Air-Sol 2-Way
Process Solenoid Valves

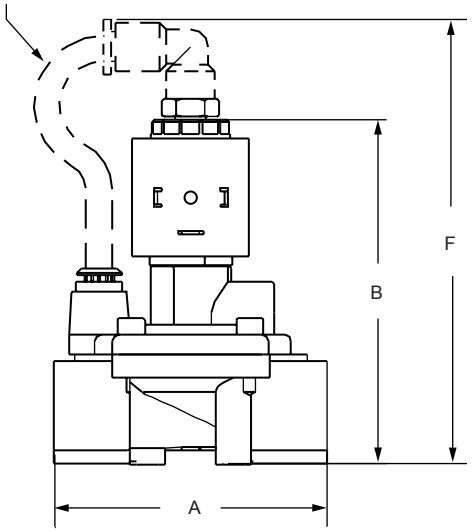
# Series 3505

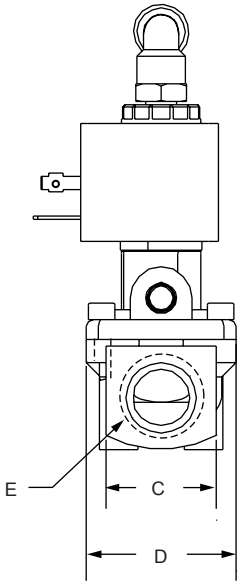
The Spartan Scientific Series 3505 is a 2-way, 2-position, normally closed or normally open valve for the control of air, oil, water, or media that is compatible with valve materials of manufacture. The valve features an all brass body and a 0 minimum pressure differential while still boasting a full flow 1/2" orifice. Available in 1/4", 3/8" and 1/2" NPT, the 3505 can handle pressures to 230 psi. The encapsulated coil construction ensures that the valve functions well under long periods of energization (100% duty), as well as providing a high degree of environmental protection (NEMA 4). The inner valve functions as a direct assist using a flat diaphragm and orifice plate. Pressure differentials shift the valve to full open or full closed. A push, non-locking manual override is standard.

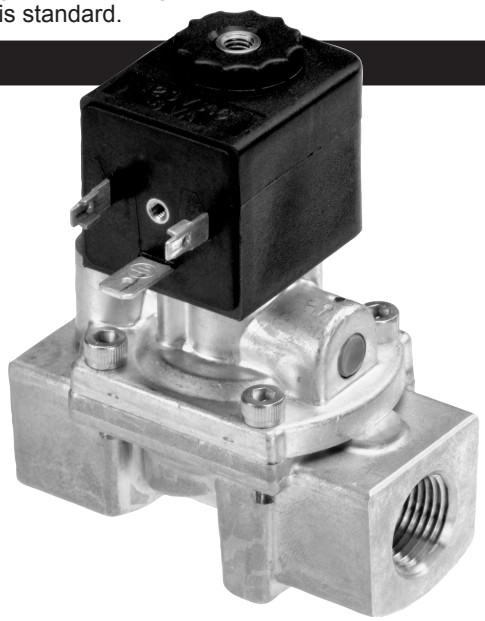
## Dimensional Data

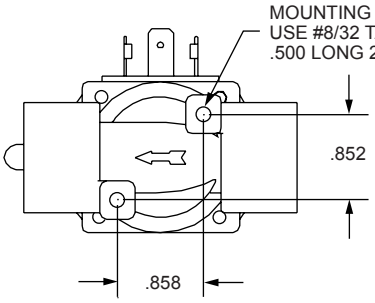
ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED

TUBE AND FITTING INSTALLED WITH
NORMALLY OPEN VERSION ONLY






| FLOW DATA | |
|---|---|
| PORT SIZE | FLOW RATE |
| 1/4" | 8.2 gpm |
| 3/8" | 9.3 gpm |
| 1/2" | 11.2 gpm |
| 120 psi Δ p 25 psi | |

| DIMENSIONAL TABLE | |
|---|---|
| PORTS | 1/4" - 3/8" - 1/2" |
| A | 2.75" |
| B | 3.50" |
| C | 1.10" |
| D | 1.50" |
| E | 1/4" - 3/8" - 1/2" NPT |
| F | 4.45" |

## Technical Data

**Function:** 2-way, 2-position normally closed or normally open internal pilot diaphragm

**Port Sizes:** 1/4", 3/8", 1/2" NPT

**Orifice Sizes:** 1/2"

**Pressure Range:** 0 - 230 psi 1/4" to 1/2" NPT
(Valve requires 1.5 psi differential to fully open.)

**Flow Factors:** 1/4" NPT 1.55 Cv
3/8" NPT 1.95 Cv
1/2" NPT 2.45 Cv

**Temperature Range:** (Fluid max. 90°C) Ambient -10° to +50°C

**Response Time:** 20 to 80 ms complete cycle

**Materials:** Operator: AISI 400 and 300 Series Stainless Steel or Brass
Shading Ring: Copper standard
Valve Body: Forged brass
Seals: Viton, Nitrile, EPDM

**Manual Override:** Push non-locking

**Media:** Air, oil, water, emulsion, inert gases

**Coil Data:** Glass filled nylon encapsulation
(Class F, continuous duty)
10 watt VDC, 8 watt VAC
Volts: 6, 12, 24 VDC
24, 120, 220 VAC 50/60 Hz
Voltage tolerance: +/- 10%

VOLTAGE

| FUNCTION | AC | DC |
|---|---|---|
| 2/2 NC | 230 | 180 |
| 2/2 NO | 150 | 150 |

MAX. PRESSURE RANGE
(psi)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# Series 3505

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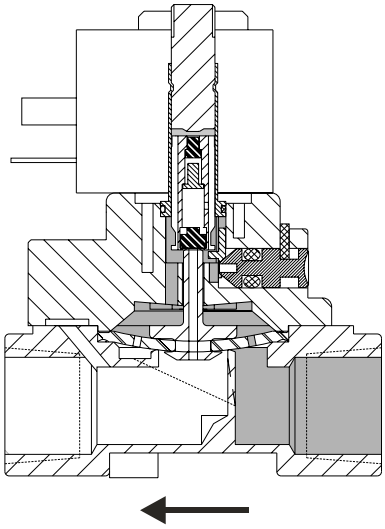
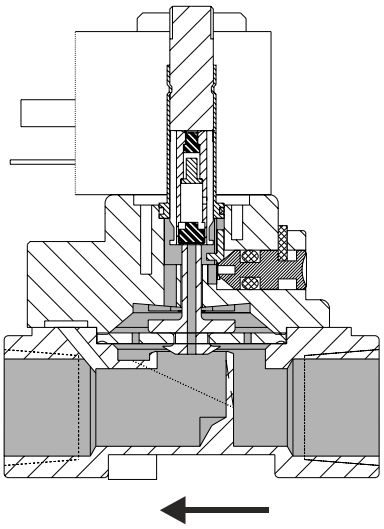
## Principle of Operation

**Closed Position**
With no supply pressure and the valve de-energized, spring force from the armature holds the valve closed. As the supply pressure is increased, pressure builds up on top of the diaphragm via the bleed hole. This force, acting on the larger effective area, holds the valve closed (in conjunction with the armature spring).



**Open Position**
When energized with no supply pressure, the armature lifts allowing the pre-loaded diaphragm to lift, opening the valve. When supply pressure is applied, pressure above the diaphragm is relieved via the open pilot gallery. The fluid pressure below assists in holding the diaphragm open.



## How To Order

3505 - □ □ - 42 □ □

**Function**
0 - 2-way, Normally Closed
1 - 2-way, Normally Open

**Seal Material**
1 - Viton
2 - Nitrile
3 - EPDM

**Port Size / Orifice / Cv**
1 - 1/4" NPT / 1/2" (12.5mm) / 1.55
2 - 3/8" NPT / 1/2" (12.5mm) / 1.95
3 - 1/2" NPT / 1/2" (12.5mm) / 2.45

**Coil Options***
1 - 6 VDC
2 - 12 VDC
3 - 24 VDC
6 - 24 VAC 50/60 Hz
7 - 120 VAC 50/60 Hz
8 - 220 VAC 50/60 Hz
9 - 240 VAC 50/60 Hz

Order Example: 3505-01-4237
Series 3505, 2-way, normally closed,
1/2" NPT, 120 VAC 50/60 Hz

**Replacement Diaphragm Kits**
Kit includes: Diaphragm and Orifice insert

| Specify Part Number | | |
|---|---|---|
| Viton | 3500-01-0001 | Normally Closed |
| Nitrile | 3500-B1-0001 | |
| EPDM | 3500-E1-0001 | |
| Viton | 3500-01-0003 | Normally Open |
| Nitrile | 3500-B1-0003 | |
| EPDM | 3500-E1-0003 | |

*For more coil options see page 7.

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