

**SAMPLE SPECIFICATION**

**AWWA BALL VALVE FOR PUMP CONTROL with WATER HYDRAULIC CYLINDER**

 **PART 1 GENERAL** GA-R201-H2O-SPEC Rev A

 1.01 SUBMITTALS

A. Submit detailed product data and descriptive literature including dimensions, weights, head loss data, pressure rating and materials of construction.

B. Provide shop drawings which clearly illustrate the general arrangement of the equipment and cross-sectional views of the components.

 1.02 QUALITY ASSURANCE

A. Supplier shall have been manufacturing AWWA C507 Ball Valves for pump control applications for a period of at least ten (10) years and shall, at the request of the Engineer, provide a list of installations involving equipment of similar size and application.

B. Manufacturer shall have an ISO-9001 quality management system certified by an accredited body.

 **PART 2 PRODUCTS**

 2.01 AWWA BALL VALVE

A. Ball valve shall conform to AWWA Standard C507 (latest revision), Pressure Class 150, 250 or 300 (as shown on the plans or in the valve schedule), consisting of a main valve assembly and electro-hydraulic controls, completely assembled, tested and ready for field installation and wiring.

B. The valve shall have a full, circular, unobstructed waterway, be trunnion-mounted and resilient seated. The valve shall consist of four (4) main parts:

1. MAIN VALVE. The valve body shall be a single piece with integral flanged ends. Pressure Class 150 valves shall have body and cover shall be cast iron per ASTM A126 Class B with flanges faced and drilled to ANSI B16.1 Class 125. Pressure Class 250 and 300 valves shall have ductile iron body and cover per ASTM A536 Grade 65-45-12 with ANSI B16.1 Class 250 flanged ends.

1. A flanged access cover shall be provided to permit resilient seat inspection, adjustment or replacement without valve disassembly or removal of inlet or outlet piping.
2. The valve shall have a single 316 stainless steel body seat on the pump side. Vent and drain connections shall be provided. The body and cover shall have replaceable lead-free bronze bearings to support the rotor and hydraulic forces. Non-metallic bearings are not acceptable.
3. All internal parts shall be removable and serviceable without removing the valve body from the line.
4. ROTOR. The rotor (ball) shall be of ductile iron per ASTM A536 Grade 65-45-12 with upper and lower integrally cast trunnions fitted with lead-free bronze bushings on the axis of rotation. The trunnions shall be sealed by means of a removable O-ring seal cartridge. The rotor shall be connected to the drive mechanism through an 18-8 stainless steel shaft, which shall transmit rotational forces only and not be used as a sealing or bearing surface. Shaft mounted rotors and/or with separate upper and lower shafts taper pinned to it are not acceptable. There shall be a single, replaceable, hydraulically actuated rotor seat of Ultra High Molecular Weight Polyethylene (UHMWPE) providing drop tight shutoff.
5. DRIVE MECHANISM. The drive mechanism shall be securely attached to the valve and keyed to the rotor shaft. The drive mechanism shall employ a link and lever to impart a characterized rotation of the valve rotor such that when closing, no less than 80% of the flow area is gradually cut off during the first 50% of the cylinder stroke. The remaining portion of the flow area shall be gradually reduced during the final 50% of the stroke.

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4. OPERATOR. The valve shall be operated by a hydraulic cylinder using line pressure obtained from the upstream and downstream side of the valve or a separate source of water pressure.

Cylinder shall meet the requirements of AWWA C507. Cylinder tube shall be brass or stainless steel with inherently non-corrosive heads and piston and a chrome plated stainless steel rod. Non-metallic or electro-plated ferrous materials are not allowed. Cylinder shall be equipped with a wiper ring to clean the piston rod before it enters the cylinder. Cylinder seals shall be Buna-N or other suitable material compatible with the fluid. Cylinder shall be sized to positively close the valve against full pump shutoff pressure. The cylinder shall be rigidly attached to the drive mechanism and shall not rotate or pivot.

C. CONTROLS

1. Controls shall consist of a 2-position, 120VAC 4-way normal solenoid pilot with manual operator, independently adjustable normal opening and closing speed controls, 120VAC emergency solenoid with separate, adjustable closing speed control, wye-strainer and isolating valves.
2. Provide a limit switch with a visual position indicator and a minimum of four sets of SPDT contacts mounted on the valve.

3. All controls and control piping shall be non-corrosive, lead free and suitable for the working pressure and electrical conditions.

 2.02 FUNCTION

A. The valve shall function to control surges associated with the starting and stopping of pumps. Valve operation shall be by means of solenoid pilots and powered by water pressure.

B. The valve shall open at a controlled rate of speed whenever both the normal and emergency solenoid pilots are energized.

C. De-energizing the normal solenoid pilot shall initiate a normal, controlled valve closure. At an adjustable point near the fully closed position, the valve shall actuate a set of contacts in the valve mounted limit switch, which shall turn off the pump motor and de-energize the emergency solenoid pilot.

D. Should a power failure while pumping, the emergency solenoid shall de-energize and initiate a more rapid valve closure.

 2.03 MANUFACTURER

A. The pump control valve shall be GA Industries Figure R201-D (Class 150), R201-U (Class 250) or R201-V (Class 300) with Water Hydraulic Cylinder as manufactured by VAG USA, LLC Mars, PA USA

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