

**CURTISS -
WRIGHT**



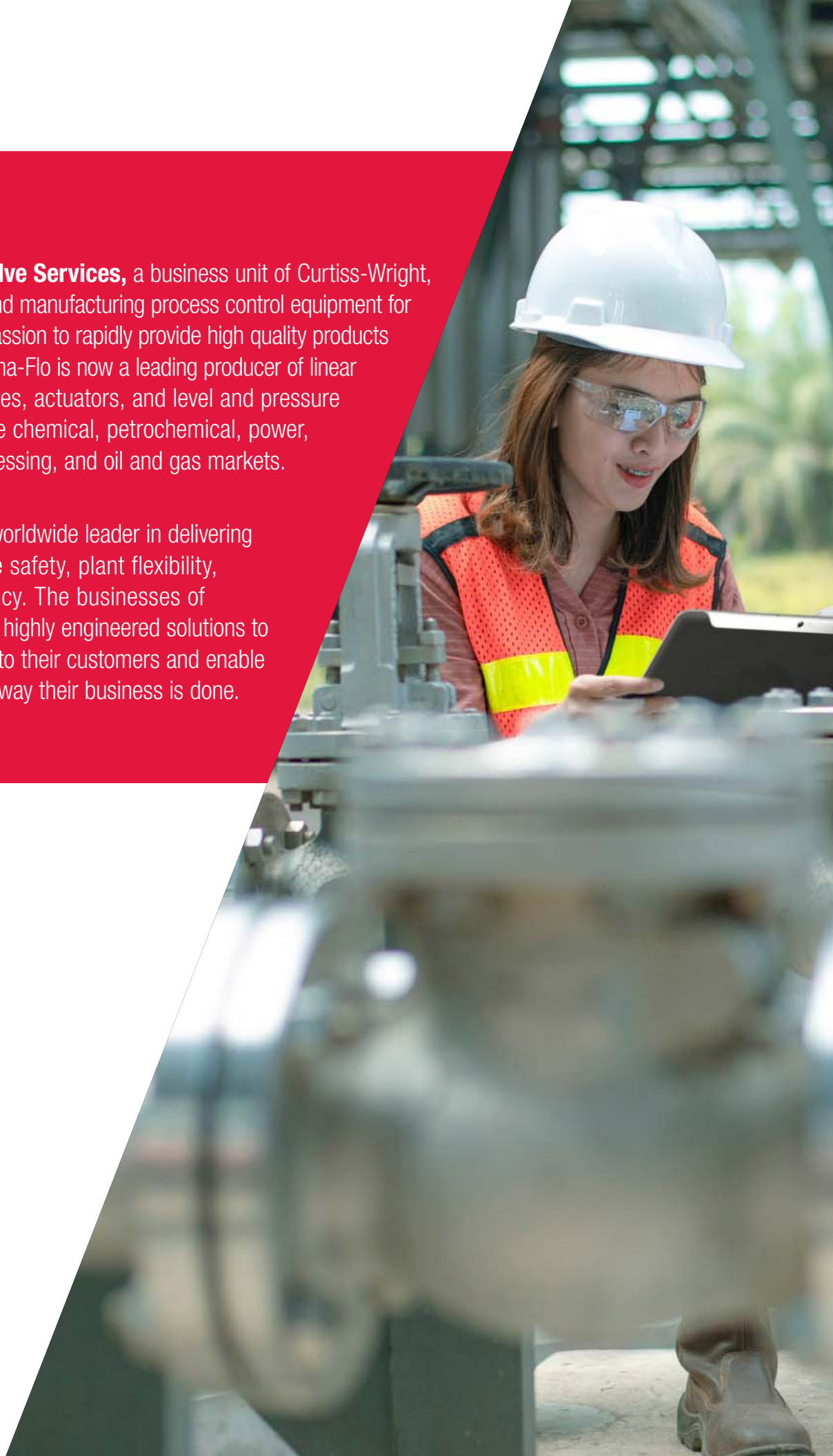
Control Valve Products and Services Overview



Our Company

Dyna-Flo Control Valve Services, a business unit of Curtiss-Wright, has been developing and manufacturing process control equipment for nearly 30 years. Our passion to rapidly provide high quality products and services is why Dyna-Flo is now a leading producer of linear and rotary control valves, actuators, and level and pressure control systems for the chemical, petrochemical, power, general industrial processing, and oil and gas markets.

Curtiss-Wright is a worldwide leader in delivering solutions that improve safety, plant flexibility, reliability, and efficiency. The businesses of Curtiss-Wright pioneer highly engineered solutions to deliver profound value to their customers and enable them to transform the way their business is done.





Our Commitment

Minimize downtime and increase productivity with our safe, high performance products. We design, manufacture, and test a variety of control valves ready to meet a broad range of service capabilities and customer equipment needs.

Responsive

Technical service and support available to assist with your project or application

Reliable

Extensive selection of products for precise control and dependability

Quality

Providing safe products compliant with rigorous industry standards

Speed

Dedicated to quick delivery of valves and parts to our customers to avoid costly downtime

Local Support

Factory trained technicians available for installation and maintenance

Global Presence

Network of representatives strategically located to assist our customers worldwide

The Dyna-Flo Team is Available to Help You.

We provide a spectrum of services including product sizing, selection, custom design and repair.

Product Sizing & Selection

For optimal system performance it is critical to determine the correct product for your application. Our Configurator software helps you select the ideal control valve or actuator.

The Configurator allows you to:

- Size Valves
- Calculate Valve Thrust and Torque
- Develop Dimensional Drawings for Product
- Request special construction options
- Organize and store project data
- Save and share projects between users
- Share product requests with sales representatives

Access the software by visiting:
www.dynaflo.com/configurator

Local Support and Service

We are a global company with local presence. Our factory trained sales representatives are readily available to understand and meet or exceed your needs such as:

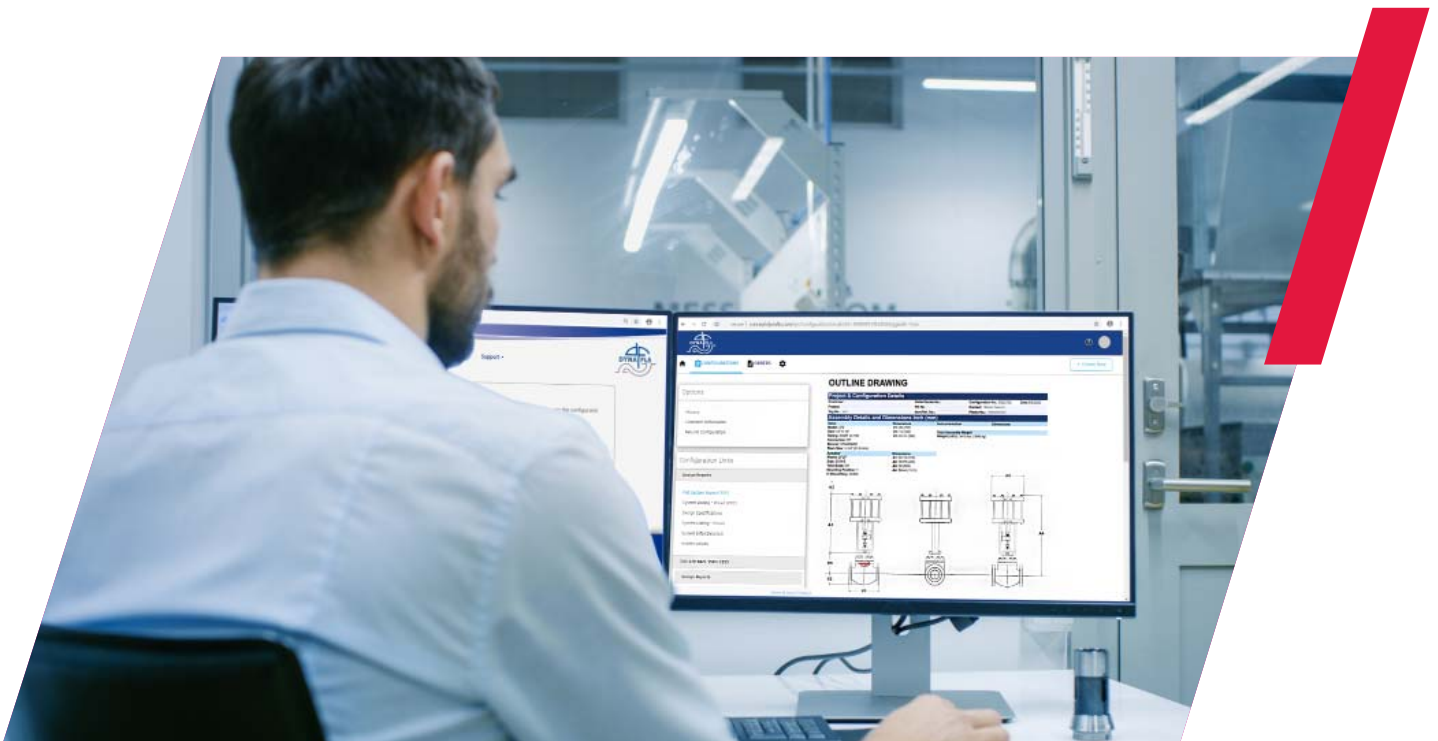
- Determining appropriate sizing
- Identifying products for your application
- Establishing compliance with codes and standards

Maintenance and repair services are available for your facility so you can maintain peak performance during operation. Our qualified team of technicians are committed to providing quick service and repair to reduce downtime and costs for essential equipment.

Find your local representative at:
www.dynaflo.com/distributors

Seminars and Product Training

We offer product seminars to educate our customers on our wide-range of products, their performance and applications. For more information or to schedule a Dyna-Flo Product Seminar, contact your local sales representative.



| Valves | | Linear Sliding Stem | | | | | | Rotary | | Integral Actuator & Linear Sliding Stem | | |
|--------------------------------------|-------------------------------|---------------------|------------|------------|-------------|--------------|-------------|------------|------------|---|-------------|-------------|
| Series | | 360 | 350 | 370 | 390 | 380 | DF2000 | 570 | 590 | DF100 | DF234 | DF270 |
| Body Size Range | | 1 to 8" | 6 to 12" | 12 to 16" | 1 to 8" | 3 & 8" | 1 to 2" | 1 to 16" | 4 to 16" | 1" | 1 to 2" | 1 to 2" |
| Pressure Rating Class ASME B16.34 | | 150 to 600 | 150 to 900 | 150 to 600 | 900 to 1500 | 1500 to 2500 | 150 to 2500 | 150 to 600 | 600 to 900 | 150 to 900 | 150 to 1500 | 150 to 1500 |
| Body Style | Globe | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| | Angle | ✓ | | | ✓ | | ✓ | | | | | |
| | Wafer | | | | | | | ✓ | ✓ | | | |
| | T Body | | | | | | | | | ✓ | | |
| End Connections | Female Internal Thread (FNPT) | ✓ | | | | | ✓ | | | ✓ | ✓ | ✓ |
| | Raised-Face (RF) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Ring Type Joint (RTJ) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| | Butt Weld End (BWE) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| | Socket Weld End (SWE) | ✓ | | | | | | | | | | |
| Trim Options | Low-Noise | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| | Anti-Cavitation | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Material Options | LCC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | WCC | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | |
| | CF8M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| | WC9 | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Shutoff Class | II | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | | |
| | III | ✓ | ✓ | | ✓ | ✓ | | | | | | |
| | IV | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| | VI | ✓ | | | | | | ✓ | ✓ | | | |
| Plug Style | Balanced | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| | Unbalanced | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |

| Actuators | | 360 | 350 | 370 | 390 | 380 | DF2000 | 570 | 590 |
|------------|--|-----|-----|-----|-----|-----|--------|-----|-----|
| Model DFC | | ✓ | ✓ | | ✓ | ✓ | ✓ | | |
| Model DFO | | ✓ | ✓ | | ✓ | ✓ | ✓ | | |
| Model DFLP | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Model DFR | | | | | | | | ✓ | ✓ |
| Model DFRP | | | | | | | | ✓ | ✓ |

Control Valves

Linear Sliding Stem

360 Series Models 360 / 361 / 362 / 363



| | |
|------------------------|--|
| Description | Most versatile, general purpose control valve series used in various demanding applications. |
| Body Size Range | 1" to 8" Nominal Pipe Size (25mm to 200mm Diameter Nominal) |
| Body Styles | Globe • Angle |
| End Connections | RF • RTJ • BWE • SWE • FNPT: 1" to 2" Valves Only |
| Pressure Rating | ASME B16.34 Class 150 to 600 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II to VI |
| Body Materials | LCC • WCC • CF8M • WC9 |
| Features | Cage or top guided Other material options available Metal seating standard Anti-cavitation, low-noise, and reduced port trim options available Live-loaded packing available Cryogenic design available NACE options available |

390 Series Models 390 / 391 / 392



| | |
|------------------------|---|
| Description | High pressure, severe service control valve used in various demanding applications. |
| Body Size Range | 1" to 8x6" Nominal Pipe Size (25mm to 200x150mm Diameter Nominal) |
| Body Styles | Globe • Angle |
| End Connections | RF • RTJ • BWE |
| Pressure Rating | ASME B16.34 Class 900 & 1500 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II to V |
| Body Materials | LCC • WCC • CF8M • WC9 |
| Features | Cage guided, balanced or unbalanced plug design Other material options available Metal seating standard Anti-cavitation, low-noise, and reduced port trim options available Live-loaded packing available NACE options available |

350 Series Models 350 & 351



| | |
|------------------------|--|
| Description | Severe service control valve with larger internal cavities for noise and cavitation control. |
| Body Size Range | 6 to 12" Nominal Pipe Size (150mm to 300mm Diameter Nominal) |
| Body Styles | Globe |
| End Connections | RF • RTJ • BWE |
| Pressure Rating | ASME B16.34 Class 150 to 900 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II to V |
| Body Materials | LCC • WCC • CF8M • WC9 |
| Features | <p>Cage guided</p> <p>Other material options available</p> <p>Metal seating standard</p> <p>Anti-cavitation, low-noise, reduced port, and pilot plug trim options available</p> <p>Live-loaded packing available</p> <p>High temperature options readily available</p> <p>NACE options available</p> |

370 Series Models 370 & 371



| | |
|------------------------|--|
| Description | Larger version of the 360 series, which is our most versatile, general purpose control valve series. |
| Body Size Range | 12" Nominal Pipe Size (300mm Diameter Nominal) valve body with 12", 14", or 16" Flanges |
| Body Styles | Globe |
| End Connections | RF • RTJ • BWE |
| Pressure Rating | ASME B16.34 Class 150 to 600 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class III to V |
| Body Materials | LCC • WCC • CF8M • WC9 |
| Features | <p>Cage guided</p> <p>Other material options available</p> <p>Metal seating standard</p> <p>Anti-cavitation and low-noise trim options available</p> <p>Live-loaded packing available</p> <p>Bolted seat rings</p> <p>NACE options available</p> |

Control Valves

Linear Sliding Stem

380 Series Models 380 / 381 / 382



| | |
|------------------------|---|
| Description | Cage guided control valves designed for high pressure applications. |
| Body Size Range | 3", 4x3", & 8" Nominal Pipe Size (80mm, 100x80mm, & 200mm Diameter Nominal) |
| Body Styles | Globe |
| End Connections | RF • RTJ • BWE |
| Pressure Rating | ASME B16.34 Class 1500 & 2500 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II to V |
| Body Materials | LCC • WCC • CF8M • WC9 |
| Features | <p>Cage guided</p> <p>Other material options available</p> <p>Metal seating standard</p> <p>Anti-cavitation and low-noise trim options available</p> <p>Live-loaded packing available</p> <p>NACE options available</p> |

Model DF2000



| | |
|------------------------|---|
| Description | Heavy duty control valve used in a variety of demanding applications for either throttling or on-off control. |
| Body Size Range | 1" to 2" Nominal Pipe Size (25mm to 50mm Diameter Nominal) |
| Body Styles | Globe • Angle |
| End Connections | FNPT • RF • RTJ |
| Pressure Rating | ASME B16.34 Class 150 to 2500 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class IV & V |
| Body Materials | LCC • CF8M |
| Features | <p>Top guided, unbalanced plug design</p> <p>Metal seating. Hard-faced or Tungsten Carbide available</p> <p>Plug characterized trim with a wide range of port sizes</p> <p>Live-loaded packing available</p> <p>Threaded bonnet and seat ring</p> <p>Standard NACE construction</p> |

570 Series Models 570 / 571 / 573



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|------------------------|---|
| Description | Segmented ball control valves suited for high flow, low pressure drop services which offer larger capacity than globe style valves. |
| Body Size Range | 1" to 16" Nominal Pipe Size (25mm to 400mm Diameter Nominal) |
| Body Style | Wafer • Flanged |
| End Connections | RF |
| Pressure Rating | ASME B16.34 Class 150 to 600 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II, IV, & VI |
| Body Materials | LCC • WCC • CG8M • WC9 |
| Features | <p>Other material options available</p> <p>Metal and soft seats available</p> <p>Live-loaded packing available</p> <p>Splined, square, and keyed shafts are available</p> <p>Throttling and on/off control capabilities</p> <p>Standard NACE construction</p> |

Model 590



| | |
|------------------------|---|
| Description | Full ball control valve suited for high flow, high pressure drop services which offer larger capacity than globe style valve. |
| Body Size Range | 4" to 16" Nominal Pipe Size (100mm to 400mm Diameter Nominal) |
| Body Style | Wafer |
| Pressure Rating | ASME B16.34 Class 600 & 900 |
| Shutoff Class | ANSI/FCI 70.2 and IEC 60534-4 Class II & VI |
| Body Materials | LCC • WCC • CG8M |
| Features | <p>Live Loaded packing standard</p> <p>Splined & keyed shaft connections</p> <p>Positive ball-to-shaft connection</p> <p>Full ANSI shut off available</p> <p>Standard NACE construction</p> |

Control Valves

Integral Actuator & Linear Sliding Stem

DF100 Control Valve



| | |
|-------------------------|---|
| Description | Compact dump valve used in tough fluid applications. |
| Valve Size Range | 1" Nominal Pipe Size (25mm Diameter Nominal) |
| Port Sizes | 1/4" (6.4mm) • 3/8" (9.5mm) • 1/2" (12.7mm) • 3/4" (19.1 mm) |
| Body Styles | Globe • "T" Body |
| End Connections | FNPT • RF • RTJ |
| Pressure Rating | ASME B16.34 Class 150 to 900 |
| Shutoff Class | ANSI/FCI 70.2 Class IV |
| Body Materials | LCC |
| Features | Standard Live Loaded Packing • Threaded bonnet Field-reversible from spring-to-close to spring-to-open • NACE Standard |

DF234 Control Valve






| | |
|-------------------------|---|
| Description | Compact dump valve used in tough fluid applications, designed for easier serviceability. |
| Valve Size Range | 1" to 2" Nominal Pipe Size (25mm to 50mm Diameter Nominal) |
| Port Sizes | 1/4" (6.4mm) • 3/8" (9.5mm) • 1/2" (12.7mm) • 3/4" (19.1 mm) • 1" (25.4 mm) |
| Body Styles | Globe • Angle |
| End Connections | FNPT • RF • RTJ |
| Pressure Rating | ASME B16.34 Class 150 to 1500 |
| Shutoff Class | ANSI/FCI 70.2 Class IV |
| Body Materials | LCC |
| Features | Standard Live Loaded Packing • Hammer nut bonnet Field-reversible from spring-to-close to spring-to-open • NACE Standard |

DF270 Control Valve



| | |
|-------------------------|---|
| Description | Heavy duty, compact control valve used in a variety of demanding applications for either throttling or on-off control. |
| Valve Size Range | 1" to 2" Nominal Pipe Size (25mm to 50mm Diameter Nominal) |
| Port Sizes | 1/4" (6.4mm) • 3/8" (9.5mm) • 1/2" (12.7mm) • 3/4" (19.1 mm) • 1" (25.4 mm) |
| Body Styles | Globe • Angle |
| End Connections | FNPT • RF • RTJ |
| Pressure Rating | ASME B16.34 Class 150 to 1500 |
| Shutoff Class | ANSI/FCI 70.2 Class IV |
| Body Materials | LCC |
| Features | Standard Live Loaded Packing • Hammer nut bonnet Field-reversible from spring-to-close to spring-to-open • NACE Standard |

| Models DFC & DF0 | |
|---|--|
|  | Description Spring and diaphragm actuators that allow for low supply pressure operation, which offer fail safe position. |
| | Actuator Sizes 046 • 069 • 105 • 156 • 220 |
| | Input Signal 3-15 Psig (21-103 kPag) or 6-30 Psig (41-207 kPag) |
| | Yoke Boss Size 2-1/8" (54 mm) • 2-13/16" (71 mm) • 3-9/16" (90 mm) |
| | Features Open yoke - open valve stem Versatile mounting options for positioners and limit switches Throttling and on/off control capabilities |
| Model DFLP | |
|  | Description Double acting pneumatic piston actuator designed for high forced applications. |
| | Actuator Sizes 113 • 154 |
| | Maximum Operating Pressures 150 Psig (1034 kPag) |
| | Yoke Boss Size 3-9/16" (90 mm) Bolted • 5" (127 mm) Bolted |
| | Features High reliability Unique design allows for low cost cylinder replacement Versatile mounting options for positioners and limit switches Throttling, and on/off control capabilities |
| Model DFN | |
|  | Description Yokeless spring and diaphragm actuator commonly used on butterfly valves, choke valves and louvers. |
| | Actuator Sizes 069 • 156 |
| | Input Signal 35 Psig (241 kPag) |
| | Bolt Circle Diameter 2-7/8" (73 mm) or 3-7/8" (99 mm) |
| | Features Steel welded design for proven reliability in extreme working conditions Actuator may be installed in any position Versatile mounting capabilities |

Actuators

Pneumatic Rotary

Model DFR




| | |
|-----------------------|---|
| Description | Rotary spring and diaphragm actuators that allow for low supply pressure operation, which offer fail safe position. |
| Actuator Sizes | 026 • 047 • 070 • 156 • 220 |
| Input Signal | 0-18 Psig (0-124 kPag) or 0-33 Psig (0-228 kPag) |
| Features | <ul style="list-style-type: none"> Fail-safe field reversible Minimal deadband Splined connection High reliability Fail-Open & Fail-Closed configurations Broad range of torque output Compatible with a wide variety of today's instrumentation |

Model DFRP




| | |
|------------------------------------|---|
| Description | Rotary double acting pneumatic piston actuator designed for high torque applications. |
| Actuator Sizes | 079 • 112 • 113 • 154 |
| Maximum Operating Pressures | 85 Psig (586 kPag) • 100 Psig (689 kPag) • 150 Psig (1034 kPag) |
| Features | <ul style="list-style-type: none"> Splined connection High reliability Minimal deadband Innovative cylinder design Unique design allows for low cost cylinder replacement Compatible with a wide variety of today's instrumentation |

| D-Force | | |
|---|----------------------------|---|
|  | Description | Rugged scotch yoke actuator designed for use with quarter turn valves. Available in double acting (DDA) and spring return (DSR) configurations. The compact dual piston design allows for simplified mounting and cost effective automation of any rotary application. The large piston design is well suited for larger torque requirements up to 427,845 lbs-in (48,340 N-M). |
| | Actuator Sizes | Small D-Force Dual Piston: 65 • 80 • 100 • 125 • 140 • 160 • 210 Large D-Force Piston Rotary: DDA 26082 to DDA 80212 33082SR to 80211SR |
| | Operating Pressures | 40 Psi (276 kPa) to 143 Psi (986 kPa) |
| | Features | Small D-Force: Namur mounting • Corrosion resistant construction • External, adjustable travel stops Large D-Force: Rugged corrosion resistant design |

Instrumentation


Instrument Supply Regulator

| PRO-50 | | |
|---|-------------------------|---|
|  | Description | Compact, lightweight regulator that provides controlled and reduced pressures for instrumentation. Generally used for a constant supply pressure to pneumatic and electropneumatic controllers. |
| | Outlet Pressures | 0-35 Psig (0-241 kPag) • 0-60 Psig (0-414 kPag) • 0-125 Psig (0-862 kPag) |
| | Inlet Pressures | 250 Psi (1724 kPa) |
| | Features | Standard low-temperature construction 1/4" (6.4 mm) NPT connection (inlet & outlet) Panel mount ready NACE options available |


Instrumentation

Pressure & Level Controllers

4000 Series Local Pressure Controllers Models 4000 / 4010 / 4000LB / 4010LB

| | | |
|---|--------------------|--|
|  | Description | Pneumatic local pressure controller. |
| | Features | Two modes of operation: Proportional Only & Proportional + Reset Control action is field reversible between direct acting and reverse acting 4000LB & 4010LB controllers meet or exceed EPA emission standards Standard controllers are equipped with critical parts in stainless steel NACE options available |


5000 & 5000E Level Controller



| | | |
|--|--------------------|--|
|  | Description | Displacer type pneumatic liquid level controller. |
| | Features | Can be configured as snap acting or throttling Meets or exceed EPA emission standards Pneumatic supply can be either air or natural gas Standard NACE construction Low-temperature body standard Electric pilot either SPDT or DPDT |

Instrumentation

I/P Transducer

Control Air T950XP

| | | |
|---|-----------------------------------|---|
|  | Description | Reliable, high performance transducer for tough applications in hazardous environments. Converts electrical current input signal to stable, pneumatic output to actuate valves. |
| | Ports (Input & Output) | Pneumatic: 1/4" (6.4 mm) NPT • Electric: 1/2" (12.7 mm) NPT |
| | Features | Direct, reverse, or split ranging Can be mounted in-line or directly to a panel in multiple configurations Field adjustable with easy to open cover and on-board switches Approved for natural gas |

| Siemens PS2 Positioner | | |
|---|--------------------|--|
|  | Description | Digital valve positioner with on-board programming and HART ready. Comes standard with an LCD screen for visual programming and diagnostics. |
| | Features | Zero bleed in steady state, meets or exceed EPA emission standards Limit switches and feedback modules available Handheld communicator not required for calibration Cold temperature and explosion proof versions available Universal mounting Meets local electrical approvals |
| Siemens 760 Positioner | | |
|  | Description | Pneumatic positioner that can be used with linear or rotary valves. |
| | Features | Limit switches and feedback module available High flow module Position indicator beacon Universal mounting |

Specialized Options

| Special Coating | Special Trim Materials & Options | Non-Destructive Testing (NDT) Methods |
|--|---|--|
| Available for valve bodies, assemblies and trim parts to prevent premature wear due to corrosion, chemical exposure, severe service and high temperature environments. Coating options include but not limited to: <ul style="list-style-type: none"> • ENC (Electroless Nickel Coating) • IMPREGLON® Coatings • Anodizing • Nitriding • Hard Chrome Plating • Tungsten Carbide | Ability to fabricate valve trim parts from customer specified materials or specialty materials to suit specific process needs or flow control specifications. Special material options include but are not limited to: <ul style="list-style-type: none"> • Duplex Stainless Steel • High Nickel Alloys • Urea Grade Stainless Steel • Tungsten Carbide • High Chrome Steel • Ceramics | Several non-destructive procedures are available for product testing on pressure containing parts. NDT procedures include: <ul style="list-style-type: none"> • Visual Inspection • Magnetic Particle Test • Liquid Penetrant Test • Radiographic Test (X-Ray) • Ultrasonic Test • Positive Material Identification |



Warranty

All Dyna-Flo Products have a Warranty Period of twelve months from first installation or eighteen months from delivery, whichever is sooner. All other warranty terms are as per Curtiss-Wright Industrial Standard Terms and Conditions, a copy which is available at www.cw-industrialgroup.com/About/Group-Policies/Terms-Conditions.aspx. or contact your local representative.

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