

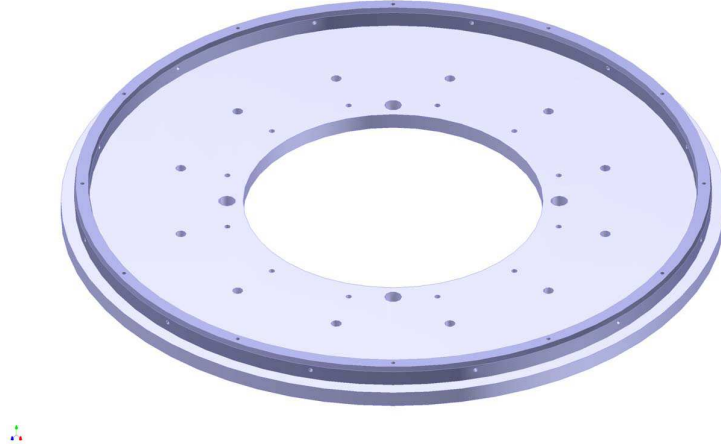


Figure 1: Bottom plate with locating ring for the lead shield (stand not shown).

ASSEMBLY INSTRUCTIONS FOR HALF-SIZE MAGNET PACKAGE.

1. Start with the bottom plate resting on a stand (see Fig. 1). The bottom plate already has the lead shield locating ring.

Action item

- Axial clamping of RF coils, B_0 coil.
- Relative orientation of B_0 coil and RF coils.

2. Place the B_0 coil on the bottom plate (see Fig. 2). The B_0 coil will be transported using the shop lifter. Fix the B_0 coil to the bottom plate using B_0 locating rings.

Action item

- Upper positioning fixture for B_0 coil.

3. Slide the vylon tube/ferromagnetic shield in place (see Figs. 3 and 4). Fix the vylon tube/ferromagnetic shield to the bottom plate using the lead shield locating ring.

Action item

- Upper positioning fixture for vylon tube.

4. Slide the G10 tube/lead shield in place. The G10 tube/lead shield already has the lower and upper relative positioning fixtures (see Fig. 5). Fix the lead shield to the bottom plate using the lead shield locating ring.

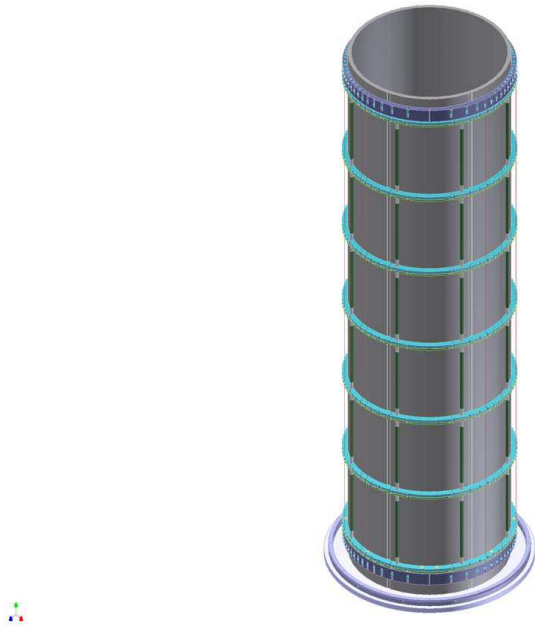


Figure 2: B_0 magnet on top of bottom plate.



Figure 3: Vylon tube on bottom plate.



Figure 4: Vylon tube on bottom plate zoom in.

Action item

- Upper and lower positioning fixtures for lead shield.
5. Slide the LHe shield into place. Fasten the LHe shield to the bottom plate (See Fig. 6). This completes phase 1.
 6. Leave the items in phase 1 in place. Place the liquid nitrogen shield on shop lifter (not shown in Fig. 7). Bring in the top plate with the fasteners (see Fig. 8 and Fig. 9). Attach the copper coated G10 baffles to the top plate. Tie the top plate with the baffles to the LN shield. This distance between the top plate and the nitrogen shield should be around 5". Attach the G10 support tubes (see Fig. 10). Finally, bring in the warm bore and attach it to the top plate. Attach the G10 rods. This completes phase 2.
 7. Insert the assembly of phase 2 into the assembly of phase 1. Secure the G10 support tubes to the bottom plate. Use the plastic guiding cylinders to match the G10 rods with the corresponding holes on the bottom plate. See Figs. 11, 12, 13, and 14.
 8. Attach cryogenic fluids feedthroughs. Tighten the VCR connectors between the feedthroughs and the copper tubing. See Fig 15. This finishes phase 3.



Figure 5: Lead shield on bottom plate.

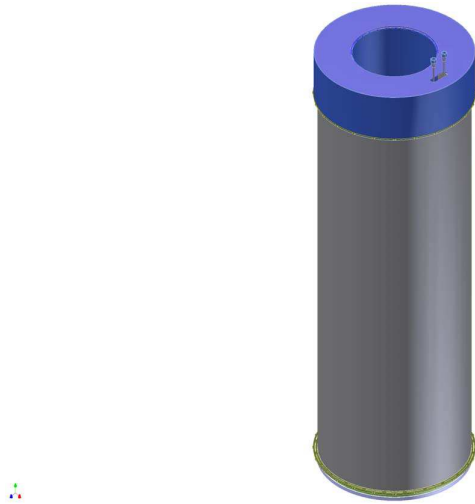


Figure 6: Top section of LHe shield connected to main body.

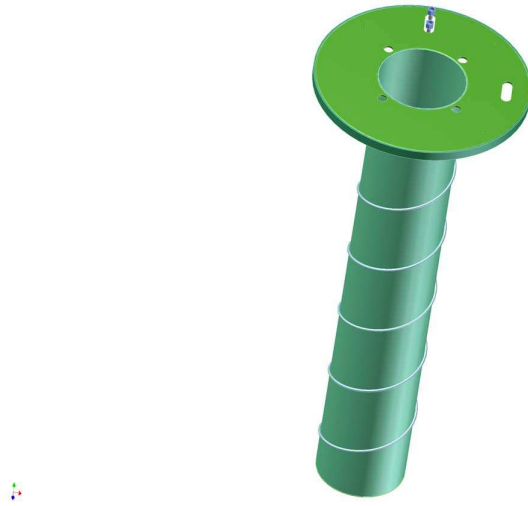


Figure 7: Liquid nitrogen shield.



Figure 8: Top flange and liquid nitrogen shield (baffles not shown).

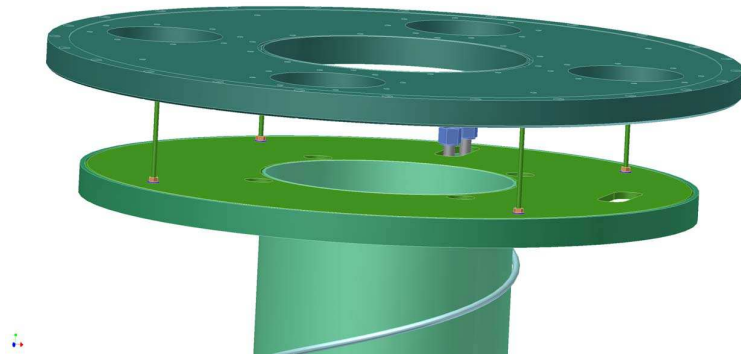


Figure 9: Side view of top flange and liquid nitrogen shield (baffles not shown).

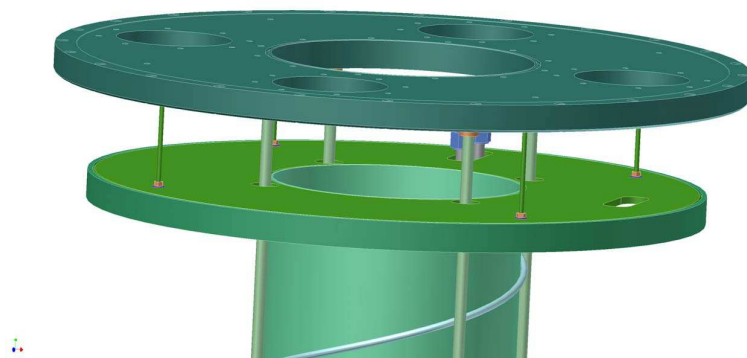


Figure 10: Top flange, warm bore, G10, and liquid nitrogen shield.



Figure 11: Phase 1 and phase 2 items coupled (see text for explanation).

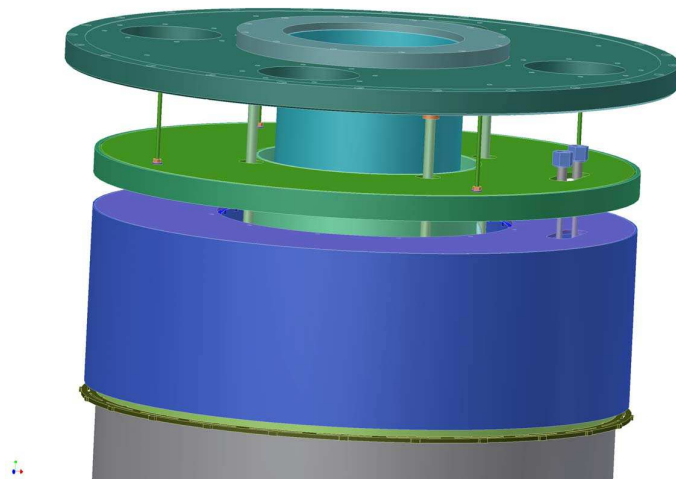


Figure 12: Phase 1 and phase 2 items already coupled (see text for explanation).

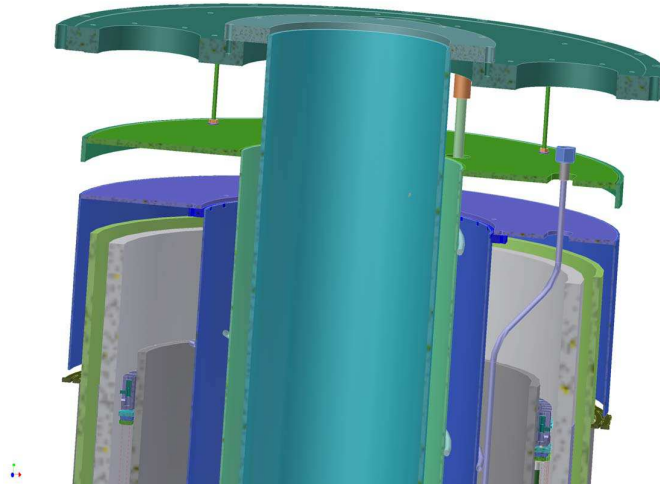


Figure 13: Cross section of upper part of phase 1 and phase 2 items already coupled.

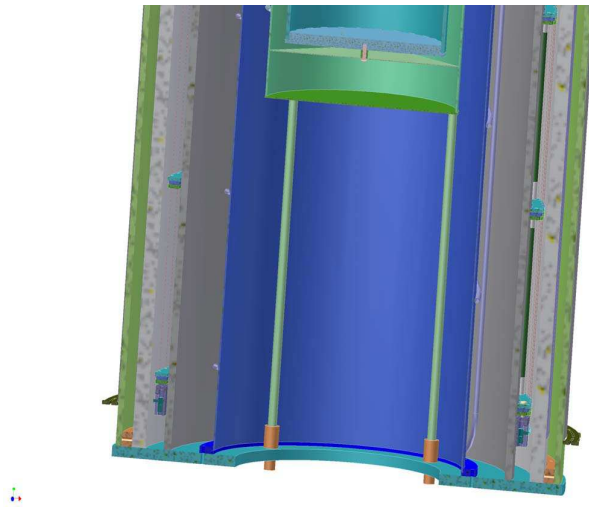


Figure 14: Cross section of lower part of phase 1 and phase 2 items already coupled.

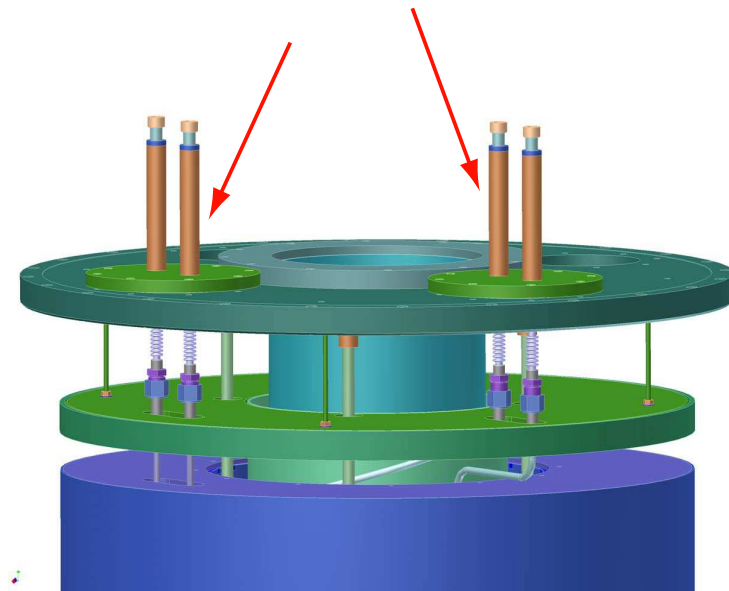


Figure 15: Feedthroughs.

9. Insert the coupled phases (1, 2, and 3) into the bucket dewar by lifting them from the top plate. Couple the top flange to the bucket dewar. See Fig. 16
10. Add the other blank flange and the rest of the pumping setup (see Fig. 17). Attach the short Helium transfer line (see Fig. 18). Fig. 19 shows the assembly so far. Slide the complete setup underneath the magnet mapper (see Fig. 20).



Figure 16: Complete setup.

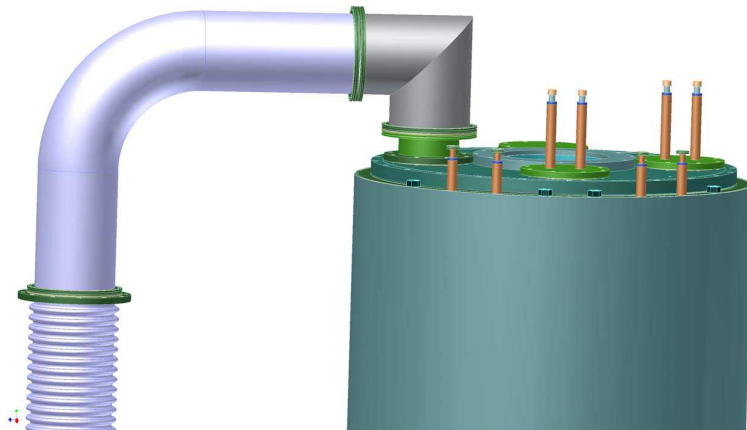


Figure 17: U-turn connectors and formed bellows.

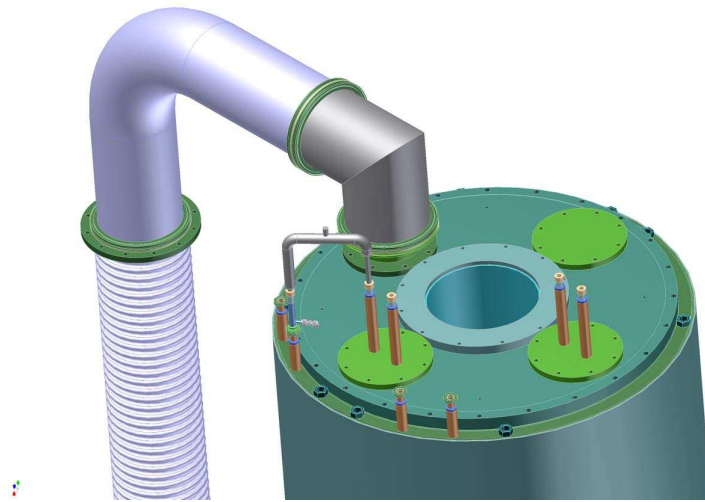


Figure 18: Short helium transfer line.

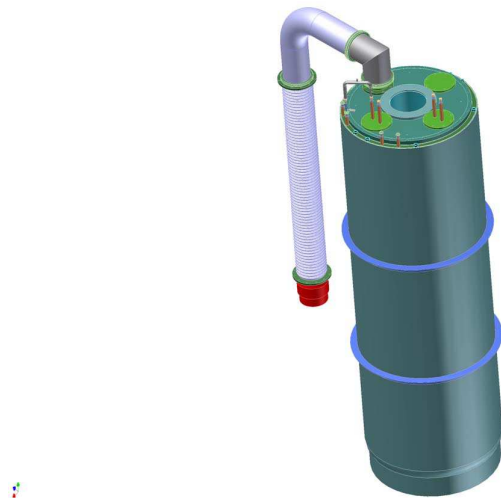


Figure 19: Complete setup with pumping line and turbo pump.

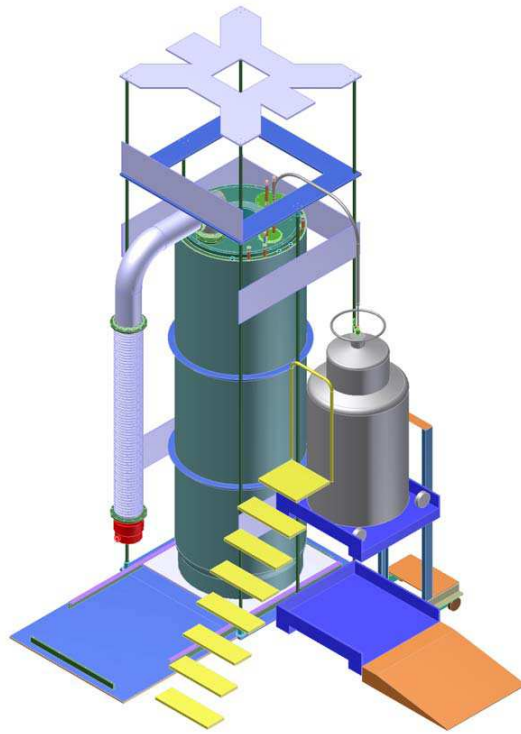


Figure 20: Complete setup inside magnet mapper with helium dewar.