

# STC 2D150-500 Series Anti-Hammering Slow Closing Pilot Solenoid Valves

BRASS



STAINLESS STEEL

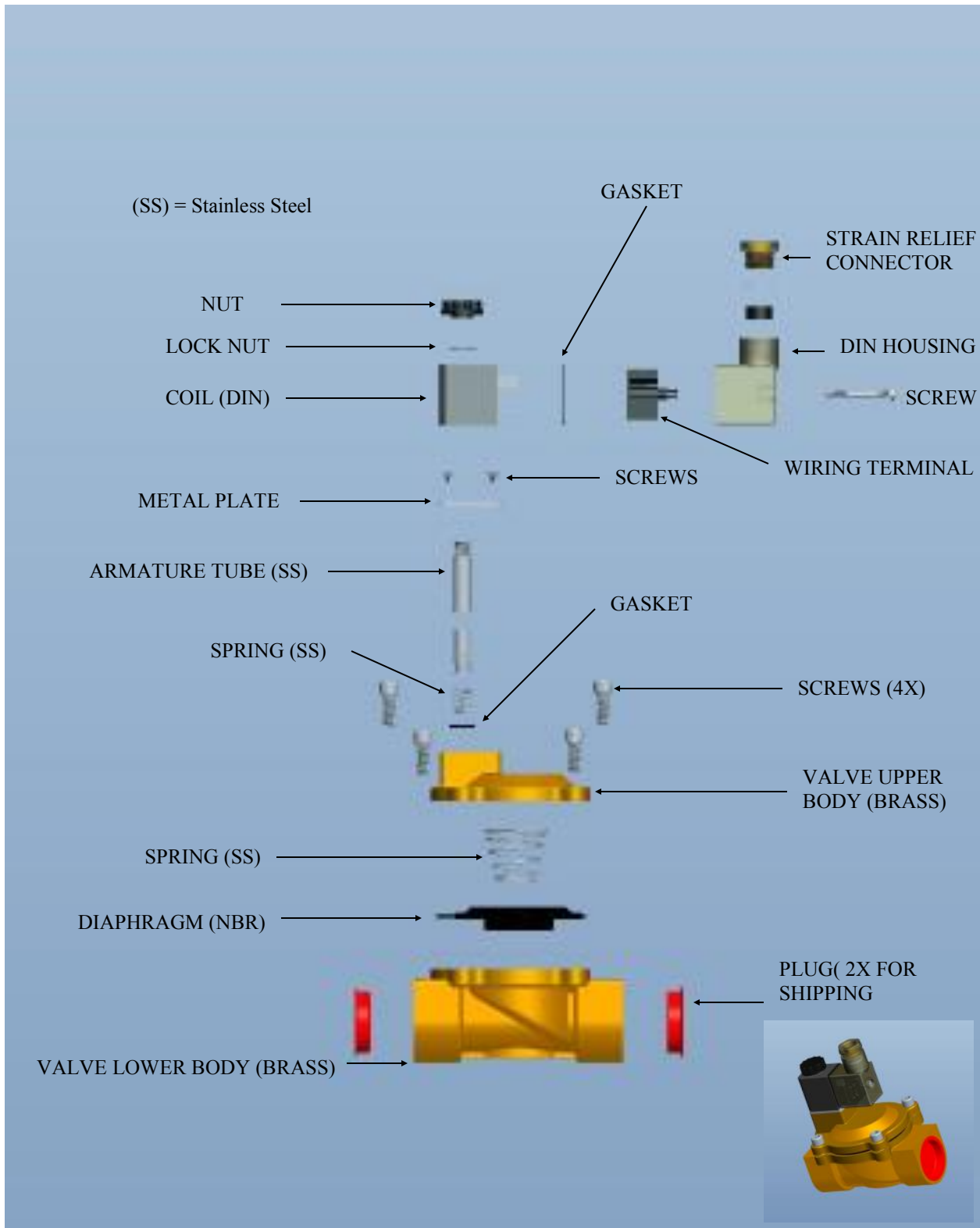


## 2D150-500 Series Solenoid Valve Specifications

Brass Model	2D150-1/2	2D200-3/4	2D250-1	2D320-1 1/4	2D400-1 1/2	2D500-2
Stainless Steel Model	2DS150-1/2	2DS200-3/4	2DS250-1	2DS320-1 1/4	2DS400-1 1/2	2DS500-2
Valve Type	2 Way, Normally Closed (NC)					
Action	Anti-Hammering Slow Closing Pilot Diaphragm					
Orifice (mm)	15mm,	20mm,	25mm,	32mm,	40mm,	50mm,
Cv	C <sub>v</sub> =3.7	C <sub>v</sub> =7	C <sub>v</sub> =11.1	C <sub>v</sub> =14	C <sub>v</sub> =24.5	C <sub>v</sub> =35
Operating Pressure	4 to 175 PSI (AC Coil), 4 to 145 PSI (DC Coil)					
Proof Pressure	350 PSI @ 75°F					
Operating Temperature	14 to 176°F (-10 to 80°C) w/ NBR Seal; Option: 14 to 266°F (-10 to 130°C) with Viton Seal					
Port Size (NPT)	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Body Materials	Brass; or 304 Stainless Steel; Upgrade Option: 316 Stainless Steel					
Seal Materials	NBR, Upgrade Option: Viton (FKM)					
Coil Duty	F Class IP65, Continuous Duty					
Voltage	Options: 12, 24 VDC; 24,110/120, 220/240 VAC (50/60Hz)					
Voltage Tolerance	±10% of Specified voltage					
Coil Power	12 to 20W (15mm Armature)					
Electrical Connections	DIN; Option 1/2" Conduit; 3 to 6 ft molded cable					
Installation	No Orientation Requirement					
Service	Air, Water, Oil					

# Slow Closing Solenoid Valves

## 2D150-500 SERIES SOLENOID VALVE COMPONENTS



## Installation and Operation:

### To connect the valve Inlet and Outlet:

Connect the inlet and outlet in the direction of the arrow marked on the valve.

### To install coil:

Put the coil onto the armature tube of the valve. Put the lock-washer and nut onto the armature tube. Hand tighten the nut, then use a wrench to tighten the nut to a quarter turn; **do not over-tighten the nut, it may cause the armature tube to fail pre-maturely.**

### To connect DIN coil:

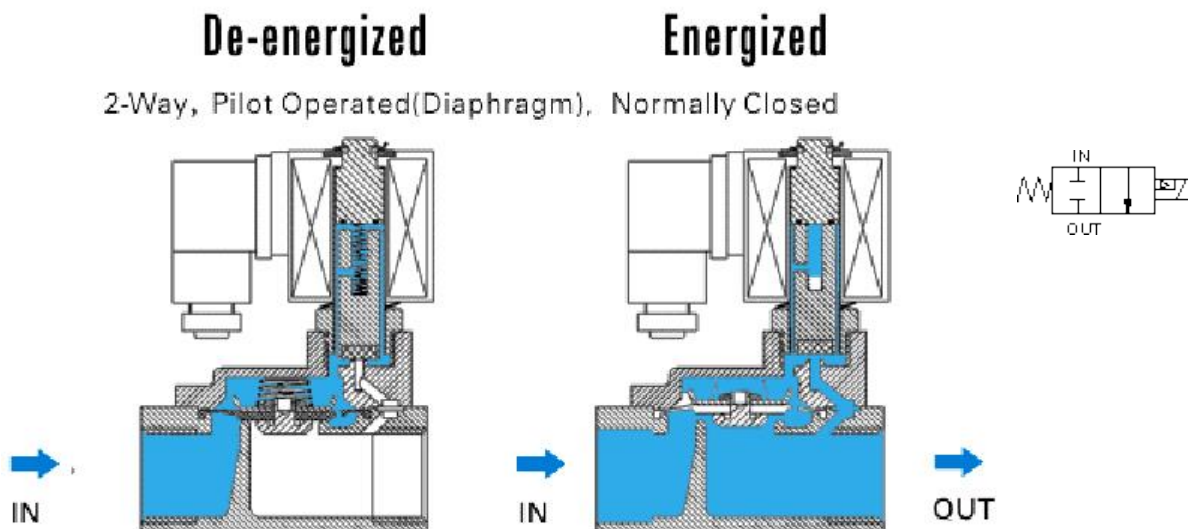
1. Remove the Philip screw from the plastic housing and unplug it from the DIN coil.
2. From the screw opening, push the terminal block out from the plastic housing.
3. Note the 1, 2 and ground markings on underside of DIN enclosure.
4. For DC DIN Coil, Connect 1 to Positive, 2 to Negative.
5. For AC DIN Coil, connect 1 to HOT wire, 2 to Neutral wire, and if required connect.
6. **Do not energize the coil without installing it onto the valve, it will burn the coil and 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. The coil temperature may become hot after being energized for extended periods, but it is normal. Do not energize the coil without installing it onto the valve or connect the coil to a wrong voltage, as it may overheat and damage the coil; although the coil is made of flame retarded material, misuse of the coil in this manner could create fire hazards and generate smoke or burning odor which indicates excessive coil temperature and should disconnect the power to the coil immediately.

## Operation: 2D150-500 Series 2/2 Pilot Operated Diaphragm Solenoid Valve NC

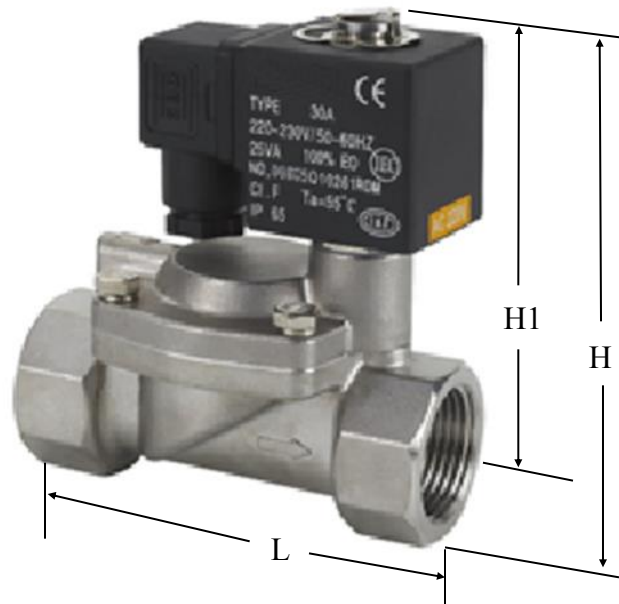
To open: when the valve receives an electrical signal, a magnetic field is formed which attracts the plunger covering the pilot orifice to lift off, causing system pressure (holding the diaphragm/piston closed) to drop. As system pressure on the top of the diaphragm/piston is reduced, full system pressure on the other side of the diaphragm/piston acts to lift the diaphragm/piston away from the main orifice, which allows media flow through the valve. Since the bleed orifice is dimensionally smaller than the pilot orifice, the system pressure can't rebuild on the top of the diaphragm/piston as long as the pilot orifice remains open.

To close: when the valve is de-energized, it releases its hold on the plunger. Then the plunger drops and covers the main orifice. The system pressure builds up on the top of the diaphragm/piston through the bleed orifice, forcing the diaphragm/piston down until it covers the main orifice and stops media flow through the valve.



## 2D150-500 & 2DS150-500 Series Solenoid Valve Installation Dimensions (mm)

Brass Model	2D150-3/8	2D150-1/2	2D200-3/4	2D250-1	2D320-1 1/4	2D400-1 1/2	2D500-2
Stainless Steel Model	2DS150-3/8	2DS150-1/2	2DS200-3/4	2DS250-1	2DS320-1 1/4	2DS400-1 1/2	2DS500-2
Port Size (NPT)	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Orifice (mm)	15	15	20	25	32	40	50
Cv (mm)	2.2	3.73	7	11	14	24.5	35
L (mm)	48	80	87	108	130	145	177
H (mm)	83	105	114	122	131	142	155
H1 (mm)	79	93	98	100	107	116	123



# Maintenance and Troubleshooting for Common STC Valve Types

## Direct Acting and Direct Lift Diaphragm

**Note:** If you do not hear a clicking sound when the valve is operational, and the wiring is correct, the coil may be burned out and must be replaced. This commonly occurs when input voltages are higher than the coil's specifications.

### Direct Acting Valves:

1. Remove any coils attached to the valve.
2. Unscrew the armature tube and remove it from the valve body. The plunger and spring are not fastened to the tube and will fall out.
3. Check for any debris that may have collected on the plunger and the hole in the center of the valve.
4. Place the spring back in the plunger, and insert the plunger back into the armature tube.
5. Screw the armature tube back into the valve, and reattach the coils.

### Direct Lift & Pilot Diaphragm Valves:

1. Remove any coils attached to the valve.
2. Unscrew the four screws around the top of the valve and remove the valve upper body.
3. Check for debris under the inside armature tube. Remove the diaphragm.
4. Check for debris around the lip of the inner chamber of the valve lower body.
5. Place the spring in back in the valve upper body, and line up the holes in the diaphragm and valve upper body for the screws.
6. Replace and tighten the screws, and reattach the coils.

### Reference Figures



**Figure 1:** Complete assembly of the direct acting valve.



**Figure 2:** Direct acting valve with all components shown. Debris on the plunger may lead to valve malfunction.



**Figure 3:** Valve body. Debris around the center hole may lead to valve malfunction.



**Figure 4:** Complete assembly of direct lift diaphragm valve



**Figure 5:** Direct lift diaphragm valve with all components shown



**Figure 6:** Diaphragm. Debris in the center hole may cause valve malfunction



**Figure 7:** Lower body. Debris in the lip of the inner chamber may cause valve malfunction

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