SECTION 22 11 23 - DOMESTIC WATER PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following all-bronze and bronze-fitted close-coupled, horizontally mounted, in-line centrifugal pumps for domestic hot-water circulation, less than 1 hp.

1.2 SUBMITTALS

A. Product Data: For each type and size of domestic water pump specified. Include certified performance curves with operating points plotted on curves; and rated capacities of selected models, furnished specialties, and accessories. Submit certification that pump seals are suitable for temperature expected.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. UL Compliance: Comply with UL 778 for motor-operated water pumps.

PART 2 - PRODUCTS

2.1 CLOSE-COUPLED, IN-LINE, SEALLESS CENTRIFUGAL PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

1. Armstrong Pumps Inc.
2. Bell & Gossett Domestic Pump; ITT Industries.
3. Grundfos Pumps Corp.
4. Taco, Inc.

B. Description: Factory-assembled and -tested, single-stage, close-coupled, in-line, sealless centrifugal pumps as defined in HI 5.1-5.6.

1. Pump and Motor Assembly: Hermetically sealed, replaceable-cartridge-type unit with motor and impeller on common shaft and designed for installation with pump and motor shaft mounted horizontally.
2. Casing: Bronze, with threaded companion-flange connections.
3. Impeller: Bronze or stainless-steel.
4. Motor: Single speed, unless otherwise indicated. Comply with requirements in Division 23 Section "Electric Motors for Mechanical Equipment."

C. Characteristics:

1. Maximum Operating Pressure: 125 psig.
2. Maximum Continuous Operating Temperature: 220 deg F.

2.2 CLOSE-COUPLED, HORIZONTALLY MOUNTED, IN-LINE CENTRIFUGAL PUMPS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

1. Armstrong Pumps Inc.
2. Bell & Gossett Domestic Pump; ITT Industries.
3. Marshall Engineered Products Co.
4. Paco Pumps, Inc.
5. Thrush Company, Inc.
6. Weinman Div.; Crane Pumps & Systems.

B. Description: Factory-assembled and -tested, overhung impeller, single-stage, close-coupled, horizontally mounted, in-line centrifugal pumps as defined in HI 1.1-1.2 and HI 1.3; and designed for installation with pump and motor shafts mounted horizontally.

1. Pump Construction: All bronze or bronze fitted.

   a. Casing: Radially split, cast iron, with threaded companion-flange connections for pumps with NPS 2 pipe connections and flanged connections for pumps with NPS 2-1/2 pipe connections.
   b. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, closed, and keyed to shaft.
   c. Shaft and Shaft Sleeve: Steel shaft, with copper-alloy shaft sleeve.
   d. Seal: Mechanical, with carbon-steel rotating ring, stainless-steel spring, ceramic seat, and rubber bellows and gasket. Include water slinger on shaft between motor and seal.
   e. Bearings: Oil-lubricated; bronze-journal or ball type.

2. Shaft Coupling: Rigid type if pump is provided with coupling.
3. Motor: Single speed, with grease-lubricated ball bearings, non-overloading at any point of pump curve, drip-proof. Comply with requirements in Division 23 Section "Common Motor Requirements for Mechanical Equipment."

C. Characteristics:

1. Maximum Operating Pressure: 175 psig.
2. Maximum Continuous Operating Temperature: 225 deg F.

2.3 CONTROLS

A. Thermostats: Electric; adjustable for control of hot-water circulation pump.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. Honeywell International, Inc.
   b. Square D.
   c. White-Rodgers Div.; Emerson Electric Co.

2. Type: Water-immersion sensor, for installation in hot-water circulation piping.
3. Range: 50 to 125 deg F.
4. Operation of Pump: On or off.
5. Transformer: Provide if required.
6. Power Requirement: 24 VAC or 120 VAC.
7. Settings: Start pump at 105 deg F and stop pump at 120 deg F.

B. Timers: Electric time clock for control of hot-water circulation pump.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:

   a. Honeywell International, Inc.
   b. Intermatic, Inc.
   c. Johnson Controls, Inc.
   d. TORK.

2. Type: Programmable, seven-day clock with manual override on-off switch.
3. Enclosure: Suitable for wall mounting.
4. Operation of Pump: On or off.
5. Transformer: Provide if required.
6. Power Requirement: 24 VAC or 120 VAC.
7. Programmable Sequence of Operation: Up to two on-off cycles each day for seven days.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with HI 1.4.

B. Install pumps with access for periodic maintenance including removal of motors, impellers, couplings, and accessories.

C. Independently support pumps and piping so weight of piping is not supported by pumps and weight of pumps is not supported by piping.

D. Install in-line, sealless and close-coupled, horizontally mounted, in-line centrifugal pumps with motor and pump shafts horizontal.

E. Install continuous-thread hanger rods of sufficient size to support pump weight. Fabricate brackets or supports as required. Hanger and support materials are specified in Division 23 Section "Hangers and Supports for Mechanical Piping and Equipment."

F. Install immersion-type thermostats in hot-water return piping.

G. Install timers adjacent to pump.

H. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

I. Install piping adjacent to pumps to allow service and maintenance.

J. Connect domestic water piping to pumps. Install suction and discharge piping equal to or greater than size of pump nozzles. Refer to Division 22 Section "Domestic Water Piping."

   1. Install shutoff valve and strainer on suction side of pumps, and check valve and throttling valve on discharge side of pumps. Install valves same size as connected piping. Refer to Division 23 Section "General-Duty Valves" for valves for domestic water piping and Division 22 Section "Domestic Water Piping Specialties" for strainers.
   2. Install pressure gages at suction and discharge of pumps. Install at integral pressure-gage tappings where provided or install pressure-gage connectors in suction and discharge piping around pumps. Refer to Division 22 Section "Meters and Gages for Piping" for pressure gages and gage connectors.

K. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

L. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

M. Connect thermostats and timers to pumps that they control.

END OF SECTION 22 11 23