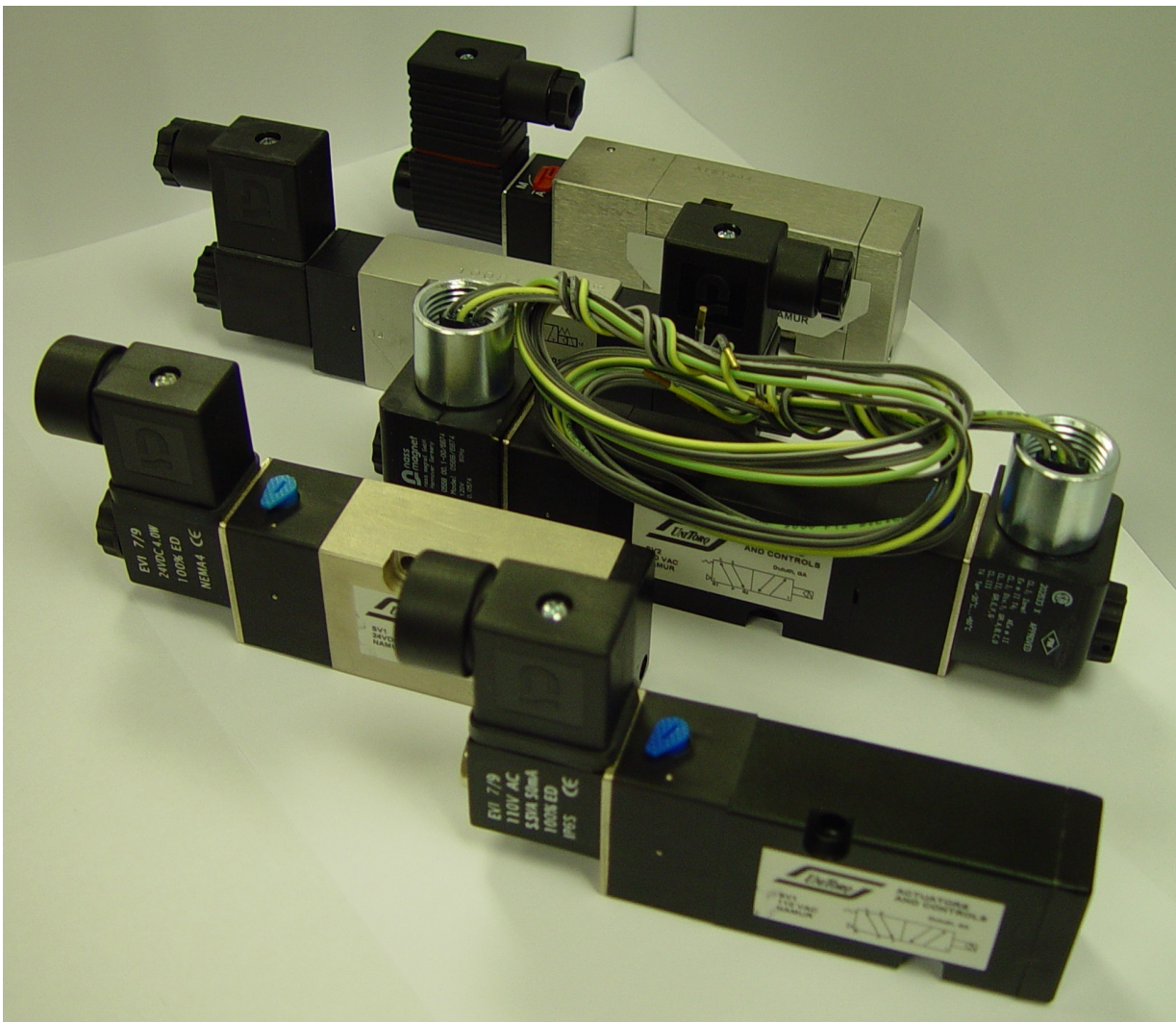




INSTALLATION OPERATION MAINTENANCE MANUAL

UNITORQ 5 WAY SOLENOID VALVE



Thank you for purchasing our SV1 or SV2 Solenoid Valves

Before installation or operation of the solenoid valve carefully review this manual to gain a thorough understanding of all installation, operation, and maintenance procedures.

The contents of this manual are subject to change due to continuous quality improvement processes.

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INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

UNITORQ 5 WAY SOLENOID VALVES

UniTorq offers several variations of our pneumatic solenoid valve. UniTorq solenoid valves are easily direct mounted to the UniTorq Pneumatic Actuator product line and use the Namur mounting standard. All hardware and seals are provided for mounting the solenoid valves.

Several variations are available such as 5 or 3 way, two position single coil or two position dual coil, and 3 position: center block, center open, or center pressure. This variety allows you to select the ideal solenoid valve for your specific requirements. Nitrile compound seal discs are used instead of o-rings for improved low friction characteristics and long life sealing. A new spool and cage design offers improved flow within a compact size. The valves are all factory lubricated for life.

Part of the standard equipment is a locking manual override. It is a very visible blue knob and is simply turned to the "1" position for engaging and back to "0" for normal operation. Operational conditions are from 37psi to 150 psi and 41°F to 122°F (optional -104°F to 122°F). Numerous coil voltages are available in both AC and DC with industrial 1/2"NPT conduit quick connects. The coil is easily changed without the need for solenoid valve removal or reworking of the conduit. Adjustable Speed Control sets are available as an accessory option and are used to slow the stroke time of the actuator by throttling the exhaust. Since 5 way solenoid valves have two exhaust ports you can independently adjust the stroke times for each direction.

The two position (SV-1 and SV-2) solenoid valves offer the option of installing as either a 5 or 3 way which is useful for cases where reduced air consumption is desired (spring return actuators only). UniTorq always recommends using the solenoid valves as 5 way even on spring return actuators; this keeps the actuator from taking in foreign debris or corrosive material which could shorten the life of the actuator.

The UniTorq two position solenoid valve is available as single (SV-1) or dual coil (SV-2) configurations. The single coil is the most common but in cases where power consumption is a concern the dual coil set up is desirable. It maintains the last position engaged so only a short pulse of power is required to shift the valve. This feature also makes the dual coil well suited for fail in last position requirements. The single coil solenoid will always fail closed (normal setup, can be changed to fail open) when power is lost.

The 3 position (SV-3) 5 way solenoid valves are all dual coil with spring (fail) to center position. There are three variations available with each suited for different applications. The "Center Open" blocks the supply air and opens both A and B actuator ports to exhaust. This configuration is required for the UniTorq 90x90 Pneumatic actuators. The "Center Block" blocks the air supply as well as both A and B actuator ports. This version works well for 3 Position Control applications. The remaining configuration is "Center Pressure" which can also be used in 3 Position Control but not as effectively. This valve pressurizes both the A and B port of the actuator when in its mid position.



INSTALLATION

Note: Make sure that the port O-Rings are correctly placed inside the O-Ring groove.

1. Mount solenoid valve to actuator and tighten screw to 70 in/lbs.

2. Disconnect solenoid wire hood. Wire terminal block and replace hood.

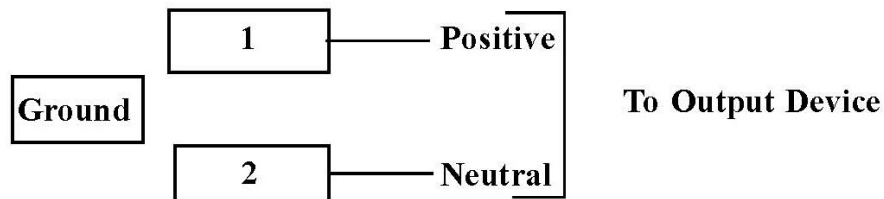
Terminal Designation:

Positive—1

Neutral—2

Ground—3

3. Energize solenoid valve several times and test for leaks and proper operation. Note: Solenoid nut should be hand tightened.



Note: Wiring diagram is the same for all voltages.
(24/48/120/220 AC : 12/24/48/120 DC)

MANUAL OVERRIDE

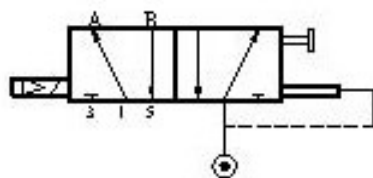
The UniTorq solenoid valve comes equipped with a locking manual override. A small blue switch located between the valve body and the coil positioned perpendicular to the long axis of the valve body allows for the overriding of the solenoid if necessary. The normal position for the switch will be perpendicular to the long axis of the valve body (pointing toward the 0). A 90° rotation of the switch in the counter clockwise direction will manually override the solenoid and lock the solenoid in the disengaged position until the switch is returned to its original position.



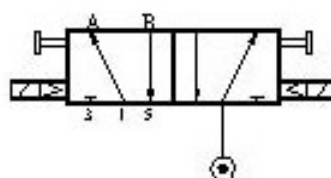
SOLENOID VALVE CHARACTERISTICS

UniTorq direct mount Solenoid Valves are permanently lubricated and are designed for long life. The Solenoid Valves are specially designed to be easily installed on pneumatic actuators. The Solenoids are equipped with Buna O-Rings to seal the valve ports to the actuator body.

Operation



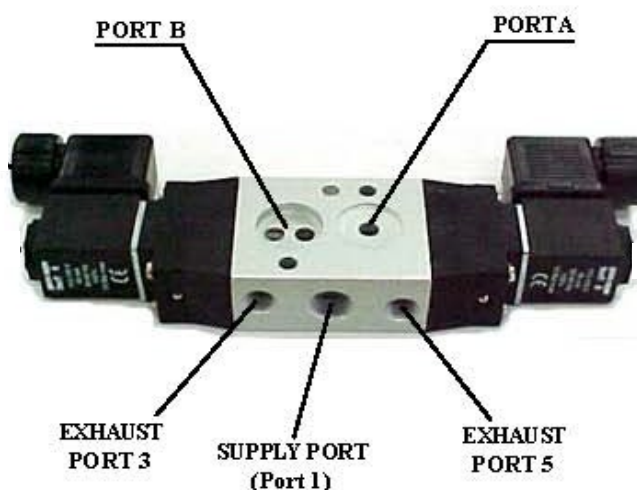
Single Coil



Dual Coil

SINGLE COIL SOLENOIDS

Port 1 is the supply port and ports 3 and 5 are the exhaust ports for both the dual coil and single coil types. The exhaust port may be equipped with silencers or speed controls to control the actuation speed. Ports A and B are the actuator input ports. In the normal position air goes from the supply port (Port 1) to Port B. During solenoid activation the flow will be from the supply port (Port 1) to Port A.



SV2
Solenoid
Valve

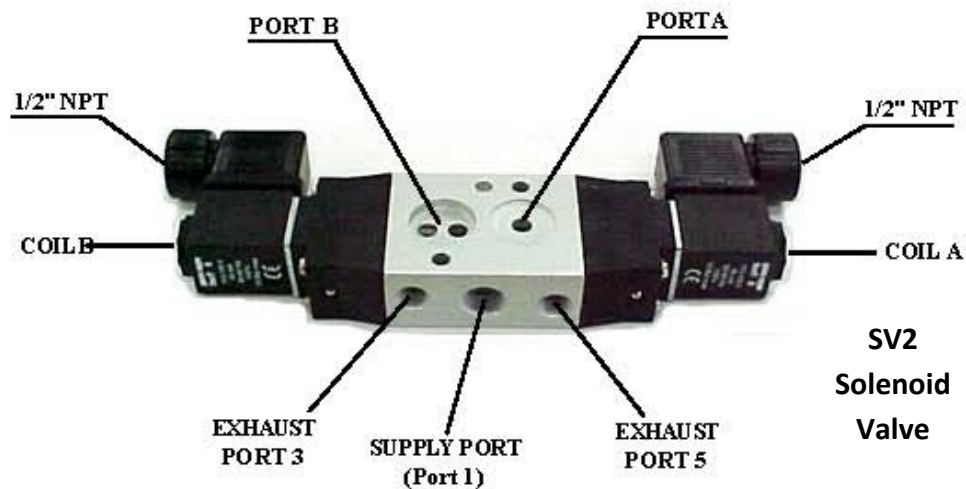


DUAL COIL SOLENOIDS

Dual coil solenoids can be operated in two different modes.

Mode 1: Energize solenoid A to connect the Supply Port to Port A. The spool which directs the air flow will respond in less than one second. After the spool has adopted its new position the coil can be de-energized. To direct the air flow to Port B energize solenoid B which can also be de-energized after the spool has been removed.

Mode 2: All of the previous instructions apply except that the coil moving the spool can be left energized. The only important consideration is that **YOU MUST DE-ENERGIZE COIL A BEFORE ENERGIZING COIL B**. The reverse is also true; de-energize Coil B before energizing Coil A.



SOLENOID CLASSIFICATION

The UniTorq solenoid valve is designed to the NEMA 4 and 4X standards. The UniTorq solenoid valve can be adapted to the 7 and 9 classifications by installing a special solenoid on the standard valve body.

NEMA 4, 4X: Watertight and Dust tight - indoor & outdoor. Protects against windblown dust, rain, splashing water and hose directed water and is corrosion resistant.

NEMA 7, 9: All of the above standard plus: Class I & Class II, Div I, indoor hazardous locations, explosion proof (which includes groups C, D, E, F, and G).



SPECIFICATIONS

SV1 NAMUR 5 Way NEMA 4 solenoid valve with standard Namur mount (M10 - M3720)

Nominal Voltage: 110 VAC +/- 10%

Port Dimensions: Port 1 = 1/4" NPT (Ports 3 & 5 = 1/8")

Power: 60 Hz AC at 3.3 Watts

Pressure Range: Min - 29 psi. / Max - 145 psi.

CV Factor: .89

In addition to the basic model UniTorq also offers a NEMA 4, 7, and 9 upgrade for explosion proof applications. The UniTorq explosion proof solenoid can easily be mounted to the standard UniTorq valve block with the addition of a spacer block and a valve adapter kit.

SV1 NAMUR 5 Way NEMA 4, 7, and 9 solenoid valve with Namur Mounting

Nominal voltage: 100VAC +/- 10%

Port Dimensions: 1,3,5 1/4" NPT (Ports 3 & 5 1/8" NPT)

Power: 60 Hz AC at 5.9 Watts

Pressure Range: Min - 29 psi. / Max - 145 psi.

CV Factor: .89

SV1 NEMA 4 Solenoid Valve		
Voltage	Power	Current
110 VAC	5.6 Watts	48 ma
12 VDC	3.5 Watts	290 ma
24 VAC	3.6 Watts	150 ma
24 VDC	4.8 Watts	198 ma
125 VDC	6.2 Watts	49.5 ma



NEMA 4 TO NEMA 7 CONVERSION

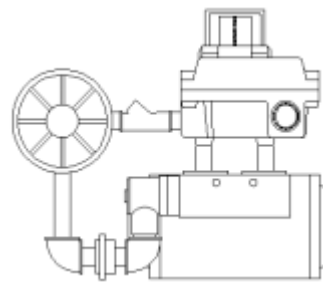
The UniTorq solenoid valve can be converted to comply with the NEMA 7 & 9 standard by adding an explosion proof coil.

1. Choose the appropriate sized direct mount solenoid valve. Remove lock nut to enable coil removal.
2. Mount solenoid valve (with spacer block in place) to side of actuator. Be sure that all four O-Rings remain in the O-Ring grooves and are not pinched.
3. Tighten coil adapter. Coil adapter should be tight against adapter plate collar. Replace coil and lock nut. Do not tighten lock nut until conduit assembly is complete. See figure below for coil.
4. Install Nema 7 rated conduit. See figure below for typical conduit installation.
5. Be sure the conduit assembly is not exerting excessive load on the solenoid valve. Tighten lock nut.

CAUTION: THE SOLENOID VALVE SHOULD NOT BE SUBJECTED TO TORQUE GREATER THAN 800 IN/LBS BY THE CONDUIT ASSEMBLY



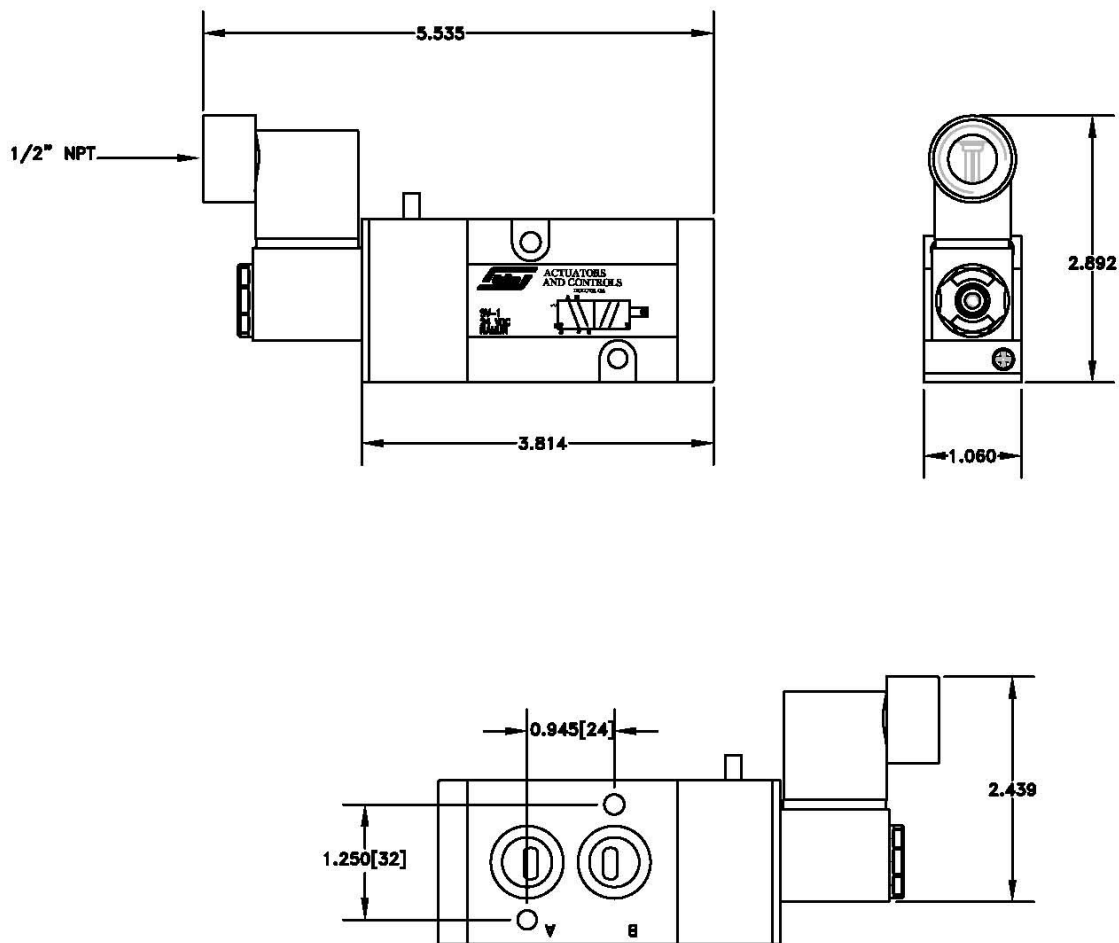
Nema 7 Coil



Typical conduit assembly
Explosion Proof



UT-SV1-N4



PRODUCT INFORMATION

Unit**Torq** ACTUATORS
AND CONTROLS
NORCROSS, GEORGIA U.S.A. 30071

PRODUCT

SOLENOID VALVE

PART NUMBER

SV1-NARMUR-4

DESCRIPTION

SOLENOID SV-1-N4

SALES DRAWING NO.

UT-SV1-N4

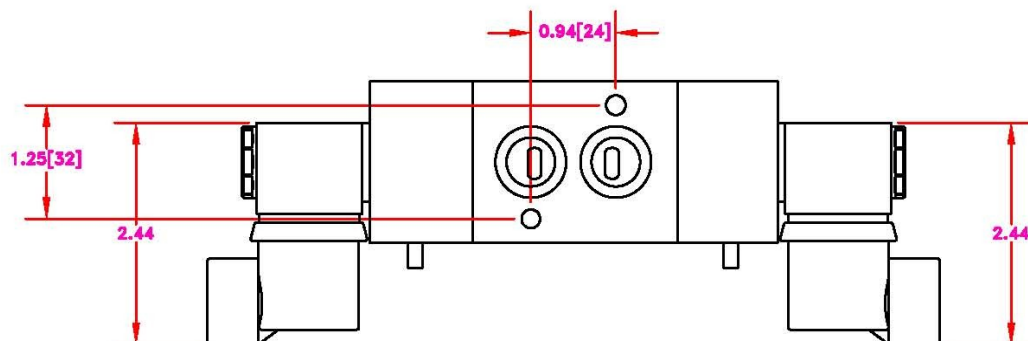
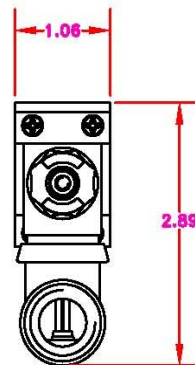
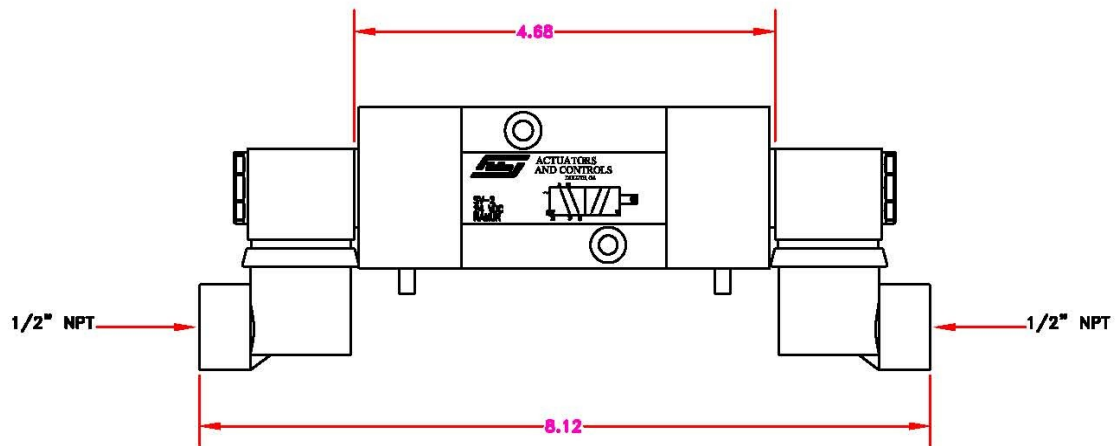
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REV.

A

UT-SV2-N4



PRODUCT INFORMATION

UnitTorq ACTUATORS
AND CONTROLS
NORCROSS, GEORGIA U.S.A. 30071

PRODUCT

SOLENOID VALVE

PART NUMBER

UT-SV2-N4

DESCRIPTION

SOLENOID SV-2

SALES DRAWING NO.

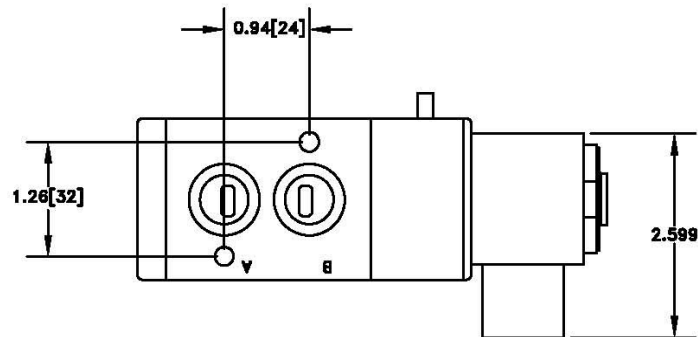
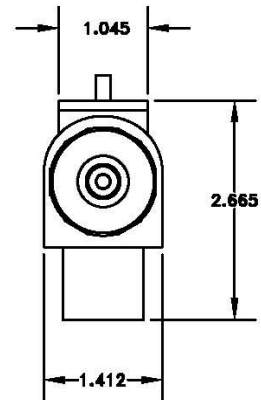
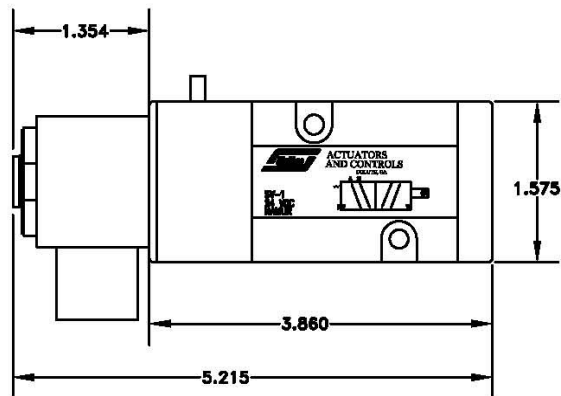
UT-SV2-N4

CLN

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REV.

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PRODUCT INFORMATION

Unit**Torq** ACTUATORS
AND CONTROLS
NORCROSS, GEORGIA U.S.A. 30071

PRODUCT

SOLENOID

PART NUMBER

SV1-NAMUR-7

DESCRIPTION

SOLENOID SV-1-N7

SALES DRAWING NO.

SV1-NAMUR-7

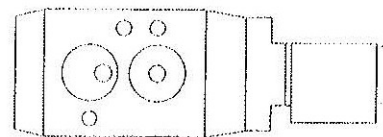
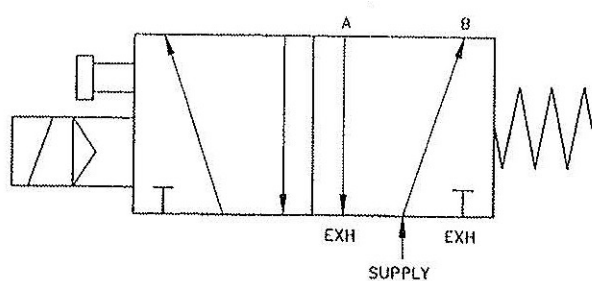
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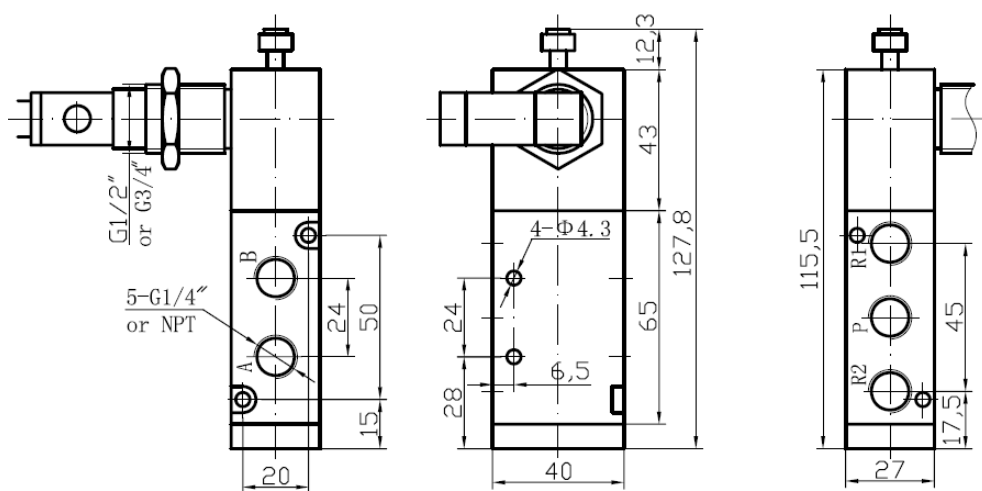
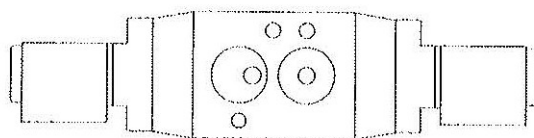
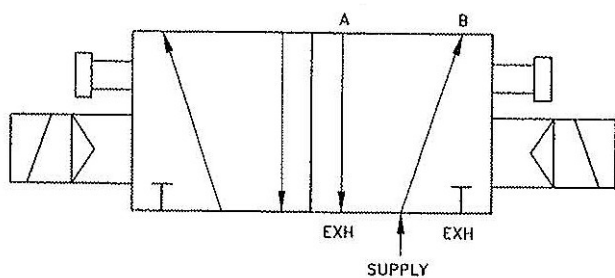
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FLOW/DIMENSIONAL DIAGRAMS

SV1 5 WAY, 2 POSITION, SINGLE COIL



SV2 5 WAY, 2 POSITION, DUAL COIL



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For further information, contact UniTorq or your local representative.

2150 Boggs Road, Suite 410 • Duluth, GA 30096 • 770.446.7074 • fax 770.447.1825

