CELEROS™ FLOW TECHNOLOGY

M-303 SLAB GATE VALVE FOR HIGH PRESSURE DIFFERENTIAL APPLICATIONS

M&J VALVE®

HELPS MINIMIZE FUGITIVE EMISSIONS
DESIGNED AND TESTED FOR API 6D
EASY INSTALLATION AND MAINTENANCE



The M&J Valve M-303 is an advanced design slab gate valve for high pressure differential applications in the oil & gas sector. It offers a host of features to simplify installation and upgrades, improve safety and reduce environmental impacts.



Reduced environmental impacts

The M-303 features a floating slab gate that uses the natural force of line pressure to obtain a reliable, dynamically tight downstream seal in high pressure differential applications. Low pressure sealing is accomplished with one wave spring that energizes the seat, pushing it firmly against the gate. This reduction in seal requirements, coupled with high packing stem reliability, has led to ISO 15848-1 certification for the valve's ability to dramatically reduce the likelihood of fugitive emissions.

Simplified installation

Operator mounting and conversions are simplified thanks to a two-piece stem (14" and larger) and common yoke design. A transparent plastic stem cover gives operators visual confirmation of valve status. Seat lubrication ports are supplied on the valve body as standard, making it easy to add sealant kits after the valve is installed in the line.

Easier maintenance, lower TCO

The M-303 offers versatility and ease of maintenance to deliver lower total cost of ownership (TCO). The two-piece stem allows different materials to be used in wetted areas to improve service life, while standard material is used for stem threads for a cost-competitive solution. Multiple seat springs have been replaced with a single seat spring ring, which is quicker to replace. No packing tightness intervention is required throughout the packing's lifecycle, minimizing downtime. Efficient valve design means there is no need for a cupola, allowing quicker access to the bonnet O-ring. The latest M-303 models have the same footprint as previous versions, so upgrading your existing M-303 valve couldn't be simpler. Components are also forwards and backwards compatible.

- Available in line sizes 6" - 84", class 150-2500
- Choice of manual, electric, hydraulic or pneumatic cylinder actuators
- Manufactured and tested to API 6D
- Certified fire-safe to API6FA / ISO10497
- Fully interchangeable with most other slab gate valves

M-303 KEY FEATURES

A **CHOICE OF OPERATOR**
- Manual, electric, hydraulic or pneumatic cylinder.

B **TOP ENTRY**
- For in-line maintenance.

C **PRIMARY STEM SEALS**
- Standard Graphite Spring Loaded Seal (SLS) Stem packing for longer service life.

D **SECONDARY STEM SEAL/PACKING INJECTOR**
- A backup safety feature using plastic non-flammable stem sealant.

E **FLOATING SLAB GATE**
- Utilizing line pressure to obtain a dynamically tight seal pushing it against the energized seat.

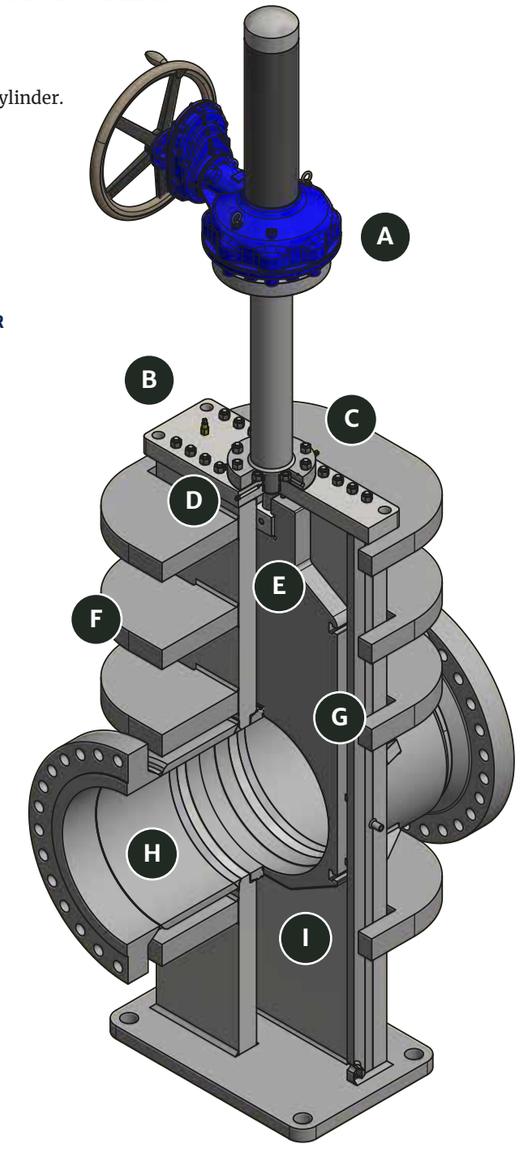
F **ADVANCED FABRICATED BODY CONSTRUCTION**
- Fabricated body minimum cavity volume.
- Optimized rib design and position to enhance pressure containment integrity of the valve body.

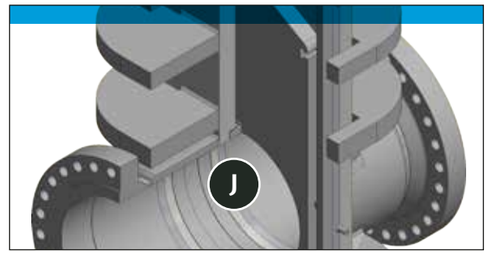
G **TRIM MATERIALS**
- Choice of body and trim materials, including regular, low temperature and sour crude services (NACE) designs.

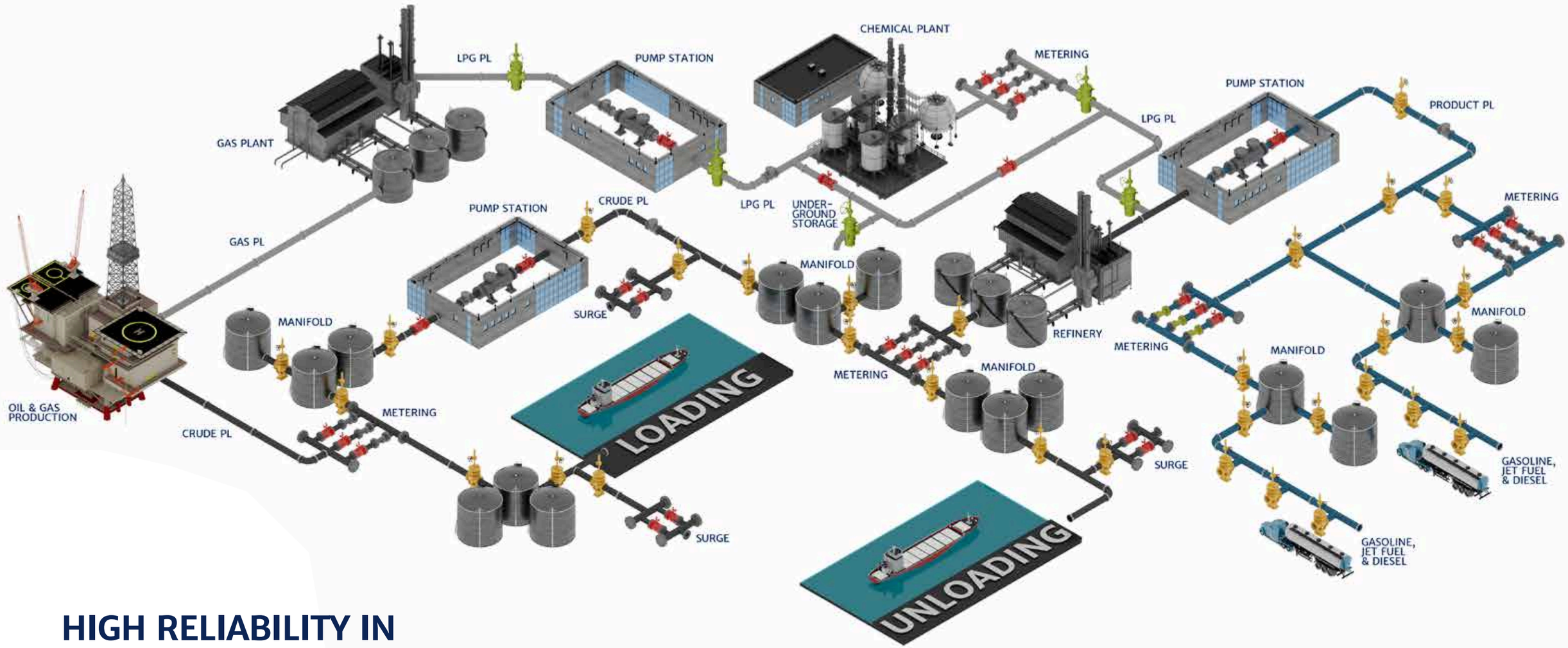
H **FULL THRU-CONDUIT PORT**
- For easy passage of pigs, wipers, and scrapers.

I **BLOCK & BLEED AND SELF RELIEVING**
- Design Based on API 6D.

J **SPRING/PRESSURE LOADED SEAT RINGS**
- With one wave spring, line pressure and nylon/elastomer seals provides a continuous positive seal in low or high pressure differential service.



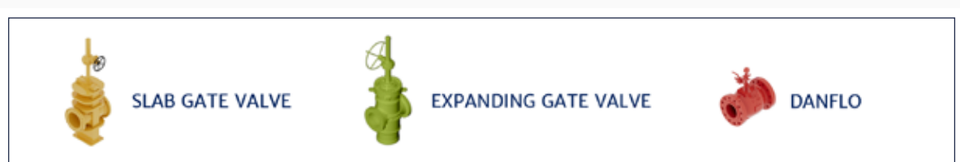




HIGH RELIABILITY IN MULTIPLE APPLICATIONS

The M-303 is suited to a wide range of applications in oil, gas, liquid products and secondary recovery, including:

- Mainline block valves
- Tank and station valves
- Block & bleed valves
- Manifold valves
- Launcher/receiver trap valves
- Meter bypass valves
- Emergency shutdown valves
- Hot tap valves



TECHNICAL SPECIFICATIONS

TABLE 1 – OPERATIONAL PARAMETERS

Type	Description
Size and Pressure ratings	NPS 6 to 42 Class 150
	NPS 6 to 42 Class 300
	NPS 6 to 36 Class 600
	NPS 6 to 30 Class 900
Fluid Media	Liquid
Flow Direction	Bi-Directional
Process Temperature	-20°F to 250°F (-29°C to 121°C)
Opening	Full Bore (Thru Conduit)
Alternative Process Temperature	-50°F to 250°F (-45°C to 121°C)
Maximum Working Pressure	2,200 psi (ANSI 900)
Differential Pressure	2,200 psi (ANSI 900)
Design, Manufacture and Test	API 6D
Face to Face	API 6D
Sour Service	NACE MR0175
End Connections	- Raised Face and RTJ per ANSI B16.5 (24" and smaller, except 22") MSS-SP-44 (22" and larger than 24") - Welded Ends
Stem Packing	SLS (Spring Loaded Seals)
Fugitive Emissions	ISO 15848
Fire Test	API 6FA
Piping System	ASME 31.3
Quality System	ISO 9001 and API Q1

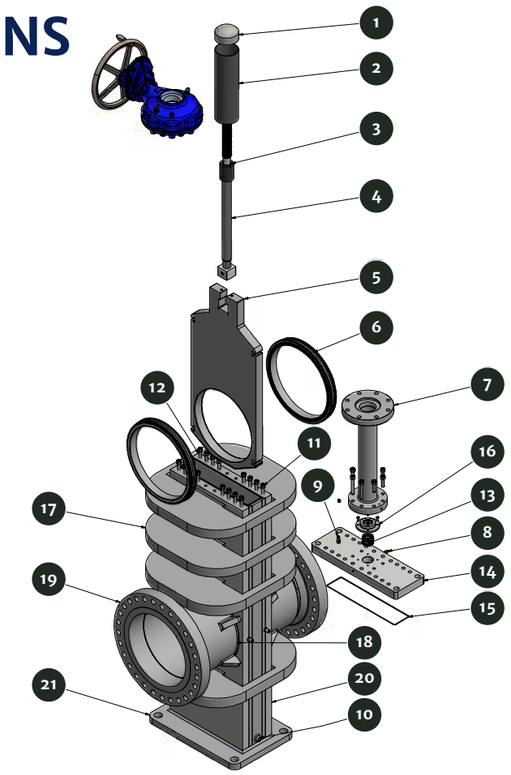


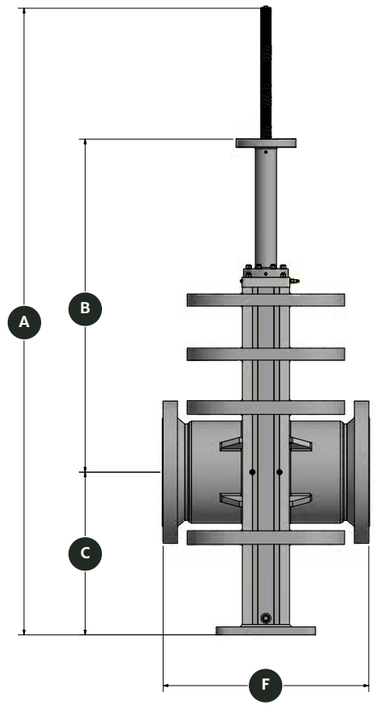
TABLE 2 – METHOD OF CONSTRUCTION

Component	Regular Service -20°F to +250°F (-29°C to +121°C)	Low Temperature -50°F to +250°F (-46°C to +121°C)
1. Stem Protector Cap	PVC	PVC
2. Stem Protector	PVC (Clear)	PVC (Clear)
3. Downstop Coupling	1018 CF	1018 CF
4. Stem Assembly	AISI 4140 Heat Treated & ENP	AISI 4140 Heat Treated & ENP
5. Gate	ASTM A516 Gr. 70 Coated*	ASTM A516 Gr. 70 Coated*
6. Seat Rings	ASTM A516 Gr. 70 Coated*	ASTM A516 Gr. 70 Coated* or A350 LF2
Springs	CS/Inconel	CS/Inconel
Seat Seals	FKM/Nylon	FKM/Nylon
O-Rings	FKM	LT Nitrile
7. Packing Injector	1215	4140
8. Stem Packing Release Valve (1/2")	12 L 14	1018
9. Body Pressure Bleed Valve (1/2")	12 L 14	1018
10. Body Drain Plug	ASTM A105	ASTM A350-LF2
11. Studs	ASTM A193 B7	ASTM A320 L7
12. Hex Nuts	ASTM A194 2H	ASTM A194 Gr. 7
13. Stem Packing	Graphite/Teflon/400SS	Graphite/Teflon/400SS
14. Bonnet	ASTM A516 Gr. 70	ASTM A516 Gr. 70
15. Bonnet O-Ring	Viton GFLT	Low Temp Nitrile
16. Packing Retainer	AISI 10122	AISI 10122
17. Ribs	ASTM A516 Gr. 70	ASTM A516 Gr. 70
18. Transition Pipe	API 5LX or A381Y50	ASTM A333 GR.6, API 5L, or A381Y50
19. Flanges (RF or RTJ)	ASTM A105	ASTM A350 LF2
20. Body Tube	ASTM A516 Gr. 70	ASTM A516 Gr. 70
21. Bottom Plate	ASTM A516 Gr. 70	ASTM A516 Gr. 70

M-303 WEIGHTS AND DIMENSIONS

CLASS 150

Valve Size		A		B	C	F			Weight Lb/(Kg)	
		A (Open)	A (Close)			RF	WE	RTJ	FE	WE
6	in	69.56	62.56	31.31	13.13	10.50	15.88	11.00	486	440
150	mm	1767	1589	795	333	267	403.00	279.00	220	200
8	in	81.44	72.38	36.13	16.00	11.50	16.50	12.00	788	710
200	mm	2068	1838	918	406	292	419	305	357	322
10	in	97.38	86.00	42.63	19.75	13.00	18.00	1350.00	1320	1220
250	mm	2473	2184	1083	502	330	457	343	599	553
12	in	109.88	96.38	47.94	22.94	14.00	19.75	14.50	1768	1600
300	mm	2791	2448	1218	583	356	502	368	802	726
16	in	130.00	113.38	57.50	27.13	16.00	24.00	16.50	2524	2140
400	mm	3302	2880	1461	689	406	610	419	1145	971
18	in	143.69	124.88	63.63	30.44	17.00	26.00	17.50	3162	2760
450	mm	3650	3172	1616	773	432	660	445	1434	1252
20	in	157.13	136.13	69.63	33.75	18.00	28.00	18.50	3864	3310
500	mm	3991	3458	1768	857	4577	711	470	1664	1501
24	in	183.25	158.06	80.31	40.19	20.00	32.00	20.50	5898	5290
600	mm	4655	4015	2040	1021	508	813	521	2675	2399
30	in	223.50	192.25	99.00	49.75	26.00	36.00		9506	8880
750	mm	5677	4883	2515	1264	660	914		4311	4027
36	in	260.31	223.06	115.38	58.75	32.00	40.00		14306	13270
900	mm	6612	5666	2931	1492	813	1016		6488	6018
42	in	304.25	260.50	135.81	69.00	64.00	64.00		23605	22243
1050	mm	7728	6617	3450	1753	1626	1626		9325	87075



CLASS 300

Valve Size		A		B	C	F			Weight Lb/(Kg)	
		A (Open)	A (Close)			RF	WE	RTJ	FE	WE
6	in	69.56	62.56	31.31	31.31	15.88	15.88	16.50	583	501
150	mm	1767	1589	795	795	403	403	419.00	237	200
8	in	81.44	72.38	36.13	36.13	16.50	16.50	17.13	8441	710
200	mm	2068	1838	918	918	419	419	435	3828	322
10	in	97.38	86.00	42.63	42.63	18.00	18.00	18.63	1570	1410
250	mm	2473	2184	1083	1083	457	457	473	712	639
12	in	109.88	96.38	47.94	47.94	19.75	19.75	20.38	2080	1850
300	mm	2791	2448	1218	1218	502	502	518	943	839
16	in	130.75	114.13	57.50	57.50	33.00	33.00	33.63	3130	2500
400	mm	3321	2899	1461	1461	838	838	854	1420	1134
18	in	144.19	125.38	63.63	63.63	36.00	36.00	36.63	4374	3630
450	mm	3662	3185	1616	1616	914	914	930	1984	1646
20	in	159.50	161.63	70.75	70.75	39.00	39.00	39.75	5810	4836
500	mm	4051	4105	1797	1797	991	991	1010	2437	1995
24	in	186.81	161.63	83.13	83.13	45.00	45.00	45.88	10074	8814
600	mm	4745	4105	2111	2111	1143	1143	1165	3719	3147
30	in	225.31	194.06	101.38	101.38	55.00	55.00	56.00	15618	14410
750	mm	5723	4829	2575	2575	1397	1397	1422	5400	8453
36	in	270.25	233.00	122.06	122.06	66.00	66.00	69.13	20932	19250
900	mm	6864	5918	3100	3100	1727	1727	1756	8536	7773
42	in	309.88	266.13	138.19	138.19	84.00	84.00		35500	34234
1050	mm	7871	6760	3510	3510	2134	2134		12923	12349

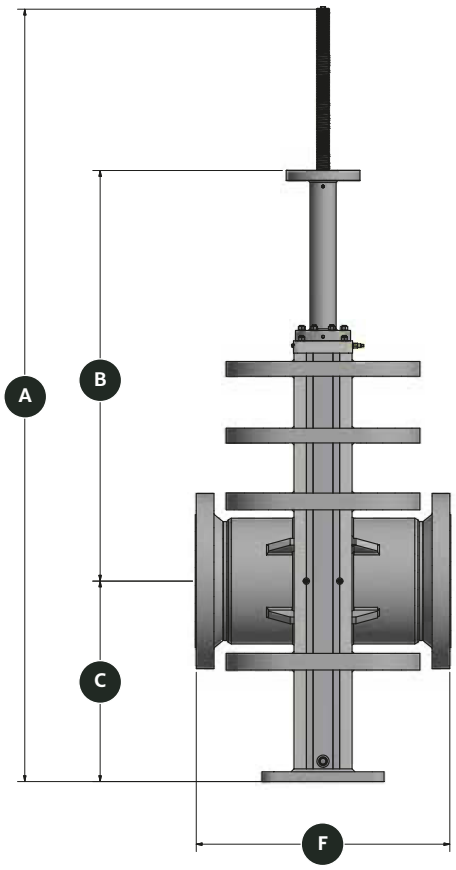
CLASS 600

Valve Size		A		B	C	F			Weight Lb/(Kg)	
		A (Open)	A (Close)			RF	WE	RTJ	FE	WE
6	in	68.56	61.56	31.31	13.13	22.00	22.00	22.13	653	513
150	mm	1742	1564	795	333	559	559	562	272	209
8	in	81.44	72.38	36.13	16.00	26.00	26.00	26.13	1011	821
200	mm	2068	86	918	406	660	660	664.00	431	331
10	in	97.38	2184.00	42.63	19.75	31.00	31.00	31.13	1750	1410
250	mm	2473	97	1083	502	787	787	791	794	639
12	in	110.38	96.88	47.94	23.44	33.00	33.00	33.13	2520	2100
300	mm	2804	2461	1218	595	838	838	841	1143	952
16	in	131.50	114.88	58.25	28.13	39.00	39.00	39.13	4218	3336
400	mm	3340	2918	1480	714	991	991	994	1833	1433
18	in	147.56	128.75	66.50	31.69	43.00	43.00	43.13	6177	6015
450	mm	3748	3270	1689	805	1092	1092	1092	2477	1995
20	in	161.00	140.00	71.25	34.75	47.00	47.00	47.25	7989	6763
500	mm	4089	3556	1822	883	1194	1194	1200	3368	2812
24	in	190.50	165.31	83.94	41.44	55.00	55.00	55.38	12947	11183
600	mm	4839	4199	2132	1052	1397	1397	1407	5158	4358
30	in	232.44	201.19	104.50	50.75	65.00	65.00	65.50	21812	19612
750	mm	5904	5110	2654	1289	1651	1651	1664	8141	7143
36	in	270.31	233.06	120.88	60.25	82.00	82.00	85.63	30194	27200
900	mm	6866	5920	3070	1530	2083	2083	2175	13693	12336
42	in	311.50	267.75	138.61	70.25	98.00	98.00		46890	43446
1050	mm	7912	6801	3526	1784	2489	2489		18315	16753

CONTINUED...

Valve Size		A		B	C	F			Weight Lb/(Kg)	
		A (Open)	A (Close)			RF	WE	RTJ	FE	WE
6	in	69.06	62.06	30.81	13.13	24.00	24.00	24.13	865	677
150	mm	1754	1576	783	333	610	610	613	298	213
8	in	81.94	72.88	36.13	16.50	29.00	29.00	29.13	1427	1075
200	mm	2081	1851	918	419	737	737	740.00	532	372
10	in	97.88	86.50	42.63	20.25	33.00	33.00	33.13	2736	2246
250	mm	2486	2197	1083	514	838	838	841	930	707
12	in	110.63	97.13	47.94	23.69	38.00	38.00	38.13	3524	2874
300	mm	2810	2467	1218	602	965	965	968	1410	1116
16	in	119.69	118.55	61.06	29.00	44.50	44.50	44.88	6703	5611
400	mm	3040	3012	1551	737	1130	1130	1140	2337	1841
18	in	126.88	108.06	68.38	32.69	48.00	48.00	48.50	8018	6560
450	mm	3434	2745	1737	830	1219	1219	1232	3637	2976
20	in	167.19	146.19	74.25	36.25	52.00	52.00	52.50	11510	9752
500	mm	4247	3713	1886	921	1321	1321	1334	4362	3565
24	in	194.75	159.56	87.06	42.56	61.00	61.00	57.00	18427	15327
600	mm	4947	4307	2211	1081	1549	1549	1448	7111	5705
30	in	235.00	203.75	106.06	5175.00	85.00	85.00	61.75	29264	25284
750	mm	5969	5175	2694	1314	2159	2159	1568	11782	9977

Please consult the M&J team for Class 1500, Class 2500 and bigger sizes.



ABOUT M&J VALVE

As a Celeros Flow Technology brand, M&J Valve is a key technology partner to companies across the globe that are involved in the storage, transportation, production or processing of gases and liquids. Founded in 1962, the M&J brand has an established history of product innovation and provides a wide variety of flow control solutions to the liquid, geothermal and gas markets.

The extensive M&J range includes control valves, gate valves, check valves, diverter valves and surge valves, plus flow loops for valve testing purposes. M&J valves make use of an array of different shut-off mechanisms (slab, piston, swing, rotary and axial) to satisfy a wide range of application characteristics. They are suitable for incorporation into overland and subsea pipelines, storage facilities, offshore platforms and pumping stations.

Thanks to high grade engineering and quality of manufacture, M&J valves can deal with a broad range of different pressure conditions and a large number of cycles, as well as offering ease of use, ongoing reliable operation and prolonged seal life. Comprehensive aftermarket services, accessible through the global network of Celeros Flow Technology service centers, help customers to maintain lifecycle performance and optimize return on investment.

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