

Sample Holders & Dewar Integrity

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Spine Pins

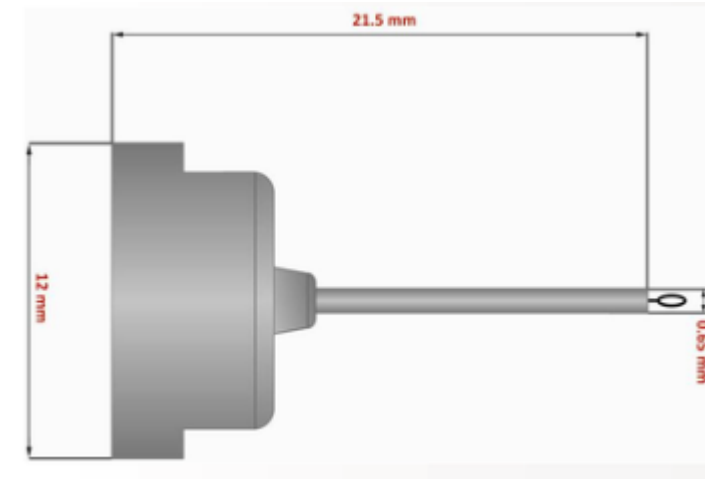
SPINE standard pins are essential to work with our Robot systems and goniometry.

Acceptable pins include:

- [Hampton CrystalCap HT](#) SPINE pin with 22mm fixed sample holder length
- [Molecular Dimensions CryoCaps](#)
- [MiTeGen B5](#) and [MiTeGen B5-R](#) Goniometer Bases

Please check that pins confirm to SPINE standard.

Non SPINE pins can cause damage to goniometry and may cause the beamline to be non functional.



Unipucks

- Unipucks are essential to work with Diamond BART robotics systems
- Any other sample holders should not be sent and risk damaging Diamond equipment



Unipucks

- On arrival your puck may be barcoded as below to allow ease of logistics once onsite



Care of Unipucks

- Always ensure puck is warmed up, dried and clean between uses.
- Always check the enclosure and remove any metal debris (e.g. broken pins)
- Pins are held in place by NdFeB ring magnets secured with polycarbonate washers



- The top of the sample enclosure is fixed with four Philips head screws which should be firmly secured.



- Always check the base and remove any metal debris (e.g. broken pins)
- The base spindle is held in place by a Philips head screw which should be firmly secured so that the spindle cannot twist.



- The base is secured to the enclosure by clips held in place with flat head screws.
- The screws should be secure and the clips bent so that they grip the sample enclosure snugly.

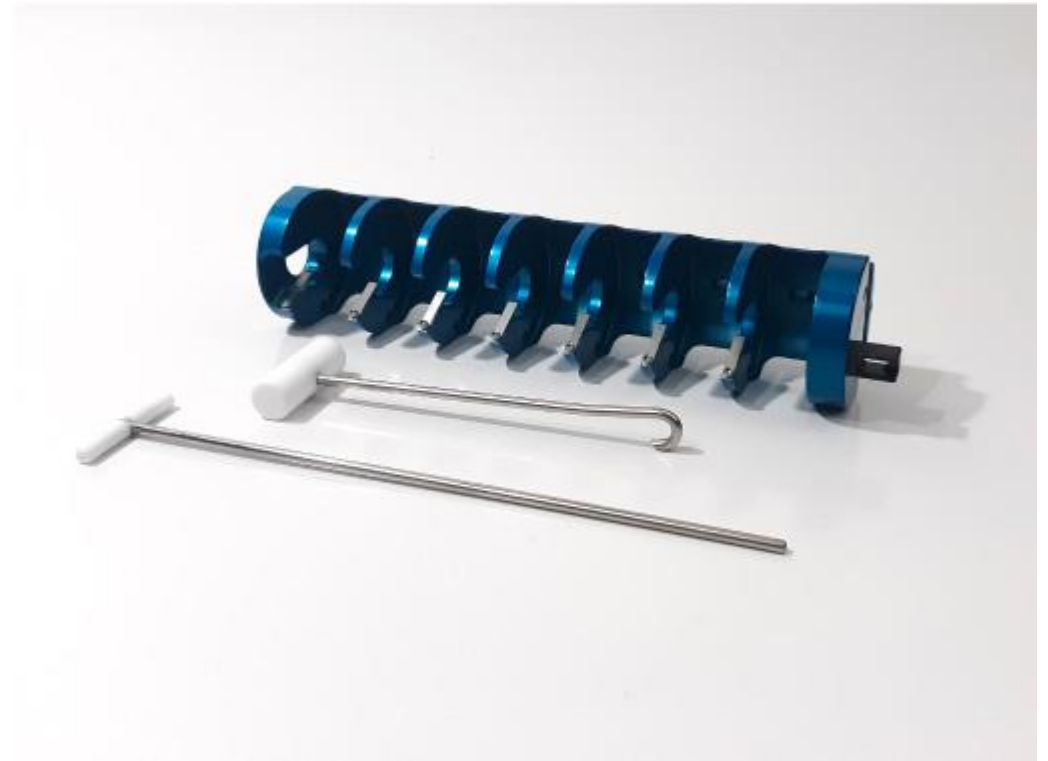


<https://www.diamond.ac.uk/Instruments/Mx/Common/Common-Manual/Sample-Holders/Care-of-Unipucks.html>

Transport Canes

The Shelved Puck Shipping Cane is required for Unattended data collection and strongly preferred for all other beamtime

Any other shipment canes should be confirmed with mx-usersupport@diamond.ac.uk before shipment



https://www.diamond.ac.uk/Instruments/Mx/I03/I03-Manual/Shipping-Samples/dry_shipping_puck HOLDERS.html

Shipping Dewar integrity

- CX100 and CXR100 have a maximum working time of 17 and 11 days respectively when brand new.
- As shipment time can be subject to customs delay it is vital to test the integrity of your Dewar
- Dewars have two things to keep samples cold:
 - The Dewar insulation
 - Vacuum condition
 - Neck plug condition
 - Absorbent material condition



CX100



CXR100



<https://www.diamond.ac.uk/Instruments/Mx/I03/I03-Manual/Shipping-Samples/Care-of-dry-shippers.html>

Shipping Dewar integrity – Absorbent Material

- Weigh your dry shipper when it is dry and warm.
- Now cool the shipper as you would prior to shipping, pour off any residual liquid and weigh it again.

Cold weight – warm weight = mass of stored nitrogen

- This should be around 3kg depending on dry shipper model.
- On some models this material can be replaced.
- Do this test periodically and compare values over time.



CX100



CXR100



<https://www.diamond.ac.uk/Instruments/Mx/I03/I03-Manual/Shipping-Samples/Care-of-dry-shippers.html>

Shipping Dewar integrity – Dewar Insulation

- Weigh the dry shipper when cold over a period and calculating the rate of mass loss.
- Once at a stable temperature (leave the dry shipper for an hour or so after charging), the mass loss is very linear and two measurements 24h or so apart should give a good estimate.
- For a new dry shipper, this mass loss should be around 150-200g a day depending on model.
- Diamond colour classifications based on weight loss are as follows:
 - Green: under 300g per day
 - Yellow: 300-400g per day
 - Red: over 400g per day

- Total lifetime can be easily calculated from the previous two experiments.
Mass of stored nitrogen/ mass loss per day = maximum storage lifetime of dry shipper
- We would recommend **relying on no more than half** of this value as a sensible safety margin for your samples



CX100



CXR100



<https://www.diamond.ac.uk/Instruments/Mx/I03/I03-Manual/Shipping-Samples/Care-of-dry-shippers.html>