Thermal 3 Head

Cleaning the Final Lens and Debris Removal Nozzle

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Revision History

Revision	Date	Author	Comments
Draft	28 Oct 2006	Ken Decarle/Kurt Shelton	Original release
A-A	17 Jul 2006	KShelton/MMunroe	Updated the template. Updated the procedure to include nozzle cleaning.

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1. RELATED DOCUMENTS

All documents are available on the Procedures page of the Thermal 3 TechPlanet site (**TechPlanet Home** > **Output** > **Heads** > **Thermal 3** > **Procedures**).

- Removing a Thermal 3 Head from a Magnus VLF
- TH3 Head on Magnus VLF Installation Procedure
- TH3 Head Lifting Crane (procedure 719-00564A-A)

2. REQUIRED TOOLS

- Small flashlight
- 2.5 mm hex wrench
- Lens cleaning kit (part number 04-0012B)
- Head lifting crane
- Optional: canned compressed air

3. SAFETY CONSIDERATIONS

3.1 Potential High Voltage Hazard

The TH3 Head has a switched power supply that operates at 380 VDC, 5A. Do not disable any safety interlocks that protect against this potential high voltage hazard.

3.2 Head Lifting Crane

For details on how to correctly use the crane, see the procedure TH3 Head Lifting Crane, available from the TH3 Procedures page.

The TH3 Head weighs 42 kg (~93lbs) and must only be lifted or moved using the head lifting crane designed for this purpose. Do not attempt to lift or move the TH3 Head without using the head lifting crane. The lifting crane is not intended for use by customers under any circumstances. The lifting crane column weighs 5 kg (~11 lbs), the boom assembly 13.2 kg (~29 lbs), and the lifting frame 2.3 kg (~5 lbs).

4. PROCEDURE

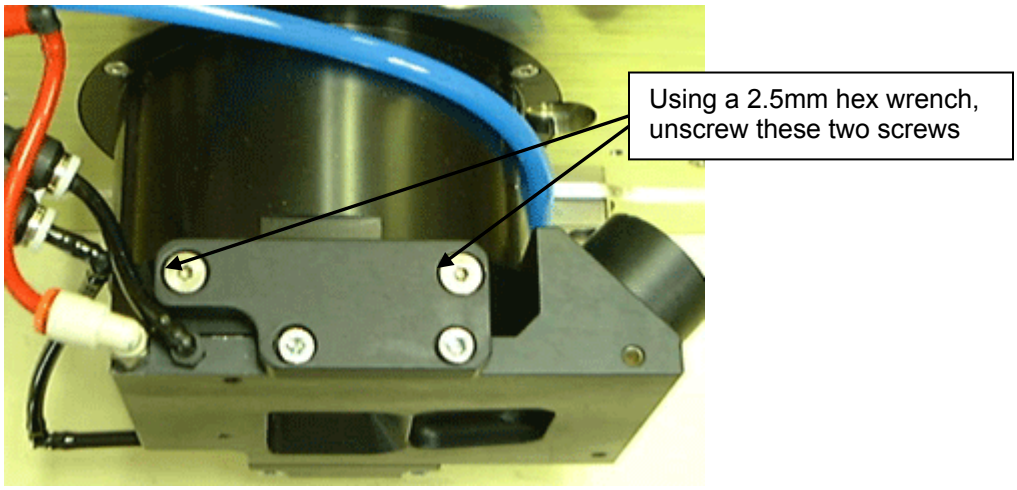
4.1 Clean the Lens

The debris removal nozzle needs to be removed when swapping a head or cleaning the final window. *You must proactively clean the nozzle every time a head is swapped or the final window is cleaned.*

1. Load a plate on the drum and type the command `>>head install on`. Note the sum and error values.
2. Using the lifting crane, remove the head from the device and place the head on a safe work surface or suspend it from the crane cable.

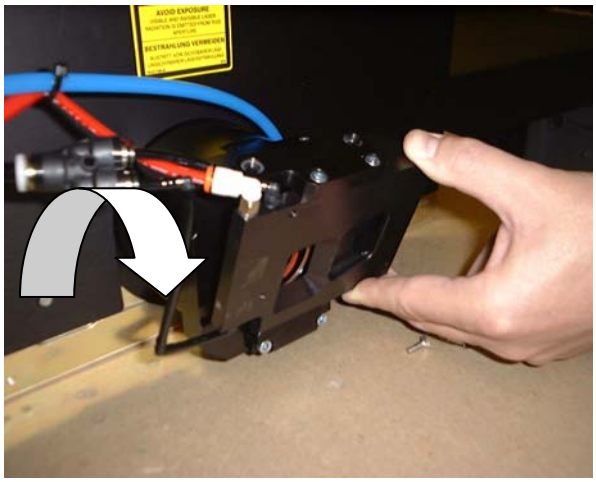
Note: You cannot clean the lens or nozzle if the head is on the carriage. The head must be off the carriage, either on the lifting crane or on a safe, clean work surface.

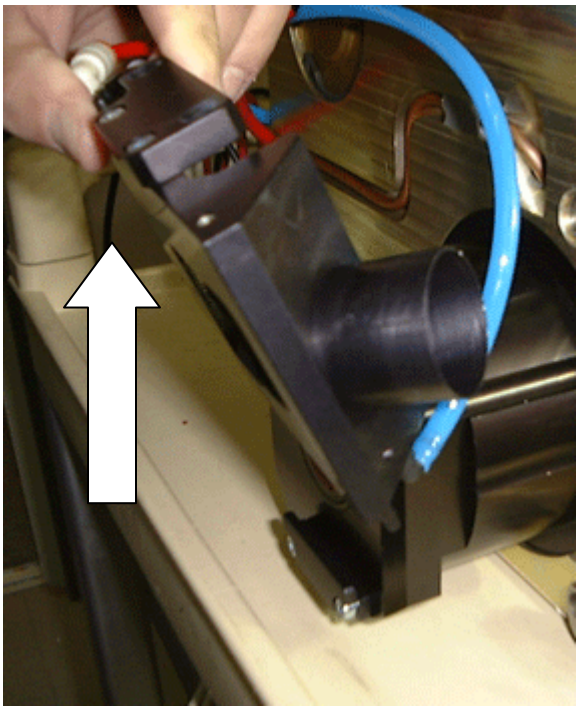
3. Remove the debris removal nozzle, and unscrew the two tapered screws (shown below).



4. Tilt the nozzle forward and lift it up and away from the head (see below).

Note: The circular or rectangular O-ring between the nozzle and the front plate may fall out. It must be re-installed when the cleaning is complete.





5. Check the device debris removal cabinet filter and replace as necessary.

6. Inspect the lens by shining a flashlight over the lens surface. Point the flashlight towards you on an angle (see below), so that you can see the blue reflection of the lens coating. In the service log, note the amount of debris.



Correct viewing angle



Incorrect viewing angle

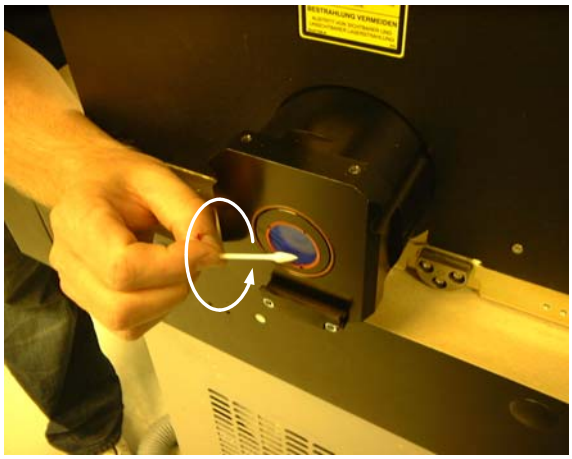
7. Dampen a new, clean cloth (provided in the lens cleaning kit, part number 04-0012B) with acetone and clean the head surface around the lens. To avoid contaminating the bottle of acetone, pour a small amount into the lid of the bottle and dip the cloth in the lid.

8. Dampen a new, clean pointed cotton swab (provided in the lens cleaning kit) with acetone.

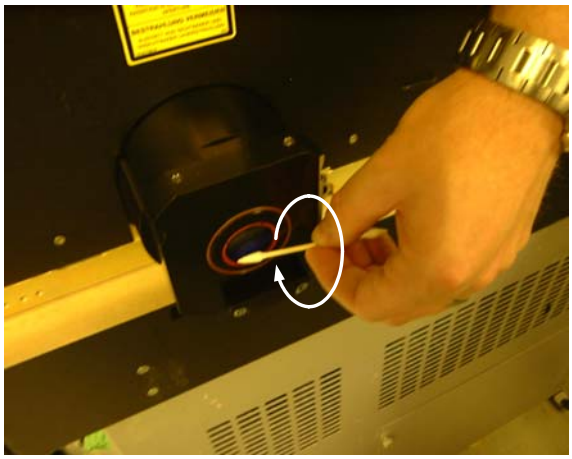
9. Position yourself and the head correctly for cleaning the lens, as shown below.

10. Starting at the bottom of the lens, rotate the cotton swab 360° in one pass from the bottom to the top of the lens. Double-click this icon to see a PowerPoint demonstration of the correct method.

CAUTION: Do not allow the cotton swab to contact the red silicone edging around the lens. It will smudge silicone across the lens and the lens will become difficult to clean.



Correct right-handed position

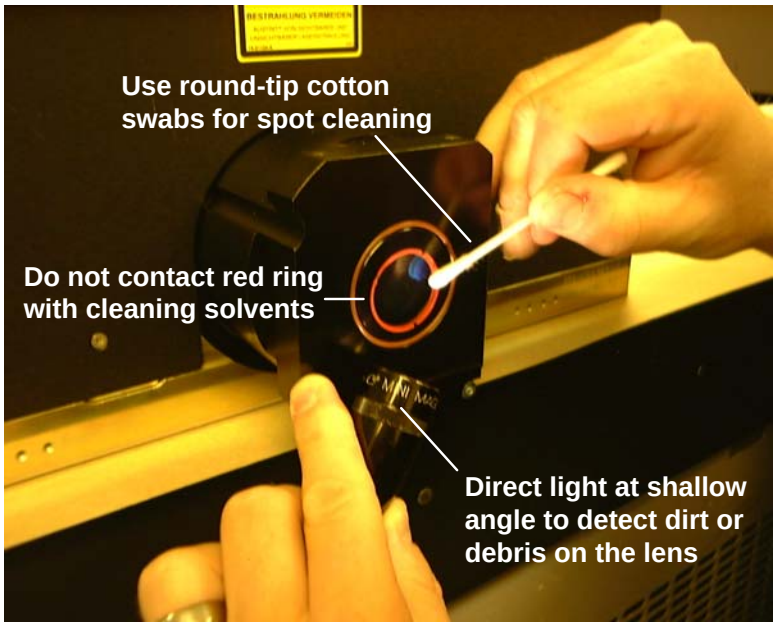


Correct left-handed position

11. Repeat step 10 with a new, dampened swab as many times as necessary until the lens is clean.

12. Inspect the lens again by shining a flashlight over the lens surface as before. Use a loupe if one is available. If it is not clean or there are streaks, repeat steps 7 to 10 as often as necessary.

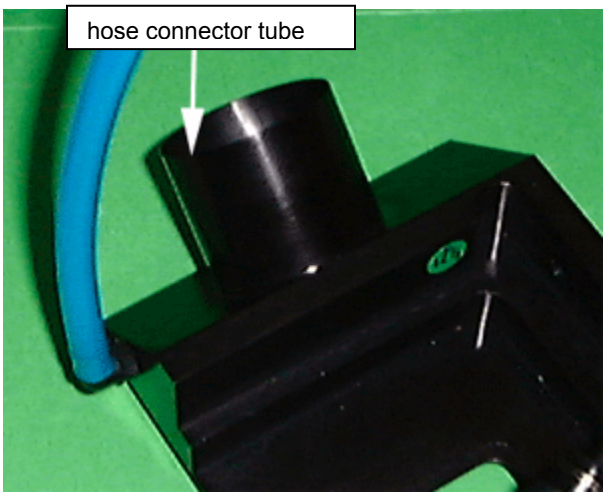
    Spot cleaning may be done using round-tip cotton swabs, as shown below.



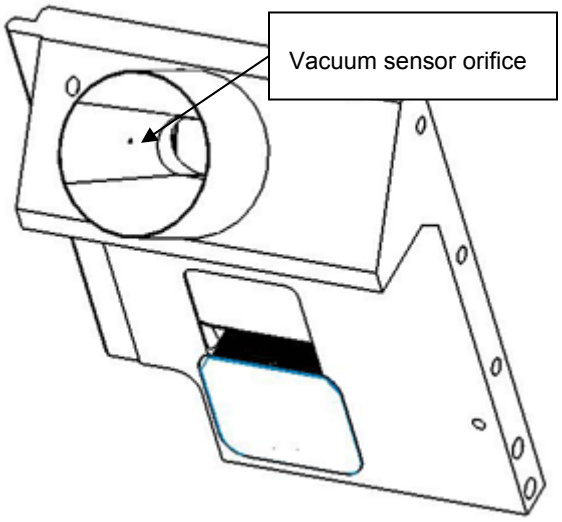
Note: If the lens is scratched, damaged, or still dirty after several cleanings, contact the PSS.

4.2 Clean the Debris Removal Nozzle

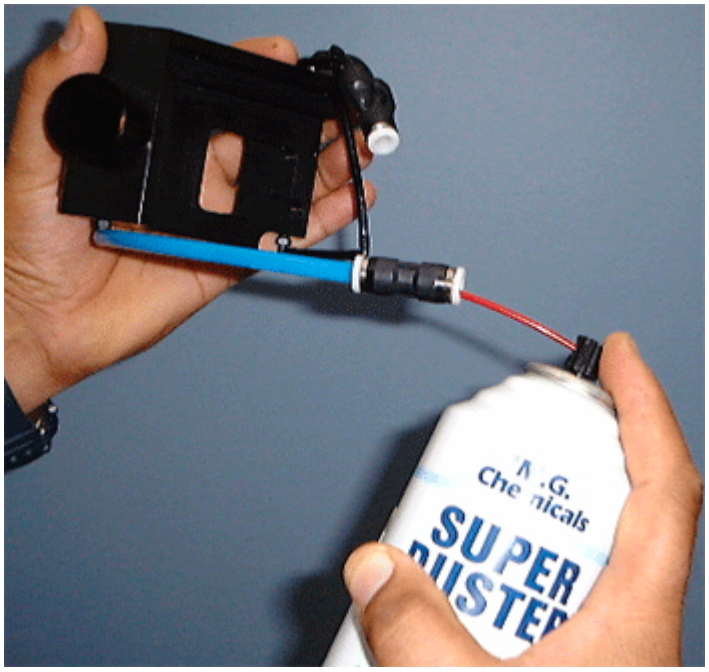
1. Using the wipes provided in the cleaning kit, wipe the entire surface of the nozzle.
2. Clean any debris build up on the inside of the nozzle.
3. With a flashlight, inspect the hose connector tube for debris accumulation. Clean out the debris.



4. Locate the vacuum sensor orifice. It is located inside the tube.



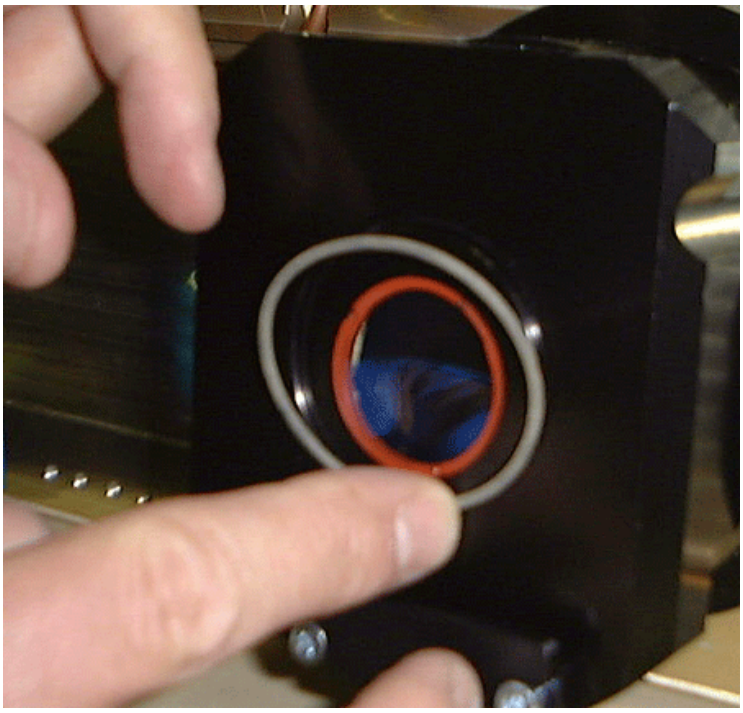
5. With a can of compressed air, blow air down the blue vacuum sensor hose.



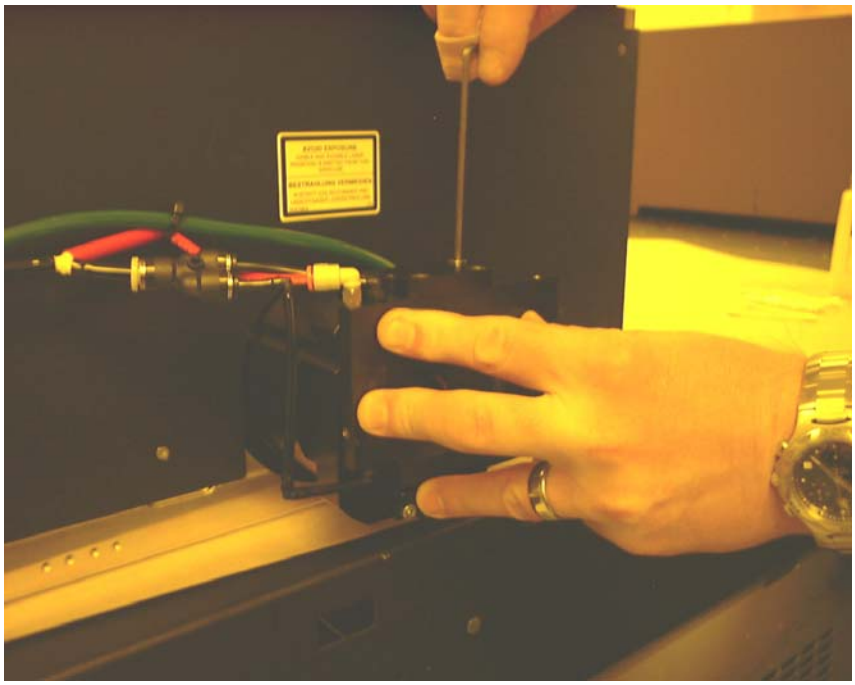
6. Wipe the debris from the vacuum sensor orifice.
7. Blow air down the vacuum sensor orifice again, to be sure it's clear of debris.

4.3 Reinstall the Nozzle and Head

1. To re-install the debris removal nozzle, first make sure that the O-ring between the nozzle and the front of the lens housing has not fallen out. If it has, reinstall it as shown below. Make sure the O-ring is properly seated in the groove.



2. Next, apply firm and even pressure to the nozzle to ensure proper compression of the O-ring as you tighten the mounting screws, as shown below.



3. Using the lifting crane, re-install the head on the device. Note the sum and error values and compare them to the values noted in step 1. If there was debris build-up on the lens the sum value may have increased. Ensure the sum is 750, ±200 and the error value is 0, ±20.

4. Re-optimize the head by running a power series and, if necessary, a surface depth series.