

## Materials Specification – 13 for DRY-BARREL FIRE HYDRANTS

**1. GENERAL:**

Except as modified or supplemented herein, fire hydrants shall be designed and manufactured in strict compliance with AWWA C502 with the following additional requirements or exceptions.

**2. SERVICE:**

Fire hydrants supplied under these Specifications shall be designed for a working pressure of 150 psi. Each factory assembled unit shall be hydrostatically tested in accordance with AWWA C502. Shop tests for the body and main valve will be conducted at a pressure of 300 psi.

**3. SIZE OF HYDRANT:**

Hydrants shall have a main valve opening size of at least 5-1/4 inches.

**4. TYPE OF HYDRANT:**

Hydrants shall be the three-way type with one pumper nozzle and two hose nozzles located on the same horizontal plane, at least 18-inches above ground line.

**5. INLET CONNECTION:**

The hydrant base shall be provided with a mechanical joint inlet in order to accommodate 6-inch diameter ductile iron pipe complete with plain rubber gasket, gland, bolts and nuts that shall be in accordance with AWWA C111.

The bolts and nuts shall be a high strength, low alloy, corrosion resistant steel, known in the industry as Cor-Ten, Usalloy or Durabolt, with a minimum yield of 50,000 psi that conforms to ASTM A242. Incorporated into the base shall be two lugs for the rodding of pipe.

Mechanical joint accessories shall be attached to the hydrant for shipment.

**6. MAIN VALVE ASSEMBLY:**

The main valve of the hydrant shall be the compression type that closes with the water pressure. The seat ring shall be bronze with a machined face and external threads for threading into a bronze drain ring, or a bronze bushed shoe to provide bronze to bronze seating for the main valve. The assembly shall be sealed with O-rings.

The main valve shall be a replaceable type that is fabricated of a resilient material with a threaded bottom plate, or nut, with a seal to prevent leakage of the hydrant shaft. The upper valve plate material shall be either bronze or epoxy coated ductile iron.

The valve assembly shall include one or more drain valves that will work automatically with the main valve to drain the barrel when the main valve is in the closed position. Drain tubes shall be bronze lined and sized large enough for the barrel to drain within 12 minutes when sized for a 5-foot trench depth.

The components of the main valve assembly shall be so designed that the removal of the assembly from the barrel may be accomplished without excavation, in accordance with AWWA C502.

**7. OPERATING SHAFT AND NUT:**

The operating nut shall be either bronze or ductile iron and shall be pentagon shaped with a finished height of 1-1/8 inch. The dimensions from point-to-flat shall be between 1-1/4 inch and 1-3/8 inch from the top to the bottom of the nut. Bushings in the bonnet shall be so constructed in order to prevent the operating nut from traveling during opening or closing operation. Also, the bushing shall house a gasket, or seal, to prevent moisture or foreign material from entering the lubricant reservoir.

Hydrants shall be grease lubricated, or of a dry-top design, where an oil reservoir will provide permanent lubrication of the operating nut threads.

A stop nut, located in the hydrant bonnet on the operating shaft, shall prevent the over travel of the main valve when it is being opened.

The hydrant shall open by turning the operating nut to the right, in a clockwise direction, and shall have an arrow on top of the bonnet to designate the direction of opening.

**8. PUMPER NOZZLE AND CAP:**

The pumper nozzle shall be 4-1/2 inches nominal diameter with 5-3/8 inch outer diameter threads having 6 threads per inch; threads shall be right-hand. It shall be the supplier's responsibility to match the thread requirements for Denver Water's hydrants. A sample nozzle will be furnished upon request.

The nozzle cap shall be furnished with a synthetic rubber gasket installed in a retaining groove. The dimensions and shape of the nozzle cap nut shall be the same as the operating shaft nut.

Nozzle caps shall be furnished with security chains; one end of each shall be securely attached to the upper barrel section of the hydrant.

**9. HOSE NOZZLES AND CAPS:**

The two hose nozzles shall be 2-1/2 inch nominal diameter with 7-1/2 threads per inch (2.5 - 7.5 N.H.). Threads shall be right-hand and shall be National Standard in accordance with NFPA No. 194. Each hose nozzle shall include a nozzle cap with a nut and security chain.

**10. NOZZLE ATTACHMENT:**

Outlet nozzles shall be fastened into the barrel by mechanical means and secured by a stainless steel pin or screw, bronze wedge or ductile iron retainer. Nozzles shall be sealed by the use of O-rings.

**11. COATINGS:**

The upper exposed section of the hydrant shall be thoroughly cleaned and painted with a prime coat of a rust inhibitive primer followed by a 10 mil thick shop coat of heavy duty alkyd enamel paint. The paint color shall be yellow, similar to Federal Color No. 13538.

Exposed exterior surfaces below the ground line shall be coated with asphalt varnish, or its equivalent, in accordance with AWWA C502.

The interior of the hydrant shall be coated with an epoxy coating in accordance with AWWA C502. The epoxy paint shall be NSF/ANSI 61 approved.

**12. CERTIFICATION:**

The manufacturer shall furnish a sworn statement stating that the hydrants that are furnished comply with all applicable provisions of AWWA C502 as modified or supplemented herein. A copy of the Certification, including interior epoxy paint compliance with ANSI/NSF 61, shall be sent to Denver Water.

**13. TRAFFIC FEATURES:**

Hydrants shall be equipped with traffic features that include a breakaway flange or lug system with a shaft coupling.

**14. ACCEPTABLE MANUFACTURERS:**

<b>Manufacturer</b>	<b>Model No.</b>
American Flow Control/Waterous*	Pacer WB-67-250
American AVK*	Series 27
Clow ( <i>Districts only</i> )	Medallion F-2545
Kennedy ( <i>Districts only</i> )	K-81D

\* THESE BRAND NAMES ARE THE ONLY ONES CONSIDERED FOR PURCHASE BY DENVER WATER FOR INSTALLATION IN THE CITY AND COUNTY OF DENVER AND TOTAL SERVICE CONTRACT AREAS. OTHER HYDRANT BRANDS WITH APPROPRIATE MODEL AND OPTIONS MAY BE UTILIZED BY DISTRIBUTOR CONTRACT AREAS FOLLOWING THE APPROVAL FOR USE BY DENVER WATER.

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Dry-Barrel Fire Hydrants*