

Total Flow Control Solutions™



Anderson Greenwood

Anderson Greenwood
Instrumentation

Bellucci

Biffi

Clarkson

Crosby

Dewrance

FCT

Gulf Valve

Hancock

Hindle

Hovap

Intervalve

Keystone

KTM

L&M Valve

MCF

Morin

Narvik

NeoTecha

Prince

Raimondi

Richards

Rovalve

Sapag

Sempell

Vanessa

Varec

Vonk

Westlock

Yarway

A Premier Manufacturer of Flow Control Products

Tyco Flow Control brings together the world's premier manufacturers of flow control products. With a portfolio of trusted brands, we offer a level of expertise that is second to none in providing innovative solutions to the most challenging flow control applications.

We are the world's largest manufacturer of products that move, control and sample liquids, gases, powders and other substances. Our industry-leading brand names include Anderson Greenwood, Anderson Greenwood Instrumentation, Bellucci, Biffi, Clarkson, Crosby, Dewrance, FCT, Gulf Valve, Hancock, Hindle, Hovap, Intervolve, Keystone, KTM, L&M Valve, MCF, Morin, Narvik, NeoTecha, Prince, Raimondi, Richards, Rovalve, Sapag, Sempell, Vanessa, Varec, Vonk, Westlock and Yarway.

With worldwide sales, service and distribution centers, we can be your source for Total Flow Control Solutions™.

Quality Philosophy

A strong commitment to maintaining and improving the quality of both product performance and customer service is behind everything we do. Our factories and quality assurance procedures are inspected and audited regularly by major quality authorities such as Lloyds Register, BSI, Bureau Veritas, ISO and TUV.

Global Service

The superior performance standards of our valve products are reinforced by the consistent high level of service and experience available to customers locally. With comprehensive sales support and experienced personnel in all major markets, customers can depend on Tyco Flow Control.

Major Markets at a Glance

Tyco Flow Control supplies products to a variety of industries, including, but not limited to:

- Aerospace
- Automotive
- Chemical and Petrochemical
- Food and Beverage
- Heating, Ventilation and Air Conditioning
- LNG
- Marine
- Mining
- Natural Gas
- Oil and Gas
- Pharmaceutical
- Power Generation
- Pulp and Paper
- Water and Waste Water

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Ball Valves

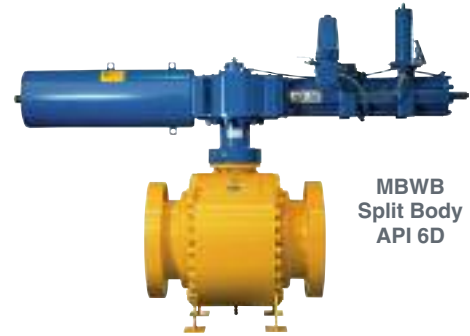
Bellucci

The Bellucci forged API 6D trunnion mounted split body ball valve helps offer a high level of integrity and safety in oil and gas gathering/transmission, compression/pumping and metering stations for pipeline applications. Packaged with our industry leading actuation and controls, we provide a trusted single source for your project needs. All are bi-directional, double block and bleed, allowing the venting and draining of the body cavity in both open and closed position. Two-seat designs are available: single piston effect (standard), providing self relieving of the body cavity overpressure and double piston effect (standard), providing double barrier. Fire tested to API 6FA and API 607, ISO 10497 featuring an emergency sealant injection provision as standard (all seats and stems) for 6" and above.

Size and Pressure: 2" to 36" Class 150 to 600
2" to 30" Class 900
2" to 20" Class 1500
Full and Reduced Bore available

Temperature Rating: -75°F to 390°F [-60°C to 200°C]

Body Materials: Carbon Steel, Stainless Steel, Duplex, Super Duplex, Special Alloys



MBWB
Split Body
API 6D

FCT

FCT has established a formidable name for highly engineered, high-quality and innovative ball valve solutions for oil and gas applications worldwide. FCT utilizes the latest 3-D and Finite Element Analysis (FEA) design software coupled with state-of-the-art manufacturing and testing facilities. FCT offers two trunnion mounted ball valves: split body and top entry. The split body designs are: three-piece forged with a pin trunnion (HPA), three-piece forged body with plate trunnion (HRA) and a two-piece cast/forged body with a pin trunnion. The top entry design utilizes a one-piece body and is built for in-line maintenance.

All designs offer soft, metal/soft or metal-to-metal seating, are fire-safe approved and meet API 6A or 6D. FCT valves are ideally suited for special critical applications such as high temperature and/or pressure, cryogenic, offshore topside and subsea, HIPPS and corrosive media (fluids, slurries) where exotic metals are required.

Complete manufacturing resources and testing facilities are in-house, including the ability to undertake special testing such as cryogenic and high temperature, bending moment, cycle testing and hyperbaric chamber.

Size Range: up to 60"

Pressure Rating: ANSI Class 150 to 2500 for API 6D; API 2000 to API 15000 for API 6A

Temperature Rating: -320°F to 750°F [-196°C to 400°C]

Body Materials: Carbon Steel, Stainless Steel, Duplex, Super Duplex, Inconel® and exotic materials



Split Body



Top Entry

raimondi

The Raimondi forged, API 6D trunnion mounted ball valve offers the safety and integrity of fully welded construction for buried service oil and gas distribution and transmission pipelines, helping to minimize the risk of fugitive emissions from flanges. As a bi-directional, double block and bleed valve, it allows for the venting and draining of the body cavity in both an open and/or closed position. Main features include two piece/three piece forged design plate trunnion with a blow-out proof stem and three stage shaft sealing with self-relieving or double piston seats. Designs are fire tested to API 6FA, API607, ISO 10497. Butt-welded ends are set according to ASME B16.25, B31.8 or to customer requirements. A removable lantern ring that facilitates replacing the upper stem seals is also available.

Size Range: up to 56"

Pressure Rating: ANSI Class 150 to 2500

Temperature Rating: -75°F to 390°F [-60°C to 200°C]

Body Materials: Carbon Steel, Low Temperature Carbon Steel, exotic materials



Fully Welded
API 6D



Ultra-Seal



Cryogenic

Hindle offers a series of flanged floating ball valves in one and two piece designs under their Ultra-Seal brand. Hindle valves have earned a reputation for their ability to offer a quality valve with high stem sealing integrity to eliminate fugitive emissions. They are also recognized as a leader in low temperature and cryogenic applications with extensive on-site cryogenic testing abilities. Features include:

- One-piece body construction for minimal weight and size.
- High integrity stem seal to prevent leakage.
- Corrosion resistant trim for long service life.
- ISO mounting flange.
- Flexing seat ring design for superior shutoff.
- Anti-static design.
- Blow-out proof stem.
- Fire test certified.

Soft Seated Range:

Reduced Bore: 1/2" to 16" ANSI Class 150
1/2" to 14" ANSI Class 300

Full Bore: 1/2" to 14" ANSI Class 150/300

Cryogenic Range:

Reduced Bore: 1/2" to 16" ANSI Class 150
1/2" to 14" ANSI Class 300

Full Bore: 1/2" to 14" ANSI Class 150
1/2" to 12" ANSI Class 300

Metal Seated Range:

Reduced Bore: 1" to 8" ANSI Class 150/300

Full Bore: 1/2" to 6" ANSI Class 150/300



Dual Pak



Vari-V



Cryogenic



Three-way Diverter



FM Approved



Block and Bleed



M-Class

At the heart of every Keystone ball valve, you'll find flexible configuration technology that allows us to supply a complete range of two and three piece ball valves with unique options designed to meet specific end user requirements. They are ideal for extreme industrial applications and fast track delivery is available on request.

- The Vari-V ball valve is a soft seated control valve that has a specific profile machined into the ball for accurate flow control. Custom profiles available on request.
- The Dual Pak ball valve is a soft seated high performance valve designed to operate at 650°F [350°C] and to help outperform in high cycle applications.
- The Cryogenic ball valve is available with a cryogenic extension for temperatures as low as -454°F [-270°C]. A bolt-on retrofit kit is available to help minimize downtime.
- A large selection of FM approved valve sizes and options are available.
- The M-Class valves tackle extreme industrial applications: abrasive, corrosive, high temperature, high cycle and high pressure service. Metal seats are standard on this series.
- Keystone ball valves offer three styles of "block and bleed" valves. Single block and bleed with line loaded seats, double block and bleed, and double block and bleed in a single body.
- Quarter-turn, three-way diverter valves are bottom entry with flow to the left or right parts. We offer a single "L-Port" ball for 180° and double "L-Port" ball for 90°.

Ball Valves

KEYSTONE

The Keystone K-Ball line offers a complete range of ball valves that offer flexibility to suit a wide variety of general industrial and process applications in water, oil and gas, and chemical. The range features one, two and three piece designs with screwed, welded or flanged connections.

Features include:

- 3-way and 4-way multi-port designs.
- ISO 5211 top mounting plate for easy actuation.
- Reduced and full bore models.
- Locking facilities on all models.

Size Range:	1/4" to 12"
Pressure Rating:	PN10/16, PN 25/40, PN 63, ANSI 150/300, JIS 10K/20K
End Connections:	Threaded - BSPP, BSPT, NPT Flanged - ANSI 150/300, PN 10/16, PN 25/40, JIS-10K/20K



KTM

KTM markets a complete line of ball valves for the most demanding application requirements of the oil and gas, power, chemical, petrochemical and other process industries. Types include floating and trunnion, 3-way, diverting and control along with premier specialty products with unique features. They feature several proprietary seat designs, and offer a wide range of performance; the E-seat, PTFE/PFE copolymer, Gratite® high temperature seat with tight shutoff and Metaltite metal seat.

KTM has developed a reputation for high quality, dependable valves backed by excellent service. Each valve is precision manufactured from foundry casting to final assembly.

Special options are available, including stem extensions, body coating and double block and bleed. Testing is also available for chlorine service, oxygen service, vacuum service, liquid penetrant, magnetic particle, ultra-sonic and x-ray.



Floating/Trunnion

Size Range:	1/2" to 30"
ASME Class:	150 and 2500
Temperature Rating:	-328°F to 932°F

Three-way

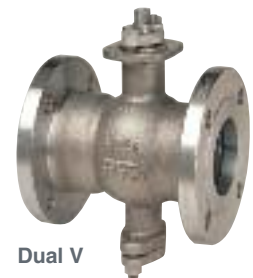
Size Range:	1/2" to 14"
ASME Class:	150, 300, and 600
3-way Patterns:	L, T, and Y
Temperature Rating:	-20°F to 932°F

Single V, VS11

Size Range:	1" to 20"
ASME Class:	150 and 300
Control Valve Range:	100:1 rangeability
Temperature Rating:	-20°F to 518°F

Dual V

Size Range:	1" to 8"
ASME Class:	150 and 300
Control Valve Range:	250:1
Temperature Rating:	-20°F to 518°F



Neotecha

The NeoTecha fully PFA lined NTB/NTC ball valve is a one-piece trunnion ball/stem, energized seat design with both upstream and downstream sealing (NTB). Features include:

- High integrity, maintenance-free stem sealing with PFA lining on all internal wetted areas.
- Full port offers high C_v value equal to the pipe.
- True trunnion design reduces "dead space" to an absolute minimum.
- High quality electrostatically applied polyester powder paint on body.
- NTB available with characterized seats for excellent control capability.
- Specific anti-blowout shaft design.

Size Range:	1/2" to 6"
Pressure Rating:	Vacuum to 232 psi
Pressure Range:	Vacuum 0.1 mbar to 232 psi
Flange Standard:	ASME B16.10 Class 150





Steam

Micro-Clean True-Tube™



Cryogenic

MCF Valves' modular three-piece valve construction accommodates a wide choice of seats, seals, accessories and end pieces for almost every type of manual or automated application. Available in two-way and three-way flow configurations.

- Pressure loaded seats with low torque design to provide a consistent bubble-tight seal.
- Fully encapsulated body seals to prevent leaks to atmosphere and at the same time allow welding in-line without time consuming and costly valve disassembly.
- Live loaded stem packing assembly to automatically compensate for wear and thermal expansion and contraction.
- A precision machined solid stainless steel ball and bottom entry stem combine to direct unrestricted flow.
- ISO 5211 type center sections feature one bolt removal (swing out design) for in-line maintenance of internal component parts.

Micro-Clean/True-Tube™ – For applications that require ultra-clean type conditions which have little or no tolerance for process contamination by microscopic particles from either media deposits or trace metallic elements involving valve components. Manufactured to comply to ASME BPE 2002 standards.

Cryogenic service valves offered in standard and full port sizes.

Regular and Steam Service

Size Range: 1/4" to 8"
Pressure Rating: Hi-Vacuum to 1500 psi
Temperature Rating: -40°F to 500°F

Cryogenic Service

Size Range: 1/2" to 6"
Pressure Rating: Hi-Vacuum to 1500 psi
Temperature Rating: -425°F to 500°F

Micro-Clean/True-Tube™

Size Range: 1/2" to 6"
Pressure Rating: Hi-Vacuum to 1500 psi
Temperature Rating: -40°F to 500°F

RICHARDS

Firesafe Valve



Full Bore Trunnion



An extensive range of full and reduced ball valves serving a wide spectrum of applications in the oil and gas, petrochemical and chemical industries. Available in flanged and threaded/welded end connections; metal or soft seated designs, incorporating either floating or trunnion mounted designs, for positive isolation.

Two Piece Ball Valves

Two piece ball valves for most process oil and gas applications, with threaded, welded connections

Size Range: 1/2" to 2"
Pressure Rating: ASME Class 800 and 1500
Temperature Rating: -20°F to 500°F [-29°C to 260°C]
End Connections: Threaded NPT, socketweld or buttweld

Trunnion Mounted Ball Valves

Two piece, cast trunnion mounted ball valves for most high pressure process services, including oil and gas production, gas processing and distribution. Available in carbon steel ASTM A216 WCC material to suit oil and gas process conditions, with ASME flanged or weld end connections.

Size Range: 2" to 8"
Pressure Rating: ASME Class 600 and 900
Temperature Rating: -20°F to 500°F [-29°C to 260°C]
End Connections: ASME flanged or buttweld

Blow-off and Blowdown Valves

HANCOCK

Hancock valves are specifically designed to withstand the deleterious effects of continuous blowdown service that is so damaging to conventional valve types. Other applications include feedwater heater bypass relief, sampling systems, drains and other services where erosion is extremely severe.

- Size Range:** 1"
Pressure Rating: ASME Class 800 (Limited Class)
End Standard: Socketweld ends only

Model 5505



YARWAY

Yarway Blow-off valves are specially designed for the punishment of blow-off service in boiler systems with pressures of 3206 psig; designed in compliance with all code requirements established by the ASME Power Boiler Code.

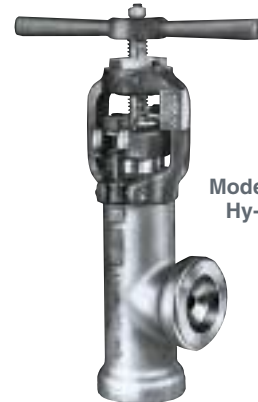
- Seatless blow-off valves operate on a sliding principal. The valve has no seats, live-loaded packing and slow opening.
- Hardseat blow-off valves have a seat and disc design with flow entering under the seat. This valve has been designed with thick stellite facings on the disc and seat to provide the hard wearing, anti-galling surfaces characteristic of stellite.
- Tandem valves allow any two Yarway hardseat valves to be used in tandem for pressure to 2455 psig. For pressures to 935 psig, hardseat valves may be used in tandem with Yarway Type C seatless valves. Tandem valves provide a compact valve design for limited spaces to conform to ASME Boiler Code requirements.

- Size Range:** 1" to 2¹/₂" (Seatless and hard seat)
Pressure Rating: ASME Class 250, 300, 600 and 1500
End Standard: Flanged, socketweld and optional buttweld

Model 5800 Hy-drop is designed for continuous blowdown, but also works well for sampling, high pressure vents, boiler feed pump bypass relief, high pressure drop services, dual range throttling and rapid energy dissipation.

- Size Range:** 1" to 1¹/₂"
Pressure Rating: ASME Class 1700 and 2700
End Standard: Socketweld ends only

Model 3482-R



Model 5800
Hy-drop

Tandem Valve





Figure
990/920/999/992

These valves are used when sanitary service, corrosion or erosion resistance is required in isolation or control valve applications. These high performance applications are found in food and beverage, pharmaceutical, pulp and paper, mining and power industries.

- One-piece, thin profile, disc-stem provides minimum obstruction to flow resulting in highest C_v , lowest pressure drops and best control characteristics.
- One-piece disc-stem is available in 316 stainless steel, polymer or elastomer molding.
- Triple-function seat provides bi-directional drop-tight shutoff, isolates the valve body and stem from the line media and also serves as the flange seal.
- Dovetail seat retention allows convenient and economical seat replacement.

Size Range: Figure 990 (wafer style) 1" to 20"
Figure 920 (lug style) 2" to 20"

Pressure Rating: 1" to 12" Metal Disc-Stem – 150 psi
2" to 12" Molded Disc-Stem – 100 psi
14" to 20" Metal or Molded Disc-Stem – 75 psi

Flange Standard: ASME 125/150



Series 60

Ideally suited for many high performance applications, including vacuum, sanitary, corrosive, and erosive that are found within the chemical, mining, pulp and paper, oil and gas, food and beverage, and power markets.

- Cartridge style seat provides high pressure, as well as full vacuum capability.
- Disc is available in a variety of metals and elastomer coated.
- Blowout resistant stem retention design is standard.
- Lug style is unidirectional, full rated dead-end service (2" to 24").

Size Range: 2" to 24" (wafer and lug style)

Pressure Rating: 2" to 12" – 250 psi
14" to 24" – 200 psi

Flange Standard: ASME 125/150



Figure
AR1/AR2

Ideally suited for many general valve applications such as liquid and gas transmission for isolation and control in cooling systems, water treatment, chemical, mining, food and beverage as well as bulk handling.

- One-piece body with extended neck allows clearance for flanges and insulation.
- Triple-function-seat provides bi-directional drop-tight shutoff, isolates the valve body and stem from the line media and also serves as the flange seal.
- Dovetail seat retention allows convenient and economical seat replacement.
- Polished disc edge provides extended cycle life.

Size Range: Figure AR1 (wafer style) 2" to 36"
Figure AR2 (lug style) 2" to 24"

Pressure Rating: 2" to 12" – 175 psi
14" to 36" – 150 psi

Flange Standard: ASME 125/150

Butterfly Valves

KEYSTONE

These valves are ideally suited for any service where tight shutoff with maximum flow area is required.

- Field-replaceable seat fully isolates the body and stem from flow.
- Thin disc design provides minimum obstruction of the flow, resulting in smooth flow characteristics.
- Ductile Iron (ASTM A536) body is standard.
- Available in nylon coated Ductile Iron and Super Duplex discs.

Size Range: 2" to 24" (wafer and lug style)

Pressure Rating: 2" to 12" – 235 psi
14" to 24" – 150 psi

Flange Standard: ASME 125/150



Series 61

This product is designed to meet the demands of applications and markets that require high pressure and bi-directional dead-end service.

- Injection molded seat provides bubble-tight shutoff to 250 psi.
- Lug style is full rated 250 psi dead-end service.
- Round polished disc edge provides concentric sealing, reduced torque and longer seat life.

Size Range: 2" to 12"

Pressure Rating: 250 psi

Flange Standard: ASME 125/150



Figure 221/222

The double-flanged, triple eccentric, resilient-seated valve design is essential for services in the water industry.

- Virtually no rubbing from the resilient seal on the seating surface. This enhances the life expectancy of the valve.
- Torque closing: greater torque results in improved tightness.
- Resilient seal firmly integrated in disc for tight shutoff performance.
- In-line replaceable and readjustable resilient disc seal.
- Face-to-face:
 - According AWWA C504-06 short.
 - Above 72": manufacturer standard.
 - Alternative face-to-face dimensions on request.
- Performance testing in compliance with AWWA C504 requirements.
- Vibration-proof disc pins installed perpendicular on the flow direction.
- Axial bottom shaft bearing carrying the disc weight when installed with shaft in vertical position and ensuring accurate centering of the disc assembly.

Size Range: 6" to 160"

Pressure Rating: 6" up to 48" – 350 psi
up to 86" – 250 psi
up to 120" – 150 psi
above 120" – contact factory

Drilling: 6" to 72" – ASME B16.1
above 72" – AWWA C207, Class D



Dubex - RMI AWWA Butterfly Valve

Butterfly Valves

KEYSTONE



Figure 106

This valve is used in many applications where large diameter valves are used, such as water transmission, chemical, mining, pulp and paper, pharmaceutical and power. The body design is a double flange.

- The disc is available in a variety of metals including elastomer molded.
- Triple-function seat provides bi-directional drop-tight shutoff, isolates the valve body and stem from the line media and also serves as the flange seal.
- Dovetail seat retention allows convenient and economical seat replacement.

Size Range: 24" to 48" (double flange)

Pressure Rating: 150 psi

Flange Standard: ASME 125/150

Neotecha



A fully lined solution according to ISO 5752/5 short (EN 558-1/T5) with a wide variety of corrosion resistant disc and liner materials to handle the most demanding customer applications.

- Stem seal, the pressure to keep the two sealing surfaces together is provided by an upper and lower set of Belleville springs resulting in a superior stem seal, which is TA-Luft approved.
- Bubble tight shut-off in both directions, in accordance with EN-12266-1 leak rate A (UHMWPE leak rate B).

Size Range: 1 1/2" to 36"

Pressure Rating: 1 1/2" to 24" – 150 psi
28", 32" and 36" – 87 psi
30" – 36 psi

Temperature: -40°F to 392°F

Flange Accommodation: DIN PN 10/(16)
ANSI 150, JIS 10K

High Performance Butterfly Valves

KEYSTONE



Figure 310/312

- Heavy duty circular key holds the seat and retaining ring in place, providing bi-directional, end-of-line service at full-rated pressure.
- Uninterrupted gasket surfaces eliminate problems associated with seat retaining screws in the gasket surface and allows use of standard spiral wound gaskets.
- Unique interference seat design with energized elastomer O-ring allows bi-directional Class VI shutoff at lower pressures. The seat is further energized by line pressure, providing the same tight bi-directional shutoff at full-rated pressure.
- The seat retainer ring is housed within the flange gasket ID to eliminate potential emission path.

Size Range: 2" to 12"

Pressure Rating: 285 psi

Temperature Rating: -20°F to 350°F

Flange Standard: ASME 150

High Performance Butterfly Valves

KEYSTONE

The K-LOK is an ASME Class product, providing services in ASME 150 and 300 ratings. The K-LOK valve is a double offset disc that utilizes a true interference seat design. This allows for increased valve performance and wear while delivering a Class VI shutoff with a polymer seat. The K-LOK can provide shutoff from vacuum to the ASME pressure rating without modifications and is available with soft seat, metal seat or API 607 4th Edition certified firesafe seat.

- Integrally cast mounting pad provides direct mounting of many actuators.
- Rocker-shaped gland bridge compensates for uneven adjustment of gland nuts.
- Disc taper pins are tangentially positioned half in disc and half in stem, placing them in compression rather than shear, which eliminates potential for failure.
- Optional bi-directional end-of-line service available.
- Standard materials of construction include carbon steel and 316 stainless steel. Other alloys available as options.
- This K-LOK design is available for firesafe services and is API 607 4th Edition approved by third-party witness.

Size Range: 2" to 36"
Pressure Rating: 285 psi and 740 psi
Temperature Rating: -20°F to 1000°F
Flange Standard: ASME 150 and 300



Figures
360/362 and 370/372

Check Valves

DEWRANCE

Pressure seal tilting disc check valves designed to deliver quick opening and immediate closing with reverse flow. Lightweight disc and offset design deliver optimum performance under a large range of flow conditions.

Size Range: 2" to 24"
Pressure Rating: up to 2850 Class
Temperature Rating: up to 1202°F
Materials: Carbon/alloy steel, C12A
Applications: Main steam check, boiler feed auxiliary, steam non-return



HPTDCV

Gulf Valve

- Lightweight, versatile design, 80 to 90% lighter than conventional full-body check valves.
- Spring-loaded, double-door design has low cracking pressure.
- Discs open 85 degrees to ensure positive closing.
- Springs are precisely calculated to increase the responsiveness of the disc, thus reducing damaging effects of water hammer.
- Wide elastomer seal is bonded and vulcanized to body.
- PTFE body and disc bushings.
- Oversized body cavity reduces opportunity for solids build-up in the closed position.

Size Range: 2" to 48"
Pressure Rating: ASME Class 125 to 900



MB

HANCOCK



5540



4081

- Disc is spring-loaded for positive closure in any position.
- The integral seat hardfacing is overlaid directly onto the body base material, helping to eliminate leakage behind the seat.
- Flat, precision machined and lapped seating surfaces eliminate damage from high impact seating.
- All internal surfaces are accurately machined to provide maximum performance.
- Code compliance with ASME B16.34 and the ASME Boiler and Pressure Vessel Code, Section I.

Size Range: Type 4000 – 1/2" to 4"
Type 5540 – 1/2" to 2"

Pressure Rating: up to Class 4500

INTERVALVE



Style A

Pressure seal swing check, tilting disc and piston type check valves for the power generation industry.

- One-piece tilting disc design through 4500 Class.
- Piston type checks for vertical pipes.
- Swing checks through 1500 Class.

Size Range: 2" to 36"

Pressure Rating: up to 4500 Class

Materials: WCB, WC6, WC9 and C12A

Neotecha



Ball Check Sight Glasses

Fully Lined Check Valves

- All PFA lined, used to prevent backflow of highly corrosive liquids and gases.
- Available in ball check, sight glass or combination.
- Virgin PTFE solid or hollow ball for liquid, gaseous and vacuum applications.
- Borosilicate glass for high temperature service.

Size Range: 1/2" to 10"

Pressure Rating: Vacuum to 232 psi

Flange Standard: ASME Class 150 and DIN versions

Fully Lined Sight Glasses

- Allows for visual indication of flow.
- All PFA lined to handle highly corrosive liquids and gases.
- Drip noses are used to detect even the smallest of flows.
- Borosilicate glass for high temperature service.

Size Range: 1/2" to 8"

Pressure Rating: Vacuum to 232 psi

Flange Standard: ASME Class 150 and DIN versions

Check Valves

PRINCE

The Prince 800 Series swing check valve is the answer to flow reversal problems. The low cracking pressure, lever, weight and optional hydraulic cushion make this series the leader in checking flow quickly, quietly and without damage to the pipeline.

- Short wafer or semi-lugged body minimizes piping support.
- Internal or external spring assists with disc closure.
- Field replaceable seat for easy maintenance.
- Vertical or horizontal check valves available to suit application.
- Optional hydraulic cushion prevents slamming of the disc.
- Available in a wide variety of trims and materials.

Size Range: 2" to 36"

Pressure Rating: 150, 285 and 740 psi

Flange Standard: ASME Class 125, 150 and 300



Type 815

Types
809, 810 and 813

raimondi

Large bore, forged body swing check, tilting disc and piston type check valves for severe service applications.

- Stem guided piston checks for low pressure drop applications.
- Pressure seal construction using graphite seals.
- Forged construction for added body integrity.

Size Range: 2 1/2" to 36"

Pressure Class: to 4500 Class

Materials: A105, F12, F11, F22, F91, F92



Sempell

Sempell cold reheat non-return valves are designed in conjunction with a major steam turbine OEM to protect the turbine from reverse flow and overspend. Sempell design allows for full control of the check valve disc across the entire travel range. The disc can be maneuvered to be completely out of the steam flow path. Sempell design offers:

- Low pressure drop.
- Full range control.
- Tight shutoff.
- DIN materials available.



DEWRANCE



Parallel slide gate valves, designed for use in power industry applications.

- Size Range:** 2" to 24"
Pressure Rating: ASME Class 500 to 4500
Body Materials: A216 WCB, A217 WC6, A217 WC9, A217 C12A

HANCOCK



Type 950

- Renewable seat rings are made from hardened stainless steel, faced with Stellite.
- The wedge is forged, hardened, ground, and lapped to ensure leak free sealing.
- Graphite packing, complete with braided graphite filament yarn anti-extrusion rings, is standard.
- Standard body and bonnet materials are carbon steel (ASME SA105), alloy steel (ASME SA182 Gr. F11) and stainless steel (ASME SA182 Gr. F316) Trim for steel valves is 13% chrome stainless steel. 316 stainless steel valves have 316 trim.
- Code compliance with ASME B16.34 and the ASME Boiler and Pressure Vessel Code, Section I.

Size Range: 1/2" to 2", Class 800 (Standard Port)

INTERVALVE



Intervalve flexible wedge gate valve – conical shaped double flexible wedge gate design delivers reliable seating and even seat loading.

- Size Range:** 2" to 36"
Pressure Rating: ASME Class 900 to 4500
Body Materials: A216 WCB, A217 WC6, A217 WC9, A217 C12A

raimondi



- High quality forged body valves for critical services, designed fully in accordance with ASME B16.34, API 600, DIN, TRD, VGB, TRB etc.
- Complete line of forged body gate valves are designed for high pressure and high temperature applications in the power and petrochemical industries.

Size Range: 2" to 36"
Pressure Rating: up to 4500 Class
Materials: A105, F12, F22, F91

Globe Valves

HANCOCK

7000 T-Pattern Globe Valve

- Heavy integral Stellite hardfacing on both body and disc seating surfaces.
- Standard body materials are carbon steel (ASME SA105), alloy steel (ASME SA182 Gr. F22).
- Available in ASME Standard and Limited Classes and in full compliance with Section 1 of the ASME Boiler and Pressure Vessel Code and ASME B16.34.

Size Range: 1/2" to 2 1/2"
(Class 1690, 2680, and 4350 – Standard and Limited)

5500

- Fixed, repairable seat overlaid with Stellite or equal hardfacing.
- Standard body and bonnet materials are carbon steel (ASME SA105), alloy steel (ASME SA182 Gr. F11) and stainless steel (ASME SA182 Gr. F316) Trim for steel valves is 13% chrome 316 stainless steel valves have 316 trim.
- Also available in a variety of body and trim materials.
- Code compliance with ASME B16.34 and the ASME Boiler and Pressure Vessel Code, Section I.

Size Range: 1/2" to 2" (Class 800 Limited Class)

4000 Y-Pattern Globe Valve

- Flow is distributed evenly and simultaneously across the entire seating surface, protecting the seating surfaces from erosion.

Size Range: 1/2" to 4" (Class 1690, 2680 and 4500 Limited Class)



7000



5500



4000

INTERVALVE

Pressure seal, Y-pattern globe valves and stop check valves, incorporated ISO top mounting pattern, specifically designed for power industry applications.

- Pressure seal Y-pattern globe valves designed in compliance with ASME B16.34.
- Offered in four standard cast materials.
- Integral seat.

Size Range: 2" to 36"

Pressure Rating: ASME Class 900 and 4500

Body Materials: A216 WCB, A217 WC6, A217 WC9, A217 C12A



5617

YARWAY

- Offers the power industry a value-engineered product with minimum maintenance and maximum service life resulting from its unique in-line renewability feature.
- The one-piece body eliminates all pressure welds, threads, and their related problems.

Size Range: 1/2" to 3" (Class 1700, Class 2700)
1/2" to 2" (Class 4500), ASME B16.34 (Limited Class)



5617

High-Integrity Globe Valves

raimondi



- High quality forged valves designed for critical services, fully in accordance with ASME B16.34, API 600, DIN, TRD, VGB, TRB, etc.
- Complete line of forged body globe valves designed for high pressure and high temperature applications in the power and petrochemical industries.

Size Range: 2" to 28"
Pressure Rating: up to 4500 Class
Temperature Rating: -51°F to 1202°F
Materials: A105, F12, F22, F91

Instrument Valves

HANCOCK



5525W-2

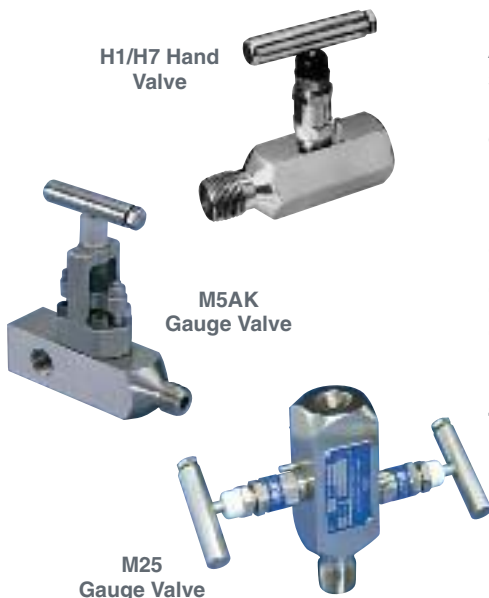
5535W-2

The 5525 and 5535 are combination and flow control instrument valves. General applications include compressors, steam condensers, pumps, steam lines, feed water regulator bypass vents, liquid level control piping, flash tank and gauge shutoff.

Size Range: 1/2" to 2"
Pressure Rating: ASME Class 800
End Standard: Threaded or socket weld

Instrumentation Products

**ANDERSON GREENWOOD
INSTRUMENTATION PRODUCTS**



H1/H7 Hand Valve

M5AK Gauge Valve

M25 Gauge Valve

Hand Valves and Gauge Valves

Anderson Greenwood hand and gauge valves include multi-port and block and bleed styles suitable for gauge isolation, calibration and venting with a choice of either globe pattern or straight-through bore designs. A wide choice of end connections and a comprehensive range of standard gauge accessories allows complete flexibility for individual installations.

Materials: CS, SS, Monel®, Hastelloy®, Duplex and other exotic materials
Seat: Metal and soft
Connections: 1/2" to 3/4" threaded, welded and flanged also available
Orifice Sizes: 3/16", 1/4", 3/8"
Pressure (max): 10,000 psig
Temperature (max): 1000°F

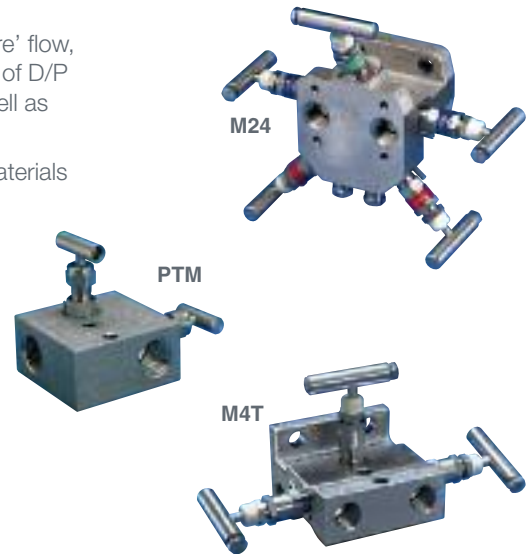
Instrumentation Products

ANDERSON GREENWOOD INSTRUMENTATION PRODUCTS

Manifolds

Anderson Greenwood has the largest and most innovative range of 'differential pressure' flow, level and pressure manifolds available in the world with models available for every kind of D/P and P instrument. These include conventional two, three and five valve manifolds as well as purpose-designed models for special applications.

Materials:	CS, SS, Monel®, Hastelloy®, Duplex and other exotic materials
Seat:	Metal and soft
Instrument Connections:	1/4" to 1/2" threaded or flange mounting
Process Connections:	1/4" to 1/2" threaded or flange mounting
Orifice Sizes:	3/16", 1/4", 3/8"
Pressure (max):	6000 psig
Temperature (max):	1000°F



IntelliMount and SaddleMount

Close couple or remote mounting of differential pressure transmitters. Patented unique two-piece design allows removal of transmitter for calibration. Block module provides process isolation. Suitable for connection of Coplanar® and biplanar style transmitters. For gas or liquid service.

Materials:	SS, Monel®, Hastelloy®, Duplex and other exotic materials
Seat:	Metal and soft
Instrument Connections:	Flange Coplanar® or biplanar
Process Connections:	1/2" and suitable for direct flange mounting (IntelliMount) Direct mount with 1/2" MNPT or 1/2" socketweld (SaddleMount)
Orifice Sizes:	3/16", 1/4", 3/8"
Pressure (max):	6000 psig
Temperature (max):	1000°F



Enclosures

- Choice of enclosure sizes.
- 2, 3 and 5 valve enclosure manifolds reduce internal brackets and pipe work.
- Heated version available.
- Complete design and installation service.

Sizes:	5L (single) 13" x 15.8" x 16.9" 15L (double) 19.7" x 19.5" x 23.6" 24L (multiple) 31.5" x 19.5" x 23.6"
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Pressure Rating: 10,000 psi (Manifolds)

Temperature Rating: Enclosure down -94°F

Materials: Tough fire-retardant GRP, weatherproof to IP66, anti-static and insulated options available



Enclosures



Keyblok

Keyblok Manifolds

The range of primary isolation double block and bleed valves meets both instrument and piping engineers' specifications, offering significant savings on space, weight, installation and cost. Suitable for line isolation, sample connectors and chemical injection service, Keyblok manifolds use ball valves, outside screw and yoke (OS&Y) bonnets and threaded bonnet instrument valves, and are available with a full range of threaded and flanged connections up to API 10K.

Materials:	CS, SS, Duplex and other exotic materials
Seat:	Metal and soft, firesafe as standard
Connections:	Threaded, flanged 1/2" to 2" ASME, DIN and API 10K, other specialist bolted connections also available
Orifice Sizes:	0.39" – Ball Valves 1/4" – OS&Y Valve Bonnet 3/16" – Instrument Valve Bonnet
Pressure (max):	10,000 psig
Temperature (max):	1000°F



HD33MK

Monoflange

The Monoflange manifolds can be mounted directly onto vertical or horizontal flanged connections, allowing a gauge to be kept in an upright position. Suitable for both primary isolation (double block and bleed) and instrument (block and bleed) duties. Monoflange provides isolation, venting and instrument mounting in a single compact unit. The designs incorporate safety features that limit vibration and reduce the overall height of a gauge installation.

Materials:	CS, SS, Duplex and other exotic materials
Seat:	Metal
Instrument Connections:	Threaded, 360 degree swivel connection and flanged
Process Connections:	Flanged 1/2" to 2" ASME, DIN and API 10K
Pressure (max):	10,000 psig
Temperature (max):	1000°F

Knife Gate and Slurry Valves

CLARKSON

Field proven, heavy-duty, trouble-free slurry valves for abrasive and coarse slurries.

KGA

- 100% full port.
- Double-seated, bi-directional shutoff design.
- Heavy-duty elastomer sleeves.
- Packingless design.

Size Range: 3" to 60"

Pressure Rating: up to 100 psi

Temperature Rating: up to 400°F

KGD

- MSS face-to-face dimension.
- 100% full port.
- Double-seated, bi-directional shutoff design.
- Exclusive, dynamic self-adjusting sleeve design.

Size Range: 2" to 24"

Pressure Rating: up to 150 psi

Temperature Rating: up to 300°F

KGF and KGF-HP

- For high pressure slurry applications.
- Same features and performance of the KGA and KGD, but in a 300, 600, 750 psi (or higher) design.

Size Range: KGF: 3" to 36"
KGF-HP: most sizes available

Pressure Rating: KGF: up to 300 psi
KGF-HP: up to 750 psi CWP

Temperature Rating: Standard sleeve rated to 160°F,
up to 300°F with proper elastomer selection



L&M Valve

Unique in the industry, the Performance Plus L&M Valve knife gate and slide products are polymer lined and offer superior shutoff, full port and positive seal packing.

- 100% full port.
- Bi-directional shutoff design.
- Positive seal packing.
- Larger sizes designed to suit application.
- Liner available in UHMW, Polypropylene, Teflon®, or other materials.

Size Range: 2" to 84"

Pressure Rating: Standard designs include 150, 300 psi CWP,
with specials up to 900 psi CWP

Temperature Rating: up to 300°F

M345
Polymer Lined
Knife Gate Valve

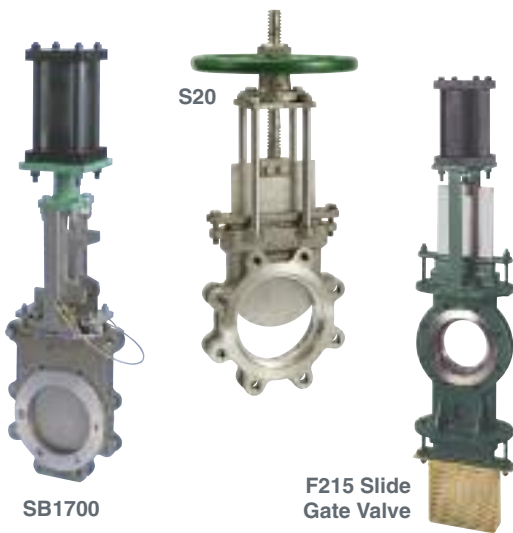


M145
Polymer Lined
Knife Gate Valve



Knife Gate Valves

Rovalve



The wide range of Rovalve products includes the high-performance SB1700 bolted body knife gate, the solid cast S20 metal-to-metal seated knife gate, the F215 slide gate, the F220 bonneted knife gate and other special application valves – each with its own unique performance and design features. This range means you get the right valve choice for your application.

Size Range: 2" to 24" SB1700 Knife Gates
2" to 24" S20 Knife Gates
2" to 24" Figure 215 Slide Gates
2" to 144" Figure 220 Bonneted Knife Gates
30" to 144" or Larger Bonnetless or Bonneted Knife Gates

Pressure Rating: Standard 150 psi CWP, higher available

Temperature Rating: Ambient to 2000°F

Customized knife gate valves are also available to suit your applications.

Liquid Level Indicating Systems

YARWAY



4400 RLLI

Manometric Indication System

The remote liquid level indicator, a differential device, is operated by the water vessel itself, using the weight difference between a constant head and variable head of water.

Pressure Rating: up to 3000 psi

Tubular, Flat Glass, Reflex, and Colorport Gauges

Provides continuous indication of boiler water levels as required by the ASME Boiler and Pressure Code. Contrasting red and green readings show water level by means of an illuminator. Water space is shown through green colored glass, steam space through red. Individual port assemblies and spring-loading add to low maintenance cost.



4500 Colorport Gauge

Magnetic Drum Level Indicator

Improved safety, convenience and versatility is possible by combining MULTIVIEW™ monitoring with an integrally-mounted armored gauge. These liquid level gauges offer more versatility, greater durability, more features and more options than any system on the market today.

Electronic Liquid Level Indication

Specially designed to meet increasing demand for a reliable, cost effective means of sensing water in various applications. Based on the conductivity probe technology now widely accepted in the industry.



Magnetic Level Gauge



Electronic Liquid Level Indication

Pressure/Vacuum Relief Valves

ANDERSON GREENWOOD

Pilot Operated Pressure Relief Valves (Series 200, 400, 500, 700 and 800, and 5100)

- Balanced for back pressure without the use of bellows which reduces the initial cost of the valve and the long-term maintenance cost.
- External, independent blowdown adjustment provides easy, accurate and repeatable settings. Reduces costly removal of valve or system downtime.
- ASME Section VIII Code Stamp. Certified National Board capacities for gas, liquid and steam service.
- Unique field test capability allows accurate set pressure verification with valve in service. No system isolation block valve or rupture disc required.
- Full lift at set pressure allows D.O.T. installation to be set higher than Maximum Allowable Operating Pressure (MAOP), resulting in increased system throughput.
- Series 5100 specifically for economizer service applications meeting the requirements of ASME Code Section I and Code Case 2446.

Series 400



Series 5100



Types 81 and 83



Tank Blanketing Valve

Direct Spring Operated Pressure Relief Valves (Series 60 and 80)

- Bubble-tight seating performance allows maximum system throughput and system optimization.
- Standard soft seated design is bubble-tight for repeated cycles, resulting in low long-term maintenance costs. Inexpensive O-rings are recommended spare parts.

With more stringent environmental regulations and increasing product costs, vapor control and recovery is becoming increasingly important. Anderson Greenwood products are ideal for applications where venting must be kept to an absolute minimum.

Tank Blanketing Valves

- Simple calibration, single unit reduces pressure from 200 psig to 1/2" wc.
- Maintains setting regardless of supply pressure variations.

Low Pressure Pilot Operated Valves (Series 90 and 9000)

- Zero leakage up to set point.
- Balanced against back pressure.
- Pop or modulating action.
- Available in Aluminum, Carbon Steel, Stainless Steel, and other materials.

Type 93



Type 9300



Varec

API 2000 Pressure and Vacuum Relief Valve

Varec's modular product offering uses interchangeable components for assembling a variety of functional configurations, which adds flexibility for field installation, repair and on-site upgrades.

- Oversized ports provide maximum flow capacity.
- Replaceable seat rings.



2010B

API 2000 Emergency Pressure Relief Manway Covers (Series 221)

- Incorporates a spring-loaded vacuum relief valve integral to the cover assembly.
- Features a diaphragm type seating surface on the pressure side. The diaphragm is fabric reinforced for durability, and is backed by compressible, cellular non-metallic pads for added cushion and reduced leakage.
- Hinged cover for proper reseating and safety.
- API 650 or ASME 150 flange drilling.



Type 221PV

Pressure/Vacuum Relief Valves

Varec



Type 5400
Flame Arrestor

Flame and Detonation Arrestment

- Used in conjunction with low flash point liquids and flammable gases or vapors.
- This design reduces surface friction, therefore optimizing flow capacity and minimizing pressure drop. The large surface area of the bank also improves heat dissipation.
- UL and FM approved.
- Extensible bank frame available for easy cleaning.

CROSBY



JOS-E
Direct Spring Valve

Direct Spring Operated Pressure Relief Valves (JOS-E Series)

- Built to API Standard 526 requirements.
- Gas/liquid dual certification for JLT model.
- Standard Inconel® 625 bellows.
- Universal disc holder for simple trim conversions.
- Full compliance with ASME Boiler and Pressure Vessel Code Section VIII.

Size Range: 1" D 2" to 8" T2 10"

Pressure Rating: to 6000 psig

Temperature Rating: to 1000°F

Inlet Ratings: ASME Class 150, 300, 600, 900, 1500, 2500

OMNI-TRIM® Series

- Positive built-in lift stop.
- Fewer parts result in increased reliability and ease of maintenance.
- Series 800 pressure relief valves have an external blowdown adjustment allowing for short blowdown, smaller differential between operating and set pressures, and reduced product loss.
- Series 900 OMNI-TRIM® valves provide reliable blowdown without the need for adjustment.



Series 900
OMNI-TRIM

ASME Boiler and Pressure Vessel Code Section I (HCI Series)

- High capacity safety valve.
- Saturated and superheated steam.
- Two-ring control.
- Restricted/adjustable lift option.
- Seat tightness at 96+% set pressure.
- Welded and flanged inlets.

Size Range: 1½ H2 3 to 6 RR 10

Pressure Rating: to 3000 psig

Temperature Rating: to 1100°F

Inlet Ratings: ASME Class 300, 600, 900, 1500, 2500



HCI
Safety Valve

JB Large Orifice Pressure Relief Valves

- Designed to eliminate the high costs associated with using multiple, smaller API Standard 526 pressure relief valves.
- Air, gas, vapor and steam applications.
- 10x14 through 20x24 sizes.

JB
Large Orifice
Valve



Rotary Process Valves

vanessa

Triple Offset, Metal Seated, Bi-Directional Zero Leakage for Critical Service

The undisputed leader in triple offset valve technology, Vanessa offers the ultimate performance in a huge range of materials, sizes, classes, temperatures and applications. The non-rubbing triple offset design in combination with the resilient metal seal ring helps ensure zero leakage performance over the highest possible valve cycle life.

- Torque-generated resilient metal seal ring helps provide zero leakage performance.
- Torque-seating action ensures continuous bi-directional, zero leakage performance.
- Quarter-turn, non-rubbing design achieved by a unique, triple offset geometry eliminates all seat-to-seat rubbing throughout the valve's 90 degree rotation.
- All metal construction and inherently fire safe, certified per API 607 4th Edition.
- Single-piece cast body, and Stellite hardfaced integral seat permits broader applications, longer valve life and less maintenance.
- Standard long length hardened stainless bearings with bearing protectors provide the highest level of protection in dirty or polymeric applications.
- Standard externally retained, blowout-proof shaft is safer to operate and provides complete compliance to API 609.
- Standard integral position indicator on the shaft and top mounting flange ensure positive disc position identification.
- Double-flanged model QTF adheres to the face-to-face dimensional requirements of ISO 5752.
- Double-flanged model QTG adheres to the face-to-face dimensional requirements of ASME B16.10.
- Single-flanged lug model QTL and wafer model QTW both adhere to the face-to-face dimensional requirements of API 609.
- Standard carbon steel and stainless steel bills of material and many alloy bills of material are available upon request.

Size Range: 3" to 112"

Pressure Ratings: ASME Class 150, 300, 600 and 900

Flange Standard: ASME B16.5, ASME B16.47
Series A & B

Industries Served: Refining, Chemical, Petrochemical, Pulp and Paper, Pharmaceutical, Power, Marine, Steam Distribution, Specialty Chemical, Sugar Processing and Municipal Water

ISO 5752, ASME B16.10, and API 609
Face-to-Face Designs



QTF Double Flange



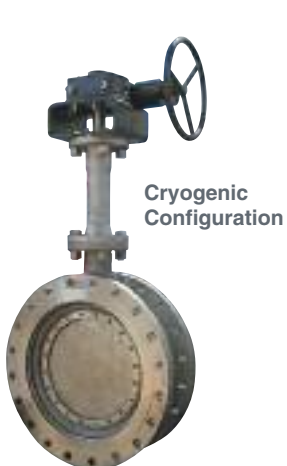
QTG Double Flange



QTL Lug Valve



QTW Wafer Valve



Cryogenic
Configuration



Buttweld



High Temperature
Configuration

Sampling Systems

Neotecha

NeoTecha sampling systems are designed to extract true representative samples from process systems with safety and simplicity as primary concerns.

PV Reactor Sampling Systems

- Used to extract samples from a reactor or pressure vessel without stopping the agitation or opening the vessel.
- Modular design can be easily fitted with accessories such as pH probes, auxiliary valves and pumps.
- Can be used with all types of vessels, including glass lined.
- Available in stainless steel or PFA lined.

Size Range: 150 ml to 500 ml sample
Pressure Rating: 150 psi
Flange Standard: 2" ANSI flange connection

SAPRO In-Line Liquid Sampling Systems

- In-line liquid sampling systems give a true representative sample.
- Available in stainless steel, PFA lined or alloys.
- Choice of bottle or syringe sample collection.
- Simple and safe to operate and maintain.
- Also available for aseptic, powder and high performance applications.

Size Range: 1" to 4"
Pressure Rating: Vacuum to 240 psi
Flange Standard: ANSI Class 150 drilling

PV
Sampling Systems



SAPRO
In-Line Liquid
Sampling Systems



Sanitary Process Equipment

KEYSTONE

Sanitary Butterfly Valves and Vertical Stainless Steel Rotary Actuators

Sanitary valves for isolation and control, in the food, dairy, brewing and chemical industries. The F250 (Imperial) and the F251 (Metric) Sanitary butterfly valves are designed to be easily automated with any quarter-turn actuation package or with our F257 vertical actuators.

- Combination dual or multi-positioned notch plate on manual valves.
- Integral disc position indicator on lower shaft.
- USDA approved powder handling option.
- F257-065, -100, -140 vertical stainless steel actuators.
- Field repairable (100 and 140 only).
- Retained spring for safety.
- Modular mounting kits – body bolts not used for brackets.
- High visibility position indicator.
- Proximity switch feedback.

Size Range: 1" to 6"
Flange Connections: Clamp connection, buttweld, wafer style

F250 Wafer



F257



F250 with
Keystone Actuator



Sanitary Process Equipment

KEYSTONE

Automated Valve Interface Device F783E EasyMind and F784 MasterMind

- Easily adapted to a wide range of rotary and linear actuators.
- High visibility status indication LEDs (energized, de-energized, solenoid activated).
- AC/DC options, with integral short circuit protection.
- Integral 5 port/2 position solenoid valve, with bi-directional speed controls and lockable manual override.
- Additional option to mount 3 solenoids for seat lifter capability.
- Network compatible interface modules (AS-interface®, DeviceNet™ and Profibus).



F784 MasterMind

KEYSTONE hovap

A specialist range of stainless steel mixproof, diverter (process) valves which can be supplied individually or as complete flow matrices.

Hovap Varioflow – F8700, F8730

- Imperial and metric connections 1 1/2" to 6".
- Isolation, divert and tank bottom configurations.
- Integrated 3-function actuator, open/close, upper and lower seat lift.
- 100% water hammer proof, bi-directional flow design.
- Spillage-free design as standard.
- Made in accordance with the EHEDG directives and 3A requirements.
- Patented leak detection and seat lift confirmation available.

Keystone J-Flow Single Seat Valves – F267J, F268J, F273J

- Imperial and metric connections.
- Isolation, divert and tank bottom functions.
- Clamped modular body design.
- Free draining, spherical body.
- Booster, damper and 3-position actuator options available.
- Easy mounting of control head or position feedback switches.
- Made in accordance with 3A requirements.

Size Range: 1" to 8"



F8700

F268J



Safety Selector Valve

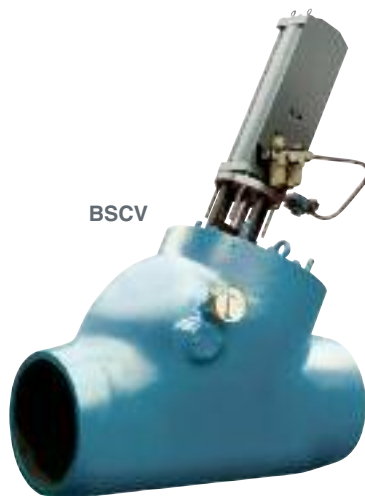
- Provides a safe, efficient method of switching from an active pressure relief device to a standby, maintaining system overpressure protection regardless of the safety selector valve position.
- Provides high C_v values, resulting in less than 3% pressure drop to the active PRV inlet, when used with the largest API orifice available in a given valve size, in accordance with the recommendations of API RP520 Part II and ASME Section VIII, Division 1, Appendix M, thereby greatly reducing the possibility of destructive chatter of the PRV.
- Requires only one minimally sized penetration into the vessel or pipe, reducing costs.
- Provides process isolation of standby pressure relief device.
- Allows pressure relief device maintenance without process shutdown.
- A bleed valve is provided under each safety relief device as an effective and safe means of venting entrapped process under an isolated pressure relief valve prior to removal for maintenance.
- Bright red indicator for positive indication of active pressure relief device.

Pressure Rating: 150 to 2500

Materials: WCB Carbon Steel and CF8M Type 316 Stainless Steel

Soft Goods: Teflon®, GRAFOIL®, PEEK

DEWRANCE



Extraction Check Valves

Unique tilting disc design developed with leading Turbine OEM for extraction service.

- Top-mounted piston eliminates packing problems.
- Free-rotating hinge pin and disc assembly.
- Protects turbine and conforms to TWIP directive.

Size Range: 6" to 32"

Pressure Rating: 150 to 1000

Materials: WCB, WC9 and C12A

Specialty Valves

NARVIK

Covers a vast product range for applications with steam, boiler, process gas and water services. Products include desuperheaters, level gauges, and sample valves. Applications in many sectors of industry, including chemical, petrochemical, power, water, pulp and paper.

Desuperheaters

- Variable nozzle design.
- In-line design.

Size Range: Water side – 1" and 1 1/2"
Steam side – 3"

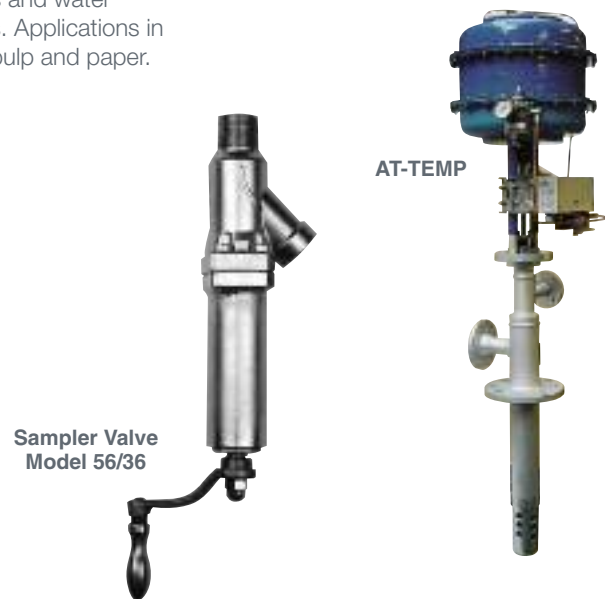
Pressure Rating: ASME Class 150 to 2500

Sampler Valve

- Body material: DIN 1.4581 or A351 CF8M
- Seal ring: Virgin PTFE, PTFE 15% glass reinforced, GRAFOIL®
- Plunger extension: Standard – 0" or 2"

Size Range: Inlet 3/4" male; Outlet 1/2" female

Connections: NPT, BSPT inlet and outlet



SAPAG

Advanced isolation valves for the power industry such as safety valves utilized in power and process industries; gate, globe, and check valves; and high pressure isolation valves utilized in steam and high temperature water process for power generation. Products suitable for nuclear power plants are also available, as well as industrial butterfly, ball and check valves for the general processing, building, services, water and waste water industries.

Isolation Valves

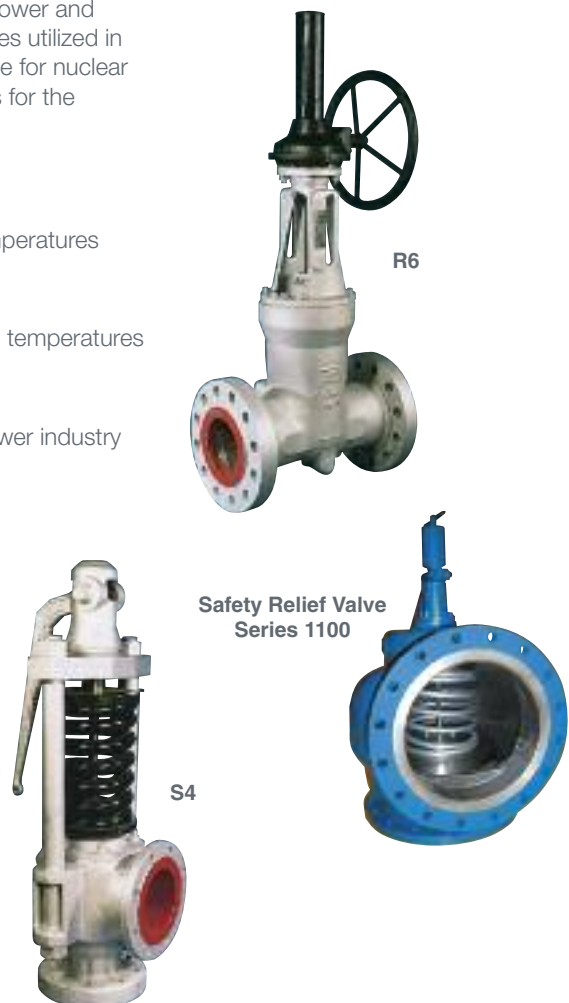
- High Pressure Gate Valves:
Pressure seal gate valve designs, suitable for the arduous services and high temperatures encountered in power industry applications.
- High Pressure Globe Valves:
Pressure seal, Y-pattern globe valves, suitable for the arduous services and high temperatures encountered in power industry applications.
- High Pressure Check Valves:
Tilting disc and swing type check valves for the prevention of flow reversal in power industry applications.

Safety Valves

- Process Safety Valves.
- Thermal Expansion Safety Valves.
- Steam Safety Valves:
Series 1100 – a soft sealed atmospheric safety valve with large flow capacity and soft seat tightness for steam condenser and turbine applications.
- Changeover Valves.

Industrial Valves

- Resilient Seated Butterfly Valves.
- High Performance Butterfly Valves.
- Ball Valves.
- Check Valves.





Style 115



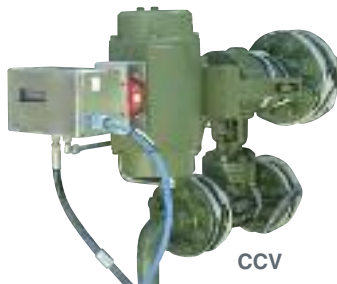
Style 312

Turbine By-pass Valves and Steam Conditioning Valves

Incorporates the use of advanced steam atomization nozzles, delivering outstanding water evaporation. Steam jacketing concept eliminates concerns over thermal shock. Multiple cage set-up controls pressure reduction, noise and delivers tight shutoff.

Available with integral and downstream steam atomized water injection designs, which offer:

- Low Noise.
- Precise Temperature Control.
- No Thermal Shock.



CCV



ICV



TW165

Vonk specialty valves are for applications in the oil and gas industry, gas lift, water injection, depressurization flow lines, glycol units, etc. The rotating disk, choke and control valves are for use under extreme operating conditions involving abrasive contaminated fluids and areas of high-pressure gradients.

Rotating Disk, Choke and Control Valves

- Suitable for contaminated fluids.
- Resistance against high pressure drops.
- High seat tightness.
- Guaranteed fixed C_v value.
- High cavitation/flashing resistance.
- Exhibits low noise.
- Easy maintenance design.
- Low maintenance costs.
- Low life cycle costs.
- Operation by hand, pneumatic, hydraulic or electric actuator.

Specialty Valves



TempLow Series 4300 and TempLow HT

For precise and economical control of steam temperature, automatically introduces cooling water into steam flow in response to a pneumatic or electric control signal. Now available up to 1100°F.

Pressure Rating: ASME Class 150, 300, 600, 900, 1500, 2500

Flange Standard: 3" pipe flange (Standard TempLow)
4" pipe flange (TempLow HT)
1" water flange (ASME Class 150 to 1500)
1 1/2" water flange (ASME Class 2500)

5400 Turbo Cascade Control Valve

- Turbo cascade, minimum recirculation control valve.
- Incorporates three separate functions of positive fluid shutoff, regulation, and pressure letdown.
- Designed and constructed to accept pressure drops of the highest magnitude.
- Assured disc-seat alignment through above and below seat guiding element.

Size Range: 1" to 6"

Pressure Rating: ASME Class 900, 1500, 2500

End Standard: Socket weld or butt weld



4300



5400

7100



7100 ARC Valve

Provides the most economical and reliable system to protect pumps from the dangers of low and/or reverse flow; combines the functions of a check valve, flow sensing device, minimum flow control and pressure letdown into a single valve.

- Size Range:** 3" to 8"
- Pressure Rating:** ASME Class 900 and 1500
- Flange Standard:** ASME Class 900 and 1500

9100 ARC Valve

Recirculates only the flow required to assure a minimum flow through the pump at all times, thereby eliminating the need to over size the pump and prime mover.

- Size Range:** 1" to 12"
- Pressure Rating:** ASME Class 600
- Flange Standard:** ASME Class 600

9100



9200 ARC Valve

Provides recirculation flow to the suction source of the pump, assuring a minimum flow for stable pump operation.

- Size Range:** 2" to 14"
- Pressure Rating:** ASME Class 150 and 300
- Flange Standard:** ASME Class 150 and 300

9200



9300 ARC Valve

For low energy, centrifugal pumps; only three connections; requires no external power source.

- Size Range:** 1" to 4"
- Pressure Rating:** P/T rating for Class 150 or Class 300 for CFBM material, whichever is lower
- Flange Standard:** ASME Class 150 and 300

9300



Steam Traps

YARWAY

Yarway Unibody Traps

With integral strainer and blow-off.

- Mechanical.
- Thermostatic.
- Thermodynamic.

Size Range: 3/8" to 1"

End Standard: Threaded or socket weld



Yarway Steam Traps

Provides efficient discharge of condensate; approaching zero steam loss. Thermodynamic, thermostatic and mechanical traps available. In-line repairable, integral strainers and blow down valves available. Drip trace and process traps handling 375,000 lb/hr capacity.

Pressure Rating: up to 4500 psig



Universal Steam Trap, 711 UC and 721 UC

The existing "All Position" connector is left in-line, and the 701-F2 UniBody Plus Adapter is permanently bolted to it. Standard Yarway capsules are then installed in the 701-F2 UniBody Plus Adapter. The 701-F2 series traps are designed to retrofit Armstrong, Sarco and TLV traps utilizing "All Position" connectors.

To renew the trap, merely remove the capsule from the adapter body, and install a new capsule of the same type – or a different type if the requirements of the application have changed. Trap renewal does not require removal of the two flange bolts.

Size Range: 1/2" to 1" (with or without blow-off connection)



Electric Actuators

KEYSTONE

The Keystone EPI₂ series is the most innovative all-in-one actuator solution for the automation of quarter-turn valves and dampers. With a huge number of standard features included in a small, compact design, this new series of electric actuators greatly simplifies valve, actuator and control system integration. Available with both weatherproof and explosion proof environmental ratings allows for a wide range of applications in most plant environments. The unique epicyclical gear train eliminates the need for mechanical/electrical brakes and handwheel clutch mechanisms. The EPI₂ direct mounts to most Tyco-manufactured valves eliminating the need for expensive mounting brackets. The EPI₂ can be tailored to fit customer requirements with the addition of options such as servo controls, feedback modules, network cards and local pushbutton station. This flexibility gives customers the ability to meet many of their quarter-turn electric actuator needs with a single actuator line.

Torque Range: 600 to 17,700 lb.in.

Universal Voltage Supply: 24 to 240 Volt, AC or DC

Environmental Rating:

Standard Weatherproof: NEMA 4/4X/6 (IP66/68) + CSA 139 (CUS) Optional – UL 873

Hazardous Environments: FM/CSA Approved for NEC 500 (Class I, Div. 2) and NEC 505 (Class I, Zone 1 and 2) + NEMA 4/4X/6 (IP66/68)



EPI₂

Electric Actuators

BIFFI



- ICON multi-turn electric actuator offers non-intrusive calibration via the local pushbuttons or a digital bus system or a hand held device.
- Standard local controls with three-position selector switch, open-stop-close pushbuttons and three LED indicator lamps.
- Two back-lit LED displays, one for position indication, the other for text messages
- Self-diagnostics via an array of sensors. Simplifies field troubleshooting.
- Other standard features include a cycle timer, monitor relay, phase protection/correction, data logger and ESD relay.
- 40 digital I/O (inputs/outputs) for control, diagnostics, and status.

Output Torque: Top mount, multi-turn applications – up to 1,062 lb.ft.
Side mount, multi-turn applications with auxiliary gear – up to 42,000 lb.ft.
Quarter-turn, side mount – 10,000 up to 4.4 million lb.in.

Pneumatic Actuators

BIFFI



ALGA/ALGAS

The Biffi pneumatic actuator utilizes a scotch yoke design that generates high break torque needed for the actuation of many quarter-turn valves. The Biffi actuator can be provided with a symmetric yoke or canted yoke design. The product line has low hysteresis and high response for enhanced modulating services.

- Six bearings provide reliability, smooth operation and extended service life.
- Guide bar supports the transverse forces and ensures proper support of the piston rod. Hard chrome plating on guide bar provides corrosion resistance and minimal friction loads.
- Electroless nickel-plated cylinder bore provides maximum corrosion resistance and reliability.

Supply Pressure: to 150 psig

Output Torques: up to 2,655,300 lb.in. (higher values with special versions)

KEYSTONE



Series MRP, Direct Mount

- Compact rack and pinion design delivers maximum output torques in a small compact package.
- Full bearing support on every moving part for long life.
- Unique spring design allows for easy adjustment in the field for different supply pressures.
- Hard anodized epoxy coated body for higher level of corrosion resistance.
- Direct mounting to Keystone butterfly valves.

Supply Pressure: 40 to 120 psig

Output Torques: Double Acting – to 27,624 lb.in.
Spring Return – to 10,155 lb.in.

Pneumatic Actuators

KEYSTONE

Series 79U

- Compact rack and pinion design delivers maximum output torques in a small, compact package.
- Full bearing support on every moving part for long life.
- Encapsulated springs simplify assembly and ensure safety and reliability.
- Hard anodized epoxy coated body for higher level of corrosion resistance.
- Direct mounting to Keystone butterfly valves.



Supply Pressure: 40 to 120 psig

Output Torques: Double acting – to 27,624 lb.in.
Spring return – to 10,155 lb.in.

MORIN

The Morin actuators are constructed of ductile iron housing and end caps, 17-4 stainless steel yoke, with either 316 stainless steel barrels for the Series B or steel barrels with Xylan® coating for the Series C. The Morin Series S actuators are constructed of stainless steel, offering high levels of corrosion protection.

Morin offers both symmetrical and canted yoke designs to allow suiting the output torque profile to the valve for more efficient and economic operation.

- Scotch yoke design using precision bearings eliminates dead band in the yoke mechanism, providing the greatest torque output at the beginning and end of stroke.
- Teflon® piston bearings, bronze piston rod bushings and output shaft bushings of either bronze or Teflon® provide longer life, help reduce maintenance and require no lubrication.
- Choice of canted or symmetrical yoke design puts the torque where it's most needed.
- Bi-directional travel stops provide accurate valve rotation adjustment.



Series B



Series C

Series B and C

Supply Pressure: 40 to 160 psig

Output Torques: Double Acting: up to 1,374,700 lb. in.
Spring Return: up to 583,288 lb. in.

Series S

Supply Pressure: 40 to 160 psig

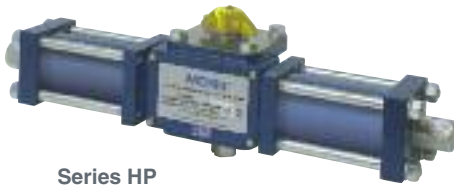
Output Torques: Double acting – to 240,000 lb.in.
Spring return – to 104,125 lb.in.



Series S

Hydraulic Actuators

MORIN



Series HP

Morin scotch yoke actuators have continued to gain market share over the years due to the corrosion resistant material used, along with its very high reliability. The HP takes the same proven technology but adapts it for use with high-pressure hydraulics. Morin also offers a complete line of accessories such as lockouts, ESD packages, overrides, and mounting hardware.

- Canted yoke models for torque seated valves requirements.

Temperature Rating: -22°F to 212°F

Hydraulic Supply Pressure: 1500 psig

Output Torques: up to 240,000 lb.in.

Controls

WESTLOCK
CONTROLS



Pharma II 76P2

Control Monitors

Pharma II 76P2/77P2 Network Control Monitor

- Non-incendive.
- Network connectivity – AS-interface® and DeviceNet™.

The Pharma II compact control monitors for sanitary diaphragm valve monitoring and control incorporate new design features that meet the challenges of modern pharmaceutical and biotech facility applications. Its low profile and tool-free access make it ideal for short bend radius installations. The Pharma II utilizes a patent pending, self-setting sensor assembly, engineered to reduce nuisance alarms and false trips created by changes in valve seat durometer. The sensor assembly contains non-contact, solid state Hall effect sensors to provide premium reliability, even in high cycle applications. The patent-pending, self-setting high definition visual indicator provides a 360° view up to 100 feet away, and the modular design allows the easy addition of our puck-style solenoid valve base. The Pharma II solenoid pilot valve employs lapped-spool technology for proven reliability and minimal maintenance.

Pharma II 99P2/99P2 Conventional Control Monitor

- Non-incendive.
- Weathertight.

The Pharma II conventional control monitor for sanitary diaphragm valve monitoring and control incorporates new design features that meet the challenges of modern pharmaceutical and biotech facility applications. Its low profile and tool-free access make it ideal for short bend radius installations. The Pharma II utilizes a patent pending, self-setting limit switch assembly, engineered to reduce nuisance alarms and false trips created by changes in valve seat durometer. The switch assembly contains hermetically sealed bifurcated switches whose snap-action and self-cleaning functionalities make them ideal for use with high or low current switching of inductive and resistive loads. Zero leakage current means excellent performance in modern, low current I/O systems. The patent-pending, self-setting high definition visual indicator provides a 360° view up to 100 feet away, and the modular design allows the easy addition of our puck-style solenoid valve base. The Pharma II solenoid pilot valve employs lapped-spool technology for proven reliability and minimal maintenance.



Controls

WESTLOCK
CONTROLS

Stainless Steel Control Monitors and Transmitters*

AccuTrak/Quantum 366, Stainless Steel Control Monitor, Explosionproof

Digital EPIC D450, Control Transmitter, Non-incendive

Digital EPIC D470, Control Transmitter, Explosionproof

Touch set cams in all control monitors are hand adjustable, spring-loaded and self-locking providing quick calibration of position sensors. Terminal strips are pre-wired and color coded with generous working space for ease of use and extra wiring points for solenoid integration. All units are standard with multiple conduits for easy field wiring and accessory mounting. All AccuTrak™ and Quantum™ products utilize common bolt pattern for mounting to actuators and can be supplied with mounting hardware as needed. Low copper content aluminum enclosures (0.2% maximum copper content) ensure robust performance in corrosive environments. Control transmitters utilize non-contact Hall effect sensing technology and digital position transmission via 4-20 mA signal. Transmitters are available with both HART® and FOUNDATION Fieldbus™ digital communication protocols.

**AccuTrak/
Quantum 366**



Digital EPIC D470



Digital EPIC D450



Positioners*

ICoT 5200/5300, Intelligent SmartCal Positioners

ICoT 5400, FOUNDATION Fieldbus™ Positioner

K-10 EaziCal, Electro-Pneumatic Positioner

793, Pneumatic Positioners

Westlock Controls offers a variety of solutions for the precise positioning of rotary and linear pneumatic actuators. These positioners are suitable for use with either double acting or spring return actuators. Mounting options include the ModMount®, NAMUR standards (VDI/VDE 3845) or actuator special kits. These units also provide the simplest form of installation and calibration as standard, without the requirement for additional equipment. Positioners are available with both HART® and FOUNDATION Fieldbus™ digital communication protocols.

ICoT 5200



**K-10
EaziCal**



793



Network Solutions*

Intellis Network Solutions, Control Monitors; Network Accessories

Intellis is a family of industrial control field network control monitors which use embedded control systems to automate valves and link field I/O to the host PLC or DCS. Each monitor is assigned a unique address and accepts input/output signals from valve position sensors, solenoids and external alarm and control devices. Hall effect sensors are utilized for valve position monitoring. Low-power Falcon solenoid valve provides integrated actuation control. Network interface module Pacs allow communication via a protocol of choice. Westlock Intellis network control monitors are available for linear or rotary applications in all area classifications.

**Intellis
Control Monitor**



**Network
Accessories**



* **Stainless Steel, AccuTrak, Quantum, Intellis Network Solutions and Positioners** - please consult the factory for the availability of global certifications such as ATEX, IEC, GOST, CSA and InMetro for specific configurations in these product lines, as approvals may vary.

Digital EPIC Position and Control Transmitters

D410/D420, Position Transmitters, Explosionproof

D430/D431/D450/D451, Control Transmitters, Non-incendive

D460/D470, Control Transmitters, Explosionproof

The EPIC Position Transmitter is a “smart” device with microprocessor-based intelligence providing both 4-20 mA signal for position and digital communications via the HART® and FOUNDATION Fieldbus protocols. The Emergency Shut Down/Partial Stroke Testing (ESD/PST) option provides for a discrete output via the Safety Information System (SIS) to control an ESD solenoid with integrated partial stroke test functionality; PST time, configurable PST stroke duration, time/date stamp of test and PST stroke timeout alarm. PST tests can be initiated via HART®, external trigger zones or internal push button. Unlike conventional position transmitters, the EPIC senses valve position without the need for linkages, levers, or rotary and linear seals. Position sensing is performed by non-contacting means via the use of an integrated Hall Effect sensor and magnet assembly.

Quantum Rotary Control Monitors*

764/784/864, Weathertight

765/789/865, Non-incendive

711/722/811, Intrinsically Safe

777/877/360, Explosionproof

Quantum products offer a fully integrated solution for the monitoring and control of process valves. Combining sensors, Falcon low-powered solenoids, junction housings and a local visual position indicator in one compact unit suitable for weatherproof and hazardous location service, Westlock offers an extremely efficient and cost effective method for the monitoring and controlling of rotary and linear valves.

AccuPuck™

APW and APA, Rotary Position Sensors, Non-incendive

The AccuPuck™ family of products provides a low profile compact valve control monitor that is simple to install, commission and operate and mounts directly to standard NAMUR actuators. The AccuPuck utilizes solid state sensors to develop various signal outputs including AS-interface, NAMUR and 3-wire DC PNP. Combined with the optional Westlock BlackHawk NAMUR mount solenoid, the AccuPuck™ provides a highly cost effective method of automating rotary valve packages.

AccuTrak™ Rotary and Linear Position Monitors*

1040/2004 and 9358/9044, Rotary Position Monitors, Weathertight

K-Switch, 9468, Rotary Position Monitor, Non-incendive

5004/5044 and 5050, Rotary Position Monitors, Intrinsically Safe

360, 2007 and 9479, Rotary Position Monitors, Explosionproof

3479 MOD3 and 9881, Linear Position Monitors, Explosionproof

316 Silver Bullet, Linear Position Sensor, All Classes and Groups

The AccuTrak™ family of products offers an integrated solution for the monitoring of process valves. By combining sensors, junction housings and local visual position indication in one compact unit suitable for weatherproof and hazardous location service, Westlock offers an extremely efficient and cost effective method of both monitoring and controlling linear and rotary valves.

* **Stainless Steel, AccuTrak, Quantum, Intellis Network Solutions and Positioners** - please consult the factory for the availability of global certifications such as ATEX, IEC, GOST, CSA and InMetro for specific configurations in these product lines, as approvals may vary.



Valve Services

Getting It Right. It's A Tyco Service Tradition.

At Tyco, superior service is more than just a job – it's a tradition. That's why we provide local, factory-owned services and inventory for The Americas. Our local facilities provide repair services and stock extensive local inventory. That includes Anderson Greenwood, Crosby, Keystone, KTM and many more – all available for same-day shipment. Plus, our broad scope of knowledge and 24/7 accessibility make us uniquely capable of providing superior service – any time you need us.

From repairs to testing, you can count on Tyco Flow Control to get it right.

Response

Delivering factory-trained teams of mobile technicians, 24/7/365. Tyco Flow Control's fleet of fully-stocked service vehicles allows us to work anywhere you need us, from the field to our own state-of-the-art production facility. Pickup and delivery services make it easier than ever to handle your service and repair needs with minimal downtime.

Knowledge

For over 100 years, Tyco Flow Control has delivered true factory service solutions to our partners around the globe. And, we're just getting started. Our state-of-the-art TecSmart™ technician training program and eDge™ Asset Management software allow us to build on our knowledge and leverage lessons learned, making Tyco Flow Control a global leader in valve repair, testing and service.

Additionally, we hold numerous industry stamps and certifications at our service facilities, including: ASME "UV", National Board, "VR", Provincial certifications in Canada and more.

Expertise

Great service doesn't just happen overnight. With skills, knowledge and experience acquired for over a century, Tyco Flow Control can service a vast range of products, including pressure relief valves, regulators, actuators, butterfly valves, control valves, and gate, globe, and check valves.

We also offer on-site valve repair, on-site wellhead valve service and full-valve modification services. From plant surveys to on-site relief valve testing to routine maintenance and repairs, we have the experience and facilities to keep your business up and running.

Availability

We're there for you – wherever "there" is. Our local, ready-to-deliver inventory means you won't lose valuable time waiting for repairs and maintenance. With direct access to a worldwide system of inventory, our global network of expert service technicians and manufacturing facilities ensures that you have instant access to the service you need, when and where you need it.



RESPONSE / KNOWLEDGE / EXPERTISE / AVAILABILITY

Valve Services

Repairs For All Valve Brands



Services

- Pressure Relief Valve Repair
- Line Valve Repair
 - Gate Valve
 - Butterfly Valve
 - Globe Valve
 - Control Valve
 - Check Valve
 - Plug Valve
 - Ball Valve
- Pump Protection Valve Repair
- Tank Vent Repair
- In-line Valve Testing and Repair - Section I and Section VIII applications
- 24/7 Repair and Field Service Support
- Mobile Units
- Valve and Inventory Management
- Training
- Steam Trap Surveys/Repairs
- Actuation and Control Repair/Calibration
- Wellhead Valve Service
- Valve Modification Services

Industries Served

- Brewery
- Chemical
- Commercial Construction
- Food and Beverage
- HVAC
- Iron and Steel
- Marine Gas Processing
- Mining
- Offshore
- Oil and Gas Pipeline
- Oil and Gas Production
- Petrochemical
- Plastics
- Pharmaceutical
- Power
- Pulp and Paper
- Refining
- Water and Waste Water

eDge™

- Simplifies the task of tracking valves.
- Helps you efficiently plan for future maintenance outages.
- Live internet access.
- Tracks your valves through the repair process.
- Stores images/pictures so customer can see damaged valve parts firsthand.
- Stores specific customer notes or comments.
- Permanent document storage.



Service locations available across the Americas



Tyco Flow Control - Americas

With sales, service and distribution operations in strategic locations, Tyco Flow Control is your single source for innovative flow control solutions.



VALVES / AUTOMATION / CONTROLS / SERVICES

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