This equipment is regulated by the European Union under WEEE Directive 2002/96/EC).

See www.nordson.com for information about how to properly dispose of this equipment.
Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address: http://www.nordson.com.

Address all correspondence to:

Nordson Corporation
Attn: Customer Service
11475 Lakefield Drive
Duluth, GA 30097

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LA 4100 Pattern Control System

Safety

Read this section before using the equipment. This section contains recommendations and practices applicable to the safe installation, operation, and maintenance (hereafter referred to as “use”) of the product described in this document (hereafter referred to as “equipment”). Additional safety information, in the form of task-specific safety alert messages, appears as appropriate throughout this document.

WARNING: Failure to follow the safety messages, recommendations, and hazard avoidance procedures provided in this document can result in personal injury, including death, or damage to equipment or property.

Safety Alert Symbols

The following safety alert symbol and signal words are used throughout this document to alert the reader to personal safety hazards or to identify conditions that may result in damage to equipment or property. Comply with all safety information that follows the signal word.

WARNING: Indicates a potentially hazardous situation that, if not avoided, can result in serious personal injury, including death.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, can result in minor or moderate personal injury.

CAUTION: (Used without the safety alert symbol) Indicates a potentially hazardous situation that, if not avoided, can result in damage to equipment or property.
Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instructions and regulatory requirements for use of the equipment are met, and qualifying all potential users.

Safety Information

- Research and evaluate safety information from all applicable sources, including the owner-specific safety policy, best industry practices, governing regulations, material manufacturer’s product information, and this document.
- Make safety information available to equipment users in accordance with governing regulations. Contact the authority having jurisdiction for information.
- Maintain safety information, including the safety labels affixed to the equipment, in readable condition.

Instructions, Requirements, and Standards

- Ensure that the equipment is used in accordance with the information provided in this document, governing codes and regulations, and best industry practices.
- If applicable, receive approval from your facility's engineering or safety department, or other similar function within your organization, before installing or operating the equipment for the first time.
- Provide appropriate emergency and first aid equipment.
- Conduct safety inspections to ensure required practices are being followed.
- Re-evaluate safety practices and procedures whenever changes are made to the process or equipment.
**User Qualifications**

Equipment owners are responsible for ensuring that users:

- Receive safety training appropriate to their job function as directed by governing regulations and best industry practices.
- Are familiar with the equipment owner’s safety and accident prevention policies and procedures.
- Receive, equipment- and task-specific training from another qualified individual.

**NOTE:** Nordson can provide equipment-specific installation, operation, and maintenance training. Contact your Nordson representative for information.

- Possess industry- and trade-specific skills and a level of experience appropriate to their job function.
- Are physically capable of performing their job function and are not under the influence of any substance that degrades their mental capacity or physical capabilities.

**Applicable Industry Safety Practices**

The following safety practices apply to the use of the equipment in the manner described in this document. The information provided here is not meant to include all possible safety practices, but represents the best safety practices for equipment of similar hazard potential used in similar industries.

**Intended Use of the Equipment**

- Use the equipment only for the purposes described and within the limits specified in this document.
- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Nordson representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.
Instructions and Safety Messages

- Read and follow the instructions provided in this document and other referenced documents.
- Familiarize yourself with the location and meaning of the safety warning labels and tags affixed to the equipment.
- If you are unsure of how to use the equipment, contact your Nordson representative for assistance.

Installation Practices

- Install the equipment in accordance with the instructions provided in this document and in the documentation provided with auxiliary devices.
- Ensure that the equipment is rated for the environment in which it will be used and that the processing characteristics of the material will not create a hazardous environment. Refer to the Material Safety Data Sheet (MSDS) for the material.
- If the required installation configuration does not match the installation instructions, contact your Nordson representative for assistance.
- Position the equipment for safe operation. Observe the requirements for clearance between the equipment and other objects.
- Install lockable power disconnects to isolate the equipment and all independently powered auxiliary devices from their power sources.
- Properly ground all equipment. Contact your local building code enforcement agency for specific requirements.
- Ensure that fuses of the correct type and rating are installed in fused equipment.
- Contact the authority having jurisdiction to determine the requirement for installation permits or inspections.

Operating Practices

- Familiarize yourself with the location and operation of all safety devices and indicators.
- Confirm that the equipment, including all safety devices (guards, interlocks, etc.), is in good working order and that the required environmental conditions exist.
- Use the personal protective equipment (PPE) specified for each task. Refer to Equipment Safety Information or the material manufacturer’s instructions and MSDS for PPE requirements.
- Do not use equipment that is malfunctioning or shows signs of a potential malfunction.
**Maintenance and Repair Practices**

- Perform scheduled maintenance activities at the intervals described in this document.
- Relieve system hydraulic and pneumatic pressure before servicing the equipment.
- De-energize the equipment and all auxiliary devices before servicing the equipment.
- Use only new factory-authorized refurbished or replacement parts.
- Read and comply with the manufacturer’s instructions and the MSDS supplied with equipment cleaning compounds.

**NOTE:** MSDSs for cleaning compounds sold by Nordson are available from Nordson’s Website at www.nordson.com or by calling Nordson Technical Support.

- Confirm the correct operation of all safety devices before placing the equipment back into operation.
- Dispose of waste cleaning compounds and residual process materials according to governing regulations. Refer to the applicable MSDS or contact the authority having jurisdiction for information.
- Keep equipment safety warning labels clean. Replace worn or damaged labels.

**Equipment Safety Information**

This part provides safety information applicable to the following types of Nordson equipment:

- hot melt and cold adhesive application equipment, including melters, hoses, and guns.
- auxiliary equipment, including pattern-controllers, timers, and other similar devices.

**Equipment Shutdown**

To safely complete many of the procedures described in this document, the user must first shut down the equipment. The level of shut-down required varies by the type of equipment in use and the procedure being completed. When required, shut-down instructions appear at the start of the procedure. Each level of shut-down is described below.
Relieve System Hydraulic Pressure
Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the melter-specific product manual for instructions on relieving system hydraulic pressure.

De-energize the System
Isolate the system (melter, hoses, guns, and auxiliary devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

1. Turn off the equipment and all auxiliary devices connected to the equipment (system).
2. To prevent the equipment from being accidentally energized, lock and tag the disconnect switch(es) or circuit breaker(s) that provide input electrical power to the equipment and auxiliary devices.

NOTE: Government regulations and industry standards dictate specific requirements for the isolation of hazardous energy sources. Refer to the appropriate regulation or standard.

Disable the Gun
All electrical or mechanical devices that provide an activation signal to the gun solenoid(s) or the melter pump must be disabled before work can be performed on or around a gun that is connected to a pressurized system.

1. Turn off or disconnect the gun triggering device (pattern controller, timer, PLC, etc.)
2. Disconnect the input signal wiring to the gun solenoid valve(s).
3. Reduce the air pressure to the gun solenoid valve(s) to zero; then relieve the residual air pressure between the regulator and the gun.
General Safety Warnings and Cautions

This part contains general safety warnings and cautions and first aid information applicable to the use of the equipment described in this document.

WARNING: Hazardous vapors! Before processing any Polyurethane Reactive (PUR) hot melt or solvent-based material through a compatible Nordson melter, read and comply with the material's MSDS. Ensure that the material's processing temperature and flashpoints will not be exceeded and that all requirements for safe handling, ventilation, first aid, and personal protective equipment are met. Failure to comply with MSDS requirements can cause personal injury, including death.

WARNING: Reactive material! Never clean any aluminum component or flush Nordson equipment with halogenated hydrocarbon fluids. Nordson melters and guns contain aluminum components that may react violently with halogenated hydrocarbons. The use of halogenated hydrocarbon compounds in Nordson equipment can cause personal injury, including death.

WARNING: System pressurized! Relieve system hydraulic pressure before breaking any hydraulic connection or seal. Failure to relieve the system hydraulic pressure can result in the uncontrolled release of hot melt that can cause personal injury.

WARNING: Molten Material! Wear eye or face protection, clothing that protects exposed skin, and heat-protective gloves when servicing equipment that contains molten hot melt. Even when solidified, hot melt can still cause burns. Failure to wear appropriate personal protective equipment can result in personal injury.
**General Safety Warnings and Cautions (contd)**

**WARNING:** Equipment starts automatically! Remote triggering devices are used to control automatic hot melt guns. Before working on or near an operating gun, disable the gun’s triggering device and remove the air supply to the gun’s solenoid valve(s). Failure to disable the gun’s triggering device and remove the supply of air to the solenoid valve(s) can result in personal injury.

**WARNING:** Risk of electrocution! Even when switched off and electrically isolated at the disconnect switch or circuit breaker, the equipment may still be connected to energized auxiliary devices. De-energize and electrically isolate all auxiliary devices before servicing the equipment. Failure to properly isolate electrical power to auxiliary equipment before servicing the equipment can result in personal injury, including death.

**WARNING:** Risk of fire or explosion! Nordson cold adhesive equipment is not rated for use in explosive environments and should not be used with solvent-based adhesives that can create an explosive atmosphere when processed. Refer to the MSDS for the adhesive to determine its processing characteristics and limitations. The use of incompatible solvent-based adhesives or the improper processing of solvent-based adhesives can result in personal injury, including death.

**WARNING:** Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

**CAUTION:** Hot surfaces! Avoid contact with the hot metal surfaces of guns, hoses, and certain components of the melter. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.
CAUTION: Some Nordson melters are specifically designed to process Polyurethane Reactive (PUR) hot melt. Attempting to process PUR in equipment not specifically designed for this purpose can damage the equipment and cause premature reaction of the hot melt. If you are unsure of the equipment's ability to process PUR, contact your Nordson representative for assistance.

CAUTION: Before using any cleaning or flushing compound on or in the equipment, read and comply with the manufacturer’s instructions and the MSDS supplied with the compound. Some cleaning compounds can react unpredictably with hot melt, resulting in damage to the equipment.

CAUTION: Nordson hot melt equipment is factory tested with Nordson Type R fluid that contains Polyester Adipate plasticizer. Certain hot melt materials can react with Type R fluid and form a solid gum that can clog the equipment. Before using the equipment, confirm that the hot melt is compatible with Type R fluid.

Other Safety Precautions
- Do not use an open flame to heat hot melt system components.
- Check high pressure hoses daily for signs of excessive wear or damage.
- Never point a dispensing handgun at yourself or others.
- Suspend dispensing handguns by their proper suspension point.

First Aid
If molten hot melt comes in contact with your skin:
1. Do NOT attempt to remove the molten hot melt from your skin.
2. Immediately soak the affected area in clean, cold water until the hot melt has cooled.
3. Do NOT attempt to remove the solidified hot melt from your skin.
4. In case of severe burns, treat for shock.
5. Seek expert medical attention immediately. Give the MSDS for the hot melt to the medical personnel providing treatment.
System Overview

The LA 4100 pattern controller (pattern controller) is dual channel and provides an application control of up to four guns per channel.

System Components

The pattern controller system components are:

- photocell
- guns
- transformer
- encoder (Machine Speed Detector [MSD])
System Features

- Dual channel with up to four gun capacity per channel
- Two beads per channel
- Simple conversion from line gluing to dot gluing
- Ability to automatically convert glue lines to dots below a certain machine speed
- Ability to inhibit outputs below a certain machine speed
- Digital display of machine speed, work rate, and total count
- Programmable gun compensation
- Internal timer function for fixed speed machines
- Liquid crystal display (LCD) programming/display screen
- Connections to allow linking to other devices
- Single encoder input
- Single trigger input
- Pressure run-up
- Remote gun purge
- Encoder scaling
## Specifications

<table>
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<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>24 VAC 50/60 Hz single phase, 150 watts (maximum)</td>
</tr>
<tr>
<td>Encoder (MSD)</td>
<td>+12 VDC</td>
</tr>
<tr>
<td>Trigger</td>
<td>+12 VDC</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>4 outputs per channel using 3-pin DIN screw-lock sockets</td>
</tr>
<tr>
<td>Spike voltage</td>
<td>Nominal 33 VDC</td>
</tr>
<tr>
<td>Spike duration</td>
<td>Adjustable from 0–15 ms</td>
</tr>
<tr>
<td>Holding voltage</td>
<td>5 or 10 VDC (programmable)</td>
</tr>
<tr>
<td>Run up</td>
<td>12 V, 0–10 VDC</td>
</tr>
<tr>
<td><strong>Constants (per channel)</strong></td>
<td></td>
</tr>
<tr>
<td>Lockout</td>
<td>0–9999 mm (0–394 in.)</td>
</tr>
<tr>
<td>Gun-to-trigger offset (GTO)</td>
<td>5–9999 mm (0.2–394 in.)</td>
</tr>
<tr>
<td>Pitch</td>
<td>0–9999 mm (0–394 in.)</td>
</tr>
<tr>
<td>Time</td>
<td>0.0–80.0 ms</td>
</tr>
<tr>
<td>On compensation</td>
<td>0.0–50.0 ms</td>
</tr>
<tr>
<td>Off compensation</td>
<td>0.0–50.0 ms</td>
</tr>
<tr>
<td><strong>Patterns</strong></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>1 per channel (2 intervals on and 2 intervals off)</td>
</tr>
<tr>
<td>Delay</td>
<td>0–9999 mm (0–393.66 in.)</td>
</tr>
<tr>
<td>Line speed</td>
<td>600 m/min (1,968 ft/min)</td>
</tr>
<tr>
<td><strong>Number of guns</strong></td>
<td>up to 4 per channel</td>
</tr>
<tr>
<td>Encoder (MSD)</td>
<td>0.01–99.99 p/mm or internal 1 khz</td>
</tr>
<tr>
<td><strong>Sockets</strong></td>
<td></td>
</tr>
<tr>
<td>Encoder (MSD)</td>
<td>5-pin DIN 240° screw-lock</td>
</tr>
<tr>
<td>Trigger</td>
<td>5-pin DIN 180° screw-lock</td>
</tr>
<tr>
<td>Transmits</td>
<td>2-pole 3.5 mm (0.14 in.) jack</td>
</tr>
<tr>
<td>Remote hold lead</td>
<td>2-pole 3.5 mm (0.14 in.) jack</td>
</tr>
<tr>
<td>Outputs</td>
<td>3-pin DIN screw-lock</td>
</tr>
<tr>
<td>Run up</td>
<td>4-pin DIN</td>
</tr>
<tr>
<td><strong>Size and weight</strong></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>135 x 262 x 18 mm (5.3 x 10.3 x 7.1 in.)</td>
</tr>
<tr>
<td><strong>Low Speed</strong></td>
<td></td>
</tr>
<tr>
<td>Minimum speed</td>
<td>0–600 m/min (0–1,968 ft/min)</td>
</tr>
<tr>
<td>Dotting</td>
<td>0–600 m/min (0–1,968 ft/min)</td>
</tr>
<tr>
<td>Display</td>
<td>4 line x 20 character, backlit LCD</td>
</tr>
</tbody>
</table>
Dimensional Drawing

Fig. 2  LA 4100 Pattern Controller Dimensional Drawing
Front Panel Controls and Indicators

Fig. 3 Location of Front Panel Controls and Indicators

1. System power switch
2. Display panel
3. PURGE key
4. SET UP key
5. Decrease (left arrow) key
6. Increase (right arrow) key
7. Up arrow key
8. Down arrow key
9. Channel Select
10. Channel 1 light
11. Channel 2 light
12. Output 1 light
13. Output 2 light
14. Trigger light
15. Encoder light

<table>
<thead>
<tr>
<th>Control and Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System power switch</td>
<td>An illuminated control for turning the unit on or off.</td>
</tr>
<tr>
<td>LCD display</td>
<td>Four-line backlit liquid crystal display.</td>
</tr>
<tr>
<td>Purge</td>
<td>Energizes all guns on the selected channel.</td>
</tr>
<tr>
<td></td>
<td>NOTE: This is an alternate action switch. Press to switch the selected</td>
</tr>
<tr>
<td></td>
<td>channel on or off.</td>
</tr>
<tr>
<td>Setup</td>
<td>Scrolls through the setup screens.</td>
</tr>
<tr>
<td>Increase/Decrease</td>
<td>Increases or decreases the selected parameter.</td>
</tr>
<tr>
<td>Up/Down</td>
<td>Selects the item being programmed by moving up or down.</td>
</tr>
<tr>
<td>Channel Select</td>
<td>Selects which channel is being programmed, observed, or adjusted. It also</td>
</tr>
<tr>
<td></td>
<td>toggles between Channel 1 and 2 lights.</td>
</tr>
<tr>
<td>Channel 1 and 2 lights</td>
<td>Illuminate to indicate which channel is being programmed, observed, or</td>
</tr>
<tr>
<td></td>
<td>adjusted.</td>
</tr>
<tr>
<td>Output 1 and 2 lights</td>
<td>Illuminate when the respective channel is being energized.</td>
</tr>
<tr>
<td>Trigger light</td>
<td>Illuminates when the trigger is on.</td>
</tr>
<tr>
<td>Encoder light</td>
<td>Illuminates with each pulse from the encoder.</td>
</tr>
</tbody>
</table>
Rear Panel Connectors

Fig. 4 Rear Panel Connectors

1. Channel 1 output jacks—4 sockets
2. Channel 1 Transmit socket
3. Channel 1 Remote Hold input socket
4. Channel 2 output jacks—4 sockets
5. Channel 2 Transmit socket
6. Channel 2 Remote Hold input socket
7. Encoder input socket
8. Encoder Transmit output socket
9. Trigger input socket
10. Trigger Transmit output socket
11. Run-up 0–10 VDC output socket
12. Power input socket, 24 VAC
Installation

The following procedures explain how to install the pattern controller.

Pattern Controller

To install the pattern controller:

1. Inspect the system components.
2. Mount the pattern controller next to the production line.
3. Plug the system power cable into the pattern controller and connect the power plug to a power source.
4. Determine the position for each of the following components:
   - photocell
   - gun

Figure 5 shows the pattern controller and its components installed and ready for operation.

![Pattern Controller Installed for Operation](image-url)

Fig. 5 Pattern Controller Installed for Operation

1. LA 4100 pattern controller
2. Photocell
3. Encoder (MSD)
4. Guns
5. Adhesive supply
6. Adhesive pressure regulation
7. Transformer
Photocell/Gun Positioning

Set the photocell in a correct position to detect the trigger edge. Position the photocell/gun:

- 50 mm (1.968 in.) upstream from the gun
- no more than 25 mm (1.0 in.) above the work surface
- so that the trigger edge will pass directly under the photocell
- over a gap in the machine or on a dark, non-reflective surface
- so that the trigger light on the pattern controller confirms when a trigger signal is received.

**NOTE:** To determine the distance set from the photocell to the gun, and the distance set from the trigger edge to the start of the glue line, see Figure 6, Bead Pattern Diagram.

System Startup

When the pattern controller is powered on, the LCD display shows the last menu that was displayed before power down. To turn on the pattern controller:

1. Make sure the power supply to the pattern controller is connected.
2. Turn on the pattern controller by switching the system power switch on. The pattern controller will perform a brief initializing procedure that includes a self-diagnostic and preparation program. The word **Initializing** appears on the display.

**NOTE:** The system can be powered down at any time and all information will be saved.
Programming the Pattern Controller

The following procedures explain how to program the pattern controller for operation.

Before Programming

Before programming the pattern controller, have a clear understanding of the following:

- Each function can be programmed one at a time for each of the two channels, regardless of whether the machine is in production.
- The current function displays on the LED and can be entered or amended as needed.
- The correct channel (1 or 2) must be selected when setting function values. When setting system-wide values, both channel LEDs are lit.
- The main display window consists of an alphanumeric LCD with four lines, each containing 20 characters.
- The diagnostic functions are provided by four (two-output) LEDs that are connected to a trigger, encoder (MSD) input, and generated output. These LEDs turn green when energized.
- Changing the value of the current function involves using the arrow keys to change the pattern controller setting. There is a two-second delay between changes.

Refer to Performance Specification Tables while setting up the pattern controller.
Pattern Controller Quick Programming Guide

This quick programming guide shows the menu screens in the *Initializing* process and the *Initializing Administrator* process that are used to program the pattern controller. Both processes are discussed in detail in the following sections.

### Initializing

- **Bead 1 of Pattern**
  - Delay (0...9999) mm
  - Length (0...9999) mm

- **Bead 2 of Pattern**
  - Delay (0...9999) mm
  - Length (0...9999) mm

- **Trigger Information**
  - Edge (Lead/Trail)
  - Lockout (0...9999) mm

- **Dot Parameters**
  - Time (0.0...50) ms
  - Pitch (0...9999) mm
  - Dot (ON/OFF)

- **Compensation Values**
  - On Comp. (0.0...50) ms
  - Off Comp (0.0...50) ms

- **Run-up Curve**
  - Speed 1 to 4, P 1 to 4 (valid curve)

- **Production Data**
  - Speed
  - Work Rate
  - Total

### Initializing Administrator

- **Bead 1 of Pattern**
  - Delay (0...9999) mm
  - Length (0...9999) mm

- **Bead 2 of Pattern**
  - Delay (0...9999) mm
  - Length (0...9999) mm

- **Trigger Information**
  - Edge (Lead/Trail)
  - Lockout (0...9999) mm

- **Dot Parameters**
  - Time (0.0...50) ms
  - Pitch (0...9999) mm
  - Dot (ON/OFF)

- **Compensation Values**
  - On Comp. (0.0...50) ms
  - Off Comp (0.0...50) ms

- **Run-up Curve**
  - Speed 1 to 4, P 1 to 4 (valid curve)

- **Production Data**
  - Speed
  - Work Rate
  - Total

### Encoder Settings

- **Encoder (Internal/Custom)**
  - Custom (0.01...2.0) mm

### Gun Settings

- **Hold Voltage** (5/10) V
- **Spike Time** (0−15)

### Other Settings

- **GTO** (5...9999) mm
- **Test PSI** (0...100%)

### Low Speed Settings

- **Min Spd** (0...600) m/min
- **Dotting** (0...600) m/min

### Trigger Memory Mode

- **YES/NO**
Initializing Process

At startup, the pattern controller goes through an *Initializing* process. Also refer to *Pattern Controller Quick Programming Guide*.

In the *Initializing* process the pattern controller goes through the following setup screens:

- Bead patterns 1 and 2
- Trigger information (system-wide settings)
- Dot parameters
- Compensation value parameters
- Run-up curve
- Production data (system-wide settings)

**Bead Patterns**

The pattern controller supports either dots or beads (not both) per channel.

![Bead Pattern Diagram](image)

Fig. 6 Bead Pattern Diagram (not to scale)
To set the delay, line length, and line type for bead 1:

1. Press the `SET UP` key until the following screen appears:

```
Bead 1 of Pattern
Delay >0 mm<
Length 0 mm
```

2. Press the ▲ or ▼ key. The cursor appears beside the Delay parameter.
3. Press the ◄ or ► key to set the desired Delay value.
4. Press the ▼ key. The cursor appears beside the Length parameter.
5. Press the ◄ or ► key to set the desired Length value.
6. Repeat steps 1–5 to set delay, line length, and line type for bead 2.

**NOTE:** When setting the delay for Bead 2, a minimum delay value is provided automatically. This value is calculated by adding the delay and length from pattern line 1 and adding 1 mm (0.039 in.), thus providing a safety margin ensuring the lines do not overlap.
**Trigger Information**

Trigger information includes the programmable input for the leading edge of the trigger. To set trigger information:

1. Press the **SET UP** key until the following screen appears.

   ![Trigger Information Screen]

   - **Trigger Information**
   - **Edge** Lead
   - **Lockout** 2 mm

2. Press the ▲ or ▼ key. The cursor appears beside the **Edge parameter**. The **Edge parameter** sets the photocell to sense either the **Lead value** or **Trail value** of the product.

   **NOTE:** The lead value (or GTO) is the distance from the photocell to the gun and is normally set at 50 mm (1.96 in.). When entered, this enables subsequent line delay and line length adjustments to be measured from the product’s leading edge. If the lead distance subsequently changes, i.e., if the photocell or gun is repositioned, then the lead value (GTO) must be altered accordingly.

3. Press the ◀ or ► key to set the **Edge parameter** to Lead or Trail.
4. Press the ▼ key. The cursor appears beside the **Lockout parameter**.
5. Press the ◀ or ► key to set the desired **Lockout value**.
Dot Parameters

To set dot parameters:

1. Press the SET UP key until the following screen appears:

```
Dot Parameters
Time    >0.1 ms <
Pitch   3 mm
Dot     On/Off
```

2. Press the ▲ or ▼ key. The cursor appears beside the Time parameter. The Time parameter can only be accurately set while the machine is running at production speed.

   NOTE: The time parameter controls the gun opening time, which governs the size of the bead. The value is displayed in milliseconds (ms) and is adjustable from 0.0–80.0 ms in 0.1 ms increments. The time necessary is dependent on several factors, which include:

   • gun type
   • machine speed
   • dot size
   • glue viscosity
   • distance from gun nozzle to product

3. Press the ▼ key. The cursor appears beside the Pitch parameter.

4. Press the ◀ or ► key to set the Pitch parameter.

   NOTE: Pitch is the repeat distance between the center of one bead and the center of the next dot.

5. Press the ▼ key. The cursor appears beside the Dot parameter.

   NOTE: Dot On or Off allows the channel to put down either dots or beads.

6. Press the ◀ or ► key to set the Dot parameter to either On or Off.
**Compensation Values**

The compensation values represent the on and off response time of the gun during application. Refer to the gun compensation tables in *Performance Specification Tables* given later.

To set the compensation value parameters:

1. Press the **SET UP** key until the following screen appears:

   ![Compensation Value](image)

   - **On Comp.** >0.0 ms<
   - **Off Comp.** 0.0 ms

2. Press the ▲ or ▼ key. The cursor appears beside the **On Comp.** parameter.

   **NOTE:** On Comp. (on compensation) time represents the on response time of the gun and is needed to keep the line start position consistent. This value is dependent on several variables, which include:

   - glue viscosity
   - nozzle size
   - height of gun above product

   **NOTE:** The value is displayed in milliseconds and is adjustable from 0.0–50.0 ms in 0.1 ms increments.

3. Press the ◀ or ► key to set the **On Comp.** value.

4. Press the ▼ key. The cursor appears beside the **Off Comp.** parameter.

   **NOTE:** Off Comp. (off compensation) time represents the off response time of the gun and is needed to keep the line end position consistent. Like On Comp., this value is dependent on a number of variables. The value is displayed in milliseconds and is adjustable from 0.0–50.0 ms in 0.1 ms increments.

5. Press the ◀ or ► key to set the **Off Comp.** value.
Run-Up Curve Settings

The in-line glue regulator unit provides settings for four pressure points related to speed. These values are output from the pattern controller in the form of a 0–10 VDC signal. Four points controller is given to facilitate a variety of glue types.

The screen shows two columns of figures, the first column displays Speed 1 to 4. Speed 1 is always set to 0 m/min, and the maximum setting for speed 2, 3, and 4 is 600 m/min (1,968 ft/min).

The second column displays Pressure (P1 to P4), shown as percentages, 100% being the maximum pressure available at the glue regulator unit.

1. Press the **SET UP** key until the following screen appears:

<table>
<thead>
<tr>
<th>Speed1</th>
<th>0</th>
<th>P1</th>
<th>&gt;0%&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed2</td>
<td>0</td>
<td>P2</td>
<td>0%</td>
</tr>
<tr>
<td>Speed3</td>
<td>0</td>
<td>P3</td>
<td>0%</td>
</tr>
<tr>
<td>Speed4</td>
<td>0</td>
<td>P4</td>
<td>0%</td>
</tr>
</tbody>
</table>

2. Press the ▲ or ▼ key. The cursor appears beside Speed 1.
3. Press the ◀ or ▶ key to set the value for Speed 1.
4. Press the ▼ key. The cursor appears beside P1.
5. Press the ◀ or ▶ key to set the value for P1.
6. Repeat steps 1–5 to set the values for Speed 2–4 and P2–P3.

**NOTE:** Adjustments to the pressure and speed values can be made while the machine is running. Not all of the coordinates have to be used. Unused coordinates are set to zero, and their corresponding pressure values are automatically set to the P1 value.
Production Data

Production data is the digital display of the machine’s speed in m/min, work rate/hr, and total count. To review the system’s production data:

1. Press the SET UP key until the following screen appears.

<table>
<thead>
<tr>
<th>Production Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
</tr>
<tr>
<td>Work Rate</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Speed: 0 m/min</td>
</tr>
<tr>
<td>Work Rate: 0 k/hr</td>
</tr>
<tr>
<td>Total: 00000</td>
</tr>
</tbody>
</table>

Speed: Shows the actual machine running speed in meters per minute.

Work Rate: Shows an average figure of how many products per hour are being processed based on the last sixty seconds.

Total: Indicates the number of products that have been processed by the system since the count was last zeroed. This value changes every time the photocell detects a product.

NOTE: The total count can be changed to zero by pressing the ▼ key.
Initializing Administrator Process

The Initializing Administrator process goes through the same setup screens as the Initializing process. This process includes additional setup screens that are used to set the pattern controller for the first time, or to reset the pattern controller. The additional screens are:

- Encoder settings (system-wide settings)
- Gun settings (1 and 2)
- Other settings
- Low speed settings
- Trigger memory mode

Also refer to Pattern Controller Quick Programming Guide.

To access the Initializing Administrator screens:

1. Turn the system power switch on and then press and hold both the and keys. The words Initializing Administrator appear, along with the software and engine software versions. Initializing takes between 10–15 seconds to complete.

   **NOTE:** To reset the pattern controller to the factory defaults, hold the PURGE and SET UP keys simultaneously at power up. The words Initializing Administrator appear, along with the software and engine software versions. Initializing takes 30 seconds to complete.

2. Press the SET UP key to access each setup screen.
**Encoder Settings**

To enter encoder settings:

1. Press the SET UP key until the following screen appears:

   ![Encoder Settings Table]

<table>
<thead>
<tr>
<th>Encoder</th>
<th>Intern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom</td>
<td>1.00 ppm</td>
</tr>
</tbody>
</table>

2. Press the ▲ or ▼ key. The cursor appears beside the Encoder parameter. The encoder parameter can either be set to Intern (internal) or Custom.

3. Press the ◀ or ► key to set the Encoder to Intern or Custom.

4. Press the ▼ key. The cursor appears beside the Custom parameter.

5. Press the ◀ or ► key to set the desired Custom value.
**Gun Settings**

To change the gun settings:

1. Press the **SET UP** key until the following screen appears:

   **Gun Settings**
   
<table>
<thead>
<tr>
<th>Hold Voltage</th>
<th>Spike Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 V</td>
<td>2 ms</td>
</tr>
</tbody>
</table>

2. Press the ▲ or ▼ key. The cursor appears beside the Hold Voltage parameter.

   **NOTE:** Hold voltage is the voltage that keeps the gun open once initiated. The value is dependent on the gun being used, but is either 5 V or 10 V. For recommended settings refer to Table 1 below.

3. Press the ◀ or ▶ key to select the correct voltage for the gun being used to 5 V or 10 V.

   **Gun Type**
   
<table>
<thead>
<tr>
<th>Spike Time</th>
<th>Hold Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic</td>
<td>10 ms</td>
</tr>
<tr>
<td>LA 22</td>
<td>5.00 ms</td>
</tr>
<tr>
<td>LA 844</td>
<td>2.0 ms</td>
</tr>
<tr>
<td>LA 820</td>
<td>1.5 ms</td>
</tr>
</tbody>
</table>

   **Table 1** Recommended Settings for Several Gun Types

4. Press the ▼ key. The cursors appear beside the Spike Time parameter.

   **CAUTION:** Setting the spike time above recommended settings can dramatically decrease the service life of the gun. For recommended settings refer to Table 1 above.

   **NOTE:** Spike time represents the duration of the 33 V spike and is dependent on the gun being used. The value is adjustable from 0.0–15.0 ms in 1 ms increments.

5. Press the ◀ or ▶ key to set the desired Spike Time value.
**Other Settings**

Other Settings include additional gun setting options. To change the settings:

1. Press the **SET UP** key until the following screen appears:

   ![Gun Settings](image)

   Gun Settings
   
   GT0  9999 mm
   Test PSI  10%

2. Press the ▲ or ▼ key. The cursor appears beside the GTO parameter.

   **NOTE:** GTO represents the gun-to-trigger offset.

3. Press the ◀ or ▶ key to set the desired GTO value.
4. Press the ▼ key. The cursor appears beside the Test PSI parameter.
5. Press the ◀ or ▶ key to set the desired Test PSI value.
**Low Speed Settings**

To change low speed settings:

1. Press the **SET UP** key until the following screen appears.

   ![Low Speed Settings](6601073)

   - **Min Spd** > 0 m/min
   - **Dotting** 0 m/min

2. Press the ▲ or ▼ key to select Min Speed (Minimum Speed).
3. Press the ◀ or ► key to set the value.
4. Press the ▼ key to select the Dotting parameter.
5. Press the ◀ or ► key to set the desired value in m/min.

**Minimum Speed**

Minimum speed is the machine speed below which outputs are inhibited.

**NOTE:** The glue application is turned off prior to switching off the machine. At that time the machine slows down gradually before coming to a complete stop and any glue application value set below the minimum speed cannot be detected. For instance, if the dotting value is set below the minimum speed, the glue output will be negligible.

**Dotting**

Dotting is a value in m/min (ft/min) below which the output of the channel is converted into dotting mode. The dotting values are taken from the dot time and dot pitch values set in the normal programming menus.
**Trigger Memory**

Trigger memory occurs when the machine stops during a pattern controller cycle or when the line speed falls below the minimum-speed setting. The trigger memory mode setting allows the user to either apply or not apply adhesive to products between the trigger and the guns when line speed recovers after falling below the minimum-speed setting.

To set the Trigger Memory mode:

1. Press the **SET UP** key until the following screen appears.

   ![Trigger Memory Screen](image)

2. Press the ◀ or ▶ key to select Yes or No.

**Operation**

The following section provides basic procedures to operate the pattern controller.

**System Power Up**

Make sure that the pattern controller system power switch is on.

**NOTE:** The pattern controller can be turned off at any time by switching off the power switch. All information in the pattern controller will be held in memory and displayed the next time the pattern controller is used.
Program Changes

To create or change program settings:

1. Press the **SET UP** key continuously to scroll through the available screens.
2. Press the ▲ or ▼ keys to select a particular parameter. The selected parameter displays between the cursors.
3. Continue pressing the ▲ or ▼ keys to scroll through the available parameter options.
4. Once the desired parameter option is selected, press the ◀ or ▶ key to alter the parameter.

**NOTE:** All changed parameters are saved in memory after 20 seconds of keypad inactivity.
Troubleshooting

Refer to this flow chart to troubleshoot basic pattern controller problems. If the problem cannot be solved with the information given here, contact the local Nordson representative for help.
Parts

To order parts, call the Nordson Customer Service Center or the local Nordson representative. Use these parts lists to describe and locate parts correctly.

Pattern Controller

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1010383</td>
<td>Pattern Controller, 2 channels, 1 trigger, 1 run-up, 2 integrated LV gun drivers</td>
</tr>
<tr>
<td>727 384</td>
<td>Transformer, 150 W, 110/24</td>
</tr>
<tr>
<td>727 385</td>
<td>Plate, transformer</td>
</tr>
</tbody>
</table>

Encoder

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>727 133</td>
<td>Encoder, 1 pulse/mm, with wheel and bracket</td>
</tr>
<tr>
<td>727 146</td>
<td>Encoder, 2 pulses/mm</td>
</tr>
<tr>
<td>727 940</td>
<td>Cable, encoder, 1 pulse/mm, straight, 20 ft</td>
</tr>
<tr>
<td>727 941</td>
<td>Cable, encoder, 1 pulse/mm, straight, 30 ft</td>
</tr>
<tr>
<td>727 240</td>
<td>Bracket assembly, 2 pulse/mm encoder, 20 mm</td>
</tr>
</tbody>
</table>

Photocell

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>727 113</td>
<td>Photocell, feed/force 1, trigger</td>
</tr>
<tr>
<td>727 141</td>
<td>Photocell, trigger</td>
</tr>
<tr>
<td>311 305</td>
<td>Extension cable, photocell, 5 m</td>
</tr>
<tr>
<td>372 501</td>
<td>Extension cable, photocell, 5 m, straight</td>
</tr>
<tr>
<td>313 376</td>
<td>Bracket, photocell, mounting clamp, 30 mm</td>
</tr>
<tr>
<td>313 378</td>
<td>Bracket, photocell, screw-mount</td>
</tr>
</tbody>
</table>
Additional Cables

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>377 222</td>
<td>Cable, encoder, VeriTec, straight, 5 m</td>
</tr>
<tr>
<td>377 230</td>
<td>Cable, remote outputs, straight, 10 m</td>
</tr>
<tr>
<td>377 231</td>
<td>Cable, remote inputs, straight, 10 m</td>
</tr>
<tr>
<td>377 234</td>
<td>Cable, tip seal output, 5 m</td>
</tr>
<tr>
<td>377 238</td>
<td>Cable, driver to pneumatic gun, 5 m</td>
</tr>
</tbody>
</table>

Performance Specification Tables

Use the following performance specification tables while setting up the pattern controller

Maximum Error Due to Acceleration and Gun Compensation

<table>
<thead>
<tr>
<th>Acceleration (mm/sec²)</th>
<th>Gun Compensation Settings (mS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>500</td>
<td>0.0</td>
</tr>
<tr>
<td>1000</td>
<td>0.0</td>
</tr>
<tr>
<td>1500</td>
<td>0.0</td>
</tr>
<tr>
<td>2000</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Error (mm)

Bead Placement Jitter Due to Gearing and Gun Compensation

<table>
<thead>
<tr>
<th>Encoder Gearing (p/mm)</th>
<th>Gun Compensation Settings (mS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0.25</td>
<td>0.2</td>
</tr>
<tr>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td>8</td>
<td>0.0</td>
</tr>
<tr>
<td>16</td>
<td>0.0</td>
</tr>
<tr>
<td>32</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Jitter (mm)
**Minimum Recommended Bead Interval Size for Special Bead Types: Stitched, Dot, Modulate**

<table>
<thead>
<tr>
<th>Gun Compensation (mS)</th>
<th>Maximum Line Speed (m/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>33</td>
</tr>
</tbody>
</table>

Minimum interval (mm)

**Minimum GTO Required**

<table>
<thead>
<tr>
<th>Line Speed (m/min)</th>
<th>Gun Compensation Settings (mS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>100</td>
<td>6</td>
</tr>
<tr>
<td>200</td>
<td>10</td>
</tr>
<tr>
<td>300</td>
<td>14</td>
</tr>
<tr>
<td>400</td>
<td>17</td>
</tr>
<tr>
<td>500</td>
<td>21</td>
</tr>
<tr>
<td>600</td>
<td>25</td>
</tr>
<tr>
<td>700</td>
<td>28</td>
</tr>
<tr>
<td>800</td>
<td>32</td>
</tr>
<tr>
<td>900</td>
<td>36</td>
</tr>
<tr>
<td>1000</td>
<td>39</td>
</tr>
</tbody>
</table>

GTO (mm)
### Maximum Line Speed and Gun Compensation for Smallest Bead or Gap

<table>
<thead>
<tr>
<th>Minimum Bead/Gap Length (mm)</th>
<th>Gun Compensation Settings (mS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>120</td>
</tr>
<tr>
<td>4</td>
<td>160</td>
</tr>
<tr>
<td>5</td>
<td>200</td>
</tr>
<tr>
<td>6</td>
<td>240</td>
</tr>
<tr>
<td>7</td>
<td>280</td>
</tr>
<tr>
<td>8</td>
<td>320</td>
</tr>
<tr>
<td>9</td>
<td>360</td>
</tr>
<tr>
<td>10</td>
<td>400</td>
</tr>
<tr>
<td>15</td>
<td>600</td>
</tr>
<tr>
<td>20</td>
<td>800</td>
</tr>
<tr>
<td>30</td>
<td>1200</td>
</tr>
<tr>
<td>50</td>
<td>2000</td>
</tr>
<tr>
<td>100</td>
<td>4000</td>
</tr>
<tr>
<td>200</td>
<td>8000</td>
</tr>
</tbody>
</table>

*Line Speed (m/mm)*

**NOTE:** These calculations are made on the assumption that all the guns are firing at once, however if a single gun is firing the maximum line speed may be higher than shown.

### Maximum Pattern Segment Length Vs. Encoder Gearing

<table>
<thead>
<tr>
<th>Single Phase Encoder Gearing (p/mm)</th>
<th>Maximum Distance Between:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trigger and First Output edge</td>
</tr>
<tr>
<td></td>
<td>Successive Output Edges (mm)</td>
</tr>
<tr>
<td>1</td>
<td>16384</td>
</tr>
<tr>
<td>2</td>
<td>8192</td>
</tr>
<tr>
<td>4</td>
<td>4096</td>
</tr>
<tr>
<td>8</td>
<td>2048</td>
</tr>
<tr>
<td>16</td>
<td>1024</td>
</tr>
<tr>
<td>32</td>
<td>512</td>
</tr>
<tr>
<td>40</td>
<td>410</td>
</tr>
</tbody>
</table>
### Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auto Spotting</strong></td>
<td>Refer to <em>Modulated Bead Type</em>.</td>
</tr>
<tr>
<td><strong>Auto Scaling</strong></td>
<td>A feature of the pattern control that allows the user to determine the encoder gearing ratio without any calculations. There are three different methods of autoscaling: product-length method, line-jog length method, and line-speed method. There is also an option of entering the value for the encoder gearing ratio if it is known.</td>
</tr>
<tr>
<td><strong>Auto Start</strong></td>
<td>A setting that automatically places the pattern control in the run mode when power is applied.</td>
</tr>
<tr>
<td><strong>Bead</strong></td>
<td>A continuous line of adhesive or, in the case of a custom bead (a stitched, modulated, or dot bead), a line of adhesive that has been divided into sub-beads. Refer also to <em>Sub-Bead</em>.</td>
</tr>
<tr>
<td><strong>Bead Length</strong></td>
<td>Refer to <em>Duration</em>.</td>
</tr>
<tr>
<td><strong>Bead Offset</strong></td>
<td>Refer to <em>Delay</em>.</td>
</tr>
<tr>
<td><strong>Bead Type</strong></td>
<td>A setting that allows the user to select one of five different bead types.</td>
</tr>
<tr>
<td><strong>Continuous Line Glue</strong></td>
<td>When gluing starts or stops at a user specified line speed.</td>
</tr>
<tr>
<td><strong>Cut Out</strong></td>
<td>Refer to <em>Minimum Operational Line Speed</em>.</td>
</tr>
<tr>
<td><strong>Delay</strong></td>
<td>The distance from the leading edge of the product to the beginning of the bead. Refer also to <em>Leading Edge</em>.</td>
</tr>
<tr>
<td><strong>Dot Bead Type</strong></td>
<td>This feature produces patterns of constant-weight (constant-volume) dots of adhesive spaced apart by a user-determined distance. Specifying the gun-on time can control the dot weight. Specifying the dot-interval distance can control the distance between dots. A constant dot weight and interval can be produced over the entire range of line speed without using external run-up equipment.</td>
</tr>
<tr>
<td><strong>Dot Pitch</strong></td>
<td>The repeat distance between the center of one spot and the center of the next spot.</td>
</tr>
<tr>
<td><strong>Dot Time</strong></td>
<td>Controls the gun opening time, which directs the size of the glue spot.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>The distance from the start of the bead to the end of the bead.</td>
</tr>
<tr>
<td><strong>Edge</strong></td>
<td>The edge parameter sets the photosensor to sense either the leading edge or the trailing edge of the product as a trigger.</td>
</tr>
</tbody>
</table>
**Encoder**  
A device that tracks line position. Using the pulse count from an encoder, the pattern control can generate highly accurate pattern sets as line speed varies.

**Encoder Gearing Ratio**  
The ratio of encoder shaft rotation to line travel. Encoder shaft rotation is measured in pulses per revolution and line travel is measured in millimeters or inches. The encoder gearing ratio is expressed in pulses per millimeter or inch.

**Fault**  
Notification that a serious defect or problem has occurred in the pattern control system. When a fault occurs, and if the system is running, the pattern control will stop generating patterns. Faults need to be cleared manually, or else the problem causing the fault will not be fixed.

**Flush**  
Refer to **Purge**.

**Gap**  
An area at either end of the product where adhesive is not applied when generating random-length beads. The size of the margin can be independently set at both the leading and trailing edges of the product. Refer also to **Random-Length Bead Type**.

**Glue Stop**  
Refer to **Minimum Operational Line Speed**.

**GTO**  
Gun-to-Trigger Offset. It is the distance from the centerline of the gun nozzle to the centerline of the trigger lens.

**Gun Actuator**  
The device that opens and closes the gun. A gun actuator can be a pneumatic solenoid valve or an electric gun driver, depending upon the type of guns you use in your production facility.

**Gun Compensation**  
The ability of the pattern control to produce accurate patterns by compensating for the delay, large or small, in gun-response time.

**Gun-On Time**  
Refer to **On Compensation**.

**Gun-Off Time**  
Refer to **Off Compensation**.

**Gun Test Button**  
A button on the main control board that allows you to test-fire the gun connected to any of the four pattern-control outputs. Using this button and associated DIP switches, you can activate one output or any combination of the four outputs.

**Gun**  
The dispensing device that applies adhesive to the products. Sometimes called a head or an applicator, a gun can have a single dispensing module or it can have multiple modules. Refer also to **Gun Actuator**.

**High Time**  
Refer to **Spike Time**.

**Interval**  
Refer to **Pitch**.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LCD</strong></td>
<td>Liquid Crystal Display.</td>
</tr>
<tr>
<td><strong>Lead Value</strong></td>
<td>Refer to GTO.</td>
</tr>
<tr>
<td><strong>Leading Edge</strong></td>
<td>The edge or face of the product that the trigger senses first on the production line. Leading edge is also used as the starting point for the delay measurement. Refer also to Trailing Edge and Delay.</td>
</tr>
<tr>
<td><strong>LED</strong></td>
<td>Light Emitting Diode.</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>Refer to Duration.</td>
</tr>
<tr>
<td><strong>Lockout Value</strong></td>
<td>Refer to Trigger Mask.</td>
</tr>
<tr>
<td><strong>Margin</strong></td>
<td>Refer to Gap.</td>
</tr>
<tr>
<td><strong>Minimum Operational Line Speed</strong></td>
<td>The speed below which the glue application ceases.</td>
</tr>
<tr>
<td><strong>Modulated Bead Type</strong></td>
<td>This feature provides a nearly constant bead volume below a set line speed. When the production line is set to a user-selected speed, the control starts dividing each bead into shorter sub-beads to prevent bead volume from increasing. The total gun-on time to produce each divided bead remains the same as the total gun-on time to produce the original solid bead, therefore the bead volume remains the same.</td>
</tr>
<tr>
<td><strong>Modulated Pitch</strong></td>
<td>Refer to Pitch.</td>
</tr>
<tr>
<td><strong>MSD</strong></td>
<td>Machine Speed Detector. Refer to Encoder.</td>
</tr>
<tr>
<td><strong>Multiple Pattern Processing</strong></td>
<td>Refer to Product Queuing.</td>
</tr>
<tr>
<td><strong>Off Compensation</strong></td>
<td>Represents the off response time of the gun, and is needed to keep the line end position consistent. The value is dependent on several variables including glue viscosity, nozzle size, and height of the gun above the product surface.</td>
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</tr>
<tr>
<td><strong>Palletizing</strong></td>
<td>A feature of the pattern control that handles pallet-stabilization applications. Use this feature to set the number of consecutive products that receive adhesive and the number of consecutive products that are skipped before pattern generation starts again.</td>
</tr>
<tr>
<td><strong>Pattern</strong></td>
<td>All of the beads produced by a single gun.</td>
</tr>
</tbody>
</table>
Photocell/Photohead
Refer to Photosensor.

Photosensor
A device that detects products as they travel along the production line.

Pitch
The distance from the start of one bead to the start of the next bead or, in the case of custom bead types (stitched beads, dot beads, or modulated beads), the distance from the start of one sub-bead to the start of the next sub-bead.

Product Queuing
The ability of the pattern control to simultaneously track the position of several products as they move from the trigger to the guns. This feature allows the user to install the sensor farther from the guns, space products closer together, and run the production line faster.

Program
Refer to Recipe.

PSI Value
Test value for pressure.

Purge Pressure
Preset run-up value that automatically engages when purging.

Purge
The process of removing trapped air or material from the adhesive gun or nozzle, or of relieving system pressure by turning the gun (or guns) on.

Random-length Bead Type
A custom bead type that the pattern control can generate. The random-length feature allows the user to apply a continuous bead of adhesive to products of different length. If desired, set a gap at the leading and trailing edges of the product where adhesive will not be applied.

Recipe
All of the pattern settings and associated parameters for applying adhesive during a single production run. A program includes the measurements that define a pattern set and may include volume-control settings (if the run-up feature is purchased and installed), optional settings such as the low-line-speed warning, and custom bead settings such as stitching or modulation.

Remote Purge
A feature that allows the user to test-fire the gun connected to any of the four pattern-control outputs. Using this button and associated DIP switches, one output or any combination of the four outputs can be activated.

Run-Up Control
A pressure variation feature that varies pump output as line speed changes to provide a consistent bead volume.

Run Mode
The glue gun stops when the machine stops, but will not start again until the photocell detects a trigger to begin a new gluing cycle.

Sensor
Refer to Trigger.

Set Mode
The glue gun stops when the machine stops, and resumes to complete the current gluing cycle when the machine restarts.
**Spike Time**
The duration of high voltage or current spike at the initiation of an electric gun firing.

**Spot Glue/Spot Mode/Spot Pattern**
Refer to *Dot Bead Type*.

**Spot Pitch**
Refer to *Dot Pitch*.

**Spot Time**
Refer to *Dot Time*.

**Spotting**
Refer to *Modulated Bead Type*.

**Stitched Bead Type**
This feature allows the reduction of adhesive usage by entering the percentage of glue savings. The pattern control automatically determines the correct length and spacing of the sub-beads in the bead pattern. Refer also to *Sub-Bead*.

**Sub-Bead**
A bead that results when the pattern control divides a continuous bead into smaller spaced beads. Sub-beads are used in the generation of custom bead types (stitched beads, dot beads, and modulated beads).

**Trailing Edge**
The product edge that causes the trigger to stop sensing the product as the product passes by the trigger. Refer also to *Leading Edge*.

**Transducer**
A device that receives an analog current signal from the pattern control and uses it to regulate air pressure. A transducer is used only in systems equipped for run-up control. Refer also to *Run-Up Control*.

**Trigger**
A photosensor that detects products as they travel along the production line. The pattern control can be equipped with one or two triggers, depending upon the requirements of the DC application.

**Trigger Mask**
Distance that a photosensor passes from the trigger edge to the other edge of the product. The photosensor is disabled for the distance entered for the lockout value, thereby preventing unwanted triggering caused by any holes or contrasting colors on the product.

**Trigger Memory Mode**
A user-determined setting (T-MEM) that allows the user to either apply or not apply adhesive to products between the trigger and the guns when line speed recovers after falling below the minimum-speed setting. If a minimum speed is set, the pattern control will stop generating patterns whenever the line speed falls below this speed.