Kodak

Calibrating Image Quality on a Magnus 400 Quantum

Platesetter

Calibration Procedure

English

DRAFT

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Product

- Kodak® Magnus™ 400 Quantum platesetter

Background

This procedure describes how to calibrate image quality on a Magnus 400 Quantum platesetter. It also describes the parallel image adjustments that were performed on the platesetter in the factory, prior to customer delivery.

During the calibration process, the following tests and calculations will be performed:

Image Quality Calibration Tests and Calculations	**Factory-Set Parallel Image Adjustment Calculations**
Focus Series on page 2	*Calculating Track Profile* on page 11
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Note: For more information about setting up media, see CTP Media Imaging Performance Database and Accreditation and Protocol Document for DITP Gold with the Kodak Platesetter Range.

Procedure

This procedure includes the following sections:

- *Performing Image Quality Tests* on page 2
- *Performing Calculations* on page 6
- *Factory-Set Parallel Image Adjustments* on page 9

Performing Image Quality Tests

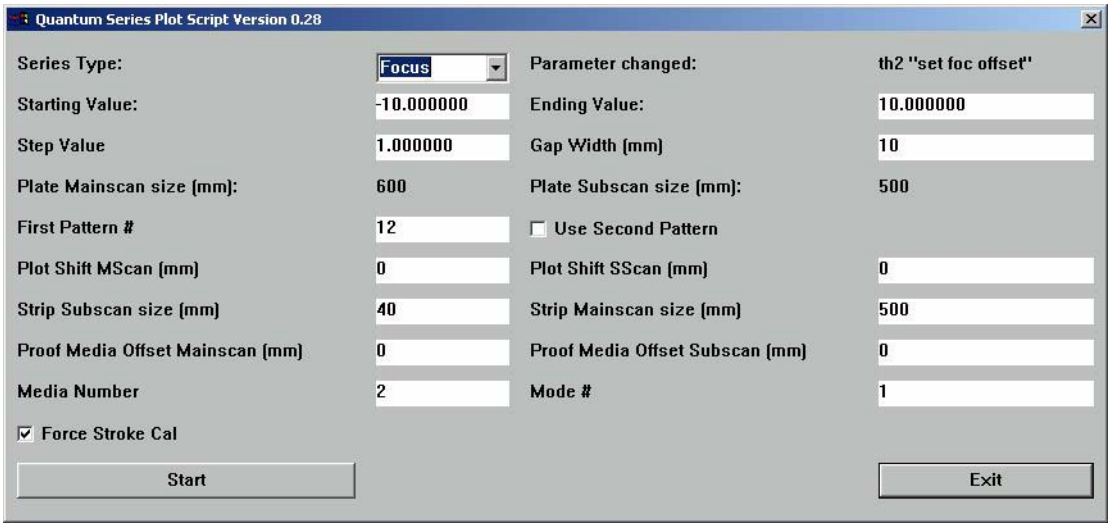
The following tests are part of the calibration process for the imaging head on the Magnus 400 Quantum platesetter.

Focus Series

1. In the Kodak Magnus 400 Controller software, select **Utilities > Hardware > Drum System > Drum Motor** and verify that the drum motor is turned **ON**.



2. To change the laser power on a Kodak Thermal Gold thermal plate, in Service Shell, at the `Th2 >>` command prompt, type:
   `set med X laserpower 7`
3. To verify the new laser power value, at the `Th2 >>` command prompt, type:
   `set med X laserpower`
4. To check the factory-defined Focus value, at the `Th2 >>` command prompt, type:
   `set foc offset`
5. In Service Shell, from the **Tools** palette, select **Scripts > Device**, and then double-click **QuantumSeries** to open the Quantum Series calibration window.



6. In the Quantum Series calibration window, send a focus series test with the following values:
   - Series Type: **Focus**
   - Test range: **15**
   - Step Value: **3**
   - Number of steps: **11**
   - Image type: **Plot 15**

   Note: Clear the **Force Stroke Cal** check box to submit the test without light calibration.
7. Select the best focus series and update accordingly. At the `Th2 >>` command prompt, type:
   `set foc offset X`

   Note: The best focus series is the swatch with the strongest colors.
8. Verify that the best focus (foffset) is no more than 30 microns from the focus that was defined for the optic head at the factory.

Power Series

1. In the Magnus 400 Controller software, select **Utilities > Hardware > Drum System > Drum Motor** and verify that the drum motor is turned **ON**.
2. In Service Shell, from the **Tools** palette, select **Scripts > Device**, and then double-click **QuantumSeries** to open the Quantum Series Calibration window.
3. In the Quantum Series calibration window, send a focus series test with the following values:
   - Series Type: **Power**
   - Test range: **7–12w**
   - Step Value: **0.5w**
   - Number of steps: **11**
   - Image type: **Plot 12**

   Note: Select the **Force Stroke Cal** check box to enable light calibration after each power test.
4. To select the correct power, either use a densitometer or choose the swatch that has no bandings.
5. Update the current power with the selected power. At the `Th2>>` command prompt, type:
   `set med X laserpower Y`

   Note: Y = the desired power

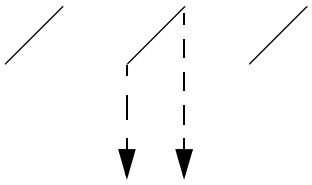
6. After you update the parameter with the correct power, at the `Th2>>` command prompt, type:
   `Quantum >> stroke cal`

   Attention: You must execute the `stroke cal` command. If you do not perform the `stroke cal` command, the next image parameter update will be performed only after the platesetter has been shut down.

   Note: The maximum laser power for the thermal 2 optic head (TH2) is 18.5 W. The minimum power is 5 W.

Slope Series

During the slope calibration, adjust both ends of the 240 beams so that they are the same color.



1. In Service Shell, from the **Tools** palette, select **Scripts > Device**, and then double-click **QuantumSeries** to open the Quantum Series Calibration window.
2. In the Quantum Series calibration window, send a slope series test with the following values:
   - Series Type: **Slope**
   - Test range: **6**
   - Step Value: **2**
   - Number of steps: **11**
   - Image type: **Plot 80** (recommended—80%) or Plot 12 (100%)
3. Update the current beam slope with the returned beam slope value. At the `TH2>>` command prompt, type:
   `Set med X beamslope Y`

   Note: Y = the returned beam slope value.
4. After you update the parameter with the correct power, at the `TH2>>` command prompt, type `Quantum >> stroke cal`

   Attention: You must execute the `stroke cal` command. If you do not perform the `stroke cal` command, the next image parameter update will be performed only after the platesetter has been shut down.

Curve Series

This parameter enables you to adjust the power of the middle laser beams, which must be uniform.

1. In Service Shell, from the **Tools** palette, select **Scripts > Device**, and then double-click **QuantumSeries** to open the Quantum Series Calibration window.
2. In the Quantum Series calibration window, send a curve series test with the following values:
   - Series Type: **Curve**
   - Test range: **6**
   - Step Value: **2**
   - Number of steps: **11**
   - Image type: **Plot 80** (recommended—80%) or Plot 12 (100%)
3. Update the current curve value with the returned value. At the `TH2>>` command prompt, type:
   `Set med X beamcurve F`

   Note: F = the returned curve value.
4. After you update the parameter with the correct value, at the `Quantum>>` command prompt, type:
   `stroke cal`

   Attention: You must execute the `stroke cal` command. If you do not perform the `stroke cal` command, the next image parameter update will be performed only after the platesetter has been shut down.

Performing Calculations

This section describes how to perform the following image-adjustment calculations:

- Mscale and Sscale
- Ortho
- Rotation (GC)

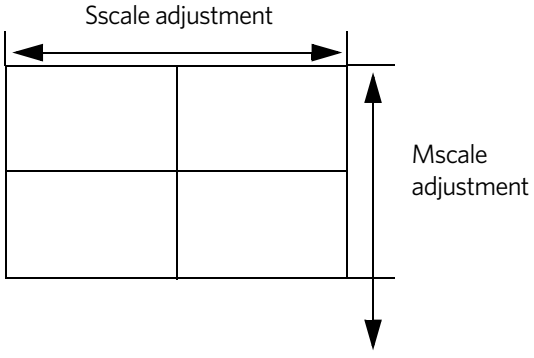
Calculating Mscale and Sscale

To perform the Mscale and Sscale calculations, use the following formula:

$$\text{Mscale or Sscale} = \frac{\text{Measured value - Desired value}}{\text{Desired value}} \times 1{,}000{,}000$$

Note: In case you need to adjust the values again, use the same method to calculate the values, and then add or subtract the results, accordingly.

You must also adjust the deviation on the leadscrew until you reach a maximum deviation of 150 microns. If the deviation is more than 150 microns, there is a problem in the platesetter.

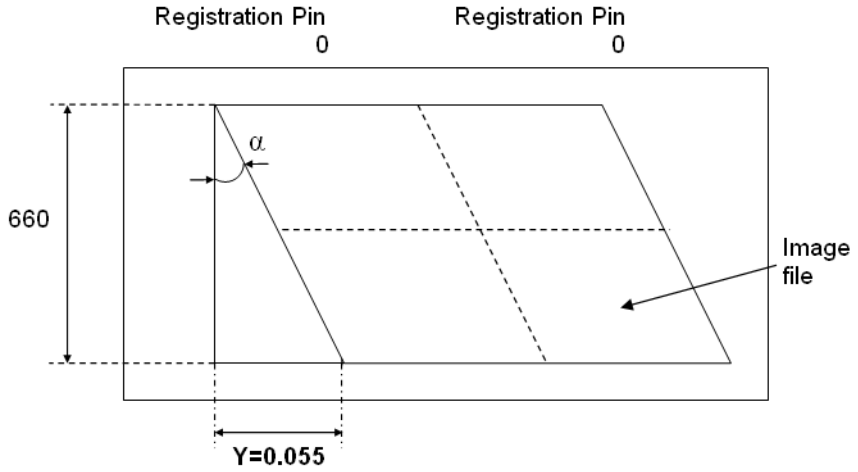


➢ In Service Shell, update the Mscale and Sscale results. At the `Quantum>>` command prompt, type:

```
Set gc mscale X
Set gc Sscale X
```

Calculating Ortho

You calculate the angles in radians.



Because the alpha (α) angle is small, use the following formula to perform the ortho calculation:

$$\frac{Y}{560} \times 1{,}000{,}000 = \text{ortho}$$

1. In Service Shell, update the results. At the `Quantum>>` command prompt, type: `Set gc orthoadjust X`

   Note: The maximum deviation for each parameter is 20 microns.

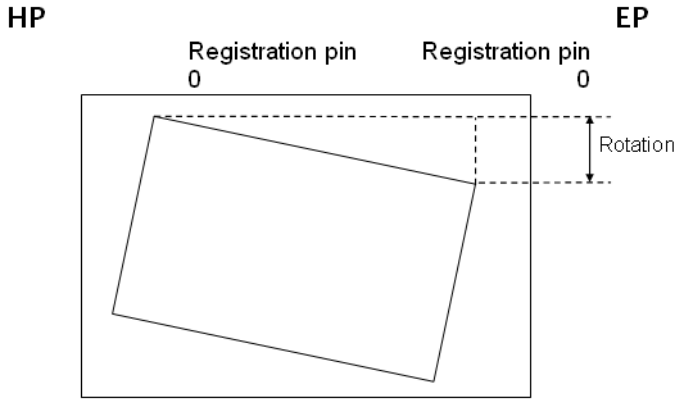
2. When you finish adjusting the calibration values, verify that Rotation is a maximum of 20 microns. If Rotation is not a maximum of 20 microns, adjust accordingly.

Calculating Rotation

Rotation is parallel image alignment.

1. Expose a grid onto a large 770×1030×0.30 plate.
2. Using a microscope, measure the deviation.
3. Type the adjustment values in microns, according to the deviation. Exact precision is not necessary because the alpha angle (measured in radians) is very small.
   - If home position (HP) is less than end position (EP), type a negative (-) value.
   - If HP is more than EP, type a positive (+) value.
4. In Service Shell, update the results:
   At the command line, type `Quantum >> Set gc rotation X`

   Note: Do not type corrective values if they are greater than 100 microns. Deviations greater than 100 microns must be corrected with an alignment device.
5. When you finish the alignment process, load a 770×1030×0.30 plate and verify that it does not touch the registration pins of a small plate.



Factory-Set Parallel Image Adjustments

Note: The information in this section is for reference purposes only. The parallel image adjustments that are described in this section were performed on your platesetter in the factory prior to customer delivery.

1. Using a grid exposure, parallel image adjustments were performed on a 622×750 plate and a 318×228 plate to ensure the parallel image is less than 20 microns.
2. The distance between the edge of the plate and the beginning of the exposure was confirmed at 10 mm along the drum. Increasing or decreasing the distance on both types of plates was performed by typing the following at the `Quantum>>` command prompt:
   `Set Gc mshift\ mshift small`

   Note: In the Geometric Correction (GC) table, each 1 mm of plate is equal to 1000 microns.

Calculating Image Dimensions

Calculating image dimensions is subject to the following conditions:

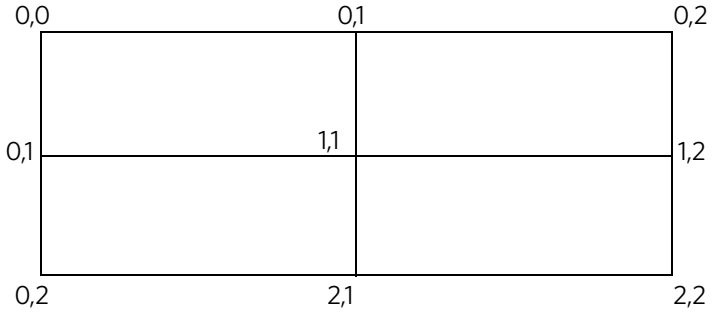
- Achieving a parallel image that is no more than 20 microns on a 622×750×0.30 plate
- Using a grid exposure to achieve the parallel image
- Measuring the parallel image on a grid table

Attention: On the grid table, you must first perform a calibration measurement (glass), and then a grid measurement (plate).

1. In Service Shell, update the results. At the `Quantum>>` command prompt, type:
   `Set GC Mscale- 250`

2. Read the results from the measuring table.

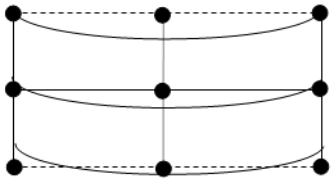
Along the Drum (X axis)	Around the Drum (Y axis)	
X	X	0,0
Track Profile (0)	X	0,1
X	Sscale (710)	0,2
X	X	1,0
X	X	1,1
X	X	1,2
Mscale (560)	Ortho (0)	2,0
X	X	2,1
X	X	2,2



3. In Set GC, adjust the values according to the measurement results:

Value	Table	Adjust in Set GC
Track profile	+	+
Orthoadjust	Positive calculation	-
Mscale	Positive calculation	-
Sscale	Positive calculation	-
Rotation	Loupe change ×20	HP >EP +

Calculating Track Profile



The following example describes how to perform a track profile calculation.

To correct a 980 mm plate to 46 microns at the center, you will use 49 microns. Each correction point is 980 mm long.

The following table illustrates a linear ramp with 46 microns at the center (490 mm).

Track Profile	Micron Correction Track Value
0	0
1	5
2	9
3	14
4	18
5	23
6	28
7	32
8	37
9	41
10	46
11	41
12	37
13	32
14	28
15	23
16	18
17	14
18	9
19	5
20	0

Note: The entire 46-micron correction is not visible because, as in this example, the bottom of the V-shaped correction falls between profile points 9 and 10. This example illustrates that the correction is only meant to correct low frequency errors.

➢ To enter the correction values, in Service Shell, at the `Quantum>>` command prompt, type the commands in the following sequence:

```
0 set gc track profile 0
5 set gc track profile 1
9 set gc track profile 2
14 set gc track profile 3
18 set gc track profile 4
23 set gc track profile 5
28 set gc track profile 6
32 set gc track profile 7
37 set gc track profile 8
41 set gc track profile 9
46 set gc track profile 10
41 set gc track profile 11
37 set gc track profile 12
32 set gc track profile 13
28 set gc track profile 14
23 set gc track profile 15
18 set gc track profile 16
14 set gc track profile 17
9 set gc track profile 18
5 set gc track profile 19
0 set gc track profile 20
```

To calculate track profile results:

1. Go to **C:\Lotem\Util** and double-click the **TrackProfileCalculator.exe** file.

   The Track Profile Calculator window appears.

2. In the Peak Point window, type the TrackProfile value that was returned when you performed the measurement.

3. Click **Calculate**.

   A calculation of 20 TrackProfile points is performed.

4. Click **Save To File**.

   The calculation results are saved at **C:\Th2\Tools\TrackProfileValues.txt** and the following message appears:
   `The file C:\TH2\Tools\TrackProfileValues.txt was saved successfully.`

5. Click **OK**.

6. Open Service Shell and run the **LoadTrackProfileParams.Spt** device script.

   The script is updated in the **C:\ServiceShell\Scripts\Device** folder.

7. To view all track profile values, in the left panel, click **Monitor** and at the `Quantum>>` command prompt, type:
   `set gc trackprofile`

Technical Contact(s)

Content owner: Mario Amir

See the Escalation page for escalation contacts.

Date Submitted

29 Jan 2007

Last Updated