



## HIGH PERFORMANCE BUTTERFLY VALVES

**Class 150-300  
PN 16-40**



**Construcción:** Cuerpo Wafer con asiento compensador y una configuración de giro doble excéntrica del disco. Diseño "Fire-safe tested", BS 6755 part 2. Eje no extractable, diseño según API 609.

**Rating:** API 609 Class 150-300 #1# ver pág. 27.

**Conexión:** ASME Class 150-300, Smooth Finish (Ra 3.2-6.3 µm), DIN 2501/1 PN 10-40, cara de la brida DIN 2526 Forma D, API 609, Categoría B Class 150-300.

**Longitudes:** API 609, Categoría B Class 150-300.

**Especialidades:** ☐ M-M #1# ver pág. 26.

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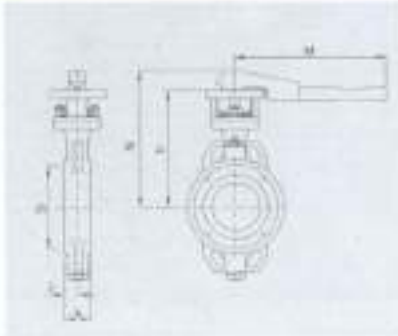
**Construction:** Wafer body, double eccentric disc, secondary energiser metal seat. Fire-safe tested design, BS 6755 part 2 blow-out proof shaft, design API 609.

**Rating:** API 609 Class 150-300 #1# see page 27.

**Connection:** ASME Class 150-300, Smooth Finish (Ra 3.2-6.3 µm), Flange DIN 2501/1 PN 10-40, facing DIN 2526 Form D.

**Face-to-face dimensions:** API 609, Category B Class 150-300.

**Specialties:** ☐ M-M #1# see page 26.



MATERIALES MATERIALS	VERSION CB	VERSION SB
Cuerpo Body	ASTM A-216 WCC	ASTM A-351 CF8M
Disco/Eje Disc/Shaft	ASTM A-351 CF8M / AHS-630	
Asientos Seats	PTFE / INCONEL	
Juntas Seals	GRAPHITE	

Hajo pemada de suministro en otro material (sujeto a confirmación).  
Other materials, no request (subject to quantity).

NPS DN	CLASS 150		CLASS 300		CLASS 150		CLASS 300		CLASS 150		CLASS 300		CLASS 150		CLASS 300	
	D	L	N	N	N	k	J	J	J	J	PAR-TORQUE	PAR-TORQUE	PESO-WEIGHT	PESO-WEIGHT		
mm																
3"	74.6	80	70	453	453	253	253	210	210	27	27	57	89	7.5	7.5	
4"	89.7	95.6	85.6	463	463	271	271	228	228	28.8	28.8	97	145	10.6	10.6	
5"	104.1	110	100	513	513	309	309	258	258	31.7	31.7	175	262	19.5	19.5	
6"	118.8	124	114	563	563	347	347	296	296	34.6	34.6	195	282	21.5	21.5	
8"	152.4	160	150	663	663	411	411	354	354	41.3	41.3	235	342	26.5	26.5	
10"	190.5	198	188	763	763	475	475	411	411	48.3	48.3	285	412	32.5	32.5	
12"	229.1	238	228	863	863	539	539	471	471	55.3	55.3	335	472	38.5	38.5	
14"	268.3	278	268	963	963	603	603	527	527	62.3	62.3	385	522	44.5	44.5	
16"	307.6	318	308	1063	1063	667	667	583	583	69.3	69.3	435	572	50.5	50.5	
18"	347.1	358	348	1163	1163	731	731	639	639	76.3	76.3	485	622	56.5	56.5	
20"	386.8	400	390	1263	1263	795	795	695	695	83.3	83.3	535	672	62.5	62.5	
24"	482.7	500	490	1563	1563	959	959	859	859	99.3	99.3	635	822	74.5	74.5	

Por favor, proporcionar, en condiciones limpias, sin cargas en los asientos, a 1/2" más de abertura con el rating del cuerpo y 1/4" de abertura con el rating del eje.  
Para poder dimensionar el actuador, tomar un coeficiente de seguridad 1.5.  
Normally specified torque, in clean conditions, without fluid seats, at 1/2" max. disc valve being and seat being (see page 27).  
For actuator sizing allow adequate safety factor.

### PROCESS TECHNICAL EQUIPMENT LTD

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## HIGH PERFORMANCE BUTTERFLY VALVES

Class 150-300



**Construcción:** Cuerpo lugged con asiento compensador y una configuración de giro doble excéntrico del disco. Diseño "Fire-safe tested", BS 6755 part 2. Eje no inyectable, diseño según API 609.

**Rating \*:** API 609 Class 150-300  $\frac{1}{2}$ " ver pág. 27.

**Conexión:** ASME Class 150-300, Smooth Finish (Ra 3.2-6.3  $\mu$ m).

**Longitudes:** API 609, Categoría B Class 150-300.

**Especialidades:**   $\frac{1}{2}$ "  $\frac{1}{4}$ " ver pág. 26.

**Construction:** Lugged body, double eccentric disc, secondary energisor metal seat. Fire-safe tested design, BS 6755 part 2, blow-out proof shaft, design API 609.

**Rating \*:** API 609 Class 150-300  $\frac{1}{2}$ " see page 27.

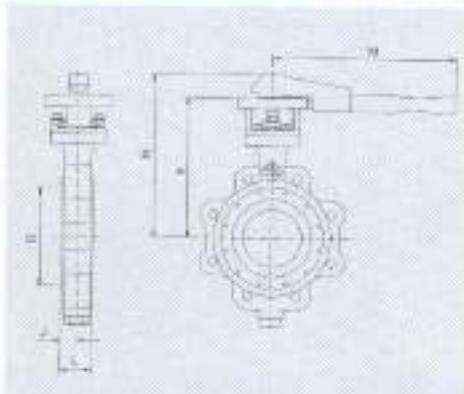
**Connection:** ASME 150-300, Smooth Finish (Ra 3.2-6.3  $\mu$ m).

**Face-to-face dimensions:** API 609, Category B Class 150-300.

**Specialties:**   $\frac{1}{2}$ "  $\frac{1}{4}$ " see page 26.

\* Bajo demanda se suministra, DIN 2501/1 PIV 10-40.

\* For DIN 2501/1 PIV 10-40, on request.



MATERIALES MATERIALES	VERSION CS	VERSION SS
Cuerpo Body	ASTM A-216 WCC	ASTM A-351 CF8M
Disco/Eje Disc/Shaft	ASTM A-351 CF8M / AHS-630	
Asientos Seats	PTFE / INCONEL	
Juntas Seals	GRAPHITE	

Bajo demanda se suministra en otros materiales (sujeto a cantidad).  
Other materials, on request (subject to quantity).

Bajo demanda se suministra con asientos metálicos.  
Metal seats w/req, on request.

NPS	D	CLASS 150	CLASS 300	CLASS 150	CLASS 300	CLASS 150	CLASS 300	CLASS 150	CLASS 300	CLASS 150	CLASS 300	CLASS 150	CLASS 300	CLASS 150	CLASS 300
		L	M	N	E	J	FAF-TORQUE	FE90-WEIGHT							
		mm													
														Nm	kg
0"	74,6	50	50	453	453	263	253	210	210	27	27	57	50	3	3
1/8"	89,7	55,5	55,5	453	453	271	271	228	228	28,8	28,8	97	145	14,5	14,5
1/4"	144,1	80	80	553	553	300	308	268	268	31,7	31,7	175	302	35	27,5
3/8"	193,8	87	78	553	-	330	371	290	317	35	38	300	612	32	46
1/2"	238,8	72	88	-	-	401	458	347	402	39,3	44	630	1208	60	75
3/4"	296	84	94	-	-	452	497	388	428	46	50,8	1175	2500	75	104
1"	304,5	82	117	-	-	506	557	437	507	52	58	1300	2200	110	160
1 1/4"	360	102	133	-	-	556	633	476	573	58	72	1500	2400	175	230
1 1/2"	410	114	148	-	-	606	695	526	635	67	78	2100	4240	188	350
2"	459	127	159	-	-	684	742	594	642	70	80	3000	4836	285	460
2 1/2"	508	154	181	-	-	748	802	648	682	80	83	4000	6018	470	705

For provided non-inherent, in clean conditions, without fiber seats, at 1/2" max. acc. valve rating and seat rating (see page 27).  
Para poder dimensionar al actuador, tomar un coeficiente de seguridad.

Normally reported torque, in clean conditions, without fiber seats, at 1/2" max. acc. valve rating and seat rating (see page 27).  
For actuator sizing allow adequate safety factor.

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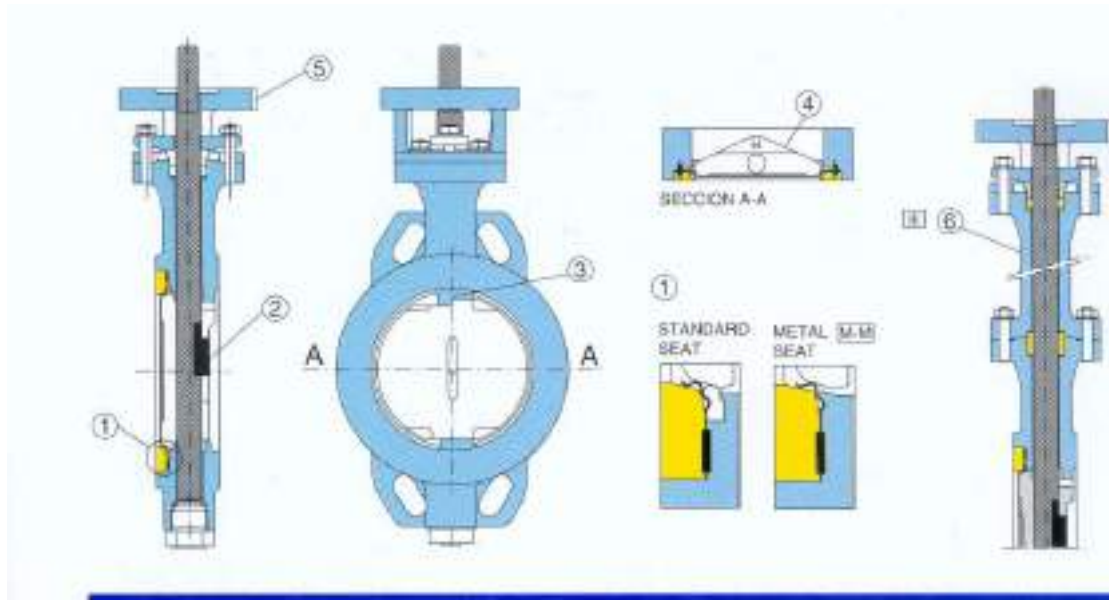
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## HIGH PERFORMANCE BUTTERFLY VALVES



### 1 ASIENTOS

Para una positiva estanquidad bidireccional el asiento de PTFE está presionado por un asiento metálico de Inconel. El asiento de Inconel es el mecanismo "Firesafe" bidireccional en caso de quemar total o parcial del asiento de PTFE.

En la versión Metal-Metal **[M.M.]** el asiento es únicamente el de Inconel que por su diseño flexible nos garantiza un buen funcionamiento y un reducido nivel de fugas.

### 2 CONEXIÓN DISCO-EJE

El sistema único de conexión entre disco y eje incrementa la fuerza mecánica entre ambos y simplifica el montaje y mantenimiento.

### 3 POSICIONAMIENTO DEL DISCO

El tope está situado en el muñón superior del cuerpo y centrado con el eje con lo que obtenemos dos ventajas: Evitar el giro del disco más de 90° y conseguir un desplazamiento uniforme del disco cuando se somete a presión, permitiendo una buena estanquidad, incluso a altas presiones al evitar el efecto "cantilever".

### 4 PERFIL DISCO

El perfil del disco está libre de cualquier obstrucción que pueda causar turbulencias y mejora el valor Cv.

### 5 MONTAJE DIRECTO DE ACTUADOR SEGUN I.S.O. 5211

Cualquier sistema de accionamiento se puede montar directamente sobre plataforma ISO 5211 eliminando así cualquier tipo de pieza intermedia.

### 6 APLICACIONES CRIOGÉNICAS **[C]**

Aplicaciones criogénicas hasta -196 °C certificadas, para temperatura de servicio inferiores a -20 °C se incorpora una alargadora (EB) con el fin de mantener la estanquidad cerca de la temperatura ambiente, para permitir la operación normal de la válvula.

### 1 SEATS

For positive bi-directional sealing the PTFE seat is energized by the Inconel metal seat. The Inconel seat becomes the Firesafe seat for bidirectional sealing in both a full or partial burn situation.

For the Metal-Metal **[M.M.]** version we use only the Inconel seat, which due its flexible design give us a good performance and low leakage rates.

### 2 KEY CONNECTION

This unique system increases the mechanical strength of the connection between disc and shaft and simplify assembly and maintenance.

### 3 OVER TRAVEL STOP

The stop is located in the top body trunion and disc, obtaining two main benefits: Avoid over travel of disc, more than 90° and to obtain an uniform deflection of the disc into the seat, avoiding the cantilever effect, which give us good tightness even a high pressures.

### 4 DISC HIGH FLOW CONTOUR

The disc has a clean contour with no adverse obstructions due to the design of the key connectin system, which improves the Cv value.

### 5 DIRECT ACTUATION MOUNTING I.S.O. 5211

All actuators is mounted directly to the top platform I.S.O. 5211 eliminating the need for extra mountin brackets or couplings.

### 6 CRYOGENIC APPLICATIONS **[C]**

Cryogenic application down -196 °C certified, for service temperatures down to -20 °C a extended bonns (EB) is incorporated, in order to maintain the stuffing bo near of the ambient temperature, which allows the normal operation of the valve.

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## HIGH PERFORMANCE BUTTERFLY VALVES

Como hay válvulas que, teniendo distintas características nominales de cuerpo, tienen asientos iguales, puede suceder que las características que corresponden a los asientos sean más elevadas que las correspondientes al cuerpo. En este caso se garantizará las válvulas respecto a las características de valor inferior.

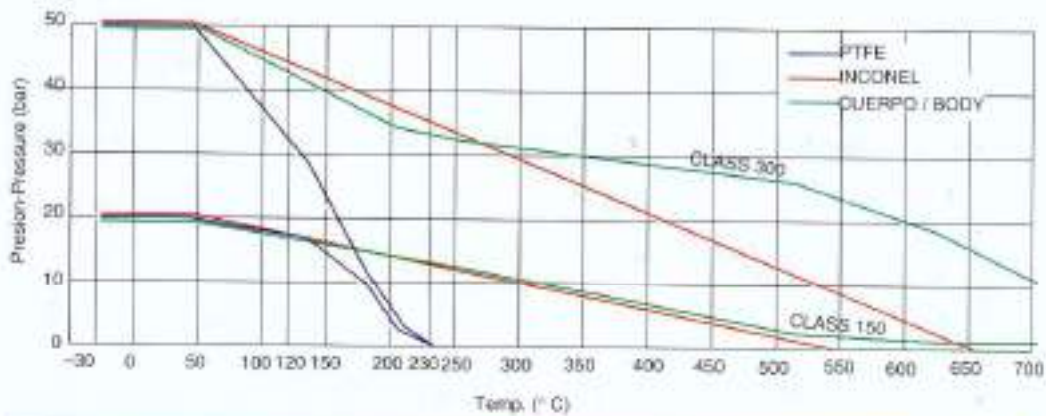
La naturaleza del material que compone el asiento hace que resulte técnicamente imposible dar unas características de rendimiento exactas. A menudo se pueden garantizar rendimientos mejores a los indicados. Al pasamos su consulta concreta, les rogamos nos indiquen los siguientes datos:

- Posición normal de la válvula: abierta/cerrada/con reducción de paso.
- Vices que se utilize/tiempo.
- Montaje horizontal o vertical.
- Presión - P temperatura.
- Producto.
- Velocidad.
- Válvula en conducto con aislamiento: sí/no.

As these are valves with different body ratings which have the same seats, it may occur that seat rating is higher than body rating. In that case valves will be guaranteed for the lower rating.

The nature of the seat material makes an exact rating technically impossible. We can often assure better performance. When consulting us please submit following data:

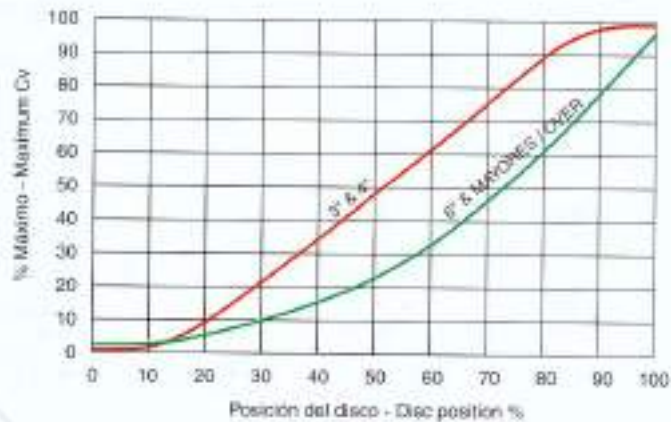
- Valve position normal: open/closed/throttling.
- Number of operations/time.
- Horizontal/ly or vertical/ly mounted.
- Pressure - P temp.
- Product.
- Velocity.
- Valve in insulated line: yes/no.



### CARACTERÍSTICAS DE CAUDAL, VALORES "Cv", USGPM/PSI FLOW CHARACTERISTICS, "Cv" VALUES, USGPM/PSI

NPS	Cv	Cara Disco Shaft Disc	Cara Eje Shaft Side
3"	145	145	164
4"	201	201	245
6"	1163	1163	1075
8"	2480	2480	2202
10"	3632	3632	3310
12"	6096	6096	4962
14"	9380	9380	7900
16"	12630	12630	10530
18"	16340	16340	13620
20"	19250	19250	16050
24"	23000	23000	19800

Para válvulas Class 150.  
For valves Class 150



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# PROTEK



## GEARBOXES FOR HIGH PERFORMANCE BUTTERFLY VALVES

### Construcción:

Diseño compacto y robusto, dotado de grandes superficies de guía para el sistema de engranaje.

### Características:

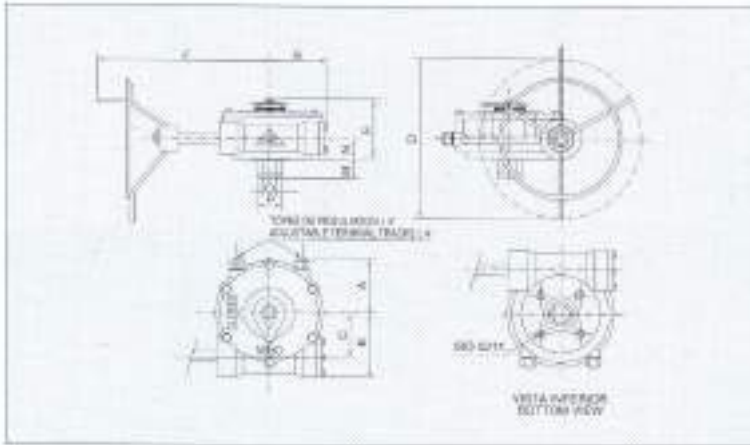
Protección a la intemperie, movimiento irreversible, y mantenimiento nulo.

### Construction:

Strong and simple construction with large guide surfaces for the worm and crown system.

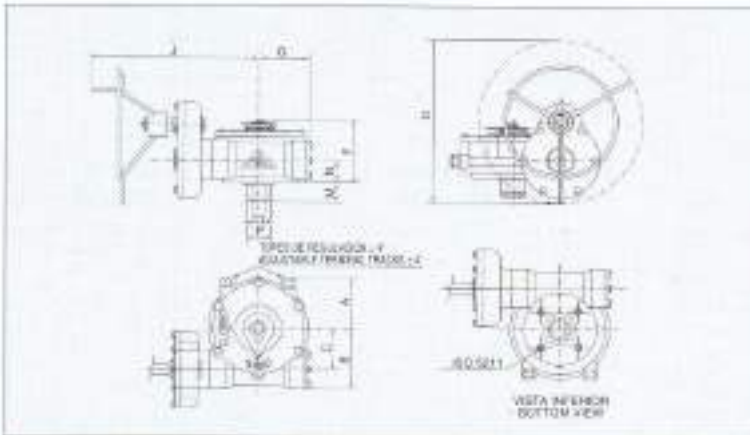
### Features:

Weather protection, self-locking movement, and zero maintenance.



MATERIALES / MATERIALS	
Cuerpo/Tapa Bodies	Fundición Nodular Nodular Iron GGG-42/12
Corona Worm	Fundición hierro Cast Iron GG-25
Eje sinfin Stem Crown	A. carbono Carbon Steel CK-45
Tornillos Bolts	A. Carbono Carbon Steel
"O" Rings	Nitrilo Nitrile

TIPO TYPE	PAR TORQUE MAX. Nm	REDUCCION REDUCTION	VUELTAS VOLANTE TURNS OF WHEEL	RENDIMIENTO EFFICIENCY	PAR MAX VOLANTE TORQUE MAX. WHEEL Nm	PESO WEIGHT KG	A	B	C	D	E	F	G	J	M	N	O	P	ISO 5211
RK 45	450	1/50	12.5	33%	30	10	90	90	65	360	165	80	200	35	37	10	53	F 10	
RK 75	1.000	1/52	13	33%	62	23	130	145	97	400	130	100	325	44	45	34	60	F 12	
RK 125	2.000	1/50	12.5	35%	150	47	170	225	152	550	150	165	480	55	65	30	84	F 14	



MATERIALES / MATERIALS	
Cuerpo/Tapa Bodies	Fundición Nodular Nodular Iron GGG-42/12
Corona Worm	Fundición hierro Cast Iron GG-25
Eje sinfin Stem Crown	A. carbono Carbon Steel CK-45
Tornillos Bolts	A. Carbono Carbon Steel
"O" Rings	Nitrilo Nitrile

TIPO TYPE	PAR TORQUE MAX. Nm	REDUCCION REDUCTION	VUELTAS VOLANTE TURNS OF WHEEL	RENDIMIENTO EFFICIENCY	PAR MAX VOLANTE TORQUE MAX. WHEEL Nm	PESO WEIGHT KG	A	B	C	D	E	F	G	J	M	N	O	P	ISO 5211
RK 400	4.000	1/150	37.5	35%	60	59	170	205	152	550	150	165	200	55	65	40	84	F 14	
RK 950	6.000	1/150	37.5	43%	100	64	175	205	152	720	150	165	325	55	65	40	84	F 25	

Depos demando pueden suministrarse en versión maraña. / On request they can be supplied for off-road uses.

Depos demando pueden suministrarse con conexión de chavetas. / On request they can be supplied with key-rot connection.

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## HIGH PERFORMANCE BUTTERFLY VALVE – TEST DATA

ESPECIFICACIONES DE ENSAYOS SEGUN BS 5351, BS 6755 PART 1, DIN 32303, BA, BO, BF  
 TEST SPECIFICATIONS ACCORDING TO BS 5351, BS 6755 PART 1, DIN 32303, BA, BO, BF

	DN 50 - DN 100				DN 150 - DN 200				DN 250 - DN 400			
	Pressure / Presure (bar)				Pressure / Presure (bar)				Pressure / Presure (bar)			
	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40
1	10	16	25	40	10	16	25	40	10	16	25	40
2	5	8	12.5	20	5	8	12.5	20	5	8	12.5	20
3	2.5	4	6.25	10	2.5	4	6.25	10	2.5	4	6.25	10
4	1.25	2	3.125	5	1.25	2	3.125	5	1.25	2	3.125	5

1. Prueba hidráulica cuerpo / Shell hydrostatic test      2. Prueba hidráulica exterior / Hydrostatic shell test  
 3. Prueba hidráulica cuerpo / Flange hydrostatic test      4. Prueba hidráulica exterior / Flange hydrostatic test

TEMPO DE ENSAYO - TEST DURATION				
DN	1	2	3	4
10" / 250-300	2 min	2 min	2 min	2 min
12" / 300-350	3 min	3 min	3 min	3 min
14" / 350-400	5 min	5 min	5 min	5 min

Note: - Other tests shall be specified in the purchase order.  
 - Valves are supplied with API 607 gaskets unless specified in the purchase order.

Note: - Other tests shall be specified in the purchase order.  
 - Valves to be supplied with API 607 gaskets shall be specified in the purchase order.

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# PROTEK



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# Knife Gate Valves



- Round Port
- Thru Conduit
- High Pressure
- Packingless
- Square Port



## Design & Construction

PROTEK Knife Gate Valves are available in sizes 2"- 48" (50mm-1200mm) and in a range of body & seat materials.

PROTEK offer a variety of actuator options including rising stem & non-rising stem hand wheel, pneumatic cylinder, lever, bevel gearbox, chain wheels & electric motors. A full complement of accessories including deflection cones and purge points are also available.

## Major Markets

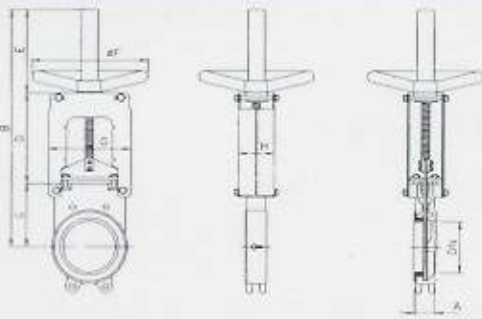
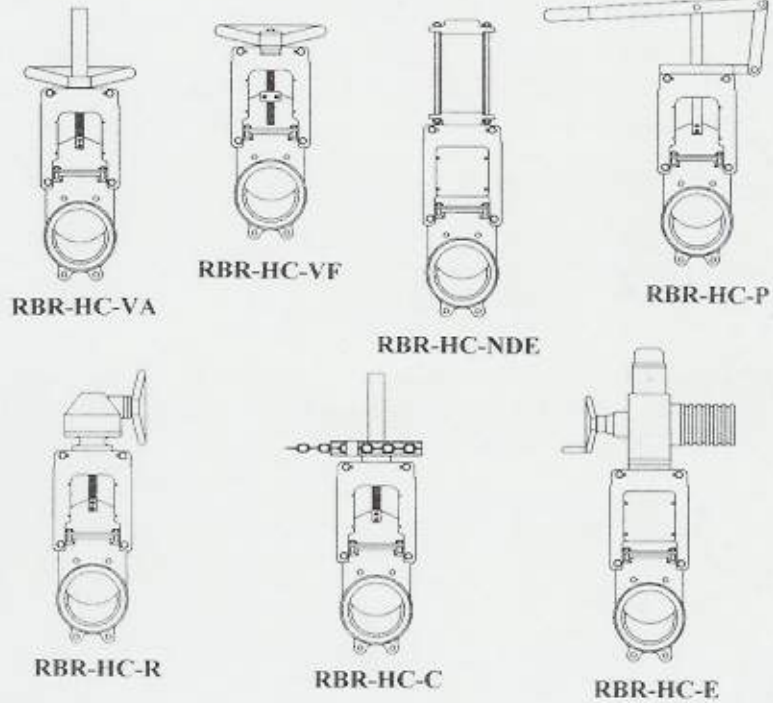
Water & waste water, Paper & pulp, Mining, Chemical, Power, OEM, Dry solids, Food processing, Sugar processing, Breweries, HVAC, Power Generation, General process applications.

## Features & Benefits

- One-piece solid cast body in either Cast/Ductile Iron, Carbon Steel or Stainless Steel
- Choice of unidirectional or bi-directional shut off
- Choice of metal or soft-seated design
- Epoxy coating suitable for Potable water applications
- Precision cast jams & guides in seating area
- Profiled packing gland with machined oval edges to provide improved sealing performance
- Triple-packing arrangement of fibre & one-piece resilient material
- Provides superior sealing characteristics and easy field adjustment or replacement
- Integral safety stem protector
- Epoxy coated safety side protection/support plates
- Easy & discreet mounting of switches and accessories
- Inter changeability of actuators without disassembling of valve
- Replacement of seat ring without disassembling of valve



## Model RBR-HC Knife Gate Valves



DN	A	B	C	D	E	ØF	G	H	Kg	PN
50	50	350	115	140	95	200	117	68	7	10
65	50	385	120	155	110	200	132	68	8	10
80	50	415	130	170	115	200	150	72	9	10
100	50	472	145	196	131	200	170	72	10	10
125	50	542	155	223	164	250	197	80	15	8
150	60	610	176	254	180	250	224	80	19	8
200	60	765	204	318	243	300	291	90	25	8
250	65	902	255	364	283	300	333	92	39	6
300	70	1057	305	424	328	350	395	95	53	6
350	90	1221	345	478	398	350	440	94	77	5
400	100	1422	400	554	468	500	543	101	119	5
500	110	1748	505	675	568	500	652	126	185	4
600	110	2073	620	795	658	500	752	120	253	3



## Inru Conduit Knife Gate Valves Model RBR-HP



- Bolted 2 piece body construction
- Standard sizes up to 24"/600mm
- Cast Iron or Stainless Steel Body
- Choice of metal or soft seated
- Optional Bi directional shut off
- Full Range of actuators and accessories

## High Pressure Knife Gate Valves Model RBR-HAP

- Bolted 2 piece body construction
- Standard sizes up to 24"/600mm
- Cast Iron or Stainless Steel Body
- Choice of seat material
- Working Pressures of PN16, PN25 & PN40
- Full Range of actuators and accessories



## Packingless Knife Gate Valves Model RBR-HM



- Specific design for mining applications
- Bolted 2 piece body construction
- Standard Sizes up to 24"/600mm
- Cast Iron or Stainless Steel Body
- Choice of resilient sleeve materials
- Full Range of actuators and accessories

## Square Section Knife Gate Valves Model RBR-SC

- Sizes to 1200mm x 1200mm
- Range of Body materials
- Range of Seat materials
- Bi-directional Shut off
- Full Range of actuators and accessories



 **PROTEK** 

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# PROTEK



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## Stainless & Carbon Steel valves



- Ball Valves
- Gate Valves
- Globe Valves
- Check Valves
- Strainer & Bellow seal



CE 0035





Protek Valve have strong technical capability . It is also equipped with many manufacturing facilities and test equipments including Ultrasonic test, Radiographic test both X-ray and gamma ray, Magnetic particle test , liquid Penetant test , Pressure test and materials analyzers which can assure the reliability and safety of the products.

Protek Valve Co., Ltd has obtained API certificates and was granted the Quality System certificate of ISO9001-2000 by TUV Rhineland. The company also obtained PED module "H" certificate issued by TUV Rhineland as European Notified Body and get the authorization to use CE marking for industrial valves , Protek valves , has adopted API ANSI ASME MSS JIS BS DIN etc standard to design , manufacturing and inspection of industrial valves , and has become one of major manufacturers and supplies of valves used in petroleum and petrochemical industrials. Protek valves have exported the industrial valve to international markets such as North and South America , Europe , Middle East and South east Asia, We also established good relationship with many international company and traders.

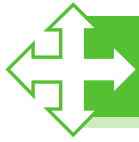
The main products manufactured at Protek is Gate , Globe , Check , Ball , Plug, Butterfly and some special requirement valves. The pressure rating is from Class 150 (PN20) to Class 2500 (PN420) and size range is from 1/8(DN3) to 36 (DN900). The main material of valves are Carbon, Alloy and Stainless steel materials, such as WCB (DIN 1.0619), CF8 (DIN1.4403) CF8M (DIN1.4408) and Titanium and Monel etc. We also can provide other special materials as per customer's requirements. Based on our company's policy "Clients first ". Protek will provide quality valves as well as best services to both domestic and foreign customers.



ISO 9001 Certificate



API 6D Certificate



# Company Presentation

## Introduction

It is with great pleasure that we introduce the PROTEK group, which since its foundation has been dedicated to the production and supply of the best in industrial valves. The company's name is of some importance in both the home and international markets.

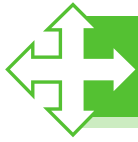
Quality has always been a priority with PROTEK and we aim to manufacture a product, which guarantees the strictest and most demanding standards of the different sectors, which use our valves.

PROTEK has been on the market now for several years with a recognised registered and approved product range. Through this time we have not only gained in experience and increased the quality of our products but we have also improved the service to our customers.

Behind the PROTEK brand is an experienced and highly skilled group of valve specialists who are the real driving force of the company.







# Products

The **PROTEK** group consists of a number of individual manufacturing companies based throughout Europe who manufacture a wide range of Valve Products. In general terms those products are:

Butterfly Valves	Gate Valves	Check Valves
Knife Gate Valves	Globe/Diaphragm Valves	Ball Valves
Full range of actuators		

In addition to selling a wide range of standard products **PROTEK** is also able to offer a design and manufacturing service for speciality or large diameter valves.





## Companies

All PROTEK products are manufactured to the very highest quality considerations and under an ISO 9001 / 9002 quality control system. The locations include:

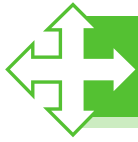
Newcastle England (Head Office)		
Bilbao Spain	Valencia Spain	Madrid Spain
Barcelona Spain	Milan Italy	Gothenburg Sweden
Bangkok Thailand		Osaka Japan

## Sales & Marketing

**PROTEK** products are sold worldwide via a network of agents and representatives. The attached map indicates the location of these agents. For further details please contact **PROTEK** UK head office.



England – Spain – France – Finland – Germany – Greece - India - Saudi Arabia - Kuwait -  
United Arab Emirates - Singapore – Indonesia - USA - Canada - Morocco - Mexico - Cuba –  
Colombia - Venezuela – Ecuador



# SELECTED MAJOR REFERENCE LIST

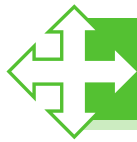
## Customers & Products

De Beers Engineering South Africa	Butterfly & Knife Gate Valves
Fluor Daniel Engineering South Africa	Butterfly & Knife Gate Valves
PETKIM - Turkey	Butterfly Ball & Gate Valves
National Refinery Pakistan	Gate Globe & Check Valves
SCA Paper - Canada	Knife Gate Valves
Kimberly Clark - Canada	Knife Gate Valves
Bangkok Municipality Thailand	Butterfly & Knife Gate Valves
RJB Mining UK	Butterfly & Knife Gate Valves
Thames Water Engineering-UK	Butterfly & Knife Gate Valves
Northumbrian Water-UK	Butterfly & Knife Gate Valves
North West Water Engineering-UK	Knife Gate Valves
Severn Trent Water -UK	Butterfly & Knife Gate Valves
TOSHIBA Corporation Japan	Butterfly Gate Check & Globe
MATSUI Corporation Japan	Butterfly Gate Check & Globe
Republic South Africa Navy	Butterfly Valves
British Nuclear Fuels Ltd (Sellafield)	Butterfly Valves
Du Pont Iberia Spain	Butterfly & Ball Valves
Bayer WIEN Austria	Butterfly & Ball Valves
BASF Austria	Butterfly Globe & Check Valves
Hellenic Sugar Mills Greece	Butterfly Check & Globe Valves
Hellenic Petroleum Greece	Gate Globe Check & Ball Valves
Jordan Petroleum Refineries, Jordan	Ball Globe Gate & Check Valves
Jordan Phosphate Mining Jordan	Butterfly & Check Valves
Abu Dhabi Municipality, U.A.E.	Gate, Check & Air Valves

## Major Projects & Products

Kimberly Gold Mining Project	Butterfly & Knife Gate Valves
Whittle Dene Water Treatment Plant	Butterfly, Check & Knife Gate Valves
Umiray Transbasin Project	Butterfly & Knife Gate Valves
Johar Water Treatment Plant	Butterfly, Check & Knife Gate Valves
Sha Tin Treatment Hong Kong	Butterfly, Check, Plug & Knife Gate Valves
Ghazi Barotha Project Pakistan	Butterfly, Gate, Check & Globe
Sulcis Thermoelectric Project Sardinia	Globe & Ball Valves





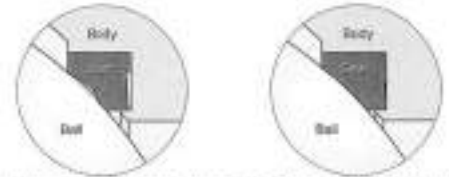
## Application

Floating ball valves are suitable for use on various kinds of pipelines of Class 150 to Class 1500, PN16 to PN100, and JIS 10K to JIS 20K to turn on or off the pipeline medium, of which the operation types include manual, worm gear and pneumatic or electric actuators.

### Construction and features of floating ball valve

## Reliable seat seal

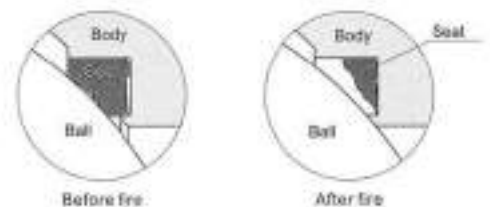
The structure design of elastic sealing ring has been adopted for floating ball valves. This seat design features a bigger sealing pressure ratio between the ring surface and the ball when medium pressure gets lower, where the contacting area is smaller. Thus, the reliable seal is ensured. When the medium pressure gets higher, the contacting area between seat ring and ball becomes bigger as the sealing ring transforms elastically to undertake the bigger force pushed by the medium without any damage.



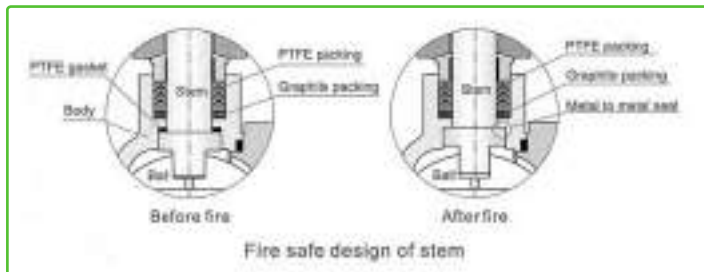
At lower medium pressure    At higher medium pressure

## Fire safe design

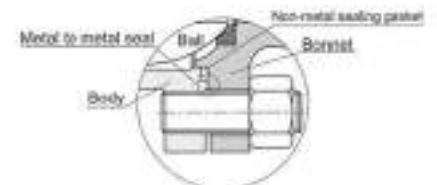
With the valve heated in a fire application, the non-metal material parts such as seat sealing ring of PTFE, stem back seat gasket, gland packing, and the sealing gasket between body and bonnet might disintegrate or be damaged due to high temperature. CHAODA's specially designed structure of auxiliary metal to metal seal is provided to effectively prevent both internal and external leakage of the valve. As required by customers, **PROTEK**'s floating ball valves with fire safe design can meet the requirement of API 607, API 6FA, BS 6755 and JB/T 6899.



Fire safe design of seat



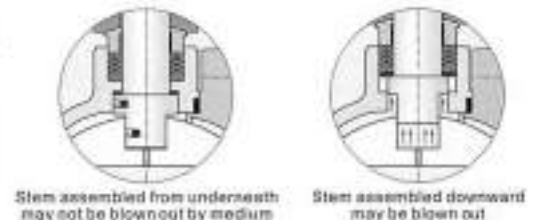
Fire safe design of stem



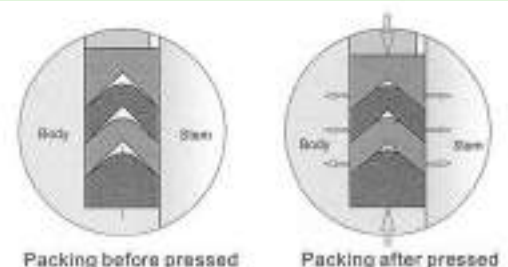
Fire safe design of valve body and bonnet flanges

## Reliable stem seal

The blow-out proof design has been adopted for the stem to ensure that even if the pressure in the body cavity is risen accidentally and the packing flange becomes invalid, the stem may not be blown out by medium. The stem features the design with a backseat, being assembled from underneath. The sealing force against the backseat gets higher as the medium pressure becomes higher. So the reliable seal of the stem can be assured under variable medium pressure.

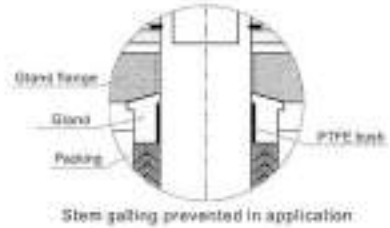


V type packing structure has been employed to effectively transform the pushing force of the gland flange and the medium pressure into the sealing force against the stem.

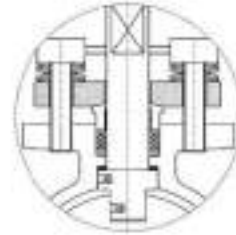




The traditional packing flange design has been improved to be of two piece structure, i.e., being as a gland flange and gland, the latter contacts the gland flange with spherical surface. Thus, the gland remains vertical always, and is lined internally with a PTFE bush to prevent the galling against and friction between the stem, which can also reduce the operation torque of the valve.

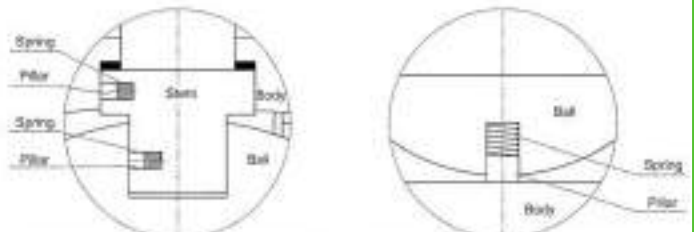


Based on customers' requirement, a packing tightening design may be employed to obtain more reliable stem packing seal, which is loaded by bevelling spring.



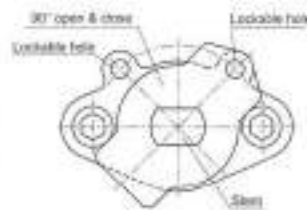
## Anti-Static Feature

The traditional packing flange design has been improved to be of two piece structure, i.e., being as a packing flange plate and a follower, the latter contacts the flange plate with spherical surface. Thus, the follower remains vertical always, and is lined internally with a PTFE bush to prevent the galling against and friction between the stem, which can also reduce the operation torque of the valve.



## Wrong operation prevention

To prevent the ball valve from wrong operation, the key lock with 90° of open and close positioning pad has been provided, which can be lockable as required. At the stem head, where the lever fixes, a flat is so designed that the valve opens with the lever in parallel to piping, and with the lever right-angled to the piping, the valve is closed. So, it is ensured that the valve indicator of open and close can never make mistake.



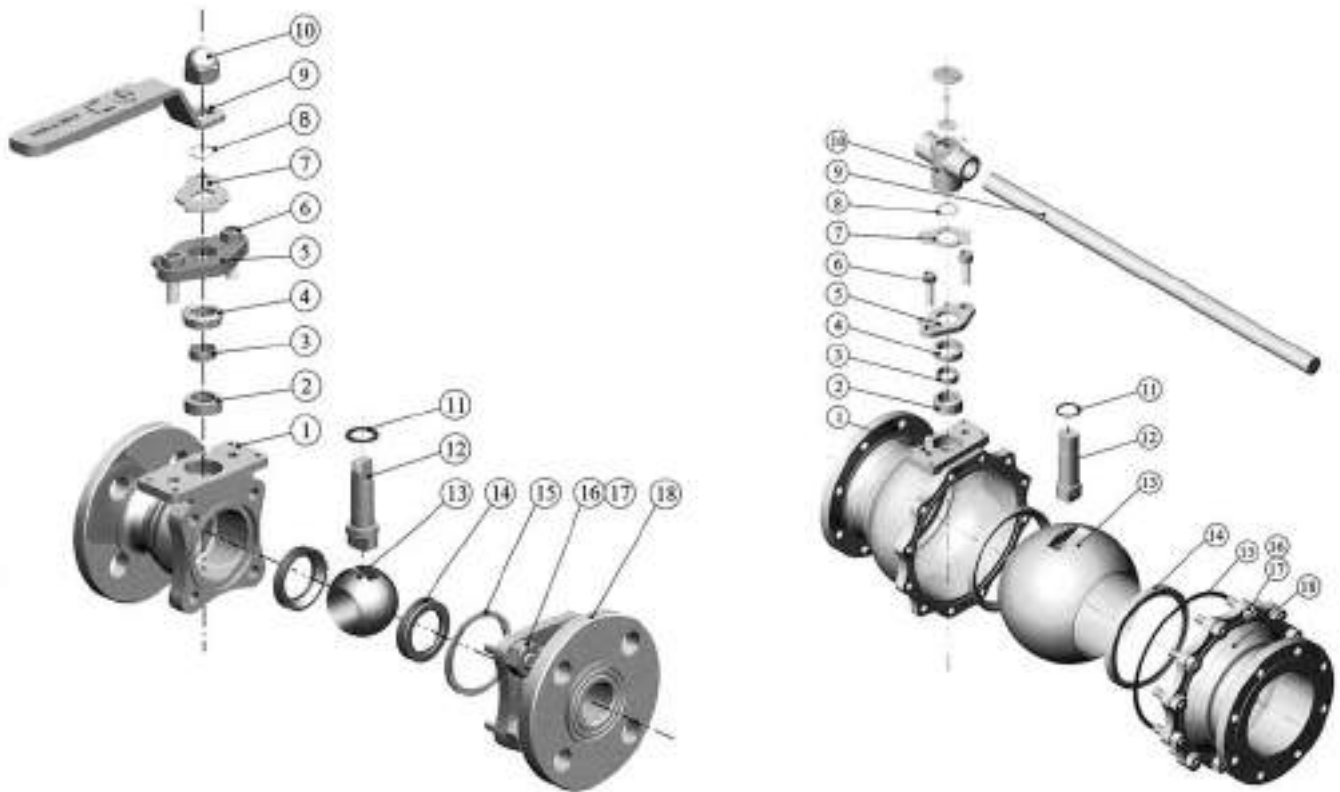
## Mounting pad provided

**PROTEK** company has provided for floating ball valve with a mounting pad, through which it is easy to fix the actuators, such as worm gear, pneumatic and electric actuators.





**Typical drawing of floating ball valve and parts composition**



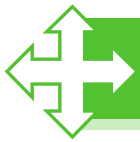
Parts and material list

FIG. BA/BK/BP

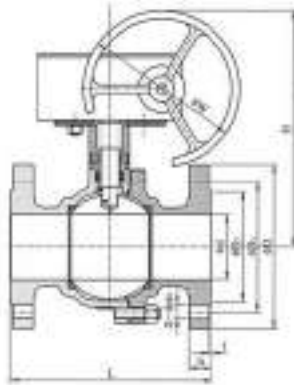
Parts No.	Parts name	Materials				
		WCB/13Cr	WCB/304	WCB/316	CF8	CF8M
1	Body	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
2	Packing	PTFE	PTFE	PTFE	PTFE	PTFE
3	Stem bearing	PTFE	PTFE	PTFE	PTFE	PTFE
4	Gland	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
5	Gland flange	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
6	Gland bolt	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
7	Stop collar	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel
8	Circlip	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel
9	Lever	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
10	Nut or wrench head	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel
11	Thrust washer	PTFE	PTFE	PTFE	PTFE	PTFE
12	Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
13	Ball	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
14	Seat	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE
15	Gasket	PTFE	PTFE	PTFE	PTFE	PTFE
16	Body nut	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M
17	Body bolting	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
18	Closure	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M

Note: The chart above only lists out some common composition of steel ball valve parts. We may provide other different parts material composition according to the customer's request or the actual valve working condition.

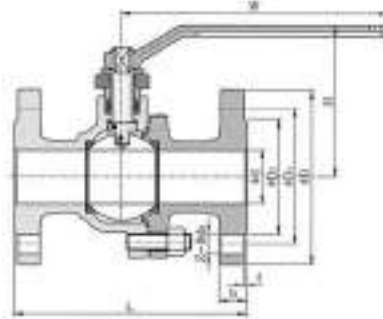




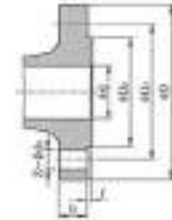
## Main size and weight



Gear box



Hand wheel



Class600—Class1500 flange

Pressure stage	Size		Dimensions (mm)											Weight (kg)			
	DN	NPS	L		d	D	D <sub>1</sub>	D <sub>2</sub>	b	f	Z-ø d	W		H		Weight (kg)	
			RF	RTJ								Hand wheel	Gear box	Hand wheel	Gear box	Hand wheel	Gear box
Class150 PN20	15	1/2	108	119	14	89	60.5	35	11.5	1.6	4-15	140	-	85	-	3	-
	20	3/4	117	130	19	98	70	43	11.5	1.6	4-15	140	-	90	-	4	-
	25	1	127	140	25	108	79.5	51	11.5	1.6	4-15	150	-	99	-	5	-
	32	1 1/4	140	153	32	117	89	64	13	1.6	4-15	180	-	105	-	7	-
	40	1 1/2	165	178	38	127	98.5	73	14.5	1.6	4-15	200	-	126	-	8	-
	50	2	178	191	51	152	120.5	92	16	1.6	4-19	250	-	140	-	12	-
	65	2 1/2	190	203	64	178	139.5	105	17.5	1.6	4-19	300	-	165	-	18	-
	80	3	203	216	76	190	152.5	127	19.5	1.6	4-19	350	-	178	-	24	-
	100	4	229	242	102	229	190.5	157	24	1.6	8-19	500	305	230	380	38	53
	125	5	356	369	127	254	216	186	24	1.6	8-22	800	305	280	405	60	79
150	6	394	407	152	279	241.5	216	25.5	1.6	8-22	800	305	310	460	82	102	
200	8	457	470	203	343	298.5	270	29	1.6	8-22	1000	305	350	550	145	185	
250	10	533	546	254	406	362	324	31	1.6	12-25	-	400	-	706	-	280	
Class300 PN50	15	1/2	140	151	14	95	66.5	35	14.5	1.6	4-15	140	-	85	-	3	-
	20	3/4	152	165	19	117	82.5	43	16	1.6	4-19	140	-	90	-	5	-
	25	1	165	178	25	124	89	51	17.5	1.6	4-19	150	-	99	-	6	-
	32	1 1/4	178	191	32	133	98.5	64	19.5	1.6	4-19	180	-	105	-	8	-
	40	1 1/2	190	203	38	156	114.5	73	21	1.6	4-22	200	-	126	-	11	-
	50	2	216	232	51	165	127	92	22.5	1.6	8-19	250	-	142	-	16	-
	65	2 1/2	241	257	64	190	149	105	25.5	1.6	8-22	300	-	165	-	24	-
	80	3	283	299	76	210	168.5	127	29	1.6	8-22	350	-	178	330	34	52
	100	4	305	321	102	254	200	157	32	1.6	8-22	500	305	230	380	56	76
	125	5	381	397	127	279	235	186	35	1.6	8-22	800	305	280	420	86	124
150	6	403	419	152	318	270	216	37	1.6	12-22	800	305	310	480	125	163	
200	8	502	518	203	381	330	270	41.5	1.6	12-25	1000	305	350	560	222	267	
Class600 PN110	15	1/2	165	164	14	95	66.5	35	14.5	6.4	4-15	140	-	79	-	5	-
	20	3/4	190	190	19	118	82.5	43	16	6.4	4-19	140	-	83	-	7	-
	25	1	216	216	25	124	89	51	17.5	6.4	4-19	200	-	114	-	9	-
	32	1 1/4	229	229	32	133	98.5	64	21	6.4	4-19	200	-	120	-	13	-
	40	1 1/2	241	241	38	156	114.5	73	22.5	6.4	4-22	250	-	125	-	17	-
	50	2	292	295	51	165	127	92	25.5	6.4	8-19	300	-	156	-	25	-
	65	2 1/2	330	333	64	190	149	105	29	6.4	8-22	350	-	172	-	42	-
	80	3	356	359	76	210	168	127	32	6.4	8-22	500	305	220	370	56	76
100	4	432	435	102	273	216	157	38.5	6.4	8-25	650	305	250	400	85	123	
Class900 PN150	15	1/2	216	216	14	121	82.5	35	22.5	6.4	4-23	150	-	98	-	9	-
	20	3/4	229	229	20	130	88.9	43	25.5	6.4	4-23	150	-	105	-	13	-
	25	1	254	254	25	149	101.6	51	29	6.4	4-26	200	-	110	-	16	-
	32	1 1/4	279	279	32	159	111.1	64	29	6.4	4-26	250	-	120	-	24	-
	40	1 1/2	305	305	38	178	123.8	73	32	6.4	4-29	250	-	125	-	31	-
50	2	368	371	50	216	165.1	92	38.5	6.4	8-26	350	-	160	-	45	-	
Class1500 PN260	15	1/2	216	216	14	121	82.5	35	22.5	6.4	4-23	182	-	98	-	10	-
	20	3/4	229	229	20	130	88.9	43	25.5	6.4	4-23	200	-	105	-	14	-
	25	1	254	254	25	149	101.6	51	29	6.4	4-26	250	-	110	-	17	-
	32	1 1/4	279	279	32	159	111.1	64	29	6.4	4-26	300	-	120	-	25	-
	40	1 1/2	305	305	38	178	123.8	73	32	6.4	4-29	350	-	130	-	33	-
50	2	368	371	50	216	165.1	92	38.5	6.4	8-26	500	-	160	-	48	-	



Nominal pressure	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
PN16	L	130	140	150	165	180	200	220	250	280	320	360	400	—	
	W	Hand wheel	140	140	150	180	200	250	300	350	500	800	800	1000	—
		Gear box	—	—	—	—	—	—	—	—	305	305	305	305	—
	H	Hand wheel	85	90	99	105	126	140	165	178	230	280	310	350	—
		Gear box	—	—	—	—	—	—	—	—	380	405	460	550	—
	Weight (kg)	Hand wheel	3	4	5	7	8	12	17	23	35	52	76	134	—
Gear box		—	—	—	—	—	—	—	—	53	79	102	185	—	
PN25	L	130	140	150	165	180	200	220	250	320	400	400	550	—	
	W	Hand wheel	140	140	150	180	200	250	300	350	500	800	800	1000	—
		Gear box	—	—	—	—	—	—	—	—	305	305	305	305	—
	H	Hand wheel	85	90	99	105	126	140	165	178	230	280	310	350	—
		Gear box	—	—	—	—	—	—	—	—	380	405	460	550	—
	Weight (kg)	Hand wheel	3	4	5	7	9	12	19	23	45	67	95	170	—
Gear box		—	—	—	—	—	—	—	—	53	79	102	185	—	
PN40	L	130	140	150	180	200	220	250	280	320	400	400	550	—	
	W	Hand wheel	140	140	150	180	200	250	300	350	500	800	800	1000	—
		Gear box	—	—	—	—	—	—	—	—	305	305	305	400	—
	H	Hand wheel	85	90	99	105	126	142	165	178	230	280	310	350	—
		Gear box	—	—	—	—	—	—	—	—	330	380	420	480	560
	Weight (kg)	Hand wheel	3	4	5	8	11	15	20	29	48	68	98	178	—
Gear box		—	—	—	—	—	—	—	—	47	68	88	136	223	
PN63	L	140	152	165	178	190	216	241	283	305	—	—	—	—	
	W	Hand wheel	140	140	200	200	250	300	350	500	650	—	—	—	—
		Gear box	—	—	—	—	—	—	—	—	305	305	—	—	—
	H	Hand wheel	79	83	114	120	125	156	172	220	250	—	—	—	—
		Gear box	—	—	—	—	—	—	—	—	390	440	—	—	—
	Weight (kg)	Hand wheel	5	7	9	13	17	25	42	56	85	—	—	—	—
Gear box		—	—	—	—	—	—	—	—	76	123	—	—	—	
PN100	L	165	190	216	229	241	292	330	356	432	—	—	—	—	
	W	Hand wheel	140	140	200	200	250	300	350	500	650	—	—	—	—
		Gear box	—	—	—	—	—	—	—	—	305	305	—	—	—
	H	Hand wheel	79	83	114	120	125	156	172	220	250	—	—	—	—
		Gear box	—	—	—	—	—	—	—	—	390	440	—	—	—
	Weight (kg)	Hand wheel	5	7	9	13	17	25	42	56	85	—	—	—	—
Gear box		—	—	—	—	—	—	—	—	76	123	—	—	—	
JIS 10K	L	108	117	127	140	165	178	190	203	229	356	394	457	533	
	W	Hand wheel	140	140	150	180	200	250	300	350	500	800	800	1000	—
		Gear box	—	—	—	—	—	—	—	—	305	305	305	305	400
	H	Hand wheel	85	90	99	105	126	140	165	178	230	280	310	350	—
		Gear box	—	—	—	—	—	—	—	—	380	405	460	550	706
	Weight (kg)	Hand wheel	3	4	5	7	8	12	18	24	38	60	82	145	—
Gear box		—	—	—	—	—	—	—	—	53	79	102	185	280	
JIS 20K	L	140	152	165	178	190	216	241	283	305	381	403	502	—	
	W	Hand wheel	140	140	150	180	200	250	300	350	500	800	800	1000	—
		Gear box	—	—	—	—	—	—	—	—	305	305	305	400	—
	H	Hand wheel	85	90	99	105	126	142	165	178	230	280	310	350	—
		Gear box	—	—	—	—	—	—	—	—	350	380	420	480	560
	Weight (kg)	Hand wheel	3	5	6	8	11	15	23	33	53	82	120	212	—
Gear box		—	—	—	—	—	—	—	—	52	76	124	163	267	



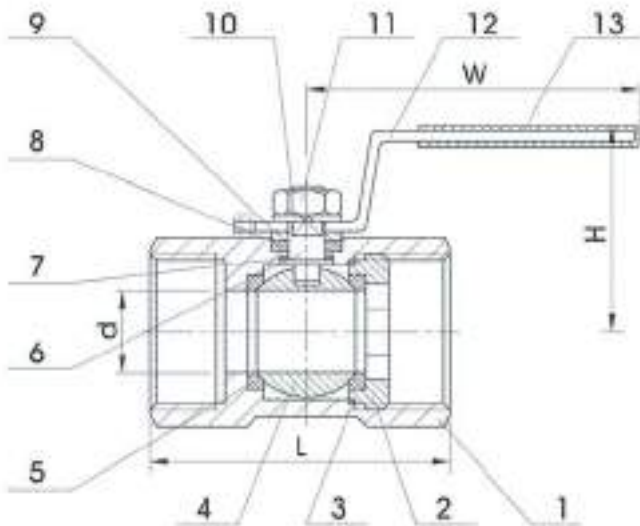
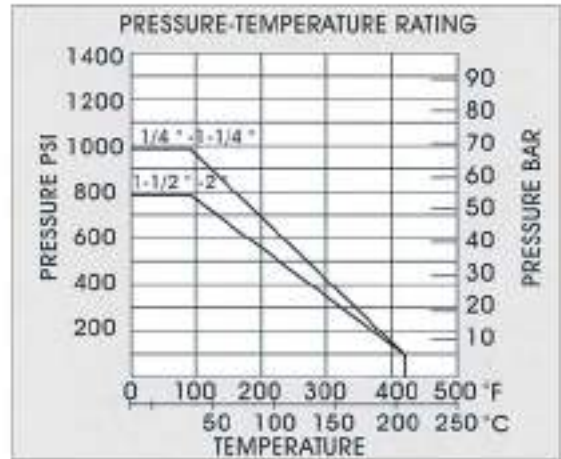


# 1-pc Investment Casting Ball Valve

## Reduce bore, Screw End, 1000 WOG.

FIG. BS-1

- Investment Castings for Body and Cap
  - Threaded ends: ANSI B2.1, BS 21, DIN 259/2999
  - Internal entry blow-out proof stem
  - Pressure rating: 1000 PSI (PN63)
  - Material: CF8M, CF8, CF3M, WCB
  - Pressure test: API 598
- 
- 1000PSI (PN63)
  - ANSI B2.1, BS 21, DIN 259/2999
  - CF8M, CF8, CF3M, WCB



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Cap	CF8M(1.4408)	1
3	Body Gasket	PTFE	1
4	Ball	SS316	1
5	Ball Seat	R-PTFE(15%)	2
6	Stem	SS316	1
7	Thrust Washer	PTFE	1
8	Stem Packing	PTFE	1
9	Washer	SS304	1
10	Spring Washer	SS304	1
11	Nut	SS304	1
12	Handle	SS304	1
13	Handle Cover	Plastic	1



SIZE	d	L	H	W	TORQUE(N·m)	WEIGHT(Kgs)
1/4"	5	40	33	67	2	0.07
3/8"	7	45	36	67	2	0.10
1/2"	9	57	37	93	3	0.16
3/4"	12.5	60	42	93	3	0.25
1"	15	71	52	103	4	0.40
1-1/4"	20	78	56	103	5	0.65
1-1/2"	25	82	65	125	7	0.83
2"	32	100	70	125	9	1.30



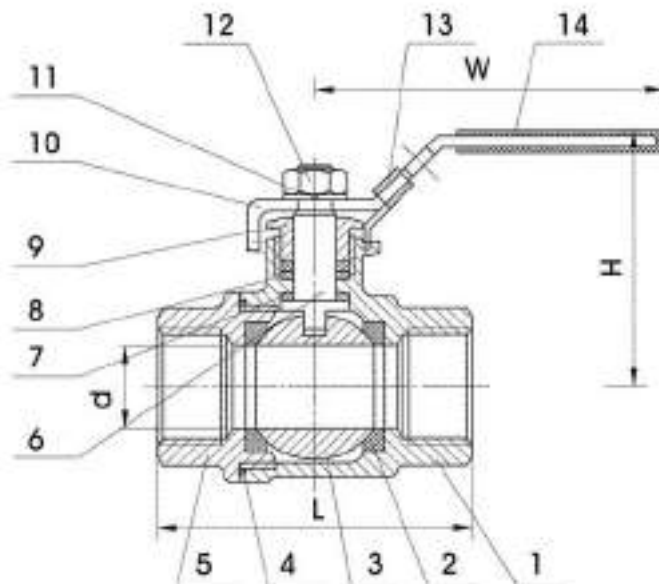
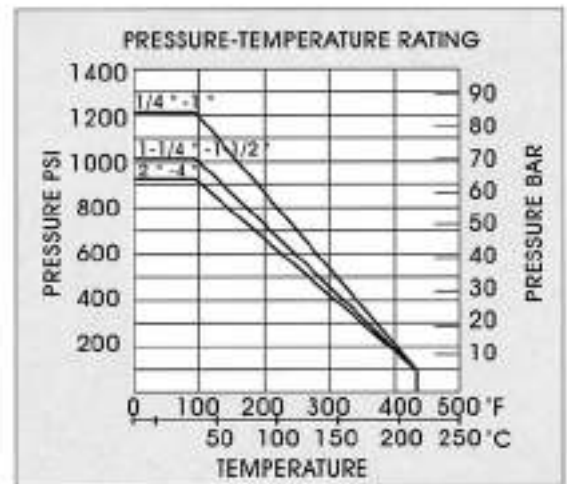


# 2-pc Investment Casting Ball Valve

## Full Port, Screw End, 1000 WOG.

FIG. BS-2

- Investment Castings for Body and Cap
  - Threaded ends: ANSI B2.1, BS 21, DIN 259/2999
  - Internal entry blow-out proof stem
  - Pressure rating: 1000 PSI (PN63)
  - Material: CF8M, CF8, CF3M, WCB
  - Pressure test: API 598
- 
- 1000PSI (PN63)
  - ANSI B2.1, BS 21, DIN 259/2999
  - CF8M, CF8, CF3M, WCB



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Ball Seat	R-PTFE(15%)	2
3	Ball	SS316	1
4	Body Gasket	PTFE	1
5	Cap	CF8M(1.4408)	1
6	Stem	SS316	1
7	Thrust Washer	PTFE	1
8	Stem Packing	PTFE	1
9	Gland Nut	SS304	1
10	Handle	SS304	1
11	Spring Washer	SS304	1
12	Nut	SS304	1
13	Lock Device	SS304	1
14	Handle Cover	Plastic	1



SIZE	d	L	H	W	TORQUE(N·m)	WEIGHT(Kgs)
1/4"	11.6	50	50	100	4	0.23
3/8"	12.5	50	50	100	4	0.22
1/2"	15	58	52	100	5	0.26
3/4"	20	65	57	115	8	0.47
1"	25	80	75	150	10	0.65
1-1/4"	32	92	80	150	14	1.15
1-1/2"	40	105	95	180	18	1.65
2"	50	125	100	180	25	2.75
2-1/2"	65	155	120	245	48	4.90
3"	76	175	130	245	75	7.70
4"	94	220	160	278	110	16.10

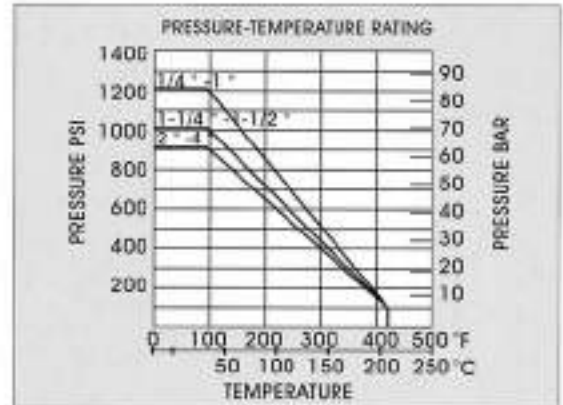


# 3-pc Ball Valve, DIN Length

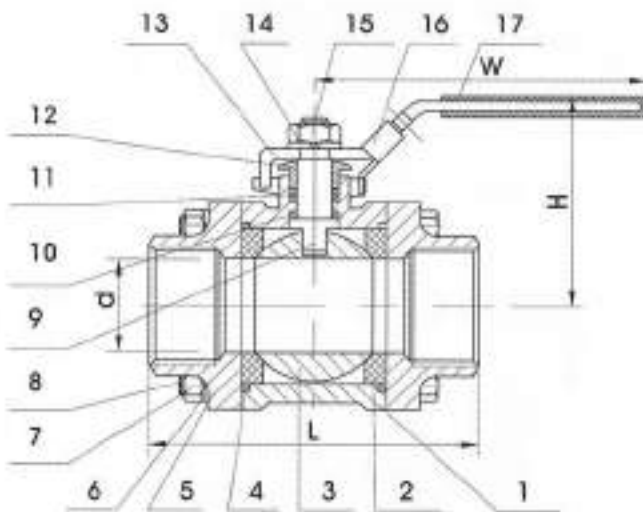
## Full Port, Screw End, 1000 WOG.

FIG. BS-3

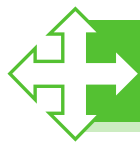
- Investment Castings for Body and Cap
  - Threaded ends: ANSI B2.1, BS 21, DIN 259/2999
  - Length According to DIN 3202-M3
  - Internal entry blow-out proof stem
  - Pressure rating: 1000 PSI (PN63)
  - Material: CF8M, CF8, CF3M, WCB
  - Pressure test: API 598
- 
- 1000PSI (PN63)
  - ANSI B2.1, BS 21, DIN 259/2999
  - CF8M, CF8, CF3M, WCB



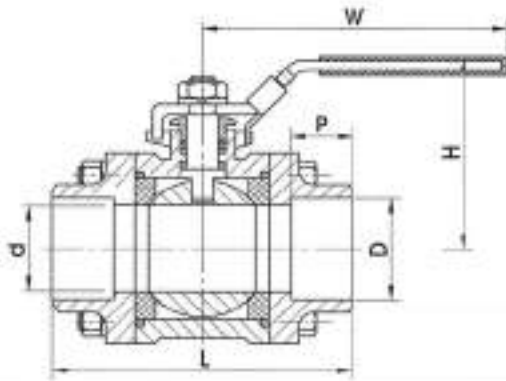
ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Ball Seat	R-PTFE(15%)	2
3	Ball	SS316	1
4	Body Gasket	PTFE	2
5	Cap	CF8M(1.4408)	2
6	Spring Washer	SS304	4(6)
7	Nut	SS304	4(6)
8	Bolt	SS304	4(6)
9	Stem	SS316	1
10	Thrust Washer	PTFE	1
11	Stem Packing	PTFE	1
12	Gland Nut	SS304	1
13	Handle	SS304	1
14	Spring Washer	SS304	1
15	Nut	SS304	1
16	Lock Device	SS304	1
17	Handle Cover	Plastic	1



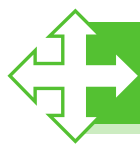
SIZE	d	L	H	W	TORQUE(N · m)	WEIGHT(Kgs)
1/4 "	11	68	50	96	4	0.33
3/8 "	12.7	68	50	96	4	0.32
1/2 "	15	75	52	128	5	0.39
3/4 "	20	85	57	130	8	0.76
1 "	25	90	78	162	10	1.02
1-1/4 "	32	112	88	162	14	1.73
1-1/2 "	40	120	95	184	18	2.42
2 "	50	145	102	184	25	3.42
2-1/2 "	65	185	119	224	48	8.11
3 "	80	210	130	224	75	12.10
4 "	100	278	159	278	110	20.60



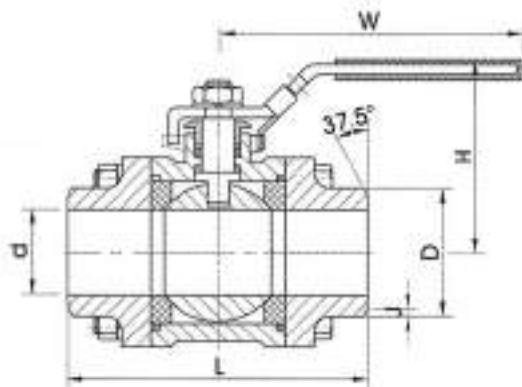
## Socket Weld End, DIN Length.



SIZE	d	D	P	L	H	W	TORQUE(N·m)	WEIGHT(Kgs)
1/4"	11	14	10	68	50	96	4	0.33
3/8"	12.7	17.6	10	68	50	96	4	0.32
1/2"	15	21.7	10	75	52	128	5	0.40
3/4"	20	27.3	13	85	57	130	8	0.74
1"	25	34.1	13	90	78	162	10	0.96
1-1/4"	32	42.8	13	112	88	162	14	1.72
1-1/2"	40	48.7	13	120	95	184	18	2.38
2"	50	61	16	145	102	184	25	3.40
2-1/2"	65	77	16	185	119	224	48	8.09
3"	80	90	16	210	130	224	75	12.00
4"	100	115.2	20	268	159	278	110	20.50



## Butt Weld End, DIN Length.



SIZE	d	D	J	L	H	W	TORQUE(N·m)	WEIGHT(Kgs)
3/8"	10	17.5	1.6	70	50	96	4	0.31
1/2"	15	21.7	1.6	75	52	128	5	0.41
3/4"	20	27.2	1.6	90	57	130	8	0.72
1"	25	34	1.6	100	78	162	10	0.94
1-1/4"	32	42.7	1.6	110	88	162	14	1.70
1-1/2"	40	48.6	1.6	125	95	184	18	2.35
2"	50	60.5	1.6	150	102	184	25	3.24
2-1/2"	65	76.3	2	190	119	224	48	8.02
3"	80	90	2	220	130	224	75	11.90
4"	100	116	3.5	270	159	278	110	20.30

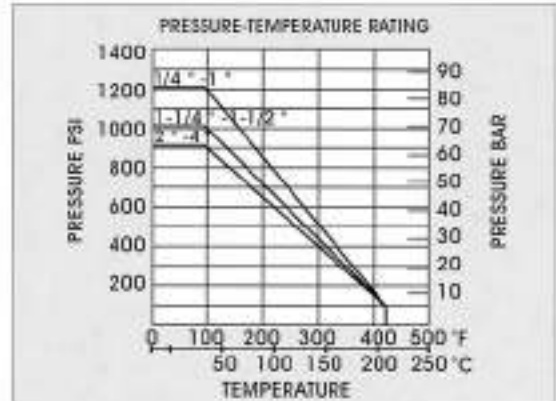




# 3-pc Ball Valve, Mounting Pad, Full Port, Screw End, 1000 WOG.

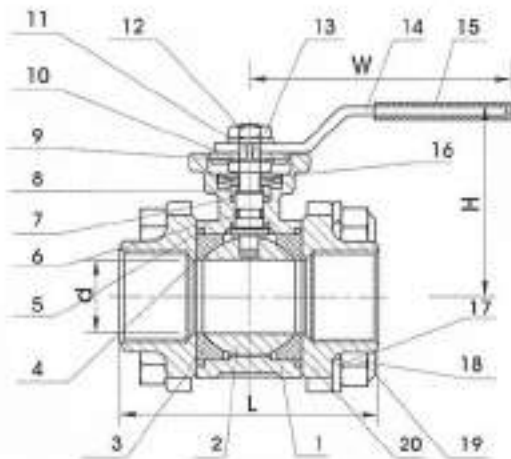
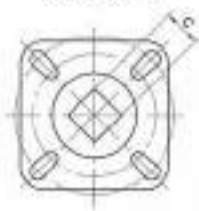
FIG. BS-3M

- Investment Castings for Body and Cap
  - Threaded ends:ANSI B2.1,BS 21,DIN 259/2999
  - Mounting Pad:ISO 5211
  - Pressure rating:1 000 PSI(PN63)
  - Material:CF8M,CF8,CF3M,WCB
  - Pressure test: API 598
- 
- 1000PSI (PN63)
  - ANSI B2.1,BS 21,DIN 259/2999
  - CF8M,CF8,CF3M,WCB



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Ball	SS316	1
3	Ball Seat	R-PTFE(15%)	2
4	Thrust Washer	PTFE	1
5	Body Gasket	PTFE	2
6	O-ring	VITON	1
7	Stem Packing	PTFE	1
8	Gland	SS304	1
9	Tab Washer	SS304	1
10	Stopper	SS304	1
11	Spring Washer	SS304	1
12	Stem	SS316	1
13	Nut	SS304	2
14	Handle	SS304	1
15	Handle Cover	Plastic	1
16	Belleville Washer	SS301	2
17	Spring Washer	SS304	4(6)
18	Nut	SS304	4(6)
19	Bolt	SS304	4(6)
20	Cap	CF8M(1.4408)	2

ISO5211



SIZE	d	L	H	W	C	ISO5211	TORQUE(N·m)	WEIGHT(Kgs)
1/4"	11	68	62	111	9	F03	4	0.38
3/8"	12.7	68	62	111	9	F03	4	0.37
1/2"	15	75	63	111	9	F04	5	0.42
3/4"	20	85	70	136	11	F04/F05	8	0.82
1"	25	90	73	136	11	F04/F05	10	1.02
1-1/4"	32	112	88	159	14	F05/F07	14	1.84
1-1/2"	40	120	93	204	14	F05/F07	18	2.53
2"	50	145	101	204	14	F05/F07	25	3.52
2-1/2"	65	185	143	328	17	F07/F10	48	8.80
3"	80	210	154	328	17	F07/F10	75	12.60
4"	100	268	164	328	17	F07/F10	110	19.45

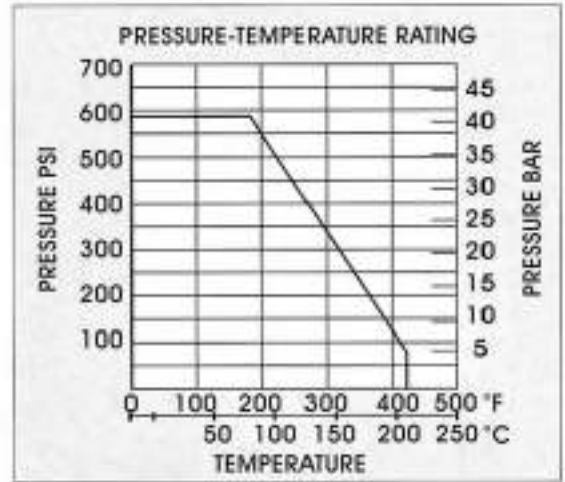


# 3-pc Investment Casting Ball Valve

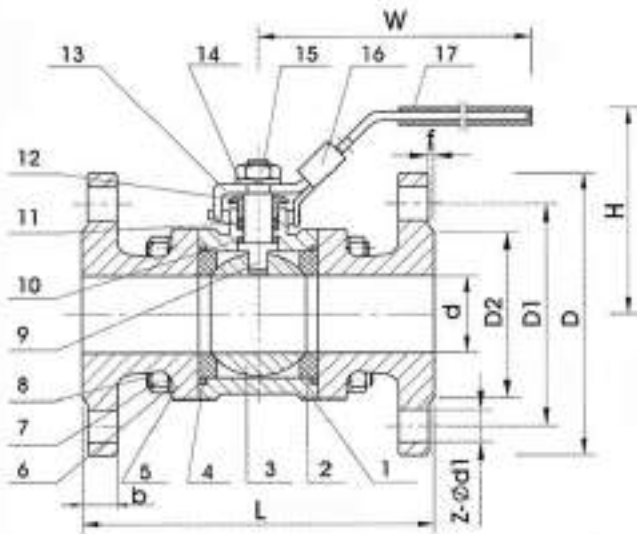
## Full Port, Flanged End, PN40.

FIG. BS-3PN

- Investment Castings for Body and Cap
  - Flanged ends: DIN2545 GB/T9113.1
  - Face to Face: DIN3202-F1 GB/T12221
  - Internal entry blow-out proof stem
  - Pressure rating: PN40
  - Material: CF8M, CF8, CF3M, WCB
  - Pressure test: API 598
- 
- PN40
  - DIN2545 GB/T9113.1
  - DIN3202-F1 GB/T12221
  - CF8M, CF8, CF3M, WCB



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Ball Seat	R-PTFE(15%)	2
3	Ball	SS316	1
4	Body Gasket	PTFE	2
5	Cap	CF8M(1.4408)	1
6	Spring Washer	SS304	8(12)
7	Nut	SS304	8(12)
8	Bolt	SS304	4(6)
9	Stem	SS316	1
10	Thrust Washer	PTFE	1
11	Stem Packing	PTFE	1
12	Gland Nut	SS304	1
13	Handle	SS304	1
14	Spring Washer	SS304	1
15	Nut	SS304	1
16	Lock Device	SS304	1
17	Handle Cover	Plastic	1



SIZE	d	D	D1	D2	L	H	W	Z-ød1	b	f	TORQUE(N·m)	WEIGHT(Kgs)
1/2"	15	95	65	45	130	84	146	4-ø14	16	2	5	2.05
3/4"	20	105	75	58	150	87	146	4-ø14	18	2	8	2.80
1"	25	115	85	68	160	93	153	4-ø14	18	2	10	3.35
1-1/4"	32	140	100	78	180	99	153	4-ø18	18	2	14	5.30
1-1/2"	40	150	110	88	200	114	217	4-ø18	18	3	18	6.50
2"	50	165	125	102	230	122	217	4-ø18	20	3	25	8.70
2-1/2"	65	185	145	122	290	150	251	8-ø18	22	3	48	15.20
3"	80	200	160	138	310	161	251	8-ø18	24	3	75	18.10
4"	100	235	190	162	350	180	291	8-ø22	24	3	110	26.90

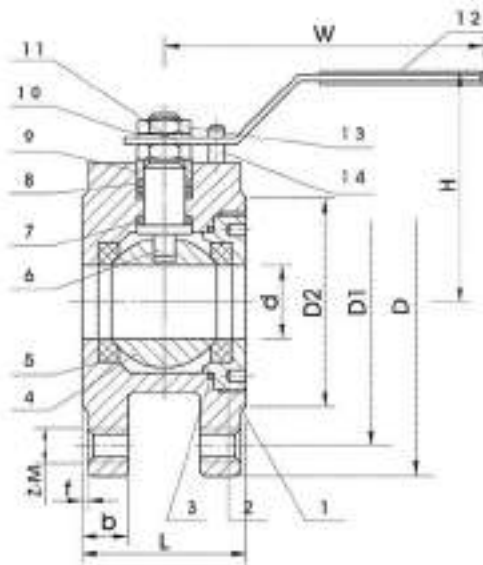
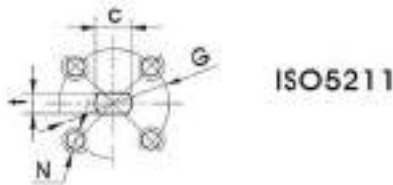
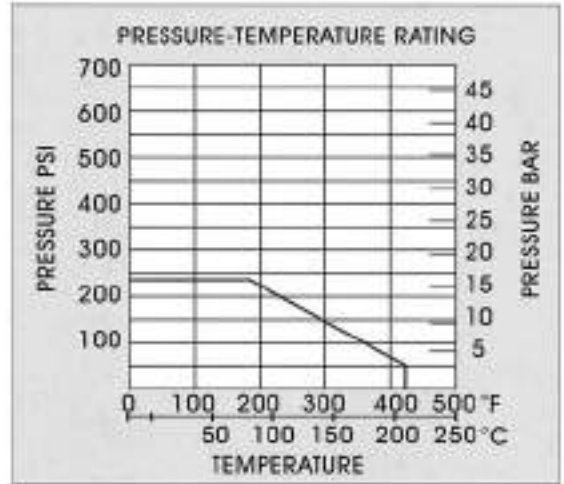


# 1-pc Investment Casting Ball Valve

## Reduce bore, Wafer Flanged, PN16.

FIG. BW-FL

- Investment Castings for Body and Cap
- Pressure rating:PN16
- Material:CF8M,CF8,CF3M,WCB
- Pressure test: API 598
- Mounting Pad : ISO5211
- Flanged ends: DIN2543
- PN16 Option JIS 10K / ANSI 150
- DIN2543
- CF8M,CF8,CF3M,WCB



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Cap	CF8M(1.4408)	1
3	Body Gasket	PTFE	1
4	Ball	S316	1
5	Ball Seal	R-PTFE(15%)	2
6	Stem	S316	1
7	Thrust Washer	PTFE	1
8	Stem Packing	PTFE	1
9	Gland	S304	1
10	Spring Washer	S304	1
11	Handle	S304	1
12	Handle Cover	Plastic	1
13	Nut	S304	2
14	Stop pin	S304	1



SIZE	d	L	D	D1	D2	b	f	H	ISO5211	Z-M	C	f	G	N	W	TORQUE(N·m)	WEIGHT(Kgs)
1/2"	15	37.5	95	65	45	14	2	62	F03	4-M12	10	6	36	M5	125	5	1.80
3/4"	20	40	105	75	58	16	2	68	F03	4-M12	10	6	36	M5	125	8	2.20
1"	25	44	115	85	68	16	2	80	F04	4-M12	12	8	42	M5	150	10	2.80
1-1/4"	32	51	140	100	78	16	2	87	F04	4-M16	12	8	42	M5	150	14	4.00
1-1/2"	40	63	150	110	88	16	3	98	F05	4-M16	16	10	50	M6	190	18	4.70
2"	50	83	165	125	102	18	3	105	F05	4-M16	16	10	50	M6	190	25	6.65
2-1/2"	65	107	180	145	122	18	3	123	F07	4-M16	20	14	70	M8	240	48	11.15
3"	76	120	200	160	138	20	3	150	F07	8-M16	20	14	70	M8	240	75	14.00
4"	94	152	220	180	158	20	3	164	F10	8-M16	24	18	102	M10	290	110	24.00



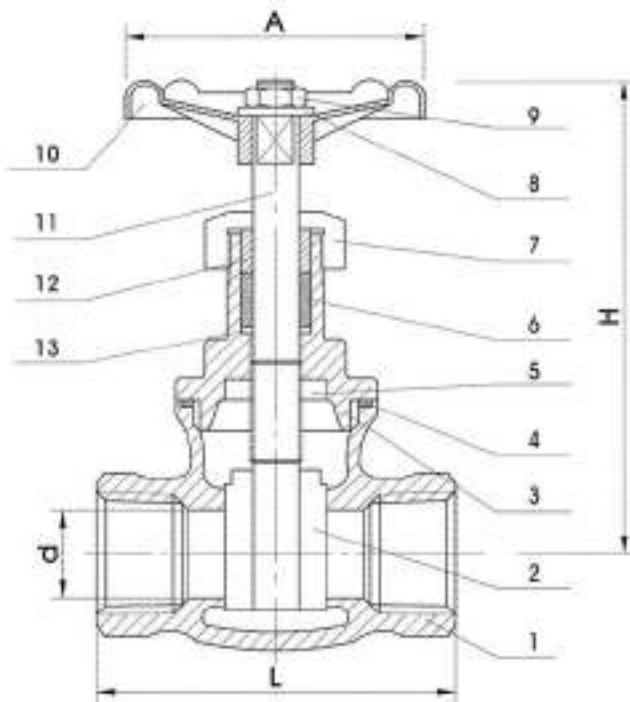
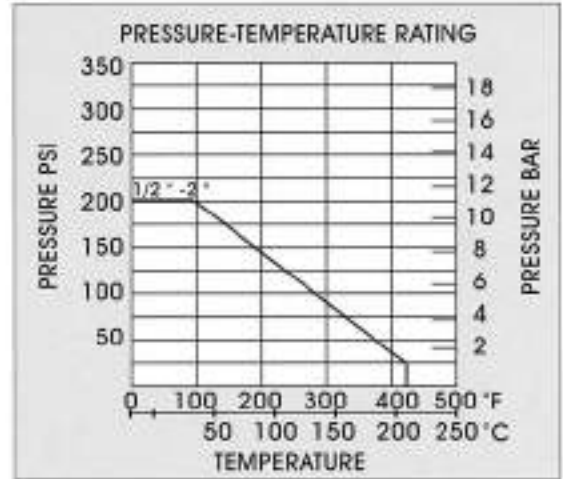


# 2-pc Investment Casting Gate Valve

## Full Port, Screw End, 200 WOG.

FIG. SGT-200

- Investment Castings for Body
  - Threaded ends: ANSI B2.1, BS 21, DIN 259/2999
  - Internal entry blow-out proof stem
  - Pressure rating: 200PSI(PN16)
  - Material: CF8M, CF8, CF3M
  - Pressure test: API 598
- 
- 200PSI(PN16)
  - ANSI B2.1, BS 21, DIN 259/2999
  - CF8M, CF8, CF3M



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Disc	CF8M(1.4408)	1
3	Bonnet	CF8M(1.4408)	1
4	Gasket	PTFE	1
5	Snap Washer	SS316	1
6	Packing	PTFE	1
7	Packing Nut	SS316	1
8	Washer	SS304	1
9	Wheel Nut	SS304	1
10	Hand Wheel	Alumnum Alloy	1
11	Stem	SS316	1
12	Gland	SS304	1
13	Snap Washer	SS304	1



SIZE	d	L	H	A	WEIGHT(Kgs)
1/2"	15	55	85	70	0.40
3/4"	20	60	95	70	0.50
1"	25	65	105	80	0.68
1-1/4"	32	75	125	90	1.05
1-1/2"	40	80	135	90	1.55
2"	50	95	155	100	2.15

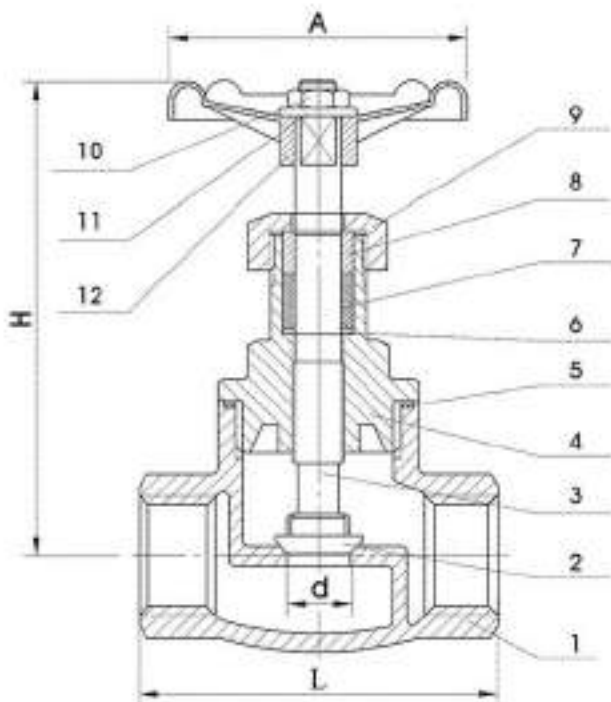
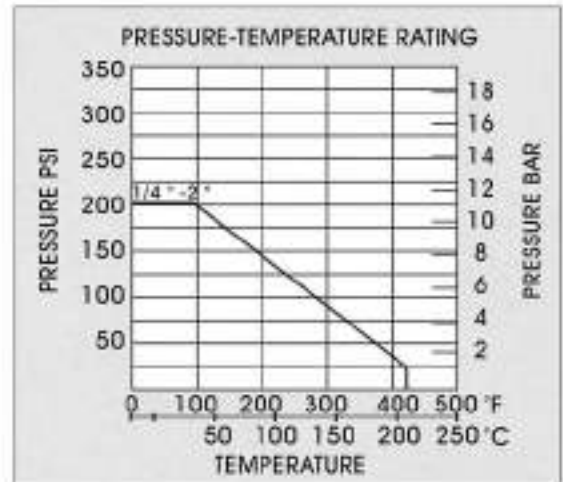


# Investment Casting Globe Valve

## Full Port, Screw End, 200 WOG.

FIG. SGL-200

- Investment Castings for Body
  - Threaded ends: ANSI B2.1, BS 21, DIN 259/2999
  - Internal entry blow-out proof stem
  - Pressure rating: 200 PSI (PN16)
  - Material: CF8M, CF8, CF3M
- 
- 200PSI (PN16)
  - ANSI B2.1, BS 21, DIN 259/2999
  - CF8M, CF8, CF3M



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Petal	SS316	1
3	Stem	SS316	1
4	Cap	CF8M(1.4408)	1
5	Gasket	PTFE	1
6	Washer	SS304	1
7	Stem Packing	PTFE	1
8	Ring	SS304	1
9	Gland Ring	SS304	1
10	Wheel Nut	SS304	1
11	Plate	SS304	1
12	Hand Wheel	Alumnum Alloy	1



SIZE	d	L	H	A	WEIGHT(Kgs)
1/4"	10	65	85	70	0.38
3/8"	12	65	85	70	0.37
1/2"	15	65	85	70	0.35
3/4"	20	80	95	70	0.55
1"	25	90	105	80	0.85
1-1/4"	32	105	125	90	1.40
1-1/2"	40	120	135	90	1.98
2"	50	140	155	100	2.75

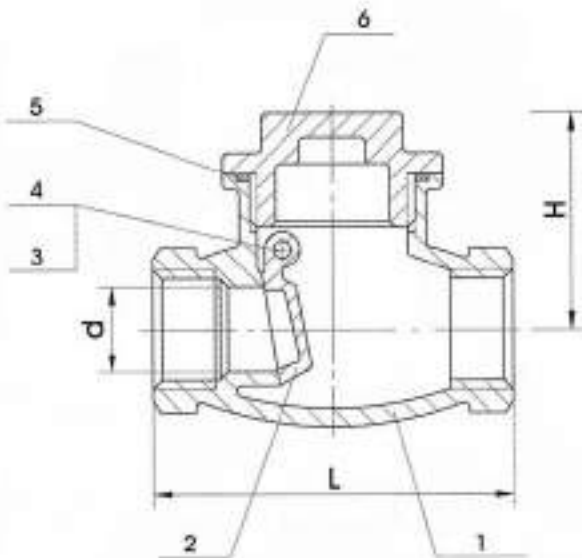
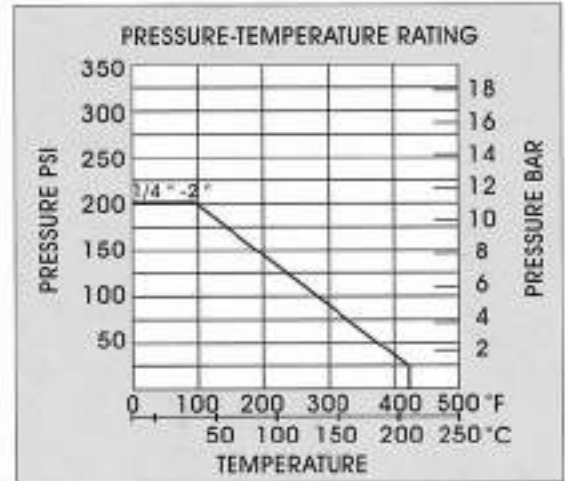


# Investment Casting Swing Check Valve

## Full Port, Screw End, 200 WOG.

FIG. SS200

- Investment Castings for Body and Bonnet
  - Threaded ends:ANSI B2.1,BS 21,DIN 259/2999
  - Pressure rating:200 PSI(PN16)
  - Material:CF8M,CF8,CF3M
- 
- 200PSI(PN16)
  - ANSI B2.1,BS 21,DIN 259/2999
  - CF8M,CF8,CF3M



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Disc	CF8M(1.4408)	1
3	Pipe Plug	SS316	1
4	Plug Gasket	PTFE	1
5	Gasket	PTFE	1
6	Bonnet	CF8M(1.4408)	1



**CE**  
0036

SIZE	d	L	H	WEIGHT(Kgs)
1/4 "	10	50	51	0.32
3/8 "	12	50	51	0.33
1/2 "	15	58	51	0.35
3/4 "	20	65	60	0.45
1 "	25	80	72	0.68
1-1/4 "	32	92	77	1.00
1-1/2 "	40	105	87	1.40
2 "	50	125	102	2.10



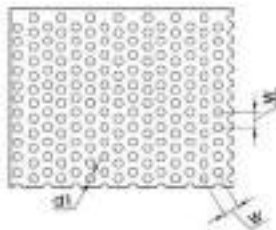
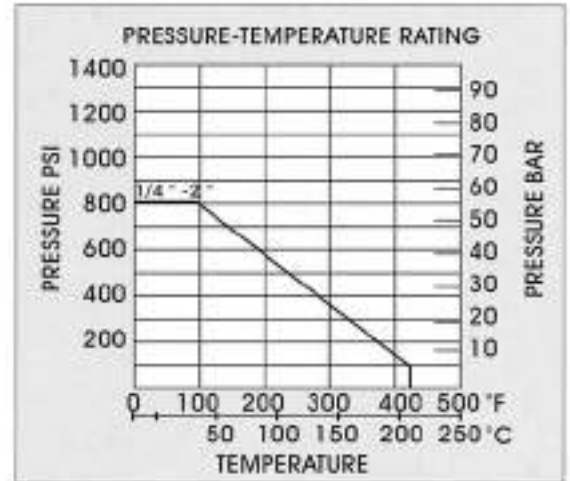


# Investment Casting Y-Strainer

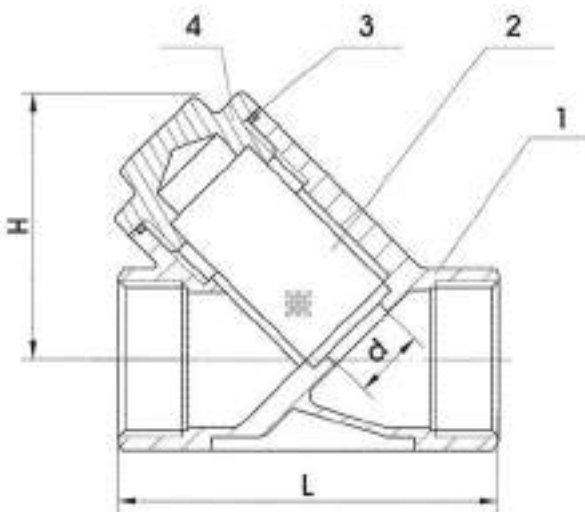
## Full Port, Screw End, 800 WOG.

FIG. Y-800

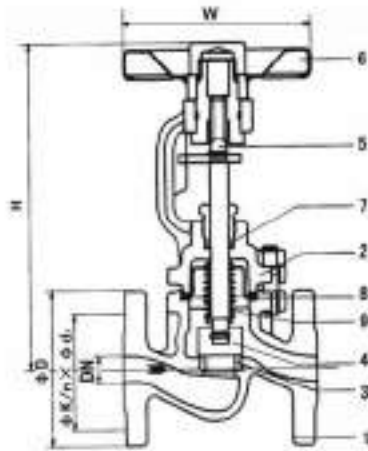
- Investment Castings for Body and Bonnet
  - Threaded ends:ANSI B2.1,BS 21,DIN 259/2999
  - Pressure rating:800 PSI(PN40)
  - Material:CF8M,CF8,CF3M
- 
- 800PSI(PN40)
  - ANSI B2.1,BS 21,DIN 259/2999
  - CF8M,CF8,CF3M



ITEM	PART	MATERIAL	QTY.
1	Body	CF8M(1.4408)	1
2	Screen	SS316	1
3	Joint Gasket	PTFE	1
4	Bonnet	CF8M(1.4408)	1



SIZE	d	L	H	W	d1	WEIGHT(Kgs)
1/4 "	10	50	51	2	0.5	0.20
3/8 "	12	50	51	2	0.5	0.20
1/2 "	15	58	51	2	0.5	0.33
3/4 "	20	65	60	2	0.5	0.50
1 "	25	80	72	2	0.5	0.75
1-1/4 "	32	92	77	2	1	0.80
1-1/2 "	40	105	87	2	1	1.50
2 "	50	125	102	2	1	2.20



### Belows sealed globe valve - zero emission valve

#### Advantages :

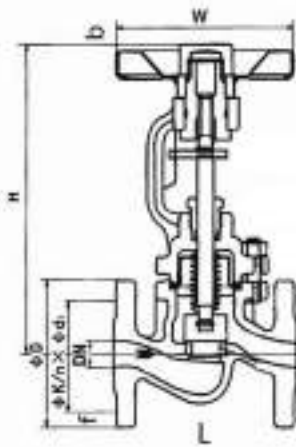
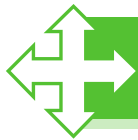
- \* Dual sealing design ( bellows + packing ) if the bellows lose efficacy the stem packing can avoid outer leak age and it accords with international sealing standards.
- \* It can decrease power loss and increase equipment security because there is not process fluid loss.
- \* Long life cycle , less maintenance times and lower operation cost
- \* Durable bellows sealing design ensures zero emissions to stem and provides non maintenance condition.

Bellows sealed globe is made as imported advanced metallic bellows sealing technology. The high performance flexible metallic bellows can expand and contract freely and it has long life-cycle. It is widely used in industries like petrochemicals, chemical fibre textile, plastic textile, plastic paper-making, electric power steel smelting, printing rubber and food process.

	MATERIAL	BG22 /PN16	BG23 /PN25	BG24 /PN40
1	BODY	WCB , GSC25	WCB , GSC25	
2	BONNET	GG5	GG5	
3	SEAT	2Cr13 /3cR13 , 1.4021.05		
4	PLUG	2Cr13 /3cR13 , 1.4021.05		
5	SPINDLE	2Cr13 /304		
6	HANDWHEEL	KT-20		
7	GLAND PACKING	Pure Graphite		
8	SEAT	316		
9	BELLOW	304 /316L , X6Cr Ni Mo Ti 17122		

### PRESSURE-TEMPERATURE-CLASSIFICATION

MATERIAL	PN	TEMPERATURE					
		120 C	200 C	250 C	300 C	350 C	400 C
GG25	16bar	16bar	13bar	11bar	10bar	-	-
GS-C25	16bar	16bar	13bar	13bar	13bar	10bar	-
GS-C25	25bar	25bar	22bar	20bar	17bar	16bar	13bar
GS-C25	40bar	40bar	35bar	32bar	28bar	24bar	21bar



## GLOBE VALVE WITH BELLOW SEAL

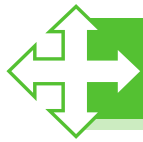
- \* 2-SYSTEMS DESIGN 100% FULLY PACKING
- SAFETY GLAND PLUS DOUBLE WALL BELLOW SEALED
- \* MAINTENANCE FREE
- \* THROTTLING PLUG & CONTROL PLUG
- \* METALLIC SEAT & PTFE SOFT SEAT (OPTION)

- Notes :**
1. Face to face according to GB/T 12221. (except those with)
  2. Flange size according to JB/T82.1~GB/T9113.4~2000
  3. Flange seal : PN6 is FF , PN16 PN25 are RF , PN40 is MF, it can be manufactured as clients' demand

### DIMENSION , KVS

DN	L	H	D	D1	D2	W	f	b	z-d	kvs / m <sup>3</sup> / H
10	130	202	90	60	40	120	2	16	4-14	3
15	130	230	95	65	45	120	2	16	4-14	4.6
20	150	231	105	75	55	140	2	16	4-14	8
25	160	231	115	85	65	140	2	16	4-14	13.5
32	180	273	140	100	78	160	2	18	4-18	21
40	200	278	150	110	85	200	3	18	4-18	33
50	230	317	165	125	100	200	3	20	4-18	51
65	290	331	185	145	120	240	3	22	8-18	82
80	310	402	200	160	135	240	3	22	8-18	131
100	350	416	230	190	160	320	3	24	8-23	205
125	400	467	270	220	188	360	3	26	8-26	316
150	480	525	300	250	218	360	3	28	8-26	451
200	600	611	360	310	278	500	3	30	12-26	798
250	650	750	425	370	332	640	3	32	12-30	1260
300	750	754	485	430	390	680	4	36	16-30	1735
400	950	954	620	550	505	720	4	44	16-36	2500





## Strainer High Quality



**Feature :** Y-strainer are applicable to all type of steam , water , oil and air systems. Their purpose is to protect trap , regulating valves , piping, etc. from dirt which are often times the cause of damage and consequently energy loss of fluid systems.

Nominal diameter : DN15-400mm , NPS1 / 2-16 "  
 Suitable temperature : 300 C - 400 C

Nominal pressure : PN2.5 , 4.0MPa , JIS-20K  
 Suitable media : For water, oil , steam and air

**MESH SIZE :** DN 15-65 0.8 mm  
 DN 80-150 1.2 mm  
 DN 200-400 1.6 mm

### MAIN PART MATERIAL

PART NAME	MATERIAL	
	YP-16	YP-40
BODY	GSC25N	1.0619+N , GSC25
SCREEN	1.4301	1.4301

### MAIN CONTOUR SIZE

DN-JIS		L (mm)	H (mm)
mm	in		
15	1/2	130	90
20	3/4	150	100
25	1	160	115
32	1 - 1/4	180	125
40	1 - 1/2	200	150
50	2	230	160
65	2 - 1/2	290	180
80	3	310	215
100	4	350	235
125	5	400	275
150	6	480	305
200	8	600	390
250	10	730	540
300	12	760	680
350	14	815	685
400	16	865	810



## SPECIAL APPLICATION STANDARDS

### **FIRE SAFE TEST**

To BS 5351 and BS 6755  
API 607 4th Edition and API 6FA

### **ANHYDROUS AMMONIA AND L.P. GAS**

To U.L. 125

### **DRY LIQUID CHLORINE**

To Chlorine Inst pamphlet NO.E

### **"SOUR GAS"**

NACE MRO 175

Certification to DIN 50049 3.1 B given only when  
Previously requested with valve supply inquiry.

### **BUTT WELD ENDS**

ANSI B 16.25  
DIN 3239

### **SOCKET WELD ENDS**

ANSI B 16.11  
ANSI B 16.34  
DIN 3239

### **THREADED ENDS**

ANSI B 1.20.1  
ANSI B 16.11  
ISO 228  
ISO 7/1  
DIN 2999  
DIN 259  
BS 21

### **FLANGED BODIES**

ANSI B 16.5  
ANSI B 16.10  
ANSI B 16.11  
ANSI B 16.34  
DIN 3202/f1/f4  
DIN 3239/2  
ISO 5752  
ISO 7005/1  
ISO 7121  
MSS SP 72  
EN 1092-1

### **WALL THICKNESS**

ANSI B 16.11  
ANSI B 16.34  
DIN 3239  
ISO 7121

### **BODY BOLTING**

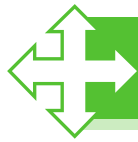
ANSI B 18.2.3.1  
ANSI B 18.2.4 M.CL5  
ISO 898  
ISO 4014 (A2-70)  
ISO 4032 (A4-70)(PC-8)  
ISO 4162 (PC-8.8)  
ISO 4762 (PC-12.9)

### **MARKING**

ANSI B 16.34  
MSS SP 25  
ISO 5209

### **TEST AND INSPECTION**

API 598  
EN 12266-1/2



## VALVE SEAT MATERIAL SELECTION GUIDE

Material	Description	Color
PTFE	This material is the basic seat material used in most Ball Valves. Its chemical compatibility is excellent for almost all media service applications. Temperature range 50° F to 450° F.	White
RTFE	This material is offered as the standard seal in most valves. 15% Glass Reinforced TFE rated suitable for temperatures 50 F to 450 F, chemical resistance is compatible to virgin TFE improved cycle life and greater pressure-temperature rating than PTFE.	Off white
CTFE	CTFE 25% Carbon Graphite with 75% TFE, is good for temperature ranging form 50° F to 475° F. This material offers a wide temperature range with better cycle life than RTFE.	Black
TFM	TFM is chemically modified PTFE that fills the gap between conventional PTFE and melt-processable PFA. According to ASTM D 4894 and ISO Draft WDT 539-1.5, TFM is classified as a PTFE. Compared to conventional PTFE, TFM has lower permeability and much lower deformation under pressure (cold flow) at room and elevated temperature. Also they can be used at higher pressures. Temperature range 50° F to 475° F.	White
NYLON	Special Nylon seats are offered for higher pressure and lower temperature service. They can be used in high pressure air, oil, and other gas media but are not suited for strong oxidizing agents. Temperature range 30° F to 200° F.	Translucent white
PEEK	Polyether-ether-ketone high temperature semirigid elastomer. Best suited for high pressure and temperature service. Also offers very good corrosion resistance. Temperature range 70° F to 600° F.	Brown
Cavity Filler	Designed to reduce the possibility of contamination by entrapment of process fluids in the void normally found behind the ball and the valve body in conventionally designed ball valves. Ideal for application where cross contamination is a concern, such as paints and dyes.	White





[WWW.PROTEKVALVES.COM](http://WWW.PROTEKVALVES.COM)



**PROTEK**



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Fax +44(0) 1661 835751



# PROTEK



[www.protekvalves.co.uk](http://www.protekvalves.co.uk)



## Cast Steel / Check Valves



- Gate Valves
- Globe Valves
- Check Valves
- Strainer Valves



CE 0035





Protek Valve have strong technical capability . It is also equipped with many manufacturing facilities and test equipments including Ultrasonic test, Radiographic test both X-ray and gamma ray, Magnetic particle test , liquid Penetant test , Pressure test and materials analyzers which can assure the reliability and safety of the products.

Protek Valve Co., Ltd has obtained API certificates and was granted the Quality System certificate of ISO9001-2000 by TUV Rhineland. The company also obtained PED module "H" certificate issued by TUV Rhineland as European Notified Body and get the authorization to use CE marking for industrial valves , Protek valves , has adopted API ANSI ASME MSS JIS BS DIN etc standard to design , manufacturing and inspection of industrial valves , and has become one of major manufacturers and supplies of valves used in petroleum and petrochemical industrials. Protek valves have exported the industrial valve to international markets such as North and South America , Europe , Middle East and South east Asia, We also established good relationship with many international company and traders.

The main products manufactured at Protek is Gate , Globe , Check , Ball , Plug, Butterfly and some special requirement valves. The pressure rating is from Class 150 (PN20) to Class 2500 (PN420) and size range is from 1/8(DN3) to 36 (DN900). The main material of valves are Carbon, Alloy and Stainless steel materials, such as WCB (DIN 1.0619), CF8 (DIN1.4403) CF8M (DIN1.4408) and Titanium and Monel etc. We also can provide other special materials as per customer's requirements. Based on our company's policy "Clients first ". Protek will provide quality valves as well as best services to both domestic and foreign customers.



ISO 9001 Certificate

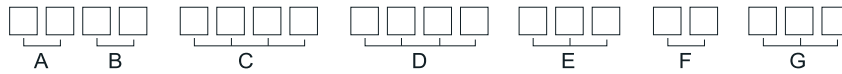


API 6D Certificate





# How to order PROTEK direct seal valve



A :	<b>BODY MATERIAL</b>	FS : FORGEDSTEEL						
		CS : CASTSTEEL						
B :	<b>TYPE OF VALVE</b>	GT : GATE						
		GL : GLOBE						
		CP : PISTON						
		CS : SWING						
		YS : Y-STRAINER						
C :	<b>SIZE / CODE</b>	1 1/2"	150	12"	1200	30"	3000	
		2"	200	14"	1400	32"	3200	
		2 1/2"	250	16"	1600	34"	3400	
		3"	300	18"	1800	36"	3600	
		4"	400	20"	2000	38"	3800	
		5"	500	22"	2200	40"	4000	
		6"	600	24"	2400	42"	4200	
		8"	800	26"	2600	44"	4400	
D :	<b>CLASS [ PRESSURE RATING ]</b>							
	150/300/600/900/1500/2500/ SPECIAL							
E :	<b>BODY MATERIAL</b>							
	<b>FORGED STEEL</b>							
	A105N						304	
	F5						304L	
	F11						316	
	F22						316L	
	<b>CAST CARBON STEEL</b>			<b>CAST CHROME STEEL</b>				
	02 - ASTM A216 WCB			10 - ASTM A217 WC6 ( 1 1/4 CR )				
	03 - ASTM A216 WCC			11 - ASTM A217 WC9 ( 2 1/4 CR )				
	04 - ASTM A352 LCB			12 - ASTM A217 C-5 ( 5 CR )				
	05 - ASTM A352 LCC			13 - ASTM A217 C-12 ( 9 CR )				
	06 - ASTM A352 LC1			14 - ASTM A217 C-12A ( 9ACR )				
	07 - ASTM A352 LC2			15 - ASTM A217 CCA15 ( 13 CR )				
	08 - ASTM A352 LC3							
	<b>CAST STAINLESS STEEL &amp; ALLOYS</b>							
	20 - ASTM A351 CF8M (316)			40 - ALLOY 20				
	21 - ASTM A351 CF10M (316H)			41 - HASTELLOY B (A494 N12MV)				
	22 - ASTM A351 CF3M (316L)			42 - HASTELLOY C (A494 CW2M)				
	23 - ASTM A351 CF8C (347)			43 - MONEL (A494 M35-1)				
	24 - ASTM A351 CF10C (347H)			44 - INCONEL 600 (CY40)				
	25 - ASTM A351 CF3C (347L)			45 - TITANIUM (ASTM B367)				
	26 - ASTM A351 CF8 (304)			46 - ZIRCONIUM (ASTM B493)				
	27 - ASTM A351 CF10 (304H)			47 - NICKEL (A494 CW12MW)				
	28 - ASTM A351 CF3 (304L)			48 - INCONEL 625 (CW6MC)				
	29 - ASTM A351 CG8M (317)			49 - INCONEL 800 (CT15C)				
	30 - ASTM A351 CG3M (317L)			50 - INCONEL 825 (CU5MCuC)				
	31 - ASTM A351 CK3MCUN			51 - ASTM A890 1A				
	32 - ASTM A351 CDMCu			52 - ASTM A890 2A				
	33 - ASTM A351 CK20			53 - ASTM A890 3A				
	34 - ASTM A351 CK20 (310)			54 - ASTM A890 4A				
	36 - ASTM A743 CA6NM (13-4)			55 - ASTM A890 5A				
	37 - STAINLESS STEEL 904L			75 - SPECIAL				
F :	<b>TRIM MATERIAL</b>							
	<b>TRIM NO.</b>	<b>WEDGE/DISC</b>	<b>SEATS</b>	<b>STEM</b>	<b>TRIM NO.</b>	<b>WEDGE/DISC</b>	<b>SEATS</b>	<b>STEM</b>
	1	CR13	CR13	CR13	15	HASTELLOY	HARDFACED	HASTELLOY
	5	HARDFACED	HARDFACED	CR13	16	HARDFACED	HARDFACED	18-8-3M
	8	F6(A216)	HARDFACED	CR13	17	HARDFACED	HARDFACED	347
	9	MONEL	MONEL	MONEL	18	HARDFACED	HARDFACED	MONEL
	10	18-8-3M	18-8-3M	18-8-3M	19	TITANIUM	HARDFACED	TITANIUM
	11	MONEL	HARDFACED	MONEL	20	TITANIUM	TITANIUM	TITANIUM
	12	18-8-3M	HARDFACED	18-8-3M	21	INCONEL	INCONEL	INCONEL
	13	ALLOY 20	ALLOY 20	ALLOY 20	22	INCONEL	HARDFACED	INCONEL
	14	HASTELLOY	HASTELLOY	HASTELLOY	23	347	HARDFACED	347
				50	SPEACIAL	SPEACIAL	SPEACIAL	
G :	<b>SPECIAL REQUIREMENTS</b>							
	JIS / DIN / STANDARD							



# Pressure-Temperature Ratings

## Standard Class Flanged End Valves for: Water, Steam and Oil Services

ASME/ANSI B16.34-88

### Metric Units in Maximum Non-Shock Working Pressures (Bars)

TEMP °C	CARBON STEEL WCB					CARBON-MOLYBDENUM STEEL / WC1					1 1/2% Cr - 1/2% MO STEEL / WC6					2 1/4% Cr - 1% MO STEEL / WC9				
	150	300	600	900	1500	150	300	600	900	1500	150	300	600	900	1500	150	300	600	900	1500
-29 to 38	19.6	51.1	102.1	153.2	255.3	18.4	47.9	95.8	143.6	239.4	25.0	51.7	103.4	155.1	258.6	20.0	51.7	103.4	155.1	258.6
50	19.2	50.1	100.2	150.2	250.4	18.3	47.6	95.3	142.9	236.2	19.2	51.1	102.3	153.4	255.7	19.2	51.2	102.4	153.6	256.0
100	17.7	46.4	92.8	139.1	231.9	17.7	46.6	93.2	139.8	233.0	17.7	48.8	97.5	146.3	243.8	17.7	49.0	98.1	147.1	245.2
150	15.8	45.2	90.5	135.7	226.1	15.8	45.0	89.9	134.9	224.8	15.8	46.4	92.7	139.1	231.9	15.8	46.6	93.3	139.9	233.2
200	14.0	43.8	87.6	131.5	219.1	14.0	44.2	88.4	132.6	221.0	14.0	45.5	91.8	136.4	227.4	14.0	44.8	89.7	134.5	224.2
250	12.1	41.7	83.4	125.2	206.6	12.1	43.1	86.2	129.2	215.4	12.1	44.5	88.9	133.4	222.3	12.1	44.2	88.4	132.7	221.1
300	10.2	38.7	77.5	116.2	193.7	10.2	42.0	84.1	126.1	210.1	10.2	42.4	84.6	127.3	212.1	10.2	42.4	84.9	127.3	212.1
350	8.4	37.0	73.9	110.9	184.8	8.4	40.2	80.5	120.7	201.1	8.4	40.2	80.5	120.7	201.2	8.4	40.2	80.5	120.7	201.2
375	7.4	36.5	72.9	109.4	182.3	7.4	38.8	77.6	116.4	194.0	7.4	38.8	77.6	116.4	194.0	7.4	38.8	77.6	116.4	194.0
400	6.5	34.5	69.0	103.5	172.5	6.5	36.6	73.2	109.8	182.9	6.5	36.6	73.2	109.8	182.9	6.5	36.6	73.2	109.8	182.9
425	5.6	28.8	57.5	86.3	143.8	5.6	35.1	70.2	105.3	175.5	5.6	35.1	70.2	105.3	175.2	5.6	35.1	70.2	105.3	175.5
450	4.7	20.0	40.1	60.1	100.2	4.7	33.8	67.6	101.4	169.0	4.7	33.8	67.6	101.4	169.0	4.7	33.8	67.6	101.4	169.0
475	*3.7	13.6	27.1	40.6	67.7	3.7	31.7	63.3	95.0	158.3	3.7	31.7	63.3	95.0	158.3	3.7	31.7	63.3	95.0	158.3
500	*2.8	↑8.8	↑17.6	↑26.4	↑44.0	2.8	↑24.1	↑48.1	↑72.2	↑120.3	2.8	27.8	55.6	83.4	139.0	2.8	27.8	55.6	83.4	139.0
525	*1.9	↑5.2	↑10.4	↑15.6	↑25.9	1.9	↑15.0	↑30.1	↑45.1	↑75.2	1.9	20.3	40.5	60.8	101.3	1.9	21.0	43.8	65.8	109.6
↑↑580	*↑1.3	↑3.3	↑6.5	↑9.8	↑16.3	↑1.3	↑10.7	↑21.4	↑32.1	↑53.5		12.8	25.5	38.3	63.8		16.4	32.7	49.1	81.8
575												8.5	17.0	25.5	42.5		11.7	23.4	35.1	58.5
680												5.9	11.8	17.6	29.4		7.6	15.3	22.9	38.2
**TEST PRESSURES: Bars																				
BODY	30	77	154	230	383	28	72	144	216	360	30	77	154	230	383	30	77	154	230	383
SEAT	21.6	55.3	112.4	168.6	280.9	20.3	52.7	105.4	158.0	263.4	21.6	55.3	112.4	168.6	280.9	21.6	55.3	112.4	168.6	280.9

\* To be used on Oil Service only.

↑ Consideration should be given to scaling due to oxidation.

\*\* Hydrostatic Tests carried out with water.

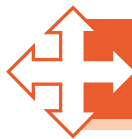
↑↑ Flanged End Ratings terminate at 540 °C.

### Metric Units in Maximum Non-Shock Working Pressures (Bars)

TEMP °C	5% Cr 1/2% Mo STEEL / C5					9% Cr 1% Mo STEEL / C12					18% Cr 10% Ni 2% Mo STAINLESS STEEL / CF8M					18% Cr 10% Ni 1% Nb STAINLESS STEEL / CF8C				
	150	300	600	900	1500	150	300	600	900	1500	150	300	600	900	1500	150	300	600	900	1500
-29 to 38	20.0	51.7	103.4	155.2	258.6	20.0	51.7	103.4	155.2	258.6	19.0	49.6	99.3	148.9	248.1	19.0	49.6	99.3	148.9	248.2
50	19.2	51.7	103.4	155.2	258.6	19.2	51.7	103.4	155.2	258.6	18.4	48.1	95.3	144.4	240.6	18.5	48.4	96.8	145.1	241.9
100	17.7	51.5	103.1	154.6	257.7	17.7	51.5	103.1	154.8	257.7	16.2	42.2	84.4	126.6	211.0	16.7	43.5	86.9	130.4	217.3
150	15.8	50.2	100.4	150.6	251.0	15.8	50.2	100.4	150.6	251.0	14.8	38.5	77.0	116.8	192.5	15.5	40.5	81.0	121.5	202.5
200	14.0	48.8	97.6	146.4	243.9	14.0	48.8	97.6	146.4	243.9	13.7	35.7	71.3	107.0	178.4	14.0	38.4	76.8	115.3	192.1
250	12.1	46.3	92.7	139.0	231.7	12.1	46.3	92.7	139.0	231.7	12.1	33.4	66.8	100.2	166.9	12.1	36.2	72.4	108.6	181.0
300	10.2	42.4	84.9	127.3	212.1	10.2	42.4	84.9	127.3	212.1	10.2	31.6	63.3	94.9	158.1	10.2	34.4	68.9	103.3	172.2
350	8.4	40.2	80.5	120.7	201.2	8.4	40.2	80.5	120.7	201.2	8.4	30.4	60.8	91.3	152.1	8.4	32.9	65.6	98.7	164.5
375	7.4	38.8	77.6	116.4	194.0	7.4	38.8	77.6	116.4	194.0	7.4	29.7	59.4	89.1	148.5	7.4	32.2	64.4	96.6	161.0
400	6.5	36.6	73.2	109.8	182.9	6.5	36.6	73.2	109.8	182.9	6.5	29.1	58.2	87.3	145.8	6.5	31.8	63.5	95.3	158.8
425	5.6	34.5	69.0	103.5	172.5	5.6	35.1	70.2	105.3	175.5	5.6	28.7	57.3	86.0	143.3	5.6	31.5	62.9	94.4	157.3
450	4.7	30.9	61.8	92.7	154.5	4.7	33.8	67.6	101.4	169.0	4.7	28.1	56.2	84.2	140.4	4.7	30.8	61.5	92.3	163.8
475	3.7	26.9	51.8	77.7	129.5	3.7	31.7	63.3	95.0	158.3	3.7	27.4	54.7	82.1	136.8	3.7	30.0	60.0	90.0	160.0
500	2.8	20.3	40.5	60.8	101.3	2.8	27.5	55.0	82.5	137.5	2.8	26.8	53.7	80.5	134.1	2.8	27.8	55.6	83.4	139.0
525	1.9	15.4	30.8	46.3	77.1	1.9	22.6	45.2	67.8	113.0	1.9	26.3	52.5	78.9	131.5	1.9	25.8	51.6	77.4	129.0
550	*1.3	11.7	23.4	35.0	58.4	*1.3	17.0	34.0	50.9	84.9	*1.3	25.0	49.9	74.9	124.8	*1.3	25.0	49.9	74.9	124.8
575		8.8	17.6	26.4	44.1		11.2	22.5	33.7	56.2		24.1	48.2	72.3	120.5		24.1	48.2	72.3	120.5
680		6.5	13.1	19.3	32.6		7.2	14.4	21.5	35.9		21.4	42.9	64.3	107.2		21.4	42.9	64.3	107.2
625		4.5	9.0	13.5	22.5		5.0	9.9	14.9	24.9		18.3	36.5	58.4	91.3		17.8	35.6	53.4	89.0
650		3.0	6.0	9.0	15.0		3.5	7.0	10.4	17.4		14.4	28.2	42.4	70.6		11.5	23.2	34.7	57.9
**TEST PRESSURES: Bars																				
BODY	30	78	156	233	388	30	78	156	233	388	29	75	149	224	373	29	75	149	224	373
SEAT	22	56.9	113.8	170.8	284.5	22	56.9	113.8	170.8	284.4	20.9	54.6	109.3	163.8	273.1	20.9	54.6	109.3	163.8	273.1

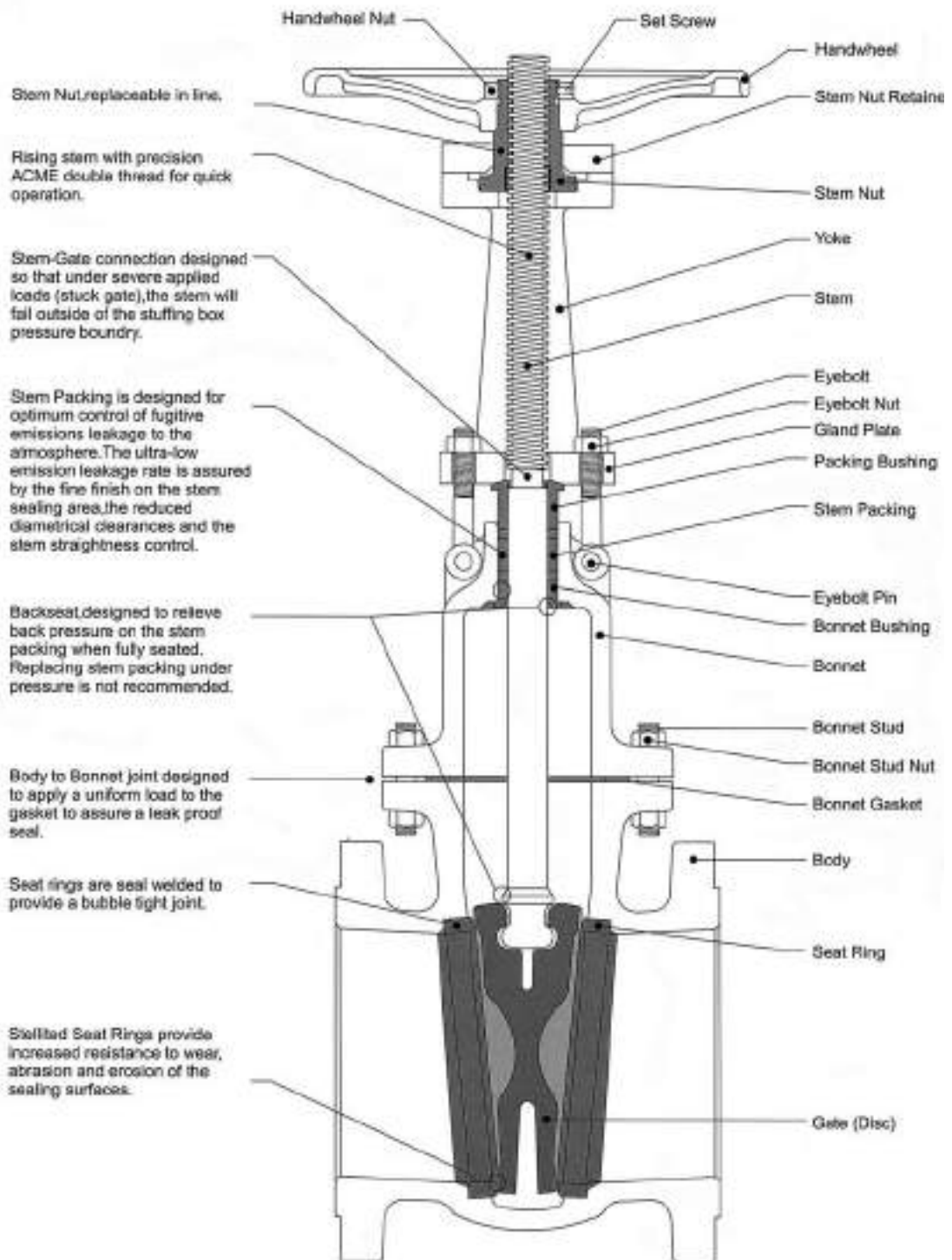
\* Flanged End Ratings terminate at 540 °C.

\*\* Hydrostatic tests carried out with water.



# Cast steel gate valve

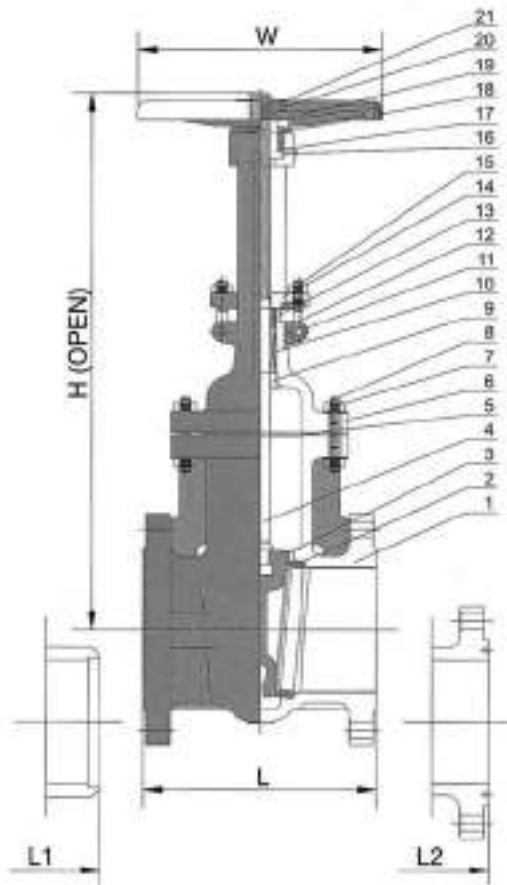
## Cast Steel Gate Valves with fixed handwheel and rising stem (outside screw and yoke) (OS&Y)







# Cast steel gate valve Class 150



## FEATURES

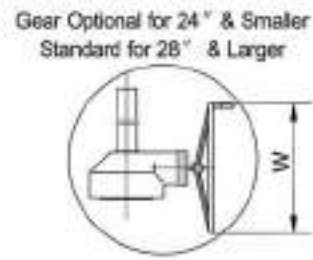
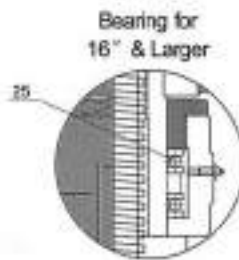
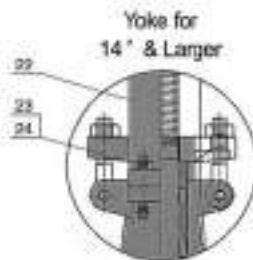
OS & Y/Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

## SPECIFICATIONS

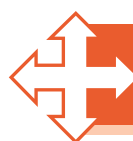
Design	ASME B16.34/WPI 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
B/W End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

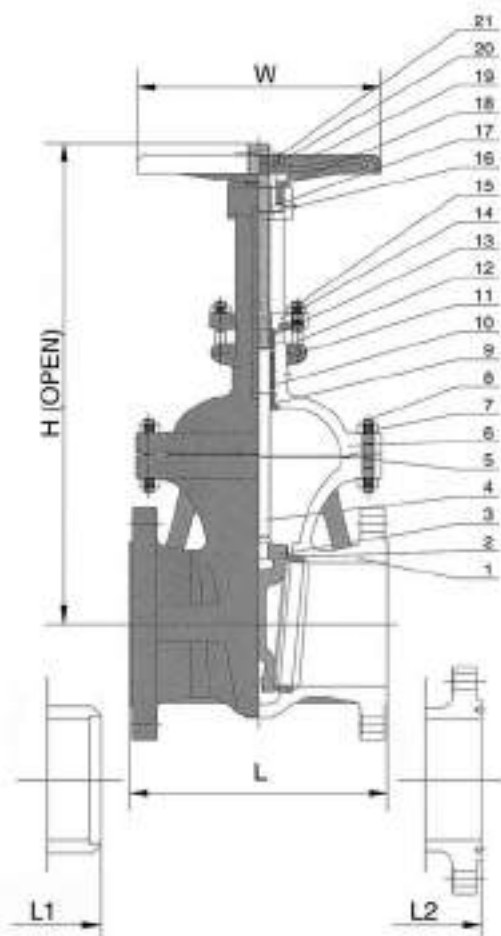
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.P6
5	Gasket	Soft Iron+Graphite
6	Bonnet	ASTM A216 GR.WCB
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	bonnet bolt	ASTM A193 GR.B7
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Eye Bolt Nuts	ASTM A194 GR.2H
16	Grease Nipple	Carbon steel
17	Stem Nut	ASTM A439 GR.D-2
18	Retaining Nut	Carbon steel
19	Handwheel	Ductile iron
20	Handwheel Nut	Carbon steel
21	Screw	Carbon steel
22	Yoke	ASTM A216 GR.WCB
23	Yoke Pin Bolt Nuts	ASTM A194 GR.2H
24	Yoke Pin Bolts	ASTM A193 GR.B7
25	Bearing	Steel



Dimensions and Weights		2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	800	900
L	in	7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	20.00	24.00	24.00	28.00	28.00
	mm	178	191	203	229	267	292	330	356	381	406	432	457	508	610	610	711	711
L1	in	8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	22.50	24.00	26.00	28.00	32.00	36.00	36.00	38.00	40.00
	mm	216	241	283	305	403	419	457	502	572	610	660	711	813	914	914	965	1016
L2	in	7.50	8.00	8.50	9.50	11.00	12.00	13.50	14.50	15.50	16.50	17.50	18.50	20.50	-	-	-	-
	mm	191	203	216	241	279	306	343	368	394	419	445	470	521	-	-	-	-
H	in	15.31	17.28	19.89	23.43	30.58	38.39	45.67	54.72	61.22	71.30	82.80	90.56	102.72	130.98	141.97	145.98	164.49
	mm	389	439	500	585	777	978	1160	1380	1555	1811	2103	2300	2609	3327	3606	3708	3924
W	in	8	8	10	10	14	14	18	18	22	24	26	27	30	24	24	24	24
	mm	200	200	250	250	350	350	400	450	560	600	640	680	760	610	610	610	610
Weight RF	kg	17	23	29	47	80	129	192	267	410	571	720	1170	1466	1931	2360	2490	3600



# Cast steel gate valve Class 300



## FEATURES

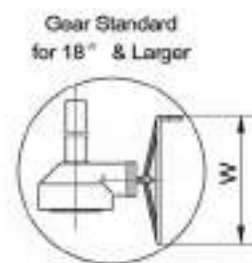
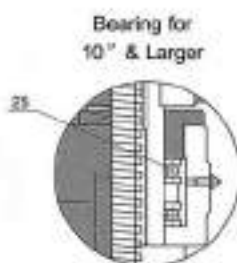
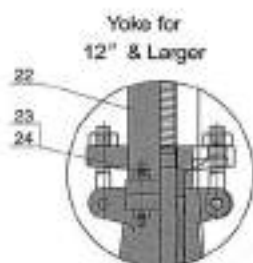
OS & Y/Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

## SPECIFICATIONS

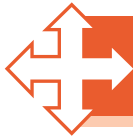
Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
B/W End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

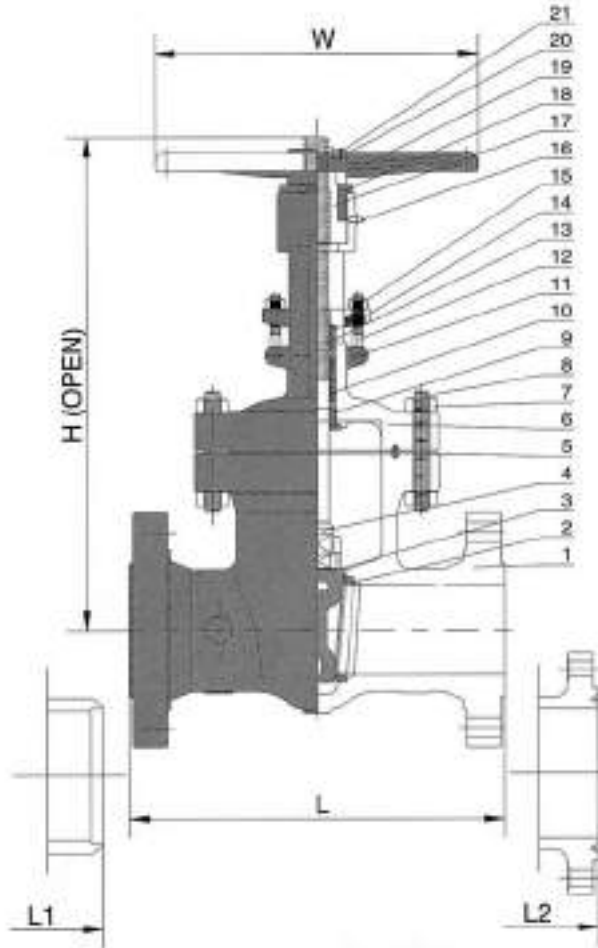
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F6
5	Gasket	Soft iron+Graphite
6	Bonnet	ASTM A216 GR.WCB
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Eye Bolt Nuts	ASTM A194 GR.2H
16	Grease Nipple	Carbon steel
17	Stem Nut	ASTM A438 GR.D-2
18	Retaining Nut	Carbon steel
19	Handwheel	Ductile Iron
20	Handwheel Nut	Carbon steel
21	Screw	Carbon steel
22	Yoke	ASTM A216 GR.WCB
23	Yoke Pin Bolt Nuts	ASTM A194 GR.2H
24	Yoke Pin Bolts	ASTM A193 GR.B7
25	Bearing	Steel
26	Lantern Ring On Request	ASTM A276 Type 410



Dimensions and Weights		2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"
SIZE	in mm	60	65	80	100	150	200	250	300	350	400	450	500	600	700	750
L/L1	in	8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	30.00	33.00	36.00	39.00	45.00	53.00	55.00
	mm	216	241	283	305	403	419	457	502	762	838	914	991	1143	1346	1397
L2	in	9.12	10.12	11.74	12.62	16.50	17.12	18.62	20.37	30.62	33.62	36.62	39.75	45.88	54.00	56.00
	mm	232	257	298	321	419	435	473	517	778	854	930	1010	1165	1372	1422
H	in	16.93	19.88	20.87	24.80	31.50	39.89	48.82	57.87	64.76	72.48	77.13	86.38	102.28	122.05	130.71
	mm	430	505	530	630	800	1008	1240	1470	1645	1841	1958	2194	2598	3100	3320
W	in	8	10	10	10	14	18	18	20	24	24	24	24	24	24	24
	mm	200	250	250	250	350	400	450	500	600	600	610	610	610	610	610
Weight (R)	kg	30	45	57	88	147	219	368	522	694	1080	1235	1695	2320	3893	4930



# Cast steel gate valve Class 600



## FEATURES

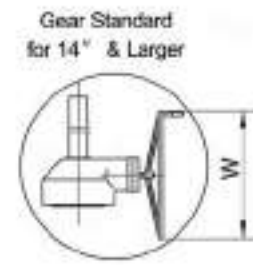
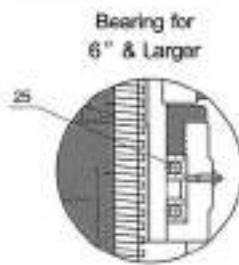
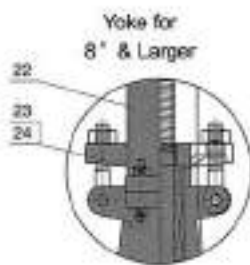
OS & YRising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

## SPECIFICATIONS

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

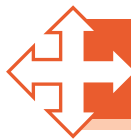
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F5
5	Gasket Ring Joint	Soft Iron
6	Bonnet	ASTM A216 GR.WCB
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Eye Bolt Nuts	ASTM A194 GR.2H
16	Grease Nipple	Carbon steel
17	Stem Nut	ASTM A439 GR.D-2
18	Retaining Nut	Carbon steel
19	Handwheel	Ductile Iron
20	Handwheel Nut	Carbon steel
21	Screw	Carbon steel
22	Yoke	ASTM A216 GR.WCB
23	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
24	Yoke Pan Bolts	ASTM A193 GR.B7
25	Bearing	Steel
26	Lantern Ring On Request	ASTM A276 Type 410

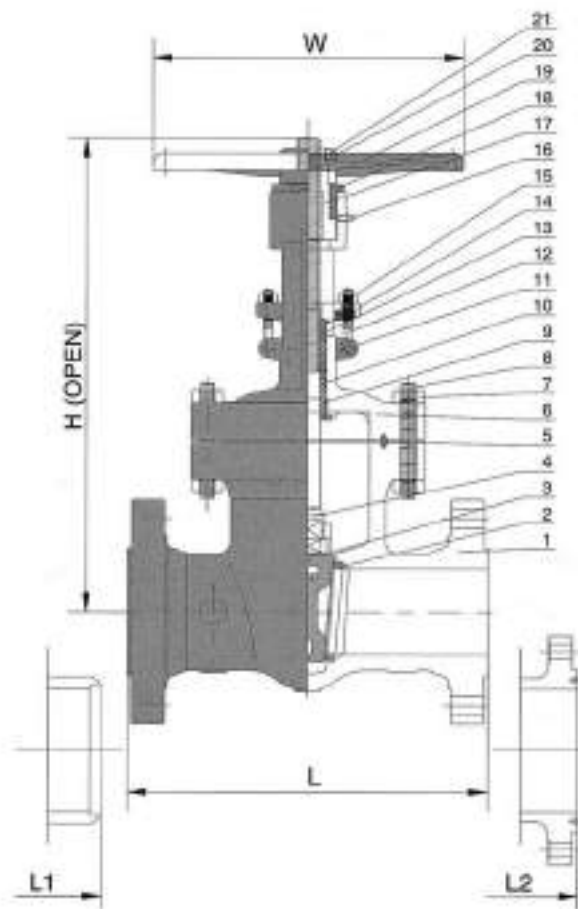


Dimensions and Weights														
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
L/L1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00
	mm	292	330	356	432	558	660	787	838	889	991	1092	1194	1397
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38
	mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
H	in	17.01	23.14	21.65	27.17	35.83	41.93	49.49	57.80	63.60	71.50	88.98	108.50	110.83
	mm	455	588	550	690	910	1065	1257	1468	1623	1816	2280	2705	2810
W	in	10	10	10	14	18	20	25	27	24	24	24	24	24
	mm	250	250	250	350	450	500	640	680	610	610	610	610	610
Weight RF	kg	45	55	76	127	277	485	754	996	1316	1872	2070	3405	4550





# Cast steel gate valve Class 900-2500



## FEATURES

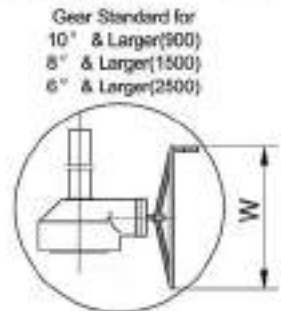
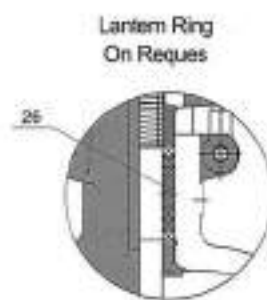
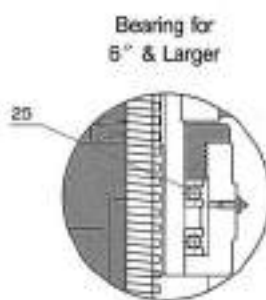
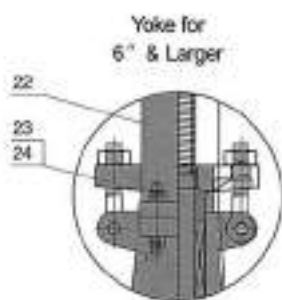
OS & Y-Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

## SPECIFICATIONS

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Yoke	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seal Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F6
5	Gasket/Ring Joint	Soft Iron
6	Bonnet	ASTM A216 GR.WCB
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Eye Bolt Nuts	ASTM A194 GR.2H
16	Grease Nipple	Carbon steel
17	Stem Nut	ASTM A439 GR.D-2
18	Retaining Nut	Carbon steel
19	Handwheel	Ductile Iron
20	Handwheel Nut	Carbon steel
21	Screw	Carbon steel
22	Yoke	ASTM A216 GR.WCB
23	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
24	Yoke Pan Bolts	ASTM A193 GR.B7
25	Bearing	Steel
26	Lantern Ring On Request	ASTM A276 Type 410



Dimensions and Weights	CALSS 900												CALSS 1500												CALSS 2500											
	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"												
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"											
	mm	50	65	80	100	150	200	250	300	50	65	80	100	150	200	250	300	50	65	80	100	150	200	250	300											
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	17.75	20.00	22.75	26.50	36.00	40.25	50.00	56.00											
	mm	368	419	381	457	610	737	838	965	368	419	470	546	705	832	981	1130	451	508	575	673	914	1022	1270	1422											
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	14.62	16.62	18.62	21.62	28.00	33.13	39.38	45.12	17.87	20.25	23.00	26.88	36.50	40.87	50.88	56.88											
	mm	371	422	384	460	613	740	841	968	371	422	473	549	711	842	1000	1148	454	514	584	683	927	1038	1292	1445											
H	in	24.41	27.76	29.02	32.48	41.93	47.99	52.95	72.44	27.36	27.76	30.31	34.33	41.99	55.12	62.95	72.44	27.96	29.53	34.82	43.19	57.09	63.99	81.73	89.80											
	mm	620	705	737	825	1065	1219	1345	1840	696	705	770	872	1062	1400	1600	1840	700	750	887	1079	1450	1610	2076	2281											
W	in	12	14	14	16	20	24	24	24	14	16	16	20	24	24	24	24	14	18	18	20	24	24	24	24											
	mm	300	350	350	400	500	600	610	610	350	400	400	500	600	610	610	610	350	450	450	500	610	610	610	610											
Weight FF	kg	95	108	125	194	378	635	900	1550	95	128	181	275	627	1000	2200	3300	135	210	271	508	1600	2450	4570	7150											



# Cast steel globe valve

Impactor Handwheel, the mechanism is based on transmitting the momentum generated by the mass of the handwheel through the impact/impulse generated during the snap closure action of the handwheel. This type of handwheel is used when a standard handwheel cannot create enough closing force to effect a seal.

Stem Nut replaceable in the line.

Revolving rising stem with precision ACME thread.

Stem Packing is designed for optimum control of fugitive emissions leakage to the atmosphere. The ultra low emission leakage rate is assured by the fine finish in the stem, the reduced diametrical clearances and the stem straightness control.

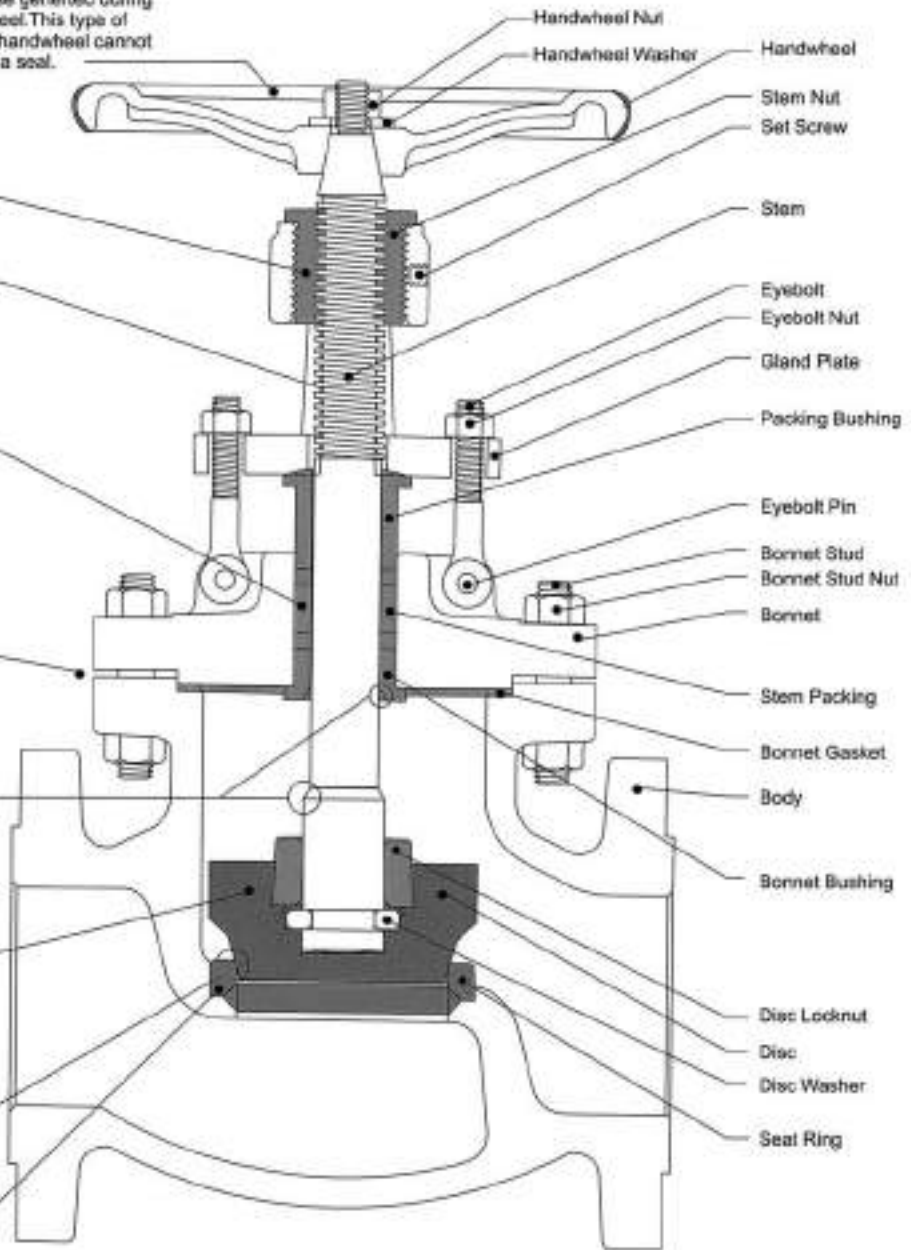
Body to Bonnet Joint designed to apply a uniform load to the gasket to assure a leak proof seal.

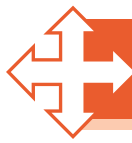
Backseat designed to relieve back pressure on the stem packing when fully seated. Replacing stem packing under pressure is not recommended.

Conical Disc, integrally guided to assure true alignment between disc and valve body. The loose disc design allows the disc and seat ring sealing surface to seat correctly without damage.

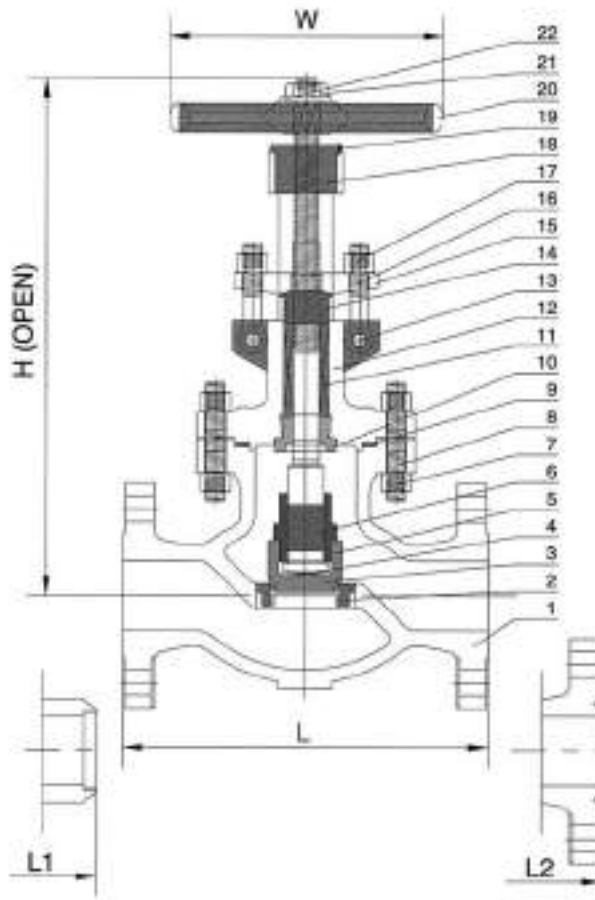
Stellite Bead Ring, providing increased resistance to wear, abrasion and erosion of the sealing surfaces.

Seal ring is seal welded to provide a bubble tight joint.





# Cast steel globe valve Class 150



## FEATURES

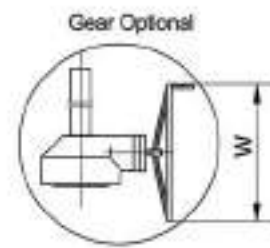
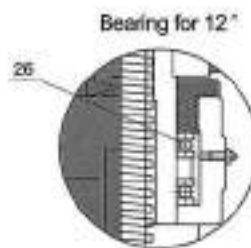
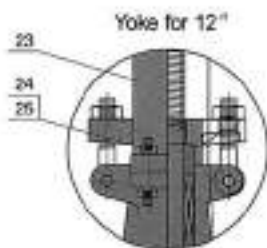
OS & Y/Rising Stem
Boiled Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact hand wheel Optional
Gear Optional

## SPECIFICATIONS

Design	ASME B16.34/BS1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seal Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A105+13Cr Faced
4	Disc Thrust Plate	ASTM A276 Type 420
5	Disc Nut	ASTM A276 Type 430
6	Stem	ASTM A182 GR.F6
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Gasket	Soft Iron+Graphite
10	Backseat Bushing	ASTM A276 Type 410
11	Stem Packing	Braided Graphite & Die formed Graphite Ring
12	Bonnet	ASTM A216 GR.WCB
13	Eye Bolt Pins	Carbon Steel
14	Gland	ASTM A276 Type 410
15	Gland Flange	ASTM A216 GR.WCB
16	Gland Eye Bolts	ASTM A307 GR.B
17	Eye Bolt Nuts	ASTM A194 GR.2H
18	Yoke Bush	ASTM A439 GR.D-2
19	Screw	Carbon steel
20	Handwheel	Ductile Iron
21	Handwheel Nut	ASTM A194 GR.2H
22	Washer	Carbon steel
23	Yoke	ASTM A216 GR.WCB
24	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
25	Yoke Pan Bolts	ASTM A193 GR.B7
26	Bearing	Steel

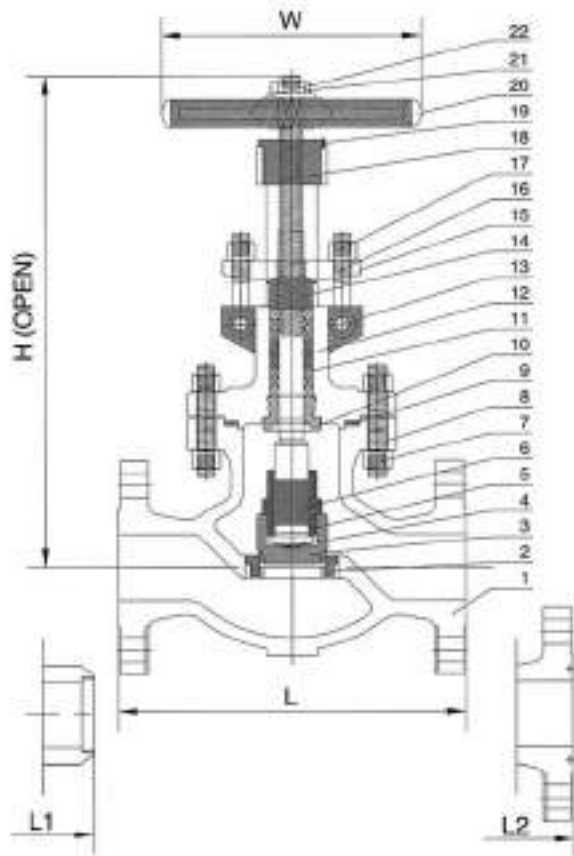


Dimensions and Weights		2"	2.5"	3"	4"	6"	8"	10"	12"
SIZE	in	2	2.5	3	4	6	8	10	12
	mm	50	65	80	100	150	200	250	300
L/L1	in	8.00	8.50	9.50	11.50	16.00	19.50	24.50	27.50
	mm	203	216	241	292	406	495	622	698
L2	in	8.50	9.00	10.00	12.00	16.50	20.00	25.00	28.00
	mm	216	229	254	305	419	508	635	711
H	in	13.58	16.34	15.94	19.09	20.47	23.62	30.00	33.94
	mm	345	415	405	485	520	600	762	862
W	in	8	8	10	12	14	16	20	25
	mm	200	200	250	300	350	450	500	640
Weight RF	kg	22	32	38	52	104	159	308	539





# Cast steel globe valve Class 300



## FEATURES

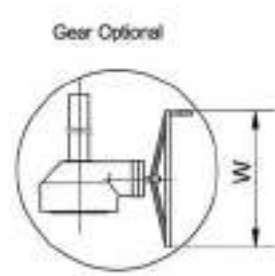
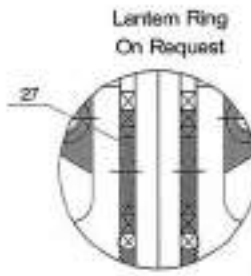
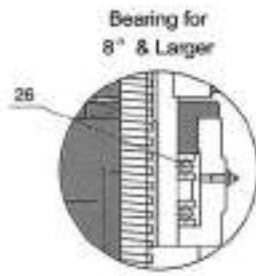
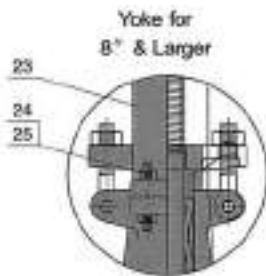
OS & Y-Rising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact hand wheel Optional
Gear Optional

## SPECIFICATIONS

Design	ASME B16.34/BS1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 508
Special	NACE MR-01-75

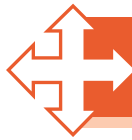
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A105+13Cr Faced
4	Disc Thrust Plate	ASTM A276 Type 420
5	Disc Nut	ASTM A276 Type 410
6	Stem	ASTM A182 GR.F6
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Gasket	Soft Iron+Graphite
10	Backseat Bushing	ASTM A276 Type 410
11	Stem Packing	Braided Graphite & Dia formed Graphite Ring
12	Bonnet	ASTM A216 GR.WCB
13	Eye Bolt Pins	Carbon Steel
14	Gland	ASTM A276 Type 410
15	Gland Flange	ASTM A216 GR.WCB
16	Gland Eye Bolts	ASTM A307 GR.B
17	Eye Bolt Nuts	ASTM A194 GR.2H
18	Yoke Bush	ASTM A439 GR.D-2
19	Screw	Carbon steel
20	Handwheel	Ductile iron
21	Handwheel Nut	ASTM A194 GR.2H
22	Washer	Carbon steel
23	Yoke	ASTM A216 GR.WCB
24	Yoke Pin Bolt Nuts	ASTM A194 GR.2H
25	Yoke Pin Bolts	ASTM A193 GR.B7
26	Bearing	Steel

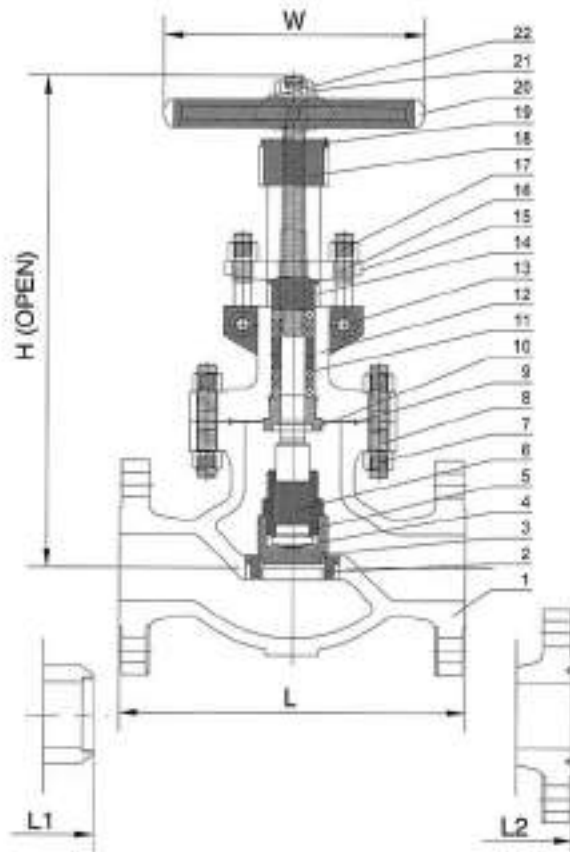


## Dimensions and Weights

SIZE	In	2"	2.5"	3"	4"	6"	8"	10"	12"
L/L1	in	10.50	11.50	12.50	14.00	17.50	22.00	24.00	28.00
	mm	267	292	318	356	445	559	622	711
L2	in	11.12	12.12	13.12	14.62	18.12	22.62	25.12	28.62
	mm	283	308	333	371	460	575	638	727
H	in	14.57	18.66	17.32	20.67	24.41	35.83	37.36	40.83
	mm	370	474	440	525	620	910	949	1032
W	in	8	10	10	14	18	22	24	26
	mm	200	250	250	350	450	560	600	660
Weight RF	kg	26	48	56	82	154	240	319	632



# Cast steel globe valve Class 600



## FEATURES

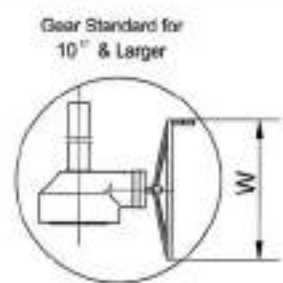
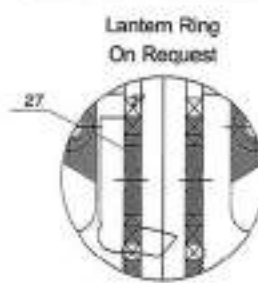
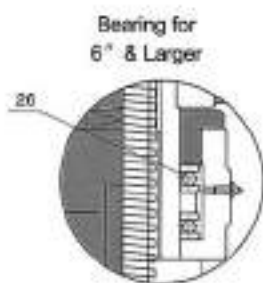
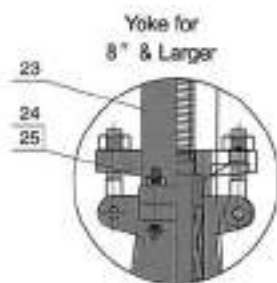
OS & YRising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact hand wheel Optional
Gear Optional

## SPECIFICATIONS

Design	ASME B18.34/BS1873
Face to Face	ASME B18.10
End to End	ASME B18.10
End Flange	ASME B18.5
BW End	ASME B18.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

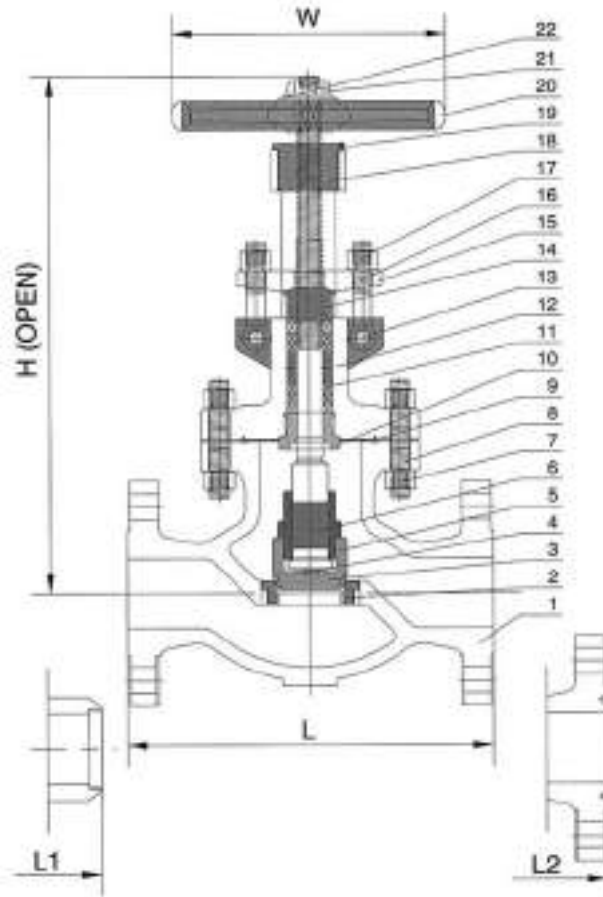
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A105+13Cr Faced
4	Disc Thrust Plate	ASTM A276 Type 420
5	Disc Nut	ASTM A276 Type 410
6	Stem	ASTM A182 GR.F8
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Gasket	Soft Iron
10	Backseat Bushing	ASTM A276 Type 410
11	Stem Packing	Braided Graphite & Die formed Graphite Ring
12	Bonnet	ASTM A216 GR.WCB
13	Eye Bolt Pins	Carbon Steel
14	Gland	ASTM A276 Type 410
15	Gland Flange	ASTM A216 GR.WCB
16	Gland Eye Bolts	ASTM A307 GR.B
17	Eye Bolt Nuts	ASTM A194 GR.2H
18	Yoke Bush	ASTM A439 GR.D-2
19	Screw	Carbon steel
20	Handwheel	Ductile iron
21	Handwheel Nut	ASTM A194 GR.2H
22	Washer	Carbon steel
23	Yoke	ASTM A216 GR.WCB
24	Yoke Pin Bolt Nuts	ASTM A194 GR.2H
25	Yoke Pin Bolts	ASTM A193 GR.B7
26	Bearing	Steel
27	Lantern Ring ON Request	ASTM A276 Type 410



Dimensions and Weights									
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"
L/L1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00
	mm	292	330	358	432	559	660	787	838
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12
	mm	295	333	359	435	562	663	790	841
H	in	18.19	21.26	23.03	26.38	34.88	38.69	40.94	50.39
	mm	462	540	585	670	889	932	1040	1280
W	in	10	10	12	18	20	25	24	24
	mm	250	250	300	460	500	630	610	610
Weight RF	kg	36	70	85	123	404	450	700	900



# Cast steel globe valve Class 900-2500



## FEATURES

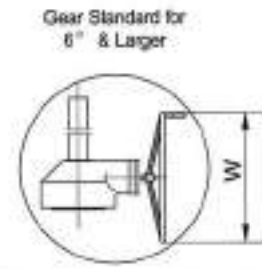
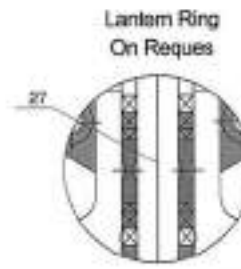
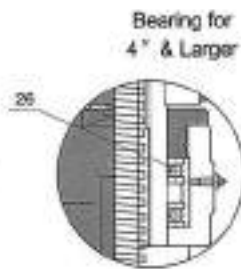
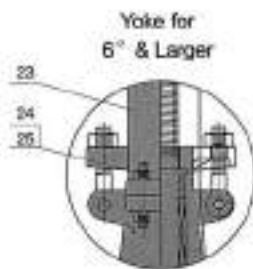
CS & Y-Rising Stem
Bolted Bonnet
Conic Disc
Expanded Bonnet for Cryogenic Services
Impact hand wheel Optional
Gear Optional

## SPECIFICATIONS

Design	ASME B16.34BS1673
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

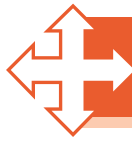
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Swirl Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A105+Stellite Faced
4	Disc Thrust Plate	ASTM A276 Type 420
5	Disc Nut	ASTM A276 Type 410
6	Stem	ASTM A182 GR.F8
7	Bonnet Bolt nuts	ASTM A194 GR.2H
8	Bonnet Bolt	ASTM A193 GR.B7
9	Gasket	Soft Iron
10	Backseat Bushing	ASTM A276 Type 410
11	Stem Packing	Braided Graphite & Die formed Graphite Ring
12	Bonnet	ASTM A216 GR.WCB
13	Eye Bolt Pins	Carbon Steel
14	Gland	ASTM A276 Type 410
15	Gland Flange	ASTM A216 GR.WCB
16	Gland Eye Bolts	ASTM A307 GR.B
17	Eye Bolt Nuts	ASTM A194 GR.2H
18	Yoke Bush	ASTM A438 GR.D-2
19	Screw	Carbon steel
20	Handwheel	Ductile Iron
21	Handwheel Nut	ASTM A194 GR.2H
22	Washer	Carbon steel
23	Yoke	ASTM A216 GR.WCB
24	Yoke Pin Bolt Nuts	ASTM A194 GR.2H
25	Yoke Pin Bolts	ASTM A193 GR.B7
26	Bearing	Steel
27	Lantern Ring ON Request	ASTM A276 Type 410

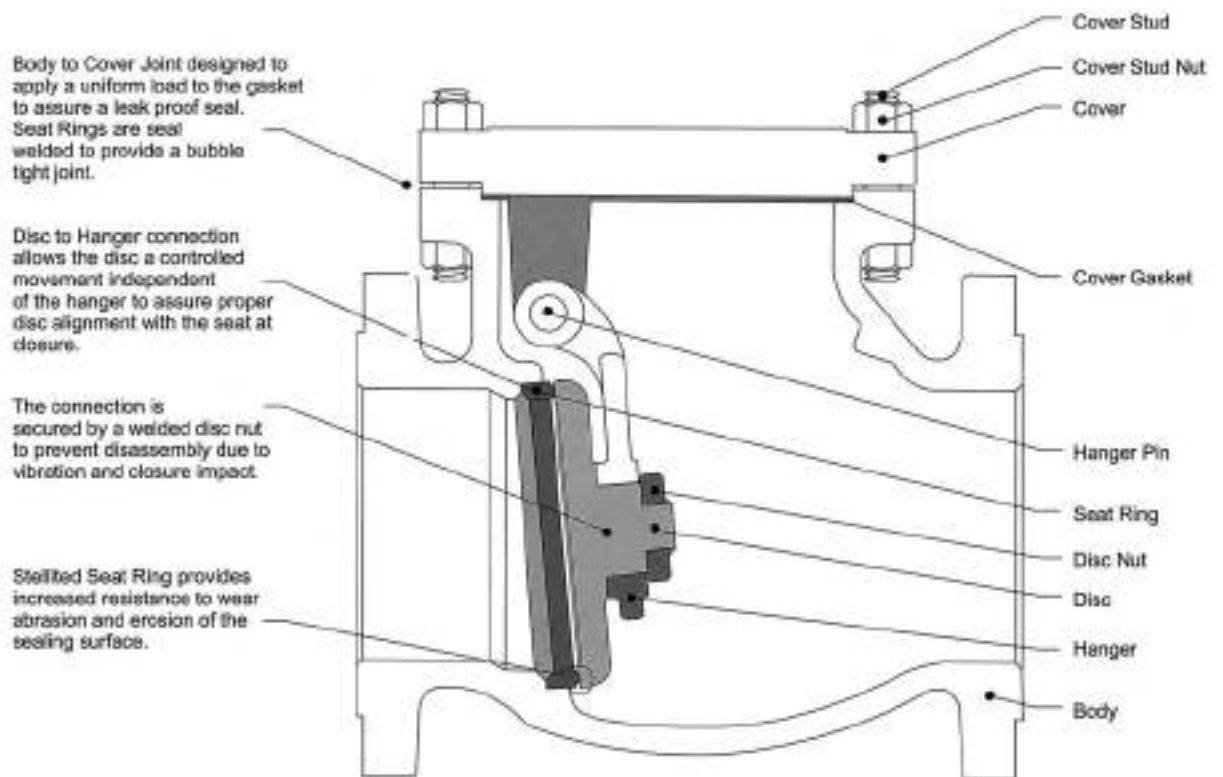


Dimensions and Weights	CALSS 900						CALSS 1500						CALSS 2500						
	2"	2.5"	3"	4"	6"	8"	2"	2.5"	3"	4"	6"	8"	2"	2.5"	3"	4"	6"	8"	
SIZE	in	50	65	80	100	150	200	50	65	80	100	150	200	50	65	80	100	150	200
L/L1	in	14.50	18.50	15.00	18.00	24.00	29.00	14.50	16.50	18.50	21.50	27.75	32.75	17.75	20.00	22.75	26.50	36.00	40.25
	mm	368	419	381	457	610	737	368	419	470	546	705	832	451	508	578	673	914	1022
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	14.62	16.62	18.62	21.62	28.00	33.13	17.87	20.25	23.00	26.88	36.50	40.67
	mm	371	422	384	460	613	740	371	422	473	549	711	841	454	514	584	683	927	1038
H	in	23.62	25.98	26.18	31.50	43.62	46.51	25.85	25.85	30.31	33.49	45.08	52.95	28.35	31.50	34.84	49.51	75.00	97.05
	mm	600	660	665	800	1108	1184	660	660	770	850	1145	1345	720	800	885	1260	1905	2465
W	in	14	14	18	20	24	24	14	14	20	22	24	24	16	20	22	24	24	24
	mm	350	350	450	500	610	610	350	350	500	560	610	610	400	500	560	600	610	610
Weight RF	kg	95	135	122	195	435	730	95	138	250	435	540	970	175	264	308	799	1990	4300





# Cast steel swing check valve





# Cast steel swing check valve Class 150

## FEATURES

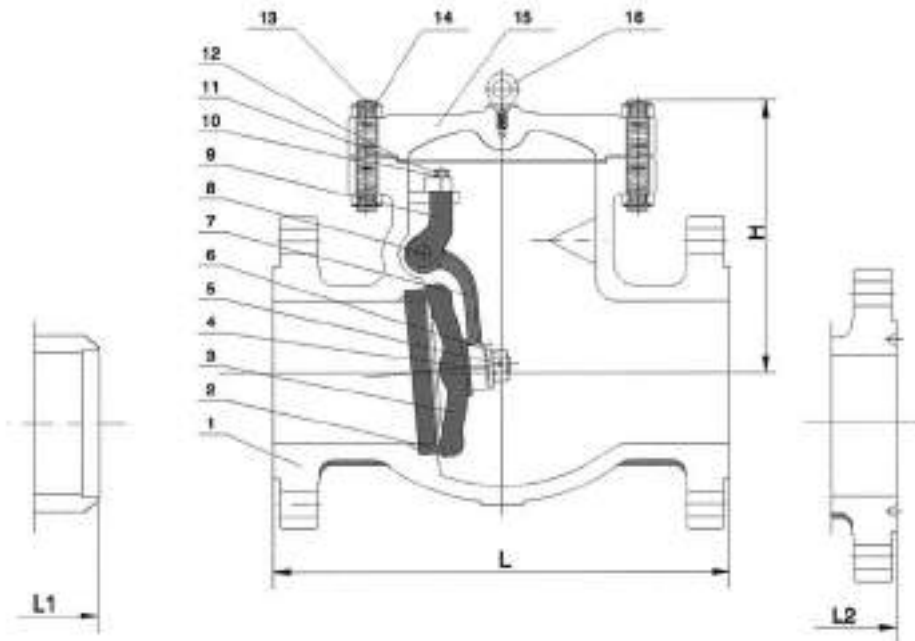
Bolted Cover
Swing Type Disc
6" & Larger With Eye Bolt
By Pass On Request
Lever & Weight Optional

## STANDARD MATERIALS OF PARTS

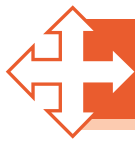
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Disc Thrust Plate	ASTM A276 Type 410
5	Disc Nut Pin	Stainless Steel
6	Disc Nut	Stainless Steel
7	Hinge	ASTM A216 GR.WCB
8	Hinge Pin	ASTM A182 GR.F6
9	Bearing Bracket	ASTM A216 GR.WCB
10	Spring Washer	Carbon Steel
11	Hex. Bolt	Carbon Steel
12	Gasket	Soft Iron+Graphite
13	Cover Bolt	ASTM A193 GR.B7
14	Cover Bolt Nut	ASTM A194 GR.2H
15	Cover	ASTM A216 GR.WCB
16	Eye Bolt	Carbon Steel

## SPECIFICATIONS

Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75



Dimensions and Weights														
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
L/L1	in	8.00	8.50	9.00	11.50	14.00	19.50	24.50	27.50	31.00	34.00	38.50	38.50	51.00
	mm	203	216	241	292	356	495	622	699	787	864	978	978	1295
L2	in	8.5	9.00	10.00	12.00	14.50	20.00	25.00	28.00	31.50	34.50	39.00	39.00	51.50
	mm	216	229	254	305	368	508	635	711	800	878	991	991	1308
H	in	6.10	6.70	7.09	8.66	10.55	12.20	14.57	16.73	18.70	20.67	22.83	24.72	34.72
	mm	155	170	180	220	268	310	370	425	475	525	580	628	882
Weight RF	kg	19	25	29	46	77	163	220	399	428	555	775	835	1150



# Cast steel swing check valve Class 300

## FEATURES

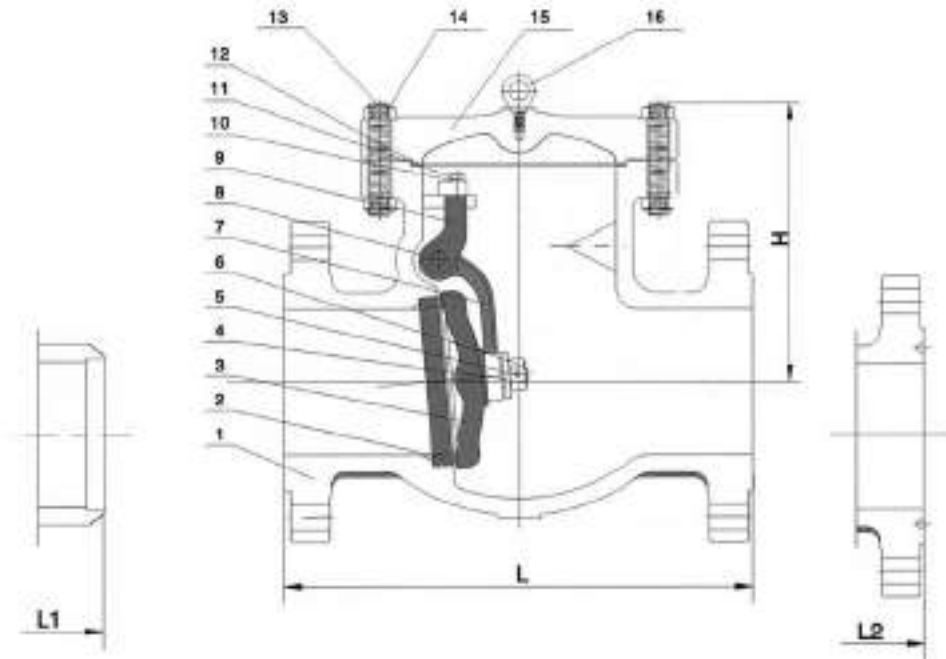
Bolted Cover
Swing Type Disc
4" & Larger With Eye Bolt
By Pass On Request
Lever & Weight Optional

## SPECIFICATIONS

Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

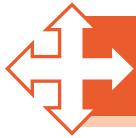
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Disc Washer	ASTM A270 Type 410
5	Disc Nut Pin	Stainless Steel
6	Disc Nut	Stainless Steel
7	Hinge	ASTM A216 GR.WCB
8	Hinge Pin	ASTM A182 GR.F6
9	Bearing Bracket	ASTM A216 GR.WCB
10	Spring Washer	Carbon Steel
11	Hex. Bolt	Carbon Steel
12	Gasket	Soft Iron+Graphite
13	Cover Bolt	ASTM A193 GR.B7
14	Cover Bolt Nut	ASTM A194 GR.2H
15	Cover	ASTM A216 GR.WCB
16	Eye Bolt	Carbon Steel



Dimensions and Weights														
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	18"	18"	20"	24"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1	in	10.50	11.50	12.50	14.00	17.50	21.00	24.50	28.00	33.00	34.00	38.50	40.00	53.00
	mm	267	292	318	356	445	533	622	711	838	864	978	1016	1346
L2	in	11.12	12.12	13.12	14.62	18.12	21.62	25.12	28.62	33.62	34.62	39.12	40.75	53.88
	mm	283	308	333	371	460	549	638	727	854	879	994	1035	1368
H	in	6.88	7.28	7.80	9.25	11.10	13.19	15.15	18.11	20.47	21.81	23.62	26.38	29.53
	mm	173	185	198	235	282	335	385	460	520	554	600	670	750
Weight RF	kg	21	30	39	69	125	210	307	450	680	640	1025	1320	1960





# Cast steel swing check valve Class 600

## FEATURES

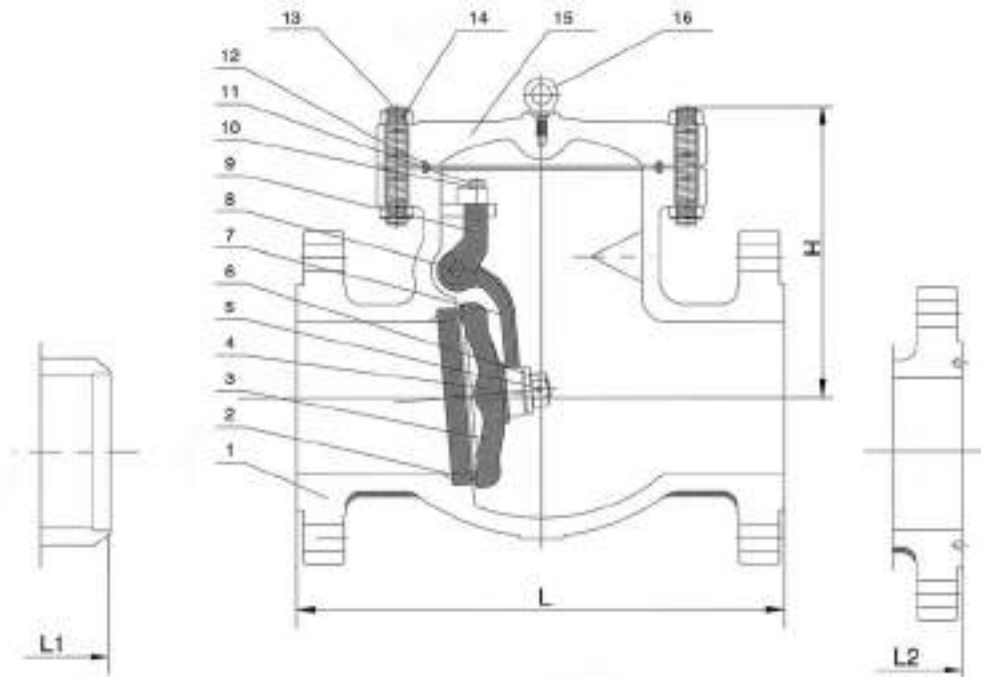
Bolted Cover
Swing Type Disc
With Eye Bolt
By Pass On Request
Lever & Wight Optional

## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A106+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Disc Washer	ASTM A276 Type 410
5	Disc Nut Pin	Stainless Steel
6	Disc Nut	Stainless Steel
7	Hinge	ASTM A216 GR.WCB
8	Hinge Pin	ASTM A182 GR.F5
9	Bearing Bracket	ASTM A216 GR.WCB
10	Spring Washer	Carbon Steel
11	Hex. Bolt	Carbon Steel
12	Gasket, Ring Joint	Soft Iron+Graphite
13	Cover Bolt	ASTM A193 GR.B7
14	Cover Bolt Nut	ASTM A194 GR.2H
15	Cover	ASTM A216 GR.WCB
16	Eye Bolt	Carbon steel

## SPECIFICATIONS

Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75



## Dimensions and Weights

SIZE	in	2"	2.5"	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
L/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	757	828	889	991	1092	1194	1397
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38
	mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
H	in	7.165	7.87	8.94	10.24	12.80	15.35	19.29	20.79	22.55	25.98	28.35	29.37	37.80
	mm	182	200	227	260	325	390	490	528	572	660	720	746	960
Weight RF	kg	36	49	70	122	289	465	673	875	994	1220	1620	2120	3100



# Cast steel swing check valve Class 900-2500

## FEATURES

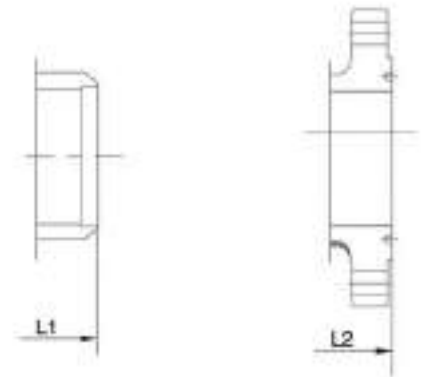
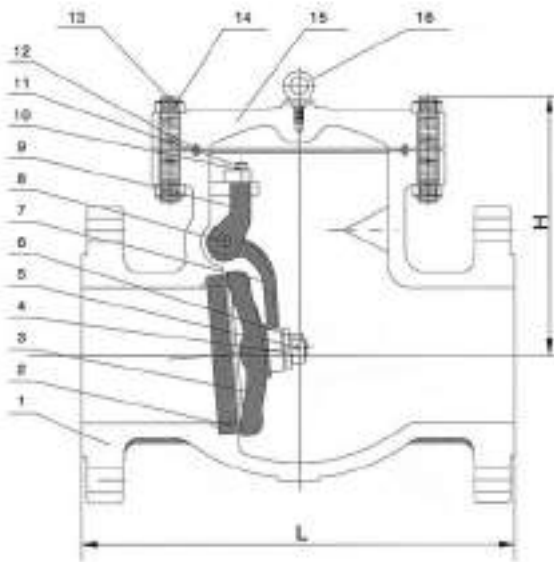
Bolted Cover
Swing Type Disc
With Eye Bolt
By Pass On Request
Lever & Wight Optional

## SPECIFICATIONS

Design	ASME B16.34/BS 1968
Face to Face	ASME B16.10
End Flange	ASME B16.5
BNV End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR. WCB
2	Seal Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Disc Washer	ASTM A276 Type 410
5	Disc Nut Pin	Stainless Steel
6	Disc Nut	Stainless Steel
7	Hinge	ASTM A216 GR.WCB
8	Hinge Pin	ASTM A182 GR.F6
9	Bearing Bracket	ASTM A216 GR.WCB
10	Spring Washer	Carbon Steel
11	Hex. Bolt	Carbon Steel
12	Gasket, Ring Joint	Soft Iron+Graphite
13	Cover Bolt	ASTM A193 GR.B7
14	Cover Bolt Nut	ASTM A194 GR.2H
15	Cover	ASTM A216 GR.WCB
16	Eye Bolt	Carbon steel



Dimensions and Weights		CALSS 900								CALSS 1500								CALSS 2500							
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"
	mm	50	65	80	100	150	200	250	300	50	65	80	100	150	200	250	300	50	65	80	100	150	200	250	300
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	17.75	20.00	22.75	28.50	36.00	40.25	50.00	56.00
	mm	368	419	381	457	610	737	838	965	368	419	470	546	705	832	991	1130	451	508	573	673	914	1022	1270	1422
L2	in	14.82	14.82	15.12	18.12	24.12	29.12	33.12	38.12	14.82	16.82	18.62	21.62	28.00	33.13	39.38	38.12	17.87	20.25	23.00	28.88	36.50	40.87	50.88	56.88
	mm	371	422	384	460	613	740	841	968	371	422	473	549	711	841	1000	1148	454	514	584	683	927	1038	1292	1445
H	in	11.65	11.81	11.81	12.87	17.36	19.76	20.14	30.51	11.65	11.81	13.43	16.22	20.12	26.77	28.76	33.74	16.38	16.50	17.36	18.06	20.12	27.98	30.80	39.37
	mm	296	300	300	327	441	502	564	775	296	300	341	412	511	680	736	857	416	419	441	479	511	711	851	1000
Weight RF	kg	70	100	91	150	305	510	810	1120	70	100	150	245	550	1010	1550	2280	145	240	338	650	1400	2420	3750	5500



## Type of end connections

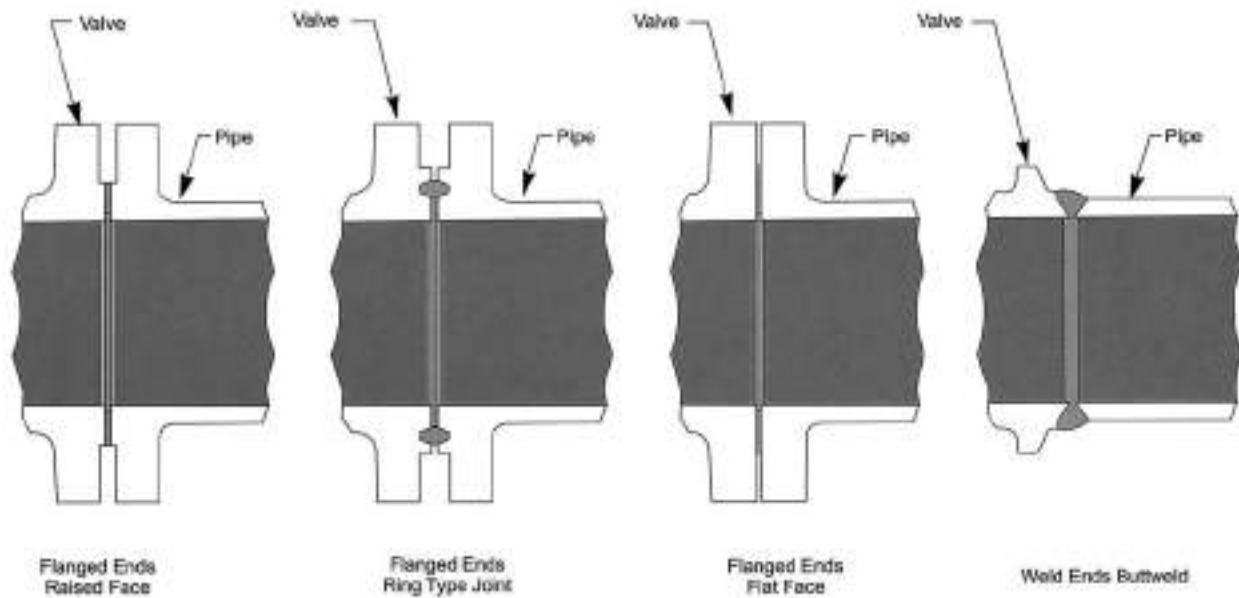
**PROTEK** Cast steel valves can be supplied with flanged ends in raised face, flat faces or ring joint type as well as in welding ends (buttweld). They can also

Be supplied with combined ends, such as flanged by weld, in accordance to customer requirements.

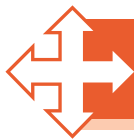
The buttweld ends in standard valves are machined in accordance with ASME B 16.25 and are supplied to meet the following pipe schedules:

Valve Pressure Class	Weld End Pipe Schedule
150/300	Schedule 40-2" to 10"
	Standard Wall-12" to 24"
600	Schedule 80
900	Schedule 160-2" to 3"
	Schedule 120-4" and Larger
1500	Schedule 160

The customer must clearly specify the pipe wall thickness and type of pipe to be welded to the valves for schedules different than the above.







## Body and bonnet joint seal gaskets

**PROTEK** Cast steel standard valves are supplied with the types of body/bonnet gaskets shown in the table.

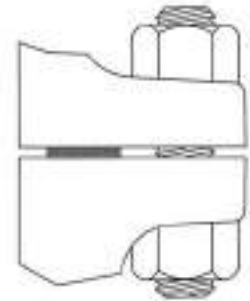
For special service conditions, the **PROTEK** valves can also be supplied with special shapes on joints and special materials, to comply with specific requirements of the customer.

VALVE	CLASS				
	150	300	600	900	1500
GATE	1	2	3	3	3
GLOBE	1	2	3	3	3
CHECK	1	2	3	3	3

Flat Gasket



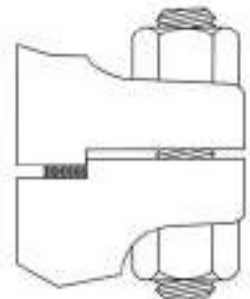
1. Flat Gasket: Graphite with 316 Stainless Steel Core



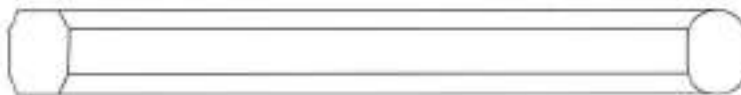
Spiral Gasket



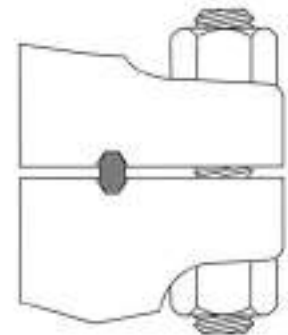
2. Spiral Gasket: Stainless Steel/Graphite Filled.

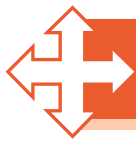


Ring Gasket



3. Ring Gasket: Oval or Octagonal shape, Soft or Stainless Steel





# Stem Packing

## Standard Compression and Live Loading

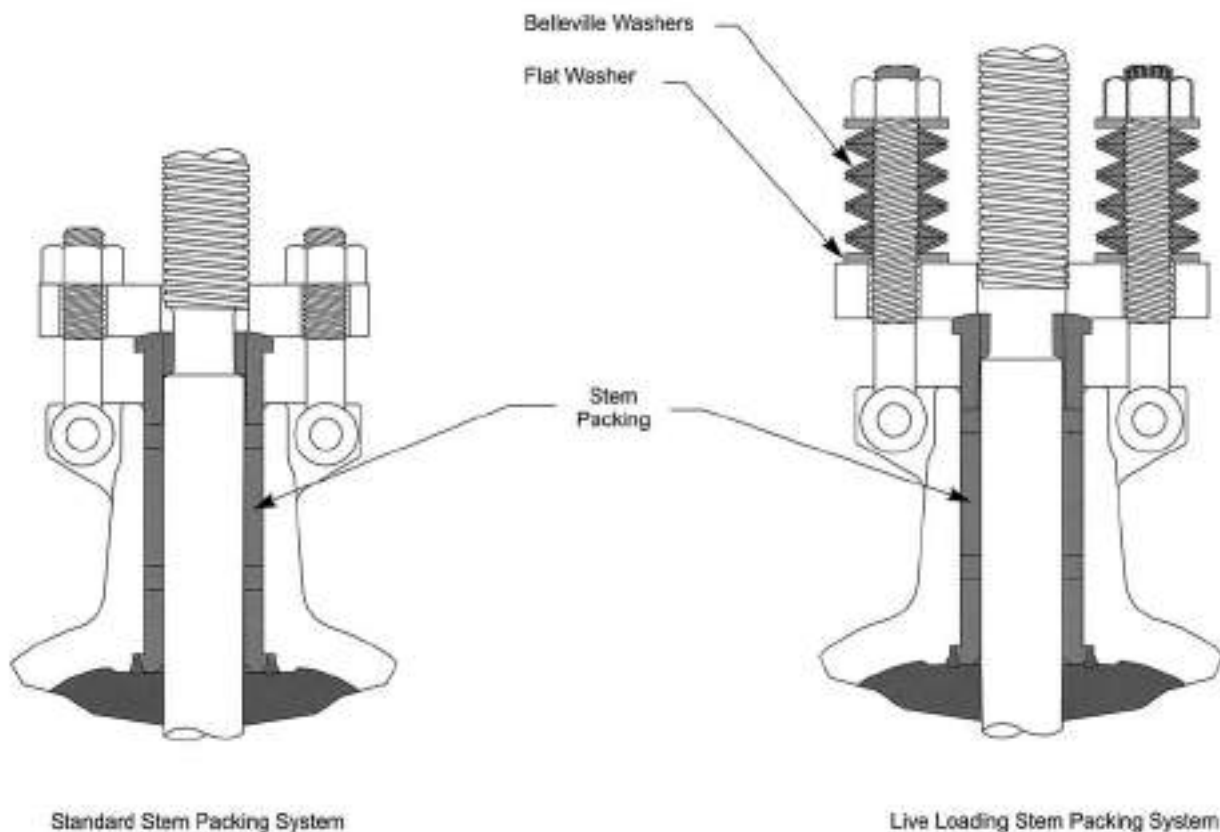
**PROTEK** Valves are designed, manufactured and tested to meet 50 PPMVOC fugitive emission leak rate as a standard off the shelf valve. This applies to all gate and globe valves, both Cast Steel and Forge Steel, without a requirement for a "special order".

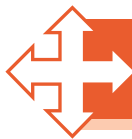
**PROTEK** Uses a stem packing of flexible graphite incorporating a passive corrosion inhibitor in a combination of high and low density sealing rings with anti-extrusion end rings reinforced with Inconel wire.

The long term low emission stem sealing ability of **PROTEK** packing is enhanced by reduced diametral clearances and close control of stem straightness and packing sealing surface finish.

**PROTEK** Can also provide gate and globe valves with a stem packing live loading system for installations requiring frequent valve operation and/or having large variations in temperature/pressure or where it is desirable to eliminate the need for occasional adjustment of the packing to compensate for the variations in operation. Live loading will provide a constant compression against the packing to maintain the optimum seal over a long period of time and variations in the operating conditions.

**PROTEK** Can also supply valves with stem packing of different types and materials to meet the customer requirements.





# Material of parts

## CAST STEEL GATE VALVE STANDARD MATERIALS OF PARTS

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL				
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
2	seat ring	A105	A350 LF2	A350 LF2	A192 F1	A192 F11	A192 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
3	disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
4	stem	A182 F5	A182 F304	A182 F304	A192 F6	A192 F6	A192 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
5	Gasket	CL150-300 CL600-2500 Ring Joint	Soft Iron+ Graphite	304+Graphite	304+Graphite	304+Graphite		304+Graphite				
			Soft Iron	304	304	316		316				
6	Bonnet	A216 WCB	A352 LCB	A352 LCC	A216 WC1	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
7	bonnet bolt nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
8	bonnet bolt	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
9	backseat bushing	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321
10	Stem Packing	Braided Graphite& Die formed Graphite Ring			Braided Graphite& Die formed Graphite Ring			Braided Graphite& Die formed Graphite Ring				
11	Eye Bolt Pins	Carbon Steel			A276 410			Stainless Steel				
12	Gland eye bolts	A307 B	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
13	gland	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321
14	gland flange	A216 WCB	A352 LCB	A352 LCC	A216 WC1	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
15	Eye Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8	A194 8	A194 8	A194 8	A194 8
16	Drainage Nipple	Carbon Steel			Carbon Steel			Stainless Steel				
17	Stem Nut	A439 D-2			A439 D-2			Al-Brass				
18	Retaining Nut	Carbon Steel			Carbon Steel			Carbon Steel				
19	handwheel	Ductile Iron			Ductile Iron			Ductile Iron				
20	handwheel nut	Carbon Steel			Carbon Steel			Stainless Steel				
21	Screw	Carbon Steel			Carbon Steel			Stainless Steel				
22	yoke	A216 WCB	A352 LCB	A352 LCC	A216 WCB	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
23	yoke pin bolt nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
24	yoke pin bolts	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
25	bearing	Steel			Steel			Steel				
26	Laxim Ring Or Request	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321

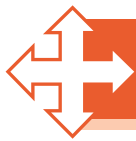
## CAST STEEL GLOBE VALVE STANDARD MATERIALS OF PARTS

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL				
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
2	seat ring	A105	A350 LF2	A350 LF2	A192 F1	A192 F11	A192 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
3	disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
4	Disc Thrust Plate	A276 420	A276 304	A276 304		A276 420		A276 304	A276 316	A276 304L	A276 316L	A276 321
5	Disc Nut	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321
6	stem	A182 F5	A182 F304	A182 F304	A192 F6	A192 F6	A192 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
7	Bonnet Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
8	bonnet bolt	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
9	Gasket	CL150-300 CL600-2500 Ring Joint	Soft Iron+ Graphite	304+Graphite	304+Graphite	304+Graphite		304+Graphite				
			Soft Iron	304	304	316		316				
10	Backseat Bushing	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321
11	Stem Packing	Braided Graphite& Die formed Graphite Ring			Braided Graphite& Die formed Graphite Ring			Braided Graphite& Die formed Graphite Ring				
12	Bonnet	A216 WCB	A352 LCB	A352 LCC	A216 WC1	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
13	Eye Bolt Pins	Carbon Steel			A276 410			Stainless Steel				
14	Gland	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321
15	Gland Flange	A216 WCB	A352 LCB	A352 LCC	A216 WC1	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
16	Gland Eye Bolts	A307 B	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
17	Eye Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
18	Yoke Bush	A439 D-2			A439 D-2			Al-Brass				
19	Screw	Carbon Steel			Carbon Steel			Stainless Steel				
20	Handwheel	Carbon Steel			Ductile Iron			Ductile Iron				
21	Handwheel Nut	Ductile Iron			A194 2H			Stainless Steel				
22	Washer	Carbon Steel			Carbon Steel			Stainless Steel				
23	Yoke	A216 WCB	A352 LCB	A352 LCC	A216 WCB	A216 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
24	Yoke Pin Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
25	Yoke Pin Bolts	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
26	Bearing	Steel			Steel			Steel				
27	Laxim Ring Or Request	A276 410	A276 304	A276 304		A276 410		A276 304	A276 316	A276 304L	A276 316L	A276 321

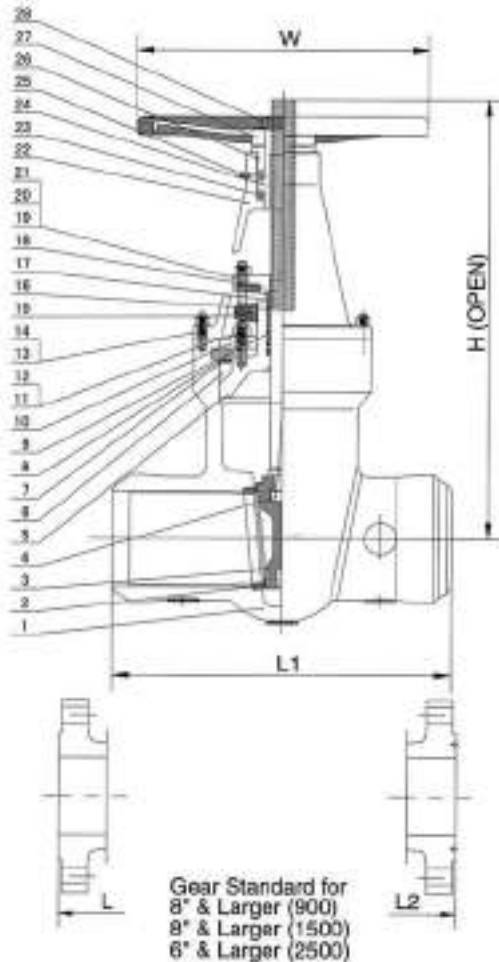
## CAST STEEL SWING CHECK VALVE STANDARD MATERIALS OF PARTS

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL				
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
2	seat ring	A105	A350 LF2	A350 LF2	A192 F1	A192 F11	A192 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
3	disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
4	Disc Washer	A276 410	A276 304	A276 304		A276 410		A276 316				
5	Disc Nut Pin	Stainless Steel			Stainless Steel			316				
6	Disc Nut	Stainless Steel			Stainless Steel			316				
7	Hinge	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
8	Hinge Pin	A182 F5	A182 F304	A182 F304	A182 F5	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321
9	Bearing Bracket	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
10	Spring Washer	Carbon steel			Stainless Steel			316				
11	Hex. Bolt	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
12	Gasket	CL150-300 CL600-2500 Ring Joint	Soft Iron+ Graphite	304+Graphite	304+Graphite	304+Graphite		304+Graphite				
			Soft Iron	304	304	316		316				
13	Cover Bolt	A193 B7	A193 L7	A193 L7	A193 B7	A193 B16	A193 B16	A193 B8				
14	Cover Bolt Nut	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8				
15	Cover	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C
16	Eye Bolt	Carbon steel			Stainless Steel			Stainless Steel				
17	Plug	A105	A350 LF2	A350 LF2	A192 F1	A192 F11	A192 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321





# Pressure seal gate valve class 900-2500



## FEATURES

OS & Y Rising Stem
Pressure Seal
Flexible Wedge
Backseat Weld-Deposited
By Pass On Request
Locking Device Optional
Gear Optional

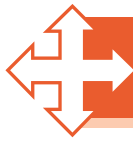
## SPECIFICATIONS

Design	ASME B16.34
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
B/W End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A106+Stellite Faced
3	Disc	ASTM A216 GR. WCB+Stellite Faced
4	Stem	ASTM A182 GR.F6
5	Bonnet	ASTM A216 GR. WCB+Stellite Faced
6	Gasket	ASTM A182 GR. F304
7	Thrust Ring	ASTM A276 Type 410
8	Separate Ring	Carbon Steel
9	Larsten Ring On Request	ASTM A276 Type 410
10	Bonnet Retainer	Carbon Steel
11	Bonnet Bolts	ASTM A193 GR.B7
12	Bonnet Bolt nuts	ASTM A194 GR.2H
13	Yoke Bolts	ASTM A194 GR.B7
14	Yoke Bolt Nuts	ASTM A193 GR.2H
15	Gland Eye	ASTM A216 GR.WCB
16	Stem Packing	Braided Graphite & Die formed Graphite Ring
17	Gland	ASTM A276 Type 410
18	Gland Flange	ASTM A216 GR.WCB
19	Eye Bolt Pins	Carbon steel
20	Gland Eye Bolts	ASTM A193 GR.B7
21	Eye Bolt Nuts	ASTM A194 GR.2H
22	Yoke	ASTM A216 GR.WCB
23	Bearing	Steel
24	Stem Nut	ASTM A436 GR. D-2
25	Grease Nipple	Carbon Steel
26	Retaining Nut	Carbon Steel
27	Handwheel	Ductile Iron
28	Handwheel Nut	Carbon Steel

Dimensions and Weights	CALSS 900								CALSS 1500								CALSS 2500										
	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"			
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	in	2"	2.5"	3"	4"	6"	8"	10"	12"	in	2"	2.5"	3"	4"	6"	8"	10"	12"
	mm	50	65	80	100	150	200	250	300	mm	50	65	80	100	150	200	250	300	mm	50	65	80	100	150	200	250	300
L	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	36.00	in	17.50	20.00	22.75	25.00	36.00	40.25	50.00	55.00	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50
	mm	368	419	381	457	610	737	836	915	mm	450	508	578	635	914	1022	1270	1422	mm	368	419	471	546	705	832	991	1130
L1	in	8.50	10.00	12.00	14.00	20.00	26.00	31.00	36.00	in	11.00	13.00	14.50	18.00	24.00	30.00	36.00	41.00	in	8.50	10.00	12.00	16.00	22.00	28.00	34.00	39.00
	mm	216	254	305	356	508	660	787	914	mm	279	330	368	457	610	762	914	1041	mm	216	254	305	406	559	711	864	991
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	36.12	in	17.87	20.25	23.00	26.66	36.50	40.87	50.88	56.88	in	14.62	16.62	18.62	21.62	28.00	33.13	39.58	45.12
	mm	371	422	384	460	613	740	841	918	mm	454	514	584	680	927	1038	1292	1445	mm	371	422	473	549	711	842	100	148
H	in	24.41	30.00	30.71	33.66	40.35	50.63	60.63	70.28	in	24.00	30.55	30.90	34.40	44.02	53.48	66.14	74.50	in	24.00	30.55	30.00	34.40	40.35	53.48	61.74	74.50
	mm	620	762	780	860	1025	1286	1540	1785	mm	610	776	785	874	1118	1358	1680	1892	mm	610	776	765	874	1025	1358	1568	1892
W	in	12	14	14	16	20	24	24	24	in	11	11	15	20	24	24	24	24	in	12	15	16	20	24	24	24	24
	mm	300	350	350	400	500	610	610	610	mm	280	280	360	500	610	610	610	610	mm	300	400	400	500	600	610	610	610
Weight RF	kg	50	72	66	110	202	530	782	1135	kg	60	112	122	192	480	630	1678	2320	kg	50	92	92	145	230	540	1060	1164



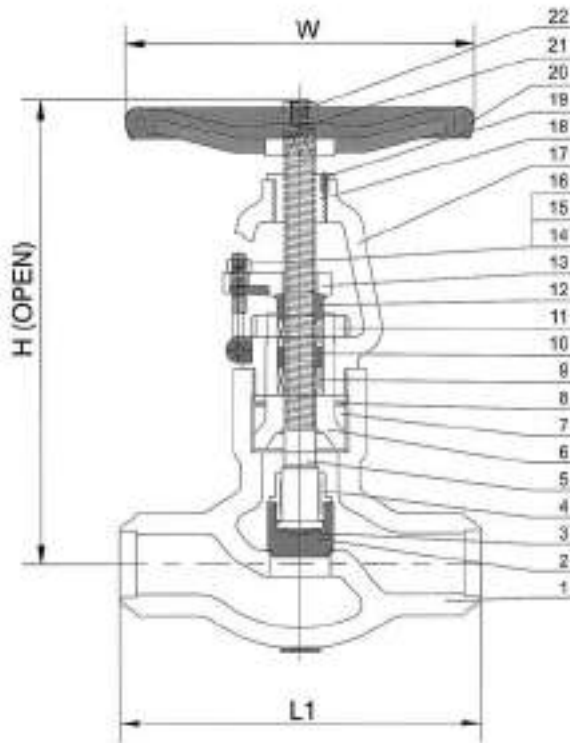
# Pressure seal globe valve class 900-2500

## FEATURES

OS & Y-Packing Stem
Pressure Seal
Conic Disc
Backseat Weld-Deposited
By Pass On Request
Locking Device Optional
Gear Optional

## SPECIFICATIONS

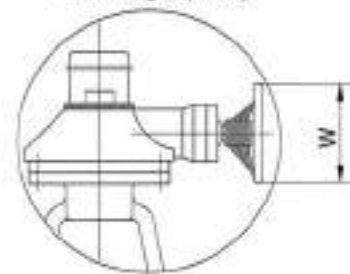
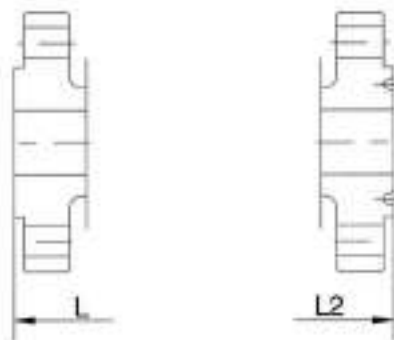
Design	ASME B16.34
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75



## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216GR.WCB+Stellite Faced
2	Disc	ASTM A106+13Cr Faced
3	Disc Thrust Plate	ASTM A276 Type 420
4	Disc Nut	ASTM A276 Type 410
5	Stem	ASTM A182 GR.F6
6	Bonnet	ASTM A216GR.WCB+Stellite Faced
7	Gasket	ASTM A182 GR.F304
8	Thrust Ring	ASTM A276 Type 410
9	Stem Packing	Braided Graphite & Die formed Graphite Ring
10	Lantern Ring	ASTM A276 Type 410
11	Bonnet Retainer	Carbon Steel
12	Gland	ASTM A276 Type 410
13	Gland Flange	ASTM A216 GR.WCB
14	Eye Bolt Pins	Carbon Steel
15	Gland Eye Bolts	ASTM A193 GR.B7
16	Eye Bolt Nuts	ASTM A194 GR.2H
17	Yoke	ASTM A216 GR.WCB
18	Yoke Bush	ASTM A439 GR.D-2
19	Screw	Carbon steel
20	Handwheel	Ductile Iron
21	Washer	Carbon steel
22	Handwheel Nut	ASTM A194 GR.2H

Gear Standard for  
6" & Larger (900)  
6" & Larger (1500)  
4" & Larger (2500)



Dimensions and Weights	CALSS 900							CALSS 1500						CALSS 2500					
	SIZE	in	2"	2.5"	3"	4"	6"	8"	2"	2.5"	3"	4"	6"	8"	2"	2.5"	3"	4"	6"
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	14.50	16.50	18.50	21.50	27.75	32.75	17.75	20.00	22.75	26.50	36.00	40.25
	mm	368	419	381	457	610	737	368	419	470	545	706	832	451	508	578	673	914	1022
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	14.62	16.62	18.62	21.62	28.00	33.13	17.87	20.25	23.00	26.88	36.50	40.87
	mm	371	422	384	460	613	740	371	422	473	549	711	841	454	514	584	683	927	1038
H	in	24.41	25.40	28.50	33.40	48.23	53.15	24.41	25.40	32.68	33.88	48.50	70.24	24.41	30.63	34.84	51.10	53.74	83.45
	mm	620	645	724	848	1225	1350	620	645	830	860	1232	1784	620	775	885	1298	1365	2120
W	in	14	14	18	20	24	24	14	14	20	22	24	24	16	20	22	24	24	24
	mm	360	350	450	500	610	610	350	350	500	560	610	610	400	500	560	610	610	610
Weight/RF	kg	62	88	86	140	360	948	62	86	112	158	765	1494	80	115	152	368	965	2095



# Pressure seal swing check valve class 900-2500

## FEATURES

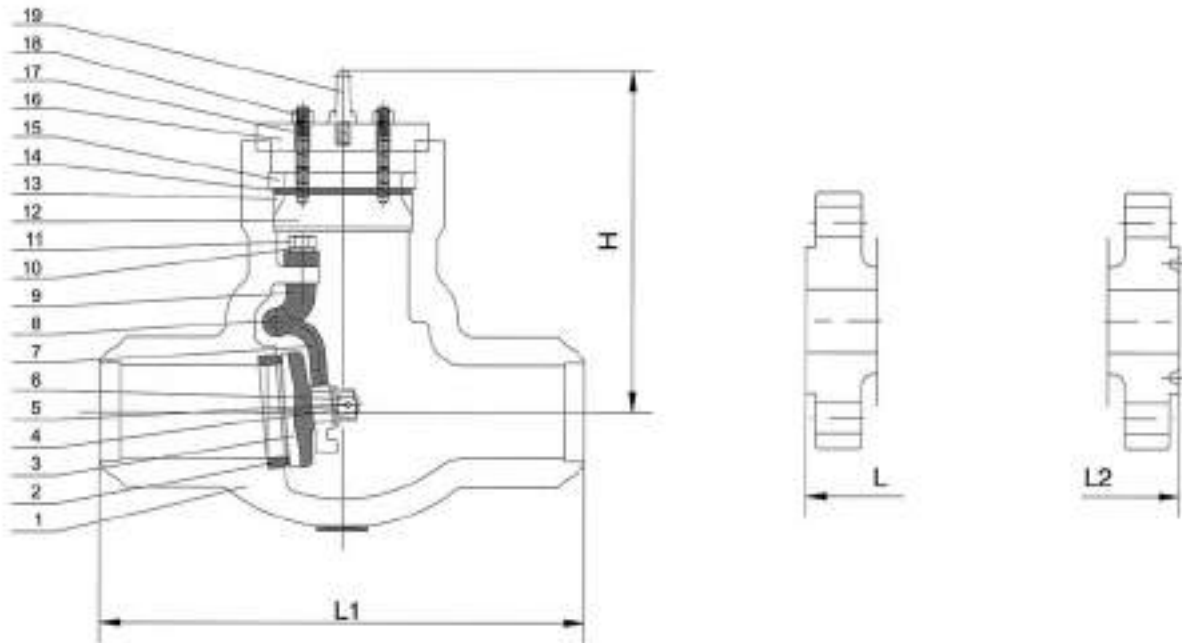
Pressure Seal
Swing Type Disc
Type 1 Standard
Type 2 Optional
With Eye Bolt
By Pass On Request
Lever & Wight Optional

## SPECIFICATIONS

Design	ASME B16.34
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
B/W End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

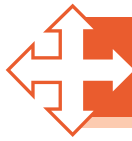
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR. WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Disc Washer	ASTM A276 Type 410
5	Disc Nut Pin	Stainless Steel
6	Disc Nut	Stainless Steel
7	Hinge	ASTM A216 GR.WCB
8	Hinge Pin	ASTM A182 GR.F6
9	Bearing Bracket	ASTM A216 GR.WCB
10	Spring Washer	Carbon Steel
11	Hex. Bolt	Carbon Steel
12	Bonnet	ASTM A216 GR.WCB
13	Gasket	ASTM A182 GR.F304
14	Thrust Ring	ASTM A 276 Type 410
15	Separate Ring	ASTM A 276 Type410
16	Cover	ASTM A216 GR.WCB
17	Cover Bolt	ASTM A193 GR.B7
18	Cover Bolt Nut	ASTM A194 GR.2H
19	Eye Bolt	Carbon steel

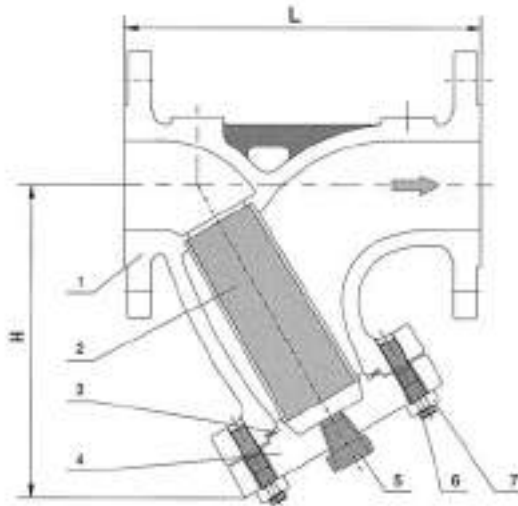


Dimensions and Weights	CLASS 900								CLASS 1500								CLASS 2500										
	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"	2"	2.5"	3"	4"	6"	8"	10"	12"			
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	in	2"	2.5"	3"	4"	6"	8"	10"	12"	in	2"	2.5"	3"	4"	6"	8"	10"	12"
	mm	50	65	80	100	150	200	250	300	mm	50	65	80	100	150	200	250	300	mm	50	65	80	100	150	200	250	300
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00
	mm	368	419	381	457	610	737	838	965	mm	368	419	381	457	610	737	838	965	mm	368	419	381	457	610	737	838	965
L2	in	14.62	14.82	15.12	18.12	24.12	29.12	33.12	38.12	in	14.62	14.82	15.12	18.12	24.12	29.12	33.12	38.12	in	14.62	14.82	15.12	18.12	24.12	29.12	33.12	38.12
	mm	371	422	384	460	613	740	841	968	mm	371	422	384	460	613	740	841	968	mm	371	422	384	460	613	740	841	968
H	in	11.05	11.01	11.81	12.87	17.30	19.70	26.14	30.51	in	11.05	11.01	11.81	12.87	17.30	19.70	26.14	30.51	in	11.05	11.01	11.81	12.87	17.30	19.70	26.14	30.51
	mm	296	300	300	327	441	502	664	775	mm	296	300	300	327	441	502	664	775	mm	296	300	300	327	441	502	664	775
Weight BW	kg	50	77	68	115	230	387	632	910	kg	50	77	68	115	230	387	632	910	kg	50	77	68	115	230	387	632	910





# Cast steel Y-strainer class 150-600



## SPECIFICATIONS

Design	ASME B16.34
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
Test	API 598

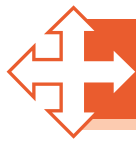
## STANDARD MATERIALS OF PARTS

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR. WCB
2	Screen	ASTM A276 Type 304
3	Gasket	304+Graphite
4	Cover	ASTM A216 GR.WCB
5	Plug	ASTM A105
6	Cover Bolt	ASTM A193 GR.B7
7	Cover Bolt Nut	ASTM A194 GR.2H

Dimensions and Weights		CALSS 150							
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"
L	in	8.00	8.50	9.50	11.50	16.00	19.50	24.50	27.00
	mm	203	216	241	292	406	495	622	689
H	in	5.71	7.20	8.11	8.98	12.95	17.32	19.96	23.39
	mm	145	183	206	228	329	440	507	594
Weight	kg	12	18	21	32	48	105	169	215

Dimensions and Weights		CALSS 300							
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"
L	in	10.50	11.50	12.50	14.00	17.50	22.00	24.50	28.00
	mm	267	292	318	356	445	559	622	711
H	in	6.70	7.28	8.25	11.42	14.76	17.72	22.64	26.18
	mm	170	185	235	290	375	450	575	665
Weight	kg	15	18	35	51	92	182	265	307

Dimensions and Weights		CALSS 600							
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"
L	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	7.28	7.67	9.84	11.81	16.34	19.29	23.43	26.77
	mm	185	200	250	300	415	490	595	680
Weight	kg	35	40	48	90	220	300	500	781



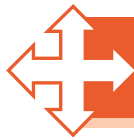
# Stem data & operation torques

## Gate Valve

CLASS	ITEM	VALVE SIZE																
		2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	32"
150	Stem Thread O.D.	3/4"	3/4"	7/8"	1"	1 1/8"	1 1/8"	1 3/8"	1 1/2"	1 3/8"	1 3/4"	1 7/8"	2"	2 1/4"	2 1/2"	2 3/4"	3"	
	Thread Per Inch	5	5	5	5	5	4	4	4	3	3	3	3	3	3	3	2	
	Pitch(in)	0.2	0.2	0.5	0.2	0.2	0.25	0.25	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5	
	Turns to Open	13	16	18	24	34	36	44	52	44	53	55	64	75	88	94	95	74
	Torque(N.m)	16	18	24	38	76	111	182	259	325	435	565	748	1256	1587	1935	2127	3230
300	Stem Thread O.D.	3/4"	3/4"	7/8"	1"	1 1/8"	1 3/8"	1 1/2"	1 3/8"	1 3/4"	1 7/8"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3"	
	Thread Per Inch	5	5	5	5	4	4	4	3	3	3	3	3	3	3	3	2	
	Pitch(in)	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5	
	Turns to Open	14	16	18	24	26	36	44	40	45	53	58	64	76	88	94	94	94
	Torque(N.m)	23	26	35	55	159	291	458	651	810	1088	1430	1778	2823	4115	5653		
600	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 1/8"	1 3/8"	1 1/2"	1 3/8"	1 3/4"	1 7/8"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3"	
	Thread Per Inch	5	5	5	5	4	3	3	3	3	3	3	3	2				
	Pitch(in)	0.2	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5				
	Turns to Open	14	16	18	24	27	27	33	40	45	53	58	64	51				
	Torque(N.m)	35	47	70	122	406	641	1023	1508	2068	2816	3038	3681	6896				
900	Stem Thread O.D.	3/4"	1 1/8"	1 1/8"	1 1/4"	1 3/8"	1 3/8"	2 1/8"	2 1/4"									
	Thread Per Inch	5	5	5	4	3	3	3	3									
	Pitch(in)	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333									
	Turns to Open	14	16	18	21	22	28	34	40									
	Torque(N.m)	80	90	95	159	569	978	1728	2601									
1500	Stem Thread O.D.	3/4"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	2 1/8"	2 1/8"	2 3/4"									
	Thread Per Inch	5	5	4	4	3	3	3	3									
	Pitch(in)	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333									
	Turns to Open	14	16	16	22	22	28	34	40									
	Torque(N.m)	117	172	224	349	1009	2025	3259	4437									
2500	Stem Thread O.D.	3/4"	1 1/8"	1 1/8"	1 3/8"	1 3/8"	2 1/8"	2 1/8"	3 1/4"									
	Thread Per Inch	5	5	4	4	3	3	2	2									
	Pitch(in)	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333									
	Turns to Open	15	17	17	22	28	28	34	40									
	Torque(N.m)	165	224	281	569	1407	2913	5748	8332									

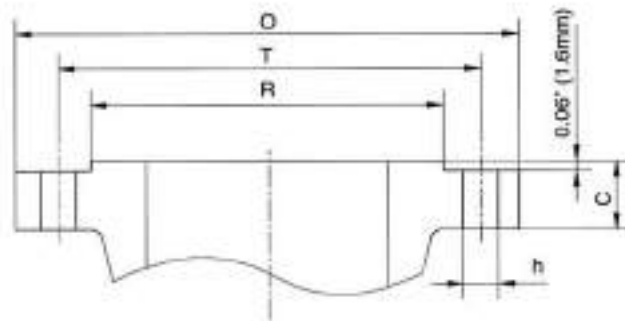
## Globe Valve

CLASS	ITEM	VALVE SIZE							
		2"	2.5"	3"	4"	6"	8"	10"	12"
150	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 3/8"
	Thread Per Inch	5	5	5	5	4	4	4	3
	Pitch(in)	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.333
	Turns to Open	4	7	5	8	7	9	10	7
	Torque(N.m)	47	86	84	157	239	326	620	1196
300	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 3/8"	1 1/2"	1 1/2"	1 3/4"
	Thread Per Inch	5	5	5	5	4	4	4	3
	Pitch(in)	0.2	0.2	0.2	0.2	0.25	0.25	0.333	0.333
	Turns to Open	4	8	7	8	7	9	9	9
	Torque(N.m)	62	85	118	218	727	1309	2160	3100
600	Stem Thread O.D.	7/8"	1"	1 1/8"	1 1/8"	1 3/8"	1 3/4"	2"	2 1/8"
	Thread Per Inch	5	5	5	4	3	3	3	3
	Pitch(in)	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333
	Turns to Open	8	8	8	8	9	9	9	9
	Torque(N.m)	142	244	316	602	1590	2782	4579	6216
900	Stem Thread O.D.	1 1/8"	1 1/4"	1 1/4"	1 3/8"	1 3/4"	2"		
	Thread Per Inch	5	4	4	4	3	3		
	Pitch(in)	0.2	0.25	0.25	0.25	0.333	0.333		
	Turns to Open	8	7	7	8	9	9		
	Torque(N.m)	265	412	528	1063	1792	3439		
1500	Stem Thread O.D.	1 1/8"	1 1/4"	1 3/8"	1 1/2"	2"	2 1/4"		
	Thread Per Inch	5	4	4	4	3	3		
	Pitch(in)	0.2	0.25	0.2	0.25	0.333	0.333		
	Turns to Open	6	7	7	8	9	9		
	Torque(N.m)	352	772	875	1816	3868	5011		
2500	Stem Thread O.D.	1 1/4"	1 1/2"	1 3/8"	1 3/4"	2"	2 1/2"		
	Thread Per Inch	4	4	3	3	3	3		
	Pitch(in)	0.25	0.25	0.333	0.333	0.333	0.333		
	Turns to Open	7	7	6	6	9	9		
	Torque(N.m)	502	824	669	2062	6530	9682		



# Steel end flange dimensions **class 150-300** ASME B16.5/B16.47

CLASS 150 300 RF



CLASS	SIZE		O		R		C		T		h		Bolt	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diameter
150	2	50	6.00	152	3.62	92	0.62	16	4.75	120.5	0.75	19	4	5/8
	2.5	65	7.00	178	4.12	106	0.69	18	5.50	139.5	0.75	19	4	5/8
	3	80	7.50	190	5.00	127	0.75	19	6.00	152.6	0.75	19	4	5/8
	4	100	9.00	229	6.19	157	0.94	24	7.50	190.5	0.75	19	8	5/8
	6	150	11.00	279	8.50	216	1.00	26	9.50	241.5	0.88	22	8	3/4
	8	200	13.50	343	10.62	270	1.12	29	11.75	298.5	0.88	22	8	3/4
	10	250	16.00	406	12.75	324	1.19	31	14.25	362	1.00	25	12	7/8
	12	300	19.00	483	15.00	381	1.25	32	17.00	432	1.00	25	12	7/8
	14	350	21.00	533	16.25	413	1.38	35	18.75	475	1.12	29	12	1
	16	400	23.50	597	18.50	470	1.44	37	21.25	540	1.12	29	16	1
	18	450	25.00	635	21.00	533	1.58	40	22.75	578	1.25	32	16	1 1/8
	20	500	27.50	699	23.00	584	1.69	43	25.00	635	1.25	32	20	1 1/8
	24	600	32.00	813	27.25	692	1.88	48	29.50	749.5	1.38	35	20	1 1/4
	28	700	36.50	927	31.50	800	2.01	72	34.00	863.5	1.38	35	28	1 1/4
	30	750	38.75	984	33.75	857	2.94	75	36.00	914.5	1.38	35	28	1 1/4
	32	800	41.75	1060	36.00	914	3.19	81	38.50	978	1.62	41	28	1 1/2
36	900	46.00	1168	40.25	1022	3.56	91	42.75	1086	1.62	41	32	1 1/2	
300	2	50	6.50	165	3.62	92	0.88	23	6.00	127	0.75	19	8	5/8
	2.5	65	7.50	190	4.12	105	1.00	26	6.88	179	0.88	22	8	3/4
	3	80	8.25	210	5.00	127	1.12	29	6.62	168.5	0.88	22	8	3/4
	4	100	10.00	254	6.19	157	1.25	32	7.88	200	0.88	22	8	3/4
	6	150	12.50	318	8.50	216	1.44	37	10.62	270	0.88	22	12	3/4
	8	200	15.00	381	10.62	270	1.62	42	13.00	330	1.00	25	12	7/8
	10	250	17.50	445	12.75	324	1.88	48	15.25	387.5	1.12	29	16	1
	12	300	20.50	521	15.00	381	2.00	51	17.75	451	1.25	32	16	1 1/8
	14	350	23.00	584	16.25	413	2.12	54	20.25	514.5	1.25	32	20	1 1/8
	16	400	25.50	648	18.50	470	2.25	58	22.50	571.5	1.38	35	20	1 1/8
	18	450	28.00	711	21.00	533	2.38	61	24.75	628.5	1.38	35	24	1 1/8
	20	500	30.50	775	23.00	584	2.50	64	27.00	686	1.38	35	24	1 1/8
	24	600	36.00	914	27.25	692	2.75	70	32.00	813	1.62	41	24	1 1/2
	28	700	40.75	1035	31.50	800	3.38	86	37.00	940	1.75	45	28	1 3/4
30	750	43.50	1092	33.75	857	3.62	92	39.25	997	1.88	48	28	1 3/4	

End Flange Dimensions: Size 2" - 24" to ASME B16.5, Size 28" - 36" to ASME B16.47 A.

Tolerances: Unit inch

Thickness C: NPS ≤ 18" +0.12, -0  
NPS ≥ 20" +0.19, -0

Drilling and Facing: Bolt Circle Diameter h: ±0.06  
Center to Center of Adjacent Bolt Holes: ±0.03

Eccentricity Between Bolt Circle Diameter and Machined Facing Diameters:  
NPS ≤ 2 1/2" ±0.03  
NPS ≤ 2 1/2" ±0.06

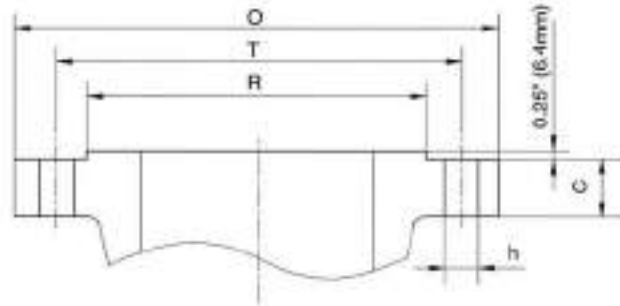
Outside Diameter R: 0.06 Raised Face: ±0.03  
0.25 Raised Face: ±0.02





# Steel end flange dimensions class 600-2500 ASME B16.5

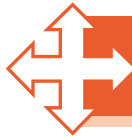
CLASS 600-2500 RF



CLASS	SIZE		O		R		C		T		h		Bolt	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diameter
600	2	50	6.50	165	3.62	92	1.00	26	5.00	127	0.75	19	8	5/8
	2.5	65	7.50	190	4.12	105	1.12	29	5.88	149	0.88	22	8	3/4
	3	80	8.25	210	5.00	127	1.25	32	6.62	168	0.88	22	8	3/4
	4	100	10.75	273	6.19	157	1.50	38	8.50	216	1.00	25	12	7/8
	6	150	14.00	356	8.50	216	1.88	48	11.50	292	1.12	29	12	1
	8	200	16.50	419	10.62	270	2.19	56	13.75	349	1.25	32	12	1 1/8
	10	250	20.00	508	12.75	324	2.50	64	17.00	432	1.38	35	16	1 1/4
	12	300	22.00	559	15.00	381	2.62	67	19.25	489	1.38	35	20	1 1/4
	14	350	23.75	603	16.25	413	2.75	70	20.75	527	1.50	38	20	1 1/2
	16	400	27.00	686	18.50	470	3.00	77	23.75	603	1.62	41	20	1 1/2
900	18	450	29.25	743	21.00	533	3.25	83	25.75	654	1.75	44	20	1 1/2
	20	500	32.00	813	23.00	584	3.50	89	28.50	724	1.75	44	24	1 1/2
	24	600	37.00	940	27.25	692	4.00	102	33.00	838	2.00	51	24	1 1/2
	2	50	8.50	216	3.62	92	1.50	38.5	6.50	165.1	1.00	26	8	7/8
	2.5	65	9.62	244	4.12	105	1.62	41.5	7.50	190.5	1.12	29	8	1
	3	80	9.50	241	5.00	127	1.50	38.5	7.50	190.5	1.00	26	8	7/8
	4	100	11.50	292	6.19	157	1.75	44.5	9.25	234.9	1.25	32	8	1 1/8
	6	150	15.00	381	8.50	216	2.19	56.0	12.50	317.5	1.25	32	12	1 1/8
	8	200	18.50	470	10.62	270	2.50	63.5	15.50	393.7	1.50	39	12	1 1/8
	10	250	21.50	545	12.75	324	2.75	70.0	18.50	469.9	1.50	39	16	1 1/8
1500	12	300	24.00	610	15.00	381	3.12	79.5	21.00	533.4	1.50	39	20	1 1/8
	14	350	25.25	640	16.25	413	3.38	86.0	22.00	558.8	1.62	42	20	1 1/2
	16	400	27.75	705	18.50	470	3.50	89.0	24.25	615.9	1.75	45	20	1 1/8
	18	450	31.00	785	21.00	533	4.00	102.0	27.00	686.8	2.00	51	20	1 1/2
	20	500	33.75	855	23.00	584	4.25	108.0	29.50	749.3	2.12	54	20	2
	24	600	41.00	1040	27.25	692	5.50	140.0	35.50	901.7	2.62	67	20	2 1/2
	2	50	8.50	216	3.62	92	1.50	38.5	6.50	165.1	1.00	26	8	1
	2.5	65	9.62	244	4.12	105	1.62	41.5	7.50	190.5	1.12	29	8	1 1/8
	3	80	10.50	267	5.00	127	1.88	48.5	8.00	203.2	1.25	32	8	1 1/4
	4	100	12.25	311	6.19	157	2.12	54.0	9.50	241.3	1.38	35	8	1 1/2
2500	6	150	15.50	394	8.50	216	3.25	83.0	12.50	317.5	1.50	39	12	1 1/2
	8	200	19.00	483	10.62	270	3.62	92.0	15.50	393.7	1.75	45	12	1 1/2
	10	250	23.00	585	12.75	324	4.25	108.0	19.00	481.3	2.00	51	12	2
	12	300	26.50	675	15.00	381	4.88	124.0	22.50	571.5	2.12	54	16	2 1/8
	14	350	29.50	750	16.25	413	5.25	133.5	25.00	635.0	2.38	61	16	2 3/8
	16	400	32.50	825	18.50	470	5.75	146.5	27.75	704.3	2.62	67	16	2 3/8
	18	450	36.00	915	21.00	533	6.38	162.0	30.50	777.3	2.88	74	16	2 3/8
	20	500	38.75	985	23.00	584	7.00	178.0	32.75	838.3	3.12	80	16	3 1/8
	24	600	46.00	1170	27.25	692	8.00	203.5	39.00	991.3	3.62	93	16	3 3/8
	2	50	9.25	235	3.62	92	2.00	51.0	6.75	171.5	1.12	29	8	1
2.5	65	10.50	267	4.12	105	2.25	57.5	7.75	196.5	1.25	32	8	1 1/8	
3	80	12.00	305	5.00	127	2.62	67.0	9.00	228.6	1.38	35	8	1 1/4	
4	100	14.00	356	6.19	157	3.00	76.5	10.75	273.0	1.62	42	8	1 1/2	
6	150	19.00	483	8.50	216	4.25	108.0	14.50	368.3	2.12	54	8	2	
8	200	21.75	550	10.62	270	5.00	127.0	17.25	438.3	2.12	54	12	2	
10	250	26.50	675	12.75	324	6.50	165.5	21.50	546.7	2.62	67	12	2 1/2	
12	300	30.00	760	15.00	381	7.25	184.5	24.38	619.3	2.88	74	12	2 3/4	

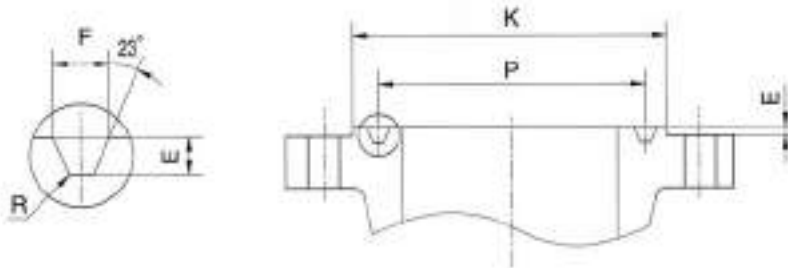
End Flange Dimensions: ASME B16.5

Tolerances: the Same as Class 150 300



# Dimensions of ring joint facing class 150-2500 ASME B16.5/B16.47

## CLASS 150-2500 RTJ

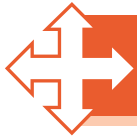


CLASS	SIZE	Ring No	P		E		F		R		K		
			in	mm	in	mm	in	mm	in	mm	in	mm	
150	2	90	R22	3.250	82.55	0.250	6.35	0.344	8.74	0.03	0.8	4.00	102
	2.5	65	R25	4.000	101.60	0.250	6.35	0.344	8.74	0.03	0.8	4.75	121
	3	80	R28	4.500	114.30	0.250	6.35	0.344	8.74	0.03	0.8	5.25	133
	4	100	R36	5.075	129.27	0.250	6.35	0.344	8.74	0.03	0.8	6.75	171
	6	150	R43	7.625	193.68	0.250	6.35	0.344	8.74	0.03	0.8	8.62	219
	8	200	R48	8.750	222.62	0.250	6.35	0.344	8.74	0.03	0.8	10.75	273
	10	250	R52	12.000	304.80	0.250	6.35	0.344	8.74	0.03	0.8	13.00	330
	12	300	R56	15.000	381.00	0.250	6.35	0.344	8.74	0.03	0.8	16.00	406
	14	350	R58	15.625	396.86	0.250	6.35	0.344	8.74	0.03	0.8	16.75	425
	16	400	R64	17.625	447.62	0.250	6.35	0.344	8.74	0.03	0.8	19.00	483
	18	450	R68	20.375	517.92	0.250	6.35	0.344	8.74	0.03	0.8	21.50	546
	20	500	R72	22.000	558.80	0.250	6.35	0.344	8.74	0.03	0.8	23.50	597
	24	600	R76	26.500	673.10	0.250	6.35	0.344	8.74	0.03	0.8	28.00	711
	28	700	R94	31.500	800.10	0.500	12.7	0.781	19.84	0.06	1.5	33.88	861
	30	750	R96	33.750	857.25	0.500	12.7	0.781	19.84	0.06	1.5	36.12	917
	32	800	R98	36.000	914.40	0.500	12.7	0.781	19.84	0.06	1.5	38.75	984
	36	900	R98	40.250	1022.38	0.500	12.7	0.781	19.84	0.06	1.5	40.75	1035
	300	2	90	R26	3.250	82.55	0.312	7.92	0.488	11.91	0.03	0.8	4.28
2.5		65	R26	4.000	101.60	0.312	7.92	0.488	11.91	0.03	0.8	5.00	127
3		80	R31	4.875	123.82	0.312	7.92	0.488	11.91	0.03	0.8	5.75	146
4		100	R31	5.875	148.22	0.312	7.92	0.488	11.91	0.03	0.8	6.88	175
6		150	R45	8.312	211.13	0.312	7.92	0.488	11.91	0.03	0.8	9.50	241
8		200	R49	10.625	269.88	0.312	7.92	0.488	11.91	0.03	0.8	11.88	302
10		250	R53	12.750	323.85	0.312	7.92	0.488	11.91	0.03	0.8	14.00	358
12		300	R57	15.000	381.00	0.312	7.92	0.488	11.91	0.03	0.8	16.25	413
14		350	R61	16.500	419.16	0.312	7.92	0.488	11.91	0.03	0.8	18.00	457
16		400	R65	18.500	469.96	0.312	7.92	0.488	11.91	0.03	0.8	20.00	508
18		450	R69	21.000	533.46	0.312	7.92	0.488	11.91	0.03	0.8	22.62	575
20		500	R73	23.000	584.20	0.375	9.52	0.531	13.49	0.06	1.5	25.00	635
24		600	R77	27.250	692.15	0.438	11.13	0.656	16.65	0.06	1.5	29.50	749
28		700	R94	31.500	800.10	0.500	12.7	0.781	19.84	0.06	1.5	33.88	861
30		750	R96	33.750	857.25	0.500	12.7	0.781	19.84	0.06	1.5	36.12	917

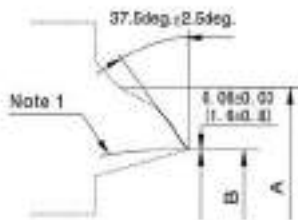
CLASS	SIZE	Ring No	P		E		F		R		K			
			in	mm	in	mm	in	mm	in	mm	in	mm		
600	2	90	R24	3.750	95.25	0.312	7.92	0.488	11.91	0.03	0.8	4.88	124	
	2.5	65	R27	4.250	107.93	0.312	7.92	0.488	11.91	0.03	0.8	5.38	137	
	3	80	R31	4.875	123.82	0.312	7.92	0.488	11.91	0.03	0.8	6.12	156	
	4	100	R37	5.675	143.22	0.312	7.92	0.488	11.91	0.03	0.8	7.12	181	
	6	150	R45	8.312	211.12	0.312	7.92	0.488	11.91	0.03	0.8	9.50	241	
	8	200	R49	10.625	269.88	0.312	7.92	0.488	11.91	0.03	0.8	12.12	308	
	10	250	R53	12.750	323.85	0.312	7.92	0.488	11.91	0.03	0.8	14.25	362	
	12	300	R57	15.000	381.00	0.312	7.92	0.488	11.91	0.03	0.8	16.50	419	
	14	350	R62	16.500	419.10	0.438	11.13	0.656	16.65	0.06	1.5	18.38	467	
	16	400	R66	18.500	469.90	0.438	11.13	0.656	16.65	0.06	1.5	20.62	524	
	18	450	R70	21.000	533.46	0.500	12.70	0.781	19.84	0.06	1.5	23.38	594	
	20	500	R74	23.000	584.20	0.500	12.70	0.781	19.84	0.06	1.5	25.50	648	
	24	600	R78	27.250	692.15	0.625	15.88	1.062	26.97	0.09	2.3	30.38	772	
	2	90	R27	3.750	95.25	0.312	7.92	0.488	11.91	0.03	0.8	4.88	124	
	2.5	65	R27	4.250	107.93	0.312	7.92	0.488	11.91	0.03	0.8	5.38	137	
	3	80	R35	4.875	123.82	0.312	7.92	0.488	11.91	0.03	0.8	6.62	168	
	4	100	R39	5.875	148.22	0.312	7.92	0.488	11.91	0.03	0.8	7.62	194	
	6	150	R45	8.312	211.12	0.375	9.52	0.531	13.49	0.06	1.5	9.75	248	
8	200	R50	10.625	269.88	0.438	11.13	0.656	16.65	0.06	1.5	12.50	318		
1500	10	250	R64	12.700	323.85	0.438	11.13	0.656	16.65	0.06	1.5	14.62	371	
	12	300	R68	15.000	381.00	0.500	12.70	0.781	19.84	0.06	1.5	17.25	438	
	14	350	R63	16.500	419.10	0.625	15.88	1.062	26.97	0.09	2.3	19.25	489	
	16	400	R67	18.500	469.90	0.688	17.48	1.188	30.18	0.09	2.3	21.50	546	
	18	450	R71	21.000	533.40	0.688	17.48	1.188	30.18	0.09	2.3	24.12	613	
	20	500	R75	23.000	584.20	0.688	17.48	1.188	30.18	0.09	2.3	26.50	673	
	24	600	R79	27.250	692.15	0.812	20.62	1.420	35.93	0.09	2.3	31.25	794	
	2	90	R26	4.000	101.60	0.312	7.92	0.488	11.91	0.03	0.8	5.25	133	
	2.5	65	R28	4.375	111.12	0.375	9.52	0.531	13.49	0.03	0.8	5.88	149	
	3	80	R32	5.000	127.00	0.375	9.52	0.531	13.49	0.04	1.5	6.62	168	
	4	100	R36	6.166	157.19	0.438	11.13	0.656	16.65	0.04	1.5	8.00	203	
	2500	6	150	R47	6.000	152.40	0.500	12.70	0.781	19.84	0.06	1.5	11.00	279
		8	200	R51	11.000	279.40	0.562	14.27	0.907	23.01	0.06	1.5	13.38	340
		10	250	R55	13.500	342.90	0.688	17.48	1.188	30.18	0.09	2.3	16.75	425
		12	300	R60	16.000	406.40	0.688	17.48	1.188	30.18	0.09	2.3	19.50	495

End Flange Dimensions: Size 2" - 24" to ASME B16.5, Size 28" - 36" to ASME B16.47A.  
 Tolerances: Unit inch  
 Depth E:  $\pm 0.016, -0$   
 Width F:  $\pm 0.008$   
 Pitch Diameter P:  $\pm 0.005$   
 Radius at Bottom R:  $R \leq 0.06" \pm 0.03, 0$   
 Angle 23 Deg:  $\pm 0.5 \text{ Deg}$

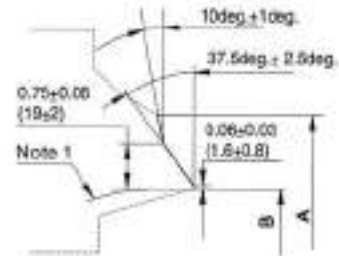




# Buttwelding end dimensions ASME B16.25



Note 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

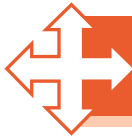


Wall Thicknesses Not Over 0.88in(22mm)  
Welding End Detail for joint Without Backing Ring

Wall Thicknesses Over 0.88in(22mm)  
Welding End Detail for joint Without Backing Ring

Nominal Pipe Size		Schedule No [Note(1)]	O.D. at Welding Ends				B		C [Note(3)]		T			
			Wrought or Fabricated Components, A [Note(1)]		Cast Steel Valves, A [Note(2)]									
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm			
65	2.5	40	43.0	2.88	75	2.96	62.5	2.469	62.93	2.479	5.16	0.203		
		80					59	2.323	59.69	2.341	7.01	0.276		
		160					54	2.125	55.28	2.178	9.53	0.375		
		XXS					45	1.771	47.43	1.868	14.02	0.552		
		80	3	40	88.9	3.50	91	3.58	78	3.088	78.25	3.081	5.49	0.216
80	3	80					73.5	2.900	74.53	2.934	7.62	0.300		
		160					66.5	2.625	68.35	2.692	11.13	0.438		
		XXS					58.5	2.300	61.19	2.409	15.24	0.600		
		90	3.5	40	101.6	4.00	106	4.12	90	3.548	90.52	3.564	5.74	0.226
		80						85.5	3.364	86.42	3.402	8.08	0.318	
100	4	40	114.3	4.50	117	4.62	102	4.026	102.73	4.044	6.02	0.237		
		80					97	3.820	98.28	3.869	8.56	0.337		
		120					92	3.624	93.78	3.692	11.13	0.438		
		160					87.5	3.428	88.65	3.530	13.49	0.531		
		XXS					80	3.152	83.30	3.279	17.12	0.674		
125	5	40	141.3	5.56	144	5.69	128	5.047	128.80	5.070	6.35	0.250		
		80					122	4.813	123.58	4.866	9.53	0.375		
		120					116	4.563	118.04	4.647	12.70	0.500		
		160					109.5	4.313	112.47	4.426	15.88	0.625		
		XXS					103	4.063	103.82	4.209	19.05	0.750		
150	6	40	168.3	6.62	172	6.78	154	6.065	154.82	6.094	7.11	0.280		
		80					146.5	5.761	148.06	5.825	10.97	0.432		
		120					140	5.501	142.29	5.600	14.27	0.562		
		160					132	5.187	135.31	5.335	18.26	0.719		
		XXS					124.5	4.897	128.65	5.072	21.95	0.864		
200	8	40	219.1	8.62	223	8.78	203	7.981	203.75	8.020	8.18	0.322		
		80					198.5	7.813	200.02	7.783	10.31	0.406		
		80					193.5	7.625	195.84	7.709	12.70	0.500		
		100					189	7.437	191.65	7.544	15.09	0.594		
		120					182.5	7.187	185.11	7.325	18.26	0.719		
		140					178	7.001	181.98	7.163	20.62	0.812		
		XXS					174.5	6.875	179.16	7.053	22.23	0.875		
250	10	40	273.0	10.75	278	10.94	254.5	10.020	256.74	10.070	9.27	0.365		
		80					247.5	9.75	249.74	9.834	12.70	0.500		
		80					243	9.562	245.55	9.670	15.09	0.594		
		100					238.5	9.312	240.01	9.451	18.26	0.719		
		120					230	9.062	234.44	9.232	21.44	0.844		
		140					222	8.750	227.51	8.959	25.40	1.000		
		160					216	8.500	221.95	8.740	28.58	1.125		
300	12	STD	323.8	12.75	329	12.97	305	12.000	305.08	12.053	9.53	0.375		
		40					300	11.838	304.72	11.999	10.31	0.406		
		XS					298.5	11.750	300.54	11.834	12.70	0.500		
		60					295	11.625	297.79	11.725	14.27	0.562		
		80					289	11.374	292.17	11.505	17.48	0.688		
		100					281	11.062	285.24	11.232	21.44	0.844		
		120					273	10.750	278.31	10.969	25.40	1.000		
350	14	STD	355.6	14.00	362	14.25	336.5	13.250	337.88	13.303	9.53	0.375		
		40					333.5	13.124	335.06	13.182	11.13	0.438		
		XS					330	13.000	332.34	13.064	12.70	0.500		
		60					325.5	12.812	328.15	12.920	15.09	0.594		
		80					317.5	12.500	321.22	12.648	19.05	0.750		
		100					308	12.124	312.86	12.318	23.83	0.938		
		120					300	11.812	305.93	12.044	27.79	1.094		
140					292	11.500	299.00	11.771	31.75	1.250				
160					284	11.188	292.07	11.490	35.71	1.406				



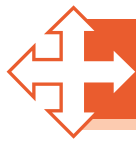


# Buttwelding end dimensions ASME B16.25

Nominal Pipe Size		Schedule No. [Note(1)]	O.D. at Welding Ends				B		C[Note(3)]		T	
			Wrought or Fabricated Components, A[Note(1)]		Cast Steel Valves, A[Note(2)]							
DN	NPS		mm	in	mm	in	mm	in	mm	in	mm	in
400	16	STD	406.4	16.00	413	16.25	387.5	15.250	388.68	15.303	9.53	0.375
		40					381	15.000	383.14	15.084	12.70	0.500
		60					373	14.688	378.21	14.811	18.66	0.656
		80					363.5	14.312	367.84	14.482	21.44	0.844
		100					354	13.938	359.63	14.155	26.19	1.031
		120					344.5	13.562	351.18	13.826	30.96	1.219
		140					333.5	13.124	341.43	13.422	36.53	1.438
		160					325.5	12.812	334.50	13.170	40.49	1.594
450	18	STD	457.2	18.00	464	18.28	438	17.250	439.48	17.303	9.53	0.375
		XS					432	17.000	433.94	17.084	12.70	0.500
		40					428.5	16.876	431.19	16.975	14.27	0.562
		60					419	16.500	422.82	16.648	19.05	0.750
		80					408.5	16.124	414.48	16.318	23.83	0.938
		100					398.5	15.688	406.78	15.938	29.36	1.156
		120					387.5	15.250	398.03	15.553	34.93	1.375
		140					379	14.876	388.77	15.226	39.67	1.562
500	20	STD	508.0	20.00	516	20.31	489	19.250	490.28	19.303	9.53	0.375
		XS					482.5	19.000	484.74	19.084	12.70	0.500
		40					478	18.812	480.55	18.920	15.09	0.594
		60					467	18.376	470.88	18.538	20.62	0.812
		80					458.5	17.938	461.13	18.155	26.19	1.031
		100					443	17.438	450.02	17.717	32.54	1.281
		120					432	17.000	440.29	17.334	38.10	1.500
		140					419	16.500	428.17	16.896	44.45	1.750
550	22	STD	558.8	22.00	567	22.34	508	19.962	510.44	19.813	9.53	0.375
		XS					501	19.700	503.54	19.813	12.70	0.500
		40					494	19.449	496.86	19.553	22.23	0.875
		60					481	18.938	483.75	19.026	27.94	1.093
		80					468.5	18.438	471.63	18.553	34.93	1.375
		100					452	17.812	456.52	18.115	41.28	1.625
		120					439	17.250	444.41	17.678	47.83	1.875
		140					425.5	16.750	430.30	17.240	53.98	2.125
600	24	STD	609.6	24.00	619	24.38	590.5	23.250	591.88	23.303	9.53	0.375
		XS					584	23.000	586.34	23.084	12.70	0.500
		30					581	22.876	583.58	22.975	14.27	0.562
		40					574.5	22.624	577.97	22.755	17.48	0.688
		60					560.5	22.062	565.49	22.283	24.61	0.969
		80					547.5	21.562	554.38	21.826	30.96	1.219
		100					532	20.938	540.49	21.280	38.89	1.531
		120					517.5	20.376	528.03	20.788	46.02	1.812
650	28	10	660.4	26.00	670	26.38	645.5	25.376	646.50	25.413	7.92	0.312
		20					635	25.000	637.14	25.084	12.70	0.500
700	28	10	711.2	28.00	721	28.38	695.5	27.376	696.30	27.413	7.92	0.312
		20					686	27.000	687.94	27.084	12.70	0.500
		30					679.5	26.750	682.37	26.865	15.88	0.625
750	30	10	762.0	30.00	772	30.38	749	29.376	747.10	29.413	7.92	0.312
		20					736.5	29.000	738.74	29.084	12.70	0.500
		30					730	28.750	733.17	28.865	15.88	0.625
800	32	10	812.8	32.00	825	32.50	797	31.376	797.00	31.413	7.92	0.312
		20					791.5	31.000	789.54	31.084	12.70	0.500
		30					781	30.750	783.97	30.865	15.88	0.625
		40					779	30.624	781.17	30.755	17.48	0.688
850	34	10	863.6	34.00	876	34.50	848	33.376	848.70	33.413	7.92	0.312
		20					838	33.000	840.34	33.084	12.70	0.500
		30					832	32.750	834.77	32.865	15.88	0.625
		40					828.5	32.624	831.97	32.755	17.48	0.688
900	36	10	914.4	36.00	927	36.50	898.5	35.376	899.00	35.413	7.92	0.312
		20					889	35.000	891.50	35.084	12.70	0.500
		30					882.5	34.750	885.57	34.865	15.88	0.625
		40					878.5	34.500	880.02	34.848	19.05	0.750

**NOTES:**

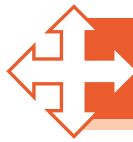
- (1) Letter designations signify
  - (a) STD=standard wall thickness
  - (b) XS=extra-strong wall thickness
  - (c) XXS=double extra-strong wall thickness
- (2) The diameters listed are not requirements. They are provided for the convenience of the user.
- (3) Internal machining for continuous backing rings for sizes DN 50(NPS 2)and smaller is not contemplated.



# Materials

Material	CHEMICAL COMPOSITIONS(%) max									MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell
WCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V0.03	485-655 (70-95)	250(36)	22	35	
WC1	0.25	0.50- 0.80	0.04	0.045	0.60	0.50	0.35	0.45- 0.65	Cu 0.50 V0.10	450-620 (65-90)	240(35)	24	35	
WC6	0.05- 0.20	0.50- 0.80	0.04	0.045	0.60	0.50	1.00- 1.50	0.45- 0.65	Cu 0.50 V0.10	485-655 (70-95)	275(40)	20	35	
WC9	0.05- 0.18	0.40- 0.70	0.04	0.045	0.60	0.60	2.00- 2.75	0.90- 1.20	Cu 0.50 V0.10	485-655 (70-95)	275(40)	20	35	
C5	0.20	0.40- 0.70	0.04	0.045	0.75	0.50	4.00- 8.50	0.45- 0.65	Cu 0.50 V0.10	620-795 (90-115)	415(60)	18	35	
C12	0.20	0.35- 0.65	0.04	0.045	1.00	0.50	8.00- 10.00	0.90- 1.20	Cu 0.50 V0.10	620-795 (90-115)	415(60)	18	35	
CA15	0.15	1.00	0.04	0.040	1.50	1.00	11.50- 14.00	0.50		620-795 (90-115)	450(65)	18	30	
LCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V0.03	450-650 (65.0-90.0)	240(35.0)	24	35	J(lbf · ft) 18(13)
LCC	0.25	1.20	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V0.03	485-655 (70.0-95.0)	275(40.0)	22	35	J(lbf · ft) 20(15)
LC2	0.25	0.50- 0.80	0.04	0.045	0.60	2.0-3.0				485-655 (70.0-95.0)	275(40.0)	24	35	J(lbf · ft) 20(15)
LC3	0.15	0.50- 0.80	0.04	0.040	0.60	3.0-4.0				485-655 (70.0-95.0)	275(40.0)	24	35	J(lbf · ft) 20(15)
CF8	0.08	1.50	0.040	0.040	2.00	8.0- 11.0	18.0- 21.0			485(70)	205(30)	35		
CF8M	0.08	1.50	0.040	0.040	1.50	9.0- 12.0	18.0- 21.0	2.0- 3.0		485(70)	205(30)	30		
CF3	0.03	1.50	0.040	0.040	2.00	8.0- 12.0	17.0- 21.0	0.50		485(70)	205(30)	35		
CF3M	0.03	1.50	0.040	0.040	1.50	9.0- 12.0	17.0- 21.0	2.0- 3.0		485(70)	205(30)	30		
CF8C	0.08	1.50	0.040	0.040	2.00	27.5- 30.5	18.0- 21.0	0.50	No ≥8xC≤1	485(70)	205(30)	30		
CN7M	0.07	1.50	0.040	0.040	1.50	0.40	19.0- 22.0	2.0- 3.0	Cu 0.40 V0.03 Nb0.02	450(62)	170(25)	35		
A105	0.35	0.60- 1.05	0.040	0.050	0.35		0.30	0.12		485(70)	250(36)	22	30	≤167
F1	0.28	0.60- 0.90	0.045	0.450	0.15- 0.35			0.44- 0.65		485(70)	275(40)	20	30	143-192
F5	0.15	0.30- 0.60	0.030	0.030	0.50	0.50	4.0- 6.0	0.44- 0.65		485(70)	275(40)	20	35	143-217
F11-1	0.05- 0.15	0.30- 0.60	0.030	0.030	0.50- 1.00		1.00- 1.50	0.44- 0.65		415(60)	205(30)	20	45	121-174
F22-1	0.05- 0.15	0.30- 0.60	0.040	0.040	0.50		2.00- 2.50	0.87- 1.13		415(60)	205(30)	20	35	≤170
F6A	0.15	1.00	0.040	0.030	1.00	0.50	11.5- 13.5			585(85)	380(55)	18	35	167-229
F304	0.08	2.00	0.040	0.030	1.00	8.0- 11.0	18.0- 20.0			515(75)	205(30)	30	50	
F304L		2.00	0.040	0.030	1.00	8.0- 13.0	18.0- 20.0			485(70)	170(70)	30	50	





# Materials

Material	CHEMICAL COMPOSITIONS(%) max.										MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell	
F316	0.08	2.00	0.040	0.030	1.00	10.0-14.0	16.0-18.0	2.00-3.00		515(75)	250(30)	30	50		
F316L	0.035	2.00	0.040	0.030	1.00	10.0-15.0	16.0-18.0	2.00-3.00		485(70)	170(25)	30	50		
F321	0.08	2.00	0.040	0.030	1.00	9.0-12.0	≥17.0		To ≥5xC<0.70	515(75)	205(30)	30	50		
F347	0.08	2.00	0.040	0.030	1.00	9.0-13.0	17.0-20.0		Nb+Ta ≥5xC<0.70	515(75)	205(30)	30	50		
410	0.15	1.00	0.040	0.030	1.00		11.50-13.50			480(70)	275(40)	20	45		
416	0.15	1.25	0.06	≥0.15	1.00		12.00-14.00							≤202	
420	Over 0.15	1.00	0.040	0.030	1.00		12.00-14.00							≤241	
D-2	3.00	0.70-1.25	0.08		1.50-3.00	18.00-22.00	1.75-2.75			400(58)	207(30)	8.0		139-202	
B7	0.37-0.49	0.85-1.10	0.035	0.040	0.15-0.35		0.75-1.20	0.15-0.25		860(125)	720(105)	16	50		
B7M	0.37-0.49	0.85-1.10	0.035	0.040	0.15-0.35		0.75-1.20	0.15-0.25		690(100)	550(80)	18	50	≤HB235 or HRB 99	
B16	0.36-0.47	0.45-0.70	0.035	0.040	0.15-0.35		0.80-1.15	0.50-0.85	VO.25-0.35	860(125)	725(105)	18	50		
B8	0.08	2.00	0.030	0.030	1.00	8.00-10.50	18.00-20.00			515(75)	205(30)	30	50	≤HB223 or HRB 96	
B8M	0.08	2.00	0.030	0.030	1.00	10.00-14.00	16.00-18.00	2.00-3.00		515(75)	205(30)	30	50	≤HB223 or HRB 96	
L7	0.38-0.48	0.75-1.00	0.040	0.040	0.15-0.35		0.80-1.10	0.15-0.25		860(125)	725(105)	16	50		
L7M	0.38-0.48	0.75-1.00	0.040	0.040	0.15-0.35		0.80-1.10	0.15-0.25		690(100)	550(80)	18	50	≤HB235 or HRB 99	
B			0.04	0.05						415-890 (80-105)		18		HRB121-212 HRC 69-95	
2H	≥0.40	1.00	0.040	0.050	0.40				Cu0.40 VO.03 Nb0.02					HRB248-352 HRC 24-38	
2HM	≥0.40	1.00	0.040	0.050	0.40									HRB248-352 HRC <22	
4	0.40-0.50	0.75-0.90	0.035	0.040	0.15-0.35			0.20-0.30						HRB248-352 HRC 24-38	
7	0.37-0.49	0.65-1.10	0.040	0.040	0.15-0.35		0.75-1.20	0.15-0.25						HRB248-352 HRC 24-38	
7M	0.37-0.49	0.65-1.10	0.040	0.040	0.15-0.35		0.75-1.20	0.15-0.25						HRB248-352 HRC ≤22	
8	0.08	2.00	0.045	0.030	1.00	5.00-10.50	18.0-20.0							HB126-300 HRC 66-105	
8M	0.08	2.00	0.045	0.030	1.00	10.0-14.0	16.0-18.0	2.00-3.00						HB126-300 HRC 66-105	





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# PROTEK



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## Forged Steel Valves



- Ball Valves
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- Check Valves
- Strainer





Protek Valve have strong technical capability . It is also equipped with many manufacturing facilities and test equipments including Ultrasonic test, Radiographic test both X-ray and gamma ray, Magnetic particle test , liquid Penetant test , Pressure test and materials analyzers which can assure the reliability and safety of the products.

Protek Valve Co., Ltd has obtained API certificates and was granted the Quality System certificate of ISO9001-2000 by TUV Rhineland. The company also obtained PED module "H" certificate issued by TUV Rhineland as European Notified Body and get the authorization to use CE marking for industrial valves , Protek valves , has adopted API ANSI ASME MSS JIS BS DIN etc standard to design , manufacturing and inspection of industrial valves , and has become one of major manufacturers and supplies of valves used in petroleum and petrochemical industrials. Protek valves have exported the industrial valve to international markets such as North and South America , Europe , Middle East and South east Asia, We also established good relationship with many international company and traders.

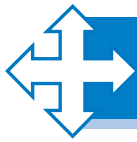
The main products manufactured at Protek is Gate , Globe , Check , Ball , Plug, Butterfly and some special requirement valves. The pressure rating is from Class 150 (PN20) to Class 2500 (PN420) and size range is from 1/8(DN3) to 36 (DN900). The main material of valves are Carbon, Alloy and Stainless steel materials, such as WCB (DIN 1.0619), CF8 (DIN1.4403) CF8M (DIN1.4408) and Titanium and Monel etc. We also can provide other special materials as per customer's requirements. Based on our company's policy "Clients first ". Protek will provide quality valves as well as best services to both domestic and foreign customers.



ISO 9001 Certificate

API 6D Certificate





# Companies

All PROTEK products are manufactured to the very highest quality considerations and under an ISO 9001 / 9002 quality control system. The locations include:

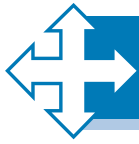
Newcastle England (Head Office)		
Bilbao Spain	Valencia Spain	Madrid Spain
Barcelona Spain	Milan Italy	Gothenburg Sweden
Bangkok Thailand		Osaka Japan

## Sales & Marketing

**PROTEK** products are sold worldwide via a network of agents and representatives. The attached map indicates the location of these agents. For further details please contact **PROTEK** UK head office.



England – Spain – France – Finland – Germany – Greece - India - Saudi Arabia - Kuwait - United Arab Emirates - Singapore – Indonesia - USA - Canada - Morocco - Mexico - Cuba – Colombia - Venezuela – Ecuador



# How to order protek direct seal valve



A :	BODY MATERIAL	FS : FORGEDSTEEL
		CS : CASTSTEEL

B :	TYPE OF VALVE	GT : GATE
		GL : GLOBE
		CP : PISTON
		CS : SWING
		YS : Y-STRAINER

C :	SIZE / CODE	1/4"	10	1 1/4"	125	3"	300
		3/8"	25	1 1/2"	150	4"	400
		1/2"	50	2"	150	5"	500
		3/4"	75	2 1/2"	150	6"	600
		1"	100				

D :	CLASS [ PRESSURE RATING ]
	150/300/600/800/900/1500/2500/ SPECIAL

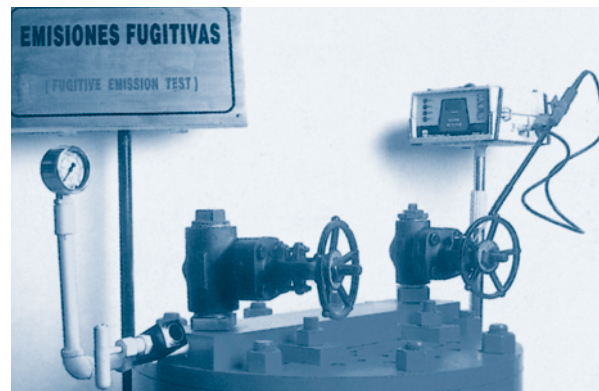
E :	BODY MATERIAL	
	FORGED STEEL	
	A105N	304
	F5	304L
	F11	316
	F22	316L

F :	TRIM MATERIAL							
	TRIM NO.	WEDGE/DISC	SEATS	STEM	TRIM NO.	WEDGE/DISC	SEATS	STEM
	1	CR13	CR13	CR13	15	HASTELLOY	HARDFACED	HASTELLOY
	5	HARDFACED	HARDFACED	CR13	16	HARDFACED	HARDFACED	18-8-3M
	8	CR13	HARDFACED	CR13	17	HARDFACED	HARDFACED	347
	9	MONEL	MONEL	MONEL	18	HARDFACED	HARDFACED	MONEL
	10	18-8-3M	18-8-3M	18-8-3M	19	TITANIUM	HARDFACED	TITANIUM
	11	MONEL	HARDFACED	MONEL	20	TITANIUM	TITANIUM	TITANIUM
	12	18-8-3M	HARDFACED	18-8-3M	21	INCONEL	INCONEL	INCONEL
	13	ALLOY 20	ALLOY 20	ALLOY 20	22	INCONEL	HARDFACED	INCONEL
	14	HASTELLOY	HASTELLOY	HASTELLOY	23	347	HARDFACED	347
					50	SPECIAL	SPECIAL	SPECIAL

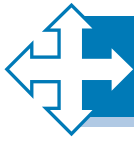
G :	SPECIAL REQUIREMENTS
	JIS / DIN / STANDARD



Manufacturing in U.K.



Fugitive Emission Test



## Forged Steel gate valves

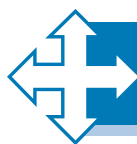
**PROTEK** valves are available in three-bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite. Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint.



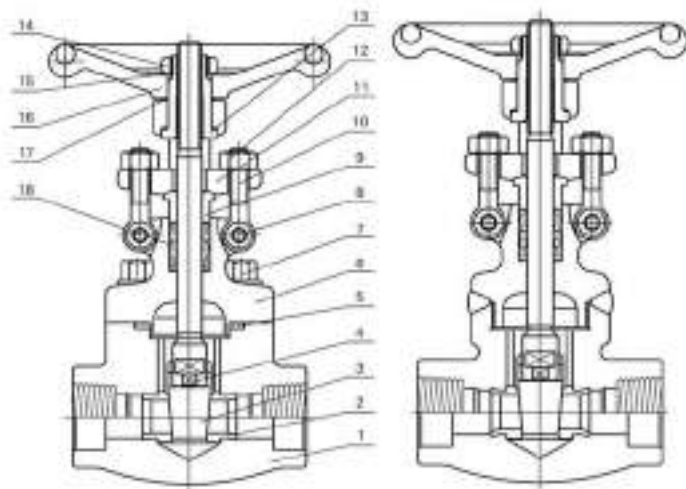
### Construction is as follows

- ※ Full port or conventional port;
- ※ Outside screw and yoke (OS & Y);
- ※ Two piece self-aligning packing gland;
- ※ Bolted bonnet & spiral wound gasket seal bonnet;
- ※ Bolted bonnet with spiral-wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
- ※ Integral backseat;
- ※ Socket weld ends to ASME B16.11;
- ※ Screwed ends (NPT) to ANSI/ASME B1.20.1.





# Female threaded and socket welded gate valves



## Application standards

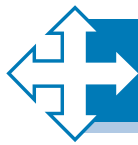
- Design and manufacture conform to:  
API 602, BS5352, ANSI B16.34;
- Connection ends conform to:  
1) Socket welded dimension conform to ANSI B16.11; JB/T1751  
2) Screw ends dimension conform to ANSI B1.20.1; JB/T7306  
3) Butt-welded conform to ANSI B16.26; JB/T12224  
4) Flanged ends conform to ANSI B16.5; JB79
- Test and inspection conform to:  
API 598, GB/T13927, JB/T9092
- Structure features:  
Bolted bonnet, outside screw and yoke  
Welded bonnet, outside screw and yoke
- Materials conform to ANIS/ASTM.
- Main materials:  
A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321;  
F51; Monel; 20 Alloy.

## Carbon steel temperature–pressure rate

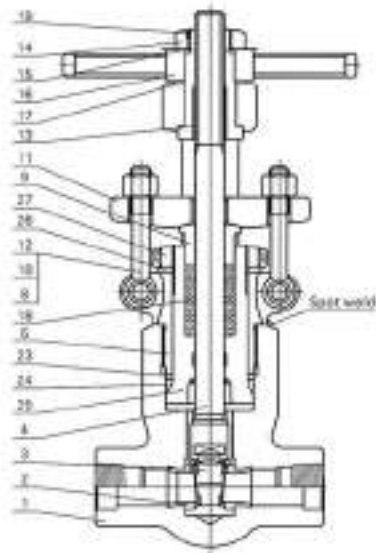
CL150–285 P.S.I @ 100° F  
 CL300–740 P.S.I @ 100° F  
 CL600–1480 P.S.I @ 100° F  
 CL800–1975 P.S.I @ 100° F  
 CL1500–3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat	410	410HF	304	410HF	304(L)	316(L)	F51
3	Wedge	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite



# Pressure sealing gate valves



## Application standards

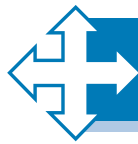
1. Design and manufacture conform to  
API 602, BS5352, ANSI B16.34
2. Connection ends conform to:
  - 1) Socket welded dimension conform to ANSI B16.11; JB/T1751
  - 2) Screw ends dimension conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to:  
API 598; GB/T13927; JB/T9092
4. Structure features:  
A threaded and pressure seal bonnet
5. Materials conform to ANIS/ASTM.
6. Main materials:  
A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F91;  
Monel; 20 Alloy.

## Carbon steel temperature-pressure rate

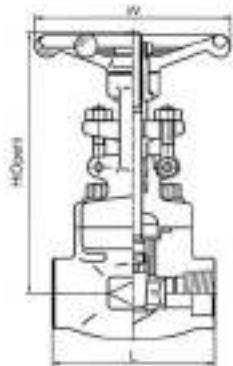
CL1500-3705 P.S.I @ 100° F  
CL2500-6170 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F91/410 HF
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F91
2	Seat	410	410HF	304	410HF	304(L)	316(L)	410HF
3	Wedge	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F6aHF
4	Stem	410	410	304	410	304(L)	316(L)	410
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F91
8	Pin	410	410	410	410	304	304	410
9	Gland	410	410	304	410	304	316	410
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8
11	Gland flange	A105	A105	LF2	F11	F304	F304	F91
12	Hex nut	2H	2H	2H	2H	B(M)	B(M)	8
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A190
17	Lubricating gasket	410	410	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
19	Stop nut	35	35	35	35	35	35	35
23	Seal gasket	420	420	304	304	304(L)	316(L)	420
24	P.S.ring	304	304	304	304	304	316	316
25	P.S.seat	420	420	304	304	304(L)	316(L)	F91
26	Nut pad	410	410	410	410	410	410	410
27	Packing nut	Cast steel	Cast steel	Cast steel	Cast steel	Stainless steel	Stainless steel	Cast steel

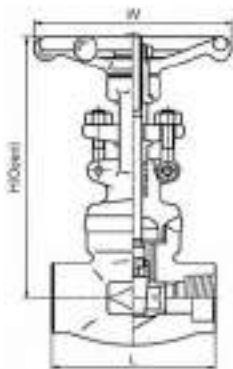


# Female threaded and socket welded gate valves



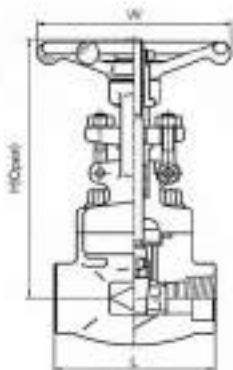
## CL800 Bolted bonnet, full port reducing port outside screw and yoke(OS & Y) Threaded, butt-welded or socket welded ends; design to API 602

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	120	140	178	180
Handwheel diameter	W	100	100	100	125	160	160	180	200	220
Height	H	161	161	163	196	223	251	290	333	370
Flow port dimension	d	8	10.5	13.5	18	24	29	36.5	45	51
Weight(Kg)		2.3	2.22	2.39	4.24	5.7	7.05	10.9	16.8	24



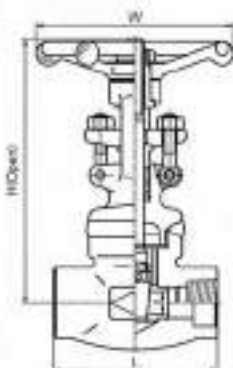
## CL800 Welded bonnet, full port reducing port outside screw and yoke(OS & Y) Threaded, butt-welded or socket welded ends; design to API 602

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	120	140	178	180
Handwheel diameter	W	100	100	100	125	160	160	180	200	220
Height	H	161	161	163	196	223	251	290	333	370
Flow port dimension	d	8	10.5	13.5	18	24	29	36.5	45	51
Weight(Kg)		1.9	1.9	2.1	3.2	5.2	6.9	10.4	15.8	22



## CL900-CL1500 Bolted bonnet, full port reducing port outside screw and yoke(OS&Y) Threaded, butt-welded or socket welded ends; design to API 602

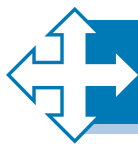
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	111	111	120	120	140	178	180	-
Handwheel diameter	W	100	125	125	160	160	180	200	220	-
Height	H	191	191	192	219	243	296	316	370	-
Flow port dimension	d	8	10.5	13.5	18	24	29	36.5	45	-
Weight(Kg)		2.4	4.4	4.3	6	7.2	11.4	16	23	-



## CL900-CL1500 Welded bonnet, full port reducing port outside screw and yoke(OS&Y) Threaded, butt-welded or socket welded ends; design to API 602

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	111	111	120	120	140	178	180	-
Handwheel diameter	W	100	125	125	160	160	160	200	220	-
Height	H	171	207	207	240	258	330	355	370	-
Flow port dimension	d	8	10.5	13.5	18	24	29	36.5	45	-
Weight(Kg)		2.3	4	4	4.8	7.1	11	16	22.8	-





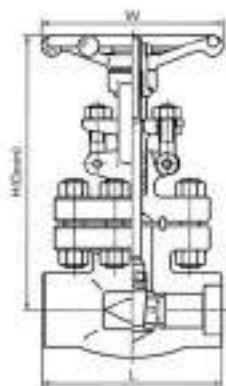
# Female threaded and socket welded gate valves



## CL2500

Welded bonnet, full port outside screw and yoke (OS & Y)  
Socket welded ends, design conform to ASME B16.34

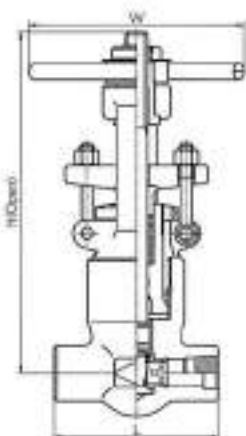
Specification(NPS)		1/4	3/8	1/2	3/4	1	1 1/4	2
Face to face	L	111	120	120	120	140		
Handwheel diameter	W	125	160	160	180	220		
Height	H	215	218	220	238	281		
Flow port dimension	d	14	14	14	19	25		
Weight(Kg)		7	8.7	8.5	11.7	17		



## CL1500-CL2500

Bolted bonnet, full port outside screw and yoke (OS & Y)  
Socket welded ends, design conform to ASME B16.34

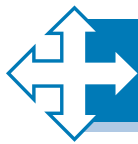
Specification(NPS)	F.P		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	CL1500	110	150	150		210	235	
		CL2500	150	150	210		235	235	
Handwheel diameter	W	CL1500	110	130	130		180	250	
		CL2500	130	130	250		300	300	
Height	H	CL1500	277	300	390		400	435	
		CL2500	293	300	390		435	435	
Flow port dimension	d	CL1500	14	17	22		35	37	
		CL2500	14	14	14		25	30	
Weight(Kg)		CL1500	5.1	11	12.1		22	37	
		CL2500	11	11.3	22.4		38	38	



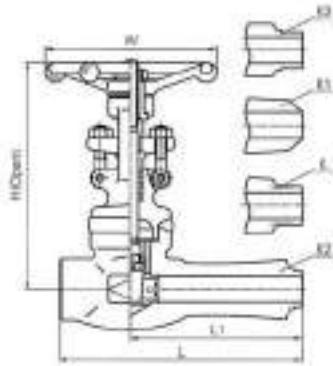
## CL1500-CL2500

Pressure seal bonnet, full port outside screw and yoke (OS & Y)  
Socket welded ends, design conform to ASME B16.34

Specification(NPS)	F.P		3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	CL900-1500	140	140	140	140	178	178	216
		CL2500	186	186	186	186	232	232	279
Handwheel diameter	W	CL900-1500	200	200	200	200	280	280	300
		CL2500	200	200	200	200	280	280	300
Height	H	CL900-1500	318	318	318	322	467	468	540
		CL2500	325	325	325	327	467	468	540
Flow port dimension	d	CL900-1500	14	14	14	19	25	30	36.5
		CL2500	14	14	14	19	25	30	36.5
Weight(Kg)		CL900-1500	11.5	11.5	10.8	10.5	19.6	21.0	55.4
		CL2500	12.3	12.3	11.6	10.8	26.0	28.4	60.0



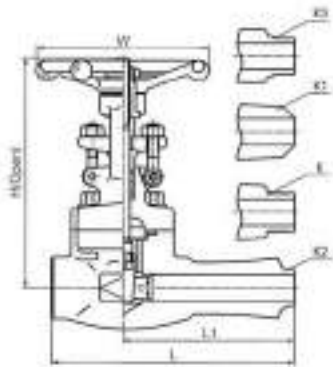
# Extended body gate valves



## CL800

Welded bonnet, reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to API 602, API 606

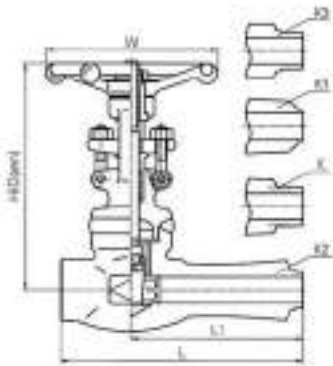
Specification(NPS)		1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	192	215	239	239	258	262
		153	153	182	182	216	216
Extended length	L1	152	170	184	184	193	197
		108	108	127	127	152	152
Handwheel diameter	W	100	100	125	160	160	180
Height	H	161	163	196	223	251	290
Flow port dimension	d	10.5	13.5	18	24	29	36.5
Weight(Kg)	K2	2.5	2.7	4.5	6.3	8.5	11.6
	K, K1, K3	2.2	2.4	3.4	6	8.0	11.4



## CL800

Bolted bonnet, reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to API 602, API 606

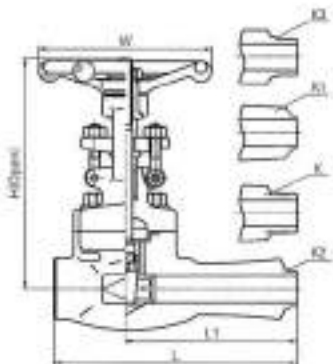
Specification(NPS)		1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	192	215	239	239	258	262
		153	153	182	182	216	216
Extended length	L1	152	170	184	184	193	197
		108	108	127	127	152	152
Handwheel diameter	W	100	100	125	160	160	180
Height	H	161	163	196	223	251	290
Flow port dimension	d	10.5	13.5	18	24	29	36.5
Weight(Kg)	K2	2.8	2.0	5.5	7	8.5	12.1
	K, K1, K3	2.4	2.5	5	6.1	7.8	11.5



## CL1500

Welded bonnet, reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to API 602, API 606

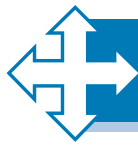
Specification(NPS)		1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	239	239	239	258	262	264
		182	182	182	216	216	264
Extended length	L1	184	184	184	193	197	189
		127	127	127	152	152	189
Handwheel diameter	W	125	125	160	160	180	200
Height	H	207	207	240	258	330	370
Flow port dimension	d	10.5	13.5	18	24	29	36.5
Weight(Kg)	K2	5.6	5.6	7.1	8.7	12.5	16.3
	K, K1, K3	5.1	5.1	6.2	8	11.7	15.7



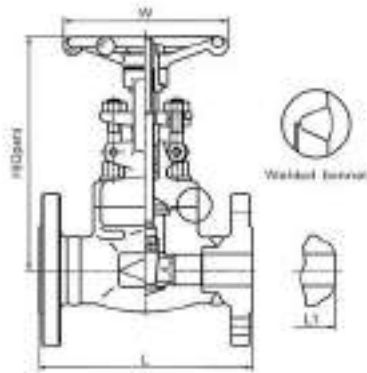
## CL1500

Bolted bonnet, reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to API 602, API 606

Specification(NPS)		1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	239	239	239	258	262	264
		182	182	182	216	216	264
Extended length	L1	184	184	184	193	197	189
		127	127	127	152	152	189
Handwheel diameter	W	125	125	160	160	180	200
Height	H	207	207	240	258	330	370
Flow port dimension	d	10.5	13.5	18	24	29	36.5
Weight(Kg)	K2	6	6	7.7	9.2	13.2	16.7
	K, K1, K3	5.7	5.7	6.5	8.2	12.3	15.9



# Forged steel flange gate valves

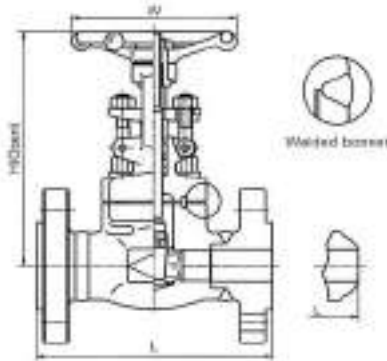


## CL150-300-600

Bolted bonnet, reducing port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to API602:BS5352

Specification(NPS)			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	CL150	L(RF)	-	-	108	117	127	140	165	178	190
	CL300	L1(BW)	-	-	140	152	165	178	190	216	241
	CL600		-	-	165	190	216	229	241	292	330
Handwheel diameter		W	-	-	100	100	125	160	160	180	200
Height	CL150	H	-	-	176	184	217	226	250	290	357
	CL300,CL600		-	-	161	163	196	226	250	290	357
Height (angle dimension)		d	-	-	10	13.5	18	24	29	36.5	45
Weight (Kg)	CL150	RF	-	-	3.4	3.98	6.12	7.2	10.4	15.5	24.5
		BW	-	-	2.8	3.3	5.4	7.1	8.2	12.5	20
	CL300	RF	-	-	3.77	4.89	7.23	9.6	12.64	18	26.2
		BW	-	-	3.5	4.4	6.8	8.1	9.2	15.4	22
	CL600	RF	-	-	4.2	5.8	8.8	12.1	15.6	19.5	32
		BW	-	-	4.5	5.1	8.2	10.5	12.4	20.1	28

If you want to order one piece body, please contract with sale department

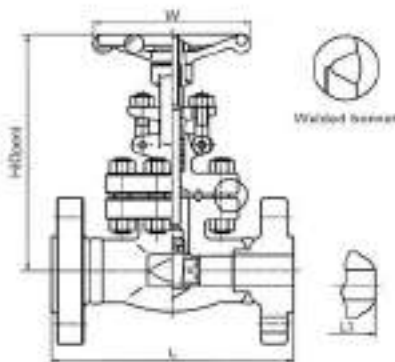


## CL900-CL1500

Welded bonnet, full port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to BS 5352

Specification(NPS)			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RF),L1(BW)		-	-	216	229	254	279	305	368
	L(RT),J1		-	-	216	229	254	279	305	371
Handwheel diameter		W	-	-	125	125	160	180	200	220
Height		H	-	-	191	192	219	257	296	316
Height (angle dimension)		d	-	-	13.5	16	24	29	36.5	45
Weight(Kg)			-	-	7.2	11.5	15.6	16.2	22.6	28.2

If you want to order one piece body, please contract with sale department



## CL2500

Bolted bonnet, full port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to ASME B16.34

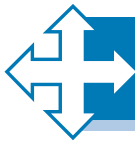
Specification(NPS)			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face (mm)	L(RF),L1(BW)		-	-	264	273	308	-	384	451
	L(RT),J1		-	-	264	273	308	-	387	454
Handwheel diameter		W	-	-	125	160	160	-	200	240
Height		H	-	-	207	240	258	-	355	370
Height (angle dimension)		d	-	-	13.5	13.5	19	-	30	36.5
Weight(Kg)			-	-	19.5	21.5	42	-	65	95

## CL2500

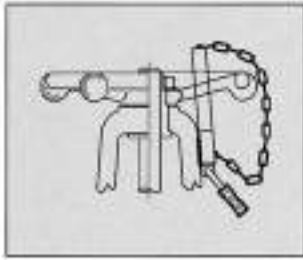
Pressure seal gate valves, full port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to ASME B16.34

Specification(NPS)			1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RF),L1(BW)		-	-	264	273	308	-	384	451
	L(RT),J1		-	-	264	273	308	-	387	454
Handwheel diameter		W	-	-	200	200	200	-	280	300
Height		H	-	-	325	325	327	-	478	540
Height (angle dimension)		d	-	-	13.5	13.5	19	-	30	36.5
Weight(Kg)			-	-	4.6	6.8	7.6	-	15	21.9

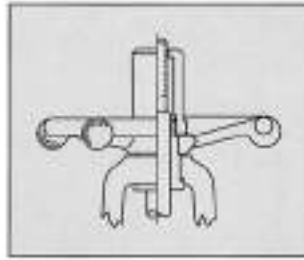




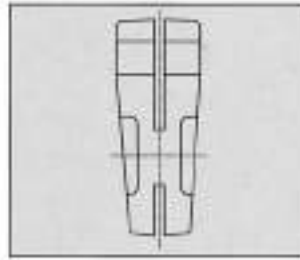
# Chosen devices and varieties of gate valves



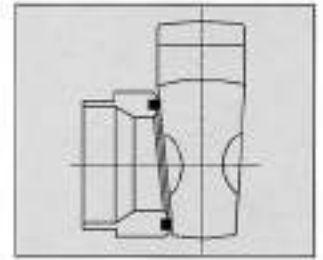
Locking device



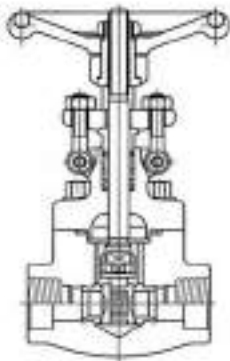
Position indicator



Flexible wedge

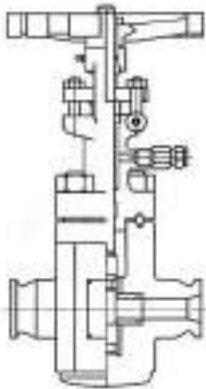


Insert PTFE seat



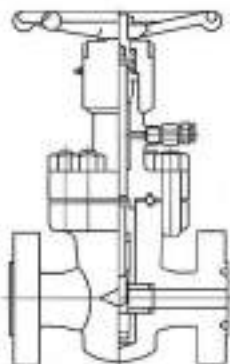
## Dynamic double-wedge gate valves

	CLASS	Materials
API 6D Outside screw and yoke	600	Carbon Steel, Cryogenic Carbon Steel/Alloy Steel, Stainless steel
	900/1500	
	2500	



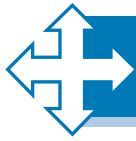
## Flat gate valves

	CLASS	Materials
API 6D Outside screw and yoke	600	Carbon Steel, Cryogenic Carbon Steel/Alloy Steel, Stainless steel
	900/1500	
	2500	



## Flat gate valves

	CLASS	Materials
API 6A Outside screw and yoke	3000	Carbon Steel, Cryogenic Carbon Steel/Alloy Steel, Stainless steel
	5000	
	10000	



## Forged steel globe valves

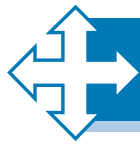
**PROTEK** valves are available in Three bonnet designs. The first design is the Bolted Bonnet, with male-Female joint, spiral wound gasket, made in F304L/graphite, Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint.



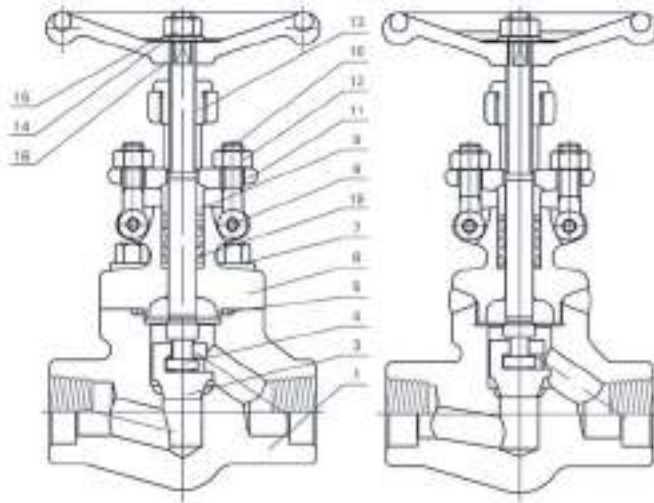
### Construction is as follows

- ※ Full port or conventional port;
- ※ Outside screw and yoke (OS&Y);
- ※ Two piece self-aligning packing gland;
- ※ Bolted bonnet with spiral-wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
- ※ Integral backseat;
- ※ Socket weld ends to ASME B16.11;
- ※ Screwed ends(NPT) to ANSI/ASME B1.20.1;
- ※ Disc can change for throttle type, needle type, ball type and check type.





# Female threaded and socket welded globe valves



## Application standards

1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1761
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials:
  - A105; LF2; F5; F11; F22; 304(L); 316(L); F347;
  - F321; F81, Monel, 20 Alloy.

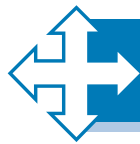
## Carbon steel temperature–pressure rate

CL150–285 P.S.I @ 100° F  
 CL300–740 P.S.I @ 100° F  
 CL600–1480 P.S.I @ 100° F  
 CL800–1975 P.S.I @ 100° F  
 CL1500–3705 P.S.I @ 100° F

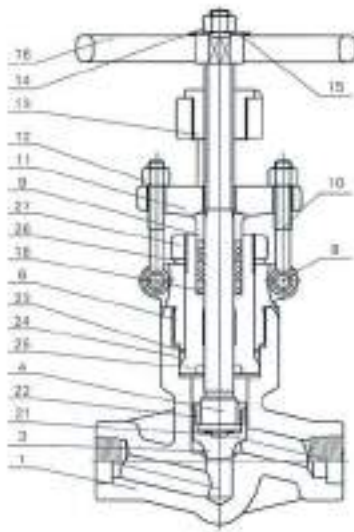
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	B(M)	B(M)	BM
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite





# Pressure sealing globe valves



## Application standards

1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 598; GB/T13927; JB/T9092
4. Structure features: A threaded and pressure seal bonnet; Y type and T type
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F91; Monel; 20 Alloy.

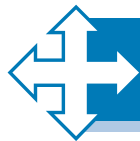
## Carbon steel temperature–pressure rate

CL1500–3705 P.S.I @ 100° F

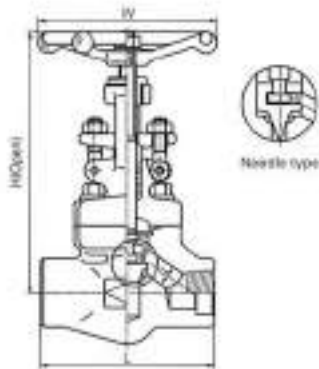
CL2500–6170 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHF	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F91/410HF
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F91+HF
3	Disc	410	410	304	410	304(L)	316(L)	410+HF
4	Stem	410	410	304	410	304(L)	316(L)	410
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F91
8	Pin	410	410	410	410	304	304	410
9	Gland	410	410	304	410	304	316	410
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8
11	Gland flange	A105	A105	LF2	F11	F304	F304	F91
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
21	Stem pad	420	420	420	420	316SH	316SH	420
22	Disc nut	410	410	410	410	304(L)	316(L)	410
23	Seal ring gasket	420	420	304	304	304(L)	316(L)	316(L)
24	P.S. ring	304	304	304	304	304	316	304
25	P.S. seat	420	420	304	304	304(L)	316(L)	F91
26	Nut pad	410	410	410	410	410	410	410
27	Draw-in stud	Cart steel	Cart steel	Cart steel	Cart steel	Stainless steel	Stainless steel	Cart steel

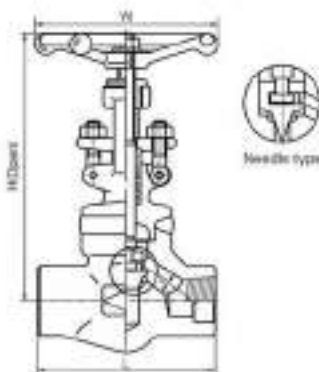


# Female threaded and socket welded globe valves



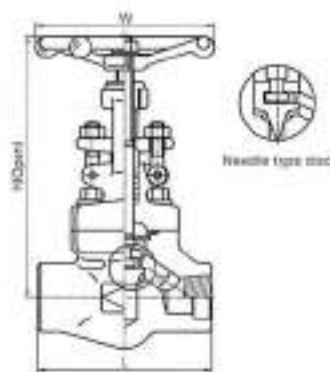
**CL800** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y) Threaded, butt-welded or socket welded ends; design to BS 5352.

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	152	172	200	
Handwheel diameter	W	100	100	100	125	160	160	180	200	
Height	H	164	164	164	203	224	260	300	355	
Height (angle dimension)	d	7	9	13	17.5	23	30	35	46	
Weight(Kg)		1.9	2.28	2.37	4.3	5.75	7.8	12.5	17.5	



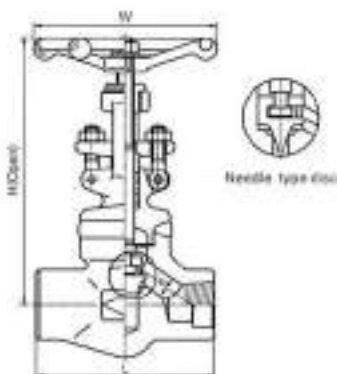
**CL800** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y) Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	152	172	200	
Handwheel diameter	W	100	100	100	125	160	160	180	200	
Height	H	164	164	164	203	224	260	300	355	
Height (angle dimension)	d	7	9	13	17.5	23	30	35	46	
Weight(Kg)		1.7	1.7	1.9	3.3	5.2	6.8	10.6	13.8	



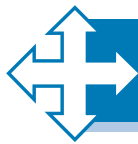
**CL900-CL1500** Bolted bonnet, full port & reducing port outside screw and yoke(OS&Y) Threaded, butt-welded or socket welded ends; design to BS 5352

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	111	111	120	152	172	200	220	-
Handwheel diameter	W	100	125	125	160	160	180	200	240	-
Height	H	171	207	207	240	258	330	355	370	-
Height (angle dimension)	d	7	12	15	20	28	32	40	45	-
Weight(Kg)		2.3	3.7	3.6	6.8	7.6	11.6	15	21.9	-

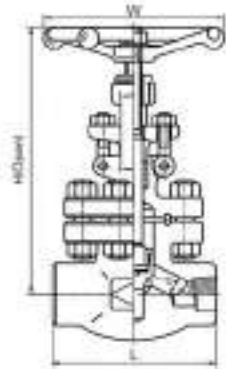


**CL900-CL1500** Welded bonnet, full port & reducing port outside screw and yoke(OS&Y) Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	111	111	120	152	172	200	220	-
Handwheel diameter	W	100	125	125	160	160	180	200	240	-
Height	H	171	207	207	240	258	330	355	370	-
Height (angle dimension)	d		12	15	20	28	32	40	45	-
Weight(Kg)		2.70	3.4	3.3	6.0	5.6	10.3	14.2	18.0	-



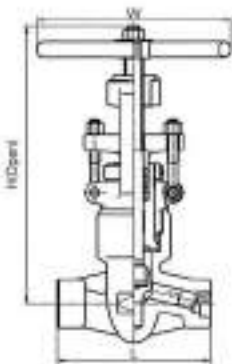
# Female threaded and socket welded globe valves



## CL900-CL1500

Bolted bonnet, full port outside screw and yoke (OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

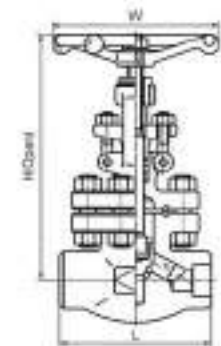
Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	110	110	150	150		210	235
Handwheel diameter	W	110	110	130	210		180	250
Height	H	227	227	300	307		40	448
Height(angle dimension)	d	9	12	15	20		32	40
Weight(Kg)		5	5	10	11.5		22	37



## CL900-CL1500

Pressure seal bonnet, full port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

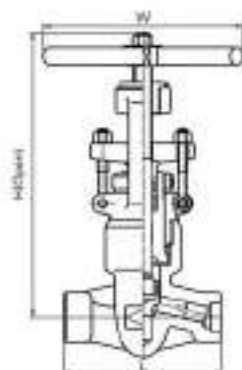
Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	140	140	140	178	178	216	
Handwheel diameter	W	200	200	200	280	280	300	
Height	H	320	320	320	440	440	490	
Height(angle dimension)	d	12	15	20	28	32	40	
Weight(Kg)		11.5	10.8	10.5	19.6	21.1	55.4	



## CL2500

Bolted bonnet, full port outside screw and yoke (OS & Y)  
Socket welded ends, design conform to ASME B16.34

Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	150	150	210		235	235	
Handwheel diameter	W	130	130	250		300	300	
Height	H	293	300	390		435	435	
Height(angle dimension)	d	11	14	19		28	35	
Weight(Kg)		10	10.3	22.4		38	38	

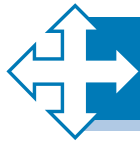


## CL2500

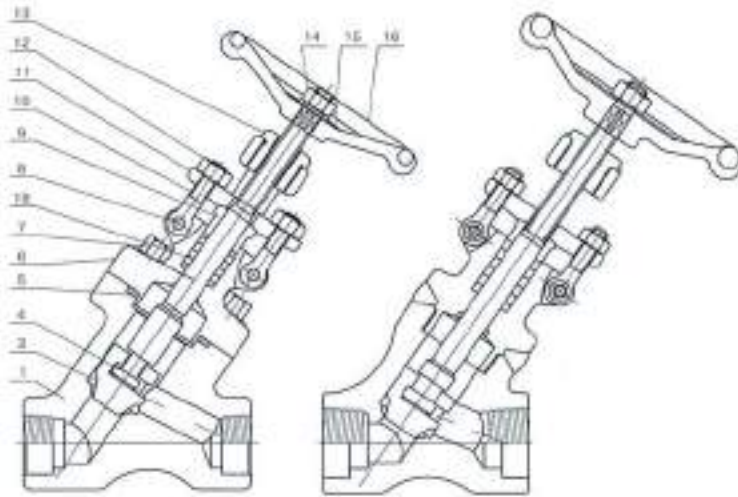
Pressure seal bonnet, full port outside screw and yoke(OS & Y)  
Socket welded ends, design conform to ASME B16.34

Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	186	186	186	232	232	279	
Handwheel diameter	W	200	200	200	280	280	300	
Height	H	375	378	380	490	490	640	
Height(angle dimension)	d	11	14	19	25	28	35	
Weight(Kg)		12.3	11.6	10.8	26.0	28.4	60	





# Female threaded and socket welded Y type globe valves



## Application standards

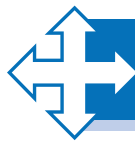
1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to:
  - 1) API 598; GB/T13927; JB/T9092
4. Structure features:
  - Boilted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
5. Materials conform to ANS/ASTM.
6. Main materials:
  - A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy; Hastelloy.

## Carbon steel temperature–pressure rate

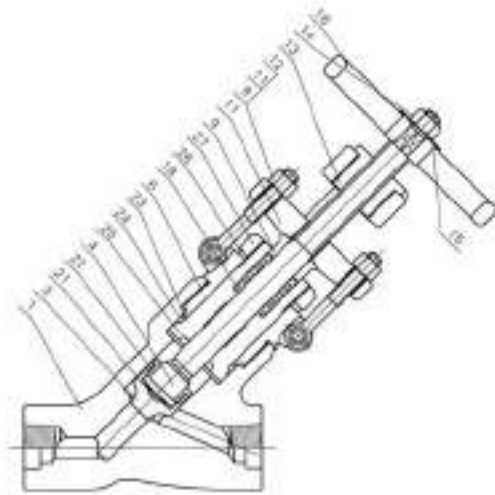
CL150–285 P.S.I @ 100° F  
 CL300–740 P.S.I @ 100° F  
 CL600–1480 P.S.I @ 100° F  
 CL800–1975 P.S.I @ 100° F  
 CL1500–3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite



# Pressure seal Y type globe valves



## Application standards

1. Design and manufacture conform to BS5352 MSS SP-11B;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to API 598; GB/T13927; JB/T9092
4. Structure features: A threaded and pressure seal bonnet; Y type and T type
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy; Hastelloy.

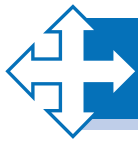
## Carbon steel temperature–pressure rate

CL1500–3705 P.S.I @ 100° F

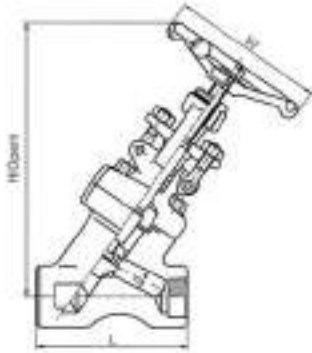
CL2500–6170 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHF5	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F91/410HF
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F91+HF
3	Disc	410	410	304	410	304(L)	316(L)	410+HF
4	Stem	410	410	304	410	304(L)	316(L)	410
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F91
8	Pin	410	410	410	410	304	304	410
9	Gland	410	410	304	410	304	316	410
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8
11	Gland flange	A105	A105	LF2	F11	F304	F304	F91
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
21	Stem pad	420	420	420	420	316SH	316SH	420
22	Disc nut	410	410	410	410	304(L)	316(L)	410
23	Seal ring gasket	420	420	304	304	304(L)	316(L)	316(L)
24	P.S.ring	304	304	304	304	304	316	304
25	P.S.seat	420	420	304	304	304(L)	316(L)	F91
26	Nut pad	410	410	410	410	410	410	410
27	Draw-in stud	Cart steel	Cart steel	Cart steel	Cart steel	Stainless steel	Stainless steel	Cart steel



# Y type globe valves



## CL800

Welded bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

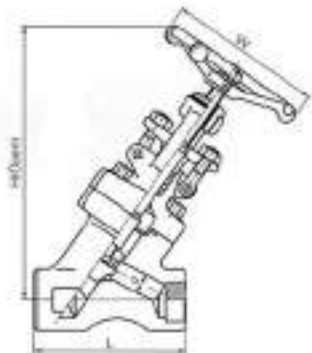
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	98	98	111	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	180	180	180	188	280	280	295	350
Height(angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		2.6	2.6	3.8	4.6	9.3	9.3	14	19.6



## CL800

Welded bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

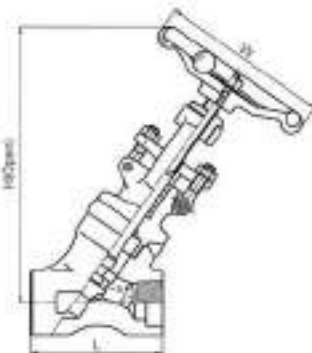
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	100	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	198	198	198	207	280	280	295	350
Height(angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		1.8	1.8	2.0	3.5	8.0	8.0	12	16



## CL900-CL1500

Bolted bonnet, full port & outside screw and yoke (OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	98	111	111	140	140	155	170	
Handwheel diameter	W	100	125	125	160	160	180	200	
Height	H	175	175	215	215	254	305	305	
Height(angle dimension)	d	9	12	15	20	28	32	40	
Weight(Kg)		2.6	4.6	4.6	9.3	9.3	14	19.6	

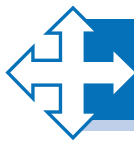


## CL900-CL1500

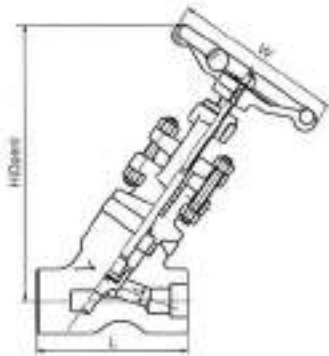
Welded bonnet, full port & outside screw and yoke (OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	100	100	140	140	155	170	
Handwheel diameter	W	100	125	125	160	160	180	200	
Height	H	175	207	207	280	280	295	350	
Height(angle dimension)	d	9	12	15	20	28	32	40	
Weight(Kg)		1.8	3.5	3.5	8.0	8.0	12	16	



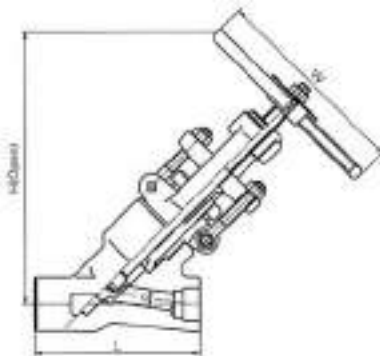


# Y type globe valves



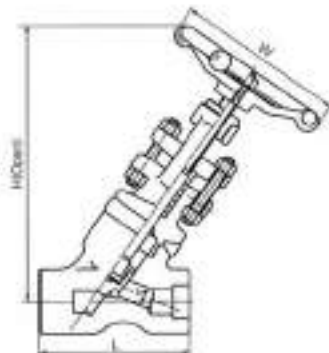
**CL2500** Welded bonnet, full port outside screw and yoke(OS & Y)  
Socket welded, design conform to ASME16.34

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	186	186	186	186	232	232	310
Handwheel diameter	W	200	200	200	200	280	280	300
Height	H	329	329	329	329	350	350	363
Height (angle dimension)	d	9	11	14	19	25	28	35
Weight(Kg)		12.3	12.3	11.6	10.8	28.0	26.4	43.8



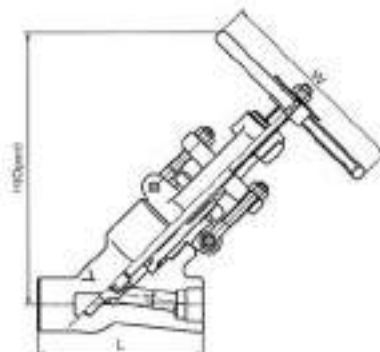
**CL2500** Pressure seal bonnet, full port outside screw and yoke(OS & Y)  
Socket welded, design conform to ASME16.34

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	186	186	186	186	232	232	310
Handwheel diameter	W	200	200	200	200	280	280	300
Height	H	333	333	333	333	406	406	524
Height (angle dimension)	d	9	11	14	19	25	28	35
Weight(Kg)		12.3	12.3	11.6	10.8	28.0	26.4	43.8



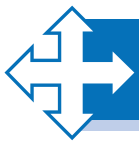
**CL4500** Welded seal bonnet, full port outside screw and yoke(OS & Y)  
Socket welded, design conform to ASME16.34

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	155	155	155	155		225	225
Handwheel diameter	W	180	180	180	180		400	400
Height	H	350	350	350	380		453	453
Height (angle dimension)	d	9	11	11	15		26	28
Weight(Kg)		9.6	9.6	9.4	10.5		34	36

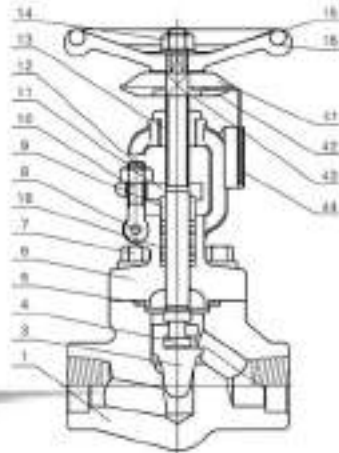


**CL4500** Pressure seal bonnet, full port outside screw and yoke(OS & Y)  
Socket welded, design conform to ASME16.34

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	200	200	200	200	250	250	330
Handwheel diameter	W	230	280	280	280	300	300	320
Height	H	400	400	400	400	460	460	540
Height (angle dimension)	d	9	11	11	15	20	26	28
Weight(Kg)		30	30	30	30	30	36	58



# Linear regulating valves



## Application standards

- Design and manufacture conform to BS5352 MSS SP-118.
- Connection ends conform to:
  - Socket welded ends conform to ANSI B16.11; JB/T1751
  - Screw ends conform to ANSI B1.20.1; JB/T7306
  - Butt-welded ends conform to ANSI B16.25; JB/T12224
  - Flanged ends conform to ANSI B16.5; JB79
- Test and inspection conform to: API 598; GB/T13927; JB/T9092
- Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
  - Disc is one piece or "V" type double or four pieces.
- Materials conform to ANSVASTM.
- Main materials:
  - A105; LF2; F5; 304(L); 316(L); F347; F321;
  - F51; Monel; 20 Alloy.

## Carbon steel temperature–pressure rate

- CL150–285 P.S.I @ 100° F
- CL300–740 P.S.I @ 100° F
- CL600–1480 P.S.I @ 100° F
- CL800–1975 P.S.I @ 100° F
- CL1500–3705 P.S.I @ 100° F

**PROTEK** regulating valves is compose of combination valves and flow control staff gauge. because equip with micrometer graduation and finger, when operator turn hand wheel around, finger would move ten percent.

**PROTEK** regulating valves equip with regulating disc to ensure flow, so it can accuracy control.

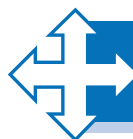
Seal facing of **PROTEK** regulating valves is stellite deposit, so seal facing is more corrosion resistant, anti-abrasive and abrasion resistance.

**PROTEK** regulating valves is manual operate, liner low regulating function, abrasion resistance.

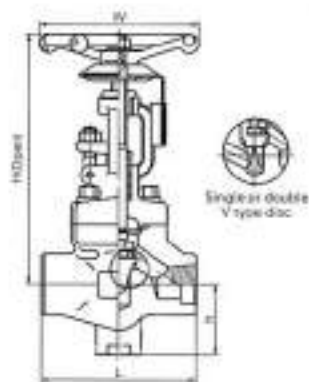
If you want to equip with locking device , please note you **PROTEK** requirement.

## Main part materials list

NO.	Part name	A105/F6a	A105/Fa6HFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
4	Stem	410	410	304	410	304(L)	316(L)	F51
5	gasket	304+	304+	304+	304+	304+	316+	316+
		flexible graphite	flexible graphite	flexible graphite	flexible graphite	flexible graphite	flexible graphite	flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
8	Pin	410	410	410	410	304	304	304
9	Gland	410	410	304	410	304	316	F51
10	Gland eyebolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
11	Gland flange	A105	A105	LF2	F11	F304	F304	F304
12	Hex nut	2H	2H	2H	2H	8(M)	8(M)	8M
13	Stem nut	410	410	410	410	410	410	410
14	Locking nut	35	35	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197	A197	A197
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
41	Index plate	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel
42	Lower plate	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel
43	Back block	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel
44	Indicative stem	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel	Cast steel



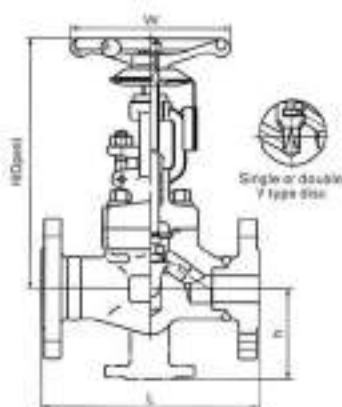
# Linear regulating valves



## CL800 Bolted bonnet, full port outside screw and yoke (OS & Y) Threaded, butt-welded or socket welded ends; design to BS5352

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	100	125	160	160	160	200
Height	H	166	166	171	207	240	258	330	355
Height (angle dimension)	SW & NPT(Rc)	40	40	40	45	50	55	60	70
Flow port dimension	d	7.0	9.0	13	17.5	23	30	35	46
Weight(Kg)		1.9	2.3	2.4	4.35	5.25	7.8	12.5	14.6
Flow coefficient Cv	Single disc	0.2	0.5	0.5	1.0	2.0	5.2	5.2	7.0
	Four part disc	0.4	1.0	1.0	2.0	4.0	10.4	10.4	14

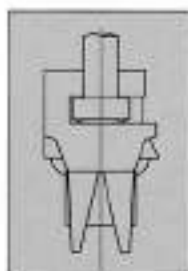
## CL150-300-600 Bolted bonnet, reducing port outside screw and yoke (OS & Y) Threaded, butt-welded or socket welded ends; design to BS5352



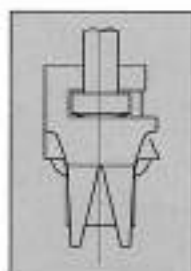
Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RF)	CL150	-	-	108	118	127	-	165	203
	L1(BW)	CL300	-	-	153	178	203	-	229	267
		CL600	-	-	165	191	216	-	241	292
Handwheel diameter	W	-	-	100	100	125	-	160	180	
Height	H	-	-	164	200	220	-	295	350	
Height (angle dimension)	SW & NPT(Rc)	-	-	40	45	50	-	60	70	
Flow port dimension	d	-	-	9.0	13	17.5	-	30	35	
Weight(Kg)		CL150	-	-	3.45	4.0	6.19	-	10.5	17
		CL300	-	-	3.8	5.1	7.2	-	13.5	19.7
		CL600	-	-	5.6	7.8	12.5	-	23.5	38.8
Flow coefficient Cv	Single disc	-	-	0.5	1.0	2.0	-	5.2	7.0	
	Four part disc	-	-	1.0	2.0	4.0	-	10.4	14	

If you want to order one piece body, please contract with our sale department

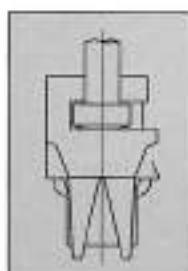
### Regulating valves operation



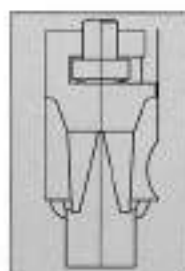
When valves full closed, disc and seat could be shut tightly.



When the disc is opened a little it allows media to flow acc. to a known quota.

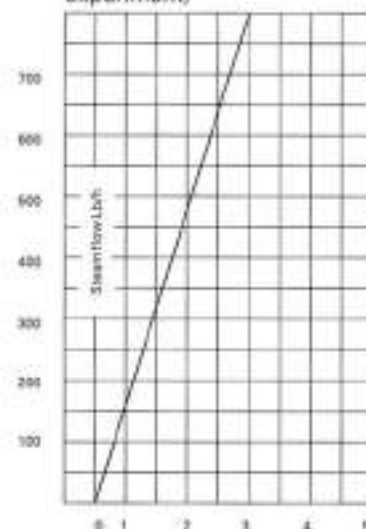


When the disc in the middle of the full lifting height, medium flow can be reduced or increased according to control scale.

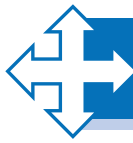


When disc in full open position, valves permit max flow to go through its port, medium flow can be reduced or acc. to control scale.

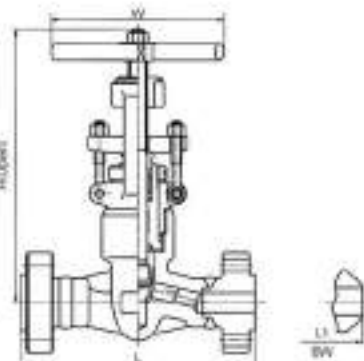
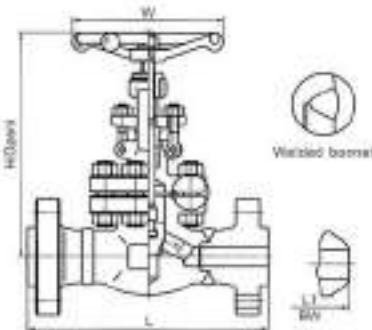
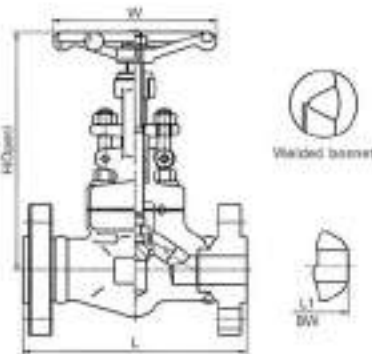
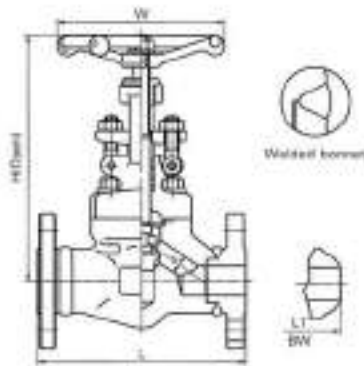
Typical stream flow chart(from experiment)







# Flange and butt-welded globe valves



## CL150-300-600

Welded bonnet, reducing port outside screw and yoke(OS & Y)  
Flange or butt-welding design to BS5352

Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	CL150	L(RF)	-	-	108	117	127	140	165	203
	CL300	L1(BW)	-	-	152	178	203	216	229	267
	CL600		-	-	165	190	216	229	241	292
Handwheel diameter	W	-	-	100	100	125	160	160	180	
Height	CL150/CL300	H	-	-	180	184	217	224	260	300
	CL600		-	-	164	164	203	224	260	300
Height(angle dimension)	d	-	-	9	13	17.5	23	30	36	
Weight (Kg)	CL150	RF	-	-	3.45	4.00	6.19	9.6	10.5	17
		BW	-	-	2.3	3.6	7.8	8.2	12.0	15.0
	CL300	RF	-	-	3.8	5.1	7.2	12	13.5	19.7
		BW	-	-	2.8	4.0	8.5	9.2	12.6	16.8
	CL600	RF	-	-	5.5	7.8	12.5	17	23.5	38.8
		BW	-	-	3.4	4.7	9.2	10.5	13.3	18.9

If you want to order one piece body, please contract with sale department

## CL900-CL1500

Welded bonnet, full port outside screw and yoke(OS & Y)  
Flange or butt-welding design to BS5352

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RF),L1(BW)	-	-	216	229	254	279	305	368
	L(RTJ)	-	-	216	229	254	279	305	371
Handwheel diameter	W	-	-	125	125	160	160	180	200
Height	H	-	-	207	207	230	180	300	355
Height(angle dimension)	d	-	-	12	15	20	28	32	40
Weight (Kg)		-	-	11	13.2	17.4	19	24.5	31

If you want to order one piece body, please contract with sale department

## CL2500

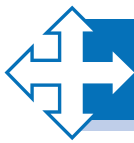
Welded bonnet, full port outside screw and yoke(OS & Y)  
Welding flange or butt-welded design conform to ASME B16.34

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RF),L1(BW)	-	-	264	273	308	-	384	451
	L(RTJ)	-	-	264	273	308	-	387	454
Handwheel diameter	W	-	-	125	160	200	-	250	240
Height	H	-	-	207	240	258	-	355	300
Height(angle dimension)	d	-	-	11	14	19	-	28	35
Weight (Kg)		-	-	19.5	21.5	42	-	65	95

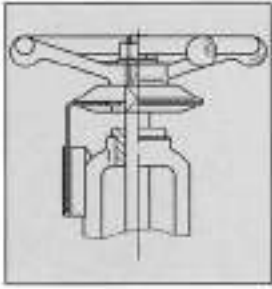
## CL2500

Pressure seal bonnet, full port outside screw and yoke(OS & Y)  
Welding flange or butt-welded design conform to ASME B16.34

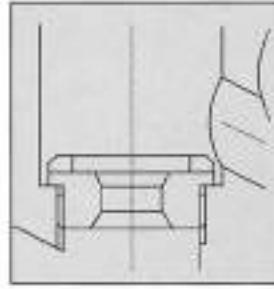
Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RF),L1(BW)	-	-	264	273	308	349	384	451
	L(RTJ)	-	-	264	273	308	349	387	454
Handwheel diameter	W	-	-	200	200	280	260	280	300
Height	H	-	-	320	320	320	440	440	490
Height(angle dimension)	d	-	-	11	14	19	25	28	35
Weight(Kg)		-	-	21.5	24.7	30.4	48.1	58.1	130



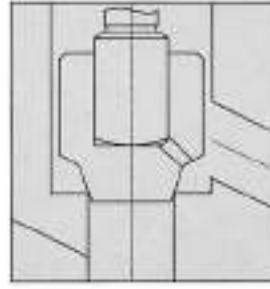
# Chosen devices and varieties of globe valves



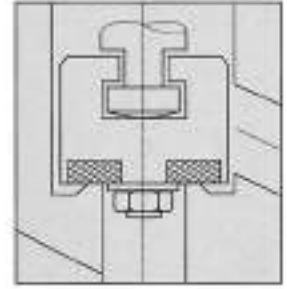
Position indicator



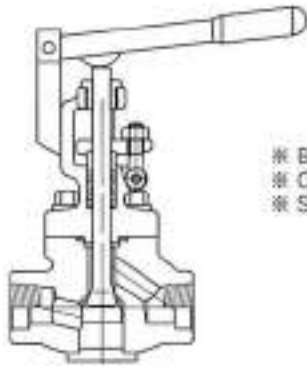
Renewable seat



Globe check valve disc



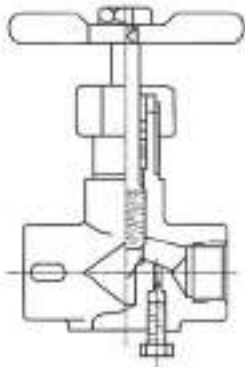
Insert PTFE seat



- ※ Bolted
- ※ OS & Y
- ※ Spring operation

## Manual-automatic shut-off valves

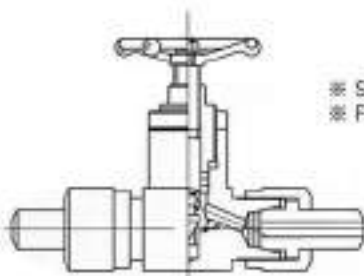
CLASS	Materials
800	Carbon Steel Alloy Steel Stainless steel
1500	
Flange and butt-welded	



- ※ Screwed bonnet
- ※ Forged structure

## Instrument valves

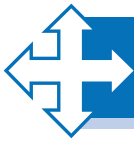
CLASS	Materials
3000	Carbon steel Stainless steel
6000	



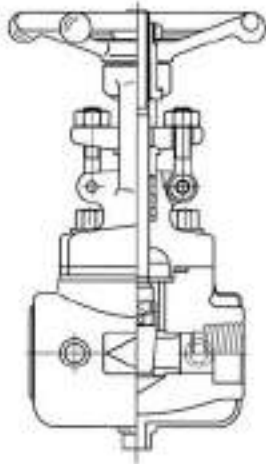
- ※ Screwed bonnet
- ※ Forged structure

## Needle valves

CLASS	Materials
800	Carbon steel Stainless steel
1500	

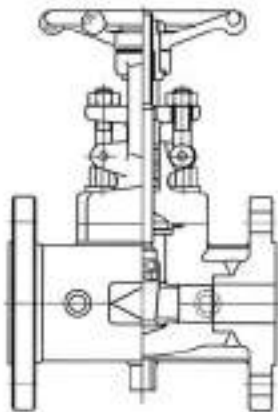


## Jacketed globe valves



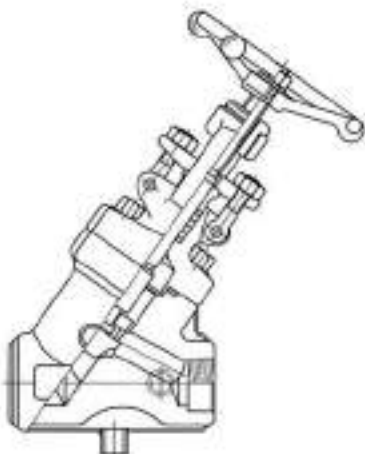
Jacketed valves  
(socket welding/screw/butt-welding)

CLASS	Material
150-2500	Cart steel, Stainless steel



Jacketed valves (flange)

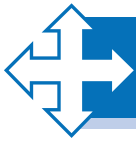
CLASS	Material
150-2500	Cart steel, Stainless steel



Y Type jacketed valves  
(socket welding/screw/butt-welding/flange)

CLASS	Material
150-2500	Cart steel, Stainless steel





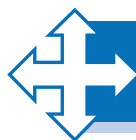
## Forged steel check valves

**PROTEK** valves are available in Three bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite. Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available. The third design is the pressure seal bonnet, with a threaded and pressure seal bonnet joint. The check valves are also available in three different design configurations. These are piston check, ball check, or swing check designs.

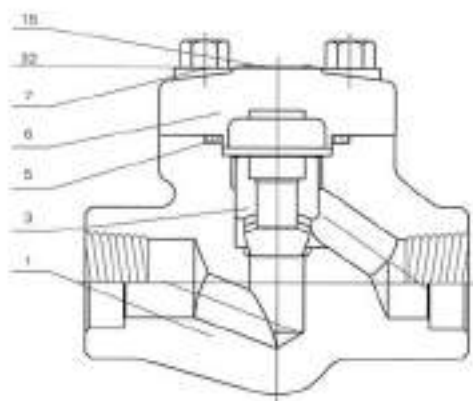


### Construction is as follows

- ※ Full port or conventional port;
- ※ Lift type check valves;
- ※ Ball type check valves;
- ※ Swing type check valves;
- ※ According to requirement equip inside spring;
- ※ Bolted bonnet with spiral-wound gasket, threaded and seal welded bonnet or threaded and pressure seal bonnet;
- ※ Socket weld ends to ASME B16.11;
- ※ Screwed ends (NPT) to ANSI/ASME B1.20.1;
- ※ Disc can change for soft seal disc and ball disc.



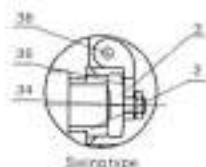
# Female threaded and socket welded check valves



Please mark in you offer if you need load spring



Balltype



Springtype

## Application standards

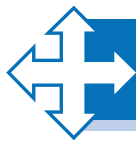
1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 698; GB/T13927; JB/T9092
4. Structure features: Bolted bonnet
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy.

## Carbon steel temperature–pressure rate

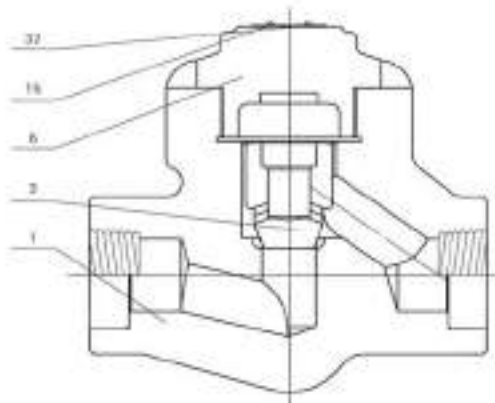
- CL150–285 P.S.I @ 100° F
- CL300–740 P.S.I @ 100° F
- CL600–1480 P.S.I @ 100° F
- CL800–1975 P.S.I @ 100° F
- CL1500–3705 P.S.I @ 100° F

## Main part materials list

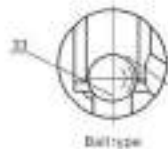
NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat ring	410	410HF	304	410HF	304(L)	316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8(M)	B8(M)	B8M
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Flevit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	430	430	304	STL	316(L)	316(L)	STL
34	Disc nut	2H	2H	8	8	8(M)	8(M)	8M
35	Hinge	410	410	304	410	316(L)	316(L)	F51
36	Pin	410	410	304	410	304(L)	316(L)	F51



# Female threaded and socket welded check valves



Please mark in you offer if you need load spring



## Application standards

1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 598; GB/T13927; JB/T9092
4. Structure features: Welded bonnet
5. Materials conform to ANSI/ASTM;
6. Main materials: A105, LF2, F5, F11, F22, 304(L), 316(L), F347, F321, F51; Monel; 20 Alloy.

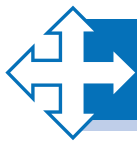
## Carbon steel temperature–pressure rate

- CL150–285 P.S.I @ 100° F
- CL300–740 P.S.I @ 100° F
- CL600–1480 P.S.I @ 100° F
- CL800–1975 P.S.I @ 100° F
- CL1500–3705 P.S.I @ 100° F
- CL2500–6170 P.S.I @ 100° F

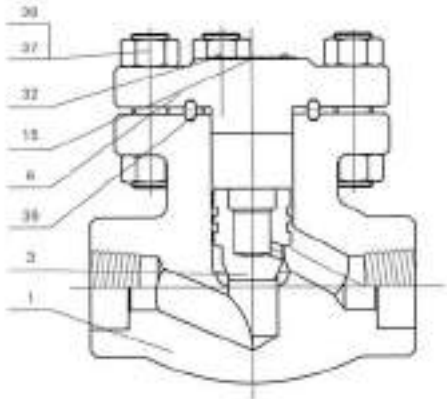
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105+HF	LF2	F11+HF	F304(L)	F316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Revit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	304	304	304	304	304(L)	316(L)	F51

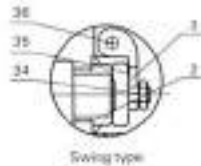
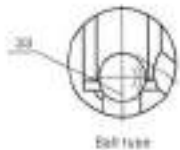




# Female threaded and socket welded check valves



Please mark in you offer if you need load spring



## Application standards

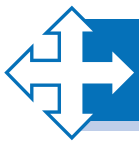
1. Design and manufacture conform to BS5352 MSS SP-11B;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to API 598; GB/T13927; JB/T9032
4. Structure features:
  - Gasket for bonnet connect adopt metal ring,
  - Boiled bonnet, Welded bonnet
5. Materials conform to ANSI/ASTM.
6. Main materials:
  - A105; LF2; F5; F11; F22; 304(L); 316(L); F347;
  - F321; F51; Monel; 20 Alloy.

## Carbon steel temperature-pressure rate

- CL150-285 P.S.I @ 100° F
- CL300-740 P.S.I @ 100° F
- CL600-1480 P.S.I @ 100° F
- CL800-1975 P.S.I @ 100° F
- CL1500-3705 P.S.I @ 100° F
- CL2500-6170 P.S.I @ 100° F

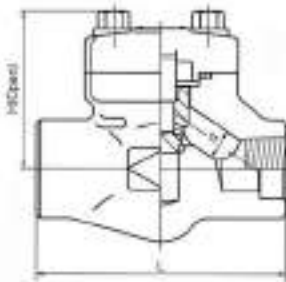
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHF5	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
2	Seat ring	410	410HF	304	410HF	304(L)	316(L)	F51
3	Disc	F6a	F6a	F304	F6aHF	F304(L)	F316(L)	F51
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Revit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	430	430	304	STL	316(L)	316(L)	STL
34	Disc nut	2H	2H	8	8	8(M)	8(M)	8M
35	Hinge	410	410	304	410	316(L)	316(L)	F51
36	Pin	410	410	304	410	304(L)	316(L)	F51
37	Screwed stud	B7	B7	L7	B16	B8(M)	B8(M)	B8(M)
38	Nut	2H	2H	8	8	8(M)	8(M)	8(M)
39	Metal ring	304	304	304	304	304(L)	316(L)	F51



# Female threaded and socket welded check valves

## CL800 Bolted bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352

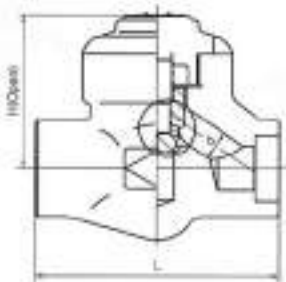


Please mark in you offer if you need load spring



Specification (NPS)	R.P		1/2	3/4	1	1 1/4	1 1/2	2		
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	Lift	79	79	92	111	120	152	172	200
		Swing	79	79	92	111	120	120	140	178
Height	H	Lift	61	61	61	78	84	84	118	132
		Swing	61	61	61	78	84	84	120	133
Height (angle dimension)	d	Lift	7	9	13	17.5	23	30	35	46
		Swing	8	10.5	13.5	18	24	29	36.5	45
Weight(Kg)		Lift	1.2	1.5	1.7	3.3	4.2	4.2	10.5	12.5
		Swing	1.4	1.5	1.7	3.3	4.2	4.2	8.5	10.9

## CL800 Welded bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352

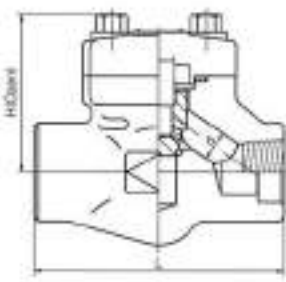


Please mark in you offer if you need load spring



Specification (NPS)	R.P		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L		79	79	92	111	120	152	172	200
Height	H		61	61	61	78	84	103	118	132
Height (angle dimension)	d		7	9	13	17.5	23	30	35	46
Weight(Kg)			1.2	1.3	1.5	3.0	3.9	6.0	10	12

## CL900-CL1500 Bolted bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352



Please mark in you offer if you need load spring



Specification (NPS)	R.P		1/2	3/4	1	1 1/4	1 1/2	2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	Lift	92	111	111	120	152	172	200
		Swing	92	111	111	120	120	140	178
Height	H	Lift	61	78	78	84	103	118	132
		Swing	61	78	78	84	101	120	133
Height (angle dimension)	d	Lift	7	12	15	20	26	32	40
		Swing	8	10.5	13.5	18	24	29	45
Weight(Kg)		Lift	1.5	3.4	3.3	4.2	6.3	10.5	12.5
		Swing	1.5	3.4	3.3	4.2	5.0	8.5	10.9

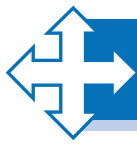
## CL900-CL1500 Welded bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352



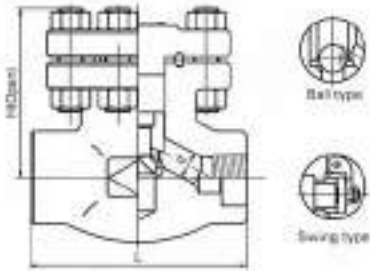
Please mark in you offer if you need load spring



Specification (NPS)	R.P		1/2	3/4	1	1 1/4	1 1/2	2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L		92	111	111	120	152	172	200
Height	H		61	78	78	84	103	118	132
Height (angle dimension)	d		7	12	15	20	28	32	40
Weight(Kg)			1.3	3.1	3.1	3.9	5.8	10.0	11.5



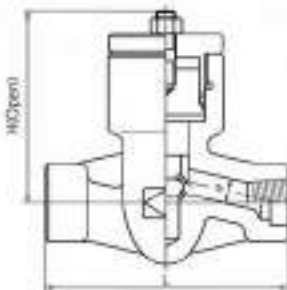
# Female threaded and socket welded check valves



## CL900-CL1500 Bolted bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352

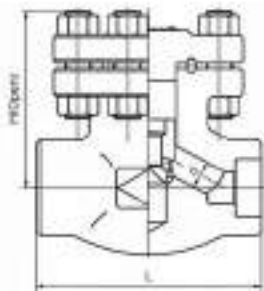
Specification (NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	110	110	110	110	150	150	210	235	
Height	H	166	166	171	207	240	258	330	355	
Height (angle dimension)	d	Lift	9	10	12	15	20	28	32	40
	Swing	8	10.5	13.5	18	24	29	36.5	45	
Weight(Kg)	Lift	2	2.1	1.9	4	5.1	7.2	12.1	14	
	Swing	1.9	2.3	2.3	4.35	5.25	7.8	12.5	14.6	

## CL900-CL1500 Pressure seal bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352



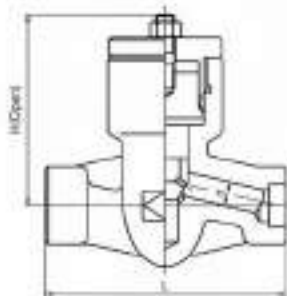
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	140	140	140	178	216	216			
Height	H	117	117	117	152	195	195			
Height (angle dimension)	d	12	15	20	28	32	40			
Weight(Kg)		7.5	7.0	6.8	18.5	20.3	22			

## CL2500 Bolted bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B16.34



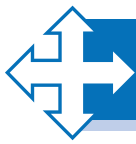
Specification (NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	150	150	150	150	210	235	235	235
Height	H	166	166	171	207	240	258	330	355
Height (angle dimension)	d	7.5	10.5	11	14	19	25	28	35
Weight(Kg)		1.9	2.3	17	46	62	73	58	85

## CL2500 Pressure seal bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B16.34

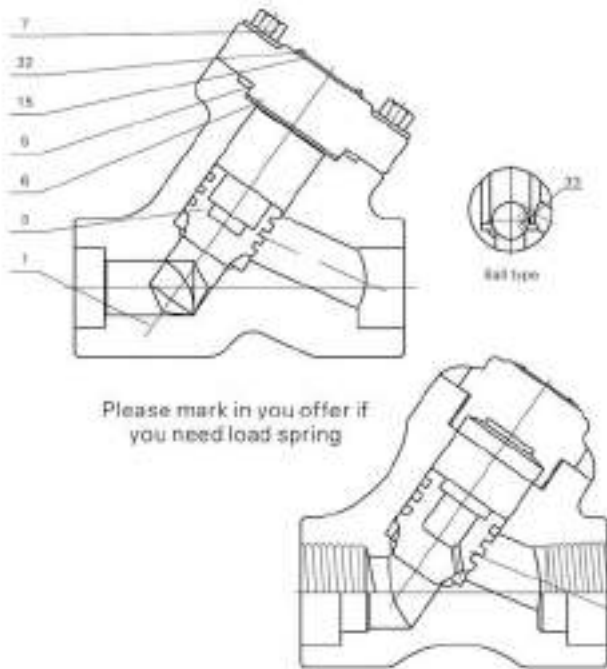


Specification (NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L			185	186	186	232	232	279
Height	H			117	117	117	152	152	195
Height (angle dimension)	d			11	14	19	25	28	35
Weight(Kg)				11.8	11	10.5	23	26.4	39





# Y type check valves



## Application standards

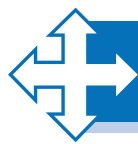
1. Design and manufacture conform to BS5352 MSS SP-118;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 698; GB/T13927; JB/T9092
4. Structure features: Bolted bonnet, Welded bonnet
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy.

## Carbon steel temperature–pressure rate

- CL1500–3705 P.S.I @ 100° F  
 CL2500–6170 P.S.I @ 100° F  
 CL4500–1111 P.S.I @ 100° F

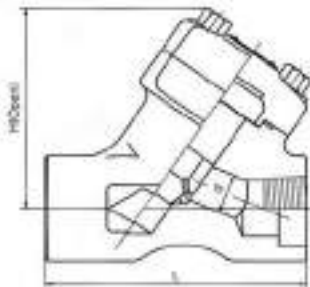
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHF	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
3	Disc	410	410HF	304	410HF	304(L)	316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B8IM	B8IM	B8M
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Revit	AL	AL	AL	AL	AL	AL	AL
33	Steel ball	430	430	304	STL	316(L)	316(L)	STL



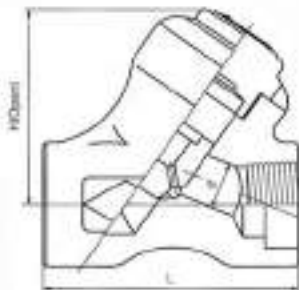
# Y type check valves

## CL800 Bolted bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352



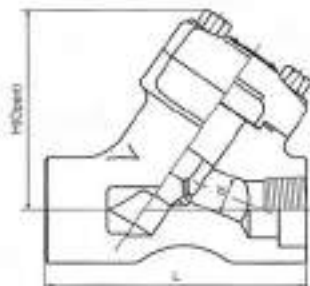
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	98	98	98	111	140	140	155	170	
Height	H	70	70	70	100	110	120	120	150	
Height(angle dimension)	d	7	10	13	17.5	23	30	35	46	
Weight(Kg)		2.2	2.2	2.1	4.2	8	8.9	10	18.6	

## CL800 Welded bonnet, full port and reducing port Threaded, butt-welded or socket welded ends; design to BS5352



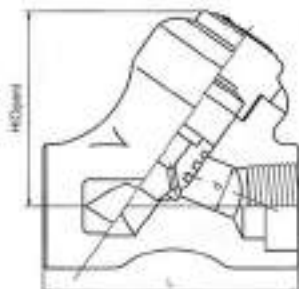
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	100	140	140	155	170	
Height	H	65	65	65	95	105	110	110	140	
Height(angle dimension)	d	7	10	13	17.5	23	30	35	46	
Weight(Kg)		1.8	1.8	2.0	3.5	8.0	8.0	12	16	

## CL900-CL1500 Bolted bonnet, full port Threaded, butt-welded or socket welded ends; design to BS5352

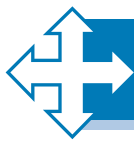


Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	111	111	140	140	155	170
Height	H	70	70	100	110	110	120	150
Height(angle dimension)	d	9	12	15	20	28	32	40
Weight(Kg)		2.1	4.2	9	8.9	10	18.6	20

## CL900-CL1500 Welded bonnet, full port Threaded, butt-welded or socket welded ends; design to BS5352

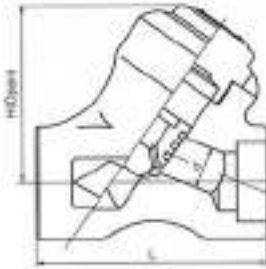


Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	92	100	100	140	140	155	170
Height	H	65	65	65	105	110	110	140
Height(angle dimension)	d	9	12	15	20	32	28	40
Weight(Kg)		2.0	3.5	3.5	8.0	12	12	18



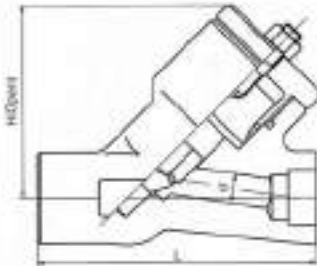
# Y type check valves

## CL2500 Welded bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B



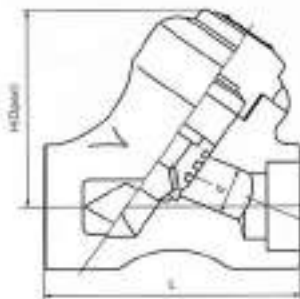
Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	186	186	186	186	232	232	310
Height	H	115	115	120	150	150	150	160
Height(angle dimension)	d	9	11	14	19	25	28	35
Weight(Kg)		11.2	11.5	10.6	10.8	25	22	39

## CL2500 Pressure seal, bolted bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B16.34



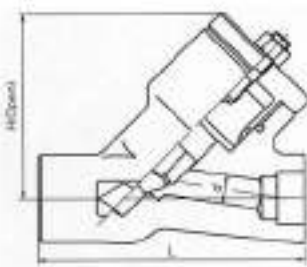
Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	186	186	186	186	232	232	310
Height	H	233	233	233	233	256	256	330
Height(angle dimension)	d	9	11	14	19	25	28	35
Weight(Kg)		11.2	11.5	10.6	10.8	25	22	39

## CL4500 Welded bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B16.34



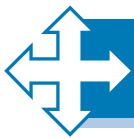
Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	155	155	155	155		225	225
Height	H	120	120	120	145		160	160
Height(angle dimension)	d	9	11	11	15		26	28
Weight(Kg)		8.7	8.7	8.7	8		16.5	16

## CL4500 Pressure seal, bolted bonnet, full port Threaded, butt-welded or socket welded ends; design to ASME B16.34



Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	200	200	200	200	250	250	330
Height	H	140	140	140	140	160	160	180
Height(angle dimension)	d	9	11	11	15	20	26	28
Weight(Kg)		20	20	20	20	26	28	46

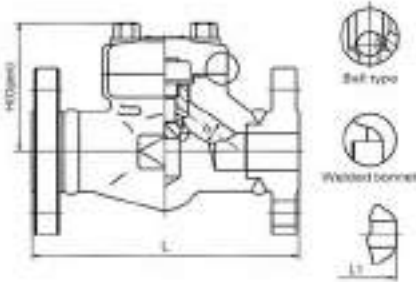




# Flange and butt-welded check valves

## CL150-300-600

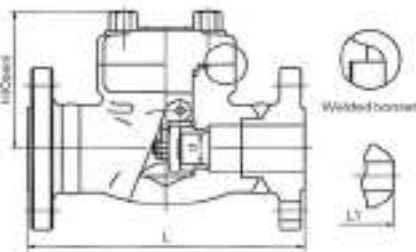
Bolted bonnet, full port  
Flange-welded or butt-welded ends; design to BS5352



Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127	140	165	203
	CL300	-	-	153	178	203	218	229	287
	CL600	-	-	165	191	216	229	241	292
Height	CL150	-	-	77	81	93	95	103	118
	CL300/600	-	-	61	78	84	101	120	133
Height(angle dimension)	CL150	-	-	10	13	17.5	23	30	35
	CL300	-	-	3.6	4.6	8.5	9.2	12.5	14.8
Weight (Kg)	CL150	-	-	3.0	3.6	7.6	8.5	11.3	13.6
	CL300	-	-	3.7	4.8	8.8	9.6	13.7	17.8
	CL300	-	-	3.2	4.3	8.0	8.6	12.7	16.2
	CL600	-	-	4.0	5.8	9.5	10.4	15.6	24.5
		-	-	3.4	5.1	8.8	9.2	14.8	22.5

## CL150-300-600

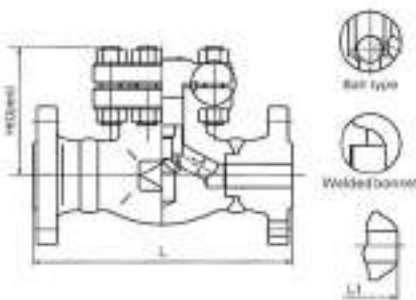
Bolted bonnet, full port  
Flange-welded or butt-welded ends; design to BS5352



Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127	140	165	203
	CL300	-	-	153	178	203	218	229	287
	CL600	-	-	165	191	216	229	241	292
Height	CL150	-	-	77	81	93	95	103	118
	CL300/600	-	-	61	78	84	101	120	133
Height(angle dimension)	CL150	-	-	10.5	13.5	18	24	29	36.5
	CL300	-	-	3.6	4.6	8.5	9.2	12.5	14.8
Weight (Kg)	CL150	-	-	3.0	3.6	7.6	8.5	11.3	13.6
	CL300	-	-	3.7	4.8	8.8	9.6	13.7	17.8
	CL300	-	-	3.2	4.3	8.0	8.6	12.7	16.2
	CL600	-	-	4.0	5.8	9.5	10.4	15.6	24.5
		-	-	3.4	5.1	8.8	9.2	14.8	22.5

## CL150-300-600

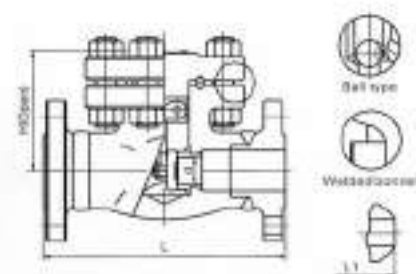
Bolted bonnet, reducing port  
Flange-welded or butt-welded ends; design to BS5352



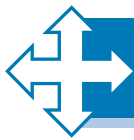
Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127	140	165	203
	CL300	-	-	153	178	203	218	229	287
	CL600	-	-	165	191	216	229	241	292
Height	CL150	-	-	77	81	93	95	103	118
	CL300/600	-	-	61	78	84	101	120	133
Height(angle dimension)	CL150	-	-	10	13	17.5	23	30	35
	CL300	-	-	3.2	3.5	4.6	5.2	7.0	16
Weight (Kg)	CL150	-	-	2.8	3.0	4.0	4.6	6.3	15
	CL300	-	-	4.8	6.1	9.1	12	18	21
	CL300	-	-	4.1	5.7	8.4	11.2	14.5	19.5
	CL600	-	-	4.8	6.3	9.3	13	16.5	22
		-	-	4.4	5.9	8.7	12.1	15.8	20.8

## CL150-300-600

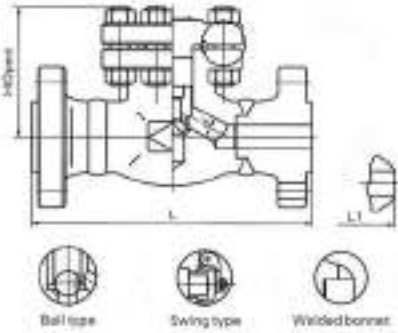
Bolted bonnet, reducing port  
Flange-welded or butt-welded ends; design to BS5352



Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127	140	165	203
	CL300	-	-	153	178	203	218	229	287
	CL600	-	-	165	191	216	229	241	292
Height	CL150	-	-	77	81	93	95	103	118
	CL300/600	-	-	61	78	84	101	120	133
Height(angle dimension)	CL150	-	-	10.5	13.5	18	24	29	36.5
	CL300	-	-	3.6	4.6	8.5	9.2	12.5	14.8
Weight (Kg)	CL150	-	-	3.0	3.6	7.6	8.5	11.3	13.6
	CL300	-	-	3.7	4.8	8.8	9.6	13.7	17.8
	CL300	-	-	3.2	4.3	8.0	8.6	12.7	16.2
	CL600	-	-	4.0	5.8	9.5	10.4	15.6	24.5
		-	-	3.4	5.1	8.8	9.2	14.8	22.5



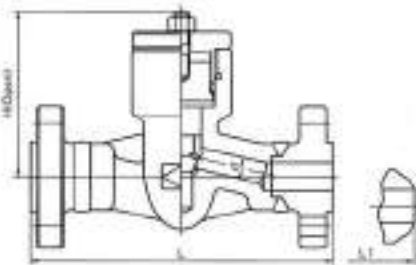
# Flange and butt-welded check valves



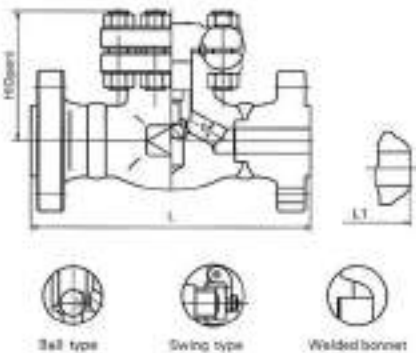
## CL900-CL1500 Bolted bonnet, full port Flange-welded or butt-welded ends; design to BS5352

Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RJ) L1(BW)	216	229	254	280	305	371	
	H	81	93	95	101	118	130	
Height (angle dimension)	d	Lift	12	15	20	28	32	40
		Swing	13.5	18	24	29	36.5	45
Weight(Kg)		Lift	5.2	6.8	10.5	28	18	24
		Swing	5.0	6.1	10.8	29	17.6	27

## CL900-CL1500 Pressure seal, bolted bonnet, full port and reducing port Flange-welded or butt-welded ends; design to BS5352

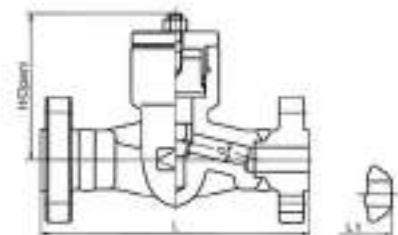


Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RJ), L1(BW)	216	229	254	280	305	371	268
	L(RTJ)	216	229	254	280	305	371	
Height	H	117	117	117	152	152	195	
Height (angle dimension)	d	Lift	12	15	20	28	32	40
		Swing	10.5	13.5	18	24	29	36.5
Weight(Kg)		Lift	17	21	28	14.5	58	85
		Swing	5.0	6.1	10.8	11.2	17.6	27



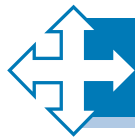
## CL2500 Bolted bonnet, full port Flange-welded or butt-welded ends; design to ASME B16.34

Specification(NPS)	F.P	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RJ), L1(BW)	264	273	308	349	384	450	
	L(RTJ)	264	273	308	352	387	454	
Height	H	81	93	95	101	118	130	
Height (angle dimension)	d	Lift	12	15	20	28	32	40
		Swing	10.5	13.5	18	24	29	36.5
Weight(Kg)		Lift	17	21	28	14.5	58	85
		Swing	5.0	6.1	10.8	11.2	17.6	27



## CL2500 pressure seal, bolted bonnet, full port Flange-welded or butt-welded ends; design to ASME B16.34

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L(RJ), L1(BW)	264	273	308	349	384	450	
	L(RTJ)	264	273	308	352	387	454	
Height	H	117	117	117	152	152	195	
Height (angle dimension)	d	Lift	12	15	20	32	28	40
		Swing	12.6	14.9	16.5	24.8	30	35
Weight(Kg)		Lift	17	21	28	14.5	58	85
		Swing	5.0	6.1	10.8	11.2	17.6	27



## Forged steel strainers

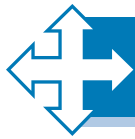
**PROTEK** Forged steel Y type strainer, bolted bonnet, gasket adopt spiral wound(304+flexible graphite)or metal ring seal.

### Construction is as follows

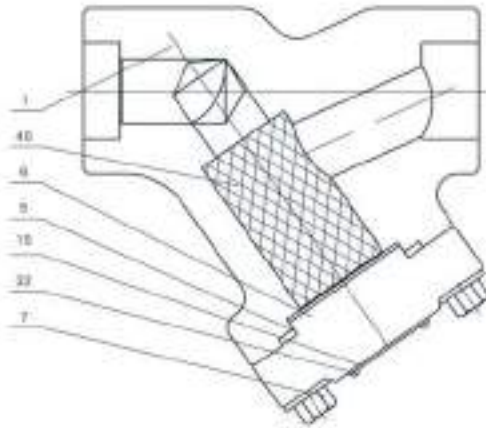
- ※ Full port or conventional port;
- ※ Bolted bonnet spiral wound gasket seal bonnet;
- ※ Socket weld ends to ASME B16.11;
- ※ Screwed ends (NPT) to ANSI/ASME B1.20.1;
- ※ Equip blow down tap and renewable strainer.







# Y type strainers



Please offer the mesh of strainer  
If you want to equip with, you contract with our sale department

## Application standards

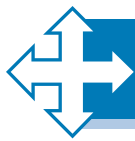
1. Design and manufacture conform to BS5352 MSS SP-11B;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to:
  - API 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet or welding bonnet
5. Materials conform to ANSI/ASTM.
6. Main materials:
  - A105; LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy.

## Carbon steel temperature–pressure rate

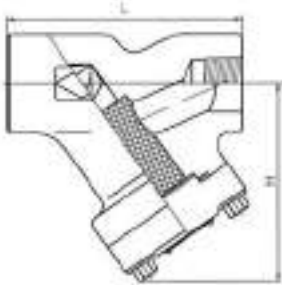
- CL150–285 P.S.I @ 100° F  
 CL300–740 P.S.I @ 100° F  
 CL600–1480 P.S.I @ 100° F  
 CL800–1975 P.S.I @ 100° F  
 CL1500–3705 P.S.I @ 100° F  
 CL2500–6170 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/Fa6HFS	LF2/304	F11/F6aHF	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	A105	A105	LF2	F11	F304(L)	F316(L)	F51
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	LF2	F11	F304(L)	F316(L)	F51
7	Bolt	B7	B7	L7	B16	B6(M)	B6(M)	B8M
15	Nameplate	AL	AL	AL	AL	AL	AL	AL
32	Rivet	H62	H62	H62	H62	H62	H62	H62
40	Filter screen	304	304	304	304	304(L)	316(L)	316(L)

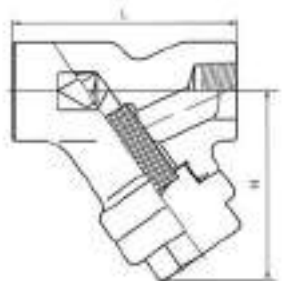


# Y type strainers



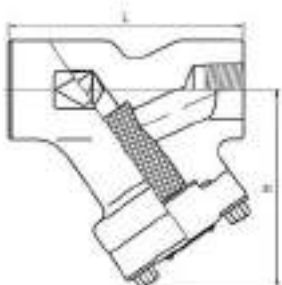
**CL800** Bolted bonnet, full port and reducing port  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	98	98	111	140	140	155	170
Height	H	70	70	70	100	110	120	120	150
Height(angle dimension)	d	7	9	13	17.5	30	30	35	46
Weight(Kg)		2.2	2.2	2.1	4.2	8.8	8.9	10	18.6



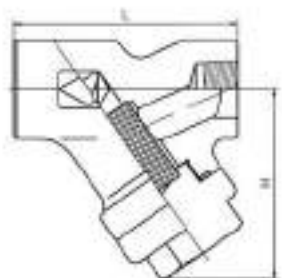
**CL800** Bolted bonnet, full port and reducing port  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	100	140	140	155	170
Height	H	65	65	65	96	105	110	110	140
Height(angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		1.8	1.8	2.0	3.5	9	8.0	12	16



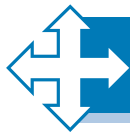
**CL900-CL1500** Bolted bonnet, full port  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	111	111	140	140	155	170
Height	H	70	70	100	110	120	120	150
Height(angle dimension)	d	9	12	15	20	28	32	40
Weight(Kg)		2.1	4.2	9	8.9	10	18.6	20



**CL900-CL1500** Bolted bonnet, full port  
Threaded, butt-welded or socket welded ends; design to BS5352

Specification (NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	92	100	100	140	140	155	170
Height	H	65	65	95	105	110	110	140
Height(angle dimension)	d	9	12	15	20	28	32	40
Weight(Kg)		2.0	3.5	8.0	8.0	12	16	18



## Forged steel cryogenic valves

**PROTEK** cryogenic valves are available in two bonnet designs.

The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite. Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available.

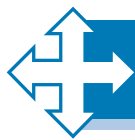
The cryogenic valves are available in gate and globe design configurations. Valves are designed with an extended bonnet for use in cold services to 196 degrees C (-320 degrees F).



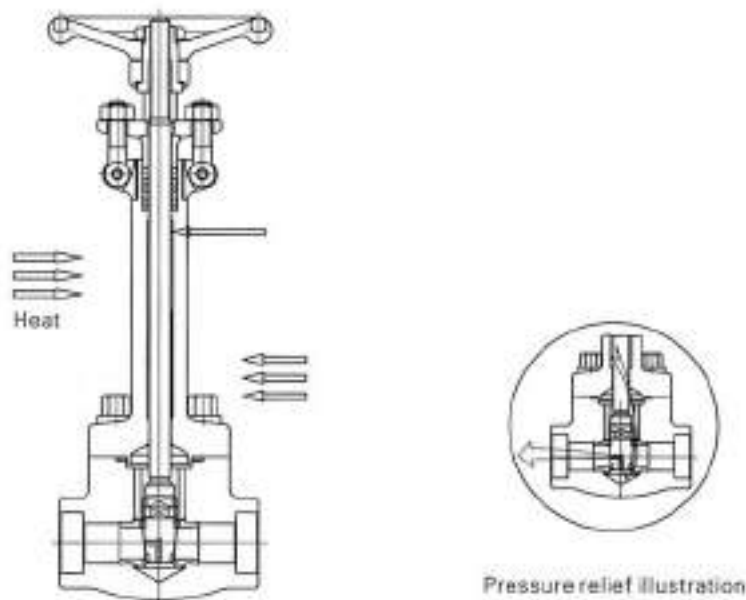
### Construction is as follows

- ※ Full port or conventional port;
- ※ Outsied screw and yoke (OS&Y);
- ※ Extended bonnet;
- ※ Self-centering gland and flange;
- ※ Bolted bonnet with spiral-wound gasket sealing bonnet;
- ※ Threaded with full welding seal bonnet;
- ※ Integral backseat;
- ※ Socket welded ends to ASME B16.11;
- ※ Screwed ends(NPT) to ANSI/ASME B1.20.1.





# Cryogenic gate valves



## Product application

**PROTEK** has many users in cryogenic valves: through more than 20-year continuous efforts, **PROTEK** forged cryogenic gate, globe and check valves are specially designed to handle the technical problems that arise in the production, transport and storage of liquified gases such as oxygen, nitrogen, argon, natural gas, hydrogen or helium (down to  $-425\text{ F}/-254\text{ C}$ ). **PROTEK** specially adapted extended bonnet forged valves offer safe and efficient service.

## Design features

All basic design features of **PROTEK** forged steel valves outlined in this catalog are adapted to special service conditions at cryogenic temperatures.

Extended bonnets with sufficient gas column length, usually specified by customer, are supplied for all valves to keep stem packing at sufficient distance away from the cold fluid to remain functional.

Pressure releasing Hole, designed in the wedge, warrants the pressure in body chamber to be balance, even if the pressure inside the body chamber is suddenly up.

High-hard-surfaced stem hardened with nitriding remains its perfect bruise and corrosion resistance at the extreme low temperature, so as to prevent the packing from being damaged.

Overlaid Stellite 6 closure members on 1/2~2" (150 mm) valves operate with no galling in cryogenic service.



## Cryogenic test

**Purpose:** Demonstrating the perfect operating performances in model cryogenic conditions.

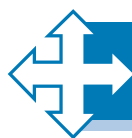
**Environment:** inside a device full of liquefied Nitrogen, temperature smaller than  $196^{\circ}\text{C}$ .

**Procedures:** After being verified at room temperature, the valve is cleaned and dried, when the temperature reached the required one, it can begin to test.

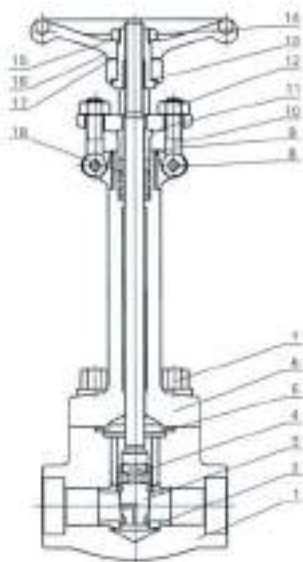
Operating performance test in cryogenic conditions,

Sealing performance tests for packing and gasket

Sealing performance test for backseat



# Cryogenic gate valves



## Application specifications

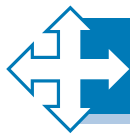
1. Design and manufacture conform to API 602 BS5352 B16.34;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 598; GB/T13927; JB/T9092
4. Structure features: Bolted bonnet, outside screw and yoke  
Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials: LF2; LF3; 304(L); 316(L); F347; F321; F51.

## Carbon steel temperature-pressure rate

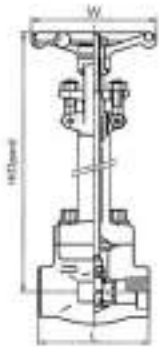
- CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F  
 CL800-1975 P.S.I @ 100° F  
 CL1500-3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	LF3/304	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	-	-	LF2	LF3	F304(L)	F316(L)	F51
2	Seat ring	-	-	304	304	304(L)	316(L)	F51
3	Wedge disc	-	-	F304	F304	F304(L)	F316(L)	F51
4	Stem	-	-	304	F304	304(L)	316(L)	F51
5	Gasket	-	-	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	-	-	LF2	LF3	F304(L)	F316(L)	F51
7	Bolt	-	-	L7	L7	B8	B8	B8
8	Pin	-	-	410	410	304	304	304
9	Gland	-	-	304	304	304	316	F51
10	Gland eyebolt	-	-	L7	L7	B8(M)	B8(M)	B8M
11	Gland flange	-	-	LF2	LF3	F304	F304	F304
12	Hex nut	-	-	2H	2H	8(M)	8(M)	8M
13	Stem nut	-	-	410	410	410	410	410
14	Locking nut	-	-	35	35	35	35	35
15	Nameplate	-	-	AL	AL	AL	AL	AL
16	Handwheel	-	-	A197	A197	A197	A197	A197
17	Lubricating gasket	-	-	410	410	410	410	410
18	Packing	-	-	Graphite	Graphite	Graphite	Graphite	Graphite

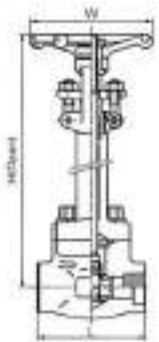


# Cryogenic gate valves



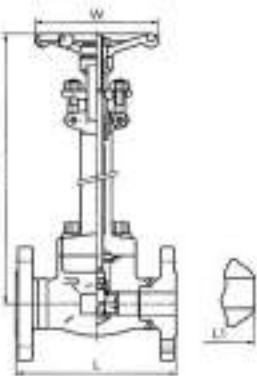
## CL800 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded, butt-welded or socket welded ends; design to API 602

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	120	140	178	180
Handwheel diameter	W	100	100	100	125	160	160	180	200	220
Height	H -196	291	291	293	340	375	400	450	490	560
	H -46	255	255	268	290	325	265	395	440	485
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29	36.5	45	51
Weight(Kg)		3.5	3.5	4.3	6.7	10.9	12	14.8	28	36



## CL1500 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded, butt-welded or socket welded ends; design to API 602

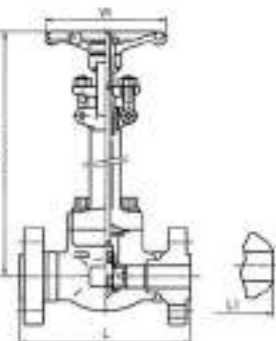
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	111	111	120	120	140	178	180
Handwheel diameter	W	100	125	125	160	160	180	200	220
Height	H -196	321	321	322	359	399	446	480	550
	H -46	285	285	287	309	343	396	420	480
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29	36.5	45
Weight(Kg)		3.5	6.7	6.7	11	12.3	15.8	28	45



## CL150-300-600 Bolted bonnet cryogenic extended bonnet, reduced port, OS&Y Flanged or butt welded ends; design to API 602

Specification(NPS)		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127	-	165	178
	CL300	L1RR, L1(BW)	-	140	153	165	-	191	218
	CL600	-	-	165	191	216	-	241	292
Handwheel diameter	W	-	-	100	100	125	160	160	180
Height	-196	H	-	321	322	359	399	446	480
	-46	H	-	285	287	309	343	396	420
Height(angle dimension)	d	-	-	10.5	13.5	18	24	29	36.5
	CL R F	-	-	5.0	5.5	8.8	13.5	15	20.3
Weight (Kg)	150 BW	-	-	-	-	-	-	-	-
	CL R F	-	-	5.8	7.3	9.7	12.5	19.5	22.3
	300 BW	-	-	-	-	-	-	-	-
CL R F	600 BW	-	-	6.0	8	11.2	13.5	21.5	24.8
	600 BW	-	-	-	-	-	-	-	-

If you want to order one piece body, please contract with sale department

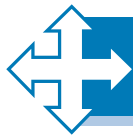


## CL1500 Bolted bonnet cryogenic extended bonnet, full port, OS&Y Flanged or butt welded ends; design to API 602

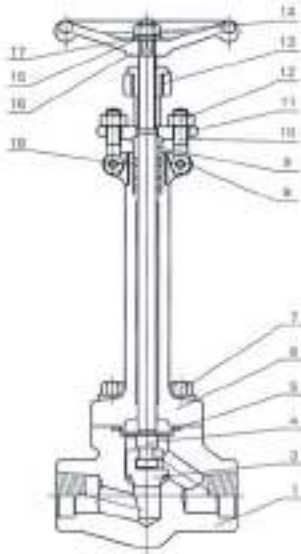
Specification(NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L		216	229	254	279	325	368
Handwheel diameter	W		125	125	160	160	180	200
Height	H -196		321	322	359	399	446	480
	H -46		285	287	309	343	396	420
Height(angle dimension)	d		10.5	13.5	16	24	29	36.5
Weight (Kg)			14	23	25.3	5.7	47	72

If you want to order one piece body, please contract with sale department





# Cryogenic globe valves



## Application specifications

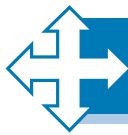
1. Design and manufacture conform to API 602 BS5352 B16.34;
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Valve test and inspection conform to: API 598, GB/T13927, JB/T9092
4. Structure features: Bolted bonnet, outside screw and yoke; Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials: LF2, LF3, 304(L), 316(L), F347, F321, F51, Monel, 20 Alloy.

## Carbon steel temperature-pressure rate

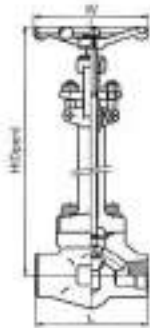
CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F  
 CL800-1975 P.S.I @ 100° F  
 CL1500-3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	LF3/304	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	-	-	LF2	LF3	F304(L)	F316(L)	F51
2	Seat ring	-	-	304	304	304(L)	316(L)	F51
3	Wedge disc	-	-	F304	F304	F304(L)	F316(L)	F51
4	Stem	-	-	304	304	304(L)	316(L)	F51
5	Gasket	-	-	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	-	-	LF2	LF3	F304(L)	F316(L)	F51
7	Bolt	-	-	L7	L7	B8	B8	B8
8	Pin	-	-	410	410	304	304	304
9	Gland	-	-	304	304	304	316	F51
10	Gland eyebolt	-	-	L7	L7	B8(M)	B8(M)	B8M
11	Gland flange	-	-	LF2	LF3	F304	F304	F304
12	Hex nut	-	-	2H	2H	B(M)	B(M)	B(M)
13	Stem nut	-	-	410	410	410	410	410
14	Locking nut	-	-	35	35	35	35	35
15	Nameplate	-	-	AL	AL	AL	AL	AL
16	Handwheel	-	-	A197	A197	A197	A197	A197
17	Lubricating gasket	-	-	410	410	410	410	410
18	Packing	-	-	Graphite	Graphite	Graphite	Graphite	Graphite

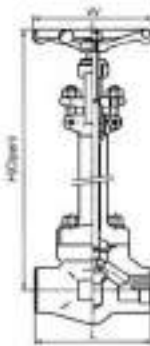


# Cryogenic globe valves



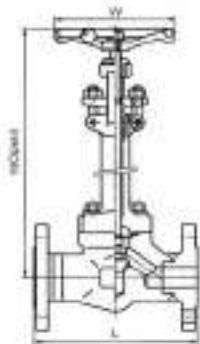
## CL800 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded or socket welded ends; design to BS5352

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	79	79	92	111	120	152	172	200	
Handwheel diameter	W	100	100	100	125	160	160	180	200	
Height(open)	H	-196°C	390	390	415	430	460	490	505	570
		-46°C	350	350	400	410	425	450	480	540
Flow port dimension	d	7.0	9.0	13	17.5	23	30	35	46	
Weight (Kg)		7.2	7.2	7.2	9.5	10.8	13.5	19.8	29	



## CL1500 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded or socket welded ends; design to BS5352

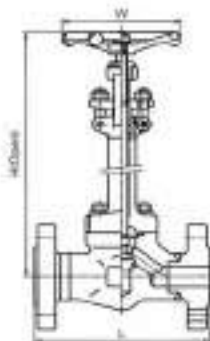
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	92	111	111	120	152	172	200	-	
Handwheel diameter	W	100	125	125	160	160	180	200	-	
Height(open)	H	-196°C	370	370	370	410	410	474	546	-
		-46°C	350	350	400	410	425	450	480	-
Flow port dimension	d	9	12	15	20	28	32	40	-	
Weight (Kg)		7.2	9.5	9.5	10.8	13.5	19.8	29	-	



## CL150-300-600 Bolted bonnet cryogenic extended bonnet, reduced port, OS&Y Flanged or butt welded ends; design to BS5352

Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RF)	-	-	108	118	127	-	165	203	
	L1(BW)	-	-	153	179	203	-	229	267	
	CL600	-	-	185	191	216	-	241	292	
Handwheel diameter	W	-	-	100	100	125	-	160	180	
Height (open)	H	-196°C	-	-	390	415	430	-	490	505
		-46°C	-	-	350	400	410	-	450	480
Flow port dimension	d	-	-	9.0	13	17.5	-	30	35	
	CL150	-	-	5	5.8	6.6	-	13.8	24.3	
	CL300	-	-	5.8	6.8	10.3	-	19.3	25.8	
Weight (Kg)	CL600	-	-	6.3	7.3	10.6	-	20.3	26.8	

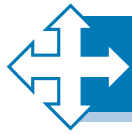
If you want to order one piece body, please contact with our sale department



## CL1500 Bolted bonnet cryogenic extended bonnet, full port, OS&Y Flanged or butt welded ends; design to BS5352

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RF)	-	-	216	229	254	280	305	368	
Handwheel diameter	W	-	-	125	125	160	160	180	200	
Height (open)	H	-196°C	-	-	370	370	410	410	474	546
		-46°C	-	-	350	400	410	425	450	480
Flow port dimension	d	-	-	12	15	20	28	32	40	

If you want to order one piece body, please contact with our sale department



## Forged steel bellow sealed valves

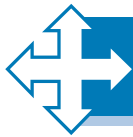
**PROTEK** Bellow Sealed valves are available in two bonnet designs. The first design is the Bolted Bonnet, with male-female joint, spiral wound gasket, made in F304L/graphite. Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available.



### Construction is as follows

- ✦ Full port or conventional port;
- ✦ Outsied screw and yoke (OS&Y);
- ✦ Self-centering gland and plate;
- ✦ Bolted bonnet with spiral-wound gasket or threaded and seal welded bonnet;
- ✦ Integral backseat;
- ✦ Socket welded end to ASME B16.11;
- ✦ Screwed ends(NPT) to ANSI/ASME B1.20.1.





# Below sealed valves

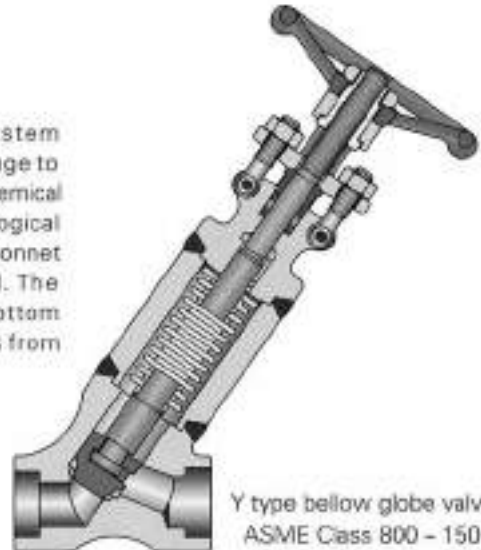
## Zero leakages

### Valves design parameters

A valve with a bellows to seal off the stem enclosure is an ideal choice whenever leakage to the atmosphere is intolerable due to toxicity, chemical corrosion, radioactivity, other health or ecological reasons. In addition, seal welding the body-bonnet seal makes the valve hermetically sealed. The bellows is welded to the stem and to the bottom of the bonnet, this kind of design originates from BTL more than 20-year experiences.



Bellow seal globe valves  
ASME Class 150 ~ 800

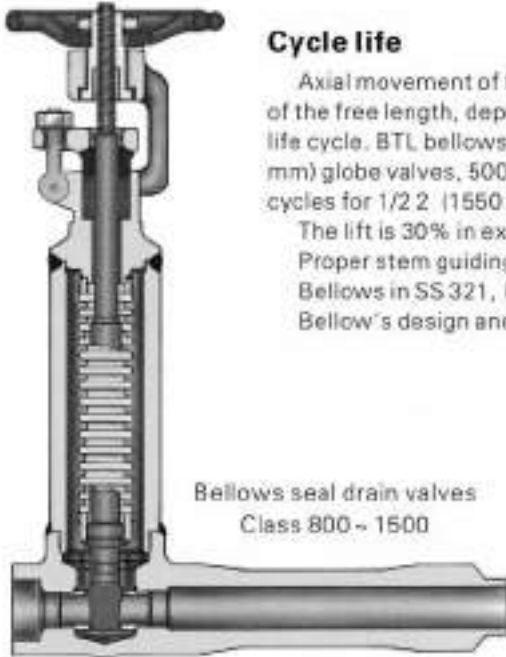


Y type bellow globe valves  
ASME Class 800 - 1500

### Cycle life

Axial movement of the bellows is limited to a maximum of 2025% of the free length, depending on pressure-temperature and desired life cycle. BTL bellows are designed for 10,000 cycles for 1/2 2(1550 mm) globe valves, 5000 cycles for bonnetless globe valves and 3000 cycles for 1/2 2 (1550 mm) gate valves.

The lift is 30% in extension and 70% in compression.  
Proper stem guiding eliminates torsion of bellows.  
Bellows in SS 321, Inconel or Hastelloy.  
Bellows design and manufacture as per MSS SP-117



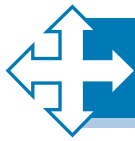
Bellows seal drain valves  
Class 800 ~ 1500

Bellows seal seal gate  
Class 800 ~ 1500  
Flange ASME Class 150 ~ 1500

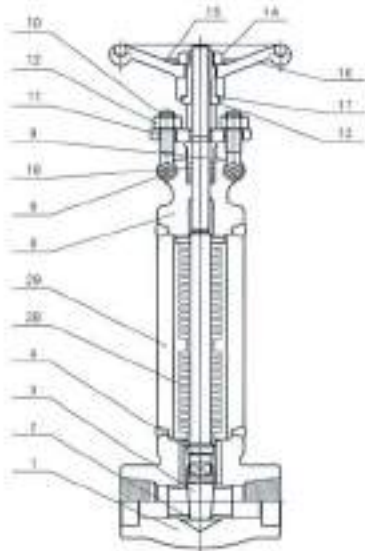


### The stem of PROTEK bellow seal valves has 3-level seals

- SS Bellow sealing;
- Packing emergency sealing;
- Backseat sealing.



# Below sealed gate valves



## Application specifications

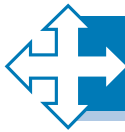
1. Design and manufacture conform to API 602; MSS-SP-117
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: API 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; 304(L); 316(L); F347; F321.
7. Bellow materials: 304; 321; 316; Inconel 625; Hastelloy C276; Monel.

## Carbon steel temperature–pressure rate

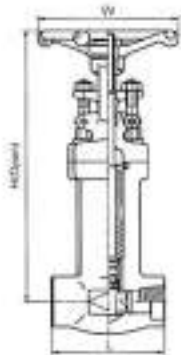
CL150–285 P.S.I @ 100° F  
 CL300–740 P.S.I @ 100° F  
 CL600–1480 P.S.I @ 100° F  
 CL800–1975 P.S.I @ 100° F  
 CL1500–3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	A105/F6aHF	F304(L)/304(L)	F316(L)/316(L)
1	Body	A105	A105	A105	F304(L)	F316(L)
2	Seat ring	410	410HF	410HF	304(L)	316(L)
3	Wedge disc	F6a	F6a	F6aHF	F304(L)	F316(L)
4	Stem	410	410	410	304(L)	316(L)
6	Bonnet	A105	A105	A105	F304(L)	F316(L)
8	Pin	410	410	410	304	304
9	Gland	410	410	410	304	316
10	Gland eyebolt	B7	B7	B7	B8(M)	B8(M)
11	Gland flange	A105	A105	A105	F304	F304
12	Hex nut	2H	2H	2H	8(M)	8(M)
13	Stem nut	410	410	410	410	410
14	Locking nut	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
28	Bellow	F321	F321	F321	F316	F321
29	Coupling pipe	A105	A105	A105	F304(L)	F316(L)



# Below sealed gate valves



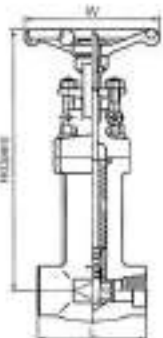
**CL800** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y).  
Threaded,butt-welded or socket welded ends;design to API602/MSS-SF

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4
Face to face	L	79	79	92	111	120	140
Handwheel diameter	W	100	100	100	125	160	160
Height	H	255	255	285	345	445	594
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29
Weight(Kg)		3.0	3.0	3.3	6.9	8.7	10.2



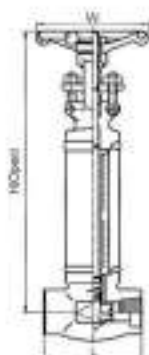
**CL800** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y).  
Threaded,butt-welded or socket welded ends;design to API 602/MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4
Face to face	L	79	79	92	111	120	140
Handwheel diameter	W	100	100	100	125	160	160
Height	H	248	548	777	335	437	537
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29
Weight(Kg)		2.9	2.9	3.2	4.6	7.2	8.9



**CL1500** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y).  
Threaded,butt-welded or socket welded ends;design to API602/MSS-SP-117

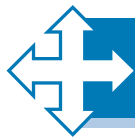
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4
Face to face	L	79	111	111	120	140	178
Handwheel diameter	W	100	125	125	160	160	160
Height	H	284	264	320	379	478	636
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29
Weight(Kg)		3.1	5.1	5.1	9.0	10.5	16.7



**CL1500** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y).  
Threaded,butt-welded or socket welded ends;design to API602/MSS-SP-117

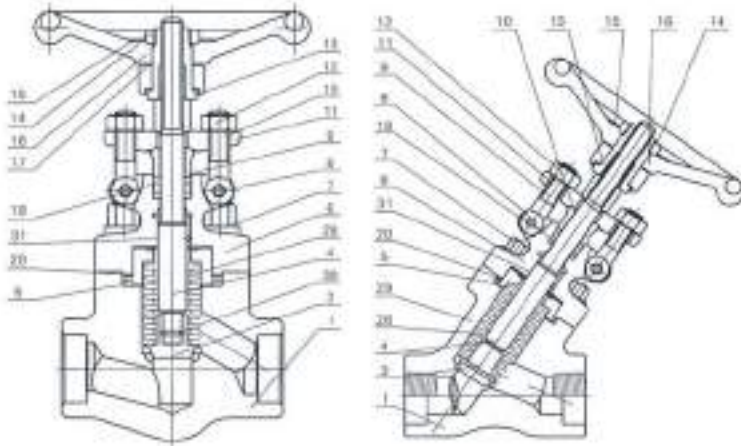
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4
Face to face	L	79	111	111	120	140	178
Handwheel diameter	W	100	125	125	160	160	160
Height	H	287	287	312	368	465	595
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29
Weight(Kg)		2.9	4.7	4.7	7.4	5.7	16





# Short pattern bellow seal globe valves

The short pattern bellow seal globe valve, agglomerating many years experiences of **PROTEK** researcher studying bellows, has been developed out through a series of complicated tests. Not only do this kind of valves own the normal bellow seal valve's functions, also have the features of a compact structure and replaceable bellow. This kind of valve will out of question display its advantages if the pipe system and/or equipment have a severe requirement to the valve's installing height.



## Application specifications

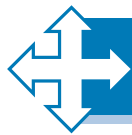
- Design and manufacture conform to BS5352; MSS-SP-117
- Connection ends conform to:
  - Socket welded ends conform to ANSI B16.11; JB/T1751
  - Screw ends conform to ANSI B1.20.1; JB/T7305
  - But-welded ends conform to ANSI B16.25; JB/T12224
  - Flanged ends conform to ANSI B16.5; JB79
- Test and inspection conform to:
  - API 598; GB/T13927; JB/T9092
- Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
- Materials conform to ANSI/ASTM.
- Main materials:
  - A105: LF2; F5; F11; F22; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy.
- Bellow materials: 304; 321; 316; Inconel 625; Hastelloy C 276; Monel.

## Carbon steel temperature-pressure rate

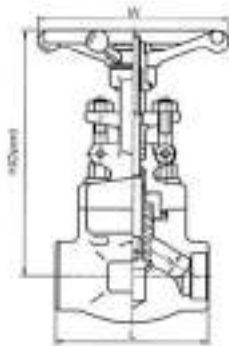
CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F  
 CL800-1975 P.S.I @ 100° F  
 CL1500-3705 P.S.I @ 100° F

## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	A105/F6aHF	F304(L)/304(L)	F316(L)/316(L)
1	Body	A105	A105+HF	A105+HF	F304(L)	F316(L)
3	Disc	F6a	F6a	F6aHF	F304(L)	F316(L)
4	Stem	410	410	410	304(L)	316(L)
5	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite
6	Bonnet	A105	A105	A105	F304(L)	F316(L)
7	Bolt	B7	B7	B7	B8(M)	B8(M)
8	Pin	410	410	410	304	304
9	Packing bushing	410	410	410	304	316
10	Eyelet bolt	B7	B7	B7	B8(M)	B8(M)
11	Packing gland	A105	A105	A105	F304	F304
12	Hex nut	2H	2H	2H	8(M)	8(M)
13	Stem nut	410	410	410	410	410
14	Locking nut	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
20	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite
28	Bellow	F321	F321	F321	F321/304L	F316/316L
30	Steel wire	304	304	304	304	316
31	Pin	304	304	304	304	316

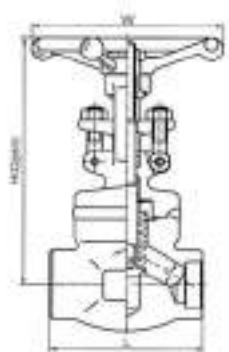


# Short pattern bellow seal globe valves



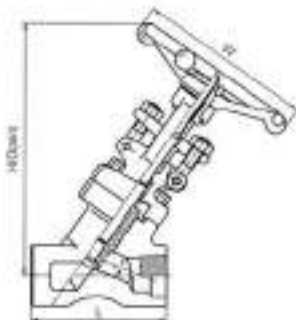
**CL800** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y). Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SI

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	162	162	164	200	220	257	295	350
Height (angle dimension)	d	7.0	9.0	13	17.5	23	30	35	46
Weight(Kg)		2.5	2.3	2.4	4.35	5.75	7.8	12.5	17.5



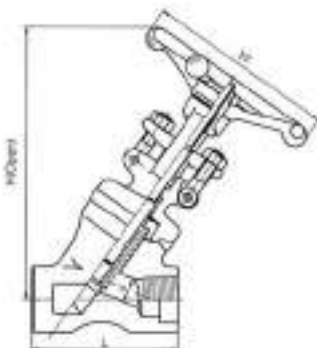
**CL800** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y). Threaded, butt-welded or socket welded ends; design to BS5352, MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	162	162	164	200	220	257	295	350
Height (angle dimension)	d	7.0	9.0	13	17.5	23	30	35	46
Weight(Kg)		1.8	1.7	1.9	3.3	5.2	6.6	10.6	13.8



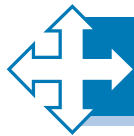
**CL800** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y). Threaded, butt-welded or socket welded ends; design to BS5352, MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	98	98	111	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	180	180	180	188	280	280	295	350
Height (angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		2.6	2.6	3.8	4.6	9.3	9.3	14	19.6

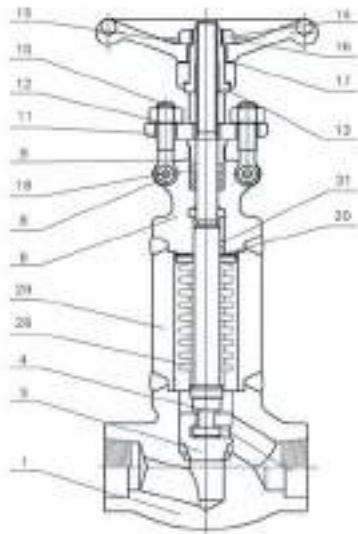


**CL800** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y). Threaded, butt-welded or socket welded ends; design to BS5352, MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	100	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	198	198	198	207	280	280	295	350
Height (angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		1.8	1.8	2.0	3.5	8.0	8.0	12	16



# Bellow sealed globe valves



## Application specifications

1. Design and manufacture conform to BS5352; MSS-SP-117
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to:
  - API 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials:
  - A105; 304(L); 316(L); F347; F321.
7. Bellow materials: 304; 321; 316; Inconel 625; Hastelloy C 276; Monel.

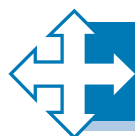
## Carbon steel temperature-pressure rate

- CL150-285 P.S.I @ 100° F
- CL300-740 P.S.I @ 100° F
- CL600-1480 P.S.I @ 100° F
- CL800-1975 P.S.I @ 100° F
- CL1500-3705 P.S.I @ 100° F

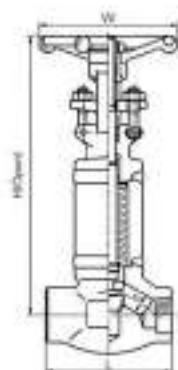
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	A105/F6aHF	F304(L)/304(L)	F316(L)/316(L)
1	Body	A105	A105+HF	A105+HF	F304(L)	F316(L)
3	Disc	F6a	F6a	F6aHF	F304(L)	F316(L)
4	Stem	410	410	410	304(L)	316(L)
6	Bonnet	A105	A105	A105	F304(L)	F316(L)
8	Pin	410	410	410	304	304
9	Gland	410	410	410	304	316
10	Gland eyebolt	B7	B7	B7	B8(M)	B8(M)
11	Gland flange	A105	A105	A105	F304	F304
12	Hex nut	2H	2H	2H	8(M)	8(M)
13	Stem nut	410	410	410	410	410
14	Locking nut	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
28	Bellow	F321	F321	F321	F316	F316L
29	Coupling pipe	A105	A105	A105	A304(L)	A316(L)
31	Pin	304	304	304	304	316





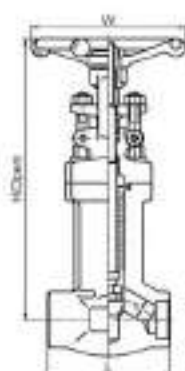
# Bellow sealed globe valves



## CL800

Welded bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

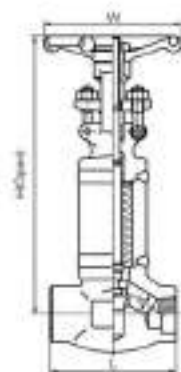
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	237	237	239	270	298	340	395	470
Height(angle dimension)	d	7.0	9.0	13	17.5	23	30	35	46
Weight(Kg)		2.6	2.5	2.7	4.4	6.7	8.8	15	18.8



## CL800

Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

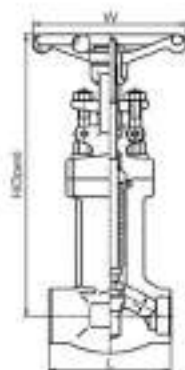
Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	111	120	152	172	200
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	237	237	239	270	298	340	395	470
Height(angle dimension)	d	7.0	9.0	13	17.5	23	30	35	46
Weight(Kg)		3.3	3.1	4.2	5.5	7.25	9.8	16	21



## CL1500

Welded bonnet, full port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

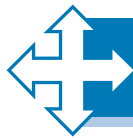
Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	92	92	111	111	120	152	172	200
Handwheel diameter	W	100	100	125	125	160	160	180	200
Height	H	290	330	380	380	400	450	520	650
Height(angle dimension)	d	7	9	12	15	20	28	32	40
Weight(Kg)		3.3	3.5	5	7.5	10	16	27	30



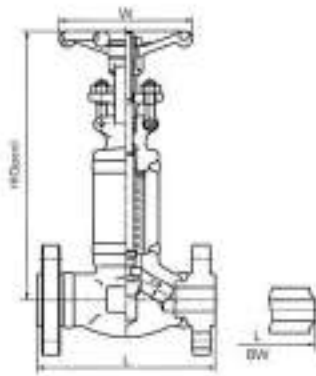
## CL1500

Bolted bonnet, full port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	92	92	111	111	120	152	172	200
Handwheel diameter	W	100	100	125	125	160	160	180	200
Height	H	290	330	380	380	400	450	520	650
Height(angle dimension)	d	7	9	12	15	20	28	32	40
Weight(Kg)		3.3	3.5	5	7.5	10	16	27	30



# Bellow sealed globe valves

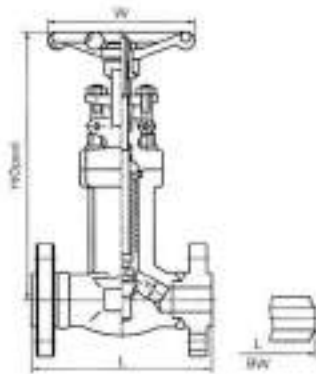


## CL150-300-600

Welded bonnet, reducing port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	CL150	-	-	108	117	127	140	165	203	
	CL300	LRF) L1(BW)	-	-	152	178	203	216	229	267
	CL600		-	-	165	190	216	229	241	252
Handwheel diameter	W	-	-	100	100	125	160	160	180	
Height	CL150/CL300	-	-	340/350	340/350	360/375	380/400	450/470	540/570	
	CL600	H	-	-	360	360	390	430	500	600
Height(angle dimension)	d	-	-	9	13	17.5	23	30	35	
Weight (Kg)	CL150 RF/BW	-	-	3.6/3	4.3/3.6	6.3/6.7	10.5/9.5	11.5/9.8	19.5/18	
	CL300 RF/BW	-	-	4/3.2	4.8/4	7.3/6.7	13/11	14.5/12	22/18	
	CL600 RF/BW	-	-	5.8/4.7	8.1/6	12.5/9	18/14	24.5/18	42/36	

If you want to order one piece body, please contract with sale department

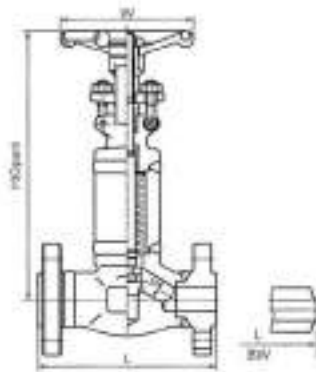


## CL150-300-600

Bolted bonnet, reducing port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	CL150	-	-	108	117	127	140	165	203	
	CL300	LRF) L1(BW)	-	-	152	178	203	216	229	267
	CL600		-	-	165	190	216	229	241	252
Handwheel diameter	W	-	-	100	100	125	160	160	180	
Height	CL150/CL300	-	-	340/350	340/350	360/375	380/400	450/470	540/570	
	CL600	H	-	-	360	360	390	430	500	600
Height(angle dimension)	d	-	-	9	13	17.5	23	30	35	
Weight (Kg)	CL150 RF/BW	-	-	4.17/3.5	4.8/4.1	7.7/6.7	12.5/11.5	14/11.5	21.5/18	
	CL300 RF/BW	-	-	4.6/3.7	5.2/4.5	8.3/7.7	14.5/12.5	16/13.5	24/20	
	CL600 RF/BW	-	-	6.3/5.2	8.6/6.5	13.5/10	19.5/15.5	26/19.5	44/36	

If you want to order one piece body, please contract with sale department

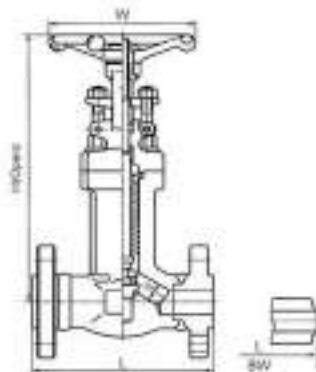


## CL1500

Welded bonnet, full port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	LRF,L1(BW)	-	-	216	229	254	280	305	368
	L1RT(J)	-	-	216	229	254	280	305	371
Handwheel diameter	W	-	-	125	125	160	160	180	200
Height	H	-	-	380	380	400	450	520	650
Height(angle dimension)	d	-	-	12	15	20	28	32	40
Weight(Kg)		-	-	11.1	11.8	14.1	16.5	23.8	37.5

If you want to order one piece body, please contract with sale department

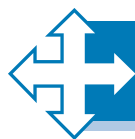


## CL1500

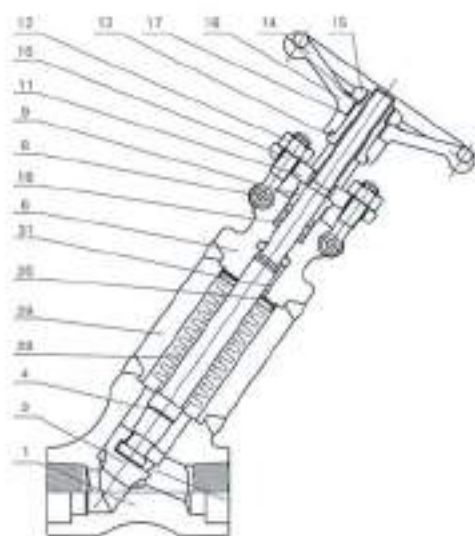
Bolted bonnet, full port outside screw and yoke(OS & Y)  
Flange-welded or butt-welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	LRF,L1(BW)	-	-	216	229	254	280	305	368
	L1RT(J)	-	-	216	229	254	280	305	371
Handwheel diameter	W	-	-	125	125	160	160	180	200
Height	H	-	-	380	380	400	450	520	650
Height(angle dimension)	d	-	-	12	15	20	28	32	40
Weight(Kg)		-	-	11.8	12.3	15	17.5	25	38.3

If you want to order one piece body, please contract with sale department



# Y type bellow globe valves



## Application specifications

1. Design and manufacture conform to BS5352; MSS-SP-117
2. Connection ends conform to:
  - 1) Socket welded ends conform to ANSI B16.11; JB/T1751
  - 2) Screw ends conform to ANSI B1.20.1; JB/T7306
  - 3) Butt-welded ends conform to ANSI B16.25; JB/T12224
  - 4) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to: AP: 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet, outside screw and yoke
  - Welded bonnet, outside screw and yoke
5. Materials conform to ANSI/ASTM.
6. Main materials: A105; 304(L); 316(L); F347; F321.
7. Bellow materials: 304, 321, 316, Inconel 625, Hastelloy C 276, Monel.

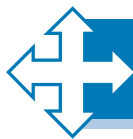
## Carbon steel temperature-pressure rate

CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F  
 CL800-1975 P.S.I @ 100° F  
 CL1500-3705 P.S.I @ 100° F

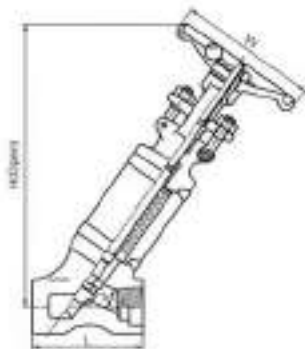
## Main part materials list

NO.	Part name	A105/F6a	A105/F6aHFS	A105/F6aHF	F304(L)/304(L)	F316(L)/316(L)
1	Body	A105	A105+HF	A105+HF	F304(L)	F316(L)
3	Disc	F6a	F6a	F6aHF	F304(L)	F316(L)
4	Stem	410	410	410	304(L)	316(L)
6	Bonnet	A105	A105	A105	F304(L)	F316(L)
8	Pin	410	410	410	304	304
9	Gland	410	410	410	304	316
10	Gland eyebolt	B7	B7	B7	B8(M)	B8(M)
11	Gland flange	A105	A105	A105	F304	F304
12	Hex nut	2H	2H	2H	8(M)	8(M)
13	Stem nut	410	410	410	410	410
14	Locking nut	35	35	35	35	35
15	Nameplate	AL	AL	AL	AL	AL
16	Handwheel	A197	A197	A197	A197	A197
17	Lubricating gasket	410	410	410	410	410
18	Packing	Graphite	Graphite	Graphite	Graphite	Graphite
20	Gasket	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
28	Bellow	F321	F321	F321	F316	F316L
29	Coupling pipe	A105	A105	A105	F304(L)	F316(L)
31	Pin	304	304	304	304	316



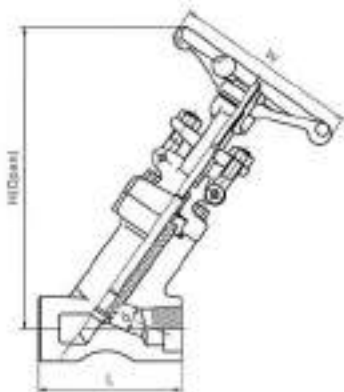


# Y type bellow globe valves



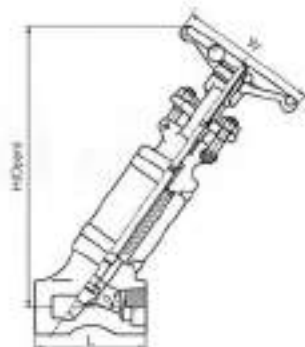
**CL800** Welded bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	79	92	100	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	237	237	239	270	298	340	396	470
Height(angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		2.6	2.6	2.8	4.6	9.5	10.0	15.5	21



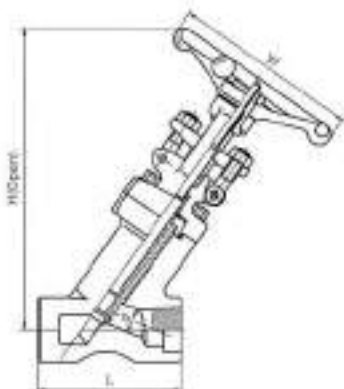
**CL800** Bolted bonnet, full port & reducing port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

Specification (NPS)	R.P	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	98	98	98	111	140	140	155	170
Handwheel diameter	W	100	100	100	125	160	160	180	200
Height	H	240	240	240	260	360	350	380	460
Height(angle dimension)	d	7	9	13	17.5	23	30	35	46
Weight(Kg)		3.1	3.1	4.3	5.6	10.8	10.8	16	22



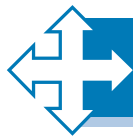
**CL1500** Welded bonnet, full port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	92	92	100	100	140	140	155	170	
Handwheel diameter	W	100	100	125	125	160	160	180	200	
Height	H	300	300	300	380	390	470	550	700	
Height(angle dimension)	d	7	9	12	15	20	28	32	40	
Weight(Kg)		3.3	3.5	5	7.5	10	16	27	30	

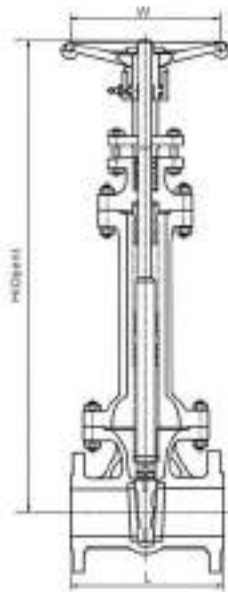


**CL1500** Bolted bonnet, full port outside screw and yoke(OS & Y)  
Threaded, butt-welded or socket welded ends; design to BS5352/MSS-SP-117

Specification(NPS)	F.P	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	98	111	111	140	140	155	170	
Handwheel diameter	W	100	125	125	160	160	180	200	
Height	H	300	300	380	390	470	550	700	
Height(angle dimension)	d	9	12	15	20	28	32	40	
Weight(Kg)		3.1	5.1	5.1	10.3	10.8	16	22	



# Carbon steel bellow gate valves



## Application specifications

1. Design and manufacture:  
ASME B16.34; BS1414; API 600; MSS-117
2. Connection ends conform to:
  - 1) Face-to-face: ANSI B16.10; GB/T12221-B9
  - 2) Butt-welded ends: ANSI B16.25; JB/T12224
  - 3) Flanged ends: ANSI B16.5; JB79
3. Test and inspection:  
API 598; GB/T13927; JB/T9092
4. Structure features:  
Bolted bonnet, outside screw & yoke  
Welding bonnet, outside screw & yoke
5. Materials conform to ASTM
6. Main materials:  
WCB; CF8; CF8M; CF3; CF3M; CN7M.
7. Bellow materials: 304, 321, 316, Inconel 625, Hastelloy C 276, Monel.

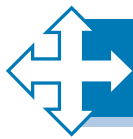
## Carbon steel temperature-pressure rate

CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F

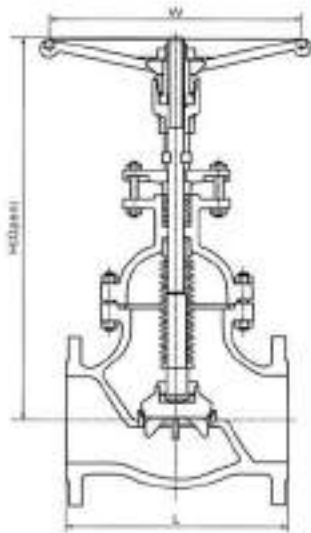
## CL150-300-600

Specification(NPS)	F.P	2	2.5	3	4	6	8	10	12	14	16	
Class 150	Face to face	L(RF)	178	191	203	229	267	292	330	356	381	406
		L(BW)	216	241	282	305	403	419	457	502	572	610
	Handwheel diameter	W	180	180	250	250	400	400	600	600	600	600
	Height (open)	H(开)	650	800	875	1100	1270	1600	2200	2500	2800	3150
	Weight (Kg)		35	40	45	60	95	150	260	400	480	700
Class 300	Face to face	L(RF, BW)	216	241	282	305	403	419	457	502	762	838
		Handwheel diameter	W	180	250	300	300	400	600	600	600	600
	Height (open)	H(Open)	630	800	875	1070	135	1700	2200	2500	2800	3150
	Weight (Kg)		45	50	70	100	160	250	440	600	930	1200
Class 600	Face to face	L(RF, BW)	292	330	356	432	559	660	787	838	889	991
		L(RJ)	295	333	359	435	562	663	790	841	892	994
	Handwheel diameter	W	250	250	300	400	400	600	600	600	800	800
	Height (open)	H(Open)	700	980	1060	1250	1980	2100	2500	2600	2950	3150
	Weight (Kg)		60	75	100	150	280	460	800	1000	1500	2100

If you want more information, please look at the carbon steel sample of BTL'S



# Carbon steel bellow globe valves



## Application specifications

1. Design and manufacture ASME B16.34; BS1873; MSS-117
2. Connection ends conform to:
  - 1) Face-to-face ANSI B16.10; GB/T12221-89
  - 2) Butt-welded ends ANSI B16.25; JB/T12224
  - 3) Flanged ends conform to ANSI B16.5; JB79
3. Test and inspection conform to:
  - API 598; GB/T13927; JB/T9092
4. Structure features:
  - Bolted bonnet, outside screw & yoke
  - Welding bonnet, outside screw & yoke
5. Materials conform to ANSI/ASTM.
6. Main materials:
  - WCB; CF8; CF8M; CF3; CF3M; CN7M.
7. Bellow materials: 304, 321, 316, Inconel 625, Hastelloy C 276, Monel.

## Carbon steel temperature-pressure rate

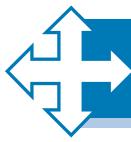
CL150-285 P.S.I @ 100° F  
 CL300-740 P.S.I @ 100° F  
 CL600-1480 P.S.I @ 100° F

## CL150-300-600

Specification(NPS)	F.P	2	2.5	3	4	6	8	10	12	14	16	
<b>Class 150</b>	Face to face	L	203	216	241	292	406	495	622	699	787	914
	Handwheel diameter	W	180	250	250	300	400	600	600	600	600	600
	Height(open)	H(Open)	470	560	560	660	750	900	1300	1600	1800	1950
	Weight (Kg)		35	40	45	65	120	230	450	600	900	1300
<b>Class 300</b>	Face to face	L	267	292	318	356	445	559	622	711	838	864
	Handwheel diameter	W	250	250	300	400	400	600	600	600	800	800
	Height(open)	H(Open)	510	560	560	660	850	1080	1300	1600	1900	1950
	Weight (Kg)		45	55	70	100	190	300	500	740	1080	1450
<b>Class 600</b>	Face to face	L	292	330	356	432	559	660	787	838	889	991
		L(R,J)	295	333	359	435	562	663	790	841	892	994
	Handwheel diameter	W	250	300	400	600	600	600	800	800	800	800
	Height(open)	H(Open)	510	650	650	720	980	1200	1450	1700	2000	2150
	Weight (Kg)		60	75	90	140	350	580	900	1200	1650	2500

If you want more information, please look at the carbon steel sample of BTL'S





# Usual ASTM materials' chemical analysis and physical properties

## Body and bonnet materials

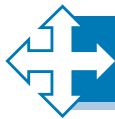
Chemical composition	Carbon steel	Cryogenic		Alloy steel				Austenite stainless steel ASTM-A182						Duplex stainless steels
	A105	LF2	LF3	F5	F91	F11Class2	F22Class3	F304	F304H	F304L	F316	F316L	F347H	F51
C	0.35	0.35	0.20	0.15	0.06-0.12	0.10-0.20	0.05-0.15	0.08	0.04-0.10	0.035	0.08	0.035	0.04-0.1	0.030
Mn	0.60-1.05	0.60-1.35	0.50	0.30-0.60	0.30-0.60	0.30-0.80	0.30-0.60	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P	0.035	0.035	0.035	0.030	0.020	0.040	0.040	0.045	0.045	0.045	0.045	0.045	0.045	0.030
S	0.040	0.040	0.040	0.030	0.010	0.040	0.040	0.030	0.030	0.030	0.030	0.030	0.030	0.20
Si	0.10-0.35	0.15-0.30	0.20-0.35	0.50	0.20-0.50	0.50-1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ni	0.40	0.40	3.3-3.7	0.50	0.40	-	-	8.0-11.0	8.0-11.0	8.0-13.0	10.0-14.0	10.0-15.0	9.0-13.0	4.5-5.5
Cr	0.30	0.30	0.30	4.0-6.0	8-9.5	1.00-1.60	2.00-2.60	18.0-20.0	18.0-20.0	18.0-20.0	16.0-18.0	16.0-18.0	17.0-20.0	21-23
Mo	0.12	0.12	0.12	0.44-0.65	0.85-1.05	0.44-0.65	0.87-1.13	-	-	-	2.00-3.00	2.00-3.00	-	2.5-3.5

Mechanical property	ASTM A105	LF2	LF3	F5	F91	F11Class2	F22Class3	F304	F304H	F304L	F316	F316L	F347H	F51
Tensile strength	70	70-95	70-95	70	85	70	75	75	75	70	75	70	75	90
Yield strength	30	36	37.5	40	60	40	45	30	30	25	30	25	30	65
Elongation at Rupture	22	22	22	20	20	20	20	30	30	30	30	30	30	25
Shrinkage of R. A.	30	30	35	35	40	30	30	50	50	50	50	50	50	45
Brinell hardness	187(2)	197	197	143-217	≤248	143-207	156-207	-	-	-	-	-	-	-

## Trim and bolt materials

Chemical composition	Trim materials					Bolt materials				
	AISI 410	AISI 416	AISI 420	ASTM B164 Monel	Stellite Gr. 6	ASTM A193		AISI 430	ASTM A154	
						B7	B8		2H	G8
C	0.15max.	0.15max.	0.15max.	0.3max.	1.00	0.37-0.49	0.08max.	0.12max.	0.40min.	0.08max.
Mn	1.00max.	1.25max.	1.00max.	2.0max.	1.00max.	0.65-1.10	2.0max.	1.00max.	1.00max.	2.00max.
P	0.040	0.050max.	0.040	-	-	0.035	0.045	0.040	0.040max.	0.045
S	0.030	0.15max.	0.030	0.024	-	0.04	0.030	0.030	0.050max.	0.030
Si	1.00max.	1.60max.	1.00max.	0.6max.	1.00	0.15-0.36	1.00max.	1.00max.	0.40max.	1.00max.
Cr	11.50-13.50	12.0-14.0	12.0-14.0	-	28.00	0.75-1.20	18.0-20.0	14.0-18.0	-	18.0-20.0
Ni	-	-	-	63.0min.	3.0max.	-	8.00-11.0	-	-	8.00-11.0
Mo	-	0.600max.	-	-	-	0.15-0.25	-	-	-	-
Cu	-	-	-	28.0-34.0	-	-	-	-	-	-
Other element	-	-	-	Fe:2.5max.	Fe:3.0max. W:4.0 Co:balance	-	-	-	-	-

Mechanical property	410	416	420	ASTM A154	Gr. 6	B7	B8	430	2H	G8
Tensile strength	99/85 70/130	85/170 85/170	149/296 105/210	70(2) 49.2	-	125 87.8	75 52.7	75.4 53	-	-
Yield strength	59/170	59/128	119/199	25(2)	-	105	30	40	-	-
Yield strength	42/120	42/90	84/140	17.6	-	73.8	21	28	-	-
Elongation at Rupture	(15)(1)	(10)(1)	(8)(1)	(35)(2)	-	16	30	28	-	-
Shrinkage of R. A.	50/75	8/60	5/40	-	-	50	50	65	-	-
Brinell hardness	180-375	180/375	300-600	-	HRC min. 37	-	-	160	248-352	125-300



# Temperature and pressure rate

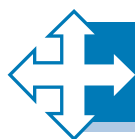
## Class 150/300/600/800/900/1500/2500 Temperature-pressure rate(Psig)- °F

Materials	A105&A350-LF2								Pb								F11							
	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500			
-20 to 100	395	740	1480	1975	2220	3705	6170	290	350	1500	2000	2280	3750	6250	290	750	1500	2000	3200	3750	6250			
200	280	675	1350	1800	2025	3375	5625	260	345	1400	2000	2235	3735	6205	260	750	1500	1800	2280	3750	6250			
300	230	655	1315	1750	1970	3280	5470	230	715	1430	1940	2160	3680	6065	230	720	1445	1795	2180	3510	6015			
400	200	625	1270	1690	1900	3170	5280	200	705	1410	1880	2115	3630	5880	200	695	1385	1755	2080	3485	5775			
500	170	600	1250	1655	1795	2995	4990	170	685	1330	1775	1985	3325	5540	170	685	1330	1710	1995	3325	5540			
600	140	590	1095	1450	1590	2720	4500	140	605	1210	1615	1815	3025	5080	140	605	1210	1615	1815	3025	5040			
850	125	535	1075	1430	1610	2685	4475	125	590	1175	1570	1765	2940	4905	125	590	1175	1570	1765	2940	4905			
700	110	535	1065	1420	1600	2680	4440	110	570	1125	1515	1715	2840	4730	110	570	1125	1515	1705	2840	4730			
750	95	505	1010	1345	1510	2520	4200	95	530	1055	1420	1585	2640	4400	95	530	1055	1420	1595	2660	4430			
800	80	410	820	1100	1235	2060	3430	80	510	1015	1320	1525	2540	4230	80	510	1015	1285	1525	2540	4230			
850	65	270	535	715	805	1340	2230	65	485	865	1170	1450	2415	4030	65	485	875	1300	1480	2435	4080			
900	50	170	340	480	515	850	1430	50	370	740	980	1170	1850	3085	50	450	900	1200	1380	2245	3745			
950								35	275	550	695	825	1370	2285	35	320	640	1005	8550	1595	2655			
1000								20	200	400	510	585	955	1655	20	215	430	555	650	1080	1860			
1050								145	250	375	430	720	1200	145	290	385	430	720	1250					
1100								90	200	375	300	495	830	95	190	325	250	480	800					
1150								60	125	185	180	310	515	60	125	140	185	310	515					
1200								35	70	125	105	170	285	40	75	90	115	180	310					
1250																								
1300																								

## Class 150/300/600/800/900/1500/2500 Temperature-pressure rate(Psig)- °F

Materials	F22								F31								F304 F304H							
	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500			
-20 to 100	330	750	1500	2020	2220	3700	6250	290	350	1500	2000	2280	3750	6250	275	720	1440	1920	2180	3500	6000			
200	260	760	1500	1910	2250	3750	6350	290	350	1500	2000	2360	3750	6250	270	600	1250	1600	1900	3000	6000			
300	230	730	1455	1825	2185	3640	6070	230	730	1455	1940	2185	3640	6070	205	580	1080	1410	1620	2700	4500			
400	200	705	1410	1730	2115	3530	5880	200	705	1410	1880	2115	3530	5880	190	495	905	1255	1490	2485	4140			
500	170	685	1330	1705	1895	3320	5540	170	685	1330	1775	1995	3325	5540	170	685	900	1185	1395	2330	3880			
600	140	605	1210	1615	1815	3025	5040	140	605	1210	1615	1815	3025	5040	140	435	875	1105	1310	2185	3640			
650	125	590	1175	1570	1765	2940	4905	125	590	1175	1570	1765	2940	4905	125	430	800	1090	1290	2160	3580			
700	110	570	1135	1515	1705	2840	4730	110	570	1135	1515	1715	2840	4730	110	425	850	1075	1275	2125	3540			
750	95	530	1065	1420	1595	2660	4430	95	530	1065	1420	1585	2660	4430	950	415	830	1060	1245	2075	3480			
800	80	510	1015	1355	1525	2540	4230	80	510	1015	1355	1525	2540	4230	80	105	805	1050	1210	2015	3380			
850	65	485	975	1300	1450	2435	4060	65	485	975	1300	1460	2435	4060	60	395	790	1035	1190	1960	3300			
900	50	480	900	1200	1345	2245	3745	50	480	900	1200	1350	2245	3745	50	390	780	1025	1185	1945	3240			
950	35	375	755	1005	1130	1885	3145	35	385	775	1030	1160	1930	3220	35	380	765	1000	1145	1910	3180			
1000	20	260	520	715	780	1305	2170	20	365	725	970	1080	1820	3030	20	320	640	800	965	1605	2675			
1050		175	350	530	525	875	1450	20	360	720	900	1060	1800	3000	310	615	825	825	1545	2570				
1100		110	220	300	330	550	915	20	300	600	605	800	1310	2515	220	515	685	770	1280	2145				
1150		70	135	275	265	345	570	20	225	445	595	670	1115	1835	200	400	520	595	995	1665				
1200		40	80	165	135	205	335	20	115	230	285	320	720	1200	165	310	415	385	770	1385				
1250														115	325	295	340	585	985					
1300														85	170	220	255	430	715					





# Temperature and pressure rate

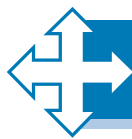
## Class 150/300/600/800/900/1500/2500 Temperature-pressure rate(Psig) – °F

Materials	F321 F321H							F316 F316H							F304L F316L						
	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500
-20 to 100	275	720	1440	1920	2160	3600	6000	275	720	1440	1920	2160	3600	6000	230	600	1200	1600	1800	3000	6000
200	240	640	1280	1720	1935	3230	5300	235	620	1240	1655	1890	3085	5160	195	505	1015	1350	1520	2530	4220
300	230	595	1190	1585	1785	2975	4960	215	560	1120	1495	1690	2795	4660	175	455	910	1210	1360	2270	3780
400	200	550	1105	1470	1655	2790	4600	195	515	1025	1370	1540	2570	4280	160	415	825	1100	1240	2065	3440
500	170	515	975	1375	1545	2570	4285	170	480	965	1275	1435	2390	3960	145	380	765	1020	1145	1910	3180
600	140	485	955	1300	1480	2435	4060	140	450	900	1205	1355	2255	3760	140	360	720	950	1080	1800	3000
650	125	490	930	1275	1435	2390	3980	125	445	890	1185	1330	2220	3700	125	350	700	935	1050	1750	2920
700	110	485	915	1240	1395	2330	3880	110	430	870	1150	1305	2170	3620	110	345	685	915	1030	1715	2860
750	95	400	800	1120	1375	2290	3820	95	425	855	1130	1290	2135	3580	95	335	670	895	1010	1680	2800
800	80	450	895	1205	1355	2255	3760	80	420	845	1100	1255	2110	3520	80	330	660	875	985	1645	2740
850	65	445	885	1190	1340	2230	3720	65	415	835	1080	1255	2090	3480	65	320	645	860	965	1610	2680
900	50	440	775	1180	1325	2210	3680	50	385	830	1050	1245	2075	3460							
950	35	385	715	1030	1180	1930	3220	35	350	775	1030	1150	1930	3220							
1000	20	355	625	950	1070	1795	2970	20	345	700	970	1050	1750	2915							
1050	20	315	545	835	940	1595	2605		305	685	860	1030	1720	2865							
1100	20	270	475	725	815	1360	2265		235	610	735	915	1525	2545							
1150	20	235	370	630	710	1195	1970		185	475	550	710	1185	1970							
1200	20	185	290	495	535	925	1545		145	370	485	565	925	1545							
1250	20	140	220	375	420	705	1170		115	295	365	440	735	1230							
1300	20	110	170	295	330	550	915			235		350	585	970							

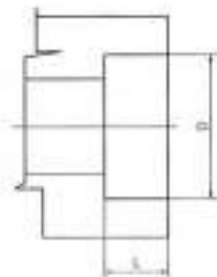
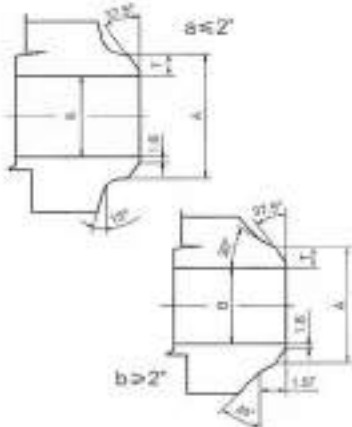
## Class 150/300/600/800/900/1500/2500 Temperature-pressure rate(Psig) – °F

Materials	F347 F347H							F44 F51 F53						
	150	300	600	800	900	1500	2500	150	300	600	800	900	1500	2500
-20 to 100	275	720	1400	1920	2160	3600	6000	290	750	1500	2000	2250	3750	6250
200	255	660	1320	1760	1960	3300	5400	260	720	1400	1920	2180	3600	6000
300	230	615	1230	1640	1845	3070	5120	230	665	1330	1773	1995	3325	5540
400	200	575	1145	1530	1720	2870	4780	200	615	1230	1640	1845	3070	5120
500	170	540	1080	1440	1620	2700	4500	170	575	1150	1537	1730	2880	4800
600	140	515	1025	1370	1540	2570	4280	140	555	1115	1485	1670	2785	4640
650	125	505	1010	1345	1510	2520	4200	125	550	1100	1467	1650	2750	4580
700	110	495	990	1320	1485	2470	4120	110	540	1085	1445	1625	2710	4520
750	95	490	985	1310	1475	2460	4100	95	530	1065	1418	1595	2660	4430
800	80	485	975	1300	1460	2435	4060							
850	65	450	970	1295	1455	2425	4040							
900	50	385	900	1200	1350	2245	3745							
950	35	365	775	1030	1160	1930	3220							
1000	20	360	720	940	1030	1820	3030							
1050	20	325	645	960	1080	1800	3000							
1100	20	275	560	860	985	1610	2685							
1150	20	170	345	735	825	1370	2285							
1200	20	125	245	490	515	855	1430							
1250	20	95	185	330	370	615	1030							
1300	20	70	110	250	280	485	770							





# Connection-end standards



## Butt-welded standard ASME B16.25

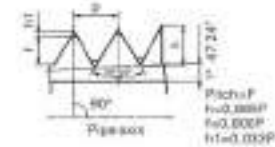
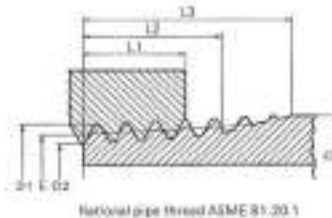
Unit:mm

Normal diameter	SCH.40			SCH.80			SCH.160			SCH.XXS		
	A	B	T	A	B	T	A	B	T	A	B	T
1/2	21.3	15.8	2.77	21.3	13.8	3.73	21.3	11.7	4.78	21.3	6.4	7.47
3/4	26.7	25.0	2.87	26.7	18.9	3.91	26.7	15.6	5.56	26.7	11.1	7.82
1	33.4	26.6	3.38	33.4	24.3	4.55	33.4	20.7	6.35	33.4	15.2	9.09
1 1/4	42.2	35.1	3.55	42.2	32.5	4.85	42.2	29.5	6.35	42.2	22.8	9.20
1 1/2	48.3	41.0	3.88	48.3	38.1	5.08	48.3	33.5	7.41	48.3	28.0	10.15
2	60.3	52.5	3.91	60.3	49.2	5.54	60.3	42.9	8.74	60.3	39.2	11.07
2 1/2	73.0	62.7	5.15	73.0	59.0	7.01	73.0	54.0	9.53	73.0	45.0	14.02
3	88.9	78.0	5.48	88.9	73.7	7.62	88.9	66.6	11.13	88.9	58.4	15.24
4	114.3	102.3	6.02	114.3	97.2	8.56	114.3	85.3	13.49	114.3	80.1	17.12

## Foreign socket welded standard JB-ANSI-JIS

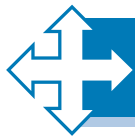
Unit:mm

Normal diameter	JB		ANSI		JIS	
	D	L	D	L	D	L
1/4	14.5	10.0	14.1	9.6	14.3	9.6
3/8	18.0	10.0	17.6	9.6	17.9	9.6
1/2	22.5	10.0	21.8	9.6	22.2	9.6
3/4	28.5	11.0	27.1	12.7	27.7	12.7
1	34.5	12.0	33.8	12.7	34.5	12.7
1 1/4	43.0	14	42.6	12.7	43.2	12.7
1 1/2	49.0	15	48.7	12.7	49.1	12.7
2	61.2	18	61.2	15.9	61.2	15.9



## Thread standard ASME B1.20.1

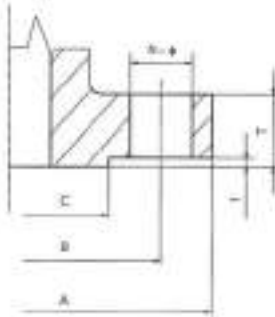
Normal diameter	O.D. OF Pipe		Threads sep in.	Pitch of thread	O.D. AT Beginning of thread		Pitch dia. at beginning of ext. thread	Root dia. at beginning of ext. thread	Handtight engagement	Effective thread ext. length	Overall length ext. thread
	D	N			D1	E					
1/8	inch	0.41	1.06	0.04	0.39	0.36	0.26	0.18	0.26	0.39	
	mm	10.29	27	0.940	9.982	9.233	6.484	4.572	6.703	9.967	
1/4	inch	0.54	0.71	0.06	0.52	0.48	0.43	0.28	0.40	0.59	
	mm	13.72	18	1.412	13.259	12.126	10.998	5.080	10.206	15.103	
3/8	inch	0.67	0.71	0.06	0.66	0.61	0.57	0.24	0.41	0.60	
	mm	17.14	18	1.412	16.862	15.545	14.427	6.096	10.358	15.255	
1/2	inch	0.84	0.55	0.07	0.82	0.76	0.70	0.32	0.53	0.78	
	mm	21.34	14	1.814	20.726	19.263	17.805	8.128	13.556	19.850	
3/4	inch	1.05	0.55	0.07	1.03	0.97	0.91	0.34	0.55	0.79	
	mm	26.67	14	1.814	26.035	24.580	23.139	8.611	13.861	20.155	
1	inch	1.31	0.452	0.09	1.28	1.21	1.14	0.40	0.68	0.99	
	mm	33.40	11.1/2	2.210	32.588	30.825	29.058	10.180	17.343	25.008	
1 1/4	inch	1.66	0.45	0.09	1.63	1.56	1.49	0.42	0.71	1.01	
	mm	42.18	11.1/2	2.210	41.326	39.550	37.795	10.688	17.953	25.616	
1 1/2	inch	1.90	0.45	0.09	1.87	1.80	1.73	0.42	0.72	1.03	
	mm	48.26	11.1/2	2.210	47.396	45.621	43.866	10.688	18.377	26.040	
2	inch	2.37	0.45	0.09	2.34	2.27	2.20	0.44	0.76	1.06	
	mm	60.32	11.1/2	2.210	59.411	57.633	55.855	11.074	19.215	28.878	



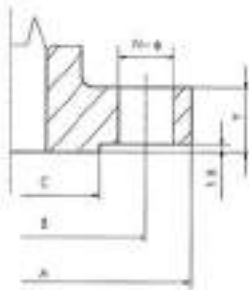
# Flange dimensions

## DIN flange 2544-45-46

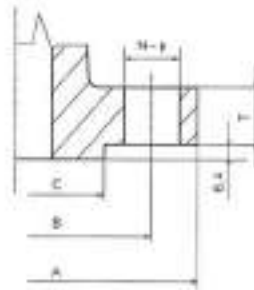
Unit:mm



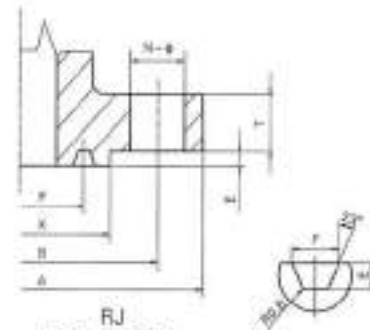
PN	DN	NPS	A	B	C	T	f	Bolt hole	
								N	φ
25 40	15	1/2	95	65	45	16	2	4	14
	20	3/4	105	75	58	18	2	4	14
	25	1	115	85	68	18	2	4	14
	32	1 1/4	140	100	78	18	2	4	18
	40	1 1/2	150	110	88	18	3	4	18
64	50	2	165	125	102	20	3	4	18
	15	1/2	105	75	45	20	2	4	14
	20	3/4	130	90	58	22	2	4	18
	25	1	140	100	65	24	2	4	18
	32	1 1/4	165	110	75	24	2	4	22
	40	1 1/2	170	125	88	26	3	4	22
	50	2	180	135	95	26	3	4	22



RF  
150-300Lb



RF  
600-2500Lb

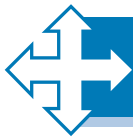


RJ  
600-2500Lb

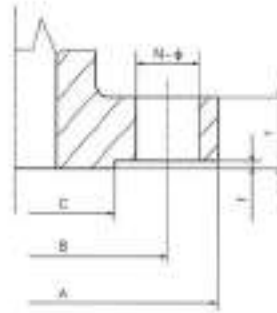
## ANSI B16.5 flange standard

Unit:mm

Class	NPS	A	B	C	T	Bolt hole		Ring type joint				Ring No
						N	φ	K	P	F	E	
150	1/2	89	60.3	34.9	11.5	4	16	-	-	-	-	-
	3/4	98	69.8	42.9	13.0	4	16	-	-	-	-	-
	1	108	79.4	50.8	14.5	4	16	63.5	47.62	8.74	6.4	R15
	1 1/4	117	88.9	63.5	16.0	4	16	73.0	57.15	8.74	6.4	R17
	1 1/2	127	98.4	73.0	17.5	4	16	82.5	65.07	8.74	6.4	R19
300	2	152	120.6	92.1	19.5	4	20	102.0	82.55	8.74	6.4	R22
	1/2	95	66.7	34.9	14.5	4	16	51.0	34.14	7.14	5.6	R11
	3/4	117	82.5	42.9	16.0	4	20	63.5	42.88	8.74	6.4	R13
	1	124	88.9	50.8	17.5	4	20	70.0	50.80	8.74	6.4	R16
	1 1/4	133	98.4	63.5	19.5	4	20	79.5	60.32	8.74	6.4	R18
600	1 1/2	156	114.3	73.0	21.0	4	23	90.5	68.28	8.74	6.4	R20
	2	165	127.0	92.1	22.5	8	20	108.0	82.55	11.91	8.0	R23
	1/2	95	66.7	34.9	14.5	4	16	51.0	34.14	7.14	5.6	R11
	3/4	117	82.5	42.9	16.0	4	20	63.5	42.88	8.74	6.4	R13
	1	124	88.9	50.8	17.5	4	20	70.0	50.80	8.74	6.4	R16
900 1500	1 1/4	133	98.4	63.5	21.0	4	20	79.5	60.32	8.74	6.4	R18
	1 1/2	156	114.3	73.0	22.5	4	23	90.5	68.28	8.74	6.4	R20
	2	165	127.0	92.1	25.5	8	20	108.0	82.55	11.91	8.0	R23
	1/2	121	82.5	34.9	22.5	4	23	60.5	39.67	8.74	6.4	R12
	1	149	101.6	50.8	29.0	4	26	71.5	50.80	8.74	6.4	R16
2500	1 1/2	178	123.8	73.0	32.0	4	29	92.0	68.28	8.74	6.4	R20
	1/2	133	88.9	34.9	30.5	4	23	65.0	42.88	8.74	6.4	R13
	1	159	107.9	50.8	35.0	4	26	82.5	60.32	8.74	6.4	R18
	1 1/2	203	146	73.0	44.5	4	32	114.5	82.55	11.91	6.4	R23



# Flange dimensions



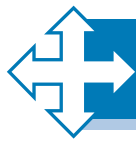
RF  
10K~63K

JIB B2212(10K) JIB B2214(20K) JIB B2215(30K) JIB B2215(40K) JIB B2216(63K)

Unit:mm

K Grabe	DN	A	B	C	T	f	Bolt hole	
							N	d
10K	10	90	65	46	12	1	4	15
	15	95	70	52	12	1	4	15
	20	100	75	58	14	1	4	15
	25	125	90	70	14	1	4	19
	32	135	100	80	16	2	4	19
	40	140	105	85	16	2	4	19
	50	155	120	100	16	2	4	19
20K	10	90	65	46	14	1	4	15
	15	95	70	52	14	1	4	15
	20	100	75	58	16	1	4	15
	25	125	90	70	16	1	4	15
	32	135	100	80	18	2	4	19
	40	140	105	85	18	2	4	19
	50	155	120	100	18	2	8	19
30K	10	110	75	52	16	1	4	19
	15	115	80	55	16	1	4	19
	20	120	85	60	18	1	4	19
	25	130	95	70	20	1	4	19
	32	140	105	80	22	2	4	19
	40	160	120	90	22	2	4	23
	50	165	130	105	22	2	8	19
40K	10	110	57	52	18	1	4	19
	15	115	80	55	20	1	4	19
	20	120	85	60	20	1	4	19
	25	130	95	70	22	1	4	19
	32	140	105	80	24	2	4	19
	40	160	120	90	24	2	4	23
	50	165	130	105	26	2	8	19
63K	10	115	80	52	23	1	4	19
	15	120	85	55	23	1	4	19
	20	135	95	60	25	1	4	23
	25	140	100	70	27	1	4	23
	32	150	110	80	30	2	4	23
	40	175	130	90	32	2	4	25
	50	185	145	105	34	2	8	23





# Main specifications and standards

NO.	Code for criteria&standards	Name of criteria & standards	Note
1	GB/T 13927-82	Pressure testing for general purpose valves	Including swing check valve
2	JB/T 8082-99	Valve inspection and testing	
3	SH 3084-94	Choosing, checking and accepting to steel general purpose valves for petroleum and chemical industries	
4	API 598	Valve inspection and testing	
5	BS 6755	Valve inspection and testing	
6	GB/T 12221-89	Metal valves for use in flanged pipe systems: face to face and center to face dimensions	
7	JB/T 96-96	Face to face and center to face dimensions for globe valves, throttling valves and check valves	
8	ASME/ANSI B16.10	Face to face and end-to-end dimensions of valves	
9	JIS B2002	Face to face and end-to-end dimensions of flanged and butt-welding valves	
10	GB/T 12224-89	General requirements for industrial steel valves	
11	GB/T 12234-89	General purpose industrial valves flanged and butt-weld steel gate valves	
12	GB/T 12235-89	General purpose industrial valves flanged steel globe valves and lift check valves	
13	GB/T 12236-89	General purpose industrial valves steel swing check valves	
14	GB/T 12237-89	General purpose industrial valves flanged and butt-weld end steel ball valves	
15	JB/T 308-75	Editing methods of valve types	
16	JB/T 7749-96	Cryogenic valves technical specifications	
17	NACE MR0175	Metals for sulfide stress cracking and stress corrosion cracking resistance in sour oilfield environments	The national association of corrosion engineers
18	ASME/ANSI B16.34	Valves flanged, threaded, and welding end	Valve body minimum wall thickness/pressure-temperature rating
19	JB/T7746-96	Flanged, threaded compact steel valves	
20	API 600	Bolted bonnet steel gate valves for petroleum and natural gas industries	Class:150-2500.Size:1"-24"(full bore)
21	API 602	Steel gate, globe and check valves for sizes DN 100 and smaller for the petroleum and natural gas industries	Class:150-1500.Size:1/4" - 4" (reduced bore)
22	BS 5362	Specification for steel wedge gate, globe and check valves 50mm and smaller for the petroleum, petrochemical and allied industries	
23	MSS 5P-117	Belows seals for globe and gate valves	
24	BS5351-91	Specification for steel ball valves for the petroleum, petrochemical and allied industries	
25	JB/T 82.1-94	Raised face welding neck steel pipe flange	Facings: RF, FF
26	JB/T 82.2-94	Male-female face welding neck steel pipe flange	Facings: FM, M
27	JB/T 82.4-94	Ring joint face welding neck steel pipe flange	Facings: RTJ or RJ
28	JB/T 79.1-94	Raised Face integral steel pipe flange	Facings: RF
29	JB/T 79.2-94	Male-female face integral steel pipe flange	Facings: FM, M
30	JB/T 79.3-94	Tongue and groove face integral steel pipe flange	Facings: T, G
31	JB/T 79.4-94	Ring joint face integral steel pipe flange	Facings: RTJ or RJ
32	GB/T 9113.1-2000	Integral steel pipe flange	FF or RF flanges
33	GB/T 9113.2-2000	Male-female face integral steel pipe flange	Facings: FM, M
34	GB/T 9113.3-2000	Tongue and groove face integral steel pipe flange	Facings: T, G
35	GB/T 9113.4-2000	Ring joint face integral steel pipe flange	Facings: RTJ or RJ
36	HG 20592-97	End flange facings and flange dimensions	Facings, parameters (European system)
37	HG 20596-97	Integral steel pipe flange	European system
38	HG 20618-97	Integral steel pipe flange	American system
39	SH 3406-82	Steel pipe flanges for petroleum and chemical industries	
40	ASME/ANSI B16.5	Pipe flanges and flanged fittings	Main Facings: RF, RTJ
41	JIS B2212 - B2216	Flange ends	RF slip-on flanges
42	ANSI B1.20.1	Pipe threads: general purpose (inch)	Angle of the thread teeth: 60 degree, FNPT
43	GB 7306-87	Pipe threads: general purpose (metric)	Angle of the thread teeth: 55 degree, Rc
44	ASME/ANSI B16.11	Forged steel fittings, socket-welding and threaded	Code: SW
45	JB/T 1751-96	Socket welding ends	Code: SW
46	ASME/ANSI B16.25	Butt welding ends	Code: BW
47	GB/T 12228-89	Technical specification for carbon fittings for general purpose valves	
48	ASTM A182	Specification for forged or bolted alloy-steel pipe flanges, forged fittings, and valves and parts for high-temperature service	
49	ASTM A183	Specification for alloy-steel and stainless steel bolting materials for high-temperature service	
50	ASTM A194	Specification for carbon and alloy-steel nuts for bolts for high-pressure and high-temperature service	
51	ASTM A106	Specification for carbon steel forgings for piping applications	
52	ASTM A276	Specification for Stainless Steel Bars and Shapes	

Code	Name
JB	Ministry of machinery industry standard
HG	Ministry of chemical industry standard
JB/T	Ministry of chemical industry recommended standard
ASTM	American society of testing materials

Sign	Name
SH	Ministry of sino petroleum-chemical industry standard
ANSI	American national standard institute
ASME	American Society of Mechanical Engineers
API	American Petroleum institute
DIN	Deutsches institute for norms
MSS	The manufacturers standardization society of the valve and fittings industry

Sign	Name
NACE	The national association of corrosion engineers
BS	British standards institution
JIS	Japanese national standard institute
ISO	The international organization for standardization
NF	French national standard institute



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