



60-0619



An ISO 9001 : 2000 Certified Company



G M ENGINEERING



Gate Valve

One stop **solutions for** all types of **valve requirements**



One stop **solutions for** all types of **valve requirements**

Valve, with their diverse role, play a pivotal role in industries. And their crucial function calls for a careful approach and deep insights of the whole mechanism, where a valve is placed.

At GM Engineering, with years of experience of working for a whole gamut of industries, we have developed a sharp understanding of valves and their varying roles. Designed by engineering brilliance and developed with finest raw material and precision, our valves precisely does what is expected from them.



Valve **Applications**

- Chemical & Process industries
- Refineries
- Petrochemicals & Fertilizer Plants
- Pharmaceuticals
- Oil Exploration
- Thermal & Nuclear Plants
- Food & Beverage industries
- Effluent Treatment & Sewerage Plants
- Water Treatment
- Cooling water & Water supply plants
- Mining Industries etc



Environment

Acting Green

At GM Engineering thinking green is just an aspect of a whole story. Our concern for the environment doesn't end at thinking for it, we actually act in greener ways. We have invested heavily in technologies that ensure environment friendly manufacturing processes and go beyond. As a responsible corporate citizen, we are well aware of our social responsibilities and we are committed to give back the nature, in sustainable, thoughtful ways.



Who **we** are

GM Engineering offers you various range of industrial valves for all your process handling needs. GM Engineering's strength is quality products at affordable prices, prompt delivery and the unflinching commitment to excel. The products have been enjoying a sustained presence in the national for over last 10 years in chemical and process industries.

GM Engineering's Products are widely used in chemical & Process industries, Refineries, Petrochemicals & Fertilizer Plants, Pharmaceuticals, Oil Exploration, Thermal & Nuclear Plants, Food & Beverage industries, Effluent Treatment & Sewerage Plants, Water Treatment, Cooling water & Water supply plants, Mining Industries etc.

The Company was founded in Year 1996. GM Engineering achieved reputation and trust within a very short span. Thanks to our user friendly direct marketing, far sighted & honest business policy.

We are having vast experience in the field of valve manufacturing. Strict Quality control norms are maintained at various levels of production and full fledged testing facility through latest technology ensures constant quality.

Continuous development & products improvement is our motto.

GM Engineering has continually worked to develop innovative and quality products and has earned a reputation for technical excellence in the valve industry and accredited with ISO 9001:2000 Certification by TUV Sudddeutschland.

GM Engineering is certified by American Petroleum Institute to use API 6D Monogram. Research and development work continually made by GM Engineering Focusing at an advanced technology of environmental compatibility has resulted in a product range that warrants safe and reliable operation in compliance with virtually all and any requirements.

GM Engineering Offers design and technical assistance in developing varieties of products. GM Engineering is always ready to assist customers in developing products that can be mutual benefit and ensure GM as an ideal partner at all time. GM Continually strives to uphold the company objective to "Build a reputation in the field by providing proven in terms of perfection, Precision and Innovative Products Design with best possible quality / competitive price ratio".

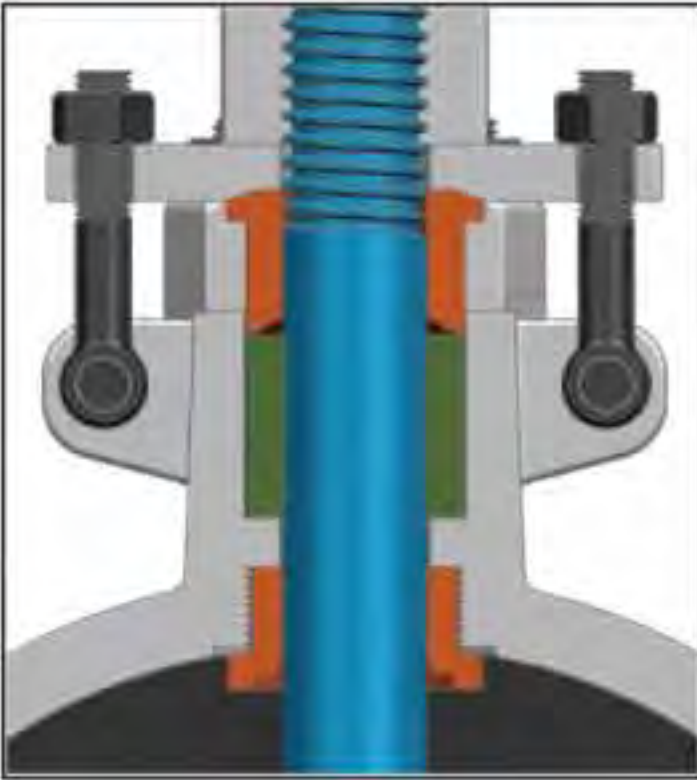
Leadership is the element that shows the way,
that sets the pace.

At **GM Engineering**, we are led with
courage, knowledge, experience and action.



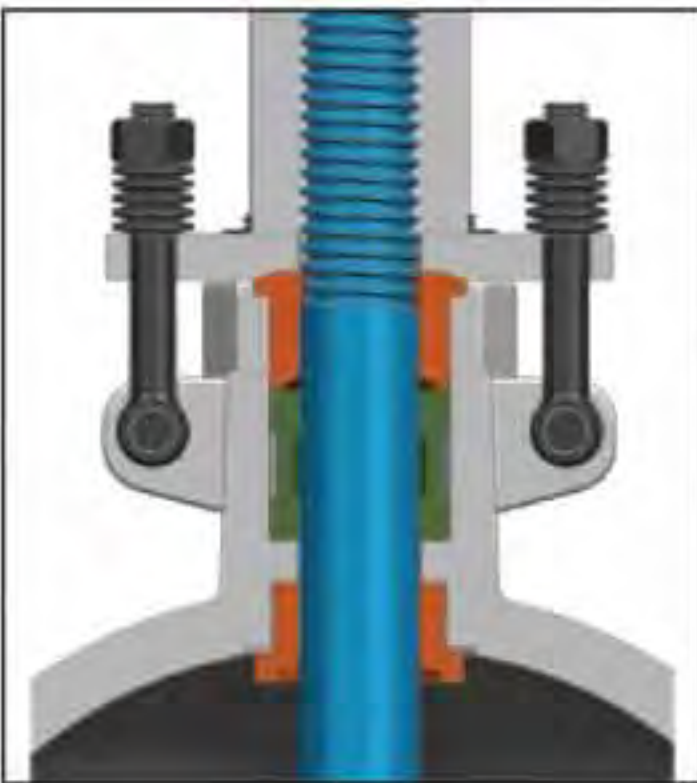
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Gate Valves - API 600 Design Features & Applications



Standard Stem

- Ensures leakage of less than 100 ppm
- Sealing is achieved when compression load is high
- Small Clearance between vital parts
- FineFinish Stem & Packing chamber
- Short & Narrow Packing chamber improves better sealing



Live loading Options

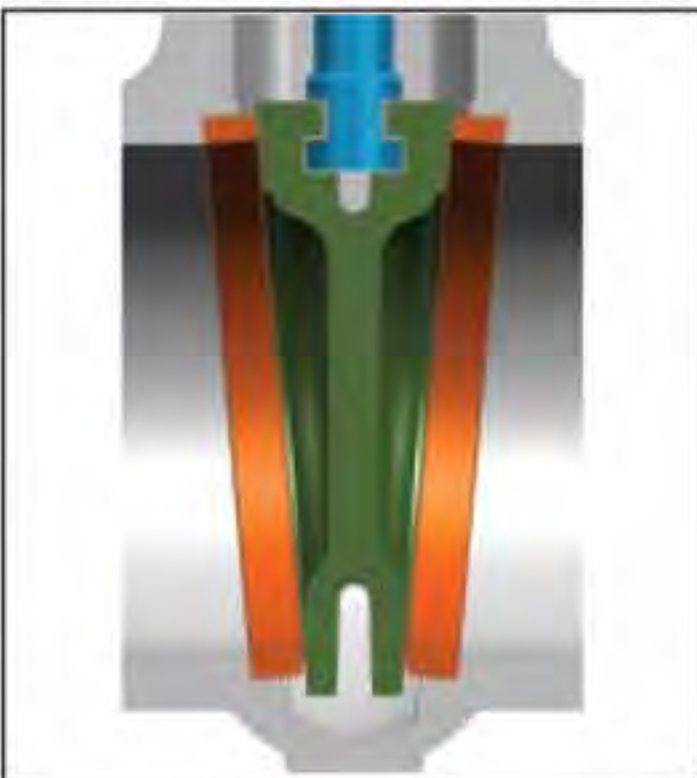
Live Loading Two sets of Belleville springs maintain a permanent packing stress. Live loading extends low emission service life especially in service with large pressure / temperature transients or frequent cycling

Lantern Ring

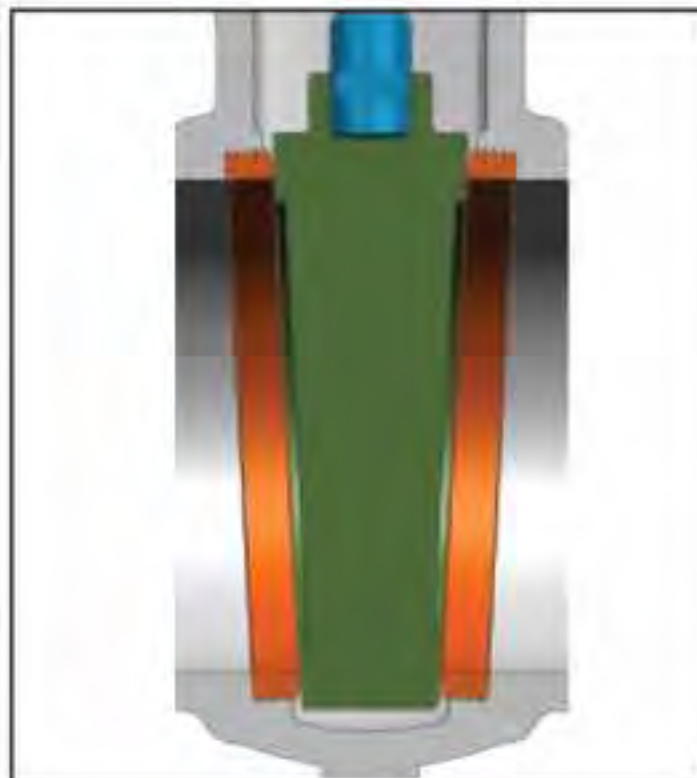
For Critical service a lantern ring & double packing can be provided with a leakoff connection. The leak-off is provided to allow connection of leakage from the lower packing set.

Wedge

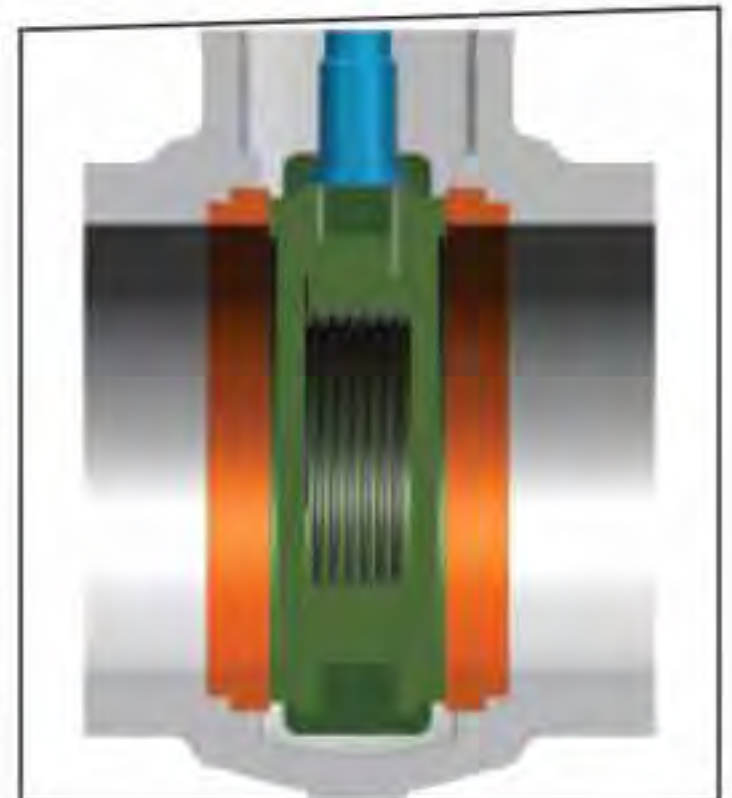
G M Offers varieties of wedge to suit your application



Flexible Wedge



Solid Wedge



Parallel Slide Wedge

Seat Ring

GM offers different seat ring design to suit your application



Screwed Seats with 13% CR



Welded Seat Ring With Stellite 6

GASKET SELECTION ACCORDING TO BODY MATERIAL

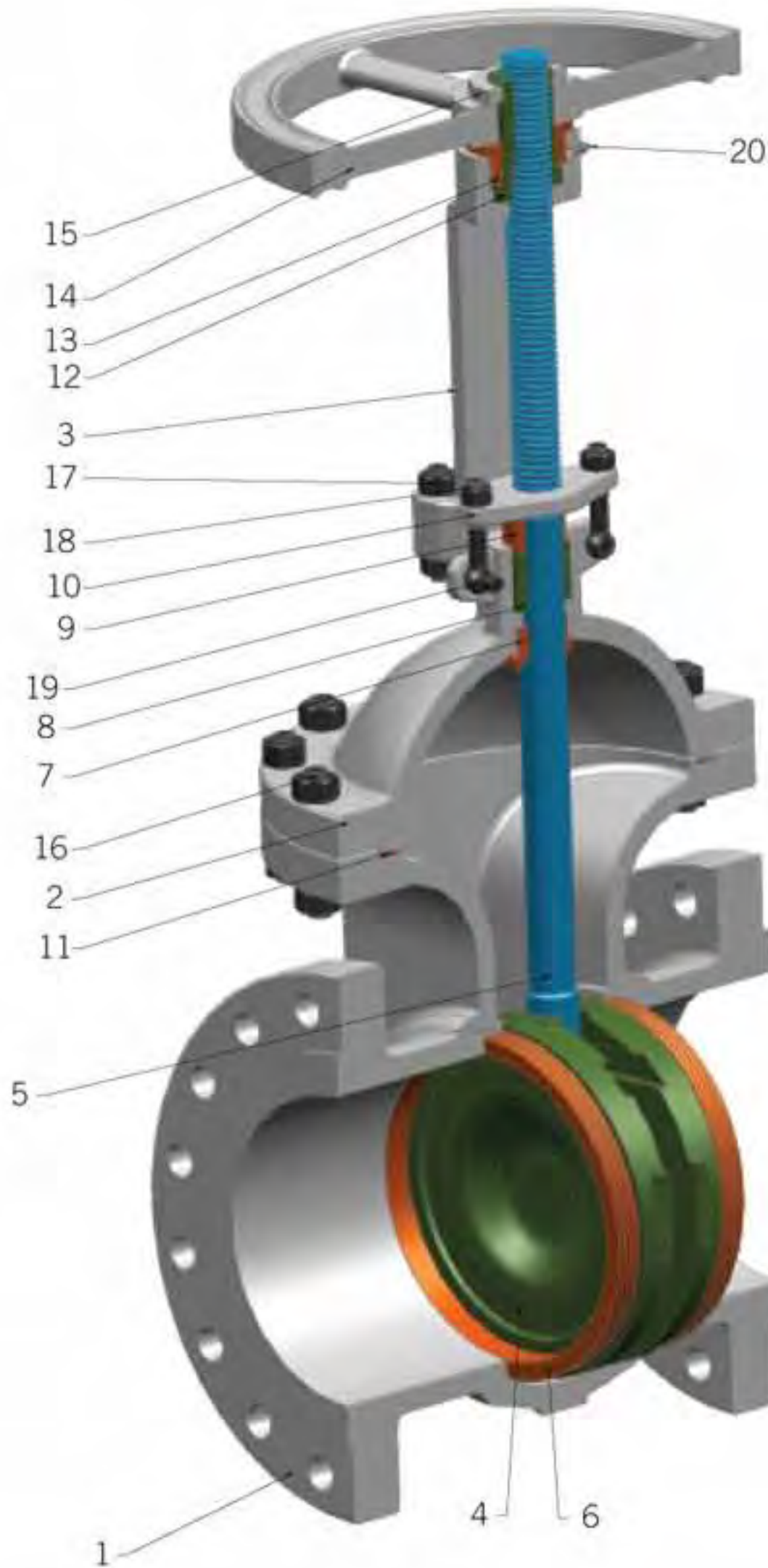
Gasket Type		Depending upon application the available choices can be:	
Type	CLASS	RTJ ring, winding strip or wrapped metal	Filler Material for spiral wound gasket or double jacketed gasket
Double Jacketed gasket.	150-300	Mild Steel (AISI 1010) Stainless Steel 304 Stainless Steel 316 Stainless Steel 304L Stainless Steel 316L Stainless Steel 347 Alloy 20 Monel 400 Titanium Nickel Inconel Hastelloy Duplex Copper Phos-Bronce	Rexicarb (flexible graphite) PTFE Non asbestos flexible super.
Spiral wound gasket.	150-600		
Ring joint type gasket.	600		

BOLTING MATERIAL

BODY / BONNET	BOLTS / NUTS	GLAND BOLTS OR EYE BOLTS
Carbon Steel & Low Alloy Steel	A-193-B7 / A-194-2H	A-193-B7 / A-194-2H
	For Sour Service : A-193-B7 Max Rc22 / 2H Optional: A-193-B7M/A-194-2HM	For Sour Service : A-193-B7 Max Rc22 / 2H Optional: A-193-B7M/A-194-2HM
Alloy Steel Above 850 F	A-193-B16/A-194-4H	A-193-B7/A-194-2H
Carbon Steel Temp. Lower than - 50 F	A-320-L7/A-194-4	A-193-N8/A-194-8 Strain Hardener
Crygenic Service Temp. Lower than - 150 F	A-193-B8/A-194-8 STrain Hardener	A-193-B8/A-194-8 Strain Hardener
Corrosive Service	Defined upon application	Defined upon application



Gate Valve



Applications

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- Petrochemicals & Fertilizer Plants
- Pharmaceuticals

- Oil Exploration
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- Food & Beverage industries
- Effluent Treatment & Sewerage Plants

- Water Treatment
- Cooling water & Water supply plants
- Mining Industries etc

Technical Specifications

3 Pcs. Floating Ball Valve

1	Body	ASTM A 216 GR. WCB	ASTM A 351 GR. CF8/CF8M	ASTM A 352 GR. LCB
2	Bonnet	ASTM A 216 GR. WCB	ASTM A 351 GR. CF8/CF8M	ASTM A 352 GR. LCB
3	Yoke	ASTM A 216 GR. WCB	ASTM A 351 GR. CF8/CF8M	ASTM A 352 GR. LCB
4	Wedge	UP TO 6" ASTM A 217 GR. CA15 AND ABOVE ASTM A 216 GR. WCB WITH 13% Cr. Facing	ASTM A 351 GR. CF8 + STELITED FACE / ASTM A 351 GR. CF8M + STELITED FACE	ASTM A 352 GR. LCB + STELITED FACE
5	STEM	ASTM A 276 TYPE 410 + STELITED FACE	*ASTM A 479 TYPE 304 + STELITED FACE / ASTM A 479 TYPE 316 + STELITED FACE*	ASTM A 276 TYPE 410 + STELITED FACE
6	Seat Ring	UP TO 12" ASTM A 217 GR. CA 15, AND ABOVE ASTM A 216 GR. WCB WITH 13% FACE	*ASTM A 479 TYPE 304 + STELITED FACE / ASTM A 479 TYPE 316 + STELITED FACE INTEGRAL + STELITED FACE*	ASTM A 352 GR. LCB + STELITED FACE
7	Back Seat Bush	UP TO 12" ASTM A 217 GR. CA 15, ABOVE 12" ASTM A 276 TYPE 410	*ASTM A 479 TYPE 304 / ASTM A 479 TYPE 316 / INTEGRAL + STELITED FACE*	ASTMA 276 TYPE 410
8	Gland Packing	BRAIDED GRAPHITE & DIE FORMED GRAPHITE RING	*BRAIDED GRAPHITE & DIE FORMED GRAPHITE RING / PTFE*	BRAIDED GRAPHITE & DIE FORMED GRAPHITE RING
9	Gland Bush	ASTM A 276 TYPE 410	*ASTM A 479 TYPE 304/ ASTM A 479 TYP 316*	ASTM A 276 TYPE 410
10	Gland Flange	ASTM A 216 GR. WCB	ASTM A 351 GR. CF8/CF8M	ASTM A 352 GR. LCB
11	Gasket	SPW SS 304 + GRAFOIL FILLER	SPW SS 304 + GRAFOIL FILLER	SPW SS 304 + GRAFOIL FILLER
12	Yoke Sleeve	EN 1A/NI-RESIST	EN 1A/NI-RESIST	EN 1A/NI-RESIST
13	Yoke Sleeve Nut	ASTM A 276 TYPE 410	*ASTM A 479 TYPE 304 / ASTM A 479 TYPE 316*	ASTM A 276 TYPE 410
14	Hand Wheel	MI / DI / CI	MI / DI / CI	MI / DI / CI
15	Hand Wheel Nut	ASTM A 276 TYPE 410	*ASTM A 479 GR. 304 / ASTM A 479 GR. 316*	ASTM A 276 TYPE 410
16	Body Stud & Nut	ASTM A 193 GR. B7 ASTM A 194 GR. 2H	ASTM A 193 GR. B8 / B8M ASTMA 194 GR. 8 / 8M	ASTM A 320 GR. L7 ASTM A 194 GR. 4
17	Yoke Stud & Nut	ASTM A 193 GR. B7 ASTM A 194 GR. 2H	ASTM A 193 GR. B8 / B8M ASTM A 194 GR. 8 / 8M	ASTM A 320 GR. L7 ASTM A 194 GR. 4
18	Eye Bolt & Nut	MS	MS	MS
19	Cross Pin	ASTM A 276 TYPE 410	ASTM A 479 GR. 304	ASTM A 276 TYPE 410
20	Grease Nipple	SS	SS	SS

DESIGN STANDARD

Basic Design	: API 600
Pressure Temperature Rating	: ASME B 16.34
Pressure Test	: API 598
Flange Ends	: ASME B 16.5
Butt Weld Ends	: ASME B 16.25
Face To Face	: ASME B 16.10

STANDARD FEATURES

- Flexible wedge design. (Choice of solid or split wedge available)
- Flanged or butt weld ends.
- OS & Y construction.
- Full port design according to ASME B16.34
- Renewable seat rings & seal welded.
- Available with Manual , Gear Operated, Electric Operated etc.



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Gate Valve Technical Features

GM bolted bonnet gate valves are designed and manufactured to provide maximum service life and dependability. All gate valves are full ported and meet the design requirements of API-600 and ANSI B16.34. Valves are available in a complete range of body/bonnet material and trims.

Swing Eye Bolts - facilitate maintenance and packing replacement.

Packing Box - Designed according to MSS-SP-120, alignment and allowances. Live load arrangements to compensate packing relaxation can be provided. Optional lantern rings and grease injectors are available.

Backseat - machined bonnet stem bushing provides backup stem seal. Can be hard faced for severe applications.

Body/Bonnet Joint - Joint design varies with ASME class rating. Normally 600 class and higher are furnished with ring type joint (RTJ)

Body - full ported, heavy duty body with API 600 wall thickness for maximum service life. Provided with bosses for optional by-passes or drains.

Seat Rings - renewable heavy duty full ported rings for easy maintenance.

Handwheel - Large handwheels for easy operation. Also available with gearing, motor actuators or cylinder actuators.

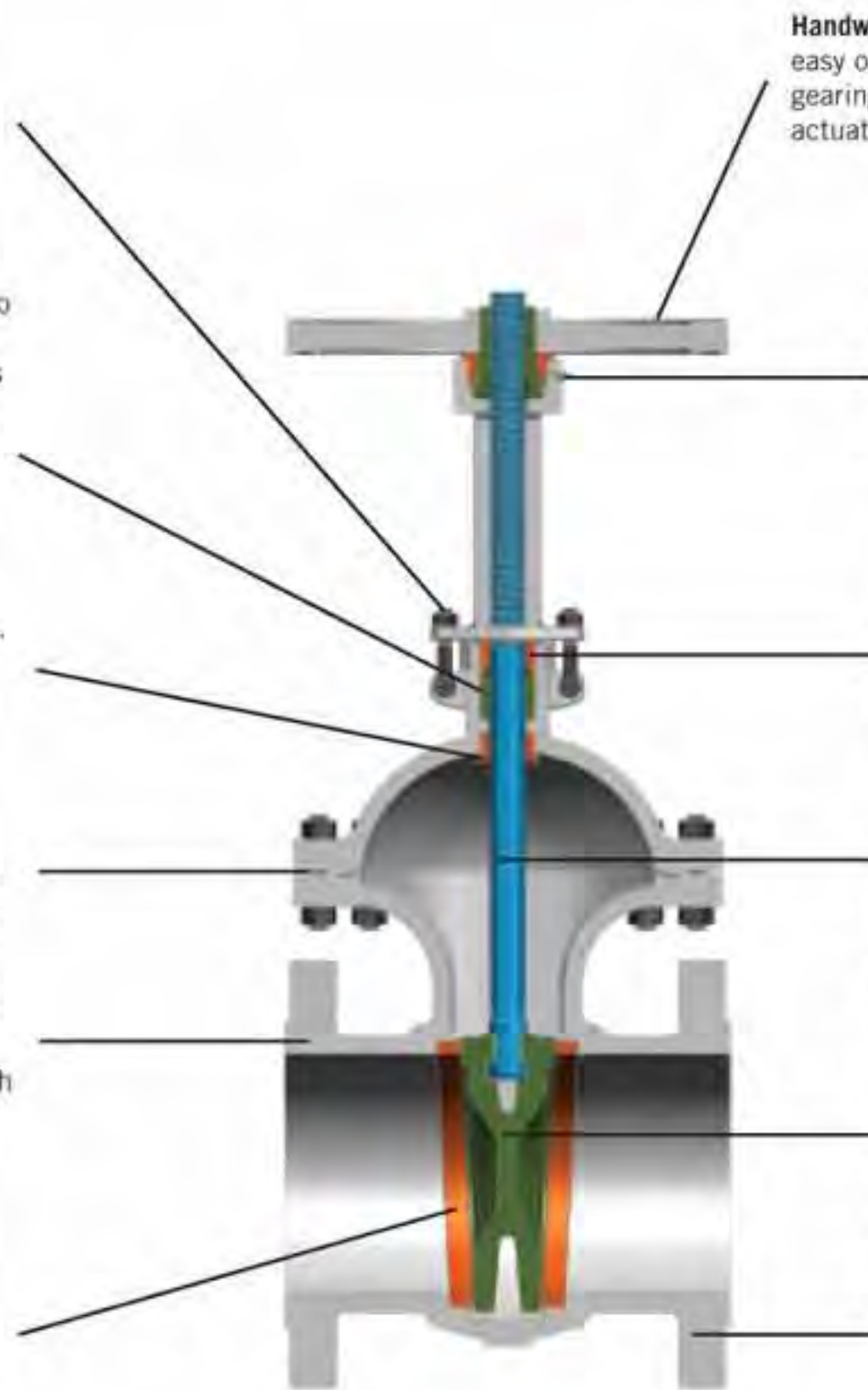
Stem Nut - Top entry design to facilitate maintenance. Needle or ball bearings are provided to reduce operating torque. Aluminium bronze is the standard material. Ni-resist can also be furnished.

Gland - Two-piece gland and gland flange is self-aligning to eliminate stem damage and provide uniform packing compression.

Stem - GM wedge gate valves are provided with integral T-head stems. The strength of the head is larger than the stem threads to comply with API 591 & API 600. This design also allows the wedge to self-align.

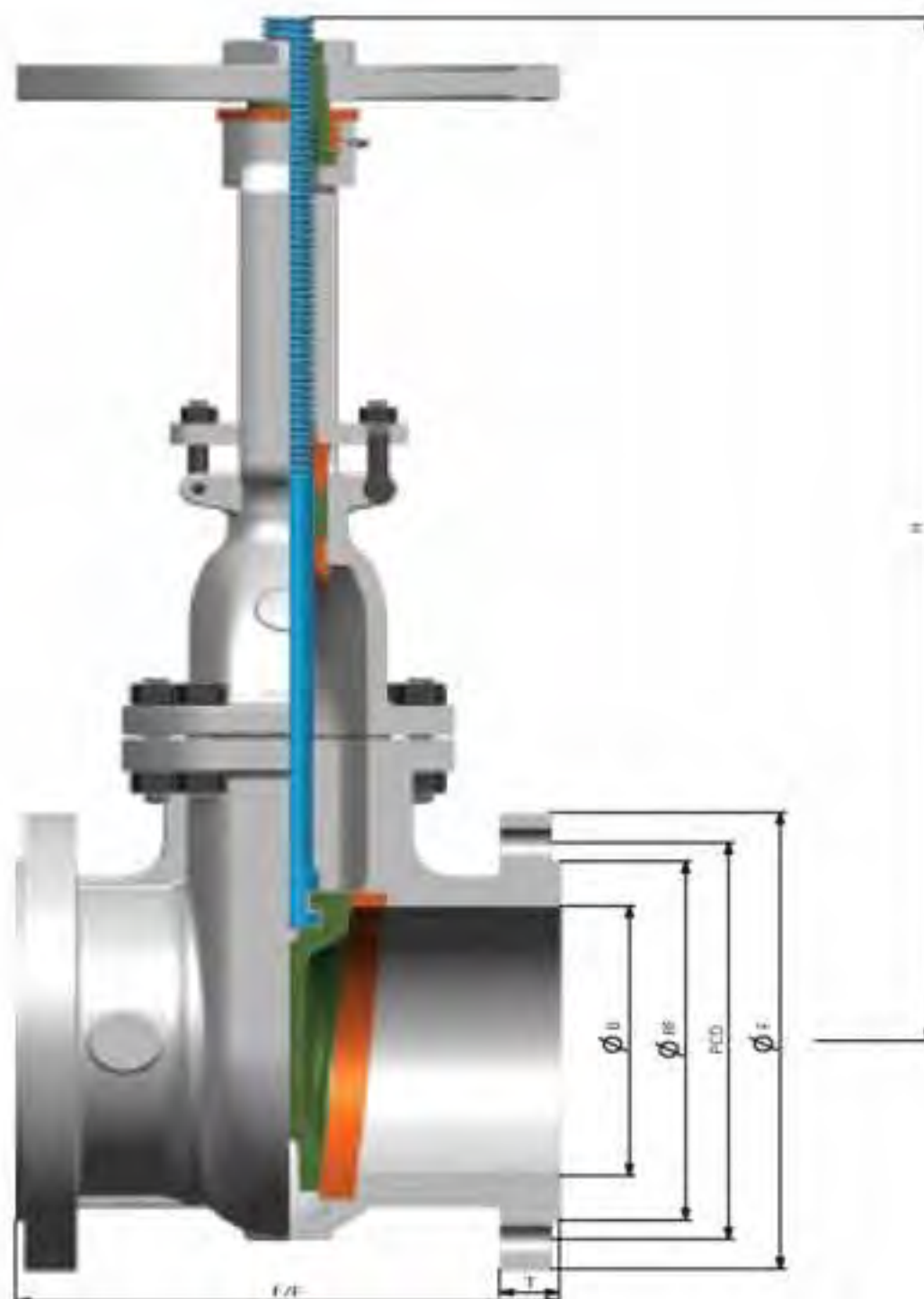
Wedge - Fully guided wedge precision fitted to body seats go exceed API 598 requirements. Available in solid, flex split and high performance seats designs.

End Connections - a choice of flanged or butt weld ends.



Body/bonnet materials include carbon and low carbon steels, low alloy and stainless steels. For Special applications they can be supplied in other grades of alloys. There's a full range of trim materials to match any service. Optional packing and gasket materials are available for a full range of service conditions.

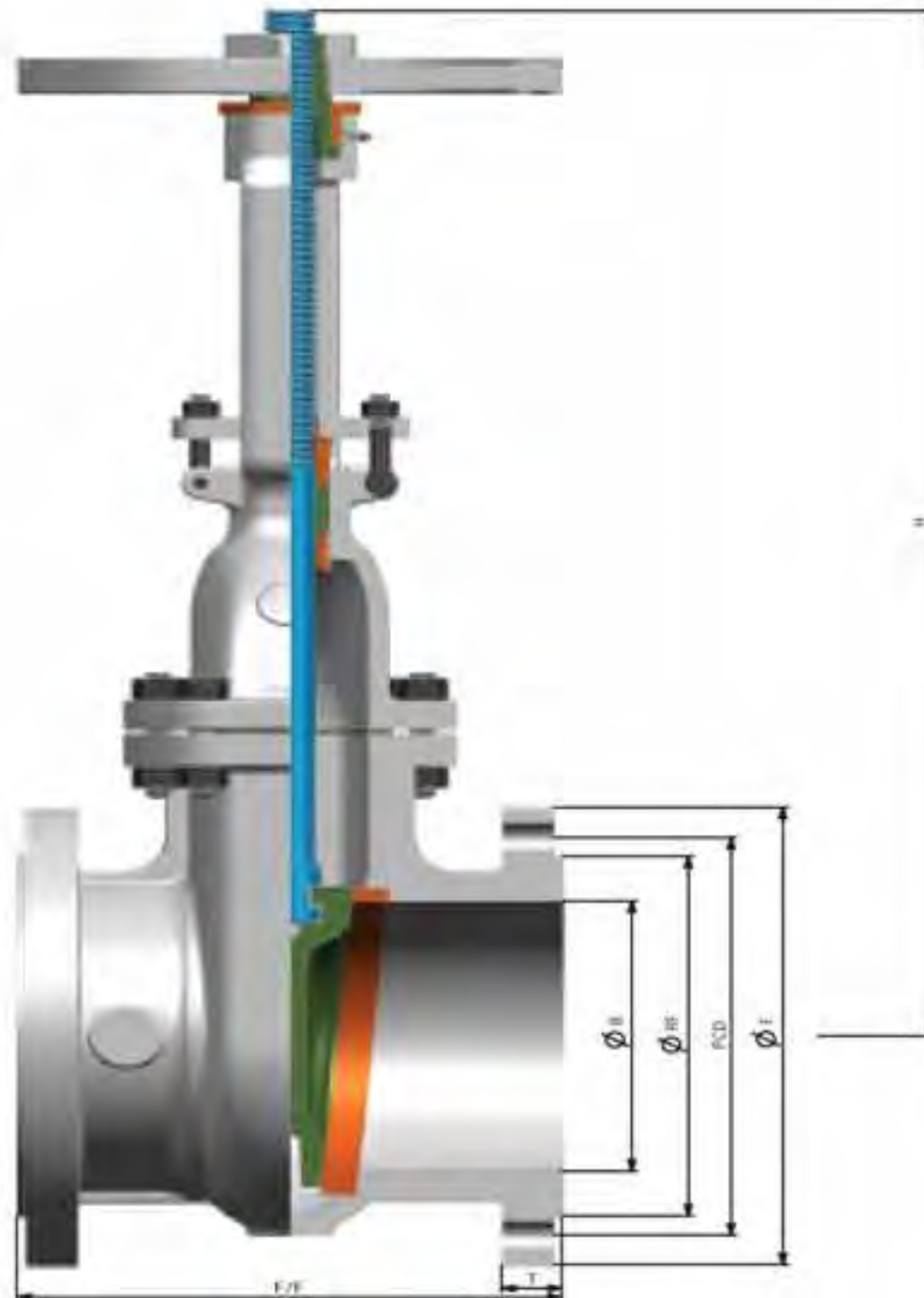
Gate Valve ASA 150# Class



Model No.: GM-100

Size	Ø B	F/F	Ø WH	H	Ø F	T	Ø R.F.	No. of Hole	Hole Ø	PCD
15 mm	12.5	108	76	200	90	10	34.9	4	15.875	60.3
20 mm	19	117	89	220	100	10.9	42.9	4	15.875	69.9
25 mm	25.4	127	102	250	110	11.6	50.8	4	15.875	79.4
40 mm	38	165	121	305	125	14.7	73	4	15.875	98.4
50 mm	51	178	216	315	150	16.3	92.1	4	19.1	120.7
65 mm	64	190	216	350	180	17.9	104.8	4	19.1	139.7
80 mm	76	203	230	390	190	19.5	127	4	19.1	152.4
100 mm	102	229	255	440	230	24.3	157.2	8	19.1	190.5
150 mm	152	267	310	600	280	25.9	215.9	8	22.2	241.3
200 mm	203	292	380	770	345	29	269.9	8	22.2	298.5
250 mm	254	330	460	925	405	30.6	323.8	12	25.4	362
300 mm	305	356	510	1060	485	32.2	381	12	25.4	431.8
350 mm	336	381	*	1200	535	35.4	412.8	12	28.6	476.3
400 mm	387	406	*	1340	595	37	469.9	16	28.6	539.8
450 mm	438	432	*	1510	635	40.1	533.4	16	31.8	577.9
500 mm	489	457	*	1680	700	43.3	584.2	20	31.8	635
600 mm	590	508	*	1900	815	48.1	692.2	20	35	749.3

Gate Valve ASA 300# Class

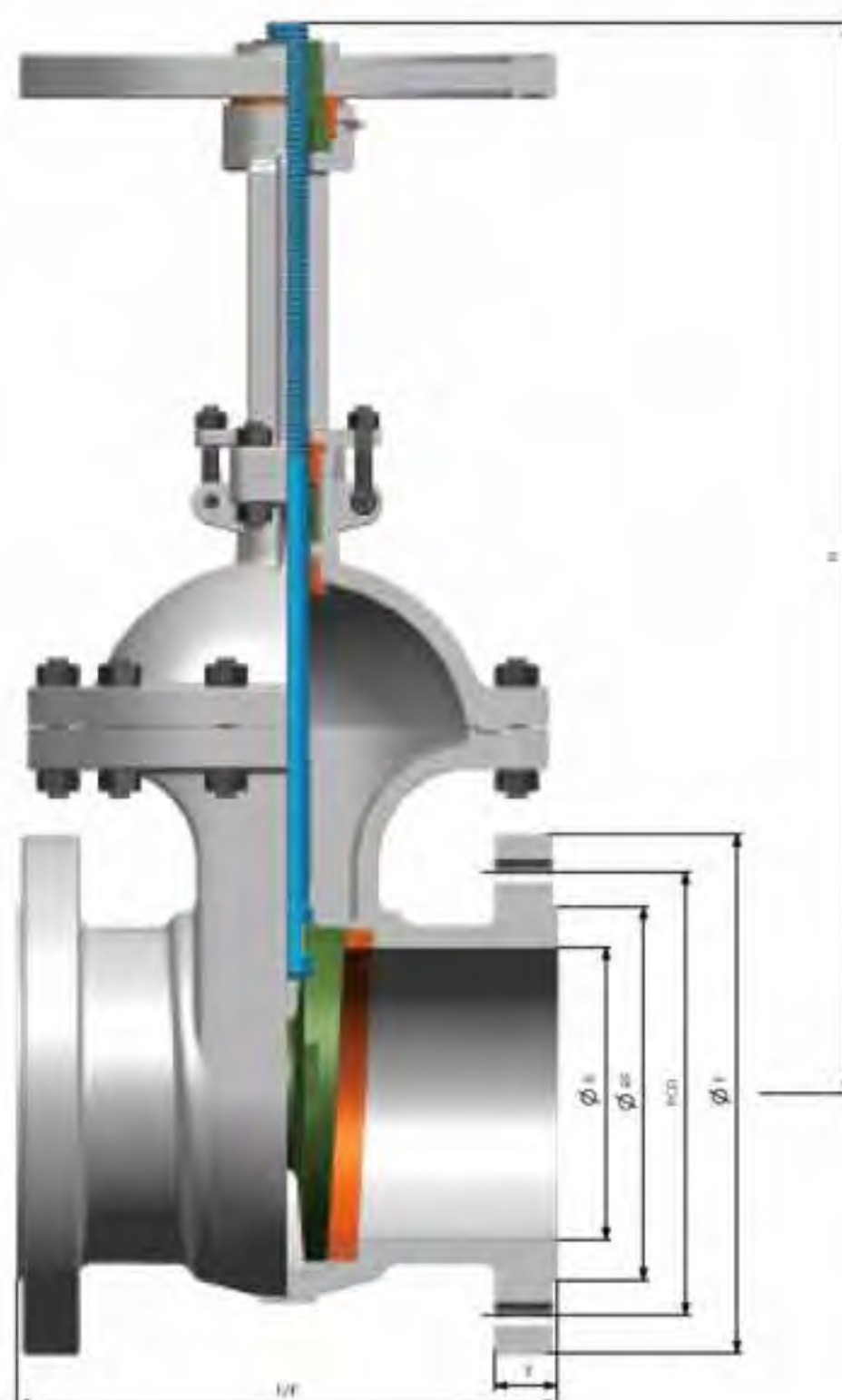


Model No.: GM-110

* Gear Operated

Size	Ø B	F/F	Ø WH	H	Ø F	T	Ø R.F.	No. of Hole	Hole Ø	PCD
15 mm	12.5	140	76	200	95	14.5	34.9	4	15.9	66.7
20 mm	19	152	90	220	115	16	42.9	4	19.1	82.6
25 mm	25.4	165	105	250	125	17.9	50.8	4	19.1	88.9
40 mm	38	190	120	305	155	21.1	73	4	22.2	114.3
50 mm	51	216	215	410	165	22.7	92.1	8	19.1	127
65 mm	64	241	215	500	190	25.9	104.8	8	22.2	149.2
80 mm	76	282	230	510	210	29	127	8	22.2	168.3
100 mm	102	305	254	605	255	32.2	157.2	8	22.2	200
150 mm	152	403	380	842	320	37	215.9	12	22.2	269.9
200 mm	203	419	460	1030	380	41.7	269.9	12	25.4	330.2
250 mm	254	457	510	1295	445	48.1	323.8	16	28.6	387.4
300 mm	305	502	560	1475	520	51.3	381	16	31.8	450.8
350 mm	336	762	*	1580	585	54.4	412.8	20	31.8	514.5
400 mm	387	838	*	1720	650	57.6	469.9	20	34.9	571.5
450 mm	438	914	*	1870	710	60.8	533.4	24	34.9	628.6
500 mm	489	991	*	2030	775	64	584.2	24	34.9	685.8
600 mm	590	1143	*	2180	915	70.3	692.2	24	41.3	812.8

Gate Valve ASA 600# Class



Model No.: GM-120

* Gear Operated

Size	Ø B	F/F	Ø WH	H	Ø F	T	Ø R.F.	No. of Hole	Hole Ø	PCD
15 mm	12.5	165	76	190	95	14.5	34.9	4	15.9	66.7
20 mm	19	190	89	230	115	16	42.9	4	19.1	82.6
25 mm	25.4	216	102	250	125	17.5	50.8	4	19.1	88.9
40 mm	38	241	121	310	155	22.5	73	4	22.2	114.3
50 mm	51	292	216	360	165	32.4	92.1	8	19.1	127
65 mm	64	330	230	440	190	35.6	104.8	8	22.2	149.2
80 mm	76	356	254	460	210	38.8	127	8	22.2	168.3
100 mm	102	432	310	550	275	45.1	157.2	8	25.4	215.9
150 mm	152	559	510	795	355	54.7	215.9	12	28.6	292.1
200 mm	203	660	560	865	420	62.6	269.9	12	31.8	349.2
250 mm	254	787	*	1050	510	70.5	323.8	16	34.9	431.8
300 mm	305	838	*	1200	560	73.7	381	20	34.9	489
350 mm	336	889	*	1350	605	76.9	412.8	20	38.1	527
400 mm	387	991	*	1500	685	83.2	469.9	20	41.3	603.2
450 mm	438	1092	*	1700	745	89.6	533.4	20	44.5	654
500 mm	489	1194	*	1880	815	95.9	584.2	24	44.5	723.9
600 mm	590	1397	*	2150	940	108.6	692.2	24	50.8	838.2

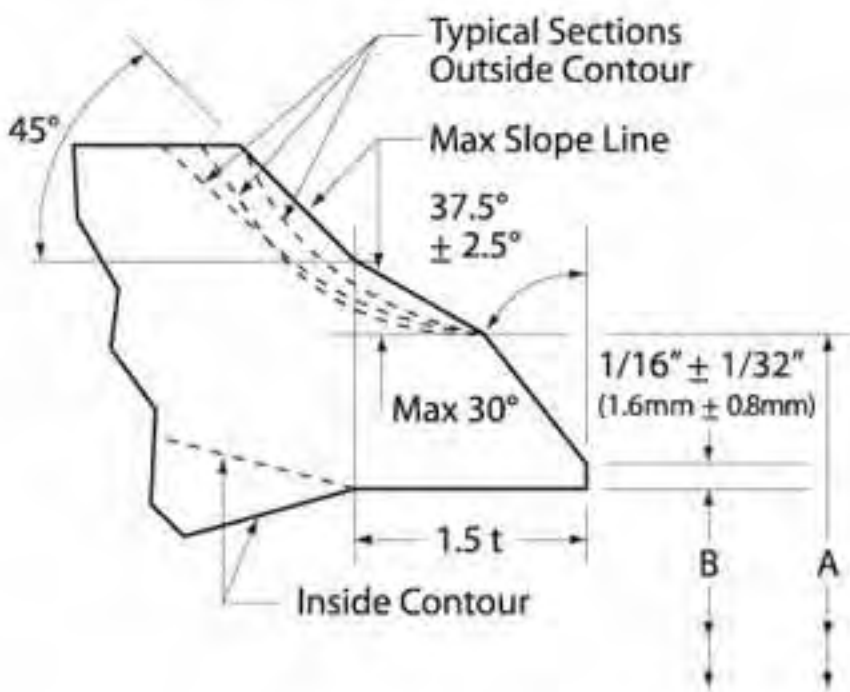


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Butt-welding Dimension - ANSI B16.25

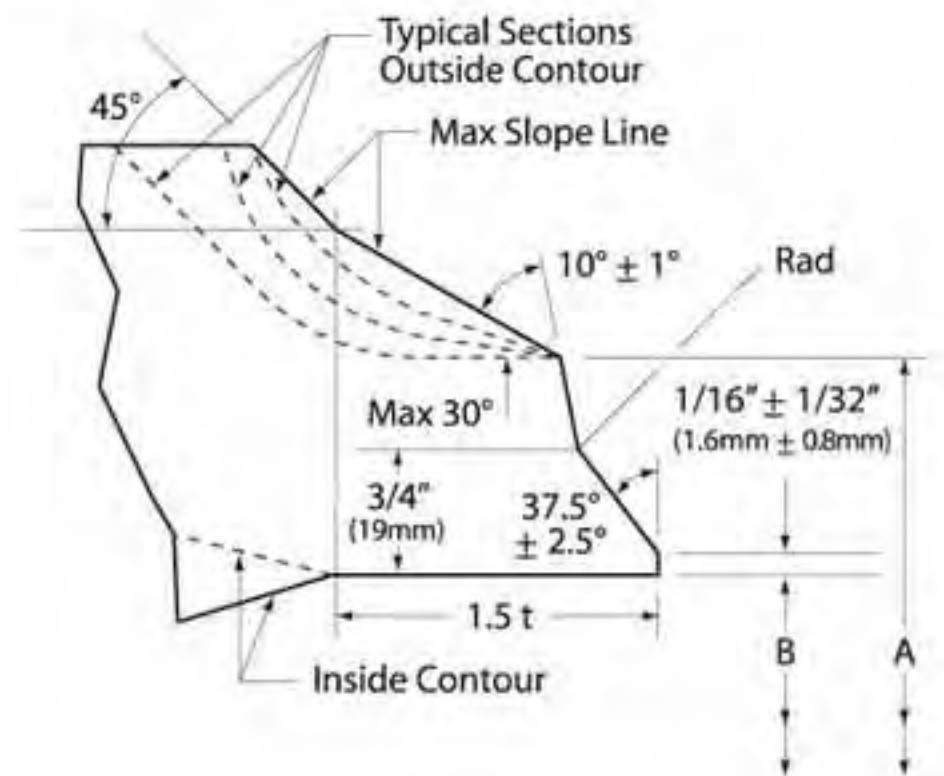
Plain Bevel Butt-welding End for Pipe Wall Thickness is 7/8" (22.23mm) or less.

Welding end details for cast components for use without backing ring or with split backing ring.



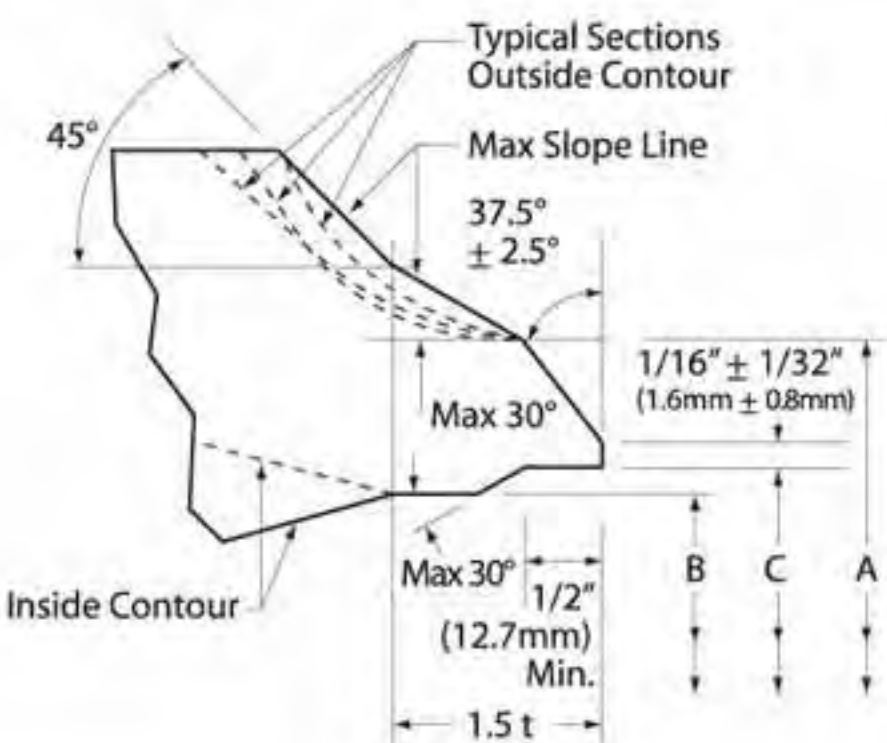
Compound Bevel Butt-welding End for Pipe wall thickness greater than 7/8" (22.23mm).

Welding end details for cast components for use without backing ring or with split backing ring.



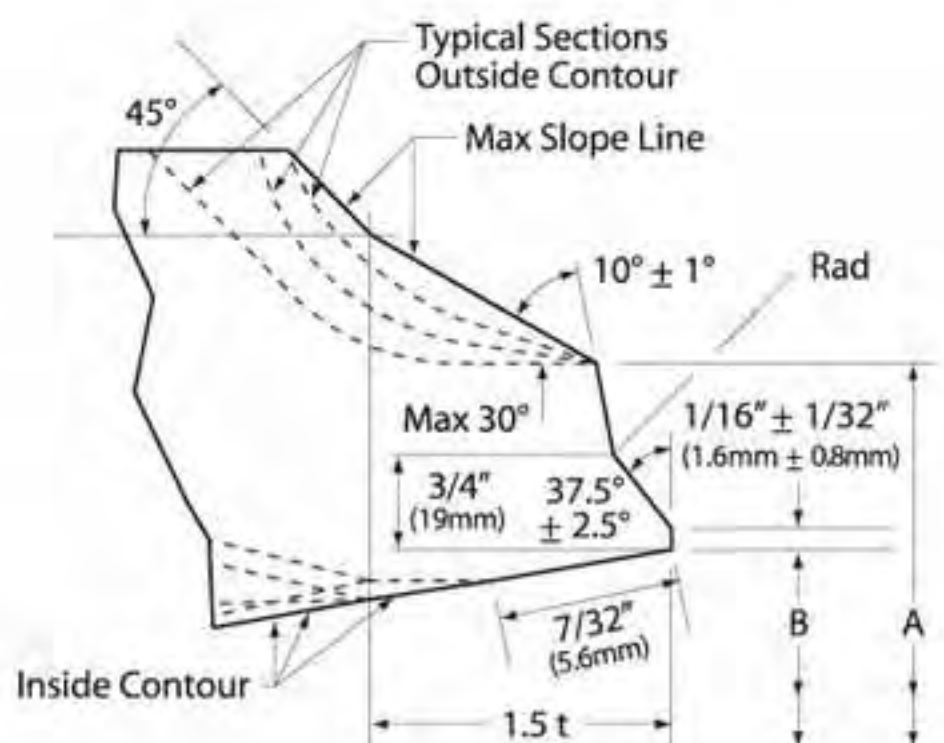
Plain Bevel Butt-welding End for Pipe Wall Thickness is 7/8" (22.23mm) or less.

Welding end details for cast components for use with continuous rectangular or tapered backing ring.



Compound Bevel Butt-welding End for Pipe Wall Thickness greater than 7/8" (22.23mm).

Welding end details for cast components for use with continuous rectangular or tapered backing ring.



Normal Pipe Size	Schedule Number or Wall	Outside Diameter (Cast Steel Valves)		Nominal Inside Diameter		Machined Inside Diameter		Nominal Wall Thickness	
		Inches A	mm	Inches B	mm	Inches C	mm	Inches D	mm
3	xxs	3-19/32	91.282	2.300	58.42	2.409	61.19	0.600	15.24
4	xxs	4-5/8	117.48	3.152	80.06	3.279	83.29	0.674	17.12
5	160	5-11/16	144.46	4.313	109.55	4.428	112.47	0.625	15.88
	xxs			4.063	103.20	4.209	106.91	0.750	19.05
6	120	6-25/32	172.34	5.501	139.72	5.600	142.24	0.562	14.27
	160			5.189	131.80	5.327	135.31	0.719	18.26
	xxs			4.897	124.38	5.072	128.83	0.864	21.95
8	100	8-23/32	223.04	7.439	188.93	7.546	191.67	0.594	15.09
	120			7.189	182.60	7.327	186.11	0.719	18.26
	140			7.001	177.83	7.163	181.94	0.812	20.62
	xxs			6.875	174.63	7.053	179.15	0.875	22.23
	160	10-15/16	277.81	6.813	173.05	6.998	177.75	0.960	23.01
10	50			9.564	242.93	9.671	245.64	0.594	15.09
	100			9.314	236.58	9.452	240.08	0.719	18.26
	120			9.064	230.23	9.234	234.54	0.844	21.44
	140			8.750	222.25	8.959	227.56	1.000	25.40
	160	12-31/32	329.41	8.500	215.90	8.740	222.00	1.125	28.58
12	60			11.626	295.30	11.725	297.82	0.562	14.27
	80			11.376	288.95	11.507	292.28	0.688	17.48
	100			11.064	281.03	11.234	284.34	0.844	21.44
	120			10.750	273.05	10.959	278.36	1.000	25.40
	140			10.500	266.70	10.740	272.80	1.125	28.58
	160	14-1/4	361.95	10.126	257.20	10.413	264.49	1.312	33.32
14	60			12.814	352.48	12.921	328.19	0.594	15.09
	80			12.500	317.50	12.646	321.21	0.750	19.05
	100			12.126	308.00	12.319	312.90	0.938	23.83
	120			11.814	300.08	12.06	305.97	1.094	27.79
	140			11.500	292.10	11.771	298.98	1.250	31.75
	160			11.188	284.18	11.498	292.05	1.406	35.71
16	60	16-1/4	412.75	14.688	373.08	14.811	376.20	0.656	16.66
	80			14.314	363.58	14.484	367.89	0.844	21.44
	100			13.938	354.03	14.155	359.54	1.031	26.19
	120			13.564	344.53	13.827	351.21	1.219	30.96
	140			13.124	333.35	13.442	341.43	1.438	36.53
	160	18-9/32	464.34	12.814	325.48	13.171	334.54	1.594	40.49
18	40			16.876	428.65	16.975	431.17	0.562	14.27
	60			16.500	419.10	16.646	422.81	0.750	19.05
	80			16.126	409.60	16.319	414.50	0.938	23.83
	100			15.688	398.48	15.936	404.50	1.156	29.36
	120			15.250	387.35	15.553	395.05	1.375	34.93
	140	14.876	377.85	15.225	386.72	1.562	39.67		
	160	20-5/16	515.94	14.438	366.73	14.842	376.99	1.781	45.24
20	40			18.814	477.88	18.921	480.59	0.594	15.09
	60			18.376	466.75	18.538	470.87	0.812	20.62
	80			17.938	455.63	18.155	461.14	1.031	26.19
	100			17.438	442.93	17.717	450.14	1.281	32.54
	120			17.000	431.80	17.334	440.28	1.500	38.10
	140			16.500	419.10	16.896	429.16	1.750	44.45
	160	24-3/8	619.13	16.064	408.03	16.515	419.48	1.969	50.01
24	30			22.876	581.05	22.975	583.57	0.562	14.27
	40			22.626	574.70	22.757	578.03	0.688	17.48
	60			22.064	560.43	22.265	565.53	0.969	24.61
	80			21.564	547.73	21.827	554.41	1.219	30.96
	100			20.938	531.83	21.280	540.51	1.531	38.89
	120			20.376	517.55	20.788	528.02	1.812	46.02
	140			19.876	504.85	20.350	516.89	2.062	52.37
	160	19.314	490.58	19.859	504.42	2.344	59.54		



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Pressure Temperatures Ratings ASME B16.34-2009

150	Temp. F	A105	WCB	LF2	WCC	LCB	WC6	LCC	C5	C12	C12A	316	CF8M	F51	F53	
	-20 to 100	288	288	288	290	265	290	290	290	290	290	290	275	275	290	290
	200	260	260	260	260	255	260	260	260	260	260	260	235	235	260	260
	300	230	230	230	230	230	230	230	230	230	230	230	215	215	230	230
	400	200	200	200	200	200	200	200	200	200	200	200	195	195	200	200
	500	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
	600	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
	650	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
	700	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
	750	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
	800	80	80	80	80	80	80	80	80	80	80	80	80	80	/	/
	850	65	65	65	65	65	65	65	65	65	65	65	65	65	/	/
	900	50	50	50	50	50	50	50	50	50	50	50	50	50	/	/
	950	35	35	35	35	35	35	35	35	35	35	35	35	35	/	/
	1000	20	20	20	20	20	20	20	20	20	20	20	20	20	/	/
	1050	/	/	/	/	/	20	/	20	20	20	20	20	20	/	/
1100	/	/	/	/	/	20	/	20	20	20	20	20	20	/	/	
1150	/	/	/	/	/	20	/	20	20	20	20	20	20	/	/	
1200	/	/	/	/	/	15	/	15	20	20	20	20	20	/	/	
1250	/	/	/	/	/	/	/	/	/	/	/	20	20	/	/	
1300	/	/	/	/	/	/	/	/	/	/	/	20	20	/	/	
1350	/	/	/	/	/	/	/	/	/	/	/	20	20	/	/	
1400	/	/	/	/	/	/	/	/	/	/	/	20	20	/	/	
1450	/	/	/	/	/	/	/	/	/	/	/	20	20	/	/	
1500	/	/	/	/	/	/	/	/	/	/	/	15	15	/	/	

300	Temp. F	A105	WCB	LF2	WCC	LCB	WC6	LCC	C5	C12	C12A	316	CF8M	F51	F53	
	-20 to 100	740	740	740	750	695	750	750	750	750	750	750	720	720	750	750
	200	680	680	680	750	660	750	750	750	750	750	750	620	620	745	745
	300	655	655	655	730	640	720	730	730	730	730	730	560	560	665	665
	400	635	635	635	705	615	695	705	705	705	705	705	515	515	615	615
	500	605	605	605	665	585	665	665	665	665	665	665	480	480	580	580
	600	570	570	570	605	550	605	605	605	605	605	605	450	450	555	555
	650	550	550	550	590	535	590	590	590	590	590	590	440	440	545	545
	700	530	530	530	555	510	570	555	570	570	570	570	435	435	540	540
	750	505	505	505	505	475	530	505	530	530	530	530	425	425	530	530
	800	410	410	410	410	390	510	410	510	510	510	510	420	420	/	/
	850	320	320	320	320	300	485	320	485	485	485	485	420	420	/	/
	900	230	230	230	225	200	450	225	375	450	450	450	415	415	/	/
	950	135	135	135	135	135	320	135	275	375	385	385	385	385	/	/
	1000	85	85	85	85	85	215	85	200	255	365	365	365	365	/	/
	1050	/	/	/	/	/	145	/	145	170	360	160	160	160	/	/
1100	/	/	/	/	/	95	/	100	115	300	305	305	305	/	/	
1150	/	/	/	/	/	65	/	60	75	225	235	235	235	/	/	
1200	/	/	/	/	/	40	/	35	50	145	185	185	185	/	/	
1250	/	/	/	/	/	/	/	/	/	/	145	145	145	/	/	
1300	/	/	/	/	/	/	/	/	/	/	115	115	115	/	/	
1350	/	/	/	/	/	/	/	/	/	/	95	95	95	/	/	
1400	/	/	/	/	/	/	/	/	/	/	75	75	75	/	/	
1450	/	/	/	/	/	/	/	/	/	/	60	60	60	/	/	
1500	/	/	/	/	/	/	/	/	/	/	40	40	40	/	/	

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	Temp. F	A105	WCB	LF2	WCC	LCB	WC6	LCC	C5	C12	C12A	316	CF8M	F51	F53
600	-20 to 100	1480	1480	1480	1500	1395	1500	1500	1500	1500	1500	1440	1440	1500	1500
	200	1360	1360	1360	1500	1320	1500	1500	1500	1500	1500	1240	1240	1490	1490
	300	1310	1310	1310	1455	1275	1445	1455	1455	1455	1455	1120	1120	1335	1335
	400	1265	1265	1265	1405	1230	1385	1405	1410	1410	1410	1025	1025	1230	1230
	500	1205	1205	1205	1330	1175	1330	1330	1330	1330	1330	995	995	1160	1160
	600	1135	1135	1135	1210	1105	1210	1210	1210	1210	1210	900	900	1115	1115
	650	1100	1100	1100	1175	1065	1175	1175	1175	1175	1175	885	885	1095	1095
	700	1060	1060	1060	1110	1025	1135	1110	1135	1135	1135	870	870	1085	1085
	750	1015	1015	1015	1015	955	1065	1015	1065	1065	1065	855	855	1065	1065
	800	825	825	825	825	780	1015	825	1015	1015	1015	845	845	/	/
	850	640	640	640	640	595	975	640	975	975	975	835	835	/	/
	900	460	460	460	445	405	900	445	745	900	900	830	830	/	/
	950	275	275	275	275	275	640	275	550	755	775	775	775	/	/
	1000	170	170	170	170	170	430	170	400	505	725	725	725	/	/
	1050	/	/	/	/	/	290	/	290	345	720	720	720	/	/
	1100	/	/	/	/	/	190	/	200	225	605	610	610	/	/
	1150	/	/	/	/	/	130	/	125	150	445	475	475	/	/
	1200	/	/	/	/	/	80	/	70	105	290	370	370	/	/
	1250	/	/	/	/	/	/	/	/	/	/	295	295	/	/
	1300	/	/	/	/	/	/	/	/	/	/	235	235	/	/
1350	/	/	/	/	/	/	/	/	/	/	190	190	/	/	
1400	/	/	/	/	/	/	/	/	/	/	150	150	/	/	
1450	/	/	/	/	/	/	/	/	/	/	115	115	/	/	
1500	/	/	/	/	/	/	/	/	/	/	85	85	/	/	
900	-20 to 100	2220	2220	2220	2250	2090	2250	2250	2250	2250	2250	2160	2160	2250	2250
	200	2035	2035	2035	2250	1980	2250	2250	2250	2250	2250	1860	1860	2230	2230
	300	1965	1965	1965	2185	1915	2165	2185	2185	2185	2185	1680	1680	2000	2000
	400	1900	1900	1900	2110	1845	2080	2110	2115	2115	2115	1540	1540	1845	1845
	500	1810	1810	1810	1995	1760	1995	1995	1995	1995	1995	1435	1435	1740	1740
	600	1705	1705	1705	1815	1655	1815	1815	1815	1815	1815	1355	1355	1670	1670
	650	1650	1650	1650	1765	1600	1765	1765	1765	1765	1765	1325	1325	1640	1640
	700	1590	1590	1590	1665	1535	1705	1665	1705	1705	1705	1305	1305	1625	1625
	750	1520	1520	1520	1520	1430	1595	1520	1595	1595	1595	1280	1280	1595	1595
	800	1235	1235	1235	1235	1175	1525	1235	1525	1525	1525	1265	1265	/	/
	850	955	955	955	955	895	1460	955	1460	1460	1460	1255	1255	/	/
	900	690	690	690	670	605	1350	670	1120	1350	1350	1245	1245	/	/
	950	410	410	410	410	410	955	410	825	1130	1160	1160	1160	/	/
	1000	255	255	255	255	255	650	255	595	760	1090	1090	1090	/	/
	1050	/	/	/	/	/	430	/	430	515	1080	1080	1080	/	/
	1100	/	/	/	/	/	290	/	300	340	905	915	915	/	/
	1150	/	/	/	/	/	195	/	185	225	670	710	710	/	/
	1200	/	/	/	/	/	125	/	105	155	430	555	555	/	/
	1250	/	/	/	/	/	/	/	/	/	/	440	440	/	/
	1300	/	/	/	/	/	/	/	/	/	/	350	350	/	/
1350	/	/	/	/	/	/	/	/	/	/	290	290	/	/	
1400	/	/	/	/	/	/	/	/	/	/	225	225	/	/	
1450	/	/	/	/	/	/	/	/	/	/	175	175	/	/	
1500	/	/	/	/	/	/	/	/	/	/	125	125	/	/	



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Notes

A large area of the page is filled with horizontal blue lines, serving as a template for taking notes.

Our Other Products



For Further Inquiries Contact :



G M ENGINEERING

Office & Works

Plot No.:2632, G.I.D.C. Lodhika,
Village: Metoda - 360 021.
Dist.: Rajkot, INDIA.

+91.2827.287658 +91.2827.287857
+91.92280.05558 valve@gmengg.com
+91.92280.05559 www.gmengg.com

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