



LIGO Laboratory / LIGO Scientific Collaboration

LIGO-E1400245-v3

Advanced LIGO

4 June 2014

RFPD Welded Enclosure Test and Bake Procedure

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Distribution of this document:
Advanced LIGO Project

This is an internal working note
of the LIGO Laboratory.

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1. Materials Used

- a. Alpha 10 wipes
- b. 1% solution of Liqui-Nox in deionized water
- c. High purity isopropyl alcohol
- d. Clean frock
- e. Clean room gloves
- f. Helium leak detector

2. Required Safety

- a. Eye wear
- b. Clean room gloves
- c. Frock
- d. All cleaning to be done in a fume hood

3. Cleaning Procedure

- a. Before any cleaning the welded enclosure is inspected for visual defects.
- b. Using a helium leak detector check for Leaks around the connectors on the enclosure. If no leak detector is on hand, use an Alpha-10 wipe and isopropyl alcohol to gently wipe down the surface of the RFPD before putting the RFPD into a chamber. Do a pressure vs. time scan for 1 hour or more looking for He leaks.
- c. If there are no leaks, begin cleaning the Enclosure using 1% Liqui-Nox in deionized water and scrubbing with Alpha 10 wipes by hand only. (Do not use immersion sonic cleaning)
- d. Rinse with deionized water for 5 minutes.
- e. Scrub using an alpha 10 wipes and Isopropyl alcohol (Do not submerge).
- f. Alcohol and rinse for 2 minutes.
- g. Allow to dry for a minimum of 4 hours.

4. Testing before baking

- a. If the enclosure passed the helium leak Detector Check (or pressure vs. time scan) before cleaning, proceed with the next step.
- b. Using the male connectors and a diode, insert and remove the diode into the diode socket 10 times.
- c. Check each socket for leaks with a helium leak detector (or pressure vs. time scan for 1 hour or more).

5. Bake Procedure

- a. Use a vacuum bake oven that has a valve capable of isolating all pumps while doing a pressure verses time RGA Scan for 1 hour or more.
- b. Bake at 120C for 48 Hours.
- c. Perform a calibration scan on the oven contents.
- d. Perform an analog scan of the oven contents.
- e. Close off all pumps leaving the RGA open to the oven contents and do a pressure vs. time scan for 1 hour.
- f. Resume pumping on the oven and RGA. Leave the enclosure in the oven under vacuum until scans are approved in ICS.