Trendsetter NEWS MPE

Thermal Head 1.7 to 2.x Upgrade Procedure

Document Number
73-3662A-D-PR01

20 Mar 2006

Copyright 2006 Kodak. All rights reserved.

Revision History

Revision	Date	Author	Comments
0.1	Mar 21 2000	Dwayne Brandt	Modified 77-0038B
0.2	June 2 2000	Dwayne Brandt	2nd draft
0.3	April 20	Frances Caton	Minor revisions throughout
A	Oct 23, 2001	Frances Caton	Modifications to cabling section for common power box. Modified air line connections for dehumidifier.
	Jan 31, 2002	Frances Caton	Modifications to sled
B	April 19, 2002	Frances Caton/Paul Holt	Update power supply and cable replacement.
C	December, 2005	Ken Johnston	Emphasize that this procedure applies only to Trendsetter NEWS MPE devices (not MCE). Update safety information (TH2 heads must only be installed on MPE devices that have the correct rear panel).
D	March 2006	Ken Johnston	Corrected typographical errors in part numbers of two cables.

Trendsetter NEWS MPE
Thermal Head 1.7 to 2.x Upgrade Procedure

CONTENTS

Revision History i

1. Procedure Overview 1

2. Laser Safety Practices 1

3. Related Documents 2

4. Parts Required 2

5. Removing a Thermal 1.7x Head 2

6. Replacing the Power Supply and Existing Cables 3

7. Mounting the TH2 Carriage Adapter Plate 4
   - 7.1 Assembling the Adapter Plate 4
   - 7.2 Preparing the Carriage for the Adapter Plate 5
   - 7.3 Attaching the Adapter Plate 6

8. Installing the TH2 head 7
   - 8.1 Preparing the Head for Mounting 7
   - 8.2 Mounting the Head on the Adapter Plate 7

9. Connecting the Cables and Hoses 7
   - 9.1 Attaching the Electrical Connections 7
   - 9.2 Attaching the Air Connections 7
   - 9.3 Reconnecting the Cooling System 9

10. Initializing the Trendsetter 9

11. Completing the Head Installation 10

1. PROCEDURE OVERVIEW

This document describes how to upgrade the 40 W, 48 V Thermal 1.7x imaging head (TH1.7x) in a *Trendsetter* NEWS MPE output device[1] to a Thermal 2.x head (TH2.x).

To replace a TH2 head in a Trendsetter NEWS MPE device that already has this upgrade, remove the failed head as described in section 5, and install the new head as described in section 8 on.

Important: Before you begin, read section 2, "Laser Safety Practices" for laser safety information.

This procedure also assumes that the head has been pre-configured for the media type and imaging time with the correct media parameters such as write laser power and drum speed. Refer to the Thermal Media Setup Procedure if media parameters have not been correctly configured.

2. LASER SAFETY PRACTICES

This document is intended for field service engineers who have attended a thermal head introductory course and is therefore familiar with the safety precautions when working with a Trendsetter.

When any interlocked access panel relied upon for laser safety is opened, power is automatically removed from both the write laser and the focus laser. For 48V TEH1.7 heads and for all TH2 heads, the service key switch in the LASER HAZARD position re-energizes only the focus laser and not the write laser.



Danger:
Never operate a thermal Trendsetter with its enclosure open and the write laser on. The write laser MUST be disabled when the enclosure is open. Failure to do so may result in permanent eye damage. The write laser must be disabled in firmware with the appropriate command:
TH1.7:
`set head wenable 0`
OR
TH2:
`redirect enable`
(to display the TH2 prompt)
`set sys laserenable false`

[1] If you are looking for the TH1.7 to TH2 upgrade procedure for MCE output devices, see Trendsetter 800 II/NEWS MCE Thermal Head 1.7 to 2.x Upgrade, document number 719-00575A-A-PR01.

Danger:
The TH2 focus laser is a hazard for up to 1.2 meters from the aperture of the head. This means that service procedures requiring the focus laser to be on, such as head positioning, must be performed with all doors closed and panels on.

For this reason, TH2 heads must not be installed on MPE output devices *unless* FCO E608 (kit part number 512-00248A) has been installed first. This FCO replaces the original back panel with one that has access holes through which a long hex key can be inserted for safe adjustment of the TH2 head positioning.

Danger:
Do not tamper with the key switch. The key can only be removed from the key switch while in the middle position (where the key is horizontal).

3. RELATED DOCUMENTS

- Thermal Exposure Head 1.7, Installation Procedure For Creo Output Devices (77-0074A)
- Thermal 2 Imaging Head Installation Procedure for Trendsetter Output Devices (719-00585A)
- Micro-Banding Troubleshooting Procedures (77-0034A)

4. PARTS REQUIRED

- Thermal 2 head upgrade kit (11-0953A)
- [If not already installed] FCO E608, kit part number 512-00248A: Back panel with access holes for safe adjustment of TH2 head positioning

5. REMOVING A THERMAL 1.7X HEAD

1. Make a backup of the existing NVS parameters using the command `fsaveall`. For details, refer to the MPE firmware release notes.
2. Use the command **`carriage moveto 20000`** to put the carriage in an easily accessible central location.
3. Remove top and rear panel. (Use a large hex key inserted in an empty pivot pin location to hold the load table up.)
4. Turn off the power to the Trendsetter with the on/off power switch.

Warning:
Wear an antistatic wrist strap plugged into the grounding socket on the frame. The autofocus laser diode is very static-sensitive and is exposed on the Thermal 1.7x heads once the PD board cover has been removed.

5. Disconnect the coolant hoses, holding paper towel under the hose fittings to catch any fluid that runs out.
6. Remove the cover for the power distribution (PD) board from the head.

7. Unplug all the cables including the home and away board cable and the lead-screw temperature sensor cable.
8. Disconnect the air jet from its fitting on the cable track mount bracket.
9. Remove the screws holding the cable track onto the bracket on the head.
10. Release latches #2 and #3, but not #1 beside the positioning screw. Use a 3 mm T-handle hex key to loosen the shoulder screws that compress the springs holding the head in position. Release latch #1.
11. Lift the head gently from the Trendsetter and place on a prepared antistatic surface.
12. Pack up the head for return shipping.

6. REPLACING THE POWER SUPPLY AND EXISTING CABLES

Because the TH2 uses a different PS6 power supply than the TH1.7, you must replace both the power supply and the existing TH1.7 power and control cables. The new cables are too bulky to fit from the power box through to the head, so you will have to feed them from the head back to the power supply.

1. Remove the debris removal hose tray (if present).
2. Remove the bracket that supports the cables entering the power box.
3. Cut all tie wraps on the cables that run from the head to the power.
4. Note the location of wires to the PS5 and PS6 power supplies. Disconnect the wires, loosen the three screws on the plate and lift the power supplies and plate out of the machine.
5. The existing bundle of wires, coming from the head, has a twisted blue/black pair that connects to the K9 terminal on the front wall of the power box. Note the position of the blue wire and the black wire and then carefully remove them from the terminal block. Cut the wires where they enter the tie-wrapped bundle. You will also have to cut these two wires where they emerge from the bundle.
6. Open up the cable track and remove:
    - PSS-head cable 10-3897B
    - EH-BP (J22) 10-3905B
    - EH-BP (J28) 10-3903B
    - Hot link cable 10-4109B
7. The existing cable track has 18 links. Add one more link to the flex track, part number 18-3345.
8. Disconnect the power cable from the new power supply so you can then feed the cable from the head side back through to the power supply. Label the wires or draw a diagram so you can reconnect them easily.

9. Thread the control cable (10-4956A), the power cable (10-4954A) and the hotlink cable (10-5145A) from the thermal head through to the power box. Connect the control cable to J22 and J28 on the card cage backplane.

10. Place the existing PS5 and new PS6 power supplies in the power box and reconnect the wires before screwing the plate in place. Note that the connector goes between the power supply and the washer.

11. Thread the blue/black twisted pair to the K9 terminal block on the front wall of the power box and connect.

12. Straighten the cables in the cable track and tie wrap taking care to keep the air carrying tubes on top.

13. Replace the bracket on the power box wall.

7. MOUNTING THE TH2 CARRIAGE ADAPTER PLATE

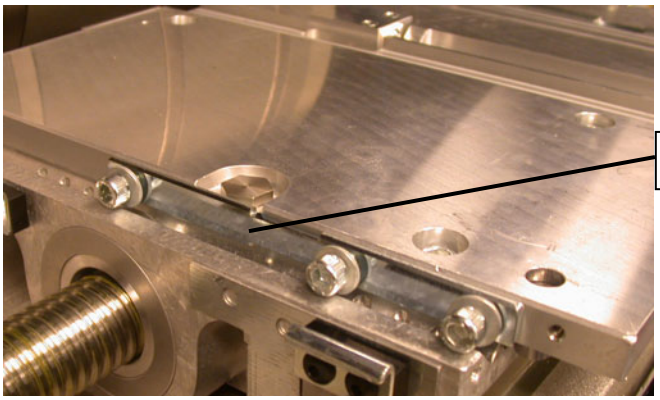
This section describes assembling and mounting the TEH 2 adapter plate (#57-8073) on the empty carriage. The adapter plate compensates for the smaller size of the TEH 2 head. Also, the squaring rods are now on the head instead of the carriage.

7.1 Assembling the Adapter Plate

To assemble the adapter plate prior to mounting on the carriage:

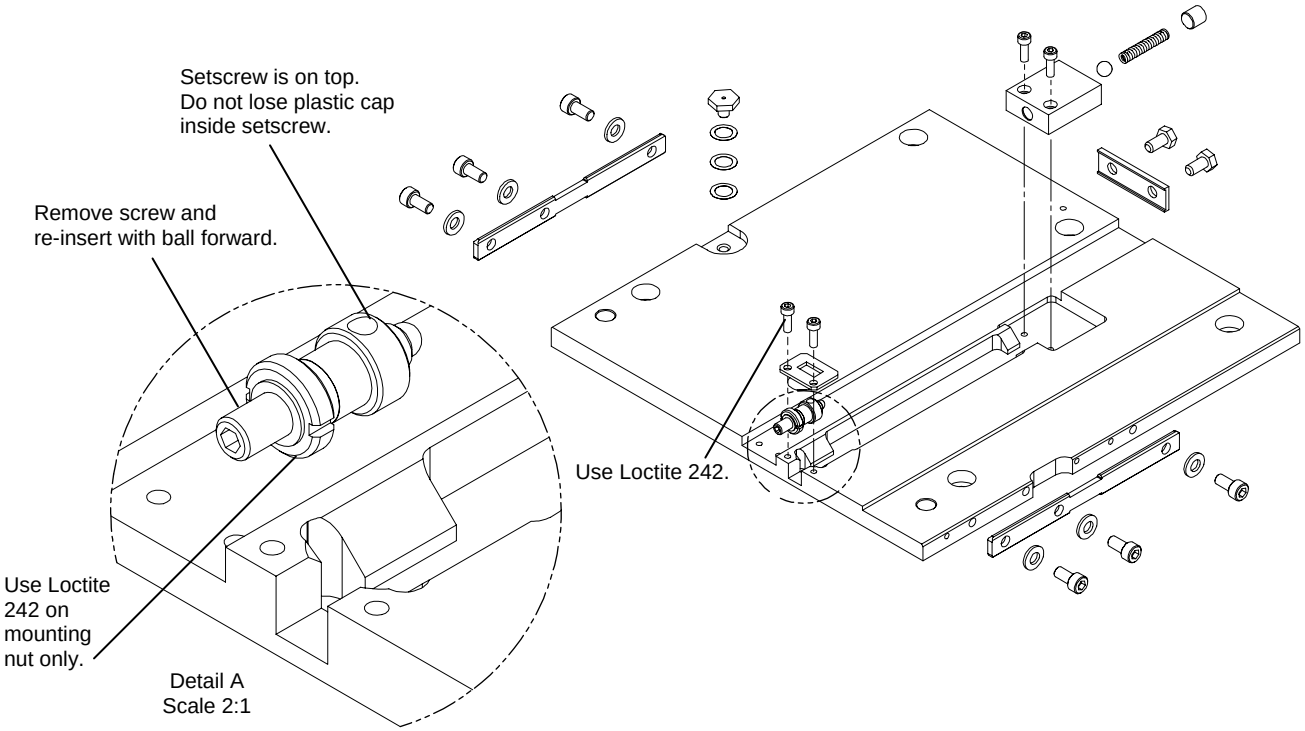
1. Place 4 shims (#52-4983) under the tilt adjust button (#57-6643A) and screw it in until it is tight.

2. Attach one blade washer plate (#57-8075) to each end of the adapter plate. Because the blade washer plates are notched on two sides, it doesn't matter which way they are attached.



Leave the three screws (#52-4485) and washers (#52-4247) on each end very loose. When the head is placed on the adapter plate, the mounting blades, which are attached to the head, fit into the space between the blade washer plate and the adapter plate.

3. Assemble the spring-loaded ball bearing block onto the adapter plate.



7.2 Preparing the Carriage for the Adapter Plate

1. Center the carriage.

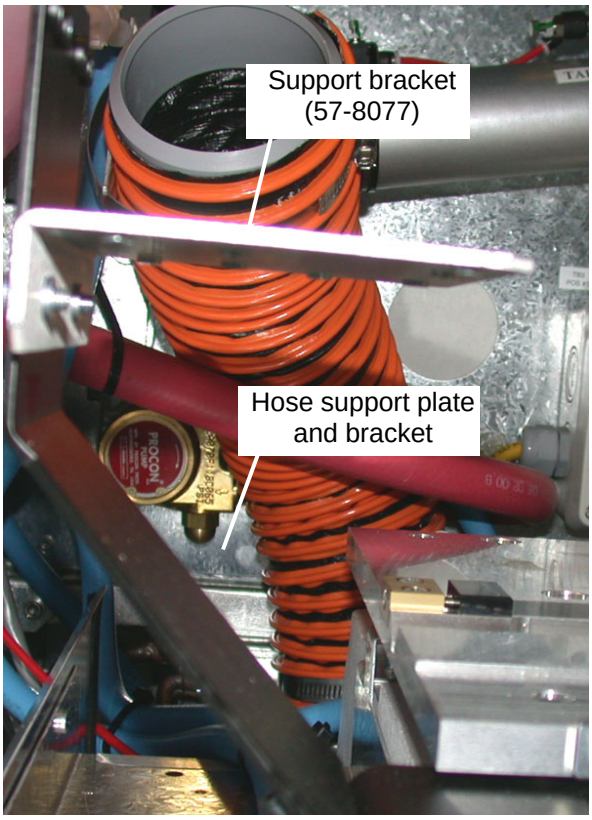
   The carriage should already be in the center. If not, power up the machine and use the command `carriage moveto 20000`. Without a head, an error will be generated and the carriage will not move. Use the commands `mask` to display the errors and `mask #` to disable each error until the carriage command works. Be sure to restore the mask values when finished.

2. Remove the squaring rods from the carriage and store them in a clearly labeled package in case a Thermal 1.7x head is reinstalled in the future.

   Warning:
   Be careful to not damage the home and away board.

   Examine the carriage surface for any raised nicks.

3. Attach the hose support plate and bracket (#57-4976 and #57-5790) to the carriage. (On newer machines this bracket may already be in place.) Then attach support bracket (#57-8077) as shown.



7.3 Attaching the Adapter Plate

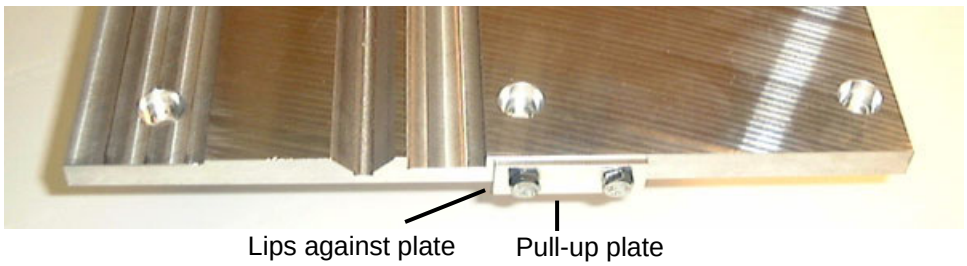
1. Place the adapter plate on the carriage so that the two alignment dowels hang over the flex-track edge of the carriage, on either side of the home and away board.

   Note: Be careful that the dowel does not damage the sensor on the home and away board.

2. Insert the six screws (#52-4485) and Belleville spring washers (#52-4031) through the adapter plate into the carriage and turn until finger tight.

   Note: The convex side of a Belleville washer goes towards the screw head.

3. Screw the pull-up plate (57-8074) to the drum side of the adapter plate with moderate torque to pull the dowels on the adapter plate tight against the edge of the carriage. Use the two hex-cap screws (52-7031). *Do not over-tighten the pull-up plate—damage to the carriage or adapter plate can result.*



The pull-up plate has two lips on one side of the plate (these are pressure points). One lip presses against the adapter plate and the other lip presses against the carriage.

Note: The main purpose of the pull-up plate is to hold the adapter plate in position while the adapter plate screws are being tightened. When the adapter plate is firmly tightened, the pull-up becomes redundant. Leave the pull-up plate attached but firmly tighten its screws.

1. Tighten the adapter plate down on the carriage. Start with the two screws in the middle of the plate and work your way outwards.
2. Recheck the tightness of the screws on the pull-up plate.

8. INSTALLING THE TH2 HEAD

This section describes mounting TEH2 onto the adapter plate, connecting the cables, and positioning the head.



Warning:
Always lift the head by the two retractable handles that slide out from each end. Always wear an antistatic wrist strap to prevent static discharge from damaging the head.

8.1 Preparing the Head for Mounting

To prepare the head for mounting:

1. Fasten the two mounting blades (57-8076A) to the ends of the head using M4x8 mm socket cap screws (52-4459) and 1 mm thick Belleville washers (52-4261). Slide the mounting blade under the head's black sheetmetal before inserting the M4 screws.
2. Install the whisker-jet block (57-7501A if necessary. Mount the whisker-jet block and make sure to install the o-ring (59-3079) and the two set screws (52-4062) to block holes. Use loctite 242 on the two set screws. The tops of the set screws should be flush with the surface of the block. It is fastened to the lower edge of the nose piece with two screws (M4x12) and directs the air from the outlet at the corner of the nose piece to the window.

8.2 Mounting the Head on the Adapter Plate

Note: Wear an anti-static wrist strap plugged into the grounding socket on the Trendsetter.

1. Back off the precision screw to give clearance for rod on the head
2. Gently place the head onto the adapter plate mounted on the carriage. The slots on the mounting blades slide over the six loose screws, between the adapter plate and the steel clamping bars, at the ends of the adapter plate.



Warning:
Be careful not to bump the lens, shutter, or autofocus actuator on any protrusions. Do not allow the head to drop down onto the carriage – the sudden

impact could shift the components inside the head and cause misalignment.

3. Slowly turn the drum by hand to check that the head has clearance from both the leading edge and trailing edge clamps. Screw in the precision screw to apply force to the rod.

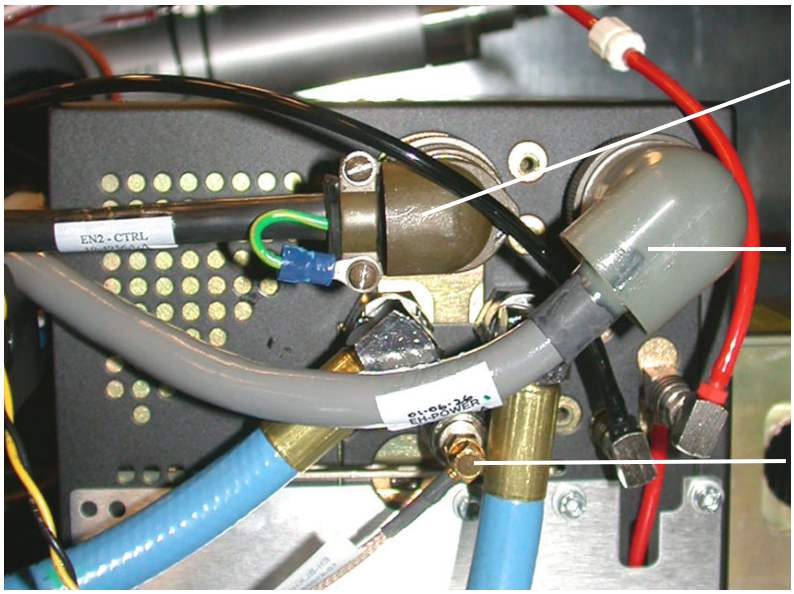
Warning:
Failure to check clamp clearance could result in severe damage to the head and clamps.

4. Leave the washer plate screws loose enough so the head can still be moved easily by the adjustment screw. If you try to adjust the positioning screw when the head is not free to move, you could strip the threads.

9. CONNECTING THE CABLES AND HOSES

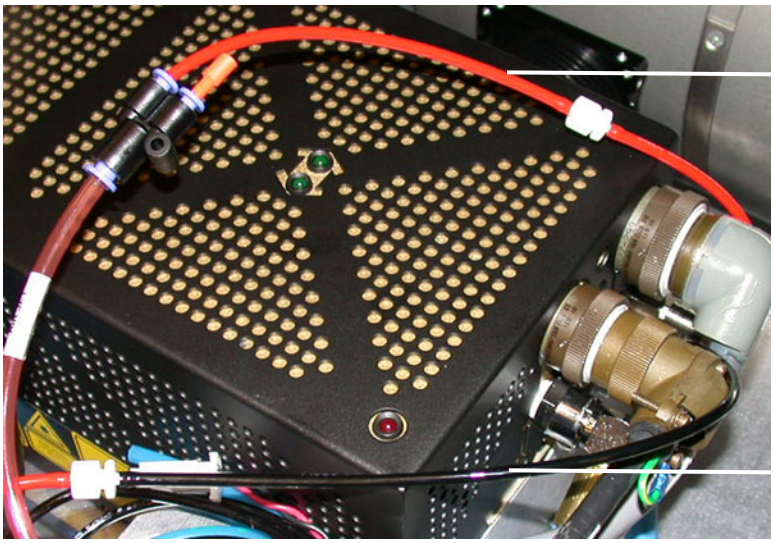
9.1 Attaching the Electrical Connections

Attach the cables as shown in the following photo.



9.2 Attaching the Air Connections

1. Replace the whisker jet air line coming from the Y connection (see photo) with the longer piece included in the kit (56-1038). Attach to the thermal head with the 50-2185A connector (see photo above).



2. Modify the existing dehumidfier air line as shown. Use male fitting (55-0134) and female fitting (55-0135) to attach the black tubing (56-1037) to the existing airline. Attach the black tubing to the thermal head with the 50-2184A connector.

   Note: When turned on, the dehumidifier makes a noise similar to air escaping. This is normal; the sleeve is semi-permeable and is releasing moist air.

9.3 Reconnecting the Cooling System

To reconnect the cooling system:

1. Inspect the O-rings on the two cooling hose fittings.

   If there are any nicks or other damage, replace the O-rings to prevent leaking.

   - To avoid damage to the o-ring, check that the latches on the TH2 cooling connectors are in the released position.
   - Insert the two cooling hoses. The direction of coolant flow through the head is not important.

2. Check that all connectors are fully inserted and latched.
3. Check the coolant level in the reservoir, and if required, add coolant.
4. Close all access panels.

10. INITIALIZING THE TRENDSETTER

To get the Thermal 2 head ready for positioning, you need to power up and initialize the Trendsetter:

1. Power up the Trendsetter and monitor the boot up sequence on the diagnostic terminal.

   The following two messages should appear:

   ```
   >>Datalink: exposure head coming online
   ```

```
>>Head initialized successfully
```

If these messages do not appear, power down the machine, open the access panels, and inspect the serial communications cable (EH-BP).

If the following message appears:

```
incompatible head firmware detected
```

Then enter the command **`list version`** and identify the cause of the incompatibility.

2. To identify the head as Thermal 2, enter the commands:

   `set head type 3`

   `nvs save`

3. Check the serial data communications with the head command:

   `head status`

11. COMPLETING THE HEAD INSTALLATION

To complete head installation procedure, refer to the following sections (and their subsections) in Thermal 2 Imaging Head Installation Procedure for Trendsetter Output Devices (719 00585A).

- Positioning the head
- Checking the image quality



Danger:
Do not begin the Thermal 2 head positioning procedure on an MPE output device *unless* FCO E608 (kit part number 512-00248A) has been installed first. This FCO replaces the original back panel with one that has access holes through which a long hex key can be inserted for safe adjustment of the TH2 head positioning.