



Pneumatic Division
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Installation Instructions: V-382P

PVLB10 / PVLC10
Serial Bus Modules

ISSUED: June, 2001

Supersedes: None

NPR# 2047

PVLB10 / PVLC10 Serial Bus Modules

Installation Instructions

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 **WARNING**

BEFORE SERVICING THIS UNIT!

Hazardous voltages and fluid pressures may be present. Disconnect all external power, BUS connections and air supply prior to the servicing of this device.

 **WARNING**

To avoid unpredictable system behavior that can cause personal injury and property damage:

- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Operate within the manufacturer’s specified pressure, temperature, and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed in these instructions.
- Installation, service, and conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversion, air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or the product does not operate properly, do not put into use.
- Warnings and specifications on the product should not be covered by paint, etc. If masking is not possible, contact your local representative for replacement labels.

DeviceNet™

Technical Specifications

Bus Voltage	11 to 25 VDC
Bus Current	200mA
Maximum Current Per Output	350mA
Total Output Current	1A
Number of Outputs	16
Baud Rates	500 Kbaud
	250 Kbaud
	125 Kbaud
Degree of Protection	IP65
Operating Temperature	
60% Rating	0°C to 55°C (32°F to 130°F)
100% Rating	0°C to 40°C (32°F to 104°F)
External Power Supply	20.4 to 30 VDC

Data Rates

Baud Rate	Distance	Drop Length	
		Max Drop	Cumulative
125 Kbaud	500m (1640 ft)	6m (20 ft)	156m (512 ft)
250 Kbaud	250m (820 ft)	6m (20 ft)	78m (256 ft)
500 Kbaud	100m (328 ft)	6m (20 ft)	39m (128 ft)

Note: This device transmits 2 bytes and receives 2 bytes. The EDS file can be downloaded from our website <http://www.parker.com/pneumatic>. Click on Solenoid / Air Operated Valves and then click on PVLB10 or PVLC10 Valves and finally click on Service / Maintenance.

Bus Connector

Pin	Function
1	Drain
2	V+ (24 VDC)
3	V- (0 VDC)
4	CAN_H
5	CAN_L

Power Connector

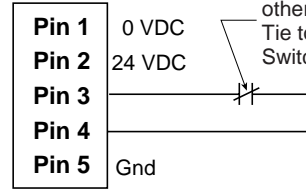
Pin	Function	Comment
1	0 VDC	BUS POWER
2	24 VDC	
3*	Valve Power	VALVE POWER
4*	Valve Power	
5	Ground	

Recommended Bus and Power Connector (or equivalent):
Turck female Eurofast #B 8151-0

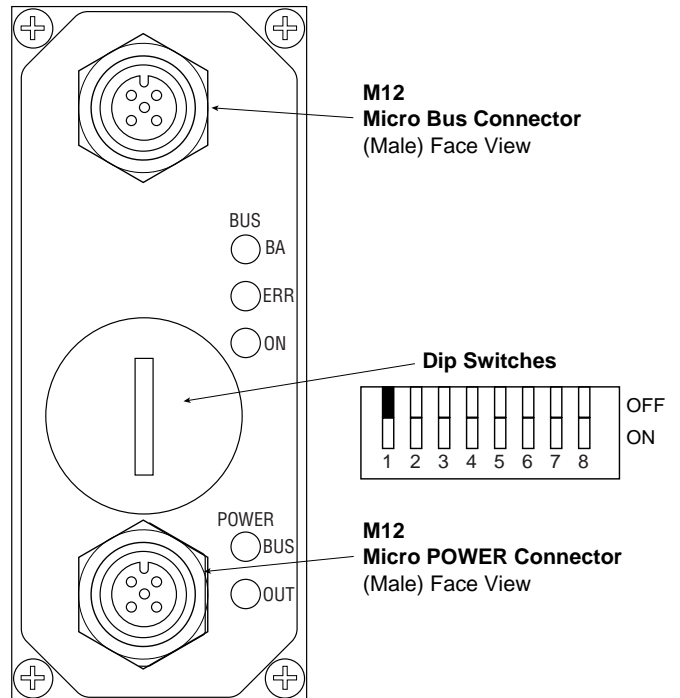
E STOP Feature*

Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing the communications to remain on. This can be done by placing the user's Emergency Stop Switch or other hard wired control contact between Pin 3 and Pin 4. If this feature is not required, Pin 3 and Pin 4 should be wired together.

Power Connector



User's Emergency Stop Switch or other hard wired control contact. Tie together if Emergency Stop Switch is not required.



DeviceNet™

Baud Rate Setting Through DIP Switches

Baud Rate	7	8
125 Kbaud	OFF	OFF
250 Kbaud	ON	OFF
500 Kbaud	OFF	ON

Module Status Lights (LED's)

Indicator		Description
Power-BUS	SteadyGreen	Normal
	OFF	No Power Applied to the BUS
Power-Out	Steady Green	Normal
	OFF	No Power Applied to the Valves
BUS-BA	Steady Green	Normal
	Flashing Green	Configuration Problem
BUS-ERR	OFF	Normal
	Steady Red	BUS Error
BUS-ON	Steady Green	Normal
	OFF	No Power Applied to the BUS

Node Address Settings Through DIP Switches

Node Address	1	2	3	4	5	6
0	Off	Off	Off	Off	Off	Off
1	On	Off	Off	Off	Off	Off
2	Off	On	Off	Off	Off	Off
3	On	On	Off	Off	Off	Off
4	Off	Off	On	Off	Off	Off
5	On	Off	On	Off	Off	Off
6	Off	On	On	Off	Off	Off
7	On	On	On	Off	Off	Off
8	Off	Off	Off	On	Off	Off
9	On	Off	Off	On	Off	Off
10	Off	On	Off	On	Off	Off
11	On	On	Off	On	Off	Off
12	Off	Off	On	On	Off	Off
13	On	Off	On	On	Off	Off
14	Off	On	On	On	Off	Off
15	On	On	On	On	Off	Off
16	Off	Off	Off	Off	On	Off
17	On	Off	Off	Off	On	Off
18	Off	On	Off	Off	On	Off
19	On	On	Off	Off	On	Off
20	Off	Off	On	Off	On	Off
21	On	Off	On	Off	On	Off
22	Off	On	On	Off	On	Off
23	On	On	On	Off	On	Off
24	Off	Off	Off	On	On	Off
25	On	Off	Off	On	On	Off
26	Off	On	Off	On	On	Off
27	On	On	Off	On	On	Off
28	Off	Off	On	On	On	Off
29	On	Off	On	On	On	Off
30	Off	On	On	On	On	Off
31	On	On	On	On	On	Off

Node Address	1	2	3	4	5	6
32	Off	Off	Off	Off	Off	On
33	On	Off	Off	Off	Off	On
34	Off	On	Off	Off	Off	On
35	On	On	Off	Off	Off	On
36	Off	Off	On	Off	Off	On
37	On	Off	On	Off	Off	On
38	Off	On	On	Off	Off	On
39	On	On	On	Off	Off	On
40	Off	Off	Off	On	Off	On
41	On	Off	Off	On	Off	On
42	Off	On	Off	On	Off	On
43	On	On	Off	On	Off	On
44	Off	Off	On	On	Off	On
45	On	Off	On	On	Off	On
46	Off	On	On	On	Off	On
47	On	On	On	On	On	On
48	Off	Off	Off	Off	On	On
49	On	Off	Off	Off	On	On
50	Off	On	Off	Off	On	On
51	On	On	Off	Off	On	On
52	Off	Off	On	Off	On	On
53	On	Off	On	Off	On	On
54	Off	On	On	Off	On	On
55	On	On	On	Off	On	On
56	Off	Off	Off	On	On	On
57	On	Off	Off	On	On	On
58	Off	On	Off	On	On	On
59	On	On	Off	On	On	On
60	Off	Off	On	On	On	On
61	On	Off	On	On	On	On
62	Off	On	On	On	On	On
63	On	On	On	On	On	On

PROFIBUS-DP

Technical Specifications

External Power Supply	20.4 to 30 VDC
Bus Current	200mA
Maximum Current Per Output	350mA
Total Output Current	1A
Number of Outputs	16
Baud Rates	9.6 Kbaud to 12 Mbaud
Degree of Protection	IP65
Operating Temperature	
60% Rating	0°C to 55°C (32°F to 130°F)
100% Rating	0°C to 40°C (32°F to 104°F)
Data I.D. Code	1000

Data Rates

Baud Rate	Distance
9.6 Kbaud	9,600m (31,488ft)
19.2 Kbaud	9,600m (31,488ft)
93.75 Kbaud	9,600m (31,488ft)
187.5 Kbaud	8,000m (26,240ft)
500.0 Kbaud	4,000m (13,120ft)
1.5 Mbaud	500m (1,640ft)
12.0 Mbaud	500m (1,640ft)

Note: This device transmits 2 bytes and receives 2 bytes. The EDS file can be downloaded from our website <http://www.parker.com/pneumatic>. Click on Solenoid / Air Operated Valves and then click on PVLB10 or PVLC10 Valves and finally click on Service / Maintenance.

Bus-In Connector

Pin	Function
1	NC
2	NC
3	A Line
4	B Line
5	RTS

Bus-Out Connector

Pin	Function
1	5V Pocket
2	0V Pocket
3	A Line
4	B Line
5	RTS

Power Connector

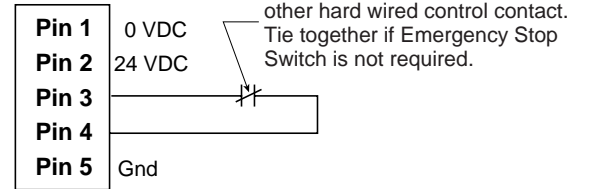
Pin	Function	Comment
1	0 VDC	BUS POWER
2	24 VDC	
3*	Valve Power	VALVE POWER
4*	Valve Power	
5	Ground	

Recommended Bus and Power Connector (or equivalent):
 Turck female Eurofast #B 8151-0
 Turck male Eurofast #BS 8151-0

E STOP Feature*

Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing the communications to remain on. This can be done by placing the user's Emergency Stop Switch or other hard wired control contact between Pin 3 and Pin 4. If this feature is not required, Pin 3 and Pin 4 should be wired together.

Power Connector



Baud Rate Setting

This system incorporates an Auto-Baud detect feature, eliminating the need to set switches.

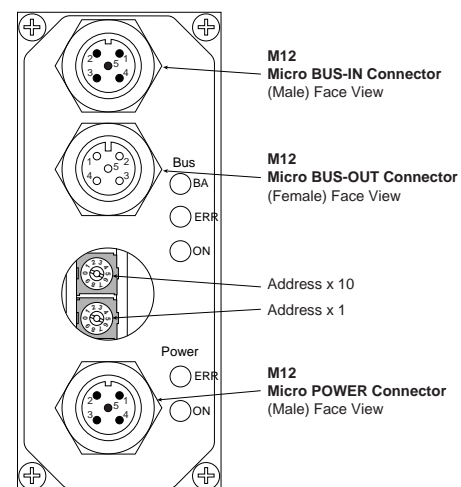
Module Status Lights (LED's)

Indicator	Description	
Power-BUS	Steady Green	Normal
	OFF	No Power Applied
Power-Out	Steady Green	Normal
	OFF	No Power Applied to the Valves
BUS-BA	Steady Green	Normal
	OFF	Configuration Problem
BUS-ERR	OFF	Normal
	Steady Red	BUS Error
BUS-ON	Steady Green	Normal
	OFF	No Power Applied

Last Module Termination

If the PVLB10 or PVLC10 manifold is the last device on the network, a terminating resistor connector must be connected on the Bus-OUT connector. If the network baud rate is higher than 1.5 Mbaud, use a terminating resistor connector with inductive filters.

Node Address Setting Through Rotary Switches



InterBus-S

Technical Specifications

External Power Supply 20.4 to 30 VDC
 Bus Current 200mA
 Maximum Current Per Outoput 350mA
 Total Output Current 1A
 Number of Outputs 16
 Baud Rates 500 Kbaud
 Data I.D. Code 03
 Degree of Protection IP65
 Operating Temperature
 60% Rating 0°C to 55°C (32°F to 130°F)
 100% Rating 0°C to 40°C (32°F to 104°F)

Bus-In Connector

Pin	Function
1	DO
2	$\overline{\text{DO}}$
3	DI
4	$\overline{\text{DI}}$
5	Ground
6	PE
7, 8, 9	Not Used

Bus-Out Connector

Pin	Function
1	DO
2	$\overline{\text{DO}}$
3	DI
4	$\overline{\text{DI}}$
5	Ground
9	$\overline{\text{RBST}}$
6, 7, 8	Not Used

Recommended Bus Connector (Or Equivalent)

Connivers #RC-09S1N128049 Female
 Connivers #RC-09P1N128049 Male

Power Connector

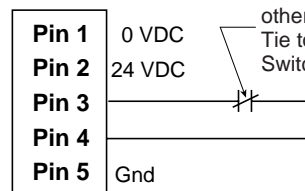
Pin	Function	Comment
1	0 VDC	BUS POWER
2	24 VDC	
3*	Valve Power	VALVE POWER
4*	Valve Power	
5	Ground	

Recommended Power Connector (Or Equivalent):
 Turck female Eurofast #B 8151-0

E STOP Feature*

Output power to the solenoids can be wired to allow the user to turn the outputs off while allowing the communications to remain on. This can be done by placing the user's Emergency Stop Switch or other hard wired control contact between Pin 3 and Pin 4. If this feature is not required, Pin 3 and Pin 4 should be wired together.

Power Connector



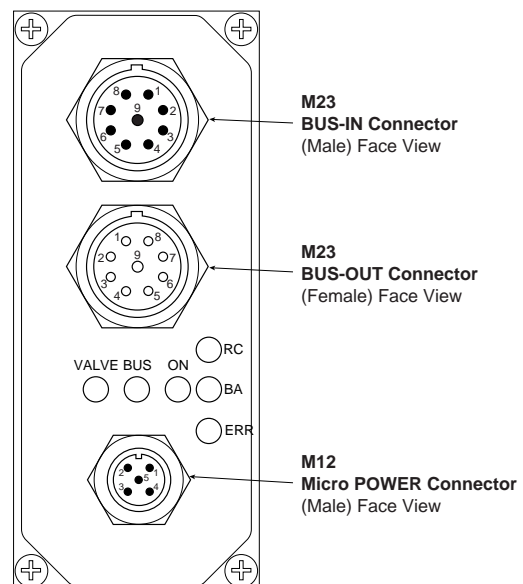
User's Emergency Stop Switch or other hard wired control contact. Tie together if Emergency Stop Switch is not required.

Baud Rate Setting

This system operates only at 500 Kbps.

Module Status Lights (LED's)

Indicator	Description	
BUS	SteadyGreen	Normal
	OFF	No Power Applied
Valves	Steady Green	Normal
	OFF Valves	No Power Applied to the
BUS-BA	Steady Green	Normal
	FlashingGreen	Configuration Problem
BUS-RC	Steady Green	Normal
	OFF	No Power Applied
BUS-ERR	OFF	Normal
	Steady Red	BUS Error
BUS-ON	Steady Green	Normal
	OFF	No Power Applied



ASI

Technical Specifications

Bus Voltage	29.5-31.6 VDC
Bus Current	30mA
Output Current	250mA
Total Output Current	1A
Max. Supply for all Inputs	200mA
ID Code	7F (4I / 4O); 8F (4O)
Degree of Protection	IP65
Operating Temperature	0°C to 50°C (32°F to 122°F)

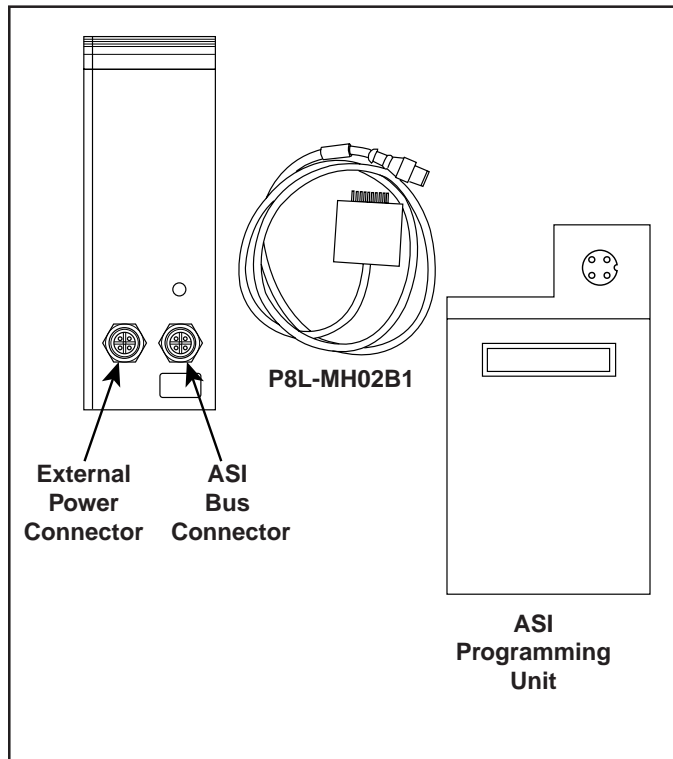
Module Status Lights (LED's)

Indicator		Description
ASI	Off	ASI Bus Error
	Steady Green	Normal
24 V Valves	Off	No Power
	Steady Green	Normal
OVERLOAD	Off	Normal
	Steady Red	Output Short Circuit

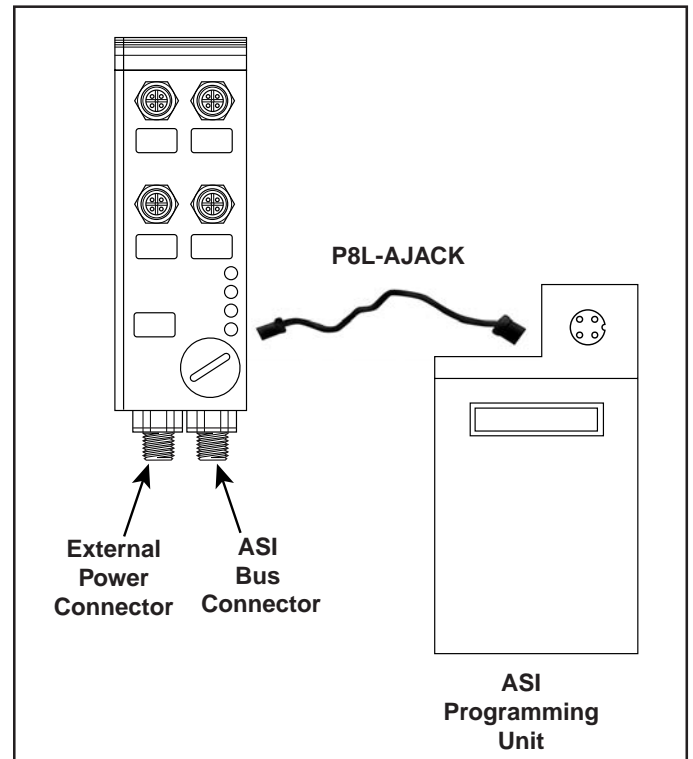
Node Address Settings:

ASI node addresses are set through an ASI programming unit as shown below.

P2SBAXXXX-ASI Head Modules 4 Output Version



PVLBAXXXX-ASI Head Modules 4 Input & 4 Output Version



ASI

Pinout Details

External Power Connector

Pin	Function
1	24 VDC Valve Power
2	NC
3	0 VDC
4	NC

ASI Bus Connector

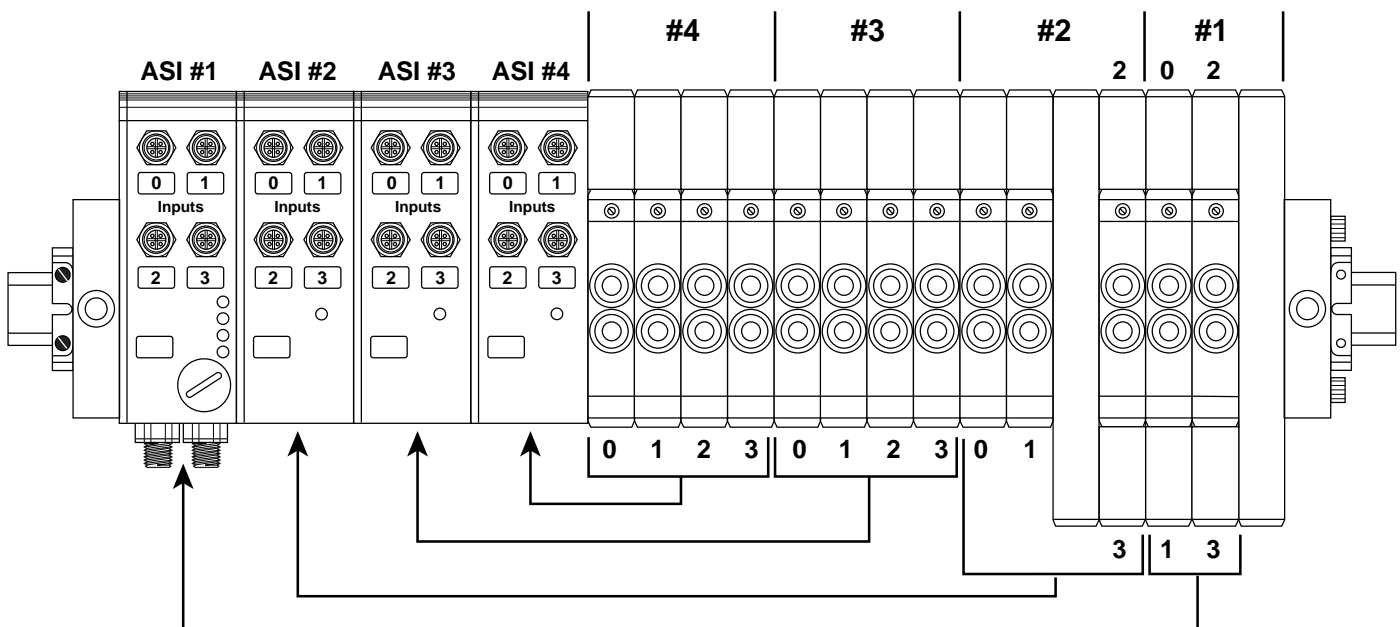
Pin	Function
1	A+
2	NC
3	A-
4	NC

Input Connector

(On PVLBAXXXX Modules PNP Only)

Pin	Function
1	24 VDC
2	NC
3	0 VDC
4	Input

Valve Address & Input Mapping





Pneumatic Division
Richland, Michigan 49083
269-629-5000

PDNSG-1

Pneumatic Division Safety Guide

ISSUED: August 1, 2006

Supersedes: June 1, 2006

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 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, 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.

Pneumatic Division 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.
- 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.