Removing the radiation shields – LN2 preamplifier

Preparation:

a) Let the cryostat warm up to room temperature.

b) Vent the UHV system and take the cryostat out with the hoist (test hoist before use for proper stability and proper length). If you need more info or support for this task, contact CreaTec.

c) Place the cryostat on the tripod. Place it in a way that the columns of the tripod do not block essential parts of the STM head.

Unmounting the LN2 radiation shields:

1. Except for 3 to 4 screws, remove all screws fixing the LN2 radiation shield to the LN2 tank. Keep one on each side to have the LN2 radiation shield still properly fixed to the LN2 tank.

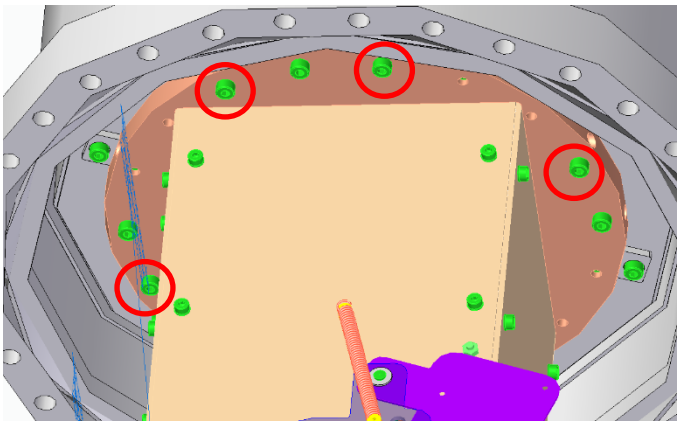

Fig. 1: Screws fixing the LN2 radiation shield to the cryostat marked in red

2. Remove the side panel on the right of the LN2 radiation shield (as seen from the transfer direction). For this, unscrew all M3 screws fixing the side panel and the one in the front holding the shutter-stick guide.

Fig. 2: side panel of LN2 shield. Note: Shutter design may deviate from the one shown here.

Rev01, 02.06.2023

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3. Remove the internal preamplifier, PT1000 and shutter wire:

   a) Search for the 3 wires going into the lHe shield. The wires are protected with teflon tubes and hold by a mini-shutter at the lHe shield.
   b) Search for the end of each of the 3 wires at the side of the internal preamplifier and unsolder the 3 wires from the gold-plated pins.
   c) Open the mini-shutter and tuck the three wires away, inside the LHe shield.
   d) Open the 2 screws that hold the internal preamplifier: one at the top holding the Cu wire and one at the bottom holding the internal preamplifier plate.
   e) Open the screw that holds the cables above the internal preamplifier.
   f) Unmount the internal preamplifier and all cables connected to the frame of the lN2 shield. You can put the whole plate including cabeling on top of the DN250CF base flange of the cryostat to store it safely for later use.
   g) Remove the cabeling of the Pt1000 on the opposite side (not visible on the photograph but self-explaining).
   h) Take the shutter hook off the front shutter

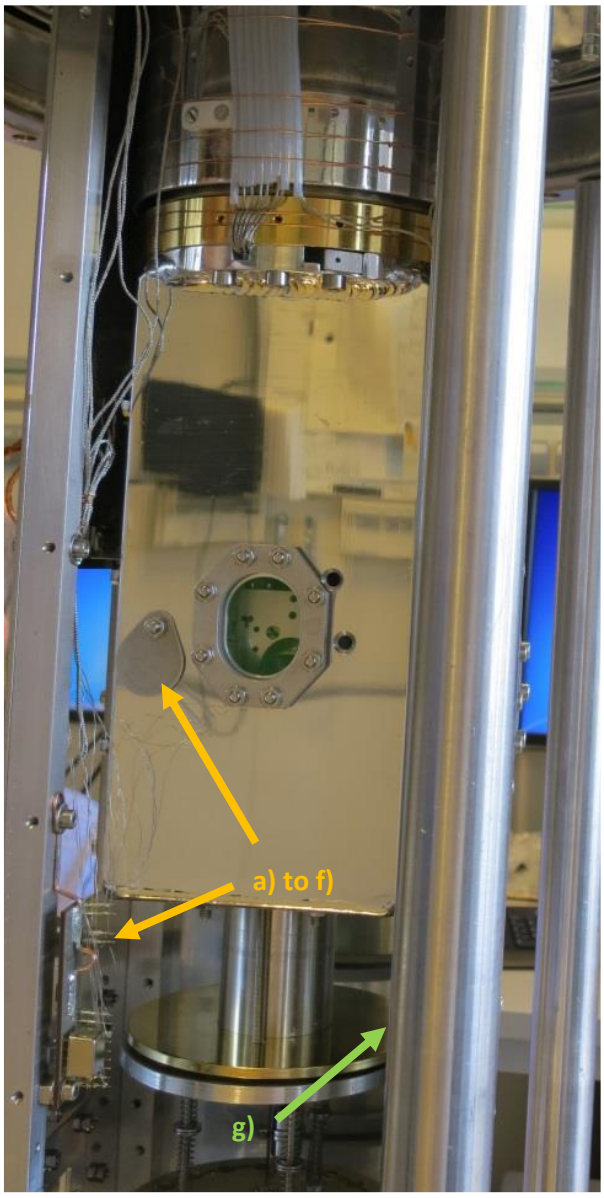

Fig. 3: Preamplifier with cabling

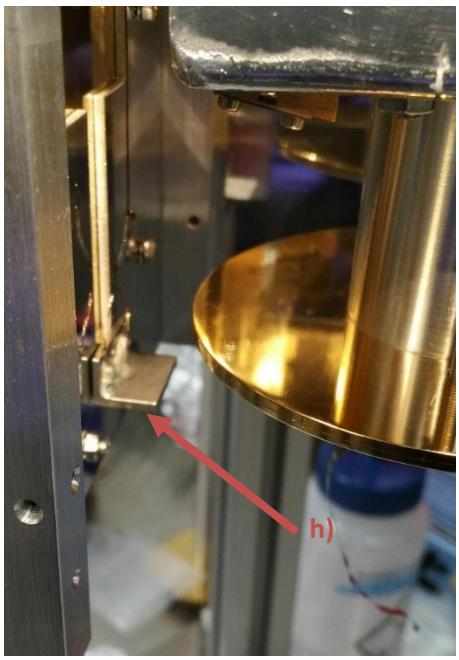

Fig. 4: Shutter hook mounted to LN2 front shutter

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4. Move push-pull completely in to fully release STM stage and relax steel ribbon. Open connector piece (see blue circle) to separate both parts of the push-pull steel ribbon.

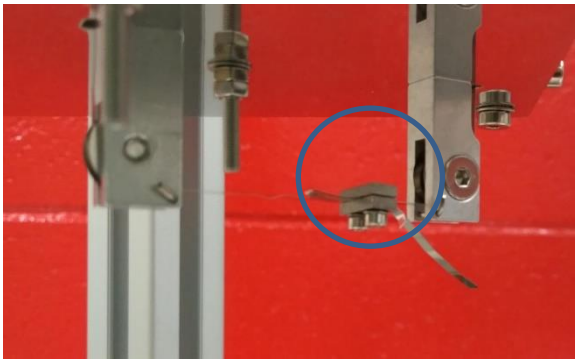

Fig. 5: Steel ribbon and clamp.

5. Remove bottom plate of LN2 shield. Unscrew all M3 screws on the side of the plate and the four M4 screws in the bottom. Then take it off and make sure the steel ribbon of the push-pull does not get stuck anywhere.

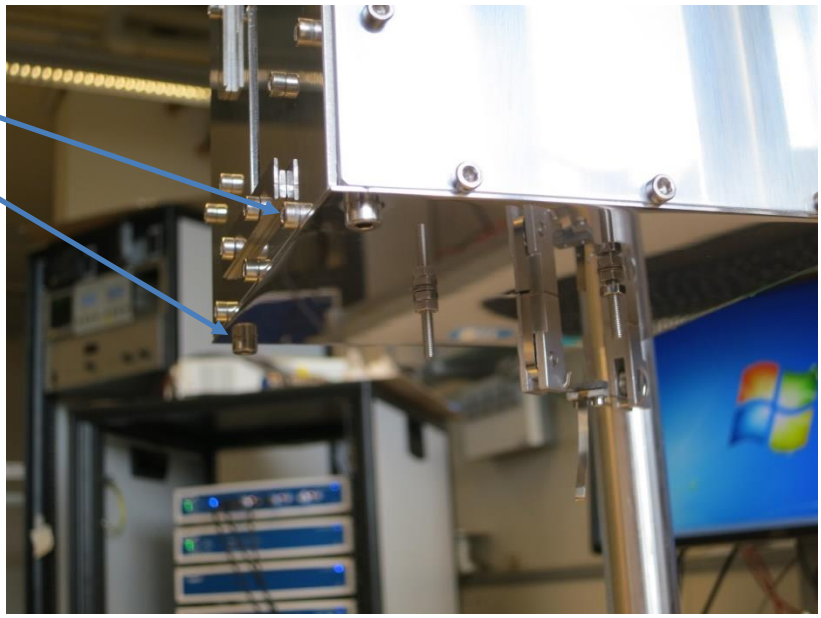

Fig. 6: bottom plate of STM head and screws.

6. After making sure everything is disconnected from the LN2 radiation shield, open the remaining screws at the top of the LN2 shield. While supporting the shield, take the screws out and then slowly lover the shield and check that nothing is pulled along by the shield.

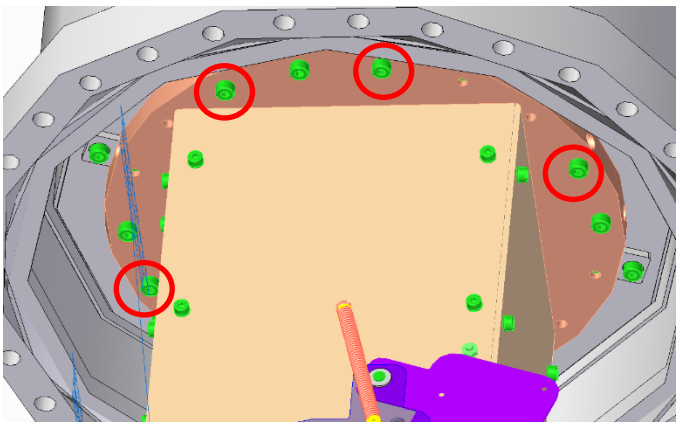

Fig. 7: Screws fixing the LN2 radiation shield to the cryostat marked in red.

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7. Remove outer “cage” piece from the bottom of the LHe shield (blue rectangle) by loosening the two long screws. The “cage” encloses the T-piece mounted at the bottom of the STM head. Normally, the slit in the T-piece should be perpendicular to the orientation of the T-piece in order to lock the STM head safely in the clamped position.

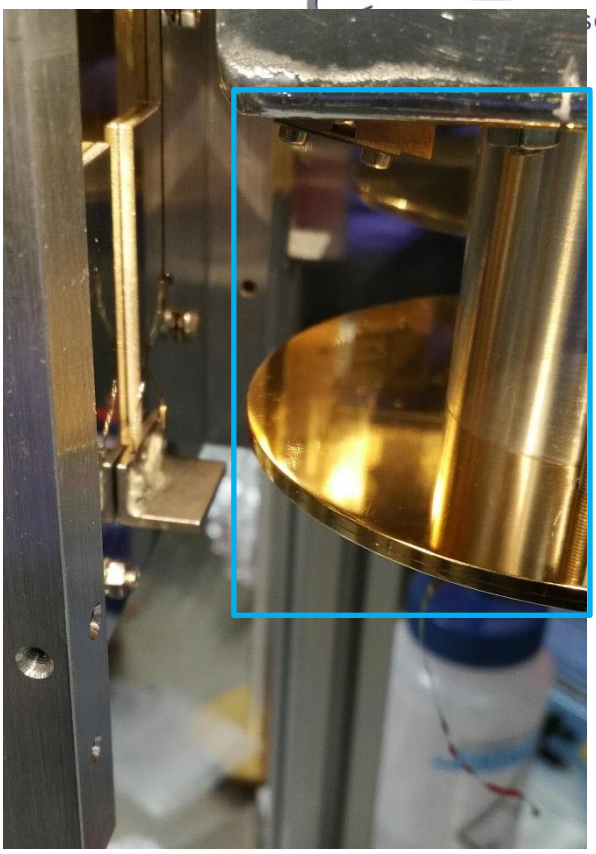

Fig. 8: T-piece cage at the bottom of LHe shield

8. Unscrew the T-piece from the STM scanner and use an M4 screw and a big washer to fix the scanner again.

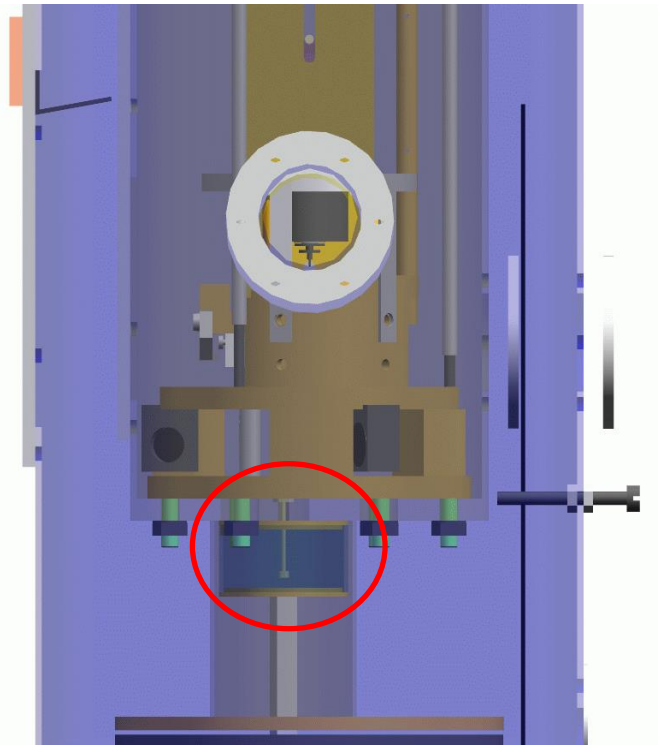

Fig. 9: Scheme of the T-piece and the cage in the bottom of the LHe shield.

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