**SECTION 23 22 23**

**STEAM CONDENSATE PUMPS**

**BASED ON DFD MASTER SPECIFICATION DATED 10/1/2012**

***This section has been written to cover most (but not all) situations that you will encounter. Depending on the requirements of your specific project, you may have to add material, delete items, or modify what is currently written. The Division of Facilities Development expects changes and comments from you.***

**P A R T 1 - G E N E R A L**

**SCOPE**

This section includes specifications for steam condensate pumps used for HVAC applications. Included are the following topics:

PART 1 - GENERAL

 Scope

 Related Work

 Reference

 Quality Assurance

 Shop Drawings

 Operation and Maintenance Data

 Design Criteria

PART 2 - PRODUCTS

 Condensate Pumps

PART 3 - EXECUTION

 Installation

 Condensate pumps

Construction Verification Items

 Functional Performance Testing

 Agency Training

**RELATED WORK**

Section 01 91 01 or 01 91 02 – Commissioning Process

Section 23 05 13 - Common Motor Requirements for HVAC Equipment

Section 23 08 00 – Commissioning of HVAC

**REFERENCE**

Applicable provisions of Division 1 shall govern work under this section.

**QUALITY ASSURANCE**

Refer to division 1, General Conditions, Equals and Substitutions.

**SHOP DRAWINGS**

Refer to division 1, General Conditions, Submittals.

Include data concerning dimensions, capacities, materials of construction, ratings, weights, temperature limits, pump curves with net positive suction head requirements, manufacturer's installation requirements, manufacturer's performance limitations, and appropriate identification.

# OPERATION AND MAINTENANCE DATA

All operations and maintenance data shall comply with the submission and content requirements specified under section GENERAL REQUIREMENTS.

***Delete the following if there are no additional requirements.***

In addition to the general content specified under GENERAL REQUIREMENTS supply the following additional documentation:

1. ***[A/E and commissioning provider to define detailed operation and maintenance data requirements for equipment specifications added to this section.]***

**DESIGN CRITERIA**

Pump sizes, capacities, pressures and operating characteristics shall be as scheduled.

Pumps shall meet or exceed operating efficiencies scheduled.

Provide all pumps with motors, impellers, drive assemblies, bearings, coupling guard, and other accessories specified. Statically and dynamically balance all rotating parts. Provide flanged connections on all pumps unless specified otherwise.

Provide pump with a motor sized for non-overloading over the entire pump curve. Motors to be 1750 rpm unless specified otherwise.

Furnish each pump and motor with a nameplate giving the manufacturer's name, serial number of pump, capacity in GPM and head in feet at design condition, horsepower, voltage, frequency, speed and full load current.

Test all pumps, clean and paint before shipment. The manufacturer shall certify all pump ratings.

All pumps to operate without excessive noise or vibration.

Furnish one spare seal and casing gasket for each pump to user agency.

**P A R T 2 - P R O D U C T S**

**CONDENSATE PUMPS**

ManufacturerS:

Aurora, Peerless, Domestic, Economy, Shipco, Skidmore, Sterling, Hoffman, Weil, or approved equal.

***Edit the following paragraphs for pump type(s) used. Delete information not applicable to project.***

Units shall be [simplex] [duplex], [base] [basin] mounted as scheduled.

Base mounted pumps shall be centrifugal type, bronze fitted with cast iron casing, stainless or carbon steel shaft, mechanical seals, close-coupled with the pump motor.

Vertical basin mounted pumps shall have cast iron casing, oilless sleeve bearings below floor level, bronze impeller, stainless steel shaft and bronze wearing rings. Provide vapor tight seals where shaft and float rod pass through receiver coverplate.

Receiver for floor mounted units shall be cast iron or 3/16" galvanized steel (minimum), with taps or openings for pump suction, condensate inlet, vent, drain, overflow, and float assembly. Provide plug or ball type isolation valve between each pump inlet and receiver connection for isolation of individual pumps.

Receivers for vertical basin mounted pumps shall be constructed of cast iron. Provide receiver cover with taps or openings for condensate inlet, discharge, vent, overflow, and float assembly. Steel cover plate on duplex units shall permit removal of one pump assembly while maintaining operation of the second pump.

Provide simplex units with U.L. listed, NEMA 1 control panel with combination magnetic starter, fusible disconnect, and overload protection. Control panels shall be internally wired at factory and shipped separate from receiver/pump units. Furnish complete wiring diagrams with units.

Provide duplex units with U.L. listed NEMA 1 control panel with combination magnetic starters, fusible disconnect switches, fusible disconnects, and float operated mechanical alternator. Control panels shall be internally wired at factory and shipped separate from receiver/pump units. Furnish complete wiring diagrams with units.

On duplex units, float operated mechanical alternator and level control shall start second pump if one pump cannot handle the load.

Both pumps shall be automatically operated if one pump cannot handle the load.

Where duplex pumps are indicated, capacity scheduled is with one pump operating.

Provide three phase overload protection for three phase motors. Single phase motors to have built in overload protection.

***If the Agency monitors condensate tank levels through their building automation system or if an overflow of the condensate tank would cause considerable damage, include the following requirement for high level condensate tank monitoring.***

[Provide a high level float with dry contacts for connection to the building automation system.]

**P A R T 3 - E X E C U T I O N**

**INSTALLATION**

Install all pumps in strict accordance with manufacturer's instructions. Access/service space around pumps shall not be less than minimum space recommended by pump manufacturer.

Support piping adjacent to pump such that no weight is carried on pump casings.

Decrease from line size at pump connections with long radius reducing elbows or concentric reducers/increasers in the vertical piping, and eccentric reducers/increasers for horizontal piping. Install eccentric reducers/increasers with the top of the pipe level

All valves and piping specialties must be full line size as indicated on the drawings

Lubricate pumps before startup.

**CONDENSATE PUMPS**

Mount base mounted pump/receiver units on concrete equipment pad.

Furnish control panel to electrical contractor mounting in accordance with code required electrical clearance. Electrical contractor shall wire panel to the pump motors and combination float switch and alternator.

***Coordinate mounting and wiring of control panels with electrical drawings to cover this responsibility.***

Provide globe valves on discharge piping from pumps and a pressure gauge with gauge valves across the discharge piping of each pump.

# CONSTRUCTION VERIFICATION ITEMS

Contractor is responsible for utilizing the construction verification checklists supplied under specification Section 23 08 00 in accordance with the procedures defined for construction verification in Section 01 91 01 or 01 91 02.

# FUNCTIONAL PERFORMANCE TESTING

Contractor is responsible for utilizing the functional performance test forms supplied under specification Section 23 08 00 in accordance with the procedures defined for functional performance testing in Section 01 91 01 or 01 91 02.

# AGENCY TRAINING

All training provided for agency shall comply with the format, general content requirements and submission guidelines specified under Section 01 91 01 or 01 91 02.

END OF SECTION