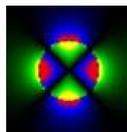


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Magnet Division Procedure

Proc. No.: SMD-BEPC-3004

Revision: A



Superconducting
Magnet Division

BEPC-II Cold Mass Assembly

- Prepared by: [Signature on File](#)_____
- Cognizant Engineer: [Signature on File](#)_____
- Production Representative: [Signature on File](#)_____
- Electrical Engineer: [Signature on File](#)_____
- Production Section Head: [Signature on File](#)_____
- Q. A. Approval: [Signature on File](#)_____
- ES&H Review: [Signature on File](#)_____

Revision History

Rev A: Initial Release

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SMD-BEPC-3004A
Page 1 of 5

1. Scope:

This MAP describes the procedure used to produce BEPC-II Cold Mass Assembly.

2. Applicable Documents:

RHIC-MAG-Q-1000	Control of Measurement Test Equipment
RHIC-MAG-Q-1004	Discrepancy Reporting Procedure
CR-E-4703-0041	Leak Check Specification
SMD-BEPC-3006	BEPC-II Magnet Assembly Pressure Leak Check

2.1 Safety Precautions:

3. Requirements:

All welding must be performed by welders qualified I.A.W. with ASME Section IX.

3.1 Material/Equipment

None

3.2 Safety Precautions

3.2.1 Operators shall wear safety glasses with side shields, or goggles.

3.2.2 Operators shall be trained by their cognizant technical supervisor and qualified in the operation of the required welding equipment.

3.2.3 No welding shall take place unless all welding screens are in place around the welding station, and all personnel not directly involved with the welding process are outside the screens. Any personnel inside the screens shall wear protective gear to prevent eye injury, and shall be clothed to prevent burns caused by intense ultra-violet light.

3.2.4 All lifting and handling operation requiring overhead crane operations shall be performed by holders of valid Safety Awareness Certificates and instructed in the use of the lifting device by the Cognizant Engineer or Technical Supervisor.

3.2.5 All relief devices and gauges used for pressure tests shall meet the requirements of ES&H Standard 1.4.1.

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SMD-BEPC-3004A
Page 2 of 5

- 4. Procedure
- 4.1 Wiring Box

NOTE

Isolate lead ends from ground during welding

- 4.1.1 Make sure all wires are clear of the area where the wiring box tube is to be welded.
- 4.1.2 Protect the lead end of the coils with heavy Nomex
- 4.1.3 Weld on the wiring box tube (21010052). Periodically cool flange with air.
- 4.1.4 Position and weld wiring box assembly (21010003).
- 4.2 Wire Routing
 - 4.2.1 Bundle and route wires around the support tube and out into the wiring box.
 - 4.2.2 Cover lead bundle with heat shrink Tefzel where it passes through the flange.
 - 4.2.3 Wrap the above area with a piece of .005” Nomex and secure in place with lacing cord.
 - 4.2.4 Make sure all wires are secured to the support tube with lacing cord.
- 4.3 Containment Aligning and Welding
 - 4.3.1 Temporarily install the outer He containment tube into its matching cryostat. Hold keys in with band clamps.

NOTE

Cryostat and front flange must be already welded together using fixture #25-1939.01

- 4.3.2 Slide coil assembly (21010009) into the helium containment.
- 4.3.3 Set this assembly on V-blocks (#25-1939.15) which in turn are put on the granite table in the warm test area.

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SMD-BEPC-3004A

Page 3 of 5

- 4.3.4 Placing the inclinometer on the survey platform on the cryostat, level the cryostat and strap it down to the granite table.
- 4.3.5 Record the exact inclinometer reading.
- 4.3.6 With the coil assembly in roughly the right rotational orientation install fixture (#25-1939.02) to the end flange.
- 4.3.7 Using the inclinometer, set the coil assembly level.

NOTE

Next steps must be done in conjunction with engineering and warm test personnel.

- 4.3.8 Warm measure magnetic field angle.
- 4.3.9 Using the micrometers in the fixture, rotate the coil assembly to align it properly with the cryostat. Cognizant engineer will determine this amount based on magnetic data. Verify by inclinometer measurement.
- 4.3.10 Repeat steps 4.3.8 and 4.3.9 until proper orientation is verified.

NOTE

Isolate lead ends from ground during welding

- 4.3.11 Tack weld coil assembly to the He containment on both ends. After weld has cooled, verify alignment with inclinometer.
- 4.3.12 Install inner He containment tube 21010017 and weld in place. Periodically cool flanges with air.
- 4.3.13 Finish welding outer He containment, again periodically cooling flanges with air.
- 4.3.14 Weld on Helium supply hose (21010080).
- 4.3.15 Call for a certified weld inspector to inspect and signoff on welds.
- 4.3.16 Pressure leak check helium containment assembly I.A.W. procedure [SMD-BEPC-3006](#).

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SMD-BEPC-3004A
Page 4 of 5

4.4 Electrical Checks

4.4.1 Perform Electrical Checks per Appendix 1

5. Quality Assurance Provisions:

5.1 The Quality Assurance provisions of this procedure require that the technician shall be responsible for performing all assembly operations in compliance with the procedural instructions contained herein and the recording of the results on the production traveler.

5.2 The technician is responsible for notifying the technical supervisor and/or the cognizant engineer of any discrepancies occurring during the performance of this procedure. All discrepancies shall be identified and reported in accordance with RHIC- MAG-Q-1004.

5.3 Measuring and test equipment used for this procedure shall contain a valid calibration label in accordance with RHIC-MAG-Q-1000.

6. Preparation for Delivery:

N/A

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SMD-BEPC-3004A
Page 5 of 5

Appendix 1
Electrical Checks

Perform Electrical Checks of Spot Heaters, Coils and Taps in each layer. Record data.

- Main Quad
- Main Dipole
- Skew Dipole
- Skew Quad
- Solenoid

Cognizant Electrical Engineer to signoff “OK to Proceed”