

Delayed Coking
Top
Unheading Valve



Maintenance Free

Small Footprint

Low Steam Consumption

Hydraulic and
Electric Actuation





DeltaValve

The Value of a Trusted Partner

DeltaValve's years of experience in designing and building engineered severe-service industrial valves and equipment for delayed coking has made us a world-recognized industry leader. In 2001, we introduced the world's first fully automated and fully enclosed coke drum unheading device at the Chevron refinery in Salt Lake City, Utah. Our valve revolutionized coke drum unheading by replacing manual or semi-manual unheading methods, which were unsafe and unreliable, with a fully automated system. The result was a safer work environment, reduced downtime, and increased productivity.



Today we offer a full range of products for delayed coking including top and bottom coke drum unheading valves, isolation valves, hydraulics and controls, auto-switch coke cutting tools, blow-out containment devices, side-feed transition spools and a center-feed injection device. We listen to our customers and strive to provide innovative products that meet the critical 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're there to provide unparalleled products, service, and support. We continually strive to make our products the industry standard.

Delayed Coking

DeltaGuard GV835



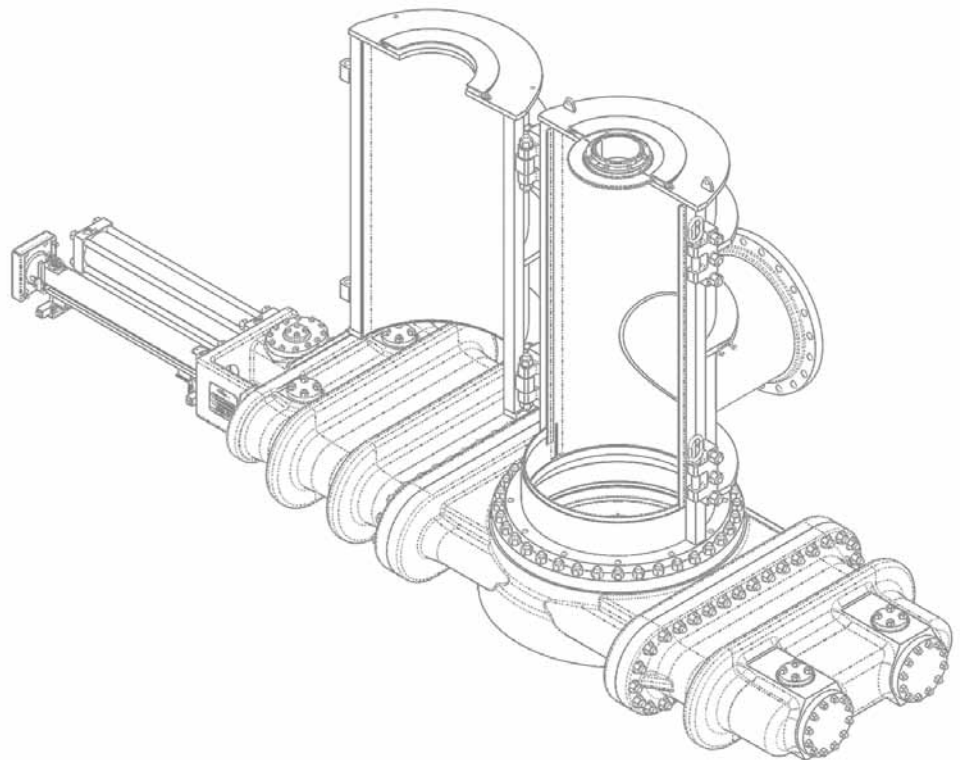
The DeltaGuard® GV835 is the newest top unheading valve from DeltaValve, an industry leader in providing safe and reliable coke drum unheading equipment. The DeltaGuard GV835, available in 24", 30", and 36" sizes, is a completely enclosed system permanently connected to the top flange of a coke drum. With this valve, top drum unheading can be safely accomplished with the push of a single button from a remote location, removing operators from the cutting deck and protecting them from potential coke drum eruptions and top head blowouts.

Available with either electric or hydraulic actuation, the GV835 with its 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 GV835, 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



Top Unheading Valve

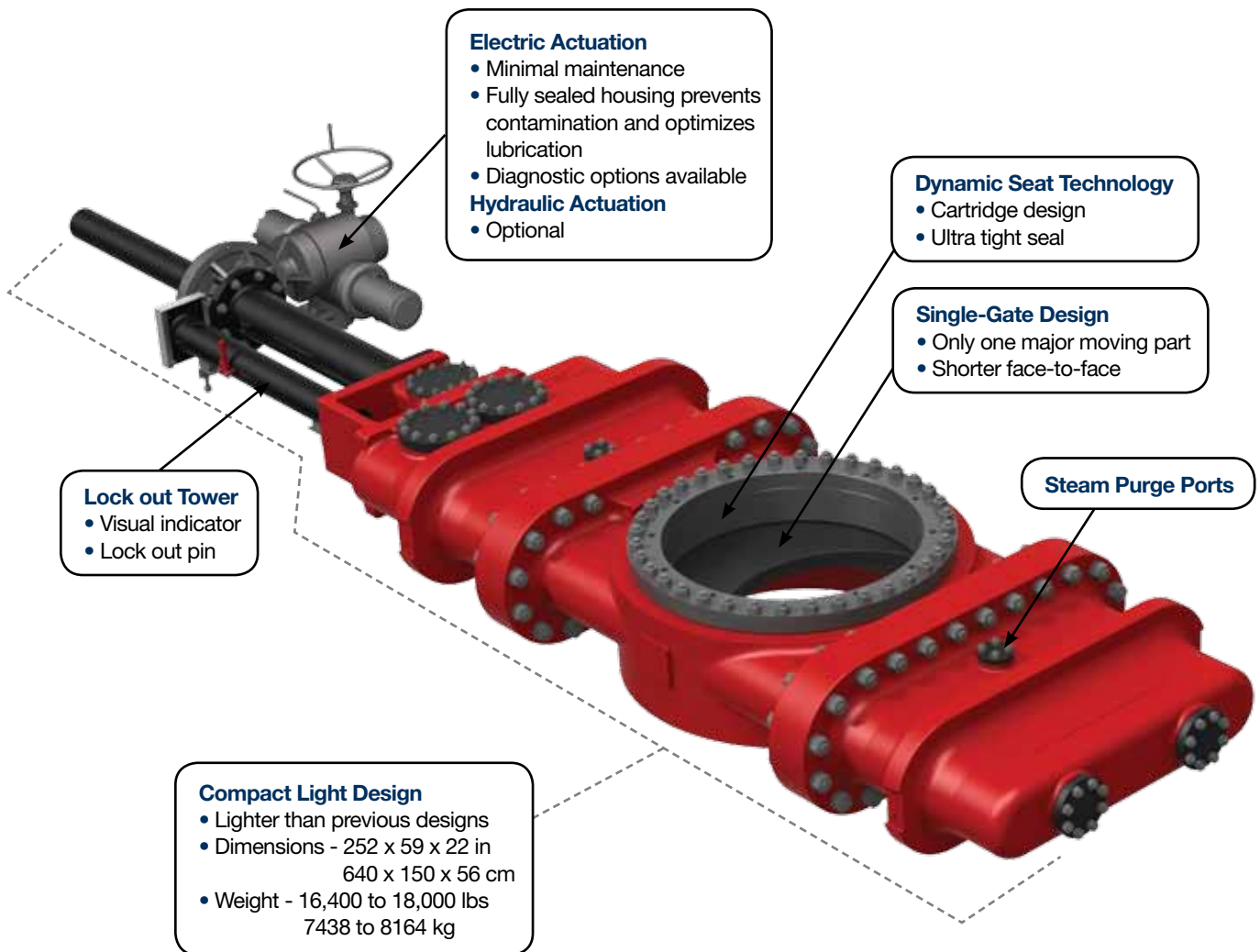
Key Design Features

Single-Gate Versus Double-Gate Design

Compared to complicated double-gate unheading valve designs which have many major moving parts, the GV835 only has a single major moving part. The simplicity of this design significantly reduces the chance of failure, resulting in less potential down-time and more production. Additionally, compared to a larger and more complex double-gate design, a single-gate unheading valve has a shorter face-to-face and a smaller overall footprint.

Gate Seal

Newly upgraded upper and lower seats provide ultra-low steam consumption. This seat design includes Inconel coil springs which hold a lower stress state, translating into extended spring life.

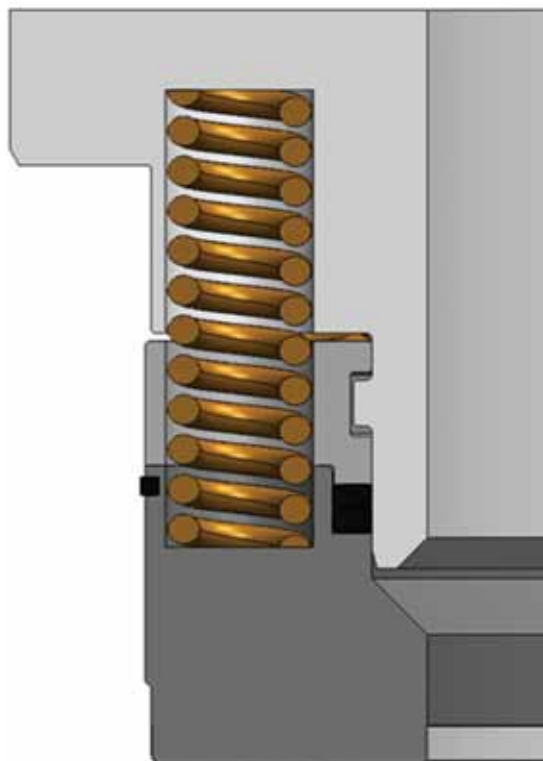


Top Unheading Valve

Unheading Seat Design

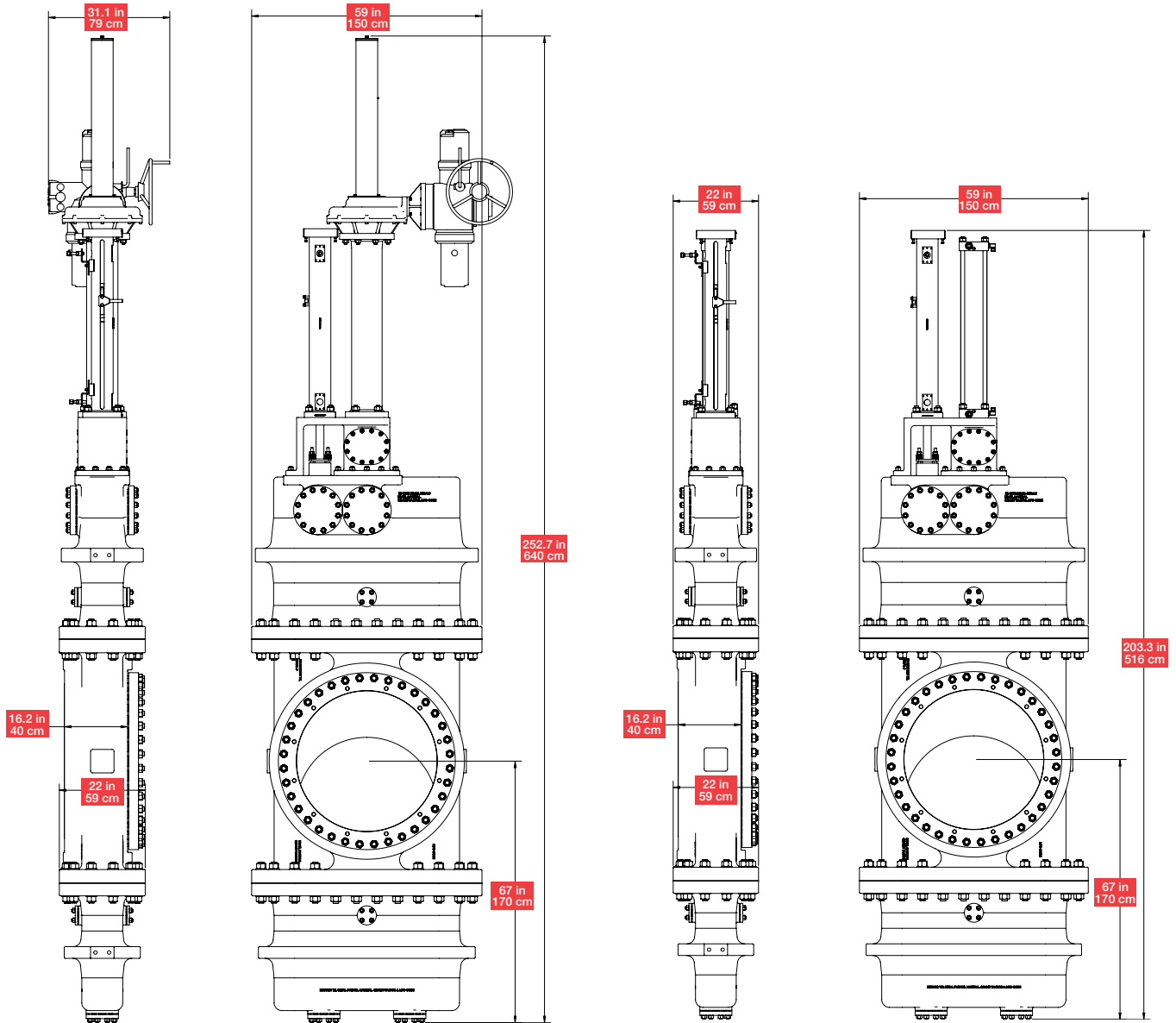
Upgraded upper and lower seats in the GV835 combine to improve seal performance and reduce steam consumption. The cartridge-style dynamic seat allows for easy replacement of previous seat versions. This design includes Inconel coil springs with tight spacing to create even-load distribution, resulting in a consistent seal against the valve gate.

New Seat Design



Top Unheading Valve

Technical Specifications (30")



30" Top Unheading Valve
with Electric Actuator

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

Weight 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

Weight 16,400 lbs
7438 kg

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

Top Unheading Valve

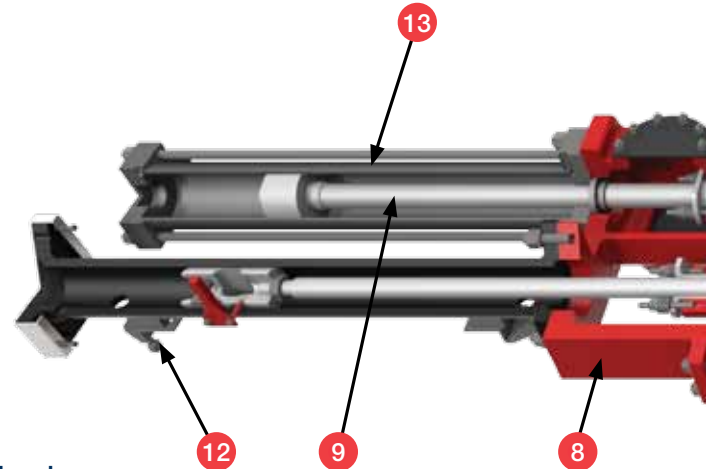
Technical Specifications



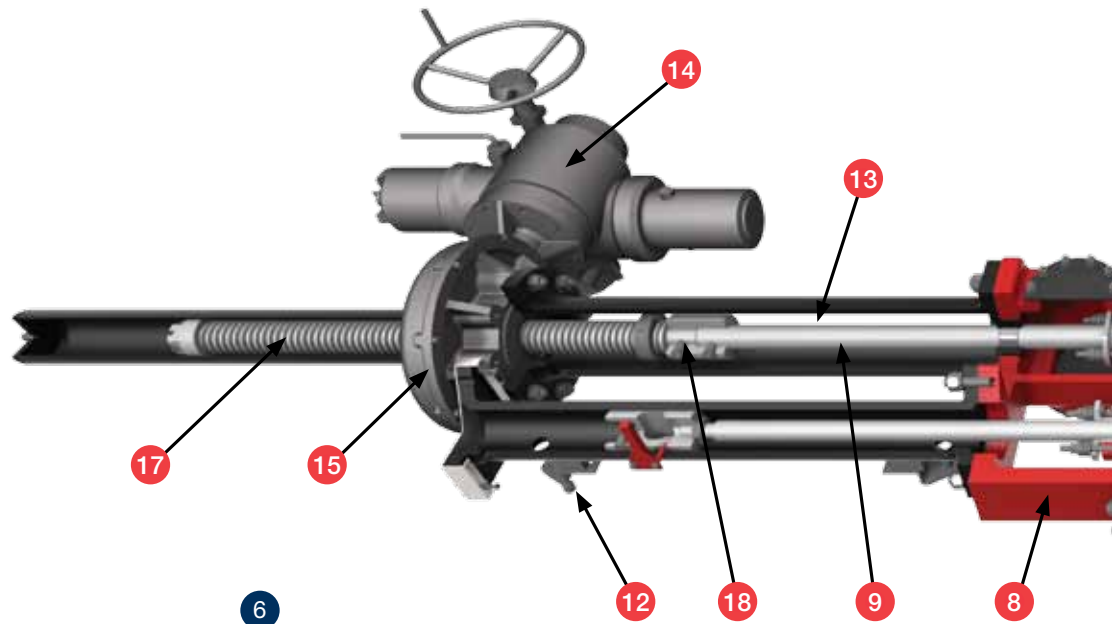
Parts and Materials

Design	Per ASME section VIII Div. 1.2
Body Material	ASME SA217 Gr5
Bonnet Material	ASME SA387 Gr22 — optional ASTM 216 WCC
Interlocks/Controls/HPU	Engineered to plant specifications
Purge Media	Steam
Shut-off	Double block and purge with 100% verifiable positive isolation
Drum Flange	24" (609mm), 30" (762mm), 36" (914mm) Standard
Maximum Design Pressure	105 PSIG (723.4 kPa) @ 900°F (482°C)

GV835 with Hydraulic Actuator

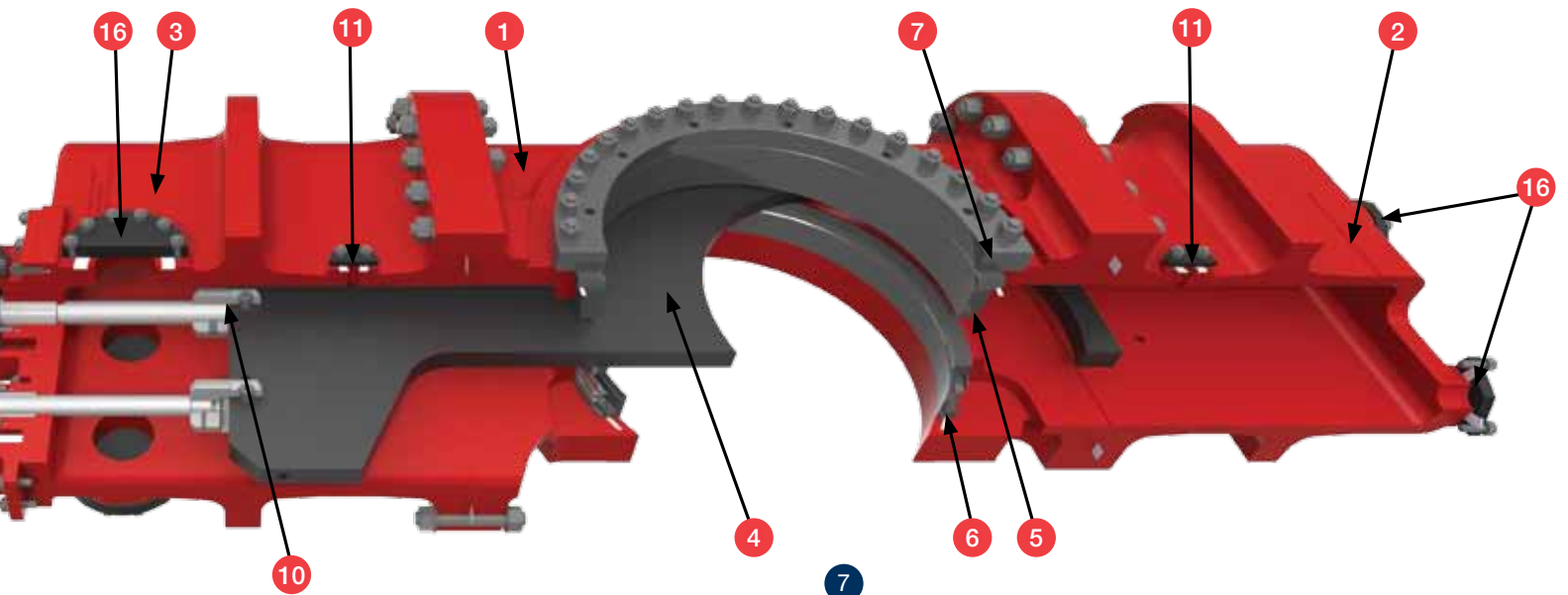
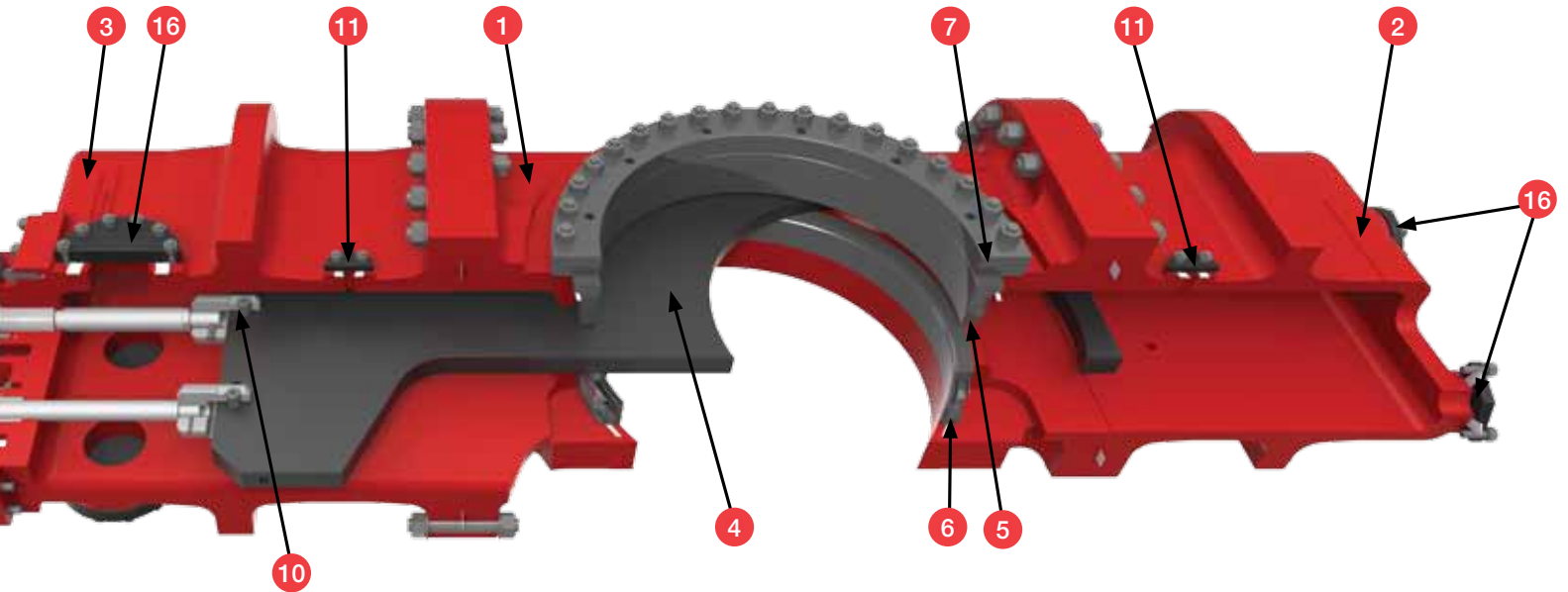


GV835 with Electric Actuator



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

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



Top Unheading Valve Control System



The DeltaGuard programmable logic controller (PLC) based unheading control system provides unparalleled safety, performance, and reliability, and is a perfect complement to the GV835. The custom-built PLC processor can be manufactured with simplex processors or redundant processors and power supplies to maximize PLC applications. The PLC program uses configurable function blocks to ensure consistent, predictable, and repeatable performance. The unheading application logic incorporates internal sequence controls, interlocks, and permissives to maximize safety and minimize the possibility of operator error. The PLC logic manages the electric motor drives or the hydraulic power unit (HPU) circuits to only allow hydraulic pressure to the appropriate unheading device when the process is safe to reduce the likelihood of operator error. Our high-performance control systems incorporate redundant components, and are fully instrumented to maximize reliability and accessibility.

The DeltaValve unheading control system is available with local control panels using push buttons and lamps, or graphic interface terminals to provide an intuitive operations interface for coker operators. In addition, DeltaValve can provide remote unheading control solutions via our DCO-2000 supervisory control system which provides the operator full control and status of the process, unheading devices, and electric or hydraulic system. The DCO-2000 can be expanded to fully integrate many coke drum operations including isolation valve controls and interlocks, switch valve controls, de-coking controls, steam controls, and the safety instrumented system. The DCO-2000 provides step-by-step interactive operating procedures for each event sequence in the coking process, which ensures consistent coker operating procedures and processes for each and every operator on every shift. The coke structure operator is fully aware of all the process and device interlocks related to each step in the operation throughout the coking process.



DeltaValve

Assurance of Quality

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

Design Standards

DeltaGuard unheading valves are designed per ASME Boiler and Pressure Vessel Code.

DeltaGuard unheading valves are certified to all applicable international standards, some of which are listed below:

- ASME “U” Stamp
- Pressure Equipment Directive (97/23/EC)
- Canadian Registration Number (CRN)
- GOST-R
- The High Pressure Gas Safety Institute of Japan

DeltaGuard unheading valves are currently installed and operating at locations in Argentina, Aruba, Brazil, Canada, China, India, Italy, Japan, Malaysia, Mexico, Saudi Arabia, South Africa, Spain, Russia, Turkey, United States, and Venezuela.



Quality Control

Final Assembly

The components of the DeltaGuard GV835 are assembled at our 110,000 square foot facility in Houston, Texas. Every part is thoroughly inspected before being assembled as part of our strict quality control protocols.



Valve Manufacturing, Houston, Texas

DeltaValve Delayed Coking Complementary Products

Bottom Unheading Valve

Permanently connected to the bottom flange of the coke drum or transition spool, the bottom unheading valve creates a totally enclosed system from the coke drum to the discharge pit. With the push of a single button from a remote location, safe and reliable unheading can be achieved. The DeltaGuard 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.

DeltaValve Delayed Coking Additional Specialized Equipment

Isolation Valves and Controls

DeltaValve's reliable, low-maintenance, tight shut-off isolation valves are designed for severe service applications. This design allows for efficient in-line removal of all internal components. These valves are capable of operating continuously in the partially open (throttling) position, while steam isolates body internals from the process. These valves are available with a complete suite of electric and hydraulic actuator options and complete PLC-based isolation valve control systems with safety interlocks and sequence controls.

DeltaGlide®

Designed to facilitate installation of the DeltaGuard bottom unheading system and support the valve during coking cycles, it also maintains alignment of valve components during maintenance and inspection.

Transition Spool

Designed to incorporate a drum cone side inlet feed port and create a permanent connection between the DeltaGuard bottom unheading valve and the coke drum bottom flange.

Safety Instrumented Systems

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

Contact Sales

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Email: deltavalve.sales@curtisswright.com

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DeltaValve

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 materials, and other relevant data to expedite practical and reliable solutions. Our field services group also offers a full line of factory certified spare parts for the entire DeltaValve product line.

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
- Spare parts

In order to respond to our customers' requirements, DeltaValve has sizeable service facilities staffed with our certified, dedicated technicians in the United States, Canada, and Europe. We are also planning such facilities globally to meet the demands of our growing list of worldwide customers.

Contact Field Services

Toll free in USA/Canada: 1.888.DELTAVALVE (1.888.335.8282)

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