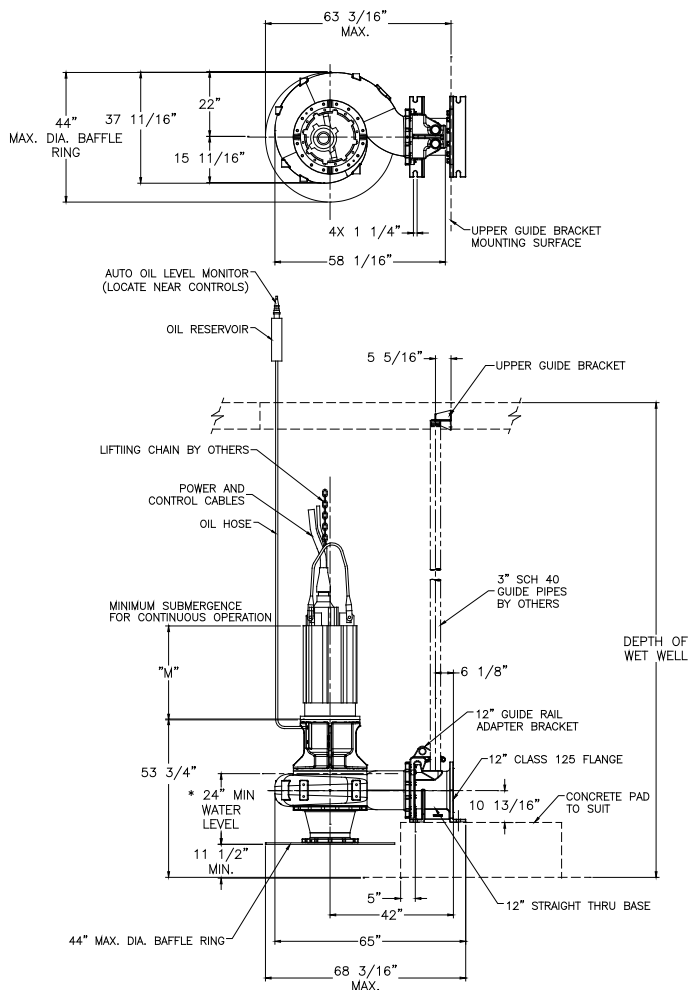


# 12" SUBMERSIBLE SCREW CENTRIFUGAL PUMP

## Materials of Construction:

**Impeller/Casing/Suction Cone/Back Pull-Out Plate:** ..... Ductile cast iron.  
**Insert Cutter:**..... Alloy steel, heat treated to minimum Rockwell C 60.  
**Mechanical Seal:** ..... Cartridge type with silicon carbide (or tungsten carbide) faces and stainless steel sleeve.  
**Thrust Bearings:**..... Face to face tapered roller type  
**Shaft:** ..... Heat treated alloy steel.  
**Lubrication:** ..... ISO Grade 46 oil.  
**Flanges:** ..... ANSI Class 125  
**Mounting Base:** ..... Ductile Cast Iron  
**Paint:** ..... Epoxy

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



MOTOR FRAME	M
320TY	25-1/2
360TY	32-3/8

15 MINUTE IN AIR FRAME SIZES ONLY

BAFFLE RING REQUIREMENT	
MINIMUM FLOW	SIZE
900 GPM	20" - 44"

\*FLOW RATES BELOW 4800 GPM REQUIRE ONLY 12" SUBMERGENCE



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 USA**

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## SPECIFICATIONS: 12" SUBMERSIBLE SCREW CENTRIFUGAL PUMP

The Vendor shall furnish (\_\_\_) submersible, 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 NSPHR. Pump shall be manufactured by Vaughan Co., Inc.

### DETAILS OF CONSTRUCTION

- A. Casing and Back Pull-Out Plate:** The pump casing shall be of volute design, spiraling outward to the Class 125 flanged centerline discharge. Casing & backplate shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. Back pull-out design shall incorporate adjusting sleeves for accurate adjustment of impeller-to-suction cone clearance.
- 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 fiber into the casing that would otherwise bind between the impeller OD and the inlet cone ID. A baffle ring will be provided when required to prevent vortexing.
- C. Impeller:** Shall be open channel, screw-centrifugal. 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. Backplate Insert Cutter:** Shall be fitted into the back plate behind the impeller, designed to cut against a cutter in the impeller hub, reducing and removing stringy materials from the mechanical seal area. Insert cutters shall be alloy steel heat treat hardened to minimum Rockwell C 60.
- E. Impeller Hub Cutter:** Shall be alloy steel hardened to minimum Rockwell C 60 and fitted into the impeller hub.
- F. Pump Shafting:** Shafting shall be heat treated alloy steel supported by rolling bearings.
- G. Pump Mechanical Seal:** The mechanical seal shall be located immediately behind the impeller hub to maximize the flushing available from the impeller. The seal shall be a cartridge-type mechanical seal with Viton O-rings and silicon carbide (or 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 cast iron seal gland.
- H. Thrust Bearings:** Shaft thrust in both directions shall be taken up by a matched set of face to face tapered roller bearings with a minimum L-10 life rated 100,000 hours. A pump mechanical seal shall be provided to isolate the bearings from the pumped media. The pump seal, as well as the thrust bearings shall be oil bath lubricated in the bearing housing by ISO Grade 46 oil.
- I. Bearing Housing:** Shall be ductile cast iron, and machined with piloted bearing fits for concentricity of all components. Piloted motor mount shall firmly align motor on top of bearing housing.
- J. Automatic Oil Level Monitor:** An oil level float switch shall be mounted in a reservoir at the top of the wet well, with a hose feeding down to the side of the bearing housing to monitor oil level and shut off the motor in event of low oil level. A relay shall be included for mounting in the motor control panel.
- K. Shaft Coupling:** The submersible motor shall be close coupled directly to the pump shaft using a solid sleeve coupling, which is keyed to both the pump and motor shafts.
- 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. Submersible Motor:** The submersible motor shall be U/L or FM and CSA listed and suitable for Class I, Group C & D, Division I hazardous locations, rated at \_\_\_ HP, \_\_\_ RPM, \_\_\_ Volts, 50 or 60 Hertz and 3 phase, 1.15 service factor (1.0 for Continuous In-Air) with Class F insulation. Motor shall have tandem mechanical seals in oil bath and dual moisture sensing probes. Moisture probes must be connected to indicate water intrusion. The lower motor seal shall be exposed only to the lubricant in the pump bearing housing, with no exposure to the pumped media. Motor shall include two normally closed automatic resetting thermostats connected in series and embedded in adjoining phases. The thermostats must be connected per local, state, and/or the National Electric Code to maintain hazardous location rating and to disable motor starter if overheating occurs. Motor frame shall be cast iron, and all external hardware and shaft shall be stainless steel.
- N. Guide Rail System:** Provide a guide rail system consisting of two galvanized or stainless steel guide rails (by others), cast ductile iron pump guide bracket, cast ductile iron discharge elbow with mounting feet and Class 125 flanges, 316 stainless steel upper guide rail mounting bracket, and 316 stainless steel intermediate guide rail stiffener bracket every 10 feet.
- O. Optional Non-Sparking Guide Rail System:** Provide a non-sparking guide rail system consisting of two galvanized or stainless steel guide rails (by others), cast aluminum bronze pump guide bracket, cast ductile iron discharge elbow with mounting feet and Class 125 flanges, 316 stainless steel upper guide rail mounting bracket, and 316 stainless steel intermediate guide rail stiffener bracket every 10 feet. System design shall prevent spark ignition of explosive gases during pump installation and removal.
- P. Surface Preparation:** Solvent wash and a single coat of Tnemec 431 epoxy (except motor).
- Q. OPTIONAL Premium Surface Preparation:** Solvent wash, sandblast, and coat with minimum 30 MDFT Tnemec Perma-Shield PL Series 431 epoxy (except motor).