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Pneumatic Division
Richland, Michigan USA
www.parker.com/pneumatics

(11-18-2011)

DX VALVE SERIES

INDEX

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☐	Safety Guide	PDN Safety Guide

Parker Pneumatic

Pneumatic Division
Richland, Michigan 49083

Installation & Service Instructions
V690P

DX ISO 5599-1 Valve Installation

ISSUED: January, 2004
Supersedes: None

Doc.# V-690P, NPR# 030987

⚠ WARNING

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

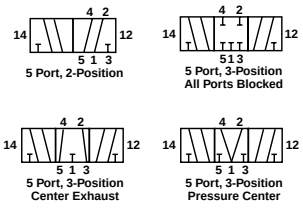
- **Disconnect electrical supply (when necessary) before installation, servicing, or conversion.**
- **Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.**
- **Operate within the manufacturer's specified pressure, temperature, 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.**

Introduction

Follow these instructions when installing, operating, or servicing the product.

Port Identification / Connections / Symbols

Port No.	Single Pressure	Dual Pressure
1	Inlet	Exhaust
2	Outlet	Outlet
3	Exhaust	Inlet
4	Outlet	Outlet
5	Exhaust	Inlet
12, 14	Pilot ports for External Pilot or Remote Pilot	



Valves may be used for single outlet (3-Way) by plugging an outlet port.

NOTE: The operator identification describes the ports that are connected when the operator is energized: operator 12 connects port 1 to port 2; operator 14 connects port 1 to port 4. Other ports may also be connected, or blocked – see symbols on the valve.

NOTE: For dual pressure, the higher pressure is to be at port 3 for single air operated valves. Solenoid types may have the highest pressure at either port 3 or 5, as specified.

⚠ **CAUTION: It is recommended that double solenoid and double remote air pilot operated 2-Position valves be mounted so that the axis of the valve spool is in the horizontal plane.**

Application Limits

These products are intended for use in general purpose compressed air systems only.

Pressure Range:

Vacuum
2 to 10 bar (29.4 to 145 PSIG). For pressure under 2 bar, external pilot supply must be connected.

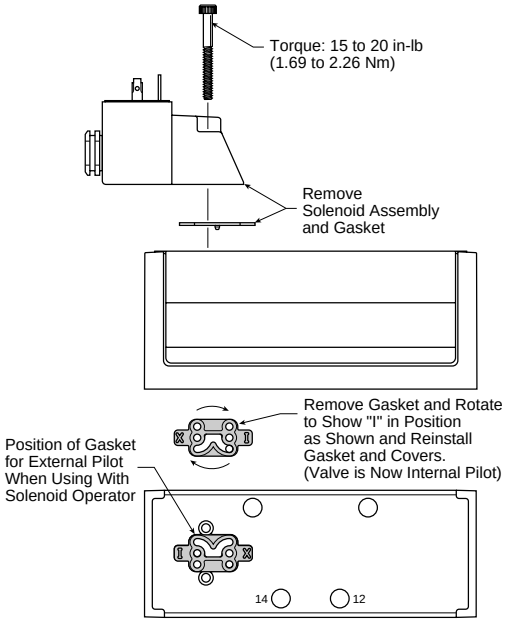
Ambient Temperature Range: -10°C to 60°C (14°F to 140°F)

Voltage Range: Rated Voltage +10%, -15%

⚠ **CAUTION: Solenoid versions of this valve contain solid state components that can be damaged by transient voltage spikes, over-voltage or high temperature. To protect against premature solenoid failure, please read and adhere to the following:**

If this solenoid operated valve is used in a circuit with other inductive loads. The solenoid should be electrically protected with a voltage suppression device (e.g. transient voltage suppressor or varistor) that has a minimum rating of 1.6 times the rated voltage of the solenoid valve and sufficient capacity to dissipate the energy of other inductive loads.

Piloting Conversion



⚠ 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.

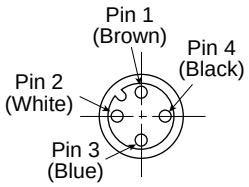
This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure and review the information concerning the product or systems 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.

4-Pin, M12 Electrical Connector

Wiring Data:

Pin #1	Free
Pin #2	24VDC, Side 12
Pin #3	0V Common
Pin #4	24VDC, Side 14



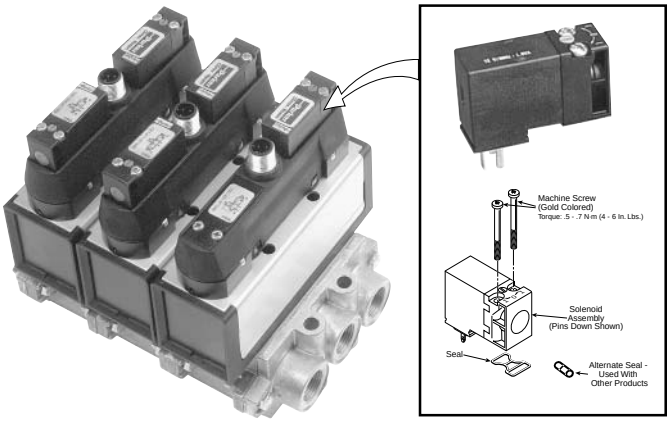
⚠ **CAUTION: An interruption of 10 milliseconds or greater to the power supplied to the solenoid of a solenoid operated valve may cause the valve to shift. Provision must be made to prevent power interruption of this duration to avoid unintended, potentially hazardous, consequences.**

15mm Solenoid Replacement Kit

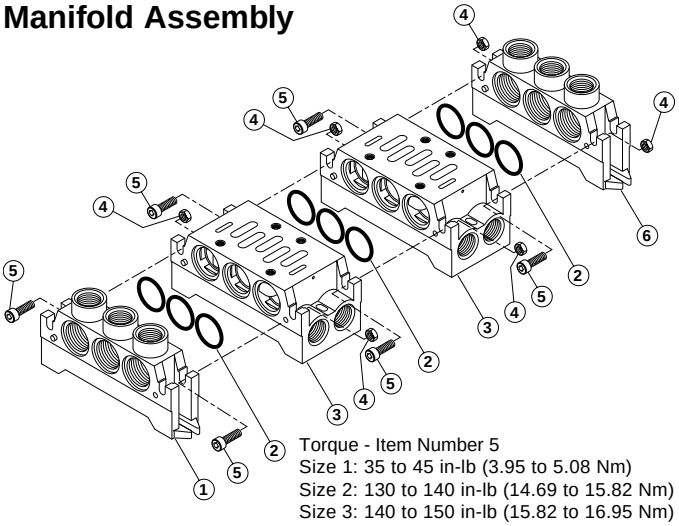
(For Solenoid Operator Option "96")

Voltage		Power	Holding	Inrush	Override
Code	DC	(VA 60Hz/W)	(mA)	(mA)	Non-Locking
M	24	2.3W	94	—	PS3541B49P

Data tested with LED and Surge Suppression.
Voltage rated +10 / -15%.



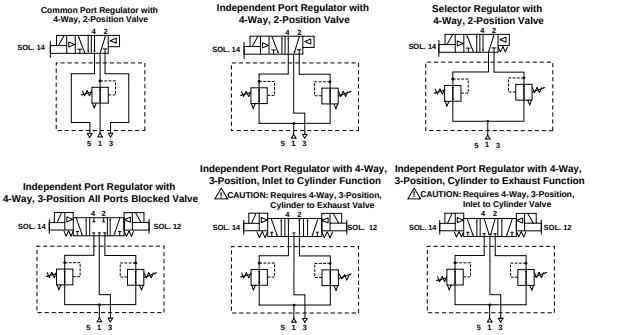
Manifold Assembly

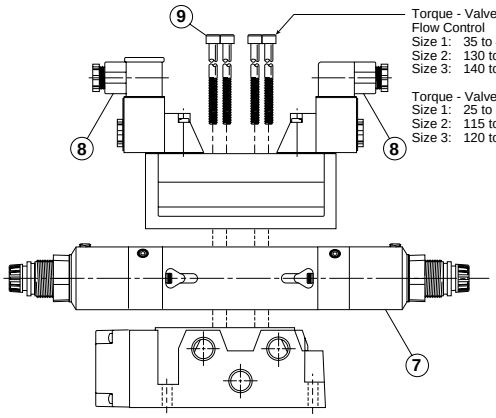


Torque - Item Number 5
Size 1: 35 to 45 in-lb (3.95 to 5.08 Nm)
Size 2: 130 to 140 in-lb (14.69 to 15.82 Nm)
Size 3: 140 to 150 in-lb (15.82 to 16.95 Nm)

Item Number	Description
1	Left End Plate
2	O-ring
3	Manifold
4	Nut
5	Screw
6	Right End Plate
7	Sandwich Regulator
8	Solenoid
9	Sandwich Regulator Bolt

Sandwich Regulator





Torque - Valve to Regulator or
Flow Control
Size 1: 35 to 45 in-lb (3.95 to 5.08 Nm)
Size 2: 130 to 140 in-lb (14.69 to 15.82 Nm)
Size 3: 140 to 150 in-lb (15.82 to 16.95 Nm)

Torque - Valve Only
Size 1: 25 to 35 in-lb (2.82 to 3.95 Nm)
Size 2: 115 to 130 in-lb (12.99 to 14.69 Nm)
Size 3: 120 to 140 in-lb (13.56 to 15.82 Nm)

Service Kits DX1, DX2, DX3

Kit Number	Description	Items Included (Qty.)
D1BD1	ISO 1 Isolation Disc Kit, Compact	Not Shown (3 per kit)
D2BD2	ISO 2 Isolation Disc Kit, Compact	Not Shown (3 per kit)
P2N-VK0P	ISO 1 Isolation Disc Kit, VDMA	Not Shown (3 per kit)
P2N-WK0P	ISO 2 Isolation Disc Kit, VDMA	Not Shown (3 per kit)
P2N-AA5B	ISO 1 Blanking Plate Kit	Not Shown
P2N-BA5B	ISO 2 Blanking Plate Kit	Not Shown
P2N-CA5B	ISO 3 Blanking Plate Kit	Not Shown
EP1DX	ISO 1 End Plate Kit	1 (1), 2 (3), 4 (2), 5 (2), 6 (1)
EP2DX	ISO 2 End Plate	1 (1), 2 (3), 4 (2), 5 (2), 6 (1)
SFR1DX	ISO 1 Common Pressure Regulator	Not Shown
SFR2DX	ISO 2 Common Pressure Regulator	Not Shown
DFR1DX	ISO 1 Dual Independent Regulator	7 (1)
DFR2DX	ISO 2 Dual Independent Regulator	7 (1)
SFC1DX	ISO 1 Sandwich Flow Control	Not Shown
SFC2DX	ISO 2 Sandwich Flow Control	Not Shown
2EV135J	120VAC Solenoid	8 (1)
2EV133M	24VDC Solenoid	8 (1)
RBK1DX	ISO 1 Regulator Bolt Kit	9 (4)
RBK2DX	ISO 2 Regulator Bolt Kit	9 (4)
FBK1DX	ISO 1 Flow Control Bolt Kit	Not Shown (4 per kit)
FBK2DX	ISO 2 Flow Control Bolt Kit	Not Shown (4 per kit)
CBK1DX	ISO 1 Reg. & Flow Control Bolt Kit	Not Shown (4 per kit)
CBK2DX	ISO 2 Reg. & Flow Control Bolt Kit	Not Shown (4 per kit)
DX1M2MB	ISO 1 Manifold to Manifold Bolt Kit	4 (10), 5 (10)
DX2M2MB	ISO 2 Manifold to Manifold Bolt Kit	4 (10), 5 (10)

Manifold to Manifold Assembly

1. Lay Right End Plate (when looking at Cylinder Ports) Port Side down.
2. Place O-rings in gasket track.
3. Place Manifold on top and tighten using Screw and Nut (both sides).
4. Repeat Steps 2 and 3 until all manifold slices are assembled.
5. Attach Left End Plate.
6. Lay Manifold on flat surface and check for straightness. Tighten all bolts per torque specifications.

Parker Pneumatic

Pneumatic Division
Richland, Michigan 49083

Installation & Service Instructions
V691P

DX0 ISO 15407-1 Valve Installation

ISSUED: January, 2004
Supersedes: None
Doc.# V-691P, NPR# 030987

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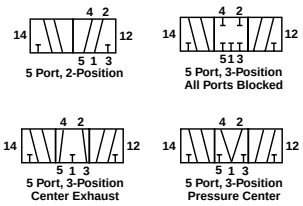
5	Exhaust	Inlet
12, 14	Pilot ports for External Pilot or Remote Pilot	



Valves may be used for single outlet (3-Way) by plugging an outlet port.

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⚠ **CAUTION: It is recommended that double solenoid and double remote air pilot operated 2-Position valves be mounted so that the axis of the valve spool is in the horizontal plane.**

Application Limits

These products are intended for use in general purpose compressed air systems only.

Piloting Pressure:
2 to 10 bar (29 to 145 PSIG)

Operating Pressure:
-0.9 to 10 bar (13 to 145 PSIG (For pressure under 2 bar, external pilot supply must be connected.)

Ambient Temperature Range:
-10°C to 60°C (14°F to 140°F)

Voltage Range:
Rated Voltage +10%, -15%

⚠ **CAUTION: Solenoid versions of this valve contain solid state components that can be damaged by transient voltage spikes, over-voltage or high temperature. To protect against premature solenoid failure, please read and adhere to the following:**

If this solenoid operated valve is used in a circuit with other inductive loads. The solenoid should be electrically protected with a voltage suppression device (e.g. transient voltage suppressor or varistor) that has a minimum rating of 1.6 times the rated voltage of the solenoid valve and sufficient capacity to dissipate the energy of other inductive loads.

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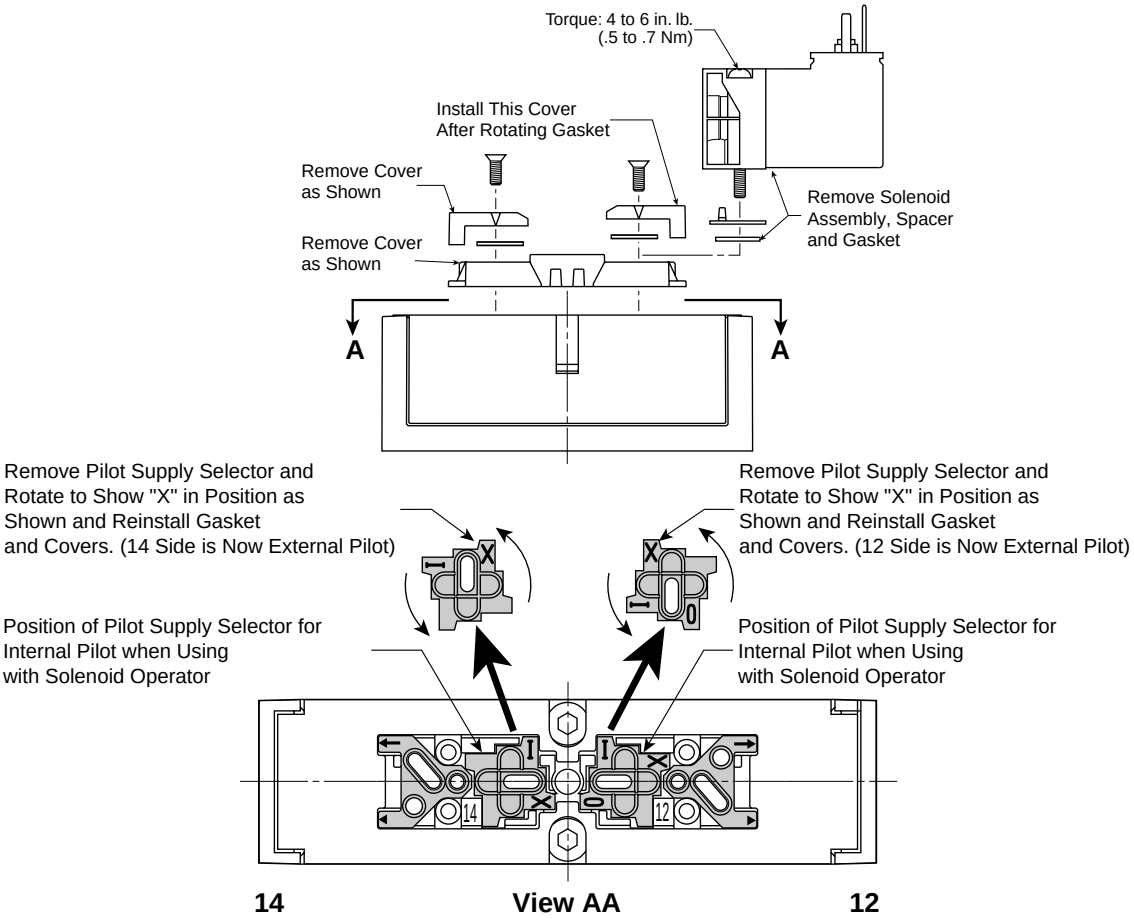
Piloting Conversion

Example: To Change from Internal to External Pilot Supply



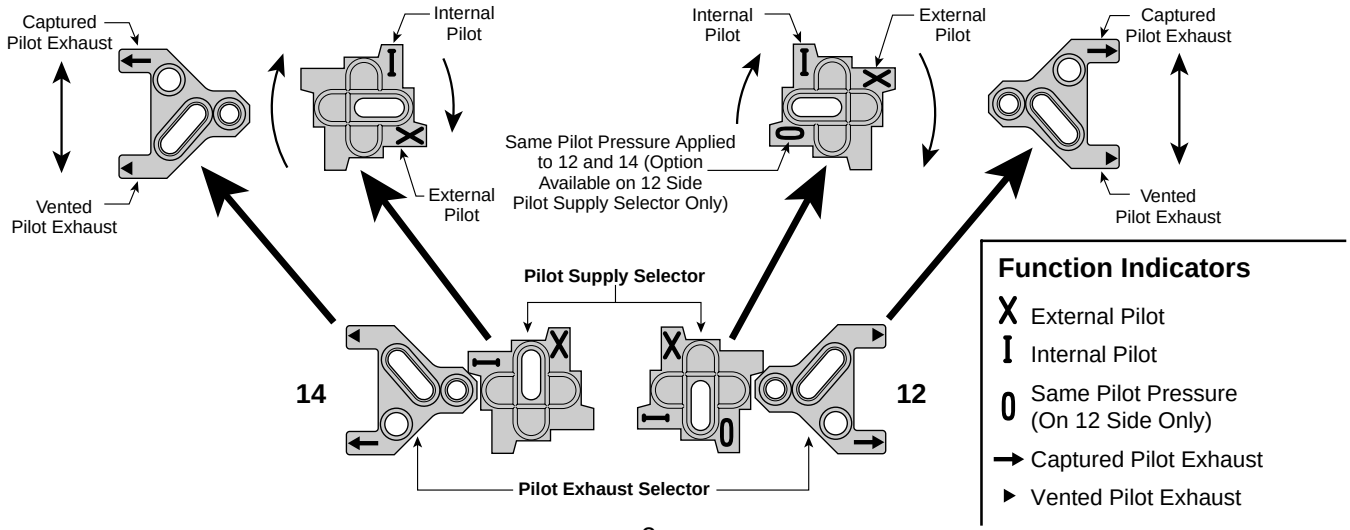
Example: To Change from External Pilot Supply, Vented Pilot Exhaust to Internal Pilot Supply, Captured Pilot Exhaust

Flip Pilot Exhaust Selector to change functionality; desired Function Indicator should be oriented to top. (14 Side is now Captured Pilot Exhaust)

Rotate Pilot Supply Selector to change functionality; desired Function Indicator should be oriented to top. (14 Side is now Internal Pilot)

Rotate Pilot Supply Selector to change functionality; desired Function Indicator should be oriented to top. (12 Side is now Internal Pilot)

Flip Pilot Exhaust Selector to change functionality; desired Function Indicator should be oriented to top. (12 Side is now Captured Pilot Exhaust)



Manifold Conversion Instructions

PJL01, Size 01

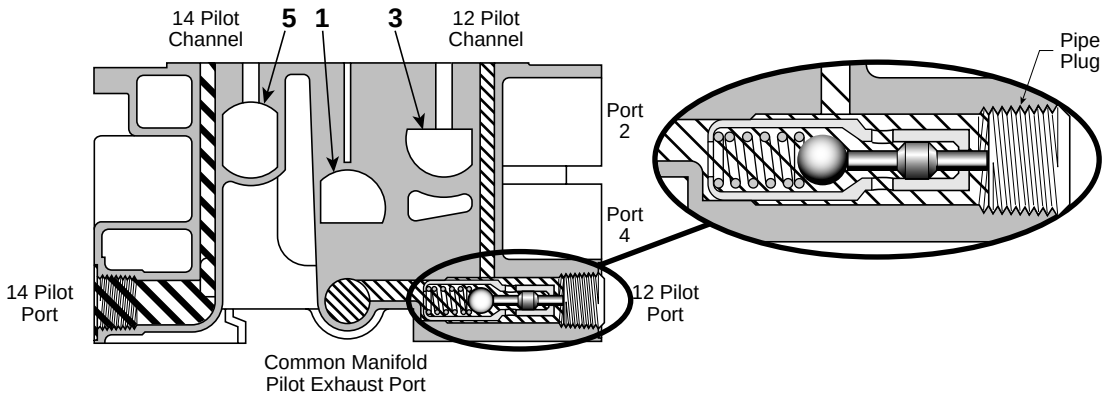
A Built-in 2-Position Selector converts the External Pilot Channel (12) into a Common Solenoid Pilot Exhaust Channel.

Position A

When in place, the Plug depresses the Selector to connect the Valve Solenoid Pilot Exhaust to a Common Manifold Exhaust Port.

Ports

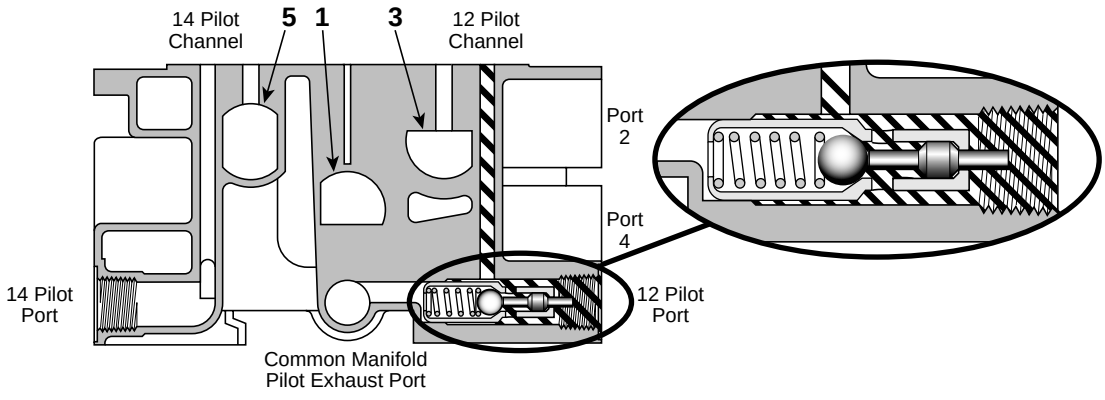
1 ..... Pressure
2 ..... #2 Cylinder Port. 1 to 2 Flow Path.
3 ..... Cylinder Exhaust Port. 2 to 3 Flow Path.
4 ..... #4 Cylinder Port. 1 to 4 Flow Path.
5 ..... Cylinder Exhaust Port. 4 to 5 Flow Path.
14 ..... #14 Pilot Port
12 ..... #12 Pilot Port



Position A

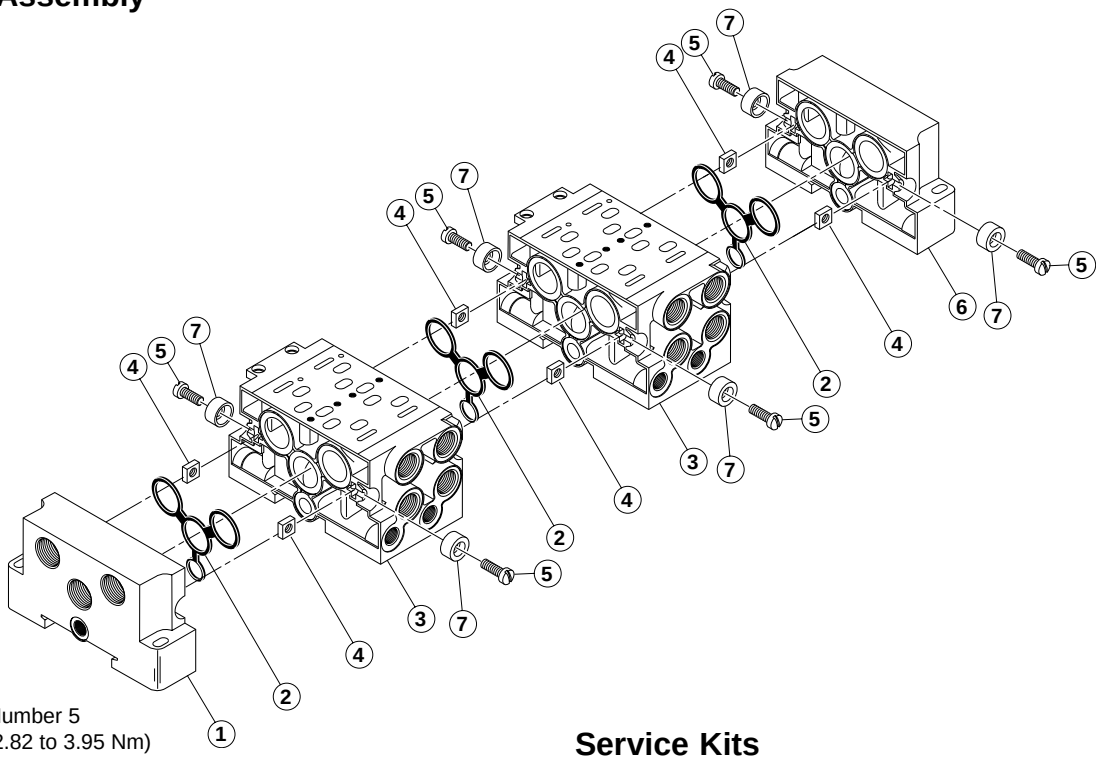
Position B

With no Plug or a fitting in place, free flow between Port 12 and the valve provides Remote External Pilot Pressure.



Position B

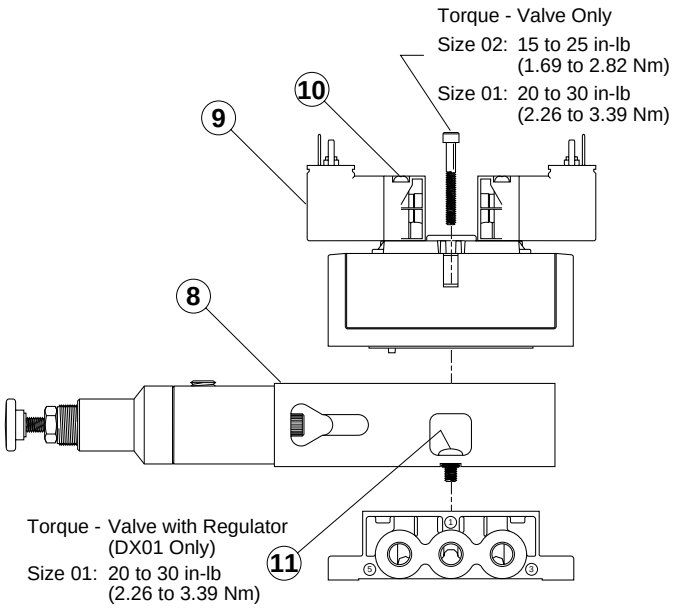
Manifold Assembly



Torque - Item Number 5
25 to 35 in-lb (2.82 to 3.95 Nm)

Item Number	Description
1	Left End Plate
2	Gasket
3	Manifold
4	Retaining Nut
5	Screw
6	Right End Plate
7	Washer
8	Sandwich Regulator
9	Solenoid
10	Solenoid Screw
11	Sandwich Regulator Bolt

Sandwich Regulator Assembly



Service Kits

Kit Number	Description	Items Included (Qty)
PEJ02-02-80	18mm End Plate Kit, 1/8" NPT	1 (1), 2 (1), 4 (2) 5 (2), 6 (1), 7 (2)
PEJ02-02-70	18mm End Plate Kit, 1/8" BSPP	
PEJ01-03-80	26mm End Plate Kit, 1/4" NPT	
D02P-01-80	26mm Intermediate Air Supply Base Kit, 1/4" NPT	Not Shown
SFR01DX	Size 01 Sandwich Regulator Kit	8 (1), 11 (2)
D02BD0	18mm Manifold Port Isolation Disc Kit	Not Shown (3 per Kit)
D01BD0	26mm Manifold Port Isolation Disc Kit	Not Shown (3 per Kit)
DX02BLK	18mm Blanking Plate Kit	Not Shown
DX01BLK	26mm Blanking Plate Kit	Not Shown
DX02M2MB	Manifold to Manifold Bolt Kit	4 (10), 5 (10), 7 (10)
PS2982B49P	24VDC, 15mm, 3-Pin, DIN 43650C, Non-Locking Replacement Solenoid Kit	9 (1), 10 (2)
PS2982C49P	24VDC, 15mm, 3-Pin, DIN 43650C, Locking Replacement Solenoid Kit	9 (1), 10 (2)
PS2982B53P	110/50, 120/60, 15mm, 3-Pin, DIN 43650C, Non-Locking, Replacement Solenoid Kit	9 (1), 10 (2)
PS2982C53P	110/50, 120/60, 15mm, 3-Pin, DIN 43650C, Locking, Replacement Solenoid Kit	9 (1), 10 (2)

Manifold to Manifold Assembly

1. Lay Right End Plate (when looking at Cylinder Ports) Port Side down.
2. Place Gasket in gasket track and Retaining Nut in slot.
3. Place Manifold on top and tighten using Screw and Washer (both sides).
4. Repeat Steps 2 and 3 until all manifold slices are assembled.
5. Attach Left End Plate.
6. Lay Manifold on flat surface and check for straightness. Tighten all bolts per torque specifications.

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, 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.