



- PREMIUM QUALITY
- UNSURPASSED SERVICE
- EXCEPTIONAL DELIVERY

The word 'VALVES' is written in a large, bold, black, stylized font with a 3D effect. It is set against a background of horizontal lines, resembling a notepad. A red five-pointed star is positioned below the 'V' and 'A'.

FOR COMPRESSED AIR
OR GAS SERVICE

PUT AAA VALVES ON YOUR
TOUGHEST JOBS

28th Edition

AAA PRODUCTS INTERNATIONAL • DALLAS, TEXAS U.S.A.
<http://www.aaaproducts.com> e-mail: info@aaaproducts.com



HISTORY OF AAA PRODUCTS INTERNATIONAL

AAA Products was envisioned during the early days of World War II. Bob Womack, Chairman of AAA, was in the special machine design and building business. Delivery on air valves and cylinders was very slow due to the large demand and to give a reasonable delivery on special machines, it was necessary to make air valves and cylinders to order.

After the war, with Bob's knowledge of fluid power (Air, hydraulic and vacuum), some of the fluid power equipment manufacturers around the world asked Bob to represent their products in the area. This was the beginning of Womack Machine Supply Company. While selling many different brands of air valves, Bob started AAA Products International and designed a line of air valves that have the best features of most air valves, while avoiding the undesirable features. The AAA air valve line has a minimum of parts, so anyone can understand its operation. There is no way the soft seal AAA valve packing can be sucked out, blown out or pinched, even when operated at four times the already high rated operating pressure of 250 PSI.

AAA Products is an entirely different valve company. AAA Products is continually designing and building new and more efficient production machines to increase output, while maintaining the highest quality standards and very fast deliveries.

Ninety percent (90%) of the components that go into our valves are manufactured on machines designed and built in our plant.

A well-known U.S. testing laboratory did blind hydrostatic tests on our standard AAA 1/4" die cast aluminum body air valves purchased at random from AAA valve distributors stock (Model RR2 used). This test was to simulate a catastrophic system failure where the valve may see a tremendous pressure increase. The standard AAA 1/4" air valves did not fracture or lose fluid containment until over 8800 PSI average. AAA rates these air valves for 250 PSI (Solenoid valves can have a maximum of 150 PSI on the solenoid operator). Just externally pilot the AAA solenoids with 150 PSI or less when using the valves for service over 150 PSI. If you need a stronger AAA valve, we have a high strength, aluminum bar stock body and for extreme pressures, we have a 316-cast stainless steel 1/4" and 3/8" NPT body. Contact us for your air valve needs for any kind of service. **"Put AAA valves on your toughest jobs, we really mean it"!**

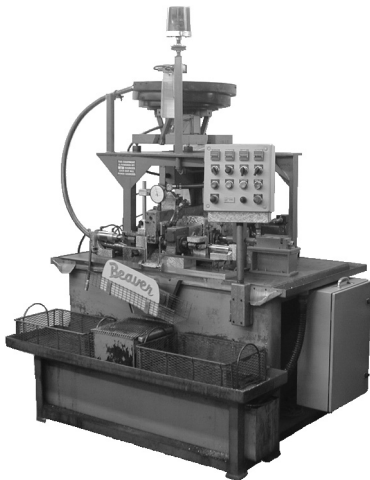


Bob Womack
Founder and Chairman
AAA Products International

P.S.: The reason why AAA Products is so well tooled is because the founder and chairman of AAA Products has over 60 years of machine design and building experience. AAA is a different kind of manufacturer. We build special tooling way ahead of product demand.

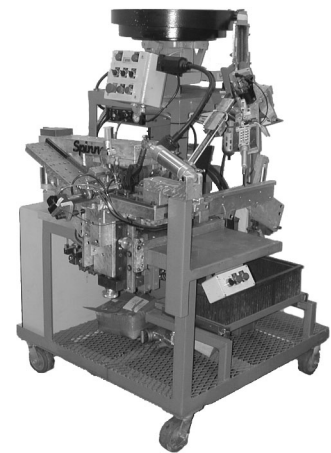
EXAMPLES OF CUSTOM PRODUCTION MACHINES IN OUR AAA PLANT

This is our new “O-ringer”, a machine designed and built in our facilities. This unique machine will insert the six O-ring packings deep into our 1/4" and 3/8" NPT air valve body. Each O-ring is placed into a specific groove, with all six O-rings inserted in just 3.8 seconds. It is powered by two high-speed electronic servo motors that quickly position and insert the O-ring within the groove, holding one thousandth of an inch accuracy. We also have an air operated O-ring inserter for the 1/4" and 3/8" air valve bodies that installs the six O-rings in 4 seconds (Many times we build a new machine to save a few seconds time on an operation or to give us backup production on critical operations).



We manufacture our most popular valve spool with a machine called the “Beaver”. A parts bowl feeder on top holds blank spools which are automatically fed to the cutting tools. The part is clamped and inspected for length. On proper length parts, the Beaver will cut 36 air groove passages around the circumference of the spool at 2 locations. The Beaver will produce 15 spools per minute and can run unattended for hours with occasional replenishment of blank spools.

This is our “Spinner” machine. This slick little machine, designed and built in our facilities, will feed valve spools and several clevis designs, and assemble them with a locking media. The spools are fed from a vibrating feeder and automatically oriented with the threaded end down. They are fed into three rotating rollers, torqued to a predetermined value and ejected. Rate of production is 20 spool clevis assemblies per minute.



The “Swinger”, with U.S. patent granted to AAA Products International, is a combination swing feed, valve end cap drilling and tapping machine. The 1/4" and 3/8" valve end caps are fed from a vibrating feeder bowl down into a parts pocket. The end cap is drilled from the bottom and tapped 1/8" NPT from the top. Rate of production is 60 end caps drilled and tapped per minute.

Note: The exceptional delivery and quality of AAA valves is due to the use of highly specialized machines like these and over fifty others in our plant. Our high production machines are always set up, ready to produce quality valve parts at unbelievable speeds.

FIND OUT FOR YOURSELF WHY AAA VALVES ARE THE BEST IN THE WORLD!

We, at AAA Products International, are committed to providing our customers with superior products of premium quality. Along with a full line of standard products, we supply over 400 special customer specific products to fit their unique applications. We promise unsurpassed customer service, exceptional delivery and competitive prices.

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See Bulletin A-266 for the location of your authorized AAA distributor.

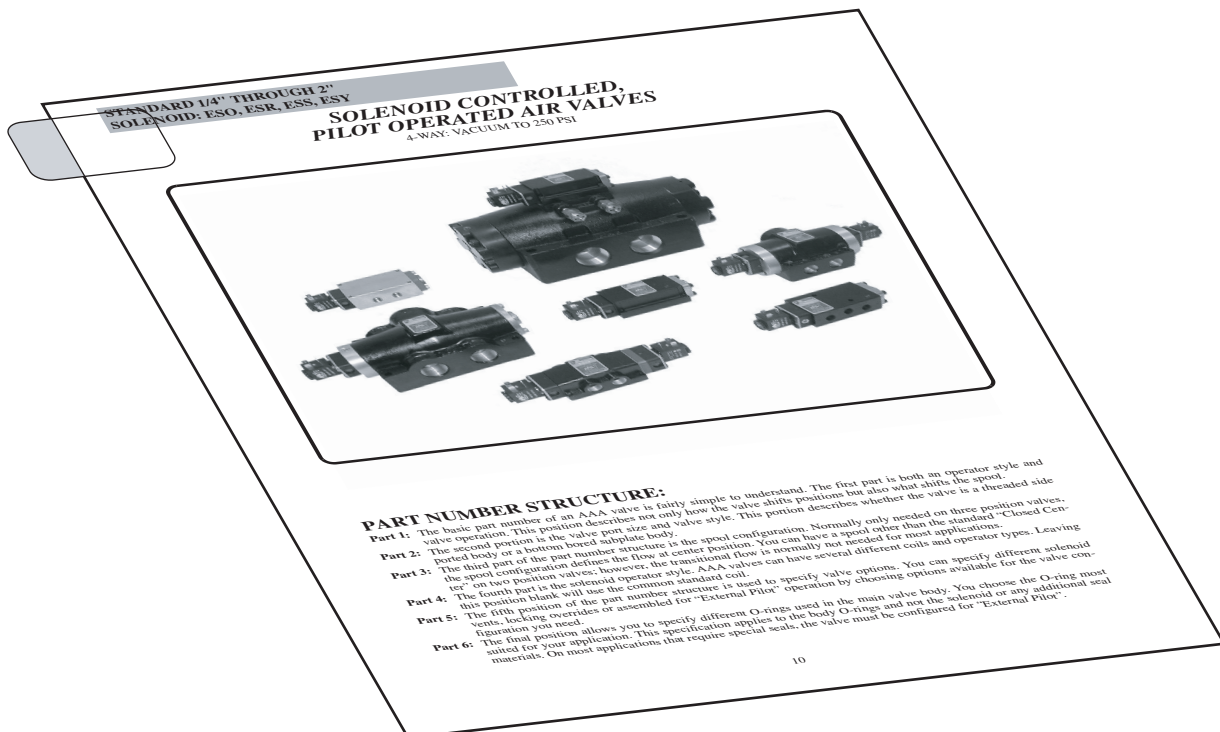
UNDERSTANDING THE CATALOG LAYOUT

This catalog is organized first by the type of valve, then by the major valve shifting operator.

1 Choose Type Of Valve			
1/4" through 2" NPTF Soft Seal, Inline or Subplate			
1/4" or 3/8" NPTF Stacking			
1/4" or 3/8" NPTF Namur Direct Mount			

2 Choose Control Operator	Std	B-Series	Namur
Standard Solenoid	pg. 10	pg. 122	pg. 140
"Classic" Solenoid	pg. 30	pg. 129	
Manual Lever	pg. 46	pg. 134	
Palm Button	pg. 56	pg. 135	
Foot Pedal/Treadle	pg. 64		
Cam Rollor	pg. 76	pg. 136	
Piston	pg. 86		
Remote Pilot	pg. 96	pg. 137	
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For convenience, on the major pages there are gray lines that can be used to align tabs for quick access. Most office stores carry self affixing colored tabs that are 1" wide by 1-1/2" long. Align the bottom of the tab to the gray line.

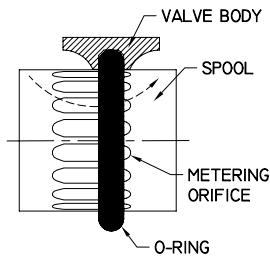




IMPORTANT FEATURES OF AAA VALVES

(ONE OF THE TOUGHEST VALVES IN THE WORLD)

**A MINIMUM OF PARTS ★ SIMPLICITY OF OPERATION ★ UNDERSTOOD BY ANYONE
STANDARD LEAKTIGHT O-RING SEALS ARE AVAILABLE WORLD-WIDE**

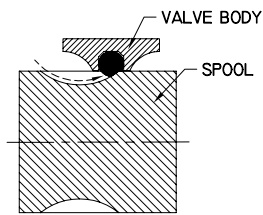
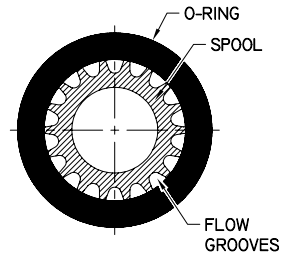


GOOD METERING NON-SHOCK REVERSAL

Whether you use manual, electric or pilot-operated valves, the tapered flow grooves give a smooth reversal of air flow, eliminating shock on lines and components.

LARGE DIAMETER SPOOL FOR HIGH FLOW

Competitive 1/2" valves have 5/8" or 3/4" diameter spool. AAA spools are 1-1/8", allowing room for seal retaining lands between the flow grooves without sacrificing flow.

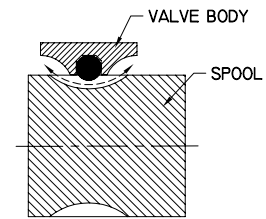


NO BITE! NO PINCH! NO WASHOUT OF O-RINGS! SIMPLE AND EFFICIENT!

A long angle on the flow grooves lifts the O-ring out of the groove as the spool shifts. No seal failure even at twice rated pressure.

AAA VALVES ARE SELF- CLEANING BY FLOW PRESSURE EITHER WAY!

AAA valves can be used with pressure or vacuum on any port because there are no cups, flanges or one direction seals.



OPERATIONAL ADVANTAGES OF AAA VALVES

1. Valves will not pinch, unseat or blow out the seals at high pressure or with any other operating condition.
2. Manually controlled valves can be throttled to a finer degree than most spool-type valves because of the double taper on each end of the grooves.
3. Vacuum to full pressure can be applied to any or all ports at the same time. Exhaust ports can be used as pressure ports for 5-way service.
4. Valves are 4-way, dual exhaust construction and work equally well as 2-way, 3-way or 5-way valves.
5. Every port is isolated from all other ports with O-rings, giving leak tight operation.
6. Cylinder speed can be controlled in both directions with needle valves screwed into exhaust ports.
7. AAA spool valve design permits operation under conditions of contamination that would lock up the spool on a metal-to-metal spool and body design.
8. Molded 11mm DIN solenoid coils are standard and are available in all popular A-C and D-C voltages. Other voltages and styles are available. Consult factory for voltages or styles not found in this catalog.
9. Coils of different voltages can be quickly and easily installed in the field.
10. Both coils of solenoid valves can be energized at the same time without damage to valve or solenoid coils.
11. O-ring seal life is extremely long because of unique flow characteristics. A 1/2" solenoid valve operated over 32 million cycles without O-ring replacements.
12. Solenoid valves are available with intrinsically safe, explosion proof, DIN connector, flying lead or Mold-Over operators.
13. Solenoid valves are available with CSA approval and solenoid operators are available with UL approval.
14. 3-position valves are normally supplied with closed center spools. Other spool types are available. Spool assembly can be changed in the field.

GENERAL INFORMATION ON AAA VALVES

AAA valves are spool-type with 4-way action and are intended primarily for control of air cylinders or air motors. Soft seal models, which include all listings, are for air, inert gas or low vacuum service up to 26" Hg. They are offered in a complete size range from 1/4" to 2". O-rings give tight sealing between all ports.

SIDE PORTED BODY SIZES

Soft seal valves are built in 4 side ported body sizes. The 1/4" and 3/8" valves are housed in the smallest body. Both are identical except for a slight difference in flow capacity. The 1/2" valves are in the next larger body. The 3/4" and 1" valves are in a still larger body. They have a flow area equal to a 3/4" diameter orifice. They are identical in appearance but have a slightly different flow capacity. The largest body with 1-3/8" diameter flow area is used for 1-1/2" and 2" valves. These two sizes are the same except for NPTF body ports on the 1-1/2" models and 2" subplate ports on the 2" models.

MODELS FOR SUBPLATE MOUNTING

Subplate mounting is offered in all body sizes except "NAMUR" and "B-Series" stack valves. 1/4" and 3/8" valves have flow area equal to 5/16" orifice and can mount on a subplate with 1/4" or 3/8" connections. 1/2" valves have a flow area of 1/2" orifice and can mount on subplates with 1/2" connections. 3/4" and 1" valves have a flow area of 3/4" orifice and can mount on subplates with 3/4" or 1" connections. 1-1/2" and 2" valves have a flow area of 1-3/8" orifice and can mount on subplates with 1-1/2" or 2" connections.

MOUNTING OF VALVES

AAA valves may generally be mounted in any position. But for safety, any valve which does not have springs or detents to hold the spool in position should be mounted with the spool horizontal unless pressure is continually applied to hold the spool in position.

THESE SAFETY PRECAUTIONS MUST BE OBSERVED

1. Do not operate solenoid valves above 150 PSI on the pilot section! Use "externally piloted" valves for pressures above 150 PSI (160 PSI on "Classic" solenoid styles).
2. Mount 2-position, no-spring models with spool horizontal to avoid accidental spool drift due to vibration.
3. Foot controlled valves should have OSHA approved safety guard.
4. Although AAA valves are virtually trouble-free through millions of normal cycles, they should be disassembled and inspected periodically, depending upon conditions.
5. Do not over lubricate! For further information contact factory.

FACTORY PRE-LUBRICATION

All valves are pre-lubricated at the factory using Magnalube®-G teflon based all purpose grease. Valves are suitable for and perform best in a low lube service.

For long life, use an air line filter/lubricator installed no further than 8 to 10 feet from the valve. The filter should be rated 25 pm or finer. Use a high grade of petroleum base non-detergent lubricating oil no heavier than SAE 10W. DO NOT OVER-LUBRICATE. This could cause the spool to stick. You should not see oil dripping or misting through the exhaust ports of the valve.

CAUTION! Do not use questionable fluids in air line lubricators. Do not use petroleum oil with detergent additives, volatile or aromatic fluids, vegetable oil, cup grease, or automobile chassis lubricant. The use of questionable fluids may swell rubber seals in valves and cylinders.

RECOMMENDED LUBRICATION

When cleaning AAA valves after extended service, lubricate the valve spool with AAA high film strength grease, or use O-ring grease which is usually available from supply houses which sell O-rings. Magnalube®-G is included in all valve repair kits for proper valve maintenance.

AAA Products International recommends the use of Magnalube®-G in all of its products. This teflon based lubricant is rated to operate under extreme load conditions and wide temperature ranges, mechanically and chemically stable, water resistant, and reduces the need for repetitive re-applications. We do not recommend any lubricants that include cleaners or solvents. These types of lubricants have a tendency to swell the O-rings and reduce the performance of the valve and O-rings must be replaced.

CONSTRUCTION FEATURES OF AAA VALVES — Soft Seal Types

One secret to the superior performance of AAA valves is the large spool diameter. The diameter is 25% to 50% larger than competitive valves, giving more positive shifting on pilot controlled and solenoid valves, less wear and longer life on the standard O-ring seals and larger flow area in a given size because so many more flow grooves can be cut around the larger diameter spools.

FULL RATED PRESSURE

The use of O-ring seals between ports permits the application of full rated pressure on any port. O-rings are standard commercial sizes and compounds available world wide from any supply house. The valve is constructed to confine the O-rings in a manner making it impossible to pinch, bite or pop them out under the most adverse operating conditions.

SYMMETRICAL CONSTRUCTION

The valve body and the spool are completely symmetrical end to end. This means that the spool and/or end caps may be reversed in the valve body. This is sometimes a great convenience in mounting or plumbing.

METERING

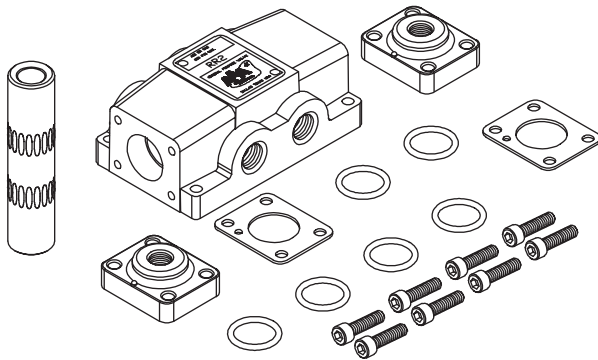
The double taper of the flow grooves gives AAA valves much better throttling characteristics on manual valves than is usual for spool valves and tends to reduce shifting shock on solenoid and pilot controlled models.

FULL FLOW

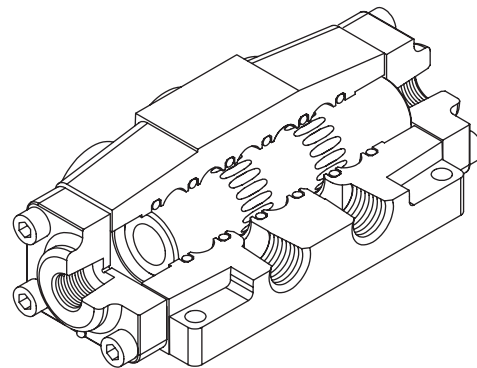
Flow area through the valve is generously designed, exceeding in most cases the size rating of the valve. Consequently, the flow losses though the valves are lower than might be expected.

SIMPLICITY — MINIMUM OF PARTS

AAA Valves are designed for simplicity and minimum number of parts. Seals are standard O-rings and are available worldwide. If they should need replacing (After millions of cycles), the job can be quickly and easily done without service or parts drawings. There are no small loose parts to be damaged or lost and no hidden seals to leak.



Component Parts of 1/4" Double Piloted Valve



Cut-away View of 1/4" Double Piloted Valve

VALVE SEALS

AAA valves are virtually trouble-free through millions of cycles if these simple lubricating instructions are followed. Some oils may swell the rubber seals in valves and cylinders of any brand and may cause binding. To determine if seals are swelled in AAA valves, remove one O-ring from the body and slip it over the spool. If the clearance between O-ring and spool is 0.005" or more all around, the ring is swelled from its original shape. A small amount of swelling will not usually impair valve performance and sometimes the valve will still perform reliably with as much as 1/32" all around (See page 152 on how to replace O-rings).

AAA spool valves use standard size O-rings available almost anywhere in the world. Specially built or non-standard valves may have been furnished with special O-rings to suit special operating conditions. When inquiring from the factory, give all model numbers and engineering numbers appearing on the valve nameplate.

Six O-rings, of 70 or 75 Shore hardness are used in the body of each valve.

HARD SPOOL

By a special process, the surface of the spool is treated to have a very hard and slick finish to give millions of trouble-free cycles. And yet, the spool is feather-light for fast response. For example, the 1/4" valve spool weighs only 1-1/4 ounce. On solenoid, pilot controlled and differential pilot models, the light spool gives extremely fast response with a minimum of shock on the end caps.

METERED EXHAUST

AAA valves have dual exhaust ports. A needle valve screwed into each exhaust port (Except "B-Series" stack valves), will permit adjustment of speed in both directions of a cylinder or air motor.

MINIMUM PRESSURE LOSS

AAA soft seal valves use a unique valving principle. Specially contoured grooves have a combined flow area equal to or greater than the size rating of the valve in most cases. Groove shape is responsible for smoother action of AAA valves as compared with ordinary spool valves.

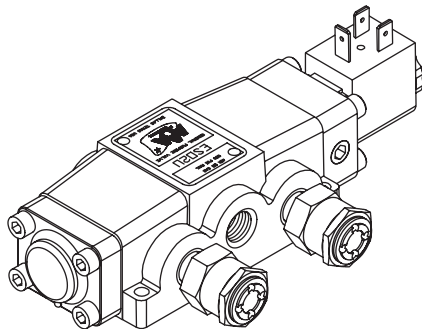
Since the O-ring seals are always confined, vacuum or pressure may be applied to any port and flow through the valve may be in either direction.

Valve Size	O-ring Size	Std. Material
1/4" & 3/8"	3/4"x15/16"	Viton
1/2"	1-1/8"x1-3/8"	Buna-N
3/4" & 1"	1-3/8"x1-5/8"	Buna-N
1-1/2" & 2"	2-1/4"x2-5/8"	Buna-N

EXHAUST FLOW CONTROLS WITH AAA VALVES

Standard AAA valves are built with dual exhaust ports. A needle valve may be screwed into each exhaust port, giving meter-out speed control of an associated air cylinder or air motor in both directions of travel.

MFC muffler/flow controls, listed on page 146, are available for this purpose. MFC flow controls not only give adjustable speed control but have a built-in muffler to reduce exhaust noise. They are available up to 1/2" size.

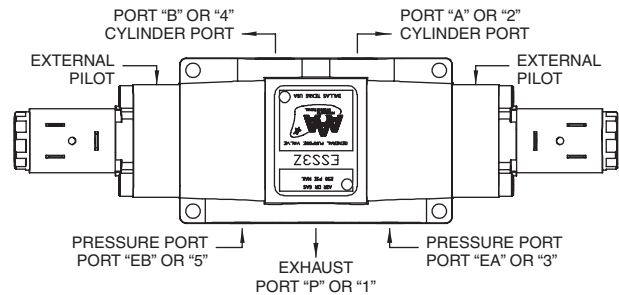


Model ESO2U Valve Showing MFC Flow Controls

USING AAA VALVES FOR 5-WAY SERVICE

A 5-way application is one using two inlet pressure levels or in which inlet pressure is derived from two different sources for use in the same circuit. Another type of 5-way application is for conserving air on the return stroke of double-acting cylinders.

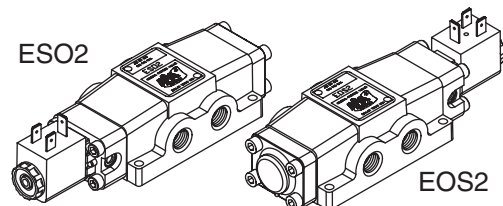
Standard AAA soft seal valves may be used for 5-way service with these exceptions: Solenoid valves must be re-connected to use an external source of 50 PSI to 150 PSI pilot pressure. Stack valve sections and differential pilot valves cannot be used for 5-way service.



Model ESS3Z Connected for 5-way Service

REVERSED OPERATORS

The end actuators on AAA Soft seal valves can be changed from one end to the other to put the inlet port and cylinder ports on the desired side for convenience in plumbing. On quantity orders, if actuators are desired on opposite ends of the valve from standard assembly as shown in this catalog, just reverse the valve operators in the valve model number when ordering (E.g. ESO2 represents standard assembly. In comparison, EOS2 has actuators reversed, end for end.



Example of Actuator Interchange

OPTIONAL O-RING MATERIALS

Unless otherwise specified, all 1/4" and 3/8" soft seal valves come standard with Viton O-rings and all 1/2", 3/4", 1", 1-1/2" and 2" soft seal valves come standard with Buna-N O-rings. If a different material is required, use the dash numbers following the basic valve numbering code. In the example, model RY3G-2 will have Silicon O-rings installed for a low temperature application. On valves larger than 1" consult factory on availability of O-ring materials.

Dash No.	O-ring Description	Temperature Rating
-1	Neoprene for freon	-40°F to 225°F
-2	Silicon	-80°F to 400°F
-3	Viton for most aromatic gases	-20°F to 400°F, 600°F for short time
-4	Butyl Rubber	-60°F to 200°F
-5	Teflon	-250°F to 450°F
-7	Urethane, 70 Durometer	-65°F to 200°F
-9	Buna-N	-40°F to 250°F

We are constantly researching O-ring materials to evaluate performance and durability in the AAA valve product line. Above is a compilation of the most commonly requested O-ring materials and the associated dash number. If you have a particular application that requires an O-ring material that is not listed, please contact us. Since we utilize standard O-ring dimensions in our valves, we can respond to the most obscure O-ring material request.

Note: On standard solenoid model valves, the solenoid operator plunger seat is Viton. On "Classic" solenoid model valves, the solenoid operator plunger seat is Buna-N. Solenoid operators must be externally piloted when using gases not compatible with seal material. Consult factory for special plunger seat material.