# SERVICE INSTRUCTIONS

PAPER MACHINERY CORPORATION

8900 West Bradley Road Milwaukee, WI 53224 (PHONE) 414-354-8050 (FAX) 414-354-8614 www.papermc.com

## CAM ALIGNMENT PROCEDURE 110.1

### 1250, 1250X, 1250M, 1000, 750, 1500, 1501, OW-800, 1300, PEM, 1301

*NOTE: Cam Shaft(s) should be lock down in the correct and permanent position. Cams on the main shaft must be positioned close to center as possible before attempting to rotate the main shaft.*

**Tools Required (Figure 2):**

- 1 or 2 Precision Ground Square Stock
- Dial Indicator
- Surface Gage
- High Spot Bluing
- Machinist Layout Dye
- C-Clamp

Rotate main can shaft (in the direction of rotation) until the follower plate just stops moving. This will place the cams in the best position to carry out the alignment procedure. See Figure 1.

Use a C-Clamp to clamp Ground Square Stock on the dwell portion of the cam. See Figure 3.

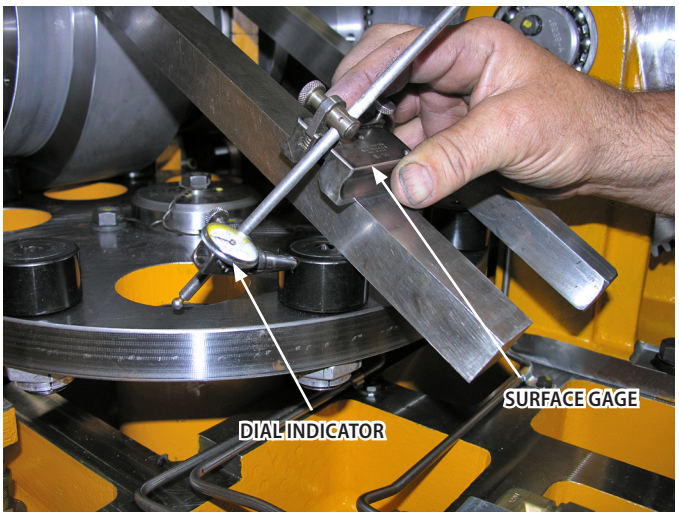


FIGURE 2 — DIAL INDICATOR WITH SURFACE GAGE

FIGURE 1 — CAM POSITION FOR ALIGNMENT PROCEDURE

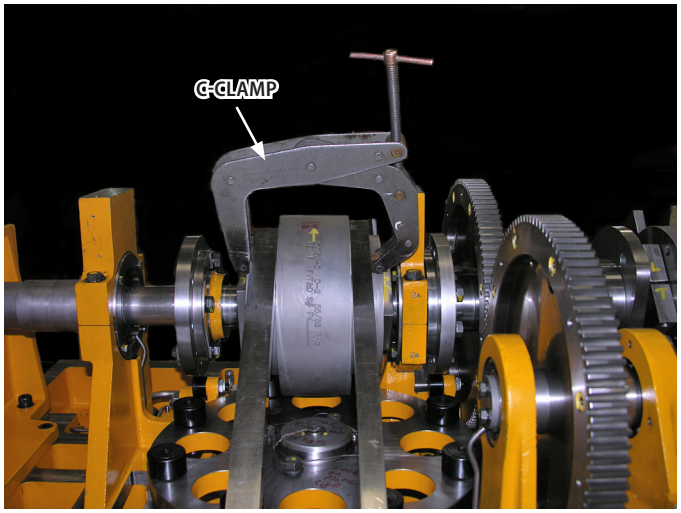


FIGURE 3 — GROUND SQUARE STOCK

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*NOTE: If 2 Ground Square Stocks are used (which is recommended), measure the distance between the ends to make sure they are not different from the clamp surface above. See Figure 4.*

Use a Dial Indicator mounted to surface gage to check the location of the cam in relation to the followers on the follower plate. See Figure 5. Slide the gage along the inside of the Ground Square Stock to move the indicator probe on the side of the follower. Record the reading. Repeat same action for the other side.
These readings will indicate how far or how close it is to the center and which direction the cam may need to be move to.

*NOTE: See Figures 5 & 6. Readings from the follower will always indicate the amount of offset the cam is to the followers. For example If the indicator reading on the left follower is -0.006" and the reading on the right follower is +0.005", the offset is 0.001". The cam would need to move half the distance of the total reading which is 0.00525" towards the side with the positive reading, in this case the right side. The final cam position would be 0.0055" on both sides, making it center.*

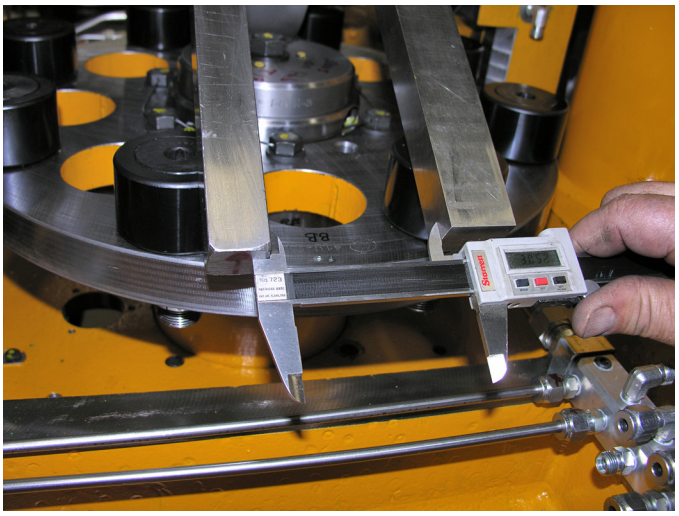

FIGURE 4 — V. CALIPER MEASURING DISTANCE OF GROUND SQUARE STOCK

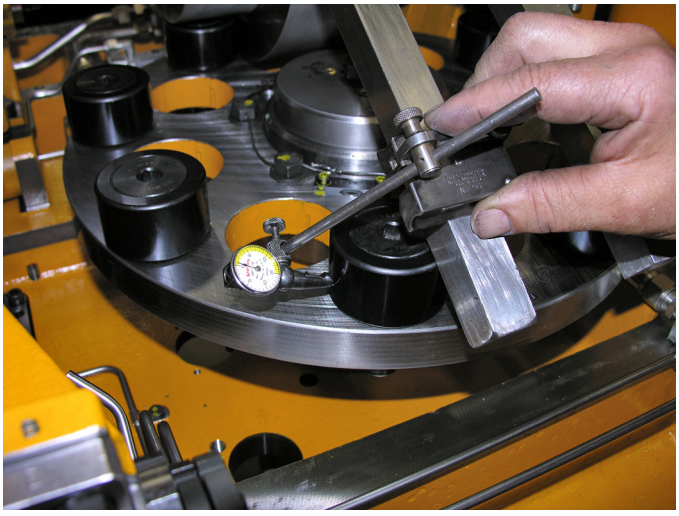

FIGURE 5 — INDICATOR READING ON LEFT SIDE OF FOLLOWER

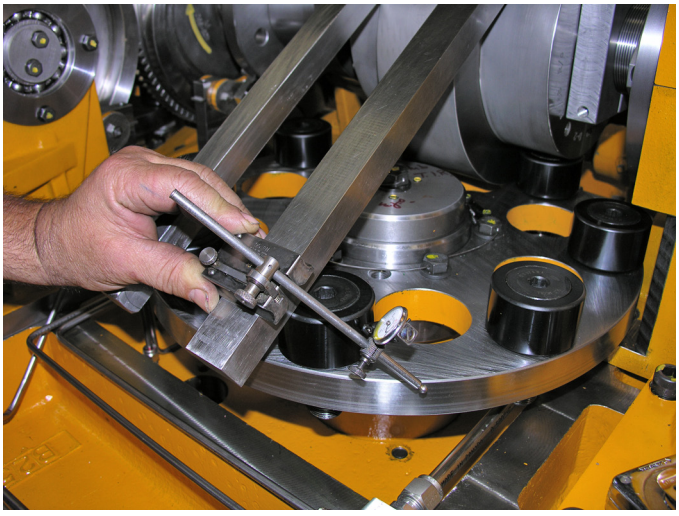

FIGURE 6 — INDICATOR READING ON RIGHT SIDE OF FOLLOWER

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To move the cam to achieve proper alignment, use the split nuts on the sides of the cam. See Figure 7.

*NOTE: Make sure split nuts are properly seated in the threads on the shaft and are not cross threaded. This will ensure that they will turn freely and lay flat against the side of the cam.*

*NOTE: Moving the cam side to side to side in order to locate it on center is a meticulous process and might need to be repeated several times to achieve proper alignment.*

Apply High Spot Blue to all entrance and exit surfaces of the cam. See Figure 8 & 9.

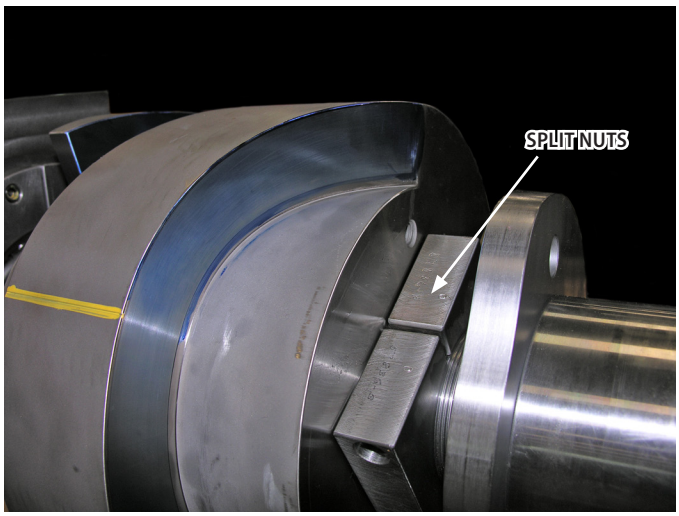


FIGURE 7 — SPLIT NUTS ON SIDE OF CAM

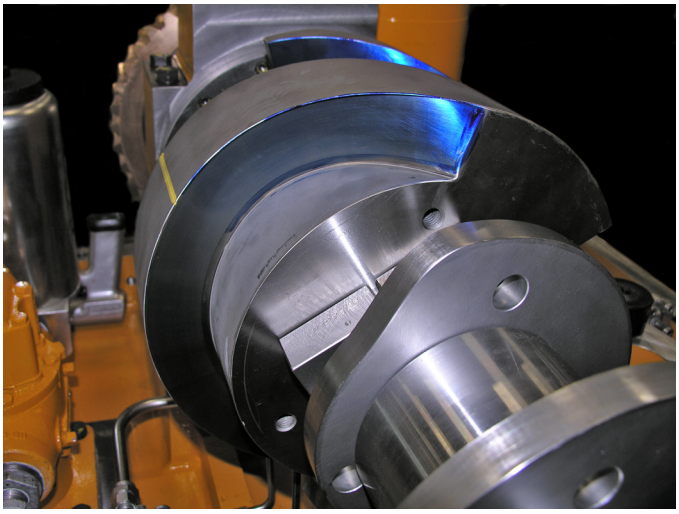

FIGURE 8 — EXIT SURFACES WITH HIGH SPOT BLUING

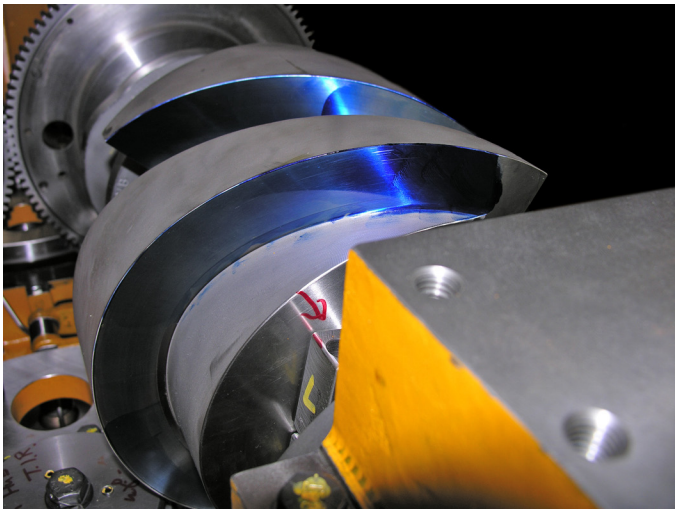

FIGURE 9 — ENTRANCE SURFACES WITH HIGH SPOT BLUING

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Apply bluing evenly on the surfaces indicated and rotate the main shaft through all sets of followers.

Examine the bluing patter on the blued surfaces. If the followers wipe the bluing evenly or left the same impression on all contacted surfaces the cam is properly aligned. See Figures 10, 11, 12 and 13.
This would be true for all turret cams.

Once the bluing patterns confirms that the cam is properly aligned, clean off all the bluing and paint the same surfaces with Machinist Layout Dye and allow it to dry.

Run the machine for 5–10 minutes and check those surfaces.

*NOTE: It might be necessary to polish high spots that the dye shows up.*
*This process of polishing the high spots requires short runs to extended runs to make sure the follower maintain proper tracking without leaving material on the cam.*

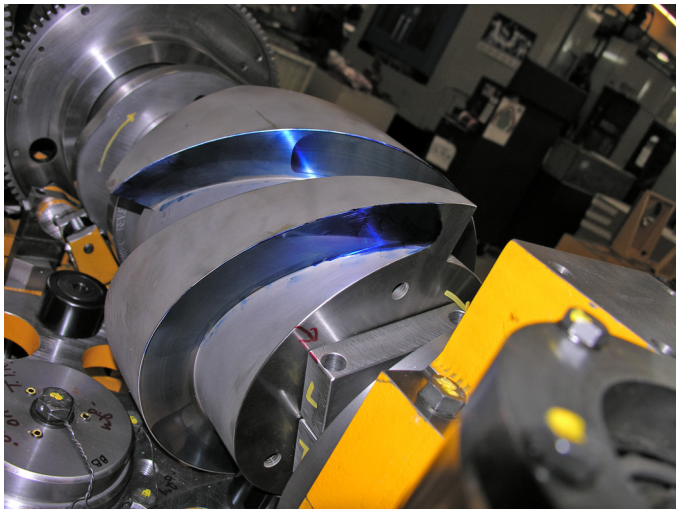

FIGURE 10 — GOOD PATTERN SHOWING FOLLOWER TRACKING FLAT AGAINST CAM (OR PERPENDICULAR)

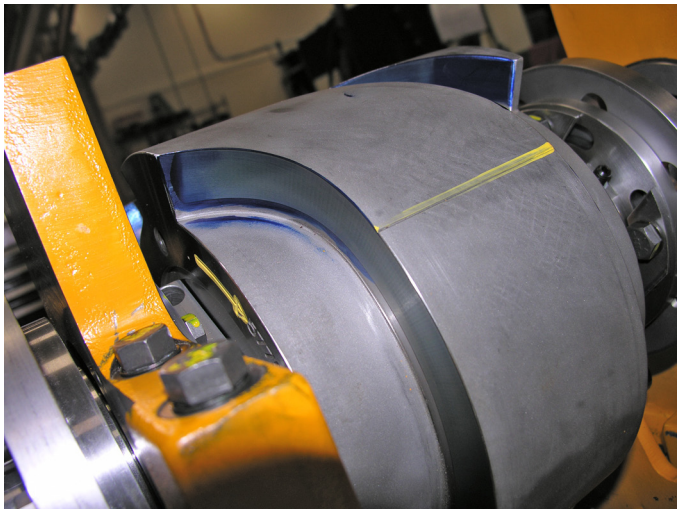

FIGURE 11 — GOOD PATTERN SHOWING FOLLOWER TRACKING FLAT AGAINST THE CAM

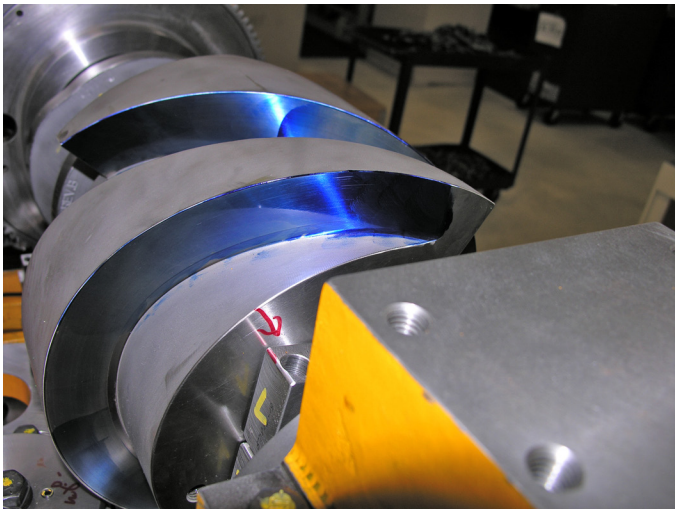

FIGURE 12 — GOOD PATTERN SHOWING FOLLOWER TRACKING FLAT AGAINST THE CAM

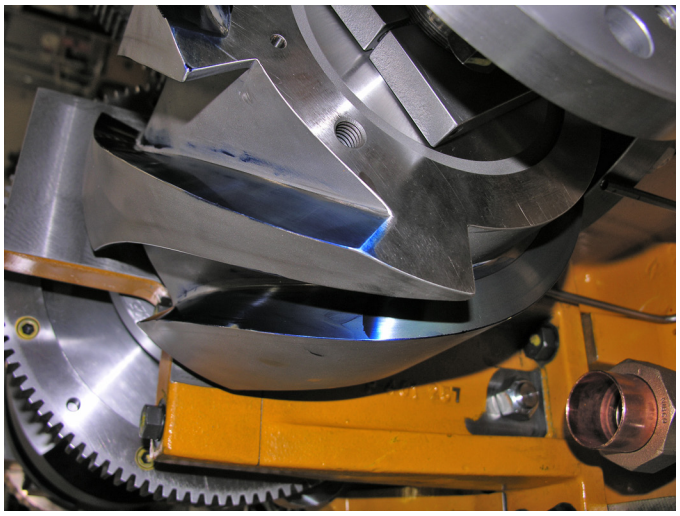

FIGURE 13 — GOOD PATTERN OF TRANSFER TURRET CAM ON ALL SURFACES