

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and Divisions 00 and 01, apply to this Section.
- B. Related Sections:
 - 1. Division 23.

1.2 SUMMARY

- A. This Section includes condensate receiver/pumps for low-pressure steam systems.

1.3 SUBMITTALS

- A. Product Data: Include certified performance curves and rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories for each type of product. Indicate pump's operating point on curves. Include receiver capacity and material.
- B. Shop Drawings: Show pump layout and connections. Include Setting Drawings with templates for installing foundation and anchor bolts and other anchorages.
 - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring.
- C. Maintenance Data: Include in maintenance manuals specified in Division 01.

1.4 CODES AND STANDARDS

- A. Codes and Standards shall be the current version adopted by the Authority Having Jurisdiction.

1.5 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.
- B. ASME Compliance: Fabricate and label receivers to comply with ASME Boiler and Pressure Vessel Code: Section VIII, "Pressure Vessels," Division 01.

1.6 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 steam condensate 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.

1.7 COORDINATION

- A. Coordinate size and location of concrete housekeeping pads. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Floor-Mounted, Condensate Receiver/Pumps:
 - a. ITT Fluid Handling; Div. of ITT Fluid Technology Corp.
 - b. Skidmore Div.; Vent-Rite Valve Corp.
 - c. Weil Pump Company, Inc.
 - d. Shipco.
 - e. Or Approved Equal

2.2 CONDENSATE RECEIVER/PUMPS

- A. Description: Factory-fabricated, packaged, electric-drive pump units; with receiver, pumps, controls, and accessories suitable for operation with low-pressure steam condensate.
- B. Configuration: Floor-mounting, simplex unit with receiver and float switch.
 - 1. Receiver: Floor-mounting, [close-grained cast iron][welded steel]; with externally adjustable float switch and flange for pump mounting. Provide connection for atmospheric pressure vent.
 - 2. Pump: Centrifugal; close coupled; vertical design; permanently aligned; bronze fitted, and with enclosed bronze case ring and mechanical seal; and mounted on receiver flange.
 - 3. Factory Wiring: Between pump and float switch, for single external electrical connection.
- C. Configuration: Floor-mounting, duplex unit with receiver and unit mounted control panel.
 - 1. Receiver: Floor-mounting, [close-grained cast iron][welded steel]; with externally adjustable float switches and flanges for pump mounting. Provide connection for atmospheric pressure vent.
 - 2. Pumps: Centrifugal; close coupled; vertical design; permanently aligned; bronze fitted, and with enclosed bronze case rings, mechanical seals suitable for 220 degrees F, and independent pump control circuit for each pump; and mounted on receiver flanges.
 - 3. Float Switches: Set for lead/lag operation.
 - 4. Factory Wiring: Between pumps, float switches, and control panel.
 - 5. Control Panel: NEMA 250, Type 2 enclosure with hinged door and grounding lug, mounted on unit; factory wired for single external electrical connection; and with the following included within cabinet:
 - a. Motor controller for each pump.
 - b. Electrical alternator.
 - c. Numbered terminal strip.

- d. Disconnect switch.
 - e. Fused transformer for each control circuit.
6. Options: Provide the following options:
- a. Gauge glass level indicator.
 - b. Thermometer.
 - c. Discharge pressure gauges.
 - d. Discharge check valves.
 - e. High level alarm with dry contacts for monitoring by the DDC system.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine equipment foundations and anchor-bolt locations for compliance with requirements for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CONDENSATE RECEIVER/PUMPS INSTALLATION

- A. Install receiver/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. Install receiver/pumps on 4-inch high concrete housekeeping pads. Anchor to bases using inserts or anchor bolts.
- E. Install thermometers and pressure gages.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to machine to allow service and maintenance.
- C. Install shutoff valves on inlet of units.
- D. Install inlet strainer and valved bypass to drain at system return connection.
- E. Install union, check valve, and shutoff valve at pump discharge connections for each pump.
- F. Install pipe drain to nearest floor drain for overflow and drain piping connections.
- G. Install full-size vent piping, terminating outside in 180-degree elbow at point above highest steam system connection or as indicated.
- H. Install electrical connections for power, controls, and devices.

- I. Electrical power and control wiring and connections are specified in Division 26 Sections.
- J. Ground equipment.
 - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 START-UP PROCEDURES

- A. Verify that condensate receiver/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. Complete installation and startup checks according to manufacturer's written instructions.
- D. Clean strainers.
- E. Set condensate receiver/pumps controls.
- F. Set pump controls for automatic start, stop, and alarm operation.
- G. Perform the following preventive maintenance operations and checks before starting:
 - 1. Lubricate bearings.
 - 2. Set float switches to operate at proper levels.
 - 3. Set throttling valves on pump discharge for specified flow.
 - 4. Check motors for proper rotation.
 - 5. Test pump controls and demonstrate compliance with requirements.
 - 6. Replace damaged or malfunctioning pump controls and equipment.
 - 7. Verify that pump controls are correct for required application.
- H. Start condensate pumps according to manufacturer's written startup instructions.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain condensate receiver/pumps as specified below:
 - 1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining pumps.
 - 2. Review data in maintenance manuals. Refer to Division 01 Operation and Maintenance Manual requirements.
 - 3. Schedule training with Owner, through Architect, with at least seven days' advance notice.

END OF SECTION