Bronze and Stainless Steel 2-Way Solenoid Valves

...For Reliable Control of Water, Oil, Steam, Air, Gas, Cryogenics, Solvents, Oxygen, and Corrosive Fluids

AVAILABLE for QUICK DELIVERY

Proudly Made in the USA

Catalog 3020
BULLETIN 3020-
Index

WELCOME to MAGNATROL

Process Control Solenoid Valves for
Water • Oil • Air • Gas • Steam • Cryogenics • Vacuum • Solvents
Brine • Oxygen • Corrosive Fluids

Magnatrol Valve Corp.

– Established 1936
– Experienced Dedicated Sales Staff
– Application / Engineering Assistance
– Excellent Product Support
– Quick Delivery

Our continued success has come from manufacturing a top quality product, product support, commitment to service and on-time delivery ensuring complete customer satisfaction.

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OUR PRODUCTS

Every valve is manufactured and tested in-house following Quality Assurance Standards where production operations are under the control of our dedicated, experienced staff and workforce.

– High Quality Bronze and Stainless Steel Solenoid Valves*
– Pressures up to 500 PSI*
– Temperatures up to 400° F*
– Cryogenic and Oxygen Service Applications
– Normally Closed (Energize to Open)
– Normally Open (Energize to Close)
– Continuous Duty Coils for all AC & DC Voltages
– NO Differential Pressure Required to Open
– Full Port-Internal Pilot Operated or Direct Acting
– 2-Way Straight Thru Design
– Packless Construction

*Custom engineered valves, special alloys, temperatures, pressures and applications as well as modifications to standard Magnatrol valves are available through Magnatrol’s Clark-Cooper Division.
(See bottom of page 3)
Use the chart below to determine suitable types of Magnatrol valves for a given application.

**Example:** A normally closed 1/2˝ valve for use on 100 psi steam, there are four types suitable and the final selection can only be made after referring to Bulletins 3020-M, 3020-S, 3020-J and 3020-W on pages 10, 12, 20 and 24 respectively.

**Maximum Differential Pressure:**
When specifying a valve, the Maximum Differential Pressure must be equal to or greater than the application. Care should be taken not to “over specify” the valve by choosing a valve with a Maximum Differential Pressure that is excessively beyond the application.

If you are unsure please consult the factory.

<table>
<thead>
<tr>
<th>Max. Temperature</th>
<th>Up To 212°F</th>
<th>Up To 400°F</th>
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</thead>
<tbody>
<tr>
<td><strong>Construction</strong></td>
<td><strong>Bronze</strong></td>
<td><strong>Stainless Steel</strong></td>
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<tr>
<td>Max. Diff. Pressure</td>
<td>30 PSI</td>
<td>50 PSI</td>
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<tr>
<td>Internal Port Size</td>
<td>Full</td>
<td>Full</td>
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<tr>
<td>Air</td>
<td>♦</td>
<td>♦</td>
</tr>
<tr>
<td>Brine</td>
<td>♦</td>
<td>♦</td>
</tr>
<tr>
<td>Gas</td>
<td>♦</td>
<td>♦</td>
</tr>
<tr>
<td>Oil</td>
<td>♦</td>
<td>♦</td>
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<tr>
<td>Solvents</td>
<td>♦</td>
<td>♦</td>
</tr>
<tr>
<td>Water</td>
<td>♦</td>
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<tr>
<td>Vacuum</td>
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<td>♦</td>
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<td>♦</td>
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<tr>
<td>Oxygen, Gaseous</td>
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<tr>
<td>Corrosive</td>
<td>♦</td>
<td>♦</td>
</tr>
</tbody>
</table>
Solenoid Coils

Continuous Duty Coils

Electrical Characteristics:

The coils are stocked for the following voltages:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>6</th>
<th>12</th>
<th>24</th>
<th>32</th>
<th>48</th>
<th>64</th>
<th>75</th>
<th>120</th>
<th>208</th>
<th>240</th>
<th>480</th>
<th>575</th>
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</thead>
<tbody>
<tr>
<td>50, 60 Hertz AC DC</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
</tbody>
</table>

75V DC for locomotive applications
*Furnished with surge protecting capacitor

Reference should be made to the Bulletins to determine the availability of a required valve for a specific power supply.

Consult the factory for information regarding voltage and frequencies not listed.

Valves for AC service can be converted for use on other AC voltages simply by changing the coil. Similarly DC valves can be converted for other DC voltages. Consult factory regarding conversion from AC to DC or DC to AC.

Current Consumption:

Current values shown in the bulletins are for 120 volts, 60 hertz. For other voltages the current is inversely proportional: For instance, if a given valve draws 0.5 amperes on 120 volts it would draw 0.25 amperes on 240 volts, or 0.125 amperes on 480 volts. Where power consumption is shown in DC watts, the values given should be divided by line voltage to obtain the current in amperes. Power consumption for all valves is shown in the individual bulletins.

Construction:

Continuous Duty Construction: Coils can be energized continuously without overheating or failure.

Wire Leads: 18” long 18 gauge wire standard (longer continuous leads available)

Encapsulated: Coils are encapsulated for temperature of intended service, providing excellent resistance to shock, moisture, oil and chemicals.

Coil Class:

General Service - Class “B”

<table>
<thead>
<tr>
<th>Maximum Fluid Temperature</th>
<th>Maximum Ambient Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>212° F (100° C)</td>
<td>104° F (40° C)</td>
</tr>
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</table>

High Temperature - Class “H”

<table>
<thead>
<tr>
<th>Maximum Fluid Temperature</th>
<th>Maximum Ambient Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>400° F (206° C)</td>
<td>212° F (100° C)</td>
</tr>
</tbody>
</table>

Installation:

The coil is a two wire device which may be controlled by either a single or double pole switch. The switch should always be installed in the hot leg of 120 volt circuits. Where both legs are hot, such as 240 or 480 volt circuits, a double pole switch is preferable, however, if a single pole switch is used, then the wiring should have top quality insulation since even minute leakage currents may give rise to sticking problems. On motor hookup with step control starter, full voltage should be supplied to coil immediately.

Note: Coil can be readily changed while valve is still under pressure.
Valve Construction Features

- 2-way straight thru globe design
- Bronze or Stainless Steel body w/female NPT threads standard
- Flanged Ends available on request
- Full port-internal pilot operated or direct acting
- Packless construction
- Continuous duty coils for all voltages
- No differential pressure required to open

Magnatrol Solenoid Operated Valves are used to control the flow of liquids or gases, generally in conjunction with automatic control apparatus such as thermostat, float switch, time switch, or flow meter.

Housing
- Construction: Malleable or Cast Iron
- Designed for rugged industrial use
- 1/2” NPS conduit connection
- Available: NEMA 12, 4, 4X and Explosion Proof

Coil
- Available Class “B” or “H” insulation
- Designed for continuous duty service
- Available in most AC or DC voltages

Bonnet
- A flanged metallic tube encloses the plunger and hermetically seals the top of the valve

Piston Assembly
- A sturdily constructed stem assembly consisting of a plunger and stainless steel pilot flexibly connected to the piston
- Discs are available in various materials dictated by operating conditions

Valve Body
- Constructed of high pressure cast bronze or stainless steel in a globe pattern
- Available in a full range of sizes

Normally Closed Valve shown is typical of Type A, 1/2” thru 1-1/4”
BRONZE Solenoid Valves

TYPE N NORMALLY CLOSED - 1/2” to 3/4” PIPE SIZE

( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

OPERATION:
This Direct Acting Valve opens when energized and closes when de-energized. When the coil is energized, the stem is lifted from its conical seat by the plunger.

Direct Acting Orifice Sizes – 3/32” to 1/2”

CONSTRUCTION:
* Wetted parts
  – Valve Body* – Cast Bronze, Globe Pattern – NPT ends
  – Coil Enclosure – Malleable Iron, 1/2” NPS conduit conn.
  – Plunger* – 430 Stainless Steel
  – Valve Stem* – 303 Stainless Steel
  – Bonnet Tube* – 304 Stainless Steel
  – Spring* – 302 Stainless Steel
  – Body Seal* – Buna N (Viton® available)
  – Orifice Seal* – Metal to Metal (Soft Seat available)
  – AC Shading Coil* – Copper
  – Stem Pin* – Inconel
  – Coil – Encapsulated Class B, 18˝ leads – (Class H available)

APPLICATION:
To control the flow of Water, Oil, Air, Gas, Solvents, Brine, Vacuum and any other fluids not reactive with construction materials and free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Valve Port Size</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. lbs</th>
<th>Dimensions in Inches</th>
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<tbody>
<tr>
<td>3/8</td>
<td>25</td>
<td>3/8</td>
<td>18N22</td>
<td>25</td>
<td>0.4</td>
<td>1.2</td>
<td>18</td>
<td>6</td>
<td>5-3/8</td>
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<tr>
<td></td>
<td>50</td>
<td>1/4</td>
<td>18N42</td>
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<td>75</td>
<td>3/16</td>
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<td>5/16</td>
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<td>1/4</td>
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<td>2-3/4</td>
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<tr>
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<td>150</td>
<td>3/16</td>
<td>33N52</td>
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<td>1/8</td>
<td>33N62</td>
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<tr>
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<td>1/2</td>
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<td>1.3</td>
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<tr>
<td></td>
<td>35</td>
<td>5/16</td>
<td>18N33</td>
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<td>3-1/2</td>
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<td>10</td>
<td>2-7/8</td>
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Optional Viton® “Soft Seat” Orifice Seal
– For applications requiring tight seating
– Suitable for Fuel Oils, Gaseous Oxygen and other compatible fluids

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
BRONZE Solenoid Valves

TYPE NR
NORMALLY OPEN - 1/2” to 3/4” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

OPERATION:
This Direct Acting Valve closes when energized and opens when de-energized. When the coil is energized, the stem is pressed into its conical seat by the plunger.

Direct Acting Orifice Sizes – 3/32” to 1/2”

CONSTRUCTION:
- Wetted parts
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends
- Coil Enclosure – Malleable Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Poppet* – 304 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Buna N (Viton® available)
- Orifice Seal* – Metal to Metal (Soft Seat available)
- AC Shading Coil* – Copper
- Stem Pin* – 304 Stainless Steel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

APPLICATION:
To control the flow of Water, Oil, Air, Gas, Solvents, Brine, Vacuum and any other fluids not reactive with construction materials and free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
BRONZE Solenoid Valves

**Type A** FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**Operation:** Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**Construction:**
- Wetted parts
  - Valve Body* - Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
  - Piston* - Bronze
  - Control Enclosure – Malleable or Cast Iron, 1/2” NPS conduitconn.
  - Plunger* - 430 Stainless Steel
  - Pilot Valve* - 303 Stainless Steel
  - Bonnet Tube* - 304 Stainless Steel
  - Pilot Valve* - 303 Stainless Steel
  - Bonnet Tube* - 304 Stainless Steel
  - Stem Pin* – Inconel
  - Orifice Seal* – Buna N (Viton® or Teflon® available)
  - Body Seal* – Buna N or Non-Asbestos Gasket
  - Spring* – 302 Stainless Steel
  - Spring* – 302 Stainless Steel
  - Piston* – Bronze
  - Valve Body* – Cast Bronze, Globe Pattern – NPT ends

**Application:** To control the flow of Water, Oil, Air, Gas, Solvents, Brine, Vacuum and any other fluids not reactive with construction materials and free of sediment. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

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<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wts</th>
<th>Dimensions in Inches</th>
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<td>7 5-7/8 2-3/4 3-1/4 4-3/4</td>
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<td>7-1/8 6 2-3/4 3-1/2 5-1/2</td>
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<td>8</td>
<td>7 5-7/8 2-3/4 3-1/2 5-1/2</td>
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</tbody>
</table>

† Not available for DC operation.

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

When ordering please supply:
- Pipe Size
- Valve Type
- Fluid
- Fluid Temperature
- Voltage (AC or DC)
- Max. Diff. Pressure
- Optional Features
- Optional Features
- (See pages 26 & 27)

MAX. FLUID TEMP. 212° F
MAX. STATIC PRESSURE 300 PSI
(Except valves listed for 500 PSI)

8 DEPENDABLE / PACKLESS
BRONZE Solenoid Valves

**TYPE AR** FULL PORT NORMALLY OPEN - 1/2” to 3” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:** Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seat it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:** *Wetted parts*
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- AC Shading Coil* – Copper
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- Body Seal* – Buna N or Non Asbestos Gasket
- Spring* – 302 Stainless Steel
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- Stem Pin* – Inconel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

**APPLICATION:** To control the flow of Water, Oil, Air, Gas, Solvents, Brine, Vacuum and any other fluids not reactive with construction materials and free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

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<th>Amps Hold 120-60</th>
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* Not available for DC operation  † Shipping weights and Dimension “A” apply to NPT Ends

**When ordering please supply:**
- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Hertz
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)
BRONZE Solenoid Valves

**TYPE M** NORMALLY CLOSED - 3/8” to 3/4” PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:** Valve opens when energized and closes when de-energized. In this direct acting valve, when the coil is energized, the stem is lifted from its conical seat by the plunger.

**Direct Acting Orifice Sizes** – 1/8” to 1/2”

**CONSTRUCTION:**
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends
- Coil Enclosure – Malleable Iron, 1/2˝ NPS conduit conn.
- Valve Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket (Teflon® available)
- Orifice Seal* – Metal to Metal (Soft Seat available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18˝ leads

**APPLICATION:** To control the flow of Steam, Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sediment. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning** – Cryogenic valves are degreased and cleaned to keep them free of moisture. Oxygen valves are also “black light” tested.

---

When ordering please supply:
- Pipe Size
- Fluid Temperature
- Voltage (AC or DC)
- Hertz
- Fluid
- Max. Diff. Pressure
- Optional Features

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

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<th>Valve Port Size</th>
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**Optional Viton® “Soft Seat” Orifice Seal** – For applications requiring tight seating – Suitable for Fuel Oils, Gaseous Oxygen and other compatible fluids
**BRONZE Solenoid Valves**

**TYPE MR** NORMALLY OPEN - 3/8” to 3/4” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:** Valve closes when energized and opens when de-energized. In this direct acting valve, when the coil is energized, the stem is pressed into its conical seat by the plunger.

**Direct Acting Orifice Sizes** – 1/8” to 1/2”

**CONSTRUCTION:** *Wetted parts*

- Valve Body* – Cast Bronze, Globe Pattern – NPT ends
- Coil Enclosure – Malleable Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Poppet* – 304 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket (Teflon® available)
- Orifice Seal* – Metal to Metal (Soft Seat available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18˝ leads

**APPLICATION:** To control the flow of Steam, Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sediment. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning** – Cryogenic valves are degreased and cleaned to keep them free of moisture.
- Oxygen valves are also “black light” tested.

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**Optional Viton® “Soft Seat” Orifice Seal**
- For applications requiring tight seating
- Suitable for Fuel Oils, Gaseous Oxygen and other compatible fluids

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For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
BRONZE Solenoid Valves

TYPE S
FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

OPERATION:
Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

CONSTRUCTION:
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket
- AC Shading Coil* – Copper
- Orifice Seal* – Glass Filled Teflon® (Teflon® available)
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18” leads

APPLICATION:
To control the flow of Steam. Steam must be free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

<table>
<thead>
<tr>
<th>Pipe Size Inches</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.*</th>
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</tbody>
</table>

† Not available for DC operation
* Shipping weights and Dimension “A” apply to NPT Ends

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

For 1/2” to 3” PIPE SIZE

DEPENDABLE / PACKLESS

MAX. FLUID TEMP. 400° F
MAX. STATIC PRESSURE 200 PSI

Solenoid Valves

When ordering please supply:
- Pipe Size
- Valve Type
- Fluid
- Voltage (AC or DC)
- Temperature
- Max. Diff. Pressure
- Optional Features
(See pages 26 & 27)
BRONZE Solenoid Valves

TYPE SR FULL PORT NORMALLY OPEN - 1/2˝ to 3˝ PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

OPERATION:
Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seat it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

CONSTRUCTION: *Wetted parts
- Valve Body* - Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2˝ NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Poppet* – 303 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Springs* – Inconel and 302 Stainless Steel
- Body Seal* – Non Asbestos Gasket
- Orifice Seal* – Glass Filled Teflon® (Teflon® available)
- STEM* – 304 Stainless Steel
- Coil - Encapsulated Class H, 18˝ leads

APPLICATION:
To control the flow of Steam. Steam must be free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

<table>
<thead>
<tr>
<th>Pipe Size Inches</th>
<th>Max. Diff. PSI</th>
<th>Watts AC</th>
<th>Amps Hold 120-50</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.</th>
<th>Dimensions in Inches</th>
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<td>45</td>
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</tr>
</tbody>
</table>

† Not available for DC operation  •  Shipping weights and Dimension “A” apply to NPT Ends

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

When ordering please supply:
- Pipe Size
- Valve Type
- Valve Voltage (AC or DC)
- Hertz
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)
BRONZE Solenoid Valves

**TYPE L**  FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:** Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:** *Wetted parts
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket (Teflon* available)
- Orifice Seal* – Glass Filled Teflon*
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18” leads

**APPLICATION:** To control the flow of Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sediment. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F). Valve operates from zero to maximum pressure and any other fluids not reactive with construction materials and free of sediment. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F).

**CLEANING** – Cryogenic valves are degreased and cleaned to keep them free of moisture.
- Oxygen valves are also *black light* tested.

**FOR STEAM APPLICATIONS** SEE BULLETIN 3020-S

Page 12

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For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

### Dimensions in Inches

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.*</th>
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<td>35</td>
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<tr>
<td></td>
<td>300 44L59</td>
<td>85</td>
<td>2.0</td>
<td>13.0</td>
<td>45</td>
</tr>
</tbody>
</table>

† Not available for DC operation  ‡ Shipping weights and Dimension “A” apply to NPT Ends

---

When ordering please supply:
- Pipe Size
- Valve Type
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)
BRONZE Solenoid Valves

**TYPE LR**  FULL PORT NORMALLY OPEN  -  1/2” to 3” PIPE SIZE  
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:** Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seal it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:**  *Wetted parts

- Valve Body* – Cast Bronze, Globe Pattern NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Poppet* – 303 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Springs* – Inconel and 302 Stainless Steel
- Body Seal* – Non Asbestos Gasket (Teflon® available)
- Onifice Seal* – Glass Filled Teflon®
- AC Shading Coil* – Copper
- Stem Pin* – 304 Stainless Steel
- Coil – Encapsulated Class H, 18” leads

**APPLICATION:** To control the flow of Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sediment. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning**  – Cryogenic valves are degreased and cleaned to keep them free of moisture. – Oxygen valves are also “black light” tested.

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**FOR STEAM APPLICATIONS SEE BULLETIN 3020-SR Page 13**

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**DEPENDABLE / PACKLESS**

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**BULLETIN 3020-LR**

**MAX. FLUID TEMP. 400° F**

**MAX. STATIC PRESSURE 300 PSI**  
(Except valves listed for 500 PSI)

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For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
**BRONZE Solenoid Valves**

**TYPE G** FULL PORT NORMALLY CLOSED - 1” to 3” PIPE SIZE

(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:**
Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:** * Wetted parts
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve Stem* – 303 Stainless Steel
- Pilot Valve Disc Holder* – Brass
- Pilot Valve Stem* – 303 Stainless Steel
- Plunger* – 430 Stainless Steel
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- Body Seal* – Buna N (Viton® available)
- Bonnet Tube* – 304 Stainless Steel
- Piston* – Bronze (Flanged Ends available)
- Spring* – 302 Stainless Steel
- Valves are ideal for TIGHT SEATING, LOW PRESSURE and LOW FLOW conditions. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**APPLICATION:**
To control the flow of Water, Air, Gas, Solvents, Vacuum and any other fluids not reactive with construction materials and free of sediment. Buna N seating of the pilot and main orifices make the valves ideal for TIGHT SEATING, LOW PRESSURE and LOW FLOW conditions. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

### Pipe Size and Max. Diff. PSI

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>1-1/4</td>
<td>20</td>
</tr>
<tr>
<td>1-1/2</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>2-1/2</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
</tr>
</tbody>
</table>

### Type No.

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.</th>
<th>Dimensions in Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>18G24</td>
<td>25</td>
<td>0.4</td>
<td>1.4</td>
<td>18</td>
<td>9</td>
<td>A: 7-1/2 B: 6-1/8 C: 8-1/8 D: 10-5/8 D (Flanged) 150#</td>
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<tr>
<td>118G24</td>
<td>40</td>
<td>0.6</td>
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<td>28</td>
<td>9</td>
<td>6-3/4</td>
</tr>
<tr>
<td>133G24</td>
<td>65</td>
<td>1.2</td>
<td>4.1</td>
<td>33</td>
<td>10</td>
<td>6-3/4</td>
</tr>
</tbody>
</table>

### Optional Features

- Shipping weights and Dimension “A” apply to NPT Ends
- Wetted parts
- Valve Body
- Piston
- Coil Enclosure
- Plunger
- Pilot Valve Stem
- Pilot Valve Disc Holder
- Pilot Valve Stem
- Plunger
- AC Shading Coil
- Stem Pin
- Orifice Seal
- Body Seal
- Bonnet Tube
- Piston
- Spring
- Valves are ideal for TIGHT SEATING, LOW PRESSURE and LOW FLOW conditions. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**For Options and Accessories**

see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
BRONZE Solenoid Valves

**TYPE GR** FULL PORT NORMALLY OPEN - 1” to 3” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:**
Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seat it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:**
- Wetted parts
  - Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
  - Piston* – Bronze
  - Coil Enclosure – Malleable or Cast Iron, 1/2˝ NPS conduit conn.
  - Plunger* – 430 Stainless Steel
  - Pilot Valve Stem* – 303 Stainless Steel
  - Pilot Valve Disc Holder* – Brass
  - Pilot Valve Seal* – Buna N (Viton® available)
  - Bonnet Tube* – 304 Stainless Steel
  - Spring* – 302 Stainless Steel
  - Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
  - Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
  - AC Shading Coil* – Copper
  - Stem Pin* – Inconel
  - Coil – Encapsulated Class B, 18˝ leads – (Class H available)

**APPLICATION:**
To control the flow of Water, Air, Gas, Solvents, Vacuum and any other fluids not reactive with construction materials and free of sediment. Buna N seating of the pilot and main orifices make the valves ideal for TIGHT SEATING, LOW PRESSURE and LOW FLOW conditions. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Pipe Size**

<table>
<thead>
<tr>
<th>Pipe Size Inches</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.*</th>
<th>Dimensions in Inches</th>
<th>D (Flanged)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>18GR24</td>
<td>25</td>
<td>0.5</td>
<td>1.5</td>
<td>18</td>
<td>9</td>
<td>A* B C D D 150#</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>33GR24</td>
<td>45</td>
<td>1.0</td>
<td>3.0</td>
<td>23</td>
<td>13</td>
<td>8-5/8 7-1/4 2-3/4 4-1/8 6-3/4</td>
<td></td>
</tr>
<tr>
<td>1-1/4</td>
<td>20</td>
<td>18GR25</td>
<td>25</td>
<td>0.5</td>
<td>1.9</td>
<td>18</td>
<td>10</td>
<td>9-3/8 7-3/4 2-7/8 4-3/8 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>33GR25</td>
<td>45</td>
<td>1.0</td>
<td>3.2</td>
<td>23</td>
<td>14</td>
<td>9-3/8 7-3/4 2-7/8 4-3/8 7</td>
<td></td>
</tr>
<tr>
<td>1-1/2</td>
<td>15</td>
<td>18GR26</td>
<td>25</td>
<td>0.5</td>
<td>2.0</td>
<td>18</td>
<td>12</td>
<td>9-1/2 7-7/8 3-1/2 4-3/4 7-3/4</td>
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</tr>
<tr>
<td></td>
<td>33GR26</td>
<td>45</td>
<td>1.0</td>
<td>3.8</td>
<td>23</td>
<td>21</td>
<td>14</td>
<td>9-1/2 7-7/8 3-1/2 4-3/4 7-3/4</td>
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<td>1.0</td>
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<td>21</td>
<td>11-1/4 9-1/4 3-3/4 5-3/4 10</td>
<td></td>
</tr>
<tr>
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<td>30</td>
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<td>4.5</td>
<td>33</td>
<td>31</td>
<td>11-1/4 9-1/4 3-3/4 5-3/4 10</td>
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</tr>
<tr>
<td>2-1/2</td>
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<td>4GR28</td>
<td>60</td>
<td>1.7</td>
<td>8.0</td>
<td>35</td>
<td>39</td>
<td>12-3/4 10-1/4 5-7/8 7-7/8 11</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>44GR29</td>
<td>60</td>
<td>1.7</td>
<td>8.8</td>
<td>35</td>
<td>47</td>
<td>13-5/8 10-5/8 6-5/8 8 13-5/16</td>
<td></td>
</tr>
</tbody>
</table>

* Shipping weights and Dimension “A” apply to NPT Ends

When ordering please supply:
- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)
BRONZE Solenoid Valves

**OPERATION:**
Valve opens when energized and closes when de-energized. In this direct acting valve the disc holder assembly is lifted from its seat by the plunger.

**CONSTRUCTION:**
- Wetted parts
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Disc Holder* – Brass
- Coil Enclosure – Malleable or Cast Iron, 1/2˝ NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – 302 Stainless Steel
- Body Seal* – Buna N (Viton® available)
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

**APPLICATION:**
To control the flow of Water, Air, Gas, Solvents, Vacuum and any other fluids not reactive with construction materials and free of sediment. Buna N seating of the orifice make the valves ideal for TIGHT SEATING, LOW PRESSURE and LOW FLOW conditions. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

---

**Pipe Size** | **Max. Diff. Watts** | **Type No.** | **Amps** | **Watts** | **Dimensions in Inches**
--- | --- | --- | --- | --- | ---
**Pipe Size**
3/8 | 15 | 18D11 | 25 | 0.4 | **A** 6-1/4
3/4 | 30 | 33D11 | 45 | 0.8 | 1.0
3/8 | 20 | 18D12 | 45 | 0.8 | 1.0
1 | 4 | 18D13 | 25 | 0.4 | 1.0
2 | 7.5 | 33D13 | 25 | 0.8 | 1.0
3 | 3 | 18D14 | 35 | 0.4 | 1.0
1 | 1/2 | 18D15 | 25 | 0.4 | 1.0
1-1/2 | 15 | 33D15 | 25 | 0.8 | 1.0
3/4 | 2 | 18D16 | 15 | 0.4 | 1.0
1 | 1/2 | 33D16 | 45 | 0.4 | 1.0
2 | 0.8 | 33D17 | 45 | 0.8 | 1.0
1.2 | 1 | 133D17 | 65 | 1.2 | 1.0

* Shipping weights and Dimension “A” apply to NPT Ends

---

When ordering please supply:
- Pipe Size
- Fluid
- Voltage (AC or DC)
- Hertz
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

For Options and Accessories see pages 26 & 27.
STRAINERS

BRONZE • STAINLESS STEEL

APPLICATION:
The presence of foreign particles in an automatic valve may seriously affect its dependability. The installation of a strainer close to the inlet side of the valve is the best means of preventing the entrance of pipe chips, scale, rust, pipe dope, welding slag or sediment into the valve, provided the screen is periodically removed for cleaning.

CONSTRUCTION:
Strainer bodies have screwed ends. Screens are stainless steel with opening sizes as listed in tables below. Other sizes can be furnished upon request. Liberal straining area provides for fluid passage at minimum pressure drop. Screens are easily removed for cleaning. Strainers are furnished with NPT blow-off connections unplugged. See charts below for blow-off sizes (C Dim.)

CLEANING FOR CRYOGENIC AND OXYGEN SERVICE:
Strainers for Cryogenic applications are degreased and cleaned to keep them free of moisture. Strainers for Oxygen service are degreased and cleaned, then “black light” tested.

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Screen Size</th>
<th>Type No.</th>
<th>Ship Wt. Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 Mesh 0.009 Openings</td>
<td>BR0</td>
<td>3/4</td>
</tr>
<tr>
<td>1/4</td>
<td></td>
<td>BR1</td>
<td>3/4</td>
</tr>
<tr>
<td>3/8</td>
<td></td>
<td>BR2</td>
<td>3/4</td>
</tr>
<tr>
<td>1/2</td>
<td></td>
<td>BR3</td>
<td>1-1/2</td>
</tr>
<tr>
<td>3/4</td>
<td></td>
<td>BR4</td>
<td>2-1/4</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>BR5</td>
<td>3-1/4</td>
</tr>
<tr>
<td>1-1/4</td>
<td></td>
<td>BR6</td>
<td>4-1/2</td>
</tr>
<tr>
<td>1-1/2</td>
<td>0.16 Diameter Perforations Lined With 30 Mesh</td>
<td>BR7</td>
<td>7</td>
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<tr>
<td>2</td>
<td></td>
<td>BR8</td>
<td>1-2/12</td>
</tr>
<tr>
<td>2-1/2</td>
<td></td>
<td>BR9</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Screen Size</th>
<th>Type No.</th>
<th>Ship Wt. Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60 Mesh 0.009 Openings</td>
<td>SS2</td>
<td>1-1/2</td>
</tr>
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<td>1-1/2</td>
<td></td>
<td>SS3</td>
<td>2-1/4</td>
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<tr>
<td>1</td>
<td></td>
<td>SS4</td>
<td>3-1/4</td>
</tr>
<tr>
<td>2</td>
<td>0.16 Diameter Perforations Lined With 30 Mesh</td>
<td>SS6</td>
<td>6-3/4</td>
</tr>
<tr>
<td>2-1/2</td>
<td></td>
<td>SS7</td>
<td>11-1/2</td>
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</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Steam</th>
<th>Liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRONZE</td>
<td>300 PSI @ 350°F</td>
<td>400 PSI @ -20 to 150°F</td>
</tr>
<tr>
<td>STAINLESS STEEL</td>
<td>845 PSI @ 750°F</td>
<td>1,440 PSI @ 100°F</td>
</tr>
</tbody>
</table>
STAINLESS STEEL Solenoid Valves

TYPE J  NORMALLY CLOSED - 3/8” to 1/2” PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

OPERATION:
Valve opens when energized and closes when de-energized. In this direct acting valve, when the coil is energized, the stem is lifted from its conical seat by the plunger.

Direct Acting Orifice Sizes – 1/8” to 3/8”

CONSTRUCTION:
* Wetted parts
- Valve Body* – 304 Stainless Steel Globe Pattern – NPT ends
- Coil Enclosure – Malleable Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Valve Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket (Teflon® available)
- Orifice Seal* – Metal to Metal (Viton® available)
- AC Shading Coil* – Silver
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18” leads

APPLICATION:
To control the flow of Steam, Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sidement. Cryogenic fluids include Liquid Oxygen (-297ºF), Liquid Argon (-303ºF) and Liquid Nitrogen (-320ºF). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning – Cryogenic valves are degreased and cleaned to keep them free of moisture.
- Oxygen valves are also “black light” tested.

Optional Viton® “Soft Seat” Orifice Seal
- For applications requiring tight seating
- Suitable for Fuel Oils, Gaseous Oxygen and other compatible fluids

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
STAINLESS STEEL Solenoid Valves

**TYPE JR**

NORMALLY OPEN - 3/8" to 1/2" PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:**
Valve closes when energized and opens when de-energized. In this direct acting valve, when the coil is energized, the stem is pressed into its conical seat by the plunger.

Direct Acting Orifice Sizes – 1/8" to 3/8"

**CONSTRUCTION:**
- Wetted parts
- Valve Body – 304 Stainless Steel Globe Pattern – NPT ends
- Coil Enclosure – Malleable Iron, 1/2” NPS conduit conn.
- Plunger – 430 Stainless Steel
- Poppet – 304 Stainless Steel
- Stem – 303 Stainless Steel
- Bonnet Tube – 304 Stainless Steel
- Spring – Inconel
- Body Seal – Non Asbestos Gasket (Teflon® available)
- Orifice Seal – Metal to Metal (Viton® available)
- AC Shading Coil – Silver
- Stem Pin – Inconel
- Coil – Encapsulated Class H, 18” leads

**APPLICATION:**
To control the flow of Steam, Hot Liquids, Hot Gases, Cryogenics** and any other fluids not reactive with construction materials and free of sidement. Cryogenic fluids include Liquid Oxygen (-297ºF), Liquid Argon (-303ºF) and Liquid Nitrogen (-320ºF). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning** – Cryogenic valves are degreased and cleaned to keep them free of moisture.
- Oxygen valves are also “black light” tested.

---

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Valve Part Size</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.</th>
<th>Dimensions in Inches</th>
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</thead>
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</tr>
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<td>23</td>
<td>70</td>
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<td>10JR21</td>
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<td>1/8</td>
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<td>10JR51</td>
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<td>25JR21</td>
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<td>23</td>
<td>10</td>
<td>7-7/8</td>
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<td>3/16</td>
<td>25JR51</td>
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Optional Viton® “Soft Seat” Orifice Seal
- For applications requiring tight seating
- Suitable for Fuel Oils, Gaseous Oxygen and other compatible fluids

---

When ordering please supply:
- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Hertz
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features
  (See pages 26 & 27)
**STAINLESS STEEL Solenoid Valves**

**TYPE K**

**FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE**

(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:** Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:** *Wetted parts - No Copper Bearing Alloys in contact with fluid*

- Valve Body* – 304 Stainless Steel Globe Pattern NPT ends (Flanged Ends available)
- Piston* – 303 Stainless Steel
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18” leads
- Orifice Seal* – Glass Filled Teflon® (Teflon® available)
- Cleaning

**APPLICATION:** To control the flow of Corrosive Fluids, Deionized Water, Condensate, Ammonias, Vegetable Oils, Fuel Oils, Cryogenics**, and Flammable Liquids. Cryogenic fluids include Liquid Oxygen (-297°F), Liquid Argon (-303°F) and Liquid Nitrogen (-320°F). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning** – Cryogenic valves are degreased and cleaned to keep them free of moisture.

- Oxygen valves are also “black light” tested.

**Ship Weights** shown here apply to Threaded Ends Only (except 3” which are Flanged Only)

For Flanged Ends contact factory for complete weight and dimensions

**3” STAINLESS STEEL VALVES** are SUPPLIED with FLANGED ENDS ONLY

### Table of Dimensions

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<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
<th>Amps Inrush 120-60</th>
<th>Watts DC</th>
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* Shipping weights and Dimension ‘A’ apply to NPT Ends

**SPECIAL GROUPS**

- **Type L**: With lug base

**FOR STEAM APPLICATIONS**

SEE BULLETIN 3020-W Page 24

**BULLETIN 3020-K**

MAX. FLUID TEMP. 400° F

MAX. STATIC PRESSURE 300 PSI

(Except valves listed for 500 PSI)

**DEPENDABLE / PACKLESS**

**For Options and Accessories**

see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

**When ordering please supply:**

- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Hertz
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features

(See pages 26 & 27)

**Shipping Weights**

Dependable/Packless

For Flanged Ends

Contact factory for complete weight and dimensions

**3" STAINLESS STEEL VALVES are SUPPLIED with FLANGED ENDS ONLY**
STAINLESS STEEL Solenoid Valves

**Cleaning**
Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seat it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:**
- Valve Body* = 304 Stainless Steel Globe Pattern NPT ends (Flanged Ends available)
- Piston* = 303 Stainless Steel
- Coil Enclosure – Malleable or Cast Iron, 1/2" NPS conduct conn.
- Plunger* = 430 Stainless Steel
- Poppet* = 303 Stainless Steel
- Stem* = 303 Stainless Steel
- Bonnet Tube* = 304 Stainless Steel
- Spring* = Inconel
- Body Seal* = Non Asbestos Gasket (Teflon* available)
- Orifice Seal* = Glass Filled Teflon*

**APPLICATION:** To control the flow of Corrosive Fluids, Deionized Water, Condensate, Ammonias, Vegetable Oils, Fuel Oils, Cryogenics**, and Flammable Liquids. Cryogenic fluids include Liquid Oxygen (-297ºF), Liquid Argon (-303ºF) and Liquid Nitrogen (-320ºF). Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Cleaning** – Cryogenic valves are degreased and cleaned to keep them free of moisture.
- Oxygen valves are also “black light” tested.

<table>
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<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Amps Hold 120-60</th>
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<td>13.0</td>
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* Shipping weights and Dimension "A" apply to NPT Ends

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

When ordering please supply:
- Pipe Size
- Fluid Temperature
- Valve Type
- Voltage (AC or DC)
- Hertz

Shipping Weights shown here apply to Threaded Ends Only (except 3” which are Flanged Only)

For Flanged Ends contact factory for complete weight and dimensions

3” STAINLESS STEEL VALVES are SUPPLIED with FLANGED ENDS ONLY
STAINLESS STEEL Solenoid Valves

TYPE W  FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE
(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

OPERATION:
Valve opens when energized and closes when de-energized. When
the coil is energized the pilot valve opens, relieving the pressure above
the piston, which is then lifted from its seat by the plunger. Upon
de-energizing the coil, a spring closes the pilot valve and opens a bleed
passageway to permit pressure to build above the piston and seat it.

CONSTRUCTION:
*Wetted parts - No Copper Bearing Alloys in
contact with fluid
- Valve Body* – 304 Stainless Steel Globe Pattern – NPT ends
(Flanged Ends available)
- Piston* – 303 Stainless Steel
- Coil Enclosure – Malleable or Cast Iron, 1/2˝ NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket
(Teflon® available)
- Orifice Seal* – Glass Filled Teflon®
- AC Shading Coil* – Silver
- Stem Pin* – Inconel
- Coil – Encapsulated Class H, 18˝ leads

APPLICATION:
To control the flow of Steam. Steam must be free of sediment. Valve
operates from zero to maximum differential pressure indicated in table.
Valve must be mounted in horizontal pipe with solenoid enclosure
vertical and on top.

Pipe Size
Dimensions in Inches

Max. Watts
Type No. Watts
Shipping Max. Diff. Ship
Inches AC Hold Type Hold Inrush DC Lbs.* AC DC
Watts
1/2” 120-60 120-60
90 14W22 25 0.4 1.2 18 7 7 5/7-8 2-7/8 3-1/4 6
140 114W42 40 0.6 1.8 28 10 8 6-7/8 3-1/2
180 129W42 65 1.2 3.6 33 10 8 6-7/8 3-1/2
3/4” 120-60 120-60
50 14W23 25 0.4 1.3 18 8 7-1/8 6 2-7/8 3-1/2
110 114W43 40 0.6 2.0 28 11 8-1/8 7 3-1/2
180 129W43 65 1.2 3.9 33 10 8 6-5/8 3-1/4 4-1/2 6-1/2
1” 120-60 120-60
50 116W24 25 0.4 1.5 18 10 8 6-5/8 3-1/4 4-1/2 6-1/2
90 116W44 40 0.6 2.3 28 10 8 6-5/8 3-1/4 4-1/2 6-1/2
180 131W44 65 1.2 4.2 33 13 8-7/8 7-1/2 3-1/2
1-1/2” 120-60 120-60
25 35W16 45 0.8 3.2 23 17 10 8-1/8 4 4-7/8 6-1/2
50 35W26 65 1.2 4.8 33 21 11 9-1/8 4-1/2
90 135W46 85 2.0 10.0 45 21 11 9-1/8 4-1/2
180 141W46 100 2.0 10.0 45 21 11 9-1/8 4-1/2
2” 120-60 120-60
25 36W17 45 0.8 3.5 23 27 11 8-3/4 5-3/8 6 8
50 36W27 65 1.2 7.4 35 32 12 9-3/4
115 42W47 85 2.0 11.0 45
180 142W47 100 2.0 11.0 45
25 44W19F1 60 1.2 8.8 35 68 13-3/4 10-1/2 6-5/8 N/A 9-1/2
50 44W29F1 85 2.0 13.0 45
100 44W49F1 150 2.0 13.0 45

For Options and Accessories see pages 26 & 27. Strainers are
recommended for use with solenoid valves (see page 19).

When ordering please supply:
- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Hertz
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features

Shipping Weights shown here apply to Threaded Ends Only
(except 3” which are Flanged Only)

For Flanged Ends contact factory
for complete weight and dimensions

3” STAINLESS STEEL VALVES are
SUPPLIED with FLANGED ENDS ONLY
STAINLESS STEEL Solenoid Valves

**TYPE WR**

FULL PORT NORMALLY OPEN - 1/2” to 3” PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:**
Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seat it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:**
*Wetted parts - No Copper Bearing Alloys in contact with fluid*
- Valve Body* – 304 Stainless Steel Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – 303 Stainless Steel
- Coil Enclosure – Malleable or Cast Iron, 1/2˝ NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Poppet* – 303 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – Inconel
- Body Seal* – Non Asbestos Gasket (Teflon® available)
- Orifice Seal* – Glass Filled Teflon®
- AC Shading Coil* – Silver
- Stem Pin* – 304 Stainless Steel

**APPLICATION:**
To control the flow of Steam. Steam must be free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

**Pipe Size** | **Max. Diff. PSI** | **Type No.** | **Watts AC** | **Amps Hold 120-60** | **Amps Inrush 120-60** | **Watts DC** | **Ship Wt. Lbs.*** | **Dimensions in Inches** | **D (Flanged) 150#**
---|---|---|---|---|---|---|---|---|---
1/2 | 90 | 14WR22 | 25 | 0.5 | 1.5 | 18 | 7 | 8-1/8 | 7 | 2-7/8 | 3-1/4 | 6
 | 140 | 114WR42 | 40 | 0.8 | 2.4 | 28 | 10 | 9-1/8 | 8 | 3-1/2 |
 | 180 | 125WR42 | 65 | 1.5 | 4.2 | 33 | 12 | 9-1/8 | 8 | 3-1/2 |
3/4 | 50 | 14WR23 | 25 | 0.5 | 1.6 | 18 | 8 | 8-1/4 | 7-1/8 | 2-7/8 | 3-1/2 | 6
 | 110 | 114WR43 | 40 | 0.8 | 2.6 | 28 | 12 | 9-1/4 | 8-1/8 | 3-1/2 |
 | 180 | 129WR43 | 65 | 1.5 | 4.3 | 33 | 12 | 9-1/4 | 8-1/8 | 3-1/2 |
1 | 25 | 16WR14 | 25 | 0.5 | 1.8 | 18 | 10 | 9-1/8 | 7-3/4 | 3-1/4 | 4-1/8 | 6-1/2
 | 25 | 16WR24 | 25 | 0.5 | 1.8 | 18 | 10 | 9-1/8 | 7-3/4 | 3-1/4 | 4-1/8 | 6-1/2
 | 35 | 116WR44 | 40 | 0.8 | 2.9 | 28 | 12 | 9-1/4 | 8-1/8 | 3-1/2 |
1-1/2 | 25 | 35WR16 | 45 | 1.0 | 3.8 | 23 | 18 | 11-3/8 | 9-1/2 | 4 | 4-7/8 | 6-1/2
 | 50 | 35WR26 | 90 | 1.5 | 5.7 | 33 | 22 | 11-5/8 | 9-3/4 | 4-1/2 |
 | 180 | 141WR46 | 85 | 3.5 | 9.7 | 45 | 22 | 11-5/8 | 9-3/4 | 4-1/2 |
2 | 25 | 36WR17 | 45 | 1.0 | 4.2 | 23 | 27 | 12-3/8 | 10-1/8 | 5-3/8 | 6 | 8
 | 50 | 36WR27 | 90 | 1.5 | 7.3 | 35 | 32 | 12-5/8 | 10-3/8 | 5-3/8 |
 | 115 | 42WR47 | 60 | 1.7 | 7.3 | 35 | 32 | 12-5/8 | 10-3/8 | 5-3/8 |
 | 180 | 142WR47 | 85 | 3.5 | 11.0 | 45 | 32 | 12-5/8 | 10-3/8 | 5-3/8 |
3 | 25 | 44WR19F1 | 60 | 1.7 | 7.3 | 35 | 69 | 14-4/3 | 11-1/8 | 6-5/8 | N/A | 9-1/2
 | 50 | 44WR29F1 | 100 | 3.5 | 11.0 | 45 | 69 | 14-4/3 | 11-1/8 | 6-5/8 | N/A | 9-1/2
| 150 | 44WR49F1 | 85 | 3.5 | 13.0 | 45 | 69 | 14-4/3 | 11-1/8 | 6-5/8 | N/A | 9-1/2

* Ship weights and Dimension “A” apply to NPT Ends

**For Options and Accessories** see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

**When ordering please supply:**
- Pipe Size
- Valve Type
- Fluid
- Voltage (AC or DC)
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)

**Shipping Weights** shown here apply to Threaded Ends Only (except 3” which are Flanged Only)

**For Flanged Ends** contact factory for complete weight and dimensions

**3” STAINLESS STEEL VALVES are SUPPLIED with FLANGED ENDS ONLY**

MAGNATROL VALVE CORPORATION • 67 Fifth Avenue • Hawthorne, NJ 07506
973.427.4341 • info@magnatrol.com • www.magnatrol.com

Shipping Weights shown here apply to NPT Ends.
BULLETIN 3020-OPT

OPTIONAL FEATURES

...FOR DEPENDABLE, PACKLESS SOLENOID VALVES

See Individual Options for Availability for Use with Specific Valve Types

BOTTOM MOUNTED OPTIONS  Note: Only one Bottom Mount Option can be installed on each valve

MANUAL OVERRIDE
(Normally Closed valves only)
(Designated by Prefix “MO”)
Enables manual opening of solenoid valve during power failure or to override automatic controls.

DASHPOT
(Designated by Prefix “DP”)
Furnished for clean liquids to reduce water hammer effect sometimes encountered in long pipe runs by slowing valve closing.

MOUNTING STUD
(Designated by Prefix “MS”)
3/8”-16 thread can be furnished in bottom of body to facilitate mounting on bracket.
(Not available on 2”, 2-1/2” and 3”)

OTHER OPTIONS

PILOT TAP
(Designated by Prefix “PT”)  
Type D, G & GR Valves can be furnished with 1/8” tapped hole for pilot connection or pressure gauge.

LEVER
(Normally Closed valves only)
(Designated by Prefix “LV”)
Enables rapid opening of solenoid valve. Can be chain operated for use at inaccessible locations.

FLOW CONTROL
(Normally Closed, NR & MR valves, only)
(Designated by Prefix “FC”)
Provides a manual method of reducing or throttling the flow.

DRAIN
(Normally Closed, NR & MR valves, only)
(Designated by Prefix “DR”)
1/4” NPT plug supplied in bottom of valve to facilitate draining of liquid.

PILOT TAP
(Designated by Prefix “PT”)  
Type D, G & GR Valves can be furnished with 1/8” tapped hole for pilot connection or pressure gauge.

“HUM FREE”: (No AC Hum/Buzz)
(Designated by Suffix “HF”) – The “HUM FREE” option eliminates the “AC hum” associated with AC operated solenoid valves. Enables valves to be used where an AC hum would not be acceptable and AC is the only power source available. IE: Hospitals, labs, schools (class rooms), homes, office environments etc. & when 24 vac is required for 40 series valves.

LEAK / DEAD TIGHT:
(Normally Closed valves only)
(Designated by Suffix “LT”) – The Leak / Dead Tight Option offers ‘soft’ resilient seating or ‘gapless’ seal for low pressure applications 60 PSI or less. Consult Factory for Max. Diff. Pressure and Valve Type availability.

Flanged Ends for Bronze and Stainless Steel Valves:
(Designated by Suffix “F1” for 150 lb or “F3” for 300 lb Flanges) – F1 or F3 Flanged ends available on all stainless steel valves. F1 Flanged ends available on bronze valves.

Explosion-Proof and Watertight Solenoids:
(Designated by Prefix “E” AND Suffix “ZP”) – are suitable for use in hazardous locations requiring Class I, Groups C & D, & Class II Groups E, F, and G equipment.

NEMA 4X:
(Designated by Prefix “E” AND Suffix “ZP”) – are suitable for use in locations requiring a NEMA 4X designation. “ZP” (Zinc Plating) replaces the standard paint used on the Coil housing (cup and base). The additional corrosion protection satisfies NEMA 4X requirements. Internal construction, pressure ratings, power consumption, and external dimensions are the same as for standard valves.

Nickel Plating:
(Designated by Suffix “NP”) – Plating is 0.0005” Thick Meets Mil Spec. C26074

Universal Mount Valves For Mounting In Vertical Pipe Runs
(See page 28, Type “P” Valve)
POSITION INDICATORS

...FOR NORMALLY CLOSED SOLENOID VALVES

POSITION SWITCHES

CONSTRUCTION:
- Housing: 316 Stainless Steel with 1/2” NPT Conduit Connection
- Contact: SPDT (Single Pole/Double Throw)
- Lead Wires: 36 inches long, 18 gauge standard leads potted-in PVC

OPERATION:
Switch is activated by a ferromagnetic “target” attached to the valve’s piston

“PS” – General Purpose/NEMA 4, 4X
“PSF” – Explosion Proof
SPDT Contact
Electrical Rating:
4A @ 120 VAC / 3A @ 24 VDC
2A @ 240 VAC / 1.25A @ 48 VDC
0.5A @ 125 VDC & 250 VDC

The PS and PSF can be wired AC or DC, N/O or N/C, consume no power to operate, and leave no current leakage or voltage drop

POSITION SWITCHES with LED VISUAL INDICATION

“PL” – General Purpose/NEMA 4, 4X
“PLF” – Explosion Proof
SPDT Contact
Electrical Rating:
0.25A @ 120 VAC / 24 VDC (Approx. 5V drop)

The PL and PLF can be wired AC or DC, N/O or N/C

Operating Temperature: -40°F to 160°F (71°C)

Position Switch shown here energizing Red LED

POSITION DISPLAY – VISUAL INDICATION ONLY

“PD” – General Purpose / NEMA 4, 4X / Explosion Proof

CONSTRUCTION:
- Housing: Clear high-strength polycarbonate

APPLICATION:
Visual indication that valve is Open / Closed

OPERATION:
When the valve is in the closed position, a ferromagnetic “target” attached to the valve’s piston, lifts a green colored magnet into the adapter hiding it from view. When the valve is energized, (open position), the magnet drops down to a visible position.

Position Indicators for Normally Closed Valves only. Available on Type A, S, L, K, W and G Valves

NOTE: ONLY ONE BOTTOM MOUNTED OPTION CAN BE INSTALLED ON EACH VALVE

For multiple switches and where a switch and a bottom mounted option are required, contact our Clark-Cooper Division.
(See bottom of Page 3)

HOW TO ORDER
Indicate option when ordering – Use the appropriate Prefix: PS, PSF, PL, PLF, or PD
See page 33 for Type Number details
BRONZE Solenoid Valves

**TYPE P**

FULL PORT NORMALLY CLOSED - 1/2” to 1-1/2” PIPE SIZE
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:**
Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:**
- Wetted parts
  - Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
  - Piston* – Bronze
  - Coil Enclosure – Malleable Iron, 1/2˝ NPS conduit conn.
  - Plunger* – 430 Stainless Steel
  - Plunger Spring* – 304 Stainless Steel
  - Pilot Valve* – 303 Stainless Steel
  - Bonnet Tube* – 304 Stainless Steel
  - Spring* – 302 Stainless Steel
  - Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
  - Orifice Seal* – Buna N (Viton® or Glass-filled Teflon® available)
  - Plunger Spring* – 304 Stainless Steel
  - Bonnet Tube* – 304 Stainless Steel
  - Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
  - Orifice Seal* – Buna N (Viton® or Glass-filled Teflon® available)
  - Stem Pin* – Inconel
  - Coil – Encapsulated Class H, 18˝ leads

**APPLICATION:**
To control the flow of Water, Oil, Air, Gas, Solvents, Brine, Vacuum and any other fluids not reactive with construction materials and free of sediment. Valve operates from zero to maximum differential pressure indicated in table. Valve can be mounted in ANY POSITION (See box above).

**For Options and Accessories**
see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

**Explosion Proof**: Available for DC Power Source ONLY
(Valves without “HF” suffix use Prefix “F”, i.e. F118P44)
**SANDY WELL WATER**

**FULL PORT NORMALLY CLOSED - 1/2” to 3” PIPE SIZE**

(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:**

Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:**

- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – 302 Stainless Steel
- Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

**APPLICATION:**

To control the flow of Sandy Well Water, the valve is designed with the piston and other components ‘turned down’, offering additional clearance, allowing the valve to operate with fluids containing some sediment typically found in well water. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.</th>
<th>Dimensions in Inches</th>
</tr>
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</tr>
</tbody>
</table>

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

**When ordering please supply:**

- Pipe Size
- Valve Type
- Voltage (AC or DC)
- Fluid
- Fluid Temperature
- Max. Diff. Pressure
- Optional Features
- Hertz

**MAX. FLUID TEMP. 212° F**

**MAX. STATIC PRESSURE 300 PSI**
OPERATION:
Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

CONSTRUCTION: *Wetted parts
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2"NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – 302 Stainless Steel
- Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

APPLICATION:
To control the flow of Coolant, the valve is designed with the piston “turned down”, and a larger pilot port, offering additional clearance, allowing the valve to operate with fluids containing some grit/sediment typically found in coolant. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

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**BULLETIN 3020**
GRITTY Coolant

**MAX. FLUID TEMP. 212° F**
**MAX. STATIC PRESSURE 300 PSI**

**BRONZE Solenoid Valves**

**FULL PORT NORMALLY CLOSED - 1/2” to 1-1/2” PIPE SIZE**
( NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN )

**OPERATION:**
Valve opens when energized and closes when de-energized. When the coil is energized the pilot valve opens, relieving the pressure above the piston, which is then lifted from its seat by the plunger. Upon de-energizing the coil, a spring closes the pilot valve and opens a bleed passageway to permit pressure to build above the piston and seat it.

**CONSTRUCTION:**
- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2"NPS conduit conn.
- Plunger* – 430 Stainless Steel
- Pilot Valve* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Spring* – 302 Stainless Steel
- Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- AC Shading Coil* – Copper
- Stem Pin* – Inconel
- Coil – Encapsulated Class B, 18˝ leads – (Class H available)

**APPLICATION:**
To control the flow of Coolant, the valve is designed with the piston “turned down”, and a larger pilot port, offering additional clearance, allowing the valve to operate with fluids containing some grit/sediment typically found in coolant. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

---

**Pipe Size** | **Max. Diff. PSI** | **Type No.** | **Watts AC** | **Watts DC** | **Ship Wt. Lbs.** | **Dimensions in Inches**
--- | --- | --- | --- | --- | --- | ---
1/2 | 80 | MS18A42-C | 25 | 18 | 8 | A: 7, B: 5-7/8, C: 2-3/4, D: 3-1/4
 | 200 | MS33A22-C | 40 | 23 |  | 
 | 300 | MS233A42-C | 80 | 40 |  | 
3/4 | 80 | MS18A43-C | 25 | 18 | 8 | A: 7-1/8, B: 6, C: 2-3/4, D: 3-1/2
 | 125 | MS33A23-C | 45 | 23 |  | 
 | 200 | MS333A43-C | 65 | 33 | 12 | A: 8-1/8, B: 7, C: 3-1/2, D: 3-1/2
 | 300 | MS233A44-C | 80 | 40 |  | 
1 | 200 | MS333A24-C | 80 | 40 | 10 | A: 7-7/8, B: 6-5/8, C: 2-3/4, D: 4-1/8
 | 300 | MS333A45-C | 80 | 40 | 12 | A: 8-3/8, B: 6-3/4, C: 2-3/4, D: 4-1/2
 | 300 | MS231A45-C | 80 | 40 |  | 
1-1/2 | 300 | MS241A46-C | 115 | 65 | 20 | A: 10, B: 8-1/8, C: 4, D: 4-7/8

“A” Dimension does not include the “MS” Mounting Stud (approx. 7/8”)

**Note:** The addition of any bottom mounted option would replace the “MS” Mounting Stud and change the prefix to reflect the appropriate option.

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For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).

---

When ordering please supply:
- Pipe Size
- Fluid
- Valve Type
- Fluid Temperature
- Voltage (AC or DC)
- Max. Diff. Pressure
- Optional Features (See pages 26 & 27)
**BRONZE Solenoid Valves**

**GRITTY COOLANT**

**FULL PORT NORMALLY OPEN - 1/2” to 1” PIPE SIZE**

(NO DIFFERENTIAL PRESSURE REQUIRED TO OPEN)

**OPERATION:**

Valve closes when energized and opens when de-energized. When the coil is energized the plunger presses the poppet, closing the pilot orifice, and opens a bleed passageway to permit pressure to build above the piston and seal it. Upon de-energizing the coil, the pilot orifice is opened, relieving the pressure above the piston, allowing it to leave its seat. The bottom spring allows the valve to operate at zero pressure drop.

**CONSTRUCTION:**

- Valve Body* – Cast Bronze, Globe Pattern – NPT ends (Flanged Ends available)
- Piston* – Cast Bronze
- Coil Enclosure – Malleable or Cast Iron, 1/2” NPS conduit conn.
- Plunger – 430 Stainless Steel
- Poppet* – 303 Stainless Steel
- Stem* – 303 Stainless Steel
- Bonnet Tube* – 304 Stainless Steel
- Springs* – Inconel and 302 Stainless Steel
- Body Seal* – Buna N or Non Asbestos Gasket (Viton® or Teflon® available)
- Orifice Seal* – Buna N (Viton® or Glass Filled Teflon® available)
- AC Shading Coil* – Copper
- Stem Pin* – 304 Stainless Steel
- Coils – Encapsulated Class B, 18” leads (Class H available)

**APPLICATION:**

To control the flow of Coolant, the valve is designed with the piston "turned down", and a larger pilot port, offering additional clearance, allowing the valve to operate with fluids containing some grit/sediment typically found in coolant. Valve operates from zero to maximum differential pressure indicated in table. Valve must be mounted in horizontal pipe with solenoid enclosure vertical and on top.

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Max. Diff. PSI</th>
<th>Type No.</th>
<th>Watts AC</th>
<th>Watts DC</th>
<th>Ship Wt. Lbs.</th>
<th>Dimensions in Inches</th>
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<td>B</td>
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<td>40</td>
<td>14</td>
<td>8-5/8</td>
</tr>
<tr>
<td>300</td>
<td>MS233AR44-C</td>
<td>80</td>
<td>40</td>
<td>14</td>
<td>8-5/8</td>
<td>3-1/2</td>
</tr>
</tbody>
</table>

“**A**” Dimension does not include the “**MS**” Mounting Stud (approx. 7/8”)

Note: The addition of any bottom mounted option would replace the “**MS**” Mounting Stud and change the prefix to reflect the appropriate option.

For Options and Accessories see pages 26 & 27. Strainers are recommended for use with solenoid valves (see page 19).
REQUEST A QUOTE

...PLEASE FILL IN THE INFORMATION BELOW

We appreciate the opportunity to quote on your requirements

For immediate quote – Call 973-427-4341 with the information below
For same day quote – Fax the information below to 973-427-7611 or e-mail to info@magnatrol.com
Request a quote online at – www.magnatrol.com, and click on Quick Quote

If you have any questions, please call 973-427-4341, Fax 973-427-7611, or e-mail info@magnatrol.com

YOUR COMPANY DATA

Company Name: ____________________________ Phone: ____________________________
Contact (Your Name): ____________________________ Fax: ____________________________
Your RFQ Reference (If Any): ____________________________
Type of Business: □ OEM □ Re-Seller □ Consumer/End User
E-Mail: ________________________________________

VALVE DATA

Desired Delivery: ____________________________ Quantity: ____________________________
Your Reference (Optional): ____________________________
Valve Construction Material: □ Bronze or □ Stainless Steel
Pipe Size: (3/8” thru 3’): ____________________________
Normally: □ Closed (Energize To Open) or □ Open (Energize To Close)
Voltage: □ AC: _______ Volts/_______ Hz or □ DC: _______ Volts
Maximum Differential Pressure: ___________ PSI
Fluid: ________________________________________
Maximum Fluid Temperature: ___________ °F
Optional Feature: (See Optional Feature Details On Pages 26 & 27)
Choose One (1) of the following per valve: □ MO □ LV □ DP □ FC □ MS □ DR □ PD □ PS □ PL
Additional Options: (Can be combined with one (1) of the above Optional Features) □ HF □ LT □ NP □ PT □ DN □ ZP
Enclosure Options: □ General Purpose □ Explosion Proof □ NEMA 4 □ NEMA 4X
(For Solenoid Housing) (Prefix “G” - NEMA 12) (Prefix “F”) (Prefix “E”) (Prefix “E” & Suffix “ZP”)
Comments: ________________________________________

Quantity Discounts: Consult Factory
Delivery: Most orders ship in 7-10 days. Small emergency orders can be shipped in 1-2 days.
ORDERING GUIDELINES

...FOR MAGNATROL SOLENOID VALVES

**MAGNATROL VALVE TYPE NUMBER DETAIL**

For additional information on Options – See Optional Features pages 26 & 27

If you have any questions, please call 973-427-4341, Fax 973-427-7611, or e-mail info@magnatrol.com

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### Prefix Letters for Options: (Choose One)
- DP: Dashpot (Consult factory for valve type availability)
- DR: Drain Plug **
- FC: Flow Control **
- LV: Lever *
- MO: Manual Override *
- MS: Mounting Stud
- PD: Position Display *
- PL: Position Switch w/LED *
- PS: Position Switch *

### Prefix Letters for Solenoid Enclosures:
- G: General Purpose NEMA 12
- E: NEMA 4
- E with ZP Suffix: NEMA 4X
- F: Explosion Proof & NEMA 4

### End Connection Description:
- SC: Screwed, FNPT
- F1: 150# Flange
- F3: 300# Flange

### Voltage Description:
- A: 120
- B: 208
- C: 240
- D: 480
- E: 575
- F: 6
- G: 12
- H: 24

### Hertz Description:
- A: 50/60
- B: 50
- C: 60
- D: DC

### Disc Material:
- † B: Buna N
- T: Teflon®
- V: Viton®
- M: Metal

### Fluids:
- C: Gritty Coolant
- G: Gas/Air/Oxygen
- H: Hot Liquid ††
- O: Oil/Fuel Oil
- S: Steam
- V: Sandy Well Water
- W: Cold Liquid †††
- Z: Cryogenics/Liquid O2

<table>
<thead>
<tr>
<th>Suffix Letters for Options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR: Clean For Freon/Refrigerant</td>
</tr>
<tr>
<td>CY: Clean For Oxygen</td>
</tr>
<tr>
<td>CZ: Clean For Cryogenics</td>
</tr>
<tr>
<td>DN: Din Connector</td>
</tr>
<tr>
<td>HF: Hum Free</td>
</tr>
<tr>
<td>HT: High Temperature Coil</td>
</tr>
<tr>
<td>LL: 6' Long Lead Wires</td>
</tr>
<tr>
<td>LT: Leak Tight (Soft Seat Pilot)</td>
</tr>
<tr>
<td>NP: Nickel Plated (.005 Thickness)</td>
</tr>
<tr>
<td>PT: Pilot Tap ***</td>
</tr>
<tr>
<td>RB: Reducing Bushing</td>
</tr>
<tr>
<td>ZP: Zinc Plated Solenoid Housing</td>
</tr>
</tbody>
</table>

### Metal Tags:
- AL: Aluminum Tag
- SS: Stainless Steel

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咨询服务与:
- 额外电压
- 结束连接未显示
- 流体字段标识

†† Refer to Individual Bulletins for Standard Orifice Seal/Disc Material.

<table>
<thead>
<tr>
<th>Fluids:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C: Gritty Coolant</td>
</tr>
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<tr>
<td>W: Cold Liquid †††</td>
</tr>
<tr>
<td>Z: Cryogenics/Liquid O2</td>
</tr>
</tbody>
</table>

††† Use fluid designation “W” for light liquids under 212° F. (i.e. Water, Jet Fuel, Kerosene, Gasoline, Naptha, Alcohol, Soluble Oil, Coolant, Freon and Refrigerant).

* Normally Closed Valves Only

** Normally Closed and NR & MR Valves/FC not available on G valve type

*** Pilot Tap: Can be used along with any other option. Available On Type D, G and GR only.

Consult Factory for Assistance with:
- Additional voltages
- End Connections not shown
- Fluid Field designations
Solenoid valve questions can be answered quickly and accurately over the phone:

Phone: 973-427-4341 • Fax: 973-427-7611

**TERMS AND CONDITIONS OF SALE**

1. **Catalog:** This catalog supersedes all previous issues.
2. **Quotations:** Quotations are made for acceptance within 60 days and are subject to change or withdrawal without notice.
3. **Prices and Discounts:** All prices and discounts are in accordance with the prices and discounts established by Magnatrol and are subject to change without notice.
4. **Terms:** Net 30 days, subject to establishment of credit.
5. **Shipments:** All shipments are F.O.B. factory, Hawthorne, New Jersey. Our responsibility ends with delivery of merchandise to the transportation company and issuance to us of formal shipping receipt.
6. **Minimum Billing:** Minimum billing charge is $50.00 net.
7. **Cancellations:** Orders are subject to cancellation only with our consent.
8. **Shipping Date:** There shall be no liability for default or delay in shipping. All orders, contracts, and agreements are made subject to delays contingent upon accidents, strikes, embargoes or other causes beyond our control.
9. **Design and Materials:** All materials and designs are subject to change without notice.
10. **Weights and Dimensions:** Weights and dimensions listed in this catalog are as close to actual as is practicable but are not guaranteed and are subject to change without notice.
11. **Errors:** All clerical errors are subject to correction.
12. **Returns for Repair:** Valves returned for repair must be shipped prepaid and accompanied by a detailed report regarding service application, installation and nature of trouble or malfunction.
13. **Returns for Credit:** Returns for credit will be accepted only with our consent. Credit will be subject to restocking charge and any additional expenses incurred in restoring valves to salable condition. Credit will be issued only to original purchaser.
14. **Taxes:** Any manufacturer’s excise tax, use tax, sales tax or tax or duty of any nature shall be paid by the buyer. In the event that the seller is required to pay any such taxes or duties, the buyer shall reimburse seller therefore. The buyer may provide seller with an exemption certificate or other documents acceptable to taxing or customs authorities at the time an order is placed.
15. **Guarantee:** MAGNATROL valves are guaranteed to be free from any defects in material and workmanship for one year or 500,000 cycles, whichever comes first. Our guarantee solely conveys the right to repair or replace free of charge, any defective valves, or parts, thereof, returned to us transportation charges prepaid, within one year after date of original shipment from factory.

This guarantee shall not apply if the valve has been:
- Improperly Installed
- Used for other than intended service
- Repaired without authorization

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**Magnatrol Contact Information**

Sales, Service, Tech Support: Phone: 973-427-4341  
Fax: 973-427-7611  
Email: info@magnatrol.com  
techsupport@magnatrol.com

Mailing Address: PO Box 17  
Hawthorne, NJ 07507

Shipping Address: 21 Horton Avenue  
Hawthorne, NJ 07506

Administrative: 67 Fifth Avenue  
Hawthorne, NJ 07506

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**Magnatrol Valve Corporation • 67 Fifth Avenue • Hawthorne, NJ 07506**  
973.427.4341 • info@magnatrol.com • www.magnatrol.com