7/8	7/8	1.46	2.50

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169PMTNS Male Elbow Non-Swivel 90°



		Pipe			
Part	Tube	Thread	Wrench		
No.	Size	(NPTF)	Flats	L	Ν
169PMTNS-4-2	1/4	1/8	1/2	0.84	0.72
169PMTNS-4-4	1/4	1/4	1/2	0.84	0.90
169PMTNS-4-6	1/4	3/8	1/2	0.84	1.06
169PMTNS-6-2	3/8	1/8	9/16	1.05	0.75
169PMTNS-6-4	3/8	1/4	9/16	1.05	0.94
169PMTNS-6-6	3/8	3/8	3/4	1.05	0.94
169PMTNS-6-8	3/8	1/2	11/16	1.12	1.26
169PMTNS-8-4	1/2	1/4	11/16	1.17	1.06
169PMTNS-8-6	1/2	3/8	11/16	1.22	1.06
169PMTNS-8-8	1/2	1/2	11/16	1.22	1.26
169PMTNS-10-6	5/8	3/8	7/8	1.46	1.11
169PMTNS-10-8	5/8	1/2	7/8	1.46	1.32
169PMTNS-12-8	3/4	1/2	1	1.81	1.44

171PMTNS Male Run Tee Non-Swivel



	Tube	Tube	Pipe				
Part	1	2	Thread	Wrench	า		
No.	Size	Size	(NPTF)	Flats	L1	L2	Ν
171PMTNS-4-4	1/4	1/4	1/4	15-32	0.91	0.91	0.94
171PMTNS-4-6-4	1/4	3/8	1/4	5/8	0.93	1.21	0.97
171PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
171PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	0.93	0.97
171PMTNS-6-4-6	3/8	1/4	3/8	5/8	1.22	0.97	0.93
171PMTNS-6-6	1/2	3/8	3/8	5/8	1.21	1.27	0.97
171PMTNS-6-8	1/2	3/8	1/2	5/8	1.17	1.27	1.26
171PMTNS-8-4	1/2	1/2	1/4	7/8	1.28	1.27	1.06

172PMT Male Branch Tee Swivel



		Pipe				
Part	Tube	Thread	Wrench	С		
No.	Size	(NPTF)	Flats	Hex	L	Ν
172PMT-4-2	1/4	1/8	1/2	7/16	0.85	1.25
172PMT-4-4	1/4	1/4	1/2	9/16	0.85	1.43
172PMT-6-2	3/8	1/8	5/8	9/16	1.22	1.66
172PMT-6-4	3/8	1/4	5/8	5/8	1.22	1.83
172PMT-6-6	3/8	3/8	5/8	3/4	1.22	1.83
172PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.73
172PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.79
172PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.97

171PMT Male Run Tee Swivel



		Pipe				
Part	Tube	Thread	Wrench	С		
No.	Size	(NPTF)	Flats	Hex	L	Ν
171PMT-4-2	1/4	1/8	1/2	7/16	.85	1.25
171PMT-4-4	1/4	1/4	1/2	9/16	.85	1.48
171PMT-4-6	1/4	3/8	1/2	11/16	.85	1.43
171PMT-6-4	3/8	1/4	5/8	9/16	1.21	1.83
171PMT-6-6	3/8	3/8	5/8	11/16	1.21	1.83
171PMT-8-4	1/2	1/4	7/8	5/8	1.27	1.74
171PMT-8-6	1/2	3/8	7/8	3/4	1.27	1.83
171PMT-8-8	1/2	1/2	7/8	7/8	1.27	1.99

172PMTNS Male Branch Tee Non-Swivel



	Tube	Tube	Pipe				
Part	1	2	Thread Wrench				
No.	Size	Size	(NPTF)	Flats	L1	L2	Ν
172PMTNS-4-2	1/4	1/4	1/8	1/2	0.91	0.91	0.78
172PMTNS-6-4	3/8	3/8	1/4	5/8	1.21	1.21	0.97
172PMTNS-6-4-4	3/8	1/4	1/4	5/8	1.21	.93	0.97
172PMTNS-6-6	3/8	3/8	3/8	5/8	1.21	1.21	0.97
172PMTNS-6-8	3/8	3/8	1/2	7/8	1.17	1.17	1.26
172PMTNS-8-6	1/2	1/2	3/8	7/8	1.28	1.28	1.06
172PMTNS-8-6-8	1/2	3/8	1/2	7/8	1.25	1.25	1.25
172PMTNS-8-8	1/2	1/2	1/2	7/8	1.34	1.25	1.25

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

MARNING:

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 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, 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, keytones, 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.



- 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.
- **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.
- 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.





The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors, are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. 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 such item, when communicated to Parker Hannifin Corporation, its subsidiaries or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDINGTHEFOREGOING, THEREARENOWARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGN OR SPECIFICATIONS.

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

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 judgements 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.

