

SECTION 15450
PLUMBING EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Water heaters.
- B. Packaged water heating systems.
- C. Water storage tanks.
- D. Water softeners.
- E. Pumps.
- F. Circulators.

1.2 REFERE

- A. Wat -21.6 -12H() T[(5933()]TJ () T[(6 -12.84 T4835(f)14.9-22.92 -12.84 Td -1A075(N)7.71458(C)73.27

- C. Warranty: Submit manufacturer's warranty and ensure forms are completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Provide pumps with manufacturer's name, model number, and rating/capacity identified.
- C. Ensure products and installation of specified products are in conformance with recommendations and requirements of the following organizations:
- D. American Gas Association (AGA).
- E. National Sanitation Foundation (NSF).
- F. American Society of Mechanical Engineers (ASME).
- G. National Board of Boiler and Pressure Vessel Inspectors (NBBPVI).
- H. National Electrical Manufacturers' Association (NEMA).
- I. Underwriters Laboratories (UL).
- J. American National Standards Institute (ANSI).
 - 1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation; operate within 25% of midpoint of published maximum efficiency curve.

1.7 REGULATORY REQUIREMENTS

- A. Conform to AGA, ANSI 2 21.22, NFPA 54, NFPA 70, UL 174, UL 1453 requirements for water heaters.
- B. Conform to ASME Section 8D for manufacture of pressure vessels for heat exchangers.
- C. Conform to ASME Section 8D for tanks.
- D. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
- B. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.9 WARRANTY

- A. Section 01740 - Warranties.
- B. Provide five-year manufacturer warranty for domestic water heaters, packaged water heating systems.

1.10 MAINTENANCE PRODUCTS

- A. Section 01730 - Operation and Maintenance Data.

PART 2 PRODUCTS

2.1 RESIDENTIAL GAS FIRED WATER HEATER

- A. Type: Automatic, natural gas-fired, vertical storage.

- C. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.
- D. Seal: Carbon rotating against a stationary ceramic seat.
- E. Drive: Flexible coupling.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install water heaters and water softeners in accordance with manufacturer's instructions. In addition install water heaters to applicable AGA, ANSI, NFPA 54, UL requirements.
- B. Coordinate with plumbing piping and related fuel piping, gas venting and electrical work to achieve operating system.
- C. Domestic Water Heater Exchangers:
 - 1. Install domestic water heater exchangers with clearance for tube bundle removal without disturbing other installed equipment or piping.
 - 2. Support unit on pipe stand.
 - 3. Pipe relief valves and drains to nearest floor drain.
 - 4. Connect steam branch line from top of main. Pipe in flexible manner, pitched with steam flow, with pipe union connections. Provide steam pressure gauge at exchanger inlet.
 - 5. Provide steam traps and valves as indicated.
 - 6. Pitch shell for condensate drain to traps.
- D. Domestic Hot Water Storage Tank:
 - 1. Provide support, independent of building structural framing members.
 - 2. Clean and flush tank. Seal until pipe connections are made.
- E. Pump:
 - 1. Ensure shaft length allows sump pumps to be located minimum 24" below lowest invert into sump pit and minimum 6" clearance from bottom of sump pit.
 - 2. Provide air cock and drain connection on horizontal pump casings.
 - 3. Provide line sized isolating valve and strainer on suction and line sized soft-seated check valve and balancing valve on discharge.
 - 4. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 4" and over.
 - 5. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25% of midpoint of published maximum efficiency curve.
 - 6. Align and verify alignment of base mounted pumps prior to start-up.

END OF SECTION