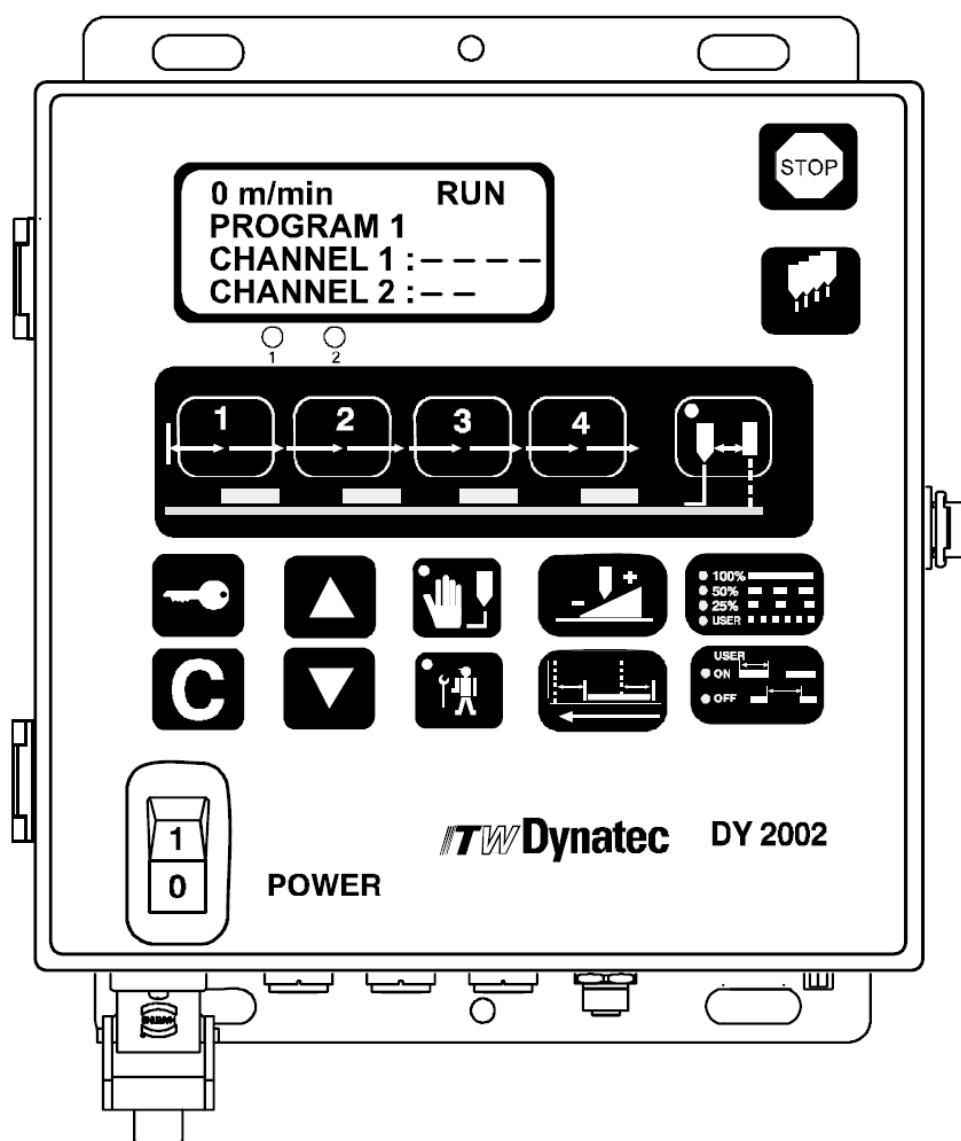


DY2002 Pattern Controller

Technical Documentation, No. 50-17, Rev.1.23



Information about this manual



Read all instructions before operating this equipment!

It is the customer's responsibility to have all operators and service personnel read and understand this information. Contact your ITW Dynatec customer service representative for additional copies.



NOTICE:

Please be sure to include the serial number of your application system each time you order replacement parts and/or supplies. This will enable us to send you the correct items that you need.

NOTICE:

Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

ITW Dynatec Service Parts Direct Dial, USA: +1-800-538-9540

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Chapter 1

Safety Instructions

1.1 Introduction



- All operators and service personnel must read and understand this manual before operating or servicing equipment.
- All maintenance and service on this equipment must be performed by trained technicians.



Read and adhere to the manual!

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.

1. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional work.
2. Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
3. All covers and guards must be in place before operating this equipment.
4. Subject to technical modifications without notice!
5. To ensure proper operation of the equipment, use specified electrical supply sources.
6. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
7. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

1.2 Safety Alert Symbols

The following safety alert symbols 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

This symbol means that failure to observe the specific instructions could cause damage to the equipment.



DANGER! HIGH VOLTAGE!

This symbol means there is a danger of electrical hazards.

NOTE! Provides useful information regarding the use of the system.

1.3 Responsibilities of the Equipment Owner

Equipment owners are responsible for managing safety information, ensuring that all instruction and regulatory requirements for use of the equipment are met and for 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 a qualified individual;

NOTE! Dynatec can provide equipment-specific installation, operation and maintenance training. Contact your Dynatec 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.

1.4 Equipment Safety Information

This equipment safety information is applicable to the following types of Dynatec equipment:

- Hot melt and cold adhesive application equipment and all related accessories.
- Pattern controllers, timers and all other optional process control devices.

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 Dynatec 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.
- 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 Shutdown

The equipment must first be shut down to safely complete many of the procedures described in this document. The level of shutdown required varies by the type of equipment in use and the procedure being completed. If required, shutdown instructions are specified at the start of the procedure. The levels of shutdown are:

RELIEVING SYSTEM HYDRAULIC PRESSURE:

Completely relieve system hydraulic pressure before breaking any hydraulic connection or seal. Refer to the appropriate manuals for instructions on relieving system hydraulic pressure.

DE-ENERGIZING THE SYSTEM

Isolate the system (melter, hoses, guns, process controls and optional devices) from all power sources before accessing any unprotected high-voltage wiring or connection point.

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



DANGER! HIGH VOLTAGE!

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

DISABLING THE GUNS

All electrical or mechanical devices that provide an activation signal to the guns, gun solenoid valves or the melter pump must be disabled before work can be performed on or around a gun that is connected to a pressurized system.

- Turn off or disconnect the gun triggering device (pattern controller, timer, PLC, etc.)
- Disconnect the input signal wiring to the gun solenoid valves.
- Reduce the air pressure to the gun solenoid valves to zero; then relieve the residual air pressure between the regulator and the gun.

1.5 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, damage or leaks.
- Never point a dispensing applicator at yourself or others.
- Suspend dispensing handguns at their proper suspension point.

1.6 Measures in case of fire

Measures in case of fire:

Wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

Firefighting - burning hot melt:

Please keep attention to the safety data sheet given by the adhesive manufacturer.



EXTINGUISH FIRE

Appropriate extinguishing agents:

Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO₂), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:

Carbon dioxide (CO₂), Dry powder.

Chapter 2

Description and Technical Specs

2.1 Applicable Safety Regulations

Intended Use

The DY2002 equipment is a Pattern Control Unit and may be used only to activate two solenoids in order to create independent adhesive patterns and within the limits specified in this document.



If the unit is not used in accordance with this regulation, a safe operation cannot be guaranteed.

The operator - and not ITW Dynatec - is liable for all personal injury or property damages resulting from unintended use!



Intended use includes, that you

- read this documentation,
- heed all given warnings and safety instructions, and
- do all maintenance within the given maintenance rates.

Any other use is considered to be unintended.

Unintended Use, Examples

The DY2002 Pattern Control may not be used under the following conditions:

- In defective condition.
- In a potentially explosive atmosphere.
- With unsuitable operating/processing materials.
- When the values stated under Specifications are not complied with.

Notes:

- Do not modify the equipment.
- Do not use incompatible materials or unapproved auxiliary devices. Contact your Dynatec representative if you have any questions on material compatibility or the use of non-standard auxiliary devices.

Residual Risks

In the design of the DY2002 Pattern Control, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided.

Personnel should be aware of the following:



High Voltage! Risk of injury and mortal danger, when opening the equipment!

Technical changes

Any kind of technical changes having impact to the security or the operational liability of the equipment should only be done by written agreement of ITW Dynatec. Suchlike changes made without given a corresponding written agreement will lead to immediate exclusion of liability granted by ITW Dynatec for all direct and indirect subsequent damages.

Using foreign components

ITW Dynatec takes no responsibility for consequential damages caused by using foreign components or controllers that have not been provided or installed by ITW Dynatec.

ITW Dynatec does not guarantee that foreign components or controllers used by the operating company are compatible to the ITW Dynatec-system.

Setting-up operation

We recommend asking for an ITW Dynatec-service technician for the setting-up operation, to ensure a functioning system. Let yourself and the people working with or working on the system be introduced to the system on this occasion.
ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

2.2 Description

The DY2002 Pattern Control Unit is one component of an adhesive application system consisting of a hot-melt unit, cold glue pressure vessel or cold glue pump, adhesive hoses and applicator heads. The Control Unit can be used in hot melt and/or cold glue applications.

The DY2002 activates two solenoids in order to create independent adhesive patterns. It is possible to program up to 4 glue patterns (4 delays + 4 glues) per channel. Each channel may operate in one of six different distance-based modes or a driver mode. Alternatively, the unit may be programmed as a timer for constant-speed applications where the inclusion of an encoder is not required. Drive outputs may be activated by either one of two available trigger inputs or by exceeding a programmed machine speed. It is possible to “over-excite” output channels in order to accelerate the activation of applicator valves. This over-excitation can be applied independently to each available output channel.

The speed of the parent machine is monitored, in distance-based modes, via an encoder input and indicated on the Control Unit display. A run-up output connected to the gear pump of a hot melt unit; or an I/P or U/P transducer in cold glue or hot melt piston pump systems, can be used to track changes in glue output volume with changes in parent machine speed. The pressure versus speed ramp is programmed on a linear basis (i.e. two-point curve).

The DY2002 can alternatively be used as a Timer with no need for encoder speed inputs for installations where machine speed does not vary or as a Driver in installations where some other control equipment, such as a PLC or PLS, is used to control glue output patterns. It is still possible to control glue volume output from the unit in these modes, however this control must be done manually.

A Machine Contact is available to enable or disable the Control Unit drive outputs via a contact closure provided from the parent machine. The feature offers the capability to override the normal functioning of the Control Unit to prevent unwanted activation of glue applicators during parent equipment setup (make-ready) and maintenance procedures. The contact circuit is programmable for either “normally-open” or “normally-closed” operation.

Two relay outputs are provided to allow the reporting of conditions, such as Control Unit faults/zero speed and stop statuses. These outputs may be configured to operate under either normally open or normally closed conditions.

Technical Data**General:**

Operating temperature	0°C to 50°C (32°F to 122°F)
Storage/ shipping temperature	-10°C to 50°C (-14°F to 122°F)
Power supply	1/N/PE 115VAC, 50 to 60 Hz
	1/N/PE 200VAC, 50 to 60 Hz
	1/N/PE 230VAC, 50 to 60 Hz
Power consumption.....	120 W
Operating languages.....	English, German
Number of programs	12
Weight	8.5 kg (18.6 lbs)
Protection class.....	IP54 (NEMA 13)

Trigger:

Input Connectors (X3 & X4)	24VDC, max. 100mA, NPN, PNP, Push-Pull
Number of Inputs.....	2
Assignment.....	Each trigger can be assigned to any drive output
Trigger Lock	0-8000mm (0.01 to 80.00in)

Encoder:

Number of Inputs	1
Input Connectors (X5)	24VDC, max. 100mA, NPN (scalable)
Configuration	Metric (pulses/meter) or Imperial (pulses/inch)
Scaling.....	500-9999 pulses/meter (5-99.99 pulses/inch)
Maximum Speed	600 m/min (2000 fpm)

Drive Outputs:

Maximum Number (X1 & X2)	2
Output Voltage	Nominal: 24VDC
	Over-excitation: 55VDC or 170VDC,
	all channels are independently adjustable.
Over-Excitation Timing	0.50 to 2.50ms in steps of 0.05ms
Power Capacity	20W/channel
Valve Modes, time-based.....	Timer
Valve Modes, distance-based	Standard, Standard with Dot, Dot, Random,
	Continuous with Trigger and Speed,
	Continuous with Speed, Driver

Glue Pattern:

Maximum Pattern Length, distance-based	8000mm in 1mm steps
	80.00 inch in 0.01 inch steps
Maximum Pattern Length, time-based	8000ms in 1ms steps

Run-Up Control:

Number of Outputs	1
Output Connector (X7)	4-20mA, 0-20mA, 0-10VDC
Range.....	0 to 100%, programmable
Control mode.....	2-point curve

Machine Contact and Alarm Outputs:

Machine Contact (X8)	NPN or dry contact, normally open or
	normally closed (programmable)
Alarm Output (X6)	Normally open or normally closed,
	potential-free 24VDC, max. 500mA or 230VAC, max 500mA

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Chapter 3

Installation



CAUTION

- Before setting up, please read this documentation carefully.
- Pay attention to all the installation and connecting advices.
- Heed all safety instructions mentioned in chapter 1.
- Only authorized persons should execute the following procedures.
Observe all applicable safety rules.



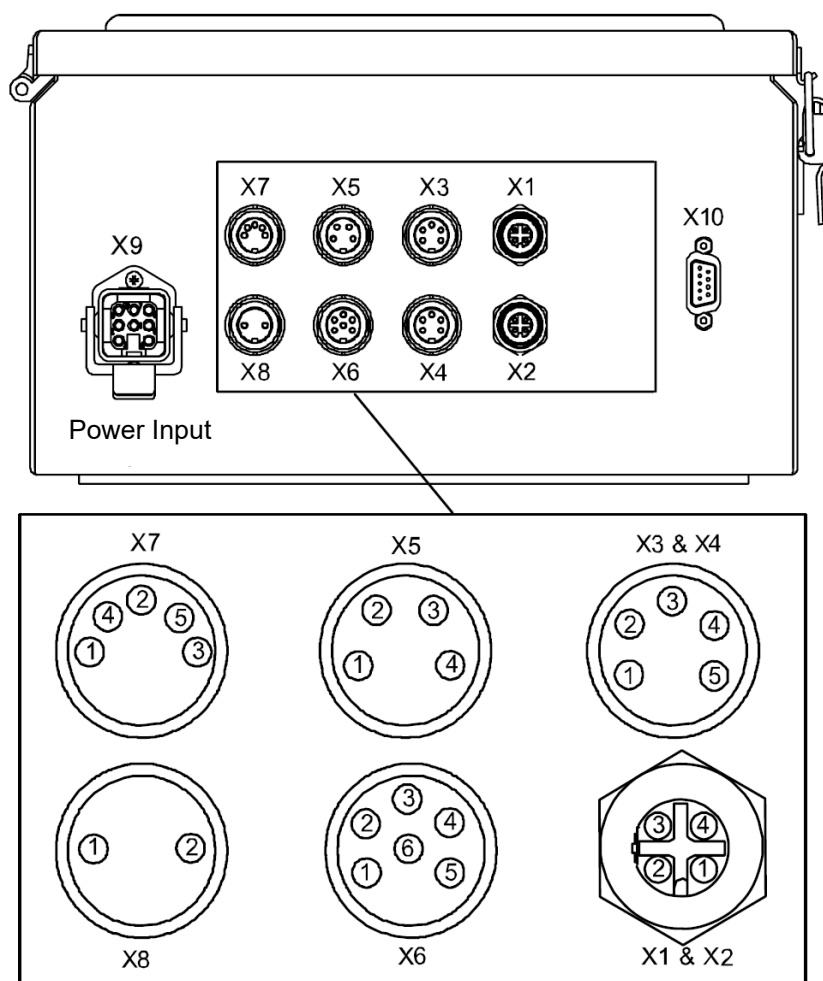
DANGER

Place this Control Unit so it is not in the danger zone of other machines.
The Operator's Panel must be accessible without hazards.

Electrical connection

- Necessary electrical connection has to be provided. See Technical Data/ electrical schematics.
- Never connect or disconnect plug-and-socket connections under load!

3.1 Connectors and Contact Definitions



Connector	Function	Contact Definition					
		1	2	3	4	5	6
X1-X2	Drive Outputs #1 & #2	+24VDC		Common	GND		
X3-X4	Trigger #1 & #2	GND	+24VDC	Signal NPN/PNP			
X5	Encoder	GND	+24VDC	Signal NPN			
X6	Alarm/Zero Speed Output	N.O.	Common	N.C.			
X6	Stop Output				N.O.	Common	N.C.
X7	Pressure Control	GND	4-20mA	0-10VDC	+24VDC		
X8	Machine Contact (External Stop)	GND	Signal NPN				
X9	AC Input Power	Use Dynatec supplied, voltage-specific power cord.					
X10	Remote Control RS485	Only for ITW Dynatec Remote Purge Control Unit.					

3.2 Connecting the System



CAUTION

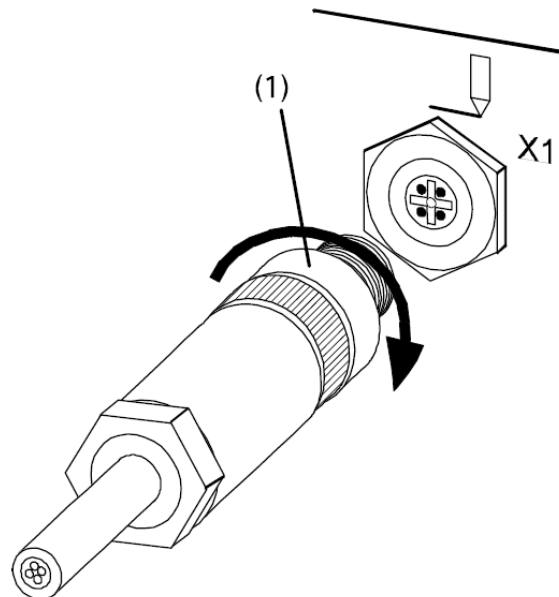
The over-excitation voltage for the drive outputs is set to OFF as factory default. Make certain the glue applicators being used are suitable for this setting. Change the over-excitation (spike voltage) setting as necessary. See the chapter on Service Settings for details.



NOTE

ITW Dynatec cold glue electric valves (Dynacold and Macon series valves) always require the over-excitation (spike) voltage set to COLD ELECTRIC (170vdc) for proper operation. Assure this over-excitation is programmed prior to operation of these valves. See the chapter on Service Settings for details.

1. Securely attach all electrical connectors to their receptacles by screwing in the connector locking ring (1) until it is tight.
2. Connect the Control Unit to an appropriate AC power supply.

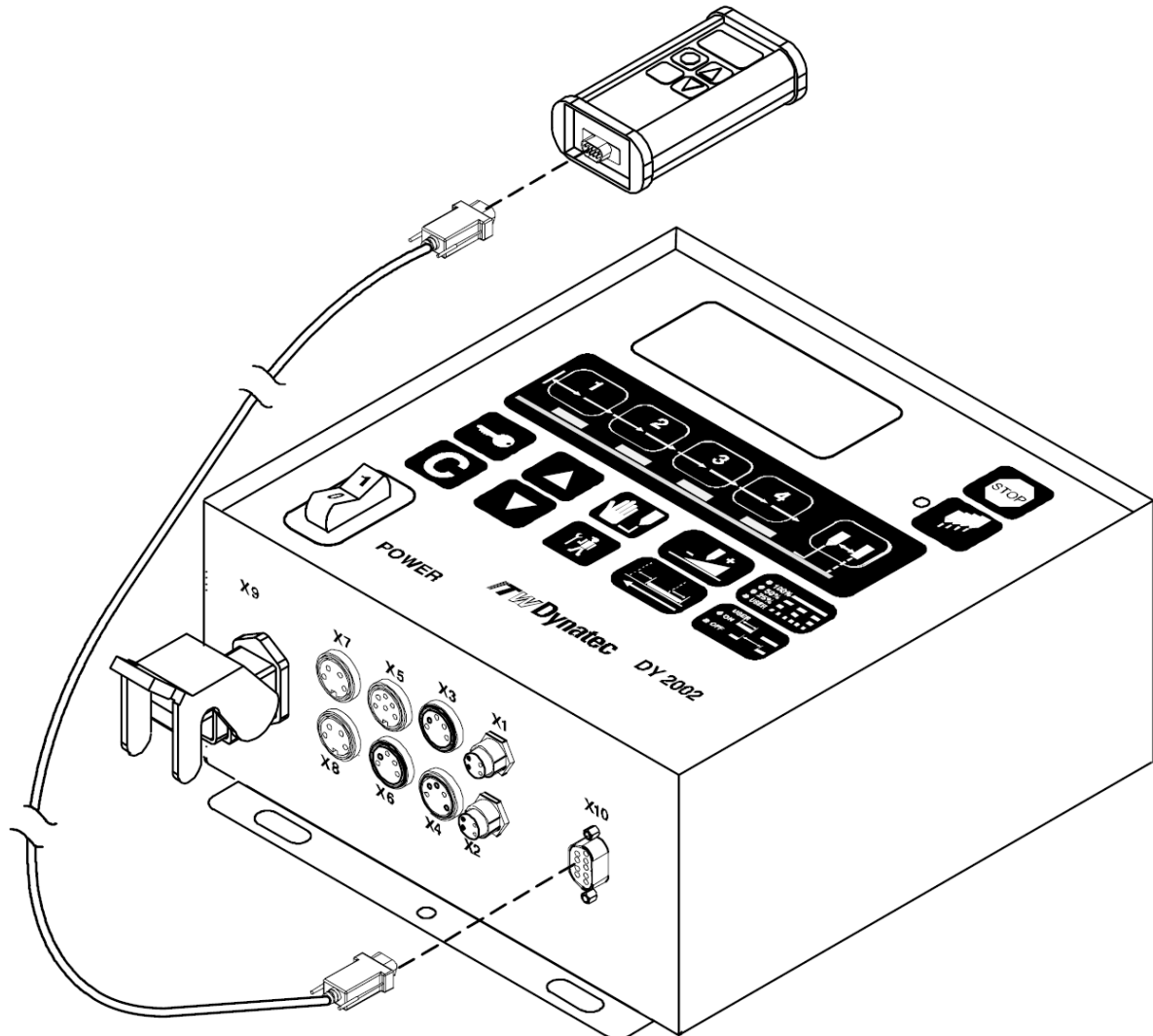


DANGER

- Proper Control Unit input voltage is determined by the modular power cord supplied with the equipment.
- **Different cords must be used for different AC input voltages (115, 200 and 230VAC).**
- Immediately contact your ITW Dynatec representative if the unit was supplied with an incorrect AC power cable.
- Do not attempt to cut the wall plug end of the power cable and use the cable for a different voltage. This will result in damage to the Control Unit and possible personal injury.

3.3 Connecting Optional Accessories

The DY2002 may be supplied with an optional Remote Purge Control (28.11101.602). This option allows one-person operation of the manual gluing (purge) function at distances up to 10 meters (33 feet) from the DY2002 Control Unit.



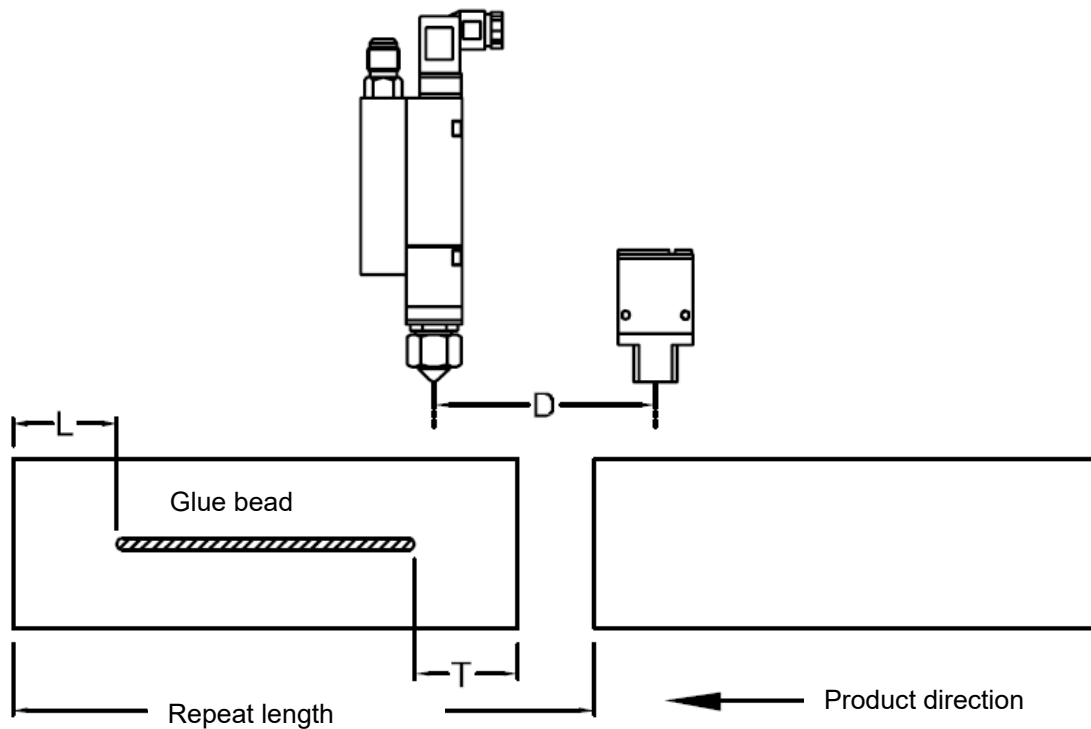
3.4 Locating an Optical Trigger (Sensor)

Use the below information to assist in the proper location of an optical triggering device.

Trigger Location Guidelines (All Conditions Must Be Met)	
All Intermittent Modes Except RANDOM	RANDOM Mode
$D + L > \text{On Compensation}$	$D + L > \text{On Compensation}$
$D < \text{Repeat Length}$	$D > T + \text{Off Compensation}$
	$D < \text{Repeat Length}$

- D = Distance from Optical Sensor to Glue Applicator (i.e. OFFSET)
- L = Leading gap on product prior to first glue bead application
- T = Trailing gap on product after last glue bead application

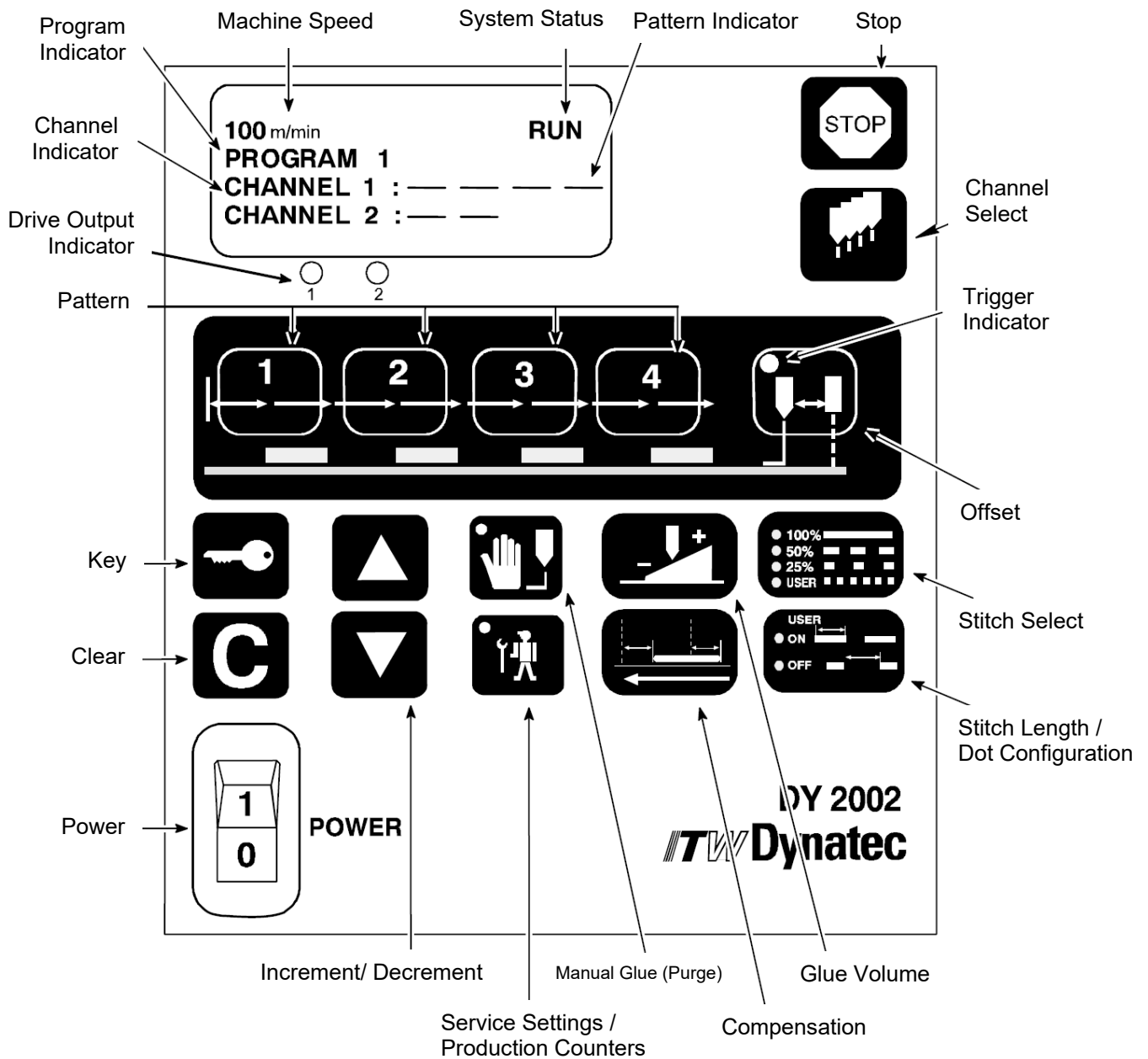
See the following diagram for additional clarification on this subject.











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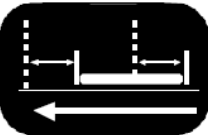
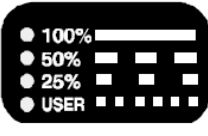
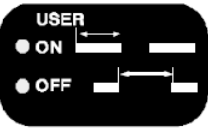
Chapter 4 Operation

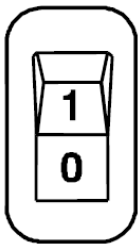
4.1 Operator Panel



See button descriptions on next pages.

Button	Description
	Stop Button Pressing this button will disable the drive outputs of the Control Unit. STOP will flash in the top, right corner of the display when this mode is active.
	Channel Select Button Pressing this button will allow the Operator to select the active channel; the topmost, flashing line of the Channel Indicator portion of the display.
	Pattern Buttons Use these buttons (1 through 4) to modify the pattern for the selected channel. <ul style="list-style-type: none"> • Pressing once displays the DELAY value for that pattern. • Pressing again displays the GLUE value for that pattern. • A total of four patterns can be programmed for each channel. • The Pattern Buttons are also used for numeric entry in the Service Settings Menu.
	Offset Button This button enables the Offset Menu (distance from the sensor to the glue applicator) for the selected channel. <ul style="list-style-type: none"> • The amber LED on this button is lit continuously when the Offset Menu is active. • This LED also is used to indicate trigger inputs for the active channel when the Offset Menu is not activated.
	Key Button This button is used to access certain capabilities on the Operator Panel, such as Purge, Pressure Adjustment, Compensation and Stitch. It is also used to confirm entry of certain parameters in the Service Settings Menu. <ul style="list-style-type: none"> • A “key” icon will usually be flashing in the lower, right corner of the display when buttons are pushed that require the Key Button to be active. • Activation of the Key Button causes the “key” icon to be displayed continuously in the lower, right corner of the display.
	Clear Button The Clear Button is used to exit sub-menus and return to the next higher level menu. Successive pressing of the Clear Button will result in display of the Main Menu.
 	Increment & Decrement Buttons These buttons are used to modify most parameter settings in both the Operator-level and Service-level menus.

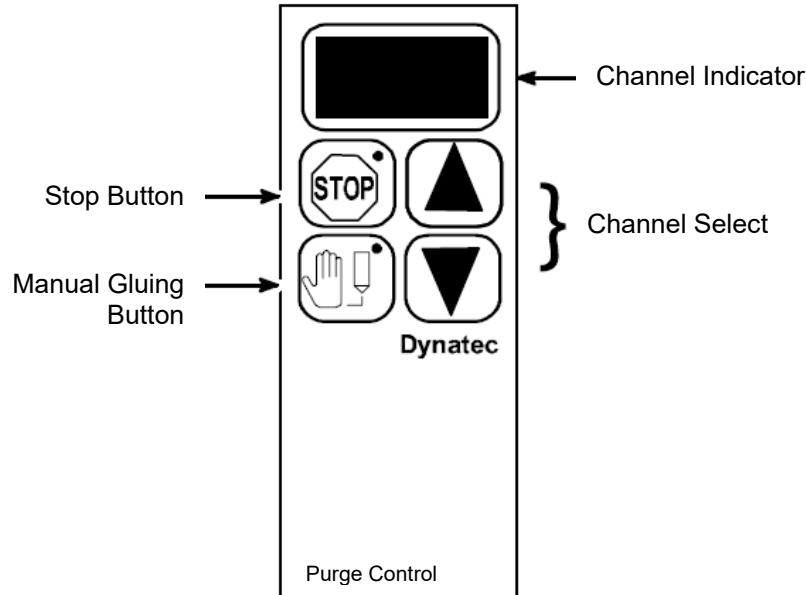
Button	Description
	<p>Manual Gluing (Purge) Button</p> <p>Manual gluing can only be activated on the front panel of the Control Unit when both the Stop Button and Key Button are first activated.</p> <ul style="list-style-type: none"> • Use the Channel Select Button to select the desired channel to be purged (topmost, flashing channel); then press the Manual Gluing Button to activate/deactivate the desired valve. • An amber LED on the Manual Gluing Button will illuminate to indicate the active purge process. • Pressing the Clear Button will deactivate the purge function.
	<p>Service Button</p> <p>The Service Button allows access to the Service Settings or Production Counter Menus.</p> <ul style="list-style-type: none"> • STOP must be activated from the front panel of the Control Unit prior to activating the Service Button to enter Service Settings. • Password entry may also be required to gain access to the Service Setting Menus. • Pressing the Key Button, then the Service Button while in the Run Mode, allows access to the Production Counter Menus. • An amber LED on the button will illuminate to indicate activation of the Service Button.
	<p>Glue Volume Button</p> <ul style="list-style-type: none"> • Pressing the Glue Volume Button will display the current pressure/motor speed. • Activating the Key Button, then pressing the Glue Volume Button will allow the modification of pressure/motor speed settings.
	<p>Compensation Button</p> <ul style="list-style-type: none"> • First activate the Key Button, and then press the Compensation Button to access the Compensation Menu. • Use the Channel Select Button to program the ON and OFF compensation of the desired channel. • NOTE: This button is not active in either the Timer or Driver modes of operation.
	<p>Stitch Select Button</p> <ul style="list-style-type: none"> • This button allows activation/deactivation of stitch patterns. The Control Unit must first be displaying the GLUE portion of the pattern desired to be stitched. • The Key Button must be activated, then the Stitch Select Button may be used. • NOTE: This button is not active in the Driver mode of operation.
	<p>Stitch Length/ Dot Configuration Button</p> <ul style="list-style-type: none"> • Use the Stitch Length/ Dot Configuration Button when the USER option is activated on the Stitch Select Button. • The button allows the operator to define the ON and OFF portions of a stitch pattern or the GLUE and REPEAT portions of a pattern when a DOT mode (Dot or Standard with Dot) is selected. • NOTE: This button is not active in the Driver mode of operation.

Button	Description
	<p>AC Power Switch</p> <ul style="list-style-type: none">• The AC Power Switch is used to energize/de-energize the Control Unit.• Depress the “zero” (O) portion of the switch to de-energize the Control Unit.• Depress the “one” (I) portion of the switch to energize the Control Unit. <p>• NOTE: Program setting are written to non-volatile memory when the Control Unit is returned to its Main Menu. Program settings will not be lost when the Control Unit is de-energized as long as the Control Unit is returned to its Main Menu display prior to de-energizing the Control Unit.</p>

4.2 Remote Purge Control

Mounting Note:

A magnet is attached to the back side of the Remote Purge Control unit for convenient mounting to any ferrous metal object.



Button	Description
	Channel Indicator Displays the current channel selected from the Remote Purge Control Unit.
	Channel Select Buttons Use the "increment" or "decrement" button to change the current channel displayed in the Channel Indicator.
	Stop Button Used to place the control into a STOP condition for manual gluing activation. Also causes the pressure output circuitry (X7) to output programmed PURGE PRESSURE when STOP is activated. STOP activation is indicated by an amber LED that is continuously illuminated. See the section of this chapter on Stop Conditions for more detail. Deactivating STOP will also automatically cease manual gluing operations on any channels that are still active.
	Manual Gluing (Purge) Button Used to activate (amber LED on continuously) or deactivate (amber LED is either OFF or flashing) the current channel displayed in the Channel Indicator LED's.

4.3 Software Version

ITW DYNATEC
DY2002
VERSION VXX
INITIALIZATION 1

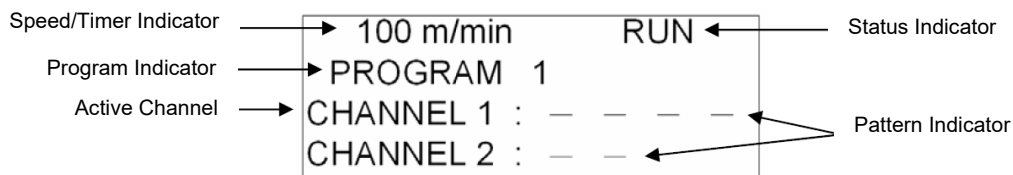
The display briefly indicates the software version number when the control is powered on. The Main Menu is displayed after the Control Unit initializes all channels.

4.4 TIMER Mode

- Refer to the chapter on Service Settings Menus: Encoder Setup: Scaling for information on programming this Pattern Control for TIMER mode.
- Many Operator Menu function similarly regardless of whether time-based or distance-based modes are being used.
- Most menus illustrated in this chapter will depict the distance-based version.
- Time-based menu versions will be illustrated when they are significantly different from their distance-based counterpart.

4.5 Main Menu

The Main Menu is the default Pattern Control display. It provides current glue system status and is the entry point for all Operator and Service level menus. It contains the following elements:



4.6 Speed/Timer Indicator

The top left corner of the Main Menu provides an indication of the current parent machine speed when in a distance-based operating mode. Time-based operating mode is indicated by a **1 ms** being displayed in place of the machine speed.

4.7 Status Indicator

The top, right corner of the Main Menu provides an indication of the current Control Unit operating status.

Possible values include:

Status	Description
RUN (continuous)	The Control Unit is ready for operation and will apply glue as programmed.
STOP (flashing)	The STOP button on the front panel of the Control Unit has been activated. All drive outputs are disabled for normal operation.
EX. STOP (flashing)	The Machine Contact (X10) connector has been activated. All drive outputs are disabled.
RMT STOP (flashing)	STOP has been activated via the Remote Purge Control Unit. All drive outputs are disabled for normal operation.

4.8 Program Indicator

The currently active program is shown just below the Speed/Timer Indicator on the left side of the display.

See the Service Settings chapter for information on selecting different programs.

4.9 Channel Indicator

Two channels are displayed just below the Program Indicator.

Pressing the Channel Select button will cause the channel numbers to scroll. Keep in mind the following points:

1. The currently active channel will be the top-most in the display and will be flashing.
2. Channels that have been de-activated via a Trigger Assignment setting of zero in the CHANNEL: TRIGGER Service Menu (see the Service Settings chapter for details) will not be displayed on the Main Menu.
3. V-MIN flashing alternately with the Channel number indicates the Control Unit is in a low speed condition (speed is below either the GLUE STARTS ABOVE or GLUE STOPS BELOW value; see Service Settings for details), therefore the drive outputs have been disabled.

NOTE: This status is not available in TIMER mode.

4.10 Pattern Indicator

The number of programmed patterns is graphically displayed immediately to the right of the Channel Indicator.

Up to four patterns may be programmed per channel.

Keep in mind these programming conventions:

1. Each dash separated by a gap represents a single programmed glue pattern. The below example indicates CHANNEL 1 with four patterns and CHANNEL 2 with two patterns programmed.

100 m/min	RUN
PROGRAM 1	
CHANNEL 1 :	— — — —
CHANNEL 2 :	— —

2. A series of dots, instead of dashes, indicates that either the pattern is set for DOT mode or has a STITCH programmed. The below example indicates CHANNEL 1 with four patterns; patterns #1 and #3 have a stitch programmed. CHANNEL 2 is set for either DOT mode or for STANDARD mode with both patterns programmed for STITCH.

100 m/min	RUN
PROGRAM 1	
CHANNEL 1 :	... — ... —
CHANNEL 2 :

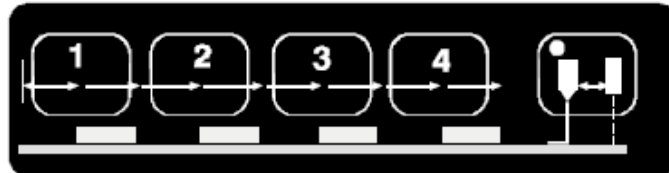
3. CONTINUOUS or RANDOM modes are represented by a series of seven (7) dashes. A series of dots is instead displayed if a STITCH has been programmed for that channel. The below example indicates CHANNEL 1 programmed for a CONTINUOUS or RANDOM mode with STITCH active. CHANNEL 2 is programmed for a CONTINUOUS or RANDOM mode with STITCH inactive.

100 m/min	RUN
PROGRAM 1	
CHANNEL 1 :
CHANNEL 2 :	-----

4.11 Operator Menu Programming

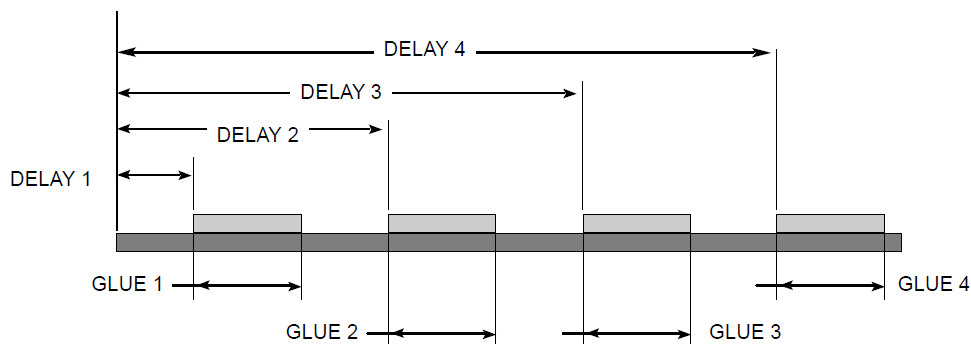
The following sections will discuss programming of the operator-level menus. Note that all operator-level programming may be disabled and password protected via the Service Settings: Security Settings: Service Menu. More details concerning this feature may be found in the chapter entitled Service Settings.

4.11.1 Pattern Programming



NOTE: This procedure may be performed on-the-fly (i.e. at any time).




The Pattern Programming Buttons are located immediately below the front panel display. Up to four patterns can be programmed per channel. Programming logic is that the DELAY is always measured from the beginning of the product until the beginning of the GLUE for that event. GLUE length is simply the length of the glue portion of that event. A graphic depiction is supplied below.



DELAY and GLUE Programming

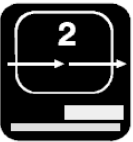



Use the following procedures to program patterns into the Control Unit.

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Main Menu is displayed on the Control Unit. 2. Press the desired Pattern button on the front panel (example: press the #1 Pattern button to modify the first pattern of a channel).
	<ol style="list-style-type: none"> 3. Check to assure the Pattern for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to choose the desired channel. <div style="text-align: center;"> <div style="display: inline-block; vertical-align: middle; text-align: right; padding-right: 10px;">Channel Identifier</div> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; margin-bottom: 5px;"> 0 m/min RUN </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> ➔ CHANNEL 1 </div> <div>DELAY 1: 20 mm</div> </div> </div>

Button	Steps
 	<p>4. Successively pressing the Pattern button will toggle the display to allow programming of the DELAY and GLUE values for that pattern.</p> <p>5. Use the Increment or Decrement buttons to select the desired value.</p> <p>6. Continue this process until all patterns are programmed for each channel.</p>
	<p>7. Press the Clear Button (C) to exit the Pattern Menu and return to the Main Menu.</p> <p>NOTE: Pattern events can only be accessed if the preceding pattern has been programmed with a DELAY and GLUE value. (example: Pattern #3 cannot be accessed until Pattern #2 has been programmed with both a DELAY and a GLUE value.).</p> <p>NOTE: Pattern programming menus will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds.</p>

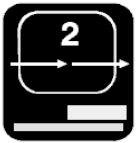



Clearing a Channel's Pattern Programming

One or more of a channel's patterns may be easily cleared (zeroed) by using the following procedure.

Button	Steps
	<p>1. Press the appropriate Pattern button to display the GLUE portion of the pattern from which you want all succeeding patterns cleared. (Example: Select GLUE #1 if all patterns for the channel are to be cleared; select GLUE #3 if only patterns #3 and #4 are to be cleared.)</p>
	<p>2. Check to assure the Pattern for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to choose the desired channel.</p>
 	<p>3. Simultaneously press the Increment and Decrement buttons. The previously programmed value will be replaced by dashes.</p> <p>4. New values can now be programmed for each pattern, as desired.</p>

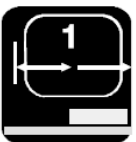




Reset a Pattern's DELAY Programming

Any DELAY may be set to its minimum value (reset) using the following steps:

Button	Steps
	1. Press the desired Pattern button on the front panel (example: press the #2 Pattern button to reset the second delay of a channel).
	2. Check to assure the Pattern for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to choose the desired channel. 3. Display the DELAY portion of the desired pattern
 	4. Simultaneously press the Increment and Decrement buttons. The previously programmed value will be replaced with the minimum possible DELAY value, based upon programming of previous DELAY and GLUE patterns. 5. A new value for the DELAY may now be programmed, as desired.

Pattern Programming in RANDOM Mode


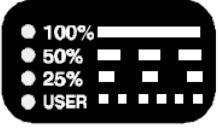
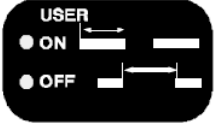
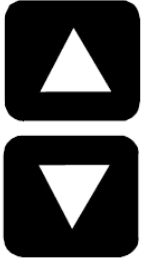


RANDOM Mode allows varying length products to be glued without a need for reprogramming the Pattern Control. The leading and trailing gap of unglued product will remain consistent. As such, there is no GLUE value to be programmed when in RANDOM Mode. The only values that need programming are the desired values for the leading and trailing gaps of unglued product. This is accomplished as follows:

Button	Steps
	1. Press the #1 Pattern button on the front panel to program the Leading Delay (DELAY 1).
	2. Check to assure the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to select the desired channel.
 	3. Use the Increment or Decrement buttons to select the desired value.
	4. Press the #2 Pattern button on the front panel to program the Trailing Delay (DELAY 2). 5. Use the Increment or Decrement buttons to select the desired value. 6. Program other channels, as desired, in the same manner.

4.11.2 Stitched Patterns

NOTE: This procedure may be performed on-the-fly (i.e.. at any time).

The Stitch Buttons are used in conjunction with the Pattern Buttons to apply a stitch to one or more gluing events on any desired channel. Stitch can be applied in all modes with the exception of DOT, STANDARD WITH DOT and DRIVER modes. Use the following procedures to apply stitch to gluing events:

Button	Steps
	<ol style="list-style-type: none"> 1. Select the GLUE portion of the pattern to be stitched or, in Random Mode, select DELAY 2. See the section on Pattern Programming, in this chapter, for details. 2. Press the Key Button until the Key icon is displayed in the lower, right corner of the display.
	<ol style="list-style-type: none"> 3. Press the Stitch Select Button to illuminate the amber LED next to the 50%, 25% or USER setting, as desired. <p>NOTE: The 50% and 25% settings are only selectable for single pattern gluing of lengths 50 millimeters (0.50 inches) or greater. Multiple pattern gluing and/or lengths less than 50 millimeters (0.50 inches) must select the USER option to enable STITCH.</p>
	<ol style="list-style-type: none"> 4. The Stitch Length Button enables manual programming of the GLUE and GAP values for the Stitch function when the USER setting is selected. Successively press the Stitch Length Button to select GLUE or GAP.
	<ol style="list-style-type: none"> 5. Use the Increment or Decrement buttons to program the desired value for each parameter.
	<ol style="list-style-type: none"> 6. Press the #1 Pattern Button to access the Stitch Select Button when in channels programmed for CONTINUOUS modes.
	<ol style="list-style-type: none"> 7. Press the #2 Pattern Button to access the Stitch Select Button when in channels programmed for RANDOM mode. <p>NOTE: Enabling/disabling STITCH (i.e. Stitch Select Button) is on a pattern basis. Programming of STITCH settings (i.e. Stitch Length Button) is on a channel basis.</p> <p>NOTE: Stitch programming menus will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds.</p>



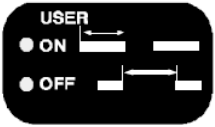

4.11.3 Dot Mode Patterns

A stitched pattern is not available when either DOT or STANDARD WITH DOT modes are selected for a channel in the Service Settings menu (see chapter 5 for more details about Channel Modes). The Stitch Length button instead becomes a Dot Configuration Button when channels where a dot mode is programmed are selected.

Dot modes differ from stitch in that the dot programming defines ON time and REPEAT distance, whereas stitch programming defines GLUE distance and GAP distance. Dot mode provides better control over the placement, size and consistency of a small amount of glue in exacting applications than is provided by stitch functions.

NOTE: This procedure may be performed on-the-fly.

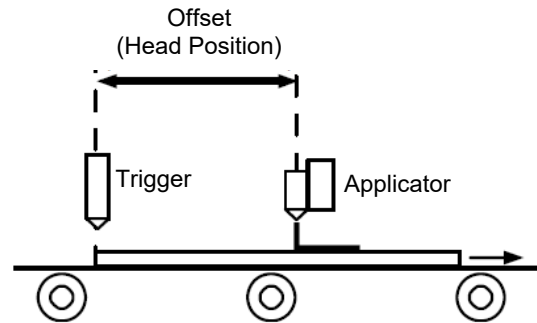
Use the following procedures to program dots for gluing events:

Button	Steps
	<ol style="list-style-type: none"> 1. Select the GLUE portion of the pattern. 2. Press the Key Button until the Key icon is displayed in the lower, right corner of the display.
	<ol style="list-style-type: none"> 3. Note that the Stitch Select Button will automatically illuminate the amber LED next to the USER setting and this selection cannot be changed.
	<ol style="list-style-type: none"> 4. The Dot Configuration Button enables programming of the GLUE and REPEAT values for the Dot function. Successively press the Dot Configuration Button to select GLUE or REPEAT.
	<ol style="list-style-type: none"> 5. Use the Increment or Decrement buttons to program the desired value for each parameter. <p>NOTE: Programming of Dot settings (i.e. Dot Configuration Button) is on a channel basis.</p> <p>NOTE: Dot programming menus will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds.</p>

4.11.4 Offset

NOTE: This procedure may be performed on-the-fly (i.e.. at any time).

The distance from the trigger device to the applicator head is an important element in assuring accurate pattern placement. The trigger input, when used, must always occur prior to application of the glue. The physical separation of the trigger device from each glue applicator assigned to that device is programmed into the Offset parameter of the Control Unit.



Use the following steps to properly program Offset for each channel:

Button	Steps
	1. Determine the distance from each glue applicator to its trigger input device (see above diagram). Systems using a proximity sensor for trigger inputs should accurately advance the machine, with products to be glued in place, to the point when the proximity sensor is first activated. Offset, in this scenario, is the distance from the glue applicator to the location where the DELAY1 of the glue pattern is to begin on the closest product yet to pass under the glue applicator.
	2. Assure the Main Menu is displayed on the Control Unit. 3. Press the Offset Button, immediately to the right of the Pattern Buttons, when in the Main Menu, until the amber LED is illuminated.
	4. Check to assure the Offset value for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to select the desired channel. <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> 0 m/min RUN OFFSET MENU Channel Identifier → CHANNEL 1 OFFSET: 40 mm </div>
	5. Use the Increment or Decrement buttons to select the appropriate Offset value. 6. Perform the above procedure for each active channel.
	7. Press the Clear Button to exit the Offset Menu and return to the Main Menu. NOTE: Offset programming will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds. NOTE: Offset is only available in distance-based operating modes.



4.11.5 Glue Volume

NOTE: This procedure may be performed on-the-fly (i.e., at any time).




The volume of glue applied to a product can be controlled from the DY2002 Pattern Control via current or voltage supplied from the X8 output on the connector panel. This output is available regardless of whether the Control Unit is operated in Distance-Based, Time-Based or Driver modes.






Use the following steps for Glue Volume programming:

View Current Glue Volume Status

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Main Menu is displayed on the Control Unit. 2. Press the Glue Volume Button in the middle, right of the Control Unit front panel. <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <div style="display: flex; justify-content: space-between;"> 0 m/min RUN </div> <div style="text-align: center;">MOTOR SPEED</div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Glue Volume Status → ACTUAL: 43% </div> </div>
	<ol style="list-style-type: none"> 3. Press the Clear Button (C) to exit the Glue Volume display and return to the Main Menu.

Modify Glue Volume Settings

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Main Menu is displayed on the Control Unit. 2. Press the Key Button until the Key icon is displayed in the lower, right corner of the display.
	<ol style="list-style-type: none"> 3. Press the Glue Volume Button in the middle, right of the Control Unit front panel. <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <div style="display: flex; justify-content: space-between;"> 0 m/min RUN </div> <div style="text-align: center;">MOTOR SPEED</div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> MINIMUM : 15% </div> </div>
	<ol style="list-style-type: none"> 4. Use the Increment or Decrement buttons to select the desired MINIMUM value (the Volume setting at zero speed).

Button	Steps
	<p>5. Press the Glue Volume Button in the middle, right of the Control Unit front panel once again.</p> <div data-bbox="700 329 1147 490"> <p>0 m/min RUN</p> <p>PRESSURE</p> <p>MAXIMUM : 60%</p> </div>
	<p>6. Use the Increment or Decrement buttons to select the desired MAXIMUM value (the Volume setting at MAXIMUM SPEED, as programmed in the Service Settings).</p>
	<p>7. Press the Glue Volume Button in the middle, right of the Control Unit front panel a third time.</p> <div data-bbox="700 891 1147 1052"> <p>0 m/min RUN</p> <p>PRESSURE</p> <p>PURGE : 100%</p> </div>
	<p>8. Use the Increment or Decrement buttons to select the desired PURGE value (the Volume setting used during manual gluing or purge operations).</p>
	<p>9. Press the Clear Button at any point in the above process to exit the Glue Volume display and return to the Main Menu.</p> <p>NOTE: Glue Volume programming will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds.</p> <p>NOTE: Display of PRESSURE or MOTOR SPEED on the Glue Volume menus is selected via the HOT/COLD MENU in the Service Settings.</p> <p>NOTE: TIMER Mode Glue Volume menus offer the selection of CONSTANT and PURGE pressure adjustments. DRIVER Mode will utilize MINIMUM and PURGE pressure settings.</p>


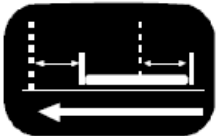



4.11.6 Compensation

NOTE: The Compensation feature is only available when operating the Control Unit is distance-based modes.

NOTE: This procedure may be performed on-the-fly (i.e.. at any time).



The programming of Compensation enables the Pattern Control to consistently apply the glue pattern at the same position on the product, regardless of variations in parent machine speed. Compensation programming is a means of factoring in the amount of time it takes a glue applicator to apply glue to a product after the signal is supplied and the amount of time it takes to stop the glue application after the signal is removed.

Use the following steps for Compensation programming:

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Main Menu is displayed on the Control Unit. 2. Press the Key Button until the Key icon is indicated in the lower, right corner of the display.
	<ol style="list-style-type: none"> 3. Press the Compensation Button in the middle, right of the Control Unit front panel.
	<ol style="list-style-type: none"> 4. Check to assure the Compensation value for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to select the desired channel. <div data-bbox="462 1115 1141 1276" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <div style="display: flex; justify-content: space-between;"> 0 m/min RUN </div> <div style="text-align: center;">COMPENSATION-MENU</div> <div style="display: flex; justify-content: space-between;"> Channel Identifier → CHANNEL 1 </div> <div style="display: flex; justify-content: space-between;"> „ON“ Compensation → ON: 4 mm </div> </div> 5. Continue pressing the Compensation Button to toggle between the ON and OFF COMPENSATION settings for a channel.
 	<ol style="list-style-type: none"> 6. Use the Increment or Decrement buttons to select the desired Compensation value. 7. Repeat the above procedure for each active channel.

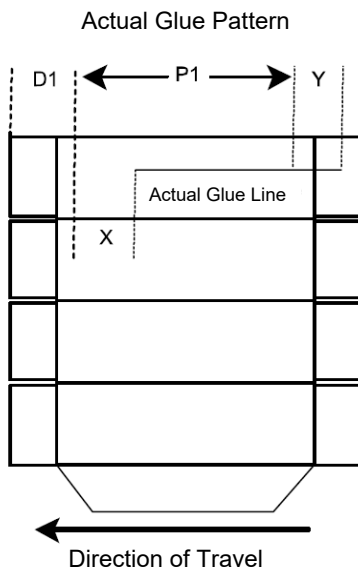
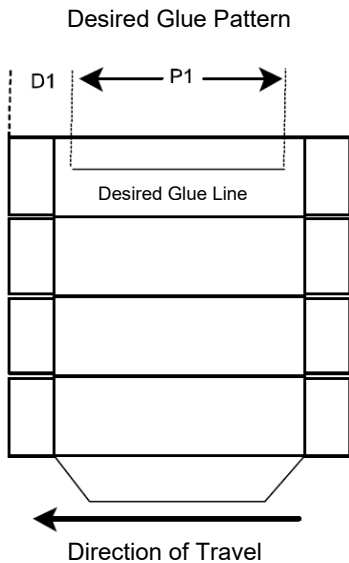
Reset a COMPENSATION Value

Any ON or OFF COMPENSATION setting may be programmed to its minimum value (reset) using the following steps:

Button	Steps
	<ol style="list-style-type: none"> 1. Display the COMPENSATION value to be reset (see above for details on how to access the COMPENSATION menu). 2. Check to assure the COMPENSATION value for the desired Channel is being modified by looking at the Channel Identifier on the display screen. Use the Channel Select Button to choose the desired channel.
	<ol style="list-style-type: none"> 3. Simultaneously press the Increment and Decrement buttons to reset the value to zero. 4. A new value for the COMPENSATION may now be programmed, as desired.

Determining Correct Compensation Values

Perform the following steps to accurately program COMPENSATION values:



1. Assure the Encoder Scaling value (PPI or PPM) is properly programmed (see the chapter on Service Settings).
2. Assure the OFFSET is properly programmed (see the section on OFFSET).
3. Program the desired pattern lengths (DELAY and GLUE).
4. Set both the ON and OFF COMPENSATION values to zero.
5. Run Production material at a speed just above the GLUE STARTS ABOVE value (see the chapter on Service Settings). Ideally, this speed will be 100 feet per minute (30 M/min) or less to minimize the effects of glue applicator response.
6. Measure the resulting patterns; they should be exactly as programmed. Double check the OFFSET, ENCODER SCALING and Pattern programming for possible errors if the glue pattern is not being correctly applied. This step will assure that any deviation in applied patterns is not the result of improper programming of these settings.
7. Run production material at an intermediate machine speed. The resulting pattern will have "retarded" (i.e. moved away from the leading edge of the product).
8. Measure the distance from where the glue pattern was supposed to have started to where the glue pattern actually started. Input this distance into the ON COMPENSATION value in the Control Unit for the appropriate channel.
9. Measure the distance from where the glue pattern was supposed to have ended to where the glue pattern actually ended. Input this distance into the OFF COMPENSATION value in the Control Unit for the appropriate channel.
10. Perform steps #8 and #9 for each active glue channel.
11. Now run material at the fastest anticipated machine speed, this should be the same speed as is programmed for the MAXIMUM SPEED parameter in the Service Settings Menu (see the chapter on Service Settings).
12. Repeat steps #8, #9 and #10.
13. The glue patterns should now be at their desired location on the product at operating speeds. Minor adjustments to the ON and OFF COMPENSATION may be required to fine tune the pattern placement.
14. Patterns should now remain in the same location on the product, regardless of changes in machine speed.





4.11.7 Manual Gluing (Purge)

NOTE: This procedure may be performed only in STOP mode.

Any or all drive outputs may be manually activated to test the operation of the adhesive applicators while the parent machine is not operational. This capability overrides any requirements for trigger inputs or minimum machine speeds in order to activate the valves. The Manual Gluing function may be performed from either the front panel of the Control Unit or via an optional Remote Purge Control.

Manual Gluing Via Front Panel




Perform the following steps to activate Manual Glue operation from the front panel of the Control Unit:

Button	Steps
	<ol style="list-style-type: none"> 1. Assure that the Main Menu is displayed. 2. Press the STOP button until STOP is flashing in the top, right corner of the display.
	<ol style="list-style-type: none"> 3. Press the KEY button until the KEY icon is evident at the bottom, right corner of the display.
	<ol style="list-style-type: none"> 4. Use the Channel Select Button to select the desired channel for Manual Gluing. The selected channel will be the top-most in the Channel Indicator portion of the display.
	<ol style="list-style-type: none"> 5. Press the Manual Gluing Button until the amber LED is constantly illuminated. 6. At this point the Control Unit pressure output will come up to the Purge Pressure setting previously programmed in the Pressure menu. See the section on Glue Volume earlier in this chapter for details on programming this parameter. The output pressure will remain at this level until approximately ten seconds after completion of the last purge activation. 7. Manual gluing for additional channels may be activated by repeating steps #4 and #5 above. <p>NOTE! The Manual Gluing Button's LED will be continuously illuminated when the Purge is active for the currently selected channel. The LED will flash intermittently when Purge is active on a channel other than the currently selected channel.</p> <ol style="list-style-type: none"> 8. Manual Gluing may be deactivated by any of several means: <ol style="list-style-type: none"> a. Pressing the Manual Gluing Button will toggle between activating and deactivating the selected channel output. b. Pressing the STOP Button until STOP is no longer flashing at the top, right corner of the display will deactivate all manual gluing operations. c. Pressing the Key Button until the Key Icon is no longer shown at the bottom, right corner of the display will deactivate all manual gluing operations. d. Pressing the Clear Button, just below the Key Button, will deactivate all manual gluing operations. <p>NOTE: Activation of Manual Gluing for any channel will cause the Run-Up output (X7) to automatically adjust to the PURGE setting programmed in the Glue Volume menu (see the section in this chapter on modifying glue volume settings).</p> <p>NOTE: Manual Gluing will not "time out". The only way to stop a channel that has been activated for Manual Gluing is to deactivate that channel in one of the manners described above.</p>

Manual Gluing Via the Remote Purge Control

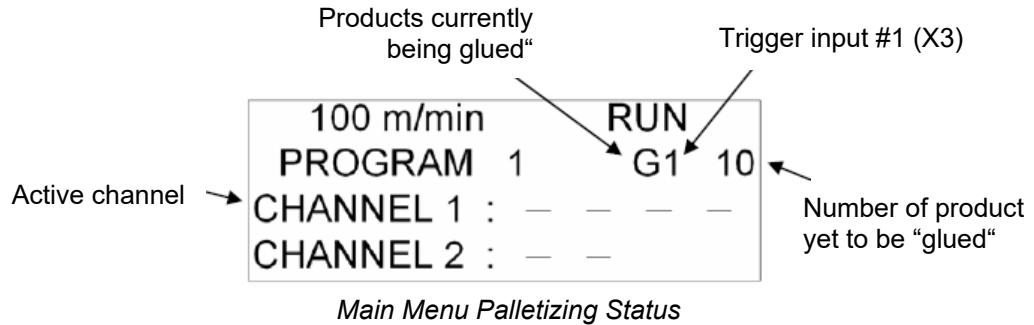
The Remote Purge Control (28.11101.602) is an option to allow one-person operation of the manual gluing function at distances up to 10 meters (33 feet) from the Pattern Control Unit. The DY2002 does not have to be placed in a STOP condition from the front panel of the Control Unit in order for the Remote Purge Control to function.

Perform the following steps to activate Manual Glue operation from the Remote Purge Control:

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Remote Purge Control is properly connected to the Control Unit. The Channel LED indicator at the top of the Remote Purge Control should be illuminated if it is properly connected. 2. Press the STOP Button on the Remote Purge Control until the LED in the top, right corner is continuously illuminated. A flashing LED indicates the STOP condition has been activated from the Control Unit front panel or the Machine Contact (X8) input. STOP must be activated via the Remote Purge Control to purge using this device. 3. At this point the Control Unit pressure output will come up to the Purge Pressure setting previously programmed in the Pressure menu. See the section on Glue Volume earlier in this chapter for details on programming this parameter. The output pressure will remain at this level until the remote purge Stop button is deactivated. <p>NOTE: RMT STOP will be displayed at the top, right corner of the Control Unit display panel when the Remote Purge Control STOP is active; provided STOP has not also been activated through some other means, such as via the front panel of the Control Unit.</p>
	<ol style="list-style-type: none"> 4. Use the Increment or Decrement buttons to select the desired channel for manual gluing, as indicated on the LED display at the top of the Purge Control Box.
	<ol style="list-style-type: none"> 5. Press the Manual Gluing Button until the LED at the top, right corner of the button is constantly illuminated to initiate the manual gluing function for the selected channel. 6. Manual gluing for additional channels may be activated by repeating steps #4 and #5 above. 7. Manual Gluing may be deactivated by the following means: <ol style="list-style-type: none"> a. Pressing the Manual Gluing Button will toggle between activating and deactivating the selected channel output. A flashing LED indicates that STOP has been activated from the control front panel. This will have no effect on deactivation of manual gluing from the Remote Purge Control. b. Pressing the STOP Button until the LED is no longer continuously illuminated will deactivate all manual gluing operations. <p>NOTE: Pressing the STOP Button on the Remote Purge Control until the LED is continuously illuminated will cause the Run-Up output (X7) to automatically adjust to the PURGE setting programmed in the Glue Volume menu (see the section in this chapter on modifying glue volume settings).</p>

4.11.8 Palletizing

The Palletizing function applies a glue pattern to a specified number of products and then “passes”, or applies no glue to a specified number of products. The Pattern Control allows the operator to determine whether the count will start with the GLUE or PASS and how many products will be GLUED and PASSED. The Palletizing function is programmed on a trigger input (initiator) basis. Each trigger input will advance the count, regardless of TRIGGER LOCK settings (see the chapter on Service Settings for more information about Trigger Lock). Programming of the palletizing function is accomplished via the Service Settings menu. Refer to the chapter on Service Settings for details of the activation and programming of the palletizing function. This section will discuss the operational use of the palletizing feature.



Separate palletizing operations may be programmed in the Service Settings menus for trigger input #1 (X3) and trigger input #2 (X4). The Main Menu of the Control Unit will display the current palletizing status for the active channel; the top-most channel displayed in the Main Menu. The display will indicate whether the trigger input assigned to the active channel is #1 or #2; whether the palletizing cycle is currently in the “glue” (G) or “pass” (P) sequence and the number of product yet to be “glued” or “passed”.





The following palletizing functions may be accomplished from the Operator Menu:

Button	Steps
	1. Press the Channel Select button to change the active channel and view the palletizing status for that channel.
	2. Press the Stop button until STOP is flashing in the top, right corner of the display to disable the drive outputs and suspend the palletizing count.
 	3. Reset the palletizing count: <ol style="list-style-type: none"> Press the Key button until the key icon is continually displayed in the lower, right corner of the display. Assure STOP is activated. Simultaneously press the Increment and Decrement buttons. NOTE: Entering the Service Settings menus will also cause the palletizing count to reset. See the chapter on Service Settings for more information on this subject.

4.11.9 Production Counters

The DY2002 has the ability to track production counts on a job and global basis for each of its two trigger inputs. The JOB COUNT menus possess an operator reset. The TOTAL COUNT menus may only be reset by ITW Dynatec. Each counter is advanced upon receipt of a valid input from its assigned triggering device as long as the control unit is in a “run condition” (i.e. no STOP conditions are activated, including VMIN). The count will, however, advance regardless of TRIGGER LOCK settings (see the chapter on Service Settings for more information about TRIGGER LOCK).

Access the Production Counter menus as follows:

Button	Steps
	<ol style="list-style-type: none"> 1. Assure the Main Menu is displayed on the Control Unit. 2. Assure RUN is displayed in the top, right side of the display (i.e. no STOP conditions are active, except for VMIN). 3. Press the Key button until the key icon is continually displayed in the lower, right corner of the display.
	<ol style="list-style-type: none"> 4. Press the Service Settings button. 5. A menu similar to the one shown below should now be displayed. <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>30 m/min RUN</p> <p>JOB COUNT IN1 ←</p> <p>XX,XXX</p> </div> <div style="margin-left: 20px;"> <p>Job Count for Trigger Input #1 (X3)</p> </div> </div>
	<ol style="list-style-type: none"> 6. Use the Increment or Decrement buttons to display the desired Product Count menu.
	<p>The JOB COUNT menus will be reset to zero via either of the following procedures:</p> <ol style="list-style-type: none"> 1. Simultaneously press the Increment and Decrement buttons when in the JOB COUNT IN1 or JOB COUNT IN2 menus respectively. 2. Loading a new program (see the Service Settings chapter) will reset both the JOB COUNT IN1 and JOB COUNT IN2 menus. <p>NOTE:</p> <ol style="list-style-type: none"> 1. TOTAL COUNT menus may only be reset via a total software reset. Contact ITW Dynatec for details, if this becomes necessary. 2. Maximum count values exceed 900 billion. 3. This menu will “time out” and the display will automatically revert back to the Main Menu when no programming activity has occurred for 30 seconds.

Chapter 5

Service Settings



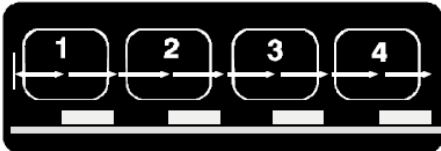

5.1 Service Settings Menu

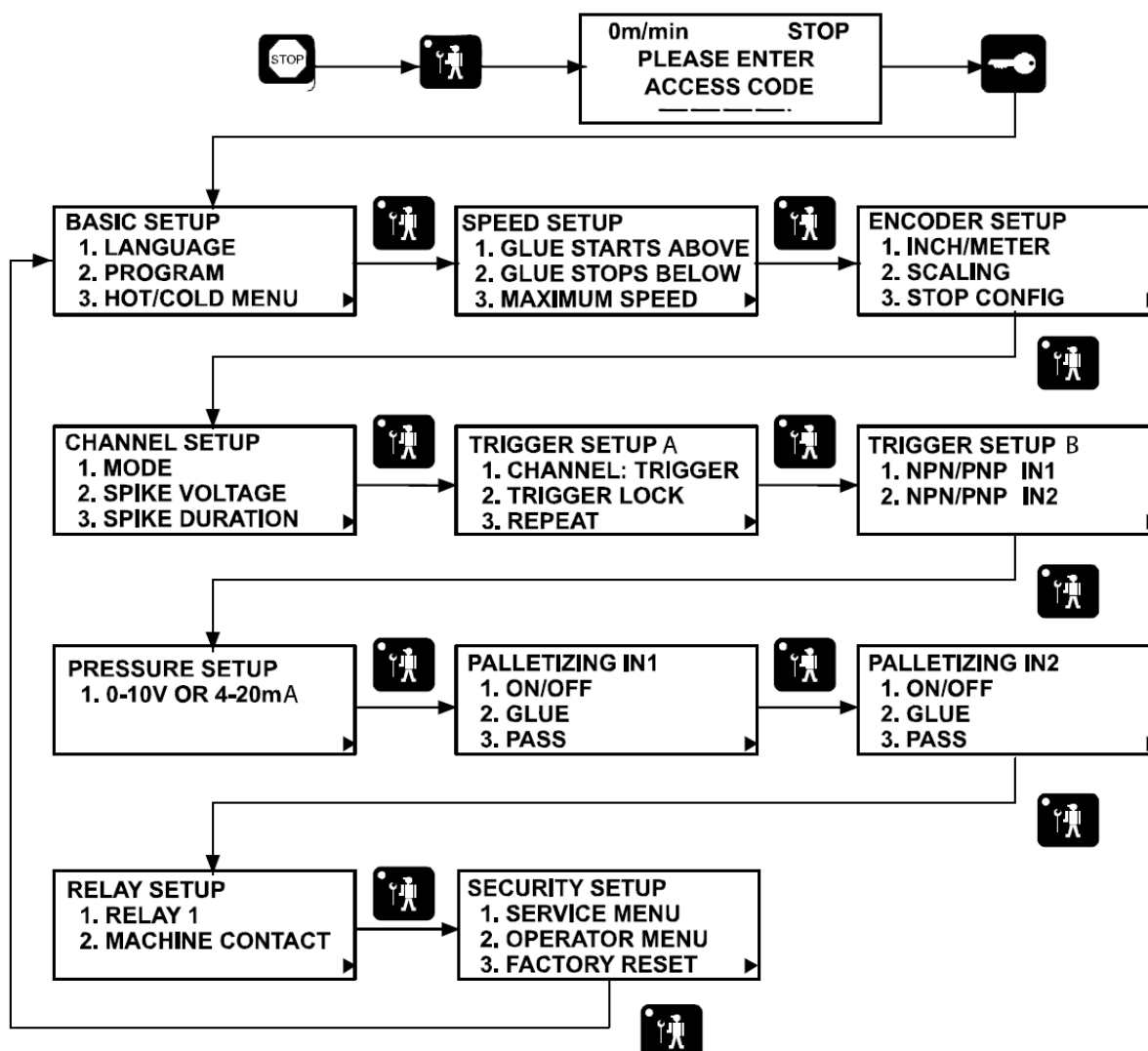
Service Settings are those parameters that provide the foundation for the Pattern Control operation. As such, these settings are not changed frequently during the normal course of operations.

NOTE: The Service Settings Menu is only accessible from the Main Menu after activating the STOP Button.

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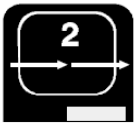







100 m/min      RUN
PROGRAM  1
CHANNEL 1 :  -  -  -  -
CHANNEL 2 :  -  -
  
```

Button	Description
	Press the STOP button when in the Main Menu until STOP is flashing in the top, right corner of the display.
	<p>Press the Service Settings Button until the LED in the top, left corner of the button is illuminated.</p> <p>The password entry menu will be displayed unless the Service Menu Security has been deactivated (see the section in the chapter on Service Menu Security).</p> <pre> 0 m/min STOP PLEASE ENTER ACCESS CODE _ _ _ _ </pre> <p>Use the Pattern buttons on the front panel of the Control Unit to enter the default security code of 1111.</p> 
	<p>The dashes on the display will turn to asterisks (*) as the digits are pressed and a Key Icon will flash in the lower, right corner of the display. Press the Key Button on the front panel to accept the entered code. The first of several Service Settings Menus will now be displayed. The following diagram is an overview of the Service Settings menus available on the DY2002.</p>

Service Settings Menus Overview

5.2 Programming Conventions




Note the following programming conventions:

Button	Steps
	1. The Service Setting button enables progression from one set of menus to the next set of menus.
	<p>2. The Key button enables reversal of the direction of progression through the Service menus.</p> <p>3. A small triangle in the lower right or left corner of the display indicates which direction the menus will progress when the Service Settings button is pressed.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> CHANNEL SETUP 1. MODE 2. SPIKE VOLTAGE 3. SPIKE DURATION  </div> <div>or</div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> CHANNEL SETUP 1. MODE 2. SPIKE VOLTAGE 3. SPIKE DURATION  </div> </div>
	4. Use the Pattern Buttons to enter the sub-menus of a Service menu. EXAMPLE: Press the two (2) key to enter the PROGRAM sub-menu of the BASIC SETUP Service menu.
 	5. Use the Increment and Decrement buttons to modify value settings in the sub-menus. EXAMPLE: Press the  button in the PROGRAM submenu one time to select Program #2 instead of the current Program #1.
	6. Use the Clear button (C) to return to the next higher Service menu. EXAMPLE: Press the Clear button to move from the PROGRAM submenu back to the BASIC SETUP menu. Clear is also used to exit the Service Settings Menu.
	<p>7. Some sub-menus will require a confirmation by pressing the Key button. The user is prompted for this entry via a flashing Key Icon () in the lower, right corner of the display.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> PROGRAM MENU CURRENT SELECTED 1 2  </div>





5.3 Service Settings Sub-Menus

The following is an overview of the functions and programming of the Service Setting sub-menus:




5.3.1 Language

Button	Description
  	<p>Press the #1 Pattern button on the front panel when the BASIC SETUP menu is displayed.</p> <p>Select the language for all menus displayed on the Control Unit by using the Increment or Decrement buttons.</p> <p>Press the Clear Button (C) to return to the BASIC SETUP Menu.</p>




5.3.2 Program

Button	Description
   	<p>Press the #2 Pattern button on the front panel when the BASIC SETUP menu is displayed.</p> <p>Select any of twelve (12) programs that are stored in non-volatile (permanent) memory by using the Increment or Decrement buttons to select the desired channel. The CURRENT (i.e. active) program is displayed along with the SELECTED (i.e. desired) program.</p> <p>NOTE: The Key button must be pressed to accept any modification to the PROGRAM menu.</p> <p>Press the Clear Button (C) to return to the BASIC SETUP Menu.</p>




5.3.3 Hot/Cold Menu

Button	Description
  	<p>Press the #3 Pattern button on the front panel when the BASIC SETUP menu is displayed.</p> <p>Select whether glue output volume is expressed as an increase/decrease in MOTOR SPEED (typically hot melt systems) or PRESSURE (typically cold glue systems) in the pattern control menus by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the BASIC SETUP Menu.</p>




5.3.4 Glue Starts Above

Button	Description
  	<p>Press the #1 Pattern button on the front panel when the SPEED SETUP menu is displayed.</p> <p>Select the machine speed above which the drive outputs will become active as machine speed is increasing by using the Increment or Decrement buttons. Activation of the drive output is also dependent upon receipt of a valid trigger where required.</p> <p>Press the Clear button (C) to return to the SPEED SETUP Menu.</p> <p>NOTE: This menu is disabled when in the Timer Mode.</p>




5.3.5 Glue Stops Below

Button	Description
  	<p>Press the #2 Pattern button on the front panel when the SPEED SETUP menu is displayed.</p> <p>Select the machine speed below which the drive outputs will be de-activated as machine speed is decreasing by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the SPEED SETUP Menu.</p> <p>NOTE: Speeds below the GLUE STOPS BELOW value will cause the drive outputs to deactivate. Returning back above this value, even if the speed did not go below the GLUE STARTS ABOVE value, will cause the drive outputs to reactivate.</p> <p>NOTE: This menu is disabled when in the Timer Mode.</p>




5.3.6 Maximum Speed

Button	Description
  	<p>Press the #3 Pattern button on the front panel when the SPEED SETUP menu is displayed.</p> <p>Select the maximum speed that the parent machine is capable of operating or a value that slightly exceeds the highest expected operating speed of the parent machine if it never actually operates at its potential maximum speed by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the SPEED SETUP Menu.</p> <p>NOTE: The MAXIMUM SPEED value is used, along with MINIMUM and MAXIMUM pressure settings to determine the pressure (motor speed) ramp curve and is also involved in COMPENSATION calculations See the chapter concerning Operator Menus for more information on these parameters.</p> <p>NOTE: This menu is disabled when in the Timer Mode.</p>





5.3.7 Inch/Meter

Button	Description
  	<p>Press the #1 Pattern button on the front panel when the ENCODER SETUP menu is displayed.</p> <p>Select either INCH or METER to establish all speed and distance programming units in both the Operator and Service menus by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the ENCODER SETUP Menu.</p> <p>NOTE: This menu is disabled when in the Timer Mode.</p>





5.3.8 Scaling

Button	Description
  	<p>Press the #2 Pattern button on the front panel when the ENCODER SETUP menu is displayed.</p> <p>Input the PULSES/INCH or PULSES/METER being generated by the encoder connected to the pattern control unit by using the Increment or Decrement buttons. Accurate determination of this value is extremely important to the proper functioning of the pattern control unit. This parameter is used to calculate all distances and speeds for the precise application of gluing patterns.</p> <p>ENTERING TIMER MODE FROM DISTANCE MODE Simultaneously pressing the Increment or Decrement buttons will cause the Control Unit to switch to Timer Mode. This mode does not use encoder inputs to determine parent machine speed and all parameter settings are programmed in time (milliseconds) instead of distance (millimeters or inches). Several parameters within the Service Setting menus are disabled upon entering Timer Mode. A note is included with the descriptions in this chapter for those parameters so affected.</p> <p>ENTERING DISTANCE MODE FROM TIMER MODE Pressing either the Increment or Decrement button when Timer Mode is selected will revert the Control Unit back to Distance Mode.</p> <p>Press the Clear button (C) to return to the ENCODER SETUP Menu.</p>

5.3.9 Stop Configuration

Button	Description
   	<p>Press the #3 Pattern button on the front panel when the ENCODER SETUP menu is displayed.</p> <p>This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.</p> <p>Select the desired value by using the Increment or Decrement buttons. There are two possible values for this parameter:</p> <p>NOT FINISH GLUING: The Pattern Control will not complete a gluing pattern that has been interrupted due to parent machine shutdown (example: The parent machine jams in the middle of a gluing cycle). The Control Unit will wait for the next valid trigger input that occurs when machine speed is above the GLUE STARTS ABOVE value before applying the next glue pattern after machine restart.</p> <p>FINISH GLUING: The Pattern Control will complete a gluing pattern that has been interrupted due to parent machine shutdown (example: The parent machine jams in the middle of a gluing cycle). The Control Unit will track how much of the pattern was applied prior to shutdown and complete the glue pattern upon restart. The Control Unit will then wait for the next valid trigger input that occurs when machine speed is above the GLUE STARTS ABOVE value before applying another glue pattern.</p> <p>Press the Clear button (C) to return to the ENCODER SETUP Menu.</p> <p>NOTE: This menu is disabled when in the Timer Mode.</p>

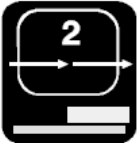



5.3.10 Mode

Button	Description
	Press the #1 Pattern button on the front panel when the CHANNEL SETUP menu is displayed.
	This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.
	Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available channel modes.
	

Channel Mode	Description
Standard	Up to 4 patterns per trigger input; pattern is started with trigger input when above GLUE STARTS ABOVE value; pattern can be stitched.
Standard with Dot	A hybrid between STANDARD and DOT modes. The GLUE portion of the pattern is applied as user-programmable “dots” between the GLUE STARTS ABOVE and GLUE STOPS BELOW speeds and as a STANDARD pattern at speeds above GLUE STOPS BELOW. No stitch is possible when in this mode.
Dot	Same as STANDARD mode, except the GLUE portion of the pattern is applied as user programmable “dots”, which are programmed as a GLUE (in milliseconds of on time) and a REPEAT (in distance), no stitch is possible when in this mode.
Random	Glue length depends upon the length of the product. The leading and lagging DELAY are programmed into DELAY 1 and DELAY 2 respectively. Pattern may also be stitched. NOTE: Random Mode incorporates a “time out” function to prevent excessive, undesired glue flow in the event of a product jam under the triggering device. Set this value to be slightly greater than the longest anticipated glue pattern time by taking into account the longest product at slowest product speed.
C. With Trigger, Speed	Continuous gluing is activated as long as an active trigger signal is present and parent machine speed is above low speed conditions (see GLUE STARTS ABOVE and GLUE STOPS BELOW for more details). Pattern may also be stitched.
Cont. With Speed	Continuous gluing is activated as long as parent machine speed is above low speed conditions (see GLUE STARTS ABOVE and GLUE STOPS BELOW for more details). Pattern may also be stitched. No trigger input is required.
Driver	Gluing is activated as long as a trigger signal is present, no speed input is used. This mode is typically used in conjunction with another control system, such as a PLC or PLS to properly drive Dynatec Cold Glue electric valves.

Press the Clear button (C) to return to the CHANNEL SETUP Menu.
NOTE: This menu is disabled when in the Timer Mode.





5.3.11 Spike Voltage

Button	Description
	Press the #2 Pattern button on the front panel when the CHANNEL SETUP menu is displayed.
	This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.
	Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available SPIKE VOLTAGE settings.
	





Spike Voltage	Description
Off	No over-excitation is supplied at the beginning of the pattern. The Control Unit outputs a 24VDC nominal voltage. This setting is used for most pneumatic valve applicators in typical glue application scenarios.
Air Valve	<p>This setting provides a 55VDC over-excitation for a period of time at the beginning of each pattern, and then settles to a 24VDC nominal voltage. It is typically used with 24VDC valves in fast-response applications to activate the valve more quickly.</p> <p>CAUTION: Be certain the valve being over-excited is designed to handle such voltages, otherwise premature valve failure may occur.</p>
Cold Electric	<p>This setting provides a 170VDC over-excitation for a period of time at the beginning of each pattern, and then settles to a 24VDC nominal voltage. This setting is required for the proper operation of all Dynatec Cold Glue Electric Valves in the <i>DynaCold</i> and <i>Macon</i> Series product lines.</p> <p>CAUTION: This setting is not recommended for use with any Dynatec glue applicators except those indicated above.</p>

Press the Clear button (C) to return to the CHANNEL SETUP Menu.

5.3.12 Spike Duration

Button	Description
   	<p>Press the #3 Pattern button on the front panel when the CHANNEL SETUP menu is displayed.</p> <p>This menu allows programming of the duration of the SPIKE VOLTAGE (Over-Excitation) programmed in the previous section. Values for this parameter range from 0.50 milliseconds to 2.50 milliseconds in 0.05 millisecond steps. The default value is 1.60 milliseconds and is recommended for most applications.</p> <p>This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.</p> <p>Select the desired value by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the CHANNEL SETUP Menu.</p>





5.3.13 Channel: Trigger

Button	Description
   	<p>Press the #1 Pattern button on the front panel when the TRIGGER SETUP A menu is displayed.</p> <p>This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.</p> <p>Select the desired value by using the Increment or Decrement buttons.</p> <p>The following selections are available for each channel:</p>





Channel:Trigger Setting	Description
0 (zero)	Disables the channel drive output. This channel will no longer be displayed in any of the Operator Menus.
1 (one)	TRIGGER 1 (X3 on the connector panel) is used to initiate the pattern for the selected channel.
2 (two)	TRIGGER 2 (X4 on the connector panel) is used to initiate the pattern for the selected channel.
1+2 (one plus two)	TRIGGER 1 and TRIGGER 2 must be activated simultaneously to initiate the pattern for the selected channel.

Press the Clear button (C) to return to the TRIGGER SETUP A Menu.

5.3.14 Trigger Lock

Button	Description
   	<p>Press the #2 Pattern button on the front panel when the TRIGGER SETUP A menu is displayed.</p> <p>This parameter determines for what distance additional trigger inputs will be ignored after an initial trigger input is received. This function is necessary when applying glue to products with cut-outs (example: windows or hand holes) to prevent unintended pattern initiation.</p> <p>This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.</p> <p>Select the desired value by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the TRIGGER SETUP A Menu.</p> <p>NOTE:</p> <ol style="list-style-type: none"> 1. This menu is disabled when in the Timer Mode. 2. This function does not work with the Palletizing Count and Production Count features.




5.3.15 Repeat

Button	Description
   	<p>Press the #3 Pattern button on the front panel when the TRIGGER SETUP A menu is displayed.</p> <p>This parameter is programmed on a channel-by-channel basis. Select the desired channel by pressing the Channel button in the upper, right corner of the front panel until the desired channel is indicated on the display.</p> <p>Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available REPEAT settings.</p>




Repeat Mode	Description
Latched Single	<p>A single glue pattern cycle is performed upon trigger initiation. The glue pattern will continue to its conclusion regardless of whether the trigger signal remains present.</p> <p>NOTE: This is the most common repeat mode used and the default setting.</p>
Gated Repeat	<p>A continuously repeating glue pattern is performed for as long as the trigger signal is present. The final glue pattern will end immediately upon loss of the trigger signal.</p>

Press the Clear button (C) to return to the TRIGGER SETUP A Menu.




5.3.16 NPN/PNP IN1

Button	Description
	Press the #1 Pattern button on the front panel when the TRIGGER SETUP B menu is displayed.
	This parameter configures Trigger (Initiator) 1 (X3 on the Connector Panel) for either a “sinking” (NPN) or “sourcing” (PNP) input. Determine the type of trigger device being used and program this parameter via the Increment or Decrement buttons.
	
	Press the Clear button (C) to return to the TRIGGER SETUP B Menu.

5.3.17 NPN/PNP IN2




Button	Description
	Press the #2 Pattern button on the front panel when the TRIGGER SETUP B menu is displayed.
	This parameter configures Trigger (Initiator) 2 (X4 on the Connector Panel) for either a “sinking” (NPN) or “sourcing” (PNP) input. Determine the type of trigger device being used and program this parameter via the Increment or Decrement buttons.
	
	Press the Clear button (C) to return to the TRIGGER SETUP B Menu.

5.3.18 0-10V or 4-20mA

Button	Description
	Press the #1 Pattern button on the front panel when the PRESSURE SETUP menu is displayed.
	Use this parameter to configure the Pressure/Motor Speed Run-Up Output (X7 on the Connector Panel) for either 0 to 10VDC/0 to 20mA or 4 to 20mA output. Use the Increment or Decrement buttons to select the desired value.
	
	Press the Clear button (C) to return to the PRESSURE SETUP Menu.

5.3.19 Palletizing IN1: On/Off




The Palletizing function applies a glue pattern to a specified number of products and then “passes”, or applies no glue to a specified number of products. The Pattern Control allows the operator to determine whether the count will start with the GLUE or PASS and how many products will be GLUED and PASSED. The Palletizing function is programmed on a trigger input (initiator) basis. All PALLETIZING IN1 menus pertain to establishment of a palletizing function for output channels assigned to Trigger (Initiator) #1 (X3 on the Connector Panel). Note: Palletizing Count advances with the receipt of each trigger input, regardless of Trigger Lock programming.

Button	Description
  	<p>Press the #1 Pattern button on the front panel when the PALLETIZING IN1 menu is displayed.</p> <p>Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available settings.</p>




ON/OFF Setting	Description
Off	Disables the Palletizing function for all output channels assigned to Trigger (Initiator) #1.
Start With Glue	Activates the Palletizing function for all output channels assigned to Trigger (Initiator) #1. Palletizing will commence with glue being applied to the programmed number of products in accordance with the Pattern programmed for each channel assigned to Trigger #1.
Start With Pass	Activates the Palletizing function for all output channels assigned to Trigger (Initiator) #1. Palletizing will commence with the programmed number of products being passed (left unglued).

Press the Clear button (C) to return to the PALLETIZING IN1 Menu.

5.3.20 Palletizing IN1: Glue




Button	Description
  	<p>Press the #2 Pattern button on the front panel when the PALLETIZING IN1 menu is displayed.</p> <p>Select the number of products that will be glued during each palletizing cycle by using the Increment or Decrement buttons.</p> <p>Press the Clear button (C) to return to the PALLETIZING IN1 Menu.</p>

5.3.21 Palletizing IN1: Pass

Button	Description
	Press the #3 Pattern button on the front panel when the PALLETIZING IN1 menu is displayed.
	Select the number of products that will be passed during each palletizing cycle by using the Increment or Decrement buttons.
	Press the Clear button (C) to return to the PALLETIZING IN1 Menu.

5.3.22 Palletizing IN2: On/Off




The Palletizing function applies a glue pattern to a specified number of products and then “passes”, or applies no glue to a specified number of products. The Pattern Control allows the operator to determine whether the count will start with the GLUE or PASS and how many products will be GLUED and PASSED. The Palletizing function is programmed on a trigger input (initiator) basis. All PALLETIZING IN2 menus pertain to establishment of a palletizing function for output channels assigned to Trigger (Initiator) #2 (X4 on the Connector Panel). Note: Palletizing Count advances with the receipt of each trigger input, regardless of Trigger Lock programming.

Button	Description
	Press the #1 Pattern button on the front panel when the PALLETIZING IN2 menu is displayed.
	Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available settings.
	




ON/OFF Setting	Description
Off	Disables the Palletizing function for all output channels assigned to Trigger (Initiator) #2.
Start With Glue	Activates the Palletizing function for all output channels assigned to Trigger (Initiator) #2. Palletizing will commence with glue being applied to the programmed number of products in accordance with the Pattern programmed for each channel assigned to Trigger #2.
Start With Pass	Activates the Palletizing function for all output channels assigned to Trigger (Initiator) #2. Palletizing will commence with the programmed number of products being passed (left unglued).

Press the Clear button (C) to return to the PALLETIZING IN2 Menu.

5.3.23 Palletizing IN2: Glue

Button	Description
	Press the #2 Pattern button on the front panel when the PALLETIZING IN2 menu is displayed.
	Select the number of products that will be glued during each palletizing cycle by using the Increment or Decrement buttons.
	Press the Clear button (C) to return to the PALLETIZING IN2 Menu.




5.3.24 Palletizing IN2: Pass

Button	Description
	Press the #3 Pattern button on the front panel when the PALLETIZING IN2 menu is displayed.
	Select the number of products that will be passed during each palletizing cycle by using the Increment or Decrement buttons.
	Press the Clear button (C) to return to the PALLETIZING IN2 Menu.

5.3.25 Relay Setup: Relay 1




The Pattern Control has two alarm output relays:

- Relay #1 is operator-configurable to switch when:
 - a) the Control Unit senses a zero speed condition, or
 - b) a fault alarm, such as an over-current or short condition, occurs.
- Relay #2 is pre-configured (not operator programmable) to switch when the control unit is in a STOP condition, such as:
 - a) the front panel STOP button has been activated (STOP),
 - b) the Remote Purge Control STOP button has been activated (COM 2-STOP) or
 - c) the External Stop (X8) circuit has been activated (EX. STOP).

Button	Description
	Press the #1 Pattern button on the front panel when the RELAY SETUP menu is displayed.
	Select the configuration for the Relay #1 Output using the Increment or Decrement buttons.
	Press the Clear button (C) to return to the RELAY SETUP Menu.

5.3.26 Relay Setup: Machine Contact (External Stop)





The Machine Contact (X8) is a two-wire circuit that provides a means of disabling the control unit drive outputs via an NPN or dry contact signal from a relay on the parent machine. The Main Menu of the Control Unit will display EX. STOP in the top, right corner when the Machine Contact circuit is activated and no other stop conditions have been set.

Button	Description
	Press the #2 Pattern button on the front panel when the RELAY SETUP menu is displayed.
	Select the desired value by using the Increment or Decrement buttons. Use the below table for an explanation of available settings.
	

Setting	Description
Normally Open	The drive outputs will be disabled when the X8 contacts are closed.
Normally Closed	The drive outputs will be disabled when the X8 contacts are open.





5.3.27 Security Setup: Service Menu

The Service Menu enables the activation, deactivation and modification of a security password for the Service Settings menus. Activation of security is global and applies to access for all Service Settings menus.

Button	Description
	Press the #1 Pattern button on the front panel when the SECURITY SETUP menu is displayed.
	<p>CHANGE ACCESS CODE The factory default Access Code is "1111". Change this by entering the desired Access Code using the Pattern buttons (numbers 1 through 4). The code may be from one to four digits long and any combination of the digits 1, 2, 3 or 4.</p> <p>DEACTIVATE ACCESS CODE Requiring an Access Code upon entering the Service Settings Menus can be deactivated by simultaneously depressing the Increment and Decrement buttons. Display of the current Access Code is replaced by three dashes (- - -) indicating the requirement for an Access Code has been disabled.</p> <p>REACTIVATE ACCESS CODE Reactivating the Access Code for entering the Service Settings Menus can be accomplished by simultaneously depressing the Increment and Decrement buttons or by entering the desired access code as described in the section above entitled Change Access Code. The Access Code display will change from three dashes (- - -) to the current Service Level Access Code.</p>
	
	
	Press the Clear button (C) to return to the SECURITY SETUP Menu.

5.3.28 Security Setup: Operator Menu






All Operator-Level menus, those directly accessible from the Main Menu; such as the Pattern, Pressure, Offset and Compensation (see the Operation chapter for more details) may be LOCKED or UNLOCKED using this menu. This is a global setting, affecting all Operator-Level menus. Once locked, the only means of modifying Operator-Level menus is to return to this Security Setup menu and change it to UNLOCK.

Button	Description
	Press the #2 Pattern button on the front panel when the SECURITY SETUP menu is displayed.
	<p>Select whether the Operator Menu is to be LOCKED or UNLOCKED by using the Increment or Decrement buttons.</p>
	
	
	<p>Press the Clear button (C) to return to the SECURITY SETUP Menu.</p> <p>NOTE: Operator level menu settings may still be viewed with security activated, but cannot be modified.</p>


5.3.29 Security Setup: Factory Reset

This menu provides the ability to reset all parameter values in the currently selected program to factory defaults.

NOTE: Performing the below steps will irretrievably erase all operator-modified settings for the current program. It is strongly recommended that all parameter settings be written down for possible future reference prior to undertaking this procedure.

Button	Description
  or 	<p>Press the #3 Pattern button on the front panel when the SECURITY SETUP menu is displayed.</p> <p>Enter the Service Setting password (see Security Setup: Service Menu above) using the Pattern buttons. The user is prompted to confirm this entry via a flashing Key Icon () in the lower, right corner of the display. All operator-modified settings for the current program will be set to factory defaults once the Key button is pressed.</p> <p>Press the Clear button to exit this menu without setting all parameters to factory defaults or press the Key button to confirm the reset request.</p> <div style="border: 1px solid black; padding: 10px; display: inline-block; text-align: center;"> <p>PLEASE ENTER ACCESS CODE</p> <p>*****</p> </div>  ← Flashing Key button <p>The display will automatically revert to the SECURITY SETUP Menu.</p>

5.3.30 Exit the Service Settings Menus

Button	Description
	<p>Pressing the Clear button from any Service Settings Menu will allow exit to the Operator Main Menu after all channels have been initialized.</p>

Chapter 6

Troubleshooting

6.1 Preliminary Checks



NOTE: Please re-read all security advices given in chapter 1 before performing any troubleshooting or repair procedures.

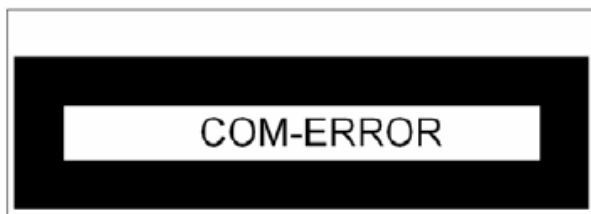
All troubleshooting or repair procedures must be performed by qualified, trained technicians.

This chapter lists problems with the DY2002 and possible solutions. Verify the following questions prior to undertaking any other troubleshooting steps:

1. Is the proper AC voltage being supplied to the Pattern Control?
2. Is the power switch to the Control turned on?
3. Is proper air pressure being supplied to the pump and pneumatic glue applicators? Check all appropriate manuals for proper specifications.
4. Are all electrical wires, pneumatic and fluid lines properly connected? Check all appropriate manuals for proper interconnection information.
5. Are any electrical, pneumatic or fluid lines damaged? These should be immediately repaired for safe and reliable system operation.
6. Are all system components (hot melt systems) at their proper operating temperature?

6.2 Error Messages

6.2.1 Communication Error



This is an internal error caused by a failure of the Control Unit's microprocessors to properly communicate with each other. The glue system may very well continue to function properly in its current run status, but will fail if any attempt is made to change any of the programming parameters.

Power the DY2002 off for at least 30 seconds and then power it back on in an attempt to clear this error condition.

The unit must be returned to ITW Dynatec for repair if this step does not result in a return of the unit to its normal operating condition.

6.2.2 Over Current Failure



This message will be displayed when an electrical short circuit occurs on either of the drive output circuits (X1 or X2). The shorted output channel number will be displayed in place of the "X" in the screen example shown above. All drive output channels will be immediately disabled.



DANGER

The cause of any electrical short should be immediately investigated prior to attempting to return the equipment to operation. Possible injury to operating personnel and/or permanent equipment damage may occur should this condition persist.

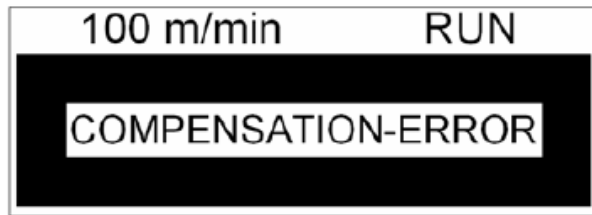
1. Note the output channel indicated in the Over Current error message on the Control Unit display.
2. Power off the Control Unit and inspect all electrical components connected to the suspect drive output channel. Check continuity of all cables and the resistance across all solenoid valves and coils; comparing them to manufacturer's specifications.
3. Disconnect all equipment and cables from the suspect drive output if no obvious damage was noted. Restore power to the Control Unit and then activate the PURGE function for the suspect channel. The DY2002 must be returned to ITW Dynatec for repairs if the Over Current error message once again is present for that channel. All equipment connected to that channel should once again be examined to locate any defects in the equipment.



NOTE: Permanent damage to the Control Unit is possible each time the drive output is shorted. Every effort should be made to locate the defective equipment prior to undertaking the following steps. Turn SPIKE VOLTAGE off for the suspect channel prior to undertaking the following steps.

4. Disable the PURGE function and connect only the cable to the suspect drive output if PURGE was successfully accomplished in Step #3 above. Activate the PURGE function once again for the suspect channel. The cable is defective if the Over Current error message is displayed.
5. Disable the PURGE function and connect the glue applicator to the cable of the suspect drive output if PURGE was successfully accomplished in Step #4 above. Activate the PURGE function once again for the suspect channel. The solenoid/coil is defective if the Over Current error message is displayed.
6. Remember to reprogram SPIKE VOLTAGE to the appropriate setting for the glue applicator prior to returning the Control Unit to service.

6.2.3 Compensation Error



This message will be displayed when the programming of the OFFSET, Pattern DELAY or Pattern GLUE parameters for a channel conflict with the COMPENSATION values for that channel. The Control Unit logic will prevent the programming of conflicting parameters and display the above message. The error message is informational in nature and will clear itself automatically after being displayed for a few seconds.

1. Acceptance of a different pattern value than originally intended or modification of the offending COMPENSATION parameter are the only means of resolving this situation.
2. Occurrence of this error condition when programming OFFSET or DELAY values will typically be caused by conflicts with the ON COMPENSATION value for that channel.
3. Occurrence of this error condition when programming GLUE values will typically be caused by conflicts with the OFF COMPENSATION value for that channel.

6.3 Troubleshooting, Frequently Asked Questions

Refer to the applicable chapters of this manual for more in-depth information concerning programming procedures discussed in this section.

Problem	Cause, Solution
1. The glue applicator does not heat.	<ol style="list-style-type: none"> 1. Is the Pattern Control Unit turned on? 2. Is the Control in a STOP condition? 3. Will the glue applicator fire during manual (PURGE) operation? 4. Are the drive cables properly connected to the glue applicators? 5. Do you have proper glue pressure? 6. Is the glue applicator nozzle plugged? 7. Are the filters clean? 8. Is a trigger assigned to the non-functioning output channel? 9. Is the proper SPIKE VOLTAGE programmed for the glue applicator being used? 10. Are you getting a valid trigger input (trigger LED illuminating)? 11. Is a valid pattern programmed for the output channel? 12. Is the pattern of sufficient duration to allow the glue applicator to turn on? 13. Is STITCH activated with such a short ON portion that the glue applicator will not function? 14. Are you getting a speed input indication at the Control Unit? (distance-based mode) 15. Is V-MIN flashing on the channel display? (distance-based mode) If so, increase machine speed until V-MIN is not present or modify the GLUESTARTS ABOVE and/or GLUE STOPS BELOW values in the Service Settings menus.

Problem	Cause, Solution
2. The trigger input does not function.	<ol style="list-style-type: none"> 1. Is the trigger properly connected to the Control Unit? 2. Is the proper trigger input assigned to the active channels in the CHANNEL:TRIGGER Menu? 3. Do you have "ANDING" activated in the CHANNEL:TRIGGER Menu? 4. Is the Control Unit programmed properly for NPN or PNP in the Service Settings menu? 5. Is the LED on the back of the sensor illuminating when a trigger input is present? If not, adjust the sensor sensitivity until this occurs.
3. I cannot access both drive output channels.	Enter the CHANNEL:TRIGGER Menu in Service Settings and assign the disabled channels to a valid trigger input.
4. Glue pattern lengths are different than what is programmed, even at slow speeds.	The encoder scaling is incorrectly programmed in the Service Settings menu.
5. Glue patterns shift as I increase and decrease machine speed.	Compensation values are not properly programmed.
6. I get too much/too little glue at high/low speeds.	The MIN and/or MAX glue pressure settings are improperly programmed.
7. I am unable to make any programming changes in the Operator Menus.	The Operator Menus have been LOCKED in the Service Settings SECURITY SETUP Menu.
8. I am able to access some Operator Menus and make changes, but other Operator Menus are not accessible.	Some Operator Menus require first pressing the Key Button in order to access them. A Key Icon will be flashing in the lower, right corner of the display in these instances.
9. It seems as though sometimes the Control Unit programming reverts to previously set values when I power the unit down and turn it on again.	<p>Programming information is saved to permanent memory only when the Control Unit returns to the Main Menu. Most Operator Menus will automatically revert to the Main Menu after a short duration of programming inactivity; however this is not the case with the Service Setting menus.</p> <p>Always assure the Control Unit is returned to the Main Menu prior to powering off the equipment to assure any program modifications are saved to permanent memory.</p>

Chapter 7

Appendix

7.1 Part Lists

7.1.1 Pattern Control Equipment

Part Number	Description
17001	DY2002 Pattern Control/Timer, 2 channel

7.1.2 Replacement Parts

Part Number	Description
17050	Power Supply Board for Control DY2002 NT-S4
17051	Communication Board SPI-S4 DY2002
17052	Rear Panel Board DY2002 RW (Connection Board)
17053	Front panel (control panel) DY2002 FB
17005	Valve driver module DY2002 VTT2K-S4 2-channel
113313 or 05.11020.004	Fine fuse 5 x 20 mm, slow, 2 A, T
104117 or 05.11063.004	Fine fuse 5 x 20 mm, slow, 6.3 A, T

7.1.3 Common Accessories

Control Upgrades:

Part Number	Description
28.11101.602	Remote Purge Control (includes 10M cable)

AC Power Cords:

Part Number	Description
28.20000.001	Power Cord, 115VAC
28.20000.002	Power Cord, 200VAC
28.20000.003	Power Cord, 230VAC

Connection Cables Solenoid Valve:

Part Number	Description
05.01004.605	Connection cable solenoid valve to Controller, open cable ends, 5 m
05.01004.610	Connection cable solenoid valve to Controller, open cable ends, 10 m
05.02104.616	Connection line M12 to solenoid valve Micro, 5m; 3x0.5mm ² shielded, 9.4mm DIN, 2-pin
05.02104.622	Adapter cable 5m 3x0.5 ² , shielded, M12 coupling plug/ BS4 Euchner, for Macon application head
05.02104.624	Adapter cable, 10m, 3x0.75, shielded, M12 coupling plug to BS4 Euchner, for Macon application head
05.03104.000	"Y" cable 0.4m to connect two solenoid valves, M12 coupling plug/2xM12 female coupling (not for DynaCold or Macon guns) with a single valve output
05.02104.100	Extension cable 4x0.5mm ² ; 10 m, shielded, with M12 connectors
108540	Connection cable, Solenoid valve, DPC-4, ILD-2

Sensors and Cables:

Part Number	Description
05.65400.501	Reflection light scanner (photo eye), with 2m connection cable, round version M18x1, switching time 5ms
05.65300.105	Reflection light scanner (photo eye), with plug on the cable, 1 ms, flat design
108239	Fiber optic sensor, teachable, 0.2 ms response time, inclusive 2m cable
105178	Proximity sensor, 1ms response time, including 5m cable
05.65401.201	Initiator with plug, length 40mm, 2m cable
110018	Sensor bracket (fits 108239 & 105178)
05.02105.603	Connection cable for Reflection light scanner (photo eye)/initiator, with connector, length: 5 m
05.02105.612	Connection cable for Reflection light scanner (photo eye)/initiator, with connector, length: 10 m
05.02105.604	Connection cable for Reflection light scanner (photo eye)/initiator, with connector, length: 25 m
05.02105.615	Adapter cable for 2001/2004/2005/2006 Y-cable for 1x Reflection light scanner (photo eye) on 2 inputs, 2x0.5m
112007	Sensor Conversion Cable, DPC/TPC/MPC-2, 8"

Encoders and Cables:

Part Number	Description
05.66501.004	Encoder, 1000 pulses/rev (1000 PPR), large version (encoder only)
70.90000.703	Rotary encoder 500 pulses/rev (500 PPR), small, with friction wheel and bracket
111420	Encoder/wheel/bracket assembly, 50 PPI, includes 5m cable
112577	Hollow shaft encoder, 600 lm/m (600PP), with bracket
05.02104.612	Connection cable for encoder, length 5 m, with angle plug
05.02104.601	Connection cable for encoder, length 10 m, with angle plug
107917	Replacement cable for encoder, DPC-2/MPC-2T, 5 m
112656	Adapter cable for encoder, DPC-2/MPC-2T (fits to existing cable)

Pressure Control Accessories:

Part Number	Description
07.10005.705	Automatic pressure control with 1 x I/P Transducer, without control cabinet, version 2013
11202	Control cabinet pneumatic with 2 X E/P Transducer and accessories
05.67000.108	I/P Transducer, version 2012, incl. cable and clip
05.02103.603	Connection cable for IP converter, 3-wire, 5 m
109996	I/P Transducer, 4-20mA, 24V, includes 3m cable

Connectors:

Part Number	Description
05.03002.001 or 105079	Plug for Machine Contact, 2-pin
05.03003.003 or 105077	Plug for Pressure Control, 3-pin
05.03005.002	Plug for Pressure Control, 5-pin
105076	Plug for Encoder Connector, 4-Pin
05.03005.001 or 105078	Coupling plug (plug for trigger), 5-Pin
05.03003.006 or 109011	Plug for Alarm Output, 6-Pin
109225	M12 Male plug
109223	M12 Female plug

7.2 Printed Circuit Board Layouts



DANGER

Place this Control Unit in a dry and dust-free environment and not in the danger zone of other machines. The Operator Panel must be accessible without hazards.



CAUTION

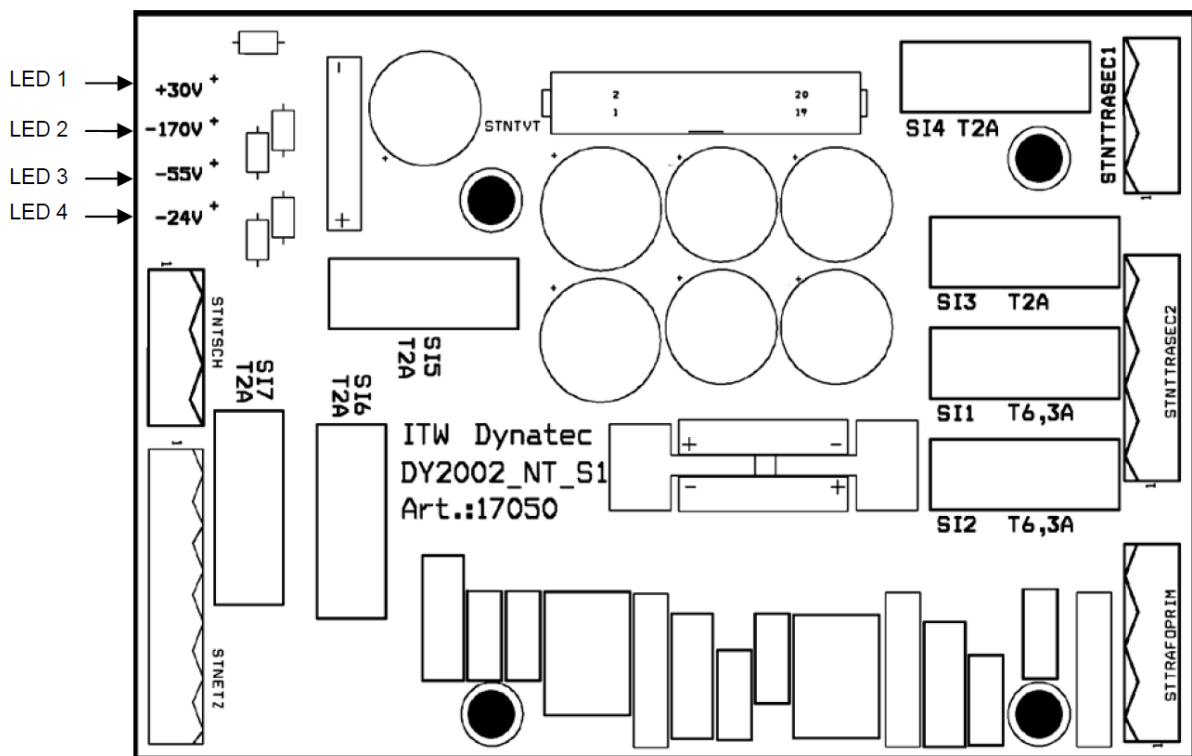
Only authorized persons should execute the following procedures. Observe all applicable safety rules.

NOTE:

The illustrations in this chapter are for reference only. They do not depict the DY2002 printed circuit boards in full detail.

7.2.1 Power Supply Board, PN 17050

The Power Supply Board regulates the DC voltage within the Pattern Control.



7.2.2 LED Indicators

There are four green light-emitting diodes (LED's) on the left edge of the Power Supply Board. All of these LED's should be brightly illuminated when the unit is powered on. Dimly lit or darkened LED's indicate a fault somewhere in the control system. Immediately contact ITW Dynatec Technical Support for assistance in diagnosing the specific problem.

7.2.3 LED Function Information

Designation	Voltage	Function
LED1	+30VDC	Microprocessor, Encoder, Triggers, Pressure Control Voltage
LED2	-170VDC	Drive Output Voltage (170VDC Over-excitation)
LED3	-55VDC	Drive Output Voltage (55VDC Over-Excitation)
LED4	-24VDC	Drive Output Voltage (24VDC Holding Voltage)

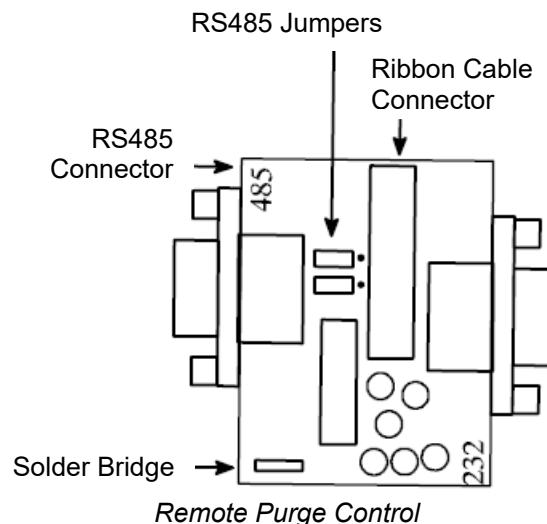
7.2.4 Fuses

The only fuses in the DY2002 Control Unit are located on the Power Supply Board. There are a total of seven fuses on this board, each covered by a plastic shield protector. The shield may be removed by using a small screwdriver to gently loosen the spring clips at the ends of each fuse holder. There are five 2 amp (PN 113313) and two 6.3 amp (PN 104117) fuses located on the board.

Designation	Amperage	Function
SI 1	6.3A	24VDC and 55VDC for Drive Output
SI 2	6.3A	24VDC and 55VDC for Drive Output
SI 3	2A	170VDC for Drive Output
SI 4	2A	170VDC for Drive Output
SI 5	2A	24VDC for Encoders, Triggers and Pressure Control and 5VDC Microprocessor Control
SI 6	2A	AC Input Voltage
SI 7	2A	AC Input Voltage

7.2.5 Remote Purge Control Board Option (28.11101.602)

The Remote Purge Control (28.11101.602) provides control of the purge function from a distance up to 10M (33 ft.) from the Operator Interface Unit when used with the DY2002 Pattern Control. This is normally a factory-installed option consisting of a PC Board with ribbon cable that is installed inside the DY2002, a hand-held purge control box and a ten meter (33 ft.) cable to connect the purge control box to the DY2002. See the chapter on Installation for more details on purge control box connection.



7.2.6 RS485 Connector and Jumpers

The Remote Purge Option board has two 9-pin “D” connectors mounted on it; one marked “485” and one marked “232”. The connector marked “485” is the one to be used with this option. Likewise, there are two jumpers immediately behind the “485” connector. These should both be bridged (jumper) for the indicated “485” setting.

7.2.7 Ribbon Cable Connection

The ribbon cable supplied with the Remote Purge Option is connected to the board on one end and the STRS485RMC connection on the back of the Control Unit front panel on the other end.

7.3 Programming Log

Make photocopies of this log, as necessary.

Program #:

Operator Menus

Pattern

Channel	Delay 1 Glue	Delay 2 Glue		Delay 3 Glue		Delay 4 Glue	
1							
2							

Offset

Channel	Offset
1	
2	

Pressure

Minimum	
Maximum	
Purge	

Dots:

Channel	Repeat	Glue
1		
2		

Stitch:

Channel	Glue	Gap	Event(s)
1			
2			

Compensation:

Channel	ON Comp.	OFF Comp.
1		
2		

Service Settings Menus**Hot/Cold**

MOTOR SPEED or PRESSURE (circle one)

Speed Setup

GLUE STARTS ABOVE: _____

GLUE STOPS BELOW: _____

MAXIMUM SPEED: _____

Encoder Setup

INCH or METER (circle one)

SCALING: _____

STOP CONFIGURATION:

Channel	Not Finish/ Finish
1	
2	

Channel Setup

CHANNEL MODE

Channel	Mode
1	
2	

SPIKE VOLTAGE

Channel	Voltage
1	
2	

SPIKE DURATION

Channel	Time
1	
2	

Trigger Setup A

CHANNEL : TRIGGER

Channel	Trigger
1	
2	

TRIGGER LOCK

Channel	Lock
1	
2	

REPEAT

Channel	Sngl/Rpt
1	
2	

Trigger Setup B

Trigger	NPN/PNP
1	
2	

Pressure Setup

0-10VDC or 4-20mA (circle one)

Palletizing IN1

START WITH GLUE or START WITH PASS (circle one)

GLUE COUNT: _____ PASS COUNT: _____

Palletizing IN2

START WITH GLUE or START WITH PASS (circle one)

GLUE COUNT: _____ PASS COUNT: _____

Relay Setup

RELAY 1: ZERO SPEED or ALARM (circle one)

MACHINE CONTACT: NORMALLY OPEN or NORMALLY CLOSED (circle one)

Security Setup

SERVICE MENU ACCESS CODE: _____

OPERATOR MENU: LOCKED or UNLOCKED (circle one)

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ITW Dynatec Service Parts and Technical Service:

AMERICAS	EUROPE, MIDDLE EAST & AFRICA	ASIA PACIFIC	
ITW Dynatec 31 Volunteer Drive Hendersonville, TN 37075 USA Tel. +1.615.824.3634 info@itwdynatec.com service@itwdynatec.com	ITW Dynatec Industriestrasse 28 40822 Mettmann Germany Tel. +49.2104.915.0 info@itwdynatec.de service@itwdynatec.de	ITW Dynatec No.2 Anzhi Street SIP, Suzhou, 215122 China Tel. +86.512.6289.0620 info@itwdynatec.cn service@itwdynatec.cn	ITW Dynatec Tsukimura Building 5th Floor 26-11, Nishikamata 7-chome Ota-ku, Tokyo 144-0051, Japan Tel. +81.3.5703.5501 info@itwdynatec.co.jp service@itwdynatec.co.jp