ROSS a global family | pneumatrol

Process sector solutions that lead the way

Safe | Reliable | Innovative | Trusted | Bespoke

Engineered peace of mind

The expertise of Pneumatrol

For more than 60 years, Pneumatrol has used its extensive technical expertise and knowledge of the process sector to deliver some of the most innovative, safe and reliable solutions in the world.

They say peace of mind is priceless and engineers everywhere understand the value of having access to certified products that can be installed easily and operate reliably with minimum maintenance.

Throughout its history, Pneumatrol has earned a reputation as a trusted problem solver extraordinaire with its vast standard range of industry-leading hazardous and safe area pneumatic solenoid valves and coils, as well as a host of bespoke solutions tailored to meet the specific requirements of individual customers. As well as the process industry, Pneumatrol delivers engineered pneumatic solutions for rail, energy and industrial market sectors.

Safety and reliability are at the core of every Pneumatrol product, with them certified to all of the most stringent industry standards (see facing page). At the same time, being part of the ROSS Controls group has enabled Pneumatrol to draw on ROSS expertise to rapidly bring new products to the market.

Values that have driven Pneumatrol from day one include the goal of manufacturing products that combine the highest quality with maximum efficiency and performance. In the 21st century, these values have been supplemented by a commitment to create solutions that are also low-power and supportive of environmental targets.

Backed by the power of ROSS

Pneumatrol was acquired by ROSS Controls in 2019 and merged with ROSS UK to form ROSS Pneumatrol Ltd. ROSS Controls group has designed and manufactured world beating pneumatic valves and control systems since 1921. Acknowledged as a global leader in fluid power safety solutions and poppet valve technology, ROSS Controls provides standard products and customised ROSS/FLEX® solutions for machinery and automation applications.

ISO-certified, ROSS Controls is renowned for developing industry-leading fluid power safety solutions, originally with pneumatic valves with internal monitoring, and now with external monitoring which helps to maintain control reliability when integrated into a larger system. ROSS Controls recently expanded its portfolio with hydraulic block and bleed and block and stop safety systems along with electrical safety solutions including ElectroGuard safety energy isolation systems that enable maintenance personnel to perform lockout/tagout (LOTO) procedures.

Bespoke pneumatic solutions

Pneumatrol and ROSS makes special products for most of its biggest process industry customers. The company believes in giving customers exactly what they need to operate at maximum levels of efficiency and safety.

This means that as well as developing some of the most advanced pneumatic valves in the world as standard, Pneumatrol creates genuinely unique solutions that are designed to meet the highly demanding and specific requirements of end-users.

For example, Pneumatrol can manufacture solenoid valves to a specific brief, whether that involves unusual voltage or special mounting requirements, and integrate coils into a customer's existing product, whether for serial production or one-off.

Pneumatrol also manufactures bespoke control panels and sub-systems for multiple applications.

Certification and partners

Global certification

Of course, Pneumatrol's hazardous and safe area pneumatic solenoid valves comply with the very latest standards and certifications.

These include SIL (Safety Integrity Level), ATEX (ATmosphère EXplosible), and IECEx (the International Electrotechnical Commission certification for explosive atmospheres).

Other certification includes FM, CE and NEPSI approval, as well as EAC (the Eurasian Conformity Mark), CCC (the China Compulsory Certificate) and GOST, CU and TR (Russia), PESO (India), CSA and KC.

Global partners

Pneumatrol's reach is truly worldwide, with a growing number of international partners in North America, Brazil, Europe, Middle East, India, South East Asia, China and Australia.

Hazardous and non-hazardous area solenoid coils

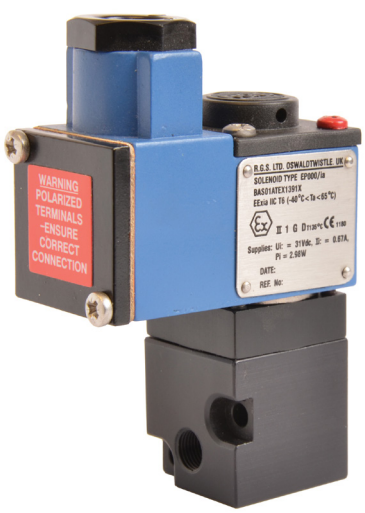
Pneumatrol manufactures a range of explosion-proof, intrinsically safe solenoid coils for use in hazardous areas, as well as a range of safe area solenoid coils.

The coils are energy efficient and low-power, with 3W typical maximum power rating as standard with 1.3W as an option (also 0.4w option for Exia coils). Standard coils in the range include 24V DC, 24V AC, 110V AC, 220V AC and 240V AC. Non-standard power ratings are available on request.

While all Exia coils can be adapted to suit particular barriers, including those with fault line detection, Pneumatrol also manufactures bespoke solenoid coils to customer specifications.

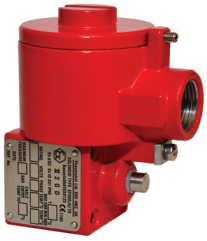
Pneumatrol solenoid coils have all the relevant approvals, including ATEX, IECEx, GOST, FM, CSA, CU,TR, NEPSI, CCC, KC and PESO.

Pneumatrol manufacture a complete range of hazardous, intrinsically safe and safe area coils including (but not limited to) Exia, Exd, Ex db mb., Ex e mb., Exna.

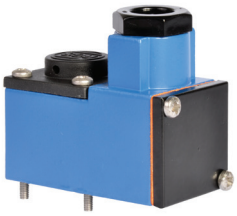


Exia

Exd



Terminal Box (IP65)



Ex db mb coil

Extensive range of standard pneumatic valves

Pneumatrol offers a comprehensive standard range of extremely robust hazardous and safe area pneumatic solenoid valves, designed specifically for the process industry.

Common to all Pneumatrol's NAMUR and remote mount valves are superior flow rates which ensure improved performance as well as environmentally friendly low-power operation. Other features include integrated exhaust to spring (ETS) and side-mounted exhaust ports, which both extend the life of the product.

Because the valves are smaller and lighter than others on the market they are easy to install. The modular and compact design also enables any of Pneumatrol's coil range to be mounted directly using a CNOMO interface, which means coils can be changed without having to replace the whole valve (even in very tight spaces), minimising maintenance costs.

In addition, the remote mount valves have a high Cv value which eliminates the requirement for separate 3/2 direct acting solenoid valves and high-flow air pilot valves.

This feature not only reduces pipework considerably (and the number of valves required) but it also provides significant savings in cost and space.

NAMUR mounted valves

The T-C-R Series solenoid valves are designed for direct mounting onto 1/4 turn pneumatically operated valve actuators that meet 'NAMUR' interface standard fixing dimensions.

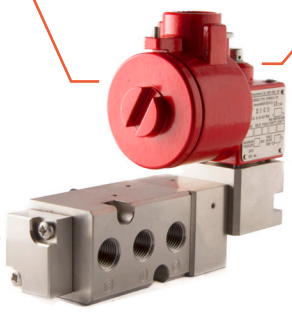
Satisfying all hazardous area standards and relevant international approvals, the valves come in aluminium and stainless steel as standard but are also available in brass. Unlike other valves, Pneumatrol's solenoid valves have exhaust ports on the side to prevent damaging water and dirt from entering the spool valve.

The T25 valve high flow option has a Cv1.0 (C series Cv 0.7) and being mounted directly to the actuator ensures optimum response times of the actuator.

Features of these valves include:

Interchangeable CNOMO interface coil units, including various hazardous area options

Integrated ETS in 3/2 position to protect actuator spring from corrosion



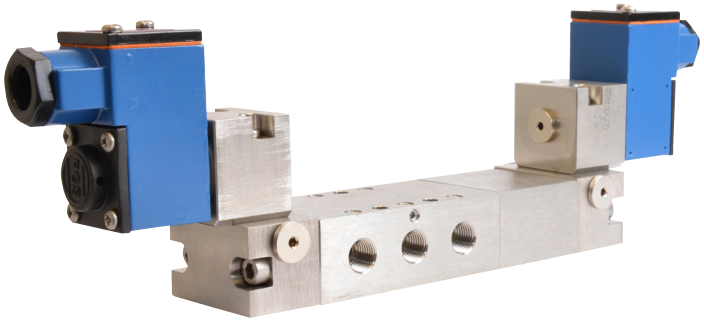
Fitted change-over interface plate that allows the valve to be converted from 3/2 to 5/2 function quickly and easily for spring return and double acting actuators

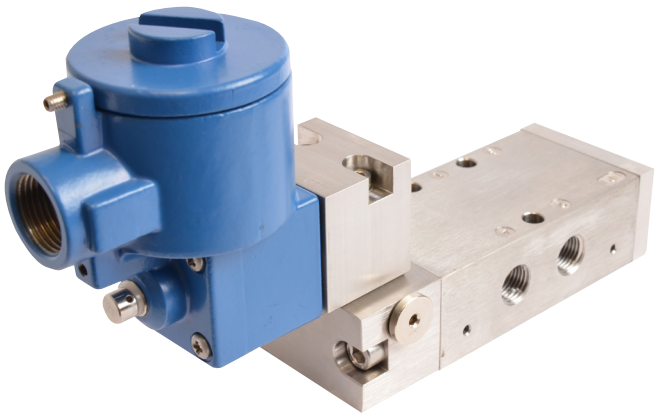
Remote mounted valves

Ease of maintenance and troubleshooting as well as minimal tubing are among the benefits of using Pneumatrol's E Series remote mounted solenoid valves.

The E2, E4 and E8 Series valves are available in 3/2, 5/2 and 5/3 configurations, with the ¼", ½ " and 1" G/NPT body ported valve offering Cv values of 1.2, 3.5 and 10 respectively.

Available in aluminium, brass or stainless steel, the valves manage 3 bar to 10 bar at temperatures between -20°C and 80°C with low temp seals (-40°C) and high temp seals (+120°C) options available. With a standard 3W (optional 1.3W) power rating, these pilot operated solenoid valves are equally ideal for installation in hazardous and non-hazardous areas, meeting all relevant standards and certifications.





Other features include:

- Internal or external pilot air connection
- High Cv values
- 5/3 options that include, all ports blocked, all ports pressurised, all ports vented

HELIS high-flow valves

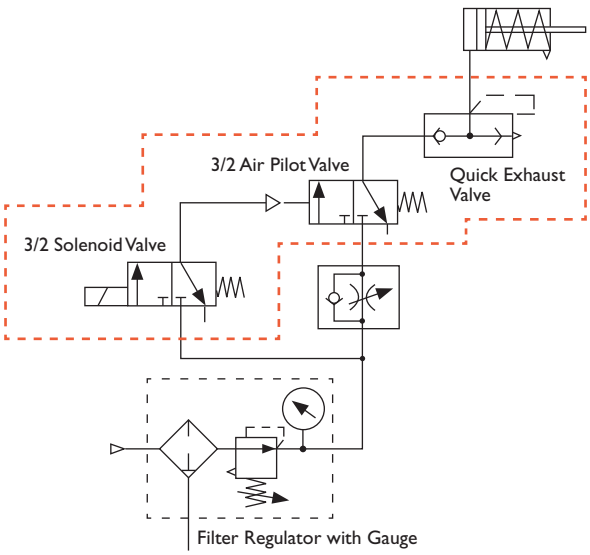
Pneumatrol's remote mounted, high-flow HELIS poppet solenoid valves are designed for use with large process valves or valves that require fast opening or closing times.

With Cv values of between 2.5 and 70, the HELIS 3/2 pilot operated valves help to reduce costs because there is no need to use separate direct acting valves, air pilot valves and quick exhaust valves. Port sizes range from ¼" to 2½" and the rapid opening/closing of the valves makes them ideal for emergency shut down (ESD) applications.

HELIS valves combine a large exhaust port with low power (standard 3W, optional 1.3W) and their integrated design means there is no need for complex tubing. Working pressure is 2 bar to 10 bar at temperatures between -20°C and 80°C.

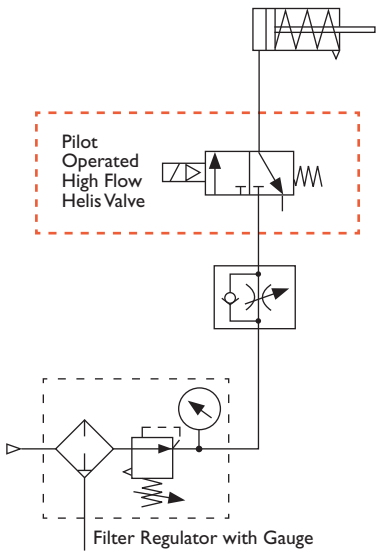
The HELIS valve is available with explosion proof, intrinsically safe and Safe area weatherproof coils, and are offered as standard with an anodised aluminium housing (Stainless steel will shortly be available). The robustly designed and self-cleaning valves are highly reliable and can operate for 10 million cycles with consistent response times over the life of the valve. 4/2 valves available on request.

Current typical layout for high flow valves



Simplified

Simplified Helis layout



HELIS valves help to reduce the number of valves used in associated pipework, saving space and cutting costs.

Standard port sizes	Port 1&2 ~ 1/4" Port 3 ~ 1/2"	Port 1&2 ~ 1/2" Port 3 ~ 1"	Port 1&2 ~ 1" Port 3 ~ 1-1/2"	Port 1&2 ~ 1-1/2" Port 3 ~ 2-1/2"	Port 1&2 ~ 2" Port 3 ~ 2-1/2"
Flow P1 to 2, P2 to 3 (Cv Factor)	Cv 1.7 Cv 3.2	Cv 6.0 Cv 8.2	Cv 19.5 Cv 27.4	Cv 44.9 Cv 74.9	Cv 57.1 Cv 77.8

Modular Redundancy Control Systems

Pneumatrol's Modular Redundancy Control Systems (MRCS) remove the need to rely on just one solenoid valve to open or close the process valve.

Traditionally, a fail-close fault with a simplex solenoid valve would lead to the process valve moving to its fail-safe position when not required to do so. Conversely, a fail open fault would prevent the process valve from moving to its fail safe position when required to and it could remain in its operational state in error.

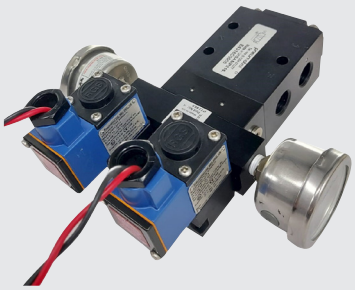
To solve this problem, Pneumatrol has developed MRCS's that offer increased redundancy to deliver safety and reliability. With these MRCS solutions, the required operation of the process valve is maintained, even in the unlikely event that there is a fault on one of the solenoid valves.

- For 1oo2, the process valve will return to its fail safe condition even if one of the solenoids has failed open.
- For 2oo2, the process valve will operate, even if only one of the two solenoids energises correctly.
- For 2oo3, the process valve will both open and close correctly in all circumstances where one of the solenoids exhibits a fault, irrespective of whether that fault is fail open or fail close.

1oo2

The 1oo2 (one-out-of-two) MRCS module can be fitted to any of ROSS Pneumatrol's CNOMO interfaced valves, including Namur and remote mounted valves.

Both solenoids are energised and de-energised at the same, but significantly, the 1oo2 module will allow the valve to vent even if one of the solenoids were to have failed open. As long as one of the two solenoids de-energises, then the control valve/actuator will return to its de-energised position.



2oo2

Pneumatrol's 2oo2 (two-out-of-two) MRCS is designed for applications where extremely high levels of availability and reliability are particularly important.

With the 2oo2 MRCS, which can be NAMUR or remote mounted, both solenoids are energised at the same time so that if the signal is lost to one of the two solenoids the main control valve/actuator will remain in its operating position. Both solenoids must be de-energised for the main control valve/actuator to return to its non-operating position. The redundant solenoids module can be fitted to any of Pneumatrol's standard 3/2 or 5/2 solenoid spring control valves that use the interchangeable CNOMO solenoid interface.

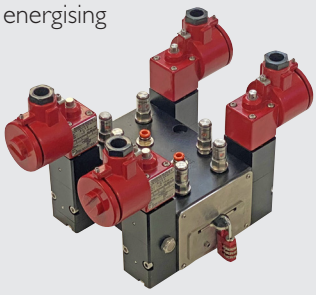
2oo3

Pneumatrol's 2oo3 (two-out-of-three) MRCS is designed to offer superior levels of safety and reliability, with TUV Rhineland certification to SIL level 3.

With the 2oo3 MRCS, two out of the three input signals need to de-energise to close (or open) the process valve. Also, a patented auto isolation feature means that individual solenoid valves can be replaced easily and safely in service without losing control of the process valve. This maintains redundancy and eliminates the need for a system bypass.

With this MRCS, valve failure can be indicated through remote electrical monitoring of the manifold block or through visual indicators that are mounted on to the valve.

- Manifold available in aluminium or stainless steel
- Hi flow and low flow options
- Solenoid operator – SIL 2 on energising and SIL 3 on de-energising



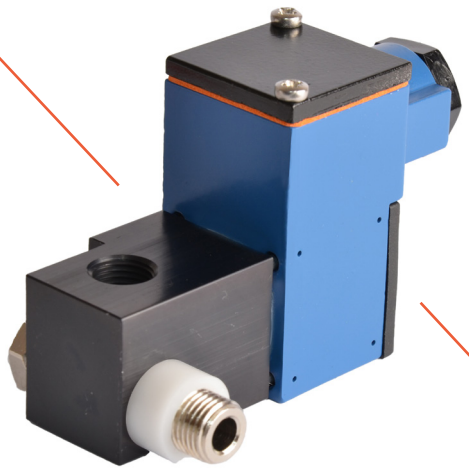
Banjo mounted valves

Pneumatrol's 1/8" & 1/4" banjo mounted valves offer a low-cost means of mounting solenoid valves directly to actuators, cylinders or angle piston valves.

For example, the E13A-A Series 3/2 function solenoid valve is designed for direct banjo bolt mounting on to 1/4 turn pneumatically operated valve actuators with 1/8" BSP ports.

With an aluminium body as standard, this valve offers the following:

Interchangeable coils, including various hazardous area options



¼" BSP mains air connection and 1/8" BSP exhaust port

Pilot exhaust dust caps fitted as standard

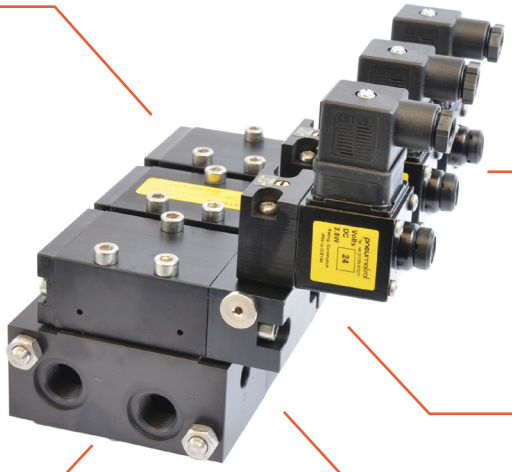
Manifold solutions

Pneumatrol's manifold solutions provide a compact and simple way of controlling up to 10 different process valves. The manifold block can be integrated neatly into control panels or boxes.

With their modular design, the manifold solutions offer customers a range of options, including mixing different solenoid coils, pilot valve bodies and manifolds. Maintenance and repair are made easier through the use of individual shut-off valves for isolation.

For example, the E23-V Series three-port, two-position manifold mount solenoid valves feature:

3/8" BSP inlet and exhaust connections and ¼" BSP outlets



Interchangeable CNOMO interface coil units, including various hazardous area options

Manual override options

Mains air isolating screw allows individual valves to be isolated while the remaining valves in the bank continue to be connected to the air supply

Linear valve actuators

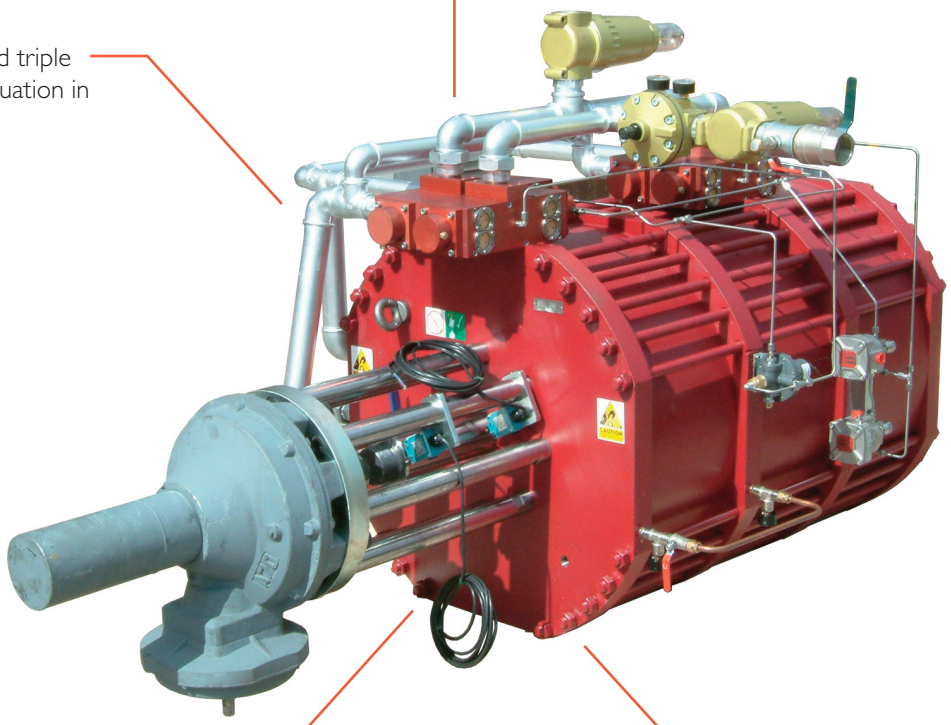
Pneumatrol has manufactured high quality pneumatic linear valve actuators for more than 40 years and supplied them for use in some of the most demanding applications in the process industry.

Pneumatrol supplies its actuators not just to process valve manufacturers and distributors but also to major oil, chemical and civil engineering companies around the world. Typical applications include turbine bypass valves, bled steam check valves, emergency shutdown valves and gas compressor anti-surge valves.

The entire range of pneumatic linear valve actuators and control systems has been designed to operate rising stem valves such as gate valves, knife gate valves, globe valves and rising stem non-contact ball valves.

Designed specifically for bespoke applications, the solutions provided include all control valves, limit switches, sensors, positioners, position indicators and pointers, as well as interconnection mountings, bridgeworks and connectors.

Available in mild steel, aluminium and stainless steel – and with a wide operating temperature range the linear actuators offer the following:



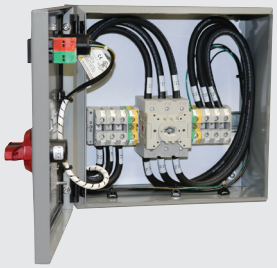
ROSS safety valves

Pneumatrol is able to draw on the expertise of ROSS Controls, the world's leading manufacturer of safety valves for the fluid power industry, including valves for pneumatic safety and hydraulic safety, as well as electrical safety systems.

Pneumatic

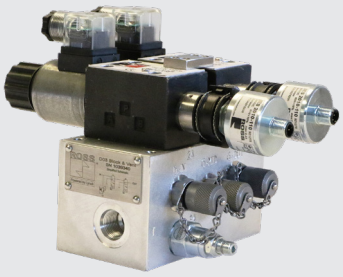
ROSS pneumatic safety solutions can be classified in the following categories – energy isolation, soft start, safe exhaust, safe return, safe hold, and press clutch/brake control. Many of the valves were initially designed with internal monitoring but the latest designs use sensors to provide feedback to a safety control system for external monitoring. These new valves are significantly smaller, lighter, less expensive and can still be considered control reliable when properly integrated into the system.

Electric



Electrical isolation devices are especially useful when distance to the main electrical disconnect is excessive and causes extra downtime travelling back and forth between the main disconnect and the machine when performing LOTO (Lock Out Tag Out).

Hydraulic



The range includes block and bleed valve systems, block and stop valve systems and dual block and stop valve systems.

The base mounted block and bleed range of safe supply/drain-to-tank double valves incorporate position sensors for external monitoring, a relief valve on the inlet and are tamper-resistant.

The block and stop load holding double valves are base mounted, with a tamper-resistant design and are equipped with position sensors for external monitoring.

Dual block and stop valve systems are used to stop cylinder motion in the event of power loss. With a sandwich style mounting between manifold and directional valve, these valves have a tamper-evident design.

Engineered peace of mind

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