Valves for Oil and Gas Production and Development
Severe Service Valve Solutions

Severe-Service ● Zero-Leakage ● Metal-Seated
ValvTechnologies provides field proven solutions for severe service applications.

Oil & Gas Production Applications

ValvTechnologies trunnion valves for subsea applications are designed for MOV coupling. A complete panel option is available. The trunnion valve is suitable for depths of 12,000’ in subsea applications, available in sizes 2 – 36”, API pressures 5000, 10000, 15000 and in a variety of material options, including metal and PEEK™ seats. The ValvTechnologies trunnion design is an effective solution for subsea applications. The one-piece body design handles solids and requires minimum maintenance. Additionally, an option for hyperbaric testing by an independent lab offering a 12,000’ certificate is available.

Facilities

- Oil and gas production
- Gathering systems, manifolds and pipelines
- Produced water processing
- Oil processing
- Gas processing
- Molecular sieve dehydration
- Scraper launchers and receivers
- Compressor stations
- Underground oil and gas storage
- Steam generation
- Steam injection
- SAGD

Subsea

- Flow lines
- Emergency shutdown
- Subsea isolation
Applications

Enhanced oil recovery
- Molecular sieve switching
- Steam injection well isolation
- Steam electronic relief
- Boiler isolation
- Produced water isolation
- Sand filter isolation

Primary oil and gas production
- Well shut-in
- Emergency shut down
- Switching valves on test and production header
- Flow line isolation
- Blowdown and venting
- Scraper trap isolation

LNG
- Turbine steam systems
- Molecular sieve switching
- Vents and drains
- Terminal inlet HIPPS

HIPPS protection
- Flow lines
- Receiving terminal
- LNG regasification outlet
- Subsea pipelines
The advantages of the trunnion-mounted ball valve include: low operating torque, very high flow rates (Cv), protected sealing surfaces when in the open and closed position, and the ability to operate in the presence of solids and other contamination. The TrunTech™ design from ValvTechnologies withstands severe thermal swings, meets stringent emission requirements and provide long life in abrasive and erosive conditions.

Applications:
- HIPPS
- ESD
- Manual isolation
- Injection
- Gas storage (withdrawal)
- Gas transmission
- Other gas treatment processes

1 Carbide Sealing Surfaces
The sealing surfaces are overlaid with tungsten or chromium carbide using the ValvTechnologies-exclusive coating process. These surfaces have a hardness of 68 – 72 Rc to allow long periods of operation in the most severe conditions.

2 High Integrity Seat Surfaces
To prevent leaks around the seats, ValvTechnologies has developed an innovative double seal design for high temperature operation and/or high cycling applications. In low temperature, high cycling service, a secondary elastomer seal is installed on the seat perimeter.

3 Solids Resistance
In addition to the carbide coatings which will allow the valve to function in highly abrasive applications, the individual valve parts have additional seals to prevent interference from solids in the system. This provides for outstanding service in severe-service isolation applications with high particle content from sand, elemental sulfur, hydrate, perforation shrapnel, molecular sieve catalyst and pipe corrosion products.
<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed tight shut-off</td>
<td>Enhanced process safety and repeatable sealing allows operation under process excursions</td>
</tr>
<tr>
<td>True metal-to-metal sealing without using secondary elastomeric seals</td>
<td>Inherent fire safety</td>
</tr>
<tr>
<td>Solid-proofed by design</td>
<td>Process reliability</td>
</tr>
<tr>
<td>Exclusive coating technology</td>
<td>Extended life</td>
</tr>
<tr>
<td>Grafoil® fire-safe seals</td>
<td>Reduced maintenance costs</td>
</tr>
<tr>
<td>Double block and bleed capability</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>High cycling capability</td>
<td>Process reliability</td>
</tr>
<tr>
<td>Bi-directional sealing by design</td>
<td>Enhanced process safety, lower maintenance, less downtime</td>
</tr>
<tr>
<td>Single-piece anti blow-out stem design</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Impervious to high thermal cycling</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Certified to use in SIL-3 loop in single-valve and SIL-4 loop in two-valve with minimum MTBF 1,280 years</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Fire safe certification: API-607 / API 6FA</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Stem fugitive emissions per ISO 15848-1 Class B</td>
<td>Lower emissions and enhanced process safety</td>
</tr>
</tbody>
</table>
The ValvTechnologies' design features are the implementation of extensive industry experience.

### Applications:
- Injection steam generations
- Steam distribution
- Production
- Molecular sieve
- LNG - steam
- Scrubber level control
- Other gas treatment processes

### V1 SERIES
**Industry Leader in High Temperature Service**

1. **Integral Metal Seat**
   With the patented ceramet and exclusive coating process, the integral seat in ValvTechnologies' rotary operating valves are resistant from the attack of abrasive magnetite or ferrous oxides in the steam flow.

2. **Body Seal Ring**
   Valvtechnologies employs a field proven seal ring technology to ensure sealing under all operating conditions, up to 1400°F. The body seal ring is loaded at a pressure higher than 20,000 psi. In addition, valves sized 3" and above contain a secondary Grafoil® seal to further guarantee reliability.

3. **Patented Coating Process**
   The sealing surfaces are overlaid with tungsten or chromium carbide using our exclusive coating process. These surfaces have a hardness of 68 – 72 Rc to allow long periods of operation in the most severe conditions.

4. **Live Loaded Gland Area**
   The V1 Series gland packing design features a four stud, live-loaded assembly designed for heavy industrial applications. The packing material is high purity Grafoil® surrounded by carbon fiber / Inconel anti-extrusion rings. The six Bellville springs (per stud) provide constant load pressure through extreme thermal shocks and prevent wear leaks in high cycle service.

5. **Blow-out Proof Stem**
   Valvtechnologies design utilizes a one piece, hard-faced, blow-out proof stem that is inserted through the inside of the body cavity eliminating the possibility of blow-out through the gland area.

- ASME/ANSI Class 150 - 2500
- API 5000 - 15000
- Sized per API 6A and 6D
## V1 Series Key Performance Features and Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed tight shut-off</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Long service life in severe applications</td>
<td>Reduced maintenance costs, long service life</td>
</tr>
<tr>
<td>Quarter turn operation - Readily automated</td>
<td>Increased safety, ease of operation, reduced space requirements</td>
</tr>
<tr>
<td>Low pressure drop - High Cv, Straight through flow</td>
<td>Reduced emissions</td>
</tr>
<tr>
<td>Dimensions to ANSI B16.10</td>
<td>Interchangeable with equivalent valves</td>
</tr>
<tr>
<td>Low emission packing and seals</td>
<td>Reduced emissions</td>
</tr>
<tr>
<td>Single-piece anti blow-out stem design</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Resistant to solids</td>
<td>Reduced process safety</td>
</tr>
<tr>
<td>Certified to use in SIL-3 loop in single-valve and SIL-4 loop in two-valve with minimum MTBF 1,280 years</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Live-load stem packing (four bolts design)</td>
<td>Lower emissions</td>
</tr>
<tr>
<td>Stem fugitive emissions per ISO 15848-1 Class B</td>
<td>Lower emissions and enhanced process safety</td>
</tr>
<tr>
<td>Fire safe certification: API-607</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Custom engineered</td>
<td>Process optimization</td>
</tr>
</tbody>
</table>

![V1 Series Valve Diagram]
ELECTRONIC RELIEF VALVE

Pilot operated relief system
Four year, zero leakage guarantee

The Electronic Relief Valve (ERV) package combines ValvTechnologies zero leakage isolation valve with electronic controls to monitor and regulate system pressure. Whether in a capacity relieving function requiring the ASME V-stamp or simply in an over pressure protection application, the ERV provides reliable protection for standard safety valves in many industries.

- ASME/ANSI Class 150 - 4500
- \( \frac{1}{2} - 12" \)

### ERV Key Performance Features and Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integral metal seat</td>
<td>Reduced maintenance costs</td>
</tr>
<tr>
<td>Single-piece anti blow-out stem design</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Live-loaded stem packing (four bolts design)</td>
<td>Lower emissions</td>
</tr>
<tr>
<td>Body seal is out of flow path</td>
<td>Reduced maintenance costs, minimum downtime</td>
</tr>
<tr>
<td>Carbide coated sealing surfaces</td>
<td>Reduced maintenance costs, long service life</td>
</tr>
<tr>
<td>High precision reliable electronics</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Repeatable tight shut-off, accurate to 1/4 or 1 psi</td>
<td>Interchangeable with equivalent valves</td>
</tr>
<tr>
<td>Dimensions to ANSI B16.10</td>
<td>Easily adapts to existing control suites</td>
</tr>
<tr>
<td>Customed-engineered</td>
<td>Reduced maintenance costs</td>
</tr>
<tr>
<td>Optional integrated isolation valve available</td>
<td></td>
</tr>
</tbody>
</table>

Application:
- Injection steam generation
XACTROL®

Characterized Trim
Leak Free Isolation and Control in One

The Xactrol® product group unites
ValvTechnologies’ zero-leakage technology
with special designs that allow rotary
modulating control. From the Mark I’s design
that features a characterized upstream
seat to the Mark III’s precision engineered
stacked disks, the Xactrol® allows the
customer to combine precise flow control
with tight shut-off. The Xactrol® is typically
used in applications where minimum flow
and relatively high differential pressures are
required.

- ASME/ANSI Class 150 – 2500
- ½ – 36”
- Integral, characterized downstream seat
- Upstream disc inserts for modulation

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure drop occurs in upstream seat</td>
<td>Downstream sealing seat protected</td>
</tr>
<tr>
<td>Repeatable tight shut-off</td>
<td>Enhanced process safety</td>
</tr>
<tr>
<td>Body seal is out of flow path</td>
<td>Reduced maintenance costs, minimum downtime</td>
</tr>
<tr>
<td>Integral downstream seat</td>
<td>Reduced leakpaths</td>
</tr>
</tbody>
</table>
### ValvTechnologies Standard Products
for Upstream Oil & Gas

<table>
<thead>
<tr>
<th>Model</th>
<th>Bore</th>
<th>End Size (inches)</th>
<th>Class</th>
<th>Body Materials</th>
<th>End Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>TrunTech™</td>
<td>.38</td>
<td>.25 – 4</td>
<td>900–4500</td>
<td>A105</td>
<td>BW</td>
</tr>
<tr>
<td>(Trunnion mounted)</td>
<td>.625</td>
<td></td>
<td></td>
<td>A182-F22 Cl.3</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td>1.06</td>
<td></td>
<td></td>
<td>A182-F91</td>
<td>RTJ</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td></td>
<td></td>
<td>A182-F31</td>
<td>Hub</td>
</tr>
<tr>
<td></td>
<td>2.125</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1 Series</td>
<td>.38</td>
<td>.25 – 4</td>
<td>900–4500</td>
<td>A105</td>
<td>BW</td>
</tr>
<tr>
<td>(Seat supported ball valve)</td>
<td>.625</td>
<td></td>
<td></td>
<td>A182-F31</td>
<td>SW</td>
</tr>
<tr>
<td>ERV</td>
<td>.625</td>
<td>6.06</td>
<td>150 - 4500</td>
<td>A105</td>
<td>BW</td>
</tr>
<tr>
<td></td>
<td>1.06</td>
<td>8.06</td>
<td></td>
<td>A350 LF2</td>
<td>RF</td>
</tr>
<tr>
<td></td>
<td>2.13</td>
<td>10.06</td>
<td></td>
<td>F51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.06</td>
<td>12.06</td>
<td></td>
<td>F53</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.06</td>
<td></td>
<td></td>
<td>A182-F91</td>
<td>SW</td>
</tr>
<tr>
<td>XACTROL®</td>
<td>Specially configured to customer specifications.</td>
<td>.5 – 36</td>
<td>1500 – 4500</td>
<td>A182-F22 Cl.3</td>
<td>BW</td>
</tr>
<tr>
<td>(Control Valve)</td>
<td>.625</td>
<td></td>
<td></td>
<td>A182-F91</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td>1.06</td>
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<td>A105</td>
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<td></td>
<td>2.125</td>
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</tbody>
</table>

### Actuation and control
- Pneumatic – single and double acting
- Hydraulic – single and double acting
- Electric
- Electro-hydraulic
- Self contained with pressure pilots
- SIL-III instrumentation and logic solver
- Gears and levers

### Fluids
- Steam from produced or aquifer water
- Gas-oil-water mixture with CO₂, chlorides H₂S and particles
- Molecular sieve raw gas and recycle gas
- Injection water and gas
- Brine and brine-containing oil
- Turbine steam
- LNG

*Materials comply with the requirements of NACE MR-01-75*
Testimonials from global oil companies operating in the Gulf of Mexico, Middle East, Latin America and Asia

“Our H2S detectors are set at a very low threshold. We need low emissions despite the thermo cycling of our treatment process. Triggering the detectors causes evacuation of the plant and shut down.”

“The critical valves in our processing facility are not reliable, the production losses this year have been between $100 and $500 million.”

“Our first priority is uninterrupted production. High-reliability valves are the cornerstone of our strategy to optimize production.”

“The production losses from valve problems amount to over (2%) of our revenues. Most of the valve problems are the result of incorrect application engineering.”

“In recent years, our company incurred $400 million per year of production losses attributable to valves alone.”

From a customer’s perspective:
- Safe operations
- Responsible development
- Reliable operation
- Asset preservation
Valves for Upstream Oil and Gas

ValvTechnologies, Inc. is a global leader in the design and manufacturing of flow control devices. Founded in 1987 and headquartered in Houston, Texas, ValvTechnologies remains focused on helping customers meet their daily production and process challenges safely and efficiently.

Having built a global reputation for superior quality and dependability across every industry served with products designed to fulfill the requirements of standard applications to the most sophisticated, severe-service processes, ValvTechnologies meets the demands for total flow control solutions, whether one valve at a time, or system-wide.

Bringing together the best people and the latest in technological design and manufacturing processes, ValvTechnologies has created an atmosphere where quality and dependability are built into every product, start to finish.

Corporation Offices and Manufacturing

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- AustralAsia
- China

To locate a master distributor or satellite office near you, visit us online at:
www.valv.com

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