

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR CONNECTING COMPRESSED AIR OR ELECTRICAL POWER TO THE ACTUATOR. DAMAGE CAUSED BY NON COMPLIANCE WILL NOT BE COVERED BY WARRANTY

STORAGE

The actuator should be stored in a clean, dry environment within a temperature range of 32 to 104° F (0 to 40° C).

INTRODUCTION

This document provides installation, operation and maintenance instructions for Valworx 5300/5301 series quarter turn double acting and spring return pneumatic actuators. These actuators are typically used to operate quarter turn valves or dampers. Every actuator has been fully tested prior to shipment to ensure trouble free operation.

MOUNTING

These rack and pinion air actuators can be mounted in any orientation, indoors or outdoors and feature a fully sealed corrosion resistant design. The valve mounting interface conforms to the international ISO5211 mounting standards.



ISO5211 Valve Mounting Pad

PILOT AIR SUPPLY

The pilot air supply should be filtered, dry or lubricated compressed air. Valworx air actuated valve assemblies require 80 to 120 PSI (5.5 to 8.3 Bar) pilot air. Pilot air ports 'A' and 'B' are either 1/8" NPT or 1/4" NPT depending on the actuator model.

PRESSURE RATING

The 5300/5301 series air actuators have a maximum pressure rating of 120 PSI (8.3 Bar) continuous duty.

TEMPERATURE RATING

Actuator temperature rating is -4 to 180° F (-20 to 82° C). Heat from the working media (fluid) should not allow actuator to exceed these temperature limits. Optional high temperature valve mounting kits are available to increase the allowable media working temperature.

VISUAL VALVE POSITION INDICATOR

Actuators are supplied with a local highly visual valve position indicator. The indicator is black with yellow pointers and indicates the open and closed (on/off) positions.

TOP MOUNTED ACCESSORIES

Valve monitors with position confirmation switches and pneumatic positioners can be easily mounted to the top of the actuator using the standard VDI/VDE-3845 mounting interface.



Top Mounting Interface

Position Indicator Shown in Closed Position



OPERATION

Double Acting (DA) Actuators

Air pressure supplied to port 'A' turns the output drive counter-clockwise 90° to OPEN the actuator (valve), exhaust air will exit through port 'B'.

Air pressure supplied to port 'B' turns the output drive clockwise and returns the actuator (valve) to the normal CLOSED position, exhaust air will exit port 'A'.

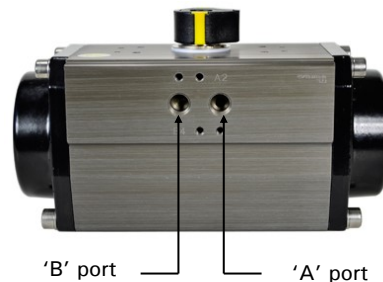
Spring Return (SR) Actuators

Air pressure supplied to port 'A' turns the output drive counter-clockwise 90° to OPEN the actuator (valve), exhaust air will exit through port 'A'. 'B' port is used as vent and should not be obstructed.

Internal springs will return the actuator (valve) to the normal CLOSED failsafe position when air pressure is removed and exhausted from port 'A'.

Note: Open is often referred to as ON or POSITION 1 and closed referred to as OFF or POSITION 2. The rotation is viewed from the top of the actuator, looking down on the visual indicator.

DA or SR Actuators



'B' port 'A' port

OPTIONAL AIR PILOT SOLENOID VALVES

Namur type solenoid pilot valves can be direct mounted to the side of the actuator using the standard ISO5211 mounting interface saving time, space and plumbing. Double acting actuators typically require a 4-way type pilot valve and spring return actuators a 3-way type valve. See page 2 for more information on solenoid valve operation.



WARNING: Disconnect or lockout air supply prior to performing any type of service work on these actuators.

MAINTENANCE

There are no field serviceable parts inside the actuator (except springs) that require regular maintenance. The springs in spring return models should be inspected at least once every 100,000 cycles. The actuator is pre-lubricated for life. The actuator may be cleaned with warm soapy water (no solvents). Actuator should be cycled at least once per month.

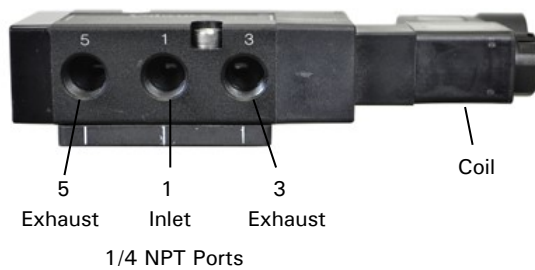
Actuators with Optional 5291 Series Direct Mount Solenoid Valves

PILOT AIR SUPPLY

Air supply to the solenoid valve should be filtered <40 micron, dry or lubricated compressed air. Most Valworx air actuated valve assemblies require 80-120 PSI (5.5-8 bar). Moisture free air is required below 32° F (0° C) to prevent freezing.

PILOT AIR CONNECTION

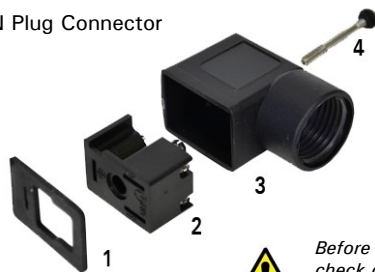
Connect air supply to the 1/4 NPT center port, marked 1. Optional mufflers or speed control mufflers can be installed in exhaust ports 3 and 5 to keep out dirt and contamination. Do not plug exhaust ports.



WIRING

Wiring must comply with all local and national electrical codes. Disassemble the DIN plug connector as shown in the diagram by removing retainer screw (4) and prying terminal block out with a small screw driver. Confirm coil voltage is correct and connect power wires to PIN 1 and PIN 2 (not polarity sensitive). Connect earth ground to the remaining flat PIN. Reassemble connector and plug onto coil, insure connector gasket (1) is installed and tighten retainer screw (4) securely.

DIN Plug Connector



Before connecting power, check coil markings to confirm correct voltage is being applied

OPERATION

Solenoid De-energized: When the solenoid is de-energized (power off) actuator will return to CLOSED position (also referred to as Off or Position 1).

Solenoid Energized: When the solenoid is energized (power on), the actuator will move to the OPEN position (also referred to as On or Position 2).

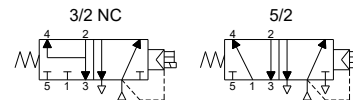
When using these solenoid valves with spring return (SR) actuators, the actuator will fail to the closed position with loss of power or loss of air pressure (failsafe). Most control valves can be setup to fail open upon request.

ENCLOSURE AND TEMPERATURE RATING

Solenoid enclosure is rated IP65 dusttight and weatherproof. Media temperature range -13 to 176° F (-25 to 80° C). Ambient temperature range -4 to 122° F (-20 to 50° C).

DUTY CYCLE

The solenoid valve coil is rated for 100% continuous duty service.



MANUAL OVERRIDE

The valve can be operated manually for setup, testing and situations where power is not available. The manual override is a twist and hold design. To operate the manual override, turn the slot head screw clockwise to the '1' position. Return to '0' position for normal electrical operation.



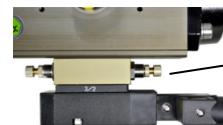
Manual override must be in position 'M' (shown) to operate the valve electrically.



Manual Override

OPTIONAL SPEED CONTROL AND EXHAUST MUFFLERS

Precision speed controls: These sandwich mount speed controls are the most accurate method of controlling the speed of an air actuator. Easy micrometer adjustment of both the open and closed speed, for both double acting and spring return type actuators.



Sandwich Mount Precision Speed Control

Exhaust speed controls and mufflers: Adjustable speed control mufflers will provide rough speed control of the air actuator and mufflers keep dirt out of the solenoid valve. With exhaust speed control of double acting actuators, both open and closed speed can be controlled. With spring return actuators, only the closing speed can be controlled (open speed cannot be fully controlled).



Exhaust Speed Control Mufflers



Exhaust Mufflers



WARNING: Remove electrical power and air pressure prior to performing any service work.

MAINTENANCE

Except for coil replacement, the series 5291 valves are not repairable. There are no parts that require regular maintenance. The valve may be cleaned with warm soapy water (no solvents). The valve should be cycled at least once per month.