

CIRCUMFERENTIAL COMB OR CORD STRIPES IN LITHOGRAPHIC PRINTING

A "YOU NEED TO KNOW" White Paper from Amerikal Products Corporation

For decades circumferential comb or cord striping has occurred in lithographic printing. To eliminate this printing defect, several mechanical components were introduced; ceramic dampening rollers, dual material compound metering rollers, softer durometer dampening roller materials, dead-end air and mechanical oscillating rollers in direct contact to the plate water form and more. Through extensive research, Amerikal has compiled four years of data and findings from seven countries, on twenty-eight lithographic presses with service age from six months to eighteen years.

IN BREVITY:

Due to wash up procedures, wash up chemistry, ink pigments, ultra fine ground calcium carbonate used in paper coatings, rubber roller durometers, rubber roller total indicated run out, and chrome roller manufacturing, comb or cord stripes will eventually appear on some press dampening systems and in the printed work.

When rubber compound rollers become out-of-round and increase in hardness, it is common practice to increase contact pressure from roller to roller in order to set even stripes from gear to operator side. This is especially true with the contact points between rubber and hard surface rollers like chrome pan and or chrome vibrator. An example of continued hard contact would be the common practice of the press operator increasing the squeeze to eliminate plate end heavy water by tightening the metering to chrome contact. This in turn flattens or smoothes out the dished ends of the rubber compound roller against the hard surface chrome roller.

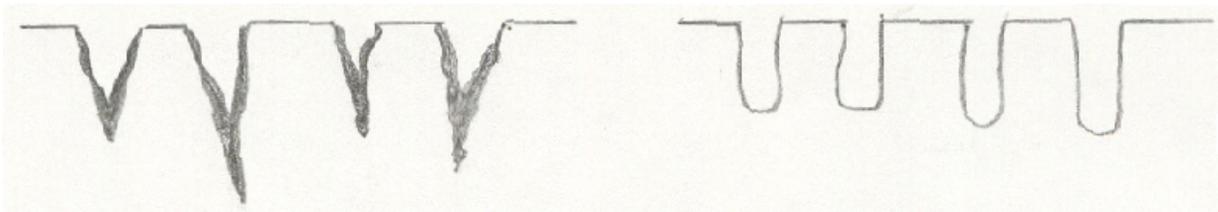
Further, when ink is cleaned from the ink train, some printing presses by way of automatic PLC logic engage the ink forms, water form, and entire dampening roller train to the plate cylinder. A highly volatile solvent is sprayed into the print tower which releases ink pigment and the paper contaminate of ultra fine ground calcium carbonate from the ink vehicles. Both pigments and UFGCC are abrasive and score the chrome rollers when released from the natural lubrication of the ink vehicles. To clarify this it must be understood that a highly volatile solvent evaporates as well as returning some of its original volume to the wash-up tray. The problem is the evaporation part that does not allow the removal of all the pigment and contaminants, the solvent merely removed the vehicle and settled the rest back on the rubber and chrome rollers.

A further consequence of the over tightening results in a collapsing (in a minimum area at the tangent of the rubber roller end point) on the chrome roller body.

SUGGESTIONS FOR ELIMINATION OF CIRCUMFERENTIAL COMB AND CORD STRIPES:

- Use properly manufactured chrome rollers in both the vibrator and pan positions.
- Do not use overly pigmented inks.
- Check the total indicated run out on each end and center of new rubber compound dampening train rollers before you install them. Allow + or - .005 indicated run out variance.
- Monthly, with an outside caliper, check the ends and center of the dampening rubber rollers and allow, + or - .010 indicated run out variance.
- Maintain durometers between 24 and 34 Shore A.
- Once heavy water is removed from the metering or chrome roller, do not over squeeze with additional turns on the adjustments.
- Use wash up blades when cleaning the ink roller train, with web presses try not to use the paper web.
- For automatic systems, program the PLC automatic system so water metering and water chrome rollers are not in contact with the water form when washing up the ink train and or to clean the water form, if applicable program the bridge roller to engage with water form, but not the chrome vibrator to the water form.
- Clean the metering and chrome rollers by hand.
- Do not use volatile non-water soluble Metering Roller Cleaners.
- Use non-grit deep cleaning ink train pastes once per week and when performing color washes or use a non-surfactant low VOC roller wash.
- Keep flow rates in and out of the water pans as high as possible
- Do not use soap or surfactant based dampening system cleaners
- Replace worn or uneven wash up blades
- Always do a final rinse of the ink train after cleaning with water or water and mild acid solution
- Stay away from acids that combine with calcium to form insoluble salts, such as calcium-citrate salts

A SCHEMATIC REPRESENTATION OF A MICROCRAZED INFERIOR CHROME ROLLER VS A HYDROPHILIC HARD CHROME



Deposits of ink pigment and paper filler