FLOWSERVE

# Nordstrom Multiport Plug Valves

*Experience In Motion*

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## Glossary of Terms Used on Valve Dimension Tables

**CWP** (Cold Working Pressure) is the maximum service pressure permitted in the ambient temperature range -20°F to 100°F (-29°C to 38°C). CWP is expressed in psig (pounds per square inch gage).

**DN** (Diameter Nominale) is an indication of nominal diameter.

**Test** is the Hydrostatic Shell Test Pressure. (See Test and Working Pressures chart.)

## Dimension Units

**NOTE:** In all dimension tables, upper dimensions and weights are in inches and pounds. Lower dimensions and weights are in millimeters and kilograms.

## About This Catalog

Every attempt has been made to assure that the data in this catalog is as accurate as possible. Flowserve Nordstrom Valves reserves the right to make product modifications that contradict the contents of this catalog without notification to the holders of this catalog; therefore, Flowserve Nordstrom Valves cannot be held responsible for any data found to be inaccurate or incomplete.

## Valve Figure Number Explanation

Valve figure numbers ending in a 2, 3, 4 or 5 indicate wrench-operated valves. Valve figure numbers ending in a 2 or 4 indicate threaded ends. Valve figure numbers ending in a 5 indicate flanged ends. Valve figure numbers ending in a 9 indicate flanged ends with worm gear operator.

# Valve Figure Number Index

## Nordstrom Iron Valve


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# Valve Working Pressure Index

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|---|---|---|---|
| **Nordstrom Valves – Iron** | | | |
| 200 CWP (13.8 bar) | Wrench | 1–2½ (DN 25–65) | 10 |
| | Wrench | 3–6 (DN 80–150) | 11 |
| | Worm Gear | 6–12 (DN 150–300) | 12 |
| 400 CWP (27.6 bar) | Wrench | ½–2½ (DN 15–65) | 10 |
| **Super Nordstrom Valves – Steel** | | | |
| ANSI Class 150 (PN 20) | Wrench | 1½ & 2 (DN 40 & 50) | 13 |
| ANSI Class 300 (PN 50) | Wrench | ½–2 (DN 15–50) | 15 |
| **Dynamic Balance Valves – Steel** | | | |
| ANSI Class 150 (PN 20) | Wrench | 3 & 4 (DN 80 & 100) | 14 |
| ANSI Class 150 (PN 20) | Worm Gear | 6–10 (DN 150–250) | 14 |
| ANSI Class 300 (PN 50) | Wrench | 3 & 4 (DN 80 & 100) | 16 |
| ANSI Class 300 (PN 50) | Worm Gear | 6–10 (DN 150–250) | 16 |
| ANSI Class 600 (PN 100) | Wrench | 2–4 (DN 50–100) | 17 |
| ANSI Class 1500 (PN 250) | Wrench | 1 & 2 (DN 25 & 50) | 17 |

☠ **WARNING:** Numerous products described in this catalog and manufactured before January 1, 1986 were equipped with packings and/or gaskets that contained asbestos. When servicing, disassembling or disposing of these products, avoid breathing the asbestos fibers or dust.

# Advantages of Multiport Design

*Flowserve Nordstrom multiport valves incorporate the established principles of Nordstrom design and quality and are particularly efficient, compared to non-lubricated multiport valves, because of the provision of sealant grooves to prevent leakage between ports.*

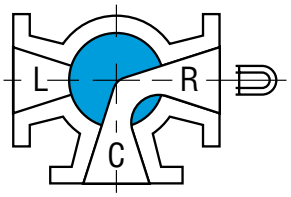
*Use of multiport valves is advantageous in many installations, providing simplification of piping and convenience in operation. One 3-way or 4-way Nordstrom multiport valve may be used in place of two, three or four straightway valves, and in most cases will also eliminate other fittings such as tees and elbows.*

*A further advantage in the use of multiport valves is that, where necessary, ports and stops can be arranged to permit the required operating connections, at the same time making it impossible for the valve to be turned to positions that would produce undesirable results, such as waste, overpressure on equipment, wrong mixtures, etc.*

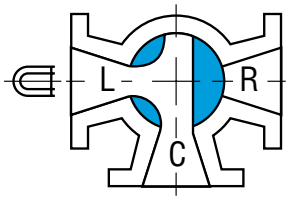
## Regular Multiport Valves

Nordstrom 3-way, 2-port; 3-way, 3-port; and 4-way multiport valves have ports arranged so that when the plug is turned from one position to another, the channels previously in connection will be entirely closed before new channels begin to open—thereby preventing mixture of fluids or loss of pressure.

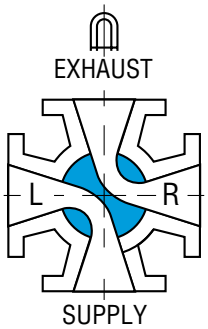
***3-Way, 2-Port***




***3-Way, 3-Port***




***4-Way***



## Positive and Negative Shutoff

Multiport valves are built to the same standards of quality and strength as the corresponding straightway valves. However, multiport valves can be expected to provide shutoff against full rated working pressure only in the positive direction (i.e., with the line pressure acting to hold the plug against the body port or ports, which are to be isolated from the higher pressure, as illustrated by Figures 1 and 2). In Figure 1, the flow is from the right-hand to center connection, and the left-hand connection is closed. In Figure 2 the flow is from the left-hand to right-hand connection, or vice versa, and the center connection is closed. In both cases the pressure inside of the valve is trying to get out and tends to force the plug against the port that is to be cut off, which, together with the sealant provided by the Nordstrom sealant system, effects a shutoff at this point.

**NOTE:** Refer to MSS SP-61 "Pressure Testing of Steel Valves" for allowable leakage rates for multiport valves.

Multiport valves are not expected to shut off high differential pressures when the line pressure is in a negative direction, as illustrated in Figures 3 and 4. In these examples, the pressure is from the left-hand and center connections, respectively, and in both cases, pressure is trying to get into the valve. Under these conditions the pressure can force the plug away from the inlet port, bypass the plug and escape at the connections, which are supposed to be isolated from the higher pressure.

The 4-way valves are intended to be used for directional control only, and cannot be expected to hold high differential pressure without some leakage.

***Positive Shutoff***

*Figure 1*

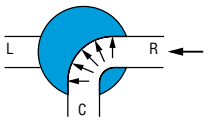
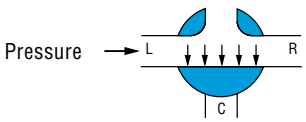



*Figure 2*




***Negative Shutoff***

*Figure 3*

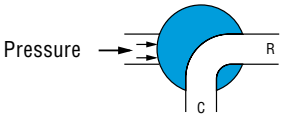
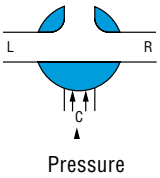


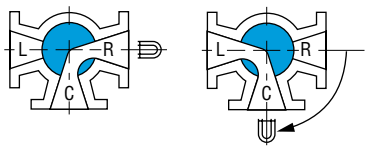

*Figure 4*




**NOTE:** When multiport valves are used in vacuum service, the positive and negative effects are reversed.

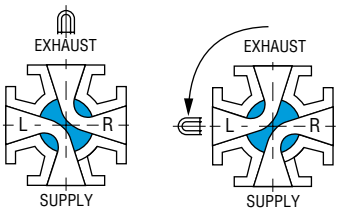
# Port and Stop Arrangements

When ordering multiport valves, specify the size, figure number and the port and stop arrangement.



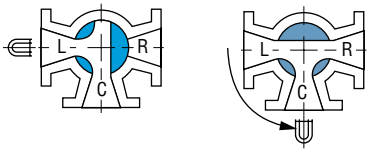

Position 1 Position 2

**Arrangement 1:** 3-way, 2-port, 90° Turn – Two Positions



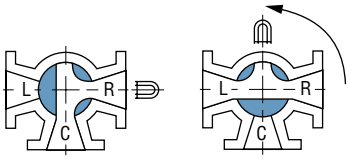

Position 1 Position 2

**Arrangement 2:** 4-way, 4-port, 90° Turn – Two Positions



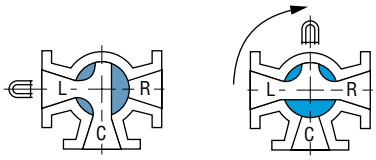

Position 1 Position 2

**Arrangement 3:** 3-way, 3-port, 90° Turn – Two Positions



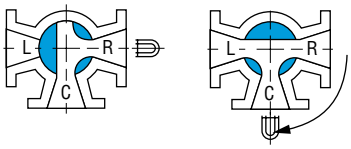

Position 1 Position 2

**Arrangement 4:** 3-way, 3-port, 90° Turn – Two Positions



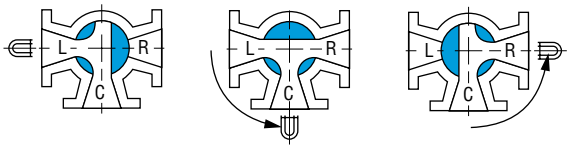

Position 1 Position 2

**Arrangement 5:** 3-way, 3-port, 90° Turn – Two Positions



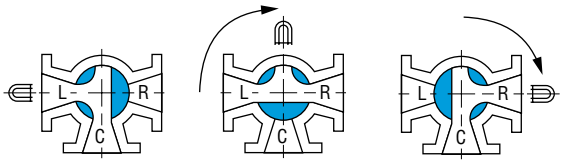

Position 1 Position 2

**Arrangement 6:** 3-way, 3-port, 90° Turn – Two Positions



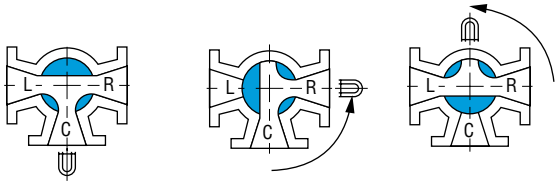

Position 1 Position 2 Position 3

**Arrangement 7:** 3-way, 3-port, 180° Turn – Three Positions



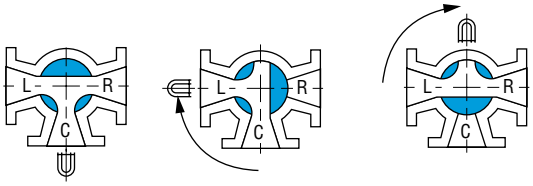

Position 1 Position 2 Position 3

**Arrangement 8:** 3-way, 3-port, 180° Turn – Three Positions



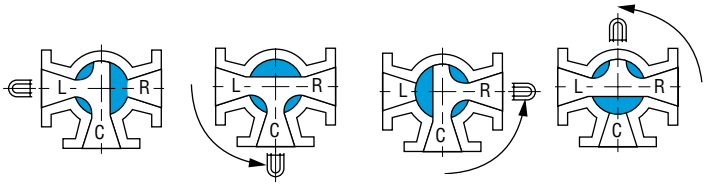

Position 1 Position 2 Position 3

**Arrangement 9:** 3-way, 3-port, 180° Turn – Three Positions



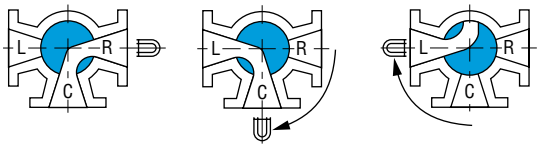

Position 1 Position 2 Position 3

**Arrangement 10:** 3-way, 3-port, 180° Turn – Three Positions



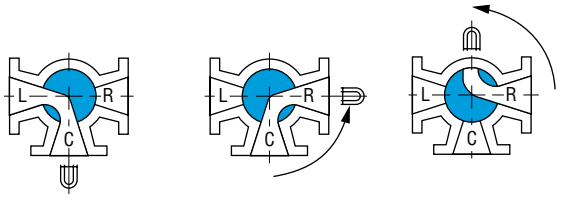

Position 1 Position 2 Position 3 Position 4

**Arrangement 11:** 3-way, 3-port, 270° Turn – Four Positions



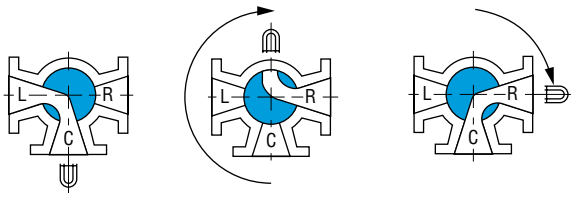

Position 1 Position 2 Position 3

**Arrangement 12:** 3-way, 2-port, 180° Turn – Three Positions




Position 1 Position 2 Position 3

**Arrangement 13:** 3-way, 2-port, 180° Turn – Three Positions



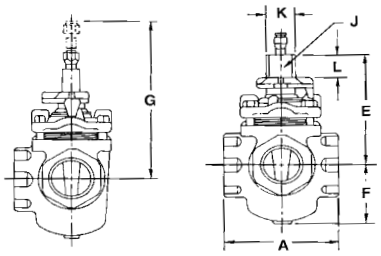

Position 1 Position 2 Position 3

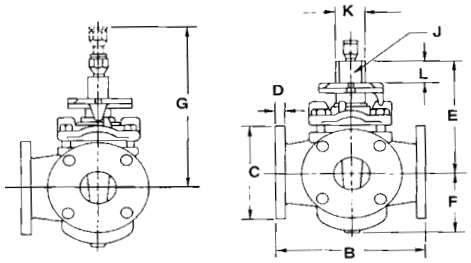
**Arrangement 14:** 3-way, 2-port, 270° Turn – Three Positions

# Nordstrom Iron Screwed Gland-Type Multiport Plug Valves

400 CWP (27.6 bar)
800 psig (55.2 bar) Test
Figure 3402 – 3-way, 2-port, sizes ½" to 2½"
Figure 3412 – 3-way, 3-port, sizes ½" to 2½"
Figure 3422 – 4-way, 4-port, sizes ½" to 2½"
Threaded, Wrench Operated

200 CWP (13.8 bar)
400 psig (27.6 bar) Test
Figure 3403 – 3-way, 2-port, sizes 1½" to 2½"
Figure 3413 – 3-way, 3-port, sizes 1½" to 2½"
Figure 3423 – 4-way, 4-port, size 1"
Flanged, Wrench Operated



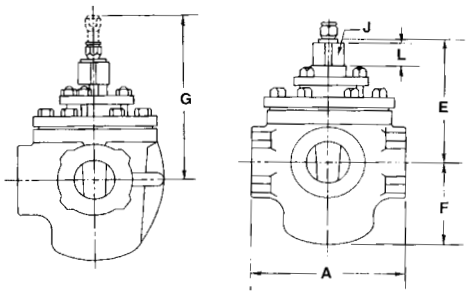

| Size | NPS<br>DN | ½<br>15 | ¾<br>20 | 1<br>25 | 1¼<br>32 | 1½<br>40 | 2<br>50 | 2½<br>65 |
|---|---|---|---|---|---|---|---|---|
| End-to-end, threaded | A | 3.90<br>99 | 3.90<br>99 | 4.80<br>122 | 5.80<br>147 | 5.80<br>147 | 7.00<br>178 | 8.50<br>216 |
| Face-to-face, flanged | B | | | 6.50<br>165 | | 7.50<br>191 | 9.00<br>229 | 10.00<br>254 |
| Diameter of flanges | C | | | 4.25<br>108 | | 5.00<br>127 | 6.00<br>152 | 7.00<br>178 |
| Thickness of flanges | D | | | .50<br>13 | | .63<br>16 | .69<br>18 | .75<br>19 |
| Center to top of stem | E | 4.6<br>117 | 4.6<br>117 | 5.3<br>135 | 5.8<br>147 | 5.8<br>147 | 6.6<br>168 | 7.7<br>196 |
| Center to bottom of body | F | 1.8<br>46 | 1.8<br>46 | 2.1<br>53 | 2.7<br>69 | 2.7<br>69 | 3.2<br>81 | 3.7<br>94 |
| Clearance required to remove sealant fitting | G | 7.2<br>183 | 7.2<br>183 | 7.9<br>201 | 8.4<br>213 | 8.4<br>213 | 9.3<br>236 | 10.3<br>262 |
| Width of stem flats | J | .88<br>22 | .88<br>22 | .94<br>24 | 1.13<br>29 | 1.13<br>29 | 1.25<br>32 | 1.38<br>35 |
| Diameter of stem | K | 1.22<br>31 | 1.22<br>31 | 1.31<br>33 | 1.59<br>40 | 1.59<br>40 | 1.78<br>45 | 1.97<br>50 |
| Height of stem flats | L | 1.2<br>30 | 1.2<br>30 | 1.2<br>30 | 1.2<br>30 | 1.2<br>30 | 1.5<br>38 | 1.6<br>41 |
| Size of sealant stick | — | B | B | B | B | B | B | B |
| Size of wrench | — | E-9 | E-9 | H-9 | K-9 | K-9 | L-9 | M-9 |
| Length of wrench | — | 7.0<br>178 | 7.0<br>178 | 9.0<br>229 | 14.0<br>356 | 14.0<br>356 | 17.5<br>445 | 21.0<br>533 |
| Weight (approx.), Figure 3402/3412/3422 | — | 8/8/8<br>4/4/4 | 8/8/8<br>4/4/4 | 11/11/11<br>5/5/5 | 22/21/23<br>10/10/10 | 22/21/23<br>10/10/10 | 34/32/34<br>15/15/15 | 60/50/56<br>27/23/25 |
| Weight (approx.), Figure 3403/3413/3423 | — | | | 18/18/18<br>8/8/8 | | 28/27/31<br>13/12/14 | 45/44/50<br>20/20/23 | 68/66/74<br>31/30/34 |

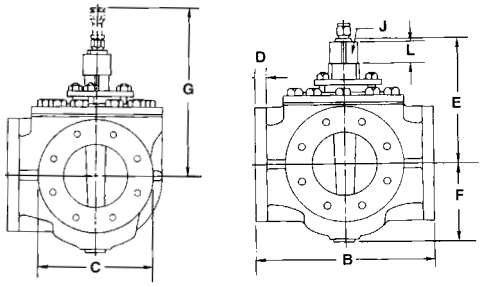
*Flanges are drilled to ASME Class 125 Cast Iron Flange Standard Template.*
*Valves conform to the following standards where applicable: ASME B2.1; ASME B16.1; API 5B, ASTM A126 Class B and MSS SP-78.*
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to end of side outlet equals half of "A"; to face of side outlet equals half "B."*

# Nordstrom Iron Bolted Gland-Type Multiport Plug Valves

200 CWP (13.8 bar)
400 psig (27.6 bar) Test
Figure 3464 – 3-way, 2-port, sizes 3" and 4"
Figure 3474 – 3-way, 3-port , sizes 3" and 4"
Figure 3484 – 4-way, 4-port, size 3"
Threaded, Wrench Operated

200 CWP (13.8 bar)
400 psig (27.6 bar) Test
Figure 3465 – 3-way, 2-port, sizes 3", 4" and 6"
Figure 3475 – 3-way, 3-port, sizes 3"–6"
Figure 3485 – 4-way, 4-port, sizes 3", 4" and 6"
Flanged, Wrench Operated



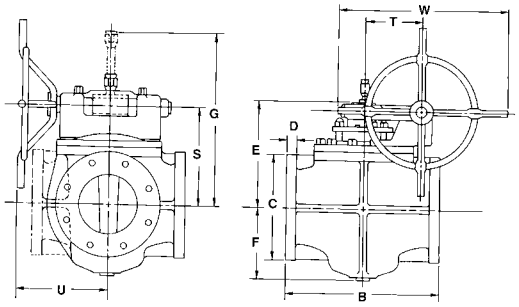




| Size | NPS<br>DN | 3<br>80 | 4<br>100 | 5<br>125 | 6<br>150 |
|---|---|---|---|---|---|
| **End-to-end, threaded** | A | 10.00<br>254 | 14.75<br>375 | | |
| **Face-to-face, flanged** | B | 11.50<br>292 | 14.00<br>356 | 16.25<br>413 | 17.00<br>432 |
| **Diameter of flanges** | C | 7.5<br>191 | 9.0<br>229 | 10.0<br>254 | 11.0<br>279 |
| **Thickness of flanges** | D | .81<br>21 | 1.00<br>25 | 1.00<br>25 | 1.10<br>28 |
| **Center to top of stem** | E | 10.0<br>254 | 11.8<br>300 | 13.1<br>333 | 13.1<br>333 |
| **Center to bottom of body** | F | 5.4<br>137 | 6.3<br>160 | 7.8<br>198 | 8.3<br>211 |
| **Clearance required to remove sealant fitting** | G | 13.8<br>351 | 16.8<br>427 | 18.1<br>460 | 18.1<br>460 |
| **Width of stem square** | J | 1.75<br>44 | 2.00<br>51 | 2.00<br>51 | 2.00<br>51 |
| **Height of stem square** | L | 1.8<br>46 | 2.0<br>51 | 2.1<br>53 | 2.1<br>53 |
| **Size of wrench** | — | P-2 | T-2 | T-2 | T-2 |
| **Length of wrench** | — | 27.0<br>686 | 36.0<br>914 | 36.0<br>914 | 36.0<br>914 |
| **Size of sealant stick** | — | D | G | G | G |
| **Weight (approx.), Fig 3464/3474/3484** | — | 114/112/112<br>52/51/51 | 220/216/—<br>100/98/— | | |
| **Weight (approx.), Fig 3465/3475/3485** | — | 137/136/144<br>62/62/65 | 220/216/244<br>100/98/111 | 327/326/345<br>148/148/156 | 356/354/383<br>161/161/174 |

*Flanges are drilled to ASME Class 125 Cast Iron Flange Standard Template.*
*Valves conform to the following standards where applicable: ASME B2.1; ASME B16.1; API 5B, ASTM A126 Class B and MSS SP-78.*
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to end of side outlet equals half of "A"; to face of side outlet equals half "B."*

# Nordstrom Iron Bolted Gland-Type Multiport Plug Valves

200 CWP (13.8 bar)
400 psig (27.6 bar) Test
Figure 3469 – 3-way, 2-port, sizes 6" to 8"
Figure 3479 – 3-way, 3-port, sizes 6" to 8"
Figure 3489 – 4-way, 4-port, sizes 6" to 12"
Flanged, Worm Gear Operated

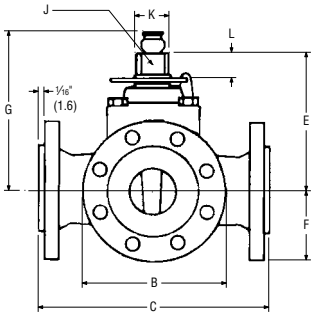



| Size | NPS<br>DN | 6<br>150 | 8<br>200 | 10<br>250 | 12<br>300 |
|---|---|---|---|---|---|
| Face-to-face, flanged | B | 17.00<br>432 | 20.00<br>508 | 24.50<br>622 | 29.50<br>749 |
| Diameter of flanges | C | 11.0<br>279 | 13.5<br>343 | 16.0<br>406 | 19.0<br>483 |
| Thickness of flanges | D | 1.06<br>27 | 1.18<br>30 | 1.3<br>32 | 1.4<br>35 |
| Center to top of stem | E | 13.4<br>340 | 15.6<br>396 | 18.5<br>470 | 20.8<br>528 |
| Center to bottom of body | F | 8.9<br>226 | 10.4<br>264 | 12.3<br>312 | 14.2<br>361 |
| Clearance required to remove sealant fitting | G | 18.4<br>467 | 20.6<br>523 | 23.5<br>597 | 25.8<br>655 |
| Center of port to center of handwheel | S | 11.2<br>284 | 13.1<br>333 | 15.9<br>404 | 18.6<br>472 |
| Transverse centerline to center of worm shaft | T | 6.3<br>160 | 7.5<br>191 | 11.1<br>282 | 12.3<br>312 |
| Longitudinal centerline to face of handwheel, 3-way valve | U | 11.4<br>290 | 13.6<br>345 | | |
| Longitudinal centerline to face of handwheel, 4-way valve | U | 15.4<br>391 | 16.9<br>429 | 18.5<br>470 | 17.7<br>450 |
| Overall diameter of handwheel, 3-way valve | W | 23.0<br>584 | 26.0<br>660 | | |
| Overall diameter of handwheel, 4-way valve | W | 15.0<br>381 | 18.0<br>457 | 18.0<br>457 | 21.0<br>533 |
| Turns of handwheel to turn plug 90° | — | 16 | 19½ | 22½ | 25½ |
| Size of sealant stick | — | G | G | G | G |
| Weight (approx.), Figure 3469 | — | 440<br>200 | 700<br>318 | | |
| Weight (approx.), Figure 3479 | — | 434<br>197 | 694<br>315 | | |
| Weight (approx.), Figure 3489 | — | 454<br>206 | 743<br>337 | 1310<br>594 | 1905<br>864 |

*Flanges are drilled to ASME Class 125 Cast Iron Flange Standard Template.*
*Valves conform to the following standards where applicable: ASME B16.1; ASTM A126 Class B and MSS SP-78.*
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to end of side outlet equals half of "A"; to face of side outlet equals half "B."*

# Super Nordstrom Steel Multiport Plug Valves

ANSI Class 150 (PN 20)
Figure 3803 – 3-way, 2-port, sizes 1½" to 2"
Figure 3813 – 3-way, 3-port, sizes 1½" to 2"
Figure 3823 – 4-way, 4-port, sizes 1½" to 2"
Flanged, Wrench Operated



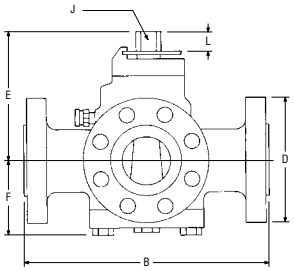

| Size | NPS<br>DN | 1½<br>40 | 2<br>50 |
|---|---|---|---|
| **End-to-end, flanged (raised face) (includes 1/16" raised face)** | B | 9.0<br>229 | 9.0<br>229 |
| **Diameter of flange** | C | 5.0<br>127 | 6.0<br>152 |
| **Center to top of stem** | E | 6.4<br>163 | 6.4<br>163 |
| **Center to bottom of body** | F | 3.8<br>97 | 3.8<br>97 |
| **Clearance required to remove sealant fitting** | G | 8.9<br>226 | 8.9<br>226 |
| **Width of stem flats** | J | 1.25<br>32 | 1.25<br>32 |
| **Diameter of stem** | K | 1.78<br>45 | 1.78<br>45 |
| **Height of stem flats** | L | 1.3<br>33 | 1.3<br>33 |
| **Size of sealant stick** | — | B | B |
| **Size of wrench** | — | L-9 | L-9 |
| **Length of wrench** | — | 17.5<br>445 | 17.5<br>445 |
| **Weight (approx.), Figure 3803 and 3813** | — | 55<br>25 | 58<br>26 |
| **Weight (approx.), Figure 3823** | — | 65<br>29 | 65<br>29 |

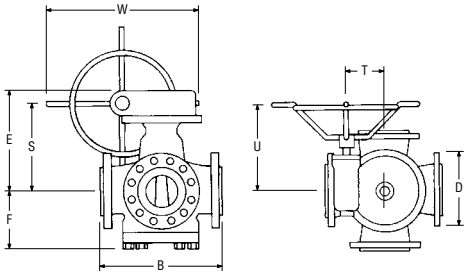
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only a 90° plug position.*
*Center of run to face of side outlet equals half "B."*
*Valves conform to the following standards where applicable: ASME B16.5 and ASME B16.34.*

# Dynamic Balance Steel Multiport Plug Valves

ANSI Class 150 (PN 20)
Figure 5105 – 3-way, 2-port, sizes 3" and 4"
Figure 5115 – 3-way, 3-port, sizes 3" and 4"
Figure 5125 – 4-way, 4-port, sizes 3" and 4"
Flanged, Wrench Operated

Figure 5109 – 3-way, 2-port, sizes 6"–10"
Figure 5119 – 3-way, 3-port, sizes 6"–10"
Figure 5129 – 4-way, 4-port, sizes 6"–8"
Flanged, Worm Gear Operated




| Size | NPS<br>DN | 3<br>80 | 4<br>100 | 6<br>150 | 8<br>200 | 10<br>250 |
|---|---|---|---|---|---|---|
| Face-to-face, flanged, (raised face) (includes 1/16" raised face) | B | 14.0<br>356 | 14.0<br>356 | 18.0<br>457 | 21.0<br>533 | 24.5<br>622 |
| End-to-end, flanged (ring joint) | — | 14.5<br>368 | 14.5<br>368 | 18.5<br>470 | 21.5<br>546 | 25.0<br>635 |
| Diameter of flange | D | 7.5<br>191 | 9.0<br>229 | 11.0<br>279 | 13.5<br>343 | 16.0<br>407 |
| Center to top of gearing | E | | | 17.0<br>432 | 17.2<br>437 | 19.2<br>488 |
| Center to top of stem | E | 10.4<br>264 | 10.4<br>264 | | | |
| Center to bottom of body | F | 6.8<br>173 | 6.8<br>173 | 8.8<br>224 | 10.2<br>259 | 10.8<br>274 |
| Width of stem flats | J | 1.25<br>32 | 1.25<br>32 | | | |
| Height of plug stem | L | 1.41<br>36 | 1.41<br>36 | | | |
| Center of port to center of handwheel | S | | | 12.7<br>323 | 12.9<br>328 | 14.5<br>368 |
| Transverse centerline to center of worm shaft | T | | | 4.9<br>124 | 4.9<br>124 | 6.0<br>152 |
| Longitudinal centerline to face of handwheel | U | | | 11.9<br>302 | 11.9<br>302 | 14.3<br>363 |
| Turns of handwheel to turn plug 90° | — | | | 12.5 | 12.5 | 16 |
| Overall diameter of handwheel, 3-way | W | | | 20.0<br>508 | 20.0<br>508 | 26.0<br>660 |
| Overall diameter of handwheel, 4-way | W | | | 12<br>305 | 12<br>305 | |
| Size of wrench | — | DB-4 | DB-4 | | | |
| Weight (approx.), Figure 5105/5115 | — | 185<br>84 | 267<br>121 | | | |
| Weight (approx.), Figure 5125 | — | 194<br>88 | 280<br>127 | | | |
| Weight (approx.), Figure 5109/5119 | — | | | 644<br>292 | 846<br>384 | 1526<br>692 |
| Weight (approx.), Figure 5129 | — | | | 650<br>295 | 898<br>407 | |

*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to face of side outlet equals half "B."*
*Valves conform to the following standards where applicable: ASME B16.5 and ASME B16.34.*

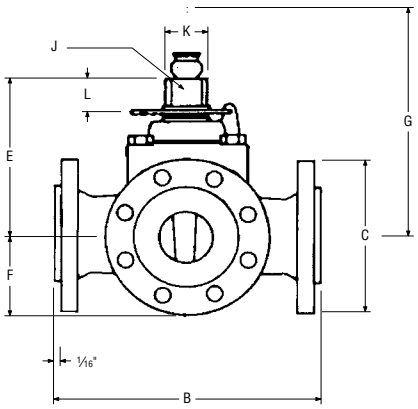
# Super Nordstrom Steel Multiport Plug Valves

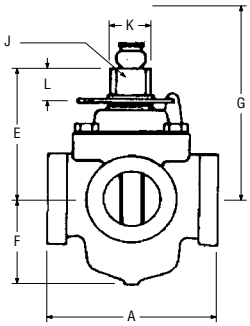
## Regular Pattern

Sizes ½–2
ANSI Class 300 (PN 50)

Figure 4803 – 3-way, 2-port, sizes ½" to 2"
Figure 4813 – 3-way, 3-port, sizes ½" to 2"
Figure 4823 – 4-way, 4-port, sizes ½" to 2"
Flanged, Wrench Operated

Figure 4802 – 3-way, 2-port, sizes 1½" to 2"
Figure 4812 – 3-way, 3-port, sizes 1½" to 2"
Figure 4822 – 4-way, 4-port, sizes 1½" to 2"
Threaded, Wrench Operated



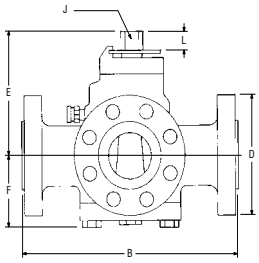

| Size | NPS<br>DN | ½<br>15 | ¾<br>20 | 1<br>25 | 1½<br>40 | 2<br>50 |
|---|---|---|---|---|---|---|
| End-to-end, threaded | A | 4.8<br>122 | 4.8<br>122 | 4.8<br>122 | 6.9<br>175 | 6.9<br>175 |
| Face-to-face, flanged (raised face) (includes 1/16" raised face) | B | | | | 9.5<br>241 | 9.4<br>239 |
| Diameter of flange | C | | | | 6.1<br>155 | 6.5<br>165 |
| Center to top of stem | E | 4.5<br>114 | 4.5<br>114 | 4.5<br>114 | 6.4<br>163 | 6.4<br>163 |
| Center to bottom of body | F | 2.1<br>53 | 2.1<br>53 | 2.1<br>53 | 3.8<br>97 | 3.8<br>97 |
| Clearance required to remove sealant fitting | G | 7.0<br>178 | 7.0<br>178 | 7.0<br>178 | 8.9<br>226 | 8.9<br>226 |
| Width of stem flats | J | .81<br>21 | .81<br>21 | .81<br>21 | 1.25<br>32 | 1.25<br>32 |
| Diameter of stem | K | 1.09<br>28 | 1.09<br>28 | 1.09<br>28 | 1.78<br>45 | 1.78<br>45 |
| Height of stem flats | L | .9<br>23 | .9<br>23 | .9<br>23 | 1.3<br>33 | 1.3<br>33 |
| Wrench size | — | SN-1 | SN-1 | SN-1 | L-9 | L-9 |
| Size of sealant stick | — | B | B | B | B | B |
| Weight (approx.), Figure 4802/4812 | — | 14<br>6 | 14<br>6 | 14<br>6 | 52<br>24 | 52<br>24 |
| Weight (approx.), Figure 4822 | — | 15<br>7 | 15<br>7 | 15<br>7 | 54<br>25 | 54<br>25 |
| Weight (approx.), Figure 4803/4813 | — | | | | 57<br>26 | 59<br>27 |
| Weight (approx.), Figure 4823 | — | | | | 65<br>30 | 68<br>31 |

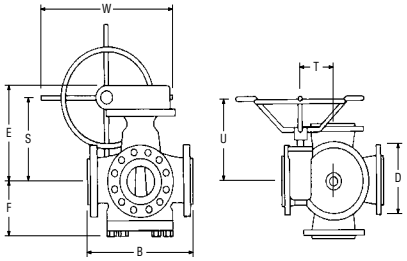
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only a 90° plug position.*
*Center of run to face of side outlet equals half "B."*
*Valves conform to the following standards where applicable: ASME B16.5 and ASME B16.34.*

# Dynamic Balance Steel Multiport Plug Valves

ANSI Class 300 (PN 50)
Figure 5205 – 3-way, 2-port, Sizes 3" and 4"
Figure 5215 – 3-way, 3-port, Sizes 3" and 4"
Figure 5225 – 4-way, 4-port, Sizes 3" and 4"
Flanged, Wrench Operated

Figure 5209 – 3-way, 2-port, Sizes 6"–10"
Figure 5219 – 3-way, 3-port, Sizes 6"–10"
Figure 5229 – 4-way, 4-port, Sizes 6"–8"
Flanged, Worm Gear Operated




| Size | NPS<br>DN | 3<br>80 | 4<br>100 | 6<br>150 | 8<br>200 | 10<br>250 |
|---|---|---|---|---|---|---|
| Face-to-face, flanged, (raised face) (includes 1/16" raised face) | B | 14.0<br>356 | 16.3<br>414 | 19.5<br>495 | 23.0<br>584 | 24.5<br>622 |
| End-to-end, flanged (ring joint) | — | 14.6<br>371 | 16.9<br>429 | 20.1<br>511 | 23.6<br>599 | 25.0<br>635 |
| Diameter of flange | D | 8.25<br>210 | 10.00<br>254 | 12.50<br>318 | 15.00<br>381 | 17.50<br>445 |
| Center to top of gearing | E | | | 17.0<br>432 | 17.2<br>437 | 19.2<br>488 |
| Center to top of stem | E | 10.4<br>264 | 10.4<br>264 | | | |
| Center to bottom of body | F | 6.8<br>173 | 6.8<br>173 | 8.8<br>224 | 10.2<br>259 | 10.8<br>274 |
| Width of stem flats | J | 1.25<br>32 | 1.25<br>32 | | | |
| Height of plug stem | L | 1.41<br>36 | 1.41<br>36 | | | |
| Center of port to center of handwheel | S | | | 12.7<br>323 | 12.9<br>328 | 14.5<br>368 |
| Transverse centerline to center of worm shaft | T | | | 4.9<br>124 | 4.9<br>124 | 6.0<br>152 |
| Longitudinal centerline to face of handwheel | U | | | 11.9<br>302 | 11.9<br>302 | 14.3<br>363 |
| Turns of handwheel to turn plug 90° | — | | | 12.5 | 12.5 | 16 |
| Overall diameter of handwheel, 3-way | W | | | 20.0<br>508 | 20.0<br>508 | 26.0<br>660 |
| Overall diameter of handwheel, 4-way | W | | | 12<br>305 | 12<br>305 | |
| Size of wrench | — | DB-4 | DB-4 | | | |
| Weight (approx.), Figure 5205/5215 | — | 204<br>93 | 297<br>135 | | | |
| Weight (approx.), Figure 5225 | — | 220<br>100 | 320<br>145 | | | |
| Weight (approx.), Figure 5209/5219 | — | | | 704<br>319 | 930<br>422 | 1640<br>744 |
| Weight (approx.), Figure 5229 | — | | | 730<br>331 | 1010<br>458 | |

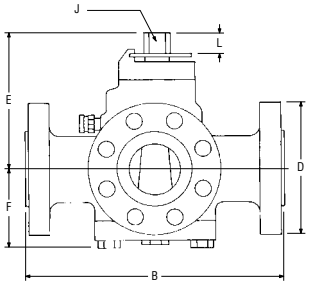
*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to face of side outlet equals half "B."*
*Valves conform to the following standards where applicable: ASME B16.5 and ASME B16.34.*

# Dynamic Balance Steel Multiport Plug Valves

ANSI Classes 600 (PN 100)
and 1500 (PN 250)

ANSI Class 600 (PN 100)
Figure 6405 – 3-way, 2-port, Sizes 2"–4"
Figure 6415 – 3-way, 3-port, Sizes 2"–4"
Flanged, Wrench Operated

ANSI Class 1500 (PN 250)
Figure 6804 – 3-way, 2-port, Sizes 1" and 2"
Figure 6814 – 3-way, 3-port, Sizes 1" and 2"
Figure 6824 – 4-way, 4-port, Sizes 1" and 2"
Threaded, Wrench Operated (not shown)




| Size | NPS | Class 600 (PN 100) | | | Class 1500 (PN 250) | |
|---|---|---|---|---|---|---|
| | | 2 | 3 | 4 | 1 | 2 |
| | DN | 50 | 80 | 100 | 25 | 50 |
| End-to-end, threaded | A | | | | 5.1<br>130 | 8.9<br>226 |
| Face-to-face, flanged (raised face) (includes ¼" raised face) | B | 12.0<br>305 | 15.5<br>394 | 18.0<br>457 | | |
| End-to-end, flanged (ring joint) | — | 12.1<br>307 | 15.6<br>396 | 18.0<br>457 | | |
| Diameter of flange | C | 6.50<br>165 | 8.25<br>210 | 10.75<br>273 | | |
| Center to top of stem | E | 7.4<br>188 | 10.4<br>264 | 10.4<br>264 | 5.9<br>150 | 7.4<br>188 |
| Center to bottom of body, Figure 6804/6814/6824 | F | | | | 3.1<br>79 | 5.4<br>137 |
| Center to bottom of body, Figure 6405/6415 | F | 5.4<br>137 | 6.8<br>173 | 6.8<br>173 | | |
| Width of stem flats | J | 1.00<br>25 | 1.25<br>32 | 1.25<br>32 | .62<br>16 | 1.00<br>25 |
| Height of stem flats | L | 1.4<br>36 | 1.4<br>36 | 1.4<br>36 | .9<br>23 | 1.4<br>36 |
| Size of wrench | — | DB-3 | DB-4 | DB-4 | DB-1 | DB-3 |
| Weight (approx.), Figure 6405/6415 | — | 104<br>47 | 230<br>104 | 326<br>148 | | |
| Weight (approx.), Figure 6804/6814 | — | | | | 22<br>10 | 105<br>48 |
| Weight (approx.), Figure 6824 | — | | | | 26<br>12 | 100<br>45 |

*When ordering multiport valves, specify port and stop arrangement number.*
*Multiport valves have special lubrication systems and should be lubricated in only 90° plug position.*
*Center of run to face of side outlet equals half "B."*
*Valves conform to the following standards where applicable: ASME B16.5 and ASME B16.34.*

# Conformance to Standard Specifications

Wherever applicable, iron and steel plug valves by Flowserve Nordstrom Valves conform to the latest edition of the standard specifications shown below as to pressure ratings, dimensions and construction. Consult your Nordstrom Customer Service Representative for additional information.

**ASME – American Society of Mechanical Engineers**

**B1.20.1** Pipe Threads, General Purpose (Inch)
**B16.1** Cast Iron Pipe Flanges and Flanged Fittings (except valves having slightly thicker flanges)
**B16.5** Pipe Flanges and Flanged Fittings
**B16.11** Forged Steel Fittings, Socket-Welding and Threaded Ends
**B16.34** Valves – Flanged, Threaded and Welding Ends
**B18.2.1** Square and Hex Bolts and Screws
**B18.2.2** Square and Hex Nuts

**API – American Petroleum Institute**

**5B** Threading, Gaging and Thread Inspection of Casing, Tubing and Line Pipe Threads

**ISO 9001 Certified**

**MSS – Manufacturers Standardization Society of the Valve and Fittings Industry**

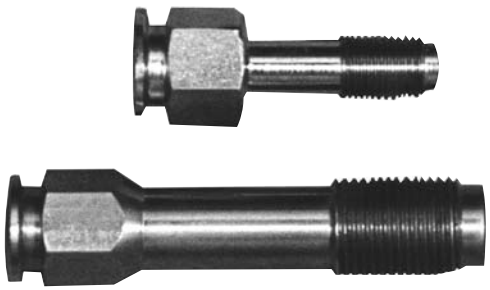
**SP-6** Standard Finish for Contact Faces of Pipe Flanges and Connecting-End Flanges of Valves and Fittings
**SP-25** Standard Marking System for Valves, Fittings, Flanges and Unions
**SP-55** Quality Standard for Steel Castings for Valves, Flanges and Fittings and Other Piping Components
**SP-78** Cast Iron Plug Valves, Flanged and Threaded Ends
**SP-84** Steel Valves – Socket Welding and Threaded Ends
**MR0175** Standard Material Requirements Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment (Valves for NACE Service)

# Sealant Fittings

## Standard Fitting

The Nordstrom Sealant Fitting is standard equipment on all Flowserve Nordstrom valves. Nordstrom Sealant Fittings allow both manual and automatic sealant injection without need for other special fittings. They are available separately, in several sizes, as replacements for damaged fittings or the lube screw on older design Nordstrom valves still in service.

| Sealant Stick Size | Parallel Thread Size | Carbon Steel Fitting Part Number |
|---|---|---|
| B | ¼" | 3000711 |
| C | ⅜" | 37416 |
| D | ½" | 37417 |
| G | ¾" | 37418 |



## Button Head Fitting

The Dynamic Balance Valve button head fittings are adaptable for mechanical injection of valve sealant. Part No. 480766.

# Gearing

Simple worm gearing enclosed in a weatherproof housing is used on Dynamic Balance valves. An indicator on top readily shows the valve operating position.

Dynamic Balance valves can be provided with watertight gearing, 2” operating nut and bent lube pipe for use in buried services. This modification protects the valve plug stem and brings sealant injection to ground level. With this buried worm gearing, the valve is operated with a tee-handle socket wrench.

Dynamic Balance valves can also be supplied with a gearbox that will accommodate electric actuators. Standard gearing is not supplied with an actuator mounting flange. Please provide the information listed under the Actuators section when ordering a valve that is to be actuated.

Gearing elevations and wormshaft extensions can also be supplied to meet your requirements.

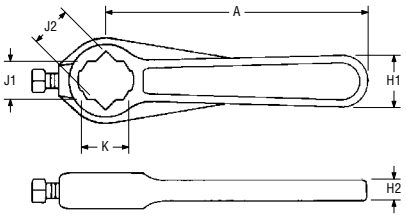
Iron Multiports are supplied with open gearing.

# Actuators

Flowserve Nordstrom Valves can supply hydraulic, pneumatic or electric power actuators for mechanical operation of Dynamic Balance, Nordstrom and Super Nordstrom valves. To obtain equipment in close conformance with customer requirements, the following information should be provided at the time of the inquiry:

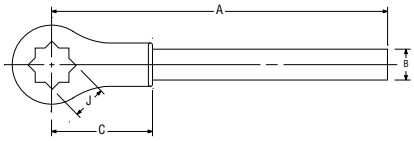
1. Valve size and pressure class
   - A. If the power actuator is being ordered for field conversion, describe the actuator currently installed on the valve.
2. Type of actuator desired
   - A. Hydraulic
   - B. Pneumatic
   - C. Electric
3. Maximum differential pressure across valve during operation
4. Minimum differential pressure across valve during operation
5. Line fluid
6. Type of Flowserve Nordstrom sealant used in valve
7. Speed of operation required in minutes or seconds
   - A. To open
   - B. To close
8. Frequency of operation
9. For an electric operator, specify
   - A. AC or DC voltage
   - B. Single or 3-phase
   - C. Type of motor
     1. Explosion proof
     2. Weatherproof
     3. Other
   - D. Frequency
10. If pneumatic or hydraulic actuator is desired, specify
    - A. Minimum and maximum pressure available
    - B. Operating medium
      1. Gas
      2. Air
      3. Fluid (specify type)
    - C. Accessory equipment desired
      1. Filter
      2. Pump
      3. Control valving
         - a. electrically operated
         - b. manually operated
         - c. pilot operated
11. Position indicator (visual indicator on valves is standard)
    - A. Remote reading
      1. Selsyn
      2. Potentiometer
12. Full instrumentation to be furnished by
    - A. Flowserve Nordstrom Valves
    - B. Others

# Wrenches



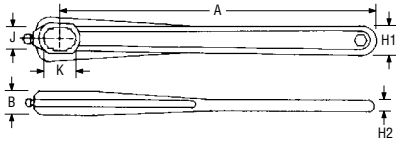

## Nordstrom and Super Nordstrom Valves with Square or Obround Stems

| Size | Part # | Weight | A | H1 | H2 | J1 | J2 | K |
|---|---|---|---|---|---|---|---|---|
| SN-1 | 3001198 | .9<br>.4 | 7.0<br>178 | 1.1<br>28 | .4<br>10 | .81<br>21 | .88<br>22 | 1.10<br>28 |



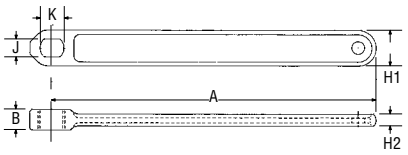

## Nordstrom Valves with Square Heads (Size 6 and Larger)

| Size | Part # | Weight | A | B (Dia.) | C | J |
|---|---|---|---|---|---|---|
| P-2 | 8889 | 6<br>3 | 27.0<br>686 | 1.7<br>43 | 5.5<br>140 | 1.84<br>47 |
| T-2 | 8148 | 11<br>5 | 36.0<br>914 | 1.9<br>48 | 6.7<br>170 | 2.09<br>53 |



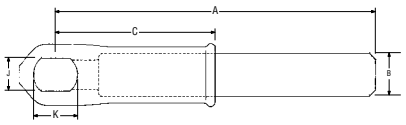

## Nordstrom Valves with Obround Stems

| Size | Part # | Weight | A | B | H1 | H2 | J | K |
|---|---|---|---|---|---|---|---|---|
| E-9 | 15105 | 1.0<br>.5 | 7.0<br>178 | .8<br>20 | 1.3<br>33 | .5<br>13 | .88<br>22 | 1.23<br>31 |
| H-9 | 15106 | 1.3<br>.6 | 9.0<br>229 | .9<br>23 | 1.4<br>36 | .5<br>13 | .94<br>24 | 1.32<br>34 |
| E-9 | 15108 | 2.5<br>1.1 | 14.0<br>356 | 1.1<br>28 | 1.6<br>41 | .6<br>15 | 1.13<br>29 | 1.60<br>41 |
| L-9 | 15109 | 3.8<br>1.7 | 17.5<br>445 | 1.2<br>30 | 1.8<br>46 | .6<br>15 | 1.25<br>32 | 1.79<br>45 |
| M-9 | 15110 | 5.5<br>2.5 | 21.0<br>533 | 1.3<br>33 | 1.9<br>48 | .6<br>15 | 1.38<br>35 | 1.98<br>50 |




## Cast Wrench for Dynamic Balance Valves

| Size | Part # | Weight | A | B | H1 | H2 | J | K |
|---|---|---|---|---|---|---|---|---|
| DB-1 | 482014 | 2.0<br>.9 | 18.0<br>457 | .9<br>23 | 1.4<br>35 | .4<br>11 | .655<br>17 | .875<br>22 |




## Cast Heads Fitted with Pipe Handle for Dynamic Balance Valves

| Size | Part # | Weight | A | B (Dia.) | C | J | K |
|---|---|---|---|---|---|---|---|
| DB-3 | 482137 | 6.8<br>3 | 36<br>914 | 1.3<br>33 | 4.7<br>119 | 1.03<br>26 | 1.44<br>37 |
| DB-4 | 482138 | 12.9<br>6 | 48<br>1219 | 1.9<br>49 | 5.5<br>140 | 1.28<br>33 | 1.82<br>46 |

# Square Adapters

## For Wrench-Operated Valves

All adapters have 2" (51 mm) square wrench flat, so that all valves fitted with adapters may be operated with a single lever or socket wrench having 2" (51 mm) square opening.

### 2" Square Adapters for Valves with Square Wrench Heads

| Distance Across Flats of Square Stem Head on Valve (See Dimension "J")* | Adapter Part # |
|---|---|
| 1.75<br>44 | 1277 |
| 2.00<br>25 | None Required |

** For dimension "J" refer to valve dimension tables.*

### 2" Square Adapters for Valves with Obround Wrench Heads

| Distance Across Flats of Obround Wrench Head on Valve (See Dimension "J")* | Adapter Part # |
|---|---|
| .62<br>.16 | 61291 |
| .81<br>21 | 12180 |
| .88<br>22 | 12181 |
| .94<br>24 | 12182 |
| 1.00<br>25 | 12183 |
| 1.12<br>29 | 12184 |
| 1.25<br>32 | 12185 |
| 1.38<br>35 | 12186 |

** For dimension "J" refer to valve dimension tables.*

# Locking Devices

## For Nordstrom Bolted Gland-Type Multiport Valves

Locking devices can be used to lock or seal valves in any of the operating positions. The device encloses the wrench flats and gland of the valve, thus preventing removal of or tampering with these parts.

### Figure Numbers 3465, 3475 and 3485; Sizes 5 and 6

| Part Description | Part # |
|---|---|
| Hood | 57629 |
| Locking Clip | 57613 |
| Dart and Chain | 57734 |
| Complete Assembly | 58092 |

### Figure Numbers 3464, 3465, 3474, 3475, 3484 and 3485; Sizes 3 and 4

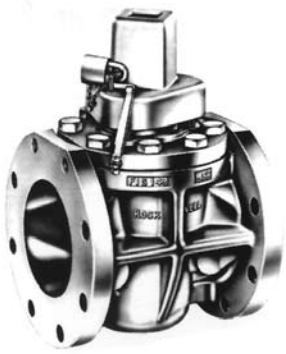
| Part Description | Part # |
|---|---|
| Hood | 57630 |
| Locking Clip | 45926 |
| Dart and Chain | 57734 |
| Complete Assembly | 58093 |

## For Dynamic Balance and Super Nordstrom Multiport Valves

Locking devices can be used to lock wrench-operated valves for port arrangements 1 through 6 only. Ask your Customer Service Representative for details.

## For Wrench-Operated Valves

When ordering a locking device, specify the size and figure number of the valve.



# Dynamic Balance Standard Design Categories

In the interest of clarity, Flowserve Nordstrom Valves has designated the following standard design categories for Dynamic Balance multiport valves. When ordering, please indicate the letter suffix that best defines your requirements, along with complete service details.

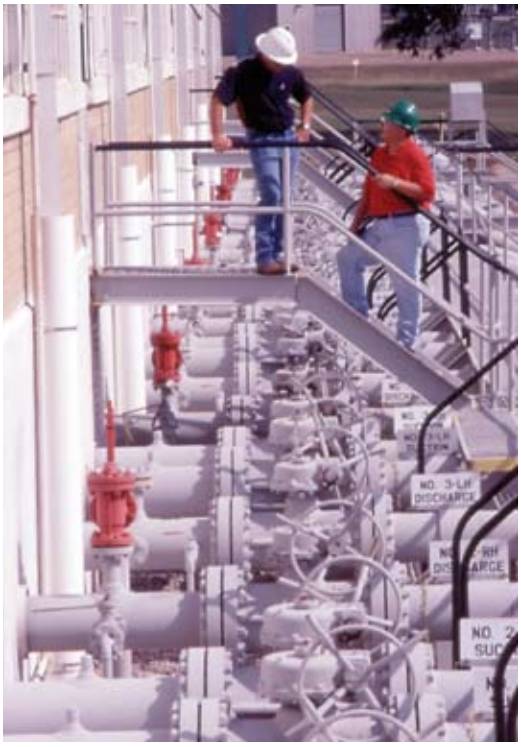
Contact your Customer Service Representative for assistance.

**A** The standard carbon steel B16.34 valve suitable for general service at temperatures from -20°F to 450°F (-29°C to 232°C).

**B** Low-temperature valves (LCC material) suitable for general service from -50°F to 450°F (-46°C to 232°C).

**C** Sour gas valves conforming to NACE MR0175 and B16.34, suitable for -20°F to 450°F (-29°C to 232°C) in accordance with the appropriate standard.

**D** Sour gas valves conforming to NACE MR0175 and B16.34, constructed of material suitable for low-temperature service -50°F (-46°C) to either 250°F (121°C) or 450°F (232°C) in accordance with the appropriate standard.



# NACE Construction Valves for Sour Gas Applications

NACE, the National Association of Corrosion Engineers, has published a report outlining acceptable materials for valves for sour gas service. The current outline is Publication MR0175, and is a guide to the manufacturers and users of valves based on the latest metallurgical knowledge. Because of a long history of reliability in numerous sour gas installations, Dynamic Balance valves can be supplied in conformance to standards enumerated in the NACE governing document on sour gas application.

In some cases, a more sophisticated construction may be required because of other corrosive elements in the flow stream. All major components are heat treated to a controlled hardness of 22 or lower on the Rockwell C scale. In this construction, the plug is coated with electroless nickel to prevent galling.

Complete engineering details are available upon request.

# Dynamic Balance Multiport Plug Valve Metals

## Carbon Steel

Cast carbon steel used in Dynamic Balance valve bodies is a medium carbon steel, conforming to ASTM Specification A216, Grade WCC.

Each heat is rigidly controlled and recorded. The castings are marked to identify the heat used in each finished valve.

Steel plugs for carbon steel valves are made of a low alloy steel, heat treated to produce the proper balance between non-galling properties and the toughness required to resist the mechanical loads imposed in operating the valve.

## Ferritic Steel

Grade LCC Ferritic Steel, conforming to ASTM Specification A352, is basically a "killed" mild carbon steel which has good impact qualities at low temperatures.

This material is used generally for subzero temperatures to -50°F (-46°C) and must have a minimum average Charpy "V" notch impact strength of 15 foot pounds at that temperature.

# Test and Working Pressures (psig minimum)

| | 150 CWP | 200 CWP | 400 CWP | ANSI Class | | | |
|---|---|---|---|---|---|---|---|
| | | | | 150 | 300 | 600 | 1500 |
| **Maximum Cold Working Pressure** | 150 | 200 | 400 | 285 | 740 | 1480 | 3705 |
| **Hydrostatic Body (Shell) Test** | 300 | 400 | 800 | 450 | 1125 | 2225 | 5575 |
| **Hydrostatic Seat Test** | 225 | 300 | 600 | 325 | 825 | 1650 | 4100 |

# Test Times

| Valve Type | Valve Sizes | Test Time (min.) | | | |
|---|---|---|---|---|---|
| | | 150, 200 and 400 CWP Valves | | ANSI Class Valves | |
| | | Hydrostatic Body | Hydrostatic Seat | Hydrostatic Body | Hydrostatic Seat |
| **Screwed Gland** | **1–4** | ½ | 1 | 2 | 2 |
| **Bolted Gland** | **4–8** | 1 | 1 | 5 | 5 |
| **Dynamic Balance and Super Nordstrom Valves** | **1–4** | — | — | 2 | 2 |
| | **6–10** | — | — | 5 | 5 |

# Operating Temperatures

## Steel Plug Valves Maximum Operating Temperatures

**Dynamic Balance Plug Valves**
Standard construction Dynamic Balance valves (Category A) are suitable for operation at the pressures and temperatures listed in the table below up to a maximum temperature of 450°F (232°C).

**Super Nordstrom Steel Plug Valves**
Super Nordstrom and Nordstrom ANSI rated valves are suitable for operation at the pressures and temperatures in the above table up to a maximum of 350°F (177°C).

## Iron Plug Valve Maximum Operating Temperatures

| | | |
|---|---|---|
| Bolted Gland Design | 350°F | 177°C |
| Screwed Gland Design | 350°F | 177°C |

# Temperature Ratings

## Recommended Pressure/Temperature Ratings for Nordstrom Iron Plug Valves

| Temperature (°F) | Working Pressure (psig) | | |
|---|---|---|---|
| | 150 | 200 | 400 |
| -20 to 150 | 150 | 200 | 400 |
| 200 | 135 | 190 | 370 |
| 225 | 130 | 180 | 355 |
| 250 | 125 | 175 | 340 |
| 275 | 120 | 170 | 325 |
| 300 | 110 | 165 | 310 |
| 325 | 105 | 155 | 295 |
| 353 | 100 | 150 | 280 |

| Temperature (°C) | Working Pressure (bar) | | |
|---|---|---|---|
| | 10.3 | 13.8 | 28.0 |
| -29 to 65 | 10.3 | 13.8 | 28.0 |
| 80 | 9.8 | 13.3 | 26.0 |
| 100 | 9.2 | 12.7 | 25.0 |
| 120 | 8.6 | 12.1 | 24.0 |
| 135 | 8.3 | 11.7 | 22.0 |
| 140 | 8.0 | 11.5 | 22.0 |
| 149 | 7.2 | 10.7 | 20.0 |
| 178 | 6.9 | 10.3 | 19.3 |

## Carbon Steel Valve Pressure/Temperature Ratings for Super Nordstrom and Dynamic Balance Valves

| Service Temp (°F) | Working Pressure by Classes (psig) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 150 | | 300 | | 600 | | 900 | | 1500 | | 2500 | |
| | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC |
| -20 to 100 | 285 | 290 | 740 | 750 | 1480 | 1500 | 2220 | 2250 | 3705 | 3750 | 6170 | 6250 |
| 200 | 260 | 260 | 675 | 750 | 1350 | 1500 | 2025 | 2250 | 3375 | 3750 | 5625 | 6250 |
| 250 | 245 | 245 | 665 | 740 | 1333 | 1478 | 1998 | 2218 | 3328 | 3695 | 5548 | 6160 |
| 300 | 230 | 230 | 655 | 730 | 1315 | 1455 | 1970 | 2185 | 3280 | 3640 | 5470 | 6070 |
| 400 | 200 | 200 | 635 | 705 | 1270 | 1410 | 1900 | 2115 | 3170 | 3530 | 5280 | 5880 |
| 450 | 185 | 185 | 618 | 685 | 1235 | 1370 | 1848 | 2055 | 3083 | 3428 | 5135 | 5710 |

| Service Temp (°C) | Working Pressure by Rating Number (bar) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PN20 | | PN50 | | PN100 | | PN150 | | PN250 | | PN420 | |
| | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC | WCB | WCC |
| -29 to 38 | 19.7 | 20.0 | 51.0 | 51.7 | 102.0 | 103.4 | 153.1 | 155.1 | 255.5 | 258.6 | 425.4 | 430.9 |
| 50 | 19.2 | 19.0 | 50.1 | 51.7 | 100.2 | 103.4 | 150.2 | 155.1 | 250.4 | 258.6 | 417.3 | 430.9 |
| 100 | 17.9 | 17.9 | 46.5 | 51.7 | 93.1 | 103.4 | 139.6 | 155.1 | 232.7 | 258.6 | 387.8 | 430.9 |
| 120 | 16.9 | 16.9 | 45.9 | 51.0 | 91.9 | 101.9 | 137.8 | 152.9 | 229.5 | 254.8 | 382.5 | 424.7 |
| 150 | 15.9 | 15.9 | 45.2 | 50.3 | 90.7 | 100.3 | 135.8 | 150.7 | 226.1 | 251.0 | 377.1 | 418.5 |
| 200 | 13.8 | 13.8 | 43.8 | 48.6 | 87.6 | 97.2 | 131.0 | 145.8 | 218.6 | 243.4 | 364.0 | 405.4 |
| 232 | 12.8 | 12.8 | 42.6 | 47.2 | 85.2 | 94.5 | 127.4 | 141.7 | 212.6 | 236.4 | 354.0 | 393.7 |

*CAN/CSA Z245-15 Ratings*

| Service Temperature (°C) | Working Pressure by Rating Number (kPa) | | | |
|---|---|---|---|---|
| | PN 20 | PN 50 | PN 100 | PN 250 |
| -29 to 120 | 19.00 | 49.60 | 99.30 | 248.20 |

# Typical Materials of Construction

## Nordstrom Screwed Gland-Type Valves

| Part Name | Standard Construction |
|---|---|
| Body | Gray Iron |
| Cover | Malleable Iron |
| Plug & Stem | Gray Iron |
| Gland | Carbon Steel |
| Cover Bolting | A449-SAE Grade 5 |
| Gland/Stem Seals | Buna N[1] |
| Seal Holder | Carbon Steel |
| Gasket | Asbestos-Free Sheet Gasket Material |
| Diaphragm | Stainless Steel |
| Check Valve | Carbon Steel |
| Sealant Fitting | Carbon Steel |
| Washer | Carbon Steel |
| Weatherseal | Polyethylene |

## Nordstrom Bolted Gland-Type Valves

| Part Name | Standard Construction |
|---|---|
| Body | Gray Iron |
| Cover | Hi Elon Iron[2] |
| Plug & Stem | Gray Iron |
| Gland | Hi Elon Iron |
| Cover Bolting | A449-SAE Grade 5 |
| Gland Bolting/Nuts | A193 Grade B7/A307 Grade B |
| Gaskets | Asbestos-Free Sheet Gasket Material |
| Diaphragm | Stainless Steel |
| Gland/Stem Seals | Buna N[1] |
| Check Valve | Carbon Steel |
| Sealant Fitting | Carbon Steel |

*Notes:*

*[1] 4-way, 4-port multiport valves have silicone seals as standard construction.*

*[2] Some wrench-operated valve covers may be made from carbon steel material.*

## Super Nordstrom Valves

| Part Name | Standard Construction |
|---|---|
| Body | A216 Grade WCB or A216 Grade WCC |
| Body End Flanges | A105 Forged |
| Cover | Carbon Steel |
| Plug and Stem | Carbon Steel |
| Gland | Carbon Steel |
| Cover Bolting | A193 Grade B7 |
| Packing | Compound of Graphite and TFE |
| Controlled Dimension Washers | Stainless Steel |
| Spring | Stainless Steel |
| Gasket | Stainless Steel and Graphite |
| Stop Collar | Wrought Carbon Steel |
| Retainer Ring | Carbon Steel |
| Sealant Fitting | Carbon Steel |
| Check Valve | Carbon Steel |
| Weatherseal | Buna N |

# Dynamic Balance Valve Typical Materials of Construction

## Size 4 and Smaller Multiport Valves

| Part Name | Category A | Category B | Category C | Category D |
|---|---|---|---|---|
| Adjusting Screw | Alloy Steel | | | |
| Adjusting Screw Cap | Carbon Steel | | | |
| Ball | Stainless Steel | | K-500 Monel | |
| Body[1] | A216 Grade WCC | A352 Grade LCC | A216 Grade WCC | A352 Grade LCC |
| Body End Flanges | A105 Forged | A350 Grade LF2 | A105 Forged | A350 Grade LF2 |
| Bolting – Cover | A193 Grade B7 | A320 Grade L7 | A193 Grade B7M | A320 Grade L7M |
| Bolting – Gland | A193 Grade B7 | A320 Grade L7 | A193 Grade B7M | A320 Grade L7M |
| Bolting – Gear Flange | A193 Grade B7 | A320 Grade L7 | A193 Grade B7M | A320 Grade L7M |
| Check Valve | Carbon Steel | | Stainless Steel | |
| Cover[1] | Carbon Steel | | | |
| Diaphragm – Thick | Carbon Steel | | | |
| Diaphragm – Thin | Stainless Steel | | | |
| Equalizer | Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Gasket | Graphite and Stainless Steel | | | |
| Gear Flange | Wrought Carbon Steel | | | |
| Gland | Ductile Iron | | | |
| Nameplate | Stainless Steel | | | |
| Packing | Graphite and Fluoropolymer Compound | | | |
| Plug | A48 Grade 45B/50B or Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Retaining Ring | Carbon Steel | | | |
| Sealant Fitting | Carbon Steel | | | |
| Spring | Stainless Steel | | Inconel X-750 | |
| Stem[1] (Wrench Operated) | Stainless Steel | | Stainless Steel Double Age Hardened | |
| Stem[1] (Gear Operated) | Wrought Carbon or Low Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Stem Ring | Carbon Steel | | Wrought Carbon Steel | |
| Stop Collar | Wrought Carbon Steel | | | |
| Thrust Button | Nickel Steel | | Wrought Carbon Steel | |
| Weatherseal – Cover | Neoprene | | | |
| Weatherseal – Stem | Buna N | | | |
| Zinc Washer | Zinc | | | |

[1] *Category B and D valves are impact tested to 20/15 ft-lb values.*

## Size 6 and Larger Multiport Valves

| Part Name | Category A | Category B | Category C | Category D |
|---|---|---|---|---|
| Adjusting Screw | Carbon Steel | | | |
| Adjusting Screw Cap | Carbon Steel | | | |
| Ball – Balance | Stainless Steel | | K-500 Monel | |
| Ball – Thrust | Stainless Steel | | K-500 Monel | |
| Ball Retaining Washer | Stainless Steel | | | |
| Ball Seat – Thrust | Alloy Steel | | Stainless Steel – Stellite Hardfaced | |
| Bearing (Thrust Washer) | Glass/PTFE Fiber Carbon Steel Backed | | Glass/PTFE Fiber Stainless Steel Backed | |
| Body[1] | A216 Grade WCC | A352 Grade LCC | A216 Grade WCC | A352 Grade LCC |
| Bolting – Cover | A193 Grade B7 | A320 Grade L7 | A193 Grade B7M | A320 Grade L7M |
| Bolting – Gland Retainer | A193 Grade B7 | A320 Grade L7 | A193 Grade B7M | A320 Grade L7M |
| Bolting – Adj. Screw Cover | SAE Gr 5 | | | |
| Check Valve | Carbon Steel | | Stainless Steel | |
| Cover[1] | Carbon Steel | | | |
| Diaphragm – Thick | Carbon Steel | | | |
| Diaphragm – Thin | Stainless Steel | | | |
| Equalizer | Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Gasket – Cover | Carbon Steel | | | |
| Gasket – Adj. Screw Cover | ACCOPAC N 820 | | | |
| Gland – Gear Operated | Gray Iron | | | |
| Gland Retainer | Carbon Steel | | | |
| Key | Carbon Steel | | | |
| Nameplate | Stainless Steel | | | |
| Packing | Graphite and Fluoropolymer Compound | | | |
| Plug | Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Sealant Fitting | Carbon Steel | | | |
| Spring | Stainless Steel | | Inconel X-750 | |
| Stem[1] (Gear Operated) | Alloy Steel | | Alloy Steel HRC 22 Maximum .003" ENP | |
| Stem Ring | Carbon Steel | | | |
| Thrust Button | Wrought Carbon Steel | | | |
| Weatherseal – Cover | Neoprene | | | |
| Zinc Washer | Zinc | | | |

*[1] Category B&D valves are impact tested to 20/15 ft-lb values.*

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***To find your local Flowserve representative:***

For more information about Flowserve Corporation, visit www.flowserve.com or call USA 1 800 225 6989

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