



## HYDROMATIC®

## Specifications HVR200 Series

**PUMP MODEL** – Pump shall be of the centrifugal type, Hydromatic® model HVR200 Series, with an integrally built-in grinder unit and submersible type motor. Discharge shall be 1-1/4" NPT.

**OPERATING CONDITIONS** – Each pump shall be rated \_\_\_\_\_ hp, \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ hertz, and \_\_\_\_\_ rpm. The unit shall produce \_\_\_\_\_ U.S. GPM at \_\_\_\_\_ feet TDH.

**CONSTRUCTION** – Each pump shall be of the sealed submersible grinder type, model HVR200 as manufactured by Hydromatic. The pump volute, motor and seal housing shall be high quality gray cast iron, ASTM A-48, Class 30. All external mating parts shall be machined and Nitrile O-ring sealed on a beveled edge. Gaskets shall not be acceptable. All fasteners exposed to the pumped liquid shall be 300 series stainless steel.

**POWER CORD** – Power cord shall be SJOOW water resistant 300V, UL and/or CSA approved. The cable jacket shall be sealed at the motor entrance by means of a rubber compression washer and compression nut. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water from entering the motor housing.

**MOTOR** – Pump motor shall be rated 2 hp at 3450 rpm. Motor shall be for 60 Hz, single-phase, 230 volts. Motor shall be capacitor start, capacitor run-type for high starting torque. The stator, rotor and bearings shall be mounted in a sealed submersible-type housing. The stator windings shall have Class F insulation (155°C or 311°F) and a dielectric oil-filled motor, NEMA L design (single-phase). Because air-filled motors do not dissipate heat as efficiently as oil-filled motors, they shall not be acceptable. The pump and motor shall be specifically designed so that they may be operated partially dry or completely submerged in the liquid being pumped. The pump shall not require cooling water jackets. Supplemental cooling shall not be acceptable.

The motor shall have a current overload attached to the top end of the motor windings to stop the motor if the motor winding temperature reaches 138°C. The high temperature shut-off will cause the pump to cease operation, should a control failure cause the pump to run in a dry wet well. The thermostat shall reset automatically when the motor cools to a safe operating temperature.

**BEARINGS AND SHAFT** – An upper single-row ball radial bearing and a lower single-row ball thrust bearing shall be provided. Bearings shall be permanently lubricated by the dielectric oil that fills the motor housing. The shaft shall be machined from solid 416 series stainless steel and be designed with large diameters and minimum overhang to reduce shaft deflection and prolong bearing and seal life.

**SEALS**– The rotor and stator in the motor housing shall be separated and protected from the pumped liquid by an oil-filled seal housing incorporating a type 21 carbon ceramic mechanical seal.

**IMPELLER** – The impeller shall be constructed of 316/CF8M stainless steel and be designed for rough duty service. It shall be a ten-vane, semi-open design with four wash out vanes on the rear shroud. The impeller shall be a non-overloading design.

**GRINDER MECHANISM** – The stationary cutter shall be circular in design and contain evenly spaced cutting slots that extend outwards from the inlet of the pump. The slots are tapered inward toward the inlet to help direct slurry through the cutting slots into the pump. The slots are to be angled, or undercut, to help maintain a sharp axial cutting edge, even as the axial face wears during use. The stationary cutter shall be pressed into the suction opening of the volute and held in place by four 300 series stainless steel screws. The stationary cutter shall be provided with tapped back-off holes so that screws can be used to remove the cutter from the volute. The rotating cutter shall contain three axial cutting arms extending from the hub, perpendicular to the pump shaft, that are shaped to aid in the rejection of suspended debris that has not been sufficiently reduced in size by the axial cutting action. The curved, leading edge of the cutting arms shall create a scissor action with the cutting slots of the stationary cutter plate to minimize the required torque. This will allow the cutter to macerate tough objects and prolong cutter life. Serrations on the hub of the cutter add additional cuts that prevent debris from becoming entangled within the rotating cutter. The rotating cutter shall thread onto the end of the pump shaft and be secured by a 300 series stainless steel washer in conjunction with a 300 series stainless steel flat head cap screw threaded into the end of the shaft. Both stationary and rotating cutters shall be made of 440C stainless steel, hardened to Rockwell 57–60C and ground close to tolerance. The grinder shall be capable of grinding normal domestic sewage into a fine slurry.

**PAINT** – The pump shall be painted with waterborne hybrid acrylic/alkyd paint. This custom engineered, quick dry paint shall provide superior levels of corrosion and chemical protection.

**LEVEL CONTROL** – An automatic control is provided by a heavy-duty UL/CSA listed float switch tethered to the side of the pump, having a piggyback plug on one end. This piggyback float switch operates the pump directly without need of a control panel.