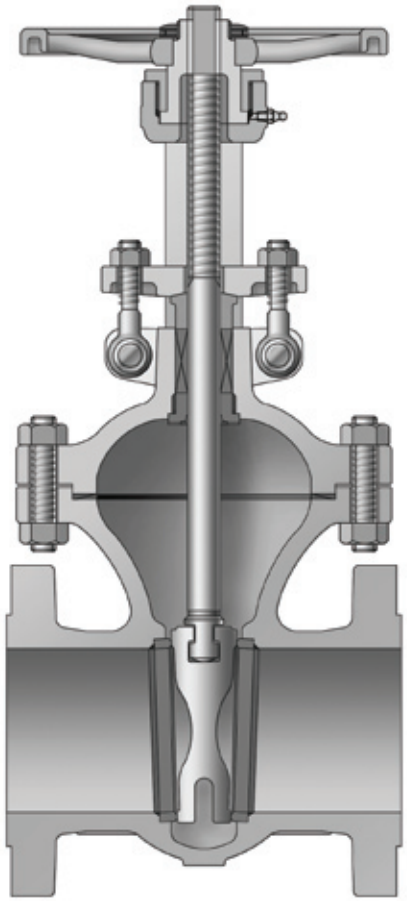
GATE VALVES



FUNCTION

Gate valve is characterized by a sliding wedge which is moved by actuator perpendicular to the flow direction. There are a variety of valve sizes and types. The valve is used primarily as a stop valve to open or close fully. Normally it works for slurries, viscous fluid, etc.,but not for throttling. The gate valve usually has a minimum pressure drop in full open and a tight seal in full close, and therefore there is little possibility that contaminants may enter the valve.

BODY AND BONNET

The body and bonnet is designed to achieve most uniform distribution of stress on all sides and minimum turbulence and resistance to flow. The bonnet on valve is equipped with back seat ring up to 12" for Class 150 & 300 and up to 10" for Class 600 or higher. The yoke is integrated with bonnet.

BODY-BONNET JOINT

Body-bonnet joint of gate valve is machined as follows:
Class 150 ····· Plain faced
Class 300 and higher class ····· Male and female
We can supply any kinds of gasket as required by customer.

WEDGE

The valve is normally supplied with a one-piece flexible wedge of which the cross section is a tapered H shape.
All wedges are fully guided. The flexible wedge is cast or machined with circumferential grooves to allow the seating faces to move independently and adjust the movement of body seat.
It is used where the line load or thermal expansion of system may distort the seating face of valve, and especially uesful to prevent sticking that may happen in case the valve is closed at a hot temperature and opened at a cold temperature.
Ideally the wedge is suitable for steam and other high temperature service.

SEAT RING

The seat ring as a welded-in type is designed to prevent any turbulence and damage by corrosion. It is forged or rolled type into one piece for all dimensions, heat treated to obtain the desired surface hadness, and cleaned thoroughly before assembling.

STEM

The stem connection to the wedge shall have an integrated tee head (without welding)and is rectified in the packing area to ensure a long life and perfect tightness. Through experiments,we have calculated and checked the connections between stem and wedge not to disengage the stem from wedge while gate valve is working.

The strength of stem and wedge connections is stronger than that of stem alone at the root of thread.

PACKING

The packing size is designed to secure maximum tightness along the stem, and the standard packing is a non-asbestos type. We can supply any kinds of packing as required by customer.

YOKE SLEEVE

The yoke sleeve is designed to able to be disassembled without discounting bonnet and stem, and provided with ball bearing of 14" or over for Class 150 ~ 300 valves, 6"or over for Class 600, and 2" or over for Class 900 ~ 1500.

GLAND

The gland is made of two pieces. Packing gland is in contact with the packing which is connected to gland flange through a spherical joint. Particular design permits a correct pressure on the packing without any damage to stem due to friction or corrosion.

STUFFING BOX

The stuffing box gives maximum packing stem seal.

Lantern ring and grease injector shall be furnished only if specified on the purchase order.

HAND WHEELS

Hand wheels are designed for easy operation. With gearing, motor actuator or cylinder actuator, it is also available for more difficult services.

BOLTS AND NUTS

Bolts and nuts are made from four different types of steel materials in conformity with the ASTM specification:

1) A307 Grade B : It has a minimum tensile strength of 55,000 pounds per square inch (3870kg/㎟).

The nuts normally used with machine bolts are a hot pressed steel conforming to ASTM specification A307, which is usually applied to hinge bolts and nuts.

2) A193 Grade B7/B16 : It usually retains the strength well at an elevated temperature and offers higher resistance to creep than any other high grade steel used as bolting materials. This steel is regularly used in bonnet bolts.

3) A194 Grade 2H/4 : The nuts of this grade shall be re-heated above the critical range of steel, quenched in a suitable medium, and then tempered at a temperature not less than 850°F(455°C). This steel is regularly used in bonnet nuts.

4) Carbon steel : It is used in hand wheel nuts, set screws, or nipples.

END CONNECTIONS

In our standard production of valves, the flange ends(RF.FF) and the face to face dimensinos conform to ANSI B16.5 and ASME B16.10, respectively, and they have a raised face serrated finish type or other finish type as requested.

For butt-welded ends (B.W.), of which the end to end dimension conforms to ASME B16.10, customer must specify the schedule type required, pipe class, or bore diameter.

Ring type joint flanged ends (R.T.J) conform to ASME B16.5 and the end to end dimension follows ASME B16.10. The other special end connections may be supplied as required by customer.

GEAR OPERATED VALVES

Valves can be supplied with gear operators.

MOTOR OPERATED VALVES

Valves can be supplied with actuators, either electric or pneumatic, accordings to customer's requirements.

ACCESSORIES

We can supply a valve fitted with accessories such as bypass, locking device, chain wheel, extension stem, etc. For more details, refer to the Accessories column.

PACKING AND GASKET MATERIALS

Packing material supplied in standard valves is non-asbestos graphite, with braided graphite rings and die-formed rings configured to provide reliable and long-lasting performance. Braided rings are coated with zinc dust to inhibit corrosion.

Dieformed rings are 98% carbon(minimum)and have maximum 50PPM chloride 550PPM sulfur content.

For standard valves, gasket materials are as follows;

Class 150 - graphite sheet type with 304 stainless steel tanged insert. (1.6mm minimum overall thickness)

Class 300 - spiral wound 304 stainless steel and graphite.

Class 600 - same as class 300 or 900

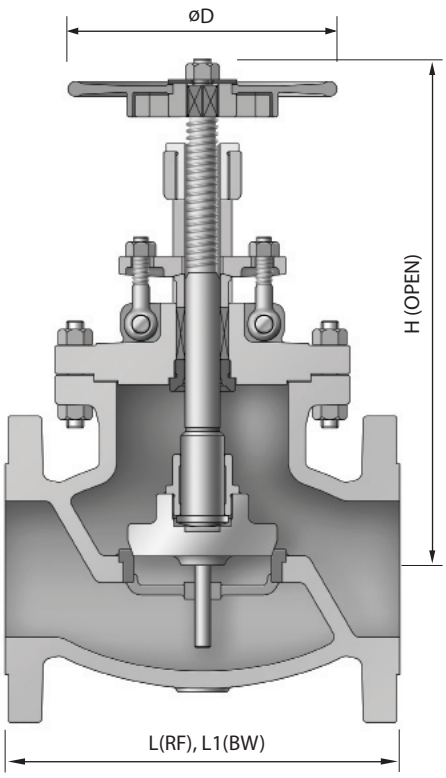
Class 900 and 1500 - Ring type joint

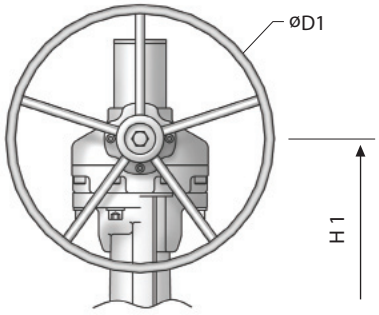
SEAL AREA DESIGN

Cast steel valves are designed and manufactured to satisfy strict requirements in order to prevent external leakage and to meet fugitive emission requirements of most customers.

Stuffing box finishes of 63 to 125 RMS, stem finishes of 16 to 32 RMS, control of straigntness and concentricity of stems, and controlled diametrical clearances between stem and gland, stem and backseat, and gland and stuffing box, all combine to quarantee consistent performance of stem seals.

Gasket surfaces between bodies and bonnets are strictly controlled to finishes of 32 to 63 AARH. When combined with engineered bolting design, quality materials and strict assembly procedures, these finishes quarantee consistent sealing in gasket areas.





GOV (GEAR OPERATED)

END CONNECTION

- R.F FLANGED ENDS TO ASME B16.5
- B.W. ENDS TO ASME B16.25
- R.T.J FLANGED ENDS TO ASME B16.5
- SIZE 26" AND LARGER, FLANGED ENDS ACCORDING TO ASME B16.47 SER.A OR SER.B

STANDARD MATERIAL SPECIFICATIONS

NO.	PART NAME	MATERIAL		
1	BODY	A216 - WCB	A217 - WC6	A351 - CF8M
2	BONNET	A216 - WCB	A217 - WC6	A351 - CF8M
3	DISC	A217 - CA15+STL	A217 - CA15+STL	A351 - CF8+STL
4	STEM	A479 - 410	A479 - 410	A479 - 304
5	HAND WHEEL	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
6	BODY SEAT RING	A216 - WCB+STL	A217 - WC6+STL	A351 - CF8+STL
7	BACK SEAT RING	A479 - 410	A479 - 410	A479 - 304
8	GASKET	SPIRAL WOUND / GRAPHITE+304+304		
9	PACKING	GRAPHITE+GRAPHITE WITH INCONEL WIRE		
10	GLAND FLANGE	A283 - D	A283 - D	A351 - CF8
11	HINGE BOLT	A307 - B	A307 - B	A193 - B8
12	HINGE NUT	A194 - 2H	A194 - 2H	A194 - 8
13	HINGE PIN	A576 - 1020	A576 - 1020	A479 - 304
14	PACKING GLAND	A576 - 1020+Cr	A479 - 410	A479 - 304
15	BONNET BOLT	A193 - B7	A193 - B16	A193 - B8
16	BONNET NUT	A194 - 2H	A194 - 4	A194 - 8
17	YOKE BUSH	A439 - D2C	A439 - D2C	A439 - D2C
18	LOCK NUT	A479 - 410	A479 - 410	A479 - 304
19	HANDLE NUT	A563 - A	A563 - A	A194 - 8
21	SHAKE ADAPTER	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
22	HANDLE COVER	A283 - D	A283 - D	A283 - D
23	GEAR BOX	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
24	STEM COVER	A53	A53	A53

DIMENSION AND WEIGHT

CLASS 150

UNIT : mm

SIZE	2	3	4	6	8	10	12	14	16	18	20	24
L	203.2	241.3	292.1	406.4	495.3	622.3	698.5	787.4	914.4	978.0	978.0	1295.4
L1	203.2	241.3	292.1	406.4	495.3	622.3	698.5	787.4	914.4	978.0	-	-
D	200	250	315	355	355	400	400	-	-	-	-	-
D1	-	-	-	-	450	450	500	560	630	630	800	800
H	284	344	388	505	623	805	839	-	-	-	-	-
H1	-	-	-	-	577	626	800	922	980	1140	1825	2029
WEIGHT(Kg)	14	27	43	91	178	256	409	616	825	960	1387	1988

CLASS 300

UNIT : mm

SIZE	2	3	4	6	8	10	12	16	18	20	24	28
L	266.7	317.5	355.6	444.5	558.8	622.3	711.2	863.6	914.4	1016.0	1346.2	1498.6
L1	266.7	317.5	355.6	444.5	558.8	622.3	711.2	863.6	-	-	-	-
D	200	250	315	355	400	450	500	-	-	-	-	-
D1	-	-	-	-	500	560	630	710	710	800	800	800
H	286	346	392	618	793	1145	1260	-	-	-	-	-
H1	-	-	-	-	805	880	971	1120	1220	1674	2086	2338
WEIGHT(Kg)	20	37	58	140	260	422	567	975	1700	2090	3481	4590

CLASS 600

UNIT : mm

SIZE	2	3	4	6	8	10	12	14	16	18	20	24	30
L	292.1	355.6	431.8	558.8	660.4	787.4	838.2	889.0	990.6	1092.2	1193.8	1397.0	1651.0
L1	292.1	355.6	431.8	558.8	660.4	787.4	838.2	-	-	-	-	-	-
D	224	315	315	450	-	-	-	-	-	-	-	-	-
D1	-	-	-	500	560	630	800	800	800	800	800	800	800
H	392	478	531	675	-	-	-	-	-	-	-	-	-
H1	-	-	-	689	754	959	1690	1871	2015	2449	2504	2595	3237
WEIGHT(Kg)	35	63	120	233	415	652	1316	1565	2120	3110	3490	4320	10800

CLASS 900

UNIT : mm

SIZE	2	3	4	6	8	12	14
L	368.3	381.0	457.2	609.6	736.6	965.2	1029
L1	358.3	381.0	457.2	609.6	736.6	965.2	-
D	315	315	355	450	710	-	900
D1	-	-	400	560	630	710	-
H	498	513	605	730	894	-	1913
H1	-	-	600	710	970	1101	-
WEIGHT(Kg)	77	103	177	388	655	1288	1500

CLASS 1500

UNIT : mm

SIZE	2	3	4	6	8	14
L	368.3	469.9	546.1	704.9	831.9	990.6
L1	358.3	469.9	546.1	704.9	831.9	990.6
D	315	355	400	500	800	-
D1	-	-	400	630	710	800
H	497	584	714	1065	1191	-
H1	-	-	700	1105	1100	1206
WEIGHT(Kg)	77	147	262	669	1187	1827