Service Bulletin 013 - Stacker - Quipp SJ35X, SJ40X Series, 50x, 60x

Discussion of Stacker Count issues . . .

PROBLEM: Bundles are the wrong count.

There are many issues that can result in bad counts on a Quipp Stacker. Some may seem obvious and easy to correct, others may be more difficult. This document attempts to address and illustrate many of the issues that affect the counts on a stacker. Most of the following discussion refers to the use of the laser sensor.

Summary of issues

- Quality of product stream entering the stacker
- Stacker control adjustments
- Component failures

Product Quality Entering Stacker

One of the easiest ways to improve product counting is to improve the way that the product is presented to the sensor in the stacker. This is best viewed from above. Climb a ladder and view the way that product is placed and carried on the infeed conveyors into the stacker. The product should not come into contact with guides or devices such that the stream is adversly disturbed and spacing between products becomes irregular. Adjustment of guides on the infeed conveyors can have a big effect on the way that the stacker counts.

The spacing between products or lap should be maintained in a consistent manner. The minimum lap specification for Quipp stackers is 2 ½ inches to achieve reliable counting. Generally the stacker infeed speed is set to be the same or slightly faster than the conveyor feeding the stacker. On a press line this speed can be accurately maintained by using an encoder. On insert lines there a tradeoffs between paper handling and matching infeed speeds. The speed of an inserter is almost always slower than suggested minimum infeed speeds, especially since this equipment is constantly starting and stopping. Try to maintain a stacker infeed speed that matches the sustained running speed of the inserter, unless this speed is too slow to properly stack papers in the stacking section of the stacker.

If the stacker seems to be counting when no copies are entering the stacker, check for material stuck to the infeed belt that may be activating the sensor. Also confirm that the laser beam is directed to the black triangular block on XX0 models and to a 2" black vinyl square on XX1 models.

Stacker Control Adjustments and Monitoring

The status of the infeed conveyor and paper stream can be viewed on the Status screen of stacker controls. This screen shows the infeed speed, the stream lap, and blanking distance.

Infeed Speed

The infeed speed should be a fairly consistent value and approximately match either the encoder upstream speed or the minimum infeed speed set on the stacker control. The minimum infeed speed is used when the press line is going slower than the minimum speed or there is not an encoder mounted on the infeed conveyors. If the displayed infeed speed is varying widely, this indicates that there may be a problem with the SDS sensor in the infeed drive section of the stacker. This sensor reads teeth on a gear at a very close range. Missed pulses and an inaccurate

speed display can result if the gap between the sensor and the gear is not set correctly. The gap should be set between .01 to .025 inches. The SDS sensor used in stackers prior 2010 required alignment to the gear. The notch on the sensor should be aligned parallel to the teeth of the gear.

Stream Lap

The stream lap shown on the status screen is the average lap of the previous 8 to10 copies. This lap should be greater than 2 ½ inches. It is also preferable that it is a lap and not individualized copies. With a lap stream the sensor is attempting to determine and count the fold edge of each copy.

Blanking Distance

Quipp stackers offer a method to improve the accuracy of stacker counts while stacking inserted copies. This is by using a parameter called blanking. Blanking is another way of saying filtering. It offers the ability to filter laser count inputs from the counts. Blanking distance is the distance after the last recognized laser count pulse where any laser input count will be ignored or filtered from use. The stacker controls will not recognize another count input pulse until the blanking distance from the previous pulse has passed the sensor.

An example of Blanking is a lap stream of copies with a consistent 6" lap. There may be ridges on the copies or inserts lying on top of the stream. If the blanking distance is set to 5" any extraneous input will be ignored. However, if the lap drops to 5" or less the next copy will also be ignored. Blanking is very effective in filtering erroneous counts that cause under count bundles. Likewise, if the blanking value is too large over count bundles may occur.

On the main stacker entry screen blanking can be set to 1,2,3,4,5, Auto while insert mode is selected. The numbers refer to blanking in inches after the fold edge of a product is recognized. Auto is a calculated blanking based on one half of the average lap of product. When the infeed lap is fairly consistent Auto mode works well. However, when the lap is constantly varying the Auto lap may not vary quickly enough or it may filter out some of the shorter laps. For this reason it is usually preferable to use a set lap length.

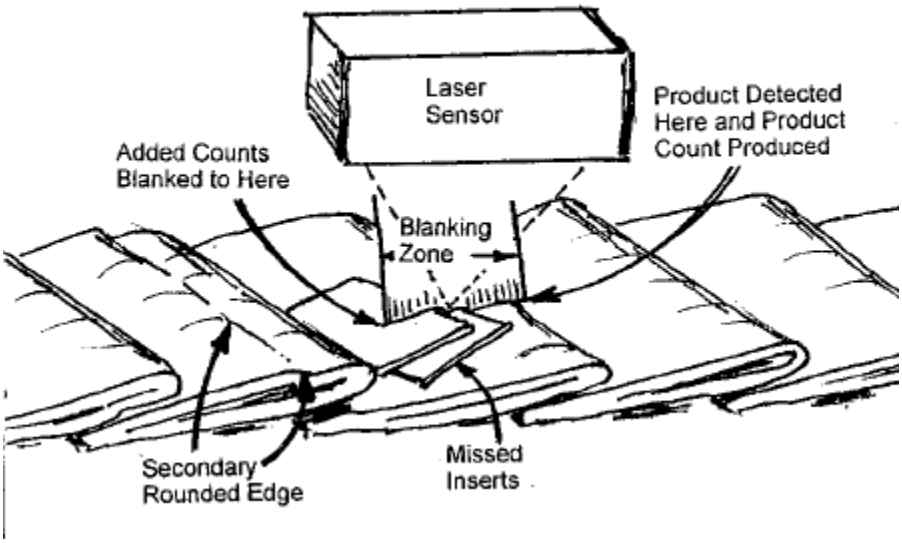

Figure 1: Depiction of Blanking with inserted copies

Laser Sensitivity

The Quipp Count Pro II sensor which is used in the 50X and 60X stackers has the ability to adjust the sensitivity of the laser signal processing. The range of adjustment is 60% to 85%, with the nominal setting of 75%. If you are experiencing counting issues try adjusting the sensitivity. The sensitivity adjustment is found on the parameter or adjustments page. The sensitivity is adjusted down for thick products and adjusted up for thin products.

Component Failures

The software controls in the stacker use many component input and outputs to produce bundles of the correct count. The following is a summary of components used in the counting and how to determine if there may be a cause of count problems.

Quipp Laser Sensor

The Quipp Count Pro and Count Pro II laser sensors are provided on Quipp 35X and later stackers. Both use a laser beam and receiver to determine the presence of newspaper copy. This sensor is designed to detect copies as small as 4 pages. Because of this sensitivity the blanking distance setting described above may need to be used.

The Sensor itself provides hardware blanking of ¾". To determine the blanking time required for ¾" of infeed conveyor travel an analog signal of 0 to 5 volts is provided to the sensor by the stacker controls. The lower the value the slower the infeed is moving and the more the count pulse is delayed. Inaccuracies or failures in the analog signal provided to the sensor may cause issues with the count. The Count Pro II has a display that shows the feet per minute of the infeed conveyor calculated by the sensor.

The Quipp Laser sensor can also detect a gap in the stream of copies under the sensor. This output is used to inhibit counting during this period. The stackers have an input called "InhibSen" of "Laser Count INH" depending on stacker model. This input is "ON" when there are no papers under the senor and "OFF" when the papers are under the sensor. This is a calculated state derived from the laser beam and processing. If this input does not change state to show the presence or absence of product under the sensor, it indicates that there is a problem within the sensor. The sensor is probably producing erroneous counts when this occurs.

Problems with the sensor can be tested by replacing the sensor with a known good sensor from another stacker. If the problem moves from one stacker to the other then it is definitely identifies the laser sensor as the problem. In most cases the laser sensors can be repaired through Quipp parts department.

The Quipp stacker may also have a mechanical sensor mounted adjacent to the laser sensor. This sensor is available in two models ROP with a small star wheel and Insert with large star wheel. ROP product is usually easy for the laser sensor to count. The mechanical sensor with the ROP wheel is normally used only when there is a complete failure of the laser sensor. Inserted product can sometimes be very difficult for a laser sensor to count. The mechanical counter with the large wheel for inserted product can be tried, if all efforts to improve counts with the laser sensor have failed.

Infeed Speed Distance Sensor SDS

This sensor is used for tracking copies between the laser sensor and the stacking section on the

infeed conveyor belt. It is used to control the intercept of copies between bundles. Missed pulses on the SDS sensor can cause miscounted bundles. In most cases the bundles will be larger than desired because the blanking algorithm depends upon normal operation of this sensor. Faulty operation of the SDS sensor is due either to miss-adjustment, misalignment or a faulty sensor.

Troubleshooting Guide

Problem	**Potential Causes**
To Many Copies in a bundle	Missed counts on sensor • Blanking set to high • Bad stream on infeed, copies to close • SDS sensor not working correctly • Infeed to slow, copies to close • Faulty Laser sensor
One bundle short copies, the next too many copies	• Intercept position not correct • Discrete mode active – signal not timed correctly • SDS sensor problem
Too few copies in a bundle	Extra counts on sensor • Blanking set to low • Gap output on Laser Sensor not working. • Faulty laser sensor