DEMBLA VALVES LTD.

Dembla

GATE VALVE

Series - GTV 01

First issue Aug -2021 : Rev-0 Aug-2021

APLICABLE STANDARDS AND CODES

British Standards are the standards produced by BSI Group

BS 10	Specification for flanges and bolting for pipes, valves and fitting.
BS EN-1092-1	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges.
BS EN 558	Industrial valves. Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems. PN and Class designated valves.
BS EN ISO 15761	Steel gate, globe and check valves for sizes DN 100 and smaller, for the petroleum and natural gas industries
BS EN 12266-1	Testing for Industrial valves.

API Standards – American Petroleum Institute

API 598	Valve Inspection and Testing
API 602	Gate, Globe,& Check Valves for Sizes up to NPS 4 (DN 100).
API 600	Steel Gate Valves-Flanged and Butt-Welding Ends, Bolted and Pressure Seal Bonnets for sizes 2" & above.

ASME Standards – ASME International (American Society of Mechanical Engineers)

ASME B16.1	Cast Iron Pipe Flanged Fittings.
ASME B16.5	Pipeline Flanges and Flanged Fittings.
ASME B16.10	Valve Dimentions, Face to Face and End to End.
ASME B16.25	Buttwelding Ends.
ASME B16.34	Valves- Flanged, Threaded and Welding End.
ASME B16.47	26" and Larger Flange dimensions.
ASME B31.1	Power Piping.
ASME B31.2	Fuel Gas Piping
ASME B31.3	Process Piping
ASME B16.11	Socket Welding
ASME B 1.20.1	Screwed End (NPT)

ISO 15848-1 & ISO 15848-2 - Test Procedures for the evaluation of external leakage of valve stem or shaft body joints.

MSS Standards – Manufacturers Standardization

MSS SP- 45	Bypass and Drain Connections
MSS SP- 55	Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components – Visual Method for Evaluation of Surface Irregularities

ASTM Standards – American Society for Testing and Materials

ASTM A 193	Standard Specification for Alloy - Steel and Stainless Steel Bolting Materials for High Temperature Service.
ASTM A 194	Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High- Temperature Service.
ASTM A 216	Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding for High- Temperature Service.
ASTM A 217	Standard Specification for Steel Castings, Matensitic Stainless and Alloy for Pressure-Containing Parts, Suitable for High- Temperature Service.
ASTM A 276	Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
ASTM A 351	Standard Specification for Castings, Austenitic, Austenitic-Ferritic (Duplex), for Pressure-Containing Parts.
ASTM A 352	Standard Specification for Steel Castings, Feritic and Matensitic, for Pressure-Containing Parts, Suitable for Low Temperature Service.
ASTM A 515	Standard Specification for Pressure Vessel Plates, Carbon Steel, for Internmediate and Higher-Temperature Service.
ASTM A 516	Standard Specification for Pressure Vessel Plates, Carbon Steel for Moderate-and Lower-Temperature Service.
EN 12266-1	Testing for Industrial Valves

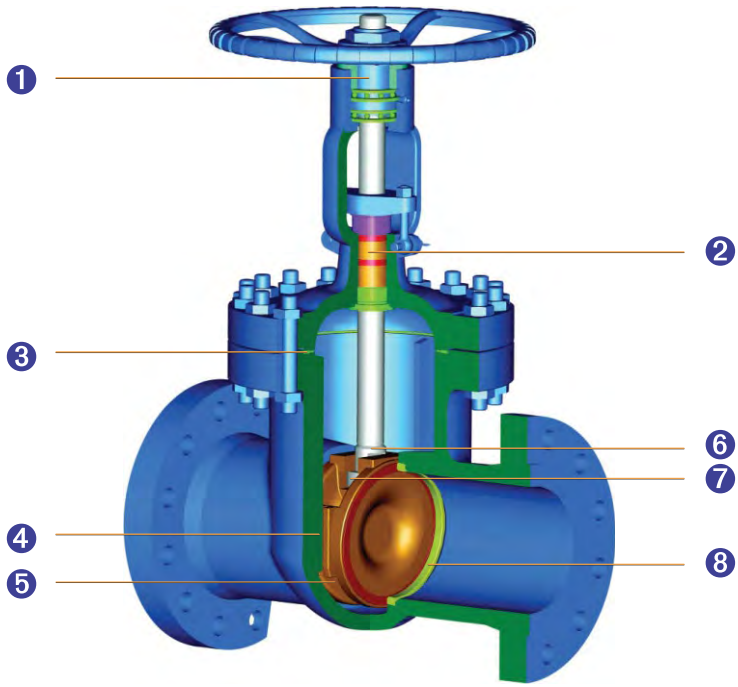
NACE Standards – NACE (National Association Engineers)

NACE MR0175 Standard Material Requirements Sulfide Stress Cracking Resistant Metalic Materials for Oilfield Equipment.

Boiler and Pressure Vessel Code:

SECTION	II	Parte A – Ferrous Material Specifications.
SECTION	II	Parte B – Non Ferrous Material Specifications
SECTION	II	Parte C – Specifications for Welding Rods, Electrodes and Filler Metals Specifications
SECTION	V	Nondestructive Examination.
SECTION	VIII	Rules for Construction of Pressure Vessels, Divisions 1 and 2.
SECTION	IX	Welding and Brazing Qualifications.

Design Features - Bolted Bonnet Gate Valve



1. Long thread stem nut provides long thread life and allow for the removal of Hand Wheel - While keeping the stem & Wedge in fixed position.
2. Spacer ring single packing set for 300 lb valves. 150 lb valves contain only a single packing set. Double packing can be provided upon customer request.
3. Spiral wound gasket for 150#, 300# & 600 # valves, and flex Graphite (Pressure Seal). 900 # & above. Ring joints are also available as an option for 600 lb valves upon customer request.
4. Integral guide rib inside the body throughout the travel distance of wedge assures self-centering of the wedge during opening or closing and the alignment of the gate stem in all orientation without gate binding or galling..
5. Flexible wedge to compensate for seat face distortion and body deformation due to pipe stress.
6. Anti blow-out stem with collar
7. Stem & wedge connection stronger than the thread area of stem.
8. Renewable seal welded seats with stellite 6 are standard. Screwed-in seats are optional.

Gate Valves Bolted Bonnet & Pressure-seal Range

Dembla Valves Limited manufactures a comprehensive range of Gate Valves in sizes up to 48” (1200 mm) and in ASME classes from 150 to 2500. The valves are offered in combination of size, pressure class, material, End-connection.

Gate Valves Product Range

Variants	ASME Class	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	36	38	40	42	48
		50	80	100	150	200	250	300	350	400	450	500	550	600	650	700	750	900	950	1000	1050	1200
Flex Wedge	150	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	600	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	900	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
	1500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
	2500	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										

Construction :-

Bolted Bonnet construction for 150#, 300# & 600# Pressure Seal Bonnet. for 900# & Above.

When Valves are to be used in highly corrosive environments, in addition to choosing expensive corrosion – resistant alloy material, we can also consider using carbon steel / low temperature carbon steel as the base material & surfacing Inconel 625 to be overlay or cladding on the contact surface with the medium to save cost.

The process of cladding creates a perfect fusion between two layers without any dilution of the overlay material. A minimum thickness of 2.5mm achieved in at least 2 layers of overlay.

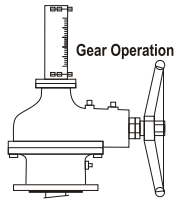
For Valves, cladding is applied on the flow bore area of Gate,Globe,Check, Ball & Butterfly Valves.

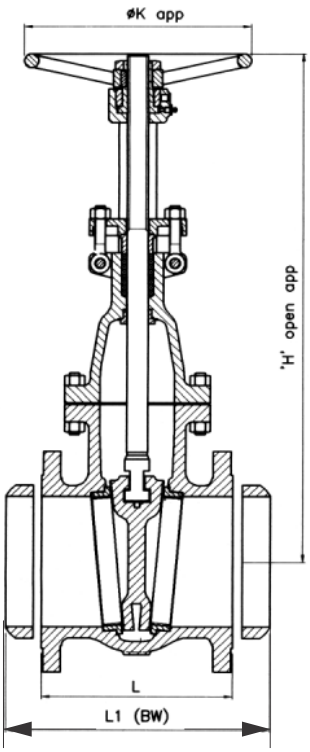
Material Specifications

Part	Standard	Low Temperature Service	Stainless Steel	High Temperature Service	Sour Service
BODY	ASTM A216-WCB	ASTM A352-LCC	ASTM A351-CF8M	ASTM A217-WC9	ASTM A216-WCB
BONNET	ASTM A216-WCB	ASTM A352-LCC	ASTM A351-CF8M	ASTM A217-WC9	ASTM A216-WCB
WEDGE	ASTM A216-WCB+ Cr13 OVERLAY+ ASTM A217-CA15	ASTM A352-LCC +316 OVERLAY + ST6	ASTM A351-CF8M+ST6	ASTM 217-WC9 + ST6. OVERLAY	ASTM A216-WCB+ CR13 OVERLAY ASTM A217-Ca15 + ST6
STEM NUT	ASTM A439 D-2	ASTM A439 D-2	ASTM A439 D-2	ASTM A439 D-2	ASTM A439 D-2
GLAND FLANGE	ASTM A216-WCB	ASTM A352-LCB	ASTM A351-CF8	ASTM A216-WCB	ASTM A216-WCB
HANDWHEEL	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
SEAT RING	ASTM A105+STL. OVERLAY	ASTM A182-F316+STL. OVERLAY	ASTM A182-F316+STL. OVERLAY	ASTM A182-F22+STL. OVERLAY	ASTM A105+STL. OVERLAY
STEM	ASTM A182-F6a	ASTM A182-F316	ASTM A182-F316	ASTM A182-F6a	ASTM A182-F6a-NC
BACK SEAT	ASTM A276-420	ASTM A276-316	ASTM A276-316	ASTM A276-420	ASTM A276-420-NC
GLAND	ASTM A276-420	STAINLESS STEEL	ASTM A276-316	ASTM A276-420	ASTM A276-420-NC
GASKET	SPIRAL WOUND GRAPHITE	SPIRAL WOUND GRAPHITE	SPIRAL WOUND GRAPHITE	SPIRAL WOUND GRAPHITE	SPIRAL WOUND GRAPHITE
MIDDLE PACKING	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE	GRAPHITE
TOP/BOTTOM PACKING	316+GRAPHITE	316+GRAPHITE	316+GRAPHITE	316+GRAPHITE	316+GRAPHITE
RETAINING NUT	CARBON STEEL	CARBON STEEL	STAINLESS STEEL	CARBON STEEL	CARBON STEEL
HANDHWEEL NUT	CARBON STEEL	CARBON STEEL	STAINLESS STEEL	CARBON STEEL	CARBON STEEL
BONNET STUD	ASTM A193-B7	ASTM A320-L7M	ASTM A193-B8	ASTM A193-B16	ASTM A193-B7M
BONNET NUT	ASTM A194-2H	ASTM A194-7M	ASTM A194-8	ASTM A194-4	ASTM A194-2HM
EYE BOLT	ASTM A193-B7	ASTM A320-L7M	ASTM A193-B8	ASTM A193-B16	ASTM A193-B7M
GLAND NUT	ASTM A194-2H	ASTM A194-7M	ASTM A194-8	ASTM A194-4	ASTM A194-2HM
GREASE FITTING	CARBON STEEL	CARBON STEEL	STAINLESS STEEL	CARBON STEEL	CARBON STEEL
EYE BOLT PIN	CARBON STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	CARBON STEEL
RIVET	CARBON STEEL	CARBON STEEL	STAINLESS STEEL	CARBON STEEL	CARBON STEEL
NAME PLATE	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL	STAINLESS STEEL

BOLTED BONNET

CLASS 150





MATERIAL SPECIFICATION

PARTS	MATERIAL		
BODY	WCB/WCC	WC6 / WC9	CF8/CF8M
BONNET	WCB/WCC	WC6 / WC9	CF8/ CF8M
YOKE 1	WCB/WCC	WC6 / WC9	CF8/ CF8M
WEDGE	13% CR FACING ON WCB/WCC	13 Cr . FACING ON WC6/WC9	CF8/ CF8M
SEAT RING 2	13 Cr. FACING ON A 515-70	SS 304 13% Cr. STEEL	SS 304/ 316 CF8 / CF8M
BACK SEAT	SS 410		INTEGRAL
SPINDLE	SS 410		SS304 /SS316
GLAND BUSH	SS 410		SS 304 /SS316
GLAND FLANGE	CARBON STEEL/WCB		SS 304
YOKE SLEEVE	ASTM A 439 Gr.D2/ AL BRONZE		
YOKE NUT	ASTM A 515 -70		SS 304
HAND WHEEL	CARBON STEEL FAB / MALLEABLE IRON		
HAND WHEEL NUT	CARBON STEEL		SS 304
STUD & NUT	B7/2H	B16/7	B7/2H B8/8
EYE BOLT & NUT	B7/2H		B8/8M
CROSS BOLT & NUT	B7/2H		B8/8
GLAND PACKING	GRAPHITE INHIB. & INCONEL WIRE REIN./GRAPHOIL		
GASKET	CORR. SOFT IRON	CORR. S S 304	CORR. SS 304/316
CRUB SCREW	STEEL		
GREASE NIPPLE	BRASS/ STEEL		
NAME PLATE	SS 304		

1) SEPARATE YOKE FOR 10" NB & ABOVE
2) SEAL WELDED SEAT RING
3) INTEGRAL SEAT AND BACK SEAT FOR AUSTENITIC STEEL VALVE
4) SEAT AND WEDGE STELLITING OPTIONAL
5) 14" NB & ABOVE NORMALLY SUPPLIED WITH GEAR BOX

Type of Ends
* **Flanged Raised Face**
* **Flanged Ring Type Joint**
* **Buttweld**

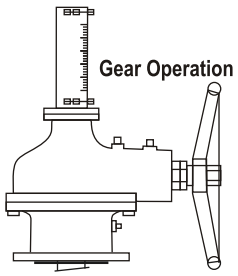
*** Valves of Inconel 625/ Inconel 625 cladding available (cladding or wetted flow area).**

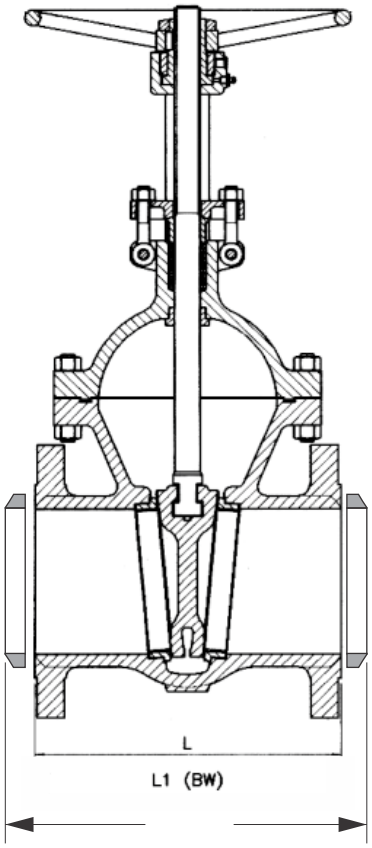
DIMENSION TABLE

VALVE SIZE	in	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	36	40	42	48
	mm	50	65	80	100	125	150	50	65	80	100	125	150	500	550	600	650	700	750	800	900	1000	1050	1200
L		7.0	7.5	8.0	9.0	10.0	10.5	11.5	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	22.0	24.0	24.0	28.0	28.0	30.0	32.0	34.0
		178	190	203	229	254	267	292	330	356	381	406	432	457	483	508	559	610	610	711	711	762	813	864
L1		8.5	9.5	11.12	12.0	15.0	15.9	16.5	18.0	19.8	22.5	24.0	26.0	28.0	30.0	32.0	34.0	36.0	36.0	38.0	40.0	42.0	45.0	46.0
		216	241	282.5	305	381	403	419	457	502	572	610	660	711	762	813	864	914	914	965	1016	1067	1143	1168
H app		400	445	485	600	725	765	985	1220	1395	1500	1775	2000	2210	2530	2725	2800	3130	3300	3420	3975	4670	4700	5525
K app		200	200	250	250	300	300	350	450	500	550	550	600	600	650	650	700	700	800	900	864	1000	1000	1200
Wt.Kg app(F/E)		20	28	33	55	70	90	130	225	330	450	530	625	825	1150	1210	1415	1620	2025	2450	3050	4000	4250	6500

BOLTED BONNET

CLASS 300





MATERIAL SPECIFICATION

PARTS	MATERIAL		
BODY	WCB/WCC	WC6 / WC9	CF8/ CF8M
BONNET	WCB/WCC	WC6 /WC9	CF8/ CF8M
YOKE 1	WCB/WCC	Wc6 / WC9	CF8/ CF8M
WEDGE	13% CR FACING ON WCB/WCC	13 Cr. FACING ON WC6/WCC	CF8/ CF8M
SEAT RING 2	CA15/13% FACING ON A 515-70	13%Cr STEEL	SS 304/SS 316 CF8/ CF8M
BACK SEAT	S S 410		INTEGRAL
SPINDLE	S S 410		S S 304/S S 316
GLAND BUSH	S S 410		S S 304/S S 316
GLAND FLANGE	CARBON STEEL/WCB		S S 304
YOKE SLEEVE	ASTM A 439 Gr.D2/ AL BRONZE		
YOKE NUT	ASTM A 515 -70		S S 304
HAND WHEEL	CARBON STEEL		
HAND WHEEL NUT	CARBON STEEL		S S 304
STUD & NUT	B7/2H	B16/7	B7/2H B8/8
EYE BOLT & NUT	B7/2H		B8/8 B8/8M
CROSS BOLT & NUT	B7/2H		B8/8
GLAND PACKING	GRAPHITE INHIB. & INCONEL		
GASKET	CORR. SOFT IRON	CORR. S S 304	CORR. S S304/316
CRUB SCREW	STEEL		
GREASE NIPPLE	BRASS/ STEEL		
NAME PLATE	SS 304		

1) SEPARATE YOKE 10" NB & ABOVE
2) SEAL WELDED SEAT RING
3) INTEGRAL SEAT AND BACK SEAT FOR AUSTENITIC STEEL VALVE
4) SEAT AND WEDGE STELLITING OPTIONAL
5) 12" NB & ABOVE NORMALLY SUPPLIED WITH GEAR BOX

Type of Ends

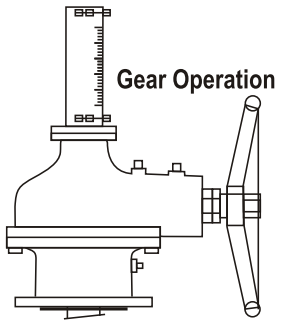
- Flanged Raised Face
- Flanged Ring Type Joint
- Buttweld
- **Valves of Inconel 625/ Inconel 625 cladding available (cladding or wetted flow area).**

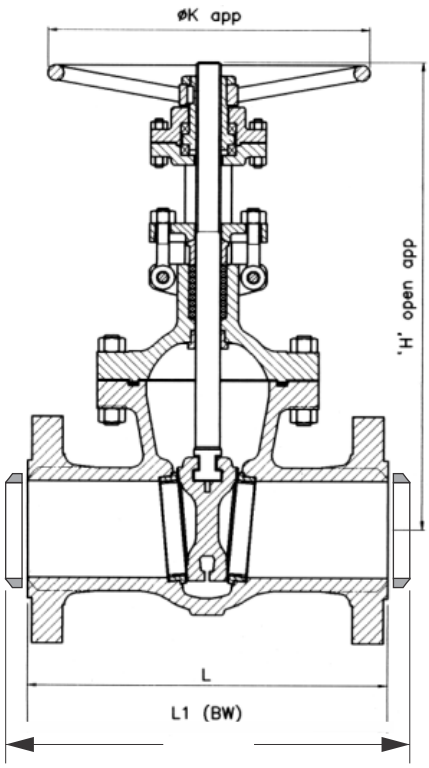
DIMENSION TABLE

VALVE SIZE	in	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	36	40
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	658	700	750	900	1000
L		8.5	9.5	11.12	12.0	15.0	15.88	16.5	18.0	19.8	30.0	33.0	36.0	39.0	43.0	45.0	49.0	53.0	55.0	68	76.0
		216	241	282.5	305	381	403	419	457	502	762	838	914	991	1092	1143	1245	1346	1397	1728	1930
L1		8.5	9.5	11.12	12.0	15.0	15.9	16.5	18.0	19.8	30.0	33.0	36.0	39.0	43.0	45.0	49.0	53.0	55.0	68	76.0
		216	241	282.5	305	381	403	419	457	502	762	838	914	991	1092	1143	1245	1346	1397	1728	1930
H app		410	450	485	615	725	835	1015	1230	1555	1720	1970	2160	2410	2550	2810	2850	3050	3170	3350	4600
K app		200	250	250	300	350	350	450	500	500	600	600	700	750	750	750	900	1000	1000	1200	1200
Wt.Kg app(F/E)		32	35	55	80	100	150	225	350	532	745	1060	1325	1725	1900	2570	2900	3400	4100	6500	8200

BOLTED BONNET

CLASS 600





MATERIAL SPECIFICATION

PARTS	MATERIAL		
BODY	WCB/WCC	WC6/WC9	CF8/ CF8M
BONNET	WCB/WCC	WC6/WC9	CF8/ CF8M
YOKE 1	WCB/WCC	WC6/WC9	CF8/ CF8M
WEDGE	13% Cr. FACING ON WCB/WCC	13% Cr. FACING ON WC6/WC9	CF8/ CF8M
SEAT RING 2	CA15/13%Cr. + STELLITED	SS 304/SS316 / STELLITED	CF8/CF8M / STELLITED
BACK SEAT	SS 410		INTEGRAL
SPINDLE	SS 410		SS304/SS316
GLAND BUSH	SS 410		SS 304/ SS316
GLAND FLANGE	CARBON STEEL /WCB		SS 304
YOKE SLEEVE	ASTM A 439 Gr.D2/ AL-BRONZE		
CASING COVER	WCB	WCB/Wc6	CF8
HAND WHEEL	CARBON STEEL		
HAND WHEEL NUT	CARBON STEEL		SS 304
STUD & NUT	B7 /2H	B16 / 7	B7 /2H B8/8
EYE BOLT & NUT	B7 / 2H		B8 /8 B8/8M
CASING STUD & NUT	B7 / 2H		B7 /2H
CROSS BOLT & NUT	B7 / 2H		B8/ 8
GASKET	SPIRAL WOUND SS 304/ SS 316 WITH ASB/GRAFOIL		
GLAND PACKING	GRAPHITE INHIB. & INCONEL /GRAFOIL		
GREASE NIPPLE	BRASS / STEEL		
NAME PLATE	SS 304		
BEARING	STANDARD		

1) SEPARATE YOKE 10"NB AND ABOVE.
2) SEAL WELDED SEAT RING
3) INTEGRAL / SEAT BACK SEAT FOR AUSTENITIC STEEL VALVES
4) WEDGE / SEAT STELLITING OPTIONAL
5) 8" NB & ABOVE NORMALLY SUPPLIED WITH GEAR BOX

Type of Ends

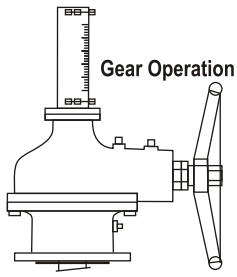
- Flanged Raised Face
- Flanged Ring Type Joint
- Buttweld
- **Valves of Inconel 625/ Inconel 625 cladding available (cladding or wetted flow area).**

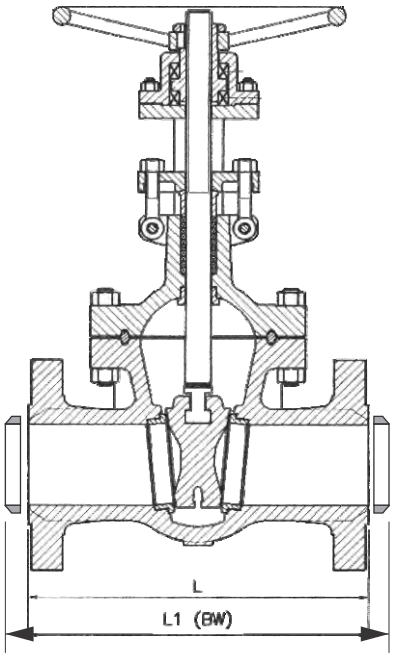
DIMENSION TABLE

VALVE SIZE	in	2	2.5	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30
	mm	50	6.5	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750
L		11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	51.0	55.0	57.0	61.0	65.0
		292	330	356	432	508	559	660	787	838	889	991	1092	1194	1295	1397	1448	1549	1651
L1		11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	51.0	55.0	57.0	61.0	65.0
		292	330	356	432	508	559	660	787	838	889	991	1092	1194	1295	1397	1448	1549	1651
H app		410	485	560	705	800	895	1125	1400	1535	1825	1955	2140	2310	2680	2680	3232	3560	3880
K app		250	250	350	450	500	500	600	700	800	800	800	800	800	900	900	1000	1000	1200
Wt.Kg app(F/E)		38	56	72	136	170	245	432	780	835	1190	1690	2010	2400	2650	3700	5000	6000	6945

BOLTED BONNET

CLASS 900/1500/2500





MATERIAL SPECIFICATION

PARTS	MATERIAL		
BODY	WCB	WC6 / WC9	CF8/ CF8M
BONNET	WCB	WC6 / WC9	CF8/ CF8M
YOKE 1	WCB	WC6 / WC9	CF8/ CF8M
WEDGE	CA15 / 13%Cr. FACING ON WCB+STELLITED	WC6+STELLITED WC9+STELLITED	CF8/ CF8M +STELLITED
SEAT RING 2	515Gr-70/13% Cr. + STELLITED	S S 304 + STELLITED	T304/T318,CF8 /CF8M + STELLITED
BACK SEAT	S S 410		INTEGRAL
SPINDLE	S S 410		S S 304/S S316
GLAND BUSH	S S 410		S S 304/S S316
GLAND FLANGE	CARBON STEEL /WCB		S S 304
YOKE SLEEVE	ASTM A 439 Gr.D2/AL-BRONZE		
CASING COVER	WCB	WCB / WC6	
HAND WHEEL	CARBON STEEL		
HAND WHEEL NUT	CARBON STEEL		S.S 304
STUD & NUT	B7 / 2H	B16 / 7	B7 / 2H
EYE BOLT & NUT	B7 / 2H		B8 / 8
CASING STUD & NUT	B7 / 2H		
CROSS BOLT & NUT	B7 / 2H		B8 / 8
GASKET	S S 304 / 316 RING		
GLAND PACKING	GRAPHITE INHIB. & INCONEL WIRE REIN./GRAPHOIL		
GREASE NIPPLE	BRASS / STEEL		
NAME PLATE	SS 304		
BEARING	STANDARD		

1) SEPARATE YOKE 10"NB AND ABOVE
2) SEAL WELDED
3) 6" NB & ABOVE 900 CLASS & 4" NB & ABOVE 1500 # & 2500 #
   NORMALLY SUPPLIED WITH GEAR BOX

Type of Ends

- Flanged Raised Face
- Flanged Ring Type Joint
- Buttweld
- **Valves of Inconel 625/ Inconel 625 cladding available (cladding or wetted flow area).**

DIMENSION TABLE 900 CLASS

VALVE SIZE	in	2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	80	100	150	200	250	300	350	400	450	500	600
L		14.5	15.0	18.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0	61.0
		368	381	457	610	737	838	965	1029	1130	1219	1321	1549
L1		14.5	315.0	18.0	24.0	29.0	33.0	38.0	40.5	44.5	48.0	52.0	61.0
		368	381	457	610	737	838	965	1029	1130	1219	1321	1549
H app		440	584	712	927	1220	1600	1752	2286	2362	2450	2600	3150
K app		250	300	400	500	600	680	760	760	910	910	950	1200
Wt.Kg app(F/E)		70	105	190	380	595	975	1275	1665	2310	2880	3505	6450

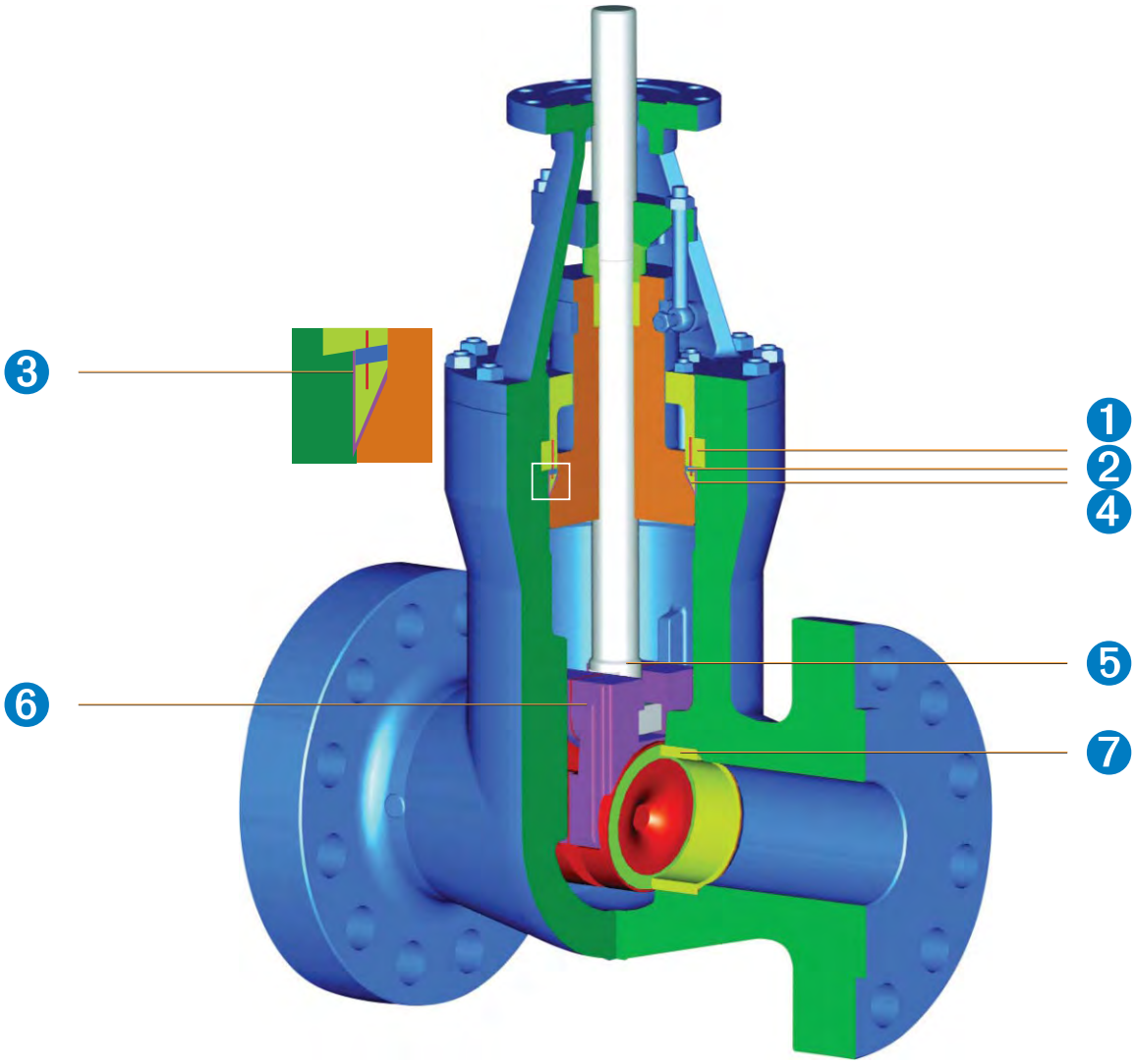
DIMENSION TABLE 1500 CLASS

VALVE SIZE	in	2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	80	100	150	200	250	300	350	400	450	500	600
L		14.5	18.5	21.5	27.8	32.7	39.0	44.5	49.5	54.5	60.5	65.5	76.5
		368	470	546	705	832	991	1130	1257	1384	1537	1664	1943
L1		14.5	18.5	21.5	27.8	32.7	39.0	44.5	49.5	54.5	60.5	65.5	16.5
		368	470	546	705	832	991	1130	1257	1384	1537	1664	1943
H app		500	633	725	1045	1310	1410	1550	2100	2475	2760	3102	3721
K app		250	350	400	600	680	910	965	1015	1065	1200	1200	1260
Wt.Kg app(F/E)		80	150	225	625	1115	1430	1955	2690	3830	900	1100	1500

DIMENSION TABLE 2500 CLASS

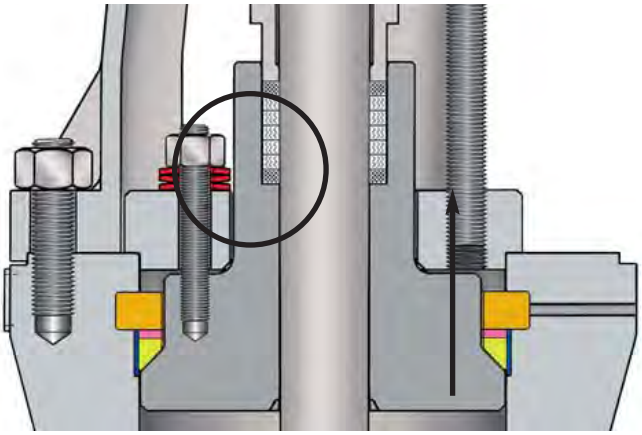
VALVE SIZE	in	2	3	4	6	8	10	12
	mm	50	80	100	150	200	250	300
L		17.8	22.8	26.5	36.0	40.3	50.0	56
		451	578	673	914	1022	1270	1422
L1		17.8	22.8	26.5	36.0	40.3	50.0	56.0
		451	578	673	914	1022	1270	1422
H app		595	750	805	1200	1346	1500	2212
K app		250	350	400	600	680	910	1200
Wt.Kg app(F/E)		130	220	320	815	1405	2550	7180

Design Features - Pressure Seal Gate Valve



1. Segmented thrust ring absorb the thrust applied by the internal pressure
2. Thrust ring provide surface bearing and prevent deformation of the gaskets
3. Stainless steel inlay to ensure soundness and corrosion resistance in the critical body sealing zone for carbon and alloy steel valves
4. Soft steel gasket seal provides a large contact area for perfect sealing
5. Anti blow-out stem design with collar
6. Flexible wedge to compensate for seat face distortion and body deformation due to pipe stress
7. Seat ring with stellite 6 overlay is standard design

INNOVATIVE PRESSURE SEAL DESIGN



OPTIMIZED FOR CRITICAL POWER PLANT APPLICATIONS

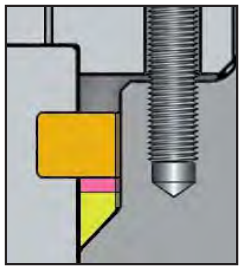
Dembla pressure seal design has been optimized for and successfully field tested in tough power applications, including “peaking” type cogeneration plants or daily start & stop (DSS) / weekend start & stop (WSS) plants where valves are subject to frequent start-ups and shut-downs.

GENERAL FEATURES OF THE DEMBLA PRESSURE SEAL DESIGN

- **Bonnet take-up bolts** establish the initial seal of the pressure seal joint (body to gasket to bonnet) (see below right).
- **Segmental thrust ring** absorbs all the thrust applied by internal pressure.
- **Drilled knock-out holes** for ejecting out thrust rings, using pins.
- **Outer row of studs** secures the yoke to the body.
- **Spacer ring** provides bearing surface and prevents deformation of the gasket.
- **Graphite gasket standard** (see right).

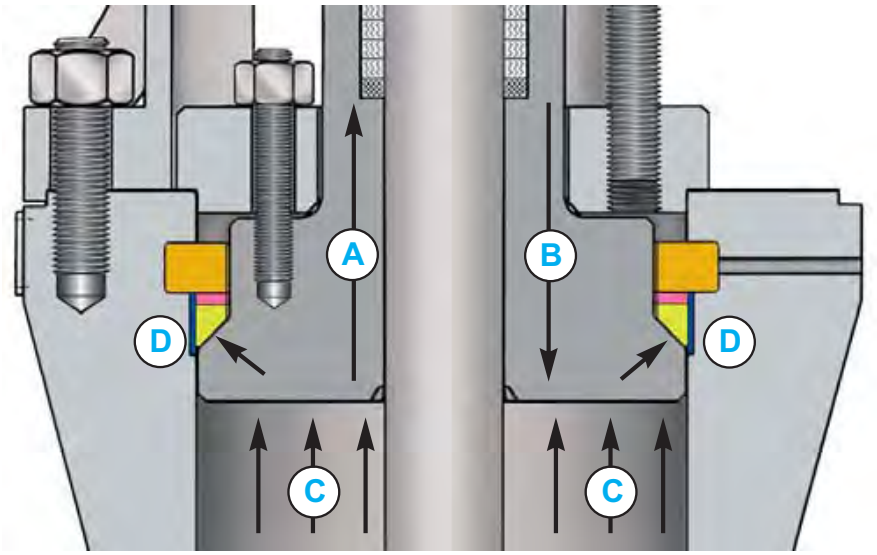
GRAPHITE GASKETS

standard, valves up to ASME Class 2500



Dembla offers graphite pressure seal gaskets as standard, instead of soft iron gaskets, providing a more flexible seal for applications with fluctuating conditions. (Silver-plated soft iron gaskets are available on request.)

BASIC PRINCIPLES OF OPERATION - HOW PRESSURE SEAL VALVES WORK



A/B. Bonnet tendency to move up or down as pressure changes.

C. System pressure.

D. Sealing forces due to pressure.

The higher the internal pressure, the greater the sealing force. Easy dismantling is made possible by dropping the bonnet assembly into the body cavity and driving out the four-segmental thrust rings by means of a push pin.

STEM SEAL DESIGN

EVOLVED FROM EXTENSIVE TESTING, OFFERS A TIGHT SEAL WITH LITTLE OR NO MAINTENANCE OVER LONG PERIODS OF TIME

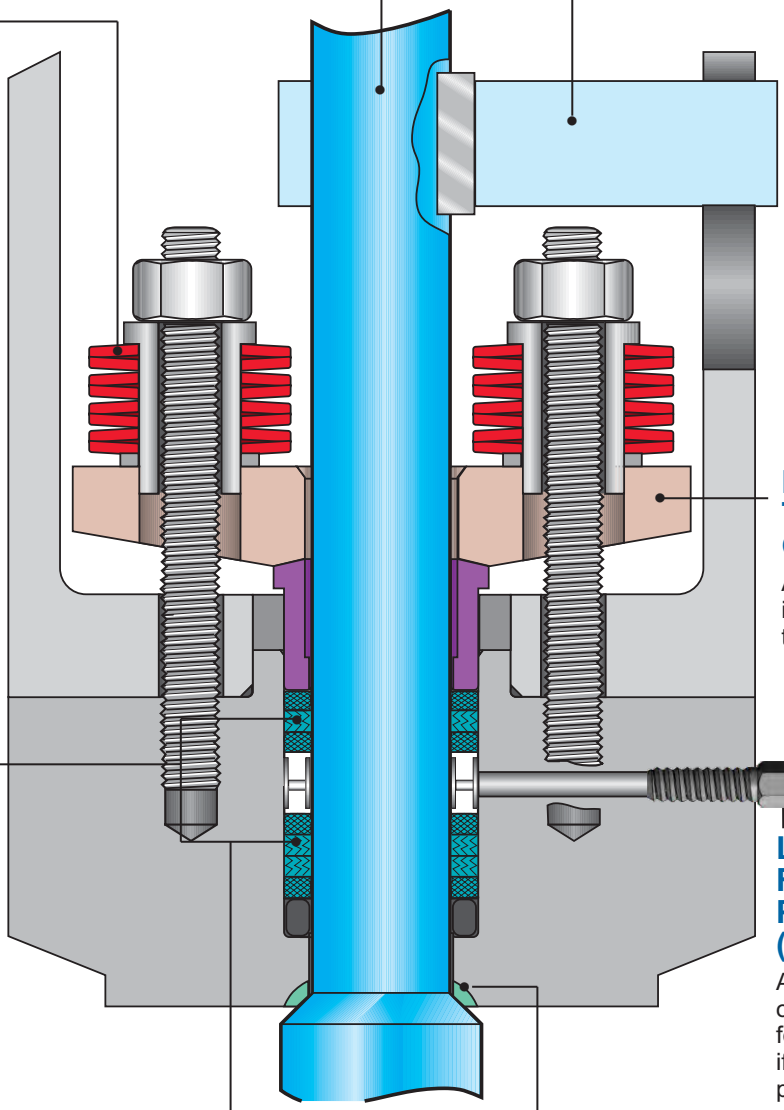
NON-ROTATING STEM
has tight roundness and straightness tolerances and is burnished for a superior surface finish.

LIVE-LOADING (OPTIONAL)
Two sets of Belleville springs maintain a minimum permanent packing stress of 4,000 psi (275 bar).

Live-loading keeps the stem tight for long periods of time without maintenance.

Bolt torques control total spring load.

SHORT & NARROW PACKING CHAMBER
Sealing effectiveness improves as over-all packing length shortens. Chamber wall is burnished for superior finish.



LOWER OPERATING TORQUE
due to non-rotating stem. Torque arm prevents rotation, indicates position and may also actuate limit switches.

HEAVY TWO-PIECE GLAND/FLANGE
A heavy gland flange is required to carry the high stress load.

LEAK-OFF FOR DOUBLE PACKING (OPTIONAL)
A lantern ring and leak-off pipe are provided for removal of leakage, if any, from lower packing set.

PRECOMPRESSED RINGS
Each braided graphite ring is preformed and compressed to 4,000 psi (275 bar) at installation to ensure optimal sealing.

EFFICIENT BACKSEAT
Cone-in-cone design eliminates problems with over-torquing.

Gate Valves - ASME 900# to 2500# (ASME B16.34)

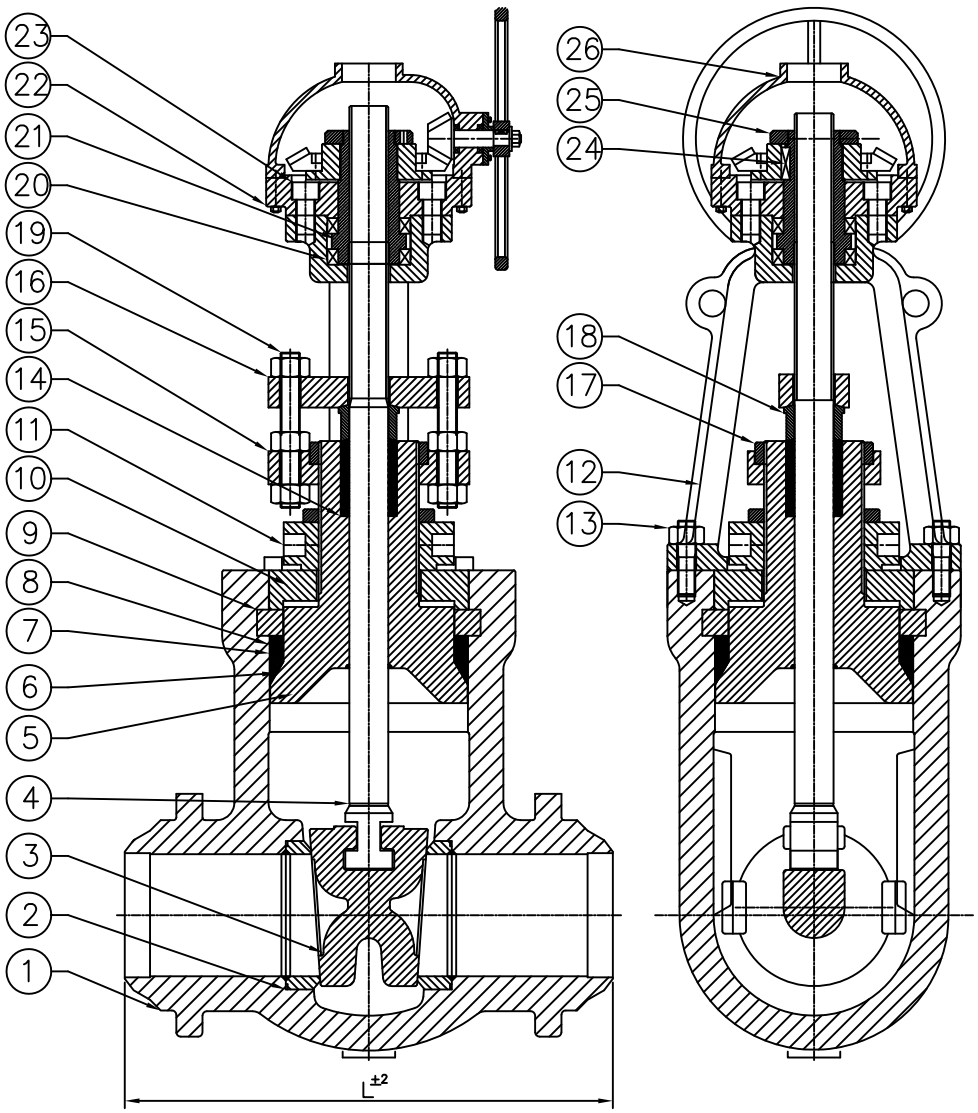
Gate valves serve as efficient on-off valves with flow in either direction. In such a design, a wedge slides cross a general passageway in order to control fluid flow (like a sliding gate - hence, the name). One of the most significant characteristics of this type of valves is its straight-through, unobstructed passageway when set in the “full open” position. This is made possible by the wedge lifting entirely out of the passageway. As a result, gate valves are characterized by a minimum of turbulence and pressure drop in operation.

While gate valves are good for applications requiring these two factors, they are not recommended for installations in which throttling would be a function. They are designed for on/off service.

BILL OF MATERIALS		TRIM 8	TRIM 2	TRIM 8	TRIM 10
Item	Description	Carbon Steel	Carbon Steel (Low Temp.)	Alloy Steel	Stainless Steel
1	Body	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
2	Bonnet	A 216 Gr. WCB	A 352 Gr. LCB	A 217 Gr. C5	A 351 Gr. CF8M
3	Wedge	A 216 Gr. WCB + ER410	A 352 Gr. LCB + ER308	A 217 Gr.C5 + ER410	A 351 Gr. CF8M
4	Yoke	A 216 Gr. WCB	A 352 Gr.LCB	A 217 Gr. C5	A 351 Gr. CF8M
5	Stem	A 182 Gr. F6a	A 182 Graph. F304	A 182 Gr. F6a	A 182 Gr. F316
6	Seat Ring	A 105 + Stellite	A 182 Gr. F304	A 182 Gr. F6a + Stellite	-----
7	Stem Nut	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2	B 148 / A 439 Gr. D2
8	Backseat	A182 Gr. F6a	A182 Gr. F304	A 182 Gr. F6a	-----
9	Gland	A 105	A 105	A 182 Gr. F6a	A 182 Gr. F316
10	Gland Flange	A 105	A 105	A 105	A 182 Gr. F304
11	Stem Packing	Graphite	Graphite	Graphite	Graphite
12	Gasket (Class 150)	SS304 / Graphite	SS304 / Graphite	SS304 / Graphite	SS316 / Graphite
12	Gasket (Class 300)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316 / Graphite
12	Gasket (Class 600)	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS304 / Graphite	Spw SS316 / Graphite
12	Gasket (Class 900)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
12	Gasket (Class 1500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
12	Gasket (Class 2500)	RJ SS304	RJ SS304	RJ SS304	RJ SS316
13	Bonnet Bolt & Nut	A 193 Gr.B7 / A 194 Gr.2H	A320 Gr. L7 / A194 Gr. 7	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H (1)
14	Eye Bolt & Nut	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H	A 193 Gr.B7 / A 194 Gr.2H
15	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel	Carbon Steel

PARTS ILLUSTRATOR

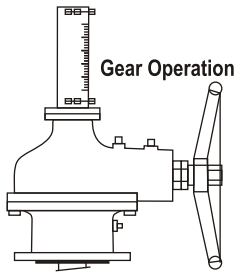
PRESSURE SEAL COVER - HIGH PRESSURE

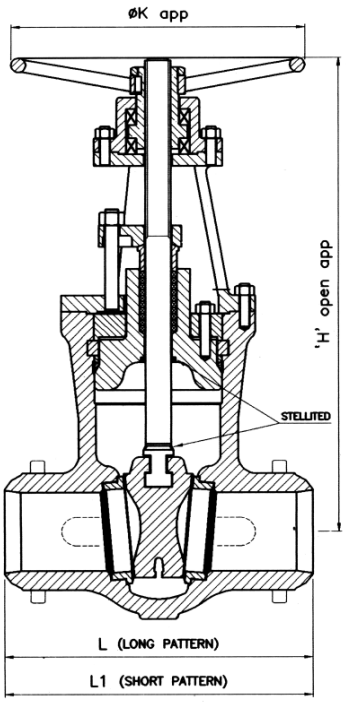


Sr,No.	DESCRIPTION
26	GEARBOX
25	HANDWHEELNUT
24	HANDWHEELKEY
23	COVER BOLT
22	YOKE COVER
21	YOKE SLEEVE
20	THRUST BEARING
19	GLAND STUD&NUT
18	GLAND BUSH
17	GLAND CLAMP
16	GLAND FLANGE
15	GLAND FOLLOWER
14	GLAND PACKING
13	STUD&NUT
12	YOKE
11	CHECK NUT
10	RETAINER
9	SEGMENTAL RING
8	THURST RING
7	GASKET
6	SEAL
5	BONNET
4	SPINDLE
3	WEDGE(FLEXIBLE)
2	SEATRING(SEALWELD)
1	BODY

PRESSURE SEAL BONNET

CLASS 900/1500/2500





MATERIAL SPECIFICATION

PARTS	MATERIAL		
BODY	WCB	WC6 / WC9	CF8/ CF8M
BONNET	WCB	WC6 / WC9	CF8/ CF8M
YOKE	WCB	WC6 / WC9	CF8/ CF8M
WEDGE	CA15 / 13%Cr. FACING ON WCB+STELLITED	WC6+STELLITED WC9+STELLITED	CF8/ CF8M+ STELLITED
SEAT RING 1	A 515-70/13%Cr.STELLITED	S.S 304 + STELLITED	SS 304/ 316
BACK SEAT	INTEGRAL		
SPINDLE	SS 410		SS 304/ SS316
GLAND BUSH	SS 410		SS304/ SS316
GLAND FLANGE	CARBON STEEL /WCB		S.S. 304
YOKE SLEEVE	ASTM A 439 Gr.D2/AL-BRONZE		
CASING COVER	WCB	WCB	CF8
BONNET PLATE	A 515-70/WCB		SS 304
HAND WHEEL	CARBON STEEL		
HAND WHEEL NUT	CARBON STEEL		S S 304
STUD & NUT	B7/2H	B16/7	B4 /2H
GLAND STUD & NUT	B7/2H		B8/8
CASING STUD & NUT	B7/2H		B7/2H
YOKE STUD & NUT	B7/2H		B7/2H
GLAND PACKING	GRAPHITE INHIB. & INCONEL WIRE REIN./GRAPHOIL		
SEAL RING	SS 304		SS 304/ 316
SPACER RING	ASTM A 515-70/SS 304	SS 304	SS 304/ 316
SEGMENTAL RING	ASTM A 515-70/SS 304	SS304	SS 304/ 316
NAME PLATE	SS 304		
BEARING	STANDARD		

Type of Ends

- Flanged Raised Face
- Flanged Ring Type Joint
- Buttweld
- **Valves of Inconel 625/ Inconel 625 cladding available (cladding or wetted flow area).**

1 SEAL WELDED.

2 END TO END AS PER L1 UNLESS OTHERWISE SPECIFIED

DIMENSION TABLE 900 CLASS

VALVE SIZE in / mm	2 / 50	3 / 80	4 / 100	6 / 150	8 / 200	10 / 250	12 / 300	14 / 350	16 / 40	18 / 450	20 / 500	24 / 600
L	14.5 368	15.0 381	18.0 457	24.0 610	29.0 737	33.0 838	38.0 965	40.5 1029	44.5 1130	48.0 1219	52.0 1321	61 1549
L1	8.5 216	12.0 305	14.0 356	20.0 508	26.0 660	31.0 787	36.0 914	39.0 991	43.0 1092	48.0 1219	52.0 1321	61.0 1549
H app	545	595	720	970	1140	1345	1615	1651	2362	2450	2550	3150
K app	250	300	400	500	600	680	760	760	910	910	950	1200
Wt.Kg app(F/E)	70		130	265	430	680	950	1290	1850	2250	2785	6450

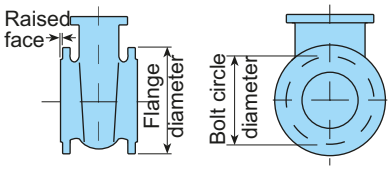
DIMENSION TABLE 1500 CLASS

VALVE SIZE in / mm	2 / 50	3 / 80	4 / 100	6 / 150	8 / 200	10 / 250	12 / 300	14 / 350	16 / 400	18 / 450	20 / 500	24 / 600
L	14.5 368	18.5 470	21.5 546	27.8 705	32.7 832	39.0 991	44.5 1130	49.5 1257	54.5 1384	60.5 1537	65.5 1664	76.5 1943
L1	8.5 216	12.0 305	16.0 406	22.0 559	28.0 711	34.0 863	39.0 991	42.0 1067	47.0 1194	53.0 1346	58.0 1475	76.5 1943
H app	545	625	900	1085	1290	1420	1580	2100	2457	2800	3100	3750
K app	250	350	400	600	680	910	965	1015	1065	1000	1000	1000
Wt.Kg app(F/E)	55	85	160	440	760	1050	1350	1890	2830	5960	7300	10500

DIMENSION TABLE 2500 CLASS

VALVE SIZE in / mm	2 / 50	3 / 80	4 / 100	6 / 150	8 / 200	10 / 150	12 / 300	14 / 350	16 / 400	18 / 450	20 / 500	24 / 600
L	17.7 451	22.7 578	36.5 673	36.0 914	40.25 1022	50.0 1270	56.0 1422	44.0 1118	49.0 1245	55.0 1397	67.0 1549	68.0 1727
L1	11.0 279	14.5 368	18.0 457	24.0 610	30.0 762	36.0 914	41.0 1041	44.0 1118	49.0 1245	55.0 1397	67.0 1549	68.0 1727
H app	610	795	975	1120	1400	1620	2092	2100	2450	2900	3100	3900
K app	400	500	700	750	800	850	900	900	900	900	900	900
Wt.Kg app(F/E)	85	120	190	520	980	1600	3460	3400	4200	5200	6100	8786

CV FLOW COFFICIENTS



API 600 CAST STEEL VALVES, CLASS 150, 300, 600, 900, AND 1500

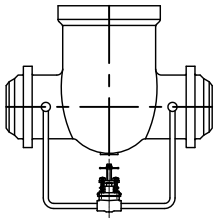
VALVE SIZES		CV FLOW COEFFICIENTS (USGPM)				
NPS	DN	150#	300#	600#	900#	1500#
2	50	260	260	260	230	230
2.1/2	65	420	420	420	-	-
3	80	625	625	625	560	510
4	100	1150	1150	1150	1050	925
6	150	2650	2650	2650	2400	2100
8	200	4850	4850	4850	4200	3650
10	250	7750	7750	7750	6750	5850
12	300	11500	11500	11500	9700	-
14	350	14000	14000	13000	12000	-
16	400	19000	19000	18000	16000	-
18	450	24000	23500	22000	-	-
20	500	31000	30000	27000	-	-
24	600	45000	44000	40000	-	-
26	650	53000	53000	38000	-	-
28	700	62000	62000	52000	-	-
30	750	73000	73000	82000	-	-
32	800	81000	81000	-	-	-
34	850	92500	-	72000	-	-
36	900	108000	108,00	103000	-	-
38	950	115000	-	103000	-	-
40	1000	130000	129500	115000	-	-
42	1050	142000	129500	-	-	-
44	1100	-	-	144000	-	-
46	1150	171000	-	-	-	-
48	1200	190000	-	-	-	-
50	1250	198000	-	190000	-	-
54	1350	238000	-	-	-	-
56	1400	260000	-	-	-	-
60	1500	300000	-	-	-	-
64	1600	340000	-	-	-	-
66	1650	-	-	-	-	-

BYPASS & CAVITY RELIEF

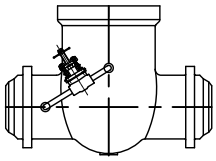
High pressure gate valves can be supplied with a variety of arrangements to equalize upstream and downstream pressures. Typically globe valves are used as bypass valves.

Further, to prevent centre cavity over-pressurization, the cavity is connected to the upstream side of the valve. This connection may be done with or without a pressure equalizing valve.

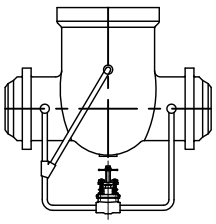
(For information on centre cavity relief, please refer ASME B16.34, Clause 2.3.3)



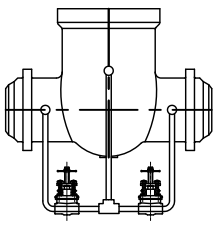
Type 1: Bypass Arrangement
The upstream and downstream sides of the valve are connected by a bypass pipe fitted with a globe valve. The gate valve is bidirectional.



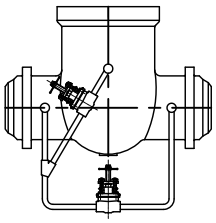
Type 2: Equalizing Arrangement
The centre cavity and upstream side of the valve are connected by a bypass pipe with a globe valve. The gate valve is unidirectional.



Type 3: Bypass and Equalizing Arrangement
There is an additional connection between centre cavity and upstream for cavity relief. The gate valve is unidirectional.



Type 4: Bypass and Equalizing Arrangement
The arrangement consists of a connection between the centre cavity and a bypass pipe, with one valve each on the upstream and downstream of the bypass pipe. Based on the flow direction, one valve can act as bypass valve and the other, as a pressure equalizing valve. The gate valve is thus bidirectional.



Type 5: Bypass and Equalizing Arrangement
The arrangement consists of a connection between the centre cavity and upstream side of the valve with an equalizing valve. The upstream and downstream sides of the valve are connected by a bypass pipe fitted with a globe valve. The gate valve is thus unidirectional.

How to order cast steel gate valves

Type of connection	Size of connection	Pressure rating	Gate Valve	Body/bonnet style	Body material	Trim material
A	B	C	D	E	F	G
F	1 0	0	0 1	4 C	0 2	J Y

The figure numbers shown on this key are designed to cover essential features of Dembla valves. Please use figure numbers to ensure prompt and accurate processing of your order. A detailed description must accompany any special orders.

A TYPE OF CONNECTION

A	Special	D	DIN Flanged	P	Flanged B16.47 series B (API605)
B	Butt weld	E	Welded studs (butt weld)	R	Flanged ring joint
C	Combination	F	Flanged B16.5 (B16.47 series A)	U	Undrilled flanges

B SIZE OF CONNECTION

(**B**) using the numbers below, or indicating valve size separately.
Sizes shown in NPS (DN)

EXAMPLES:
F10-0064C-02JY (valve size is part of figure number)
3 (80) F-0064C-02JY (valve size is shown separately)

08	2 (50)	**14**	6 (150)	**21**	18 (450)	**30**	30 (750)	**42**	42 (1050)	**56**	56 (1400)
09	2½ (65)	**15**	8 (200)	**22**	20 (500)	**32**	32 (800)	**44**	44 (1100)	**60**	60 (1500)
10	3 (80)	**16**	10 (250)	**23**	22 (550)	**34**	34 (850)	**46**	46 (1150)	**64**	64 (1600)
11	3½ (90)	**18**	12 (300)	**24**	24 (600)	**36**	36 (900)	**48**	48 (1200)	**99**	Special
12	4 (100)	**19**	14 (350)	**26**	26 (650)	**38**	38 (950)	**50**	50 (1250)		
13	5 (125)	**20**	16 (400)	**28**	28 (700)	**40**	40 (1000)	**54**	54 (1350)		

C PRESSURE RATING

0	150	**1**	300	**2**	600	**3**	1500	**7**	900	**8**	2500

D VALVE TYPE

01	Gate Valve	

E BODY/BONNET STYLE

4	Vertical	**A**	Special
		C	Bolted bonnet (cast)
		E	Extended bonnet (cryogenic)
		V	Cast bolted bonnet bellows seal

F BODY MATERIAL(1)

01	Special	**09**	C12	**19**	Monel M35	**31**	LCC
02	WCB	**11**	CF8	**23**	Alloy 20	**34**	C12A (F91)
03	WC1	**12**	CF3	**25**	LCB	**38**	LC1
04	C5	**13**	CF8M	**27**	LC3	**39**	LC2
05	WC6	**14**	CF3M	**28**	CG8M	**46**	GS-C25N
06	WC9	**15**	CF8C	**29**	CG3M		

(1)

Note: CoCr alloy as used throughout this catalog refers to cobalt chrome hardfacing alloys as supplied by Kennametal Stellite™, and other approved manufacturers.

For a more detailed list of available trims, contact the factory

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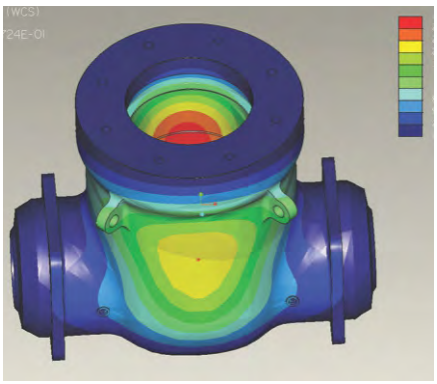
G TRIM (standard trims)

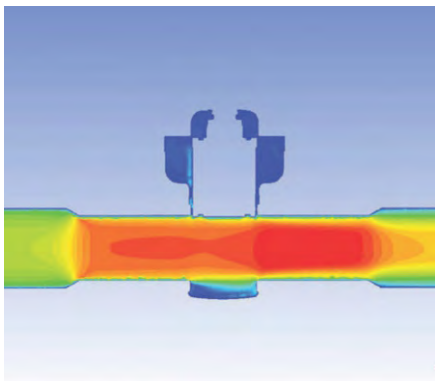
Code		Wedge/disc surface (2)	Seat surface (2)	Stem	API Number	Bellows (3) (if applicable)
PS	Standard	CoCr alloy (4)	CoCr alloy (4)	316	16	316TI/321
PY	Standard	CF8M or 316	CoCr alloy (4)	316	12	316TI/321
JS	Standard	CoCr alloy (4)	CoCr alloy (4)	13 Cr (410) (5)	5	316TI/321
JY	Standard	13 Cr (410 or CA15)	CoCr alloy (4)	13 Cr (410)	8	
VA	NACE service	13 Cr (410 or CA15) HRC 22 max.	CoCr alloy (4)	13 Cr 410 HRC 22 max.	8	
VB	NACE service	CF8M	CoCr alloy (4)	316	12	316TI/321
VC	NACE service	Monel	CoCr alloy (4)	Monel	11	Hastelloy C
VD	NACE service	CoCr alloy (3)	CoCr alloy (3	630 (H1150M)	5 (8)	
VE	NACE service	CoCr alloy (4)	CoCr alloy (4)	13 Cr 410 HRC 22 max.	5	
VF	NACE service	CoCr alloy (4)	CoCr alloy (4)	Same as body		
VG	NACE service	CoCr alloy (4)	CoCr alloy (4)	316	16	
VV	NACE service	CF8M	CoCr alloy (4)	316	12	
VU	NACE service	Monel	Monel	Monel	9	
VY	NACE service	CoCr alloy (4)	CoCr alloy (4)	XM-19	16 (9)	
AS		CoCr alloy (4)	CoCr alloy (4)	321	16 (10)	316TI/321
AY		CF8C/F321	CoCr alloy (4)	321	12 (10)	316TI/321
CC		Alloy 20	Alloy 20	Alloy 20	13	
ES		CoCr alloy (4)	CoCr alloy (4)	347	16 (10)	
EY		CF8C/F347	CoCr alloy (4)	347	12 (10)	
HC		Hastelloy C	CoCr alloy (4)	Hastelloy C		Hastelloy C
HP		HF-acid trim	HF-acid trim	HF-acid trim		
PF		CF8M or 316 w/ Teflon insert (6)	CoCr alloy (4)	316	12	
PH		CoCr alloy (4)	CoCr alloy (4)	316	16	Hastelloy C
PV		CoCr alloy (4)	CoCr alloy (4)	316	16	Inconel 625
PU		CF8M	316	316	10	
JF		13Cr (410 or CA15) w/ Teflon insert (6)	CoCr alloy (4)	13 Cr (410)	8	
JH		CoCr alloy (4)	CoCr alloy (4)	13 Cr (410) (5)	5	Hastelloy C
JN		CoCr alloy (4)	CoCr alloy (4)	13 Cr (410) (5)	5	Inconel 625
US		CoCr alloy (4)	CoCr alloy (4)	Monel		
UU		Monel	Monel	Monel	9	
UY		Monel	CoCr alloy (4)	Monel	11	

(2) Base material is either the same as the body or solid trim at manufacturer's option.
(3) Bellows material shown as standard, Inconel can be used in lieu of 321 and Hastelloy C in lieu of Inconel, where design and/or pressure class applicable.
(4) CoCr alloy refers to cobalt-chrome alloys in Grade 6 (e.g. AWS CoCr-A, UNS 30006 & 30106) or Grade 21 (e.g. AWS CoCr-E, UNS 30021). Use of Grade 6 or 21 is at dEMBLA's option.
(5) 616HT manufacturer's standard. (F91 and C12A only).
(6) Inserts may be in seat or wedge at manufacturer's option.
(7) Valves with "NACE" figure numbers will meet the material requirements of NACE MRO103 and MRO175/ISO 15156. It is the equipment user's responsibility to ensure that the materials are suitable for the intended service.
(8) 630 SS is a Precipitation - Hardenable Stainless Steel (Also referred to as 17-4 PH stainless steel) Has superior Mechanical properties and adequate corrosion resistance when compared to 410 SS.
(9) XM-19 is an austenitic stainless steel known for its superior mechanical properties and corrosion resistance compared to 316 SS.
(10) An austenitic stainless steel which has comparable mechanical properties and corrosion resistance compared to 316.

R&D

Designs for Dembla Gate, Globe & Check Valves are created in a 3D environment using state-of-the-art design and analysis software. Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) are extensively used to fine-tune product designs.





In-house Qualification Test Facilities:

- High Pressure Gas Test
- Endurance & Cycle Test
- Pipe end load Test
- Vaccum Test
- Fire Safe Test
- Fugitive Emission Test
- Tat Test

The integrity of seat and pressure were established at ambient condition, at elevated temperature and pressure as well as at re-ambient condition.

Dembla

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