

Condensate Pump

Mechanical steam motive

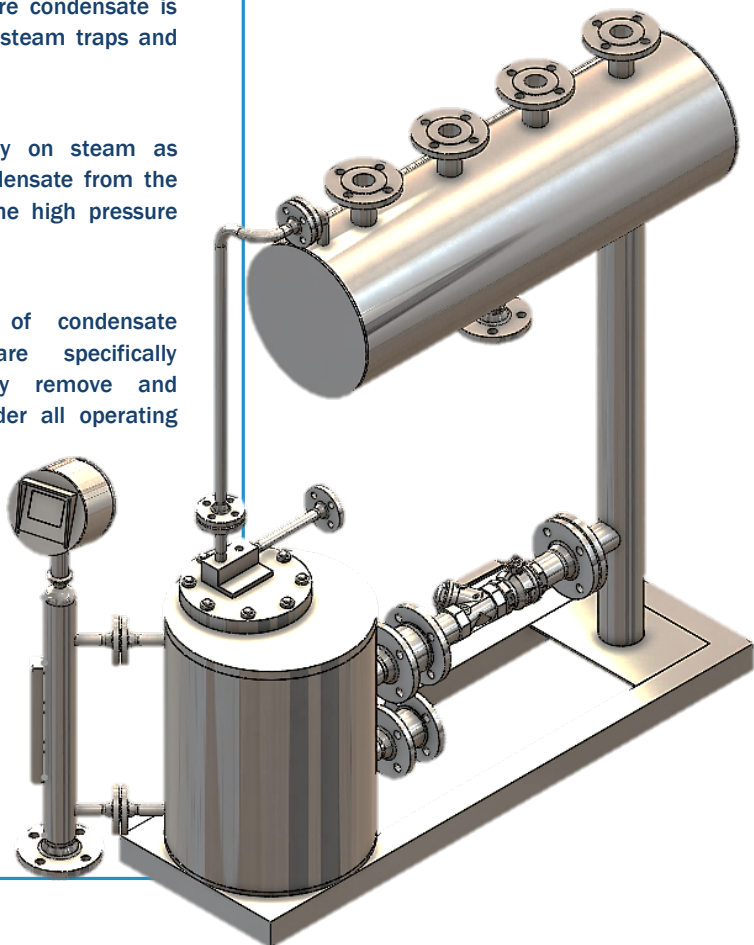
Model CP-S10F1

INSTRUCTION

Mechanical fluid pumps are typically installed with a receiver vented to the atmosphere – in what is usually termed an ‘open’ system - where condensate is collected from multiple steam traps and is pumped to the boiler.

Condensate Pumps rely on steam as power to transport condensate from the low pressure area to the high pressure area.

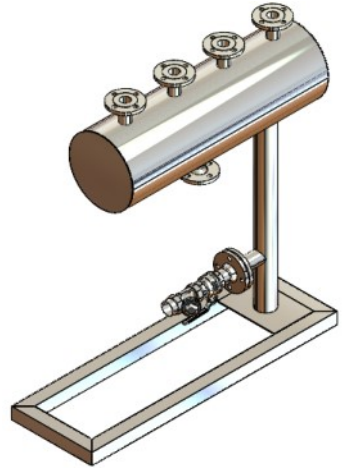
Dornikasanat's range of condensate recovery solutions are specifically designed to efficiently remove and recover condensate under all operating conditions.



CONSTITUENT PARTS



Condensate Pump,
Code Number: CP-S10F1



Collector and SS304 Structure,
Code Number: CP-R90-3



Monitoring unit,
Code Number:
MSG40



Disk Check Valve Guide
Code Number: DCVG

MECHANICAL FEATURES

Our condensate recovery pump is unmatched by other electric pumps and has a series of advantages such as:

1. Not driven by electric power or level switches, only driven by steam, simplifying installation which makes it ideal for hazardous environments. One pump design covers all applications
2. No cavitation, completely overcomes the shortcomings of electric pump cavitation specially in high temperature fluids, reducing plant maintenance problems, no NPSH required
3. Water hammer resistance ,water hammer causes no harm to internal mechanism in case of a water hammer incident
4. No mechanical seals or packing glands to leak
5. All stainless steel internal parts, special materials and perdurable design guarantee performance and life
6. The structure is compact and the design permits installation in a limited space
7. Automatic control and self-regulating, the amount of water output is determined by the amount of water input which is directly connected to the collector height; when the amount of condensed water increases the working frequency speeds up, when it decreases the working frequency decreases, therefore no condensed water enters and stops working.
8. Fuel saving due to utilization of the energy from hot condensate
9. Reduced make-up water requirement as a boiler feed water
10. Being highly pure, condensate saves cost of water treatment
11. Less condensate discharged into the sewer reduces disposal cost
12. A special device, designed within the mechanism is placed inside the pump which blocks the outlet pass-way, upstream of the flow, in case of influx of acidic fluids. This prevents the piping line and all other belonging supplies and equipment from corrosion, disrepair or any other catastrophic destruction

MONITORING

Monitoring set includes several parts such as: plc, Level switch and level gage. One can get information about Efficiency and effectiveness of the mechanical pump through the above mentioned devices.

❖ Data logging in PLC is presented through 2 tables,

1. First table shows the hourly flux of condensate in the past 24 hours
2. Second table collects data about the volume flow rate of returned condensate within 10 days

❖ The data reported can be used in the following cases:

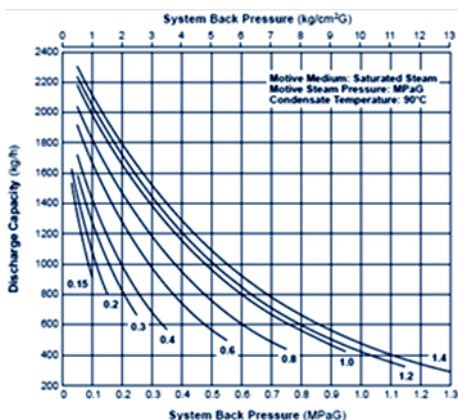
1. Estimate the efficiency of mechanical pump in each and every situation
2. Improve the steam usage
3. Estimate the pump's affordability
4. Extract Excel files in order to store specific date according to the needs of the employer , compare the data, prepare any chart according to the discretion of the technical expert
5. Purchases and optimizes equipment according to the needs and data provided

e.g.: Primary estimations resulted in a 2in. pipeline supplies but after the installation of Dornikasanat's CR pump; the data provided results in a 1½in. purchase

6. Eliminates the need for a skilled operator for data collection
7. Data analysis can result in probable destruction in brazes and heat exchangers like: shell and tubes , etc.

SPECIFICATIONS

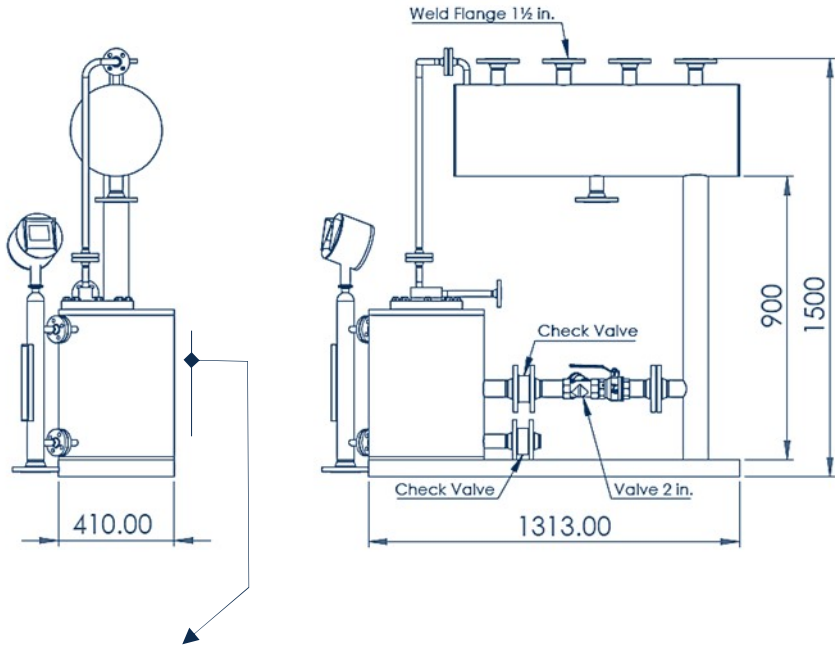
model	CP-S10F1	
Connection	Flanged	
Motive Sizing	Motive Inlet	½ in.
Pump Sizing	Pump Inlet	2 in.
	Pump Outlet	1½ in.
Maximum Operating Pressure	10 barg	
Maximum Operating Temperature	200 °C	
Motive Medium Pressure Range	3-10 barg	
Maximum Allowable Back Pressure	0.5 barg	
Volume of Each Discharge Cycle	Determined by the motive medium pressure and back pressure using the diagram shown	
Motive medium	Saturated Steam	
Pumped Medium	Condensate Steam	



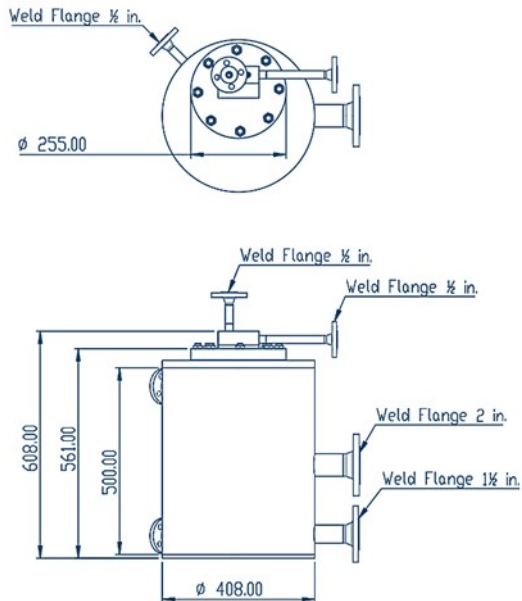
COMPONENTS

Code No.	Part	Material	Price \$
CP-S10F1	Condensate Recovery Pump	SS304	2500
DCVG	Check valves	SS304-SS316	200/300
MSG40	Monitoring units, including Plc, magnetic Switch and level gage	SS304-SS316-AI	500
CP-R90-3	Collector and SS304 Structure	SS304	1750

DIMENSION AND DRAWINGS



CONDENSATE RECOVERY PUMP DETAILED VIEW:



WORKING PRINCIPLE

The condensate recovery pump has two strokes, inlet water and exhaust condensate. At the beginning the inlet check valve is opened and the outlet check valve is closed due to high back pressure.

The mechanism starts to switch at a high position and closes the discharge valve, opens the power steam, injects steam into the valve and pushes the condensate in the pump to the high pressure area under the push of steam pressure.

When the flow reaches a low position the mechanism switches to close the power steam, opens the discharge valve and enters the next action cycle.

PRECAUTIONS

- ❖ A check valve must be installed at both the pumped Medium inlet and outlet.
- ❖ Motive steam pressure minus back pressure must be greater than 0.5 barg.
- ❖ A strainer must be installed at the motive medium and pumped medium inlets.
- ❖ Make sure that:

Discharge Capacity × Correction Factor > Required Flow

