



# Valves

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# Valves

A valve, simply put, is a device that controls the passage or flow of fluid through a structure such as a pipe or duct. Fluid can mean many things, including compressed air, inert gases, oil, and water.

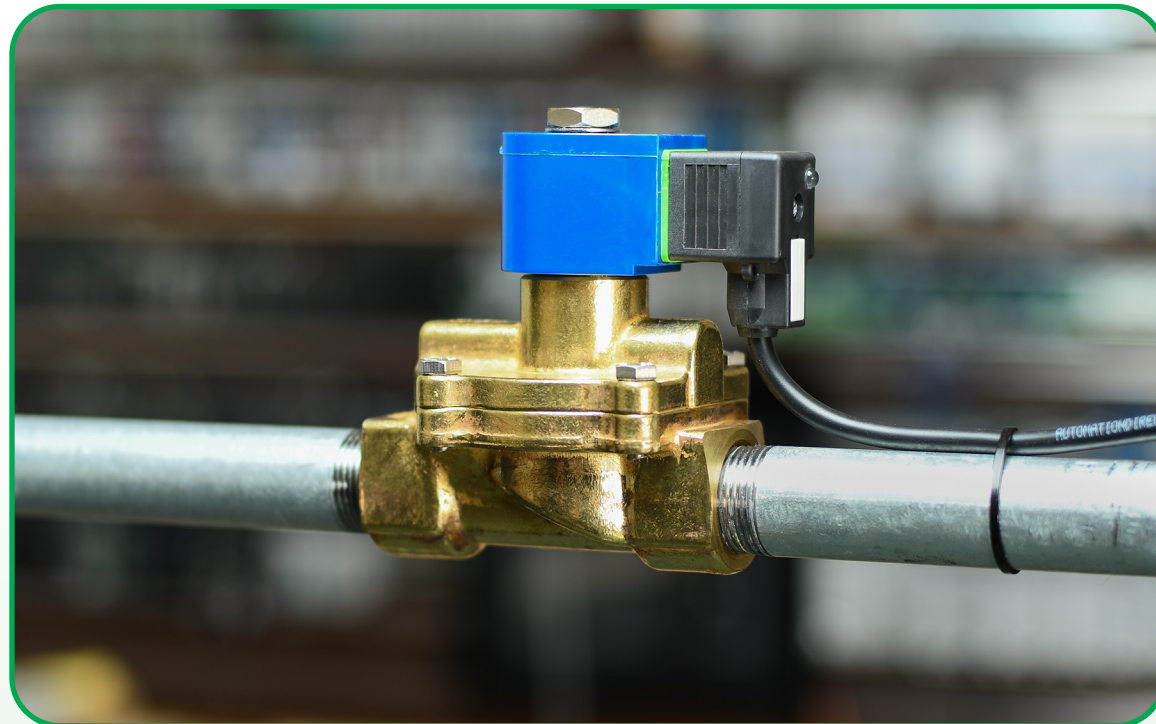
Valves can be seen in many installations throughout the process industry, controlling the direction and/or flow of fluids. Valves can be on or off, allowing or halting the flow, or may control the fluid volume through a pipe. Types of valves include solenoid process valves, directional control solenoid valves, air pilot valves, and manual air valves.

Solenoid process valves use an electrical actuator to move the valve from one position to another. They allow or halt flow through a pipe essential to the process. Solenoid process valves are available as process valves, stacking or manifold process valves, and media-separated process valves.

Directional control solenoid valves are valves used to control a fluid-powered mechanical system. They control actuators, e.g., cylinders and other devices, and are available in various body styles and operating characteristics.

Air pilot valves are used where air pressure control is preferred over electrical control. These valves are available with single-pilot spring return or double-pilot 2-position operation. Double-pilot models are also available in a 3-position center-closed configuration.

Manual air valves are ideal for non-electrical operator-controlled applications. They are available in many convenient sizes and types, including foot pedal valves, toggle and rotary style hand levers, push/pull valves, pushbutton, selector switches, key switches, and even limit switch actuators.



A solenoid process valve controlling fluid flow in a pipe.



## Why buy valves from us?

At AutomationDirect, we know that you have choices regarding valves. Many choices come with a high price tag, product availability issues, or no one to talk to if you have a question. There are several advantages to purchasing your components from AutomationDirect:



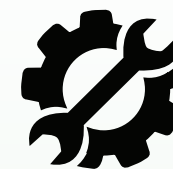
**Price** - As with all of our product lines, our prices are often well below the list prices of traditional automation suppliers. Our direct business model allows us to operate more efficiently than other suppliers and pass the savings on to you.



**Availability** - All of our components are stocked in one of our local warehouses here in Georgia. That's correct, when we say we have them in stock, they are in our inventory and ready to be shipped to you. You will not have to wait months for a manual or solenoid valve to arrive or order from several different sources just to get everything to complete your project. Our products are shipped out to you quickly. Not only do you get the parts you need, but you also get them fast too.



**Free 2-day delivery for orders over \$49\*** - Not only is shipping free on orders over \$49, but you will also receive your order in 2 business days. *\*See Terms and Conditions for exceptions.*



**Service** - We give you options for self-service but at the same time, we are there when you need us. You can place your order online or call our customer service team. Have a technical question about one of our products or need help gathering up a bill of materials for one of your projects? You can call our free Technical Support at 1-800-633-0405 (9am to 6pm Eastern Standard Time Monday through Friday).

# Low-cost valves for a variety of applications



## NITRA Poppet Style Process Valves

NITRA DVP series valves are 2-way and 3-way normally closed solenoid valves that feature a reliable solenoid operator and a body construction makes these valves compatible with air, oil, inert gas, water, and caustics (verify chemical compatibility).

- Glass filled nylon body, Viton seals
  - \* Brass or stainless steel operators
- 2 and 3-way poppet style
- 1/8" to 3/8" FNPT ports available, depending on operator material
- 2-position, normally closed, spring return
- 24 VDC, 24 VAC, or 120 VAC solenoids
- DIN style wiring connector

## NITRA Diaphragm Style Process Valves

NITRA DVD series valves are 2-way, 2-position, normally closed valves for the control of air, oil, water, inert gas, or other liquid media that is compatible with valve materials.

The all-brass body style with brass operator offers zero minimum pressure differential while still boasting a full flow 1/2" orifice. The encapsulated coil construction provides a high degree of environmental protection (NEMA Type 4).

The composite body style with brass operator features a power-saving solenoid pilot miniaturized to fit in tight places, with fully encapsulated coils. Typical applications include control of inert fluids and gases, condensate drainage, hot water plumbing, and sprinkler systems.

- All-brass or composite bodies
  - \* Viton seals, brass operator
- 2-way diaphragm style
- 1/4" to 1" FNPT ports available, depending on body material
- 2-position, normally closed, spring return
- 24 VDC, 24 VAC, or 120 VAC solenoids
- DIN style wiring connector



## GC Valves General-Purpose Process Valves

GC Valves general-purpose process valves are an excellent choice for a wide variety of applications. Most valves work with air, inert gas, water, coolant or light oil.

- Piloted diaphragm style are an excellent choice for many general purpose applications
- Piloted piston (high-pressure) style can operate with pressures up to 2200 psi
- Zero-differential style can operate under zero head pressure (does not need a differential pressure across the valve to work)
- Direct-acting style has an armature that acts directly on the valve orifice to control fluid flow and does not require a minimum pressure to operate
- 2-port (2-way) or 3-port, 2-position (depending on series)
- Normally closed (N.C.) or normally open (N.O.) configurations
- 1/8" to 1" NPT ports available, depending on body and operator style
- 120 VAC, 24 VAC, or 24 VDC solenoids
- Brass, stainless steel, or nylon bodies (depending on model)
- Nitrile, Viton, or PTFE seals (depending on model)



## CFA Valve Banks from GC Valves

CFA brand valve banks feature a space-saving manifold mounted design for convenience and fast installation.

- Pre-assembled 2-, 3-, or 4-valve banks (valves and manifold) available
- 2-port, 2-way valve style
- 1/4" FNPT inlet and outlet ports
- 24 VAC, 120 VAC, or 24 VDC Solenoids
- Normally closed (N.C.) configuration
- Brass or stainless steel bodied valves with Viton seals
- Valves available with or without integrated glow metering
- Acceptable media includes compressed air, inert gases, light oil, and water

## NITRA Stacking Process Valves

NITRA DVP-2C and DVP-3C series valves can be stacked into a multiple output bank of up to six solenoid valves with a shared inlet/outlet. These valves feature a fully encapsulated coil, spring compensated plunger seats for long life, and a miniature composite valve body.

The advantage to this design is the versatility to stock single units and build, mix, and match to meet specifications. In most cases these valves reduce inventory costs and lower installation costs over a conventional manifold valve series. The coils are supplied with DIN connectors installed. Features include:

- Glass filled nylon body
- Viton seals
- Brass operator
- 2- and 3-way stackable poppet styles
- 1/8" FNPT ports
- 2-position, normally closed, spring return
- 24 VDC, 24 VAC, or 120 VAC solenoids
- DIN style wiring connector



## Media Separated Process Valves

NITRA DVM-2B series valves are media separated, dry operator, 2-way, 2-position solenoid operated valves for use in applications where the working components of the valve are not allowed to contact the media being controlled. The body construction makes these valves compatible with air, gases, water, and chemicals.

- Glass filled nylon body with Viton seals and brass operator
- 2-way media separated diaphragm style
- 1/8", 1/4" or 3/8" FNPT ports
- 2-position, normally closed, spring return
- 24 VDC, 24 VAC, or 120 VAC solenoids
- DIN style wiring connector

# Low-cost valves (continued)

## GC Water Valves

GC water valves are an excellent choice for potable water applications. Certain models can handle up to 400psi, others will operate even when supply pressure drops to zero, such as when emptying a tank. They are available with either stainless steel (303 or 316L) or Nylon 6 bodies, with various orifice sizes.

- 2-port (2-way), 2-position
- Normally closed (N.C.) configuration
- Piloted diaphragm or direct acting operator
- Zero differential action on select models
- 18mm (DIN 43650A) style wiring plug
- 120 VAC, 24 VAC or 24 VDC solenoids



## Potable Water Valves

Spartan potable water valves are available with low-lead brass or nylon bodies. They are diaphragm operated and available in a range of port sizes and solenoid voltages.

- Port sizes include 1/8, 1/4, 3/8 or 1/2 inch NPT or 1/4 inch push-to-connect
- 2-way, 2-position normally closed operation
- 24 VDC or 120 VAC
- Additional solenoid coils available in 12 VDC, 24 VAC or 220 VAC
- Wiring connection options include 18mm DIN or pigtail



# Get your pneumatic system under control...

Manually operated air valves are ideal for non-electrical operator controlled applications. NITRA manual valves are available in many convenient sizes and

types and provide a simple, cost-effective solution for mechanical control of pneumatic devices like cylinders, tools, doors, etc.



## Manual Air Valves

NITRA pneumatic directional control manual valves include toggle style and rotary style hand lever valves, push-pull valves, and foot pedal valves. Foot pedal valves are 5-port (4-way) spool valves that are ideal for non-electrical operator control applications. Rotary-style valves are available in port sizes of 1/4" or 1/2" NPT.

## Pushbutton Manual Air Valves

NITRA pushbutton valves actuate up to two 3-way valves, or one valve and one to three electrical contact blocks. They fit in a standard 22mm hole, just like an electric pushbutton.

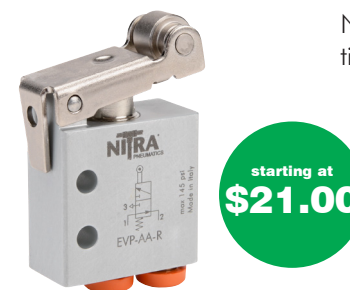
- Operator types include: pushbutton, mushroom, selector switch, & key switch
- 5/32" (4mm) push-to-connect fittings



## Limit Switch Manual Air Valves

NITRA pneumatic limit switch valves allow purely mechanical actuation without the need for electrical signals.

- Varieties include plunger, plunger with roller, and thru-panel mounting options
- 5/32" (4mm) push-to-connect fittings



## Miniature Manual Air Valves

NITRA miniature manual valves offer a simple, space-saving method for directional control and other pneumatic valve applications. All valves can be thru-panel mounted for a very clean-looking operator interface.

- Pushbutton or toggle operator styles
- Aluminum or stainless steel body styles
- 3-port/2-position, 3-port/3-position and 5-port/2-position action
- Momentary (spring return) or maintained operation





# Directional Control Solenoid Valves

Pneumatic valves, also called directional control valves, are activated in a variety of operating styles including solenoid-operated

and air piloted. Pneumatic valves direct airflow to sequence operations in a pneumatic system.

## Pilot Valves



starting at  
**\$28.50**

NITRA directional control pilot air valves are body-ported 5-port (4-way) spool valves that are actuated by pilot air.

- 1/8", 1/4", 3/8" or 1/2" NPT ports
- 2-position, single pilot, spring return; 2-position, double pilot; 3-position, double pilot center closed
- Single valve or multiple manifold mounted valve applications

## Standard Directional Control Valves

NITRA standard directional control valves are body-ported spool valves available in 3-port (3-way) and 5-port (4-way) styles and are suitable for many general-purpose pneumatic control applications.

- 1/8", 1/4", 3/8" or 1/2" NPT ports
- 2-position single solenoid, normally closed spring return and 2-position double solenoid available
- 2-position double solenoid, energize open/energize closed
- 3-position double solenoid, center closed or center exhaust
- 24 VDC or 120 VAC solenoid coil
- Can be used individually or mounted on optional manifolds
- Additional coil voltages possible with the purchase of a separate solenoid coil



starting at  
**\$34.50**

## Stackable Directional Control Valves

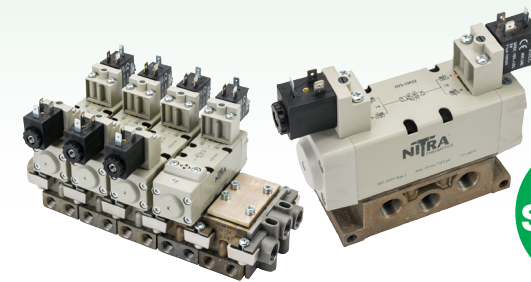


starting at  
**\$32.00**

Stackable directional control valves are 3-port, 2-position (3-way) poppet-style valves. These valves are great for lower-flow applications where saving space is a concern.

- 1/8" NPT ports
- 2-position, normally closed, spring return
- 24 VDC or 120 VAC solenoid coil
- Can be used individually or as a space-saving stackable system
- Additional coil voltages possible with the purchase of a separate solenoid coil

## ISO 5599 Valves



starting at  
**\$86.00**

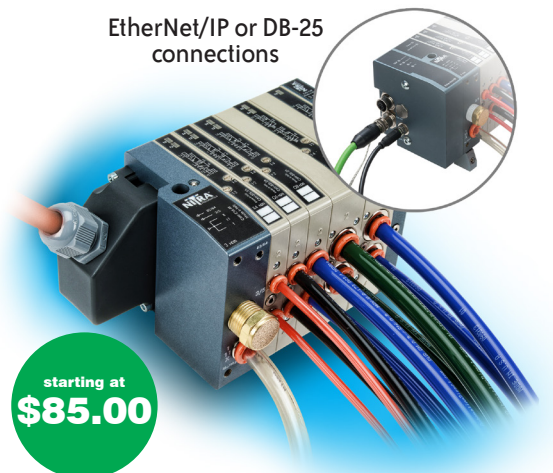
NITRA ISO 5599 valves and other components are a robust directional control solution that conforms to the ISO 5599/1 standard. The ISO 5599/1 standard ensures that all components, regardless of manufacturer will be compatible and a perfect fit.

- ISO 5599/1 sizes 1 and 2 are interchangeable with all other brands meeting the ISO 5599/1 specification
- 5-port / 2-position and 5-port / 3-position valves available
- Order stand-alone bases or manifolds separately
- Solenoid coils sold separately in 12 & 24 VDC and 24, 110 & 220 VAC

## Compact Modular Valves

NITRA compact modular valves offer unbeatable performance with the flexibility and modularity of multiple valves combined with sturdy mechanics and a high degree of environmental protection. The system offers flexibility from one to 16 valves, and input and output terminals for tubing of different sizes.

- Up to 16 valves (16 solenoids max) per manifold
- Mix valve sizes as needed
- 3-way/2-position, 5-way/2-position and 5-way/3-position valves available
- Selection of end and intermediate plates to cover a wide range of special applications
- Input terminals (left end plates) available for EtherNet/IP connections as well as multi-conductor cable (DB-25) connections
- Valves can be individually replaced
- IP65 (when NITRA DB25 cable used)



starting at  
**\$85.00**

## Miniature Solenoid Valves



starting at  
**\$36.00**

Miniature solenoid valves are an excellent choice for very low-flow applications where mounting space is very limited. Valves must be mounted to a compatible manifold (sold separately).

- 10mm and 15mm valve widths
- 2-way or 3-way normally closed configurations
- 3-way valves offered in latching versions
- 12 or 24 VDC solenoid coil
- Flying lead or pin-plug cable connections
- Manifolds sold separately



# PAL Modular Electro-Pneumatic System

## The Versatile PAL System - Your “Pneumatic Automation Link”

The Pneumatic Automation Link (PAL) system is an electro-pneumatic system that can contain both electrical I/O as well as a solenoid valve bank. In effect, a single assembly can combine solenoid valves of various types, digital or analog I/O and common power sources for all control components.

Using a limited variety of basic components, many different configurations can be built. Valves are compact yet have high flow ratings (Cv) and high performance. The system can be controlled by direct wiring if only pneumatic valves are used or via EtherNet/IP if a combination of electrical I/O and valves are part of your application. To simplify wiring and system design, DC power is connected through a central module using M8 connections. All PAL components come with an efficient diagnostic system.



## Using the PAL System as a Modular Pneumatic Valve Bank

The Pneumatic Automation Link can be used as a valve bank without any field I/O. Valves can be controlled via an EtherNet/IP master, or by discrete control wiring through the conventional electrical modules.

Modular pneumatic valve bases support either 3 or 4 stations and 3, 4, 6 or 8 solenoids per base. Many valve configurations are available, including 3/2, 5/2 and 5/3 center closed.

- Up to 40 valve bases supported per system
- Conventional electrical modules have either 25-pin or 44-pin connection. All other electrical connections are M8 and M12 quick-disconnect
- The complete system, including all electrical and pneumatic components, is rated IP65
- Push-to-connect fittings are cartridge-style for easy replacement or changing the size of the fitting.
- Pneumatic system rated vacuum up to 145 psi



## Using the PAL System for Field I/O

The Pneumatic Automation Link can be used as a field I/O system by itself. An EtherNet/IP slave bus coupler allows the system to be controlled remotely via EtherNet/IP master as well as a bus expansion coupler that allows the system's installation to be physically split up into parts while only using one connection to the master.

I/O modules for the NITRA PAL electro-pneumatic system include discrete DC input and output modules, analog modules in a variety of voltage and current ranges, and a temperature input module.

- Up to 20 digital input modules/128 digital input points supported per system
- Up to 20 digital output modules/128 digital output points supported per system
- Up to 4 analog input modules/16 analog input channels supported per system
- Up to 4 analog output modules/16 analog output channels supported per system
- IP65 rated equipment designed to be machine mounted
- Quick and simple wiring using M12 and M8 connections



## Using the PAL System as an Electro-Pneumatic System

Using the PAL system as a complete electro-pneumatic system provides the most benefit to the designer and installer. With a large number of I/O and pneumatic valves supported, the possibilities of various configurations are practically endless. Add the fact that the PAL is machine mountable and IP65 rated and you have a very versatile, rugged, modular system that is easy to design, install and maintain.

