The SuperSpool RCV 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 integrated solenoid operators and wire way, a simplified sub base that allows mounting to most in service stock, mounting risers, a latching protection cover and provides cost savings to the car owner without sacrificing critical design features.
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 devices, unless under trained supervision.

Compressed air 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™ RCV 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 “SUPPLY” port: Supply air
Valve “DEL. PORT ‘B’”: To cap end of cylinder
Valve “DEL. PORT ‘A’”: To piston rod end of cylinder

Figure 1: Typical Valve Configuration

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

Operation

Temperature Range: -20 deg. F to +160 deg. F
Max. Operating Pressure: 150 psi
Min. Operating Pressure: 15 psi
The SuperSpool™ RCV valve is a high flow, four 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 at the yellow reusable butt splice connector and a negative (-) signal on the ground wire actuates the "OPEN" end solenoid. Reversing the polarity on these two leads actuates the "CLOSE" end solenoid.

Adjustments

No adjustments are required on the SuperSpool RCV 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 where the valve is hard wired to the car and remove the five screws that attach the valve to the subbase. Caution: If this is done, the electrical operation will need to be verified on the car after the valve 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 it from the valve. The spool must be re-installed exactly as removed.

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. In order to do this the solenoid operators will need to be removed from the valve assembly. Remove the conduit body cover from the top of the valve and carefully disconnect the diode holders from the wires leading to the solenoids. The solenoid operators may now be removed from the valve by carefully feeding the wires back through the wire way and out the end of the valve. 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 armature and 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 6. 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.

If a solenoid operator body that uses a flat gasket between the operator body and the valve body must be replaced, the hollow locating pin installed in the end of the valve body will need to be removed prior to installation of the new operator body. This must be done with care so as not to damage the surface on the end of the valve body.

When reassembling the valve using the rubber overhaul kit, the one new seal cage included in the kit should be installed in the center of the valve body and one of the old cages should be discarded. To do this, three old cages and three new seals should be inserted into the bore of the valve body before inserting the new cage provided in the repair kit. Then the remaining three new seals and three of the old cages should be inserted into the bore. This is illustrated in figure 2. Attach the solenoid operator with the detent piston first, insuring that the wires are inserted into the integral wire way and fed through the opening in the top of the valve body. Insert the spool from the open end of the valve, inserting the red end first. Press the spool down until it engages the detent piston.

Attach the other solenoid operator insuring that the wires are inserted through the integral wire way and fed through the opening in the top of the valves body and tighten it against the body. Torque all of the attachment screws (8) to 6 – 8 ft-lbs. As the attachment screws are tightened they will "crush" the new seal cage 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 (150 psi max) and 24 Vdc power supply to the lead wires and note the valve shifts as desired. Positive to the yellow reusable butt splice and negative to the ground wire should energize the "OPEN" end of the valve, reversing the polarity should energize the "CLOSE" end of the valve. Also depress the manual override buttons on each end of the valve to confirm their function.
Repair Kits & Parts for SuperSpool™ RCV

R434000736: Rubber Overhaul Kit and Hardware Items

R434000737: Wiring Elements (includes 2 diode harnesses & ground wire harness)

R434000738: Replacement Diodes (6) (fits all valves)

R434000524: 24 VDC Solenoid Operator Assembly (fits either end, 2 per valve req’d)

R434000104: Replacement Spool

R434008046: "A" End Detented Operator Body Assembly including Solenoid Operator R434000524

R434000096: "B" End Solenoid Operator Body Assembly including Solenoid Operator R434000524

R434000743: Sub-base and Sub-base Gasket

Complete Valve less sub-base: Consult Factory for part number
2: Typical Valve Exploded View
Figure 3: Typical Valve Wiring Connections
NOTICE TO PRODUCT USERS

1. WARNING: FLUID MEDIA
AVENTICS 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, AVENTICS 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 AVENTICS 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. AVENTICS recommends the use of only petroleum based oils with the 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.

3. 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.

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

LIMITATIONS OF WARRANTIES & REMEDIES

AVENTICS warrants all Products manufactured by it to be free from defects in material and workmanship under normal operating conditions and proper application in accordance with specifications for operation as described in the Data Sheet which accompanies such Products, for (i) twenty-four (24) months after date of shipment to Distributor, (ii) eighteen (18) months after date of shipment to the customer, or (iii) twelve (12) months after the Product is placed in service, whichever occurs first. Vendor or customer-supplied items on systems, assemblies and components are warranted per original manufacturer's warranty policy.

THE FOREGOING WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Buyer's sole and exclusive remedy under this warranty shall be limited to the repair or exchange of warranted products at AVENTICS' option for AVENTICS' factory. No attempt to repair or improve the Goods or parts by any of AVENTICS' representatives shall change or extend this warranty.

If the Buyer (as that term is hereafter defined) or Agent grants to an end user any warranty which is greater in scope, time period or labor allowance than the warranty stated herein, AVENTICS shall not be liable beyond this stated warranty. Except as otherwise provided under the Warranty Processing Procedures section of this warranty, equipment and accessories not manufactured by AVENTICS shall not be the responsibility of AVENTICS. The term "Buyer" as used herein means the person or firm that purchased the product directly from AVENTICS, and includes direct OEM customers and AVENTICS distributors.

No products shall be returned without prior authorization from AVENTICS. Buyer shall prepay all transportation charges for the return of such products to AVENTICS' factory or authorized factory service center. AVENTICS will not accept any charges for labor and/or parts incidental to the removal and remounting of products repaired or replaced under this warranty. All repair and replacement parts provided under this warranty 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 30 days of failure or be subject to rejection. This warranty is not transferable beyond the first using purchaser. An AVENTICS Quality Service Report (QSR) to initiate the warranty request is available online (www.aventics.com/us/downloads).
