Field Repair Procedure

Replacement, Cooling Module, Coolant Pump

DT00249 Rev A

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Revisions

Revision	Change Description	Changed By/Date
A	New Release	LG 5/3/23

Notice

PPE

Use personal protective equipment (PPE) including but not limited to gloves and Safety Goggles.
Follow all site-specific Safety rules and recommendations.

Why are you doing this operation?

Symptoms

See DT00245, Cooling Module Troubleshooting

Failed Tests

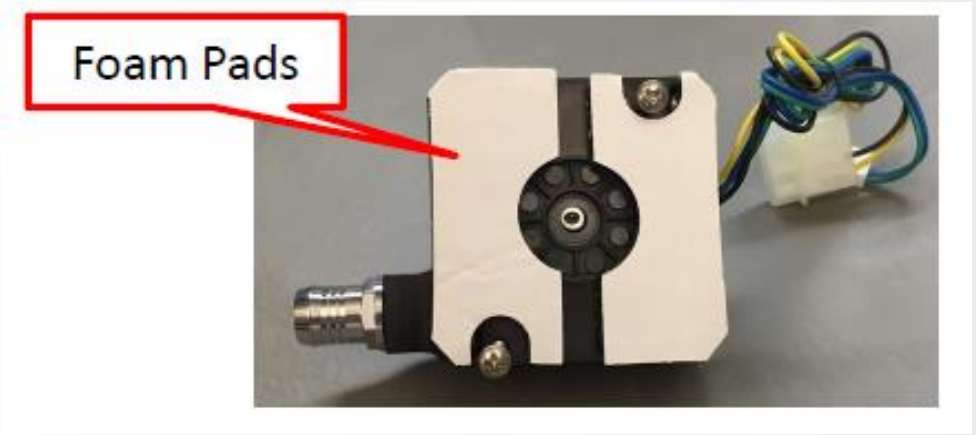
- Cooling pump is loud or nonresponsive with a good bottom board and proper connectivity.

Special Tools Required

1	Hose and Tube Pinch-Off Pliers. McMaster-Carr 5774A21 or equivalent. Quantity 2. In a pinch, two pairs of long nose vice grips with padding around the jaws can be used.
2	Adjustable pliers, Quantity 1

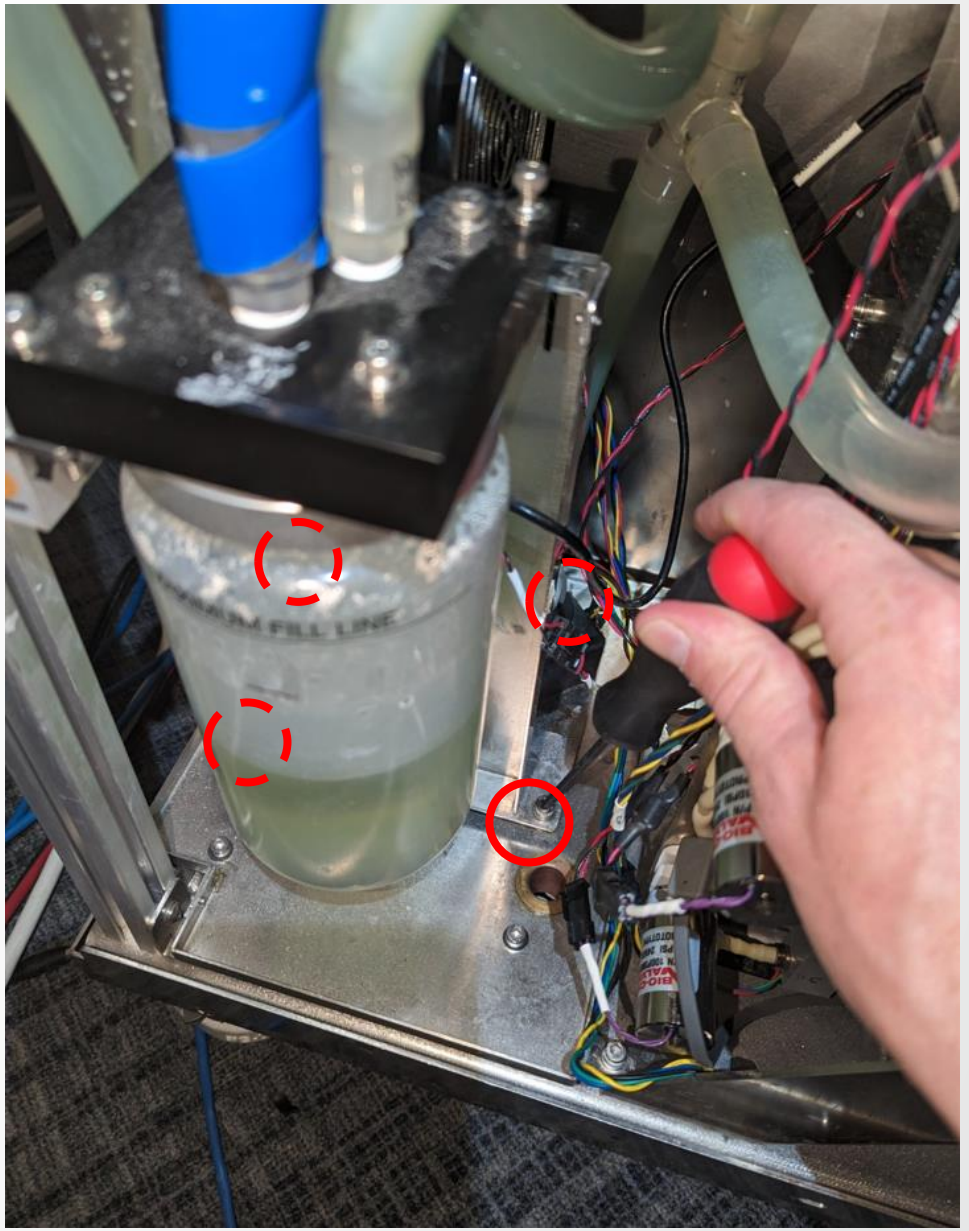
PS00306

1	Gather a replacement pump **PS00306.** Leave the paper backing on the foam pads.



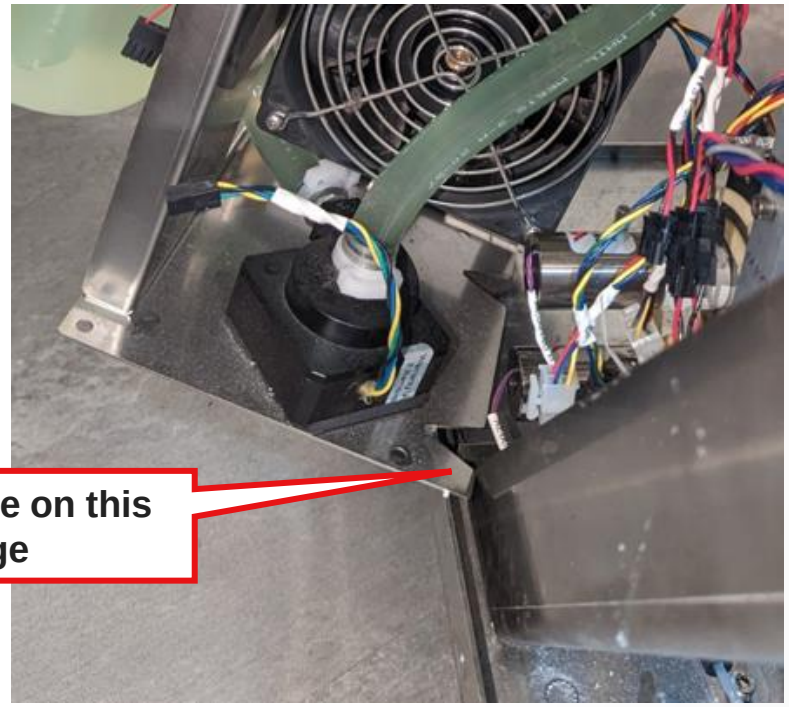
Remove Module

1	Turn off instrument power chassis
2	Remove lower left and lower rear cover
3	Using a 4mm ball head driver, remove four M4 socket head cap screws to disconnect the cooling module from the cooling module drip pan.
4	Disconnect all cooling module electrical connections from the bottom board: - Fans - Pump - Load Cell - LED



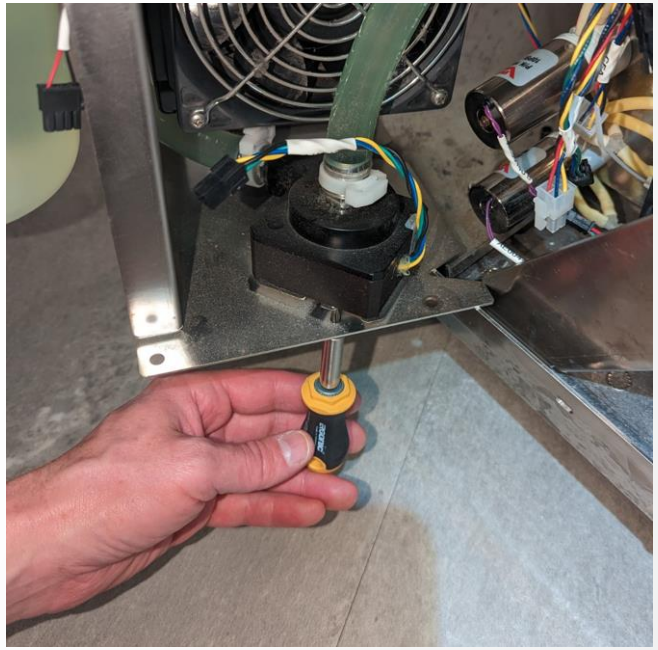
Place Module on Covers Bracket

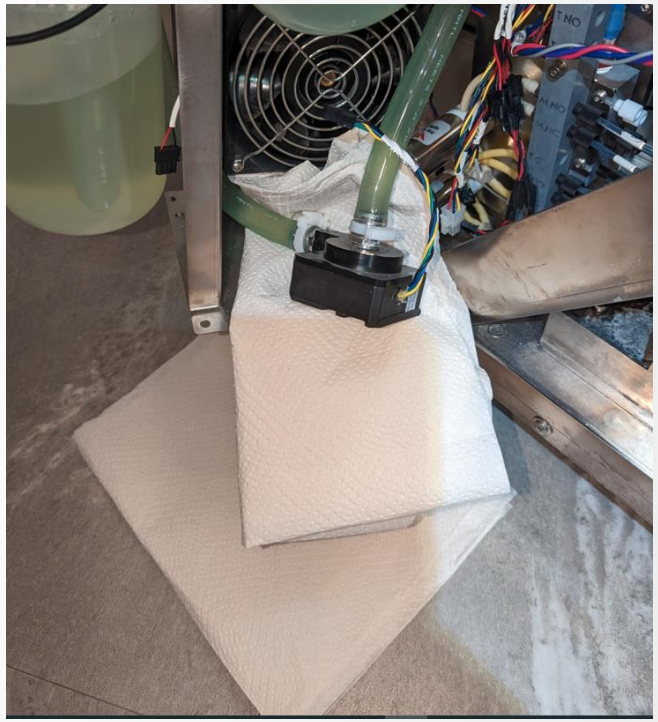
1	Carefully manipulate the tubing, cables, and cooling module to pull the cooling module out to the left side of the instrument. If you are careful, you can do this without disconnecting the tubing from distribution and return manifolds
2	Set the frame of the cooling module on the edge cover sheet metal bracket. The module should be able to safely rest here.



Remove Pump

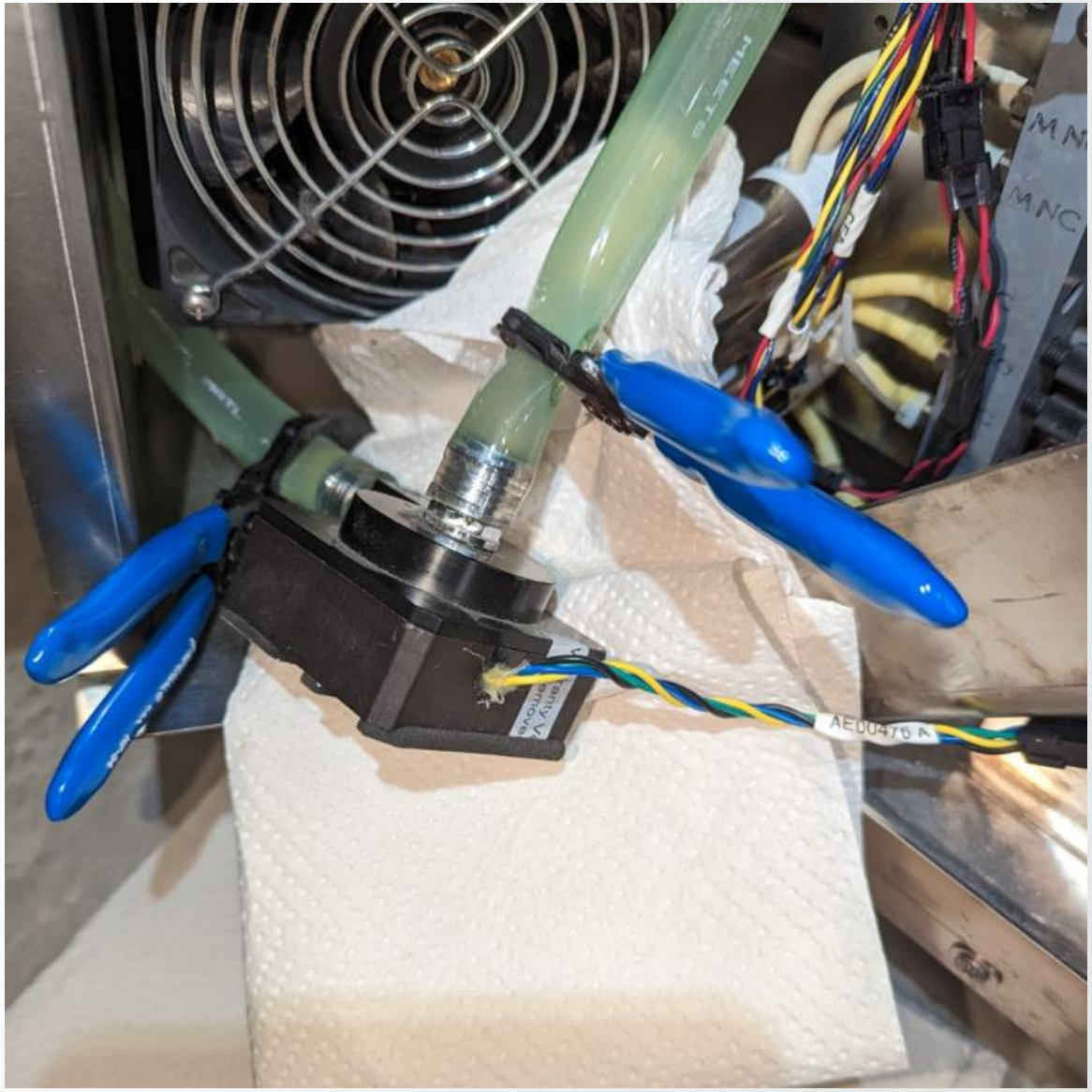
1	Use a Phillips head screwdriver to remove two screws that retain the pump to the bottom of the module
2	Lay down lots of paper towels on the laboratory floor and around the pump.





Remove Pump

1	Add two hose pinch off-pliers to the two locations shown.
2	Using pliers, remove and retain the two hose clamps.



Replace Pump

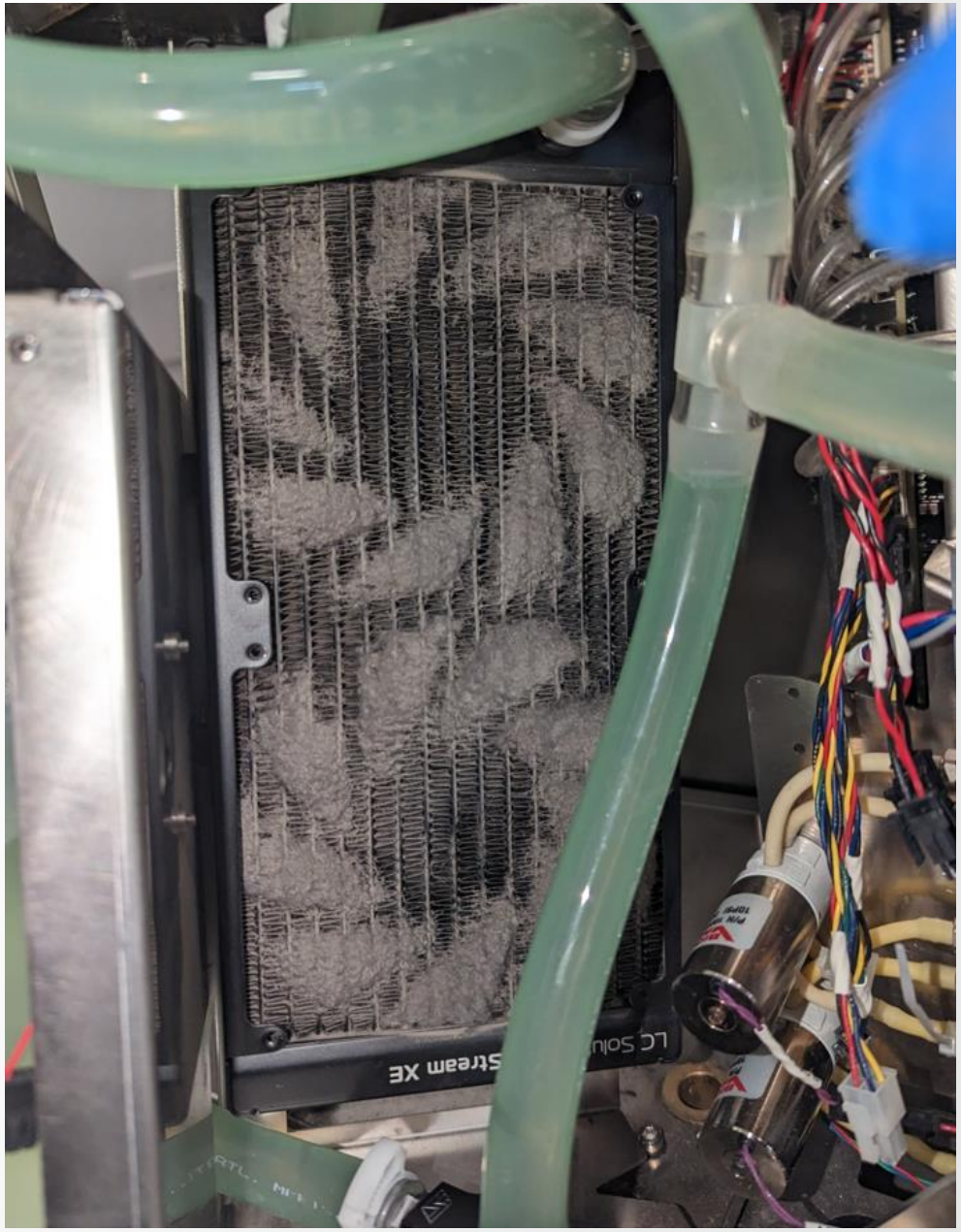
1	Remove the old pump
2	Install new pump into the existing tubing by installing the barbed fittings into the tubing. Ensure that the inlet of the pump (center) connects to the reservoir.
3	Replace the plastic hose clamps. Tighten with a pair of adjustable pliers

Replace Pump

1	Remove the pinch-off pliers.
2	Where the pliers had compressed the tubing, use your fingers to massage the tubing to restore the tubing to its undeformed shape.

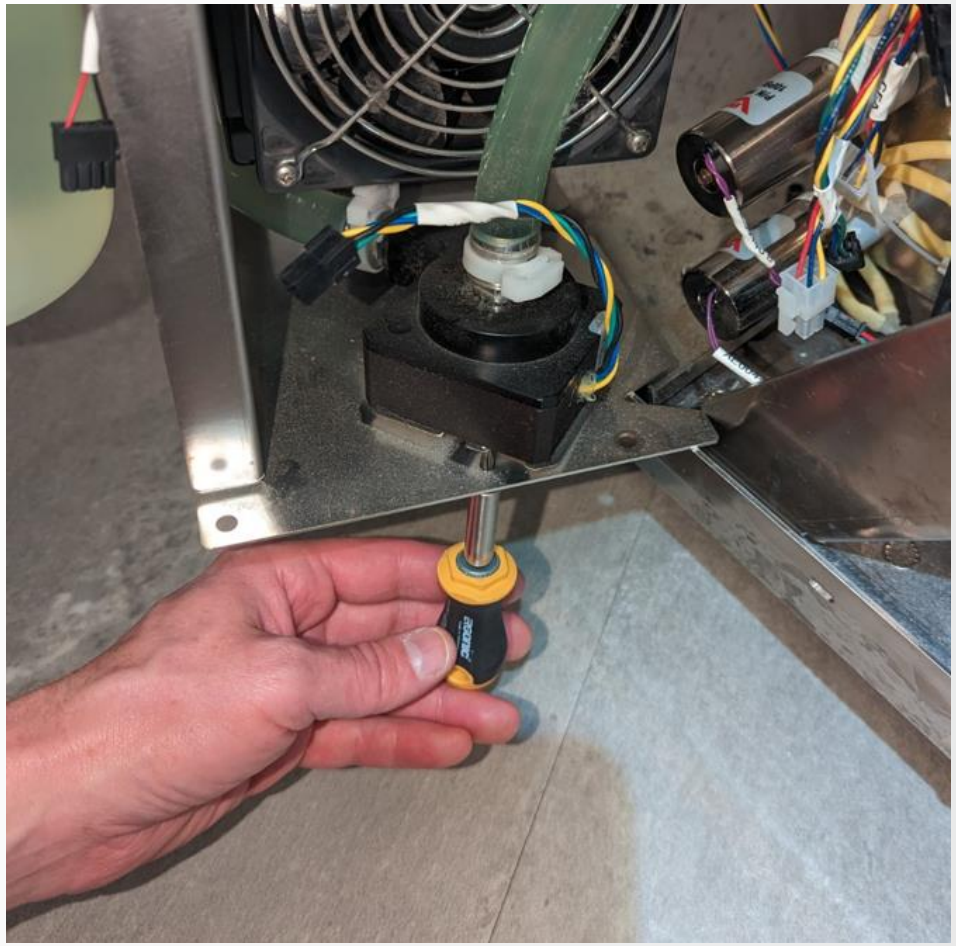
Check for Dust

1	While the module is removed and you have good access, visually inspect the fans and radiator surface. Dust will accumulate between the fans and the radiator. If these parts appear to be very dusty, remove the fans and remove the dust with a soft brush or compressed air.



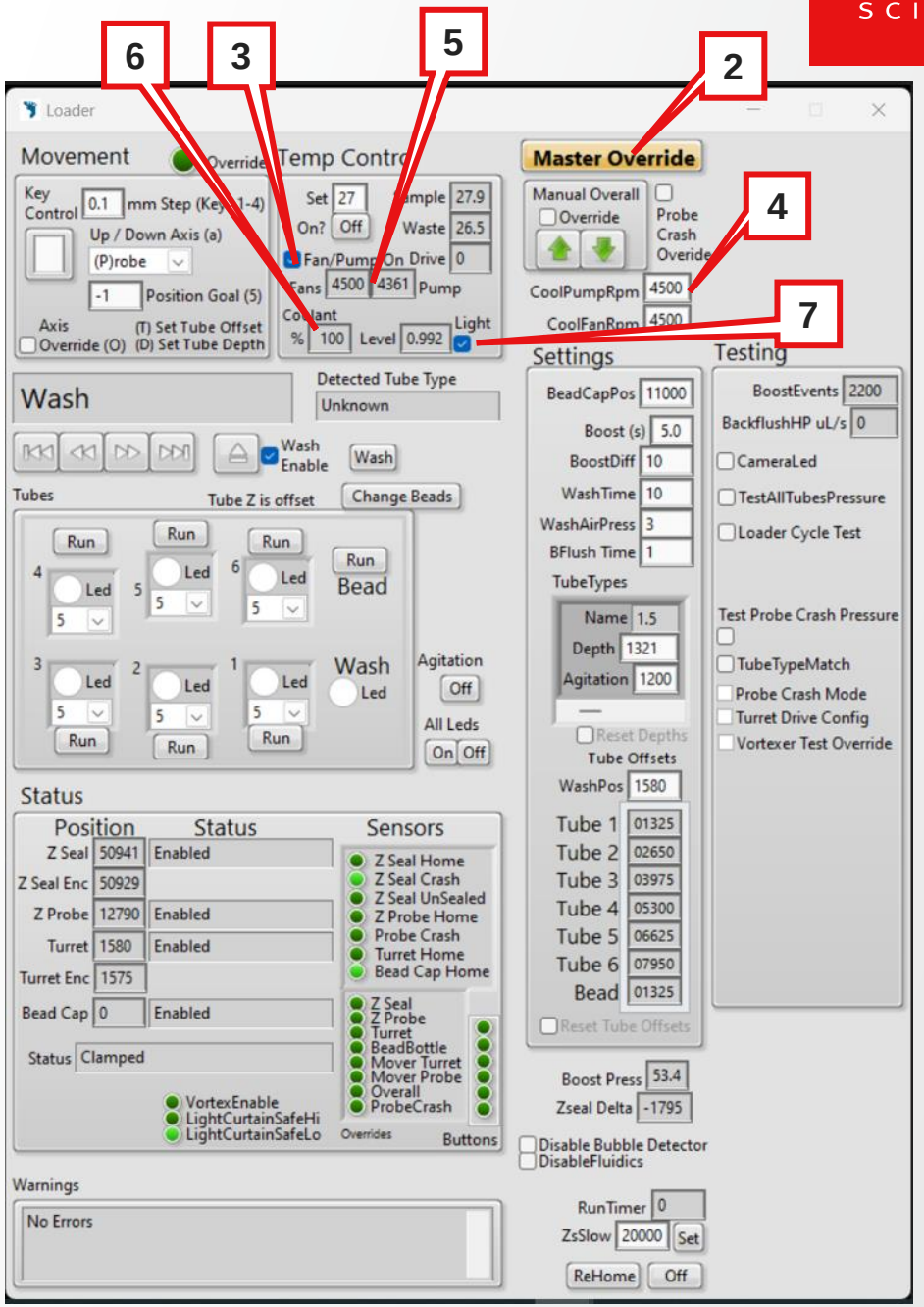
Reinstall Pump

1	Replace the screws that attach the pump to the cooling module frame.
2	Carefully replace the module into the instrument.
3	Fasten the four M4 screws that were removed earlier.
4	Plug all the electrical connections back in.
5	Follow the coolant fill procedure DT00186 to replace any lost coolant.



Confirm Operation

1	Open the service tool, Loader Panel.
2	Turn on the Master Override
3	Check the checkbox shown to manually control the pump and fan speeds.
4	Set the pump and fan RPM to 4500.
5	Confirm that the measured RPM roughly matches the input
6	Confirm that the coolant level indicator roughly matches the liquid level. If not, recalibrate according to procedure DT00251.
7	Confirm that the LED light is working.
8	Remove the overrides when these checks are complete.



Wrap Up

1	Replace the covers
2	Procedure complete