CRYOSTREAM 1000 – TECH NOTE: 2218

PUMPING DOWN THE VACUUM SPACE

BRIEF

Instructions on how to evacuate (or “pump”) the vacuum space for the Cryostream 1000. This procedure is recommended every 12 months or 12,000 hours

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V1.1

INTRODUCTION

The vacuum space in the Cryostream will need to be evacuated (or “pumped”) occasionally to ensure it acts as an effective thermal insulator. This will be apparent from an excessively cold, wet or icy Cryostream coldhead and/or transfer line, and you may also notice the Cryostream is unable to hold a low set temperature.

If you have any questions or concerns, please contact Oxford Cryosystems’ support team: support@oxcryo.com, +44 (0) 1993 88 34 88

WARNING

The re-activation heater and the supplied power cable should only be connected to the “Re-activation Heater” port on the rear of Gas Supply Module. **DO NOT** attempt to connect this to any other OCS equipment or power sources.

TOOLS REQUIRED

CRH25 Re-activation Heater	Supplied with Cryostream
Vacuum pump (capable of 1x10-2 mBar ultimate pressure, 2.5 m3/hr pumping speed, e.g. Pfeiffer DUO 2.5) Vacuum hose Vacuum hose clamps, centring ring and O-rings (capable of connecting to NW16/KF16 flange on pump-out adaptor)	Not supplied with Cryostream. Available from Oxford Cryosystems. Part Number: 22CS-VacRegKitPF

INSTRUCTIONS

1. Switch off the Cryostream and leave it standing for 24 hours to warm internally or run a PURGE.
2. Remove the rigid section of the transfer line from the liquid nitrogen Dewar.
3. Leave the transfer line out of the liquid nitrogen Dewar for one hour to allow it to warm up, then dry it carefully.
4. Place the end of the rigid section of the transfer line into the hole of the re-activation heater.

NOTE
Do not turn the heater on at this stage.

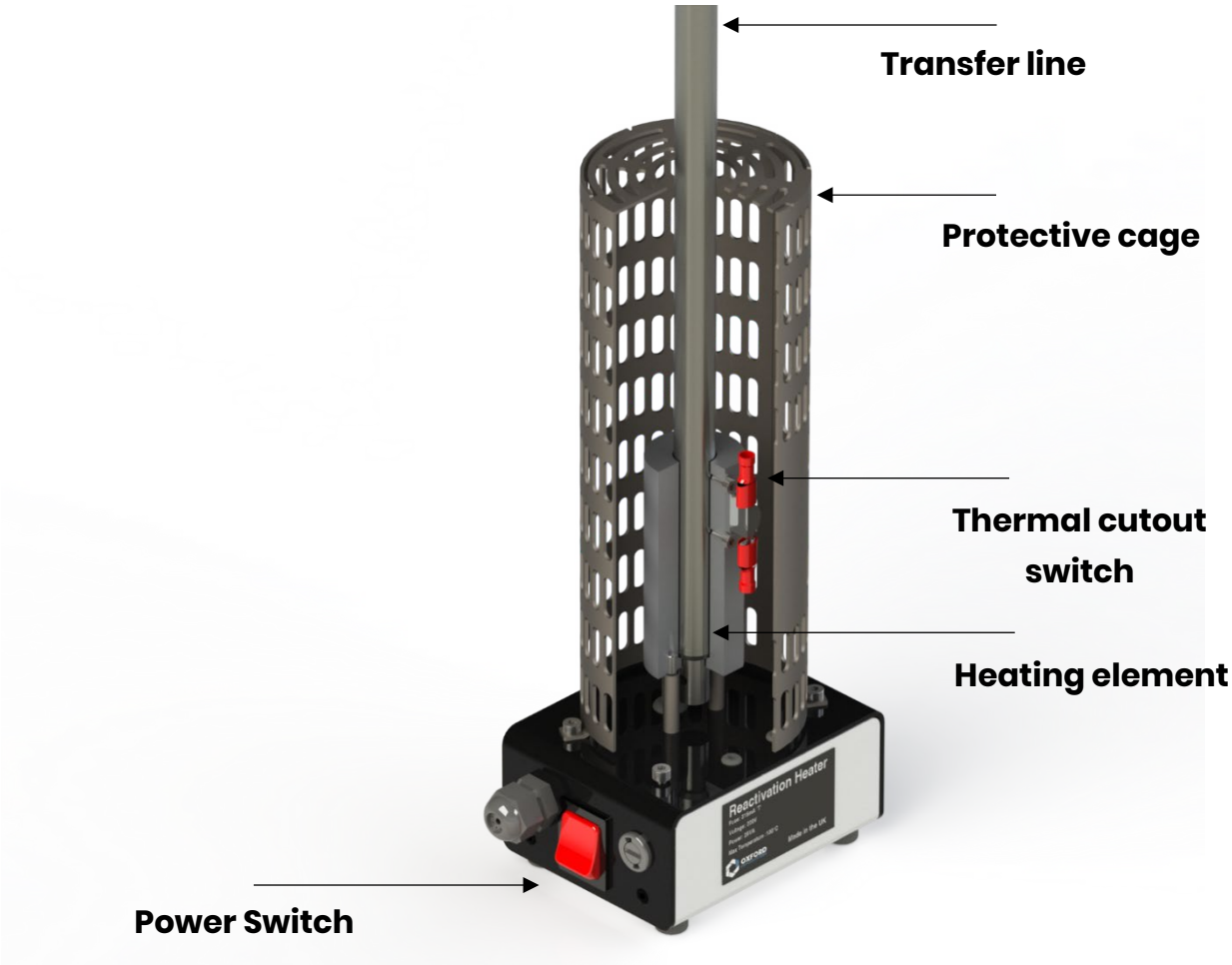


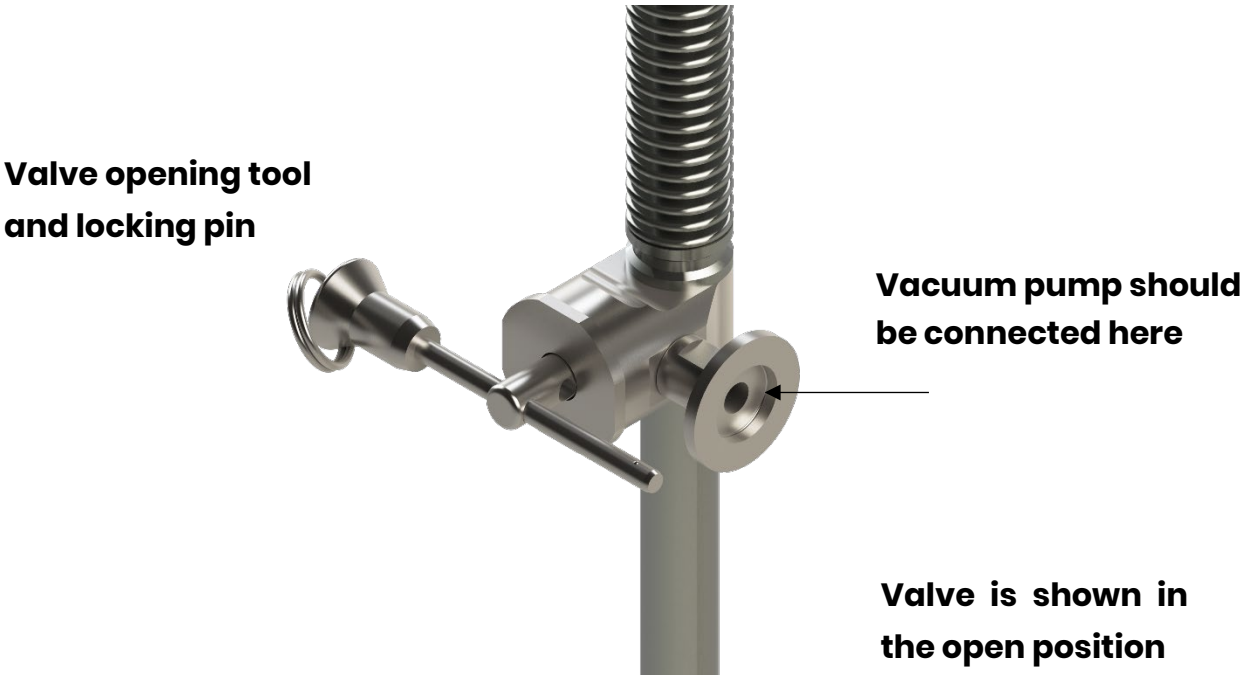
Fig. 1: Transfer line in Re-activation heater

5. Connect your vacuum pump and gauge to the flange (NW16/KF16) on the pump-out adaptor.
6. Start the vacuum pump and ensure it is possible to obtain a vacuum pressure of at least 0.1 mBar with the sealing plug still in place to ensure there are no leaks in the vacuum equipment.

NOTE

It may be necessary to use the ballast valve on the vacuum pump to achieve a good vacuum pressure. Refer to the pump manufacturer's instructions for further details.

7. Use the tool supplied to slowly pull the sealing plug out of the pump-out port on the transfer leg, exposing the Cryostream vacuum space to the vacuum pump. This is illustrated in the image below. The vacuum pump hose has been removed for clarity but should be connected to the flange shown. Do not open the port until the vacuum pump has been connected and is running.



8. Ensure the sealing plug is locked in the 'open' position, or the differential pressure of the vacuum will cause it close prematurely.
9. Wait until the pressure read by the vacuum pump/gauge assembly is 0.1 mBar or lower.
10. Plug the re-activation heater into the GSM and turn it on by toggling the red switch on the front of the re-activation heater.

11. The re-activation heater needs to be powered by the GSM, to do this first go to the 'Device Info' page and tick 'Begin Regen' and press OK. This will take you to the 'Shutdown Options' page and press 'Regen'.
12. Ensure the home screen now displays the 'Regen' status.

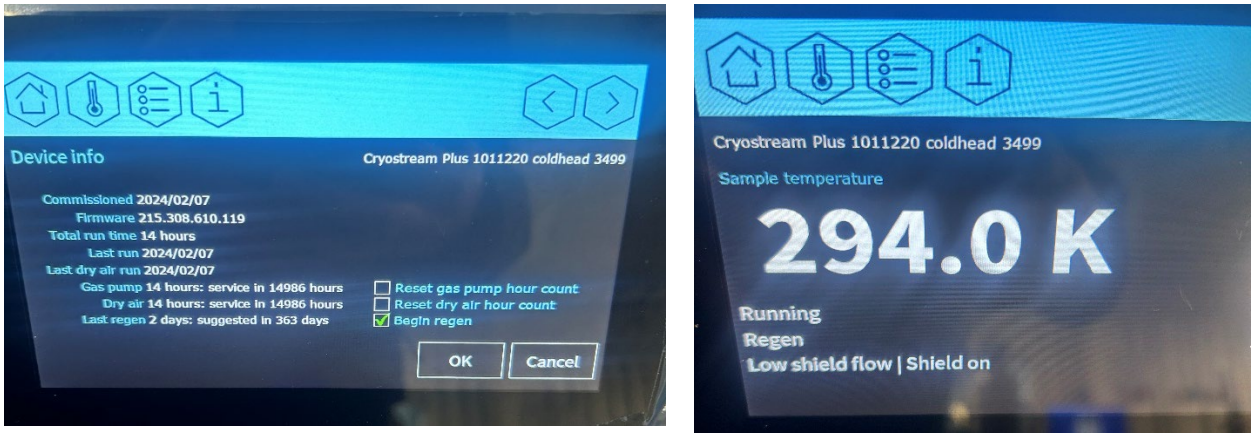


Figure 2 - Regen command and status

NOTE

This process will also reset the 'Last regen' timer on the 'Device Info' page.

NOTE

You should also notice the red switch on the re-activation heater is now illuminated, indicating the heater is powered.

WARNING

The re-activation heater heats itself and part of the transfer line to 150-200°C. Ensure nothing will come into contact with the heater and do not touch the heater during or for some time after operation.

13. Pump the vacuum for at least 16 hours; ideally, the Cryostream should be vacuum pumped for up to 24 hours.

CAUTION

If the Cryostream is not pumped for at least 16 hours, you may find that the Cryostream does not perform well when re-installed and will require vacuum pumping again sooner than expected. At least 16 hours is required to drive off all contaminants that have been adsorbed by the cryopump in the transfer line.

14. Ensure the vacuum gauge reads 0.01 mBar (1x10-2 mBar) or better.
15. Remove the locking pin and push the sealing plug on the transfer line back into the closed position.
16. The re-activation heater should power off automatically, but make sure the red toggle switch on the front of the heater is also turned off.
17. Turn off the vacuum pump.
18. When it is safe to do so (according to the instructions in your vacuum pump), release the vacuum from the vacuum hose.
19. Disconnect the vacuum hose from the pump-out adaptor.
20. Once the end of the Cryostream transfer line has cooled, remove it from the CRH25 re-activation heater; it is now safe to re-install into the liquid nitrogen Dewar.