INSTALLATION AND MAINTENANCE INSTRUCTIONS

3 way solenoid operated valves normally closed, normally open and universal operation

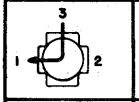
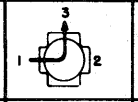
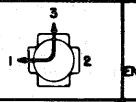
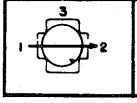
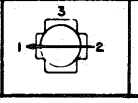
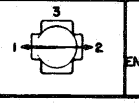
ASCO
Bulletin 8320
Form no. V32001

DESCRIPTION
Bulletin 8320 valves are 3 way solenoid operated valves with all connections located in the body. Valves are brass or stainless steel with 1/8 or 1/4 inch NPT process connections.

Standard valves have an epoxy encapsulated solenoid coil for Type 1,2,3,3S, and 4 combination general purpose and watertight installations. Valves with "EP" prefixes in the catalogue number have encapsulated solenoids suitable for Type 3,3S,4,6, and 7(A,B,C,&D) explosion proof Class I, Group A,B,C,&D and Type 9(E,F,&G)-Dust-Ignition Proof Class II Groups E,F,&G.

OPERATION
Normally Closed: Applies pressure when solenoid is energized; exhausts pressure when solenoid is de-energized. When the solenoid is energized flow is from connection "2" to connection "1". Connection "3" is closed. When solenoid is de-energized flow is from connection "1" to connection "3". Connection "2" is closed.
Normally Open: Applies pressure when solenoid is de-energized; exhausts pressure when solenoid is energized. When the solenoid is energized flow is from connection "1" to connection "2". Connection "3" is closed. When solenoid is de-energized flow is from connection "3" to connection "1". Connection "2" is closed.
Universal: For normally closed or normally open operation, selection or diversion of pressure can be applied to connection "1", "2" or "3".
NOTE: To change from normally closed to normally open or universal operation, consult factory.

FLOW DIAGRAMS

NORMALLY OPEN PRESS. AT 3	NORMALLY CLOSED PRESS. AT 2	UNIVERSAL-PRESS. AT ANY ORIFICE.	FORM
			SOL. DE-ENERGIZED
			SOL. ENERGIZED

TEMPERATURE LIMITATIONS
For maximum valve ambient and fluid temperatures, refer to chart below. Check catalogue number prefixes and watt ratings to determine maximum temperatures.

TEMPERATURE LIMITATIONS 8320g, CATA. 32C

WATT RATING	CATALOGUE # PREFIX	MAX. AMBIENT TEMP. F.	MAX. FLUID TEMP F.	
			1/8 NPT	1/4 NPT
10.1 & 17.1	NONE,FB,KF,KP, SC,SD,SF,SP	125	180	200
10.1 & 17.1	HB,HT,KB,KH,SS, ST,SU	140	180	200
11.6 & 22.6	NONE,KB,KF,KP, SC,SD,SF,SP	104	120	150
11.6 & 22.6	HP,HT,KB,KH,SS, ST,SU,SV	104	120	150

* MINIMUM AMBIENT TEMPERATURE - 40 F.

INSTALLATION
Check nameplate for correct catalogue number, pressure, fluid and electrical service.

Positioning
This valve is designed to perform properly when mounted in any position. For optimum performance and life, the solenoid should be mounted vertical and upright.

Mounting
Valves may be pipe mounted, direct mounted with self tapping screws in the case of forged brass bodies, or mounted with optional factory supplied mounting brackets.

Piping
Connect pipe or tubing to valve according to markings on the valve body. Refer to flow diagrams above. Apply pipe compound or teflon tape sparingly to male pipe threads only. When tightening connections do not use the valve body or solenoid as a lever. Locate wrenches as close as possible to the connection point.
IMPORTANT: For protection of the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to the valve as possible. Periodic cleaning is required depending on service conditions.

Wiring
Wiring must comply with local and national codes. Solenoids are provided with 1/2" conduit hubs or other optional connection methods as illustrated in Fig.2,3. The solenoid may be rotated to facilitate electrical connection.
NOTE: Alternating current and direct current solenoids are built differently. To convert one to the other it is necessary to change the complete solenoid assembly including core tube, bonnet, and core assembly.

MAINTENANCE
NOTE: It is not necessary to remove the valve from the pipeline for repairs.
WARNING: Turn off electrical power supply and de-pressurize valve before making repairs.

Cleaning
All solenoid valves should be cleaned periodically. The time between cleanings will vary depending on the fluid 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. Clean valve strainer or filter when cleaning the valve.

Preventive Maintenance
1. Keep the fluid flowing through the valve as free from dirt and foreign material as possible.
2.While in service, the valve should be operated at least once a month to insure proper opening and closing.
3.Depending on the fluid and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace worn or damaged parts with an ASCO rebuild Kit.

Causes of Improper Operation
1. Faulty Control Circuits: Check the electrical system by energizing the solenoid. A metallic "click" signifies that the solenoid is operating. Absence of the "click" indicates loss of power supply. Check for loose or blown fuses, open circuited or grounded coil, broken lead wires or splice connections.
2. Burned-Out Coil: Check for open-circuited coil. Replace coils as necessary. Check supply voltage; it must be the same as specified on coil.
3. Low voltage: Check voltage across the coil lead. Voltage must be at least 85% of coil rating.
4. Incorrect Pressure: Check valve pressure. Pressure to valve must be within range specified on nameplate.
5. Excessive Leakage: Disassemble valve and clean all parts. Replace worn or damaged parts with an ASCO Rebuild Kit.

ASCO Valve Canada
Division of Emerson Electric Canada Limited
P.O. Box 160, Brantford, Ont. N3T 5M8

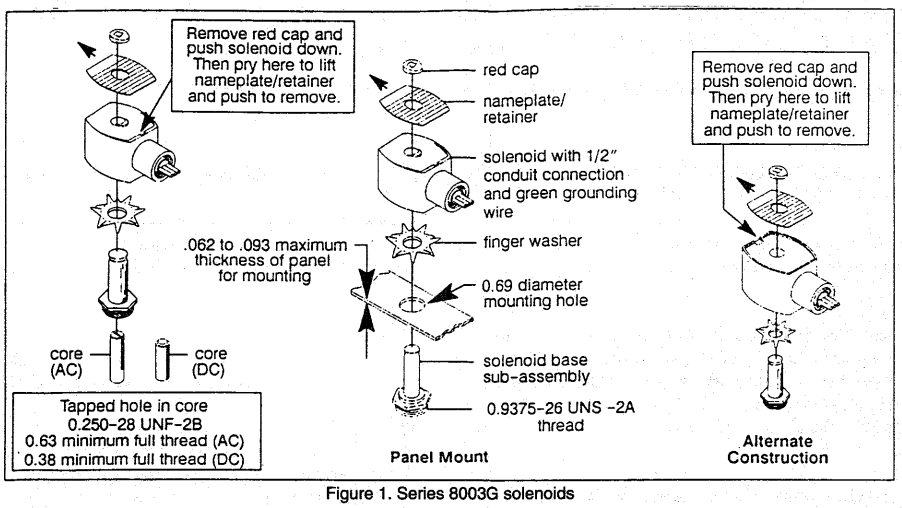


Figure 1. Series 8003G solenoids

COIL REPLACEMENT (REF. FIG. 1)

Turn off electrical power, disconnect coil lead wires and proceed as follows:

1. Remove red cap, and nameplate.
2. Slip coil off solenoid base sub-assembly
3. Reassemble in reverse order of disassembly.

VALVE DISASSEMBLY AND REASSEMBLY (REF. FIG. 1)

Turn off electrical power supply and de-pressure valve.

1. Remove retaining cap and slip entire solenoid off solenoid base sub-assembly.
2. Unscrew bonnet or solenoid base sub-assembly. Remove core assembly, core spring and body gasket.
3. Remove end cap, body gasket, disc spring, disc holder, disc or disc holder assembly.
4. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.
5. Reassemble in reverse order of disassembly paying careful attention to exploded view provided.

ORDERING INFORMATION FOR SPARE PARTS KITS

When Ordering Spare Parts Kits or Coils Specify Valve Catalog Number. Serial Number and Voltage.

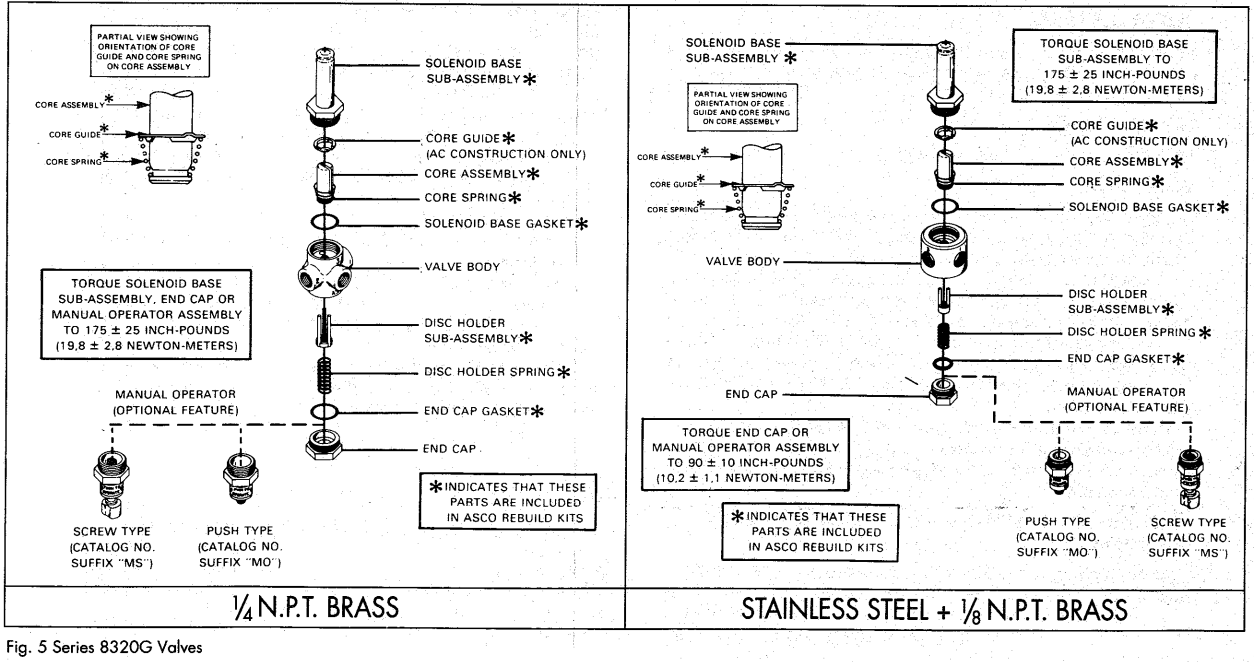


Fig. 5 Series 8320G Valves

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Direct Acting

General Service Solenoid Valves

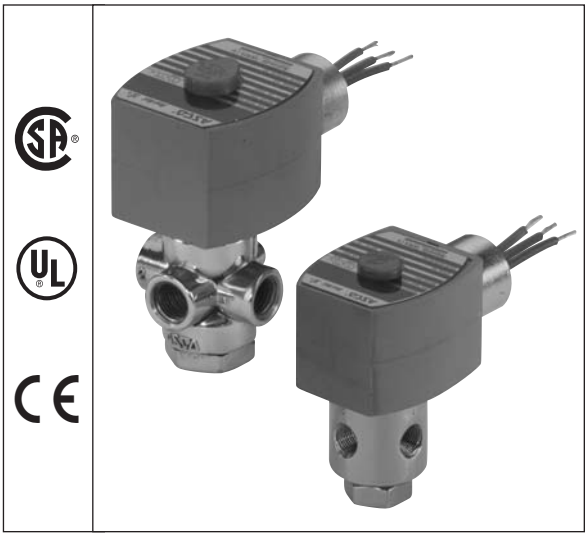
Brass or Stainless Steel Bodies
1/8" to 1/4" NPT

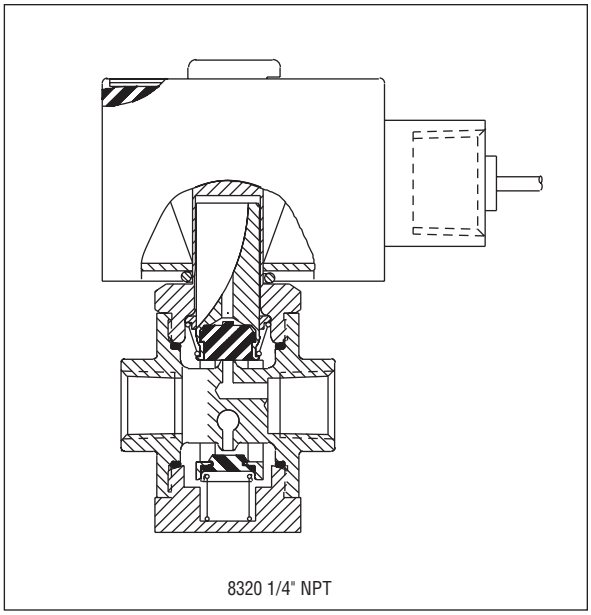
NC U NO

3/2 SERIES 8320

Features

- All NPT connections are in the valve body to allow in-line piping.
- No Minimum Operating Pressure Differential required.
- Sturdy design for long years of reliable service.
- Broadest range of applications.
- Mountable in any position.





8320 1/4" NPT

Construction

Valve Parts in Contact with Fluids		
Body	Brass	303 Stainless Steel
Seals and Discs	NBR	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Core Springs	302 Stainless Steel	
Shading Coil	Copper	Silver
Disc-Holder	CA	
Core Guide	CA (10.1 and 17.1 Watt only)	

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
		AC			General Purpose		Explosionproof	
	DC Watts	Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	11.6	10.1	25	50	238610	238710	238614	238714
F	22.6	17.1	40	70	238610	238710	238614	238714

Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220, volts AC, 50 Hz). 6, 12, 24, 120, 240 volts DC. Must be specified when ordering. Other voltages are available when required.

Nominal Ambient Temperature Ranges:

AC: 32˚F to 125˚F (0˚C to 52˚C)
DC: 32˚F to 104˚F (0˚C to 40˚C)
Refer to Engineering Section for details.

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 the catalog number.)
See Optional Features Section for other available options.

Approvals:

CSA certified. UL listed 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	Operating Pressure Differential (psi) Max. AC Air-Inert Gas	Max. AC Water	Max. AC Lt. Oil @ 300 SSU	Max. DC Air-Inert Gas	Max. DC Water	Max. DC Lt. Oil @ 300 SSU	Max. Fluid Temp. °F AC	Max. Fluid Temp. °F DC	Brass Body Catalog Number	Brass Body Constr. Ref. No.	Stainless Steel Body Catalog Number	Stainless Steel Body Constr. Ref. No.	Watt Rating/ Class of Coil Insulation AC	Watt Rating/ Class of Coil Insulation DC
UNIVERSAL OPERATION (Pressure at any port)																
1/8	1/16	.09	150	150	150	125	125	125	180	120	8320G212	1	8320G221	1	17.1/F	22.6/F
1/8	3/32	.12	100	100	100	60	60	60	180	120	8320G213	1	8320G222	1	17.1/F	11.6/F
1/8	1/8	.21	50	50	50	25	25	25	180	120	8320G214	1	8320G223	1	17.1/F	11.6/F
1/4	1/16	.09	125	130	130	75	75	75	200	150	8320G172	2	--	--	10.1/F	11.6/F
1/4	1/16	.09	175	175	175	125	125	125	200	150	-	-	8320G230	3	17.1/F	22.6/F
1/4	3/32	.12	100	100	100	60	60	60	200	150	8320G174	2	8320G200	3	17.1/F	11.6/F
1/4	1/8	.25	50	50	50	25	25	25	200	150	8320G176	2	8320G201	3	17.1/F	11.6/F
1/4	11/64	.35	20	20	20	12	12	12	200	150	8320G178	2	--	--	10.1/F	11.6/F
NORMALLY CLOSED (Closed when de-energized)																
1/8	1/16	.09	210	225	225	160	160	160	180	120	8320G215	1	8320G224	1	17.1/F	11.6/F
1/8	3/32	.12	150	150	150	115	115	115	180	120	8320G216	1	8320G225	1	10.1/F	11.6/F
1/8	1/8	.21	85	85	85	60	60	60	180	120	8320G217	1	8320G226	1	10.1/F	11.6/F
1/4	1/16	.09	210	225	225	160	160	160	200	150	8320G182	2	8320G231	3	17.1/F	11.6/F
1/4	3/32	.12	150	150	150	115	115	115	200	150	8320G184	2	8320G202	3	10.1/F	11.6/F
1/4	1/8	.25	85	85	85	60	60	60	200	150	8320G186	2	8320G203	3	10.1/F	11.6/F
1/4	11/64	.35	45	45	45	25	25	25	200	150	8320G188	2	--	--	10.1/F	11.6/F
NORMALLY OPEN (Open when de-energized)																
1/8	1/16	.09	235	250	250	160	160	160	180	120	8320G218	1	8320G227	1	17.1/F	11.6/F
1/8	3/32	.12	150	140	140	100	100	100	180	120	8320G219	1	8320G228	1	10.1/F	11.6/F
1/8	1/8	.21	70	70	70	55	55	55	180	120	8320G220	1	8320G229	1	10.1/F	11.6/F
1/4	1/16	.09	250	250	250	160	160	160	200	150	8320G192	2	8320G232	3	17.1/F	11.6/F
1/4	3/32	.12	150	140	140	100	100	100	200	150	8320G194	2	8320G204	3	10.1./F	11.6/F
1/4	1/8	.25	70	70	70	55	55	55	200	150	8320G196	2	8320G205	3	10.1/F	11.6/F
1/4	11/64	.35	40	40	40	30	30	30	200	150	8320G198	2	--	--	10.1/F	11.6/F