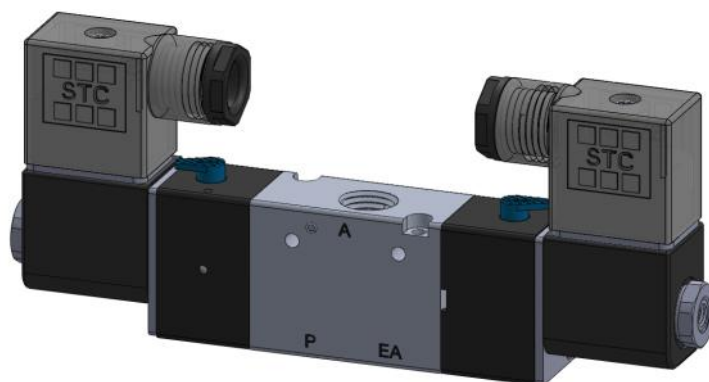


# STC 3V120-420 Series Solenoid Air Valves

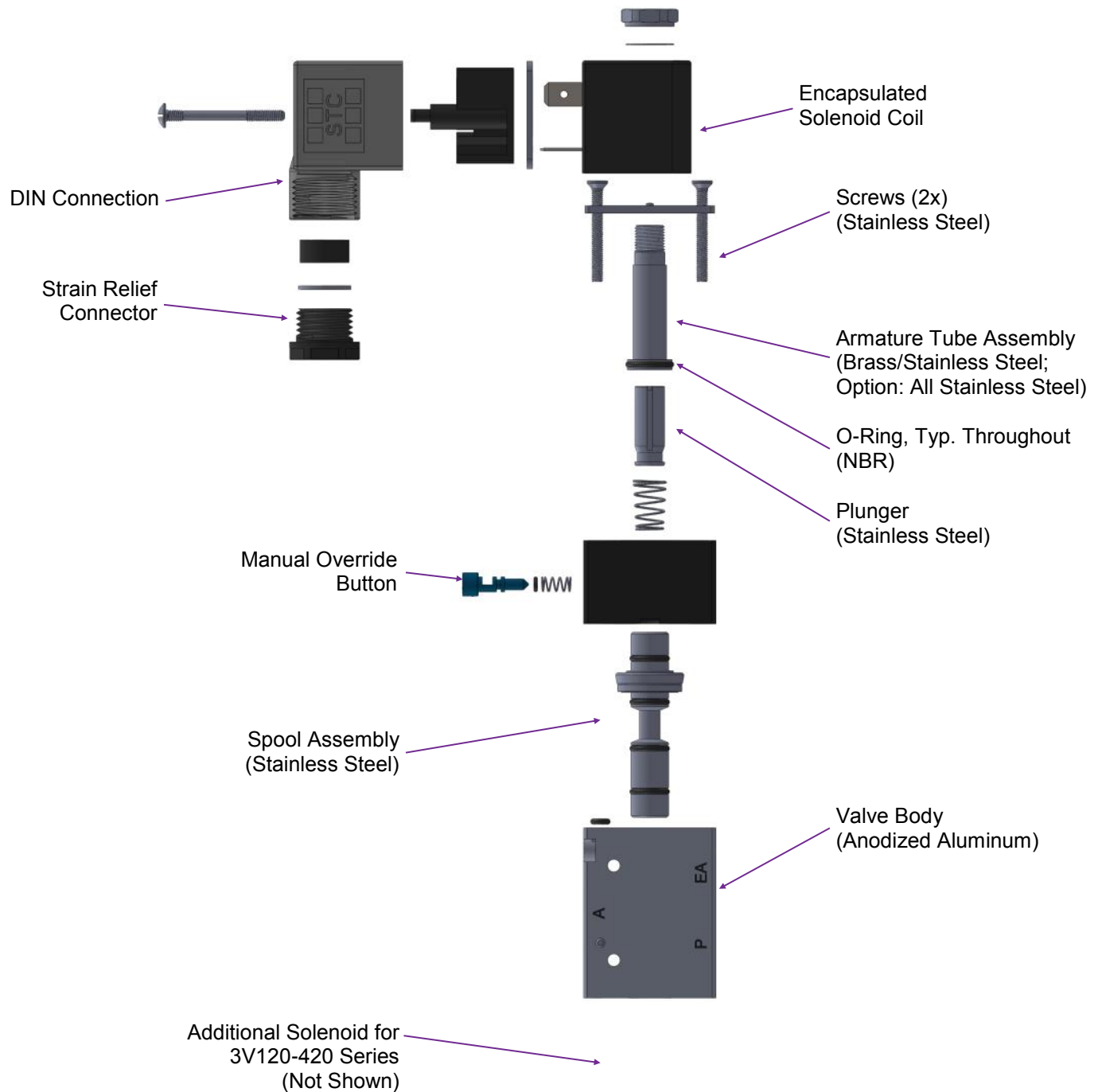
## 3-Way, 2-Position, Double Solenoid (3/2/2)



### 3V120-420 Series Specifications

Valve Model	3V120-1/8	3V220-1/4	3V320-1/4	3V320-3/8	3V420-1/2
Port & Mounting	Body Ported, 3-Way, 2-Position				
Action & Motion	Air Pilot, Spool Design, Response Time < 20ms, Double Solenoid				
Operating Pressure	Operating Pressure: 21 to 115 PSI, Proof Pressure: 200 PSI (leaks develop)				
Port Sizes (NPT)	1/8"	1/4"	1/4"	3/8"	1/2"
Operating Temperature	14 to 140°F (-10 to 60°C)				
Cv	0.67	0.89	1.68	1.68	2.79
SCFM @ 100 PSI	25	53	80	80	160
Manual Override	Detentable (depress & rotate)				
Electrical Connection	DIN, Grommet				
Working Medium	40 micron filtered air or inert gas				
Coil Duty Cycle & Protection	100% ED (Continuous Duty), IP65, Class F				
Coil Voltage Options	12VDC, 24VDC, 24VAC, 110/120 VAC (50/60Hz), 220/240VAC (50/60Hz)				
Coil Power	2.5W	3 / 4.8W			
Coil Locking Nut	M8x0.75 Threads				
Wetted Surfaces	Anodized Aluminum, NBR (Buna N), Stainless Steel				

# 3V120-420 Series Solenoid Air Valve Components



**Note:** Standard configuration is shipped with a DIN coil (as shown above). Grommet coil (lead wires) is available by request.

**Note:** Model shown above is a *single solenoid*. The 3V120-420 valve has two solenoids, but the internal components are functionally identical.

# Material Test Reports

This document certifies that STC products have been subjected to quality assurance procedures and meet the material and performance specifications published by Sizto Tech Corporation (STC). The products have been manufactured, processed, inspected, and tested according to STC internal requirements and ISO 9001 standards.

ISO 9001:2008 Certificate Number: **Q17150329**

Date of Issue: **10, March, 2015**

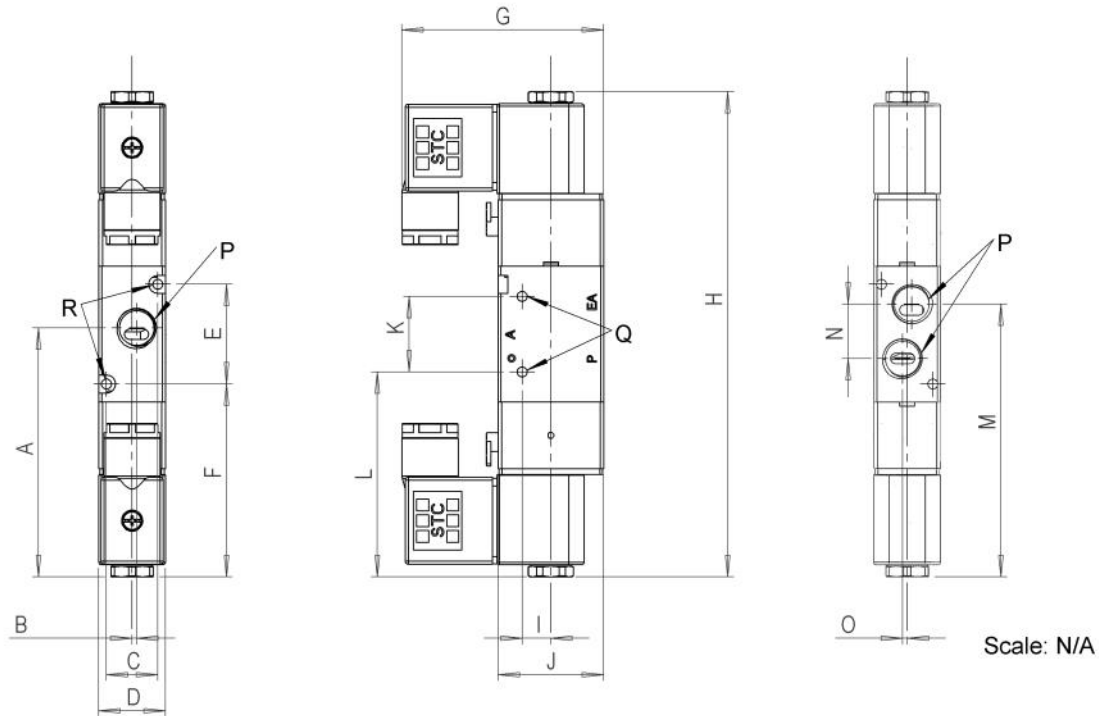
Valid Until: **09, March, 2018**

Individual materials and components used in this product have been tested and conform to applicable published standards according to chart below. Please be advised that STC does not conduct its own material analysis of all raw materials, rather, STC relies on the statements of its material suppliers & reserves the rights to independently test raw materials if necessary. Material Test Reports may be available for specific products upon request.

Material	Use Location	Material Standard
316 Stainless Steel	Metal Fittings, Valves, Air Cylinders	ASTM A240/A2666
304 Stainless Steel	Valves, Air Cylinders	ASTM A240/A666
CF8M Stainless Steel	Valves	ASTM A351/A743
Brass	Valves	ASTM B36/B62
Nickel-Plated Brass	Composite Fittings	ASTM B456/B927
Acetal Homopolymer (Delrin)	Valves	ASTM D4181/D6778—14
Acetal Copolymer (POM)	Composite Fittings	ASTM D4181/D6778—14
FKM (Viton)	Seals	ASTM D1418
PTFE (Teflon)	Valves, Seals	ASTM D3294—15
NBR (Buna N)	Seals	ASTM D1387—06
EPDM	Seals	ASTM D3568—03
Polybutylene Terephthalate (PBT)	Composite Fittings	ASTM D4000



# 3V120-420 Series Solenoid Air Valve Dimensions



Valve Model [mm]	3V120-1/8	3V220-1/4	3V320-1/4	3V320-3/8	3V420-1/2
A	63.8	81	87	87	95
B	1	0	0	0	2
C	13	17	20	20	27
D	18	22	27	27	34
E	19	30	35	35	40.5
F	54.3	66	69.4	69.4	76.1
G	53.5	66.5	69	69	73.8
H	127.6	162	174	174	190.5
I	5.8	9.5	9.5	9.5	11.5
J	27	35	40	40	50
K	21	25	30	30	51
L	53.3	68.4	72	72	72
M	71.8	92.5	99	99	111
N	16	22.5	24	24	31.5
O	1	0	0	0	0
P	1/8-27 NPT	1/4-18 NPT	1/4-18 NPT	3/8-18 NPT	1/2-14 NPT
Q	Ø3.3	Ø4.3	Ø4.3	Ø4.3	Ø4.3
R	Ø3.3	Ø3.2	Ø4.3	Ø4.3	Ø4.3

# Installation & Operation

## To Connect the Valve Inlet & Outlets:

- Connect the pressurized line to the port marked “P”. Connect outlet to port “A”. Connect exhaust outlet to port “EA” (the exhaust connection is optional).

## To Install the Coil:

- Put the coils on to the armature tube of the valve. Place the lock washer & nut on to the armature tube. Hand tighten the nut, then use a wrench to tighten the nut another quarter-turn. Do not over-tighten the nut, as it may cause the armature tube to fail prematurely.

## To Connect a DIN Coil:

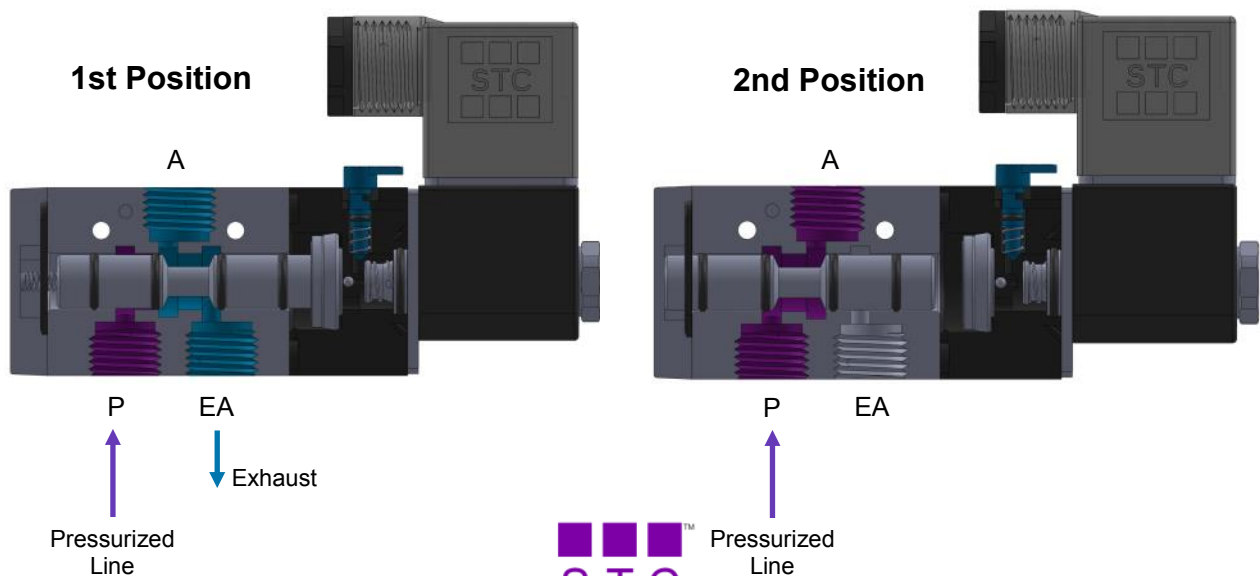
1. Remove the Philips-head screw from the plastic DIN housing & unplug it from the DIN coil
2. From the screw opening, push the terminal block out from the plastic DIN housing.
3. Note the “1”, “2”, and ground “ $\perp$ ” symbols on the underside of the DIN enclosure.
4. For DC DIN Coils, connect “1” to your Positive Lead & “2” to your Negative lead.
5. For AC DIN Coils, connect “1” to your HOT lead, “2” to your Neutral lead, & “ $\perp$ ” to your ground if required.

**Do not energize the coil without installing it onto the valve or connect the coil to a different voltage than specified. This will burn the coil and could create fire hazards.**

**Safety Note:** Standard valves are supplied with continuous duty coils. The proper class of insulation for the service is indicated on the coil body. The coil temperature may rise significantly if energized for extended periods—this is normal. Although the coil is made of flame-retardant material, misuse of the coil could create fire hazards & generate smoke and/or a burning odor. If these conditions are encountered, the coil temperature has risen above safe levels and the power should be disconnected immediately.

**Operation:** This valve is a three-way, air-pilot valve with a spool design that requires an input pressure supplied to port P to actuate. The valve will not actuate when no pressure is applied. Unlike on a spring-return valve, the valve will stay in position until the corresponding solenoid coil is energized. When viewing the coil with the port labels facing you, the left coil will bring the valve to Position 1; the right coil will bring the valve to Position 2. The pressurized flow is shown in the diagrams below in purple; the exhaust flow is shown in blue.

**Note:** The 3V120-420 series has *two solenoids*. The diagram below is an illustration of the flow-path only & does not show the 2nd (left) coil.



# 3-Way Solenoid Air Valve

## Installation, Maintenance & Troubleshooting Guide

**Warning:** DO NOT over tighten the nut holding the coil to the armature tube. Over tightening may result in damage to the welded joint.

**Note:** This valve is designed for AIR FLOW ONLY. The use of filtered, lubricated air will prolong the life of the valve & its internal components.

### Attaching a Coil to a Valve:

- After wiring the coil, fit the coil assembly over the armature tube. Ensure that the threads of the tube are accessible.
- Fit the spring or lock washer over the assembly.
  - For spring washers, the concave side should be oriented toward the coil.
- Tighten the nut over the washer by hand.
  - For standard washers, tighten the nut an additional  $\frac{1}{4}$  turn with a wrench if necessary.
  - For spring washers, continue to tighten the nut until the spring washer is almost completely compressed.

### Installing Air Lines:

1. Connect the pressurized source line to the port labeled "P".
2. Connect the 1st outlet to the port labeled "A".
3. Connect the 1st exhaust to the port labeled "EA" if necessary.

### Notes:

- After an extended period of operation, the solenoid coil may burn out. This commonly occurs when input voltages are higher than the coil's specifications. If the valve does not make a clicking sound when energized/de-energized, the coil likely needs to be replaced.

### Maintenance Procedure:

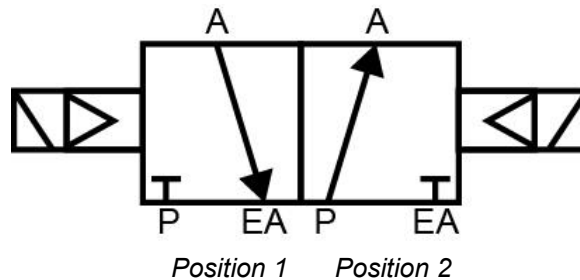
1. Turn off the power supply to the valve & ensure it is safely locked-out.
2. Remove any coils attached to the valve.
3. Unscrew the holding plate and the armature tube assembly and remove it from the valve body. The plunger & spring are not fastened to the tube and will fall out.
4. Check for any debris that may have collected on the plunger & the hole in the center of the valve. Clean any dirty surfaces or debris with clean water.
5. Place the spring back in the plunger & insert the plunger back into the armature tube.
6. Screw the armature tube & holding plate back into the valve.
7. Please refer to the diagram on Page 2 of this document for a breakdown of individual components.

For tips, maintenance guides, & procedural videos, visit us at [www.youtube.com/users/STCValves](http://www.youtube.com/users/STCValves)

# STC General Operation Guide

## 3-way & 4-Way Solenoid Valves

### 3-Way Valves (STC 3V120-420), Double Solenoid

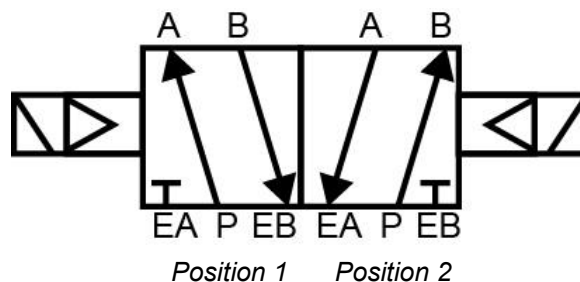


**Operation:**

1. When left solenoid is energized (*Position 1*), Port “A” is connected to Port “EA”. Port “P” is closed.
2. When right solenoid is energized (*Position 2*), Port “P” is connected to Port “A”. Port “E” is closed.
3. Unlike a spring-return valve, the valve will remain in position until the opposite solenoid is energized.

**Note:** Typical use of 3-way valves is to control (extend) a single acting (spring return) cylinder.

### 4-Way Valves (STC 4V120-420), Double Solenoid



**Operation:**

1. When solenoid is OFF (*Position 1*), Port “P” is connected to Port “A”. Port “B” is exhausted to Port “EB”. Port “EA” is closed.
2. When solenoid is ON (*Position 2*), Port “P” is connected to Port “B”. Port “A” is exhausted to Port “EA”. Port “EB” is closed.
3. Unlike a spring-return valve, the valve will remain in position until the opposite solenoid is energized.

**Note:** Typical use of 4-way valves is to control (extend & retract) a double acting cylinder.

For tips, maintenance guides, & procedural videos, visit us at [www.youtube.com/users/STCValves](http://www.youtube.com/users/STCValves)



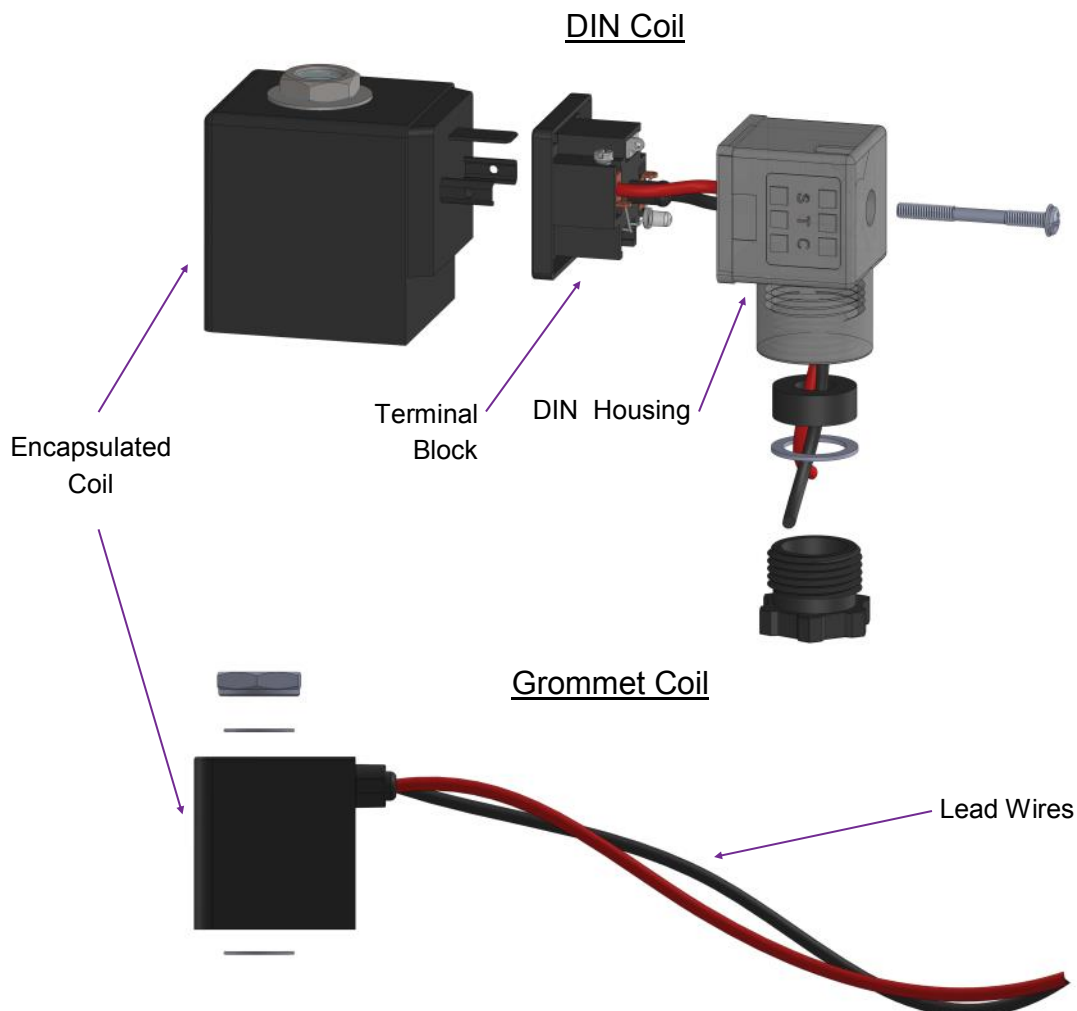
# Electrical Connections

## To Connect a DIN Coil:

- Remove the Philips screw from the plastic housing & unplug from the DIN coil.
- Use the removed screw to push the terminal block out of the plastic DIN housing.
- Note the “1”, “2”, and ground “ $\perp$ ” symbols.
  - For DC DIN Coils, connect “1” to your positive lead & “2” to your negative lead.
  - For AC DIN Coils, connect “1” to your HOT lead, “2” to your NEUTRAL lead, and “ $\perp$ ” to your ground lead, if required.

## To Connect a Grommet Coil:

- For DC Coils, connect the red wire to your positive lead & the black wire to your negative lead.
- For AC Coils, connect the black wire to your HOT lead & the white wire to your NEUTRAL lead.
- For Coils provided with Molded Cables, the color of the wire indicates the type of lead:
  - GREEN = Ground Wire
  - BLUE = Positive or HOT Wire
  - BROWN = Negative or Neutral Wire





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No merchandise is accepted for return 30 days after delivery date. No credit allowed on merchandise shipped as ordered and returned without obtaining an authorization number IN ADVANCE. A 20% restocking charge applies to all returns, and transportation charges must be fully prepaid. We will pay **ground** transportation charges on re-sent or returned merchandise due to STC's error.

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Sizto Tech Corporation, 892 Commercial Street, Palo Alto, CA 94303, USA

Credit Card Payments: Visa, MasterCard, Discover, or American Express accepted

**International Customers:** Advance Payment Required via Bank Wire, Cashier's Check or Approved Credit Card.

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