KITZ

Cast Carbon and Low Alloy Steel Valves

ASME Class 150 / 300 / 600 / 900 / 1500 / 2500
Gate, Globe and Check Valves, Bolted Bonnet Design

KITZ CORPORATION OF AMERICA

INDEX

Profile of KITZ Cast Steel Valves 1
Standard Product Range 2
Standard Seat Material and Construction 2
Product Coding 3
General Design Specifications 4
Valve Shell Materials 4
Valve Trim Materials 5
Mounting of Body Seat Rings 6
Gland Packing Materials 7
Bonnet Gasket Materials 7
Contact Face of Flanges 8
NACE Valves 8
Design Features of KITZ Gate Valve Wedges 9
Inspection and Warranty Policy of KITZ Corporation 10
Typical KITZ Inspection Flow 10
KITZ Low Emission Service Valves 11

Valve Specifications

Class	Product Code	Valve Type	Construction	Page
150	150 SCL	Gate	B.B., O.S. & Y.	12
300	300 SCL	Gate	B.B., O.S. & Y.	12
600	600 SCL	Gate	B.B., O.S. & Y.	13
900	900 SCLS	Gate	B.B., O.S. & Y.	13
1500	1500 SCLS	Gate	B.B., O.S. & Y.	14
2500	2500 SCLS	Gate	B.B., O.S. & Y.	14
150	150 SCJ	Globe	B.B., O.S. & Y.	15
300	300 SCJ	Globe	B.B., O.S. & Y.	15
600	600 SCJ	Globe	B.B., O.S. & Y.	16
900	900 SCJS	Globe	B.B., O.S. & Y.	16
1500	1500 SCJS	Globe	B.B., O.S. & Y.	17
2500	2500 SCJS	Globe	B.B., O.S. & Y.	17
150	150 SCO	Check	B.C.	18
300	300 SCO	Check	B.C.	18
600	600 SCO	Check	B.C.	18
900	900 SCOS	Check	B.C.	19
1500	1500 SCOS	Check	B.C.	19
2500	2500 SCOS	Check	B.C.	19

Care for Handling Valves 20
Pressure-Temperature Ratings 21
Steel Pipe Flanges 22
Buttwelding End Details 25

The products introduced in this catalog are all covered by the ISO 9001 certification awarded KITZ Corporation in 1989, the earliest in the valve industry.

KITZ Corporation of Mexico S.A. de C.V. established in Reynosa in 1994 as a branch manufacturing operation of KITZ Ina Plant, has been succesfully operated to supply steel valves in the lower pressure class range to the North American Market.

Profile of KITZ Cast Steel Valves

KITZ Corporation, unlike its competitors, runs its own foundries for all the products it produces. This corporate strategy has been embodied in its Ina steel foundry which produce 1,000 tons of steel castings a month. Here, a pair of 7.5 ton electric arc furnaces, and 120 casting frames, which move at an electronically controlled flow of 90 seconds, are used for automated production of worldwidely reputed KITZ carbon and low alloy steel valves. By eliminating dependence on outside foundries, KITZ controls production lead time, minimizes production costs and maximizes quality control of valve shell castings - the most critical components for valve life and performance.
This in-house foundry operation is combined with KITZ's uniquely integrated production system for

KITZ Ina Plant, Japan (ISO 9001 certified)

Electric furnaces

KITZ Reynosa Plant, Mexico (ISO 9002 certified)

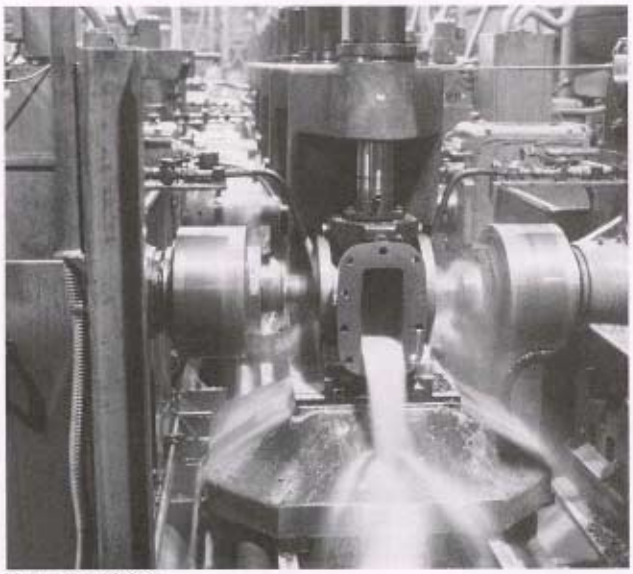
ultimate performance and efficiency. Its main feature is a single undisturbed flow of processes from foundry operation to machine shops, assembly shops, tests, inspections and the final valve makeup works. Human engineered layouts of all manufacturing processes are equipped with state-of-the-art machinery and apparatuses, making KITZ production efficiency unrivaled anywhere in Japan.

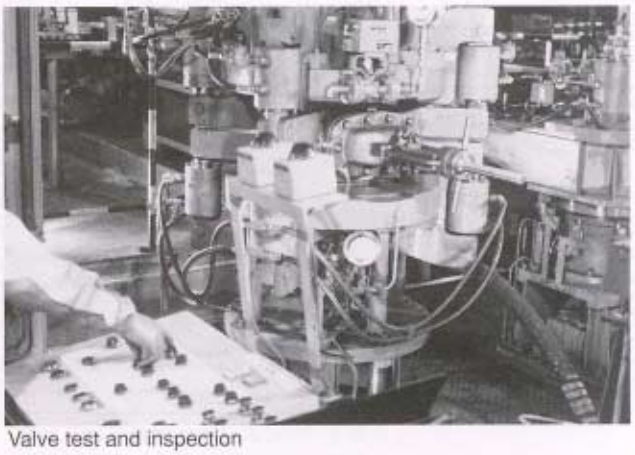
KITZ's wide product range helps customers save on procurement costs by reducing the number of suppliers. It has recently been expanded with the introduction of low emission service valves that exceed US federal environment protection requirement of 500 ppm limit on external leakage of toxic gas from valves and other plant equipment. Every customer is trying hard to improve his plant life cycle by targeting valve maintenance problems as his essential management program. KITZ's low emission service valves offer hydrocarbon and chemical industries a realistic and timely solution.

To compliment its state-of-the-art production system and facilities, KITZ has committed itself to quality assurance management to an extent unparalleled in the valve industry. Its aggressive employment of quality management was confirmed by the Bureau Veritas Quality International of London when they chose KITZ for their premiere presentation of the ISO 9001 certification in 1989, the earliest in the valve industry.

Valve casting molding

Valve assembly


Valve machining


Valve test and inspection

Standard Product Range

KITZ Cast carbon Steel Valves, RF-flanged※(1), Bolted Bonnet Design

Valve Type	ASME Class	Design Standard		Material		Size	1½in	2	2½	3	4	5	6	8	10	12
		P-T Rating	Wall Thickness	Shell※(2)	Trim※(3)	Code	40mm	50	65	80	100	125	150	200	250	300
Gate	150	ASME B16.34	API 600 BS 1414	WCB	F6/F6	150 SCL※(4)	●	●	●	●	●	●	●	●	●	●
	300					300 SCL	●	●	●	●	●	●	●	●	●	●
	600					600 SCL		●	●	●	●	●	●	●	●	●
	900				F6/HF	900 SCLS		●		●	●		●	●	●	●
	1500					1500 SCLS		●	●	●	●		●	●	●	●
	2500					2500 SCLS		●	●	●	●		●			
Globe	150		API 600 BS 1873	WCB	F6/F6	150 SCJ	●	●	●	●	●	●	●	●	●	●
	300					300 SCJ	●	●	●	●	●	●	●	●	●	●
	600					600 SCJ		●	●	●	●		●	●	●	●
	900				F6/HF	900 SCJS				●	●		●	●		
	1500					1500 SCJS		●	●	●	●		●	●		
	2500					2500 SCJS		●	●	●	●					
Swing Check	150		API 600 BS 1868	WCB or A 105	F6/F6	150 SCO	●	●	●	●	●	●	●	●	●	●
	300					300 SCO	●	●	●	●	●	●	●	●	●	●
	600					600 SCO		●	●	●	●		●	●	●	●
	900				F6/HF	900 SCOS				●	●		●	●	●	●
	1500					1500 SCOS		●	●	●	●		●	●	●	●
	2500					2500 SCOS		●	●	●	●		●			

※(1) : The standard contact face of end flanges is RF-flange with smooth finish on gasket surface.
Butt-welding end or RF-flange with serrated finish on gasket surface is available as an option.
Refer to "Contact Faces of Flanges" on Page 8.

※(2) : For special shell materials, refer to "Valve Shell Materials" on Page 4.

※(3) : For special trim materials, refer to "Valve Trim Materials" on Page 5.

※(4) : Sizes larger than 36" are available for special orders.

Standard Seat Material and Construction

Valve Type	KITZ Product Code	Size / Part	1½in 40mm	2 50	2½ 65	3 80	4 100	5 125	6 150	8 200	10 250	12 300
Gate	150 SCL, 300 SCL	Disc	13Cr Disc					Cast Steel Disc-13Cr Deposited Seats				
		Body Seat	13Cr Seats Threaded									
	600 SCL	Disc		13Cr Disc				Cast Steel Disc-13Cr Deposited Seats				
		Body Seat		13Cr Seats Threaded※1								
	900 SCLS, 1500 SCLS 2500 SCLS	Disc		13Cr Disc				Cast Steel Disc-13Cr Deposited Seats				
		Body Seat		Steel Seats-Hardfaced and Welded								
Globe	150 SCJ, 300 SCJ	Disc	13Cr Disc						Cast Steel Disc-13Cr Deposited Seats			
		Body Seat	13Cr Seats Threaded									
	600 SCJ	Disc		13Cr Disc				Steel Seat Disc-13Cr Deposited Seats				
		Body Seat		13Cr Seats Threaded							Steel Seat-13Cr Deposited and Welded	
	900 SCJS, 1500 SCJS 2500 SCJS	Disc		13Cr Disc				Cast Steel Disc-13Cr Deposited Seats				
		Body Seat		Directly Deposited Hardfacing								
Swing Check	150 SCO, 300 SCO	Disc	13Cr Disc							Cast Steel Disc-13Cr Deposited Seats		
		Body Seat	13Cr Seats Threaded									
	600SCO	Disc		13Cr Disc						Cast Steel Disc-13Cr Deposited Seats		
		Body Seat		13Cr Seats Threaded								
	900 SCOS, 1500 SCOS 2500 SCOS	Disc		Cast Steel Disc-13Cr Deposited Seats								
		Body Seat		Steel Seats-Hardfaced and Welded								

※1 Product coded 150 SCLS/300 SCLS

※2 Product coded 600 SCLS

● Product coded 150/300/600 SCLS

		14	16	18	20	22	24	26	28	30	32	34	36	Page
		350	400	450	500	550	600	650	700	750	800	850	900	
		●	●	●	●	●	●	◉	◉	◉	◉	◉	◉	12
		●	●	●	●	●	●	◉	◉	◉	◉	◉	◉	12
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		●	●											19
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														19

For KITZ pressure-seal carbon steel gate valves, refer to KITZ Cat. No. K-171

	14	16	18	20	22	24	26	28	30	32	34	36
	350	400	450	500	550	600	650	700	750	800	850	900
	Cast Steel Disc-13Cr Deposited Seats											
	13Cr Seats Threaded						Steel Seats-Hardfaced and Welded※1					
	Cast Steel Disc-13Cr Deposited Seats											
	1*	Steel Seats-Hardfaced and Welded※2										
	Cast Steel Disc-13Cr Deposited Seats											
	Steel Seats Hardfaced and Welded											
	Cast Steel Disc-13Cr Deposited Seats											
	Steel Seat-13Cr Deposited and Welded											
	Cast Steel Disc-13Cr Deposited Seats											
	13Cr Seats Threaded						Steel Seats-13Cr Deposited and Welded					
	Cast Steel Disc-13Cr Deposited Seats											
	Steel Seats-13Cr Deposited and Welded											
	Cast Steel Disc-13Cr Deposited Seats											
	Steel Seats Hard-faced and Welded											

Product Coding

G- 150 SC LS6CY

5 4 1 2 3

1 ASME pressure class: 150 through 2500

2 Shell material code:
Carbon and low alloy steel are always identified as "SC"

3 Other valve specifications:

L S 6C Y

a b c b

a Valve type code:
L : Gate valve
J : Globe valve
O: Swing check valve

b Seat material/mounting:

Code	Disc Seat Material	Body Seat Material	Type of Mounting
□	13Cr.	13Cr.	
S □	13Cr.	HF	
□ B	13Cr.	HF	Refer to
□ D	HF	13Cr.	Page 6
□ Y	HF	HF	
S □ Y	HF	HF	

□ : Special shell material code

c Special shell material:
No code is required for WCB. Refer to "Valve Shell Material" on Page 4, for special shell materials.

4 Type of end connection:
No code is required for RF-flanged ends with smooth finish on gasket face. (Standard)*
W: Butt-welding ends.
Refer to "Contact Face of Flanges" on Page 8.
* RF-flanged ends with serrated finish on gasket face. (Option)

5 Type of valve operation:
No code is required for manual handwheel operation.
G : Gear operation.
E : Electric actuator operation.

General Design Specifications

Items	American Std.	British Std.
Shell wall thickness and general valve design specifications	API 600	BS1414 (Gate valve) BS1873 (Globe valve) BS1868 (Check valve)
Pressure-temperature ratings	ASME B16.34	BS1560
Face-to-face dimensions End-to-end dimensions	ASME B16.10	BS2080
End flange dimensions Gasket contact facing	ASME B16.5*	BS1560
Welding end dimensions	ASME B16.25	BS1414 (Gate valve) BS1873 (Globe valve) BS1868 (Check valve)

* MSS SP-44 for 22" and ASME B16.47 Series B for 26" and larger, for end flange dimensions.

Valve Shell Materials

Besides ASTM A216 WCB, the standard material, KITZ cast steel valves are optionally available with the materials listed below:

ASTM Specification	Material Designation	Working Temperature* °F (°C)	KITZ Code
A216 WCB	Carbon steel	1000 (538) Maximum	–
A217 WC1	C–½ Mo		1C
A217 WC6	1¼ Cr–½ Mo	1100 (593) Maximum	6C
A217 WC9	2¼ Cr–1Mo		9C
A217 C5	5Cr–½ Mo	1200 (649) Maximum	5C
A217 C12	9Cr–1Mo		12C
A352 LCB	Carbon steel	–50 (–46) Minimum	BL
A352 LCC	Carbon steel		CL
A352 LC1	C–½ Mo	–75 (–59) Minimum	1L
A352 LC2	2½ Ni	–100 (–73) Minimum	2L
A352 LC3	3½ Ni	–150 (–101) Minimum	3L

For ASTM A351 Austenitic Stainless Steel Valves, refer to KITZ Cat.No.K-150.

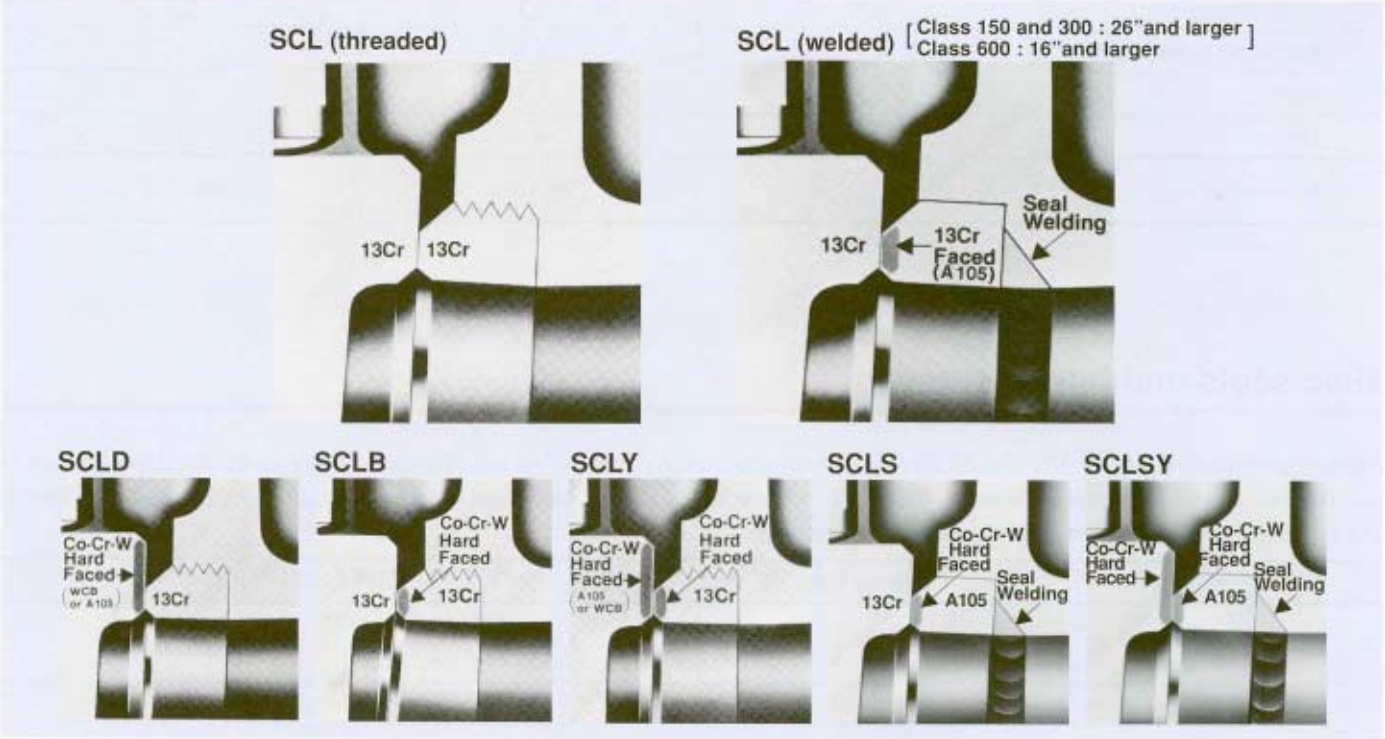
* Refer to ASME B16.34 for details of ASTM A216, A217 and A352 Pressure-temperature ratings. (See page 21 for A216 and A217)
The minimum working temperatures of ASTM A352 are based on ASME B31.3.

KITZ Low Temperature Service Valves

KITZ Corporation offers Class 150, 300 and 600 API 600 design low alloy steel valves for sub-zero temperature service down to -101°C (-150°F). Detailed design information are available on request.

Mounting of Body Seat Rings

Body seat rings of KITZ cast steel valves are mounted on the valve body by either threading or seal welding as shown in the typical examples of gate valves illustrated below. Unless specifically requested in advance, mounting of body seat rings shall be made at the manufacturer's discretion. Specify your own method of mounting, noting your purchase orders with adequate KITZ product code numbers.



For KITZ cast steel valves made of ASTM A216 WCB, the standard shell material, disc seats and body seat rings shall be provided as follows. (Refer to Page 3 for Product Coding)

KITZ Product Code	Standard Disc Seat	Standard Body Seat	Mounting of Body Seat Rings
SCL (Gate) SCJ (Globe) SCO (Check)	F6a or WCB + 13Cr or A105 + 13Cr	F6a	Threaded
		A105 + 13Cr	Seal Welded**
SCLS (Gate) SCJS (Globe) SCOS (Check)		A105 + HF* or Direct HF***	Seal Welded or Direct HF***
SCLB (Gate) SCJB (Globe) SCOB (Check)		F6a + HF*	Threaded
SCLD (Gate) SCJD (Globe) SCOD (Check)	A105 + HF* or WCB + HF*	F6a	Threaded
		A105 + 13Cr	Seal Welded**
SCLY (Gate) SCJY (Globe) SCOY (Check)		F6a + HF*	Threaded
SCLSY (Gate) SCJSY (Globe) SCOSY (Check)		A105 + HF* or Direct HF***	Seal Welded or Direct HF***

* Co-Cr-W Alloy deposited for hard facing.

** Employed swing check valves of Class 150 / 300 26" and larger, or Class 600 16" and larger sizes.

*** Co-Cr-W Alloy is directly deposited on valve body for hard facing.
KITZ Product Code 900SCJS, 900SCJSY, 1500SCJS, 1500SCJSY, 2500SCJS and 2500SCJSY globe valves employ this hard facing.

Gland Packing Materials

Following packing materials can be chosen for KITZ cast steel valves, depending on servicing conditions, or market requirements. Specify your packing material in your purchase order.

Packing Material		Service Conditions
Non-asbestos	Braided PTFE fiber	260°C (500°F) corrosion resistant
	PTFE cup & cone / PTFE V-ring	150°C (300°F) corrosion resistant
	Carbon fiber	500°C (930°F) high pressure
	Flexible graphite	600°C (1110°F)* corrosion resistant
	Inconel wired flexible graphite	600°C (1110°F)* corrosion resistant
Asbestos	Inconel wired asbestos	650°C (1200°F) high pressure
	PTFE impregnated asbestos	260°C (500°F) corrosion resistant

Note : Refer to Page 11 for gland packings used for KITZ low emission service valves.
* 455°C (850°F) for oxidizing atmosphere.

Bonnet Gasket Materials

Depending on class ratings and servicing conditions, following gasket materials are available for body/bonnet flange gaskets of KITZ cast steel valves. Specify your gasket material in purchase order.

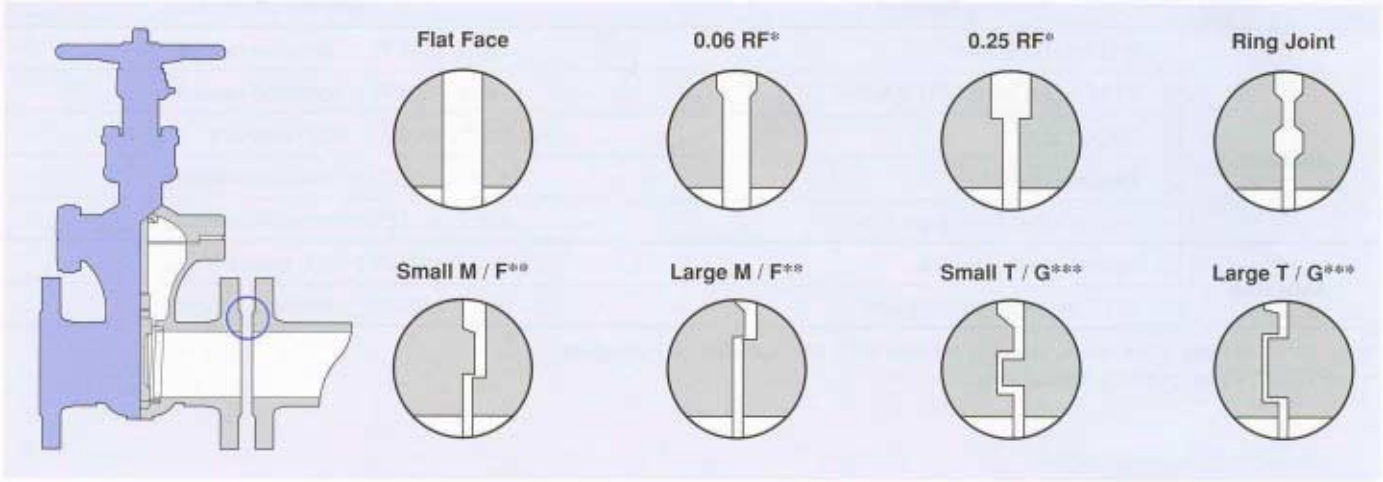
Gasket Material	Class					
	150	300	600	900	1500	2500
Corrugated metal	●	●				
Ring joint metal			●	●	●	●
Spiral wound metal, PTFE filled		●				
Flexible graphite	●					
Spiral wound metal, flexible graphite filled		●				
Stainless steel inserted flexible graphite	●					
Ceramics filled PTFE	●					
Compressed asbestos	●	●				
Spiral wound metal, asbestos filled		●				

Note: Refer to Page 11 for bonnet gaskets used for KITZ low emission service valves.

Contact KITZ Corporation or your KITZ distributors for optional requirement of gasket or gland packing materials other than listed above.

Contact Face of Flanges

ASME B16.5 specifies several different types of contact face of flanges as illustrated below. Among them, KITZ cast steel valves employ 0.06 RF for Class 150 and 300, and 0.25 RF for higher pressure classes with an optional employment of ring-joint contact.



RF* : Raised Face M / F : Male-Female T / G *** : Tongue & Groove**

Gasket contact surface finish of end flanges as well as body-bonnet flange very much depends on the materials selected for flange gaskets. Our standard is the smooth finish. Serrated finish with specific roughness is your option.

NACE Valves

For servicing sour gases or other Hydrogen Sulfide bearing hydrocarbon fluids, KITZ offers NACE valves made of component materials specially heat-treated and hardness-controlled in comformity with NACE MR0175 Standard.
Typical NACE material configuration is shown below for KITZ cast steel gate valves. A note should be taken on the fact that NACE hardness requirement conflicts with the one of valve seating surface specified by API 600, Table 3. KITZ NACE steel valves are available only at your option.

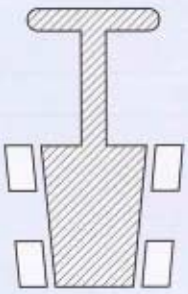
Valve Parts	ASTM Specification	NACE Hardness	API 600 Hardness
Body / bonnet	A216 WCB	≦ HRC 22 (237 HB)	–
Disc	A216 WCB or AISI Type 410		
Disc seat	***13Cr deposit or AISI Type 410		≧ 250 HB*
Gland	***AISI Type 410		–
Stem			275 HB≧ ≧200HB
Lantern ring			–
Bonnet bush			≧ 250 HB
Body seat ring			≧ 250 HB*
Bonnet bolts	A193 B7	–	–
	A193 B7M**	≦ HRC 22	
Bonnet nuts	A194 2H	–	
	A194 2HM**	≦ HRC 22	

* Hardness differential of 50 HB is required between the seats.
** Only when specified.
*** Double tempered. (Three step process)

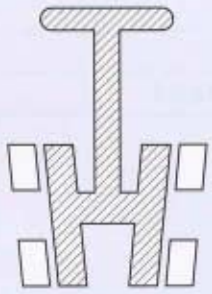
Design Features of KITZ Gate Valve Wedges (Discs)

Among the four different shapes of wedge gates recognized by API 600 Paragraph 2.3.1, KITZ has adopted solid wedges for smaller valves such as 1 1/2"to 4" of Class 150 / 300 / 900 / 1500 / 2500 (excluding class 600) gate valves, and flexible wedges for all other sizes of all pressure classes and 2" & larger of class 600.

H-shaped flexible wedges are featured with mechanical flexibility to adjust its own shape following the shape of the body seats for tightly secured mutual contact. This is paticularly important when larger gate valves service extremely high pressure and temperature, where temporary deformation of the valve body always occurs. Operational torque is smaller, seat wear is less and valve closure is tighter when H-shaped flexible wedges are provided.



Solid wedge



Flexible wedge

Heavily designed KITZ wedge gates are forged or cast solid, single piece of steel without any welding work. Specially heat-treated wedges are firmly coupled with integral T-head of the valve stems, which are also ruggedly designed and specially heat-treated for the highest possible durability of stem to wedge connection. API 600 Paragraph 2.6.2 particularly emphasizes the importance of the mechanical strength of this connection.

As another unique feature, KITZ wedge gates are designed for always accurately maintained concentricity and carefully lapped for leakfree contact.

Side View

Front View

Stem-to-Wedge Connection

Inspection and Warranty Policy of KITZ Corporation

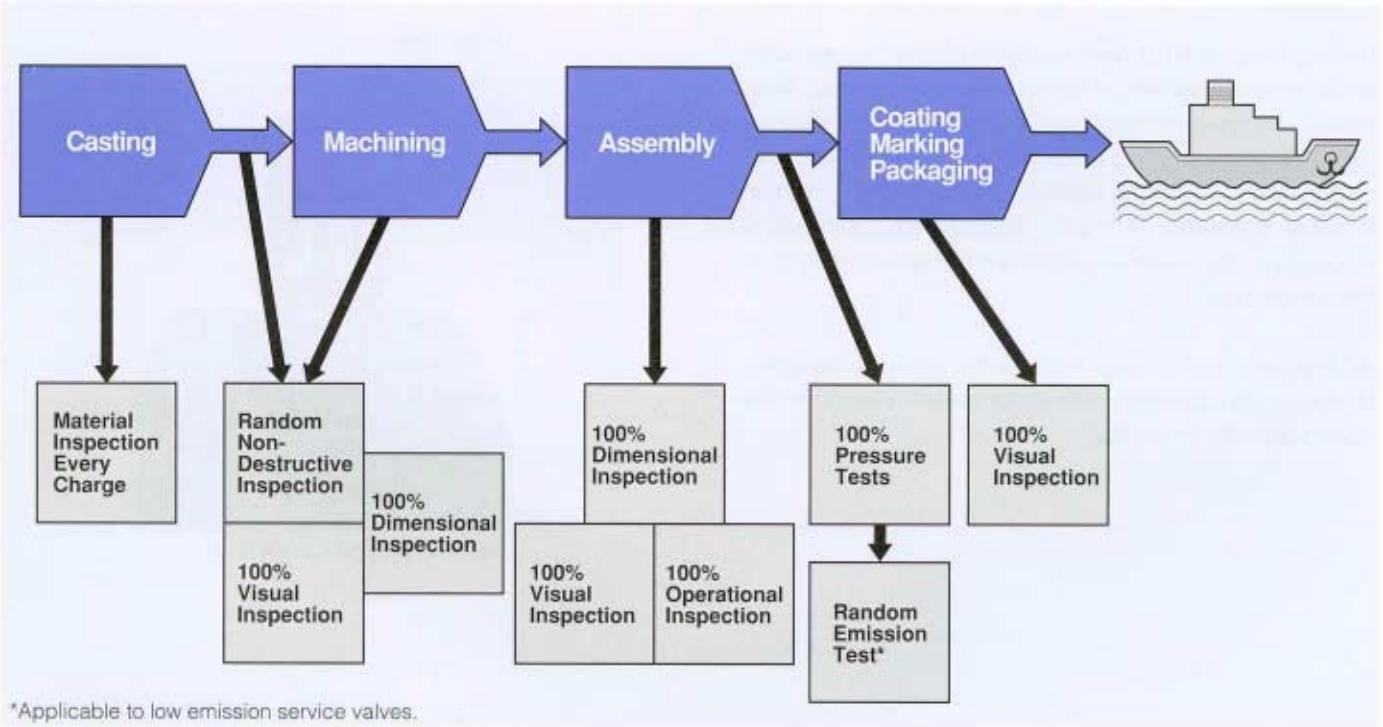
Every piece of KITZ cast carbon and low alloy steel valves is subjected to 100% pressure tests, according to API 598 or BS 6755 Part 1 requirements. Manufacturer's material test reports and inspection certificates are available on your request, while each valve is guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from the factories of KITZ Corporation.

Various tests and inpections of valves made by KITZ Corporation include the following. Unless otherwise specified, all KITZ cast steel valves shall be subjected to these testing or inspection methods and evaluation criteria.

Test / Inspection Item	Method	Evaluation
Chemical composition analysis		Relevant ASTM Stds.
Mechanical property test	ASTM A370	Relevant ASTM Stds.
Pressure tests	API 598 or BS 6755 Part 1	API 598
Radiographic inspection	ASTM E142 / E49	ASME B16.34
Wet magnetic particle inspection	ASTM E138	
Liquid penetrant inspection	ASTM E165	
Low temperature impact test	ASTM E23	ASTM A352
Dimensional inspection		Relevant Valve Stds.
Visual inspection		MSS SP-55
Emission test*	EPA Method 21 and KITZ Std.	KITZ Std.

* Applicable to low emission service valves.

Typical KITZ Inspection Flow



*Applicable to low emission service valves.

KITZ Low Emission Service Valves

In the United States, the Federal Clean Air Act was dramatically amended in 1990, to realize the new environmental protection policy of a 95% reduction in fugitive emission or leak levels of toxic gas from plant equipment. Promulgated in April, 1994, the new law requires all plants handling the toxic gas specified by the Environmental Protection Agency, to periodically monitor their plant equipment for detection of leaks exceeding 500 ppm, and repair or replace all defective parts immediately. California has exceeded the Federal law with a state regulation requiring 100 ppm maximum leak level for an astonishing 99% reduction of such an environmental pollution for the Northern California Region after 1997.

Our newly developed low emission valves, the proud fruits of several years of trial and error at our laboratory, are designed, engineered, manufactured and tested to now meet the 100 ppm maximum emission level. This is the standard specification in North America for KITZ flanged and butt-welding end carbon or low alloy steel valves rated Class 150, 300 and 600. In other markets, all these low emission valves are optionally available. Major design considerations for having upgraded our standard valves to the low emission performers are introduced below.

Gland packing

KITZ's original "SEALEVER®" flexible graphite packing set, consisting of 4 dieformed flexible graphite rings* and 2 braided flexible graphite rings, combined with a pure carbon spacer bush for Class 300 and 600 rated valves.

*US Patent No. 5522603 & 5573253. Other patents registered or pending worldwide.

Bonnet gaskets (including check valve cover gaskets)

Class 150 : Flexible graphite sheet with stainless steel insert and permeation protective barrier for low emission service

Class 300 : Spiral wound (flexible graphite filler and stainless steel hoop) with a stainless steel inner ring

Class 600 : Ring joint metal gasket

Diametrical interface clearance

20 to 32 mils (0.5 to 0.8 mm) : Stem to gland
20 to 32 mils (0.5 to 0.8 mm) : Stem to bonnet bushing
4 to 12 mils (0.1 to 0.3 mm) : Gland to stuffing boxs

Stem

16 to 32 RMS surface finish. Straightness and roundness are precision controlled according to KITZ design and manufacturing standards.

Stuffing box

Maximum 125 RMS surface finish. Cylindricity and verticality are precision controlled according to KITZ design and manufacturing standards.

Plug gaskets for check valves

Class 150 / 300 : Flexible graphite sheet with stainless steel insert and permeation protective barrier.

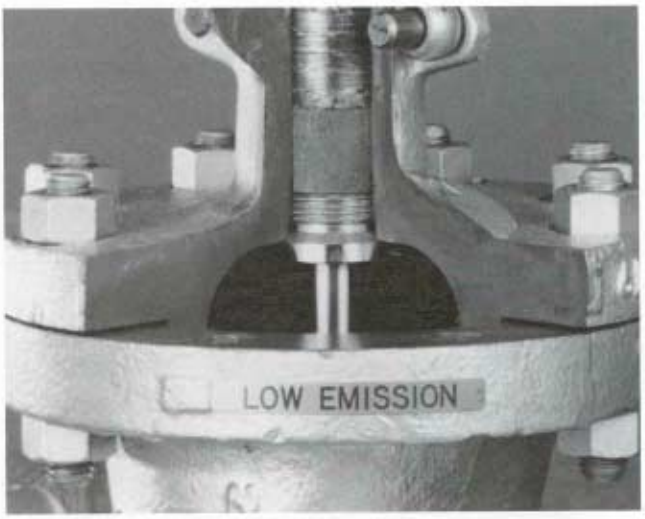
Class 600 : Spiral wound metal, flexible graphite filled

Product identification

Stainless steel ID plates with the letters "LOW EMISSION" in orange are welded on the bonnet flanges.

Low emission acceptance test

While no official testing standard is available as of March 1, 2000, KITZ Corporation has developed its own test method and evaluation criteria basing on the results of laboratory tests carried out for the last several years. Most significantly, KITZ employs 10 ppm as the acceptance criteria for the random test done prior to shipment to customers, in consideration of stress relaxation of packing material during transportation and storage.

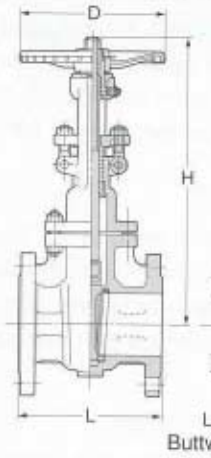


Detailed technical presentation of KITZ low emission service valves are given in KITZ Cat. No. K-430. Also a brochure titled "Fugitive Emissions Solutions" is available from KITZ Corporation of America, 10750 Corporate Drive, Stafford, TX 77477, USA; Phone 1-281-491-7333 or 1-800-772-0073, Fax 1-281-491-9402, to help you understand what the problem of the fugitive emission is, how US government prepares to fight with this problem and where end users can feel relaxed with KITZ' solution proposals.

Class 150 Cast Carbon Steel Gate Valve

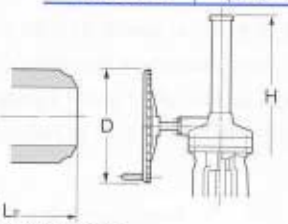
Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel,
Solid wedge (1½" to 4") or flexible wedge (5" & larger).

150 SCL



Buttwelding End

Fig	End Connections
150 SCL	RF-flanged with smooth finish on gasket surface.
W150 SCL	Butt-welding ends.
150 SCLS	(6" or 26" and larger)



Gear Operation
Optional
for 14" to 24"
Standard
for 26" & larger

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (1½" – 4") ASTM A216 Gr.WCB + 13Cr (5" & larger)
Body seat ring	ASTM A182 Gr.F6a (24" & smaller) ASTM A105 + 13Cr (26" & larger)
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel

Note: Refer to Page 2 & 3 for standard seat material and construction.

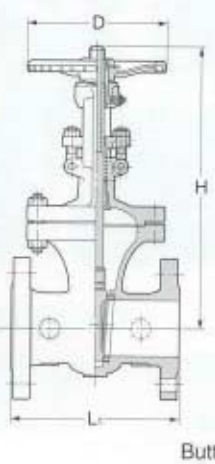
Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
L_1	in	6.50	7.00	7.50	8.00	9.00	10.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	22.00	24.00	24.00	26.00	28.00	28.00
	mm	165	178	190	203	229	254	267	292	330	356	381	406	432	457	483	508	559	610	610	660	711	711
L_2	in	–	8.50	9.50	11.14	12.00	15.00	15.86	16.50	18.00	19.76	22.50	24.00	26.00	28.00	30.00	32.00	34.00	36.00	36.00	38.00	40.00	40.00
	mm	–	216	241	283	305	381	403	419	457	502	572	610	660	711	762	813	864	914	914	965	1016	1016
H	in	13.8	15.1	16.9	20.0	23.1	25.9	29.8	37.7	45.7	53.6	60.0	66.7	74.3	83.5	91.6	98.1	111.0	116.7	126.4	133.9	140.2	145.7
	mm	351	383	430	507	587	658	757	958	1162	1361	1523	1693	1887	2120	2326	2492	2820	2965	3210	3400	3560	3700
D	in	7.1	7.9	7.9	9.8	9.8	11.8	11.8	13.8	15.7	17.7	19.7	23.6	23.6	26.8	26.8	29.9	19.7	23.6	23.6	23.6	23.6	23.6
	mm	180	200	200	250	250	300	300	350	400	450	500	600	600	680	680	760	500	600	600	600	600	600

Class 300 Cast Carbon Steel Gate Valve

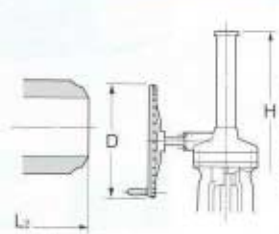
Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel,
Solid wedge (1½" to 4") or flexible wedge (5" & larger).

300SCL



Buttwelding End

Fig	End Connections
300 SCL	RF-flanged with smooth finish on gasket surface.
W300 SCL	Butt-welding ends.
300 SCLS	(6" or 26" and larger)



Gear Operation
Optional
for 12" to 24"
Standard
for 26" & larger

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (1½" – 4") ASTM A216 Gr.WCB + 13Cr (5" & larger)
Body seat ring	ASTM A182 Gr.F6a (24" & smaller) ASTM A105 + 13Cr (26" & larger)
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel
Collar	ASTM A182 Gr.F6a

Note: Refer to Page 2 & 3 for standard seat material and construction.

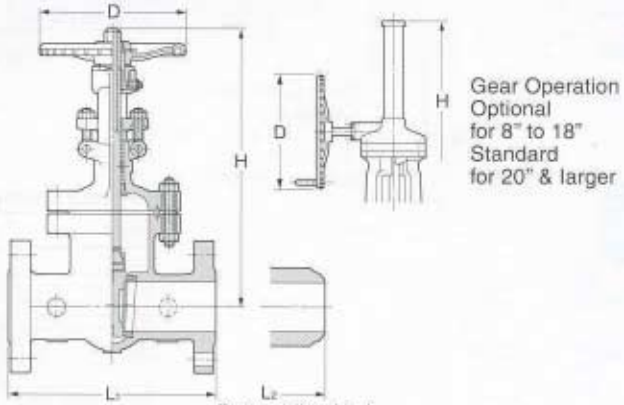
Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
L_1	in	7.50	8.50	9.50	11.14	12.00	15.00	15.86	16.50	18.00	19.76	30.00	33.00	36.00	39.00	43.00	45.00	49.00	53.00	55.00	60.00	64.00	68.00
	mm	190	216	241	283	305	381	403	419	457	502	762	838	914	991	1092	1143	1245	1346	1397	1524	1626	1727
L_2	in	7.50	8.50	9.50	11.14	12.00	15.00	15.86	16.50	18.00	19.76	30.00	33.00	36.00	39.00	43.00	45.00	49.00	53.00	55.00	60.00	64.00	68.00
	mm	190	216	241	283	305	381	403	419	457	502	762	838	914	991	1092	1143	1245	1346	1397	1524	1626	1727
H	in	14.7	16.2	17.9	20.8	24.1	27.2	31.1	39.9	47.8	56.6	61.5	68.1	76.0	84.1	93.1	100	116.9	122.0	131.9	137.8	144.9	152.0
	mm	374	411	454	528	613	692	790	1013	1215	1437	1561	1729	1931	2137	2364	2540	2970	3100	3350	3500	3680	3860
D	in	7.9	7.9	7.9	9.8	9.8	11.8	13.8	15.7	17.7	19.7	23.6	23.6	26.8	29.9	29.9	35.8	23.6	23.6	23.6	23.6	23.6	23.6
	mm	200	200	200	250	250	300	350	400	450	500	600	600	680	760	760	910	600	600	600	600	600	600

Class 600 Cast Carbon Steel Gate Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel, Flexible wedge.

600SCL



Gear Operation
Optional
for 8" to 18"
Standard
for 20" & larger

Buttwelding End

Fig	End Connections
600 SCL	RF-flanged with smooth finish on gasket surface.
W600 SCL	Butt-welding ends.
600 SCLS	(6" or 16" and larger)

Dimensions

Valve Size		2	2½	3	4	5	6	8	10	12	14	16	18	20	22	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600
L_1	in	11.50	13.00	14.00	17.00	20.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	51.00	55.00
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1295	1397
L_2	in	11.50	13.00	14.00	17.00	20.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	51.00	55.00
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1295	1397
H	in	17.6	19.6	21.4	26.2	30.3	35.1	41.9	49.5	57.6	62.7	70.0	81.5	88.2	98.4	107.5
	mm	447	499	544	666	770	892	1065	1257	1464	1593	1779	2071	2240	2500	2730
D	in	7.9	9.8	9.8	11.8	15.7	17.7	19.7	23.6	26.8	29.9	29.9	35.8	23.6	23.6	24.0
	mm	200	250	250	300	400	450	500	600	680	760	760	910	600	600	610

Standard materials of parts

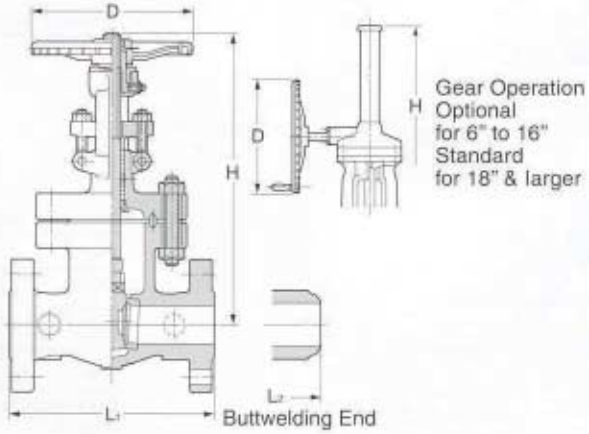
Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (2" – 4") ASTM A216 Gr.WCB + 13Cr (5" & larger)
Body seat ring	ASTM A182 Gr.F6a (14" & smaller) ASTM A105 + 13Cr (16" & larger)
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel
Collar	ASTM A182 Gr.F6a

Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 900 Cast Carbon Steel Gate Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel, Solid wedge (2" to 4") or flexible wedge (6" & larger).

900 SCLS



Gear Operation
Optional
for 6" to 16"
Standard
for 18" & larger

Buttwelding End

Fig	End Connections
900 SCLS	RF-flanged with smooth finish on gasket surface.
W900 SCLS	Butt-welding ends.

Dimensions

Valve Size		2	3	4	6	8	10	12	14	16	18	20	24
	mm	50	80	100	150	200	250	300	350	400	450	500	600
L_1	in	14.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
L_2	in	14.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00
	mm	368	381	457	610	737	838	965	1029	1130	1219	1321	1549
H	in	20.5	24.4	27.5	35.5	42.8	50.6	59.0	62.2	69.5	85.8	94.5	105.5
	mm	521	620	698	901	1087	1286	1498	1581	1766	2180	2400	2680
D	in	9.8	11.8	13.8	19.7	23.6	26.8	29.9	29.9	23.6	23.6	24.0	24.0
	mm	250	300	350	500	600	680	760	760	600	600	610	610

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (2" – 4") ASTM A216 Gr.WCB + 13Cr (6" & larger)
Body seat ring	ASTM A105 + HF*
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel
Collar	ASTM A182 Gr.F6a

* Hard facing with Co-Cr-W Alloy.

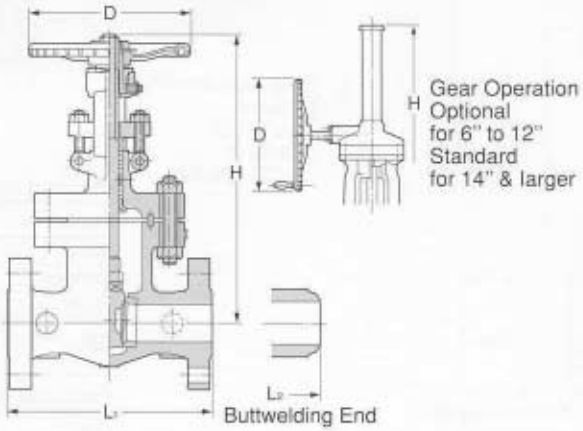
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 1500 Cast Carbon Steel Gate Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel, Solid wedge (2" to 4") or flexible wedge (6" & larger).

Fig	End Connections
1500 SCLS	RF-flanged with smooth finish on gasket surface.
W1500 SCLS	Butt-welding ends.

1500 SCLS



Dimensions

Valve Size		2	2½	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L_1	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L_2	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
H	in	21.9	24.9	27.0	30.4	41.3	49.2	58.1	65.3	69.0	81.1
	mm	555	633	686	772	1050	1250	1477	1658	1750	2060
D	in	9.8	11.8	13.8	15.7	23.6	26.8	35.8	35.8	23.6	24.0
	mm	250	300	350	400	600	680	910	910	600	610

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (2" – 4") ASTM A216 Gr.WCB+13Cr (6" & larger)
Body seat ring	ASTM 105 + HF*
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel
Collar	ASTM A182 Gr.F6a

* Hard facing with Co-Cr-W Alloy.

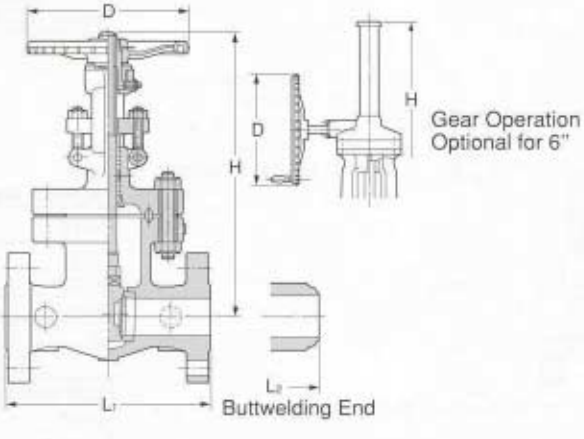
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 2500 Cast Carbon Steel Gate Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem, Non-rising handwheel, Solid wedge (2" to 4") or flexible wedge (6" & larger).

Fig	End Connections
2500 SCLS	RF-flanged with smooth finish on gasket surface.
W2500 SCLS	Butt-welding ends.

2500 SCLS



Dimensions

Valve Size		2	2½	3	4	6
	mm	50	65	80	100	150
L_1	in	17.75	20.00	22.75	26.50	36.00
	mm	451	508	578	673	914
L_2	in	17.75	20.00	22.75	26.50	36.00
	mm	451	508	578	673	914
H	in	24.9	29.0	30.0	34.8	48.9
	mm	633	737	762	885	1243
D	in	9.8	11.8	13.8	15.7	19.7
	mm	250	300	350	400	500

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A182 Gr.F6a
Disc	ASTM A182 Gr.F6a (2" – 4") ASTM A216 Gr.WCB + 13Cr (6")
Body seat ring	ASTM 105 + HF*
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke sleeve	ASTM A439 Tp.D2
Grease nipple	Carbon steel
Collar	ASTM A182 Gr.F6a

* Hard facing with Co-Cr-W Alloy.

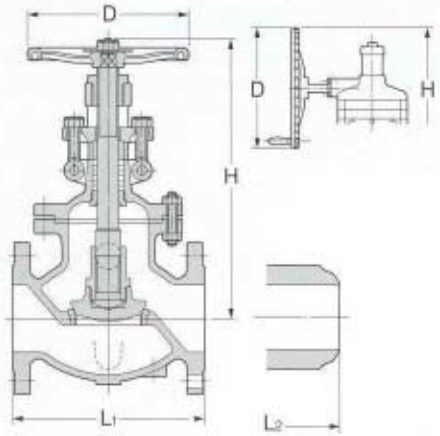
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 150 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
150 SCJ	RF-flanged with smooth finish on gasket surface.
W150 SCJ	Butt-welding ends.

150 SCJ



Gear Operation for 10" and larger Hammer-blow Type Handwheel for 6" & 8"

Buttwelding End

Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16	18
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450
L_1	in	6.50	8.00	8.50	9.50	11.50	14.00	16.00	19.50	24.50	27.50	31.00	36.00	38.50
	mm	165	203	216	241	292	356	406	495	622	698	787	914	978
L_2	in	6.50	8.00	8.50	9.50	11.50	14.00	16.00	19.50	24.50	27.50	31.00	36.00	38.50
	mm	165	203	216	241	292	356	406	495	622	698	787	914	978
H	in	12.2	13.1	14.1	15.4	18.1	19.1	20.2	24.8	37.6	40.4	42.6	48.1	51.4
	mm	310	332	359	390	460	484	513	630	955	1025	1082	1222	1305
D	in	7.9	7.9	8.9	9.8	9.8	11.8	13.8	15.7	19.7	19.7	19.7	23.6	23.6
	mm	200	200	225	250	250	300	350	400	500	500	500	600	600

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a (1½" ~ 5") ASTM A105 + 13Cr (6" & larger)
Lock nut	ASTM A182 Gr.F6a
Body seat ring	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105 ASTM A276 Tp.403 (10" and larger)
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a ASTM A439 Tp.D2 (10"and larger)
Yoke bush	ASTM A439 Tp.D2

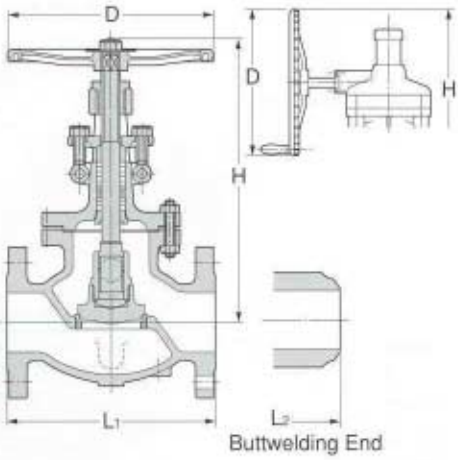
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 300 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
300 SCJ	RF-flanged with smooth finish on gasket surface.
W300 SCJ	Butt-welding ends.

300 SCJ



Gear Operation for 8" and larger Hammer-blow Type Handwheel for 5" & 6"

Buttwelding End

Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16
	mm	40	50	65	80	100	125	150	200	250	300	350	400
L_1	in	9.00	10.50	11.50	12.50	14.00	15.75	17.50	22.00	24.50	28.00	33.00	34.00
	mm	229	267	292	318	356	400	444	559	622	711	838	864
L_2	in	9.00	10.50	11.50	12.50	14.00	15.75	17.50	22.00	24.50	28.00	33.00	34.00
	mm	229	267	292	318	356	400	444	559	622	711	838	864
H	in	13.4	14.3	15.8	17.4	20.1	24.0	27.0	40.9	44.9	46.7	55.7	57.9
	mm	341	362	402	441	510	610	685	1038	1141	1186	1415	1470
D	in	7.9	7.9	9.8	9.8	13.8	15.7	17.7	19.7	23.6	23.6	23.6	23.6
	mm	200	200	250	250	350	400	450	500	600	600	600	600

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a (1½" ~ 5") ASTM A105 + 13Cr (6" & larger)
Lock nut	ASTM A182 Gr.F6a
Body seat ring	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke bush	ASTM A439 Tp.D2
Collar	ASTM A182 Gr.F6a

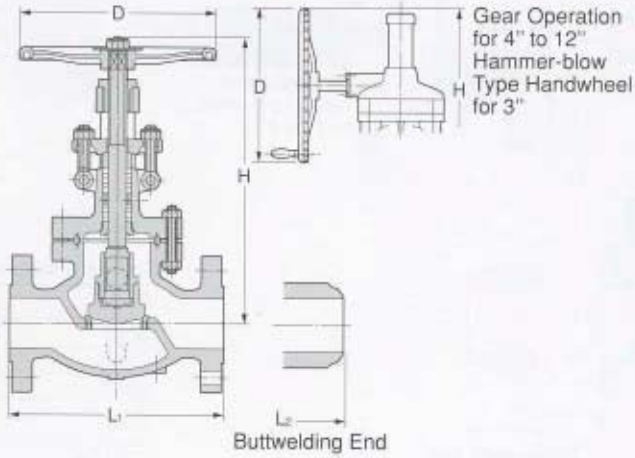
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 600 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
600 SCJ	RF-flanged with smooth finish on gasket surface.
W600 SCJ	Butt-welding ends.

600 SCJ



Gear Operation for 4" to 12" Hammer-blow Type Handwheel for 3"

Buttwelding End

Dimensions

Valve Size		2	2½	3	4	6	8	10	12
	mm	50	65	80	100	150	200	250	300
L_1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00
	mm	292	330	356	432	559	660	787	838
L_2	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00
	mm	292	330	356	432	559	660	787	838
H	in	15.7	18.7	19.9	34.5	38.1	45.9	52.0	62.2
	mm	400	475	506	877	967	1165	1320	1580
D	in	9.8	11.8	13.8	19.7	19.7	23.6	23.6	24.0
	mm	250	300	350	500	500	600	600	610

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a (2" ~ 4") ASTM A105 + 13Cr (6" ~ 10") ASTM A216 Gr.WC8 + 13Cr (12" only)
Lock nut	ASTM A182 Gr.F6a
Body seat ring	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke	ASTM A216 Gr.WCB
Collar	ASTM A182 Gr.F6a

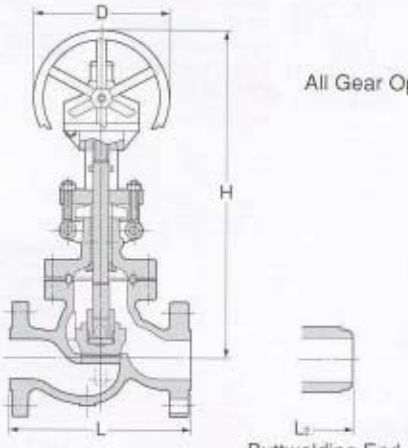
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 900 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
900 SCJS	RF-flanged with smooth finish on gasket surface.
W900 SCJS	Butt-welding ends.

900 SCJS



All Gear Operation

Buttwelding End

Dimensions

Valve Size		3	4	6	8
	mm	80	100	150	200
L_1	in	15.00	18.00	24.00	29.00
	mm	381	457	610	737
L_2	in	15.00	18.00	24.00	29.00
	mm	381	457	610	737
H	in	34.6	36.7	46.1	53.0
	mm	880	933	1171	1345
D	in	19.7	19.7	23.6	23.6
	mm	500	500	600	600

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a (3" & 4") ASTM A105 + 13Cr (6" & 8")
Lock nut	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke	ASTM A216 Gr.WCB
Collar	ASTM A182 Gr.F6a

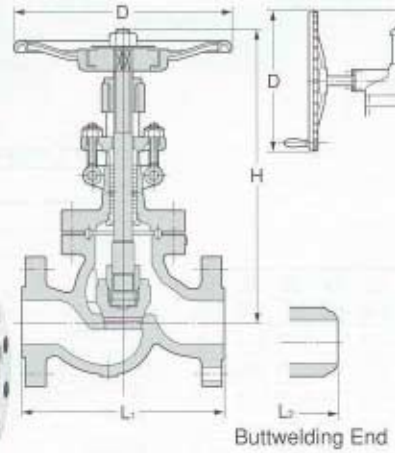
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 1500 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
1500 SCJS	RF-flanged with smooth finish on gasket surface.
W1500 SCJS	Butt-welding ends.

1500 SCJS



Dimensions

Valve Size		2	2½	3	4	6	8
	mm	50	65	80	100	150	200
L_1	in	14.50	16.50	18.50	21.50	27.75	32.75
	mm	368	419	470	546	705	832
L_2	in	14.50	16.50	18.50	21.50	27.75	32.75
	mm	368	419	470	546	705	832
H	in	21.3	35.4	37.0	43.3	52.4	55.1
	mm	540	900	940	1100	1330	1400
D	in	13.8	19.7	19.7	23.6	23.6	24.0
	mm	350	500	500	600	600	610

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB + HF*
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a (2" ~ 4") ASTM A105 + 13Cr (6" & 8")
Lock nut	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke	ASTM A216 Gr.WCB
Collar	ASTM A182 Gr.F6a

* Hard facing with Co-Cr-W Alloy.

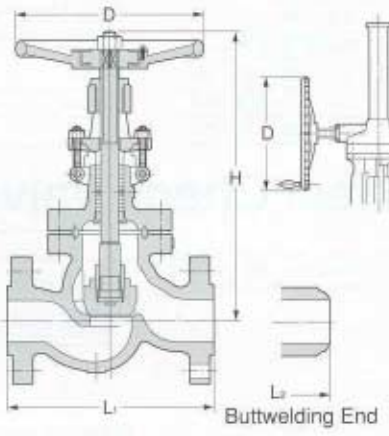
Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 2500 Cast Carbon Steel Globe Valve

Bolted bonnet, Outside screw-and-yoke, Rising stem and handwheel, Swivel disc.

Fig	End Connections
2500 SCJS	RF-flanged with smooth finish on gasket surface.
W2500 SCJS	Butt-welding ends.

2500 SCJS



Dimensions

Valve Size		2	2½	3	4
	mm	50	65	80	100
L_1	in	17.75	20.00	22.75	26.50
	mm	451	508	578	673
L_2	in	17.75	20.00	22.75	26.50
	mm	451	508	578	673
H	in	25.5	27.6	40.0	50.3
	mm	648	702	1016	1278
D	in	15.7	19.7	23.6	23.6
	mm	400	500	600	600

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB + HF*
Bonnet	ASTM A216 Gr.WCB
Stem	ASTM A276 Tp.403
Disc	ASTM A182 Gr.F6a
Lock nut	ASTM A182 Gr.F6a
Gland	ASTM A182 Gr.F6a
Gland packing	See Page 7.
Gland flange	ASTM A105
Handwheel	Ductile iron
Gasket	See Page 7.
Bonnet bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Gland bolt / nut	ASTM A576 Gr.1045/A194 Gr.2H
Bonnet bush	ASTM A182 Gr.F6a
Yoke	ASTM A216 GrWCB
Collar	ASTM A182 Gr.F6a

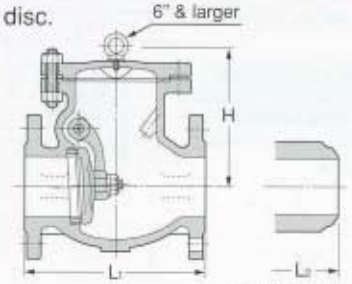
* Hard facing with Co-Cr-W Alloy.

Note: Refer to Page 2 & 3 for standard seat material and construction.

Class 150 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

150 SCO



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
150 SCO	RF-flanged with smooth finish on gasket surface.
W150 SCO	Butt-welding ends.

Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	550	600	650	700	750
L1	in	6.50	8.00	8.50	9.50	11.50	13.00	14.00	19.50	24.50	27.50	31.00	34.00	38.50	38.50	42.00	51.00	51.00	57.00	60.00
	mm	165	203	216	241	292	330	356	495	622	698	787	864	978	978	1067	1295	1295	1448	1524
L2	in	6.50	8.00	8.50	9.50	11.50	13.00	14.00	19.50	24.50	27.50	31.00	34.00	38.50	38.50	42.00	51.00	51.00	57.00	60.00
	mm	165	203	216	241	292	330	356	495	622	698	787	864	978	978	1067	1295	1295	1448	1524
H	in	5.3	6.0	6.7	7.1	7.9	9.25	9.8	11.6	13.2	14.5	16.3	18.1	20.1	21.7	23.0	24.8	26.8	28.2	29.9
	mm	135	152	170	180	200	235	250	295	334	368	415	460	510	550	585	630	680	716	760

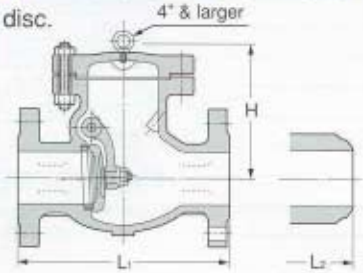
Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	A105/ASTM A216 Gr.WCB
Disc	ASTM A182 Gr.F6a (1½" ~ 6") ASTM A216 Gr.WCB + 13Cr (8" & larger)
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A182 Gr.F6a
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A105 (1½" ~ 14") ASTM A216 Gr.WCB (16" & larger)
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

Class 300 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

300SCO



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
300 SCO	RF-flanged with smooth finish on gasket surface.
W300 SCO	Butt-welding ends.

Dimensions

Valve Size		1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	28	30
	mm	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750
L1	in	9.50	10.50	11.50	12.50	14.00	15.75	17.50	21.00	24.50	28.00	33.00	34.00	38.50	40.00	53.00	59.00	62.75
	mm	241	267	292	318	356	400	444	533	622	711	838	864	978	1016	1346	1499	1594
L2	in	9.50	10.50	11.50	12.50	14.00	15.75	17.50	21.00	24.50	28.00	33.00	34.00	38.50	40.00	53.00	59.00	62.75
	mm	241	267	292	318	356	400	444	533	622	711	838	864	978	1016	1346	1499	1594
H	in	5.5	6.5	7.5	8.1	8.9	9.8	10.7	13.0	14.2	16.0	18.9	21.1	22.6	24.8	31.7	36.6	38.4
	mm	140	165	190	205	225	250	272	330	360	406	480	535	575	630	805	930	975

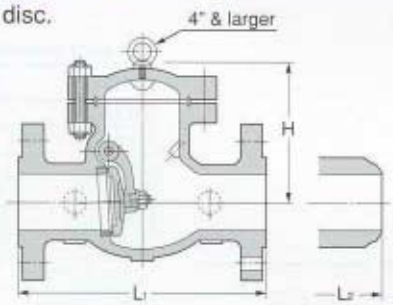
Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	A105/ASTM A216 Gr.WCB
Disc	ASTM A182 Gr.F6a (1½" ~ 6") ASTM A216 Gr.WCB + 13Cr (8" & larger)
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A182 Gr.F6a
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A105 (1½" ~ 12") ASTM A216 Gr.WCB (14" & larger)
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

Class 600 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

600 SCO



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
600 SCO	RF-flanged with smooth finish on gasket surface.
W600 SCO	Butt-welding ends.

Dimensions

Valve Size		2	2½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
L2	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
H	in	7.1	7.8	8.7	10.1	12.5	14.0	16.3	17.7	21.9	23.7	25.0	27.8	33.7
	mm	180	197	220	256	318	356	415	450	556	601	635	707	856

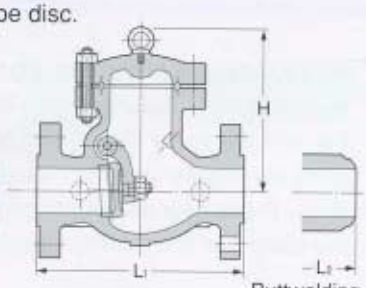
Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	ASTM A216 Gr.WCB
Disc	ASTM A182 Gr.F6a (2" ~ 6") ASTM A216 Gr.WCB + 13Cr (8" & larger)
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A182 Gr.F6a (2" ~ 14") ASTM A105+13Cr (16" & larger)
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A105 (2" ~ 12") ASTM A216 Gr.WCB (14" & larger)
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

Class 900 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

900 SCOS



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
900 SCOS	RF-flanged with smooth finish on gasket surface.
W900 SCOS	Butt-welding ends.

Dimensions

Valve Size		3	4	6	8	10	12	14	16
	in	80	100	150	200	250	300	350	400
L_1	in	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50
	mm	381	457	610	737	838	965	1029	1130
L_2	in	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50
	mm	381	457	610	737	838	965	1029	1130
H	in	11.5	13.6	17.5	20.7	24.4	28.3	31.3	34.6
	mm	292	346	444	526	620	720	794	880

Standard materials of parts

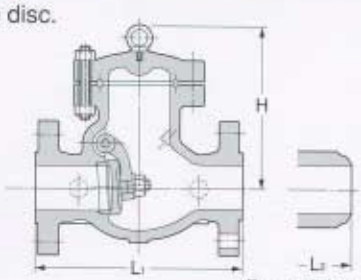
Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	ASTM A216 Gr.WCB
Disc	ASTM A216 Gr.WCB + 13Cr
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A105 + HF*
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A216 Gr.WCB
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

* Hard facing with Co-Cr-W Alloy.

Class 1500 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

1500 SCOS



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
1500 SCOS	RF-flanged with smooth finish on gasket surface.
W1500 SCOS	Butt-welding ends.

Dimensions

Valve Size		2	2½	3	4	6	8	10	12	14	16
	in	50	65	80	100	150	200	250	300	350	400
L_1	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
L_2	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	49.50	54.50
	mm	368	419	470	546	705	832	991	1130	1257	1384
H	in	11.4	12.4	13.7	15.4	20.3	25.6	29.0	34.4	37.6	42.6
	mm	290	316	347	391	515	650	737	875	955	1082

Standard materials of parts

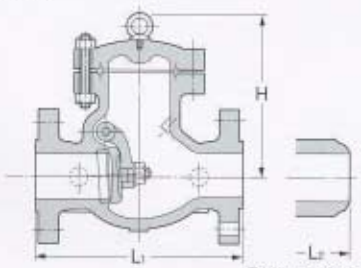
Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	ASTM A216 Gr.WCB
Disc	ASTM A216 Gr.WCB + 13Cr
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A105 + HF*
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A216 Gr.WCB
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

* Hard facing with Co-Cr-W Alloy.

Class 2500 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.

2500 SCOS



Buttwelding End

Note : Refer to Page 2 & 3 for standard seat material and construction.

Fig	End Connections
2500 SCOS	RF-flanged with smooth finish on gasket surface.
W2500 SCOS	Butt-welding ends.

Dimensions

Valve Size		2	2½	3	4	6
	in	50	65	80	100	150
L_1	in	17.75	20.00	22.75	26.50	36.00
	mm	451	508	578	673	914
L_2	in	17.75	20.00	22.75	26.50	36.00
	mm	451	508	578	673	914
H	in	13.2	15.2	15.7	17.7	22.8
	mm	335	385	400	450	580

Standard materials of parts

Parts	Materials
Body	ASTM A216 Gr.WCB
Cover	ASTM A216 Gr.WCB
Disc	ASTM A216 Gr.WCB + 13Cr
Disc nut	ASTM A194 Gr.8
Body seat ring	ASTM A105 + HF*
Cover bolt / nut	ASTM A193 Gr.B7/A194 Gr.2H
Arm	ASTM A216 Gr.WCB
Gasket	See Page 7.
Plug	ASTM A576 Gr.1045

* Hard facing with Co-Cr-W Alloy.

Care for Handling Valves

1. Before mounting valves:

Before mounting valves, be sure that adequate valves have been prepared to exactly meet the service conditions including the maximum design pressures and temperatures. Foreign objects such as sands or scales may be left in the pipes, and care should be taken to remove all of them by filters or strainers to protect valve seat surfaces during subsequent valve commissioning.

2. Mounting valves:

On mounting valves, clean the inside of pipes again so that no welding spatters, chips, scales or sands are left. For installation of flanged end valves, flange bolts should be tightened alternately and diagonally. Where extraordinary external forces such as piping stress may be applied to the flanges of valves being mounted, provide valve supports or any other adequate protective measures.

3. Retightening valves glands:

When leakage is detected from the gland area while the valve is being in service, the gland should be immediately retightened. Tighten the gland slowly and gradually until the leakage stops, while rotating the valve handwheel. In case the valve operating torque has been found considerably increased after these procedures, it is recommended to replace all packing rings at the time of valve maintenance.

4. Replacing packing rings:

It is recommended to replace packing rings during valve maintenance operation, but never while the valve is being pressurized in service, except the line pressure is reduced to the atmospheric level. KITZ cast carbon and low alloy steel valves are provided with the backseats or bonnet bushes. If leakage from the gland area cannot be stopped by retightening the gland, operate the valve to its full open position and add a few packing rings or replace packing rings utilizing sealing function of these backseats.

Sealing function of backseats is sometimes disturbed due to rust or other foreign objects trapped inside. It should be carefully checked before adding or replacing packing rings that backseats function properly. When the valve is highly pressurized, it sometimes causes danger to replace all of packing rings. In this case, adding a few new rings or replacing a few rings on top of the packing chamber is recommended as a first aid solution.

For replacement of packing rings, first remove the gland bolts and then packing rings. Clean the packing chamber and the valve stem. After checking that all sliding parts are in good condition, securely install new packing rings. Press new packing rings lightly a few times with the gland and then evenly tighten the gland.

KITZ Product Warranty

All KITZ cast carbon and low alloy steel valves are guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from the factories of KITZ Corporation, provided that the valves are properly handled according to the relevant KITZ operation manual.

Pressure-Temperature Ratings

Maximum Allowable Non-Shock Pressure, psig. **ASME B 16.34–1996**

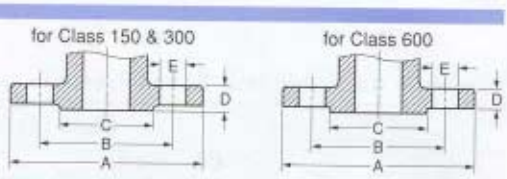
Service Temperature		Class 150					Class 300					Class 600				
°F	°C	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)
-20 to 100	-29 to 38	285	290	290	290	290	740	750	750	750	750	1480	1500	1500	1500	1500
200	93	260	260	260	260	260	675	710	750	750	750	1350	1425	1500	1500	1500
300	149	230	230	230	230	230	655	675	730	730	730	1315	1345	1455	1455	1455
400	204	200	200	200	200	200	635	660	705	705	705	1270	1315	1410	1410	1410
500	260	170	170	170	170	170	600	640	665	665	665	1200	1285	1330	1330	1330
600	316	140	140	140	140	140	550	605	605	605	605	1095	1210	1210	1210	1210
650	343	125	125	125	125	125	535	590	590	590	590	1075	1175	1175	1175	1175
700	371	110	110	110	110		535	570	570	570		1065	1135	1135	1135	
750	399	95	95	95	95		505	530	530	530		1010	1065	1065	1065	
800	427	80	80	80	80		410	510	500	510		825	1015	995	1015	
850	454	65	65	65	65		270	485	440	485		535	975	880	975	
900	482	50	50	50	50		170	450	355	450		345	900	705	900	
950	510	35	35	35	35		105	380	260	375		205	755	520	755	
1000	538	20	20	20	20		50	225	190	255		105	445	385	505	
1050	566		20*	20*	20*			140	140	170			275	280	345	
1100	593		20*	20*	20*			95	105	115			190	205	225	
1150	621			20*	20*				70	75				140	150	
1200	649			20*	20*				45	50				90	105	
Hydrostatic Shell Test Pressure		450	450				125	1125				2225	2250			
Valve Closure Test Pressure	Water	314	814				825	1628				1650				
	Air	80					80					80				

Service Temperature		Class 900					Class 1500					Class 2500				
°F	°C	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)	WCB (a)	WC6 (b)	C5	C12 (c)	LCC (d)
-20 to 100	-29 to 38	2220	2250	2250	2250	2250	3705	3750	3750	3750	3750	6170	6250	6250	6250	6250
200	93	2025	2135	2250	2250	2250	3375	3560	3750	3750	3750	5625	5930	6250	6250	6250
300	149	1970	2020	2185	2185	2185	3280	3365	3640	3640	3640	5470	5605	6070	6070	6070
400	204	1900	1975	2115	2115	2115	3170	3290	3530	3530	3530	5280	5485	5880	5880	5880
500	260	1795	1925	1995	1995	1995	2995	3210	3325	3325	3325	4990	5350	5540	5540	5540
600	316	1640	1815	1815	1815	1815	2735	3025	3025	3025	3025	4560	5040	5040	5040	5040
650	343	1610	1765	1765	1765	1765	2685	2940	2940	2940	2940	4475	4905	4905	4905	4905
700	371	1600	1705	1705	1705		2665	2840	2840	2840		4440	4730	4730	4730	
750	399	1510	1595	1595	1595		2520	2660	2660	2660		4200	4430	4430	4430	
800	427	1235	1525	1490	1525		2060	2540	2485	2540		3430	4230	4145	4230	
850	454	805	1460	1315	1460		1340	2435	2195	2435		2230	4060	3660	4060	
900	482	515	1350	1060	1350		860	2245	1765	2245		1430	3745	2945	3745	
950	510	310	1130	780	1130		515	1885	1305	1885		860	3145	2170	3145	
1000	538	155	670	575	760		260	1115	960	1270		430	1860	1600	2115	
1050	566		410	420	515			685	705	855			1145	1170	1430	
1100	593		290	310	340			480	515	565			800	860	945	
1150	621			205	225				345	375				570	630	
1200	649			135	155				225	255				370	430	
Hydrostatic Shell Test Pressure		3350	3375				5575	5625				9275	9375			
Valve Closure Test Pressure	Water	2442	2475				4076	4125				6787	6875			
	Air	80					80					80				

Notes : (a)–Permissible, but not recommended for prolonged usage above about 427°C (800°F).
(b)–Not to be used over 1100°F.
(c)–Use normalized and tempered material only.
(d)–Not to be used over 650°F.
* For welding end valves only. Flanged end ratings terminate at 538°C (1000°F)

Steel Pipe Flanges

ASME B16.5-1996
Class 150 RF to 600 RF



Class 150 Steel Pipe Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	6.00	152	4.75	120.5	3.62	92	0.75 (0.62)	19.1 (15.9)	0.75	19	4	5/8
2 1/2	65	7.00	178	5.50	139.5	4.12	105	0.88 (0.69)	22.3 (17.5)	0.75	19	4	5/8
3	80	7.50	190	6.00	152.5	5.00	127	0.94 (0.75)	23.9 (19.1)	0.75	19	4	5/8
4	100	9.00	229	7.50	190.5	6.19	157	0.94	23.9	0.75	19	8	5/8
5	125	10.00	254	8.50	216.0	7.31	186	0.94	23.9	0.88	22	8	3/4
6	150	11.00	279	9.50	241.5	8.50	216	1.00	25.4	0.88	22	8	3/4
8	200	13.50	343	11.75	298.5	10.62	270	1.12	28.6	0.88	22	8	3/4
10	250	16.00	406	14.25	362.0	12.75	324	1.19	30.2	1.00	25	12	7/8
12	300	19.00	483	17.00	432.0	15.00	381	1.25	31.8	1.00	25	12	7/8
14	350	21.00	533	18.75	476.5	16.26	413	1.38	35.0	1.12	29	12	1
16	400	23.50	597	21.25	539.5	18.50	470	1.44	36.6	1.12	29	16	1
18	450	25.00	635	22.75	578.0	21.00	533	1.56	39.7	1.25	32	16	1 1/8
20	500	27.50	698	25.00	635.0	23.00	584	1.69	42.9	1.25	32	20	1 1/8
24	600	32.00	813	29.50	749.5	27.25	692	1.88	47.7	1.38	35	20	1 1/4

Height of raised face is 0.06" (1.6mm) each. Dimensions in ( ) are for valve flanges.

Class 300 Steel Pipe Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	6.50	165	5.00	127.0	3.62	92	0.88	22.3	0.75	19	8	5/8
2 1/2	65	7.50	190	5.88	149.0	4.12	105	1.00	25.4	0.88	22	8	3/4
3	80	8.25	210	6.62	168.0	5.00	127	1.12	28.6	0.88	22	8	3/4
4	100	10.00	254	7.88	200.0	6.19	157	1.25	31.8	0.88	22	8	3/4
5	125	11.00	279	9.25	235.0	7.31	186	1.38	35.0	0.88	22	8	3/4
6	150	12.50	318	10.62	270.0	8.50	216	1.44	36.6	0.88	22	12	3/4
8	200	15.00	381	13.00	330.0	10.62	270	1.62	41.3	1.00	25	12	7/8
10	250	17.50	444	15.25	387.5	12.75	324	1.88	47.7	1.12	29	16	1
12	300	20.50	521	17.75	451.0	15.00	381	2.00	50.8	1.25	32	16	1 1/8
14	350	23.00	584	20.25	514.5	16.25	413	2.12	54.0	1.25	32	20	1 1/8
16	400	25.50	648	22.50	571.5	18.50	470	2.25	57.2	1.38	35	20	1 1/4
18	450	28.00	711	24.75	628.5	21.00	533	2.38	60.4	1.38	35	24	1 1/4
20	500	30.50	775	27.00	686.0	23.00	584	2.50	63.5	1.38	35	24	1 1/4
24	600	36.00	914	32.00	813.0	27.25	692	2.75	69.9	1.62	41	24	1 1/2

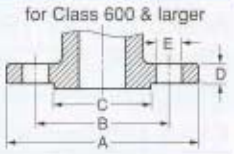
Height of raised face is 0.06" (1.6mm) each.

Class 600 Steel Pipe Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	6.50	165	5.00	127.0	3.62	92	1.00	25.4	0.75	19	8	5/8
2 1/2	65	7.50	190	5.88	149.0	4.12	105	1.12	28.6	0.88	22	8	3/4
3	80	8.25	210	6.62	168.0	5.00	127	1.25	31.8	0.88	22	8	3/4
4	100	10.75	273	8.50	216.0	6.19	157	1.50	38.1	1.00	25	8	7/8
5	125	13.00	330	10.50	266.5	7.31	186	1.75	44.5	1.12	29	8	1
6	150	14.00	356	11.50	292.0	8.50	216	1.88	47.7	1.12	29	12	1
8	200	16.50	419	13.75	349.0	10.62	270	2.19	55.6	1.25	32	12	1 1/8
10	250	20.00	508	17.00	432.0	12.75	324	2.50	63.5	1.38	35	16	1 1/4
12	300	22.00	559	19.25	489.0	15.00	381	2.62	66.7	1.38	35	20	1 1/4
14	350	23.75	603	20.75	527.0	16.25	413	2.75	69.9	1.50	38	20	1 3/8
16	400	27.00	686	23.75	603.0	18.50	470	3.00	76.2	1.62	41	20	1 1/2
18	450	29.25	743	25.75	654.0	21.00	533	3.25	82.6	1.75	45	20	1 5/8
20	500	32.00	813	28.50	724.0	23.00	584	3.50	88.9	1.75	45	24	1 5/8
24	600	37.00	940	33.00	838.0	27.25	692	4.00	101.6	2.00	51	24	1 7/8

Height of raised face is 0.25" (6.4mm) each.

Class 900 RF to 2500 RF



Class 900 Steel Pipe Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	50Use Class 1500 dimensions for these sizes.											
2½	65												
3	80	9.50	241	7.50	190.5	5.00	127	1.50	38.1	1.00	25	8	⅞
4	100	11.50	292	9.25	235.0	6.19	157	1.75	44.5	1.25	32	8	1⅛
5	125	13.75	349	11.00	279.5	7.31	186	2.00	50.8	1.38	35	8	1¼
6	150	15.00	381	12.50	317.5	8.50	216	2.19	55.7	1.25	32	12	1⅛
8	200	18.50	470	15.50	393.5	10.62	270	2.50	63.5	1.50	38	12	1⅜
10	250	21.50	546	18.50	470.0	12.75	324	2.75	69.9	1.50	38	16	1⅜
12	300	24.00	610	21.00	533.5	15.00	381	3.12	79.3	1.50	38	20	1⅜
14	350	25.25	641	22.00	559.0	16.25	413	3.38	85.9	1.62	41	20	1½
16	400	27.75	705	24.50	616.0	18.50	470	3.50	88.9	1.75	45	20	1⅝
18	450	31.00	787	27.00	686.0	21.00	533	4.00	101.6	2.00	51	20	1⅞
20	500	33.75	857	29.50	749.5	23.00	584	4.25	108.0	2.12	54	20	2
24	600	41.00	1041	35.50	901.5	27.25	692	5.50	139.7	2.62	67	20	2½

Height of raised face is 0.25" (6.4mm) each.

Class 1500 Steel Pipe Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	8.50	216	6.50	165.0	3.62	92	1.50	38.1	1.00	25	8	⅞
2½	65	9.62	244	7.50	190.5	4.12	105	1.62	41.2	1.12	29	8	1
3	80	10.50	267	8.00	203.0	5.00	127	1.88	47.8	1.25	32	8	1⅛
4	100	12.25	311	9.50	241.5	6.19	157	2.12	53.9	1.38	35	8	1¼
5	125	14.75	375	11.50	272.0	7.31	186	2.88	73.2	1.62	41	8	1½
6	150	15.50	394	12.50	317.5	8.50	216	3.25	82.6	1.50	38	12	1⅜
8	200	19.00	483	15.50	393.5	10.62	270	3.62	92.0	1.75	45	12	1⅝
10	250	23.00	584	19.00	482.5	12.75	324	4.25	108.0	2.00	51	12	1⅞
12	300	26.50	673	22.50	571.5	15.00	381	4.88	124.0	2.12	54	16	2
14	350	29.50	749	25.00	635.0	16.25	413	5.25	133.4	2.38	60	16	2¼
16	400	32.50	826	27.75	705.0	18.50	470	5.75	146.1	2.62	67	16	2½
18	450	36.00	914	30.50	774.5	21.00	533	6.38	162.1	2.88	73	16	2¾
20	500	38.75	984	32.75	832.0	23.00	584	7.00	177.8	3.12	79	16	3
24	600	46.00	1168	39.00	990.5	27.25	692	8.00	203.2	3.62	92	16	3½

Height of raised face is 0.25" (6.4mm) each.

Class 2500 Steel Pipe Flange Dimensions

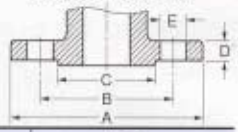
Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
2	50	9.25	235	6.75	171.5	3.62	92	2.00	50.8	1.12	29	8	1
2½	65	10.50	267	7.75	197.0	4.12	105	2.25	57.2	1.25	32	8	1⅛
3	80	12.00	305	9.00	228.5	5.00	127	2.62	66.5	1.38	35	8	1¼
4	100	14.00	356	10.75	273.0	6.19	157	3.00	76.2	1.62	41	8	1½
5	125	16.50	419	12.75	324.0	7.31	186	3.62	91.9	1.88	48	8	1¾
6	150	19.00	483	14.50	368.5	8.50	216	4.25	108.0	2.12	54	8	2
8	200	21.75	552	17.25	438.0	10.62	270	5.00	127.0	2.12	54	12	2
10	250	26.50	673	21.25	540.0	12.75	324	6.50	165.1	2.62	67	12	2½
12	300	30.00	762	24.38	629.5	15.00	381	7.25	184.2	2.88	73	12	2¾

Height of raised face is 0.25" (6.4mm) each.

ASME B16.47-1996
Class 150 RF, Class 300 RF

The API-605 flanges are designated as Series B flanges in this standard.

for Class 150 & 300



Class 150 Series B Integral Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
26	650	30.94	786	29.31	744.5	28.00	711.2	1.62	41.3	0.88	22.2	36	3/4
28	700	32.94	837	31.31	795.3	30.00	762.0	1.75	44.4	0.88	22.2	40	3/4
30	750	34.94	887	33.31	846.1	32.00	812.8	1.75	44.4	0.88	22.2	44	3/4
32	800	37.06	941	35.44	900.1	34.00	863.6	1.81	46.0	0.88	22.2	48	3/4
34	850	39.56	1005	37.69	957.3	36.25	920.8	1.94	49.2	1.00	25.4	40	7/8
36	900	41.62	1057	39.75	1009.6	38.25	971.6	2.06	52.4	1.00	25.4	44	7/8
38	950	44.25	1124	42.12	1070.0	40.25	1022.4	2.12	54.0	1.12	28.6	40	1
40	1000	46.25	1175	44.12	1120.8	42.50	1079.5	2.19	55.6	1.12	28.6	44	1
42	1050	48.25	1226	46.12	1171.6	44.50	1130.3	2.31	58.7	1.12	28.6	48	1
44	1100	50.25	1276	48.12	1222.4	46.50	1181.1	2.38	60.3	1.12	28.6	52	1
46	1150	52.81	1341	50.56	1284.3	48.62	1235.1	2.44	61.9	1.25	31.8	40	1 1/8
48	1200	54.81	1392	52.56	1335.1	50.75	1289.0	2.56	65.1	1.25	31.8	44	1 1/8
50	1250	56.81	1443	54.56	1385.9	52.75	1339.8	2.69	68.3	1.25	31.8	48	1 1/8
52	1300	58.81	1494	56.56	1436.7	54.75	1390.6	2.75	69.8	1.25	31.8	52	1 1/8
54	1350	61.00	1549	58.75	1492.2	56.75	1441.1	2.81	71.4	1.25	31.8	56	1 1/8
56	1400	63.00	1600	60.75	1543.0	58.75	1492.3	2.88	73.0	1.25	31.8	60	1 1/8
58	1450	65.94	1675	63.44	1611.3	60.75	1543.0	2.94	74.6	1.38	34.9	48	1 1/4
60	1500	67.94	1726	65.44	1662.1	63.00	1600.2	3.00	76.2	1.38	34.9	52	1 1/4

Height of raised face is 0.06" (1.6mm) each.

Class 300 Series B Integral Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
26	650	34.12	867	31.62	803.3	29.00	736.6	3.50	88.9	1.38	34.9	32	1 1/4
28	700	36.25	921	33.75	857.2	31.00	787.4	3.50	88.9	1.38	34.9	36	1 1/4
30	750	39.00	991	36.25	920.8	33.25	844.6	3.69	93.7	1.50	38.1	36	1 3/8
32	800	41.50	1054	38.50	977.9	35.50	901.7	4.06	103.2	1.62	41.3	32	1 1/2
34	850	43.62	1108	40.62	1031.9	37.50	952.5	4.06	103.2	1.62	41.3	36	1 1/2
36	900	46.12	1172	42.88	1089.0	39.75	1009.6	4.06	111.1	1.75	44.4	32	1 5/8
38	950	48.12	1222	44.88	1139.8	41.75	1060.4	4.38	115.9	1.75	44.4	36	1 5/8
40	1000	50.12	1273	46.88	1190.6	43.88	1114.4	4.56	119.1	1.75	44.4	40	1 5/8
42	1050	52.50	1334	49.00	1244.6	46.00	1168.4	4.69	127.0	1.88	47.6	36	1 3/4
44	1100	54.50	1384	51.00	1295.4	48.00	1219.2	5.00	128.6	1.88	47.6	40	1 3/4
46	1150	57.50	1460	53.75	1365.2	50.00	1270.0	5.06	128.6	2.00	50.8	36	1 7/8
48	1200	59.50	1511	55.75	1416.0	52.25	1327.2	5.06	138.1	2.00	50.8	40	1 7/8

Height of raised face is 0.06" (1.6mm) each.

MSS SP-44-1996 Class 150 RF, Class 300 RF & Class 600 RF

Class 150 Steel Pipe Line Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
22	550	29.50	750	27.25	692	25.25	641	1.81	46.0	1.38	35	20	1 1/4

Height of raised face is 0.06" (1.6mm) each.

Class 300 Steel Pipe Line Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
22	550	33.00	840	29.25	743	25.25	641	2.62	66.5	1.62	41	24	1 1/2

Height of raised face is 0.06" (1.6mm) each.

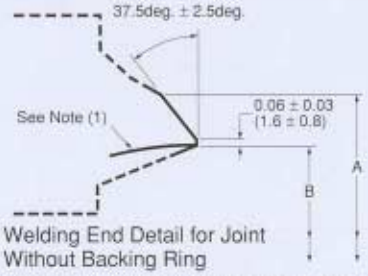
Class 600 Steel Pipe Line Flange Dimensions

Nominal Size		A		B		C		D		E		Bolt	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	Number	Diam
22	550	34.25	870	30.62	778	26.25	641	3.75	95.0	1.88	47	24	1 3/4

Height of raised face is 0.25" (6.4mm) each.

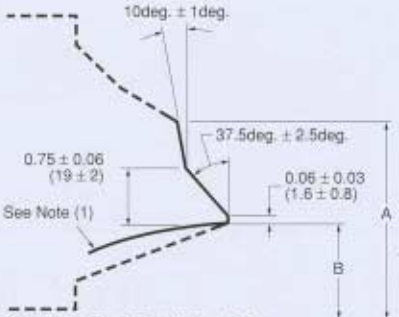
Buttwelding End Details

ASME B16.25–1997



Welding End Detail for Joint
Without Backing Ring

WELDING END DETAILS INTENDED FOR USE ON 0.88 in. (22 mm) AND THINNER NOMINAL WALL THICKNESSES



Welding End Detail for Joint
Without Backing Ring

WELDING END DETAILS INTENDED FOR USE ON NOMINAL WALL THICKNESSES GREATER THAN 0.88 in. (22mm)

NOTES: (1) Internal surface may be as-formed or machined for dimension B at root face. Contour within the envelope shall be in accordance with section.

		Pipe Schedule No.	Nominal Pipe Size									
			2½	3	4	5	6	8	10	12	14	16
A	in	All	2.96	3.59	4.62	5.69	6.78	8.78	10.94	12.97	14.25	16.25
	mm		75.18	91.19	117.35	144.53	172.21	223.01	277.88	329.44	361.95	412.75
B	in	STD								12.000	13.250	15.250
	mm									304.80	336.55	387.35
	in	40	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938	13.124	15.000
	mm		62.71	77.93	102.26	128.19	154.05	202.72	254.51	303.23	333.35	381.00
	in	XS								11.750	13.000	
	mm									298.45	330.20	
	in	60						7.813	9.750	11.626	12.812	14.688
	mm							198.45	247.65	295.30	325.42	373.08
	in	80	2.323	2.900	3.826	4.813	5.761	7.625	9.562	11.374	12.500	14.312
	mm		59.00	73.66	97.18	122.25	146.33	193.68	242.87	288.90	317.50	363.52
	in	100						7.437	9.312	11.062	12.124	13.938
	mm							188.90	236.52	280.97	307.95	354.03
	in	120			3.624	4.563	5.501	7.187	9.062	10.750	11.812	13.562
	mm				92.05	115.90	139.73	182.55	230.17	273.05	300.02	344.47
	in	140						7.001	8.750	10.500	11.500	13.124
	mm							177.83	222.25	266.70	292.10	333.35
	in	160	2.125	2.624	3.438	4.313	5.187	6.875	8.500	10.126	11.188	12.812
	mm		53.98	66.65	87.33	109.55	131.75	174.63	215.90	257.20	284.18	325.42
	in	XXS	1.771	2.300	3.152	4.063	4.897	6.813				
	mm		44.98	58.42	80.06	103.20	124.38	173.05				

		Pipe Schedule No.	Nominal Pipe Size									
			18	20	22	24	26	28	30	32	34	36
A	in	All	18.28	20.31	22.34	24.38	26.38	28.38	30.38	32.50	34.50	36.50
	mm		464.31	515.87	567.44	619.25	670.05	720.85	771.65	825.50	876.30	927.10
B	in	10					25.376	27.376	29.376	31.376	33.376	35.376
	mm						644.55	695.35	746.15	796.95	847.75	898.55
	in	20					25.000	27.000	29.000	31.000	33.000	35.000
	mm						635.00	685.80	736.60	787.40	838.20	889.00
	in	STD	17.250	19.250	21.250	23.250						
	mm		438.15	488.95	539.75	590.55						
	in	XS	17.000	19.000	21.000	23.000						
	mm		431.80	482.60	533.40	584.20						
	in	30				22.876		26.750	28.750	30.750	32.750	34.750
	mm					581.05		679.45	730.25	781.05	831.85	882.65
	in	40	16.876	18.812		22.624				30.624	32.624	34.500
	mm		428.65	477.82		574.65				777.85	828.65	876.30
	in	60	16.500	18.376	20.250	22.062						
	mm		419.10	466.75	514.35	560.37						
	in	80	16.124	17.938	19.750	21.562						
	mm		409.55	455.63	501.65	547.67						
	in	100	15.688	17.438	19.250	20.938						
	mm		398.48	442.93	488.95	531.83						
	in	120	15.250	17.000	18.750	20.376						
	mm		387.35	431.80	476.25	517.55						
	in	140	14.876	16.500	18.250	19.876						
	mm		377.85	419.10	463.55	504.85						
	in	160	14.438	16.062	17.750	19.312						
	mm		366.73	407.97	450.85	490.52						

⚠ CAUTION

Pressure-temperature ratings and other performance data published in this catalog have been developed from our design calculation, in-house testing, field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of KITZ products introduced in this catalog.

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