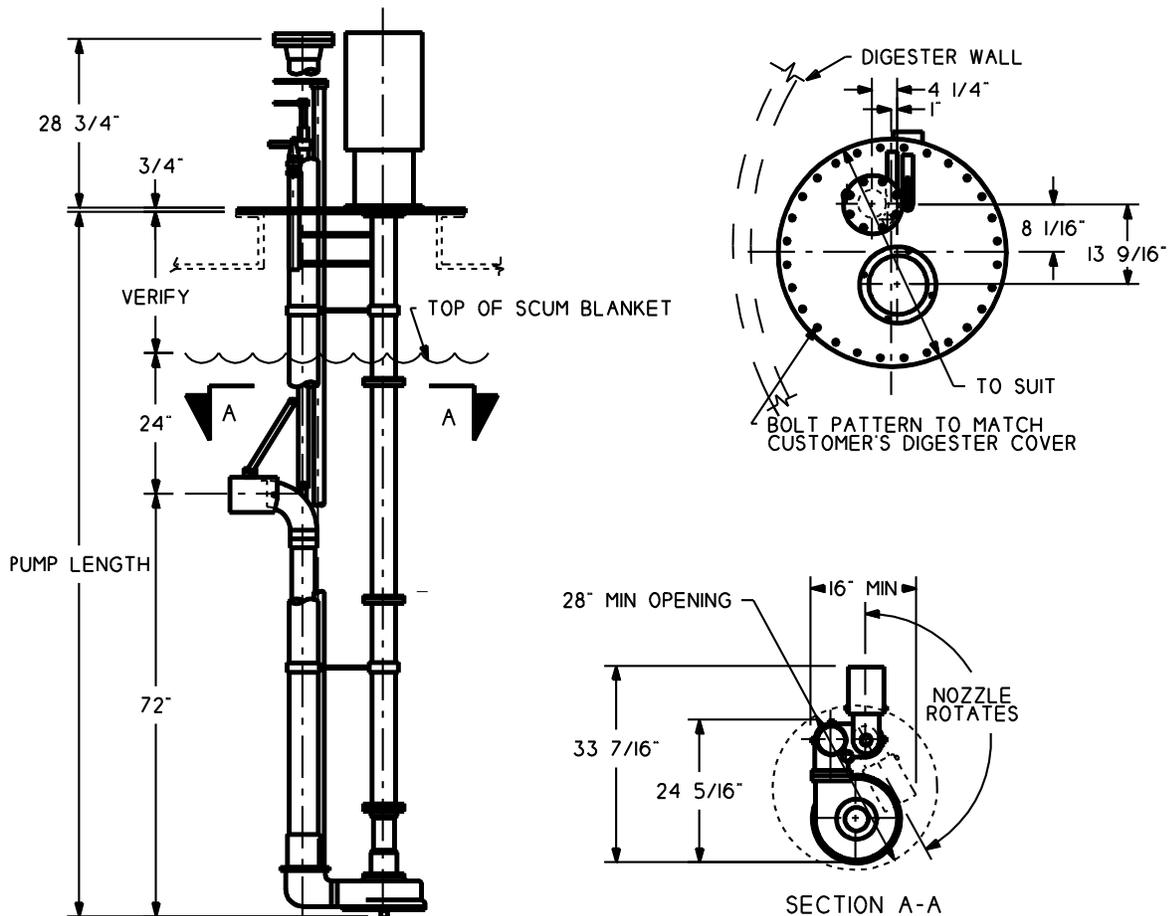




# SCUMBUSTER

## Materials of Construction:

- Impeller/Upper Cutter/Cutter Bar Cutter Nut:** ..... Cast alloy steel, heat treated to minimum Rockwell C 60.
- Casing:**..... Ductile cast iron.
- Mechanical Seal:**..... Cartridge type with silicon carbide (or tungsten carbide) faces and stainless steel sleeve.
- Thrust Bearings:**..... Back-to-back angular contact ball type.
- Radial Bearings:** ..... Ball type.
- Shaft:**..... Heat treated alloy steel.
- Lubrication:**..... ISO Grade 46 oil.
- Discharge Flange:** ..... ANSI Class 150.
- Mounting Plate:**..... Carbon steel.
- Paint** ..... Epoxy



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# SPECIFICATIONS- SCUMBUSTER CHOPPER PUMP

The vendor shall furnish one vertical wet pit Scumbuster® chopper pump and all appurtenances as specified. The pump shall be specifically designed to mix and pump anaerobic digester scum 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.

## DETAILS OF CONSTRUCTION

- A. Casing:** Shall be of semi-concentric design, with the first half of the circumference being cylindrical beginning after the pump outlet, and the remaining circumference spiraling outward to the Class 150 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, and to draw lubricant down from the reservoir should seal leakage occur. 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 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 or set screws required.
- C. Cutter bar:** Shall be recessed into the pump bowl and shall contain at least 2 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. Upper cutter: Shall 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 steel heat treated to minimum Rockwell C 60.
- E. 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. Shaft column to be O-ring fitted through deck plate for gas-tight mounting.
- F. Pump Shaft Bearings:** Shall be oil bath lubricated by ISO Grade 46 hydraulic oil, with the exception of the top bearing, which shall be greased packed. The bearings shall have a minimum L-10 life rated 100,000 hours. Shaft thrust shall be taken up by 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.
- G. 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 (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. Automatic Oil Level Monitor:** Shall be located above the mounting plate and be fitted with an internal oil level switch to detect 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.
- I. Recirculation Nozzle Assembly:** The pump shall be fitted with a recirculation nozzle assembly to permit recirculation/conditioning of the pit contents prior to discharge. The recirculation nozzle shall be adjustable Minimum 180° horizontally and 45° vertically. A valve assembly shall be connected to the pump discharge to adjust pump flow either to the nozzle or the pump discharge flange. Valve shall be ductile cast iron, with 316 stainless steel valve disk. The operating levers shall be located above at a mounting plate for easy access. All lever penetrations through deck plate to be O-ring fitted for gas-tight mounting.
- J. Pump Discharge Pipe:** Shall include a Class 150 rated discharge flange with end cap. A 1/4" NPT pressure tap shall be located above the deck plate. Discharge pipe penetration through deck plate to be O-ring fitted for gas-tight mounting.
- 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 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, 3/4" minimum thickness, and shall include lifting lugs. Base plate dimensions and bolt holes to match existing manway, and to include gasket for gas-tight mounting.
- 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:** degreased and coated with 5-8 MDFT epoxy (except motor).
- Q. Optional Surface Preparation:** SSPC-SP6 commercial sandblast (except motor), primed with 5-8 MDFT epoxy primer and finish coated with 5-8 MDFT epoxy (except motor).