

## Pneumatic Division

Richland, Michigan USA

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### SPRINT / AL VALVE SERIES

Bulletin Number		Bulletin Description	
<input type="checkbox"/>	V570P	Rev. 7	Valve, Installation Instructions
<input type="checkbox"/>	V571P	Rev. 5	Valve, Installation & Service Instructions
<input type="checkbox"/>	V572P		Valve (Solenoid Operated), Service Instructions
<input type="checkbox"/>	V573P		Manifolds, Installation Instructions
<input type="checkbox"/>	V574P		Subbase, Installation Instructions
<input type="checkbox"/>	V575P		Sandwich Flow Controls, Installation Instructions
<input type="checkbox"/>	V576P		Sandwich Regulator, Installation Instructions
<input type="checkbox"/>	V577P		Plug-In Lamp Kit, Service Instructions
<input type="checkbox"/>	V578P		Dynamic Seal Kit, Service Instructions
<input type="checkbox"/>	V579P		Extended Locking Override Kit, Service Instructions
<input type="checkbox"/>	V589P		Plug-In Solenoid Conversion, Service Instructions
<input type="checkbox"/>	Safety Guide		PDN Safety Guide



Pneumatic Division North America  
Richland, MI 49083

Installation Instructions: V-570P

Sprint/AL Valves

ISSUED: May, 2001

Supersedes: November, 1998

ECN #9369 Rev. 7

**⚠ WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on 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 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.

**INSTALLATION / OPERATING INSTRUCTIONS**

Valve should be installed with reasonable accessibility for service whenever possible -- repair service kits are available. Keep pipe or tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe -- never into the female port. Do not use PTFE tape to seal pipe joints -- pieces have a tendency to break off and lodge inside the unit, possibly causing malfunction. Care must be taken to avoid undue strain on the valve. Mounting bolt torque 35 to 40 in-lb. for manifold and subbase mounting valves.

Air applied to the valve must be filtered to realize maximum component life.

**⚠ 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. The valve may be rotated 360° around the axis for mounting convenience.

**Life Expectancy** - Normal multi-million cycle life expectancy of these valves is based on the use of properly filtered and lubricated air at room temperature. These valves are also designed to operate under non-lubricated conditions and will yield millions of maintenance free cycles.

**Factory Pre-Lubrication** - All valves are pre-lubricated at assembly with Sunaplex 781 or equivalent (Petroleum Base - Lithium Content) grease.

**In-Service Lubrication** - In-service lubrication is not required; however, if lubrication is to be used, F442 oil is recommended. This oil is specially formulated to provide peak performance and maximum service life from all air operated equipment. Otherwise, use a straight paraffin base mineral oil of viscosity 100 - 200 SSU @ 100°F and an aniline point greater than 200°F.

**⚠ CAUTION:** Do not use synthetic, reconstituted, or oils with an alcohol content or detergent additive.

**APPLICATION LIMITS**

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

Operating pressure range:	PSIG	Bar	kPa
Minimum*	35	2.41	241
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

\* For lower pressure or vacuum operation, solenoid(s) may be externally piloted (35 psig min.) following the conversion procedure on these instructions.

**Operating Temperature Range:** 20°F (7°C) to 140°F (60°C)

**Voltage Range:** +10% to -15% of rating

**WIRING INSTRUCTIONS**

**Units with flying leads**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be "Hot".

**⚠ CAUTION:** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**⚠ 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.

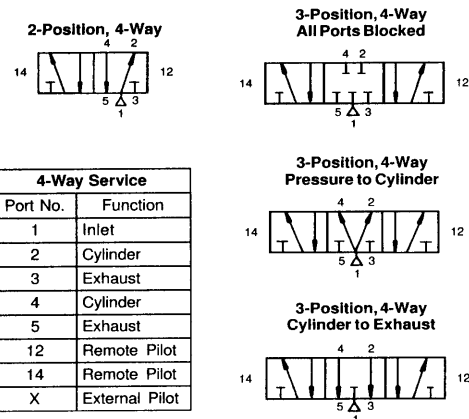
**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

**NOTE:** In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-Pin, 4-Pin, or 5-Pin Connectors:**

See installation instructions packed with or decal on subbase or manifold.

**PORT IDENTIFICATION / CONNECTIONS**



4-Way Service	
Port No.	Function
1	Inlet
2	Cylinder
3	Exhaust
4	Cylinder
5	Exhaust
12	Remote Pilot
14	Remote Pilot
X	External Pilot

**CONVERSION PROCEDURE FOR EXTERNAL PILOT**

Internal/External Pilot Conversion – Valves are field convertible to an external pilot supply for applications where pressure supplied to the valve inlet is lower than the specified service limitations, including vacuum or dual pressure service and applications using sandwich regulators.

**VALVES WITH BLACK COVERS**

1. Remove two recessed Phillips-head screws securing valve cover.
2. Lift cover off valve.
3. Remove the rubber selector and reposition with the number “2” aligned with the pointer on the valve body.
4. Replace cover on valve and tighten screws to 10 – 12 in.-lbs.
5. Connect pressure signal (between 35 and maximum psig) to port “X”, “12” or “14” on valve body or base. (This step is not necessary when converting valve for use with sandwich regulators).

**VALVES WITH LIGHT GREY COVERS**

1. Loosen two recessed Phillips-head screws securing valve cover.
2. Loosen selector by lightly tapping on cover with plastic mallet.
3. Turn selector to align with number “2” on valve cover.
4. Tighten screws to 20 in.- lbs.
5. Same as Step 5 above.

**Pilot Selector Code**

Position	Operator Type	Pilot Supply	Sandwich Regulator	Port 12	Port 14
1	Solenoid	Internal	No	Plug	Plug
2	Solenoid	External	No	Plug	*
3	Single Pilot	N/A	No	Plug	Pilot Signal
4	Double Pilot	N/A	No	Pilot Signal	Pilot Signal
2	Solenoid	Internal	Yes	Plug	Plug
2	Solenoid	External	Yes	Plug	*
4	Single Pilot	N/A	Yes	**	Pilot Signal
4	Double Pilot	N/A	Yes	Pilot Signal	Pilot Signal

\*Supply 35 – 150 PSIG (35 – 100 PSIG for low watt) (or at port “X” if applicable).

\*\*Supply 35 – 150 PSIG (35 – 100 PSIG for low watt).

**Available Service Items**

DESCRIPTION	PART NUMBER
Seal Kit	K352386
Locking Override	K152008
Flush Non-locking Override	K162005
Ext. Non-locking Override	K162006
Indicator Lamp (120/60 AC)*	H19109
Indicator Lamp (24V DC)*	H19110
Indicator Lamp (120/60 AC)**	K252009
Indicator Lamp (24V DC)**	K252008
Plunger & Guide (Standard)	K232025
Plunger & Guide (Low Watt)	K232047
Return Spring	K473053
Interface Seal	K663006

**Coil Replacement Chart**

Voltage			Coil Number			
60 Hz	50 Hz	D.C.	19” Leads	Plug-In*	Plug-In W/O Light**	Plug-In W/ Light**
24	—	—	K593169	K593211	K593288	—
—	—	12	K593170	K593213	K593289	—
—	—	24	K593171	K593215	K593290	K593303
—	—	24***	K593281	K593283	K593298	K593307
—	—	24****	K593315	—	K593328	K593330
—	—	24<>	K593277	K593279	K593331	K593333
120	110	—	K593166	K593205	K593285	K593302
240	—	—	K593175	K593248	K593294	—
120 <>	110 <>	—	—	—	K593325	K593327

\*For use with valve model numbers not ending with “B”.

\*\* For use with valve model numbers ending with “B”.

\*\*\* Low watt.

\*\*\*\* Low watt with arc suppression.

<> Arc suppression.

For voltages and options not listed, consult your local representative.

**⚠ WARNING**

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

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

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

**EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE INSTRUCTION MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.**



**Pneumatic Division**  
 Richland, Michigan 49083

**Installation & Service Instructions**  
**V571P**

**Sprint / AL Valves**

**ISSUED: February, 2002**

**Supersedes: November, 2001**

**Doc.# V-571P, ECN# P28822, Rev. 5**

**! 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.

**Application Limits**

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

Operating pressure range:	PSIG	bar	kPa
Minimum*	35	2.41	241
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

\* For lower pressure or vacuum operation, solenoid(s) may be externally piloted (35 psig min.) following the conversion procedure on these instructions.

**Operating Temperature Range:** 20°F (7°C) to 140°F (60°C)

**Voltage Range:** +10% to -15% of rating

**Wiring Instructions**

**Units with flying leads**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be "Hot".

**! CAUTION: DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.**

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

**NOTE:** In addition to the above instructions, follow all requirements for local and national electrical codes.

**Conversion Procedure For External Pilot**

Internal/External Pilot Conversion – Valves are field convertible to an external pilot supply for applications where pressure supplied to the valve inlet is lower than the specified service limitations,

including vacuum or dual pressure service and applications using sandwich regulators.

**Valves With Black Covers**

1. Remove two recessed Phillips-head screws securing valve cover.
2. Lift cover off valve.
3. Remove the rubber selector and reposition with the number "2" aligned with the pointer on the valve body.
4. Replace cover on valve and tighten screws to 10 – 12 in.-lbs.
5. Connect pressure signal (between 35 and maximum psig) to port "X", "12" or "14" on valve body or base. (This step is not necessary when converting valve for use with sandwich regulators).

**Valves With Light Grey Covers**

1. Loosen two recessed Phillips-head screws securing valve cover.
2. Loosen selector by lightly tapping on cover with plastic mallet.
3. Turn selector to align with number "2" on valve cover.
4. Tighten screws to 20 in.-lbs.
5. Same as Step 5 above.

**Pilot Selector Code**

Position	Operator Type	Pilot Supply	Sandwich Regulator	Port 12	Port 14
1	Solenoid	Internal	No	Plug	Plug
2	Solenoid	External	No	Plug	*
3	Single Pilot	N/A	No	Plug	Pilot Signal
4	Double Pilot	N/A	No	Pilot Signal	Pilot Signal
2	Solenoid	Internal	Yes	Plug	Plug
2	Solenoid	External	Yes	Plug	*
4	Single Pilot	N/A	Yes	**	Pilot Signal
4	Double Pilot	N/A	Yes	Pilot Signal	Pilot Signal

\* Supply 35 – 150 PSIG (35 – 100 PSIG for low watt) (or at port "X" if applicable).

\*\* Supply 35 – 150 PSIG (35 – 100 PSIG for low watt).

**! WARNING**

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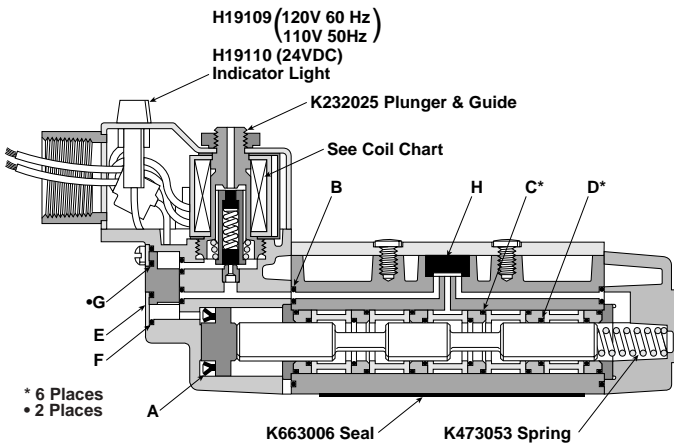
This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application, including consequences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

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### Service Procedures

**NOTE:** All cleaning of parts to be done with mineral spirits or equivalent cleaning solution. Grease should be a mineral based lubricant (MagnaLube G). All parts showing nicks, scratches or other signs of wear or damage should be replaced.



### Valve Service (Use Kit K352386)

1. Mark end sections to ensure re-assembly on the proper end. Remove two socket head screws from each end section and detach.

**NOTE:** Valves with model numbers ending in "B" have end sections with wiring that cannot be detached. Wire length is sufficient for service access. Remove spring (where applicable).

2. Remove spool and clean. Note which end spring or spring bore in spool was on.
3. Remove molded seal from each end of body and discard.
4. Remove end spacers, spacers, seal retainers, and o-rings (C & D). Discard o-rings. Clean body and all retained parts.
5. Lightly grease new o-rings (C & D) and install onto seal retainers.
6. Using the spool as a mandrel, begin reassembly by sliding a seal retainer (outside o-ring (C) facing downward) over the spool and push down. Then stack a spacer on top of the seal retainer. Next, stack a seal retainer (outside o-ring facing upward). Repeat this process alternating seal retainer orientation each time. The final assembly should have outside o-rings (C) showing at each end of the spool.

**NOTE:** Valves with four (4) brass and two (2) aluminum seal retainers must be reassembled with the aluminum seal retainers in the middle two (2) positions.

7. Grease the outside of this assembly and gently slide it into the valve body. (On spring return valves, the hollow end of the spool goes on the spring return end.)
8. Lightly grease new end gaskets (B) and place in grooves in ends of body.
9. **Solenoid and Remote Operated End Sections** – Remove piston from bore. Remove lipseal (A) and discard. Clean piston and housing bore. Grease new lipseal and assemble to piston. Reassemble piston into housing (lipseal end first). Reassemble end sections to body torquing screws to 40 in.-lbs.
10. **Spring Return End Sections** – Slide spring into bore in end of spool. Compress spring while assembling end housing to body with socket head screws. Torque screws to 30-35 in.-lbs.
11. **Manual Override Service** – Remove the two Phillips-head screws securing the manual override on the solenoid end(s). Discard seal (E) and o-ring (F) and the two seated o-rings (G) in the override bore. Clean the override and its bore and install new o-rings. Lightly grease all seals and reinstall the override with the two screws making sure to insert locking style override with the slot vertical so that only 90° of clockwise rotation is possible.

12. **Pilot Selector Service (Valves with black cover)** – Remove the cover by removing the two Phillips-head screws located on top of the valve. Remove and discard rubber selector (H). Clean selector cavity and place new selector in cavity oriented so that number on rubber selector is adjacent to selector arrow on top of body. (Number to set selector is obtained from Pilot Selector Code on front of this sheet.) Re-install cover and screws, torquing screws to 10-12 in.-lbs.

13. **Pilot Selector Service (Valves with light grey cover)** – Remove the cover by removing the two Phillips-head screws located on top of the valve. Pull out the selector dial, remove & discard old o-rings. Clean the selector cavity, lightly grease and install the new o-rings, and re-install the selector dial and valve cover. Set the selector per Pilot Selector Code & torque the cover screws to approximately 20 in.-lbs.

### Available Service Items

Part Number	Description
K352386	Seal Kit
K152008	Locking Override
K162005	Flush Non-locking Override
K162006	Ext. Non-locking Override
H19109	Indicator Lamp (120/60 AC)*
H19110	Indicator Lamp (24V DC)*
K252009	Indicator Lamp (120/60 AC)**
K252008	Indicator Lamp (24V DC)**
K232025	Plunger & Guide (Standard)
K232047	Plunger & Guide (Low Watt)
K473053	Return Spring
K663006	Interface Seal

### Coil Replacement Chart

Voltage				Coil Number		
60 Hz	50 Hz	D.C.	19" Leads	Plug-In*	Plug-In w/o Light**	Plug-In w/ Light**
24	—	—	K593169	K593211	K593288	—
—	—	12	K593170	K593213	K593289	—
—	—	24	K593171	K593215	K593290	K593303
—	—	24***	K593281	K593283	K593298	K593307
—	—	24****	K593315	—	K593328	K593330
—	—	24†	K593277	K593279	K593331	K593333
120	110	—	K593166	K593205	K593285	K593302
240	—	—	K593175	K593248	K593294	—
120†	110†	—	—	—	K593325	K593327

\*For use with valve model numbers not ending with "B".

\*\* For use with valve model numbers ending with "B".

\*\*\* Low watt.

\*\*\*\*Low watt with arc suppression.

† Arc suppression.

For voltages and options not listed, consult your local representative.



Pneumatic Division North America  
Richland, MI 49083

Service Instructions: V-572P

Sprint/AL Valves (Solenoid Operators)

ISSUED: November, 1998

Supersedes: K583-373, June, 1997

ECN #8922

**WARNING**

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

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- Disconnect electrical supply before installation, servicing or conversion.
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- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on these instructions.
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**APPLICATION LIMITS**

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

Operating pressure range:	PSIG	Bar	kPa
Minimum*	35	2.41	241
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

\* For lower pressure or vacuum operation, solenoid(s) may be externally piloted (35 psig min.) following the conversion procedure on these instructions.

**Operating Temperature Range:** 20°F (7°C) to 140°F (60°C)

**Voltage Range:** +10% to -15% of rating

**WIRING INSTRUCTIONS**

**Units with flying leads**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be hot".

**CAUTION:** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

**NOTE:** In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-Pin, 4-Pin, or 5-Pin Connectors:**

See installation instructions packed with or decal on subbase or manifold.

**SERVICE PROCEDURES (See Figure A)**

**NOTE:** All cleaning of parts to be done with mineral spirits or equivalent cleaning solution. Grease should be a mineral based lubricant (Sunaplex 781). All parts showing nicks, scratches or other signs of wear or damage should be replaced.

**CONVERSION PROCEDURE FOR EXTERNAL PILOT**

Internal/External Pilot Conversion – Valves are field convertible to an external pilot supply for applications where pressure supplied to the valve inlet is lower than the specified service limitations, including vacuum or dual pressure service and applications using sandwich regulators.

**VALVES WITH BLACK COVERS**

- 1) Remove two recessed Phillips-head screws securing valve cover.
- 2) Lift cover off valve.
- 3) Remove the rubber selector and reposition with the number "2" aligned with the pointer on the valve body.
- 4) Replace cover on valve and tighten screws to 10 – 12 in.-lbs.
- 5) Connect pressure signal (between 35 and maximum psig) to port "X", "12", or "14" on valve body or base. (This step is not necessary when converting valve for use with sandwich regulators).

**VALVE WITH LIGHT GREY COVERS**

- 1) Loosen two recessed Phillips-head screws securing valve cover.
- 2) Loosen selector by lightly tapping on cover with plastic mallet.
- 3) Turn selector to align with number "2" on valve cover.
- 4) Tighten screws to 20 in.-lbs.
- 5) Same as Step 5 above.

**Pilot Selector Code**

Position	Operator Type	Pilot Supply	Sandwich Regulator	Port 12	Port 14
1	Solenoid	Internal	No	Plug	Plug
2	Solenoid	External	No	Plug	*
3	Single Pilot	N/A	No	Plug	Pilot Signal
4	Double Pilot	N/A	No	Pilot Signal	Pilot Signal
2	Solenoid	Internal	Yes	Plug	Plug
2	Solenoid	External	Yes	Plug	*
4	Single Pilot	N/A	Yes	**	Pilot Signal
4	Double Pilot	N/A	Yes	Pilot Signal	Pilot Signal

\*Supply 35 – 150 PSIG (35 – 100 PSIG for low watt) (or at port "X" if applicable).

\*\*Supply 35 – 150 PSIG (35 – 100 PSIG for low watt).

**MANUAL OVERRIDE CONVERSION**

The following override assemblies are interchangeable and can be field converted:

Locking override.....	K152008
Flush non-locking override.....	K162005
Push-button non-locking override.....	K162006

- 1) Remove the override assembly by removing the two Phillips-head screws.
- 2) Remove the two seals in the override bore and replace with the two small o-rings supplied with the kit. Place the round gasket with the u-shaped protrusion back into place (if it becomes dislodged).
- 3) Install the new override assembly re-using the two Phillips-head screws. (For locking overrides, install unit with the slot vertical so that only 90 degrees of clockwise rotation is possible.)

**NOTE:** Non-locking overrides are held out by air pressure and may not extend until pressure is reapplied to the valve.

**Solenoid Pilot Service**

- 1) Remove hex nut (A) and cover (B). Slide coil and frame assembly (C) off of plunger guide (D). Unscrew the plunger guide and remove plunger (E), spring (F) and o-ring (G).
- 2) Clean plunger guide, plunger, spring and seat in housing. Replace plunger guide assembly if necessary.
- 3) Grease o-ring and place at bottom of threaded bore. Very lightly grease plunger. Reassemble plunger and spring into plunger guide. Screw plunger guide into housing and torque to 50-60 in.-lbs.
- 4) Slide coil and frame assembly back onto plunger guide. Gently pack wires under cover while reassembling on top of end housing (be careful not to pinch wires under edge of cover).
- 5) Screw hex nut onto plunger guide and torque to 30-40 in.-lbs.

**Coil / Indicator Light Replacement – Conduit Style Valves**

- 1) Disconnect solenoid leads from machine wiring. Remove conduit from conduit port in cover (if necessary).
- 2) Remove hex nut (A) and cover (B). Slide coil and frame assembly (C) off of plunger guide (D). Remove frame and washer (H) from coil. Discard coil.
- 3) On units with indicator light, snap open splice connectors (J) and pry clip out of splice. Slide wires out of splice. If replacing indicator light (K), crush lens. Pull out light and discard. Slide new light into housing and slide clip over indicator light until firmly contacting housing. Slide one coil and one indicator light wire into each splice. If multi-colored wires are present, connect red to red and back to white. Place clip into splice and press until flush with top of splice. Snap splice housing shut.
- 4) Reassemble in reverse order of disassembly. Torque hex nut to 30-40 in.-lbs.

**Coil / Indicator Light Replacement – Plug-In Valves (Model numbers NOT ending with “B”)**

- 1) Remove the two socket head screws from solenoid end section and detach.
- 2) Remove hex nut (A) and cover (B). Slide coil and frame assembly (C) off of plunger guide (D). Remove frame and washer (H) from coil.
- 3) Using Amp Tool No. 305183-R, disengage pins from plastic housing. Disengage locking tab on top of plastic housing and remove from end section. Pull wires out of end section.
- 4) On units with indicator lights, see Step 3 for Coil/Indicator Light Replacement – Conduit Style Valves above.
- 5) Slide solenoid wires through top of housing and out end. Slide plug housing over ends of wires (red wire on top if applicable) until pins click into housing. Slide plastic housing into end section until secured by locking tab.
- 6) Reassemble in reverse order of assembly. Ascertain that leads are not in a position to be pinched by cover. Tighten hex nut to 30-40 in.- lbs.

- 1) Remove hex nut (A). Lift coil assembly (L) off of plunger guide (D) and discard.
- 2) Place new coil assembly on plunger guide and push down until seated.
- 3) Tighten hex nut to 30-40 in.-lbs.

**Indicator Light Replacement (Model numbers ending with “B”)**

- 1) Gently pry up under light (M) and remove. Discard light and o-ring seal (N).
- 2) Slide new o-ring over lamp body.
- 3) Align “+” printed on light with the “+” molded on the coil. Insert the light and press firmly to seat.

**Available Service Items**

DESCRIPTION	PART NUMBER
Seal Kit	K352386
Locking Override	K152008
Flush Non-locking Override	K162005
Ext. Non-locking Override	K162006
Indicator Lamp (120/60 AC)*	H19109
Indicator Lamp (24V DC)*	H19110
Indicator Lamp (120/60 AC)**	K252009
Indicator Lamp (24V DC)**	K252008
Plunger & Guide (Standard)	K232025
Plunger & Guide (Low Watt)	K232047
Return Spring	K473053
Interface Seal	K663006

**Coil Replacement Chart**

Voltage			Coil Number			
60 Hz	50 Hz	D.C.	19" Leads	Plug-In*	Plug-In w/o Light**	Plug-In w/ Light**
24	—	—	K593169	K593211	K593288	—
—	—	12	K593170	K593213	K593289	—
—	—	24	K593171	K593215	K593290	K593303
—	—	24***	K593281	K593283	K593298	K593307
—	—	24****	K593315	—	K593328	K593330
—	—	24<>	K593277	K593279	K593331	K593333
120	110	—	K593166	K593205	K593285	K593302
240	—	—	K593175	K593248	K593294	—
120 <>	110 <>	—	—	—	K593325	K593327

\*For use with valve model numbers not ending with “B”.

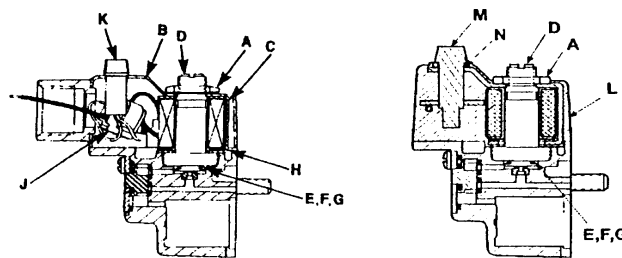
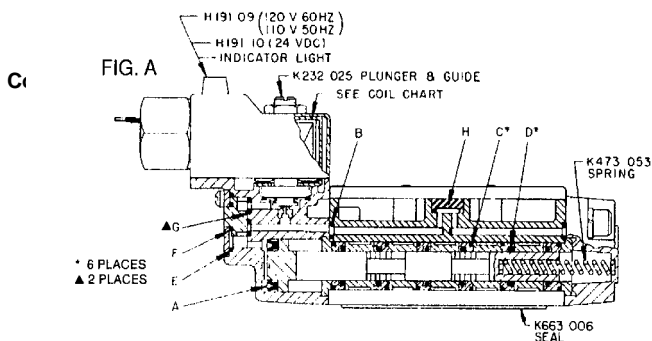
\*\* For use with valve model numbers ending with “B”.

\*\*\* Low watt.

\*\*\*\*Low watt with arc suppression.

<> Arc suppression.

For voltages and options not listed, consult your local representative.



**WARNING**

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Pneumatic Division North America  
Richland, MI 49083

Installation Instructions: V-573P

Sprint/AL Manifolds

ISSUED: November, 1998

Supersedes: K583-280, September, 1996

ECN #8922

**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

**APPLICATION LIMITS**

These products are intended for use in general purpose compressed air systems only. Compliance with the rated pressure, temperature and voltage is necessary -- see installation instructions packed with (or label on) valve.

**VALVE MOUNTING PROCEDURES**

- 1) Clean top surface of manifold and bottom surface of valve body of any dirt or dust.
- 2) Apply a light coating of grease to gasket (packet in kit) and assemble to valve body.
- 3) Place valve on top of manifold lining up all three mounting holes. Electrically operated valves also require pressing down on valve to seat electrical plug.
- 4) Insert (3) valve mounting screws and torque to 35-40 in-lbs in progressive steps with a crisscross pattern.

**WIRING INSTRUCTIONS**

**Units with flying leads:**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be "Hot".

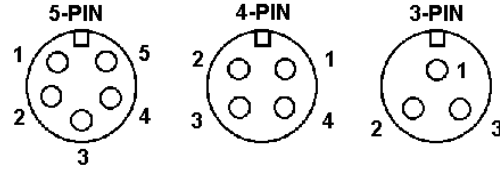
**CAUTION :** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**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.

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold and connect a ground lead to the green ground screw.

**NOTE:** In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-pin, 4-pin or 5-pin connectors:**



**Pin numbers as viewing face of male receptacle.**

Pin No	3-pin	4-pin Ford	5-pin Ford	4-pin Chrysler	5-pin Chrysler	4-pin G M	5-pin G M
1	Ground	Not used	Sol 14 (+)	Sol 14 (+)	Sol 12 (+)	Sol 12 (+)	Sol 12 (+)
2	Sol (+)	Sol 12 (+)	Sol 12 (+)	Ground	Sol 12 (-)	Not used	Sol 14 (+)
3	Sol (-)	Common(-)	Ground	Common(-)	Ground	Common(-)	Ground
4	-----	Sol 14 (+)	Sol 12 (-)	Sol 12 (+)	Sol 14 (-)	Sol 14 (+)	Sol 14 (-)
5	-----	-----	Sol 14 (-)	-----	Sol 14 (+)	-----	Sol 12 (-)

Note: Solenoid 14 is wired for single solenoid valves.

**MANIFOLD APPLICATION**

Valves may be gang manifolded up to any number of stations, providing that sufficient pressure is realized in the circuits downstream of the valve outlets; and sufficient pressure is available for shifting the valves. Longer manifold gangs may require intermediate supports. Means to increase pressure levels include supply connections at both ends of the manifold gang, supplementary supply at Intermediate Inlets, external pilot supplies and sequencing the valve operation to maximize time between different valve shifts.

**WARNING:** Air exhausting from one valve into the exhaust gallery of the manifold may pressure other valve circuits open to the same gallery. Design the circuit such that there is no hazard or damage consequence from this action.

**PORT CONNECTIONS**

- 1) Connect a single inlet air supply to manifold inlet gallery by one of the following methods:
  - a) **All valves to be supplied with a common pressure:** Connect air supply to port marked "1" on either end of manifold package and plug port on other end marked "1" (or connect air supply to both ends for applications requiring a larger volume of air).
  - b) **Two groups of valves each requiring a different single pressure supply:** Isolate valves into two groups using Manifold Isolation Procedures. Connect appropriate air supply to each end of manifold package at port "1".
- 2) Connect mufflers (or pipe exhaust) at ports "3" and "5" for single exhaust; and port "1" for dual supplies.
- 3) Connect cylinder ports marked "2" and "4" to ends of cylinder or other device to be supplied air. Connections are commonly made to ports on end of manifold opposite wiring cavity. If bottom ports are more accessible to your application, plug end cylinder ports and remove plugs from bottom ports.

**EXTERNAL PILOT CONNECTIONS**

Use an external pilot for dual inlet air supplies, for inlet pressures below minimum valve ratings, or any other application requiring pilot pressure different than main supply pressure.

- 1) Perform pilot supply conversion outlined on Installation Instructions packed with valve.



## EXTERNAL PILOT CONNECTIONS (continued)

- 2) Isolate external pilot supply gallery (designated by "X" ) to those valves requiring external pilot supply.
- 3) Connect pilot supply source to manifold pilot supply gallery by one of the following methods:
  - a) **All valves to be Externally Piloted:** Connect pilot supply source to port "X" in one of the port plates. Plug port "X" on opposite plate.
  - b) **Valves on one end of a bank to be Externally Piloted:** Connect pilot supply source to port "X" on the end to be externally piloted.
  - c) **Valves in central portion of a bank to be Externally Piloted:** Remove pipe plug from any end port marked "12" or "14" in the isolated portion of the manifold package and connect to pilot supply source.

## MANIFOLDING ASSEMBLY PROCEDURES

(See Figure A)

Manifolds may be assembled to one another either before or after assembling valves to manifolds. If inlet, exhaust or external pilot galleries are to be isolated from neighboring manifolds, follow isolation procedures before proceeding with this section.

- 1) Line up manifolds in order of assembly while viewing cylinder ports "2" and "4". From the port plate kit, place the right port plate (A) - stamped K568-052 - at the right end of the bank.
- 2) Apply a light coating of grease to a gasket (packet in kit) and place in groove in first manifold from right.
- 3) Assemble first manifold to right port plate (A) with two short button head screws (B). Allen wrench may be inserted through the adjacent manifold mounting hole for tightening (C). Torque screws to 40 in-lbs.

**CAUTION:** Verify that the gasket has not been pinched out of its track before moving on to the next station.

- 4) Assemble remaining manifolds by repeating steps 2 and 3.
- 5) Apply a light coating of grease to a gasket (packet in kit) and place in groove in left port plate (E).
- 6) Assemble left port plate (E) to last manifold with two long button head screws (F) with lockwashers. Torque screws to 40 in-lbs.
- 7) Mount valves on manifolds per Valve Mounting Procedures (if not already attached).
- 8) Apply air pressure to the assembly and check for leaks and proper operation.

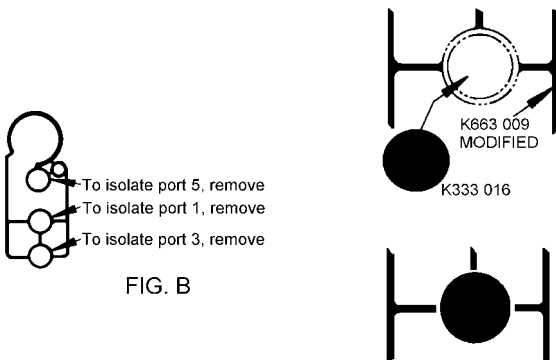


FIG. B

## MANIFOLD ISOLATION PROCEDURES

(See Figure B)

Inlet, exhaust and external pilot galleries may be isolated from those in neighboring manifolds through the use of isolation disks/plugs.

- 1) Determine which gallery is to be isolated between two manifolds.
- 2) Modify the manifold interface gasket by cutting out the circular seal portion of the gasket around the gallery to be isolated.
- 3) Apply a light coating of grease (packet in kit) to isolation disk/plug and insert into counterbore.
- 4) Apply a light coating of grease (packet in kit) to modified gasket and assemble in manifold groove.

**NOTE:** When port 1 is isolated, valves on lower pressure side disc must be converted to external pilot supply (position 2 on the selector). The pilot air on these valves is provided by the inlet signal on the high pressure side of the disc, providing that one of the valves out that side is set to internal pilot supply (position 1 on the selector).

## OPTIONAL ACCESSORIES

**MANIFOLD AUXILIARY PORT BASE** - may be used to provide a supplementary/different supply pressure and/or external pilot supply pressure to a group of valves isolated in the central portion of the bank of manifolds. Assembly and isolation procedures are the same as those for manifold blocks with the exception that there is no wiring to be done or valves to be attached to these stations.

Air connections are the same as on port plates. Ports 1, 3, and 5 are provided on both top and bottom of block. Port "X" is located on the bottom.

**BLANK STATION PLATE** - used with a manifold block to reserve a place for a valve that will be later added to the manifold bank or to remove a valve from a manifold without having to remove the manifold block from the manifold bank.

Place gasket and block on manifold and assemble using screws provided with plate. Tighten screws to 40 in-lbs max.

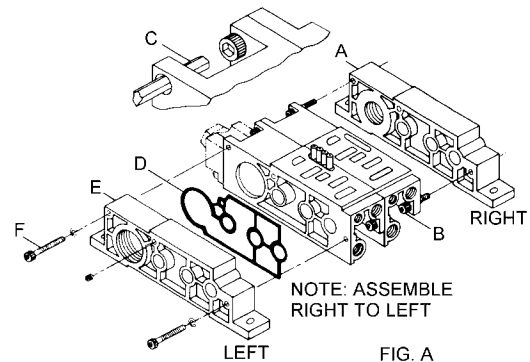


FIG. A



## WARNING

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Pneumatic Division North America  
Richland, MI 49083

Installation Instructions: V-574P

Sprint/AL Subbases

ISSUED: November, 1998

Supersedes: K583-278, September, 1996

ECN #8922

**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

**APPLICATION LIMITS**

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

Operating pressure range:	PSIG	Bar	kPa
Minimum	35	2.41	241
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

**Operating Temperature Range:** 20°F (-6°C) to 140°F (60°C)

**Voltage Range:** +10% to -15% of rating  
(Applicable only for solenoid operated valves)

NOTE: The above ratings are those of the associated valve.

**WIRING INSTRUCTIONS**

**Units with flying leads:**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be "Hot".

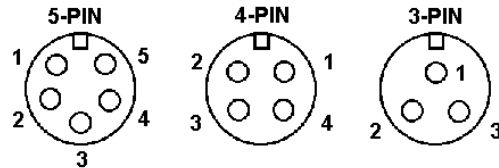
**CAUTION:** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**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.

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

NOTE: In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-pin, 4-pin or 5-pin connectors:**



Pin numbers as viewing face of male receptacle.

Pin No	3-pin	4-pin Ford	5-pin Ford	4-pin Chrysler	5-pin Chrysler	4-pin G M	5-pin G M
1	Ground	Not used	Sol 14 (+)	Sol 14 (+)	Sol 12 (+)	Sol 12 (+)	Sol 12 (+)
2	Sol (+)	Sol 12 (+)	Sol 12 (+)	Ground	Sol 12 (-)	Not used	Sol 14 (+)
3	Sol (-)	Common(-)	Ground	Common(-)	Ground	Common(-)	Ground
4	-----	Sol 14 (+)	Sol 12 (-)	Sol 12 (+)	Sol 14 (-)	Sol 14 (+)	Sol 14 (-)
5	-----	-----	Sol 14 (-)	-----	Sol 14 (+)	-----	Sol 12 (-)

Note: Solenoid 14 is wired for single solenoid valves.

**VALVE MOUNTING PROCEDURES**

- 1) Clean top surface of subbase and bottom surface of valve body of any dirt or dust.
- 2) Apply a light coating of grease to gasket (packet in kit) and assemble to valve body.
- 3) Place valve on top of subbase lining up all three mounting holes. Electrically operated valves also require pressing down on valve to seat electrical plug.
- 4) Insert (3) valve mounting screws and torque to 35-40 in-lbs in progressive steps with a crisscross pattern.

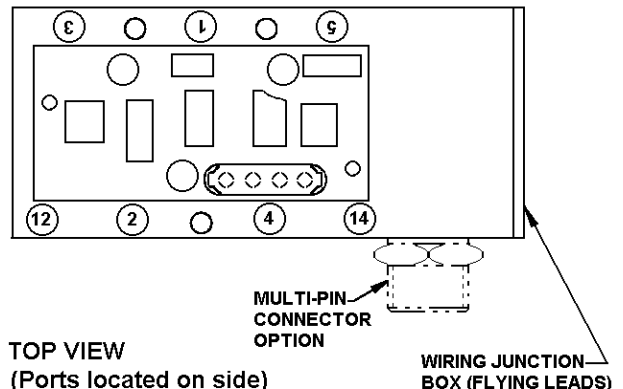
**PORT CONNECTIONS**

- 1) Connect a single inlet air supply to port "1". (For dual pressure applications connect inlet air supplies to port "3" and "5").
- 2) Connect mufflers (or plumb exhaust) from ports "3" and "5" for single air supply. (For dual pressure applications connect to port "1").
- 3) Connect cylinder ports "2" and "4" to ends of cylinder or other device to be supplied air.

**EXTERNAL PILOT SUPPLY CONNECTIONS**

Use an external pilot for dual inlet air supplies, for inlet pressure below minimum valve ratings, or any other application requiring pilot pressure different than main supply pressure.

- 1) Perform pilot supply conversion outlined on installation instructions packed with valve.
- 2) Connect pilot supply source to the following port(s):  
Single Solenoid Valves "14"  
Double Solenoid Valves "12" and "14"



TOP VIEW  
(Ports located on side)

MULTI-PIN CONNECTOR OPTION

WIRING JUNCTION BOX (FLYING LEADS)

**WARNING**

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Pneumatic Division North America  
Richland, MI 49083

Installation Instructions: V-575P  
Sprint/AL Sandwich Flow Controls  
ISSUED: July, 1999  
Supersedes: November, 1998  
ECN #9125

**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

**INSTALLATION/OPERATING INSTRUCTIONS**

A Flow Control "Sandwich" controls the flow of air from the valve exhaust ports to atmosphere. The Sprint valve (4-way) is typically used with a double acting cylinder alternately pressurizing one end while exhausting the other. Cylinder speed can be influenced by restricting the exhaust path.

NOTE: If the complete blockage of air to atmosphere or extremely fine adjustments are required DO NOT use a Flow Control "Sandwich". Instead connect Micrometer Flow Control Valves to cylinder ports of subbase or manifold with the free flow direction pointing away from the subbase or manifold.

Flow Control "Sandwich" is intended for use with subbase or manifold mounted Sprint Valves. It is only recommended for use with Common Port versions of Sandwich Regulators. The Flow Control is to be assembled between the regulator and the subbase or manifold using the (3) 1/4-20 X 1-1/4" low head cap screws provided in the kit. If used with Single Port or Independent Port versions of Sandwich Regulators functionality is limited as follows:

**Flow Control "Sandwich" used in conjunction with Single Port version of Sandwich Regulator** - Adjust speed with the adjusting screw on the regulator end of the Sandwich Regulator. It adjusts the speed of exhaust flow from cylinder ports "2" and "4". Independent speed adjustment is not possible. This could result in different exhaust speeds for cylinder ports "2" and "4" since line pressure is supplied to one cylinder port and a regulated pressure is supplied to the other. The other adjusting screw is non-functional.

**Flow Control "Sandwich" used in conjunction with Independent Port version of Sandwich Regulator** - Fully close one adjustment screw and perform adjustment with the other. Either adjustment screw controls the speed of exhaust flow from cylinder ports "2" and "4". Independent speed adjustment is not possible. This could result in different exhaust speeds for cylinder ports "2" and "4" since a different regulated pressure is supplied to each cylinder port.

**APPLICATION LIMITS**

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

Operating Pressure Range:	PSIG	Bar	kPa
Minimum	35	2.4	241
Maximum	150	10.4	1034

Operating Temperature Range: 20°F (-7°C) to 140°F (60°C)

Voltage Range: +10% to -15% of Valve Rating  
(Applicable only for solenoid operated valves)

NOTE: The above ratings are those of the associated valve.

**INSTALLATION**

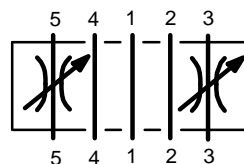
- 1) Remove the valve from the subbase or manifold (if assembled) by removing and discarding the three mounting screws.
- 2) Clean all mating surfaces of valve, subbase or manifold and Flow Control "Sandwich" of dust and dirt.
- 3) Apply a light coating of grease (in kit) to gasket and place in gasket track on bottom of Flow Control "Sandwich".
- 4) Place Flow Control "Sandwich" on top of subbase or manifold lining up all three mounting holes. Electrically operated valves also require pressing down on flow control to seat electrical plug.
- 5) Apply a light coating of grease (in kit) to valve gasket and place in gasket track on bottom of valve.
- 6) Place valve on top of Flow Control "Sandwich" lining up all three mounting holes. Electrically operated valves also require pressing down on valve to seat electrical plug.
- 7) Assemble valve, flow control and subbase or manifold together with (3) 1/4-20 screws. Tighten to 35-40 in-lbs. (If valve has a black plastic cover use the (3) 1/4-20 socket head cap screws. If valve has a gray metal cover use (3) 1/4-20 button head screws, P/N H09829. Part number H09829 must be ordered separately).
- 8) Apply pressure to subbase or manifold and check for leakage at gasket interfaces. If audible leakage or noticeable bubbling (using soapy water at joints) is present the gasket probably was accidentally pushed out of the groove during assembly. If this occurs remove pressure, disassemble and replace gasket.

**ADJUSTMENT PROCEDURES**

Adjustment screw nearest to junction box cover on subbase or manifold controls the flow of air from cylinder port 4 to exhaust port 5. With a double solenoid valve this occurs when operator #12 is actuated. With a single solenoid valve this occurs when operator #14 is not actuated. Adjustment screw on other end controls air from cylinder port 2 to exhaust port 3.

- 1) Turn both adjustment screws clockwise until fully closed and then counterclockwise slightly.
- 2) While cycling valve with cylinder adjust clockwise to decrease speed or counterclockwise to increase speed.

**ANSI SYMBOL**



**WARNING**

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Pneumatic Division North America  
Richland, MI 49083

Installation Instructions: V-576P

Sprint/AL Sandwich Regulator

ISSUED: May, 2001

Supersedes: November, 1998

ECN #9369 Rev. 9

 **WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

**INSTALLATION/OPERATING INSTRUCTIONS**

A sandwich regulator is used to provide regulated pressure to individual valves in a manifolded valve arrangement. Three basic modes of regulation are available as follows:

**Common Port Regulation** - Provides adjustable regulated air pressure to the valve inlet.

**Independent Port Regulation** - Provides (2) separately adjustable regulated air pressures, one to each of the valves exhaust passages. The valves exhaust (coming out of its inlet passage) is directed to both manifold or subbase exhaust ports.

**Single Port Regulation** - Provides adjustable regulated air pressure to one of the valves exhaust passages and full inlet pressure to the other. The valves exhaust (coming out of its inlet passage) is directed to the manifold or subbase exhaust port on the regulator end.



**CAUTION:** The reverse valve porting utilized with Independent Port and Single Port Regulation will reverse the function of 4-way, 3-position cylinder to exhaust and 4-way, 3-position inlet to cylinder valves. Utilize the opposite function valve for normal operation.

Sandwich regulator should be installed with reasonable accessibility for service whenever possible -- repair service kits are available. Keep pipe or tubing lengths to a minimum with inside clean and free of dirt and chips. Pipe joint compound should be used sparingly and applied only to the male pipe -- never into the female port. Do not use PTFE tape to seal pipe joints -- pieces have a tendency to break off and lodge inside the unit, possibly causing malfunction. Care must be taken to avoid undue strain on the valve. Mounting bolt torque 40-50 in-lbs.

Air applied to the sandwich regulator must be filtered to realize maximum component life.

**Factory Pre-Lubrication** - Sandwich regulators are pre-lubricated at assembly with Texaco Marfak MP-2 grease.



**CAUTION:** Do not use synthetic, reconstituted, or oils with an alcohol content or detergent additive.

**APPLICATION LIMITS**

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


<b>Operating pressure range:</b>	<b>PSIG</b>	<b>Bar</b>	<b>kPa</b>
Minimum	35	2.41	241
Maximum	150	10.34	1034
<b>Operating Temperature Range:</b>	20°F (-6°C) to 140°F (60°C)		
<b>Voltage Range:</b>	+10% to -15% of rating		
(Applicable only for solenoid operated valves)			

NOTE: The above ratings are those of the associated valve.

**WIRING INSTRUCTIONS**

**Units with flying leads:**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14".  
 Either may be "Hot".

**CAUTION:** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

NOTE: In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-pin, 4-pin, or 5-pin connectors:**

See Installation Instructions packed with or decal on subbase or manifold.

**INSTALLATION**

If valve is not mounted to base skip steps 1 and 2.

- 1) Remove (3) body to base mounting bolts and lift valve body from subbase or manifold and retain body to base seal.
- 2) Thoroughly clean both valve body and base mounting surfaces of all foreign residue.
- 3) Verify that the valve selector is properly set for use with a sandwich regulator per the *Selector Settings Table* as follows:
  - a) **VALVES WITH BLACK COVERS**
    1. Remove (2) recessed phillips-head screws securing valve cover.
    2. Lift cover off valve.
    3. Remove the rubber selector and reposition it with the Position Number from the *Selector Settings Table* aligned with the pointer on the valve body.
    4. Replace cover on valve and tighten screws to 10-12 in lbs.
  - b) **VALVES WITH LIGHT GREY COVERS**
    1. Loosen (2) recessed phillips-head screws securing valve cover.
    2. Loosen selector by lightly tapping on cover with plastic mallet.
    3. Turn selector so that its arrow is aligned with the Position Number from the *Selector Settings Table*.
    4. Tighten screws to 20 in lbs.
- 4) Install seal (Item #15) into the grooves on the bottom surface of the Sandwich Regulator.

## INSTALLATION (CONTINUED)

- 5) Proceed as follows depending on the type of plug arrangement:
  - a) **Sandwich Regulators with bridge plug** ("B" or "F" suffix in part number) simply align mating plug of regulator assembly to that of the base and press down.
  - b) **Sandwich Regulators with plug/wire harness** ("E", "G", or "L" suffix or no suffix in part number), remove the existing plug/wire harness in the valve base. Snake the wires from the Sandwich Regulator through the empty plug opening out the conduit opening in the valve base.
- 6) Using the (3) new mounting bolts (Item #14), secure the Sandwich Regulator to the base torquing the bolts to 40 in-lbs.
- 7) Using the (3) existing mounting bolts, secure the valve to the Sandwich Regulator base torquing the bolts to 40 in-lbs.

### Selector Settings Table

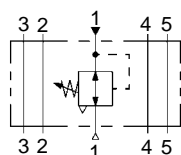
Position Number	Valve Operator Type
2	Single and Double Solenoid
4*	Single Remote Pilot
4	Double Remote Pilot

\* Provide external pilot supply of 35 to 150 psig to the valve through manifold port 12.

**CAUTION:** Valve pilot supply selector must be reset per the above table since these settings differ from those used for a valve without a sandwich regulator. Valves may fail to function properly if this procedure is not followed. Selector position number 2 provides internal pilot supply for single and double solenoid operated valves. If external pilot supply is required (main supply pressure is less than 35 psig) use a sandwich regulator drilled for external pilot supply (E, F, or G in the 10th digit of the model number).

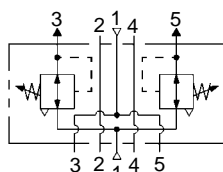
## ANSI DIAGRAMS

### COMMON PORT



MANIFOLD SIDE

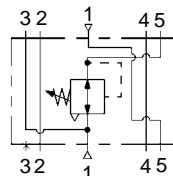
### INDEPENDENT PORT



MANIFOLD SIDE

### SINGLE PORT

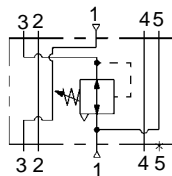
#### VALVE SIDE



MANIFOLD SIDE

PORT 5 REGULATED

#### VALVE SIDE



MANIFOLD SIDE

PORT 3 REGULATED

## OPERATION

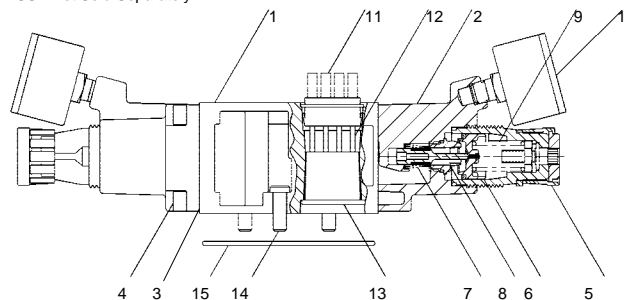
- 1) Supply air to the manifold inlet gallery or subbase inlet port.
- 2) Disengage locking knob by pulling outward.
- 3) To increase pressure supplied to the valve turn locking knob clockwise until desired pressure is reached.
- 4) To decrease pressure supplied to the valve turn locking knob counterclockwise past the desired pressure setting and then slowly turn the knob clockwise until the desired pressure setting is reached.
- 5) Press the locking knob inward to secure the adjustment.
- 6) Adjustment may require resetting to compensate for flow after the valve is cycling in normal use.

## REPLACEMENT PARTS

Service Kit . . . . . PS460BP  
(Two kits required for units with Independent Port Regulation)

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.		
			COMMON PORT	INDEPENDENT PORT	SINGLE PORT
1	Interface Block	NSS	1	1	1
2	Regulator Housing	NSS	1	2	1
3	Gasket	KIT	1	2	1
4	Screw (SHCS, 10-32 X 1/2)	K05R1110F050	4	8	4
5	Bonnet Assembly	L0136901	1	2	1
6	Piston Assembly	KIT	1	2	1
7	Poppet Assembly	KIT	1	2	1
8	Seat	KIT	1	2	1
9A	Control Spring, 125 psi	P01173	1	2	1
9B	Control Spring, 60 psi	P01174	1	2	1
9C	Control Spring, 30 psi	P01175	1	2	1
9D	Control Spring, 15 psi	P01176	1	2	1
10A	Gauge, 160 psi	H03274	1	2	1
10B	Gauge, 60 psi	H03273	1	2	1
10C	Gauge, 30 psi	H03272	1	2	1
10D	Gauge, 15 psi	P530157	1	2	1
10E	Gauge, 100 psi Liquid Filled	H03276	1	2	1
11	Cap Housing	K203076	1	1	1
12A	Wire Assembly, 18"	K512006	1	1	1
12B	Wire Assembly, 6"	K51020003	1	1	1
13	Pin Housing *	K203089	1	1	1
14	Screw (Low Head SHCS, 1/4-20 X 3/4)	H30901	3	3	3
15	Seal	K663006	1	1	1

\* For plug options "B" or "F" (Bridge plug) only.  
NSS - Not Sold Separately.



## **WARNING**

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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.

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Pneumatic Division North America  
Richland, MI 49083

Service Instructions: V-577P

Sprint/AL Plug-In Lamp Kit

ISSUED: November, 1998

Supersedes: K583-452, June, 1997

ECN #8922



**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

**Plug-In Lamp Replacement Instructions:**

- 1) Gently pry up under light and remove. Discard light and o-ring seal.
- 2) Slide new o-ring over lamp body.
- 3) Align "+" printed on light with the "+" molded on the coil. Insert the light and press firmly to seat.

**Available Lamps:**

Description	Part Number
Indicator Lamp (120/60 AC)	K252009
Indicator Lamp (24V DC)	K252008



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Pneumatic Division North America  
Richland, MI 49083

Service Instructions: V-578P

Sprint/AL Dynamic Seal Kit

ISSUED: November, 1998

Supersedes: K583-455, May, 1997

ECN #8922



**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on 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 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.

**APPLICATION LIMITS**

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

Operating pressure range:	PSIG	Bar	kPa
Minimum* 35	2.41	241	
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

\* For lower pressure or vacuum operation, solenoid(s) may be externally piloted (35 psig min.) following the conversion procedure on these instructions.

**Operating Temperature Range:** 32°F (0°C) to 175°F (80°C)

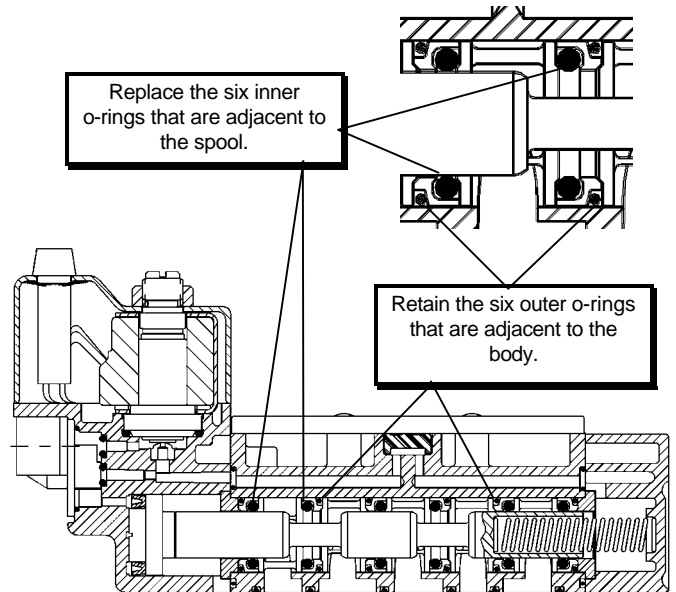
**Voltage Range:** +10% to -15% of rating

**Dynamic Seal Replacement Instructions (Kit No. K352423)**

- 1) Mark end sections to ensure re-assembly on the proper end. Remove two socket head screws from each end section and detach.

**Note:** Valves with model numbers ending in "B" have end sections with wiring that cannot be detached. Wire length is sufficient for service access. Remove spring (where applicable).

- 2) Remove spool and clean. Note which end spring or spring bore in spool was on.
- 3) Remove molded seal from each end of body and retain.
- 4) Remove end spacers, spacers, seal retainers, and o-rings. Discard the inner o-rings only. Clean body and all retained parts.
- 5) Lightly grease the o-rings and install onto seal retainers.
- 6) Using the spool as a mandrel, begin reassembly by sliding a seal retainer (outside o-ring facing downward) over the spool and push down. Then stack a spacer on top of the seal retainer. Next, stack a seal retainer (outside o-ring facing upward). Repeat this process alternating seal retainer orientation each time. The final assembly should have outside o-rings showing at each end of the spool.  
**NOTE:** Valves with four (4) brass and two (2) aluminum seal retainers must be reassembled with the aluminum seal retainers in the middle two (2) positions.
- 7) Grease the outside of this assembly and gently slide it into the valve body. (On spring return valves, the hollow end of the spool goes on the spring return end.)
- 8) Lightly grease end gaskets and place in grooves in ends of body.
- 9) **Spring Return End Sections** - Slide spring into bore in end of spool. Compress spring while assembling end housing to body with socket head screws. Torque screws to 30-35 in lbs.



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Pneumatic Division North America  
Richland, MI 49083

Service Instructions: V-579P

Sprint/AL Extended Locking Override Kit

ISSUED: November, 1998

Supersedes: K583-457, September, 1997

ECN #8922

 **WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on service instructions sheets.
- 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 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.

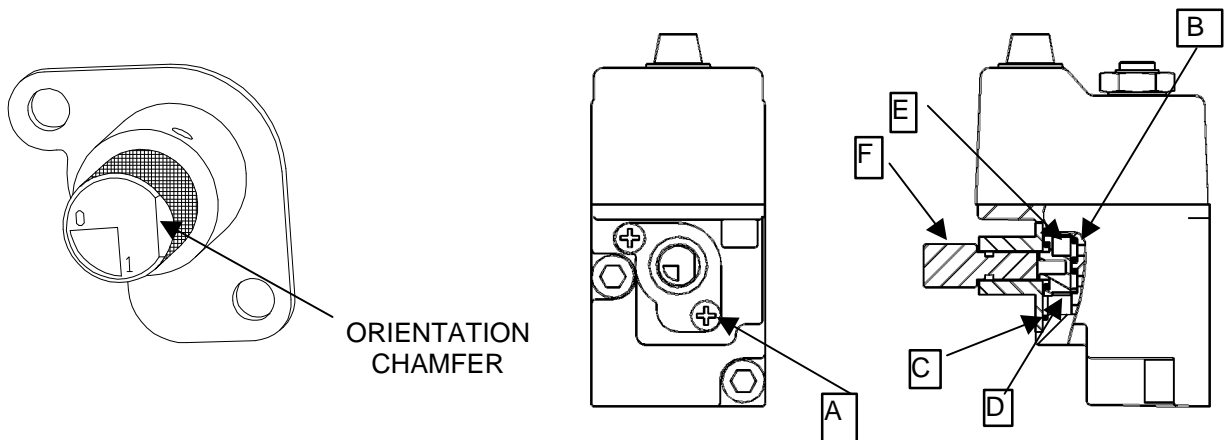
## MANUAL OVERRIDE SERVICE/CONVERSION

### Service of or Conversion to an Extended Locking Override (Kit No. K162010).

- 1) Remove override mounting screws(A) and retain.
- 2) Remove and discard override, override cover and all seals.
- 3) Lightly lubricate new seals with grease (tube in kit).
- 4) Place (2) small o-rings(B) into counterbores. Place the round gasket (C) with the u-shaped protrusion into its groove.
- 5) Place the override selector (D) into the housing with the slot vertical so that only 90° of clockwise rotation is possible.
- 6) Place o-ring (E) into top of override selector.
- 7) Assemble new override (F) with blade of override lined up with slot in override selector (D). Also make sure that chamfer on override knob is to the right.
- 8) Replace override mounting screws (A) and tighten.

### Retrofitting a Standard Locking Override to an Extended Locking Override (Kit No. K112104).

- 1) Turn override counterclockwise to the off position.
- 2) Remove override mounting screws (A) and retain.
- 3) Remove and discard override cover.
- 4) Assemble new override with blade of override lined up with slot in override selector (D). Also make sure that chamfer on override knob is to the right.
- 5) Replace override mounting screws (A) and tighten.



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Pneumatic Division North America  
 Richland, MI 49083

Service Instructions: V-589P  
 Sprint Valves/AL  
 Plug-In Solenoid Conversion  
 ISSUED: November, 1998  
 Supersedes: K583-404, June, 1997  
 ECN #8922

**WARNING**

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

- Disconnect air supply and depressurize all air lines connected to this product before installation, servicing, or conversion.
- Disconnect electrical supply before installation, servicing or conversion.
- Operate within the manufacturer's specified pressure, temperature, voltage and other conditions listed in these instructions.
- Medium must be moisture-free if ambient temperature is below freezing.
- Service according to procedures listed on 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 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.

**APPLICATION LIMITS**

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

Operating pressure range:	PSIG	Bar	kPa
Minimum*	35	2.41	241
Maximum (Standard)	150	10.34	1034
(Low Watt)	100	6.89	689

\* For lower pressure or vacuum operation, solenoid(s) may be externally piloted (35 psig min.) following the conversion procedure on these instructions.

**Operating Temperature Range:** 20°F (7°C) to 140°F (60°C)

**Voltage Range:** +10% to -15% of rating

**WIRING INSTRUCTIONS**

**Units with flying leads:**

**Single Solenoid:** Use wires marked "2" and "3" for connection to the solenoid. Either may be "Hot".

**Double Solenoid:** Use wires marked "1" and "2" for Solenoid "12". Either may be "Hot". Use wires marked "3" and "4" for Solenoid "14". Either may be "Hot".



**CAUTION:** DC solenoids with indicator lights and/or arc suppression coils are polarity sensitive. Use wire number 2 for single solenoid valves and wire numbers 1 and 4 for double solenoid valves as positive.

**Earth ground:** All electrically operated valves must be provided a proper earth ground. Remove the end cover of the manifold or subbase and connect a ground lead to the green ground screw.

**NOTE:** In addition to the above instructions, follow all requirements for local and national electrical codes.

**Units with 3-pin, 4-pin, or 5-pin connectors:**

See Installation Instructions packed with or decal on subbase or manifold.

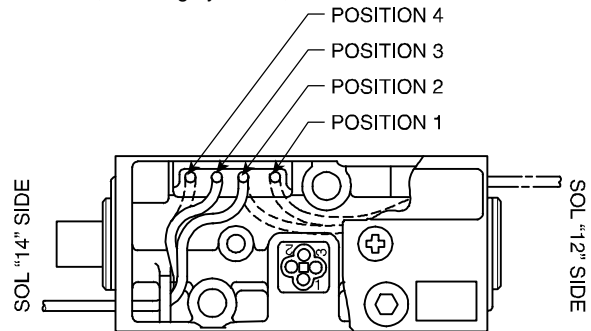
**PLUG-IN SOLENOID CONVERSION INSTRUCTIONS**

**To replace one solenoid on a single-solenoid valve or both solenoids on a double-solenoid valve:**

- 1) Remove air, electricity, etc.
- 2) Remove old solenoid end section(s) and discard.
- 3) Remove valve body cover and remove all wiring and plugs from body.
- 4) Insert new 4-pin plug housing in body (note orientation of plug, taller side of plug rests against wall of valve body).
- 5) Assemble new end section(s) to body passing lead wires into body cavity and torque screws to 40 in-lbs.
- 6) Insert pins on ends of lead wires into plastic plug housing until they lock in place in the location shown in the wiring diagram.
- 7) Replace valve cover and tighten screws to 10-12 in-lbs on black covers, and on grey covers, 20 in-lbs.

**To replace one solenoid only on a double-solenoid valve:**

- 1) Remove air, electricity, etc.
- 2) Remove old solenoid end section and discard.
- 3) Remove valve body.
- 4) Using pliers, pull the wires going to the solenoid to be replaced out of the 4-wire plug housing (The pins can be removed easier by using AMP tool no. 305183-R.)
- 5) Remove the wires and the corresponding 2-wire plug from the body and discard.
- 6) Assemble new end section to body passing lead wires into body cavity and torque screws to 40 in-lbs.
- 7) Insert pins on ends of lead wires into plastic plug housing until they lock in place in the location shown in the wiring diagram.
- 8) Replace valve cover and tighten screws to 10-12 in-lbs on black covers, and on grey covers, 20 in-lbs.



Type	Body Wiring Solenoid Lead	Body Plug
Single Solenoid	Black Wire	Position 3
	Red Wire	Position 2
Double Solenoid	Black Wire Solenoid 12	Position 2
	Red Wire Solenoid 12	Position 1
	Black Wire Solenoid 14	Position 3
	Red Wire Solenoid 14	Position 4

## CONVERSION PROCEDURE FOR EXTERNAL PILOT

Internal/External Pilot Conversion - Valves are field convertible to an external pilot supply for applications where pressure supplied to the valve inlet is lower than the specified service limitations, including vacuum or dual pressure service and applications using sandwich regulators.

### Valves with Black Covers

- 1) Remove two recessed phillip-head screws securing valve cover.
- 2) Lift cover off valve.
- 3) Remove the rubber selector and reposition with the number "2" aligned with the pointer on the valve body.
- 4) Replace cover on valve and tighten screws to 10-12 in-lbs.
- 5) Connect pressure signal (between 35 and maximum psig) to port "X", "12" or "14" on valve body or base. (This step is not necessary when converting valve for use with sandwich regulators).

### Valves with Light Grey Covers

- 1) Loosen two recessed phillip-head screws securing valve cover.
- 2) Loosen selector by lightly tapping on cover with plastic mallet.
- 3) Turn selector to align with number "2" on valve cover.
- 4) Tighten screws to 20 in-lbs.
- 5) Connect pressure signal (between 35 and maximum psig) to port "X", "12" or "14" on valve body or base. (This step is not necessary when converting valve for use with sandwich regulators).

### Pilot Selector Code

Position	Operator Type	Pilot Supply	Sandwich Regulator	Port	
				12	14
1	Solenoid	Internal	No	Plug	Plug
2	Solenoid	External	No	Plug	*
3	Single Pilot	N/A	No	Plug	Pilot Signal
4	Double Pilot	N/A	No	Pilot Signal	Pilot Signal
2	Solenoid	Internal	Yes	Plug	Plug
2	Solenoid	External	Yes	Plug	*
4	Single Pilot	N/A	Yes	**	Pilot Signal
4	Double Pilot	N/A	Yes	Pilot Signal	Pilot Signal

\* Supply 35 - 150 PSIG (35 - 100 PSIG for low watt) (or at port "X" if applicable).

\*\* Supply 35 - 150 PSIG (35 - 100 PSIG for low watt).

## Available Service Items

Description	Part Number
Seal Kit	K352386
Locking Override	K152008
Flush Non-Locking Override	K162005
Ext. Non-Locking Override	K162006
Indicator Lamp (120/60 AC)*	H19109
Indicator Lamp (24V DC)*	H19110
Indicator Lamp (120/60 AC)**	K252009
Indicator Lamp (24V DC)**	K252008
Plunger & Guide (Standard)	K232025
Plunger & Guide (Low Watt)	K232047
Return Spring	K473053
Interface Seal	K663006

## Coil Replacement Chart

Voltage			Coil Number			
60 Hz	50 Hz	D.C.	19" Leads	Plug-In*	Plug-In w/o Light**	Plug-In w/Light**
24	-	-	K593169	K593211	K593288	-
-	-	12	K593170	K593213	K593289	-
-	-	24	K593171	K593215	K593290	K593303
-	-	24 <sup>†</sup>	K593281	K593283	K593298	K593307
-	-	24 <sup>††</sup>	K593315	-	K593328	K593330
-	-	24<>	K593277	K593279	K593331	K593333
120	110	-	K593166	K593205	K593285	K593302
240	-	-	K593175	K593248	K593294	-
120 <>	110 <>	-	-	-	K593325	K593327

\* For use with valve model numbers not ending with "B".

\*\* For use with valve model numbers ending with "B".

† Low watt.

†† Low watt with arc suppression.

<> Arc suppression.

For voltages and options not listed, consult your local representative.



## WARNING

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

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

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

**EXTRA COPIES OF THESE INSTRUCTIONS ARE AVAILABLE FOR INCLUSION IN EQUIPMENT / MAINTENANCE INSTRUCTION MANUALS THAT UTILIZE THESE PRODUCTS. CONTACT YOUR LOCAL REPRESENTATIVE.**



**Pneumatic Division**  
Richland, Michigan 49083  
269-629-5000

**PDNSG-1**

**Pneumatic Division Safety Guide**

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

### **⚠ WARNING:**

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

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

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

### **1. GENERAL INSTRUCTIONS**

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

### **2. PRODUCT SELECTION INSTRUCTIONS**

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

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- 2.7. Chemical Compatibility:** For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5
- 2.8. Product Rupture:** Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
  - Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
  - Consult product labeling or product literature for pressure rating limitations.

### 3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

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

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

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

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

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