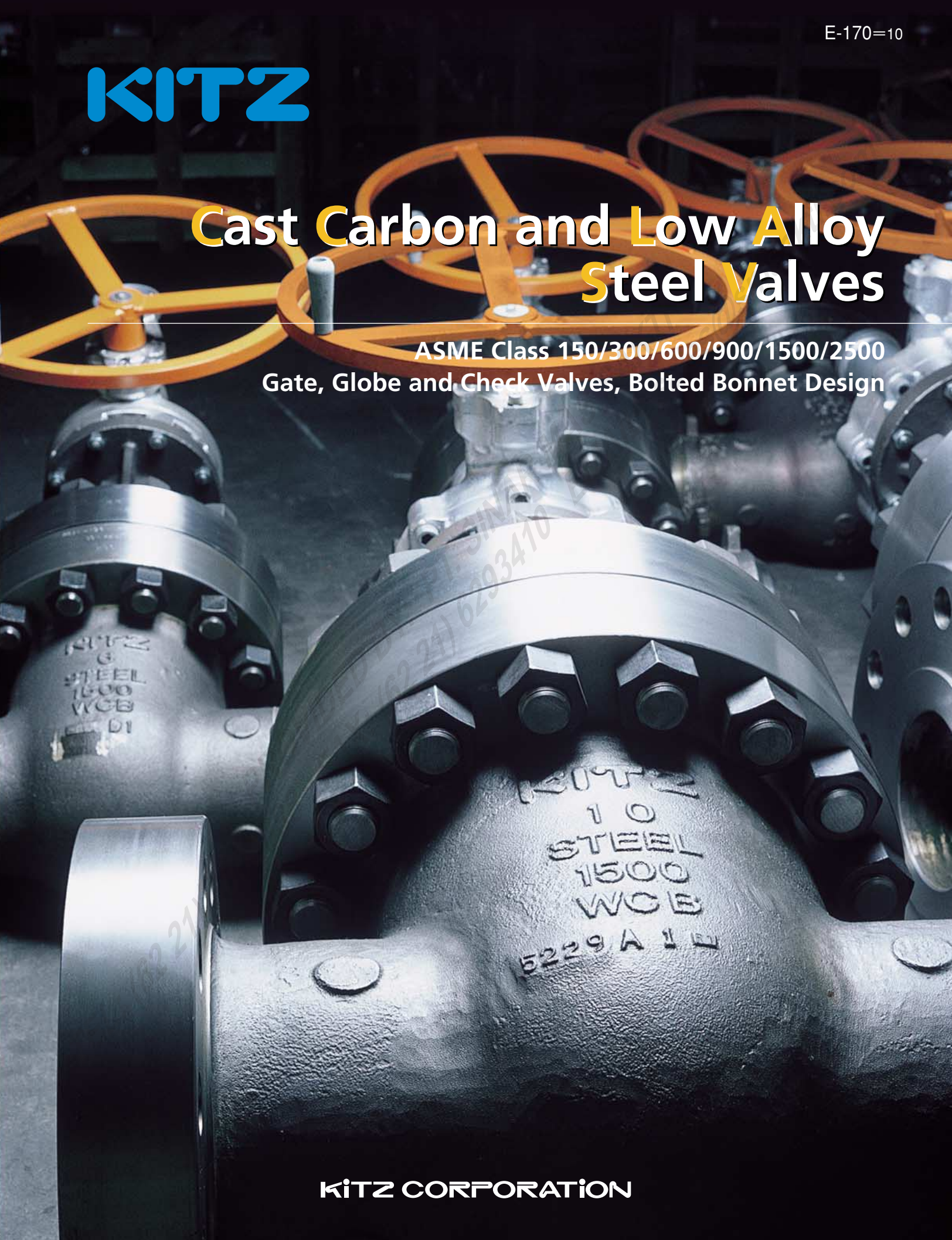
E-170=10

KITZ

# Cast Carbon and Low Alloy Steel Valves

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




KITZ CORPORATION

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**Valve Specifications**


| Class | Product Code | Valve Type | Construction | Page |
|---|---|---|---|---|
| 150 | 150SCLS | Gate | B.B., O.S.&Y. | 12 |
| 300 | 300SCLS | Gate | B.B., O.S.&Y. | 13 |
| 600 | 600SCLS | Gate | B.B., O.S.&Y. | 14 |
| 900 | 900SCLS | Gate | B.B., O.S.&Y. | 15 |
| 1500 | 1500SCLS | Gate | B.B., O.S.&Y. | 16 |
| 2500 | 2500SCLS | Gate | B.B., O.S.&Y. | 17 |
| 150 | 150SCJS | Globe | B.B., O.S.&Y. | 18 |
| 300 | 300SCJS | Globe | B.B., O.S.&Y. | 19 |
| 600 | 600SCJS | Globe | B.B., O.S.&Y. | 20 |
| 900 | 900SCJS | Globe | B.B., O.S.&Y. | 21 |
| 1500 | 1500SCJS | Globe | B.B., O.S.&Y. | 22 |
| 2500 | 2500SCJS | Globe | B.B., O.S.&Y. | 23 |
| 150 | 150SCOS | Check | B.C. | 24 |
| 300 | 300SCOS | Check | B.C. | 25 |
| 600 | 600SCOS | Check | B.C. | 26 |
| 900 | 900SCOS | Check | B.C. | 27 |
| 1500 | 1500SCOS | Check | B.C. | 28 |
| 2500 | 2500SCOS | Check | B.C. | 29 |

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

KITZ Ina Plant, Japan (ISO 9001 certified)

KITZ Corporation of JIANGSU KUNSHAN


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# Profile of KITZ Cast Steel Valves

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

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

Field applications 1

Field applications 2

Valve machining

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# Standard Product Range

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

| Valve Type | ASME Class | Design Standard | | Material | | Nominal Size / Code | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | P-T Rating | Wall Thickness | *(2) Shell | *(3) Trim | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | |
| Gate | 150 | ASME B16.34 | API 600 BS 1414 | WCB | F6/HF | *(4) 150SCLS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 12 |
| | 300 | | | | | 300SCLS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | 12 |
| | 600 | | | | | 600SCLS | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | 13 |
| | 900 | | | | | 900SCLS | | ● | | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | 13 |
| | 1500 | | | | | 1500SCLS | | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | | | | | | | | | | 14 |
| | 2500 | | | | | 2500SCLS | | ● | ● | ● | ● | | ● | | | | | | | | | | | | | | | | 14 |
| Globe | 150 | | API 600 BS 1873 | WCB | F6/HF | 150SCJS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | 15 |
| | 300 | | | | | 300SCJS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | 15 |
| | 600 | | | | | 600SCJS | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | 16 |
| | 900 | | | | | 900SCJS | | | | ● | ● | | ● | ● | | | | | | | | | | | | | | | 16 |
| | 1500 | | | | | 1500SCJS | | ● | ● | ● | ● | | ● | ● | | | | | | | | | | | | | | | 17 |
| | 2500 | | | | | 2500SCJS | | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | 17 |
| Swing Check | 150 | | API 600 BS 1868 | WCB or A105 | F6/HF | 150SCOS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | 18 |
| | 300 | | | | | 300SCOS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | | ● | ● | | | | 18 |
| | 600 | | | | | 600SCOS | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | | | | | | | 18 |
| | 900 | | | | | 900SCOS | | | | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | 19 |
| | 1500 | | | | | 1500SCOS | | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | | | | | | | | | | | 19 |
| | 2500 | | | | | 2500SCOS | | ● | ● | ● | ● | | ● | | | | | | | | | | | | | | | | 19 |

*(1): Butt-welding end available as an option.
Refer to ''Contact Faces of Flanges'' on Page 7.
*(2): For special shell materials, refer to ''Valve Shell Materials'' on Page 4.
*(3): For special trim materials, refer to ''Valve Trim Materials'' on Page 5.
*(4): Nominal size larger than 36 are available for special orders.

For KITZ pressure-seal carbon steel valves, Contact KITZ Corporation.

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# Standard Seat Material and Construction

| Valve Type | KITZ Product Code | Part \ Nominal Size | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 |
| Gate | 150SCLS, 300SCLS | Disc | ● | ● | ● | ● | ● | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ |
| | | Body Seat | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | 600SCLS | Disc | | ● | ● | ● | ● | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | |
| | | Body Seat | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | 900SCLS, 1500SCLS, 2500SCLS | Disc | | ● | ● | ● | ● | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | |
| | | Body Seat | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| Globe | 150SCJS, 300SCJS | Disc | ●▲ | ●▲ | ●▲ | ●▲ | ●▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | | | | | | | | | |
| | | Body Seat | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | |
| | 600SCJS | Disc | | ● | ● | ● | ● | ▲ | ▲ | ▲ | ▲ | ▲ | | | | | | | | | | | | |
| | | Body Seat | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | |
| | 900SCJS, 1500SCJS, 2500SCJS | Disc | | ● | ● | ● | ● | ▲ | ▲ | ▲ | | | | | | | | | | | | | | |
| | | Body Seat | | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | ▼ | | | | | | | | | | | | | | |
| Swing Check | 150SCOS, 300SCOS | Disc | ●◆ | ●◆ | ●◆ | ●◆ | ●◆ | ●◆ | ●◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | |
| | | Body Seat | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| | 600SCOS | Disc | | ● | ● | ● | ● | ● | ● | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | |
| | | Body Seat | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | |
| | 900SCOS, 1500SCOS, 2500SCOS | Disc | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | | |
| | | Body Seat | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | |

● :13Cr Disc
◆ :Cast Steel Disc-13Cr Deposited Seats
■ :Steel Seats-Hardfaced and Welded
▲ :Steel Disc-13Cr Deposited Seats
▼ :Directly Deposited Hardfacing

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## PRODUCT CODING

**G- 150 SC LS6CY**

5 4 1 2 3

**1 ASME pressure class:**
150 through 2500

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

**3 Other valve specifications:**

**L S 6C Y**

a b c b

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

**b Seat material/mounting:**

| Code | Disc Seat Material | Body Seat Material | Type of Mounting |
|---|---|---|---|
| S□ | 13Cr | HF | Refer to Page 6 |
| S□Y | HF | HF | |

□ : Special shell material code

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

**4 Type of end connection:**
No code is required for RF-flanged ends
**W:** Butt-welding ends.
Refer to "Contact Face of Flanges" on Page 7.

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

# General Design Specifications

| Items | American Std. | British Std. |
|---|---|---|
| **Shell wall thickness and general valve design** | API 600 | BS 1414 (Gate valve)<br>BS 1873 (Globe valve)<br>BS 1868 (Check valve) |
| **Pressure-temperature ratings** | ASME B16.34 | BS 1560 |
| **Face-to-face dimensions**<br>**End-to-end dimensions** | ASME B16.10 | BS 2080 |
| **End flange dimensions**<br>**Gasket contact facing** | ASME B16.5* | BS 1560 |
| **Welding end dimensions** | ASME B16.25 | BS 1414 (Gate valve)<br>BS 1873 (Globe valve)<br>BS 1868 (Check valve) |

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

# Valve Shell Materials

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

| ASTM Specification | Material Designation | Working Temperature* °F (°C) | KITZ code |
|---|---|---|---|
| **A216 WCB** | Carbon steel | 1000 (538) Maximum | — |
| **A217 WC1** | C–1/2 Mo | | 1C |
| **A217 WC6** | 11/4 Cr–1/2 Mo | 1100 (593) Maximum | 6C |
| **A217 WC9** | 21/4 Cr–1Mo | | 9C |
| **A217 C5** | 5Cr–1/2 Mo | 1200 (649) Maximum | 5C |
| **A217 C12** | 9Cr–1Mo | | 12C |
| **A352 LCB** | Carbon steel | –50 (–46) Minimum | BL |
| **A352 LCC** | Carbon steel | | CL |
| **A352 LC1** | C–1/2 Mo | –75 (–59) Minimum | 1L |
| **A352 LC2** | 21/2 Ni –100 | –100 (–73) Minimum | 2L |
| **A352 LC3** | 31/2 Ni –150 | –150 (–101) Minimum | 3L |

For ASTM A351 Austenitic Stainless Steel Valves, refer to KITZ Cat.No.E-150.
*Refer to ASME B16.34 for details of ASTM A216, A217 and A352 Pressure-temperature ratings. (See page 31 for A216 and A217)
The minimum working temperatures of ASTM A352 are based on ASME B31.3.

# KITZ Low Temperature Service Valves

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

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# Valve Trim Materials

API 600 and BS 1414/1873/1868 specify the following valve component parts as the valve trim:

| Description | Gate Valve | Globe Valve | Check Valve |
|---|---|---|---|
| **Disc seat surface** | ● | ● | ● |
| **Body seat surface** | ● | ● | ● |
| **Bonnet bush (Backseat)** | ● | ● | — |
| **Stem** | ● | ● | — |
| **Others** | Internal small parts | Lock nut | Hinge Pin |
| **Specified by** | API 600<br>BS 1414 | BS 1873 | BS 1868 |

*Available optionally.

# Disc seats and body seats

Following trims specified in API 600, Table 13, are available from KITZ either as our standard or at your option. Composition of combination trims which employ different seating surface materials for disc seats and body seats, shall be arranged at the manufacturer's discretion, unless specified in advance.

| Combination number | Material description | Brinell hardness |
|---|---|---|
| **5.** | HF / HF | 350HB min. |
| **8.** | 13Cr / HF | 250HB min. / 350HB min. |
| **11.*** | Ni-Cu alloy (Monel) / HF | Not specified / 350HB min. |
| **12.*** | 18Cr-8Ni-Mo (316) / HF | Not specified / 350HB min. |
| **14.*** | 19Cr-29Ni (Alloy 20) / HF | Not specified / 350HB min. |

*Available optionally.
HF: Co-Cr-W Alloy (Stellite No.6) deposit

# Stems and bonnet bushing (backseat bushing)

ASTM A182 (F6a) is our standard material for stems and bonnet bushing. The other materials including ASTM A182 (F304), A182 (F316), Monel and Alloy 20 are available on your specific request.

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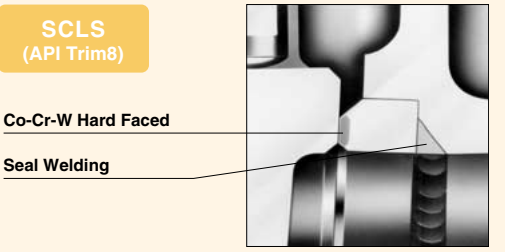
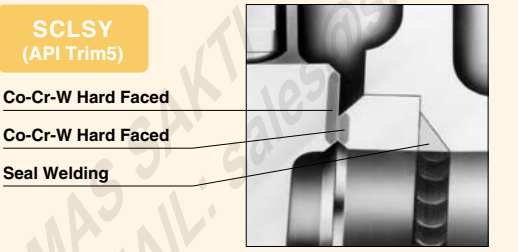
# Mounting of Body Seat Rings

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

**SCLS**
**(API Trim8)**




**SCLSY**
**(API Trim5)**




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

| KITZ Product Code | Standard Disc Seat | Standard Body Seat | Mounting of Body Seat Rings |
|---|---|---|---|
| **SCLS (Gate)**<br>**SCJS (Globe)**<br>**SCOS (Check)** | F6a or<br>WCB + 13Cr or<br>A105 + 13Cr or<br>CA15 | A105 + HF* or<br>A106 Gr. B + HF* or<br>AISI 1022 + HF* or<br>Direct HF** | Seal Welded or Direct HF** |
| **SCLSY (Gate)**<br>**SCJSY (Globe)**<br>**SCOSY (Check)** | A105 + HF* or<br>WCB + HF* or<br>CA15 + HF* | A105 + HF* or<br>A106 Gr. B + HF* or<br>AISI 1022 + HF* or<br>Direct HF** | Seal Welded or Direct HF** |

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

# Bonnet Gasket Materials

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

| Gasket Material | Class | | | | | |
|---|---|---|---|---|---|---|
| | 150 | 300 | 600 | 900 | 1500 | 2500 |
| **Corrugated metal with flexible graphite** | ● | | | | | |
| **Ring joint metal** | | | ● | ● | ● | ● |
| **Spiral wound metal, flexible graphite filled** | | ● | | | | |
| **Stainless steel inserted flexible graphite** | ● | | | | | |

Note: Refer to Page 9 for bonnet gaskets used for KITZ low emission service valves.

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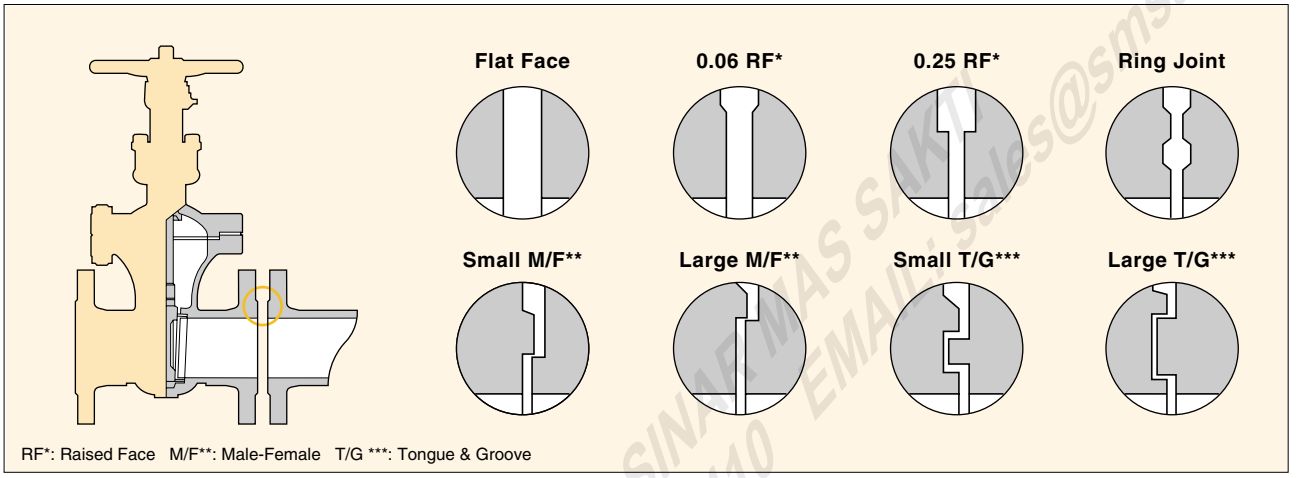
# Contact Face of Flanges

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




Gasket contact surface finish of end flanges as well as body-bonnet flange very much depends on the materials selected for flange gaskets.

# NACE Valves

For servicing sour gases or other Hydrogen Sulfide bearing hydrocarbon fluids, KITZ offers NACE valves made of component materials specially heat-treated and hardness-controlled in comformity with NACE MR0103, KITZ Standard, or optionally NACE MR0175 Standard.
Typical NACE material configuration is shown below for KITZ cast steel gate valves. A note should be taken on the fact that NACE hardness requirement conflicts with the valve trim. KITZ NACE steel valves are available only as a specified option.

| Valve Parts | ASTM Specification | NACE Hardness |
|---|---|---|
| **Body/bonnet** | A216 WCB | ≦ HRC 22 (237 HB) |
| **Disc** | A216 WCB or AISI Type 410 or A217 CA15 | |
| **Disc seat** | *13Cr deposit or AISI Type 410 | |
| **Gland** | *AISI Type 410 | |
| **Stem** | | |
| **Bonnet bushing** | | |
| **Body seat surface** | HF** | ≧ 350 HB |
| **Bonnet bolts** | A193 B7 | — |
| | A193 B7M | ≦ HRC 22 |
| **Bonnet nuts** | A194 2H | — |
| | A194 2HM | ≦ HRC 22 |

*Double tempered. (Three step process) **Co-Cr-W Alloy deposited for hard facing.

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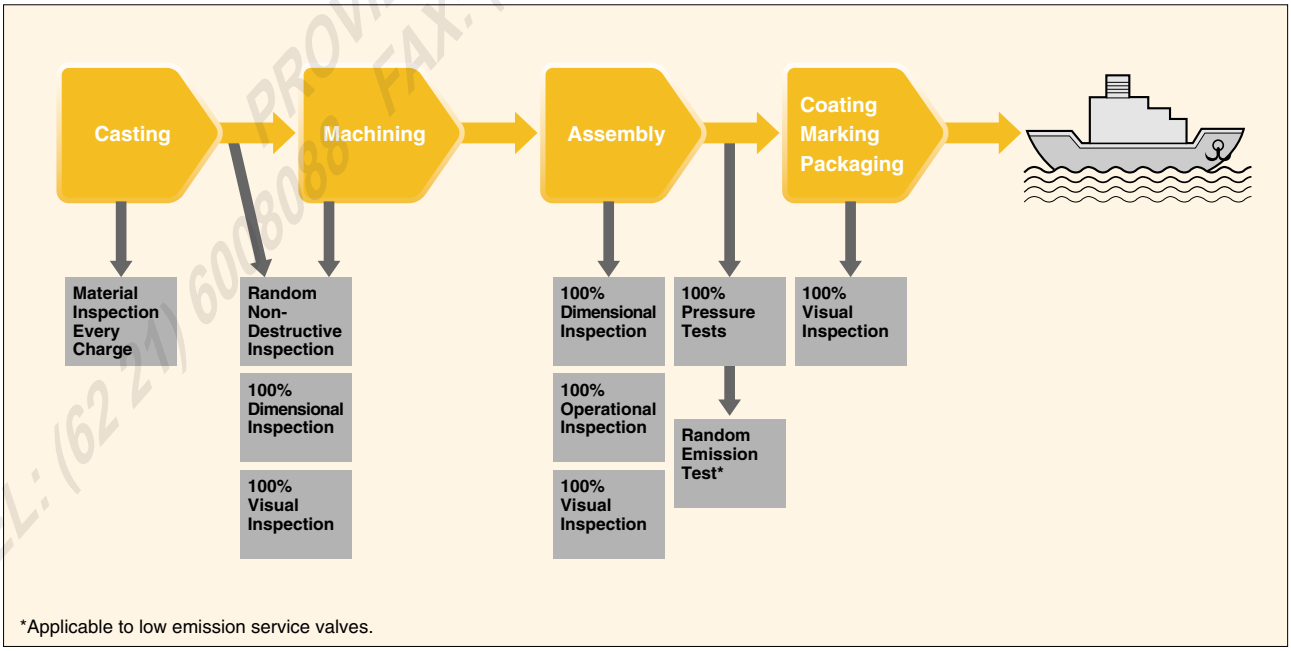
# Inspection and Warranty Policy of KITZ Corporation

Every piece of KITZ cast carbon and low alloy steel valves is subjected to 100% pressure tests, according to API 598 requirements. Manufacturer's material test reports and inspection certificates are available on your request, while each valve is guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from the factories of KITZ Corporation.
Various tests and inpections of valves made by KITZ Corporation include the following. Unless otherwise specified, all KITZ cast steel valves shall be subjected to these testing or inspection methods and evaluation criteria.

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

*Applicable to low emission service valves.

# Typical KITZ Inspection Flow




*Applicable to low emission service valves.

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# KITZ Low Emission Service Valves

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

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

## Gland packing

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

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

## Bonnet gaskets (including check valve cover gaskets)

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

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

Class 600 : Ring joint metal gasket

## Diametrical interface clearance

20 to 32 mils (0.5 to 0.8 mm) : Stem to gland

20 to 32 mils (0.5 to 0.8 mm) : Stem to bonnet bushing

4 to 12 mils (0.1 to 0.3 mm) : Gland to stuffing boxs

## Stem

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

## Stuffing box

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

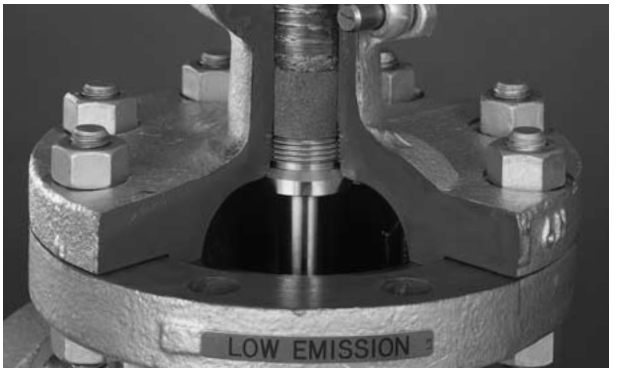
## Plug gaskets for check valves

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

Class 600 : Spiral wound metal, flexible graphite filled

## Product identification

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




## YRT Emission Test Results

In addition to our in-house lab tests and certifications by Lloyd's Register of Shipping, a third-party perfomance test was carried out on a KITZ nominal size 6 Class 300 gate valve at Yarmouth Research and Technology, Maine, USA, according to one user's testing specifications. The test conditions included an unprecedented 3500 cycle operation of a 99% methane pressurized valve through thermal cycles at 350˚F (177℃), with the valve stem positioned horizontally to the ground, and the leak level was monitored at every 100 cycles, from an aluminum foil housing sealed the valve gland area. In spite of these severe test conditions, the results were in close agreement with findings from the tests made at our laboratory over the last several years.

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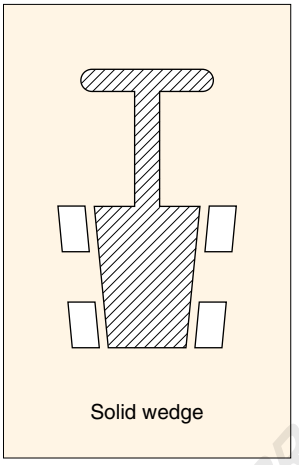
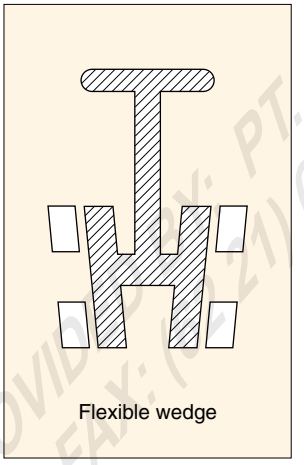
# Design Features of KITZ Gate Valve Wedges (Discs)

Among the four different shapes of wedge gates recognized by API 600 Paragraph 5.6.1.1 and 5.6.1.2, KITZ has adopted solid wedges for smaller valves such as nominal size 2 to 4 of Class 900/1500/2500 gate valves, and flexible wedges for all other sizes of all pressure classes.

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



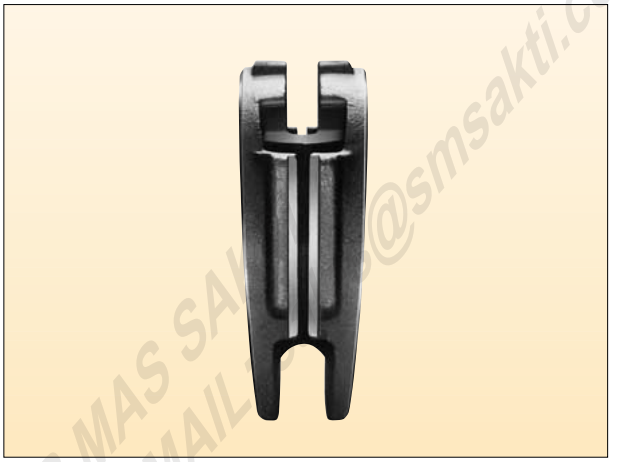
Solid wedge



Flexible wedge

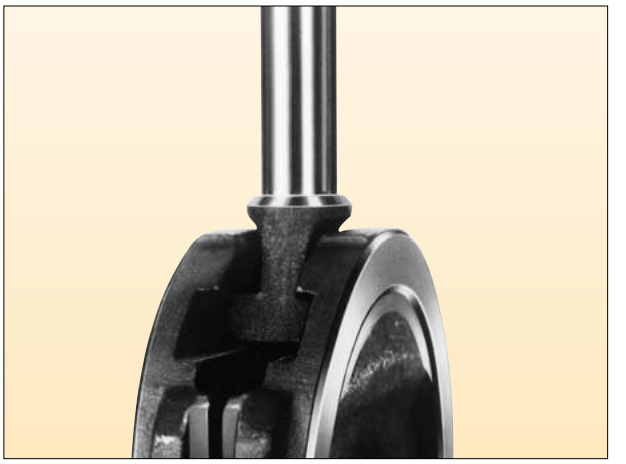
Heavily designed KITZ wedge gates are forged or cast solid, single piece of steel without any welding work. Specially heat-treated wedges are firmly coupled with integral T-head of the valve stems, which are also ruggedly designed and specially heat-treated for the highest possible durability of stem to wedge connection. API 600 Paragraph 5.8.7 particularly emphasizes the importance of the mechanical strength of this connection.

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



Side View

Front View



Stem-to-Wedge Connection

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## Memo

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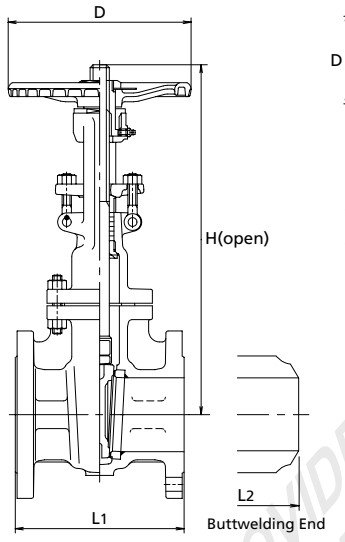
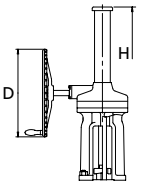
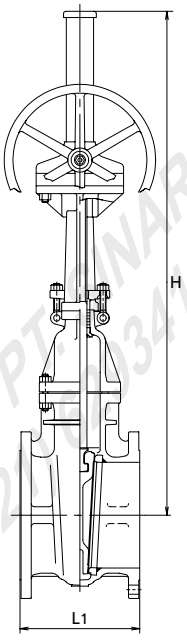
# Class 150 Cast Carbon Steel Gate Valve

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




Gear Operation
Optional
for Nominal Size
14 to 24 Standard
for 26 & larger




**150SCLS** **G-150SCLS**

| Fig | End Connections |
|---|---|
| 150SCLS | RF-flanged ends. |
| W150SCLS | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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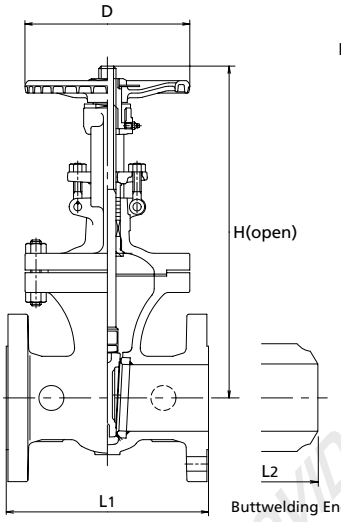
### Dimensions

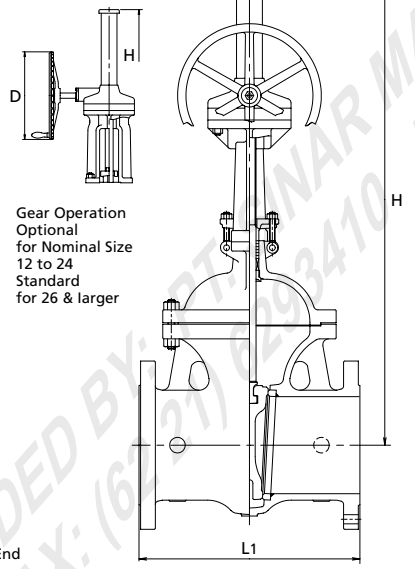
| Nominal Size | | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 |
| L1 | in | 6.50 | 7.00 | 7.50 | 8.00 | 9.00 | 10.00 | 10.50 | 11.50 | 13.00 | 14.00 | 15.00 | 16.00 | 17.00 | 18.00 | 19.00 | 20.00 | 22.00 | 24.00 | 24.00 | 26.00 | 28.00 | 28.00 |
| | mm | 165 | 178 | 190 | 203 | 229 | 254 | 267 | 292 | 330 | 356 | 381 | 406 | 432 | 457 | 483 | 508 | 559 | 610 | 610 | 660 | 711 | 711 |
| L2 | in | — | 8.50 | 9.50 | 11.14 | 12.00 | 15.00 | 15.86 | 16.50 | 18.00 | 19.76 | 22.50 | 24.00 | 26.00 | 28.00 | 30.00 | 32.00 | 34.00 | 36.00 | 36.00 | 38.00 | 40.00 | 40.00 |
| | mm | — | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 | 572 | 610 | 660 | 711 | 762 | 813 | 864 | 914 | 914 | 965 | 1016 | 1016 |
| H | in | 15.2 | 15.2 | 17.0 | 20.1 | 23.3 | 25.9 | 29.9 | 37.8 | 45.8 | 53.6 | 60.0 | 66.6 | 74.3 | 83.6 | 91.6 | 98.1 | 111.6 | 119.3 | 124.2 | 128.6 | 138.1 | 149.6 |
| | mm | 385 | 385 | 432 | 510 | 592 | 658 | 759 | 959 | 1163 | 1362 | 1523 | 1691 | 1888 | 2124 | 2326 | 2492 | 2835 | 3030 | 3154 | 3267 | 3507 | 3801 |
| D | in | 7.9 | 7.9 | 7.9 | 9.8 | 9.8 | 11.8 | 11.8 | 13.8 | 15.7 | 17.7 | 19.7 | 23.6 | 23.6 | 26.8 | 26.8 | 29.9 | 19.7 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 |
| | mm | 200 | 200 | 200 | 250 | 250 | 300 | 300 | 350 | 400 | 450 | 500 | 600 | 600 | 680 | 680 | 760 | 500 | 600 | 600 | 600 | 600 | 600 |

# Class 300 Cast Carbon Steel Gate Valve

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




300SCLS




G-300SCLS

| Fig | End Connections |
|---|---|
| 300SCLS | RF-flanged ends. |
| W300SCLS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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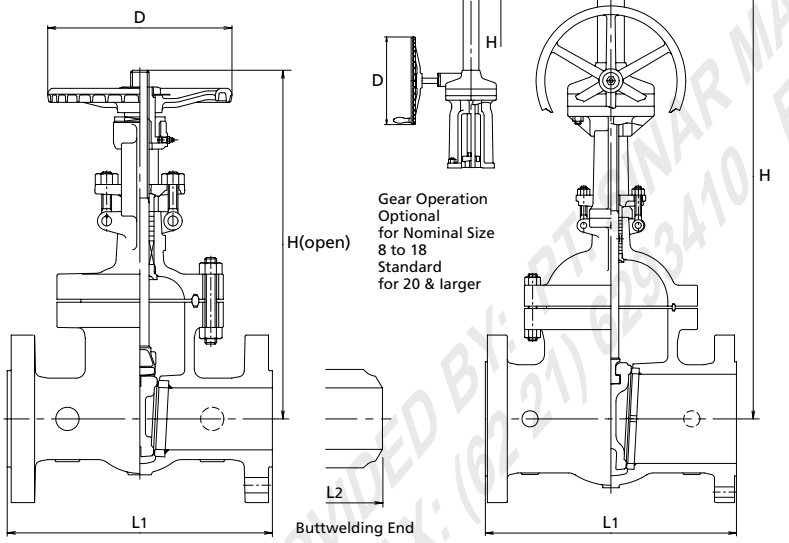
## Dimensions

| Nominal Size | | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 |
| L1 | in | 7.50 | 8.50 | 9.50 | 11.14 | 12.00 | 15.00 | 15.86 | 16.50 | 18.00 | 19.76 | 30.00 | 33.00 | 36.00 | 39.00 | 43.00 | 45.00 | 49.00 | 53.00 | 55.00 | 60.00 | 64.00 | 68.00 |
| | mm | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 | 762 | 838 | 914 | 991 | 1092 | 1143 | 1245 | 1346 | 1397 | 1524 | 1626 | 1727 |
| L2 | in | — | 8.50 | 9.50 | 11.14 | 12.00 | 15.00 | 15.86 | 16.50 | 18.00 | 19.76 | 30.00 | 33.00 | 36.00 | 39.00 | 43.00 | 45.00 | 49.00 | 53.00 | 55.00 | 60.00 | 64.00 | 68.00 |
| | mm | — | 216 | 241 | 283 | 305 | 381 | 403 | 419 | 457 | 502 | 762 | 838 | 914 | 991 | 1092 | 1143 | 1245 | 1346 | 1397 | 1524 | 1626 | 1727 |
| H | in | 16.2 | 16.2 | 17.9 | 20.8 | 24.1 | 27.2 | 31.1 | 39.9 | 47.8 | 56.6 | 61.5 | 68.1 | 76.0 | 84.1 | 93.1 | 100 | 112.1 | 124.1 | 131.5 | 137.8 | 150.6 | 154.6 |
| | mm | 411 | 411 | 454 | 528 | 613 | 692 | 790 | 1013 | 1215 | 1437 | 1561 | 1729 | 1931 | 2137 | 2364 | 2540 | 2848 | 3151 | 3341 | 3500 | 3826 | 3926 |
| D | in | 7.9 | 7.9 | 7.9 | 9.8 | 9.8 | 11.8 | 13.8 | 15.7 | 17.7 | 19.7 | 23.6 | 23.6 | 26.8 | 29.9 | 29.9 | 35.8 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 | 23.6 |
| | mm | 200 | 200 | 200 | 250 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 600 | 680 | 760 | 760 | 910 | 600 | 600 | 600 | 600 | 600 | 600 |

# Class 600 Cast Carbon Steel Gate Valve

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




600SCLS G-600SCLS

| Fig | End Connections |
|---|---|
| 600SCLS | RF-flanged ends. |
| W600SCLS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
| L1 | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 | 35.00 | 39.00 | 43.00 | 47.00 | 51.00 | 55.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 | 889 | 991 | 1092 | 1194 | 1295 | 1397 |
| L2 | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 | 35.00 | 39.00 | 43.00 | 47.00 | 51.00 | 55.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 | 889 | 991 | 1092 | 1194 | 1295 | 1397 |
| H | in | 17.6 | 19.6 | 21.4 | 26.2 | 30.3 | 35.1 | 41.9 | 49.5 | 57.6 | 62.7 | 70.0 | 81.5 | 88.8 | 98.4 | 107.5 |
| | mm | 447 | 499 | 544 | 666 | 770 | 892 | 1065 | 1257 | 1464 | 1593 | 1779 | 2071 | 2256 | 2500 | 2730 |
| D | in | 7.9 | 9.8 | 9.8 | 11.8 | 15.7 | 17.7 | 19.7 | 23.6 | 26.8 | 29.9 | 29.9 | 35.8 | 23.6 | 23.6 | 24.0 |
| | mm | 200 | 250 | 250 | 300 | 400 | 450 | 500 | 600 | 680 | 760 | 760 | 910 | 600 | 600 | 610 |

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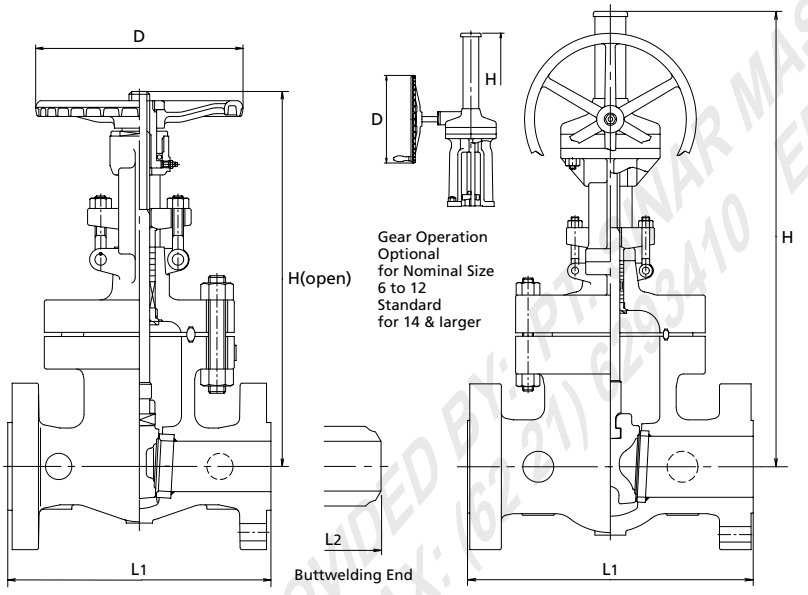
# Class 900 Cast Carbon Steel Gate Valve

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




900SCLS G-900SCLS

| Fig | End Connections |
|---|---|
| 900SCLS | RF-flanged ends. |
| W900SCLS | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

### Dimensions

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

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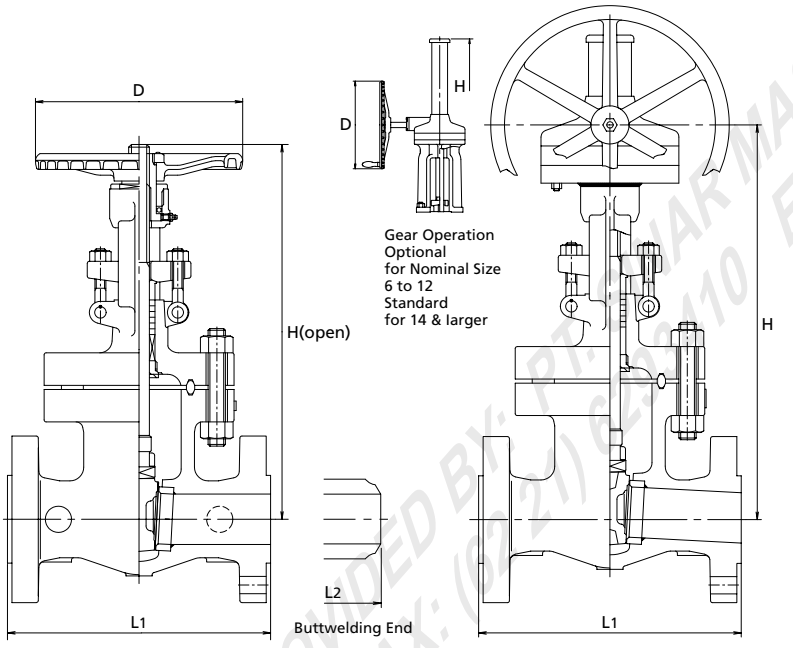
# Class 1500 Cast Carbon Steel Gate Valve

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




1500SCLS G-1500SCLS

| Fig | End Connections |
|---|---|
| 1500SCLS | RF-flanged ends. |
| W1500SCLS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 2 | 2 1/2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 50 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| L1 | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 | 39.00 | 44.50 | 49.50 | 54.50 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 | 991 | 1130 | 1257 | 1384 |
| L2 | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 | 39.00 | 44.50 | 49.50 | 54.50 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 | 991 | 1130 | 1257 | 1384 |
| H | in | 20.5 | 24.9 | 27.0 | 30.4 | 41.3 | 49.2 | 58.1 | 65.3 | 69.0 | 51.1 |
| | mm | 521 | 633 | 686 | 772 | 1050 | 1250 | 1477 | 1658 | 1750 | 2060 |
| D | in | 9.8 | 11.8 | 13.8 | 15.7 | 23.6 | 26.8 | 35.8 | 35.8 | 23.6 | 24.0 |
| | mm | 250 | 300 | 350 | 400 | 600 | 680 | 910 | 910 | 600 | 610 |

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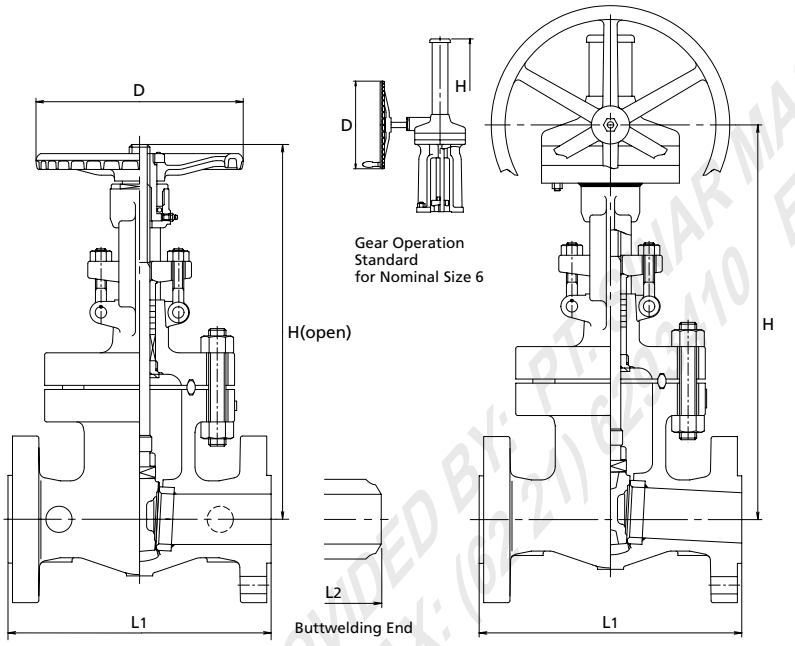
# Class 2500 Cast Carbon Steel Gate Valve

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




2500SCLS G-2500SCLS

| Fig | End Connections |
|---|---|
| 2500SCLS | RF-flanged ends. |
| W2500SCLS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A182 Gr.F6a |
| Disc | 13Cr/Carbon Steel+13Cr |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |
| Grease nipple | Carbon steel |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 2 | 2½ | 3 | 4 | 6 |
|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 150 |
| L1 | in | 17.75 | 20.00 | 22.75 | 26.50 | 36.00 |
| | mm | 451 | 508 | 578 | 673 | 914 |
| L2 | in | 17.75 | 20.00 | 22.75 | 26.50 | 36.00 |
| | mm | 451 | 508 | 578 | 673 | 914 |
| H | in | 24.9 | 29.0 | 30.0 | 34.8 | 48.9 |
| | mm | 633 | 737 | 762 | 885 | 1243 |
| D | in | 9.8 | 11.8 | 13.8 | 15.7 | 19.7 |
| | mm | 250 | 300 | 350 | 400 | 500 |

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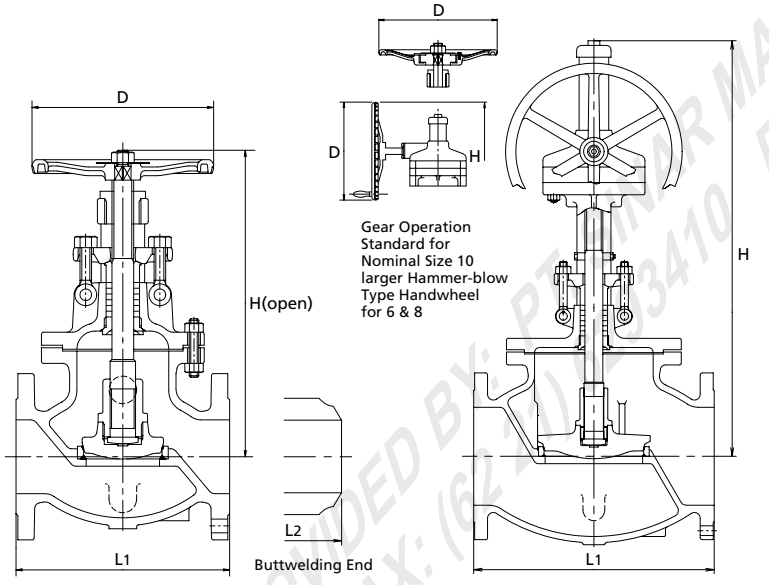
# Class 150 Cast Carbon Steel Globe Valve

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




150SCJS G-150SCJS

| Fig | End Connections |
|---|---|
| 150SCJS | RF-flanged ends. |
| W150SCJS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | 13Cr/Carbon Steel+13Cr |
| Lock nut | ASTM A182 Gr.F6a |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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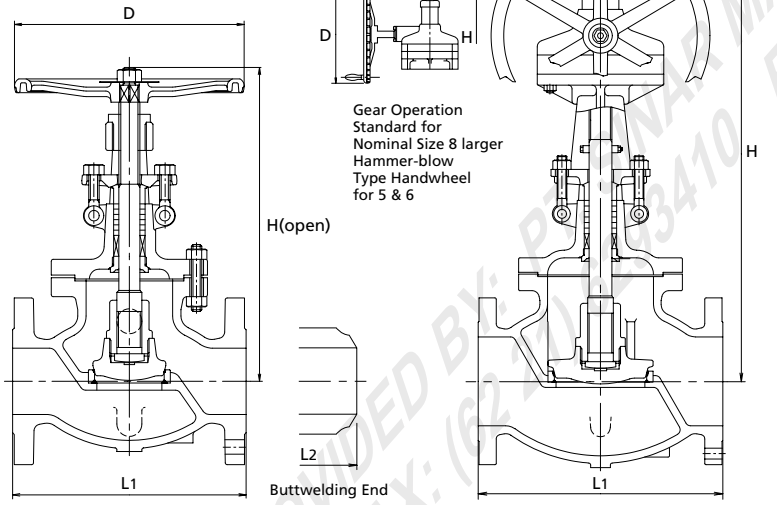
## Dimensions

| Nominal Size | | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| L1 | in | 6.50 | 8.00 | 8.50 | 9.50 | 11.50 | 14.00 | 16.00 | 19.50 | 24.50 | 27.50 | 31.00 | 36.00 | 38.50 |
| | mm | 165 | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 | 698 | 787 | 914 | 978 |
| L2 | in | — | 8.00 | 8.50 | 9.50 | 11.50 | 14.00 | 16.00 | 19.50 | 24.50 | 37.50 | 31.00 | 36.00 | 38.50 |
| | mm | — | 203 | 216 | 241 | 292 | 356 | 406 | 495 | 622 | 698 | 787 | 914 | 978 |
| H | in | 13.1 | 13.1 | 14.9 | 15.4 | 18.1 | 19.1 | 20.2 | 24.8 | 38.5 | 41.3 | 43.5 | 48.2 | 49.8 |
| | mm | 332 | 332 | 379 | 390 | 460 | 464 | 513 | 630 | 979 | 1049 | 1106 | 1224 | 1264 |
| D | in | 7.9 | 7.9 | 9.8 | 9.8 | 9.8 | 11.8 | 13.8 | 15.7 | 19.7 | 19.7 | 19.7 | 23.6 | 23.6 |
| | mm | 200 | 200 | 250 | 250 | 250 | 300 | 350 | 400 | 500 | 500 | 500 | 600 | 600 |

# Class 300 Cast Carbon Steel Globe Valve

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




300SCJS G-300SCJS

| Fig | End Connections |
|---|---|
| 300SCJS | RF-flanged ends. |
| W300SCJS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | 13Cr/Carbon Steel+13Cr |
| Lock nut | ASTM A182 Gr.F6a |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke sleeve | ASTM A439 Tp.D2 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 1½ | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 |
| L1 | in | 9.00 | 10.50 | 11.50 | 12.50 | 14.00 | 15.75 | 17.50 | 22.00 | 24.50 | 28.00 | 33.00 | 34.00 |
| | mm | 229 | 267 | 292 | 318 | 356 | 400 | 444 | 559 | 622 | 711 | 838 | 864 |
| L2 | in | — | 10.50 | 11.50 | 12.50 | 14.00 | 15.75 | 17.50 | 22.00 | 24.50 | 28.00 | 33.00 | 34.00 |
| | mm | — | 267 | 292 | 318 | 356 | 400 | 444 | 559 | 622 | 711 | 838 | 864 |
| H | in | 14.3 | 14.3 | 17.0 | 17.2 | 20.1 | 24.0 | 27.0 | 41.8 | 45.0 | 46.8 | 57.1 | 55.5 |
| | mm | 362 | 362 | 433 | 436 | 510 | 610 | 685 | 1062 | 1143 | 1188 | 1450 | 1410 |
| D | in | 7.9 | 7.9 | 9.8 | 9.8 | 13.8 | 15.7 | 17.7 | 19.7 | 23.6 | 23.6 | 23.6 | 23.6 |
| | mm | 200 | 200 | 250 | 250 | 350 | 400 | 450 | 500 | 600 | 600 | 600 | 600 |

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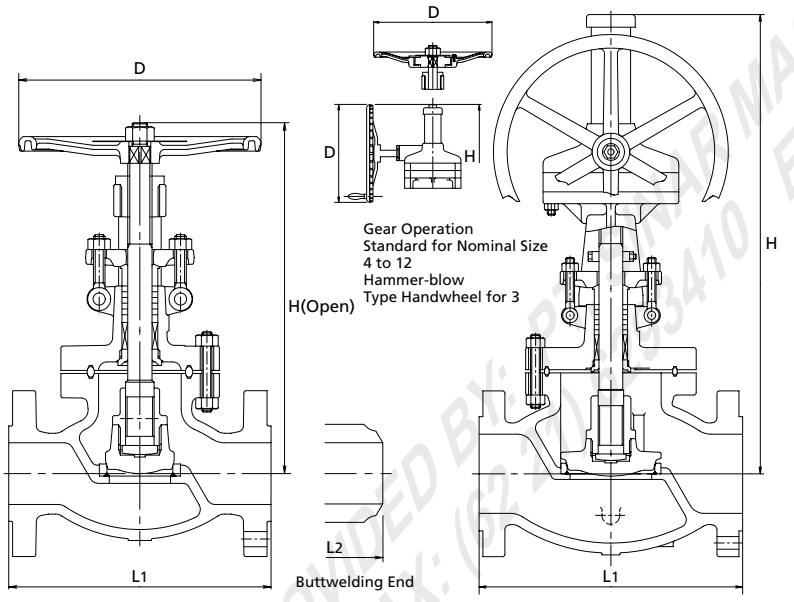
# Class 600 Cast Carbon Steel Globe Valve

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




600SCJS G-600SCJS

| Fig | End Connections |
|---|---|
| 600SCJS | RF-flanged ends. |
| W600SCJS | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | 13Cr/Carbon Steel+13Cr |
| Lock nut | ASTM A182 Gr.F6a |
| Body seat ring | Carbon Steel+HF* |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke | ASTM A216 Gr.WCB |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

### Dimensions

| Nominal Size | | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
| $L_1$ | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 |
| $L_2$ | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 |
| H | in | 15.7 | 18.7 | 19.9 | 35.3 | 36.6 | 39.0 | 45.9 | 52.0 | 62.2 |
| | mm | 400 | 475 | 506 | 897 | 930 | 991 | 1167 | 1320 | 1580 |
| D | in | 9.8 | 11.8 | 13.8 | 19.7 | 19.7 | 19.7 | 23.6 | 23.6 | 24.0 |
| | mm | 250 | 300 | 350 | 500 | 500 | 500 | 600 | 600 | 610 |

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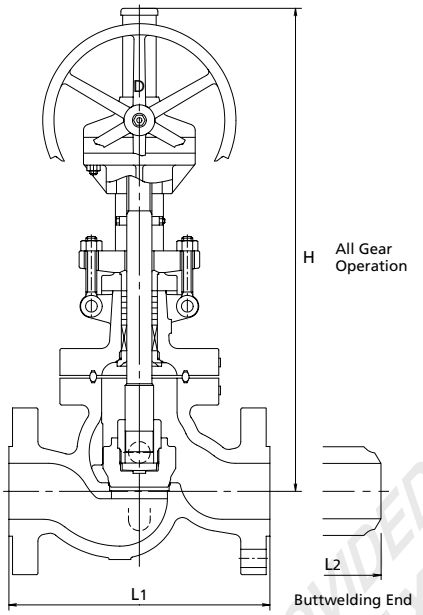
# Class 900 Cast Carbon Steel Globe Valve

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




**900SCJS**

| Fig | End Connections |
|---|---|
| 900SCJS | RF-flanged ends. |
| W900SCJS | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB+HF* |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | 13Cr/Carbon Steel+13Cr |
| Lock nut | ASTM A182 Gr.F6a |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke | ASTM A216 Gr.WCB |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

### Dimensions

| Nominal Size | | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| | | 80 | 100 | 150 | 200 |
| $L_1$ | in | 15.00 | 18.00 | 24.00 | 29.00 |
| | mm | 381 | 457 | 610 | 737 |
| $L_2$ | in | 15.00 | 18.00 | 24.00 | 29.00 |
| | mm | 381 | 457 | 610 | 737 |
| H | in | 35.4 | 37.7 | 46.2 | 54.4 |
| | mm | 900 | 957 | 1173 | 1381 |
| D | in | 19.7 | 19.7 | 23.6 | 23.6 |
| | mm | 500 | 500 | 600 | 600 |

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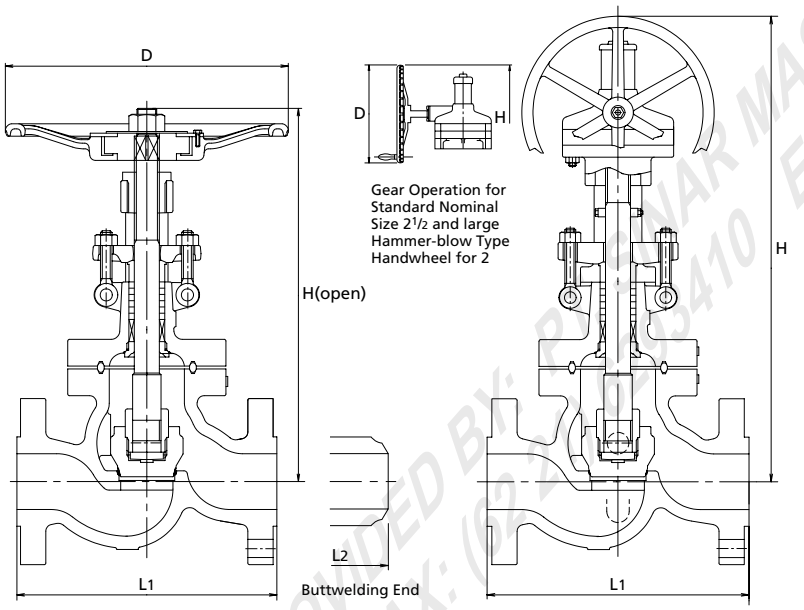
# Class 1500 Cast Carbon Steel Globe Valve

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




1500SCJS G-1500SCJS

| Fig | End Connections |
|---|---|
| 1500SCJS | RF-flanged ends. |
| W1500SCJS | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB+HF* |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | 13Cr/Carbon Steel+13Cr |
| Lock nut | ASTM A182 Gr.F6a |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105/A216 Gr. WCB |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke | ASTM A216 Gr.WCB |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

### Dimensions

| Nominal Size | | 2 | 2½ | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 150 | 200 |
| L1 | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 |
| L2 | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 |
| H | in | 21.3 | 36.2 | 38.0 | 43.4 | 53.8 | 55.1 |
| | mm | 540 | 920 | 964 | 1102 | 1366 | 1400 |
| D | in | 13.8 | 19.7 | 19.7 | 23.6 | 23.6 | 24.0 |
| | mm | 350 | 500 | 500 | 600 | 600 | 610 |

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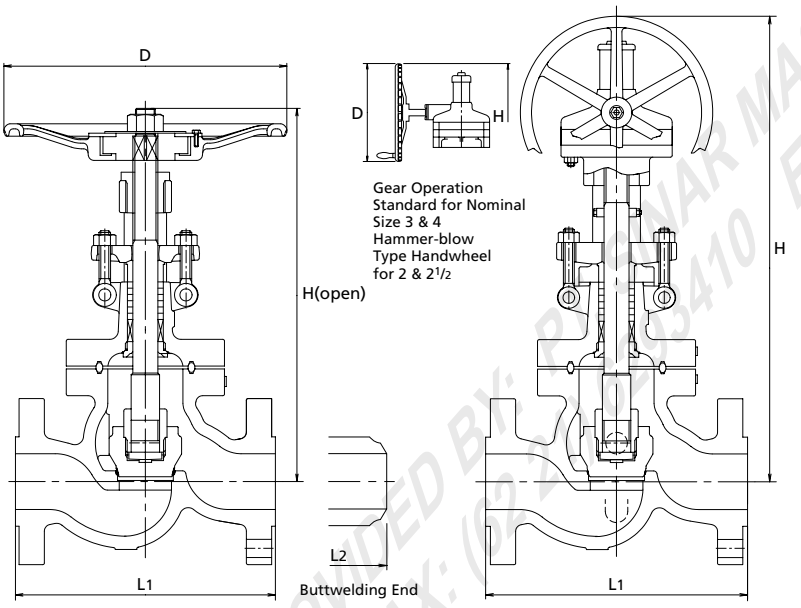
# Class 2500 Cast Carbon Steel Globe Valve

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




2500SCJS G-2500SCJS

| Fig | End Connections |
|---|---|
| 2500SCJS | RF-flanged ends. |
| W2500SCJS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB+HF* |
| Bonnet | ASTM A216 Gr.WCB |
| Stem | ASTM A276 Tp.403 |
| Disc | ASTM A182 Gr.F6a |
| Lock nut | ASTM A182 Gr.F6a |
| Gland | ASTM A182 Gr.F6a |
| Gland packing | Flexible Graphite |
| Gland flange | ASTM A105 |
| Handwheel | Ductile iron |
| Gasket | See Page 6 |
| Bonnet bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Gland bolt/nut | ASTM A576 Gr.1045/A194 Gr.2H |
| Bonnet bushing | ASTM A182 Gr.F6a |
| Yoke | ASTM A216 Gr.WCB |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 2 | 2½ | 3 | 4 |
|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 |
| L1 | in | 17.75 | 20.00 | 22.75 | 26.50 |
| | mm | 451 | 508 | 578 | 673 |
| L2 | in | 17.75 | 20.00 | 22.75 | 26.50 |
| | mm | 451 | 508 | 578 | 673 |
| H | in | 25.5 | 27.6 | 40.0 | 50.3 |
| | mm | 648 | 702 | 1016 | 1278 |
| D | in | 15.7 | 19.7 | 23.6 | 23.6 |
| | mm | 400 | 500 | 600 | 600 |

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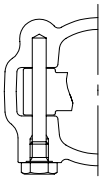
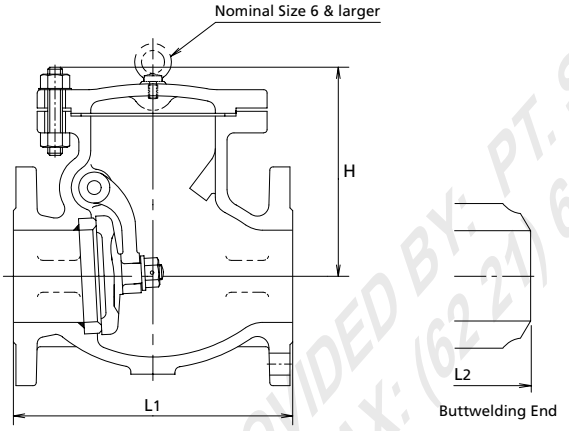
# Class 150 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.






150SCOS

| Fig | End Connections |
|---|---|
| 150SCOS | RF-flanged ends. |
| W150SCOS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Cover | ASTM A105/A216 Gr.WCB |
| Disc | 13Cr/Carbon Steel+13Cr |
| Disc nut | ASTM A194 Gr.8 |
| Body seat ring | Carbon Steel+HF* |
| Cover bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Arm | ASTM A105 ($1^1/_2$—14)<br>ASTM A216 Gr.WCB (16and larger) |
| Gasket | See Page 6 |
| Plug | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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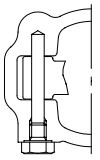
FAX: (62 21) 6008088

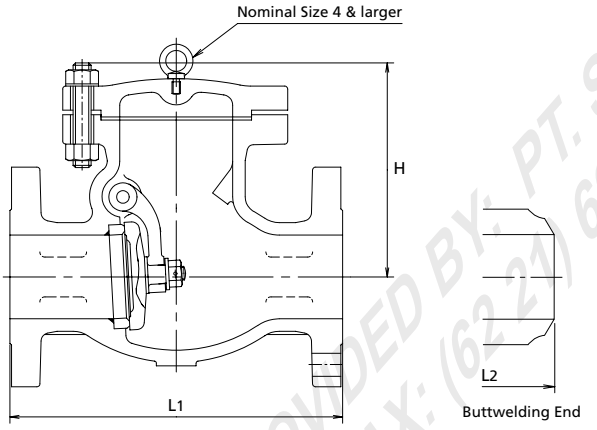
## Dimensions

| Nominal Size | | $1^1/_2$ | 2 | $2^1/_2$ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 |
| $L_1$ | in | 6.50 | 8.00 | 8.50 | 9.50 | 11.50 | 13.00 | 14.00 | 19.50 | 24.50 | 27.50 | 31.00 | 34.00 | 38.50 | 38.50 | 42.00 | 51.00 | 51.00 | 57.00 | 60.00 |
| | mm | 165 | 203 | 216 | 241 | 292 | 330 | 356 | 495 | 622 | 698 | 787 | 864 | 978 | 978 | 1067 | 1295 | 1295 | 1448 | 1524 |
| $L_2$ | in | — | 8.00 | 8.50 | 9.50 | 11.50 | 13.00 | 14.00 | 19.50 | 24.50 | 27.50 | 31.00 | 34.00 | 38.50 | 38.50 | 42.00 | 51.00 | 51.00 | 57.00 | 60.00 |
| | mm | — | 203 | 216 | 241 | 292 | 330 | 356 | 495 | 622 | 698 | 787 | 864 | 978 | 978 | 1067 | 1295 | 1295 | 1448 | 1524 |
| H | in | 5.3 | 6.0 | 6.7 | 7.1 | 7.9 | 9.25 | 9.8 | 11.6 | 13.2 | 14.5 | 16.3 | 18.1 | 20.1 | 23.0 | 23.0 | 24.8 | 26.8 | 28.2 | 29.9 |
| | mm | 135 | 152 | 170 | 180 | 200 | 235 | 250 | 295 | 334 | 368 | 415 | 460 | 510 | 583 | 585 | 630 | 680 | 716 | 760 |

# Class 300 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.






**300SCOS**

| Fig | End Connections |
|---|---|
| **300SCOS** | RF-flanged ends. |
| **W300SCOS** | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| **Body** | ASTM A216 Gr.WCB |
| **Cover** | ASTM A105/A216 Gr. WCB |
| **Disc** | 13Cr/Carbon Steel+13Cr |
| **Disc nut** | ASTM A194 Gr.8 |
| **Body seat ring** | Carbon Steel+HF* |
| **Cover bolt/nut** | ASTM A193 Gr.B7/A194 Gr.2H |
| **Arm** | ASTM A105 ($1^1/_2$—12)<br>ASTM A216 Gr.WCB (14 and larger) |
| **Gasket** | See Page 6 |
| **Plug** | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | $1^1/_2$ | 2 | $2^1/_2$ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 28 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 700 | 750 |
| $L_1$ | in | 9.50 | 10.50 | 11.50 | 12.50 | 14.00 | 15.75 | 17.50 | 21.00 | 24.50 | 28.00 | 33.00 | 34.00 | 38.50 | 40.00 | 53.00 | 59.00 | 62.75 |
| | mm | 241 | 267 | 292 | 318 | 356 | 400 | 444 | 533 | 622 | 711 | 838 | 864 | 978 | 1016 | 1346 | 1499 | 1594 |
| $L_2$ | in | — | 10.50 | 11.50 | 12.50 | 14.00 | 15.75 | 17.50 | 21.00 | 24.50 | 28.00 | 33.00 | 34.00 | 38.50 | 40.00 | 53.00 | 59.00 | 62.75 |
| | mm | — | 267 | 292 | 318 | 356 | 400 | 444 | 533 | 622 | 711 | 838 | 864 | 978 | 1016 | 1346 | 1499 | 1594 |
| H | in | 5.5 | 6.5 | 7.5 | 8.1 | 8.9 | 9.8 | 10.7 | 13.0 | 14.2 | 16.0 | 18.9 | 21.1 | 22.6 | 24.8 | 31.7 | 36.6 | 38.4 |
| | mm | 140 | 165 | 190 | 205 | 225 | 250 | 272 | 330 | 360 | 406 | 480 | 535 | 575 | 630 | 805 | 930 | 975 |

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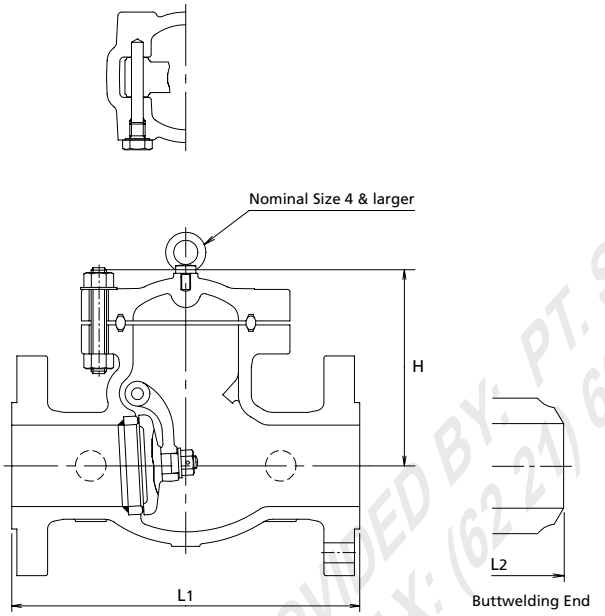
# Class 600 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.




600SCOS

| Fig | End Connections |
|---|---|
| 600SCOS | RF-flanged ends. |
| W600SCOS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Cover | ASTM A216 Gr.WCB |
| Disc | 13Cr/Carbon Steel+13Cr |
| Disc nut | ASTM A194 Gr.8 |
| Body seat ring | Carbon Steel+HF* |
| Cover bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Arm | ASTM A105 ($1^1/_2$—12)<br>ASTM A216 Gr.WCB (14 and larger) |
| Gasket | See page 6 |
| Plug | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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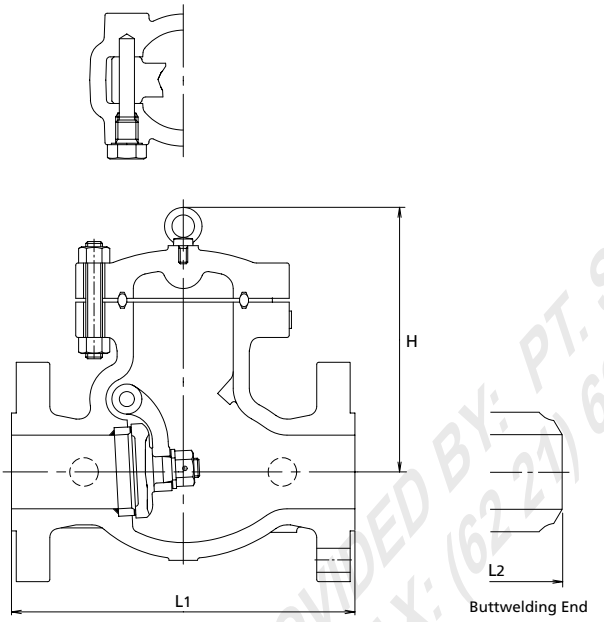
## Dimensions

| Nominal Size | | 2 | $2^1/_2$ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 |
| $L_1$ | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 | 35.00 | 39.00 | 43.00 | 47.00 | 55.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 | 889 | 991 | 1092 | 1194 | 1397 |
| $L_2$ | in | 11.50 | 13.00 | 14.00 | 17.00 | 20.00 | 22.00 | 26.00 | 31.00 | 33.00 | 35.00 | 39.00 | 43.00 | 47.00 | 55.00 |
| | mm | 292 | 330 | 356 | 432 | 508 | 559 | 660 | 787 | 838 | 889 | 991 | 1092 | 1194 | 1397 |
| H | in | 7.1 | 7.8 | 8.7 | 10.1 | 11.5 | 12.5 | 14.0 | 16.3 | 17.7 | 21.9 | 23.7 | 25.0 | 27.8 | 33.7 |
| | mm | 180 | 197 | 220 | 256 | 292 | 318 | 356 | 415 | 450 | 556 | 601 | 635 | 707 | 856 |

# Class 900 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.




900SCOS

| Fig | End Connections |
|---|---|
| 900SCOS | RF-flanged ends. |
| W900SCOS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Cover | ASTM A216 Gr.WCB |
| Disc | ASTM A216 Gr.WCB+13Cr |
| Disc nut | ASTM A194 Gr.8 |
| Body seat ring | Carbon Steel+HF* |
| Cover bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Arm | ASTM A216 Gr.WCB |
| Gasket | See Page 6 |
| Plug | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

## Dimensions

| Nominal Size | | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
| $L_1$ | in | 15.00 | 18.00 | 24.00 | 29.00 | 33.00 | 38.00 | 40.50 | 44.50 | 48.00 | 52.00 |
| | mm | 381 | 457 | 610 | 737 | 838 | 965 | 1029 | 1130 | 1219 | 1321 |
| $L_2$ | in | 15.00 | 18.00 | 24.00 | 29.00 | 33.00 | 38.00 | 40.50 | 44.50 | 48.00 | 52.00 |
| | mm | 381 | 457 | 610 | 737 | 838 | 965 | 1029 | 1130 | 1219 | 1321 |
| H | in | 11.5 | 13.6 | 17.5 | 20.7 | 24.4 | 28.3 | 31.3 | 34.6 | 37.5 | 41.0 |
| | mm | 292 | 346 | 444 | 526 | 620 | 720 | 794 | 880 | 952 | 1042 |

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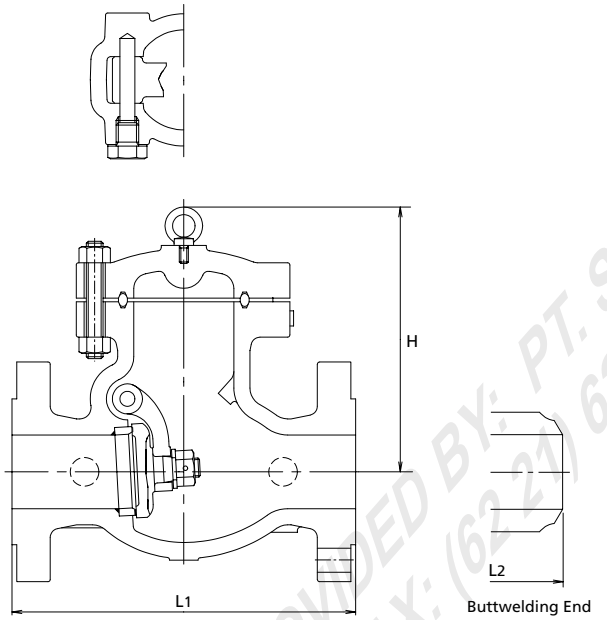
# Class 1500 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.




1500SCOS

| Fig | End Connections |
|---|---|
| 1500SCOS | RF-flanged ends. |
| W1500SCOS | Butt-welding ends. |

## Standard materials of parts

| Parts | Materials |
|---|---|
| Body | ASTM A216 Gr.WCB |
| Cover | ASTM A216 Gr.WCB |
| Disc | ASTM A216 Gr.WCB+13Cr |
| Disc nut | ASTM A194 Gr.8 |
| Body seat ring | Carbon Steel+HF* |
| Cover bolt/nut | ASTM A193 Gr.B7/A194 Gr.2H |
| Arm | ASTM A216 Gr.WCB |
| Gasket | See Page 6 |
| Plug | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

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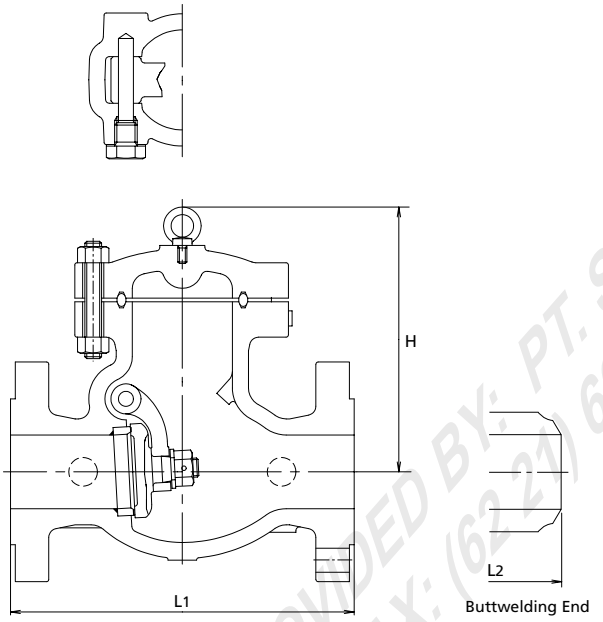
## Dimensions

| Nominal Size | | 2 | 2 1/2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 65 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| $L_1$ | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 | 39.00 | 44.50 | 49.50 | 54.50 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 | 991 | 1130 | 1257 | 1384 |
| $L_2$ | in | 14.50 | 16.50 | 18.50 | 21.50 | 27.75 | 32.75 | 39.00 | 44.50 | 49.50 | 54.50 |
| | mm | 368 | 419 | 470 | 546 | 705 | 832 | 991 | 1130 | 1257 | 1384 |
| H | in | 11.4 | 12.4 | 13.7 | 15.4 | 20.3 | 25.6 | 29.0 | 34.4 | 37.6 | 42.6 |
| | mm | 290 | 316 | 347 | 391 | 515 | 650 | 737 | 875 | 955 | 1082 |

# Class 2500 Cast Carbon Steel Check Valve

Bolted cover, Swing type disc.




**2500SCOS**

| Fig | End Connections |
|---|---|
| **2500SCOS** | RF-flanged ends. |
| **W2500SCOS** | Butt-welding ends. |

### Standard materials of parts

| Parts | Materials |
|---|---|
| **Body** | ASTM A216 Gr.WCB |
| **Cover** | ASTM A216 Gr.WCB |
| **Disc** | ASTM A216 Gr.WCB+13Cr |
| **Disc nut** | ASTM A194 Gr.8 |
| **Body seat ring** | Carbon Steel+HF* |
| **Cover bolt/nut** | ASTM A193 Gr.B7/A194 Gr.2H |
| **Arm** | ASTM A216 Gr.WCB |
| **Gasket** | See Page 6 |
| **Plug** | ASTM A576 Gr.1045 |

*Hard facing with Co-Cr-W Alloy.
**Note:**Refer to Page 3&6 for standard seat material and construction.

### Dimensions

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

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# Care for Handling Valves

## 1. Before mounting valves:

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

## 2. Mounting valves:

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

Check body/bonnet bolting during installation, stress relaxation of fasteners can occur during transit and storage.

Lubricate stem and yoke sleeve prior to valve operation. KITZ valves are shipped from the factory with only a light lubricant which facilitates assembly.

## 3. Retightening valves glands:

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

## 4. Replacing packing rings:

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

Sealing function of backseats is sometimes disturbed due to rust or other foreign objects trapped inside. It should be carefully checked before adding or replacing packing rings that backseats function properly. When the valve is highly pressurized, it sometimes causes danger to replace all of packing rings. In this case, adding a few new rings or replacing a few rings on top of the packing chamber is recommended as a first aid solution.
For replacement of packing rings, first remove the gland nuts and then packing rings. Clean the packing chamber and the valve stem. After checking that all sliding parts are in good condition, securely install new packing rings. Press new packing rings lightly a few times with the gland and then evenly tighten the gland nuts.

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# Pressure - Temperature Ratings <For reference only>
# Valves - Flanged and Welding End : Standard Class

ASTM Material Standard-to ASME B16.34 2004

| Temperature | | Working Pressures by Class, psig | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Class 150 | | | | | Class 300 | | | | | Class 600 | | | | |
| °F | °C | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) |
| -20 to 100 | -29 to 38 | 285 | 290 | 290 | 290 | 290 | 740 | 750 | 750 | 750 | 750 | 1,480 | 1,500 | 1,500 | 1,500 | 1,500 |
| 200 | 93 | 260 | 260 | 260 | 260 | 260 | 680 | 750 | 750 | 750 | 750 | 1,360 | 1,500 | 1,500 | 1,500 | 1,500 |
| 300 | 149 | 230 | 230 | 230 | 230 | 230 | 655 | 720 | 730 | 730 | 730 | 1,310 | 1,445 | 1,455 | 1,455 | 1,455 |
| 400 | 204 | 200 | 200 | 200 | 200 | 200 | 635 | 695 | 705 | 705 | 705 | 1,265 | 1,385 | 1,410 | 1,410 | 1,405 |
| 500 | 260 | 170 | 170 | 170 | 170 | 170 | 605 | 665 | 665 | 665 | 665 | 1,205 | 1,330 | 1,330 | 1,330 | 1,330 |
| 600 | 316 | 140 | 140 | 140 | 140 | 140 | 570 | 605 | 605 | 605 | 605 | 1,135 | 1,210 | 1,210 | 1,210 | 1,210 |
| 650 | 343 | 125 | 125 | 125 | 125 | 125 | 550 | 590 | 590 | 590 | 590 | 1,100 | 1,175 | 1,175 | 1,175 | 1,175 |
| 700 | 371 | 110 | 110 | 110 | 110 | 110 | 530 | 570 | 570 | 570 | 555 | 1,060 | 1,135 | 1.135 | 1.135 | 1,110 |
| 750 | 399 | 95 | 95 | 95 | 95 | 95 | 505 | 530 | 530 | 530 | 505 | 1,015 | 1,065 | 1,065 | 1,065 | 1,015 |
| 800 | 427 | 80 | 80 | 80 | 80 | 80 | 410 | 510 | 510 | 510 | 410 | 825 | 1,015 | 1,015 | 1,015 | 825 |
| 850 | 454 | 65 | 65 | 65 | 65 | 65 | 320 | 485 | 485 | 485 | 320 | 640 | 975 | 975 | 975 | 640 |
| 900 | 482 | 50 | 50 | 50 | 50 | 50 | 230 | 450 | 375 | 450 | 225 | 460 | 900 | 745 | 900 | 445 |
| 950 | 510 | 35 | 35 | 35 | 35 | 35 | 135 | 320 | 275 | 375 | 135 | 275 | 640 | 550 | 755 | 275 |
| 1000 | 538 | 20 | 20 | 20 | 20 | 20 | 85 | 215 | 200 | 255 | 85 | 170 | 430 | 400 | 505 | 170 |
| 1050 | 566 | | 20 | 20 | 20 | | | 145 | 145 | 170 | | | 290 | 290 | 345 | |
| 1100 | 593 | | 20 | 20 | 20 | | | 95 | 100 | 115 | | | 190 | 200 | 225 | |
| 1150 | 621 | | 20 | 20 | 20 | | | 65 | 60 | 75 | | | 130 | 125 | 150 | |
| 1200 | 649 | | 15 | 15 | 20 | | | 40 | 35 | 50 | | | 80 | 70 | 105 | |

| Temperature | | Working Pressures by Class, psig | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Class 900 | | | | | Class 1500 | | | | | Class 2500 | | | | |
| °F | °C | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) | WCB (a) | WC6 (b) | C5 (c) | C12 (c) | LCC (d) |
| -20 to 100 | -29 to 38 | 2,220 | 2,250 | 2,250 | 2,250 | 2,250 | 3,705 | 3,750 | 3,750 | 3,750 | 3,750 | 6,170 | 6,250 | 6,250 | 6,250 | 6,250 |
| 200 | 93 | 2,035 | 2,250 | 2,250 | 2,250 | 2,250 | 3,395 | 3,750 | 3,750 | 3,750 | 3,750 | 5,655 | 6,250 | 6,250 | 6,250 | 6,250 |
| 300 | 149 | 1,965 | 2,165 | 2,185 | 2,185 | 2,185 | 3,270 | 3,640 | 3,640 | 3,640 | 3,640 | 5,450 | 6,015 | 6,070 | 6,070 | 6,070 |
| 400 | 204 | 1,900 | 2,080 | 2,115 | 2,115 | 2,110 | 3,170 | 3,530 | 3,530 | 3,530 | 3,530 | 5,280 | 5,775 | 5,880 | 5,880 | 5,880 |
| 500 | 260 | 1,810 | 1,995 | 1,995 | 1,995 | 1,995 | 3,015 | 3,325 | 3,325 | 3,325 | 3,325 | 5,025 | 5,540 | 5,540 | 5,540 | 5,540 |
| 600 | 316 | 1,705 | 1,815 | 1,815 | 1,815 | 1,815 | 2,840 | 3,025 | 3,025 | 3,025 | 3,025 | 4,730 | 5,040 | 5,040 | 5,040 | 5,040 |
| 650 | 343 | 1,650 | 1,765 | 1,765 | 1,765 | 1,765 | 2,745 | 2,940 | 2,940 | 2,940 | 2,940 | 4,575 | 4,905 | 4,905 | 4,905 | 4,905 |
| 700 | 371 | 1,590 | 1,705 | 1,705 | 1,705 | 1,665 | 2,665 | 2,840 | 2,840 | 2,840 | 2,775 | 4,425 | 4,730 | 4,730 | 4,730 | 4,630 |
| 750 | 399 | 1,520 | 1,595 | 1,595 | 1,595 | 1,520 | 2,535 | 2,660 | 2,660 | 2,660 | 2,535 | 4,230 | 4,430 | 4,430 | 4,430 | 4,230 |
| 800 | 427 | 1,235 | 1,525 | 1,525 | 1,525 | 1,235 | 2,055 | 2,540 | 2,540 | 2,540 | 2,055 | 3,430 | 4,230 | 4,230 | 4,230 | 3,430 |
| 850 | 454 | 955 | 1,460 | 1,460 | 1,460 | 955 | 1,595 | 2,435 | 2,435 | 2,435 | 1,595 | 2,655 | 4,060 | 4,060 | 4,060 | 2,655 |
| 900 | 482 | 690 | 1,350 | 1,120 | 1,350 | 670 | 1,150 | 2,245 | 1,870 | 2,245 | 1,115 | 1,915 | 3,745 | 3,115 | 3,745 | 1,855 |
| 950 | 510 | 410 | 955 | 825 | 1,130 | 410 | 685 | 1,595 | 1,370 | 1,885 | 685 | 1,145 | 2,655 | 2,285 | 3,145 | 1,145 |
| 1000 | 538 | 255 | 650 | 595 | 760 | 255 | 430 | 1,080 | 995 | 1,270 | 430 | 715 | 1,800 | 1,655 | 2,115 | 715 |
| 1050 | 566 | | 430 | 430 | 515 | | | 720 | 720 | 855 | | | 1,200 | 1,200 | 1,430 | |
| 1100 | 593 | | 290 | 300 | 340 | | | 480 | 495 | 565 | | | 800 | 830 | 945 | |
| 1150 | 621 | | 195 | 185 | 225 | | | 325 | 310 | 375 | | | 545 | 515 | 630 | |
| 1200 | 649 | | 125 | 105 | 155 | | | 205 | 170 | 255 | | | 345 | 285 | 430 | |

(a) Upon prolonged exposure to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800°F
(b) Use normalized and tempered material only. Permissible, but not recommended for prolonged use above 1100°F
(c) Use normalized and tempered material only.
(d) Not to be used over 650°F.

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