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Model JCV

Specifications

	Standard	Optional
Size	2, 3, 4 inch	
Range of HP	1 to 2 HP Three Phase 1 to 5 HP Single Phase	
Range of Performance	Capacity 16 to 430 GPM Head 9 to 66 feet	
Limitation Maximum Water Temperature	 104°F (40°C)	
Synchronous Speed	1800 RPM	
Materials Casing Impeller Shaft Motor Frame Fastener	 Cast Iron Cast Iron 403 Stainless Steel Cast Iron 304 Stainless Steel	
Mechanical Seal Material – Upper Side Material – Lower Side Impeller Type Bearing Motor Single Phase Three Phase Service Factor Motor Protection Single Phase Three Phase	Double Mechanical Seal Carbon/Ceramic Silicon Carbide/Silicon Carbide Recessed Vortex Impeller Prelubricated Ball Bearing Air-filled, Insulation Class F 208/230V 208/230/460V 1.15 Built-in Auto Cut - overload, no load, out of phase, and single phasing protection	
Accessories	Submersible cable 33 ft.	66 ft. PRS System

A. General:

Provide submersible vortex sewage pumps suitable for continuous duty operation underwater without loss of water-tight integrity to a depth of 65 feet. If mounted on a guide rail system, design shall be such that the pump will be automatically connected to the discharge piping when lowered into place on the discharge connection. The pump shall be easily removable for inspection or service, requiring no bolts, nuts, or other fasteners to be disconnected, or the need for personnel to enter the wet well. The motor and pump shall be designed, manufactured, and assembled by the same manufacturer.

B. Manufacturer:

J D L Systems, Inc.

C. Pump Characteristics:

Pumps shall conform to the following requirements:

Number of units	
Design flow (gpm)	
Design TDH (ft)	
Minimum shut off head (ft)	
RPM	1800
Maximum HP	
Minimum efficiency at design (%)	
Minimum power factor at design (%)	
Voltage/HZ	208/230V, 460V / 60
Phase	

D. Pump Construction:

All major parts of the pumping unit(s) including casing, impeller, motor frame and discharge elbow shall be manufactured from gray cast iron, ASTM A-48 Class 30. Castings shall have smooth surfaces devoid of blow holes or other casting irregularities. Casing design shall be centerline discharge with a large radius on the cut water to prevent clogging. Units shall be furnished with a discharge elbow and 125 lb. flat face ANSI flange. All exposed bolts and nuts shall be 304 stainless steel. All mating surfaces of major components shall be machined and fitted with NBR O-rings where watertight sealing is required. Machining and fitting shall be such that sealing is accomplished by automatic compression of O-rings in two planes and O-ring contact is made on four surfaces without the requirement of specific torque limits. Internal and external surfaces are prepared to SPPC-VISI-SP-3-63 then coated with a zinc-chromate primer. The external surfaces are then coated with a HB Tnemecol 46-465 Coal Tar paint.

Impeller shall shall be a recessed, semi-vortex, multi-vane design. The impeller design shall include back pump out vanes to reduce the pressure and entry of foreign materials into the mechanical seal area. The inlet edge of the impeller vanes shall be angled toward the impeller periphery so as to facilitate the release of objects that might otherwise clog the pump. Impellers shall be direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller bolt.

Double mechanical seals operating in an oil bath shall be provided on all units. The oil filled seal chamber shall be designed to prevent over-filling and include an anti-vortexing vane to insure proper lubrication of both seal faces. Lower face materials shall be silicon carbide vs. silicon carbide, upper faces carbon vs. ceramic, NBR elastomers, and 304SS hardware. Seal system shall not rely on pumping medium for lubrication.

E. Motor Construction:

The pump motor shall be an air filled induction type with a squirrel cage rotor, shell type design, built to NEMA MG-1, Design B specifications. Stator windings shall be copper, insulated with moisture resistant Class F insulation, rated for 311°F. The stator shall be dipped and baked three times in Class F varnish and heat shrunk fitted into the stator housing. Rotor bars and short circuit rings shall be manufactured of cast aluminum. Motor shaft shall be one piece AISI403 material, rotating on two permanently lubricated ball bearings designed for a minimum B-10 life of 60,000 hours. Motor service factor shall be 1.15 and capable of up to 20 starts per hour. The motor shall be designed for continuous duty pumping at a maximum sump temperature of 104°F. Voltage and frequency tolerances shall be a maximum 10 / 5% respectively. Junction area shall include a terminal board for power connections on all three (3) phase units. Motor protection shall be provided by an auto-cut device located directly over the windings to provide protection from single phasing, low voltage, phase imbalance, locked rotor, and no load or run dry conditions. Motor shall be non overloading over the entire performance curve and be able to operate at full load intermittently while unsubmerged without damage to the unit.

Power cable jacket shall be manufactured of an oil resistant chloroprene rubber material, designed for submerged applications. Cable shall be watertight to a depth of a least 65'. Cable entry shall be composed of a one piece, vulcanized, three way mechanical sealing system with a thick molded shoulder with increasing cable diameters to resist fatigue from bending forces. The molded shoulder, acts as the primary and secondary sealing points. This system shall also prevent leakage into the motor housing due to capillary action through the insulation if the cable is damaged or cut. A metallic plate shall be utilized to clamp the entry system to the motor housing. Strain relief shall be accomplished by clamping and attaching the cable with chain to the motor housing.

F. Pump Removal System:

Design shall include two (2) 304SS schedule 40 guide rails sized to mount directly to the quick discharge connector, PRS, at the floor of the wetwell and to a guide rail bracket at the top of the wetwell below the hatch opening, (refer to project drawings). Intermediate guide brackets are recommended for rail lengths over 15 feet. Guide rails are not part of the pump package and shall be supplied by others.

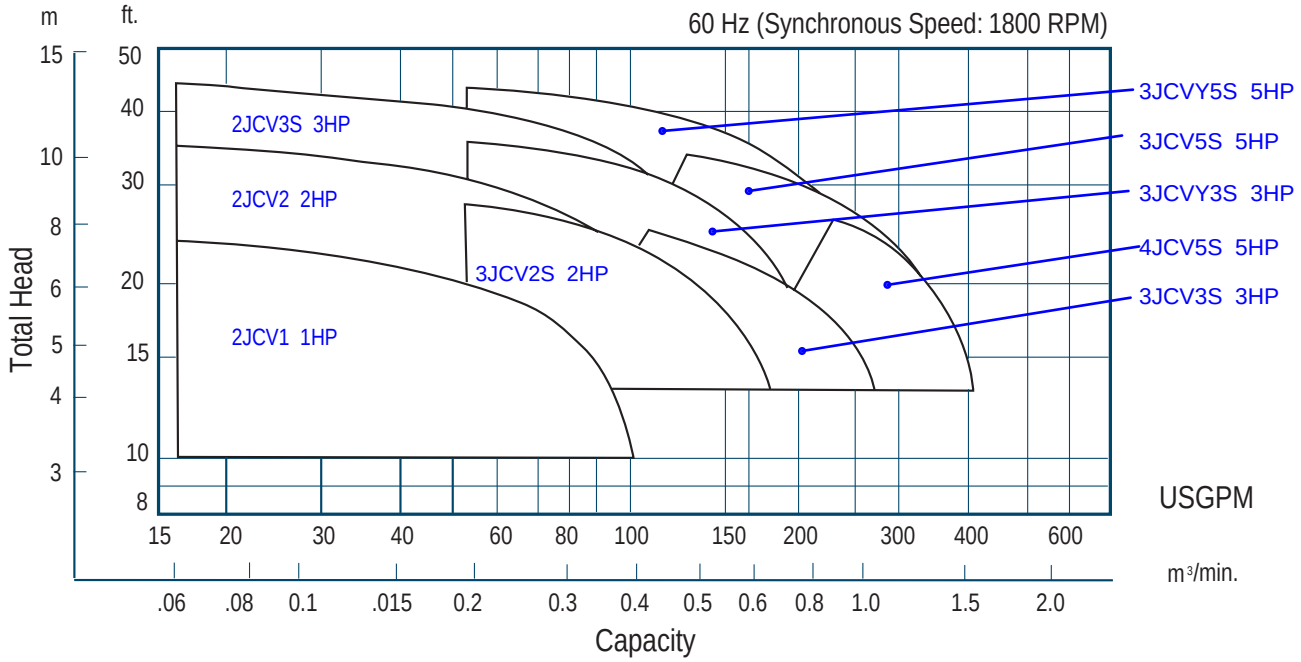
The PRS shall be manufactured of cast iron, ASTM A48 Class 30. It shall be designed to adequately support the guide rails, discharge piping, and pumping unit under both static and dynamic loading conditions with support legs that are suitable for anchoring it to the wetwell floor. The face of the inlet PRS flange shall be perpendicular to the floor of the wetwell. The discharge flange of the PRS shall conform to ANSI B16.1 Class 125.

The pump design shall include an integral self-aligning sliding bracket. Sealing of the pumping unit to the QDC shall be accomplished by a single, linear, downward motion of the pump. The entire weight of the pump unit shall be guided to and wedged tightly against the inlet flange of the PRS, making metal to metal contact with the pump discharge forming a seal without the use of bolts, gaskets or O-rings.

Lifting chain shall be galvanized (stainless steel) suitable for removing and installing the pump unit.

Model JCV

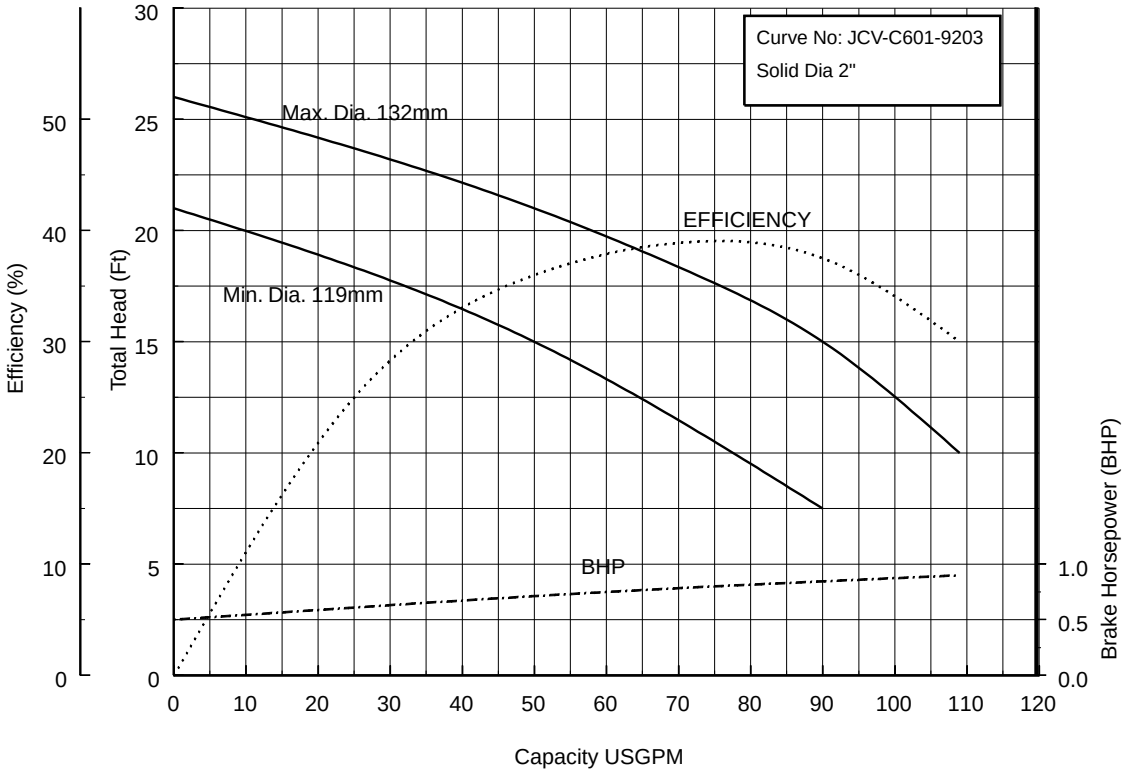
Selection chart



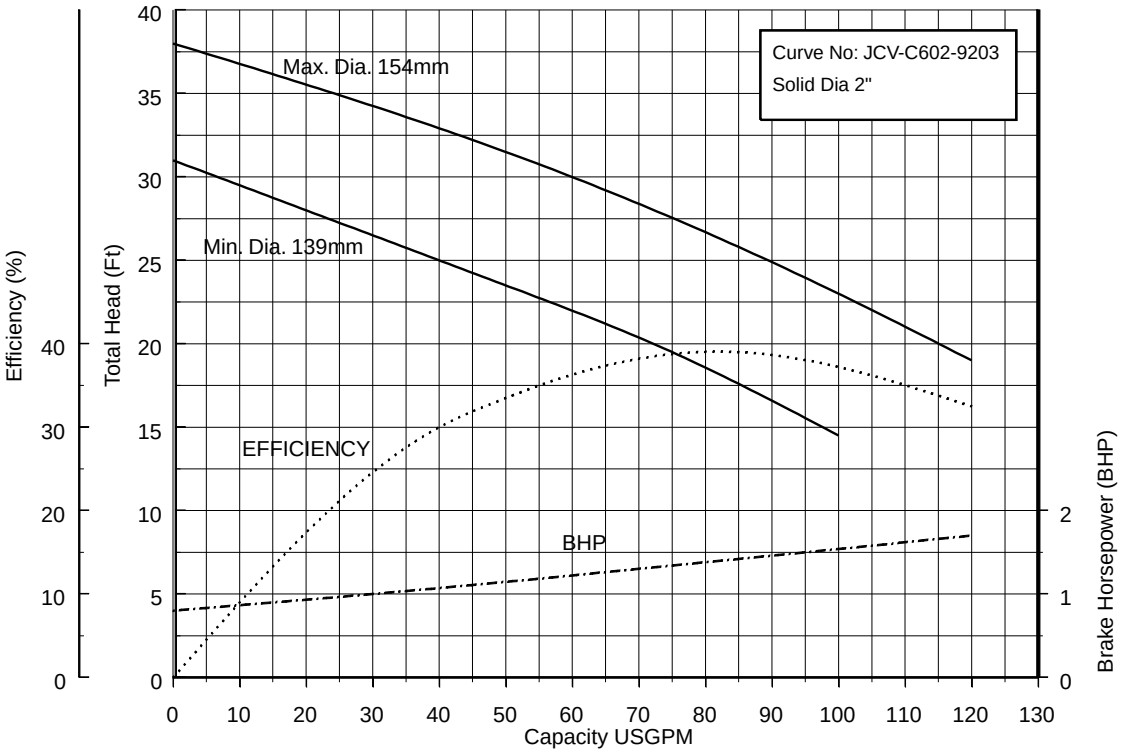
Performance Curves

Project: GPM: TDH: EFF: HP: Chk'd: Date:

2JCV1S 2JCV1 (1HP) Synchronous Speed: 1800 RPM — 2 inch Discharge



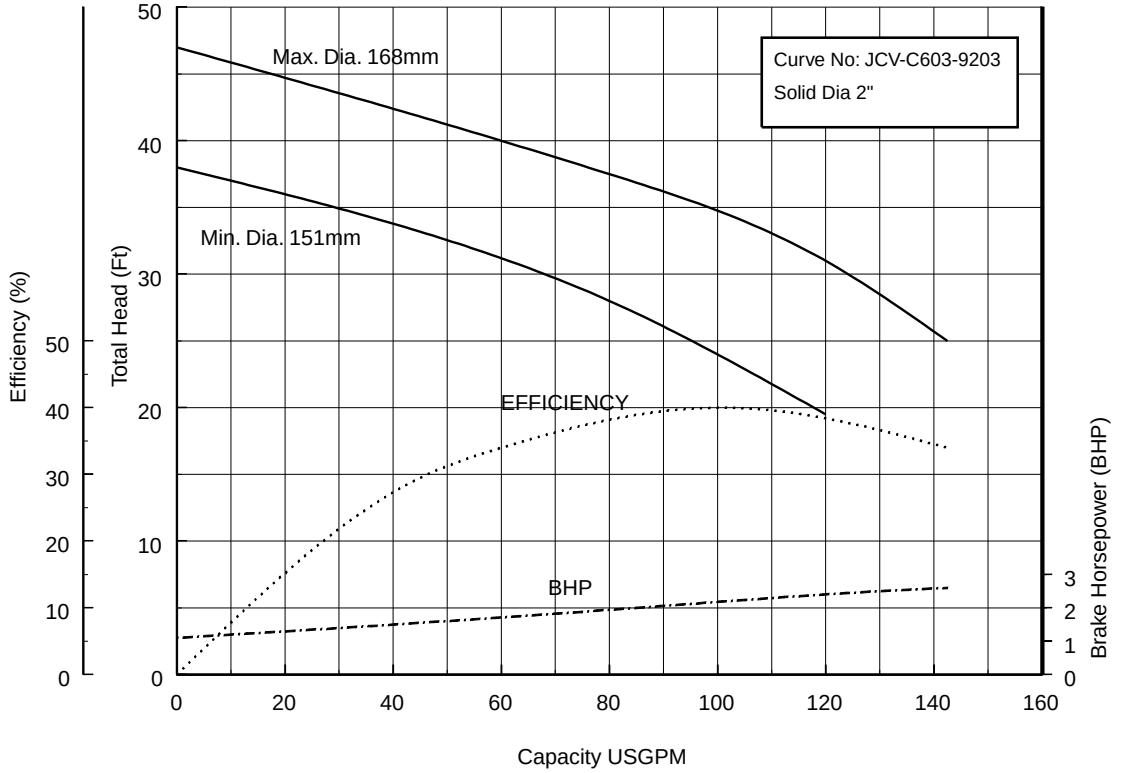
2JCV2S 2JCV2 (2HP) Synchronous Speed: 1800 RPM — 2 inch Discharge



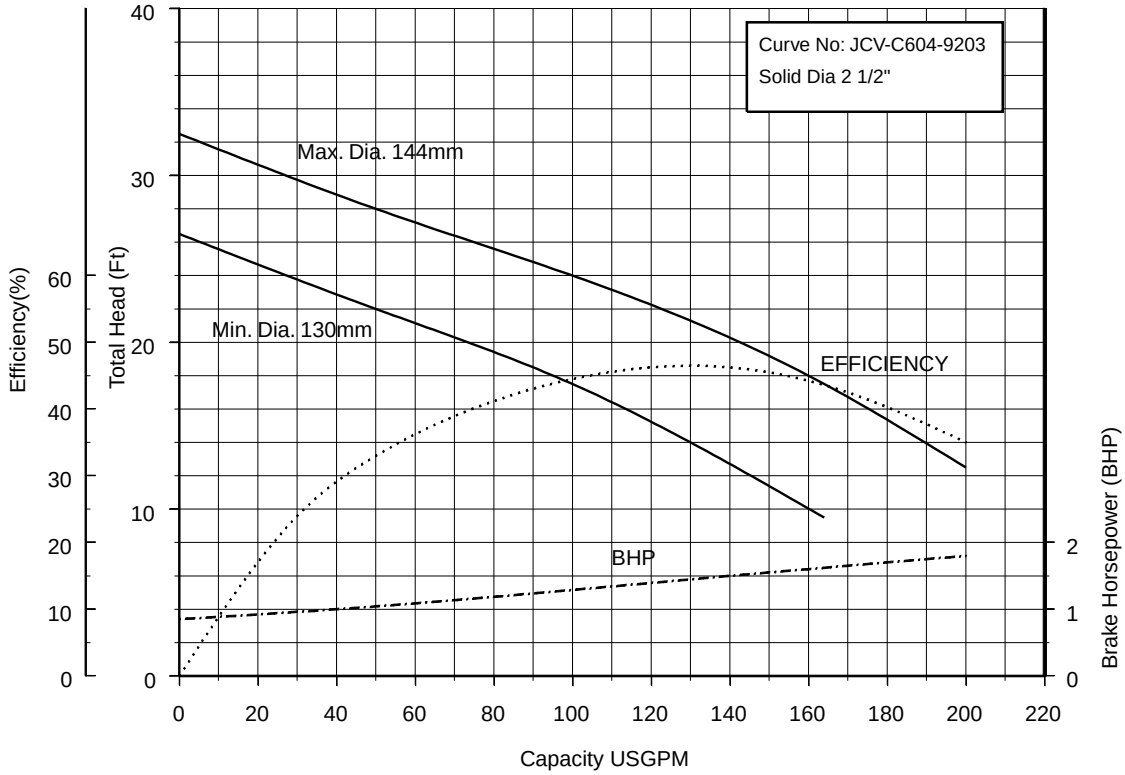
Performance Curves

Project: GPM: TDH: EFF: HP: Chk'd: Date:

2JCV3S (3HP) Synchronous Speed: 1800 RPM — 2 inch Discharge



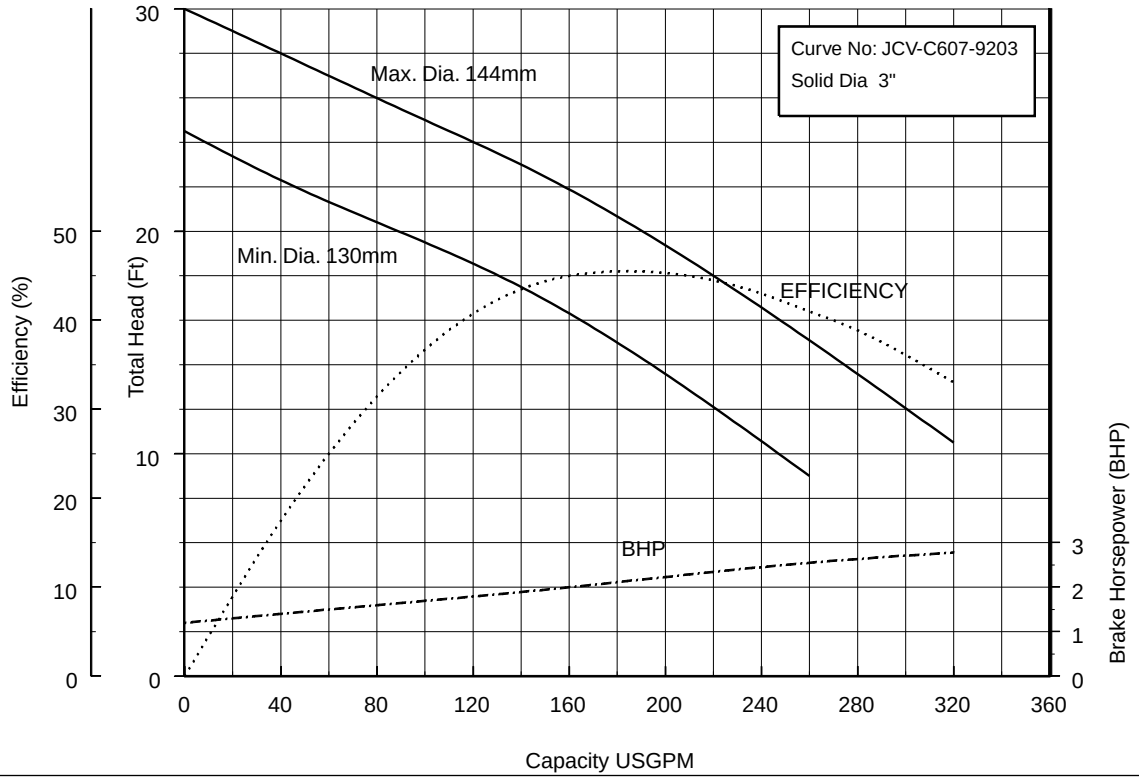
3JCV2S 3JCV2 (2HP) Synchronous Speed: 1800 RPM — 3 inch Discharge



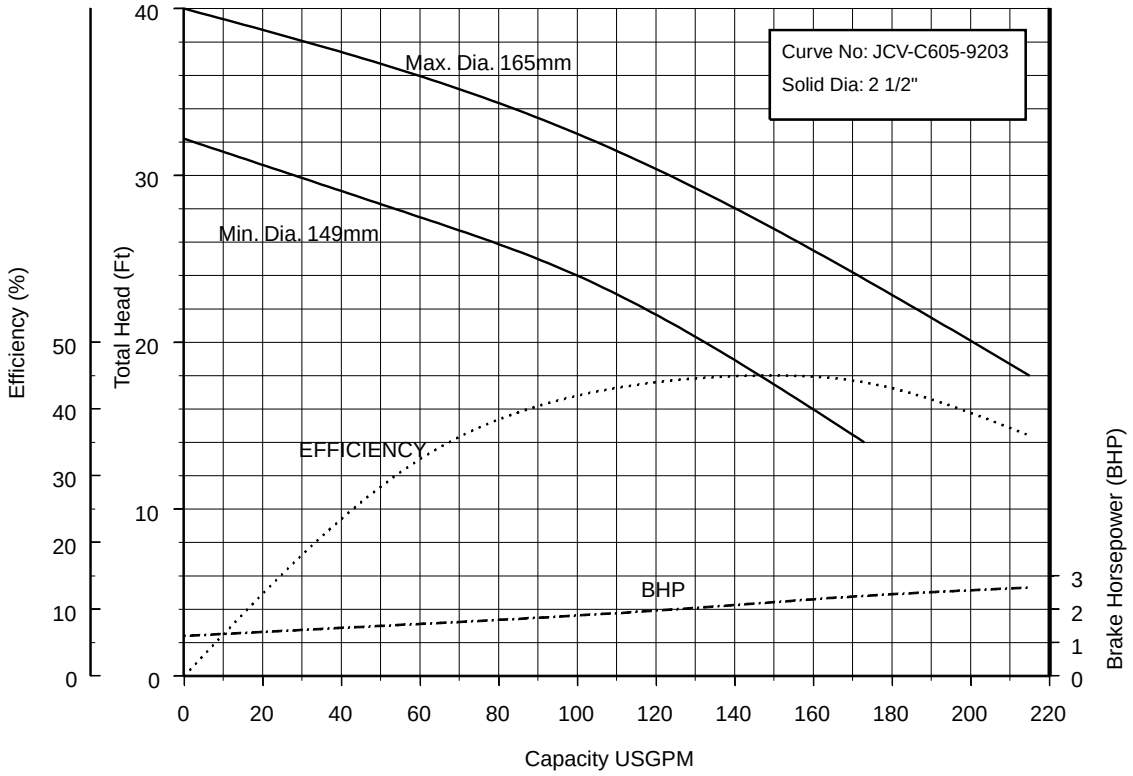
Performance Curves

Project: GPM: TDH: EFF: HP: Chk'd: Date:

3JCV3S (3HP) Synchronous Speed: 1800 RPM — 3 inch Discharge



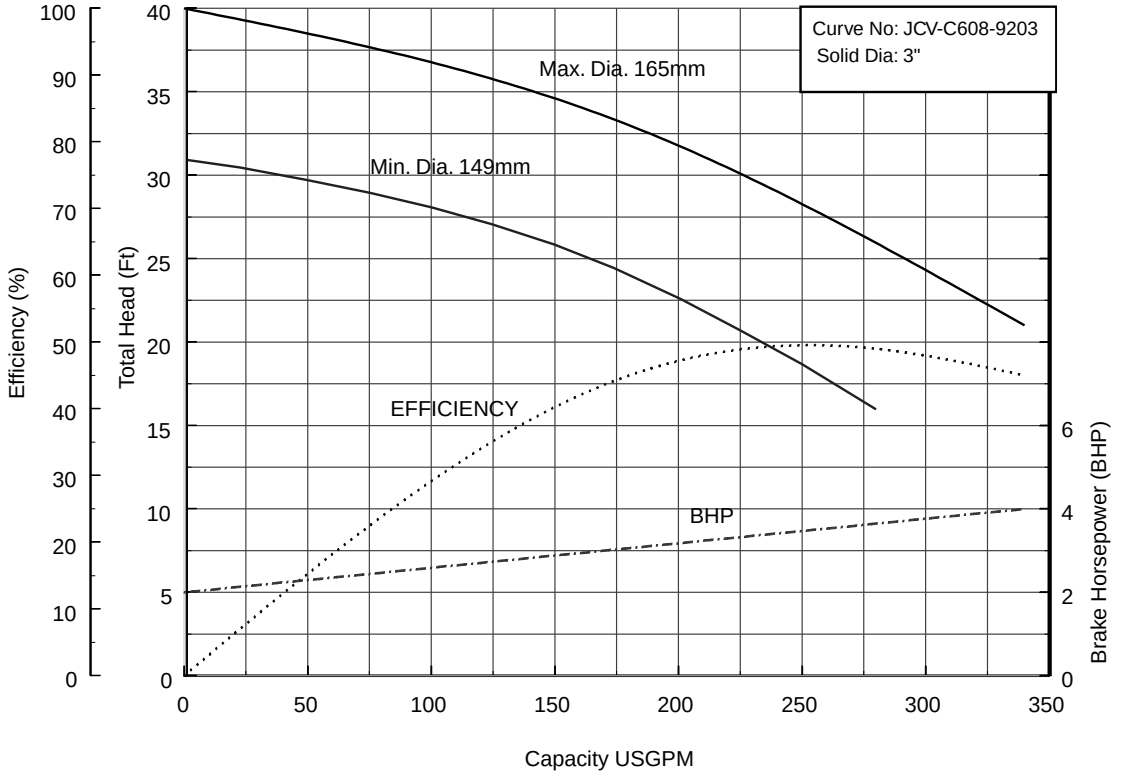
3JCVY3S (3HP) Synchronous Speed: 1800 RPM — 3 inch Discharge



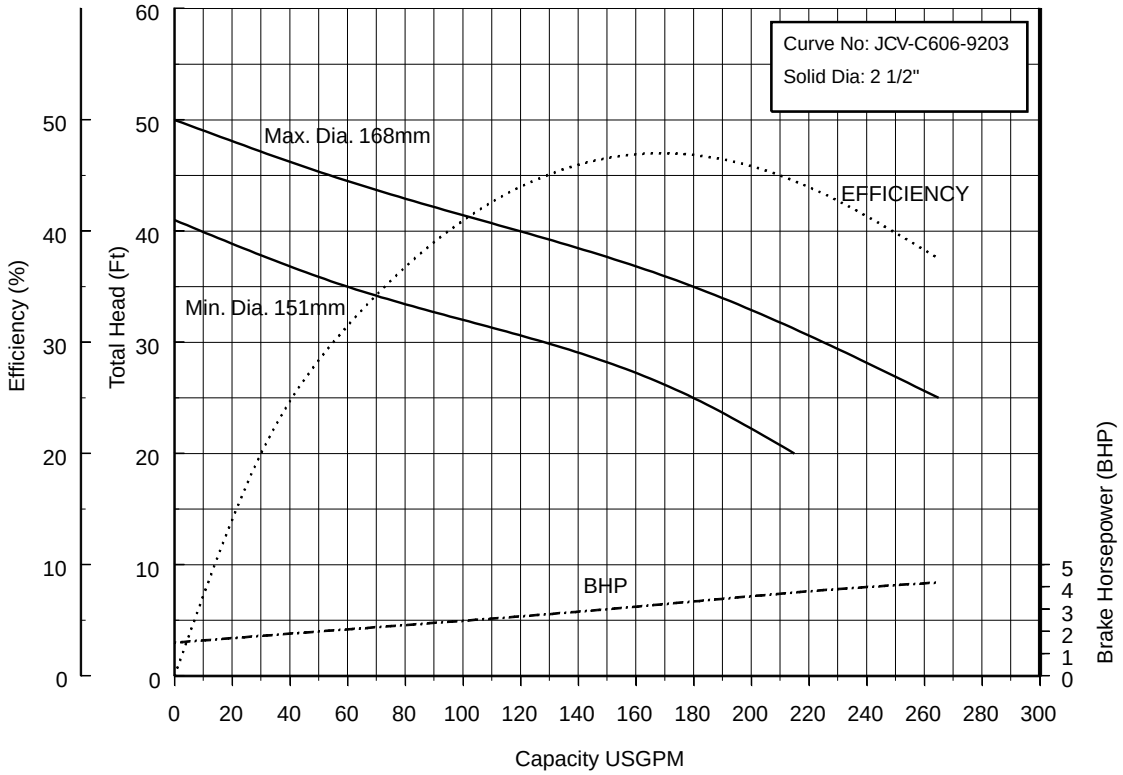
Performance Curves

Project: GPM: TDH: EFF: HP: Chk'd: Date:

3JCV5S (5HP) Synchronous Speed: 1800 RPM — 3 inch Discharge



3JCVY5S (5HP) Synchronous Speed: 1800 RPM — 3 inch Discharge



Performance Curves

Project: GPM: TDH: EFF: HP: Chk'd: Date:

4JCV5S (5HP) Synchronous Speed: 1800 RPM — 4 inch Discharge