

Thermal 2 Exposure Head

Removing the Head from a Lotem Quantum

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Revision History

Revision	Date	Author	Comments
DRAFT	Sept 2001	M Gill	Draft
.1	Oct 2001	Alvaro Ireta	First revision
.2	May 2002	M Gill	Updated template. Added note to turn off three main power circuit breakers

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1. SCOPE

This document shows the most effective way to remove a Thermal 2 head from a Lotem Quantum. This is a necessary step for head cleaning and maintenance.

2. RELATED DOCUMENTS

- Quantum Safety for Service Engineers (http://techplanet.creo.com/output/computer_to_plate/lotem_quantum/content/documentation/Qsafe_serv_apr24.pdf)

The following documents are available from the Procedures page on the Thermal 2 site of TechPlanet (**TechPlanet Home**>**Output**>**Heads**>**Thermal 2**>**Procedures**):

- Thermal 2 Exposure Head Window Cleaning Procedure
- Thermal 2 Exposure Head Debris Removal Nozzle Cleaning Procedure

3. LASER SAFETY PROCEDURES



DANGER:
Ensure that you follow all necessary laser and device safety precautions when completing this procedure.

To use this document the FSE (Field Service Engineer) **must** have attended and passed a thermal introductory course and be familiar with the necessary safety precautions.

The FSE **must** be familiar with the safety procedures for the Lotem Quantum. Refer to the following document:

- Quantum Safety for Service Engineers (http://techplanet.creo.com/output/computer_to_plate/lotem_quantum/content/documentation/Qsafe_serv_apr24.pdf)

4. HEAD REMOVAL PROCEDURE

4.1 Preparing the Device

1. Move the carriage to position 500mm. Use the Lotem GUI or enter `Quantum> carriage moveto 500` in the Splot terminal.
2. From the Lotem GUI, open the rear door.
3. Shut down the Lotem computer. Close the GUI, then select **Start>>Shut Down**. Wait until the computer is ready to be powered off.
4. Press the yellow emergency shutdown button (refer to Figure 1).



Figure 1: Emergency Shutdown Button

5. Turn off the three main power circuit breakers at the distribution box.
6. Remove the rear upper panel.
7. Remove the unload tray. The Quantum should now look like Figure 2.

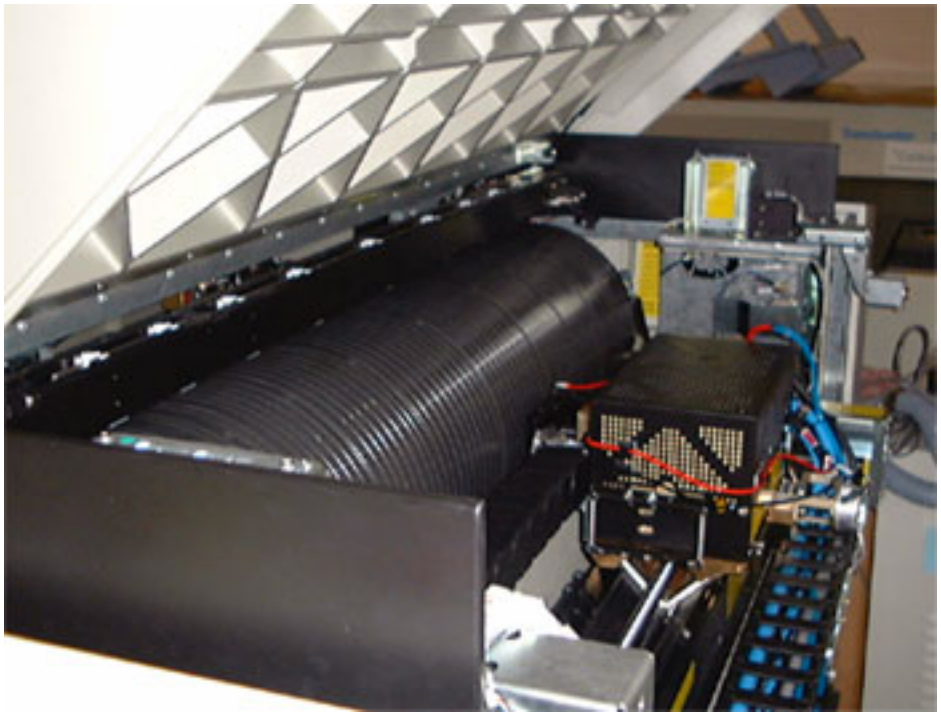


Figure 2: Quantum with rear door open, rear panel and tray removed.

4.2 Disconnecting the Coolant, Debris Removal, Naphion and Electrical Connections

1. Disconnect the debris removal suction hose, as shown in Figure 3.

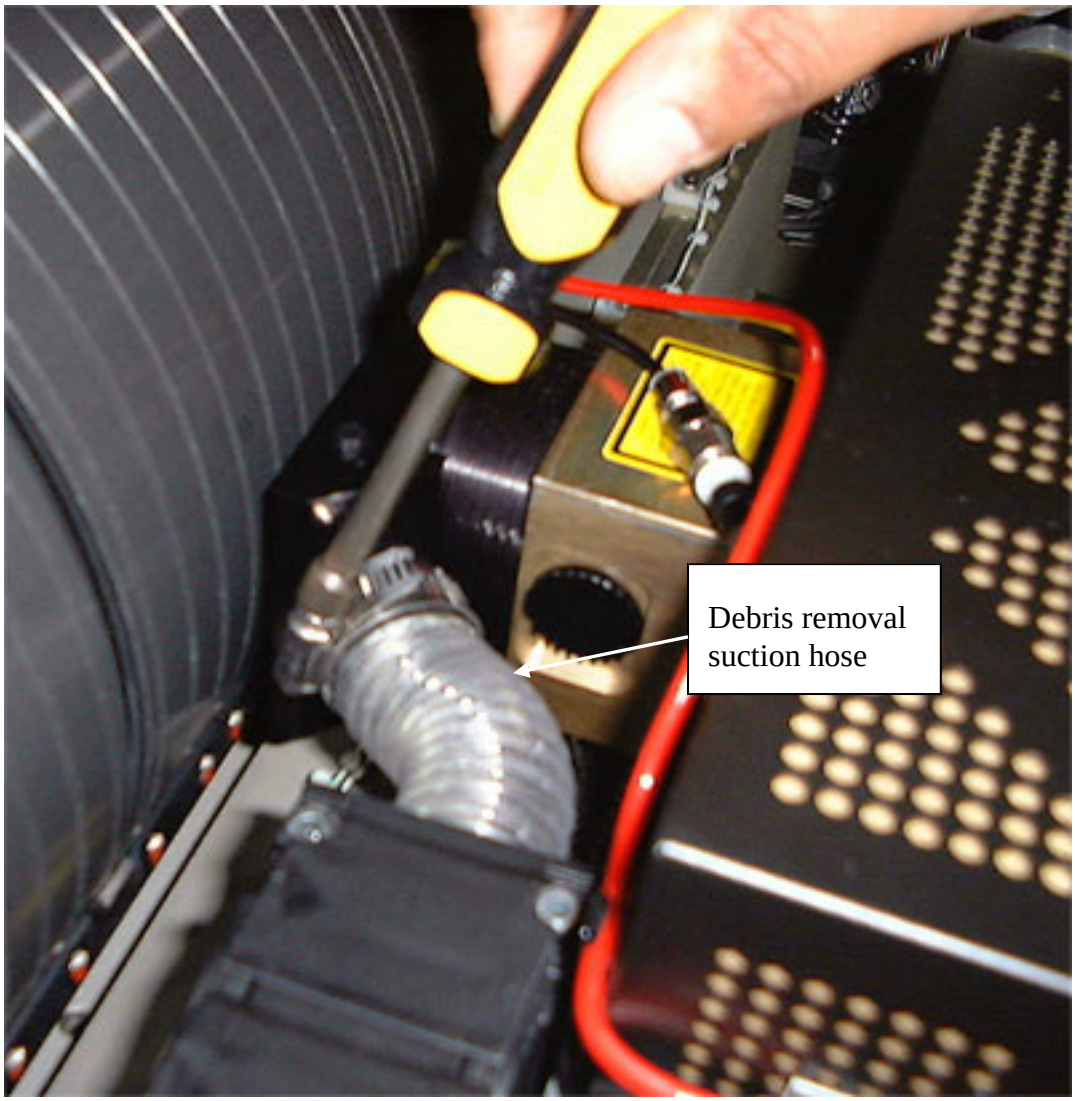
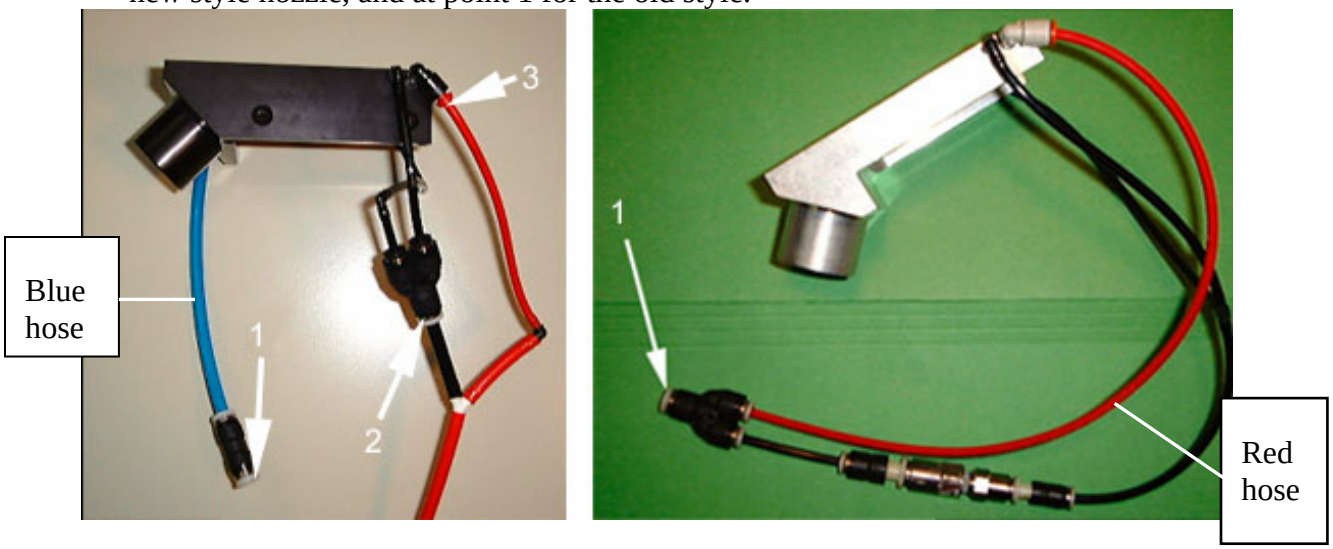


Figure 3: Disconnecting the suction hose

2. Disconnect the debris removal air purge line as shown in Figure 4. Note that there are two types of debris removal nozzle. Disconnect the air lines at points 1,2, and 3 for the new style nozzle, and at point 1 for the old style.



New Style Nozzle Old Style Nozzle

Figure 4: Disconnecting the air purge line

3. Disconnect the two military connectors as shown in Figure 5.

CAUTION: Ensure you are wearing a static grounding strap for this step.

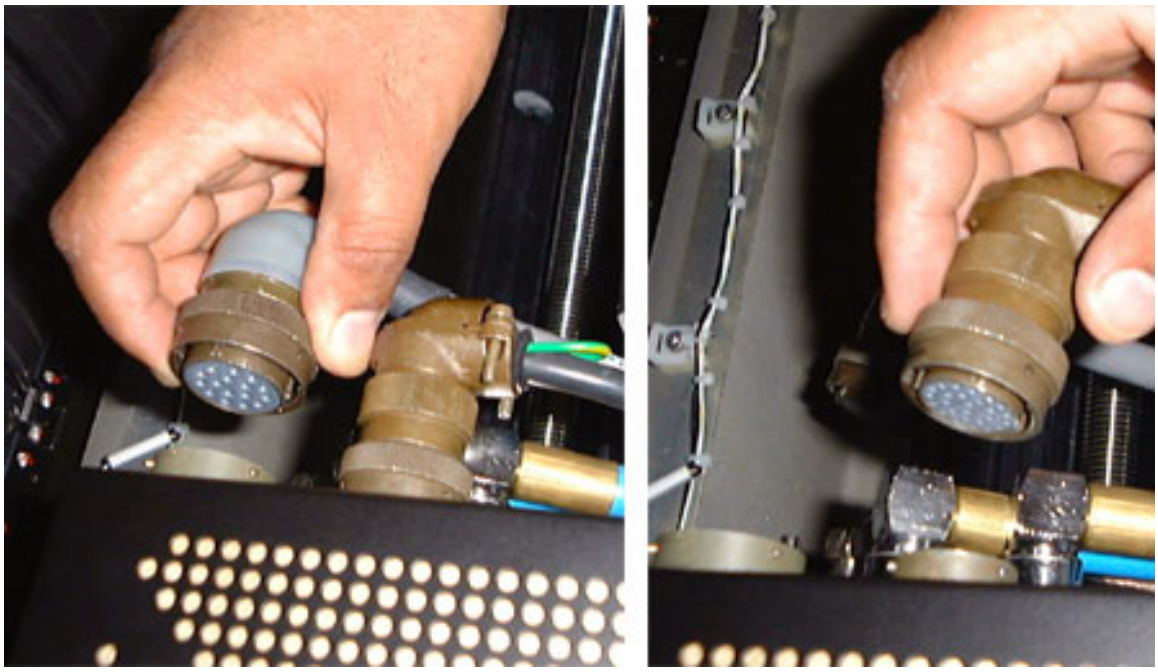


Figure 5: Disconnecting the military connectors

4. Disconnect the coolant hoses, as shown in Figure 6.

CAUTION: Place a piece of paper towel underneath the coolant connectors to ensure that coolant does not spill on the hotlink connector.

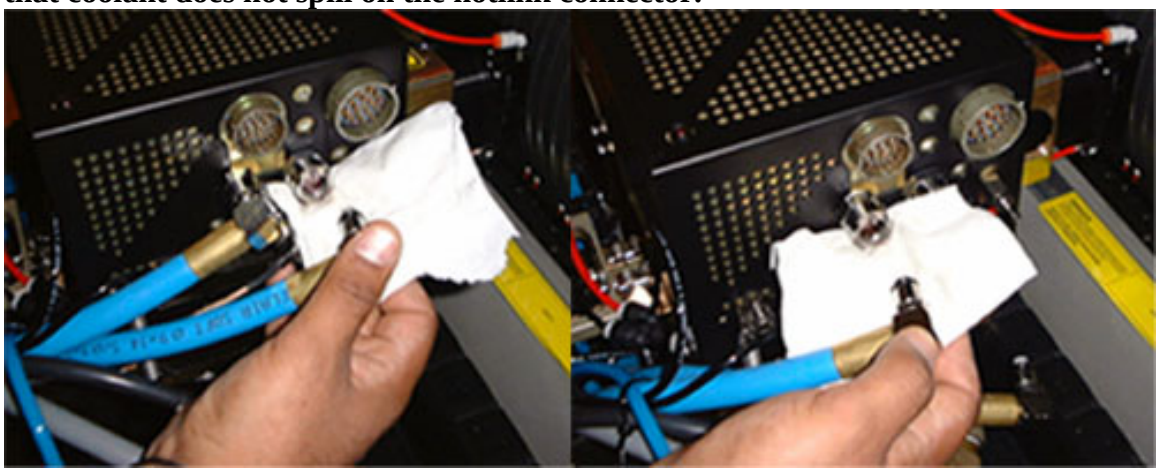


Figure 6: Disconnecting the coolant hoses

5. Disconnect the hotlink BNC connector.

6. Remove the naphion quick-release connector, as shown in Figure 7.

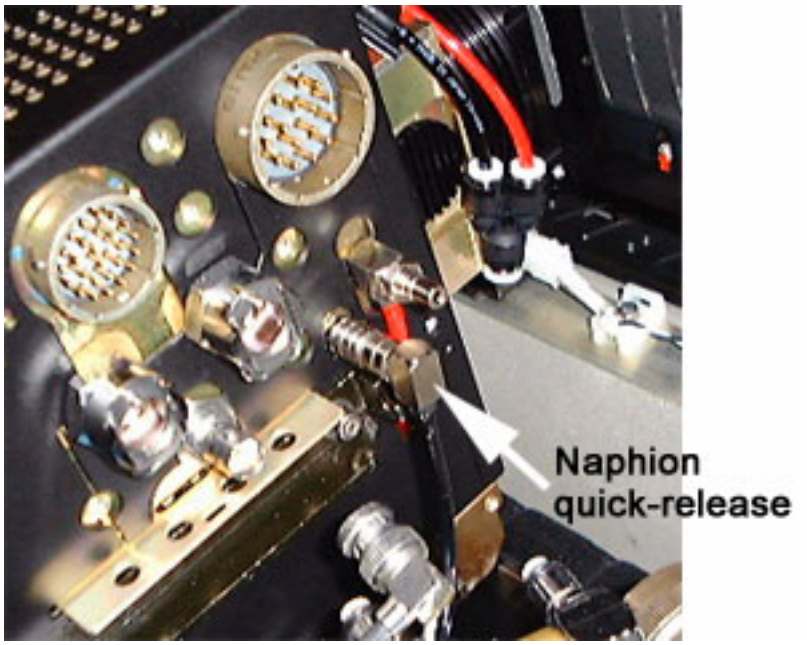


Figure 7: Naphion quick-release connector

4.3 Removing the Hardware

1. Remove the four springs that hold the head down.
2. Using a pair of needle-nose pliers, remove one of the cir-clips from the Z stage pneumatic unit pin (there is a cir-clip on both sides of the pin). Removing either one is sufficient; you do not need to remove both (refer to Figure 8a). If you cannot access the pin you must rotate the unit around counterclockwise using an Allen key. Refer to Figure 8b.

CAUTION: Place a piece of paper underneath the cyclinder to prevent any loose parts from falling into the cable track.

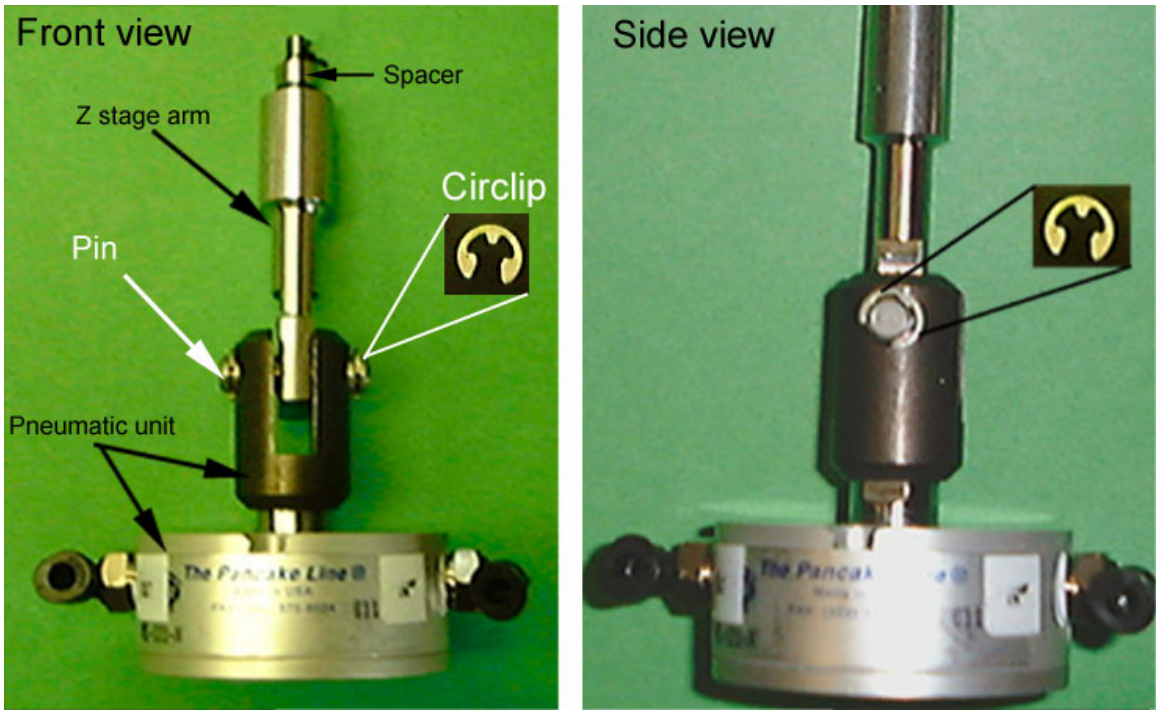


Figure 8a: Detail of the Pneumatic unit and Z stage arm

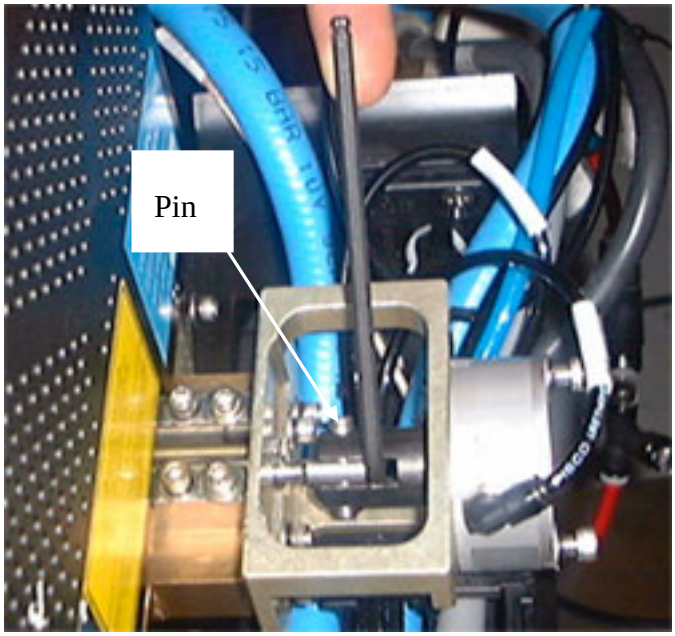


Figure 8b: Rotating the unit counterclockwise using an Allen key

3. Rotate the pneumatic unit counterclockwise until the pin is vertical and the side with the remaining cir-clip is at the top (refer to Figure 8b). This ensures that the pin will be easy to pull out.

4. Unscrew the two screws on the outside of the pneumatic unit (refer to Figure 9).

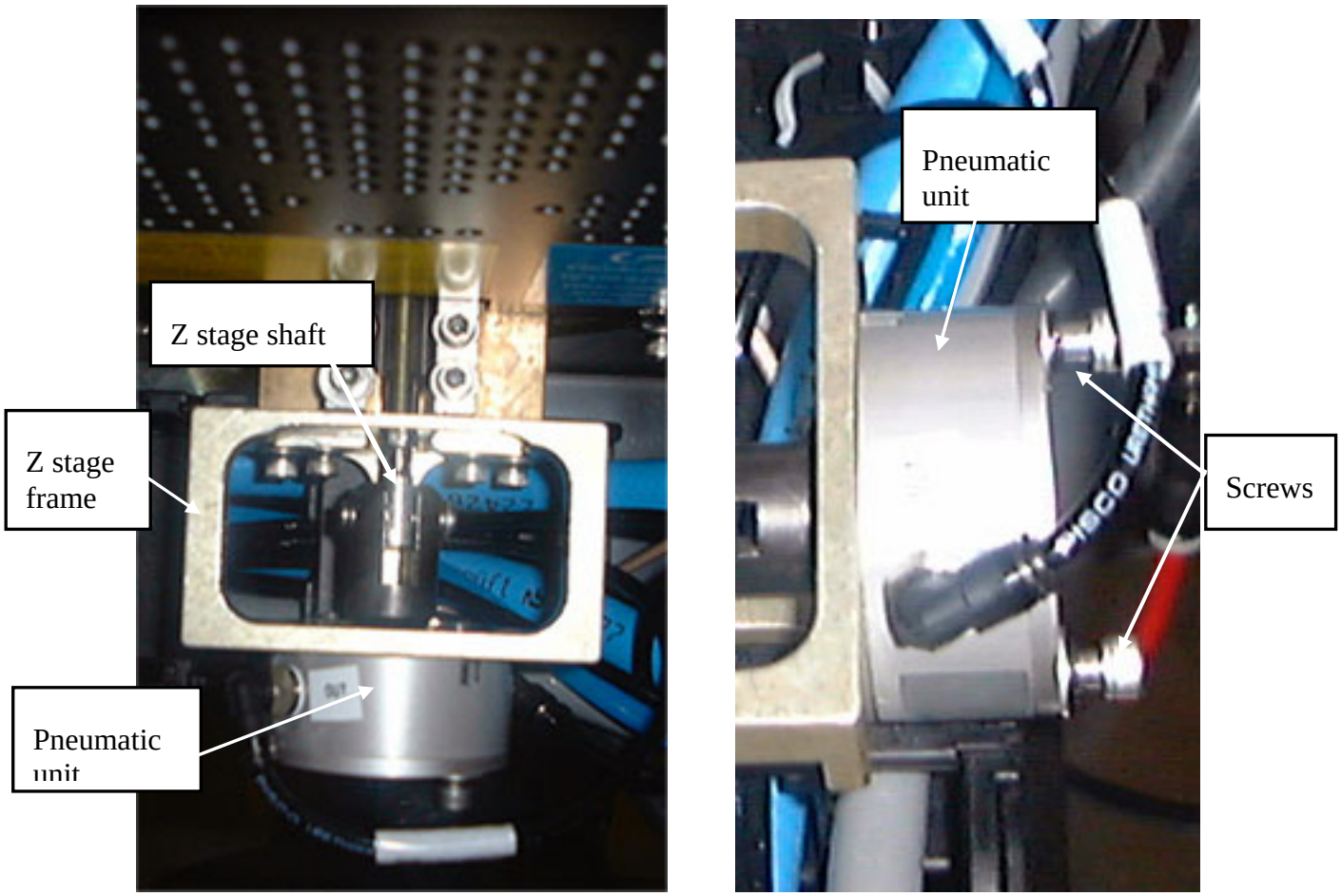


Figure 9: Top and side views of the Z stage

5. Locate the pneumatic valve for the Z stage in the bottom right hand side of the tray (refer to Figure 10). Press and hold the valve while at the same time pulling the pin from the pneumatic unit (for detail refer to Figure 8b). Pull the pneumatic unit away from the Z stage frame.

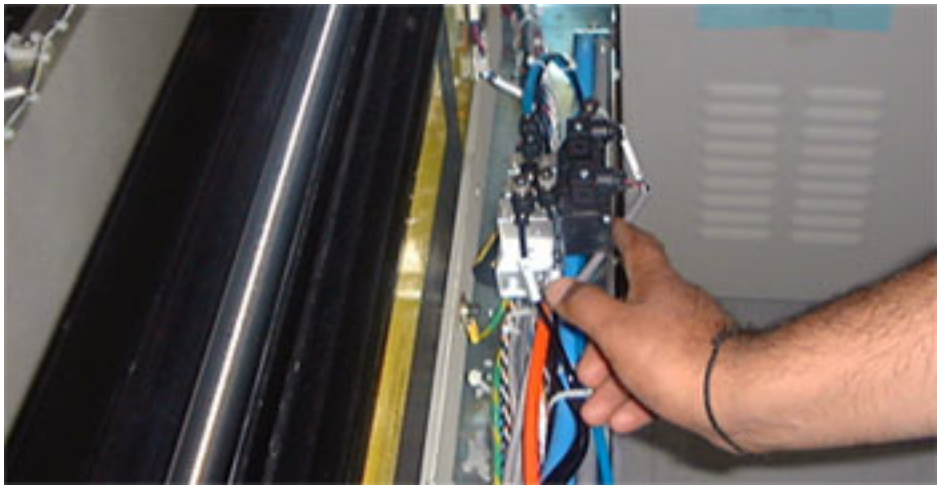


Figure 10: Z stage pneumatic valve

6. Loosen the Z stage shaft by turning it counter-clockwise using an Allen key (refer to Figure 11). Finish unscrewing it by hand and pull it out, being careful not to drop the spacer off the head-end of the shaft (refer to Figure 12).

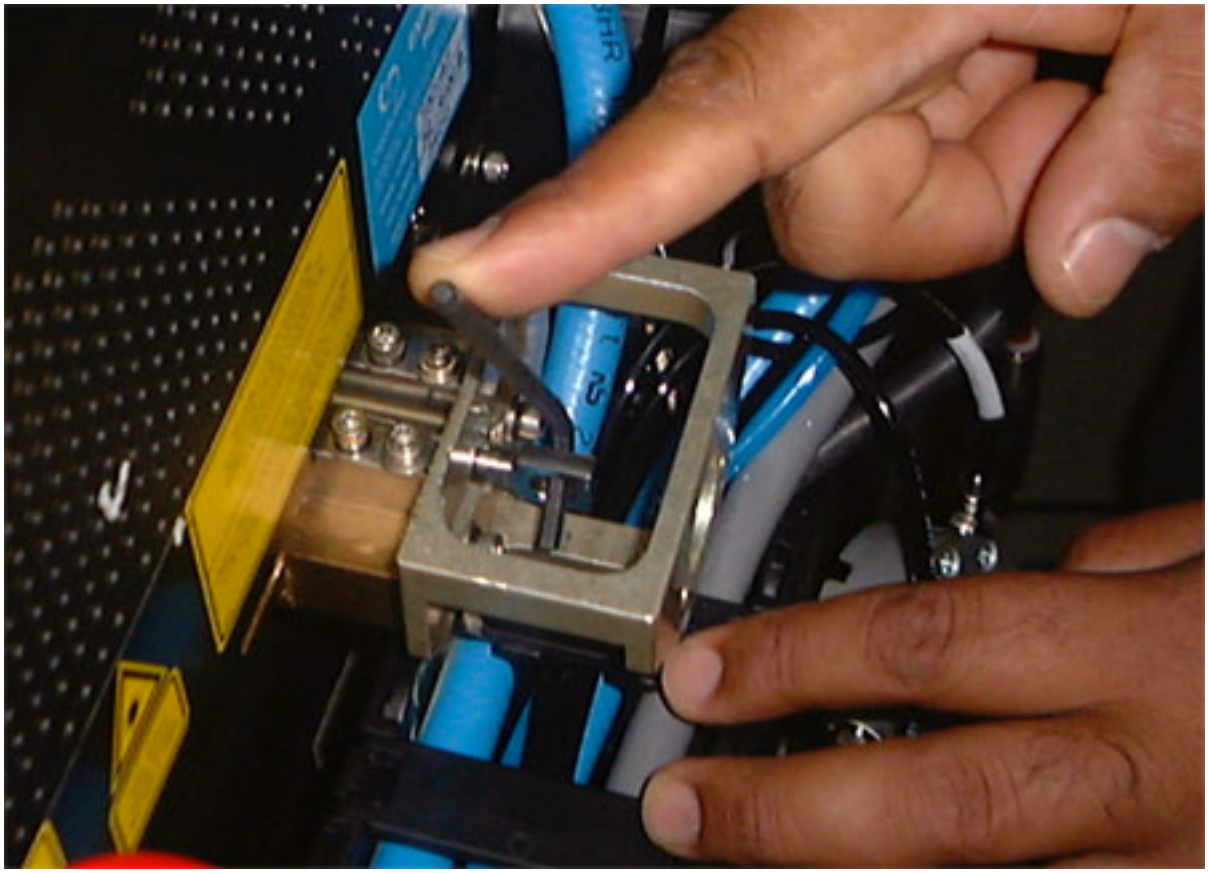


Figure 11: Turning the shaft with an Allen key

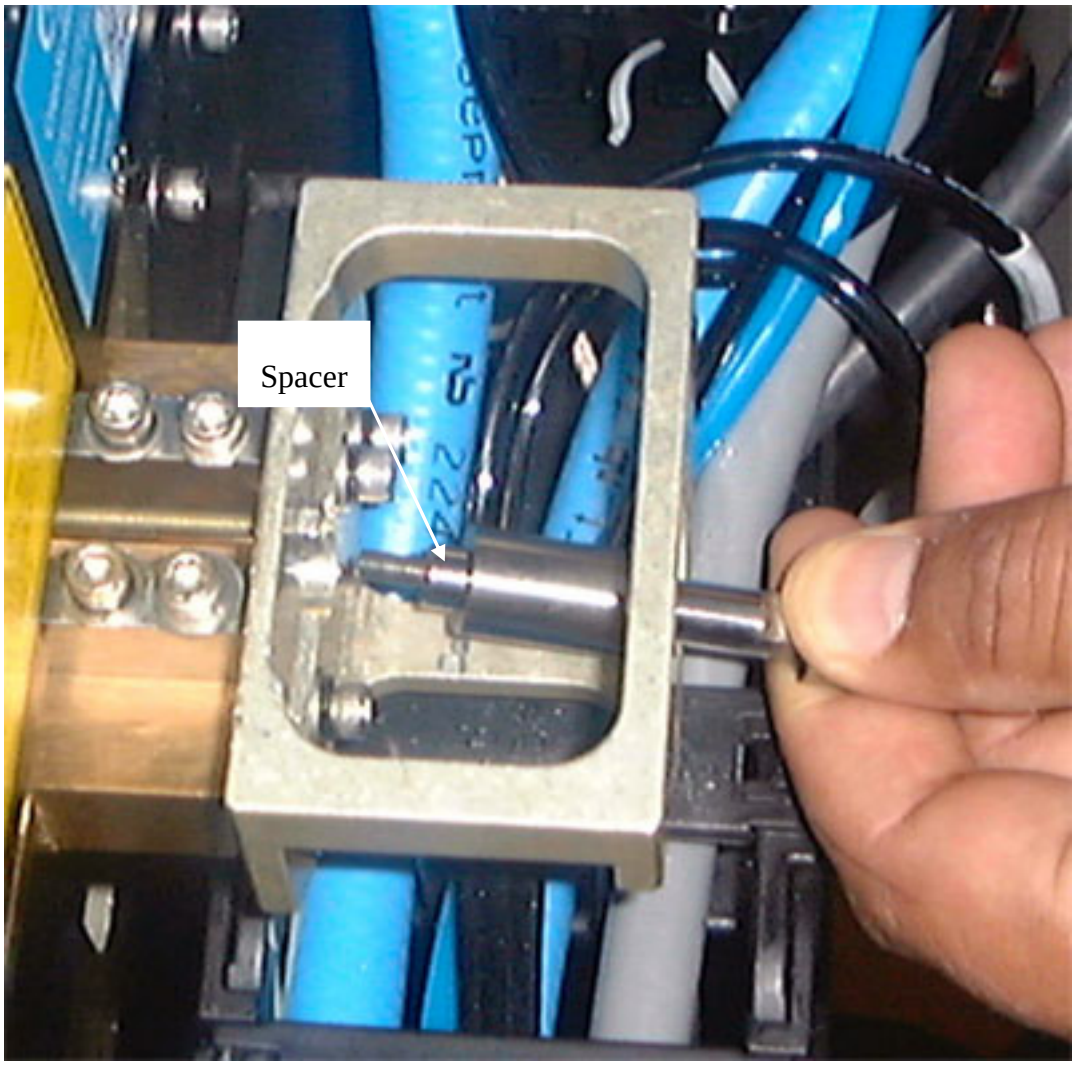


Figure 12: Removing the shaft, being careful not to drop the spacer

4.4 Lifting the Head out of the Quantum

1. Make sure that you have enough space to remove the head and a clean, safe place to put it once you have lifted it out.

DANGER! The thermal head weighs 12 kg. Do not to hit or damage the head window on any part of the device. It is breakable.

2. Ensure that the mounting brackets are securely attached to the head. Using the mounting brackets, lift the head up and back off the device.

CAUTION: Use the proper precautions to protect your back when lifting the head.

3. Place the head in a safe area with enough room for servicing.

5. REINSTALLING THE HEAD

5.1 Place the head back in the Quantum

1. Lift the head back into the device using the mounting brackets. Ensure that the actuator is facing the drum.

DANGER! The thermal head weighs 12 kg. Do not to hit or damage the head window on any part of the device. It is breakable.

2. Re-attach the four springs that hold the head down.

5.2 Reinstall the pneumatic unit and Z stage arm

1. Place the spacer on the end of the Z stage shaft and carefully reinsert it into the head, through the Z stage frame (refer to Figure12). Ensure that the shaft is positioned such that the pin hole is easily accessible.
2. Place the pneumatic unit back onto the Z stage frame. Align the pneumatic unit with the Z stage shaft.
3. Tighten the screws on the outside of the pneumatic unit (refer to Figure 9).
4. Insert the pin connecting the Z stage shaft and the pneumatic unit. Press and hold the pneumatic valve (as in section 4.3, step 5) to bring the two pieces close together, then insert the pin.

Note: You may need to toggle the valve in order to properly align the holes and insert the pin.

5. Rotate the unit counterclockwise (as in Figure 8b) until the non-cir-clip end is accessible. Reattach the remaining cir-clip (refer to Figure 8a) to the end of the pin.
6. Insert the Allen key (as shown in Figure 8b) and turn the unit clockwise until fully tightened.

5.3 Reconnect the Coolant, Debris Removal, Naphion and Electrical Connections

1. Attach the naphion quick release connector (refer to Figure 7).
2. Reconnect the hotlink BNC connector.
3. Reconnect the coolant hoses, being careful not to drip any coolant on the hotlink connector (refer to Figure 6).
4. Reconnect the two military connectors (refer to Figure 5).
5. Reconnect the debris removal air purge line as shown in Figure 4.
6. Reconnect the debris removal suction hose as shown in Figure 3.

5.4 Close the Quantum

1. Reinstall the unload tray.
2. Reattach the rear upper panel.
3. Close the top rear door.
4. Turn on the three main power circuit breakers at the distribution box.
5. Press the yellow emergency shutdown button (refer to Figure 1).
6. Restart the Lotem computer and GUI.

If you have any comments or feedback please contact Alvaro Ireta or Itai Peperovich.