

Misregistration / Dot Slur



Sappi Printer Technical Service

877 SappiHelp (727 7443)

Problem

Printing dots, line work, or solid imagery does not precisely align and/or consistently reproduce from sheet to sheet causing an inconsistent blurred image or color variance. Register marks usually appear out of sync.

Description

Sometimes called doubling, unit-to-unit misregister or slur occurs when the inked image does not consistently transfer sheet-to-sheet in the exact register of the original print. This print inconsistency then transfers back from the printed sheet to the non-image area of the blanket in the following unit of print. This false image, in conjunction with the actual registered image, then transfers from the blanket to the next sheet in succession as a slur or double image.

Causes

- Ink tack out of sequence.
- The castors, belts, brushes, feed rolls, forwarding wheels, or tail wheels of the feeder are misadjusted.
- The sheet is reaching the head stops either too early or too late.
- The sheet is being forced into the head stops.
- Side guide pulls too hard or too far.
- Worn cams, followers, or cylinder thrust bearings.
- Paper slipping in grippers. Slur starts from the immediate lead edge to tail edge (See Sappi Tech Tip Sheet on Gripper Slip).
- Units are printing different lengths/loose blankets or inconsistent blanket cylinder circumference.
- Blankets are too hard, too smooth, or mismatched causing inconsistent or high-force blanket release.
- Paper lacks heft, body, and stiffness for heavy ink coverage.
- Sheet is out of square or has a bowed/scalloped gripper edge.
- Paper has been adversely exposed causing inconsistent moisture content across the sheet which results in an unstable wavy or tight edge condition.

Misregistration / Dot Slur (continued)



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- Sheet is undersized; critical heavy coverage imagery is too close to sheet edge.
- Paper has poor dimensional stability as evidenced by unit-to-unit tail-edge fan-out or flair (short grain paper is not recommended for multi-pass or tight register work).
- Heavy ink coverage exceeding capability of paper grade and basis weight.

Options and Solutions

PRESS CONSIDERATIONS

- Use tack-graded inks with decreasing tack in order of sequence. If excessive blanket release is causing sheet distortion, consider a low tack ink set.
- Adjust pile height, air separators, suction, and check all bearings, head stops, side guide, belts, and feedboard wheels to assure proper sheet timing down the feedboard.
- Reduce impression cylinder squeeze until image starts to break up and increase squeeze minimally to achieve acceptable print. Impression squeeze should be no greater than necessary to effectively transfer the ink film onto the paper.
- Check sheet register and timing into the head stops and adjust tail wheels to assist the sheet in holding position at the head stops. Tail wheels should help drive the sheet into the head stops without interfering with side guide movement.
- Check the cams and cam followers in the transfer system for wear or faulty operation.
- Check thrust bearings for wear.
- Clean grippers and gripper pads with a wire brush and check gripper bite tension. Lubricate gripper movement and check the gripper bar cams and cam followers for wear and proper timing (Refer to Sappi Tech Tip on Gripper Slip).
- Adjust plate and blanket packing in relation to cylinder undercut and consistently torque all blankets to assure consistent unit-to-unit print length. Excessive blanket over-packing may result in too much impression squeeze. Consult with supplier for recommended packing and torque specifications.
- Change to a matching set of high quality quick-release blankets. A rougher-surfaced blanket can improve release characteristics and may be more appropriate for smoother-surfaced substrates.

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PAPER CONSIDERATIONS

- Check that paper is properly acclimated to pressroom temperature and be sure pressroom environment is conducive to maintaining sheet stability. Recommendations for proper conditioning and control are listed below under Pressroom Environment. (See Sappi Tech Tip on Paper Conditioning & Characteristics).
- Optimize press speed to accommodate paper limitations or try a stiffer, higher-bulk sheet.
- Check gripper edge by butting up two sheets gripper-to-gripper on a light table. If bowed or scalloped, try retrimming paper to square a new edge.
- Cut blanket packing at trailing and outside edges in non-image area to relieve a wavy, tight, or warped sheet condition that may be the result of distortion from adverse exposure and/or first pass printing.
- Check grain direction; short-grain paper is more susceptible to sheet fan-out or tail-edge flare.
- Try a different production run of the same grade of paper.

PRESSROOM ENVIRONMENT

- Monitor relative humidity and temperature. The ambient pressroom temperature and humidity may be too high or too low, affecting ink tack, blanket release, and paper strength/stability.
- Ideal pressroom climate is 45% (+/-5%) Rh at 72° (+/-5°) F. for North America and 52% (+/-5%) at 21° C. in Europe.
- Allow paper to acclimate to pressroom temperature.

Paper will acclimate in skid, carton, or ream wraps. Do not open until going to press.

Paper acclimation time is relative to environmental extremes and volume of paper.
- Properly conditioned paper runs with a broader operating window on press.