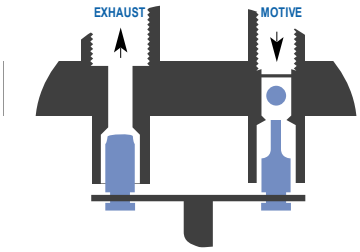
Applications

- Collection of condensate
- Where electrical service is unavailable
- Submerged or remote sumps and manholes
- Hazardous fluids and process fluids
- Low pressure and vacuum systems
- High back pressure systems
- High capacity process applications

Condensate Commander Pump

Pressures to 250 PSIG (17.2 barg)
Temperatures to 650ºF (343ºC)



Inlet Supply and Vent Valves

Lapped valves and seats for tight shutoff

Stainless steel construction resists corrosion

Floating ball design and hardened sealing surface of supply valve provide long service life

Floating disk and ball valves feature an infinite number of seating surfaces

Self centering design assures reliable performance

Unique Patented Single Spring Mechanism

Eliminates pump breakdown due to spring failure

Snap acting mechanism actuates the valve

Heavy duty spring operating in compression carries lifetime warranty

Unaffected by turbulence

Stainless steel construction maximizes reliability and service life

Valve and linkage positioning above condensate level minimizes corrosion

Cycle Counter

accurately depicts number of cycles and assists in maintenance scheduling

Retrofit Mechanism Available

Head assembly fits many manufacturer's tanks

ASME Code Stamped Tank

Fabricated steel tank is standard on most models

Warrantied 3 Years or One Million Cycles

Longest warranty in the industry

CONDENSATE COMMANDER PUMP

Pressures To 250 PSIG (17.2 barg) Temperatures to 650°F (343°C)

No Electricity Needed
–Uses pressurized gas or steam as the pumping force.
–Preferable for remote or hazardous locations.

Lifetime Warranty on Spring
–Single spring mechanism operates in compression only to assure long service life
–Stainless steel snap action mechanism in continuous compression offers superior performance.

Rugged Mechanism
–Unaffected by turbulence.
–No adjustments or maintenance necessary.

Superior Valve Technology
–Supply and exhaust valves are lapped for tight shutoff.
–Self centering design assures reliable performance.
–Unique floating ball design and hardened sealing surface of the supply valve provide long service life.

Suitable for a Wide Variety of Liquids
–Condensate from steam systems.
–High back pressure, low pressure and vacuum systems.
–Ideal in a sump or other submersible applications.
–Suitable for acids and other process fluids that may be incompatible with conventional pumps.

Warantied 3 Years or One Million Cycles
– Longest warranty in the industry.

ASME Code Stamped Tank
–Fabricated steel tank is standard on most models.

Retrofit Mechanism Available
–Head assembly can fit other manufacturer's tanks.

Required suction head is minimal
–Optimal performance achieved at only 12 inches.

Applications

Collection of Condensate
- Remote Locations such as tank farms
- Low pressure and vacuum systems
- Condensate systems with high back pressure
- High capacity process applications such as heat exchangers

Electrical Service is Unavailable or Prohibited
- Remote locations
- Hazardous locations

Submerged Areas
- Sumps or low lying areas
- Manholes

Hazardous Fluids
- Process fluids that may be difficult for conventional electric pump technology to handle

Options

- Glass Water Gage
- Cycle Counter
- Bronze or Stainless Steel Check Valves
- Insulating Jacket
- Supply Pressure Regulator
- Stainless Steel Tanks
- High Temperature
- High Pressure

Models

- **Classic**–Standard capacity, vertical tank
- **Big Boy**–Super capacity, horizontal tank
- **Horizontal**–Standard capacity, high pressure, horizontal tank
- **Little Boy**–Reduced capacity, vertical tank
- **Skid**–Standard or custom multiplex configurations

Operation

The vent valve is open, the pressure supply valve is closed and the float is positioned in the lower part of the tank as the condensate or other liquid enters the tank through the inlet check valve. As the tank fills with liquid, the float rises to the point where the spring mechanism snaps past the center position. The compressed spring instantly closes the vent valve and opens the pressure supply. This allows pressure into the tank which forces the liquid through the outlet check valve.

As the liquid level falls, the float lowers to the point where the spring mechanism snaps past the center position which immediately closes the pressure supply valve and opens the vent valve. The pressure in the tank decreases, allowing liquid to flow through the inlet check valve, repeating the cycle.

CONDENSATE COMMANDER PUMP PRIMER

The SPENCE Condensate Commander belongs to a class of pressure operated pumps primarily intended to move condensate or other fluids without the use of electricity. When compared to conventional electrical pumps, the Condensate Commander is particularly suited to pumping "difficult" media such as high temperature condensate and corrosive fluids. Pressure operated pumps and the Condensate Commander in particular enjoy a reputation of long life with very little required maintenance. Generally these types of pumps, by eliminating rotating seals, electrical motors, and impellers, last five to ten times as long as conventional electrical pumps while eliminating most of the standard maintenance.

- Returns hot condensate conserving boiler feed water chemicals and reducing fuel cost associated with reheating boiler feed water.
- Pumps without requiring electrical service.
- Pump design provides safe operation for hazardous or explosive environments.
- Operates on steam, compressed air or gas from 5 psig to 250 psig depending on model.
- Capacities to 48,000 lbs./hr.

OPERATION

The Condensate Commander pumps by displacing fluid with steam or compressed gas. The float is connected to a linkage and spring that simultaneously actuates a motive valve and an exhaust valve. During the fill cycle the motive valve closes while the exhaust valve opens, allowing condensate to fill the pump housing. When the float, rising with the entering fluid level, reaches the top of its stroke, the mechanism releases the spring, opening the motive and closing the exhaust valves. Steam or compressed gas then flows into the pump displacing the fluid. Check valves positioned at the inlet and outlet of the pump direct the fluid in the direction of the flow.

CHARACTERISTICS

Flow capacity is dependent on several parameters. Bearing in mind that that the Condensate Commander pumps in discreet, relatively consistent slugs of fluid, the total capacity will depend on how quickly the Commander cycles. Motive pressure available and resistance in the flow line are the obvious causative and limiting factors of capacity. Less obvious is the Cv of the check valves, pressure or head of the incoming fluid, resistance in the vent line, and characteristics of the motive gas used.

There is no "vacuum" side of a Commander pump. While there certainly is an inlet side, it is important to understand that the class of pumps the Condensate Commander belongs to does not draw or suck fluid into it. The media must flow by gravity into the pump. The greater the pressure and/or head, the greater the Cv of the inlet check, and to a lesser extent the greater the Cv of the exhaust vent, the faster the fill portion of the cycle will complete. With the fill portion completed the Commander mechanism will shut off the exhaust vent and open the motive valve. Steam or compressed gas will now displace the fluid contained in the pump housing. Factors controlling the speed of the discharge portion of the cycle include pressure of motive steam or gas, outlet check Cv, downstream backpressure, and potentially temperature of flow media and/or ambient conditions if steam is utilized as the motive gas. This last component is often overlooked, but the fact that steam will condense and reduce actual motive pressure could become significant in some applications.

RECEIVER

Conventional electric condensate pumps typically require a receiver sized to allow condensate to cool and vent flash steam. This is necessary, as the suction side of the pump will lower pressure potentially allowing the hot condensate to boil as it is drawn past the impeller. This action, known as cavitation, will quickly erode the impeller. While the temperature of the flow media is generally not a concern it must be remembered that the Condensate Commander pumps in discrete cycles. While the Commander is expelling fluid the body is pressurized and cannot receive fluid. If fluid is draining to the Commander in a continuous fashion, a receiver sized to accommodate the maximum volume expected during the time required to discharge the commander must be utilized. Failure to do so will back condensate up and possibly increase pressure, potentially causing problems.