Installation & Maintenance Instructions

4-WAY DIRECT-ACTING SOLENOID VALVES
BRASS AND STAINLESS STEEL CONSTRUCTION
1/4" AND 3/8" NPT - 3/16" ORIFICE

SERIES

8342

Form No. V6319R3

NOTICE: See separate solenoid installation and maintenance instructions for information on: Wiring, Solenoid Temperature, Causes of Improper Operation, Coil or Solenoid Replacement.

DESCRIPTION

Series 8342 valves are 4-way direct-acting solenoid valves that require no minimum operating pressure and no minimum flow for operation. Valves are made of rugged brass or stainless steel and have a sliding resilient seal for tight seating. Standard valves have a general purpose solenoid enclosure. Valves may be provided with a combination explosionproof/watertight solenoid enclosure.

Series 8342 valves with Suffix P in the catalog number are designed specifically for dry inert gas or non-lubricated air service.

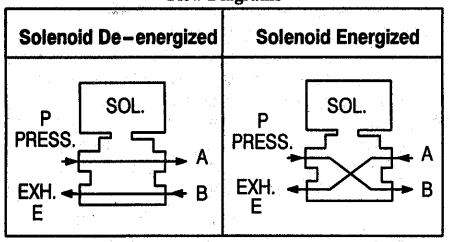
OPERATION

Solenoid de-energized: Flow is from Pressure P to Cylinder A and from Cylinder B to Exhaust E.

Solenoid energized: Flow is from Pressure P to Cylinder B and from Cylinder A to Exhaust E.

NOTE: No minimum operating pressure required.

Flow Diagrams



NOTE: For 3-way application, one cylinder port can be plugged. Plug Cylinder A for normally closed operation or Cylinder B for normally open operation.

IMPORTANT: Flow controls or regulators may be placed at any of the port connection without adversely affecting valve operation.

Metering Device (Optional feature)

Valves with suffix M in the catalog number are provided with a built-in metering device (flow control) for each cylinder connection. To adjust metering device, release locknut by turning it counterclockwise. To increase flow, turn metering stem clockwise. To reduce flow, turn metering stem counterclockwise. After adjusting to desired flow, hold metering stem and tighten locknut. The metering stem closest to the solenoid controls Cylinder A; the adjacent metering stem controls Cylinder B.

Manual Operation

Manual operator allows manual operation when desired or during an electrical power outage. Depending upon valve requirements, two types of manual operators are available:

Momentary Push Type (Suffix MO) Manual Operator

To engage push type manual operator, push stem at base of valve body upward as far as possible. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator, release stem. Manual operator will return to original position.

Maintained Screw Type (Suffix MS) Manual Operator

To engage screw type manual operator, push red knob upward towards valve body and turn it clockwise until flow from port is stopped. Valve will now be in the same position as when solenoid is energized.

⚠ CAUTION: If manual operator is not turned clockwise after pushing upward to engage, leakage at exhaust port may occur.

To disengage manual operator and return valve to the de-energized position, turn red knob counterclockwise allowing stem to disengage and drop.

⚠ CAUTION: For valve to operate electrically, manual operator must be fully disengaged.

INSTALLATION

Check nameplate for correct catalog number, pressure, voltage, frequency and service. Never apply incompatible fluids or exceed pressure rating of the valve. Installation and valve maintenance to be performed by qualified personnel.

Future Service Considerations

Provision should be made for performing seat leakage, external leakage, and operational tests on the valve with a nonhazardous, noncombustible fluid after disassembly and reassembly.

Temperature Limitations

For maximum valve ambient and fluid temperatures, refer to chart below. Check catalog number prefix and watt rating on nameplate.

Watt Rating	Catalog Number Prefix	Coil Class	Max. Ambient Temp.	Max. Fluid Temp.
20	None, DP or KP	F	77°F (25°C)	160°F (71°C)
	HB or KB	H	125°F (51.7°C)	
20.1	None, KP, SP or SD	F	125°F (51.7°C)	160°F (71°C)
	HB, KB, SS or SV	H	140°F (60°C)	

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Positioning

This valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertically and upright to reduce the possibility of foreign matter accumulating in the solenoid base sub-assembly area.

Mounting

For body boss mounting dimensions, see Figure 1. below.

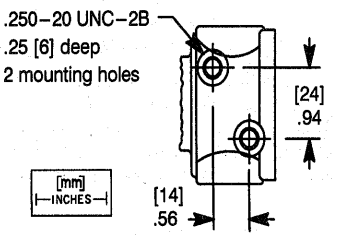


Figure 1. Mounting dimensions

Piping

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male pipe threads only. If applied to valve threads, the compound may enter the valve and cause operational difficulty. Avoid pipe strain by properly supporting and aligning piping. When tightening the pipe, do not use valve or solenoid as a lever. Locate wrenches applied to valve body or piping as close as possible to connection point.

⚠ CAUTION: To protect the solenoid valve install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Clean periodically depending on service conditions. See ASCO Series 8600, 8601 and 8602 for strainers.

MAINTENANCE

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, turn off electrical power, depressurize valve, and vent fluid to a safe area before servicing the valve.

Note: For inspecting, cleaning or rebuilding, remove piping from Cylinder Ports A and B.

Cleaning

All solenoid valves should be cleaned periodically. The time between cleaning will vary depending on the medium and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive noise or leakage will indicate that cleaning is required. In the extreme case, faulty valve operation will occur and the valve may fail to shift. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep the medium flowing through the valve as free from dirt and foreign material as possible.
- While in service, the valve should be operated at least once a month to insure proper shifting.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Causes of Improper Operation

- **Incorrect Pressure:** Check valve pressure. Pressure to valve must be within range specified on nameplate.
- **Excessive Leakage:** Disassemble valve and clean all parts. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Disassembly (Refer to Figure 4)

1. Remove piping from Cylinders A and B and disassemble valve in an orderly fashion. Use exploded views provided for identification and placement of parts.
2. Remove solenoid enclosure. See separate instructions.
3. Unscrew solenoid base sub-assembly and remove core spring guide and core spring.
4. Remove end cap screws (4), end cap and end cap gasket from valve body.
5. Pull sleeve/disc/spring assembly containing disc assemblies, disc spring and sleeve from valve body. Then remove sleeve spring, core and bonnet gasket.
   Note: On suffix P valve constructions, the core contains three rider rings.
6. If cleaning is all that is required, do not remove body seat (exhaust), body seat gasket, end cap seat (cylinder), end cap seat gasket, or orifice gaskets. Remove these only if replacement seats and gaskets are available.
7. To remove body seat (exhaust) and seat gasket, insert an appropriate tool or a heavy gauge wire with a bent hook on the end through the center hole in the seat. Pull to dislodge seat. If seat will not dislodge easily, remove piping from exhaust port and push seat out with a thin rod through the exhaust port.
   To remove end cap seat (cylinder) and gaskets, push seat from end cap, using thin blunt rod inserted through hole between Cylinder Port A and Cylinder Port B. When the end cap contains metering devices, apply compressed air through either pipe connection or the small vent hole in the end cap to force out the end cap seat with the gasket. If this fails, use the appropriate tool or bent wire described above to dislodge the end cap seat with the gasket.
8. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Valve Reassembly

1. Lubricate all gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease. Lubricate seating surface of end cap seat, body seat and disc assemblies (including u-cups) with Dow Corning Corporation's MOLYKOTE® M-77 Paste lubricant supplied in ASCO Rebuild Kit. Note: On suffix P valve constructions, lubricate core spring with lubricant supplied.
2. Replace body seat gasket on body seat and install seat with gasket side first into valve body.
3. Preassemble disc assembly on disc spring and install into sleeve. Install remaining disc assembly from the opposite end. The disc assemblies will snap onto the disc spring if pushed evenly and twisted slightly.

4. Install sleeve/disc/spring assembly into the valve body and onto core simultaneously.
5. Install end cap assembly consisting of end cap, end cap gasket, end cap seat, seat gasket and orifice gaskets (2). Install end cap screws (4) and torque in a crisscross manner to 110 ± 10 in–lbs [12,4 ± 1,1 Nm].
6. Move the core up and down to see that it is properly engaged and there is no misalignment or binding of parts.
7. Replace bonnet gasket, sleeve spring, core spring and core spring guide.
8. Replace solenoid base sub–assembly and torque to 175 ± 25 in–lbs [19,8 ± 2,8 Nm].
9. Install solenoid. See separate instructions.

⚠ WARNING: To prevent the possibility of death, serious injury or property damage, check valve for proper operation before returning to service. Also perform internal seat and external leakage tests with a nonhazardous, noncombustible fluid.

10. Restore line pressure and electrical power supply to valve.
11. After maintenance is completed, operate the valve a few times to be sure of proper operation. A metallic *click* indicates the solenoid is operating.

Metering Device Disassembly (Refer to Figure 2)

1. Loosen and remove locknut.
2. Unscrew metering cap with gasket and remove stem/disc/spring assembly intact. A special wrench is available for metering cap removal or installation. Order ASCO Wrench Kit No. K158477–001.
3. Unscrew metering stem from cap and remove disc spring, metering disc and metering stem gasket.
4. If cleaning is all that is required, do not remove end cap seat with gaskets. Remove these only if replacement seat and gaskets are available. If replacement is necessary, use an appropriate tool or compressed air as previously described in ***Valve Disassembly*** to dislodge end cap seat.
5. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

Metering Device Reassembly

1. Reassemble in reverse order of disassembly. Use exploded views provided for identification and placement of parts.
2. Lubricate metering cap and stem gaskets with DOW CORNING® 111 Compound lubricant or an equivalent high–grade silicone grease.
3. Replace metering stem gasket, metering disc and disc spring on metering stem.

⚠ CAUTION: Metering disc must be assembled as indicated in Figure 2.

4. Install cap on stem/disc/spring assembly.
5. Install stem/disc/spring assembly intact then torque metering cap to 110 ± 10 in–lbs [12,4 ± 1,1 Nm].
6. Replace locknut (loosely) and make adjustments as follows: To Increase Flow: Turn metering stem clockwise. To Reduce Flow: Turn metering stem counterclockwise.
7. After adjusting to desired flow, hold metering stem and tighten locknut.

Manual Operator (Optional feature)

No field maintenance need be performed on the manual operator. However, it may be removed and replaced for general cleaning or inspection (Refer to Figure 3).

ORDERING INFORMATION FOR ASCO REBUILD KITS

Parts marked with an asterisk (*) in the exploded view are supplied in Rebuild Kits. When Ordering Rebuild Kits for ASCO valves, order the Rebuild Kit number stamped on the valve nameplate. If the number of the kit is not visible, order by indicating the number of kits required, and the Catalog Number and Serial Number of the valve(s) for which they are intended.

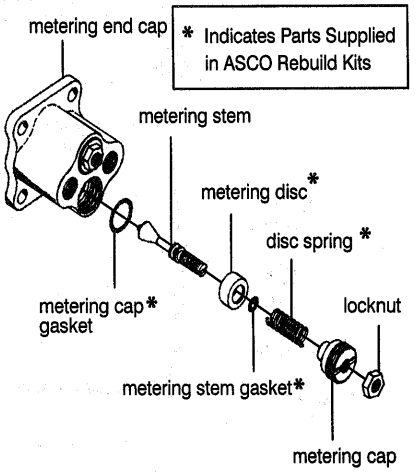


Figure 2. Metering device (optional)

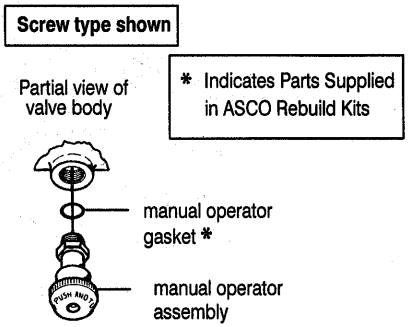


Figure 3. Manual operator (optional)

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Torque Chart

Part Name	Torque Value Inch–Pounds	Torque Value Newton–Meters
Solenoid base sub–assembly	175 ± 25	19,8 ± 2,8
End cap screws & Metering cap	110 ± 10	12,4 ± 1,1
Manual operator assembly	150 ± 10	17 ± 1,1

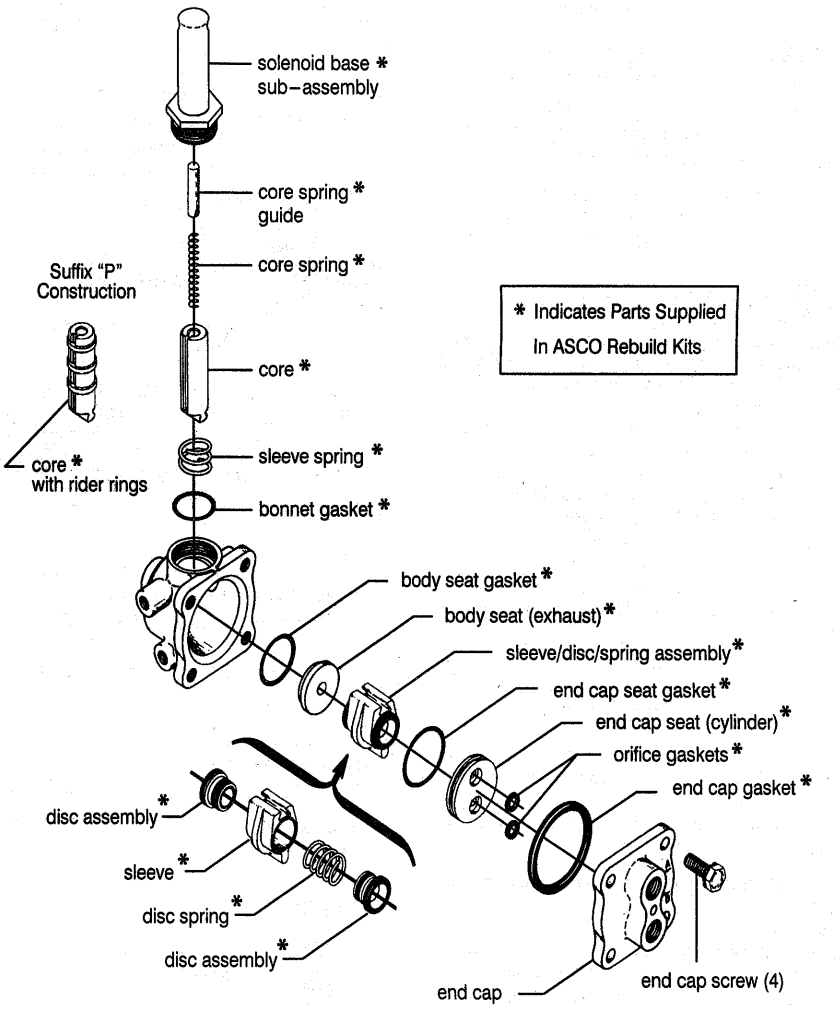


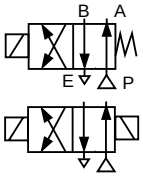
Figure 4. Series 8342 valve without solenoid.

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Direct Acting

General Service Solenoid Valves

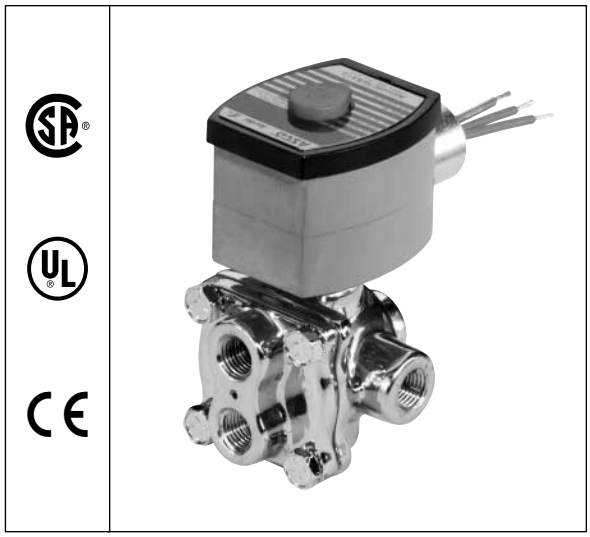
Brass or Stainless Steel Bodies
1/4" and 3/8" NPT



4/2
SERIES
8342

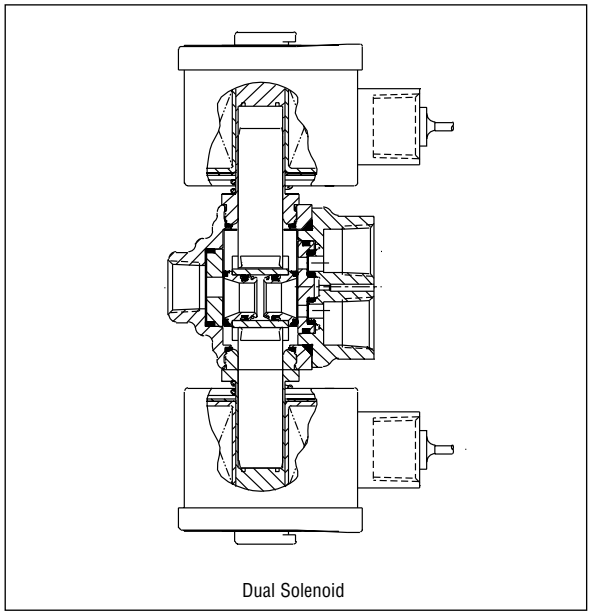
Features

- Direct acting operation and high flow construction.
- Direct acting, high flow slide-style valve.
- Optional flow control regulates cylinder speed independently, in either direction.
- Mechanical detent on dual solenoids holds last position, even after loss of electric power, pneumatics or pressure.
- No Minimum Operating Pressure Differential required to shift valve.
- Dual solenoid operation: solenoid may be energized momentarily (1/10 second) or continuously.
- Mountable in any position.



Construction

Valve Parts in Contact with Fluids		
Body	Brass	304 Stainless Steel
Seals and Discs	NBR and FKM	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Springs	302 Stainless Steel / 17-7 PH Stainless Steel	
Shading Coil	Copper	
Sleeve	PA	
Seats	Graphite-filled PTFE	



Dual Solenoid

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption			Spare Coil Part No.	
	AC			General Purpose	Explosionproof
	Watts	VA Holding	VA Inrush	AC	AC
F	16.1	35	115	272610	272614
F	20.1	45	140	272610	272614

Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz. 24, 110, 115, 220, 230 volts AC, 50 Hz. Other voltages are available when required.

Note: No combination 120/60, 110/50 coil available. Must order either 120/60 or 110/50, etc.

Solenoid Enclosures

Standard: Watertight, Types 1, 2, 3, 3S, 4, and 4X.

Optional: Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9. (To order, add prefix "EF" to catalog number.)

See Optional Features Section for other available options.

Nominal Ambient Temperature Ranges:

Standard Class F insulation: 32˚F to 125˚F (0˚C to 52˚C)
Optional Class H insulation: 32˚F to 140˚F (0˚C to 60˚C)
Refer to Engineering Section for details.

Approvals:

CSA certified. UL listed as General Purpose Valves. Meets applicable CE directives.
Refer to Engineering Section for details.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor ①	Operating Pressure Differential (psi) Maximum AC			Max. Fluid. Temp. °F	Brass Body		Stainless Steel Body		Watt Rating/ Class of Coil Insulation
			Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	Catalog Number	Constr. Ref. No.	Catalog Number	Constr. Ref. No.	AC
SINGLE SOLENOID CONSTRUCTION											
1/4	3/16	.70	125	100	100	160	8342G1	1	8342G701	2	20.1/F
3/8	3/16	.70	125	100	100	160	8342G3	1	8342G703	2	20.1/F
DUAL SOLENOID CONSTRUCTION											
1/4	3/16	.70	125	125	125	160	8342G20	3	8342G720	4	16.1/F
3/8	3/16	.70	125	125	125	160	8342G22	3	8342G722	4	16.1/F

Notes: ① With built-in flow control (Suffix "M"), the Cv is 0.44 and an 0.5 psi minimum operating pressure is required.

Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h) ①	Operating Pressure Differential (bar) Maximum AC			Max. Fluid. Temp. °C	Brass Body		Stainless Steel Body		Watt Rating/ Class of Coil Insulation
			Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	Catalog Number	Constr. Ref. No.	Catalog Number	Constr. Ref. No.	AC
SINGLE SOLENOID CONSTRUCTION											
1/4	4.8	.60	9	7	7	70	8342G1	1	8342G701	2	20.1/F
3/8	4.8	.60	9	7	7	70	8342G3	1	8342G703	2	20.1/F
DUAL SOLENOID CONSTRUCTION											
1/4	4.8	.60	9	9	9	70	8342G20	3	8342G720	4	16.1/F
3/8	4.8	.60	9	9	9	70	8342G22	3	8342G722	4	16.1/F

Notes: ① With built-in flow control (Suffix "M"), the Kv is 0.38 and an 0.03 bar minimum operating pressure is required.

Dimensions: inches (mm)

Constr. Ref. 1, 2, 3, 4

