SOLENOID TEMPERATURE

Standard catalog valves are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched with the hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

MAINTENANCE

WARNING: Turn off electrical power and line pressure to valve before making repairs. It is not necessary to remove valve from pipe line for repairs.

CLEANING

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary, depending on the media and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive heating or noise will indicate that cleaning is required.

PREVENTIVE MAINTENANCE

1. Keep the medium flowing through the valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

IMPROPER OPERATION

1. **Faulty Control Circuit:** Check the electrical system by energizing the solenoid. A metallic click signifies the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown-out fuses, open-circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open-circuited coil. Replace coil if necessary.
3. **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure at the solenoid valve. Pressure to the valve must be within the range indicated on the nameplate. Flow must be adequate to maintain a minimum differential to allow valve to transfer (see pressure limitation on nameplate).
5. **Excessive Leakage:** Disassemble valve and clean all parts and passageways. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

A-C / D-C COIL REPLACEMENT (Refer to Figure 5)

Turn off electrical power and disconnect coil lead wires.

1. Remove retaining cap or clip, nameplate and solenoid housing/cover. CAUTION: When metal retaining clip disengages it will spring upward.
2. Lift off spring washer, upper insulating washer and coil. NOTE: Insulating washers are omitted when molded coil is used.
3. Reassemble parts in reverse order of disassembly.

CAUTION: Solenoid must be fully reassembled as the housing and internal parts are part of and complete the magnetic circuit. Place insulating washers at each end of coil if required.

D-C COIL REPLACEMENT – ALTERNATE CONSTRUCTION

(Refer to Figure 4)

Turn off electrical power and disconnect coil lead wires.

1. Remove retaining cap or clip, nameplate and solenoid cover. CAUTION: When metal retaining clip disengages it will spring upward.
2. Lift off fluxplate and coil.
3. Coil is now accessible for replacement. Reassemble in reverse order of disassembly.

CAUTION: Solenoid must be fully reassembled as the housing and internal parts are part of and complete the magnetic circuit.

VALVE DISASSEMBLY (Refer to Figure 5)

Depressurize valve and turn off electrical power. Disconnect coil lead wires.

1. Solenoid may be removed intact by loosening and removing solenoid base sub-assembly from body.
2. A-C / D-C Construction:
   Remove core/core spring/disc sub-assembly and body gasket ('O' ring) respectively.
   Alternate D-C Construction:
   Remove core spring, core assembly and body gasket respectively.
3. A 4-40 machine screw (provided in Spare Parts Kit) serves as a self-tapping screw to remove insert from body. Thread screw a few turns in hole located in the flat surface of insert. CAUTION: Do not damage center hole (pilot orifice) in raised surface of insert. Remove insert by using a pair of pliers on the head of the screw.
4. Remove three gaskets from insert. Tag each as they are removed so that they can be reassembled in the same location. NOTE: Middle and lower gaskets have the same physical dimensions, however, the lower gasket is made of a softer material.
5. Remove four (4) body screws and slip piston end body from piston.
6. Slide piston/shaft assembly out of body.
7. 1/4 - 3/8 - 1/2 N.P.T. Construction:
   Remove four (4) 'O' ring gaskets, two (2) from piston end body counter bores and two (2) from body insert - one (1) from each end.
   3/4 - 1 N.P.T. Construction:
   Remove five (5) 'O' ring gaskets, two (2) from piston end body, counter bores and three (3) from body insert (two from large end, one from small end).
8. To disassemble piston/shaft assembly, insert brass rod in cross hole of shaft. (NOTE: Rod must be brass or other soft material so as not to burr edges of hole.) Unscrew and remove shaft nut. Remove shaft washer, piston, shaft/piston gasket, body insert and lift out main disc.
9. Remove two (2) 'U' shaped lip seals from piston, one from each end.
10. 1/4 - 3/8 - 1/2 N.P.T. Construction:
    Unscrew end cap/seat from main body. Remove two (2) 'O'-ring gaskets from end cap/seat and lift out main disc.
    3/4 - 1 N.P.T. Construction:
    Remove four (4) end cap/seat screws and slide out end cap/seat from main body. Remove two (2) 'O'-ring gaskets from end cap/seat and lift out main disc.
11. All parts and passageways are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

VALVE REASSEMBLY (Refer to Figure 5)

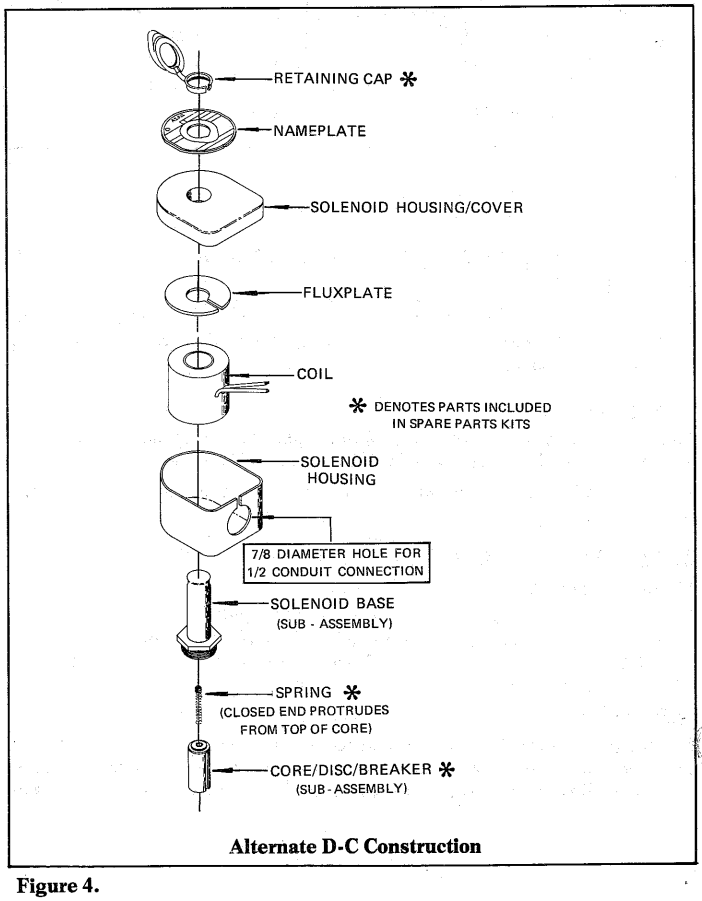
1. Clean all parts and passageways thoroughly.
2. Reassemble parts in reverse order of disassembly. Parts should be installed in the same cavity that they were removed from.
3. Lubricate all rubber parts with Dow Corning's Valve Seal or equivalent silicone grease.

NOTE: Main discs must be assembled with 'U' cup lip seals facing out (flat brass surface facing in). 'U' cup shaped lip seals on piston must face out at each end.

SPARE PARTS KITS

Spare Parts Kits and Coils are available for ASCO valves.
Parts marked with an asterisk (*) are supplied in Spare Parts Kits.

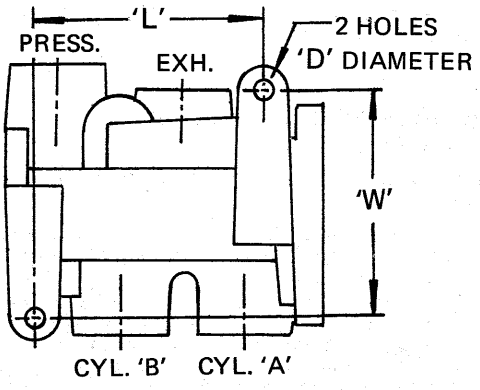
ORDERING INFORMATION FOR SPARE PARTS KITS
When Ordering Spare Parts Kits or Coils Specify Valve Catalog Number, Serial Number and Voltage.



Alternate D-C Construction

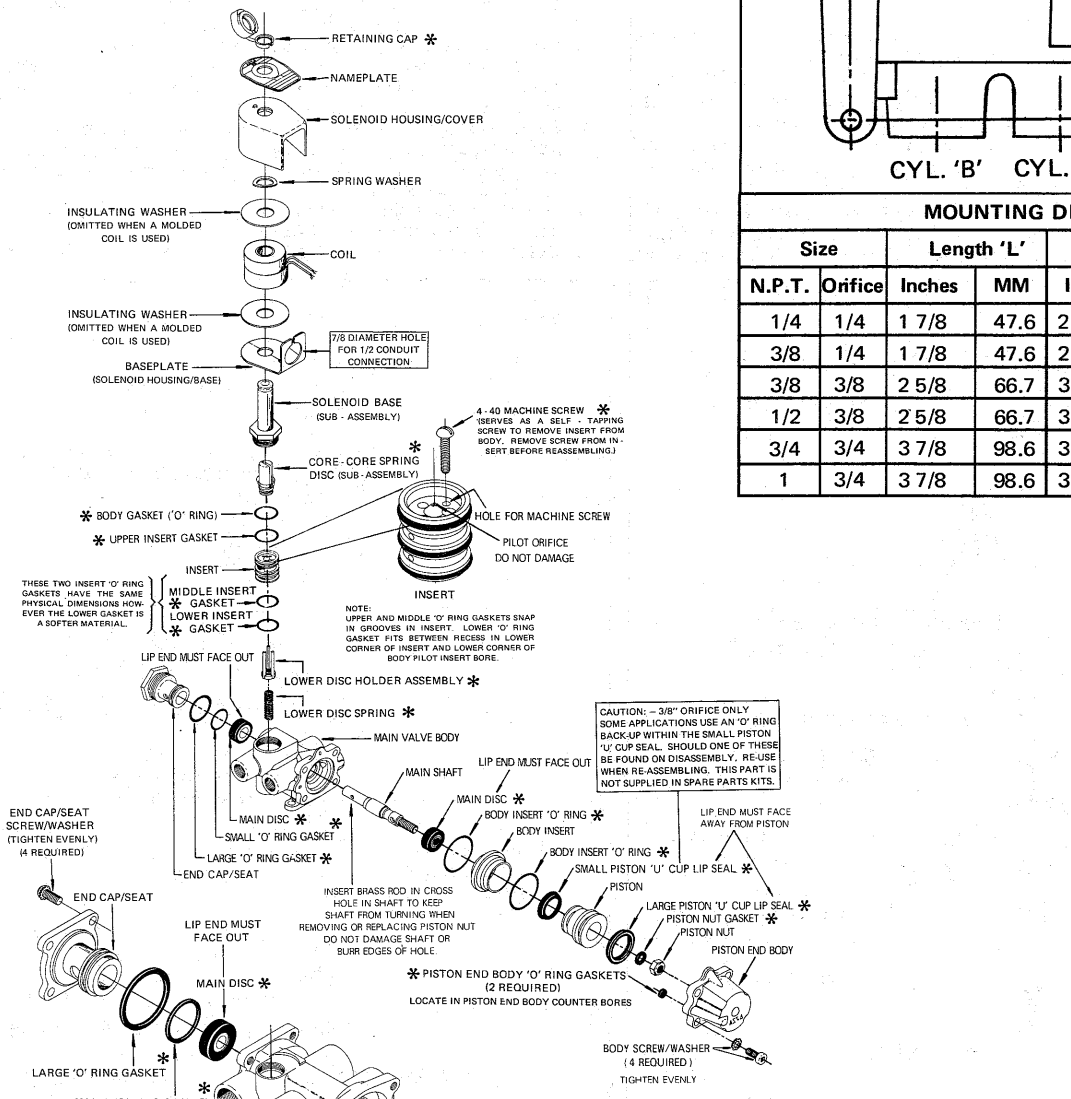
Figure 4.

MOUNTING DIMENSIONS

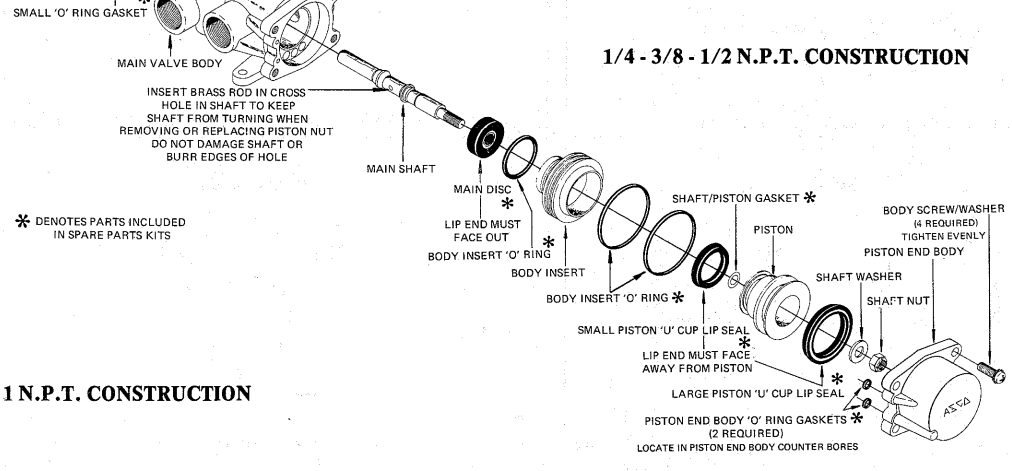


MOUNTING DIMENSIONS

Size		Length 'L'		Width 'W'		Holes 'D' Dia.	
N.P.T.	Orifice	Inches	MM	Inches	MM	Inches	MM
1/4	1/4	1 7/8	47.6	2 13/32	61.1	9/32	7.1
3/8	1/4	1 7/8	47.6	2 13/32	61.1	9/32	7.1
3/8	3/8	2 5/8	66.7	3 1/8	79.4	11/32	8.7
1/2	3/8	2 5/8	66.7	3 1/8	79.4	11/32	8.7
3/4	3/4	3 7/8	98.6	3 13/16	96.8	11/32	8.7
1	3/4	3 7/8	98.6	3 13/16	96.8	11/32	8.7



1/4 - 3/8 - 1/2 N.P.T. CONSTRUCTION



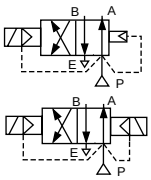
3/4 - 1 N.P.T. CONSTRUCTION

BULLETIN NO. 8344
Single Solenoid A-C / D-C Construction
1/4 - 3/8 - 1/2 - 3/4 - 1 N.P.T.

Figure 5.

ASCO® Red-Hat®

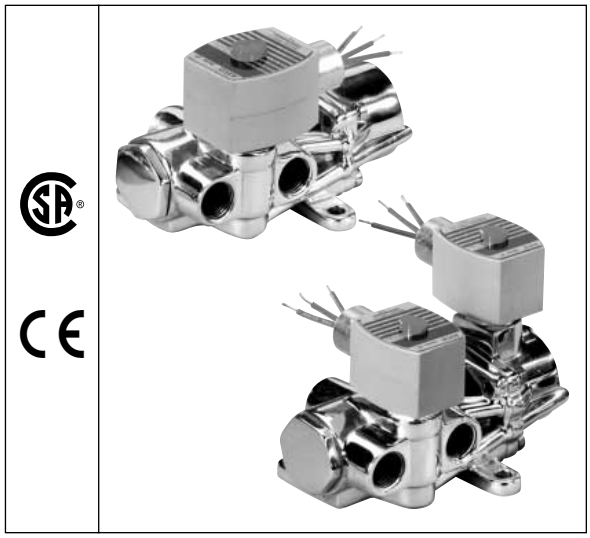
Pilot Operated
Piston/Poppet Solenoid Valves
Brass Body • 1/4" to 1" NPT

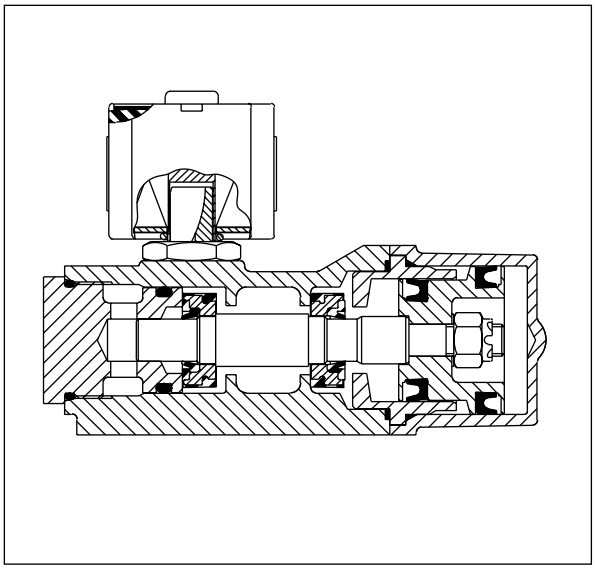


4/2
SERIES
8344

Features

- Sturdy, solid construction.
- Piston-operated poppet design provides high flow.
- Can use air or water for piloting control valves.
- Wide range of sizes and flow rates.
- Single or dual solenoid construction.
- Dual solenoid can be shifted with a momentary signal and remain in position even if electrical power is lost.
- Mountable in any position.





Construction

Valve Parts in Contact with Fluids	
Body	Brass
Seals and Disc	NBR
Core Tube	305 Stainless Steel
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel and 17-7PH Stainless Steel
Shading Coil	Copper
Pilot Seat Cartridge and Disc-Holder	CA
Shaft Gasket	Lead/Copper

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC Watts	AC VA Holding	AC VA Inrush	General Purpose		Explosionproof	
F	10.6	6.1	16	30	238210	238310	238214	238314
F	11.6	10.1	25	50	238610	238710	238614	238714
F	22.6	17.1	40	70	238610	238710	238614	238714

Dual Solenoid Operation: Minimum coil on-time for dual solenoid valves is 0.3 seconds on air service and 1.0 seconds on liquids.

Caution: Do not energize both solenoids simultaneously.
Refer to Engineering Section for details.

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.

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.

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.

Approvals:

CSA certified. Meets applicable CE directives.

Important:

A Minimum Operating Pressure Differential must be maintained between the pressure and exhaust ports. Supply and exhaust piping must be full area, unrestricted. ASCO flow controls and other similar components must be installed in the cylinder lines only.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor		Operating Pressure Differential (psi)							Max. Fluid Temp. °F		Brass Body		Watt Rating/ Class of Coil Insulation	
					Max. AC			Max. DC								
		Press.	Exh.	① Min.	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	AC	DC
SINGLE SOLENOID																
1/4	1/4	.80	1.0	10	150	125	125	125	125	125	180	150	8344G70	1	10.1/F	11.6/F
1/4	1/4	.80	1.0	10	250 ②	250 ②	250 ②	250 ②	250 ②	250 ②	180	180	8344G0	1	17.1/F	22.6/F
3/8	3/8	1.4	2.2	10	150	125	125	125	125	125	180	150	8344G72	2	10.1/F	11.6/F
3/8	1/4	.80	1.0	10	250 ②	250 ②	250 ②	250 ②	250 ②	250 ②	180	180	8344G1	1	17.1/F	22.6/F
1/2	3/8	1.4	2.2	10	150	125	125	125	125	125	180	150	8344G74	2	10.1/F	11.6/F
1/2	3/8	1.4	2.2	10	250 ②	250 ②	250 ②	250 ②	250 ②	250 ②	180	180	8344G27	2	17.1/F	22.6/F
3/4	3/4	5.2	5.6	10	150	125	125	125	125	125	180	150	8344G76	3	10.1/F	11.6/F
3/4	3/4	5.2	5.6	10	250 ②	250 ②	250 ②	250 ②	250 ②	250 ②	180	180	8344G29	3	17.1/F	22.6/F
1	3/4	5.2	5.6	10	150	125	125	125	125	125	180	150	8344G78	3	10.1/F	11.6/F
1	3/4	5.2	5.6	10	250 ②	250 ②	250 ②	250 ②	250 ②	250 ②	180	180	8344G31	3	17.1/F	22.6/F
DUAL SOLENOID ③																
1/4	1/4	.80	1.0	10	250	200	125	125	125	100	180	120	8344G44	4	6.1/F	10.6/F
3/8	3/8	1.4	2.2	10	250	200	125	125	125	100	180	120	8344G80	6	6.1/F	10.6/F
3/8	3/8	1.4	2.2	10	300	300	200	-	-	-	180	-	8344G50	7	10.1/F	-
1/2	3/8	1.4	2.2	10	250	200	125	125	125	100	180	120	8344G82	6	6.1/F	10.6/F
3/4	3/4	5.2	5.6	10	300	300	200	125	125	100	180	120	8344G54	8	10.1/F	10.6/F
1	3/4	5.2	5.6	10	300	300	200	125	125	100	180	120	8344G56	8	10.1/F	10.6/F

Notes: ① 25 psi (1.7 bar) minimum on light oil service. ③ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.
② For best results, do not use valve rated 250 psi (17 bar) on mainline pressure of less than 125 psi (9 bar).

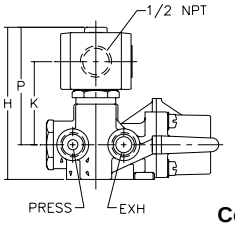
Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)		Operating Pressure Differential (bar)							Max. Fluid Temp. °C		Brass Body		Watt Rating / Class of Coil Insulation	
					Max. AC			Max. DC								
		Press.	Exh.	① Min.	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	AC	DC
SINGLE SOLENOID																
1/4	6	.69	.86	0.7	10	9	9	9	9	9	81	65	8344G70	1	10.1/F	11.6/F
1/4	6	.69	.86	0.7	17 ②	17 ②	17 ②	17 ②	17 ②	17 ②	81	81	8344G0	1	17.1/F	22.6/F
3/8	10	1.2	1.89	0.7	10	9	9	9	9	9	81	65	8344G72	2	10.1/F	11.6/F
3/8	6	.69	.86	0.7	17 ②	17 ②	17 ②	17 ②	17 ②	17 ②	81	81	8344G1	1	17.1/F	22.6/F
1/2	10	1.2	1.89	0.7	10	9	9	9	9	9	81	65	8344G74	2	10.1/F	11.6/F
1/2	10	1.2	1.89	0.7	17 ②	17 ②	17 ②	17 ②	17 ②	17 ②	81	81	8344G27	2	17.1/F	22.6/F
3/4	19	4.5	4.80	0.7	10	9	9	9	9	9	81	65	8344G76	3	10.1/F	11.6/F
3/4	19	4.5	4.80	0.7	17 ②	17 ②	17 ②	17 ②	17 ②	17 ②	81	81	8344G29	3	17.1/F	22.6/F
1	19	4.5	4.80	0.7	10	9	9	9	9	9	81	65	8344G78	3	10.1/F	11.6/F
1	19	4.5	4.80	0.7	17 ②	17 ②	17 ②	17 ②	17 ②	17 ②	81	81	8344G31	3	17.1/F	22.6/F
DUAL SOLENOID ③																
1/4	6	.69	.86	0.7	17	14	9	9	9	7	81	48	8344G44	4	6.1/F	10.6/F
3/8	10	1.2	1.89	0.7	17	14	9	9	9	7	81	48	8344G80	6	6.1/F	10.6/F
3/8	10	1.2	1.89	0.7	21	21	14	-	-	-	81	-	8344G50	7	10.1/F	-
1/2	10	1.2	1.89	0.7	17	14	9	9	9	7	81	48	8344G82	6	6.1/F	10.6/F
3/4	19	4.5	4.80	0.7	21	21	14	9	9	7	81	48	8344G54	8	10.1/F	10.6/F
1	19	4.5	4.80	0.7	21	21	14	9	9	7	81	48	8344G56	8	10.1/F	10.6/F

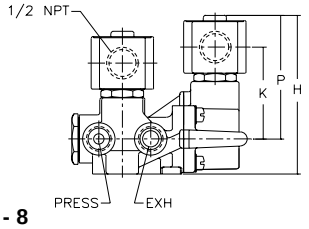
Dimensions: inches (mm)

Constr. Ref. No.		ØD	E	F	G	H	J	K	L	N	P	W	X	Y	Z	Exhaust Pipe Size
1	**ins.**	Ø.28	.56	2.41	1.88	4.08	1.03	2.15	3.13	.72	3.12	4.75	1.41	1.56	.81	3/8
	mm	Ø7.1	14	61	48	104	26	55	80	18	79	121	36	40	21	3/8
2	**ins.**	Ø.34	.75	3.12	2.63	4.06	1.50	1.97	3.18	.83	2.94	6.06	1.88	1.90	.84	1/2
	mm	Ø8.6	19	79	67	103	38	50	81	21	75	154	47	48	21	1/2
3	**ins.**	Ø.34	1.34	3.81	3.88	4.86	2.09	2.34	4.56	1.56	3.31	8.25	2.12	2.63	1.16	1
	mm	Ø8.6	34	97	99	123	53	59	116	39	84	210	54	67	30	1
4	**ins.**	Ø.28	.56	2.41	1.88	4.34	1.03	2.52	3.13	.72	3.38	4.81	1.41	1.56	.81	3/8
	mm	Ø7.1	14	61	48	110	26	64	80	18	86	122	36	40	21	3/8
6	**ins.**	Ø.34	.75	3.12	2.63	4.50	1.50	2.52	3.18	.83	3.38	6.06	1.88	1.90	.84	1/2
	mm	Ø8.6	19	79	67	114	38	64	81	21	86	154	47	48	21	1/2
7	**ins.**	Ø.34	.75	3.12	2.63	4.68	1.50	2.59	3.18	.83	3.56	6.06	1.88	1.90	.84	1/2
	mm	Ø8.6	19	79	67	119	38	66	81	21	90	154	47	48	21	1/2
8	**ins.**	Ø.34	1.34	3.81	3.88	5.56	2.09	3.03	4.56	1.55	4.00	8.25	2.12	2.63	1.16	1
	mm	Ø8.6	34	97	99	141	53	77	116	39	102	210	54	67	30	1

Constr. Ref 1 - 3



Constr. Ref. 4 - 8



Constr. Ref 1 - 8

