



We're more than valves... We're solutions.



&  
Solenoid Valves  
Manifolds



888-825-8405 [www.solenoidsolutionsinc.com](http://www.solenoidsolutionsinc.com)

# Wattmizer

## Miniature Solenoid Valves

Body size: 1"

Port size: #10-32 UNF-2B to 1/8" NPT

Orifice range: .025" to 1/8"



pages 12-17

## 7 Series

### Mid-Range Capacity Economical High-Efficiency Valves

Body size: 1-1/4" x 1-5/8"

Port size: 1/8" NPT to 1/4" NPT Female

Orifice range: .025" to .219"



pages 18-21

## 8 Series

### Premium Heavy-Duty Valves

Body size: 1-1/2"

Port size: 1/8" NPT to 1/4" NPT

Orifice range: 1/32" to 1/4"



pages 22-25

## 2 Series

### High Capacity Largest Direct Acting Valves

Body size: 2"

Port size: 1/4" NPT to 3/8" NPT

Orifice range: 1/16" to 3/8"



pages 26-29

## Super Wattmizer

### High Capacity Miniature Solenoid Valves

Body size: 1"

Port size: #10-32 UNF-2B to 1/4" NPT

Orifice range: .025" to 3/8"



pages 30-31

## Manifolds

### Manifolds Turn Valves Into Systems

Include multiple solenoid valves with an endless array of fittings, controls, connectors and other components to create a single, easy to install, Plug-n-Play valve system.



pages 32-33

## Custom Valves

Design options are endless! Solenoid Solutions Engineers can work with OEM's to design a unique valve to address your particular requirements. Solenoid Solutions can finish your valve or manifold with value-added accessories that save time, money and potential maintenance issues.



pages 34

# We're more than valves... we're solutions

We specialize in custom engineering solutions and manufacturing support. If you have a difficult application problem, call on the technical engineering staff at Solenoid Solutions with their expertise in solving critical application problems. We can design a solenoid valve or manifold to fit your exact needs. We provide prototypes, delivery quality valves as you need them and offer technical assistance to help you through the application. More than just providing you with the best valve, we will also work to fit your business model; we offer options like safety stock, consignment options and blanket ordering with shipments scheduled to meet your forecasted delivery.

## Premium quality Solenoid valves reasonably priced... designed to fit your application

Located in Erie, Pennsylvania, Solenoid Solutions, Inc. has been setting the standard for solenoid valves for more than 45 years. Annually, Solenoid Solutions produces millions of valves and components to exacting quality standards. From the high performance, miniature Wattmizer series to our larger, high capacity valves, we offer a wide selection of high quality valves designed to fulfill the requirements of any solenoid valve application. New, state-of-the-art machining facilities, along with lean manufacturing and assembly processes, allow us to provide higher quality solenoid valves at a competitive price and deliver them on time, every time.



# Table of Contents

- State-of-the-Art Equipment ..... 4
- Value Added Service ..... 5
- Direct Acting Valves ..... 6
- Valve Design Considerations ..... 7
  - Body & Seal Material Options ..... 8
  - Coils & Housing Options ..... 8
  - Applications ..... 9
- Valve Quick Reference Guide ..... 10-11
- Wattmizer Series
  - Miniature Solenoid Valves ..... 12-17
- 7 Series
  - Mid-Range Capacity Solenoid Valves ..... 18-21
- 8 Series
  - Rugged, Heavy Duty Solenoid Valves ..... 22-25
- 2 Series
  - Largest High Capacity Direct Acting Valves ..... 26-29
- Super Wattmizer Series
  - High Capacity Miniature Solenoid Valves ..... 30-31
- Manifold Valves
  - Manifolds Turn Valves Into Systems..... 32-33
- Custom Valves ..... 34
- Total Cost Solutions ..... 35





# Manufacturing & Assembly

## State-of-the-art Equipment & Facilities

To ensure you receive the highest quality solenoid valves, Solenoid Solutions has state-of-the-art equipment and spotless modern facilities. Our newest machines provide a complete solenoid valve body to micro-tolerances with multiple operations in seconds.

The machining facility is complemented by our advanced assembly techniques using statistical process control that features video screens at each workstation to assure clarity of requirements and adherence to rigid standards.

Solenoid Solutions' facilities feature:

- State-of-the-art CNC equipment
- Statistical tracking of efficiency and performance objectives
- Real-time video monitors displaying the latest drawings, engineering changes and quality alerts for a particular job
- Work of skilled craftsmen whose average length of service to the company exceeds 15 years.



Our newest CNC machining centers produce a complete valve body and components to world class tolerances.



## Total Cost Solutions

At Solenoid Solutions, we view our mission as more than providing competitively priced, reliable solenoid valves—we want to provide Total Cost Solutions design, technical and manufacturing support for your business needs.

In providing Total Cost Solutions, many services must be included to the products we offer. These services include design engineering, assembly and build-out services, as well as a host of purchasing and inventory support services. Let Solenoid Solutions perform the difficult and expensive assembly procedures that your facility may not be equipped to handle. Reduce installation time and potential problems by allowing Solenoid Solutions to provide a complete valve system designed and manufactured by our engineers, technicians and craftsmen to your exacting standards. 100% of our valves are rigorously tested for function, flow and leakage.

**Our value added services options help provide an easier and quicker installation, ensuring that our valves are “plug-and-play” when they arrive for installation.**

### Engineering services

- Design custom valves with application-specific requirements
- Create designs for manifolds for multi-valve applications
- Provide filtration options
- Offer flow controls
- Solve your solenoid valve problems with fast, efficient service with a constant eye on opportunities for overall cost savings

### Manufacturing services

- Installation of wire connectors and cable terminations
- Special body porting and thread connections
- Installation of all types of hose and tube fittings
- Installation of regulators, pressure switches and gauges
- Installation of relief valves and check valves
- Circuit board interface

### Business Solutions

Solenoid Solutions serves as a “Total Cost Solutions” manufacturer, focusing on reducing your overall costs by combining a broad range of solenoid valves with advanced engineering capabilities. Solenoid Solutions will work with your business model offering a variety of inventory, stocking, planning, scheduling and shipping programs to best fit your business. We focus on adapting our operation to your business needs to reduce your total costs while providing the right valve package for your application.



CNC machining centers are monitored continuously for accuracy and overall performance.

Workers use real-time video to display the latest drawings, engineering changes and quality alerts for a particular job.



# Direct Acting Valves & Valve Design

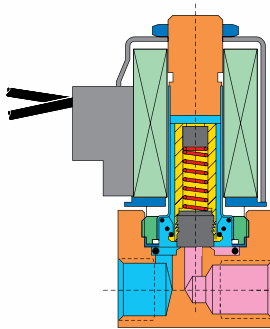
## Direct Acting Valves

Our standard direct acting solenoid valves are available with inlet port sizes from 10-32 UNF to 3/8" and 5/16", or 10-32 UNF Manifold Mount configurations, in 2-way or 3-way designs with capacities up to 1600 psi. The bodies, seals and coil types are constructed from materials designed to withstand the harshest environments and temperature extremes.

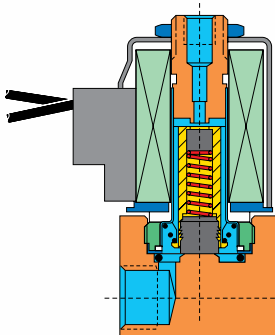
In 2-way normally closed solenoid valves, pressure flow from one port is blocked to the other until the power is turned on, allowing the media to flow freely through the valve. Alternatively, in 2-way normally open valves, pressure flows from one port to the other when the power is off and the valve is de-energized; when the power is turned on and the valve is energized, fluid flow ceases.

Three-way valves have three pipe connections or ports and two orifices. One is always open, allowing for two paths of flow depending on the energized state of the valve. This allows the flow or pressure to a tool to be applied or stopped when the valve is energized (de-energized), and the flow or pressure to move to a different destination when the valve is de-energized (energized). There are four common types of 3-way solenoid valves: 3-way Normally Closed, 3-way Normally Open, 3-way Directional Control and 3-way Multi Purpose.

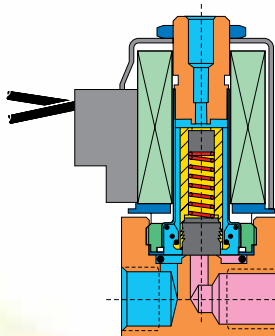
**Two-Way  
Normally Closed**



**Two-Way Open**

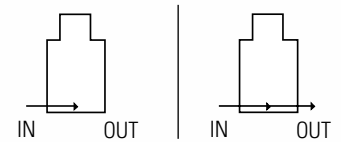


**Three-Way**

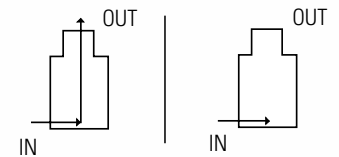


**De-Energized | Energized**

**2-Way Normally Closed**

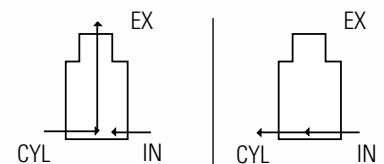


**2-Way Normally Open**

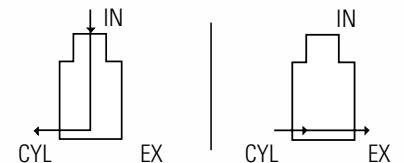


**3-Way Normally Closed**

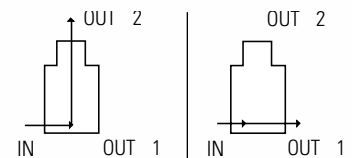
Free Vent and Line Connection



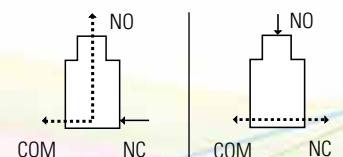
**3-Way Normally Open**



**3-Way Directional Control**



**3-Way Multi-Purpose**





# Considerations



## Solenoid Valve Design Considerations

### Valve Functions

**Do you need a 2-Way on/off or a multi-port 3-way valve?**

### Valve Operation

**Is it normally closed or normally open?  
Will the valve operate on short or long cycle times?**

### Available Voltage

**At what voltage will the valve operate?**

Common voltages are 120 VAC, 24 VAC, 240 VAC, 6VDC, 12 VDC and 24 VDC, although other voltages can be accommodated.

**Does the valve need to operate at a specific wattage?**

**Does it run on battery power?**

**Is energy conservation important?**

Conserving energy can be accomplished through a variety of methods including coil selection, bump and hold circuitry and latching options.

### Media Type

The type of gas or liquid moving through the valve determines the type of seal material that must be used. The specific gravity and viscosity of the media impacts the rate flow.

### Pressure

**What is the maximum pressure at which the valve will operate?**

**What is the range of pressure the valve will see on all ports during operation?**

### Flow Rate

**What is the approximate desired flow rate of the media?**

Specific flow rates are determined based on the applied pressure, orifice size, specific gravity, viscosity and temperature of the media that is flowing through the valve.

### Orifice Size

The valve's internal orifice size and pressure are the primary determinants of the flow rate; the larger the orifice, the greater the flow at a given pressure.

### Coil Type

The larger the orifice and the higher the pressure, the more power required for the valve to open against that pressure. The higher the power requirement, the higher the wattage of the required coil. Solenoid Solutions offers a broad range of standard coils in molded and tape-wrapped designs, with or without metal housings and mounting brackets. Coils are available with wire lead, spade, DIN and conduit electrical connections in various wattages and temperature ratings.

### Port Size

The ports in the valve body refer to the points where plumbing connections are made to the valve, while the size refers to the type and size of these connections. Generally, larger port sizes will be found in larger valves that operate at higher wattages, which are more expensive than smaller valves. Port size does not determine flow; the orifice size and pressure do.

### Electrical Connections

**What type of electrical connection is required?**

- Spades
- Wire leads
- DIN
- Conduit

### Operating Environments

**Will the valve operate in a high temperature, corrosive or high-vibration environment with limited energy or space available? Will it require specific agency approvals?**

Environmental issues directly affect the selection of valve components.

## Other Considerations

### Multiple Valves

**Does your system require more than one valve?**

**Are there multiple controls, fittings or sensors associated with the valve(s)?**

A manifold system may be the most cost and space efficient solution to your system's requirements.

### Valve Assembly

**Based on the requirements of your system and the structure of your business, would it be beneficial for Solenoid Solutions to perform some subassembly operations?**

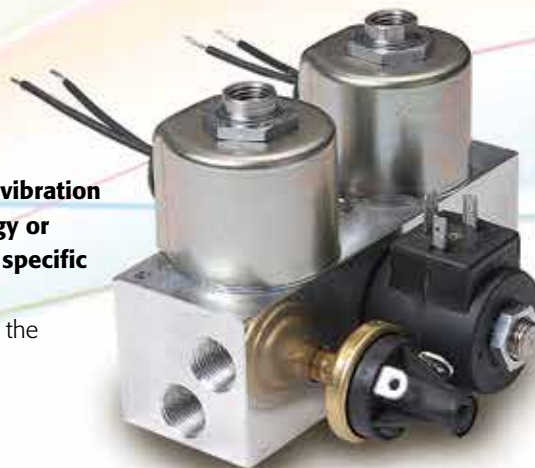
Solenoid Solutions can manufacture your valves to ship with all components torqued properly and clocked to precise angles to fit your space with electrical leads ready for finished assembly. With preassembled components, your business will find multiple cost and efficiency benefits.

### Supply Options

**Do you need your valves delivered every two weeks, all at once?**

**Need them right before assembly?**

Solenoid Solutions offers an almost unlimited number of supply options to meet your business needs such as blanket orders, safety stock, consignment and Kan Ban. Whatever you need!



# Body & Seal Material Options

## Body Materials

Depending on the model of the valve and the requirements of the application, Solenoid Solutions offers a variety of body materials. Standard materials include brass, aluminum and stainless steel.

### Ports

The ports in the valve body refer to the points where plumbing connections are made to the valve, while the size refers to the type and size of these connections. Standard port sizes are referenced below:

- **Wattmizer** - 1/8" NPT, 10-32 UNF-2B
- **Wattmizer Manifold Mount:**  
10-32 UNF-2B and 5/16"-24 UNC-2A
- **Super Wattmizer** - 10-32 NPT,  
1/8" NPT, 1/4" NPT
- **Super Wattmizer Manifold Mount:**  
10-32 UNF-2B and 5/16"-24 UNC-2A
- **7 Series** - 1/8" NPT to 1/4" NPT
- **7 Series Manifold Mount:**  
1/2-20 UNF-2A
- **8 Series** - 1/8" NPT to 1/4" NPT
- **2 Series** - 1/4" NPT to 3/8" NPT

### Orifice Sizes

The valve's internal orifice(s) is one of the prime determinants of the flow rate of media through the valve. Standard orifice sizes are referenced below:

- **Wattmizer:** .025" to 1/8"
- **Super Wattmizer:** up to .219"
- **7 Series:** 1/32" to 1/4"
- **8 Series:** 1/32" to 1/4"
- **2 Series:** 1/16" to 3/8"

## Seal Materials

Different types of seals are used to close the valve body to the Plunger Guide Assembly to prevent leaks, as well as to seal off the valve's internal orifices in order to stop flow. Proper seal material must be selected to ensure an effective seal on the valve while preventing them from swelling, cracking, dissolving or becoming damaged by the type of media that flows through the valve. Some of the most common seal materials are listed below:

### Buna N NBR

This is the most common seal material used for solenoid valves. The standard Buna elastomer is abrasion and tear resistant. It has excellent service characteristics for use with water, air, light oil, non-volatile liquids and inert gases in temperature ranges from -30°F to 212°F.

### Viton - Fluorocarbon

Viton is suitable for use with hydrocarbon-based fluids, such as gasoline, jet fuel, organic solvents and a wide range of chemicals in a temperature range of -15°F to 400°F.

### Ethylene Propylene (EPDM, EPR)

EPDM is excellent for use with hot water or steam, alcohols and many acids, alkalis and polar solvents in a temperature range for EPDM from -55°F to 300°F (400°F with water or steam).

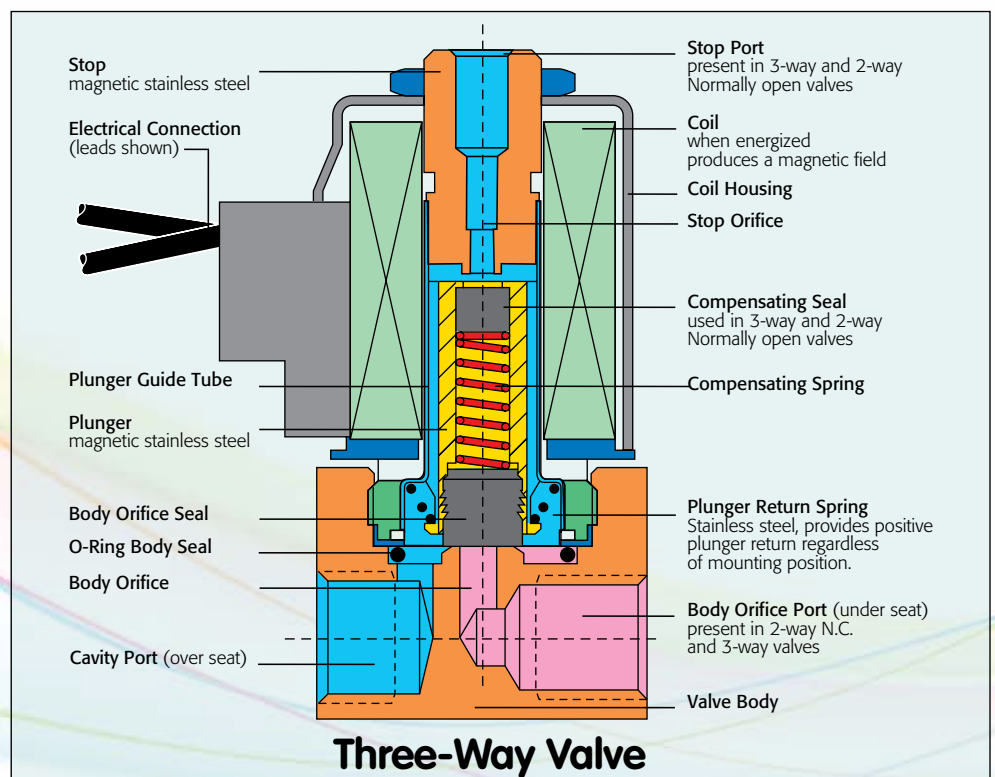
**In Addition to these four standard seals, we offer others as need arises:**

- Teflon
- Standard Neoprene
- Neoprene
- Poly Urethane

## Coils & Housing Options

Solenoid Solutions offers a broad range of standard coil types and connections designed to accommodate virtually any requirement. Special coils are available by contacting the company. Standard coil and housing options are listed below.

- Over Molded
- Non-Molded
- Tape Wrapped
- 5" Leads
- 1/4" Spades
- Conduit Connections
- DIN Connections
- Class B, F, H





# Applications



## Transportation/ Class 8 Trucks

### Seating

- Lumbar Headrest Support
- Seat Adjustment

### Engine Systems

- Fan Clutch Assemblies
- Fuel Shut-off
- Propane Fuel Safety Systems
- Nitrous Oxide Injection Systems
- Lube Systems
- Vacuum Systems
- Emissions Monitoring
- Boat Fuel Systems

### Suspension

- Suspension Systems
- Lift Axles
- Bus "Kneeling" Systems

### Fueling

- Gasoline/Diesel/Propane Fueling Systems
- Storage Tank Anti-siphon Systems

### Other

- Braking Systems
- Power Transmission
- Air Horns
- Air Dryers
- Paint Spraying
- Airline Televiwer Screen Actuation
- Freon Recycling
- Anti-Freeze Recycling
- Engine Oil Recycling
- Brake Fluid Recycling
- Agricultural Spraying Systems

## Instrumentation

- Welding/Soldering
- Electronic Chip Production
- Compressors
- Cosmetics
- Purification Equipment
- Laboratory Evacuation Equipment
- Vacuum Pumps/Systems
- Spectrometers
- Chemical Processing
- Gas Chromatography
- Ozone Detection
- Process Sampling
- Pollution Monitoring
- Emissions Monitoring
- Pulp and Paper Processing
- Dust Collectors

## Medical/Dental

### Bed/Tables/Chairs

- Hospital Beds
- Operating Tables
- Chiropractic Tables
- Therapeutic Massage Tables
- Dental/Ophthalmologist Chairs

### Respiratory

- Respirators
- Ventilators
- Oxygen Concentrators

### Sterilizers

- Sterilizers/Autoclaves
- Chemical Sterilizers

### Other

- Blood Gas/Gas Analyzers
- Tissue Analyzers
- Dialysis Equipment
- Blood Pressure Cuffs
- Air Casts/Socks
- Dental Scalers
- Chemical Cleaning Equipment

## Food Service Equipment

### Food Prep

- Ice Makers
- Soft Serve Ice Cream Makers
- Poultry Processing
- Steam Tables
- Cookers/Range

### Beverage Dispensing

- Coffee Makers
- Food Disposers
- Trash Compactors
- Water Dispensers
- Coffee/Tea Dispensers
- Liquor Dispensers
- Beer Dispensers
- Soft Drink Dispensers
- Cappuccino Makers
- Syrup Dispensers
- Citrus Juice Dispensers

### Other

- Dishwashing Systems
- Fire Suppression Systems
- Cooking Oil Processing
- Slaughter House Processing
- Packaging Equipment
- Lifting/Conveying Equipment

## Miscellaneous

### Air Treatment

- HVAC/Chillers/Heat Exchangers
- Humidifiers/Dehumidifiers
- Air Conditioning

### Cleaning

- Touchless Flush/Wash Systems
- Car Wash Systems
- Carpet Cleaners
- Industrial Wash Systems
- Copying Equipment
- Laundry Processing/Presses
- Industrial Floor Scrubbers
- Bowling Alley Strip/Re-Oil Machines

### Printing/Graphics

- Ink Jet Printing
- Dyeing Equipment
- Photographic Equipment
- Paint Mixing/Dispensing

### Other

- Spray Lubrication
- Low Pressure Hydraulic Systems
- Oil Drilling
- Waste Oil/Oil Burners
- Heating Circuits
- Machine Tool Positioning
- Injection/Blow Molding
- Cryogenics
- Metal Treating
- Electroplating
- Alkaline Washing
- Control Valve Pilot Actuation
- Prison Door Closing Systems
- Department Store Door Opening Systems
- Sprinkler Systems
- Machine Gun Simulators
- Boiler Feed Systems
- Cylinder Actuation
- Packaging Equipment
- Glue Dispensing
- Sewing Equipment/Textiles
- SCUBA Equipment
- Hydrogen Fuel Cells

# Standard Solenoid Valves

## Solenoid Valve Selection Guide

### Miniature Valves

#### Wattmizer



**Applications:** The Wattmizer series solenoid valve is a highly efficient, miniature valve designed for use in compact areas. They are offered in a range of .65 to 9 watts of continuous power and have rapid response times of 6 to 10 milliseconds. They are rated as Bubble Tight with a leakage rate of less than  $1 \times 10^{-5}$  cc/sec. See pages 12-17

### Mid-Range Valves

#### 7 Series



**Applications:** The high-performance, low cost characteristics of the 7 series makes them ideal for use by OEMs in automotive applications like suspension systems, emissions monitoring, fan clutch controls and control equipment, dental/vision or medical applications, tables and beds liquid recycling systems, HVAC and many other applications. See pages 18-21

### Mid-Range Valves

#### 8 Series



**Applications:** Heavy-duty, mid-size, general valves. Used in OEM pneumatic and hydraulic component assemblies, automotive suspension systems, emissions monitoring and control equipment, truck fan clutch controls, dental/vision chairs, medical tables and beds, liquid recycling systems and HVAC. See pages 22-25

<b>Body Size</b>	1"	1 1/4" x 1 5/8"	1 1/2"
<b>Approx. Weight</b>	2 3/4 - 3 1/4 oz.	0.6 lb	1.75 lb
<b>Type</b>	2 way, 3 way	2 way, 3 way	2 way, 3 way
<b>Operation</b>	2 way normally closed, 2 way normally open; 3 way normally closed, normally open, directional control, or Multi-Purpose. Stop port can be free vent or line connect with adapter.	2 way normally closed; 3 way normally closed, line connect; 3 way normally closed; 3 way line connect; manifold valve	2 way normally closed, 2 way normally open; 3 way normally closed, normally open, directional control, or Multi-Purpose. Stop port can be free vent or line connect.
<b>Coil Type</b>	Molded class "F" (155°C) with leads or 1/4" spades, molded class "B" (130°C) with leads, non-molded class "B" (130°C) with leads; Rated for continuous service	Overmold, continuous rating 11 watt, class H (185°C) non-molded standard	Molded Class "F" (155°C) with conduit, 1/4" spades, and wire lead connections; Rated for continuous service
<b>Port Sizes</b>	1/8, #10-32 UNF-2B or #10-32 UNF-2B and 5/16-24 UNC-2A Manifold Mount	1/8" NPT, 1/4 NPT female	1/8" NPT, 1/4" NPT female
<b>Body Materials</b>	Brass, Stainless Steel	Aluminum, brass, stainless steel	Brass, Stainless Steel
<b>Seal Types</b>	Buna, EPDM, Viton, are Standard Other materials are available as needed.	Buna N, EPDM, Viton, are Standard Other materials are available as needed.	Buna, EPDM, Viton are Standard Other materials are available as needed.
<b>Orifice Sizes</b>	.025", 1/32", 3/64", .055", 1/16", 5/64", 5/32", 7/64", 1/8"	Body: 3/64" to 1/4" Stop: 1/16" to 3/32"	1/32", 3/64", 1/16", 5/64", 3/32", 1/8", 5/32", 3/16", 1/4", 1/16" x 3/64", 1/8" x 3/32", 1/32" x 3/64"
<b>Wattages</b>	.65, 1.5, 3.0, 6.0, 9.0	11.0	11.0
<b>Voltages</b>	24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC	24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC. Other voltages on request.	24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC

# Specialty Solenoid Valves

## High Capacity Valves

### 2 Series



**Applications:** High capacity, heavy-duty. Designed to operate under high pressure with a high flow rate. Used in packaging equipment, colorant mixing, blow molding, heat exchangers and industrial washing equipment. See pages 26-29

2"

1.50-2.75 lb

2 way, 3 way

2 way normally closed, 2 way normally open; 3 way normally closed, normally open, directional control, or Multi-Purpose. Stop port can be free vent or line connect.

Non-molded class "B" (155°C) with wire leads or with conduit connection with leads; Molded class "B" with leads or with conduit connection with leads. Rated for continuous service.

1/4" NPT, 1/8" NPT female

Aluminum, Brass

Buna, EPDM, Viton are Standard Other materials are available as needed.

1/16", 3/32", 1/8", 5/32", 3/16", 1/4", 5/16", 3/8"

17.0

24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 12, 24 VDC.

## Miniature Valves

### Super Wattmizer



**Applications:** Super Wattmizer solenoid valves produce 30% greater performance at the same wattage as standard models. They use a larger, heat-dispersing coil design with larger orifice to achieve pressures in excess of 1500 psi. The valves are compatible with most common fluids making them ideal for pneumatic and hydraulic applications. See pages 30-31

## High Capacity Valves

### Manifolds



**Applications:** Solenoid valve manifolds save space and cost in most multiple valve applications. Manifolds connect multiple valves and other components into a single, compact assembly. Designed into a convenient "plug and play" system and eliminate redundant piping, fittings, and leak points creating a more reliable valve assembly. Can be used in most liquid and gas applications. See pages 32-33

# Custom Solenoid Valves

## Specialty & Latching Valves



Solenoid Solutions can furnish your valve with value-added accessories that will save you time, money and potential maintenance issues. We can design and produce custom engineered valves to your specific requirements. With our array of solenoid valves, manifold bodies and value-added services, we can produce millions of solenoid valve and manifold combinations.

Latching valves offer significant energy savings by reducing power consumption. These highly efficient valves do not require a current to stay in an energized position. A permanent magnet that requires no electric input is built into the valve. When the valve is supplied a brief pulse of full rated voltage to open the valve, power is then turned off and the magnet holds the valve open. To close the valve, an electric pulse of opposite polarity is supplied to the valve to produce a magnetic field opposite to the magnets which allows the valve to close.

## Additional Components



Valve added services we can add to your solenoid valve include:

- Leads
- Fittings
- Controls
- Gauges and Transducers
- Check Valves
- Custom Porting
- Special Coatings
- Custom Threading
- Custom Mounting Options
- Mounting Straps
- Pressure Switches
- All Types of Electrical Connections







# Wattmizer

Miniature Solenoid Valves (.65 to 9 Watts)

## General Specifications:

**One-inch stainless steel or brass bodies are standard.** The internal components of the valve that come in contact with the media are all stainless steel-compatible with common media including air, water and inert gases.

**Maximum Operating Pressure Differential:**  
up to 1200 psi (85 bar)

**Orifice Diameters:** Body – .025" to 1/8"  
Stop – .025" to 5/64"

**Response Time:** 6 to 10 milliseconds

**Coil Type:** Continuous Rating  
.65 watt through 9 watt—Class "F" (155°C) standard  
.65 watt through 9 watt—Class "B" (130°C) optional

**Standard Voltages:** 24V/50-60 Hz, 120V/50-60 Hz,  
240V/50-60 Hz, 6, 12, 24 VDC (other voltages  
and wattages available upon request)

**Power Consumption:** .65 to 9 watt continuous duty

**Vacuum:** 5 microns

**Port Size:** #10-32 UNF-2B, 1/8" NPT,

**Housing:** Strap housing (standard),  
grommet housing optional

**Seal Material:** Buna N, Viton, EPDM standard,  
others optional

**Leakage:** Bubble tight (1 x 10<sup>-5</sup> cc/sec.)

**Media Temperature Limitations:**  
Minimum— -40°F (-40°C); Maximum— +180°F (+82°C)

**Weight:** 2 3/4 – 3 1/4 ounces

**Lead wire:** 20 AWG, 18 inches long standard

## Wattmizer Solenoid Valves:

Wattmizer is a highly efficient, miniature solenoid valve designed for use in compact areas. These 2-way and 3-way solenoid valves are offered in a range of .65 to 9 watts of continuous power and operating pressure ranges up to 1200 psi (85 bar). The valves come standard with brass or stainless steel bodies and stainless steel internal parts, making this miniature valve compatible with most fluids and gases. Their energy efficient, low watt coils draw less current and are available for AC or DC operation while providing wide pressure and flow ratings. Plus they are long duty lasting in excess of 10 million cycles. Wattmizer valves are most commonly used in medical devices, beverage systems, gas analyzation systems, as well as many other gas and water applications.



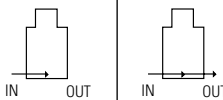
## Valve Model Number Matrix

2 WAYS	W1 FAMILY	3 FUNCTION	6 COIL TYPE	—	1 PORT SIZE	N PORT TYPE	B BODY MATERIAL	—	A SEAL MATERIALS	4 ORIFICE SIZE	D WATTAGE	5 VOLTAGE	U OPTIONS
2 2-Way	W1 Wattmizer	3 2-Way Normally Closed	Molded Class "F" W with 18" leads		1 1/8"	N NPT Female	B Brass		A Buna	0 .025 (.65)	A 0.65	1 120/60	B Mounting Brackets
3 3-Way		3 3-Way Normally Closed Line Connect	6 with 1/4" Spades		5 #10-32 Manifold Mount*	D Defined Elsewhere	R Stainless Steel		E EPDM	1 1/32" (.80)	B 1.5	2 24/60	P Exhaust Port Adapter
		4 Normally Open	Non-Molded Class "B"		7 #10-32*		O Without Body		V Viton	2 3/64" (1.2)	C 3.0	3 240/60 6 & 9 watt only	U UL Approval
		5 Directional Control	0 with 18" Leads		9 5/16"-24 Manifold Mount				N Neoprene	3 .055 (1.4)	D 6.0	4 6 VDC	C CSA Approval
		6 Normally Closed Free Venting	1 with 18" Leads		Q Defined Else					4 1/16" (1.6)	E 9.0	5 12 VDC	L CUL Approval
		7 Universal								5 5/64" (2.0)		6 24 VDC	S UL/CSA Approval
										6 3/32" (2.4)			G CSA Approval Gas Valves Natural Gas & Propane
										7 7/64" (2.8)			
										8 1/8" (3.2)			

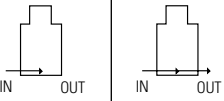
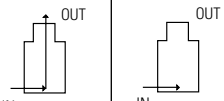
\*Note: #5 port size (#10-32 manifold mount) and #7 port size (#10-32) are limited to #5 (5/64") orifice.  
#5 port size (#10-32 manifold mount) is limited to 250 psig maximum pressure.

## Maximum Operating Pressure Differential (PSI)

### 2-Way AC Pressure Ratings





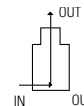
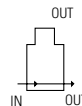
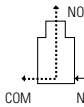

2-Way AC Pressure Ratings		Orifice Diameter		Cv Factor		Nominal Wattage					
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	.65 Watts (A)*	1.5 Watts (B)†	3.0 Watts (C)	6.0 Watts (D)‡	9.0 Watts (E)§
<div>2-Way Normally Closed</div> <div></div>		0	.025 (.65)		.015 (.011)		450 (31.6)	750 (51.7)	1200 (82.8)	1200 (82.8)	1200 (82.8)
		1	1/32 (.80)		.020 (.015)		350 (24.1)	625 (43.1)	900 (62.0)	1000 (69.0)	1200 (82.8)
		2	3/64 (1.2)		.030 (.023)		225 (15.5)	475 (32.8)	725 (50.0)	800 (55.2)	900 (62.0)
		3	.055 (1.4)		.050 (.038)		110 (7.6)	275 (18.9)	500 (34.5)	650 (44.8)	725 (50.0)
		4	1/16 (1.6)		.080 (.062)		75 (5.2)	200 (13.8)	325 (2.44)	500 (34.5)	550 (37.9)
		5	5/64 (2.0)		.120 (.092)			110 (7.6)	200 (13.8)	350 (24.1)	400 (27.6)
		6	3/32 (2.4)		.170 (.131)				125 (8.6)	225 (15.5)	250 (17.2)
		7	7/64 (2.8)		.250 (.192)				75 (5.2)	125 (8.6)	175 (12.1)
		8	1/8 (3.2)		.280 (.215)				35 (2.4)	75 (5.2)	100 (6.9)

### 2-Way DC Pressure Ratings

<b>2-Way Normally Closed</b>  		0	.025 (.65)		.015 (.011)		150 (10.3)	350 (24.1)	750 (51.7)	1000 (69.0)	1200 (82.8)
		1	1/32 (.80)		.020 (.015)		110 (7.6)	200 (13.8)	500 (34.5)	900 (62.0)	1000 (69.0)
		2	3/64 (1.2)		.030 (.023)		40 (2.8)	125 (8.6)	250 (17.2)	500 (34.5)	575 (39.7)
		3	.055 (1.4)		.050 (.038)		15 (1.0)	50 (3.4)	125 (8.6)	255 (17.6)	300 (20.7)
		4	1/16 (1.6)		.080 (.062)		10* (.7)	35 (2.4)	90 (6.2)	175 (12.1)	225 (15.5)
		5	5/64 (2.0)		.120 (.092)			15 (1.0)	45 (3.1)	100 (6.9)	125 (8.6)
		6	3/32 (2.4)		.170 (.131)				30 (2.1)	60 (4.1)	100 (6.9)
		7	7/64 (2.8)		.250 (.192)				20 (1.4)	40 (2.8)	60 (4.1)
		8	1/8 (3.2)		.280 (.215)				10 (.7)♦	35 (2.4)	50 (3.5)
<b>2-Way Normally Open</b>  		0		.025 (.65)		.015 (.011)	100 (6.9)	300 (20.7)	625 (43.1)	850 (58.6)	1000 (69.0)
		1		1/32 (.80)		.020 (.015)	75 (5.2)	175 (12.1)	425 (29.3)	750 (51.7)	850 (58.6)
		2		3/64 (1.2)		.030 (.023)	30 (2.1)	100 (6.9)	200 (13.8)	425 (29.3)	475 (32.8)
		3		.055 (1.4)		.050 (.038)		40 (2.8)	100 (6.9)	190 (13.1)	250 (17.2)
		4		1/16 (1.6)		.080 (.062)		30 (2.1)	75 (5.2)	150 (10.3)	190 (13.1)
		5		5/64 (2.0)		.120 (.092)		10 (.7)♦	35 (2.4)	85 (5.9)	100 (6.9)



### 3-Way DC Pressure Ratings

3-Way DC Pressure Ratings		Orifice Diameter		Cv Factor		Nominal Wattage					
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	.65 Watts (A)*	1.5 Watts (B)†	3.0 Watts (C)	6.0 Watts (D)‡	9.0 Watts (E)◆
<b>3-Way Normally Closed</b> Free Vent and Line Connection  		0	.025 (.65)	.025 (.65)	.015 (.011)	.015 (.011)	100 (6.9)	180 (12.4)	350 (24.1)	450 (31.6)	550 (37.9)
		1	1/32 (.80)	1/32 (.80)	.020 (.015)	.020 (.015)	65 (4.5)	115 (7.9)	250 (17.2)	300 (20.7)	400 (27.6)
		2	3/64 (1.2)	3/64 (1.2)	.030 (.023)	.030 (.023)	10 (.7)	70 (4.8)	175 (12.1)	250 (17.2)	300 (20.7)
		3	.055 (1.4)	.055 (1.4)	.050 (.038)	.050 (.038)		20 (1.4)	100 (6.9)	160 (11.0)	190 (13.1)
		4	1/16 (1.6)	1/16 (1.6)	.080 (.062)	.080 (.062)		10 (.7) ◆	75 (5.2)	125 (8.6)	175 (12.1)
		5	5/64 (2.0)	5/64 (2.0)	.120 (.092)	.120 (.092)			30 (2.1)	65 (4.5)	90 (6.2)
		6	3/32 (2.4)	5/64 (2.0)	.170 (.131)	.120 (.092)			15 (1.0)	40 (2.8)	60 (4.1)
		8	1/8 (3.2)	5/64 (2.0)	.280 (.215)	.120 (.092)				15 (1.0)	25 (1.7)
<b>3-Way Normally Open</b>  		0	.025 (.65)	.025 (.65)	.015 (.011)	.015 (.011)	100 (6.9)	175 (12.1)	200 (13.8)	300 (20.7)	350 (24.1)
		1	1/32 (.80)	1/32 (.80)	.020 (.015)	.020 (.015)	50 (3.4)	100 (6.9)	150 (10.3)	200 (13.8)	250 (17.2)
		2	3/64 (1.2)	3/64 (1.2)	.030 (.023)	.030 (.023)	15 (1.0)	60 (4.1)	125 (8.6)	175 (12.1)	200 (13.8)
		3	.055 (1.4)	.055 (1.4)	.050 (.038)	.050 (.038)			55 (3.8)	125 (8.6)	150 (10.3)
		4	1/16 (1.6)	1/16 (1.6)	.080 (.062)	.080 (.062)			20 (1.4)	90 (6.2)	100 (6.9)
		5	5/64 (2.0)	5/64 (2.0)	.120 (.092)	.120 (.092)				45 (3.1)	50 (3.4)
		6	3/32 (2.4)	5/64 (2.0)	.170 (.131)	.120 (.092)				20 (1.4)	40 (2.8)
		8	1/8 (3.2)	5/64 (2.0)	.280 (.215)	.120 (.092)					15 (1.0)
<b>3-Way Directional Control</b>  		0	.025 (.65)	.025 (.65)	.015 (.011)	.015 (.011)	75 (5.2)	150 (10.3)	175 (12.1)	255 (17.6)	350 (24.1)
		1	1/32 (.80)	1/32 (.80)	.020 (.015)	.020 (.015)	40 (2.8)	90 (6.2)	125 (8.6)	200 (13.8)	250 (17.2)
		2	3/64 (1.2)	3/64 (1.2)	.030 (.023)	.030 (.023)	15 (1.0)	55 (3.8)	100 (6.9)	175 (12.1)	200 (13.8)
		3	.055 (1.4)	.055 (1.4)	.050 (.038)	.050 (.038)			45 (3.1)	125 (8.6)	150 (10.3)
		4	1/16 (1.6)	1/16 (1.6)	.080 (.062)	.080 (.062)			15 (1.0)	90 (6.2)	100 (6.9)
		5	5/64 (2.0)	5/64 (2.0)	.120 (.092)	.120 (.092)				45 (3.1)	50 (3.4)
		6	3/32 (2.4)	5/64 (2.0)	.170 (.131)	.120 (.092)				20 (1.4)	40 (2.8)
		8	1/8 (3.2)	5/64 (2.0)	.280 (.215)	.120 (.092)					15 (1.0)
<b>3-Way Multi-Purpose</b>  		0	.025 (.65)	.025 (.65)	.015 (.011)	.015 (.011)	65 (4.5)	125 (8.6)	150 (10.3)	200 (13.8)	300 (20.7)
		1	1/32 (.80)	1/32 (.80)	.020 (.015)	.020 (.015)	30 (2.1)	75 (5.2)	100 (6.9)	175 (12.1)	200 (13.8)
		2	3/64 (1.2)	3/64 (1.2)	.030 (.023)	.030 (.023)	10 (.7)	45 (3.1)	80 (5.5)	150 (10.3)	175 (12.1)
		3	.055 (1.4)	.055 (1.4)	.050 (.038)	.050 (.038)			35 (2.4)	80 (5.5)	100 (6.9)
		4	1/16 (1.6)	1/16 (1.6)	.080 (.062)	.080 (.062)			10 (.7) ◆	65 (4.5)	75 (5.2)
		5	5/64 (2.0)	5/64 (2.0)	.120 (.092)	.120 (.092)				25 (1.7)	35 (2.4)
		6	3/32 (2.4)	5/64 (2.0)	.170 (.131)	.120 (.092)				15 (1.0)	25 (1.7)
		8	1/8 (3.2)	5/64 (2.0)	.280 (.215)	.120 (.092)					10 (.7) ◆

Notes: \* Maximum available voltage: 80 volts AC or DC.

Values in parenthesis are metric.

Example: inch (millimeter) – psi (bar)

† Maximum available voltage: 120 volts AC or DC.

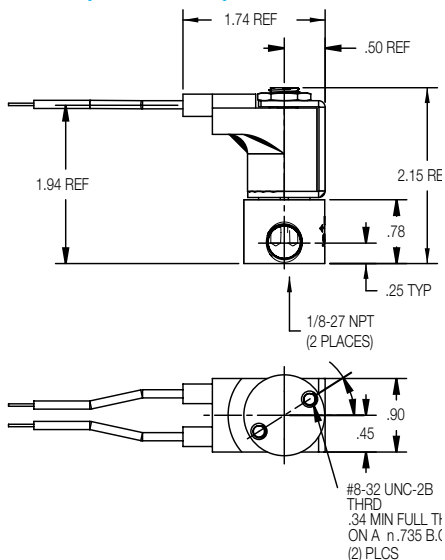
‡ Maximum available duty rating for Class B 266° F (130° C) DC coils.

♦ Maximum continuous duty rating for Class B 266° F (130° C) full wave rectified AC coils and Class F 311° F (155° C) DC coils.

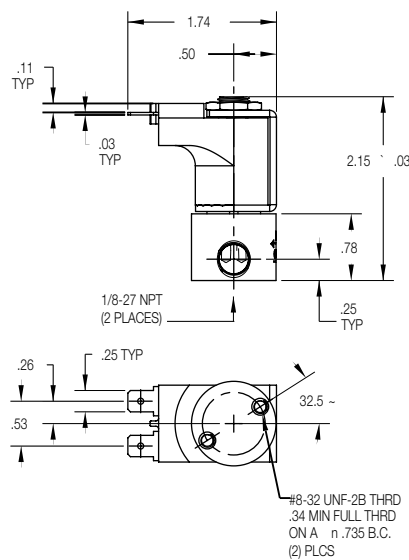
◆ Do not use for vacuum applications in excess of rated pressure.

Note: 240/60 VAC coils available in 6 watt configurations only.

### 2-Way Normally Closed with Leads

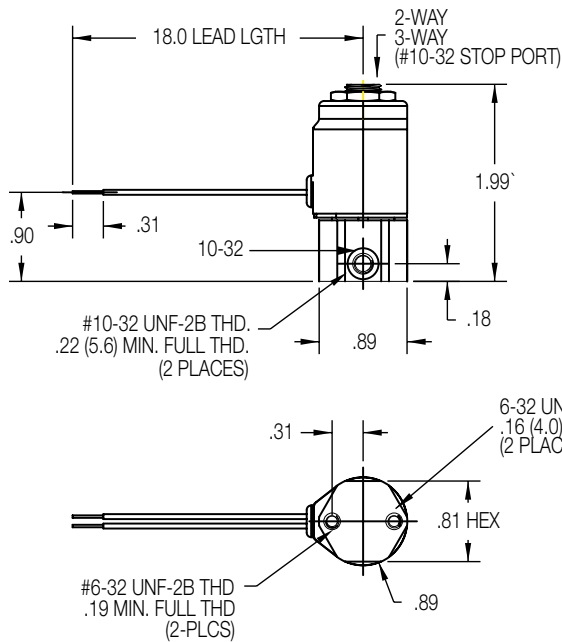


### 2-Way Normally Closed with Spades

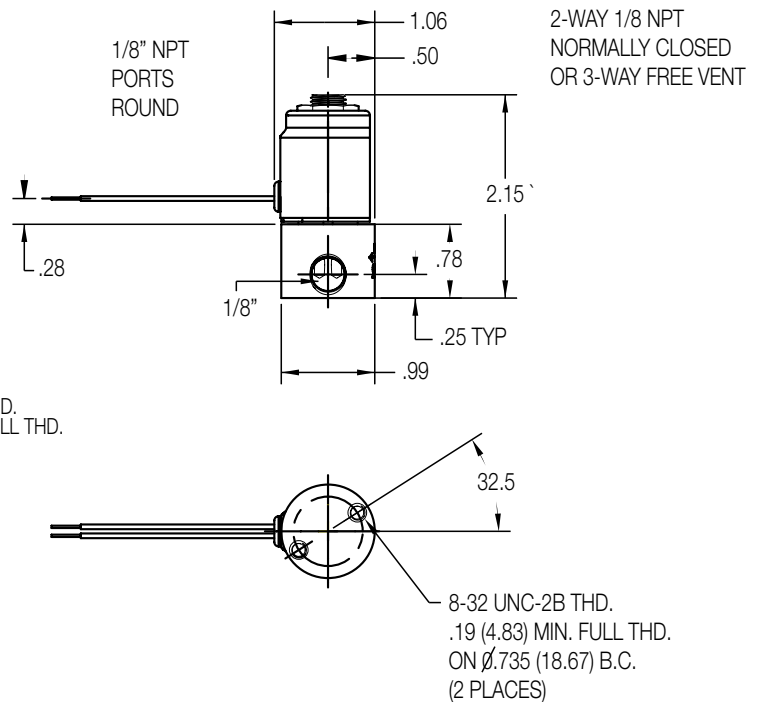


## Dimensions

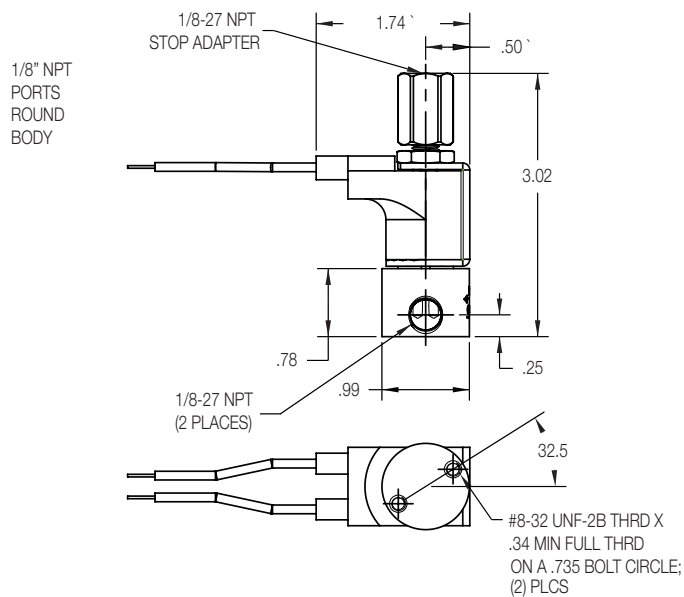
### 2-WAY NORMALLY CLOSED & 3-WAY FREE VENT



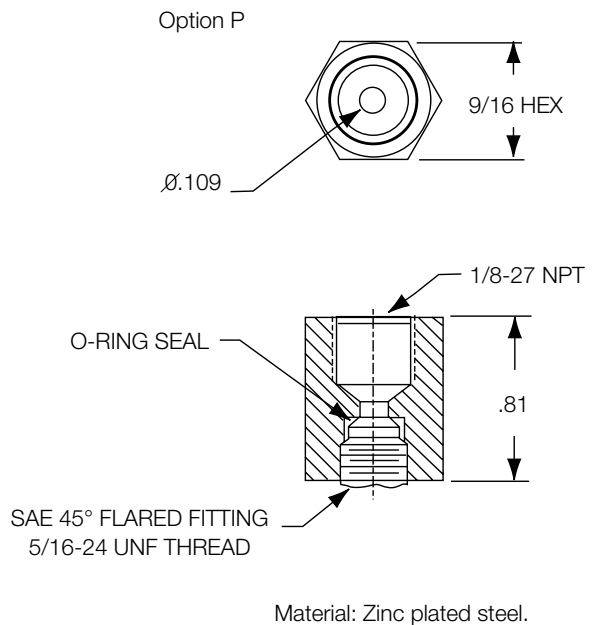
### 2-WAY NORMALLY CLOSED/OPEN & 3-WAY FREE VENT\*\*



### 2-WAY NORMALLY OPEN & 3-WAY\* LINE CONNECT



### STOP ADAPTOR\* (Plated Carbon Steel Only)

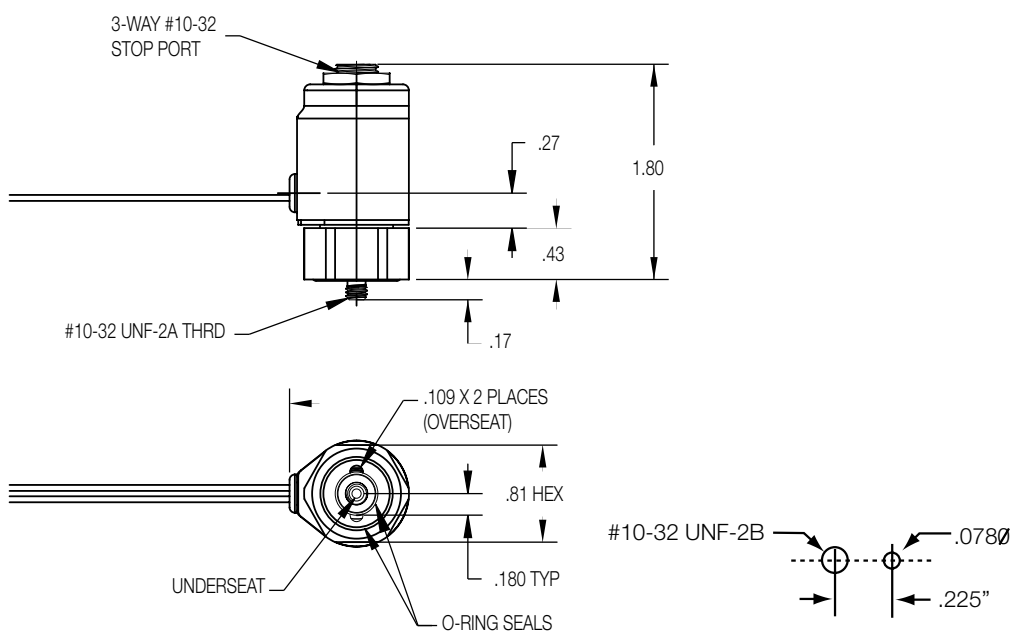


\* Stop Adaptor supplied as an option. Standard line connect is SAE 45° X 1/8" flare tube fitting.

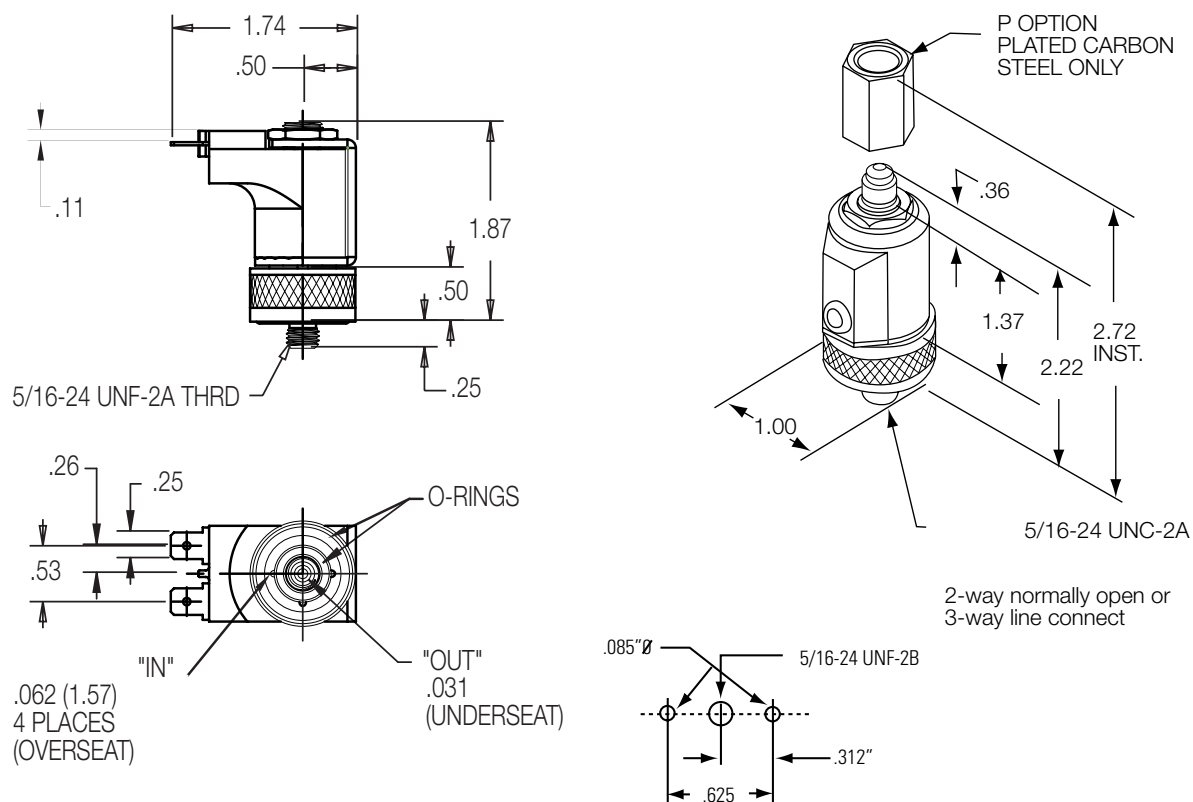
\*\* 3-way free vent is supplied with #10-32UNF-2B exhaust port.

## Dimensions

## #5 Manifold Mount



## #9 Manifold Mount





# 7 SERIES





# 7 Series Valves

Mid-Range Capacity, High Efficiency Valves

## General Specifications:

**Anodized Aluminum Body** with stainless steel internal parts – compatible with common media including air, inert gases, hydraulic fluids, petroleum products, and corrosive media. Brass and stainless steel bodies optional.

**Body Size:** 1.25" x 1.63"

**Maximum Operating Pressure Differential:**  
up to 250 psi

**Orifice Diameters:** Body– 3/64" to 1/4"  
Stop– 1/16" to 3/32"

**Response Time:** 8 to 10 milliseconds

**Power Consumption:** 11 watt continuous duty

**Vacuum:** Special, to 1 micron

**Port Size:** 1/8" NPT, 1/4" NPT Female

**Power Electrical Connection:** Leads and spades

**Seal Material:** Buna N, Viton, EPDM standard, others optional

**Leakage:** Bubble tight

**Coil Type:** Continuous Rating, 11 watt, Class H (185°C)  
non-molded standard

**Standard Voltages:** 24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC. Other voltages available on request.

**Media Temperature Limitations:**

Minimum - 45°F (-43°C)  
Maximum +185°F (+85°C)

**Ambient Temperature:** Standard; Max. +100°C  
for continuous duty. Special; to +115°C

**Weight:** 0.6 lbs.

**Leadwire:** 18 AWG, 18 inches long standard

## 7 Series Solenoid Valves:

New, mid-range capacity, 7 Series Solenoid Valves are designed with a powerful, but economical coil capable of handling pressures up to 250 PSI in a 2-way normally closed configuration. This versatile valve series with its overmold coil and construction performs well at high temperatures, is moisture resistant and can be configured in a low-profile option for difficult installations.

The high-performance, low-cost characteristics of the 7 Series makes them ideal for use by OEMs in automotive applications like suspension systems, emissions monitoring, fan clutch controls and control equipment, dental/vision or medical applications, tables and beds liquid recycling systems, HVAC and many other applications.

This direct acting solenoid valve series is available in 2-way and 3-way designs, and features 1.25" x 1.63" and manifold mount body types machined from aluminum, brass or stainless steel with 1/8" or 1/4" NPT ports and orifice sizes from 3/64" to 1/4" with a standard 11 watt coil that can operate on either AC or DC service. The 7 series is available with both spade and lead connections.



## Valve Model Number Matrix

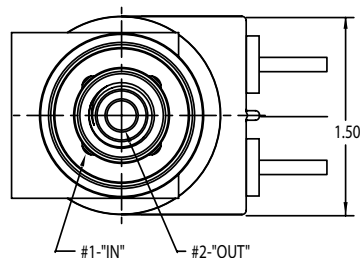
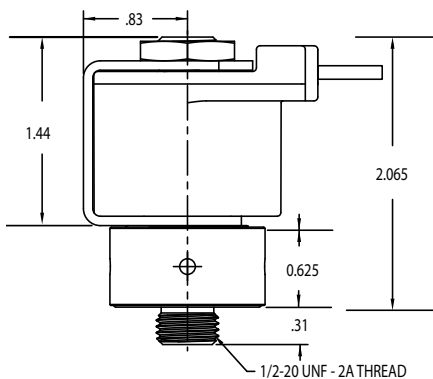
2 WAYS	7 FAMILY	3 FUNCTION	3 COIL TYPE MOLDED	2 PORT SIZE	N PORT TYPE	R BODY MATERIALS	V SEAL MATERIALS	4 ORIFICE SIZE	F WATTAGE	1 VOLTAGE
2 2-Way	7B 1-1/2" Body	3 2-Way Normally Closed	3 18" Leads	1 1/8"	N NPT Female	A Aluminum	A Buna	2 3/64"	F 11.0	1 120/60 VAC
3 3-Way	7M 1/2" - 20 UNF-2A Thread Manifold Mount Body	3 3-Way Normally Closed	G 1/4" Spades	2 1/4"	D Defined Elsewhere	B Brass	E EPDM	4 1/16"		2 24/60 VAC
		4 Normally Open		Q Defined Elsewhere		T 303 Stainless	V Viton	6 3/32"		3 240/60 VAC
		5 Directional Control				O Without Body		8 1/8" (3.2)		5 12 VDC
		7 Multi-purpose						9 5/32" (4.0)		6 24 VDC
								44 1/16" x 1/16"		
								66 3/32" x 3/32"		
								A 3/16" x 1/32"		
								C 1/4" x 3/32"		
								T 1/8" x 3/32"		
								W 3/64" x 1/16"		

Note: Other options for voltage, wattage, body material, porting and Cv are available. Contact the factory.

## Dimensions

### 2-Way Normally Closed

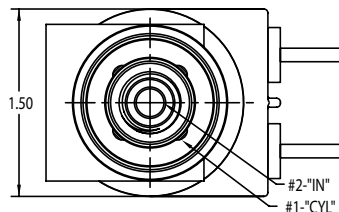
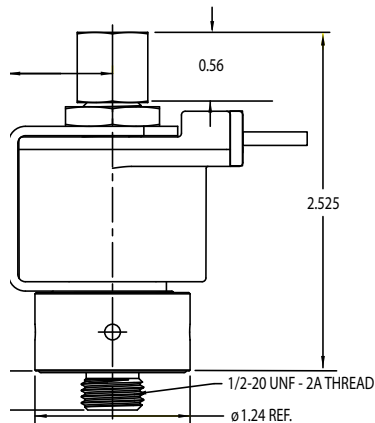
#### 3-Way Free Vent Manifold Mount



Also available with Spades

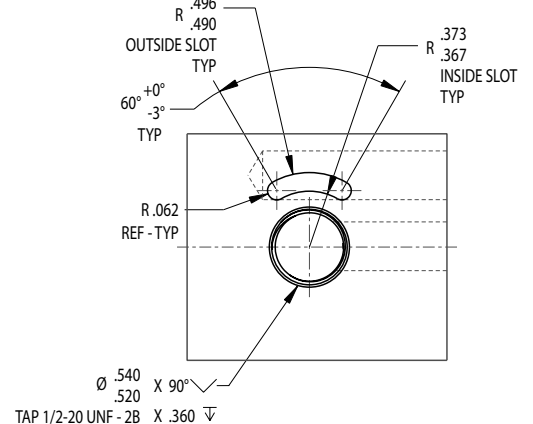
### 3-Way Line Connect

#### 2-Way Normally Open Manifold Mount



Also available with Spades

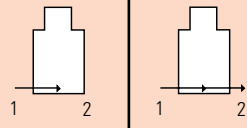
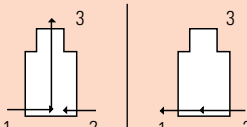
#### Manifold Valve/ Manifold Interface



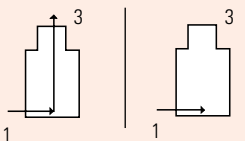
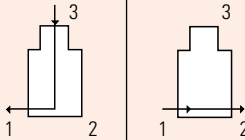
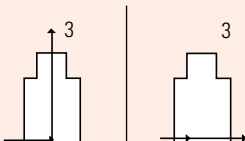
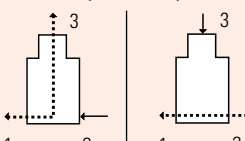


## Maximum Operating Pressure Differential (PSI)

### Standard Valve Offerings

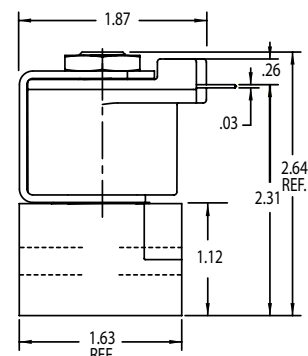
			Orifice Diameter		C <sub>V</sub> Factor		Maximum Operating Pressure Differential	
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC	DC
<b>2-Way Normally Closed</b> 		2	3/64 (1.2)		.062		250 (17.25)	250 (17.25)
		4	1/16 (1.6)		.111		200 (13.80)	200 (13.80)
		6	3/32 (2.4)		.180		125 (8.60)	125 (8.60)
		8	1/8 (3.2)		.280		100 (6.90)	100 (6.90)
		9	5/32 (4.0)				75 (5.20)	50 (3.45)
		A	3/16 (4.8)		.500		50 (3.45)	25 (1.73)
		C	1/4 (6.4)		.750		20 (1.38)	5 (0.35)
<b>3-Way Normally Closed Free Vent &amp; Line Conn.</b> 		W	3/64 (1.2)	1/16 (1.6)	.062	.095	150 (10.35)	150 (10.35)
		4	1/16 (1.6)	1/16 (1.6)	.111	.095	100 (6.90)	100 (6.90)
		6	3/32 (2.4)	3/32 (2.4)	.170	.170	75 (5.18)	75 (5.18)
		T	1/8 (3.2)	3/32 (2.4)	.280	.170	50 (3.45)	50 (3.45)
		A	3/16 (4.8)	3/32 (2.4)	.380	.170	20 (1.38)	20 (1.38)
		C	1/4 (6.4)	3/32 (2.4)	.670	.170	10 (0.70)	5 (0.35)

### Special Valve Offerings, Contact Factory

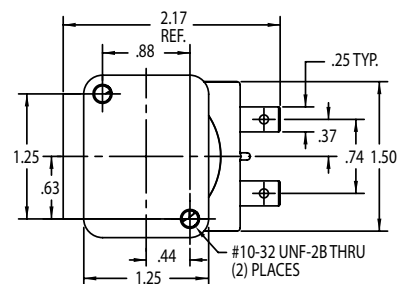
			Orifice Diameter		C <sub>v</sub> Factor		Maximum Operating Pressure Differential	
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC	DC
<b>2-Way Normally Open</b> 		2		3/64 (1.2)		.054	200 (13.80)	200 (13.80)
		4		1/16 (1.6)		.107	150 (10.35)	150 (10.35)
		6		3/32 (2.4)		.150	125 (8.60)	125 (8.60)
<b>3-Way Normally Open</b> 		R	1/16 (1.6)	3/64 (1.2)	.104	.052	150 (10.35)	150 (10.35)
		S	1/8 (3.2)	1/16 (1.6)	.280	.085	100 (6.90)	100 (6.90)
		T	1/8 (3.2)	3/32 (2.4)	.280	.170	75 (5.18)	75 (5.18)
<b>3-Way Directional Control</b> 		R	1/16 (1.6)	3/64 (1.2)	.095	.052	200 (13.80)	200 (13.80)
		4	1/16 (1.6)	1/16 (1.6)	.095	.085	150 (10.35)	150 (10.35)
		6	3/32 (2.4)	3/32 (2.4)	.170	.120	125 (8.60)	125 (8.60)
		T	1/8 (3.2)	3/32 (2.4)	.280	.120	100 (6.90)	100 (6.90)
<b>3-Way Multi-Purpose</b> 		W	3/64 (1/16)	3/64 (1.2)	.052	.052	150 (10.35)	125 (10.35)
		4	1/16 (1.6)	1/16 (1.6)	.095	.095	100 (6.90)	100 (6.90)
		6	3/32 (2.4)	3/32 (2.4)	.170	.170	75 (5.18)	50 (5.18)

Values in parenthesis are metric. Example: inch (millimeter) – psi (bar)

### 2-Way Normally Closed Standard Body

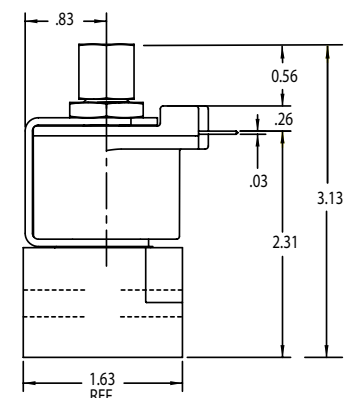


Note: Coil is oriented 90° out of position

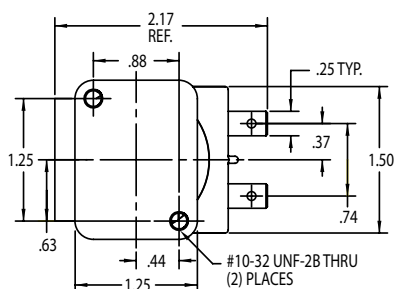


Also available with Leads

### 3-Way Normally Closed Line Connect 2-Way Normally Open Standard Body



Note: Coil is oriented 90° out of position



Also available with Leads

# 8

## SERIES





# 8 Series Valves

Heavy-Duty, Mid-Range Solenoid Valves

## General Specifications:

### Overmold Coil Construction

- Meets NEMA 4 and 4X Requirements
- Unique internal design resulting in improved magnetic circuitry
- Wide variety of electrical connection structures

### One Piece Flange Tube Assembly

- Eliminates one weld joint for increased strength and reduced leakage potential
- Allows for high vacuum operation
- Wrench flats on conduit for ease of installation

### Rugged Construction

### Wide Variety of Construction Materials

**Weight:** Approximately 1 lb., 7 ounces

**Agency Approvals:** UL recognition, CUL recognition

## Features:

- 1/8" NPT and 1/4" NPT porting
- Orifice Diameters: Body Orifice - 1/32" to 1/4" Stop Orifice - 3/32" to 3/16"
- Weight approximately 1 lb., 7 oz.
- Media temperature limitations of -40°F to 180°F
- 2-way and 3-way operation
- Operating pressure up to 1100 PSI (82.75 bar)
- Power consumption of 11 watt continuous duty
- DIN, conduit, spade and wire lead type electrical connections
- Standard voltages: 24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC
- Standard seal material is Buna N, Viton, EPDM with others optional
- Body sizes: 1-1/2"

## 8 Series Solenoid Valves:

The 8 Series solenoid valves are heavy-duty, mid-sized, general purpose valves featuring high performance pressure and flow characteristics. They are commonly used in OEM pneumatic and hydraulic component assemblies, as well as automobile suspension systems, emissions monitoring and control equipment, truck fan clutch controls, dental/vision chairs, medical tables and beds, liquid recycling systems and HVAC applications.



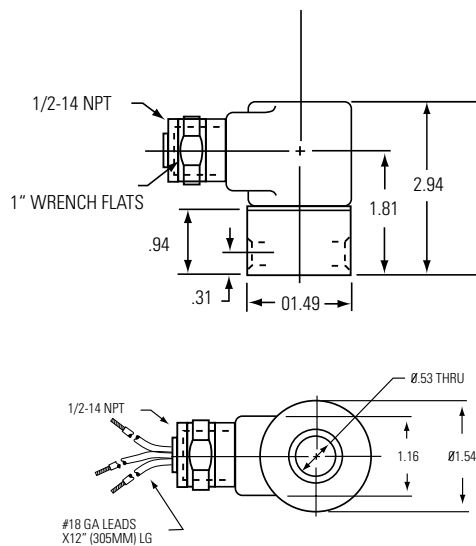


## Valve Model Number Matrix

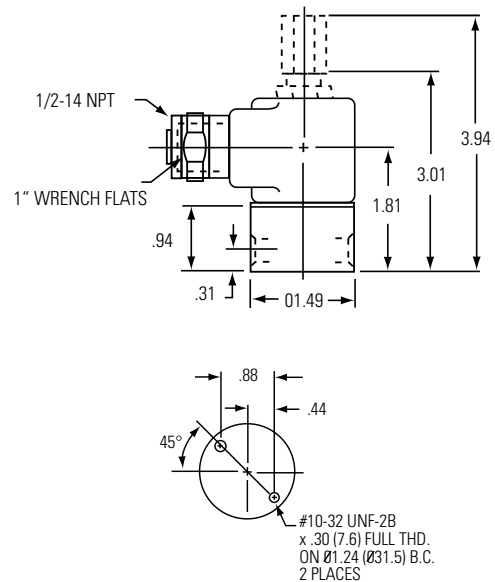
2 WAYS	82 FAMILY	3 FUNCTION	7 COIL TYPE OVERMOLD	—	2 PORT SIZE	N PORT TYPE	T BODY MATERIALS	—	V SEAL MATERIALS	4 ORIFICE SIZE	F WATTAGE	1 VOLTAGE	OPTIONS
2 2-Way	82 1-1/2" body	3 2-Way Normally Closed	Class "F" A Conduit		1 1/8"	N NPT Female	B Brass		A Buna	1 1/32" (.80)	F 11.0	1 120/60	U UL Approval
3 3-Way		3-way Normally Closed Line Connect	B 1/4" Spades		2 1/4"	D Defined Elsewhere	T 303 Stainless Family 82 Only		E EPDM	2 3/64" (1.2)		2 24/60	C CSA Approval
		4 Normally Open	C 18" Leads		Q Defined Elsewhere		O Without Body		F FDA Buna	4 1/16" (1.6)		3 240/60	L CUL Approval
		5 Directional Control	7 DIN 43650						G FDA EPDM	5 5/64" (2.0)		4 6 VDC	S UL/CSA Approval
		6 Normally Closed Free Venting	H Hazardous Location						V Viton	6 3/32" (2.4)		5 12 VDC	
		7 Universal								8 1/8" (3.2)		6 24 VDC	
										9 5/32" (4.0)			
										A 3/16" (4.8)			
										C 1/4" (6.4)			
										R 1/16"x 3/64" (1.6 x 1.2)			
										T 1/8"x 3/32" (3.2 x 2.4)			
										V 1/32"x 3/64" (.8 x 1.2)			

## Dimensions

### 2-Way Normally Closed

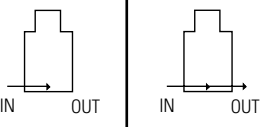
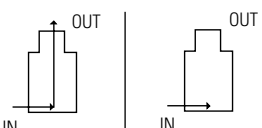
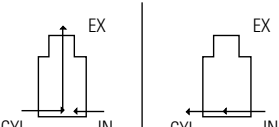
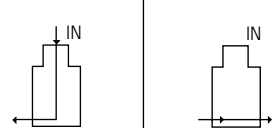
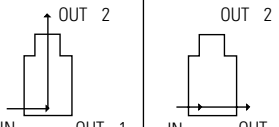
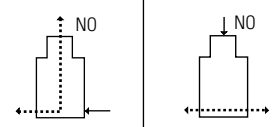


### 2 & 3-Way Normally Closed/Normally Open

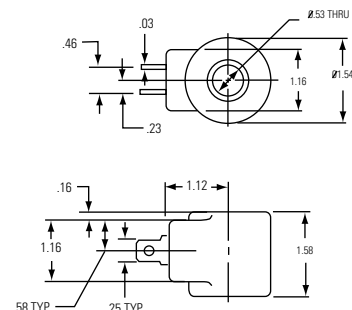


## Conduit Connection

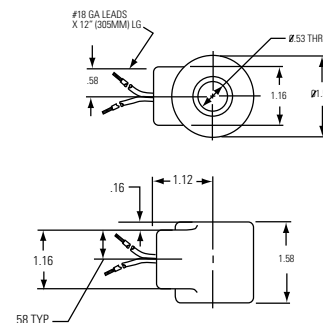
## Maximum Operating Pressure Differential (PSI)

2-Way Pressure Ratings		Orifice Diameter		C <sub>v</sub> Factor		Maximum Operating Pressure Differential		
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC	DC
<div>2-Way Normally Closed</div> <div></div>		1	1/32 (.80)		.024		1200 (82.75)	1100 (75.86)
		2	3/64 (1.2)		.062		1100 (75.86)	1000 (68.96)
		4	1/16 (1.6)		.095		1000 (68.10)	600 (41.38)
		5	5/64 (2.0)		.120		600 (41.38)	325 (22.41)
		6	3/32 (2.4)		.180		400 (27.59)	275 (18.97)
		8	1/8 (3.2)		.280		225 (15.52)	150 (10.34)
		9	5/32 (4.0)		.400		120 (8.28)	60 (4.14)
		A	3/16 (4.8)		.500		80 (5.51)	30 (2.07)
		C	1/4 (6.4)		.750		25 (1.73)	10 (0.70)
<div>2-Way Normally Open</div> <div></div>		2	3/64 (1.2)		.062		500 (35.48)	
		4	1/16 (1.6)		.095		300 (21.0)	
		6	3/32 (2.4)		.180		150 (10.0)	
3-Way Pressure Ratings		Orifice Diameter		C <sub>v</sub> Factor		Maximum Operating Pressure Differential		
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC/DC	
<div>3-Way Normally Closed</div> <div></div>		V	1/32 (.80)	3/64 (1.2)	.024	.062	600 (41.38)	
		2	3/64 (1.2)	3/64 (1.2)	.062	.062	275 (18.97)	
		4	1/16 (1.6)	1/16 (1.6)	.095	.095	220 (15.17)	
		6	3/32 (2.4)	3/32 (2.4)	.180	.180	130 (8.97)	
		T	1/8 (3.2)	3/32 (2.4)	.280	.180	90 (6.21)	
		9	5/32 (4.0)	3/32 (2.4)	.400	.180	40 (2.76)	
		A	3/16 (4.8)	3/32 (2.4)	.500	.180	25 (1.73)	
		C	1/4 (6.4)	3/32 (2.4)	.750	.180	10 (0.70)	
<div>3-Way Normally Open</div> <div></div>		R	1/16 (1.6)	3/64 (1.2)	.095	.062	225 (15.52)	
		4	1/16 (1.6)	1/16 (1.6)	.095	.095	150 (10.35)	
		6	3/32 (2.4)	3/32 (2.4)	.180	.180	100 (6.90)	
		T	1/8 (3.2)	3/32 (2.4)	.280	.180	50 (3.45)	
		9	5/32 (4.0)	3/32 (2.4)	.400	.180	40 (2.76)	
		A	3/16 (4.8)	3/32 (2.4)	.500	.180	20 (1.38)	
		C	1/4 (6.4)	3/32 (2.4)	.750	.180	10 (0.70)	
<div>3-Way Directional Control</div> <div></div>		R	1/16 (1.6)	3/64 (1.2)	.095	.062	300 (20.70)	
		4	1/16 (1.6)	1/16 (1.6)	.095	.095	250 (17.25)	
		6	3/32 (2.4)	3/32 (2.4)	.180	.180	140 (9.66)	
		T	1/8 (3.2)	3/32 (2.4)	.280	.180	120 (8.62)	
		9	5/32 (4.0)	3/32 (2.4)	.400	.180	65 (4.48)	
		A	3/16 (4.8)	3/32 (2.4)	.500	.180	25 (1.73)	
<div>3-Way Universal</div> <div></div>		V	1/32 (.80)	3/64 (1.2)	.062	.062	350 (24.14)	
		2	3/64 (1.2)	3/64 (1.2)	.062	.062	200 (13.80)	
		4	1/16 (1.6)	1/16 (1.6)	.095	.095	175 (12.07)	
		6	3/32 (2.4)	3/32 (2.4)	.180	.180	100 (6.90)	
		T	1/8 (3.2)	3/32 (2.4)	.280	.180	50 (3.45)	
		9	5/32 (4.0)	3/32 (2.4)	.400	.180	25 (1.73)	

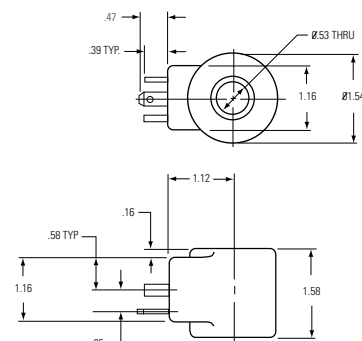
### Coil Options



### Dual Spade



### Dual Lead



### DIN Connection

Values in parenthesis are metric. Example: inch (millimeter) – psi (bar)

# 2

SERIES





# 2 Series Valves

High Capacity Solenoid Valves (17 Watts)

## General Specifications:

**Aluminum or brass body** with stainless steel internal parts—compatible with common media including air, inert gases, hydraulic fluids, petroleum products, etc.

**Maximum Operating Pressure Differential:**  
up to 750 psi (51.7 bar)

**Orifice Diameters:** Body orifice—1/16" to 3/8"  
Stop orifice—3/32" to 3/16"

**Response Time:** 20 to 25 milliseconds

**Power Consumption:** 17 watt continuous duty

**Vacuum:** Special to 10 microns

**Port Size:** 1/4" NPT and 3/8" NPT

**Housing:** Grommet, 1/2" conduit

**Seal Material:** Buna N standard, Viton, EPDM, others optional

**Leakage:** Bubble tight (1 x 10<sup>-5</sup> cc/sec.)

**Coil Type:** Continuous Rating 17 watt—Class "B"  
(130°C) non-molded standard

**Standard Voltages:** 24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 12, 24 VDC. Other voltages and wattages available upon request

**Media Temperature Limitations:**  
Standard; -40°F to 180°F (-40°C to 82°C)

**Weight:** Approximately 1.7 lbs. (Aluminum Body)

**Leadwire:** 18 AWG, 18 (457) inches long standard

**Body Size:** 2"

## 2 Series Solenoid Valves:

These rugged, direct acting valves offer the largest flow capacity, and are available with up to 3/8" ports and 1/4" orifices. Series 2 Solenoid Valves feature a very powerful 17-watt coil. These valves are designed to operate under high pressure with a high flow rate. Typical applications include use with packaging equipment, colorant mixing, blow molding, heat exchangers and industrial washing equipment.



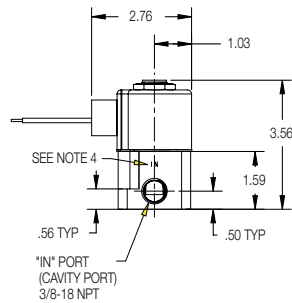


## Valve Model Number Matrix

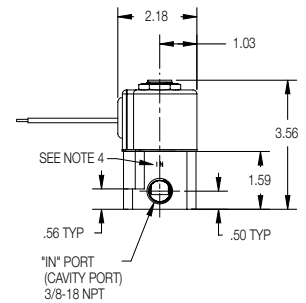
2 WAYS	22 FAMILY	4 FUNCTION	8 COIL TYPE	3 PORT SIZE	N PORT TYPE	B BODY MATERIAL	A SEAL MATERIALS	4 ORIFICE SIZE	J WATTAGE	2 VOLTAGE
2 2-Way	"2" Series	3 2-Way Normally Closed	Non-Molded Class "B" with 0 leads	2 1/4"	N NPT Female	B Brass	A Buna	4 1/16" (1.6)	J 17	1 120/60
3 3-Way		3 3-Way Normally Closed Line Connect		3 3/8"	D Defined Elsewhere	O Without Body	E EPDM	6 3/32" (2.4)		2 24/60
		4 Normally Open		Q Defined Elsewhere			V Viton	8 1/8" (3.2)		3 240/60
		5 Directional Control	Molded Class "B" with 1 leads					9 5/32" (4.0)		4 6 VDC
		7 Multi-Purpose						A 3/16" (4.8)		5 12 VDC
								C 1/4" (6.4)		6 24 VDC
								D 5/16" (8.0)		
								E 3/8" (9.5)		

## Dimensions

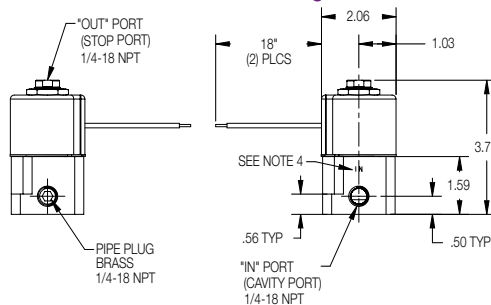
### 2-Way Normally Closed Conduit Housing



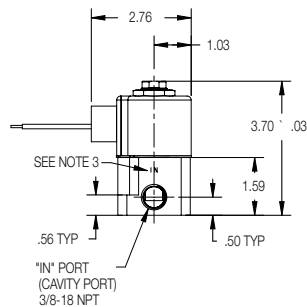
### 2-Way Normally Closed Grommet Housing



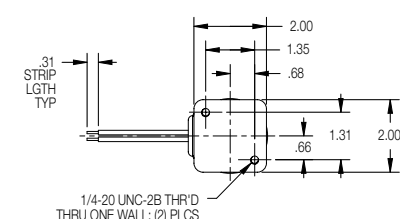
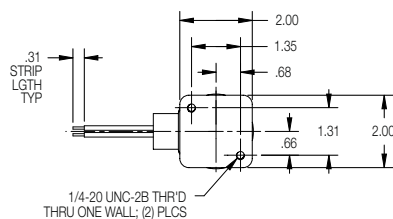
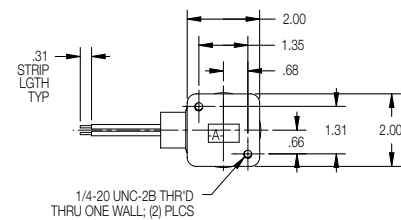
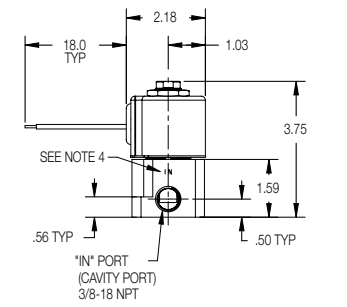
### 2-Way Normally Open Grommet Housing



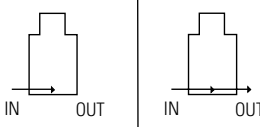
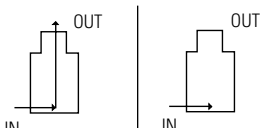
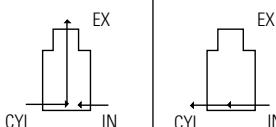

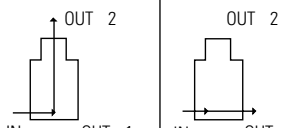
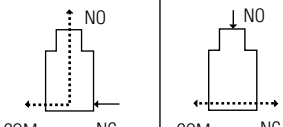
### 3-Way Line Connect Conduit Housing



### 3-Way Line Connect Grommet Housing



## Maximum Operating Pressure Differential (PSI)

2-Way AC Pressure Ratings		Orifice Diameter		C <sub>v</sub> Factor		Maximum Operating Pressure Differential		
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC	DC
<div>2-Way Normally Closed</div> <div></div>		4	1/16 (1.6)		.12		750 (51.7)	750 (51.7)
		6	3/32 (2.4)		.21		500 (34.5)	500 (34.5)
		8	1/8 (3.2)		.32		300 (20.7)	300 (20.7)
		9	5/32 (4.0)		.50		225 (15.5)	225 (15.5)
		A	3/16 (4.8)		.69		140 (9.7)	140 (9.7)
		C	1/4 (6.35)		.94		100 (6.9)	100 (6.9)
		D	5/16 (8.0)		1.48		45 (3.1)	45 (3.1)
		E	3/8 (9.5)		1.90		35 (2.4)	35 (2.4)
<div>2-Way Normally Open</div> <div></div>		6	3/32 (2.4)		.25		275 (19.0)	275 (19.0)
		8	1/8 (3.2)		.35		175 (12.1)	175 (12.1)
		9	5/32 (4.0)		.45		125 (8.6)	125 (8.6)
		A	3/16 (4.8)		.50		100 (6.9)	100 (6.9)
3-Way AC Pressure Ratings		Orifice Diameter		C <sub>v</sub> Factor		Maximum Operating Pressure Differential		
De-energized	Energized	Orif. No.	Body	Stop	Body	Stop	AC	DC
<div>3-Way Normally Closed LINE CONNECT</div> <div></div>		6	3/32 (2.4)	3/32 (2.4)	.25	.25	225 (15.5)	225 (15.5)
		8	1/8 (3.2)	1/8 (3.2)	.35	.35	150 (10.3)	150 (10.3)
		9	5/32 (4.0)	5/32 (4.0)	.45	.45	125 (8.6)	125 (8.6)
		A	3/16 (4.8)	3/16 (4.8)	.50	.50	85 (5.9)	85 (5.9)
		C	1/4 (6.35)	3/16 (4.8)	.75	.50	50 (3.4)	50 (3.4)
		D	5/16 (8.0)	3/16 (4.8)	1.10	.50	25 (1.7)	25 (1.7)
<div>3-Way Normally Open</div> <div></div>		6	3/32 (2.4)	3/32 (2.4)	.25	.25	275 (19.0)	275 (19.0)
		8	1/8 (3.2)	1/8 (3.2)	.35	.35	175 (12.1)	175 (12.1)
		9	5/32 (4.0)	5/32 (4.0)	.45	.45	125 (8.6)	125 (8.6)
		A	3/16 (4.8)	3/16 (4.8)	.50	.50	75 (5.2)	75 (5.2)
		C	1/4 (6.35)	3/16 (4.8)	.75	.50	50 (3.4)	50 (3.4)
		D	5/16 (8.0)	3/16 (4.8)	1.10	.50	40 (2.8)	40 (2.8)
<div>3-Way Directional Control</div> <div></div>		6	3/32 (2.4)	3/32 (2.4)	.25	.25	200 (13.8)	200 (13.8)
		8	1/8 (3.2)	1/8 (3.2)	.35	.35	175 (12.1)	175 (12.1)
		9	5/32 (4.0)	5/32 (4.0)	.45	.45	125 (8.6)	125 (8.6)
		A	3/16 (4.8)	3/16 (4.8)	.50	.50	75 (5.2)	75 (5.2)
		C	1/4 (6.35)	3/16 (4.8)	.75	.50	60 (4.1)	60 (4.1)
		D	5/16 (8.0)	3/16 (4.8)	1.10	.50	40 (2.8)	40 (2.8)
<div>3-Way Multi-Purpose</div> <div></div>		6	3/32 (2.4)	3/32 (2.4)	.25	.25	150 (10.3)	150 (10.3)
		8	1/8 (3.2)	1/8 (3.2)	.35	.35	110 (7.6)	110 (7.6)
		9	5/32 (4.0)	5/32 (4.0)	.45	.45	75 (5.2)	75 (5.2)
		A	3/16 (4.8)	3/16 (4.8)	.50	.50	50 (3.4)	50 (3.4)
		C	1/4 (6.35)	3/16 (4.8)	.75	.50	30 (2.1)	30 (2.1)
		D	5/16 (8.0)	3/16 (4.8)	1.10	.50	15 (1.0)	15 (1.0)
		E	3/8 (9.5)	3/16 (4.8)	1.95	.50	10 (.7)	10 (.7)

Values in parenthesis are metric. Example: inch (millimeter) – psi (bar)

# SW

SERIES





# Super Wattmizer

High Capacity, Low Power Miniature Solenoid Valves

## General Specifications:

**One-inch stainless steel or brass bodies are standard** while the internal components that come in contact with the media are all stainless steel. They are compatible with common media including air, water and inert gases.

**Maximum Operating Pressure Differential:**  
up to 1500 psi (85 bar)

**Orifice Diameters:** .025 to 1/8, Stop-.025" to 5/64"

**Response Time:** 6 to 10 milliseconds

**Power Consumption:** .65 to 9 watt continuous duty

**Vacuum:** 5 microns

**Port Size:** #10-32 UNF-2B, 1/8" NPT and 1/4" NPT

**Housing:** Strap housing

**Seal Material:** Buna N, Viton, EPDM standard, others optional

**Leakage:** Bubble tight ( $1 \times 10^{-5}$  cc/sec.)

**Coil Type:** Continuous Rating - Heat dispersing  
.65 watt through 9 watt—Class "F" (155°C) standard  
.65 watt through 9 watt—Class "B" (130°C) optional

**Standard Voltages:** 24V/50-60 Hz, 120V/50-60 Hz, 240V/50-60 Hz, 6, 12, 24 VDC. Other voltages and wattages available upon request

**Media Temperature Limitations:**

Minimum— -40°F (-40°C);

Maximum— +180°F (+82°C)

**Weight:** 2 3/4–3 1/4 ounces

**Leadwire:** 20 AWG, 18 (457) inches long or spades

**Agency Approvals:** UL recognition, CUL recognition

## Super Wattmizer Solenoid Valves:

Super Wattmizer series produces 30% greater performance at the same wattage as standard Wattmizer models. This High Performance valve series uses a larger heat-dispersing coil design with larger orifices and flow rates to operate at pressures in the excess of 1,500 psi. These compact, 2-way and 3-way solenoid valves are offered in a range of .65 to 9 watts of continuous power.

Super Wattmizer miniature solenoid valves are compatible with most common fluids and gases making them ideal for pneumatic and hydraulic applications typically using light viscous oils. The larger coil design also allows the valves to operate at higher temperatures than standard Wattmizer models.

Super Wattmizer uses #10-32 UNF-2B, 1/8" NPT or 1/4" NPT porting, orifices up to 1/8" and coils for AC or DC operation. These valves provide wide pressure and flow ratings, and are long duty, lasting in excess of 10 million cycles.









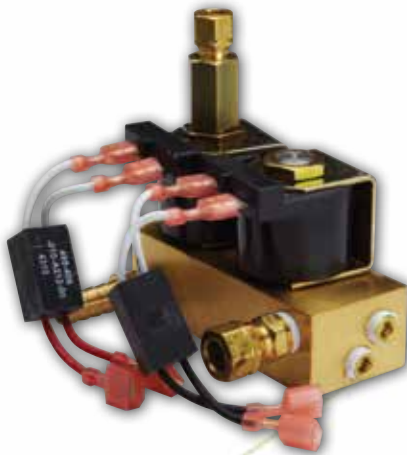
# Manifold Valves

## Manifold Valves:

Solenoid valve manifolds save space and cost in most multiple valve applications. A manifold connects multiple solenoid valves and other components into a single, compact assembly allowing space to be used more efficiently and reducing leakpoints and the overall cost of valving. Designed into a convenient "Plug and Play" system, these manifolds eliminate the need for redundant piping and fittings that can leak, break or degrade over time, thereby enhancing the reliability of the solenoid valve assembly. Replacing individual valves and components with a custom manifold will decrease customer's direct labor costs and assembly time as well.

Solenoid manifolds, made from brass or aluminum, can be used in most liquid, air or gas applications. Manifolds from Solenoid Solutions accommodate from 2 to 20 valves, making it practical to use small and large valves on the same manifold. They can also be fitted with pressure switches, transducers, sound reduction, filters, regulators, fittings, connections and gauges based on your needs.

Direct involvement with Solenoid Solutions' engineering department ensures that manifolds are designed to meet the exact requirements of the application. This optimizes the functionality of Solenoid Solutions' manifolds and assemblies to best meet customers' overall objectives of cost reduction, improved performance, greater system integrity and the ease and speed of final assembly.





# Custom Valves

for Special Applications

## Specialty Valves

Let us finish your valve or manifold with value-added accessories that will save you time, money and potential maintenance issues.

Most applications using solenoid valves require some level of custom design. Solenoid Solutions can produce custom engineered valves and manifolds for your specific requirements. We work closely with you to ensure that custom built solenoid valves and manifolds exactly meet your needs. With our array of solenoid valves, manifold bodies, and value-added services, we can produce millions of solenoid valve and manifold combinations.

Specialized valve designs include latching valves which do not require a current to stay in an energized position, valves designed to operate on bump and hold circuits that utilize a minimal amount of power to stay open, and axial flow valves which provide a straight flow from the bottom to the top of the valve.

## Accessories and customization we can add to your solenoid valve:

- Leads
- Fittings
- Controls
- Gauges and Transducers
- Check Valves
- Custom Porting
- Special Coatings
- Custom Threading
- Custom Mounting Options
- Mounting Straps
- Pressure Switches
- All Types of Electrical Connections

## Latching Solenoid Valves - Low Power

Latching solenoid valves offer energy savings by reducing power consumption

In the case of a latching valve, a permanent magnet that requires no electric input is built into the top of the valve. The small magnetic field is not enough to activate the plunger. However, when the valve is switched opened to full power, the permanent magnet is strong enough to keep the valve open. This allows the valve to remain open after the initial electrical power has been turned off, thus offering significant potential energy savings. The valve will remain open until another electrical charge, of opposite polarity, is applied. This is particularly beneficial in applications where the valve remains open for long periods of time or if the valve is battery powered and must conserve as much energy as possible.

In general, a latching solenoid valve is a very well balanced system. All components of the valve, pressures, power inputs, and operating conditions must be stable and within the design specification. Small deviations will likely cause the valve to not operate properly. For instance, latching valves do not operate reliably when they are subject to vibration.

The electrical current applied to the latching valve is very brief, typically in pulses of 20 to 50 milliseconds. The device's electrical control system must control these pulses precisely. If they are too short, the valve will not respond and if they are too long, the valve will open and then close again or vice versa. This is commonly referred to as re-latching. The voltage must also be stable not varying more than +10% or -15% of rated voltage.





# Total Cost Solutions

As an experienced manufacturer and supplier of solenoid valves and solenoid valve manifolds, it is incumbent upon us to provide valuable products that meet or exceed customer needs while reducing their overall costs. Solenoid Solutions implements this strategic stance by investing in engineering and product design programs, world class machining systems,

advanced assembly concepts, and by providing value added services for its customers. The result adds up to quality products designed and produced that create Total Cost Solutions, an analysis of which often shows there can be a large difference between the price of something and its long term cost.

**Product Design**  
**Prototyping**  
**Engineering Services**



**Lean Manufacturing**  
**Automation**  
**SPC Statistical Process Control**



**Advanced Assembly**  
**Quality Assurance**  
**ISO Certification**



**Value Added Services**  
**Stocking Inventory**  
**JIT Delivery-Consignment**





# Ask about our SubMiniature & Proportional Valves

## 10mm & 15mm SubMiniature Pilot Valves

These new SubMiniature 10 and 15mm Solenoid Valves are ideal for air and inert gas applications in the pneumatic automation and instrumentation markets offering low power consumption, high-flow rates and 50 million cycle life.



## Proportional Valves

Proportional Valves regulate the flow of air and gas varying the output flow based on the applied current input to the valve. The valves are 2 way, normally closed and are available with a 9 watt coil featuring a combination of 12 or 24 VDC voltages with 1/16" or 3/32" orifices. These valves provide an adjustable programmable controller, ideal for mixing gases.



2251 Manchester Road  
Erie, Pennsylvania 16506-1001 USA  
PH: 888-825-8405  
FAX: 814-833-5439  
[www.solenoidsolutionsinc.com](http://www.solenoidsolutionsinc.com)

### ! WARNING !

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH. PERSONAL INJURY AND/OR PROPERTY DAMAGE.

This document and other information from Solenoid Solutions, Inc. provides product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current catalog. Due to the variety of operation conditions and applications for these products or systems, the user, through his own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Solenoid Solutions, Inc. at any time without notice.