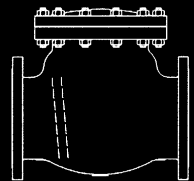
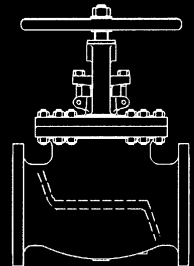
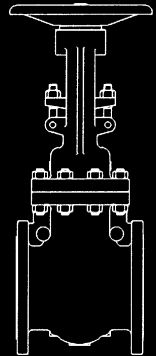




DELTA PACIFIC VALVE

API 600 Cast Steel Valves



Delta Pacific Valve Mfg. Co.

New York, U.S.A.



API 600 CAST STEEL VALVES

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HOW TO ORDER

1 5

ANSI Class

15 = ANSI Class 150
 30 = ANSI Class 300
 60 = ANSI Class 600
 90 = ANSI Class 900
 150 = ANSI Class 1500

1

Valve Type

1 = Gate, OS&Y, RS
 2 = Globe
 3 = Swing Check

2

Shell Material

1 = WC1
 2 = WCB
 3 = CF8M
 3L = CF3M
 4 = CF8
 4L = CF3
 5 = C5
 6 = WC6
 7 = CN7M
 9 = WC9
 C = LCC

F

End Connections

F = Flanged Ends
 B = Butt-Weld Ends
 T = Threaded
 X = Per Customer's Request

Example above, namely DPV Fig. 1512F = ANSI Class 150 Gate Valve, Outside Screw and Yoke, Rising Stem Design, in Cast Carbon Steel ASTM A216 Grade WCB Shell Material with Flanged Ends

COMPANY INTRODUCTION

Delta Pacific Valve Manufacturing Company

Consistent product quality and availability of substantial stocks makes **DPV®** a dependable choice for API 600 cast steel gate, globe, and check valves where total reliability is of the utmost concern.

DPV® manufactures valves to industry standard specifications, or to customer specified requirements, both promptly and economically.

DPV® maintains an extensive quality system which complies with the requirements of major oil companies, industry standards and to the ISO 9000 standard.

DPV® cast steel valves are manufactured in compliance with the requirements of API 600 and pressure tested in accordance with API 598 standard.

Materials of construction include the ASTM A216 and ASTM A352 range of carbon steels, the ASTM A217 range of alloy steels and the ASTM A351 range of corrosion-resistant steels; the pressure containing components being of high integrity castings.

All **DPV®** gate and globe valves can be easily adapted for actuation to most makes of actuators or to suit customer specifications.

Environmentally Friendly Valves

In concert with customers' continual efforts to both reduce the cost of ownership and comply with local environmental requirements, **DPV®** now manufactures a range of low emission valves offering minimum leakage and maximum service life in the stem sealing and bonnet joint areas.

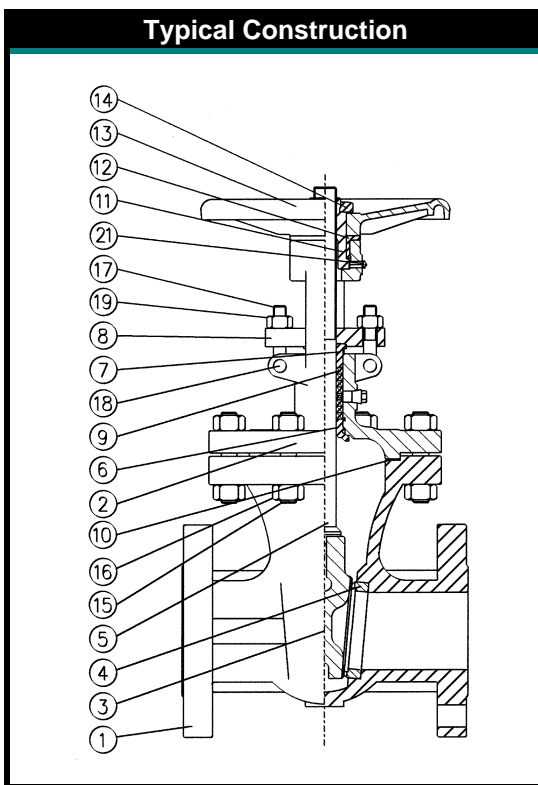
Testing and evaluation criteria is based on EPA method 21, and emission rates lower than 500 ppm during operation are standard for this range of gate, globe and check valves.

DPV® is an internationally registered trademark of D.P.S.I., New York, U.S.A.

GATE VALVE DESIGN FEATURES

- ◆ Plain or One-Piece Flexible Solid Wedge
- ◆ Bolted Bonnet Construction
- ◆ Outside Screw and Yoke
- ◆ Non-Rotating, Rising Stem
- ◆ Manual Operated, Actuation Available
- ◆ Renewable Threaded-In Backseat Bushing
- ◆ Renewable Threaded-In or Welded-In Seat Rings

- ◆ Design : API 600 / API 6D / BS 1414
- ◆ Shell Thickness : API 600 / API 6D / BS 1414
- ◆ Flanged Ends : ANSI B16.5 (Sizes ≤ 24")
MSS SP-44 (Sizes > 24")
API 605 (Sizes > 24")
- ◆ Face-to-Face : ANSI B16.10 / API 6D
- ◆ Testing : API 598 / BS 6755 Part 1



| No. | Part Name |
|---------|---------------------|
| 1 | Body |
| 2 | Bonnet |
| 3 | Wedge Disc |
| 4 | Seat Ring |
| 5 | Stem |
| 6 | Backseat Bushing |
| 7 | Gland Bushing |
| 8 | Gland Flange |
| 9 | Packing |
| 10 | Gasket |
| 11 | Yoke Sleeve |
| 12 | Retainer Nut |
| 13 | Handwheel |
| 14 | Handwheel Nut |
| 15 / 16 | Stud Bolt / Hex Nut |
| 17 | Eyebolt |
| 18 | Pin |
| 19 | Hex Nut |
| 21 | Grease Fitting |

Note: Weld end valves available upon request

- ◆ Heavy duty BODY with full port dia. and shell thickness to API / BS standards (where applicable)
- ◆ SEAT RINGS and WEDGE DISC ground and lapped to a mirror finish to provide matching sealing surfaces
- ◆ WEDGE DISC fully guided and precision fitted to ensure tight sealing performance
- ◆ Heat treated stainless steel STEM with precision machined ACME threads for long-lasting service
- ◆ Machined BACKSEAT BUSHING to provide a secondary metal-to-metal stem seal

- ◆ RISING STEM for open/close position indication
- ◆ Austenitic ductile iron YOKE SLEEVE to provide resistance to heat, corrosion and wear
- ◆ Two piece self-aligning GLAND BUSHING and GLAND FLANGE to prevent stem damage
- ◆ High strength alloy steel STUD BOLTS and heavy series HEX NUTS used
- ◆ Large diameter HANDWHEEL for easy operation
- ◆ Grease fitting for YOKE SLEEVE lubrication to minimize operating torque & stem wear

STANDARD MATERIALS OF CONSTRUCTION

| Part | ANSI B16.34 Material Group | | | | |
|-----------------------|--|--------------|--|---------------|---------------|
| | Carbon Steel | C-Mn Steel | Alloy Steel | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 |
| Body / Bonnet | A216 Gr. WCB | A352 Gr. LCC | A217 Gr. WC6 | A217 Gr. WC9 | A217 Gr. C5 |
| Gland Bushing | ← 13% Chromium ASTM A182 Gr. F6a → | | | | |
| Stud Bolts & Hex Nuts | B7 / 2H | L7 / 7 | ← ASTM A193 Gr. B16 / ASTM A194 Gr. 2H → | | |
| Yoke / Gland Flange | ← Carbon Steel → | | | | |
| Yoke Sleeve | ← Austenitic Ductile Iron ASTM A439 Type D2 → | | | | |
| Retainer Nut | ← Carbon Steel → | | | | |
| Handwheel | ← Ductile / Malleable Iron → | | | | |
| Handwheel Nut | ← Carbon Steel → | | | | |
| Gland Eyebolts & Nuts | ← Carbon Steel ASTM A307 Gr. B → | | | | |
| Part | Corrosion Resistant Steel | | | | |
| | 2.1 | | 2.2 | | 3.17 |
| | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Body / Bonnet | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Gland Bushing | 304SS | 304L SS | 316SS | 316L SS | Alloy 20 |
| Stud Bolts & Hex Nuts | ← Corrosion Resistant Steel ASTM A193 Gr. B8 / A194 Gr. 8 → | | | | |
| Yoke / Gland Flange | ← Corrosion Resistant Steel → | | | | |
| Yoke Sleeve | ← Austenitic Ductile Iron ASTM A439 Type D2 → | | | | |
| Retainer Nut | ← Carbon Steel → | | | | |
| Handwheel | ← Ductile / Malleable Iron → | | | | |
| Handwheel Nut | ← Carbon Steel → | | | | |
| Gland Eyebolts & Nuts | ← Corrosion Resistant Steel ASTM A193 Gr. B8 / ASTM A194 Gr. 8 → | | | | |

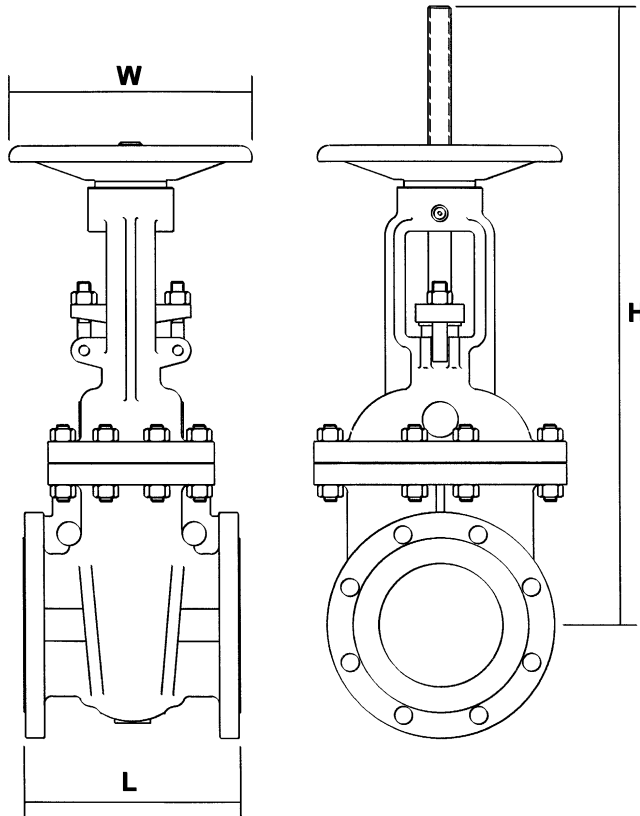
Note: Other materials available upon request.

Trim Materials

| Part | API Trim No. | | | | | | | | | | | |
|------------|--------------|-------|----------|-------|--------------|-------|-------|-------|----------|----------|--------|--|
| | 1 | 2 | 5 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| Wedge Disc | F6 | 304SS | HF | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | HF | |
| Seat Ring | F6 | 304SS | HF | HF | Ni-Cu | 316SS | HF | HF | Alloy 20 | HF | HF | |
| Stem | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS | |
| Backseat | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS | |
| Part | API Trim No. | | | | DPV Trim No. | | | | | | | |
| | 16 | 17 | 18 | A | B | C | D | E | F | G | H | |
| Wedge Disc | HF | HF | HF | HF | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze | |
| Seat Ring | HF | HF | HF | HF | Bronze | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE | |
| Stem | 316SS | 347SS | Alloy 20 | Ni-Cu | Brass | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Brass | |
| Backseat | 316SS | 347SS | Alloy 20 | Ni-Cu | Brass | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Brass | |

Note: Trim will be supplied either as a base material equal to body with overlay or solid trim at manufacturer's option.

DIMENSIONS



ANSI Class 150

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 178 | 388 | 200 | 40 | 18 |
| 2½" | 191 | 444 | 200 | 54 | 25 |
| 3" | 203 | 497 | 250 | 82 | 37 |
| 4" | 229 | 585 | 250 | 119 | 54 |
| 5" | 254 | 677 | 300 | 157 | 71 |
| 6" | 267 | 765 | 350 | 194 | 88 |
| 8" | 292 | 964 | 350 | 318 | 144 |
| 10" | 330 | 1,155 | 400 | 434 | 197 |
| 12" | 356 | 1,386 | 450 | 657 | 298 |
| 14" | 381 | 1,535 | 500 | 895 | 406 |
| 16" | 406 | 1,811 | 600 | 1,155 | 524 |
| 18" | 432 | 2,009 | 600 | 1,588 | 720 |
| 20" | 457 | 2,230 | 680 | 2,007 | 910 |
| 24" | 508 | 2,641 | 760 | 2,492 | 1,130 |
| 26" | 559 | 2,775 | 800 | 3,142 | 1,425 |
| 28" | 610 | 2,825 | 800 | 3,418 | 1,550 |
| 30" | 610 | 3,175 | 800 | 4,300 | 1,950 |
| 36" | 711 | 3,600 | 800 | 6,725 | 3,050 |

ANSI Class 300

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 216 | 424 | 200 | 53 | 24 |
| 2½" | 241 | 460 | 250 | 96 | 44 |
| 3" | 283 | 535 | 250 | 117 | 53 |
| 4" | 305 | 615 | 250 | 168 | 76 |
| 5" | 381 | 770 | 300 | 203 | 92 |
| 6" | 403 | 795 | 350 | 322 | 146 |
| 8" | 419 | 1,012 | 400 | 481 | 218 |
| 10" | 457 | 1,231 | 450 | 776 | 352 |
| 12" | 502 | 1,450 | 550 | 1,041 | 472 |
| 14" | 762 | 1,645 | 600 | 1,530 | 694 |
| 16" | 838 | 1,845 | 600 | 2,315 | 1,050 |
| 18" | 914 | 1,995 | 680 | 2,977 | 1,350 |
| 20" | 991 | 2,208 | 750 | 3,649 | 1,655 |
| 24" | 1,143 | 2,650 | 800 | 5,182 | 2,350 |
| 30" | 1,397 | 3,270 | 800 | 9,041 | 4,100 |

DPV Figure Numbers

| Material | ANSI Class | |
|---------------|------------|--------|
| | 150 | 300 |
| A216 Gr. WCB | 1512F | 3012F |
| A352 Gr. LCC | 151CF | 301CF |
| A217 Gr. WC6 | 1516F | 3016F |
| A217 Gr. WC9 | 1519F | 3019F |
| A217 Gr. C5 | 1515F | 3015F |
| A351 Gr. CF8 | 1514F | 3014F |
| A351 Gr. CF3 | 1514LF | 3014LF |
| A351 Gr. CF8M | 1513F | 3013F |
| A351 Gr. CF3M | 1513LF | 3013LF |
| A351 Gr. CN7M | 1517F | 3017F |

DIMENSIONS

ANSI Class 600

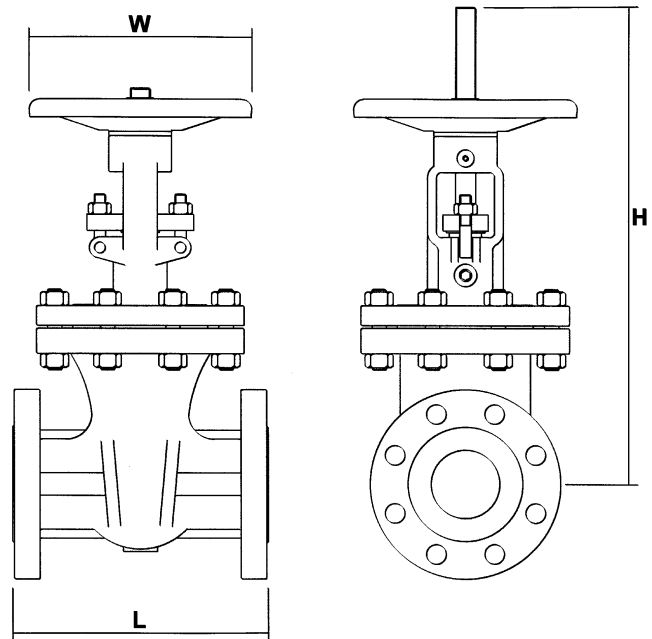
| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 292 | 458 | 250 | 101 | 46 |
| 2½" | 330 | 508 | 250 | 121 | 55 |
| 3" | 356 | 570 | 250 | 159 | 72 |
| 4" | 432 | 690 | 350 | 282 | 128 |
| 5" | 508 | 880 | 400 | 397 | 180 |
| 6" | 559 | 910 | 450 | 587 | 266 |
| 8" | 660 | 1,064 | 500 | 924 | 419 |
| 10" | 787 | 1,390 | 600 | 1,610 | 730 |
| 12" | 838 | 1,650 | 680 | 1,874 | 850 |
| 14" | 889 | 1,655 | 750 | 2,867 | 1,300 |
| 16" | 991 | 1,905 | 750 | 3,859 | 1,750 |

ANSI Class 900

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 368 | 445 | 300 | 187 | 85 |
| 3" | 381 | 595 | 350 | 276 | 125 |
| 4" | 457 | 750 | 400 | 397 | 180 |
| 6" | 610 | 865 | 500 | 684 | 310 |
| 8" | 737 | 1,225 | 600 | 1,158 | 525 |
| 10" | 838 | 1,450 | 750 | 2,150 | 975 |
| 12" | 965 | 1,675 | 800 | 3,197 | 1,450 |
| 14" | 1,029 | 1,680 | 800 | 4,190 | 1,900 |
| 16" | 1,130 | 1,925 | 800 | 5,634 | 2,555 |

ANSI Class 1500

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 368 | 475 | 400 | 243 | 110 |
| 3" | 470 | 600 | 400 | 320 | 145 |
| 4" | 546 | 775 | 500 | 485 | 220 |
| 6" | 705 | 925 | 600 | 889 | 403 |
| 8" | 832 | 1,250 | 750 | 1,566 | 710 |
| 10" | 991 | 1,525 | 800 | 2,977 | 1,350 |
| 12" | 1,130 | 1,725 | 800 | 5,072 | 2,300 |
| 14" | 1,257 | 1,750 | 800 | 6,836 | 3,100 |
| 16" | 1,384 | 1,950 | 800 | 7,883 | 3,575 |

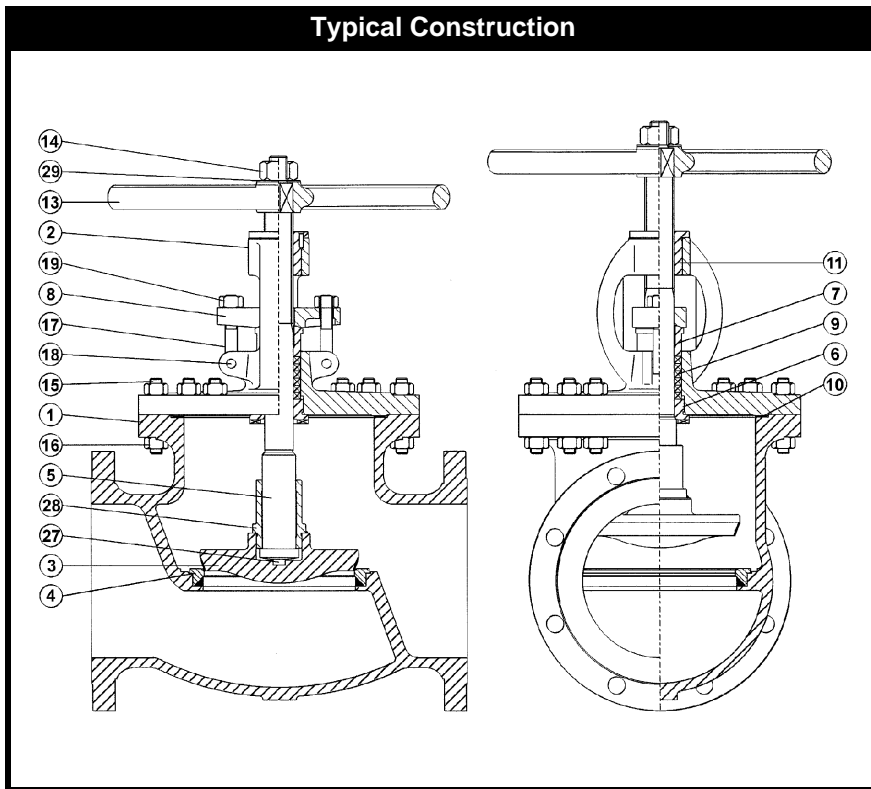


DPV Figure Numbers

| Material | ANSI Class | | |
|---------------|------------|--------|---------|
| | 600 | 900 | 1500 |
| A216 Gr. WCB | 6012F | 9012F | 15012F |
| A352 Gr. LCC | 601CF | 901CF | 1501CF |
| A217 Gr. WC6 | 6016F | 9016F | 15016F |
| A217 Gr. WC9 | 6019F | 9019F | 15019F |
| A217 Gr. C5 | 6015F | 9015F | 15015F |
| A351 Gr. CF8 | 6014F | 9014F | 15014F |
| A351 Gr. CF3 | 6014LF | 9014LF | 15014LF |
| A351 Gr. CF8M | 6013F | 9013F | 15013F |
| A351 Gr. CF3M | 6013LF | 9013LF | 15013LF |
| A351 Gr. CN7M | 6017F | 9017F | 15017F |

GLOBE VALVE DESIGN FEATURES

- ◆ Swivel Plug Disc Design Standard
- ◆ Flat and Regulating Type Disc Available
- ◆ Bolted Bonnet Construction
- ◆ Outside Screw and Yoke, Rising Stem
- ◆ Manual Operated, Actuation Available
- ◆ Renewable Threaded-In Backseat Bushing
- ◆ Renewable Threaded-In or Welded-In Seat Ring
- ◆ Design : BS 1873 / API 600
- ◆ Shell Thickness : BS 1873 / API 600
- ◆ Flanged Ends : ANSI B16.5 (Sizes ≤ 24")
MSS SP-44 (Sizes > 24")
API 605 (Sizes > 24")
- ◆ Face-to-Face : ANSI B16.10
- ◆ Testing : API 598 / BS 6755 Part 1



| No. | Part Name |
|---------|---------------------|
| 1 | Body |
| 2 | Bonnet |
| 3 | Disc |
| 4 | Seat Ring |
| 5 | Stem |
| 6 | Backseat Bushing |
| 7 | Gland Bushing |
| 8 | Gland Flange |
| 9 | Packing |
| 10 | Gasket |
| 11 | Yoke Bushing |
| 13 | Handwheel |
| 14 | Handwheel Nut |
| 15 / 16 | Stud Bolt / Hex Nut |
| 17 | Eyebolt |
| 18 | Pin |
| 19 | Hex Nut |
| 27 / 28 | Disc Washer / Nut |
| 29 | Washer |

Note: Weld end valves available upon request

- ◆ Heavy duty BODY with shell thickness to API / BS standards (where applicable)
- ◆ SEAT RING and WEDGE DISC ground and lapped to a mirror finish to provide matching sealing surfaces
- ◆ Plug Type DISC supplied as standard. Flat and Regulating Type DISC available upon request.
- ◆ Heat treated stainless steel STEM with precision machined ACME threads for long-lasting service
- ◆ Machined BACKSEAT BUSHING to provide a secondary metal-to-metal stem seal
- ◆ RISING STEM for open/close position indication
- ◆ Austenitic ductile iron YOKE SLEEVE to provide resistance to heat, corrosion and wear
- ◆ Two piece self-aligning GLAND BUSHING and GLAND FLANGE to prevent stem damage
- ◆ High strength alloy steel STUD BOLTS and heavy series HEX NUTS used
- ◆ Large diameter HANDWHEEL for easy operation
- ◆ Optional Deep Stuffing Box with Lantern Ring
- ◆ Angle and Y Body Patterns available

STANDARD MATERIALS OF CONSTRUCTION

| Part | ANSI B16.34 Material Group | | | | |
|-----------------------|--|--------------|--|---------------|---------------|
| | Carbon Steel | C-Mn Steel | Alloy Steel | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 |
| Body / Bonnet | A216 Gr. WCB | A352 Gr. LCC | A217 Gr. WC6 | A217 Gr. WC9 | A217 Gr. C5 |
| Gland Bushing | ← 13% Chromium ASTM A182 Gr. F6a → | | | | |
| Stud Bolts & Hex Nuts | B7 / 2H | L7 / 7 | ← ASTM A193 Gr. B16 / ASTM A194 Gr. 2H → | | |
| Yoke / Gland Flange | ← Carbon Steel → | | | | |
| Yoke Bushing | ← Austenitic Ductile Iron ASTM A439 Type D2 → | | | | |
| Handwheel | ← Ductile / Malleable Iron → | | | | |
| Handwheel Nut | ← Carbon Steel → | | | | |
| Gland Eyebolts & Nuts | ← Carbon Steel ASTM A307 Gr. B → | | | | |
| Part | Corrosion Resistant Steel | | | | |
| | 2.1 | | 2.2 | | 3.17 |
| | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Body / Bonnet | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Gland Bushing | 304SS | 304L SS | 316SS | 316L SS | Alloy 20 |
| Stud Bolts & Hex Nuts | ← Corrosion Resistant Steel ASTM A193 Gr. B8 / ASTM A194 Gr. 8 → | | | | |
| Yoke / Gland Flange | ← Corrosion Resistant Steel → | | | | |
| Yoke Bushing | ← Austenitic Ductile Iron ASTM A439 Type D2 → | | | | |
| Handwheel | ← Ductile / Malleable Iron → | | | | |
| Handwheel Nut | ← Carbon Steel → | | | | |
| Gland Eyebolts & Nuts | ← Corrosion Resistant Steel ASTM A193 Gr. B8 / ASTM A194 Gr. 8 → | | | | |

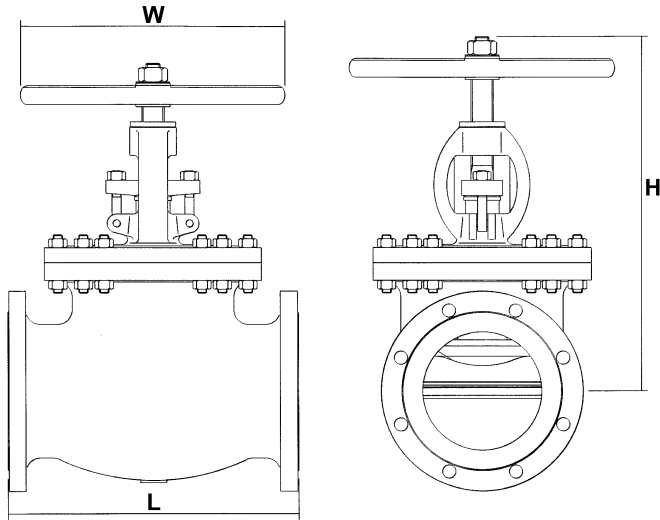
Note: Other materials available upon request.

Trim Materials

| Part | API Trim No. | | | | | | | | | | |
|--------------|--------------|-------|----------|--------------|--------|-------|-------|-------|----------|----------|--------|
| | 1 | 2 | 5 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Disc | F6 | 304SS | HF | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | HF |
| Seat Ring | F6 | 304SS | HF | HF | Ni-Cu | 316SS | HF | HF | Alloy 20 | HF | HF |
| Stem | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Backseat | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Washer / Nut | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Part | API Trim No. | | | DPV Trim No. | | | | | | | |
| | 16 | 17 | 18 | A | B | C | D | E | F | G | H |
| Disc | HF | HF | HF | HF | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze |
| Seat Ring | HF | HF | HF | HF | Bronze | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE |
| Stem | 316SS | 347SS | Alloy 20 | Ni-Cu | Brass | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Brass |
| Backseat | 316SS | 347SS | Alloy 20 | Ni-Cu | Brass | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Brass |
| Washer / Nut | 316SS | 347SS | Alloy 20 | Ni-Cu | Brass | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Brass |

Note: Trim will be supplied either as a base material equal to body with overlay or solid trim at manufacturer's option.

DIMENSIONS



ANSI Class 150

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 203 | 350 | 200 | 49 | 22 |
| 2½" | 216 | 403 | 250 | 66 | 30 |
| 3" | 241 | 405 | 250 | 93 | 42 |
| 4" | 292 | 478 | 350 | 132 | 60 |
| 5" | 356 | 513 | 350 | 170 | 77 |
| 6" | 406 | 555 | 350 | 214 | 97 |
| 8" | 495 | 610 | 450 | 355 | 161 |
| 10" | 622 | 730 | 500 | 679 | 308 |
| 12" | 699 | 1,008 | 600 | 904 | 410 |
| 14" | 787 | 1,200 | 600 | 1,191 | 540 |
| 16" | 914 | 1,270 | 650 | 1,676 | 760 |
| 18" | 978 | 1,300 | 650 | 2,315 | 1,050 |
| 20" | 978 | 1,350 | 700 | 2,701 | 1,225 |
| 24" | 1,295 | 1,450 | 750 | 3,638 | 1,650 |

ANSI Class 300

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 267 | 420 | 200 | 61 | 28 |
| 2½" | 292 | 435 | 250 | 110 | 50 |
| 3" | 318 | 450 | 250 | 126 | 57 |
| 4" | 356 | 520 | 350 | 182 | 83 |
| 5" | 400 | 620 | 400 | 298 | 135 |
| 6" | 445 | 650 | 450 | 331 | 150 |
| 8" | 559 | 800 | 500 | 875 | 397 |
| 10" | 622 | 1,040 | 500 | 1,162 | 527 |
| 12" | 711 | 1,140 | 600 | 1,341 | 608 |
| 14" | 838 | 1,250 | 700 | 1,687 | 765 |
| 16" | 864 | 1,295 | 750 | 2,426 | 1,100 |
| 18" | 978 | 1,340 | 800 | 3,241 | 1,470 |
| 20" | 1,016 | 1,385 | 915 | 3,704 | 1,680 |
| 24" | 1,346 | 1,475 | 915 | 5,457 | 2,475 |

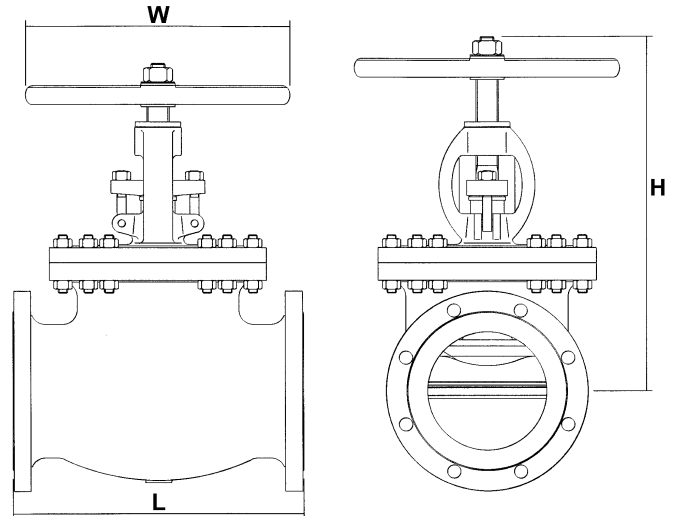
DPV Figure Numbers

| Material | ANSI Class | |
|---------------|------------|--------|
| | 150 | 300 |
| A216 Gr. WCB | 1522F | 3022F |
| A352 Gr. LCC | 152CF | 302CF |
| A217 Gr. WC6 | 1526F | 3026F |
| A217 Gr. WC9 | 1529F | 3029F |
| A217 Gr. C5 | 1525F | 3025F |
| A351 Gr. CF8 | 1524F | 3024F |
| A351 Gr. CF3 | 1524LF | 3024LF |
| A351 Gr. CF8M | 1523F | 3023F |
| A351 Gr. CF3M | 1523LF | 3023LF |
| A351 Gr. CN7M | 1527F | 3027F |

DIMENSIONS

ANSI Class 600

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 292 | 457 | 250 | 95 | 43 |
| 2½" | 330 | 470 | 300 | 161 | 73 |
| 3" | 356 | 584 | 350 | 196 | 89 |
| 4" | 432 | 660 | 450 | 329 | 149 |
| 5" | 508 | 820 | 500 | 463 | 210 |
| 6" | 559 | 850 | 550 | 919 | 417 |
| 8" | 660 | 1,050 | 600 | 1,195 | 542 |
| 10" | 787 | 1,140 | 600 | 1,526 | 692 |
| 12" | 838 | 1,320 | 750 | 2,150 | 975 |
| 14" | 889 | 1,350 | 800 | 2,459 | 1,115 |
| 16" | 991 | 1,550 | 800 | 3,263 | 1,480 |



ANSI Class 900

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 368 | 495 | 300 | 212 | 96 |
| 2½" | 419 | 540 | 350 | 174 | 79 |
| 3" | 381 | 600 | 350 | 258 | 117 |
| 4" | 457 | 655 | 500 | 392 | 178 |
| 5" | 559 | 670 | 500 | 673 | 305 |
| 6" | 610 | 780 | 600 | 783 | 355 |
| 8" | 737 | 1,050 | 600 | 1,610 | 730 |
| 10" | 838 | 1,300 | 750 | 2,315 | 1,050 |
| 12" | 965 | 1,480 | 800 | 2,977 | 1,350 |

ANSI Class 1500

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-------|-----|-------------|---------|
| | L | H | W | (lb.) | (kg.) |
| 2" | 368 | 550 | 300 | 256 | 116 |
| 2½" | 419 | 580 | 350 | 276 | 125 |
| 3" | 470 | 625 | 400 | 320 | 145 |
| 4" | 546 | 750 | 450 | 463 | 210 |
| 5" | 673 | 810 | 500 | 871 | 395 |
| 6" | 705 | 925 | 600 | 1,047 | 475 |
| 8" | 832 | 1,225 | 600 | 2,040 | 925 |
| 10" | 991 | 1,450 | 750 | 3,010 | 1,365 |
| 12" | 1,130 | 1,870 | 800 | 4,851 | 2,200 |

DPV Figure Numbers

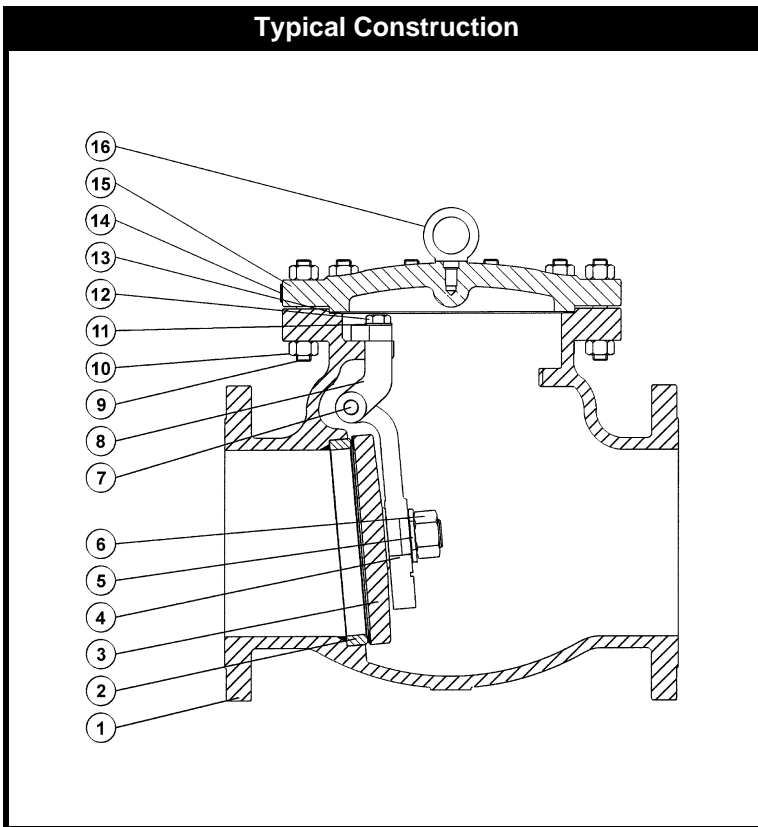
| Material | ANSI Class | | |
|---------------|------------|--------|---------|
| | 600 | 900 | 1500 |
| A216 Gr. WCB | 6022F | 9022F | 15022F |
| A352 Gr. LCC | 602CF | 902CF | 1502CF |
| A217 Gr. WC6 | 6026F | 9026F | 15026F |
| A217 Gr. WC9 | 6029F | 9029F | 15029F |
| A217 Gr. C5 | 6025F | 9025F | 15025F |
| A351 Gr. CF8 | 6024F | 9024F | 15024F |
| A351 Gr. CF3 | 6024LF | 9024LF | 15024LF |
| A351 Gr. CF8M | 6023F | 9023F | 15023F |
| A351 Gr. CF3M | 6023LF | 9023LF | 15023LF |
| A351 Gr. CN7M | 6027F | 9027F | 15027F |

SWING CHECK VALVE DESIGN FEATURES

- ◆ Swing Disc Design
- ◆ Regular Opening Type
- ◆ Bolted Cover Construction
- ◆ Internal Hinge Design Standard
- ◆ Through-Body Hinge Pin Design Available
- ◆ Renewable Threaded-In or Welded-In Seat Ring

- ◆ Design : API 6D / API 600 / BS 1868
- ◆ Shell Thickness : API 6D / API 600 / BS 1868
- ◆ Flanged Ends : ANSI B16.5 (Sizes ≤ 24")
MSS SP-44 (Sizes > 24")
API 605 (Sizes > 24")
- ◆ Face-to-Face : ANSI B16.10
- ◆ Testing : API 598 / BS 6755 Part 1

Typical Construction



| No. | Part Name |
|-----|-------------|
| 1 | Body |
| 2 | Seat Ring |
| 3 | Disc |
| 4 | Hinge |
| 5 | Disc Washer |
| 6 | Disc Nut |
| 7 | Hinge Pin |
| 8 | Bracket |
| 9 | Stud Bolt |
| 10 | Hex Nut |
| 11 | Washer |
| 13 | Capscrew |
| 14 | Nameplate |
| 15 | Cover |
| 16 | Lifting Lug |

Note: Weld end valves available upon request

- ◆ Heavy duty BODY with shell thickness to API / BS standards (where applicable)
- ◆ SEAT RING and DISC ground and lapped to a mirror finish to provide matching sealing surfaces
- ◆ Free rotating DISC design to minimize localized wear on sealing surface
- ◆ Y Body Pattern available
- ◆ Standard internal HINGE design eliminates body penetration and allows ease of maintenance since all parts are accessible from the top and the valve can be serviced insitu
- ◆ Through-body HINGE PIN design available for outside lever, counter weight or slam retarder
- ◆ High strength alloy steel STUD BOLTS and heavy series HEX NUTS used

SWING CHECK VALVES



STANDARD MATERIALS OF CONSTRUCTION

| Part | ANSI B16.34 Material Group | | | | |
|-------------------|-------------------------------|--------------|-----------------------------------|---------------|---------------|
| | Carbon Steel | C-Mn Steel | Alloy Steel | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 |
| Body / Cover | A216 Gr. WCB | A352 Gr. LCC | A217 Gr. WC6 | A217 Gr. WC9 | A217 Gr. C5 |
| Hinge / Bracket | A216 Gr. WCB | A352 Gr. LCC | A217 Gr. WC6 | A217 Gr. WC9 | A217 Gr. C5 |
| Stud Bolts | A193 Gr. B7 | A320 Gr. L7 | ← Alloy Steel ASTM A193 Gr. B16 → | | |
| Hex Nuts | A194 Gr. 2H | A194 Gr. 7 | ← Carbon Steel ASTM A194 Gr. 2H → | | |
| Washer / Capscrew | ← Carbon Steel → | | ← Alloy Steel → | | |
| Part | Corrosion Resistant Steel | | | | |
| | 2.1 | | 2.2 | | 3.17 |
| | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Body / Cover | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Hinge / Bracket | A351 Gr. CF8 | A351 Gr. CF3 | A351 Gr. CF8M | A351 Gr. CF3M | A351 Gr. CN7M |
| Stud Bolts | ← ASTM A193 Gr. B8 → | | ← ASTM A193 Gr. B8M → | | |
| Hex Nuts | ← ASTM A194 Gr. 8 → | | ← ASTM A194 Gr. 8M → | | |
| Washer / Capscrew | ← Corrosion Resistant Steel → | | | | |

Note: Other materials available upon request.

Trim Materials

| Part | API Trim No. | | | | | | | | | | |
|-------------|--------------|-------|----------|-------|--------|--------------|-------|-------|----------|----------|--------|
| | 1 | 2 | 5 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Disc | F6 | 304SS | HF | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | HF |
| Seat Ring | F6 | 304SS | HF | HF | Ni-Cu | 316SS | HF | HF | Alloy 20 | HF | HF |
| Disc Washer | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Disc Nut | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Hinge Pin | F6 | 304SS | F6 | F6 | Ni-Cu | 316SS | Ni-Cu | 316SS | Alloy 20 | Alloy 20 | 304SS |
| Part | API Trim No. | | | | | DPV Trim No. | | | | | |
| | 16 | 17 | 18 | A | B | C | D | E | F | G | H |
| Disc | HF | HF | HF | HF | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze |
| Seat Ring | HF | HF | HF | HF | Bronze | PTFE | PTFE | PTFE | PTFE | PTFE | PTFE |
| Disc Washer | 316SS | 347SS | Alloy 20 | Ni-Cu | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze |
| Disc Nut | 316SS | 347SS | Alloy 20 | Ni-Cu | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze |
| Hinge Pin | 316SS | 347SS | Alloy 20 | Ni-Cu | Bronze | F6 | 304SS | 316SS | Ni-Cu | Alloy 20 | Bronze |

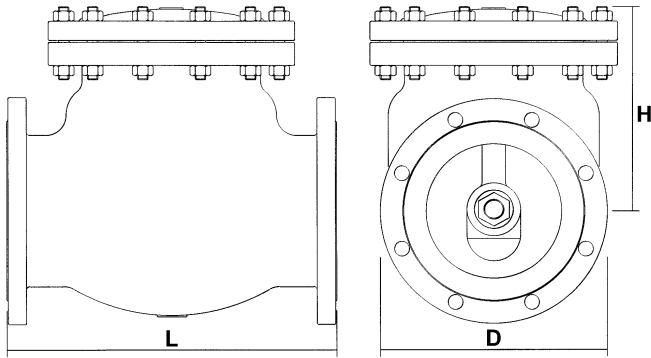
Note: Trim will be supplied either as a base material equal to body with overlay or solid trim at manufacturer's option.

Gasket Materials

| Type | ANSI Class | | | | |
|-------------------|------------|-----|-----|-----|------|
| | 150 | 300 | 600 | 900 | 1500 |
| S.S. Spiral Wound | ● | ● | ○ | ○ | ○ |
| Soft Iron Ring | N/A | N/A | ● | ● | ● |

● Standard ○ Optional Other types available upon request.

DIMENSIONS



ANSI Class 150

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-----|-----|-------------|---------|
| | L | H | D | (lb.) | (kg.) |
| 2" | 203 | 156 | 152 | 42 | 19 |
| 2½" | 216 | 170 | 178 | 57 | 26 |
| 3" | 241 | 180 | 191 | 62 | 28 |
| 4" | 292 | 213 | 229 | 105 | 48 |
| 5" | 330 | 229 | 254 | 152 | 69 |
| 6" | 356 | 307 | 279 | 172 | 78 |
| 8" | 495 | 357 | 343 | 293 | 133 |
| 10" | 622 | 390 | 406 | 587 | 266 |
| 12" | 699 | 410 | 483 | 765 | 347 |
| 14" | 787 | 415 | 533 | 994 | 451 |
| 16" | 864 | 460 | 597 | 1,226 | 556 |
| 18" | 978 | 570 | 635 | 1,738 | 788 |
| 20" | 978 | 625 | 699 | 2,020 | 916 |
| 24" | 1,295 | 675 | 813 | 2,811 | 1,275 |

ANSI Class 300

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-----|-----|-------------|---------|
| | L | H | D | (lb.) | (kg.) |
| 2" | 267 | 198 | 165 | 46 | 21 |
| 2½" | 292 | 203 | 191 | 66 | 30 |
| 3" | 318 | 222 | 210 | 94 | 43 |
| 4" | 356 | 266 | 254 | 146 | 66 |
| 5" | 400 | 292 | 279 | 185 | 84 |
| 6" | 445 | 326 | 318 | 276 | 125 |
| 8" | 533 | 400 | 381 | 430 | 195 |
| 10" | 622 | 455 | 445 | 666 | 302 |
| 12" | 711 | 543 | 521 | 858 | 389 |
| 14" | 838 | 500 | 584 | 1,433 | 650 |
| 16" | 864 | 545 | 648 | 1,764 | 800 |
| 18" | 978 | 605 | 711 | 2,139 | 970 |
| 20" | 1,016 | 675 | 775 | 2,977 | 1,350 |
| 24" | 1,346 | 785 | 914 | 4,873 | 2,210 |

DPV Figure Numbers

| Material | ANSI Class | |
|---------------|------------|--------|
| | 150 | 300 |
| A216 Gr. WCB | 1532F | 3032F |
| A352 Gr. LCC | 153CF | 303CF |
| A217 Gr. WC6 | 1536F | 3036F |
| A217 Gr. WC9 | 1539F | 3039F |
| A217 Gr. C5 | 1535F | 3035F |
| A351 Gr. CF8 | 1534F | 3034F |
| A351 Gr. CF3 | 1534LF | 3034LF |
| A351 Gr. CF8M | 1533F | 3033F |
| A351 Gr. CF3M | 1533LF | 3033LF |
| A351 Gr. CN7M | 1537F | 3037F |

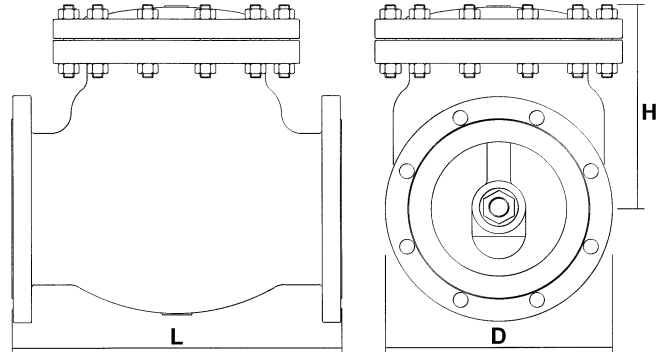
SWING CHECK VALVES



DIMENSIONS

ANSI Class 600

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-----|-----|-------------|---------|
| | L | H | D | (lb.) | (kg.) |
| 2" | 292 | 224 | 165 | 76 | 34 |
| 2½" | 330 | 245 | 191 | 139 | 63 |
| 3" | 356 | 278 | 210 | 165 | 75 |
| 4" | 432 | 307 | 273 | 212 | 96 |
| 5" | 508 | 498 | 330 | 355 | 161 |
| 6" | 559 | 394 | 356 | 501 | 227 |
| 8" | 660 | 468 | 419 | 763 | 346 |
| 10" | 787 | 554 | 508 | 1,202 | 545 |
| 12" | 838 | 575 | 559 | 1,720 | 780 |
| 14" | 889 | 580 | 603 | 1,929 | 875 |
| 16" | 991 | 630 | 686 | 2,370 | 1,075 |



ANSI Class 900

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-----|-----|-------------|---------|
| | L | H | D | (lb.) | (kg.) |
| 2" | 368 | 195 | 216 | 121 | 55 |
| 2½" | 419 | 235 | 244 | 154 | 70 |
| 3" | 381 | 260 | 241 | 198 | 90 |
| 4" | 457 | 275 | 292 | 298 | 135 |
| 5" | 559 | 320 | 349 | 364 | 165 |
| 6" | 610 | 370 | 381 | 650 | 295 |
| 8" | 737 | 435 | 470 | 1,158 | 525 |
| 10" | 838 | 520 | 546 | 1,985 | 900 |
| 12" | 965 | 530 | 610 | 2,370 | 1,075 |

ANSI Class 1500

| Size | Dimensions (mm) | | | Approx. Wt. | |
|------|-----------------|-----|-----|-------------|---------|
| | L | H | D | (lb.) | (kg.) |
| 2" | 368 | 220 | 216 | 154 | 70 |
| 2½" | 419 | 270 | 244 | 187 | 85 |
| 3" | 470 | 290 | 267 | 254 | 115 |
| 4" | 546 | 310 | 311 | 386 | 175 |
| 5" | 673 | 350 | 375 | 397 | 180 |
| 6" | 705 | 410 | 394 | 816 | 370 |
| 8" | 832 | 485 | 483 | 1,499 | 680 |
| 10" | 991 | 737 | 584 | 3,711 | 1,683 |
| 12" | 1,130 | 875 | 673 | 5,281 | 2,395 |

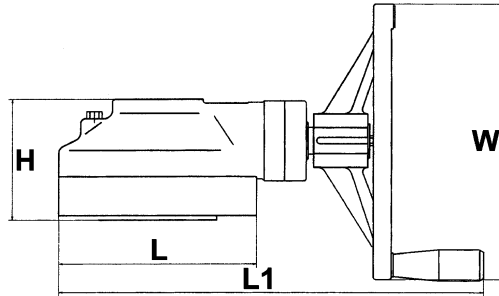
DPV Figure Numbers

| Material | ANSI Class | | |
|---------------|------------|--------|---------|
| | 600 | 900 | 1500 |
| A216 Gr. WCB | 6032F | 9032F | 15032F |
| A352 Gr. LCC | 603CF | 903CF | 1503CF |
| A217 Gr. WC6 | 6036F | 9036F | 15036F |
| A217 Gr. WC9 | 6039F | 9039F | 15039F |
| A217 Gr. C5 | 6035F | 9035F | 15035F |
| A351 Gr. CF8 | 6034F | 9034F | 15034F |
| A351 Gr. CF3 | 6034LF | 9034LF | 15034LF |
| A351 Gr. CF8M | 6033F | 9033F | 15033F |
| A351 Gr. CF3M | 6033LF | 9033LF | 15033LF |
| A351 Gr. CN7M | 6037F | 9037F | 15037F |



API 600 CAST STEEL VALVES

BEVEL GEAR OPERATOR



| Model No. | Torque | | Thrust | | Ratio | L mm | L1 mm | H mm | W mm | Weight | | Model No. |
|-----------|--------|-------|---------|-----|--------|------|-------|------|------|--------|-----|-----------|
| | ft-lbf | NM | lbf | kN | | | | | | lb | kg | |
| BG-0 | 540 | 735 | 22,030 | 98 | 3:1 | 218 | 467 | 140 | 308 | 53 | 24 | BG-0 |
| BG-1 | 1,100 | 1,500 | 44,060 | 196 | 4.1:1 | 289 | 555 | 160 | 460 | 93 | 42 | BG-1 |
| BG-2 | 2,210 | 3,000 | 78,680 | 350 | 6:1 | 385 | 694 | 230 | 610 | 192 | 87 | BG-2 |
| BG-3 | 4,420 | 6,000 | 141,630 | 630 | 19.3:1 | 510 | 877 | 270 | 610 | 340 | 154 | BG-3 |

Bevel Gear Operator Sizing

| Valve Size | Gate Valve | | | | | Globe Valve | | | | | Valve Size |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| | ANSI Class | | | | | ANSI Class | | | | | |
| | 150 | 300 | 600 | 900 | 1500 | 150 | 300 | 600 | 900 | 1500 | |
| 2" | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | 2" |
| 2½" | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | 2½" |
| 3" | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-1 | 3" |
| 4" | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-0 | BG-1 | BG-2 | 4" |
| 5" | BG-0 | BG-0 | BG-0 | BG-0 | BG-1 | BG-0 | BG-0 | BG-1 | BG-2 | BG-3 | 5" |
| 6" | BG-0 | BG-0 | BG-0 | BG-0 | BG-1 | BG-0 | BG-1 | BG-2 | BG-2 | BG-3 | 6" |
| 8" | BG-0 | BG-0 | BG-1 | BG-1 | BG-2 | BG-0 | BG-1 | BG-3 | BG-3 | - | 8" |
| 10" | BG-0 | BG-0 | BG-1 | BG-2 | BG-3 | BG-1 | BG-2 | BG-3 | - | - | 10" |
| 12" | BG-0 | BG-1 | BG-2 | BG-2 | BG-3 | BG-1 | BG-3 | - | - | - | 12" |
| 14" | BG-0 | BG-1 | BG-2 | BG-3 | - | BG-2 | BG-3 | - | - | - | 14" |
| 16" | BG-1 | BG-1 | BG-2 | BG-3 | - | BG-2 | - | - | - | - | 16" |
| 18" | BG-1 | BG-2 | BG-3 | - | - | BG-3 | - | - | - | - | 18" |
| 20" | BG-1 | BG-2 | BG-3 | - | - | BG-3 | - | - | - | - | 20" |
| 24" | BG-2 | BG-3 | - | - | - | - | - | - | - | - | 24" |
| 26" | BG-2 | BG-3 | - | - | - | - | - | - | - | - | 26" |
| 28" | BG-2 | BG-3 | - | - | - | - | - | - | - | - | 28" |
| 30" | BG-3 | BG-3 | - | - | - | - | - | - | - | - | 30" |
| 36" | BG-3 | - | - | - | - | - | - | - | - | - | 36" |

Note: **BOLD & ITALIC** means bevel gear operator recommended.

OPTIONAL MODIFICATIONS

SPECIAL SERVICES

- ◆ Extended Stem / Handwheel Elevations
- ◆ Extended Bonnet / Elevated Stuffing Box
- ◆ Floorstands / Universal Joints
- ◆ Soft Seal Inserts on Disc or Seat(s)
- ◆ Lantern Ring / Leak-Out Port
- ◆ Live-Loaded Packing
- ◆ Oxygen / Chlorine Service
- ◆ Double Block & Bleed Operation
- ◆ Quick Closing / Opening Operation
- ◆ Fail Closed / Fail Open Operation
- ◆ Outside Lever & Weight for Check Valves
- ◆ Slam Retarder for Check Valves
- ◆ Bypass Piping (see below)

NON-DESTRUCTIVE TESTING

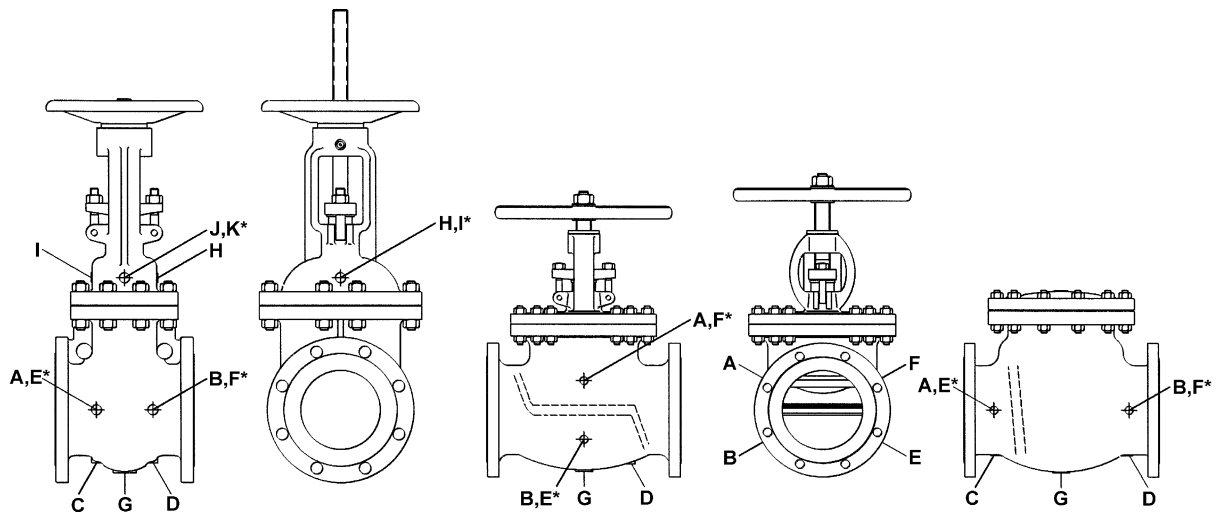
- ◆ Radiographic Examination
- ◆ Magnetic Particle Examination
- ◆ Dye Penetrant Examination

OPERATION

- ◆ Hammer-Blow / Impactor Handwheels
- ◆ Bevel Gear / Chainwheel Operator
- ◆ Multi-Turn Electric Actuator
- ◆ Linear Pneumatic Actuator
- ◆ Linear Hydraulic Actuator
- ◆ Linear Electro-Hydraulic Actuator

| Chainwheel Operator | |
|---------------------|--------------------------------|
| No. | Suitable for Valve Handwheel Ø |
| 0 | 2" to 4" |
| 1 | 4¼" to 5¾" |
| 1½ | 6" to 7½" |
| 2 | 7¾" to 9" |
| 2½ | 9¼" to 12½" |
| 3 | 12¾" to 15½" |
| 3½ | 15¾" to 19" |
| 4 | 19¼" to 22" |
| 4½ | 22¼" to 26" |
| 5 | 26¼" to 36" |

AUXILIARY CONNECTIONS



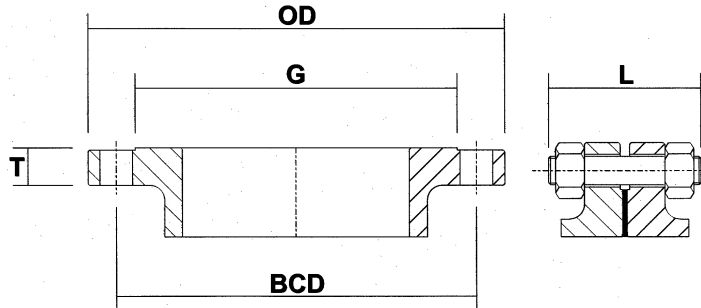
| | | | | |
|--------------------|----------|----------|------------|----------------|
| Nominal Valve Size | 2" to 4" | 5" to 8" | 10" to 12" | 14" and Larger |
| Connection Size | ½" | ¾" | 1" | 1½" |

* Same location on the other side.



API 600 CAST STEEL VALVES

END FLANGE DIMENSIONS (in.)



ANSI / ASME B16.5 Class 150 R.F. (1/16" Raised Face)

| Size | OD | T | | G | BCD | Bolt Hole Ø | No. of Bolt Holes | Stud Bolt Ø | L | Size |
|------|-----------|------------------|--------------|--------|---------------|-------------|-------------------|-------------|-------------|------|
| | Outside Ø | Companion Flange | Valve Flange | R.F. Ø | Bolt Circle Ø | | | | Bolt Length | |
| 2 | 6 | 3/4 | 5/8 | 3 5/8 | 4 3/4 | 3/4 | 4 | 5/8 | 3 | 2 |
| 2½ | 7 | 7/8 | 11/16 | 4 1/8 | 5 1/2 | 3/4 | 4 | 5/8 | 3 1/4 | 2½ |
| 3 | 7 1/2 | 15/16 | 15/16 | 5 | 6 | 3/4 | 4 | 5/8 | 3 3/4 | 3 |
| 4 | 9 | 15/16 | 15/16 | 6 3/16 | 7 1/2 | 3/4 | 8 | 5/8 | 3 3/4 | 4 |
| 5 | 10 | 15/16 | 15/16 | 7 5/16 | 8 1/2 | 7/8 | 8 | 3/4 | 4 | 5 |
| 6 | 11 | 1 | 1 | 8 1/2 | 9 1/2 | 7/8 | 8 | 3/4 | 4 | 6 |
| 8 | 13 1/2 | 1 1/8 | 1 1/8 | 10 5/8 | 12 | 7/8 | 8 | 3/4 | 4 1/4 | 8 |
| 10 | 16 | 1 3/16 | 1 3/16 | 12 3/4 | 14 1/4 | 1 | 12 | 7/8 | 4 3/4 | 10 |
| 12 | 19 | 1 1/4 | 1 1/4 | 15 | 17 | 1 | 12 | 7/8 | 4 3/4 | 12 |
| 14 | 21 | 1 3/8 | 1 3/8 | 16 1/4 | 18 3/4 | 1 1/8 | 12 | 1 | 5 1/4 | 14 |
| 16 | 23 1/2 | 1 7/16 | 1 7/16 | 18 1/2 | 21 1/4 | 1 1/8 | 16 | 1 | 5 1/2 | 16 |
| 18 | 25 | 1 9/16 | 1 9/16 | 21 | 22 3/4 | 1 1/4 | 16 | 1 1/8 | 6 | 18 |
| 20 | 27 1/2 | 1 11/16 | 1 11/16 | 23 | 25 | 1 1/4 | 20 | 1 1/8 | 6 1/4 | 20 |
| 24 | 32 | 1 7/8 | 1 7/8 | 27 1/4 | 29 1/2 | 1 3/8 | 20 | 1 1/4 | 6 3/4 | 24 |

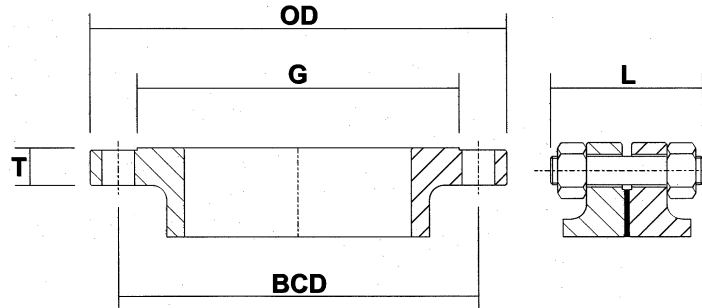
MSS SP-44 / ASME B16.47 Series A Class 150 R.F. (1/16" Raised Face)

| | | | | | | | | | | |
|----|--------|---------|---------|--------|--------|-------|----|-------|--------|----|
| 22 | 29 1/2 | 1 13/16 | 1 13/16 | 25 1/4 | 27 1/4 | 1 3/8 | 20 | 1 1/4 | 6 3/4 | 22 |
| 26 | 34 1/4 | 2 11/16 | 2 11/16 | 29 1/2 | 31 3/4 | 1 3/8 | 24 | 1 1/4 | 8 1/2 | 26 |
| 28 | 36 1/2 | 2 13/16 | 2 13/16 | 31 1/2 | 34 | 1 3/8 | 28 | 1 1/4 | 8 3/4 | 28 |
| 30 | 38 3/4 | 2 15/16 | 2 15/16 | 33 3/4 | 36 | 1 3/8 | 28 | 1 1/4 | 9 | 30 |
| 36 | 46 | 3 9/16 | 3 9/16 | 40 1/4 | 42 3/4 | 1 5/8 | 32 | 1 1/2 | 10 3/4 | 36 |

API 605 / ASME B16.47 Series B Class 150 R.F. (1/16" Raised Face)

| | | | | | | | | | | |
|----|----------|--------|--------|--------|---------|-----|----|-----|-------|----|
| 26 | 30 15/16 | 1 5/8 | 1 5/8 | 28 | 29 5/16 | 7/8 | 36 | 3/4 | 5 1/2 | 26 |
| 28 | 32 15/16 | 1 3/4 | 1 3/4 | 30 | 31 5/16 | 7/8 | 40 | 3/4 | 5 3/4 | 28 |
| 30 | 34 15/16 | 1 3/4 | 1 3/4 | 32 | 33 5/16 | 7/8 | 44 | 3/4 | 5 3/4 | 30 |
| 36 | 41 5/8 | 2 1/16 | 2 1/16 | 38 1/4 | 39 3/4 | 1 | 44 | 7/8 | 6 1/2 | 36 |

END FLANGE DIMENSIONS (in.)



ANSI / ASME B16.5 Class 300 R.F. (1/16" Raised Face)

| Size | OD | T | G | BCD | Bolt Hole Ø | No. of Bolt Holes | Stud Bolt Ø | L | Size |
|------|-----------|------------------|--------|---------------|-------------|-------------------|-------------|-------------|------|
| | Outside Ø | Flange Thickness | R.F. Ø | Bolt Circle Ø | | | | Bolt Length | |
| 2 | 6 1/2 | 7/8 | 3 5/8 | 5 | 3/4 | 8 | 5/8 | 3 1/2 | 2 |
| 2½ | 7 1/2 | 1 | 4 1/8 | 5 7/8 | 7/8 | 8 | 3/4 | 4 | 2½ |
| 3 | 8 1/4 | 1 1/8 | 5 | 6 5/8 | 7/8 | 8 | 3/4 | 4 1/4 | 3 |
| 4 | 10 | 1 1/4 | 6 3/16 | 7 7/8 | 7/8 | 8 | 3/4 | 4 1/2 | 4 |
| 5 | 11 | 1 3/8 | 7 5/16 | 9 1/4 | 7/8 | 8 | 3/4 | 4 3/4 | 5 |
| 6 | 12 1/2 | 1 7/16 | 8 1/2 | 10 5/8 | 7/8 | 12 | 3/4 | 4 3/4 | 6 |
| 8 | 15 | 1 5/8 | 10 5/8 | 13 | 1 | 12 | 7/8 | 5 1/2 | 8 |
| 10 | 17 1/2 | 1 7/8 | 12 3/4 | 15 1/4 | 1 1/8 | 16 | 1 | 6 1/4 | 10 |
| 12 | 20 1/2 | 2 | 15 | 17 3/4 | 1 1/4 | 16 | 1 1/8 | 6 3/4 | 12 |
| 14 | 23 | 2 1/8 | 16 1/4 | 20 1/4 | 1 1/4 | 20 | 1 1/8 | 7 | 14 |
| 16 | 25 1/2 | 2 1/4 | 18 1/2 | 22 1/2 | 1 3/8 | 20 | 1 1/4 | 7 1/2 | 16 |
| 18 | 28 | 2 3/8 | 21 | 24 3/4 | 1 3/8 | 24 | 1 1/4 | 7 3/4 | 18 |
| 20 | 30 1/2 | 2 1/2 | 23 | 27 | 1 3/8 | 24 | 1 1/4 | 8 | 20 |
| 24 | 36 | 2 3/4 | 27 1/4 | 32 | 1 5/8 | 24 | 1 1/2 | 9 | 24 |

MSS SP-44 / ASME B16.47 Series A Class 300 R.F. (1/16" Raised Face)

| | | | | | | | | | |
|----|--------|-------|--------|--------|-------|----|-------|--------|----|
| 22 | 33 | 2 5/8 | 25 1/4 | 29 1/4 | 1 5/8 | 24 | 1 1/2 | 9 | 22 |
| 26 | 38 1/4 | 3 1/8 | 29 1/2 | 34 1/2 | 1 3/4 | 28 | 1 5/8 | 10 1/4 | 26 |
| 28 | 40 3/4 | 3 3/8 | 31 1/2 | 37 | 1 3/4 | 28 | 1 5/8 | 10 3/4 | 28 |
| 30 | 43 | 3 5/8 | 33 3/4 | 39 1/4 | 1 7/8 | 28 | 1 3/4 | 11 1/2 | 30 |
| 36 | 50 | 4 1/8 | 40 1/4 | 46 | 2 1/8 | 32 | 2 | 13 | 36 |

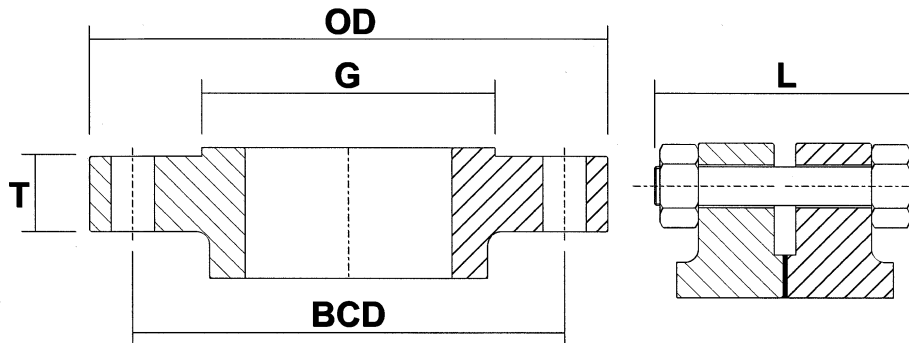
API 605 / ASME B16.47 Series B Class 300 R.F. (1/16" Raised Face)

| | | | | | | | | | |
|----|--------|---------|--------|--------|-------|----|-------|--------|----|
| 26 | 34 1/8 | 3 1/2 | 29 | 31 5/8 | 1 3/8 | 32 | 1 1/4 | 10 1/4 | 26 |
| 28 | 36 1/4 | 3 1/2 | 31 | 33 3/4 | 1 3/8 | 36 | 1 1/4 | 10 1/4 | 28 |
| 30 | 39 | 3 11/16 | 33 1/4 | 36 1/4 | 1 1/2 | 36 | 1 3/8 | 10 3/4 | 30 |
| 36 | 46 1/8 | 4 1/16 | 39 3/4 | 42 7/8 | 1 3/4 | 32 | 1 5/8 | 12 | 36 |



API 600 CAST STEEL VALVES

END FLANGE DIMENSIONS (in.)



ANSI / ASME B16.5 Class 600 R.F. (1/4" Raised Face)

| Size | OD | T | G | BCD | Bolt Hole Ø | No. of Bolt Holes | Stud Bolt Ø | L | Size |
|------|-----------|------------------|--------|---------------|-------------|-------------------|-------------|-------------|------|
| | Outside Ø | Flange Thickness | R.F. Ø | Bolt Circle Ø | | | | Bolt Length | |
| 2 | 6 1/2 | 1 | 3 5/8 | 5 | 3/4 | 8 | 5/8 | 4 1/4 | 2 |
| 2½ | 7 1/2 | 1 1/8 | 4 1/8 | 5 7/8 | 7/8 | 8 | 3/4 | 4 3/4 | 2½ |
| 3 | 8 1/4 | 1 1/4 | 5 | 6 5/8 | 7/8 | 8 | 3/4 | 5 | 3 |
| 4 | 10 3/4 | 1 1/2 | 6 3/16 | 8 1/2 | 1 | 8 | 7/8 | 5 3/4 | 4 |
| 5 | 13 | 1 3/4 | 7 5/16 | 10 1/2 | 1 1/8 | 8 | 1 | 6 1/2 | 5 |
| 6 | 14 | 1 7/8 | 8 1/2 | 11 1/2 | 1 1/8 | 12 | 1 | 6 3/4 | 6 |
| 8 | 16 1/2 | 2 3/16 | 10 5/8 | 13 3/4 | 1 1/4 | 12 | 1 1/8 | 7 1/2 | 8 |
| 10 | 20 | 2 1/2 | 12 3/4 | 17 | 1 3/8 | 16 | 1 1/4 | 8 1/2 | 10 |
| 12 | 22 | 2 5/8 | 15 | 19 1/4 | 1 3/8 | 20 | 1 1/4 | 8 3/4 | 12 |
| 14 | 23 3/4 | 2 3/4 | 16 1/4 | 20 3/4 | 1 1/2 | 20 | 1 3/8 | 9 1/4 | 14 |
| 16 | 27 | 3 | 18 1/2 | 23 3/4 | 1 5/8 | 20 | 1 1/2 | 10 | 16 |
| 18 | 29 1/4 | 3 1/4 | 21 | 25 3/4 | 1 3/4 | 20 | 1 5/8 | 10 3/4 | 18 |
| 20 | 32 | 3 1/2 | 23 | 28 1/2 | 1 3/4 | 24 | 1 5/8 | 11 1/4 | 20 |
| 24 | 37 | 4 | 27 1/4 | 33 | 2 | 24 | 1 7/8 | 13 | 24 |

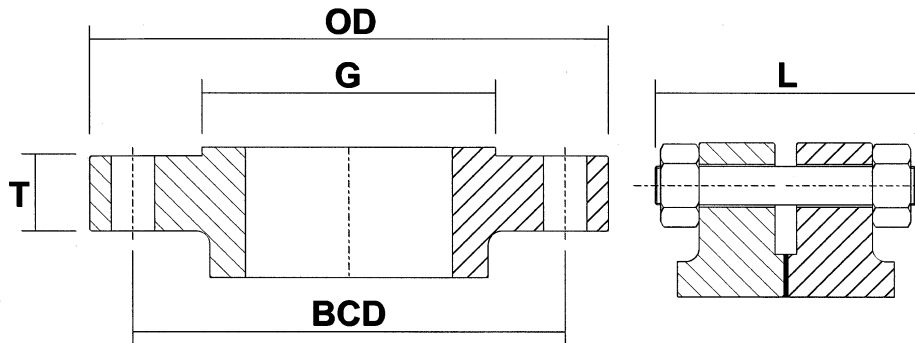
MSS SP-44 / ASME B16.47 Series A Class 600 R.F. (1/4" Raised Face)

| | | | | | | | | | |
|----|--------|-------|--------|--------|-------|----|-------|--------|----|
| 26 | 40 | 4 1/4 | 29 1/2 | 36 | 2 | 28 | 1 7/8 | 9 3/4 | 26 |
| 28 | 42 1/4 | 4 3/8 | 31 1/2 | 38 | 2 1/8 | 28 | 2 | 10 | 28 |
| 30 | 44 1/2 | 4 1/2 | 33 3/4 | 40 1/4 | 2 1/8 | 28 | 2 | 10 1/4 | 30 |
| 32 | 47 | 4 5/8 | 36 | 42 1/2 | 2 3/8 | 28 | 2 1/4 | 10 1/2 | 32 |
| 36 | 51 3/4 | 4 7/8 | 40 1/4 | 47 | 2 5/8 | 28 | 2 1/2 | 11 | 36 |

API 605 / ASME B16.47 Series B Class 600 R.F. (1/4" Raised Face)

| | | | | | | | | | |
|----|--------|---------|--------|--------|-------|----|-------|--------|----|
| 26 | 35 | 4 3/8 | 28 5/8 | 31 3/4 | 1 3/4 | 28 | 1 5/8 | 13 1/4 | 26 |
| 28 | 37 1/2 | 4 9/16 | 30 7/8 | 34 | 1 7/8 | 28 | 1 3/4 | 13 3/4 | 28 |
| 30 | 40 1/4 | 4 15/16 | 33 1/8 | 36 1/2 | 2 | 28 | 1 7/8 | 14 3/4 | 30 |
| 36 | 47 3/4 | 5 49/64 | 39 3/4 | 43 1/2 | 2 3/8 | 28 | 2 1/4 | 17 1/4 | 36 |

END FLANGE DIMENSIONS (in.)



ANSI / ASME B16.5 Class 900 R.F. (1/4" Raised Face)

| Size | OD | T | G | BCD | Bolt Hole Ø | No. of Bolt Holes | Stud Bolt Ø | L | Size |
|------|-----------|------------------|--------|---------------|-------------|-------------------|-------------|-------------|------|
| | Outside Ø | Flange Thickness | R.F. Ø | Bolt Circle Ø | | | | Bolt Length | |
| 2 | 8 1/2 | 1 1/2 | 3 5/8 | 6 1/2 | 1 | 8 | 7/8 | 5 3/4 | 2 |
| 2½ | 9 5/8 | 1 5/8 | 4 1/8 | 7 1/2 | 1 1/8 | 8 | 1 | 6 1/4 | 2½ |
| 3 | 9 1/2 | 1 1/2 | 5 | 7 1/2 | 1 | 8 | 7/8 | 5 3/4 | 3 |
| 4 | 11 1/2 | 1 3/4 | 6 3/16 | 9 1/4 | 1 1/4 | 8 | 1 1/8 | 6 3/4 | 4 |
| 5 | 13 3/4 | 2 | 7 5/16 | 11 | 1 3/8 | 8 | 1 1/4 | 7 1/2 | 5 |
| 6 | 15 | 2 3/16 | 8 1/2 | 12 1/2 | 1 1/4 | 12 | 1 1/8 | 7 1/2 | 6 |
| 8 | 18 1/2 | 2 1/2 | 10 5/8 | 15 1/2 | 1 1/2 | 12 | 1 3/8 | 8 3/4 | 8 |
| 10 | 21 1/2 | 2 3/4 | 12 3/4 | 18 1/2 | 1 1/2 | 16 | 1 3/8 | 9 1/4 | 10 |
| 12 | 24 | 3 1/8 | 15 | 21 | 1 1/2 | 20 | 1 3/8 | 10 | 12 |
| 14 | 25 1/4 | 3 3/8 | 16 1/4 | 22 | 1 5/8 | 20 | 1 1/2 | 10 3/4 | 14 |
| 16 | 27 3/4 | 3 1/2 | 18 1/2 | 24 1/4 | 1 3/4 | 20 | 1 5/8 | 11 1/4 | 16 |
| 18 | 31 | 4 | 21 | 27 | 2 | 20 | 1 7/8 | 12 3/4 | 18 |
| 20 | 33 3/4 | 4 1/4 | 23 | 29 1/2 | 2 1/8 | 20 | 2 | 13 3/4 | 20 |
| 24 | 41 | 5 1/2 | 27 1/4 | 35 1/2 | 2 5/8 | 20 | 2 1/2 | 17 1/4 | 24 |

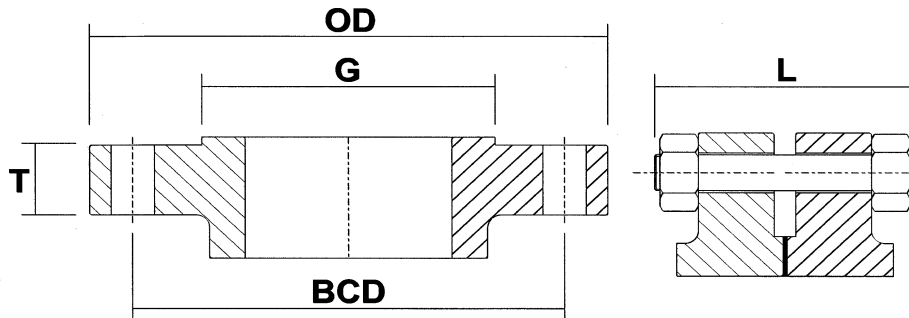
MSS SP-44 / ASME B16.47 Series A Class 900 R.F. (1/4" Raised Face)

| | | | | | | | | | |
|----|--------|-------|--------|--------|-------|----|-------|--------|----|
| 26 | 42 3/4 | 5 1/2 | 29 1/2 | 37 1/2 | 2 7/8 | 20 | 2 3/4 | 17 3/4 | 26 |
| 28 | 46 | 5 5/8 | 31 1/2 | 40 1/4 | 3 1/8 | 20 | 3 | 18 1/2 | 28 |
| 30 | 48 1/2 | 5 7/8 | 33 3/4 | 42 3/4 | 3 1/8 | 20 | 3 | 19 | 30 |
| 32 | 51 3/4 | 6 1/4 | 36 | 45 1/2 | 3 3/8 | 20 | 3 1/4 | 20 1/4 | 32 |
| 36 | 57 1/2 | 6 1/2 | 40 1/4 | 50 3/4 | 3 5/8 | 20 | 3 1/2 | 21 1/4 | 36 |

API 605 / ASME B16.47 Series B Class 900 R.F. (1/4" Raised Face)

| | | | | | | | | | |
|----|--------|---------|--------|--------|-------|----|-------|--------|----|
| 26 | 40 1/4 | 5 5/16 | 30 | 35 1/2 | 2 5/8 | 20 | 2 1/2 | 16 3/4 | 26 |
| 28 | 43 1/2 | 5 13/16 | 32 1/4 | 38 1/4 | 2 7/8 | 20 | 2 3/4 | 18 1/4 | 28 |
| 30 | 46 1/2 | 6 1/8 | 34 1/2 | 40 3/4 | 3 1/8 | 20 | 3 | 19 1/2 | 30 |
| 36 | 53 | 6 13/16 | 40 1/2 | 47 1/4 | 3 1/8 | 24 | 3 | 20 3/4 | 36 |

END FLANGE DIMENSIONS (in.)



ANSI / ASME B16.5 Class 1500 R.F. (1/4" Raised Face)

| Size | OD | T | G | BCD | Bolt Hole Ø | No. of Bolt Holes | Stud Bolt Ø | L | Size |
|------|-----------|------------------|--------|---------------|-------------|-------------------|-------------|-------------|------|
| | Outside Ø | Flange Thickness | R.F. Ø | Bolt Circle Ø | | | | Bolt Length | |
| ½ | 4 3/4 | 7/8 | 1 3/8 | 3 1/4 | 7/8 | 4 | 3/4 | 4 1/4 | ½ |
| ¾ | 5 1/8 | 1 | 1 6/8 | 3 1/2 | 7/8 | 4 | 3/4 | 4 1/2 | ¾ |
| 1 | 5 7/8 | 1 1/8 | 2 | 4 | 1 | 4 | 7/8 | 5 | 1 |
| 1¼ | 6 1/4 | 1 1/8 | 2 1/2 | 4 3/8 | 1 | 4 | 7/8 | 5 | 1¼ |
| 1½ | 7 | 1 1/4 | 2 7/8 | 4 7/8 | 1 1/8 | 4 | 1 | 5 1/2 | 1½ |
| 2 | 8 1/2 | 1 1/2 | 3 5/8 | 6 1/2 | 1 | 8 | 7/8 | 5 3/4 | 2 |
| 2½ | 9 5/8 | 1 5/8 | 4 1/8 | 7 1/2 | 1 1/8 | 8 | 1 | 6 1/4 | 2½ |
| 3 | 10 1/2 | 1 7/8 | 5 | 8 | 1 1/4 | 8 | 1 1/8 | 7 | 3 |
| 4 | 12 1/4 | 2 1/8 | 6 3/16 | 9 1/2 | 1 3/8 | 8 | 1 1/4 | 7 3/4 | 4 |
| 5 | 14 3/4 | 2 7/8 | 7 5/16 | 11 1/2 | 1 5/8 | 8 | 1 1/2 | 9 3/4 | 5 |
| 6 | 15 1/2 | 3 1/4 | 8 1/2 | 12 1/2 | 1 1/2 | 12 | 1 3/8 | 10 1/4 | 6 |
| 8 | 19 | 3 5/8 | 10 5/8 | 15 1/2 | 1 3/4 | 12 | 1 5/8 | 11 1/2 | 8 |
| 10 | 23 | 4 1/4 | 12 3/4 | 19 | 2 | 12 | 1 7/8 | 13 1/4 | 10 |
| 12 | 26 1/2 | 4 7/8 | 15 | 22 1/2 | 2 1/8 | 16 | 2 | 14 3/4 | 12 |
| 14 | 29 1/2 | 5 1/4 | 16 1/4 | 25 | 2 3/8 | 16 | 2 1/4 | 16 | 14 |
| 16 | 32 1/2 | 5 3/4 | 18 1/2 | 27 3/4 | 2 5/8 | 16 | 2 1/2 | 17 1/2 | 16 |
| 18 | 36 | 6 3/8 | 21 | 30 1/2 | 2 7/8 | 16 | 2 3/4 | 19 1/2 | 18 |
| 20 | 38 3/4 | 7 | 23 | 32 3/4 | 3 1/8 | 16 | 3 | 21 1/4 | 20 |
| 24 | 46 | 8 | 27 1/4 | 39 | 3 5/8 | 16 | 3 1/2 | 24 1/4 | 24 |

ANSI CLASS 150 PRESSURE-TEMP RATINGS

| Temperature °F | Pressure (psig) | | | | | | | | | | Temp. °C |
|-------------------|----------------------------|------------------|------------------|------------------|-----------------|------------------|------------------|-------------------|-------------------|-------------------|-------------|
| | ANSI B16.34 Material Group | | | | | | | | | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 | 2.1 | | 2.2 | | 3.17 | |
| | WCB ¹ | LCC ² | WC6 ³ | WC9 ³ | C5 ³ | CF8 ⁴ | CF3 ⁵ | CF8M ⁴ | CF3M ⁶ | CN7M ⁷ | |
| -20 to 100 | 285 | 290 | 290 | 290 | 290 | 275 | 275 | 275 | 275 | 230 | -29 to 38 |
| 200 | 260 | 260 | 260 | 260 | 260 | 230 | 230 | 235 | 235 | 200 | 93 |
| 300 | 230 | 230 | 230 | 230 | 230 | 205 | 205 | 215 | 215 | 180 | 149 |
| 350 | 215 | 215 | 215 | 215 | 215 | 198 | 198 | 205 | 205 | 170 | 177 |
| 400 | 200 | 200 | 200 | 200 | 200 | 190 | 190 | 195 | 195 | 160 | 204 |
| 450 | 185 | 185 | 185 | 185 | 185 | 180 | 180 | 183 | 183 | 155 | 232 |
| 500 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 150 | 260 |
| 550 | 155 | 155 | 155 | 155 | 155 | 155 | 155 | 155 | 155 | 145 | 288 |
| 600 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 316 |
| 650 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 343 |
| 700 | 110 | | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 371 |
| 750 | 95 | | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 399 |
| 800 | 80 | | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 427 |
| 850 | 65 | | 65 | 65 | 65 | 65 | | 65 | 65 | | 454 |
| 900 | 50 | | 50 | 50 | 50 | 50 | | 50 | | | 482 |
| 950 | 35 | | 35 | 35 | 35 | 35 | | 35 | | | 510 |
| 1,000 | 20 | | 20 | 20 | 20 | 20 | | 20 | | | 538 |
| 1,050 | | | 20 ^a | 20 ^a | 20 ^a | 20 ^a | | 20 ^a | | | 566 |
| 1,100 | | | 20 ^a | 20 ^a | 20 ^a | 20 ^a | | 20 ^a | | | 593 |
| 1,150 | | | | | 20 ^a | 20 ^a | | 20 ^a | | | 621 |
| 1,200 | | | | | 15 ^a | 20 ^a | | 20 ^a | | | 649 |
| 1,250 | | | | | | 20 ^a | | 20 ^a | | | 677 |
| 1,300 | | | | | | 20 ^a | | 20 ^a | | | 704 |
| 1,350 | | | | | | 20 ^a | | 20 ^a | | | 732 |
| 1,400 | | | | | | 20 ^a | | 20 ^a | | | 760 |
| 1,450 | | | | | | 15 ^a | | 20 ^a | | | 788 |
| 1,500 | | | | | | 10 ^a | | 20 ^a | | | 816 |

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Not to be used over 650 °F (343 °C).

³ Use normalized and tempered material only.

⁴ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

⁵ Not to be used over 800 °F (427 °C).

⁶ Not to be used over 850 °F (454 °C).

⁷ Use solution annealed material only.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).



API 600 CAST STEEL VALVES

ANSI CLASS 300 PRESSURE-TEMP RATINGS

| Temperature °F | Pressure (psig) | | | | | | | | | | Temp. °C |
|-------------------|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------|
| | ANSI B16.34 Material Group | | | | | | | | | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 | 2.1 | | 2.2 | | 3.17 | |
| | WCB ¹ | LCC ² | WC6 ³ | WC9 ³ | C5 ³ | CF8 ⁴ | CF3 ⁵ | CF8M ⁴ | CF3M ⁶ | CN7M ⁷ | |
| -20 to 100 | 740 | 750 | 750 | 750 | 750 | 720 | 720 | 720 | 720 | 600 | -29 to 38 |
| 200 | 675 | 750 | 750 | 750 | 745 | 600 | 600 | 620 | 620 | 520 | 93 |
| 300 | 655 | 730 | 720 | 730 | 715 | 540 | 540 | 560 | 560 | 465 | 149 |
| 350 | 645 | 718 | 708 | 718 | 710 | 518 | 518 | 538 | 538 | 443 | 177 |
| 400 | 635 | 705 | 695 | 705 | 705 | 495 | 495 | 515 | 515 | 420 | 204 |
| 450 | 618 | 685 | 680 | 685 | 685 | 480 | 480 | 498 | 498 | 405 | 232 |
| 500 | 600 | 665 | 665 | 665 | 665 | 465 | 465 | 480 | 480 | 390 | 260 |
| 550 | 575 | 635 | 635 | 635 | 635 | 450 | 450 | 465 | 465 | 375 | 288 |
| 600 | 550 | 605 | 605 | 605 | 605 | 435 | 435 | 450 | 450 | 360 | 316 |
| 650 | 535 | 590 | 590 | 590 | 590 | 430 | 430 | 445 | 445 | | 343 |
| 700 | 535 | | 570 | 570 | 570 | 425 | 425 | 430 | 430 | | 371 |
| 750 | 505 | | 530 | 530 | 530 | 415 | 415 | 425 | 425 | | 399 |
| 800 | 410 | | 510 | 510 | 510 | 405 | 405 | 420 | 420 | | 427 |
| 850 | 270 | | 485 | 485 | 485 | 395 | | 420 | 420 | | 454 |
| 900 | 170 | | 450 | 450 | 370 | 390 | | 415 | | | 482 |
| 950 | 105 | | 320 | 375 | 275 | 380 | | 385 | | | 510 |
| 1,000 | 50 | | 215 | 260 | 200 | 320 | | 350 | | | 538 |
| 1,050 | | | 145 ^a | 175 ^a | 145 ^a | 310 ^a | | 345 ^a | | | 566 |
| 1,100 | | | 95 ^a | 110 ^a | 100 ^a | 255 ^a | | 305 ^a | | | 593 |
| 1,150 | | | | | 60 ^a | 200 ^a | | 235 ^a | | | 621 |
| 1,200 | | | | | 35 ^a | 155 ^a | | 185 ^a | | | 649 |
| 1,250 | | | | | | 115 ^a | | 145 ^a | | | 677 |
| 1,300 | | | | | | 85 ^a | | 115 ^a | | | 704 |
| 1,350 | | | | | | 60 ^a | | 95 ^a | | | 732 |
| 1,400 | | | | | | 50 ^a | | 75 ^a | | | 760 |
| 1,450 | | | | | | 35 ^a | | 60 ^a | | | 788 |
| 1,500 | | | | | | 25 ^a | | 40 ^a | | | 816 |

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Not to be used over 650 °F (343 °C).

³ Use normalized and tempered material only.

⁴ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

⁵ Not to be used over 800 °F (427 °C).

⁶ Not to be used over 850 °F (454 °C).

⁷ Use solution annealed material only.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

ANSI CLASS 600 PRESSURE-TEMP RATINGS

| Temperature °F | Pressure (psig) | | | | | | | | | | Temp. °C |
|-------------------|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|-------------|
| | ANSI B16.34 Material Group | | | | | | | | | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 | 2.1 | | 2.2 | | 3.17 | |
| | WCB ¹ | LCC ² | WC6 ³ | WC9 ³ | C5 ³ | CF8 ⁴ | CF3 ⁵ | CF8M ⁴ | CF3M ⁶ | CN7M ⁷ | |
| -20 to 100 | 1,480 | 1,500 | 1,500 | 1,500 | 1,500 | 1,440 | 1,440 | 1,440 | 1,440 | 1,200 | -29 to 38 |
| 200 | 1,350 | 1,500 | 1,500 | 1,500 | 1,490 | 1,200 | 1,200 | 1,240 | 1,240 | 1,035 | 93 |
| 300 | 1,315 | 1,455 | 1,445 | 1,455 | 1,430 | 1,080 | 1,080 | 1,120 | 1,120 | 930 | 149 |
| 350 | 1,293 | 1,433 | 1,415 | 1,433 | 1,420 | 1,038 | 1,038 | 1,073 | 1,073 | 888 | 177 |
| 400 | 1,270 | 1,410 | 1,385 | 1,410 | 1,410 | 995 | 995 | 1,025 | 1,025 | 845 | 204 |
| 450 | 1,235 | 1,370 | 1,358 | 1,370 | 1,370 | 963 | 963 | 990 | 990 | 813 | 232 |
| 500 | 1,200 | 1,330 | 1,330 | 1,330 | 1,330 | 930 | 930 | 955 | 955 | 780 | 260 |
| 550 | 1,148 | 1,270 | 1,270 | 1,270 | 1,270 | 903 | 903 | 928 | 928 | 750 | 288 |
| 600 | 1,095 | 1,210 | 1,210 | 1,210 | 1,210 | 875 | 875 | 900 | 900 | 720 | 316 |
| 650 | 1,075 | 1,175 | 1,175 | 1,175 | 1,175 | 860 | 860 | 890 | 890 | | 343 |
| 700 | 1,065 | | 1,135 | 1,135 | 1,135 | 850 | 850 | 870 | 870 | | 371 |
| 750 | 1,010 | | 1,065 | 1,065 | 1,055 | 830 | 830 | 855 | 855 | | 399 |
| 800 | 825 | | 1,015 | 1,015 | 1,015 | 805 | 805 | 845 | 845 | | 427 |
| 850 | 535 | | 975 | 975 | 965 | 790 | | 835 | 835 | | 454 |
| 900 | 345 | | 900 | 900 | 740 | 780 | | 830 | | | 482 |
| 950 | 205 | | 640 | 755 | 550 | 765 | | 775 | | | 510 |
| 1,000 | 105 | | 430 | 520 | 400 | 640 | | 700 | | | 538 |
| 1,050 | | | 290 ^a | 350 ^a | 290 ^a | 615 ^a | | 685 ^a | | | 566 |
| 1,100 | | | 190 ^a | 220 ^a | 200 ^a | 515 ^a | | 610 ^a | | | 593 |
| 1,150 | | | | | 125 ^a | 400 ^a | | 475 ^a | | | 621 |
| 1,200 | | | | | 70 ^a | 310 ^a | | 370 ^a | | | 649 |
| 1,250 | | | | | | 225 ^a | | 295 ^a | | | 677 |
| 1,300 | | | | | | 170 ^a | | 235 ^a | | | 704 |
| 1,350 | | | | | | 125 ^a | | 190 ^a | | | 732 |
| 1,400 | | | | | | 95 ^a | | 150 ^a | | | 760 |
| 1,450 | | | | | | 70 ^a | | 115 ^a | | | 788 |
| 1,500 | | | | | | 55 ^a | | 85 ^a | | | 816 |

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Not to be used over 650 °F (343 °C).

³ Use normalized and tempered material only.

⁴ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

⁵ Not to be used over 800 °F (427 °C).

⁶ Not to be used over 850 °F (454 °C).

⁷ Use solution annealed material only.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).



API 600 CAST STEEL VALVES

ANSI CLASS 900 PRESSURE-TEMP RATINGS

| Temperature °F | Pressure (psig) | | | | | | | | | | Temp. °C |
|-------------------|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|-------------------|-------------------|-------------|
| | ANSI B16.34 Material Group | | | | | | | | | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 | 2.1 | | 2.2 | | 3.17 | |
| | WCB ¹ | LCC ² | WC6 ³ | WC9 ³ | C5 ³ | CF8 ⁴ | CF3 ⁵ | CF8M ⁴ | CF3M ⁶ | CN7M ⁷ | |
| -20 to 100 | 2,220 | 2,250 | 2,250 | 2,250 | 2,250 | 2,160 | 2,160 | 2,160 | 2,160 | 1,800 | -29 to 38 |
| 200 | 2,025 | 2,250 | 2,250 | 2,250 | 2,235 | 1,800 | 1,800 | 1,860 | 1,860 | 1,555 | 93 |
| 300 | 1,970 | 2,185 | 2,165 | 2,185 | 2,150 | 1,620 | 1,620 | 1,680 | 1,680 | 1,395 | 149 |
| 350 | 1,935 | 2,150 | 2,123 | 2,150 | 2,133 | 1,555 | 1,555 | 1,610 | 1,610 | 1,330 | 177 |
| 400 | 1,900 | 2,115 | 2,080 | 2,115 | 2,115 | 1,490 | 1,490 | 1,540 | 1,540 | 1,265 | 204 |
| 450 | 1,848 | 2,055 | 2,038 | 2,055 | 2,055 | 1,443 | 1,443 | 1,488 | 1,488 | 1,215 | 232 |
| 500 | 1,795 | 1,995 | 1,995 | 1,995 | 1,995 | 1,395 | 1,395 | 1,435 | 1,435 | 1,165 | 260 |
| 550 | 1,718 | 1,905 | 1,905 | 1,905 | 1,905 | 1,353 | 1,353 | 1,395 | 1,395 | 1,123 | 288 |
| 600 | 1,640 | 1,815 | 1,815 | 1,815 | 1,815 | 1,310 | 1,310 | 1,355 | 1,355 | 1,080 | 316 |
| 650 | 1,610 | 1,765 | 1,765 | 1,765 | 1,765 | 1,290 | 1,290 | 1,330 | 1,330 | | 343 |
| 700 | 1,600 | | 1,705 | 1,705 | 1,705 | 1,275 | 1,275 | 1,305 | 1,305 | | 371 |
| 750 | 1,510 | | 1,595 | 1,595 | 1,585 | 1,245 | 1,245 | 1,280 | 1,280 | | 399 |
| 800 | 1,235 | | 1,525 | 1,525 | 1,525 | 1,210 | 1,210 | 1,265 | 1,265 | | 427 |
| 850 | 805 | | 1,460 | 1,460 | 1,450 | 1,190 | | 1,255 | 1,255 | | 454 |
| 900 | 515 | | 1,350 | 1,350 | 1,110 | 1,165 | | 1,245 | | | 482 |
| 950 | 310 | | 955 | 1,130 | 825 | 1,145 | | 1,160 | | | 510 |
| 1,000 | 155 | | 650 | 780 | 595 | 965 | | 1,050 | | | 538 |
| 1,050 | | | 430 ^a | 525 ^a | 430 ^a | 925 ^a | | 1,030 ^a | | | 566 |
| 1,100 | | | 290 ^a | 330 ^a | 300 ^a | 770 ^a | | 915 ^a | | | 593 |
| 1,150 | | | | | 185 ^a | 595 ^a | | 710 ^a | | | 621 |
| 1,200 | | | | | 105 ^a | 465 ^a | | 555 ^a | | | 649 |
| 1,250 | | | | | | 340 ^a | | 440 ^a | | | 677 |
| 1,300 | | | | | | 255 ^a | | 350 ^a | | | 704 |
| 1,350 | | | | | | 185 ^a | | 290 ^a | | | 732 |
| 1,400 | | | | | | 145 ^a | | 225 ^a | | | 760 |
| 1,450 | | | | | | 105 ^a | | 175 ^a | | | 788 |
| 1,500 | | | | | | 80 ^a | | 125 ^a | | | 816 |

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Not to be used over 650 °F (343 °C).

³ Use normalized and tempered material only.

⁴ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

⁵ Not to be used over 800 °F (427 °C).

⁶ Not to be used over 850 °F (454 °C).

⁷ Use solution annealed material only.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).

ANSI CLASS 1500 PRESSURE-TEMP RATINGS

| Temperature °F | Pressure (psig) | | | | | | | | | | Temp. °C |
|-------------------|----------------------------|------------------|------------------|------------------|------------------|--------------------|------------------|--------------------|-------------------|-------------------|-------------|
| | ANSI B16.34 Material Group | | | | | | | | | | |
| | 1.1 | 1.2 | 1.9 | 1.10 | 1.13 | 2.1 | | 2.2 | | 3.17 | |
| | WCB ¹ | LCC ² | WC6 ³ | WC9 ³ | C5 ³ | CF8 ⁴ | CF3 ⁵ | CF8M ⁴ | CF3M ⁶ | CN7M ⁷ | |
| -20 to 100 | 3,705 | 3,750 | 3,750 | 3,750 | 3,750 | 3,600 | 3,600 | 3,600 | 3,600 | 3,000 | -29 to 38 |
| 200 | 3,375 | 3,750 | 3,750 | 3,750 | 3,725 | 3,000 | 3,000 | 3,095 | 3,095 | 2,590 | 93 |
| 300 | 3,280 | 3,640 | 3,610 | 3,640 | 3,580 | 2,700 | 2,700 | 2,795 | 2,795 | 2,330 | 149 |
| 350 | 3,225 | 3,585 | 3,538 | 3,585 | 3,555 | 2,593 | 2,593 | 2,683 | 2,683 | 2,220 | 177 |
| 400 | 3,170 | 3,530 | 3,465 | 3,530 | 3,530 | 2,485 | 2,485 | 2,570 | 2,570 | 2,110 | 204 |
| 450 | 3,083 | 3,428 | 3,395 | 3,428 | 3,428 | 2,408 | 2,408 | 2,480 | 2,480 | 2,028 | 232 |
| 500 | 2,995 | 3,325 | 3,325 | 3,325 | 3,325 | 2,330 | 2,330 | 2,390 | 2,390 | 1,945 | 260 |
| 550 | 2,865 | 3,175 | 3,175 | 3,175 | 3,175 | 2,258 | 2,258 | 2,323 | 2,323 | 1,873 | 288 |
| 600 | 2,735 | 3,025 | 3,025 | 3,025 | 3,025 | 2,185 | 2,185 | 2,255 | 2,255 | 1,800 | 316 |
| 650 | 2,685 | 2,940 | 2,940 | 2,940 | 2,940 | 2,150 | 2,150 | 2,220 | 2,220 | | 343 |
| 700 | 2,665 | | 2,840 | 2,840 | 2,840 | 2,125 | 2,125 | 2,170 | 2,170 | | 371 |
| 750 | 2,520 | | 2,660 | 2,660 | 2,640 | 2,075 | 2,075 | 2,135 | 2,135 | | 399 |
| 800 | 2,060 | | 2,540 | 2,540 | 2,540 | 2,015 | 2,015 | 2,110 | 2,110 | | 427 |
| 850 | 1,340 | | 2,435 | 2,435 | 2,415 | 1,980 | | 2,090 | 2,090 | | 454 |
| 900 | 860 | | 2,245 | 2,245 | 1,850 | 1,945 | | 2,075 | | | 482 |
| 950 | 515 | | 1,595 | 1,885 | 1,370 | 1,910 | | 1,930 | | | 510 |
| 1,000 | 260 | | 1,080 | 1,305 | 995 | 1,605 | | 1,750 | | | 538 |
| 1,050 | | | 720 ^a | 875 ^a | 720 ^a | 1,545 ^a | | 1,720 ^a | | | 566 |
| 1,100 | | | 480 ^a | 550 ^a | 495 ^a | 1,285 ^a | | 1,525 ^a | | | 593 |
| 1,150 | | | | | 310 ^a | 995 ^a | | 1,185 ^a | | | 621 |
| 1,200 | | | | | 170 ^a | 770 ^a | | 925 ^a | | | 649 |
| 1,250 | | | | | | 565 ^a | | 735 ^a | | | 677 |
| 1,300 | | | | | | 430 ^a | | 585 ^a | | | 704 |
| 1,350 | | | | | | 310 ^a | | 480 ^a | | | 732 |
| 1,400 | | | | | | 240 ^a | | 380 ^a | | | 760 |
| 1,450 | | | | | | 170 ^a | | 290 ^a | | | 788 |
| 1,500 | | | | | | 135 ^a | | 205 ^a | | | 816 |

¹ Upon prolonged exposure to temperatures above 800 °F (427 °C), the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800 °F (427 °C).

² Not to be used over 650 °F (343 °C).

³ Use normalized and tempered material only.

⁴ At temperatures over 1,000 °F (538 °C), use only when the carbon content is 0.04% or higher.

⁵ Not to be used over 800 °F (427 °C).

⁶ Not to be used over 850 °F (454 °C).

⁷ Use solution annealed material only.

^a For welding end valves only. Flanged end ratings terminate at 1,000 °F (538 °C).



API 600 CAST STEEL VALVES

SHELL MATERIAL SPECIFICATIONS

| Carbon and Alloy Steel Castings | | | | | | |
|---------------------------------|------|--------------------|--------------------|--------------|--------------|-------------|
| | Unit | A216 Gr. WCB | A352 Gr. LCC | A217 Gr. WC6 | A217 Gr. WC9 | A217 Gr. C5 |
| C ¹ | % | 0.300 ³ | 0.250 ⁴ | 0.05-0.20 | 0.05-0.18 | 0.200 |
| Si ¹ | % | 0.600 | | | | 0.750 |
| Mn ¹ | % | 1.000 ³ | 1.200 ⁴ | 0.50-0.80 | 0.40-0.70 | |
| P ¹ | % | 0.040 | | | | |
| S ¹ | % | 0.045 | | | | |
| Cr ¹ | % | 0.500 | 0.500 ⁵ | 1.00-1.50 | 2.00-2.75 | 4.00-6.50 |
| Ni ¹ | % | 0.500 | 0.500 ⁵ | 0.500 | | |
| Mo ¹ | % | 0.200 | 0.200 ⁵ | 0.45-0.65 | 0.90-1.20 | 0.45-0.65 |
| Cu ¹ | % | 0.300 | 0.300 ⁵ | 0.500 | | |
| V ¹ | % | 0.030 | 0.030 ⁵ | - | | |
| T.S. | MPa | 485-655 | | | | 620-795 |
| Y.S. ² | MPa | 250 | 275 | | 415 | |
| EI. ² | % | 22.0 | | 20.0 | | 18.0 |
| R.A. ² | % | 35.0 | | | | |

| Corrosion Resistant Steel Castings | | | | | | |
|------------------------------------|------|--------------|---------------|--------------|---------------|---------------|
| | Unit | A351 Gr. CF8 | A351 Gr. CF8M | A351 Gr. CF3 | A351 Gr. CF3M | A351 Gr. CN7M |
| C ¹ | % | 0.08 | | 0.03 | | 0.07 |
| Si ¹ | % | 2.00 | 1.50 | 2.00 | 1.50 | |
| Mn ¹ | % | 1.50 | | | | |
| P ¹ | % | 0.04 | | | | |
| S ¹ | % | 0.04 | | | | |
| Cr | % | 18.0-21.0 | | 17.0-21.0 | | 19.0-22.0 |
| Ni | % | 8.0-11.0 | 9.0-12.0 | 8.0-12.0 | 9.0-13.0 | 27.5-30.5 |
| Mo ¹ | % | 0.50 | 2.0-3.0 | 0.50 | 2.0-3.0 | |
| Cu | % | - | | | | 3.0-4.0 |
| T.S. ² | MPa | 485 | | | | 425 |
| Y.S. ² | MPa | 205 | | | | 170 |
| EI. ² | % | 35.0 | | | | |

¹ Values listed are permitted maximums, unless otherwise stated.

² Values listed are required minimums, unless otherwise stated.

³ For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.28%.

⁴ For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.04% Mn above the specified maximum will be permitted up to a maximum of 1.40%.

⁵ Specified Residual Elements - The total content of these elements is 1.00% maximum.

TRIM MATERIAL SPECIFICATIONS

| Corrosion Resistant Alloys | | | | | |
|-----------------------------|------|---|-----------------------------------|-------------------------------|--------------------------------|
| | Unit | A182 Gr. F6a | A182 Gr. F304 | A182 Gr. F316 | A182 Gr. F347 ³ |
| C ¹ | % | 0.150 | | 0.080 | |
| Si ¹ | % | | 1.000 | | |
| Mn ¹ | % | 1.000 | | 2.000 | |
| P ¹ | % | | 0.040 | | |
| S ¹ | % | | 0.030 | | |
| Cr | % | 11.5-13.5 | 18.0-20.0 | 16.0-18.0 | 17.0-20.0 |
| Ni ¹ | % | 0.500 | 8.0-11.0 | 10.0-14.0 | 9.0-13.0 |
| Mo | % | - | | 2.0-3.0 | - |
| N ¹ | % | - | 0.100 | | - |
| Tensile Str. ² | MPa | 485 | | 515 ⁴ | |
| Yield Str. ² | MPa | 275 | | 205 | |
| Elongation ² | % | 18.0 | | 30.0 | |
| Reduc. of Area ² | % | 35.0 | | 50.0 | |
| Hardness | HB | 143-187 | | - | |
| Nonferrous Alloys | | | Bolting | | |
| | Unit | Alloy 20 ⁵ B462 UNS N08020 | Ni-Cu Alloy UNS N04400 B164 | Alloy Steel A193 Gr. B7 | Carbon Steel A194 Gr. 2H |
| C ¹ | % | 0.070 | 0.300 | 0.37-0.49 | 0.400 Min. |
| Si ¹ | % | 1.000 | 0.500 | 0.15-0.35 | 0.400 |
| Mn ¹ | % | 2.000 | | 0.65-1.10 | 1.000 |
| P ¹ | % | 0.045 | - | 0.035 | 0.040 |
| S ¹ | % | 0.035 | 0.024 | 0.040 | 0.050 |
| Cr | % | 19.0-21.0 | - | 0.75-1.20 | - |
| Ni ² | % | 32.0-38.0 | 63.0 ⁶ | - | - |
| Mo ¹ | % | 2.0-3.0 | - | 0.15-0.25 | - |
| Cu ¹ | % | 3.0-4.0 | 28.0-34.0 | - | - |
| Fe ¹ | % | Balance ⁶ | 2.500 | - | - |
| Tensile Str. ² | MPa | 551 | 480 | 860 | - |
| Yield Str. ² | MPa | 241 | 170 | 720 | - |
| Elongation ² | % | 30.0 | 35.0 | 18.0 | - |
| Reduc. of Area ² | % | 50.0 | - | 50.0 | - |

¹ Values listed are permitted maximums, unless otherwise stated.

² Values listed are required minimums, unless otherwise stated.

³ Shall have a columbium plus tantalum content of not less than ten times the carbon content and not more than 1.10%.

⁴ For sections over 5 inches in thickness, the minimum tensile strength shall be 485 MPa.

⁵ Shall have a columbium plus tantalum content of not less than eight times the carbon content and not more than 1.0%.

⁶ Shall be determined arithmetically by difference.



API 600 CAST STEEL VALVES

FIGURE NUMBER COMPARISON CHART

| Valve | ANSI Class | DPV® | Crane | Kitz | Lunkenheimer | Newco |
|-------------|------------|--------|-------|---------|--------------|---------|
| Gate | 150 | 1512F | 47 | 150SCL | 1512 | 11F-CB |
| | 300 | 3012F | 33 | 300SCL | 3012 | 13F-CB |
| | 600 | 6012F | 76 | 600SCL | 6012 | 16F-CB |
| | 900 | 9012F | 83 | 900SCL | - | 19F-CB |
| | 1500 | 15012F | 87 | 1500SCL | - | 115F-CB |
| Globe | 150 | 1522F | 143 | 150SCJ | 1542 | 21F-CB |
| | 300 | 3022F | 151 | 300SCJ | 3042 | 23F-CB |
| | 600 | 6022F | 171 | 600SCJ | 6042 | 26F-CB |
| | 900 | 9022F | 183 | 900SCJ | - | 29F-CB |
| | 1500 | 15022F | 189 | 1500SCJ | - | 215F-CB |
| Swing Check | 150 | 1532F | 147 | 150SCO | 1572 | 31F-CB |
| | 300 | 3032F | 159 | 300SCO | 3072 | 33F-CB |
| | 600 | 6032F | 175 | 600SCO | 6072 | 36F-CB |
| | 900 | 9032F | 187 | 900SCO | - | 39F-CB |
| | 1500 | 15032F | 199 | 1500SCO | - | 315F-CB |

| Valve | ANSI Class | Pacific | Powell | Stockham | Velan | Walworth |
|-------------|------------|-----------|--------------|----------|------------|----------|
| Gate | 150 | 2155 | 1503N / 1503 | 15-OF | F-0064C-02 | 5202F |
| | 300 | 2355 | 3003N / 3003 | 30-OF | F-1064C-02 | 5206F |
| | 600 | 2655 | 6003 | 60-OF | F-2064C-02 | 5232F |
| | 900 | 2955 | 9003 | - | F-7064C-02 | 5247F |
| | 1500 | 21555 | 1303 | - | F-3064C-02 | 5262F |
| Globe | 150 | 160 | 1531 | 15-GPF | F-0074C-02 | 5275F |
| | 300 | 360 | 3031 | 30-GPF | F-1074C-02 | 5281F |
| | 600 | 660 | 6031 | 60-GPF | F-2074C-02 | 5295F |
| | 900 | 960 | 9031 | - | F-7074C-02 | 5301F |
| | 1500 | - | 1331 | - | F-3074C-02 | 5308F |
| Swing Check | 150 | 180 / 184 | 1561 | 15-SF | F-0114C-02 | 5341F |
| | 300 | 380 / 384 | 3061 | 30-SF | F-1114C-02 | 5344F |
| | 600 | 680 / 684 | 6061 | 60-SF | F-2114C-02 | 5350F |
| | 900 | 984 | 9061 | - | F-7114C-02 | 5353F |
| | 1500 | 1584 | 1361 | - | F-3114C-02 | 5356F |

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STANDARD TERMS AND CONDITIONS OF SALE

CONTROLLING PROVISIONS AND ACCEPTANCE

All DPV sales are expressly subject to these terms and conditions, which govern and prevail regardless of any terms and conditions set forth to the contrary by the Buyer. The Buyer's acceptance of these terms and conditions is evidenced by the Buyer's placement of order with DPV.

QUOTATIONS AND PRICES

All goods are priced F.O.B. our warehouse. Inland freight to destination is for account of the Buyer, either on collect basis, or prepaid and then billed by DPV for payment by the Buyer. Unless otherwise stated in writing, all prices are valid for thirty (30) days only. Published prices are subject to changes without prior notice.

DELIVERY

Delivery quoted is estimated based on availability of DPV's stock and/or production schedule at time of quotation/order, and is subject to changes in the event of prior sales and re-scheduling to any occurrences beyond the DPV's control, though DPV, as a gesture of goodwill, will do its best stay as close as possible to the delivery estimated. Title to the product(s) and risk of loss shall pass to the Buyer upon delivery to a common carrier or Buyer's transport. All claims of loss to the materials in transit shall be filed by the Buyer directly with the carrier. All claims for shortages, corrections or deductions must be made to DPV within ten (10) days after receipt of goods.

CANCELLATION AND RETURN

All cancellations and returns, etc., cannot be made without DPV's formal prior consent with a Return Authorization Number (RAN). A cancellation and re-stocking charge will apply in accordance with DPV's Return Policy, which applies to all returns. Special items are not subject to cancellation or returns.

FORCE MAJEURE

DPV is not to be held responsible for any delays in delivery, or defaults in completing an order or contract, due to force majeure such as strikes, work stoppages, fires, floods, accidents, inability to obtain fuel and transportation means, vendors' delayed deliveries or materials, parts, components, goods, etc., to DPV, acts of God, and/or any other causes beyond Seller's control.

TAXES

All DPV prices are exclusive of all taxes, which, if applicable under government laws, shall be wholly for the Buyer's account and to be fully paid by the Buyer only. Where the Buyer is lawfully entitled to exemption from any tax, all necessary documentation must be provided by the Buyer to DPV to effect such exemption. Any taxes interests and penalties assessed against DPV on transactions which are otherwise determined as taxable, shall be borne by the Buyer. The term "Taxes" used here shall include any impost, duty, levy or other charges imposed by any government or agency thereof upon the property, services or parties hereto, but shall not include those measured by the net income of DPV.

ERRORS

All clerical and computational errors and/or omissions are exempted and are to be corrected by DPV.

LIMITED WARRANTY

All DPV products are guaranteed to the original Buyer only for a one (1) year period from and after the invoice date against defects in material and workmanship under normal and proper use and service, and not caused or resulting from improper usage or application, improper installation, improper maintenance and repairs, modifications or alterations, normal wear and tears, corrosion, erosion, or chemical attacks. DPV's obligation under this warranty is limited strictly to repairing or replacing, at its election, any parts or products determined by DPV to be defective, or refunding the purchasing price to the original Buyer. DPV shall bear normal surface transportation cost for shipping the replacements, but shall not bear any losses, damages, installation, re-installation, engineering, or any other costs incurred thereof by the Buyer. The Uniform Commercial Code (UCC) shall not apply to the sale, nor the Michigan statutes adopting the UCC. This warranty is expressly made in lieu of and excludes all other warranties, guarantees, or representations expressed or implied. There are no implied warranties of merchantability or fitness for a particular purpose.

EXCLUSIONS

Do not use DPV products in aircraft or aerospace applications. No warranties, guarantees or representations of any kind are made with respect to such applications. The Buyer assumes on their own all risks of any use in such applications and will indemnify and hold harmless DPV against and from any claims, costs (including attorney's fees) and liabilities arising out of such use.

LIABILITY

Notwithstanding any provision in the Buyer's order or elsewhere to the contrary, under no circumstances shall DPV be liable for any direct, indirect, special, consequential or incidental damages (including but not limited to loss of revenue, loss of use, material, production or end products), or any other claims for damages arising out of the purchase, delivery, installation or use of DPV products, whether claimed in contract, warranty, tort (including negligence) and delays, actual or imputed, or otherwise.

GOVERNING LAW

The contract shall be governed by, construed, and enforced in accordance with the laws of the State of New York in the United States of America. The provisions of the "UN Convention on Contracts for the International Sale of Goods" shall not apply.

PARTIES

The abbreviation "DPV" refers to Delta Pacific Valve Mfg. Co., and the word "Buyer" refers to the Person, Party or Company purchasing goods and/or services from Delta Pacific Valve Mfg. Co. (DPV).

OTHER PRODUCTS

API 6D / BS 5351 Floating Ball Valves

Fire Tested & Certified to API 6FA & BS 6755 Pt. 2
1-Pce & 2-Pce Body Design, Full & Reduced Bores
ANSI Class 150 & 300, ½" to 12", WCB/LCC/CF8M

API 609 Butterfly Valves

Category A, Wafer & Lug Body Patterns
Concentric Disc & Seat Design, 2-Pce Stem
Rated 200 psig CWP, 2" to 12", WCB & CF8M

Industrial Ball Valves - Investment Cast

1-Pce, 2-Pce & 3 Pce Body Designs
Full & Reduced Bores, NPT/SW/BW Ends
ANSI Class 150 to 800, ½" to 4", WCB & CF8M

Multi-Function Control Check Valves

Y-Pattern Body, Cast & Ductile Iron, 2" to 14"
ANSI Class 125, 150 & 300, Flanged Ends

API 6D Trunnion Mounted Ball Valves

Forged Steel, 3-Piece Bolted Body Design
ANSI Cl.150 to 2500, Full & Reduced Bores
Available in A105, LF2 and other Alloys

API 6D / API 594 Wafer Check Valves

Dual & Single Plate Designs
ANSI Class 150 to 600, 2" to 24"
Available in WCB, LCB & CF8M

Industrial Strainers

Y & Basket (Simplex & Duplex) Types
ANSI Class 150 to 1500, ¼" to 16"
Available in Cast Iron, Bronze, WCB & CF8M

Pump Suction Diffusers

Cast Iron & Ductile Iron Materials
ANSI Class 125, 150 & 300, Flanged Ends

Distributed by: