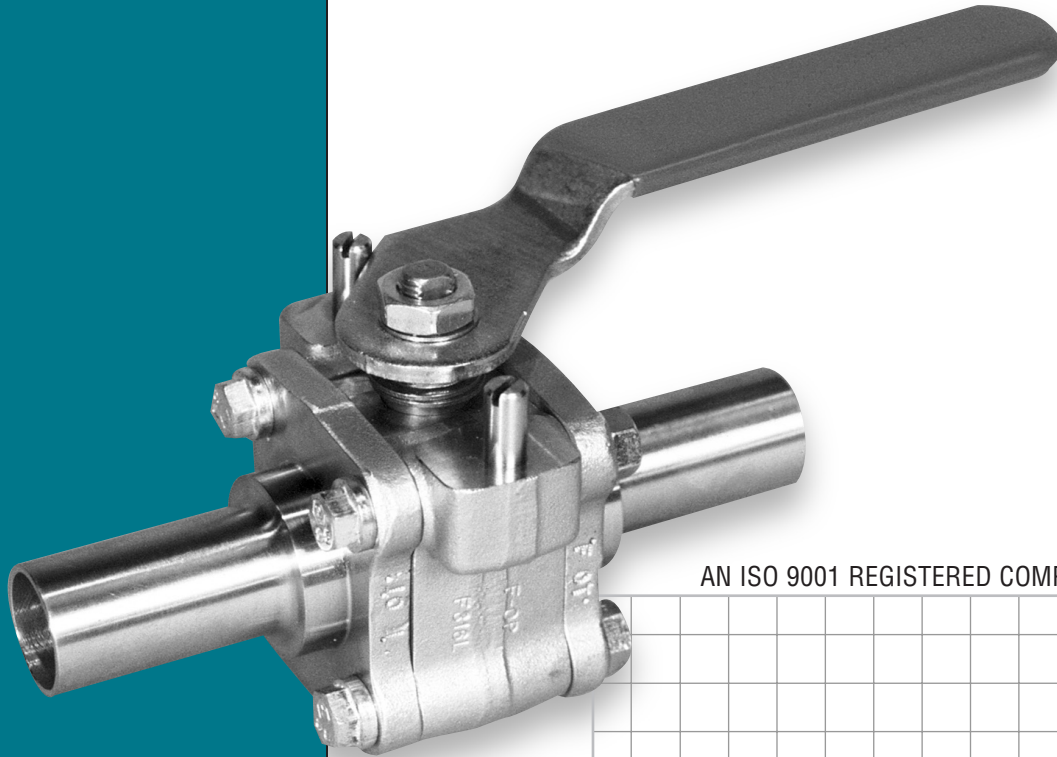


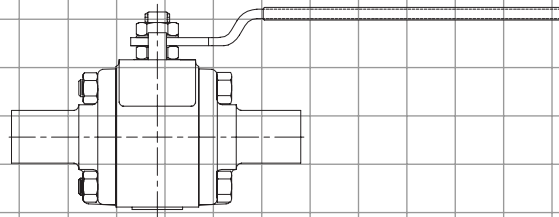


Worcester Controls

FCD WCABR1036-00
(Part PB WK 70-Rev)



AN ISO 9001 REGISTERED COMPANY



Series WK 70 Tube Bore Clean Valves

*Forged Stainless Steel Ball Valves for
high-purity and aseptic processes*

A Clean valve to write your specifications around:

Tube bore, metallurgy, surface finish, shutoff, cleanability and automation

Series WK 70 clean valves operate dependably in the pharmaceutical, biotech, food, cosmetic, paint, chemical and semi-conductor manufacturing industries where microbes, media deposits, mineral impurities and cross-contamination can threaten the quality of the product. The high-purity design, high vacuum rating, high cycle life and pressure/temperature rating of these valves make them ideal for applications from sterile steam to nutrient inlets to high-purity water. The performance of the WK70 Tube Bore Clean Valve is based on a combination of high standard specifications.

Tube Bore*

The inside diameter of WK70 valve components are tube bore dimensions so that the valve precisely matches the tubing it is connected to. This prevents buildup of pyrogens or bacteria.

Forged Valve

WK70 valves are built of forged parts. From an integrity perspective, forgings are better than castings for clean service because they are stronger, free from crevices, pits, shrinks or inclusions and have better controlled metallurgy.

Low Ferrite Content

WK70 valves are made of 316L stainless steel with ferrite content less than 5 percent.** This prevents rouging resulting from minerals and impurities drawn from higher ferrite content metals.

High Integrity Welds

The metallurgy of WK70 body and extended tube ends assures the integrity of the orbital welding. The tube ends have a verifiable sulfur content between .005 percent and .016 percent. Too much sulfur causes a lack of penetration of the orbital welding. With a low sulfur content comparable to that of the process tubing, the quality of the weld is assured.

CMTRs

Certified Material Test Reports are available for the body, pipe ends, ball and stem. (Request when placing order.)

High Cycle Sealing, Bubbletight Shutoff

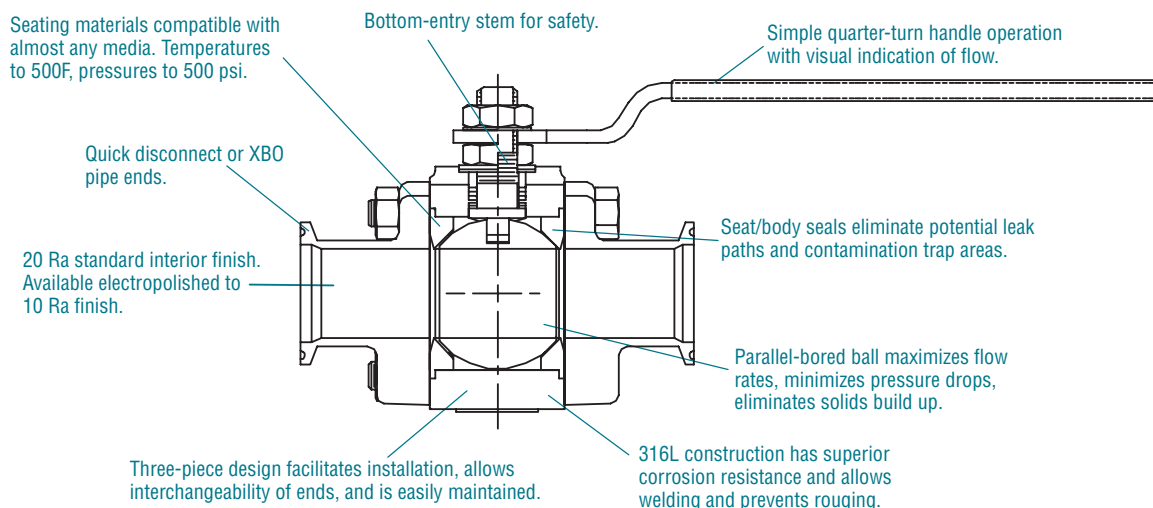
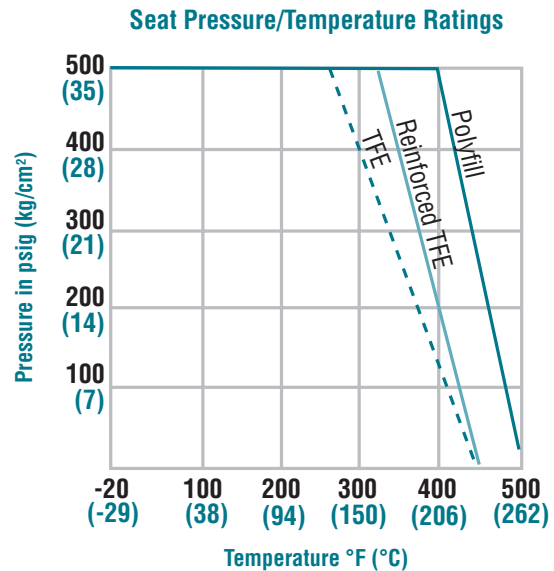
Seats of TFE, Reinforced TFE and Polyfill® provide bubbletight shutoff through the valve, even under conditions of high vacuum and high cycle operation. High-cycle stem seals assure external sealing when the valve is automated.

Steam Service Capability

Pollyfill is a TFM material with carbon and graphite fillers with excellent high temperature properties. These standard seats are capable of up to 275 working steam pressure (WSP) making the WK 70 valve ideal for sterile steam applications.

3"-4" Series WK 70 Clean Valves

Worcester's clean valves are optionally available in 3" and 4" sizes with TC Quick Disconnect and XBO ends through our Custom Product Department.



*For standard reduced port clean valves, refer to Brochure FCD WCABR1035.

**As certified by component manufacturer, CMTRs available upon request.

Specifications

- Valve Size:** ½", ¾", 1", 1½", 2"
(3" and 4" custom product only)
- Styles:** Three-piece, tube bore valve,
bi-directional flow
- Pressure Rating*:** Quick disconnect – varies
according to clamp type and gasket
material. XBO - 500 psig.
- Vacuum Rating:** 1x 10⁻³ torr (1 x 10⁻⁵ torr optional)
- Body and Pipe Ends:** Forged stainless steel to ASTM
A182 F316L. Ferrite content less
than 5%. XBO tube ends have
verifiable sulfur content between
.005% to .016%.
- Ball:** Solid parallel bore (no vent hole)
stainless steel, ASTM A479-316L
condition A.
- Seats:** TFE, Reinforced TFE, Polyfill, TFM
- Body Seals:** TFE
- Stem:** One-piece, bottom-entry stainless
steel ASTM A479-316L,
condition A.
- Stem Seals:** TFE, Polyfill and PEEK.
- External Parts:** 300 series stainless steel

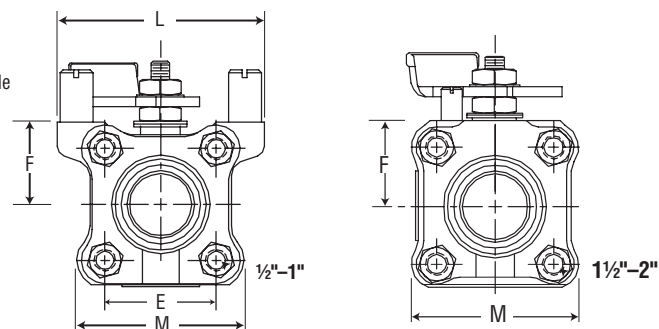
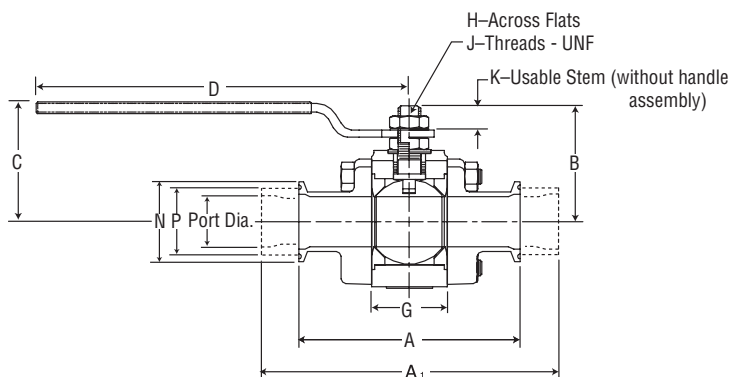
*The final valve pressure and temperature rating is established by the rating of two items; end connections and seat/body seal material. The lowest rating prevails.

- Interior Surface Finish:** 20 Ra Standard (ASME-SFV1),
10 Ra Optional
(electropolish/ASME-SFV4)
- Seat/Seal Leakage:** Standard valves, less than 1x10⁻⁶
cc He/sec inboard and through
the valve, bubbletight (1x10⁻⁴cc
He/sec). With preparation, leakage
will be less than 2x10⁻⁹ He/sec. All
valves 100% tested to bubbletight
standards in a class 100 clean
room and double bagged.
- Standard and Approvals:** Materials of construction comply
with FDA requirements (21CFR).
USP Class VI approval with TFE,
TFM and Polyfill seats. USDA
approval with TFE seats.

C_v Values and Equivalent Length of .065" Wall tubing

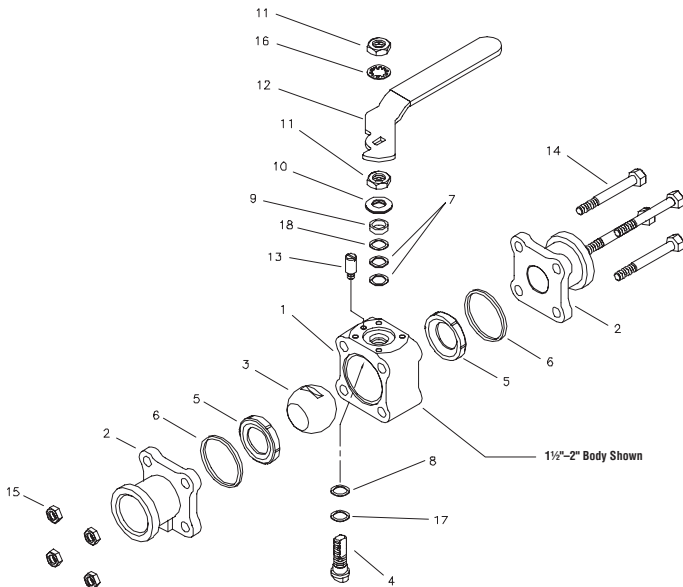
| Valve Size | C _v | | Equivalent Length of Tubing in. (mm) | |
|------------|----------------|------|--------------------------------------|---------------|
| | TC | XBO | Quick Disconnect | XBO |
| ½" | 8.1 | 6.5 | 3.50 (88.9) | 5.53 (141) |
| ¾" | 28.6 | 24.3 | 4.00 (102) | 5.57 (147) |
| 1" | 67 | 56.4 | 4.53 (115) | 6.36 (162) |
| 1½" | 192 | 165 | 5.57 (142) | 7.5 (191) |
| 2" | 400 | 367 | 6.69 (170) | 8.04 (204) |

Dimensions Inches (mm)



| Valve Size | Face to Face | | B | C | D | E | F | G | H | J | K | L | M | N | P | Port Diameter | Valve Weight lb. (kg) |
|------------|----------------|---------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|---------|---------------|----------------|----------------|-----------------|----------------|----------------|-----------------------|
| | TC | XBO | | | | | | | | | | | | | | | |
| ½" | 3.50 (88.9) | 5.53 (141) | 1.55 (39.4) | 1.76 (44.7) | 5.53 (141) | 1.25 (31.8) | .94 (23.9) | .813 (20.7) | .217 (5.51) | ¾-24 | .28 (7.11) | 2.33 (59.2) | 1.79 (45.5) | .986 (25) | .50 (12.7) | .37 (9.40) | 1.1 (.50) |
| ¾" | 4.00 (102) | 5.77 (147) | 1.68 (42.7) | 1.90 (48.3) | 5.53 (141) | 1.50 (31.8) | 1.07 (27.2) | .969 (24.6) | .217 (5.51) | ¾-24 | .28 (7.11) | 2.62 (66.6) | 2.04 (51.8) | .986 (25) | .75 (19.1) | .62 (15.8) | 1.8 (.82) |
| 1" | 4.53 (115) | 6.36 (162) | 2.23 (56.6) | 2.32 (58.9) | 6.53 (166) | 1.75 (44.5) | 1.30 (33.0) | 1.28 (32.5) | .296 (7.52) | 7/16-20 | .43 (10.9) | 3.12 (79.3) | 2.45 (62.2) | 1.986 (50.4) | 1.00 (21.4) | .87 (22.1) | 3.1 (1.41) |
| 1½" | 5.57 (142) | 7.50 (191) | 2.96 (75.2) | 2.91 (73.9) | 8.03 (204) | 2.41 (61.2) | 1.80 (45.7) | 1.98 (50.3) | .343 (8.71) | 9/16-18 | .61 (15.5) | — | 3.31 (84.1) | 1.986 (50.4) | 1.50 (38.1) | 1.37 (34.8) | 6.2 (2.82) |
| 2" | 6.69 (170) | 8.04 (204) | 3.33 (84.6) | 3.29 (83.6) | 8.03 (204) | 3.09 (78.5) | 2.18 (55.4) | 2.66 (67.6) | .343 (8.71) | 9/16-18 | .60 (15.2) | — | 4.09 (104) | 2.518 (64.0) | 2.00 (50.8) | 1.87 (47.5) | 9.5 (4.31) |

Part Identification and Materials of Construction



| Item No. | Qty. | Description | Material |
|----------|--------|-----------------------|--|
| 1 | 1 | Valve Body | Stainless Steel ASTM A182-F316L |
| 2 | 2 | Pipe Ends | Stainless Steel ASTM A182-F316L |
| 3 | 1 | Ball | Stainless Steel A479-316L Cond. A |
| 4 | 1 | Stem | Stainless Steel A479-316L Cond. A |
| 5 | 2 | Seat | TFE-Virgin / Reinforced TFE / PolyFill / TFM |
| 6 | 2 | Body Seal | TFE-Virgin |
| 7 | 2 | Stem Seal | PolyFill / TFE-Virgin / TFM-Virgin |
| 8 | 1 | Thrust Bearing | PolyFill / TFE-Virgin / TFM-Virgin |
| 9 | 1 | Follower | Stainless Steel AISI 316L |
| 10 | 2 | Belleville Washers | Stainless Steel AISI 301 |
| 11 | 2 | Handle Nut & Ret. Nut | Stainless Steel AISI 300, Series/Zinc-Plated |
| 12 | 1 | Handle Assembly | Stainless Steel ASTM A167 304, Vinyl-Coated |
| 13 | 1 or 2 | Stop Pin | Stainless Steel, A276-300 Series |
| 14 | 4 | Body Bolts | Stainless Steel ASTM F593-316 GR.2 |
| 15 | 4 | Body Nuts | Stainless Steel ASTM A194 GR.8 |
| 16 | 1 | Lockwasher | Stainless Steel AISI 300 Series |
| 17 | 1 | Thrust Bearing | PEEK |
| 18 | 1 | Seal Protector | PEEK |

How to Order

| Valve Size | Options | Product Series | Body & Pipe Ends | Ball & Stem | Seats | Body Seals | Ends | Variations |
|------------|---|----------------|------------------------|------------------------|------------------|------------|----------------------------------|--|
| 1" | P | WK70 | 66 | 66 | P | T | TC | * |
| 1/2" | Blank-Std. 20 Ra Finish | WK 70 | 6-316L Stainless Steel | 6-316L Stainless Steel | T-TFE | T-TFE | TC- Quick Disconnect | Blank-No Variations |
| 3/4" | E-No handle valve, built for automation | | | | R-Reinforced TFE | | XBO-Extended Butt Weld O.D. Tube | V6-Source Inspection |
| 1" | K-Locking Handle | | | | P-Polyfill | | | V32-Oval Handle |
| 1 1/2" | P-Electropolished (10 Ra) | | | | TFM-TFM | | | V36-Cert. of Compliance |
| 2" | V-Vacuum | | | | | | | V48-Extended Lever Handle |
| | | | | | | | | V59-Extended Oval Handle |
| | | | | | | | | V60-OSHA Lockout |
| | | | | | | | | V66-Cert. of Comp. for European Valve Orders |
| | | | | | | | | V72-Cert. of Comp. for European Pressure Equipment Directive Conformance |
| | | | | | | | | V73-Cavity Filler Seats |

Ordering Example: A 1" Series WK 70 with a stainless steel body, pipe ends, ball and stem, Polyfill seats, TFE body seals, quick disconnect ends, and electropolished finish.

CAUTION: Ball Valves can retain pressurized media in the body cavity when closed. Use care when disassembling. Always open valve to relieve pressure prior to disassembly. Due to continuous development of our product range, we reserve the right to alter the dimensions and information contained in this leaflet as required.

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

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(Part PB WK 70-Rev)