ORBIT Valves

Unique tilt-and-turn design for fast, low-torque operation and long-term, reliable performance in applications when zero leakage and frequent operation are demanded.
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Cameron’s ORBIT® valves are ideal for applications when zero leakage and frequent operation are demanded. They are used globally in gas processing plants using molecular sieve systems in switching service.

- **No Rubbing Between Sealing Surfaces**
  The tilt-and-turn action eliminates seal abrasion, which is the major cause of seat wear in conventional ball, gate and plug valves.

- **Injectable Packing**
  For in-service maintenance, stem packing material is injected through the packing fitting, giving complete control of fugitive emissions. (Available on all enclosed bonnet models.)

- **Single-seat Design**
  The single, stationary seat in the ORBIT valve seals in both directions and avoids the problems of trapped pressure between seals.

- **Long Life**
  ORBIT valves replace troublesome ball valves, gate valves, globe valves and plug valves. The ORBIT design has performance advantages that reduce plant outage and reduce the cost of ownership.

- **Optimum Flow**
  Full port or reduced port openings give high C_v figures. System pumping efficiency is enhanced and erosion problems are reduced.

- **Top-entry Design**
  In-line inspection and repair, after system depressurizing, simplifies maintenance.

  - **Dual Stem Guides**
    Hardened stem slots and tough guide pins control the lift-and-turn action of the stem.

  - **Self-cleaning**
    Tilting the core away from the seat before rotation causes immediate flow around 360 degrees of the core face. Product flow flushes any foreign material away from the seat without localized, high-velocity erosive flow.

  - **Low-torque Operation**
    ORBIT valves turn easily because seal rubbing is eliminated.

  - **Wear-resistant Hard Facing on Core**
    The core face is a hard, polished material that will endure difficult service, without loss of sealing integrity.

  - **Mechanical Cam Closure**
    The cam angle at the lower end of the stem provides a mechanically energized seal.

**NOTE:** Never remove any part from an ORBIT valve unless specifically instructed to do so in the literature, or without first consulting a Cameron representative. Incorrect procedure could result in personal injury and/or property damage.
QUALITY ASSURANCE

Cameron’s Little Rock, Ark., US, manufacturing facility has quality programs that are ISO 9001 registered.

Specifications and Compliances

- API 6D
- ISO 9001:2008
- PED 97/23/EC
- ATEX Directive 94/9/EC
- GOST
- GOST-R Certificate and RTN Permit
- ISO 15848-1 (Fugitive Emission Type Testing)
- Shell GSI SPE 77/300 TAT Qualified and TAMAP Two-Star Rating
- ASME B16.34

Cameron’s manufacturing philosophy and the standard 36-month warranty ensures that the design, materials and workmanship of all ORBIT products result in years of dependable operation.

Certifications for hydrostatic test results and material properties are available on request.

The Little Rock facility has undergone a new layout reorganization and CAPEX investment in state-of-the-art equipment.

Every ORBIT valve built is individually pressure tested to meet or exceed industry standards.

Gas testing and certification to the latest industry standards is performed by independent inspectors.
OPERATING PRINCIPLE

Every ORBIT valve incorporates a proven tilt-and-turn operation that eliminates seal rubbing, which is the primary cause of valve failure.

When an ORBIT valve is closed, the core is mechanically wedged tightly against the seat, ensuring positive shutoff.

When an ORBIT valve begins to open, the core tilts away from the seat and line flow passes uniformly around the core face. This eliminates the localized high-velocity flow that typically creates uneven seat wear in ordinary ball, gate and plug valves. The core then rotates to the fully open position.

The absence of seal rubbing during both opening and closing means easy, low-torque valve operation and long-term reliable performance.

When valve leakage cannot be tolerated, Cameron’s ORBIT operating principle can be relied upon to deliver a positive shutoff.

To Close an ORBIT Valve

To close an ORBIT valve, as the handwheel is turned, the stem begins to lower.

Precision spiral grooves in the stem act against fixed guide pins, causing the stem and core to rotate.

Continued turning of the handwheel rotates the core and stem a full 90 degrees without the core touching the seat.

Final turns of the handwheel mechanically wedge the stem down, pressing the core firmly against the seat.
MARKET OPERATIONS

ORBIT valves are ideally suited for:

- Mol sieve dehydration
  switches valves
- Flowlines
- Meter isolation
- Dryer switching
- Block and bypass
- Product segregation
- Emergency shutdown
- Suction and discharge isolation
- Heat transfer fluids/hot oil
- Hydrogen service
- Many additional applications

ORBIT valves are ideal where frequent cycling and a positive shutoff are required, conditions that are prevalent in molecular sieve applications in gas processing plants.

The ORBIT valve’s top-entry design provides convenient access for in-line inspection and repairs, when required. For environmental protection, injectable packing can be replenished while valves are under full line pressure on enclosed bonnet models.

An ORBIT model is displayed at the customer show room in Little Rock, Ark., US.
PRODUCT RANGE AND OPTIONS

ORBIT valves are manufactured in a variety of materials, sizes and trims to meet specific requirements.

Materials
Carbon steel, stainless steel, duplex SS, high-nickel alloys and other special materials are used as service conditions require. External protective coatings are available for added durability in corrosive environments.

Seats
Soft or metal-seated options are selected for the intended service. Because the seals in the valves do not rub, and because they are mechanically compressed shut, they survive in high-temperature and abrasive situations.

Operation
Hand or power operation can be selected. Cameron’s ORBIT brand offers double-acting, spring-close and spring-open pneumatic actuators. User-selected electric and hydraulic actuators are available. Instrumentation choices also are offered.

Customizing
Handwheel extensions, safety interlocks, position indicator limit switches, thermal jackets, custom painting and special inspection can be provided.

Maintenance and Repairs
Cameron’s services include inspection, maintenance and repairs for all ORBIT valve products.
HOW TO ORDER

Sizes Available

<table>
<thead>
<tr>
<th>ASME Class (PN)</th>
<th>150 (20)</th>
<th>300 (50)</th>
<th>600 (100)</th>
<th>900 (150)</th>
<th>1500 (250)</th>
<th>2500 (420)</th>
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</thead>
<tbody>
<tr>
<td>Reduced Port, Flanged</td>
<td>2 through 30</td>
<td>2 through 30</td>
<td>2 through 30</td>
<td>3 through 24</td>
<td>3 through 20</td>
<td>3 through 16</td>
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<tr>
<td>(mm)</td>
<td>(50 through 750)</td>
<td>(50 through 750)</td>
<td>(50 through 750)</td>
<td>(80 through 600)</td>
<td>(80 through 500)</td>
<td>(80 through 400)</td>
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<td>Full Port, Flanged</td>
<td>1 through 24</td>
<td>1 through 24</td>
<td>1 through 24</td>
<td>1 through 20</td>
<td>1 through 16</td>
<td>2 through 12</td>
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<td>(25 through 500)</td>
<td>(25 through 400)</td>
<td>(50 through 300)</td>
<td></td>
</tr>
<tr>
<td>Reduced Port, Butt Weld</td>
<td>3 through 20</td>
<td>3 through 20</td>
<td>3 through 20</td>
<td>3 through 20</td>
<td>3 through 20</td>
<td>3 through 12</td>
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<tr>
<td>(80 through 500)</td>
<td>(80 through 500)</td>
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<td>(80 through 300)</td>
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<tr>
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<td>2 through 16</td>
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<td>2 through 16</td>
<td>2 through 10</td>
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<td>(50 through 400)</td>
<td>(50 through 250)</td>
<td></td>
</tr>
<tr>
<td>Full Port, Butt Weld x Flanged</td>
<td>–</td>
<td>–</td>
<td>2 through 16</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(50 through 400)</td>
<td></td>
<td></td>
<td>(50 through 400)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Full Port, Socket Weld</td>
<td>–</td>
<td>–</td>
<td>1 through 2</td>
<td>–</td>
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<td>(25 through 50)</td>
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<td>(25 through 50)</td>
<td>(25 through 50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Port, Threaded</td>
<td>–</td>
<td>–</td>
<td>1 through 3</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(25 through 80)</td>
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<td>(25 through 80)</td>
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Ordering Information

How to develop figure numbers:

Class

<table>
<thead>
<tr>
<th>Model</th>
<th>Port Size and Connection</th>
<th>Suffix**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Standard</td>
<td>2 – Full Port, Flanged</td>
<td>A – Type of Seat 250° F (121° C) Max.</td>
</tr>
<tr>
<td>2 – Low-temp. -50° F (-46° C)</td>
<td>3 – Reduced Port, Flanged</td>
<td>H – Type of Seat 500° F (260° C) Max.</td>
</tr>
<tr>
<td>3 – Alloy Steel</td>
<td>4 – Full Port, Threaded</td>
<td>H8 – Type of Seat 800° F (427° C) Max.</td>
</tr>
<tr>
<td>4 – API</td>
<td>5 – Reduced Port, Butt Weld</td>
<td>PK – Type of Seat 570° F (299° C) Max.</td>
</tr>
<tr>
<td>5 – National Grid (UK)</td>
<td>6 – Full Port, Butt Weld</td>
<td>L – Adapted for Actuator</td>
</tr>
<tr>
<td>6 – Corrosive: 316 SS -155° F (-104° C)</td>
<td>7 – Duplex SS</td>
<td>BB – Block-and-Bleed Model</td>
</tr>
<tr>
<td>7 – ASME/ANSI 1500</td>
<td>8 – Drilling Valves</td>
<td>GS – Grease Seal Model</td>
</tr>
<tr>
<td>8 – High-nickel Alloy</td>
<td>9 – Standard, ASME/ANSI Class 600, Reduced Port, Flanged, Standard (T3)</td>
<td>S – Non-standard End-to-End Dimension</td>
</tr>
<tr>
<td>9 – High-nickel Alloy</td>
<td></td>
<td>SC – Chevron Special Trim</td>
</tr>
</tbody>
</table>

Example

1433H = Standard, ASME/ANSI Class 600, Reduced Port, Flanged, Standard (T3)

* For a more complete explanation of trims and figure numbers, consult your Cameron representative.

** Valve figure number may use more than one suffix. Example: 1433HBL.

Cameron reserves the right to substitute materials listed on the following pages with alternate materials for the designated service.
ONE-PIECE STEM, ENCLOSED BONNET VALVES

Details and Materials
## Materials List

<table>
<thead>
<tr>
<th>Parts Description</th>
<th>Standard T3 -20° F to 500° F (-29° C to 260° C)</th>
<th>Standard T7 -20° F to 500° F (-29° C to 260° C)</th>
<th>Low-Temp. T3 -50° F to 500° F (-46° C to 260° C)</th>
<th>Low-Temp. T7 -50° F to 500° F (-46° C to 260° C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Body</td>
<td>ASTM A216 Gr. WCC</td>
<td>ASTM A216 Gr. WCC</td>
<td>ASTM A352 Gr. LCC</td>
<td>ASTM A352 Gr. LCC</td>
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<tr>
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<td>ASTM A216 Gr. WCC</td>
<td>ASTM A352 Gr. LCC</td>
<td>ASTM A352 Gr. LCC</td>
</tr>
<tr>
<td>3 Gasket</td>
<td>Stainless Steel and Graphite</td>
<td>Stainless Steel and Graphite</td>
<td>Stainless Steel and Graphite</td>
<td>Stainless Steel and Graphite</td>
</tr>
<tr>
<td>5 Nut</td>
<td>ASTM A194 Gr. 2H</td>
<td>ASTM A194 Gr. 2HM</td>
<td>ASTM A194 Gr. 4 or 7</td>
<td>ASTM A194 Gr. 7M</td>
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<tr>
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<td>Stainless Steel</td>
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<tr>
<td>7 Seat Insert</td>
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<td>Teflon</td>
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<td>ASTM A216 Gr. WCC</td>
<td>ASTM A216 Gr. WCC</td>
<td>ASTM A216 Gr. WCC</td>
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<tr>
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<td>Nickel</td>
<td>Nickel-based CRA</td>
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<tr>
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<td>–</td>
<td>Nickel-based CRA</td>
</tr>
<tr>
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<td>Nickel-based CRA</td>
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<td>Stainless Steel</td>
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<tr>
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<tr>
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<tr>
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<td>Alloy Steel</td>
<td>Stainless Steel</td>
</tr>
<tr>
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<td>Teflon</td>
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<tr>
<td>17 Injectable Packing</td>
<td>ORBIT GP6</td>
<td>ORBIT GP6</td>
<td>ORBIT GP6</td>
<td>ORBIT GP6</td>
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<tr>
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<td>Stainless Steel</td>
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<td>19 Bonnet Nut</td>
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<tr>
<td>20 Packing Fitting</td>
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<tr>
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<tr>
<td>23 Bearing</td>
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<td>Alloy Steel</td>
</tr>
</tbody>
</table>

*Actual materials of construction will depend on the valve size, pressure class, end configuration and service conditions.*

*Consult Cameron for a detailed materials list.*

*This is a partial list of material options. Many alternatives can be provided to match the actual service requirements.*
TWO-PIECE STEM, ENCLOSED BONNET VALVES

Details and Materials
## Materials List

<table>
<thead>
<tr>
<th>Parts Description</th>
<th>Standard T3 -20° F to 500° F (-29° C to 260° C)</th>
<th>Standard T7 -20° F to 500° F (-29° C to 260° C)</th>
<th>Low-temp. T3 -50° F to 500° F (-46° C to 260° C)</th>
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</thead>
<tbody>
<tr>
<td>1 Body</td>
<td>ASTM A216 Gr. WCC</td>
<td>ASTM A216 Gr. WCC</td>
<td>ASTM A352 Gr. LCC</td>
<td>ASTM A352 Gr. LCC</td>
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<td>2 Bonnet</td>
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<td>ASTM A216 Gr. WCC</td>
<td>ASTM A352 Gr. LCC</td>
<td>ASTM A352 Gr. LCC</td>
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<tr>
<td>3 Gasket</td>
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<td>Stainless Steel and Graphite</td>
<td>Stainless Steel and Graphite</td>
<td>Stainless Steel and Graphite</td>
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</tbody>
</table>

Actual materials of construction will depend on the valve size, pressure class, end configuration and service conditions. Consult Cameron for a detailed materials list. This is a partial list of material options. Many alternatives can be provided to match the actual service requirements.
ONE-PIECE STEM, OS&Y BONNET VALVES

Details and Materials
Actual materials of construction will depend on the valve size, pressure class, end configuration and service conditions.
Consult Cameron for a detailed materials list.
This is a partial list of material options. Many alternatives can be provided to match the actual service requirements.

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<th>Standard T7</th>
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TWO-PIECE STEM, OS&Y BONNET VALVES

Details and Materials
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Actual materials of construction will depend on the valve size, pressure class, end configuration and service conditions. Consult Cameron for a detailed materials list. This is a partial list of material options. Many alternatives can be provided to match the actual service requirements.
## END FLANGE BOLTING DIMENSIONS

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</tr>
<tr>
<td>18 x 16 x 18</td>
<td>40</td>
<td>1-7/8</td>
<td>12-3/4</td>
<td>13-1/4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>20 x 16 x 20</td>
<td>40</td>
<td>2</td>
<td>13-3/4</td>
<td>14-1/4</td>
<td>32</td>
<td>3</td>
<td>21-1/4</td>
<td>22-1/4</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
<td>2</td>
<td>13-3/4</td>
<td>14-1/4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

**ASME/ANSI**
- Raised-face Flanged
- Flat-face Flanged
- RTJ (RG) Flanged
- Butt Weld
- Socket Weld or Threaded
# Seat and Stem Packing Selection

## Seat Selection

<table>
<thead>
<tr>
<th>Temperature/Service</th>
<th>Insert Material</th>
<th>Support Ring</th>
<th>Bore Sizes (In.)</th>
<th>Seat Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>-50° F to 250° F (-46° C to 121° C)</td>
<td>Nylon</td>
<td>Carbon Steel</td>
<td>2 to 16</td>
<td>Type A, BB and GS</td>
</tr>
<tr>
<td>-50° F to 250° F (-46° C to 121° C)</td>
<td>Nylon</td>
<td>Stainless Steel</td>
<td>2 to 16</td>
<td>Type A, BB and GS</td>
</tr>
<tr>
<td>-155° F to 500° F (-104° C to 260° C)</td>
<td>Teflon TFE</td>
<td>Stainless Steel</td>
<td>1 to 24</td>
<td>Type H</td>
</tr>
<tr>
<td>-155° F to 800° F (-104° C to 427° C)</td>
<td>–</td>
<td>Stainless Steel</td>
<td>1</td>
<td>Type H8</td>
</tr>
<tr>
<td>-155° F to 800° F (-104° C to 427° C)</td>
<td>Stainless Steel Tube</td>
<td>Stainless Steel</td>
<td>1-1/2 to 24</td>
<td>Type H8</td>
</tr>
<tr>
<td>-50° F to 570° F (-46° C to 300° C)</td>
<td>PEEK*</td>
<td>Stainless Steel</td>
<td>2 to 12</td>
<td>Type PK</td>
</tr>
</tbody>
</table>

*Other packing materials available.

## Stem Packing Selection

<table>
<thead>
<tr>
<th>Temperature/Service</th>
<th>Packing Material</th>
<th>ORBIT Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>-50° F to 500° F (-46° C to 260° C)</td>
<td>Injectable Teflon Packing with Fire-safe Graphite Top Ring</td>
<td>GP6</td>
</tr>
<tr>
<td>-50° F to 800° F (-46° C to 427° C)</td>
<td>Graphite Rings with OS&amp;Y Packing</td>
<td>GP20</td>
</tr>
<tr>
<td>-30° F to 550° F (-34° C to 288° C)</td>
<td>Injectable Teflon Packing with Fire-safe Graphite Top Ring</td>
<td>GP19</td>
</tr>
<tr>
<td>-20° F to 400° F (-29° C to 204° C)</td>
<td>Injectable Teflon Packing with Teflon Rings</td>
<td>GP27</td>
</tr>
<tr>
<td>-30° F to 275° F (-34° C to 135° C)</td>
<td>Injectable Teflon Packing with Teflon Rings</td>
<td>GP7</td>
</tr>
<tr>
<td>Ammonia Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTBE Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen Service</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other packing materials available.
MARKINGS

Valves & Measurement

<table>
<thead>
<tr>
<th>Valves &amp; Measurement ORBIT</th>
<th>STANDARD TRIM</th>
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</thead>
<tbody>
<tr>
<td>SIZE 3” 900 CL</td>
<td>END TO END 15”</td>
</tr>
<tr>
<td>FIG 1523H RF</td>
<td>1995 MOP AT +500F</td>
</tr>
<tr>
<td>SN 110091620001</td>
<td>2250 MOP AT -20F</td>
</tr>
<tr>
<td>PKG GP6</td>
<td>STEM CR13</td>
</tr>
<tr>
<td>SEAT CR13 TEF</td>
<td>BODY STEEL WCC</td>
</tr>
<tr>
<td>MFG 6D-0073</td>
<td>CORE TRIM CR13</td>
</tr>
<tr>
<td>DATE 04/01 ISO 14313</td>
<td>CORE FACE NI</td>
</tr>
<tr>
<td>IMPACT TEMP -50F</td>
<td>TEMP -20/+500F</td>
</tr>
</tbody>
</table>

CAMERON
Little Rock, AR USA

Nameplate Markings for Valve Trim

- AS  Alloy Steel
- 15-6  Carpenter 450° Stainless Steel
- 660  A-638 (Grade 660)
- HF-C  Hardfacing Hastelloy C® and C-276
- C-276  Hastelloy C-276®
- MP35N Latrobe®
- CO-U  Cobalt-Based Ultimet®
- NICU  Monel®
- NI  Nickel
- COCR  Stellite®
- 17-4  17-4PH Stainless Steel
- CR13  410 and 420 Stainless Steel (13% Chrome)
- 718  Inconel 718®
- 316  316 Stainless Steel
- NYL  Nylon
- PEEK  Polyetheretherketone
- TEF  Teflon

Nameplate Markings for Stem Packing

- GP-6  General Service
- GP-7  Oxygen Service
- GP-19  Ammonia Service
- GP-27  MTBE Service
- Graphite OS&Y (Graphite Rings)
- GP-22  Injectable Graphite

Body Markings – ASME/ANSI Valve

The serial number is stamped into the side of the valve body or the OD of the flange. If the valve has ring joint facings, the ring gasket number is stamped into the OD of the flange. Preferred pressure end and seat size code are stamped on the OD of flanged valves and on the hub end of butt weld and threaded valves. The end connection size and class are stamped or cast on the body.
**ACTUATOR FIGURE NUMBERS**

**Diaphragm Actuator**

![Diaphragm Actuator Diagram]

**Double-acting Style**

*Example*: 164100-280

**First Figures** (8, 16 or 42)  
(Nominal Size of Diaphragm) x 10  
8 = Approximately 80 sq in  
16 = Approximately 160 sq in  
42 = Approximately 420 sq in

**Second Figure**  
(0)(4) etc. = Actuator/Valve Mounting Configuration

**Third Figures**  
(100)(625)(1125) etc. = Valve Stem Thread Size

**Fourth Figure**  
Available Accessories  
275 = Manual Close Mechanism  
280 = Two-way Manual Mechanism  
301 = Snubber  
376 = Snubber and Manual Close Mechanism  
381 = Snubber Two-way Manual Mechanism

---

**Spring-return Style**

*Example*: 62585-275

**First Figures**  
(100)(625)(1125) etc. = Valve Stem Thread Size

**Second Figures** (8, 16 or 42)  
(Nominal Size of Diaphragm) x 10  
8 = Approximately 80 sq in  
16 = Approximately 160 sq in  
42 = Approximately 420 sq in

**Third Figure**  
Type of Spring-action and Mounting Configuration  
0 = Spring Close, Threaded Adapter  
3 = Spring Open, Threaded Adapter  
4 = Spring Close, Flange Adapter  
5 = Spring Open, Flange Adapter, etc.

**Fourth Figure**  
Available Accessories  
275 = Manual Close Mechanism for Spring Open  
280 = Two-way Manual Mechanism for Spring Open  
301 = Snubber  
291 = Two-way Manual Mechanism for Spring Close  
376 = Snubber and Manual Close Mechanism for Spring Open  
381 = Snubber and Two-way Manual Mechanism for Spring Open
Piston Actuator

Example: LS-185-D-5-X-S

First Figure
L = Low-pressure Cylinder Actuator, 80 psi Maximum Pressure

Second Figure
G = Double-cylinder Damping or No Damping
S = Single-cylinder Damping

Third Figures
(12)(18)(20) etc. = Nominal Diameter of Actuator Piston (inches)

Fourth Figures
(3)(4)(5) etc. = Nominal Piston Stroke (inches)

Fifth Figure
(D)(T) etc. = Number of Cylinders (Double/Triple, etc.)

Sixth Figures
(1)(2)(3) etc. = Actuator/Valve Mounting Configuration (Consult Cameron for specific details)

Seventh Figure
Accessory Features
C = Mechanical Override – Closed
H = Hydraulic Override – Open, Mechanical Override – Closed
L = Positive Close Locking Device
M(N) = Mechanical Override – Open and Closed
O = Hydraulic Override – Open and Closed
X = No Accessory Features

Eighth Figure
S = Spring Return
These are typical selections of actuators for soft-seated valves with standard T3 trim and pipeline pressure from the preferred end. The correct choice of actuator will depend on pressure direction, temperature, flow conditions, valve trim and valve end connections. Consult Cameron for the specific actuator/valve combination that is most suitable for the intended service.

**Electric Actuators**

Cameron supplies electric actuated valve packages using many of the commercially available power actuators built by other companies. The electric actuator is selected, mounted, adjusted and tested by Cameron so that field performance of the entire valve assembly can be ensured.

**Hydraulic Actuators**

Commercially available hydraulic actuators built by other vendors are available upon request.
Services for Valves and Actuation

Global Network and Local Support
Cameron is well-positioned to deliver total valve support, quickly and efficiently, with unmatched OEM expertise. Our highly skilled engineers and technicians are available around the clock, seven days a week to respond to customer queries, troubleshoot problems and offer reliable solutions.

Easily Accessible Parts and Spare Valves
- OEM spare valves, actuators and parts (including non-Cameron brands)
- Handling, storage, packaging, and delivery
- Dedicated stocking program

Comprehensive Services Portfolio
- Parts and spare valves
- Repair
- Field services
- Preventative maintenance
- Equipment testing and diagnostics
- Remanufacturing
- Asset preservation
- Customer property management
- Training and recertification services
- Warranty

Customized Total Valve Care™ (TVC) Programs
Customized asset management plans that optimize uptime, availability and dedicated services.
- Engineering consultancy
- Site management
- Flange management
- Startup and commissioning
- Spare parts and asset management
- Operational support
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<table>
<thead>
<tr>
<th>Registered Trademark</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpenter 450</td>
<td>Carpenter Technology Corp.</td>
</tr>
<tr>
<td>Hastelloy</td>
<td>Haynes International, Inc.</td>
</tr>
<tr>
<td>Inconel</td>
<td>INCO Nickel Sales, Inc.</td>
</tr>
<tr>
<td>Latrobe</td>
<td>Timkin Latrobe Steel</td>
</tr>
<tr>
<td>Monel</td>
<td>INCO Alloys International, Inc.</td>
</tr>
<tr>
<td>PEEK</td>
<td>Victrex PLC.</td>
</tr>
<tr>
<td>Stellite</td>
<td>Stoody Deloro Stellite, Inc.</td>
</tr>
<tr>
<td>Teflon</td>
<td>E.I. DuPont De Nemours &amp; Company</td>
</tr>
<tr>
<td>Ultimet</td>
<td>Haynes International, Inc.</td>
</tr>
</tbody>
</table>
HSE Policy Statement
At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt and nothing gets harmed.