



Rotary Control Valve Systems



Atomac® Valves

Durco® Valves

Durco® Microfinish™ Valves

*Automax® Valve
Automation Systems*



Quality
System
Certificate

High Performance/Low Cost Automation Solutions

FCD DVATB0019-00
(Bulletin V-19r)

A Leading Expert In Control Valve Technology, Flowserve Can Service Your Complete Automation Needs

Offered in a wide choice of standard and proprietary alloy and non-metallic materials, Flowserve's Durco and Atomac rotary valves are synonymous with performance reliability. These valves coupled with the comprehensive selection of Automax actuators, controls and accessories enable Flowserve to be a single-source supplier of integrated control valve systems for the chemical process industries.

Flowserve rotary control valves are a better choice than traditional control valve offerings. Only Flowserve offers dependable process control with bubble-tight shutoff plus unmatched materials expertise and application know-how at a fraction of the cost.

Simply put, Flowserve offers more value for the money.

Durco BX high performance valve with Automax SuperNova actuator and HART™ compatible Logix digital positioner

Broad Product Lines

Rotary Valves

- Durco SleeveLine® (see page 4)
- Durco T-Line® (see page 5)
- Durco Microfinish™ (see page 6)
- Atomac lined (see page 7)
- Big Max® BX/MX high performance (see page 8)
- BTV-2000 lined (see page 9)

Automax Valve Automation Systems

(see pages 10-11)

- SuperNova™, Centura™ and heavy-duty actuators
- UltraSwitch™ limit switches
- Aviator™ and BUSwitch™ rotary position indicators
- Apex™, XL90™ and Logix™ positioners
- SureGrip™ valve couplings
- AutoBrakits™ and accessories
- NAMUR accessories

Smart Technology

SmartSwitch and digital positioner components compatible with fieldbus protocols are available for use with smart instrument systems.



A Wide Choice of Valve Automation Solutions

Flowserve valves, actuators, controls and accessories are available as separate components or as parts of integrated rotary control valve automation packages. Flowserve will design and build to customer specification regardless of component manufacturer.

Technical Consultation

Experienced and knowledgeable technicians provide product training, materials selection guidance and application know-how.

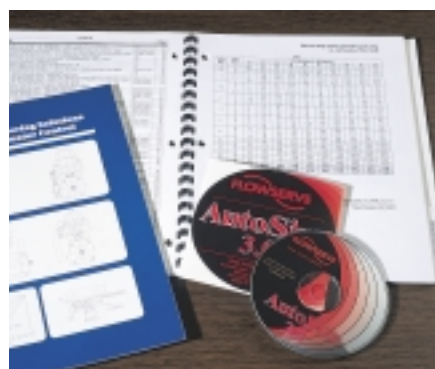
Repair Service

Through its global network of Service/Repair and Invatech operations, Flowserve provides comprehensive repair, maintenance and distribution services for process valves, instrumentation and related process system components.

Support and Service

- **Automated Drawing Service (ADS)**
Comprehensive computer-aided drafting software system creates custom engineering assembly drawings within minutes, 24 hours a day via e-mail. These drawings include valve, actuator and controls along with pertinent technical data.
- **AutoSize™**
Computerized sizing and selection guide for Automax actuation equipment, including engineering calculations, data sheets and global application data.
- **Technical Manuals**
 - Instrument Engineer's Handbook for Durco Quarter-turn Control Valves
 - Engineering Solutions for Actuator Control

To obtain copies of AutoSize and technical manuals fax 1 937 890 5314 or e-mail lit@tricommtg.com.



Durco Sleeveline Valves (Class 150 and 300)

Durco PTFE sleeved G4 and fully PTFE lined T-41/43 plug valves are designed for highly corrosive and difficult chemical services where drop-tight shutoff is an absolute requirement. Unique features include dynamic self-adjusting, self-energized reverse lip, PFA diaphragm stem seal and in-line/thru-line seal adjustability.

Models

- G4 isolation
- G4Z fire sealed
- G4Z-HF alkylation

Specialty Valves

- G4B Marathon™
- TSG4 severe service

Features

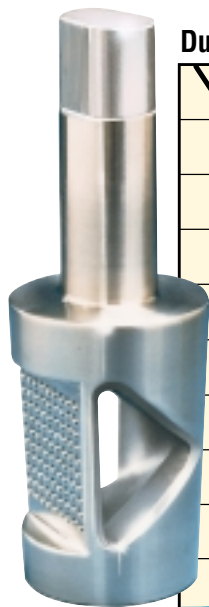
- Double D plug stem accepts most standard actuation equipment and provides positive valve position indication.
- Integral-cast pads permit mounting directly on flanges for solid support.
- Large port openings assure less pressure drop and higher C_v . (See V-24, Durco Sleeveline Bulletin for complete information about G4, G4B, TSG4 and G4Z valves. See V-25, Durco Sleeveline G4Z-HF Alkylation Valve Bulletin for information about refinery service valves.)

EG4 V-Port Control Valves

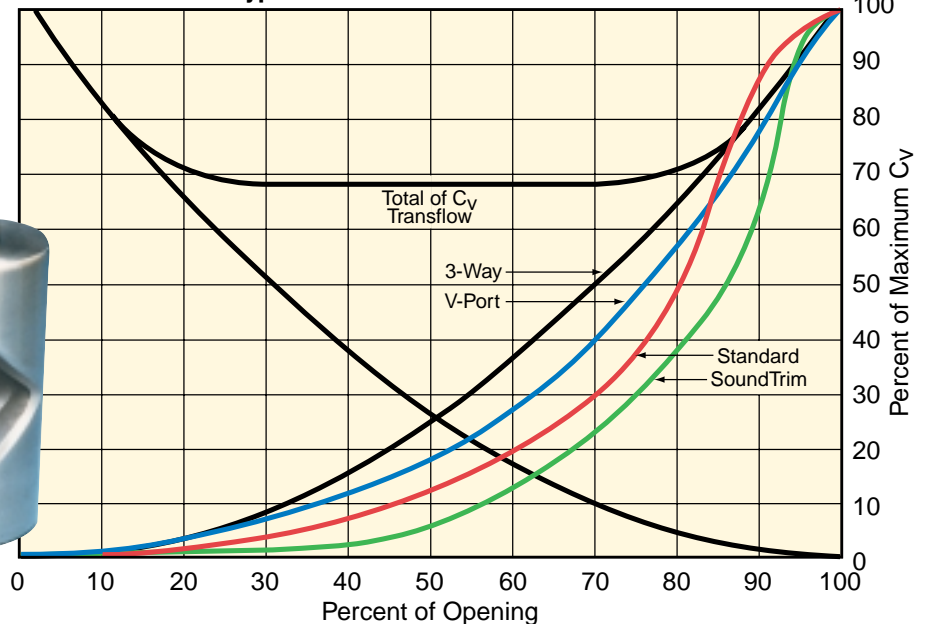
- Sleeveline valves are available in a variety of trim configurations for exact flow control with full open C_v values of 0.9 to 400.0.
- SoundTrim® control valves reduce noise, cavitation and flashing.



The G4B Marathon is intended for reliable performance in high cycle on-off or modulating services. It offers fugitive emission containment equal to expensive toxic service valves.



Durco Sleeveline Typical Flow Characteristics



Durco[®] Mach 1 High Performance Plug Valve, Durco[®] T-Line Valves



Models

- QV1 (Class 150)
- QV3 (Class 300)
- QV6 (Class 600 - derated)
- Fire-sealed option

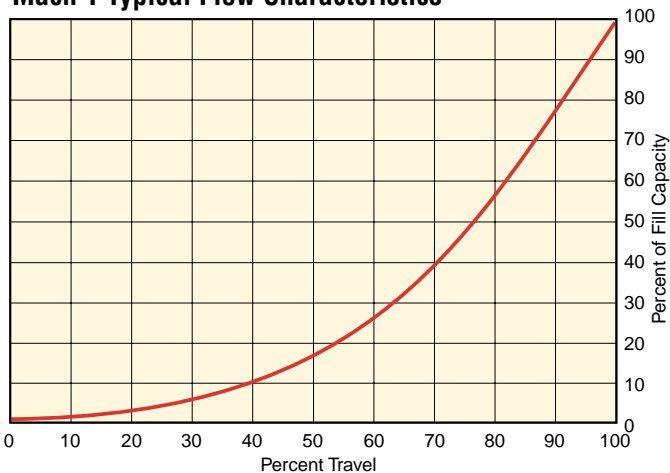
Features

- Lower, constant turning torques comparable to ball valves and significantly lower than other plug valves.
- Easy seat replacement with valve in-line.
- Double D plug stem accepts most standard actuation equipment.
- ISO 5211 mounting pad for easy, low cost actuation.

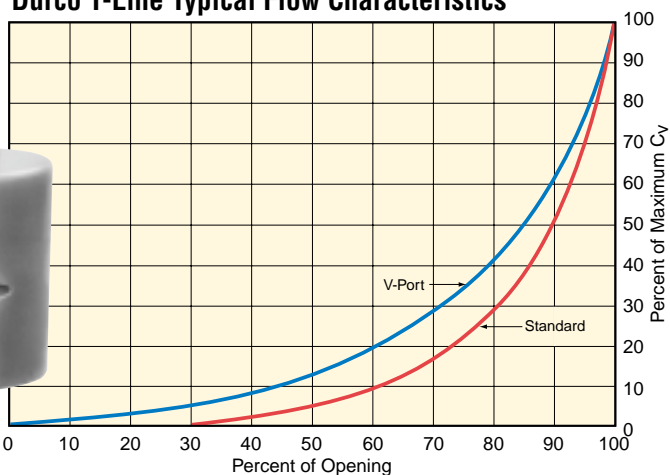


T-Line environmental feature: Mounting pads on the flanges isolate the bonnet from actuator forces.

Mach 1 Typical Flow Characteristics



Durco T-Line Typical Flow Characteristics



Models

- T-41 (Class 150)
- T-43 (Class 300)

Features

T-Line valves have no wetted metal parts. Chemically-resistant TFE liners and fluoropolymer encapsulated plug ensure safe and durable handling of aggressive products without the need to use expensive exotic alloys. (For complete information about T-41/43 valves see VT-17, Durco T-Line Valve Bulletin.)

Typical Applications

- Hydrochloric acid
- Sulfuric acid
- Hot rayon spin bath solution
- Waste acids
- Acid brine

T-Line V-Port Control Valves

T-Line valves are available in a variety of trim configurations for exact flow control with C_v of 1.1 through 66.3.

Refer to the Durco Technical Manual for valve and actuator sizing.

Durco Microfinish Valves

Flowserve offers a choice of ball valves: general chemical service Durco Microfinish alloy valves; and corrosion resistant Atomac fluoropolymer lined valves. Both provide bubble-tight shutoff, no-leak stem seals, the safety assurance of blowout-proof stem seals and, of course, low turning torque for easy, cost-effective actuation.

1000WOG three-piece design features ISO 5211 actuator mounting flange.



Models

- (Class 150 and 300)
- Full port
- Fire sealed
- 1000WOG three-piece design

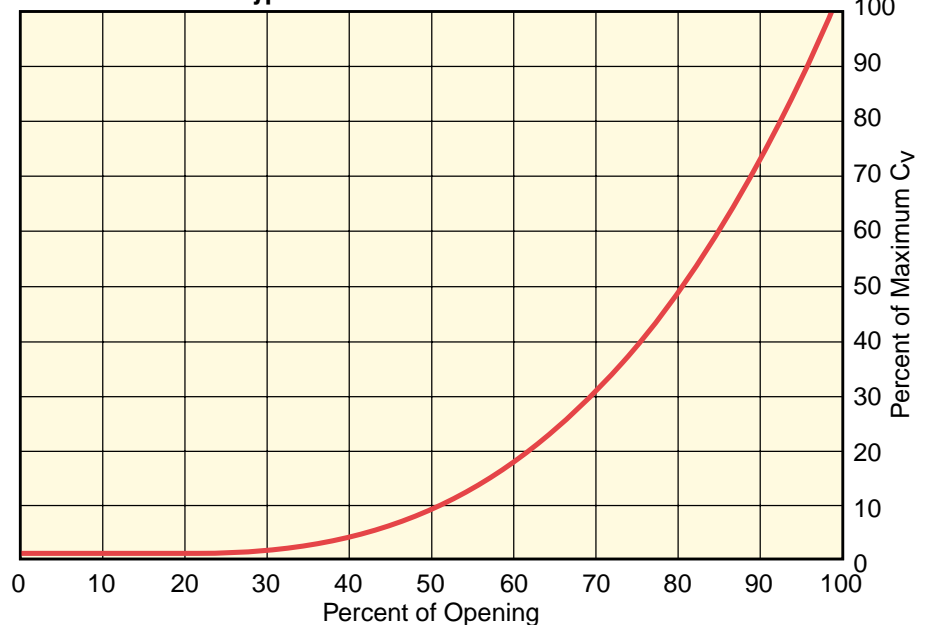
Features

- PTFE cup and cone packing for unsurpassed seal life and cyclability
 - Smooth stem finish to reduce torque and to increase stem seal life
 - Glass filled PTFE thrust washer to aid sealing while reducing torque
 - Full port design for maximum flow rates
 - Double D stem for positive valve position indication and ease of actuation
 - ISO 5211 mounting flange for easy, low cost actuation
- (See VM-60, Durco Microfinish Ball Valves, for complete information.)



Low torque Durco Microfinish valves require less expensive actuation equipment and provide lower operating cost. Test results have shown stem seal integrity without adjustment to 100,000 cycles.

Durco Microfinish Typical Flow Characteristics



Atomac Valves

Models

(Class 150)

- AKH2 full port
- AKH2A ANSI full port
- AKH3 ANSI standard port
- AMP3 3-way
- AKH5 ceramic lined
- AKH6 tank drain

Features

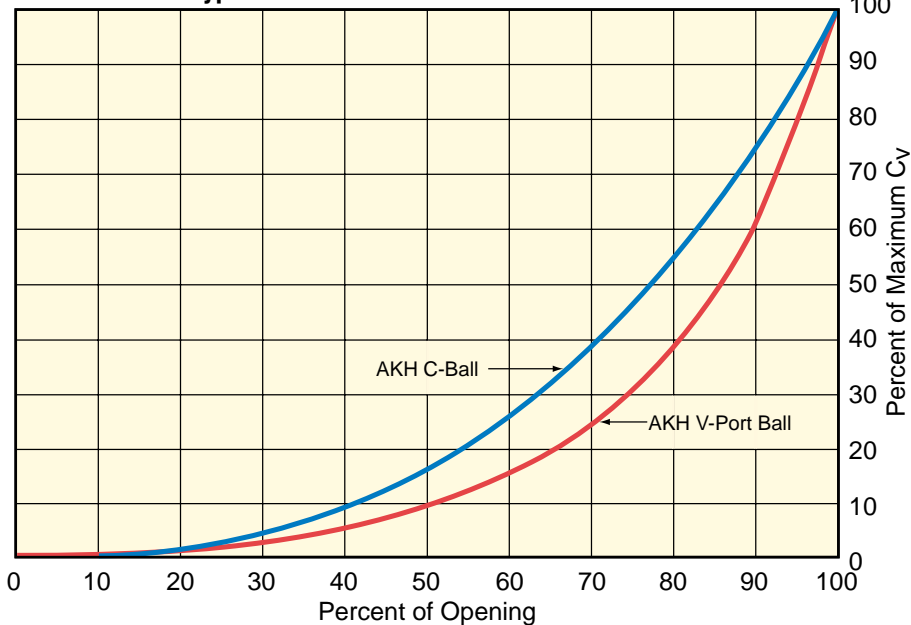
- Low, constant and predictable torque
- Thrust bearing supported stem to eliminate side-loading of packing and subsequent leakage during cycling
- Floating ball seat design for bubble-tight shutoff
- Long-life seats to minimize downtime and maintenance
- ISO 5211 mounting flanges (See VA-10, Atomac Lined Valves, for complete information about these products.)

Characterized Ball Options

- V-port ball control valve is available for throttling services in both fluoropolymer lined and ceramic lined models.
- C-ball eliminates media build-up in ball cavity.



Durco Atomac Typical Flow Characteristics



The process industry's most preferred lined valve, Atomac valves with V-port ball configuration can provide precise modulating control.

Refer to the Durco Technical Manual for valve and actuator sizing.

Durco Big Max Valves

Durco Big Max BX2001 and MX high performance alloy valves and Durco BTV-2000 fully fluoropolymer lined chemical service valves provide reliable bubble-tight shutoff. Both are built for long, continuous, high cycle operation where economical, minimum maintenance valving is essential.

Models

- BX2001 (Class 150)
- MX (Class 300)
- Seat Options
 - Soft seated
 - Fire sealed
 - Apex™ metal seated (Class IV shutoff) for abrasive/dirty services
 - TriFlex™ metal seated (Class VI shutoff) for high temperature services
- Stuffing Box Packing Options
 - Standard single PTFE cup & cone
 - Optional double PTFE cup & cone also with lantern ring or live loaded
 - Triple seal
 - Fire sealed single or double Grafoil® packing set with lantern ring
 - High temperature arrangement

- Low profile disc for increased capacity and better flow control
- Eccentric seating action for longer seat life, tighter shutoff and reduced opening torques
- Energized PFA seat for positive, bidirectional shutoff with long cycle life on low pressure and vacuum, and high ΔP services
- Double D stem and integral mounting pad for easier actuation and positive valve position indication
(See Bulletins V-37, V-38 and V-39 for complete Big Max valve information.)

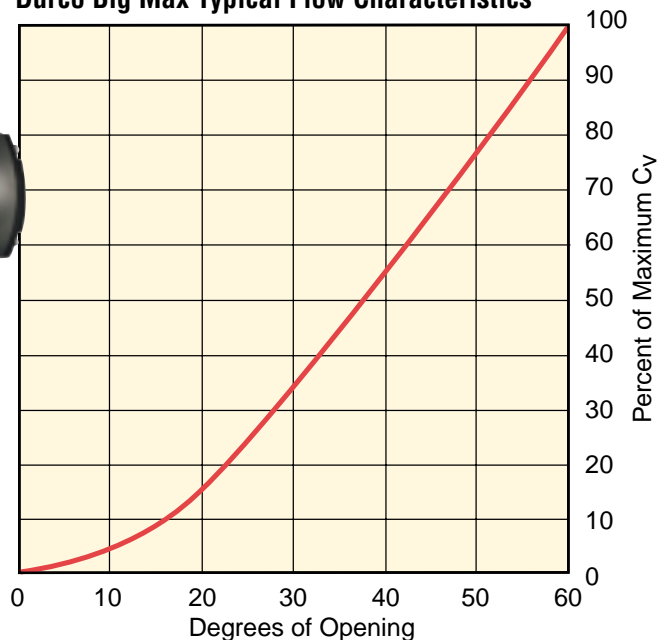
Features

- Precise throttling control of on-off service with lighter weight piping systems and less expensive, energy efficient actuators



Big Max valves are available in wafer or lug body designs with a wide variety of packing options to meet routine as well as the most rigid service requirements.

Durco Big Max Typical Flow Characteristics



© Grafoil is a registered trademark of Union Carbide Corporation.

Durco BTV-2000 Valves

Models

(ANSI Class 150)

- PTFE lined (corrosion resistant)
- UHMWPE lined (erosion resistant)
 - Both available with PFA or UHMWPE encapsulated or metallic discs

Features

- Maintenance free, live loaded, triple seal design to ensure bubble-tight shutoff stem seals
- Unique energized seat design for bubble-tight shutoff line seal
- Unequaled performance in high temperature/high cycle services
- Interchangeable actuator mounting plates for ISO, MSS or special actuators
- Double D stem flats for positive valve position indication and simplified adaptation to automatic operation (See V-20, Durco BTV-2000 Valve Bulletin, for complete information.)

Applications

- General and severe chemical process fluids and slurries
- Pulp & paper processing
- Mining & metal refining
- Pollution abatement
- Solids handling

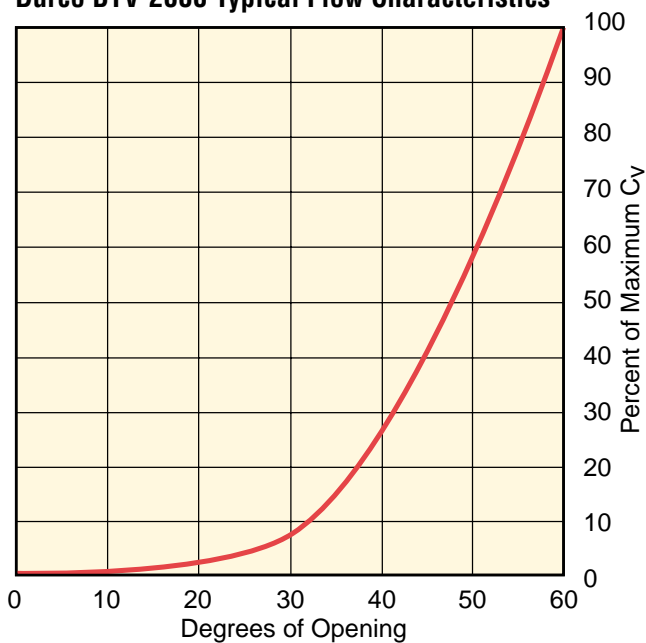


Dynamic live-loaded and triple-sealed shaft seal never needs adjustment.



The Durco BTV-2000 offers low turning torques, high flow rates and excellent control characteristics.

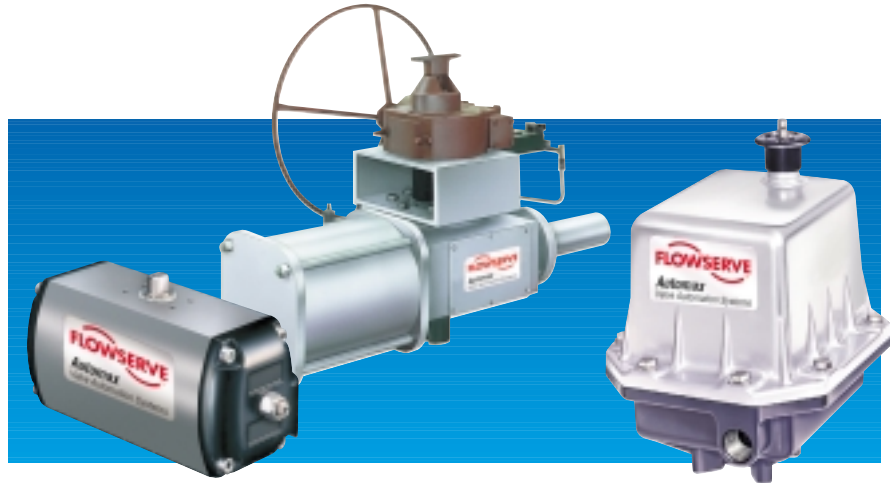
Durco BTV-2000 Typical Flow Characteristics



Refer to the Durco Technical Manual for valve and actuator sizing.

Automax Actuators, Controls and Accessories

Choose from a complete line of Automax Valve Automation Equipment including smart technology for precise proportioning and on-off control of rotary valves.



SuperNova™ Pneumatic Rack & Pinion Actuators

A wide variety of material choices to suit user's application includes hard anodized aluminum, epoxy filled composite and stainless steel. Available in torque ranges from 25 in-lb (3 Nm) to 58,000 in-lb (6554 Nm).

Heavy-Duty Rotary Actuators

Scotch-Yoke heavy-duty actuators provide torques from 3,000 in-lb

(339 Nm) to 500,000 in-lb (56,500 Nm). Designed for maximum performance and cycle life.

Centura® Electric Rotary Actuators

Ideal for precise on-off and modulating control, they are available in metallic and non-metallic housings with torque ranges from 225 in-lbs (25 Nm) to 3,500 in-lbs (396 Nm). Created for both hazardous and non-hazardous locations.



AutoBrakits Mounting Kits

Automax heavy-duty mounting kits are designed to close tolerances to assure consistency and proper alignment for maximum actuator and valve cycle life.

Flow Controls, NAMUR Accessories, Lockouts, Gear Overrides

Control accessories are key in creating a complete system to meet increasingly sophisticated customer needs.



SureGrip™ Valve Couplings

Eliminates deadband between actuators and rotary valves to assure optimal performance on critical control applications. Especially suggested for use with V-ported plug and ball valves and for packages with Logix and XL90 positioners.



UltraSwitch® GL / XL / PL Series Rotary Position Indicators

Provide compact and economical packages for both visual and remote electrical indication of valve position. Available in either die cast aluminum or non-metallic versions with UL and CSA ratings. Housings suitable for NEMA 4, 4X, 7 & 9 applications.

Aviator™ Rotary Position Indicator

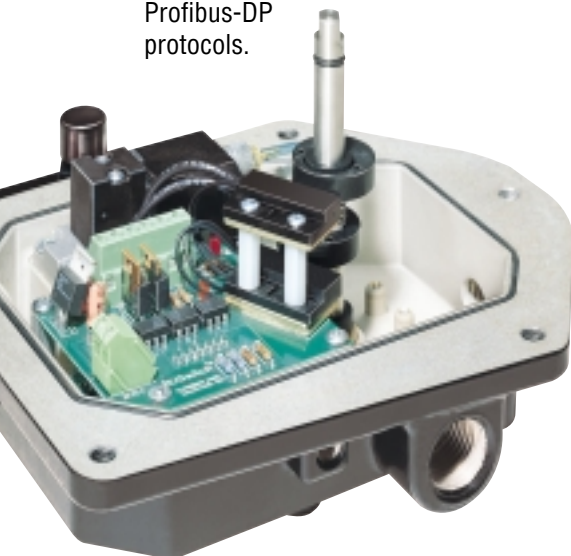
Internal pilot solenoid coil provides a truly integrated package for both visual and electrical position indication as well as air supply control.

APEX™ Modular Positioner

Combines precise valve positioning with advanced features. Available in die cast aluminum and non-metallic versions. Modular manifold base allows pneumatic or electrical control signals. UL, C-UL, GENELEC & SAA.

BUSwitch™ Valve Control and Monitoring System

Digital rotary position indicator. Enables digital control and monitoring of automated on-off valves. Available in FOUNDATION® Fieldbus and Profibus-DP protocols.



XL90™ High Performance Positioner

This analog positioner with two-stage relay provides fast, sensitive response characteristics to meet demanding control objectives. It may be used with pneumatic or electrical control signals. Options include position feedback limit switches, 4-20mA position feedback transmitter, and UltraDome visual position indicator.

Logix™ Digital Positioner

Combines fast 16-bit microprocessor and two-stage electronic relay with HART™ protocol for compatibility with smart instrument systems. Quick-Cal™ function allows automatic, push-button calibration. Proprietary software for positioner communication via computer provides a variety of configurations, diagnostics, custom characterizations and other functions.

Logix™ 500si Digital Positioner

Provides highly accurate positioning and very responsive control of rotary valves and dampers. It combines state-of-the-art piezo valve technology with inner-loop feedback for precise control. The Logix 500si is available with North American or ATEX intrinsically-safe approvals.





Flowserve has the answer to your corrosion resistant, rotary control valve needs.

Clockwise from top right.

Durco® BTV-2000

PTFE or UHMWPE lined chemical service valve

Atomac®

Lined ball valves

- ANSI/ISO, standard and full port
- Specialty valves
- Valve products and accessories

Durco® SleeveLine®

Non-lubricated, PTFE-sleeved plug valves

- G4 Isolation
- G4E – DIN Mounting Pad
- G4 Marathon™
- TSG4 Severe Service

Durco® T-Line®

Non-lubricated, PTFE-lined plug valves

Big Max® Butterfly

High performance valves

Durco® Microfinish™

Alloy ball valves

Automax®

Valve automation systems

- Actuators
- Controls with smart technology
- Accessories

For more information, contact:



Flowserve Corporation
Flow Control Division
1978 Foreman Drive
Cookeville, Tennessee 38501
Phone: 931 432 4021
Fax: 931 432 3105
www.flowserve.com



Or Consult Your Local Stocking Distributor

Flowserve Ahaus GmbH
Von Braun Straße 19a
D-48683 Ahaus
Germany
Phone: +49 2561 686-0
Fax: +49 2561 686-39

Flowserve Pte. Ltd.
12 Tuas Avenue 20
Republic of Singapore 638824
Phone: 65 862 3332
Fax: 65 862 2800

Printed in U.S.A.
March 2004
© Flowserve Corporation