

## SECTION 15185 - HYDRONIC PUMPS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes hydronic pumps.

## 1.3 SUBMITTALS

- A. Product Data: Include certified performance curves and rated capacities; shipping, installed, and operating weights; furnished specialties; final impeller dimensions; and accessories for each type of product indicated. Indicate pump's operating point on curves.
- B. Maintenance Data: For pumps to include in maintenance manuals specified in Division 1.

## 1.4 QUALITY ASSURANCE

- A. UL Compliance: Fabricate and label pumps to comply with UL 778, "Motor-Operated Water Pumps," for construction requirements.
- B. Product Options: Drawings indicate size, profiles, connections, and dimensional requirements of pumps and are based on the specific types and models indicated. Other manufacturers' pumps with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."
- C. Regulatory Requirements: Fabricate and test steam condensate pumps to comply with HI 1.1-1.5, "Centrifugal Pumps for Nomenclature, Definitions, Application and Operation," and HI 1.6, "Centrifugal Pump Tests."
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer's Preparation for Shipping: Clean flanges and exposed machined metal surfaces and treat with anticorrosion compound after assembly and testing. Protect flanges, pipe openings, and nozzles with wooden flange covers or with screwed-in plugs.
- B. Store pumps in dry location.
- C. Retain protective covers for flanges and protective coatings during storage.
- D. Protect bearings and couplings against damage from sand, grit, and other foreign matter.
- E. Comply with pump manufacturer's written rigging instructions.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Armstrong Pumps, Inc.
  2. Bell & Gossett ITT; Div. of ITT Fluid Technology Corp.
  3. Taco; Fabricated Products Div.
  4. PACO Pumps.

## 2.2 GENERAL PUMP REQUIREMENTS

- A. Pump Units: Factory assembled and tested.
- B. Motors: Include built-in, thermal-overload protection and grease-lubricated ball bearings. Select each motor to be nonoverloading over full range of pump performance curve.
- C. Motors Indicated to be premium efficiency: Minimum efficiency as indicated according to IEEE 112, Test Method B. Include motors with higher efficiency than "average standard industry motors" according to IEEE 112, Test Method B, if efficiency is not indicated.

## 2.3 IN-LINE PUMPS

- A. Description: Horizontal or vertical, in-line, centrifugal, single-stage, bronze-fitted, radially split case design; rated for 125-psig minimum working pressure and a continuous water temperature of 225 deg F.
1. Casing: Cast iron, with threaded companion flanges for piping connections, and threaded gage tappings at inlet and outlet connections.
  2. Impeller: ASTM B 584, cast bronze, statically and dynamically balanced, closed, overhung, single suction, and keyed to shaft.
  3. Shaft and Sleeve: Carbon steel shaft with oil-lubricated bronze sleeve.
  4. Seals: Self-flushing.
  5. Pump Bearings: Oil-lubricated, bronze journal and thrust type.
  6. Motor Bearings: Oil-lubricated, sleeve type.
  7. Coupling: Flexible, capable of absorbing torsional vibration and shaft misalignment.
  8. Motor:
    - a. Resiliently mounted to pump casing.
    - b. Premium efficiency

## 2.4 PUMP SPECIALTY FITTINGS

- A. Triple-Duty Valve: (May be substituted for check, balance, and shutoff valves shown in Pump Detail) Angle or straight pattern, 175-psig pressure rating, cast-iron body, pump-discharge fitting; with drain plug and bronze-fitted shutoff, balancing, and check valve features.

## PART 3 - EXECUTION

## 3.1 PUMP INSTALLATION

- A. Install pumps according to manufacturer's written instructions.

- B. Install pumps to provide access for periodic maintenance, including removing motors, impellers, couplings, and accessories.
- C. Support pumps and piping separately so piping is not supported by pumps.
- D. Suspend in-line pumps using continuous-thread hanger rod and vibration-isolation hangers.

### 3.2 ALIGNMENT

- A. Comply with pump manufacturers' written instructions.

### 3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.
- C. Connect piping to pumps. Install valves that are the same size as piping connected to pumps.
- D. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.

### 3.4 COMMISSIONING

- A. Verify that pumps are installed and connected according to the Contract Documents.
- B. Verify that electrical wiring installation complies with manufacturer's written instructions and the Contract Documents.
- C. Perform the following preventive maintenance operations and checks before starting:
  - 1. Lubricate bearings.
  - 2. Disconnect coupling and check motor for proper rotation that matches direction marked on pump casing.
  - 3. Verify that pumps are free to rotate by hand and that pumps for handling hot liquids are free to rotate with pumps hot and cold. Do not operate pumps if they are bound or drag, until cause of trouble is determined and corrected.
  - 4. Check suction piping connections for tightness to avoid drawing air into pumps.
  - 5. Clean strainers.
  - 6. Verify that pump controls are correct for required application.
- D. Refer to Division 15 Section "Testing, Adjusting, and Balancing" for detailed requirements for testing, adjusting, and balancing hydronic systems.

END OF SECTION 15185