

Web Weave at the Roll Splice



Sappi Printer Technical Service

877 SappiHelp (727 7443)

Problem

During and after the roll splice, oscillating web weave at the infeed or the chill rolls continues for a prolonged period of time as the web guides hunt and over-correct in attempt to bring the web back in alignment causing dot slur or side-lay misregister resulting in excessive paper waste at each roll splice.

Description

Web weave usually starts with tension disruptions during the zero-speed splice aggravated by roll splice disturbance in the web dryer in conjunction with various other press dynamics. Narrow webs running on full-web presses may be particularly challenged because they do not fully benefit from or track well through the self-centering, concave festoon rolls.

The roll splice is a primary factor in compounding or even causing the effects of web weave because it initiates web direction of the new roll and creates a significant disturbance within the web dryer initiating web flutter or an oscillation effect that may carry over to the chill rolls. This makes the integrity of the roll splice with respect to alignment especially critical as it directs the forward web path. The splice should also be as flat as possible without kinks or puckers which may accentuate dryer disturbances.

When an oscillating or misdirected web hits the first chill roll, carrying with it a rush of hot, solvent-laden air with the natural tendency to trap air at the nip point, it is not unusual for the web to continue to weave as the confused web guide repeatedly over-shoots as it tries to correct. In certain situations, it may take too many cut-offs and too much waste before the web guidance system stabilizes.

If web weave is only occurring after the units, there may be another dynamic causing the effect. Web weave after the units in the chills or at the ribbons on the former often suggests there may be "too much paper" or web slack between the chills and the folder. This condition could be caused by the folder speed being too slow or by web slippage at the nips in the folder.

Web weave must first be identified as either a problem in the splicer through units or after the units in the chills through the folder before effective trouble-shooting can begin.

Causes

WEB WEAVE THROUGH THE SPLICER, INFEED, AND UNITS

- The roll shaft is bent or chucking-up off-center.
- The narrow web on a full-web press is not effectively tracking the natural concave shape of the festoon rolls and holding center.
- Improperly adjusted, hardened, or glazed dancer roll in the infeed.

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- Alignment of roll splice is angularly offset.
- Low web tension through the units.
- Web aligner is off-center or limiting out.
- Poor roll construction.

Web Weave Through the Chills and Folder

- If the folder is not pulling enough paper, the web could be loose or slack at the chills contributing to web weave that may have started in the dryer.
- The fast moving web surface carries hot, solvent-laden air out of the dryer, combines with the cold air following the chill roll surface, and creates an air-trap effect which negates positive web to chill roll contact and wrap. This condition usually worsens with higher press speeds.
- Glazed, hardened, or improperly set nip rolls at the chill stand and/or the folder may be causing the web to slip.
- The web aligner is over-correcting or may be limiting out.
- Misaligned or puckered rolls splices may be causing a disturbance in the dryer resulting in increasing amplitudes of web flutter and oscillation which triggers web weave at the chills.
- Dryer temperature or air flow fluctuations can create disturbance and turbulence that may trigger web flutter, oscillation, and weave on the chills. Dryer air exhaust intake screen may be partially blocked with paper and/or ink tar debris.
- The silicone/water re-moisturizer may be applying too much solution or the solution may be mixed too rich causing downstream slipping of the web which results in web slack at the chills. Along with side guide variation, this condition will also cause cut-off variation.
- The combined co-efficient of friction (COF) of the paper and print is especially low creating more potential for web slip.
- Lack of positive drive and/or tension control at any point after the dryer.

Options and Solutions

WEB WEAVE THROUGH THE SPLICER, INFEED, AND UNITS

- Check air or mechanical shafts for bent shaft and/or stuck chucking mechanisms. Check air bladders for leakage.

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- Try building up the festoon rolls with a couple wraps of tape just inside the outer edge of the web to help the narrow web track on center.
- Clean any glaze build-up on the infeed dancer roll and check durometer and nip settings.
- Critically stage and align the roll splice as square as possible with no kinks or puckers.
- Increase web tension through the units and insure that the last unit blankets are not underpacked.
- Be sure web aligners are centered and not limiting out.
- Change from auto to manual splice.
- Installation of a spreader roll with sufficient web-wrap after the infeed and before the 1st unit will help stabilize the web.
- Whenever possible, sequentially run rolls within the same production run by roll position as designated by the last two digits in the roll number.
- Check paper for any roll construction issues and change to another roll of paper.

WEB WEAVE THROUGH THE CHILLS AND FOLDER

- Try adjusting web tension to pull more paper at the folder while tightening slack at the chills.
- Check nip roll(s) at the chills and the folder for proper durometer and/or setting. Clean any glaze or paper/ink build-up.
- Check folder drive roll(s) for bearing or surface wear. Undersized or worn drive rolls may not be pulling enough paper through the folder.
- Be sure web aligners are centered and not limiting out.
- Roll splices should be staged as square as possible with no kinks or puckers.
- Check that the web dryer is not radically fluctuating to control web temp. Check dryer exhaust screen for any paper and/or ink tar debris that may be blocking the intake.
- Reduce press speed at the roll splice.
- Running the web aligner on manual instead of auto control at the roll splice may reduce any tendency for over-compensation.
- Try disengaging the silicone unit to eliminate web slip at the folder.

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- Try splicing unprinted paper through the press with heat and compare performance. If web weave ceases, try changing to a wax-free varnish or wax-free yellow ink.
- Installation of a spreader roll with sufficient web-wrap after the chills will help stabilize the web.
- Permanent or portable electrostatic chill-roll tackers supply a controlled electrical charge to the web causing the charged web to be attracted to the chill roll. This reduces the air gap between the web and the chill roll. The primary benefit is the reduction of solvent condensation and streaking. Side benefits include the elimination of web weave and better ink-set through more efficient cooling.
- Portable electrostatic generators can be used to supply a controlled electrical charge to the web ribbons at the folder to create a mutual ribbon-to-ribbon attraction. Ribbon tackers can be very effective in reducing web slip on the former board at the folder.
- Whenever possible, sequentially run rolls within the same production run by roll position as designated by the last two digits in the roll number.