

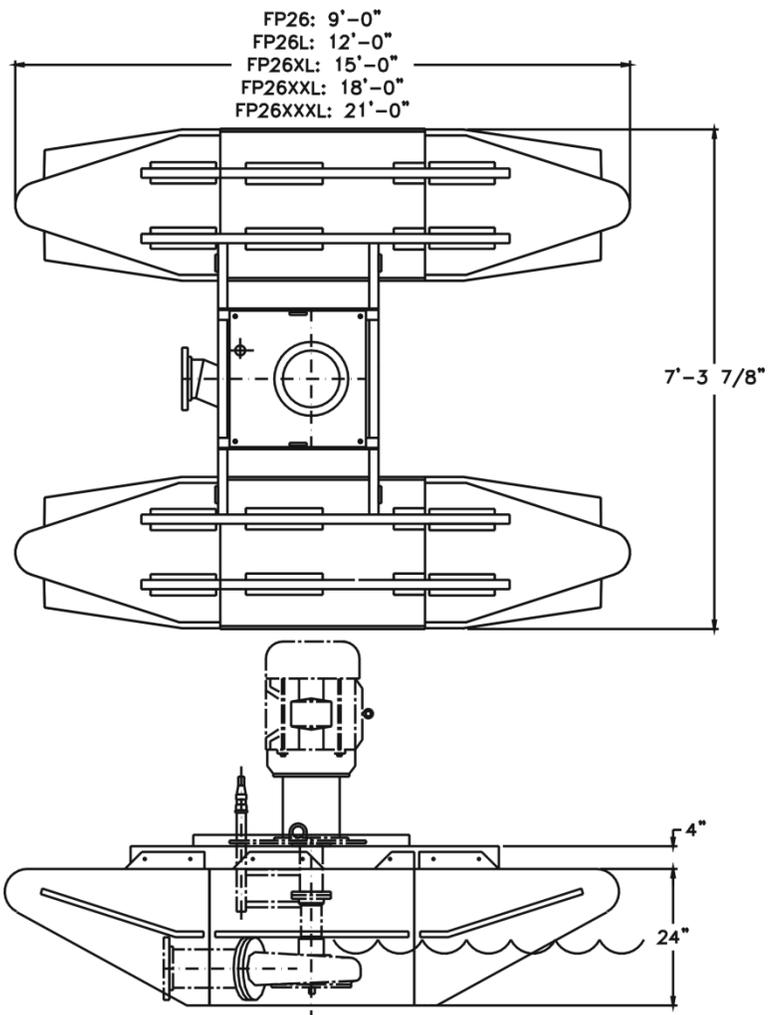


# UNMANNED PLATFORM PUMPS

## Materials of Construction:

**Frame:** ..... Carbon Steel  
**Pontoons:** ..... Foam-filled Polyethylene  
**Pump:** ..... Ductile Iron and Steel  
**Paint:** ..... Ceramic Epoxy

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



MAXIMUM ALLOWED WEIGHT (PUMP & MOTOR)	
FP26	994 LB.
FP26L	1536 LB.
FP26XL	2084 LB.
FP26XXL	2612 LB.
FP26XXXL	3140 LB.



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

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# SPECIFICATIONS – UNMANNED PLATFORM PUMPS

The unmanned pumping platform shall be a floating all-electric unit, complete with pump and motor on a floating platform. Unit shall include a Vaughan chopper pump, specifically designed to pump waste solids at heavy consistencies. Materials shall be macerated and conditioned by the pump as an integral part of the pumping action. The pump must have demonstrated the ability to chop through and pump high concentrations of solids such as plastics, heavy rags, grease and hair balls, wood, paper products and stringy materials without plugging, both in tests and field applications. Complete unit shall be manufactured by Vaughan Co., Inc.

## PLATFORM CONSTRUCTION

- A. **Flotation:** Flotation shall be provided by 26" diameter foam-filled polyethylene pontoons. Tapered pontoon ends shall provide easy movement through crusted sludge. Special polyethylene formulation shall provide the high strength necessary to prevent cracking at attachment points and the stability for long life in extreme heat and cold. No more than 50% of flotation shall be utilized for platform weight. Floats shall be attached to the frame with stainless steel fasteners. No features shall be provided for manned usage.
- B. **Frame:** Shall be structural steel, complete with lifting and towing eyes.

## PUMP CONSTRUCTION

- A. **Casing:** Shall be of volute or semi-volute design, spiraling outward to the Class125 flanged discharge. Casing shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. Casing shall include a replaceable Rockwell C 60 alloy steel cutter to cut against the rotating impeller pump-out vanes for removing fiber and debris.
- B. **Impeller:** Shall be semi-open type with pump out vanes to reduce seal area pressure. Chopping/maceration of materials shall be accomplished by the action of the cupped and sharpened leading edges of the impeller blades moving across the cutter bar at the intake openings, with a set clearance between the impeller and cutter bar of 0.015" to 0.025" cold. Impeller shall be cast alloy steel heat treated to minimum Rockwell C 60 and dynamically balanced. The impeller shall be keyed to the shaft and shall have no axial adjustments and no set screws.
- C. **Cutter Bar Plate:** Shall be recessed into the pump bowl and shall contain at least two shear bars extending diametrically across the intake opening to within 0.010" – 0.030" of the rotating cutter nut tooth, for the purpose of preventing intake opening blockage and wrapping of debris at the shaft area. Chopper pumps utilizing individually mounted shear bars shall not be acceptable. Cutter bar shall be alloy steel heat treated to minimum Rockwell C 60.
- D. **Cutter nut:** The impeller shall be secured to the shaft using a cutter nut, designed to cut stringy materials and prevent binding using a raised, rotating cutter tooth. The cutter nut shall be cast alloy steel heat treated to minimum Rockwell C 60
- E. **Upper cutter:** Shall be threaded into the casing behind the impeller, designed to cut against the pump-out vanes and the impeller hub, reducing and removing stringy materials from the mechanical seal area. Upper cutter shall be cast alloy steel heat treated to minimum Rockwell C 60. The upper cutter teeth are positioned as closely as possible to the center of shaft rotation to minimize cutting torque and nuisance motor tripping. The ratio of upper cutter cutting diameter to shaft diameter in the upper cutter area of the pump shall be 3.0 or less
- F. **Pump Shafting:** Shall be heat treated alloy steel. Upper shaft extension shall be turned, ground and polished. The shaft column shall be minimum 4" inch O.D. precision steel tubing welded to steel flanges and machined with piloted bearing fits for concentricity of all components. All support column tubes shall be leak tested. Distance between shaft bearings shall not exceed critical speed dimensions.
- G. **Pump Shaft Ball Bearings:** Shall be oil bath lubricated by I.S.O. Grade 46 oil with the exception of the top bearing, which shall be grease packed. The bearings shall have a minimum L-10 life rated 100,000 hours. Shaft thrust shall be taken up by either a double row angular contact ball bearing or two back-to-back mounted single row angular contact ball bearings, which bear against a machined shoulder on one side and the seal sleeve on the other side. Overhang from the centerline of the lower thrust bearing to the seal faces shall be a maximum of 1.7", with a mechanical seal to isolate the bearings from the pumped media.
- H. **Pump Mechanical Seal:** The mechanical seal shall be located immediately behind the impeller hub to maximize the flushing available from the impeller pump-out vanes. The seal shall be a cartridge-type mechanical seal with Viton O-rings and silicon 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.
- I. **Automatic Oil Level Monitor:** Shall be located above the mounting plate and be fitted with an internal oil level switch to monitor oil level and shut off the motor in event of low oil level.
- J. **Pump Discharge Pipe:** The pump assembly shall be mounted vertically on a common steel base plate with a below-deck quick -disconnect galvanized steel Gheen fitting.
- K. **Shaft Coupling:** Shall be T.B. Woods Sureflex elastomeric type with a minimum 1.5 service factor based on the drive rated horsepower, and shall be protected with a guard meeting OSHA requirements.
- L. **Motor Stool:** Shall be a fabricated carbon steel weldment machined with piloted fits to positively align the C-flanged motor and pump shaft, with no adjustments.
- M. **Pump Base Plate:** Shall be fabricated carbon steel, 1/2" minimum thickness, and shall include lifting lugs.
- N. **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.
- O. **Motor Requirements:** Drive motor shall be \_\_\_ HP, \_\_\_ RPM, \_\_\_ volts, 3 phase, 60 hertz, 1.15 service factor, TEFC enclosure. The motor shall be sized for non-overloading conditions.
- P. **Surface Preparation:** Solvent wash and a single coat of Tnemec 431 epoxy applied at 5 MDFT minimum (except motor).
- Q. **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).