

Solenoid Squirt Valve



Peter Paul Squirt valves Series 15 (left) and Series 50 (right) are part of a family of Squirt valves for process industries and special applications. This valve was originally developed for marking a continuous web of cloth, paper, wood or anything moving on a conveyor which needs to be marked.

Our new Squirt valve is an in-line, two-way Normally Closed Series 50 or 15 solenoid valve with double plunger seal which does not allow continuous flow, but will shut off, energized or de-energized. This prevents a continuous flow condition if someone accidentally left the Squirt valve "on". You get one squirt or drop and no more.

Its main claim to fame is probably its size, currently 50 and 15 solenoid valves with a variety of tube sizes which control drop size. Low pressure ratings of two psi to ten psi are available; anything less than two pounds pressure does not provide enough velocity for a good squirt or drop.

Because this valve was originally developed for marking cloth with dye to highlight defects in yard goods, the valve had to meet both small size and low cost requirements. You might call it non-critical dispensing: It doesn't have to be perfectly exact for oil or any light liquid. If you dispense a drop of oil on a bearing before assembling it, the application would be good enough. The same could be suggested with glue, other types of lubricants, sealants...any light liquid dispensed at low pressure in drop increments.

The small dispenser tube is critical only in its diameter and controls drop size and squirt length. The bigger the drop, the shorter the carry.

These mostly stainless steel versions are available in either AC or DC.

Metering Adapter Adds To Utility Of Our Series 20 And 30 Solenoid Valves



Adjustable, stainless steel metering adapters shown mounted on our (left to right) Series 30 grommet valve, Series 30 conduit valve with in-body metering, Series 20 Explosion-Proof conduit valve, and Series 20 with spade terminals and in-body metering.

A new, adjustable, stainless steel metered adapter for Series 20 and 30, 2-way N.O. and 3-way solenoid valves provides a manually adjustable flow control to a valve which creates a speed control for the process the valve is controlling.

While our solenoid valves can be configured with metering in the valve bodies, the use of metering in the sleeve port adapter on either the top inlet or exhaust allows the user to set the best possible flow parameters for the specific application. For instance, to restrict the return speed of a cylinder, the metering adapter acts as a damper on the process. With the use of these adapters, it is also possible to pipe the exhaust from the solenoid valve out of the area rather than exhausting directly to atmosphere. The metering adapters are available for either 1/8 NPT or 1/4 NPT porting and are used for liquid and gaseous media.

The metering adapter is typically used as a metered exhaust for 3-way normally open valves, or as a metered normally open port in multi-purpose or directional control valves.

Universal Mounting Bracket Now Available For Peter Paul Solenoid Valves



Our new universal mounting bracket is shown here attached to (left to right) Series 15, 30, and 50 and 70 solenoid valves. The zinc plated, carbon steel bracket (foreground) is provided with screws.

The bodies of all our solenoid valves offer an underside pair of drilled and tapped holes for easy mounting. But where the mounting surface is very thick or physically inaccessible, a simple top mounting is desirable.

For such applications, we have developed a universal, plated steel mounting bracket, part number B96, for individual, solenoid valves in Series 15, 20, 30, 50, and 70. Provided with screws and several countersunk hole configurations, the brackets are easily installed and may be used in virtually any operating environment.

Manual Override Now Offered On Many Peter Paul Solenoid Valves



Manual override (turn-lock or momentary push button) is a factory option and is available on specified solenoid valves including (clockwise for 10) Series 20, grommet housing, multipurpose; Series 70, conduit housing, 3-way NO; and Series 58, DIN-type connector, 3-way NC.

Manual override, a mechanical device which permits the momentary or locking manual opening of NC valves or the closing of NO valves, is available as a factory option on many models of our Series 58, 20, and 70 solenoid valves.

There are a number of common processing situations in which it may be necessary to actuate a single solenoid valve in a array of valves without disturbing the electrical sequencing or piping to these valves. The manual override option is built into the bodies of these valves and will not affect their normal operation unless actuated in the case of power failure or similar circumstance.

The manual override option adds only marginally to the cost of the valve; other body options, as you know, include metering, metered bypass, manifold mount, flange mount, and orifice metering.

Screw-In Series 20 Solenoid Valve Bodies Offered With Larger Ports



New, brass, and stainless steel screw-in, Series 20 solenoid valve bodies offering simplified assembly, disassembly, and field replacement are now produced with enlarged ports for higher flow applications.

The Series 20 screw-in valve bodies speed and simplify valve-to-manifold attachment in processes involving liquid or gaseous media compatible with brass. Assembled barely more than finger tight, these brass bodies incorporate two O-rings to help eliminate leakage and provide the required high burst pressure ratings. These bodies are offered for use with brass, stainless steel, or anodized aluminum manifolds where media compatibility is not a problem.

These unique, screw-in valve bodies (1/2-20" male UNF-2A port) are available for many of our standard valve models and are used for both conventional, one-piece machined manifolds of with out proprietary modular solenoid valve building block manifolds.

Our large port, screw-in, Series 20 valve bodies for simplified manifold mounting are now offered in brass for compatibility with a broad range of liquid and gaseous process media and with existing brass, anodized aluminum, and stainless steel manifold designs. Dual O-rings in these screw-in valve bodies virtually eliminate the possibility of leakage and provide attractively high burst pressure ratings.

Unique Solenoid Valve Indicates The Location Of Track Flaws For The Railroad Industry



The complete Series 30 spray valve used to mark suspect areas of track for subsequent inspection and repair incorporates a unique lower nozzle section which is removable for cleaning of all parts that come in contact with the oil-base paint which is dispersed by the valve. The valves are part of automated testing systems used by independent rail testing services.

We have developed a special, two-way, Normally Closed solenoid valve used by rail flaw inspection services to pinpoint track problem areas for the railroad industry. Designated the Series 30 spray valve, this 12 VDC, 8 watt, 60 psi valve is part of an ultrasonic or induction detection system used by independent rail testing service organizations for checking each rail, end-to-end, to automatically identify faults, cracks, and railhead (wear) loss. When a flaw is found, the solenoid valve is automatically energized and a yellow, oil-based paint is pressure sprayed through the adjustable valve nozzle, marking the defective area for subsequent identification and repair.

Paint flow is straight through the valve from the adapter on top to the nozzle-like bottom of the brass body, which incorporates a 7/64" orifice. The nozzle portion of the valve is removable so that all of the internal parts, including the nozzle, can be cleaned to prevent clogging. In addition to marking track areas for manual inspection and repair, the track riding test vehicles provide their operators with a visual display of track anomalies including cross-sectional views and realhead wear diagrams and retain these data electronically for off-line analysis and report generation. The design of the Series 30 spray valve has been tested in several similar applications, with particular emphasis on O-ring and seal compatibility with the material being discharged.

High Flow Valve



Low pressures, high flows, compact size, larger flow passages...that's what's cooking with commercial cookers.

Here's a solution to provide a Series 30 Normally Closed valve for LP and natural gas...very low pressures up to about 2 psi but with high flows ($C_v = .57$), compact size, and economy in a Series 30 valve. As you can see from the photograph, this style has larger flow passages for higher flows through the valve. Larger drilled ports also allow higher flows. While our competitors provide C_v 's of about .40, they probably use multiple valves on smaller burners with more pressure drop. The seal materials are typically FKM, with brass bodies, yoke, and spade coil, most of the appliance-type. For standard equipment, it had to be basically small and economical. High flow is usually needed for commercial cookers and could be used with any kind of gas-fired heaters. They're also employed for incubators and poultry brooders. And these valves might also be useful for decorative gas-fired lights, infrared heaters, small heaters, patio heaters, and more.

Our valve is a very high flow, low cost unit with compact size.

The same technology would potentially apply to gravity feed systems such as lubricators...low pressure lubrication, low pressure dispensing of various materials from a low pressure valve requiring a large orifice, but overall small in size. Perhaps we could provide some samples for you.

Series 50 with Welded Stainless Steel Fittings



Series 50 Welded Fittings

Designed to meet stringent purity requirements in analysis equipment and other applications requiring all welded components. Available with various options including 3-way operation and diode rectifier coils for quiet operation. Continuous operation at maximum rated pressure. Shown as 3-way with welded stainless steel fittings

It may come as a surprise to learn that about 80% of the product information calls involve special, unique, and non-standard applications for our solenoid valves.

For instance, a customer asked us to modify a standard Series 50, 3-way, Directional Control valve with stainless steel components and FKM seals for oxygen service to incorporate special welded fittings (one tee and one elbow) with threaded ends as shown in the picture.

These modifications of standard Series 50 drawings took a few minutes to complete by CAD. They were immediately faxed to the customer and approved. The result, as you can see to the left, is a valve with relatively simple external modifications which precisely meets the requirements of the user's application. Five easy steps: Request; drawings, mechanical changes; prototype; production.

High Flow Vacuum Solenoid Valves Developed For Medical & Industrial Applications



New line of solenoid valves for sterilizing medical instruments includes a large air-operated valve with extended plunger stroke for high-flow and a smaller valve, 2-Way, Normally-Closed with 12 VDC power.

We have developed a new series of solenoid valves for use in vacuum chambers for sterilizing medical instruments. These valves feature high flows; bubble-tight; standard vacuum fittings and standard flanges for international use; electron beam seamless welding of flange to body; purity requirements allowing no trapped particles on the inner diameter; several million cycle endurance for critical life operation; and Teflon™ outside coating to eliminate dust and possible wear-creating particles.

Two basic models have been developed: The smaller one is electrically operated with 1/2" orifice, 2-Way, Normally Closed with FKM plunger seals.

The larger of the new valves is air-operated by cylinder with a 1" orifice to meet high-flow requirements. The spring-loaded assembly seals on the orifice for failsafe operation. Assembly of this larger unit also involves electron beam welding. Both valves employ anodized aluminum bodies with all stainless steel inner moving parts. Of particular interest to prospective users, a major medical products producer required elaborate testing of valve open/close times, as well as extensive endurance testing.



Cutaway of large, air-operated valve shows 1" orifice.

Stainless Steel Series 58 Solenoid Valves



Two Peter Paul Series 58 valves with stainless steel bodies are (left) 2-Way, NC, stud mount, and coil with lead wires; (right) 3-Way, NC, piped exhaust, 10/32 ports, and coil with lead wires.

Additions to our line of molded Series 58 solenoid valves have been developed with two stainless steel bodies. These bodies supplement the existing six models of plastic valves currently used in portable medical devices, analyzers, portable test equipment, and similar applications.

These stainless steel bodies represent an option for the 58 valves while retaining all the same coil options, voltages, wattages, orifice sizes, pressure ratings, and elastomers.

Two stainless steel models are offered in both 2-Way and 3-Way versions: A stud mount, utilizing a 10/32 stud as the orifice connection and an annular groove as the cavity connection. These connections are separated and sealed with O-rings. The other body style uses 10/32 female ports for both the cavity and orifice connections. Optionally, the user can upgrade from the plastic bodied Series 58 to either of the stainless steel bodies.



Series 50 Valves Configured For Precision Electronic Production Equipment



Two examples of the new, sealed, Peter Paul Series 50 solenoid valves for electronics and chip manufacture are shown. A 24 VDC, 7.0 watt, 1/16 orifice, 100 psi solenoid valve (top) is offered with grommet housing and 1/4" O.D. stainless steel tubing welded to the body; the sleeve assembly is threaded to the body and sealed with an elastomeric gasket. The valve below incorporates welded 1/8" O.D. input/output tubing but with body and sleeve assembly welded together, eliminating the gasket and threads, for total, positive, permanent sealing.

We've announced a new, completely sealed, Series 50 solenoid valve to meet today's stringent requirements for chip manufacturing, analysis equipment, and other types of ultra high purity equipment requiring welded components.

Available immediately in a 2-way, Normally Closed configuration, the valve can be produced in many AC or DC voltages. These Series 50 valves feature all 430F stainless steel construction with either 1/8" or 1/4" O.D. stainless steel welded tubing as their port connections. The sleeve assemblies of these valves can be attached with conventional threads and elastomeric seals or, for the most critical applications, with the body welded directly to the sleeve assembly. Both grommet and conduit-style housings are offered, with internal electro polish available.

Employing all our standard components for millions of trouble-free operating cycles, these fully sealed Series 50 solenoid valves are available with all standard options including 3-way operation, quiet operating diode rectified coils, and more for continuous operation at maximum rated pressures as required.

. . . Special Options

3-Way and 2-Way Solenoid Valves For Quiet (No-Click) Operation

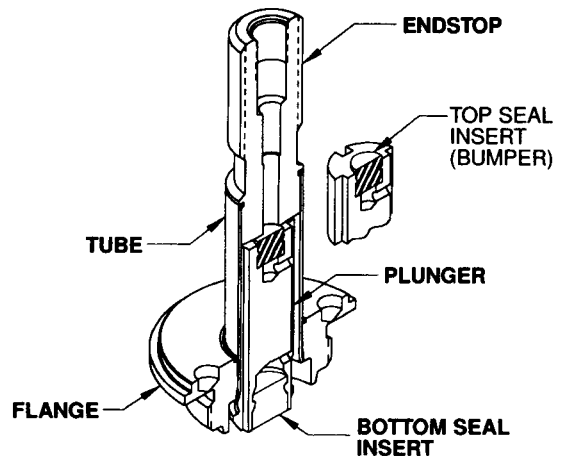
Peter Paul Electronics Co., Inc. has developed solenoid valves for use in medical applications such as hospital beds, breathing apparatus, and inflatable mattresses for burn patients in which a bumper is installed for quiet operation.

In normal industrial applications, the click of a solenoid valve is not an issue, but in the quiet of a hospital environment it can be nerve wracking to hear constant clicking as the valve is actuated. Several new plunger and bumper designs used in the 3-way function have a top seal but eliminate the metal-to-metal contact.

One way to "eliminate the click" is to put in a rigid top seal that's non-compensating and doesn't move. The top seal contacts the end stop, but no metal contact is made. It requires a unique plunger and uses a special end stop to accommodate it. Many times the pressure ratings are reduced just a bit due to the increased air gap in the valve, affecting magnetic performance. Usually these applications are low-pressure air or vacuum, therefore the reduced rating of the valve is generally not an issue.

Rectified coils are also often specified in medical equipment, either full bridge or half bridge, to eliminate the potential for noise. A valve, which might potentially cause a hum or buzz can be very annoying to a patient, so a full wave rectified unit for AC service is often preferred. A DC unit, not requiring a rectifier, is sometimes used in specific applications.

Also common is a bumper in a 2-way valve, usually just a flat disk with no sealing action. Bumpers may be urethane or filled Teflon or special low cold-flow Teflon, which doesn't become deformed like virgin Teflon.



Typical Peter Paul Electronics 3-way and 2-way solenoid valves for use in medical applications such as hospital beds, breathing apparatus, and quiet, no-click operation (shown on cutaway).

Occasionally, a bumper is included in a valve for a non-medical application where long life is critical. With a bit more cost, a Teflon-coated plunger combined with a bumper will provide very long, quiet valve life under many operating conditions.