

Item 513
 Pump Control Valves

Notes to Specifier:

Delete these notes and not used paragraphs.

Engineer should use this specification with care and verify all requirements.

Where options are given, make appropriate selection and delete the other option, fill in all blanks.

Verify all references to paragraphs within this Section and to any applicable Sections, standards or other specified sources of information.

513.1 Description

This item shall govern the pump control valves furnished and installed as indicated on the Drawings and shall be suitable for use in a **[potable]** municipal water system. Materials, equipment, and incidentals necessary to install and test with all appurtenances and accessories to install pump control valves on discharge piping for the pumps at the **insert installation location here.**

513.2 Standards

The applicable provisions of the following standards shall apply as if written here in their entirety.

A. American Society for Testing and Materials (ASTM) Standards:

ASTM A48	Standard Specification for Gray Iron Castings
ASTM B61	Standard Specification for Steam or Valve Bronze Castings
ASTM B62	Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM A536	Standard Specification for Ductile Iron Castings

B. American Water Works Association (AWWA) Standards:

AWWA C530	Standard Specification for Pilot-Operated Control Valves
AWWA C550	Standard Specification for Protective Interior Coatings for Valves and Hydrants

C. American National Standards Institute (ANSI).

D. National Electric Manufacturers Association (NEMA).

E. NSF Standard 61 – Drinking Water System Components – Health Effects

F. NSF Standard 372 – Drinking Water System Components – Lead Content

513.3 Materials

A. Quality Assurance

Experience Requirements: Valves shall be the product of a manufacturer who has a least 10 years' experience of successful experience in the design, manufacture and application of pilot operated solenoid control valves used in water service and pump control.

Assembly: The valve, strainers, piping, opening and closing speed control valves and other appurtenances shall be completely assembled, wired and tested at the factory. The valve seats shall be adjusted at the factory for correct seating.

Manufacturer's Representative: The valve manufacturer shall furnish the services of a competent service technician for the duration of time necessary to assist in the installation, adjustment and start-up operation, and field acceptance testing. The technician shall instruct the Owner's personnel in the proper care, maintenance, adjustment and operation of the equipment and shall issue a written certification that the equipment has been properly installed.

Acceptable Manufacturers: Acceptable valve manufacturers include the following:

1. CLA-VAL Company.

513.4 Manufactured Products

A. General

The valves shall meet NSF, TCEQ, and AWWA requirements for potable water service.

The valve body shall be globe pattern incorporating in its design two operating chambers, sealed from one another by a flexible diaphragm. Valve bodies and covers shall be cast and machined in North America.

Valves shall be diaphragm actuated, hydraulic operated, pilot-controlled type, and designed to control starting and stopping surges from the pump. The diaphragm assembly shall be the only moving part and shall be fully guided by bearings in the valve cover and lower operating unit.

Valves shall be tight closing, with EPDM rubber discs. The discs shall be field replaceable and the valves shall be serviceable inline by removing the cover. Valves shall be drip tight at rated pressures with flow in one direction and shall be satisfactory for applications involving valve operation after long periods of inactivity.

Valve body interior and exterior surfaces shall be epoxy resin coated and shall be suitable for high velocity service. The coating shall be applied by the fusion bond method and will be a minimum thickness of 8 mils when complete.

Valves shall be equipped with opening and closing speed control by means of an exterior flow rate control valve.

The pilot shall be a three-way pilot used for on/off service and include a dual supply system to insure the highest system pressure for pilot control operation. The valve shall be opened or closed based on an electrical signal received from contacts located at the pump motor

starter.

1. The pilot system shall be furnished to operate at 120 VAC, 60 Hz.

Provide piping to convey water expelled from the valve bonnet to floor drains as indicated on the drawings.

The valve body and cover shall be ductile iron in accordance with ASTM A536. The disc guide, seat, and cover bearing shall be bronze in accordance with ASTM B61. Valves shall have pressure rating as indicated on the drawings.

The solenoid valve for control valve shall be rated for 120 V, 1 phase, 60 Hz and be ASCO Red-Hat type. The valve shall contain auxiliary controls which permit adjustment of the opening and closing speeds. Valve opening and closing time shall be factory set at 2 minutes. Pilot system check valve shall be of the diaphragm type to assure drip type shutoff and equipped with two y-pattern strainers to protect the pilot system from foreign matter. Pilot system materials to be cast bronze ASTM B62 with 303 stainless steel trim.

Note to Specifier: Adjust model for project hydraulics. Coordinate with NBU Water Treatment & Compliance for optional equipment selection.

Valves shall be Model # [60G-41YBKCKX] as manufactured by Cla-Val Company, Newport Beach, CA.:

Material Specifications	
Main Valve body & Cover	ASTM A536 Ductile Iron
End Connections	AWWA C207 Flange for 250 psi max. working pressure
Main Valve Trim	303 Stainless Steel
Pilot control system	Bronze ASTM B62 with 303 Stainless Steel trim and tubing
Rubber parts	EPDM
Tubing & Control Piping	Stainless Steel Piping & Fittings

B. Operation

The valve shall function to control the surges associated with pump start-up and shutdown. Valve operation shall be by means of solenoid pilots and powered by water pressure obtained from the inlet or outlet side of the main valve. The valve shall open at a controlled rate of speed whenever the solenoid pilot is energized. Upon opening, the indicator rod shall actuate a limit switch tied in with the motor starter circuit. De-energizing the solenoid pilot shall initiate a normal, controlled valve closure. At an adjustable point near the seated position, the retracting indicator rod shall actuate the limit switch and shut off the pump.

513.5 Light Switches for Motor Control

Limit switches shall be dry contacts and shall be independently adjustable at the open and

closed limit. Auxiliary limit switches shall have isolated Form A or B contacts rated for 10 amps at 120 VAC. Limit switch assemblies shall be Model X105L/X105L2 by Cla-Val.

Two limit switches are required. Limit switches shall be furnished for valve control and for remote and local Open and Close indications.

Valve Limit Switch Settings. The first limit switch (LS1) shall indicate valve fully closed and the second limit switch (OVLS-2) shall indicate the valve is fully open.

513.6 Installation

Install the valve in the pump discharge piping with the valve diaphragm shaft in the vertical position. Make all connections between the valve and the valve pilot. Installation of the valve shall be in accordance with the valve manufacturer’s recommendations.

513.7 Field Quality Control

Upon completion of the installation of the equipment, an acceptance test to verify the satisfactory operation of the valve shall be performed. The test shall be conducted in a manner, approved by and in the presence of the Engineer. The valve manufacturer’s representative shall be present during the valve acceptance test. The unit must perform in a manner acceptable to the Engineer before final acceptance will be made by the Owner.

513.8 Schedules

The control valve furnished under this specification shall meet the following requirements:

Number Required	Size (in.)	Pressure Class (psi)	Pump Shut-off Head* (ft)	Max. Differential Head** (ft)	Min. Flow* (MGD)	Max. Flow* (MGD)	Location
[4]	[20"]	[250]	[415]	[320]	[7]	[13]	Pump Station Discharge Piping

*Confirm with pump manufacturer.

**Pump shut-off head minus static pressure.

513.9 Clean and Adjust

All Adjustments will be performed in accordance with the valve manufacturer’s instructions.

513.10 Measurement

All pump control valves will be measured per each.

513.11 Payment

Payment shall include full compensation, in accordance with the pay item established in the bid, for furnishing, hauling, and placing valves including anchorage, and for all other incidentals

necessary to complete the installation, as indicated in the Drawings, complete in place.

Pump Control Valves: Payment will be at the unit bid price for the size and type valve installed, including setting, anchoring in place, testing, and all other appurtenances and appurtenant work necessary for proper operation.

Payment, when included as a contract pay item, will be made under the following:

Pay Item: Pump Control Valve, _____ Diameter Per Each.

End