Fisher® Control-Disk™ Valve Pocket Guide

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Fisher® Control-Disk™ Valve

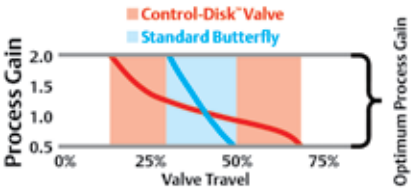
The Fisher® Control-Disk™ rotary valve with 2052 spring-and-diaphragm actuator can effectively replace poorly performing butterfly control valves and provide a more compact, competitive alternative to segmented ball valves.

A new valve and actuator designed as a package to:

- Improve Control
- Expand Control Range
- Provide Rugged Reliability
- Minimize Process Variability
- Extend Product Life
- Meet Global Standards
- Metric Design

Stay on Set Point and Save Money

■ **Improved throttling** control range from 15 % to 70% opening – equal percentage flow characteristic.



■ **Control closer** to ideal set point with **faster response** time, less chance of set point overshoot.

■ **Eliminates the need to de-tune** your loop or revert to manual control at lower travels.

■ The new Control-Disk valve also **reduces operating torque**.

■ **Maximum capacity equivalent** to conventional high-performance butterfly valves with better control over a wider control range.

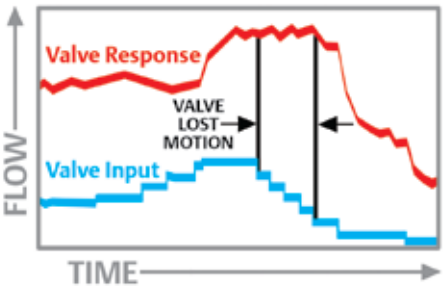
Rugged Reliability and Exceptional Shutoff for Long Product Life

- From seals to bearings, springs to diaphragms, every Fisher rotary control product is **designed to improve product life**.
  - They are **tested to a minimum of 25,000 cycles** -- Hot air to 385°C (725°F), high-pressure water to 51 bar (740 psig), and steam at 28 bar (400 psig) and 371°C (700°F)
- Mechanical tests determine the effects of cycle life, fatigue, vibration, galling, wear and corrosion.
  - We simulate a lifetime of use in hours at our global, world-class test facilities.

We test until convinced the seal is good enough for you.

Higher Profits through Reduced Process Variability

Lost motion, friction, and positioner response cause variability.



Typical Poorly Performing Valve

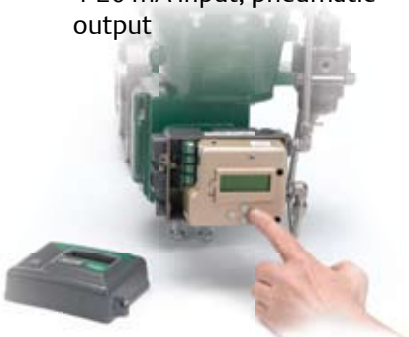
■ **Elimination of lost motion and backlash** is enabled by:

- Clamped spline connection
- High-quality actuator rod-end bearing
- A “best in industry” pin connection of shaft and disk. In addition, pin system makes maintenance easy.

Higher Profits through Reduced Process Variability

- **Low friction** through the use of:
  - PTFE-lined PEEK bearings
  - Premium bushings for the actuator lever

- Available with the Fisher FIELDVUE® **DVC2000 or DVC6020 digital valve controllers**.
  - DVC2000 and DVC6020—4-20 mA input, pneumatic output



Longer Product Life; Lower Maintenance Costs

- For maximum reliability, valve and actuator are **designed for one million full-stroke cycles** under load conditions.
- PTFE-lined PEEK bearings offer **low friction, long life**.
- Shaft pinning system ensures a tight connection and **easy disassembly and reassembly** for maintenance.
- Design of actuator ensures long life and **easy maintenance**. No special tools needed.
- Powder paint finish offers an **excellent corrosion-resistant finish** to all steel parts. Bolting is stainless steel.

Adherence to Global Standards is Easy

- The valve **meets API, ASME, and EN standards**, making it suitable for use in all world areas.
- The optional ENVIRO-SEAL® packing systems offer exceptional shaft sealing capabilities. Live-loading provides improved sealing, guiding, and loading force transmission.
- ISO actuator mounting and NAMUR accessories mounting.
- Available in constructions that **comply with NACE** MR0103 and MR0175 / ISO 15156.

Easy Selection and Flexible Installation

- **Actuator sizing is taken care of** for you. Simply select the valve size and pressure drop—only 3 actuator sizes. Torque values are available for sizing.
- Mount the valve in **either horizontal or vertical position**.
  - Disk is always centered—spring-loaded shaft-disk
  - Actuator can be right-or left-hand mounted
- Line centering clips for easy alignment during installation.
- One body for **either PTFE or metal seal**.

The spring in the outboard shaft positions the drive train and disk when shaft is in vertical or horizontal orientation.

Performance Proven in Field Tests

- Two troublesome valves on a paper machine were replaced with Control-Disk valves.
  - Existing valves could not be put into automatic operation.
  - Existing valves had gains greater than 4.0 with process variability of 3.5% for one and 8.0% for the other.
  - Replacement Control-Disk valves were installed and put on automatic control.
  - Variability was reduced from 8.0% to 3.0% for one valve and from 3.5% to 1.6 % for the other.
- In another field test, two conventional butterfly valves controlling cooling water to condensers were causing costly trips of the safety system. Maximum dynamic error was 21%.
  - The Control-Disk valves greatly reduced safety plant trips. Dynamic error was reduced to 2% and deadband was reduced to 0.25%

Selections

The selections below apply to the Control-Disk , A81, and 8580 valve and the 2052 actuator. For further information on the A81 and 8580 valves, refer to the Associated Products section. Complete specifications can be found in product bulletins 51.3:Control-Disk, 51.6:8580, and 21.1:A81.

Sizes	DN 50 – 300	NPS 2 – 12
Pressure Ratings	PN 10 – 40 EN 12516-1	CL150/300
Connections	EN 1092-1	ASME B16.5 raised-face
Body Style	■ Wafer (flangeless), or ■ single flange	
Body Material	■ EN 1.0619/WCC steel ■ EN 1.4409/CF3M (316L) stainless steel, ■ CW2M, or ■ M35-1	
Disk Material	■ PTFE Seal: EN 1.4409 stainless steel/CF3M (316L) stainless steel, CW2M , or M35-1 ■ Metal or UHMWPE Seal: Chrome-plated EN 1.4409 stainless steel/CF3M (316L) stainless steel	
Bearing Material	■ PEEK/PTFE or ■ R30006 (Alloy 6)	
Seal Material	■ PTFE or UHMWPE with S31600 (316 stainless steel) or R30003 spring or ■ Metal 316 stainless steel with graphite gaskets	
Actuator Operating Pressure	2 - 3 or 4 - 5 bar (30 - 44 or 60 - 73 psig) spring-and-diaphragm actuator	

Pressure Drops

Maximum shutoff pressure drops for the PTFE seal and PEEK/PTFE bearings are shown here.

Valve Size, DN	Actuator Size	Maximum Shutoff Pressure Drop, Bar	
		2 Bar Supply	4 Bar Supply
50	1	13	49
80		3.7	35
100		----	9.2
80	2	52	52
100		38	52
150		6.7	30
200		----	10
100	3	52	52
150		42	52
200		16	47
250		4.1	24
300		0.15	13

NPS	Actuator Size	Psi	
		30 Psig Supply	50 Psig Supply
2	1	185	706
3		54	514
4		----	133
3	2	750	750
4		555	750
6		97	427
8		----	140
4	3	750	750
6		609	750
8		229	674
10		60	343
12		2.1	184

Associated Products

Fisher® 8580 Valve with 2052 Spring-and-Diaphragm Actuator

- For traditional high-performance butterfly valve control applications, consider the 8580 valve.
- It is available in the same sizes, ratings, and materials as the Control-Disk valve.

Associated Products

POSI-SEAL® A81 Valve with FieldQ™ Rack-and-Pinion Actuator

- For automated on-off applications, consider the A81 valve with the FieldQ rack-and-pinion actuator.
- The actuator is an innovative, modular design; small and compact. It is available in double-acting and spring-return models. The actuator uses solenoid valves to switch operating pressure on and off.
- The valve is available in the same sizes, ratings, and materials as the Control-Disk valve.

Associated Products

Fisher 2052 Spring-and-Diaphragm Actuator

- The same 2052 pneumatic actuator available on the Control-Disk valve is available as a stand-alone product or on traditional Fisher rotary valves.
- With its ISO 5211 mounting-hole pattern, it can be added to other control valves to improve performance.
- Provides the same rugged reliability and long life as it does when coupled with the Control-Disk valve.

Fisher Vee-Ball® Valve with 2052 Actuator and DVC2000 Controller.

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