



Norgren Installation Instructions ISO Star Series Directional Control Valves

Operating Specifications

Fluids: filtered, nonlubricated or lubricated, compressed air or vacuum

Valve Working Pressure Ranges:

Air, and Solenoid Operators with External Pilot
Supply: Vacuum to 232 psig (-9 to 16 bar).
Solenoid Operated Valves with Internal Pilot
Supply*: Vacuum to 145 psig (10 bar)

Minimum Pilot Pressures

Primary Operator	Secondary Return Oper.	Min. Press. psig (bar)
Solenoid	Spring	14.5 (1)*
Solenoid	Solenoid	29 (2)*
Air	Spring	23.2 (1.6)
Air	air	29 (2)

* Solenoid Operators must be externally piloted if the supply pressure to the main valve is below the minimum pilot pressure listed in the table above.

Maximum Pilot Pressure

Operator Type	Max. Press. psig (bar)
Solenoid	145 (10)
Air Pilot	232 (16)

Temperature Range (Ambient & Inlet):

Solenoid Operated Valves: 5° to 122°F† (-15° to 50°C):

Air Operated Valves: 5° to 176°F (-15° to 80°C)

† With dew point of supply air less than air temperature below 35°F (2°C)

WARNINGS

Do not use these valves to control a power press clutch or brake

These products are intended for use in industrial pneumatic systems. They are designed and tested for use in industrial pneumatic systems. They are designed and tested for use with filtered, lubricated compressed air at pressures and temperatures within specified limits.

For use with fluids other than air, for non-industrial applications or for life support systems, consult Norgren. These products must not be used in applications which do not fully comply with all operating specifications.

Compressed air systems may contain lubricants or contaminants which can attack materials utilized in the manufacture of these products and cause failure. The user is cautioned to be certain that his compressed air system is fully compatible with the materials utilized in these products.

High Energy Level – Compressed air systems contain high levels of stored energy. Any attempt to connect, disconnect or repair these products when a system is under pressure can lead to serious personal injury. Do not attempt to install, operate or repair these products unless you are trained in the proper techniques for working on fluid power systems, or are under competent supervision.

Code Compliance – the user of these products is cautioned to conform to all applicable electrical, mechanical, and other codes in the installation and operation of these products.

Failure Modes – Through misuse, wear or malfunction, these valves and related accessories can fail in modes which can simultaneously pressurize all ports to the highest applied pressure level. They can also fail to shift as expected upon the application or removal of operator signals. These failure modes must be considered in the use of these valves and related accessories, and all appropriate safeguards to prevent personal injury or property damage in the event of such failure must be provided.

Repair and Conversion – Any time these valves are disassembled for repair or conversion to a different configuration, the reassembled valve or accessory must be checked for leakage and proper function prior to installation.

Electric Shock – To avoid electrical shock and the possibility of serious or fatal injury, always disconnect electrical power before servicing any electrically operated valve.

INSTALLATION

Valve Exhaust

Adequately sized mufflers should be used in the valve exhaust ports. Valves should not be mounted with unprotected exhaust ports facing upward. If exhaust is to be piped away, piping should be installed horizontally or at a downward angle from the valve to provide adequate drainage and minimize the accumulation of debris in the air line.

Pilot Supply

If the valve inlet pressure is less than the specified minimum pilot pressure for the type of solenoid operator used, then external pilot supply must be provided.



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Observe Rated Pressure Range

These spool valves are designed to operated from vacuum to 232 psig (-.9 to 16 bar) with proper pilot pressure. See Operating Specification. Be sure valve has an adequate supply flow and the tube or tube fittings do not cause restrictions.

Observe Rated Temperature Range

The recommended temperature range for the air flowing through the valve and for the ambient temperature is between 5°F and 122°F (-15° to 50°C) for air and solenoid operated valves. Air dew point should be less than the air temperature for 5°F to 176°F (-15° to 80°C). Improper valve action, or a shortening of valve life, can result if these limits are exceeded.

Use a Filter and Lubricator

Dirt, scale, moisture, etc. are present in virtually all compressed air systems and should be removed continuously with an air line filter located upstream of the valve. An air line lubricator capable of lubricating at low as well as high air flows should be installed as close as possible to the valve downstream of the filter. Non-detergent, petroleum-based oils with sufficient fogging capability and an SAE Number 10, or lighter viscosity equivalent, are generally compatible with the seals used in these valves. Phosphate ester based fluids must never be used in any part of the air system or seal damage will result.

Solenoid Operators

Voltages should not vary more than plus 5% or minus 15% of the voltage printed on the coil. For example, a 120-volt coil will operated between 102 and 126 volts. At the time of installation, it may be advisable to check voltage for compatibility with solenoid coil.

Seal Compatibility

ISO Star Series seals are compatible with most good quality O-ring lubricants, including:

- DC BR-2+ grease (Dow Corning)
- DC 44 grease (Dow Corning)
- Magnalube g (Saunders Industries)
- Non-detergent mineral based oils such as Mobil DTE light oil.

ISO Star Series seals are not compatible with WD-40, commonly used de-icer fluids, or diester based synthetic lubricants. Consult factory to verify compatibility of lubricants or fluids not listed above.

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **Specifications**.

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Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure modes. **System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products. System designers should also provide for all OSHA requirements including Title 29 CFR 1910.147 Lockout/Tagout.

It should be recognized that warnings are valid for any product, regardless of manufacturer, and are not restricted to products manufactured by Norgren. Norgren's reputation for product quality and performance is well established. We feel we have the additional obligation to provide information or warnings to customers to assist them in applying our products in a reasonable and safe manner.

Warranty

Items sold by Norgren are warranted to be free from defects in materials and workmanship for a period of two years from the date of manufacture, provided said items are used according to Norgren's recommended usages. Norgren's liability is limited to the repair of, refund of purchase price paid for, or replacement in kind of, at Norgren's sole option, any items proved defective, provided the allegedly defective items are returned to Norgren prepaid. The warranties expressed above are in lieu of and exclusive of all other warranties.

There are no other warranties, expressed or implied, except as stated herein. There are no implied warranties of merchantability or fitness for a particular purpose, which are specifically disclaimed. Norgren's liability for breach of warranty as herein stated is the exclusive remedy, and in no event shall Norgren be liable or responsible for incidental or consequential damages, even if the possibility of such incidental or consequential damages has been made known to Norgren.

Norgren reserves the right to discontinue manufacture of any product or change product materials, design, or specifications.



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There are no other warranties, expressed or implied, except as stated herein. There are no implied warranties of merchantability or fitness for a particular purpose, which are specifically disclaimed. Norgren's liability for breach of warranty as herein stated is the exclusive remedy, and in no event shall Norgren be liable or responsible for incidental or consequential damages, even if the possibility of such incidental or consequential damages has been made known to Norgren.

Norgren reserves the right to discontinue manufacture of any product or change product materials, design, or specifications.