

Low Temperature and Cryogenic Valves



- G**ATE VALVE
- G**LOBE VALVE
- C**HECK VALVE
- B**ALL VALVE

Low Temperature and Cryogenic Valves

GATE VALVE

GLOBE VALVE

CHECK VALVE

BALL VALVE

KITZ valves have been developed to meet the most advanced and demanding technological standards of Japan, the world's leading importer of environmentally friendly, clean energy LNG (liquid natural gas). KITZ offers a series of cryogenic valves of proven high quality, as demonstrated by technical evidence.

We offer stainless steel and cast carbon steel gate, globe, check and ball valves for processing, storage, shipment and distribution of ethylene, LPG, LNG and other low temperature or cryogenic fluids down to -196°C (-321°F).

Use applications

- LNG (Liquefied Natural Gas) ; Terminals/Gas Production Plants
- Ethylene plant
- Industrial low-temperature gas

CONTENTS

- 02 Features of metal seated gate valves.
- 03 Features of soft seated globe valves.
- 04 Features of floating ball valves
- 05 Design comparison according to operational temperature
- 06 Feature of trunnion mounted ball valves
- 07 Low emission service valves
- 08 Inspection
- 10 Product range of operation temperatures
- 11 Product coding
- 12 -196°C **C series** Gate Valves, Globe Valves, Check Valves
- 16 -196°C **A series** Gate Valves, Globe Valves, Check Valves
- 20 -196°C **C series** Globe Valves (Soft Seated)
- 20 -196°C **A series** Globe Valves (Soft Seated)
- 21 -104°C **A series** Gate Valves, Globe Valves, Check Valves
- 24 -104°C **C series** Globe Valves (Soft Seated)
- 24 -104°C **A series** Globe Valves (Soft Seated)
- 25 -46°C Gate Valves, Globe Valves, Check Valves
- 27 -196°C Ball Valves
- 29 -104°C Ball Valves
- 30 -46°C Ball Valves



Casting technology

Our cryogenic service valve castings are typically made of modified ASTM CF8M austenitic stainless steel which contains a higher percent nickel to minimize transformation of an austenitic structure to a martensitic structure. This undesirable transformation occurs when valve parts are machined during production process (or subjected to mechanical stress), which make them vulnerable to distortion, when valve assemblies are exposed to extremely low temperature in the field. This must be prevented during production because of subsequently degraded seat face precision, and resultant concern of seat leakage. By the way, a higher nickel content usually lowers the temperature where martensitic transformation begins (Martensitic Transformation Temperature or MTT in short, only in this article below). For this reason, our foundries always ensure proper adjustment of other chemicals such as carbon and chromium to make MTT lower.



Operational Temperature Range

Valve Type	Design	-196	-104	-80	-46	0°C		Page
Gate Valve	Metal Seated	[Bar chart showing range from -196 to 0°C]					-196°C	12~19
Globe Valve		[Bar chart showing range from -104 to 0°C]					-104°C	21~23
Check Valve		[Bar chart showing range from -46 to 0°C]					-46°C	25~26
Globe Valve	Soft Seated	[Bar chart showing range from -196 to 0°C]					-196°C	20
		[Bar chart showing range from -104 to 0°C]					-104°C	24
Ball Valve	Floating Trunnion	[Bar chart showing range from -196 to 0°C]					-196°C	27~28
		[Bar chart showing range from -104 to 0°C]					-104°C	29
		[Bar chart showing range from -46 to 0°C]					-46°C	30

Color tags corresponding to usage temperature are provided.

KITZ Production control

Order inflow

KITZ cryogenic valves are tailored to meet our clients' specifications. KITZ selects the most appropriate valve types and analyzes the clients' needs, before deciding on valve manufacturing specifications. These manufacturing specifications serve as the base for unified control of every step of valve manufacture from sales and design to production and shipping.

Design

KITZ's valve designs reflect know-how built on a long record of achievement and proven, performance-tested technology

Casting

Our high quality stainless steels are manufactured from castings produced at KITZ's in-house foundry. Therefore, special materials can be used to required the low temperature and cryogenic service.

Machining

We have established production technologies and performance tests based on its many years of experience in manufacturing valves for industrial use.

Assembly and Inspection

KITZ carries out strict inspections of cryogenic valves on a dedicated assembly and inspection line. Starting with a variety of non-destructive inspections, KITZ can accommodate in-house any type of special method inspections requested by our customers.

Feature of KITZ metal seated gate valves.

● Extension bonnet

The extension bonnet provides efficient cold insulation, minimizing heat conduction and transfer from cryogenic flow, while preventing the exposure of valve packing to cryogenic media and providing a secure seal.

● Surface-hardening treatment with Stellite® alloy

Stellite® alloy is used to apply a surface-hardening treatment to the sliding portions of the body and disc seat assemblies, preventing wear and improving durability.

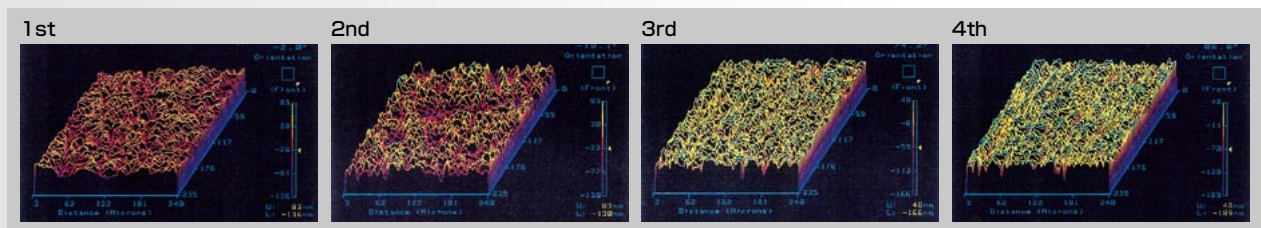
● Cavity pressure relief

A hole in the disc on the high-pressure side, to prevent excessive rise in the cavity pressure.
(Liquid trapped within the body cavity may evaporate, and cause an excessive rise in the cavity pressure)

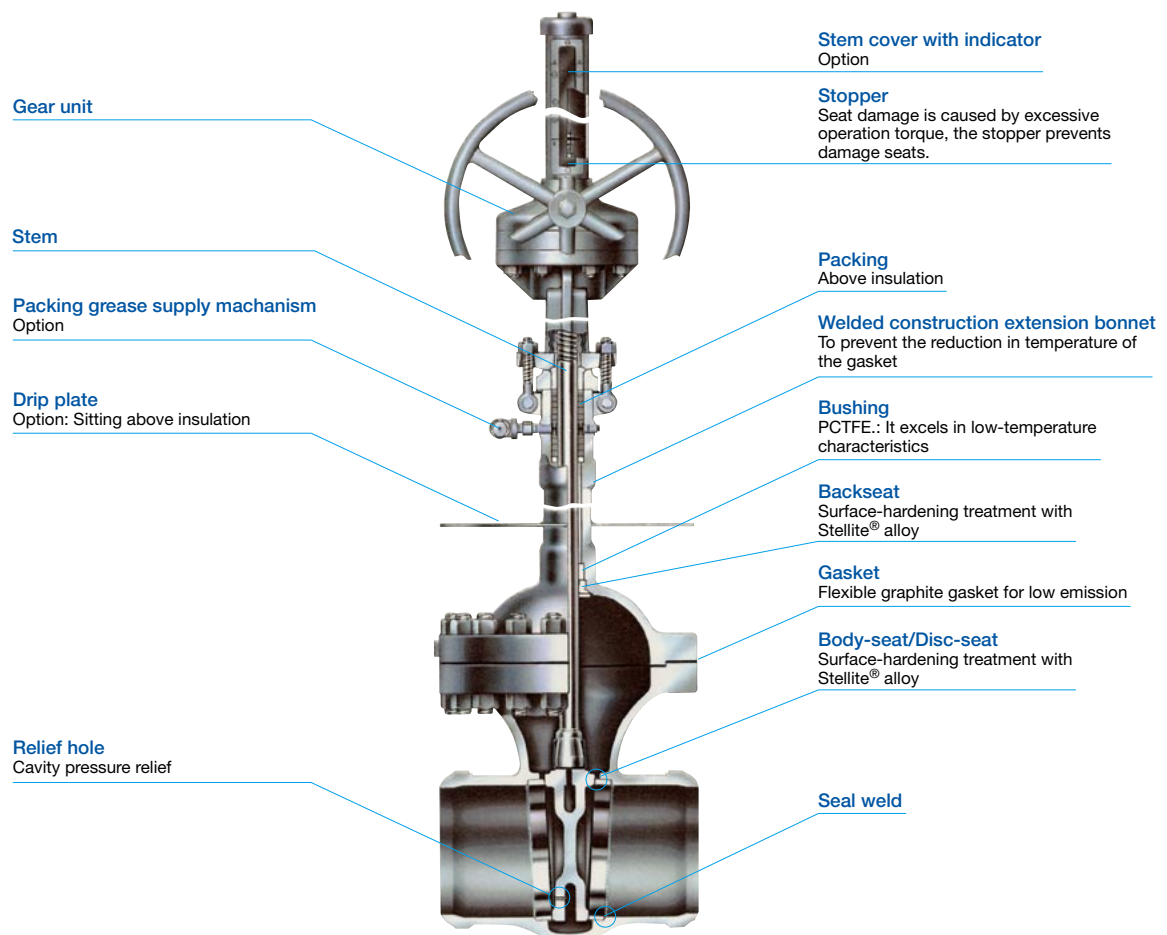
● Seat lapping

We polish dry-lapped seat surfaces to compare surface finish before and after polishing. Also we compared the seat surface finish and sealing performance of valve samples provided with only lapped seats and lapped-and-polished seats.

Improvement of seat surface roughness with lapping



This is an illustrated cross-section of a typical KITZ Cryogenic service gate valve to exhibit the basic design concept –196°C specification



Feature of KITZ soft seat globe valves

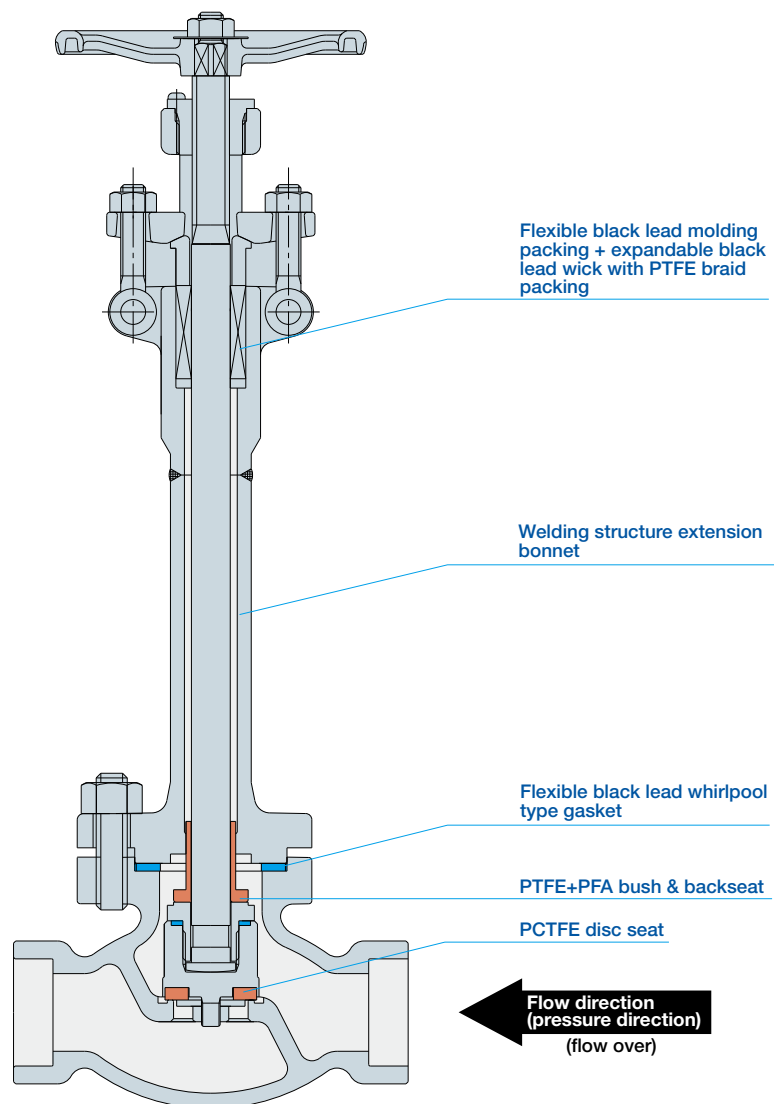
- Higher cost performance than the disc seat structure achieved.
- Flow direction (pressure direction) becomes flow over the disc low operation strength enabled through flow over.
- PCTFE disc seat with excellent low-temperature characteristics and mechanical properties used to achieve high durability and high sealant qualities.
- Stem binding prevention realized with back seat and all-in-one type PTFE+PFA construction bush.
- Disc seats can only be replaced by removing the disc nut.
- Same low emission type as in the metal seat structure used for the seal material of packing/gasket. This eliminates compression creep stress relief are canceled, and secures seal qualities for extended periods.
- Improvement of maintenance and avoided of binding achieved through all-in-one design of backseat and bush PTFE+PFA.

*1 Soft structure applicable only to globe valve

*2 Even when valves are all closed with flow over, packing unit is always pressurized.

Soft seat globe valve representative structural assembly

-196°C specification



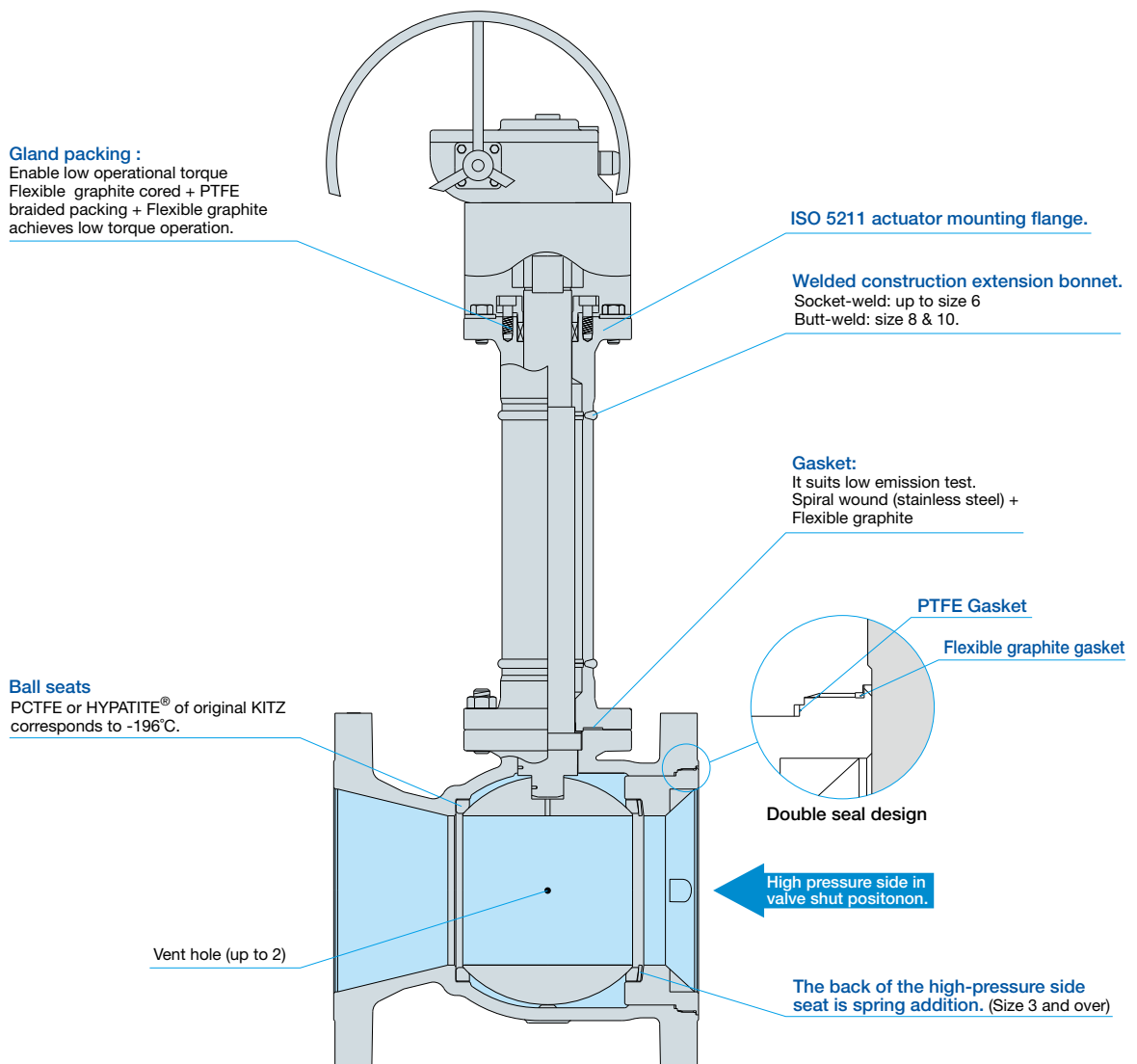
※This figure shows the valve "Closed".

Features of KITZ floating ball valves

-196°C Specification

- Easy opening and closing with 90° rotation.
- There is little pressure loss.
- Extension bonnet
Thermal conduction and heat transmission from the low temperature fluid is suppressed to a minimum while a cooling effect is provided, and the packing is prevented from being exposed to the low temperature liquid and a secure seal is realized.
- Packing/gasket
Flexible graphite excelling in resistance to low temperatures, sealing qualities, and durability is used in the packing and gasket.
- Seat structure
Size 3B and over utilizes a seat spring and achieves a secure seal with low operation torque.
- Prevention of abnormal pressure within cavity
Size 1/2B to 2B have vent holes, and size 3B to 10B have upstream-side seat springs installed to prevent abnormal pressure within the cavity.
- Firesafe design

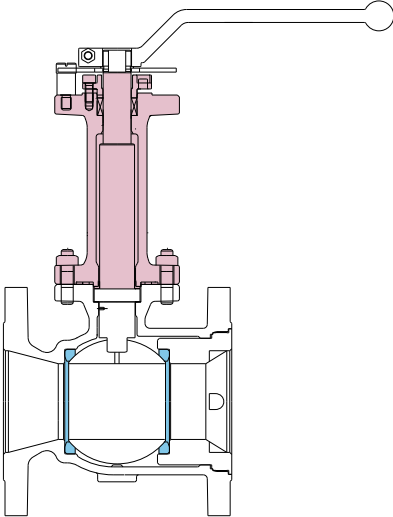
This is an illustrated cross-section of a KITZ cryogenic floating Ball Valve, operational Temperature is -196°C



- The valve design that is appropriate for operational temperature can be selected by combining Extension bonnet with Ball seat.

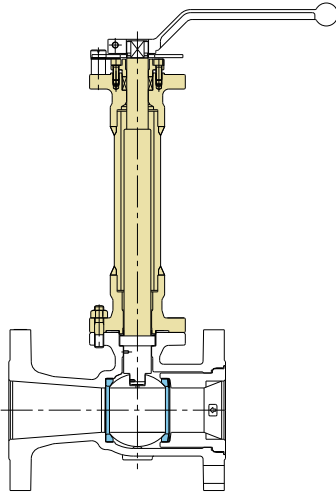
Design comparison according to operational temperature.

-46°C



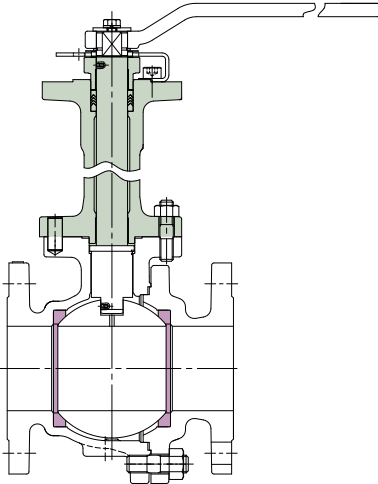
● Body material	A352 Gr. LCC
● Bore	Reduced bore
● Body design	1-piece
● Flow direction	Bi-directional flow
● Gland packing	Flexible graphite
● Gasket	PTFE + Flexible graphite

-196°C



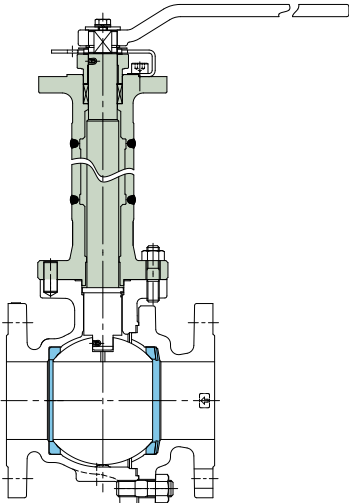
● Body material	A351 Gr. CF8M
● Bore	Reduced bore
● Body design	1-piece
● Flow direction	Unidirection
● Gland packing	Flexible graphite
● Gasket	PTFE + Flexible graphite
● Seat spring	Size 3 and over

-104°C



● Body material	A351 Gr. CF8
● Bore	Full bore
● Body design	2-piece
● Flow direction	Unidirection
● Gland packing	PTFE
● Gasket	PTFE

-196°C



● Body material	A351 Gr. CF8
● Bore	Full bore
● Body design	2-piece
● Flow direction	Bi-directional flow
● Gland packing	Flexible graphite
● Gasket	Flexible graphite
● Seat spring	Size 2 and over

Feature of KITZ trunnion mounted ball valves

-196°C and -104°C Specifications

1. Firesafe Design.

(1) Internal leakage prevention:

When resilient sealing materials are decomposed or deteriorated by a plant fire, the edge of the metal seat retainer preloaded by the seat spring comes into contact with the ball to shut off the line fluid to minimize internal leakage through the valve bore. The seat retainer also compresses KITZ originally designed flexible graphite retainer packings to prevent fluid leakage from between the valve body and the seat retainer.

(2) External leakage prevention

Perfect sealing and fire safe features are provided by the sealing action of flexible graphite gland packing and gasket. Flexible graphite gaskets are in all the static joints of the body components.

2. Bi-directional flow Sealing Mechanism

A floating seat design is employed so that each of the upstream and downstream seats is adequately maintained in contact with the ball by means of a seat spring. Line pressure further helps this contact method. It features excellent sealing performance independently on both seats at the same time.

3. Cavity Pressure Relief.

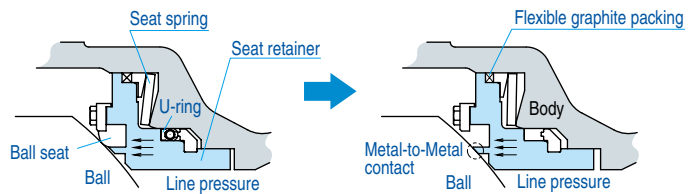
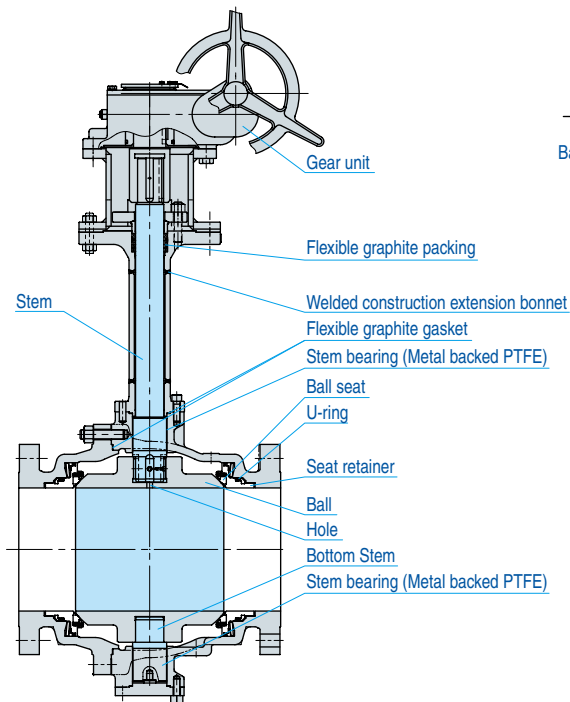
In case of an unusually high increase of servicing or ambient temperature, liquefied gas or highly volatile liquid trapped within the body cavity may evaporate, and cause an excessive rise in the cavity pressure. For safety considerations, a provision is made so that when the cavity pressure exceeds the line pressure and cavity pressure is abnormal, then the ball seat will move slightly away from the ball surface to relieve the excessive cavity pressure into the valve bore.

A pressure relief hole is provided at the coupling area of the ball to the stem in order to relieve the pressure trapped in the cavity when the valve is fully open.

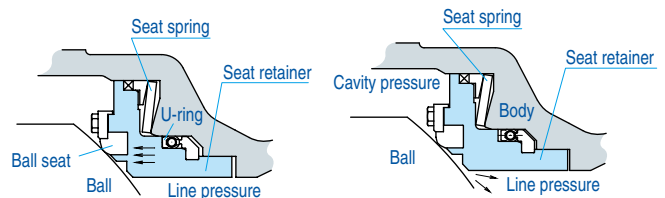
4. Options

Uni Direction Seating Mechanism.

Please contact your KITZ agent or distributor.



Firesafe design



Cavity pressure relief

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 emissions or leak levels of toxic gases and chemicals 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 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 Class 150, 300 and 600 Series A and C stainless and high alloy steel valves. 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 <Gate Valves, Globe Valves>

KITZ's original "SEALEVER_" graphite packing set with a pure carbon spacer bush for Class 300 and 600.

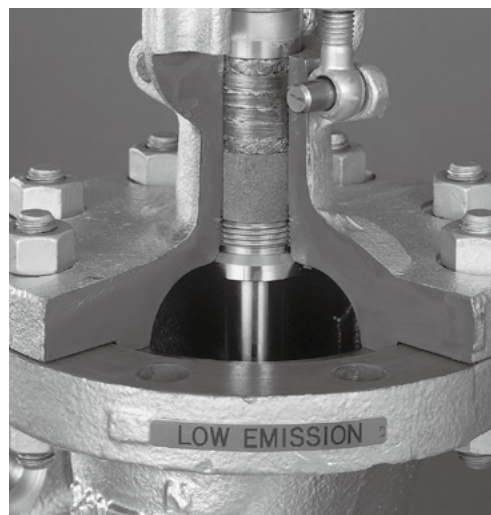
*US Patent No.5522603 & 5573253. Other patents registered or pending worldwide

Bonnet gaskets and check valve cover gaskets <Gate Valves, Globe Valves, Swing Check Valves>

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

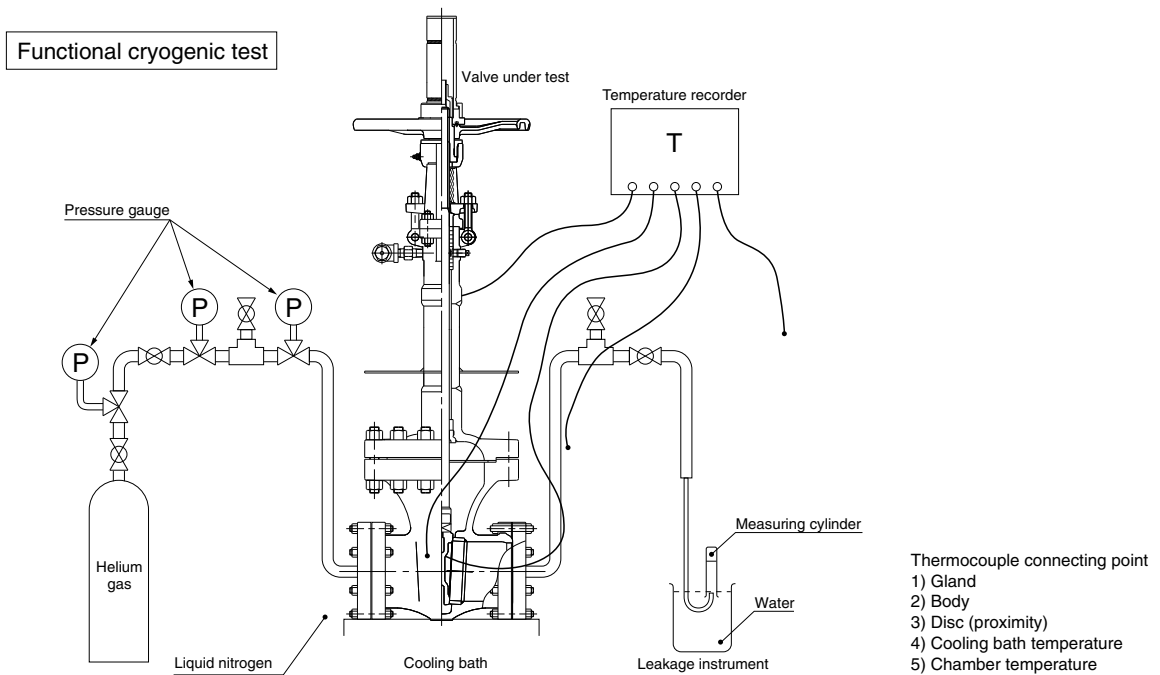
Class 600 : Ring joint metal gasket



Test/Inspection Item	Method	Evaluation
Chemical composition analysis		Relevant ASTM Standards
Mechanical property test	ASTM A370	Relevant ASTM Standards
Pressure tests	API 598 or BS 6755 Part 1	API 598
Radiographic inspection	ASTM E142/E49	ASME B16.34
Wet magnetic particle inspection	ASTM E 138	
Liquid penetrant inspection	ASTM E165	
Low temperature impact test	ASTM E23	ASTM A352
Dimension inspection		Relevant Valve Standards.
Visual inspection		MSS SP-55
Emission test	EPA Method 21 and KITZ Std	KITZ Std.
Cryogenic test	BS 6364	BS 6364

* The test requirements, such as test items, methods and criteria, must be agreed upon by both the customer and KITZ.

Cryogenic Valves Test



Before test



After test



Product range of operation temperatures

Operational Temperature	Class	End connection	Valve type	Nominal Size Code	Nominal Size																			Page
					A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
					B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
-196°C	150	RF-flanged	Ball valve (1 piece)	150UTALM	●	●	●	●	●	●		●	●		■	■	■							27
	300		Ball valve (1 piece)	300UTALM	●	●	●	●	●	●		●	●		■	■	■							
	10K	RF-flanged	Ball valve	10UTDZL※1	●	●	●	●	●	●	●	●	▲	■	■	■								28
	20K		Ball valve	20UTDZL※1	●	●	●	●	●	●	●	●	■	■	■	■								28
	150		Ball valve	150UTDZL※1	●	●	●	●	●	●	●	●	■	■	■	■								28
	300		Ball valve	300UTDZL	●	●	●	●	●	●	●	■	■	■	■									28
-104°C	10K	RF-flanged	Ball valve	10UTDZXL※1	●	●	●	●	●	●	●	●	■	■	■	■								29
	20K		Ball valve	20UTDZXL※1	●	●	●	●	●	●	●	●	■	■	■	■								29
	150		Ball valve	150UTDZXL※1	●	●	●	●	●	●	●	■	■	■	■									29
	300		Ball valve	300UTDZXL	●	●	●	●	●	●	■	■	■	■										29
-46°C	150	RF-flanged	Ball valve (1 piece)	150SCTAXCL	●	●	●	●	●	●	●	●	■	■	■	■								30
	300		Ball valve (1 piece)	300SCTAXCL	●	●	●	●	●	●	●	●	■	■	■	■								30

▲ : Made to order. Please contact KITZ Corporation for details. ■ : Gear operation
 ※1: 32A (DN32) - Please contact KITZ Corporation.

Product coding

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
● Gate Valve	G	-	W	150	SC	L		X	BL	Y	
● Globe Valve	(T)	G	-	W	150	U	M	C	L	M	Y
● Soft seated Globe Valve			W	150	U	M	C	L	M	Y	
● Check Valve			W	300	U	O	C	X		Y	
● Ball Valve	G	-		150	U	TDZ		XL	M		

① T.T.O Guideline	
None	—
(T)	Apply

② Operation	
None	Hand wheel or Lever
G	Gear

③ End connection	
None	RF-flanged
W	Butt-weld
SW	Socket-weld

④ Pressure (Class)		
10	10K	JIS
20	10K	JIS
150	Class150	ASME
300	Class300	ASME
600	Class600	ASME

⑤ Material group	
SC	Carbon steel
U	Stainless Steel

⑥ Valve type		
Code	Body Material	Valve Type
L	Carbon Steel	Gate valve
J	Carbon Steel	Globe valve
O	Carbon Steel	Swing check
M	Stainless Steel	Gate valve
P	Stainless Steel	Globe valve
PD	Stainless Steel	Soft seated globe valve
O	Stainless Steel	Swing check
N	Stainless Steel	Lift check
TDZ	C/S, S/S Full bore, 2-piece body	Floating ball valve
TA	C/S, S/S Reduced bore, 1-piece body	Floating ball valve

⑦ Design standard*	
A	ASME B16.34
C	JPI-7S-46/API 600

*For Stainless Steel Gate Globe and Check Valve

⑧ Bonnet design	
L	Long bonnet design
X, XL	Semi-long bonnet design

⑨ Body material		
BL	Carbon Steel	A352 LCB
CL	Carbon Steel	A352 LCC
None	SS	A351 Gr. CF8
M	SS	A351 Gr. CF8M

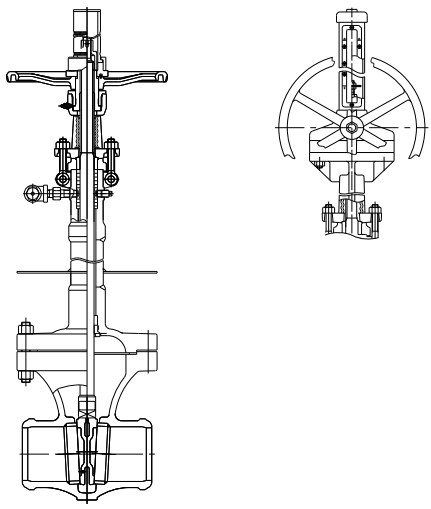
⑩ Seat Hard facing	
Code	Facing point
Y	Body, Disc and Backseat

Class 150

C series

C series

Class 150 Stainless Steel Gate Valves



Butt-weld

Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials	
Body	40A under	SCS14A+HF*
	50A over	SCS14A
Bonnet	25A under	SCS14A+HF*
	40A over	SCS14A
Stem	SUS316+HF*	
Disc	SCS14A+HF*	
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite spiral wound	
Body seat ring (50A over)	SUS316+HF*	
Bonnet bolt	A320 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

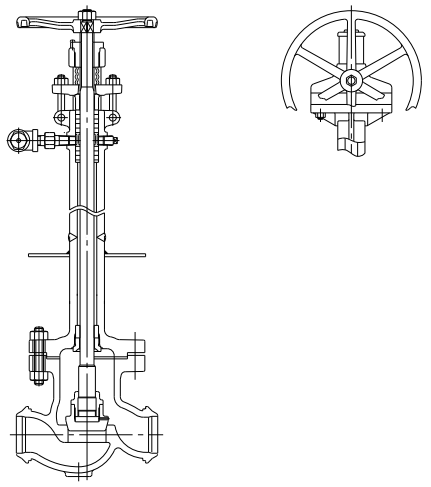
Range

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
Butt-weld (T)W150UMCLMY						●	●	●	●	●	●	■	■	■	■	■	■	■	■	■
RF-flanged 150UMCLMY		●	●	●	●	●	●	●	●	●	●	●	■	■	■	■	■	■	■	■

● : Handle operation ■ : Gear operation

C series

Class 150 Stainless Steel Globe Valves



Butt-weld

Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials	
Body	40A under	SCS14A+HF*
	50A over	SCS14A+HF*
Bonnet	25A under	SCS14A
	40A over	SUS316+HF*
Stem	SUS316+HF*	
Disc	SCS14A+HF*	
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite spiral wound	
Bonnet bolt	A320 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

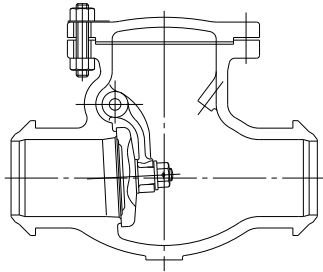
Range

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
Butt-weld (T)W150UPCLMY						●	●	●	●	●	●	■								
RF-flanged 150UPCLMY		●	●	●	●	●	●	●	●	●	●	■								

● : Handle operation ■ : Gear operation

C series

Class 150 Stainless Steel Swing Check Valves



Butt-weld

Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials
Body	SCS14A+HF*
Cover	SCS14A
Disc	SCS14A+HF*
Gasket	Flexible graphite spiral wound
Cover bolt	A320 Gr. B8 CL2
Cover nut	A194 Gr. 8

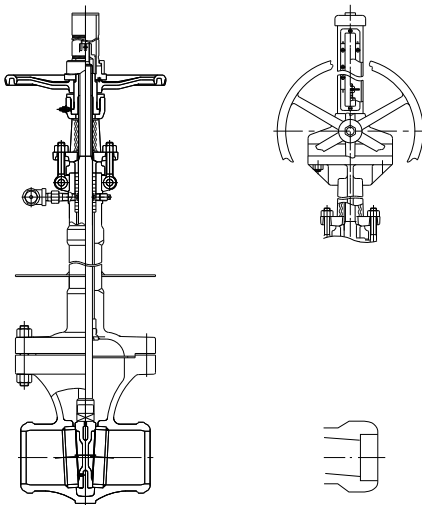
*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	mm
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Butt-weld	(T)W150UOCLMY						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
RF-flanged	150UOCLMY		●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●

C series

Class 300 Stainless Steel Gate Valves



Butt-weld

Socket-weld

Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials
Body	40A under SCS14A+HF* 50A over SCS14A
Bonnet	25A under SCS14A+HF* 40A over SCS14A
Stem	SUS316+HF*
Disc	SCS14A+HF*
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing
Gasket	Flexible graphite spiral wound
Body seat ring(50A over)	SUS316+HF*
Bonnet bolt	A320 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	mm
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	(T)SW300UMCLMY		●	●	●	●	●														
Butt-weld	(T)W300UMCLMY						●	●	●	●	●	●	■	■	■	■	■	■	■	■	■
RF-flanged	300UMCLMY		●	●	●	●	●	●	●	●	●	●	■	■	■	■	■	■	■	■	■

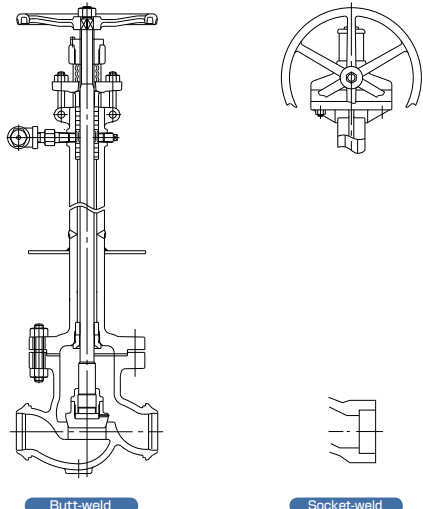
● : Handle operation ■ : Gear operation

Class 300

C series

C series

Class 300 Stainless Steel Globe Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials	
Body	40A under	SCS14A+HF*
	50A over	SCS14A+HF*
Bonnet	25A under	SCS14A
	40A over	SUS316+HF*
Stem	SUS316+HF*	
Disc	SCS14A+HF*	
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite spiral wound	
Bonnet bolt	A320 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	(T)SW300UPCLMY		●	●	●	●	●														
Butt-weld	(T)W300UPCLMY						●	●	●	●		■	■								
RF-flanged	300UPCLMY		●	●	●	●	●	●	●	●		■	■								

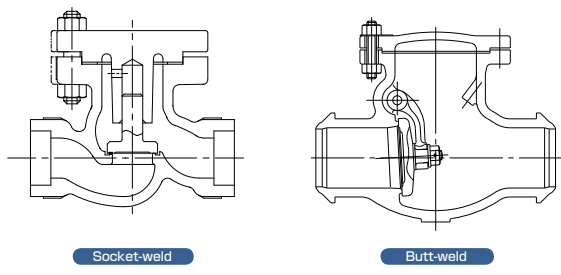
● : Handle operation ■ : Gear operation

C series

Class 300 Stainless Steel Lift Check / Swing Check Valves

Lift Check Valves

Swing Check Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials
Body	SCS14A+HF*
Cover	SCS14A
Disc	SCS14A+HF*
Gasket	Flexible graphite spiral wound
Cover bolt	A320 Gr. B8 CL2
Cover nut	A194 Gr. 8

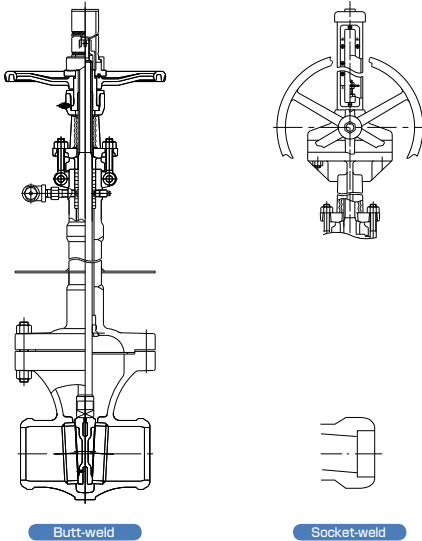
*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld (Lift check)	(T)SW300UNCLMY		●	●	●	●															
Socket-weld (Swing check)	(T)SW300UOCLMY						●														
Butt-weld (Swing check)	(T)W300UOCLMY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
RF-flanged (Swing check)	300UOCLMY						●	●	●	●		●	●	●	●	●	●	●	●	●	●

C series

Class 600 Stainless Steel Gate Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials	
Body	40A under	SCS14A+HF*
	50A over	SCS14A
Bonnet	25A under	SCS14A+HF*
	40A over	SCS14A
Stem	SUS316+HF*	
Disc	SCS14A+HF*	
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite spiral wound	
Body seat ring(50A over)	SUS316+HF*	
Bonnet bolt	A320 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

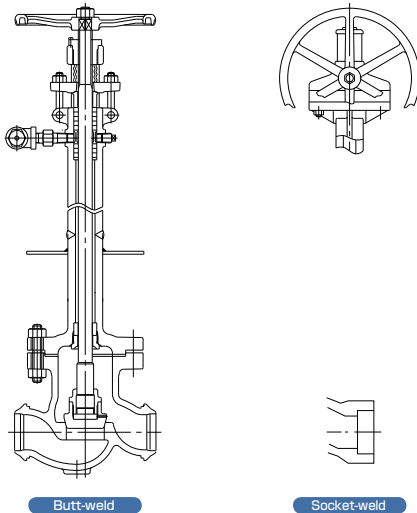
Range

Nominal size		mm																		
		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Socket-weld	(T)SW600UMCLMY	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
Butt-weld	(T)W600UMCLMY																			
RF-flanged	600UMCLMY																			

● : Handle operation ■ : Gear operation

C series

Class 600 Stainless Steel Globe Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials	
Body	40A under	SCS14A+HF*
	50A over	SCS14A+HF*
Bonnet	25A under	SCS14A
	40A over	SUS316+HF*
Stem	SUS316+HF*	
Disc	SCS14A+HF*	
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite spiral wound	
Bonnet bolt	A320 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

Range

Nominal size		mm																		
		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Socket-weld	(T)SW600UPCLMY	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
Butt-weld	(T)W600UPCLMY																			
RF-flanged	600UPCLMY																			

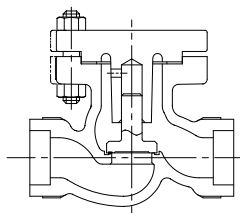
● : Handle operation ■ : Gear operation

C series

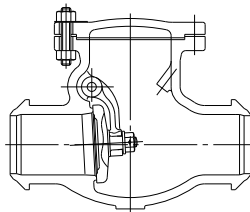
Class 600 Stainless Steel Lift Check / Swing Check Valves

Lift Check Valves

Swing Check Valves



Socket-weld



Butt-weld

Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials
Body	SCS14A+HF*
Cover	SCS14A
Disc	SCS14A+HF*
Gasket	Flexible graphite spiral wound
Cover bolt	A320 Gr. B8 CL2
Cover nut	A194 Gr. 8

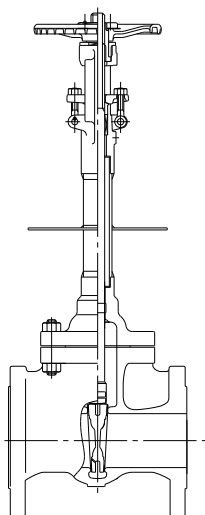
*Co-Cr-W Alloy

Range

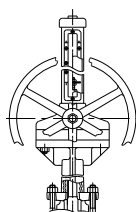
Nominal size	A	mm																		
		15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld (Lift check) (T)SW600UNCLMY		●	●	●	●															
Butt-weld (Swing check) (T)W600UOCLMY						●		●	●		●	●	●	●						
RF-flanged (Swing check) 600UOCLMY		●	●	●	●	●		●	●		●	●	●	●						

A series

Class 150 Stainless Steel Gate Valves



RF-flanged



Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5 Socket-weld JIS B2316

Materials

Name of parts	Materials
Body	SCS14A+HF*
Bonnet	SCS14A
Stem	SUS304
Disc	SCS14A+HF*
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing
Gasket	Flexible graphite spiral wound
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

*Co-Cr-W Alloy

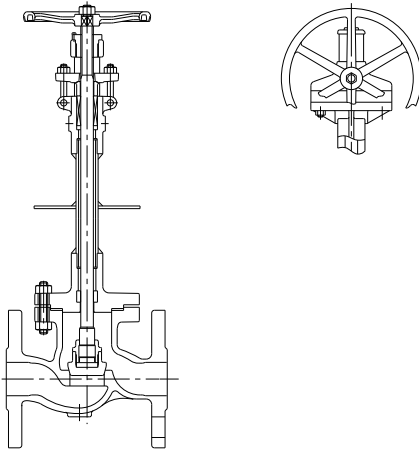
Range

Nominal size	A	mm																		
		15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
RF-flanged 150UMALMY		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	■			

● : Handle operation ■ : Gear operation

A series

Class 150 Stainless Steel Globe Valves



RF-flanged

Design Specifications

Wall thickness	ASME B16.34	
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34	
Face to face dimensions	JPI-7S-67 / ASME B16.10	
End connection dimensions	RF-flanged	JPI-7S-15 / ASME B16.5
	Socket-weld	JIS B2316

Materials

Name of parts	Materials	
Body	SCS14A+HF*	
Bonnet	SCS14A	
Stem	SUS304	
Disc	40A under	SUS316+HF*
	50A over	SCS14A+HF*
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing	
Gasket	Flexible graphite seat	
Bonnet bolt	A193 Gr. B8 CL2	
Bonnet nut	A194 Gr. 8	

*Co-Cr-W Alloy

Range

Nominal size	mm																		
	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
RF-flanged	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
150UPALMY		●	●	●	●	●	●	●	●	●	■	■							

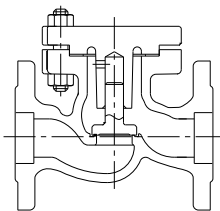
● : Handle operation ■ : Gear operation

A series

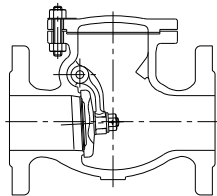
Class 150 Stainless Steel Lift Check / Swing Check Valves

Lift Check Valves

Swing Check Valves



RF-flanged



RF-flanged

Design Specifications

Wall thickness	ASME B16.34	
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34	
Face to face dimensions	JPI-7S-67 / ASME B16.10	
End connection dimensions	RF-flanged	JPI-7S-15 / ASME B16.5
	Socket-weld	JIS B2316

Materials

Name of parts	Materials
Body	SCS14A+HF*
Bonnet	SCS14A
Disc	Lift Check Valves: SUS316+HF*
	Swing Check Valves: SCS14A+HF*
Gasket	Flexible graphite seat
Cover bolt	A193 Gr. B8 CL2
Cover nut	A194 Gr. 8

*Co-Cr-W Alloy

Range

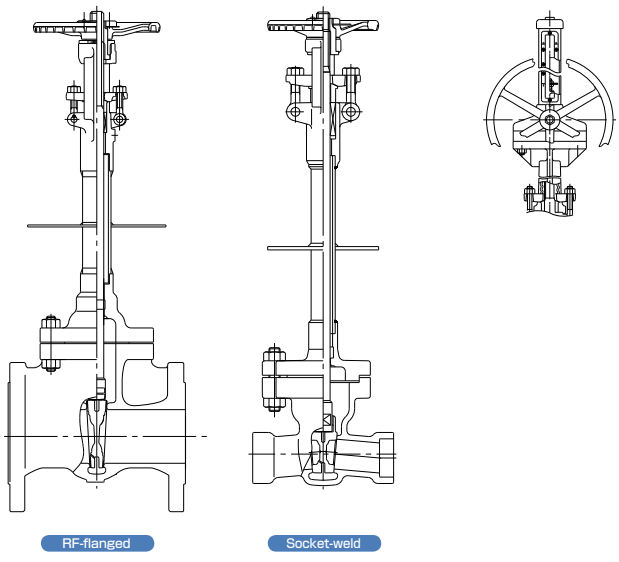
Nominal size	mm																		
	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
RF-flanged (Lift check)	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
150UNALMY		●	●	●	●														
RF-flanged (Swing check)					●	●	●	●	●	●	●	●	●	●	●	●			
150UOALMY																			

Class 300

A series

A series

Class 300 Stainless Steel Gate Valves



Design Specifications	
Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5
	Socket-weld JIS B2316

Materials	
Name of parts	Materials
Body	SCS14A+HF*
Bonnet	SCS14A
Stem	SUS304
Disc	SCS14A+HF*
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing
Gasket	Flexible graphite spiral wound
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

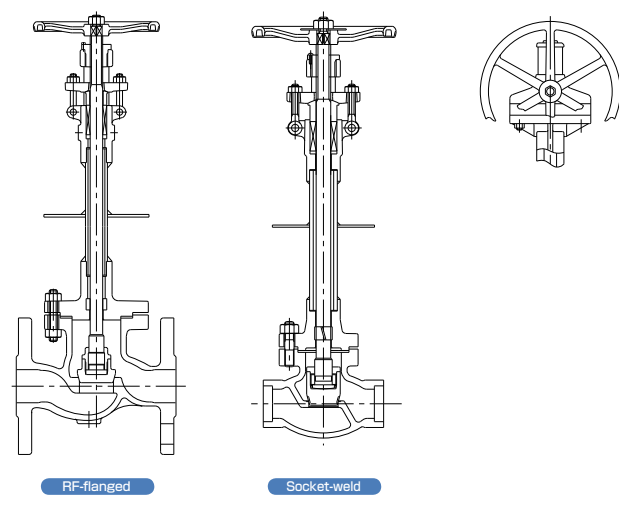
*Co-Cr-W Alloy

Range		mm																		
Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UMALMY	●	●	●	●															
RF-flanged	300UMALMY	●	●	●	●	●	●	●	●	●	●	●	●	●	■	■				

● : Handle operation ■ : Gear operation

A series

Class 300 Stainless Steel Globe Valves



Design Specifications	
Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5
	Socket-weld JIS B2316

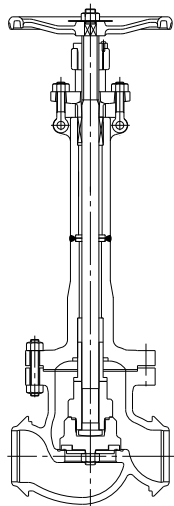
Materials	
Name of parts	Materials
Body	SCS14A+HF*
Bonnet	SCS14A
Stem	SUS304
Disc	40A under SUS316+HF*
	50A over SCS14A+HF*
Gland packing	Flexible graphite braided packing + Flexible graphite die mold packing
Gasket	Flexible graphite seat
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

*Co-Cr-W Alloy

Range		mm																		
Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UPALMY	●	●	●	●															
RF-flanged	300UPALMY	●	●	●	●	●	●	●	●	●	■	■								

● : Handle operation ■ : Gear operation

Class 150 Stainless Steel Globe Valves (Soft Seated)



Design Specifications

Wall thickness	JPI-7S-46
Pressure-temperature ratings	ASME B16.34
Face to face dimensions	JPI-7S-67
End connection dimensions	JPI-7S-67

Materials

Name of parts	Materials
Body	SCS13A
Bonnet	SCS13A
Stem	SUS304
Valve holding	SUS304 or SCS13A
Gland	SUS304
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Handle	FCD400
Gasket	Flexible graphite spiral wound
Bonnet bolt	A320 2Gr. B8
Bonnet nut	A194 Gr. 8

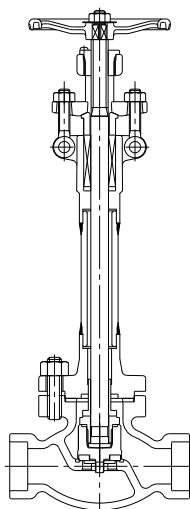
Range

C series

mm

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	½	¾	1	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	
Butt-weld	W150UPDCL					●	●	●	●											

Class 300 Stainless Steel Globe Valves (Soft Seated)



Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face to face dimensions	JPI-7S-36-96
End connection dimensions	JIS B 2316

Materials

Name of parts	Materials
Body	SCS13A
Bonnet	SCS13A
Stem	SUS304
Valve holder	SUS304
Gland	SUS304
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Handle	FCD400
Gasket	Flexible graphite spiral wound
Bonnet bolt	A320 Gr. B8
Bonnet nut	A194 Gr. 8
seat	PCTFE

Range

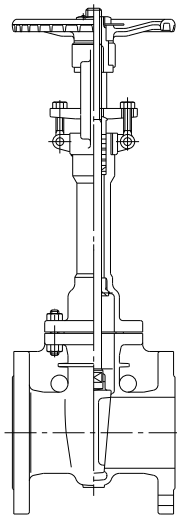
A series

mm

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	½	¾	1	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UPDAL	●	●	●	●	●														

A series

Class 150 Stainless Steel Gate Valves



RF-flanged

Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Stem	SUS304
Disc	SCS13A+HF*
Gland packing	Flexible graphite+PTFE braided
Handle	FCD400
Gasket	Ceramic PTFE
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8
York sleep	C6782BE

*Co-Cr-W Alloy

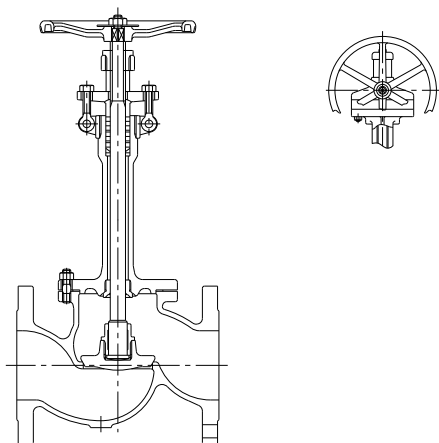
Range

mm

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
RF-flanged 150UMAXY		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				

A series

Class 150 Stainless Steel Globe Valves



RF-flanged

Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Stem	SUS304
Disc	40A under SUS304+HF* 50A over SCS13A+HF*
Gland packing	Flexible graphite+PTFE braided
Gasket	Ceramic PTFE
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

*Co-Cr-W Alloy

Range

mm

Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
RF-flanged 150UPAXY		●	●	●	●	●	●	●	●	●	■	■		■					

● : Handle operation ■ : Gear operation

Class 150

A series

Class 300

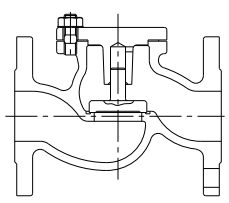
A series

A series

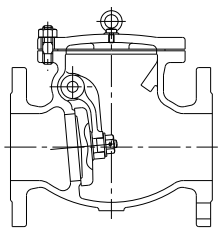
Class 150 Stainless Steel Lift Check / Swing Check Valves

Lift Check Valves

Swing Check Valves



RF-flanged



RF-flanged

Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Disc	Lift Check Valves: SUS304+HF* Swing Check Valves: SCS13A+HF*
Gasket	Ceramic PTFE
Cover bolt	A193 Gr. B8 CL2
Cover nut	A194 Gr. 8

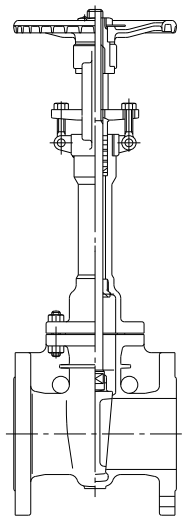
*Co-Cr-W Alloy

Range

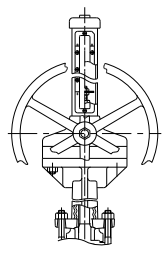
Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
RF-flanged (Lift check)	150UNAXY		●	●	●	●															
RF-flanged (Swing check)	150UOAXY					●	●	●	●	●	●	●	●	●	●	●	●				

A series

Class 300 Stainless Steel Gate Valves



RF-flanged



Socket-weld

Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Stem	SUS304
Disc	SCS13A+HF*
Gland packing	Flexible graphite+PTFE braided
Handle	FCD400
Gasket	PTFE spiral wound
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8
York sleeve	C6782BE

*Co-Cr-W Alloy

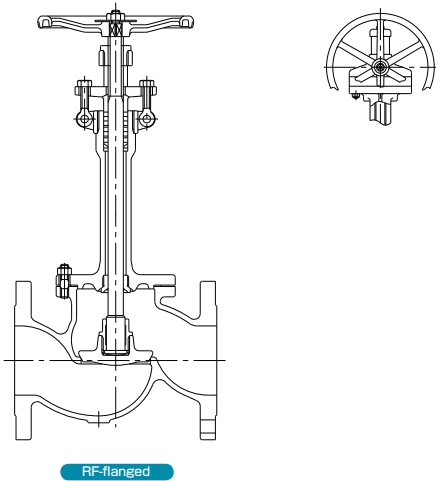
Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UMXY		●	●	●	●															
RF-flanged	300UMAXY		●	●	●	●	●	●	●	●	●	●	■	■	■	■	■			■	■

● : Handle operation ■ : Gear operation

A series

Class 300 Stainless Steel Globe Valves



Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Stem	SUS304
Disc	40A under SUS304+HF* 50A over SCS13A+HF*
Gland packing	Flexible graphite+PTFE braided
Gasket	PTFE spiral wound
Bonnet bolt	A193 Gr. B8 CL2
Bonnet nut	A194 Gr. 8

*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UPXY		●	●	●	●															
RF-flanged	300UPAXY		●	●	●	●	●	●	●	●	●	●	■								

● : Handle operation ■ : Gear operation

A series

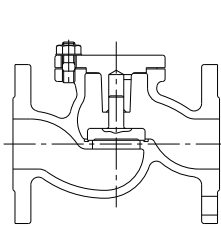
Class 300 Stainless Steel Lift Check / Swing Check Valves

Lift Check Valves

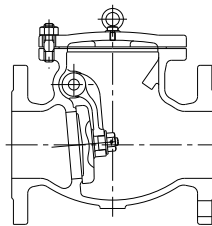
Swing Check Valves



Socket-weld



RF-flanged



RF-flanged

Design Specifications

Wall thickness	ASME B16.34
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	JPI-7S-15 / ASME B16.5

Materials

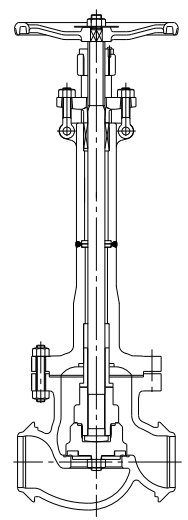
Name of parts	Materials
Body	SCS13A+HF*
Bonnet	SCS13A
Disc	Lift Check Valves: SUS304+HF* Swing Check Valves: SCS13A+HF*
Gasket	PTFE spiral wound
Cover bolt	A193 Gr. B8 CL2
Cover nut	A194 Gr. 8

*Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld (Lift check)	SW300UNXY		●	●	●	●															
RF-flanged (Lift check)	300UNAXY		●	●	●	●															
RF-flanged (Swing check)	300UOAXY					●	●	●	●	●	●	●	●	●	●	●	●	●			

Class 150 Stainless Steel Globe Valves (Soft Seated)

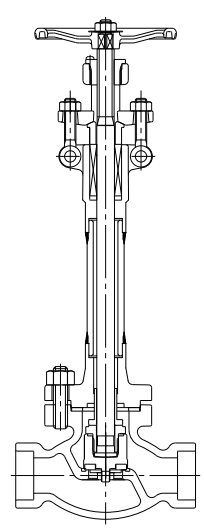


Design Specifications	
Wall thickness	JPI-7S-46
Pressure-temperature ratings	ASME B16.34
Face to face dimensions	JPI-7S-67
End connection dimensions	JPI-7S-67

Materials	
Name of parts	Materials
Body	SCS13A
Bonnet	SCS13A
Stem	SUS304
Valve holding	SUS304 or SCS13A
Gland	SUS304
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Handle	FCD400
Gasket	Flexible graphite spiral wound
Bonnet bolt	A320 2Gr. B8
Bonnet nut	A194 Gr. 8

Range		C series																	mm	
Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Butt-weld	W150UPDCX					●	●	●	●											

Class 300 Stainless Steel Globe Valves (Soft Seated)



Design Specifications	
Wall thickness	ASME B16.34
Pressure-temperature ratings	ASME B16.34
Face to face dimensions	JPI-7S-36-96
End connection dimensions	JIS B 2316

Materials	
Name of parts	Materials
Body	SCS13A
Bonnet	SCS13A
Stem	SUS304
Valve holding	SUS304
Gland	SUS304
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Handle	FCD400
Gasket	Flexible graphite spiral wound
Bonnet bolt	A320 Gr. B8
Bonnet nut	A194 Gr. 8
Seat	PCTFE

Range		A series																	mm	
Nominal size	A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
	B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24	
Socket-weld	SW300UPDX	●	●	●	●	●														

Cast Carbon steel / Low alloy for low temperature Valves

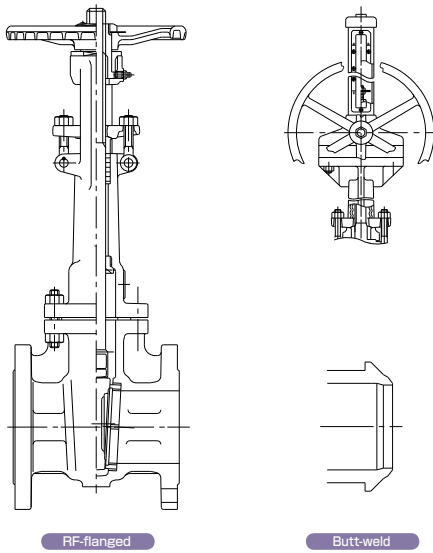
Body / Bonnet		Trim Materials *1				Bonnet bolt / Nut *1		Operating temperature *2	
Material	Code	Body seat	Disc seat	Stem	Bonnet bush	Bolt	Nut	Min	Max
SCPL1 (LCB)	BL	SUS304	SUS304 or 308	SUS304	SUS316	— (Gr. L7)	— (Gr. 4)	350°C (343°C)	-45°C (-46°C)
— (LCC)	CL							343°C	— (-46°C)
SCPL11 (LC1)	1L							350°C (343°C)	-60°C (-59°C)
SCPL21 (LC2)	2L							200°C (343°C)	-80°C (-73°C)
SCPL31 (LC3)	3L							200°C (343°C)	-100°C (-101°C)

The materials in the parentheses indicate the material standard from ASTM standard.
The figures in the parentheses indicate the temperature from ASTM standard.

*1 : The trim material and bonnet bolt/nut material shown is a representative example. The appropriate material will be selected according to the temperature for use.

*2 : The usage temperature is the temperature for the body/bonnet material and the temperature for the valve with consideration for the bonnet shape will be selected separately.

Class 150 / 300 / 600 Cast Carbon Steel / Low Alloy Gate Valves



Design Specifications	
Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5 Butt-weld JPI-7S-67 / ASME B16.25

Materials	
Name of parts	Materials
Body	※
Bonnet	※
Stem	SUS304
Disc	100A under SUS304+HF* 150A over ※
Gland packing	Flexible graphite
Gasket	Flexible graphite spiral wound
Body seat ring (50A over)	SUS304+HF*
Bonnet bolt	A320 Gr. L7
Bonnet nut	A194 Gr. 8

※The minimum working temperatures is depending on material. (See table upper)
Class150: Flexible graphite seat spiral wound
Class300: Flexible graphite seat spiral wound
Class600: Soft iron
*Co-Cr-W Alloy

Range

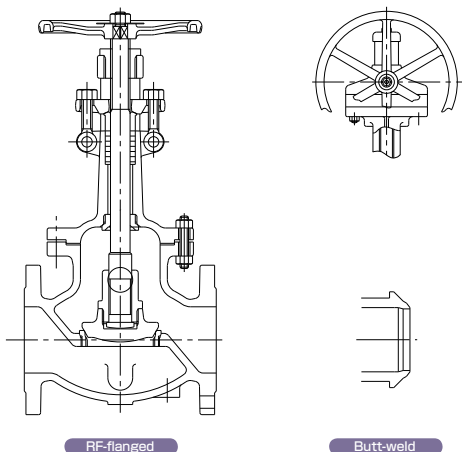
Nominal size	A	mm																	
		15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
Butt-weld	W150SCLSXBLY				●	●	●	●	●	●	●	●	●	●	●	●	■	■	■
RF-flanged	150SCLSXBLY				●	●	●	●	●	●	●	●	●	●	●	●	■	■	■
Butt-weld	W300SCLSXBLY					●	●	●	●	●	●	●	●	●	●	■	■	■	
RF-flanged	300SCLSXBLY					●	●	●	●	●	●	●	●	●	●	■	■	■	
Butt-weld	W600SCLSXBLY					●	●	●	●		■	■	■	■	■				
RF-flanged	600SCLSXBLY					●	●	●	●		■	■	■	■	■				

● : Handle operation ■ : Gear operation

Memo

Grid area for notes.

Class 150 / 300 / 600 Cast Carbon Steel / Low Alloy Globe Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5 Butt-weld JPI-7S-67 / ASME B16.25

Materials

Name of parts	Materials
Body	※
Bonnet	※
Stem	SUS304
Disc	100A under SUS304+HF* 150A over ※
Gland packing	Flexible graphite
Gasket	Flexible graphite spiral wound
Body seat ring(50A over)	SUS304+HF*
Bonnet bolt	A320 Gr. L7
Bonnet nut	A194 Gr. 8

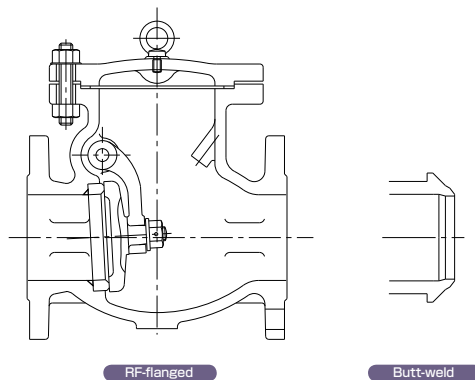
※The minimum working temperatures is depending on material. (See to page 25)
 Class150: Flexible graphite seat Class300: Flexible graphite seat
 Class600: Soft iron
 *Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	½	¾	1	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	
Butt-weld	W150SCJSXBLY						●	●	●	●		●	●		■						
RF-flanged	150SCJSXBLY						●	●	●	●		●	●		■						
Butt-weld	W300SCJSXBLY						●	●	●	●		■	■								
RF-flanged	300SCJSXBLY						●	●	●	●		■	■								
Butt-weld	W600SCJSXBLY						●	●	●	■		■	■	■							
RF-flanged	600SCJSXBLY						●	●	●	■		■	■	■							

● : Handle operation ■ : Gear operation

Class 150 / 300 / 600 Cast Carbon Steel / Low Alloy Swing Check Valves



Design Specifications

Wall thickness	JPI-7S-46 / API600
Pressure-temperature ratings	JPI-7S-65 / ASME B16.34
Face to face dimensions	JPI-7S-67 / ASME B16.10
End connection dimensions	RF-flanged JPI-7S-15 / ASME B16.5 Butt-weld JPI-7S-67 / ASME B16.25

Materials

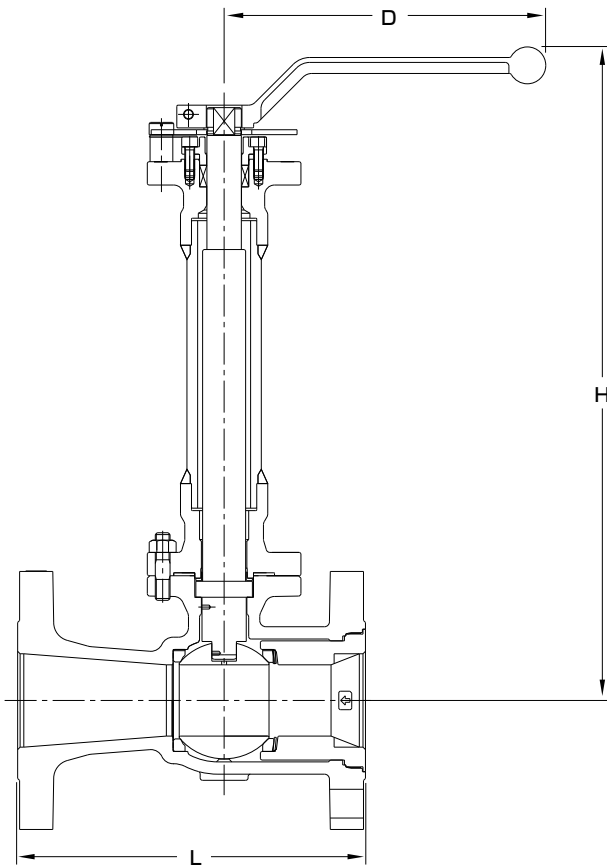
Name of parts	Materials
Body	※
Cover	※
Disc	100A under SUS304+HF* 150A over ※
Gasket	Flexible graphite spiral wound
Body seat ring(50A over)	SUS304+HF*
Bonnet bolt	A320 Gr. L7
Bonnet nut	A194 Gr. 8

※The minimum working temperatures is depending on material. (See to page 25)
 Class150: Flexible graphite seat Class300: Flexible graphite seat
 Class600: Soft iron
 *Co-Cr-W Alloy

Range

Nominal size		A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	
		B	½	¾	1	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	
Butt-weld	W150SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
RF-flanged	150SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
Butt-weld	W300SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
RF-flanged	300SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
Butt-weld	W600SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●
RF-flanged	600SCOSXBLY						●	●	●	●		●	●	●	●	●	●	●	●	●	●

Class 150 / 300 Stainless Steel Floating Ball Design, Reduced Bore



Design Specifications

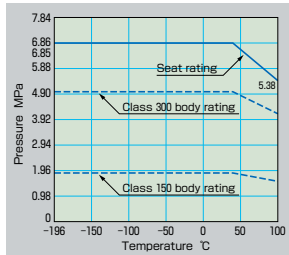
Wall thickness	BS 5351
Cryogenic valve citation standard	MESC
Face to face dimensions	ASME B16.10
Flange規格	ASME B16.5

Materials

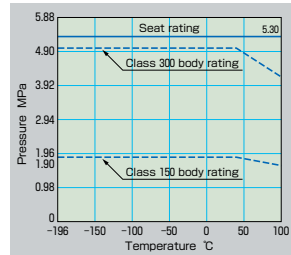
Name of parts	Materials
Body	SCS14A
Bonnet	SCS14A
Insert	SCS14A
Stem	SUS630
Seat spring	SUS304CSP (Size 3B over)
Ball	SCS14A
Gland	SCS14A
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Ball seat	HYPATITE PTFE
Handle	FCD400
Gasket	Flexible graphite spiral wound Flexible graphite seat PTFE
Bonnet bolt	A320 Gr. B8M CL2
Bonnet nut	A194 Gr. 8M

Pressure-Temperature Rating (Seat rating)

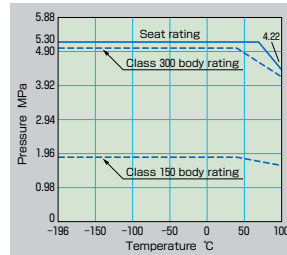
150UTALM 1/2~1
300UTALM 1/2~1



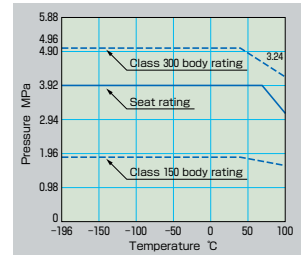
150UTALM 1 1/2~3
300UTALM 1 1/2~3



150UTALM4 G-150UTALM6
300UTALM4 G-300UTALM6



G-150UTALM8 G-150UTALM10
G-300UTALM8 G-300UTALM10

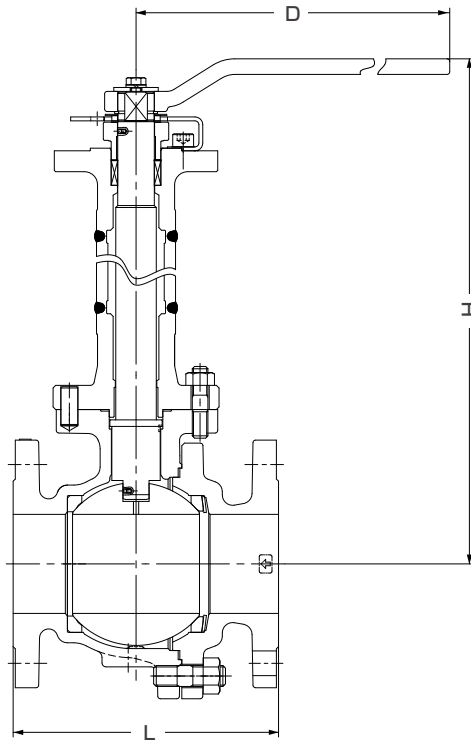


Range

Nominal size			mm															
			A	15	20	25	40	50	65	80	100	125	150	200	250	300	350	400
			B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16
Class 150	RF-flanged	150UTALM	L (flanged)	108	117	127	165	178	—	203	229	—	267	292	330	—	—	—
			H	312	314	275.5	405	421	—	532	548	—	※	※	※	—	—	—
			D	140	140	160	180	230	—	400	400	—	※	※	※	—	—	—
Class 300	RF-flanged	300UTALM	L (flanged)	140	152	165	190	216	—	283	305	—	403	419	457	—	—	—
			H	312	314	268	405	421	—	532	548	—	※	※	※	—	—	—
			D	140	140	160	180	230	—	400	400	—	※	※	※	—	—	—

※Gear operation only. Please contact KITZ corporation for details.

Class 150 / 300 Stainless Steel Floating Ball Design, Full bore



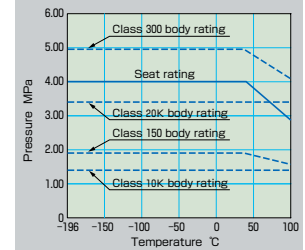
Design Specifications

Wall thickness	ASME B16.34
Face to face dimensions	ASME B16.10
Flange	JIS B 2220 (10K/20K)
	ASME B16.5 (150/300)

Materials

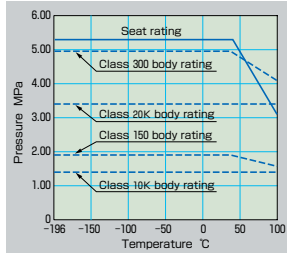
Name of parts	Materials
Body	SCS13A
Body cap	SCS13A
Bonnet	SUS304
Stem	SUS304
Seat spring	SUS304CSP (Size 2B over)
Ball	SUS304 or SCS13A
Ball seat A	HYPATITE PTFE
Ball seat B	PCTFE (Size 1 1/2 B under)
Gasket	Flexible graphite spiral wound
	Flexible graphite seat
Bonnet bolt	SUS304 (B8)
Bonnet nut	SUS304 (6)
Gland packing	Flexible graphite die mold packing

10UTDZL200, 250 150UTDZL200, 250
20UTDZL200, 250 300UTDZL200, 250

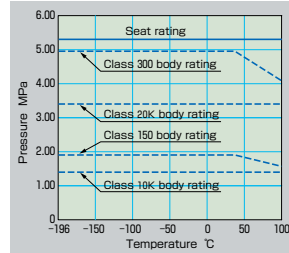


● Pressure-Temperature Rating (Seat rating)

10UTDZL15~40 150UTDZL15~40
20UTDZL15~40 300UTDZL15~40



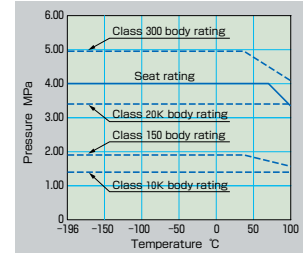
10UTDZL50, 65 150UTDZL50, 65
20UTDZL50, 65 300UTDZL50, 65



10UTDZL80, 100 150UTDZL80, 100
20UTDZL80, 100 300UTDZL80, 100



10UTDZL125, 150 150UTDZL125, 150
20UTDZL125, 150 300UTDZL125, 150

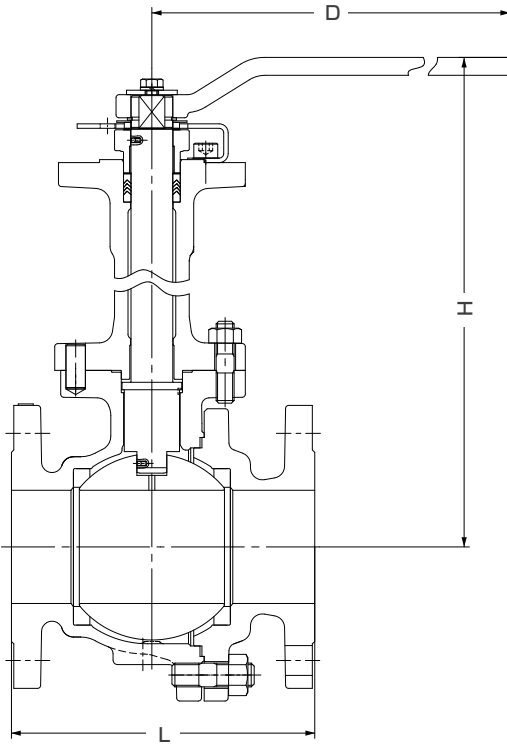


Range

Nominal size	A	B	mm															
			15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
Class 10K RF-flanged 10UTDZL	L (flanged)		108	117	127	140	165	178	190	203	229	356	394	457	533	—	—	—
	H (full open)		330	333	354	358	421	430	526	536	619	635	758	841	937	—	—	—
	D		130	130	160	160	230	230	400	400	*	*	*	*	*	—	—	—
Class 20K RF-flanged 20UTDZL	L (flanged)		140	152	165	178	190	216	241	283	305	381	403	502	—	—	—	—
	H (full open)		330	333	354	358	421	435	557	557	619	663	755	849	—	—	—	—
	D		130	130	160	160	230	300	600	*	*	*	*	*	—	—	—	—
Class 150 RF-flanged 150UTDZL	L (flanged)		108	117	127	140	165	178	190	203	229	356	394	457	533	—	—	—
	H (full open)		330	333	354	358	421	430	526	536	619	635	758	849	937	—	—	—
	D		130	130	160	160	230	230	400	400	*	*	*	*	*	—	—	—
Class 300 RF-flanged 300UTDZL	L (flanged)		140	152	165	—	190	216	241	283	305	—	403	502	—	—	—	—
	H (full open)		330	333	354	—	421	435	557	557	619	—	755	849	—	—	—	—
	D		130	130	160	—	230	300	600	*	*	—	*	*	—	—	—	—

*Gear operation only. Please contact KITZ corporation for details.

Class 150 / 300 Stainless Steel Floating Ball Design, Full bore



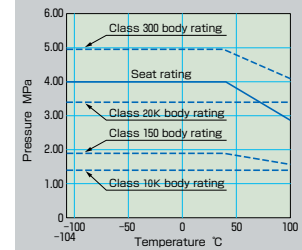
Design Specifications

Wall thickness	ASME B16.34
Face to face dimensions	ASME B16.10
Flange	JIS B 2220 (10K / 20K) ASME B16.5 (150 / 300)

Materials

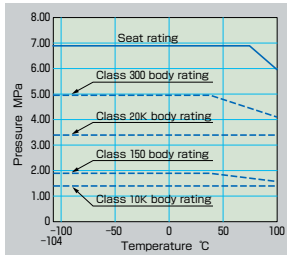
Name of parts	Materials
Body	SCS13A
Body cap	SCS13A
Bonnet	SCS13A
Stem	SUS304
Ball	SUS304 or SCS13A
Ball seat	HYPATITE PTFE
Gasket	Ceramic PTFE Flexible graphite spiral wound
Bonnet bolt	SUS304(B8)
Bonnet nut	SUS304(B)
Gland packing	PTFE

10UTDZXL200, 250 150UTDZXL200, 250
20UTDZXL200, 250 300UTDZXL200, 250

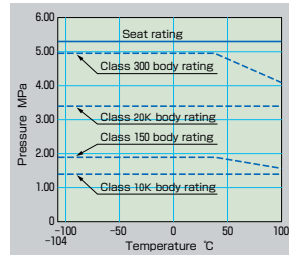


Pressure-Temperature Rating (Seat rating)

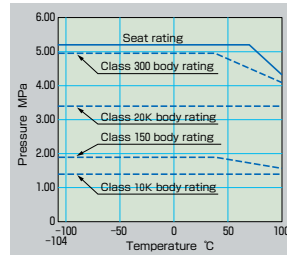
10UTDZXL15~20 150UTDZXL15~20
20UTDZXL15~20 300UTDZXL15~20



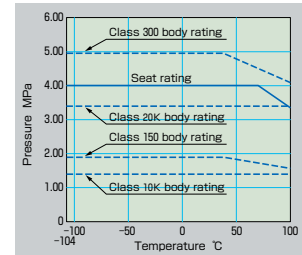
10UTDZXL25~65 150UTDZXL25~65
20UTDZXL25~65 300UTDZXL25~65



10UTDZXL80, 100 150UTDZXL80, 100
20UTDZXL80, 100 300UTDZXL80, 100



10UTDZXL125, 150 150UTDZXL125, 150
20UTDZXL125, 150 300UTDZXL125, 150

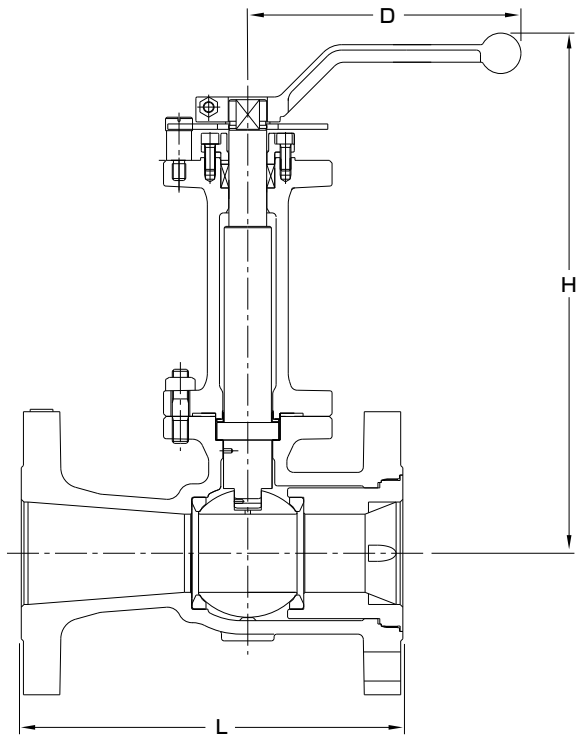


Range

Nominal size			mm																
			A	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
			B	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16
Class 10K	RF-flanged	10UTDZXL	L (flanged)	108	117	127	140	165	178	190	203	229	356	394	457	533	—	—	—
			H (full open)	228	231	268	272	300	309	373	383	458	482	572	677	724	—	—	—
			D	130	130	160	160	230	230	400	400	750	*	*	*	*	—	—	—
Class 20K	RF-flanged	20UTDZXL	L (flanged)	140	152	165	178	190	216	241	283	305	381	403	502	—	—	—	—
			H (full open)	228	231	268	272	300	309	373	383	466	510	569	685	—	—	—	—
			D	130	130	160	160	230	230	400	400	*	*	*	*	—	—	—	—
Class 150	RF-flanged	150UTDZXL	L (flanged)	108	117	127	140	165	178	190	203	229	356	394	457	533	—	—	—
			H (full open)	228	231	268	272	300	309	373	383	458	482	572	685	724	—	—	—
			D	130	130	160	160	230	230	400	400	750	*	*	*	*	—	—	—
Class 300	RF-flanged	300UTDZXL	L (flanged)	140	152	165	—	190	216	241	283	305	—	403	502	—	—	—	—
			H (full open)	228	231	268	—	300	309	373	383	466	—	569	685	—	—	—	—
			D	130	130	160	—	230	230	400	400	*	—	*	*	*	—	—	—

*Gear operation only. Please contact KITZ corporation for details.

Class 150 / 300 Cast Carbon Steel Floating Ball Design, Reduced Bore



Design Specifications

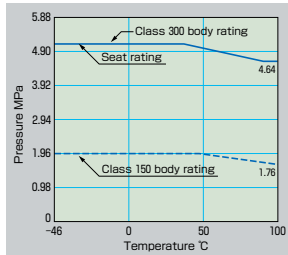
Wall thickness	ASME B16.34
Face to face dimensions	ASME B16.10
Flange	ASME B16.5

Materials

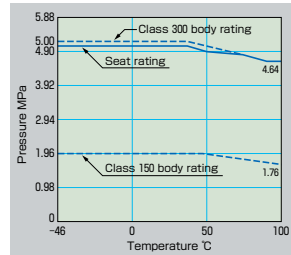
Name of parts	Materials
Body	LCC
Bonnet	LCC
Insert	LCC
Stem	SUS316
Ball	SCS14A
Gland packing	Flexible graphite cored PTFE braided packing + Flexible graphite die mold packing
Ball seat	HYPATITE PTFE
Handle	FCD400-15
Gasket	Flexible graphite spiral wound Flexible graphite PTFE
Bonnet bolt	A320 Gr. L7M CL2
Bonnet nut	A194 Gr. 7M

● Pressure-Temperature Rating (Seat rating)

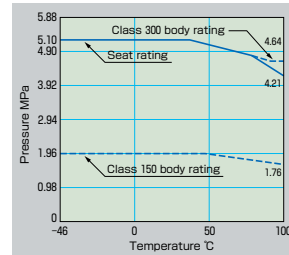
150SCTAXCL 1/2~1
300SCTAXCL 1/2~1



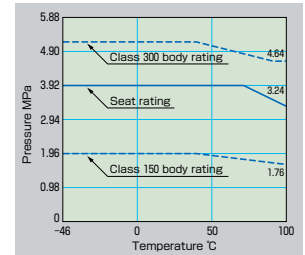
150SCTAXCL 1 1/2~3
300SCTAXCL 1 1/2~3



150SCTAXCL 4, 6
300SCTAXCL 4, 6



150SCTAXCL 8, 10
300SCTAXCL 8, 10



Range

Nominal size		A	mm														
			15	20	25	40	50	65	80	100	125	150	200	250	300	350	400
		B	1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16
Class 150 RF-flanged	150SCTAXCL	L (flanged)	108	117	127	165	178	—	203	229	—	267	292	330	—	—	—
		H (full open)	212	214.5	172.5	282	291	—	386	402	—	※	※	※	—	—	—
		D	140	140	160	180	230	—	400	400	—	※	※	※	—	—	—
Class 300 RF-flanged	300SCTAXCL	L (flanged)	140	152	165	190	216	—	283	305	—	403	419	457	—	—	—
		H (full open)	212	214.5	181.5	282	291	—	386	402	—	※	※	※	—	—	—
		D	140	140	160	180	230	—	400	400	—	※	※	※	—	—	—

※ Gear operation only. Please contact KITZ corporation for details.

● Precautions in selecting a product.

- The product described in this catalog is designed and produced especially for low temperatures. Please have the person deciding on the design and specifications of the equipment and facilities determine the suitability of this valve.
- The range of usage of the products described in this catalog is based on public standards and specifications, and our standards. Please confirm each product's specifications, fluid, temperature, and pressure usage conditions to select the appropriate product.
- When using our products in an environment, where there are legal restrictions and there are voluntary specifications for standards and regulations of use have been established and where the products are to be used, please select the appropriate product after confirming such regulations and restrictions.
- Please ensure carrying out necessary safety precautions after confirming with our company when using our products with nuclear power, railway, aircraft, vehicle, ship, medical equipment, food processing equipment, safety equipment, and amusement machinery to be used in amusement parks and facilities.
- Our products using fluorine resin and rubber are not designed and manufactured for use to transplant into the human body or for use in medical equipment that will come into contact with bodily fluids or biological tissue. Usage for such purpose is not possible.
- The corrosion resistance for each material used in the composition of the products are different. Please make the selection after confirming corrosion resistance under the conditions of usage for each material (fluid, temperature, and pressure).
- Even when used within the pressure and temperature standards for usage of the product, please inquire to us when usage is close to the limitations or when using with frequent opening and closing for prolonged periods.
- Ensure to confirm with us when using in a corrosive environment.
- Our product has oil and grease coated on the inside, outside, sliding areas, and areas contacting with fluids to prevent rust and for lubrication. When safety, hygienic, and functional problems are an issue because of the oil and grease spilling, please take appropriate measures such as washing.
- Removal of foreign matter is not particularly done for our products. If the product is to be used for equipment concerning beverage, food, etc., please take appropriate measure to remove any foreign matter.
- Please use the gate valve either "Completely Open" or "Completely Closed". Using the valve halfway open or closed may damage valve or surface of the valve seat.
- Swing check valves can be used for horizontal and vertical piping. However, the flow of the fluid is limited from the ground upward when setup in vertical piping. Lift check valves cannot be used for vertical piping.
- Ball valves are used in the fully open or close positions. The ball seats may be deformed, if the valve is not fully open or closed position during use.
- When in operation, the check valve may generate noise caused by chattering and water hammer. Please take into ample consideration in the design of your pipe layout for prevention of chattering and water hammer when selecting the properly sized valve.
- When our product is to be exported, it is necessary to acquire permission from the Ministry of Economy, Trade and Industry to export in accordance with regulations of the Export Trade Control Ordinance for foreign currency exchange and Foreign Trade Law by the person who will be exporting them. Please consult our company if anything is unclear.
- The figures in this catalog shows representative sizes. Please access our company homepages or make a request to us when detailed illustrations of the selected product is required. (Our company Homepages: www.kitz.com)

● Precautions when handling products

- Precautions when handling products introduced in this catalog are not described in the catalog. Make sure to obtain the applicable instruction manual for the product or the manual included with product and confirm the "Warnings" and "Precautions" to use the product properly and safely.

Liability Disclaimer

Our company does not assume any responsibility for damage caused by natural disasters, acts by third parties, other accidents, deliberate damage by customers, misuse, usage under abnormal conditions and other conditions outside our responsibility. Our company does not assume any responsibility for damage when the purchaser of our product does not observe the restrictions described in the catalog,

instruction manual and manual included with the product, or any damage caused by usage outside the specifications, during installation and use of the product. Our company does not assume any responsibility for damage caused by modification of the product that is done other than our company, and damage from influence of other additional equipment.

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.

For any specific application, users are kindly requested to contact KITZ Corporation for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and / or personal injury, for which we shall not be liable.

While this catalog has been compiled with the utmost care, we assume no responsibility for errors, impropriety or inadequacy. Any information provided in this catalog is subject to from-time-to-time change without notice for error rectification, product discontinuation, design modification, new product introduction or any other cause that KITZ Corporation considers necessary. This edition cancels all previous issues.

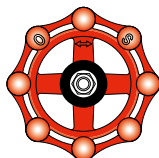
Read instruction manual carefully before use.

NOTICE

If any products designated as strategic material in the Foreign Exchange and Foreign Trade Law, Cabinet Order Concerning Control of Export Trade, Cabinet order Concerning Control of Foreign Exchange and other related laws and ordinances ("Foreign Exchange Laws") are exported to any foreign country or countries, an export license issued by the Japanese Government will be required under the Foreign Exchange Laws.

Further, there may be cases where an export license issued by the government of the United States or other country will be required under the applicable export-related laws and ordinances in such relevant countries.

The contract shall become effective subject to that a relevant export license is obtained from the Japanese Government.



*A chrysanthemum-handle is a symbol of KITZ,
the brand of valve reliability*

ISO 9001 certified since 1989

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