Linx 5900

How To Use Dynamic Message Orientation

LINX

THINKING ALONG YOUR LINES

How To Use Dynamic Message Orientation

Contents

How To Use Dynamic Message Orientation

1 Introduction

This document describes how to configure dynamic message orientation for the 5900 Dairy Coder printer for a traversing application. Dynamic orientation means that the orientation of the message changes automatically in response to a trigger event. The following topics are included:

- How to configure the software for the 5900 Dairy Coder printer.
- How to configure the primary trigger and secondary trigger.
- How to install the printer and printhead correctly, including:
  - ❒ Printer position
  - ❒ Printhead type selection (straight or right-angled)
  - ❒ Conduit routing

You need a User Level C password to perform all the tasks that are described in this document.

1.1 Health and Safety

Make sure that you read and understand the Health and Safety information in the 'Safety' section of the *Linx 5900 & 7900 Quick Start Guide*.

2 About traversing applications

In a traversing application, the printhead makes repeated movements across the substrate. Normally, the printer marks the product during these printhead movements. In some applications, the printhead prints in both directions (that is, from left to right, and from right to left).

The following illustration shows a simple view of a traversing application.

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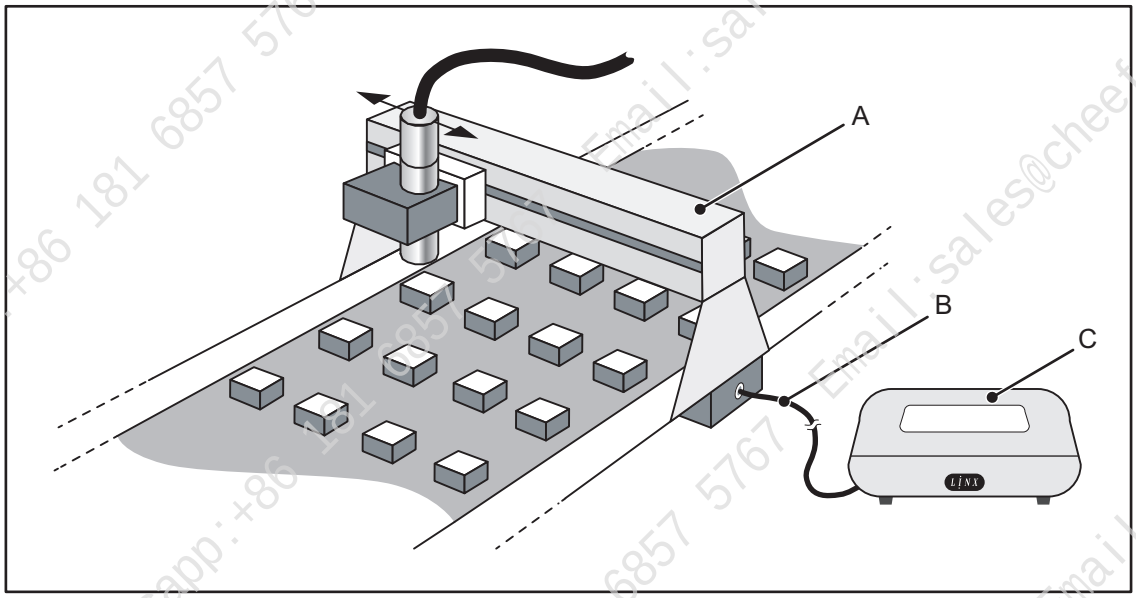

Figure 1. Traversing application

The printhead is mounted on the traversing arm (A), and moves across the conve-yor, as indicated by the arrows. The control system provides an output signal (B) to the printer (C) to indicate the direction of the printhead movement. This direction signal is connected to the secondary trigger input of the printer. The direction signal has two states: one state indicates the forward direction, and the other state indicates the reverse direction.

To print correctly in the reverse direction, the printer must change the horizontal orientation of the message. The printer uses the print direction signal to control the print orientation.

2.1 Application design

A traversing application requires some care in the physical layout and the configuration of the printer software.

2.1.1 Physical layout

The movement of the printhead can cause a failure of the conduit unless the mechanical setup is planned carefully.

2.1.2 Software configuration

If the printer marks the products during the printhead movement, you must adjust the printer settings as required to print the message correctly. If the printhead marks the products in both the forward direction and the reverse direction, you must configure some additional settings.

2.1.3 Software requirements

The 5900 Dairy Coder printer has a **Variable Message Orientation** option on the **Print Settings** page which allows you to configure dynamic message orientation for traversing applications (see 'Set up dynamic message orientation' on page 10.)

2.1.4 Inputs

A typical traversing application uses three input signals

Primary trigger

The primary trigger signal is normally a photocell. The photocell detects the presence of the product on the production line as it approaches the printhead, and provides a 'next object' signal to the printer. The 'next object' signal starts a print delay, and the message is printed after this delay. The position of the message on the product (print registration) depends on the photocell position and delay. To get the correct print registration, these factors must be carefully planned.

Secondary trigger

The secondary trigger signal provides the print 'direction' signal when the traversing arm is at the end of its travel. The print 'direction' signal can set any sequential fields in the message to their required values.

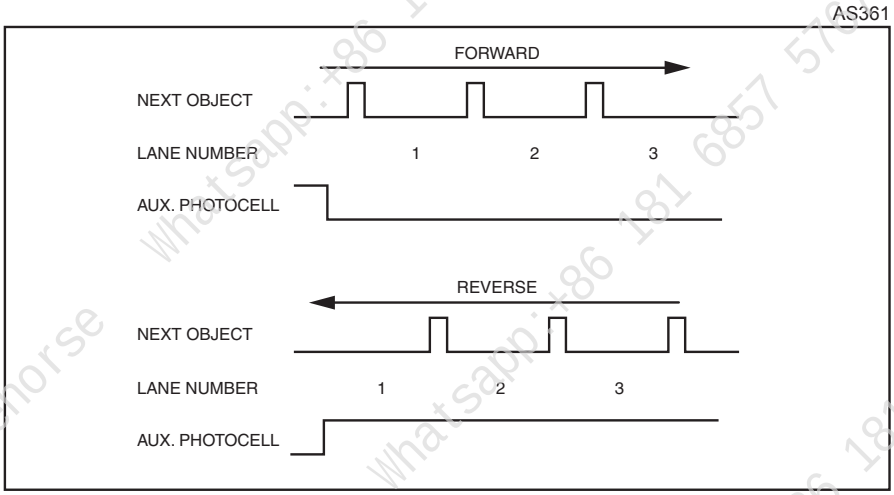

Figure 2. Print direction signal

Shaft encoder

A shaft encoder is required for most applications because the printhead does not move at a constant speed along the traversing arm. A shaft encoder maintains the width of the printed message when the speed changes.

2.2 Installation

2.2.1 Printer position

To minimize any strain in the conduit, the rear panel of the printer cabinet must not be less than 150 mm from any wall or other obstruction.

In Figure 3 (a), there is only a small distance (A) between the wall and the printer. The bend radius of the conduit is less than the minimum allowed (75 mm). In Figure 3 (b), the distance (B) is larger and the conduit has a larger bend radius, as shown.

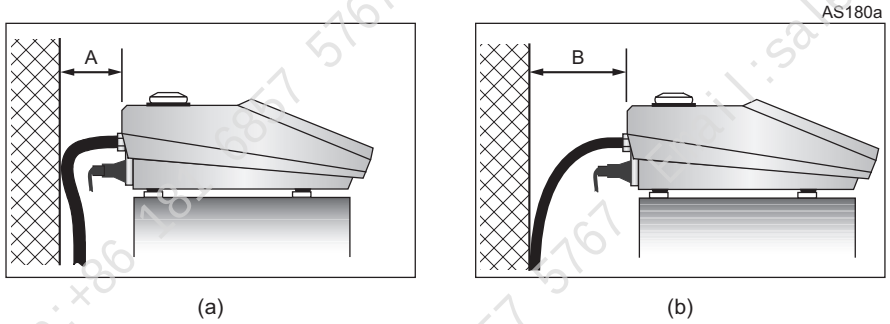

Figure 3. Printer cabinet installation

2.2.2 Printhead mounting

A printhead mounting that is not planned carefully can cause a failure of the conduit.

Printhead type

Two versions of the Linx Mk7 Printhead are available: straight and right-angled.

Select the printhead type that minimizes the tension in the conduit. For example, the right angle printhead in Figure 4 (a) creates a tension in the conduit when the printer moves to the left side. The straight connector in Figure 4 (b) prevents this problem.

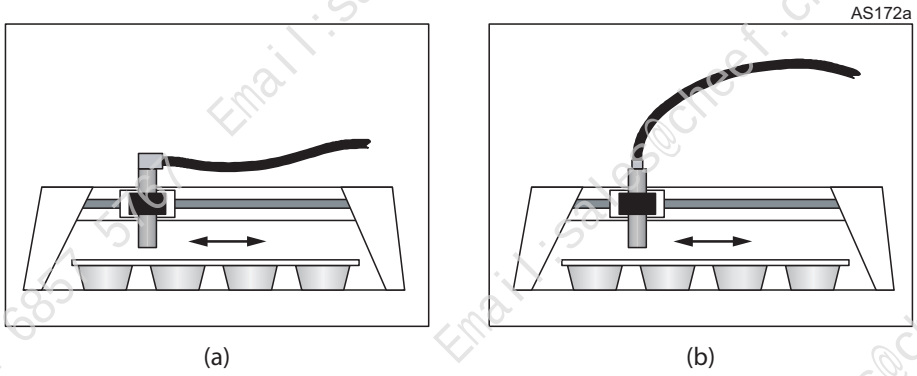

Figure 4. Conduit tension example

The bend radius of the conduit is the most important factor than decreases the life of the conduit. You must install the printhead to maximize any bend radius.

2.2.3 Conduit routing

Design the conduit route to minimize the bends in the conduit, because any bend can cause a strain the conduit. Never allow the bend radius of the conduit to be less than the minimum allowed. The minimum bend radius for a traversing application is 150 mm (measured to the inside of the bend).

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The following diagrams show some suggestions to improve the layout:

- To decrease the strain when the conduit bends as shown in Figure 5 (a), make a loop in the conduit as shown in Figure 5 (b). Consider the use of a 4-metre conduit to make a wider loop if the traversing arm is long.

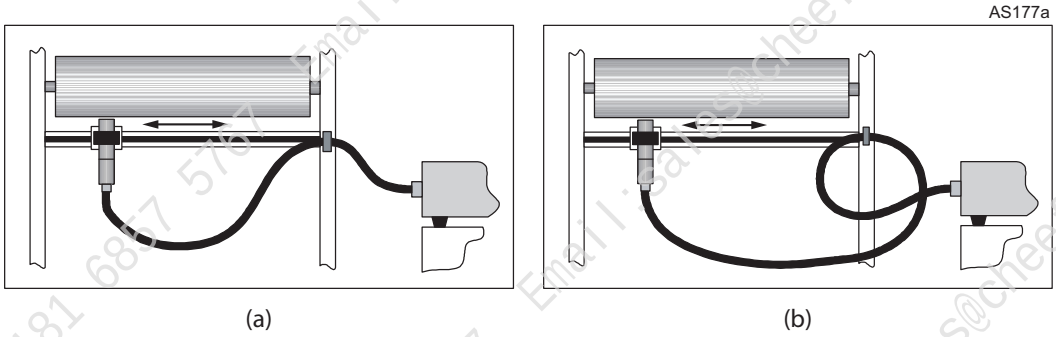

Figure 5. Conduit loop

- Make sure that the conduit does not touch any other objects when the printhead moves. Some applications need a special support for the conduit, to prevent any abrasion and allow the conduit to move and bend correctly. For example, Figure 6 (a) shows a conduit without any support. A set of rollers is added in Figure 6 (b). the rollers support the conduit, but do not prevent the free movement of the conduit.

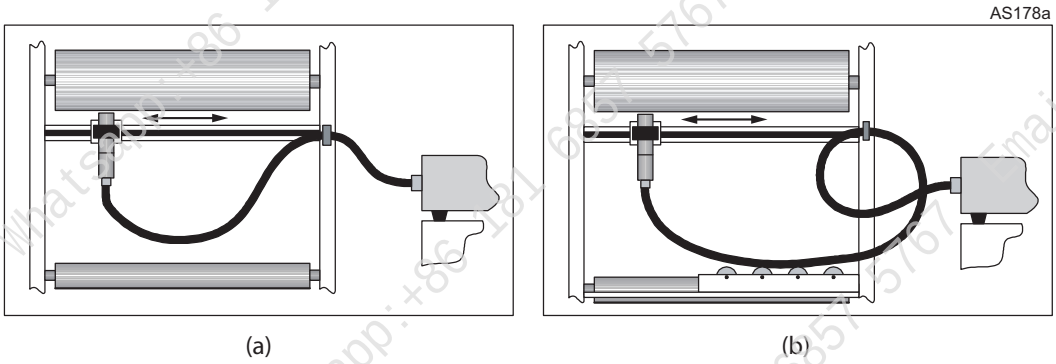

Figure 6. Conduit support rollers

- Make sure that the guards cannot damage the conduit when the operator opens or closes the guards. If necessary, provide some gaps in the guard.

- Make sure that the printhead movement does not apply a rotation force (torsion) to the conduit clamp at the printhead end of the conduit. Figure 7 (a) shows an incorrect design that causes this problem. The rotation force is reversed when the printhead direction is reversed. These repeated reversals can cause a failure of the conduit at the printhead end. Figure 7 (b) shows a better design that causes only a bend in the conduit, but does not cause any torsion.

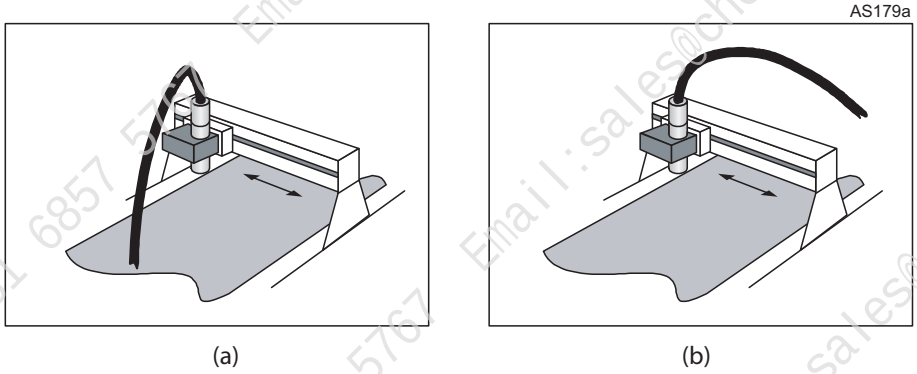

Figure 7. Conduit tension

NOTE: Remember to allow access to clean the printhead.

2.2.4 Printhead vibration

Make sure that the printhead mounting minimizes any vibration from the traversing arm. If there is any vibration, the path of the ink drops can change. Any high-frequency vibrations (including very small vibrations), cause a larger effect than a low-frequency vibration. The effect is proportional to the square of the frequency.

A vibration can cause the following problems:

- The print quality decreases.
- A gutter failure occurs.

Print quality

The print quality decreases because the vibration changes the ink drop positions on the substrate. This problem is likely to occur before a gutter failure occurs. (the effect depends on many factors, so no numerical limits can be defined.)

Gutter failure

A stronger vibration can cause a gutter failure. This problem occurs if a large number of ink drops hit the edge of the gutter, and are not collected by the gutter.

A vibration, or a sudden start or stop, is a sudden increase or decrease in the speed of the printhead movement (that is, an *acceleration*). To prevent a gutter failure, you must make sure that the acceleration of the printhead is not too high.

3 Example

The printer in this example is on a production line that has three lanes (Figure 8). The printhead is on a traversing arm, and moves across the three lanes to mark the products.

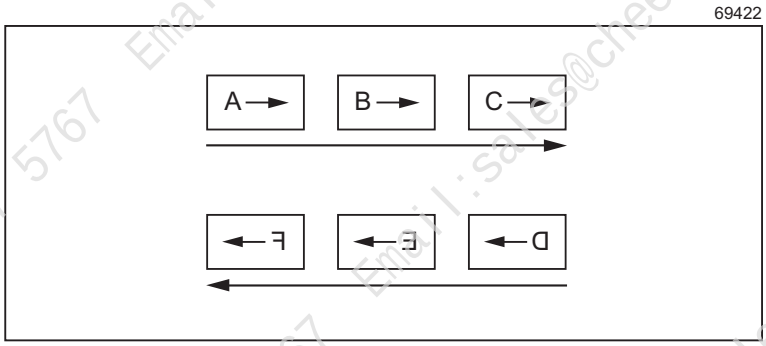

Figure 8. Printing a message with reverse text

NOTE: The printer prints the same message on all of the products.

The printer marks the first three items (A, B, and C) with normal orientation. then the conveyor moves to put the next row of products under the traversing arm.

The printhead direction reverses, and the printer marks the next three items (D, E, and F) with reversed (Horizontal Flip) orientation.

The direction signal from the traversing arm has two levels: High and Low. The signal level indicates the current direction of the traversing arm, as follows:

High level: Forward direction

Low level: Reverse direction

The printer uses the level to set the orientation of the printed messages. The following orientations are used:

- Normal:

  TEST 6109

- Horizontal Flip:

  TSET 6110

(Two other orientations are also available: Vertical Flip and Horizontal + Vertical Flip. This example does not use these orientations.)

3.1 Set up dynamic message orientation

Refer to Figure 9 and correct the direction signal from the traversing arm to the SECONDARY TRIGGER/SHAFT ENCODER input (B) on the rear panel of the printer.

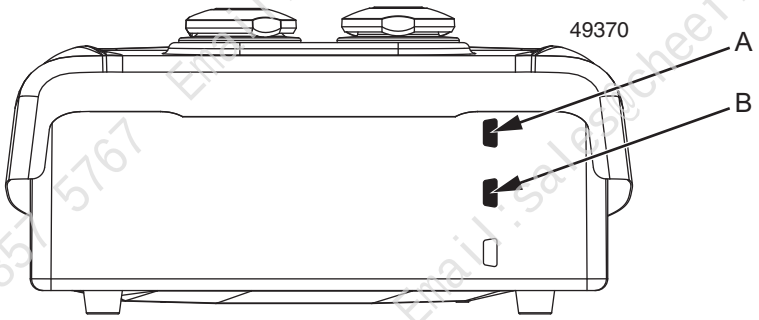

Figure 9. Secondary trigger/shaft encoder input

NOTE: Normally, the input A is needed for the primary trigger device. If a shaft encoder is used, the secondary trigger and shaft encoder must share the input B.

To use dynamic message orientation, you must define the event that is to trigger the change in orientation. This can be a High Level or Low Level trigger. Refer to *How To Change the System Setup* for more information about print triggers.

Navigate to the **Print Settings** page (**Print Monitor** page > **Print Settings**).

Select the **Message Orientation Mode** option to display the **Message Orientation Mode** page.

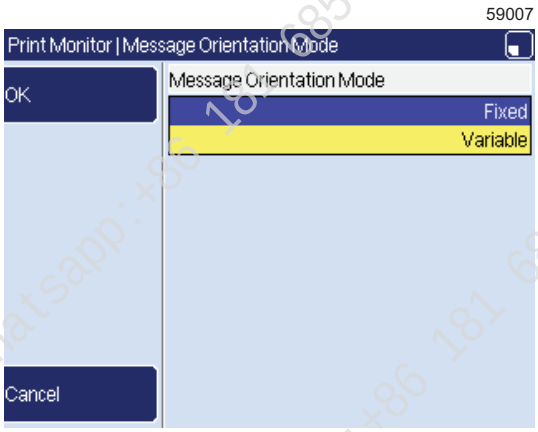

Figure 10. Message Orientation Mode page

You can set the message orientation mode to either Fixed or Variable. Variable mode enables you to configure the 5900 Dairy Coder printer software for traversing operations.

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If you select Fixed mode, the four standard 5900 message orientations (Horizontal + Vertical Flip, Horizontal Flip, Vertical Flip, and Normal) are available on the **Message Orientation** page, as shown in Figure 11. Refer to *How To Change Print Settings* for more information.

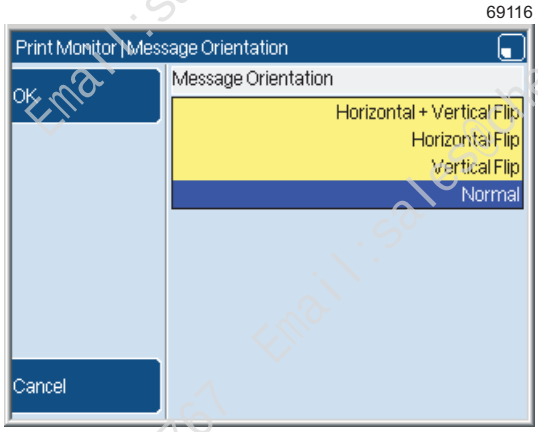

Figure 11. Message Orientation page (Fixed mode)

If you select Variable mode, the **Variable Message Orientation** page is displayed.

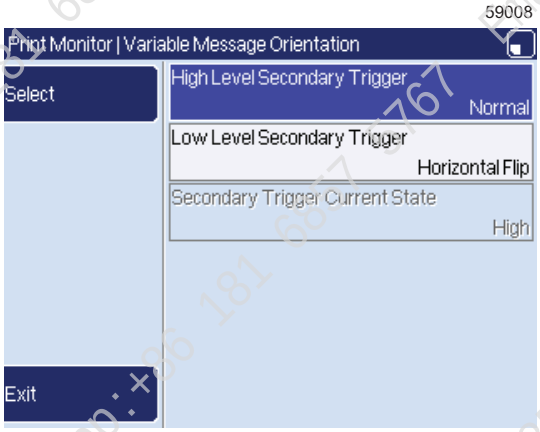

Figure 12. Variable Message Orientation page

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The following options are available:

- **High Level Secondary Trigger**—this option sets the message orientation when a High Level trigger signal is received (that is, when the trigger is in the inactive state). You can select one of the four standard message orientations (Horizontal + Vertical Flip, Horizontal Flip, Vertical Flip, and Normal). In the example on page 9, this is set to Normal.
- **Low Level Secondary Trigger**—this option sets the message orientation when a Low Level trigger signal is received (that is, when the trigger is in the active state). You can select one of the four standard message orientations (Horizontal + Vertical Flip, Horizontal Flip, Vertical Flip, and Normal). In the example on page 9, this is set to Horizontal Flip.
- **Secondary Trigger Current State**—this option is for display purposes only and shows which of the two orientation states is active. This depends on the current state of the secondary trigger signal. The trigger can be either High Level (inactive) state or Low Level (active) state. For example, in Figure 12, the secondary trigger is in the High Level (inactive) state, so the message orientation is currently Normal.

NOTE: None of the above options are available in the 'Printing' state.

Any orientation sequence that you create is saved in the Orientation Sequence Store with the name 'DairyCoderOrientationSeq'. There can only be one such sequence saved in the store at any time.