

SERIES 3800  
HORIZONTAL FRAME MOUNTED END SUCTION CENTRIFUGAL PUMPS

PART I – GENERAL

1.01 DESCRIPTION

The Contractor shall furnish materials, equipment and labor to furnish, install and test the pumping system complete with the pumps, motors, mounting bases, piping, valves and appurtenances, as indicated on the contract drawings and as herein specified.

1.02 INSTALLATION

The Contractor shall insure that the pumps and motors are properly installed with no pipe strain transmitted to the pump casing.

1.03 RESPONSIBILITY

To assure a properly integrated and compatible system, all equipment described in this section shall be furnished by the Pump Manufacturer, who shall assume full responsibility for the proper operation of the pumps and associated equipment.

1.04 SUPERVISION

The Contractor shall arrange for the Pump Manufacturer to provide a factory-trained representative as required for the purpose of supervising installation, start-up, final field acceptance testing, and providing instruction to the owner's operating personnel in the proper operation and maintenance of the equipment in this section.

1.05 REFERENCE STANDARDS

The work in this section is subject to the requirements of applicable portions of the following standards:  
Hydraulic Institute Standards  
IEEE Standards  
NEMA Standards  
OSHA Rules and Regulations

PART II - PRODUCTS

2.01 GENERAL DESCRIPTION

The pump shall be a centrifugal horizontal flexible-coupled end suction pump, Aurora Model 3804 or pre-approved equal. Pre-approval must be obtained a minimum of ten days before bid date.

2.02 MATERIALS OF CONSTRUCTION

Casing.....Cast Iron (ASTM A48)  
Impeller.....316 Stainless Steel (ASTM A276)  
Shaft.....Steel (AISI C1045)  
Shaft Sleeve.....Bronze (ASTM B62)

2.03 CASING

The casing will be of the end suction design with tangential discharge outlet. For suction piping diameters of 2" or less and discharge piping diameters of 1.5" or less, the suction and discharge connections shall be NPT threaded. For suction piping diameters of 2" or greater, the suction inlet and the discharge outlet

shall be a bolt through flange connection, and tapped for pressure gages. Flange connections shall be ANSI 125# rated. The casing shall have tapped and plugged holes for priming and draining. The casing bore shall be large enough to allow "back pullout" of the impeller without disturbing the casing or suction and discharge piping. The casing shall have integral cast feet.

#### 2.04 IMPELLER

The impeller shall be of the enclosed type, and investment cast. It shall be finished all over, the exterior being turned and the interior being finished smooth and cleaned of all burrs, trimmings, and irregularities. The impeller shall be dynamically balanced. The impeller will be keyed to the shaft, and fastened with a washer, gasket and capscrew.

#### 2.05 MOTOR BRACKET AND SEAL PLATE

The seal plate and motor bracket shall be of a two piece design, and shall provide an adequate area for internal recirculation of the pumped fluid around the sealing medium.

#### 2.06 MECHANICAL SEAL

Shaft sealing shall be accomplished by means of a mechanical seal with a Ceramic seat, carbon washer, Buna-N elastomers, and stainless steel metal parts.

#### 2.07 SHAFT

The impeller shall be direct-coupled to the motor shaft. The motor shaft shall be machined to provide a keyway, and drilled and tapped to accept the impeller fastener. Stub shafts are not acceptable. The outboard shaft extension shall be machined with a keyway to accept a coupling to the driving unit. Lip seals shall be furnished on both the inboard and outboard shaft extensions, and a water slinger shall be furnished on the inboard shaft extension closest to the mechanical seal.

#### 2.08 SHAFT SLEEVE

The pump shaft shall be fitted with a shaft sleeve to minimize shaft wear. The sleeve shall be sealed to the impeller hub by an O-ring, and shall be positively driven by a pin to the keyway. The use of adhesive compounds to fasten the sleeve to the shaft shall not be accepted.

#### 2.09 POWER FRAME

The power frame shall house a single-row outboard regreaseable thrust bearing. Both bearings shall be selected for a 3 year minimum life at maximum load. The outboard bearing shall be locked in place by a retaining ring. The inboard bearing shall not be locked in order to accommodate thermal expansion of the shaft. Lubrication fittings shall be provided in convenient location. A bearing cartridge end cap shall be provided on the outboard side of the power frame to allow inspection of the thrust bearing without the need for disassembling the power frame housing.

#### 2.10 FOOT SUPPORTS

The pump unit shall be supported from feet cast into the casing and a bracket mounted to the power frame.

#### 2.11 BASEPLATE

The pump and motor shall be mounted on a groutable formed steel baseplate or a drip-rim baseplate with integral drip channels incorporated on each side. Each channel shall include an NPT drain connection and plug. The base shall be sufficiently rigid to support the pump and the motor without the use of additional supports or members.

## 2.12 COUPLING

A flexible coupling shall be provided to connect the pump shaft to the motor shaft. The coupling shall be of an all metal type with a flexible rubber insert. The entire rotating coupling assembly shall be enclosed by a coupling guard.

## 2.13 MOTOR

The motor shall be a NEMA configuration in accordance with the latest NEMA Standards, and shall have the following characteristics:

Enclosure.....Open Drip Proof/TEFC/X-Proof  
Number of Phases.....Three  
Cycles.....60 Hz.  
Voltages.....230/460 Volt  
Speed.....3600 RPM  
Horsepower.....? hp

Each motor shall have a sufficient horsepower rating to operate the pump at any point within the manufacturer's recommended operating range on the pump's head-capacity curve without overloading the nameplate horsepower rating of the motor, regardless of service factor. The motor shall have a service factor of at least 1.15. The service factor is reserved for variations in voltage and frequency.

## PART III - PERFORMANCE

### 3.01 CONDITIONS OF SERVICE

The following conditions of service shall be strictly adhered to:

Number of Units.....?  
Type of Drive.....? (variable or constant)  
Discharge Size.....1.25 in, minimum  
Suction Size.....1.5 in, minimum  
Design Capacity..... US gpm  
Design Head..... ft  
Efficiency at Design..... %, minimum  
Rotative Speed.....3600 RPM, maximum  
Shut-off Head..... ft, minimum  
Driver Horsepower..... hp, minimum  
NPSHR at Design..... ft, maximum

### 3.02 INSPECTION AND FACTORY TESTS

Each centrifugal pump furnished under these specifications shall be tested at the factory to verify individual performance (VIP). Certified copies of all test reports shall be submitted to the Engineer for approval prior to shipment. Each unit shall be hydrostatically tested in accordance with the Hydraulic Institute Standards.

### 3.03 INSTALLATION AND ACCEPTANCE TESTS

A. The pumping units shall be installed in accordance with the instructions of the manufacturer and as shown on the drawings by the Contractor.

B. Installation shall include furnishing the required oil and grease for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

Additional information is available from any Pentair Aurora authorized distributor.

Pentair reserves the right to make revisions to its products and their specifications without notice.