Adjusting Stitching/GC Parameters on TMCE or GMCE NEWS 200 Devices

Product

Kodak® Trendsetter® NEWS™ 200 (TMCE or GMCE)

Background

The Trendsetter NEWS 200 output device uses two TH2 thermal imaging heads to increase its maximum plate throughput compared to that of single-head devices. When the two heads are writing one large image on a panorama plate, it is important that the following geometric correction parameters be set correctly, so that stitch line can be seen between the section imaged by the master head and that imaged by the slave head:

- `mshift` (mainscan shift)
- `headspacing` (distance between master and slave heads)

This procedure describes how to adjust both of these parameters, along with the `sshift` (subscan shift), which ensures that the image written by each thermal head is correctly set up for individual plates.

Note: This procedure applies to both NEWS 200 TMCE and GMCE devices. On GMCE NEWS 200 devices, you have the option of using the Test Plot utility in Service Shell to simplify the process of adjusting dual-head GC parameters. See the TechPlanet Trendsetter NEWS Procedures page for that procedure.

Procedure

Adjusting Subscan and Mainscan Shift

1. In Service Shell, select the **Device Monitor** and then select **GMCE** or **MCE** from the Device Tree.
2. Enter command

   `gc`

   to display a table showing all the current gc parameters. Take note of the current `mshift` and `sshift` values for both the Master (pin 1-2) and Slave (pin 3-4) heads.
3. Load two thermal plates into the NEWS 200 device with command:

   `load m <xxx> s <yyy> ms 2`

   (xxx = mainscan dimension in mm; yyy = subscan dimension in mm)
4. Enter command:

   `plot 100`
5. Use a pen to mark which plate was imaged by the master thermal head and which was imaged by the slave.
6. Process the plates.
7. For each plate, with the leading edge towards you, measure the distance between the crosshair in the lower left corner and the bottom edge (leading edge) of the plate. This mainscan distance should be 25.4 mm (1 inch) from the leading edge of the plate, within 20 microns (0.02 mm).

8. For each plate, with the leading edge towards you, measure the distance between the crosshair in the lower right corner and the right (home side) edge of the plate. This subscan distance should be 25.4 mm (1 inch) from the left edge of the plate, within 20 microns (0.02 mm).
9. If necessary, adjust the mainscan shift (gc mshift) and subcan shift (gc sshift) parameters for the master head.

   Increasing the gc mshift value will move the cross hair upwards on the plate by the number of microns added. Increasing the gc sshift value will move the cross hair to the right by the number of microns added.

   The commands to change these values for the master head are as follows:

   `set gc mshift 1 <new value>`

   `set gc sshift 1 <new value>`
10. If necessary, adjust the mainscan shift (gc mshift) and subscan shift (gc sshift) parameters for the slave head.

    The commands to change these values for the slave head are as follows:

    `set gc mshift 2 <new value>`

    `set gc sshift 2 <new value>`
11. Load two new plates and repeat steps 4 to 8 to confirm that the cross hairs are now in the correct positions.
12. If they are not, repeat steps 9 to 11.

    If the cross hairs tend to move 1 or 2 mm in the subscan direction (left to right) over time or from plate to plate, this could a result of changes in the surface reflectivity of the plate.

    Surface reflectivity may change if the plate is old, or exposed, or fogged. In this case, use new plates. Surface reflectivity may also vary from batch to batch from thermal plates. Sometimes, the emulsion is damaged 10 to 15 mm up from the leading edge of the plate, causing changes in surface reflectivity. In these cases, contact the plate manufacturer.

    To help diagnose variability in surface reflectivity from batch to batch of plates, use the foc cal reflect command. Be aware that the focus laser will expose the plate and cause the output value to change over time. Either load new plates or move the drum or carriage so that the focus laser is over fresh emulsion.

Adjusting Head Spacing

1. Enter command:

   `gc`

   Take note of the current values for the `mshiftslave` and `headspacing` parameters.
2. To make it easier to see the stitch line when you image a test plot, temporarily subtract 85 microns from the mainscan shift value currently being used for the slave head.

   Enter command:

   `set gc mshiftslave <current value - 85>`

3. Load a panorama plate into the NEWS 200 device with command:

   `load m <xxx> s <yyy> ms 1`

   (xxx = mainscan dimension in mm; yyy = subscan dimension in mm)

4. Enter command:

   `plot 22`

   (2 x 2 pixel checkerboard)

5. Mark the leading edge with a pen and process the plate.

   Note: Ignore any banding that appears on the plate. This is normal for this test pattern when imaged at typical newspaper resolutions (1016, 1200, or 1270 dpi). It does not appear under normal imaging conditions with customer TIFF files.

6. With the leading edge towards you, use a 100 power microscope to examine the very bottom of the stitch line. Each square represents 42.4 microns.

   Note: Typical 100 power microscopes invert the image, so when viewing the stitch line under a microscope with the leading edge of the plate towards you, keep in mind that the plot to the left of the stitch line was imaged by the slave head, while the plot to the right was imaged by the master head.

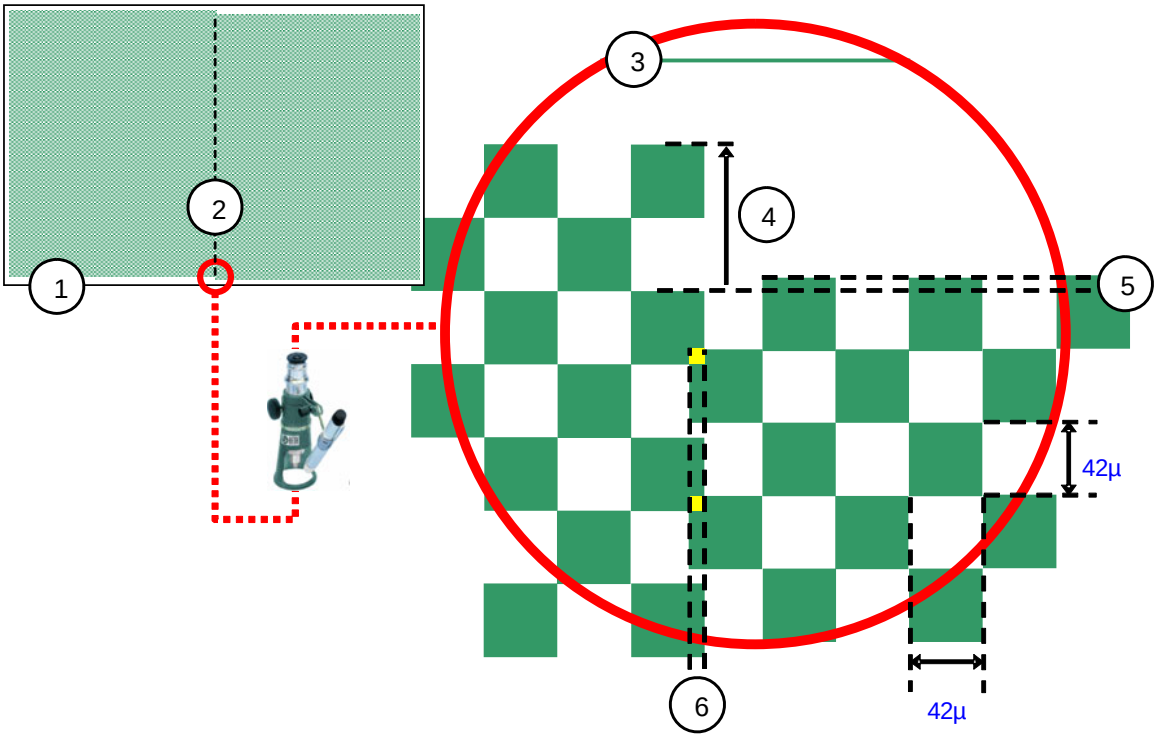


Figure 1: Stitch Line As Viewed Thorough Typical 100X Microscope (after 85µ temporarily subtracted from mshiftslave value)

1. Leading edge of plate
2. Stitch line on plate
3. Leading edge of plate as seen through microscope
4. Distance (85µ) that squares imaged by slave head were shifted towards the leading edge of the plate in step 2
5. Error in mainscan direction.
   - To move squares on slave head side of the stitch line away from leading edge of plate, increase value of mshiftslave parameter.
   - To move squares on slave head side of the stitch towards leading edge of plate, decrease value of mshiftslave parameter.
6. Error in subscan direction.
   - If squares overlap along the stitch line (as shown) decrease value of headspacing parameter to compensate.
   - If there is a gap between squares along the stitch line, increase value of headspacing parameter to compensate.

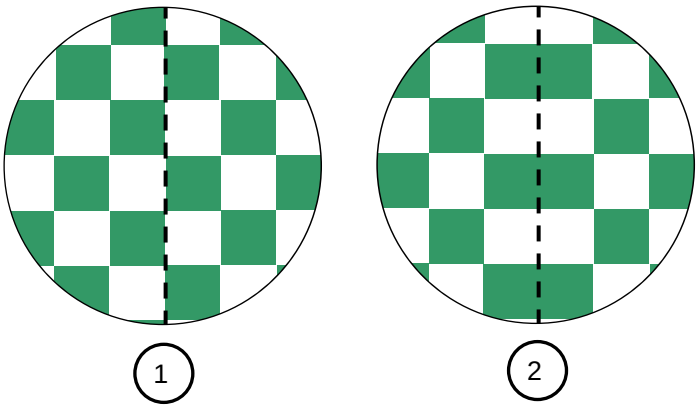
7. Adjust the slave head offset parameter so that the first row of squares on the master head side of the stitch line is aligned with the third row of squares on the slave head side. Enter command:

   `set gc mshiftslave <new value>`

   Increase `gc mshiftslave` to move squares imaged by the slave head away from the leading edge of the plate.

   Decrease `gc mshiftslave` to move these squares towards the leading edge.

   Note: Depending on the subscan dimension of the plate, the 2 x 2 pixel checkerboard patterns imaged by the master and slave heads may not always line up so that one row ends with a solid square and the other begins with a space or vice versa. Sometimes, the patterns will line up so that two spaces and two squares meet each other on either side of the stitch line.



1 Example 1: For every row that ends with a solid square, the corresponding row begins with a space, and vice versa.

2 Example 2: For every row that ends with a solid square, the corresponding row begins with a solid square, and for every row that ends with a space, the corresponding row begins with a space.

8. Adjust the `headspacing` parameter so that the squares just touch each other in the subscan direction (left to right). Enter command:

   `set gc headspacing <new value>`

   (Increase `gc headspacing` to close a gap along the stitch line.

   Decrease `gc headspacing` to reduce an overlap along the stitch line.

9. Load another panorama plate and repeat steps 4 to 6 to confirm that the first row of squares on the master head side of the stitch line is aligned with the third row of squares on the slave head side, and that there is no gap or overlap of squares along the stitch line.

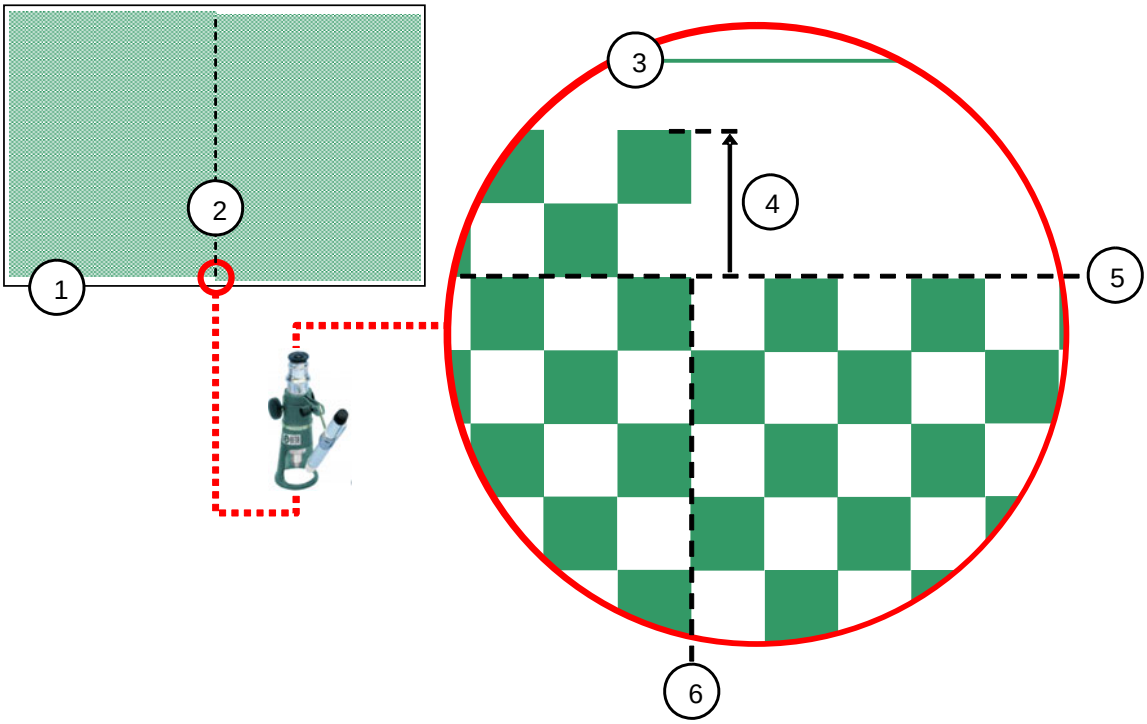


Figure 2: Stitch Line As Viewed Thorough Typical 100X Microscope (after first stage of geometric correction)

1	Leading edge of plate
2	Stitch line on plate
3	Leading edge of plate as seen through microscope
4	Distance (85µ) that squares imaged by slave head were shifted towards the leading edge of the plate in step 2
5	1st row of squares on master head side of stitch line aligned with 3rd row of squares on slave head side
6	Stitch line as seen through microscope

10. If the first row of squares on the master head side of the stitch line is not aligned perfectly with the third row of squares on the slave head side, or if there is a gap or overlap of squares along the stitch line, repeat steps 7 to 9.

11. Using a microscope, inspect the squares on either side of the stitch line at the other edge (trailing edge) of the plate to ensure that they line up perfectly in the mainscan direction. They should line up perfectly, but in the unlikely event that they don't, you may have to adjust the mscale (mainscan scale) parameter to compensate.

    a. Determine the distance in microns by which the image produced by the slave head needs to be scaled up or down in the mainscan direction in order to line up with that produced by the master head.

    b. Enter command

       `set gc mscale 2 <value>`

       where <value> is the increase or decrease in parts per million.

       To calculate this value in parts per million:

       (D ÷ H) x 1000

       where D = distance in microns by which slave head image needs to be scaled up or down, and

       H = height (dimension in mainscan direction) of the image in mm

12. Add the 85 microns you subtracted from the mainscan shift value in step 2 back onto the value now being used for the slave head.

    Enter command:

    `set gc mshiftslave <current value + 85>`

13. Adjust the `mshift 2` parameter by the same amount you adjusted mshiftslave in step 7, so that the overall mainscan shift (`mshift 2 + mshiftslave`) is unchanged.

    `set gc mshift 2 <new value>`

14. Load another panorama plate into the NEWS 200 device and image it with plot 22 (as described in steps 3 and 4, above). Process the plate and verify that subscan shift, mainscan shift, and head spacing are set up correctly. (The stitch line should be very difficult to detect, even under a microscope.)

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Date submitted	16 May 2005
Last updated	20 Feb 2008