

Cornell Vertical Close Coupled Solids Handling Pumps

Furnish and install (1) end suction centrifugal pumps. The pumps shall be designed for continuous operating service and constructed as follows to meet the intended service. Pumps shall be as manufactured by CORNELL PUMP COMPANY of Portland, Oregon, USA and shall be warranted for a period of two full years after start up, not to exceed 30 months from the date of shipment.

Pumps shall be Model Number _____

Design Capacity	_____	Pumpage Temp	60.0 Deg f
Design Total Head	_____ Ft	Max. NPSHR @ Design Pt.	_____ Ft
Min. Shut Off Head	_____ Ft		
Maximum Speed	_____ RPM		
Min. Efficiency Design Point	_____ %		
Discharge Size	_____ "		

The close coupled end suction centrifugal pump shall be directly coupled to the motor. The keyed straight bore impeller shall be mounted directly to the motor shaft. The pump and motor shall be connected by an ASTM A48 Class 30 fine grain Grey Iron bracket with machined registers to assure proper alignment.

The pump casing shall be tangential/centerline (**choose**) discharge of back pullout design allowing for removal of rotating element without disturbing piping connections. The casing shall be constructed of fine grain Cast Iron of ASTM A48 Class 30. All casing sections shall have heavy wall thickness to provide long life under abrasive and corrosive operating conditions. All mating surfaces shall have register fits to ensure proper alignment. Piping connections shall be ANSI 125# flat face drilled flange. Flange face surface finish shall be a minimum of 250 micro-inch finish.

The pump back plate shall be constructed of ASTM A48 Class 30 Cast iron, and include a priming port to permit use of this pump in a vacuum prime service

A replaceable wear ring shall be provided. The ring shall be of the peripheral design requiring no axial adjustment and shall be press fit into the case. The rings shall be constructed of ASTM A48, Class 30 cast iron.

The impeller shall be of heavy section Cast Iron ASTM A48, Class 30 with the two-port design. Impellers shall be capable of passing a 3" or larger soft solid. Impellers will have back vanes to reduce axial thrust and lower the stuffing box pressure. Internal vane edges shall be well rounded to present smooth flow. Impeller shall have a straight non-tapered bore, be dynamically balanced, keyed to the shaft and further secured with a Stainless Steel washer and a Stainless Steel impeller lock screw. The impeller shall be fixed at location with no expected or required adjustment.

A Cornell Cycloseal backplate with deflector vanes constructed of ASTM A48 Class 30 Grey Iron shall be provided, including a single mechanical seal, tungsten carbide vs silicon carbide. The design shall allow for continuous operation without the need for external flush water or venting.

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(** Patent Number 5,489,187 **)

Optional

The shaft shall be of high strength Alloy Steel. The shaft shall be accurately machined and polished and of sufficient size to transmit full driver output without excessive flexure or stressing. The shaft shall have a minimum diameter of _____ inches under the sleeve. All steps in the shaft shall be radiused to reduce stress concentrations. Shaft deflection shall not exceed 0.005 inch measured at end of shaft when operating at specified design condition. A complete shaft stress analysis calculation shall be supplied by the pump manufacturer to illustrate conformance with this requirement.

The shaft shall be protected by a renewable shaft sleeve which extends through the stuffing box and under the gland. The sleeve shall be grooved on the inside for an o-ring to prevent leakage along the shaft and shall be positively locked to prevent rotation. The sleeve O.D. shall be a minimum of 0.375 inches wider than the shaft and constructed of 420 S.S H.T. min 400 BHN.

Suction elbows shall be of one piece cast iron, heavy section, construction, with a bolted and contoured clean out plug. The base shall be constructed with sufficient strength to support the entire weight of the unit, and of sufficient height so that no part of the elbow will touch the floor.

The motor shall be of United States manufacture, vertical mount, close coupled type with rodent screens on all ventilating passages. It shall be not less than ____ HP at ____ rpm, **open drip proof/TEFC (select one)** and non-overloading exclusive of the service factor at any point on the pump head capacity curve. Motor supply power is _____ volt, 60 hertz, 3 phase. The motor bearings shall be selected to withstand thrust loads and have a minimum B-10 life of 50,000 hours. The motors shall be equipped with grease fittings and automatic grease reliefs. Motors shall also be provided with drip hood over top end bell.