



Engineered Performance



## *Valve & Control Solutions*

Liquid Level Controllers

Liquid Level Switches

Chambers and Domes

Control Valves

Pressure/Temperature Controllers

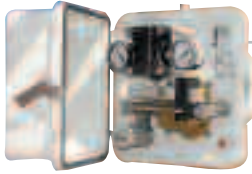
Check Valves

Butterfly Valves



Since 1955, the name for quality, reliability and cost-efficiency has been Norriseal. Because Norriseal products are field-proven, backed by extensive applications engineering and manufactured with precision. That's why Norriseal products have set the performance standards in oil and gas production, refining, chemical processing, marine, power generation and many other industrial applications.

# Liquid Level Controllers



## SERIES EVS ZERO-LEAK

Environmentally friendly liquid level controllers with patented Envirosave™ snap (on/off) pilot to prevent fugitive emissions and reduce bleeding of valuable gases. Service-enhanced design simplifies installation and inspection.

- Envirosave pilot rated at zero leakage in U.S. EPA Natural Gas STAR Program report (call for details)
- Back-mount design with flush-mount internals for easy access
- Uses proven, force-balance technology for reliability and long service life
- High sensitivity for either top level or interface control
- Weather-resistant sealed enclosure
- Complies with NACE MR0175-2002



## SERIES 1400, TYPE 72-15 PNEUMATIC NON-INDICATING

Pneumatic, non-indicating level controller/transmitter used with a Series 1406 torque tube level sensor. Provides throttle control with torque tube accuracy.

- Pneumatic control ranges:
  - 5% to 100% proportional band for modulating
  - 5% to 75% snap range for differential gap or adjustable on/off control
- Available in both controller and transmitter
- Internal 3-to-1 relay maximizes control output
- Click-type friction lock nozzle allows accurate set in vibration service
- 3 to 15 psig, 3 to 27 psig and 6 to 30 psig control signal ranges



## SERIES 1001 PNEUMATIC

Reliable and economical pneumatic liquid level controllers with no-bleed, force-balance operation. Available with patented Envirosave™ snap pilot to prevent fugitive emissions and reduce bleeding of valuable gases.

- Snap (on/off) or throttle (proportional) control
- Right- or left-hand mount
- Field-configurable direct or reverse action
- Removable door
- Various arm lengths, displacer sizes, diameters, connections and body materials
- Options include SPDT or DPDT electric switches



## SERIES 1001A WEATHERPROOF

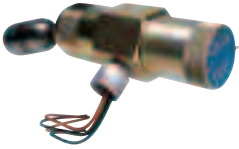
Features a weatherproof case/cover with a secure lever latch to protect internals. Options include marine service and SPDT or DPDT electric switches.



## SERIES 1400, TYPE 72-45 PNEUMATIC INDICATING

Pneumatic, indicating level controller/transmitter used with a Series 1406 torque tube level sensor.

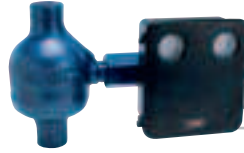
- Dial-in set point
- 15% to 200% adjustable throttling control
- Automatic reset and/or rate action
- 3 to 15 psig, 3 to 27 psig and 6 to 30 psig control signal ranges or adjustable differential gap action



### SERIES 1005E ELECTRIC

Float-actuated electric level switch designed for rugged use (2,000 psig maximum working pressure @ 220°F/104°C) as a high- or low-level alarm.

- Body available in carbon steel and 316 SST
- CSA listed and explosion-proof
- Available with SST or polypropylene float
- SPDT or DPDT options
- Can be mounted in an external chamber



### SERIES 1100A PNEUMATIC HIGH/LOW NO-BLEED

Pneumatic liquid level switch that combines a cast carbon steel external chamber and a liquid level controller. Used in high- and low-level safety applications.

- Pneumatic switch
- Special marine service
- Top-, bottom- or side-mount connections
- Standard 1,480 psig maximum working pressure @ 220°F/104°C (optional 2,220 psig working pressure)
- Optional Series 1100AE incorporates an SPDT or DPDT electrical switch with a carbon steel external chamber



### SERIES 1005P1 PNEUMATIC

Pneumatic, float-actuated switch used as a high- or low-level switch or to operate a control valve. Features a three-way pilot valve with built-in manual override and porting for piped exhaust.

- Rugged carbon steel or 316 SST body with SST float
- Maximum 1,500 psig working pressure @ 220°F/104°C
- Can be mounted in an external chamber



### SERIES 1006 VERTICAL CHAMBER

Externally mounted, vertical chambers used with Series 1001 and 1001A liquid level controllers.

- 1.5-inch or 2.0-inch flanged or NPT process connections
- Side, top or bottom connections
- Accommodates all standard displacer lengths
- ANSI 150 to 2500 pressure classes
- Carbon steel standard; other materials available
- Optional Series 1006D Dome Assembly



### SERIES 1006 STYLE 4V03 HORIZONTAL CHAMBER

Externally mounted carbon steel or 316 SST chamber used with Series 1002A, 1005E and 1005P1 liquid level switches.

- 1.0-inch NPT process connections
- 1.5-inch and 2.0-inch NPT level switch connections
- 3,000 psig working pressure @ 220°F/104°C



### SERIES 1006 STYLE 4V12 HORIZONTAL CHAMBER

Externally mounted carbon steel chamber (other materials available) used with Series 1001 and 1001A liquid level controllers.

- 1.0-inch NPT (3,000 psig working pressure @ 220°F/104°C) or 1.0- to 2.0-inch ANSI Class 150 to 2500 flanged process connections top and bottom
- Level controller connection can be 2.0-inch NPT or flanged



### SERIES 1406 LEVEL SENSOR/TORQUE TUBE

Versatile sensor used with Series 1400 liquid level controllers and transmitters. Available in top-mount, side-mount and external-mount configurations.

- 4.0-inch ANSI class 150 through 600 raised face and ring joint internal side mounting
- Externally mounted cage with 1.5-inch and 2.0-inch threaded, ANSI 150 through 600 raised face and ring joint vessel connections in all positions
- 316 SST displacer; special materials on request
- Inconel® torque tube



## SERIES AOV 1-INCH ADJUSTABLE ORIFICE

Compact, heavy-duty, highly versatile control valve designed as a single solution for a variety of flow rates. Reduces costs and simplifies inventory logistics by providing one valve for the full range of 1.0-inch applications.

- Eight field-selectable flow settings
- Environmentally friendly, gas-tight FES-III packing
- Superior seat tightness
- Oversize high-durometer O-rings
- Tungsten-carbide valve trim
- Service versatility includes simplified packing inspection and field-reversible actuator



## SERIES 2023A "NO FREEZE"

Ideal for use as a high-pressure liquid dump valve for separators and other process vessels. Valve body is designed for constant trim immersion in vessel fluid.

- Threaded end connections
- Replaceable plug and seat
- Ball-type trim design
- Standard 300 Series SST trim Soft Seat (Teflon®) trim option
- Maximum working pressure: 2,220 psig @ 100°F/38°C



## SERIES 2026/2027A "NO FREEZE"

"No-Freeze" liquid control valves for high-pressure service. The valve body screws directly into the vessel connection, immersing the plug and seat into the process liquid to resist freezing.

- Adjustable or non-adjustable diaphragm actuators
- Carbon steel, hex body
- Hammer-nut closure
- Quick-change replaceable trim
- Series 2026 maximum working pressure: 1,500 psig @ 100°F/38°C
- Series 2027A maximum working pressure: 3,000 psig @ 100°F/38°C



## SERIES 2220 HIGH PRESSURE

Proven, "industry-standard" high-pressure control valve. Used to control liquid or gas pressure in separators, scrubbers or other types of pressure vessels.

- Close-coupled design conserves space
- Hammer-nut entry allows quick access for trim inspection or replacement
- Variety of trims, seal materials and end connections
- Patented spherical plug and matching seat for precise seating alignment
- Quick-opening trim or throttling of modified or equal-percentage trim
- Pressure-relief feature of hammer-nut/body connection improves safety



## SERIES 2200

Open yoke allows mounting of positioners, limit switches or other devices, provides exposed stem for accurate travel indication and enables service at elevated temperatures.



## SERIES 2700A GENERAL-PURPOSE

Globe-bodied, bolted-bonnet control valve designed for a wide range of pressures, temperatures, materials and trims.

Single-ported control valves have balanced, unbalanced and restricted-port trims for a variety of flow characteristics.

- 17-4ph SST standard trim material
- Plug control (modified percentage, quick opening)
- Cage control (linear, equal percentage, quick opening)
- Trim options include erosion-resistant, soft seat ring, noise abatement and cavitation control
- Extended bonnet for high or low temperatures
- Direct or reverse-acting, yoke-mounted pneumatic diaphragm actuators
- Available in 1.0-inch through 8-inch sizes in ANSI 150 to 2500 pressure classes in threaded, raised face or ring joint end connections



## SERIES 2720 SPACE SAVING

Space-saving, economical version of the Series 2700A valve with close-coupled (yokeless) actuator. Trim variations are interchangeable; packing is non-adjustable and spring-loaded.

- Includes all Series 2700A features except yoke
- Reverse-acting, yokeless actuator with visual travel indicator
- Globe body, bolted bonnet closure
- Equal percent, modified percent, linear, low noise and cavitation trims available



## SERIES 3023 THREE-WAY

Three-way, two-position high-pressure control valves used for diverting or blending applications. Designed to accommodate the high differential and static pressures of system switching by giving positive shut-off while maintaining high flow capabilities.

- Hammer-nut closure with hard, soft and blow case trims available
- Reverse acting, direct acting or pressure balanced
- Teflon® V-ring, spring loaded, non-adjustable packing
- Temperature range from -20°F (-29°C) to 180°F (82°C)
- Optional open yoke for temperatures up to 400°F (204°C)



## Technical Support

*Norriseal offers extensive resources to help you find the most cost-effective solution for your application. Our in-house engineering staff and experienced field-support personnel are available to assist you in specifying, installing and operating our products. We also make available custom software programs to facilitate valve specification and sizing, as well as actuator and level sizing. For details, contact your Norriseal representative or visit [norriseal.com](http://norriseal.com).*



## SERIES 4300 PNEUMATIC

A simple-to-operate, pneumatic pressure controller that senses pressure with a 316 SST Bourdon tube. Ideal for installations requiring rugged construction, dependable operation and a minimum of parts.

- Control options include throttle, throttle with low-cutout, and snap
- Bourdon tube pressure ratings up to 7,500 psig
- Field-reversible controller action
- Orifice sizes to accommodate most actuators



## SERIES 4700A PNEUMATIC

Provides pressure control in proportional only, proportional plus integral (reset), differential gap, or transmitter modes.

Standard pressure ratings up to 10,000 psig with 316 SST Bourdon tube sensing elements.

- Field-reversible direct or reverse action
- Ambient operating temperature range  $-40^{\circ}\text{F}$  to  $160^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$  to  $71^{\circ}\text{C}$ )
- Weather-resistant aluminum enclosure
- Optional over-travel stop, anti-reset windup, diaphragm seal, differential pressure cell and remote set point



## SERIES 4400, TYPE 72-44 INDICATING PNEUMATIC

Pneumatic indicating pressure controller driven by either a 316 SST Bourdon tube, NI-span C or 316 SST diaphragm capsule, or Buna-N slack diaphragm process pressure sensing elements. Also available as a pressure transmitter.

- Pressure ranges from vacuum to 5,000 psig
- 100% and 200% proportional band control
- Four different outputs: 3 to 15 psig, 3 to 27 psig, 6 to 30 psig and adjustable differential gap
- Direct visual set point accurate to within 1.5%



## SERIES 4400, TYPE 72-46 TEMPERATURE/CONTROLLER TRANSMITTER

Temperature controller driven by a bulb-type sensing element. Optional remote set point, automatic/manual functions and hi-limit reset.

- Temperature ranges from  $-40^{\circ}\text{F}$  to  $1,200^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$  to  $649^{\circ}\text{C}$ )
- Gas or organic liquid actuation
- Armor-type capillary tube in lengths up to 150 feet
- Dial-in set point
- Proportional control, proportional plus reset and/or rate



## SERIES 7100 FLO-LIFT<sup>®</sup> PISTON CHECK VALVE

Non-slam piston check valve designed for positive prevention of backflow in gas, air or liquid systems. Optional reduced port trims for low-flow applications.

- Available in 1.0-inch through 12-inch sizes in ANSI 150 to 2500 pressure classes in threaded, raised face or ring joint end connections
- Built-in lifting device for piston removal and inspection
- High flow capacity
- Low pressure drop
- Bolted closure
- Meets API 6D specifications



Only Norris butterfly valves feature an advanced angle-disc design for positive shutoff and long service life. Norris butterfly valves are field-repairable in all types and sizes without using special tools. The versatile design can be adapted for specialty applications, such as dry bulk service, abrasive services, food-grade applications and severe-service chemical flow streams.



### SERIES 200

Unique, angle-disc butterfly valves available in both resilient-seated and metal-lined designs. Feature bi-directional positive shutoff to 200 psig working pressure. Angle disc provides 360° uninterrupted differential sealing surface.

- Double-shaft seals and body bushings assure smooth, low-torque operation
- Independent flange seals
- Rigid-backed rubber seat easily field-replaced
- Non-wetted body available in lug or wafer designs
- Rigid drive, precision disc-to-shaft connection
- Resilient-seated design (R200) offered in a wide variety of elastomeric seals and metallic materials
- Metal-lined design (M200) provides positive shutoff with minimum sealing material
- Available with a variety of pneumatic, electric and hydraulic actuation



### SERIES M200 VALVES

Available in a wide range of materials, including Hastelloy®, titanium and other unique alloys.

### Typical Applications

- Cooling tower water control and isolation
- Ethylene glycol chiller systems
- Steel mill quench water control
- Freon-based refrigeration systems
- Filtration equipment isolation and flow control
- Chemical plating or coating
- Lubricating oil service
- Gasoline, kerosene, aviation fuel isolation and control
- Dry bulk cement
- Vacuum lines
- Ethanol for gasohol mixing
- Abrasive slurry applications
- Specialty chemicals requiring special alloys



### SERIES 285

Exclusive, angle-disc butterfly valves provide bi-directional, positive shutoff to ANSI 150 standards (285 psig). Uses a rigid-drive, precision disc-to-shaft connection without load-bearing fasteners in the flowstream. Available in both resilient-seated and metal-lined configurations.

- Angle disc with 360° uninterrupted differential sealing surface
- Double-shaft seals and shaft bushings assure smooth, low-torque operation
- Non-wetted body available in lug or wafer design
- Offered with a variety of pneumatic, electric and hydraulic actuation



### SERIES M285 VALVES

Offered in several grades of bronze, SST and high alloys such as Monel®, Inconel® and titanium.



### DIAPHRAGM ACTUATORS

Designed for on/off or throttling service (when used with a positioner). Available in four size ranges with torque output to 17,000 in./lbs.

- Spring-return or double-acting
- Spring rotation from clockwise to counter-clockwise is field-reversible
- Easily adapted to various mounting styles and shaft types
- Can be actuated with as little as 10 psig supply air
- Adaptable to water or oil as the supply source
- Wide range of switches, positioners and other accessories can be mounted

## Why you can depend on genuine Norriseal products

- In-house engineering and technical support
- In-depth applications experience
- Award-winning innovation and ongoing product development
- ISO 9001-certified manufacturing
- Over five decades of industry service
- Compliance with all industry standards and specifications
- Responsive service and prompt delivery
- Field support available worldwide

This overview provides a brief introduction to an extensive line of valve and control products. Within each series, multiple design configurations and material options are also available. For example, all products can be configured to meet NACE specifications.

Please contact your Norriseal representative for more details and assistance in specifying the optimal solution for your application.



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