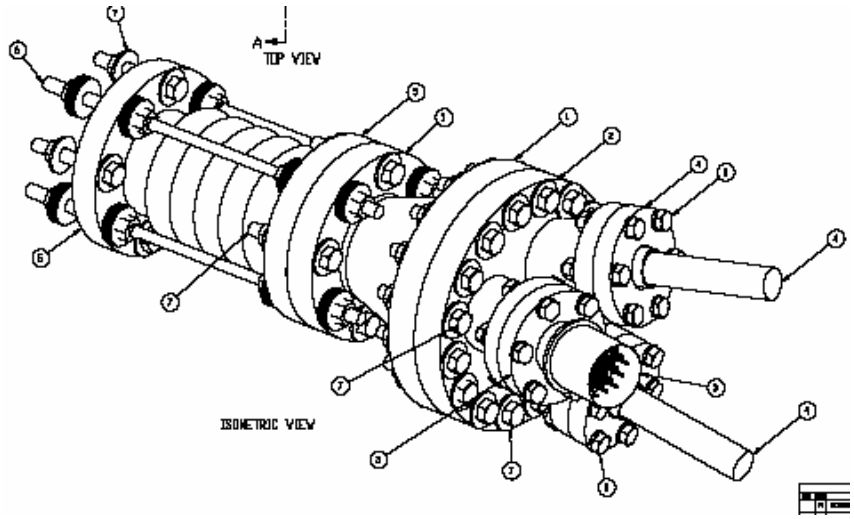
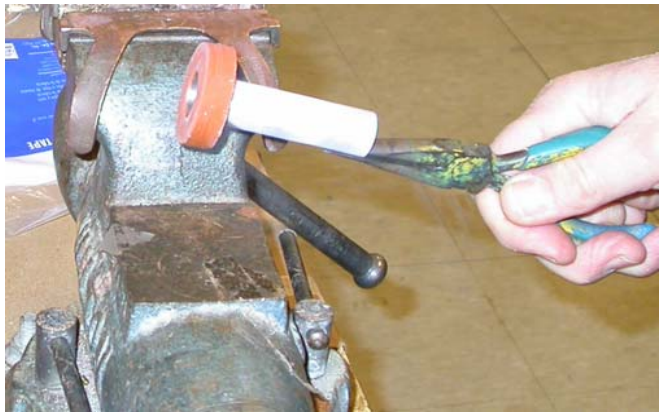
Joint and Conflat Leakage, March 2007 Tests
P. Titus, MIT (Mar. 7,2007)

- Problems/Observations:
- “Large” LN2 Leaks were evident - but Mercury tests were not impacted.
- One major leak was from the LN2 feed closure valve that was “found equipment”
- Cobbled together cryogenic system does not represent the CERN magnet deliverables.
- Terminal seals leaked.
- “Quick Fill” affected Conflat seal. Leaks were detected from the center terminal assembly.

Joint and Conflat Leakage, March 2007 Tests

- During March tests last year there was a small leak in one of the terminals. Another “washer” of silicon rubber was added. This was compressed at RT and did not leak during March 2007 tests.





LN2 Dunk Test: Feb 9 2006 The gland for the power lead did not shatter – but it was rigid.

Proposed Remedial Actions:

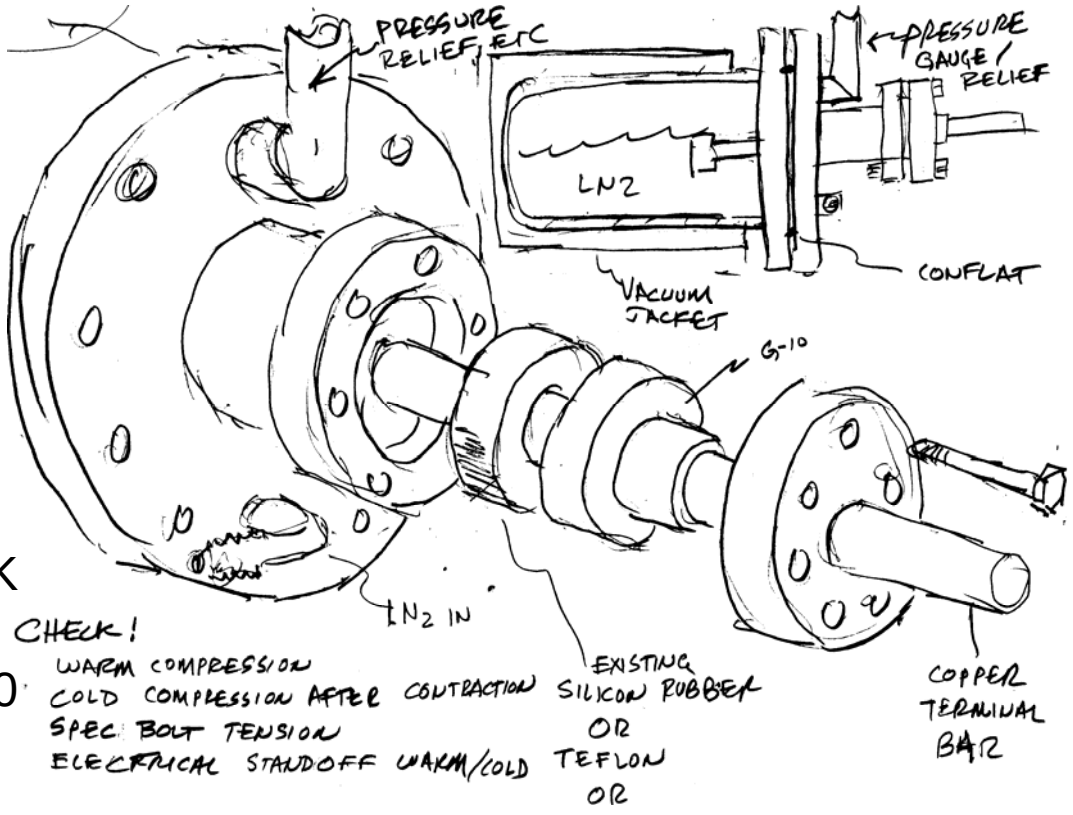
Further qualify gland material and tightening procedure in a small test fixture/tank.

Check existing and alternative materials, RT vs. cold compression, cycling reliability, Conflat thermal shock.

Implement any needed improvements in magnet, at CERN.

Stick to the Slow cool from RT and 80K to 110K cycling. Avoid fast cooldowns from above 140K

MIT to Pressurize Magnet to 100 psi cold and 250 psi at RT (Duplicate CVIP qualification) Acceptance based on holding pressure over time.



Proposed CERN Acceptance

- Use dependant on acceptance of small tank qualification.
- Duplicate RT 250 psi Pressure test above ground. Acceptance based on time to hold pressure (TBD).
- Quantify Acceptable leak rate based on tunnel Specs HVAC etc. – This experiment should not be held to the same reliability standards as dipoles.
- Do pressure test in tunnel at temperature and with as high a pressure as the CERN cryo sytem can provide – Up to 250 psi, before N2 activation issues. Acceptance based on no visible LN2 leaks, and time to hold pressure as determined from tunnel requirements.