ACOP SINGLE
PUMP SERIES

ACOP EX-PROOF
PUMP SERIES

ACOP DOUBLE
PUMP SERIES

ACOP

CONDENSATE TRANSFER PUMP SYSTEMS

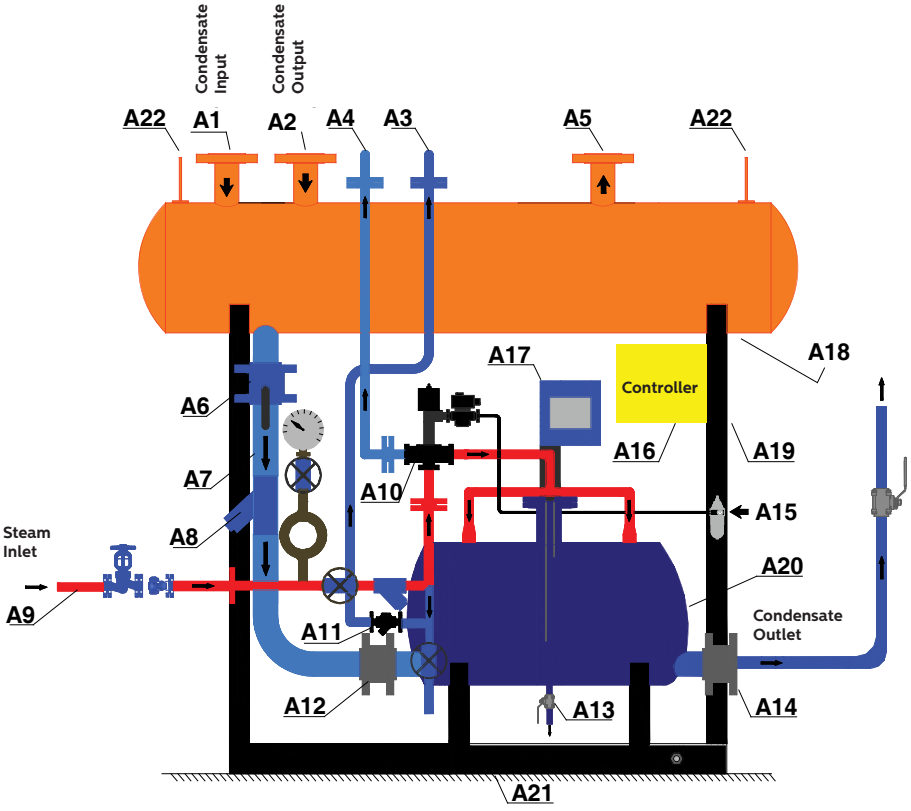
rev. 0319

AYVAZ

CONDENSATE TRANSFER PUMP SYSTEM

Package Type Condansate Transfer Pump

Ayvaz condensate pump is a system which is collecting the condensate and pump it with using steam as a feed water. Condensate pump can be work with gas, compressed air and steam. In high condesate situations, It can be able to use with double –triple way. In systems if the boiler feed water is on optimum temperatures, system recovers the maximum energy with help of this condensate pump systems. If you use the electrical pumps instead of condensate pump for send the high temperature condensate, the flash steam make some cavitations. To avoid this situtation from the system use mechanic condensate pump.



A1/A2 – Condansate Input
A3 – Condensate which is in between Steam Input and condensate pump
A4 – Flash steam and air release
A5 – Air Release
A6 – Manuel Valve
A7 – Pipe
A8 – Strainer
A9 – Steam Input
A10 – 3 way Valve (Pneumatic)
A11 – Thermodynamic Steam trap
A12/A14 – Dısco Checkvalve
A13 – Drain Valve
A15 – Air Filter and Pressure Reducer
A16 – Controller
A17 – Level Gauge (ELK)
A18 – Collector
A19 – Side Supports
A20 – Condensate Collection Tank
A21 – Bottom Table
A22 – Carriage Tarts

Work Principles

Condensate comes from the input collector and goes on internal pipe and access check valve than enter in condesate pump body so tank is getting full . In tank when the condensate comes on the upper limit, ELK-2 leve gauge check the conductivity and change it to electrical signal and send it to 3 way pneumatic valve for the giving contact which is on the steam line than allows it to be opened. In normally steam has more high pressure than the condensate pressure . When 3 way valve is close, system discharge condensate from the system with thermodynamic steam trap.

When the condensate pressure is smaller than the opposite pressure in condensate pump, discharge operation do not ocur. Steam is occurs the condensate discharging with entering the body, which have more pressure than the opposite pressure. When the condensate limit is gettin bottom limit of the tank, ELK-2 level gauge send electrical signal to 3-way pneumatic valve for close the system for entering steam. After that condens enter again and getting full tank . This operation frequency is connect between the condensate quantity.If the users want they can be follow the condensate quantity, from contoller.

Condensate Pump Application Area

1- Temperature control processes which has temperature control valves (Pneumatic, electric actuators,thermodynamic etc.)
2- Steam strap outputs (heat exchangers, tanks, heaters etc.)
3- Between steam trap and condensate tanks which has long distance between themselves.
4- Low condensate pressure systems In heat exchangers after the steam traps Thats why this situation getting more critical, ıf the condensate getting higher on steam trap's outputs. On heat exchangers, when the temperature is going to be set temperautes, control valve will be closed than steam volume drops and make some vacuums on serpantines. There is no pressure for the condensate discharging.

In that time condensate goes into the stable state and can't be discharging. This situation call STALL. This condensate goes on the heat systems and heat exchangers, makes some corrosion problems.

Thats why users condensate take into the some cap than discharge the condensate with the condensate transfer pump. There are many problems occurs if the systems dont use condensate transfer pump.

Problems That Will Occur When The Condensate Pump Is Not Used

1- Corrosion
2- Installation damages (water hammering etc.)
3- Ram jam
4- Product quality descrease.
5- Efficiency loses, Energy loses, Money loses.

Advantages of using Condensate Transfer Pump
1- Recover condensate, water conservation
2- Decreases chemicals
3- Decreases fuel using
4- When using instead of the electrical pump, energy saves.
5- If using in electrical pumps, the problems does not occurs.
6- Pipe diameters don't increases
7- Unnesseary to using another condensate tank.

Although in heat exchanger systems many control valves are using, if the pressure is not equal or higher than the pressure after steam trap, discharging does not avaible. This situation call STALL condensate locks. With the condensate pump users can be prevent it.

For Choosing Condensate Pump
1- Steam ınput pressure which is using in condensate tank. (bar)
2- Back pressure (bar) (Line height, distance to condensate tank, elbow, valve, other condensate connection, condensate types etc.)
3- Maximum pressure of heating process (boiler pressure) (bar)
4- Steam capacitive (kg/h)
5- Lower limit of the heating fluids (Water sample etc.) (°C)
6- Maximum limit of the heating fluids (Water sample etc.) (°C)

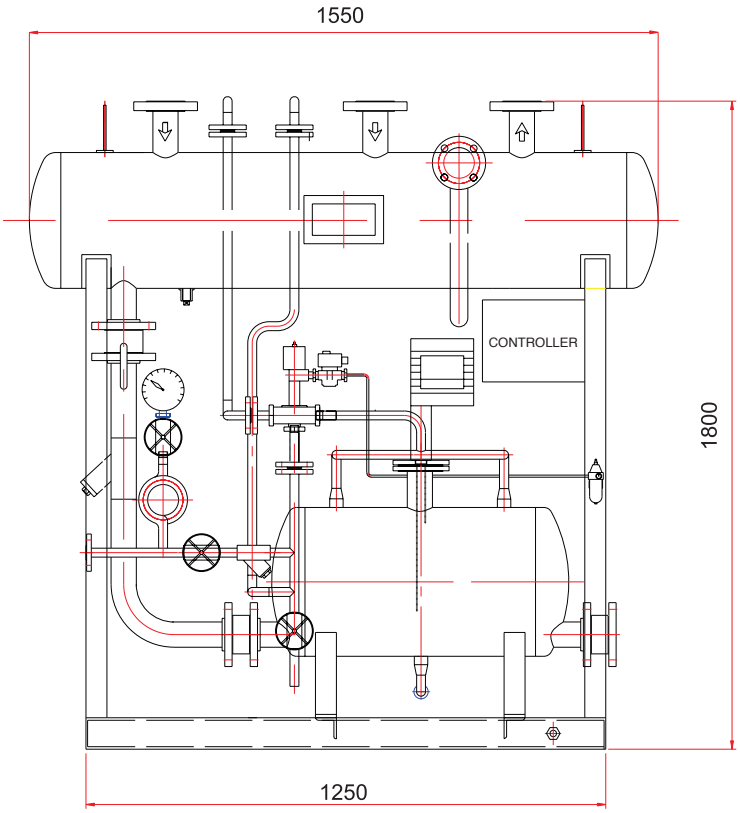
CONDENSATE TRANSFER PUMP SYSTEM

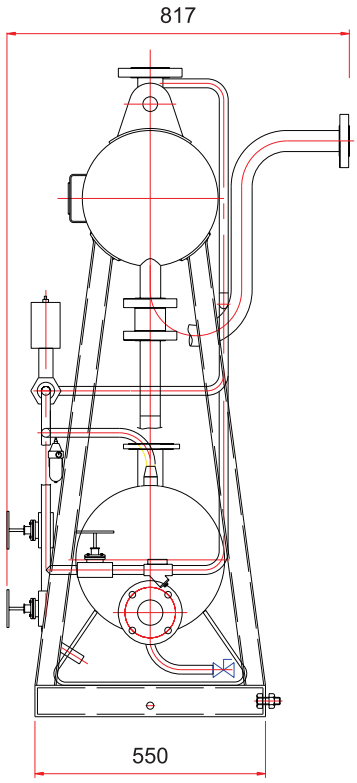
TECHNICAL PROPERTIES

ACOP (Ayvaz Condensate Pump)

INPUT WORKING PRESSURE	TOTAL OPPOSITE PRESSURE	200i	300i	400i	500i	600i
		ACOP				
bar		kg/h				
2	0.5	1190	2860	3790	5400	12285
	1	1150	2550	3460	4520	11070
3	0.5	1260	3000	4080	5980	13770
	1	1200	2770	3830	5100	12555
	1.5	1170	2560	3600	4840	11745
	2	1050	2320	3410	4350	10260
4	0.5	1300	3100	4290	6390	14850
	1	1240	2920	4090	5510	13500
	1.5	1200	2670	3790	5200	12285
	2	1090	2460	3520	4570	11205
	3	940	2090	2880	2810	10125
5	1	1270	3030	4290	5830	14175
	1.5	1230	2760	3950	5480	12015
	2	1130	2560	3600	4743	10935
	3	980	2230	3040	3260	10800
6	1	1300	3130	4460	6090	14850
	1.5	1250	2830	4070	5700	14040
	2	1150	2650	3670	4880	12555
	3	1020	2340	3170	3620	11475
	4	990	1980	2630	3530	11340
7	1	1320	3210	4210	6310	15255
	1.5	1270	2890	4170	5900	14445
	2	1180	2720	3720	5000	13095
	3	1050	2440	3280	3930	12015
	4	1020	2030	2680	3630	11880
8	1	1340	3280	4320	6400	15795
	1.5	1280	2940	4260	6070	14985
	2	1200	2780	3770	5100	13500
	3	1070	2520	3380	4200	12420
	4	1040	2080	2720	3710	12285
9	1	1350	3340	4420	6510	16200
	1.5	1290	2980	4340	6210	15390
	2	1220	2840	3820	5190	13905
	3	1100	2600	3460	4440	12825
	4	1060	2120	2760	3780	12690
10	1	1370	3400	4510	6620	16470
	1.5	1310	3020	4410	6340	15795
	2	1230	2890	3850	5270	14310
	3	1120	2660	3540	4647	13230
	4	1080	2150	2800	3850	13095

DIMENSION DRAWNINGS





Design Properties

Collector Design Pressure	bar (g)	3.5
Pump Design Pressure	bar (g)	11
Design Temperature	˚C	187

Working Conditions

Condensate Feed Driving Max. Steam/Air Pressure	bar (g)	10
Max. Steam Temp.	˚C	187
Pump Discharge Pressure	bar (g)	5
Max. Supply Voltage	230 V AC 1 phase	50 Hz
Steam Consumption	3 Kg Steam	1000 kg condensate

Models and Connection Types

MODEL ACOP	COLLECTOR CONDENSATE INPUT (A1, A2)	PUMP CONDEN-SATE OUTPUT (A14)	STEAM INPUT (A9)	COLLECTOR VENT (A5)	PUMP DRANIAGE(A13)	STEAM TRAP LINE (A3)	PUMP VENT (A4)
ACOP200i	DN50 X 2	DN25	DN15	DN50	DN25, SCR BSP	DN15	DN15
ACOP300i	DN50 X 2	DN40	DN15	DN50	DN25, SCR BSP	DN15	DN15
ACOP400i	DN50 X 2	DN50	DN15	DN80	DN25, SCR BSP	DN15	DN15
ACOP500i	DN50 X 2	DN80	DN15	DN80	DN25, SCR BSP	DN15	DN15
ACOP600i	DN80 X 2	DN100	DN15	DN100	DN25, SCR BSP	DN15	DN25

CONDENSATE TRANSFER PUMP SYSTEM

SECURITY ORDERS

1. Transport
• If any carrying or lifting it must be supported.
• Please don't use the collector for carrying or hanging.
• Please follow the instructions.

2. Storage
• Please cover pump from sun and rain drops.
• Please don't storage it in corositive placeses.
• Please don't smash the packing box.
• Don't establish it on the soil.
• Crates (packing box) life is almost 2-3 months.

3. Supply
• Pump must be establish with RCC supply.
• Supply table must be minimum 100 mm over the floor.
• For cleaning please drop 1 mm each units.

4. Levels
• For water discharge and good drainage it must be down level.

5. ACOP Position
• ACOP must be closer to system .
• Liquids direction must be the same direction with gravity.
• If the system is a flash steam application, output of the flash steam must have a distance minimum 500 mm from the collector.
• Without bending any of the collector discharge valve for evacuation to a safe place should be provided.
• For the prefering air, steam trap must be positioned on / off line .
• Pump discharging must be continious . Pump discharge pipe must be 3 times more than the condensate quantity.
• Steam, compressed air, single phase electrical connetion (230V AC, 50 Hz) etc.must be provided.
• For ACOP must be grounding. For control unit 1 KVA UPS is advising.

The Installation Procedure

1. Connect the pump discharge line to directly boiler feed tank .
2. Please connect condensate line to collector and condensate pump .
3. Please pump drainage directly connect with the drainage chamber
4. Collector drainage line has correct angle .
5 . 1" BSP Nipple hose always be ready in tow for the drainage .
6. When the pipe is open which is after the condensate pump, please apply low pressure air for examinate the discharge.
7. Please follow the drawings
8.For operation of the 3-way valve, connect the compressed air to the air filter regulator via an isolation valve.
9. 230 V AC connection is must be same as instructions.
10. Please cover the supply cable from the moisture.

System Startup

1. Open the power supply
2. Open the air valve and please sure about the pressure on the AFR.
3. Open the steam input valve.
4. For the first time, discharging the condensate from the stable line please use by-pass valves when steam is comming, please close by-pass valve
5. Open the butterfly valve
6. ACOP open valves on condensate line.
7. Open the condensate input valve full .
8. System on process now.

Control & Safety

1. With the automatic leash assembly collector protected. Selenoide valve must be protect with the emergency safe button.
2. Main insurance protection is provided for the main feed.
3. The electrical supply is disconnected when air or condensate pump stops running.

Stopping The Condensate Pump

1. Close the condensate valve
2. Open the by-pass line valve

DIFFERENCES WITH OTHER CONDENSATE PUMP SYSTEMS

1. ACOP is not mechanical pump with float. ACOP includes level gauges (electornic or tube type) and this level gauge controls the pump condensation level.

2. It has less material to break or maintenance such as float and lever arm. When condensation reachs to high level, with the level gauge's signal, 3 way valve changes the flow direction and allow the steam for discharging condensate.

3. With ACOP, condensation can discharge from more than single machine (up to 4 machines). First installation cost can reduce instead of more than one equipment.

4. You can use ACOP with steam or air. It does not require only steam.

CONDENSATE TRANSFER PUMP SYSTEM

Fixing Problems

PROBLEM	CAUSE /CHECKING POINTS	SOLVE
Overflow Collector	Strainer clogging	Clean Strainer
	Input DCV closed or damaged	If it is necessary please change it.
	Level gauge error	Check Cables
	Power Unit Control	Open, clean, If it is necessary please change it.
Condensate overflow over the 3 way valve	Selenoide valve error	Change the coils.
	3 way control valve error	Release the connection points and change the 3 way valve.
Knocking evacuation taking long	Leaking	Clean try, if the problem will continue change the DVC
	3 way valve opening valve	Change the 3 way valve
Steam coming from entry side of 3 way valve	3 way valve leaking	Change the 3 way valve
	Less air pressure	Check the air pressure after regulator
Ram Jam	Not correct isolation	Check the isolation lines.
	No isolation on lines	Apply Isolation
	Diffrent assembly from instructions	Correct assemblies
	No inclination on Condensate inlet and outlet line	Apply correct angle for the system
	A lot of bendings in entry and output	Please take minimum quantity for the bendings
	Flash tank steam trap is not working	Check the steam trap and steam trap valve

PROBLEMS WITH LEVEL GAUGES AND CONDUCTIVITIES		
Overflow levels	Main voltage not working.	Provide the mail stream. Complete the device wiring according to the diagram.
	Heat Error	Change the fuse
	Minimum conductivites	DIPswitch (L) conductivity level must be > 0.5 PS/cm
	There isn't any groundings	Do Isolation
	Electronic card error	Change it.
Swithc doesn't working	The electrode rods are in contact with the ground	Change the assembly.
Research at Contact Point: Not Working	Contact function is not set as required. Electrode probs are not cut as right length.	Cut the electrode probs as right length.
Flow totalizer not working.	Electronic card error	Send it to service.
	The big surge at the power supply	Check the breaker, replace it with new one if its neccesary.

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