

TABLE OF CONTENTS

JDL Models

- 2JCDH.5 (½ HP)
- 2JCDH1 (1 HP)
- 2JCDH2 (2 HP)
- 2JCD3 (2 HP)
- 2JCDH3 (3 HP)
- 2JCD5 (5 HP)
- 2JCDH5 (5 HP)
- 3JCD3 (3 HP)
- 3JCDH3 (3 HP)
- 3JCD5 (5 HP)
- 3JCDH5 (5 HP)
- 4JCD7 (7½ HP)
- 4JCD10 (3 HP)



Section	Page
Specifications	C1-01, C1-03
Selection Chart	C1-02, C1-04
Performance Curves	C1-07
Outline Drawings	C1-12
Sectional View	C1-15
PRS Information	PRS1-00
Technical Information	TD1-00
Motor Data	MD1-00

Specifications and Selection chart

**Model JCD/JCDH
Specifications**

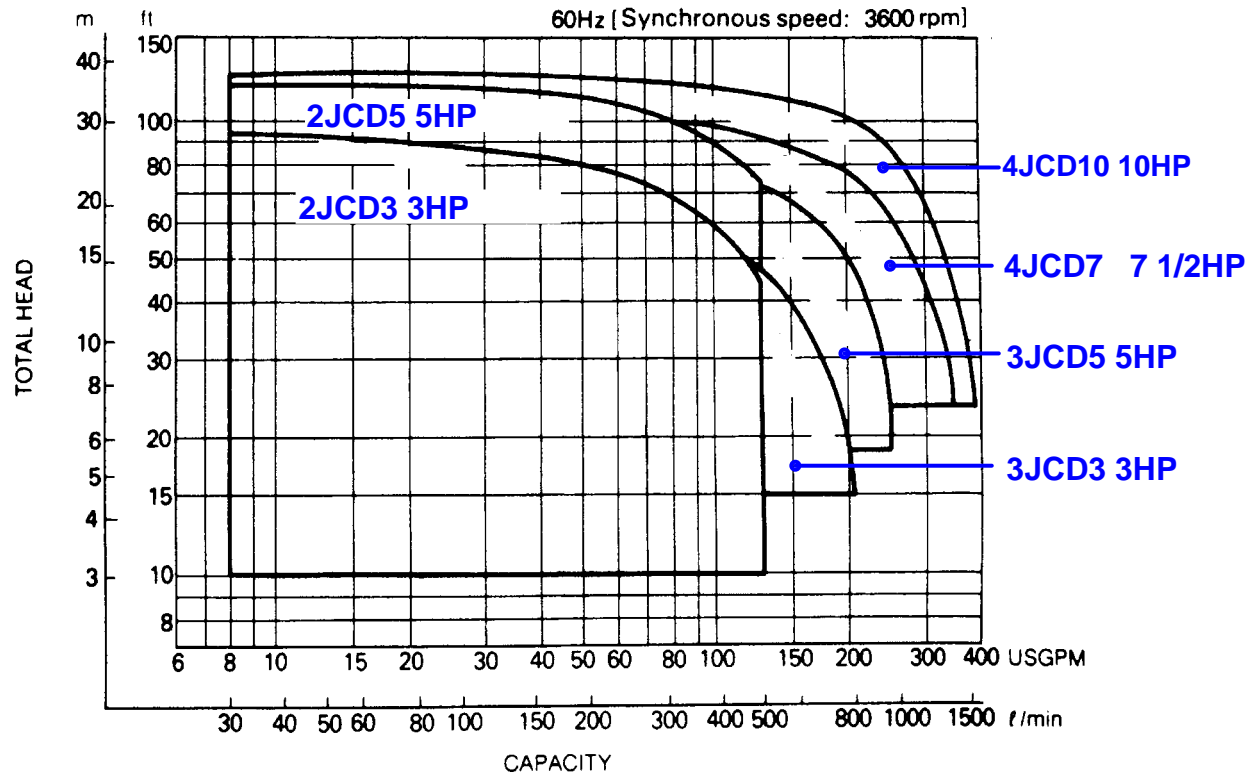
	Standard	Optional
Size	2, 3, 4 inch	
Range of HP Range of Performance	3 HP to 10 HP Capacity 8 to 390 GPM Head 10 to 126 feet	
Limitation Maximum Water Temperature	122°F (50°C)	
Synchronous Speed	3600 RPM	
Materials Casing Impeller Shaft Motor Frame Fastener	Cast Iron Ductile Iron 403 Stainless Steel Cast Iron 304 Stainless Steel	
Mechanical Seal Material – Upper Side Material – Lower Side Impeller Type Bearing Motor Three Phase Service Factor Motor Protection Submersible Cable Accessories	Double Mechanical Seal Carbon/Ceramic Silicon Carbide/Silicon Carbide Open Prelubricated Ball Bearing Air-filled, Insulation Class F 208/230/460V 1.15 Built-in Auto Cut - overload, out of phase, single phasing protection 33 ft. standard cable length Cast iron discharge elbow (3 to 5 HP)	66 ft. Pump Removal System



Selection Chart

Model JCD

Three Phase



Specifications

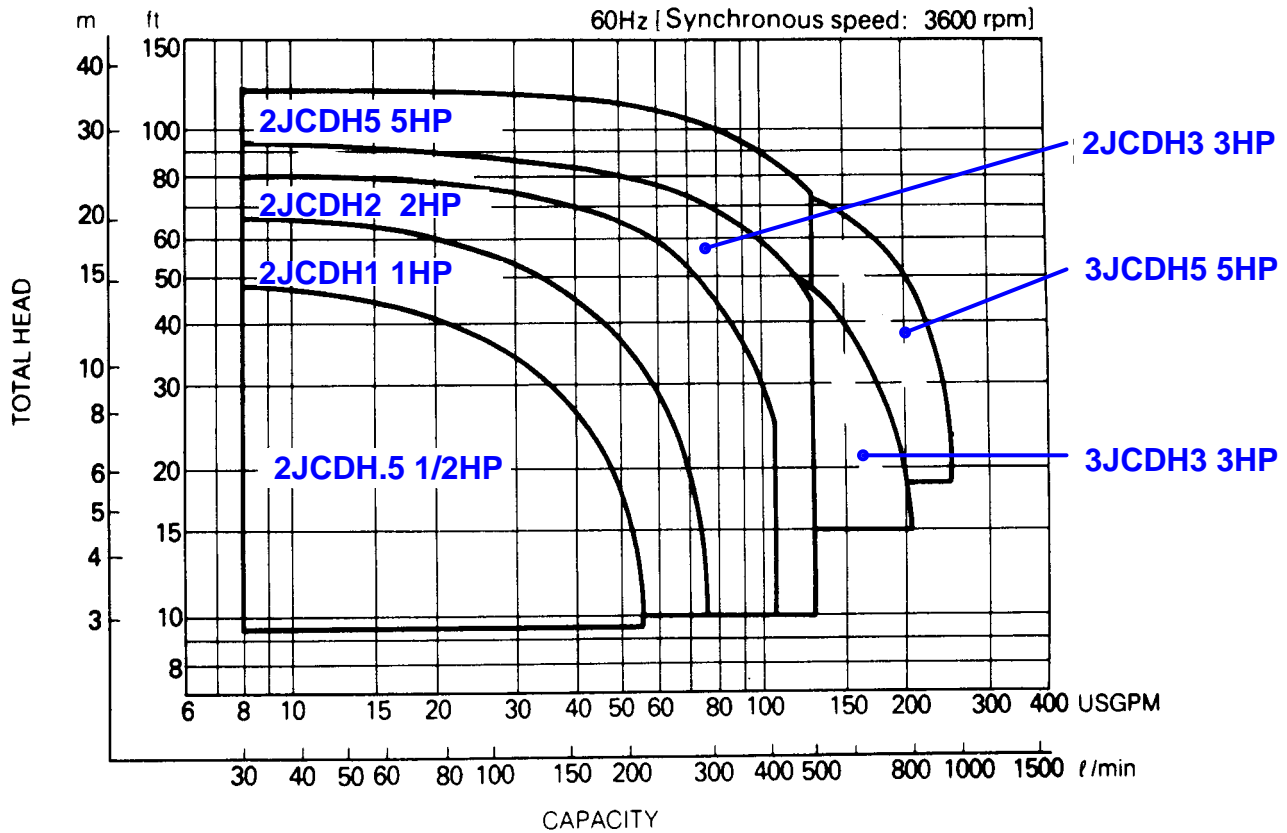
Model JCDH – Hot Water Pumps Specifications

	Standard	Optional
Size	2, 3 inch	
Range of HP Range of Performance	1/2 HP to 5 HP Capacity 8 to 250 GPM Head 8 to 126 feet	
Limitation Maximum Water Temperature	158°F (70°C) 1/2 HP, 1 HP 176°F (80°C) 2 HP to 5 HP 200°F (93°C) Operation is limited to 10 minutes	
Synchronous Speed	3600 RPM	
Materials Casing Impeller Shaft Motor Frame Fastener	Cast Iron Cast Iron (1/2 to 2 HP), Ductile Iron (3, 5 HP) 403 Stainless Steel Cast Iron 304 Stainless Steel	
Mechanical Seal Material – Upper Side Material – Lower Side Impeller Type Bearing Motor Three Phase Service Factor Motor Protection Submersible Cable Accessories	Double Mechanical Seal Silicon Carbide/Silicon Carbide Silicon Carbide/Silicon Carbide Open Prelubricated Ball Bearing Air-filled, Insulation Class H (1/2, 1HP) Class F (2, 3, 5 HP) 208/230V, 460V - Single voltage 1.15 Built-in Overload Protection 33 ft. standard cable length Cast Iron companion flange with NPT thread (1/2 to 2HP) Cast iron discharge elbow (3 to 5 HP)	66 ft. Pump Removal System



Selection chart

Model JCDH – Hot Water Pumps
Three Phase



Specifications

A. General:

Provide submersible dewatering pumps suitable for continuous duty operation underwater without loss of watertight 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	3600
Maximum HP	
Minimum efficiency at design (%)	
Minimum power factor at design (%)	
Voltage/HZ	208/230V, 460V / 60
Phase	3

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 up to and including 2HP with 1½" and 2" discharge sizes shall be furnished with a female NPT connection. Units 3HP and above with 2" and larger discharge ports 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. Units shall be provided with a galvanized strainer to prevent solids larger than the design will allow from entering the pump. 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 chlorinated rubber paint.

Impeller shall be multi-vane open design, direct connected to the motor shaft with a slip fit, key driven, and secured with an impeller nut. Units ½ to 2 HP shall be furnished with a replaceable 304SS wear plate. Units 3 HP and larger shall have impellers with back pump out vanes and rear shroud operating with a replaceable 304SS wear ring as well as a replaceable cast iron suction cover. Suction covers on all models shall be designed such that they may be adjusted to maintain working clearances and hydraulic efficiencies.

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. For applications under 122°F; lower face materials shall be silicon carbide, upper faces carbon vs ceramic, NBR elastomers, and 304SS hardware. Applications greater than 122°F shall include silicon carbide face materials for both upper and lower seals, and viton elastomers. Seal system shall not rely on pumping medium for lubrication.



Specifications

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 (Class H for JCDH 1/2 & 1 HP models) 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 403SS AISI403 material, rotating on two permanently lubricated ball bearings designed for a minimum B-10 life of 60,000 hours. Model DSU motors shall be designed for continuous duty pumping at a maximum sump temperature of 122°F and capable of up to 20 starts per hour. Model JCDH motors shall be designed for up to 20 starts per hour continuous duty pumping at a maximum sump temperature of 158°F for 1/2 and 1 HP units, and 176°F for 2 to 5 HP units. Motor service factor shall be 1.15. Voltage and frequency tolerances shall be a maximum 10%/5% respectively. Junction area shall include a terminal board for power connections eliminating the need for wire nuts. 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 at 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. Units 1/2 to 7 1/2 HP shall utilize a metallic plate to clamp the entry system to the motor housing. Strain relief on these sizes shall be accomplished by clamping and attaching the cable with chain to the motor housing. Units larger than 7 1/2 HP shall utilize a cast iron cable housing which is bolted to the top of the motor housing causing a compression fit between the molded shoulder and the top of the motor. Strain relief protection shall be provided by clamping the cable to the cable housing.

F. Pump Removal System (PRS):

Design shall include two (2) 304SS schedule 40 guide rails sized to mount directly to the pump removal system base (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).

Units shall utilize two (2) Guide pipes. Intermediate guide brackets shall be supplied for rail lengths over 20 feet.

Guide rails are not part of the pump package and shall be supplied by others.

The PRS shall be manufactured of cast iron, 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 pump design shall include an integral self-aligning sliding bracket. Sealing of the pumping unit to the PRS 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, either galvanized or stainless steel, suitable for removing and installing the pump unit shall be provided.

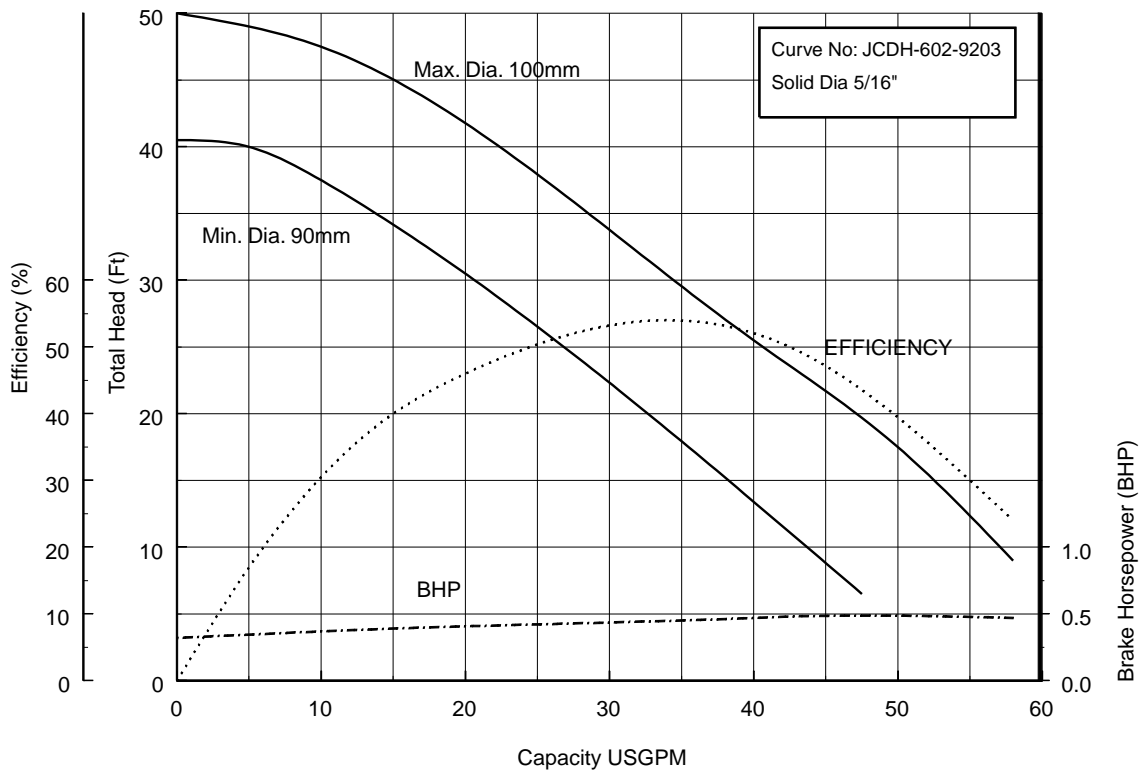


Performance Curves

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

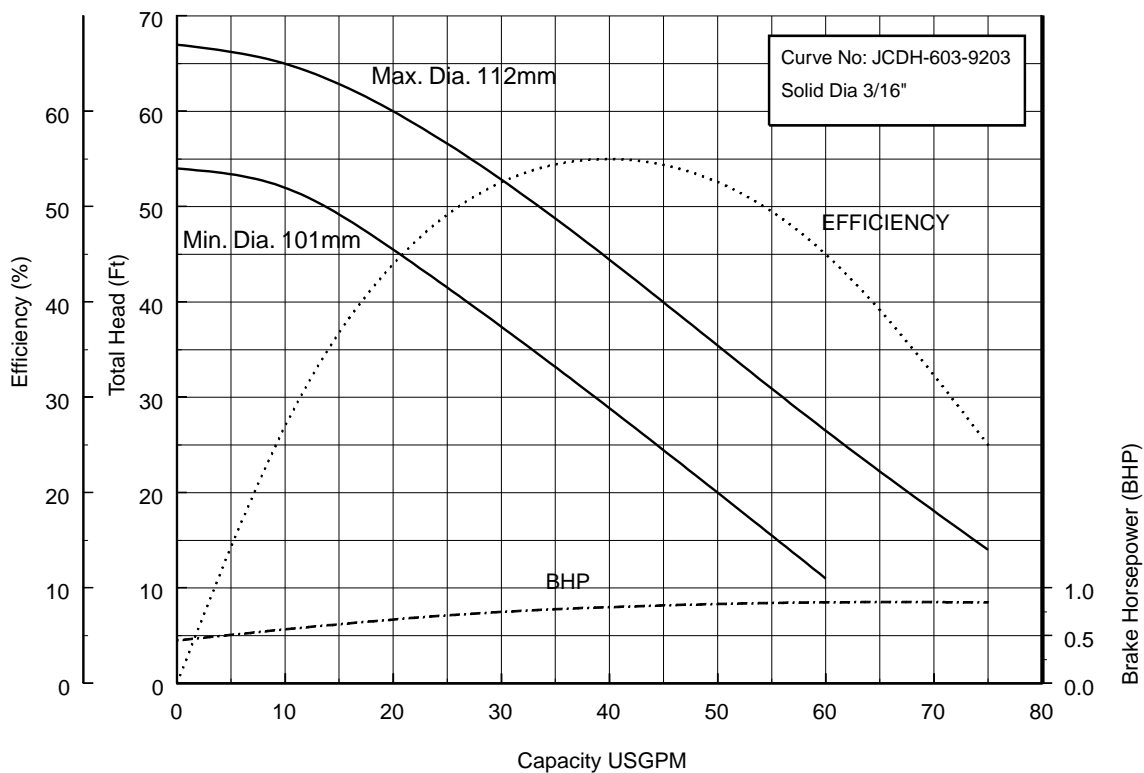
2JCDH.5 (1/2HP) Synchronous Speed: 3600 RPM

2 inch Discharge



2JCDH1 (1HP) Synchronous Speed: 3600 RPM

2 inch Discharge

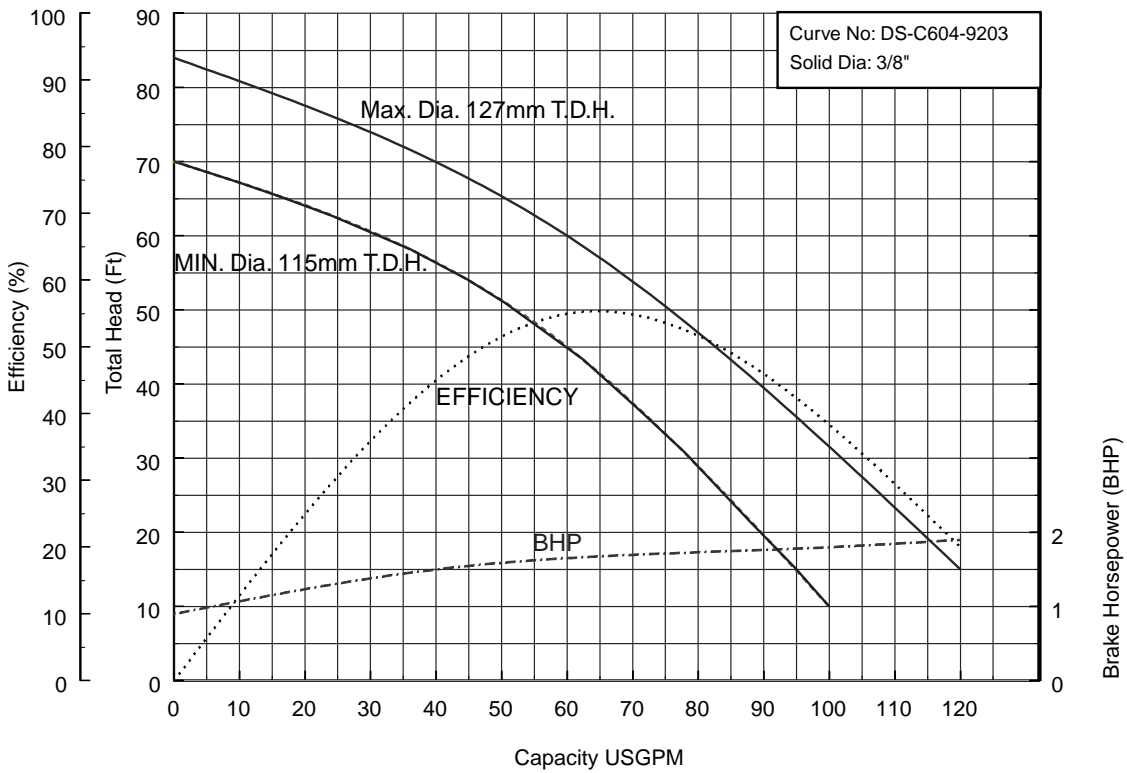


Performance Curves

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

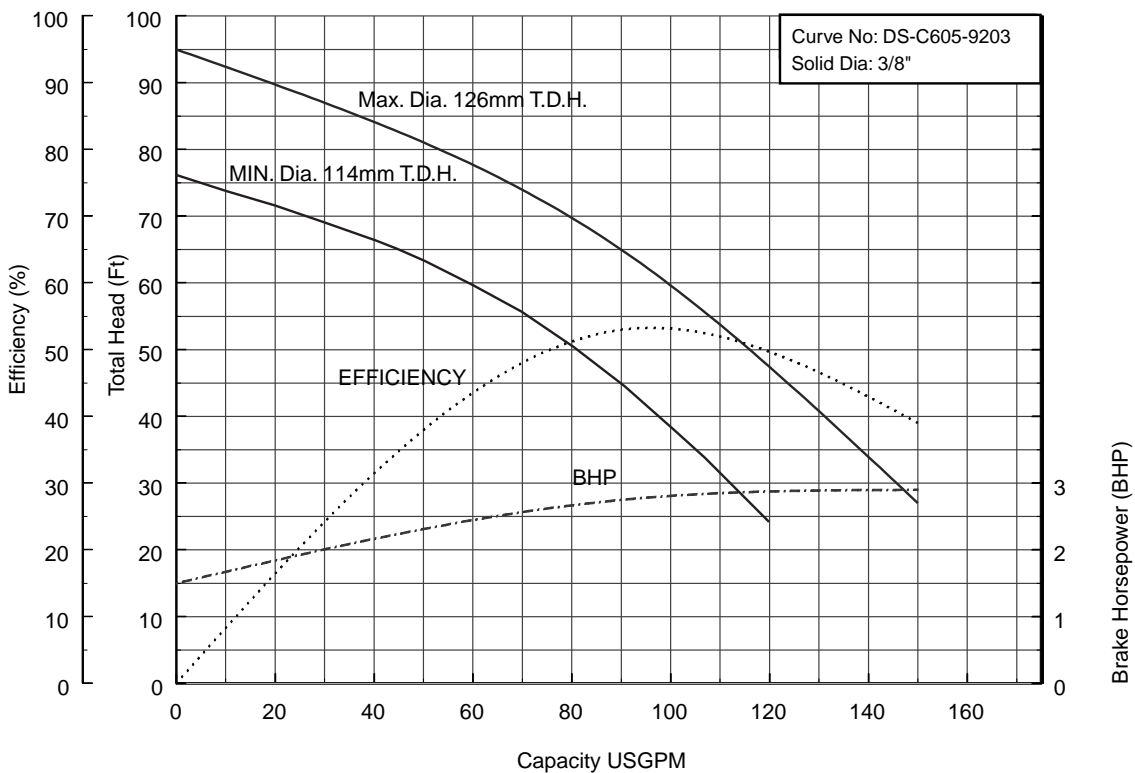
2JCDH2 (2HP) Synchronous Speed: 3600 RPM

2 inch Discharge



2JCD3 2JCDH3 (3HP) Synchronous Speed: 3600 RPM

2 inch Discharge

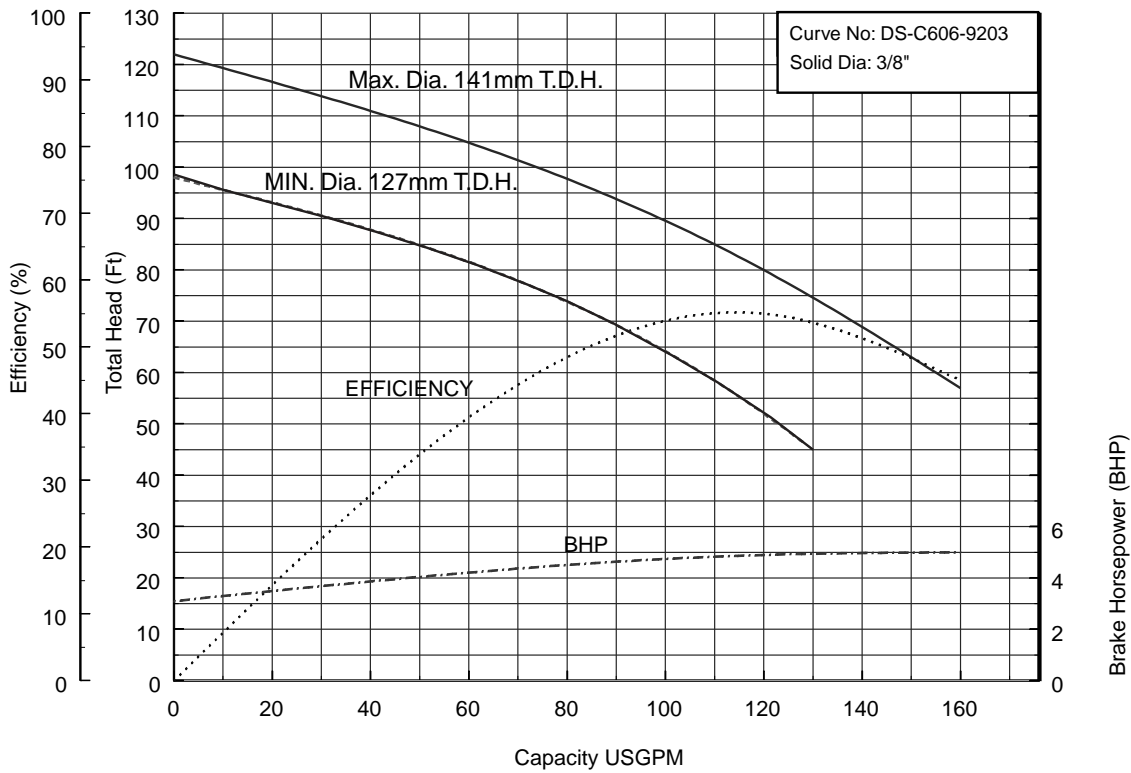


Performance Curves

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

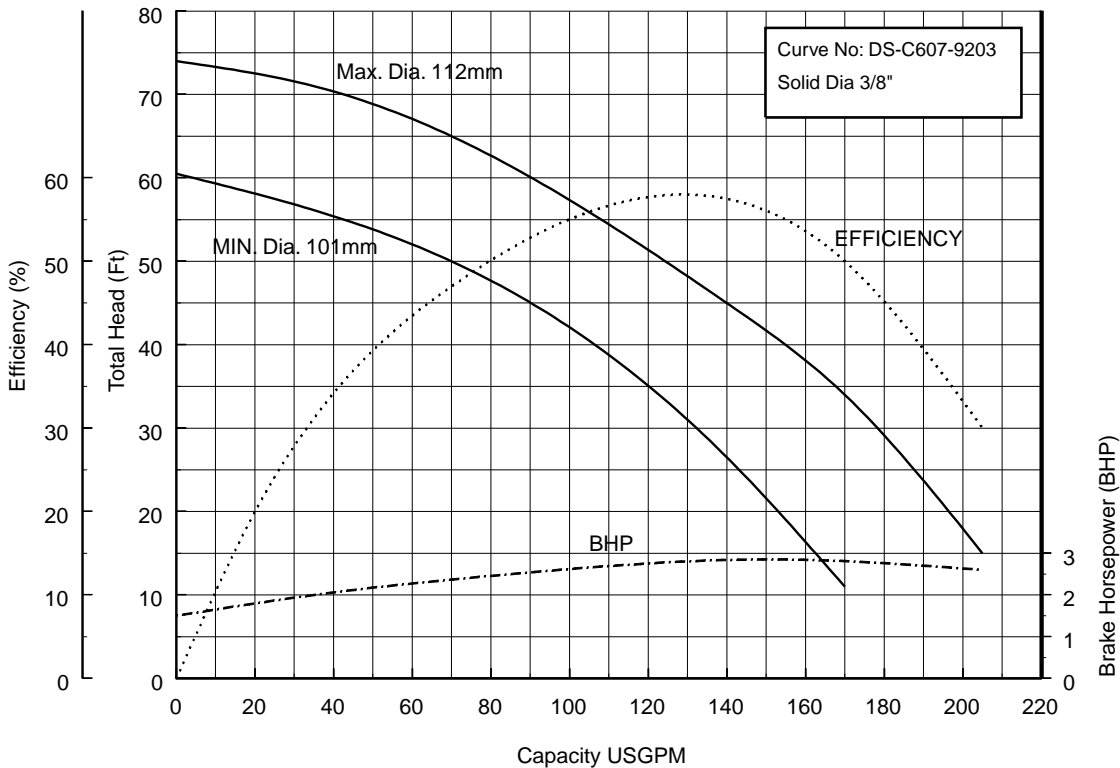
2JCD5 2JCDH5 (5HP) Synchronous Speed: 3600 RPM

2 inch Discharge



3JCD3 3JCDH3 (3HP) Synchronous Speed: 3600 RPM

3 inch Discharge

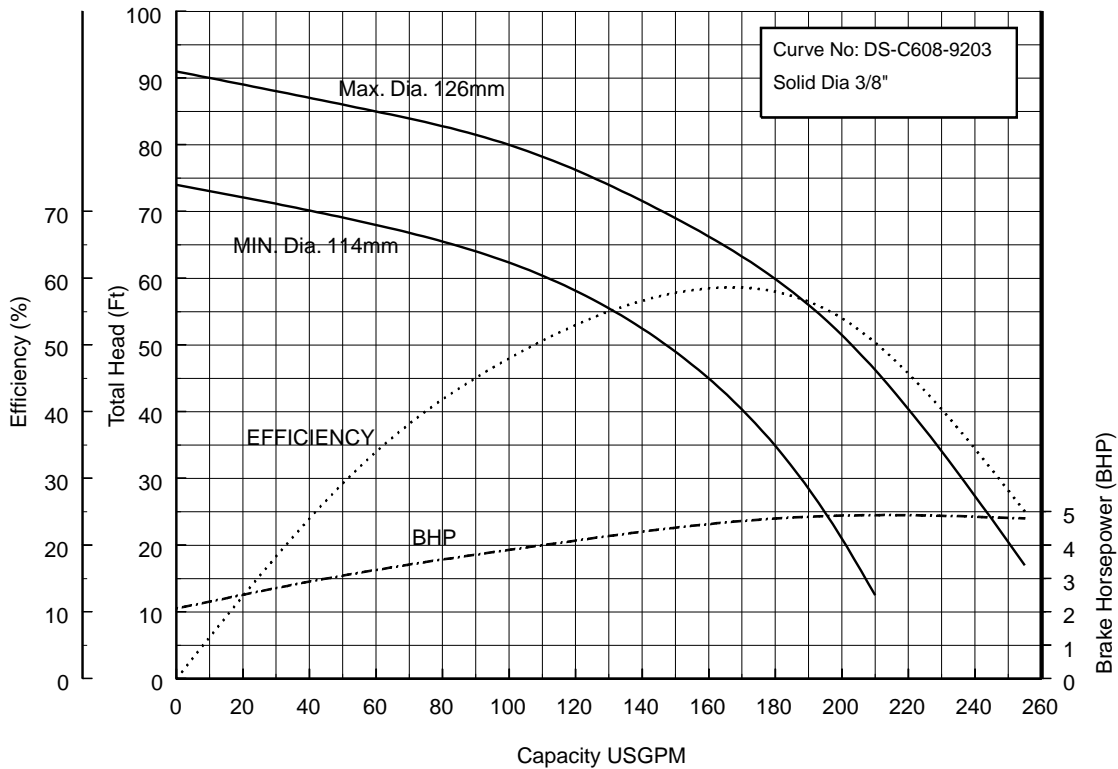


Performance Curves

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

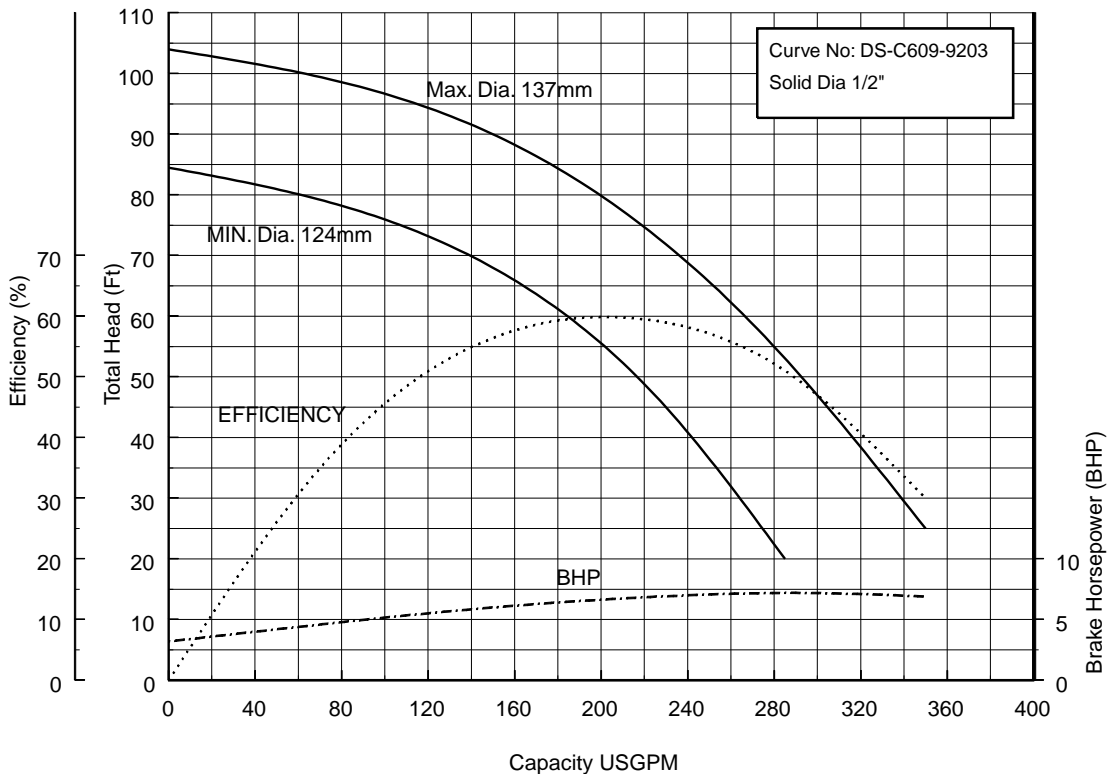
3JCD5 3JCDH5 (5HP) Synchronous Speed: 3600 RPM

3 inch Discharge



4JCD7 (7 1/2 HP) Synchronous Speed: 3600 RPM

4 inch Discharge



Performance Curves

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

4JCD10 (10HP) Synchronous Speed: 3600 RPM

4 inch Discharge

