

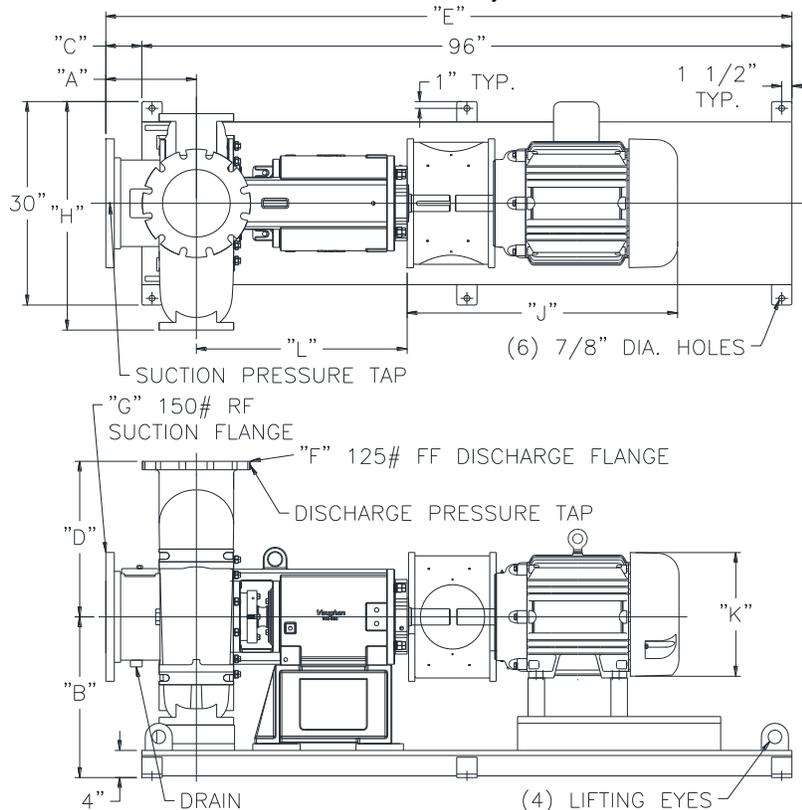


8"-12" E-Series Horizontal Chopper Pumps

Materials of Construction:

Impeller / Upper Cutter /

- External Cutter:** Cast alloy steel, heat treated to minimum Rockwell C 60.
Cutter Bar / Back Wear Plate:..... Plate steel, heat treated to minimum Rockwell C 60.
Casing/Back Pull-Out Plate: Ductile cast iron.
Flushless Mechanical Seal:..... Cartridge type with silicon carbide (or tungsten carbide) faces.
Opt. Flushed Double Mechanical Seal: Cartridge type with sets of silicon carbide (or tungsten carbide) faces in tandem.
Opt. Flushed Mechanical Seal: Welded bellows with silicon carbide (or tungsten carbide) faces.
Optional Packing:..... 5-ring packing with split Teflon lantern ring.
Seal Sleeve:..... Stainless steel.
Thrust Bearings:..... Back-to-back angular contact ball type or face to face tapered roller type.
Radial Bearings:..... Spherical roller type.
Shaft:..... Heat treated steel.
Lubrication:..... ISO Gr. 100 oil.
Flanges: 125 lb. Discharge, 150 lb. suction ANSI rated.
Mounting Base:..... Carbon Steel.
Paint:..... Acrylic Urethane.



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

MODEL	A	B	C	D	E
HE8N10	12 ¹³ / ₁₆	18 ½	4 ¼	17 ¾	100 ¼
HE8P10	11 ¹⁵ / ₁₆	18 ½	3 ³ / ₁₆	18 ¾	99 ³ / ₁₆
HE10R12	13 ¼	23 ¹¹ / ₁₆	5 ³ / ₁₆	23	101 ³ / ₁₆
HE12W18	17 ⁵ / ₁₆	27 ½	8 ⁹ / ₁₆	27	95 ½

MODEL	F	G	H	L
HE8N10	8	10	28 ¹³ / ₁₆	31 ¹ / ₈
HE8P10	8	10	27 ³ / ₁₆	30 ⁵ / ₁₆
HE10R12	10	12	33 ¹¹ / ₁₆	31 ¹ / ₈
HE12W18	12	18	37 ⁹ / ₁₆	31 ⁵ / ₈

MOTOR FRAME SIZE	J	K
286TC	39 ¾	14 ⁵ / ₈
324TC / 326TC	42 ½	16 ½
364TC / 365TC	45 ½	18 ¼
404TC / 405TC	50 ⁹ / ₁₆	20 ¹ / ₈
444TC / 445TC	58 ½	22 ³ / ₈



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CURRENT U.S. PATENTS: Nos. 7,125,221;
 5,460,482; 5,460,483; 5,456,580; 5,256,032;
 5,076,757; 4,840,384; 4,842,479.

CURRENT FOREIGN PATENTS: Nos. 2 371
 834; 2 188 138; 1,290,981; 276224; 0 774 045.

OTHER PATENTS PENDING.

SPECIFICATIONS – 8" – 12" E-SERIES HORIZONTAL CHOPPER PUMPS

The horizontal chopper pump shall be specifically designed to pump waste solids at heavy consistencies without plugging or dewatering of the solids. Materials shall be chopped/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. Pump shall be manufactured by Vaughan Co., Inc.

DETAILS OF CONSTRUCTION

- A. Casing, Back Pull-Out Adapter Plate and Wear Plate: The pump casing shall be of volute design, spiraling outward to the 125 lb. flanged centerline discharge. A ½"-NPT pressure tap shall be included on or near the discharge flange. Back pull-out adapter plate shall allow for removal of pump components from outboard of the casing, and allow external adjustment of impeller-to-cutter bar clearance. Casing and adapter plate shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. The back pull-out wear plate shall be heat treated low-alloy steel plate. Backplate will include a replaceable Rockwell C 60 steel wear plate with adjustability to maintain a 0.040-0.050" clearance to cut against the rotating impeller pumpout 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 maximum set clearance between the impeller and cutter bar of 0.015" - 0.025". Impeller shall be cast steel, heat treated to minimum Rockwell C 60 and dynamically balanced. The impeller shall be threaded 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 2 shear bars extending diametrically across the intake opening to within 0.020" - 0.040" for 8"-10" pumps and 0.040"-0.060" for 12" pumps of the rotating external cutter tooth, for the purpose of preventing intake opening blockage and wrapping of debris at the shaft area. Chopper pumps utilizing individually mounted shear bars, and which do not have a rotating external cutter extending through to the opposite side of the shear bar, shall not be acceptable. Cutter bar shall be alloy steel heat-treated to minimum Rockwell C 60.
- D. Upper Cutter: Shall be bolted into the 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 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 3.6 or less.
- E. External Cutter: The external cutter shall be used to eliminate binding or build-up of stringy materials at the pump inlet. The external cutter shall consist of opposing cutter wings which shear against the outside surface of the shear bars on the cutter bar plate to within 0.020" - 0.060", an integral cast anvil which shears against the adjacent surface of the shear bars on the cutter bar plate, and a hex head sufficiently sized for ease of removal. The external cutter shall be cast steel and heat treated to a minimum 60 Rockwell C Hardness.
- F. Pump Shafting: The pump shaft and impeller shall be supported by ball bearings. All shafting shall be heat treated.
- G. Bearings: Shaft thrust in both directions shall be taken up by two back-to-back mounted single-row angular contact ball bearings, or two face-to-face mounted tapered roller bearings, mounted in an adjustable position thrust bearing cartridge to permit upper cutter to impeller adjustment. A single spherical roller radial bearing shall also be provided. L10 bearing life shall be minimum 100,000 hours.
- H. Bearing Housing: Shall be cast iron, and machined with piloted bearing fits for concentricity of all components. Bearing housing shall be oil bath lubricated with ISO Gr. 100 turbine oil and a side-mounted site glass. Viton® double lip seals riding on stainless steel shaft sleeves are to provide sealing at each end of the bearing housing.
- I. 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.
- J. Seal: [NOTE TO CONSULTING ENGINEER: Please choose one of the 3 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 and maximize the flushing available from the impeller pumpout vanes. The seal shall be cartridge-type mechanical seal with Viton O-rings and silicon carbide (or tungsten carbide) faces. This cartridge seal shall be a pre-assembled, 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.
 - Flushed Tandem Mechanical Seal: The seal shall be cartridge-type tandem mechanical seal with Viton O-rings and silicon carbide (or tungsten carbide) faces. This cartridge seal shall be a pre-assembled, 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 stainless steel) seal housing. Seal requires flush to drain at 3 US gallons/hr 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 stainless steel with silicon 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 gal./hr. 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 6-10 gal./hr. packing flush with filtered water, a rotameter, throttle valve, and solenoid operated isolation valve interlocked with an auxiliary contact of the motor starter.
- K. Inlet Manifold: The pump assembly shall be mounted horizontally with a 150 lb. standard inlet flange, cleanout, 1/2" NPT suction pressure tap, drain connection and mounting feet.
- L. Shaft Coupling: Bearing housing and motor stool design is to provide accurate, self-aligning mounting for a C-flanged electric motor. Pump and motor coupling shall be T.B. Woods Sureflex elastomeric type.
- M. Optional Belt Drive: Adjustable brackets shall be used to support motor. Sheaves and belts shall be properly sized for horsepower ratings, and all guards are to be supplied with the belt drive system.
- N. Stainless Steel Nameplates: Shall be attached to the pump and drive motor giving the manufacturer's model and serial number, rated capacity, head, speed and all pertinent data.
- O. Drive motor: Shall be ____ HP, ____ RPM, ____ volts, ____ phase, ____ hertz, ____ service factor, foot and C-flange mounted, _____ enclosure. The motor shall be sized for non-overloading conditions.
- P. Surface Preparation: Degreased and coated with 1-3 MDFT of acrylic urethane (except motor).
OPTIONAL ADDER Surface Preparation: SSPC-SP5 commercial sandblast (except motor), primed with 5-8 MDFT epoxy primer and finish coated with 2-4 MDFT acrylic (except Motor).