

Front-End Water Circuit Troubleshooting Procedure

Follow the steps listed below in order to determine the cause of a problem with a FE-EPS water circuit and actions to correct it. The problem will, under most circumstances, have caused a trip of the beam. If the problem is not remedied after following this procedure, notify the system engineer.

Even if the cause of the trouble is found, complete all listed steps so no other issues are ignored. Experience has shown that more than one problem can occur simultaneously.

1. Using trend data available on OAGapps and on ME Group web site check trend data for the problem circuit and for other front-end components of the same beamline.
2. If all components of the same beamline indicate flow drop at the same time as the components that tripped the beam - problem is with secondary water system. See [secondary water system troubleshooting procedure](#). If flow problem is only with one component see **step 3**. If trend data indicates steadily dropping or erratic value problem is likely with either, Love controller, differential pressure transmitter, control wiring or flow circuit blockage.
3. Using a variable resistor intended for such a purpose, check that the Love controller display for the water circuit is functioning properly. The resistor should be placed at 0%, 50%, and 100% positions. The full scale of all Love controllers is 50 in WC. The corresponding Love controller displays should read 0 (0% of full scale), 25 (50% of full scale), and 50 (100% of full scale), respectively, when the resistor value is varied among the 0%, 50%, and 100% positions
4. If Love controller does not indicate the proper values within +/-1 in WC, request that the floor coordinator responsible contact the appropriate on-call EPS personnel to address the faulty Love controller.
5. If Love controller check indicates no failure and trend data is showing steadily dropping or erratic value replace differential pressure transmitter.
6. If trend data indicates momentary drop in value contact SI group to check wiring.
7. If problem still persists it will be necessary to access the tunnel to verify flow with portable flow meter. If readings are confirmed to match those made with Love controller/differential pressure transmitter component will have to be flushed as blockage is likely cause of flow drop.