

# ARMSTRONG

I W H



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*Instantaneous Water Heater*

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# INSTANTANEOUS

**A**rmstrong Instantaneous Water Heaters (IWH) are a safer, more cost effective approach to domestic hot water heating than traditional storage tanks. The IWH units are available in a wide range of sizes and can be configured with either a basic or an enhanced controller.

The IWH is ideal for schools, hospitals, hotels, commercial buildings, apartments, condominiums, institutional facilities, nursing homes and process applications. The Armstrong IWH unit can operate with dedicated hot water boilers, or can be combined with space heating boiler systems. Whatever your application, an Armstrong IWH unit can meet your needs.

Armstrong IWH packaged systems provide hot water instantaneously. Unlike storage tank approaches, water is heated on demand as it flows through the system. Where a hot water storage tank

may become depleted during periods of peak demand and then require time for re-heating, a properly sized IWH unit can supply hot water at peak demand without any recovery period.

The basic IWH packaged system ships completely assembled on a compact common base-plate, that can be maneuvered through the average mechanical room door. The basic system includes:

- ◆ Plate & Frame heat exchanger
- ◆ Boiler side pressurizing pump to supply the heat exchanger
- ◆ Temperature controller
- ◆ 3-way motorized control valve
- ◆ High temperature safety shut off aquastat
- ◆ Temperature sensor on the hot water supply

The unit is shipped fully assembled with factory default settings programmed into the controller. For installation the unit requires mechanical plumbing connections for hot water supply, cold boiler return, municipal water supply, domestic recirculation, domestic hot water supply lines, and an electrical supply connection. Once installed and energized the system is ready to supply hot water.

Armstrong also provides the option for an enhanced IWH packaged system that includes these additional features:

- ◆ Built-in recirculation pump
- ◆ 5 additional temperature sensors
- ◆ Feed-forward controller for more accurate temperature control
- ◆ Communications interface compatible with BAS networks
- ◆ Capacity for installation in a 'master-slave' configuration to sequence parallel IWH units
- ◆ Smart, energy-saving sleep mode
- ◆ Energy-saving night-time temperature setback
- ◆ Isolation shut-off valves at all piping connections

The enhanced IWH packaged system provides more precise temperature control to address boiler supply temperature transients, and offers extra features to deliver increased energy savings.

The IWH sets a new standard for domestic hot water heating. When compared with traditional approaches to hot water heating, an IWH saves from 30% to 80% of the floor space required by a storage tank system. In addition, because the IWH system does not store heated water, it greatly reduces the health risks of Legionella bacteria that are associated with storage tanks. The Armstrong IWH is a great solution for domestic hot water that provides uninterrupted supply, saves energy, saves installation time and reduces first cost.

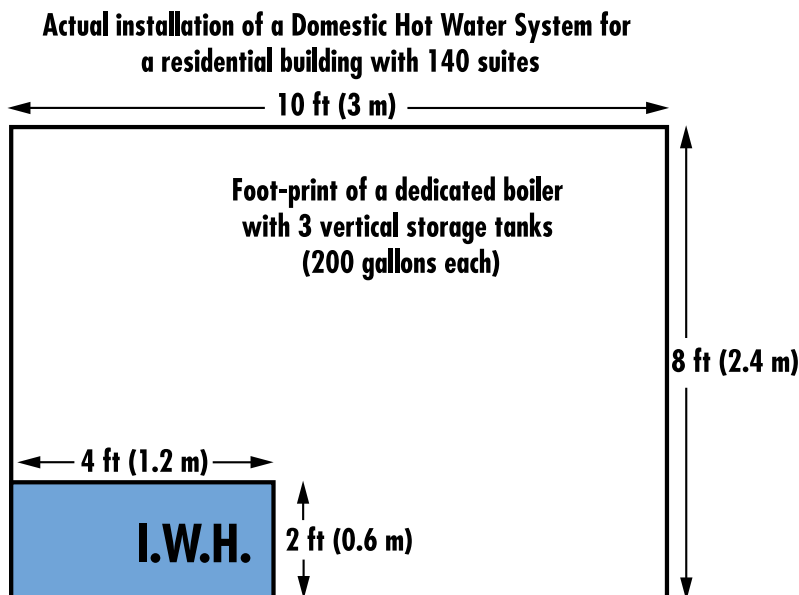


# WATER HEATER

## Features & Benefits

- ◆ Small Footprint — Saves boiler room space
- ◆ Night-time temperature set-back — Energy savings
- ◆ Optional Double-Wall plates — No cross-contamination of domestic water
- ◆ Instantaneous heating — No shortage of hot water
- ◆ No storage of water — Reduced risk of Legionella disease
- ◆ Optional back-flush — Simplified maintenance
- ◆ Temperature control within  $\pm 4^{\circ}\text{F}$  ( $\pm 2.2^{\circ}\text{C}$ )
- ◆ High temperature limit switch
- ◆ Simple installation
- ◆ Control panel UL & CSA Approved
- ◆ Compatibility with Building Automation System
- ◆ Single source responsibility
- ◆ OPTIONS:
  - Back-flushing tees on Plate & Frame heat exchanger
  - Thermostatic mixing valve to reduce the risk of scalding

### Compare the Foot-Print



# Specification

## Boiler Water as Heat Source

**F**urnish & install in accordance with the plans an Armstrong Instantaneous Water Heater, Model (enter model number) \_\_\_\_\_. The factory-assembled package shall be capable of heating (enter flow) \_\_\_\_ USgpm (m<sup>3</sup>/hr) of water from \_\_\_\_°F (°C) to \_\_\_\_°F (°C) when supplied with (enter boiler flow) \_\_\_\_ USgpm (m<sup>3</sup>/hr) of boiler water at \_\_\_\_°F (°C) and returning to the boiler at \_\_\_\_°F (°C) (minimum 140°F or 60°C). The package, mounted on a common base plate, shall include a Plate & Frame heat exchanger, a 3-way electronic control valve, a bronze-fitted vertical in-line pump, an all-bronze circulating pump complete with electric controls, valves and strainers, and all interconnecting piping.

The entire package shall be hydrostatically tested and factory painted prior to shipment, and shall have a performance guarantee when installed and operated in accordance with the manufacturer's instructions.

### Heat Exchanger

The ASME constructed & tested heat exchanger shall be assembled with 316 stainless steel Single-Wall plates and EPDM gaskets. To minimize the risk of cross-contamination, Double-Wall plates shall be specified. Tie rods, nuts and washers shall be zinc coated. Unit shall be rated for 125 psi (862 kPa) design pressure at 300°F (149°C) maximum operating temperature.

### 3-way electronic control valve

The electronically actuated mixing valve shall be ANSI rated to withstand the operating conditions. The valve shall have a metal to metal seat, stainless steel stem and replaceable cartridge-type EPDM packing for easy service. The valve shall be spring loaded to fail closed in case of power outage.

### Pumps

Armstrong Series 4380 close-coupled, single stage, single suction vertical in-line centrifugal unit. The pump shall have a cast iron casing, an enclosed dynamically balanced bronze impeller, a bronze shaft sleeve and a single inside mechanical seal. The driving motor shall be industry standard, vertical solid shaft and squirrel cage induction type with ODP enclosure.

### Circulating Pump

Armstrong "H" series Circulating Pump with a capacity of \_\_\_\_ USgpm (m<sup>3</sup>/hr), handling water against a total head of \_\_\_\_ ft (m). Pump shall be equipped with a \_\_\_\_ hp (Kw), \_\_\_\_ volt, single phase, 60 Hertz, 1800 rpm drip-proof mounted motor. Circulator shall be all-bronze construction and the shaft shall have an oil-lubricated bronze sleeve bearing and an "ARMSEAL" mechanical seal.

### Gauges

The pump shall be provided with a 2½" dial pressure gauge and three-way brass valving with copper tubing for measuring both suction and discharge pressure.

### Control Panel

A single enclosure NEMA 1 control panel, wired to the pumps and 3-way valve actuator, shall be provided. Panel shall have main disconnect interlocked with the door, a locking door handle provided with two keys, fuses for the pump motor and starters with 3-leg overload protection. Control circuit shall include fused primary and secondary control transformers with 24 & 120-volt secondary, H-O-A switch for the primary pump and ON/OFF switch for the circulating pump. Control Panel shall be UL & CSA listed. The control panel includes either a basic temperature controller or enhanced controller described below.

**Basic Control:** Advanced PID digital temperature controller with one Type J thermocouple sensing DHW supply temperature. Serial communication interface available as option.

**Enhanced Control:** Custom designed digital temperature controller with six Type J thermocouples shall incorporate a feed forward controller for more accurate temperature control to address

changes in boiler supply temperature transients. Communications interface with BAS networks, a master-slave ability to sequence parallel IWH units for high flow applications, smart energy saving "sleep mode" logic, and night time temperature setback energy saving logic shall be standard features.

### Temperature Controller

The temperature controller in the control panel monitors hot water (HW) supply temperature and HW usage using feedback and feed-forward compensation principles. The temperature controller controls the 3-way mixing valve to maintain a constant HW temperature supply. The Proportional plus Integral control of the temperature controller shall be factory set via simulated site condition testing and shall adapt to continuous changing demands.

### Piping, Baseplate and Test

Interconnecting piping on the primary (boiler) side shall be schedule 40 black steel pipe while regular red brass piping shall be supplied on the secondary (hot water) side of the heat exchanger. Suitable union connections shall be provided in the piping to allow removal of the heat exchanger or other major components without disturbing system piping. Baseplate shall be constructed of heavy duty welded structural steel. The complete package shall receive a hydrostatic test prior to shipping.

### Optional Accessories

- Back-flushing tees (installed on the plate and frame connections)
- Thermostatic mixing valve (to reduce risks of scalding)



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