SECTION 40_05_66

HYDRAULIC CONTROLLED CHECK VALVE

PART 1 GENERAL

1.01 DESCRIPTION

A. This specification covers the Hydraulic Controlled Check Valve for the Pump Control Valve Bypass.

B. Comply with the provisions of Section 40_05_60 - Valves in addition to the requirements specified herein. Valves shall be furnished compliant with Section 01_60_00 – Product Requirements.

C. Valve shall open to permit flow when inlet pressure is greater than discharge pressure. The valve shall close drip-tight when the pressure on the discharge end is greater than the inlet pressure.

D. When the discharge pressure is greater the valve shall close tightly to prevent return flow. The valve shall be a hydraulically operated, diaphragm actuated globe pattern valve.

1.02 REFERENCES

A. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250 and 800
ANSI B16.5	Pipe Flanges and Flanged Fittings
ASTM A48	Gray Iron Castings
NSF/ANSI 61	Drinking Water System Components – Health Effects
NSF/ANSI/CAN 600	Health Effects Evaluation and Criteria for Chemicals in Drinking Water

1.03 SUBMITTALS

A. Submittals as specified in Section 40_05_60 - Valves.

B. In addition to submittals specified in 40_05_60 - Valves, provide the following Action Submittal items:
   1. Copy of this section: Check (✓) shall denote full compliance with a paragraph as a whole
   2. Completed Certificate of Unit Responsibility attesting that the Contractor has assigned, and that the manufacturer accepts unit responsibility in accordance with the requirements of this Section and Section 43_05_11 – General Requirements for Equipment paragraph 1.02. No other submittal material will be reviewed until the certificate has been received and found to be in conformance with these requirements.
   3. In addition to submittals specified in 40_05_60 - Valves, provide the following Informational Submittal items:
      a. Factory testing procedures.
      b. Factory Acceptance Test results and/or Certified Statement of Proof-of-Design testing results specified herein.
      c. Assembly weight
      d. Design calculations certifying officer plate diameter specified herein.

1.04 QUALITY ASSURANCE

A. Factory Testing
   1. The valves shall be hydrostatically tested at 1.5 times their rated cold working pressure and seat tested at the valve cold working pressure. Manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Procedures: Section 40_05_60 - Valves.

1.06 WARRANTY

A. A warranty for the equipment specified under this Section shall be provided in accordance with the Section 01_78_36 – Warranties and Bonds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hydraulic controlled check valve shall be Model 81G-02 (81-11) as manufactured by CLA-VAL or approved equal.

2.02 MATERIALS

A. Valve shall be constructed of the following materials unless otherwise specified:

Component	Material
Valve Body & Cover	Ductile Iron ASTM A536
Disc Retainer & Diaphragm Washer	Cast Iron
Trim: Disc Guide, Seat & Cover Bearing	Stainless Steel
Disc	Buna-N Rubber
Diaphragm	Nylon Reinforced Buna-N Rubber
Stem, Nut and Spring	Stainless Steel
Pilot System Fittings & Valves	Brass
Pilot System Tubing	Copper Type K

B. Coating shall be manufacture's standard NSF/ANSI/CAN 61 certified epoxy coating.

2.03 DESIGN REQUIREMENTS

Item	Value
Line Size, Inches	10
Valve Configuration	Globe
Valve End Connections	Flange x Flange
Maximum Working Pressure, psig	250
Fluid Service	Potable Water
Fluid Temperature, °F	40 to 100

2.04 VALVE CONFIGURATION

A. Valve shall be a hydraulically operated, diaphragm actuated globe pattern valve with fusion bonded epoxy coating and flat faced flanges in accordance with ASME B16.1, Class 150. Valve design shall permit in-line repairs.

B. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure form line pressure. The diaphragm assembly shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The diaphragm shall shall not be used as a seating surface. Rubber disc shall be contained by a disc retainer to form a tight seal against a single removable seat insert. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the valve.

C. The valve shall contain auxiliary pilot control valves which permit adjustment of the opening and closing speeds. Valve opening and closing time shall be factory set at 10 seconds.

D. Pilot system check valve shall be of the diaphragm type, Cla-Val Series 81.01, to assure drip type shutoff. Provide y- strainers to protect the pilot system from foreign matter.

E. Furnish and install a ½" thick 4.8" diameter 316 S.S. orifice plate downstream of the Hydraulic Controlled Check Valve as shown on the drawings. The orifice plate sizing is based upon a Valve Cv of 1245, maximum flow of 3125 gpm, and maximum head differential of 134 ft. Valve manufacturer shall determine orifice plate diameter based upon the maximum head differential for the selected pump manufacturer at 60% speed and maximum bypass flow of 3125 gpm.

F. Manufacturer shall provide valve with anti-cavitation trim if necessary, based on the sizing and selection of orifice and valve.

PART 3 EXECUTION

3.01 INSTALLATION

A. Valves shall be installed in accordance with the manufacturer's recommendations.

END OF SECTION