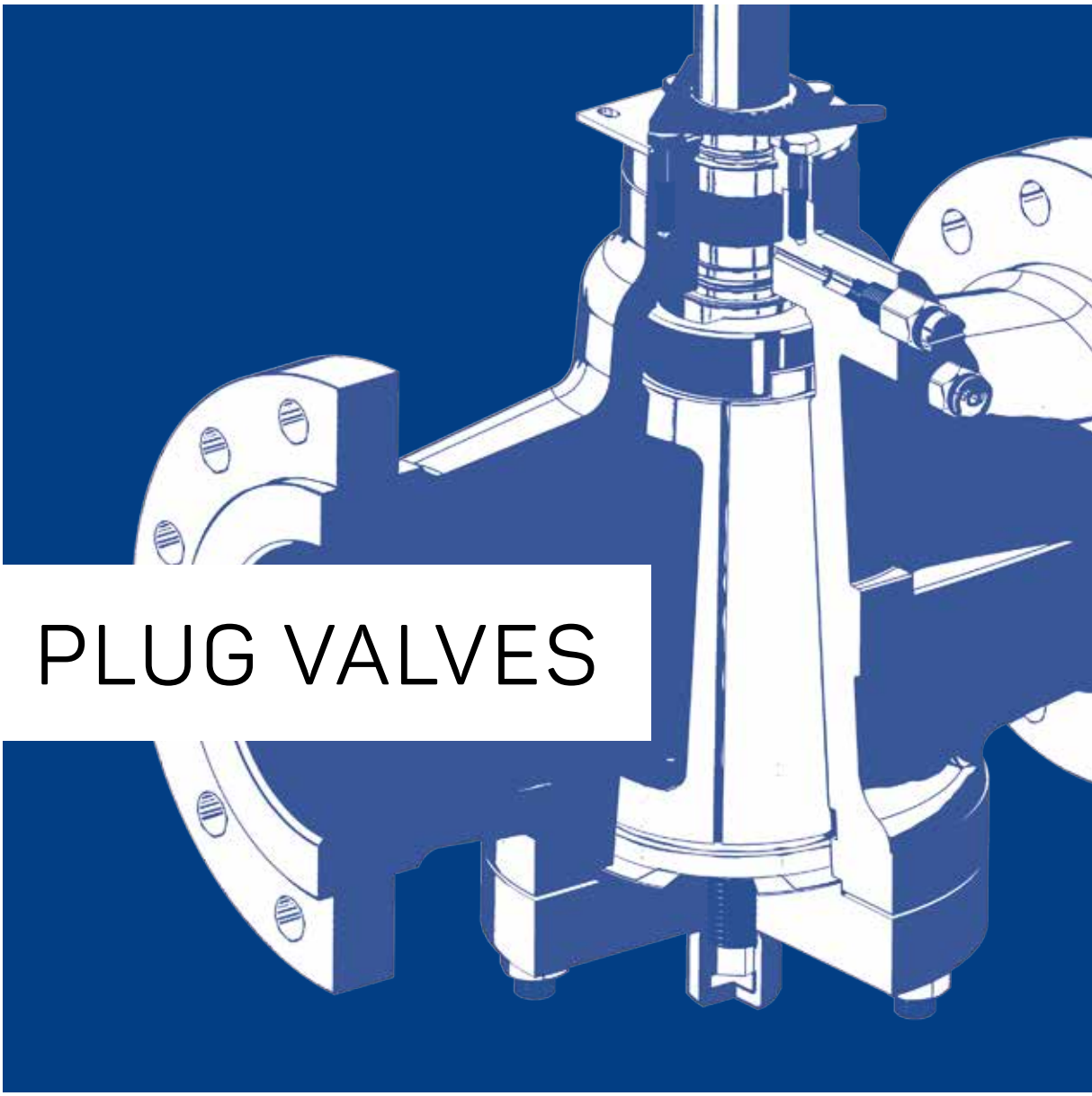
CDB ENGINEERING

Single source Engineered solutions



PLUG VALVES

ABOUT US

We are pleased to introduce the company CDB Engineering as a manufacturer of Lubricated and non Lubricated Plug valves.
CDB Engineering is a dynamic, independent and consolidated Italian company, capable of the design, manufacture and supply of a wide range of products for the energy industry.
CDB Engineering operates in the Oil & Gas, Petrochemical and Power generation fields through three different Business Units.
The company is located in the industrial area south of Milan and covers a total surface of 25,000 sq.m.
The manufacturing activities are organized in three factories over a covered area of 10,000 sq.m.
Boasting a staff of over 100 people, CDB can cover all phases of engineering: process and mechanical design, manufacturing, testing, painting and packing. All these activities are carried out in-house.

Process and Project management

As a precious added value for its customers, CDB offers a complete and effective management of all phases of process and production: from valve design to testing of finished products. Particular attention is paid to all the phases involved in the product's lifespan, from quotation submittal to on-site service. One key goal at CDB Engineering is to guarantee to our customers a proactive approach and fruitful cooperation throughout the project's development, which is closely monitored from the design to the delivery stage.

From contract review to expediting

Project documentation and job execution monitoring are always handled by a dedicated Project Manager, representing the only direct contact point with the customer.
Thanks to its dedicated warehouse area, CDB Engineering in-stock material is always updated to provide prompt assistance and on-time reply. Here at CDB Engineering, the focus is always on our customer's satisfaction.

In-house test facilities

Facilities for hydraulic and gas pressure testing are available in-house, this means that all CDB produced valves are supplied after a successful outcome in tests.

Each area of the business involved in the activities performed at CDB Engineering (from head office to manufacturing site) is committed to continuous improvement. QHSE politics represent a milestone for the whole production process and customer service.

R&D Department

As a result of CDB's forward-thinking approach, we can reach our goals for reliability and performance improvement.
Thanks to qualified engineers, CDB's know-how, we are capable of developing products, services and solutions, delivering proven performance and reliability.
Reliable design optimization is the true added value of CDB Engineering's Final Element Analysis module.
Innovative engineering solutions are offered in compliance with international standards and thanks to our internal Engineering and R&D department, we can successfully undertake prototype-manufacturing operations.

Application

- High Pressure Valve Isolation
- By pass Equalizing valves
- Slurry isolation (Abrasive Service with high sand content like flow lines, manifold and headers.
- Dirty Service in General
- Sulphur recovery plant
- Gas Blow Down against full differential pressure.

Standard Product Range

Size DN ½" up to 24"

PressureRating

Class 150 up to 2500

Benefits

- Capability to operate against full differential pressure
- Hardfacing (Stellite 6-12-21)
- Compact body design with no cavities.
- Cladding (Inconel 625)
- Suitability for critical application (Abrasive and Corrosive service)

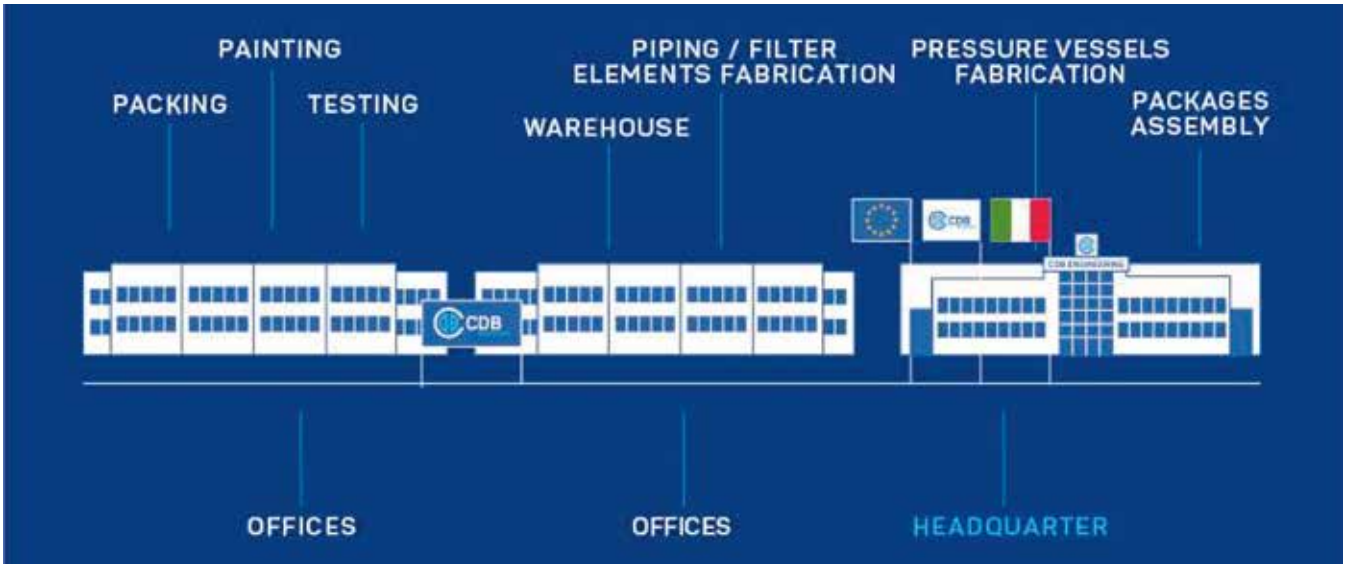
CDB OVERVIEW

Location
Milan Area - Italy

Total number of staff
102

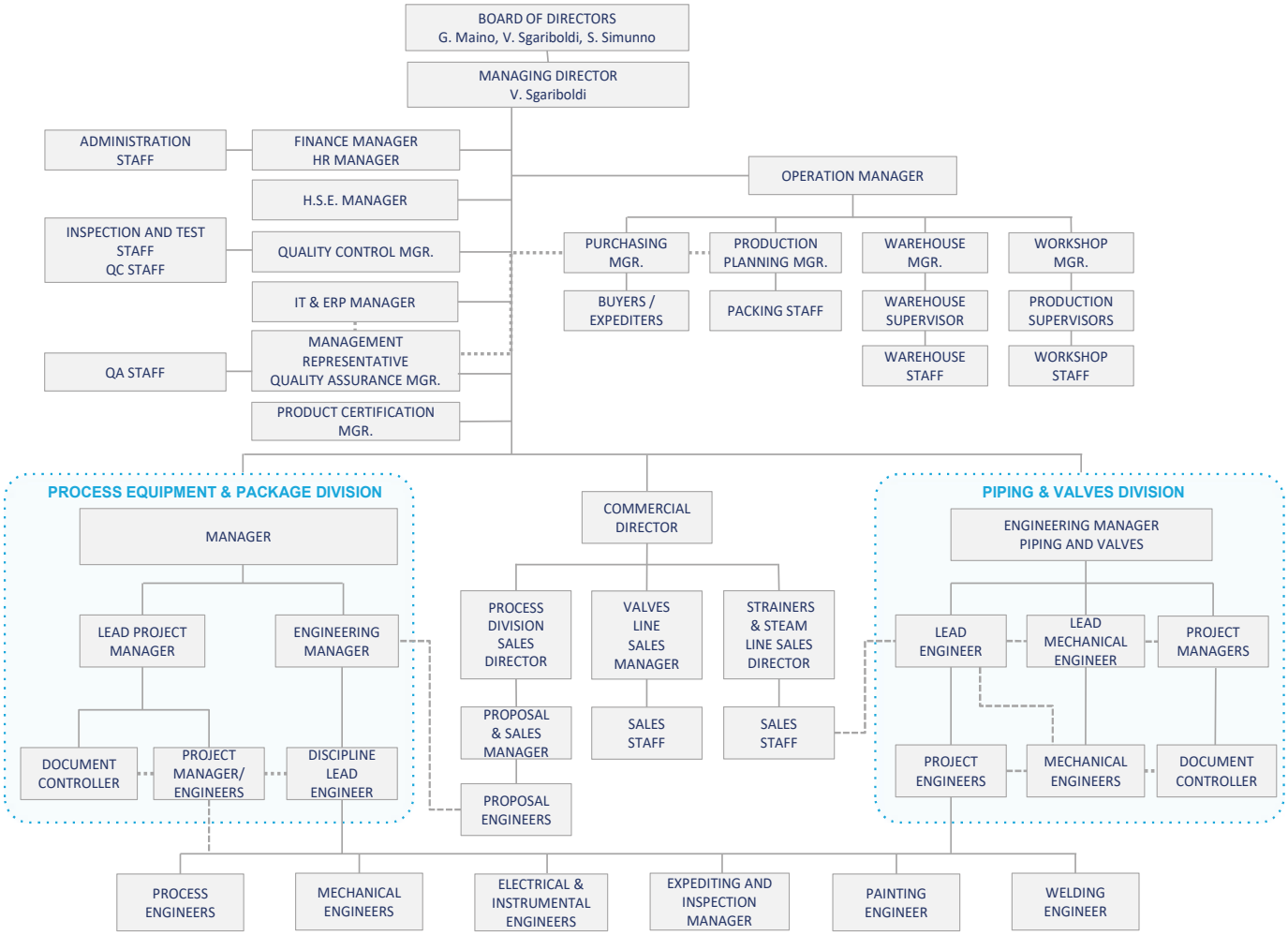
CDB FACILITIES

Total built over area 25.000 sqm
Total factory area 10.000 sqm
Max manufacturing capa. per month ~80 tons



SERVING THE OIL, GAS AND POWER GENERATION INDUSTRIES

ORGANIZATION CHART



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Without prior notice CDB reserves the right to make modification or changes to its product

CERTIFICATES QUALITY ASSURANCE DEVELOPMENT

CDB Engineering's design and manufacturing activities are managed in accordance with the highest quality and efficiency standards. CDB is able to offer appropriate services and products in order to serve the marketplace and to warrant the maximum reliability as a confirmation of the quality of its products.

CDB Quality System includes the following Certifications:

Certificate of Authority to use the Official API Monogram
License Number: 6D-1750 ORIGINAL

The American Petroleum Institute hereby grants to:

CDB ENGINEERING SPA
Via Luigi Maggi 19
Casalpusterlengo - Loc. Zorlesco, Lodi
Italy

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number **6D-1750**.

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Plug Valves

QMS Exclusions: Servicing

Effective Date: NOVEMBER 9, 2019
Expiration Date: NOVEMBER 9, 2022

To verify the authenticity of this license, go to www.api.org/compositelist.

Vice President of Global Industry Services

American Petroleum Institute

ISO 9001-2015

ISO 14001-2015

ISO 45001:2018

PED - 2014/68/EU Directive

ATEX n°2014/34/UE Directive

ASME - U1

ASME – U2

EAC – RUSSIA

CRN - Canadian Registration Number

UL - Underwriter Laboratories

FIRE TESTING

QUALIFICATION OF OTHER SIZE VALVES -API 6FA			QUALIFICATION OF OTHER PRESSURE RATING VALVES				
Size of Test Valve			Rating of Testing Valve				
SIZE	DN	SIZE QUALIFIED	Class	PN	Bar	Class	PN
2" API 6D	50	2"-2 1/2"-3"-4" API 6D	150 API 6D	20	N/A	150-300 API 6D	20-50
2 1/2" API-6D	65	2" 1/2"-3"-4" API 6D	300API 6D	50	N/A	300-600 API 6D	50-64-100
3" API 6D	80	3"-4"-6" API 6D	400 API 6D	64	N/A	400-600 API 6D	64-100
4" API 6D	100	4"-6"-8" API 6D	600 API 6D	100	N/A	600-900 API 6D	100-150
6" API 6D	150	6"-8"-12" API 6D	900 API 6D	150	N/A	900-1500 API 6D	150-250
8" API 6D	200	8"-10"-12"-14"-16" API 6D	1500 API 6D	250	N/A	1500-2500 API 6D	250-420
10" API 6D	250	10" Trought-20" API 6D	2500 API 6D	420	N/A	2500 API 6D	420
12"API 6D	300	12" Trought 24" API 6D					
14" API 6D	350	14" trought 28" API 6D					
16" API 6D	400	16" and larger 24" API 6D					

Fire safe test Certificate
Fire Safe Test carried out according to:

BS – UNI EN ISO 10497

API STANDARD 607

API SPECIFICATION 6FA

LUBRICATED PLUG VALVES PRESSURE BALANCED TYPE

Operating and advantages of pressure Balanced Lubricated Plug valve

The basic operating principle of pressure balanced plug valve is the "pressure equalization" between the plug port area and the upper/lower body cavities.For this purpose, two holes are provided in the plug: one connecting the plug port area with the upper body cavity, while the lower one connecting the port area with the bottom plug cavity.
The tightness of lubricated plug valves is guaranteed by lubricant grease into the sealant system (grooves) on plug surface.

- The sealant acts as the hydraulic medium which jacks the tapered plug from its tapered seat and lubricates the plug.
- Tightness of the main operating stem, is assured by the antifriction ring fitted between operating stem and valve body "O" Ring.

Main advantages are:

- Easy turning operation at any time, even after long periods in open/closed position.
- Even in case of locking of the plug against the body, it is possible to release it simply by injecting lubricant through the fitting injector. Moreover, the adjustment of the plug can be carried out at the same time with the valve in service.

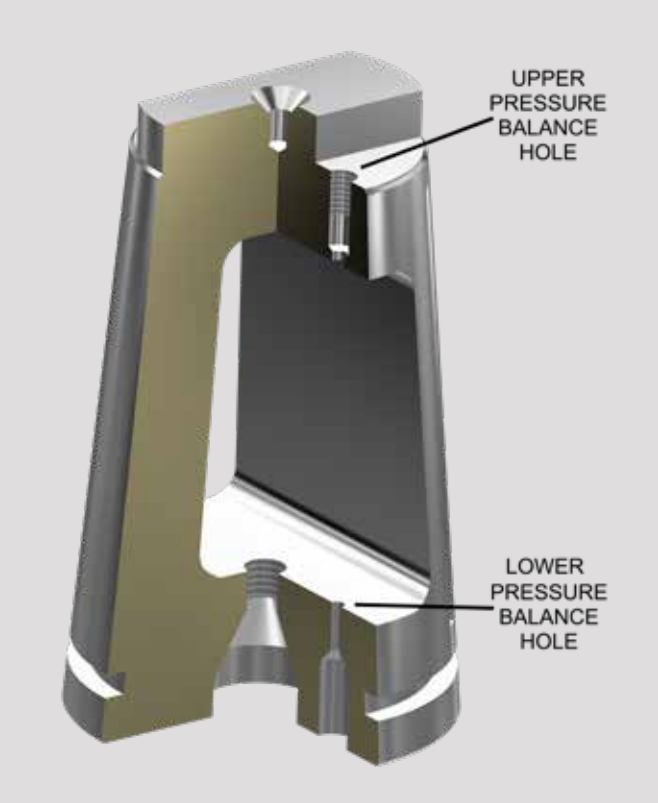
ORDERING - INSTRUCTION EXAMPLE

1	2	3	4	5	6	7
PLUG VALVE TYPE	**PATTERN**	**SIZE**	**ENDS**	**RATING**	**OPERATION**	**FEATURES**
LPB	R	6	1	600	G	LD

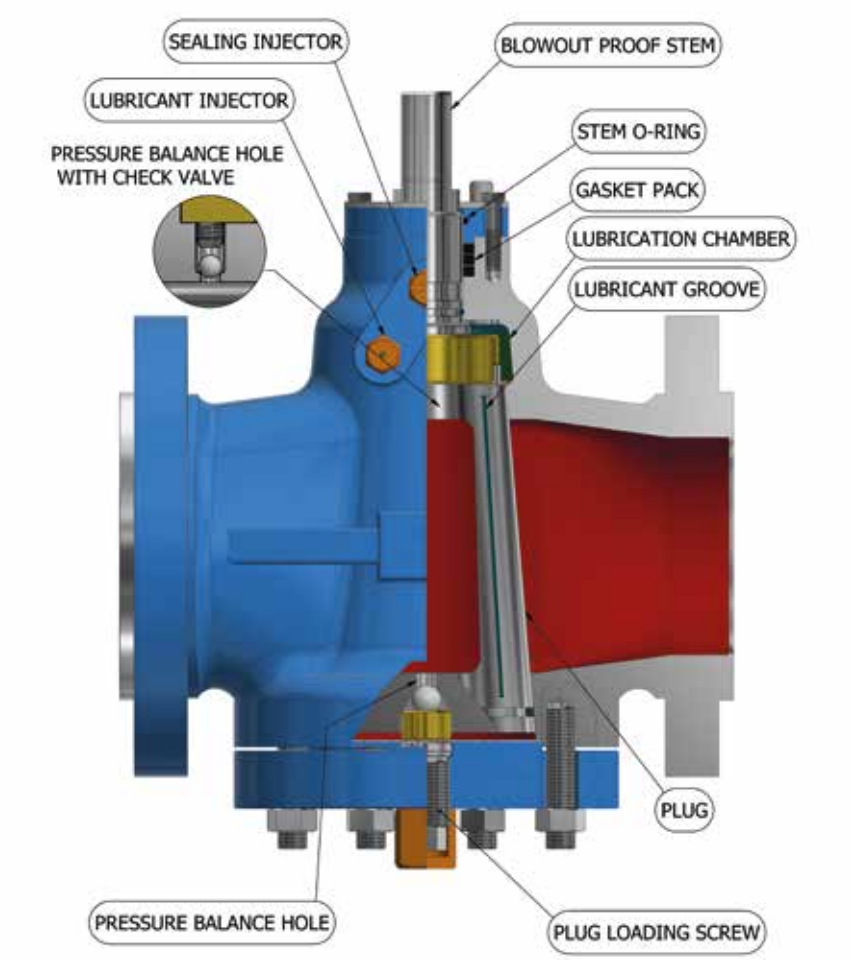
1	Plug Valve Type
LPB	Lubricated Pressure Balanced
LPBJ	Lubricated Pressure Balanced Jacketed
LS	Lubricated Standard
LSJ	Lubricated Standard Jacketed
L3W	3 Way
L4W	4 Way
2	Pattern
R	Regular
S	Short
V	Venturi
F	Full Bore
L3W	3 Way
L4W	4 Way
3	Valve Size (In Inches)
4	Ends
1 RF	Flanged Raise Face
2 FF	Flanged Flat Face
3 RTJ	Flanged Ring Joint
4 BW	Butt Welding
5 BWR	Butt welding /RF
6 HU	Hub ends
7 T	Threaded
8 S	Socket
5	Rating
ASME	150
ASME	300
ASME	600
ASME	900
ASME	1500
ASME	2500
6	Operation
G	Gear Operator
L	Lever Operator
B	Bare Stem
E	Electric Actuator
P	Pneumatic Actuator
O	Gas over oil Actuator
H	Hydraulic Actuator
7	Features
LD	Locking Device
EXS	Extension Stem
MS	Micro Switches

PLUG VALVE PATTERN

The Short pattern design has a rectangular port area of 50% of a Full Bore Plug Valve. It is found only in class 150 & 300, where flanged plug valves match the face to face dimensions of steel flanged gate valve in DN 1 ½" through DN 12"
The Regular pattern design has a rectangular port area of 60-70% of a Full Bore Plug Valve, which is larger than a Venturi pattern.
The Venturi pattern design has a rectangular port area of 40% of a Full Bore Plug Valve and the valves have a configuration of body and plug ports that approximates a Venturi throat.



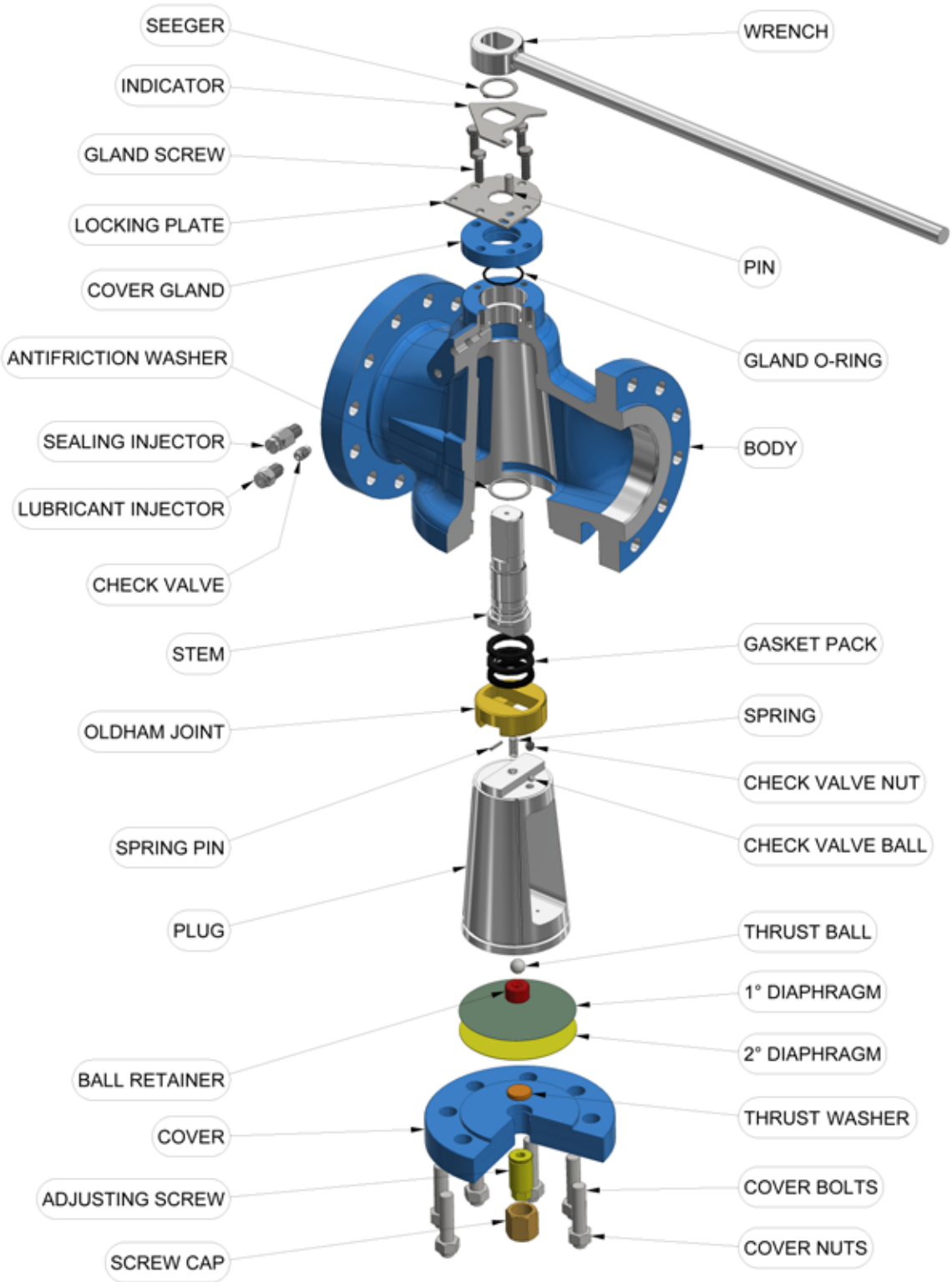
CROSS SECTION DRAWING



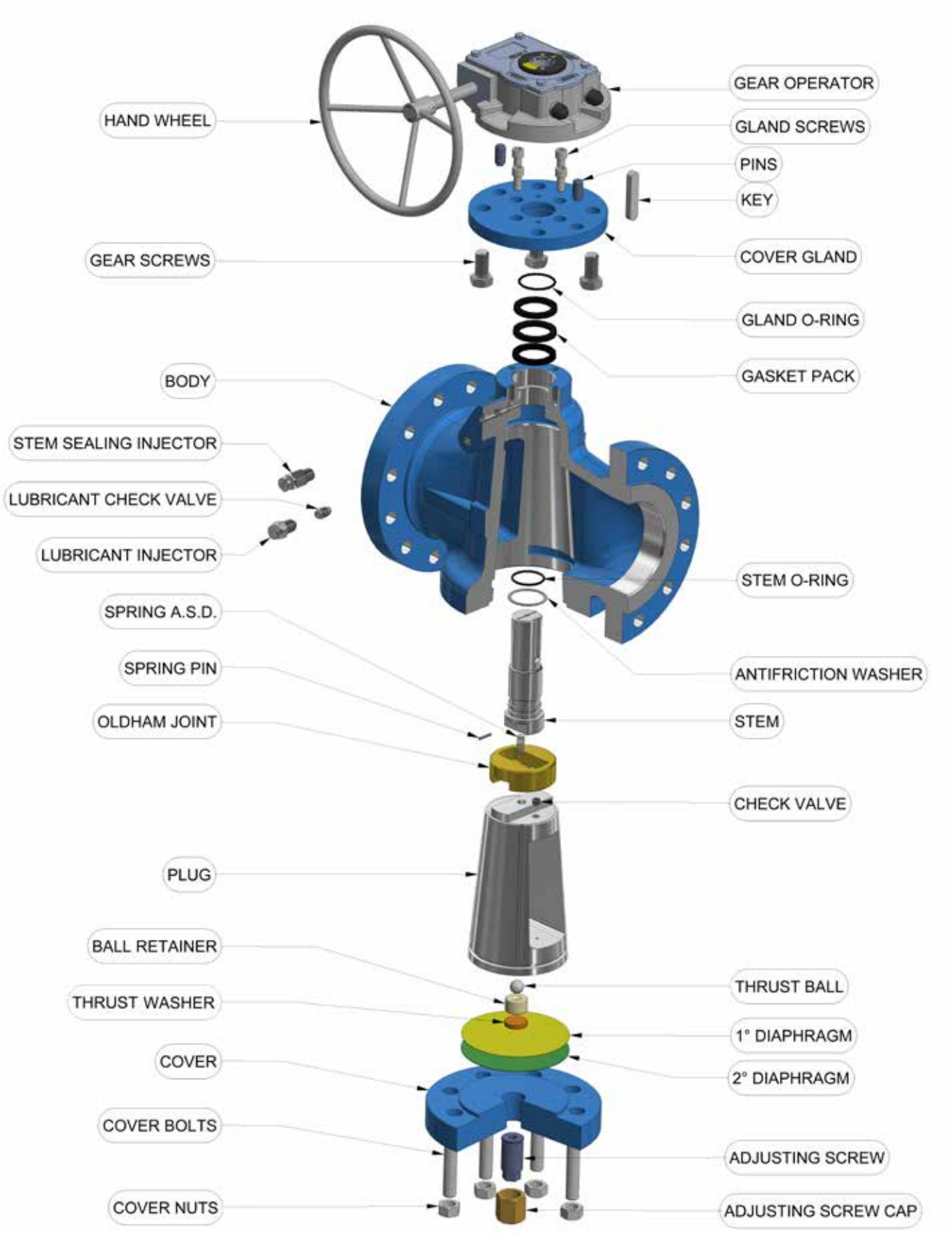
STANDARD MATERIALS

STANDARD SERVICE	BODY/COVER	PLUG	STEM	BOLTING
Sweet Natural Gas	Carbon Steel ASTM a 216 WCB/WCC ASTM A 105	Carbon Steel ASTM A 216 WCB/WCC ASTM A 105	ASTM A 29 Gr.4140	ASTM A 193 B7
Hydrocarbons	Low Carbon Steel ASTM A 352 LCB/LCC ASTM A 350 LF2	ASTM A 352 LCB/LCC -ASTM A 350 LF2	ASTM A 182 Gr F6a cl.3	ASTM A 194 2H
	Max C=0,25% Low Temp. Max C=0,23%	ASTM A 182 Gr. F6a Cl.3		ASTM A 320 L7-A 194 Gr.7
Sour Service	Carbon Steel ASTM a 216 WCB/WCC ASTM A 105	Carbon Steel ASTM A 216 WCB/WCC + ENP ASTM A 105+ENP	ASTM A 29 Gr.4140	ASTM A 193 B7M
H2S and CO2	Low Carbon Steel ASTM A 352 LCB/LCC ASTM A 350 LF2	ASTM A 352 LCB/LCC +ENP - ASTM A 350 LF2+ENP	ASTM A 182 Gr F6a cl.3	ASTM A 194 2HM
Hydrocarbons	Max C=0,25% Low Temp. Max C=0,23%	ASTM A 182 Gr. F6a Cl.3		ASTM A 320 L7M-A 194 Gr.7
	Max HRC 22	Max HRC 22	Max HRC 22	Max HRC 22
Sea Water	UNS 31254 6MO	UNS 31254 6MO	UNS 31254 6MO	ASTM A 453 Gr.660A
	UNS 31803 Duplex 22% Cr	UNS 31803 Duplex 22% Cr	UNS 31803 Duplex 22% Cr	ASTM A 453 Gr.660A UNS 32760
	UNS 32750 Super Duplex 25% Cr	UNS 32750 Super Duplex 25% Cr	UNS 32750 Super Duplex 25% Cr	UNS 32760
	UNS 32760 Super Duplex 25% Cr	UNS 32760 Super Duplex 25% Cr	UNS 32760 Super Duplex 25% Cr	UNS 32760

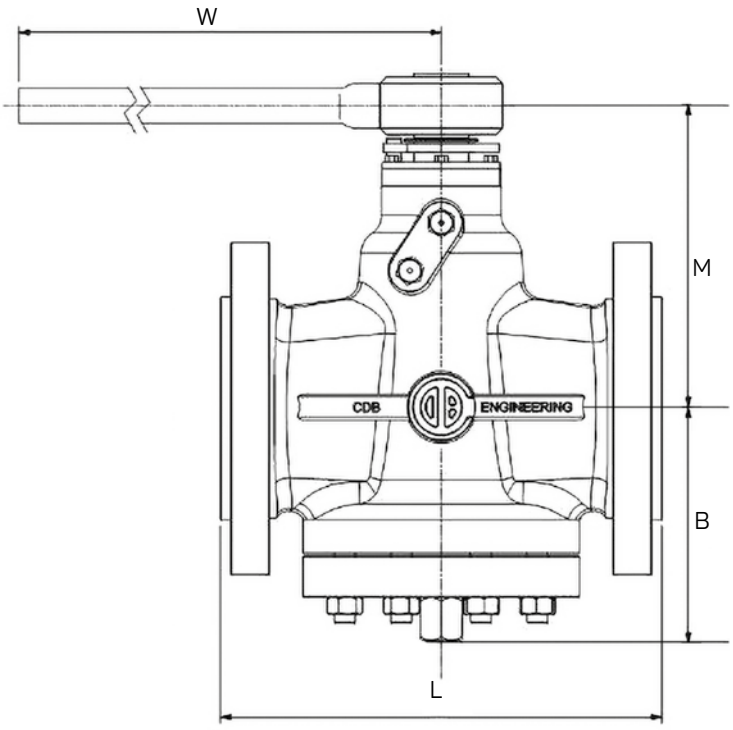
VALVE ASSEMBLY - EXPLODED - VIEW

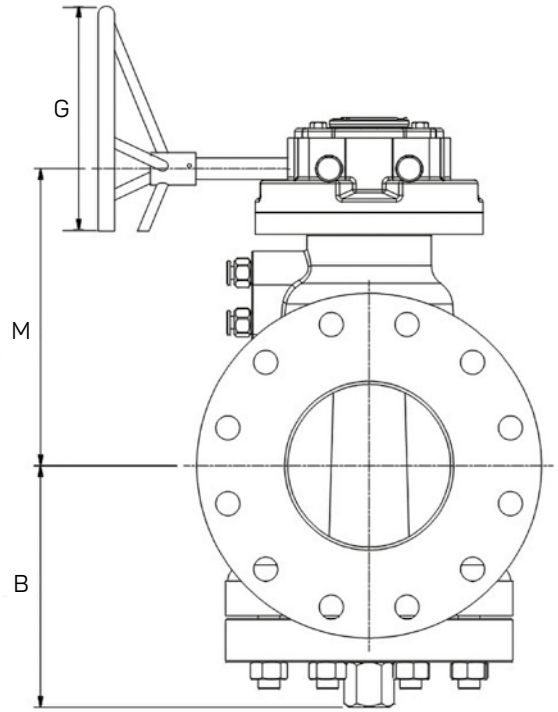


VALVE ASSEMBLY - EXPLODED - VIEW



ANSI CLASS 150 (PN 20)

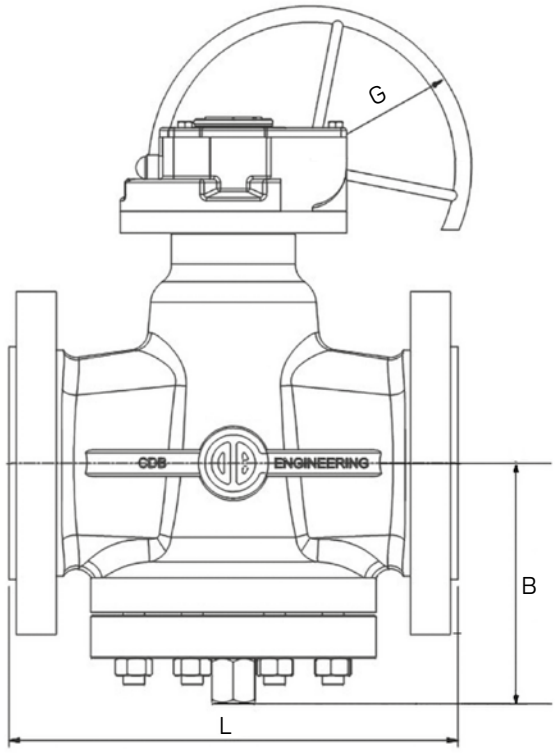


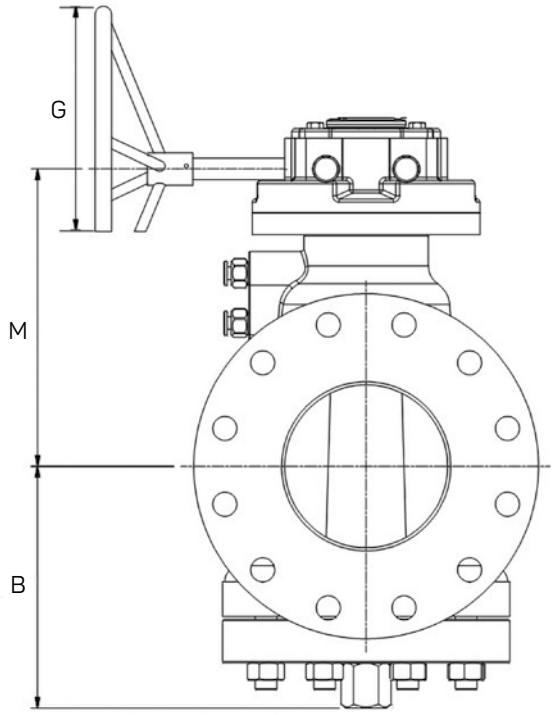


ANSI CLASS 150 (PN 20)		SHORT PATTERN							REGULAR PATTERN			
Size		2"	3"	4"	6"	8"	10"	12"	6"	8"	10"	12"
Face To Face	mm											
L - RF	mm	178	203	229	267	292	330	356	394	457	533	610
L - RTJ	mm	191	216	241	279	305	343	368	406	470	546	622
L - BW	mm	267	330	356	457	521	559	635	457	521	559	635
B	mm	100	120	150	174	216	260	295	174	216	260	295
M	mm	175	210	230	261	292	317	360	280	321	351	390
G	mm	-	-	-	450	450	550	600	550	550	600	700
W	mm	350	500	600	800							
Weight RF/RTJ	Kg	19	35	55	83	160	225	320	95	180	255	365
Weight BW	Kg	15	30	45	67	124	195	290	82	158	215	320

NOTES:
Short Pattern valve flanges from DN 3" up to DN 10" have 2 tapped holes UNC threaded,DN 12" has 4 tapped holes UNC threaded
DN 6" is available with gear operator.
Handwheel dimension is only an indication.
The weights are approximative.

ANSI CLASS 150 (PN 20)

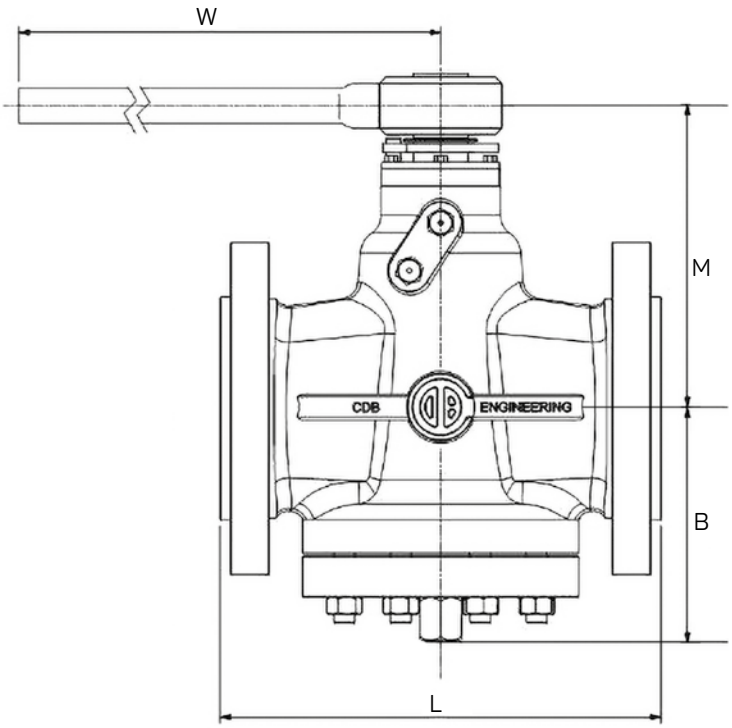


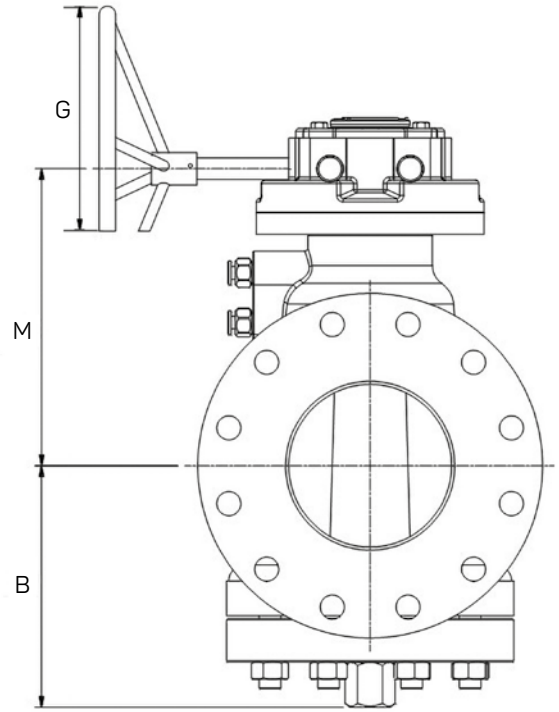


ANSI CLASS 150 (PN 20)		VENTURI PATTERN						
Size		10"	12"	14"	16"	18"	20"	24"
Face To Face	mm							
L - RF	mm	533	610	686	762	864	914	1067
L - RTJ	mm	546	622	699	775	876	927	1080
L - BW	mm	559	635	686	762	864	914	1067
B	mm	260	295	324	332	453	457	594
M	mm	317	360	399	515	628	598	691
G	mm	560	560	700	700	700	700	800
Weight RF/RTJ	Kg	240	365	480	750	880	1120	1650
Weight BW	Kg	204	310	410	640	710	950	1320

NOTES:
Handwheel dimension (G) is only an indication
The weights are approximative.

ANSI CLASS 300 (PN 50)

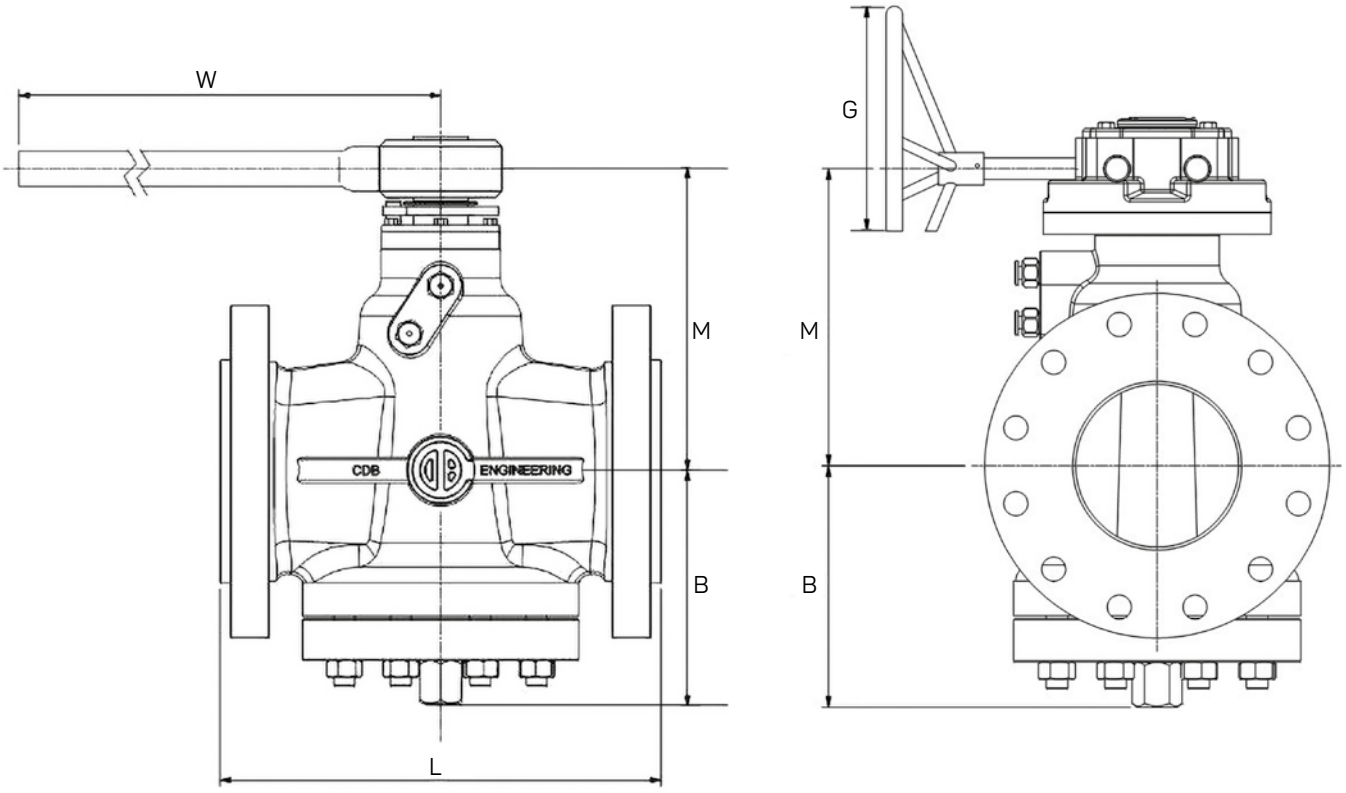




ANSI CLASS 300 (PN 50)		SHORT PATTERN							REGULAR PATTERN		
Size		2"	3"	4"	6"	8"	10"	12"	6"	8"	10"
Face To Face	mm										
L - RF	mm	216	283	305	403	419	457	502	403	502	568
L - RTJ	mm	232	298	321	419	435	473	518	419	518	584
L - BW	mm	267	330	356	457	521	559	635	457	521	568
B	mm	115	125	145	210	265	310	350	185	265	310
M	mm	175	210	230	270	291	328	475	270	291	328
G	mm	-	-	-	500	600	600	700	500	600	700
W	mm	450	600	800	1000	-	-	-	-	-	-
Weight RF/RTJ	Kg	23	42	65	107	185	310	415	140	220	330
Weight BW	Kg	17	35	52	85	152	250	340	130	200	300

NOTES:
DN 6" available with gear operator. (Short Pattner)
Handwheel dimension (G) is only an indication.
The weights are approximative.

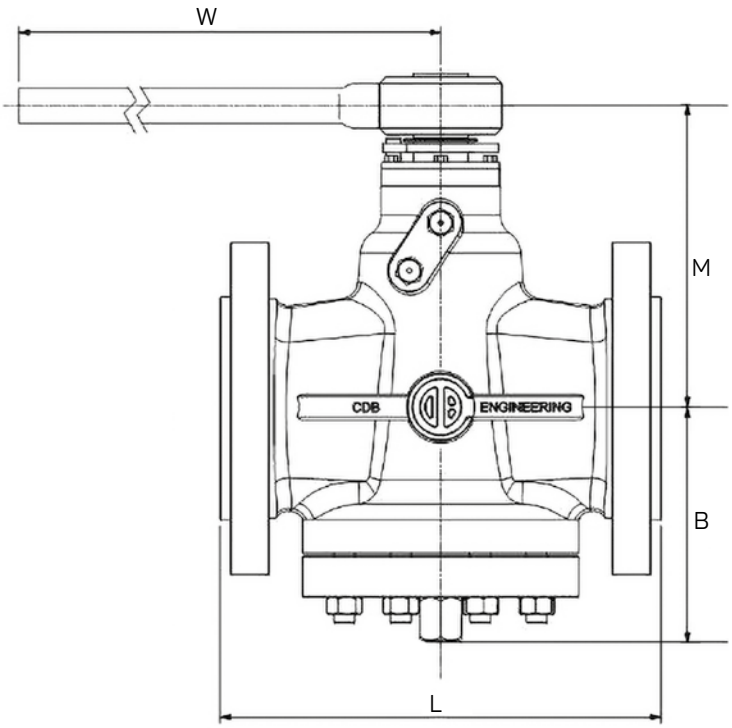
ANSI CLASS 300 (PN 50)

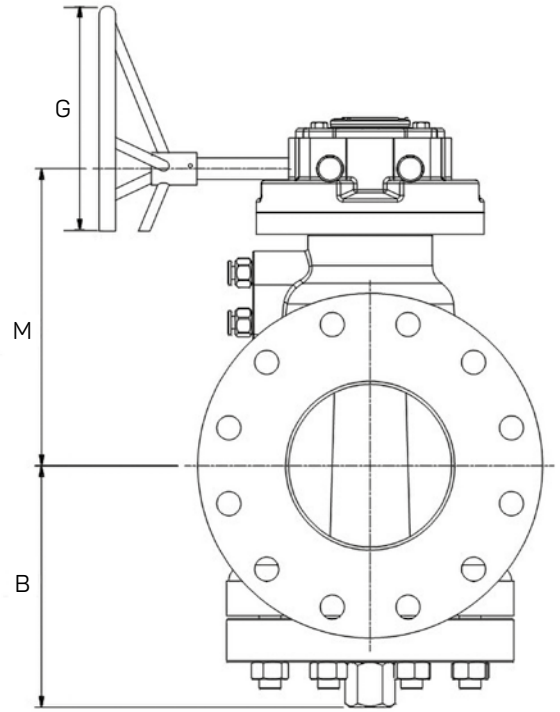


ANSI CLASS 300 (PN 50)		VENTURI PATTERN								
Size		6"	8"	10"	12"	14"	16"	18"	20"	24"
Face To Face	mm									
L - RF	mm	403	419	457	502	762	838	914	991	1143
L - RTJ	mm	419	435	473	518	778	854	930	1010	1165
L - BW	mm	457	521	559	635	762	838	914	991	1143
B	mm	210	275	310	370	385	420	460	510	601
M	mm	270	291	328	475	445	455	490	580	600
G	mm	500	600	600	700	750	750	800	800	800
W	mm	1000	-	-	-	-	-	-	-	-
Weight RF/RTJ	Kg	107	185	270	310	540	700	1150	1360	1850
Weight BW	Kg	85	152	240	250	440	570	920	1210	1730

NOTES:
DN 6" available with gear operator.
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 600 (PN 100)

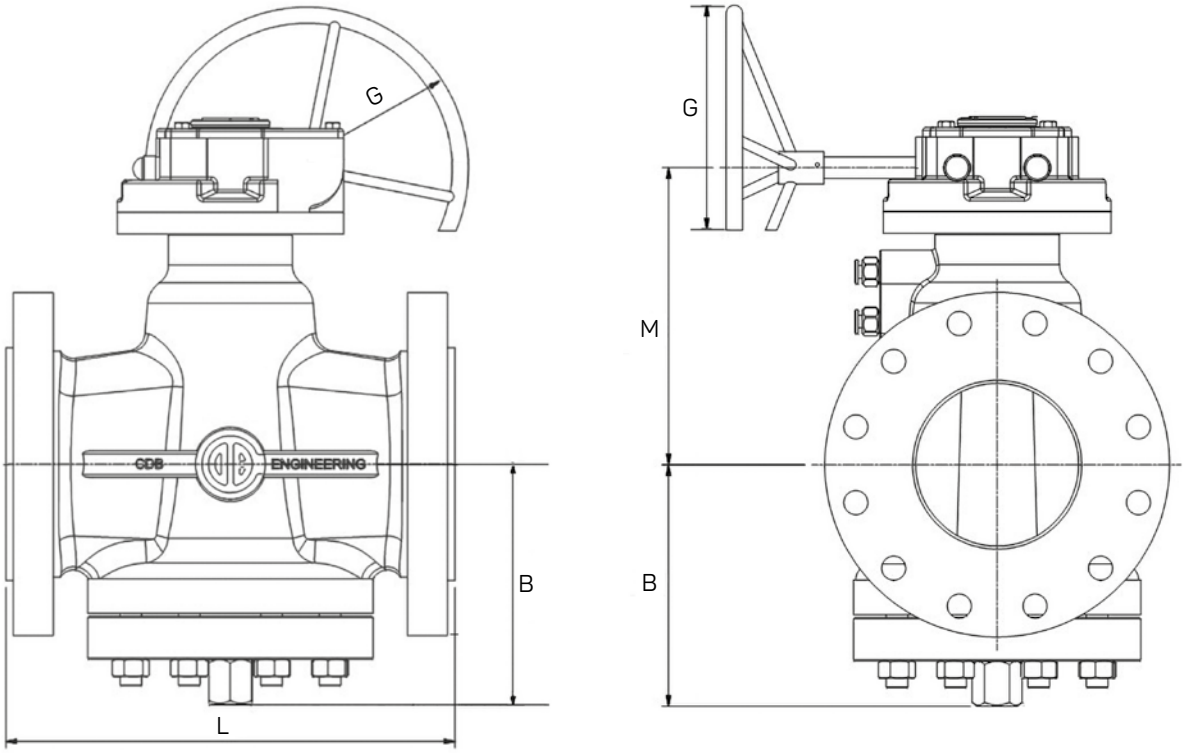




ANSI CLASS 600 (PN 100)		REGULAR PATTERN											
Size		2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Face To Face	mm												
L - RF	mm	292	356	432	559	660	787	838	889	991	1092	1194	1397
L - RTJ	mm	295	359	435	562	664	791	841	892	994	1095	1200	1407
L - BW	mm	292	356	432	559	660	787	838	889	991	1092	1194	1397
B	mm	135	165	185	240	260	280	300	350	370	400	430	530
M	mm	175	210	250	270	340	360	420	540	475	610	790	600
G	mm	-	-	560	650	650	700	800	800	760	800	800	1000
W	mm	500	750	1000	-	-	-	-	-	-	-	-	
Weight RF/RTJ	Kg	27	45	78	170	280	450	910	1100	1350	1670	2620	4250
Weight BW	Kg	23	43	60	130	230	480	750	850	1150	1600	2300	3450

NOTES:
DN 4" available with gear operator.
Handwheel dimension (G) is only an indication.
The weights are approximative.

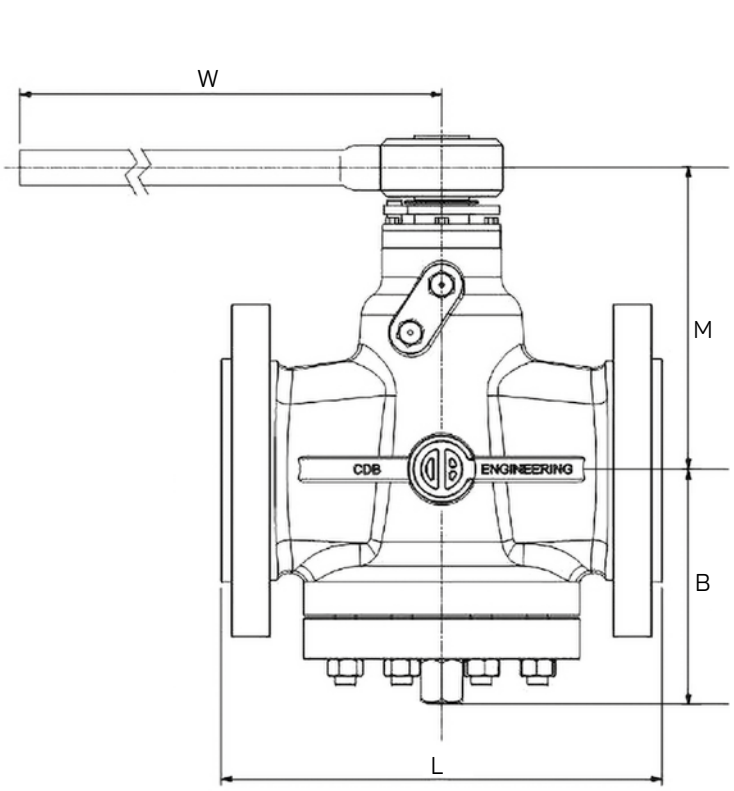
ANSI CLASS 600 (PN 100)

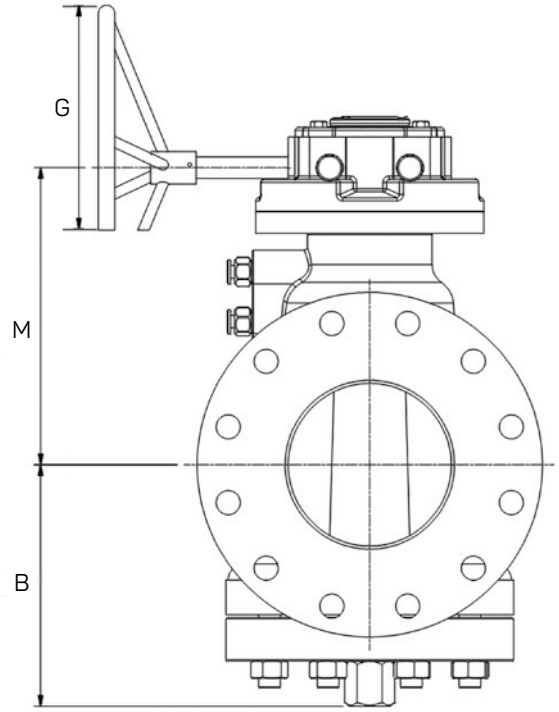


ANSI CLASS 600 (PN 100)		VENTURI PATTERN								
Size		**6"**	**8"**	**10"**	**12"**	**14"**	**16"**	**18"**	**20"**	**24"**
Face To Face	mm									
L - RF	mm	559	660	787	838	889	991	1092	1194	1397
L - RTJ	mm	562	664	791	841	892	994	1095	1200	1407
L - BW	mm	559	660	787	838	889	991	1092	1194	1397
B	mm	240	260	280	300	350	370	400	430	530
M	mm	250	320	340	380	410	460	495	630	580
G	mm	560	300	700	700	700	700	760	800	800
Weight RF/RTJ	Kg	158	250	490	730	950	1150	1700	2100	3050
Weight BW	Kg	110	210	400	590	750	920	1450	1680	2460

NOTES:
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 900 (PN 150)

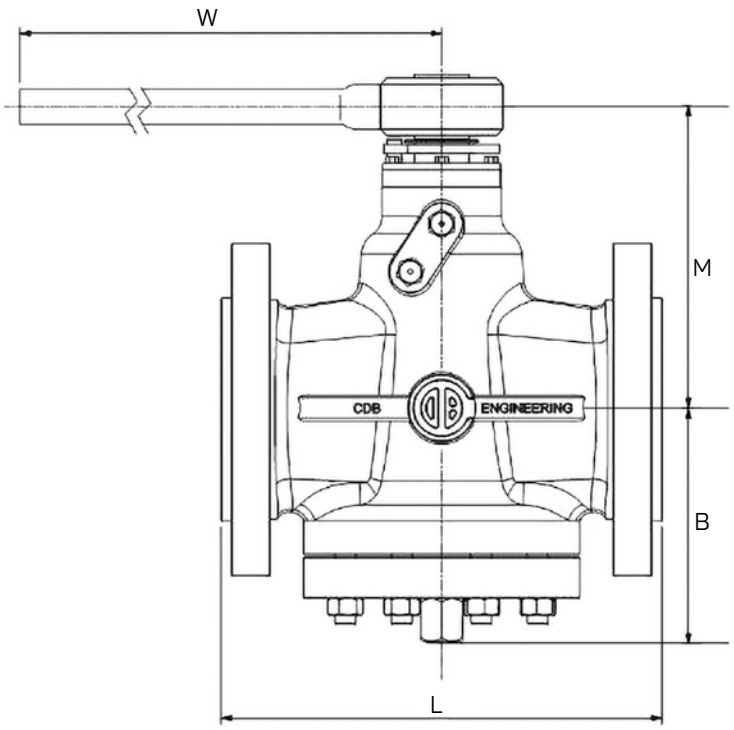


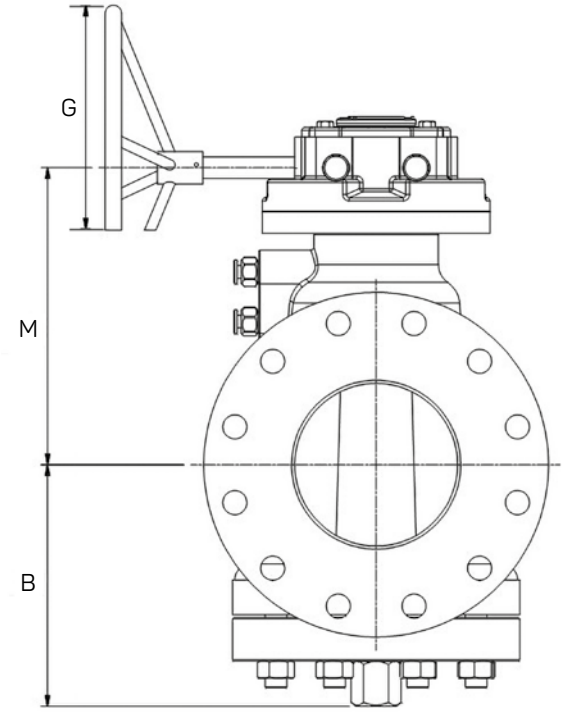


ANSI CLASS 900 (PN 150)		REGULAR PATTERN						VENTURI PATTERN					
Size		2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Face To Face	mm												
L - RF	mm	368	381	457	610	737	838	965	1029	1130	1321	1549	1753
L - RTJ	mm	371	384	460	613	740	841	968	1038	1140	1334	1568	1775
L - BW	mm	368	381	457	610	737	838	965	1029	1130	1321	1549	1753
B	mm	140	180	190	255	275	320	380	430	470	500	580	655
M	mm	210	230	250	290	310	430	450	495	590	600	635	950
G	mm	-	-	560	560	560	700	700	700	800	800	800	1000
W	mm	600	850	1000	-	-	-	-	-	-	-	-	-
Weight RF/RTJ	Kg	55	90	160	230	390	590	1100	1300	1520	1750	2850	4390
Weight BW	Kg	36	65	125	145	294	460	720	920	1250	1400	2320	3220

NOTES:
DN 4" available with gear operated.
Face to Face of DN 18" up to 24" in accordance with ASME B16.10
The weights are approximative.

ANSI CLASS 1500 (PN 250)

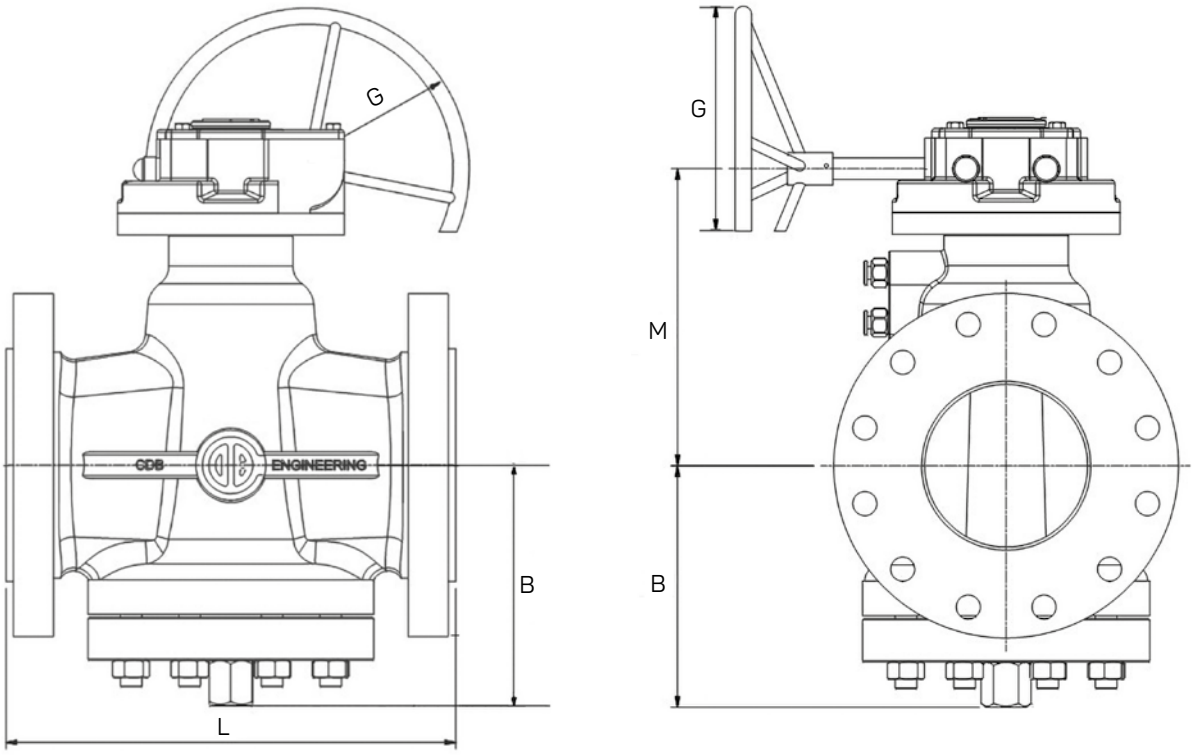




ANSI CLASS 1500 (PN 250)		REGULAR PATTERN							VENTURI PATTERN			
Size		2"	3"	4"	6"	8"	10"	12"	14"	16"	20"	24"
Face To Face	mm											
L - RF	mm	368	470	546	705	832	991	1130	1257	1384	1664	1943
L - RTJ	mm	371	473	549	711	841	1000	1146	1276	1406	1686	1972
L - BW	mm	368	470	546	705	832	991	1130	1257	1384	1664	1943
B	mm	135	180	210	225	280	390	440	490	530	560	600
M	mm	210	240	270	265	370	400	530	580	610	640	670
G	mm	-	500	500	650	650	700	700	800	1000	1000	1000
W	mm	800	1000	-	-	-	-	-	-	-	-	-
Weight RF/RTJ	Kg	55	90	175	310	580	940	1750	2100	2970	4490	5400
Weight BW	Kg	41	75	145	250	450	730	1290	1390	2370	3580	4600

NOTES:
DN 3" available with gear operator.
Face to Face of DN 14"up to 24" in accordance with ASME B16.10.
The weights are approximative.

ANSI CLASS 2500 (PN 420)



ANSI CLASS 2500 (PN 420)		REGULAR PATTERN						
Size		**2"**	**3"**	**4"**	**6"**	**8"**	**10"**	**12"**
Face To Face	mm							
L - RF	mm	451	578	673	914	1022	1270	1422
L - RTJ	mm	454	584	683	927	1038	1292	1445
L - BW	mm	451	578	673	914	1022	1270	1422
B	mm	170	190	210	250	300	380	450
M	mm	230	250	260	300	340	450	650
G	mm	560	560	650	800	800	1000	1000
Weight RF/RTJ	Kg	72	160	220	650	1200	2200	3200
Weight BW	Kg	58	128	180	520	960	1760	2560

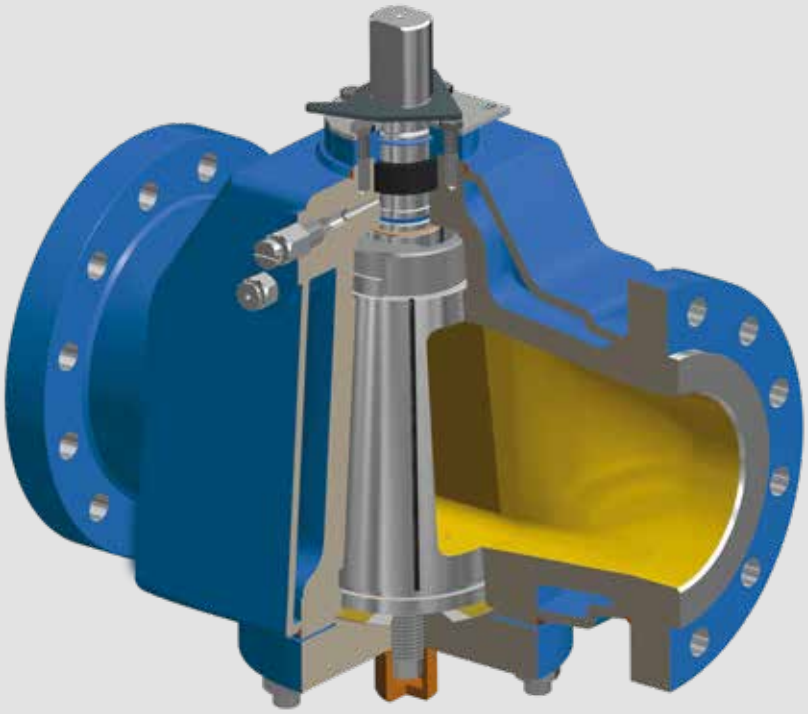
NOTES:
Handwheel dimension (G) is only an indication.
The weights are approximative.

FULL JACKETED PLUG VALVES

Full Jacketed lubricated standard plug valve are designed for fluids having high viscosity such as bitumen, asphalt, molten sulphur and heavy oils.
The inlet of steam into the valve jacket keeps the valve body warm, avoiding the risk of solidification of the main fluid.
The tightness of plug valves is always guaranteed by direct contact of the metal plug surface and the valve body seat, with a special lubricant grease suitable for both the type of main fluid and the operating temperature (-29°C to 350°C).

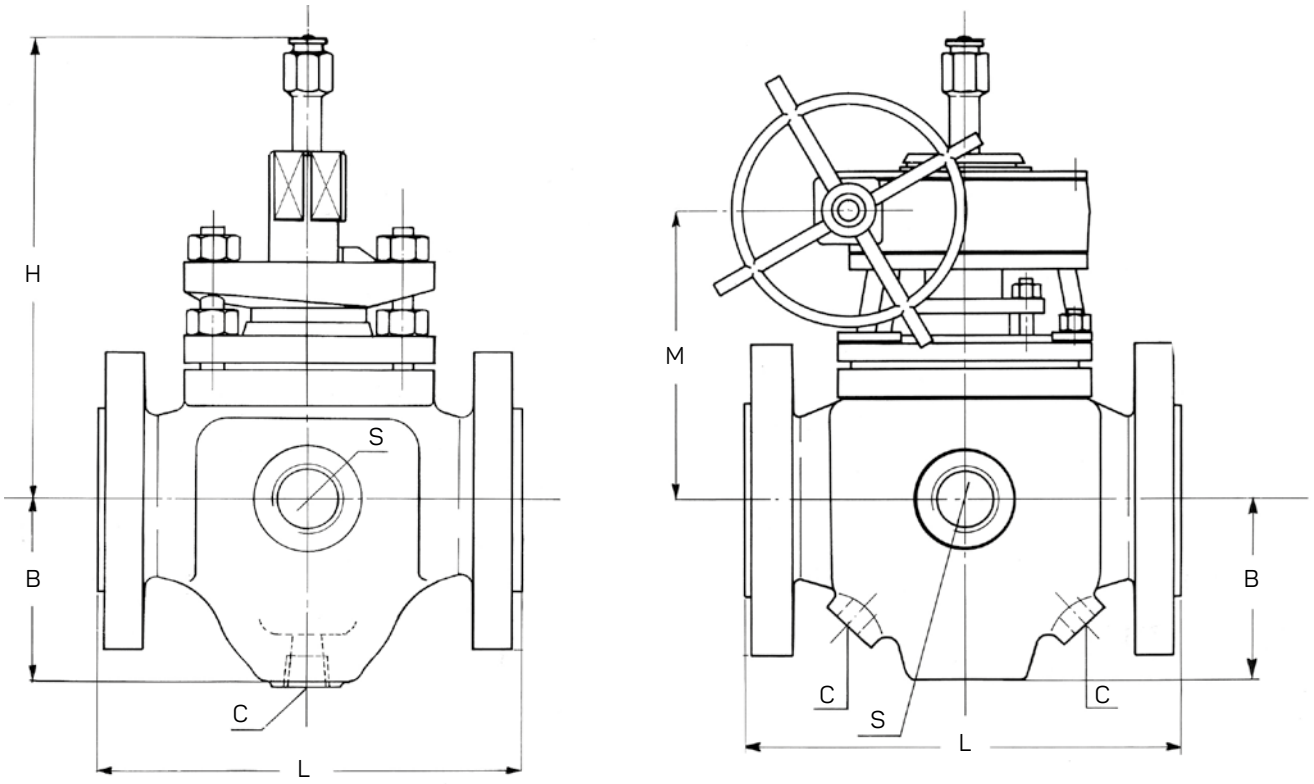
The standard plug is retained into the body by a bolted cover avoiding its blow out only for class 150 & 300.
CDB Engineering can supply Full Jacketed Plug valves pressure balanced type for high pressure application class 600 & 900.
Special antifriction treatment by PTFE applied on the plug surface provides low friction between plug & body and low torque moment.

CROSS SECTION DRAWING



FULL JACKETED PRESSURE BALANCED TYPE

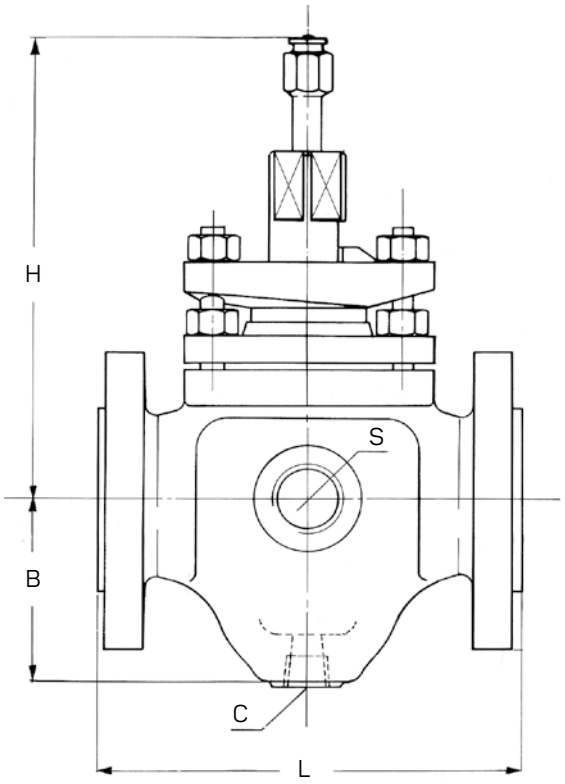
ANSI CLASS 150 (PN 20)

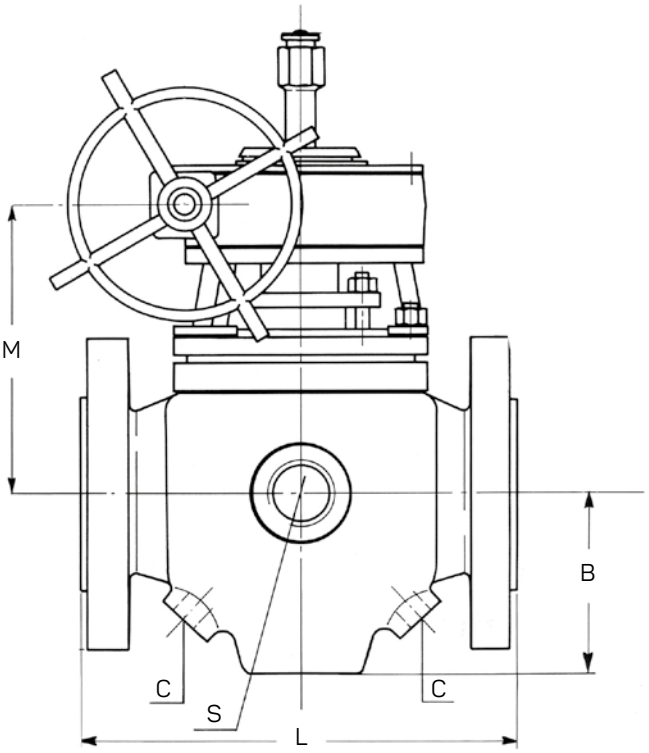


ANSI CLASS 150 (PN 20)		REGULAR PATTERN					
Size		2" X 3"	3"X 4	4"X 6	6"X 8	8"X 10"	10"X 12"
Face To Face	mm						
L - RF	mm	240	300	390	419	457	502
H	mm	180	250	260		-	-
B	mm	120	150	180	230	270	390
M	mm	-	-	-	550	630	830
G	mm	-	-	-	600	600	850
W	mm	450	600	700	-	-	-
Weight RF	Kg	29	52	125	220	290	370

NOTES:
Handwheel dimension (G) is only an indication.
The Jacket is suitable with 2 screwed holes DN 1/2" or 3/4" NPT for steam inlet (S) and 1 hole DN 1/2" or 3/4" NPT for condensate (C).
The weights are approximative.

ANSI CLASS 300 (PN 50)



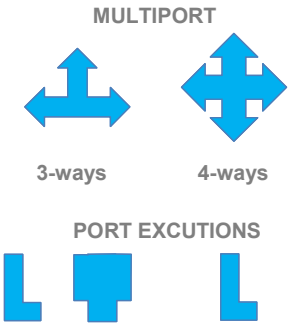


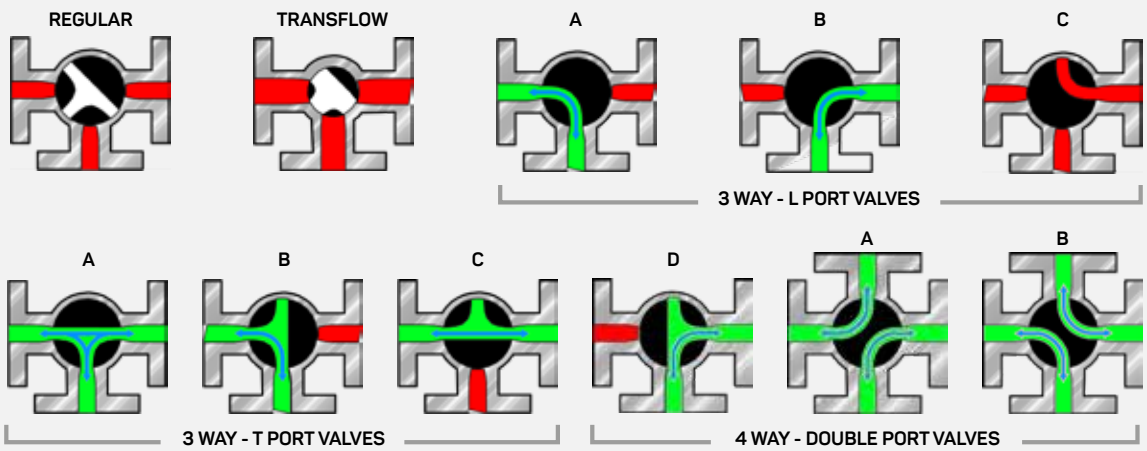
ANSI CLASS 300 (PN 50)		REGULAR PATTERN					
Size		2"X 3"	3"X 4	4"X 6	6"X 8	8"X 10"	10"X 12"
Face To Face	mm						
L - RF	mm	260	300	403	419	457	502
H	mm	180	250	260	-	-	-
B	mm	120	150	180	230	270	390
M	mm	-	-	-	550	620	680
G	mm	-	-	-	700	800	800
W	mm	450	560	750	-	-	-
Weight RF	Kg	40	65	135	250	360	415

NOTES:
Handwheel dimension (G) is only an indication.
The Jacket is suitable with 2 screwed holes DN 1/2" or 3/4" NPT for steam inlet (S) and 1/2 hole DN 1/2" or 3/4" NPT for condensate.
The weights are approximative.

MULTIPORT PLUG VALVE THREE & FOUR WAY

Multiport Plug valves from ASME/ANSI 150 to 600 are built with the same characteristics of straightway standard valves, or inverted pressure balanced plug type. Three way plug valves can be made with a regular or transflow pattern.
When a regular pattern plug valve is turned from one position to another one, the first fluid position is insulated before the second one starts to open.This design avoids mixture of the fluids into the body.
Viceversa, in the transflow pattern, the ports of the plug are larger than the ports of the valve body, therefore when the plug is turned from a fluid position to another one, the second fluid position starts to open before the first one is completely closed. This type of plug valve is essential when temporary shut-off of the flow is possible.
Under high differential pressure conditions, they might have some leakage problems from one side of the valve to another one.
CDB product range is 3 way-T or L port and 4 way double L port.

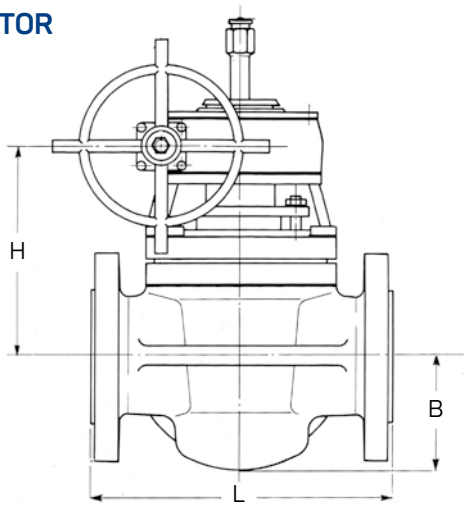




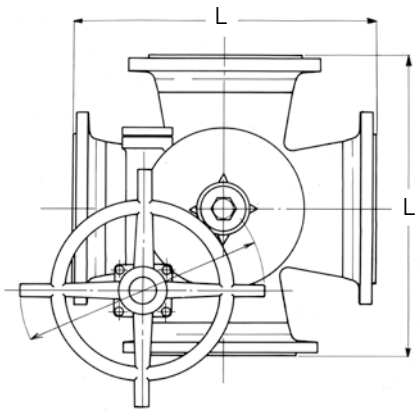
ANSI CLASS 150 (PN 20) - THREE & FOUR WAY

GEAR OPERATOR

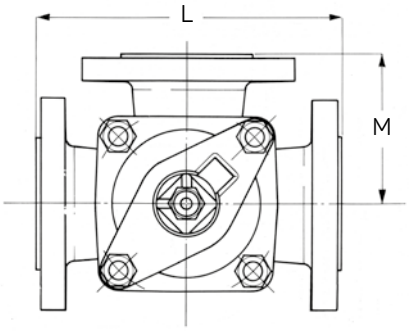
Three way

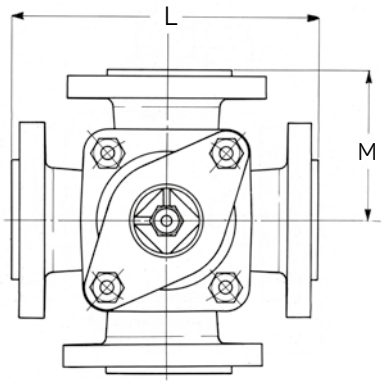


Four way



WRENCH OPERATOR





ANSI CLASS 150 (PN 20)		LONG PATTERN					
Size		2"	3"	4"	6"	8"	10"
Face To Face	mm						
L - RF	mm	268	300	350	458	508	622
B	mm	70	100	125	230	270	385
M	mm	134	150	175	229	254	311
H	mm	-	-	-	660	690	720
G	mm	-	-	-	700	750	800
WRENCH	mm	450	600	700	-	-	-
Weight RF Three Way Transflow	Kg	27	60	80	220	295	380
Weight Three way Regular	Kg	32	65	95	235	320	410
Weight RF Four Way	Kg	35	70	110	255	330	425

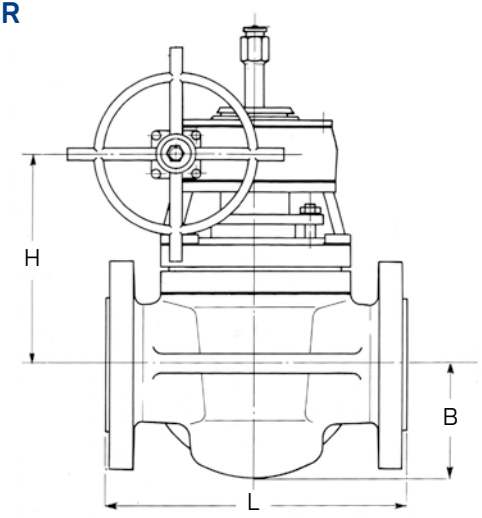
NOTES:
Handwheel dimension (G) is only an indication.
Valve Three Way Transflow with Plug T or L port.
Valve Three Way Regular with Plug T or L port.
The weights are approximative.

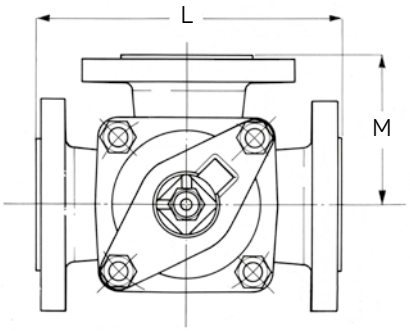
ANSI CLASS 300 (PN 50) - THREE & FOUR WAY

GEAR OPERATOR

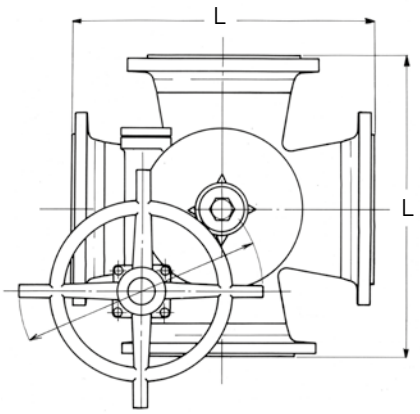
WRENCH OPERATOR

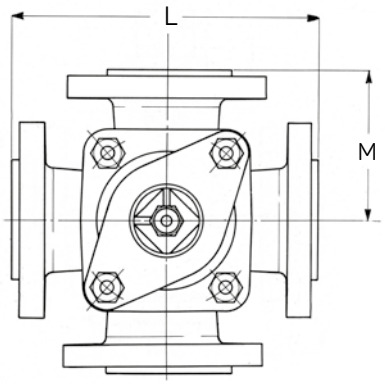
Three way





Four way





ANSI CLASS 300 (PN 50)		LONG PATTERN					
Size		**2"**	**3"**	**4"**	**6"**	**8"**	**10"**
Face To Face	mm						
L - RF	mm	268	300	350	458	508	622
B	mm	120	165	180	230	270	385
M	mm	134	150	175	229	254	311
H	mm	-	-	-	660	690	720
G	mm	-	-	-	700	750	750
WRENCH	mm	500	700	750	-	-	-
Weight RF Three Way Transflow	Kg	26	60	85	220	295	380
Weight Three way Regular	Kg	35	65	95	260	325	420
Weight RF Four Way	Kg	40	81	125	310	390	460

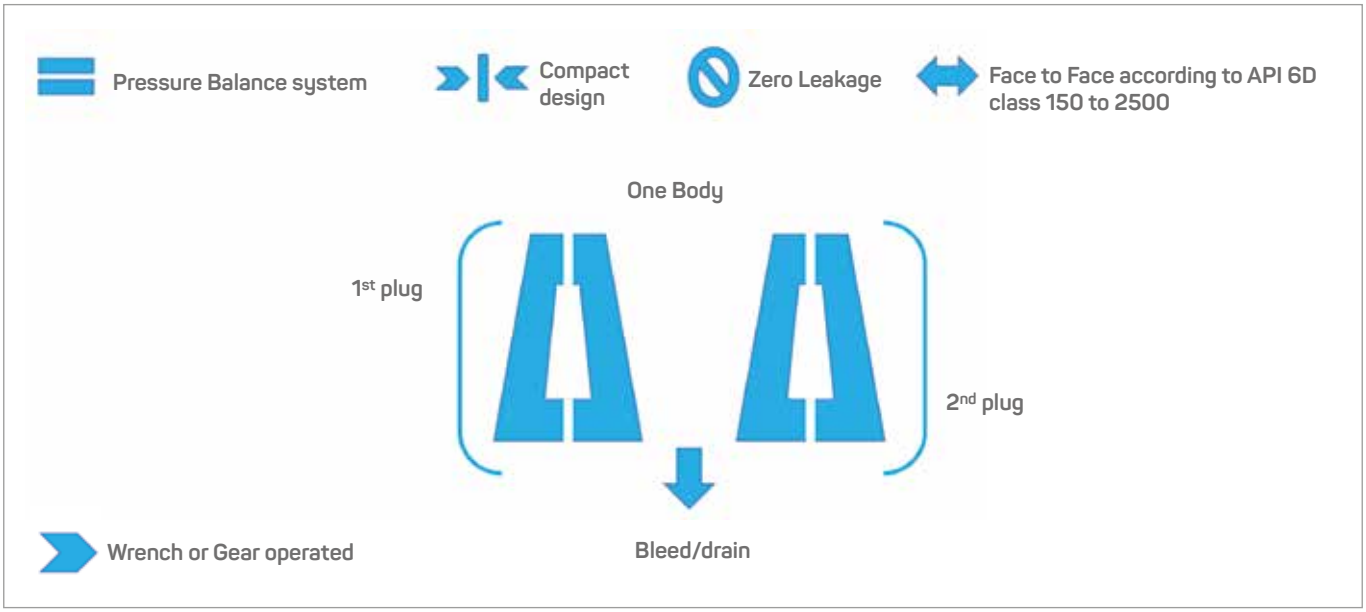
NOTES:
Handwheel dimension (G) is only an indication.
Valve Three Way Transflow with Plug T or L port
Valve Three Way Regular with Plug T or L port
The weights are approximative.

DOUBLE BLOCK & BLEED PLUG VALVE

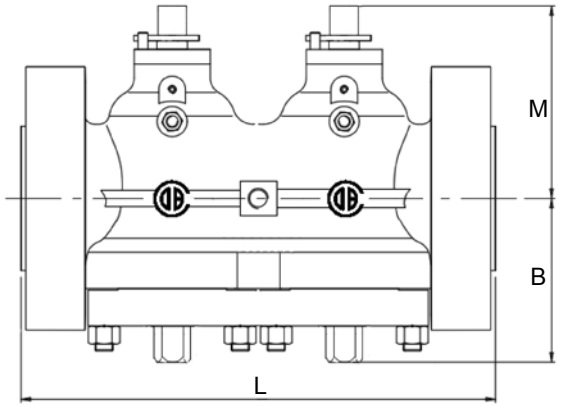
DBB plug valves (Double Block & Bleed Valve) have two inverted plugs in one body to guarantee positive shut off in upstream and downstream, under low or high pressure.
The bleed allows monitoring both the zero leakage at the maximum differential pressure across the valve and the bleed functions.
Bi-directional sealing double plug valve in the manifold are reliable segregated by provable, zero leakage.
A DBB plug valve is lighter than two single valves installed in series, reducing the overload on the line.
DBB plug valves ensure that no leaks occur and are used in various applications such as: gas/oil pipeline systems, by-pass valves, compressor/pump stations, manifold isolation and slurry/dirty/severe services.
The quality of the valve design depends also on the material selection.
After examination of service conditions, the selection criteria are based on the verification of the physical and chemical characteristics of the material or products.
On request, CDB Engineering DBB plug valves can be supplied in accordance with NACE - MR-01-75.

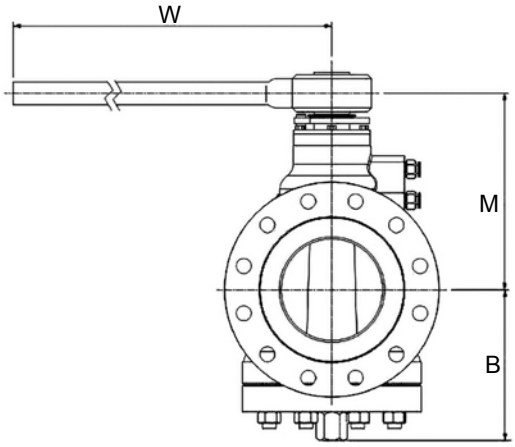
Standard Material
Body and Plug: ASTM A 216 WCB/WCC
Stem: ASTM A 182 F6a
Cover: ASTM A 105 /A 216 WCB/WCC
Special material such as Duplex, Superduplex or 6MO with corrosion resistance qualification upon request.

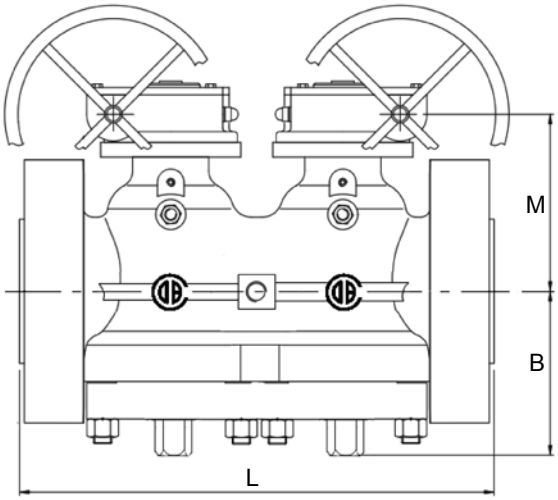
Size Dn 2" to 16"
Class ASME/ANSI 150 to 1500
Class 2500 upon request

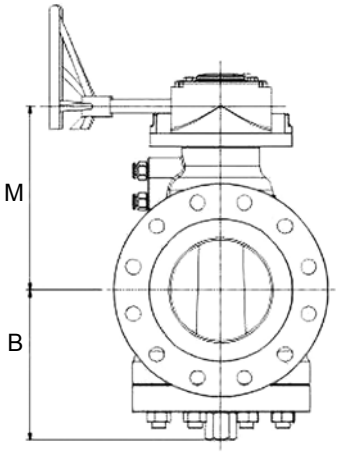


ANSI CLASS 150 (PN 20)





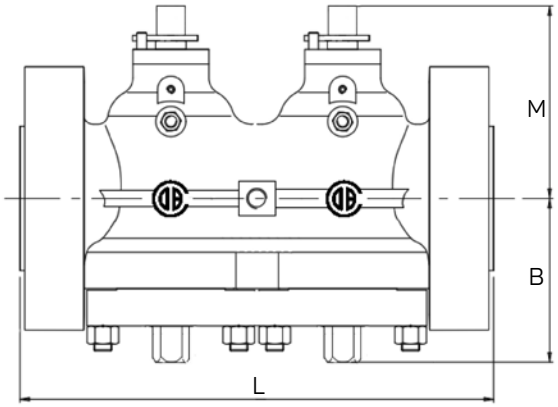


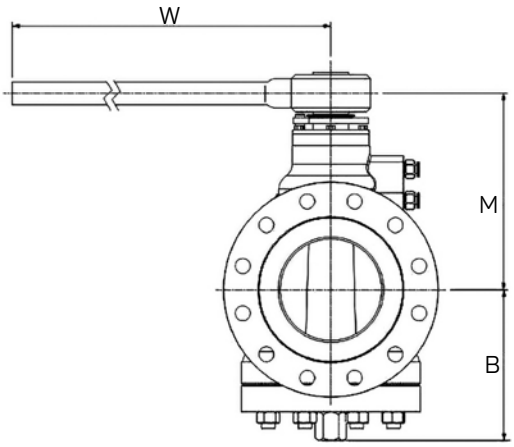


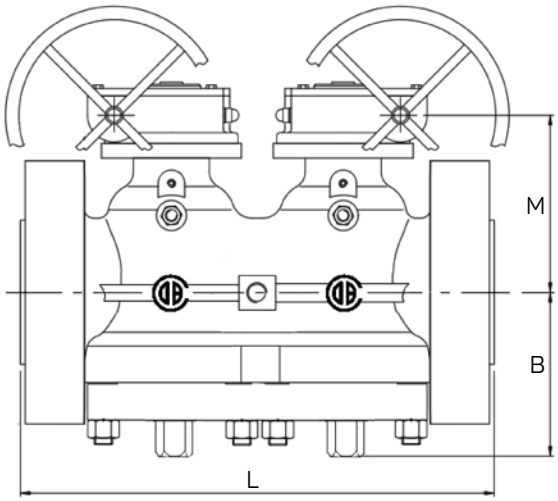
ANSI CLASS 150 (PN 20)		SHORT PATTERN						VENTURI PATTERN		
Size		2"	3"	4"	6"	8"	10"	12"	16"	20"
Face To Face	mm									
L - RF	mm	267	343	432	546	622	660	762	991	1194
L - RTJ	mm	279	356	445	559	635	673	775	1004	1209
B	mm	140	160	175	230	280	330	360	410	465
M	mm	180	210	250	285	300	380	430	460	520
G	mm	-	-	-	550	550	600	600	700	750
W	mm	450	500	600	1000	-	-	-	-	-
Weight RF/RTJ	Kg	31	61	94	139	286	400	590	1435	2160
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"

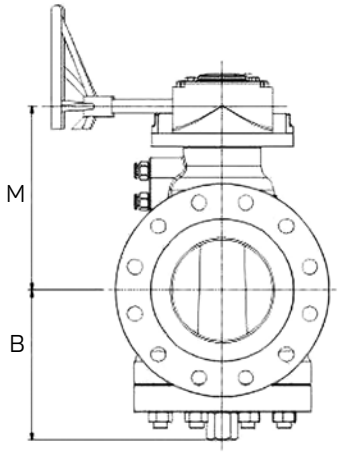
NOTES:
DN 6" is available with gear operator.
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 300 (PN 50)





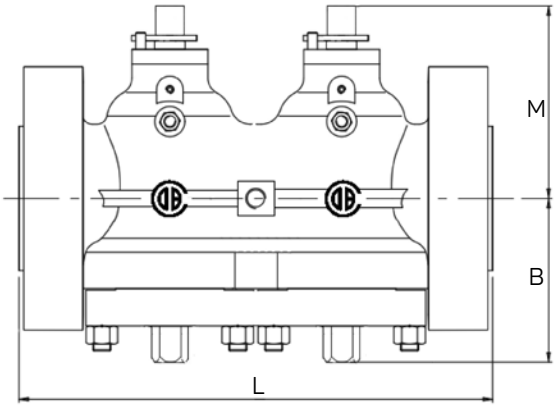


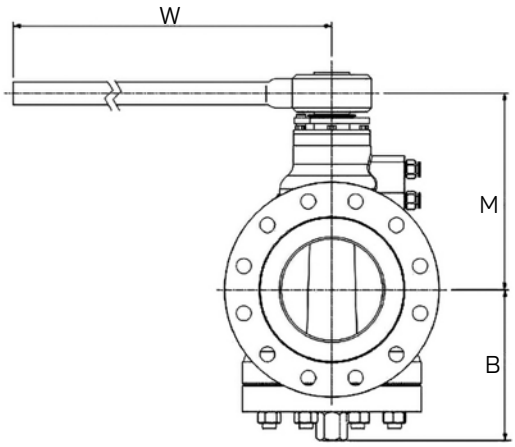


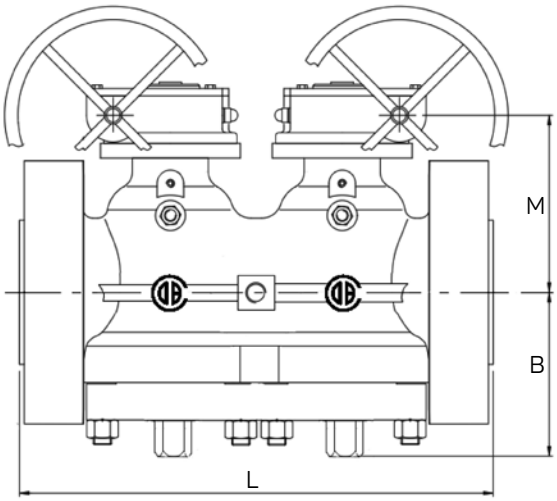
ANSI CLASS 300 (PN 50)		SHORT PATTERN						VENTURI PATTERN		
Size		2"	3"	4"	6"	8"	10"	12"	16"	20"
Face To Face	mm									
L - RF	mm	283	387	457	559	686	826	864	991	1194
L - RTJ	mm	298	403	473	575	702	842	880	1006	1213
B	mm	120	160	175	230	290	330	380	420	510
M	mm	180	210	250	285	300	380	430	460	520
G	mm	-	-	-	600	600	600	700	750	800
W	mm	500	600	700	1000	-	-	-	-	-
Weight RF/RTJ	Kg	40	78	120	195	445	560	770	1300	2720
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"

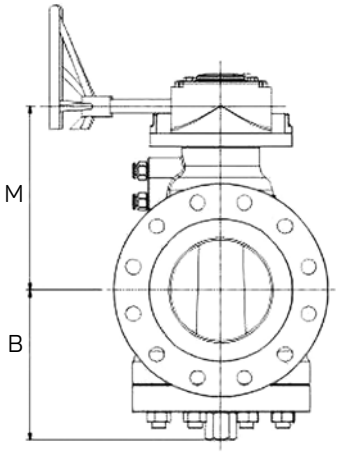
NOTES:
DN 6" is available with gear operator.
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 600 (PN 100)





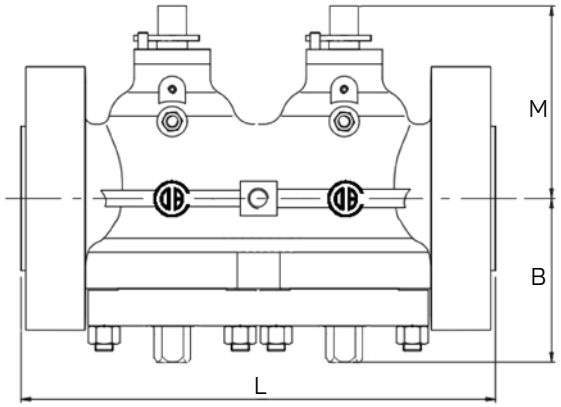


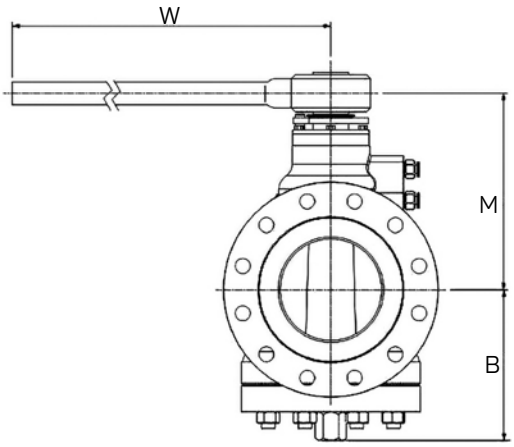


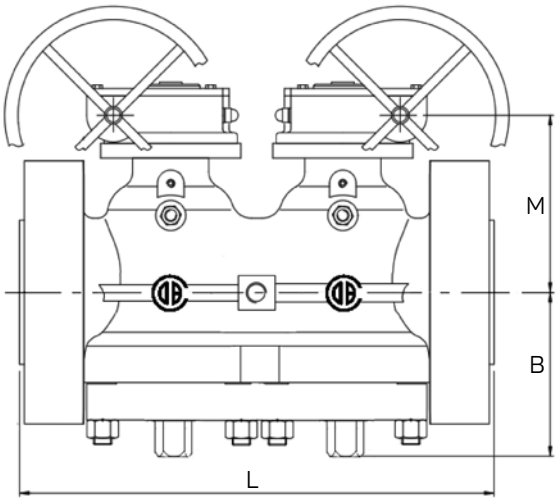
ANSI CLASS 600 (PN 100)		REGULAR PATTERN						VENTURI PATTERN		
Size		2"	3"	4"	6"	8"	10"	12"	16"	20"
Face To Face	mm									
L - RF	mm	292	356	432	559	660	787	838	991	1194
L - RTJ	mm	295	359	435	562	664	791	841	994	1200
B	mm	120	160	175	230	290	330	350	420	490
M	mm	180	210	230	280	325	380	480	535	610
G	mm	-	-	560	600	700	700	700	800	800
W	mm	550	700	950	-	-	-	-	-	-
Weight RF/RTJ	Kg	54	94	150	325	550	1100	1650	2400	5020
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"

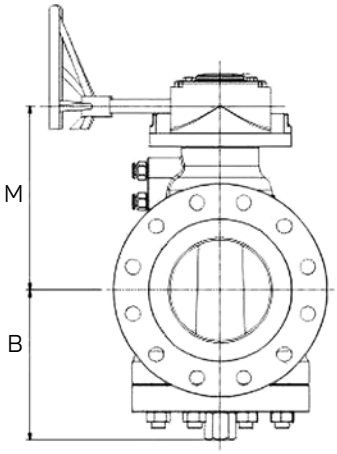
NOTES:
DN 4" is available with gear operator.
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 900 (PN 150)





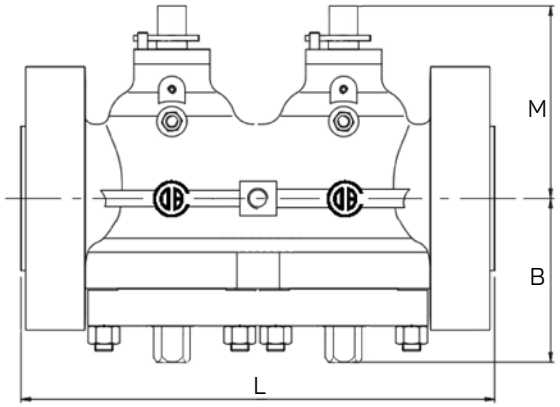


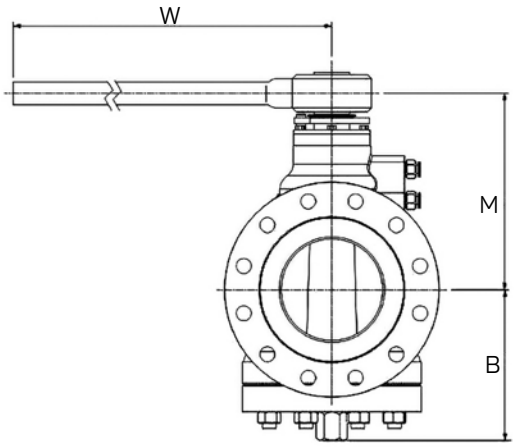


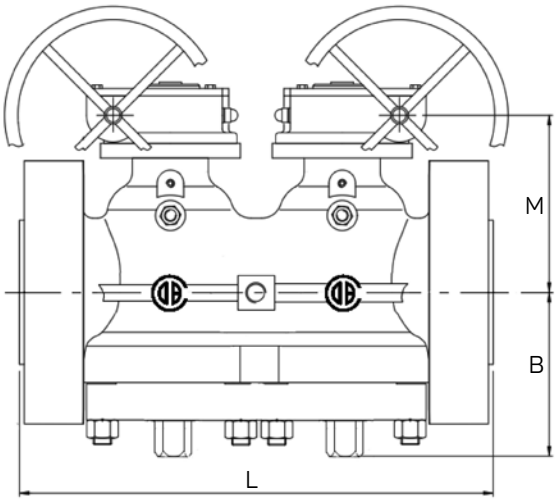
ANSI CLASS 900 (PN 150)		REGULAR PATTERN						VENTURI PATTERN		
Size		2"	3"	4"	6"	8"	10"	12"	16"	20"
Face To Face	mm									
L - RF	mm	368	381	457	610	737	838	965	1130	1321
L - RTJ	mm	371	384	460	613	740	841	968	1140	1334
B	mm	135	190	195	220	280	330	390	475	500
M	mm	210	220	260	300	320	420	460	600	650
G	mm	-	-	560	600	600	700	700	800	800
W	mm	600	1000	-	-	-	-	-	-	-
Weight RF/RTJ	Kg	176	160	296	390	740	1140	1824	2885	5400
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1"

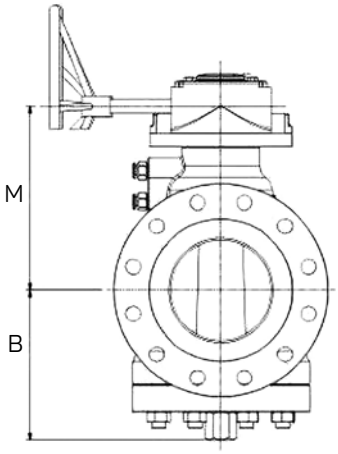
NOTES:
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 1500 (PN 250)





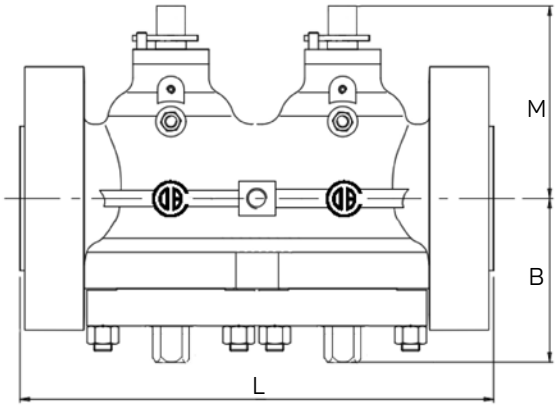


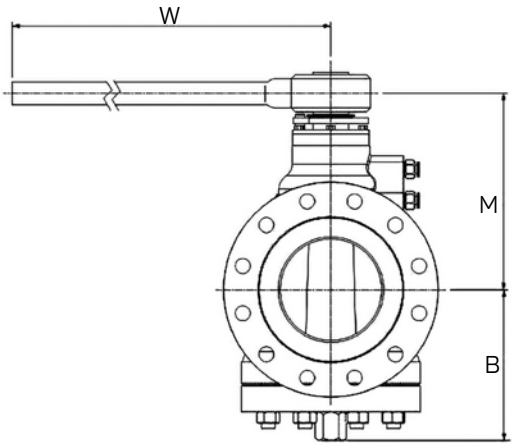


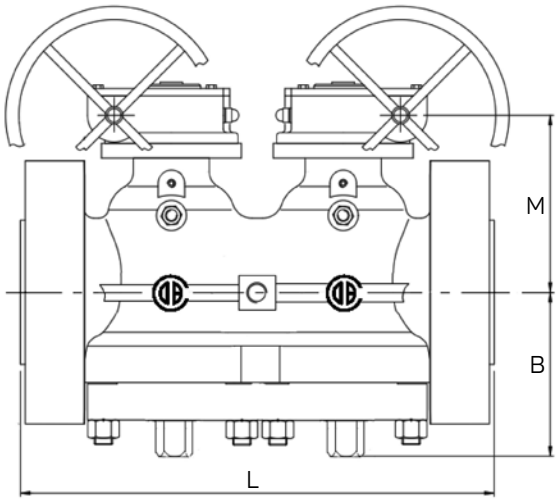
ANSI CLASS 1500 (PN 250)		REGULAR PATTERN			VENTURI PATTERN				
Size		2"	3"	4"	6"	8"	10"	12"	16"
Face To Face	mm								
L - RF	mm	368	470	546	705	832	991	1130	1384
L - RTJ	mm	371	473	549	711	841	1000	1146	1406
B	mm	145	190	220	255	290	395	460	550
M	mm	210	220	260	300	320	420	540	620
G	mm	-	-	560	600	600	700	700	800
W	mm	800	1000	-	-	-	-	-	-
Weight RF/RTJ	Kg	114	176	370	640	1170	1910	3130	5835
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"

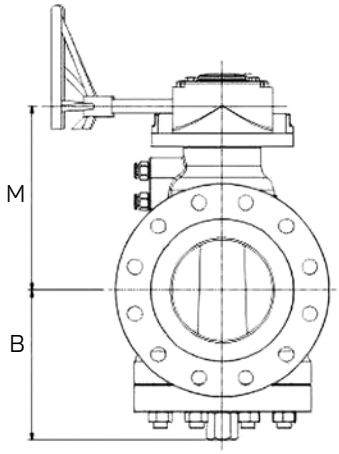
NOTES:
Handwheel dimension (G) is only an indication.
The weights are approximative.

ANSI CLASS 2500 (PN 420)









ANSI CLASS 2500 (PN 420)		REGULAR PATTERN					
Size		**2"**	**3"**	**4"**	**6"**	**8"**	**10"**
Face To Face	mm						
L - RF	mm	451	578	673	914	1022	1270
L - RTJ	mm	454	584	683	927	1038	1292
B	mm	170	220	250	300	340	360
M	mm	220	240	260	300	350	490
G	mm	-	560	560	700	800	800
W	mm	800	-	-	-	-	-
Weight RF/RTJ	Kg	134	263	1185	860	2480	4100
Bleed Size Threaded NPT		1/2"	1/2"	1/2"	1/2"	3/4"	3/4"

NOTES:
Handwheel dimension (G) is only an indication.
The weights are approximative.

CDB - TESTING FACILITY

DURATION OF HYDROSTATIC TESTS IN MINUTES (MINIMUM)

		API 598		API 6 D	
Valve Size		Shell Test	Seat Test	Shell Test	Seat Test
≤ 50 mm	≤ 2"	15 Sec.	15 Sec.	not applicable	
50 mm to 100 mm	2" to 4"	-	-	2'	2'
65 mm to 150 mm	2 ½" to 6"	1'	1'	2'	2'
150 mm to 250 mm	-	-	-	5'	5'
200 mm to 300 mm	8" to 12"	2'	2'	5'	5'
350 mm and over	≥ 14"	5'	2'	-	-
300 mm to 450 mm	12" to 18"	-	-	15'	5'

API 6D also requires a 5.5 bar (80 psi) air seat test for the same duration

ACTUATORS

Gas Over Oil

Pneumatic

Electric

GAS TERMINAL ACTUATED VALVES

ASME B16.34 GROUP MATERIAL 1.1

ASTM A 216 WCB; A 352 LF2

Working Pressure by Classes, psig (Bar)

	150 PN20	300 PN 50	600 PN 100	900 PN150	1500 PN250	2500 PN420
Working pressure rating	285 (20)	740 (51)	1480 (102)	2220 (153)	3705 (255)	6170 (425)
Hydraulic body test	450 (31)	1125 (78)	2225 (153)	3350 (231)	5575 (384)	9275 (640)
Hydraulic seat test	314 (22)	814 (56)	1628 (112)	2442 (168)	4076 (281)	6787 (468)

ASME B16.34 GROUP MATERIAL 1.2 AND 2.8

ASTM A 350 LF6-A216WCC-A352LCC-A182F44/F51-UNS S31803/S31254/S32750 A 351GR.CK3MCUN/ CE8MN CD4MCU/CD3MWCUN)

Working Pressure by Classes, psig (Bar)

	150 PN20	300 PN 50	600 PN 100	900 PN150	1500 PN250	2500 PN420
Working pressure rating	290 (21)	750 (52)	1500 (103)	2250 (155)	3750 (259)	6250 (431)
Hydraulic body test	450 (31)	1125 (78)	2250 (155)	3375 (233)	5625 (388)	9375 (646)
Hydraulic seat test	319 (22)	825 (57)	1650 (114)	2475 (171)	4125 (284)	6875 (474)

ASME B16.34 GROUP MATERIAL 1.3

A 352 LCB

Working Pressure by Classes, psig (Bar)

	150 PN20	300 PN 50	600 PN 100	900 PN150	1500 PN250	2500 PN420
Working pressure rating	265 (18)	695 (48)	1390 (96)	2085 (144)	3470 (239)	5785 (399)
Hydraulic body test	400 (28)	1050 (72)	2100 (145)	3150 (217)	5225 (360)	8700 (600)
Hydraulic seat test	292 (20)	765 (53)	1529 (105)	2294 (158)	3817 (263)	6364 (439)

ASME B16.34 GROUP MATERIAL 2.1 AND 2.2

A 182F304-A 479 GR.304-A 351 CF3-A351 CF8-A 182 F316-A 479 GR.316-A 351 CF3M

Working Pressure by Classes, psig (Bar)

	150 PN20	300 PN 50	600 PN 100	900 PN150	1500 PN250	2500 PN420
Working pressure rating	275 (19)	720 (50)	1440 (99)	2160 (149)	3600 (248)	6000 (414)
Hydraulic body test	425 (29)	1100 (76)	2175 (150)	3250 (224)	5400 (372)	9000 (621)
Hydraulic seat test	303 (21)	792 (55)	1584 (109)	2376 (164)	3960 (273)	6600 (455)

ASME B16.34 GROUP MATERIAL 2.3

A 182 F304L-A 182 F316L-A 479 GR.304L-A 479 GR.316L

Working Pressure by Classes, psig (Bar)

	150 PN20	300 PN 50	600 PN 100	900 PN150	1500 PN250	2500 PN420
Working pressure rating	230 (16)	600 (41)	1200 (83)	1800 (124)	3000 (207)	5000 (345)
Hydraulic body test	350 (24)	900 (62)	1800 (124)	2700 (186)	4500 (310)	7500 (517)
Hydraulic seat test	253 (17)	660 (46)	1320 (91)	1980 (137)	3300 (228)	5500 (379)

CDB VALVE LUBRICANTS

LUBRICANT NUMBER	COLOR	TEMP. RANGE FROM - TO	PRINCIPAL SERVICE	UNSUITABLE FOR
CD 100	White	-46° to 204°C	Molten Sulphur C02-H2S	L.P.G. Hydrocarbon Solvent
CD 102	White	-59° to 121°C	Cold Service Pipe Lines & Compressor Stations	Aromatic Solvents
CD 106	Cream	-29 to 260°C	Gas & Hydrocarbon Service	L.P.G.
CD 111	Amber	0° to 204°C	Aviation Gasoline - Jet Fuel	Pure Benzine
CD 150	Black	0° to 316°C	Asphalt-Bitumen - Hot Oil Service, Hot Hydrocarbon Gases	Aromatic -Solvents
CD 60	Amber	-29° to 149° C	Hydrocarbon Service	Alkalies
CD 80	White	-29° to 232°C	Butane, Ethane, Propane	Alkalies
CD 90	Black	-29° to 343°C	Natural Gas, Hot Hydrocarbon Service	Alkalies
CD 103	Cream	-29° to 204°C	Natural Gas Pipelines Services	Alcohols, Glicols

CDB HYDRAULIC HAND GUN PUMP MODEL MH 140

Experience has proven that periodic maintenance makes valves operate easier and seal properly.
A small amount of fresh grease into the valve body will add years to its service life. Our field experience on over the past ten years, has taught us that if you want the job done properly, you have to provide reliable and effective lubricant/sealant pumping equipment. CDB's Plug valves can use different types of lubricant grease suitable for different services, type of fluid and operating conditions.
The lubricant can be supplied as cartridges (suitable for hydraulic gun pump) or drums (suitable for pneumatic pump) for an easier lubrication maintenance.
The Hydraulic Hand Gun Pump here below, is suitable for normal operating of maintenance either in workshop or at field.
The lubricant grease can be provided as 16 Sticks per Carton.
Special mastic CDB sticks are suitable for stem packing sealing.
Lubricant in 5-quart (4.7 liter) and 5-gallon (22.68 liter) cans are available in bulk.
For larger quantities, CDB offers 120 lb. drum of lubricant suitable for pneumatic pump Mod. MH160 / 180.

Hydraulic Hand Gun Pump model MH 140

Pneumatic Pump model MH 160/180

PLUG VALVE DIMENSIONS ACCORDING TO API 6D/ISO 14313

Face to Face and End to End dimensions in mm

CLASS 150 (PN 20)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	178	267	191							267		279
2 1/2"	191	305	203							298		311
3"	203	330	216							343		356
4"	229	356	241							432		445
6"	267	457	279	394		406				546		559
8"	292	521	305	457		470				622		635
10"	330	559	343	533		546	533	559	546	660		673
12"	356	635	368	610		622	610	635	622	762		775
14"							686	686	699			
16"							762	762	775			
18"							864	864	876			
20"							914	914	927			
24"							1067	1067	1080			

CLASS 300 (PN 50)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	216	267	232							283	283	298
2 1/2"	241	305	257							330	330	346
3"	283	330	298							387	387	403
4"	305	356	321							457	457	473
6"	403	457	419	403		419	403	457	419	559	559	575
8"	419	521	435	502		518	419	521	435	686	686	702
10"	457	559	473	568		584	457	559	473	826	826	841
12"	502	635	518				502	635	518	965	965	981
14"							762	762	778			
16"							838	838	854			
18"				914		930	914	914	930			
20"				991		1010	991	991	1010			
22"				1092		1114	1092	1092	1114			
24"				1143		1165	1143	1143	1165			
26"				1245		1270	1245	1245	1270			
28"				1346		1372	1346	1346	1372			
30"				1397		1422	1397	1397	1422			
32"				1524		1553	1524	1524	1553			
34"				1626		1654	1626	1626	1654			
36"				1727		1756	1727	1727	1756			

CLASS 400 (PN 64)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"				292	292	295				330		333
2 1/2"				330	330	333				381		384
3"				356	356	359				445		448
4"				406	406	410				483	559	486
6"				495	495	498	495	495	498	610	711	613
8"				597	597	600	597	597	600	737	845	740
10"				673	673	676	673	673	676	889	889	892
12"				762	762	765	762	762	765	1016	1016	1019
14"							826	826	829			
16"							902	902	905			
18"							978	978	981			
20"							1054	1054	1060			
22"							1143	1143	1153			
24"							1232	1232	1241			
26"							1308	1308	1321			
28"							1397	1397	1410			
30"							1524	1524	1537			
32"							1651	1651	1667			
34"							1778	1778	1794			
36"							1880	1880	1895			

Tollerance: +/-2mm on size 10" and smaller. +/-3mm on size 12" and larger

PLUG VALVE DIMENSIONS ACCORDING TO API 6D/ISO 14313

Face to Face and End to End dimensions in mm

CLASS 600 (PN 100)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	292	292	295							330		333
2 1/2"	330	330	333							381		384
3"	356	356	359							445		448
4"	432	432	435							508	559	511
6"	559	559	562				559	559	562	660	711	664
8"	660	660	664				660	660	664	794	845	797
10"	787	787	791				787	787	791	940	1016	943
12"							838	838	841	1067	1067	1070
14"							889	889	892			
16"							991	991	994			
18"							1092	1092	1095			
20"							1194	1194	1200			
22"							1295	1295	1305			
24"							1397	1397	1407			
26"							1448	1448	1462			
30"							1651	1651	1664			
32"							1778	1778	1794			
34"							1930	1930	1946			
36"							2083	2083	2099			

CLASS 900 (PN 150)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	368		371							381		384
2 1/2"	419		422							432		435
3"	381	381	384							470		473
4"	457	457	460							559		562
6"	610	610	613				610	610	613	737		740
8"	737	737	740				737	737	740	813		816
10"	838	838	841				838	838	841	965		968
12"							965	965	968	1118		1121
16"							1130	1130	1140			

CLASS 1500 (PN 250)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	368		371							391		394
2 1/2"	419		422							454		457
3"	470	470	473							524		527
4"	546	546	549							625		629
6"	705	705	711				705	705	711	787		794
8"	832	832	841				832	832	841	889		899
10"	991	991	1000				991	991	1000	1067		1076
12"	1130	1130	1146				1130	1130	1146	1219		1235

CLASS 2500 (PN 420)												
	SHORT			REDUCE REGULAR			VENTURI			ROUND PORT FULL BORE		
DN mm	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint	Raised Face	Welding	Ring Joint
2"	451		454									
2 1/2"	508		514									
3"	578		584									
4"	673		683									
6"	914		927									
8"	1022		1038									
10"	1270		1292									
12"	1422		1445									

OTHER PLUG VALVES

NOTES:
Catalogue is available on request


Expanding Plug valve


Expanding Plug valve


Expanding Plug valve


PTFE - Sleeve Plug valve


PTFE - Sleeve Plug valve with wrench


PTFE - Sleeve Plug valve with gear


PFA - Lined Plug valve


PFA - Lined Jacketed Plug valve with wrench


PFA - Lined Plug valve with pneumatic actuator

CDB PROCESS EQUIPMENT & PACKAGES

CDB Process Division is focused on the design, manufacturing and supply of tailor-made solutions for the Oil&Gas Process Industry. Our multi-disciplined engineering team has proven expertise in the design of high valued engineered solutions providing support during the entire project lifecycle.
We ensure a single-point responsibility, starting from process and detailed engineering to commissioning and start up.

Automatic Filtration System

Electro Chlorination System

Processing Dehydration Package

STRAINERS

NOTES:
Catalogue is available on request


Ytype


UL basket


Cast steel basket


Tee Type


Simplex Basket


Rubber lined basket


Duplex basket

STEAM LINE


Trap Station


Steam Traps


Forged Piston Manifold


High capacity condensate lift pump


Condensate lift pump


Condensate lift station

CDB ENGINEERING WORLDWIDE

OUR EXPERIENCE

We have extensive experience in cooperating with some of the major Oil & Gas Companies, EPC Contractors and Engineering firms.

OIL&GAS COMPANIES

Saudi Aramco · ExxonMobil · Total · bp · ADNOC · Novatek · Shell · KNPC · eni · Qatar Petroleum · Gazprom · Petronas · SOCAR

EPC CONTRACTORS

SAIPEM · Tecnicas Reunidas · Linde · Maire Tecnimont · JGC · Chiyoda Corporation · Samsung Engineering · TechnipFMC · Petrofac · Bechtel · Ansaldo Energia · Siemens · Enppi · CBI · wood.

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