* 1. HYDRAULIC CHECK VALVE

1. Supply a *insert size* Singer Model *specify model as 106/S106/206/S206* – HC Hydraulic Check Valve.
	1. The valve shall be equipped with the following available options:
		1. *specify*
		2. *specify*
		3. *specify*.
	2. Singer Valve schematic *specify*.
2. Function: The valve shall be a pilot operated hydraulic check valve which will permit normal forward flow and close when pressure is reversed so as to prevent reverse flow through the valve. The control valve functions as a non-modulating, two position valve, either fully open or fully closed.
3. Operation: The pilot system shall allow the valve to open under normal forward flow at a controlled rate through a swing check valve and manually adjustable opening speed control, by venting the bonnet pressure to the lower downstream pressure. Upon pressure reversal the higher downstream pressure is applied to the bonnet chamber through a swing check valve and manually adjustable closing speed control to permit controlled ‘non-slam’ valve closure to prevent surges.
	1. Quality Assurance
4. The control valve shall be tested prior to shipment. The standard test shall include a functional stroke, pressure and leak test of valve body, seat, fitted pilots and accessories.
5. The control valve shall be covered by a minimum three (3) year warranty against defects in materials and workmanship. The AISI 316 stainless steel seat ring shall be covered by a lifetime guarantee.
6. All control valve maintenance and repairs shall be possible without removing the main valve body from the line, when installed in accordance with manufacturer’s recommendations.
	1. Main Valve
7. The main valve shall be a Singer *specify main valve model number (106/S106/206/S206)* -PG single chamber, diaphragm actuated *specify (full/reduced)* port model. Main valve shall be installed in a flow direction with forward flow over the valve seat.
8. Main valves, 6” (150mm) and larger, shall provide smooth frictionless motion to ensure a low flow stability to *specify minimum USGPM or L/s*, achieved using SRD-Single Rolling Diaphragm technology.
9. The main valve, bonnet and removable stem cap shall be constructed of ASTM A536 (Grade 65/45/12) ductile iron.
10. Main valves of 2.5” (65mm) and larger shall have a removable stem cap for access to the main valve stem for alignment check, spring installation and ease of service and assembly.
11. The main valve bonnet shall be located using two or more locating guide pins to maintain the inner valve assembly alignment and for ease of maintenance.
12. The main valve trim, consisting of seat ring and stem shall be constructed of AISI 316 stainless steel. The valve stem shall have wrench flats for ease of maintenance.
13. The main valve shall provide a drip-tight seal using a mechanically retained resilient disc, having a rectangular cross section, against the stationary AISI 316 stainless steel seat ring.
14. The stationary AISI 316 stainless steel seat ring of main valves 2.5” (65mm) and larger shall be held in place using Spiralock® self-locking screws and seat ring retainers.
15. All internal and external ferrous components, including all mating surfaces, shall be coated with an NSF-61 approved fusion bonded epoxy to a minimum of 10 mils DFT-Dry Film Thickness.
16. The main valve elastomers: diaphragm, resilient disc and seals, shall be of EPDM or Buna-N.
17. All main valve fasteners (bolts, nuts, studs, cap screws) shall be supplied as AISI 18-8 or 304 stainless steel. All bonnet bolts shall be fitted with stainless steel washers to prevent damage to the bonnet coating.
18. Valve shall have flanged, threaded or grooved end connections. Flanged connections shall be *specify ANSI/ASME B16.42 Class 150#/300# or ISO 7005-2 PN10/16/25/40* flange drilled, faced and rated. Threaded connections shall be *specify NPT or BSPT*.
19. Due to the potential for noise, vibration and erosion damage from cavitation, the valve manufacturer shall provide, upon request, a computerized sizing and cavitation analysis, using independent third party software. Cavitation analysis shall provide the status of cavitation based on customer supplied parameters as to valve size, flow rate requirements and pressure conditions. The cavitation analysis shall also provide information as to Cv factor, percent of valve lift, cavitation index and noise level.
20. The valve manufacturer shall be able to supply cavitation control trim which shall be engineered to be optimized to the actual operating parameters of the control valve application and warranted to perform correctly and prevent main valve cavitation damage under the stated conditions. Orifice plates or other non-engineered cavitation control devices shall not be used to prevent or minimize valve cavitation.
	1. Pilot Controls
21. Opposing pilot swing check valves shall be supplied as standard. Swing check valve size shall be specified by the manufacturer. Swing check valves shall be constructed of *specify material (B16 brass or 316 stainless steel)*.
22. Opening and closing globe valve speed controls shall be supplied as standard. Speed controls shall be constructed of *specify material (B16 brass or 316 stainless steel)* with handwheel operator.
23. The pilot fittings shall be supplied as *specify material (ASTM B16 brass or AISI 316 stainless steel)*.
24. The pilot tubing shall be supplied as *specify material (ASTM B280 seamless copper or AISI 316 stainless steel or PTFE lined flexible braided stainless steel)*.
	1. Control Valve Components – Available Options
25. specify.