

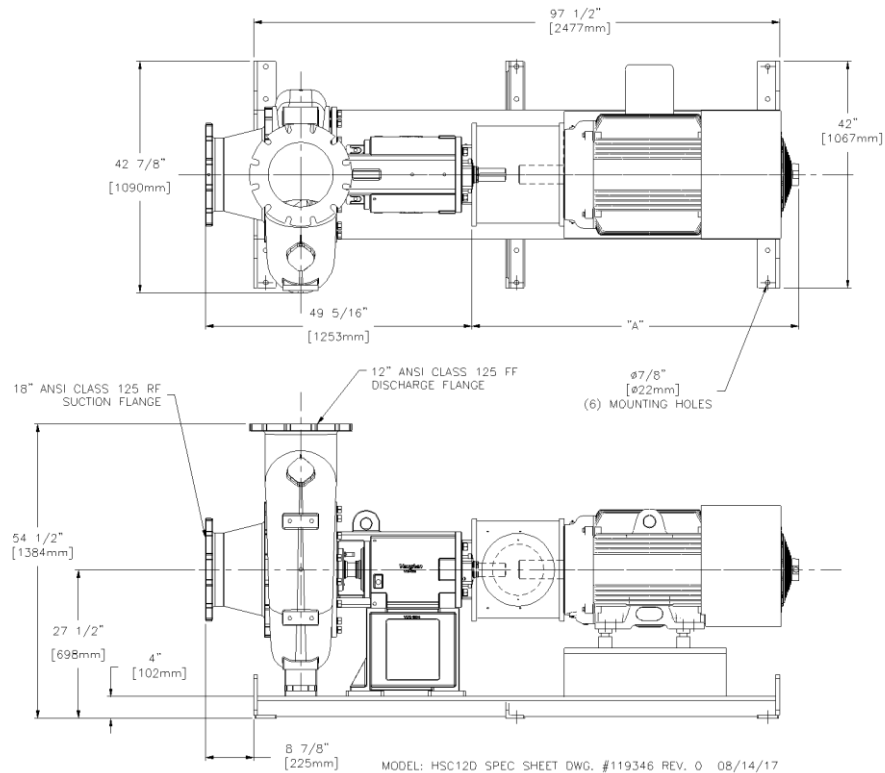


# 12" TRITON HORIZONTAL SCREW CENTRIFUGAL PUMP

## Materials of Construction:

- Casing/Backplate/Suction Cone/Impeller:** ..... Ductile cast iron.  
**Back Wear Plate:** ..... Alloy steel, heat treated to minimum Rockwell C 60.  
**Flushless Mechanical Seal:** ..... Cartridge type with silicon carbide (or optional tungsten carbide) faces and stainless steel sleeve. (See following page for other sealing options.)  
**Thrust Bearings:** ..... Face to face tapered roller type.  
**Radial Bearings:** ..... Spherical roller type  
**Shaft:** ..... Heat treated alloy steel.  
**Lubrication:** ..... ISO 46 hydraulic oil.  
**Flanges:** ..... ANSI Class 125  
**Mounting Base:** ..... Carbon Steel  
**Paint:** ..... Ceramic Epoxy.

**DRAWINGS AND DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE. DO NOT USE FOR CONSTRUCTION PURPOSES. CONTACT VAUGHAN FOR CERTIFIED CONSTRUCTION PRINTS.**



NEMA Motor Frame Size	A* inch (mm)
284TC	33 (838)
286TC	35 (889)
324TC/326TC	38 (965)
364TC/365TC	41 (1041)
404TC/405TC	47 (1194)
444TC/445TC	54 (1372)
447TC	57 (1448)
449TC	62 (1575)

IEC Motor Frame Size	A* mm (inch)
200L	660 (26)
225S	737 (29)
225M	762 (30)
250S	787 (31)
250M	838 (33)
280S	889 (35)
280M	940 (37)
315S	1016 (40)
315M	1037 (42)

\*Note: Dimension A may differ between different manufacturers, figures given are for guidance only.



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For all current patents, see <http://www.chopperpumps.com/patents.htm>

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## SPECIFICATIONS - 12" HORIZONTAL SCREW CENTRIFUGAL PUMP

The Vendor shall furnish ( ) horizontal, end suction, screw-centrifugal pump(s) and all appurtenances as specified below. The pump(s) shall be of heavy-duty construction intended for services requiring reliable solids handling, gentle pumping action, high efficiency, and low NSPH<sub>R</sub>. Pump shall be manufactured by Vaughan Co., Inc.

### DETAILS OF CONSTRUCTION

- A. Casing, Back Plate and Wear Plate:** The pump casing shall be of volute design, spiraling outward to the Class 125 flanged centerline discharge. Back pull-out design shall incorporate adjusting sleeves for accurate adjustment of impeller-to-suction cone clearance, and shall allow removal of pump components without requiring disconnection of casing from inlet or discharge piping. A ½"-NPT pressure tap shall be included on or near the discharge flange. Casing and back plate shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. The replaceable wear plate shall be heat treated alloy steel with cutting groove to cut against insert cutter in the impeller hub.
- B. Inlet Suction Cone:** The inlet suction cone shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. The suction cone shall incorporate a spiral groove to channel trapped fiber into the casing that would otherwise bind between the impeller OD and the inlet cone ID. The clearance of the impeller to the cone shall be externally adjustable without requiring pump or piping disassembly or special tools.
- C. Impeller:** Shall be open channel, screw-centrifugal type. The impeller shall be ductile cast iron and shall be dynamically balanced. The single-passage impeller shall combine the action of a positive displacement screw and a single-vane centrifugal impeller.
- D. Insert Cutter:** Shall be installed in the impeller hub, designed to cut against the cutter groove in the replaceable wear plate, reducing and removing stringy materials from between the impeller and wear plate and the mechanical seal area. Insert cutter shall be alloy steel, heat treated to minimum Rockwell C 60. The insert cutter clearance from the impeller hub to wear plate shall be externally adjustable without requiring pump disassembly.
- E. Pump Shafting:** Shafting shall be heat treated alloy steel supported by roller bearings.
- F. Stuffing Box:** The stuffing box shall be ductile cast iron. The stuffing box shall be designed to accommodate the flushed mechanical seal, or packing as described below. The Vaughan flushless seal and flushed tandem mechanical seal as described below do not require stuffing box
- G. Seal:** [NOTE TO CONSULTING ENGINEER: Please choose one of the 4 options below]:
- Mechanical Seal system *specifically designed to require no seal flush*: The mechanical seal shall be located immediately behind the impeller hub to eliminate the stuffing box. The seal shall be cartridge-type mechanical seal with Viton O-rings and silicon carbide (or optional tungsten carbide) faces. This cartridge seal shall be a pre-assembled and pre-tested so that no seal settings or adjustments are required from the installer. Any springs used to push the seal faces together must be shielded from the fluid to be pumped. The cartridge shall also include a 17-4PH, heat-treated seal sleeve and a ductile iron seal housing (or optional stainless steel).
  - Flushed Tandem Mechanical Seal: The seal shall be cartridge-type tandem mechanical seal with Viton O-rings and silicon carbide (or optional tungsten carbide) faces. This cartridge seal shall be pre-assembled and pre-tested so that no seal settings or adjustments are required from the installer. Any springs used to push the seal faces together must be shielded from the fluid to be pumped. The cartridge shall also include a 17-4PH, heat-treated seal sleeve and a ductile iron (or optional stainless steel) seal housing. Seal requires flush to drain at 2-3 GPH (7-11 L/hr) per hour flow rate.
  - Mechanical seal with throttle bushing and water fitting for seal water flush. The seal shaft sleeve shall be 316 SS. Mechanical seal materials shall be 316 SS or Alloy 20 with silicon carbide or tungsten carbide faces. Seal shall be positively driven by set-screws. Elastomers shall be of Buna N, and stationary seal member shall be of the cup-mounted type to ensure cushioning of face material from mechanical shock. Contractor is to provide a 6-10 GPH (22-37 L/hr) per hour seal flush with filtered water, a rotameter, throttle valve, and solenoid operated isolation valve interlocked with an auxiliary contact of the motor starter.
  - Packing design with 5-ring Kevlar packing, split Teflon lantern ring and water fitting. The packing shaft sleeve shall be 316 SS with Nickel-Chrome-Boron coating. Contractor is to provide a filtered water packing flush at 10 PSI (0.7 bar) greater than pump discharge pressure. The flush water line is to be interlocked with an auxiliary contact of the motor starter so it is automatically turned on when the motor is started.
- H. Bearings:** Shaft thrust in both directions shall be taken up by two face to face mounted tapered roller bearings. A spherical roller bearing shall be provided for radial loads. Bearings shall be rated with a minimum L10 bearing life of 100,000 hours at any acceptable operating point on the performance curve.
- I. Bearing Housing:** Shall be ductile cast iron, and machined with piloted bearing fits for concentricity of all components. Bearing housing shall have oil bath lubrication using ISO 46 hydraulic oil. Fill and drain ports shall be provided. Bronze non-contacting labyrinth style, O-ring mount bearing isolators shall be provided at each end of the bearing housing to prevent egress of oil and ingress of contaminants. Bearing housing shall include a cast-in lifting eye to aid in removing the back-pullout assembly from the pump casing during maintenance.
- J. Shaft Coupling:** Bearing housing and motor stool design is to provide accurate, self-aligning mounting for a C-flanged or B5 flanged electric motor. Pump and motor coupling shall be T.B. Woods Sureflex elastomeric type.
- K. Optional Belt Drive:** Adjustable brackets shall be used to support an over-head or side mounted motor. Sheaves and belts shall be properly sized for horsepower ratings, and all guards are to be supplied with the belt drive system.
- L. Stainless Steel Nameplate:** Shall be attached to the pump giving the manufacturer's model and serial number, rated capacity, head, speed and all pertinent data.
- M. Drive Motor:** Shall be \_\_ HP/KW, \_\_\_\_ RPM, \_\_\_ volts, 3 phase, 60 or 50 hertz, 1.15 service factor, C-flange or B5 flange mounted, TEFC enclosure. The motor shall be sized for non-overloading conditions.
- N. Surface Preparation:** Solvent wash and a single coat of Tnemec 431 epoxy applied at 5 MDFT minimum (except motor).
- O. OPTIONAL Surface Preparation:** SSPC-SP6 commercial sandblast (except motor), a prime coat of Tnemec 431 epoxy and a finish coat of Tnemec 431 epoxy for total finish of 30 MDFT minimum (except motor).