

Isolation Valves

Live Loaded Metal Seats

Bi-Directional Flow Control

Double Block and Purge

In-Line Serviceable





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."



Isolation Valve (GV851)



The GV851 is a high performance isolation gate valve specifically designed for clean services within the delayed coker. Such services include steam and water, clean hydrocarbon liquids below coking temperatures, and clean hydrocarbon vapor streams in on/off and modulating services.

The advanced sealing properties of the double live-loaded seats in the GV851 create tight shut off in both open and closed valve positions with virtually no change in seal performance over time. The GV851 works like an automated (linear) goggle blind, providing positive isolation with no cross valve process leakage when utilizing purge steam. The ultra tight seal also allows the valve to be operated with or without body steam purge based on the requirements of the refinery.

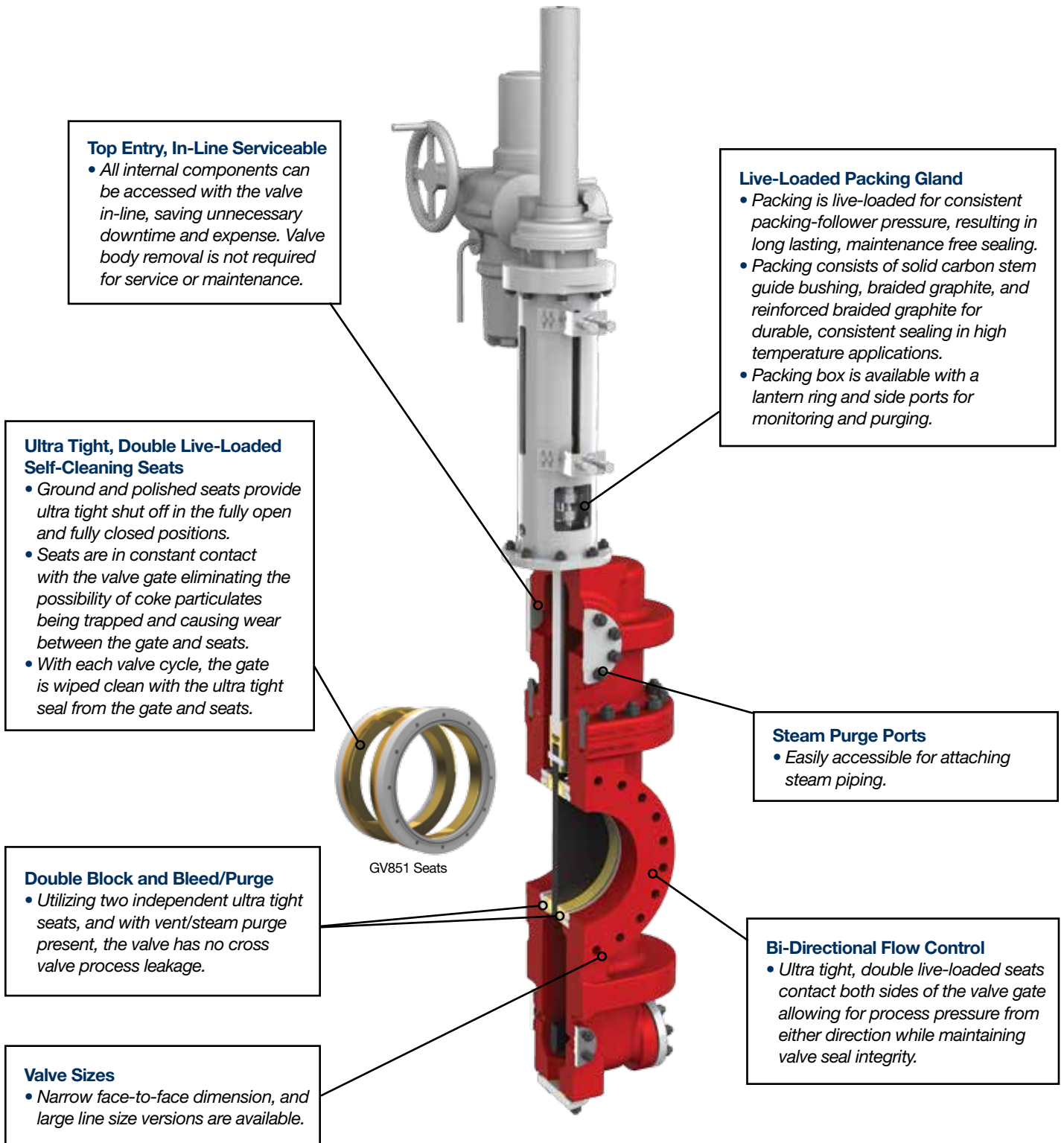
The innovative design of the GV851 bonnets and body allow for maintenance and replacement of parts without removing the valve from the line. All valve internals can be replaced through the top of the body when the upper bonnet is removed and the valve body remains connected in line.

The valve's standard packing box is available with a lantern ring and a purge port for monitoring or purging of the packing box. The packing is live-loaded for long lasting, continuous, and consistent sealing.

The GV851 can be used in on/off or modulating services. Suggested applications include:

- Coke drum vapor discharge PSV
- Utility steam MOV
- Quench water MOV
- Atmospheric vent valve
- Quench oil HCGO

Engineering and Design



Top Entry, In-Line Serviceable

- All internal components can be accessed with the valve in-line, saving unnecessary downtime and expense. Valve body removal is not required for service or maintenance.

Live-Loaded Packing Gland

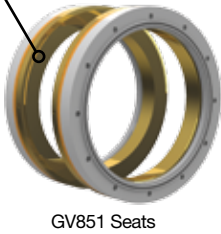
- Packing is live-loaded for consistent packing-follower pressure, resulting in long lasting, maintenance free sealing.
- Packing consists of solid carbon stem guide bushing, braided graphite, and reinforced braided graphite for durable, consistent sealing in high temperature applications.
- Packing box is available with a lantern ring and side ports for monitoring and purging.

Ultra Tight, Double Live-Loaded Self-Cleaning Seats

- Ground and polished seats provide ultra tight shut off in the fully open and fully closed positions.
- Seats are in constant contact with the valve gate eliminating the possibility of coke particulates being trapped and causing wear between the gate and seats.
- With each valve cycle, the gate is wiped clean with the ultra tight seal from the gate and seats.

Steam Purge Ports

- Easily accessible for attaching steam piping.



Double Block and Bleed/Purge

- Utilizing two independent ultra tight seats, and with vent/steam purge present, the valve has no cross valve process leakage.

Bi-Directional Flow Control

- Ultra tight, double live-loaded seats contact both sides of the valve gate allowing for process pressure from either direction while maintaining valve seal integrity.

Valve Sizes

- Narrow face-to-face dimension, and large line size versions are available.



Isolation Valve (GV852)



The GV852 is a high performance isolation gate valve with extended seats which trap process media in the orifice of the gate between the extended seats throughout the full stroke of the valve. This anti-fouling feature allows the valve to modulate in service without the accumulation of process media in the body cavity, making it truly unique as a maintenance free isolation valve suited for dirty service. Ground and polished self-cleaning live-loaded seats provide tight shutoff regardless of valve position.

The GV852 is designed to operate with body steam purge. The tight seal between the seats and gate provide positive isolation with no cross valve process leakage. The tight seat-to-gate seal significantly reduces steam consumption reducing daily steam cost. Steam purge has the added benefit of pressure assisting the seat to gate seals further reducing steam consumption and preventing media from entering the body cavity. This clean operation allows for processing of heavier feeds stocks.

The innovative top entry design of the GV852 allows for maintenance and replacement of parts without removing the valve body from the line. All valve internals can be replaced through the top of the body when the upper bonnet is removed.

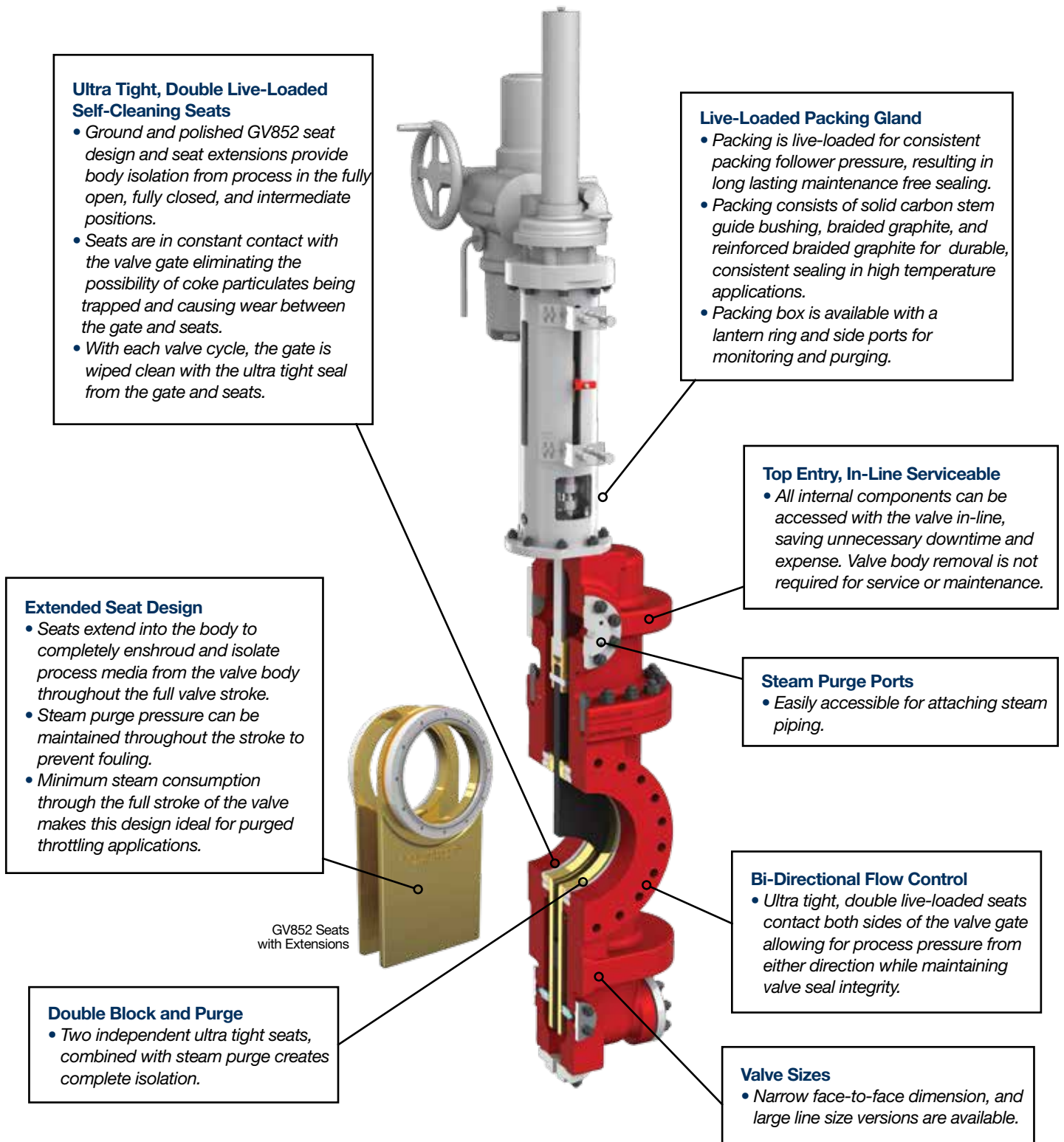
The standard packing box, which is separable from the valve bonnet, is available with a lantern ring and purge port for monitoring or purging of the packing box. The packing is live-loaded for long lasting, continuous, and consistent sealing.

The GV852 can be used in on/off, or modulating services with or without continuous steam purge, and is designed for use in a wide range of applications including hydrocarbons near coking temperature, solids laden hydrocarbon liquids, and dirty hydrocarbon vapor streams.

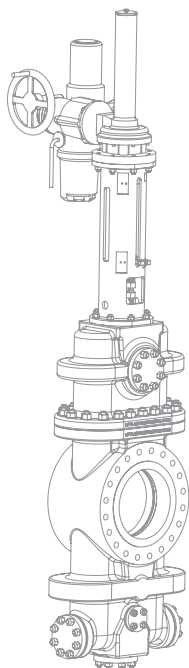
Suggested applications include:

- Feed isolation
- Overhead vapor to fractionator
- Coke condensate
- Drain to coke pad
- Manifold isolation valve
- Manifold valve
- Wax tailings/steam to blow down
- Hydrocarbon liquids/vapor bypass to fractionator
- Utility steam MOV
- Quench water MOV purged

Engineering and Design



Technical Data



General Specifications

Size:	6 inch to 36 inch*
Pressure Class:	CL150, CL300, CL600
Body Material:	ASME SA217 C12, ASME SA217 C5, ASME SA216 WCB
Seat Material:	ASME SA182 F9, ASME SA217 C12 (Nitrided)
Gate Material:	ASME SA387 GR 91 CL 2 (Nitrided)
Stem Material:	ASME SA 564 GR 630 CL H1150
Bolting:	ASME SA193 B16, ASME SA194 GR4
Actuation:	Electric, hydraulic, manual, bare stem
Engineering Standards ASME Standard B16.5 B16.10 B16.34 B31.3	Pipe flange and flanged fittings Face-to-face and end-to-end dimensions of valves Pressure / temperature charts per materials Pipe line specification
ASME B&PV Code Section II Part D Section VIII Div 1 & 2	Material of construction Pressure vessel design

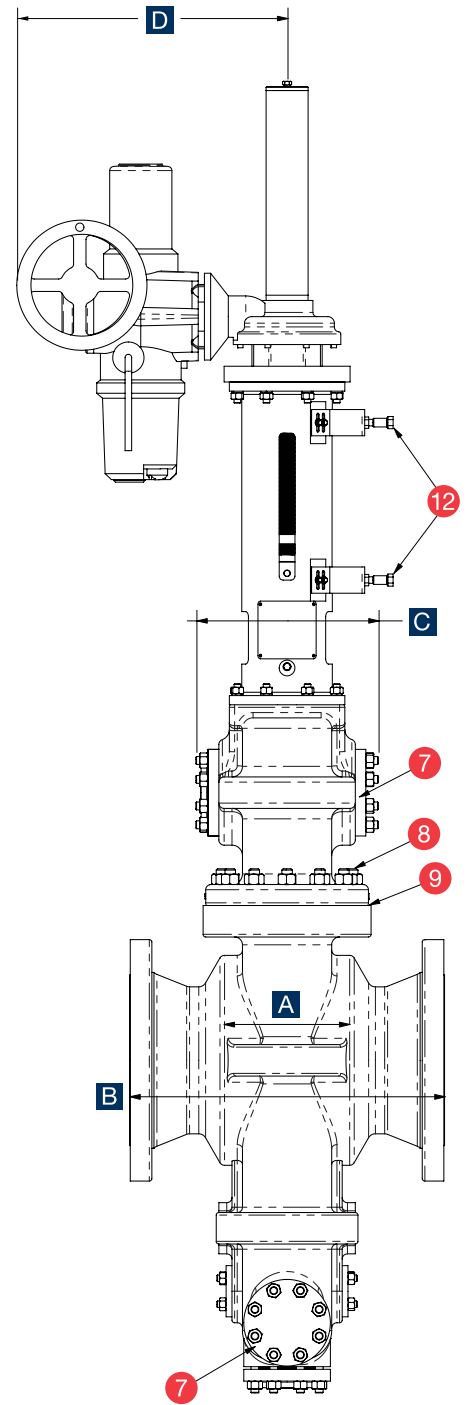
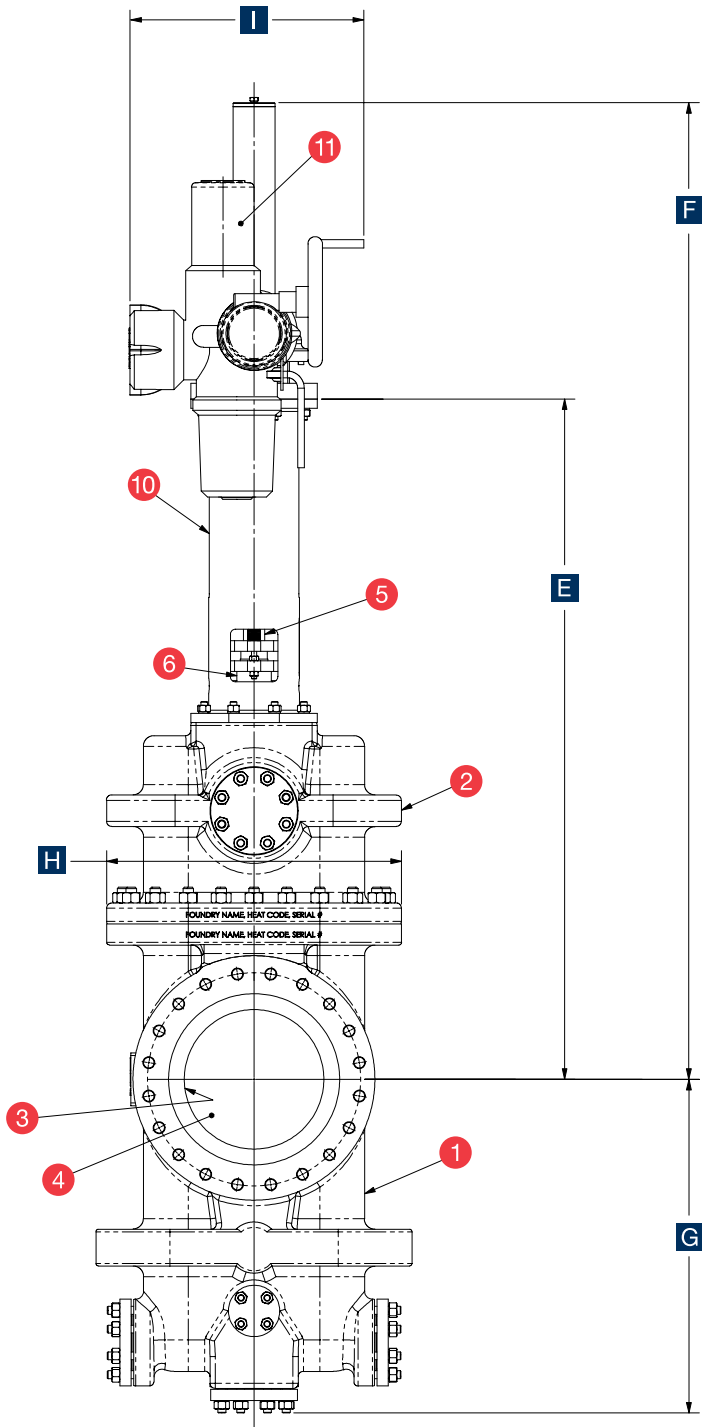
Envelope Dimensions – Class 300

Valve Size*	DV F/F	B16.10 F/F	Envelope Dimensions							Valve Weights
	A	B	C	D	E	F	G	H	I	
6 [150]	8.00	15.88	11.13	15.30	39.20	70.40	17.50	16.00	21.70	1250 lbs
	[203]	[403]	[283]	[389]	[996]	[1788]	[445]	[406]	[551]	600 Kg
8 [200]	9.00	16.50	13.20	15.30	45.70	77.70	21.60	19.20	21.70	1500 lbs
	[229]	[419]	[335]	[389]	[1161]	[1974]	[549]	[488]	[551]	680 Kg
10 [250]	10.50	22.34	13.38	15.83	55.50	80.34	24.44	22.00	22.52	1700 lbs
	[267]	[567]	[340]	[402]	[1410]	[2041]	[621]	[559]	[572]	771 Kg
12 [300]	12.00	25.5	16.88	15.28	60.38	86.25	28.44	27.50	21.69	1920 lbs
	[305]	[648]	[429]	[388]	[1534]	[2191]	[722]	[699]	[551]	870 Kg
14 [350]	14.50	30.00	17.38	25.75	64.63	92.76	31.69	28.00	22.57	3496 lbs
	[368]	[762]	[441]	[654]	[1641]	[2356]	[805]	[711]	[573]	1586 Kg
16 [400]	16.75	33.00	18.76	19.75	73.00	113.38	34.88	32.75	30.88	5030 lbs
	[425]	[838]	[477]	[502]	[1854]	[2880]	[886]	[832]	[784]	1880 Kg
18 [450]	16.00	36.00	18.89	20.56	90.25	137.31	39.31	36.75	31.13	6710 lbs
	[406]	[914]	[480]	[522]	[2292]	[3487]	[998]	[933]	[791]	2510 Kg
20 [500]	16.00	39.00	18.50	20.56	93.25	143.82	43.94	35.38	31.13	8380 lbs
	[406]	[991]	[470]	[522]	[2369]	[3653]	[1116]	[899]	[791]	3130 Kg
24 [600]	19.00	45.00	18.50	20.51	95.00	129.33	47.75	46.00	31.39	10600 lbs
	[483]	[1143]	[470]	[521]	[2413]	[3285]	[1213]	[1168]	[797]	4800 Kg
30 [750]	19.00	55.00	20.88	35.20	115.25	163.69	59.19	58.50	31.38	17900 lbs
	[483]	[1397]	[530]	[874]	[2927]	[4158]	[1503]	[1486]	[797]	7940 Kg
36 [900]	21.50	68.00	21.75	36.13	135.63	171.13	68.13	65.50	32.86	21800 lbs
	[546]	[1727]	[552]	[918]	[3445]	[4347]	[1730]	[1664]	[835]	8140 Kg

Chart dimensions assume electric actuation.

*Other valve sizes and custom face-to-face dimensions available upon request.

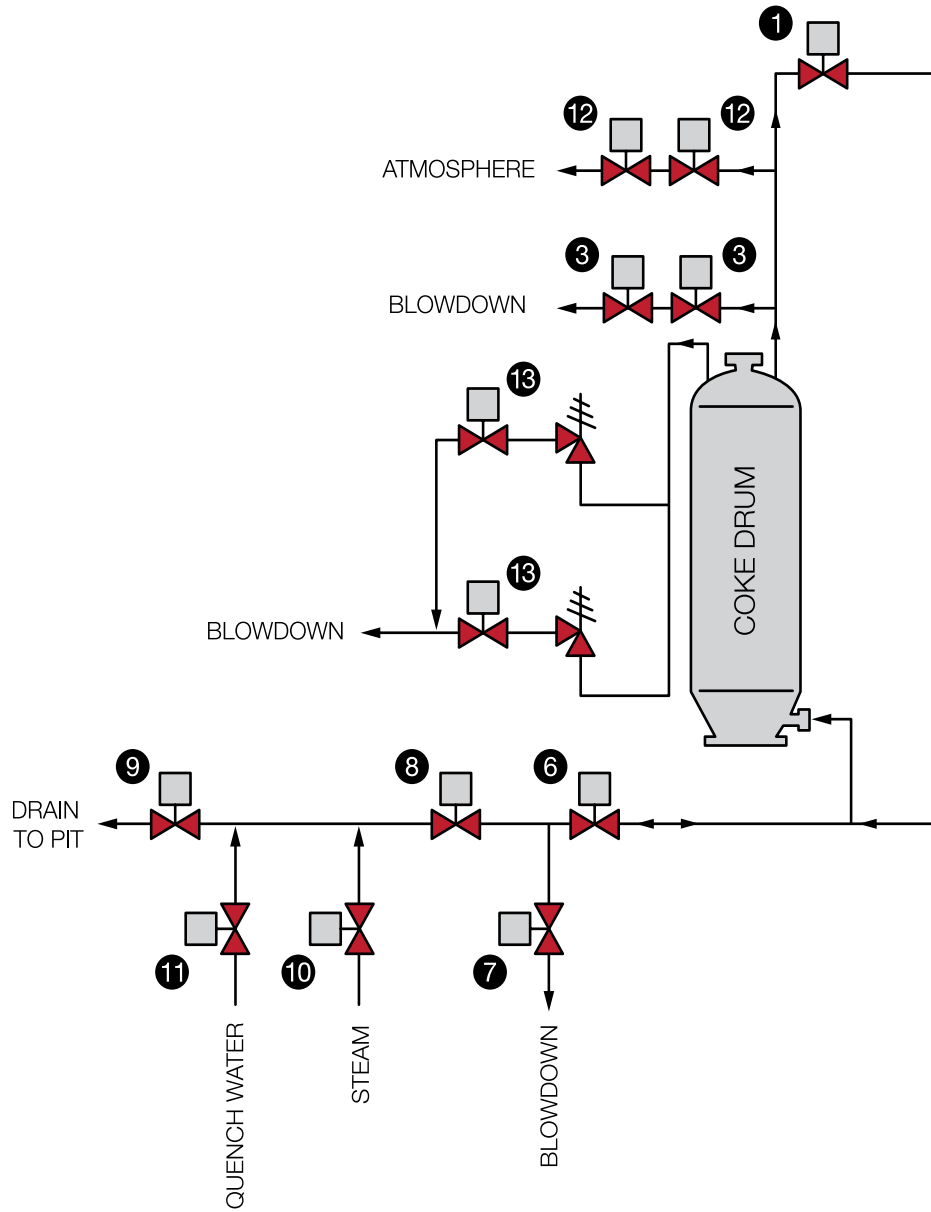
Dimensions and weights are subject to change. Dimensions D and I change with actuation method, manufacturer, and orientation.



Item	Description
1	Body
2	Bonnet
3	Seats
4	Gate

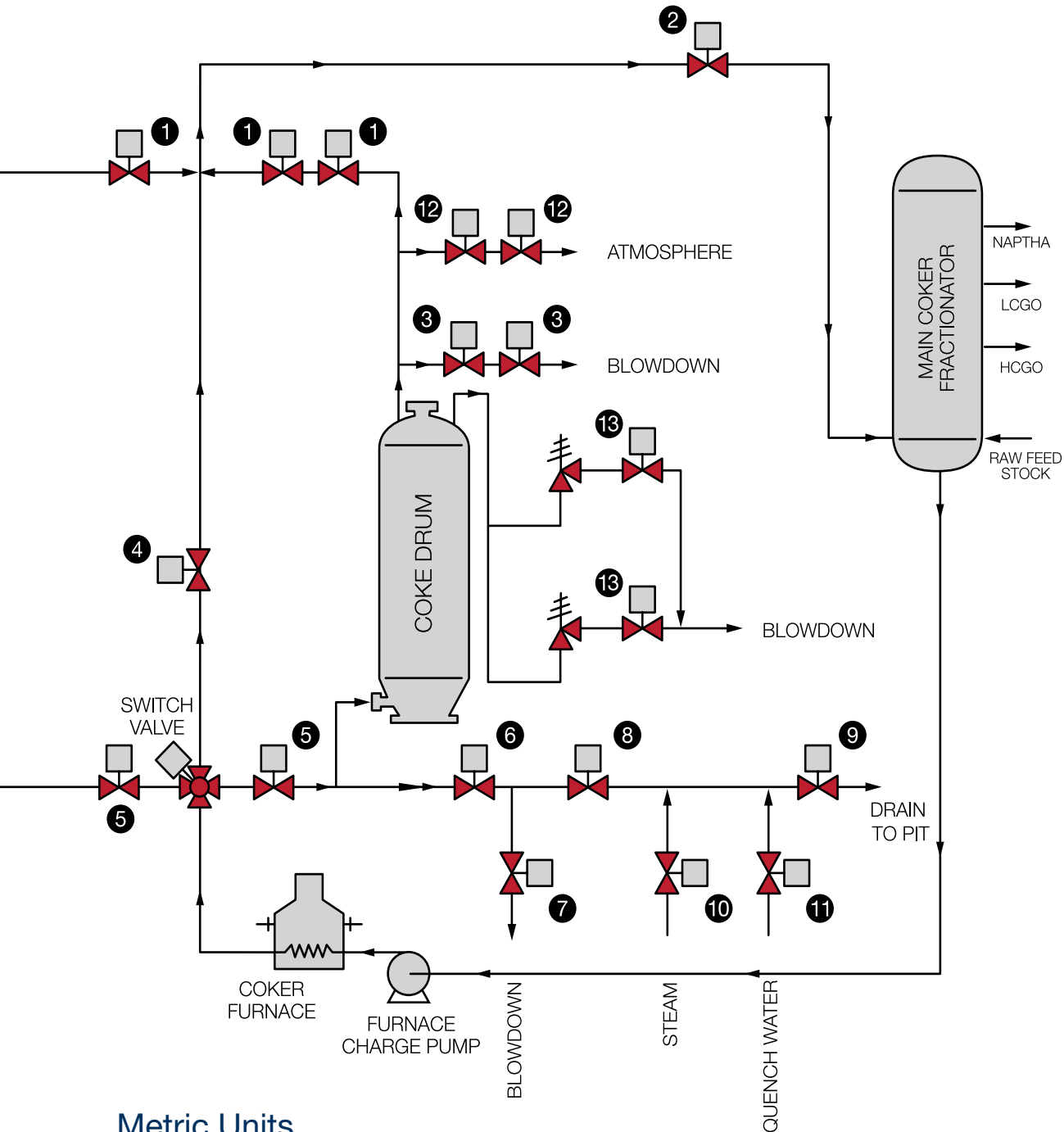
Item	Description
5	Stem
6	Packing
7	Port Flanges
8	Bonnet Bolting

Item	Description
9	Body Gasket
10	Yoke
11	Actuator
12	Proximity Switches



Standard Units

Valve Number	Valve Description	Temperature Range	Pressure Range	Isolation Valve	Recommended Model		Steam Purged Valve Body
		°F	psig	Inches	GV851	GV852	TYPICALLY
1	Overhead vapor to fractionator	70 - 850	10 - 80	20 - 42	-	X	Y
2	Back pressure valve	750 - 850	10 - 80	20 - 42	-	X	Y
3	Wax tailings to blowdown	70 - 850	10 - 80	20 - 42	-	X	Y
4	Bypass valve	350 - 750	30 - 800	10 - 16	-	X	Y
5	Feed isolation	350 - 950	200 - 800	12 - 20	-	X	Y
6	Manifold isolation valve	70 - 950	100 - 300	12 - 20	-	X	Y
7	Coke condensate	200 - 750	100 - 300	8 - 14	-	X	Y
8	Utility isolation valve	200 - 750	100 - 300	8 - 14	X	-	Y
9	Drain to coke pad	200 - 750	40 - 300	8 - 14	X	-	Y
10	Utility steam	200 - 750	100 - 300	8 - 12	X	-	N
11	Quench water	550 - 900	100 - 300	8 - 12	X	-	N
12	Atmospheric vent (a)	70 - 850	10 - 80	12 - 16	X	-	Y
13	PSV vapor discharge (b)	350 - 850	10 - 80	8 - 14	X	-	Y



Metric Units

Valve Number	Valve Description	Temperature Range	Pressure Range	Isolation Valve	Recommended Model		Steam Purged Valve Body
		°C	bar g	mm	GV851	GV852	TYPICALLY
1	Overhead vapor to fractionator	20 - 450	1 - 5	500 - 1070	-	X	Y
2	Back pressure valve	400 - 450	1 - 5	500 - 1070	-	X	Y
3	Wax tailings to blowdown	20 - 450	1 - 5	500 - 1070	-	X	Y
4	Bypass valve	180 - 400	2 - 60	250 - 400	-	X	Y
5	Feed isolation	180 - 510	15 - 60	300 - 500	-	X	Y
6	Manifold isolation valve	20 - 510	7 - 20	300 - 500	-	X	Y
7	Coke condensate	90 - 400	7 - 20	200 - 350	-	X	Y
8	Utility isolation valve	90 - 400	7 - 20	200 - 350	X	-	Y
9	Drain to coke pad	90 - 400	7 - 20	200 - 350	X	-	Y
10	Utility steam	90 - 400	3 - 20	200 - 300	X	-	N
11	Quench water	90 - 400	7 - 20	200 - 300	X	-	N
12	Atmospheric vent (a)	20 - 450	1 - 5	300 - 400	X	-	Y
13	PSV vapor discharge (b)	180 - 450	1 - 5	200 - 350	X	-	Y



Control System



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 isolation valves are designed per ASME B16.34.

DeltaValve maintains the following stamps/design certifications:

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

Isolation 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
- 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





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

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

Phone: 801.984.1000

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 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

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Quality
ISO 9001

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