

Top Unheading Valve

Maintenance Free

Small Footprint

Low Steam Consumption

Hydraulic and
Electric Actuation





Delayed Coking Products and Services

Bottom and Top Unheading Valves

Retractable Center Feed Injection Devices

Auto-Switch Boring/Cutting Tools

Isolation Valves

Aftermarket / Field Services

EPC Management



The Value of a Trusted Partner



DeltaValve's extensive experience in designing and building engineered severe-service industrial valves and equipment for delayed cokers has made us a world-recognized industry leader. In 2001, DeltaValve designed, engineered, and installed the world's first fully automated, fully enclosed coke drum unheading valve at the Chevron refinery in Salt Lake City, Utah. This valve revolutionized coke drum unheading by replacing traditionally unsafe and unreliable manual or semi-manual unheading equipment, with a fully automated system. The result has been a safer working environment, reduced downtime, and increased productivity.



Today we offer a full range of products for delayed coking including bottom and top coke drum unheading valves, isolation valves, hydraulic and electric actuation, controls and interlocks, auto-switch coke cutting tools and enclosures, and the retractable center feed injection device. We listen to our customers and strive to provide innovative products that are designed and engineered to meet the critical service requirements of delayed coking.

DeltaValve is a trusted partner; delivering safe, reliable products while providing the best value for our customers. From the moment a customer contacts us, through delivery, installation, and beyond, we are there to provide unparalleled products, service, and support. We continually strive to make our products and services "Best in Class."



Coke Drum Top Unheading Valve



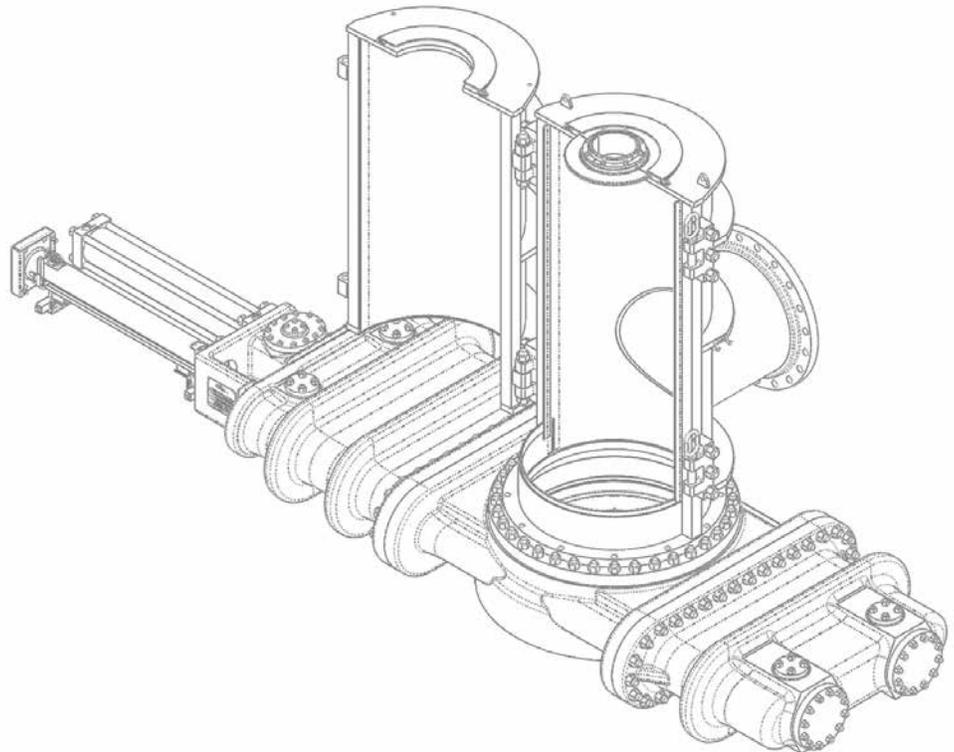
The DeltaValve top unheading valve is available in 24", 30", and 36" sizes. It is a completely enclosed system permanently connected to the top flange of a coke drum. With this valve, top drum unheading can be safely accomplished with the push of a single button from a remote location, allowing operators to be removed from the cutting deck and protecting them from potential coke drum eruptions and top head blowouts.

Available with either electric or hydraulic actuation, DeltaValve's top unheading valve includes upgraded seating technology, is tight-sealing and designed to operate maintenance free from turnaround to turnaround. Combined with the drill stem guide/blowout diverter, this equipment creates a fully enclosed, fully automated coke-drum top unheading system.

The top unheading valve uses double block and purge sealing. Seal condition can be continuously and positively monitored and verified by measuring boundary pressure and steam purge flow.

Key Advantages:

- Fully automated
- Totally enclosed system
- Low maintenance
- Low steam consumption
- Safe unheading



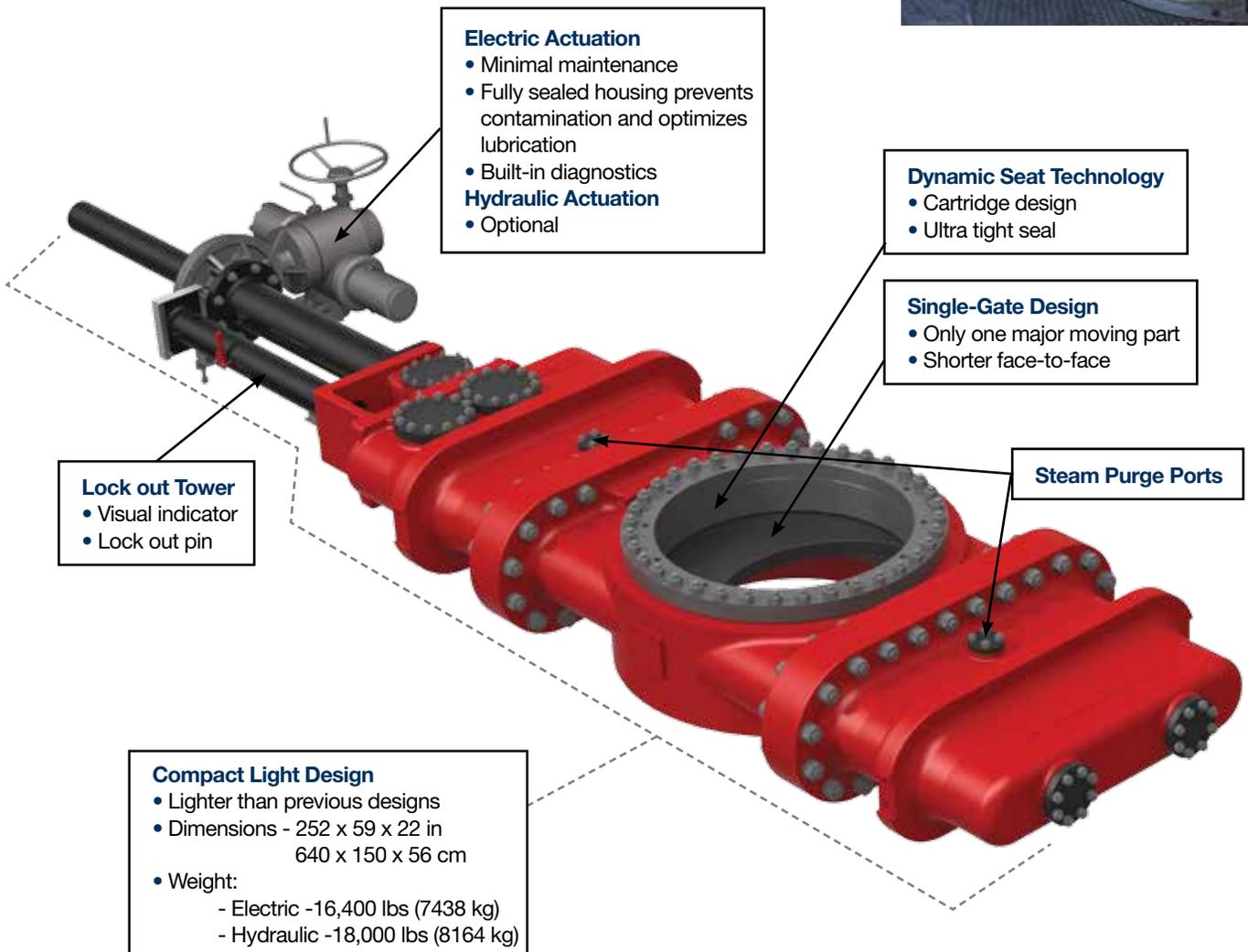
Engineering and Design

Single Gate Versus Double Gate Design

The single gate design of DeltaValve's top unheading valve has only one major moving part. The simplicity of this design significantly reduces the possibility of failure, less potential down-time and more production. Additionally, DeltaValve's single gate design has a shorter face-to-face and a smaller overall footprint as compared to the more complicated double gate design.

Seat Seal

Improved upper and lower seats allow for the use of longer Inconel coil springs, which hold a lower stress state than shorter springs. This provides for an extended spring life. These features, in addition to more robust packing, combine to provide ultra-low steam consumption.



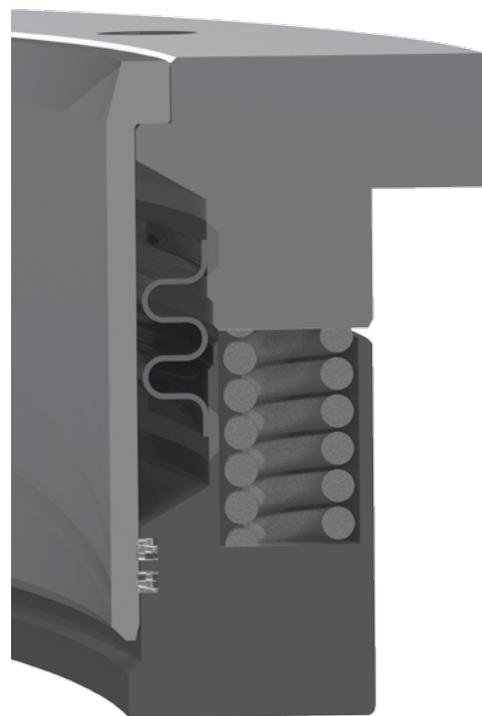


Seat Design

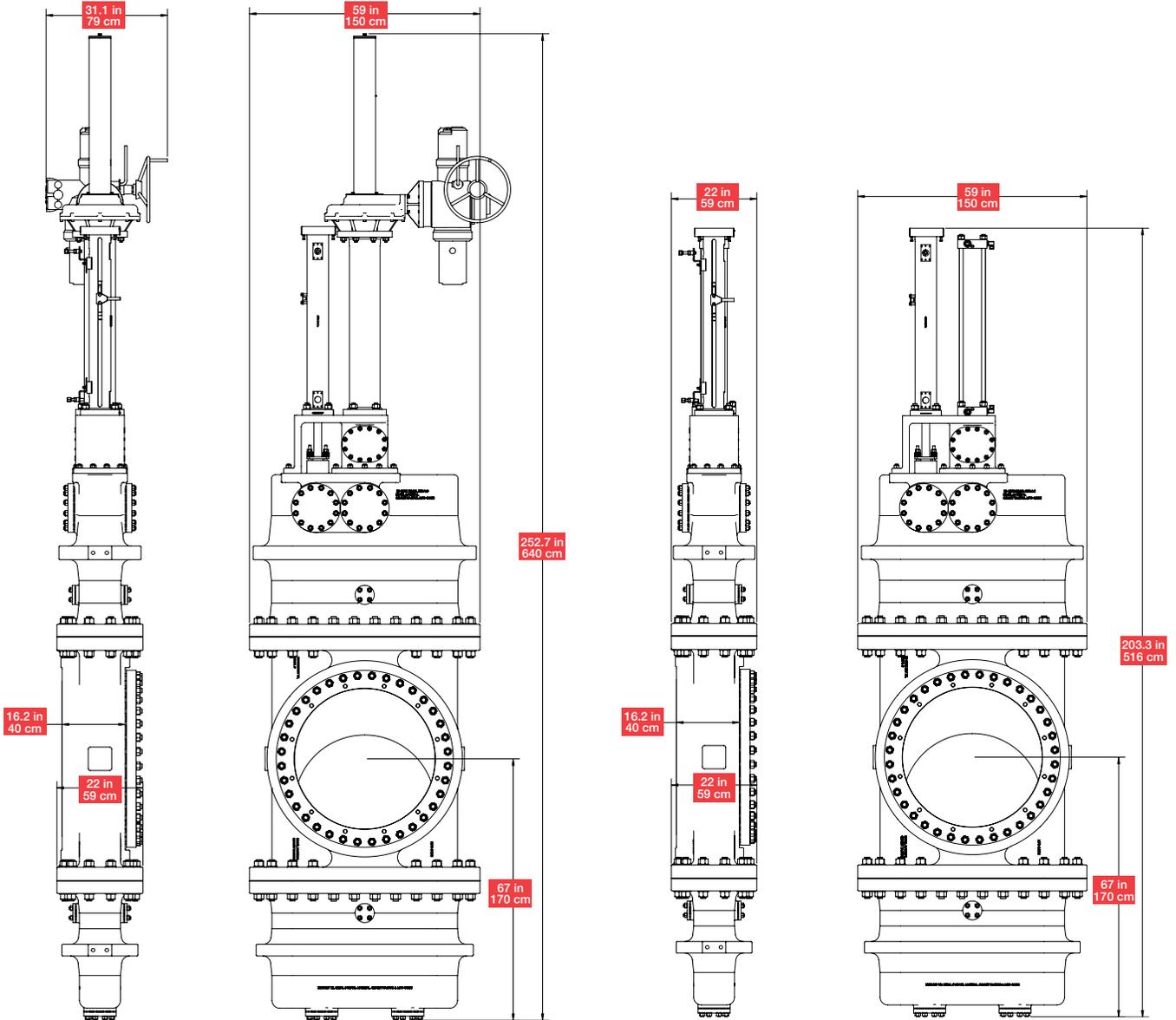


Upgraded upper and lower seats in DeltaValve's top unheading valve combine to improve seal performance and reduce steam consumption. The cartridge-style dynamic seats allow for easy replacement of previous versions. This design includes Inconel coil springs with tight spacing to create even-load distribution, resulting in a consistent seal against the valve gate.

New Seat Design



Dimensions and Weights (30")



**30" Top Unheading Valve
with Electric Actuator**

Dimensions 252.7 x 59 x 22 in
640 x 150 x 59 cm

Weights 18,000 lbs
8164 kg

**30" Top Unheading Valve
with Hydraulic Actuator**

Dimensions 203.3 x 59 x 22 in
516 x 150 x 59 cm

Weights 16,400 lbs
7438 kg

Please contact DeltaValve for dimensions and weights for 24 inch or 36 inch top unheading valves.



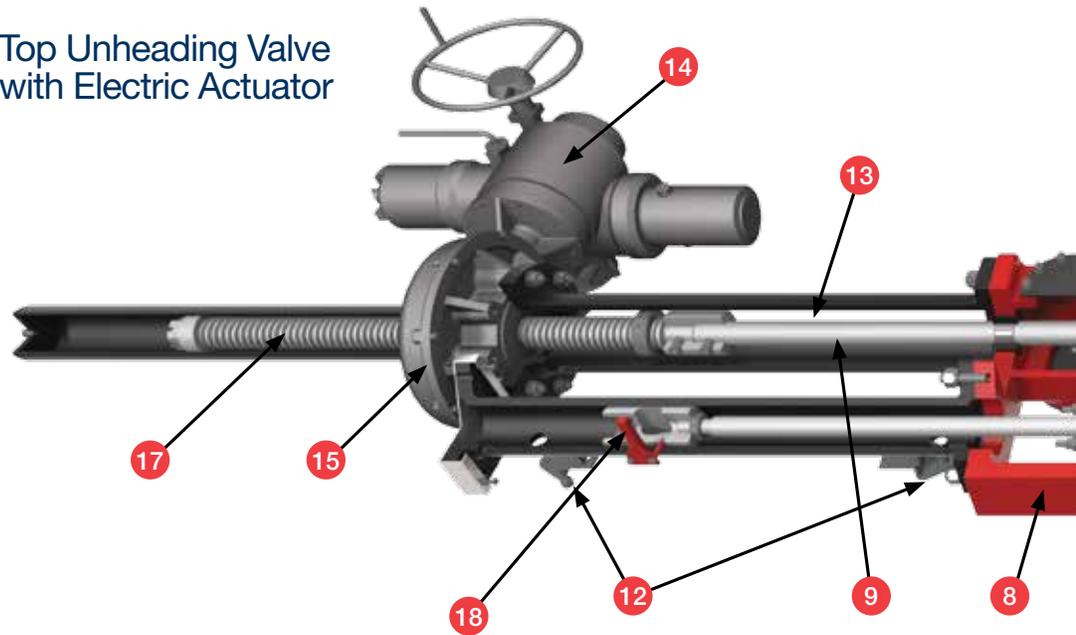
Technical Specifications



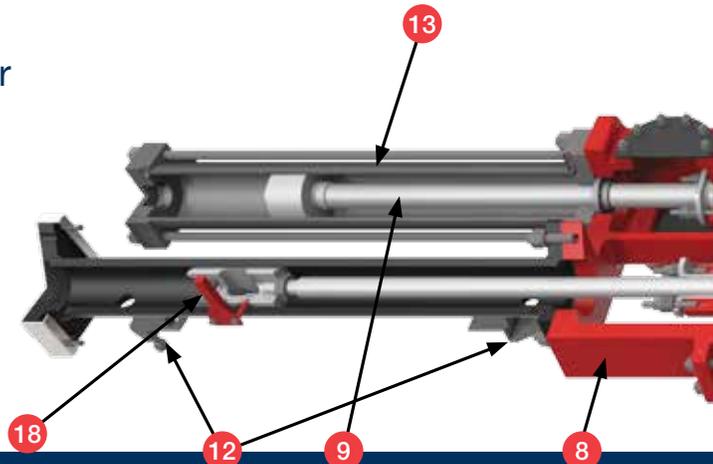
Parts and Materials

Design	Per ASME section VIII Div. 1.2
Body Material	ASME SA217 Gr5
Bonnet Material	ASME SA217 WC9 or ASTM SA216 WCC ASME SA387 Gr22 CL2 or SA516 Gr70
Interlocks/Controls/HPU	Engineered to plant specifications
Purge Media	Steam
Shut-off	Double block and purge with 100% verifiable process isolation
Drum Flange	24" (609mm), 30" (762mm), 36" (914mm) Standard
Maximum Design Pressure	105 PSIG (723.4 kPa) @ 900°F (482°C)

Top Unheading Valve with Electric Actuator

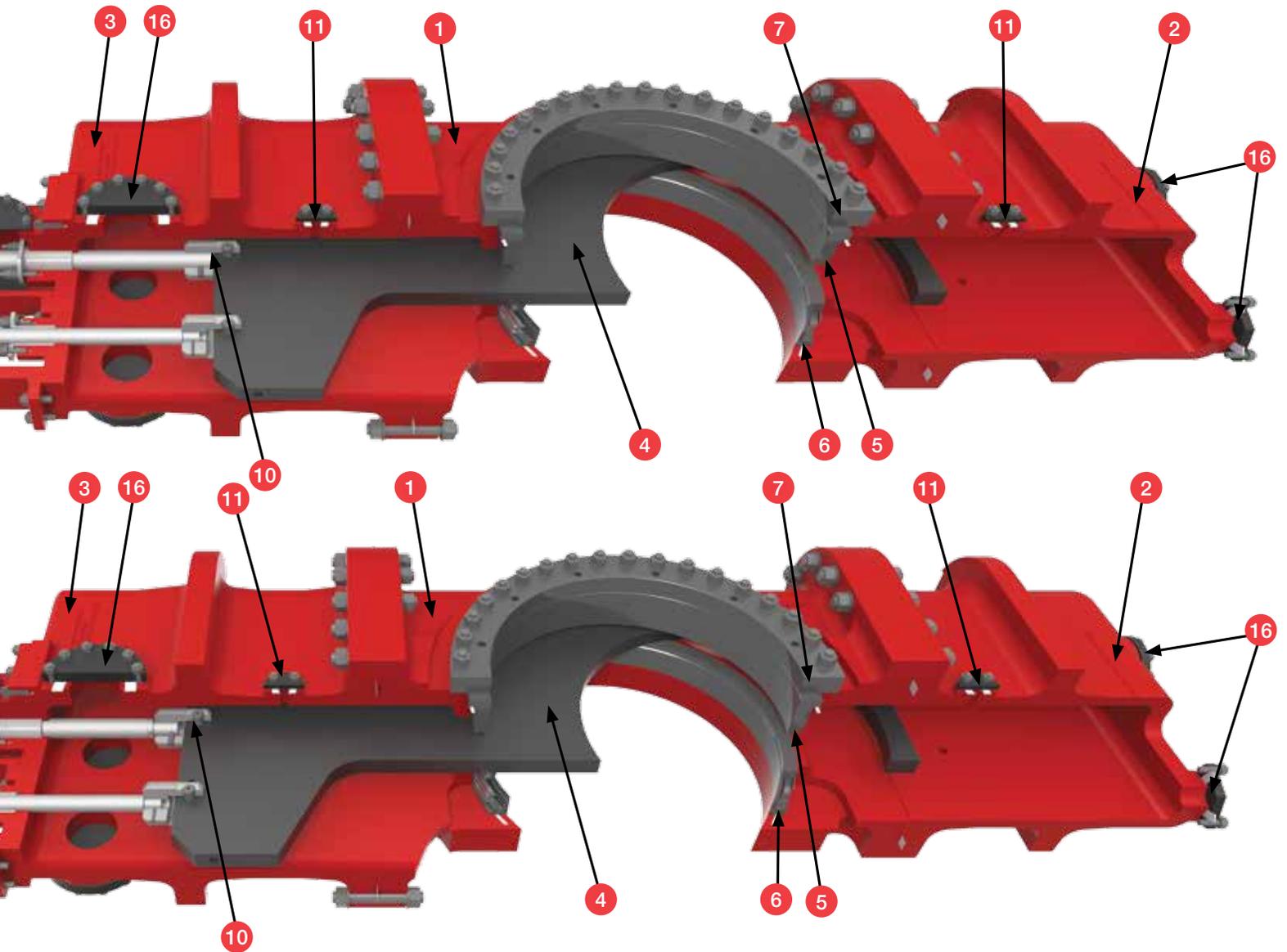


Top Unheading Valve with Hydraulic Actuator and Lockout Tower



Item	Description
1	Body
2	Lower Bonnet
3	Upper Bonnet
4	Gate
5	Static Upper Seat
6	Dynamic Lower Seat
7	Seat Retainer
8	Actuator Standoff/Packing Access
9	Actuator Stem

Item	Description
10	Actuator Clevis
11	Steam Port
12	Actuator Proximity Switch
13	Actuator Assembly
14	Electric Motor
15	Gear Box
16	Bonnet Access Cover
17	ACME Drive Screw
18	Position Indicator





Control Systems



DeltaValve's programmable logic controller (PLC) provides unparalleled safety, performance and reliability. The custom-built PLC can be manufactured with simplex or redundant hardware configurations, configurable function blocks, internal sequence controls, interlocks, permissives, and more. For hydraulic systems, the PLC logic manages the hydraulic power unit circuits to only allow hydraulic pressure to the appropriate unheading device when the process is verified safe. Additionally our high-performance Hydraulic Power Unit (HPU) incorporates redundant equipment such as pump trains, and filters to maximize reliability. The hydraulic circuit is fully instrumented to provide real time status and includes alarms to facilitate preventative maintenance for a longer lasting robust system.



Quality

Customer satisfaction is critical to our success. DeltaValve provides its customers with the highest level of quality in products and services by complying with, and continually improving all aspects of our ISO 9001:2008 certified quality management system.

Design Standards

DeltaValve unheading valves are designed per ASME and the Boiler and Pressure Vessel Code, Section VIII Div. I and II.

DeltaValve maintains the following stamps/design certifications:

- ASME
- “U” Stamp, Division I
- “R” Stamp
- National Board Registration

Unheading valves include but are not limited to the following certifications per international requirements:

- Pressure Equipment Directive (PED) (97/23/EC)
- Canadian Registration Number (CRN)
- GOST-R
- KHK

DeltaValve has experience installing equipment in Flameproof/Explosion Proof, Non-Incendive, Intrinsically Safe hazardous areas utilizing the following standards:

- IECEx
- InMetro
- NEMA
- PESO
- UL
- TIIS
- ATEX
- KOSHA
- CSA
- JIS
- GOST
- NEPSI

DeltaValve complies with international certifications and standards, and has unheading valves installed in over 100 refineries in approximately 20 countries around the world.

Quality Assurance Documentation

- Quality assurance manual
- ISO 9001:2008 certificate
- Additional international certifications as required





Complementary Products

Bottom Unheading Valve

The bottom unheading valve connects to the transition spool and creates a totally enclosed system from the coke drum to the discharge chute. With the push of a single button from a remote location, safe and reliable unheading can be achieved. The bottom unheading valve is inherently safe, easy to operate, and designed to be maintenance-free from turnaround to turnaround.



Drill Stem Guide/Blowout Diverter

The drill stem guide/blowout diverter is designed to protect personnel and equipment by directing coke drum eruptions up and away from the cutting deck. The built-in drill stem guide controls and stabilizes the drill stem during coke cutting and boring modes. The drill stem guide mounts directly to the DeltaGuard top unheading valve and, when used in conjunction with an auto-switch coke cutting tool, creates a safe coke cutting process.

Auto-Switch Cutting/Boring Tool

The innovative DeltaValve auto-switch coke cutting tool provides a high level of safety during de-coking operations by allowing the tool to remain in the drum during switching between cutting/boring modes. The auto-switch tool, in combination with the DeltaValve drill stem guide/blowout diverter, and the DeltaGuard top unheading valve, provides maximum coker safety on the cutting deck by enclosing critical equipment.

Additional Specialized Equipment

Retractable Center Feed Injection Device

DeltaValve's innovative center feed injection device addresses the issues of uneven thermal distribution and severe thermal transients experienced when using side or dual side feed configurations. The center feed device accomplishes this by simply returning feed streams to the center of the coke drum, resulting in more consistent operation during feed, steam strip, and quench cycles, all of which contribute to reduced drum stresses and longer calculated drum life. The center feed can be configured with electric, electro-hydraulic, or hydraulic actuation, and can be integrated with any safety interlock system.

Auto-Switch Coke Cutting Tool

DeltaValve's auto-switch coke cutting tool provides a high level of safety during de-coking operations by allowing the tool to remain in the drum during switching between cutting/boring modes. The auto-switch tool and enclosure, in combination with the DeltaValve top unheading valve, provides maximum coker safety on the top unheading deck by allowing personnel to be removed from the area.

Isolation Valves and Controls

DeltaValve's reliable, low-maintenance, tight shut-off isolation valves are designed for extreme temperatures and harsh applications. They provide for quick, efficient in-line removal of all internal components. Steam purge ports are capable of operating continuously in the partially open (throttling) position, while isolating body internals from the process. These valves are available with a complete suite of electric and hydraulic actuator options and complete PLC-based control systems with safety interlocks and sequence controls.

Safety Instrumented Systems

Designed in compliance with IEC 61508 to provide an independent layer of protection to mitigate coker safety risks.

Contact Sales

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Email: sales@deltavalve.com

Web: www.deltavalve.com





Field Services



Our field service technicians provide a superior level of service, providing 24-7 coverage to reduce downtime by responding to our customers' needs in a timely and efficient manner. DeltaValve's network of technicians are highly trained to evaluate, troubleshoot, and resolve issues. They are backed by our engineering group allowing for quick access to technical expertise, drawings, bills of material, and other relevant data to expedite practical and reliable solutions.

Core services of the DeltaValve field service team are:

- DeltaValve equipment installations
- Site acceptance tests
- Commissioning supervision
- Site audits
- Turnaround service
- Maintenance and repair
- Equipment rebuilds
- Equipment storage
- Hydraulic flush services
- Electrical loop checks
- On-site training
- Bolt tensioning/torquing
- General valve/equipment maintenance and service
- Engineering, Procurement and Construction Management services

In order to respond to our customers' requirements, DeltaValve has service facilities staffed with our certified, dedicated technicians to meet the demands of our growing list of worldwide customers.

Contact Field Services

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Quality
ISO 9001

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