FB10000 Error Messages Troubleshooting

Error ID: 66116: Unified Cooler - Critical Flow Rate

Error Severity: Critical

Possible Causes

- Water Pump CB threshold definitions are wrong
- Electrical phase is disconnected
- External water valves are not fully open
- Water filter is clogged
- Water pipe quick connectors are not properly attached
- Water pipes or tubes are obstructed or damaged
- Water pipes are clogged
- Water flow meter sensor is faulty
- Pump is faulty or its wire is disconnected

Recommended Actions

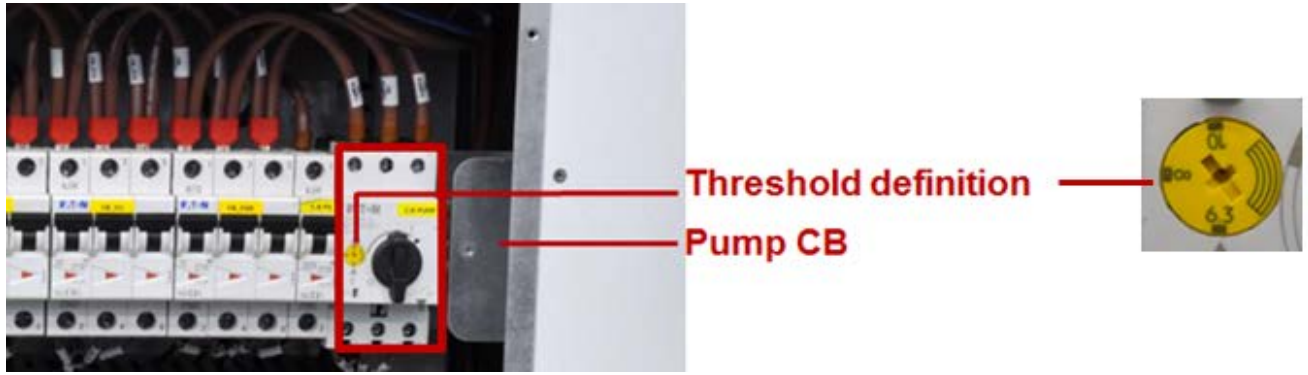
Water Pump CB threshold definitions are wrong

1. Open the circuit breaker flap cover on the cooler front.



Cooler circuit breaker flap open

2. Ensure that pump circuit breaker is switched on. If it is down, switch it on.



Water pump circuit breaker wrong threshold definition

3. If it switches down again, this indicates either a circuit break in the water pump itself or a wrong CB threshold definition.
   The CB threshold settings should be 6.3A for 50Hz and 8A for 60Hz. If not properly set, please readjust the values using a tiny screwdriver.
4. If the CB does not shut down, check the phase connection. The three phase LEDs on the cooler front should all be lit.
   If it is not, this might indicate that the phases are not correctly connected.

Electrical Phase is disconnected

1. The three LEDs on the cooler front indicate the status of the three AC electric phases (1,2,3).
   If one of these LEDs is not lit during the cooler operation. This might indicate either a faulty LED or a disconnection of the corresponding phase wire in the LEC cabinet.



Cooler phase LEDs

System OK	Lights in green when the Controller receives the correct current from the system
Water Sys OK	Lights in green when a Command was sent from the system to the pump
Water System Error	Lights in orange in case of error or warning

2. Check in the LEC the corresponding phase connection.
   Note that a disconnection of a phase wire at the Main level, prevents the machine from switching on.
3. If one of the LEDs does not light during operation while no error message appears, then the LED might be faulty. In such case, replace it.

External Water Valves are not fully open

1. Verify that the four external water valves on the lower right side of the cooler are fully open.

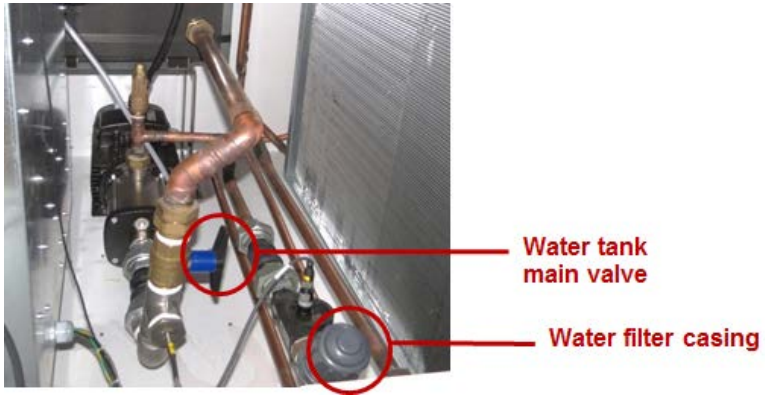


Unified Cooler Main water valves [fully closed]

2. If they are all fully open, then check the next possible cause - clogged water filter.

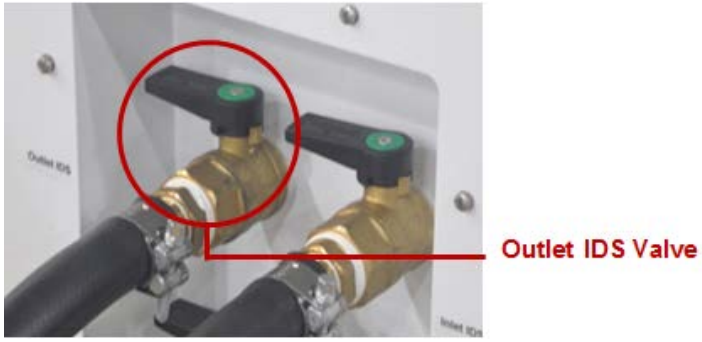
Water Filter is clogged

1. Open the right service cover.
2. Ensure that the water tank main valve is fully open



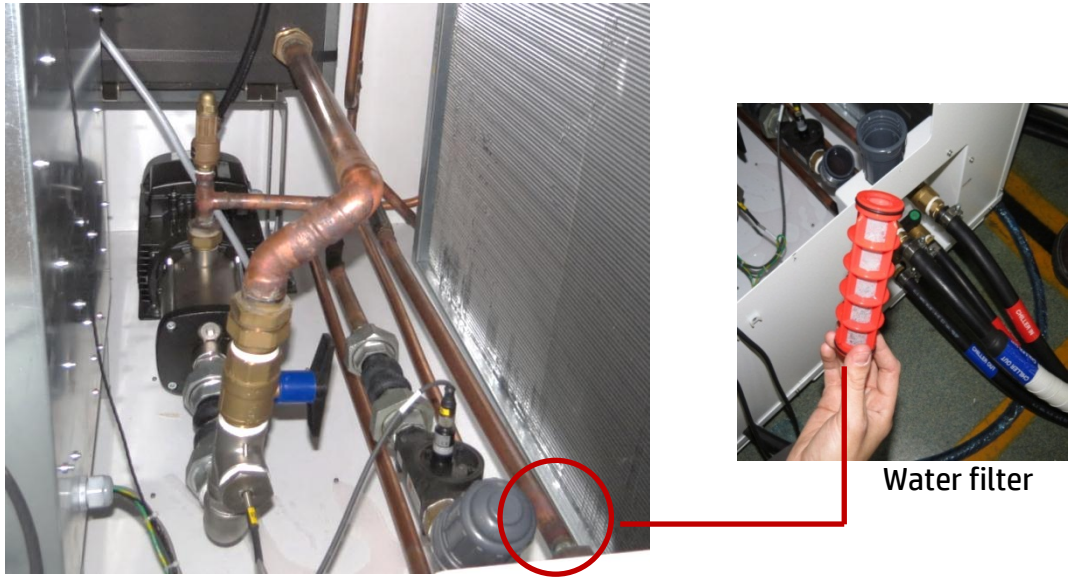
Cleaning cooler water filter

3. Close the water tank main valve inside the cooler (see figure above).
4. Close the water outlet IDS valve on the lower right side of the cooler.



Outlet and Inlet IDS main valves

5. Open the filter casing, remove the filter out and clean it under running water.



Cleaning a clogged water filter

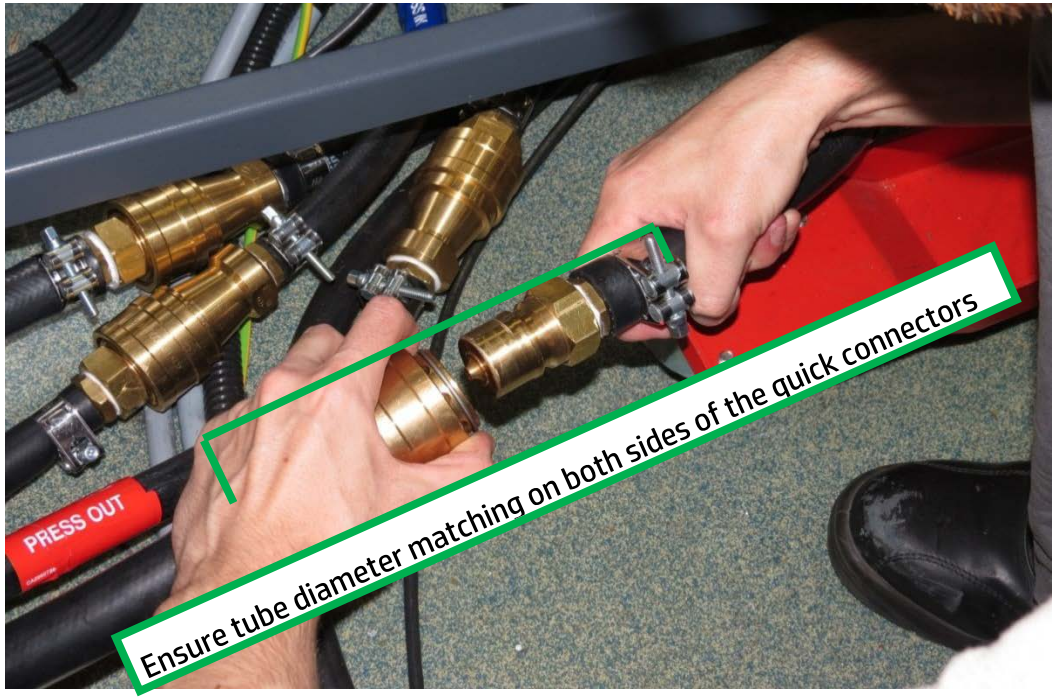
6. Return the filter to its place inside its casing and close it tightly to avoid leakage.
7. Reopen the two water valves you closed in step 3 and 4.
8. Click the Clear Error button in the application window.
   If the error message reappears, then move to the next step: Check if the water pipes quick connectors are all properly attached.
   There are 6 such connectors: 4 in the LEC area and 2 in the UV lamp area.

Water Pipe Quick Connectors are not properly attached

1. Check the two IDS and the two UV water pipes quick connectors near the LEC by disconnecting and reconnecting each of them.
2. Verify that the IDS and UV quick connectors were not mistakenly interchanged.

   Note: These quick connectors may interchange because they have the same male and female connections.

3. Ensure their correct matching by visually inspecting the pipe diameter on both sides of the quick connectors.



Checking and Matching the IDS and UV water quick connections.

4. If the error message reappears, then move to the next possible cause, inspecting the machine water pipes and tubes for obstruction or damage.

Water Pipes or Tubes are obstructed or damaged

There are three groups of water tubes which if obstructed could trigger the Critical flow rate error message:

- The black pipes from the cooler to the UV lamp and to the IDs
- The grey tubes in the UV housing neighborhood
- The blue and red tubes on the bridge

1. Check the black tubes between the cooler and the LEC and ensure that none of them is damaged or pressured by any heavy object.

   Note: It is recommended to secure these pipes with a protective hard cover.



Pipe protection

2. Check the red and blue tubes (12 and 8 mm) in the bridge area and ensure that none of them is broken or pressured. The most probable place to check such damage would be under the bridge.

WARNING! High Voltage System! Do not touch any wiring while system is UP!
From this stage and on, only an HP certified electrician may perform the tests.

Water Pipes are clogged

- TBD in next version.

Water Flow Meter Sensor is faulty

1. Disconnect the water flow meter sensor by twisting it counterclockwise and reconnect it by twisting it clockwise.

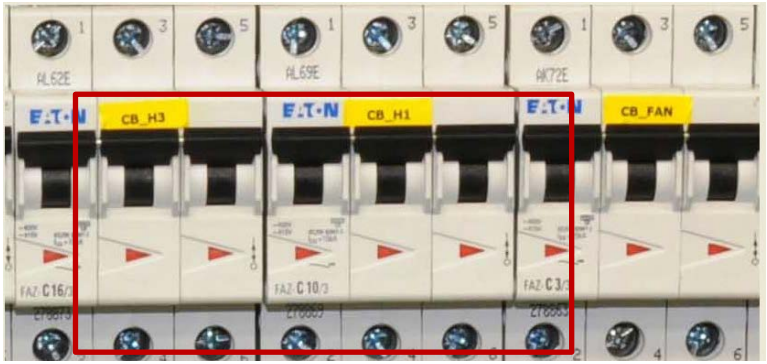


Water flow meter sensor

2. If faulty, start replacing the Hall sensor first. If this does not solve the problem, then change the entire sensor assembly.
3. The next step is to check the pump itself and its wiring by checking that it receives the correct current.

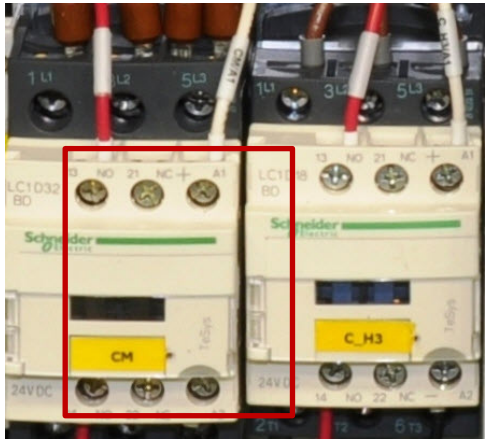
Faulty Pump or disconnected wire

1. To avoid causing any damage during the tests, shut down the two heaters' circuit breakers (CB_H3 & CB_H1) in the cooler electric panel.



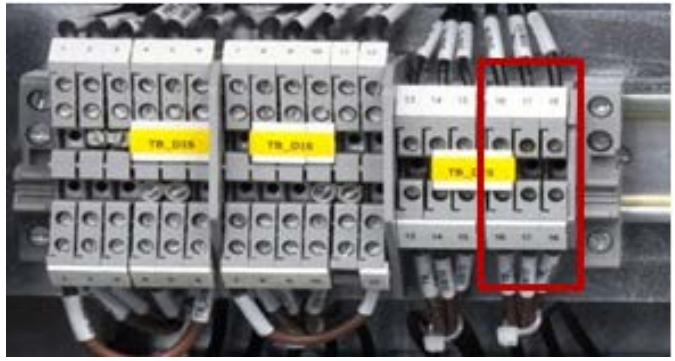
CB_H1 and CB_H3

2. Start the cooler using the Service Tools application.
3. Ensure that the main Contactor is ON (C_M) (retracted in).



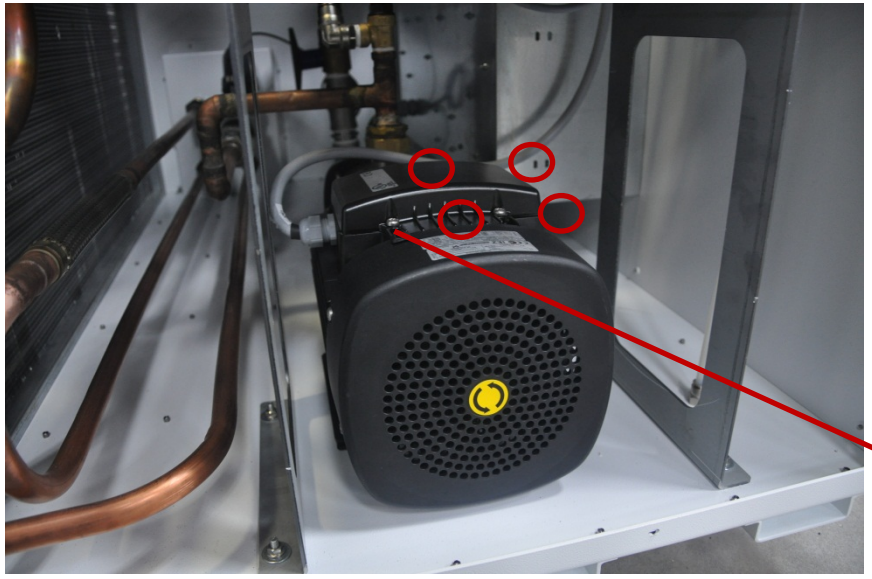
C_M Connector

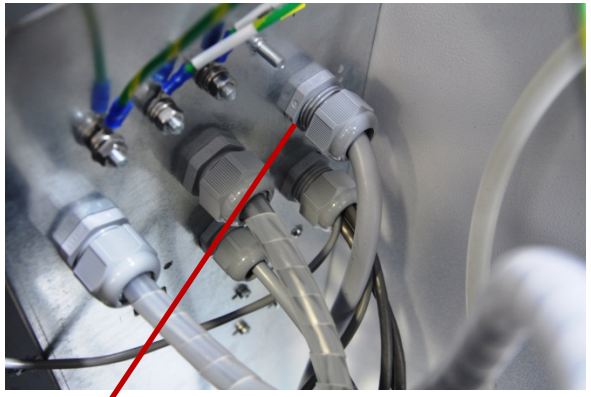
4. If the pump does not show that it started working, continue to the next step.
5. To ensure that the pump receives current, use an Ammeter to check its connections (TB_DIS 16,17,18).
   All three TBs should receive current.



TB_DIS 16, 17, 18

6. If TB_DIS 16, 17, 18 receive only voltage but no current, this indicates one of the two: wire disconnection or pump malfunction.
7. Start by checking the pump's wiring.
8. Open the cooler left cover by removing the screws securing it to the cooler casing.
9. Check the pump wiring connections.

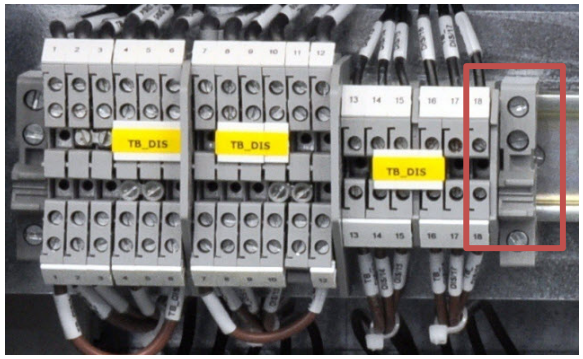




Motor Pump electric wire connectors

Water Pump motor electric connections

10. Check the two motor pump electric wire connectors.
    To access the wire connector attached to the motor side, unscrew the four screws described in the figure above.
11. If the pump wiring connections are ok, use a fluke tester to check if current arrives to TB_DIS 16, 17 and 18.



12. If no current arrives to TB_DIS 16, 17 1nd 18, this might indicate that the motor pump itself is faulty. In this case, replace the motor pump.
13. If all these steps did not solve the problem, contact your HP regional specialist.