Dilating Disk Control Valves

Technical brochure

AMPO
POYAM VALVES

Commitment made of steel

1. COMPANY PROFILE

AMPO is an **international leader** in highly engineered valves and Integrated Smart Solutions for the most severe applications and industries as well as in stainless steel and high alloy castings.

Through our AMPO SERVICE team **we guarantee a prompt response** to customer needs wherever they are throughout the world: technical support in start-up stages, equipment selection, predictive and preventive maintenance, training, etc.

Fully inhouse manufacturing process

Worldwide references

Project based on people

Innovative spirit

700+ people

In more than 60 countries

Most important partners in the industry

Cutting edge technologies

Our commitment: the best service

Customer focus

Since 1964

AMPO POYAM VALVES has an exclusive world-wide licensing agreement with Clarke valve for the manufacturing, distribution and service of zero-emissions Dilating Disk Control valves. This product has been developed through allocation of substantial financial and technical resources in partnership with Clarke Valve investors, Saudi Aramco Energy Ventures, Chevron Technology Ventures, Kanoo Group, and Climate Investment, a specialist decarbonization investor founded by a number of the world's leading energy companies.

2. APPLICATION

The Dilating Disk Control Valve is designed to seamlessly replace the globe valves that are used for process control in every industry, every day, with zero disruption or switching costs.

From oil and gas to power production, from chemical plants to advanced water systems, no other globe valve provides the precision flow control of the Dilating Disk Valve. We specialize in:

- **Oil and gas:**
  - o Upstream: Onshore and offshore E&P, FPSO, FLNG, gas lift.
  - o Midstream: Gas compressor stations, separators.
  - o Downstream: Refinery, petrochemical, tank valves, VRU.
- **Navy and marine:** Fuel, oil, water.
- **Power:** Cooling water, steam, glycol, fuel control valves, boiler control valves, nuclear.
- **Advanced water systems:** Lime slurry, water treatment, water control, municipal.
- **Chemical plants:** Vacuum, oxygen, gases, acids.
- **Aerospace:** Cooling systems, fuel systems, environmental control.

The Dilating Disk Valve has been successfully deployed in a broad spectrum of customer applications since 2015.

3. DILATING DISK CONTROL VALVES

Sizes: 1/4" up to 12". (Larger sizes upon request)

Pressure class: 150 lbs up to 1500 lbs.

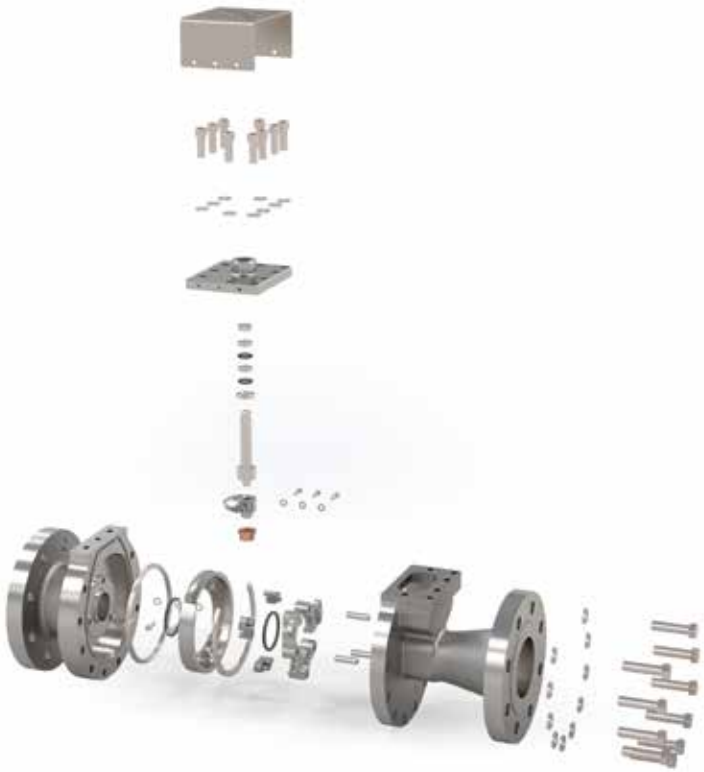
Temperature: -46°C/-50,8°F up to 260°C/-500°F. (Cryogenic and High Temperature upon request)

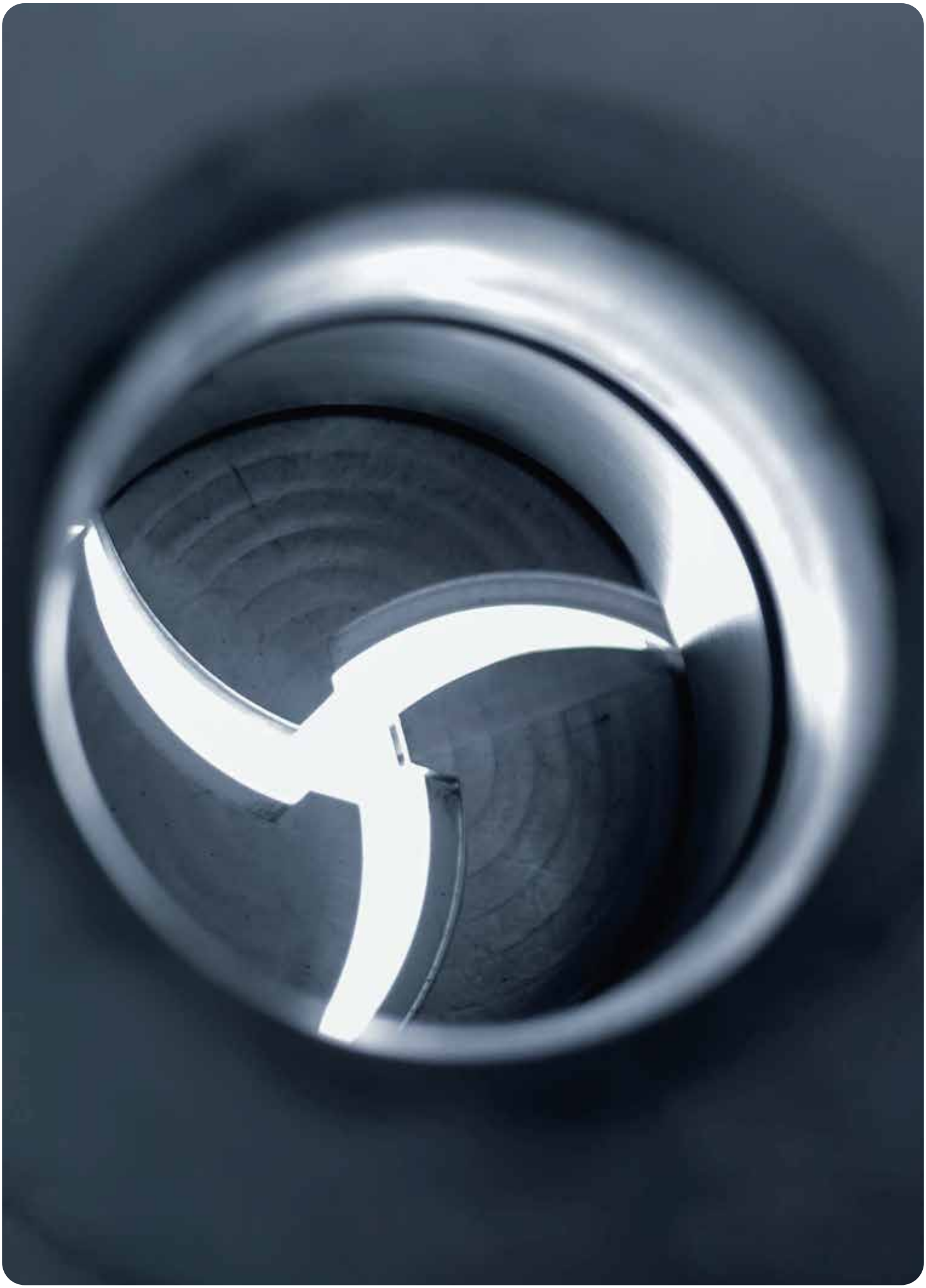
Standards: ANSI/FCI 70-2. ANSI/ISA-75.02.01. ANSI/ISA-75.17. API 598. API 641. ASME B16.34. ASME B16.5. ASME B16.10. CRN. IEC 60534-2-1. IEC 60534-2-3. IEC 60534-2-4. IEC 60534-7. IEC 60534-8-4. ISA-RP75.23. ISO 15848-1 & 15848-2. ISO 5211. MIL-DTL-32632 (NAVSEA). MSS SP-61.SIL 3. IEC 61508. FIRE SAFE: API 607 & ISO 10497.

Materials: Carbon steel, Stainless steel, duplex and superduplex, nickel-based alloys, specialty materials.

End connections: NPT, RF, RTJ. (BW upon request)

Actuation: Manual Quarter Turn, Pneumatic Compatible with Digital Positioners, Electric.

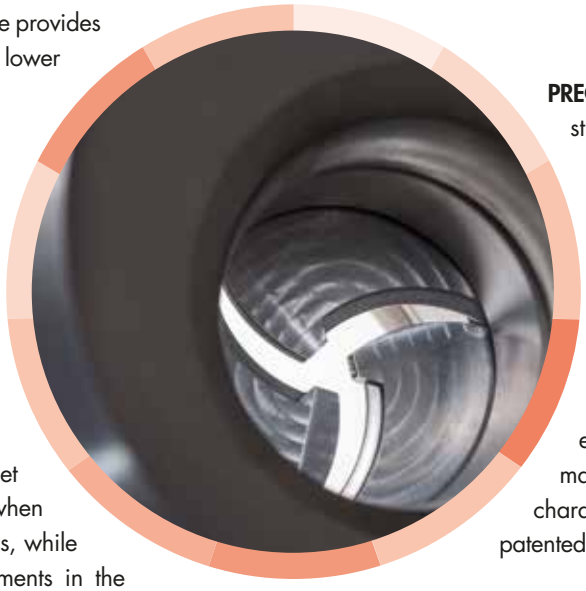




4. WHY CHOOSE OUR DILATING DISK CONTROL VALVES

A completely reimagined, precision control valve that is light years ahead of any other control valve on the market today. The Dilating Disk series of valves deliver unparalleled performance and adaptability, putting them in a class of their own when it comes to efficiency, size, reliability and sustainability.

UNIQUE FORM: The Dilating Disk Control Valve employs a unique trim geometry, providing best-in-class, dynamic process control from a quarter-turn stem. Three interlocking Petals form the aperture of the Dilating Disk Valve. They open perpendicular to the flow of process fluids. The mechanical operation of the valve is driven by a rugged and efficient Ring Gear, which delivers precise throttling, consistent shutoff, and high cycle life while requiring minimal torque. In large valves (8" and above) with a valve body that is 50-80% smaller and lighter than the globe valves it is designed to replace, the Dilating Disk Valve provides a wide range of benefits at a significantly lower cost.



BEST FUNCTIONALITY: By opening perpendicular to the flow of process fluids, the Dilating Disk Valve requires much less operating torque than other control valves; reducing actuator size and energy requirements. The proprietary design of the Dilating Disk Valve's bonnet and stem leads to zero fugitive emissions when compared to "low emissions" globe valves, while eliminating the need for packing adjustments in the field.

EASY INSTALLATION: Exact face to face dimensions (ISA 75.08, ASME B16.10) as current globe valves, no pipe modifications required for installation. Uses manual, pneumatic, electric actuators.

EFFICIENT FLOW PATH: The fluid is continuously in the centerline of the pipeline, improving resistance to cavitation damage and lower noise. Curved closure members allow predictable pressure drops and provide a tight shut off.

LEAKAGE CLASS IV AS STANDARD: Optional Class V & VI shut off up to ASME pressure class 1500 with precise throttling capability that is easily programmed into the control system.

DESIGNED FOR SAFETY: Shell and leakage tested in keeping with required industry standards per customer requirements before shipping.

PRECISION RANGEABILITY: Centralized flow stream, from a fine mist to full port creates a high rangeability of up to 500:1, provides precise control that exceeds other globe control valve products.

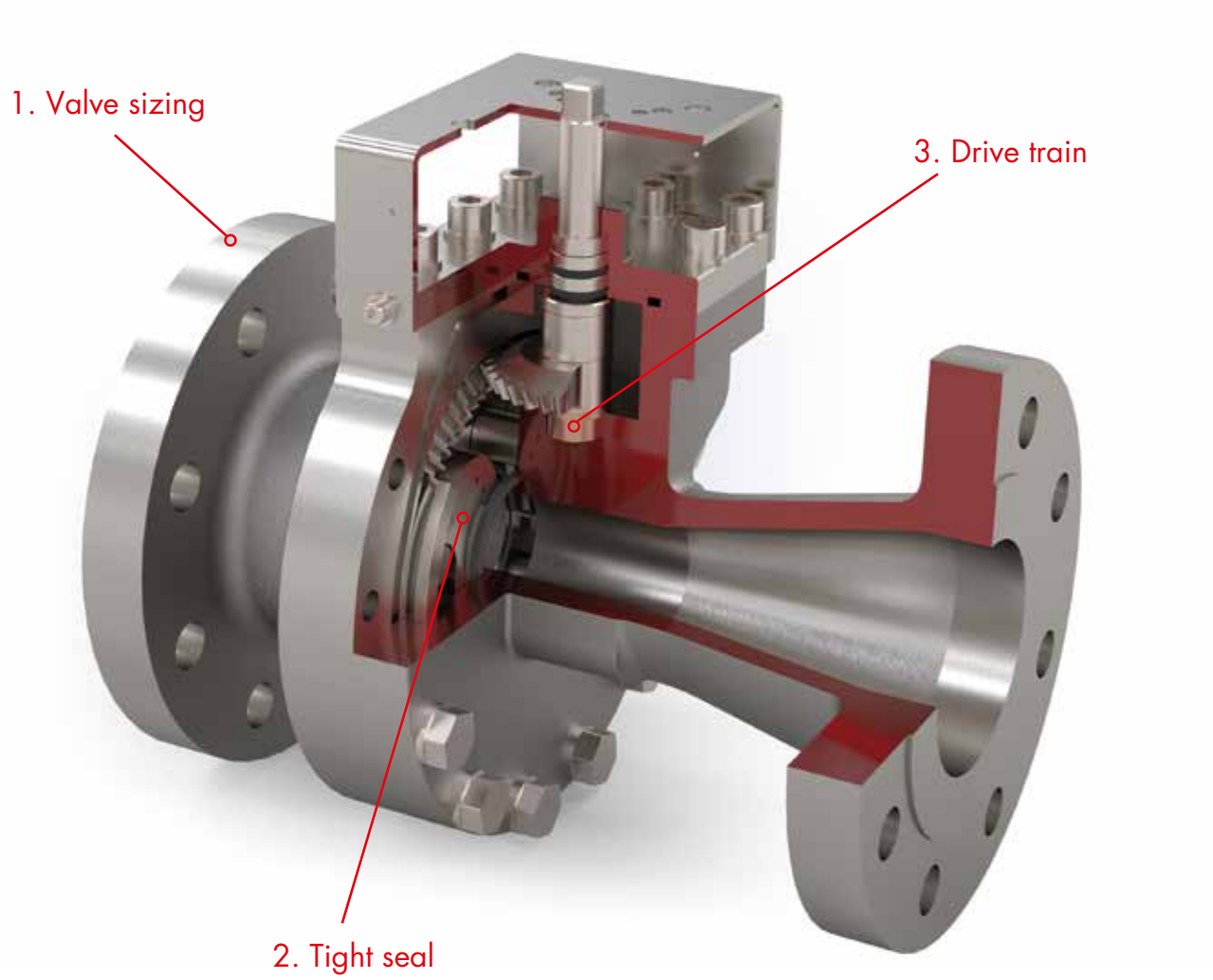
INCREDIBLY COMPACT DESIGN: Smaller envelope and less weight compared to equivalent size control valves, while maintaining the ideal equal percentage valve characteristic. All of this is made possible by our patented mechanical design.

SMALL ACTUATORS: Our closure members open and close perpendicular to the flow, thus reducing the required torque of our valve. That means you can go electric where you couldn't before, and valve automation costs are significantly reduced.

VERSATILE: Standard materials are common Carbon Steel and Stainless Steel grades, with other materials available, including special materials, to suit your individual needs.

EPA COMPLIANCE: Plug and play zero emissions valves. Fast track.

5. TECHNICAL FEATURES

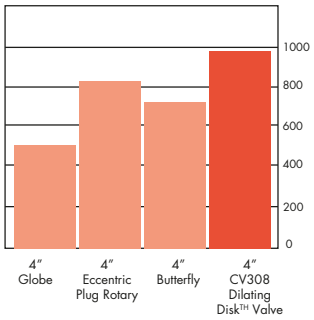


5.1 VALVE SIZING TO MATCH CV RATINGS:

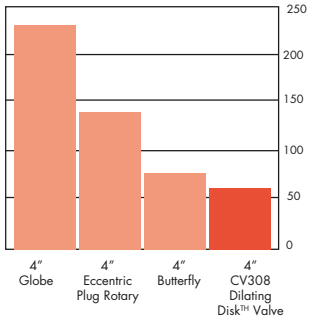
Dilating Disk Valves are sized according to IEC and ISA standard control valve equations using AMPO's in-house proprietary software. All standard AMPO Dilating Disk Valves can also be sized using CONVAL third party software.

The Dilating Disk Valve provides greater volumetric flow, rangeability, and maximum Cv coefficient than larger legacy valve designs, such as the butterfly, globe, and eccentric plug valves. At the same time, the Dilating Disk Valve weighs less than all three comparable valves. With this in mind, our control valve engineers follow a strict methodology for sizing valves, ensuring that the Dilating Disk Valve meets or exceeds all of the functional requirements for any legacy valve that it might be replacing. For new build projects, the Dilating Disk Valve enables EPCs and end users to design flow control systems that take advantage of the Dilating Disk Valve's size and weight advantages to drastically reduce project costs.

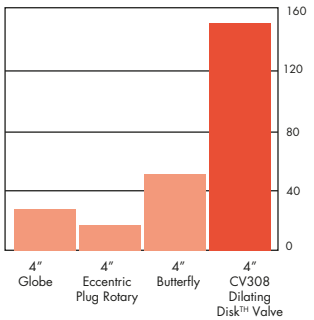
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



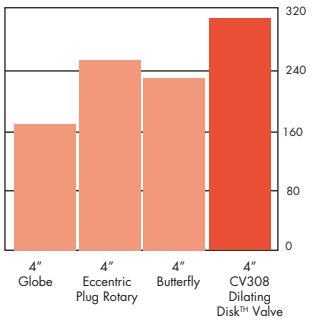
Assembly Weight
(lbs)



Rangeability



Maximum Cv Coefficient



5.2 TIGHT SEAL:

PETALS:

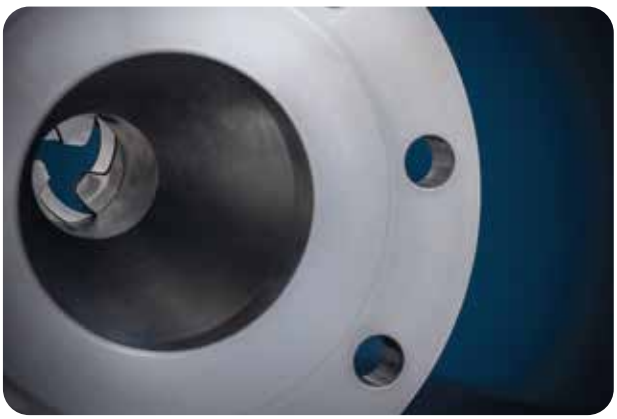
The 3 Petals that function as the throttling mechanism in the Dilating Disk Valve are high-strength, robust metal blades that pivot about a Hinge Pin, into (or away from) the central opening of the valve, similar to the low-friction motion of scissors. The Petals are efficiently positioned by a high-strength steel low friction Ring Gear, which enables the Dilating Disk Valve to operate with minimal torque. The design protects the inner diameter O-ring seal surrounding the central aperture of the Dilating Disk Valve from particle impacts or fluid erosion, enhancing reliability in applications with sand or other solids, while still achieving a tight shutoff.

SEALS:

The axial face of each of the 3 Petals is precisely machined to incorporate a curved arc-circle geometry. This approach benefits the Dilating Disk Valve in 2 ways: The arc-circle of the Petal prevents a shearing motion across the face of the O-ring by avoiding any pinch points between 2 metal surfaces: the O-ring only comes into contact with any of the valve Petals during the full closed position. The lip of the arc-circle on all 3 Petals presses tightly against the O-ring in the fully closed position, compressing it against the edge of the valve port and the groove where the O-ring sits in the valve body and cover, effectively creating the second half of the O-ring groove.

Similar to the seals in the bonnet and valve body, AMPO made a design decision to use standard, off-the-shelf sizes for the O-ring surrounding the valve port. While the arc-circle design helps the O-ring to survive high cycle fatigue and wear, the use of standard parts will ensure that any service or replacements of the soft goods in the Dilating Disk Valve is cost-effective, and immediately available in case of emergency.

The 3-piece O-ring groove created by the valve Petals in the closed position was developed as a solution to survive high-cycle fatigue & wear, whether the seals are elastomer, PTFE, or metallic.



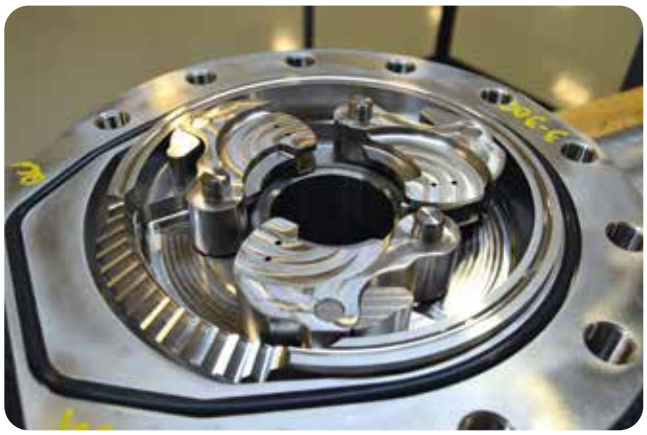
To sum up, by using the arc-circle design, we have extended the life of the interior diameter O-ring in each Dilating Disk Valve, while ensuring a tight seal when the 3 Petals are in the fully closed position. We have conducted 360,000 test cycles on a valve to successfully demonstrate the extended life of the O-ring seal, while maintaining the tight shutoff that results from this design.

Customers therefore benefit from longer periods between maintenance and greater overall uptime, while having total confidence in tight closure at ANSI Class IV, Class V, and even Class VI bubble-tight leakage ratings.

5.3 DRIVE TRAIN

1. VALVE STEM & PINION GEAR:

The Valve Stem of the Dilating Disk Valve is a 90 degree, solid steel structure, with an anti-blowout prevention feature to maximize safety and reliability. Each stem is precision machined to exact tolerances to ensure proper fit with the drive gear of an appropriately sized actuator. A Pinion Gear is press-fit onto the Valve Stem to drive the Ring Gear. The mating gears are designed to have near-zero backlash, or play, for precision positioning and operation of your Dilating Disk Valve.



The Pinion Gear transfers torque from the actuator and Valve Stem to the Ring Gear, using a quarter-turn motion to cycle from fully closed to a fully open port.

2. RING GEAR:

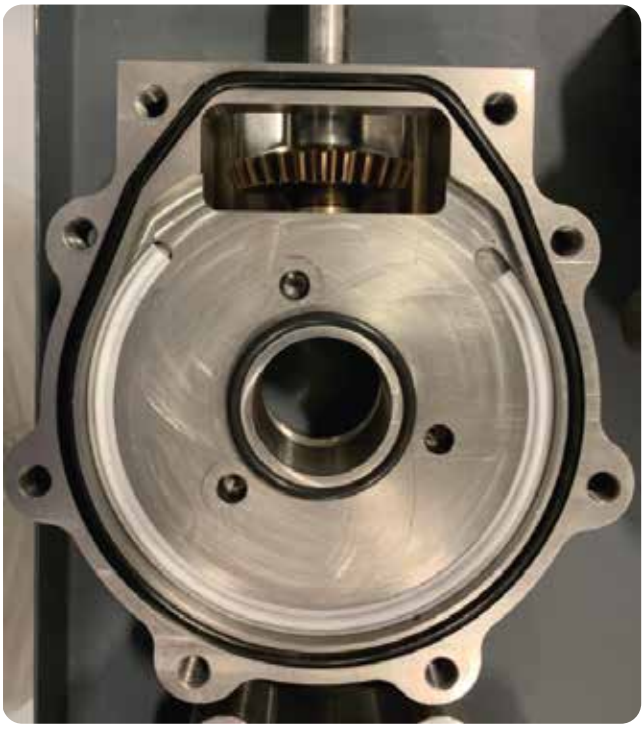
The Valve Stem and Pinion Gear are connected to the Ring Gear to provide an inherent mechanical advantage in driving the movement of the Petals to minimize torque.

To further maximize efficiency and achieve reliable operation from the gearing in the Dilating Disk Valve design, we have optimized the alignment and synchronization between the Pinion Gear and Ring Gear, by ensuring consistent tolerances between the gears. This degree of precision helps to prevent any backlash or play in the mechanism, delivering smooth and controlled operation. The reduction or elimination of play also minimizes energy loss and ensures the efficient conversion of torque into the opening and closing function of the valve.

3. PETALS:

Energy is then transferred from the Ring Gear to the three valve Petals by control Arms that link the Ring Gear to each Petal. The Ring Gear is connected to each arm, and each arm is then connected to the other end of the Petal. There are also three Hinge Pins mounted in the valve body, that act as a stationary connection point for each Petal. Through this mechanism, the rotating motion of the Ring Gear is transformed into the pivoting movement of each Petal, into (or away from) the center of the valve port. The mechanical advantage of the Ring Gear provides a torque multiplication effect.

In addition to the leverage provided by this mechanism, the movement of the three valve Petals also occurs in such a way as to further minimize torque requirements. In the Dilating Disk Valve, the three Petals open and close perpendicular to the flow of any process fluids being controlled, encountering minimal flow-related resistance. As a result of this design feature, the Dilating Disk Valve does not require the high amounts of torque needed by a butterfly or globe valve, each of which need to push against the force of the flow, for throttling or shutoff. In fact, no matter how much the pressure or flow rate are increased in a given process, the Dilating Disk Valve does not require any additional torque to open and close. The same cannot be said for a butterfly or a globe valve, both which require more torque to operate, as the pressure increases in the pipe.



6. QUALIFICATION

AMPO POYAM VALVES values quality. Therefore, our operating and production processes are implemented and controlled by a quality assurance system, certified since 1991 under the ISO 9001 Standard and accredited by the most important external organizations. Moreover, AMPO POYAM VALVES holds international standard approvals and completely fulfills international standard requirements, reinforcing its leading position on the market.

FUGITIVE EMISSIONS:

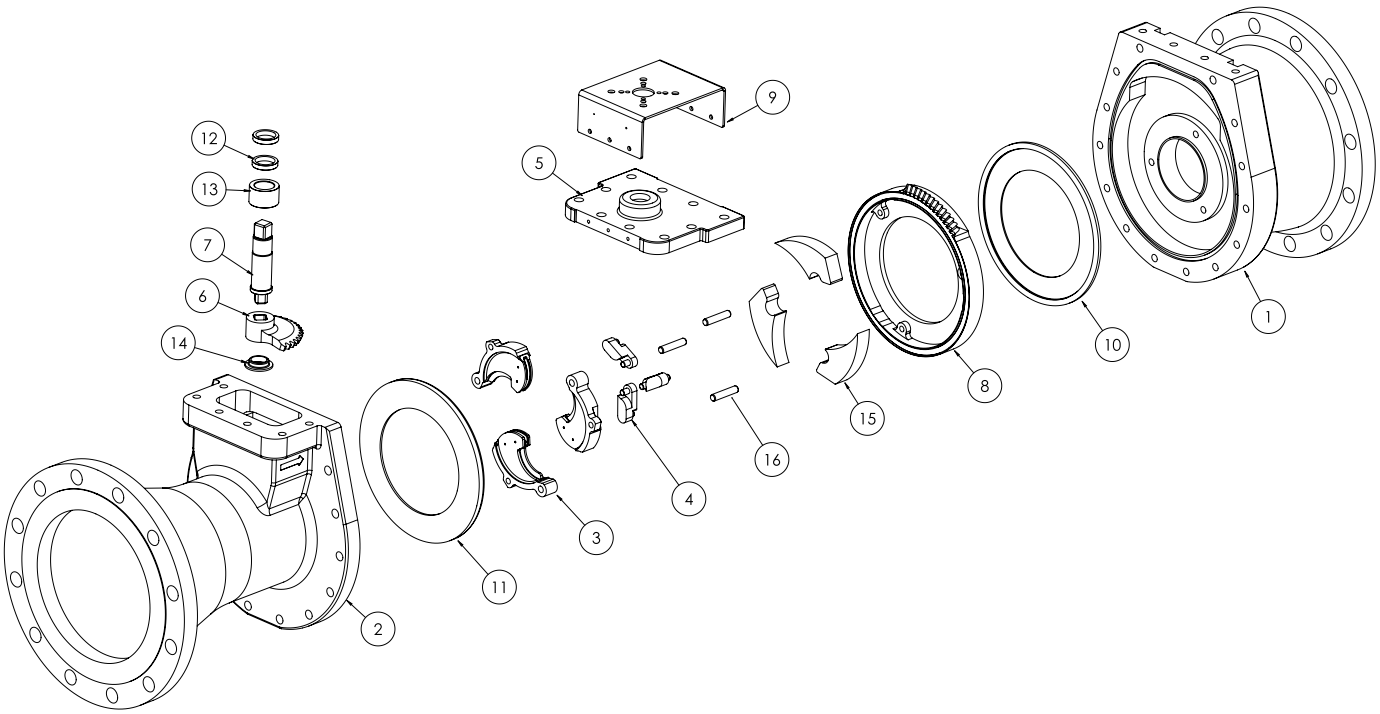
Owing to its unique design, the Dilating Disk Valve is one of the few control valves to qualify for both ISO 15848-1 and API 641 certifications.

The Dilating Disk Valve is the only valve on the market which simultaneously meets the most stringent leakage rating of AM, less than 50 ppm of methane, and the highest endurance threshold of CC3, which requires 100,000 operational cycles to complete.

VALVE TYPE	Ball Valve	Globe Valve	Dilating Disk Valve
Fugitive Emissions	100 ppm	500 ppm	0 ppm

7. MATERIAL SELECTION

DILATING DISK CONTROL VALVE
Sample drawing



NO.	PART	MATERIAL
1	BODY	WCB / A 105 N
2	COVER	WCB / A 105 N
3	PETAL	316L (PTFE)
4	ARM	17-4
5	BONNET	WCB / A 105 N
6	PINION GEAR	17-4
7	IN LINE STEM	17-4
8	RING GEAR	17-4
9	ACTUATOR BRACKET	316L
10	BODY RING BEARING	PTFE
11	COVER RING BEARING	PTFE
12	STEM BUSHING	PTFE
13	BASE STEM BUSHING	PTFE
14	PINION BEARING	C95500
15	BOB PLASTIC INSERT	NA
16	DOWEL PIVOT PIN	17-4

Sample materials shown, a wide range of materials are available based on customer requirements

8. SIZES

Our Dilating Disk Control Valves have exact face to face dimensions (ISA 75.08, ASME B16.10) as current globe valves, and no pipe modifications are required for installation. They use manual, pneumatic or electric actuators.

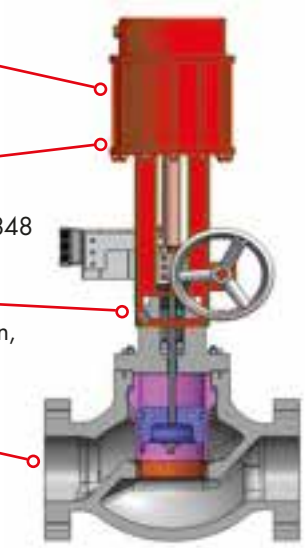
COMPARISON TO GLOBE VALVES

Large Actuator
Heavy and large footprint

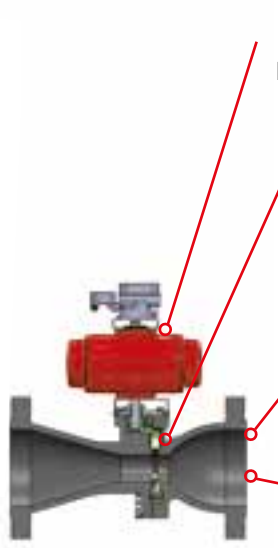
Higher GHG Emissions
Requires special packing to comply with API641 & ISO15848

High Lifecycle Cost
Capital, installation, operation, repair and maintenance

Restrictive Flow Path
Inefficient design



VS.



Small, Low Torque Actuator
Less weight and small footprint

Lowest GHG Emissions
Exceeds AP1641 & ISO15848

Low Lifecycle Cost
Capital, installation, operation, repair and maintenance

Straight Flow
Precise throttling; Efficient design

DILATING DISK CONTROL VALVE PRODUCT FAMILY

CV2

CV20

CV71

CV308

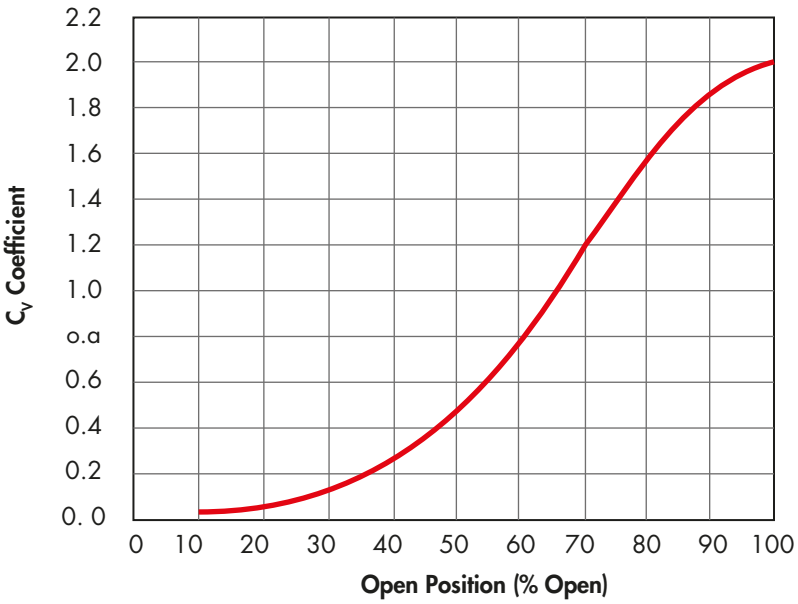
CV1345

CV2 DILATING DISK ™ VALVE

Flow Characteristics

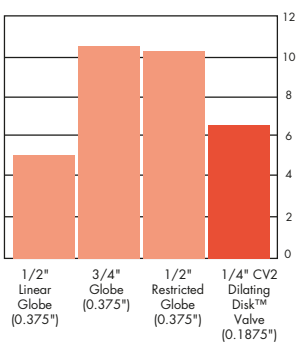
% OPEN	C_V	K_V	F_L	X_T
10	0.00858	0.0074	0.99	0.63
20	0.04660	0.0400	0.96	0.53
30	0.11600	0.1000	0.90	0.44
40	0.23600	0.2040	0.87	0.40
50	0.45300	0.3920	0.84	0.40
60	0.76600	0.6630	0.75	0.44
70	1.20000	1.0380	0.60	0.50
80	1.55000	1.3410	0.48	0.48
90	1.85000	1.6000	0.41	0.40
100	2.00000	1.7300	0.37	0.33

What results does the Dilating Disk™ Valve deliver?

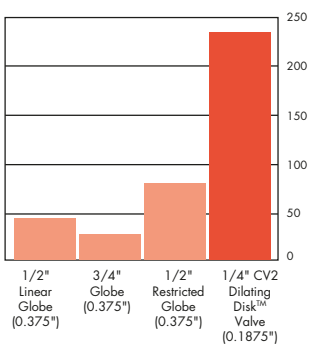


Market Comparison: How does the Dilating Disk™ Valve compare?

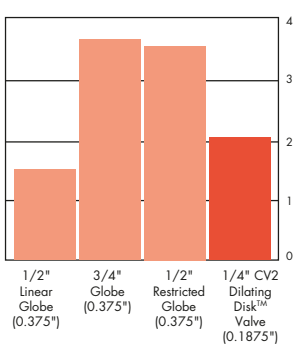
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



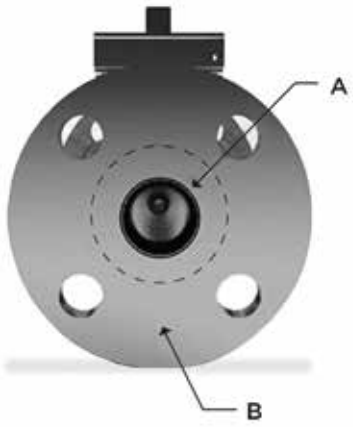
Rangeability

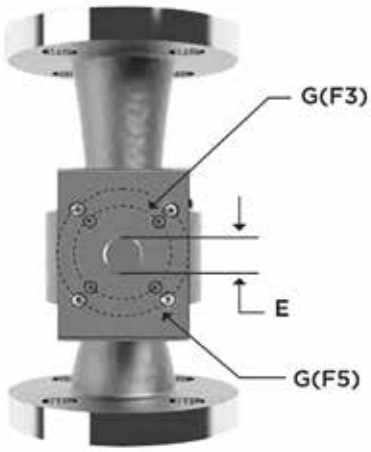


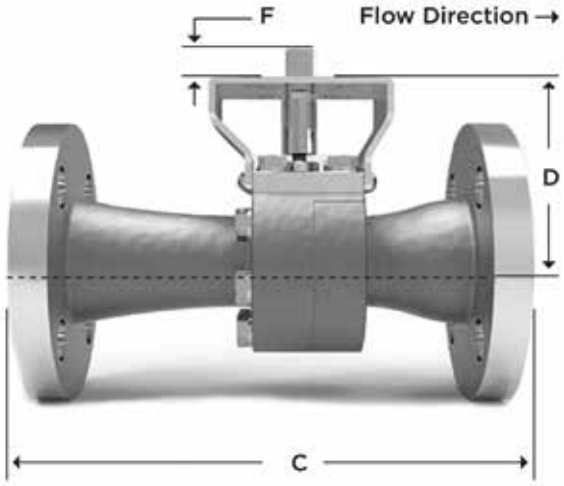
Maximum Cv Coefficient



CV2 DILATING DISK ™ VALVE PRESSURE CLASS 150 - 1500







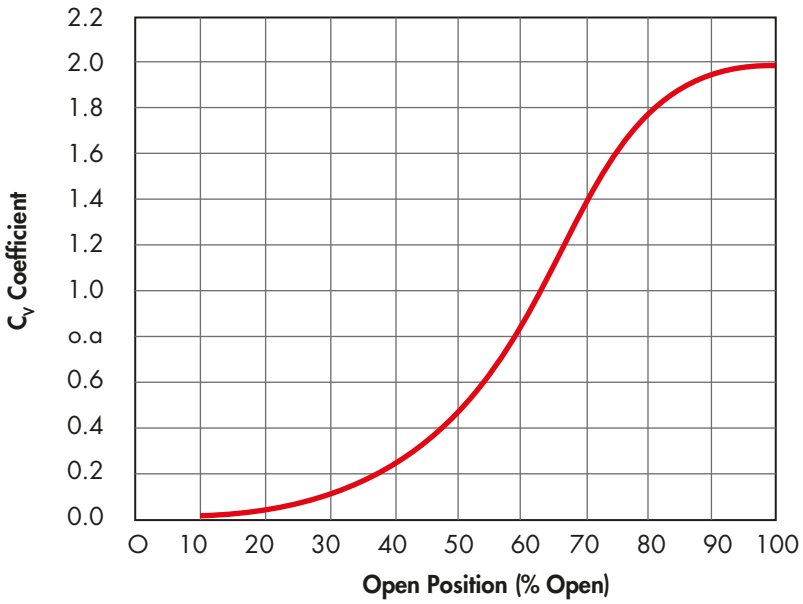
A		B	C	D	E	F	G	H	I
ASME B16.5 (NPS)		PRESSURE CLASS (ASME)	FACE TO FACE ISA 75.08 (IN)	CENTERLINE HEIGHT (IN)	DRIVE SQUARE WIDTH (IN)	DRIVE SQUARE HEIGHT (IN)	ISO 5211 YOKE PATTERN (IN)	WEIGHT (LBS)	MAST (IN-LBS)
NPT ONLY	0.25"	CL600	3.15	2.73	0.433	0.684	F3 - 1.417 F5 - 1.970	5	67
	0.50"	CL1500	3.15						
1.00"		CL150	7.25					9	
		CL300	7.75					12	
		CL600	8.25					13	
		CL1500	11.50					25	

CV20 DILATING DISK ™ VALVE

Flow Characteristics

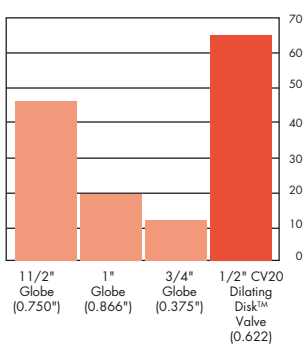
% OPEN	C_V	K_V	F_L	X_T
10	0.113	0.098	0.99	0.53
20	0.352	0.305	0.96	0.55
30	0.987	0.854	0.90	0.49
40	1.860	1.610	0.87	0.43
50	3.890	3.370	0.84	0.39
60	7.760	6.910	0.75	0.36
70	12.800	11.100	0.60	0.33
80	17.300	14.900	0.48	0.31
90	19.500	16.800	0.41	0.27
100	20.000	17.300	0.37	0.22

What results does the Dilating Disk™ Valve deliver?

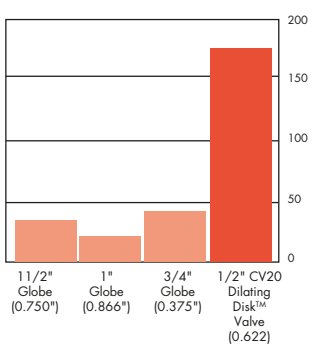


Market Comparison: How does the Dilating Disk™ Valve compare?

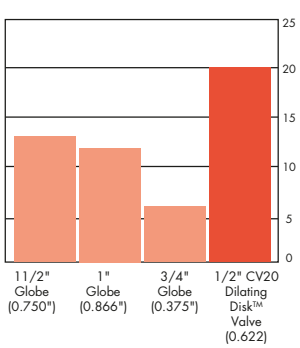
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



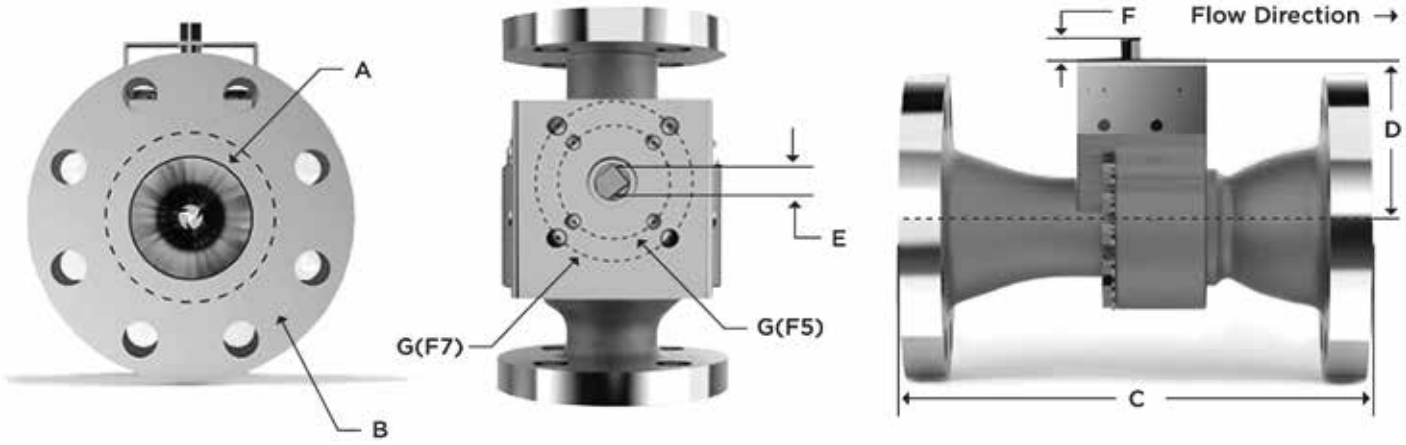
Rangeability



Maximum Cv Coefficient



CV20 DILATING DISK ™ VALVE PRESSURE CLASS 150 - 1500



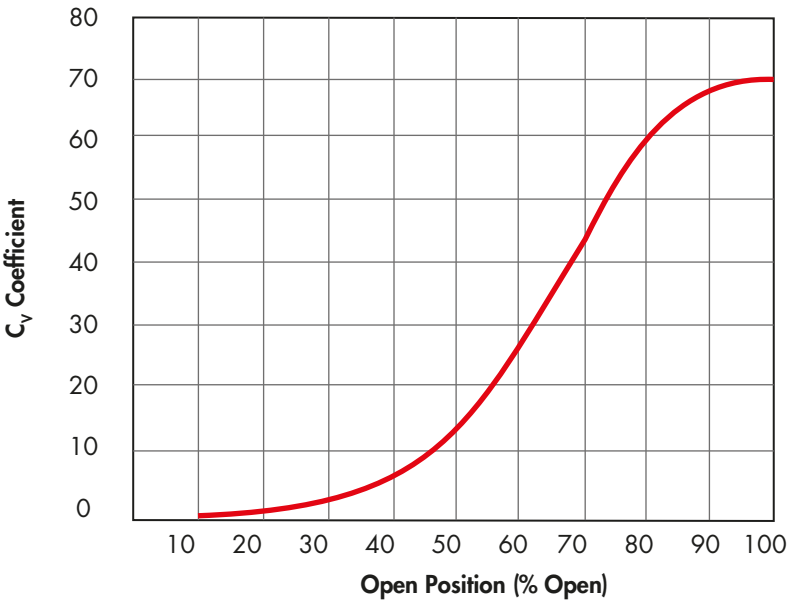
A	B	C	D	E	F	G	H	I
ASME B16.5 (NPS)	PRESSURE CLASS (ASME)	FACE TO FACE ISA 75.08 (IN)	CENTERLINE HEIGHT (IN)	DRIVE SQUARE WIDTH (IN)	DRIVE SQUARE HEIGHT (IN)	ISO 5211 YOKE PATTERN (IN)	WEIGHT (LBS)	MAST (IN-LBS)
0.75"	CL150	7.25	4.515	0.433	0.535	F5 - 1.97 F7 - 2.76	20	1656
	CL300	7.62					22	
	CL600	8.12					23	
	CL900	10.75					45	
	CL1500							
1.00"	CL150	7.25					21	
	CL300	7.75					24	
	CL600	8.25					25	
	CL900	10.75					50	
	CL1500							
1.50"	CL150	8.75					26	
	CL300	9.25					31	
	CL600	9.88					33	
	CL900	12.25					84	
	CL1500							
2.00"	CL150	10.00					32	
	CL300	10.50					36	
	CL600	11.25					39	
	CL900	14.75					84	
	CL1500							
3.00"	CL150	11.75					45	
	CL300	12.50					53	
	CL600	13.25					59	
	CL900	17.38					105	
	CL1500	18.12					129	

CV71 DILATING DISK ™ VALVE

Flow Characteristics

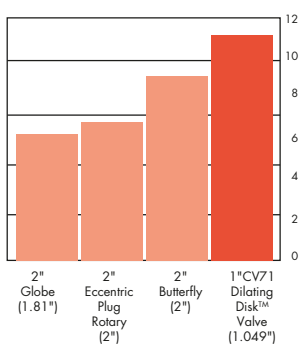
% OPEN	C_V	K_V	F_L	X_T
10	0.40	0.346	0.99	0.45
20	1.25	1.080	0.96	0.65
30	3.50	3.030	0.90	0.61
40	6.60	5.710	0.87	0.65
50	13.80	11.900	0.84	0.61
60	27.60	23.800	0.75	0.57
70	45.50	39.400	0.60	0.41
80	61.40	53.100	0.48	0.27
90	69.10	59.700	0.41	0.16
100	71.00	61.400	0.37	0.15

What results does the Dilating Disk™ Valve deliver?

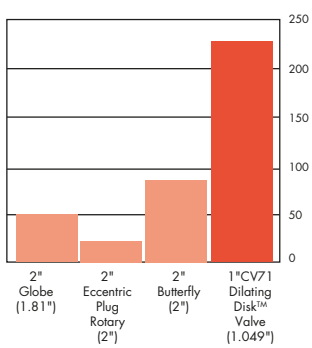


Market Comparison: How does the Dilating Disk™ Valve compare?

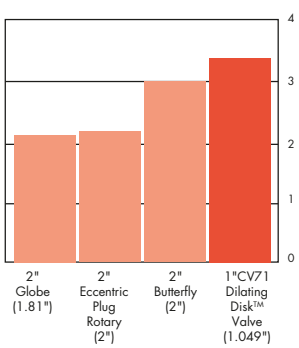
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



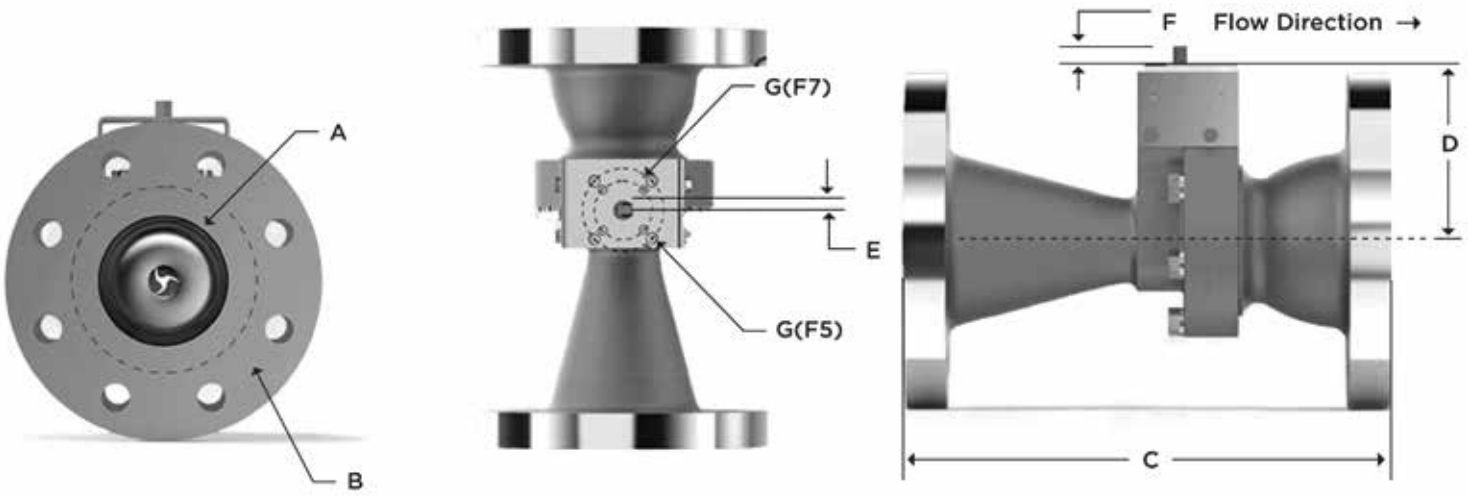
Rangeability



Maximum Cv Coefficient



CV71 DILATING DISK ™ VALVE PRESSURE CLASS 150 - 1500



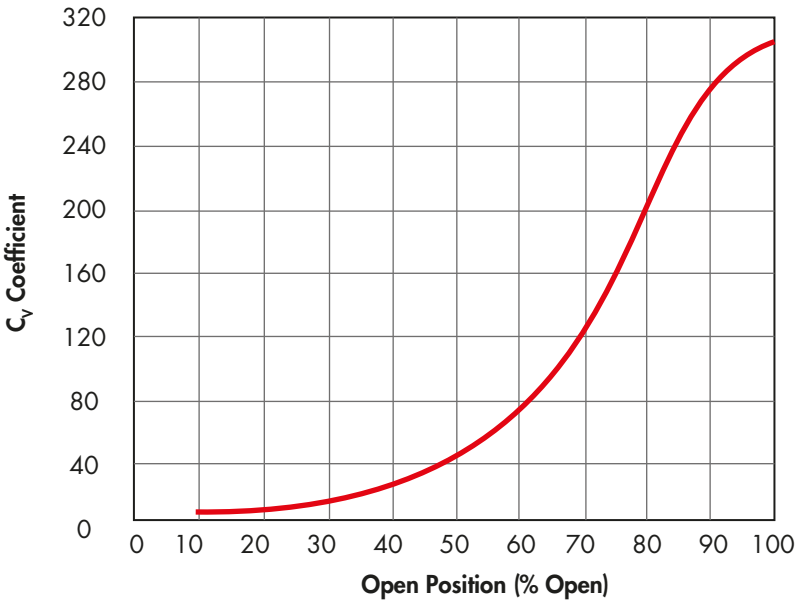
A	B	C	D	E	F	G	H	I
ASME B16.5 (NPS)	PRESSURE CLASS (ASME)	FACE TO FACE ISA 75.08 (IN)	CENTERLINE HEIGHT (IN)	DRIVE SQUARE WIDTH (IN)	DRIVE SQUARE HEIGHT (IN)	ISO 5211 YOKE PATTERN (IN)	WEIGHT (LBS)	MAST (IN-LBS)
1.5"	CL150	8.75	5.232	0.433	0.584	F5 - 1.97 F7 - 2.76	31	1522
	CL300	9.25					36	
	CL600	9.88					46	
	CL900	13.12					81	
	CL1500							
2.0"	CL150	10.00					35	
	CL300	10.50					39	
	CL600	11.25					52	
	CL900	14.75					103	
	CL1500							
3.0"	CL150	11.75					48	
	CL300	12.50					57	
	CL600	13.25					73	
	CL900	17.38					103	
	CL1500	18.12					149	
4.0"	CL150	13.88					62	
	CL300	14.50					80	
	CL600	15.50					117	
	CL900	20.12					147	
	CL1500	20.87					205	
6.0"	CL300	18.62					128	

CV308 DILATING DISK ™ VALVE

Flow Characteristics

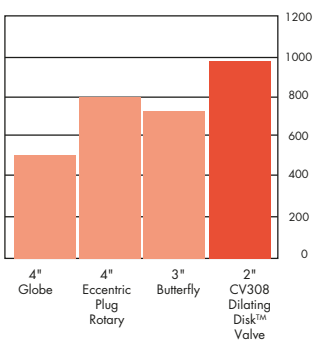
% OPEN	C_V	K_V	F_L	X_T
10	2.00	1.7	0.98	0.49
20	6.08	5.2	0.93	0.49
30	12.00	10.4	0.81	0.46
40	22.20	19.2	0.76	0.42
50	41.00	34.5	0.71	0.37
60	70.10	60.6	0.56	0.34
70	118.00	102.0	0.36	0.32
80	194.00	168.0	0.23	0.31
90	280.00	242.0	0.17	0.28
100	308.00	266.0	0.14	0.22

What results does the Dilating Disk™ Valve deliver?

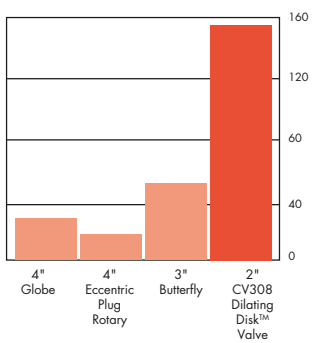


Market Comparison: How does the Dilating Disk™ Valve compare?

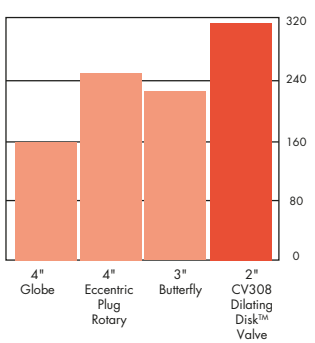
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



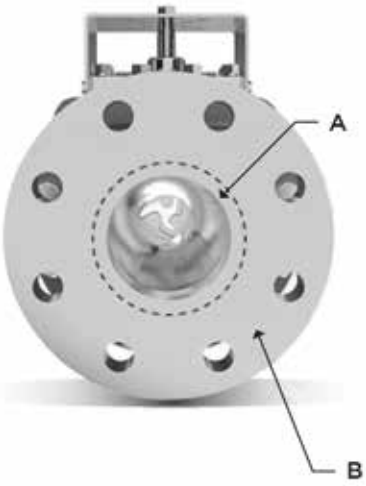
Rangeability

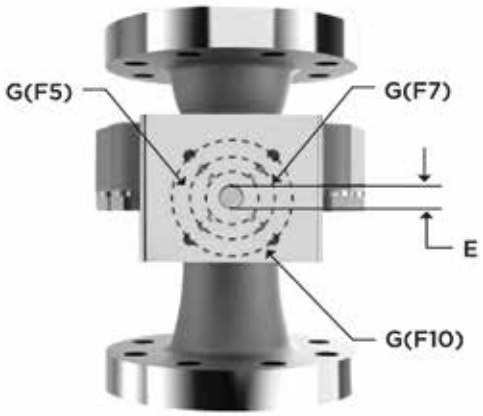


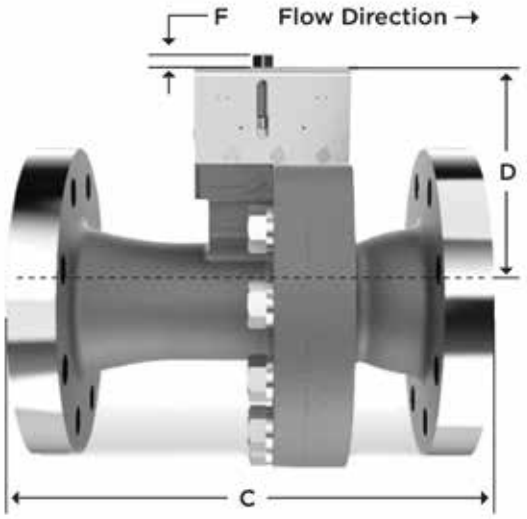
Maximum Cv Coefficient



CV308 DILATING DISK ™ VALVE PRESSURE CLASS 150 - 600







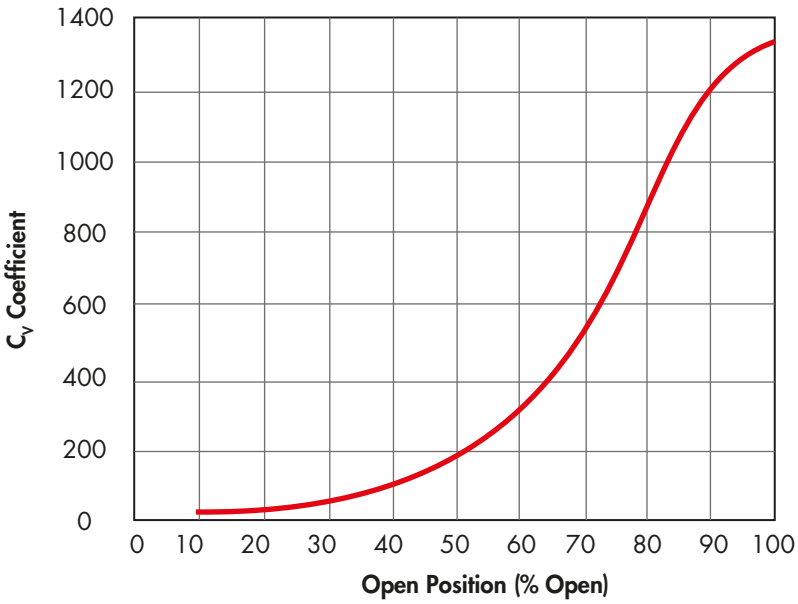
A	B	C	D	E	F	G	H	I
ASME B16.5 (NPS)	**PRESSURE CLASS** (ASME)	**FACE TO FACE ISA 75.08** (IN)	**CENTERLINE HEIGHT** (IN)	**DRIVE SQUARE WIDTH** (IN)	**DRIVE SQUARE HEIGHT** (IN)	**ISO 5211 YOKE PATTERN** (IN)	**WEIGHT** (LBS)	**MAST** (IN-LBS)
3"	CL150	11.75	8.027	0.574	0.584	F5 - 1.970 F7 - 2.760 Fl0 - 4.016	87	2566
	CL300	12.50					100	
	CL600	13.25					127	
4"	CL150	13.88					99	
	CL300	14.50					122	
	CL600	15.50					170	
6"	CL150	17.75					131	
	CL300	18.62					172	
	CL600	20.00					248	

CV1345 DILATING DISK ™ VALVE

Flow Characteristics

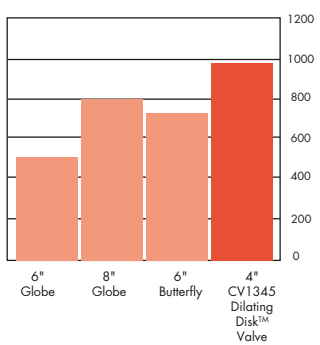
% OPEN	C_V	K_V	F_L	X_T
10	9	7.79	0.98	0.52
20	26	22.50	0.93	0.49
30	53	45.80	0.81	0.42
40	97	83.90	0.76	0.36
50	181	156.00	0.71	0.32
60	303	262.00	0.56	0.28
70	515	445.00	0.36	0.24
80	844	731.00	0.23	0.19
90	1220	1060.00	0.17	0.17
100	1345	1160.00	0.14	0.14

What results does the Dilating Disk™ Valve deliver?

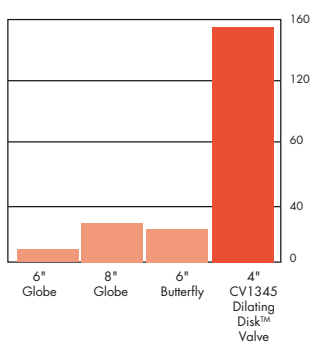


Market Comparison: How does the Dilating Disk™ Valve compare?

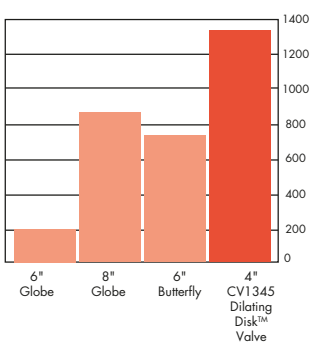
Volumetric Flow Rate
(ΔP=10 psid) (US GPM)



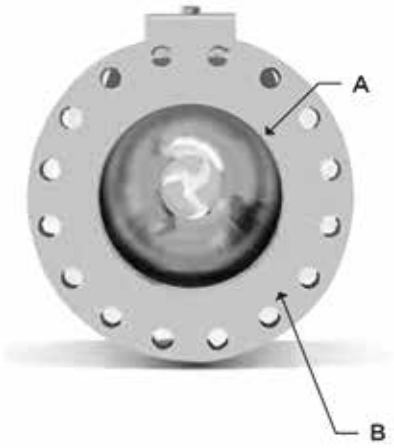
Rangeability

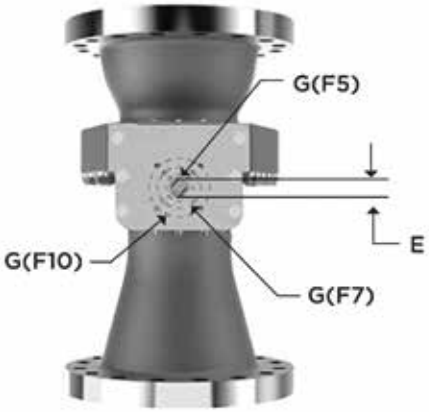


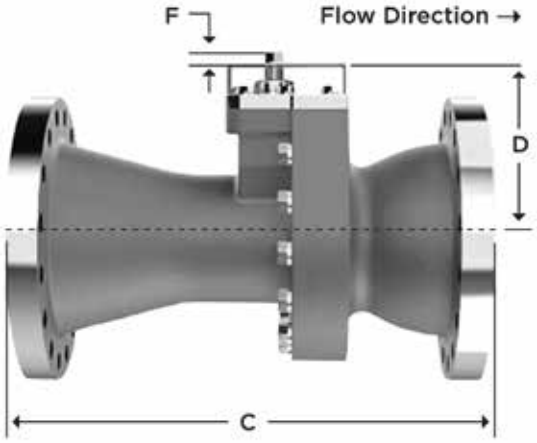
Maximum Cv Coefficient



CV1345 DILATING DISK ™ VALVE PRESSURE CLASS 150 - 600







A	B	C	D	E	F	G	H	I
ASME B16.5 (NPS)	PRESSURE CLASS (ASME)	FACE TO FACE ISA 75.08 (IN)	CENTERLINE HEIGHT (IN)	DRIVE SQUARE WIDTH (IN)	DRIVE SQUARE HEIGHT (IN)	ISO 5211 YOKE PATTERN (IN)	WEIGHT (LBS)	MAST (IN-LBS)
6"	CL150	17.75	10.827	0.866	0.7	F5 - 1.970 F7 - 2.760 FI0 - 4.016	312	8641
	CL600	18.62					361	
	CL300	20.00					443	
8"	CL150	21.38					370	
	CL300	22.38					441	
	CL600	24.00					535	
10"	CL150	26.50					458	
	CL300	27.88					551	
	CL600	32.35					717	
12"	CL150	29.00					542	
	CL300	30.50					665	
	CL600	32.25					819	

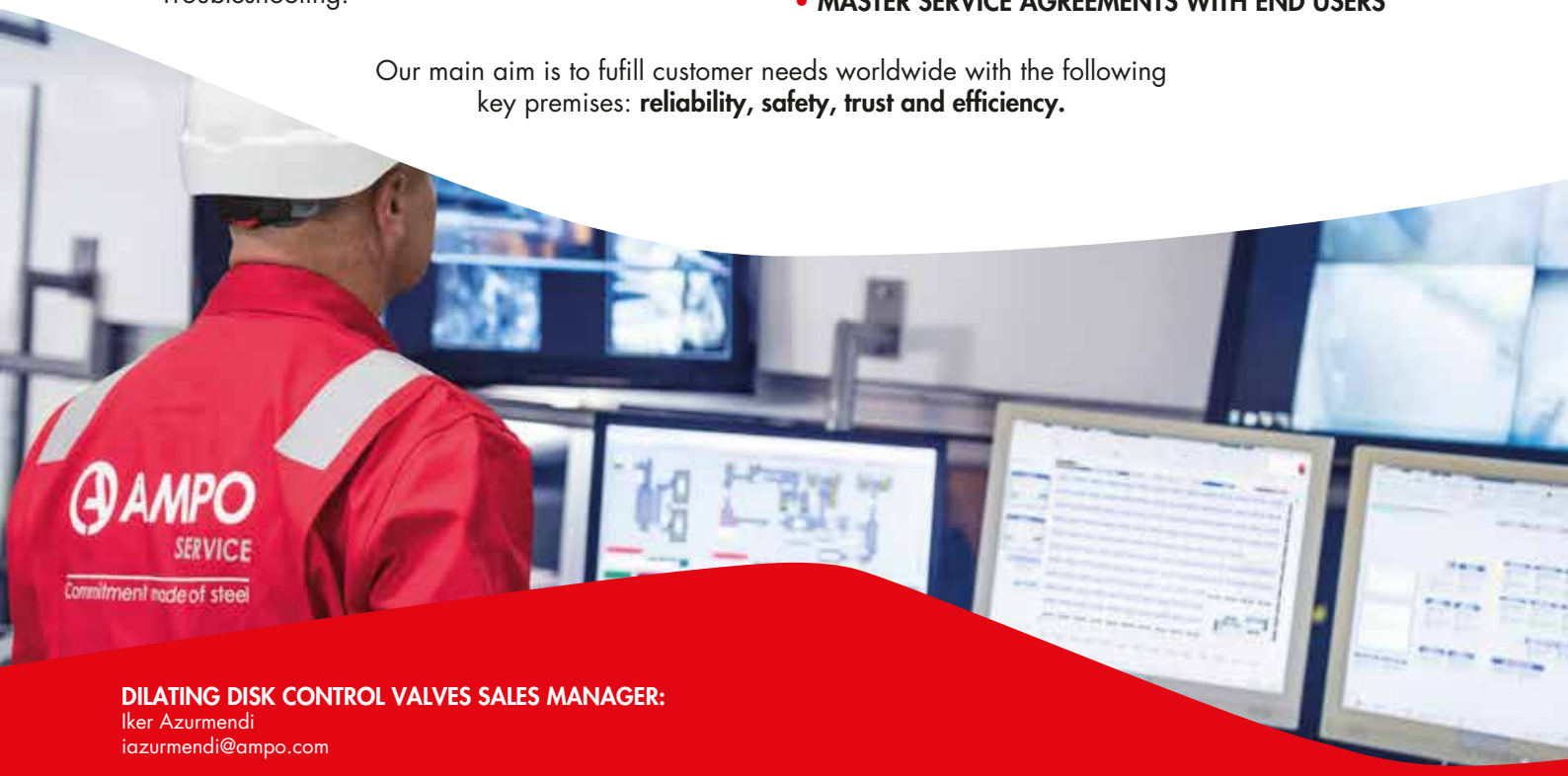
9. AMPO SERVICE

AMPO POYAM VALVES
Commitment made of steel

AMPO SERVICE has a wide experience in guaranteeing a **prompt response** (72 hours at site if needed) to customer needs **all over the world** with a highly experienced, customer oriented and specialized team. It provides a wide range of **ad-hoc and high added value services:**

- **MRO SERVICES**. Plug and play valves. Fast track.
- **SPARE PARTS**. Optimized Management Program. Fast track services.
- **TRAINING SERVICES**
- **FIELD ENGINEERING SERVICES (FES):** Consulting services during plant construction. Commissioning and start-up services. Planned shut-down services. Troubleshooting.
- **PREDICTIVE MAINTENANCE SERVICE:** Patented AMPO RCM system (Remote Control Valve Monitoring Service)
- **PREVENTIVE MAINTENANCE SERVICE:** Maintenance Plan developments.
- **WORLDWIDE REPAIR AND MAINTENANCE CENTERS**
- **TAILORED ENGINEERING SOLUTIONS**
- **MASTER SERVICE AGREEMENTS WITH END USERS**

Our main aim is to fufill customer needs worldwide with the following key premises: **reliability, safety, trust and efficiency.**



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AMPO is just 1 hour drive away from BILBAO (International Airport) and at the following distances from other important places:
65 km west of Pamplona/45 km south of San Sebastian/ 70 km south of the French border.