

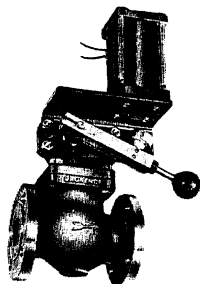
2-WAY MANUALLY RESET SOLENOID VALVES

**BULLETIN
 SERIES
 700
 700HP
 800**

Issue 8

NO VOLTAGE RELEASE-Trip on Current Failure

NORMALLY CLOSED - Reset to Open



**#6 FUEL OIL
 #2 FUEL OIL
 FUEL GASES**

MANUALLY RESET, NO VOLTAGE RELEASE

- Reset or "latched-up" manually
- Held reset by the energized electromagnet (solenoid) - (current on)
- Trip or fail-safe upon current failure

These valves may be tripped by failure of an electrical signal from a burner flame safeguard, pressure or level switch, thermostat, timer, limit switch, photoelectric device, gas analyzer, flow switch, salinity cell, or other sensing device or relay.

NORMALLY CLOSED, RESET TO OPEN

- Closed in the normal or "tripped" position
- Manually opened to reset or "latch up"
- Fail closed upon current failure

These valves are used for SAFETY SHUT-OFF applications such as stopping the flow of oil or gas to a burner, or steam to a heater, when dangerous, abnormal, or shutdown conditions exist. They may also be used in semi-automatic filling or batching operations in conjunction with an integrating flow meter, weigh scale, lever switch or timer.

For valves that TRIP OPEN upon current failure and are manually closed when reset; to be used for emergency discharge or purge, for fire deluge, or for process cooling, see BULLETIN SERIES 750/750HP/850 - NORMALLY OPEN.

See BULLETIN SERIES 900/900HP/1000 for FREE-HANDLE SAFETY SHUT-OFF SOLENOID VALVES.

ROTARY SHAFT TYPE - with Rotary Teflon Shaft Seal

All valves in this bulletin are of the ROTARY SHAFT TYPE. They are basically lift, globe-style valves; however the linear lifting action of the external operating lever is transmitted thru a mechanical advantage into a slight rotary motion by way of the ROTARY shaft seal unit, and is then converted back into a linear action to lift the valve piston (plug) and disc off the seat.

FEATURES

ROTARY SHAFT TYPE, with ROTARY TEFLON SHAFT SEAL

- Higher pressures can be handled because of the mechanical advantage in opening the valve.
- Greater safety shut-off reliability is achieved because: (1) pressure and flow (above the seat) tend to close the valve and hold it closed, (2) the rotary shaft type mechanical advantage allows a stronger direct-closure internal spring, an optional external spring, and/or optional weight-on-lever to be installed.
- Shaft seal maintenance is virtually eliminated with the ROTARY TEFLON SHAFT SEAL - no "in and out" wear and tear of the packing occurs as in reciprocating, "direct-lift" valves.
- Fluid media is contained in a separate lower unit, away from the magnetic parts and away from the coil -- corrosive fluids are handled safely; hot fluids do not appreciably affect the coil, therefore fewer inadvertent shut-downs occur as a result of coil failure; no chance of fuel gases or other flammable or explosive fluids escaping into the coil enclosure due to solenoid-core tube breakage; viscous or dirty liquids cannot foul the magnetic parts.

CLOSELY GUIDED VALVE INTERNAL PARTS

- Prevents binding due to misalignment.
- Consistent lasting tight shut-off.

NO MINIMUM PRESSURE or FLOW REQUIREMENT

- Opens and closes fully down to 0 PSI
- Positive valve action at all rated pressure ranges.

HEAVY VALVE BODY

- Higher static pressure ratings, greater strength.
- Prevents permanent leakage due to distortion of valve body and seat when installed with oversize wrenches.

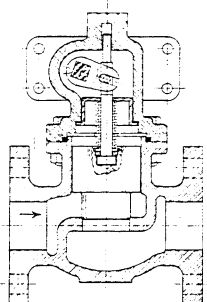
HEAVY-DUTY PILOT SWITCH PROVISION

- Contactor-type heavy-duty limit switch(es) can be mounted readily to indicate valve position remotely or to actuate an alarm or another relay.

SERIES 700

SERIES 700 are pure Direct Operated valves; (referring to the internal construction) wherein the full-area valve disc is lifted off the seat against the full, static line pressure by raising the external lever; i.e. without the aid of an internal pilot and without a minimum pressure or flow requirement. The valve will open, remain open, and/or will close fully and remain closed down to 0 PSI differential. Closing speed is essentially instantaneous and independent of fluid viscosity, line pressure, or pressure drop across the valve.

SERIES 700 valves are suitable for handling #6 fuel oil, sea water, other viscous and unclean liquids as well as fuel gases, steam, water, #2 fuel oil, etc.

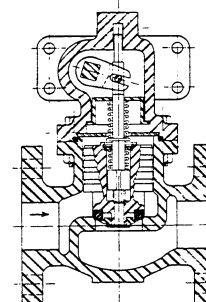


SERIES 700, REGROUNDING DISC

SERIES 800

SERIES 800 also are semi-Direct Operated valves suitable for air, steam, fuel gases, as well as light liquids at higher pressures than SERIES 700HP.

When the external lever is raised, a first-stage port opens, relieving the static line pressure on top of the main piston. A pressure imbalance is created because the first-stage port area is greater than the flow-clearance area feeding the top of the piston and this imbalance assists in lifting the piston off the seat to open the valve fully. However, due to an auxiliary spring and a solid connection between the stem and the main piston in our valve, it is basically the raising of the lever, not this pressure assist, that provides a lifting action and thus, there is no dependence on a minimum pressure or flow to operate.



SERIES 800, RESILIENT DISC

SERIES 700HP

SERIES 700HP are semi-Direct Operated valves for liquid service only at higher pressures than SERIES 700. The main piston opens fully when the external lever is raised because of a solid connection between them. Valve action is quick and positive and requires no minimum pressure or flow to open and close fully, however is pressure assisted at higher pressures.

SERIES 700HP valves are suitable for handling #6 and #2 fuel oils, lube oils, sea water, river water, viscous liquids, light slurries, solvents, corrosive liquids, condensate, etc.

**BULLETIN
SERIES
700
700HP
800**

Issue 8

VALVE BODY		INNER PARTS	DISC	CATALOG NUMBER PREFIXES			
Bronze	ASTM* B-62	Brass & S.S.	Regrinding	700WA	720	803WA	823
			Resilient	701WA	721	804WA	824
Bronze	B-62	Stainless Steel	Regrinding	702WA	722	805WA	825
			Resilient	702GWA	722G	805GWA	825G
Naval Bronze	B-61	Monel	Regrinding	702NBMWA	722NEM	805NBMWA	825NEM
			Resilient	702NBMGWA	722NEMG	805NBMGWA	825NEMG
Steel	A216 WCB	Stainless Steel	Regrinding	709WA	729	809WA	829
			Resilient	709GWA	729G	809GWA	829G
Stainless Steel Type 304	A351 CF8	Stainless Steel Type 303/304	Regrinding	706WA	726	810WA	830
			Resilient	706GWA	726G	810GWA	830G
Stainless Steel Type 316	A351 CF8M	Stainless Steel Type 316	Regrinding	707WA	727	811WA	831
			Resilient	707GWA	727G	811GWA	831G
Stainless Steel Alloy-20	A351 CN7M	Stainless Steel Alloy-20	Regrinding	708WA	728	812WA	832
			Resilient	708GWA	728G	812GWA	832G
Monel	FED QQ-N -288	Monel	Regrinding	708MWA	728M	812MWA	832M
			Resilient	708MGWA	728MG	812MGWA	832MG

FOR SERIES 700HP, ADD "HP" TO SERIES 700 PREFIX ABOVE

VALVE BODIES - Globe type (standard). *—Chemical Analysis of castings comply with those in spec. shown.

INNER PARTS - means ALL parts coming in contact with the fluid (magnetic parts are not wetted by the fluid).

REGRINDING DISC - a closely guided, rounded metal disc, lapped-in for tight shut off.

RESILIENT DISC - Buna, Teflon, Glass-filled TFE, Viton.

SEAT - Integral (standard). Inserted and stellite-faced seats are also available.

BODY-BONNET FLANGE O-RING SEAL - Buna, TFE, Viton, EPR, Metal.

ROTARY SHAFT SEAL - Teflon (standard). Also Buna, Viton, EPR and metal.

OPTIONAL FEATURES

PILOT SWITCH(ES) - Heavy duty, SPDT or DPDT, for remote indication of valve position or to actuate an alarm or relay; contacts rated up to 20 amps at 115/60 AC or 10 amps at 125 DC depending on switch style, type of enclosure and contact arrangement, etc.; to indicate valve open/not open and/or valve closed/not closed. Add "PS" to suffix on Page 3.

ELECTROMAGNET CUT-IN SWITCH - To energize the electromagnet only as the valve is being opened and latched up. Add "CS" to suffix on Page 3.

EXTERNAL LINKAGE COVER - To discourage tampering with, or tieing-up of the valve mechanism, and/or to prevent direct contact with the weather or corrosive ambient. Add "LC" to suffix on Page 3. Optionally available with LEXAN window.

TRIP DELAY - To delay valve closing, available up to four seconds, depending on valve size, voltage, etc. Add "TD" to suffix on Page 3.

TERMINAL BLOCK - For making solenoid connections within the solenoid enclosure. Add "TB" to suffix on Page 3.

GRAVITY OPERATED - With weight on external lever to assist return to normal or tripped position - for additional reliability from gravity. Add "W" to suffix on Page 3.

INVERTED BODY - For limited headroom. Add "Z" to suffix on Page 3.

MATERIALS TRACEABILITY, RADIATION-RESISTING COILS AND SEALS, SHOCK AND VIBRATION-RESISTANT CONSTRUCTIONS AND CERTIFICATIONS.

SERIES 700	SERIES 800
NEMA 1 General Purpose NEMA 2 Driptight NEMA 3 Weatherproof NEMA 4 Water-tight NEMA 12 Dust-tight Electromagnet Enclosures Class I, Groups A, B, C, & D Division 1 Explosion Proof Electromagnet Enclosure	NEMA 1 General Purpose NEMA 2 Driptight NEMA 3 Weatherproof NEMA 4 Water-tight NEMA 12 Dust-tight Electromagnet Enclosures Class I, Groups A, B, C, & D Division 1 Explosion Proof Electromagnet Enclosure

ELECTROMAGNET ENCLOSURES - See above.

① ALL LAURENCE EXPLOSION PROOF ENCLOSURES ARE FM APPROVED FOR CLASS I GROUPS A, B, C & D, Division 1!

ELECTROMAGNET COILS

Max. Ambient Temp. Max. Fluid Temp.

Class H insulation 185F ③ 550F ④

However the safe temperatures for a specific application depend on the overall consideration of the actual max. ambient and fluid temperatures, the temperature rise of the coil to be used, range of applied voltage and nature of hazardous area, if any - consult factory for the safe temps. for your application. Also, higher temperatures can be handled in some cases.

③ - based on fluid temperature of 230F or less.

④ - based on ambient temperature of 40C (104F).

Standard coils are waterproofing-varnish dipped, vacuum impregnated and baked. Molded Class H coils for greater resistance to moisture, fungus and physical damage are available. Standard coils are for continuous duty (24-hour continuous energization, with maximum steady state coil temperature being within rating of class of insulating materials used).

STANDARD VOLTAGES

A.C. - 115/60, 115/50, 220/60, 220/50 or 440/60. A D.C. coil is used along with a solid-state rectifier for greater holding power, lower current draw and zero electrical noise.

D.C. - 125, 250 volts

Other voltages, frequencies, special electrical characteristics can be furnished - consult factory.

MOUNTING - All valves must be mounted with the solenoid in a vertical, upright position. Horizontal pipe mounting is standard and should be utilized whenever possible. For vertical pipe mounting add "V" to prefix above and specify whether flow is upward or downward; resilient valve disc is recommended. Not available in 6" pipe size.

CATALOG NUMBER SUFFIXES

CATALOG NUMBER SUFFIX		PIPE & PORT SIZE	CLASS & TYPE CONNECTIONS	C _v FLOW RATING	MAXIMUM INLET PRESSURE (PSIG)		
					SERIES 700	SERIES 700HP	SERIES 800
AC	DC						
14	14DC	1/2"	600 Screwed	3.0	300 PSI	—	1480 PSI
18	18DC		150 Flanged	3.0	285	—	285
20	20DC		300 Flanged	3.0	300	—	740
24	24DC	3/4"	600 Screwed	6.8	250	1480	1480
28	28DC		150 Flanged	6.8	250	285	285
30	30DC		300 Flanged	6.8	250	740	740
34	34DC	1"	600 Screwed	10.0	200	740	1480
38	38DC		150 Flanged	10.0	200	285	285
40	40DC		300 Flanged	10.0	200	740	740
44	44DC	1-1/4"	600 Screwed	15.5	150	740	1480
48	48DC		150 Flanged	15.5	150	285	285
50	50DC		300 Flanged	15.5	150	740	740
54	54DC	1-1/2"	600 Screwed	22.5	100	400	400
58	58DC		150 Flanged	22.5	100	285	285
60	60DC		300 Flanged	24.0	100	740	740
638	638DC	2"	250 Screwed	40.0	60	400	400
678	678DC		150 Flanged	40.0	60	285	285
698	698DC		300 Flanged	46.0	60	600	740
718	718DC	2-1/2"	250 Screwed	62.5	40	300	400
738	738DC		150 Flanged	62.5	40	285	285
758	758DC		300 Flanged	69.0	40	300	740
798	798DC	3"	150 Flanged	90.0	20	285	285
838	838DC		300 Flanged	96.0	20	300	740
896	896DC	4"	150 Flanged	160.0	10	285	285
936	936DC		300 Flanged	175.0	10	300	740
106	106DC	6"	150 Flanged	375.0	—	285	285

PRESSURES

Above figures are intended to indicate our current maximum standard capability. The actual "rating" of a given suffix number will depend on materials selection, actual pressures, actual temperatures, and other application specifics. In other words, all valves with the same suffix number are not necessarily "rated" at the figure shown. Therefore, ALWAYS ADVISE or SPECIFY YOUR ACTUAL pressure and temperature conditions, etc.

The above figures represent the maximum differential pressure the valve can be opened against (max. inlet pressure minus the max. outlet pressure when the valve is closed). A higher inlet pressure can be handled if a corresponding higher downstream pressure exists when the valve is closed. All valves will hold closed at emergency pressures greatly exceeding the figures shown because the line pressure and flow are above the seat, tending to close the valve. However, in many cases the safe operating pressure is limited by pressure-temperature tables of ANSI B16.34 (and above figures are based on -20 to +100F).

TEMPERATURES - Standard maximum fluid temperature: 550F

Standard minimum fluid temperature: -50F,

although variations are made in the standard construction for temperatures within this range - ALWAYS SPECIFY YOUR ACTUAL TEMPERATURE CONDITIONS. Valves for higher temperatures and cryogenics are available - consult factory.

PORT SIZES - All valves have full diameter internal ports.

ELECTROMAGNET SIZE AND CURRENT - All standard valves shown above have electromagnet size "CMR" for A.C., 0.2 amps inrush and holding @ 115 V 60 Hz; size "CM" for D.C., 0.2 amps @ 125 V D.C.

C_v FLOW RATINGS - are approximate, for estimating only. See Bulletin Series 500 or 600 for flow formulas for liquids, gases, and steam.

STAINLESS STEEL, STEEL & MONEL VALVES - Screwed ends are standard up to 1½" pipe size only. Stainless steel type 304 body is standard for all screwed-ends and some flanged- and weld-ends steel body valves.

TYPE CONNECTIONS

Bronze and Naval Bronze Bodies: Class 250 Screwed, Class 150 and 300 ANSI Flanged, flat face (FF).
Stainless Steel, Steel, Monel bodies: Class 300 and 600 Screwed; Class 150 and 300 ANSI Flanged, raised face (RF).

ALSO AVAILABLE

- Socket-Weld or Butt-Weld ends. Add "SW" or "BW" to screwed-ends suffix up to 1½", flanged-ends suffix up to 6" pipe size.
- 1/4", 3/8" and 8" pipe and port sizes.
- Class 600 and Class 900 ANSI Flanged, MIL-F-20042 Flanged and Silver-Brazing (female socket or union) ends.
- Fractional (reduced) internal port size (Series 700) to achieve higher opening pressure capability, where flow rate is of secondary importance.

ORDERING DATA

Full Catalog Number (prefix + suffix + option adders)
Pipe Size and C_v

ACTUAL Maximum Inlet Pressure, and Maximum Opening Differential Pressure

Liquid or Gas Handled

Viscosity, Concentration, Specific Gravity, Clean?

ACTUAL Fluid and Ambient Temperatures

Flow Rate desired and Max. Allowable Pressure Drop

Valve Body, Inner Parts and Disc Material desired

Type and Rating of Connections

Horizontal or Vertical Pipe Mounting; if vertical, whether upward or downward flow

Type of Electromagnet Enclosure (if explosion proof, specify Class and Group and/or nature of hazard)

Voltage and Frequency

Maximum Time On and Frequency of Operation

Electromagnet Insulation Class

Summary of Application and/or Sketch of System

Optional or Special Features

For your convenience, use OUR Solenoid Valve Data Sheet for compiling the above information.

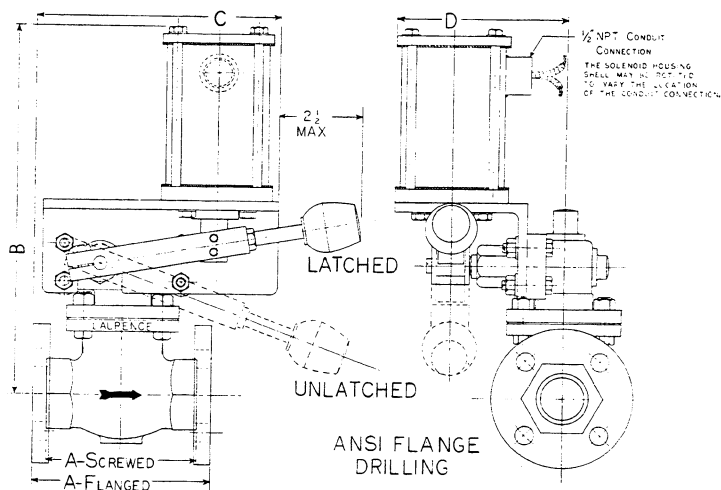
TO SPECIFY A CATALOG NUMBER - Combine the catalog number prefix from Page 2 with the catalog number suffix from above; e.g. 706WA24, 706WAHP24, 706WA24SW, 706WA24SWPS.

DIMENSIONS (HORIZONTAL PIPE MOUNTING)

CATALOG NUMBER SUFFIX		PIPE SIZE	FACE TO FACE A	B*	C	D	NET WEIGHT
AC	DC						
14	14DC	1/2"	3	10-1/4	6-1/4	4-3/4	14
18	18DC		4-7/8	10-1/2	6-1/2	4-3/4	16
20	20DC		6	10-1/2	7-1/4	4-3/4	18
24	24DC	3/4"	3-1/2	10-1/2	6-1/4	4-3/4	15
28	28DC		4-7/8	10-1/2	6-1/2	4-3/4	17
30	30DC		7	10-1/2	7-3/4	4-3/4	20
34	34DC	1"	4	10-3/4	6-1/4	4-3/4	18
38	38DC		5-1/8	11	6-3/4	4-3/4	25
40	40DC		5-1/2	12-1/2	7-1/4	4-3/4	28
44	44DC	1-1/4"	4-3/4	11-1/2	6-1/2	4-3/4	24
48	48DC		5-1/2	11-1/2	6-3/4	4-3/4	26
50	50DC		8-1/2	11-1/2	8-1/4	4-3/4	37
54	54DC	1-1/2"	7	11-1/2	6-3/4	4-3/4	26
58	58DC		6-1/8	11-1/2	7	5	31
60	60DC		9	14-3/4	8-1/2	5-1/4	55
638	638DC	2"	6	12-3/4	7	5	35
678	678DC		7-1/2	13	7-3/4	5	43
698	698DC		10-1/2	15	11	5-1/2	80
718	718DC	2-1/2"	10	13-3/4	9	5	53
738	738DC		8	13-3/4	8	5	63
758	758DC		11-1/2	16	11-1/4	5-1/4	103
798	798DC	3"	9-7/8	16	10-1/4	5-1/4	95
838	838DC		11-3/4	15-3/4	11-1/4	5-1/4	120
896	896DC	4"	11-3/4	16	11-1/4	5-1/4	132
936	936DC		14	16-1/4	12-1/2	6-1/4	165
106	106DC	6"	17-3/4	18-1/2	13-3/4	8	250

- * For D.C. suffixes, dimension "B" is 1-1/2" less in most cases.
- All dimensions and weights are approximate, for estimating purposes only, and are subject to change without notice.
- Net weights are based on a bronze valve.

All solenoid enclosures have a 1/2" NPT conduit connection (standard). Other sizes and types are available.



Location of the conduit connection varies depending on the pipe size of the valve and whether A.C. or D.C.

- All flanges drilled per ANSI standards.
- Valve bodies can be rotated 90° to four positions to facilitate mounting for direction of flow. Specify with order if body orientation is to be different than standard shown above.
- On all valves, additional headroom should be allowed for removal of the solenoid enclosure/coil. Consult factory for details.
- Consult factory for Vertical Pipe Mounting dimensions. Specify whether upward or downward flow.
- Consult factory for Inverted Body dimensions. Specify direction of flow.