

## TS II-120-2-HF

### Heat Recovery Water Heater Specification Information

#### Construction Specifications

1. Dual circuit refrigerant heat exchange plate designed for maximum heat transfer with minimum pressure drop
2. 1-5/8 in. O.D. refrigerant inlets and outlets
3. Industrial glass lined 114-gallon hot water storage tank
4. 2 in. foam-in-place urethane insulation (R-16)
5. Dual anode protection against corrosion for extended tank life
6. 1-1/4 in. male NPT water inlet
7. 1-1/4 in. male NPT water outlet
8. 150 psi and 195°F pressure/temperature relief valve
9. Attractive enameled galvanized external wrapper
10. Mid-tank 3/4 in. Male NPT connection for recirculating loop return or for aquastat (mid-port)

#### Overview

The Opti-Stor TS II-120-2-HF High Flow (HF) Heat Recovery Water Heater features a high flow, dual-circuit heat exchanger encompassing a 114-gallon water tank. Each circuit is compatible with refrigeration loads of up to 27 tons (refer to chart on the back). Larger refrigeration loads can be accommodated by piping the circuits together or considering the Opti-Stor TS II-120-1 unit.

#### Operation

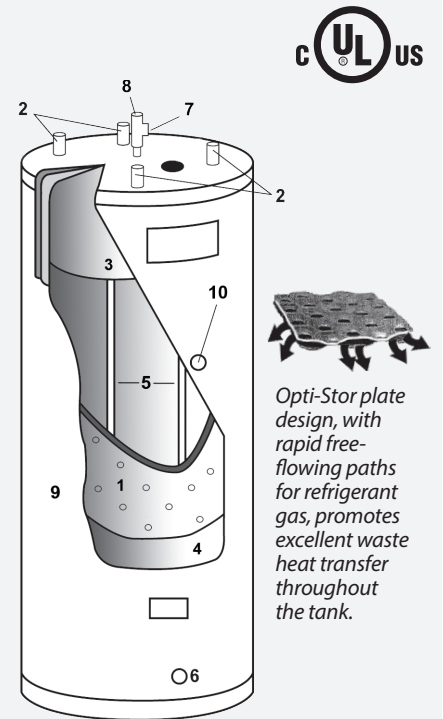
The Opti-Stor TS II-120-2-HF heats water by transferring refrigerant superheat to water. Hot gas leaving the compressor(s) is piped through the refrigeration circuits en route to the condenser(s). The TS II-120-2-HF is compatible with any typical refrigeration system within sizing guidelines (using capillary tube systems with the Opti-Stor is normally not recommended). Plumbing recirculating loop return water to the mid-port allows recirc line losses to be heated with reclaimed heat without affecting overall heating efficiency. Hot water production depends on the evaporator load (capacity), run time of the compressor and water usage.

#### Typical Applications

The Opti-Stor TS II-120-2-HF is ideally suited for heating water in facilities with larger capacity one or two compressor refrigeration systems. Common installations include:

- Grocery stores
- Breweries
- Health care facilities
- Walk-in coolers/freezers

**Part No. 4021577 – TS II-120-2-HF**



#### Unit Specifications

- Tank Dimensions — Diameter: 29-1/4 in., Height: 62-1/4 in.
- Unit Dimensions (with fittings) — Diameter: 31-1/2 in., Height: 67 in., Weight: 420 lbs.
- 120 gallon nominal water capacity
- Max. heat exchange rating 80,000 BTU/hr
- 150 psi max. operating water pressure
- Rated for 450 psi refrigerant operating water pressure
- R-16 insulation
- High refrigerant capacity
- Double wall vented protection between refrigerant and water
- Triple leak checked, shipped with N2 holding charge

Part No. 4021577 – TS II-120-2-HF  
Specifications subject to change without notice.

#### Certifications

- UL/cUL® (SA5939)
- ASHRAE 90

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## Sizing Guidelines

The Opti-Stor TS II-120-2-HF can accommodate refrigeration loads of up to 27 tons per circuit depending on refrigerant and evaporator temperatures. The individual circuits can be piped together in parallel to accommodate larger loads (see diagrams below). Single circuit units are available with larger refrigeration capacities (Opti-Stor TS II-120-1). Opti-Stor units are not intended as a substitute for air or water cooled condensers. These capacity ratings are based on approximately 15 lb. pressure drop at maximum capacity.

<b>TS II-120-2-HF</b> <b>Max. Recommended Capacity (in tons) for</b> <b>Typical Refrigeration Systems</b>		
Refrigerant	Low Temperatures	Medium Temperatures
R-22	25	27
R-134A	20	23
R-404A, R-502, R-507	18	20

## Water Temperature Control

Incorporating provisions in the refrigerant piping to bypass hot gas around the Opti-Stor directly to the condenser is recommended for large capacity systems. This prevents water from overheating during periods of sustained refrigeration operation with no/low

water demand. A typical arrangement incorporates a three-way valve operated by an aquastat that senses water temperature. An alternate arrangement is a water bleed valve that would bleed hot water out of the tank. An aquastat can be mounted on the mid-port if there is no recirculation loop or connected to the water outlet piping to sense water temperature. Refer to diagram A below.

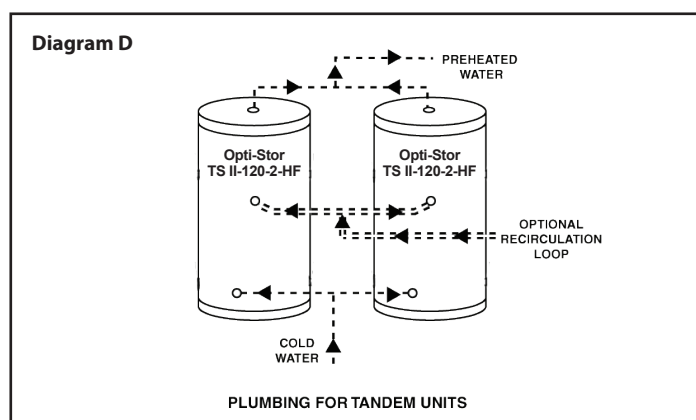
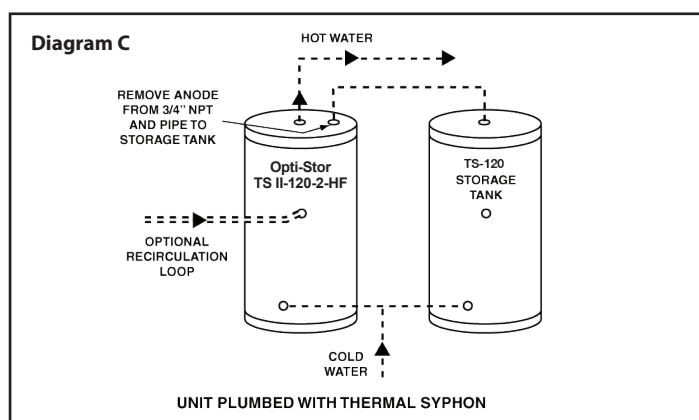
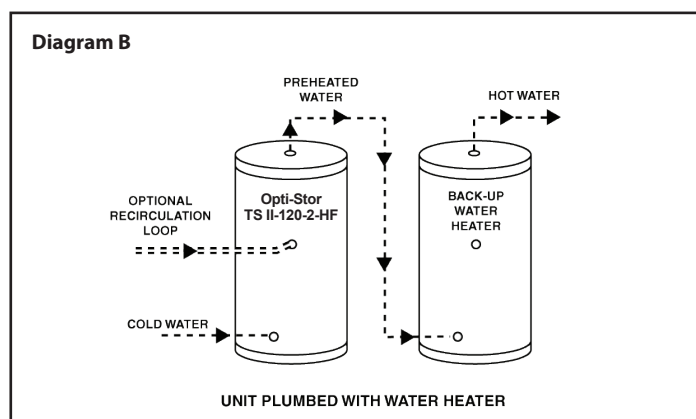
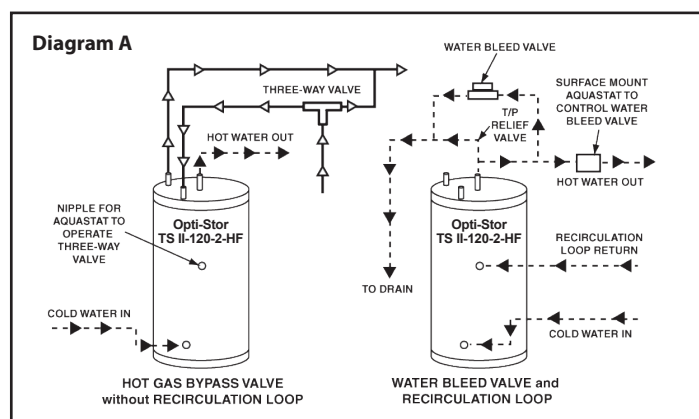
## Supermarket Applications

The Opti-Stor TS II-120-2-HF is often plumbed in series with a conventional water heater. See diagram B.

In applications with "batch" cleaning, adding a Opti-Stor TS-120 storage tank is recommended. The TS-120 can be installed to accommodate thermal-syphoning (circulating without a pump). See diagram C, refer to Opti-Stor TS-120 spec sheet for more information.

The Opti-Stor System is installed with a circulating loop, pump the water as slowly as possible and return to the 3/4 in. NPT mid-port. Do not circulate directly between the water heater and the Opti-Stor unit unless the heater has been deactivated so that it acts as storage only.

The individual circuits can be piped together in parallel to accommodate larger loads (see diagram D). Do not install both circuits of the TS II-120-2-HF in parallel on a single system that experiences low load conditions since this may trap liquid.



LIT-2926-21-Q09EN