

Instruction Booklet

Integrated cryogen-free superconducting magnet system

Magnet mounting instructions v3

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This instruction explains the preparations and procedure to mount a superconducting magnet to a Bluefors LD system. For other type of systems, the procedure is the similar, but some minor details may differ.

For more information, please contact support@bluefors.com.

1 Mounting the 4K interface tube

1. Before mounting the 4K Interface Tube: install the Still-shield with magnet-tail. (Still-shield not shown in picture)
2. Orientation: make sure cut-outs for current leads in flange and tube coincide.
3. Firmly tighten the bolts to the 4K flange (see red circle).
4. Connect the lead(s) of the temperature sensor(s) (see red arrow).
5. Connect the lead(s) of the persistent switch heater(s)



2 Mounting the magnet

1. Place the magnet on a lifting table below the 4K Interface Tube.
2. Make sure the contact surfaces at the interface tube and the magnet are clean to ensure a good thermal contact. Carefully raise the magnet against the bottom of the interface tube.
Tip: Leave a few millimetre gap between the magnet and the interface tube for fine-tuning the alignment.
3. Orientation: make sure cut-outs for current leads coincide.
4. Firmly tighten all bolts (see red circle).



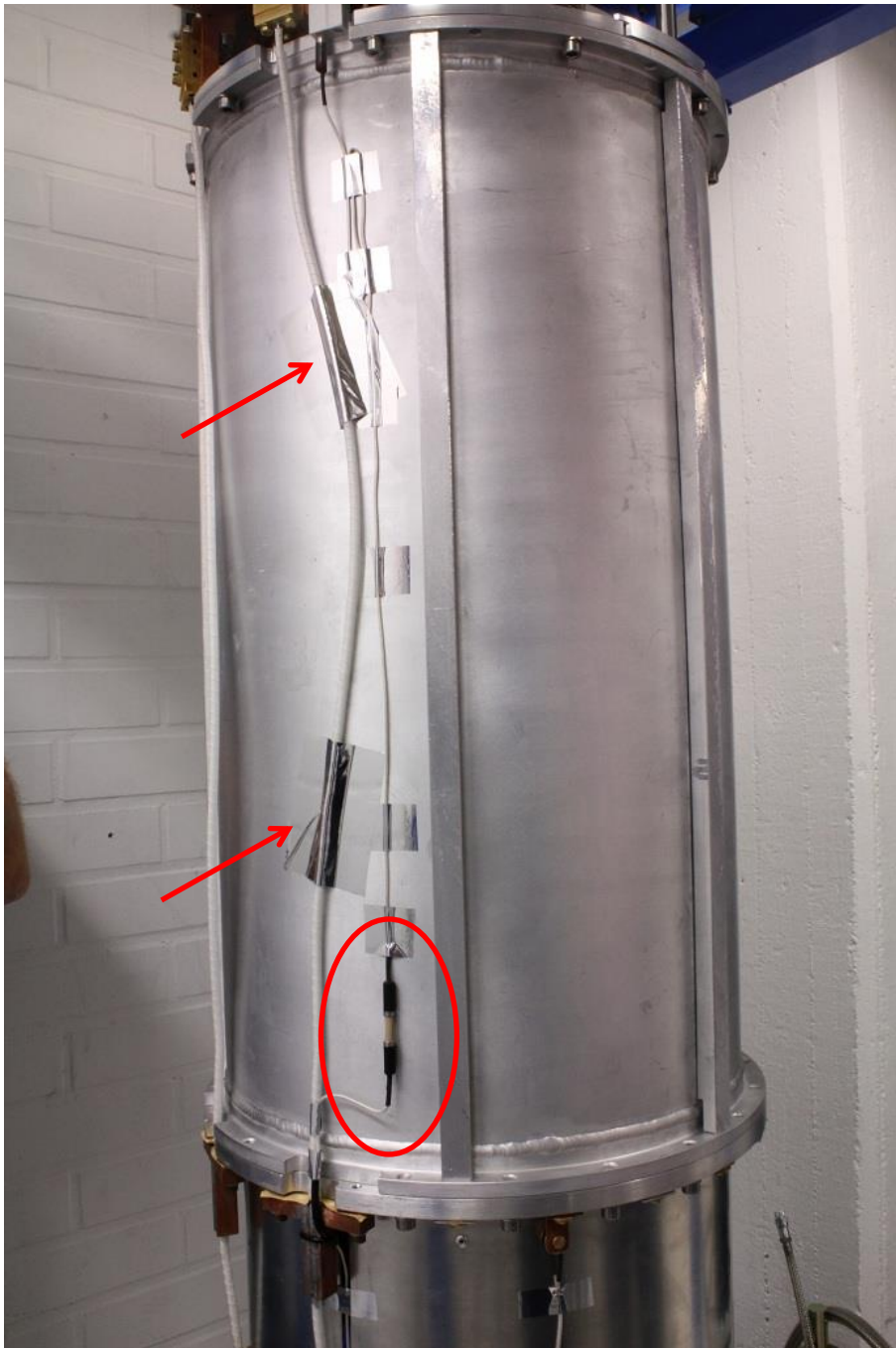
3 Connecting the magnet current leads

1. Make sure the contacts are clean.
2. Connect the magnet current leads using brass screws.
3. Use **1.5-2 Nm** of torque to tighten (using a torque screwdriver is recommended).
NOTE: Always connect leads without crossing them, then order for vector magnets and polarity for all magnets will remain correct.



4 Connect temperature sensor and tape current leads

1. Connect the temperature sensor and persistent switch heater(s) (see red circle).
2. Tape the current leads to the interface tube (see red arrows). This is to prevent thermal contact between the magnet leads and the 50K shield.
3. Measure the magnet resistance, and check for ground contacts. Also check operation of the temperature sensor and persistent switch heaters. The magnet temperature sensor is typically connected to Ch. 3, and the calibration as well as the sensor parameters are provided with the magnet test report.



5 Important notes regarding the magnet operation

1. The magnet should never be ramped if the temperature of the magnet is above the recommended values. Please refer to the test report of the magnet for further details.
2. Before ramping the magnet, make sure there are no items surrounding the magnet, which could be affected by the magnetic field. For most magnets, all tools should be cleared at least within 1.5 m radius from the field center. For more specific information, please refer to the magnet test report, or contact support@bluefors.com. Neglecting this can cause a serious safety risk.
3. Restricting access to the cryostat, while the magnet is powered, is strongly recommended.
4. Bluefors is not responsible for experimental setups made by the customer near the full field of the magnet. Potential hazards regarding rapid changes in the magnetic field should be taken into account when making the designs.

6 Removing the magnet

Perform the steps 1 – 4 in reverse order.

Note: Do not forget to first unscrew the current leads and disconnect the temperature sensor and persistent heater leads.