

**SAN ANTONIO WATER SYSTEM
SAN ANTONIO, TEXAS**

SPECIFICATIONS FOR HAND OPERATED BUTTERFLY VALVES

REVISED MAY 1998

1. **SCOPE**

This specification covers cast iron butterfly valves of the rubber-seat, tight, closing type in sizes 3 inches and larger.

2. **GENERAL REQUIREMENTS**

- a. Except as otherwise modified or supplemented herein , AWWA Standard C504 or the latest revision thereof, shall govern the design, component material construction, manufacture an testing of all butterfly valves.
- b. Valves shall be Class 150B of the short-body type with a 150 psig bi-directional shut-off rating, a 300 psig hydrostatic body shell test and a line velocity rating of 16 feet per second.
- c. Valves shall be for mounting on a horizontal pipe with a wrench nut on top. Valves shall be for buried service, unless otherwise specified.
- d. Valve body shall be of cast iron conforming to ASTM Specification A-126, Class B.
- e. Valve body ends shall be flat-faced flanged with facing and drilling in accordance with ANSI B16.1, Class 125. All valves shall conform to AWWA C504, Table 2, laying lengths for flanged valves and minimum body shell thickness for all body types.
- f. Valve shall be of such design that the disc will seat at 90 degrees with the pipe axis.
- g. Valve shall be of such design that the disc will not flutter or vibrate when operated in a throttled position.
- h. Valves disc shall be of Cast Iron A48, Cast Iron A126, Class B or Ductile Iron ASTM A536, Grade 65-45-12 and shall be of disc design to provide 360 degree uninterrupted seating.
- i. The valve seat shall be natural or synthetic rubber and may be applied to the disc or body. For valves 30 inches or larger, the rubber seat shall be capable of mechanical adjustment in the field and shall be field replaceable without the need for special tools. Mechanical adjustment or attachment of the seat and seat ring does not include

welding. The mating seat surface shall be type 304 or Type 316 stainless steel, no-chrome or monel. Sprayed or plate mating seat surfaces are not acceptable.

- j. Valve shafts shall be Type 304 stainless steel conforming to ASTM A-276 and shall have a diameter equal to or greater than that shown for Class 150B in Table 3 of AWWA C504. Shafts shall conform to the requirements of Section 3.3, Valves Shaft of AWWA C504 for one-piece or stub shaft types. Connection between the shaft and disc shall be dowel or taper pins, which are mechanically secured.
- k. The valve assembly shall be furnished with a factory-set, non-adjustable disc shaft thrust bearing that insures the valve disc is centered within the valve body seat at all times.
- l. Valve shaft bearings shall be permanent, self-lubricated, bearings which provides continuous, low-friction maintenance-free operation. Shaft bearing shall be contained in integral hubs of the valve body.
- m. Valve shaft seal shall consist of "O" rings or "vee" ring packing where the shaft projects through the valve body for the actuator connection.
- n. The valve shall be provided with a fully enclosed, permanently lubricated actuator of the traveling nut or worm gear design. The operator shall be designed such that constant input speed results in variable output speed with slowing down valve closure at the ends of travel. The effect is to maintain the rated output torque throughout the entire travel. The actuator shall be connected to the valve shaft by means of a key and keyway connection.
- o. All actuators shall have adjustable, mechanical stop limits in accordance with C504 Section 3.8.2. All 6" - 42" valve actuators shall be capable of withstanding 450 ft-lbs of input torque against the open or closed stops without damage.

- p. Valves for below ground applications shall be provided with an AWWA wrench nut. The wrench nut shall have an arrow cast thereon, indicating the direction on of opening. The wrench nut shall be suitably fastened to the actuator input shaft. If the shaft is smooth, the wrench nut shall be fastened to the input shaft by means of a 5/16" diameter steel pin passing entirely through the shaft and the wrench nut. Key with keyway will be acceptable . If the shaft is splined, the wrench nut shall be formed to fit the splined shaft. The actuator shall be designed to produce the specified torque with a maximum input of 150 ft-lbs applied to the wrench nut.
- q. Valves for above-ground applications shall be provided with a handwheel. The handwheel shall have an arrow thereon, indicating the direction of the opening. The handwheel shall be suitably fastened to the actuator input shaft. Actuators equipped with handwheels shall be designed to produce the specified torque with a maximum pull of 80 pounds of the handwheel rim.
- r. The requirement for either wrench nut or handwheel and the direction of opening will be specified on each purchase order.
- s. The number of turns to open (close) the valve shall be consistent for each valve size for the manufacturer and shall be approved by the San Antonio Water System.
- t. All interior wetted ferrous surfaces of the valve, including the disc, shall be coated with epoxy, N.S.F. 61 certified. All exterior surfaces of the valve shall be coated with epoxy. The epoxy shall have a nominal thickness of 10 mils, and shall be in accordance with AWWA C550, latest revision.
- u. The bidder shall submit with his proposal three sets of certified drawings showing the principal dimensions, general construction and material specification of the valve proposed. The number of turns to open (close) shall be clearly noted in the valve information submitted with the proposal documents.
- v. The supplier/manufacturer shall provide Affidavit of Compliance with applicable sections of AWWA C504 and/or San Antonio Water System Specification 21-05 to include the following: Results of ASTM testing procedures and requirements for materials, Manufacturer's Quality Assurance Program, leak-tightness testing and proof of design testing of representative actuators in accordance with AWWA C504 Section 3.8.5.2 as modified herein (450 ft-lbs). Compliance assurance will be required in accordance with AWWA C504 Section 5.1.2, Affidavits. Results of performance tests, proof of design test, AWWA C504 Section 5.2.4, hydrostatic test, leakage test, and Affidavit of Compliance shall be provided with the bid or with the shipping documents and shall be approved by the San Antonio Water System.
- w. Valves furnished under this specification shall be supplied by our approved manufacturer list.

APPROVED MANUFACTURER and PRODUCTS LIST

Manufacturer

M&H Valve Company
Henry Pratt Company
Mueller Company
Keystone Valve Company
DeZurik AWWA Valve

Product

Model 450 & 4500
Groundhog & Triton HP-250
Lineseal III & Lineseal XP
Fig. 504 and Fig. 47
No. 9239757