



## Sentinel® Condensate Pumps

### Application

SC Sentinel® Condensate Pumps are complete compact assemblies returning condensate to boiler feed receivers or directly to boilers and provide condensate recovery from comfort heating systems or low pressure steam process heating systems where water recovery is economical or a combination of any such systems. Our systems allow greater flexibility in areas where it becomes difficult to properly grade condensate return lines to a central collection point.

The Sentinel® protects the environment. It prevents heat and boiler treatment from polluting liquid waste disposal systems by recycling water, chemicals and heat which also reduces maintenance and energy costs.



### Features

#### Low Operating Costs

Sentinel's® designed with high efficiency 3450 RPM motors and peak efficiency pumps which yield lower energy costs. Our pumps have long life, high temperature ceramic seals (250°) eliminating the stuffing box designed leakage of valuable condensate. The motors are mounted off the floor in a lower maintenance environment.

#### Overload Protection

The Sentinel® Control Panel comes with high quality Horlick® electrical controls which provide peak overload protection, featuring across the line magnetic starters and circuit breakers and are accurately tuned to the specific loading needs of the motors. Units with 2HP and larger motors require an electrical control panel. Smaller HP motors can be ordered with a control panel providing the same protection afforded the larger motors.

#### Oversized Rated Duty

Sentinel® units are designed for low NPSH® giving them the ability to handle high temperature condensate quietly and efficiently at a much higher than specified EDR. This assures low maintenance and long life. Duplex models provide 100% stand-by with alternation.

#### User Friendly Installation

The Sentinel® only requires simple piping and wiring connections to become operational.

#### Specifications

- Simplex
- Duplex
- Capacities of 10,000 - 50,000 EDR
- Flow rates of 3 - 75 GPM
- Discharge Pressures of 20 - 80 PSIG
- Standard Receiver Sizes:  
10- 15 - 30- 45 - 75 Gallons

**Note:** We reserve the right to make revisions to its products, specifications, forms and related information without notice.

## Construction

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The Sentinel® has durable closed coupled centrifugal pumps with dynamically balanced impellers that are mounted directly to the shaft extension of efficient 3450 RPM motors. A volute designed pump case and attached motor adapter form the impeller enclosure. Pumps are furnished with high temperature carbon-ceramic mechanical seals rated @ 250° F for handling hot condensate and eliminating messy stuffing boxes. L50 (B50) rated motor bearings assure motor/pump assembly longevity. Units are available on 3Φ 50/60Hz 208v/230v-460v and 1Φ50/60Hz 115v-230v AC.

Our carbon Steel receiver tanks have mounting feet so they can be easily secured to a house keeping foundation and a pair of vortex breakers to eliminate problems of loss in NPSHA (Net Positive Suction Head Available) and cavitation associated with the creation of vortices within pump suction. They also assist in the handling of hot condensate and prevent leakage by minimizing tank distortion by external plumbing forces through added rigidity at tank discharge.

Optional isolation valves prevent the loss of valuable condensate when pump/motor assemblies require removal for maintenance. A simplex unit may be converted to a duplex by removing the outlet cover plate, adding a second pump assembly (with isolation valve if added) and replacing the float switch with an alternator. (Note if your simplex unit came with a factory control panel it can easily be converted to a duplex by added the required components).

Duplex control panels include one NEMA 12 enclosure, UL Labeled, a main non-fused disconnect, two circuit breakers, two across the line magnetic starters, two test-auto-off (T-O-A) selector switches. Switch handles are illuminated and double as pump running lights. There are two multi tap (460v-230v-208v-115v/115v) control circuit transformers and two each primary/secondary transformer circuit breakers.

The duplex unit comes standard with a mechanical alternator that provides 100% automatic stand-by capabilities. With each rising and lowering condensate cycle in the

receiver there is pump alternation. If the operating pump fails, the second pump will automatically start and carry the load. When condensate is returning to the receiver tank at a higher rate than one pump can handle the second pump will automatically assist the first pump.

### Operation

Condensate formed in the heating terminal units and the steam distribution system flows by gravity to the handling unit's receiver. As the receiver tank fills the level is monitored by a float and it's connecting mechanism. At a pre-determined level the contacts of the float switch close energizing the motor/pump assembly which discharges water (condensate) to a boiler or a boiler feed unit. Once the level in the receiver tank is lowered to a pre-set level the switch contacts open shutting off the pump action and it waits for another cycle to begin.

### Selection

To properly select the correct unit for your heating system use the **Sizing Charts** on the following pages. Sentinel's® capacity is rated in EDR\* X 1,000. Once you have determined your EDR requirements select the correct unit rated for the required load. The first column in the charts indicates units EDR capacity. Also in the charts is units discharge pressure rating. To determine discharge pressure rating add the boiler shut-off pressure to the elevation height difference of the boiler inlet connection and the pump discharge plus the calculated friction pressure drop in the connecting line from the pump discharge to the boiler inlet.\*\* When discharge pressure requirements have been determined the forth column in the charts indicates the units discharge pressure rating. Finally using column five for simplex and column six for duplex select the model number of the unit that fits your requirements.

\* 1,000 EDR = 1/2 GPM or 500 pounds per hour.

\*\* To determine PSIG divide the difference of height in feet by 2.31.

**Caution:** The pump discharge should always be below boiler inlet.