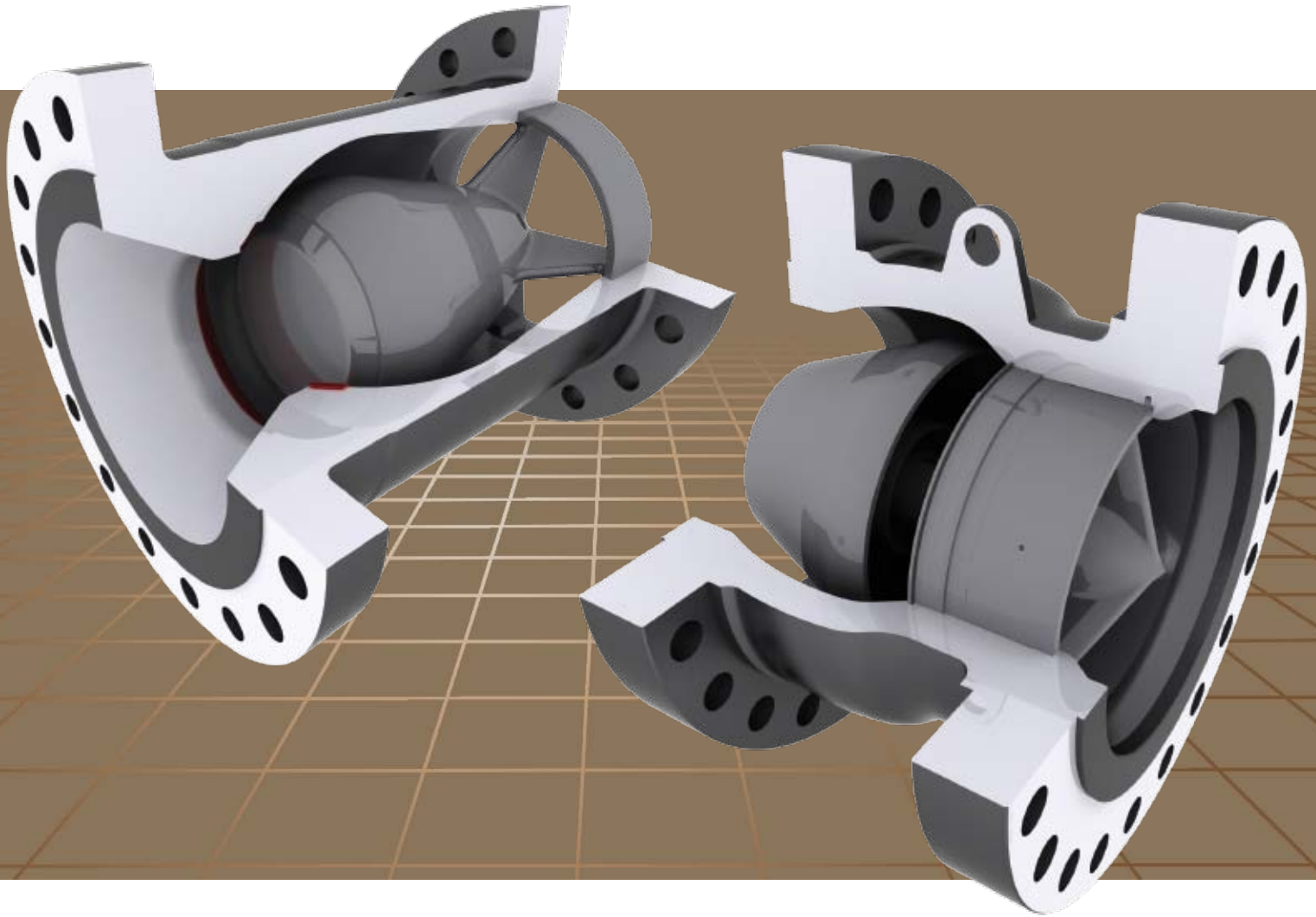


ENTECH™

Non-Slam, Nozzle Check Valve



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ENTECH™

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Voghera, Italy

Cameron's Valves & Measurement (V&M) group is a leading provider of valves and measurement systems to the oil and gas industry. The group's products are primarily used to control, direct and measure the flow of oil and gas as it is moved from individual wellheads through flow lines, gathering lines and transmission systems to refineries, petrochemical plants and industrial centers for processing.

The Engineered & Process Valves division provides a wide range of valves for use in natural gas, LNG, crude oil and refined products transmission lines. The traditional CAMERON® fully-welded ball valve product line has been combined with the GROVE®, RING-O®, TOM WHEATLEY®, ENTECH™ and TK® product lines. This broad offering has significantly strengthened Cameron's ability to serve as a single source for a wide scope of customer requirements. The division also provides critical service valves for refinery, chemical and petrochemical processing businesses and for associated storage terminal applications, particularly through the ORBIT® and GENERAL VALVE®. These brands are complimented by WKM®, TBV™ and TEXSTEAM™ valve products and considerably expand the scope of this division's product offerings.

ENTECH is recognized for its use in pipelines, production and process applications. The valves are applied primarily in gas compression applications. Non-slam valves prevent reverse flow. Their short stroke length reduces closing time, and eliminates water hammer. The pressure loss with a nozzle check is minimal and has excellent dynamic performance.

ENTECH™ NON-SLAM, NOZZLE CHECK VALVE

FEATURES

Since 1930, ENTECH nozzle check valves have provided reliable backflow prevention for the oil, gas, water and process industries. Beginning in 1972, ENTECH has also served the nuclear industry with nozzle check valves for containment and commercial process.

The ENTECH nozzle check valve is designed to meet the criteria of conventional check valves by allowing forward flow under normal conditions, opening easily, firmly backseating at low velocity and closing on reverse flow with minimal seat leakage.

Easy to stroke, requires very low flow to fully open, guarantee the highest fluid dynamic performances.

Nozzle design, to streamline the flow for very low pressure drops and operating costs with no turbulence and vibrations.

Tight shut-off, by means of a metal to metal conical seating for perfect self-alignment and no maintenance costs.

Extremely reliable, the single spring loaded disc responds quickly to flow variations.

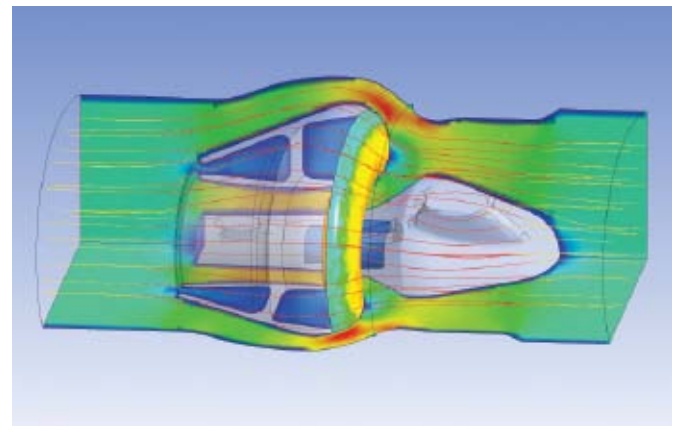
Closes rapidly, and stops back flow to protect the pipe and critical equipment.

Highly customizable, to fit any application and with internals that can be replaced to suit future flow conditions.

The ENTECH nozzle check valve is aligned with other Cameron products, leading the field in pipeline and gas production, offshore, onshore, sub-sea, refining and industrial processing.

APPLICATIONS

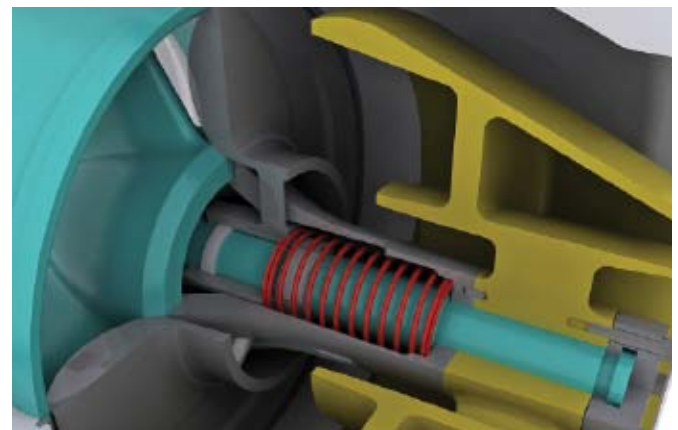
- Compressor discharge
- Natural gas, refineries
- Pump discharge
- Critical equipment discharge
- Compressor/pump bypass
- Storage facilities
- Offshore
- Nuclear power plants



Axial design, stream-lined flow, low pressure drops, high dynamic performances.



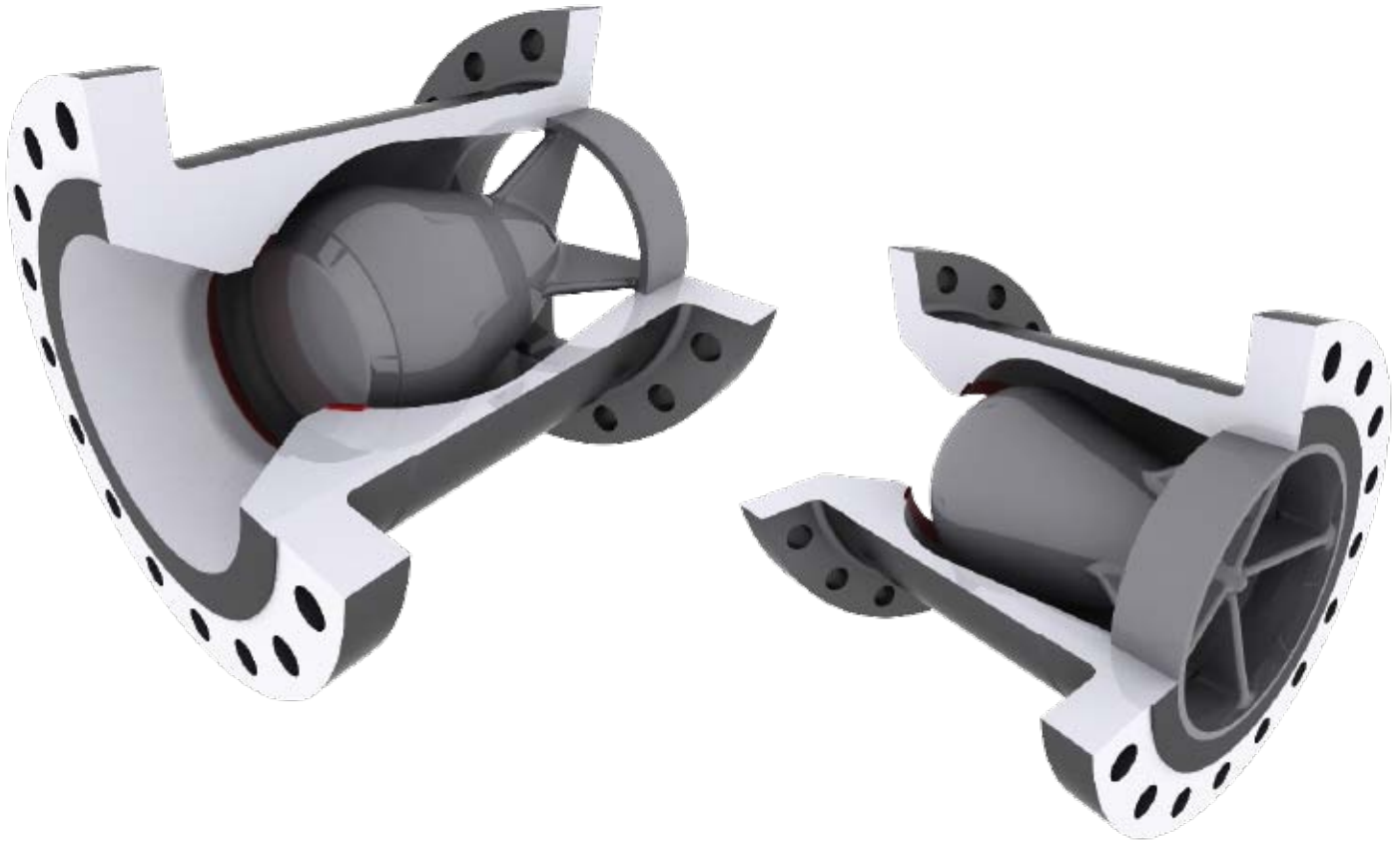
Short stroke, very low flow velocity to fully open the valve, short closure time.



Can be customized to customer needs, also offers a spring protection from fluid particles.

ENTECH™ NON-SLAM, NOZZLE CHECK VALVE

PRODUCT DRV-Z



The DRV-Z Nozzle Check is a small bore valve designed for use in piping systems from 1 in. (25 mm) to 14 in. (350 mm) diameter. This size range allows the use of a simple, streamlined, in-line check design which is quick to respond to changes in velocity.

The DRV-Z design also provides:

- Non-slam closure
- Metal seating
- Fast closing
- Mounting in any orientation
- Low pressure drop
- No scheduled maintenance
- Tight shut-off

Sizes and Ratings:

- Size 1 in. (25 mm) through 14 in. (350 mm)
- ANSI / ASME Classes 150 through 2500
- API 3000 through 10,000
- Face-to-face manufacturers standard
- ANSI / ASME flanges, weld ends or other flange end configurations can be provided upon request
- Other sizes and pressure classes will be considered upon request

ENTECH™ NON-SLAM, NOZZLE CHECK VALVE

PRODUCT DRV-BN



The DRV-BN Nozzle Check is a large bore valve designed for compressor and pumping stations from 16 in. (400 mm) diameter and above.

In this size range ENTECH incorporates the following:

- 1) The use of an annular ring design to minimize the weight of the disc to avoid any fatigue phenomena and significantly improve valve response time to pipeline flow changes.
- 2) Centralized single coil spring mechanism as the most consistent spring force design, extremely stable and responds rapidly to flow variation.
- 3) Features a flow-spacer that allows the valve to be fully customizable to specific service and installation conditions and to be easily re-configurable in case of potential changes of customer plant flow performances over the years.

The DRV-BN design also provides:

- Non-slam closure
- Metal seating
- Fast closing
- Spring loaded disc allows mounting in any orientation
- Low pressure drop
- No scheduled maintenance
- Tight shut-off

Sizes and Ratings:

- Size 16 in. (400 mm) and above
- ANSI / ASME Classes 150 through 2500
- Face-to-face manufacturers standard
- ANSI / ASME flanges, weld end or other flange ends configurations can be provided upon request
- Other sizes and pressure classes will be considered upon request

ENTECH™ NON-SLAM, NOZZLE CHECK VALVE

QUALITY ASSURANCE

Cameron's Valves & Measurement Group operates a high level quality control program to ensure all its products are designed and manufactured to the highest standards available using the latest technology.

The Cameron Quality Assurance program encompasses our entire operation, from order entry to final inspection and delivery.

Cameron's Six Sigma lean manufacturing philosophy and the standard warranty which covers the product for 12 months after installation or 18 months after shipment, whichever occurs first, assure that the design, materials and workmanship of all ENTECH products result in years of dependable operation.

SPECIFICATIONS AND COMPLIANCE: ISO 9001:2008, API 6D / ISO 14313, ISO 19001, API 6DSS / ISO 14723, API 6A / ISO 10423, PED, GOST, and CRN.

DIMENSIONAL DATA & WEIGHTS

DRV-Z FLANGED END VALVES

Valve Size		150#		300#		600#		900#	
NB	DN	Length mm	Weight Kg	Length mm	Weight Kg	Length mm	Weight Kg	Length mm	Weight Kg
1	25	100	5	100	5	100	8	100	12
2	50	120	9	120	9	120	11	200	16
3	80	180	16	180	23	180	30	180	32
4	100	240	25	240	38	240	46	240	60
6	150	350	49	350	70	350	97	350	165
8	200	450	88	450	121	450	163	450	241
10	250	500	130	500	177	500	269	500	310
12	300	600	*	600	*	600	*	600	*
14	350	700	*	700	*	700	*	700	*

DRV-BN FLANGED END VALVES

Valve Size		150#		300#		600#		900#	
NB	DN	Length mm	Weight Kg	Length mm	Weight Kg	Length mm	Weight Kg	Length mm	Weight Kg
16	400	500	385	500	385	500	550	500	640
20	500	625	665	625	665	625	905	665	1210
24	600	745	1060	745	1060	745	1450	800	2165
30	750	930	2040	930	2040	930	2640	1060	3855
36	900	1120	3285	1120	3285	1120	4340	1270	6430
42	1050	1308	*	1308	*	1308	*	*	*
48	1200	1485	*	1485	*	1485	*	*	*

* Information provided upon request.

FLOW PERFORMANCE DATA

C_v Values [gpm]

DRV-Z	Size	150	300	600	900
	1"	20	20	20	20
	2"	84	84	84	84
	3"	227	227	227	227
	4"	366	366	366	366
	6"	881	881	881	881
	8"	1692	1692	1692	1692
	10"	2762	2762	2762	2762
	12"	3043	3043	3043	3043
	14"	6003	6003	6003	5952

C_v Values [gpm]

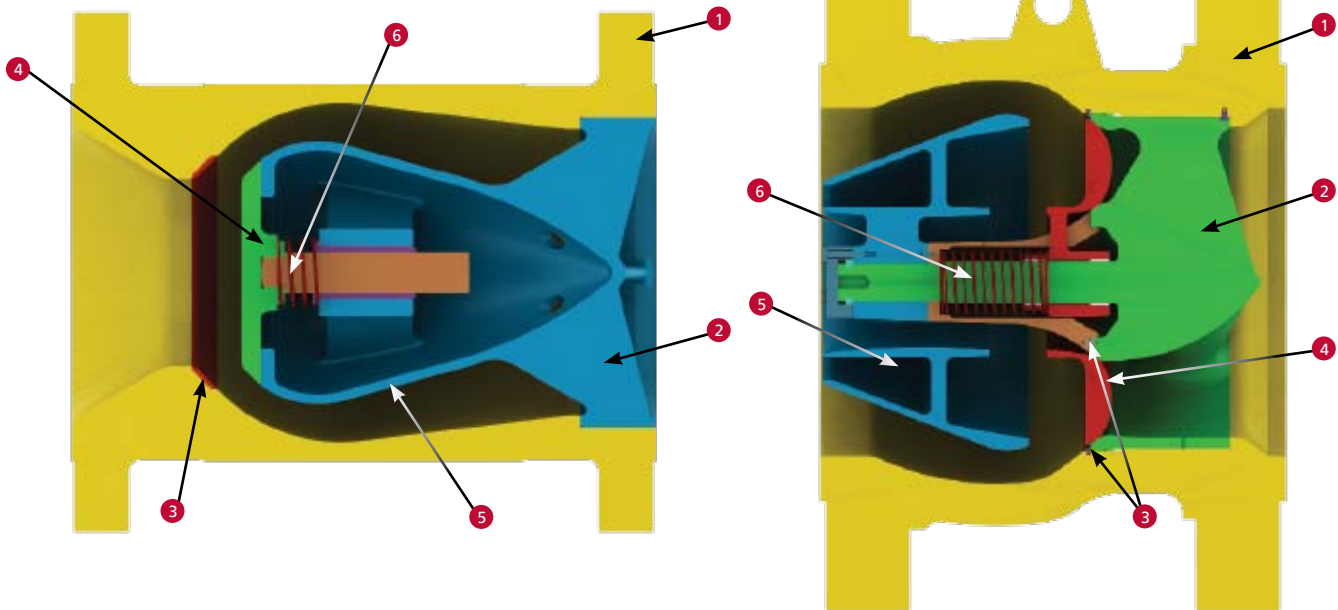
DRV-BN	Size	150	300	600	900
	16"	8100	8100	8100	8100
	20"	12500	12500	12500	12500
	24"	17984	17984	17984	17984
	30"	30900	30900	30900	30900
	36"	43000	43000	43000	43000
	42"	46000	46000	46000	46000
	48"	58000	58000	58000	58000

ENTECH™ NON-SLAM, NOZZLE CHECK VALVE

MATERIALS OF CONSTRUCTION

DRV-Z

DRV-BN



Part	Description	Low Temp Carbon Steel / 316SS Seats	Low Temp Carbon Steel / Inc625 Seats	Full Stainless Steel	Full Duplex
1	Body	A352 LCC / A350 LF2	A352 LCC / A350 LF2	A351 CF8M / A182 F316	S31803 / A182 F51
2	Nozzle	A352 LCC	A352 LCC	A351 CF8M	S31803
3	Seat	316SS	INCONEL 625	INTEGRAL	INTEGRAL
4	Disc	A351 CF8M	A351 CF8M	A351 CF8M	S31803
5	Diffuser	A352 LCC	A352 LCC	A351 CF8M	S31803
6	Spring	X-750	X-750	X-750	X-750

Design Temperatures:

Low Temperature Carbon Steel: -50°F to 572°F (-45°C to 300°C)

Stainless Steel: -320°F to 572°F (-196°C to 300°C)

Duplex: -320°F to 572°F (-196°C to 300°C)

All materials comply with NACE MR0175 / ISO 15156 Sour Service requirements.

Others materials are available upon request to meet specific service requirements.

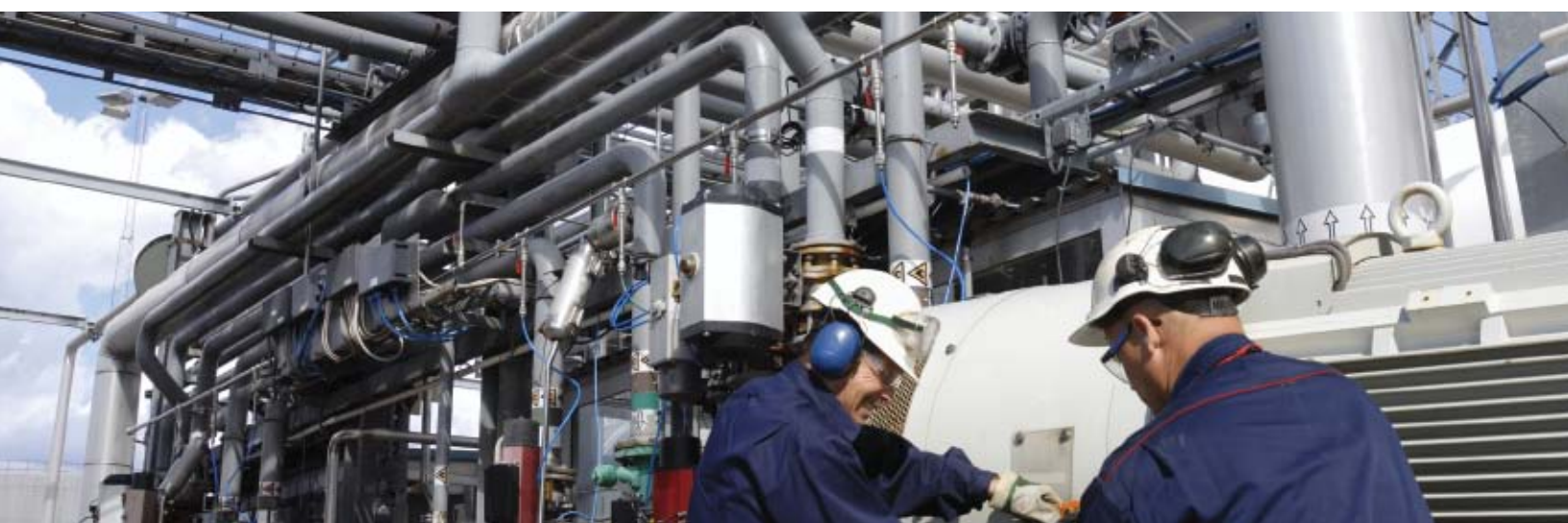
CAMSERV™ AFTERMARKET SERVICES



Cameron's Aftermarket Services' goal is to help our customers lower the total cost of valve ownership. To that end we offer a full range of services from over twenty-five Service Centers worldwide and can provide experienced personnel trained to meet the specific service requirements of each valve type.

Aftermarket Services

- Supplies replacement valves and parts:
 - Maintains a full inventory of new and reconditioned valves for immediate delivery
 - Provides factory warranty support for all Cameron OEM brands as well as service for most other valves
- Field Service & Technical Support
 - Field service technicians on call 24 hours a day 7 days a week to handle service issues wherever they arise
 - Provides equipment installation, field repairs, as well as track and perform scheduled maintenance
- Customer Property Repair
 - The Customer Property Repair program allows Cameron valve customers to store assets at our service centers throughout the world
 - Valves tracked in electronic database accessible through the Internet
- Remanufactured Products
 - Offers a broad range of API-compliant reconditioned equipment with fast delivery
- Total Valve Management
 - Supply and service automation and control packages
 - Assist with valve installation, commissioning and start-up



TRADEMARK INFORMATION

ENTECH™ is a registered trademark which is owned by Cameron.

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