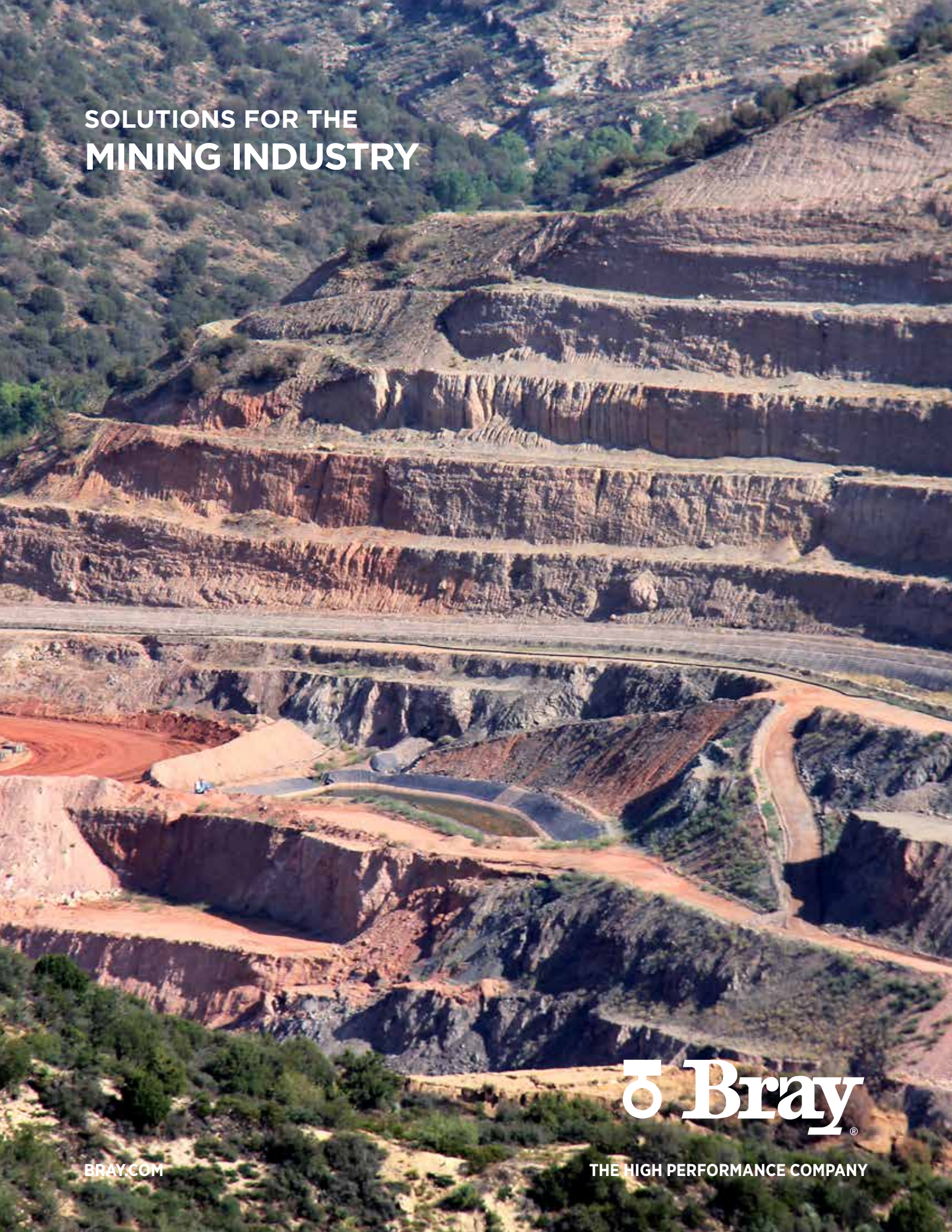


SOLUTIONS FOR THE MINING INDUSTRY

Bray®

BRAY.COM

THE HIGH PERFORMANCE COMPANY

At Bray our business is helping our customers with their flow control requirements. Our modular product line offers the best compatibility, economy and quality performance in the flow control industry.

Through years of field application experience, research and development, Bray has designed products that meet the stringent requirements of today's flow control industry. We have earned a reputation for excellence by creating products of superior value and quality, providing personalized customer service and emphasizing on-time deliveries. Our success has always been the direct result of our fully integrated range of valve, actuator and control products. Rugged and reliable, our products are engineered to provide years of trouble free service.

Bray manufacturing facilities are certified to ISO 9001 quality standards, assuring product quality, precision manufacturing and internal process integrity.

Bray is committed to customer support. Our extensively trained staff is knowledgeable in all aspects of Bray's products and their applications and provide personal attention to every customer. To serve you locally, each region maintains a factory certified sales and service network for all Bray International products.

Bray recognizes that "our customers make us successful" and they have a choice of many manufacturers when selecting valves, actuators and accessories for their applications. Since many manufacturers have access to the same materials of construction for these products, Bray believes that a customer's purchase decision is heavily influenced by the following key factors:

- Trust in the Manufacturer
- Confidence in the Quality Assurance and Integrity of the Manufacturer
- Proven Industry Experience
- Features and Benefits of the Product
- Delivery
- Customer Service
- Cost of Ownership

Tough mining services require well built, robust valves for long service life.

Bray valve designs are field proven in tough mine applications around the world. Bray is proud to supply the right valve that performs in mine service applications helping achieve operational efficiencies with a lower cost of ownership.

With valve installations in copper, gold and alloy mineral mines worldwide, Bray is fast becoming an industry leader for the following reasons:

- Improved operations performance due to reliability.
- Longer service life with less maintenance avoiding costly downtime.
- Proven safe designs protecting mine personnel.

SLURRY TRANSPORTATION SOLUTIONS

- Bray Series 762, 765 767, and 768 Slurry Knife Gate Valves
- SlurryTuff Maxi-Check Isolation Ball Check Valve
- SlurryTuff Maxi-Check Ball Check Valve
- SlurryTuff EZI-VAC Air Release Valve
- SlurryTuff Penta-Wedge Slurry Gate Valve

SLURRY HANDLING SOLUTIONS

- Bray Series 762, 765 and 768 Slurry Knife Gate Valves
- SlurryTuff TISO Check Changeover Ball Check Valve
- SlurryTuff Penta-Wedge Slurry Wedge Gate Valve
- Bray Series 39L Slurry Control Valve w/Ceramic Liner and Trim
- Flow-Tek Resolute Square Ball Valve

PROCESS WATER AND WASTEWATER SOLUTIONS

- Bray Series 30 and 31 with FKM Fluoropolymer Elastomer Seat
- Bray Series 940 Unidirectional Knife Gate Valve
- Bray Large Diameter Resilient Seated Butterfly Valves 24″ to 120″ Diameter

MINERAL PROCESS AND EXTRACTION SOLUTIONS

Flotation Cell Level Control

- Dart Valve
- Bray Series 39L

Leaching Process Valves (Strong Acid)

- Bray/McCannalok High Performance Butterfly Valve
- Flow-Tek F-Series Ball Valve

Weak Acid Valves

- Bray Series 22 and 23 Butterfly Valve
- Amresist Acris Butterfly Valves
- Amresist Acris Lined Ball Valves

Autoclave Valves (HPAL, POX)

- Flow-Tek M1 Severe Service Metal-Seated Ball Valve
- Bray 762 and 768 Slurry Knife Gate Valve

Hydromet Pump Isolation

- Bray/Rite High Performance Swing Check Valves

BRAY SERIES 762 BIDIRECTIONAL SLURRY VALVES

The Bray Series 762 is a bidirectional heavy duty slurry valve, designed for demanding slurry applications. Twin elastomer seats and push-through gate design facilitate self-cleaning and prevent media build up.

The durable ductile iron body is offered in a two-piece bolted flange style. When fully open, the valve is full bore,offering no resistance to line media.

BRAY SERIES 768 BIDIRECTIONAL SLURRY VALVE

The Bray Series 768 is a bidirectional slurry valve, designed for demanding slurry applications. Twin elastomer seats and push-through gate design facilitate self-cleaning and prevent media build up.

The durable ductile iron body is offered in a compact wafer style. When fully open, the valve bore offers no resistance to line media.

Designed for easy, quick conversion between manual and pneumatic actuation. Featuring a lubricant injection port for continuous, smooth operation with minimal maintenance.

BRAY SERIES 765 BIDIRECTIONAL SLURRY VALVE (LIGHT DUTY) 6.2 BAR

The Bray Series 765 is a bidirectional slurry valve, designed for demanding slurry applications. Twin elastomer seats and push-through gate design facilitate self-cleaning and prevent media build up.

The durable ductile iron body is offered in a compact wafer style. When fully open, the valve bore offers no resistance to line media.

Designed for easy, quick conversion between manual and pneumatic actuation. Featuring a lubricant injection port for continuous, smooth operation with minimal maintenance.

BRAY SERIES 767 BIDIRECTIONAL HIGH PRESSURE SLURRY VALVE

The Bray Series 767 is a bidirectional high pressure slurry valve, designed for demanding high pressure slurry applications. Twin elastomer seats and push-through gate design facilitate self-cleaning and prevent media build up.

The durable ductile iron body is offered in a two-piece bolted flanged style. When fully open, the valve bore, offers no resistance to line media.

BRAY SERIES 940 UNIDIRECTIONAL KNIFE GATE VALVE

Engineered for general purpose on/off service and isolation of clean, dirty, corrosive, abrasive, viscous and high temperature media.

- Topworks designed for easy, quick conversion between manual and pneumatic actuation. Manual valves include a lubricant injection port for continuous, smooth operation with minimal maintenance.
- Clevis design and horizontal bolting stabilizes gate ensuring proper alignment.
- Standard multi-layer square packing provides exceptional gland sealing.
- Optional energized quad seal packing for additional leak prevention.
- Standard integral metal seat and optional replaceable zero leakage resilient seats.
- Gate design ensures consistent alignment throughout the length of the stroke.
- Unique body design with no dead pockets enables self-draining of valve.

SLURRYTUFF PENTA-WEDGE SLURRY GATE VALVE

The PENTA-WEDGE circular gate is mounted and fixed on a wedge assembly which is suspended on the end of the spindle. There is no contact with the body when it is open, hence there is no locking up. The PENTA-WEDGE slurry valve is designed specifically for slurries, ash disposal, abrasive media and any application where heavy scale build-up is prominent. As the valve opens it scrapes the face of the gate which is Urethane coated and through this action any scale build up is removed.

The discharge section of the body has a cut-out in the lower area and during closure the flow is directed into this section causing a flushing action to remove any deposits. This prevents the gate from fouling on build up.

The PENTA-WEDGE Slurry Gate Valve is rated to a maximum CWP of 150 bar (ANSI class 900) and is suited to applications in mining, mineral processing, power generation, pit dewatering as well as pulp and paper.

SLURRYTUFF MAXI-CHECK ISOLATION BALL CHECK VALVE

The SLURRYTUFF™ MAXI-Check I dual function ball check/isolation valves are specifically designed for high wear applications such as slurry, ash disposal and mine dewatering. The large port design prevents clogging while the Hi-Wear seat offers a large sealing area. The valve is normally located on pump discharge. In a static situation the ball is held in the seat by back pressure.

Applications up to 35 bar use a urethane coated ball, for abrasion resistance.

High pressure applications (usually dewatering) use a hollow ball manufactured from stainless steel or silica bronze to withstand the mechanical forces. The robust construction ensures years of continuous and reliable use.

SLURRYTUFF EZI-VAC AIR RELEASE VALVE

EZI-VAC valves are designed for many applications, including slurry and water. The large port design prevents clogging while the Hi-Wear seat and float design offers a large sealing area.

In the case of column separation, where large volumes of air should be introduced to the system to prevent water hammer, the floats respond virtually instantaneously. These valves are constructed as full bore with high discharge and intake capabilities.

An anti-surge float option is available to limit discharge rates to reduced differential pressure. The EZI-VAC Triple Action (EVTA) internal float design allows venting under pressure. EZI-VAC Valves are long lasting and maintenance free.

SLURRYTUFF MAXI-CHECK BALL CHECK VALVE

The MAXI-Check L is a soft seated ball check valve for low abrasion applications.

The weight of the ball compared to the flap of an equivalent swing check valve plus the flow around the ball means that there is considerably lower pressure loss through the valve.

Such savings in pressure drop are reflected in measurable annual power savings, particularly in 24 x 7 pipeline pumping scenarios. The large port design prevents clogging while the urethane coated ball is free to move and rotate with the media as it flows through the valve. This continuous movement prevents scale build up on the ball and within the ball bonnet, which can be inspected through the bonnet blanking flange. The seat is integral to the one piece body.

The valves are fabricated which allows flexibility of manufacturing to suit clients requirements.

SLURRYTUFF TISO CHECK CHANGEOVER BALL CHECK VALVE

The SLURRYTUFF™ range includes the TISO Valve - Twin Inlet-Single Outlet. This valve is a 'Tech-Taylor™' style ball check valve used to isolate pumps mounted in parallel.

TISO style valves are popular in mineral processing cyclone circuits. Standby pumps are often used in critical areas of processing plant. It is common to have two pumps discharge into a common line. Without the use of the TISO valve, this would require an isolation valve on each pump discharge and a 'Y' fitting.

The body of the TISO valve replaces the 'Y' fitting and its automatic ball action replaces the shut-off valves. The TISO valve performs these functions automatically, without any external power requirement. The TISO valve is designed for the maximum abrasion resistance making it a trouble-free addition to the piping system.

SLURRYTUFF MAXI-DART VALVE

The MAXI-DART Valve is a full bore control valve with an anti-clogging plug design for either over- or under-flow depending on application. Actuation options are linear pneumatic with fail close/open as required, hydraulic or electric; all with 4-20mA control/feedback CCT. For external design a hand wheel option is available. All valves are rubber lined for abrasion resistance and designed for easy on-site maintenance. The plug, actuator and tower can be removed in line as a single assembly and the seat can be replaced on site. Spindle gland box uses off-the-shelf packing for ease of maintenance. Extended body design allows for a longer stroke which provides more accurate level and flow control. Pressure up to 16 bar depending on flow direction and actuation. Size range from 4" to 24"

- Flotation cell level control
- Distribution box level control
- Sump tank shut-off (external design)
- Chemical dosing

BRAY/RITE CHECK VALVES

Rite's Bray/Rite wafer combination swing check valves are flow–activated and Rite Sized. Bray/Rite inlet ports and disc have been shape optimized to achieve a fully open position at low flow rates (3 ft/s on average). Therefore, the Bray/Rite operates exceptionally well in the flow rates typically found in pipelines containing control valves and lines with varying media flows.

- Engineered to accelerate line media through the valve and achieve a virtually unobstructed full opening in low pressure.
- Limited movement of internal parts during operation, reduces wear – enhancing the long service life of a Bray/Rite valve.
- Bray/Rite valves, either resilient or metal seated, offer zero leakage in all pressure classifications

BRAY SERIES 39L SLURRY CONTROL VALVE W/CERAMIC LINER AND TRIM

Features a high performance short body slurry and liquor control valve designed to control in erosive, corrosive and scaling applications.

- Robust construction
- Easy to maintain, fully repairable and replaceable components
- Engineered trim solutions to suit specific applications
- Enhanced reliability through advanced material and coatings technology
- Offset disc profile for optimum control and wear resistance
- Blow-out proof stem

BRAY/MCCANNALOK HIGH PERFORMANCE BUTTERFLY VALVE

Bray's award winning double offset high performance butterfly valve is precision engineered to deliver quality, value and reliability in the most demanding applications.

- Designed for high pressure and high temperature applications.
- Bidirectional zero leakage shutoff rate across full pressure range.
- Designed for dead-end service at full rated pressure.
- Double offset geometry reduces seat wear and extends valve service life.
- Easy field maintenance, seat replacement only requires removing a few bolts.
- Adjustable and field replaceable stem packing.

BRAY SERIES 22/23 PFA LINED BUTTERFLY VALVES

Extensive field research and engineering have developed this design which provides bubble tight shutoff and high Cv values. The Series 22/23 features a stainless steel disc that can be encapsulated in PTFE, PFA, or UHMWPE to fit a wide range of customer applications. The PTFE seat is isostatically molded to provide superior chemical resistance.

- The primary seal is achieved by an interference fit between the extra wide disc hubs and contoured seat.
- The unique seat geometry lowers seating and unseating torque while reducing wear on the contacting parts.
- A resilient seat energizer extends completely around the seat, including the disc hub providing uniform force sufficient for bubble tight shutoff
- The encapsulated disc has 1/8" (3 mm) minimum thickness of virgin PTFE or PFA lined over stainless steel.

AMRESIST ACRIS PFA LINED BUTTERFLY VALVE

Fully PFA lined butterfly valves engineered for bidirectional zero leakage shutoff in demanding corrosive and ultra pure industrial applications provide unsurpassed resistance to corrosion, permeation and microbial contamination for maximum purity and reliability with minimum maintenance.

- Durable, spherically molded PFA liner and matching disc interface to form a tight bidirectional seal.
- Full width 360° energized backup liner provides uniform sealing.
- Acriseal™ live-loaded, stem sealing system self-adjusts to eliminate leak paths and reduce fugitive emissions for long-term, maintenance-free operation.
- Extended PFA liner forms a protective sleeve shielding the stem from corrosive media and eliminating leak paths.
- PFA disc over-molding is mechanically bonded to the base metal for full vacuum capability and the streamlined disc engineered for maximum flow.

BRAY RESILIENT SEATED BUTTERFLY VALVES

Bray's resilient seated butterfly valve line has been an industry leader for over 30 years. Tongue and groove seat design, double-D shaft to disc connection, and Nylon 11 disc coating are all best in class features which provide a long lasting and quality product.

- Engineered disc to maximize flow and minimize resistance providing a high Cv.
- Seat design and internal disc to stem connection isolates the line media from the body and stem.
- Spherically machined and polished disc edge produces bubble tight shutoff, minimum torque, and longer seat life.
- Non-corrosive, heavy duty bushing absorbs actuator side thrust and extend service life.
- Various seat material options to handle general to abrasive slurry service.

FLOW-TEK F15/F30 FLANGED SERIES BALL VALVES

Feature a floating ball design for low torque and increased cycle life. As standard, large size valves feature trunnion-type ball support. These rugged ball valves are ideal for industrial applications.

- Smart Stem features live loaded packing that ensures tight stem packing sealing during changes in environmental conditions and long term wear of the valve.
- Ball support on large sizes elevates the ball to allow for uniform contact with the downstream sealing seat ensuring tight sealing and long service life while preventing premature failure due to uneven wear.
- Grooves in O.D. of seats to safely relieve excess cavity pressure during moments of unplanned high pressure exceeding specifications.
- Cavity fillers reduce entrapment of media in body cavity preventing solidifying media buildup and extending service life.

FLOW-TEK SERIES M1 SEVERE SERVICE METAL SEATED BALL VALVE

Flow-Tek's High Performance Series M1 Severe Service Metal Seated Ball Valves are suitable for the harshest applications. These products are customized as required for specific applications.

Each M1 valve is engineered for the customer's specific application and is backed by a specialized and trained service department.

- Maximum sealing life achieved through widest sealing surfaces and advanced coating technology.
- A large spring washer stabilizes and locks the seat in place. These springs uniformly produce a consistent load around the entire seat ring and maintain a seal by loading the primary seat ring to the valve body.
- Features a highly corrosion resistant super alloy, blowout proof, one-piece design. The stem design meets API 608 & 6D.
- Two coated inner stem bearing rings are used as thrust bearings for rotational movement. Gall resistant coatings are used to maximize bearing life. These rings are flat-lapped for low friction operation.

AMRESIST ACRIS PFA LINED BALL VALVE

Fully Lined Valves Engineered for Corrosive & Ultra Pure Industrial Applications

- Fully PFA lined ball, stem and body offer unsurpassed resistance to corrosion, permeation and microbial contamination for maximum purity and reliability.
- Full port design ensures an unrestricted flow path for high flow rates with minimal pressure drop.
- Rugged, high strength one piece ball and stem prevents blowouts and limits hysteresis for dependable operation.
- Adjustable PTFE chevron packing eliminates leak paths and reduces fugitive emissions.
- Durable, corrosion resistant PTFE seat designed for zero leakage, low torque isolation.
- Metal-to-metal body joints protect the locked-in liner from damage caused by external forces.

SERIES 05 DECLUTCHABLE GEAR OPERATOR

This operator is excellent for the safe handling of spring return actuators. During pneumatic operation, the worm of the gear unit is disengaged. Should the valve require opening or closing in the event of power loss, manual rotation of the declutch lever will provide a camming action and engage the worm to the segmented worm gear, allowing rotation of the valve using the handwheel.

- Heavy duty on/off service
- Self-locking to hold any position
- Field-adjustable travel stops
- Locking kits

SERIES 92/93 PNEUMATIC ACTUATORS

Features rack and pinion with reduced overall size requirements and economic savings. In addition, all Bray accessories are fully modular and directly mount to the actuator – providing flexibility and efficiency at reduced cost

- Completely enclosed and self-contained
- Anodized aluminum bodies with polyester coated end caps as standard.
- Two independently adjustable travel stops
- Integral porting
- Permanently lubricated bearings and guides
- NAMUR accessory compatible

SERIES 70 ELECTRIC ACTUATOR

Features on/off or modulating control and offers easy access to terminal block wiring, cam adjustments and switch installation. Therefore, the time required for field start-up and adjustment is greatly reduced, and maintenance can be performed with assured ease and safety.

- High visibility position indicator
- Manual declutchable handwheel
- Easy access for field wiring and adjustment
- Captive cover bolts
- Self locking output drive assembly
- Travel limit SPDT switches
- Digital interface available
- Optional Seacorr® coating for harsh environments
- Optional modulating control using Servo NXT microprocessor

SERIES 98 SCOTCH-YOKE ACTUATOR

Features a modular design with a wide range of modules to suit the required process application. The heart of the Series 98 is the yoke, available in symmetrically or canted, that converts linear motion into rotational motion.

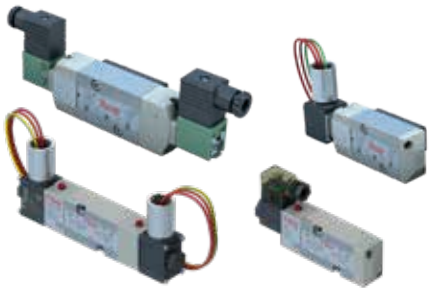
- Compact, modular design for ease of maintenance
- High torque to weight ratio
- Easy field configuration
- Premium epoxy/polyurethane coating
- Optional Seacorr® coating for harsh environments
- Wide range of modules
- Replaceable self lubricating metal backed PTFE bearings for enhanced service life
- Wide range of accessories to mount

SERIES 6A ELECTRO PNEUMATIC POSITIONER

Precision digital control with proven reliability the Series 6A positioners were designed with ease of installation, simple calibration, efficiency and economy in mind. Units for rotary single acting and double acting actuators are offered as standard. Various housing options and intrinsically safe versions are also available.

- Zero bleed design
- On-line adaptive control
- Corrective and preventative maintenance self-diagnostic checks
- LCD monitor
- Auto calibration
- Friction clutch locking device
- Non-contacting position sensor technology
- Integral volume booster

SERIES 63 SOLENOID VALVES



These units can be used with either spring return or double acting actuators where on/off electrical operation is required. Units have ¼" NPT conduit connections and DIN units have cable gland PG9 connectors, also available with ½" NPT conduit adapters.

- Compact, modular design
- Pilot operated
- Single or dual coil
- Low power & Intrinsically safe options
- Hazardous area option available
- Convertible from 3-way (32) or 4-way (52)
- Spool control valve
- Double or single acting
- NEMA 4, 4X IP65

SERIES 5A, 5B AND 5C VALVE STATUS MONITORS

Provide visual and electrical indication of position on any VDI/VDE 3845 compliant quarter-turn rotary actuators. The VSMs can be installed in both perpendicular and parallel orientations without changing brackets. Available as general purpose (Series 5A and 5B) or hazardous locations (Series 5C Explosion Proof, and 5A/B Intrinsically safe).

- Shatter and UV resistant dome. Stainless steel captive cover bolts
- High visibility position indicator with double seal to prevent water ingress.
- Splined cams for easy and accurate adjustment without tools.
- Flexible mounting options with adjustable bracket for NAMUR mounting pads. Easy access terminals.
- Available industrial communication protocols module (CommPro) for AS-i, DeviceNet and Profibus DP.
- Explosion-proof housing or intrinsically safe proximity switches available for hazardous locations.

SERIES 54 PROXIMITY SENSORS

Design offers reliable and durable valve monitoring and control solutions for efficient plant operation. The compact Series 54 directly mounts to VDI/VDE 3845 compliant actuators resulting in a smaller, cost saving actuator profile. Various electrical output options allow integration of the Series 54 into all standard process control environments.

- Two independent sensors for open and close position indication
- Rugged design resistant to shock, vibration, UV and corrosion
- Hermetically sealed protects against ingress of liquids or solids
- Non-contact sensor eliminates the effect of mechanical wear
- Eliminates potential switch welding, arcing and sparking
- Quick and easy installation, maintenance free design
- LED indication for sensor power, switch and solenoid status
- AS-i sensor available for digital network solution for valve actuator interface
- DC 2-wire sensor available for hazardous area process environments, optimized for indoor and outdoor use.

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

VISIT **BRAY.COM** TO LEARN MORE ABOUT BRAY PRODUCTS AND LOCATIONS NEAR YOU.

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