



Max-Air Technology

"NAMUR" Solenoid Valve 3/2 – 4/2 – 4/3

Installation, Operation & Maintenance Manual



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CHAPTER 1: PRODUCT DESCRIPTION

Max-Air offers a complete range of direct mount Solenoid Valves (SV series). Each solenoid valve is available in single coil (SV61/71/91 and SV63/73/93), dual coils (SV62/72/92) or 3 positions configuration (S36A,S36C,S37A,S37C,S39A,S39C) and can be used with either lubricated or non-lubricated air.

Max-Air Solenoid Valves are designed according the NAMUR VDI/VDE 3845 standard; therefore they can be easily installed on all types of pneumatic actuators, both linear and rotary, with NAMUR connections.

Max-Air Solenoid Valves are equipped in the standard configuration with the following features:

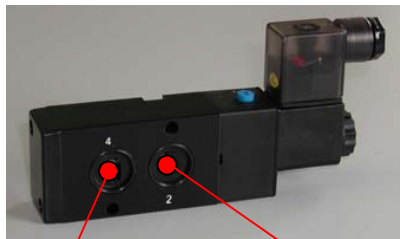
- Field convertible for use on either double acting (4 way) or spring return (3 way) actuators through switches
- Electroless nickel plated spool
- Easy-to-use manual override
- Uniquely designed air pressure pop up indicator which provides for a quick check to verify if the solenoid valve is pressurized or not
- Port sizes: inlet and exhaust ¼" NPT

The SV61/71/91 valves have the operating coils on the left side of the valve and operate as shown in figures 3 and 4.

The SV63/73/93 valves have the operating coils on the right side of the valve and operate in a reverse fashion (port 1 to port 2 when energized, port 1 to port 4 when de-energized).

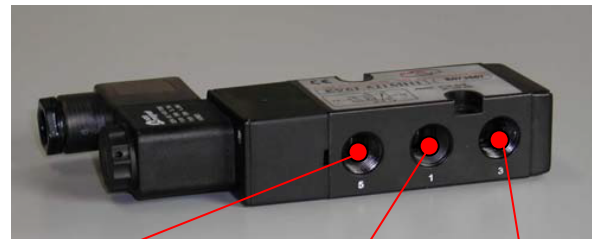
CHAPTER 2: METHOD of OPERATION

All **Max-Air** direct mount Solenoid Valves come lubricated and designed for long life. The solenoids are equipped with BUNA O-Rings to seal the valve ports to the body of the actuators. (High temperature Viton seals are available as an option)



Port 2

Port 4

Figure 1

Port 5

Port 1

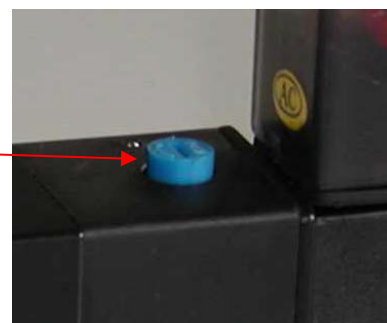
Port 3

Figure 2

Port 1 is the supply port and ports 3 and 5 are the exhaust ports (Figure 2). The exhaust port can be equipped with silencers or speed controls to control the actuation time. Ports 2 and 4 are the actuator ports (Figure 1).

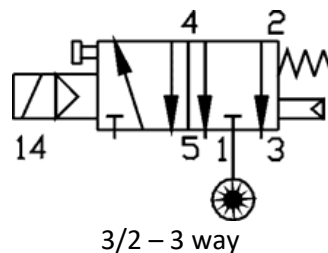
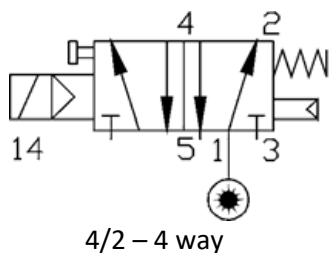
Manual Override:

All **Max-Air** solenoid valves come equipped with a manual override. A small blue or silver switch located between the valve body and the coil, positioned perpendicular to the long axis of the valve body, allows for the overriding of the solenoid if necessary. The normal position for the switch will be pointing toward "0". A 90° rotation of the switch in the clockwise direction will manually override the solenoid and lock the solenoid in the disengaged position until the switch is returned to its original position.



2 – 1 SINGLE COIL SOLENOID VALVE

Pneumatic Diagram:



During the solenoid activation (opening phase of the actuator) air goes from the supply Port 1 to the Port 4, which is connected with the internal chamber between the pistons.

In the normal position (actuator closed) the flow depends on the type of solenoid valve:

- **4 way (4/2)** for Double Acting actuators: air goes from the supply Port 1 to the Port 2, filling up the chambers the cavity between the pistons and the end caps, closing the actuator (see fig. 3)
- **3 way (3/2)** for Spring Return actuators: air is exhausted through Port 2 (see figure 4)

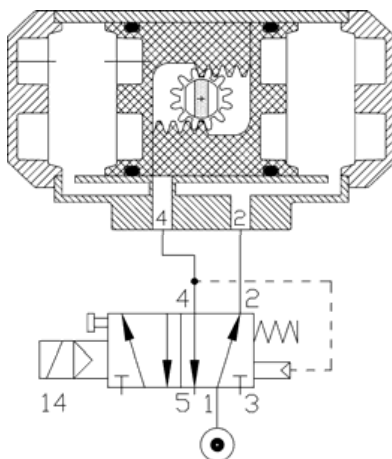


Figure 3

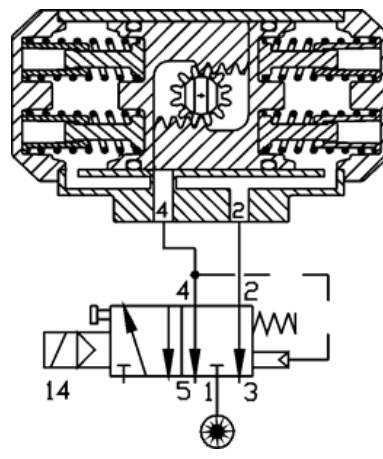
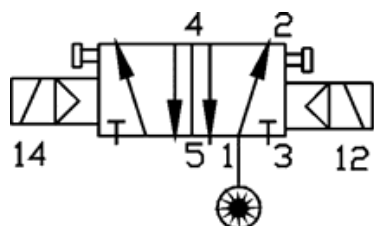


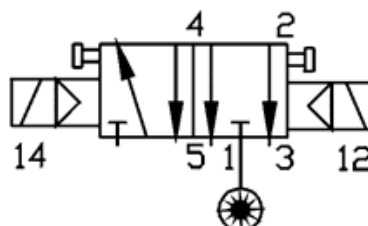
Figure 4

2 – 2 DUAL COIL SOLENOID VALVE

Pneumatic Diagram:



Dual Coil 4/2



Dual Coil 3/2

During the solenoid activation (opening phase of the actuator) air goes from supply Port 1 to Port 4, which is connected to the internal chamber between the pistons.

In the normal position (actuator closed) the flow depends on the type of solenoid valve:

- **4 way (4/2)** for Double Acting actuators: air goes from the supply Port 1 to the Port 2, filling up the cavity between the pistons and the end caps, closing the actuator (see fig. 5);
- **3 way (3/2)** for Spring Return actuators: air is exhausted through Port 2 (see figure 6)

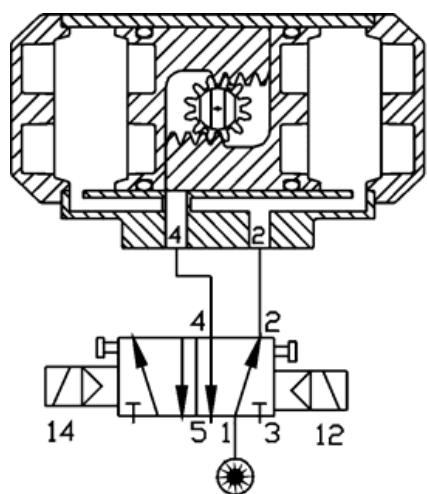


Figure 5

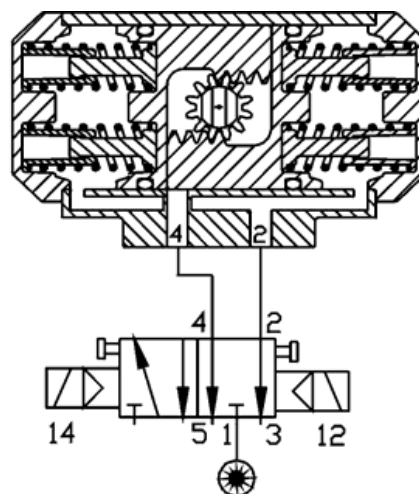


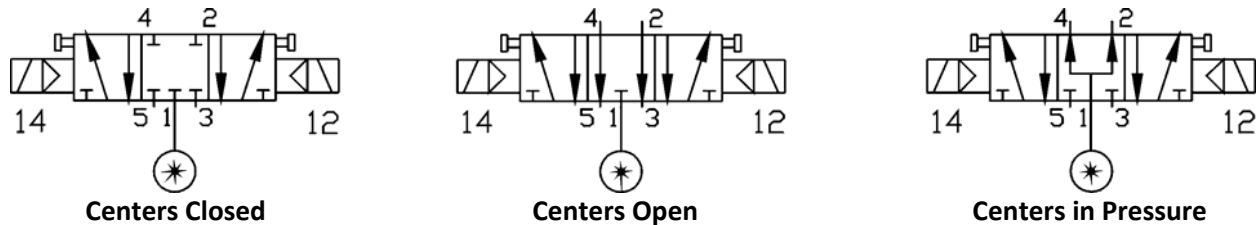
Figure 6

Note: The dual coil solenoid valve requires a pulse to cause the actuator to move. To return the actuator To the normal position, a pulse must be sent to the 2nd coil.

2 – 3 THREE (3) POSITION SOLENOID VALVE

Max-Air offers 3 position solenoid valves in 3 different configurations:

Pneumatic Diagram:



Note: the above diagrams refer to the “0” position.

Closed centers: both the inlet and exhaust ports are closed.

Open centers: the inlet port is closed and air is exhausted through both ports 3 and 5.

Centers in pressure: air is supplied through the inlet port 1 to both ports 2 and 4.

During the solenoid activation (opening phase of the actuator, referred as 14 on the above diagrams) air goes from the supply Port 1 to the Port 4, which is connected with the internal chamber between the pistons.

In the normal position (actuator closed) the flow depends on the type of solenoid valve:

- **4 way (4/3)** for Double Acting actuators: air goes from the supply Port 1 to the Port 2, filling the cavity between the pistons and the end caps, closing the actuator (see fig. 7);
- **3 way (3/3)** for Spring Return actuators: air is exhausted through Port 2 (see figure 8)

Note: The 3 position solenoid valve requires a pulse to cause the actuator to move. Then the solenoid valve returns to the center position (spring), causing the actuator to stop in its position. To return the actuator the normal position, a pulse must be sent to the 2nd coil.

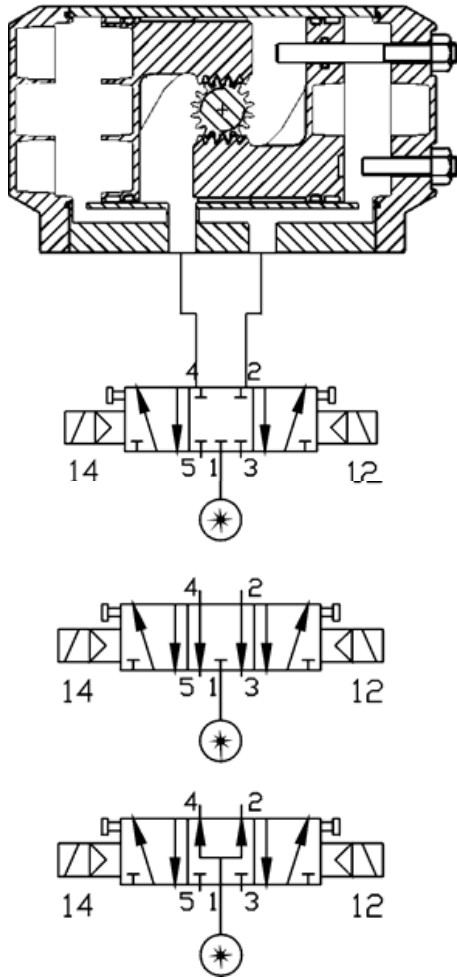


Figure 7

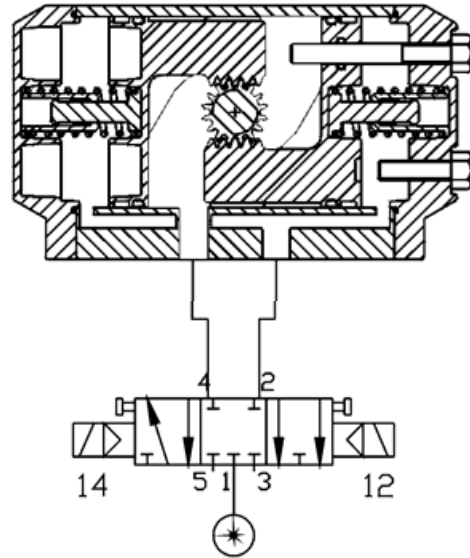


Figure 8

CHAPTER 3: SOLENOID VALVE INSTALLATION

Max-Air Solenoid Valves are designed according the NAMUR VDI/VDE 3845 standard; therefore they can be easily installed on all types of pneumatic actuators, both linear and rotary, with NAMUR connections.



ASSEMBLY ONTO THE ACTUATOR

Single Coil or Dual Coil 4/2 Solenoid Valve – Double Acting Actuator

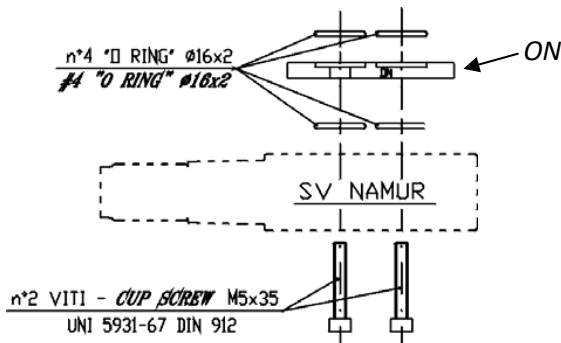
- Check that the O-rings are properly mounted onto the valve body
- Mount the solenoid valve onto the actuator with M5x30 screws supplied as standard

SV71(2) – SV81(2) – SV91(2) ONLY

- Check that the O-rings are properly mounted onto the **5/2 spacer** supplied with the standard kit
- Mount the solenoid valve onto the actuator with M5x35 screws supplied as standard, inserting the spacer between the valve and actuator

3/2 Solenoid Valve – Spring Return Actuator

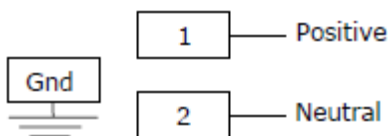
- Check that the O-rings are properly mounted onto the valve body
- Check that the O-rings are properly mounted onto the **3/2 spacer** supplied with the standard kit
- Mount the solenoid valve onto the actuator with M5x35 screws supplied as standard inserting the spacer between valve and actuator. The spacer is correctly mounted when from the top can be read **ON**.



Max-Air Technology, Inc.

CHAPTER 4: TECHNICAL DATA

4 – 1 WIRING DIAGRAM



The above wiring diagram is the same for all the voltages.

4 – 2 SOLENOID CLASSIFICATION

Max-Air solenoid valves are available with the following classification:

IP65: Watertight and Dust tight – indoor & outdoor. Protects against windblown dust rain, splashing water and hose directed water. Also corrosion resistant.

Hazardous Location: Intrinsically Safe (**EExi-a**), Explosion Proof (**EExm**)

NEMA 7: Class I & Class II, indoor hazardous locations, Explosion Proof

4 – 3 MATERIAL

Body:	Epoxy coated die cast aluminum
Spool:	ENP aluminum
Piston:	Aluminum
Spring:	Stainless steel
Seal:	Buna-N
Screws:	Stainless steel
Other components:	Technopolymer



4 – 4 SOLENOID SPECIFICATIONS

Port connections

Inlet and exhaust	1/4" NPT
Outlet	NAMUR interface
DIN connector	1/2" NPT

Pressure Range:

30 to 150 PSI

Flow factor:

1.1 Cv

Media Temperature:

-4°F to +158°F

Operating Voltages

12 V DC, 24 V DC

24 V AC, 48 V AC

110 V AC, 220 V AC

Voltage Tolerance:

± 10%

Power Consumption:

DC: 3 W

AC: 7.5 VA inrush,
holding 6 VA

Coil Insulation Class:

Class F standard

Class H optional

Duty cycle:

100% ED

Max operating frequency:

600/1'



WARRANTY

Max-Air Technology provides the following warranty regarding products manufactured by it. THE WARRANTY STATED HEREIN IS EXPRESSED IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, OR STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. *Max-Air Technology* warrants its products to be free from defects in materials and workmanship when these products are used for the purpose for which they were designed and manufactured. *Max-Air Technology* does not warrant its products against chemical or stress corrosion or against any other failure other than from defects in materials or workmanship. The warranty period is for twelve (12) months from installation date or eighteen (18) months from shipment date, whichever date comes first. Any claims regarding this warranty must be in writing and received by *Max-Air Technology* before the last effective date of the warranty period. Upon *Max-Air Technology* receipt of a warranty claim, *Max-Air Technology* reserves the right to inspect the product(s) in question at either the field location or at *Max-Air Technology* Manufacturing plant. If, after inspection of the product(s) in question, *Max-Air Technology* determines that the purchaser's claim is covered by this warranty, *Max-Air Technology's* sole liability and the purchaser's sole remedy under this warranty is limited to the refunding of the purchase price or repair or replacement thereof a *Max-Air Technology* option. *Max-Air Technology* will not be liable for any repairs, labor, material or other expenses that are not specifically authorized in writing by *Max-Air Technology*, and in no event shall *Max-Air Technology* be liable for any direct or consequential damages arising out of any defect from any cause whatsoever. If any *Max-Air Technology* product is modified or altered at any location other than *Max-Air Technology* – St. Louis (Missouri) or *Max-Air Technology* – Sesto San Giovanni (Milan) ITALY without the express written authorization of *Max-Air Technology* are not covered by this warranty. The warranty for such products shall be subject only to the warranty relief, if any, provided by the suppliers and/or manufacturers of such products.