

TFX Head

Tilt Series

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Revision History

Revision	Date	Author	Comments
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1 RELATED DOCUMENTS

- TFX Head Installation on ThermoFlex Wide II. See http://techplanetpre.creo.com/output/computer_to_plate/thermoflex_II/nav/install.htm#install_procs
- Additional information and troubleshooting guides for the TFX head can be found at http://techplanetpre.creo.com/output/heads/tfx/nav/index.htm
- Media setup procedures. See http://techplanetpre.creo.com/consumables/media/nav/flexo.htm

2 TOOLS REQUIRED:

- 2mm Allen key, shaft length 15cm (6 in.) T-handle recommended (90-1100)
- Dylux media (pieces are supplied with each machine)
- Procomm script "TFX_ManTilt" or SPLOT equivalent script

3 SETTING HEAD TILT

WARNING: The TFX head is much more static sensitive than other Thermal Heads. You must wear a properly grounded wrist strap at all times while handling and installing the head. The ThermoFlex Wide II must be plugged into the AC wall supply for the wrist strap to be grounded.

3.1 Tilt series using Dylux media (preferred method)

A tilt series may be necessary to correct cases where moiré or the orthogonality artifact is particularly objectionable. The tilt is adjusted by means of a ¼-80 jacking screw located on the home side of the head.

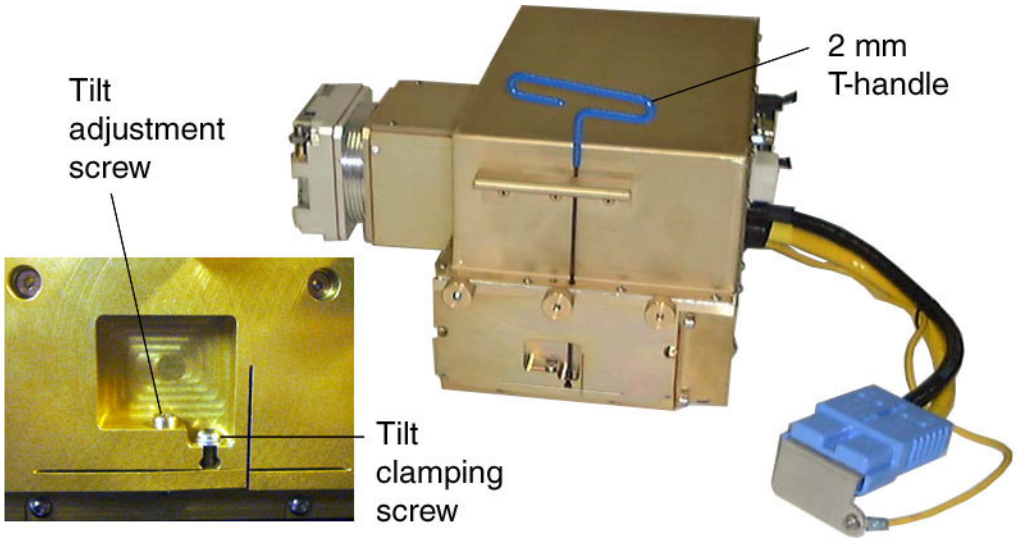


Figure 1: Tilt adjustment mechanism. The T-handle is shown inserted into the tilt adjustment clamping screw.

1. Type >>`media` and record the index for the media configured for Dylux.
2. Type >>`media <index for Dylux>.`
3. Type >>`drumvacuum on` to turn the drum vacuum on.
4. Push the table back to expose the drum (if necessary use >>`table open`)
5. Manually load a small piece of Dylux proofing media - at least 8” (around drum) x 16” (along drum). (A procedure for manually loading media is given in Appendix A). If no Dylux is available, see the section on using Flexo Media.
6. Type >>`zdrive init`
7. `Type` >>`zdrive focus 432 0.2`

Note: Wait for this command to complete before proceeding to the next step.

8. Open the table. Loosen the clamp screw that locks the tilt adjustment.
   Insert the 2mm T-handle Allen key through the rear slot (labelled “C” for clamp) in the TFX side-handle, and into the rear guide hole. The clamp screw cannot be seen behind the flex blade - you must ‘feel’ the tool engaging the head of the screw.
9. Loosen the six flexure-blade nuts (3 on each side). If the head moved while loosening the nuts, gently push the head forwards towards the drum to reseat the head against the guide rod locating pin.
10. Close the table and wait for the head to reset.
11. Type >>`TFX> foc install on` to check the focus error number (second column of streaming numbers) to verify that the head has not moved - the values must be less than ± 15.

12. Run the tilt series script using the following script parameters:

Mode #	1
Initial Offset (in.)	0.5
Pattern Width (in.)	0.5
MCE Plot Pattern	11
Media #	<MCE media index for Dylux>
Pattern Spacing (inches)	0.1
Desired # of Plot Strips	25 or more

Note: Because this is a manual series, keep track of how many turns of the tilt screw you make and whether the turns were clockwise or counterclockwise. TIP: keep track of the turns by writing them on the media under each strip after each plot has completed.

Note: Each time the table is opened, the carriage automatically moves home. This is not part of the script but an unavoidable function of the ThermoFlex Wide II firmware.
After each plot strip in the series completes, the script pauses and the drum stops with the exposed media visible with the table open. Adjust the tilt screw during these pauses as follows:

i. Push the table back and open the front cover and use the 2mm T-Handle to adjust the tilt screw. The tilt screw is accessed by inserting the T-handle through the front slot (labelled "T" for tilt) of the TFX handle, and into the forward guide hole. The T-Handle can be left in the tilt screw through the duration of the series.

ii. After each adjustment of the tilt screw, lightly push the head down and forward simultaneously with one hand to ensure the head is contacting the locating pin.

13. Complete the first plot strip in the series without changing the tilt screw - this serves as the reference position. After this initial strip is complete, begin the series by turning the screw one full turn either clockwise or counterclockwise.

What to look for: Incorrect tilt will emphasize differences at the orthogonality correction boundaries of the plot strips. When the tilt is improperly set, one of the orthogonality corrections will stand out as being much darker, or much lighter, than the neighboring sections. As the tilt screw is turned, this portion of the plot will change from darker to lighter, or vice-versa depending on the direction of the turns. Clockwise and counterclockwise adjustments are indicated beneath each strip. These adjustments are very coarse, but are used here for illustrative purposes to emphasize the effect of head tilt.

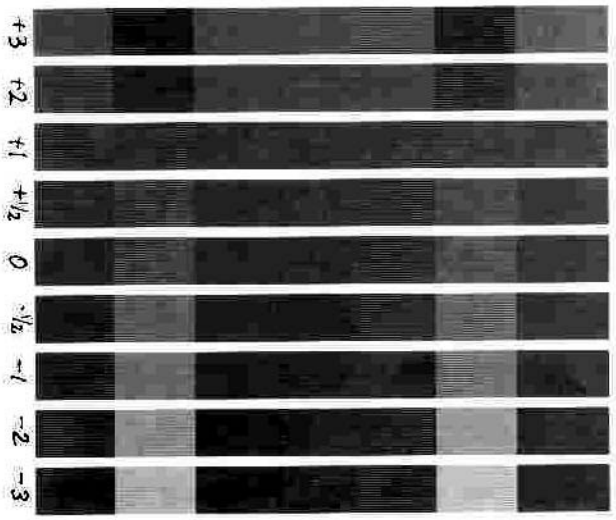


Figure 2: Tilt series.

Clockwise and counterclockwise adjustments are indicated beneath each strip. These adjustments are very coarse, but are used here for illustrative purposes to emphasize the effect of head tilt. The best setting here would be near "+1".

14. Proceed with half or full turns until it has become obvious that one section of the plot has gone from being lighter to being darker (or vice-versa) than its neighboring sections. This process will likely involve turning the screw only a few times clockwise and/or counterclockwise to improve the tilt setting.

15. Fine-tune the adjustments by using < ¼ turns to find the tilt position at which the plot strip looks the most uniform, where no portion is significantly darker or significantly lighter than surrounding portions. This is the optimal tilt setting.

Note: Pattern 11 is more demanding than half-tone screens and it is likely that there is no position where the plot looks absolutely uniform.

16. After the optimal tilt setting has been set, lightly push the head down and forward with one hand while carefully tightening the six flexure-blade nuts on the sides of the head. Pay particular attention that when tightening the nuts the head does not lift upwards or bind on the flexure-blades. This is the most crucial step in the procedure - moving the head here will often mean having to repeat the tilt series.

17. Plot another strip to verify the head did not move while tightening the nuts. If there is no obvious change in the pattern, proceed with the next step. If it appears that the pattern did change significantly, loosen the nuts and repeat the plot. If necessary, repeat steps 14 to 16 until there is no change in the pattern after the tightening the nuts.

18. Tighten the clamping screw that locks the tilt adjustment.

19. Plot another strip to verify that the head did not move while tightening the clamping screw.

20. Exit the script and remove the media from the drum.

21. Type >>`drumvacuum off` to turn the drum vacuum off.

3.2 Tilt series using Flexo media

Flexo media can be used to do a tilt series if Dylux is unavailable. The procedure is similar but there are important exceptions.

See Figure 1: Tilt adjustment mechanism for the screw location.

1. Open the table to expose the drum (If necessary type `>>table unlock`)
2. Type `>>drumvacuum on` to turn on the drum vacuum.
3. Manually load a piece of flexo media. A small piece can be used, but it should be at least 16” (around drum) x 16” (along drum). (A procedure for manually loading media is given in Appendix I).
4. Type `>>media`
   Note the MCE media index for the type of flexo (Cyrel, BASF etc.) that is being used.
5. Type `>>media <index for flexo>.`
6. Determine the TFX “med” index <k> and the MCE media index <n> for the type of flexo material to be used in the series. This can be done by starting at k=0, issuing the command >>`TFX> set med <k> Name` and incrementing k until the match is found. In most cases k = n-1.
7. The tilt series will be done at 50% of the normal exposure setting:
   `TFX>set med <k> stroke`
   Record the stroke (ie. power) setting for the media.
8. Set the power to 50% of the value recorded above:
   `TFX> set med <k> stroke all <power/2>` mw.
9. Type `>>zdrive init`
10. Type `>>zdrive focus 1.7`

Note: Wait for this command to complete before proceeding to the next step.

11. Raise the ThermoFlex table. Loosen the clamp screw that locks the tilt adjustment. Insert the 2mm T-handle Allen key through the rear slot (labelled “C” for clamp) in the TFX side-handle, and into the rear guide hole. The clamp screw cannot be seen behind the flex blade - you must feel the tool engaging the head of the screw.
12. Loosen the six flexure-blade nuts (3 on each side). If the head moved while loosening the nuts, gently push the head forwards towards the drum to reseat the head against the guide rod locating pin.
13. Close the table and wait while the head resets.
14. Check the focus error number (second column of streaming numbers) to verify that the head has not moved - the values must be less than 10:
    `TFX> foc install on`

15. Run the Procomm script to do the tilt series using the following script parameters:

Mode #	1
Initial Offset (in.)	0.5
Pattern Width (in.)	0.5
MCE Plot Pattern	50
Media #	<MCE media index for flexo>
Pattern Spacing (inches)	0.1
Desired # of Plot Strips	25 (any large number is OK)

Note: Because this is a manual series, keep track of how many turns of the tilt screw you make and whether the turns were clockwise or counterclockwise. TIP: keep track of the turns by writing them on the media under each strip after each plot has completed.

Note: Each time the ThermoFlex table is opened the carriage automatically moves home. This is not part of the script but a function of the ThermoFlex firmware.

16. After each plot strip in the series completes, the script pauses and the drum stops with the exposed media visible at the flash cover. Adjust the tilt screw during these pauses as follows:

    a) Raise the table and use the 2mm T-Handle to adjust the tilt screw. The tilt screw is accessed by inserting the T-handle through the front slot (labeled "T" for tilt) of the TFX handle, and into the forward guide hole. The T-Handle can be left in the tilt screw through the duration of the series.

    b) After each adjustment of the tilt screw, lightly push the head down and forward simultaneously with one hand to ensure the head is contacting the locating pin.

17. Complete the first plot strip in the series without changing the tilt screw - this serves as the reference position. After this initial strip is complete, begin the series by turning the screw one full turn either clockwise or counterclockwise.

    What to look for: Incorrect tilt will emphasize differences at the orthogonality correction boundaries of the plot strips. When the tilt is improperly set, one of the orthogonality corrections will stand out as being much darker, or much lighter, than the neighboring sections. As the tilt screw is turned, this portion of the plot will change from darker to lighter, or vice-versa depending on the direction of the turns. See Figure 2: Tilt series.

18. Turn the screw 2 full turns counterclockwise and plot another strip.

19. Increment the tilt screw ¼ turn clockwise and plot. Repeat the ¼ turn increments until the screw has been turned a total of 2 full turns clockwise past the reference position. This will involve a total of sixteen "¼ turns" and there should be 18 plot strips on the media (17 plots in the series plus the reference plot in step 18).

20. Remove the flexo from the drum and examine it on a light table.

Determine which of the series plots is most uniform (where no one portion of the strip is significantly darker, or significantly lighter than neighboring portions.) This is the optimal tilt setting and should be within 2 turns of the original (reference) tilt position.

Note: Because the plot is underexposed it will emphasize tilt artifacts. It is likely that there will be no tilt position where the plot looks absolutely uniform.

If none of the plot strips have gone from darker to lighter, the optimal tilt setting is more than two full turns from the original setting. Do another series, extending it in either the clockwise or counterclockwise direction as necessary.

21. Turn the tilt screw to its optimal position, as determined in the previous step.

Note: Before setting the tilt screw, remember that the current tilt position is probably not the initial reference position – its set to whatever it was at the end of the last series. Be very aware of this and take it into consideration when making this adjustment.

22. After the optimal tilt setting has been set, lightly push the head down and forward with one hand while carefully tightening the six flexure-blade nuts on the sides of the head. Pay particular attention that when tightening the nuts the head does not lift upwards or bind on the flexure-blades. This is the most crucial step in the procedure - moving the head here will often mean having to repeat the tilt series.

23. Tighten the clamping screw that locks the tilt adjustment.

24. Exit the script if it is still running.

25. Load another piece of media and plot a 50% pattern (the power should still set to under expose the media) to compare with the optimal setting found in the series.
    Type `>> plot 50 5`
    This is to ensure the head did not move while clamping it and the tilt screw.

26. Compare this plot on a light table with the optimal setting from the tilt series. This is somewhat subjective and is one of the disadvantages of using flexo for the tilt series. If it is not significantly different from the optimal, proceed to the step 27. If it does appear to have changed significantly, the two most likely problems are:

    - head moved or bound on the flexure blades while locking it down
    - setting the tilt incorrectly (eg. not keeping track of the number of turns)

    Loosen the six flexure-blade nuts and gently push the head forward to ensure it is properly seated against the guide rod locating pin. Carefully tighten the nuts, making sure the head is not being lifted or binding on the flexure-blades, and do another plot 50. If this has not corrected the problem, repeat the tilt series.

27. Reset the power for the flexo media to its original value
    `TFX> set med k stroke all <power recorded in step 7>` mw

28. Turn the drum vacuum off
    `>>drumvacuum off`