

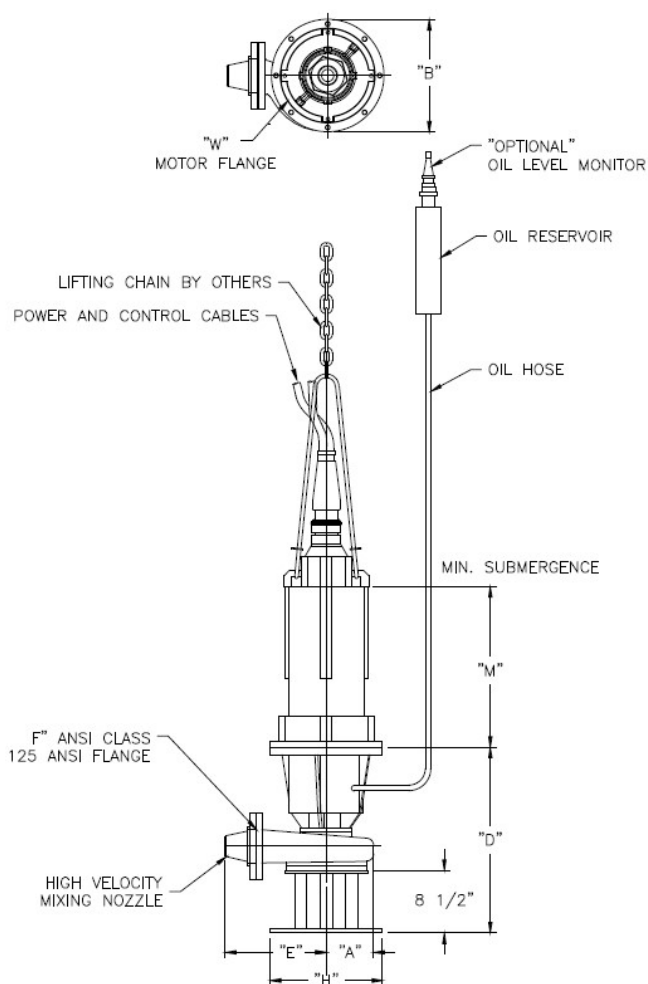


3"- 6" S-SERIES SUBMERSIBLE CONDITIONING CHOPPER PUMP

Materials of Construction:

Impeller/Cutter Bar/Upper Cutter/Cutter Nut:	Cast alloy steel, heat treated to minimum Rockwell C 60.
Casing/Bearing Housing:	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 bearing or face to face tapered roller bearing.
Lubrication:	ISO Grade 46 oil.
Flange:	ANSI Class 125
Paint:	Epoxy

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



15 MINUTE IN AIR FRAME SIZES ONLY

MODEL	A	B	C	D	E	F
S3F/S3G	5	5 7/8	11 3/8	24 5/8	7 5/8	3
S3L/S3M	5 1/2	6 1/2	11 1/4	24	8 5/8	3
S3P	7 11/16	7 11/16	10 5/8	23 3/4	11 1/2	3
S3V/S3W	5 1/8	6	10 5/8	24	8 5/8	3
S4K/S4L	6 7/16	7 1/2	11 5/8	25 1/8	9 1/2	4
S4S/S4T	7 7/8	9	11 5/8	24 1/4	11 1/2	4
S4V	10 1/4	10 3/4	11 7/8	25 5/8	17	4
S6U	8 1/4	9 5/8	12 3/8	25 3/4	12	6
HP	SPEED	FRAME	M	W	H	
5	1170					
5	1750	180TY	17 1/4	12 3/8	15 1/4	
7.5	1750					
7.5	1170					
10	1170					
10	1750					
15	1750	210 TY	21 7/8	15 1/4	15 1/4	
15	3510					
20	1750					
20	3510					
15	1170					
20	1170					
25	1170					
25	1750					
25	3510	250 TY	25	17	19 1/2	
30	1750					
30	3510					
40	1750					
40	3510					
30	1170					
40	1170					
50	1170					
50	1750					
50	3510	320 TY	25 1/2	18 3/4	19 1/2	
60	1170					
60	1750					
60	3510					
75	1750					



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

**MADE IN THE
USA**

SPECIFICATIONS: 3"- 6" S-SERIES SUBMERSIBLE CONDITIONING CHOPPER PUMPS

The Conditioning Pump is a submersible chopper pump on a portable stand for recirculating flow in a tank for the purposes of mixing and homogenizing the tank fluid, to either re-suspending settled solids, or breaking up floating mats. The mixing nozzle assembly shall be specifically designed to direct fluid and waste solids at heavy consistencies back into the tank without nozzle plugging. The mixing nozzle assembly shall be specifically designed for the optimal mixing velocity and direction for the given tank or sump. A chopper pump shall be used to provide flow to this nozzle assembly to assure plug-free operation.

DETAILS OF CONSTRUCTION

- A. Casing:** Shall be of volute design, spiraling outward to the Class 125 flanged centerline 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 0.015-0.025" 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 casing 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.
- E. Upper Cutter:** Shall be threaded into the casing or back pull-out adapter plate 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:** Shafting shall be heat treated alloy steel, with a minimum diameter of 1.5 inches in order to minimize deflection during solids chopping.
- G. Bearing Housing:** Shall be ductile cast iron, and machined with piloted bearing fits for concentricity of all components. Piloted motor mount shall securely align motor on top of bearing housing.
- H. Thrust Bearings:** Shaft thrust in both directions shall be taken up by two back-to-back mounted single-row angular contact ball bearings, or a matched set of face to face tapered roller bearings, with a minimum L-10 rated life of 100,000 hours. Overhang from the centerline of the lower thrust bearing to the seal faces shall be a maximum of 1.7". A pump mechanical seal shall also 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. Shaft overhang exceeding 1.7 inches from the center of the lowest thrust bearing to the seal faces shall be considered unacceptable.
- I. 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 (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.
- J. 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. Slip clutches and shear pins between the shaft and the motor are considered unacceptable.
- K. Submersible Motor:** The submersible motor shall be U/L or FM 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. Motor shall be sized for non-overloading conditions.
- L. Stainless Steel Nameplate:** The stainless steel nameplate giving the manufacturer's model and serial number, rated capacity, head, speed and all pertinent data shall be mounted to a larger stainless steel plaque. Warning tags and oil reservoir will be mounted to this same plaque. Plaque is to be fastened to wall or structure adjacent to pump.
- M. Portable Stand:** Shall be fabricated steel, with a base plate of suitable diameter to support the pump without tipping.
- N. High Velocity Mixing Nozzle,** shall be fabricated mild steel and bolted directly to discharge. Straight, angled, and double nozzle configurations are available.
- O. Surface Preparation:** Solvent wash and a single coat of Tnemec 431 epoxy (except motor).
- P. OPTIONAL Premium Surface Preparation:** Solvent wash, sandblast, and coat with minimum 30 MDFT Tnemec Perma-Shield PL Series 431 epoxy (except motor).
- Q. OPTIONAL Control Panel:** includes power components to control the pump motor, sensors to protect the pump, and pilot devices for operator control.
- R. OPTIONAL Automatic Oil Level Monitor:** An oil level switch shall be mounted 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.