

Auto-Switch Boring/Cutting Tool



Remotely Switches Between
Boring and Cutting Modes

Visual Mode Indicator

Internal Components
Isolated from Coke Fines





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."



Auto-Switch Boring/Cutting Tool

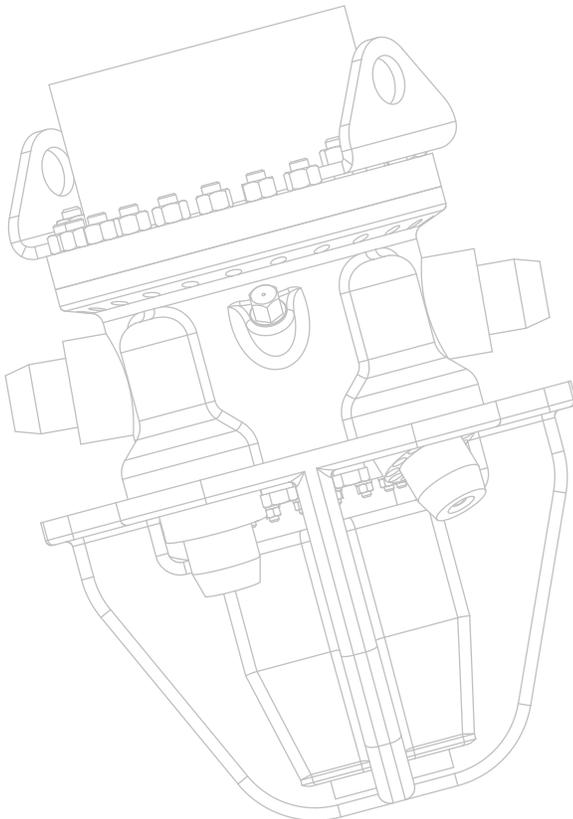


The innovative DeltaValve auto-switch coke cutting tool provides a high level of safety and reliability during de-coking operations by allowing the tool to remain in the drum during switching between boring/cutting modes. The auto-switch tool, in combination with the DeltaValve drill stem guide enclosure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

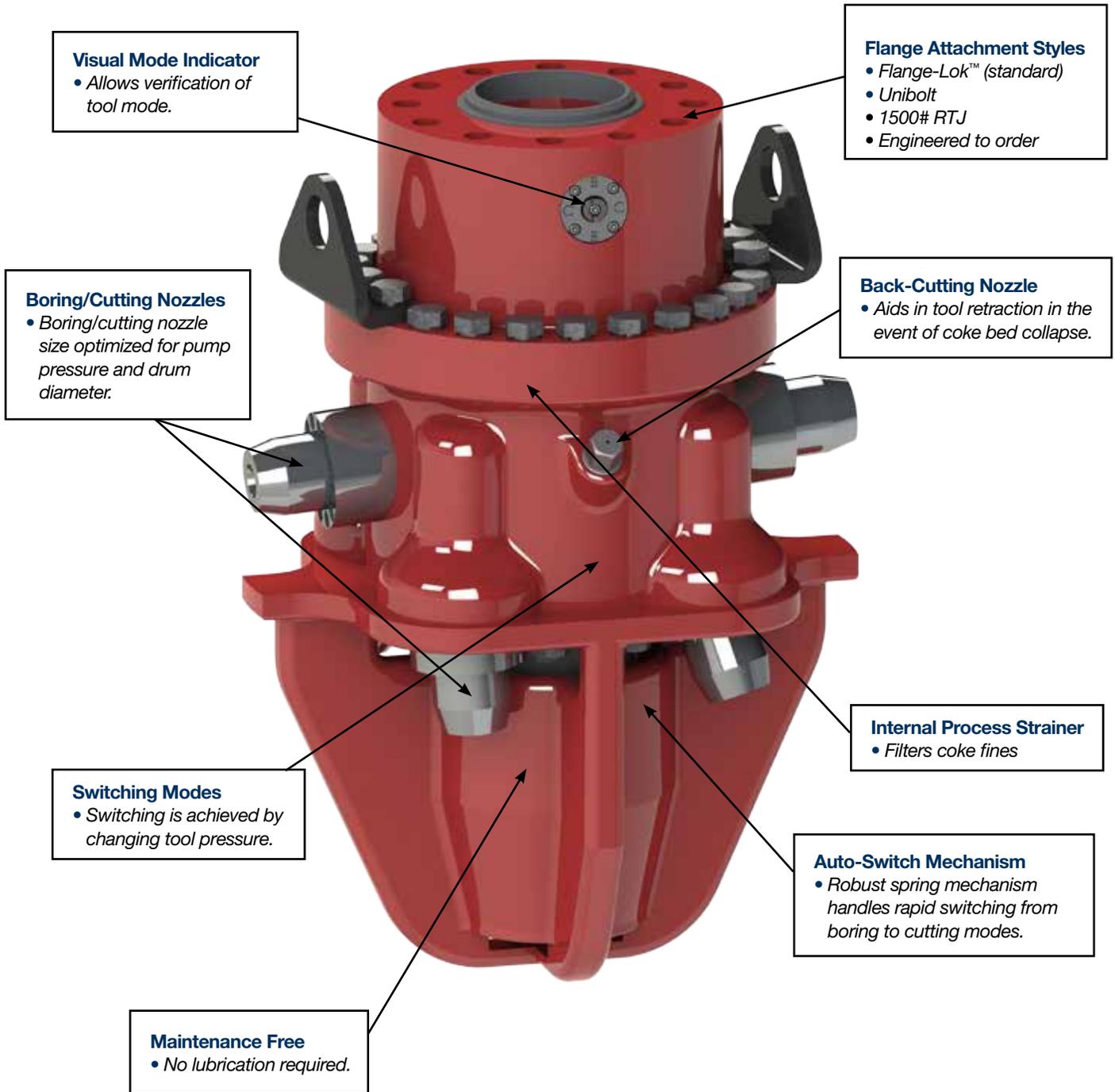
Flow channels in the auto-switch tool are optimized to provide maximum boring and cutting forces at the nozzle jets. Switching is accomplished by remotely reducing the pressure to the tool and then restoring the pressure. The boring/cutting modes are distinguished by different steady state pressures displayed at the operator's panel and by a visual indicator on the tool.

In addition to the internal coke fines screen, all internal mechanisms are isolated from exposure to cutting water and coke fines for long-term reliability. No field lubrication is required.

Drill string connections are available in Flange-Lok™, Unibolt, RTJ, or engineered to order configurations.



Engineering and Design



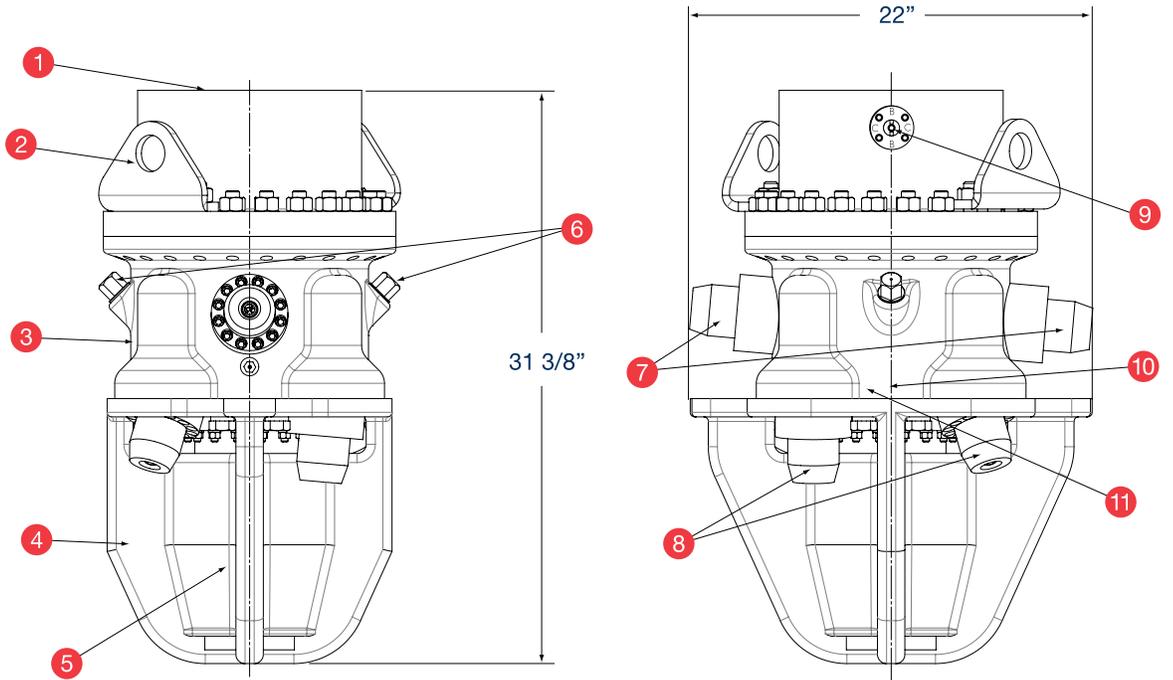


Technical Data



General Specifications

Construction:	Cast
Body Material:	SA-487 CA6NM
Nozzle Material:	ASTM A479 316 Electroless Nickel Plating
Connections:	Flange-Lok™, Unibolt, RTJ, Engineered to plant specs.
Cutting Water Pressures:	2500 to 5500 psi
Pressure Envelope:	Engineered to comply with ASME Sec. VIII, Div. I allowable stresses for materials
Switch Mechanism:	Nitrogen spring
Switch Pressure:	100 - 500 psi
Dimensions:	31 3/8" x 22"
Weight:	950 lbs. +/-

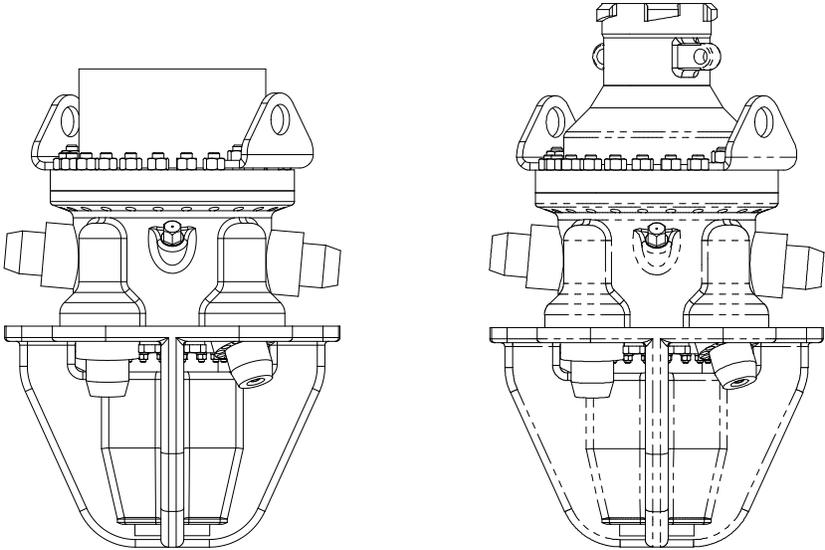


Item	Description
1	Mounting Flange
2	Lifting Eyes
3	Body
4	Lower Guard
5	Nitrogen Spring (internal)
6	Back Cutting Nozzle

Item	Description
7	Cutting Nozzle
8	Boring Nozzle
9	Visual Mode Indicator
10	Switching Mechanism (internal)
11	Process Strainer (internal)

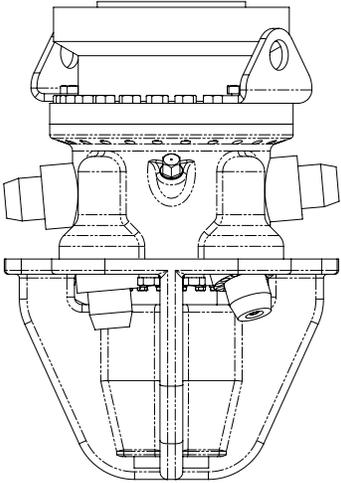
Drill Stem Connections

The auto-switch tool can be connected to the drill stem with one of the various flange connection styles below. The style of flange connection is specified by the customer at time of order.



Flange-Lok™

Unibolt



1500# RTJ





Complementary Products



Top Unheading Valve

The DeltaValve top unheading valve mounts directly to the drum to create a permanent top head connection. Just like the DeltaValve bottom unheading valve, the top heading valve uses patented dynamic seating technology that is tight-sealing, robust, and highly reliable.



Cutting Tool Enclosure/Blowout Diverter

The cutting tool enclosure/blowout diverter is designed to protect personnel and equipment by diverting coke, steam, and water from drum eruptions to a safe area. The built-in drill stem guide controls and stabilizes the drill stem during coke boring and cutting. The enclosure mounts directly to the DeltaValve top unheading valve and, when used in conjunction with the auto-switch coke cutting tool that is housed within the enclosure when not in the drum, creates a safe coke cutting operation.



Additional Specialized Equipment

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.

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.

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.

Coker Automation

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.

Contact Sales

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

Phone: 801.984.1000

Email: sales@deltavalve.com

Web: www.deltavalve.com





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 cutting/boring tools 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

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

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



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 resolves 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

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

Phone: 281.247.8100

Email: fieldservices@deltavalve.com

Web: www.deltavalve.com

Contact Customer Care

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

Phone: 801.984.1000

Email: customer care@deltavalve.com

Web: www.deltavalve.com





9890 Jordan Gateway
Sandy, Utah 84070
Phone: 801.984.1000
www.deltavalve.com

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Quality
ISO 9001

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