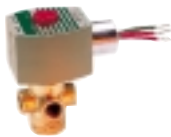
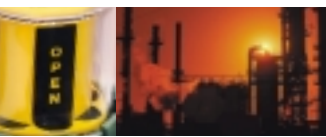


Fluid Control Products



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2 Way General Purpose Solenoid Valves

Installation & Maintenance Instructions

2-WAY INTERNAL PILOT-OPERATED SOLENOID VALVES
NORMALLY CLOSED OPERATION — GENERAL SERVICE
1", 1¼" OR 1½" NPT

SERIES

8210

8211

I&M No.V5436R7

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

DESCRIPTION

Series 8210 valves are 2-way normally closed internal pilot-operated solenoid valves designed for general service. Valves are made of rugged forged brass. Series 8210 valves are provided with a general purpose solenoid enclosure. Series EF8210 and 8211 are the same as Series 8210 except they are provided with an explosionproof or explosionproof/watertight solenoid enclosure.

OPERATION

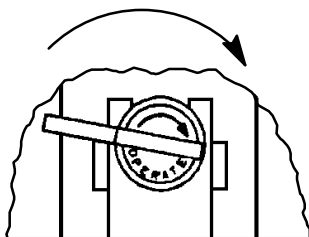
Normally Closed: Valve is closed when solenoid is de-energized; open when energized.

IMPORTANT: Minimum operating pressure differential is 5 psi.

Manual Operator (optional feature)

Manual operator allows manual operation when desired or during an electrical power outage. To engage manual operator (open the valve), turn lever clockwise until it hits a stop. Valve will now be in the same position as when the solenoid is energized. To disengage manual operator (close the valve), turn lever counterclockwise until it hits a stop.

To engage, turn lever clockwise until it hits a stop.



Partial view of
Manual Operator

CAUTION: For valve to operate electrically, manual operator lever must be fully rotated counterclockwise.

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 AC/DC	Catalog Number Prefix	Solenoid Class	Maximum Ambient Temp.	Maximum Fluid Temp.
6 AC	None or DF	F	122°F (50°C)	180°F (82°C)
	HT	H	140°F (60°C)	180°F (82°C)
6.1 AC	None, KF, SF or SC	F	125°F (54°C)	180°F (82°C)
	HT, KH, ST or SU	H	140°F (60°C)	180°F (82°C)
11.2 DC	None or HT	F or H	77°F (25°C)	150°F (65°C)
11.6 DC	None, HT, KF, KH, SC, SF or ST	F or H	104°F (40°C)	150°F (65°C)

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.

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: It is not necessary to remove the valve from the pipeline for repairs.

Cleaning

All solenoid valves should be cleaned periodically. The time between cleanings 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 open or close. Clean strainer or filter when cleaning the valve.

Preventive Maintenance

- Keep medium flowing through the valve as free from dirt and foreign material as possible.
- Periodic exercise of the valve should be considered if ambient or fluid conditions are such that corrosion, elastomer degradation, fluid contamination build up, or other conditions that could impede solenoid valve shifting are possible. The actual frequency of exercise necessary will depend on specific operating conditions. A successful operating history is the best indication of a proper interval between exercise cycles.
- 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 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

1. Disassemble valve in an orderly fashion using exploded views for identification and placement of parts. Refer to Figure 1 for AC construction; Figure 2 for DC construction. For 1" or 1 1/4" NPT valve construction, see Figure 1; for 1 1/2" NPT valve construction, see Figure 2.
 2. Remove solenoid enclosure. See separate instructions.
- For valves supplied with optional manual operators, see section on *Disassembly of Manual Operator*.
 - 3. Unscrew solenoid base sub-assembly from valve body. Then remove core assembly with core spring and solenoid base gasket. For AC construction (Figure 1) core spring is a loose piece.
 - 4. For normal maintenance (cleaning) it is not necessary to remove the valve seat. However, for valve seat removal use a 7/16" thin wall socket wrench
 - 5. Remove bonnet screws, valve bonnet, diaphragm spring, diaphragm assembly, body gasket, body passage eyelet (present on current valve constructions only) and body passage gasket.
 - 6. All parts are now accessible for cleaning or replacement. If parts are worn or damaged, install a complete ASCO Rebuild Kit.

— Service Notice —

When installing a new ASCO Rebuild Kit, please be aware that the diaphragm assembly may not be identical to the diaphragm assembly in the valve. See Figure 1 for alternate diaphragm constructions. The two diaphragm constructions are interchangeable and will perform equally well.

⚠ CAUTION: To ensure proper valve operation, install all parts supplied in ASCO Rebuild Kit. Do not mix old and new parts.

Valve Reassembly

1. Lubricate body gasket, body passage gasket, bonnet gasket and solenoid base gasket with DOW CORNING® 200 Fluid lubricant or an equivalent high-grade silicone fluid.

2. Install body passage gasket, body passage eyelet, diaphragm assembly, diaphragm spring, valve bonnet and bonnet screws. Hand thread screws as far as possible. Then torque bonnet screws in a crisscross manner to 144 ± 15 in-lbs [$16,3 \pm 1,7$ Nm].
3. If removed, install valve seat in valve body. Apply a small amount of thread compound compatible with valve media to valve seat threads. Torque valve seat to 75 ± 10 in-lbs [$8,5 \pm 1,1$ Nm].
- For valves supplied with optional manual operator, see section on *Reassembly of Manual Operator*.
4. For AC construction (Figure 1), install core spring in core assembly. Wide end of core spring in core first, closed end protrudes from top of core.
5. Install solenoid base gasket, core assembly with core spring and solenoid base sub-assembly in valve body. Torque solenoid base sub-assembly to 175 ± 25 in-lbs [$19,8 \pm 2,8$ Nm].
6. 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.

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

Disassembly of Manual Operator

1. Unscrew solenoid base sub-assembly from manual operator body.
2. Unscrew manual operator body from valve body. Then remove stem retainer from base of manual operator body and stem/spacer sub-assembly.
3. Pull stem/spacer sub-assembly with stem gasket from side of manual operator body. Then remove core assembly with core spring, solenoid base gasket and manual operator bonnet gasket.
4. For further disassembly refer to section on *Valve Disassembly* step 4.

Reassembly of Manual Operator

1. Lubricate stem gasket with DOW CORNING® 111 Compound lubricant or an equivalent high-grade silicone grease.
2. For AC construction (Figure 1), install core spring in core assembly. Wide end of core spring in core first, closed end protrudes from top of core.
3. Holding the manual operator body in a horizontal position, install core assembly with core spring from the bottom end.
4. Insert the stem/spacer sub-assembly with the stem gasket into the side hole of the manual operator body. Rotate the lever of the stem/spacer sub-assembly to the 12 o'clock position.
5. Install stem retainer on base of manual operator body and simultaneously engage it into the slot provided on the stem/spacer sub-assembly.

IMPORTANT: The spacer on the stem/spacer sub-assembly *must* be inside of the stem retainer for AC construction (Figure 1) and outside of the stem retainer for DC construction (Figure 2).

6. Install manual operator bonnet gasket and body with preassembled parts into valve body. Torque manual operator body to 175 ± 25 in-lbs [$19,8 \pm 2,8$ Nm].
7. Replace solenoid base gasket and solenoid base sub-assembly. Torque solenoid base sub-assembly to 175 ± 25 in-lbs [$19,8 \pm 2,8$ Nm].
8. For further reassembly, refer to *Valve Reassembly* step 6.

Torque Chart

Part Name	Torque Value Inch—Pounds	Torque Value Newton—Meters
Solenoid base sub—assembly	175 ± 25	19,8 ± 2,8
Manual operator body		
Bonnet screw	144 ± 15	16,3 ± 1,7
Valve seat	75 ± 10	8,5 ± 1,1

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.

IMPORTANT
Captive spacer on stem/spacer sub—assembly must be located on the inside of stem retainer when reassembled.

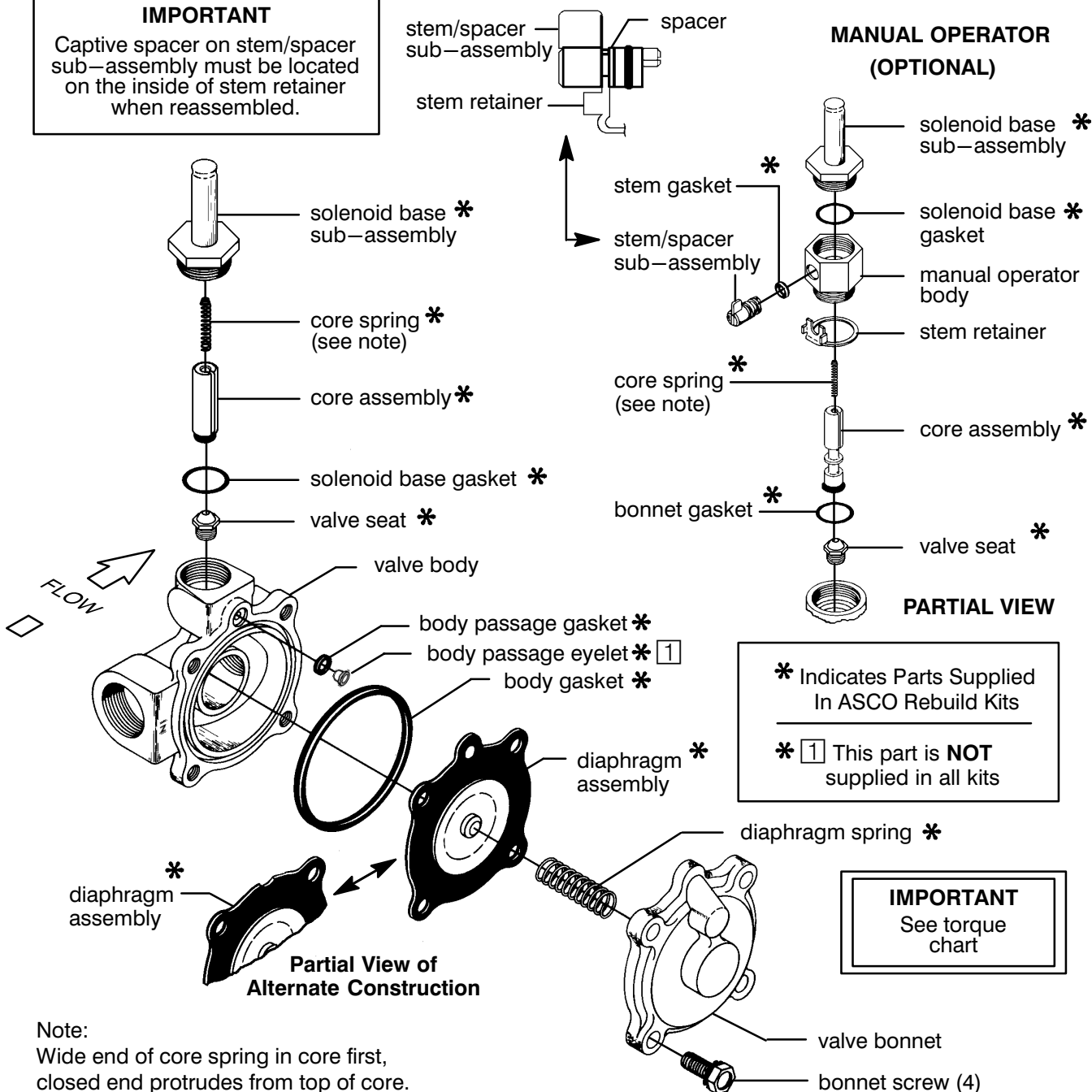
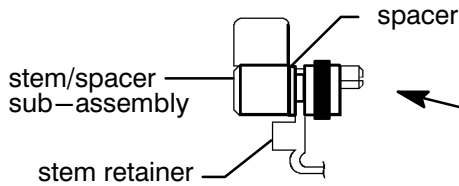


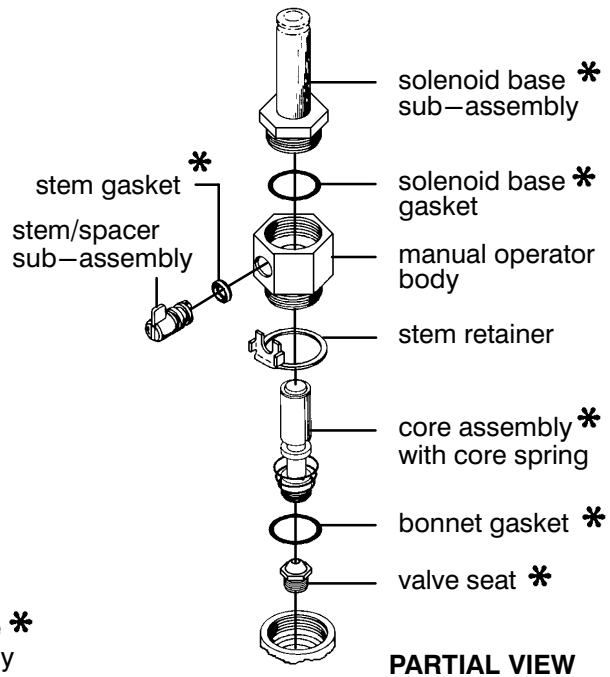
Figure 1. Series 8210 valve without solenoid, AC construction with 1" or 1 1/4" NPT valve body shown.

IMPORTANT

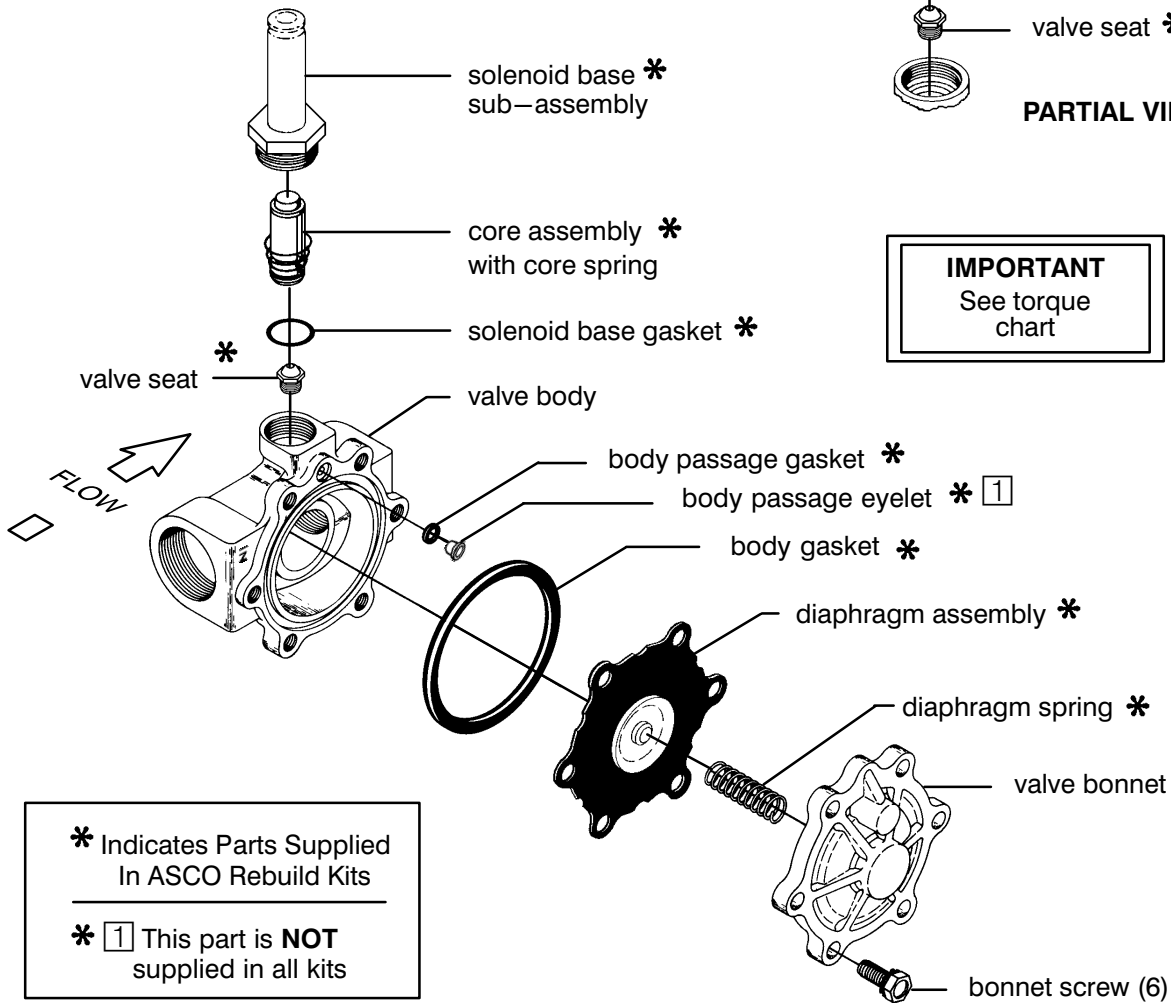
Captive spacer on stem/spacer sub-assembly must be located on the outside of stem retainer when reassembled.



MANUAL OPERATOR (OPTIONAL)



IMPORTANT
See torque chart



* Indicates Parts Supplied In ASCO Rebuild Kits

* 1 This part is **NOT** supplied in all kits

Figure 2. Series 8210 valve without solenoid, DC construction with 1 1/2" NPT valve body shown.

Installation & Maintenance Instructions



OPEN—FRAME, GENERAL PURPOSE, WATERTIGHT/EXPLOSIONPROOF SOLENOIDS

SERIES

8016G

Form No.V6583R7

—SERVICE NOTICE—

ASCO® solenoid valves with design change letter “G” in the catalog number (example: 8210G 1) have an epoxy encapsulated ASCO® Red Hat II® solenoid. This solenoid replaces some of the solenoids with metal enclosures and open—frame constructions. Follow these installation and maintenance instructions if your valve or operator uses this solenoid.

DESCRIPTION

Catalog numbers 8016G1 and 8016G2 are epoxy encapsulated pull—type solenoids. The green solenoid with lead wires and 1/2” conduit connection is designed to meet Enclosure Type 1—General Purpose, Type 2—Dripproof, Types 3 and 3S—Raintight, and Types 4 and 4X—Watertight. The black solenoid on catalog numbers prefixed “EF” is designed to meet Enclosure Types 3 and 3S—Raintight, Types 4 and 4X—Watertight, Types 6 and 6P—Submersible, Type 7 (A, B, C, & D) Explosionproof Class I, Division 1, Groups A, B, C, & D and Type 9 (E, F, & G)—Dust—Ignitionproof Class II, Division 1, Groups E, F, & G. The Class II, Groups F & G Dust Locations designation is not applicable for solenoids or solenoid valves used for steam service or when a class “H” solenoid is used. See *Temperature Limitations* section for solenoid identification and nameplate/retainer for service. When installed just as a solenoid and not attached to an ASCO valve, the core has a 0.250—28 UNF—2B tapped hole, 0.38 minimum full thread.

Series 8016G solenoids are available in:

- **Open—Frame Construction**
The green solenoid may be supplied with 1/4” spade, screw, or DIN terminals (Refer to Figure 4).
- **Panel Mounted Construction**
These solenoids are specifically designed to be panel mounted by the customer through a panel having a .062 to .093 maximum wall thickness. (Refer to Figure 3 and section on *Installation of Panel Mounted Solenoid*).

Optional Features For Type 1 – General Purpose Construction Only

- **Junction Box**
This junction box construction meets Enclosure Types 2,3,3S,4, and 4X. Only solenoids with 1/4” spade or screw terminals may have a junction box. The junction box provides a 1/2” conduit connection, grounding and spade or screw terminal connections within the junction box (See Figure 5).
- **DIN Plug Connector Kit No. K236034**
Use this kit only for solenoids with DIN terminals. The DIN plug connector kit provides a two pole with grounding contact DIN Type 43650 construction (See Figure 6).

OPERATION

When the solenoid is energized, the core is drawn into the solenoid base sub—assembly. **IMPORTANT: When the solenoid is de—energized, the initial return force for the core, whether developed by spring, pressure, or weight, must exert a minimum force to overcome residual magnetism created by the solenoid. Minimum return force for AC construction is 11 ounces, and 4 ounces for DC construction.**

INSTALLATION

Check nameplate for correct catalog number, service, and wattage. Check front of solenoid for voltage and frequency.

⚠ WARNING: Electrical hazard from the accessibility of live parts. To prevent the possibility of death, serious injury or property damage, install the open — frame solenoid in an enclosure.

FOR BLACK ENCLOSURE TYPES 7 AND 9 ONLY

⚠ CAUTION: To prevent fire or explosion, do not install solenoid and/or valve where ignition temperature of hazardous atmosphere is less than 165° C. On valves used for steam service or when a class “H” solenoid is used, do not install in hazardous atmosphere where ignition temperature is less than 180° C. See nameplate/retainer for service.

NOTE: These solenoids have an internal non—resetable thermal fuse to limit solenoid temperature in the event that extraordinary conditions occur which could cause excessive temperatures. These conditions include high input voltage, a jammed core, excessive ambient temperature or a shorted solenoid, etc. This unique feature is a standard feature only in solenoids with black explosionproof/dust—ignitionproof enclosures (Types 7 & 9).

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

Temperature Limitations

For maximum valve ambient temperatures, refer to chart. The temperature limitations listed, only indicate maximum application temperatures for field wiring rated at 90°C. Check catalog number prefix and watt rating on nameplate to determine maximum ambient temperature. See valve installation and maintenance instructions for maximum fluid temperature. NOTE: For steam service, refer to *Wiring* section, *Junction Box* for temperature rating of supply wires.

Temperature Limitations For Series 8016G Solenoids for use on Valves Rated at 6.1, 8.1, 9.1, 10.6, or 11.1 Watts

Watt Rating	Catalog Number Coil Prefix	Class of Insulation	Maximum † Ambient Temp.
6.1, 8.1, 9.1, & 11.1	None, FB, KF, KP, SF, SP, SC, & SD	F	125°F (51.7°C)
6.1, 8.1, 9.1, & 11.1	HB, HT, KB, KH, SS, ST, SU, & ST	H	140°F (60°C)
10.6	None, KF, SF, & SC	F	104°F (40°C)
10.6	HT, KH, SU, & ST	H	104°F (40°C)

†Minimum ambient temperature –40°F (–40° C).

Positioning

This solenoid 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.

Wiring

Wiring must comply with local codes and the National Electrical Code. All solenoids supplied with lead wires are provided with a grounding wire which is green or green with yellow stripes and a 1/2” conduit connection. To facilitate wiring, the solenoid may be rotated 360°. For the watertight and explosionproof solenoid, electrical fittings must be approved for use in the approved hazardous locations.

Additional Wiring Instructions For Optional Features:

- **Open—Frame solenoid with 1/4” spade terminals**
For solenoids supplied with screw terminal connections use #12—18 AWG stranded copper wire rated at 90°C or greater. Torque terminal block screws to



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10 ± 2 in–lbs [1,0 ± 1,2 Nm]. A tapped hole is provided in the solenoid for grounding, use a #10–32 machine screw. Torque grounding screw to 15 –20 in–lbs [1,7 – 2,3 Nm]. On solenoids with screw terminals, the socket head screw holding the terminal block to the solenoid is the grounding screw. Torque the screw to 15 – 20 in–lbs [1,7 – 2,3 Nm], with a 5/32" hex key wrench.

• Junction Box

The junction box is used with spade or screw terminal solenoids only and is provided with a grounding screw and a 1/2" conduit connection. Connect #12–18 AWG standard copper wire only to the screw terminals. Within the junction box use field wire that is rated 90°C or greater for connections. For steam service use 105°C rated wire up to 50 psi or use 125°C rated wire above 50 psi. After electrical hookup, replace cover gasket, cover, and screws. Tighten screws evenly in a crisscross manner.

• DIN Plug Connector Kit No.K236–034

1. The open–frame solenoid is provided with DIN terminals to accommodate the DIN plug connector kit.
2. Remove center screw from plug connector. Using a small screwdriver, pry terminal block from connector cover.
3. Use #12–18 AWG stranded copper wire rated at 90°C or greater for connections. Strip wire leads back approximately 1/4" for installation in socket terminals. The use of wire–end sleeves is also recommended for these socket terminals. Maximum length of wire–end sleeves to be approximately 1/4". Tinning of the ends of the lead wires is not recommended.
4. Thread wire through gland nut, gland gasket, washer, and connector cover.

NOTE: Connector cover may be rotated in 90° increments from position shown for alternate positioning of cable entry.

5. Check DIN connector terminal block for electrical markings. Then make electrical hookup to terminal block according to markings on it. Snap terminal block into connector cover and install center screw.
6. Position connector gasket on solenoid and install plug connector. Torque center screw to 5 ± 1 in–lbs [0,6 ± 1,1 Nm].

NOTE: Alternating current (AC) and direct current (DC) solenoids are built differently. To convert from one to the other, it may be necessary to change the complete solenoid including the core and solenoid base sub–assembly, not just the solenoid. Consult ASCO.

Installation of Solenoid

Solenoids may be assembled as a complete unit. Tightening is accomplished by means of a hex flange at the base of the solenoid. The 3/4" bonnet construction (Figure 1) must be disassembled for installation and installed with a special wrench adapter.

Installation of Panel Mounted Solenoid (See Figure 3)

Disassemble solenoid following instruction under *Solenoid Replacement* then proceed

3/4" Valve Bonnet Construction

1. Install retainer (convex side to solenoid) in 1.312 diameter mounting hole in customer panel.
2. Then position spring washer over plugnut/core tube sub–assembly.
3. Install plugnut/core tube sub–assembly through retainer in customer panel. Then replace solenoid, nameplate/retainer and red cap.

15/16" Valve Bonnet Construction

1. Install solenoid base sub–assembly through 0.69 diameter mounting hole in customer panel.
2. Position spring washer on opposite side of panel over solenoid base sub–assembly then replace.

Solenoid Temperature

Standard solenoids are designed for continuous duty service. When the solenoid is energized for a long period, the solenoid becomes hot and can be touched by hand only for an instant. This is a safe operating temperature.

MAINTENANCE

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

Cleaning

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

Preventive Maintenance

- Keep the medium flowing through the solenoid operator or valve as free from dirt and foreign material as possible.
- While in service, the solenoid operator or valve should be operated at least once a month to insure proper opening and closing.
- Depending on the medium and service conditions, periodic inspection of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any worn or damaged parts.

Causes of Improper Operation

- **Faulty Control Circuit:** 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 solenoid, broken lead wires or splice connections.
- **Burned–Out Solenoid:** Check for open–circuited solenoid. Replace if necessary. Check supply voltage; it must be the same as specified on nameplate/retainer and marked on the solenoid. Check ambient temperature and check that the core is not jammed.
- **Low Voltage:** Check voltage across the solenoid leads. Voltage must be at least 85% of rated voltage.

Solenoid Replacement

1. On solenoids with lead wires disconnect conduit, coil leads, and grounding wire.

NOTE: Any optional parts attached to the old solenoid must be reinstalled on the new solenoid.

2. Disassemble solenoids with optional features as follows:

• Spade or Screw Terminals

Remove terminal connections, grounding screw, grounding wire, and terminal block (screw terminal type only).

NOTE: For screw terminals, the socket head screw holding the terminal block serves as a grounding screw.

• Junction Box

Remove conduit and socket head screw (use 5/32" hex key wrench) from center of junction box. Disconnect junction box from solenoid.

• DIN Plug Connector

Remove center screw from DIN plug connector. Disconnect DIN plug connector from adapter. Remove socket head screw (use 5/32" hex key wrench), DIN terminal adapter, and gasket from solenoid.

3. Snap off red cap from top of solenoid base sub–assembly.
4. Push down on solenoid. Then using a suitable screwdriver, insert blade in slot provided between solenoid and nameplate/retainer. Pry up slightly and push to remove. Then remove solenoid from solenoid base sub–assembly.
5. Reassemble using exploded views for parts identification and placement

Disassembly and Reassembly of Solenoids

1. Remove solenoid, see *Solenoid Replacement*.
2. Remove finger washer or spring washer from solenoid base sub–assembly.
3. Unscrew solenoid base sub–assembly.

NOTE: Some solenoid constructions have a plugnut/core tube sub–assembly, bonnet gasket and bonnet in place of the solenoid base sub–assembly. To remove bonnet use special wrench adapter supplied in ASCO Rebuild Kit. For wrench adapter only, order ASCO Wrench Kit No.K218948.

4. The core is now accessible for cleaning or replacement.
5. If the solenoid is part of a valve, refer to basic valve installation and maintenance instructions for further disassembly.
6. Reassemble using exploded views for identification and placement of parts.

ORDERING INFORMATION FOR ASCO SOLENOIDS

When Ordering Solenoids for ASCO Solenoid Operators or Valves, order the number stamped on the solenoid. Also specify voltage and frequency.

Torque Chart

Part Name	Torque Value in Inch—Pounds	Torque Value in Newton—Meters
solenoid base sub—assembly	175 ± 25	19,8 ± 2,8
valve bonnet (3/4" bonnet construction)	90 ± 10	10,2 ± 1,1
bonnet screw (3/8" or 1/2" NPT pipe size)	25	2,8
bonnet screw (3/4" NPT pipe size)	40	4,5

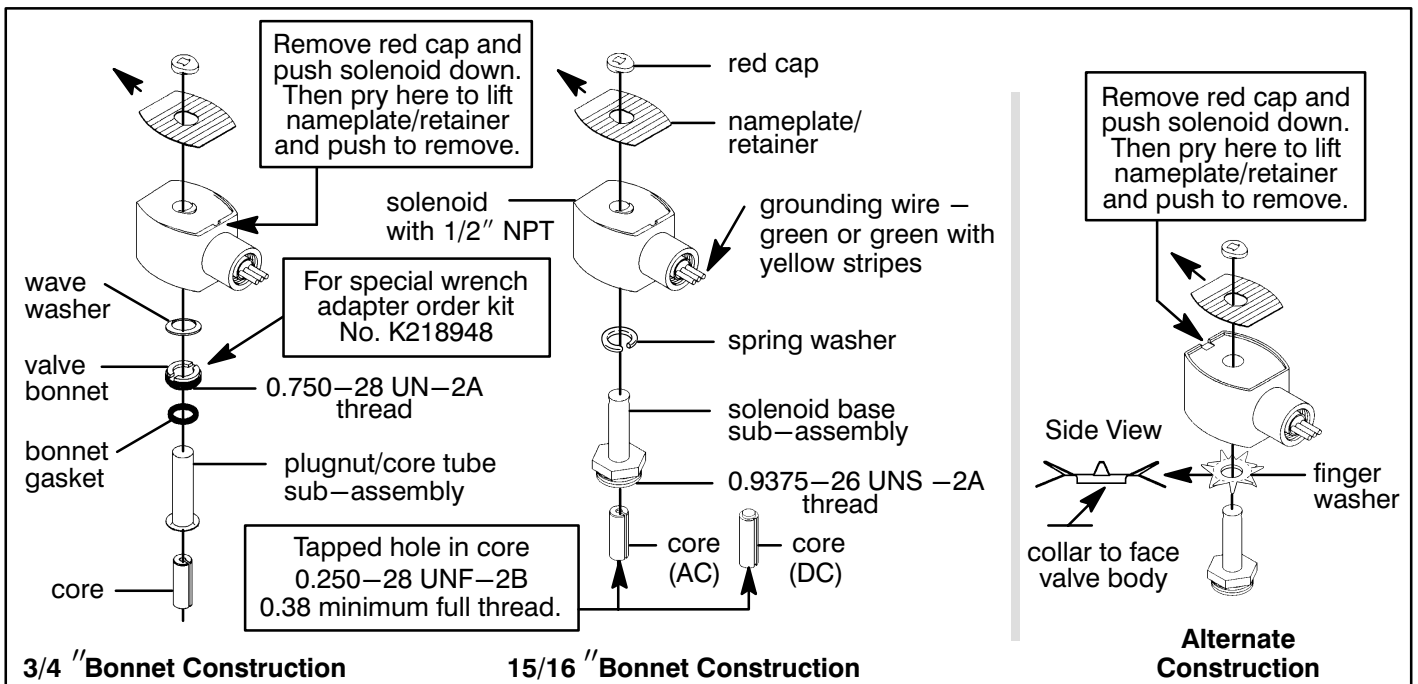


Figure 1. Series 8016G solenoids

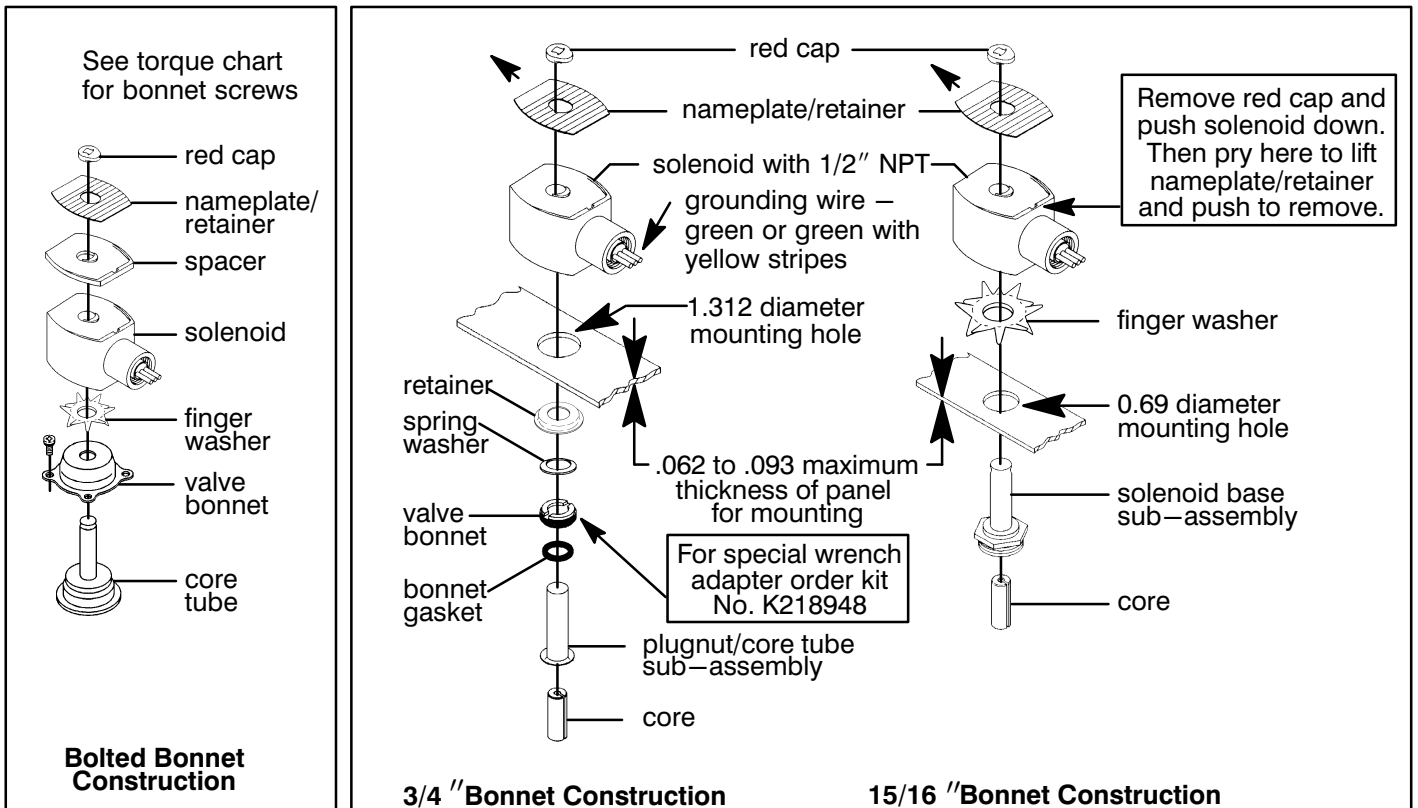


Figure 2. Series 8016G solenoid

Figure 3. Series 8016G panel mounted solenoids

Torque Chart

Part Name	Torque Value in Inch—Pounds	Torque Value in Newton—Meters
terminal block screws	10 ± 2	1,1 ± 0,2
socket head screw	15 — 20	1,7 — 2,3
center screw	5 ± 1	0,6 ± 0,1

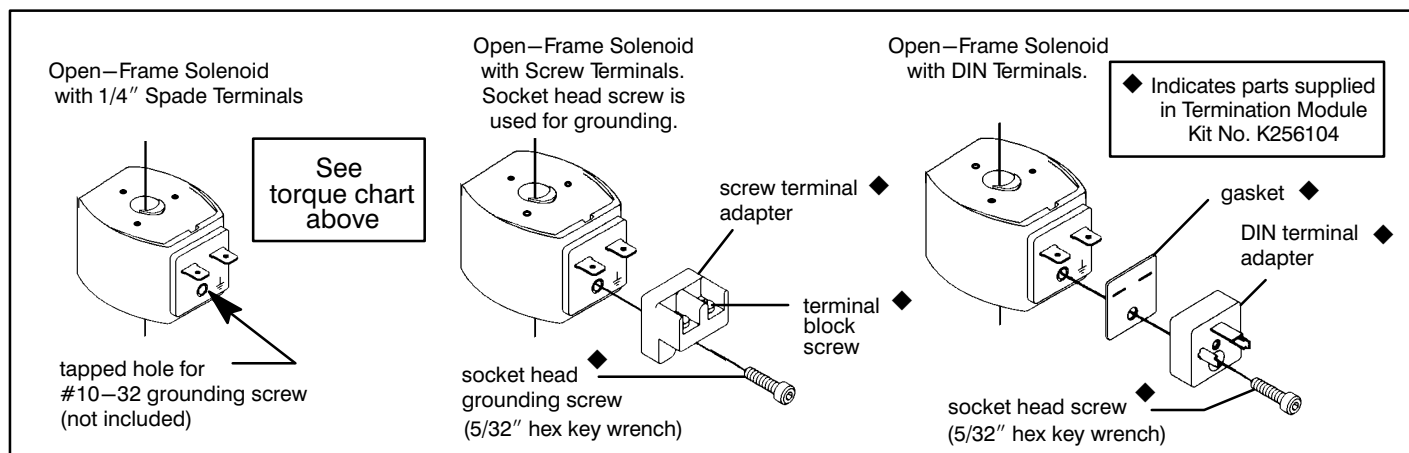


Figure 4. Open—frame solenoids

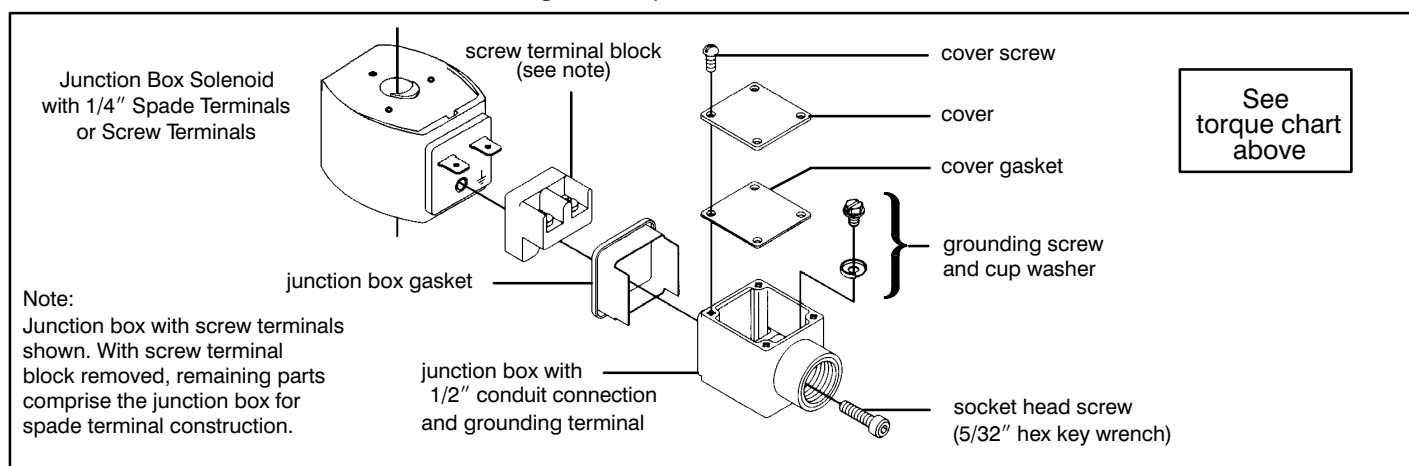


Figure 5. Junction box (optional feature)

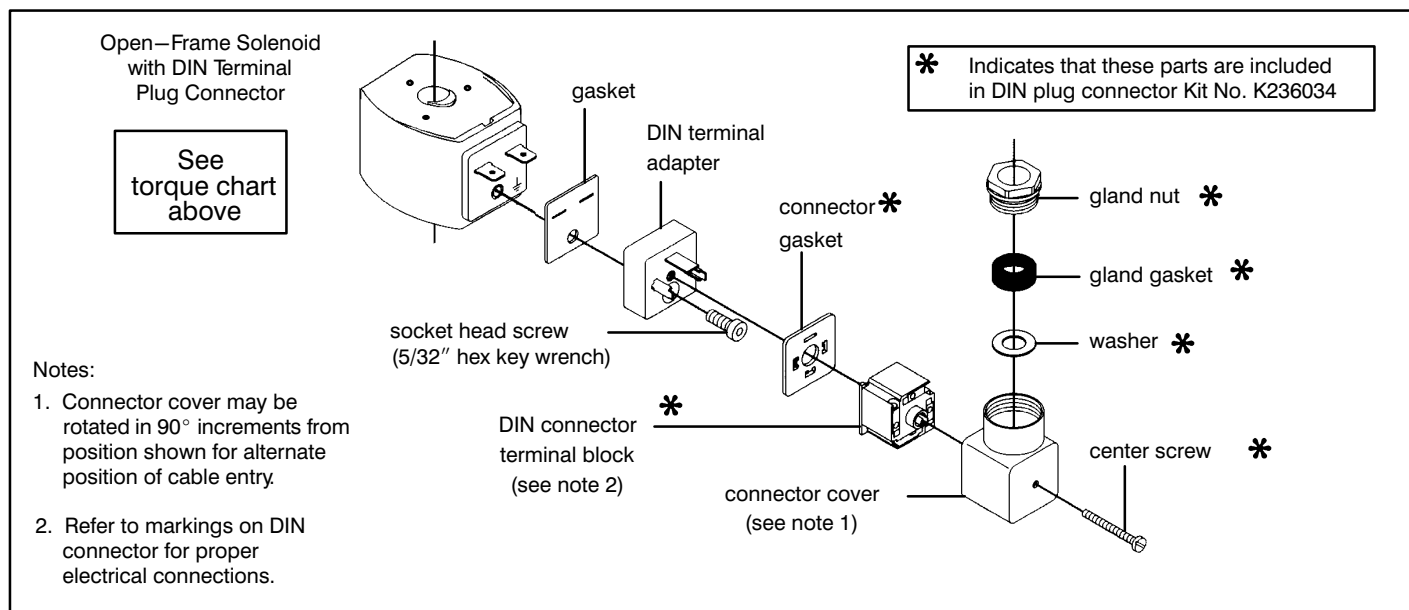


Figure 6. DIN plug connector kit No. K236034 (optional feature)



GENERAL INSTALLATION AND MAINTENANCE INSTRUCTIONS

Note: These General Installation and Maintenance Instructions must be read in conjunction with the instruction Sheet for the specific product.

INSTALLATION

ASCO/JOUCOMATIC components are intended to be used only within the technical characteristics as specified on the nameplate. Changes to the equipment are only allowed after consulting the manufacturer or its representative. Before installation depressurize the piping system and clean internally. The equipment may be mounted in any position if not otherwise indicated on the product by means of an arrow. The flow direction and pipe connection of valves are indicated on the body.

The pipe connections have to be in accordance with the size indicated on the nameplate and fitted accordingly.
Caution:

- Reducing the connections may cause improper operation or malfunctioning.
- For the protection of the equipment install a strainer or filter suitable for the service involved in the inlet side as close to the product as possible.
- If tape, paste, spray or a similar lubricant is used when tightening, avoid particles entering the system.
- Use proper tools and locate wrenches as close as possible to the connection point.
- To avoid damage to the equipment, **DO NOT OVERTIGHTEN** pipe connections.
- Do not use valve or solenoid as a lever.
- The pipe connections should not apply any force, torque or strain to the product.

ELECTRICAL CONNECTION

In case of electrical connections, they are only to be made by trained personnel and have to be in accordance with the local regulations and standards.

Caution:

- Turn off electrical power supply and de-energize the electrical circuit and voltage carrying parts before starting work.
- All electrical screw terminals must be properly tightened according to the standards before putting into service.
- Dependent upon the voltage electrical components must be provided with an earth connection and satisfy local regulations and standards

The equipment can have one of the following electrical terminals:

- Spade plug connections according to ISO-4400 or 3 x DIN-46244 (when correctly installed this connection provides IP-65 protection).
- Embedded screw terminals in metal enclosure with "Pg" cable gland.
- Spade terminals (AMP type).
- Flying leads or cables.

PUTTING INTO SERVICE

Before pressurizing the system, first carry-out an electrical test. In case of solenoid valves, energize the coil a few times and notice a metal click signifying the solenoid operation.

SERVICE

Most of the solenoid valves are equipped with coils for continuous duty service. To prevent the possibility of personal or property damage do not touch the solenoid which can become hot under normal operation conditions.

SOUND EMISSION

The emission of sound depends on the application, medium and nature of the equipment used. The exact determination of the sound level can only be carried out by the user having the valve installed in his system.

MAINTENANCE

Maintenance of ASCO/JOUCOMATIC products is dependent on service conditions. Periodic cleaning is recommended, the timing of which will depend on the media and service conditions. During servicing, components should be examined for excessive wear. A complete set of internal parts is available as a spare parts or rebuild kit. If a problem occurs during installation/maintenance or in case of doubt please contact ASCO/JOUCOMATIC or authorized representatives.

A separate Declaration of Incorporation relating to EEC-Directive 89/392/EEC Annex II B is available on request. Please provide product identification number and serial numbers of products concerned.

The product complies with the essential requirements of the EMC Directive 89/338/EEC and amendments and the Low Voltage directives 73/23/EEC and 93/68/EEC. A separate Declaration of Conformity is available on request. Please provide product identification number and serial numbers of the products concerned.



INSTRUCTIONS GÉNÉRALES D'INSTALLATION ET D'ENTRETIEN

Note : Ces instructions générales d'installation et d'entretien complètent la notice spécifique du produit.

MONTAGE

Les composants ASCO/JOUCOMATIC sont conçus pour les domaines de fonctionnement indiqués sur la plaque signalétique ou la documentation. Aucune modification ne peut être réalisée sur le matériel sans l'accord préalable du fabricant ou de son représentant. Avant de procéder au montage, dépressuriser les canalisations et effectuer un nettoyage interne.

A moins qu'une flèche ou la notice n'indique un sens de montage spécifique de la tête magnétique, le produit peut être monté dans n'importe quelle position.

Le sens de circulation du fluide est indiqué par repères sur le corps et dans la documentation.

La dimension des tuyauteries doit correspondre au raccordement indiqué sur le corps, l'étiquette ou la notice.

Attention :

- Une restriction des tuyauteries peut entraîner des dysfonctionnements.
- Afin de protéger le matériel, installer une crépine ou un filtre adéquat en amont, aussi près que possible du produit.
- En cas d'utilisation de ruban, pâte, aérosol ou autre lubrifiant lors du serrage, veiller à ce qu'aucun corps étranger ne pénètre dans le circuit.
- Utiliser un outillage approprié et placer les clés aussi près que possible du point de raccordement.
- Afin d'éviter toute détérioration, **NE PAS TROP SERRER** les raccords des tuyauteries.
- Ne pas se servir de la vanne ou de la tête magnétique comme d'un levier.
- Les tubes de raccordement ne devront exercer aucun effort, couple ou contrainte sur le produit.

RACCORDEMENT ÉLECTRIQUE

Le raccordement électrique doit être réalisé par un personnel qualifié et selon les normes et règlements locaux.

Attention :

- Avant toute intervention, couper l'alimentation électrique pour mettre hors tension les composants.
- Toutes les bornes à vis doivent être serrées correctement avant la mise en service.
- Selon la tension, les composants électriques doivent être mis à la terre conformément aux normes et règlements locaux.

Selon les cas, le raccordement électrique s'effectue par :

- Connecteur débrochable ISO4400 ou 3 x DIN46244 avec degré de protection IP65 lorsque le raccordement est correctement effectué.
- Bornes à vis solidaires du bobinage, sous boîtier métallique avec presse-étoupe "Pg - -".
- Cosses (type AMP).
- Fils ou câbles solidaires de la bobine.

MISE EN SERVICE

Avant de mettre le circuit sous pression, effectuer un essai électrique. Dans le cas d'une électrovanne, mettre la bobine sous tension plusieurs fois et écouter le "clac" métallique qui signale le fonctionnement de la tête magnétique.

FONCTIONNEMENT

La plupart des électrovannes comportent des bobinages prévus pour mise sous tension permanente. Pour éviter toute brûlure, ne pas toucher la tête magnétique qui, en fonctionnement normal et en permanence sous tension, peut atteindre une température élevée.

BRUIT DE FONCTIONNEMENT

Le bruit de fonctionnement varie selon l'utilisation, le fluide et le type de matériel employé. L'utilisateur ne pourra déterminer avec précision le niveau sonore émis qu'après avoir monté le composant sur l'installation.

ENTRETIEN

L'entretien nécessaire aux produits ASCO/JOUCOMATIC varie avec leurs conditions d'utilisation. Il est souhaitable de procéder à un nettoyage périodique dont l'intervalle varie suivant la nature du fluide, les conditions de fonctionnement et le milieu ambiant. Lors de l'intervention, les composants doivent être examinés pour détecter toute usure excessive. Un ensemble de pièces internes est proposé en pièces de rechange pour procéder à la réparation. En cas de problème lors du montage/entretien ou en cas de doute, veuillez contacter ASCO/JOUCOMATIC ou ses représentants officiels.

Conformément à la directive CEE 89/392/CEE Annexe II B, une Déclaration d'Incorporation peut être fournie sur demande. Veuillez nous indiquer le numéro d'accusé de réception (AR) et les références ou codes des produits concernés.

Ce produit est conforme aux prescriptions les plus importantes de la directive CEM 89/338/CEE et amendements et aux directives basse tension 73/23/CEE et 94/68/CEE. Une déclaration de conformité peut être fournie sur simple demande. Veuillez nous indiquer le numéro d'accusé de réception (AR) ainsi que les numéros de série des produits concernés.



ALLGEMEINE BETRIEBSANLEITUNG

ACHTUNG: Diese Allgemeine Betriebsanleitung gilt in Zusammenhang mit der jeweiligen Betriebsanleitung für die speziellen Produkte.

EINBAU

Die ASCO/JOUCOMATIC-Komponenten dürfen nur innerhalb der auf den Typenschildern angegebenen Daten eingesetzt werden. Veränderungen an den Produkten sind nur nach Rücksprache mit ASCO/JOUCOMATIC zulässig.

Vor dem Einbau der Ventile muß das Rohrleitungssystem drucklos geschaltet und innen gereinigt werden.

Die Einbaulage der Produkte ist generell beliebig. Ausnahme: Die mit einem Pfeil gekennzeichneten Produkte müssen entsprechend der Pfeilrichtung montiert werden.

Die Durchflußrichtung und der Eingang von Ventilen sind gekennzeichnet.

Die Rohranschlüsse sollten entsprechend den Größenangaben auf den Typenschildern mit handelsüblichen Verschraubungen durchgeführt werden. Dabei ist folgendes zu beachten:

- Eine Reduzierung der Anschlüsse kann zu Leistungs- und Funktionsminderungen führen.
- Zum Schutz der Ventile sollten Schmutzfänger oder Filter so dicht wie möglich in den Ventileingang integriert werden.
- Bei Abdichtung am Gewinde ist darauf zu achten, daß kein Dichtungsmaterial in die Rohrleitung oder das Ventil gelangt.
- Zur Montage darf nur geeignetes Werkzeug verwendet werden.
- Konische Verschraubungen sind sorgfältig anzuziehen. Es ist darauf zu achten, daß beim Anziehen das Gehäuse nicht beschädigt wird.
- Spule und Führungsrohr von Ventilen dürfen nicht als Gegenhalter benutzt werden.
- Die Rohrleitungsanschlüsse sollen fluchten und dürfen keine Spannungen auf das Ventil übertragen.

ELEKTRISCHER ANSCHLUß

Der elektrische Anschluß ist von Fachpersonal entsprechend den geltenden VDE- und CEE-Richtlinien auszuführen. Es ist besonders auf folgendes zu achten:

- Vor Beginn der Arbeiten ist sicherzustellen, daß alle elektrischen Leitungen und Netzteile spannungslos geschaltet sind.
- Alle Anschlußklemmen sind nach Beendigung der Arbeiten vorschriftsmäßig entsprechend den geltenden Regeln anzuziehen.
- Je nach Spannungsbereich muß das Ventil nach den geltenden Regeln einen Schutzleiteranschluß erhalten.

Der Magnetantrieb kann je nach Bauart folgende Anschlüsse haben:

- Anschluß für Gerüstesteckdose nach DIN 43850 Form A/ISO 4400 oder 3x DIN 46244 (durch ordnungsgemäße Montage der Gerüstesteckdose wird Schutzklasse IP 65 erreicht).
- Anschlüsse innerhalb eines Blechgehäuses mittels Schraubklemmen. Kabeleinführung ins Gehäuse mit PG-Verschraubung.
- Offene Spulen mit Flachsteckern (AMP-Fahren) oder mit eingegossenen Kabelenden.

INBETRIEBNAHME

Vor Druckbeaufschlagung des Produktes sollte eine elektrische Funktionsprüfung erfolgen:

Bei Ventilen Spannung an der Magnetspule mehrmals ein- und ausschalten. Es muß ein Klicken zu hören sein.

BETRIEB

Die meisten Ventile sind mit Spulen für Dauerbetrieb ausgerüstet. Zur Vermeidung von Personen- und Sachschäden sollte jede Berührung mit dem Ventil vermieden werden, da die Magnetspule bei längerem Betrieb sehr heiß werden kann.

GERÄUSCHEMISSION

Diese hängt sehr stark vom Anwendungsfall, den Betriebsdaten und dem Medium, mit denen das Produkt beaufschlagt wird, ab. Eine Aussage über die Geräuschemission des Produktes muß deshalb von demjenigen getroffen werden, der das Produkt innerhalb einer Maschine in Betrieb nimmt.

WARTUNG

Die Wartung hängt von den Einsatzbedingungen ab. In entsprechenden Zeitabständen muß das Produkt geöffnet und gereinigt werden. Für die Überholung der ASCO/JOUCOMATIC-Produkte können Ersatzteilsätze geliefert werden. Treten Schwierigkeiten bei Einbau, Betrieb oder Wartung auf, sowie bei Unklarheiten, ist mit ASCO/JOUCOMATIC Rücksprache zu halten.

(ASCO/JOUCOMATIC Produkte sind entsprechend der EG-Richtlinie 89/392/EWG gefertigt.

Eine separate Herstellererklärung im Sinne der Richtlinie 89/392/EWG Anhang II B ist auf Anfrage erhältlich. Geben Sie bitte für die Produkte die Nummer der Auftragsbestätigung und die Seriennummer an.

Dieses Produkt entspricht den grundlegenden Bestimmungen der EMV-Richtlinie 89/338/EWG, einschl. Nachträge, sowie den Niederspannungsrichtlinien 73/23/EWG u. 93/68/EWG. Bitte geben Sie die Auftragsbestätigungsnummer und die Seriennummern der betreffenden Produkte an.

ES



INSTRUCCIONES GENERALES DE INSTALACION Y MANTENIMIENTO

Nota: Estas instrucciones Generales de Instalación y Mantenimiento deben considerarse en conjunción con la Hoja de instrucciones de cada producto.

INSTALACION

Los componentes ASCO/JOUCOMATIC sólo deben utilizarse dentro de las especificaciones técnicas que se especifican en su placa de características o catálogo. Los cambios en el equipo sólo estarán permitidos después de consultar al fabricante o a su representante. Antes de la instalación despresurice el sistema de tuberías y limpie internamente.

El equipo puede utilizarse en cualquier posición si no estuviera indicado lo contrario sobre el mismo mediante una flecha o en el catálogo.

En el cuerpo o en el catálogo se indican el sentido del fluido y la conexión de las válvulas a la tubería.

Las conexiones a la tubería deben corresponder al tamaño indicado en la placa de características la etiqueta o el catálogo y ajustarse adecuadamente.

Precaución:

- La reducción de las conexiones puede causar operaciones incorrectas o defectos de funcionamiento.
- Para la protección del equipo se debe instalar, en la parte de la entrada y tan cerca como sea posible del producto, un filtro adecuado.
- Si se utilizara cinta, pasta, spray u otros lubricantes en el ajuste, se debe evitar que entren partículas en el producto.
- Se debe utilizar las herramientas adecuadas y colocar llaves inglesas lo mas cerca posible del punto de conexión.
- Para evitar daños al equipo, NO FORZAR las conexiones a la tubería.
- No utilizar la válvula o el solenoide como palanca.
- Las conexiones a la tubería no producirán ninguna fuerza, par o tensión sobre el producto.

CONEXION ELECTRICA

Las conexiones eléctricas serán realizadas por personal cualificado y deberán adaptarse a las normas y regulaciones locales.

Precaución:

- Antes de comenzar el trabajo, desconecte el suministro de energía eléctrica y desenergice el circuito eléctrico y los elementos portadores de tensión.
- Todos los terminales eléctricos deben estar apretados adecuadamente según normas antes de su puesta en servicio.
- Según el voltaje, los componentes eléctricos deben disponer de una conexión a tierra y satisfacer las normas y regulaciones locales.

El equipo puede tener uno de los siguientes terminales eléctricos:

- Conexiones desenchufables según ISO 4400 o 3 x DIN-46244 (cuando se instala correctamente esta conexión proporciona una protección IP-65).
- Terminales de tornillo con carcasa metálica con entrada de cable de conexión rosca "PG".
- Conector desenchufable (tipo AMP).
- Salida de cables.

PUESTA EN MARCHA

Se debe efectuar una prueba eléctrica antes de someter a presión el sistema. En el caso de las válvulas solenoides, se debe energizar varias veces la bobina y comprobar que se produce un sonido metálico que indica el funcionamiento del solenoide.

SERVICIO

La mayor parte de las válvulas solenoides se suministran con bobinas para un servicio continuo. Con el fin de evitar la posibilidad de daños personales o materiales no se debe tocar el solenoide, ya que puede haberse calentado en condiciones normales de trabajo.

EMISION DE RUIDOS

La emisión de ruidos depende de la aplicación, medio y naturaleza del equipo utilizado. Una determinación exacta del nivel de ruido sólo puede llevarse a cabo por el usuario que disponga la válvula instalada en su sistema.

MANTENIMIENTO

El mantenimiento de los productos ASCO/JOUCOMATIC depende de las condiciones de servicio. Se recomienda una limpieza periódica, dependiendo de las condiciones del medio y del servicio. Durante el servicio, los componentes deben ser examinados por si hubieran desgastes excesivos. Se dispone de un juego completo de partes internas como recambio o kit de montaje. Si ocurriera un problema durante la instalación/mantenimiento o en caso de duda contactar con ASCO/JOUCOMATIC o representantes autorizados.

Se dispone, por separado y bajo demanda, de una Declaración de incorporación conforme a la Directiva CEE 89/392/EEC Anexo II B. Rogamos que nos faciliten los códigos y números de aceptación de pedido correspondientes.

Este producto es conforme a las principales prescripciones de la directiva CEM 89/336/CEE y a las enmiendas y directivas baja tensión 73/23/CEE y 94/68/CEE. Si lo desea, podemos facilitar una Declaración de Conformidad por separado. Rogamos faciliten el número de confirmación de pedido y los números de serie de los respectivos productos.

ASCOMATICA S.A. de C.V.
Bosques de Duraznos No. 65—1003A
Fraccionamiento Bosques de las Lomas
Delegación Miguel Hidalgo
Mexico, D.F. CP11700
Tel: (52)—55—5596—7741
Fax: (52)—55—5596—7719

ASCO Valve Canada
P.O. Box 160 (Airport Road)
Brantford, Ontario N3T 5M8
Tel: (519) 758—2700
Fax: (519) 758—5540

IT



ISTRUZIONI DI INSTALLAZIONE E DI MANUTENZIONE GENERALE

Nota: Queste istruzioni devono essere lette in congiunzione con il manuale specifico del prodotto.

INSTALLAZIONE

Le elettrovalvole devono essere utilizzate esclusivamente rispettando le caratteristiche tecniche specificate sulla targhetta. Variazioni sulle valvole o sui piloti sono possibili solo dopo aver consultato il costruttore o i suoi rappresentanti. Prima dell'installazione depressurizzare i tubi e pulire internamente.

Le elettrovalvole possono essere montate in tutte le posizioni. Diversamente, una freccia posta sulla valvola indica che deve essere montata in posizione verticale e dritta.

La direzione del flusso è indicata sul corpo della valvola per mezzo di una freccia oppure con l'etichetta "IN", "1", "A", o "P".

I raccordi devono essere conformi alla misura indicata sulla targhetta apposta.

Attenzione:

- Ridurre i raccordi può causare operazioni sbalziate o malfunzionamento.
- Per proteggere il componente installare, il più vicino possibile al lato ingresso, un filtro adatto al servizio.
- Se si usano nastro, pasta, spray o lubrificanti simili durante il serraggio, evitare che delle particelle entrino nel corpo della valvola.
- Usare un'attrezzatura appropriata e utilizzare le chiavi solo sul corpo della valvola.
- Per evitare danni al corpo della valvola, NON SERRARE ECCESSIVAMENTE i tubi.
- Non usare la valvola o il pilota come una leva.
- I raccordi non devono esercitare pressione, torsione o sollecitazione sull'elettrovalvola.

ALLACCIAMENTO ELETTRICO

L'allacciamento elettrico deve essere effettuato esclusivamente dal personale specializzato e deve essere conforme alle Norme locali.

Attenzione:

- Prima di mettere in funzione togliere l'alimentazione elettrica, disaccettare il circuito elettrico e le parti sotto tensione.
- I morsetti elettrici devono essere correttamente avvitati, secondo le Norme, prima della messa in servizio.
- Le elettrovalvole devono essere provviste di morsetti di terra a seconda della tensione e delle Norme di sicurezza locali.

I piloti possono avere una delle seguenti caratteristiche elettriche:

- Connettore ISO-4400 o 3 x DIN-46244 (se installato correttamente è IP-65).
- Morsetteria racchiusa in custodia metallica. Entrata cavi con pressacavi tipo "PG".
- Bobina con attacchi FASTON (tipo AMP).
- Bobine con fili o cavo.

MESSA IN FUNZIONE

Prima di dare pressione alla valvola, eseguire un test elettrico. Eccitare la bobina diverse volte fino a notare uno scatto metallico che dimostra il funzionamento del pilota.

SERVIZIO

Molte elettrovalvole sono provviste di bobine per funzionamento continuo. Per prevenire la possibilità di danneggiare cose o persone, non toccare il pilota. La custodia della bobina o del pilota può scaldarsi anche in normali condizioni di funzionamento.

EMISSIONE SUONI

L'emissione di suoni dipende dall'applicazione e dal tipo di elettrovalvola. L'utente può stabilire esattamente il livello del suono solo dopo aver installato la valvola sul suo impianto.

MANUTENZIONE

Generalmente questi componenti non necessitano spesso di manutenzione. Comunque, in alcuni casi è necessario fare attenzione a depositi o ad eccessiva usura. Questi componenti devono essere puliti periodicamente, il tempo che intercorre tra una pulizia e l'altra varia a seconda delle condizioni di funzionamento. Il ciclo di durata dei componenti dipende dalle condizioni di funzionamento. Incaso di usura è disponibile un set completo di parti interne per la revisione. Se si incontrano problemi durante l'installazione e la manutenzione o se si hanno dei dubbi, consultare ASCO/JOUCOMATIC o i suoi rappresentanti.

L'utente può richiedere al costruttore una dichiarazione separata riguardante le Direttive EEC 89/392/EEC e 91/368/EEC (vedere allegato II B) fornendo il numero di serie e il riferimento dell'ordine relativo.

Questo prodotto soddisfa i requisiti essenziali della direttiva CEM 89/336/CEE nonché gli emendamenti e le direttive sulla bassa tensione 73/23/CEE e 94/68/CEE. Una Dichiarazione di Conformità separata può essere ottenuta su richiesta. Si prega di fornire il numero della conferma dell'ordinativo ed i numeri di serie dei relativi prodotti.

ASCOTECH S.A. de C.V.
Circuito Del Progreso No.27
Parque Industrial Progreso
Mexicali, B.C. Mexico
Tel: (011)—52—686—559—8500
Fax: (011)—52—686—559—8548

NL



ALGEMENE INSTALLATIE- EN ONDERHOUDSINSTRUCTIES

N.B.: Deze algemene instructies l.a.v. installatie en onderhoud moeten in acht worden genomen tezamen met de specifieke voorschriften van het product.

INSTALLATIE

ASCO/JOUCOMATIC producten mogen uitsluitend toegepast worden binnen de op de naamplaat aangegeven specificaties. Wijzigingen, zowel elektrisch als mechanisch, zijn alleen toegestaan na overleg met de fabrikant of haar vertegenwoordiger. Voor het inbouwen dient het leidingsstelsel drukloos gemaakt te worden en inwendig gereinigd.

De positie van de afsluiter is naar keuze te bepalen, behalve in die gevallen waarbij het tegendeel door pijlen wordt aangegeven. De doorstroomrichting wordt bij afsluiters aangegeven op het afsluiterhuis.

De pijp aansluiting moet overeenkomstig de naamplaatgegevens plaatsvinden.

Hierbij moet men letten op:

- Een reductie van de aansluitingen kan tot prestatie- en funktiestoornissen leiden.
- Ter bescherming van de interne delen wordt een filter in het leidingsnet aanbevolen.
- Bij het gebruik van draaddichtingsgasta of tape mogen er geen deeltjes in het leidingswerk gepakt.
- Men dient uitsluitend geschikt gereedschap voor de montage te gebruiken.
- Bij konische/tape koppelingen moet met een zodanig koppel worden gewerkt dat het product niet wordt beschadigd.
- Het product, de behuizing of de spoel mag niet als hefboom worden gebruikt.
- De pijp aansluitingen mogen geen krachten of momenten op het product overdragen.

ELEKTRISCHE AANSLUITING

In geval van elektrische aansluiting dient dit door vakkundig personeel te worden uitgevoerd volgens de door de plaatselijke overheid bepaalde richtlijnen.

Men dient in het bijzonder te letten op:

- Voordat men aan het werk begint moeten alle spanningsvoerende delen spanningsloos worden gemaakt.
- Alle aansluitklemmen moeten na het beëindigen van het werk volgens de juiste normen worden aangedraaid.
- Al naar gelang het spanningsniveau, moet het product volgens de geldende normen van een aarding worden voorzien.

Het product kan de volgende aansluitingen hebben:

- Stekeraansluiting volgens ISO-4400 of 3x DIN-46244 (bij juiste montage wordt de dichtheidsklasse IP-65 verkregen).
- Aansluiting binnen in het metaal huis d.m.v. schroefaansluiting. De kabeldoorvoer heeft een "PG" aansluiting.
- Spooien met platte stekker (AMP type).
- Losse of aangegoten kabels

IN GEBRUIK STELLEN

Voordat de druk aangesloten wordt dient een elektrische test te worden uitgevoerd. Ingeval van magneetafsluiters, legt men meerdere malen spanning op de spoel aan waarbij een duidelijk "klikken" hoorbaar moet zijn bij juist functioneren.

GEBRUIK

De meeste magneetafsluiters zijn uitgevoerd met spoelen voor continu gebruik. Omdat persoonlijke of zakelijke schade kan ontstaan bij aanraking dient men dit te vermijden, daar bij langdurige inschakeling de spoel of het spoelhuis heet kan worden.

GELUIDSEMISSIE

Dit hangt sterk af van de toepassing en het gebruikte medium. De bepaling van het geluidsniveau kan pas uitgevoerd worden nadat het ventiel is ingebouwd.

ONDERHOUD

Het onderhoud aan de afsluiters is afhankelijk van de bedrijfsomstandigheden.

In bepaalde gevallen moet men bedacht zijn op media welke sterke vervuiling binnen in het product kunnen veroorzaken. Men dient dan regelmatig inspecties uit te voeren door de afsluiter te openen en te reinigen. Indien ongewone slijtage optreedt dan zijn reserve onderdelen sets beschikbaar om een inwendige revisie uit te voeren.

Ingeval problemen of onduidelijkheden tijdens montage, gebruik of onderhoud optreden dan dient men zich tot ASCO of haar vertegenwoordiger te wenden.

Een aparte fabrikanten verklaring van inbouw, in de zin van EU-richtlijn 89/392/EEG aanhangsel IIB kan door de afnemer na opgave van orderbevestigingsnummer en serienummer verkregen worden.

Dit product voldoet aan de essentiële vereisten van de EMC Richtlijn 89/336/EEG en amendementen, net als aan de richtlijnen 73/23/EEG en 93/68/EEG inzake laagspanning. Een afzonderlijke verklaring van overeenstemming is op verzoek verkrijgbaar. Vermeld a.u.b. het nummer van de opdrachtbevestiging en de serienummers van de betreffende producten.

ASCO

MMIL

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Form No. 6950RS

50 Hanover Road, Florham Park, New Jersey 07932

www.ascovalve.com

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T A B L E O F C O N T E N T S

Series	General Description	Pipe Size	Body Material	Page
8030	Low Pressure	3/8" - 3/4"	Brass and Stainless Steel	1
8040/8215	High Flow Gas/ High Air Valves	3/8" - 3"	Aluminum	5
8210	General Service	3/8" - 2 1/2"	Brass and Stainless Steel	9
8221	Slow Closing	3/8" - 2 1/2"	Brass	15
8223	High Pressure	1/4" - 3/4"	Brass and Stainless Steel	19
8225/8280	Sub-Miniature	1/8"	Brass and Stainless Steel	21
8260	Dispensing/Bib Connection	1/4"	Plastic	23
8262/8263	General Service Compact	1/8" - 3/8"	Brass and Stainless Steel	27

These solenoid valves have one inlet and one outlet, and are used to permit and shut off fluid flow.

Two Types of Operations Apply:

Normally Closed

Fluid is shut off when the coil is de-energized, flows through the valve when the coil is energized.

Normally Open

Fluid flows through the valve when the coil is de-energized, shuts off when the coil is energized.

Two Types of Constructions Apply:

Direct Acting

When the solenoid is energized, the core directly opens the orifice of a Normally Closed valve or closes the orifice in a Normally Open valve. The valve will operate at pressures from 0 psi to its rated maximum. The force needed to open the valve is proportional to the orifice size and fluid pressure. As orifice size increases, so does the required force. To open larger orifices without increasing solenoid size, internal pilots are used.

Internally Piloted

These valves use line pressure to assist operation.

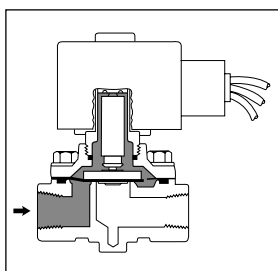
When the coil is de-energized (on a Normally Closed valve), the pilot orifice is closed and line pressure is applied to the top of the piston or diaphragm through the bleed orifice, closing the valve. When the coil is energized, the core opens the pilot orifice, relieving pressure from the diaphragm or piston. Line pressure, alone, opens the valve by lifting the diaphragm or piston off the main orifice.

See Engineering Section for further details.

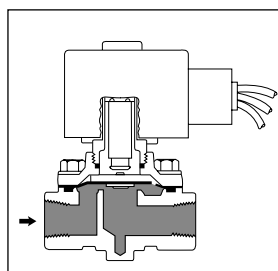
Standard and Optional Features:

Solenoid valves are supplied, as listed, with either Red-Hat II® molded epoxy solenoids or Red-Hat® solenoids with metal enclosures. Red-Hat II valves are identified by the letter "G" or "H" in their catalog numbers; e.g., 8030**G**16. Many optional features may be added to your valves; e.g., high-temperature Class H molded coils, manual operators, and metering devices.

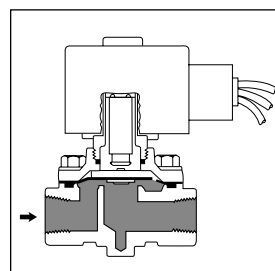
2 Way/2 Position Valves Flow Diagrams



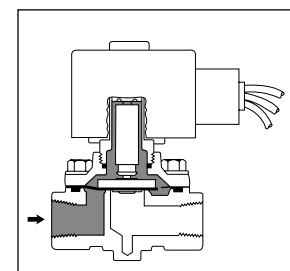
**Normally Closed Valve
De-Energized**



**Normally Closed Valve
Energized**



**Normally Open Valve
De-Energized**



**Normally Open Valve
Energized**

Features

- Operate at low pressures: no minimum required; up to 15 psi maximum differential.
- Normally Closed or Normally Open operation.
- Widely used for dispensing, collating, gas shutoff, vacuum holding, and tank draining applications.
- Normally Open valve well suited for venting systems.

Construction

Valve Parts in Contact with Fluids		
Body	Brass	304 Stainless Steel
Seals and Disc	NBR	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Core Spring	302 Stainless Steel	
Shading Coil	Copper	Silver
Stem	PA (Normally Open)	

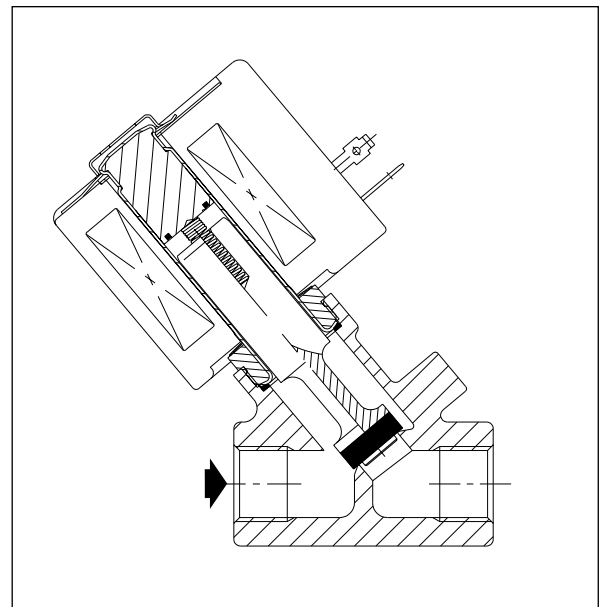
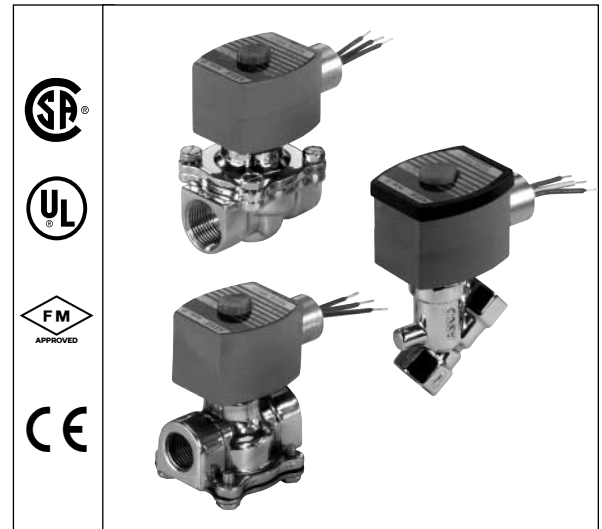
Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part Number			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	10.6	6.1	16	40	238210	238310	238214	238314
F	11.6	10.1	25	70	238610	238710	238614	238714
F	--	16.1	35	95	272610	97617	272614	97617
F	--	17.1	40	93	238610	--	238614	--
F	--	20.1	48	240	272610	--	272614	--

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 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 catalog number.)



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)

Approvals:

CSA certified. UL listed, as indicated. FM approved (Normally Closed only except 8030G17 and 8030G67). Meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)						Max. Fluid Temp. °F		Brass Body			Stainless Steel Body			Watt Rating/ Class of Coil Insulation ①	
			Min.	Max. AC		Max. DC		AC									DC	Catalog Number
				Air-Inert Gas	Water	Air-Inert Gas	Water											
NORMALLY CLOSED (Closed when de-energized)																		
3/8	3/8	1.8	0	7	5	3	3	180	120	8030G10	1	○	8030G64	1	○	6.1/F	10.6/F	
3/8	3/8	1.8	0	15	15	3.5	3.5	180	150	8030G13	2	○	8030G65	2	○	10.1/F	11.6/F	
1/2	7/16	2.8	0	4	6	-	-	180	-	8030G16	3	○	8030G66	3	○	6.1/F	-	
1/2	7/16	2.8	0	15	15	-	-	200	-	8030G17	11	○	8030G67	11	○	16.1/F	-	
3/4	3/4	5	0	2	2	1	1	180	150	8030G3	9	○	-	-	-	10.1/F	11.6/F	
3/4	3/4	5	0	4	4	-	-	180	-	8030G43	9	○	-	-	-	17.1/F	-	
3/4	5/8	5.4	0	2.5	2.5	-	-	180	-	-	-	-	8030G63	10	○	10.1/F	-	
NORMALLY OPEN (Open when de-energized)																		
3/8	3/8	1.6	0	15	15	-	-	200	-	8030G70	12	●	-	-	-	16.1/F	-	
1/2	7/16	2.2	0	15	15	-	-	200	-	8030G71	13	●	-	-	-	20.1/F	-	
1/2	3/4	5	0	2	2	-	-	180	-	8030G82	7	●	-	-	-	10.1/F	-	
3/4	3/4	5.5	0	2	2	-	-	180	-	8030G83	8	●	-	-	-	10.1/F	-	
Notes: ① On all 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ② ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.																		

Notes: ① On all 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.

② ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.

Specifications (Metric units)

Pipe Size Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)					Max. Fluid Temp. °C		Brass Body			Stainless Steel Body			Watt Rating/ Class of Coil Insulation ①	
			Min.	Max. AC		Max. DC		AC	DC								
				Air-Inert Gas	Water	Air-Inert Gas	Water			Catalog Number	Constr. Ref. No.	UL ② Listing	Catalog Number	Constr. Ref. No.	UL ② Listing	AC	DC
NORMALLY CLOSED (Closed when de-energized)																	
3/8	10	1.5	0	0.5	0.3	0.2	0.2	81	48	8030G10	1	○	8030G64	1	○	6.1/F	10.6/F
3/8	10	1.5	0	1.0	1.0	0.2	0.2	81	65	8030G13	2	○	8030G65	2	○	10.1/F	11.6/F
1/2	11	2.4	0	0.3	0.4	-	-	81	-	8030G16	3	○	8030G66	3	○	6.1/F	-
1/2	11	2.4	0	1.0	1.0	-	-	92	-	8030G17	11	○	8030G67	11	○	16.1/F	-
3/4	19	4.3	0	0.1	0.1	0.1	0.1	81	65	8030G3	9	○	-	-	-	10.1/F	11.6/F
3/4	19	4.3	0	0.3	0.3	-	-	81	-	8030G43	9	○	-	-	-	17.1/F	-
3/4	16	4.6	0	0.2	0.2	-	-	81	-	-	-	-	8030G63	10	○	10.1/F	-
NORMALLY OPEN (Open when de-energized)																	
3/8	10	1.4	0	1.0	1.0	-	-	92	-	8030G70	12	●	-	-	-	16.1/F	-
1/2	11	1.9	0	1.0	1.0	-	-	92	-	8030G71	13	●	-	-	-	20.1/F	-
1/2	19	4.3	0	0.1	0.1	-	-	81	-	8030G82	7	●	-	-	-	10.1/F	-
3/4	19	4.7	0	0.1	0.1	-	-	81	-	8030G83	8	●	-	-	-	10.1/F	-
Notes: ① On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ② ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.																	

Notes: ① On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.

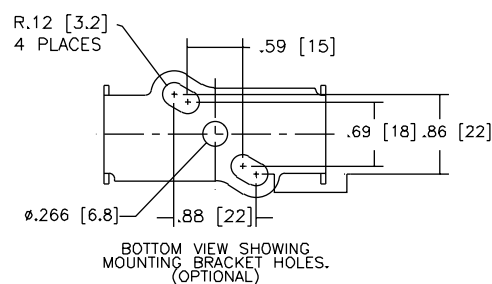
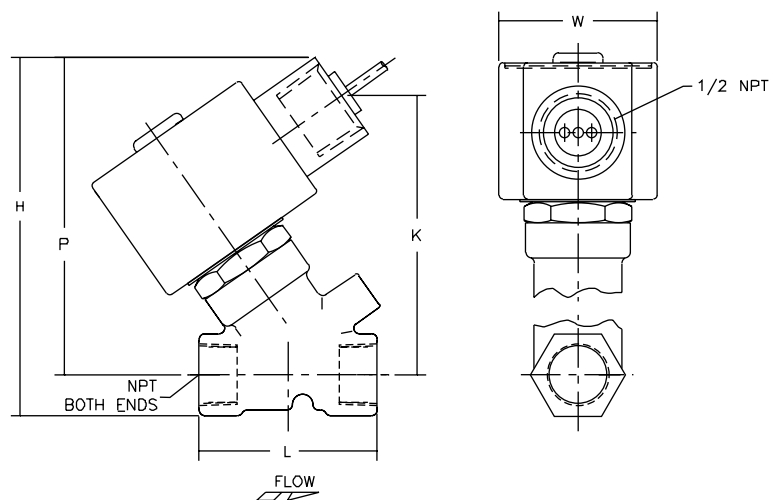
② ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.

Dimensions: inches (mm)

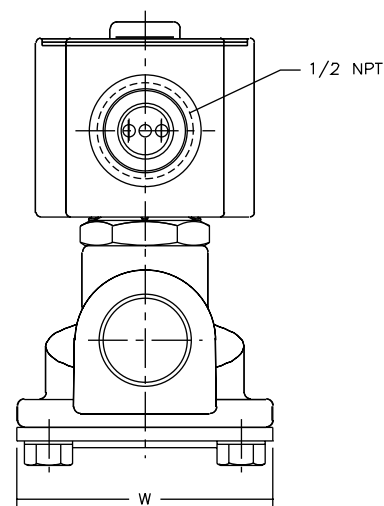
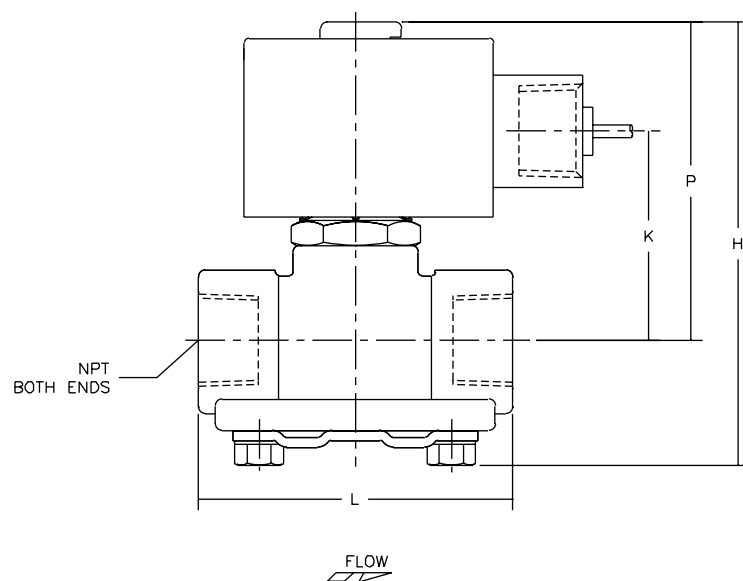
Constr. Ref. No.		H	K	L	P	W
1	ins.	3.85	3	1.91	3.41	1.69
	mm	98	76	49	87	43
2	ins.	4	3.14	1.91	3.55	1.95
	mm	102	80	49	90	50
3	ins.	4.07	3.25	2.28	3.63	1.69
	mm	103	83	58	92	43
7	ins.	3.97	1.88	2.81	2.85	2.29
	mm	101	48	71	72	58
8	ins.	3.97	1.88	2.81	2.85	2.29
	mm	101	48	71	72	58
9	ins.	4.1	2.44	2.81	3.41	2.28
	mm	104	62	71	87	58
10	ins.	4.16	2.47	2.81	3.44	2.28
	mm	106	63	71	87	58
11	ins.	4.31	3.39	2.28	3.77	2.06
	mm	110	86	58	96	52
12	ins.	4.16	1.1	1.91	3.72	2.06
	mm	106	28	49	94	52
13	ins.	4.37	1.05	2.28	3.83	2.06
	mm	111	27	58	97	52

IMPORTANT: Valves may be mounted in any position, except for 8030G3 DC.

Constr. Refs. 1, 2, 3

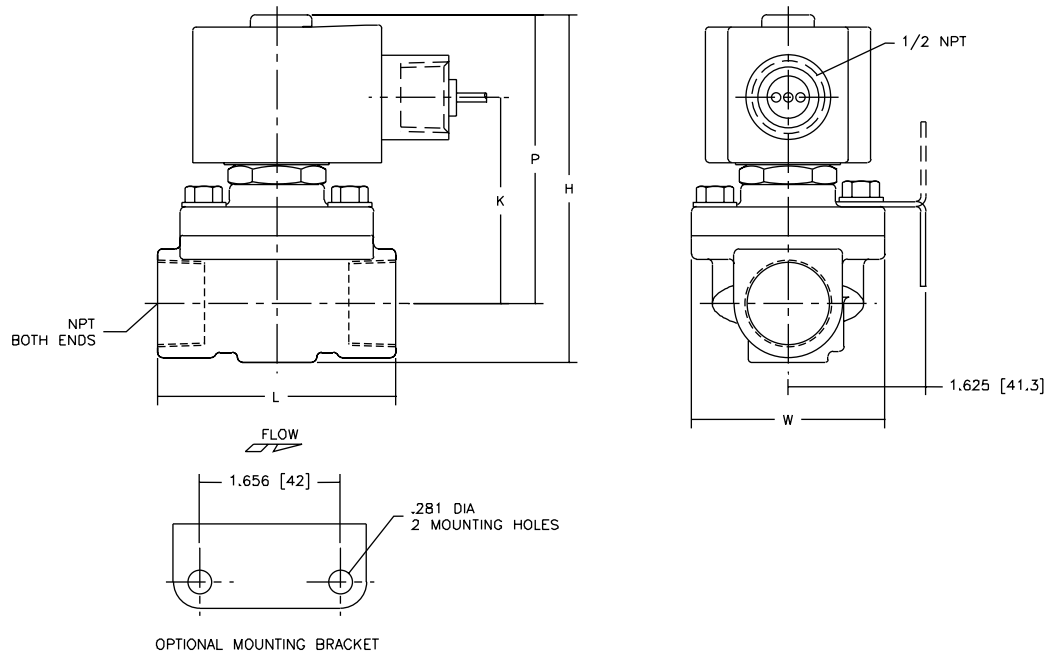


Constr. Refs. 7, 8

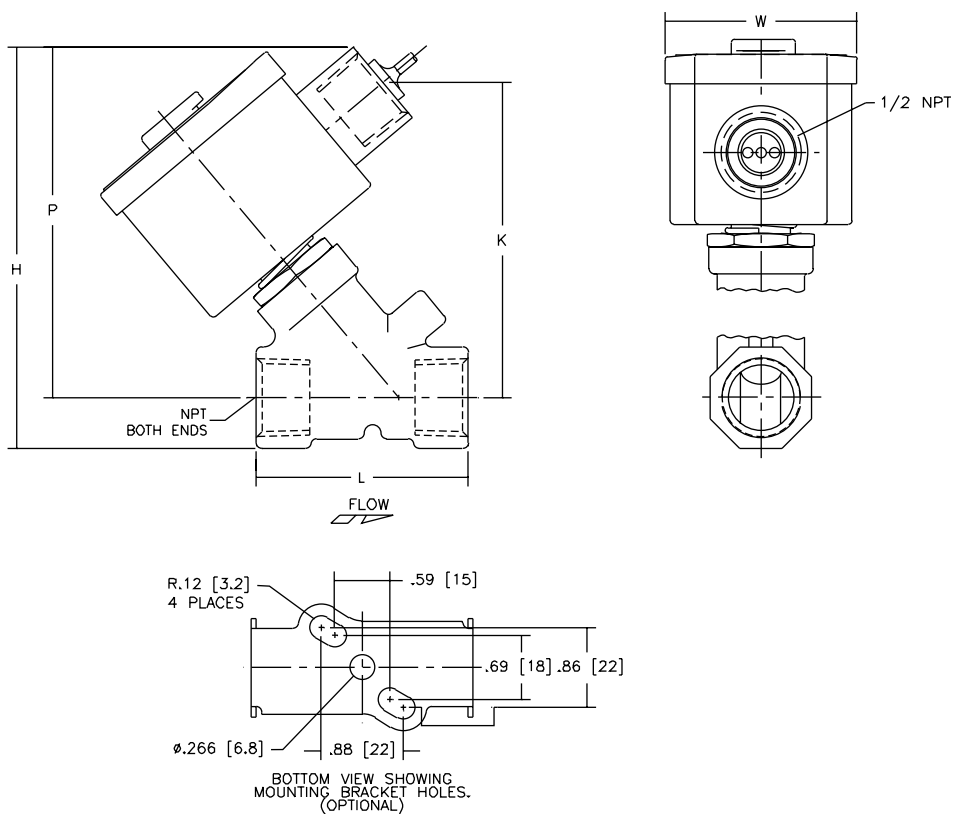


Dimensions: inches (mm)

Constr. Refs. 9, 10



Constr. Refs. 11, 12, 13



Features

- Lightweight, low-cost valves for air service.
- Ideal for low pressure applications.
- Provides high flow, Cv up to 138 (Kv 118).
- Air and vacuum service.

Construction

Valve Parts in Contact with Fluids	
Body	Aluminum
Seals, Diaphragms, Disc	NBR
Disc-Holder	PA (10.1 and 11.6 watt Normally Open only)
Core Guide	CA
Core Tube	305 Stainless Steel
Rider Rings	PTFE
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Shading Coil	Copper

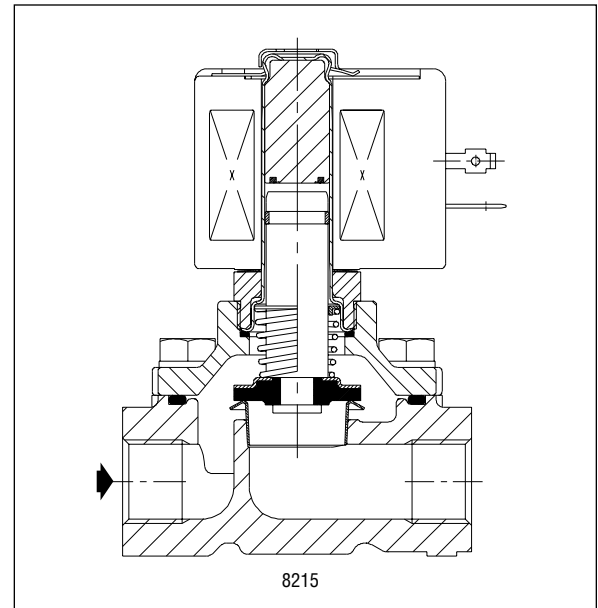
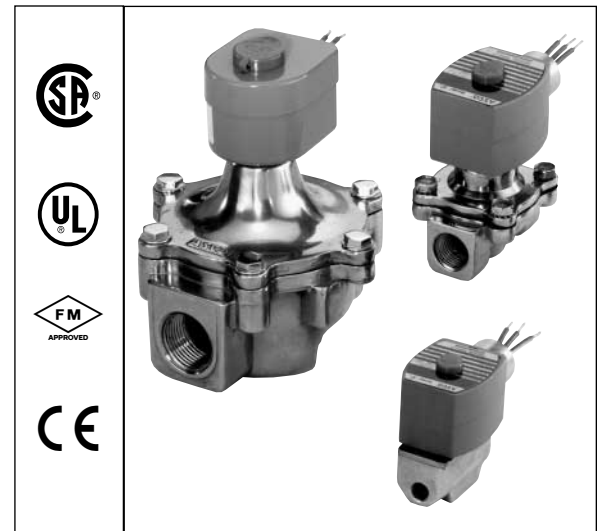
Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush				
F	-	6.1	16	40	238210	-	238214	-
F	11.6	10.1	25	70	238610	238710	238614	238714
B	14.9	-	-	-	-	62691	-	-
F	-	15.4	27	160	99257	-	99257	-
F	-	28.2	50	385	206409	-	206409	-

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 available when required.

Solenoid Enclosures

Standard: Red-Hat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; Red-Hat - Type I.
Optional: Red-Hat II - Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9; Red-Hat - Explosionproof and Raintight, Types 3, 7, and 9. (Except EF8215A40 and EF8215A90, which are suitable for Types 3 and 7 (C and D) only and have a T2B temperature rating code.) To order, add prefix "EF" to catalog number.



Nominal Ambient Temperature Ranges:

Red-Hat II/

Red-Hat AC: 32°F to 125°F (0°C to 52°C)

Red-Hat II DC: 32°F to 104°F (0°C to 40°C)

Red-Hat DC: 32°F to 77°F (0°C to 25°C)
(104°F/40°C occasionally)

Approvals:

CSA certified. UL listed, as indicated. FM approved (Normally Closed only, except Catalog Numbers 8215A90 and 8215A40). Red-Hat II meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)			Max. Fluid Temp. °F		Aluminum Body			Watt Rating/ Class of Coil Insulation ②	
			Min.	Max. AC	Max. DC							
				Air-Fuel Gas	Air-Fuel Gas	AC	DC	Catalog Number	Constr. Ref. No	UL ⑤ Listing	AC	DC
NORMALLY CLOSED (Closed when de-energized)												
1/8	5/16	1.0	0	15	-	125	-	8040H6	11	○	6.1/F	-
1/4	5/16	1.1	0	15	-	125	-	8040H7	11	○	6.1/F	-
3/8	5/16	1.2	0	15	-	125	-	8040H8	11	○	6.1/F	-
3/8	3/4	3.4	0	50	25	125	104	8215G10	2	○	10.1/F	11.6/F
3/8	3/4	3.5	5	125	125	125	104	8215G1 ①	1	○	6.1/F	11.6/F
1/2	3/4	5.4	0	2	-	125	-	8040G22	13A	○	10.1/F	-
1/2	3/4	4.4	0	50	25	125	104	8215G20	2	○	10.1/F	11.6/F
1/2	3/4	4.8	5	125	125	125	104	8215G2 ①	1	○	6.1/F	11.6/F
3/4	3/4	9.5	0	2	-	125	-	8040G23	13B	○	10.1/F	-
3/4	3/4	5.1	0	50	25	125	104	8215G30	4	○	10.1/F	11.6/F
3/4	3/4	5.1	5	125	125	125	104	8215G3 ①	3	○	6.1/F	11.6/F
1	1 5/8	21	0	25	25	125	77	8215B50 ③	6	○	15.4/F	14.9/B
1 1/4	1 5/8	32	0	25	25	125	77	8215B60 ③	6	○	15.4/F	14.9/B
1 1/2	1 5/8	35	0	25	25	125	77	8215B70 ③	6	○	15.4/F	14.9/B
2	2 3/32	60	0	25	15	125	77	8215B80 ③	7	○	15.4/F	14.9/B
2 1/2	3	117	0	5	-	125	-	8215A90	8	○	28.2/F	-
3	3	138	0	5	-	125	-	8215A40	8	○	28.2/F	-
NORMALLY OPEN (Open when de-energized)												
3/8	3/4	3.2	0	125	125	125	104	8215G13	9	●	10.1/F	11.6/F
1/2	3/4	4	0	125	125	125	104	8215G23	9	●	10.1/F	11.6/F
3/4	3/4	4.6	0	125	125	125	104	8215G33	10	●	10.1/F	11.6/F
1	1 5/8	22	0	25	15	125	77	8215C53	12	●	15.4/F	14.9/B
1 1/4	1 5/8	33	0	25	15	125	77	8215C63	12	●	15.4/F	14.9/B
1 1/2	1 5/8	37	0	25	15	125	77	8215C73	13	●	15.4/F	14.9/B
2	2 3/32	58	0	25	15	125	77	8215C83	14	●	15.4/F	14.9/B
2 1/2	3	117	0	5	-	125	-	8215B93 ④	15	●	28.2/F	-
Notes: ① Do not use for Fuel Gas. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ③ FM Approved Process Control Valves. See Engineering Section (Approvals) for details. ④ Type 1 enclosure only. ⑤ ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.												

Specifications (Metric units)

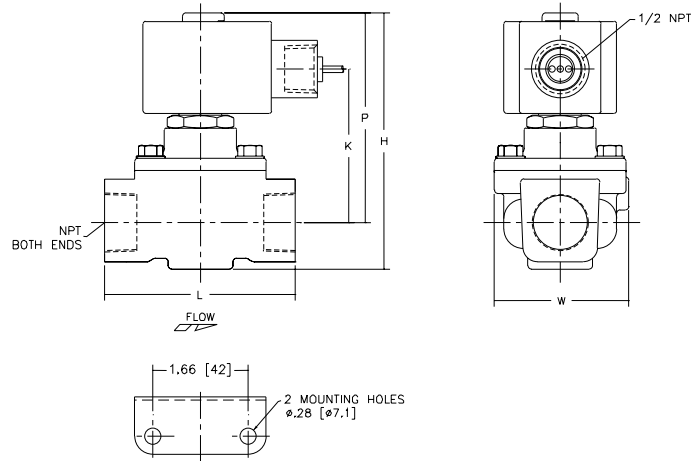
Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)			Max. Fluid Temp. °C		Aluminum Body			Watt Rating/ Class of Coil Insulation ②	
			Min.	Max. AC	Max. DC							
				Air-Fuel Gas	Air-Fuel Gas	AC	DC	Catalog Number	Constr. Ref. No	UL ⑤ Listing	AC	DC
NORMALLY CLOSED (Closed when de-energized)												
1/8	7.9	.86	0	1.0	-	51	-	8040H6	11	○	6.1/F	-
1/4	7.9	.94	0	1.0	-	51	-	8040H7	11	○	6.1/F	-
3/8	7.9	1.03	0	1.0	-	51	-	8040H8	11	○	6.1/F	-
3/8	19	2.91	0	3.4	1.7	51	40	8215G10	2	○	10.1/F	11.6/F
3/8	19	3.00	0.3	8.6	8.6	51	40	8215G1 ①	1	○	6.1/F	11.6/F
1/2	19	4.63	0	0.1	-	51	-	8040G22	13A	○	10.1/F	-
1/2	19	3.77	0	3.4	1.7	51	40	8215G20	2	○	10.1/F	11.6/F
1/2	19	4.11	0.3	8.6	8.6	51	40	8215G2 ①	1	○	6.1/F	11.6/F
3/4	19	8.14	0	0.1	-	51	-	8040G23	13B	○	10.1/F	-
3/4	19	4.37	0	3.4	1.7	51	40	8215G30	4	○	10.1/F	11.6/F
3/4	19	4.37	0.3	8.6	8.6	51	40	8215G3 ①	3	○	6.1/F	11.6/F
1	41	18.00	0	1.7	1.7	51	25	8215B50 ③	6	○	15.4/F	14.9/B
1 1/4	41	27.43	0	1.7	1.7	51	25	8215B60 ③	6	○	15.4/F	14.9/B
1 1/2	41	30.00	0	1.7	1.7	51	25	8215B70 ③	6	○	15.4/F	14.9/B
2	53	51.43	0	1.7	1.0	51	25	8215B80 ③	7	○	15.4/F	14.9/B
2 1/2	76	100.28	0	0.3	-	51	-	8215A90	8	○	28.2/F	-
3	76	118.28	0	0.3	-	51	-	8215A40	8	○	28.2/F	-
NORMALLY OPEN (Open when de-energized)												
3/8	19	2.74	0	8.6	8.6	51	40	8215G13	9	●	10.1/F	11.6/F
1/2	19	3.43	0	8.6	8.6	51	40	8215G23	9	●	10.1/F	11.6/F
3/4	19	3.94	0	8.6	8.6	51	40	8215G33	10	●	10.1/F	11.6/F
1	41	18.86	0	1.7	1.0	51	25	8215C53	12	●	15.4/F	14.9/B
1 1/4	41	28.28	0	1.7	1.0	51	25	8215C63	12	●	15.4/F	14.9/B
1 1/2	41	31.71	0	1.7	1.0	51	25	8215C73	13	●	15.4/F	14.9/B
2	53	49.71	0	1.7	1.0	51	25	8215C83	14	●	15.4/F	14.9/B
2 1/2	76	100.28	0	0.3	-	51	-	8215B93 ④	15	●	28.2/F	-
Notes: ① Do not use for Fuel Gas. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ③ FM Approved Process Control Valves. See Engineering Section (Approvals) for details. ④ Type 1 enclosure only. ⑤ ○ = Safety Shutoff Valve; ● = General Purpose Valve. Refer to Engineering Section (Approvals) for details.												

Dimensions: inches (mm)

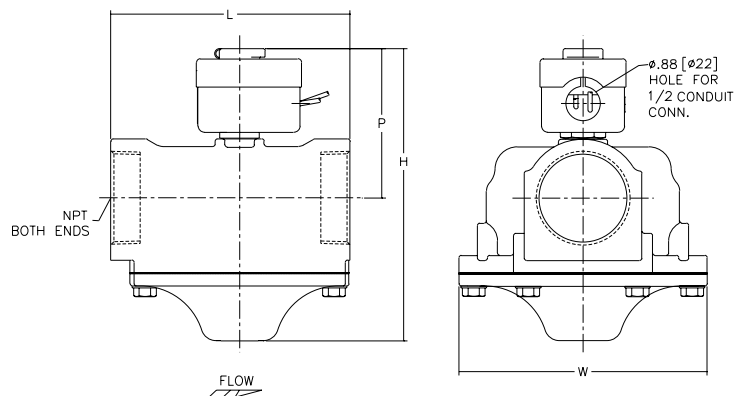
Constr. Ref. No.		H	K	L	P	W
1	ins.	3.42	2.00	2.75	2.87	2.46
	mm	87	51	70	73	63
2	ins.	4.02	2.49	2.75	3.46	2.46
	mm	102	63	70	88	63
3	ins.	3.87	2.19	3.31	3.05	2.33
	mm	98	56	84	77	59
4	ins.	4.46	2.68	3.31	3.64	2.33
	mm	113	68	84	92	59
6 ①	ins.	6.84	x	5.00	5.59	5.38
	mm	174	x	127	142	137
7 ①	ins.	7.47	x	6.09	5.94	6.31
	mm	190	x	155	151	160
8 ①	ins.	10.25	x	7.79	7.91	7.94
	mm	260	x	198	201	202
9	ins.	4.42	2.72	2.75	3.86	2.36
	mm	112	69	70	98	60
10	ins.	4.86	2.72	3.31	4.04	2.36
	mm	123	69	84	103	60
11	ins.	2.74	1.44	2.00	2.30	1.69
	mm	69	36	51	58	43
12	ins.	6.84	x	5.00	3.63	5.38
	mm	174	x	127	92	137
13	ins.	6.84	x	5.00	3.56	5.38
	mm	174	x	127	90	137
13A	ins.	4.05	2.46	2.75	3.44	2.42
	mm	103	63	70	87	62
13B	ins.	4.49	2.65	3.31	3.63	2.39
	mm	114	67	84	92	61
14 ②	ins.	7.44	x	6.09	3.81	6.31
	mm	189	x	155	97	160
15 ②	ins.	10.25	x	7.80	5.22	7.94
	mm	260	x	198	133	202

IMPORTANT: Valves may be mounted in any position except all DC constructions and those marked ①, which must be mounted with the solenoid vertical and upright. Constructions marked ② must be mounted with the solenoid vertical and upright or horizontal only.

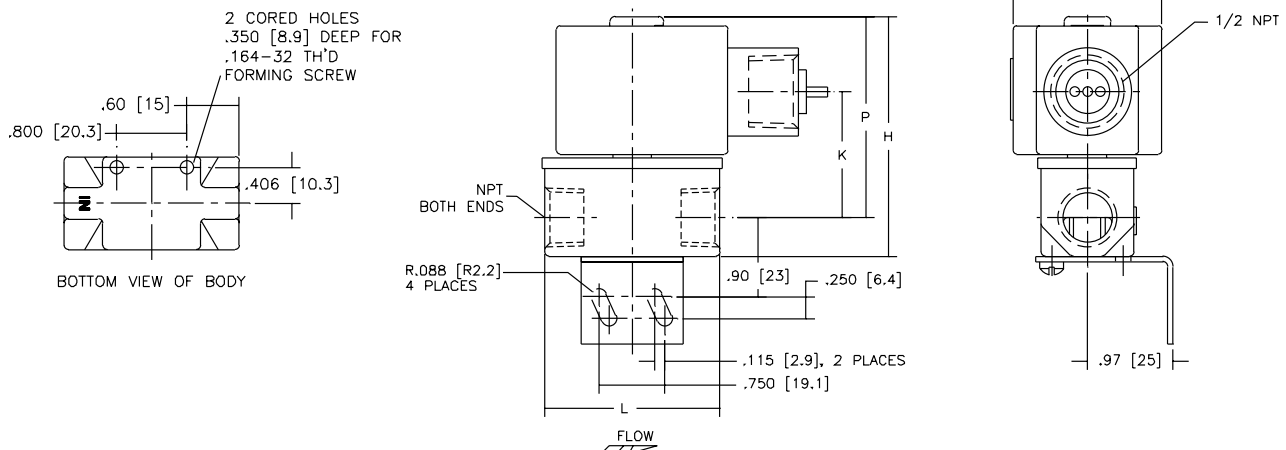
Constr. Refs. 1-4, 9, 10, 13a, 13b



Constr. Refs. 6, 7, 8, 12-15



Constr. Refs. 11



Features

- Wide range of pressure ratings, sizes, and resilient materials provide long service life and low internal leakage.
- High Flow Valves for liquid, corrosive, and air/inert gas service.
- Industrial applications include:
 - Car wash
 - Laundry equipment
 - Air compressors
 - Industrial water control
 - Pumps

Construction

Valve Parts in Contact with Fluids		
Body	Brass	304 Stainless Steel
Seals and Discs	NBR or PTFE	
Disc-Holder	PA	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Springs	302 Stainless Steel	
Shading Coil	Copper	Silver

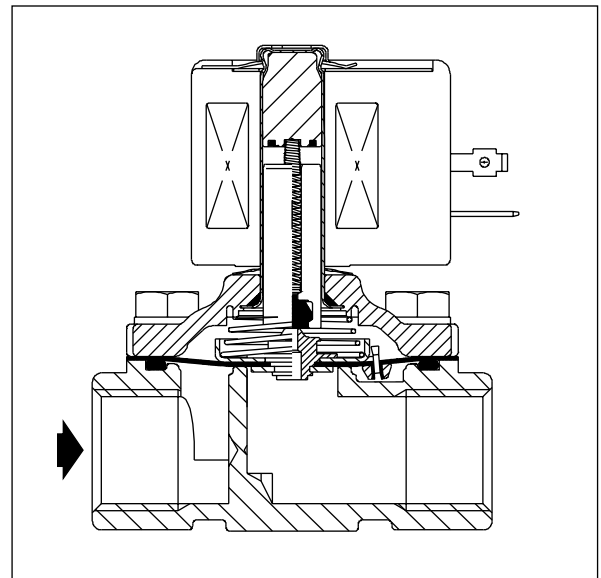
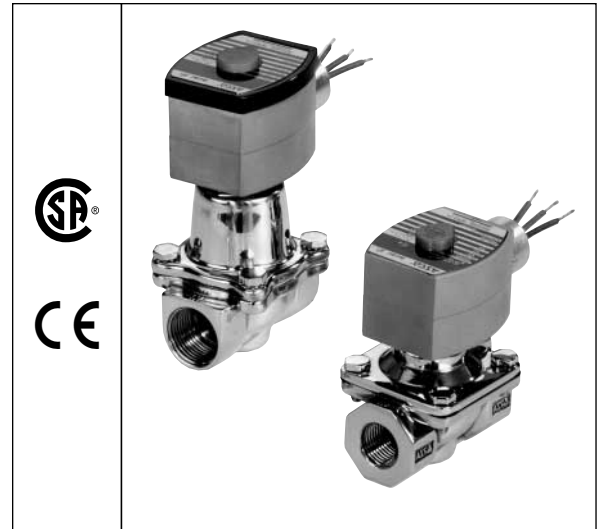
Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part Number			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	-	6.1	16	40	238210	-	238214	-
F	11.6	10.1	25	70	238610	238710	238614	238714
F	16.8	16.1	35	180	272610	97617	272614	97617
F	-	17.1	40	93	238610	-	238614	-
F	-	20	43	240	99257	-	99257	-
F	-	20.1	48	240	272610	-	272614	-
H	30.6	-	-	-	-	74073	-	74073
F	40.6	-	-	-	-	238910	-	238914

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 available when required.

Solenoid Enclosures

Standard: Red-Hat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; Red-Hat - Type I.
Optional: Red-Hat II - Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9; Red-Hat - Explosionproof and Watertight, Types 3, 4, 4X, 7, and 9.
 (To order, add prefix "EF" to catalog number, except Catalog Numbers 8210B57, 8210B58, and 8210B59. Valves not available with Explosionproof enclosures.)



Nominal Ambient Temperature Ranges:

Red-Hat II/
 Red-Hat AC: 32°F to 125°F (0°C to 52°C)
 Red-Hat II DC: 32°F to 104°F (0°C to 40°C)
 Red-Hat DC: 32°F to 77°F (0°C to 25°C)
 (104°F/40°C occasionally)

Approvals:

CSA certified. Red-Hat II meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Min.	Operating Pressure Differential (psi)						Max. Fluid Temp. °F		Brass Body			Stainless Steel Body			Watt Rating/Class of Coil Insulation ⑦	
				Max. AC			Max. DC			AC	DC	Catalog Number	Constr. Ref. No. ④	UL ⑤ Listing	Catalog Number	Constr. Ref. No. ④	UL ⑤ Listing	AC	DC
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU										
NORMALLY CLOSED (Closed when de-energized), NBR or PTFE ② Seating																			
3/8	3/8	1.5	①	150	125	-	40	40	-	180	150	8210G73 ③	1P	●	8210G36 ③	1P	●	6.1/F	11.6/F
3/8	5/8	3	0	150	150	-	40	40	-	180	150	8210G93	5D	○	-	-	-	10.1/F	11.6/F
3/8	5/8	3	5	200	150	135	125	100	100	180	150	8210G1	6D	○	-	-	-	6.1/F	11.6/F
3/8	5/8	3	5	300	300	300	-	-	-	175	-	8210G6	5D	○	-	-	-	17.1/F	-
1/2	7/16	2.2	①	150	125	-	40	40	-	180	150	8210G15 ③	2P	●	8210G37 ③	2P	●	6.1/F	11.6/F
1/2	5/8	4	0	150	150	-	40	40	-	180	150	8210G94	5D	○	-	-	-	10.1/F	11.6/F
1/2	5/8	4	0	150	150	125	40	40	-	175	150	-	-	-	8210G87	7D	●	17.1/F	11.6/F
1/2	5/8	4	5	200	150	135	125	100	100	180	150	8210G2	6D	○	-	-	-	6.1/F	11.6/F
1/2	5/8	4	5	300	300	300	-	-	-	175	-	8210G7	5D	○	-	-	-	17.1/F	-
1/2	5/8	4	5	300	300	-	300	300	-	180	125	8210G227	5D	○	-	-	-	17.1/F	40.6/H
3/4	5/8	4.5	0	150	150	125	40	40	-	175	150	-	-	-	8210G88	7D	●	17.1/F	11.6/F
3/4	3/4	5	5	125	125	125	100	90	75	180	150	8210G9	9D	○	-	-	-	6.1/F	11.6/F
3/4	3/4	5	0	150	150	-	40	40	-	180	150	8210G95	8D	○	-	-	-	10.1/F	11.6/F
3/4	3/4	6.5	5	250	150	100	125	125	125	180	150	8210G3	11D	○	-	-	-	6.1/F	11.6/F
3/4	3/4	6	0	-	-	-	200	180	180	-	77	8210B26 ② ‡	10P	-	-	-	-	-	30.6/H
3/4	3/4	6	0	350	300	200	-	-	-	200	-	8210G26 ② ‡	40P	●	-	-	-	16.1F	-
1	1	13	0	-	-	-	100	100	80	-	77	8210B54 ‡	31D	-	8210D89	15D	-	-	30.6/H
1	1	13	0	150	125	125	-	-	-	180	-	8210G54	41D	●	8210G89	45D	●	16.1/F	-
1	1	13	5	150	150	100	125	125	125	180	150	8210G4	12D	○	-	-	-	6.1/F	11.6/F
1	1	13.5	0	300	225	115	-	-	-	200	-	8210G27 ‡	42P	●	-	-	-	20.1/F	-
1	1	13.5	10	300	300	300	-	-	-	175	-	8210G78	3P	-	-	-	-	17.1/F	-
1 1/4	1 1/8	15	0	-	-	-	100	100	80	-	77	8210B55 ‡	32D	-	-	-	-	-	30.6/H
1 1/4	1 1/8	15	0	150	125	125	-	-	-	180	-	8210G55	43D	●	-	-	-	16.1/F	-
1 1/4	1 1/8	15	5	150	150	100	125	125	125	180	150	8210G8	16D	○	-	-	-	6.1/F	11.6/F
1 1/2	1 1/4	22.5	0	-	-	-	100	100	80	-	77	8210B56 ‡	33D	-	-	-	-	-	30.6/H
1 1/2	1 1/4	22.5	0	150	125	125	-	-	-	180	-	8210G56 ‡	44D	●	-	-	-	16.1/F	-
1 1/2	1 1/4	22.5	5	150	150	100	125	125	125	180	150	8210G22	18D	●	-	-	-	6.1/F	11.6/F
2	1 3/4	43	5	150	125	90	50	50	50	180	150	8210G100	20P	●	-	-	-	6.1/F	11.6/F
2 1/2	1 3/4	45	5	150	125	90	50	50	50	180	150	8210G101	21P	●	-	-	-	6.1/F	11.6/F
NORMALLY OPEN (Open when de-energized), NBR Seating (PA Disc-Holder, except as noted)																			
3/8	5/8	3	0	150	150	125	125	125	80	180	150	8210G33	23D	●	-	-	-	10.1/F	11.6/F
3/8	5/8	3	5	250	200	200	250	200	200	180	180	8210G11 ⑧ ⑨	39D	●	-	-	-	10.1/F	11.6/F
1/2	5/8	4	0	150	150	125	125	125	80	180	150	8210G34	23D	●	-	-	-	10.1/F	11.6/F
1/2	5/8	3	0	150	150	100	125	125	80	180	150	-	-	-	8210G30	37D	●	10.1/F	11.6/F
1/2	5/8	4	5	250	200	200	250	200	200	180	180	8210G12 ⑧ ⑨	39D	●	-	-	-	10.1/F	11.6/F
3/4	3/4	5.5	0	150	150	125	125	125	80	180	150	8210G35	25D	●	-	-	-	10.1/F	11.6/F
3/4	5/8	3	0	150	150	100	125	125	80	180	150	-	-	-	8210G38	38D	●	10.1/F	11.6/F
3/4	3/4	6.5	5	-	-	-	250	200	200	-	180	8210C13	24D	●	-	-	-	-	16.8/F
3/4	3/4	6.5	5	250	200	200	-	-	-	180	-	8210G13	46D	●	-	-	-	16.1/F	-
1	1	13	0	125	125	125	-	-	-	180	-	8210B57 ⑥ ⑩	34D	●	-	-	-	20/F	-
1	1	13	5	-	-	-	125	125	125	-	180	8210D14	26D	●	-	-	-	-	16.8/F
1	1	13	5	150	150	125	-	-	-	180	-	8210G14	47D	●	-	-	-	16.1/F	-
1 1/4	1 1/8	15	0	125	125	125	-	-	-	180	-	8210B58 ⑥ ⑩	35D	●	-	-	-	20/F	-
1 1/4	1 1/8	15	5	-	-	-	125	125	125	-	180	8210D18	28D	●	-	-	-	-	16.8/F
1 1/4	1 1/8	15	5	150	150	125	-	-	-	180	-	8210G18	48D	●	-	-	-	16.1/F	-
1 1/2	1 1/4	22.5	0	125	125	125	-	-	-	180	-	8210B59 ⑥ ⑩	36D	●	-	-	-	20/F	-
1 1/2	1 1/4	22.5	5	-	-	-	125	125	125	-	180	8210D32	29D	●	-	-	-	-	16.8/F
1 1/2	1 1/4	22.5	5	150	150	125	-	-	-	180	-	8210G32	49D	●	-	-	-	16.1/F	-
2	1 3/4	43	5	-	-	-	125	125	125	-	150	8210I03	30P	●	-	-	-	-	16.8/F
2	1 3/4	43	5	125	125	125	-	-	-	180	-	8210G103	50P	●	-	-	-	16.1/F	-
2 1/2	1 3/4	45	5	-	-	-	125	125	125	-	150	8210I04	27P	●	-	-	-	-	16.8/F
2 1/2	1 3/4	45	5	125	125	125	-	-	-	180	-	8210G104	51P	●	-	-	-	16.1/F	-
Notes: ① 5 psi on Air; 1 psi on Water. ② Valve provided with PTFE main disc. ③ Valve includes Ultem (G.E. trademark) piston. ④ Letter "D" denotes diaphragm construction; "P" denotes piston construction. ⑤ ○ Safety Shutoff Valve; ● General Purpose Valve. Refer to Engineering Section (Approvals) for details.											⑥ Valves not available with Explosionproof enclosures. ⑦ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ⑧ AC construction also has PA seating. ⑨ No disc-holder. ⑩ Stainless Steel disc-holder. ‡ Must have solenoid mounted vertical and upright.								

Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)							Max.Fluid Temp. °C		Brass Body			Stainless Steel Body			Watt Rating/ Class of Coil Insulation ⑦		
			Min.	Max. AC			Max. DC			AC	DC	Catalog Number	Constr. Ref. No. ④	UL ⑤ Listing	Catalog Number	Constr. Ref. No. ④	UL ⑤ Listing	AC	DC	
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU											
NORMALLY CLOSED (Closed when de-energized), NBR or PTFE ② Seating																				
3/8	10	1.29	①	10	9	-	3	3	-	81	65	8210G73 ③	1P	●	8210G36 ③	1P	●	6.1/F	11.6/F	
3/8	16	2.57	0	10	10	-	3	3	-	81	65	8210G93	5D	○	-	-	-	10.1/F	11.6/F	
3/8	16	2.57	0.3	14	10	9	9	7	7	81	65	8210G1	6D	○	-	-	-	6.1/F	11.6/F	
3/8	16	2.57	0.3	21	21	21	-	-	-	79	-	8210G6	5D	○	-	-	-	17.1/F	-	
1/2	11	1.89	①	10	9	-	3	3	-	81	65	8210G15 ③	2P	●	8210G37 ③	2P	●	6.1/F	11.6/F	
1/2	16	3.43	0	10	10	-	3	3	-	81	65	8210G94	5D	○	-	-	-	10.1/F	11.6/F	
1/2	16	3.43	0	10	10	9	3	3	-	79	65	-	-	-	8210G87	7D	●	17.1/F	11.6/F	
1/2	16	3.43	0.3	14	10	9	9	7	7	81	65	8210G2	6D	○	-	-	-	6.1/F	11.6/F	
1/2	16	3.43	0.3	21	21	21	-	-	-	79	-	8210G7	5D	○	-	-	-	17.1/F	-	
1/2	16	3.43	0.3	21	21	-	21	21	-	81	52	8210G227	5D	○	-	-	-	17.1/F	40.6F	
3/4	16	3.86	0	10	10	9	3	3	-	79	65	-	-	-	8210G88	7D	●	17.1/F	11.6/F	
3/4	19	4.29	0.3	9	9	9	7	6	5	81	65	8210G9	9D	○	-	-	-	6.1/F	11.6/F	
3/4	19	4.29	0	10	10	-	3	3	-	81	65	8210G95	8D	○	-	-	-	10.1/F	11.6/F	
3/4	19	5.57	0.3	17	10	7	9	9	9	81	65	8210G3	11D	○	-	-	-	6.1/F	11.6/F	
3/4	19	5.14	0	-	-	-	14	12	12	-	25	8210B26 ② ‡	10P	-	-	-	-	-	30.6/H	
3/4	19	5.14	0	24	21	14	-	-	-	92	-	8210G26 ② ‡	40P	●	-	-	-	16.1F	-	
1	25	11.14	0	-	-	-	7	7	6	-	25	8210B54 ‡	31D	-	8210D89	15D	-	-	30.6/H	
1	25	11.14	0	10	9	9	-	-	-	81	-	8210G54	41D	●	8210G89	45D	●	16.1/F	-	
1	25	11.14	0.3	10	10	7	9	9	9	81	65	8210G4	12D	○	-	-	-	6.1/F	11.6/F	
1	25	11.57	0	21	16	8	-	-	-	92	-	8210G27 ‡	42P	●	-	-	-	20.1/F	-	
1	25	11.57	0.7	21	21	21	-	-	-	79	-	8210G78	3P	-	-	-	-	17.1/F	-	
1 1/4	29	12.86	0	-	-	-	7	7	6	-	25	8210B55 ‡	32D	-	-	-	-	-	30.6/H	
1 1/4	29	12.86	0	10	9	9	-	-	-	81	-	8210G55	43D	●	-	-	-	16.1/F	-	
1 1/4	29	12.86	0.3	10	10	7	9	9	9	81	65	8210G8	16D	○	-	-	-	6.1/F	11.6/F	
1 1/2	32	19.29	0	-	-	-	7	7	6	-	25	8210B56 ‡	33D	-	-	-	-	-	30.6/H	
1 1/2	32	19.29	0	10	9	9	-	-	-	81	-	8210G56 ‡	44D	●	-	-	-	16.1/F	-	
1 1/2	32	19.29	0.3	10	10	7	9	9	9	81	65	8210G22	18D	●	-	-	-	6.1/F	11.6/F	
2	44	36.86	0.3	10	9	6	3	3	3	81	65	8210G100	20P	●	-	-	-	6.1/F	11.6/F	
2 1/2	44	38.57	0.3	10	9	6	3	3	3	81	65	8210G101	21P	●	-	-	-	6.1/F	11.6/F	
NORMALLY OPEN (Open when de-energized), NBR Seating (PA Disc-Holder, except as noted)																				
3/8	16	2.57	0.0	10	10	9	9	9	6	81	65	8210G33	23D	●	-	-	-	10.1/F	11.6/F	
3/8	16	2.57	0.3	17	14	14	17	14	14	81	81	8210G11 ⑧ ⑨	39D	●	-	-	-	10.1/F	11.6/F	
1/2	16	3.43	0	10	10	9	9	9	6	81	65	8210G34	23D	●	-	-	-	10.1/F	11.6/F	
1/2	16	2.57	0	10	10	7	9	9	6	81	65	-	-	-	8210G30	37D	●	10.1/F	11.6/F	
1/2	16	3.43	0.3	17	14	14	17	14	14	81	81	8210G12 ⑧ ⑨	39D	●	-	-	-	10.1/F	11.6/F	
3/4	19	4.71	0	10	10	9	9	9	6	81	65	8210G35	25D	●	-	-	-	10.1/F	11.6/F	
3/4	16	2.57	0	10	10	7	9	9	6	81	65	-	-	-	8210G38	38D	●	10.1/F	11.6/F	
3/4	19	5.57	0.3	-	-	-	17	14	14	-	81	8210C13	24D	●	-	-	-	-	16.8/F	
3/4	19	5.57	0.3	17	14	14	-	-	-	81	-	8210G13	46D	●	-	-	-	16.1/F	-	
1	25	11.14	0	9	9	9	-	-	-	81	-	8210B57 ⑥ ⑩	34D	●	-	-	-	20/F	-	
1	25	11.14	0.3	-	-	-	9	9	9	-	81	8210D14	26D	●	-	-	-	-	16.8/F	
1	25	11.14	0.3	10	10	9	-	-	-	81	-	8210G14	47D	●	-	-	-	16.1/F	-	
1 1/4	29	12.86	0	9	9	9	-	-	-	81	-	8210B58 ⑥ ⑩	35D	●	-	-	-	20/F	-	
1 1/4	29	12.86	0.3	-	-	-	9	9	9	-	81	8210D18	28D	●	-	-	-	-	16.8/F	
1 1/4	29	12.86	0.3	10	10	9	-	-	-	81	-	8210G18	48D	●	-	-	-	16.1/F	-	
1 1/2	32	19.29	0	9	9	9	-	-	-	81	-	8210B59 ⑥ ⑩	36D	●	-	-	-	20/F	-	
1 1/2	32	19.29	0.3	-	-	-	9	9	9	-	81	8210D32	29D	●	-	-	-	-	16.8/F	
1 1/2	32	19.29	0.3	10	10	9	-	-	-	81	-	8210G32	49D	●	-	-	-	16.1/F	-	
2	44	36.86	0.3	-	-	-	9	9	9	-	65	8210I03	30P	●	-	-	-	-	16.8/F	
2	44	36.86	0.3	9	9	9	-	-	-	81	-	8210G103	50P	●	-	-	-	16.1/F	-	
2 1/2	44	38.57	0.3	-	-	-	9	9	9	-	65	8210I04	27P	●	-	-	-	-	16.8/F	
2 1/2	44	38.57	0.3	9	9	9	-	-	-	81	-	8210G104	51P	●	-	-	-	16.1/F	-	
Notes: ① 0.3 bar on Air; 0.0 bar on Water. ② Valve provided with PTFE main disc. ③ Valve includes Uitem (G.E. trademark) piston. ④ Letter "D" denotes diaphragm construction; "P" denotes piston construction. ⑤ ○ Safety Shutoff Valve; ● General Purpose Valve. Refer to Engineering Section (Approvals) for details.											⑥ Valves not available with Explosionproof enclosures. ⑦ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts. ⑧ AC construction also has PA seating. ⑨ No disc-holder. ⑩ Stainless Steel disc-holder. ‡ Must have solenoid mounted vertical and upright.									

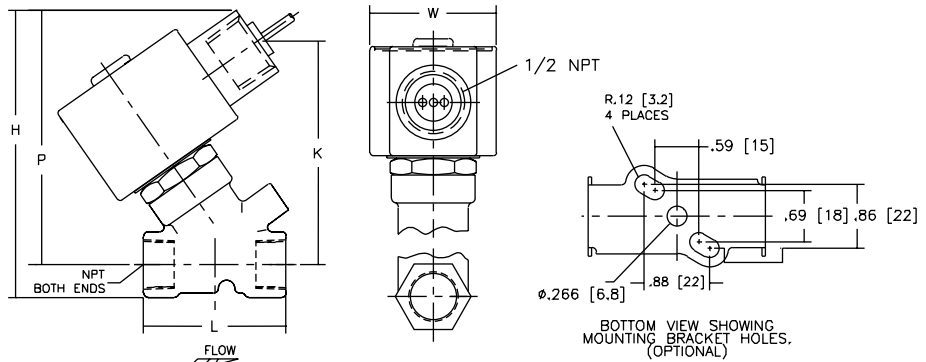
Dimensions: inches (mm)

Constr. Ref. No.		H	K	L	P	W
1*	ins.	3.85	3.00	1.91	3.41	1.69
	mm	98	76	49	87	43
2*	ins.	4.17	3.25	2.28	3.63	1.69
	mm	106	83	58	92	43
3	ins.	4.44	3.22	3.75	4.19	5.81
	mm	113	82	95	106	147
5	ins.	3.84	2.31	2.75	3.28	2.28
	mm	98	59	70	83	58
6*	ins.	3.38	1.94	2.75	2.80	2.28
	mm	86	49	70	71	58
7	ins.	4.19	2.50	2.81	3.47	2.39
	mm	106	64	71	88	61
8	ins.	4.13	2.47	2.81	3.44	2.29
	mm	105	63	71	87	58
9*	ins.	3.66	2.10	2.81	2.96	2.28
	mm	93	53	71	75	58
10*①	ins.	5.25	X	2.81	4.59	2.31
	mm	133	X	71	117	59
11*	ins.	4.16	2.66	3.84	3.52	2.75
	mm	106	68	98	89	70
15*	ins.	5.34	X	3.75	4.47	3.84
	mm	136	X	95	114	98
20*	ins.	7.33	3.71	5.06	4.57	4.87
	mm	186	94	129	116	124
21*	ins.	7.33	3.71	5.50	4.57	4.87
	mm	186	94	140	116	124
23	ins.	4.35	2.65	2.75	3.79	2.28
	mm	110	67	70	96	58
24	ins.	5.06	X	3.78	4.44	2.75
	mm	129	X	96	113	70
25	ins.	4.64	2.81	2.81	3.94	2.28
	mm	118	71	71	100	58
26	ins.	6.53	X	3.75	4.91	3.19
	mm	166	X	95	125	81
27	ins.	8.22	X	5.50	5.47	4.87
	mm	209	X	140	139	124
28	ins.	6.53	X	3.66	4.91	3.19
	mm	166	X	93	125	81
29	ins.	7.03	X	4.38	5.06	4.40
	mm	179	X	111	129	112

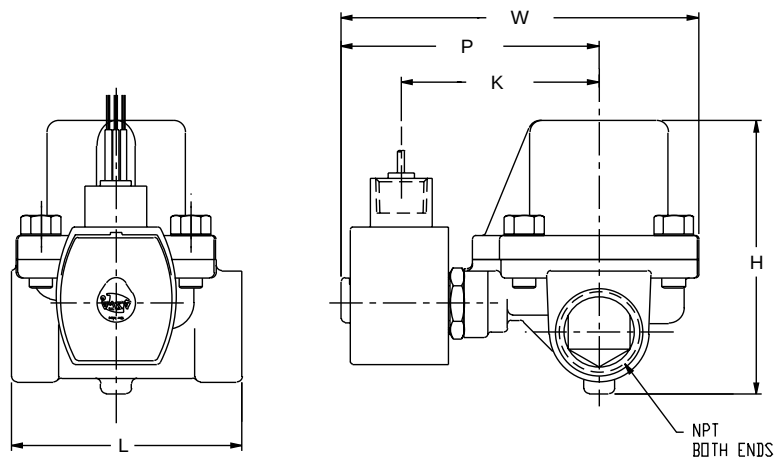
① Valves must be mounted with solenoid vertical and upright.

* DC dimensions slightly larger.

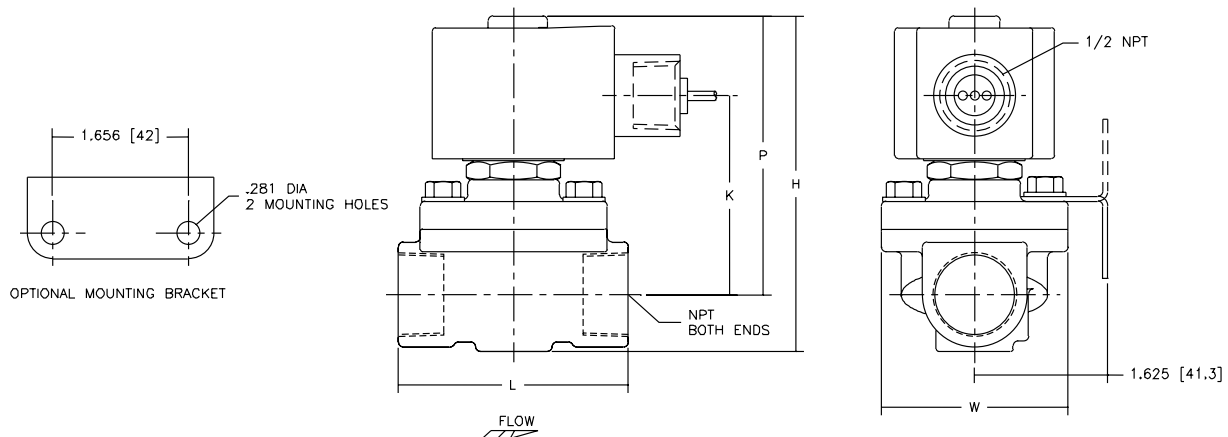
Constr. Refs. 1, 2



Constr. Ref. 3



Constr. Refs. 5-9, 11, 20, 21, 23, 25, 37, 38

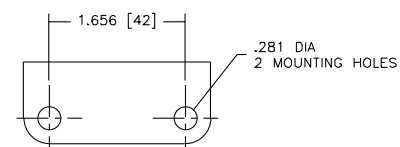
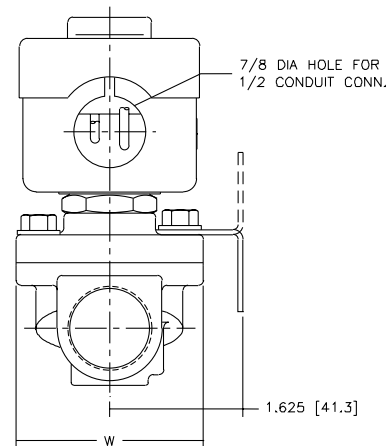
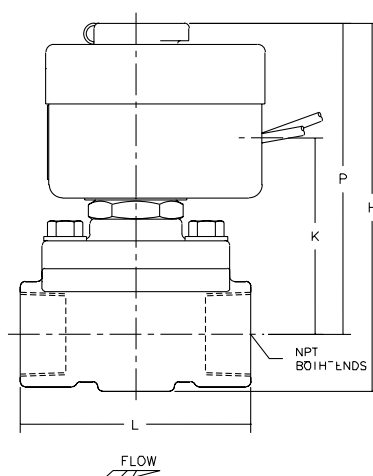


Dimensions: inches (mm)

30	ins.	8.22	X	5.06	5.47	4.87
	mm	209	X	129	139	124
31	ins.	5.25	X	3.75	4.44	3.25
	mm	133	X	95	113	83
32	ins.	5.69	X	3.66	4.69	3.25
	mm	145	X	93	119	83
33	ins.	6.06	X	4.38	4.94	3.91
	mm	154	X	111	125	99
34	ins.	6.91	X	3.75	6.09	3.25
	mm	176	X	95	155	83
35	ins.	7.34	X	3.66	6.34	3.25
	mm	186	X	93	161	83
36	ins.	7.66	X	4.38	6.56	3.91
	mm	195	X	111	167	99
37	ins.	4.61	2.75	2.81	3.89	2.39
	mm	117	70	71	99	61
38	ins.	4.61	2.75	2.81	3.89	2.39
	mm	117	70	71	99	61
39	ins.	5.42	2.31	2.75	4.86	3.80
	mm	138	59	70	123	97
40	ins.	5.20	3.29	2.81	4.50	2.28
	mm	132	83	71	114	58
41	ins.	5.13	3.10	3.75	4.32	3.25
	mm	130	79	95	110	83
42	ins.	6.43	4.40	3.93	5.62	3.25
	mm	163	112	100	143	83
43	ins.	5.57	3.35	3.66	4.57	3.25
	mm	142	85	93	116	83
44	ins.	5.90	3.57	4.38	4.79	3.91
	mm	150	91	111	122	99
45	ins.	5.26	3.17	3.75	4.38	3.84
	mm	134	81	95	111	98
46	ins.	4.95	3.10	3.84	4.31	2.75
	mm	126	79	98	110	70
47	ins.	6.43	3.59	3.75	4.81	3.52
	mm	163	91	95	122	90
48	ins.	6.43	3.59	3.66	4.81	3.73
	mm	163	91	93	122	95
49	ins.	6.91	3.75	4.38	4.96	4.40
	mm	176	95	111	126	112
50	ins.	8.13	4.15	5.06	5.37	4.87
	mm	207	105	129	136	124
51	ins.	8.13	4.15	5.50	5.37	5.18
	mm	207	105	140	136	132

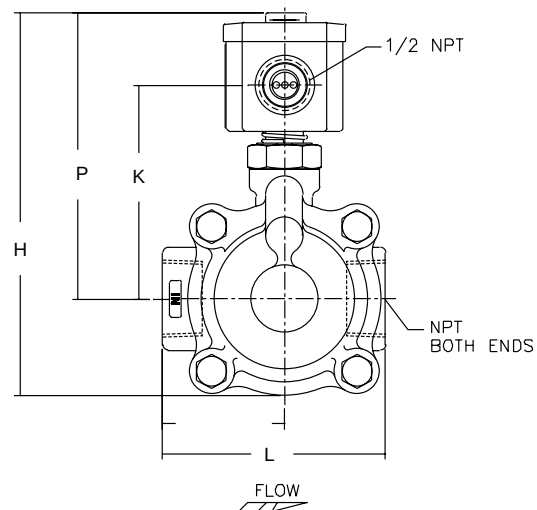
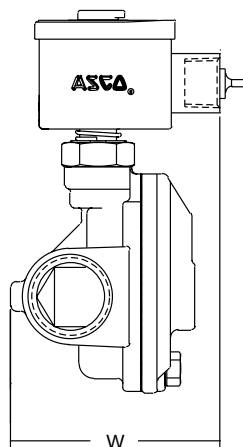
IMPORTANT: Valves may be mounted in any position, except as noted in specifications table.

Constr. Refs. 10, 15, 24, 26-36



OPTIONAL MOUNTING BRACKET

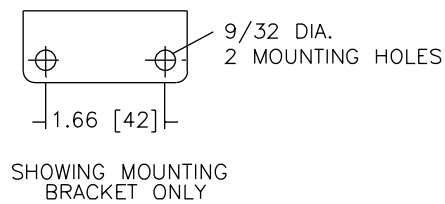
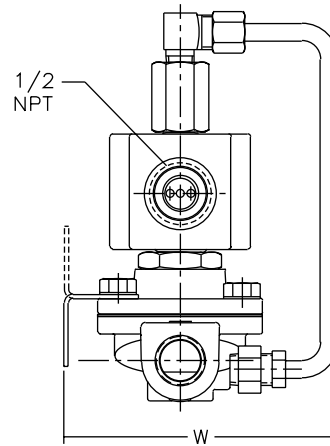
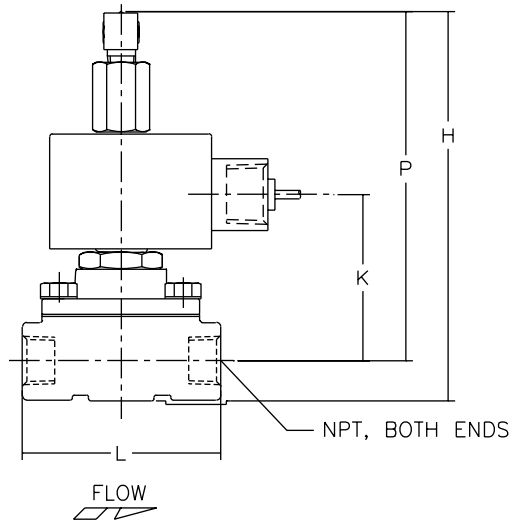
Constr. Refs. 12, 16, 18



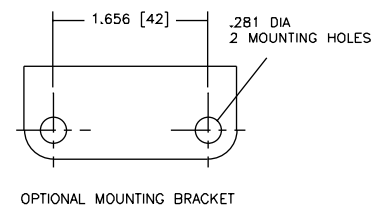
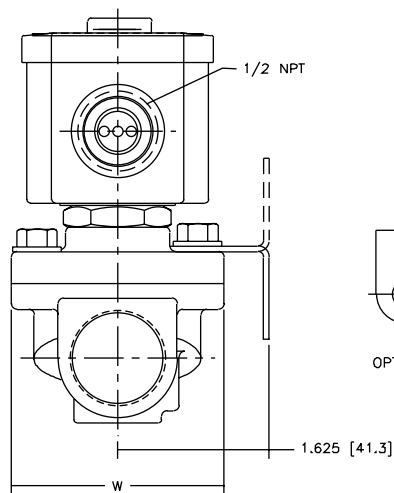
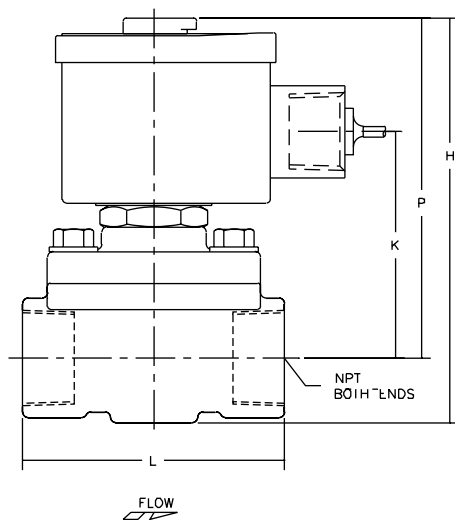
Note: Valve must be mounted with solenoid vertical and upright.

Dimensions: inches (mm)

Constr. Refs. 39



Constr. Refs. 40-51



Features

- Pilot Operated, Normally Open or Normally Closed.
- Snubber slows disc closing speed to protect system against water hammer damage more effectively than other techniques.
- Pressure spike due to water hammer reduced to a point eliminating the need for suppressors or other controls in most water systems.
- Fluid Controls Institute Inc. evaluations have classified these valves:

Pipe Sizes

3/8", 1/2", 3/4"

1", 1 1/4", 1 1/2", 2", 2 1/2"

FCI-82-1 Class

CC

BB

Construction

Valve Parts in Contact with Fluids	
Body	Brass
Disc	NBR
Seals	PTFE & NBR
Core Tube	305 Stainless Steel
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Piston	Stainless Steel or Brass
Shading Coil	Copper

Electrical

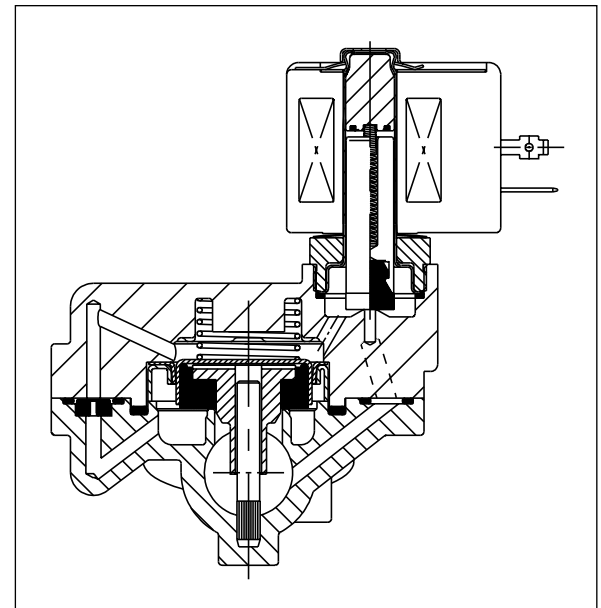
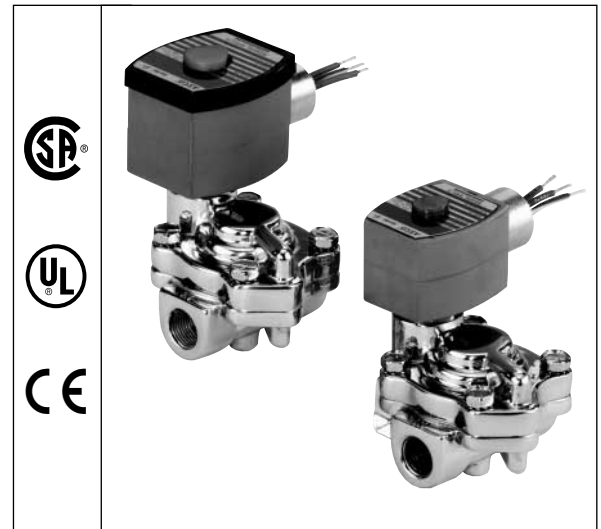
Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	11.6	6.1	16	30	238210	238710	238214	238714
F	16.8	16.1	35	95	272610	97617	272614	97617
F	22.6	-	-	-	-	238710	-	238714

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.

Solenoid Enclosures

Standard: Red-Hat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; Red-Hat - Type I.

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



Nominal Ambient Temperature Ranges:

Red-Hat II/
 Red-Hat AC: 32°F to 125°F (0°C to 52°C)

Red-Hat II DC: 32°F to 104°F (0°C to 40°C)

Red-Hat DC: 32°F to 77°F (0°C to 25°C)
 (104°F/40°C occasionally)

Approvals:

CSA certified. UL listed, General Purpose Valves.
 Red-Hat II meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)			Maximum Fluid Temp. °F		Brass Body		Watt Rating/ Class of Coil Insulation ③	
			Min. ①	Max. AC	Max. DC	AC	DC			Catalog Number	Constr. Ref. No.
				Water ②	Water ②						
NORMALLY CLOSED (Closed when de-energized)											
3/8	9/16	3	5	150	125	180	150	8221G1	1	6.1/F	11.6/F
1/2	9/16	3.5	5	150	125	180	150	8221G3	1	6.1/F	11.6/F
3/4	3/4	5.5	5	150	125	180	150	8221G5	2	6.1/F	11.6/F
1	1	11.5	5	150	125	180	150	8221G7	5	6.1/F	11.6/F
1 1/4	1 1/8	13	5	150	125	180	150	8221G9	6	6.1/F	11.6/F
1 1/2	1 1/4	24	5	150	125	180	150	8221G11	7	6.1/F	11.6/F
2	1 3/4	36	5	150	125	180	150	8221G13	11	6.1/F	22.6/F
2 1/2	1 3/4	38	5	150	125	180	150	8221G15	12	6.1/F	22.6/F
NORMALLY OPEN (Open when de-energized)											
3/8	9/16	3	5	-	125	-	150	822121	15	-	16.8/F
3/8	9/16	3	5	150	-	180	-	8221G21	3	16.1/F	-
1/2	9/16	3.5	5	-	125	-	150	822123	15	-	16.8/F
1/2	9/16	3.5	5	150	-	180	-	8221G23	3	16.1/F	-
3/4	3/4	5.5	5	-	125	-	150	822125	16	-	16.8/F
3/4	3/4	5.5	5	150	-	180	-	8221G25	4	16.1/F	-
1	1	11.5	5	-	125	-	150	822127	17	-	16.8/F
1	1	11.5	5	150	-	180	-	8221G27	8	16.1/F	-
1 1/4	1 1/8	13	5	-	125	-	150	822129	18	-	16.8/F
1 1/4	1 1/8	13	5	150	-	180	-	8221G29	9	16.1/F	-
1 1/2	1 1/4	24	5	-	125	-	150	822131	19	-	16.8/F
1 1/2	1 1/4	24	5	150	-	180	-	8221G31	10	16.1/F	-
2	1 3/4	36	5	-	125	-	150	822133	20	-	16.8/F
2	1 3/4	36	5	150	-	180	-	8221G33	13	16.1/F	-
2 1/2	1 3/4	38	5	-	125	-	150	822135	21	-	16.8/F
2 1/2	1 3/4	38	5	150	-	180	-	8221G35	14	16.1/F	
Notes: ① Valves require a 5 psi Minimum Pressure Differential to open. Once open, they remain open with 3 psi differential pressure. ② Refer to Steam/Hot Water Valve Series for Hot Water constructions. ③ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.											

Specifications (Metric units)

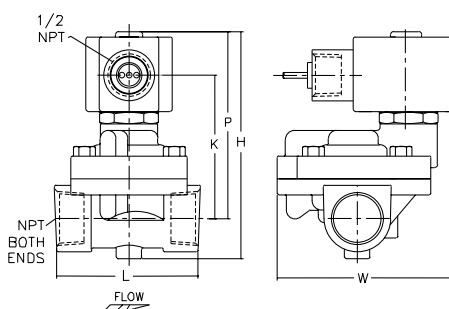
Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)			Maximum Fluid Temp. °C		Brass Body		Watt Rating/ Class of Coil Insulation ③	
			Min. ①	Max. AC	Max. DC	AC	DC			Catalog Number	Constr. Ref. No.
				Water ②	Water ②						
NORMALLY CLOSED (Closed when de-energized)											
3/8	14	2.57	0.3	10	9	81	65	8221G1	1	6.1/F	11.6/F
1/2	14	3.00	0.3	10	9	81	65	8221G3	1	6.1/F	11.6/F
3/4	19	4.71	0.3	10	9	81	65	8221G5	2	6.1/F	11.6/F
1	25	9.86	0.3	10	9	81	65	8221G7	5	6.1/F	11.6/F
1 1/4	29	11.14	0.3	10	9	81	65	8221G9	6	6.1/F	11.6/F
1 1/2	32	20.57	0.3	10	9	81	65	8221G11	7	6.1/F	11.6/F
2	44	30.86	0.3	10	9	81	65	8221G13	11	6.1/F	22.6/F
2 1/2	44	32.57	0.3	10	9	81	65	8221G15	12	6.1/F	22.6/F
NORMALLY OPEN (Open when de-energized)											
3/8	14	2.57	0.3	-	9	-	65	822121	15	-	16.8/F
3/8	14	2.57	0.3	10	-	81	-	8221G21	3	16.1/F	-
1/2	14	3.00	0.3	-	9	-	65	822123	15	-	16.8/F
1/2	14	3.00	0.3	10	-	81	-	8221G23	3	16.1/F	-
3/4	19	4.71	0.3	-	9	-	65	822125	16	-	16.8/F
3/4	19	4.71	0.3	10	-	81	-	8221G25	4	16.1/F	-
1	25	9.86	0.3	-	9	-	65	822127	17	-	16.8/F
1	25	9.86	0.3	10	-	81	-	8221G27	8	16.1/F	-
1 1/4	29	11.14	0.3	-	9	-	65	822129	18	-	16.8/F
1 1/4	29	11.14	0.3	10	-	81	-	8221G29	9	16.1/F	-
1 1/2	32	20.57	0.3	-	9	-	65	822131	19	-	16.8/F
1 1/2	32	20.57	0.3	10	-	81	-	8221G31	10	16.1/F	-
2	44	30.86	0.3	-	9	-	65	822133	20	-	16.8/F
2	44	30.86	0.3	10	-	81	-	8221G33	13	16.1/F	-
2 1/2	44	32.57	0.3	-	9	-	65	822135	21	-	16.8/F
2 1/2	44	32.57	0.3	10	-	81	-	8221G35	14	16.1/F	-
Notes: ① Valves require a 0.3 bar Minimum Pressure Differential to open. Once open, they remain open with 0.2 bar differential pressure. ② Refer to Steam/Hot Water Valve Series for Hot Water constructions. ③ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.											

Dimensions: inches (mm)

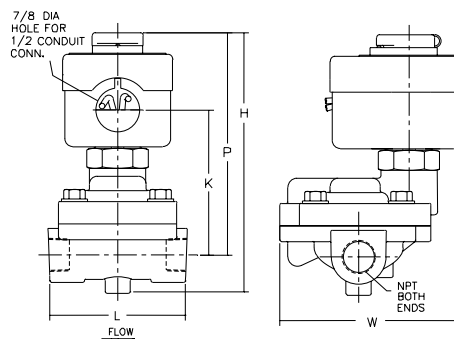
Constr. Ref. No.		H	K	L	P	W
1	ins.	4.34	2.69	2.72	3.59	3.41
	mm	110	68	69	91	87
2	ins.	4.53	2.69	2.78	3.75	3.41
	mm	115	68	71	95	87
3	ins.	5.22	3.14	2.72	4.47	3.69
	mm	133	80	69	114	94
4	ins.	5.41	3.30	2.78	4.62	3.69
	mm	137	84	71	117	94
5	ins.	5.62	3.15	3.75	4.03	3.16
	mm	143	80	95	102	80
6	ins.	5.56	3.15	3.66	4.03	3.56
	mm	141	80	93	102	90
7	ins.	6.12	3.30	4.38	4.19	4.12
	mm	156	84	111	106	105
8	ins.	6.53	3.59	3.75	4.91	3.16
	mm	166	91	95	125	80
9	ins.	6.47	3.59	3.56	4.91	3.56
	mm	164	91	93	125	90
10	ins.	7.03	3.74	4.38	5.06	4.12
	mm	179	95	111	129	105
11	ins.	7.38	3.71	5.06	4.59	4.72
	mm	188	94	129	117	120
12	ins.	7.38	3.71	5.50	4.59	5.19
	mm	188	94	140	117	132
13	ins.	8.22	4.15	5.06	5.47	4.72
	mm	209	105	129	139	120
14	ins.	8.22	4.15	5.50	5.47	5.19
	mm	209	105	140	139	132
15	ins.	5.22	X	2.72	4.47	3.69
	mm	133	X	69	114	94
16	ins.	5.41	X	2.78	4.62	3.69
	mm	137	X	71	117	94
17	ins.	6.53	X	3.75	4.91	3.16
	mm	166	X	95	125	80
18	ins.	6.47	X	3.66	4.91	3.56
	mm	164	X	93	125	90
19	ins.	7.03	X	4.38	5.06	4.12
	mm	179	X	111	129	105
20	ins.	8.22	X	5.06	5.47	4.72
	mm	209	X	129	139	120
21	ins.	8.22	X	5.50	5.47	5.19
	mm	209	X	140	139	132

IMPORTANT: Valves may be mounted in any position.

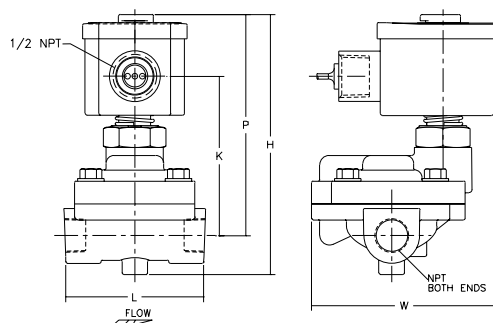
Constr. Refs. 1, 2



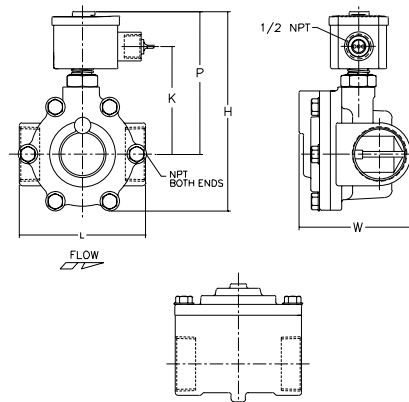
Constr. Refs. 15, 16



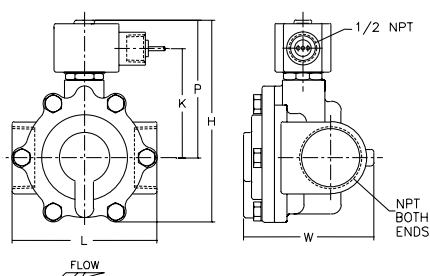
Constr. Refs. 3, 4



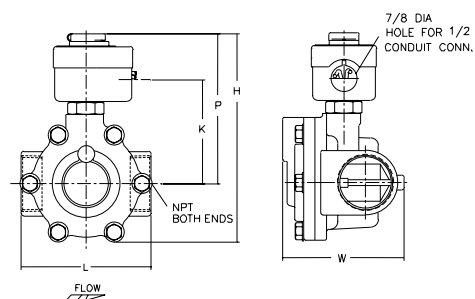
Constr. Refs. 8, 9, 10, 13, 14



Constr. Refs. 5, 6, 7, 11, 12



Constr. Refs. 17 - 21



Features

- Rugged piston construction built to withstand pressure ratings of 450 to 1500 psi.
- Angle body design for high flows.
- Ideal for high pressure water applications, such as car washes.
- Mountable in any position.

Construction

Valve Parts in Contact with Fluids		
Body	Brass	300 Stainless Steel
Seals and Disc	NBR, PA, PTFE	PTFE, NBR
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Core Spring	302 Stainless Steel	
Shading Coil	Copper	Silver
Stem	PA (Normally Open)	

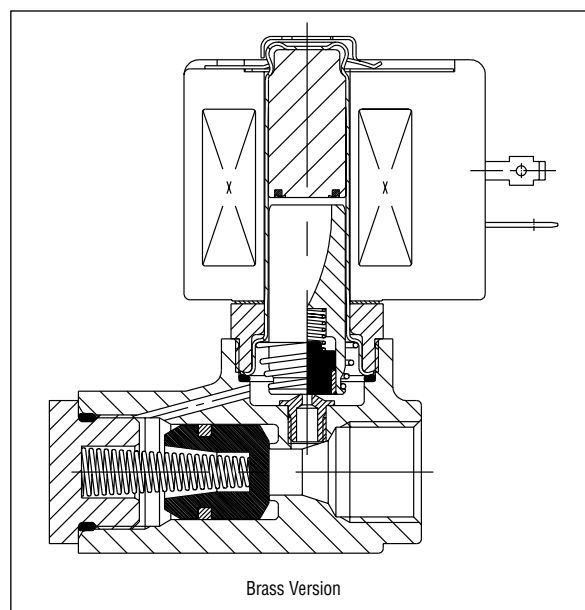
Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part Number			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	-	10.1	25	50	238610	-	238614	-
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 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 catalog number.)



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)

Approvals:

CSA certified. Meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)							Maximum Fluid Temp. °F		Brass Body		Stainless Steel Body		Watt Rating/ Class of Coil Insulation	
			Min.	Max. AC			Max. DC										
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	Catalog Number	Constr. Ref. No.	AC	DC
NORMALLY CLOSED (Closed when de-energized)																	
1/4	5/16	1.5	10	750	750	750	-	-	-	200	-	8223G21	1	-	-	10.1/F	-
1/4	5/16	1.5	10	1500	1500	1500	500	500	500	200	150	8223G25	1	-	-	17.1/F	22.6/F
3/8	5/16	1.5	10	750	750	750	400	400	400	200	150	8223G23	1	-	-	10.1/F	22.6/F
3/8	5/16	1.5	10	1500	1500	1500	500	500	500	200	150	8223G27	1	-	-	17.1/F	22.6/F
1/2	3/8	3.2	25	1500	1500	1500	500	500	500	200	150	8223G3	2	8223G10	4	17.1/F	22.6/F
3/4	3/4	7.8	25	750	750	750	450	450	450	200	150	8223G5	3	8223G12	5	17.1/F	22.6/F

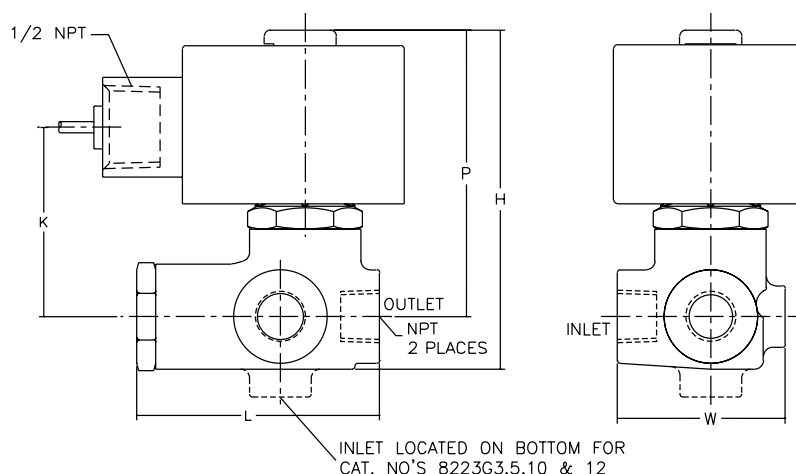
Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)							Maximum Fluid Temp. °C		Brass Body		Stainless Steel Body		Watt Rating/ Class of Coil Insulation	
			Min.	Max. AC			Max. DC			AC	DC	Catalog Number	Constr. Ref. No.	Catalog Number	Constr. Ref. No.	AC	DC
				Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU								
NORMALLY CLOSED (Closed when de-energized)																	
1/4	8	1.29	0.7	52	52	52	-	-	-	92	-	8223G21	1	-	-	10.1/F	-
1/4	8	1.29	0.7	103	103	103	34	34	34	92	65	8223G25	1	-	-	17.1/F	22.6/F
3/8	8	1.29	0.7	52	52	52	28	28	28	92	65	8223G23	1	-	-	10.1/F	22.6/F
3/8	8	1.29	0.7	103	103	103	34	34	34	92	65	8223G27	1	-	-	17.1/F	22.6/F
1/2	10	2.74	1.7	103	103	103	34	34	34	92	65	8223G3	2	8223G10	4	17.1/F	22.6/F
3/4	19	6.69	1.7	52	52	52	31	31	31	92	65	8223G5	3	8223G12	5	17.1/F	22.6/F

Dimensions: inches (mm)

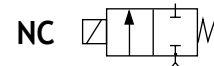
Constr. Ref. No.		H	K	L	P	W
1	ins.	3.41	1.91	2.44	2.88	1.95
	mm	87	49	62	73	50
2	ins.	4.32	2.17	3.03	3.13	1.95
	mm	110	55	77	80	50
3	ins.	5.03	2.64	3.60	3.61	2.00
	mm	128	67	91	92	51
4	ins.	4.34	2.15	2.50	3.13	1.95
	mm	110	55	64	80	50
5	ins.	5.03	2.53	3.53	3.50	3.50
	mm	128	64	90	89	89

Constr. Refs. 1 - 5





Direct Acting
Sub-Miniature Solenoid Valves
 Brass, Stainless Steel or Aluminum Bodies
 1/8" NPT



2/2
 SERIES
8225
8280

Features

- Economical, Normally Closed valves for a wide range of OEM applications.
- Convertable from AC to DC by changing the molded epoxy open frame coil.
- Individual valves handle mildly aggressive fluids.
- Group mounted valves (max. 10 valves) have aluminum bodies and built-in manual operators for air service.
- Mountable in any position.

Construction

Valve Parts in Contact with Fluids		
Body		
Individual Valves	Brass	Stainless Steel
Group Mounted	Aluminum	
Seals and Discs	NBR or FKM	
Core and Plugnut	430F Stainless Steel	
Core Springs	302 Stainless Steel	
Shading Coil	Copper	

Electrical

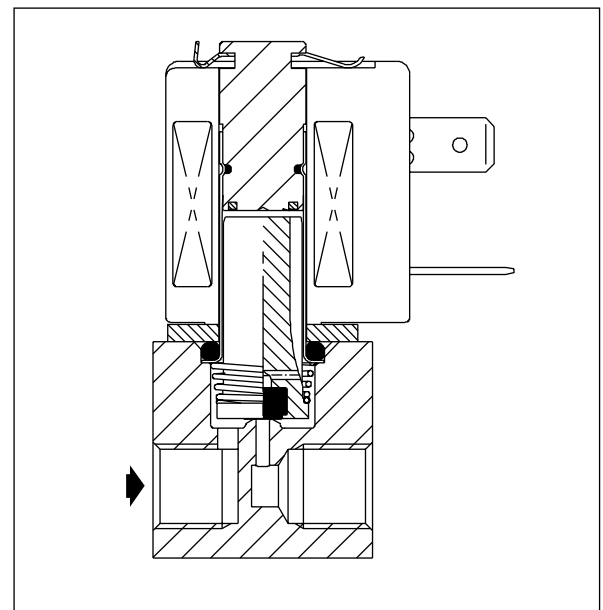
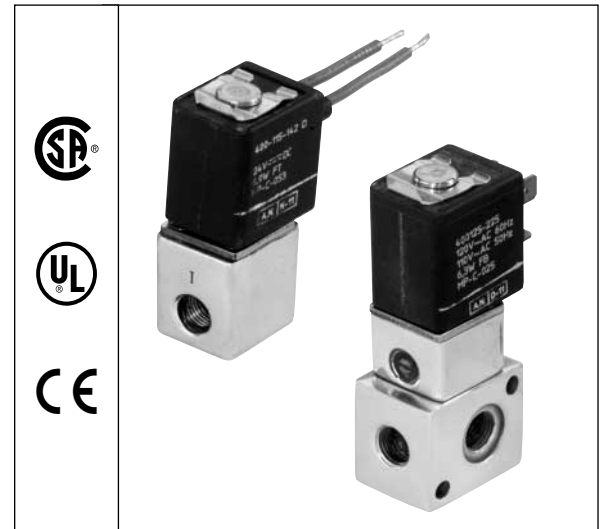
Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part Number	
	DC Watts	AC				
		Watts	VA Holding	VA Inrush	AC	DC
F	6.9	6.3	8.8	12.1	400125	400125

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 available when required.

Solenoid

Standard: Molded epoxy open frame solenoid can be converted from AC to DC by simply changing the coil.

Optional: 3x DIN 46244 coil; 1/2" Threaded Conduit Hub.



Nominal Ambient Temperature Ranges:

AC: 32°F to 135°F (0°C to 57°C)
 DC: 32°F to 77°F (0°C to 25°C)

Approvals:

CSA certified. UL Recognized Component. Meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)						Max. Fluid Temp. °F		Open Frame Solenoid		Watt Rating/ Class of Coil Insulation	
			Max. AC			Max. DC					Brass Body	Stainless Steel Body		
			Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU	AC	DC	Catalog Number	Catalog Number	AC	DC
NORMALLY CLOSED (Closed when de-energized), FKM Disc														
1/8	3/64	.05	500	500	500	200	200	200	180	77	U8225B1V	U8225B5V	6.3/F	6.9/F
1/8	1/16	.07	300	300	300	125	125	125	180	77	U8225B2V	U8225B6V	6.3/F	6.9/F
1/8	3/32	.17	175	175	175	30	30	30	180	77	U8225B3V	U8225B7V	6.3/F	6.9/F
1/8	1/8	.23	125	125	125	20	20	20	180	77	U8225B4V	U8225B8V	6.3/F	6.9/F

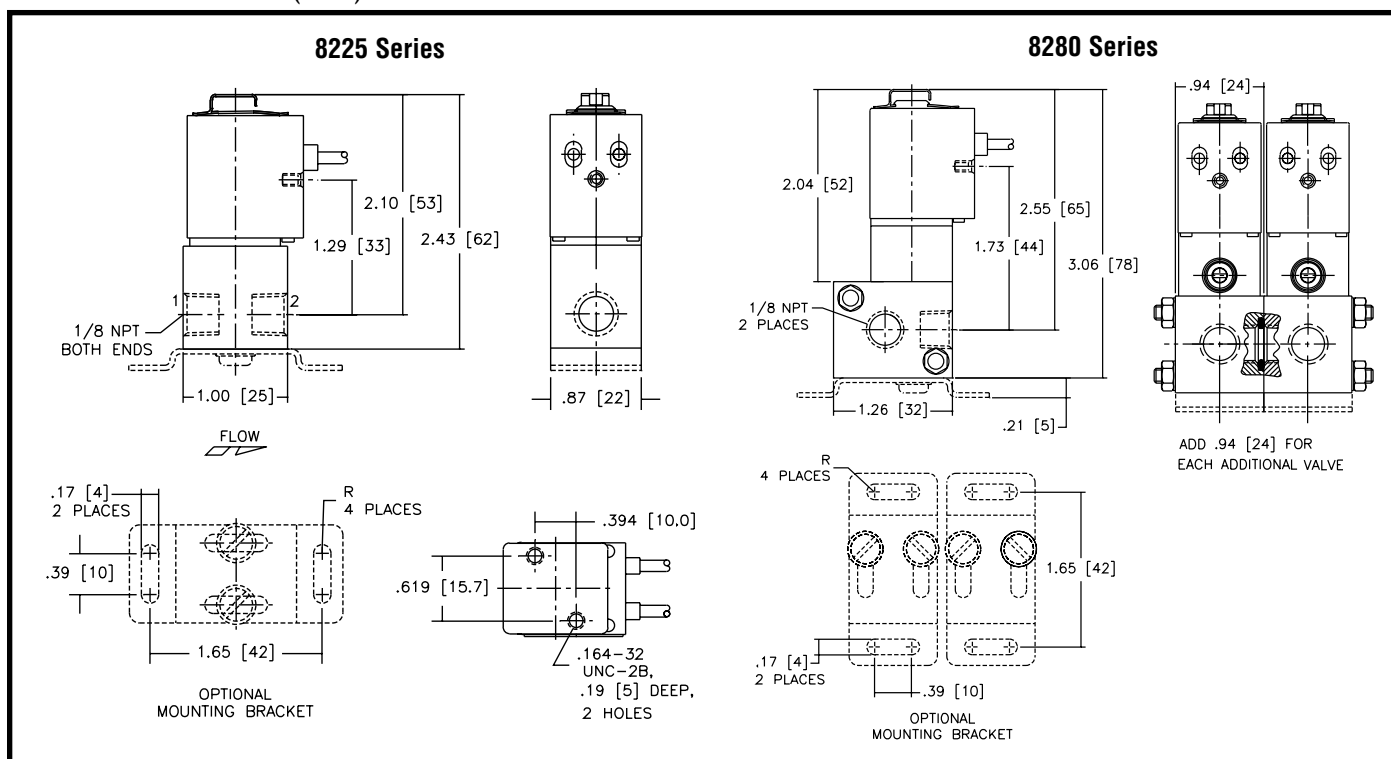
Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)		Max. Fluid Temp. °F		Open Frame Solenoid		Watt Rating/ Class of Coil Insulation	
			Max. AC	Max. DC			Operator Only	Sub-Base Construction		
			Air-Inert Gas	Air-Inert Gas	AC	DC	Catalog Number	Catalog Number	AC	DC
			GROUP MOUNTING - NORMALLY CLOSED (Closed when de-energized), Aluminum Body, NBR Disc							
1/8	3/64	.05	150	150	180	77	U8280B1	U8280B2	6.3/F	6.9/F

Specifications (Metric units)

Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)						Max. Fluid Temp. °C		Open Frame Solenoid		Watt Rating/ Class of Coil Insulation	
			Max. AC			Max DC					Brass Body	Stainless Steel Body		
			Air-Inert Gas	Water	Light Oil @ 300 SSU	Air-Inert Gas	Water	Light Oil @ 300 SSU	AC	DC	Catalog Number	Catalog Number	AC	DC
NORMALLY CLOSED (Closed when de-energized), FKM Disc														
1/8	1.2	.04	34	34	34	14	14	14	81	27	U8225B1V	U8225B5V	6.3/F	6.9/F
1/8	1.6	.06	21	21	21	9	9	9	81	27	U8225B2V	U8225B6V	6.3/F	6.9/F
1/8	2.4	.15	12	12	12	2	2	2	81	27	U8225B3V	U8225B7V	6.3/F	6.9/F
1/8	3.2	.20	9	9	9	1	1	1	81	27	U8225B4V	U8225B8V	6.3/F	6.9/F

Pipe Size Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)		Max. Fluid Temp °C		Open Frame Solenoid		Watt Rating/ Class of Coil Insulation			
			Max. AC	Max. DC			Operator Only	Sub-Base Construction				
			Air-Inert Gas	Air-Inert Gas	AC	DC	Catalog Number	Catalog Number	AC	DC		
GROUP MOUNTING - NORMALLY CLOSED (Closed when de-energized), Aluminum Body, NBR Disc												
1/8	1.2	.04	10	10	81	25	U8280B1		U8280B2		6.3/F	6.9/F

Dimensions: inches (mm)



Features

- Corrosion resistant plastic bodies.
- Available with compression fitting ends for metal or plastic tube to save installation cost.
- Mountable in any position.
- Dispensing vending construction NSF listed.

Construction

Valve Parts in Contact with Fluids	
Body	CA, PA, PP
Seals and Disc	NBR
Core Tube	305 Stainless Steel
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Shading Coil	Copper

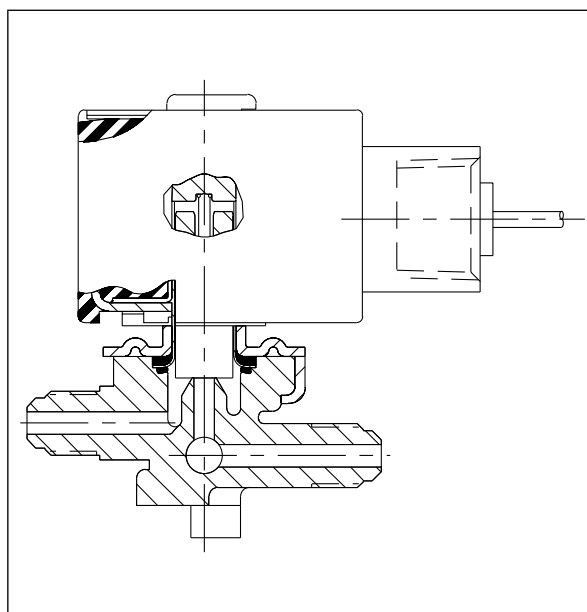
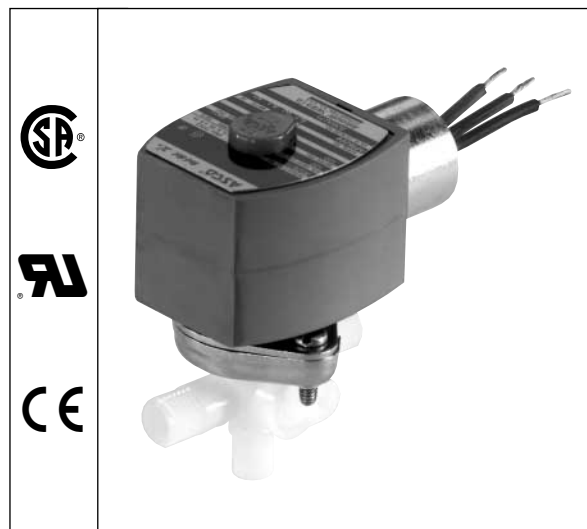
Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part Number	
	DC Watts	AC			General Purpose	
		Watts	VA Holding	VA Inrush	AC	DC
B	6.4	6.5	9.2	17.3	174879	180555
F	10.6	6.1	16	30	238210	238310

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 available when required.

Solenoid Enclosures

Standard: Watertight, Types 1, 2, 3, 3S, 4, and 4X.
Optional: Open Frame Solenoid, Junction Box enclosures.



Nominal Ambient Temperature Range:

AC: 32°F to 125°F (0°C to 52°C)
 DC: 32°F to 104°F (0°C to 40°C)

Approvals:

CSA certified. UL Recognized Component. Meets applicable CE directives.

Specifications (English units)

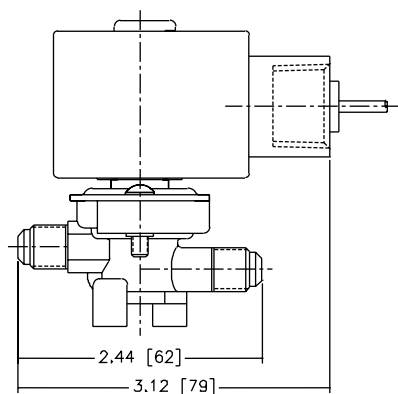
Pipe Connections	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)				Max. Fluid Temp. °F		Plastic Body		Watt Rating/ Class of Coil Insulation ②	
			Max. AC		Max. DC							
			Air-Inert Gas	Water	Air-Inert Gas	Water	AC	DC	Catalog Number	Constr. Ref. No.	AC	DC
GENERAL SERVICE CONSTRUCTION - CA Body, Watertight enclosure with leads												
1/4" Male Flare	9/64	.35	120	120	50	50	130	120	8260G42	1	6.1/F	10.6/F
Bib for 1/4" I.D. Tube	9/64	.35	120	120	50	50	130	120	8260G54	2	6.1/F	10.6/F
1/4" O.D. ① Compression	9/64	.35	120	120	50	50	130	120	8260G71	3	6.1/F	10.6/F
GENERAL SERVICE CONSTRUCTION - PP Body, Open Frame Solenoid and Spade Terminal Coils												
1/4" O.D. ① Compression	1/16	.09	150	150	60	60	130	120	USM826073	5	6.5/B	6.4/B
	3/32	.19	100	100	20	20	130	120	USM826074	5	6.5/B	6.4/B
	1/8	.31	60	60	10	10	130	120	USM826075	5	6.5/B	6.4/B
	5/32	.43	35	35	5	5	130	120	USM826076	5	6.5/B	6.4/B
DISPENSING VENDING CONSTRUCTION - NSF Listed - PP Body, Open Frame Solenoid and Spade Terminal Coils												
1/4" O.D. ① Compression	1/16	.09	150	150	60	60	130	120	USM826077	4	6.5/B	6.4/B
	3/32	.19	100	100	20	20	130	120	USM826078	4	6.5/B	6.4/B
	1/8	.31	60	60	10	10	130	120	USM826079	4	6.5/B	6.4/B
	5/32	.43	35	35	5	5	130	120	USM826080	4	6.5/B	6.4/B
DISPENSING VENDING CONSTRUCTION - NSF Listed - PA Body, Open Frame Solenoid and Spade Terminal Coils												
3/8" O.D. ① Compression	5/16	1.3	5	5	-	-	130	-	USM826090	6	6.5/B	-
PA Body, Open Frame Solenoid and Spade Terminal Coils												
3/8" O.D. ① Compression	5/16	1.3	5	5	-	-	130	-	USM826089	6	6.5/B	-
Notes: ① Fittings not supplied with valve. To order, refer to List Price Schedule. Kit No. 224150 - plastic tubing, and Kit No. 224151 - metal tubing. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.												

Specifications (Metric units)

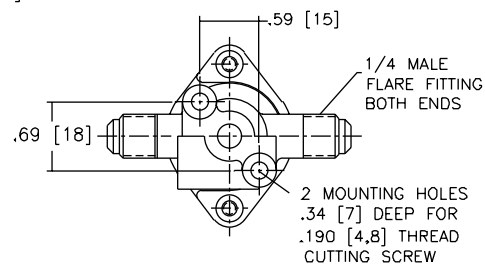
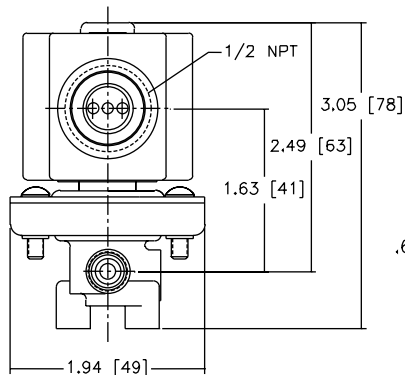
Pipe Connections	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)				Max. Fluid Temp. °C		Plastic Body		Watt Rating/ Class of Coil Insulation ②		
			Max. AC		Max. DC								
			Air-Inert Gas	Water	Air-Inert Gas	Water	AC	DC	Catalog Number	Constr. Ref. No.	AC	DC	
GENERAL SERVICE CONSTRUCTION - CA Body, Watertight enclosure with leads													
1/4" Male Flare	3.6	.30	8.3	8.3	3.4	3.4	54	49	8260G42	1	6.1/F	10.6/F	
Bib for 1/4" I.D. Tube	3.6	.30	8.3	8.3	3.4	3.4	54	49	8260G54	2	6.1/F	10.6/F	
1/4" O.D. ① Compression	3.6	.30	8.3	8.3	3.4	3.4	54	49	8260G71	3	6.1/F	10.6/F	
GENERAL SERVICE CONSTRUCTION - PP Body, Open Frame Solenoid and Spade Terminal Coils													
"1/4" O.D. ① Compression	1.6	.08	10.3	10.3	4.1	4.1	54	49	USM826073	5	6.5/B	6.4/B	
	2.4	.16	6.9	6.9	1.4	1.4	54	49	USM826074	5	6.5/B	6.4/B	
	3.2	.27	4.1	4.1	0.7	0.7	54	49	USM826075	5	6.5/B	6.4/B	
	4.0	.37	2.4	2.4	0.3	0.3	54	49	USM826076	5	6.5/B	6.4/B	
DISPENSING VENDING CONSTRUCTION - NSF Listed - PP Body, Open Frame Solenoid and Spade Terminal Coils													
1/4" O.D. ① Compression	1.6	.08	10.3	10.3	4.1	4.1	54	49	USM826077	4	6.5/B	6.4/B	
	2.4	.16	6.9	6.9	1.4	1.4	54	49	USM826078	4	6.5/B	6.4/B	
	3.2	.27	4.1	4.1	0.7	0.7	54	49	USM826079	4	6.5/B	6.4/B	
	4.0	.37	2.4	2.4	0.3	0.3	54	49	USM826080	4	6.5/B	6.4/B	
DISPENSING VENDING CONSTRUCTION - NSF Listed - PA Body, Open Frame Solenoid and Spade Terminal Coils													
3/8" O.D. ① Compression	7.9	1.11	0.3	0.3	-	-	54	-	USM826090	6	6.5/B	-	
PA Body, Open Frame Solenoid and Spade Terminal Coils													
3/8" O.D. ① Compression	7.9	1.11	0.3	0.3	-	-	54	-	USM826089	6	6.5/B	-	
Notes: ① Fittings not supplied with valve. To order, refer to List Price Schedule. Kit No. 224150 - plastic tubing, and Kit No. 224151 - metal tubing. ② On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.													

Dimensions: inches (mm)

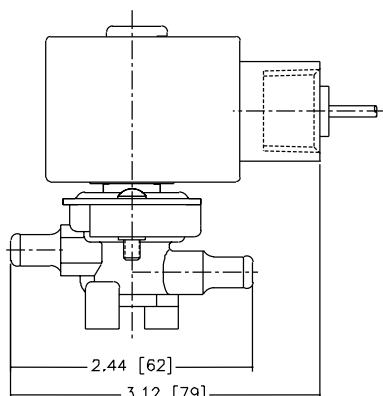
Constr. Refs. 1



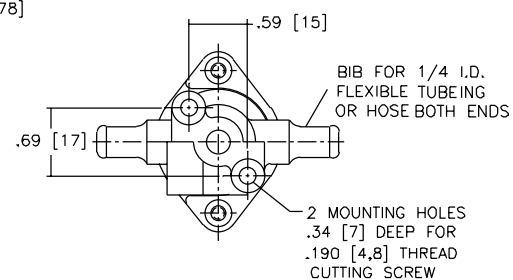
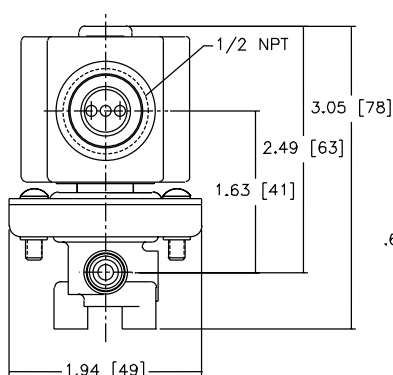
FLOW



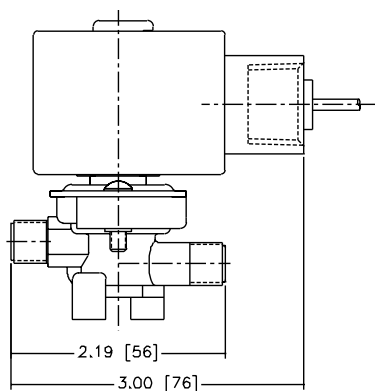
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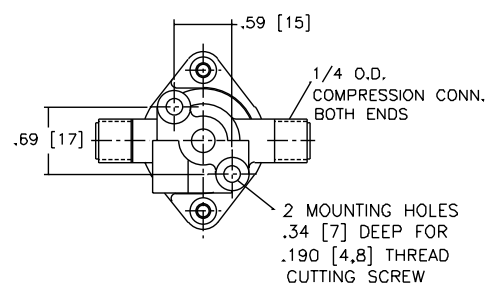
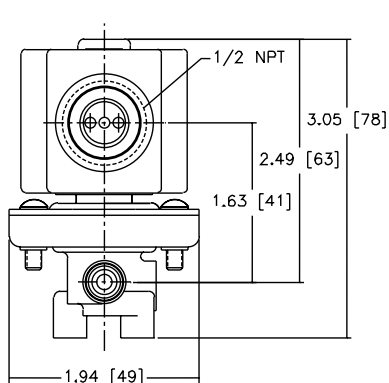
FLOW



Constr. Refs. 3

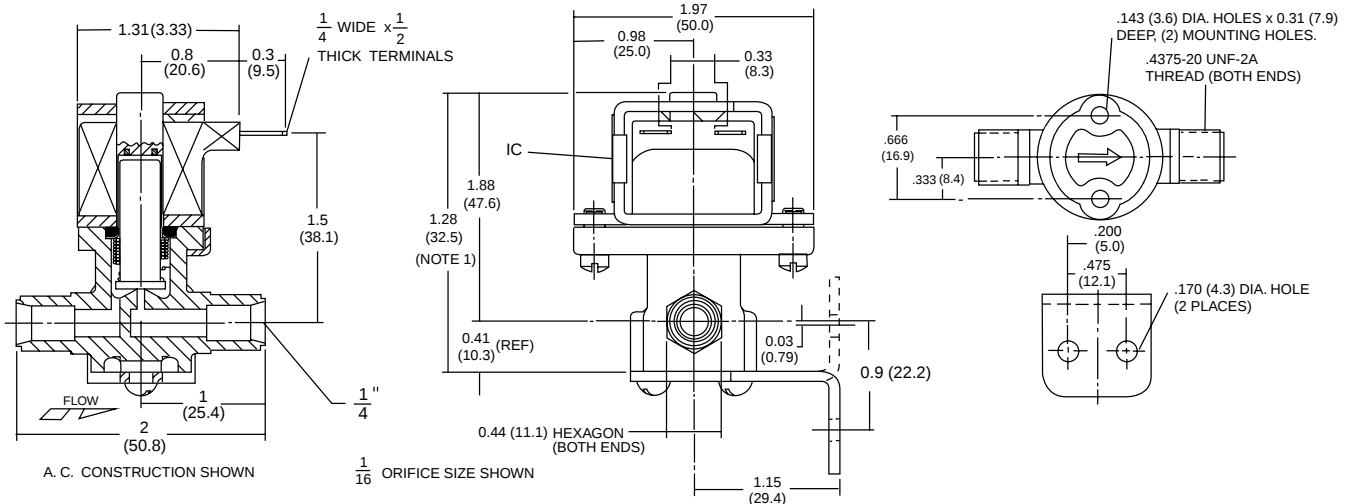


FLOW

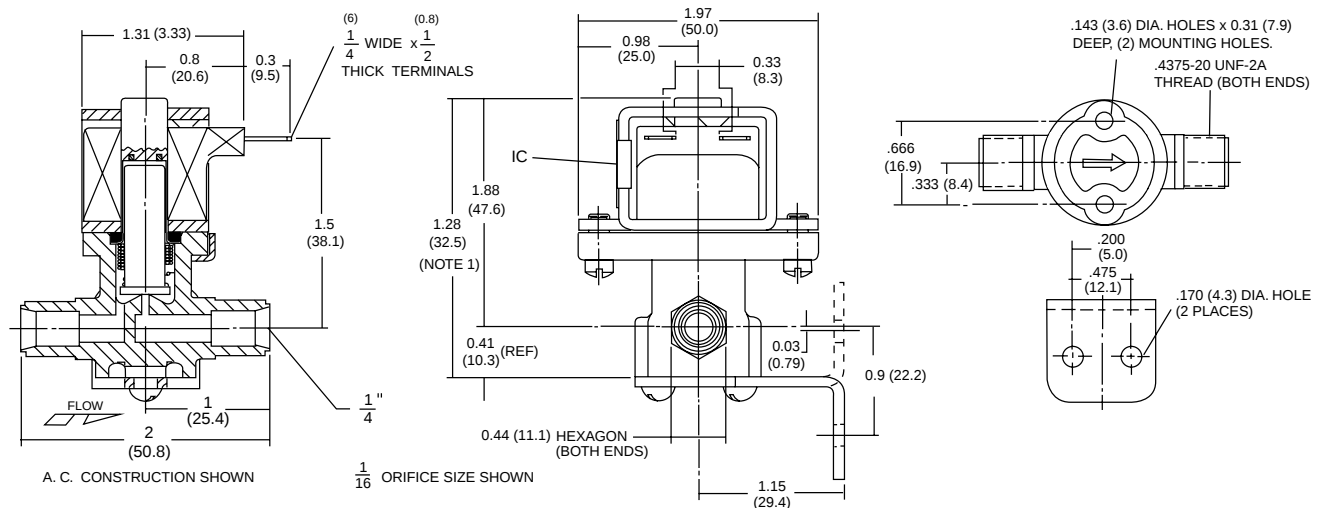


Dimensions: inches (mm)

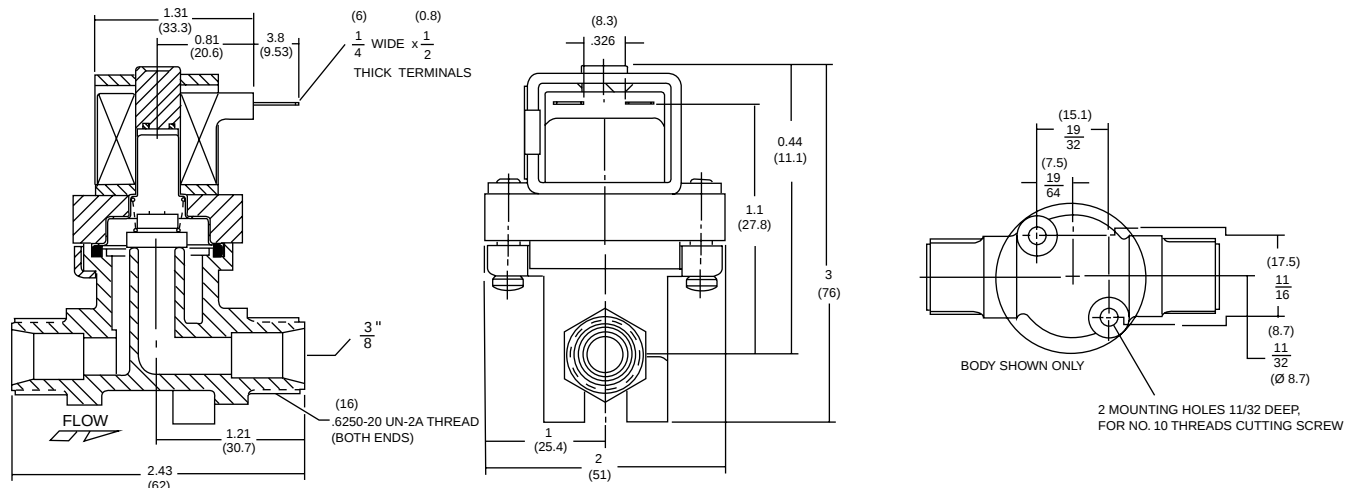
Constr. Refs. 4



Constr. Refs. 5



Constr. Refs. 6



Features

- Reliable, proven design with high flows.
- Small poppet valves for tight shutoff.
- Wide range of elastomers for specialty service.
- Mountable in any position.
- Brass body construction for general atmospheres; Stainless Steel for corrosive atmospheres.

Construction

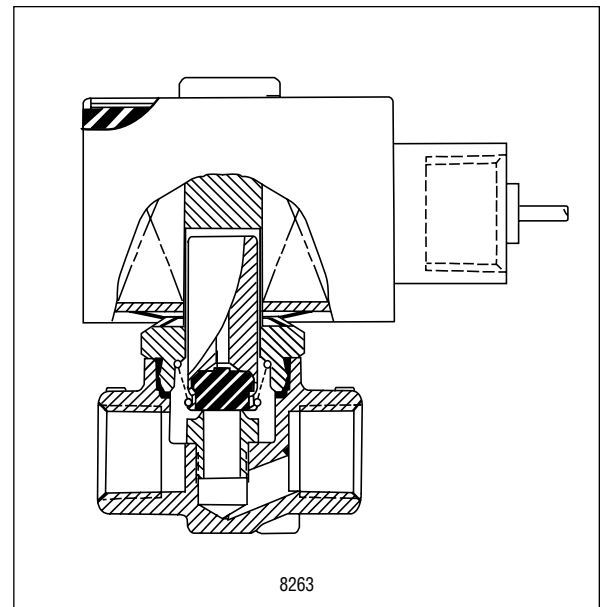
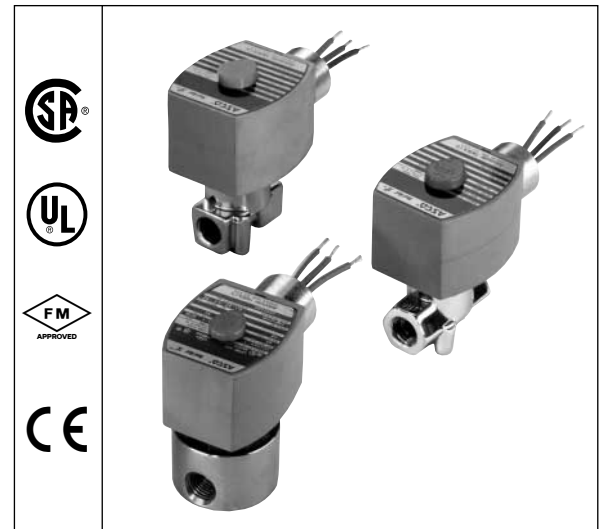
Valve Parts in Contact with Fluids		
Body	Brass	303/304 Stainless Steel
Seals and Discs	NBR or Cast UR	
Core Tube	305 Stainless Steel	
Core and Plugnut	430F Stainless Steel	
Springs	302 Stainless Steel	
Shading Coil	Copper	Silver
Stem	PA (Normally Open)	
Note: All 1/8" NPT Normally Open valves contain CA. All 1/4" NPT Normally Open valves contain PA.		

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
	DC Watts	AC			General Purpose		Explosionproof	
		Watts	VA Holding	VA Inrush	AC	DC	AC	DC
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
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 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 catalog number)



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)

Approvals:

CSA certified. UL listed, as indicated. Normally Closed Valves FM approved. Meets applicable CE directives.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)						Max. Fluid Temp. °F		Brass Body			Stainless Steel Body			Watt Rating/ Class of Coil Insulation ②	
			Max. AC			Max. DC												
			Air-Inert Gas	Water	Lt. Oil @ 300 SSU	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	UL ③ Listing	Catalog Number	Constr. Ref. No.	UL ③ Listing	AC	DC
NORMALLY CLOSED (Closed when de-energized), NBR Disc																		
1/8	3/64	.06	750	750	530	650	640	550	180	120	8262G1	1	○	8262G12	1	○	6.1/F	10.6/F
1/8	3/32	.20	275	290	130	150	140	145	180	120	8262G14	1	○	8262G15	1	○	6.1/F	10.6/F
1/8	1/8	.34	155	180	140	80	80	80	180	120	8262G2	1	○	8262G6	1	○	6.1/F	10.6/F
1/4	3/64	.06	750	750	500	500	500	500	180	120	8262G19	16	○	8262G80	11	○	6.1/F	10.6/F
1/4	3/64	.06	1500	1500	1100	475	475	450	140	140	8262G200	17	●	-	-	-	10.1/F	11.6/F
1/4	3/64	.06	2200	2000	1100	-	-	-	140	140	-	-	-	8262G214	12	●	10.1/F	-
1/4	3/32	.17	360	340	160	150	125	125	180	120	8262G20	16	○	8262G86	11	○	6.1/F	10.6/F
1/4	1/8	.35	140	165	90	65	60	60	180	120	8262G22	16	○	8262G7	11	○	6.1/F	10.6/F
1/4	1/8	.35	300	300	200	75	70	70	180	150	8262G232	17	○	-	-	-	10.1/F	11.6/F
1/4	5/32	.50	180	200	145	40	40	45	180	150	8262G202	4	○	8262G220	12	○	10.1/F	11.6/F
1/4	7/32	.72	90	100	100	25	25	25	180	150	8262G208	4	○	8262G226	12	○	10.1/F	11.6/F
1/4	7/32	.85	40	50	40	17	20	21	180	120	8262G13	2	○	8262G36	11	○	6.1/F	10.6/F
1/4	9/32	.88	60	75	60	18	15	18	180	150	8262G210	4	○	-	-	-	10.1/F	11.6/F
1/4	9/32	.88	90	100	90	25	20	22	180	150	8262G212	6	○	8262G230	13	○	17.1/F	22.6/F
1/4	9/32	.96	27	36	28	15	16	16	180	120	8262G90	2	○	8262G38	11	○	6.1/F	10.6/F
3/8	1/8	.35	160	150	90	65	60	60	180	120	8263G2	3	○	8263G330	3	○	6.1/F	10.6/F
3/8	5/32	.52	100	100	100	35	35	35	180	150	8263G200	5	○	8263G331	5	○	10.1/F	11.6/F
3/8	7/32	.72	100	100	100	25	25	25	180	150	8263G206	5	○	8263G332	5	○	17.1/F	11.6/F
3/8	9/32	.85	100	100	70	-	-	-	180	—	8263G210	7	○	8263G333	7	○	17.1/F	-
NORMALLY OPEN (Open when de-energized), NBR Disc (except where noted)																		
1/8	1/16	.09	500	300	225	400	250	150	180	120	8262G91	8	●	8262G92	8	●	6.1/F	10.6/F
1/8	3/32	.15	275	200	150	190	110	110	180	120	8262G93	8	●	8262G94	8	●	6.1/F	10.6/F
1/8	1/8	.21	125	100	85	80	60	50	180	120	8262G31	8	●	8262G35	8	●	6.1/F	10.6/F
1/4	3/64	.06	750	700	700	500	500	500	140	140	8262G260 ①	9	●	8262G130 ①	14	●	10.1/F	11.6/F
1/4	3/32	.17	300	250	230	200	150	125	140	140	8262G261 ①	9	●	8262G134 ①	14	●	10.1/F	11.6/F
1/4	1/8	.35	130	110	100	80	60	60	180	150	8262G262	9	●	8262G138	14	●	10.1/F	11.6/F
1/4	5/32	.49	85	75	60	45	30	30	180	150	8262G263	4	●	8262G142	14	●	10.1/F	11.6/F
1/4	7/32	.83	45	45	40	25	20	20	180	150	8262G264	4	●	8262G148	14	●	10.1/F	11.6/F
1/4	9/32	.96	30	25	20	15	15	15	180	150	8262G265	4	●	8262G152	14	●	10.1/F	11.6/F
Notes: ① Cast UR disc supplied as standard. ② On 50 hertz service, the rating for the 6.1/F solenoid is 8.1 watts. ③ ○ Safety Shutoff Valve; ● General Purpose Valve. Refer to Engineering Section (Approvals) for details.																		

Specifications (Metric units)

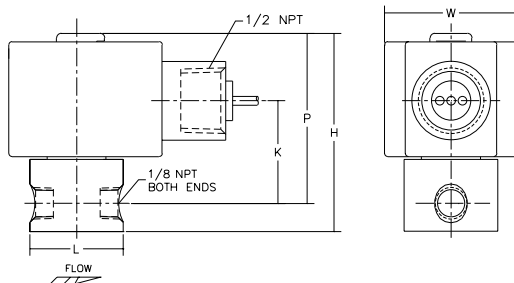
Pipe Size (ins.)	Orifice Size (mm)	Kv Flow Factor (m3/h)	Operating Pressure Differential (bar)						Max. Fluid Temp. °C		Brass Body			Stainless Steel Body			Watt Rating/ Class of Coil Insulation ②	
			Max. AC			Max. DC												
			Air-Inert Gas	Water	Lt. Oil @ 300 SSU	Air-Inert Gas	Water	Lt. Oil @ 300 SSU	AC	DC	Catalog Number	Constr. Ref. No.	UL ③ Listing	Catalog Number	Constr. Ref. No.	UL ③ Listing	AC	DC
NORMALLY CLOSED (Closed when de-energized), NBR Disc																		
1/8	1.2	.05	52	52	37	45	44	38	81	48	8262G1	1	○	8262G12	1	○	6.1/F	10.6/F
1/8	2.4	.17	19	20	9	10	10	10	81	48	8262G14	1	○	8262G15	1	○	6.1/F	10.6/F
1/8	3.2	.29	11	12	10	6	6	6	81	48	8262G2	1	○	8262G6	1	○	6.1/F	10.6/F
1/4	1.2	.05	52	52	34	34	34	34	81	48	8262G19	16	○	8262G80	11	○	6.1/F	10.6/F
1/4	1.2	.05	103	103	76	33	33	31	60	60	8262G200	17	●	-	-	-	10.1/F	11.6/F
1/4	1.2	.05	152	138	76	-	-	-	60	60	-	-	-	8262G214	12	●	10.1/F	-
1/4	2.4	.15	25	23	11	10	9	9	81	48	8262G20	16	○	8262G86	11	○	6.1/F	10.6/F
1/4	3.2	.30	10	11	6	4	4	4	81	48	8262G22	16	○	8262G7	11	○	6.1/F	10.6/F
1/4	3.2	.30	21	21	14	5	5	5	81	65	8262G232	17	○	-	-	-	10.1/F	11.6/F
1/4	4.0	.43	12	14	10	3	3	3	81	65	8262G202	4	○	8262G220	12	○	10.1/F	11.6/F
1/4	5.6	.62	6	7	7	2	2	2	81	65	8262G208	4	○	8262G226	12	○	10.1/F	11.6/F
1/4	5.6	.73	3	3	3	1	1	1	81	48	8262G13	2	○	8262G36	11	○	6.1/F	10.6/F
1/4	7.1	.75	4	5	4	1	1	1	81	65	8262G210	4	○	-	-	-	10.1/F	11.6/F
1/4	7.1	.75	6	7	6	2	1	2	81	65	8262G212	6	○	8262G230	13	○	17.1/F	22.6/F
1/4	7.1	.82	2	2	2	1	1	1	81	48	8262G90	2	○	8262G38	11	○	6.1/F	10.6/F
3/8	3.3	.30	11	10	6	4	4	4	81	48	8263G2	3	○	8263G330	3	○	6.1/F	10.6/F
3/8	4.0	.45	7	7	7	2	2	2	81	65	8263G200	5	○	8263G331	5	○	10.1/F	11.6/F
3/8	5.6	.62	7	7	7	2	2	2	81	65	8263G206	5	○	8263G332	5	○	17.1/F	11.6/F
3/8	7.1	.73	7	7	5	-	-	-	81	-	8263G210	7	○	8263G333	7	○	17.1/F	-
NORMALLY OPEN (Open when de-energized), NBR Disc (except where noted)																		
1/8	1.6	.08	34	21	16	28	17	10	81	48	8262G91	8	●	8262G92	8	●	6.1/F	10.6/F
1/8	2.4	.13	19	14	10	13	8	8	81	48	8262G93	8	●	8262G94	8	●	6.1/F	10.6/F
1/8	3.2	.18	9	7	6	6	4	3	81	48	8262G31	8	●	8262G35	8	●	6.1/F	10.6/F
1/4	1.2	.05	52	48	48	34	34	34	59	59	8262G260 ①	9	●	8262G130 ①	14	●	10.1/F	11.6/F
1/4	2.4	.15	21	17	16	14	10	9	59	59	8262G261 ①	9	●	8262G134 ①	14	●	10.1/F	11.6/F
1/4	3.2	.30	9	8	7	6	4	4	81	65	8262G262	9	●	8262G138	14	●	10.1/F	11.6/F
1/4	4.0	.42	6	5	4	3	2	2	81	65	8262G263	4	●	8262G142	14	●	10.1/F	11.6/F
1/4	5.6	.71	3	3	3	2	1	1	81	65	8262G264	4	●	8262G148	14	●	10.1/F	11.6/F
1/4	7.1	.82	2	2	1	1	1	1	81	65	8262G265	4	●	8262G152	14	●	10.1/F	11.6/F
Notes: ① Cast UR disc supplied as standard. ② On 50 Hertz service, the rating for the 6.1/F solenoid is 8.1 watts. ③ ○ Safety Shutoff Valve; ● General Purpose Valve. Refer to Engineering Section (Approvals) for details.																		

Dimensions: inches (mm)

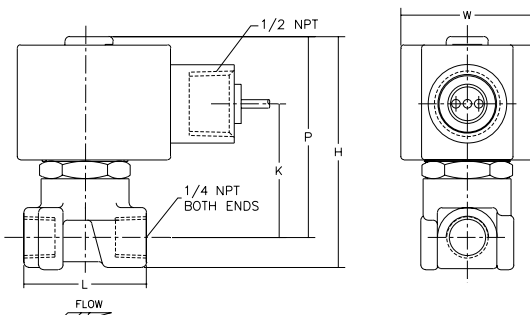
Constr. Ref. No.		H	K	L	P	W
1	ins.	2.52	1.30	1.19	2.16	1.69
	mm	64	33	30	55	43
2	ins.	2.98	1.71	1.56	2.57	1.69
	mm	76	43	40	65	43
3	ins.	3.07	1.63	1.88	2.49	1.69
	mm	78	41	48	63	43
4	ins.	3.20	1.78	1.56	2.79	1.95
	mm	81	45	40	71	50
5	ins.	3.25	1.70	2.00	2.77	1.95
	mm	83	43	51	70	50
6	ins.	3.16	1.78	1.56	2.75	1.95
	mm	80	45	40	70	50
7	ins.	3.25	1.70	2.00	2.67	1.95
	mm	83	43	51	68	50
8	ins.	3.15	1.32	1.19	2.18	1.69
	mm	80	34	30	55	43
9	ins.	3.23	1.67	1.25	2.81	1.95
	mm	82	42	32	71	50
11	ins.	2.94	1.71	1.56	2.57	1.69
	mm	75	43	40	65	43
12	ins.	3.12	1.78	1.56	2.75	1.95
	mm	79	45	40	70	50
13	ins.	3.12	1.78	1.56	2.75	1.95
	mm	79	45	40	70	50
14	ins.	3.16	1.65	1.56	2.79	1.95
	mm	80	42	40	71	50
16	ins.	3.01	1.73	1.25	2.59	1.69
	mm	76	44	32	66	43
17	ins.	3.19	1.80	1.25	2.77	1.95
	mm	81	46	32	70	50

IMPORTANT: Valves may be mounted in any position.

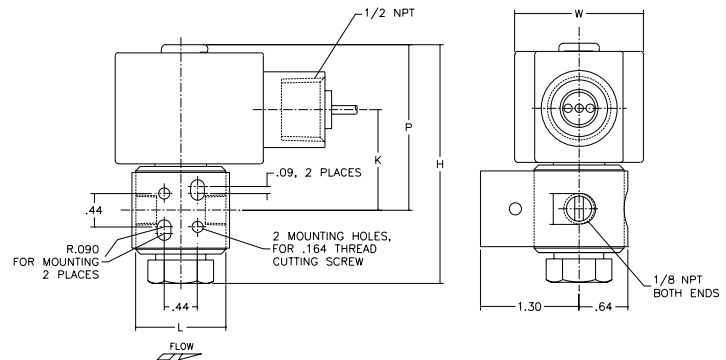
Constr. Refs. 1



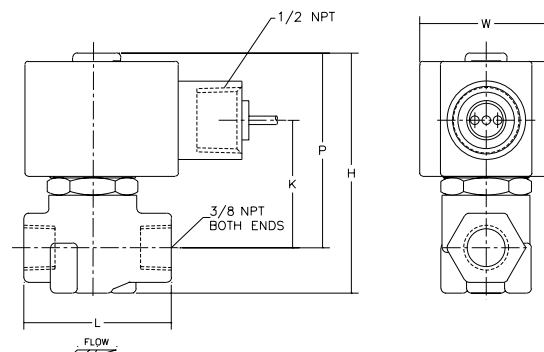
Constr. Refs. 2, 4, 6, 9



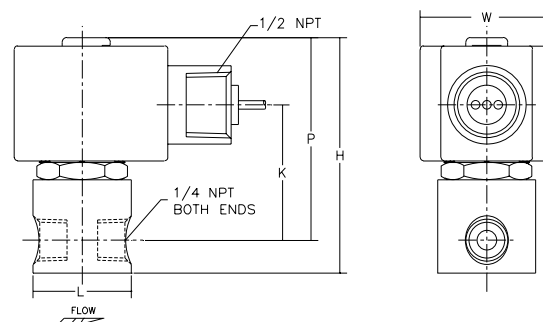
Constr. Refs. 8



Constr. Refs. 3, 5, 7

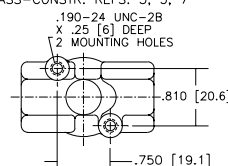


Constr. Refs. 11-14, 16, 17

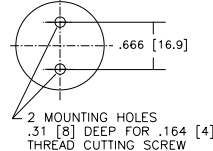


Mounting Details

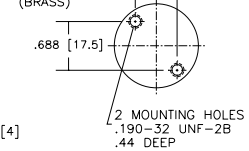
MOUNTING HOLES IN VALVE BODY
BRASS—CONSTR. REFS. 3, 5, 7



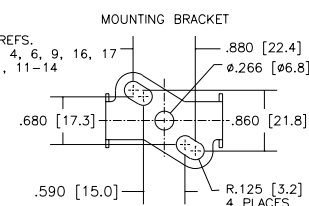
CONSTR. REF. 9, 16, 17



CONSTR. REF. 1 (BRASS)



CONSTR. REFS. 2, 4, 6, 9, 16, 17
ST. ST.: 1, 11-14



Americas

USA

Alabama

Birmingham, AL 35244
Tel (205) 988-8169
Fax (205) 988-9675

Alaska

Contact Southern CA office

Arizona

Contact Southern CA office

Arkansas

Contact Eastern OK office

California

Orange, CA 92868
Tel (714) 937-0811
Fax (714) 937-1390

Colorado

Littleton, CO 80122
Tel (303) 779-6990
Fax (303) 773-0859

Connecticut (Northern)

Contact Central/Northern NY office

Connecticut (Southern)

Contact NJ office

Delaware

Contact NJ office

Florida

Contact Alabama office,
toll-free (800) 531-2019

Georgia

Contact Alabama office

Hawaii

Contact Southern CA office

Idaho (Northern)

Contact Southern CA office

Idaho (Southern)

Contact Colorado office

Illinois

Westmont, IL 60559
Tel (630) 789-4810
Fax (630) 789-4820

Indiana

C. M. Buck & Associates, Inc.
Indianapolis, IN 46268
Tel (317) 293-5704
Fax (317) 293-0281

Iowa (Eastern)

Contact Illinois office,
toll-free (800) 437-1416

Iowa (Western)

Contact Colorado office

Kansas

Contact Colorado office

Kentucky

McNay Equipment Co.
Louisville, KY 40299
Tel (502) 491-0333
Fax (502) 499-7149

Louisiana

Contact Texas office

Maine

Contact Northern NY office

Maryland

Contact Southern NJ office

Massachusetts

Contact Northern NY office

Michigan

Southfield, MI 48076
Tel (248) 645-2620
Fax (248) 645-9696

Minnesota

Plymouth, MN 55447
Tel (612) 577-0427
Fax (612) 577-0524

Mississippi

Contact Alabama office

Missouri (Eastern)

Contact Illinois office,
toll-free (800) 437-1416

Missouri (Western)

Contact Colorado office

Montana

Contact Southern CA office

Nebraska

Contact Colorado office

Nevada (Northern)

Contact Southern CA office

Nevada (Southern)

Contact Southern CA office

New Hampshire

Contact Northern NY office

New Jersey

Marlton, NJ 08053
Tel (856) 985-8700
Fax (856) 985-5030
Headquarters:
Hanover Road, Florham Park
NJ 07932
Tel (973) 966-2000
Fax (973) 966-2628

New Mexico

Contact Southern CA office

New York

(Central/Northern)
N. Syracuse, NY 13212
Tel (315) 453-3877
Fax (315) 453-3795

New York (Metropolitan)

Contact NJ office

North Carolina

PL&E Sales, Inc.
Charlotte, NC 28210
Tel (704) 366-9222
Fax (704) 366-9227

North Dakota

Contact Minnesota office

Ohio (Northern)

Contact Michigan office

Ohio (Southern)

McNay Equipment Co., Inc.
Cincinnati, OH 45242
Tel (513) 489-4770
Fax (513) 489-1470

Oklahoma

Automatic Engineering, Inc.
Tulsa, OK 74120
Tel (918) 585-5703
Fax (918) 585-5707

Oregon

Contact Northern CA office

Pennsylvania (Eastern)

Contact Southern NJ office

Pennsylvania (Western)

Continental Sales & Engrg. Co.
Pittsburgh, PA 15235
Tel (412) 241-5660
Fax (412) 243-1329

Rhode Island

Contact Northern NY office

South Carolina

Contact North Carolina office

South Dakota

Contact Minnesota office

Tennessee

Contact Alabama office

Texas

Dallas, TX 75243
Tel (972) 699-1781
Fax (972) 669-9852

Utah

Contact Colorado office

Vermont

Contact Northern NY office

Virginia (Northern)

Contact Southern NJ office

Virginia (Southern)

Richmond, VA 23288
Tel (804) 282-3523
Fax (804) 282-3522

Washington

Contact Northern CA office

West Virginia

Contact Western PA office

Wisconsin

Milwaukee, WI 53217
Tel (414) 351-8400
Fax (414) 351-8404

Wyoming

Contact Colorado office

Caribbean (Puerto Rico)

Mario R. Franceschini, Inc.
San Juan, PR 00907
Tel (787) 725-7080
Fax (787) 721-5762

ARGENTINA

ASCO Joucomatic
Tel (54) 11-4718-0322 x249
Fax (54)-11-4797-4164

BRAZIL

Main Office

ASCOVAL Ind. E. Com Ltda.
São Paulo
Tel (55) 11-7295-5333
Fax (55) 11-7295-3970

Grande Do Sul

Port Alegre 90550-004
Tel (011) 55-51-343-4699
Fax (011) 55-51-343-4867

Sao Paulo

Campinas 13052-200
Tel (011) 55-192-227-7755
Fax (011)-55-192-227-2399

Minas Gerais

Belo Horizonte 30430-680
Tel (011) 55-31-295-2470
Fax (011)-55-31-295-3606

Rio De Janeiro

Bonsucesso 21032-600
Tel (011) 55-21-270-2290
Fax (011)-55-21-270-208

CANADA

Main Office

ASCOLECTRIC Limited
Brantford, Ontario N3T 5M8
Tel (519) 758-2700
Fax (519) 758-5540

British Columbia

Burnaby, V5G 4E1
Tel (604) 294-1767
Fax (604) 294-9935

Alberta, Saskatchewan, and Manitoba (incl. Thunder Bay)

Calgary T2E 7L4
Tel (403) 207-8571
Fax (403) 207-8581

Ontario (excl. Ottawa Valley & Thunder Bay)

Mississauga, L5N 1A6
Tel (905) 821-2711
Fax (905) 821-2780

Quebec & Ottawa Valley

Saint Laurent, H4S 1P9
Tel (514) 337-8520
Fax (514) 337-8771

Atlantic Provinces

Dartmouth, N.S. B3B 1W2
Tel (902) 468-2559
Fax (902) 468-1663

Manitoba

Winnipeg, R2J 0B8
Tel (204) 233-0077
Fax (204) 233-0777

MEXICO

ASCOMATICA S.A. de C.V.
Mexico, D.F. CP11700
Tel (52) 5-596-77-41
Fax (52) 5-596-77-19

VENEZUELA

ASCOMATICA
Tel (58) 2-237-9036 ext.17
Fax (58)-2-238-9023

Europe

Belgium

ASCO Joucomatic
Benelux N.V.
Tel (32) 2-333-0250
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Fax (351) 2-619-0858

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Fax (46) 33-108080

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Fax (91) 44-496-2270

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