C-BIV-0221

# NIBCO®

AHEAD OF THE FLOW®

# Bronze & Iron Valves

# Business-to-Business Solutions

## Look to NIBCO for technology leadership.

The velocity with which e-business evolves demands that new products and services be continuously developed and introduced to keep our customers at the center of our business efforts. NIBCO provides an entire suite of business-to-business solutions that is changing the way we interact with customers.

NIBCOpartner.com℠ is an exclusive set of secure web applications that allow quick access to customer-specific information and online order processing. This self-service approach gives you 24/7 access to your order status putting you in total control of your business.

NIBCOPartner.com

Real time information includes:

- Online order entry
- Viewable invoices & reports
- Inventory availability
- Current price checks
- Order status
- Online library of price sheets, catalogs & submittals

Electronic Data Interchange (EDI) makes it possible to trade business documents at the speed of light. This technology cuts the cost of each transaction by eliminating the manual labor and paper-work involved in traditional order taking. This amounts to cost-savings, increased accuracy and better use of resources.

With EDI, you can trade:

- Purchase orders
- PO Acknowledgements
- Invoices
- Product activity data
- Advanced ship notices
- Remittance advice

Vendor Managed Inventory (VMI), a sophisticated service for automated inventory management, reduces your overhead by transferring inventory management, order entry and forecasting to NIBCO. This is an on-going, interactive partnership with NIBCO.

Through automation, VMI brings results:

- Improves customer service
- Optimum inventory efficiencies
- Better forecasting
- Cuts transaction costs
- Peace of mind
- Relief from day-to-day management

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# Pressure Rated Bronze, Iron and Ductile Iron Valves

## Gate, Globe, Angle and Check Valve Figure Number System

**Examples:**

| | 1 End | 2 Type | 3 Pressure | 4 Detail–Features | 5 Disc Material | 6 Misc. |
|---|---|---|---|---|---|---|
| **T-113** | **T** | **1** | **1** | **3** | | |
| **F-617-O** | **F** | **6** | **1** | **7** | | **O** |

**Key:**

| 1 End | 2 Type | 3 Pressure | 4 Detail–Features | | | 5 Disc Material | 6 Miscellaneous |
|---|---|---|---|---|---|---|---|
| | | | Gate | Globe and Angle | Check | | |
| F-Flanged | 1-Gate-Bronze | 1-125# SWP/ 200#CWP | 1-SB, RS, Solid | 1-SB, Int | 3-Hor SW, SB, Int (Y-Pat) | A-Alloy Threads | 13-3% Nickel Body |
| MJ-Mechanical Joint | 2-Globe-Bronze | 2-125# SWP/ 200# CWP | 2-SB, RS | 5-UB, Int | 6-UB, Ren | B-Bronze | 31-Bronze<br>33-Stainless Steel<br>BHW-Bronze Handwheel |
| S-Solder | 3-Angle-Bronze | 3-150# SWP/ 300# or 285# CWP | 3-SB, NRS, Solid | 6-UB, Ren | 7-Internal Body Swing | V-FKM | BP-British Parallel<br>BT-British Taper Threads<br>B7-B7 Bolting |
| T-Threaded | 4-Check-Bronze | 5-200# SWP/ 400# CWP | 4-UB, RS, Solid | 8-BB, Ren | | W-Buna-N | C-Copper Flared<br>D-Drain<br>GP-Graphite Packing |
| W-Wafer | 6-Gate-Iron Body | 6-250# SWP/ 500# CWP | 5-UB, RS, Split | 9-BB, Ren Stop Check | 8-Hor, SW, BB, Ren | Y-PTFE | GO-Gear Operator<br>H-Hose End<br>HC-Hose Cap and Chain |
| P-IPS Push-on | 7-Globe-Iron Body | 7-300# SWP/ 600# CWP | 6-UB, NRS, Solid | | 0-Vert Lift, Ren Silent Type | | K-Cross Handle<br>L-Lockshield<br>L&W-Lever and Weight |
| PR-IPS Push-on w/Joint Restraint | 8-Angle-Iron Body | 8-250# CWP | 7-BB, RS, Solid | | | | L&S-Lever and Spring<br>N-Iron Trim<br>O-OS&Y |
| G-Grooved | 9-Check-Iron Body | 9-300# CWP | 9-BB, NRS, Solid | | | | P-Full Plug Disc<br>RW-Resilient Wedge<br>SON-Square Operating Nut |
| | | 0-175# WWP | | | | | SS-Stainless Steel Trim<br>T-Solid Tee Handle<br>TP-PTFE Packing<br>X-Oxygen Service<br>Z-By-Pass |

**Terms:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BB | Bolted Bonnet | CI | Cast Iron | POA | Price on Application | SB | Screw-in Bonnet |
| Int | Integral | MI | Malleable Iron | Ren | Renewable | UB | Union Bonnet |
| | | NRS | Non-Rising Stem | RS | Rising Stem | FF | Flat Face Flanges |

Dezincification Resistant

**De-alloying corrosion, known as "Dezincification," was effectively eradicated from valve products in the 1950s. Today, however, this problem has returned with the increased use of high-zinc alloys (commonly referred to as 'Yellow Brass') in forged and cast valves typically produced outside the United States.**

**Dezincification selectively removes zinc from the alloy, leaving behind a porous, copper-rich structure that has little mechanical strength. The physical attributes of an in-service valve with dezincification includes a white powdery substance or mineral stains on its exterior surface.**

**What's the cure? On all bronze valves the metal components in the waterway must not contain more than 15% zinc in their chemical makeup. As a standard NIBCO bronze pressure-rated valves are made to be "Dezincification Resistant," which is a seal of quality and longevity.**

**This key is a guide only and is not intended to infer that any valve will be produced that is contained in the key.**

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# Bronze Gate Valves
# Illustrated Index

Dezincification Resistant

| | | | |
|---|---|---|---|
| Bronze Gate Valve<br>Screw-in Bonnet<br>125 lb. SWP<br>200 lb. CWP<br> <br>**T or S-111**<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Threaded or Solder Ends<br>**Page 6** | Bronze Gate Valve<br>Screw-in Bonnet<br>125 lb. SWP<br>200 lb. CWP<br> <br>**T or S-113**<br>Non-Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Threaded or Solder Ends<br>**Page 7** | Bronze Hose Gate Valve<br>Screw-in Bonnet<br>125 lb. SWP<br>200 lb. CWP<br> <br>**T-113-HC**<br>Non-Rising Stem • Solid Wedge<br>Sizes ½" thru 1½"<br>Threaded Ends<br>**Page 8** | Bronze Gate Valve<br>Union Bonnet<br>125 lb. SWP<br>200 lb. CWP<br> <br>**T-124**<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Threaded Ends<br>**Page 9** |
| Bronze Gate Valve<br>Screw-in Bonnet<br>150 lb. SWP<br>300 lb. CWP<br> <br>**T-131**<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Threaded Ends<br>**Page 10** | Bronze Gate Valve<br>Screw-in Bonnet<br>150 lb. SWP<br>300 lb. CWP<br> <br>**T-133**<br>Non-Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Threaded Ends<br>**Page 11** | Bronze Gate Valve<br>Union Bonnet<br>150 lb. SWP<br>300 lb. CWP<br> <br>**T or S-134**<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Size 4" Bolted Bonnet<br>Threaded or Solder Ends<br>**Page 12, 13** | Bronze Gate Valve<br>Union Bonnet<br>150 lb. SWP<br>300 lb. CWP<br> <br>**T or S-136**<br>Non-Rising Stem • Solid Wedge<br>Sizes ¼" thru 3"<br>Size 4" Bolted Bonnet<br>Threaded or Solder Ends<br>**Page 14, 15** |
| Bronze Gate Valve<br>Block Design • Union Bonnet<br>200 lb. SWP<br>400 lb. CWP<br> <br>**T-154-A**<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 2"<br>Threaded Ends<br>**Page 16** | Bronze Gate Valve<br>Block Design • Union Bonnet<br>300 lb. SWP<br>600 lb. CWP<br> <br>**T-174-A or SS**<br>Bronze or SS Seats<br>Rising Stem • Solid Wedge<br>Sizes ¼" thru 2"<br>Threaded Ends<br>**Page 17** | Bronze Gate Valve<br>Block Design • Union Bonnet<br>300 lb. SWP<br>600 lb. CWP<br> <br>**T-176-A or SS**<br>Bronze or SS Seats<br>Non-Rising Stem • Solid Wedge<br>Sizes ¼" thru 2"<br>Threaded Ends<br>**Page 18** | |

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# Class 125 Bronze Gate Valves

Screw-In Bonnet • Rising Stem • Solid Wedge

Dezincification Resistant

**125 PSI/8.6 bar saturated steam to 353° F/178° C**
**200 PSI/13.8 bar non-shock cold working pressure**

CONFORMS TO MSS SP-80

**T-111**
Threaded

**S-111**
Solder

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | 300 Series Stainless Steel |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Malleable Iron ASTM A 47 |
| 4. | Stem | Silicon Bronze ASTM B 371 Alloy C69400/C69430 or ASTM B 99 Alloy C65100 |
| 5. | Packing Nut | Bronze ASTM B 62 or ASTM B584 Alloy C84400 or Brass ASTM B 16 |
| 6. | Packing Gland | Bronze ASTM B 62 or ASTM B584 Alloy C84400 or Brass ASTM B16 |
| 7. | Packing | Aramid Fibers with Graphite |
| 8. | Bonnet | Bronze ASTM B 62 |
| 9. | Body | Bronze ASTM B 62 |
| 10. | Wedge | Bronze ASTM B 62 |

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | T-111 | | S-111 | | Master Ctn. Qty. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. | Lbs. | Kg. | T-111 | S-111 |
| †¼ | 8 | 1.69 | 43 | 4.63 | 117 | x | x | 0.79 | 0.36 | x | x | 50 | x |
| †⅜ | 10 | 1.69 | 43 | 4.63 | 117 | .69 | 18 | 0.76 | 0.35 | 0.70 | 0.32 | 50 | 50 |
| †½ | 15 | 1.94 | 49 | 4.81 | 122 | .75 | 19 | 0.87 | 0.40 | 0.73 | 0.33 | 50 | 50 |
| ¾ | 20 | 2.06 | 54 | 5.81 | 148 | .88 | 22 | 1.19 | 0.54 | 1.07 | 0.49 | 50 | 50 |
| 1 | 25 | 2.44 | 62 | 7.09 | 180 | 1.00 | 25 | 1.98 | 0.90 | 1.77 | 0.80 | 30 | 30 |
| 1¼ | 32 | 2.63 | 67 | 8.13 | 206 | 1.19 | 32 | 2.66 | 1.21 | 2.52 | 1.14 | 20 | 20 |
| 1½ | 40 | 2.88 | 72 | 9.81 | 249 | 1.25 | 33 | 3.76 | 1.70 | 3.42 | 1.55 | 10 | 10 |
| 2 | 50 | 3.06 | 78 | 11.56 | 294 | 1.31 | 34 | 5.56 | 2.52 | 5.23 | 2.37 | 10 | 10 |
| 2½ | 65 | 4.13 | 105 | 14.31 | 364 | 1.81 | 46 | 10.81 | 4.90 | 9.63 | 4.37 | 4 | 4 |
| 3 | 80 | 4.50 | 114 | 16.50 | 419 | 1.94 | 49 | 15.49 | 7.02 | 13.92 | 6.31 | 2 | 4 |

**† No packing gland, packing only in these sizes.**

**x Not available this size.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**T-111**
NPT x NPT

**S-111**
C x C

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# Class 250 Iron Body Gate Valves

Bolted Bonnet • Non-Rising Stem • Solid Wedge • Bronze Mounted

**500 PSI/34.5 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 250 PSI/17.2 bar**
**250 PSI/17.2 bar saturated steam to 406°F/208°C**

CONFORMS TO MSS SP-70

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Stem | Brass ASTM B16 Alloy C36000 |
| 5. | Gland Follower Nut | Copper Alloy ASTM F 467 Alloy C27000 |
| 6. | Gland Follower | Cast Iron ASTM A126 Class B or Ductile Iron ASTM A536 |
| 7. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 8. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or Copper Alloy ASTM B16 |
| 9. | Stuffing Box | Cast Iron ASTM A126 Class B |
| 10. | Packing | Aramid Fibers / Graphite |
| 11. | Stuffing Box Gasket | Reinforced Graphite |
| 12. | Stuffing Box Bolt | Steel ASTM A307/SAE J429 |
| 13. | Stuffing Box Nut | Steel ASTM A563 |
| 14. | Body Bolt | Steel ASTM A307/SAE J429 |
| 15. | Bonnet | Cast Iron ASTM A126 Class B |
| 16. | Body Gasket | Reinforced Flexible Graphite |
| 17. | Body Nut | Steel ASTM A307 |
| 18. [2] | Wedge Nut | Copper Alloy ASTM B584 Alloy C84400 |
| 19. | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 20. [1] | Wedge Face Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 21. [1] | Wedge | Cast Iron ASTM A126 Class B |
| 22. | Body | Cast Iron ASTM A126 Class B |

**[1]Sizes thru 3" have Bronze Wedges. 4" thru 12" have Cast Iron Wedges with Copper Alloy Wedge Face Rings.**
**[2]Copper Alloy Wedge Bushing cast in place on 4" Wedge. Copper Alloy Wedge Nut used in sizes 5" thru 12".**

**NOTE: 1.NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

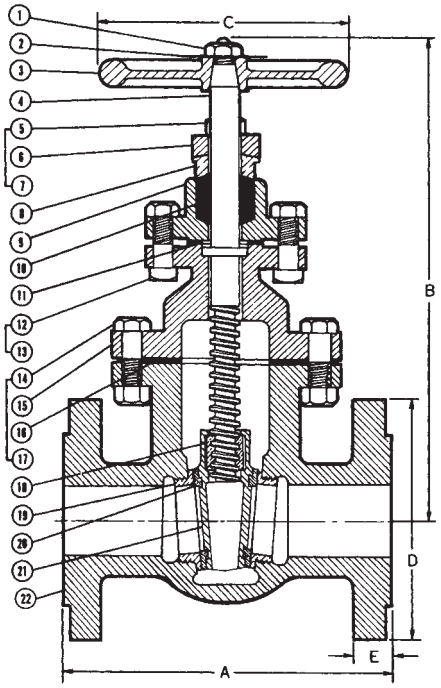
**2. Hand wheel secured with 25mm x 125mm metric socket head cap screw. Also need 1/2" wide diameter flat washer.**

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.50 | 216 | 13.50 | 343 | 7 | 178 | 6.50 | 165 | .88 | 22 | 53 | 24 |
| 2½ | 65 | 9.50 | 241 | 15.00 | 381 | 8 | 203 | 7.50 | 191 | 1.00 | 25 | 72 | 33 |
| 3 | 80 | 11.13 | 283 | 16.50 | 419 | 10 | 254 | 8.25 | 210 | 1.13 | 29 | 115 | 52 |
| 4 | 100 | 12.00 | 305 | 18.50 | 470 | 12 | 305 | 10.00 | 254 | 1.25 | 32 | 186 | 85 |
| 5 | 125 | 15.00 | 381 | 20.75 | 527 | 12 | 305 | 11.00 | 279 | 1.38 | 35 | 269 | 122 |
| 6 | 150 | 15.88 | 403 | 24.00 | 610 | 16 | 406 | 12.50 | 318 | 1.44 | 37 | 374 | 170 |
| 8 | 200 | 16.50 | 419 | 28.50 | 724 | 16 | 406 | 15.00 | 381 | 1.63 | 41 | 581 | 264 |
| 10 | 250 | 18.00 | 457 | 34.00 | 864 | 18 | 457 | 17.50 | 445 | 1.88 | 48 | 786 | 357 |
| 12 | 300 | 19.75 | 502 | 36.00 | 914 | 20 | 508 | 20.50 | 521 | 2.00 | 51 | 1098 | 498 |

**Position indicators available. See page 98.**

**F-669**
Flanged




**F-669**
Flg x Flg

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

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# Iron Globe and Angle Valves
# Illustrated Index

Iron Body Globe Valve
Outside Screw and Yoke
125 lb. SWP
200 lb. CWP

**F-718-B** Brass Disc
**F-718-N** All Iron Trim
Sizes 2" thru 10" Flanged
**Page 55, 56**

Iron Body Globe Valve
Outside Screw and Yoke • Bronze Mounted
250 lb. SWP
500 lb. CWP

**F-768-B**
Brass Disc
Sizes 2" thru 8" Flanged
**Page 57**

Iron Body Angle Valve
Outside Screw and Yoke • Bronze Mounted
125 lb. SWP
200 lb. CWP

**F-818-B**
Brass Disc
Sizes 2" thru 8" Flanged
**Page 58**

Iron Body Stop Check Valve
Outside Screw and Yoke • Bronze Mounted
250 lb. SWP
500 lb. CWP

**F-869-B**
Brass Disc
Sizes 2½" thru 8" Flanged
**Page 59**

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# Class 125 Iron Body Globe Valves

Bolted Bonnet • Renewable Seat and Disc* • Bronze Mounted

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-85

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A307 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Yoke Bushing | Brass ASTM B584 Alloy C84400 |
| 5. | Bonnet | Cast Iron ASTM A126 Class B |
| 6. | Stem | Copper Alloy ASTM B16 Alloy C36000 |
| 7. | Gland Follower Nut | Copper Alloy ASTM F467 Alloy C27000 |
| 8. | Gland Follower | Cast Iron ASTM A126 Class B or Ductile Iron ASTM A536 |
| 9. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or Copper Alloy ASTM B16 |
| 10. | Gland Follower Stud | Steel ASTM A307 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Body Bolt | Steel ASTM A307/SAE J429 |
| 13. | Body Gasket | Synthetic Fibers / Nitrile |
| 14. [1] | Body Nut | Steel ASTM A563 |
| 15. | Swivel Nut | Copper Alloy ASTM B584 Alloy C84400 |
| 16. [2] | Disc Cage | Cast Iron ASTM A126 Class B |
| 17. [3] | Disc | Copper Alloy ASTM B584 Alloy C84400 (B) |
| **18. [4] | Disc Plate | Cast Iron ASTM A126 Class B |
| **19. | Disc Nut | Copper Alloy |
| 20. | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 21. | Body | Cast Iron ASTM A126 Class B |

**[1] 2" and 10" have hex head steel capscrew.**
**[2] 2" thru 5" are Cast Copper Alloy ASTM B584 Alloy C84400**
**[3] For (B) Disc, 2" thru 6" have Bronze ASTM B584 Alloy C84400 Disc.**
**8" thru 10" have Iron Disc with Copper Alloy Disc Face Rings and Brass Pilots.**
**[4] 2" thru 4" are Cast Copper Alloy ASTM B584 Alloy C84400.**
**[5] 2" thru 8"have Aramid Fibers/Graphite packings. 10" has wire reinforced carbon yarn/resilient core with graphite and zinc finish.**
****For PTFE Seat Valves Only.**

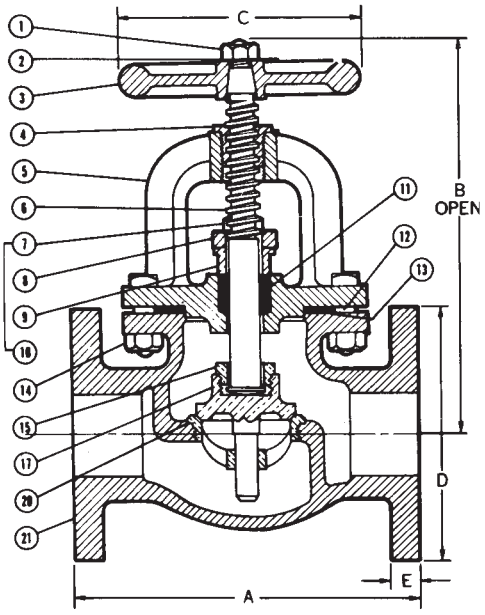
**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 10.19 | 259 | 7 | 178 | 6.00 | 152 | .63 | 16 | 32 | 15 |
| 2½ | 65 | 8.50 | 216 | 11.81 | 300 | 8 | 203 | 7.00 | 178 | .69 | 17 | 49 | 22 |
| 3 | 80 | 9.50 | 241 | 12.50 | 318 | 8 | 203 | 7.50 | 191 | .75 | 19 | 65 | 30 |
| 4 | 100 | 11.50 | 292 | 15.81 | 402 | 10 | 254 | 9.00 | 229 | .94 | 24 | 98 | 44 |
| 5 | 125 | 13.00 | 330 | 16.50 | 419 | 10 | 254 | 10.00 | 254 | .94 | 24 | 140 | 63 |
| 6 | 150 | 14.00 | 356 | 18.88 | 479 | 12 | 305 | 11.00 | 279 | 1.00 | 25 | 182 | 83 |
| 8 | 200 | 19.50 | 495 | 21.13 | 537 | 16 | 406 | 13.50 | 343 | 1.13 | 29 | 361 | 164 |
| 10 | 250 | 24.50 | 622 | 25.19 | 640 | 18 | 457 | 16.00 | 406 | 1.19 | 30 | 586 | 266 |

***With proper machining facilities.**

**F-718-B**
Flanged




**F-718-B**
Flg x Flg

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 125 All Iron Trim Iron Body Globe Valves

Bolted Bonnet • Renewable Seat and Disc*

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-85

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Yoke Bushing | Ductile Iron ASTM A536 |
| 5. | Bonnet | Cast Iron ASTM A126 Class B |
| 6. | Stem | Steel ASTM A108 12L14 Electroless NI-PI |
| 7. | Gland Follower Nut | Steel ASTM A307/SAE J429 |
| 8. | Gland Follower | Cast Iron ASTM A126 Class B or Ductile Iron ASTM A536 |
| 9. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 |
| 10. | Gland Follower Stud | Steel ASTM A307/SAE J429 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Body Bolt | Steel ASTM A307/SAE J429 |
| 13. | Body Gasket | Synthetic Fibers / Nitrile |
| 14. [1] | Body Nut | Steel ASTM A563 |
| 15. | Swivel Nut | Cast Iron ASTM A126 Class B |
| 16. | Disc | Cast Iron ASTM A126 Class B |
| 17. | Seat Ring | Cast Iron ASTM A126 Class B |
| 18. | Body | Cast Iron ASTM A126 Class B |

**[1] 2" and 10" have hex head steel capscrew.**

**[2] 2" thru 8" have Aramid Fibers/graphite packings. 10" has wire reinforced carbon yarn with resilient core and graphite and Zinc finish.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 10.19 | 259 | 7 | 178 | 6.00 | 152 | .63 | 16 | 33 | 15 |
| 2½ | 65 | 8.50 | 216 | 11.81 | 300 | 8 | 203 | 7.00 | 178 | .69 | 17 | 49 | 22 |
| 3 | 80 | 9.50 | 241 | 12.50 | 318 | 8 | 203 | 7.50 | 191 | .75 | 19 | 66 | 30 |
| 4 | 100 | 11.50 | 292 | 15.81 | 402 | 10 | 254 | 9.00 | 229 | .94 | 24 | 97 | 44 |
| 5 | 125 | 13.00 | 330 | 16.50 | 419 | 10 | 254 | 10.00 | 254 | .94 | 24 | 141 | 64 |
| 6 | 150 | 14.00 | 356 | 18.88 | 479 | 12 | 305 | 11.00 | 279 | 1.00 | 25 | 183 | 83 |
| 8 | 200 | 19.50 | 495 | 21.13 | 537 | 16 | 406 | 13.50 | 343 | 1.13 | 29 | 359 | 163 |
| 10 | 250 | 24.50 | 622 | 25.19 | 640 | 18 | 457 | 16.00 | 406 | 1.19 | 30 | 611 | 277 |

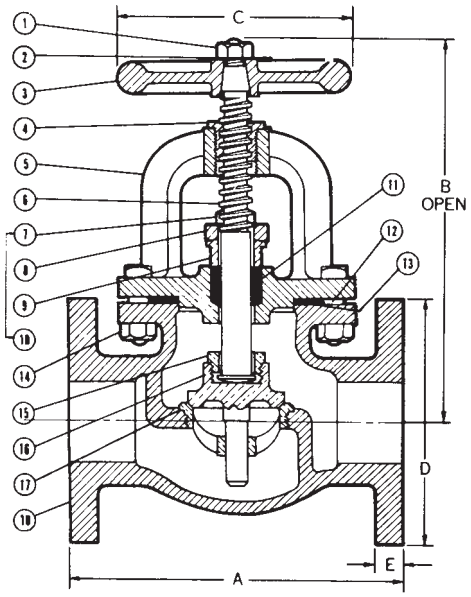
***With proper machining facilities available.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**F-718-N**
Flanged




**F-718-N**
Flg x Flg

*Visit our website for the most current information.*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TECH SERVICES PH: 1.888.446.4226 • FAX: 1.888.336.4226 • INTERNATIONAL OFFICE PH: +1.574.295.3327 • FAX: +1.574.295.3455
www.nibco.com

# Class 250 Iron Body Globe Valves

Bolted Bonnet • Renewable Seat and Disc* • Bronze Mounted

**500 PSI/34.5 bar non-shock cold working pressure from -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 250 PSI/17.2 bar**
**250 PSI/17.2 bar saturated steam to 406°F/208°C**

CONFORMS TO MSS SP-85

**F-768-B**
Flanged

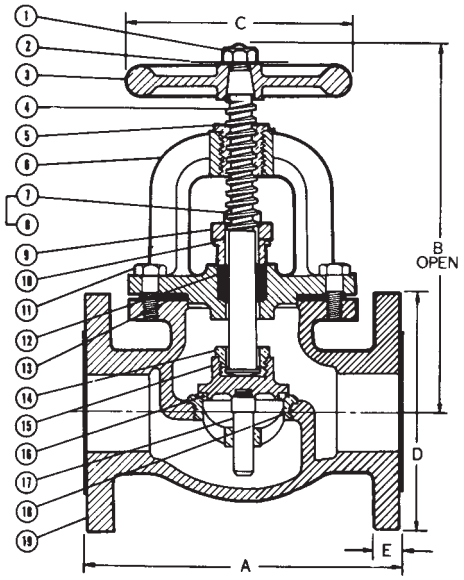
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Stem | Brass ASTM B16 Alloy C36000 |
| 5. | Yoke Bushing | Copper Alloy ASTM B584 Alloy C84400 |
| 6. | Bonnet | Cast Iron ASTM A126 Class B |
| 7. | Gland Follower Nut | Copper Alloy ASTM F467 Alloy C27000 |
| 8. | Gland Follower Stud | Steel ASTM A307/SAE J429 |
| 9. | Gland Follower | Cast Iron ASTM A126 Class B or Ductile Iron ASTM A536 |
| 10. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or Copper Alloy ASTM B16 |
| 11. | Hex Head Cap Screw | Steel ASTM A307/SAE J429 |
| 12. | Packing | Aramid Fibers / Graphite |
| 13. | Body Gasket | Reinforced Flexible Graphite |
| 14. | Swivel Nut | Copper Alloy ASTM B584 Alloy C84400 or ASTM B16 Alloy C36000 |
| 15. | [1]Disc | Cast Iron ASTM A126 Class B |
| 16. | Disc Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 17. | Disc Pilot | Copper Alloy ASTM B584 Alloy C84400 |
| 18. | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 19. | Body | Cast Iron ASTM A126 Class B |

**[1]Sizes thru 4" have all Bronze Discs**
**Sizes 6" and 8" have Cast Iron Disc with Copper Alloy Disc Face Rings and Copper Alloy Pilots.**

**[2] 2" thru 6" have Aramid Fibers/Graphite packings. 8' has wire reinforced carbon yarn, resilient core with Graphite & Zinc finish.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**




**F-768-B**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 10.50 | 267 | 10.31 | 262 | 7 | 178 | 6.50 | 165 | .88 | 22 | 42 | 19 |
| 2½ | 65 | 11.50 | 292 | 13.56 | 344 | 8 | 203 | 7.50 | 191 | 1.00 | 25 | 78 | 35 |
| 3 | 80 | 12.50 | 318 | 14.00 | 356 | 10 | 254 | 8.25 | 210 | 1.13 | 29 | 96 | 44 |
| 4 | 100 | 14.00 | 356 | 16.50 | 419 | 11 | 279 | 10.00 | 254 | 1.25 | 32 | 154 | 70 |
| 6 | 150 | 17.50 | 445 | 23.50 | 597 | 14 | 356 | 12.50 | 318 | 1.44 | 37 | 360 | 163 |
| 8 | 200 | 21.00 | 533 | 26.50 | 673 | 16 | 406 | 15.00 | 381 | 1.63 | 41 | 546 | 248 |

***With proper machining facilities available.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 125 Iron Body Angle Valves

Bolted Bonnet • Renewable Seat and Disc* • Bronze Mounted

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-85

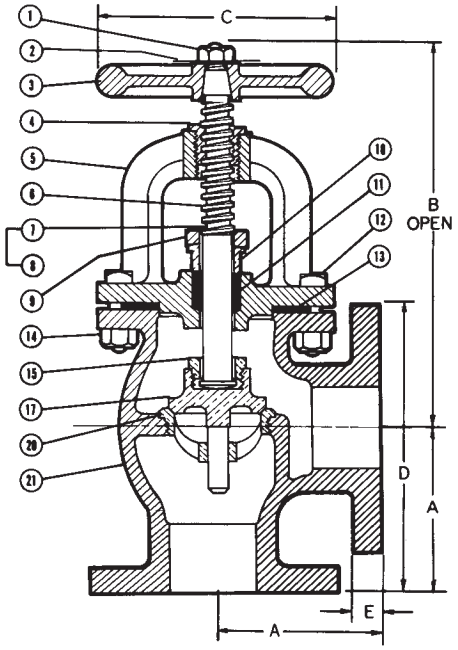
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Yoke Bushing | Brass ASTM B584 Alloy C84400 |
| 5. | Bonnet | Cast Iron ASTM A126 Class B |
| 6. | Stem | Copper Alloy ASTM B16 Alloy C36000 |
| 7. | Gland Follower Nut | Copper Alloy ASTM F467 Alloy C27000 |
| 8. | Gland Follower Stud | Steel ASTM A307/SAE J429 |
| 9. | Gland Follower | Cast Iron ASTM A126 Class B or Ductile Iron ASTM A536 |
| 10. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or ASTM B16 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Body Bolt | Steel ASTM A307/SAE J429 |
| 13. | Body Gasket | Synthetic Fibers / Nitrile |
| 14. [1] | Body Nut | Steel ASTM A563 |
| 15. | Swivel Nut | Copper Alloy ASTM B584 Alloy C84400 |
| 16. [2] | Disc Cage | Cast Iron ASTM A126 Class B |
| 17. [3] | Disc | Copper Alloy ASTM B584 Alloy C84400 (B) |
| 18. [4] | Disc Plate | Cast Iron ASTM A126 Class B |
| 19. | Disc Nut | Copper Alloy |
| 20. | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 21. | Body | Cast Iron ASTM A126 Class B |

**[1] 2" have hex head steel capscrews.**
**[2] 2" thru 5" are Cast Bronze ASTM B584 Alloy C84400.**
**[3] 8" have Cast Iron Disc with Bronze Disc Face Rings and Brass Pilots.**
**[4] 2" thru 4" are Cast Bronze ASTM B584 Alloy C84400.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

**F-818-B**
Flanged




**F-818-B**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 4.00 | 102 | 10.00 | 254 | 7 | 178 | 6.00 | 152 | .63 | 16 | 30 | 14 |
| 2½ | 65 | 4.25 | 108 | 11.50 | 292 | 8 | 203 | 7.00 | 178 | .69 | 17 | 50 | 23 |
| 3 | 80 | 4.75 | 121 | 12.25 | 311 | 8 | 203 | 7.50 | 191 | .75 | 19 | 60 | 27 |
| 4 | 100 | 5.75 | 146 | 15.00 | 381 | 10 | 254 | 9.00 | 229 | .94 | 24 | 99 | 45 |
| 5 | 125 | 6.50 | 171 | 16.50 | 419 | 10 | 254 | 10.00 | 254 | .94 | 24 | 133 | 60 |
| 6 | 150 | 7.00 | 178 | 18.88 | 479 | 12 | 305 | 11.00 | 279 | 1.00 | 25 | 187 | 85 |
| 8 | 200 | 9.75 | 248 | 20.75 | 527 | 16 | 406 | 13.50 | 343 | 1.13 | 29 | 349 | 158 |

***With proper machining facilities available.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**⚠ WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*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TECH SERVICES PH: 1.888.446.4226 • FAX: 1.888.336.4226 • INTERNATIONAL OFFICE PH: +1.574.295.3327 • FAX: +1.574.295.3455
www.nibco.com

# Class 250 Iron Body Automatic Stop Check Valves

Bolted Bonnet • Angle Pattern • Renewable Seat and Disc* • Bronze Mounted

**500 PSI/34.5 bar non-shock cold working pressure from -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 250 PSI/17.2 bar**
**250 PSI/17.2 bar saturated steam to 406°F/208°C**

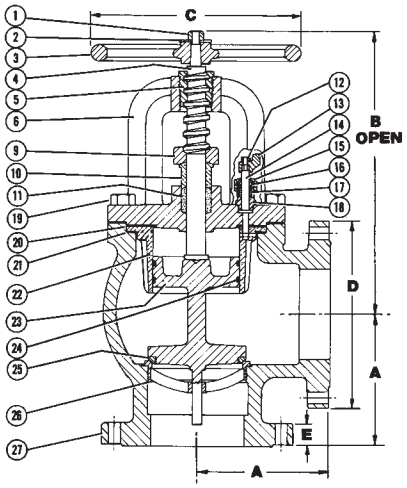
CONFORMS TO MSS SP-85

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A307 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Cast Iron ASTM A126 Class B |
| 4. | Stem | Brass ASTM B 16 Alloy C36000 |
| 5. | Yoke Bushing | Copper Alloy ASTM B584 Alloy C84400 |
| 6. | Bonnet | Cast Iron ASTM A126 Class B |
| 7. | Gland Follower Stud | Steel ASTM A307 (not shown) |
| 8. | Gland Follower Nut | Copper Alloy ASTM F467 Alloy C27000 (not shown) |
| 9. | Gland Follower | Ductile Iron ASTM A536 |
| 10. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or Copper Alloy ASTM B16 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Butterfly Handle Nut | Steel ASTM A307/SAE J429 |
| 13. [1] | Butterfly Handle | Copper Alloy ASTM B584 Alloy C84400 |
| 14. [1] | Control Valve Stem | Copper Alloy ASTM B371 Alloy C69400 |
| 15. [1] | Control Valve Pack Nut | Copper Alloy ASTM B584 Alloy C84400 |
| 16. [1] | Control Valve Pack Gland | Copper Alloy ASTM B16 Alloy C36000 |
| 17. [1] | Control Valve Packing | Aramid Fibers with Graphite |
| 18. [1] | Control Valve Body | Copper Alloy ASTM B584 Alloy C84400 |
| 19. | Hex Head Cap Screw | Steel ASTM A307/SAE J429 |
| 20. | Body Gasket | Reinforced Graphite |
| 21. [1] | Dashpot Gasket | Reinforced Graphite |
| 22. [1] | Dashpot | Copper Alloy ASTM B584 Alloy C84400 |
| 23. [1] | Piston-Disc | Cast Iron ASTM A126 Class B |
| 24. [1] | Piston Ring (2) | PTFE Composite Material |
| 25. [1] | Disc Face Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 26. [1] | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 27. | Body | Cast Iron ASTM A126 Class B |
| 28. [2] | Piston Ring Collar | Copper Alloy ASTM B16 Alloy C36000 |
| 29. [2] | Disc Cage | Copper Alloy ASTM B584 Alloy C84400 |
| 30. [2] | PTFE Disc | PTFE |
| 31. [2] | Disc Plate and Nut | Copper Alloy ASTM B584 C84400 |
| 32. [2] | Piston Rod Plug | Copper Alloy ASTM B16 Alloy C36000 |
| 33. [2] | Piston Rod Plug Pin | Copper Alloy ASTM B 140 Alloy C31400 |

**[1] 4" thru 8" size only. (4" thru 8" have Cast Iron Disc with Bronze Disc Face Ring)**
**[2] TFE Seat Disc in 2½" and 3" only. Maximum 150 psi saturated steam working pressure**
**[3] 2" thru 6" have Aramid Fibers/Graphite packings. 8" has wire reinforced carbon yarn with resilient core with Graphite & Zinc finish.**

**F-869-B**
Flanged
Series D




**F-869-B**
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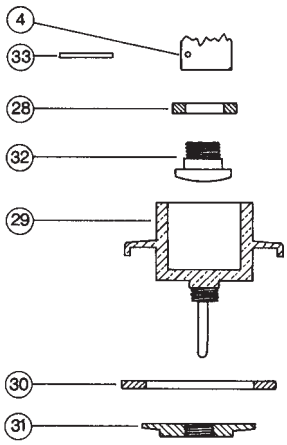


## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2½ | 65 | 5.75 | 146 | 12.63 | 321 | 8 | 203 | 7.50 | 191 | 1.00 | 25 | 80 | 36 |
| 3 | 80 | 6.25 | 159 | 14.00 | 356 | 10 | 254 | 8.25 | 210 | 1.13 | 29 | 102 | 46 |
| 4 | 100 | 7.00 | 178 | 16.50 | 419 | 10 | 254 | 10.00 | 254 | 1.25 | 32 | 168 | 76 |
| 6 | 150 | 8.75 | 222 | 20.75 | 527 | 14 | 356 | 12.50 | 318 | 1.44 | 37 | 311 | 141 |
| 8 | 200 | 10.50 | 267 | 23.81 | 605 | 16 | 406 | 15.00 | 381 | 1.63 | 41 | 520 | 236 |

***With proper machining facilities available.**
**Valve must be installed vertically.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Sizing NIBCO Automatic Stop Check Valves F-869-B

## CALCULATED STEAM VOLUME SYSTEM REQUIREMENTS

| HOUR | EXAMPLE 1 NORMAL VOLUME lbs/hr | EXAMPLE 2 WINTER VOLUME lbs/hr |
|---|---|---|
| 12 AM | 17,000 | 29,000 |
| 1 | 13,000 | 24,000 |
| 2 | 15,000 | 26,000 |
| 3 | 13,000 | 25,000 |
| 4 | 10,000 | 22,000 |
| 5 | 14,000 | 25,000 |
| 6 | 15,000 | 26,000 |
| 7 | 20,000 | 31,000 |
| 8 | 23,000 | 34,000 |
| 9 | 39,000 | 50,000 |
| 10 | 44,000 | 55,000 |
| 11 | 45,000 | 63,000 |
| 12 PM | 40,000 | 51,000 |
| 1 | 22,000 | 32,000 |
| 2 | 35,000 | 46,000 |
| 3 | 37,000 | 49,000 |
| 4 | 34,000 | 45,000 |
| 5 | 35,000 | 45,000 |
| 6 | 33,000 | 44,000 |
| 7 | 33,000 | 44,000 |
| 8 | 34,000 | 46,000 |
| 9 | 29,000 | 43,000 |
| 10 | 27,000 | 40,000 |
| 11 | 20,000 | 33,000 |
| DAILY TOTAL | 647,000 | 928,000 |
| **HOURLY AVERAGE** | **26,958** | **38,667** |

## STEP 1

A. Calculate and chart the expected steam volume requirements for each hour of boiler operation. See example chart on left.
B. Total the volume and divide by the number of hours the boiler is in operation to get steam Hourly Average volume in lbs/hour.

## STEP 2

**Example 1** - This is a typical boiler system where the steam volume is consistent throughout the year. Use the Sizing Chart below, left section with 2 psi pressure drop.

1. Identify system steam working gauge pressure. For our example we will use 125 psi.
2. Use *Hourly Average* steam demand calculated in Step 1 above. For our example use 26,958 from chart on left, center column.
3. Find the *Gauge Pressure* column in Sizing Chart below closest to the system pressure of our example, 125 psi, for each size valve (***120 psi*** is closest).
4. Find the ***lbs/hr*** in Sizing Chart below closest to calculated Hourly Average of our example, 26,958 lbs/hr (***23,100*** is closest).
5. Read across to choose a 6" size valve.

**Example 2** - This is a typical boiler system where the steam volume is higher in the winter than in summer. Use the Sizing Chart below, right section with 5 psi pressure drop.

1. Identify system steam working gauge pressure. For our example we will use 125 psi.
2. Use *Hourly Average* steam demand calculated in Step 1 above. For our example use 38,667 from chart on left, right column.
3. Find the *Gauge Pressure* column in Sizing Chart below closest to the system pressure of our example, 125 psi, for each size valve (***120 psi*** is closest).
4. Find the ***lbs/hr*** in Sizing Chart below closest to calculated Hourly Average of our example, 38,667 lbs/hr (***37,400*** is closest).
5. Read across to choose a 6" size valve.

NOTE: It is better for control consistency to size the automatic stop check valve on the smaller side than on the larger side.

## SIZING CHART

| 2 psi PRESSURE DROP for consistent steam volume | | | | | | 5 psi PRESSURE DROP for consistent steam volume | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| STEAM VOLUME FLOW lbs/hr | SATURATED STEAM GAUGE PRESSURE | | | | VALVE SIZE | STEAM VOLUME FLOW lbs/hr | SATURATED STEAM GAUGE PRESSURE | | | | VALVE SIZE |
| | 10 psi | 50 psi | 120 psi | 250 psi | | | 10 psi | 50 psi | 120 psi | 250 psi | |
| | 1,540 | 2,420 | 3,520 | — | 2½" | | 2,640 | 3,630 | 5,720 | — | 2½" |
| | 2,200 | 3,520 | 4,840 | — | 3" | | 3,850 | 6,380 | 9,350 | — | 3" |
| | 3,740 | 5,940 | 8,250 | 11,550 | 4" | | 7,150 | 11,000 | 16,500 | 23,100 | 4" |
| | 9,900 | 15,400 | 23,100 | 33,000 | 6" | | 16,500 | 25,300 | 37,400 | 51,700 | 6" |
| | 16,500 | 27,500 | 38,500 | 55,000 | 8" | | 29,700 | 46,200 | 66,000 | 93,500 | 8" |

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# F-869 Automatic Stop Check Valve Sizing Guide

| RATED BOILER HP | MAXIMUM BOILER CAPACITY (LBS/HR) | OPERATING PRESSURE (PSIG) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 100 | 3450 | 4" | 3" | 3" | 2½" | 2½" | 2½" | n/a | n/a | | |
| 125 | 4313 | 4" | 3" | 3" | 3" | 3" | 2½" | n/a | n/a | n/a | n/a |
| 150 | 5175 | 4" | 4" | 4" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 200 | 6900 | 6" | 4" | 4" | 4" | 4" | 3" | n/a | n/a | n/a | n/a |
| 250 | 8625 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | n/a | n/a | n/a |
| 300 | 10350 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 350 | 12075 | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 400 | 13800 | 8" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 500 | 17250 | 8" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" |
| 600 | 20700 | | 8" | 6" | 6" | 6" | 6" | 6" | 4" | 4" | 4" |
| 700 | 24150 | | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 750 | 25875 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 800 | 27600 | | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" |
| 900 | 31050 | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" |
| 1000 | 34500 | | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" |
| 1100 | 37950 | | | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" |
| 1200 | 41400 | | | 8" | 8" | 8" | 8" | 8" | 8" | 6" | 6" |
| 1300 | 44850 | | | | 8" | 8" | 8" | 8" | 8" | 8" | 8" |
| 1400 | 48300 | | | | 8" | 8" | 8" | 8" | 8" | 8" | 8" |
| 1500 | 51750 | | | | | 8" | 8" | 8" | 8" | 8" | 8" |
| 1600 | 55200 | | | | | | 8" | 8" | 8" | 8" | 8" |
| 1800 | 62100 | | | | | | | 8" | 8" | 8" | 8" |
| 2000 | 69000 | | | | | | | | | 8" | 8" |

This chart assumes that the boiler will always run at maximum capacity (lbs/hr)

| RATED BOILER HP | @ 90% BOILER CAPACITY (LBS/HR) | OPERATING PRESSURE (PSIG) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 100 | 3105 | 4" | 3" | 2½" | 2½" | 2½" | 2½" | n/a | n/a | | |
| 125 | 3881 | 4" | 3" | 3" | 3" | 2½" | 2½" | n/a | n/a | n/a | n/a |
| 150 | 4658 | 4" | 3" | 3" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 200 | 6210 | 4" | 4" | 4" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 250 | 7763 | 6" | 4" | 4" | 4" | 4" | 3" | n/a | n/a | n/a | n/a |
| 300 | 9315 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | n/a | n/a | n/a |
| 350 | 10868 | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 400 | 12420 | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 500 | 15525 | 8" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 600 | 18630 | 8" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" |
| 700 | 21735 | | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 4" | 4" |
| 750 | 23288 | | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 800 | 24840 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 900 | 27945 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1000 | 31050 | | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1100 | 34155 | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" |
| 1200 | 37260 | | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" |
| 1300 | 40365 | | | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" |
| 1400 | 43470 | | | 8" | 8" | 8" | 8" | 8" | 8" | 6" | 6" |
| 1500 | 46575 | | | | 8" | 8" | 8" | 8" | 8" | 8" | 8" |
| 1600 | 49680 | | | | 8" | 8" | 8" | 8" | 8" | 8" | 8" |
| 1800 | 55890 | | | | | | 8" | 8" | 8" | 8" | 8" |
| 2000 | 62100 | | | | | | | 8" | 8" | 8" | 8" |

This chart assumes that the boiler will always run between 75% and 100% of maximum capacity (lbs/hr) and average an output of 90% of boiler capacity.

NOTES:
1. Automatic Stop Check Valve sizing must be sized only to the boiler steam demand, not the boiler nozzle outlet piping size.
2. Specific operating conditions may require slightly different Automatic Stop Check Valve sizing requirements for any given boiler system.
3. Automatic Stop Check Valve sizing is based on a target of 2 PSI pressure drop across the valve for optimum flow.
4. Please contact NIBCO Technical Services for guidance if operating conditions differ from conditions stated in #2 above.
5. This chart is to be used to assist in sizing Automatic Stop Check Valves, NIBCO assumes no liability for incorrect sizing.

# F-869 Automatic Stop Check Valve Sizing Guide

| RATED BOILER HP | @ 75% BOILER CAPACITY (LBS/HR) | OPERATING PRESSURE (PSIG) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 100 | 2588 | 3" | 2½" | 2½" | 2½" | 2½" | 2½" | n/a | | | |
| 125 | 3234 | 4" | 3" | 2½" | 2½" | 2½" | 2½" | n/a | n/a | | |
| 150 | 3881 | 4" | 3" | 3" | 2½" | 2½" | 2½" | n/a | n/a | n/a | n/a |
| 200 | 5175 | 4" | 4" | 3" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 250 | 6469 | 4" | 4" | 4" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 300 | 7763 | 6" | 4" | 4" | 4" | 4" | 3" | n/a | n/a | n/a | n/a |
| 350 | 9056 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | n/a | n/a | n/a |
| 400 | 10350 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 500 | 12938 | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 600 | 15525 | 8" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 700 | 18113 | 8" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" |
| 750 | 19406 | 8" | 6" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" |
| 800 | 20700 | | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 4" | 4" |
| 900 | 23288 | | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1000 | 25875 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1100 | 28463 | | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1200 | 31050 | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" |
| 1300 | 33638 | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" |
| 1400 | 36225 | | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" |
| 1500 | 38813 | | | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" |
| 1600 | 41400 | | | 8" | 8" | 8" | 8" | 8" | 8" | 6" | 6" |
| 1800 | 46575 | | | | 8" | 8" | 8" | 8" | 8" | 8" | 8" |
| 2000 | 51750 | | | | | 8" | 8" | 8" | 8" | 8" | 8" |

This chart assumes that the boiler will always run between 50% and 100% of maximum capacity (lbs/hr) and average an output of 75% of boiler capacity.

| RATED BOILER HP | @ 50% BOILER CAPACITY (LBS/HR) | OPERATING PRESSURE (PSIG) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 10 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 |
| 100 | 1725 | 2½" | | | | | | | | | |
| 125 | 2156 | 3" | 2½" | 2½" | | | | | | | |
| 150 | 2588 | 3" | 2½" | 2½" | 2½" | 2½" | | | | | |
| 200 | 3450 | 4" | 3" | 3" | 2½" | 2½" | 2½" | n/a | | | |
| 250 | 4313 | 4" | 3" | 3" | 3" | 3" | 2½" | n/a | n/a | n/a | n/a |
| 300 | 5175 | 4" | 4" | 4" | 3" | 3" | 3" | n/a | n/a | n/a | n/a |
| 350 | 6038 | 4" | 4" | 4" | 4" | 3" | 3" | n/a | n/a | n/a | n/a |
| 400 | 6900 | 6" | 4" | 4" | 4" | 4" | 3" | n/a | n/a | n/a | n/a |
| 500 | 8625 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | n/a | n/a | n/a |
| 600 | 10350 | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 700 | 12075 | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 750 | 12938 | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 800 | 13800 | 8" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" | 4" |
| 900 | 15525 | 8" | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" | 4" |
| 1000 | 17250 | 8" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" | 4" |
| 1100 | 18975 | | 6" | 6" | 6" | 6" | 6" | 4" | 4" | 4" | 4" |
| 1200 | 20700 | | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 4" | 4" |
| 1300 | 22425 | | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1400 | 24150 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1500 | 25875 | | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1600 | 27600 | | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" | 6" |
| 1800 | 31050 | | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | 6" |
| 2000 | 34500 | | 8" | 8" | 8" | 8" | 8" | 8" | 6" | 6" | 6" |

This chart assumes that the boiler will always run between 25% & 100% of maximum capacity (lbs/hr) and average an output of 50% of boiler capacity.

NOTES:
1. Automatic Stop Check Valve sizing must be sized only to the boiler steam demand, not the boiler nozzle outlet piping size.
2. Specific operating conditions may require slightly different Automatic Stop Check Valve sizing requirements for any given boiler system.
3. Automatic Stop Check Valve sizing is based on a target of 2 PSI pressure drop across the valve for optimum flow.
4. Please contact NIBCO Technical Services for guidance if operating conditions differ from conditions stated in #2 above.
5. This chart is to be used to assist in sizing Automatic Stop Check Valves, NIBCO assumes no liability for incorrect sizing.


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# Iron Check Valves & Y-Strainers
# Illustrated Index

| | | | |
|---|---|---|---|
| Iron Body Swing Check Valve<br>Bronze Mounted or All Iron<br>125 lb. SWP<br>200 lb. CWP<br> <br>**F-918-B/F-918-N/T-918-B**<br>Bronze or Cast Iron Disc<br>Sizes 2" thru 12"<br>Flanged or Threaded<br>**Page 64, 65** | Iron Body Swing Check Valve<br>Bronze Mounted<br>250 lb. SWP<br>500 lb. CWP<br> <br>**F-968-B**<br>Bronze Disc<br>Sizes 2½" thru 6"<br>Flanged<br>**Page 66** | Lead Free Iron Body Silent Check Valve<br>In-Line Lift • Wafer Style • Spring Actuated<br>125 lb. Class/200 lb. CWP<br>250 lb. Class/400 lb. CWP<br> <br>**W-910-LF, 125 lb. Class**<br>**W-960-LF, 250 lb. Class**<br>Bronze or Buna-N Seat<br>Sizes 2" thru 10"<br>Wafer Style<br>**Page 67** | Lead Free Iron Body Silent Check Valve<br>In-Line Lift • Globe Style • Spring Actuated<br>125 lb. Class/200 lb. CWP<br>250 lb. Class/400 lb. CWP<br> <br>**F-910-LF, 125 lb. Class**<br>**F-960-LF, 250 lb. Class**<br>Bronze or Buna-N Seat<br>Sizes 2 ½" thru 36"<br>Flanged<br>**Page 68** |
| Iron Body Twin Disk Check Valve<br>125 lb. Class/250 lb. CWP<br> <br>**W-920-W-LF**<br>Buna-N Seat<br>Sizes 2" thru 36"<br>Wafer Style<br>**Page 69, 70, 71** | Lead Free Iron Body Grooved Silent Check Valve<br>Bronze Disc<br>250 lb. CWP<br> <br>**G-920-W-LF**<br>Buna-N Seat<br>Sizes 2" thru 12"<br>Grooved<br>**Page 72** | Iron Y-Strainer<br>Screw-in Cap • Blow-off Plug<br>Class 250<br> <br>**T-751-A**<br>20 Mesh or SS Perforated Screen<br>Sizes 1/4" - 3"<br>Threaded<br>**Page 73** | Iron Y-Strainer<br>Bolted Bonnet • Blow-off Plug<br>Class 125<br> <br>**F-721-A**<br>20 Mesh or SS Perforated Screen<br>Sizes 2" - 16"<br>Flanged<br>**Page 74** |

**NOTE: Check valves should never be installed immediately adjacent to a pump discharge or change in direction. Check Valves should be installed downstream from all sources of line turbulence, including fittings and valves, at a minimum of 5x the nominal pipe diameter (preferably 10x) with straight piping to provide laminar flow.**

# Class 125 Iron Body Check Valves

Bolted Bonnet • Horizontal Swing • Renewable Seat and Disc*

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-71 TYPE 1

**F-918-B**
Flanged

**T-918-B**
Threaded

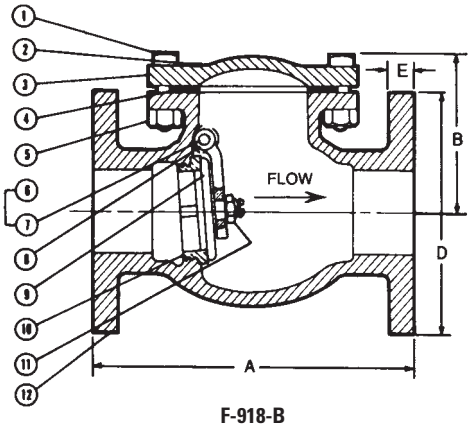
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body Bolt | Steel ASTM A307 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | Cast Iron ASTM A126 Class B |
| 4. | Body Gasket | Synthetic Fibers |
| 5. | Body Nut | Steel ASTM A563 |
| 6. | Side Plug | Brass ASTM B16 Alloy C36000 |
| 7. | Hanger Pin | Brass ASTM B16 Alloy C36000 |
| 8. | Hanger | Ductile Iron ASTM A536 |
| 9. [1] | Disc | Brass ASTM B584 Alloy C84400 or ASTM A536 Ductile Iron with Brass Face Ring |
| 10. | Seat Ring | Brass ASTM B584 Alloy C84400 |
| 11. | Disc Nut | Brass ASTM B16 Alloy C36000 |
| 12. | Body | Cast Iron ASTM A126 Class B |
| 13. [1] | Disc Bolt | Brass ASTM B16 Alloy C36000 |
| 14. | Disc Plate** | Cast Iron ASTM A126 Class B |
| 15. | Disc Cage** | Cast Iron ASTM A126 Class B |

**[1]2" thru 4" have Bronze ASTM B584 Disc.**
**5" thru 12" have Iron Disc with Bronze Disc Face Rings and Disc Bolt.**

****These items are not in the -B, only the -W and -Y.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

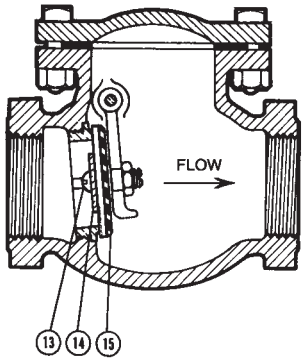



**F-918-B**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions F-918-B A | | Dimensions T-918-B A | | Dimensions B | | Dimensions D | | Dimensions E | | F-918-B | | T-918-B | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 6.50 | 165 | 3.94 | 100 | 6.00 | 152 | .63 | 16 | 24 | 11 | 15 | 7 |
| 2½ | 65 | 8.50 | 216 | 7.50 | 191 | 4.50 | 114 | 7.00 | 178 | .69 | 17 | 35 | 16 | 26 | 12 |
| 3 | 80 | 9.50 | 241 | 8.00 | 203 | 5.13 | 130 | 7.50 | 191 | .75 | 19 | 47 | 21 | 31 | 14 |
| 4 | 100 | 11.50 | 292 | 9.38 | 238 | 6.13 | 156 | 9.00 | 229 | .94 | 24 | 80 | 36 | 54 | 24 |
| 5 | 125 | 13.00 | 330 | x | x | 6.81 | 173 | 10.00 | 254 | .94 | 24 | 100 | 45 | 80 | 36 |
| 6 | 150 | 14.00 | 356 | x | x | 8.00 | 203 | 11.00 | 279 | 1.00 | 25 | 146 | 66 | 121 | 54 |
| 8 | 200 | 19.50 | 495 | x | x | 9.44 | 240 | 13.50 | 343 | 1.13 | 29 | 274 | 124 | x | x |
| 10 | 250 | 24.50 | 622 | x | x | 12.06 | 306 | 16.00 | 406 | 1.19 | 30 | 426 | 193 | x | x |
| 12 | 300 | 27.50 | 699 | x | x | 16.13 | 410 | 19.00 | 483 | 1.25 | 32 | 675 | 306 | x | x |

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) disc**
**- swing design with lever and weight or lever and spring**




**T-918**
NPT x NPT
Buna-N Disc Shown

***Proper machining facilities required.**

**2½" thru 12" are available with lever and weight or lever and spring.**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**NIBCO Iron Body Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**Warning – Do Not Use For Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*



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# Class 125 Iron Body Check Valves

Bolted Bonnet • Horizontal Swing • Renewable Iron Seat and Disc*

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-71 TYPE 1

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body Bolt | Steel ASTM A307/SAE J429 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | Cast Iron ASTM A126 Class B |
| 4. | Body Gasket | Synthetic Fibers |
| 5. | Body Nut | Steel ASTM A563 |
| 6. | Side Plug | Steel ASTM A307 |
| 7. | Hanger Pin | Steel ASTM A 108 1214L |
| 8. | Hanger | Ductile Iron ASTM A536 |
| 9. | Disc | Cast Iron ASTM A126 Class B or ASTM A536 Ductile Iron (2"–4") |
| 10. | Seat Ring | Cast Iron ASTM A126 Class B |
| 11. | Disc Nut | Steel ASTM A563 |
| 12. | Body | Cast Iron ASTM A126 Class B |
| 13.[1] | Disc Bolt | Mild Steel (not shown) |

[1] **5" thru 12" only.**

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 3.94 | 100 | 6.00 | 152 | .63 | 16 | 24 | 11 |
| 2½ | 65 | 8.50 | 216 | 4.50 | 114 | 7.00 | 178 | .69 | 17 | 35 | 16 |
| 3 | 80 | 9.50 | 241 | 5.13 | 130 | 7.50 | 191 | .75 | 19 | 47 | 21 |
| 4 | 100 | 11.50 | 292 | 6.13 | 156 | 9.00 | 229 | .94 | 24 | 80 | 36 |
| 5 | 125 | 13.00 | 330 | 6.81 | 173 | 10.00 | 254 | .94 | 24 | 99 | 45 |
| 6 | 150 | 14.00 | 356 | 8.00 | 203 | 11.00 | 279 | 1.00 | 25 | 147 | 67 |
| 8 | 200 | 19.50 | 495 | 9.44 | 240 | 13.50 | 343 | 1.13 | 29 | 254 | 115 |
| 10 | 250 | 24.50 | 622 | 12.06 | 306 | 16.00 | 406 | 1.19 | 30 | 424 | 192 |
| 12 | 300 | 27.50 | 699 | 16.13 | 410 | 19.00 | 483 | 1.25 | 32 | 646 | 293 |

***Proper machining facilities required.**

**Note: On pump discharge, the preferred check valves are:**
- **inline, spring assisted, center-guided, lift checks**
- **spring assisted twin (double) disc**
- **swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence.Flow straighteners may be required in extreme cases.**

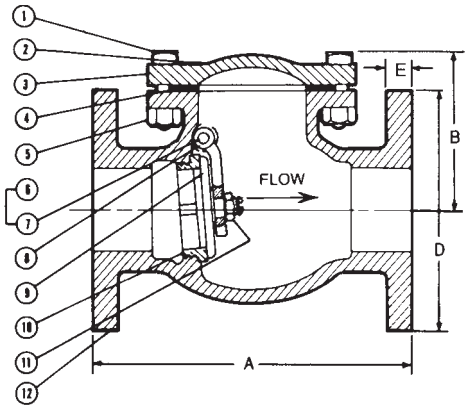
**NIBCO Iron Body Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**WARNING: Do not use for Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**F-918-N**
Flanged




**F-918-N**
Flg x Flg

*Visit our website for the most current information.*

# Class 250 Iron Body Check Valves

Bolted Bonnet • Horizontal Swing • Renewable Bronze Seat and Disc*

**500 PSI/34.5 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 250 PSI/17.2 bar**
**250 PSI/17.2 bar saturated steam to 406°F/208°C**

CONFORMS TO MSS SP-71 TYPE 1 • APPROVED BY THE NEW YORK CITY B.S.A. 143-69-SA AT 350 PSI NON-SHOCK COLD WATER

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body Bolt | Steel ASTM A307/SAE J429 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | Cast Iron ASTM A126 Class B |
| 4. | Body Gasket | Reinforced Graphite |
| 5. | Body Nut | Steel ASTM A563 |
| 6. | Side Plug | Brass ASTM B16 Alloy C36000 |
| 7. | Hanger Pin | Copper Alloy ASTM B16 Alloy C36000 |
| 8. | Hanger | Copper Alloy ASTM B584 Alloy C84400 |
| 9. | Disc Nut | Copper Alloy ASTM B584 Alloy C84400 |
| 10. | Disc | Copper Alloy ASTM B584 Alloy C84400 |
| 11. | Seat Ring | Copper Alloy ASTM B584 Alloy C84400 |
| 12. | Body | Cast Iron ASTM A126 Class B |

**NOTE: NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) for ASTM A126 Class B Cast Iron for the Body, Bonnet, Wedge, or Disc. NIBCO may substitute Ductile Iron ASTM A395 (60-40-18) or ASTM A536 (65-45-12) for all other ASTM A126 Class B Cast Iron components.**

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2½ | 65 | 11.50 | 292 | 5.83 | 149 | 7.50 | 191 | 1.00 | 25 | 62 | 28 |
| 3 | 80 | 12.50 | 318 | 6.31 | 160 | 8.25 | 210 | 1.13 | 29 | 77 | 35 |
| 4 | 100 | 14.00 | 356 | 7.56 | 192 | 10.00 | 254 | 1.25 | 32 | 129 | 58 |
| 6 | 150 | 17.50 | 445 | 8.50 | 216 | 12.50 | 318 | 1.44 | 37 | 225 | 102 |

***Proper machining facilities required.**

**Note: On pump discharge, the preferred check valves are:**
- **inline, spring assisted, center-guided, lift checks**
- **spring assisted twin (double) disc**
- **swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

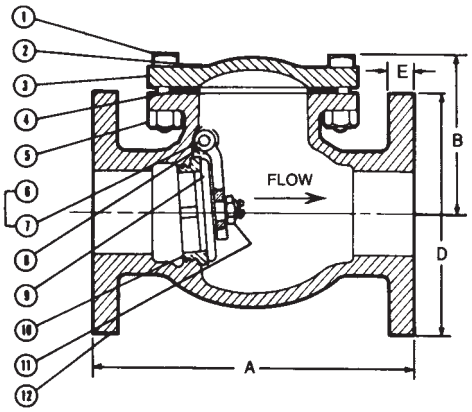
**NIBCO Iron Body Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**Warning – Do Not Use For Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**F-968-B**
Flanged




**F-968-B**
Flg x Flg

*Visit our website for the most current information.*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TECH SERVICES PH: 1.888.446.4226 • FAX: 1.888.336.4226 • INTERNATIONAL OFFICE PH: +1.574.295.3327 • FAX: +1.574.295.3455
www.nibco.com

# Lead-Free* Class 125/250 Iron Body Silent Check Valves

Wafer Style • Renewable Seat and Disc • Spring Actuated (1/2 PSI cracking pressure)

**Class 125, 200 PSI/13.8 bar non-shock cold working pressure**
**Class 250, 400 PSI/27.6 bar non-shock cold working pressure**
**Maximum temperature to 200°F/93°C**
**W910-B-LF — 2" thru 10" ONLY**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372
NSF/ANSI 61 CERTIFIED BY UL
CONFORMS TO MSS SP-125 • FM APPROVED

**W-910-LF 125 lb. Class**
**W-960-LF 250 lb. Class**

TESTED AND CERTIFIED Water Quality UNDER INDUSTRY STANDARDS
C USA
**COMPONENT LEAD-FREE**

CLASSIFIED UL
**WATER QUALITY NSF 61 CERTIFIED**

FM APPROVED

## MATERIAL LIST

| PART | SPECIFICATION |
|---|---|
| 1. Body | Cast Iron ASTM 126 Class B |
| 2. Seat (B) | Bronze ASTM B584 Alloy C87600<br>316 Stainless Steel |
| 2a. Seat (W) | with Buna-N O-ring |
| 3. Disc | Bronze ASTM B584 Alloy C87600<br>316 Stainless Steel |
| 4. Spring | Stainless Steel ASTM A313 UNS S31600 |
| 5. Bushing | Aluminum Bronze B505 C95400 |
| 6. O-Ring | EPDM |

## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | Dimensions B | | W-910 | | W-960 | |
|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. | Lbs. | Kg. |
| *2 | 50 | 4.25 | 108 | 2.63 | 67 | 6 | 5 | 6 | 3 |
| *2½ | 65 | 5.00 | 127 | 2.88 | 73 | 7 | 3 | 7 | 3 |
| *3 | 80 | 5.75 | 146 | 3.13 | 79 | 12 | 5 | 12 | 5 |
| *4 | 100 | 7.00 | 178 | 4.00 | 102 | 18 | 8 | 18 | 8 |
| *5 | 125 | 8.38 | 213 | 4.75 | 121 | 27 | 12 | 27 | 12 |
| *6 | 150 | 9.75 | 248 | 5.50 | 140 | 42 | 19 | 42 | 19 |
| 8 | 200 | 13.38 | 340 | 6.50 | 165 | †85 | 39 | 86 | 39 |
| 10 | 250 | 16.00 | 406 | 8.25 | 210 | †99 | 45 | ‡137 | 62 |

***NOTE: Sizes 2" thru 6" have dual class ratings (125 lb. and 250 lb.) resulting in W-910-LF and W-960-LF being identical. 8" and 10" have special machining in accordance with Flange Class.**

**†Class 125 only.**
**‡Class 250 only.**

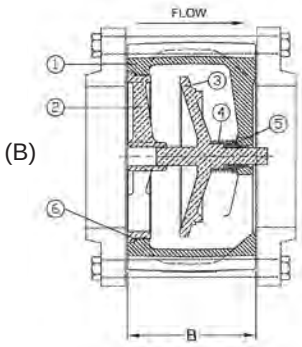
**WARNING: 1. These are not to be used as steam valves.**
**2. Valves are not to be used near a reciprocating air compressor.**
**3. Do not install in vertical line with downward flow.**

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) disc**
**- swing design with lever and weight or lever and spring**

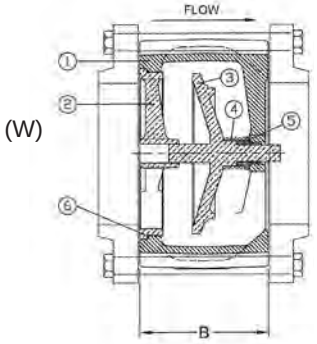
**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**Note: W-960-LF 8" and 10" not FM approved.**

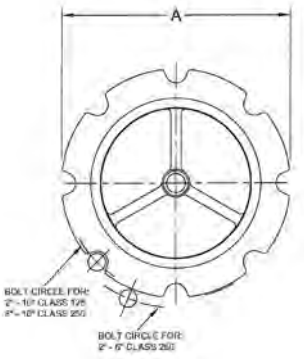
**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**




**W-910-B-LF/W-960-B-LF**
**W-910-SS/W-960-SS**
Wafer




**W-910-W-LF/W-960-W-LF**
**W-910-SS/W-960-SS**
Wafer




**W-910-B-LF/W-960-B-LF**
**W-910-SS/W-960-SS**
Wafer

*Weights are approximate.

*Visit our website for the most current information.*

# Lead-Free* Class 125/250 Iron Body Silent Check Valves

Flanged • Globe Style • Renewable Seat and Disc • Spring Actuated (1 / 2 PSI cracking pressure)

**[1]Class 125, 200 PSI/13.8 bar non-shock cold working pressure**
**[2]Class 250, 400 PSI/27.6 bar non-shock cold working pressure**
**Maximum temperature to 200°F/93°C**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372 •
NSF/ANSI 61 CERTIFIED BY UL •
CONFORMS TO MSS SP-125 • CONFORMS TO MIL-V-18436F •
FM APPROVED — 2½" thru 10" ONLY (F-910-B-LF)

C USA
COMPONENT
LEAD-FREE

WATER QUALITY
NSF 61 CERTIFIED

FM APPROVED

## MATERIAL LIST

| PART | SPECIFICATION |
|---|---|
| 1. Body | Cast Iron ASTM 126 Class B |
| 2. Seat (B) | Bronze ASTM B584 Alloy C87600 |
| 2a. Seat (W) | with Buna-N O-ring |
| 3. Disc | 2½" - 10" - Bronze ASTM B584 Alloy C87600<br>12" - 36" - Class 250 Alloy ASTM B148 C95500 |
| 4. Spring | Stainless Steel ASTM A313 UNS S31600 |
| 5. Bushing | Aluminum Bronze B505 C95400 |
| 6. Set Screws† | Stainless Steel Type 316 ASTM F879 |

**F-910-LF, 125 lb. Class**
**F-960-LF, 250 lb. Class**
Flanged

## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | F-910-LF | | F-960-LF | |
|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | Lbs. | Kg. | Lbs. | Kg. |
| 2½ | 65 | 5.50 | 140 | 24 | 11 | 30 | 14 |
| 3 | 80 | 6.00 | 152 | 29 | 13 | 36 | 16 |
| 4 | 100 | 7.25 | 184 | 42 | 19 | 59 | 27 |
| 5 | 125 | 8.50 | 216 | 52 | 24 | 78 | 35 |
| 6 | 150 | 9.75 | 248 | 73 | 33 | 103 | 47 |
| 8 | 200 | 12.50 | 318 | 126 | 57 | 179 | 81 |
| 10 | 250 | 15.50 | 394 | 205 | 93 | 253 | 115 |
| 12 | 300 | 14.25 | 362 | 306 | 139 | 401 | 182 |
| 14 | 350 | 15.75 | 400 | 350 | 172 | 511 | 232 |
| 16 | 400 | 17.63 | 448 | 501 | 227 | 697 | 316 |
| 18 | 450 | 18.75 | 476 | 724 | 328 | 959 | 435 |
| 20 | 500 | 20.63 | 524 | 890 | 404 | 1180 | 535 |
| 24 | 600 | 24.00 | 610 | 1220 | 553 | 1680 | 762 |
| 30 | 750 | 29.25 | 743 | 2000 | 907 | 2375 | 1077 |
| 36 | 900 | 45.00 | 1143 | 4421 | 2005 | 5511 | 2500 |

**[1]14" - 36" sizes - Class 125, 150 psi/10.3 bar CWP**
**[2]14" - 36" sizes - Class 250, 300 psi/20.7 bar CWP**

**† 2½" - 12" : No Set Screws**

**NOTE: F-910-LF made to 125 lb. Flange dimensions.**
**F-960-LF made to 250 lb. Flange dimensions.**

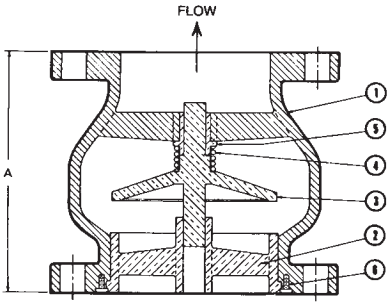
**A Wafer Style Butterfly Valve can be mated on the down stream side of the F-910-LF 2½"–10" sizes without use of spacers or adapters. 316 Stainless Steel Trim available – Consult Factory.**

**USE THIS VALVE ONLY WITH FLAT FACE FLANGE AND FULL FACE GASKET.**

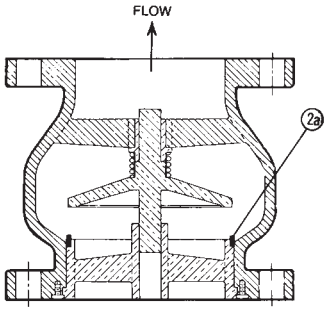
**WARNING: 1. Seat end of valves 14" and larger must be mated to a standard flat faced metal flange. Rubber flanges not acceptable.**
**2. These are not to be used as steam valves.**
**3. Valves are not to be used near a reciprocating air compressor.**
**4. Do not install in vertical line with downward flow.**

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) disc**
**- swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**




**F-910-B-LF or F-960-B-LF**
Flg x Flg Flg x Flg




**F-910-W-LF or F-960-W-LF**
Flg x Flg Flg x Flg

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*



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www.nibco.com

# Lead-Free* Class 125 Iron Body Check Valves

Twin Disc • Wafer Style • Bronze Disc • Rubber Seat • Spring Actuated

**250 PSI/17.2 bar non-shock cold working pressure**
**Maximum temperature to 180°F/82°C**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372 •
NSF/ANSI 61 CERTIFIED BY UL •
CONFORMS TO AWWA C518

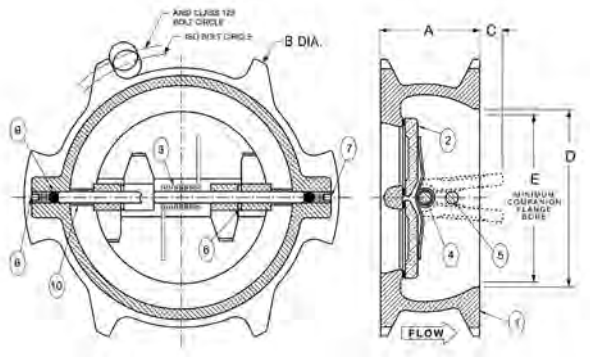
**W-920-W-LF**
Wafer Styles
(excluding 5" and 6")

TESTED AND CERTIFIED WaterQuality UNDER INDUSTRY STANDARDS
C USA
**COMPONENT LEAD-FREE**

CLASSIFIED UL
**WATER QUALITY NSF 61 CERTIFIED**

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body | Ductile Iron ASTM A536 Grade 65-45-12 w/Buna-N (Nitrile) resilient seat molded to body |
| 2. | Disc | Bronze ASTM B584 UNS C87600 |
| 3. | Torsion Spring | Stainless Steel ASTM A313 UNS S31600 |
| 4. | Disc Thrust Bearing | Stainless Steel ASTM A240 UNS S31600 |
| 5. | Stabilization Sphere | Buna-N |
| 6. | Hinge Pin Retainer | Stainless Steel ASTM A276 UNS S31600 |
| 7. | Stop Pin Retainer | Stainless Steel ASTM A276 UNS S31600 |
| 8. | Disc Hinge Pin | Stainless Steel ASTM A276 UNS S31600 |
| 9. | Spacer | Stainless Steel ASTM A276 UNS S31600 |
| 10. | Disc Stop Pin | Stainless Steel ASTM A276 UNS S31600 |




2" thru 12"

## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 2.13 | 54 | 5.13 | 130 | — | — | 2.88 | 73 | — | — | 4 | 2 |
| 2½ | 65 | 2.38 | 60 | 6.00 | 152 | .13 | 3.3 | 3.50 | 89 | 1.31 | 33 | 5 | 2 |
| 3 | 80 | 2.63 | 67 | 5.63 | 143 | .19 | 4.8 | 3.88 | 99 | 1.69 | 43 | 7 | 3 |
| 4 | 100 | 2.63 | 67 | 7.75 | 197 | .63 | 16.0 | 4.75 | 121 | 3.06 | 78 | 9 | 4 |
| 5 | 125 | 3.25 | 83 | 7.56 | 192 | .81 | 20.0 | 5.50 | 140 | 3.63 | 92 | 13 | 6 |
| 6 | 150 | 3.75 | 95 | 8.63 | 222 | .81 | 32.0 | 6.25 | 171 | 4.25 | 146 | 19 | 9 |
| 8 | 200 | 5.00 | 127 | 12.25 | 279 | 1.00 | 33.0 | 8.00 | 222 | 5.50 | 197 | 37 | 17 |
| 10 | 250 | 5.50 | 140 | 14.75 | 340 | 2.06 | 64.0 | 10.25 | 276 | 8.50 | 248 | 65 | 30 |
| 12 | 300 | 7.13 | 181 | 17.38 | 410 | 1.94 | 60.0 | 12.00 | 327 | 9.25 | 279 | 94 | 43 |

**NOTE: Twin Disc Check Valves can be installed horizontally or in the vertical position with flow up.**

**CAUTION: For horizontal flow applications, the valve must be installed with disc hinge pin in the vertical position, to insure proper operation.**

**WARNING: 1. Seat end of valve must be mated to a standard flat faced metal flange. Rubber flanges not acceptable.**
**2. These are not to be used as steam valves.**
**3. Valves are not to be used near a reciprocating air compressor.**

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) DISC**
**- SWING DESIGN WITH LEVER AND WEIGHT OR LEVER AND SPRING**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**W-920-W-LF**
Wafer Style
Body Style 5", 6"

*Visit our website for the most current information.*

*Weights are approximate

# Lead-Free* Class 125 Iron Body Check Valves

Twin Disc • Wafer Style • Bronze disc • Rubber seat • Spring Actuated

**150 PSI/10.3 bar non-shock cold working pressure**
**Maximum temperature to 180°F/82°C**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372 •
NSF/ANSI 61 CERTIFIED BY UL •
CONFORMS TO AWWA C518

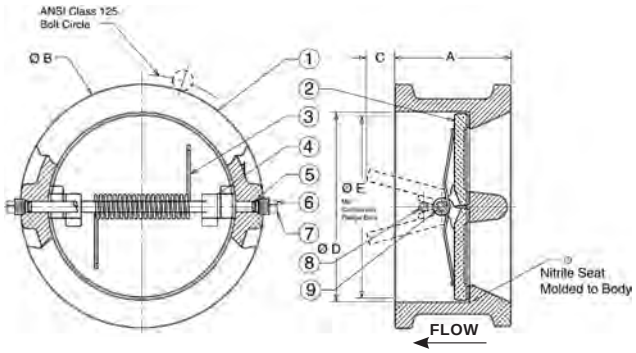
**W-920-W-LF**
Wafer

**C USA**
**COMPONENT LEAD-FREE**

**WATER QUALITY NSF 61 CERTIFIED**

## MATERIAL LIST — 14" thru 24"

| PART | SPECIFICATION |
|---|---|
| 1. Body | Cast Iron ASTM A126 Class B w/Buna-N (Nitrile) resilient seat molded to body |
| 2. Disc | Aluminum Bronze ASTM B148 C95200 |
| 3. Torsion Spring | Stainless Steel ASTM A313 UNS S31600 or UNS S17700 |
| 4. Disc Thrust Bearing | Stainless Steel ASTM A240 UNS S31600 |
| 5. Stabilization Sphere | Buna-N |
| 6. Hinge Pin Retainer | Steel |
| 7. Stop Pin Retainer | Steel |
| 8. Disc Stop Pin | Stainless Steel ASTM A276 UNS S31600 |
| 9. Disc Hing Pin | Stainless Steel ASTM A276 UNS S31600 |




## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 14 | 350 | 7.25 | 184 | 17.75 | 451 | 3.25 | 83 | 14.38 | 365 | 12.50 | 318 | 187 | 85 |
| 16 | 400 | 7.50 | 191 | 20.25 | 514 | 4.50 | 114 | 16.38 | 416 | 15.00 | 381 | 270 | 122 |
| 18 | 450 | 8.00 | 203 | 21.63 | 549 | 5.38 | 137 | 18.38 | 467 | 17.00 | 432 | 350 | 150 |
| 20 | 500 | 8.38 | 213 | 23.88 | 606 | 6.38 | 162 | 20.25 | 514 | 19.00 | 483 | 424 | 192 |
| 24 | 600 | 8.75 | 222 | 28.25 | 718 | 8.50 | 216 | 24.25 | 616 | 23.00 | 584 | 589 | 267 |

**NOTE: Twin Disc Check Valves can be installed horizontally or in the vertical position with flow up.**

**CAUTION: For horizontal flow applications, the valve must be installed with disc hinge pin in the vertical position, to insure proper operation.**

**WARNING: 1. Seat end of valve must be mated to a standard flat faced metal flange. Rubber flanges not acceptable.**
**2. These are not to be used as steam valves.**
**3. Valves are not to be used near a reciprocating air compressor.**
**4. Install 5 pipe diameters minimum downstream from pump discharge or elbows to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) disc**
**- swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 125 Iron Body Check Valves

Twin Disc • Wafer Style • Bronze Disc • Rubber Seat • Spring Actuated • Non-Slam • Silent Check

**150 PSI/10.3 bar non-shock cold working pressure**
**Maximum temperature to 180°F/82°C**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372 •
NSF/ANSI 61 CERTIFIED BY UL •
CONFORMS TO AWWA C518

**W-920-W-LF**
Wafer

C USA
**COMPONENT LEAD-FREE**

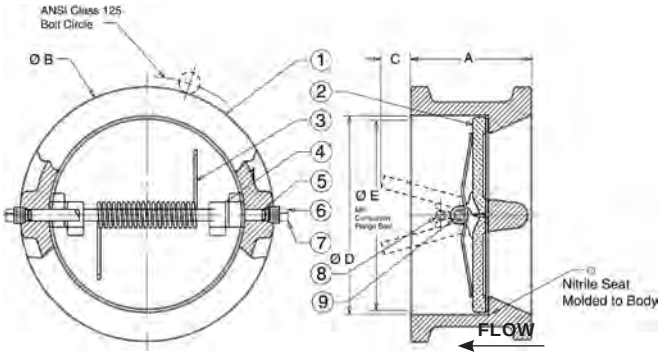
**WATER QUALITY**
**NSF 61 CERTIFIED**

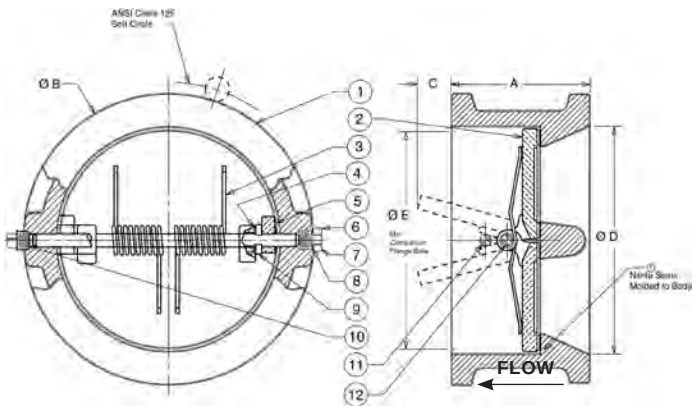
## MATERIAL LIST — 30"

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body | Cast Iron ASTM A126 Class B w/Buna-N (Nitrile) resilient seat molded to body |
| 2. | Disc | Aluminum Bronze ASTM B148 UNS C952000 |
| 3. | Torsion Spring | Stainless Steel ASTM A 313 UNS S31600 or UNS S17700 |
| 4. | Disc Thrust Bearing | Stainless Steel ASTM A 240 UNS S31600 |
| 5. | Stabilization Sphere | Nitrile ASTM D 2000 |
| 6. | Hinge Pin Retainer | Steel |
| 7. | Stop Pin Retainer | Steel |
| 8. | Disc Stop Pin | Stainless Steel ASTM A 276 UNS S31600 |
| 9. | Disc Hing Pin | Stainless Steel ASTM A 276 UNS S31600 |

## MATERIAL LIST — 36"

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body | Cast Iron ASTM A126 Class B |
| 2. | Disc | Nickel Plated D.I. ASTM A536 Grade 65-45-12 |
| 3. | Torsion Spring | Stainless Steel ASTM A 313 UNS S31600 or UNS S17700 |
| 4. | Inner Thrust Bearing | Stainless Steel ASTM A 240 UNS S31600 |
| 5. | Outer Thrust Bearing | Stainless Steel ASTM A 240 UNS S31600 |
| 6. | Hinge Pin Retainer | Steel |
| 7. | Stop Pin Retainer | Steel |
| 8. | O-Ring | Nitrile ASTM D 2000 |
| 9. | Shaft Collar | Stainless Steel ASTM A 240 UNS S31600 |
| 10. | Stabilization Sphere | Nitrile ASTM D 2000 |
| 11. | Stop Pin | Stainless Steel ASTM A 276 UNS S31600 |
| 12. | Hinge Pin | Stainless Steel ASTM A 276 UNS S31600 |




## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 30 | 750 | 12.00 | 305 | 34.75 | 883 | 9.50 | 241 | 30.00 | 762 | 28.50 | 724 | 1112 | 504 |
| 36 | 900 | 14.50 | 368 | 41.25 | 1048 | 12.00 | 305 | 36.00 | 914 | 34.50 | 876 | 1864 | 846 |

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**NOTE: Twin Disc Check Valves can be installed horizontally or in the vertical position with flow up.**

**CAUTION: For horizontal flow applications, the valve must be installed with disc hinge pin in the vertical position, to insure proper operation.**

**WARNING: 1. Seat end of valve must be mated to a standard flat faced metal flange. Rubber flanges not acceptable.**
**2. These are not to be used as steam valves.**
**3. Valves are not to be used near a reciprocating air compressor.**

**Note: On pump discharge, the preferred check valves are:**
**- inline, spring assisted, center-guided, lift checks**
**- spring assisted twin (double) disc**
**- swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

*Visit our website for the most current information.* *Weights are approximate and may vary.

# Lead-Free* 250 PSI CWP Iron Body Grooved Silent Check Valves

Twin Disc • Grooved Style • Bronze Disc • Buna-N Seat • Spring Actuated

**250 PSI/17.2 bar non-shock cold working pressure**
**Maximum temperature to 180°F/82°C at 220 PSI/15 bar**

CERTIFIED LEAD-FREE* BY WQA TO NSF/ANSI 372
CONFORMS TO ANSI/AWWA C606 FOR STEEL IPS PIPE

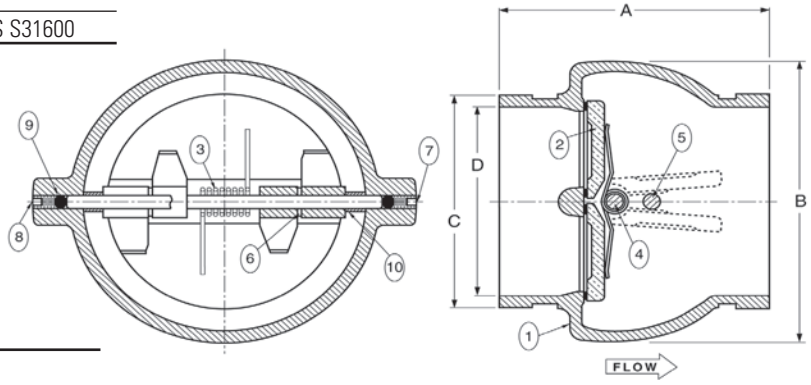
TESTED AND CERTIFIED WaterQuality UNDER INDUSTRY STANDARDS
C USA
**COMPONENT LEAD-FREE**

**G-920-W-LF**
Grooved

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body | Ductile Iron ASTM A536 Grade 65-45-12 w/Buna-N (Nitrile) resilient seat molded to body |
| 2. | Disc | Bronze ASTM B584 Alloy C87600 |
| 3. | Torsion Spring | Stainless Steel ASTM A313 UNS S31600 |
| 4. | Disc Hinge Pin | Stainless Steel ASTM A276 UNS S31600 |
| 5. | Disc Stop Pin | Stainless Steel ASTM A276 UNS S31600 |
| 6. | Disc Thrust Bearing | Stainless Steel ASTM A240 UNS S31600 |
| 7. | Hinge Pin Retainer | Steel |
| 8. | Stop Pin Retainer | Steel |
| 9. | Stabilization Sphere | Buna-N |
| 10. | Spacer | Stainless Steel ASTM A276 UNS S31600 |

**Sizes 10" and 12" furnished with lifting eyebolt**




## DIMENSIONS—WEIGHTS

| Size | | Dimensions A | | B | | C | | D | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 4.66 | 111 | 4.13 | 105 | 2.38 | 60 | 2.00 | 51 | 3.30 | 1.49 |
| 2½ | 65 | 4.91 | 125 | 4.88 | 124 | 2.88 | 73 | 2.41 | 61 | 4.50 | 2.04 |
| 3 | 80 | 5.31 | 135 | 5.38 | 137 | 3.50 | 89 | 2.94 | 75 | 7.30 | 3.31 |
| 4 | 100 | 5.38 | 137 | 6.00 | 152 | 4.50 | 114 | 3.91 | 99 | 8.60 | 3.90 |
| 5 | 125 | 5.72 | 145 | 7.06 | 179 | 5.56 | 141 | 4.89 | 124 | 13.00 | 5.90 |
| 6 | 150 | 6.00 | 152 | 8.13 | 206 | 6.63 | 168 | 5.92 | 150 | 18.00 | 8.17 |
| 8 | 200 | 6.72 | 171 | 10.03 | 255 | 8.63 | 219 | 7.91 | 201 | 30.00 | 13.6 |
| 10 | 250 | 7.78 | 198 | 12.38 | 314 | 10.75 | 273 | 10.00 | 254 | 56.00 | 25.4 |
| 12 | 300 | 8.19 | 208 | 14.38 | 365 | 12.75 | 324 | 11.94 | 303 | 81.80 | 36.7 |

**Groove dimensions conform to ANSI/AWWA specification C606 Table 4 (Cut Groove Dimensions)**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

**NOTE:** Twin Disc Check Valves can be installed horizontally or in the vertical position with flow up.

**CAUTION:** For horizontal flow applications, the valve must be installed with disc hinge pin in the vertical position to insure proper operation.

**WARNING:**
1. This valve is not to be used as a steam valve.
2. Valves are not to be used near a reciprocating air compressor.
3. Install 5 pipe diameters minimum downstream from pump discharge or elbows to avoid flow turbulence. Flow straighteners may be required in extreme cases.

**Note: On pump discharge, the preferred check valves are:**
- inline, spring assisted, center-guided, lift checks
- spring assisted twin (double) disc
- swing design with lever and weight or lever and spring

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

*Visit our website for the most current information.*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# Class 250 Iron Y-Strainers

Screw-In Cap • Blow-Off Plug • Threaded Ends • 20 Mesh Stainless Steel Screen or Stainless Steel Perforated Screen

**250 PSI/17.2 bar saturated steam to 406°F/207°C**
**400 PSI/27.5 bar non-shock cold working pressure**

CONFORMS TO ANSI B1.20.1 (NPT)

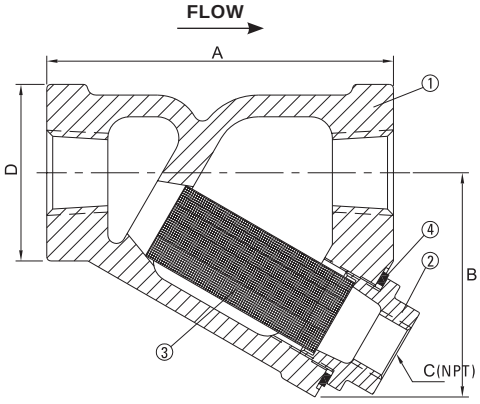
## MATERIAL LIST

| PART | SPECIFICATION |
|---|---|
| 1. Body | Cast Iron ASTM A126 Class B |
| 2. Cap | Cast Iron ASTM A126 Class B |
| 3. Screen | Stainless Steel AISI 304 |
| 4. Gasket | Metal-Filled Graphite |
| 5. Plug | Cast Iron ASTM A126 Class B |

**T-751-A**
Threaded

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 1/4 | 8 | 3.19 | 81.0 | 2.1 | 52.4 | 1/4 | 8 | 1.63 | 41.4 | 1.39 | 0.63 |
| 3/8 | 10 | 3.19 | 81.0 | 2.1 | 52.4 | 1/4 | 8 | 1.63 | 41.4 | 1.39 | 0.63 |
| 1/2 | 15 | 3.19 | 81.0 | 2.1 | 52.4 | 1/4 | 8 | 1.63 | 41.4 | 1.39 | 0.63 |
| 3/4 | 20 | 3.75 | 95.3 | 2.4 | 61.9 | 3/8 | 10 | 1.77 | 45.0 | 2.20 | 0.99 |
| 1 | 25 | 4.00 | 101.6 | 2.3 | 58.7 | 3/8 | 10 | 2.19 | 55.6 | 3.08 | 1.39 |
| 1¼ | 32 | 5.00 | 127.0 | 3.4 | 85.8 | 3/4 | 20 | 2.52 | 64.0 | 5.06 | 2.29 |
| 1½ | 40 | 5.75 | 146.1 | 3.9 | 98.4 | 3/4 | 20 | 2.99 | 75.9 | 7.70 | 3.49 |
| 2 | 50 | 7.00 | 177.8 | 4.8 | 120.7 | 1 | 25 | 3.54 | 89.9 | 12.54 | 5.68 |
| 2½ | 65 | 9.25 | 235.0 | 5.9 | 149.2 | 1½ | 40 | 4.25 | 108.0 | 24.42 | 11.08 |
| 3 | 80 | 10 | 25 | 6.0 | 152.4 | 1½ | 40 | 5.00 | 127.0 | 29.26 | 13.27 |




**T-751-A**
Threaded

| FLOW COEFFICIENTS | | | |
|---|---|---|---|
| SIZE | $C_V$ | SIZE | $C_V$ |
| 1/4" | 9.2 | 1¼" | 44 |
| 3/8" | 9.2 | 1½" | 61 |
| 1/2" | 9.2 | 2" | 97 |
| 3/4" | 19 | 2½" | 130 |
| 1" | 29 | 3" | 160 |

**NOTE: strainer drain plugs are installed hand tight only allowing easy removal for installation of manual drain valve. If manual drain valves are not used, installer must tighten drain plug for proper seal.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

# Class 125 Iron Y-Strainer

Bolted Bonnet • Blow-Off Plug • Flanged End • 20 Mesh Stainless Steel Screen or Stainless Steel Perforated Screen

**2" - 12": 125 PSI/8.6 bar saturated steam to 353°F/178°C**
**200 PSI/13.8 bar non-shock cold working pressure**
**14" & 16": 100 PSI/6.9 bar saturated steam to 353°F/178°C**
**150 PSI/ 10.3 bar non-shock cold working pressure**

CONFORMS TO ANSI B16.1 (FLANGE)

**F-721-A**
Flanged

## MATERIAL LIST

| PART | SPECIFICATION |
|---|---|
| 1. Body | Cast Iron ASTM A126 Class B |
| 2. Bonnet | Cast Iron ASTM A126 Class B |
| 3. Screen | Stainless Steel AISI 304 |
| 4. Bolt | Carbon Steel ASTM A307 |
| 5. Gasket | Metal-Filled Graphite |
| 6. Plug | Cast Iron ASTM A126 Class B |

## DIMENSIONS—WEIGHTS

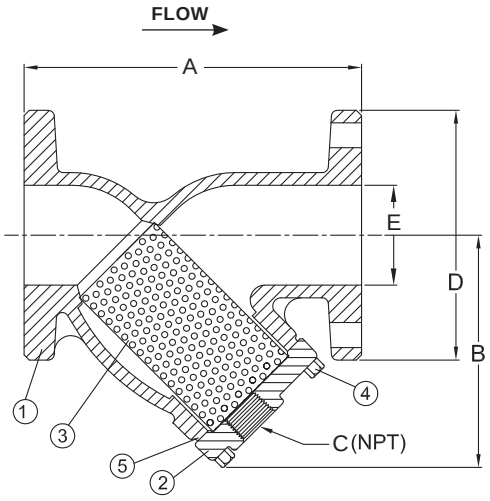
| SIZE | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.87 | 199.9 | 5.25 | 133.4 | ½ | 15 | 6.0 | 152.4 | 2.00 | 50.8 | 18.00 | 8.16 |
| 2½ | 65 | 10.00 | 254.0 | 6.50 | 165.1 | 1 | 25 | 7.0 | 177.8 | 2.50 | 63.5 | 28.00 | 12.70 |
| 3 | 80 | 10.12 | 257.0 | 7.00 | 177.8 | 1 | 25 | 7.5 | 190.5 | 3.00 | 76.2 | 34.00 | 15.42 |
| 4 | 100 | 12.12 | 307.8 | 8.25 | 209.6 | 1 ½ | 40 | 9.0 | 228.6 | 4.00 | 101.6 | 60.00 | 27.22 |
| 5 | 125 | 15.62 | 396.7 | 11.25 | 285.8 | 2 | 50 | 10.0 | 254.0 | 5.00 | 127.0 | 95.00 | 43.09 |
| 6 | 150 | 18.50 | 469.9 | 13.50 | 342.9 | 2 | 50 | 11.0 | 279.4 | 6.00 | 152.4 | 133.00 | 60.33 |
| 8 | 200 | 21.62 | 549.1 | 15.50 | 393.7 | 2 | 50 | 13.5 | 342.9 | 8.00 | 203.2 | 247.00 | 112.04 |
| 10 | 250 | 26.00 | 660.4 | 18.50 | 469.9 | 2 | 50 | 16.0 | 406.4 | 10.00 | 264.0 | 320.00 | 145.15 |
| 12 | 300 | 29.87 | 758.7 | 21.75 | 552.5 | 2 | 50 | 19.0 | 482.6 | 12.00 | 304.8 | 579.00 | 262.63 |
| 14* | 350 | 33.25 | 844.6 | 26.06 | 662.0 | 2 | 50 | 21.0 | 533.4 | 14.00 | 355.6 | 772.00 | 350.17 |
| 16* | 400 | 38.75 | 984.3 | 30.15 | 765.8 | 2 | 50 | 23.5 | 596.9 | 16.00 | 406.4 | 1133.00 | 513.92 |

***Sizes 14" and 16" rated to 150 CWP, 100 SWP**

**NOTES:**

1. **2" – 12" size strainers are rated 125 psi saturated steam and 200 psi CWP.**
2. **14" & 16" size strainer are rated 100 psi saturated steam and 150 psi CWP.**
3. **2" – 4" size strainers have square shaped bonnets.**
4. **5" – 16" size strainers have round shaped bonnets.**
5. **Strainer drain plugs are installed hand tight only allowing easy removal for installation of a manual drain valve. If manual drain valve is not used, installer must tighten drain plug for proper seal.**

⚠ **WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**




**F-721-A**
Flanged

| FLOW COEFFICIENTS | | | |
|---|---|---|---|
| SIZE | $C_V$ | SIZE | $C_V$ |
| 2" | 42.7 | 8 | 974 |
| 2½" | 83.1 | 10 | 1495 |
| 3" | 117.0 | 12 | 1817 |
| 4" | 177.0 | 14 | 2600** |
| 5" | 313 | 16 | 4000** |
| 6" | 453 | | |

**Estimated

**SCREEN SIZE:**
**2" - 4": 1/16" perforation (37% open area)**
**5" - 16": 1/8" perforation (40% open area)**

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# Ductile and Alloy Iron Gate Valves
# Illustrated Index

3% Nickel Iron Body Gate Valve
Outside Screw and Yoke
Stainless Steel Trim
Class 125 SWP
200 lb. CWP

**F-617-13**
Solid Wedge
Sizes 2" thru 12"
Flanged Ends
**Page 76**

3% Nickel Iron Body Gate Valve
Outside Screw and Yoke
Stainless Steel Trim
Class 125 SWP
150 lb. CWP

**F-617-13**
Solid Wedge
Sizes 14" thru 24"
Flanged Ends
**Page 77**

Ductile Iron Body Gate Valve
Outside Screw and Yoke
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-637-31**
Solid Wedge
Sizes 2" thru 12"
Flanged-Raised Face
**Page 78**

Ductile Iron Body Gate Valve
Outside Screw and Yoke
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-637-31**
Solid Wedge
Sizes 14" thru 24"
Flanged-Raised Face
**Page 79**

Ductile Iron Body Gate Valve
Outside Screw and Yoke
316SS Stainless Steel Trim
Class 150 SWP
285 lb. CWP

**F-637-33**
Solid Wedge
Sizes 2" thru 12"
Flanged-Raised Face
**Page 80**

Ductile Iron Body Gate Valve
Outside Screw and Yoke
316SS Stainless Steel Trim
Class 150 SWP
285 lb. CWP

**F-637-33**
Solid Wedge
Sizes 14" thru 24"
Flanged-Raised Face
**Page 81**

Ductile Iron Body Gate Valve
Inside Screw
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-639-31**
Non-Rising Stem • Solid Wedge
Sizes 2" thru 16"
Flanged-Raised Face
**Page 82**

Ductile Iron Body Gate Valve
Inside Screw
316SS Stainless Steel Trim
Class 150 SWP
285 lb. CWP

**F-639-33**
Non-Rising Stem • Solid Wedge
Sizes 2" thru 16"
Flanged-Raised Face
**Page 83**

*Visit our website for the most current information.*

# Class 125 3% Nickel Iron Body Gate Valves

Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • Stainless Steel Trim

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-70

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Stem | ASTM A 276 S31600SS |
| 2. | Handwheel Nut | Ductile Iron ASTM A536 |
| 3. | Identification Plate | Aluminum |
| 4. | Yoke Bushing | Ductile Iron ASTM A536 |
| 5. | Handwheel | Cast Iron ASTM A126 Class B |
| 6. | Bonnet Cap Nut | Steel ASTM A563 |
| 7. | Bonnet Cap | Ductile Iron ASTM A536 |
| 8. [1] | Bonnet | ASTM A126 3% Nickel Iron Class B |
| 9. | Bonnet Cap Bolt | Steel ASTM A307/SAE J429 |
| 10. | Gland Follower Nut | Steel ASTM A563 |
| 11. | Gland Follower | Ductile Iron ASTM A536 |
| 12. | Packing Gland | ASTM A276 S31600SS |
| 13. | Packing | Aramid Fiber / Graphite |
| 14. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 15. | Backseat Bushing | ASTM A276 S31600SS |
| 16. | Body Nut | Steel ASTM A563 |
| 17. | Body Bolt | Steel ASTM A307/SAE J429 |
| 18. | Wedge Pin | ASTM A276 S31600SS |
| 19. | Body | ASTM A126 3% Nickel Iron Class B |
| 20. | Seat Ring | ASTM A351 CF8M Stainless |
| 21. | Wedge Face Ring | ASTM A351 CF8M Stainless |
| 22. [2] | Wedge | ASTM A126 3% Nickel Iron Class B |
| 23. | Body Gasket | Synthetic Fibers |
| 24. | Stem Collar | ASTM A276 S31600SS |
| 25. | Grease Fitting | Alemite 1743B (not shown) |

**[1]Sizes thru 8" made with Yoke Integral with Bonnet. 10" and 12" sizes made with separate Yoke Bolted to Bonnet.**

**[2]Sizes 2" thru 3" have Solid ASTM A 351 CF8M Wedges. Sizes 4" thru 12" made with ASTM A126 3% Ni-Iron Wedge with ASTM A351 CF8M Wedge Face Rings.**

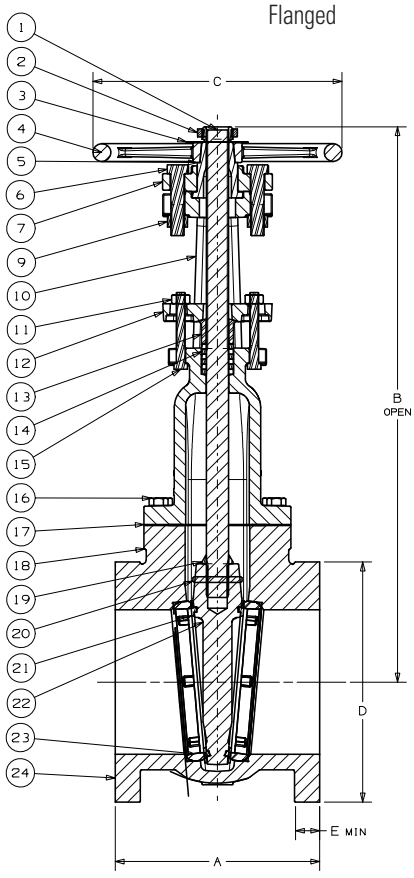
## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.00 | 178 | 16.31 | 414 | 8.00 | 203 | 6.00 | 152 | .63 | 16 | 41 | 19 |
| 2½ | 65 | 7.50 | 191 | 17.19 | 437 | 8.00 | 203 | 7.00 | 178 | .69 | 17 | 54 | 25 |
| 3 | 80 | 8.00 | 203 | 19.50 | 495 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 66 | 30 |
| 4 | 100 | 9.00 | 229 | 24.00 | 610 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 109 | 49 |
| 6 | 150 | 10.50 | 267 | 31.06 | 789 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 179 | 81 |
| 8 | 200 | 11.50 | 292 | 40.19 | 1021 | 14.00 | 356 | 13.50 | 343 | 1.13 | 29 | 309 | 140 |
| 10 | 250 | 13.00 | 330 | 48.25 | 1226 | 16.00 | 406 | 16.00 | 406 | 1.19 | 30 | 481 | 218 |
| 12 | 300 | 14.00 | 356 | 56.88 | 1445 | 18.00 | 457 | 19.00 | 483 | 1.25 | 32 | 706 | 320 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**F-617-13**
Flanged




**F-617-13**
Flg x Flg

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

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# Class 125 3% Nickel Iron Body Gate Valves

Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • Stainless Steel Trim

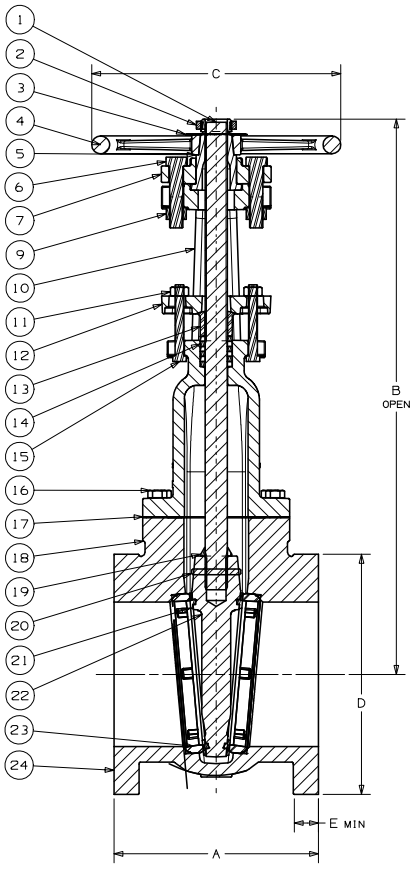
**150 PSI/10.3 bar non-shock cold working pressure from -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 350°F/177°C at 100 PSI/6.9 bar**
***100 PSI/6.9 bar saturated steam to 338°F/170°C**
****50 PSI/3.4 bar saturated steam to 297°F/147°C**

CONFORMS TO MSS SP-70

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Ductile Iron ASTM A536 |
| 2. | Identification Tag | Aluminum |
| 3. | Handwheel | Fabricated Steel |
| 4. | Yoke Bushing | Ductile Iron ASTM A536 |
| 5. | Split Yoke Bolt | Steel ASTM A307/SAE J429 |
| 6. | Split Yoke Bolt Nut | Steel ASTM A563 |
| 7. | Yoke | ASTM A126 3% Nickel Iron Class B |
| 8. | Gland Follower Nut | Steel ASTM A307/SAE J429 |
| 9. | Gland Follower | Ductile Iron ASTM A536 |
| 10. | Yoke Bolt | Steel ASTM A307/SAE J429 |
| 11. | Yoke Bolt Nut | Steel ASTM A563 |
| 12. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 13. | Packing Gland | ASTM A276 S31600SS |
| 14. | Packing | Wire Reinforced Carbon Yarn with Resilient Core and Zinc Finish |
| 15. | Backseat Bushing | ASTM A351 CF8M |
| 16. | Bonnet | ASTM A126 3% Nickel Iron Class B |
| 17. | Stem | ASTM A276 S31600SS |
| 18. | Body Bolt | Steel ASTM A307/SAE J429 |
| 19. | Body Bolt Nut | Steel ASTM A563 |
| 20. | Body Gasket | Synthetic Fibers / Nitrile |
| 21. | Body | ASTM A126 3% Nickel Iron Class B |
| 22. | Wedge | ASTM A126 3% Nickel Iron Class B |
| 23. | Seat Ring | ASTM A351 CF8M |
| 24. | Wedge Ring | ASTM A351 CF8M |
| 25. | Swing Nut | Steel ASTM A563 |
| 26. | Swing Bolt | Steel ASTM A307/SAE J429 |
| 27. | Grease Fitting | Alemite 1743B (not shown) |
| 28. | Stem Collar | ASTM A276 S31600SS (not shown) |
| 29. | Wedge Pin | ASTM A276 S31600SS (not shown) |
| 30. | Wedge Nut | Ductile Iron ASTM A536 (not shown) |

**F-617-13**
Flanged




**F-617-13**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 14 | 350 | 15.00 | 381 | 65.50 | 1664 | 24.00 | 610 | 21.00 | 533 | 1.38 | 35 | 890 | 404 |
| 16 | 400 | 16.00 | 406 | 74.50 | 1892 | 24.00 | 610 | 23.50 | 597 | 1.44 | 37 | 1252 | 568 |
| 18 | 450 | 17.00 | 432 | 82.50 | 2096 | 24.00 | 610 | 25.00 | 635 | 1.56 | 40 | 1596 | 725 |
| 20 | 500 | 18.00 | 457 | 91.00 | 2311 | 30.00 | 762 | 27.50 | 699 | 1.69 | 43 | 2023 | 918 |
| 24 | 600 | 20.00 | 508 | 107.50 | 2731 | 30.00 | 762 | 32.00 | 813 | 1.88 | 48 | 2907 | 1320 |

*** 14" and 16"**
**** 18", 20" and 24"**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/232°C at 185 PSI/8.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

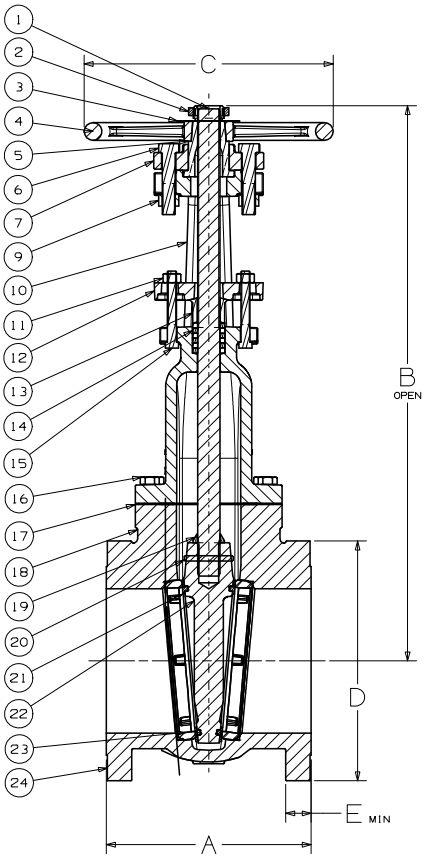
CONFORMS TO MSS SP-128

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Stem | Brass ASTM B 371 |
| 2. | Handwheel Nut | Copper Alloy ASTM B584 |
| 3. | Identification Plate | Aluminum |
| 4. | Yoke Bushing | Copper Alloy ASTM B584 C84400 |
| 5. | Handwheel | Iron ASTM A126 Class B |
| 6. | Bonnet Cap Nut | Steel ASTM A563 |
| 7. | Bonnet Cap | Ductile Iron ASTM A536 |
| 8. [1] | Bonnet | Ductile Iron ASTM A395 |
| 9. | Bonnet Cap Bolt | Steel ASTM A307/SAE J429 |
| 10. | Gland Follower Nut | Steel ASTM A563 |
| 11. | Gland Follower | Ductile Iron ASTM A536 |
| 12. | Packing Gland | Zinc Plated Powdered Iron ASTM B783 or Copper Alloy ASTM B16 Alloy C3600 |
| 13. | Packing | Aramid Fiber / Graphite |
| 14. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 15. | Backseat Bushing | Copper Alloy ASTM B584 C84400 |
| 16. | Body Nut | Steel ASTM A563 |
| 17. | Body Bolt | Steel ASTM A307/SAE J429 |
| 18. | Wedge Pin | Copper Alloy ASTM B 371 C69430/C69400 |
| 19. | Body | Ductile Iron ASTM A395 60-40-18 |
| 20. [3] | Seat Ring | Copper Alloy ASTM B584 C84400 |
| 21. | Wedge Face Ring | Copper Alloy ASTM B584 C84400 |
| 22. [2] | Wedge | Ductile Iron ASTM A395 |
| 23. | Body Gasket | Synthetic Fibers |
| 24. | Stem Collar | Copper Alloy ASTM B 371 C69430/C69400 |
| 25. | Grease Fitting | Alemite 1743B (not shown) |

**[1] Sizes thru 8" made with Yoke Integral with Bonnet. 10" and 12" sizes made with separate Yoke Bolted to Bonnet.**
**[2] Sizes 2" thru 6" are all Copper Alloy (31 Trim).**
**Sizes 8" thru 12" Ductile Iron Wedge with Copper Alloy Wedge Face Rings (31 Trim).**
**[3] Lugs may be removed at customer's request – POA.**

**F-637-31**
Flanged-Raised Face




**F-637-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.00 | 178 | 16.31 | 414 | 8.00 | 203 | 6.00 | 152 | .63 | 16 | 41 | 19 |
| 2½ | 65 | 7.50 | 191 | 17.19 | 437 | 8.00 | 203 | 7.00 | 178 | .69 | 17 | 55 | 25 |
| 3 | 80 | 8.00 | 203 | 19.50 | 495 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 67 | 30 |
| 4 | 100 | 9.00 | 229 | 24.00 | 610 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 107 | 48 |
| 5 | 125 | 10.00 | 254 | 27.13 | 689 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 145 | 66 |
| 6 | 150 | 10.50 | 267 | 31.06 | 789 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 178 | 81 |
| 8 | 200 | 11.50 | 292 | 40.19 | 1021 | 14.00 | 356 | 13.50 | 343 | 1.13 | 29 | 309 | 140 |
| 10 | 250 | 13.00 | 330 | 48.25 | 1226 | 16.00 | 406 | 16.00 | 406 | 1.19 | 30 | 481 | 218 |
| 12 | 300 | 14.00 | 356 | 56.88 | 1445 | 18.00 | 457 | 19.00 | 483 | 1.25 | 32 | 706 | 320 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*


NIBCO INC. WORLD HEADQUARTERS • 1516 MIDDLEBURY ST. • ELKHART, IN 46516-4740 • USA • PH: 1.800.234.0227
TECH SERVICES PH: 1.888.446.4226 • FAX: 1.888.336.4226 • INTERNATIONAL OFFICE PH: +1.574.295.3327 • FAX: +1.574.295.3455
www.nibco.com

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/232°C at 185 PSI/8.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

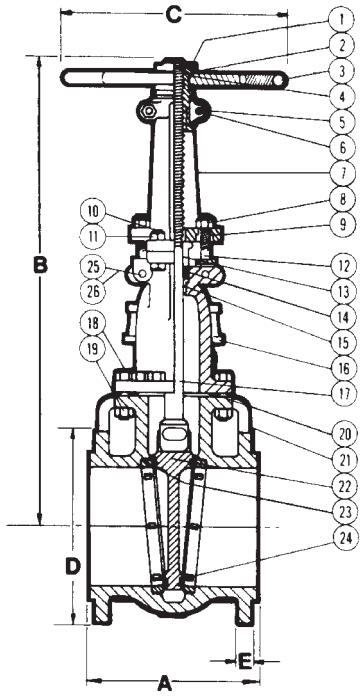
CONFORMS TO MSS SP-128

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Brass ASTM B584 C84400 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Fabricated Steel |
| 4. | Yoke Bushing | Copper Alloy ASTM B584 C84400 |
| 5. | Split Yoke Bolt | Steel ASTM A307/SAE J429 |
| 6. | Split Yoke Bolt Nut | Steel ASTM A563 |
| 7. | Yoke | Ductile Iron ASTM A536 |
| 8. | Eye Bolt Nut | Copper Alloy ASTM F467 |
| 9. | Gland Follower | Ductile Iron ASTM A536 |
| 10. | Yoke Bolt | Steel ASTM A307/SAE J429 |
| 11. | Yoke Bolt Nut | Steel ASTM A563 |
| 12. | Gland Follower Eye Bolt | Steel ASTM A307/SAE J429 |
| 13. | Packing Gland | Copper Alloy ASTM B584 C84400 |
| 14. | Packing | Wire Reinforced Carbon Yarn, Resilient Core, Graphite and Zinc Finish |
| 15. | Backseat Bushing | Copper Alloy ASTM B371 |
| 16. | Bonnet | Ductile Iron ASTM A395 |
| 17. | Stem | Copper Alloy ASTM B371 |
| 18. | Body Bolt | Steel ASTM A193 Grade B7/SAEJ429 Grade 8 |
| 19. | Body Bolt Nut | Steel ASTM A194 Grade 2H/SAE J995 Grade 8 |
| 20. | Body Gasket | Synthetic Fibers / Nitrile |
| 21. | Body | Ductile Iron ASTM A395 |
| 22. | Wedge | Ductile Iron ASTM A395 |
| 23. [1] | Seat Ring | Copper Alloy ASTM B584 C84400 |
| 24. | Wedge Ring | Copper Alloy ASTM B584 C84400 |
| 25. | Swing Nut | Steel ASTM A563 |
| 26. | Swing Bolt | Steel ASTM A307/SAE J429 |
| 27. | Grease Fitting | Alemite 1743B (not shown) |
| 28. | Stem Collar | Copper Alloy ASTM B371 (not shown) C69430/C69400 |
| 29. | Wedge Pin | Copper Alloy ASTM B371 (not shown) C69430/C69400 |
| 30. | Wedge Nut | Copper Alloy ASTM B584 (not shown) C69430/C69400 |

**[1]Lugs may be removed at customer's request – POA.**

**F-637-31**
Flanged-Raised Face




**F-637-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Turns to Open | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | | Lbs. | Kg. |
| 14 | 350 | 15.00 | 381 | 65.50 | 1664 | 24.00 | 610 | 21.00 | 533 | 1.38 | 35 | 29.38 | 892 | 405 |
| 16 | 400 | 16.00 | 406 | 74.50 | 1892 | 24.00 | 610 | 23.50 | 597 | 1.44 | 37 | 33.50 | 1253 | 568 |
| 18 | 450 | 17.00 | 432 | 82.50 | 2096 | 24.00 | 610 | 25.00 | 635 | 1.56 | 40 | 37.63 | 1592 | 722 |
| 20 | 500 | 18.00 | 457 | 91.00 | 2311 | 30.00 | 762 | 27.50 | 699 | 1.69 | 43 | 41.88 | 2008 | 911 |
| 24 | 600 | 20.00 | 508 | 107.50 | 2731 | 30.00 | 762 | 32.00 | 813 | 1.88 | 48 | 50.06 | 2907 | 1318 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • 316 Stainless Steel Trim

NSF/ANSI 61
NSF/ANSI 372

**285 PSI/19.7 bar non-shock working pressure to -20°F to 100°F/-29°F to 38°C♦**
**Maximum working temperature 170 PSI / 11.7 Bar 500°F/0 260°C**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

CERTIFIED LEAD-FREE* TO NSF/ANSI-61-8 (INCLUDES ANNEX F AND G) AND NSF/ANSI-372 • CONFORMS TO MSS SP-128

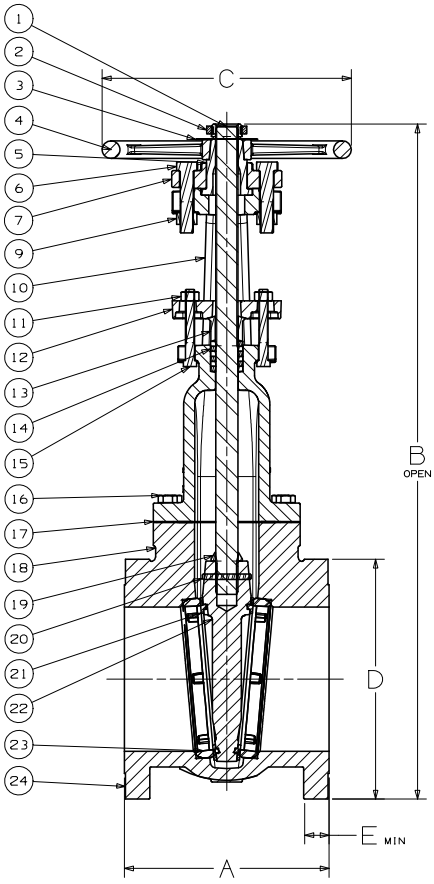
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Stem | Stainless Steel ASTM A 276 S31600 |
| 2. | Handwheel Nut | Ductile Iron ASTM A395 |
| 3. | Identification Plate | Aluminum |
| 4. | Yoke Bushing | Ductile Iron ASTM A536 |
| 5. | Handwheel | Iron ASTM A126 Class B |
| 6. | Bonnet Cap Nut | Steel ASTM A563 |
| 7. | Bonnet Cap | Ductile Iron ASTM A536 |
| 8. | Bonnet [1] | Ductile Iron ASTM A395 |
| 9. | Bonnet Cap Bolt | Steel ASTM A307/SAE J429 |
| 10. | Gland Follower Nut | Steel ASTM A563 |
| 11. | Gland Follower | Ductile Iron ASTM A536 |
| 12. | Packing Gland | Stainless Steel ASTM A276 S31600 |
| 13. | Packing | PTFE Braided Synthetic Fiber |
| 14. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 15. | Backseat Bushing | Stainless Steel ASTM A276 |
| 16. | Body Nut | Steel ASTM A563 |
| 17. | Body Bolt | Steel ASTM A307/SAE J429 |
| 18. | Wedge Pin | Stainless Steel ASTM A276 |
| 19. | Body | Ductile Iron ASTM A 395 |
| 20. | Seat Ring[2] | Stainless Steel ASTM A 351 CF8M |
| 21. | Wedge Face Ring | Stainless Steel ASTM A 351 CF8M |
| 22. | Wedge[2] | Ductile Iron ASTM A 395 |
| 23. | Body Gasket | Synthetic Fibers |
| 24. | Stem Collar | Stainless Steel ASTM A276 S31600 |
| 25. | Grease Fitting | Alemite 1743B (not shown) |

**[1] Sizes 2" thru 8" made with Yoke Integral with Bonnet. 10" and 12" sizes made with separate Yoke Bolted to Bonnet.**

**[2] Size 2" thru 3" have solid wedges ASTM A351 CF8M.**
**Sizes 4" thru 12" made with ASTM A395 wedge wiht ASTM A351 CF8M face rings.**

**F-637-33**
Flanged-Raised Face




**F-637-33**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.00 | 178 | 16.31 | 414 | 8.00 | 203 | 6.00 | 152 | .63 | 16 | 40 | 18 |
| 2½ | 65 | 7.50 | 191 | 17.19 | 437 | 8.00 | 203 | 7.00 | 178 | .69 | 17 | 54 | 25 |
| 3 | 80 | 8.00 | 203 | 19.50 | 495 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 66 | 30 |
| 4 | 100 | 9.00 | 229 | 24.00 | 610 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 107 | 48 |
| 5 | 125 | 10.00 | 254 | 27.13 | 689 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 144 | 66 |
| 6 | 150 | 10.50 | 267 | 31.06 | 789 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 178 | 81 |
| 8 | 200 | 11.50 | 292 | 40.19 | 1021 | 14.00 | 356 | 13.50 | 343 | 1.13 | 29 | 309 | 140 |
| 10 | 250 | 13.00 | 330 | 48.25 | 1226 | 16.00 | 406 | 16.00 | 406 | 1.19 | 30 | 479 | 217 |
| 12 | 300 | 14.00 | 356 | 56.88 | 1445 | 18.00 | 457 | 19.00 | 483 | 1.25 | 32 | 706 | 320 |

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

*Weighted average lead content ≤ 0.25%



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www.nibco.com

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Solid Wedge • 316 Stainless Steel Trim

NSF/ANSI 61
NSF/ANSI 372

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 500°F/260°C at 170 PSI/11.7 bar**
**150 PSI/10.3 bar saturated steam to 500°F/260°C**

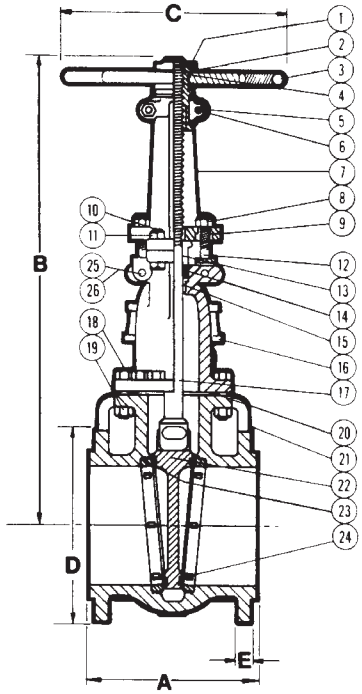
CERTIFIED LEAD-FREE* TO NSF/ANSI-61-8 (INCLUDES ANNEX F AND G) AND NSF/ANSI-372 • CONFORMS TO MSS SP-128

**F-637-33**
Flanged-Raised Face

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Ductile Iron ASTM A536 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Fabricated Steel |
| 4. | Yoke Bushing | Ductile Iron ASTM A536 |
| 5. | Split Yoke Bolt | Steel ASTM A307/SAE J429 |
| 6. | Split Yoke Bolt Nut | Steel ASTM A563 |
| 7. | Yoke | Ductile Iron ASTM A536 |
| 8. | Eye Bolt Nut | STEEL ASTM A563 |
| 9. | Gland Follower | Ductile Iron ASTM A536 |
| 10. | Yoke Bolt | Steel ASTM A307/SAE J429 |
| 11. | Yoke Bolt Nut | Steel ASTM A563 |
| 12. | Gland Follower Eye Bolt | Steel ASTM A307/SAE J429 |
| 13. | Packing Gland | Stainless Steel ASTM A276 |
| 14. | Packing | Wire Reinforced Carbon Yarn, Resilient Core, Graphite and Zinc Finish |
| 15. | Backseat Bushing | Stainless Steel ASTM A276 |
| 16. | Bonnet | Ductile Iron ASTM A395 |
| 17. | Stem | Stainless Steel ASTM A 276 |
| 18. | Body Bolt | A193B7/SAEJ429 Grade 8 |
| 19. | Body Bolt Nut | Steel ASTM A194 SH/SAE J995 Grade 8 |
| 20. | Body Gasket | Synthetic Fibers / Nitrile |
| 21. | Body | Ductile Iron ASTM A395 |
| 22. | Wedge | Ductile Iron ASTM A395 |
| 23. [1] | Seat Ring | Stainless Steel ASTM A 351 CF8M |
| 24. | Wedge Ring | Stainless Steel ASTM A351 CF8M |
| 25. | Swing Nut | Steel ASTM A563 |
| 26. | Swing Bolt | Steel ASTM A307/SAE J429 |
| 27. | Grease Fitting | Alemite 1743B (not shown) |
| 28. | Stem Collar | Stainless Steel ASTM A276 (not shown) |
| 29. | Wedge Pin | Stainless Steel ASTM A276 (not shown) |
| 30. | Wedge Nut | Stainless Steel ASTM A276 (not shown) |

**[1]Lugs may be removed at customer's request – POA.**




**F-637-33**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Turns to | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Open | Lbs. | Kg. |
| 14 | 350 | 15.00 | 381 | 65.50 | 1664 | 24.00 | 610 | 21.00 | 533 | 1.38 | 35 | 29.38 | 890 | 405 |
| 16 | 400 | 16.00 | 406 | 74.50 | 1892 | 24.00 | 610 | 23.50 | 597 | 1.44 | 37 | 33.50 | 1253 | 570 |
| 18 | 450 | 17.00 | 432 | 82.50 | 2096 | 24.00 | 610 | 25.00 | 635 | 1.56 | 40 | 37.63 | 1598 | 726 |
| 20 | 500 | 18.00 | 457 | 91.00 | 2311 | 30.00 | 762 | 27.50 | 699 | 1.69 | 43 | 41.88 | 2000 | 909 |
| 24 | 600 | 20.00 | 508 | 107.50 | 2731 | 30.00 | 762 | 32.00 | 813 | 1.88 | 48 | 50.06 | 2908 | 1322 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Non-rising Stem • Solid Wedge • B584 Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/262°C at 185 PSI/8.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

CONFORMS TO MSS SP-128

## MATERIAL LIST

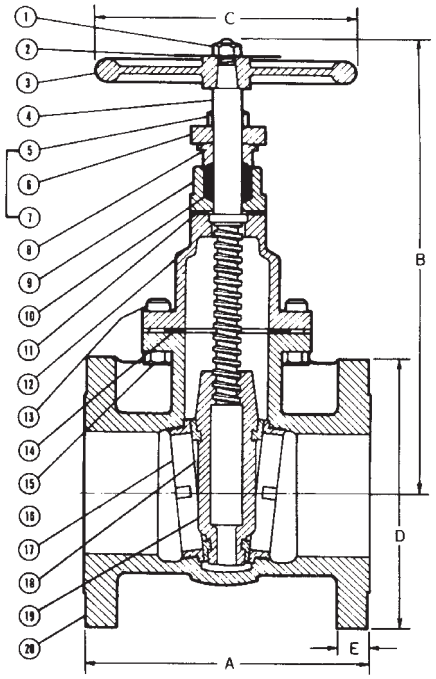
| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Iron ASTM A126 Class B |
| 4. | Stem | Brass ASTM B371 C69430/C69400 |
| 5. | Gland Follower Nut | Copper Alloy ASTM F467 |
| 6. | Gland Follower | Ductile Iron ASTM A536 |
| 7. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 8. | Packing Gland | Copper Alloy or Iron |
| 9. | Stuffing Box | Ductile Iron ASTM A536 |
| 10. | Packing | Aramid Fibers / Graphite |
| 11. | Stuffing Box Gasket | Synthetic Fibers |
| 12. | Bonnet | Ductile Iron ASTM A395 |
| 13. | Body Bolt | A193 B7/SAE J429 Grade 8 |
| 14. | Body Gasket | Synthetic Fibers |
| 15. | Body Nut | Steel ASTM A194 2H/SAE J995 Grade 8 |
| 16. [2] | Seat Ring | Copper Alloy ASTM B584 C84400 |
| 17. | Wedge Face Ring | Copper Alloy ASTM B584 |
| 18. [1] | Wedge | Ductile Iron ASTM A395 |
| 19. | Body | Ductile Iron ASTM A395 |
| 20. | Stuffing Box Nut | Steel ASTM A563 (not shown) |

**[1] Sizes thru 4" made with Bronze Wedges. Sizes 5" thru 12" made with Ductile Iron Wedge with Bronze Face Rings (31 Trim).**

**[2] Lugs may be removed at customer's request – POA.**

**[3] 2" thru 12" have Aramid Fibers/Graphite packings. 14" & 16" have wire reinforced carbon yarn with resilient core with graphite and Zinc finish.**

**F-639-31**
Flanged-Raised Face




**F-639-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.00 | 178 | 11.00 | 279 | 7.00 | 178 | 6.00 | 152 | .63 | 16 | 35 | 16 |
| 2½ | 65 | 7.50 | 191 | 12.50 | 318 | 7.00 | 178 | 7.00 | 178 | .69 | 17 | 49 | 22 |
| 3 | 80 | 8.00 | 203 | 13.50 | 343 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 60 | 27 |
| 4 | 100 | 9.00 | 229 | 15.75 | 400 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 90 | 41 |
| 5 | 125 | 10.00 | 254 | 17.00 | 432 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 129 | 59 |
| 6 | 150 | 10.50 | 267 | 21.00 | 533 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 161 | 73 |
| 8 | 200 | 11.50 | 292 | 25.00 | 635 | 14.00 | 356 | 13.50 | 343 | 1.13 | 29 | 278 | 126 |
| 10 | 250 | 13.00 | 330 | 29.00 | 737 | 16.00 | 406 | 16.00 | 406 | 1.19 | 30 | 419 | 190 |
| 12 | 300 | 14.00 | 356 | 34.50 | 876 | 18.00 | 457 | 19.00 | 483 | 1.25 | 32 | 631 | 286 |
| 14 | 350 | 15.00 | 381 | 40.38 | 1026 | 20.00 | 508 | 21.00 | 533 | 1.38 | 35 | 869 | 394 |
| 16 | 400 | 16.00 | 407 | 45.75 | 1162 | 22.00 | 559 | 23.50 | 597 | 1.44 | 37 | 1223 | 555 |

**Position indicators available. See page 98.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

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www.nibco.com

# Class 150 Ductile Iron Body Gate Valves

Raised Face Flanges • Bolted Bonnet • Non-Rising Stem • Solid Wedge • 316 Stainless Steel Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 500°F/260°C at 125 PSI/8.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

CONFORMS TO MSS SP-128

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A307 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Iron ASTM A126 Class B |
| 4. | Stem | Stainless Steel ASTM A276 |
| 5. | Gland Follower Nut | Steel ASTM A307 |
| 6. | Gland Follower | Ductile Iron ASTM A536 |
| 7. | Gland Follower Bolt | Steel ASTM A307/SAE J429 |
| 8. | Packing Gland | Stainless Steel ASTM A276 |
| 9. | Stuffing Box | Ductile Iron ASTM A536 |
| 10. | Packing | Synthetic Fibers / PTFE |
| 11. | Stuffing Box Gasket | Synthetic Fibers |
| 12. | Bonnet | Ductile Iron ASTM A395 |
| 13. | Body Bolt | Steel ASTM A193 B7/SAE J429 Grade 8 |
| 14. | Body Gasket | Synthetic Fibers / Nitrile |
| 15. | Body Nut | Steel ASTM A194 2H/SAE J995 Grade 8 |
| 16. [1] | Seat Ring | Stainless Steel ASTM A351 CF8M |
| 17. | Wedge Face Ring | Stainless Steel ASTM A351 CF8M |
| 18. | Wedge | Ductile Iron ASTM A395 |
| 19. | Body | Ductile Iron ASTM A395 |
| 20. | Stuffing Box Nut | Steel ASTM A307 (not shown) |

**[1]Lugs may be removed at customer's request – POA.**

**F-639-33**
Flanged-Raised Face

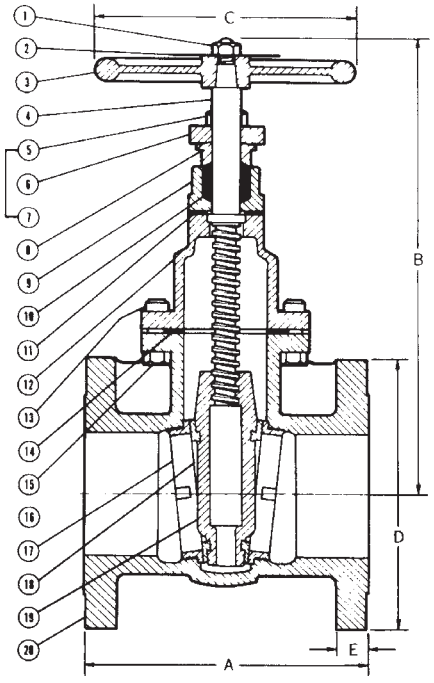
## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 7.00 | 178 | 11.00 | 279 | 7.00 | 178 | 6.00 | 152 | .63 | 16 | 35 | 16 |
| 2½ | 65 | 7.50 | 191 | 12.50 | 318 | 7.00 | 178 | 7.00 | 178 | .69 | 17 | 49 | 22 |
| 3 | 80 | 8.00 | 203 | 13.50 | 343 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 60 | 27 |
| 4 | 100 | 9.00 | 229 | 15.75 | 400 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 90 | 41 |
| 5 | 125 | 10.00 | 254 | 17.00 | 432 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 129 | 59 |
| 6 | 150 | 10.50 | 267 | 21.00 | 533 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 161 | 73 |
| 8 | 200 | 11.50 | 292 | 25.00 | 635 | 14.00 | 356 | 13.50 | 343 | 1.13 | 29 | 278 | 126 |
| 10 | 250 | 13.00 | 330 | 29.00 | 737 | 16.00 | 406 | 16.00 | 406 | 1.19 | 30 | 419 | 190 |
| 12 | 300 | 14.00 | 356 | 34.50 | 876 | 18.00 | 457 | 19.00 | 483 | 1.25 | 32 | 631 | 286 |
| 14 | 350 | 15.00 | 381 | 40.38 | 1026 | 20.00 | 508 | 21.00 | 533 | 1.38 | 35 | 869 | 394 |
| 16 | 400 | 16.00 | 407 | 45.75 | 1162 | 22.00 | 559 | 23.50 | 597 | 1.44 | 37 | 1223 | 555 |

**Position indicators available. See page 98.**

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**




**F-639-33**
Flg x Flg

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Ductile and Alloy Iron Globe, Angle and Check Valves Illustrated Index

Ductile Iron Body Globe Valve
Outside Screw and Yoke
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-738-31**
Bronze Disc
Sizes 2" thru 10"
Flanged-Raised Face
**Page 85**

Ductile Iron Body Angle Valve
Outside Screw and Yoke
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-838-31**
Bronze Disc
Sizes 2" thru 8"
Flanged-Raised Face
**Page 86**

3% Nickel Iron Body Check Valve
Stainless Steel Trim
Class 125 SWP
200 lb. CWP

**F-918-13**
Stainless Steel Disc
Sizes 2" thru 12"
Flanged Ends
**Page 87**

Ductile Iron Body Swing Check Valve
Bronze Trim
Class 150 SWP
285 lb. CWP

**F-938-31**
Bronze Disc
Sizes 2" thru 12"
Flanged-Raised Face
**Page 88**

Lead Free Ductile Iron Body Swing Check Valve
316SS Stainless Steel Trim
Class 150 SWP
285 lb. CWP

**F-938-33**
Stainless Steel Disc
Sizes 2" thru 12"
Flanged-Raised Face
**Page 89**

Why Ductile Iron? . . . . . **Page 90**

How Ductile Iron Compares
to Cast Iron and Cast Steel. . . . . **Page 91**

Construction Features. . . . . **Page 92**

Ductile Iron Valve Specifications . . **Page 93**

**NOTE: Check valves should never be installed immediately adjacent to a pump discharge or change in direction. Check Valves should be installed downstream from all sources of line turbulence, including fittings and valves, at a minimum of 5x the nominal pipe diameter (preferably 10x) with straight piping to provide laminar flow.**

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# Class 150 Ductile Iron Body Globe Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/232°C at 185 PSI/12.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

TESTING SPECIFICATION TO MSS SP-85

## MATERIAL LIST

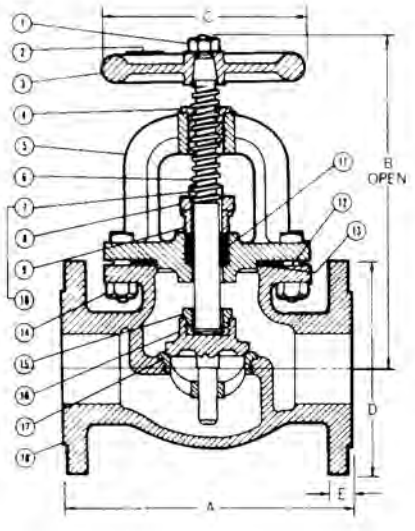
| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Iron ASTM A126 Class B |
| 4. | Yoke Bushing | Brass ASTM B584 |
| 5. | Bonnet | Ductile Iron ASTM A395 |
| 6. | Stem | Brass ASTM B371 Alloy C69400 or C69430 |
| 7. | Gland Follower Nut | Brass ASTM F467 Alloy C27000 |
| 8. | Gland Follower | Ductile Iron ASTM A536 |
| 9. | Packing Gland | Zinc Plated Powdered Iron ASTM B 310 or Brass ASTM B371 C69300 |
| 10. | Gland Follower Stud | Steel ASTM A307/SAE J429 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Body Bolt | Steel ASTM A193 B7/SAE J429 Grade 8 |
| 13. | Body Gasket | Synthetic Fibers / Nitrile |
| 14. [2] | Body Nut | Steel ASTM A194 2H/SAE J995 Grade 8 |
| 15. | Swivel Nut | Brass ASTM B584 Alloy C84400 |
| 16. [2] | Disc | Brass ASTM B584 Alloy C84400 |
| 17. | Seat Ring | Brass ASTM B584 Alloy C84400 |
| 18. | Body | Ductile Iron ASTM A395 |

**[1] 2" and 10" have hex head steel capscrew.**

**[2] 2" thru 6" have Bronze ASTM B584 Disc. 8" thru 10" have Ductile Iron Disc with Bronze ASTM B584 Disc Face Rings and Brass Pilots.**

**[3] 2" thru 8" have Aramid Fibers/Graphite packings. 10" has wire reinforced carbon yarn, resilient core with Graphite & Zinc finish.**

**F-738-31**
Flanged-Raised Face




**F-738-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 10.19 | 259 | 8.00 | 203 | 6.00 | 152 | .63 | 16 | 32 | 15 |
| 2½ | 65 | 8.50 | 216 | 11.81 | 300 | 8.00 | 203 | 7.00 | 178 | .69 | 17 | 49 | 22 |
| 3 | 80 | 9.50 | 241 | 12.50 | 318 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 66 | 30 |
| 4 | 100 | 11.50 | 292 | 15.81 | 402 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 98 | 45 |
| 5 | 125 | 13.00 | 330 | 16.50 | 419 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 139 | 63 |
| 6 | 150 | 14.00 | 356 | 18.88 | 479 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 183 | 83 |
| 8 | 200 | 19.50 | 495 | 21.13 | 537 | 16.00 | 406 | 13.50 | 343 | 1.13 | 29 | 362 | 164 |
| 10 | 250 | 24.50 | 622 | 25.19 | 640 | 18.00 | 457 | 16.00 | 406 | 1.19 | 30 | 582 | 264 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 150 Ductile Iron Body Angle Valves

Raised Face Flanges • Bolted Bonnet • Outside Screw and Yoke • Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/232°C at 185 PSI/12.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

TESTING SPECIFICATION TO MSS SP-85

## MATERIAL LIST

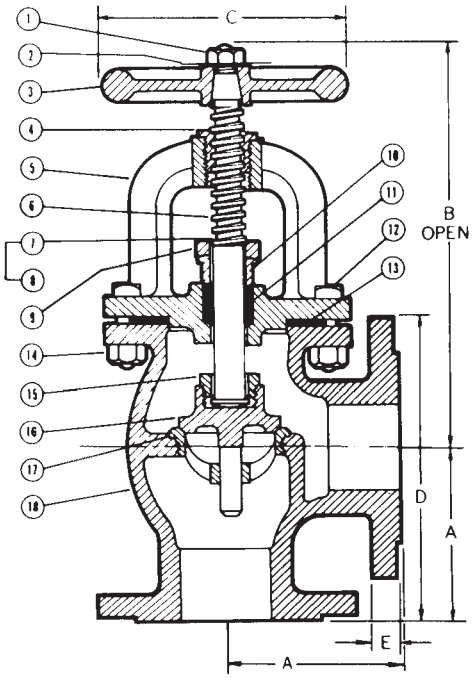
| | PART | SPECIFICATION |
|---|---|---|
| 1. | Handwheel Nut | Steel ASTM A563 |
| 2. | Identification Plate | Aluminum |
| 3. | Handwheel | Iron ASTM A126 Class B |
| 4. | Yoke Bushing | Brass ASTM B584 |
| 5. | Bonnet | Ductile Iron ASTM A395 |
| 6. | Stem | Brass ASTM B371 Alloy C69400 or C69430 |
| 7. | Gland Follower Nut | Brass ASTM F467 Alloy C27000 |
| 8. | Gland Follower Stud | Steel ASTM A307/SAE J429 |
| 9. | Gland Follower | Ductile Iron ASTM A536 |
| 10. | Packing Gland | Zinc Plated Powdered Iron ASTM B 310 or Brass ASTM B 372 C69400 |
| 11. | Packing | Aramid Fibers / Graphite |
| 12. [1] | Body Bolt | Steel ASTM A193 B7/SAE J429 Grade 8 |
| 13. | Body Gasket | Synthetic Fibers / Nitrile |
| 14. [1] | Body Nut | Steel ASTM A563 |
| 15. | Swivel Nut | Brass ASTM B584 Alloy C84400 |
| 16. [2] | Disc | Brass ASTM B584 Alloy C84400 |
| 17. | Seat Ring | Brass ASTM B584 Alloy C84400 |
| 18. | Body | Ductile Iron ASTM A395 |

**[1] 2" have hex head steel capscrew.**

**[2] For Disc 2" thru 6" have Bronze ASTM B584 Disc. 8" thru 10" have Ductile Iron Disc with Bronze ASTM B584 Disc Face Rings and Brass Pilots.**

**Consult Factory for non-return feature. Fig. No. F-838-31NR.**

**F-838-31**
Flanged-Raised Face




**F-838-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | C | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 4.00 | 102 | 10.00 | 254 | 8.00 | 203 | 6.00 | 152 | .63 | 16 | 30 | 14 |
| 2½ | 65 | 4.25 | 108 | 11.50 | 292 | 8.00 | 203 | 7.00 | 178 | .69 | 17 | 51 | 23 |
| 3 | 80 | 4.75 | 121 | 12.25 | 311 | 8.00 | 203 | 7.50 | 191 | .75 | 19 | 60 | 27 |
| 4 | 100 | 5.75 | 146 | 15.00 | 381 | 10.00 | 254 | 9.00 | 229 | .94 | 24 | 99 | 45 |
| 5 | 125 | 6.50 | 171 | 16.50 | 419 | 10.00 | 254 | 10.00 | 254 | .94 | 24 | 132 | 60 |
| 6 | 150 | 7.00 | 178 | 18.88 | 479 | 12.00 | 305 | 11.00 | 279 | 1.00 | 25 | 188 | 85 |
| 8 | 200 | 9.75 | 248 | 20.75 | 527 | 16.00 | 406 | 13.50 | 343 | 1.13 | 29 | 349 | 158 |

**FREEZING WEATHER PRECAUTION: Subsequent to testing a piping system, valves should be left in an open position to allow complete drainage.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

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# Class 125 3% Nickel Iron Body Check Valves

Bolted Bonnet • Renewable Seat and Disc* • Stainless Steel Trim

**200 PSI/13.8 bar non-shock cold working pressure to -20°F to 150°F/-29°C to 66°C♦**
**Maximum working temperature 450°F/232°C at 125 PSI/8.6 bar**
**125 PSI/8.6 bar saturated steam to 353°F/178°C**

CONFORMS TO MSS SP-71

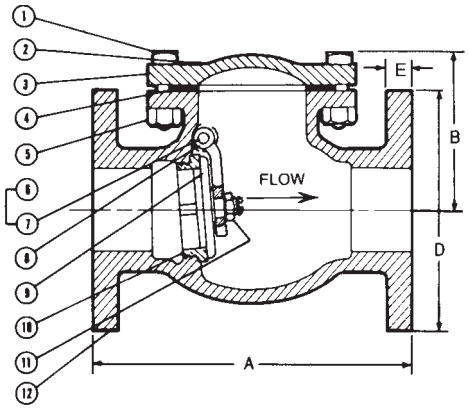
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Body Bolt[1] | Steel ASTM A307 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | ASTM A126 3% Nickel Iron Class B |
| 4. | Body Gasket | Synthetic Fibers |
| 5. | Nut | Steel ASTM A563 |
| 6. | Side Plug | ASTM A 193 B8M S31600SS |
| 7. | Hanger Pin | Ductile Iron ASTM A536 |
| 8. | Hanger | Ductile Iron ASTM A395 |
| 9. | Disc[2] | ASTM A351 CF8M |
| 10. | Seat Ring | ASTM A351 CF8M |
| 11. | Disc Nut | ASTM A194 B8M S31600 SS |
| 12. | Body | ASTM A126 3% Nickel Iron Class B |
| 13. | Disc Bolt[2] | ASTM A276 S31600 Stainless Steel |

**[1]2" and 10" have hex head steel capscrew**

**[2]2"-4" SST ASTM A351 CF8M disc**
**5"-12" 3% nickel iron disc with SST disc face ring and disc bolt**

**F-918-13**
Flanged




**F-918-13**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 3.94 | 100 | 6.00 | 152 | .63 | 16 | 24 | 11 |
| 2½ | 65 | 8.50 | 216 | 4.50 | 114 | 7.00 | 178 | .69 | 17 | 35 | 16 |
| 3 | 80 | 9.50 | 241 | 5.13 | 130 | 7.50 | 191 | .75 | 19 | 47 | 21 |
| 4 | 100 | 11.50 | 292 | 6.13 | 156 | 9.00 | 229 | .94 | 24 | 80 | 36 |
| 6 | 150 | 14.00 | 356 | 8.00 | 203 | 11.00 | 279 | 1.00 | 25 | 146 | 66 |
| 8 | 200 | 19.50 | 495 | 9.44 | 240 | 13.50 | 343 | 1.13 | 29 | 255 | 116 |
| 10 | 250 | 24.50 | 622 | 12.06 | 306 | 16.00 | 406 | 1.19 | 30 | 426 | 193 |
| 12 | 300 | 27.50 | 699 | 16.13 | 410 | 19.00 | 483 | 1.25 | 32 | 657 | 298 |

***Proper machining facilities required.**

**Note: On pump discharge, the preferred check valves are:**
- **inline, spring assisted, center-guided, lift checks**
- **spring assisted twin (double) disc**
- **swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**NIBCO® Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**Warning: Do not use for Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.*

# Class 150 Ductile Iron Body Swing Check Valves

Raised Face Flanges • Bolted Bonnet • Bronze Trim

**285 PSI/19.7 bar non-shock cold working pressure to -20°F to 100°F/-29°C to 38°C♦**
**Maximum working temperature 450°F/232°C at 185 PSI/12.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

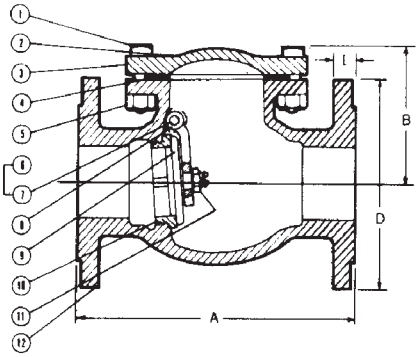
CONFORMS TO MSS SP-136

## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Bolt | Steel ASTM A193 B7/SAE J429 Grade 8 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | Ductile Iron ASTM A395 |
| 4. | Body Gasket | Synthetic Fibers |
| 5. | Nut | Steel ASTM A194 2H/SAE J995 Grade 8 |
| 6. | Side Plug | Brass ASTM B584 C84400 |
| 7. | Hanger Pin | Brass ASTM B371 C69430/C69400 |
| 8. | Hanger | Ductile Iron ASTM A536 |
| 9. | Disc[1] | Brass ASTM B584 C84400 |
| 10. | Seat Ring | Brass ASTM B584 C84400 |
| 11. | Disc Nut | Brass ASTM B371 C69430/C69400 |
| 12. | Body | Ductile Iron ASTM A395 |
| 13. | Disc Bolt[1] | Brass ASTM B371 C69430/C69400 |

**[1]2"-4" bronze disc**
**5"-12" ductile iron disc with bronze face ring and disc bolt**

**F-938-31**
Flanged-Raised Face




**F-938-31**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 3.94 | 100 | 6.00 | 152 | .63 | 16 | 24 | 11 |
| 2½ | 65 | 8.50 | 216 | 4.50 | 114 | 7.00 | 178 | .69 | 17 | 35 | 16 |
| 3 | 80 | 9.50 | 241 | 5.13 | 130 | 7.50 | 191 | .75 | 19 | 47 | 21 |
| 4 | 100 | 11.50 | 292 | 6.13 | 156 | 9.00 | 229 | .94 | 24 | 81 | 37 |
| 5 | 125 | 13.00 | 330 | 6.81 | 173 | 10.00 | 254 | .94 | 24 | 100 | 45 |
| 6 | 150 | 14.00 | 356 | 8.00 | 203 | 11.00 | 279 | 1.00 | 25 | 146 | 66 |
| 8 | 200 | 19.50 | 495 | 9.44 | 240 | 13.50 | 343 | 1.13 | 29 | 255 | 116 |
| 10 | 250 | 24.50 | 622 | 12.06 | 306 | 16.00 | 406 | 1.19 | 30 | 426 | 193 |
| 12 | 300 | 27.50 | 699 | 16.13 | 410 | 19.00 | 483 | 1.25 | 32 | 660 | 299 |

**Lever and Weight/Spring Options available only in 3", 4" and 6". (see page 102)**

**Note: On pump discharge, the preferred check valves are:**
- **inline, spring assisted, center-guided, lift checks**
- **spring assisted twin (double) disc**
- **swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**NIBCO® Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**WARNING: Do not use for Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

⚠ **WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

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www.nibco.com

# Class 150 Ductile Iron Body Swing Check Valves

Raised Face Flanges • Bolted Bonnet • 316 Stainless Steel Trim

NSF/ANSI 61
NSF/ANSI 372

**285 PSI/19.7 bar non-shock cold working pressure to -20° F to 100° F/-29° C to 38° C♦**
**Maximum working temperature 450°F/343°C at 125 PSI/8.6 bar**
**150 PSI/10.3 bar saturated steam to 366°F/186°C**

CERTIFIED LEAD-FREE* TO NSF/ANSI-61-8 (INCLUDES ANNEX F AND G) AND NSF/ANSI-372 • CONFORMS TO MSS SP-136

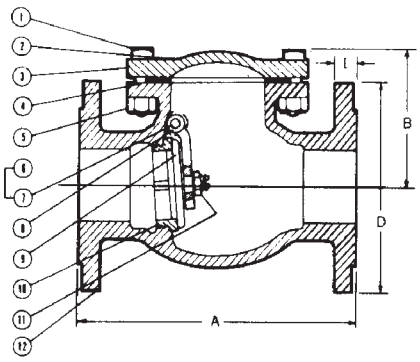
## MATERIAL LIST

| | PART | SPECIFICATION |
|---|---|---|
| 1. | Bolt | Steel ASTM A193 B7/SAE J429 Grade 8 |
| 2. | Identification Plate | Aluminum |
| 3. | Bonnet | Ductile Iron ASTM A395 |
| 4. | Body Gasket | Synthetic Fibres |
| 5. | Nut | Steel ASTM A194 2H/SAE J995 Grade 8 |
| 6. | Side Plug | Stainless Steel ASTM A193 B8M |
| 7. | Hanger Pin | Stainless Steel ASTM A276 |
| 8. | Hanger | Ductile Iron ASTM A395 |
| 9. | Disc[1] | Stainless Steel ASTM A351 CF8M |
| 10. | Seat Ring | Stainless Steel ASTM A351 CF8M |
| 11. | Disc Nut | Stainless Steel ASTM A351 CF8M |
| 12. | Body | Ductile Iron ASTM A395 |
| 13. | Disc Bolt[1] | Stainless Steel UNS S31600 |

[1]**2"-4" stainless steel disc**

**5"-12" ductile iron disc with SST disc face ring and disc bolt**

**F-938-33**
Flanged-Raised Face




**F-938-33**
Flg x Flg

## DIMENSIONS—WEIGHTS—QUANTITIES

| Size | | Dimensions A | | B | | D | | E | | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| In. | mm. | In. | mm. | In. | mm. | In. | mm. | In. | mm. | Lbs. | Kg. |
| 2 | 50 | 8.00 | 203 | 3.94 | 100 | 6.00 | 152 | .63 | 16 | 24 | 11 |
| 2½ | 65 | 8.50 | 216 | 4.50 | 114 | 7.00 | 178 | .69 | 17 | 35 | 16 |
| 3 | 80 | 9.50 | 241 | 5.13 | 130 | 7.50 | 191 | .75 | 19 | 47 | 21 |
| 4 | 100 | 11.50 | 292 | 6.13 | 156 | 9.00 | 229 | .94 | 24 | 80 | 36 |
| 5 | 125 | 13.00 | 330 | 6.81 | 173 | 10.00 | 254 | .94 | 24 | 100 | 46 |
| 6 | 150 | 14.00 | 356 | 8.00 | 203 | 11.00 | 279 | 1.00 | 25 | 146 | 66 |
| 8 | 200 | 19.50 | 495 | 9.44 | 240 | 13.50 | 343 | 1.13 | 29 | 274 | 125 |
| 10 | 250 | 24.50 | 622 | 12.06 | 306 | 16.00 | 406 | 1.19 | 30 | 426 | 194 |
| 12 | 300 | 27.50 | 699 | 16.13 | 410 | 19.00 | 483 | 1.25 | 32 | 655 | 298 |

**Lever and Weight/Spring Options available only in 3", 4" and 6". (see page 102)**

**Note: On pump discharge, the preferred check valves are:**
- **inline, spring assisted, center-guided, lift checks**
- **spring assisted twin (double) disc**
- **swing design with lever and weight or lever and spring**

**Install 5 pipe diameters minimum downstream from pump discharge or changes in direction to avoid flow turbulence. Flow straighteners may be required in extreme cases.**

**NIBCO® Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position.**

**WARNING: Do not use for Reciprocating Air Compressor Service.**

**♦ For detailed Operating Pressure, refer to Pressure Temperature Chart on page 114.**

**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.**

*Visit our website for the most current information.* *Weights are approximate and may vary ±25%.

# Why Ductile Iron?

NIBCO is the largest United States manufacturer of pressure rated Ductile Iron Valves. NIBCO Ductile Iron multi-turn valves are ideal for a wide variety of services: hydrocarbons, chemical, marine, fire protection services, pulp and paper applications where cast iron and/or cast steel valves could be installed.

Ductile Iron, also known as nodular iron, was developed in 1949 as a substitute for steel. Cast steel contains carbon of less than .3% by weight, while cast and ductile irons have at least 3% total carbon. This low carbon content in cast steel does not allow the carbon to form as free graphite resulting in a laminate type of structure. The natural form of carbon in cast iron is the free graphite flake form. In Ductile Iron, this graphite flake is modified by a specialized treatment process to form tiny spheres or nodules. These modified graphite nodules provide Ductile Iron with physical properties greater than cast iron and comparable to steel. It is this nodular microstructure of carbon in Ductile Iron which produces high ductility and shock resistance while the flake form of cast iron results in no malleability. Optimum ductility is obtained with a ferritic matrix, therefore, all NIBCO Ductile Iron pressure containing parts are treated with a ferritizing annealing cycle. In Ductile Iron spheroidal nodules also eliminate the crack effect of flake graphite which is exhibited in cast iron. In microscopic photos of Ductile Iron, cracks can be seen traveling to a graphite nodule and stopping. These graphite spheroids are know as "crack arresters" in the Ductile Iron industry because of their ability to stop cracks in their tracks.

In some circles, Ductile Iron is known as the metal that is the "best of both worlds" meaning that Ductile Iron combines the superior strength of cast steel with the excellent corrosion resistance of cast iron.

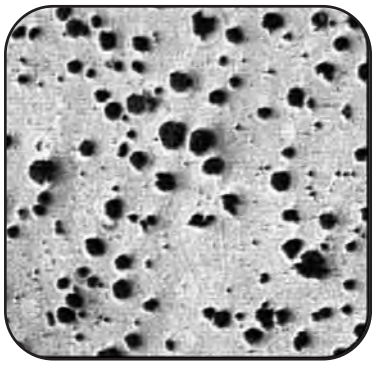
## Ductile Iron vs. Cast (Gray) Iron

The strength of Ductile Iron when compared to cast iron is overwhelming. Ductile Iron tensile strength is 60k versus cast iron at 31k. Ductile Iron has a yield strength of 40k, whereas cast iron exhibits no yield, only ultimate fracture. Ductile Iron strength-to-cost ratio offers greater value for a marginal increase in cost over cast iron. (See page 90 for a complete comparison of mechanicals.) Ductile Iron offers excellent corrosion resistance that is equivalent to cast iron.

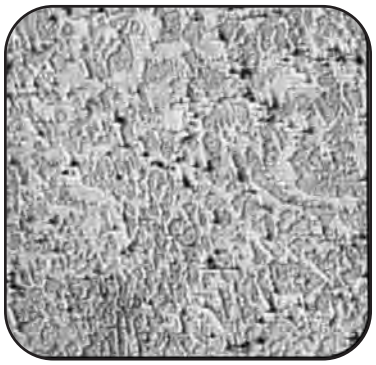
## Ductile Iron vs. Cast Steel

The strengths of Ductile Iron and cast steel are comparable. Ductile Iron has a higher minimum yield strength at 40k versus cast steel at 36k. (See page 90 for a more complete comparison of mechanicals.) Ductile Iron has corrosion and oxidation resistance that surpasses cast steel in most general utility service applications. Because of Ductile Iron's spheroidal graphite microstructure, Ductile Iron is superior to steel in its ability to deaden vibration and therefore reduce stresses. An important factor in selecting Ductile Iron over cast steel is cost. The lower expense of Ductile Iron results from readily available materials, foundry operation efficiencies and reduced machining costs of Ductile Iron.

Cast (Gray) Iron
Flake Form



Ductile Iron
Spheroidal Graphite Nodules



Cast Steel Form

**NOTE: For our metal comparison, NIBCO has chosen to use ASTM A395 Ductile Iron, ASTM A126 Cast Iron and ASTM A216 WCB Cast Steel. Wherever Cast Iron is listed, we are referring to Gray Iron.**

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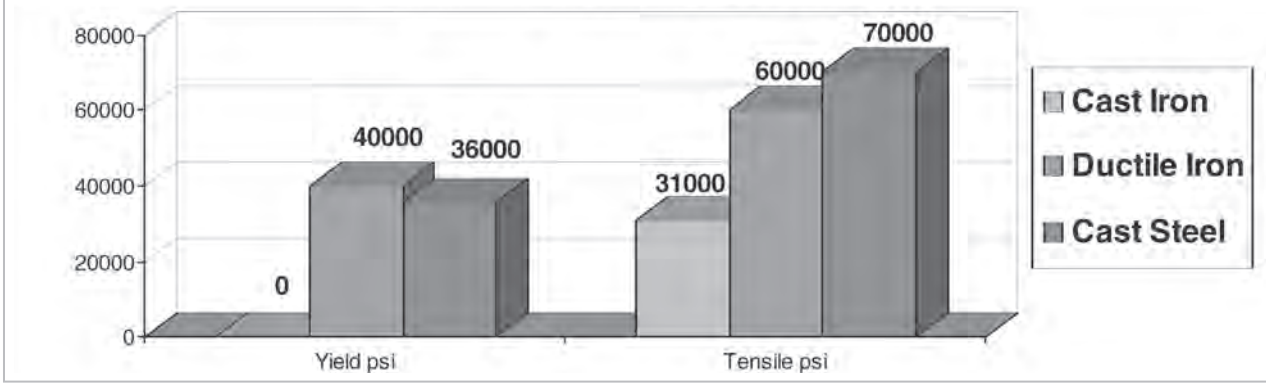
# How Ductile Iron Compares to Cast Iron and Cast Steel

## Minimum Mechanical Properties




## Chemical Analysis

| | Cast Iron ASTM A126 Class B* | Ductile Iron ASTM A395 | Cast Steel ASTM A216 WCB |
|---|---|---|---|
| *Iron and Residuals%* | *94.0* | *94.5* | *98.1* |
| *Carbon%* | *3.3* | *3.0* | *0.3* |
| *Silicon%* | *2.0* | *2.5* | *0.6* |
| *Manganese%* | *0.7* | | *1.0* |

** Typical composition, ASTM Standard does not specify materials to this detail.*

## Pressure/Temperature Ratings Comparing Cast Iron, Ductile Iron and Cast Steel

| | ASTM A126 Cast Iron | | ASTM A395 *Ductile Iron | ASTM A216 WCB Cast Steel |
|---|---|---|---|---|
| **°F/°C Temperature** | **Class 125** | | **Class 150** | **Class 150** |
| | **2"-12"** | **14"-24"** | **2"-24"** | **2"-24"** |
| -20°F-100°F | 200 psi | 150 psi | **285 psi | 285 psi |
| 150°F/66°C | 200 psi | 150 psi | 243 psi | |
| 200°F/93°C | 190 psi | 135 psi | 235 psi | 260 psi |
| 250°F/121°C | 175 psi | 125 psi | 225 psi | |
| 300°F/149°C | 165 psi | 110 psi | 215 psi | 230 psi |
| 350°F/177°C | 150 psi | 100 psi | 210 psi | |
| 400°F/204°C | 140 psi | | 200 psi | 200 psi |
| 450°F/232°C | 125 psi | | 185 psi | |
| 500°F/260°C | | | 170 psi | 170 psi |
| 550°F/288°C | | | 155 psi | |
| 600°F/316°C | | | 140 psi | 140 psi |
| 650°F/343°C | | | 125 psi | 125 psi |

** These ratings apply when temperature exceeds 450°F and the valve has 316 SS trim. When ASTM B584 trim is used, maximum temperature limit is 450°F.*

*** ENGINEERING NOTE: NIBCO ductile iron valve wall thickness is designed to ASME B16.1 Class 125 standards, exceeding the wall thickness requirements of ASME B16.42 Class 150. NIBCO ductile iron valves are rated for susstained operation of 285 CWP when connected to Class 150 flanges.*

*Visit our website for the most current information.*

# Construction Features

| | |
|---|---|
| **Flanges** | NIBCO® Ductile Iron Valves come standard ASME B16.42 Class 150 flanges and the same end-to-end dimensions as Class 125 iron or Class 150 steel valves. Thus Ductile Iron valves can easily replace cast iron or steel valves. NIBCO also offers PN10/16 flanges per BS 4504 and compliant to BS 5150 face-to-face dimensions. |
| **Trim** | Bronze ASTM B584, 316 Stainless Steel |
| **Test Pressures** | All NIBCO Ductile Iron Valves are tested to MSS requirements in our ISO 9002 quality certified manufacturing plant in Blytheville, Arkansas. |
| **Color** | NIBCO Ductile Iron valves are painted green in compliance with API 604. |

# Features and Benefits

| | |
|---|---|
| **Strength** | Ductile Iron is a very strong material when compared to cast iron and comparable to cast steel. Ductile Iron has a higher yield strength than cast steel 40K vs. 30K. The strength of Ductile Iron when compared to cast iron is overwhelming. Ductile Iron tensile strength is 60K vs Cast Iron at 31K. Ductile Iron has yield strength of 40K and cast iron has none. |
| **Corrosion Resistance** | Ductile Iron has a corrosion and oxidation resistance in most cases that surpasses cast steel and is slightly better than cast iron. Oxide penetration can severely affect the strength and performance of valves. |
| **Low Transition Temps** | Ferrous metals are subject to brittle fractures with severe temperature changes. The chemical composition of NIBCO's Ductile Iron provides transition temperatures to -20°F. This property is important if physical shock loading is present in cold weather applications. |
| **Cost Effective** | These unique characteristics make Ductile Iron a cost-effective option for 150 psi steam service as well as hydrocarbon processing up to 650°F/343°C. |

# Applications

| | |
|---|---|
| **Steam Service** | Ductile Iron gate, globe and check valves are excellent choices for 150 psi steam service. Available with ASTM B584 bronze trim and CF8M SS trim. |
| **Hydrocarbon Service** | Ductile Iron is an acceptable substitute for cast steel in a wide range of processing services both on the production and refining side up to 650°F/343°C. |
| **General Service** | Ductile Iron can substitute for standard Class 125 cast iron where there may be concerns with potential stresses and a stronger material is desired, i.e. in situations of unusual pipe movement due to the system or external forces, such as cold weather, earthquakes, etc.<br><br>Ductile Iron may be substituted for Class 250 cast iron for intermediate pressure services using steel Class 150 flanges up to 285 psi CWP. (Should save on valve and flange costs.)<br><br>Ductile Iron is a good choice for general service, fire protection and Hi-rise applications.<br><br>Has a higher application temperature than PTFE seated flanged ball valves. |
| **Marine Service** | For shipboard application and tanker piping, many marine agencies recommend the use of Ductile Iron Valves because of its resistance to shock, vibration and superior corrosion-resistant properties. Approved by DOT and Certificate of Approval from Lloyds Register of Shipping. |

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# Ductile Iron Valve Specifications

## VALVES 2½" AND LARGER — 285 PSI CWP APPLICATION

**Gate Valves**

Valves to be Class 150 and 285 PSI CWP, tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, OS&Y or Non-Rising, Ductile Iron body, bronze trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron. Packing and gaskets to be non-asbestos.

ACCEPTABLE VALVES: NIBCO F-637-31 (OS&Y) or F-639-31 (Non-Rising).

**Globe/Angle Valves**

Valves to be Class 150 and 285 PSI CWP, tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, OS&Y, Ductile Iron body, bronze trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron. Packing and gaskets to be non-asbestos.

ACCEPTABLE VALVES: Straight Globe NIBCO F-738-31; Angle Globe NIBCO F-838-31.

**Check Valves**

Valves to be Class 150 and 285 PSI CWP, shall be swing-type tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, Ductile Iron body, bronze trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron, non-asbestos gasket.

ACCEPTABLE VALVES: Swing-type NIBCO F-938-31; Swing-type with outside lever and spring/weight NIBCO F-938-31-BL&S (BL&W).

## VALVES 2½" AND LARGER — HIGH PRESSURE STEAM/HYDROCARBON

**Gate Valves**

Valves to be Class 150 and 285 PSI CWP, tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, OS&Y, Ductile Iron body, 316 SS trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron. Packing and gaskets to be non-asbestos.

ACCEPTABLE VALVES: NIBCO F-637-33.

**Globe/Angle Valves**

Valves to be Class 150 and 285 PSI CWP, tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, OS&Y, Ductile Iron body, bronze trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron. Packing and gaskets to be non-asbestos.

APPLICABLE VALVES: Straight Globe NIBCO F-738-31; Angle Globe NIBCO F-838-31 Bronze Trim for Steam Application ONLY.

**Check Valves**

Valves to be Class 150 and 285 PSI CWP, shall be swing-type tested in accordance with Manufacturers Standardization Society, flanged, bolted bonnet, Ductile Iron body, 316 SS trimmed, with body and bonnet conforming to ASTM A395 Ductile Iron, non-asbestos gasket.

ACCEPTABLE VALVES: Swing-type NIBCO F-938-33; Swing-type with outside lever and spring/weight NIBCO F-938-33-BL&S (BL&W).

## GLOSSARY OF TERMS

**Ductility:** The ability of a material to become permanently deformed—stretched, drawn, or hammered without failure while maintaining an appreciable load.

**Tensile Strength:** Measures in force per unit area [i.e. pounds per square inch (PSI)] the ultimate stress that can be withstood by a material in tension prior to failure.

**Yield Strength:** Measures in force per unit area, the stress at which a material will undergo a permanent change in shape (plastic deformation) in response to an applied force.

**Elongation:** Measures by percentage, the amount of plastic deformation a material will exhibit in response to a force applied in tension.

**Oxide Penetration:** The depth of material deterioration or loss displayed along the surface of a metal that is exposed to highly corrosive (oxidizing) environment.

# Bronze and Iron Valves
# Options and Accessories Index

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**Options and Accessories**

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**Iron Valve**

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# Bronze Valve Options and Accessories - Handles

## Matrix of Bronze Valve Handwheel Diameters

| Valve | T062142 PP 2½" Dia. | T062459 PP 2½" Dia. | T062143 PP 3¼" Dia. | T065573 PP 3¼" Dia. | T062144 PP 4½" Dia. | T065574 PP 4½" Dia. | T062145 PP 5⅜" Dia. | T065575 PP 5⅜" Dia. | T062146 PP 7" Dia. | Valve |
|---|---|---|---|---|---|---|---|---|---|---|
| 111 | 1/4 - 3/8 | 1/2 - 3/4 | 1 | 1¼ - 1½ | | 2 - 2½ | | 3 | | GATE |
| 113 | 1/4 - 3/8 | 1/2 - 3/4 | 1 | 1¼ - 1½ | | 2 - 2½ | | 3 | | |
| 124 | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | 2½ | 3 | | |
| 131 | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | 2½ | 3 | | |
| 133 | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | 2½ | 3 | | |
| 134 | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | 2½ | 3 | | |
| 136 | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | 2½ | 3 | | |
| 154A | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | | | | |
| 174A | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | | | | |
| 174SS | | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | | | | |
| 176A | 1/4 - 3/8 | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | | | | |
| 176SS | | 1/2 | 3/4 - 1 | 1¼ | 1½ | 2 | | | | |
| 211 | 1/8 - 1/2 | 3/4 | 1 - 1¼ | | 1½ | 2 | | 2½ - 3 | | GLOBE |
| 235 | 1/8 - 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ - 2 | 2 | 2½ | 3 | |
| 256AP | | 1/4 - 1/2 | | 3/4 | 1 | 1¼ - 1½ | 2 | 2½ | 3 | |
| 275B | | 1/8 - 3/8 | 1/2 | 3/4 - 1 | 1 | 1¼ - 1½ | 2 | 2½ | 3 | |
| 275Y | | 1/4 - 3/8 | 1/2 | 3/4 - 1 | | 1¼ - 1½ | 2 | 2½ | 3 | |
| 276AP | | 1/4 - 3/8 | 1/2 | 3/4 | 1 | 1¼ - 1½ | 2 | 2½ | 3 | |
| 311 | 1/4 - 1/2 | 3/4 | 1 - 1¼ | | | 2 | | 2½ - 3 | | ANGLE |
| 335 | 1/8 - 3/8 | 1/2 | 3/4 | 1 | 1¼ | 1½ - 2 | | | 3 | |
| 375B | | 1/4 - 3/8 | 1/2 | 3/4 | 1 | 1¼ - 1½ | 2 | | 3 | |
| 376AP | | 1/4 - 3/8 | 1/2 | 3/4 | 1 | 1¼ - 1½ | 2 | | | |

**Malleable Iron ASTM A47**
Available as standard for NIBCO® Bronze Gate and Globe Valves. Class 125, 150, 200, 300 lb. SWP Bronze Body Valves. ¼" thru Square Stem only.

**Malleable**

**Red Bronze 85-5-5-5% ASTM B62**
Available for some NIBCO® 125 lb. SWP Bronze Body Valves ⅜" thru 3". Used where standard handwheel would be out of reach or hand space is restricted. Specify by adding (K) to Fig. No., i.e. T-000-K. For field replacement, specify valve type and size. Square Stem Only.

**Cross**

**Red Bronze 85-5-5-5% ASTM B62**
Available for some NIBCO® 125 lb. SWP Bronze Body Valves ⅜" thru 2". Used where code requirements or personal preference dictate a bronze handwheel. Specify by adding (BHW) to Fig. No., i.e. T-000-BHW. For field replacement, specify valve type and size. Square Stem Only.

**Bronze**

**Red Bronze 85-5-5-5% ASTM B62**
Available for some NIBCO® 125 lb. SWP Bronze Body Valves thru 3". Used where standard handwheel would be out of reach or hand space is restricted. Square Stem only.

**Solid Tee**

**Red Bronze 85-5-5-5% ASTM B62 or ASTM B16**
Available for some NIBCO® 125 lb. SWP Bronze Body Valves thru 3". Use where valve might be subject to unauthorized use or tampering. Specify by adding (L) to Fig. No., i.e. T-000-L. For field replacement, specify valve type and size. Square Stem Only.

**Lockshield**

**Red Bronze 85-5-5-5% ASTM B62**
Available for some NIBCO® 125 lb. SWP Bronze Body Valves thru 3". Used as handle for lockshields. Specify – "Lockshield Key." For field replacement, specify valve type and size. Square Stem Only.

**Lockshield Key**

**NIBCO INC. reserves the right to change materials, options and accessories without notice.**

*nformation.*

# Bronze Valve Options and Accessories
# Seating and Packing

## Seating Material

**Material:** **PTFE**
Max. Pressure: 300 SWP/600 CWP
Max. Temperature: -20°F to 400°F
Service: Oxygen, steam, and all services where the media being handled is not corrosive to the metallic parts of the valve. Available for some NIBCO valves. Specify by adding (Y) to Fig. No., i.e. T-000-Y

**Material:** **FKM**
Max. Pressure: 125 SWP/200 CWP
Max. Temperature: -20°F to 300°F
Service: Hydrocarbon service, mineral acids and salt solutions that are not corrosive to the metallic parts of the valve. Available for some NIBCO valves. Specify by adding (V) to Fig. No., i.e. T-000-V

**Material:** **Buna-N (Nitrile)**
Max. Pressure: 200 CWP
Max. Temperature: -40°F to 180°F
Service: Water, Oil, Gas. Available for some NIBCO valves. Specify by adding (W) to Fig. No., i.e. T-000-W

**Material:** **Bronze ASTM B 62**
Max. Pressure: 150 SWP/300 CWP
Max. Temperature: 406°F
Service: Provides good seating properties for clean moderate service. Should not be used for close throttling or for handling material containing abrasive or corrosive particles.

**Material:** **Bronze ASTM B 61**
Max. Pressure: 300 SWP/600 CWP
Max. Temperature: 550°F
Service: Provides good seating properties for clean moderate service. Should not be used for close throttling or for handling material containing abrasive or corrosive particles.

**Material:** **Nickel Alloy, Semi Plug Only**
Max. Pressure: 300 SWP/600 CWP
Max. Temperature: 550°F
Service: General service, nickel alloy material is durable and resists wear and the corrosive action of some dilute acids and alkalies. Available for 300 SWP Globe Valves.

**Material:** **Hardened Stainless Steel, Full Plug Only**
Max. Pressure: 300 SWP/600 CWP
Max. Temperature: 550°F
Service: Recommended for close throttling and most all severe conditions, not to exceed the valve ratings. Available for 200 and 300 SWP Globe and Angle Valves.

## Packing Material

**Aramid Fibers with Graphite.**
Offered as standard on NIBCO Bronze Valves.

**Solid PTFE Packing**
Offered as a field retrofit option on NIBCO Bronze Valves. Consult factory for price and availability.

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# Bronze Valves Options and Accessories
# Drain Cap, Oxygen Service, Stem Extensions

## ⅛" Drain Cap

A fast and convenient means for draining sections of line between valves.

Specify by adding (D) to Fig. No., i.e. T-111-D.

(Applicable to figure numbers 111, 113 and 211 only.)

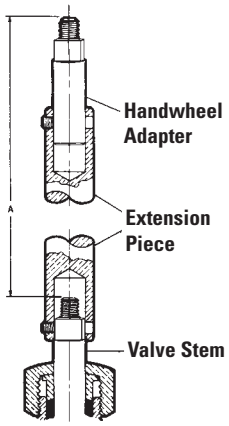
## Optional Squared Stem Extension

Available for all NIBCO® Bronze Valves.

Made from ASTM B371 62 Alloy C69400 (rod).

Used when valves must be operated from a distance.
Adequate and rigid support must be provided for long stem extension units.

Specify valve size, figure number and length to be added to existing stem length (dimension A). 3" minimum length, 18" maximum length.




## Oxygen Service; Bronze Gate, Globe and Check

The following valves are offered as oxygen cleaned and bagged. NIBCO figure number:

S/T-134-X
S/T-235-YX
S/T-413-YX
S/T-433-YX

Except for PTFE disc and packing, and identification tag, all parts are identical to standard valves. Valves are thoroughly cleaned and degreased and individually packed in sealed polyethylene bags.

Consult with factory on availability for other bronze valves to be oxygen cleaned.

## Silicone Lubricants in Nacogdoches, Texas, Plant

Below lists the two ways in which NIBCO® bronze gate, globe, check and ball valves are manufactured in our Nacogdoches plant:

1. **Standard valves:**
   All pressure rated bronze gate, globe, check and bronze ball valves are manufactured in Nacogdoches, Texas. Silicone is **NOT** used in this plant in the production of valves or assembly of any component parts of the above listed products.
2. **Valves can be cleaned for oxygen service:**
   - The steps involved are as follows:
   - Clean ultrasonically all component parts with a degreaser in a warm water solution
   - Rinse with warm water in an ultrasonic bath
   - Rinse again in cold water
   - Put all component parts under black light for inspection of any carbon. If carbon found, repeat steps above.
   - Assemble and test valves
   - Package the valves in a sealed plastic bag to avoid contamination

**NOTE:** Valves that are assembled and tested without silicone lubricants in this plant have a potential exposure to air-born silicone as well as during shipping after they leave the plant. Therefore, NIBCO cannot certify valves produced in the Nacogdoches plant to be 100% silicone free.

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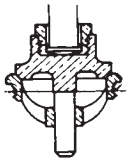
# Iron Valve Options and Accessories
# Seating, Packing and Gasket Materials

## Iron Valve Seating Material

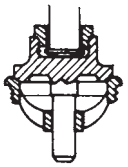
**Material:** **Bronze**
Max. Pressure: 250 SWP/500 CWP
Max. Temperate: 450°F
Service: Steam-Water, Oil, and Gas. Standard on all NIBCO® Iron Body Valves unless otherwise specified.



**Material:** **PTFE**
Max. Pressure: 250 SWP/500CWP
Max. Temperature: 450°F
Service: Oxygen, steam, and all services where the media being handled is not corrosive to the metallic parts of the valve. Standard on 2½" and 3" Automatic Stop Check.

**NOTE: ASME B 31.1 Boiler and Pressure Vessel Code limits non-metallic seats to 150 PSI steam service.**

**Material:** **Iron**
Max. Pressure: 200 CWP
Max. Temperature: 250°F
Service: Used where bronze trim is not permitted. Specify by adding (N) to Fig. No., i.e. F-000-N. Available for some NIBCO® Gate, Globe, Angle and Check Valves.



## Packing and Gasket Materials

1. Standard NIBCO® iron valves are furnished with synthetic fibers and graphite packing, along with synthetic fibre gaskets. Temperature rated to 550°F. Class 250 iron valves are furnished with PTFE braided packing and reinforced graphite gaskets. For other special packing and gaskets, consult factory.
2. Alloy Iron Valves are furnished with PTFE braided packing and synthetic fibre gaskets.
3. Graphite packing and gaskets optional on some NIBCO Iron Valves. Consult factory.

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# Iron Valve Options and Accessories
# Operating Nut, Position Indicator, Sprocket Rims

## Square Operating Nut

The square operating nut can be substituted for the regular handwheel when an NRS (619 & 639) valve is to be installed in an inaccessible location. It may be operated by a key or a wrench. A directional arrow indicating "open" is cast on top of the nut. All square operating nuts have a standard 2" square which facilitates opening and closing the valve with a square socket wrench as used by the Water Works. Material: Cast Iron ASTM A126 Class B. Field retrofit is standard. Some factory installed versions are available.

## Position Indicator

For non-rising stem (2"–12") metal seated, (not resilient wedge,) iron body gate valves. Indicates whether it is open, partly open or closed by the position of the needle which moves as the valve is operated. Field installed.
Ordering Information: Specify size and figure number of the valve to be fitted.

## Adjustable Sprocket

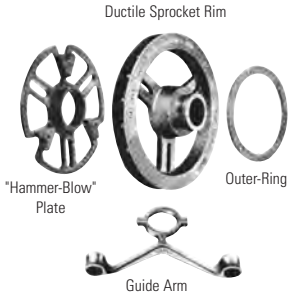
The Adjustable Sprocket Rim will provide for remote operation of gate, globe and angle valves in high, normally out-of-reach locations. Attaches to valve wheel for instant valve open/close response. Sprocket rim made from cast iron, chain guide is malleable iron. When ordering, specify either the sprocket and chain number, or the NIBCO® valve figure number and size. The chain length must also be specified.

| Size | Diameter of Sprocket Wheel (In.) | Weight (Lbs.) | O.D. of Valve Wheels Rim Will Fit | Chain Size | Chain Weight per 100' (Lbs.) |
|---|---|---|---|---|---|
| 0 | 4.00 | 2 | 2–4 | 2 | 10.00 |
| 1 | 5.88 | 4 | 4⅛–5⅞ | 1/0 | 17.50 |
| 1½ | 7.50 | 5 | 6–7½ | 1/0 | 17.50 |
| 2 | 9.00 | 8 | 7¾–9 | 1/0 | 17.50 |
| 2½ | 12.50 | 15 | 9¼–12½ | 4/0 | 30.00 |
| 3 | 15.50 | 21 | 12¾–15½ | 4/0 | 30.00 |
| 3½ | 19.00 | 25 | 15¾–19 | 4/0 | 30.00 |
| 4 | 22.00 | 34 | 19¼–22 | 5/0 | 35.00 |
| 4½ | 26.00 | 38 | 22¼–26 | 5/0 | 35.00 |
| 5 | 30.00 | 46 | 26¼–30 | 5/0 | 35.00 |

## Hammer-Blow Sprocket

The Adjustable Hammer-Blow Sprocket Rim is for use with hard-to-operate gate, globe and angle valves in overhead locations. The Hammer-Blow plate and rim are made of tough, shock resistant ductile iron to withstand heavy, valve releasing impact. The chain guide is malleable iron. When ordering, specify the sprocket number, chain number and length, or the NIBCO valve figure number, size and the chain length.

| Ductile Rim Guide with Hammer Blow Complete | Diameter of Sprocket Wheel (In.) | Weight (Lbs.) | Diameter of Valve Wheels Rim Will Fit | Chain Size | Chain Weight per 100' (Lbs.) |
|---|---|---|---|---|---|
| 2 | 9.00 | 13 | 7¾–9 | 1/0 | 17.50 |
| 2½ | 12.50 | 22 | 9¼–12½ | 4/0 | 30.00 |
| 3 | 15.50 | 30 | 12¾–15½ | 4/0 | 30.00 |
| 3½ | 19.00 | 35 | 15¾–19 | 4/0 | 30.00 |
| 4 | 22.00 | 55 | 19¼–22 | 5/0 | 35.00 |
| 4½ | 26.00 | 78 | 22¼–26 | 5/0 | 35.00 |
| 5 | 30.00 | 78 | 26¼–30 | 5/0 | 35.00 |




## Sprocket Rim Selection Guide

| | #1½ | #2 | #2½ | #3 | #3½ | #4 | #4½ | #5 |
|---|---|---|---|---|---|---|---|---|
| Fig. F-617-O Size Valve Rim will fit | | 2, 2½, 3 | 4, 5, 6 | 8 | 10, 12 | | 14, 16, 18 | 20, 24 |
| Fig. F-619 Size Valve Rim will fit | 2, 2½ | 3 | 4, 5, 6 | 8 | 10, 12 | | 14, 16 | |
| Fig. F-667-O Size Valve Rim will fit | | 2, 2½, 3 | 3, 4, 5 | | 6, 8 | 10, 12 | | |
| Fig. F-669 Size Valve Rim will fit | 2 | 2½ | 3, 4, 5 | | 6, 8, 10 | 12 | | |

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# Iron Valve Options and Accessories
# Stem Extensions

## Stem Extension

Stem extensions are designed to permit remote operation of gate, globe or angle valves by providing an extension to the valve stem long enough to reach from the valve to the desired remote operating location.

The extension consists of a length of steel tube with a coupling on one end to attach to the valve, and a coupling on the other end to attach to a handwheel or some other type of operating device.

The stem extension is made to accept the handwheel from the valve to which it is being attached. Therefore, Extensions are not supplied with a handwheel unless it is special ordered.

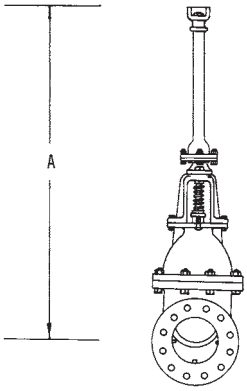
Orders or inquiries for stem extensions to be attached to a NIBCO® valve must include the dimension from the center line of the valve waterway to the top of the handwheel. This dimension is the "A" distance as shown below. Please specify separately coupling sets for iron valve extensions.

Adequate support must be provided for long stem extensions exceeding 12 ft. of "A" dimension. This support should be rigid and of sufficient strength to prevent "wind-up," deflection or transfer of abnormal loads to the valve. This is a custom-built requirement provided by the customer.

**Minimum "A" dimensions:**

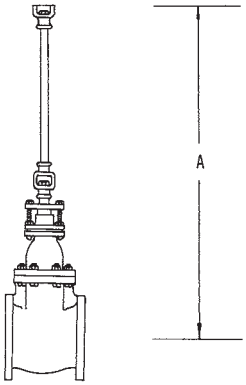
### Rising Stem Valve

| Valve Size | "A" | |
|---|---|---|
| | In. | mm. |
| 2" | 21.00 | 533 |
| 2½" | 21.50 | 546 |
| 3" | 23.50 | 597 |
| 4" | 28.00 | 711 |
| 5" | 31.00 | 787 |
| 6" | 35.00 | 889 |
| 8" | 45.00 | 1,143 |
| 10" | 53.50 | 1,359 |
| 12" | 63.00 | 1,600 |




### Non-Rising Stem Valve

| Valve Size | "A" | |
|---|---|---|
| | In. | mm. |
| 2" | 19.56 | 497 |
| 2½" | 21.06 | 535 |
| 3" | 21.94 | 557 |
| 4" | 24.25 | 616 |
| 5" | 25.50 | 648 |
| 6" | 29.50 | 749 |
| 8" | 35.06 | 891 |
| 10" | 38.88 | 988 |
| 12" | 44.56 | 1,132 |

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# Iron Valve Options and Accessories
# Floor Stands

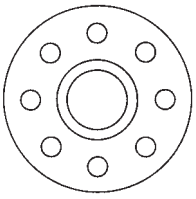
## Floor Stands

Floor stands are designed for operating gate, globe and angle valves that are installed in inaccessible places under a floor. For your convenience, they are available in two heights (20" and 32"). They are also available with an indicator so the position of the disc (wedge) can be read at a glance.

Without Indicator

Floor Stand Base Template

9" outside diameter
7½" bolt circle diameter
¾" hole diameter



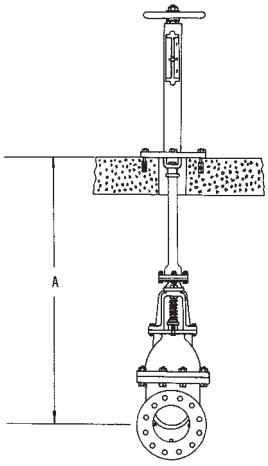
When ordering a floor stand – the dimension from the centerline of the valve waterway to the top of the floor must be furnished. This dimension is the "A" dimension pictured below. The NIBCO valve figure number and size must also be furnished and specify valve stem coupling for use with floor stand. Nothing extra is needed, except the floor mounting bolts which will vary depending on the floor construction.

With Indicator

**Minimum "A" dimensions:**

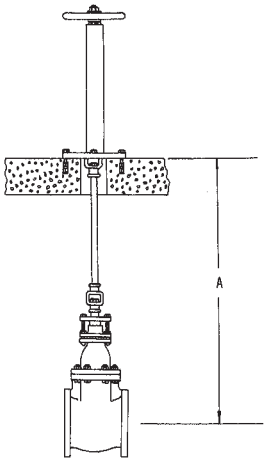
### Rising Stem Valve

| Valve Size | "A" | |
|---|---|---|
| | In. | mm. |
| 2" | 28.50 | 724 |
| 2½" | 29.00 | 737 |
| 3" | 31.00 | 787 |
| 4" | 36.00 | 914 |
| 5" | 39.00 | 991 |
| 6" | 43.00 | 1,092 |
| 8" | 53.00 | 1,346 |
| 10" | 60.50 | 1,537 |
| 12" | 70.00 | 1,778 |




### Non-Rising Stem Valve

| Valve Size | "A" | |
|---|---|---|
| | In. | mm. |
| 2" | 26.56 | 675 |
| 2½" | 28.06 | 713 |
| 3" | 28.75 | 730 |
| 4" | 31.19 | 792 |
| 5" | 32.44 | 824 |
| 6" | 36.31 | 922 |
| 8" | 42.69 | 1,084 |
| 10" | 45.88 | 1,165 |
| 12" | 52.06 | 1,322 |

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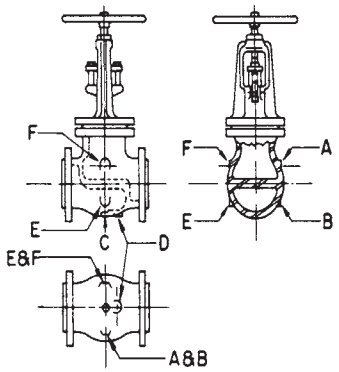
# Iron Valve Options and Accessories
# Tapping, Boss Locations, By-Passes*

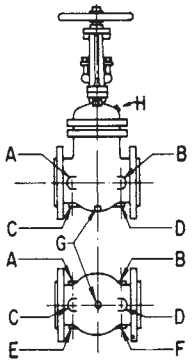
## Boss Locations

All NIBCO® iron valves are available with tapping for drain and special tapping. Boss locations and symbols and tapping procedures are in accordance with MSS By-Pass and Drain Connection Standard SP-45. All tappings are plugged at no extra charge. When Bosses are ordered tapped, the standard size of tapping is in accordance with the following table taken from MSS Specification SP-45, table 1.

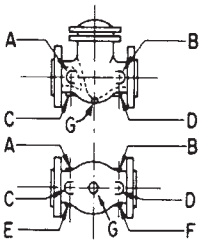
| Size of valve (In.) | 2 | 2½ | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size of Drain Tapping (In.) | | | | | | | | | | | | | | |
| Series A (steam) | ½ | ½ | ½ | ½ | ¾ | ¾ | ¾ | 1 | 1 | 1 | 1 | 1 | 1 | 1 |



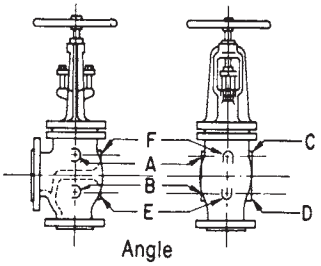
Globe



Gate



Check



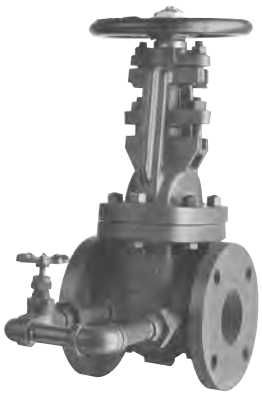
Angle

## By-Passes*

A By-Pass can be used to equalize pressure at inlet and outlet before opening main valve; facilitates easy valve operation. Can also be used for preheating outlet lines and eliminate damage from too fast expansion. The built up type By-Pass is available on all NIBCO iron valves and is attached in accordance with MSS By-Pass and Drain Connection Standard SP-45. The By-Pass valve used on standard iron valves is a globe valve. Specify by adding (Z) to Fig. No, i.e. F-000-Z.

| Main Valve Size (In.) | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| By-Pass Valve Size (In.) | ½ | ¾ | ¾ | ¾ | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Sizes of By-Pass valves on NIBCO® Iron Gate, Globe, Angle and regular Swing Check Valves conform to MSS Specification SP-45, Table II, Series A for steam service.



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***By-Pass not available on F607-OTS**

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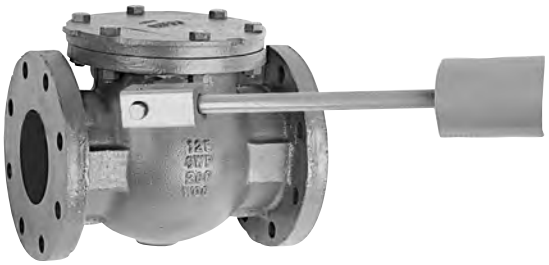
# Iron Check Valve Options and Accessories
# Lever and Weight/Spring (factory installed only)

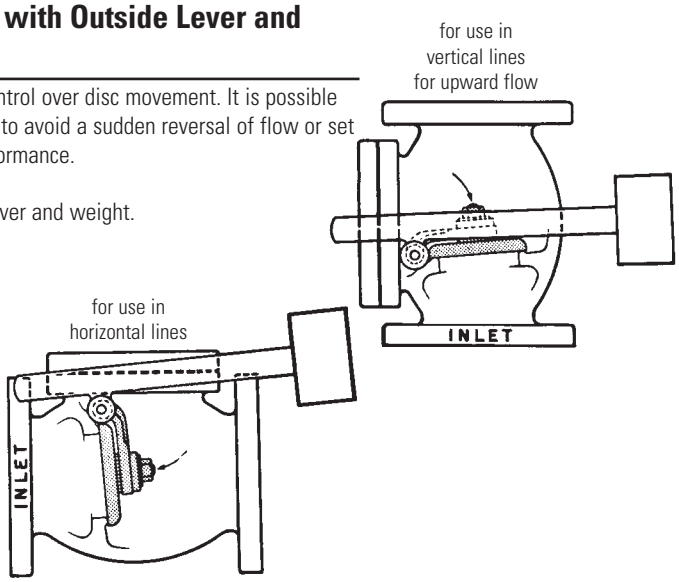
## Iron Body Swing Check Valves are available with Outside Lever and Weight or Lever and Spring

The lever and weight arrangement is used to maintain exterior control over disc movement. It is possible to assist the disc to close rapidly where quick action is necessary to avoid a sudden reversal of flow or set the lever and weight at any position to get desired operating performance.

Illustrated below are some commonly accepted positions of the lever and weight.



Lever and weight mounted to assist the disc in closing.




The lever and weight is mounted on the right side of the valve when facing the inlet.
Available on Figure no. F-918 in sizes 2½"–12".

Lever and spring provides more positive control in closing the disc.
Tension of the spring may be adjusted to control the pressure against the disc.

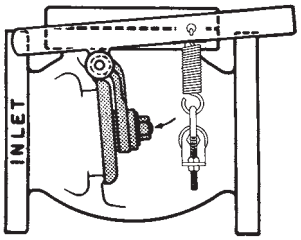



Fig. No. F-918-BL&S

**Silicone lubricant is used in production of butterfly, flanged steel ball valves, and iron check valves at the Blytheville, Arkansas, Plant**

Multi-turn Iron Valves: Gate, Globe, Angle and Check

The silicone used is in the form of grease, and is applied to the seat.

High Performance butterfly valves do **NOT** use silicone in assembly.

**NOTE:** Valves that are assembled and tested without silicone lubricants in this plant have a potential exposure to air-born silicone as well as during shipping after they leave the plant. Therefore, NIBCO cannot certify valves produced in the Blytheville plant to be 100% silicone free.

**Special Ordered Check Valves:**

We will, upon request, assemble check valves that are described as "Assembled-Dry". These valves are assembled **NOT** using the silicone grease.

NIBCO® Check Valves may be installed in both horizontal and vertical lines with upward flow or in any intermediate position. They will operate satisfactorily in a declining plane (no more than 15°).

**WARNING: Do not use for reciprocating air compressor service.**

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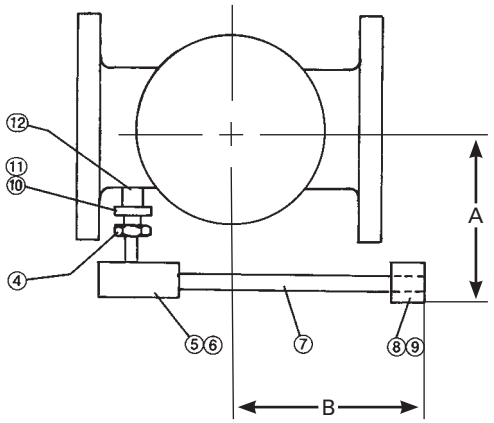
# Iron Check Valve Options and Accessories
# Lever and Weight/Spring Parts • Gear Operators
## (factory installed only)

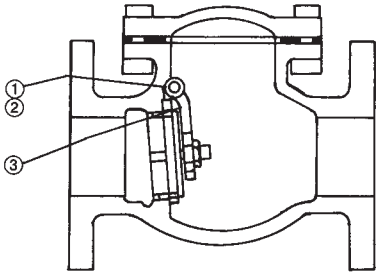
### Parts for Iron Body Swing Check Valves with Outside Lever and Weight or Lever and Spring

| Parts for Lever and Weight (F-918-BL&W) | | | Qty. |
|---|---|---|---|
| *1 | Hanger and Spindle Key | Steel | 1 |
| *2 | Hanger Pin | Brass ASTM B16 | 1 |
| *3 | Hanger | Ductile Iron | 1 |
| *4 | Pack Nut | Brass | 1 |
| *5 | Coupling | Steel | 1 |
| *6 | Coupling Set Screw | Steel | 2 |
| 7 | Lever | Steel | 1 |
| 8 | Weight | Steel | 1 |
| 9 | Weight Set Screw | Steel | 2 |
| *10 | Pack Gland | Zinc-Plated Powdered Iron | 1 |
| *11 | Packing Rope | Non-Asbestos Fibers | 1 |
| *12 | Stuffing Box | Brass ASTM B16 | 1 |
| *13 | Coupling and Lever Spring Pin | Steel | 1 |

***Parts common to both F-918-BL&W and F-918-BL&S.**




| Parts for Lever and Spring (F-918-BL&S) (not pictured) | | Qty. |
|---|---|---|
| Bracket Spacer | Steel 1020 | 1 |
| Bracket | Steel | 1 |
| Bracket Bolt | Steel | 2 |
| Eye Bolt | Steel | 1 |
| Eye Bolt Nut | Steel | 2 |
| Hanger and Spindle Key | Steel | 1 |
| Lever | Steel | 1 |
| Spring | Steel | 1 |



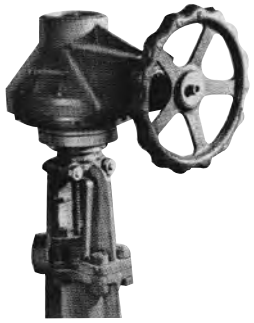

### Gear Operators

Gearing is applied to valves to provide ease of operation.

Bevel Gears are the most versatile in that they have good efficiency. Gears are weatherproofed and Babbit® sprockets may be applied.

When ordering gear operators, always provide the following information:

1. Valve size
2. Figure number
3. Pressure of media
4. Temperature of media



| F918-LW / F938-LW | | |
|---|---|---|
| **VALVE SIZE** | **A** | **B** |
| 2½" | 8" | 9¾" |
| 3" | 8" | 9½" |
| 4" | 8" | 14¼" |
| 5" | 8¼" | 14" |
| 6" | 9¼" | 14" |
| 8" | 11½" | 16" |
| 10" | 12½" | 17½" |
| 12" | 15¼" | 17" |

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# Engineering Data Index

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**Chemical Compatibility**

Please consult the most current edition of the NIBCO Chem-Guide for recommendations regarding chemical compatibility of material exposure to specific media and media-treatment additives. The NIBCO Chem-Guide is a general guide on the topic of chemical compatibility and is by no means an exhaustive resource on the subject. Ultimately, proper material selection is the responsibility of the installer and/or end-user, taking into account all aspects of a system's design and intended use.

**Galvanic Potential in Piping Systems**

Galvanic corrosion or dissimilar metal corrosion is an electrochemical process that is created through the electrical interaction of two different metals under the influence of a conductive media (i.e. an electrolyte). An electrolytic cell, much like a battery, is generated by these dissimilar metals using water as the electrolyte. The electrical charge, developed within the electrolytic cell, drives a preferential attack on the more electrically active metal with the water acting as the recipient of the discarded metal ions. Such galvanic attack is often encountered in service where iron or steel components are installed, and later corrode, in a largely copper piping system. Please consult NIBCO Technical Bulletin NTB-0714-01 Dielectric Products Relative to Electrolysis and Galvanic Corrosion.

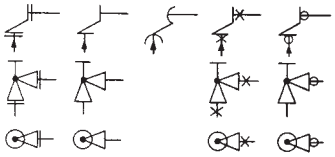
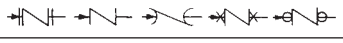
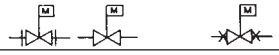
# Valve Terms and Piping Symbols

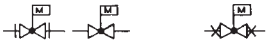
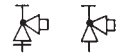
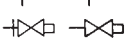
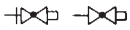
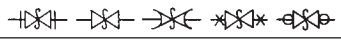
## Common industry terms and abbreviations

| | |
|---|---|
| AC | Alternating Current |
| ALL IRON | All-Iron Construction |
| AMER STD | American Standard |
| AMS | Aeronautical Material Specifications of the Society of Automotive Engineers |
| APPROX | Approximate |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society of Testing Materials |
| ATM | Atmosphere |
| BB | Bolted Bonnet |
| BLR | Boiler |
| B/M | Bill of Material |
| BTU | British Thermal Unit(s) |
| C | Degree Centigrade |
| CxC | Copper to Copper |
| CDA | Copper Development Association |
| COND | Condenser |
| COP | Copper |
| CSA | Canadian Standards Association |
| CV | Check Valve |
| CWP | Cold Working Pressure |
| CYL | Cylinder |
| DC | Direct Current |
| DD | Double Disc |
| EXP VLV | Expansion Valve |
| F | Degree Fahrenheit |
| FF | Flat Face |
| FxF | Face to Face |
| FLG | Flanged End |
| FM | Indicates product has been approved by Factory Mutual Laboratories |
| F/S | Factor of Safety |
| FSPS | Female Standard Pipe Size |
| FT LB | Foot Pound |
| GPH | Gallons Per Hour |
| GPM | Gallons Per Minute |
| IBBM | Iron Body, Bronze Mounted |
| IN LB | Inch-pound |
| IPS | Iron Pipe Size |
| MSS | Manufacturers Standardization Society of the Valve and Fitting Industry |
| NEC | National Electrical Code |
| NPT | American Standard Taper Pipe Thread |
| NRS | Non-Rising Stem |
| OD | Outside Diameter |
| OS&Y | Outside Screw and Yoke |
| PNEU | Pneumatic |
| PRESS | Pressure |
| PRV | Pressure Reducing Valve |
| PSI | Pounds Per Square Inch |
| PSIA | Pounds Per Square Inch Absolute |
| PSIG | Pounds Per Square Inch Gage |
| RECIRC | Recirculate(d) |
| RF | Raised Face |
| RPM | Revolutions per Minute |
| RS | Rising Stem |
| S.A.E. | Society of Automotive Engineers |
| SB | Screw-in Bonnet |
| SE | Screwed (Threaded) End |
| SJ | Solder Joint |
| SPEC | Specification |
| STD | Standard |
| SWP | Steam Working Pressure |
| TEMP | Temperature |
| TRIM | Term designating certain valve parts such as discs, seat rings, stems, and repacking seat bushings |
| UB | Union Bonnet |
| UL | Indicates product has been approved by Underwriter's Laboratories, Inc. |
| VAC | Vacuum |
| VOL | Volume |
| WOG | Water, Oil, Gas Working Pressure |
| WWP | Water Working Pressure |

# Valve Terms and Piping Symbols, cont.

## Piping Symbols

| | Flanged | Threaded | Bell & Spigot | Welded | Soldered |
|---|---|---|---|---|---|
| 1 Angle Valve |  | | | | |
| 1.1 Check | | | | | |
| 1.4 Globe (elevation) | | | | | |
| 1.5 Globe (plan) | | | | | |
| 1.6 Hose Angle | Same as Symbol 9.1 | | | | |
| 2. Automatic Valve | | | | | |
| 2.1 By-Pass | | | | | |
| 2.2 Governor-Operated | | | | | |
| 2.3 Reducing | | | | | |
| 3. Check Valve | | | | | |
| 3.1 Angle Check | Same as symbol 1.1 | | | | |
| 3.2 (straight way) |  | | | | |
| 4. Cock | | | | | |
| 5. Diaphragm Valve | | | | | |
| 6. Float Valve | | | | | |
| 7. Gate Valve | | | | | |
| 7*.1 | | | | | |
| 7.4 Motor-Operated |  | | | | |

| | Flanged | Threaded | Bell & Spigot | Welded | Soldered |
|---|---|---|---|---|---|
| 8. Globe Valve | | | | | |
| 8.1 | | | | | |
| 8.2 Angle Globe | Same as Symbols 1.4 & 1.5 | | | | |
| 8.3 Hose Globe | Same as Symbol 9.3 | | | | |
| 8.4 Motor-Operated |  | | | | |
| 9. Hose Valve | | | | | |
| 9.1 Angle |  | | | | |
| 9.2 Gate |  | | | | |
| 9.3 Globe |  | | | | |
| 10. Lockshield Valve | | | | | |
| 11. Quick-Opening Valve | | | | | |
| 12. Safety Valve |  | | | | |
| 13. Stop Valve | Same as Symbol 7.1 | | | | |
| 14. Tee | | | | | |
| 14.7 Side Outlet (outlet down) | | | | | |
| 14.8 Side Outlet (outlet up) | | | | | |
| 15. Union | | | | | |

***Also used for general STOP VALVE symbol when amplified by specification.**

# Properties of Valve Materials

| | ALLOY | ASTM NO. | OTHER ALLOY DESIGNATION | NOMINAL OR MAXIMUM CHEMICAL COMPOSITION AL | CARBON C | CHROME Cr | COBALT Co | COPPER Cu | IRON Fe | LEAD Pb | MANGA-NESE Mn | MOLYB-DENUM Mo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bronze & Brass | Commercial Aluminum 380 | SC 84 A (modified) | UNS A38000 | 87.0 | | | | 1.0 | 1.3 | | .35 | |
| | Free Cutting Brass | B 16 | UNS C36000 | | | | | 61.5 | | 3.0 | | |
| | Navy "M" (Steam Bronze) | B 61 | UNS C92200 | .005 | | | | 88.0 | .25 | 1.5 | | |
| | Composition Bronze (Ounce Metal) | B 62 | UNS C83600 | .005 | | | | 85.0 | .30 | 5.0 | | |
| | Copper-Silicon Alloy B | B 98/B 99 | UNS C65100 | | | | | 96.0 | .8 | .05 | .7 | |
| | Forging Brass | B 124 | UNS C37700 | | | | | 60.0 | .3 | 2.0 | | |
| | Forging Brass | B 283 | UNS C37700 | | | | | 58.0 | .3 | 2.5 | | |
| | Brass Wire (Red Brass) | B 134 | UNS C23000 | | | | | 85.0 | .05 | .05 | | |
| | Leaded Red Brass | B 140 | UNS C31400 | | | | | 89.0 | .10 | 1.9 | | |
| | Aluminum Bronze (Cast) | B 148 | UNS C95400 | 11.0 | | | | 85.0 | 4.0 | | | |
| | Aluminum Bronze (Rod) | B 150 | UNS C64200 | 7.0 | | | | 91.0 | .30 | .05 | .10 | |
| | Silicon Red Brass | B 371 | UNS C69400 | | | | | 81.5 | .20 | .30 | | |
| | Leaded Semi-Red Brass | B584 | UNS C84400 | .005 | | | | 81.0 | .40 | 7.0 | | |
| | Leaded Red Brass | | UNS C84500 | .005 | | | | 78.0 | .40 | 7.0 | | |
| | Leaded Nickel Bronze | B584 | UNS C97600 | | | | | 64.0 | | 4.0 | | |
| Copper | Copper (Wrot) | B 75 | UNS C12200 | | | | | 99.9 | | | | |
| Iron | Gray Iron | A 126 | Class B | | | | | | | | | |
| | 3% Ni Gray Iron | A 126 (modified) | Class B | | | | | | | | | |
| | Austenitic Gray Iron (Ni-Resist) | A 436 | Type 2 | | 3.00 | 2.0 | | .5 | | | 1.0 | |
| | Ductile Iron (Ferritic) | A 395 | | | 3.20 | | | | | | | |
| | Austenitic Ductile Iron (Ductile) (Ductile) (Ni-Resist) | A 536 65-45-12 A 536 80-55-06 A 439 D2C | | | 2.9 | .5 | | | | | 2.4 | 1.0 |

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| NOMINAL OR MAXIMUM CHEMICAL COMPOSITION | | | | | | | | NOMINAL PHYSICAL PROPERTIES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NICKEL Ni | PHOS P | SILICON Si | SULFUR S | TIN Sn | TITAN-IUM Ti | TUNG-STEN W | ZINC Zn | TENSILE STRENGTH Psi | YIELD STRENGTH Psi | % ELONGATION | HARDNESS |
| .50 | | 12.0 | | .15 | | | .50 | 42,000 | 19,000 | 3.5 | |
| | | | | | | | 35.5 | 50,000 | 20,000 | 15 | 75 HRB |
| 1.0 | .05 | .005 | .05 | 6.0 | | | 4.5 | 34,000 | 16,000 | 22 | 65 HB *500 kg |
| 1.0 | .05 | .005 | .08 | 5.0 | | | 5.0 | 30,000 | 14,000 | 20 | 60 HB 500 kg |
| | | 1.6 | | | | | 1.5 | 86,000** | 20,000 | 11 | 65 HRB |
| | | | | | | | 38.0 | 52,000 | 20,000 | 45 | 80 HRB |
| | | | | | | | 38.0 | 52,000 | 20,000 | 45 | 78 HRB |
| | | | | | | | 15.0 | 56,000 | | | 60 HRB |
| .7 | | | | | | | 9.1 | 50,000 | 30,000 | 7 | 60 HRB |
| | | | | | | | | 75,000 | 30,000 | 12 | 170 HB *3000 kg |
| .25 | | 2.0 | | .20 | | | .50 | 90,000 | 45,000 | 9 | 80 HRB |
| | | 4.0 | | | | | 14.5 | 80,000 | 40,000 | 15 | 85 HRB |
| | .02 | .005 | .08 | 3.0 | | | 9.0 | 29,000 | 13,000 | 18 | 55 HB *500 kg |
| 1.0 | .02 | .005 | .08 | 3.0 | | | 12.0 | 29,000 | 13,000 | 16 | 55 HB *500 kg |
| 20.0 | | | | 4.0 | | | 8.0 | 40,000 | 17,000 | 10 | 80 HB |
| | .02 | | | | | | | 36,000 | 30,000 | 25 | 45 T |
| | .75 | | .15 | | | | | 31,000 | | | 195 HB |
| 3.00 | .75 | | .15 | | | | | 31,000 | | | 195 HB |
| 20.0 | | 2.0 | .12 | | | | | 25,000 | | | 118 HB |
| | .08 | 2.50 | | | | | | 60,000 | 40,000 | 18 | 167 HB |
| | .08 | 2.50 | | | | | | 65,000 | 45,000 | 12 | 160 HB |
| | .08 | 2.50 | | | | | | 80,000 | 55,000 | 6 | 160 HB |
| 24.0 | .08 | 3.0 | | | | | | 58,000 | 28,000 | 20 | 146 HB |

**Load Applied During Testing*
***Allowable Range is 75,000 to 95,000*

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# Properties of Valve Materials

| | ALLOY | ASTM NO. | OTHER ALLOY DESIGNATION | NOMINAL OR MAXIMUM CHEMICAL COMPOSITION AL | CARBON C | CHROME Cr | COBALT Co | COPPER Cu | IRON Fe | LEAD Pb | MANGA-NESE Mn | MOLYB-DENUM Mo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stainless Steel | Wrot 304 | A 167 304 | UNS S30400 | | .08 | 19 | | | | | 2 | |
| | Cast 316 | A 351 CF8M | UNS S31600 | | .08 | 20 | | | | | 1.5 | 2.5 |
| | Cast 316 | A 743 CF16F | | | .16 | 20 | | | | | 1.5 | 1.5 |
| | Cast 316 | A 743 CF8M | | | .08 | 20 | | | | | 1.5 | 2.5 |
| | Wrot 316 | A 276 316 | UNS S31600 | | .08 | 17 | | | | | 2 | |
| | Cast 410 | A 217 CA 15 | | | .15 | 13 | | | | | 1 | 2.5 |
| | Forged 410 | A 182 F6A2 | | | .15 | 13 | | | | | 1 | |
| | Wrot 410 | A 276 410 | UNS S41000 | | .15 | 13 | | | | | 1 | |
| | Wrot 416 | A 582 | UNS S41600 | | .15 | 13 | | | | | 1.25 | |
| | Wrot 420 | A 276 420 | UNS S42000 | | .15 | 13 | | | | | 1 | |
| | Cast Alloy 20 | A 743 CN7M | | | .07 | 20 | | 3.5 | | | 1.5 | 2.5 |
| | Wrot Alloy 20 | B 473 20C63 | UNS N08020 | | .07 | 20 | | 3.5 | | | 2 | 2.5 |
| | Wrot 17-4PH | A 564 630 | UNS S17400 | | .07 | 16 | | 3.5 | | | 1 | |
| Steels | Forged Carbon Steel | A 105 | | | .35 | | | | | | 1 | |
| | Cast Carbon Steel | A 216 WCB | | | .3 | | | | | | 1.1 | |
| | Cast Carbon Steel | A 216 WCC | | | .25 | | | | | | 1.2 | |
| | 1¼ Cast Cr. Moly Steel | A 217 WC6 | | | .2 | 1.2 | | | | | .7 | .55 |
| | Cast Cr. Moly Steel | A 217 C5 | | | .2 | 5 | | | | | .55 | .55 |
| | Cast Low Carbon Steel | A 352 LCB | | | .3 | | | | | | 1.0 | |
| | Nickel-Low Carbon Steel | A 352 LC2 | | | .25 | | | | | | .65 | |
| Trim Steels | B-7 Alloy Steel Studs | A 193 B7 | | | .4 | 1 | | | | | .85 | .2 |
| | 304 SS Nuts | A 194 GR8 | | | .08 | 19 | | | | | 2 | |
| | 2-H Alloy Steel Nuts | A 194 2H | | | .4 | | | | | | | |
| | Reg. Steel Bolting | A 307 Gr. A | | | .29 | | | | | | 1.2 | |
| | Steel Bolting | A 449 | | | .4 | | | | | | .6 | |
| | 304SS Bolting | A 493 304 | UNS S30400 | | .08 | 19 | | | | | 2 | |
| | Eyebolts | A 489 | | | .48 | | | | | | 1.0 | |
| | Gland Nuts | A 563 Gr. A | | | .37 | .55 | | .35 | | | 1.0 | |
| | H/W Nuts | A 108 1020 | UNS G10200 | | .20 | | | | | | .45 | |
| | Swing Bolt Pin | A 108 1212 | UNS G12120 | | .13 | | | | | | .85 | |
| | Yoke Bushing Caps | A108 12L14 | | | .15 | | | | | .25 | 1.0 | |
| | Seat Ring Base | A 519 1026 | | | .25 | | | | | | .75 | |
| Monel H.F. | (Trademark Materials like, Stellite 6*, Stoody 6, and Wallex 6) | | AWS 5.13 | | 1.25 | 29 | 55 | | 2.5 | | | |
| | Cast Monel | | QQ-N-288-E | .5 | .3 | | | 30 | 3.5 | | 1.5 | |
| | Wrought Monel (K-500) | | QQ-N-286-C1B | 3.0 | .1 | | | 24 | 2.0 | | 1.5 | |

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| NOMINAL OR MAXIMUM CHEMICAL COMPOSITION | | | | | | | | NOMINAL PHYSICAL PROPERTIES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NICKEL Ni | PHOS P | SILICON Si | SULFUR S | TIN Sn | TITAN-IUM Ti | TUNG-STEN W | ZINC Zn | TENSILE STRENGTH Psi | YIELD STRENGTH Psi | % ELONGATION | HARDNESS |
| 9 | .045 | 1.0 | .03 | | | | | 75,000 | 30,000 | 40 | 202 HB |
| 11 | .04 | 2.0 | .04 | | | | | 70,000 | 30,000 | 25 | |
| 11 | .04 | 2.0 | .04 | | | | | 70,000 | 30,000 | 30 | |
| 12 | .045 | 1.0 | .03 | | | | | 75,000 | 30,000 | 30 | |
| 12 | .045 | 1.0 | .03 | | | | | 75,000 | 30,000 | 30 | |
| 1 | .04 | 1.5 | .04 | | | | | 90,000 | 65,000 | 18 | |
| | .04 | 1.0 | .03 | | | | | 85,000 | 55,000 | 18 | 200/225 HB |
| .5 | .04 | 1.0 | .03 | | | | | 100,000 | 80,000 | 15 | |
| | .06 | 1.0 | .15 | | | | | 114,000 | 95,000 | 17 | 235 HB |
| | .04 | 1.0 | .03 | | | | | | | | 250/450 HB |
| 28 | .04 | 1.5 | .04 | | | | | 62,000 | 25,000 | 35 | |
| 35 | .045 | 1.0 | .035 | | | | | 85,000 | 35,000 | 30 | |
| 4 | .04 | 1.0 | .03 | | | | | 115,000 | 75,000 | 18 | 255 HB |
| | .04 | .035 | .05 | | | | | 70,000 | 36,000 | 22 | 187 HB |
| | .04 | .6 | .045 | | | | | 70,000 | 36,000 | 22 | |
| | .04 | .6 | .04 | | | | | 70,000 | 40,000 | 22 | |
| | .04 | .06 | .045 | | | | | | | | |
| | .04 | .75 | .045 | | | | | | | | |
| | .04 | .6 | .045 | | | | | 65,000 | 35,000 | 24 | |
| 2.5 | .04 | .6 | .045 | | | | | 70,000 | 40,000 | 24 | |
| | .035 | .25 | .04 | | | | | 125,000 | 105,000 | 16 | |
| 9 | .045 | 1.0 | .03 | | | | | | | | 126/300 HB |
| | .04 | | .05 | | | | | | | | 250/300 HB |
| | .04 | | .15 | | | | | 60,000 | | 18 | 121/241 HB |
| | .04 | | .05 | | | | | 120,000 | 92,000 | 14 | |
| 9 | .045 | 1.0 | .03 | | | | | 90,000 | | | |
| | .04 | .25 | .05 | | | | | 75,000 | 30,000 | 30 | |
| .35 | .04 | .2 | .05 | | | | | | | | |
| | .04 | | .05 | | | | | | | | 120/300 HB |
| | .10 | | .20 | | | | | | | | |
| | .07 | | .3 | | | | | | | | |
| | .04 | | .05 | | | | | 55,000 | 35,000 | 25 | |
| 3 | | | | | | 5 | | 105,000 | | 10 | 350 HB |
| 60 | | 1.5 | | | | | | 65,000 | 32,500 | 25 | 125/150 HB |
| 67 | | .5 | .01 | | .5 | | | 135,000 | 95,000 | 20 | 255 HB |

# Flow Data
# $C_v$ Values for Valves

**Liquid Flow:**

$$Q = C_v \sqrt{\frac{\Delta P}{S}} \quad \text{or} \quad \Delta P = S\left(\frac{Q}{C_v}\right)^2$$

where... Q = flow rate (gallons per minute)
ΔP = pressure drop across valve (psi)
S = specific gravity of media

This equation is good for turbulent flow and for liquids with viscosities near that of water.
(Cv is defined as the flow in GPM that a valve will carry with a pressure drop of 1.0 psi when the media is water at 60°F.) (The specific gravity of water is 1 (one). )

## Valve Size

| Size (mm.) | 4 | 8 | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 90 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Size (In.)** | **1/8** | **1/4** | **3/8** | **1/2** | **3/4** | **1** | **1 1/4** | **1 1/2** | **2** | **2 1/2** | **3** | **3 1/2** | **4** | **5** | **6** | **8** |
| **GATES** | | | | | | | | | | | | | | | | |
| S/T-29 | 0.5 | 2 | 4.9 | 9.1 | 22 | 40 | 65 | 95 | 175 | | | | | | | |
| S/T-111, 113, 131, 133 134, 136, 154, 174, 176 | — | 5.6 | 10.7 | 17.6 | 32 | 54 | 97 | 135 | 230 | 337 | 536 | 710 | 960 | 1,525 | 2,250 | |
| T/F-617, 619, 667, 669, 607, 609 F-637, 639 | | | | | | | | | 215 | 335 | 510 | 710 | 945 | 1,525 | 2,250 | 4,150 |
| **GLOBES** | | | | | | | | | | | | | | | | |
| S/T-211, 235, 256 275-Y | 0.61 | 1.16 | 2.2 | 3.64 | 6.65 | 11.1 | 20 | 28 | 48 | 70 | 111 | — | 198 | | | |
| T-275-B | — | 1.16 | 2.21 | 3.64 | 6.65 | 11.1 | 20 | 28 | 48 | 70 | 111 | | | | | |
| F-718, F-738, F-768 | | | | | | | | | 45 | 70 | 105 | — | 195 | 315 | 465 | 860 |
| **CHECKS** | | | | | | | | | | | | | | | | |
| S/T-413, 433, 473 (Swing) | — | 1.3 | 2.5 | 4.8 | 14.3 | 24 | 43 | 60 | 102 | 150 | 238 | 315 | 435 | 675 | 1,000 | |
| S/T-480 (Poppet) | — | — | 3.7 | 6.86 | 16.3 | 30 | 49 | 72 | 130 | | | | | | | |
| F-908 (Swing) | | | | | | | | | | 243 | 356 | — | 665 | 1,073 | 1,584 | 2,937 |
| T/F-918, 968, 938 (Swing) | | | | | | | | | 137 | 221 | 327 | — | 605 | 975 | 1,440 | 2,670 |
| F-910, 960 (Poppet) | | | | | | | | | | 110 | 155 | — | 278 | 431 | 625 | 1,115 |
| W-910, 960 (Poppet) | | | | | | | | | 66 | 88 | 130 | — | 228 | 350 | 520 | 900 |
| G-920-W, KG-900-W | | | | | | | | | 77 | 129 | 209 | — | 358 | 573 | 898 | 1,740 |
| W-920-W, KW-900-W | | | | | | | | | 76 | 161 | 224 | — | 400 | 648 | 1060 | 1,890 |
| **BALL** | | | | | | | | | | | | | | | | |
| F-510, 530 | — | — | — | 11 | 25 | 45 | — | 137 | 217 | — | 482 | — | 790 | — | 1,144 | 2,164 |
| F-515, 535 | — | — | — | 25 | 50 | 85 | — | 259 | 440 | 840 | 1,400 | — | 2,350 | — | 5,200 | 10,200 |
| F-565 | — | — | — | — | — | 75 | — | 235 | 400 | — | 1,180 | — | 2,040 | — | — | |
| T-560-BR/CS/S6 | — | 4 | 4 | 5 | 12 | 22 | 35 | 52 | 95 | — | — | | | | | |
| T-570 | — | — | — | 7 | 12 | 25 | 38 | 52 | 95 | — | — | | | | | |
| T/S-580 | — | — | — | 5.8 | 13.9 | 27 | 44 | 64 | 100 | — | — | | | | | |
| T/S-580-70 | — | — | — | — | — | — | 38.5 | 76 | 101.4 | 183 | 390 | | | | | |
| T/S-585-70 | — | 4.2 | 6.2 | 15.3 | 30.4 | 48.8 | 103 | 143 | 245 | — | — | | | | | |
| TM-585-70-66 | — | — | — | 15.3 | 30.4 | 48.8 | 103 | 143 | 245 | — | — | | | | | |
| AT-585-70-66 | — | — | — | — | — | — | — | — | — | 183 | — | | | | | |
| T-580-70-W3 | — | — | — | — | — | — | 21.6 | 38 | 48.5 | — | — | | | | | |
| T/S-585-70-W3 | — | — | — | 6 | 12 | 19.5 | — | — | — | — | — | | | | | |
| T-580 (CS-S6) | — | 6 | 12 | 15 | 23 | 36 | 44 | 64 | 114 | — | — | | | | | |
| T/S-590-Y | — | — | — | — | — | — | 44 | 64 | 100 | 183 | 390 | | | | | |
| T/S-595-Y | — | 5.9 | 11.4 | 18.7 | 34 | 57 | 103 | 143 | 245 | 310 | — | | | | | |
| TM/KM-595 (CS-S6) | — | 6 | 12 | 19 | 37 | 64 | 103 | 143 | 245 | — | — | | | | | |
| T/K-595 (CS-S6) | — | 6 | 12 | 19 | 37 | 64 | 103 | 143 | 245 | — | — | | | | | |
| **BUTTERFLY** | | | | | | | | | | | | | | | | |
| LD/WD-1000, 2000, 3000 | | | | | | | | | 166 | 247 | 340 | — | 660 | 1,080 | 1,613 | 3,759 |
| GD-4765, 4775 FC-2700, FD-5700 | | | | | | | | | 145 | 195 | 290 | — | 600 | 930 | 1,600 | 3,450 |

NOTE: Flow data for angle valves use globe Cv times 1.25:
Bronze Angles — 311, 335, 375, 376-AP
Iron Angles — 818, 869, 831

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www.nibco.com

**Gas Flow:**

$$Q = 1360\ C_V \sqrt{\frac{\Delta P \times P_1}{ST}}$$

where . . . Q = gas flow (SCFH—std. cu. ft/hr)
S = specific gravity of gas (air = 1.0)
T = temp—degrees Rankine (°F + 460)
$\Delta P$ = pressure drop across valve (psi)
$P_1$ = upstream pressure (psia) absolute

**NOTE:** $\Delta P$ must be less than .5 $P_1$. (Flow is critical when $\Delta P$ is greater than .5 $P_1$.)

## Throttling Factors

**For throttling use with disc partially open. Multiply Cv by factor.**
**NOTE: Gate Valves are not throttled.**

| 250 | 300 | 350 | 400 | 450 | 500 | 600 | 750 | 900 |
|---|---|---|---|---|---|---|---|---|
| 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 6,700 | 9,925 | 13,800 | 18,375 | 23,600 | 29,600 | 43,570 | | |
| | | | | | | | | |
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| | | | | | | | | |
| 1,390 | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| 4,730 | 6,985 | | | | | | | |
| 4,300 | 6,350 | | | | | | | |
| 1,770 | 2,500 | 3400 | 4400 | 5600 | 6900 | 10000 | 15400 | 22400 |
| 1,450 | | | | | | | | |
| 3,180 | 4,950 | | | | | | | |
| 3,340 | 5,270 | 5,700 | 7,200 | 9,400 | 12,000 | 18,500 | 33,000 | 50,000 |
| | | | | | | | | |
| 3,507 | 5,516 | | | | | | | |
| 14,400 | 25,300 | | | | | | | |
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| | | | | | | | | |
| 5,300 | 7,969 | 11,917 | 16,383 | 21,705 | 27,908 | 43,116 | 63,328 | 86,375 |
| 5,800 | 8,950 | | | | | | | |

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 0 | 0.35 | 0.65 | 0.90 | 0.93 | 0.96 | 0.98 | 0.99 | 1.00 | 1.00 | 1.00 |
| 0 | 0.030 | 0.035 | 0.06 | 0.10 | 0.16 | 0.24 | 0.32 | 0.47 | 0.68 | 1.00 |
| 0 | 0.35 | 0.65 | 0.90 | 0.93 | 0.96 | 0.98 | 0.99 | 1.00 | 1.00 | 1.00 |

**WARNING**

The Fluid Flow factors contained herein are calculated values. They are, therefore, approximations and cannot be used for highly critical flow or pressure drop calculations. For very precise flow measurements, tests must be conducted on any valve mentioned within this catalog. Throttling of ball valves is not recommended when valves are less than 45° open.

| 0° | 10° | 20° | 30° | 40° | 45° | 50° | 60° | 70° | 80° | 90° |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| 0 | 0.01 | 0.05 | 0.16 | 0.3 | 0.37 | 0.45 | 0.58 | 0.71 | 0.87 | 1 |
| | | | | | | | | | | |
| 0 | 0.03 | 0.06 | 0.12 | 0.18 | 0.22 | 0.27 | 0.4 | 0.56 | 0.8 | 1 |
| 0 | 0.03 | 0.06 | 0.12 | 0.18 | 0.22 | 0.27 | 0.4 | 0.56 | 0.8 | 1 |

# Reference Specifications

NIBCO® valves are designed and manufactured to give maximum performance on recommended service at the lowest possible initial and upkeep cost. They also meet or exceed the following specifications developed through years of experience, research and many thousands of laboratory tests by technical researchers, producers, consumers, government agencies and universities.

**NOTE: WW-V-51, WW-V-54, WW-V-58 have been cancelled and replaced by the corresponding MSS Specifications.**

## BRONZE

Federal Specification WW-V-51e Class A, Type I Covers 125 lb. S.W.P. Globe Valves (MSS SP-80).

Federal Specification WW-V-51e Class A, Type II Covers 125 lb. S.W.P. Angle Valves (MSS SP-80).

Federal Specification WW-V-51e Class A, Type IV Covers 125 lb. S.W.P. Swing Check Valves (MSS SP-80).

Federal Specification WW-V-51e Class B, Type I Covers 150 lb. S.W.P. Globe Valves (MSS SP-80).

Federal Specification WW-V-51e Class B, Type II Covers 150 lb. S.W.P. Angle Valves (MSS SP-80).

Federal Specification WW-V-51e Class B, Type IV Covers 150 lb. S.W.P. Swing Check Valves (MSS SP-80).

Federal Specification WW-V-51e Class C, Type I Covers 200 lb. S.W.P. Globe Valves (MSS SP-80).

Federal Specification WW-V-54d Class A, Type I Covers 125 lb. S.W.P. Wedge Disc, Non-Rising Stem Gate Valves (MSS SP-80).

Federal Specification WW-V-51e Class C, Type II Covers 200 lb. S.W.P. Angle Valves (MSS SP-80).

Federal Specification WW-V-51e Class C, Type IV Covers 200 lb. S.W.P. Swing Check Valves (MSS SP-80).

Federal Specification WW-V-54d Class A, Type II Covers 125 lb. S.W.P. Wedge Disc, Rising Stem, Inside Screw Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class A, Type III Covers 125 lb. S.W.P. Double Disc, Rising Stem, Inside Screw Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class B, Type I Covers 150 lb. S.W.P. Wedge Disc, Non-Rising Stem Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class B, Type II Covers 150 lb. S.W.P. Wedge Disc, Rising Stem, Inside Screw Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class B, Type III Covers 150 lb. S.W.P. Double Disc, Rising Stem, Inside Screw Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class C, Type I Covers 200 lb. S.W.P. Wedge Disc, Non-Rising Stem Gate Valves (MSS SP-80).

Federal Specification WW-V-54d Class C, Type II Covers 200 lb. S.W.P. Wedge Disc, Rising Stem, Inside Screw Gate Valves (MSS SP-80).

Federal Specification WW-V-35b Covers 150 lb. S.W.P. Ball Valves.

## IRON

Federal Specification WW-V-58b Class 1, Type I Covers 125 lb. S.W.P. Wedge Disc, OS&Y, Screwed End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 2, Type I Covers 250 lb. S.W.P. Wedge Disc, OS&Y, Screwed End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 1, Type I Covers 125 lb. S.W.P. Non-Rising Stem, Inside Screw, Screwed End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 2, Type I Covers 250 lb. S.W.P. Non-Rising Stem, Inside Screw, Screwed End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 1, Type I Covers 125 lb. S.W.P. OS&Y, Flanged End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 2, Type I Covers 250 lb. S.W.P. OS&Y, Flanged End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 1, Type I Covers 125 lb. S.W.P. Non-Rising Stem, Inside Screw, Flanged End, Cast Iron Gate Valves (MSS SP-70).

Federal Specification WW-V-58b Class 2, Type I Covers 250 lb. S.W.P. Non-Rising Stem, Inside Screw, Flanged End, Cast Iron Gate Valves (MSS SP-70).

## STANDARDS–FOR INFORMATION PURPOSES ONLY

MSS SP-25 Standard Marking System for Valves, Fittings, Flanges and Unions.

MSS SP-45 Covers By-Pass and Drain Connections.

MSS SP-67 Covers Butterfly Valves of the Single Flange Type (Lug Wafer).

MSS SP-67 Covers Butterfly Valves of the Flangeless Type (Wafer).

MSS SP-70 Covers Cast Iron Gate Valves, Flanged and Threaded Ends.

MSS SP-71 Covers Cast Iron Swing Check Valves, Flanged and Threaded Ends.

MSS SP-72 Covers Ball Valves with Flanged or Butt-Welding Ends for general service.

MSS SP-80 Covers Bronze Gate, Globe, Angle and Check Valves.

MSS SP-85 Covers Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

MSS SP-110 Covers Ball Valves, Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

ASME Standard B1.1—The Unified Screw Threads Standard that covers manufacturing tolerances of screw threads.

ASME Standard B1.20.1—This standard controls NIBCO pipe threads.

ASME Standard B2.4—This standard controls NIBCO hose coupling screw threads.

ASME Standard B16.18—This standard controls NIBCO valve solder cups.

ASME Standard B16.1—Covers cast iron pipe flanges and flanged fittings (Class 125 and 250).

ASME Standard B16.10—Covers face-to-face and end-to-end dimensions of ferrous valves.

MILITARY Standard MIL-V-18436—Applies to bronze and iron check valves sizes 1/2" thru 12".

NIBCO Federal code No. is 12168. It has been assigned to NIBCO by the Defense Logistics Service Center, Battle Creek, Michigan. Used for coding NIBCO as spare parts for valves used on other equipment.

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# Marine Applications

## COAST GUARD

**CG190**

Now called "CIMDTINST - M16714.3"
"Equipment Lists"
"Items approved, certified or accepted under Marine Inspection and Navigation Laws."
NIBCO Valves, Fittings and Flanges are listed in this document.

**Code of Federal Regulations Title 46 Shipping Parts 41 to 69**

The Code of Federal Regulations is a codification of the general and permanent rules published in the Federal Regulations by the Executive Departments and Agencies of the Federal Government.

This regulation is constantly revised to reference the latest ANSI, ASTM & MSS Standards to which NIBCO conforms to when building products.

## NAVY

**APL, CID, NSN**

"Department of the Navy"
"Navy Ships Parts Control Center"
Mechanicsburg, PA
The Department of the Navy, when using standard commodity type valves, assigns APL-CID numbers to each individual valve manufactured by a company. Valves of the same figure number, but of different size get different CID numbers.

The (APL) Allowance Parts List, (CID) Code Identification Numbers and (NSN) National Stock Numbers are used by the Navy in the Parts Control Center to order replacement valves or parts for valves that are installed on board United States Navy vessels.

When a Navy vessel is being built, the ship yard doing the construction must apply to the Parts Control Center for CID numbers on all valves before the Navy will accept delivery of the vessel.

On many NIBCO valves, the CID and NSN numbers have been assigned. Consult NIBCO for more information.

## AMERICAN BUREAU OF SHIPPING

**Rules for Building**

The American Bureau of Shipping states in Article 36.15.1; All valves are to be constructed and tested in accordance with a recognized standard, such as ANSI, MSS or other, acceptable to the Bureau. They are to bear the trademark of the manufacturer legibly stamped or cast on the exterior of the valve, as well as the pressure rating class for which the manufacturer guarantees the valve will meet the requirements of the standards.

The following iron gate, globe and check valves are approved by ABS for marine service: F-617, F-619, F-637, F-639, F-718, F-738, F-918, and F-938 series.

**Manufacturers Federal Code: NIBCO - 12168**

## LLOYD'S REGISTER OF SHIPPING

NIBCO iron valves are approved by Lloyd's Register.

**Certificate No. NOS 9603021**

# Temperature Limits of Materials

## Rated Internal Working Pressures of Joints made with Copper Water Tube and Solder Type Fittings, PSI (Bar)

| Solder or Brazing Alloy Used in Joints | Service Temperature ° F | (° C) | Copper Water Tube K, L and M Nominal Sizes, In Inches (mm) Water A ¼" to 1" | 1¼" to 2" | 2½" to 4" | 5" to 8" | 10" to 12" | Saturated Steam LB (kg) All Sizes |
|---|---|---|---|---|---|---|---|---|
| 50- 50 Tin-Lead[B, G] | 100 | (38) | 200 (14) | 175 (12) | 150 (10) | 135 (9) | 100 (7) | 15[D] (6.8)[D] |
| | 150 | (66) | 150 (19) | 125 (8) | 100 (7) | 90 (6) | 70 (4) | |
| | 200 | (93) | 100 (9) | 90 (6) | 75 (5) | 70 (40) | 50 (3) | |
| | 250 | (121) | 85 (6) | 75 (5) | 50 (3) | 45 (3) | 40 (2) | |
| 95-5 Tin-Antimony[C] | 100 | (38) | 635 (43) | 560 (39) | 375 (26) | 340 (23) | 150 (10) | 15[D] (6.8)[D] |
| | 150 | (66) | 635 (43) | 560 (39) | 375 (26) | 340 (23) | 150 (10) | |
| | 200 | (93) | 630 (43) | 480 (33) | 375 (26) | 340 (23) | 140 (10) | |
| | 250 | (121) | 435 (30) | 330 (23) | 265 (18) | 245 (16) | 110 (7) | |
| Brazing Alloys, | 100-150-200 | (32-66-93) | [H] | [H] | [H] | [H] | [H] | 120[E] (54.4)[E] |
| Melting at or above | 250[F] | (121)[F] | [H] | [H] | [H] | [H] | [H] | |
| 1000° F (538°C) | 350 | (177) | [H] | [H] | [H] | [H] | [H] | |

The values in the above table are based on data in the National Bureau of Standards publications, "Building Materials and Structures Reports" BMS 58 and BMS 83.

[A] Including other non-corrosive liquids and gases.

[B] ASTM B 32, Alloy Grade Sn50.

[C] ASTM B 32, Alloy Grade Sb5.

[D] This pressure is determined by the temperature of saturated steam at 15 lb. (6.8 kg) pressure at 250°F (121°C).

[E] This pressure is determined by the temperature of saturated steam at 120 lb. (54.4 kg) pressure at 350°F (177°C).

[F] For service temperatures lower than 250°F (121°C), the solders as above may be used.

[G] The Safe Drinking Water Act Amendment of 1986 prohibits the use in potable water systems of any solder having a lead content in excess of 0.2%.

[H] Rated internal pressure is that of the tube being joined. While solders can be used, brazing alloys are recommended.

## Pressure/Temperature Ratings for Threaded Bronze Pressure Rated Valves‡

| Press. Class | | 125[2,3] | 150[3] | 200[3] | 300[3] |
|---|---|---|---|---|---|
| Temperature | | Thd. | Thd. | Thd. | Thd. |
| °F | °C | ASTM B 62 | | ASTM B 61 | |
| -20 to 150 | -28.8 to 65.5 | 200 | 300 | 400 | 600 |
| 200 | 93.3 | 185 | 270 | 375 | 560 |
| 250 | 121.1 | 170 | 240 | 350 | 525 |
| 300 | 148.8 | 155 | 210 | 325 | 490 |
| 350 | 176.6 | 140 | 180 | 300 | 450 |
| 400 | 204.4 | – | – | 275 | 410 |
| 406 | 207.7 | 125 | 150 | – | – |
| 450 | 232.2 | 120[1] | 145[1] | 250 | 375 |
| 500 | 260.0 | – | – | 225 | 340 |
| 550 | 287.7 | – | – | 200 | 300 |

[1] Some codes (i.e. ASME BPVC, SECTION 1) limit the rating temperatures of the indicated material to 406° F temperatures.

[2] Buna-N disc valves limited to 180° F temperatures.

[3] PTFE disc valves limited to 450° F temperatures.

[4] Solder end valves are limited by temperatures which affect the strength of the solder joint.

‡ Tables from MSS SP-80

## Pressure/Temperature Ratings for NIBCO® Gray Iron and Ductile Iron Valves

| [1]Temperature | | Gray Iron Class 125 200 WOG | | | Gray Iron Class 250 500 WOG | | Ductile Iron Class 150 |
|---|---|---|---|---|---|---|---|
| °F | °C | 2"-12" | 14"-24" | 30"-48" | 2"-12" | 14"-24" | 2"-12" |
| -20 to 100 | -28.8 to 37.7 | 200 | 150 | 150 | 500 | 300 | 285 |
| 150 | 65.5 | 200 | 150 | – | 500 | 300 | 243 |
| 200 | 93.3 | 190 | 135 | 115 | 460 | 280 | 235 |
| 225 | 107.2 | 180 | 130 | 100 | 440 | 270 | – |
| 250 | 121.1 | 175 | 125 | 85 | 415 | 260 | 225 |
| 275 | 135.0 | 170 | 120 | 65 | 395 | 250 | – |
| 300 | 148.8 | 165 | 110 | 50 | 375 | 240 | 215 |
| 325 | 162.7 | 155 | 105 | | 355 | 230 | – |
| 350 | 176.6 | 150 | 100 | | 335 | 220 | 210 |
| 375 | 190.5 | 145 | | | 315 | 210 | – |
| 400 | 204.4 | 140 | | | 290 | 200 | 200 |
| 425 | 218.3 | 130 | | | 270 | | – |
| *450 | 232.2 | 125 | | | 250 | | 185 |
| 500 | 260.0 | | | | | | 170 |
| 550 | 287.7 | | | | | | 155 |
| 600 | 315.5 | | | | | | 140 |
| 650 | 343.3 | | | | | | 125 |

The temperature shown for the corresponding rating shall be the metal temperature of the pressure retaining parts. It shall be assumed that the metal temperature will be the temperature of the contained fluid. Use of a pressure rating at a metal temperature other than that of the contained fluid shall be the responsibility of the user.

[1] Buna-N Disc Valves limited to 180° F or EPDM Disc Valves limited to 250° F.

* Maximum temperature for bronze trim or PTFE

*Visit our website for the most current information.*



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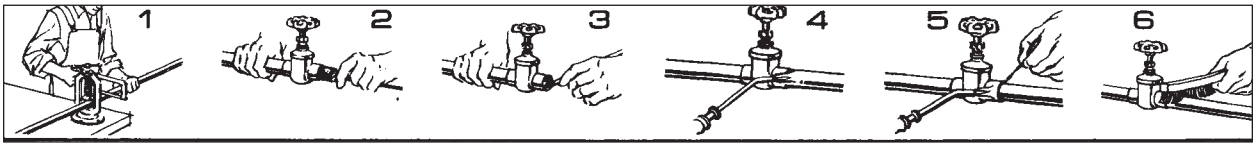
# Valve Installation Tips




**SOLDERING AND SILVER BRAZING**

Analyze the application to determine which valve is best suited for installations, keeping in mind the service for which the valve is recommended. Before installing the correct valve, review the installation instructions to prevent damage to the valve and to assure its maximum efficiency.

1. Cut tube end square. Ream, burr and size.
2. Use sand cloth or steel wire brush to clean both ends to a bright metal finish. Steel wool is *not* recommended.
3. Apply flux to outside of tube and inside of solder cup. Surfaces to be joined must be completely covered. Use flux sparingly.
4. Be sure that valve is fully open. Apply heat to tube first. Transfer as much heat as possible through tube into valve. Avoid prolonged heating of valve itself.

4a. Silver Brazing Method: Assemble parts to be brazed. If fluxed parts are allowed to stand, the water in the flux will evaporate, and dried flux is liable to flake off, exposing metal surfaces to oxidation. Assemble joint by inserting tube into socket hard against the stop. The assembly should be firmly supported so that it will remain in alignment during the brazing operation.

**NOTE:** On one-inch and larger valves, it is difficult to bring the whole joint up to temperature at one time. It will frequently be found desirable to use a double-tip torch to maintain the proper temperature over the larger area. A mild pre-heating of the whole socket area is recommended. Apply heat to parts to be joined. The preferred method is by oxy-acetylene flame. Heat tube first, beginning one inch from edge of valve. Sweep flame around tube in short strokes up and down at right angles to run of tube. To avoid burning through tube, the flame should be in continuous motion and not allowed to remain on any one point.

Apply flame to valve at base of socket. Heat uniformly, sweeping flame from valve to tube until flux on valve becomes quiet. Avoid excessive heating of valve.

When flux appears liquid and transparent on both tube and valve, start sweeping flame back and forth along axis of joint to maintain heat on parts to be joined, especially toward base of valve socket.

5. Use just enough solder: with wire solder, use 3/4" for a 3/4" valve, etc. If too much solder is used, it may flow past tube stop and clog sealing area. When joint is filled, a continuous run of solder or brazing alloy will be visible.

5a. Silver Brazing Method: Apply brazing wire or rod at point where tube enters valve socket. Keep flame away from rod or wire as it is fed into the joint. Move flame back and forth as alloy is drawn into joint. When the proper temperature is reached alloy will flow readily into space between tube outer wall and valve socket. When joint is filled, a continuous rim of brazing alloy will be visible.

6. Remove excess solder with small brush while plastic, leaving a fillet around end of valve as it cools.

**SILVER BRAZING**

The strength of a brazed joint does not vary appreciably with the different brazing materials, but depends to a large extent upon the maintenance of proper clearance between the outside of the tube and the valve socket. The interior dimensions of silver brazing valve sockets are machined to the closest tolerances and finished smooth to promote full capillary attraction.

**NOTE:** Care should be observed in cleaning and in removing residues of the cleaning medium. Attempting to braze a contaminated or improperly cleaned surface will result in an unsatisfactory joint. Silver brazing alloys will not flow over or bond to oxides. Oily or greasy surfaces repel fluxes, leaving bare spots which oxidize and result in voids and inclusions.

**THREADING**

Grit, dirt or any foreign matter accumulated in the pipe can hinder efficient valve operation and seriously damage vital valve parts. Thoroughly clean pipe internally with air or steam.

When threading pipe, gauge pipe threads for size and length to avoid jamming pipe against seat and disc. Thoroughly clean threaded end to remove any harmful steel or iron deposits. For a good joint, use PTFE tape or pipe dope. If pipe dope is used, apply sparingly on pipe threads, *never* on valve threads. Do not allow any pipe dope into valve body in order to avoid damage to disc and seat.

Before installation, check line of flow through valve so that valve will function properly. Close valve completely before installation. Apply wrench to hex next to pipe and guard against possible distortion. After installation of valve, support line; a sagging pipe line can distort valve and cause failure.

**FLANGED**

There are several steps to follow to make sure that a flanged joint will be properly assembled. First, clean the joint carefully. Then loosely assemble the joint by putting in the bottom two or three bolts. Then carefully insert the gasket into place. The bottom bolts will help locate the gasket and hold it in position. Then insert the rest of the bolts into place and tighten all of the bolts evenly—not in rotation, but by the cross-over method to load the bolts evenly and eliminate concentrated stresses. The bolts should be checked for tightness after an appropriate interval of use and retightened if necessary.

# Engineering Data
# Flange Dimensions

## Class 125 Bronze Flange Dimensions
Meets 125 lb. ASME/ANSI Standard

| Nominal Size | Dim. A Flange O.D. | Dim. B Bolt Circle | Dim. C Thickness of Flange | Dia. Bolt Hole | Dia. Bolt | No. Bolt Holes |
|---|---|---|---|---|---|---|
| ½ | 3.50 | 2.38 | .19 | .63 | .50 | 4 |
| ¾ | 3.88 | 2.75 | .19 | .63 | .50 | 4 |
| 1 | 4.25 | 3.13 | .25 | .63 | .50 | 4 |
| 1¼ | 4.63 | 3.50 | .25 | .63 | .50 | 4 |
| 1½ | 5.00 | 3.88 | .31 | .63 | .50 | 4 |
| 2 | 6.00 | 4.75 | .38 | .75 | .63 | 4 |
| 2½ | 7.00 | 5.50 | .38 | .75 | .63 | 4 |
| 3 | 7.50 | 6.00 | .44 | .75 | .63 | 4 |
| 3½ | 8.50 | 7.00 | .44 | .75 | .63 | 8 |
| 4 | 9.00 | 7.50 | .44 | .75 | .63 | 8 |
| 5 | 10.00 | 8.50 | .44 | .88 | .75 | 8 |
| 6 | 11.00 | 9.50 | .50 | .88 | .75 | 8 |
| 8 | 13.50 | 11.75 | .63 | .88 | .75 | 8 |
| 10 | 16.00 | 14.25 | .63 | 1.00 | .88 | 12 |
| 12 | 19.00 | 17.00 | .69 | 1.00 | .88 | 12 |

## Class 150 Bronze Flange Dimensions
Meets ASME/ANSI STD B16.24 and Federal Spec. WW-F-406

| Nominal Size | Dim. A Flange O.D. | Dim. B Bolt Circle | Dim. C Thickness of Flange | Dia. Bolt Hole | Dia. Bolt | No. Bolt Holes |
|---|---|---|---|---|---|---|
| ½ | 3.50 | 2.38 | .31 | .63 | .50 | 4 |
| ¾ | 3.88 | 2.75 | .34 | .63 | .50 | 4 |
| 1 | 4.25 | 3.13 | .38 | .63 | .50 | 4 |
| 1¼ | 4.63 | 3.50 | .40 | .63 | .50 | 4 |
| 1½ | 5.00 | 3.88 | .44 | .63 | .50 | 4 |
| 2 | 6.00 | 4.75 | .50 | .75 | .63 | 4 |
| 2½ | 7.00 | 5.50 | .56 | .75 | .63 | 4 |
| 3 | 7.50 | 6.00 | .63 | .75 | .63 | 4 |
| 3½ | 8.50 | 7.00 | .69 | .75 | .63 | 8 |
| 4 | 9.00 | 7.50 | .69 | .75 | .63 | 8 |
| 5 | 10.00 | 8.50 | .75 | .88 | .75 | 8 |
| 6 | 11.00 | 9.50 | .81 | .88 | .75 | 8 |
| 8 | 13.50 | 11.75 | .94 | .88 | .75 | 8 |

## Class 300 Bronze Flange Dimensions
Meets ASME/ANSI STD B16.24

| Nominal Size | Dim. A Flange Diam. | Dim. B Min. Flange Thickness | Dim. C Bolt Circle | Dim. F Bolt Hole Diam. | Bolt. Diam. | No. of[1] Bolts |
|---|---|---|---|---|---|---|
| ½ | 3.75 | .50 | 2.63 | .63 | .50 | 4 |
| ¾ | 4.63 | .53 | 3.25 | .75 | .63 | 4 |
| 1 | 4.88 | .59 | 3.50 | .75 | .63 | 4 |
| 1¼ | 5.25 | .63 | 3.88 | .75 | .63 | 4 |
| 1½ | 6.13 | .69 | 4.50 | .88 | .75 | 4 |
| 2 | 6.50 | .75 | 5.00 | .75 | .63 | 8 |
| 2½ | 7.50 | .81 | 5.88 | .88 | .75 | 8 |
| 3 | 8.25 | .91 | 6.63 | .88 | .75 | 8 |
| 3½ | 9.00 | .97 | 7.25 | .88 | .75 | 8 |
| 4 | 10.00 | 1.06 | 7.88 | .88 | .75 | 8 |
| 5 | 11.00 | 1.13 | 9.25 | .88 | .75 | 8 |
| 6 | 12.50 | 1.19 | 10.63 | .88 | .75 | 12 |
| 8 | 15.00 | 1.38 | 13.00 | 1.00 | .88 | 12 |

[1]When flanges are integral with fittings or valves, holes for bolts are drilled to straddle the center line.

Corresponding sizes of class 150 (ASME B16.24) flange diameters and drilling templates are the same as those of the American Class 125 Cast Iron Flange Standard (ASME B16.1) and of the American Class 150 Steel Flange Standard (ASME B16.5). Class 300 (ASME B16.24) flange diameters and drilling templates are the same as those of the American Class 250 Cast Iron Flange Standard (ASME B16.1) and of the American Class 300 Steel Flange Standard (ASME B16.5).

Full face gaskets extending to the flange face edge as given in American Standard Non-Metal Gaskets for Pipe Flanges ASME B16.21 are required. Metal gaskets should not be used.

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# Flange Dimensions

## Class 125 Cast Iron Flanges - ASME/ANSI Standard B16.1

**Mates with 150-lb. Steel Flanges ASME Standard B16.5**

**Dimension in Inches**

| Size | Diameter of Flange | Thickness of Flange | Diameter of Bolt Circle | Bolt Hole Diameter | Number of Bolts | Diameter of Bolts | *Length of Bolts |
|---|---|---|---|---|---|---|---|
| 2 | 6.00 | .63 | 4.75 | .75 | 4 | .63 | 2.25 |
| 2½ | 7.00 | .69 | 5.50 | .75 | 4 | .63 | 2.50 |
| 3 | 7.50 | .75 | 6.00 | .75 | 4 | .63 | 2.50 |
| 3½ | 8.50 | .81 | 7.00 | .75 | 8 | .63 | 2.75 |
| 4 | 9.00 | .94 | 7.50 | .75 | 8 | .63 | 3.00 |
| 5 | 10.00 | .94 | 8.50 | .88 | 8 | .75 | 3.00 |
| 6 | 11.00 | 1.00 | 9.50 | .88 | 8 | .75 | 3.25 |
| 8 | 13.50 | 1.13 | 11.75 | .88 | 8 | .75 | 3.50 |
| 10 | 16.00 | 1.19 | 14.25 | 1.00 | 12 | .88 | 3.75 |
| 12 | 19.00 | 1.25 | 17.00 | 1.00 | 12 | .88 | 3.75 |
| 14 | 21.00 | 1.38 | 18.75 | 1.13 | 12 | 1.00 | 4.25 |
| 16 | 23.50 | 1.44 | 21.25 | 1.13 | 16 | 1.00 | 4.50 |
| 18 | 25.00 | 1.56 | 22.75 | 1.25 | 16 | 1.13 | 4.75 |
| 20 | 27.50 | 1.69 | 25.00 | 1.25 | 20 | 1.13 | 5.00 |
| 24 | 32.00 | 1.88 | 29.50 | 1.38 | 20 | 1.25 | 5.50 |

*When bolting to steel flanges, longer bolts or stud may be required.

## Class 250 Cast Iron Flanges - ASME/ANSI Standard B16.1

**Mates with 300 lb. Steel Flanges ASME Standard B16.5**

**Dimension in Inches**

| Size | Diameter of Flange | Thickness of Flange | Diameter of Bolt Circle | Bolt Hole Diameter | Number of Bolts | Diameter of Bolts | *Length of Bolts |
|---|---|---|---|---|---|---|---|
| 2 | 6.50 | .88 | 5.00 | .75 | 8 | .63 | 2.75 |
| 2½ | 7.50 | 1.00 | 5.88 | .88 | 8 | .75 | 3.25 |
| 3 | 8.25 | 1.13 | 6.63 | .88 | 8 | .75 | 3.50 |
| 3½ | 9.00 | 1.19 | 7.25 | .88 | 8 | .75 | 3.50 |
| 4 | 10.00 | 1.25 | 7.88 | .88 | 8 | .75 | 3.75 |
| 5 | 11.00 | 1.38 | 9.25 | .88 | 8 | .75 | 4.00 |
| 6 | 12.50 | 1.44 | 10.63 | .88 | 12 | .75 | 4.00 |
| 8 | 15.00 | 1.63 | 13.00 | 1.00 | 12 | .88 | 4.50 |
| 10 | 17.50 | 1.88 | 15.25 | 1.13 | 16 | 1.00 | 5.25 |
| 12 | 20.50 | 2.00 | 17.75 | 1.25 | 16 | 1.13 | 5.50 |
| 14 | 23.00 | 2.13 | 20.25 | 1.25 | 20 | 1.13 | 6.00 |
| 16 | 25.50 | 2.25 | 22.50 | 1.38 | 20 | 1.25 | 6.25 |
| 18 | 28.00 | 2.38 | 24.75 | 1.38 | 24 | 1.25 | 6.50 |
| 20 | 30.50 | 2.50 | 27.00 | 1.38 | 24 | 1.25 | 6.75 |
| 24 | 36.00 | 2.75 | 32.00 | 1.63 | 24 | 1.50 | 7.50 |

*When bolting to steel flanges, longer bolts or stud may be required

# Steam Tables

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| Abs. Press. Lb./Sq. In. p | Gage Pressure | Temp. Fahr. t | SPECIFIC VOLUME Sat. Liquid vf | SPECIFIC VOLUME Evap. vfg | SPECIFIC VOLUME Sat. Vapor vg | ENTHALPY Sat. Liquid hf | ENTHALPY Evap. hfg | ENTHALPY Sat. Vapor hg | ENTROPY Sat. Liquid sf | ENTROPY Evap. sfg | ENTROPY Sat. Vapor sg | Gage Pressure | Abs. Press. Lb./Sq. In. p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0886 | | 32.00 | 0.01602 | 3305.7 | 3305.7 | 0 | 1075.1 | 1075.1 | 0 | 2.1865 | 2.1865 | | 0.0886 |
| 0.125 | | 40.69 | 0.01602 | 2383.7 | 2383.7 | 8.74 | 1070.2 | 1078.9 | 0.0176 | 2.1388 | 2.1564 | | 0.125 |
| 0.250 | | 59.31 | 0.01603 | 1235.8 | 1235.8 | 27.38 | 1059.5 | 1086.9 | 0.0542 | 2.0414 | 2.0956 | | 0.250 |
| 0.500 | | 79.58 | 0.01607 | 641.71 | 641.73 | 47.60 | 1048.0 | 1095.6 | 0.0924 | 1.9434 | 2.0358 | | 0.500 |
| 1 | | 101.76 | 0.01614 | 333.77 | 333.79 | 69.72 | 1035.5 | 1105.2 | 0.1326 | 1.8443 | 1.9769 | | 1 |
| 5 | | 162.25 | 0.01641 | 73.584 | 73.600 | 130.13 | 1000.7 | 1130.8 | 0.2347 | 1.6090 | 1.8437 | | 5 |
| 10 | | 193.21 | 0.01659 | 38.445 | 38.462 | 161.17 | 982.1 | 1143.3 | 0.2834 | 1.5042 | 1.7876 | | 10 |
| 14.696 | 0 | 212.00 | 0.01672 | 26.811 | 26.828 | 180.07 | 970.3 | 1150.4 | 0.3120 | 1.4446 | 1.7566 | 0 | 14.696 |
| 15 | .3 | 213.03 | 0.01672 | 26.303 | 26.320 | 181.11 | 969.6 | 1150.7 | 0.3135 | 1.4413 | 1.7548 | .3 | 15 |
| 20 | 5.3 | 227.96 | 0.01683 | 20.093 | 20.110 | 196.16 | 959.9 | 1156.1 | 0.3356 | 1.3959 | 1.7315 | 5.3 | 20 |
| 30 | 15.3 | 250.34 | 0.01700 | 13.746 | 13.763 | 218.83 | 945.2 | 1164.0 | 0.3680 | 1.3312 | 1.6992 | 15.3 | 30 |
| 40 | 25.3 | 267.24 | 0.01715 | 10.489 | 10.506 | 236.02 | 933.7 | 1169.7 | 0.3919 | 1.2844 | 1.6763 | 25.3 | 40 |
| 50 | 35.3 | 281.01 | 0.01727 | 8.505 | 8.522 | 250.09 | 923.9 | 1174.0 | 0.4110 | 1.2473 | 1.6583 | 35.3 | 50 |
| 60 | 45.3 | 292.71 | 0.01738 | 7.162 | 7.179 | 262.10 | 915.4 | 1177.5 | 0.4271 | 1.2166 | 1.6437 | 45.3 | 60 |
| 70 | 55.3 | 302.92 | 0.01748 | 6.193 | 6.210 | 272.61 | 907.9 | 1180.5 | 0.4409 | 1.1905 | 1.6314 | 55.3 | 70 |
| 80 | 65.3 | 312.03 | 0.01757 | 5.458 | 5.476 | 282.02 | 901.1 | 1183.1 | 0.4532 | 1.1677 | 1.6209 | 65.3 | 80 |
| 90 | 75.3 | 320.27 | 0.01766 | 4.880 | 4.898 | 290.57 | 894.8 | 1185.4 | 0.4641 | 1.1472 | 1.6113 | 75.3 | 90 |
| 100 | 85.3 | 327.83 | 0.01774 | 4.415 | 4.433 | 298.43 | 888.9 | 1187.3 | 0.4741 | 1.1287 | 1.6028 | 85.3 | 100 |
| 110 | 95.3 | 334.79 | 0.01782 | 4.032 | 4.050 | 305.69 | 883.3 | 1189.0 | 0.4832 | 1.1118 | 1.5950 | 95.3 | 110 |
| 120 | 105.3 | 341.26 | 0.01789 | 3.710 | 3.728 | 312.46 | 878.1 | 1190.6 | 0.4916 | 1.0963 | 1.5879 | 105.3 | 120 |
| 130 | 115.3 | 347.31 | 0.01796 | 3.437 | 3.455 | 318.81 | 873.2 | 1192.0 | 0.4995 | 1.0820 | 1.5815 | 115.3 | 130 |
| 140 | 125.3 | 353.03 | 0.01803 | 3.202 | 3.220 | 324.83 | 868.5 | 1193.3 | 0.5089 | 1.0686 | 1.5755 | 125.3 | 140 |
| 150 | 135.3 | 358.43 | 0.01809 | 2.998 | 3.016 | 330.53 | 863.9 | 1194.4 | 0.5138 | 1.0560 | 1.5698 | 135.3 | 150 |
| 160 | 145.3 | 363.55 | 0.01815 | 2.816 | 2.834 | 335.95 | 859.6 | 1195.5 | 0.5204 | 1.0442 | 1.5646 | 145.3 | 160 |
| 170 | 155.3 | 368.42 | 0.01821 | 2.656 | 2.674 | 341.11 | 855.2 | 1196.3 | 0.5266 | 1.0327 | 1.5593 | 155.3 | 170 |
| 180 | 165.3 | 373.08 | 0.01827 | 2.564 | 2.532 | 346.07 | 851.1 | 1197.2 | 0.5325 | 1.0220 | 1.5545 | 165.3 | 180 |
| 190 | 175.3 | 377.55 | 0.01833 | 2.386 | 2.404 | 350.83 | 847.2 | 1198.0 | 0.5382 | 1.0119 | 1.5501 | 175.3 | 190 |
| 200 | 185.3 | 381.82 | 0.01839 | 2.270 | 2.288 | 355.40 | 843.3 | 1198.7 | 0.5436 | 1.0021 | 1.5457 | 185.3 | 200 |
| 210 | 195.3 | 385.93 | 0.01844 | 2.165 | 2.183 | 359.80 | 839.6 | 1199.4 | 0.5488 | 0.9929 | 1.5417 | 195.3 | 210 |
| 220 | 205.3 | 389.89 | 0.01850 | 2.067 | 2.086 | 364.05 | 835.8 | 1199.9 | 0.5538 | 0.9838 | 1.5376 | 205.3 | 220 |
| 230 | 215.3 | 393.70 | 0.01855 | 1.9803 | 1.9989 | 368.16 | 832.2 | 1200.4 | 0.5585 | 0.9752 | 1.5337 | 215.3 | 230 |
| 240 | 225.3 | 397.40 | 0.01860 | 1.8990 | 1.9176 | 372.16 | 828.7 | 1200.9 | 0.5632 | 0.9669 | 1.5301 | 225.3 | 240 |
| 250 | 235.3 | 400.97 | 0.01866 | 1.8244 | 1.8431 | 376.04 | 825.4 | 1201.4 | 0.5677 | 0.9590 | 1.5267 | 235.3 | 250 |
| 260 | 245.3 | 404.43 | 0.01870 | 1.7555 | 1.7742 | 379.78 | 822.0 | 1201.8 | 0.5720 | 0.9513 | 1.5233 | 245.3 | 260 |
| 270 | 255.3 | 407.79 | 0.01875 | 1.6913 | 1.7101 | 383.43 | 818.8 | 1202.2 | 0.5761 | 0.9439 | 1.5200 | 255.3 | 270 |
| 280 | 265.3 | 411.06 | 0.01880 | 1.6316 | 1.6504 | 386.99 | 815.5 | 1202.5 | 0.5802 | 0.9365 | 1.5167 | 265.3 | 280 |
| 290 | 275.3 | 414.24 | 0.01885 | 1.5758 | 1.5947 | 390.47 | 812.4 | 1202.9 | 0.5841 | 0.9296 | 1.5137 | 275.3 | 290 |
| 300 | 285.3 | 417.33 | 0.01890 | 1.5237 | 1.5426 | 393.85 | 809.3 | 1203.2 | 0.5879 | 0.9228 | 1.5107 | 285.3 | 300 |
| 350 | 335.3 | 431.71 | 0.01912 | 1.3064 | 1.3255 | 409.70 | 794.7 | 1204.4 | 0.6057 | 0.8915 | 1.4972 | 335.3 | 350 |
| 400 | 385.3 | 444.58 | 0.0193 | 1.1416 | 1.1609 | 424.02 | 780.9 | 1204.9 | 0.6215 | 0.8635 | 1.4850 | 385.3 | 400 |
| 450 | 435.3 | 456.27 | 0.0195 | 1.0123 | 1.0318 | 437.18 | 767.8 | 1205.0 | 0.6357 | 0.8382 | 1.4739 | 435.3 | 450 |
| 500 | 485.3 | 467.00 | 0.0197 | 0.9077 | 0.9274 | 449.40 | 755.5 | 1204.9 | 0.6488 | 0.8153 | 1.4641 | 485.3 | 500 |
| 550 | 535.3 | 476.94 | 0.0199 | 0.8217 | 0.8416 | 460.83 | 743.6 | 1204.4 | 0.6609 | 0.7939 | 1.4548 | 535.3 | 550 |
| 600 | 585.3 | 486.21 | 0.0201 | 0.7494 | 0.7695 | 471.59 | 732.0 | 1203.6 | 0.6721 | 0.7739 | 1.4460 | 585.3 | 600 |
| 650 | 635.3 | 494.90 | 0.0203 | 0.6879 | 0.7082 | 481.73 | 721.0 | 1202.7 | 0.6826 | 0.7553 | 1.4379 | 635.3 | 650 |
| 700 | 685.3 | 503.09 | 0.0205 | 0.6347 | 0.6552 | 491.49 | 710.1 | 1201.6 | 0.6925 | 0.7376 | 1.4301 | 685.3 | 700 |
| 750 | 735.3 | 510.83 | 0.0207 | 0.5884 | 0.6091 | 500.8 | 699.4 | 1200.2 | 0.7019 | 0.7206 | 1.4225 | 735.3 | 750 |
| 800 | 785.3 | 518.20 | 0.0209 | 0.5476 | 0.5685 | 509.7 | 689.1 | 1198.8 | 0.7108 | 0.7047 | 1.4155 | 785.3 | 800 |
| 850 | 835.3 | 525.23 | 0.0210 | 0.5116 | 0.5326 | 518.3 | 678.9 | 1197.2 | 0.7194 | 0.6893 | 1.4087 | 835.3 | 850 |
| 900 | 885.3 | 531.94 | 0.0212 | 0.4794 | 0.5006 | 526.6 | 669.0 | 1195.6 | 0.7276 | 0.6746 | 1.4022 | 885.3 | 900 |
| 950 | 935.3 | 538.38 | 0.0214 | 0.4503 | 0.4717 | 534.6 | 659.2 | 1193.8 | 0.7355 | 0.6605 | 1.3960 | 935.3 | 950 |
| 1000 | 985.3 | 544.56 | 0.0216 | 0.4240 | 0.4456 | 542.4 | 649.5 | 1191.9 | 0.7431 | 0.6468 | 1.3899 | 985.3 | 1000 |
| 1050 | 1035.3 | 550.52 | 0.0218 | 0.4001 | 0.4219 | 550.0 | 640.0 | 1190.0 | 0.7504 | 0.6335 | 1.3839 | 1035.3 | 1050 |
| 1100 | 1085.3 | 556.26 | 0.0219 | 0.3783 | 0.4002 | 557.4 | 630.4 | 1187.8 | 0.7575 | 0.6205 | 1.3780 | 1085.3 | 1100 |
| 1150 | 1135.3 | 561.81 | 0.0221 | 0.3583 | 0.3804 | 564.6 | 621.0 | 1185.6 | 0.7644 | 0.6079 | 1.3723 | 1135.3 | 1150 |
| 1200 | 1185.3 | 567.19 | 0.0223 | 0.3397 | 0.3620 | 571.7 | 611.5 | 1183.2 | 0.7712 | 0.5955 | 1.3667 | 1185.3 | 1200 |
| 1250 | 1235.3 | 572.39 | 0.0225 | 0.3228 | 0.3453 | 578.6 | 602.2 | 1180.8 | 0.7777 | 0.5835 | 1.3612 | 1235.3 | 1250 |
| 1300 | 1285.3 | 577.43 | 0.0227 | 0.3067 | 0.3294 | 585.4 | 592.9 | 1178.3 | 0.7840 | 0.5717 | 1.3557 | 1285.3 | 1300 |
| 1350 | 1335.3 | 582.32 | 0.0229 | 0.2918 | 0.3147 | 592.1 | 583.7 | 1175.8 | 0.7902 | 0.5602 | 1.3504 | 1335.3 | 1350 |
| 1400 | 1385.3 | 587.07 | 0.0231 | 0.2780 | 0.3011 | 598.6 | 574.6 | 1173.2 | 0.7963 | 0.5489 | 1.3452 | 1385.3 | 1400 |
| 1450 | 1435.3 | 591.70 | 0.0233 | 0.2652 | 0.2885 | 605.0 | 565.5 | 1170.5 | 0.8022 | 0.5379 | 1.3401 | 1435.3 | 1450 |
| 1500 | 1485.3 | 596.20 | 0.0235 | 0.2530 | 0.2765 | 611.4 | 556.3 | 1167.7 | 0.8081 | 0.5269 | 1.3350 | 1485.3 | 1500 |
| 1550 | 1535.3 | 600.59 | 0.0237 | 0.2416 | 0.2653 | 617.7 | 547.1 | 1164.8 | 0.8138 | 0.5160 | 1.3298 | 1535.3 | 1550 |
| 1600 | 1585.3 | 604.87 | 0.0239 | 0.2309 | 0.2548 | 623.9 | 538.0 | 1161.9 | 0.8195 | 0.5054 | 1.3249 | 1585.3 | 1600 |
| 1650 | 1635.3 | 609.05 | 0.0241 | 0.2207 | 0.2448 | 630.0 | 528.8 | 1158.8 | 0.8250 | 0.4948 | 1.3198 | 1635.3 | 1650 |
| 1700 | 1685.3 | 613.12 | 0.0243 | 0.2111 | 0.2354 | 636.1 | 519.6 | 1155.7 | 0.8304 | 0.4843 | 1.3147 | 1685.3 | 1700 |
| 1750 | 1735.3 | 617.11 | 0.0245 | 0.2020 | 0.2265 | 642.1 | 510.4 | 1152.5 | 0.8359 | 0.4740 | 1.3099 | 1735.3 | 1750 |
| 1800 | 1785.3 | 621.00 | 0.0247 | 0.1933 | 0.2180 | 648.0 | 501.3 | 1149.3 | 0.8412 | 0.4639 | 1.3051 | 1785.3 | 1800 |
| 1850 | 1835.3 | 629.82 | 0.0249 | 0.1850 | 0.2099 | 653.9 | 492.0 | 1145.9 | 0.8465 | 0.4537 | 1.3002 | 1835.3 | 1850 |
| 1900 | 1885.3 | 628.55 | 0.0252 | 0.1770 | 0.2022 | 659.9 | 482.5 | 1142.4 | 0.8517 | 0.4434 | 1.2951 | 1885.3 | 1900 |
| 1950 | 1935.3 | 632.20 | 0.0254 | 0.1695 | 0.1949 | 665.8 | 473.0 | 1138.8 | 0.8569 | 0.4332 | 1.2901 | 1935.3 | 1950 |
| 2000 | 1985.3 | 635.78 | 0.0257 | 0.1622 | 0.1879 | 671.7 | 463.5 | 1135.2 | 0.8620 | 0.4231 | 1.2851 | 1985.3 | 2000 |
| 2100 | 2085.3 | 642.73 | 0.0262 | 0.1486 | 0.1748 | 683.4 | 444.2 | 1127.6 | 0.8722 | 0.4029 | 1.2751 | 2035.3 | 2100 |
| 2200 | 2185.3 | 649.42 | 0.0267 | 0.1359 | 0.1626 | 695.0 | 424.4 | 1119.4 | 0.8823 | 0.3826 | 1.2649 | 2185.3 | 2200 |
| 2300 | 2285.3 | 655.87 | 0.0274 | 0.1240 | 0.1514 | 706.7 | 404.3 | 1111.0 | 0.8923 | 0.3624 | 1.2547 | 2285.3 | 2300 |
| 2400 | 2385.3 | 662.09 | 0.0280 | 0.1130 | 0.1410 | 718.5 | 382.9 | 1101.4 | 0.9025 | 0.3413 | 1.2438 | 2385.3 | 2400 |
| 2500 | 2435.3 | 668.10 | 0.0287 | 0.1026 | 0.1313 | 730.7 | 360.3 | 1091.0 | 0.9127 | 0.3195 | 1.2322 | 2485.3 | 2500 |
| 2600 | 2585.3 | 673.91 | 0.0295 | 0.0924 | 0.1219 | 743.1 | 337.0 | 1080.1 | 0.9232 | 0.2973 | 1.2205 | 2585.3 | 2500 |
| 2700 | 2685.3 | 679.54 | 0.0305 | 0.0818 | 0.1123 | 756.1 | 312.2 | 1068.3 | 0.9342 | 0.2740 | 1.2082 | 2685.3 | 2700 |
| 2800 | 2785.3 | 684.98 | 0.0316 | 0.0716 | 0.1032 | 770.0 | 284.6 | 1054.6 | 0.9458 | 0.2486 | 1.1944 | 2785.3 | 2800 |
| 2900 | 2885.3 | 690.26 | 0.0329 | 0.0612 | 0.0941 | 785.2 | 252.9 | 1038.1 | 0.9586 | 0.2199 | 1.1785 | 2885.3 | 2900 |
| 3000 | 2985.3 | 695.37 | 0.0346 | 0.0503 | 0.0849 | 802.6 | 216.7 | 1019.3 | 0.9731 | 0.1876 | 1.1607 | 2985.3 | 3000 |
| 3100 | 3035.3 | 700.29 | 0.0372 | 0.0380 | 0.0752 | 824.6 | 169.4 | 994.0 | 0.9916 | 1.1460 | 1.1376 | 3085.3 | 3100 |
| 3200 | 3185.3 | 705.04 | 0.0443 | 0.0153 | 0.0596 | 871.3 | 75.3 | 946.6 | 1.0311 | 0.0647 | 1.0958 | 3185.3 | 3200 |
| 3206.2* | | 705.34 | 0.0541 | 0 | 0.0541 | 910.3 | 0 | 910.3 | 1.0645 | 0 | 1.0645 | | 3206.2* |

*Critical pressure

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# Bronze Valve
# Figure Number Comparisons

| NIBCO | Milwaukee | Stockham | Crane | Jenkins | Powell | Hammond | Walworth | NIBCO |
|---|---|---|---|---|---|---|---|---|
| **S-111** | 149 | B-109 | 1334 | 991 | 1821 | IB635 | 55SJ | **S-111** |
| **S-113** | 115 | B-104 | 1324 | 993 | 1822 | IB647 | 4SJ | **S-113** |
| **S-134** | 1169 | B-124 | | 1242 | | IB648 | | **S-134** |
| **S-136** | | | | 1240 | | | | **S-136** |
| **S-211-B** | 1502 | B-17 | | 995 | | IB418 | 3058SJ | **S-211-B** |
| **S-211-Y** | | B-14-T | 1310 | | | | | **S-211-Y** |
| **S-235-Y** | 1590-T | B-24-T | | 1200 | 1823 | IB423 | | **S-235-Y** |
| **S-311-Y** | | | | | | | | **S-311-Y** |
| **S-413-B** | 1509 | B-309 | 1342 | 997 | 1825 | IB912 | 3406SJ | **S-413-B** |
| **S-413-W** | | B-310-B | | | | | | **S-413-W** |
| **S-413-Y** | 1509-T | B-310-T | | | | | | **S-413-Y** |
| **S-433-B** | | | | 1222 | | | | **S-433-B** |
| **S-433-Y** | 1510-T | | | | | IB945 | | **S-433-Y** |
| **T-104-O** | | B-133 | 459 | 275U | | | | **T-104-O** |
| **T-111** | 148 | B-100 | 428 | 990 | 500 | IB640 | 55 | **T-111** |
| **T-113** | 105 | B-103 | 438 | 992 | 507 | IB645 | 4 | **T-113** |
| **T-124** | 1152 | | | 47U | 2700 | IB617 | | **T-124** |
| **T-131** | 1150 | B-122 | 431 | 47 | 514 | IB641 | 56 | **T-131** |
| **T-133** | 1140 | B-128 | 437 | 670 | 512 | IB646 | 14 | **T-133** |
| **T-134** | 1151 | B-120 | 431UB | 49U | 2714 | IB629 | 11 | **T-134** |
| **T-136** | 1141 | B-130 | | | 2712 | IB638 | | **T-136** |
| **T-154-A** | 1156 | B-135 | | | 375 | IB650 | 37 | **T-154-A** |
| **T-174-A** | 1182 | B-144 | | | 377 | IB652 | 3048 | **T-174-A** |
| **T-174-SS** | 1184 | B-145 | 634E | | 2377 | IB654 | | **T-174-SS** |
| **T-176-A** | | | | | | | | **T-176-A** |
| **T-176-SS** | 1186 | B-147 | 636E | | 2382 | IB656 | | **T-176-SS** |
| **T-211-B** | 502 | B-16 | 1 | 746 | 650 | IB440 | 3058 | **T-211-B** |
| **T-211-Y** | | B-13-T | | | | | | **T-211-Y** |
| **T-235-Y** | 590-T | B-22 | 7TF | 106-A | 150 | IB413T | 3095 | **T-235-Y** |
| **T-256-AP** | 592-A | B-62 | 212P | | 2608 | IB434 | 3160 | **T-256-AP** |
| **T-275-B** | 572 | B-66 | | 750 | 120 | IB412 | 3205 | **T-275-B** |
| **T-275-Y** | | | | | | | | **T-275-Y** |
| **T-276-A** | | | | 576 | 1202 | | | **T-276-A** |
| **T-276-AP** | 593-A | B-74 | 382P | 576-P | 2612 | IB444 | 3260P | **T-276-AP** |
| **T-311-Y** | 504 | B-216 | 2 | | | IB463 | | **T-311-Y** |
| **T-335-Y** | 595-T | B-222-T | 17TF | 108A | 151 | IB454-T | 3096 | **T-335-Y** |
| **T-375-B** | 582 | B-237 | | | | IB469 | | **T-375-B** |
| **T-376-AP** | | B-274 | 384P | 578-P | 2614 | IB471 | | **T-376-AP** |
| **T-413-B** | 509 | B-319 | 37 | 92A | 578 | IB904 | 3406 | **T-413-B** |
| **T-413-W** | 511 | B-320-B | | | | | | **T-413-W** |
| **T-413-Y** | 509-T | B-320-T | | | | IB940 | | **T-413-Y** |
| **T-433-B** | 508 | B-321 | 137 | | | | | **T-433-B** |
| **T-433-Y** | 510-T | | | 352 | 596 | IB946 | 3412 | **T-433-Y** |
| **T-453-B** | 508 | B-345 | 36 | 762A | 560Y | IB944 | 3420 | **T-453-B** |
| **T-473-B** | 507 | B-375 | 76E | 962B | 563Y | IB949 | 3428 | **T-473-B** |
| **T-473-Y** | | | | | | | | **T-473-Y** |
| **T-480-Y** | | | | | | | | **T-480-Y** |

To be used as a guide only. Some variations in detail are possible.

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# Iron Valve
# Figure Number Comparisons

| NIBCO | Milwaukee | Stockham | Crane | Jenkins | Powell | Hammond | Walworth | NIBCO |
|---|---|---|---|---|---|---|---|---|
| **F-617-O** | F2885-A | G-623 | 465-1/2 | 651A | 1793 | IR1140 | 8726F | **F-617-O** |
| **F-617-ON** | F2891-A | G-624 | 475-1/2 | 100A | 1816 | IR1146HI | 8727F | **F-617-ON** |
| **F-619** | F2882-A | G-612 | 461 | 326 | 1787 | IR1138 | 8719F | **F-619** |
| **F-619-N** | F2890 | G-613 | 473 | 98 | 1799 | IR1144HI | 8720F | **F-619-N** |
| **F-667-O** | F2894-A | F-667 | 7-1/2E | 204 | 1797 | IR330 | 8786F | **F-667-O** |
| **F-669** | | F-661 | 3E | 203 | | | 8775F | **F-669** |
| **F-718-B** | F2981-A | G-512 | 351 | 613 | 241 | IR116 | 8906F | **F-718-B** |
| **F-718-N** | F2892 | | 351-1/4 | | 457 | | 8906-1/2F | **F-718-N** |
| **F-768-B** | F2983 | F-532 | 21E | 923 | 256 | IR313 | 8955F | **F-768-B** |
| **F-818-B** | F2988 | G-515 | 353 | 614 | 243 | | 8907F | **F-818-B** |
| **F-869-B** | | F-541 | 30E | 293 | 368 | | | **F-869-B** |
| **F-918-B** | F2974-A | G-931 | 373 | 624 | 559 | IR1124 | 8928F | **F-918-B** |
| **F-918-N** | F2971 | G-933 | 373-1/2 | 85 | 1259 | IR1126HI | 8928-1/2F | **F-918-N** |
| **F-968-B** | F2970 | F-947 | 39E | 339R | 576 | IR322 | 8970F | **F-968-B** |
| Wafer Checks | | | | | | | | |
| **F-910** | 1800 | | | | | IR9354 | | **F-910** |
| **F-960** | | | | | | IR9355 | | **F-960** |
| **W-910/960** | 1400 | | | | | IR9253/9255 | | **W-910/960** |
| **W-920-W** | | WG-970 | | | | | | **W-920-W** |
| Alloy Iron | | | | | | | | |
| **F-617-13** | F2885-13 | AG-642 | 14477 | 7651N | 1893 | IR1913HI | 725FS | **F-617-13** |
| **F-918-13** | F2974-13 | AG-931 | 14493 | 7624N | 559P | IR1937HI | 928FS | **F-918-13** |

## Comparing Ductile Iron Valves to Cast Steel Valves

| **Ductile Iron** | **Cast Steel** | | | | |
|---|---|---|---|---|---|
| **NIBCO** | **Crane** | **Powell** | **Stockham** | **Kitz** | **Velan** |
| **OS & Y Gate F-637-31 or F-637-33** | 47 | 1503 | 15-OF | K150-SCL | F-006C-02 |
| **NRS Gate F-639-31 or F-639-33** | Not Available | Not Available | Not Available | Not Available | Not Available |
| **Globe F-738-31** | 143 | 1531 | 15-GSF | K-150-SCJ | F-007C-02 |
| **Angle Globe F-838-31** | 145 | 1533 | 15-APF | Not Available | Not Available |
| **Swing Check F-938-31 or F-938-33** | 147 | 1561 | 15-SF | K150-SCO | F-001C-02 |

**NOTE: -31 is B584 Bronze Trim -33 is CF8M Stainless Steel Trim.**
**When determining valve selection, care should be taken regarding the capabilities of the materials used.**
**To be used as a guide only. Some variations in detail are possible.**

# REPLACEMENT HANDWHEELS F607RW & F607RWS GATE VALVES

| VALVE SIZE | F607RWS | F607RW |
|---|---|---|
| 2½" | T1447559 PP | T117454 PP |
| 3" | | |
| 4" | T1447560 PP | T117422 PP |
| 6" | T1447561 PP | T117427 PP |
| 8" | T1447562 PP | T117400 PP |
| 10" | T117485 PP | |
| 12" | T117371 PP | |

# REPLACEMENT HANDWHEEL NUTS F607RW & F607RWS GATE VALVES

| VALVE SIZE | F607RWS | | | F607RW | | |
|---|---|---|---|---|---|---|
| | MATERIAL NO | NUT OD X TK | THREAD SIZE | MATERIAL NO | NUT OD X TK | THREAD SIZE |
| 2½" | T1470614 PP | 52 X 10 | M30 X 1.5 | T1098244 PP | 52 X 10 | M33 X 1.5 |
| 3" | | | | | | |
| 4" | T1470615 PP | 72 X 12 | M45 X 1.5 | USE T1470615 PP | 68 X 10 | M45 X 1.5 |
| 6" | | | | | | |
| 8" | T1470616 PP | 72 X 12 | M48 X 1.5 | T1470616 PP | 72 X 12 | M48 X 1.5 |
| 10" | | | | | | |
| 12" | T1470617 PP | 78 X 12 | M52 X 1.5 | T1470617 PP | 78 X 12 | M52 X 1.5 |
| 14" | T1470618 PP | 90 X 12 | M60 X 2 | | | |
| 16" | | | | | | |

5 year 125% warranty

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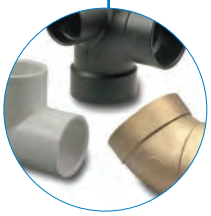
LEAD-FREE: Weighted average lead content ≤0.25%



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