

SUPERSPOOL™ II VALVE

PNEUMATIC DIRECTIONAL CONTROL VALVE

SERVICE INFORMATION

Part Number R431001089 (replaces P -030625-00002)

Part Number R431001090 (replaces P -030625-00003)



Valve Only

The SuperSpool™ II Valve is the latest version of the SuperSpool valve family that has successfully served the railcar hopper door market for over 30 years.

Designed around the same spool and seal design that has proven itself for decades, this valve now offers more economical solenoid operators and a simplified subbase to provide cost savings to the car owner without sacrificing critical design features.

WARNING: INSTALLATION AND MOUNTING

The user of these devices must conform to all applicable electrical, mechanical, piping and other codes in the installation, operation or repair of these devices.

INSTALLATION! Do not attempt to install, operate or repair these devices without proper training in the technique of working on pneumatic or hydraulic systems and devices, unless under trained supervision.

Compressed air and hydraulic systems contain high levels of stored energy. Do not attempt to connect,

disconnect or repair these products when a system is under pressure. Always exhaust or drain the pressure from a system before performing any service work. Failure to do so can result in serious personal injury.

MOUNTING! Devices should be mounted and positioned in such a manner that they cannot be accidentally operated.

Installation

Before installing the SuperSpool II Valve, all air lines in the system should be blown clean to remove any moisture or loose material. To further ensure long, trouble-free service, an efficient air line filter should be installed on the supply side of the valve. Since this application has a very low cycle rate, an air line lubricator is not required.

The preferred mounting for this valve is with the axis of the valve spool horizontal and parallel with the axles of the railcar wheels. If a drain valve is not used in the system, the valve should be mounted such that the valve is lower than the cylinder ports.

The valve subbase ports are 3/4" NPT, and may be plumbed to the actuating cylinder to suit the desires of the customer, but the typical plumbing is as follows:

- Valve "IN" port: Supply
- Valve "Out 1" port: To cap end of cylinder
- Valve "Out 2" port: To piston rod end of cylinder

The "Exh 1", and "Exh 2" exhaust ports are typically left open to atmosphere in this application. Mufflers or insect excluders may be installed if desired, but care should be taken to assure that they are the free-flow type and that they will not be a design that will clog up with coal dust over time. Flow restriction at these exhaust ports will slow the speed of the cylinder and door actuation, so due caution is suggested if these items are installed.

Additionally, the valve is typically mounted such that the delivery port supplying the cap end of the cylinder (the "Out 1" port in this example) is located closest to the center of the car. In this position, the manual override button used to open the car doors is on the inside of the car and requires a more obvious procedure to be actuated.

WARNING: OPERATION, ADJUSTMENT AND MAINTENANCE

Operation

- Temperature Range: - 20° F to + 160° F
- Max. Operating Pressure: 150 psi
- Min. Operating Pressure: 15 psi

This SuperSpool™ II valve is a high flow, five ported, four-way directional control valve featuring double 24 Vdc solenoid operators. This valve also utilizes a reverse polarity diode assembly and requires connection of only two leads to control the valve. A positive (+) polarity 24 Vdc signal on the black lead and a negative (-) signal on the white lead actuates the “A” end solenoid. Reversing the polarity on these two leads actuates the “B” end solenoid.

Adjustments

No adjustments are required on the SuperSpool II Valve.

Maintenance

It is recommended that this valve be disassembled every five years for cleaning, inspection, and lubrication. To remove this valve from the installation, all air pressure must be shut off and vented.

If complete valve removal is desired, disconnect the electrical wiring from the junction box and remove the three screws that attach the valve to the subbase. As an option, the electrical solenoid / junction box assembly may be left wired to the car to service only the pneumatic portion of the valve. To do this, remove the two solenoid acorn nuts and lift the solenoid / junction box assembly from the valve. Remove the three screws that attach the valve to the subbase. The pneumatic portion of the valve may now be serviced apart from the electrical coil assembly if desired. Caution: If this is done, the electrical operation will need to be verified on the car after the coil assembly is re-attached.

Valve service should be performed in a clean work area. Blow all dust from the valve ports using compressed air and disassemble the valve. Use care to avoid scratching the large diameter of the spool during or after removing this from the valve.

If the valve body and spool are extremely dirty, it may be advisable to wash them with either a mild (non-abrasive) soap and water solution or with a non-flammable solvent. Inspect the spool for any nicks or scratches on the outer sealing diameter. If scratches are found, the spool should be replaced. All rubber parts should be washed with soap and water. Rinse thoroughly and blow dry.

Use a spanner wrench to remove the solenoid plunger assemblies and clean the solenoid end covers in similar fashion to remove dust and debris. Rinse and dry these parts thoroughly before reassembly.

Replace any parts that are damaged or worn, giving particular attention to the spool and seal rings. Repair kit part numbers are identified on page 5. Lubricate all rubber parts, the bore of the valve body, and the spool itself with the Shell Alvania EP-RO grease as provided in the seal repair kit.

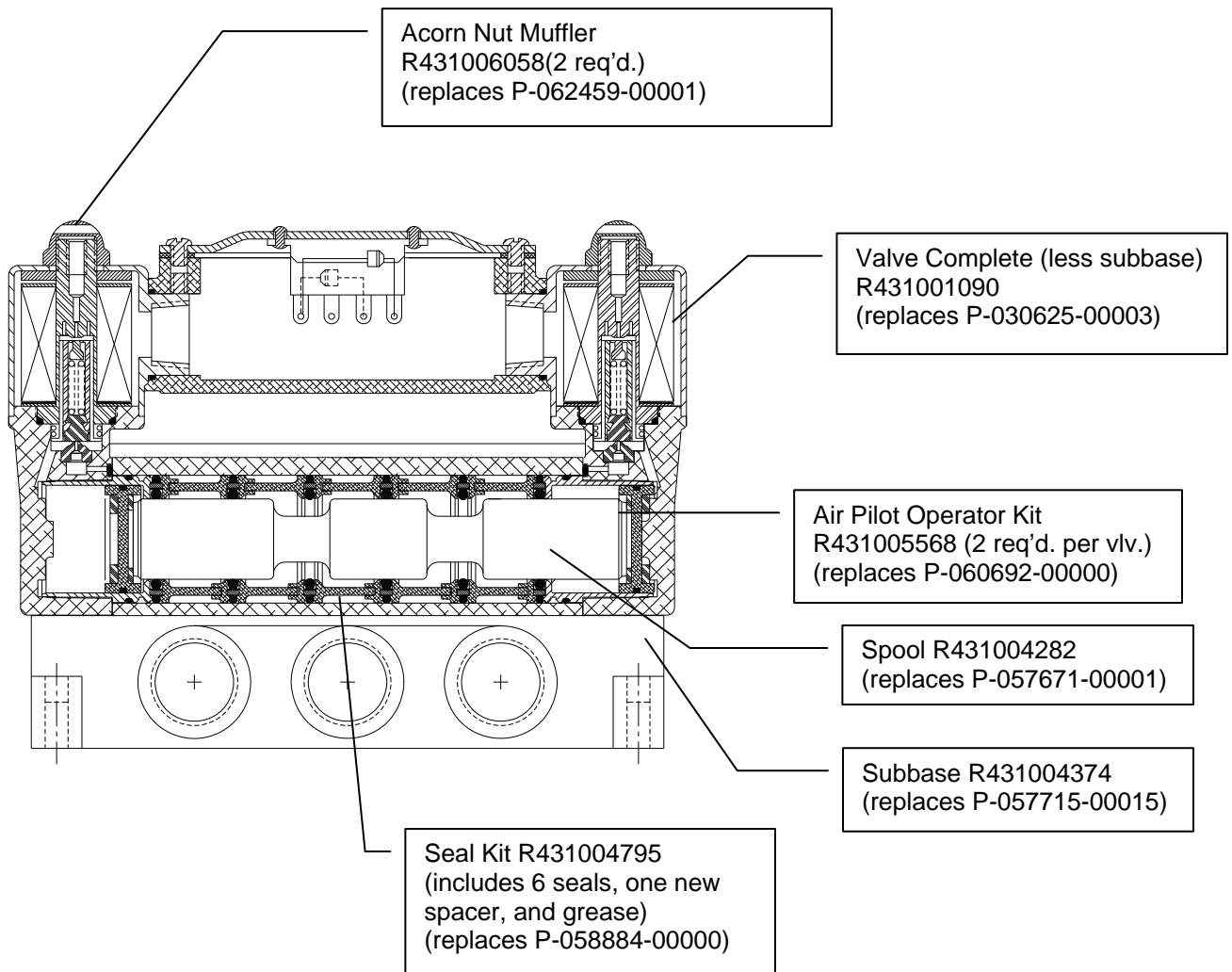
When reassembling the valve using the seal repair kit, the one new seal spacer included in the kit should be installed in the center of the valve body and one of the old spacers should be discarded. Install the new seals and spacers on each side of this central spacer as shown in the diagram on page 5. Install the spool and piston assemblies and attach one solenoid end cover. From the opposite (open) end of the valve body, push the spool / piston assembly completely against the travel stops in the end cover just attached.

Attach the other end cover and tighten it against the body. As the attachment screws are tightened they will “crush” the new seal spacer in the assembly and create the proper loading on the new seals.

Mount the valve on a subbase and test for proper function. Apply air pressure and 24 Vdc power supply to the lead wires and note the valve shifts as desired. Since this valve utilizes a reverse diode package, reversing the polarity of the voltage to the lead wires will shift the valve in the opposite direction. Also depress the manual override buttons on each end of the valve to confirm their function.

REPAIR PARTS FOR SUPERSPOOL™ II

R431001089 (Replaces P -030625-00002)



* New Rubber Seals Overhaul kit, R434000818 (1 per valve) includes screws.

Additional Repair Parts:

Mounting Screws: ¼-20 x 2.00" :	R431002330 (replaces P-049856-00275) (3 req'd.)
Mtg. Screw Lockwashers: ¼":	R431001970 (replaces P-049696-00004) (3 req'd.)
Solenoid Repair Kit:	R431002782 (replaces P-050861-00003) (1 per coil)
Valve / Subbase gasket	R431004496 (replaces P-058110-00000) (1 per valve)

NOTICE TO PRODUCT USERS

1. WARNING: FLUID MEDIA

Bosch Rexroth pneumatic devices are designed and tested for use with filtered, clean, dry, chemical free air at pressures and temperatures within the specified limits of the device. For use with media other than air or for human life support systems, Bosch Rexroth must be consulted. Hydraulic cylinders are designed for operation with filtered, clean, petroleum based hydraulic fluid; operation using fire-resistant or other special types of fluids may require special packing and seals. Consult the factory.

2. WARNING: MATERIAL COMPATIBILITY

Damage to product seals or other parts caused by the use of noncompatible lubricants, oil additives or synthetic lubricants in the air system compressor or line lubrication devices voids Bosch Rexroth's warranty and can result in product failure or other malfunction. See lubrication recommendations below.

AIR LINE LUBRICANTS! In service higher than 18 cycles per minute or with continuous flow of air through the device, an air line lubricator is recommended.* (Do not use line lubrication with vacuum products.) However, the lubricator must be maintained since the oil will wash out the grease, and lack of lubrication will greatly shorten the life expectancy. The oils used in the lubricator must be compatible with the elastomers in the device. The elastomers are normally BUNA-N, NEOPRENE, VITON, SILICONE and HYTREL. Bosch Rexroth recommends the use of only petroleum based oils without synthetic additives, and with an aniline point between 180° F and 210° F.

COMPRESSOR LUBRICANTS! All compressors (with the exception of special "oil free" units) pass oil mist or vapor from the internal crankcase lubricating system through to the compressed air. Since even small amounts of non-compatible lubricants can cause severe seal deterioration (which could result in component and system failure) special care should be taken in selecting compatible compressor lubricants. It is recommended that users review the National Fluid Power Association "Recommended Guide Lines For Use Of Synthetic Lubricants In Pneumatic Fluid Power Systems" (NFPA T1.9.2-1978).

3. WARNING: INSTALLATION AND MOUNTING

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INSTALLATION ! Do not attempt to install, operate or repair these devices without proper training in the technique of working on pneumatic or hydraulic systems and devices, unless under trained supervision. Compressed air and hydraulic systems contain high levels of stored energy. Do not attempt to connect, disconnect or repair these products when a system is under pressure. Always exhaust or drain the pressure from a system before performing any service work. Failure to do so can result in serious personal injury.

MOUNTING! Devices should be mounted and positioned in such a manner that they cannot be accidentally operated.

4. WARNING: APPLICATION AND USE OF PRODUCTS

The possibility does exist for any device or accessory to fail to operate properly through misuse, wear or malfunction. The user must consider these possibilities and should provide appropriate safe guards in the application or system design to prevent personal injury or property damage in the event of a malfunction.

5. WARNING: CONVERSION, MAINTENANCE AND REPAIR

When a device is disassembled for conversion to a different configuration, maintenance or repair, the device must be tested for leakage and proper operation after being reassembled and prior to installation.

MAINTENANCE AND REPAIR! Maintenance periods should be scheduled in accordance with frequency of use and working conditions. All Bosch Rexroth products should provide a minimum of 1,000,000 cycles of maintenance free service when used and lubricated as recommended. However, these products should be visually inspected for defects and given an "in system" operating performance and leakage test once a year. Where devices require a major repair as a result of the one million cycles, one year, or routine inspection, the device must be disassembled, cleaned, inspected, parts replaced as required, rebuilt and tested for leakage and proper operation prior to installation. See individual catalogs for specific cycle life estimates.

6. PRODUCT CHANGES

Product changes including specifications, features, designs and availability are subject to change at any time without notice. For critical dimensions or specifications, contact factory.

*Many Bosch Rexroth pneumatic valves and cylinders can operate with or without air line lubrication; see individual sales catalogs for details.

LIMITATIONS OF WARRANTIES & REMEDIES

Bosch Rexroth warrants its products sold by it to be free from defects in material and workmanship to the following:

For twelve months after shipment Bosch Rexroth will repair or replace (F.O.B. our works), at its option, any equipment which under normal conditions of use and service proves to be defective in material or workmanship at no charge to the purchaser. No charge will be made for labor with respect to defects covered by this Warranty, provided that the work is done by Bosch Rexroth or any of its authorized service facilities. However, this Warranty does not cover expenses incurred in the removal and reinstallation of any product, nor any downtime incurred, whether or not proved defective.

All repairs and replacement parts provided under this Warranty policy will assume the identity, for warranty purposes, of the part replaced, and the warranty on such replacement parts will expire when the warranty on the original part would have expired. Claims must be submitted within thirty days of the failure or be subject to rejection.

This Warranty is not transferable beyond the first using purchaser. Specifically, excluded from this Warranty are failures caused by misuse, neglect, abuse, improper operation or filtration, extreme temperatures, or unauthorized service or parts. This Warranty also excludes the use of lubricants, fluids or air line additives that are not compatible with seals or diaphragms used in the products. This Warranty sets out the purchaser's exclusive remedies with respect to products covered by it, whether for negligence or otherwise. Neither, Bosch Rexroth nor any of its affiliates will be liable for consequential or incidental damages or other losses or expenses incurred by reason of the use or sale of such products. Our liability (except as to title) arising out of the sale, use or operation of any product or parts, whether on warranty, contract or negligence (including claims for consequential or incidental damage) shall not in any event exceed the cost of replacing the defective products and, upon expiration of the warranted period as herein provided, all such liability is terminated. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHETHER FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE. No attempt to alter, amend or extend this Warranty shall be effective unless authorized in writing by an officer of Bosch Rexroth Corporation.

Bosch Rexroth reserves the right to discontinue manufacture of any product, or change product materials, design or specifications without notice.

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