

**END CAP CALORIMETER**

ANNULAR SPACE PIPE  
CLEANING PROCEDURES

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D-ZERO ENGINEERING NOTE # 3740.220-EN-271

PROCEDURE FOR CLEANING EC PIPING AT LAB A

1.0 Pipes to be cleaned at Lab A include:

- A. Argon gas relief valve pipe
- B. Argon gas rupture disc pipe
- C. Argon gas supply pipe
- D. Nitrogen condensor coil exhaust pipe
- E. Nitrogen condensor coil cooldown pipe - two legs
- F. Nitrogen condensor coil operating pipe

- G. Thermal siphon filter tubing - four tubes
- H. Sample line filter tubing - four tubes
- I. Vapor pressure bulb tubing - two tubes
- J. N18P tube

- K. Argon drain/fill cold valve line

2.0 Wear safety goggles.

3.0 Group 1, A thru F

3.1 Under experienced pipe cleaners guidance, attach pipe cleaning cart to each end of pipe.

3.2 Circulate micro clean cleaning solution through pipe for at least four hours. Inspect filter and save. Drain solution from cleaning cart, rinse and add distilled water.

3.3 Rinse pipe with distilled water until sudsing ceases and filter inspection shows pipe is clean.

3.4 Disconnect pipe cleaning cart from pipe.

3.5 Dry out pipe by using a clean flexible tube attached to a vacuum to suck excess water out of low points of the piping.

3.6 Blow hot, dry nitrogen gas through the pipe to finish drying.  
For final check of dryness pull a vacuum on the pipe to less than ten microns.

3.7 Cover ends of the pipe to keep the pipe clean. Tag the pipe "clean" and date it.

3.8 Continue steps 3.1 thru 3.7 until all pipes A thru F are done.

4.0 Group 2, G thru J

4.1 Blow nitrogen/ethyl alcohol thru the tube for three minutes.

4.2 After three minutes stop flow.

4.3 Inspect the inside of the exhaust end of the tube for particles.  
Remove any particles that are seen.

4.4 Reverse the direction of flow and repeat steps 4.1 thru 4.3.

- 4.5 Blow dry clean air or nitrogen thru tube to remove alcohol.
- 4.6 Cover tube/port ends and tag 'clean' and date it.
- 4.7 Complete steps 4.1 through 4.6 until all tubes are done.
- 5.0 Group 3, K
- 5.1 Cold valve should not be installed during drain pipe cleaning.
- 5.2 Attach pipe cleaning cart to drain pipe and cold valve inlet.
- 5.3 Circulate micro clean cleaning solution through pipe for at least four hours. Inspect filter and save. Drain solution from cleaning cart, rinse and add distilled water.
- 5.4 Rinse pipe with distilled water until sudsing ceases and filter inspection shows pipe is clean.
- 5.5 Disconnect pipe cleaning cart from pipe.
- 5.6 Dry out pipe by using a clean flexible tube attached to a vacuum to suck excess water out of low points of the piping.
- 5.7 Blow hot, dry nitrogen gas through the pipe to finish drying.  
For final check of dryness pull a vacuum on the pipe to less than ten microns.
- 5.8 Cleaned cold valve can then be installed. Cover weir pipe to keep cold valve inlet clean.
- 5.9 Cover drain line stub and tag "clean" and date.