

Warming U-Tubes

The purpose of warming a U-tube or Z-tube on an operating cryogenics system would be to free a blockage of flow due to contaminants.

1. Power down the solenoid to below 3000 amps.
2. Troubleshoot the blockage of flow to determine as close as possible where the blockage is located.
3. If it is determined to be a U-tube the quickest way to warm it up is to bleed up the insulating vacuum space.
4. If the U-tube is flowing cold (liquid or 2 phase helium) back-fill the vacuum space with helium gas either from a bottle or the warm gas line from the system compressor.
5. Once the vacuum is let up to equal atmospheric pressure warm the outer jacket with heat guns and or heat tape.
6. Monitor the pressures in the system around the zone with the plug or restriction to determine if this procedure is having a positive effect.
7. It is helpful if possible to stop flow through this U-tube (even briefly) during the warming process.
8. Once it is determined that helium can be flowed through the U-tube stop warming and using a pump pull a good vacuum on the insulating space.
9. Once the vacuum is below 100 microns continue normal operations.