

User
Manual

SmartPAC PRO Servo

*Wintriss® Press Automation Control
1147100
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Tech Support Hotline 800-586-8324 8-5 EST



Wintriss Controls Group, LLC
100 Discovery Way
Unit 110
Acton MA 01720 USA
Phone (800) 586-8324
Fax (978) 263-2048

PRINTED IN USA

www.wintriss.com

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HOW TO USE THIS MANUAL

This manual shows you how to install, set up, program, operate, and troubleshoot SmartPAC PRO Servo, including the standard ProCamPAC and optional DiProPAC modules.

Chapter 1 provides an overview of the operation and features of SmartPAC PRO Servo.

Chapter 2 shows you how to install SmartPAC PRO Servo.

Chapter 3 shows you how to use the SmartPAC PRO displays.

Chapter 4 shows you how to use SmartPAC PRO Servo in Initialization mode, which is the mode you select to make settings that apply to SmartPAC PRO Servo operation for all tools.

Chapter 5 shows you how to use SmartPAC PRO Servo in Program mode, which is the mode you select to program settings that apply to SmartPAC PRO Servo operation for individual tools.

Chapter 6 shows you how to use SmartPAC PRO Servo in Run mode, which is the mode you select to run the press and make minor adjustments to programmed settings.

Chapter 7 provides explanations of the messages that display on the SmartPAC PRO front panel when a fault condition occurs or a counter preset is reached, and shows you how to correct SmartPAC PRO Servo faults.

Appendix A shows you how to install a Balluff linear sensor.

The Glossary provides definitions of some of the terms used in the manual that may be unfamiliar to you.

Setup sheets at the end of the manual provide forms on which you can maintain a record of Initialization and Program settings for your SmartPAC PRO Servo.

Wiring diagrams (Figures 1 through 8) following the Setup sheets provide wiring connections for SmartPAC PRO Servo, DiProPAC, ProCamPAC, and the SmartPAC PRO loopback test.

Important Highlighted Information

Important danger, warning, caution and notice information is highlighted throughout the manual as follows:

DANGER

A DANGER symbol indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

WARNING

A WARNING symbol indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION

A CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in property damage.

NOTICE

A NOTICE symbol indicates important information that you should remember, including tips to aid you in performance of your job.

WARRANTY

Wintriss Controls warrants that Wintriss electronic controls are free from defects in material and workmanship under normal use and service for a period of one year (two years for Shadow light curtains) from date of shipment. All software products (SFC), electro-mechanical assemblies, and sensors are warranted to be free from defects in material and workmanship under normal use and service for a period of 90 days from date of shipment. Wintriss's obligations under this warranty are limited to repairing or replacing, at its discretion and at its factory or facility, any products which shall, within the applicable period after shipment, be returned to Wintriss Controls freight prepaid and which are, after examination, disclosed to the satisfaction of Wintriss to be defective. This warranty shall not apply to any equipment which has been subjected to improper installation, misuse, misapplication, negligence, accident, or unauthorized modification. The provisions of this warranty do not extend the original warranty of any product which has either been repaired or replaced by Wintriss Controls. No other warranty is expressed or implied. Wintriss accepts no liability for damages, including any anticipated or lost profits, incidental damages, consequential damages, costs, time charges, or other losses incurred in connection with the purchase, installation, repair or operation of our products, or any part thereof.

Please note:

It is solely the user's responsibility to properly install and maintain Wintriss controls and equipment. Wintriss Controls manufactures its products to meet stringent specifications and cannot assume responsibility for consequences arising from their misuse.

Wintriss Controls Group, LLC
100 Discovery Way
Unit 110
Acton, MA 01720
Telephone: (800) 586-TECH (8324)
(978) 268-2700
Fax: (978) 263-2048
Internet: <http://www.wintriss.com>

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Chapter 1 – Introduction

SmartPAC PRO Servo is a smart modular interface for multiple press automation functions. With the same user interface as SmartPAC PRO, which is widely used on standard mechanical presses, SmartPAC PRO Servo tracks the position of the ram using a linear transducer instead of a resolver. “Ram Position” settings for top and bottom linear position (see page 154) determine the stroke length for each tool, which is converted to 0° to 180° for the downstroke and 181° to 359° for the upstroke. Ram Position must be programmed properly for SmartPAC PRO Servo to work correctly.

CAUTION

Some Servo presses are capable of hitting the same part more than once at Bottom Dead Center (BDC) before returning to the top of the stroke. You will have to note the angle ranges at which repeated strokes occur. Any cams programmed within these ranges will actuate once for each hit. Die protection ready signals programmed within these ranges will expect sensor actuation once for each hit. If this is not feasible, please contact Wintriss Tech. Support to learn about new advanced features.

Failure to comply with these instructions could result in property damage.

NOTICE

If this is a retrofit, do not disconnect existing linear and pressure sensors from your control. Installation instructions. Identify the old inputs from which sensors are disconnected and the new inputs to which they are connected.

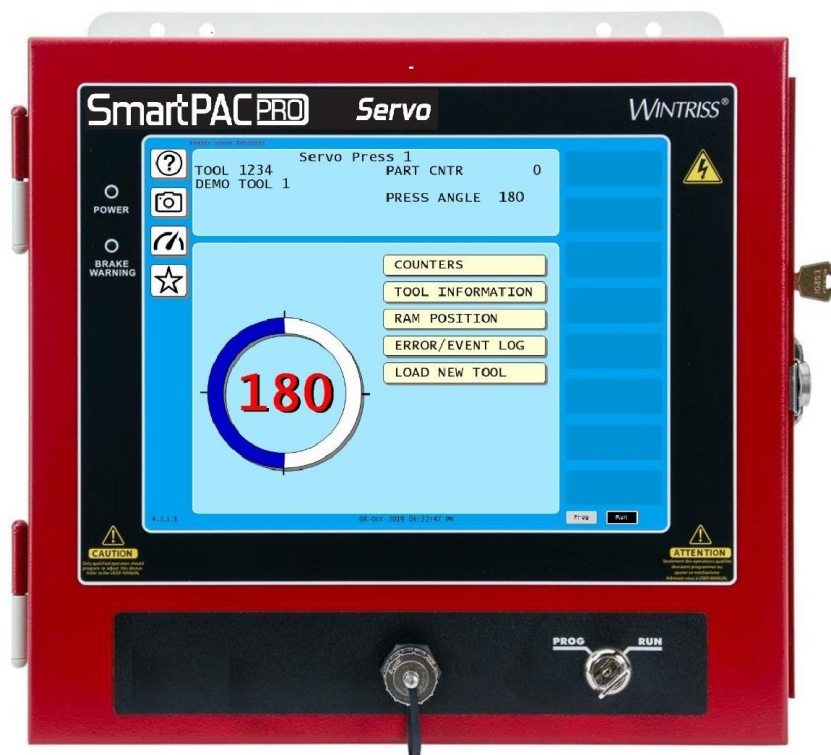


Figure 1-1. SmartPAC PRO Servo Front Panel

Every SmartPAC PRO Servo provides a magnetostrictive position transducer, eight-channel programmable cam switch, and extensive counter capabilities. SmartPAC PRO Servo can make instantaneous decisions for up to 8 cams (15 cams with the ProCamPAC 15 Linear board option) and for up to 32 sensors if DiProPAC is installed. Because SmartPAC PRO Servo is microprocessor-based, it can monitor or control all these different functions during a press stroke. Additionally, it saves these settings for up to 2000 tools.

Programming and operation of SmartPAC PRO Servo are accomplished via its front panel, Figure 1-1. This includes a color liquid crystal (LCD) touch display and the Program/Run key switch. Detailed instructions on how to use the display are provided in Chapter 3.

SmartPAC PRO Servo can be connected to a computer network, enabling press operation to be monitored remotely and e-mail messages to be sent from the SmartPAC PRO Servo control.

SmartPAC PRO Servo can be configured with the following options:

- Up to 32-sensor die protection system
- Up to 16-channel programmable cam switch
- Up to 32-sensor in-die measurement system
- Solid-state dual-microprocessor-based clutch/brake control
- Two- or four-input load monitoring
- Automated shut-height and counterbalance control
- Automated press speed and lubrication control
- Servofeed interface

In addition, SmartPAC PRO Servo can be linked to Wintriss's ShopFloorConnect Asset Utilization Software (SFC) for data collection, analysis and reporting.

SmartPAC PRO Servo Standard Features

SmartPAC PRO Servo brings a multitude of press automation functions to one central location. The following capabilities are standard features:

- All settings are made at the operator console, using SmartPAC PRO's large, bright, color touch screen.
- All tool programming is automatically saved in SmartPAC PRO's non-volatile memory. To use the same settings when you run the job again, simply re-load your stored tool number. SmartPAC PRO Servo can save settings for 2000 tools.
- SmartPAC PRO Servo's programmable cam switch provides cam timings for feeder signals and other press equipment, including global cams for press operation functions and multiple on-off cycles.
- Fault messages appear on the SmartPAC PRO display whenever the press malfunctions or counter presets are reached. An error/event log maintains a record of the last 100 errors and events.
- SmartPAC PRO Servo is Ethernet-ready, allowing the control to be connected to any computer network. Network connectivity allows press operations to be viewed remotely via the SmartView utility and e-mail messages, containing diagnostics and error log information, to be sent from the SmartPAC PRO.

- SmartPAC PRO Servo upgrades and enhancements can be installed quickly and easily. Upgrades can be either downloaded from a Wintriss web site via an email with a link or mailed to you on a USB disk.

SmartPAC PRO Servo Options

When configured with the DiProPAC option, SmartPAC PRO Servo can monitor up to 32 die protection sensors, allowing detection of malfunctions such as stock buckling, misfeeds, and improper part ejection.

Info Center, another SmartPAC PRO Servo option, enables die setup sheets and other plant-specific press information to be displayed on the SmartPAC PRO screen. This option allows you to store information needed throughout the plant on a central server, where it is available to operators via SmartPAC PRO's Ethernet connectivity. In order to make use of Info Center functionality, SmartView must be installed. Documentation of the Info Center option is available at www.smartpac2.com/SmartView/InfoCenterSetupHelp.htm

SmartPAC PRO Servo Operation

SmartPAC PRO Servo is connected to a magnetostrictive linear transducer mounted on the press, which reads the ram position. As the transducer moves up and down, its signals are interpreted by SmartPAC PRO Servo's electronics to determine the correct ram angle at every point in the stroke. SmartPAC PRO Servo converts the signal from the transducer at any point in its linear motion to a number corresponding to the position of the transducer (and ram) in degrees.

SmartPAC PRO Servo Settings

You can make the following settings, on the SmartPAC PRO keyboard:

- **Assign tool numbers.** Settings for each tool are stored by tool number, which you assign to identify and access the tool when you want to program or load it. You specify in Initialization mode whether to use numeric or alphanumeric tool numbers in programming.
- **Load settings by tool number.** SmartPAC PRO saves all counter, cam switch, sensor (if DiProPAC is installed), and other press settings in its electronic memory. To use tool settings again, you recall them by selecting the tool number from the Tool Manager display. SmartPAC PRO retains tool settings even when the power is off.
- **Record tool information for each tool number.** With this option you can record up to 30 characters of information, such as installation notes, for each tool.
- **Protect settings with lockout and optional password security.** Using SmartPAC PRO's Security Access Menu in Initialization mode, you can lock many of the settings in Run mode, preventing anyone without access to the Program/Run key from altering Run settings. You can also require that the user enter a password in order to change settings. To prevent unauthorized changes to SmartPAC PRO Servo setup, you can require a special password for access to the Main Initialization Menu.
- **Set counters.** SmartPAC PRO provides counters to keep track of the number of strokes made by the press during each job, the number of good parts produced, and other desired statistical information. The stroke counter increments at each press cycle. The good parts counter increments only when the die protection or tonnage monitoring option does not generate a fault.

Three batch counters can be set to either top-stop the press or signal programmable limit switch (PLS) outputs when their presets are reached. The total hits counter counts all hits on a tool, and keeps track of the last recorded number for the previous job. With the optional Advanced counter mode, you can set the good parts counter to give an accurate parts count when multiple parts are produced on each stroke or when multiple strokes are required to produce one part.

- **Reset SmartPAC PRO.** You reset SmartPAC PRO whenever the press is stopped because of a malfunction. The malfunction is described in a fault message, which displays on the SmartPAC PRO Servo front panel when the fault occurs, making it easy to troubleshoot the problem. See Chapter 7 for documentation of fault messages.
- **Review recent errors.** SmartPAC PRO's Error/Event Log feature displays the 100 most recent errors and events that have occurred at the press. Errors (i.e., incidents that cause the press to stop) are shown along with the stroke count and ram angle at which the error occurred. Events, such as tool changes, are displayed with the date, time, and stroke count. The Error Log is accessible from the Main Run Menu.
- **Set timing for sensor inputs (DiProPAC Only).** You can specify the portion of the stroke during which you want installed sensors to monitor press operation. Up to 32 sensors can be programmed, allowing detection of malfunctions such as stock buckling, misfeeds, die overload, and improper part ejection.

Sensors Available for DiProPAC

DiProPAC, the SmartPAC PRO die protection option, checks output from sensors monitoring the die and sends a stop signal to the press when it detects a malfunction. Sensors can be mounted on the press or die.

Any electro-mechanical sensor can be used with SmartPAC PRO Servo as long as it can switch between an open state (i.e., sensor circuit to SmartPAC PRO open) and a closed state (i.e., sensor circuit closed to ground or "grounded"). All types of NPN electronic sensors (e.g., proximity, photoelectric, and fiberoptic sensors) can be used as can simple contact sensors and probes. If you have questions about whether a certain sensor will work with SmartPAC PRO Servo, contact Wintriss Controls.

Wintriss offers a wide range of sensors. Those that can be used with SmartPAC PRO Servo with DiProPAC are shown below. Detailed application information is available. Many sensors made by other manufacturers can also be used.

- **Miniature fiberoptic photoelectric sensors**—Thru-beam and reflective types are available with adjustable sensitivity and the capability to detect objects as small as .0006 in. (.015 mm). Require 12 to 24 Vdc power source.
- **Proximity sensors**—Miniature electronic sensors that detect metal objects passing in front of the sensor barrel. These sensors have no moving parts and are not affected by water or oil. Require 12 to 24 Vdc power source.
- **Misfeed detectors**—Designed to monitor non-working, spring-loaded pilot punch position, stripper position, or other material location applications.
- **Short feed sensors**—Used to ensure that material is contacted at the fully advanced position.
- **Overload sensors**—Used to prevent expensive die damage due to overload from slugging, material thickness variations, broken tooling, etc.
- **Die overload sensors**—Designed to detect minor changes in shut height.

- **Buckling sensor**—Used to detect material buckle.
- **End of material sensor**—Signals when material has run out.
- **Probes**—Three types are available for diverse applications.

Programmable Cam Channels

DANGER

PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC PRO Servo's programmable cam switch to control auxiliary functions only. The SmartPAC PRO Servo programmable cam capability should never be used to provide timing signals for any safety use including muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

With SmartPAC PRO Servo you received a separate assembly for wiring up to eight cam channels to your equipment. (If you ordered the ProCamPAC 15 Linear option, you received equipment that enables you to wire up to 15 channels.) The assembly contains the relays that open and close on signals from SmartPAC PRO Servo to turn your equipment on and off.

Different types of relays can be used depending upon the voltages of your equipment and your special needs. Refer to Chapter 2 for details on wiring the cam channels.

SmartPAC PRO Servo's Three Modes of Operation

SmartPAC PRO Servo has three operating modes, each of which allows you to perform specific tasks.

- **Initialization Mode.** Used to create settings (e.g., linear sensor, global cams) that control operation of SmartPAC PRO Servo when any tool is loaded. Initialization settings generally only need to be made once. Initialization mode is discussed in detail in Chapter 4.
- **Program Mode.** Used to create, modify, and load settings (e.g., sensor and cam timing, counter presets) that control SmartPAC PRO Servo operation for a specific tool. You cannot use this mode while the press is running. Instructions for using Program Mode are provided in Chapter 5.
- **Run Mode.** Used to operate the press and make adjustments to programmed settings such as sensor and cam timing. You can also load tool settings in Run mode. discussed in Chapter 6.

SmartPAC PRO Servo Specifications

Table 1-1. Specifications

| | |
|-----------------------------|--|
| Equipment | <p>Main enclosure: 14.1 x 13.1 x 5.3 in (358 x 333 x 134 mm), NEMA 12, shock mounted. Weight 19.3 lb</p> <p>Panel mount: 13.7 x 12.8 in (348 x 324 mm)</p> <p>MTS linear position transducer: Magnetostrictive; electrical stroke 6 to 48 in. in 6-in. increments, 2.1 x 2.7 in., overall length 8.8 in. plus electrical stroke</p> |
| Electrical | <p>Input: 115/230 \pm 10% Vac 50/60 Hz 30VA Or 24Vdc \pm 15% 37W</p> <p>When installed, this equipment shall have in close proximity and easily accessible, a switch or circuit breaker marked as the disconnect switch.</p> |
| Operating Conditions | <p>Temperature 32 to 122 °F (0 to 50 °C)</p> <p>Relative humidity: Indoor factory conditions</p> <p>Altitude 6562 ft (2000 m)</p> |
| Speed | 300 SPM maximum |
| Accuracy | $\pm 2/3^\circ$ |
| Counters | <p>Good parts, strokes, 3 batch with presets (7 digits)</p> <p>Number-of-hits-on-tool counter: counts all hits on tool; resettable to 0 after maintenance</p> |
| Display | 12.1 in (307 mm) color active matrix TFT liquid crystal display (LCD), Power LED, Brake Warning LED |
| Memory | Allows storage of settings for 2000+ tools |
| Inputs/Outputs | <p>Inputs for position transducer, remote reset, and setup mode and for USB, PS/2 and Ethernet RJ-45 connectors</p> <p>Outputs for top stop, emergency stop: ratings 0-4 A resistive @ 120V max (AC or DC); Normally open–Held closed. Fault condition or power off opens relay(s)</p> |
| Communications | Connects via Ethernet to local area network; data viewed via the internet using SmartView remote viewing utility; allows backup of programmed tool settings to a network drive. |
| Standard Features | <p>ProCamPAC provides up to 8 programmable cam switch output channels (up to 15 channels with ProCamPAC 15 option) Programmable cam output assembly: NEMA 12, holds up to 8 outputs</p> <p>Enclosure: 9 x 11 x 3.5 in. (229 x 279 x 89 mm) shock-mounted Relay SPDT 0-3 A resistive @ 240V</p> <p>DC solid state SPST 2A @ 5-60 Vdc</p> <p>AC solid state SPST 1A @ 70-250 Vac</p> |

| | |
|--|---|
| Options | <p>DiProPAC provides up to 32 die protection sensor inputs</p> <p>Power for electronic sensors (NPN only): 15 Vdc min., 100 mA total</p> <p>DiPro Sensor Interface, DSI 2*: 5.88 x 5.41 x 3.42 in. (149 x 137 x 87 mm)</p> <p>DiProPAC sensor-disabled output: open collector, 8 mA max.</p> <p>AutoSetPAC* 10.25 x 12 x 4 in. (260 x 305 x 102 mm)</p> <p>2 or 4 strain link inputs</p> <p>Ability to store high, low, and repeatability setpoints with tool number</p> <p>Displays, adjusts, recalculates “auto” setpoints and displays actual load</p> <p>Displays and saves load signatures</p> <p>SFI* ServoFeed Interface integrates servofeed</p> <p>RamPAC* 10.25 x 12 x 4 in. (260 x 305 x 102 mm)</p> <p>Automatically sets shut height and counterbalance and cushion pressures</p> <p>USB Disk Backup Enables backup of programmed tool settings to USB disk</p> <p>Info Center With this option Setup sheets and other press information stored on a central server can be displayed on networked SmartPAC PRO Servos</p> <p>Multilingual* menus</p> <p>Preventive Maintenance (PM) Monitor Tracks selected press functions requiring scheduled maintenance and alerts the user when maintenance is due</p> <p>PLC Interface Enables SmartPAC PRO Servo to transmit additional tool settings to a Programmable Logic Controller for press automation and auxiliary functions</p> <p>ShopFloorConnect Asset Utilization Software (SFC) provides capability for production information from SmartPAC PRO Servo to be downloaded to SFC data collection software for generation of OEE and other reports. Requires purchase of SFC software.</p> <p>3rd Party Comms This option allows SmartPAC PRO Servo to transmit real-time and status information to external software for reporting and other tasks</p> |
| <p>* Consult product user manual. DSI 2: #1121900; AutoSetPAC: #1101600; SFI: #1102500; RamPAC: #1115200; Bilingual (English/Spanish): #1130600.</p> | |

Chapter 2 – Installation

⚠ DANGER

ELECTRIC SHOCK OR HAZARDOUS ENERGY

Disconnect main power before installation.

- Remove all power to the press, press control, and other equipment used with the press.
- Remove all fuses and “tag out” per OSHA 1910.147 Control of Hazardous Energy (Lockout/Tagout).
- Ensure that installation is performed by qualified personnel.
- Complete all installation procedures before connecting to the AC power source.

Failure to comply with these instructions will result in death or serious injury.

⚠ DANGER

PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC PRO Servo’s programmable cam switch to control auxiliary functions only. The SmartPAC PRO programmable cam capability should never be used to provide timing signals for any safety use including muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

NOTICE

OPTIONAL DIPROPAC MODULE INCLUDED IN MANUAL

When you order your SmartPAC PRO Servo, you may include the DiProPAC die protection option. This manual includes instructions for installing and using this option. Remember that it is an option and might not be included in your system.

If you ordered SmartPAC PRO Servo with other optional modules such as AutoSetPAC load monitor or RamPAC shut height, counterbalance, and cushion control, refer to the user manual for that option for complete details on its installation and use.

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Before You Start

NOTICE

READ INSTALLATION INSTRUCTIONS BEFORE STARTING INSTALLATION

If you install SmartPAC PRO Servo yourself, read this installation chapter carefully, plan your installation, and figure out what steps you will follow before you start drilling holes, running conduit, or cutting wires.

NOTICE

LEARN TO USE SMARTPAC PRO SERVO BEFORE INSTALLING ON A PRESS

If you have not used SmartPAC PRO Servo before, learn how to initialize and program it before installing it on a press. On the bench, wire the linear transducer to SmartPAC PRO Servo (see page 37), connect the transducer to a DC power source (see page 39), and wire AC power (see page 40). You can then access all the menus and make settings. See Chapter 3 for instructions on using the display and making settings, Chapter 4 for using Initialization mode, Chapter 5 for using Program mode, and Chapter 6 for using Run mode.

This chapter describes how to install SmartPAC PRO Servo and some of its options.

Installation Guidelines

Observe the following guidelines when installing SmartPAC PRO Servo, referring to Figure 2-1, page 30 when necessary.

- Separate high- and low-voltage wires

Never run wires for 120V and for lower voltages (e.g., 24V, 60V) inside the same conduit. Run flexible, liquid-tight conduit for high voltage lines (120V power, relay circuits) to the upper right-hand corner of the SmartPAC PRO Servo enclosure. Run one or two low voltage conduits for the transducer and communications control wires into the lower left-hand corner of SmartPAC PRO Servo. If you have top-stop and emergency-stop circuits that are 24V or a voltage other than 120V, you must run them separately from the high-voltage wiring.

The AC power supply wires to SmartPAC PRO Servo should be run separately from the DC control wires going to the ProCamPAC Output Assembly. Never use the SmartPAC PRO Servo power terminals as a junction point to provide power for external devices. In most cases, the AC power supply wires should be connected directly to the press control cabinet. Do not use the ProCam output enclosure as a junction box for the AC control wires. Provide a separate junction box for this purpose.

Communications wiring should be run separately in its own conduit. Communications wiring will be installed if SmartPAC PRO Servo is connected to a ServoFeed Interface (SFI™), AutoSetPAC, RamPAC, SFC, or other equipment.

- Provide NEMA 12 conduit and connections

Because SmartPAC PRO Servo is rated NEMA 12 (i.e., protected against dust and oil), you must use conduit of the same rating and make proper connections to ensure that the enclosure is NEMA-12-protected.

- Properly ground SmartPAC PRO Servo

The ground wire from SmartPAC PRO Servo should be connected to the main ground point of the press control system. This ground point may be in the area where the control transformer is grounded. Finding a good place for a ground is sometimes difficult, but the location should be close to where the press receives its ground.

- Correctly terminate all cable shields

Terminate all cable shields to the studs provided in the enclosure or to a good grounding location (see *Terminating Cable Shields*, page 31).

- Install suppressors across inductive loads

All relays, solenoids, or other inductive loads that are controlled by SmartPAC PRO Servo must be suppressed. Suppressors should be installed across the load and as close to the load as possible. See Figure 2-17, page 54. Never install a suppressor across relay contacts. If you do, the suppressor may fail shorted, and the equipment controlled by that relay will remain energized. Additional suppressors (part number 2238801) can be obtained from Wintriss Controls.

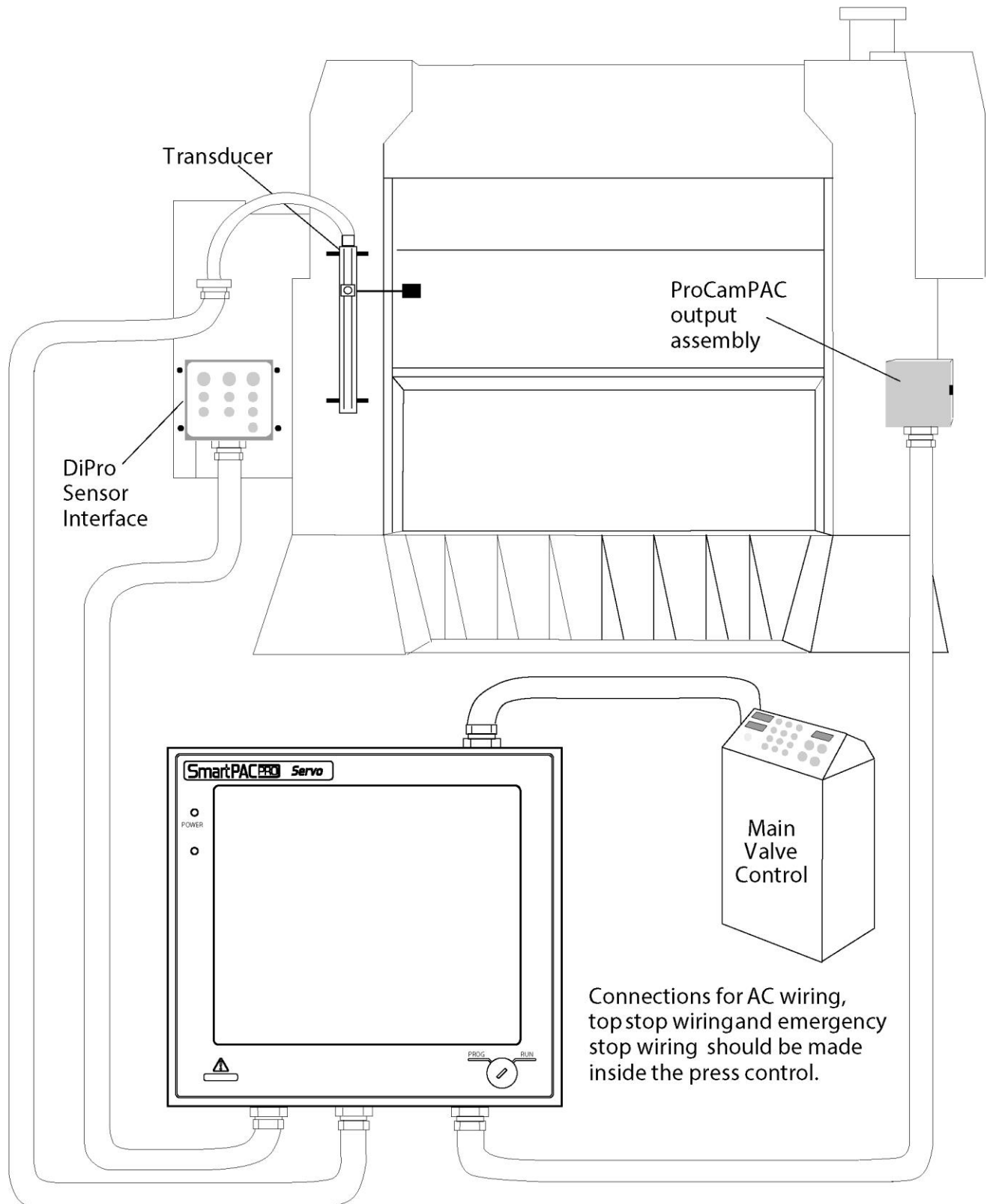


Figure 2-1. Installation Overview

Terminating Cable Shields

NOTICE

TERMINATE CABLE SHIELDS CORRECTLY TO MINIMIZE ELECTROMAGNETIC INTERFERENCE (EMI)

Shielded cables are used with the SmartPAC PRO Servo. For effective shielding, terminate the cable shields as near as possible to the terminal block you are wiring to.

NOTICE

TERMINATE BOTH ENDS OF SHIELD

Be sure to terminate cable shields at both ends (for example, at SmartPAC PRO Servo and DSI 2).

For each shielded cable, perform the following steps.

1. Strip the cable jacket back about 3 inches.
2. You can terminate the shield braid or drain wire to either a chassis ground stud or under the screw on a PC board standoff. Find one of these as close as possible to the terminal block you are wiring.
3. Connect the shield drain wire or braid to the chassis ground stud or beneath the screw in the PC board standoff.
4. Connect the insulated wires to their designated positions on the terminal block.

Checking the Press

NOTICE

MOVE RAM TO TDC BEFORE INSTALLING SMARTPAC PRO SERVO

This is an important step. Be accurate when setting the press to TDC. Set to $0^\circ \pm 2^\circ$. Use a dial indicator on the face of the ram if necessary.

Before starting the installation, remove the die from the press and run the press in all its operating modes—Inch, Single-stroke, and Continuous. Make sure the press has working top-stop and emergency-stop circuits. Verification that the press operates and stops properly is extremely important because SmartPAC PRO Servo will be connected to the press stop circuits. Do not forget to mark on your electrical prints where you connect SmartPAC PRO Servo. Move the press ram to its programmed Upper Limit (see page 154).

Mounting the SmartPAC PRO Servo Control Enclosure

NOTICE

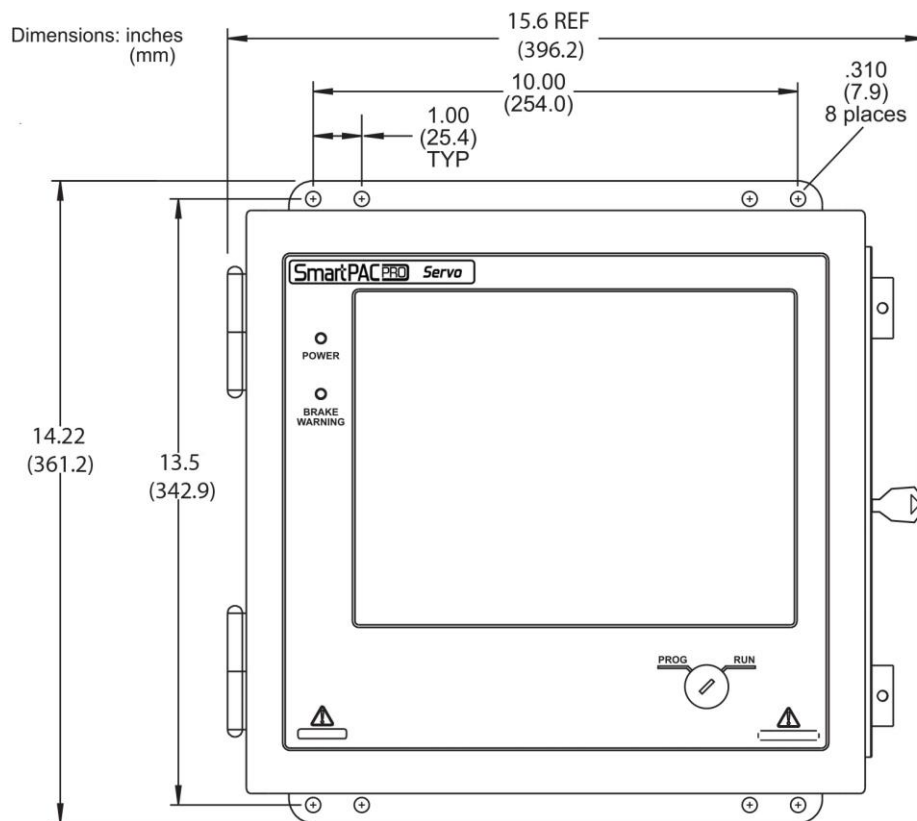
If your SmartPAC PRO Servo is a panel mount version, for mounting instructions go to the next section, *Installing SmartPAC PRO Servo as a Panel Mount*, page 33.

NOTICE

PLACE SMARTPAC PRO SERVO AT A CONVENIENT HEIGHT

SmartPAC PRO Servo should be installed at a convenient height for all users. Ideally, the top edge of the unit should be approximately at chin level. Experiment to determine a good height for all users before mounting.

To mount the SmartPAC PRO Servo enclosure, follow the steps below, referring to Figure 2-2.



Enclosure depth approx. 5.5 inches (140 mm). However, you must allow clearance of approximately 18 inches (460 mm) from mounting surface to fully open the enclosure's door.

Figure 2-2. SmartPAC PRO Servo Mounting Dimensions

1. Determine a convenient location for the enclosure. Ideally, the enclosure should be mounted where operators and setup personnel can easily see the readouts and reach the keyboard. Make sure that all cables can reach the enclosure. Leave enough room to open the door at least 120°. The enclosure can be mounted on a pedestal, pendant, or the press itself.
2. Drill and tap (if necessary) mounting holes, using a No. 7 drill and 1/4–20 tap, then mount the enclosure, using the enclosed shock mounts. Shock mount studs are 1/4–20.

Installing SmartPAC PRO Servo as a Panel Mount

If you have received the panel-mount configuration of SmartPAC PRO Servo, follow the steps below to install the panel mount in your enclosure. The panel mount is usually installed from the outside of the enclosure. Be sure to allow at least 6 in. (152 mm) of clearance behind the panel mounting plane to leave enough room for the electronics.

1. Determine a convenient location within your enclosure or console for mounting SmartPAC PRO Servo. Ideally, SmartPAC PRO Servo should be mounted where operators and setup personnel can easily see the readouts and reach the keyboard.
2. Cut out a hole in your enclosure, and drill and tap twelve holes for #10-32 screws, referring to Figure 2-3 and Figure 2-4, below for cutout and mounting dimensions.
3. Prop the panel mount near the cutout location. You can do this by connecting ty wraps from two of the left holes on the panel to the corresponding holes on the enclosure or console, creating hinges.
4. Perform wiring connections as shown in the following sections. Make sure all cables will reach the connectors on the back of the panel mount.
5. When final checkout procedures have been completed (see *Final Checkout*, page 58), install the panel mount in your enclosure or console, using twelve #10-32 screws.

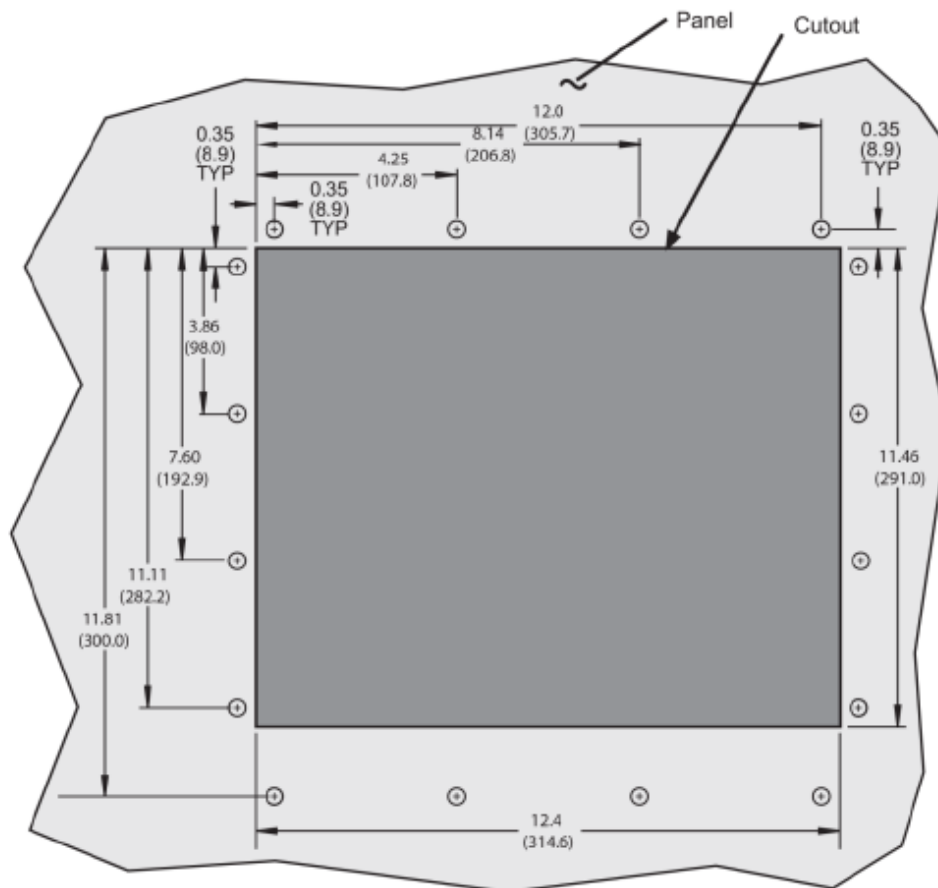


Figure 2-3. SmartPAC PRO Servo Panel Mount Cutout Dimensions

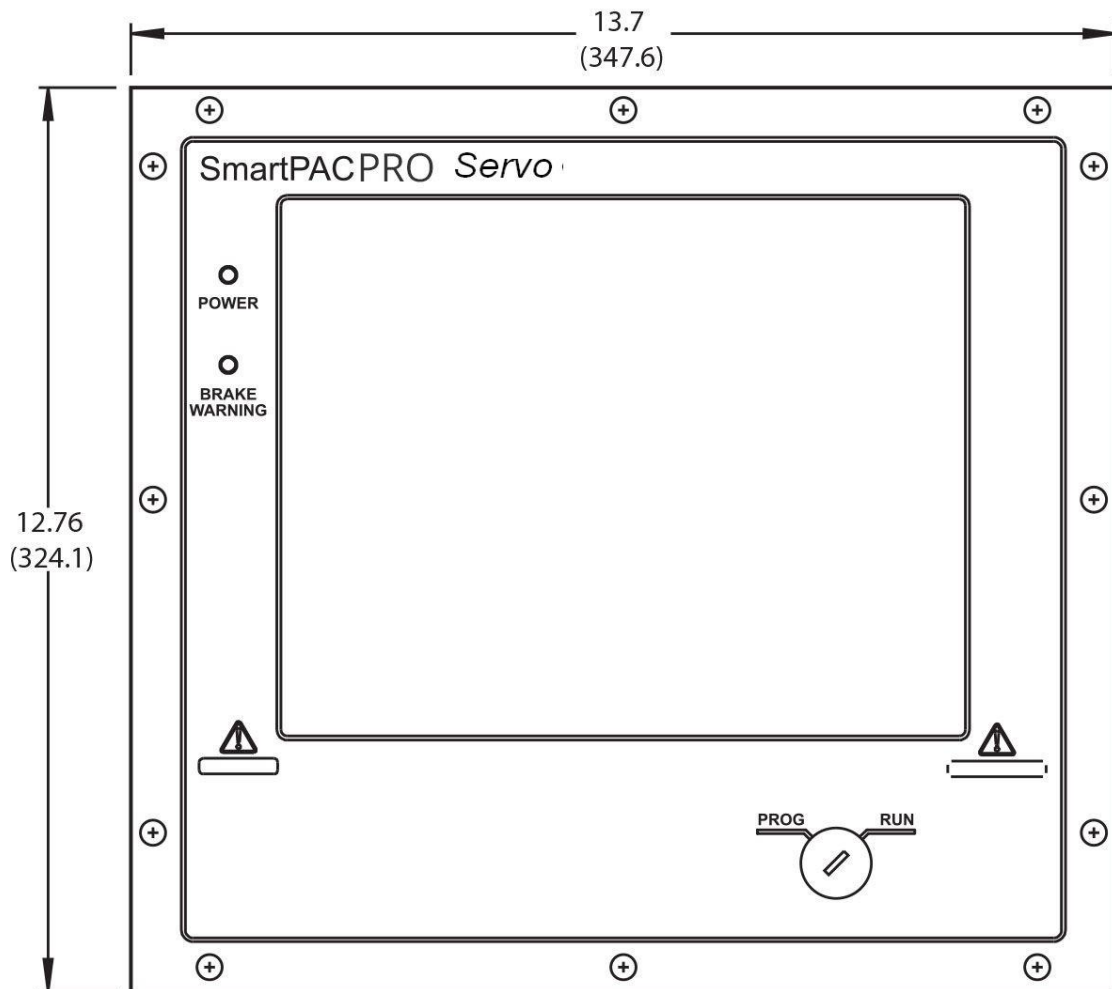


Figure 2-4. SmartPAC PRO Servo Panel Mount Dimensions

Installing SmartPAC PRO Servo with Remote HMI

The Remote HMI version of the SmartPAC Pro consists of a panel mount screen with a separate Real Time SmartPAC (RTS) board. This version reduces the amount of wiring to the HMI portion of the SmartPAC PRO.

1. Install the HMI screen by following the Installing SmartPAC PRO as a Panel Mount instructions above.
2. Select a location in a control cabinet, enclosure, or console for the RTS board. The location should offer convenient access to power, I/O, and stop circuit wiring.
3. Using the drawing in Figure 6, drill eleven clearance holes (5/32") for the 6-32 mounting screws, and mount the board using the standoffs provided.

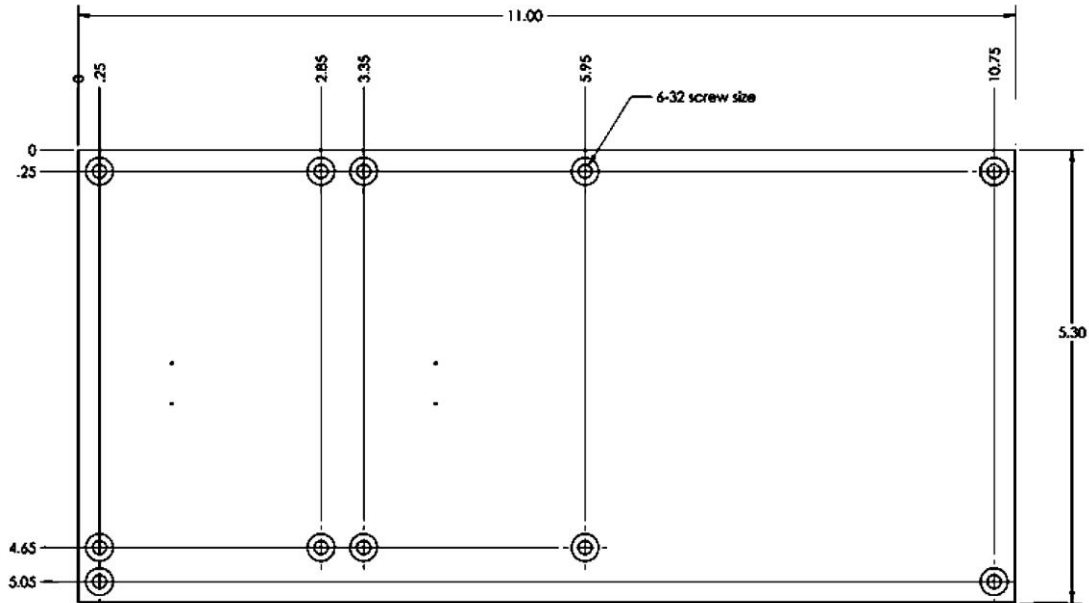


Figure 2-5. Real Time SmartPAC (RTS) Board Mounting Dimensions

Installing the MTS Linear Transducer

Make sure to install a magnetostrictive linear transducer (see page 21 for a description of transducer operation) that is at least as long as or longer than the sum of the maximum stroke length of your press and the maximum shut-height adjustment. Mount the transducer with the cable at the top.

If you have an existing Balluff transducer, refer to Appendix A for installation instructions.

CAUTION

ENSURE CORRECT TRANSDUCER INSTALLATION: MOUNT WITH CABLE UP

It is important to mount the transducer with the cable up, as shown in Figure 2-6. If the cable is facing down, the transducer will not work properly.

Failure to comply with these instructions could result in property damage.

Mounting the Transducer

NOTICE

Not all Servo presses are the same. Each installation will be different. The following installation procedure is an example.

Once you have thought out your design and gathered the parts, mount the magnetostrictive linear transducer by performing the following steps, referring to Figure 2-1, page 30, for suggested mounting location and Figure 2-5, page 35, for mounting dimensions:

1. Make sure the press is at Bottom Dead Center (BDC) and at the Lower Limit of its Shut Height adjustment.
2. Using a marking pen, mark the upper and lower limits of the area identified as the sensor's "Max. electrical stroke" in Figure 2-6.

3. Fabricate a bracket that will fit the length of the transducer and its mounting feet.
Make sure the bracket mounting holes are elongated or oval-shaped so the transducer can be moved up and down during fine-tuning of the transducer's mounting position.
4. Fabricate a second bracket to hold the sliding magnet connecting rod.
5. Mount the bracket for the transducer on the press.
6. Mount the transducer on the bracket, leaving the screws loose to allow adjustment of transducer position.
7. Mount the bracket for the magnet connecting rod on the ram.
8. Connect the magnet to the transducer by sliding it into the mating grooves from the bottom of the unit. Make sure the magnet is positioned within the transducer's electrical range (i.e., within the marks you made in step 2) and that the bump on the magnet is facing the sensor's electronics housing when the press moves up and down (see Figure 2-6). If the magnet is not positioned within the transducer's electrical range, it will not work properly.
9. Once the magnet is secure, tighten down the transducer.

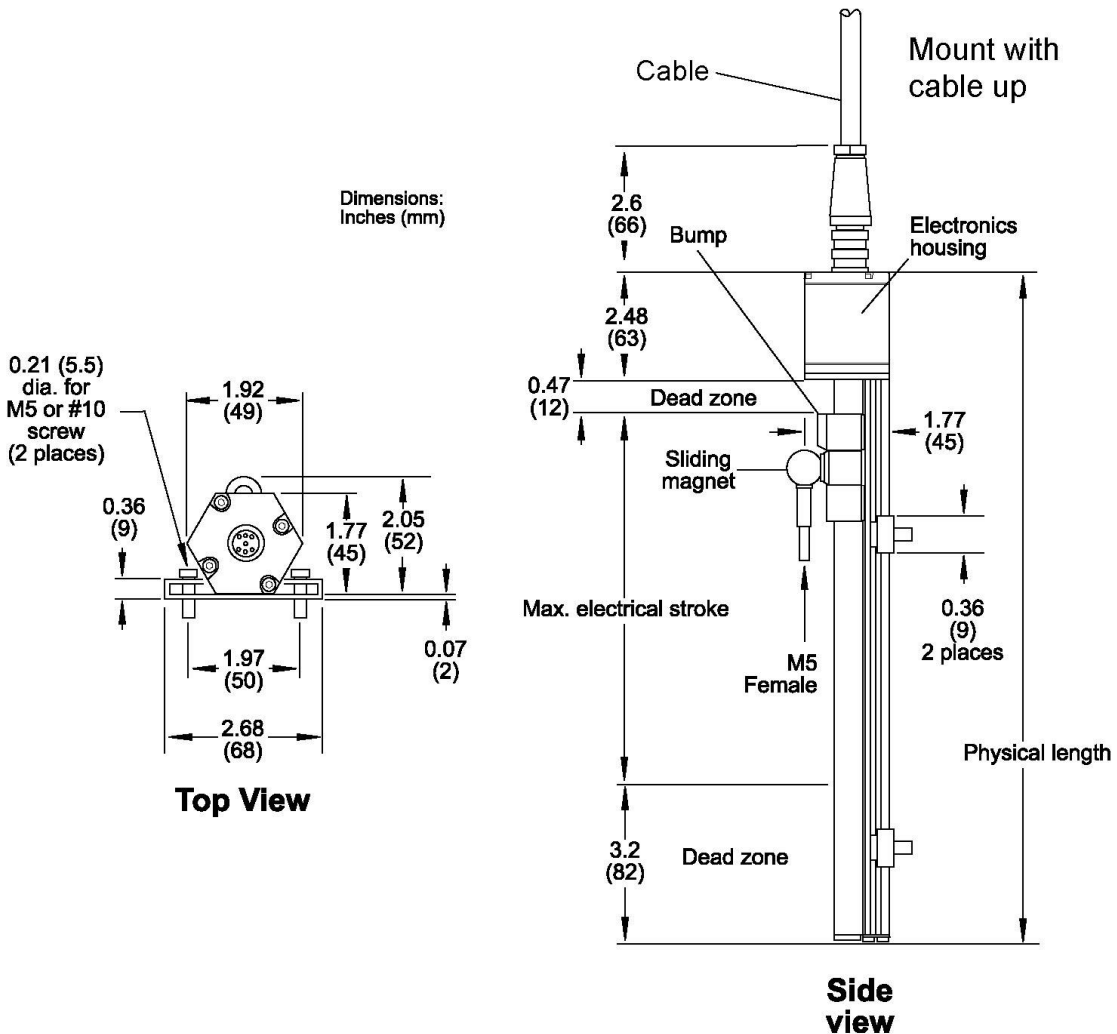


Figure 2-6. MTS Linear Transducer Dimensions

Wiring the Transducer

To wire the transducer to the SmartPAC PRO Servo board, perform the following steps:

1. Plug the connector on the transducer cable into the transducer if it is not already connected, twisting the locknut so the connection is tight. The connector plugs into the transducer only one way.
2. Run the transducer cable through 1/2-in. conduit from the transducer to one of the knockouts on the bottom left of the SmartPAC PRO Servo enclosure.
3. Measure and cut the transducer wires so they comfortably reach TB402 on the ProCamPAC board. See Figure 2-7, below, for the location of the ProCamPAC board on the SmartPAC PRO Servo board and Figure 2-8 for the location of TB402 on the ProCamPAC board.

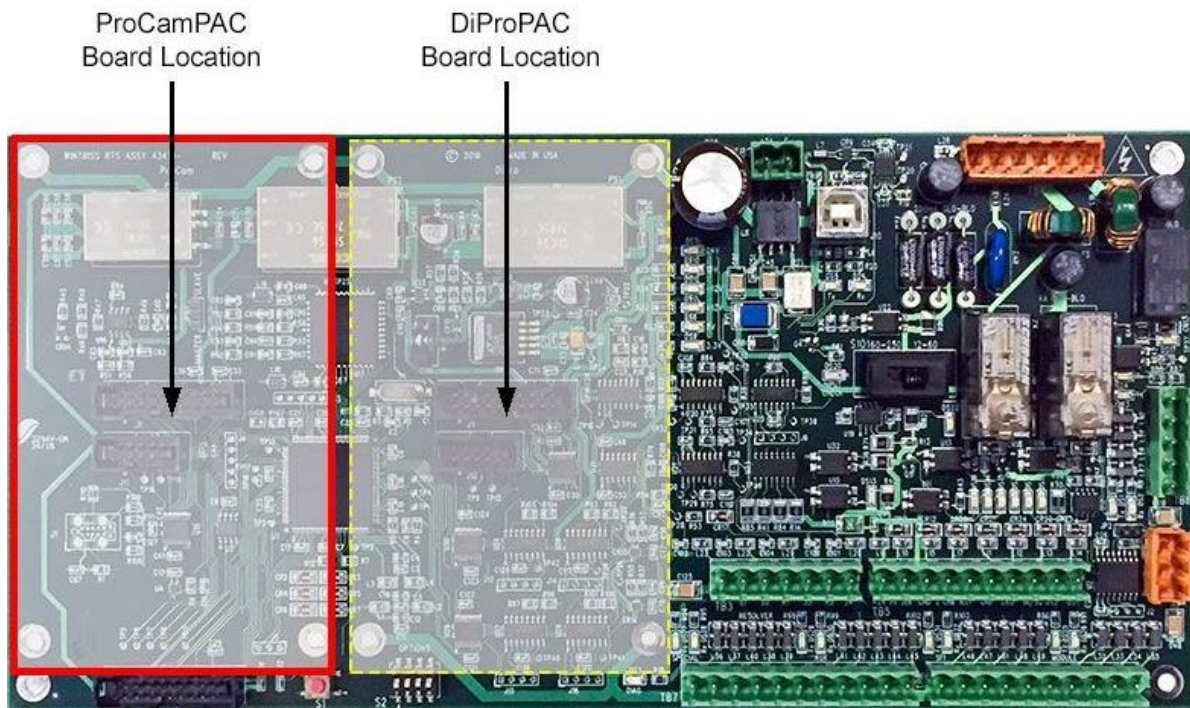


Figure 2-7. SmartPAC PRO Servo Board– ProCamPAC Board, Left, Outlined in Red

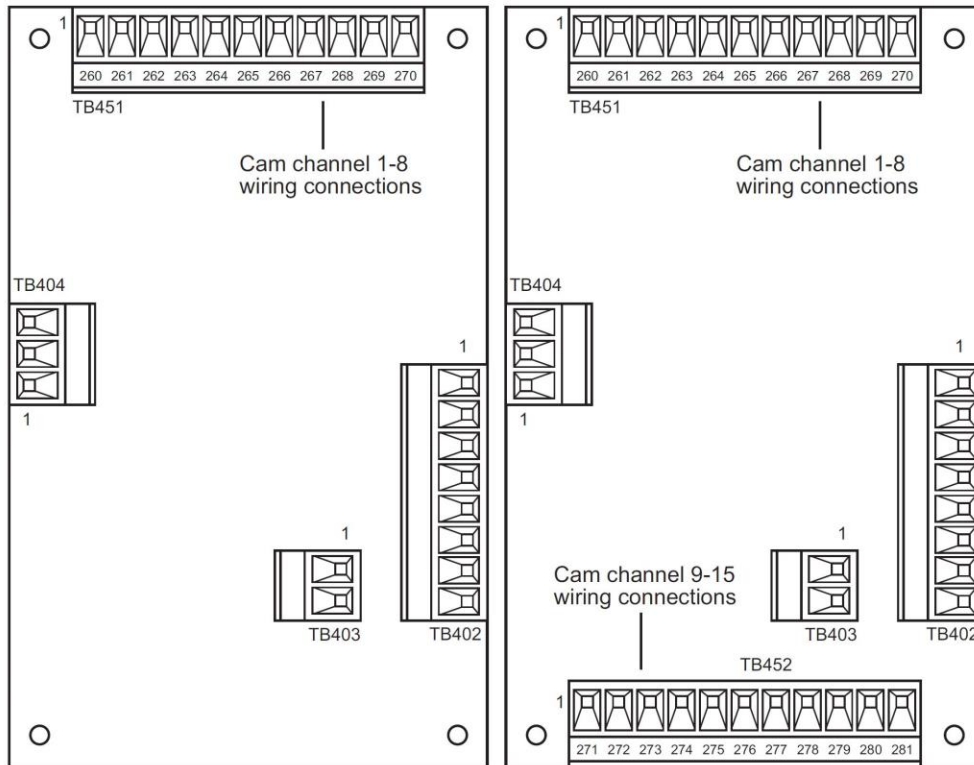


Figure 2-8. ProCamPAC Linear Boards, Location of Components
8-Channel (Left), 15-Channel (Right)

4. Unplug the connector from TB402, and attach transducer wires as shown in Figure 2-9, Table 2-1, and Figure 1. or Figure 2. *SmartPAC Pro Servo Press ProCamPAC 15 MTS Transducer Wiring Diagram* at the end of the manual.

NOTICE

The connector can plug into the ProCamPAC board in only one direction. Before wiring the connector, mark its left and right ends when it is plugged in to make sure you wire the correct pin numbers.

5. Double-check connections, then plug the connector back into TB402. It plugs in only one way.

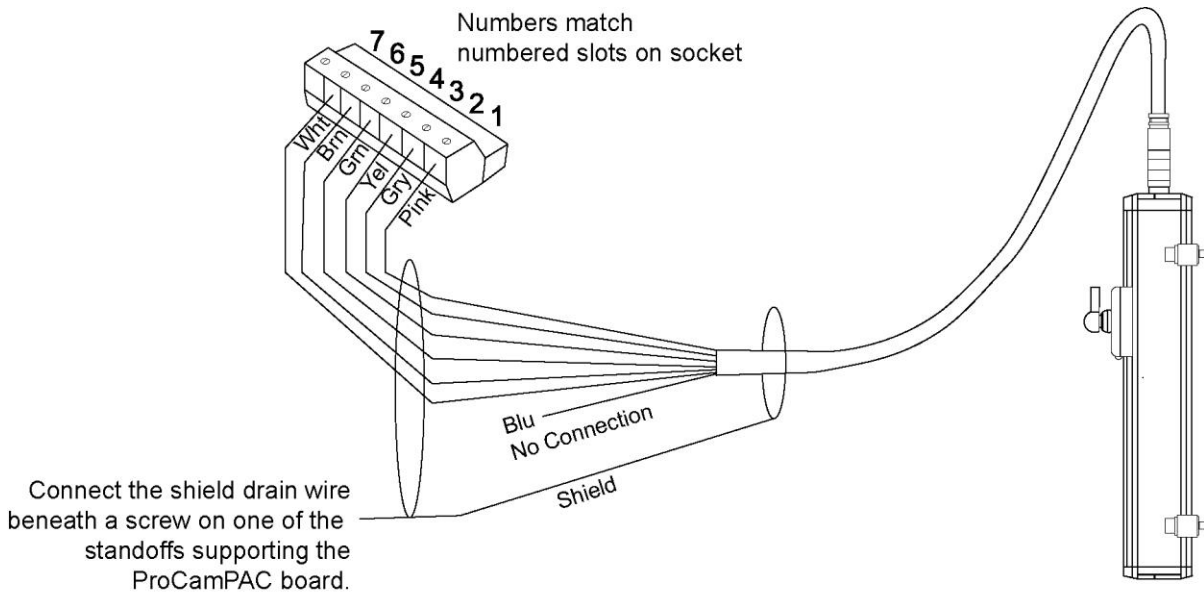


Figure 2-9. MTS Linear Transducer Pinout

Table 2-1. MTS Linear Transducer Wiring

| Pin # on TB402 ProCamPAC Linear Board | Wire Color * |
|---------------------------------------|---|
| | Shield Terminate shield drain wire at the ProCamPAC board under a screw in one of the standoffs. |
| 1 (+DATA) | Pink |
| 2 (-DATA) | Grey |
| 3 (+CLK) | Yellow |
| 4 (-CLK) | Green |
| 5 (+24VDC) | Brown |
| 6 (GND) | White |

* Blue is not used.

Wiring the Transducer to DC Power

The magnetostrictive linear transducer requires a DC power source. Wire it according to wiring diagram *Figure 1.* at the end of this manual.

Connecting Power Wiring – AC Powered Units

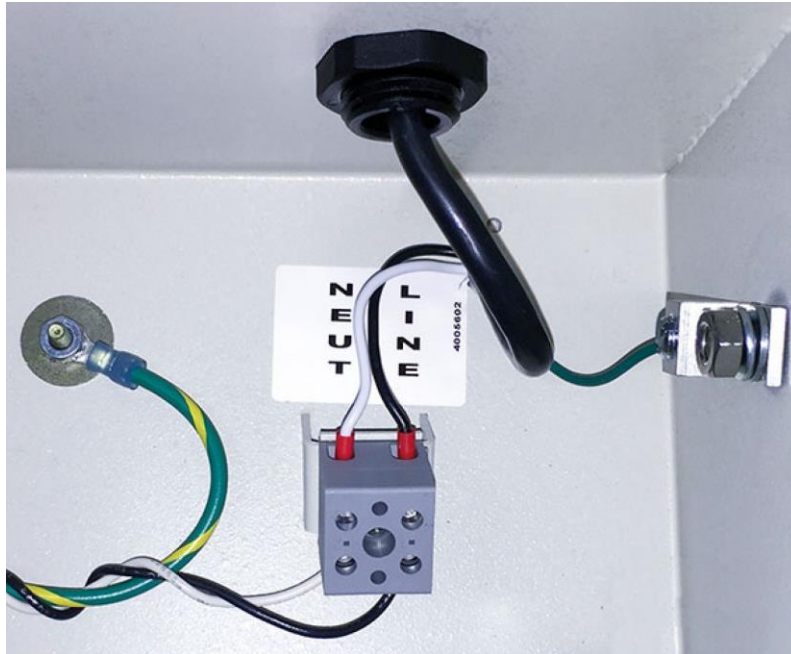


Figure 2-10. Wiring AC to Terminal Block, Inside Enclosure, Top Right

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Do not connect the AC power source until you are done with all other installation procedures.
- Turn off and disconnect power from the machinery SmartPAC PRO Servo is connected to before making any wiring connections. This includes power to the machine control and motor.

Failure to comply with these instructions could result in death or serious injury.

Run the AC power wires through a “high-voltage” conduit (see *Installation Guidelines*, page 28) along with the wiring for emergency-stop, top-stop, and input check circuits. No. 16 wire (No. 14, if local codes require it) with a minimum 75° C temperature rating is recommended for these circuits. Bring the conduit into the top right knockout of the SmartPAC PRO Servo enclosure. Then, to wire the AC input terminal block, follow these steps:

1. Find the AC terminal block at the top right corner of the back wall of the enclosure (see Figure 2-10).

For a panel mount unit, the terminal block is mounted to the back of the faceplate near the top right corner of the SmartPAC PRO Servo PC board.

2. Determine how you will bring wiring from your 115 Vac power source (or 230V source, if applicable) to the unit. These wires should be connected directly to the press control transformer at the press control. For 115 Vac, you need three wires—high (black), neutral (white) and ground (green). For 230 Vac, wires are black and red with green or green/ yellow for ground.

Connecting Power Wiring – 24 VDC Powered Units

⚠ WARNING

ELECTRIC SHOCK HAZARD

- Do not connect the DC power source until you are done with all other installation procedures.
- Turn off and disconnect power from the machinery SmartPAC PRO Servo is connected to before making any wiring connections. This includes power to the machine control and motor.

Failure to comply with these instructions could result in death or serious injury.

Run a +24V and return wire from a 24VDC, 2A power supply into the conduit on top of the enclosure on the right side. Connect the +24V wire to TB2 Pin 257, and the return wire to TB2 pin 258.

Connecting Stop Circuits and Input Check Circuit

You need four wires to connect SmartPAC PRO Servo to your press control stop circuits, two for the emergency-stop circuit and two for the top-stop circuit. You can wire these circuits at your press control. Refer to your press control manual or other electrical prints.

You need two wires to connect to the input check circuit. These wires are connected in parallel with one of the coils on the Dual Safety Valve that controls the clutch/brake. When the clutch is engaged, 12–250 VAC or VDC (50-60 Hz) must be present across terminals A and B, as shown in Figure 2-9. The connection can be made inside the press control where the circuits to the valve relays are connected. Refer to your press control manual and electrical prints. It does not matter which wire goes to terminal A and which to terminal B.

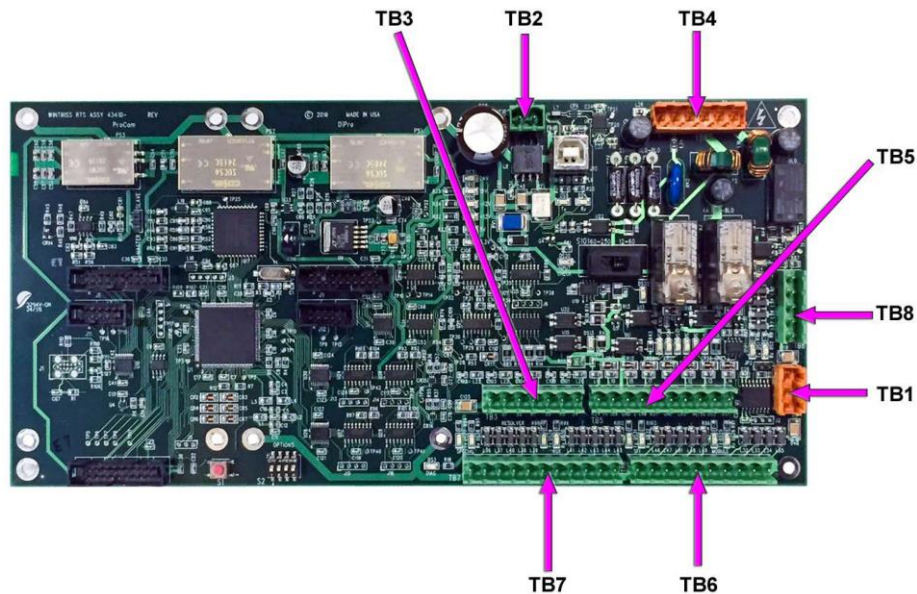


Figure 2-11. Location of Terminal Blocks TB1 to TB8

Making Wiring Connections

To make wiring connections from SmartPAC PRO Servo to your press control emergency-stop, top-stop, and input check circuits, do the following:

1. Run the stop circuit and input check circuit wires to SmartPAC PRO Servo through flexible liquid-tight conduit to the enclosure. Because SmartPAC PRO Servo is rated NEMA 12 (protected against dust and oil), you must use conduit of the same rating and make proper connections to ensure that the enclosure is NEMA-12-protected.
2. Locate connector TB4 on the SmartPAC PRO Servo board (see Figure 2-7, page 37) and unplug it from its socket. Connect the wires for the stop and input check circuits to TB4 pin locations, as shown in Table 2-2, below, and Figure 4 at the end of the manual.

Table 2-2. Stop and Input Check Circuit Wiring Connections: TB4

| Circuit | SmartPAC PRO Servo TB 4 Pin Locations |
|---------------|---------------------------------------|
| Input check A | 205 |
| Input check B | 206 |
| E-stop | 207 |
| E-stop | 208 |
| Top-stop | 209 |
| Top-stop | 210 |

3. Plug the connector back into its socket. Double-check connections to make sure that you did not wire the connector backwards.
4. Connect top-stop, E-stop, and input check circuit wires at the press control or other box into which you are tying them.

NOTICE

Be sure to number all wires in a way consistent with your press's electrical prints.

5. Make all the necessary conduit connections to ensure NEMA 12 protection.

Setting the Input Check Voltage Switch

To set voltage for the input check circuit, do the following:

1. Find the input check voltage switch, S101, on the SmartPAC PRO Servo board. It is located on the right side of the board just to the left of the E-stop relays.
2. Place S101 in the Left or Right position, depending on the coil voltage of the dual safety valve.

For a coil voltage of 60-250V, the switch should be placed in the Left position (this is the factory setting). For 12-60V coil voltage, set the switch to the Right setting (see Figure 2-12).

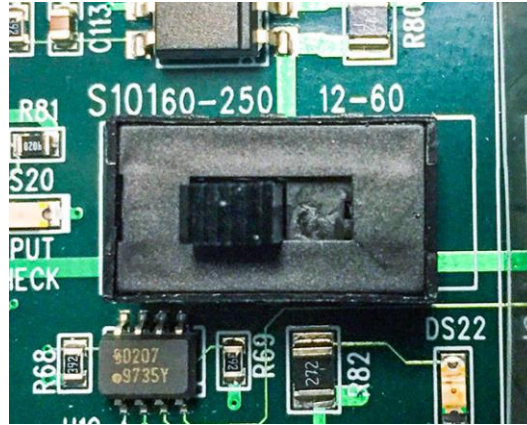


Figure 2-12. Input Check Voltage Switch (S101) in the Factory Default (60-250V) Position

Connecting to the Network

Before you connect SmartPAC PRO Servo to a computer network, consult with your network administrator to obtain the necessary connections and settings, for example, whether to obtain an IP address automatically (DHCP) or use a Static IP address.

The Ethernet cable is plugged into the Ethernet connector on the SmartPAC PRO Servo board.

NOTICE

SETTING STATIC IP ADDRESS

SmartPAC PRO Servo comes from the factory set up for a Dynamic Host Configuration Protocol (DHCP) network, which automatically assigns IP addresses. If your network requires static IP addresses, have your network administrator call Wintriss Tech. Support for assistance in setting up SmartPAC PRO Servo with a static IP address. See *CHANGE NETWORK SETTINGS*, page 100.

Adding or Upgrading DiProPAC or ProCamPAC

⚠ WARNING

ELECTRIC SHOCK HAZARD

Turn off and disconnect power from SmartPAC PRO Servo and from the machinery it is connected to before making any wiring connections. This includes power to the machine control and motor. Do not connect the AC power source until you are done with all other installation procedures.

Failure to comply with these instructions could result in death or serious injury.

CAUTION

DAMAGE TO BOARD FROM STATIC DISCHARGE

Ground yourself before touching circuit boards or chips by touching a large metal object such as the press. Static electricity can destroy electronic components.

Failure to comply with these instructions could result in property damage.

NOTICE**INSTALL DIPROPAC AND/OR PROCAMPAC BOARDS IN CORRECT LOCATIONS**

Install these boards in the locations shown in Figure 2-13, page 44. If you install a board in the wrong location, SmartPAC PRO Servo will not recognize that the option is installed.

Eight-, 16-, and 32-channel configurations of the same option are interchangeable. When a board is installed in the correct location, SmartPAC PRO Servo recognizes whether it is an 8-, 16-, or 32-channel version of DiProPAC or an 8- or 16-channel version of ProCamPAC.

The following instructions describe how to add die protection and/or programmable limit switch capabilities to a basic SmartPAC. If you ordered either of these options with your new SmartPAC PRO Servo, the boards will have been installed at the factory, and you can skip to the wiring sections for these modules. DiProPAC is available as an 8-sensor, 16-sensor, or 32-sensor board. You can obtain the ProCamPAC board in 8-cam or 16-cam versions.

Wiring instructions for the DiProPAC board are provided starting on page 45. Wiring for the ProCamPAC board is documented starting on page 49.

To install a new DiProPAC or ProCamPAC board, do the following:

1. On the SmartPAC PRO Servo board, locate the connector in which the new board should be installed (see Figure 2-13).

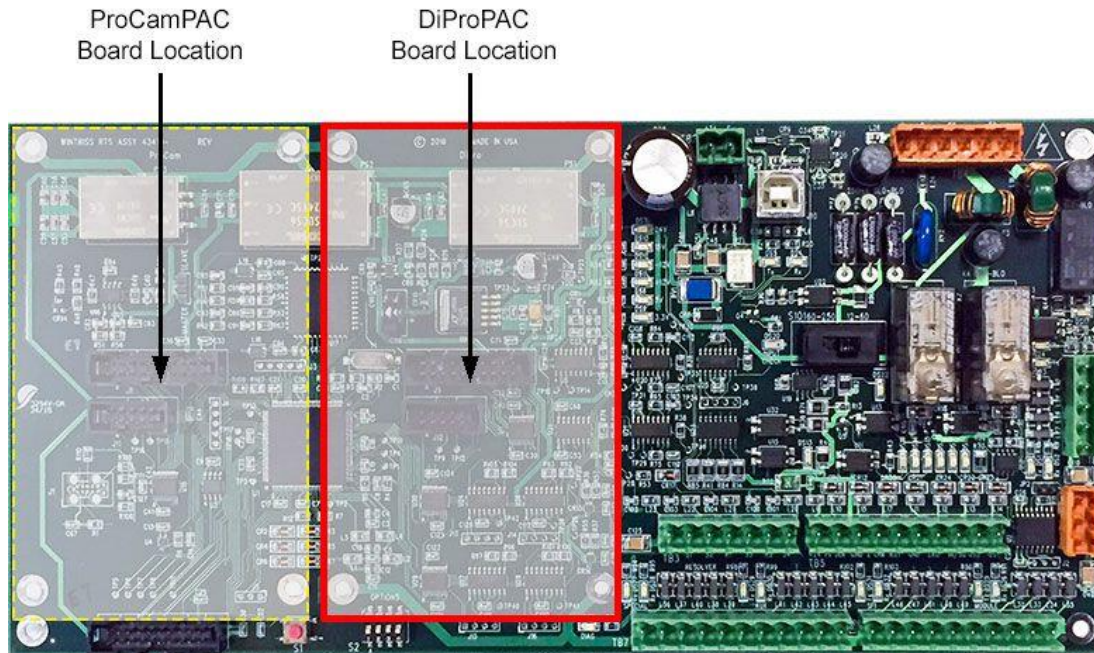


Figure 2-13. SmartPAC PRO Servo Board - DiProPAC Board, Right, Outlined in Red

CAUTION**DAMAGE TO BOARD FROM STATIC DISCHARGE**

Ground yourself before touching circuit boards or chips by touching a large metal object such as the press. Static electricity can destroy electronic components.

Failure to comply with these instructions could result in property damage.

2. Making sure that you are grounded, install the new board by plugging it into the appropriate connector. Connectors are keyed, so you can only plug in the boards in one direction.
3. When the board is properly seated, screw it down to the four standoffs, using the screws that came with the kit.
4. Remove the connector(s) from the board, one connector for an 8-sensor or 8-cam unit, two connectors for a 16-sensor or 16-cam unit, four connectors for a 32-sensor unit. Terminal block assignments for the different boards are as follows:
 - DiProPAC 8: Sensors 1-8 to TB554
 - DiProPAC 16: Sensors 1-8 to TB554, sensors 9-16 to TB554
 - DiProPAC 32: Sensors 1-8 to TB554, sensors 9-16 to TB554, sensors 17-24 to TB555, and sensors 25-32 to TB555

 - ProCamPAC 8: Cam channels 1-8 to TB401
 - ProCamPAC 16: Cam channels 1-8 to TB451, channels 9-16 to TB452
5. Wire the connector(s) to the appropriate component(s). For the DiProPAC board, wire the connector(s) to the DiPro Sensor Interface, following the instructions in *Connecting DiPro Sensor Interface to SmartPAC PRO Servo*, page 45. For the ProCamPAC board, wire the connector(s) to the ProCam Output assembly, following the procedure in *Connecting Programmable Cam Channels*, page 49.
6. Plug the connector(s) back into their sockets on the board.
7. Verify that you have installed the board(s) properly by performing *Verifying Installation of DiProPAC and ProCamPAC*, page 57. You need to complete this procedure before you can use SmartPAC PRO Servo.

Connecting DiPro Sensor Interface to SmartPAC PRO Servo

To connect your DiPro die protection sensors through the DiPro Sensor Interface (DSI) 2, refer to

Table 2-3, below, to wire sensors 1-8

Table 2-4, page 47, to wire sensors 9-16

Table 2-5, page 48, to wire sensors 17-24

Table 2-6, page 48, to wire sensors 25-32.

Wiring diagrams (Figure 4 for sensors 1-16, Figure 5 for sensors 17-32) are provided at the end of the manual. Terminate cable shields to ground studs close to the point of entry into the enclosure. Refer to the DSI 2 manual for more information.

NOTICE

DSI 2 NOT COMPATIBLE WITH LOW-IMPEDANCE SENSORS

If any of your sensors are low-impedance types, they must be wired directly to DiProPAC. Low-impedance sensors cannot be wired to DSI 2.

NOTICE

If there are extra wires in the cable, cut them off close to the end of the cable jacket.

Table 2-3. DiPro Sensor Interface (DSI) 2 to SmartPAC PRO Servo Wiring, Sensors 1-8

| Wire color* | 1st DSI 2 (TB2) | | DiProPAC (TB554) | |
|-------------|-------------------------------------|-----------------|-------------------------------------|-----------------|
| | Pin # | Pin Designation | Pin # | Pin Designation |
| Brown | 1 | SENSOR 1 | 282 | SENSOR 1 |
| Red | 2 | SENSOR 2 | 283 | SENSOR 2 |
| Orange | 3 | SENSOR 3 | 284 | SENSOR 3 |
| Yellow | 4 | SENSOR 4 | 285 | SENSOR 4 |
| Green | 5 | SENSOR 5 | 286 | SENSOR 5 |
| Blue | 6 | SENSOR 6 | 287 | SENSOR 6 |
| Violet | 7 | SENSOR 7 | 288 | SENSOR 7 |
| Gray | 8 | SENSOR 8 | 289 | SENSOR 8 |
| | | No connection | 290 | Sensor power |
| Black | 9 | GND | 291 | GND |
| | 10 | GND | | No connection |
| | 11 | +5 VDC | | No connection |
| Shield | Terminate drain wire to ground stud | | Terminate drain wire to ground stud | |

* Your colors may be different.

Table 2-4. DiPro Sensor Interface (DSI) 2 to SmartPAC PRO Servo Wiring, Sensors 9-16

| Wire color* | 2nd DSI 2 (TB2) | | DiProPAC (TB554) | |
|-------------|-------------------------------------|-----------------|-------------------------------------|-----------------|
| | Pin # | Pin Designation | Pin # | Pin Designation |
| Brown | 1 | SENSOR 1 | 292 | SENSOR 9 |
| Red | 2 | SENSOR 2 | 293 | SENSOR 10 |
| Orange | 3 | SENSOR 3 | 294 | SENSOR 11 |
| Yellow | 4 | SENSOR 4 | 295 | SENSOR 12 |
| Green | 5 | SENSOR 5 | 296 | SENSOR 13 |
| Blue | 6 | SENSOR 6 | 297 | SENSOR 14 |
| Violet | 7 | SENSOR 7 | 298 | SENSOR 15 |
| Gray | 8 | SENSOR 8 | 299 | SENSOR 16 |
| | | No connection | 300 | Sensor power |
| Black | 9 | GND | 301 | GND |
| | 10 | GND | | No connection |
| | 11 | +5 VDC | | No connection |
| Shield | Terminate drain wire to ground stud | | Terminate drain wire to ground stud | |

* Your colors may be different.

Table 2-5. DiPro Sensor Interface (DSI) 2 to SmartPAC PRO Servo Wiring, Sensors 17-24

| Wire color* | 3rd DSI 2 (TB2) | | DiProPAC (TB555) | |
|-------------|-------------------------------------|-----------------|-------------------------------------|-----------------|
| | Pin # | Pin Designation | Pin # | Pin Designation |
| Brown | 1 | SENSOR 1 | 180 | SENSOR 17 |
| Red | 2 | SENSOR 2 | 181 | SENSOR 18 |
| Orange | 3 | SENSOR 3 | 182 | SENSOR 19 |
| Yellow | 4 | SENSOR 4 | 183 | SENSOR 20 |
| Green | 5 | SENSOR 5 | 184 | SENSOR 21 |
| Blue | 6 | SENSOR 6 | 185 | SENSOR 22 |
| Violet | 7 | SENSOR 7 | 186 | SENSOR 23 |
| Gray | 8 | SENSOR 8 | 187 | SENSOR 24 |
| | | No connection | 188 | Sensor power |
| Black | 9 | GND | 189 | GND |
| | 10 | GND | | No connection |
| | 11 | +5 VDC | | No connection |
| Shield | Terminate drain wire to ground stud | | Terminate drain wire to ground stud | |

* Your colors may be different

Table 2-6. DiPro Sensor Interface (DSI) 2 to SmartPAC PRO Servo Wiring, Sensors 25-32

| Wire color* | 4th DSI 2 (TB2) | | DiProPAC (TB555) | |
|-------------|-------------------------------------|-----------------|-------------------------------------|-----------------|
| | Pin # | Pin Designation | Pin # | Pin Designation |
| Brown | 1 | SENSOR 1 | 190 | SENSOR 25 |
| Red | 2 | SENSOR 2 | 191 | SENSOR 26 |
| Orange | 3 | SENSOR 3 | 192 | SENSOR 27 |
| Yellow | 4 | SENSOR 4 | 193 | SENSOR 28 |
| Green | 5 | SENSOR 5 | 194 | SENSOR 29 |
| Blue | 6 | SENSOR 6 | 195 | SENSOR 30 |
| Violet | 7 | SENSOR 7 | 196 | SENSOR 31 |
| Gray | 8 | SENSOR 8 | 197 | SENSOR 32 |
| | | No connection | 198 | Sensor power |
| Black | 9 | GND | 199 | GND |
| | 10 | GND | | No connection |
| | 11 | +5 VDC | | No connection |
| Shield | Terminate drain wire to ground stud | | Terminate drain wire to ground stud | |

* Your colors may be different.

Connecting Programmable Cam Channels

⚠ DANGER

PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC PRO Servo's programmable cam switch to control auxiliary functions only. The SmartPAC PRO Servo programmable cam capability should never be used to provide timing signals for any safety use including muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

CAUTION

BOARD DAMAGE OR SHORT CIRCUIT WHEN MOUNTED WITHOUT ENCLOSURE

- Mount the cam output assembly in a clean area where it will be safe from damage.
- Provide at least 0.5 in. (12.7 mm) clearance between the back of the Cam Outputs board and any metal surface.

Failure to comply with these instructions could result in property damage.

The ProCamPAC Output Assembly allows you to wire up to fifteen cam channels to your equipment. The assembly contains the relays that control the timing signals for your press. Different types of relays can be used, depending on the voltages of your equipment and your special needs.

To mount the ProCamPAC Output Assembly and wire it to the ProCamPAC board inside the SmartPAC PRO Servo control, follow these instructions:

1. Select a convenient location for running conduit from the ProCamPAC Output Assembly to the equipment that it will control.
2. Mount the output enclosure, using the mounting holes on the flanges as shown in Figure 2-14, page 50.
3. Select the relays to be used with each channel. Relays should already be plugged into the Cam Outputs board (see Figure 2-15, page 51), each relay labelled with its type (i.e., standard or solid state).

Standard relays can only be plugged into the slots labeled K301 through K305, K307, K309, and K311, which are channels 1-8. Optional solid state relays can only be plugged into slots labeled K306, K308, K310, and K312, which are channels 5-8.

Do not mix standard and solid state relays in channel locations 5-8. For example, if you plug a solid state relay into channel 5 (location K306), you cannot plug a standard relay into location K305. See Figure 2-14.

Example

Say you wish to use three standard relays and one solid state relay. You would install the three standard relays in channels 1 through 3, and the solid state relay in channel 5, skipping the channel 4 output for all wiring and programming.

To remove a relay, pull the plastic retention clip away from the relay and pull the relay straight out of its socket. When re-inserting the relay, make sure that the pins line up with the socket holes, then press in firmly.

4. Locate the 12-conductor cable(s) for wiring the ProCamPAC board (see Figure 2-8, page 38, for layouts of 8- and 15-channel boards) to terminal block TB301 inside the ProCamPAC Output

enclosure. If you are wiring an 8-channel ProCamPAC Linear, one cable is supplied (for channels 1-8). If you are wiring a 15-channel board, two cables are supplied, one for channels 1 through 8, the other for channels 9 through 15.

5. Remove the appropriate connector(s) from its socket on the ProCamPAC Linear board (TB451 for an 8-channel ProCamPAC Linear, TB451 and TB452 for a 15-channel ProCamPAC Linear). Connect wires from the 12-conductor cable(s) to the pin locations on the appropriate terminal blocks, as shown in Table 2-7, page 52 (for the 8-channel option) or Table 2-7 and Table 2-8, page 52 (for the 15-channel option). See also figures 1 (8-channel unit) and 2 (15-channel unit) at the end of the manual.
6. Plug the connector(s) back into its socket.
7. Run the cable(s) through conduit to TB301 in the ProCamPAC Output enclosure, using the knockouts directly above the connector.

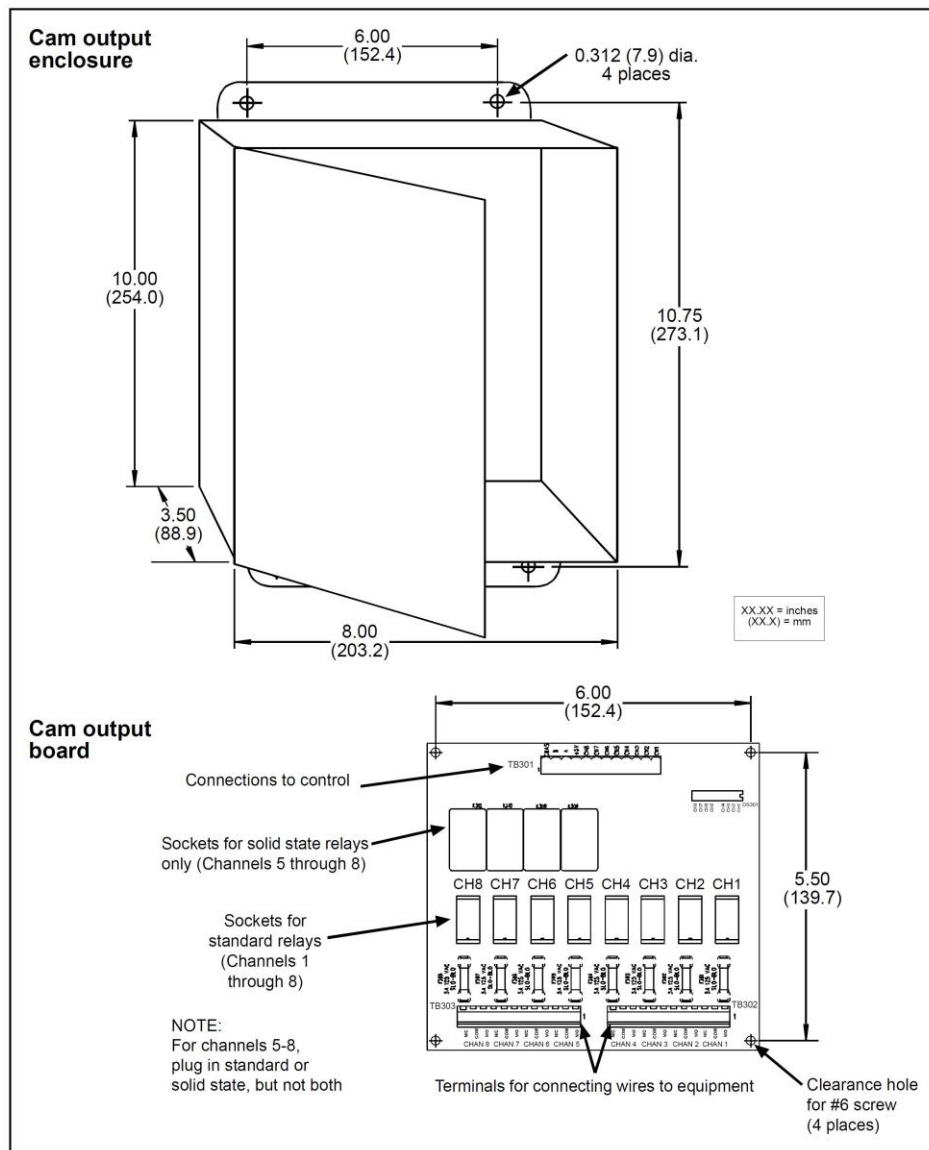


Figure 2-14. ProCamPAC Output Assembly

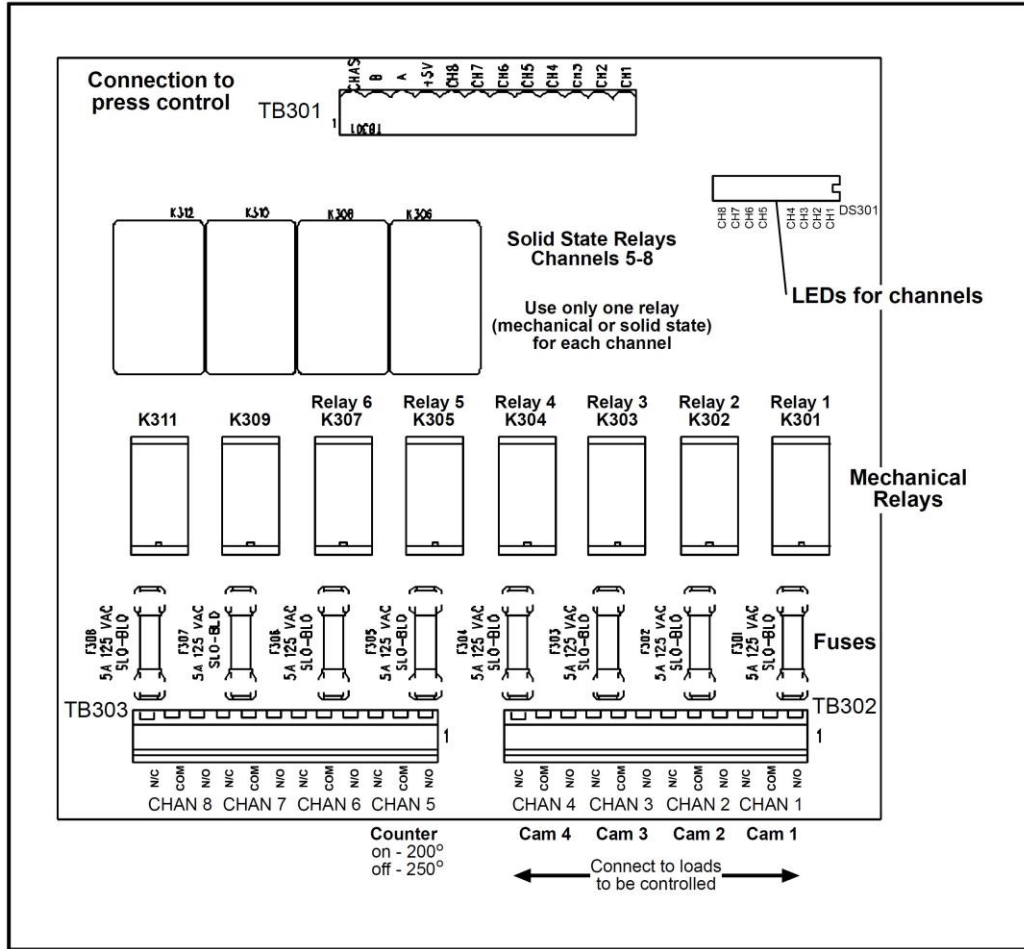


Figure 2-15. Cam Outputs Board

Table 2-7. ProCamPAC Linear to Cam Output Assembly TB301 Wiring, Cams 1-8

| Wire | ProCamPAC Linear TB451 (Pin #) | 1st Cam Output Board TB301 (Pin #) |
|--|-----------------------------------|---------------------------------------|
| | | CHAS (1) |
| White | Relay Pwr (270) | A (3)* |
| Black | Gnd (269) | B (2)* |
| Red | +5 (268) | +5 Vdc (4) |
| Tan | Ch 8 (267) | Ch 8 (5) |
| Pink | Ch 7 (266) | Ch 7 (6) |
| Gray | Ch 6 (265) | Ch 6 (7) |
| Blue | Ch 5 (264) | Ch 5 (8) |
| Yellow | Ch 4 (263) | Ch 4 (9) |
| Orange | Ch 3 (262) | Ch 3 (10) |
| Purple | Ch 2 (261) | Ch 2 (11) |
| Brown | Ch 1 (260) | Ch 1 (12) |
| * Note that the pin numbers for A and B are out of order | | |

Table 2-8. ProCamPAC Linear to Cam Output Assembly TB301 Wiring, Cams 9-15

| Wire | ProCamPAC Linear TB452 (Pin #) | 2nd Cam Output Board TB301 (Pin #) |
|--|-----------------------------------|---------------------------------------|
| | | CHAS (1) |
| White | Relay Pwr (281) | A (3)* |
| Black | Gnd (280) | B (2)* |
| Red | +5 (279) | +5 Vdc (4) |
| | Unused | Unused |
| Pink | Ch 15 (277) | Ch 7 (6) |
| Gray | Ch 14 (276) | Ch 6 (7) |
| Blue | Ch 13 (275) | Ch 5 (8) |
| Yellow | Ch 12 (274) | Ch 4 (9) |
| Orange | Ch 11 (273) | Ch 3 (10) |
| Purple | Ch 10 (272) | Ch 2 (11) |
| Brown | Ch 9 (271) | Ch 1 (12) |
| * Note that the pin numbers for A and B are out of order | | |

8. Remove the TB301 connector from its socket, and connect wires from the 12-conductor cable(s) as shown in Table 2-7(for 8-channel ProCamPAC Linear) or Table 2-7 and Table 2-8 (for a 15-channel ProCamPAC Linear). A wire from CHAS to a lug on the ProCamPAC Output enclosure should already be connected (unless you bought the board assembly only).
9. Plug the connector(s) back into its socket.
10. To connect the relays to your equipment, use connectors TB302 and TB303 (Figure 2-16).

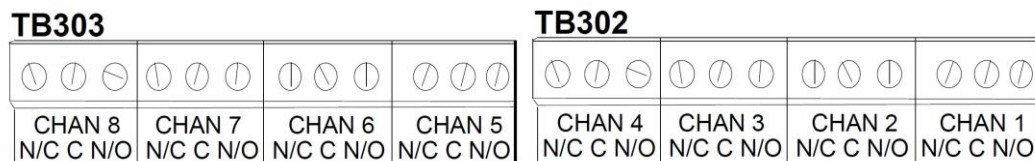


Figure 2-16. TB302 and TB 303 for Wiring Relays to Equipment

Specific connections depend on the type of relay you use. For 120 Vac relays, you can connect wires from your equipment to “C” and either the N/O or N/C side of the relay. If you connect to N/O, the equipment will be on for the number of degrees set in SmartPAC PRO Servo. If you connect to N/C, the equipment will be on except for the number degrees set. Generally, you should use the N/O terminal so that equipment is off except when you use SmartPAC PRO Servo to turn it on. Use the N/C terminal only if it is more practical to do the reverse.

All solid state relays work only when the C and the N/O terminals are connected. Polarity must be correct for DC solid state relays (refer to Table 2-9.)

Table 2-9. Connections to Relays

| Module | How to Connect | Type |
|--------------------------|---|------|
| Electro-mechanical Relay | One wire to C, one wire to N/O or N/C, polarity does not matter | SPDT |
| DC Solid State | - to C, + to N/O | SPST |
| AC Solid State | One wire to C, one wire to N/O, polarity does not matter | SPST |

⚠ WARNING

INCORRECT SUPPRESSOR INSTALLATION MAY CAUSE RELAYS TO REMAIN ENERGIZED

Ensure that suppressors are correctly installed. They must not be installed across the relay contacts inside the ProCamPAC Output enclosure. If a suppressor is installed across the relay contacts and it fails shorted, the equipment controlled by that relay will remain energized.

Failure to comply with these instructions could result in death or serious injury.

11. To reduce electrical noise and to extend the life of the relays, do the following:
 - a. AC loads: Install arc suppressors across each inductive load (motors, coils, etc.) that is connected to a cam relay (see Figure 2-17). Suppressors are supplied with each relay. Install the suppressors across the load or as close to the load as possible. Attach suppressors by connecting leads across existing terminals or junction points.
 - b. DC loads: Install a diode across each DC load, such as relays, solenoids and PLC inputs (see Figure 2-18).

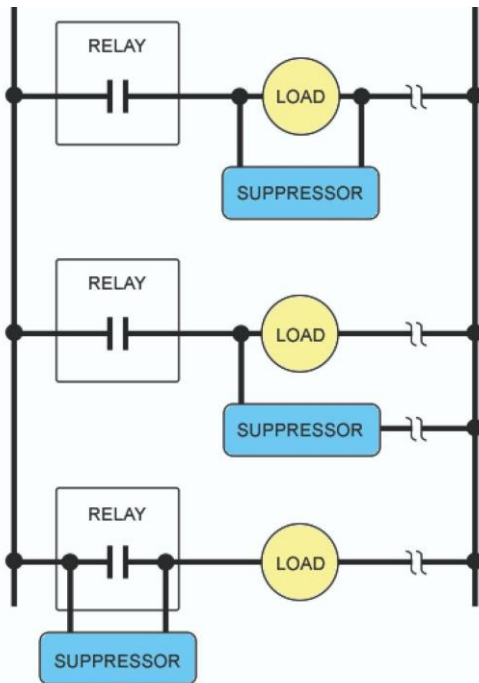


Figure 2-17. Install Suppressors Across AC Loads

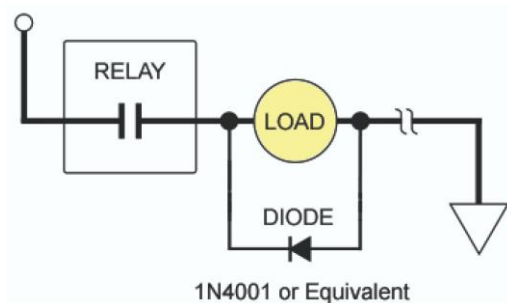


Figure 2-18. Installing a Diode Across a DC Load

Wiring Setup Mode Circuit

SmartPAC PRO Servo Setup mode allows you to disable green sensors and parts/batch counters, using a remote switch. Typically, the Setup mode circuit is enabled when Inch mode is selected on your main control. When you inch the press, SmartPAC PRO Servo will not stop the press when a fault condition is detected. The Setup mode terminal can be wired to an extra contact on the Inch switch of your main control, or you can use an external switch to activate the circuit. If you intend to use the Setup mode circuit, plan how you will run your wiring for this connector now so you do not have to disconnect conduit or rerun wires through conduit later.

For Setup mode, you must provide contact closure when the main control is in Inch mode. Connect a wire from SmartPAC PRO Servo terminal block TB 5, terminal #252 (SETUP) to one side of a normally open switch, Table 2-10, page 60, and Figure 3 at the end of the manual). Connect the other side of the switch to GND (TB5, terminal #250). Refer to your electrical prints or the manual for your control to plan your wiring.

Wiring a Remote Reset Switch (Optional)

Like the Setup mode terminal, the Remote Reset terminal can be wired to a normally open switch to activate the circuit. Be sure to plan how you will run your wiring for this connector so that you do not have to disconnect conduit or re-run wires through conduit later. Connect a wire from SmartPAC PRO Servo TB5, terminal #249 (REM RES) to a normally open switch (see Table 2-10, page 60, and Figure 3 at the end of the manual). Connect another wire from the switch to GND (TB5, terminal #250). SmartPAC PRO Servo is reset with a momentary connection to ground.

Wiring a Sensor-Disabled Output (Optional)

You can wire a Sensor-disabled Output such as a warning light to a customer-supplied solid state relay to warn personnel that the die protection capability, if installed, is disabled. Connect the positive input wire from your 12Vdc solid-state relay to terminal #302 (Relay Pwr) on TB553 on the DiProPAC board (see Figure 4 or 5 at the end of the manual). Connect the negative input wire from the relay to terminal #306 (Aux 1) on TB553. You cannot use more than 8 mA for your relay.

Turning on Power to SmartPAC PRO Servo

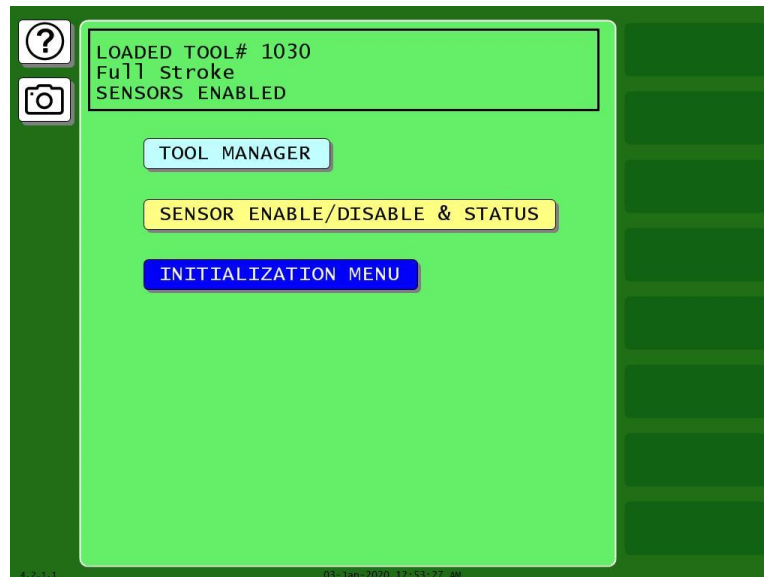


Figure 2-19. Main Program Menu

NOTICE

For help in using the SmartPAC PRO Servo touch screen, see Chapter 3.

NOTICE

If you turn the Program/Run key and nothing happens, press EXIT or BACK repeatedly until SmartPAC PRO Servo changes modes. Before turning the Program/Run key, make sure SmartPAC PRO Servo is in the Main menu for the mode it is in. If it is not, press EXIT or BACK repeatedly until the Main menu appears. Then turn the Program/Run key.

To turn on power to SmartPAC PRO Servo, do the following:

1. Make sure there is no die in the press.
2. Turn the Program/Run key to PROG.
3. Power up the SmartPAC PRO Servo.

The green Power LED on the SmartPAC PRO Servo front panel illuminates, a red Wintriss screen appears for a few seconds, then the SmartPAC PRO Servo executes its startup process. Eventually, the Main Program Menu appears (Figure 2-20).

NOTICE

- If an error message displays when SmartPAC PRO Servo starts up, press EXIT.
- If the error message continues to appear after your press EXIT, find the message in Chapter 7 and follow the instructions for correcting the problem. If you cannot find the error message or cannot fix the problem, contact Wintriss Tech. Support.

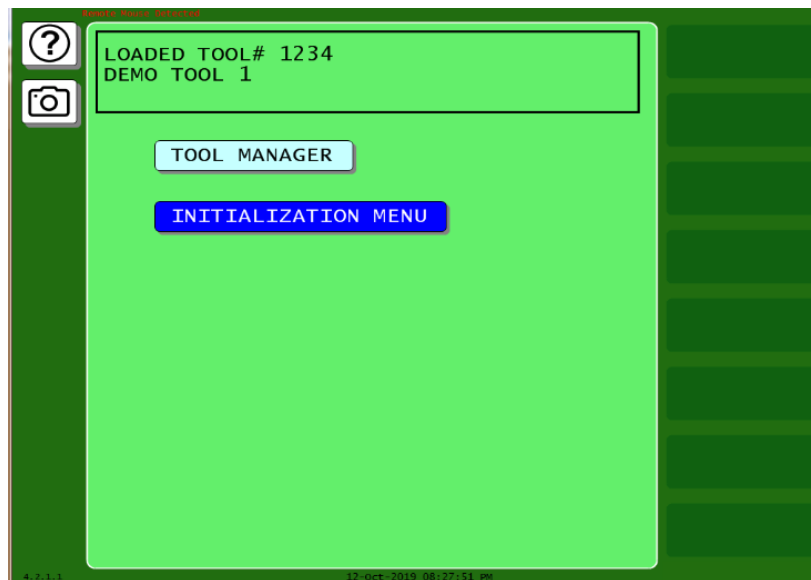


Figure 2-20. Main Program Menu

4. If the SmartPAC PRO Servo display remains off, do the following:
 - **If the green Power LED on SmartPAC PRO Servo does not illuminate**
Turn off power to SmartPAC PRO Servo, and recheck all power connections. Check that the connectors are correctly seated on both ends of the cables between the SmartPAC PRO Servo board and the display. Power up SmartPAC PRO again. If the display remains off, contact Wintriss Tech. Support.
 - **If the green Power LED illuminates, but the display remains off**
Power down SmartPAC PRO Servo, and check that the connectors are correctly seated on both ends of the cables between the SmartPAC PRO Servo board and the display. Power up SmartPAC PRO Servo again. If the display remains off, contact Wintriss Tech. Support.

Verifying Installation of DiProPAC and ProCamPAC

If you installed DiProPAC and/or replaced ProCamPAC on SmartPAC PRO Servo, you need to verify that the installation was done correctly and that these items are available. Do the following:

1. With the Main Program Menu on the SmartPAC PRO Servo display, INITIALIZATION MENU to display the Main Initialization Menu (see Figure 2-21, page 58).
2. Press INSTALLED OPTIONS. The Installed Options screen, shown in Figure 2-22, page 58, displays.

Check to see that DiProPAC and/or ProCamPAC are displayed in the list.

- If DiProPAC and/or ProCamPAC are in the list, go to the next section.
- If you do not see one or both of the items, go to *Adding or Upgrading DiProPAC or ProCamPAC*, page 43, and verify that you performed the installation properly. Check that the board or boards are plugged into the correct connectors. If you still cannot fix the problem, call Wintriss Tech. Support.

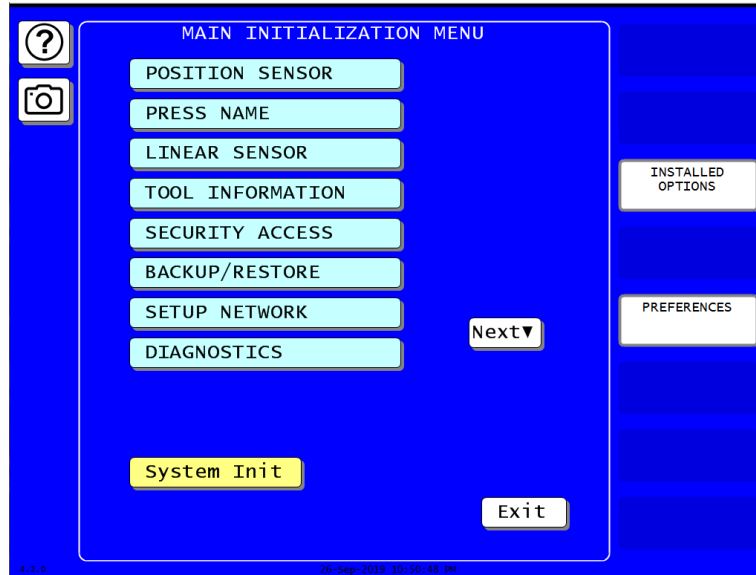


Figure 2-21. Main Initialization Menu

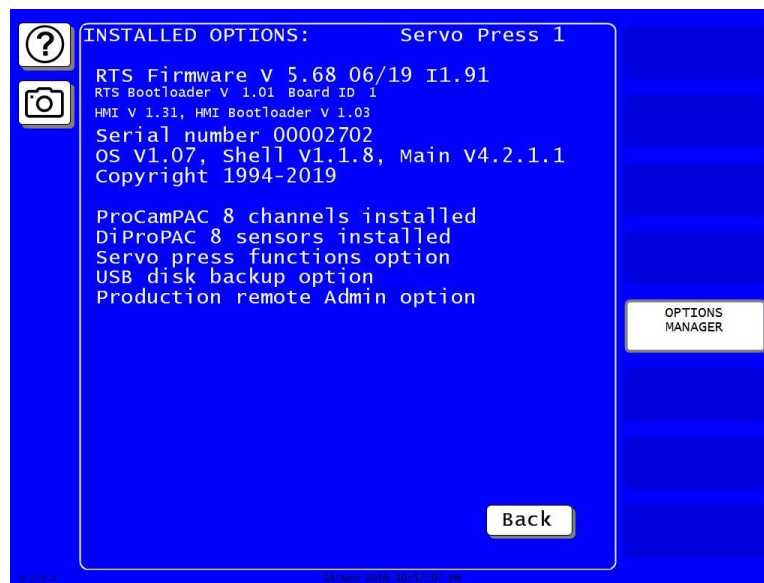


Figure 2-22. Installed Options Screen

Final Checkout

Before using SmartPAC PRO Servo, you need to make a few test press runs to ensure that your unit is working properly. To perform final checkout, follow these instructions. Do not proceed to the next step or group of steps until the item you are testing checks out.

Set Up a “Test” Tool

1. Create a tool number and program counter settings (see *Creating a New Tool*, page 107, *TOOL NAME*, page 113, and *COUNTERS*, page 114). If you are not familiar with how to use the SmartPAC PRO Servo touch screen displays, see Chapter 3.

2. Program Upper Limit and Lower Limit settings on the Ram Position screen (see page 154).
3. Load the tool number (see *Loading a Tool*, page 110), and enter Run mode (see *Entering and Exiting Run Mode*, page 160).

Check Stroke Limits

4. Inch the press. Verify that the ram moves accurately between programmed Upper and Lower limits (see *RAM POSITION*, page 154).
5. Run the press in Single-stroke, and reconfirm that the ram moves accurately between programmed limits.
6. Run the press in Auto or Continuous, if available, and reconfirm ram limits.
7. Change the stroke length from your Servo control, program new Upper and Lower limits to match these settings, and verify that the ram moves accurately between the new limits.

Check the Top-stop Circuit

8. Set the stroke counter preset to a small value (e.g., 10), referring to *COUNTERS*, page 114; then, run the press in Continuous mode until the preset value is reached. Check to make sure that the press top-stops and that a message indicating that the preset was reached is displayed (see Chapter 7 for counter preset messages).
 - If the press top-stopped correctly, go to step 9.
 - If the press did not top-stop and SmartPAC PRO displayed a message, there is a wiring problem in your top-stop circuit. Recheck all wiring and trace the cause of the problem.

Check the Emergency-stop Circuit

9. Turn the Program/Run key switch to PROG, and press RESET until the Main Program Menu (see Figure 2-19, page 56) displays. Try stroking the press. Since SmartPAC PRO Servo's E-stop relays are always open in Program mode, the ram should not move.
 - If the ram does not move, go to step 10.
 - If the ram moves, there is a wiring problem in your emergency-stop circuit. Recheck all wiring and trace the cause of the problem.

Check Cam Channels

10. Create some test settings for your cam channels in Program mode (see *COUNTERS*, page 114), load the tool settings, and switch to Run mode to run the press. Ensure that the equipment (feed, blow off, lube, etc.) controlled by each channel is operating appropriately according to the settings you made.

Test Complete

11. If you get to this step, SmartPAC PRO Servo is working correctly. Clear any error messages by pressing RESET, then delete the test tool. You can now create a tool in SmartPAC PRO Servo, program settings for it, load it, and begin to make parts using your new SmartPAC PRO Servo.

What Next?

To program and use your SmartPAC PRO Servo, follow the instructions in the remaining chapters of this manual. Go to Chapter 4 to make Initialization settings for your SmartPAC PRO Servo.

Wiring Tables for SmartPAC PRO Servo Options

Table 2-10. Auxiliary Port (TB5) Wiring

| TB5 | | |
|----------------|-------|-----------------|
| Function | Pin # | Signal |
| Auxiliary Port | 245 | +24 V |
| | 246 | POSITION SENSOR |
| | 247 | GND |
| | 248 | ZERO |
| | 249 | REMOTE RESET |
| | 250 | GND |
| | 251 | LOCKOUT |
| | 252 | SETUP |
| | 253 | OP STA 2 |
| | 254 | OP STA 1 |

Table 2-11. SFI Port and Module Port (TB6) Wiring

| TB6 | | |
|-------------|-------|-------------|
| Function | Pin # | Signal Port |
| SFI Port | 235 | +RXD1 |
| | 236 | -RXD1 |
| | 237 | TXD1 |
| | 238 | +TXD1 |
| | 239 | -TXD1 |
| | 240 | GND |
| Module Port | 241 | +RXD2 |
| | 242 | -RXD2 |
| | 243 | +TXD2 |
| | 244 | -TXD2 |

Table 2-12. Special Port and AUX (TB7) Wiring

| TB7 | | |
|--------------|-------|--------|
| Function | Pin # | Signal |
| SPECIAL PORT | 224 | +RXD3 |
| | 225 | -RXD3 |
| | 226 | TXD3 |
| | 227 | +TXD3 |
| | 228 | -TXD3 |
| | 229 | GND |
| AUX | 230 | +RXD4 |
| | 231 | -RXD4 |
| | 232 | TXD4 |
| | 233 | +TXD4 |
| | 234 | -TXD4 |

Table 2-13. WPC Port and Spare 1 Port (TB8) Wiring

| TB8 | | |
|------------------|-------|---------|
| Function | Pin # | Signal |
| WPC PORT (6) | 330 | -TXD6 |
| | 329 | +TXD6 |
| | 328 | -RXD6 |
| | 327 | +RXD6 |
| | 326 | GND |
| SPARE 1 PORT (5) | 325 | -TXD5 |
| | 324 | +TXD5 " |
| | 323 | TXD5 " |
| | 322 | -RXD5 " |
| | 321 | +RXD5 " |

Table 2-14. Stop and Input Check Circuit (TB4) Wiring

| Pin # | Signal |
|--------------|---------------|
| 205 | Input check A |
| 206 | Input check B |
| 207 | E-stop |
| 208 | E-stop |
| 209 | Top-stop |
| 210 | Top-stop |

Chapter 3 – Displays and Operating Modes

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This chapter shows you how to use the SmartPAC PRO Servo displays and introduces you to SmartPAC PRO’s three operating modes. The displays appear on the screen located on the SmartPAC PRO Servo front panel, Figure 3-1.

It is a good idea to learn how to use SmartPAC PRO Servo before you install it. Set up the unit on a bench and wire a power cord and a position transducer to it. Then, try making settings on the displays.

SmartPAC PRO Servo is easy to use. The instructions on each display tell you what to press in order to proceed to the next step.



Figure 3-1. SmartPAC PRO Servo

SmartPAC PRO Operating Modes

SmartPAC PRO has three modes of operation: Initialization mode, Program mode, and Run mode. The Main, or top, menu for each mode is shown in Figure 3-2. Table 3-1, page 65 tells what you can do in that mode and which chapter gives instructions for that mode. That table also tells what you can do in each mode, tells how to enter and exit the mode, and refers you to other sections of the manual.

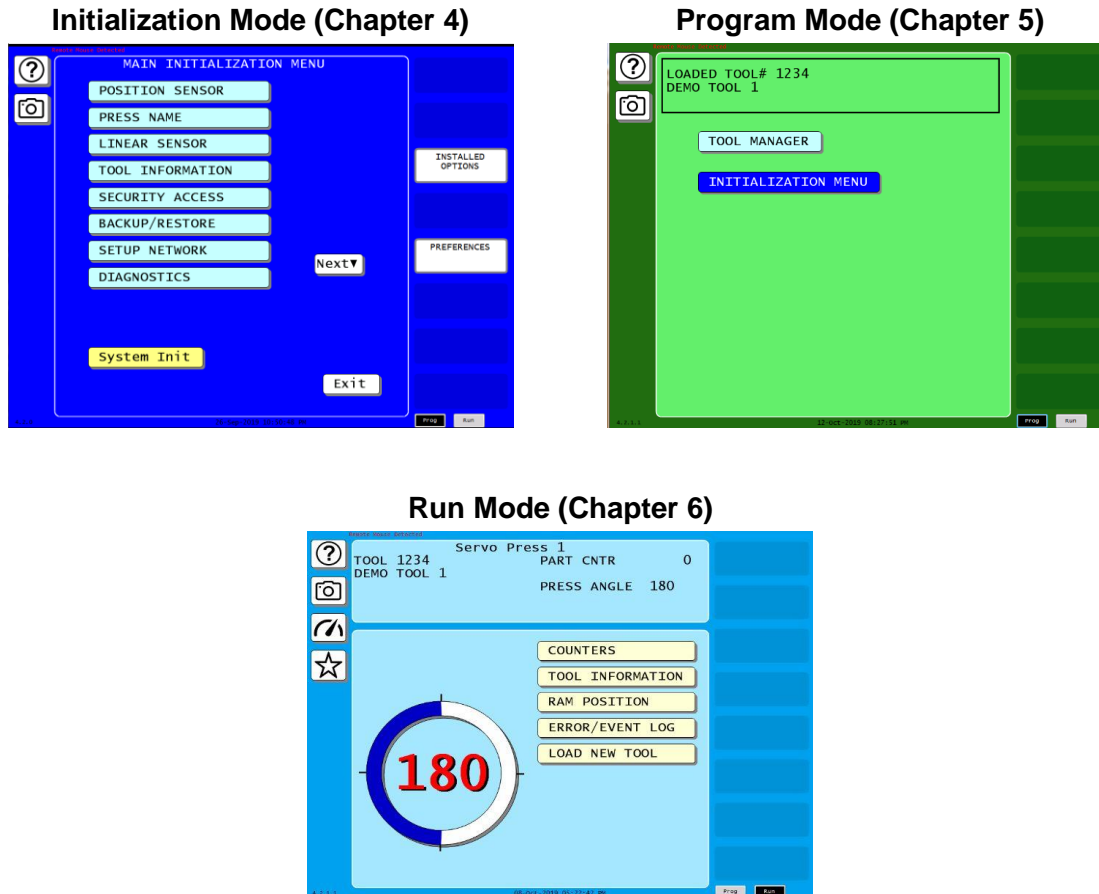


Figure 3-2. SmartPAC PRO Servo Operating Modes, Showing Main Menus

Table 3-1. Initialization, Program and Run Modes: Entry and Exit Procedures

| Mode | How to Enter This Mode | How to Exit This Mode |
|---|--|--|
| <p>Initialization</p> <p>Make settings that control operation of SmartPAC PRO with all tools.</p> <p>You use Initialization mode extensively when you install a new SmartPAC PRO. You will use this mode only occasionally after you set up SmartPAC PRO and the press is running.</p> <p>See page 3-XX and Chapter 4.</p> <p>White text on dark blue display.</p> | <p>Turn the key switch to “PROG” and select “INITIALIZATION MENU” from the Main Programming Menu.</p> <p>We recommend that you password-protect the Initialization menu (see Chapter 4 for information on setting passwords and security access)</p> | <p><i>To switch to Program mode:</i></p> <p>Press EXIT.</p> <hr/> <p><i>To switch to Run mode:</i></p> <p>Turn the Program/Run key to RUN.*</p> |
| <p>Program</p> <p>Create, modify and load settings for individual tools that control SmartPAC PRO operation when that tool is loaded.</p> <p>See page 3-XX and Chapter 5. Black text on green display.</p> | <p><i>From Run mode:</i></p> <p>Turn the Program/Run key to PROG.*</p> <hr/> <p><i>From Initialization mode:</i></p> <p>Go to the Main Initialization Menu, and Press EXIT.</p> <p>—or—</p> <p>Turn the Program/Run key to RUN and then back to PROG.*</p> | <p><i>To switch to Run mode:</i></p> <p>Turn the Program/Run key to RUN.*</p> <hr/> <p><i>To switch to Initialization mode:</i></p> <p>Select “INITIALIZATION MENU” from the Main Programming Menu</p> |
| <p>Run</p> <p>Run the press. In this mode you can adjust counters, cams, sensors and other functions while the press is running.</p> <p>See <i>Run Mode</i>, page 66 and Chapter 6.</p> <p>Black text on light blue display.</p> | <p>Turn the Program/Run key to RUN.*</p> | <p><i>To switch to Program mode:</i></p> <p>Turn the Program/Run key to PROG.*</p> |
| <p>* If you turn the key and nothing happens, press EXIT repeatedly until SmartPAC PRO changes modes. Before you turn the Program/Run key, make sure SmartPAC PRO is in the Main (or top) menu for the mode it is in. If it is not, press RESET repeatedly until the Main menu appears.</p> | | |

Initialization Mode

Initialization mode allows you make settings that control the operation of SmartPAC PRO Servo with any tool. (Settings for individual tools are made in Program mode—see Chapter 5.) Initialization mode is used extensively when you install a new SmartPAC PRO Servo, but you will likely use it only occasionally after SmartPAC PRO Servo is set up and the press is running.

See Chapter 4 for detailed instructions on how to use SmartPAC PRO Servo in Initialization mode.

Program Mode

Program mode allows you to create, copy, modify and delete tool settings as well as enable or disable sensors. The Main Program Screen is shown in Figure 3-2.

See Chapter 5, page 105 for detailed instructions on how to use SmartPAC PRO Servo in Program mode.

Run Mode

Run mode is the mode you use to run the press. The Main Run Menu, shown in Figure 3-2, displays the rotation of the crankshaft on a crank angle clock diagram in the lower left corner of the display. When the press is running in Continuous mode, the press speed in strokes per minute is displayed in the center of the clock diagram. When the press is stopped or running in Inch or Single-stroke, the crankshaft angle is displayed inside the clock.

If security access settings in Initialization mode permit, you may be able to make adjustments to programmed settings in Run mode, such as changes to die protection settings, cam timing, etc. See Chapter 6, page 159, for detailed instructions on how to use SmartPAC PRO in the Run mode.

On-Screen Data Entry

SmartPAC PRO Servo features a touch screen with on-screen buttons to enable you to navigate through its menus and make setting for your tools. In addition, SmartPAC PRO utilizes several different on-screen keypads for entering alpha-numeric data or to navigate through certain “legacy” screens using cursor (arrow) “keys”. These keypads are described below.

NOTICE

You may plug a USB keyboard into the USB port on the front panel of the SmartPAC PRO. When entering alphanumeric data, the SmartPAC PRO will automatically recognize keystrokes from both the external and on-screen keyboards

On-Screen Numeric Keypad

Whenever you select a field that requires numbers only, SmartPAC PRO Servo displays a numeric keypad, Figure 3-3.

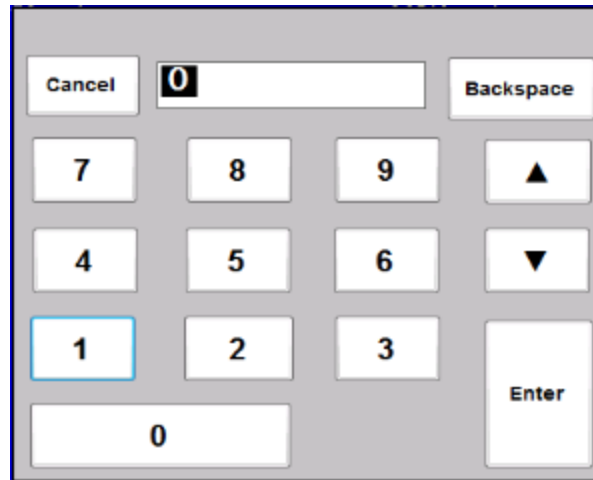


Figure 3-3. Numeric Keypad

The up and down arrow cursor keys on the keypad increment or decrement the value by 1. The backspace key clears the value. The Cancel key closes the numeric keypad without making any changes, and the Enter key accepts the value entered into the field.

When you use a USB keyboard, the Esc key acts as the Cancel button, while the other keys match their counterparts.

Please note that when the on-screen keypad is displayed, the “EXIT” key on the screen is disabled. You must enter or cancel the keypad value before you can access any other buttons on the screen.

On-Screen Keyboard

Whenever you select a field that requires the input of a combination of letters, symbols, and/or numbers, SmartPAC PRO Servo displays its on-screen keyboard, Figure 3-4.

The backspace key clears the value. The Cancel key closes the numeric keypad without making any changes, and the Enter key accepts the value entered into the field.

The Shift key capitalizes the next character, the CAPS key functions like a Caps Lock key.

When you use a USB keyboard, the Esc key acts as a Cancel button, while the other keys match their counterparts.

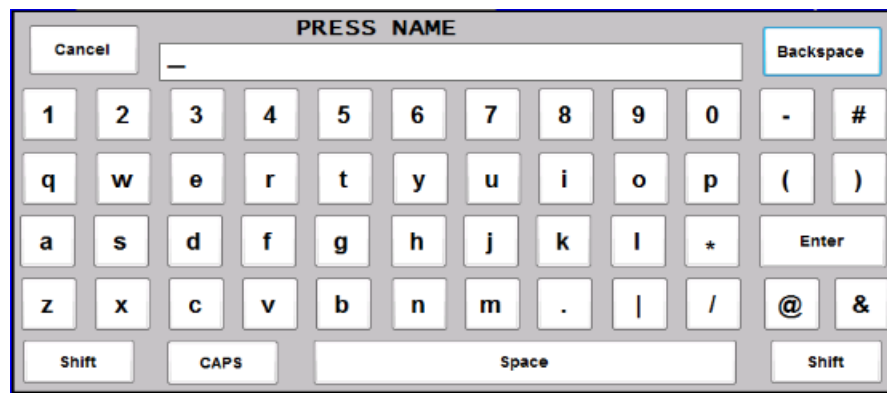







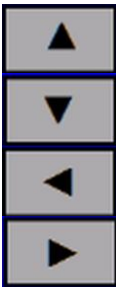

Figure 3-4. SmartPAC PRO Servo On-screen Keyboard

Please note that when the on-screen keyboard is displayed, the “EXIT” key and any other buttons on the screen behind the keyboard are disabled. You must enter or cancel the value before you can access any other buttons on the screen.

The “ALT” Menu

At the left side of certain screens, an alternate navigation menu called the “ALT” menu appears, shown below. Typically, the ALT menu is displayed where cursor-and-enter navigation is used on a screen rather than the touch screen. It consists of the following buttons:

Table 3-2. Button Descriptions

| | | |
|--|---|--|
|  |  | The Help button is active on most screens. As the label implies, this button provides instructions for the specific screen you are viewing. |
| |  | The Camera button, when pressed, captures an image of the current screen. See <i>Screen Captures</i> , below, for more information on this feature. |
| |  | The Dashboard button, when pressed, displays the currently active dashboard. |
| |  | The Favorite button allows you to quickly access the Run mode screens you bookmarked (favorited). Also press this button to access, create, and edit dashboards. |
| |  | Cursor (arrow) buttons are used to move the on-screen navigation highlight, to increment and decrement numeric values, and to set the on and off angles for programmable cam switches and die protection ready signals. When setting ON/OFF timing, the Up/Down cursor arrows set the ON time. The Right/Left cursor arrows set the OFF time. |
| |  | ENTER – The Enter button is used to select a highlighted item during navigation, or to register a value entered into a field. |

Screen Captures

At the left of the screen is a camera icon button. Press it to capture the currently displayed screen, Table 3-2. The screen captures can be either saved internally by the SmartPAC PRO (and later downloaded or emailed) or they can be saved to a USB drive that is plugged into SmartPAC PRO’s USB port.

The screen captures are stored as JPEG files, and each one is about 80Kb in size. The file names are unique, and are derived from the time and date that they were captured. If there is a USB Disk in SmartPAC PRO Servo's USB port, the SmartPAC Pro creates a directory on the disk labelled "CaptureXXXXXXXX", with the XXXXXXXX being replaced with the SmartPAC PRO Servo's serial number. The screen captures are stored in this directory until the USB Disk is full.

If there's no USB drive plugged into the USB port at the time a screen is captured, SmartPAC PRO will store up to 20 screen captures internally. If more than 20 screens are captured, the SmartPAC PRO overwrites the oldest file.

The internally stored screen captures and other diagnostic information can be retrieved from the SmartPAC PRO by plugging a USB drive into the SmartPAC PRO's USB port, going to the Initialization Menu, selecting DIAGNOSTICS, then SAVE TO USB DISK (see Figure 3-5).

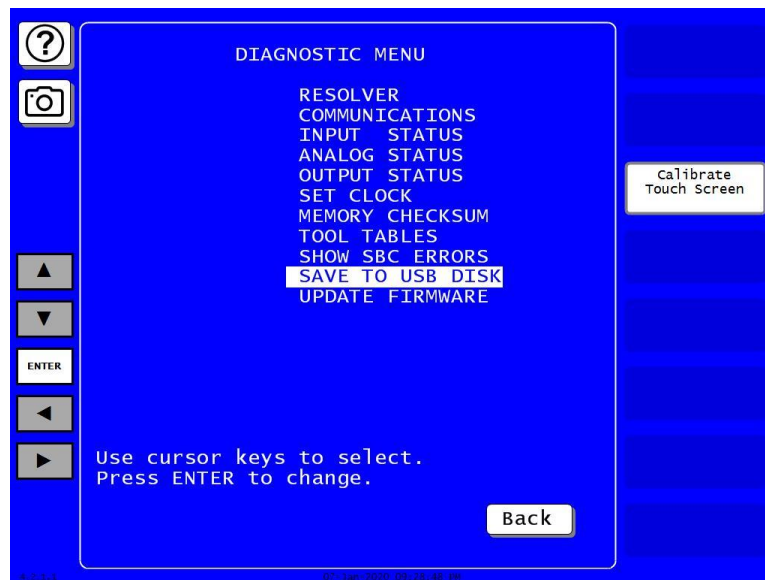


Figure 3-5. Save to USB Disk

The SmartPAC PRO creates a directory on the drive labelled "UploadXXXXXXXX" - with the XXXXXXXX replaced by the SmartPAC PRO Servo's serial number. The screen captures are saved into this directory.

If you attempt to download to USB disk without first plugging a USB drive into the USB Port, an error message appears (see Figure 3-6).



Figure 3-6. USB Disk Error Message

The SmartPAC PRO creates a directory on the drive labelled "UploadXXXXXXXX" - with the XXXXXXXX replaced by the SmartPAC PRO Servo's serial number. The screen caps are saved in this directory.

Chapter 4 – SmartPAC PRO Servo Initialization Mode

This chapter shows you how to make settings in SmartPAC PRO Servo Initialization mode. Initialization settings entered via the Main Initialization Menu (Figure 4-1) control operation of SmartPAC PRO Servo for all tools. (You make settings for individual tools in Program mode—see Chapter 5).

To enter Initialization Mode: Turn the PROG/RUN key to PROG. In the Program Menu that appears, press INITIALIZATION MENU.

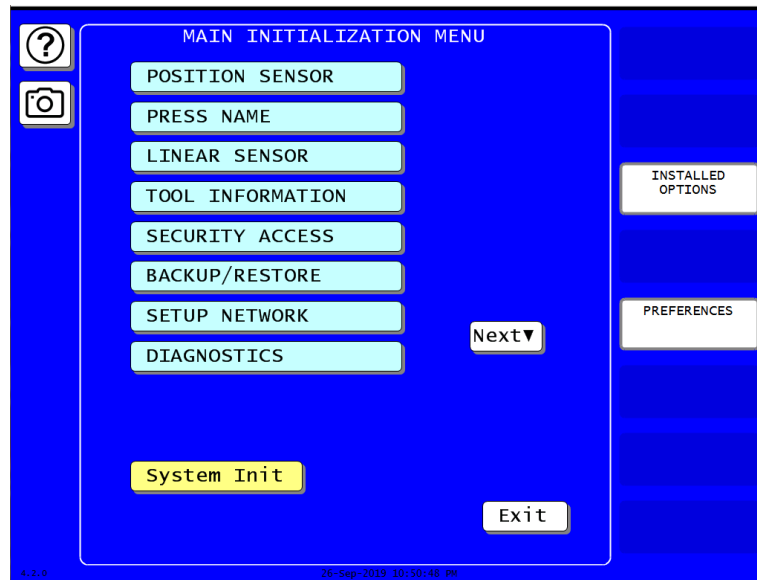


Figure 4-1. Main Initialization Menu
(Includes some options. Your display may look different.)

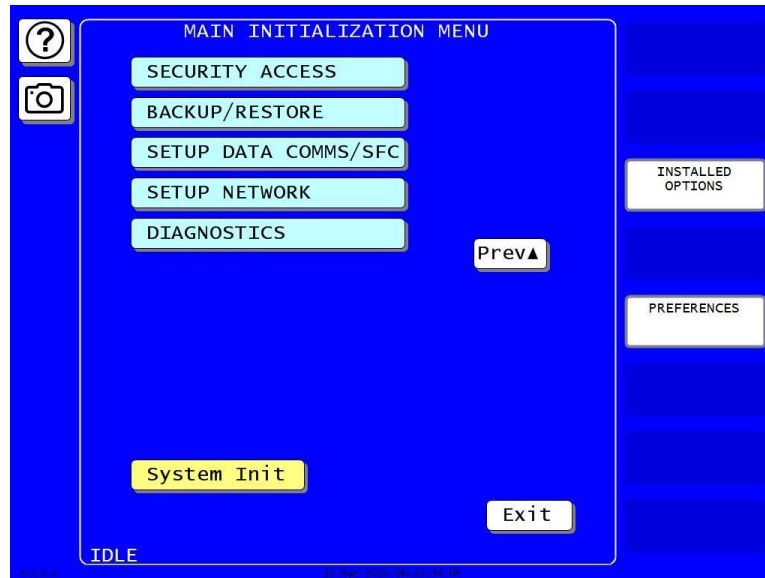


Figure 4-2. Main Initialization Menu, Next Items

The following sections cover setting up the linear transducer, controlling security access, setting communications parameters, and other operations. It also documents functions related to programmable cams and die protection, such as entering custom cam channel and sensor names and setting global cams.

If you have SmartPAC PRO Servo options installed, you also make Initialization settings for them. Refer to the user manuals for the options you have purchased for instructions.

The following sections show you how to use the selections available on the Main Initialization Menu to set initialization parameters for SmartPAC PRO Servo with ProCamPAC and DiProPAC.

NOTICE

SET THE INTERNAL CLOCK IN SMARTPAC PRO SERVO

When you initialize your SmartPAC PRO Servo, be sure to set the clock to the correct date and to your local time according to the instructions in *SET CLOCK*, page 102.

POSITION SENSOR

(INITIALIZATION – POSITION SENSOR)

This item allows you to select certain parameters for the press. Parameters are set on the screen shown in Figure 4-3. The following sections show you how to set each parameter.

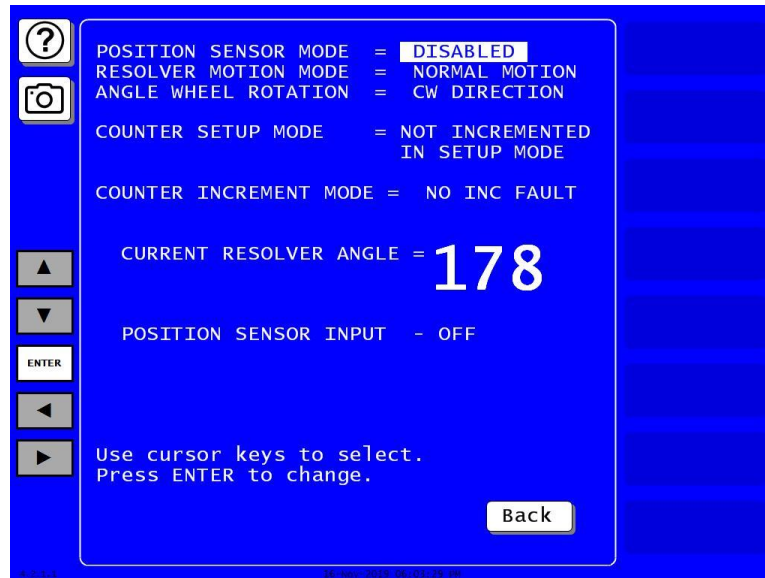


Figure 4-3. Position Sensor Screen

Position Sensor Mode

(INITIALIZATION – POSITION SENSOR)

SmartPAC PRO Servo does not use a position sensor, and this item is set to “DISABLED” by default. If POSITION SENSOR MODE has been inadvertently set to “ENABLED,” the “Position sensor incorrect” message displays (see page 188 for details). To correct this problem, do the following:

1. On the Position Sensor screen and with the POSITION SENSOR MODE setting selected, press ENTER to toggle the setting from “ENABLED” to “DISABLED.”
2. Press Back when you are done.

Resolver Motion Mode (Normal Motion – Link Motion)

(INITIALIZATION – POSITION SENSOR)

SmartPAC PRO Servo does not use a resolver. Leave this option set to “NORMAL MOTION,” its default setting. The setting has no effect on the operation of your press.

Angle Wheel Rotation (Clockwise – Counterclockwise)

(INITIALIZATION – POSITION SENSOR)

Leave this item set to “CW” (Clockwise), its default setting.

Counter Setup Mode

(INITIALIZATION – POSITION SENSOR)

This item allows you to enable or disable counter setup mode if you have made the appropriate wiring connections to make SmartPAC PRO Servo “setup mode ready” (see *Wiring Setup Mode Circuit*, page 55.) To set this parameter, do the following:

1. Press ENTER to toggle between two settings:
 - “IS INCREMENTED IN ALL MODES”– The parts and batch counters will increment on every stroke no matter what mode (i.e., Inch, Single-stroke, or Continuous) you are in.
 - “NOT INCREMENTED IN SETUP MODE”–The Parts counter and batch counters whose increment mode is programmed as GOOD PARTS will not increment when you are in Inch mode.

NOTICE

The Strokes counter will increment regardless of the mode you are in.

2. When the setting you want is displayed, press Back.

Counter Increment Mode

(INITIALIZATION – POSITION SENSOR)

This item allows you to specify whether the Good Parts counter increments during a fault condition. The default setting, NO INC FAULT, prevents the counter from incrementing when there is a fault. To set this parameter, do the following:

1. Press ENTER to toggle between two settings:
 - “NO INC FAULT”–The Parts counter and batch counters whose increment mode is programmed as GOOD PARTS will increment on every stroke except when there is a fault condition. This is the default setting.
 - “INC ALWAYS”–The Parts counter and batch counters whose increment mode is programmed as GOOD PARTS will increment on every stroke even if a fault condition is present.
2. When the setting you want is displayed, press Back.

INSTALLED OPTIONS

(INITIALIZATION – INSTALLED OPTIONS)

This item enables you to view the options that are installed on your SmartPAC PRO Servo (see Figure 4-4), including the number of cam channels and sensors.

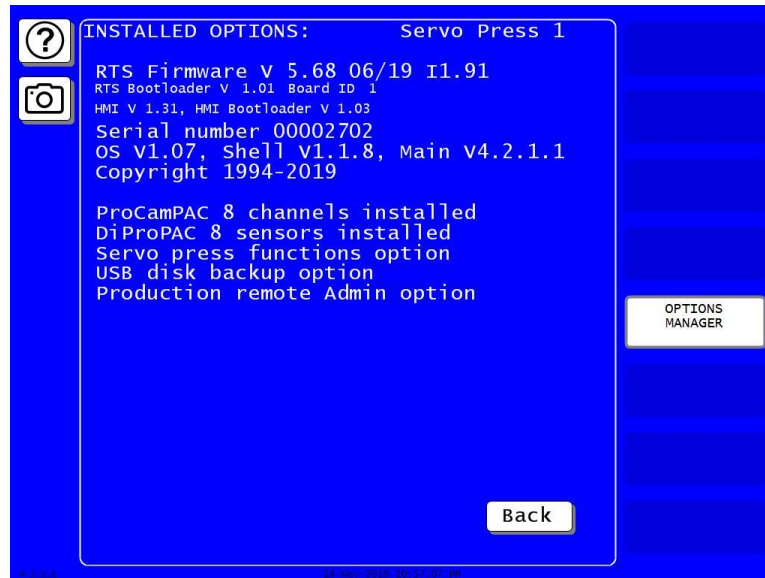


Figure 4-4. Installed Options Screen
(Your screen will look different.)

OPTIONS MANAGER

(INITIALIZATION – INSTALLED OPTIONS – OPTIONS MANAGER)

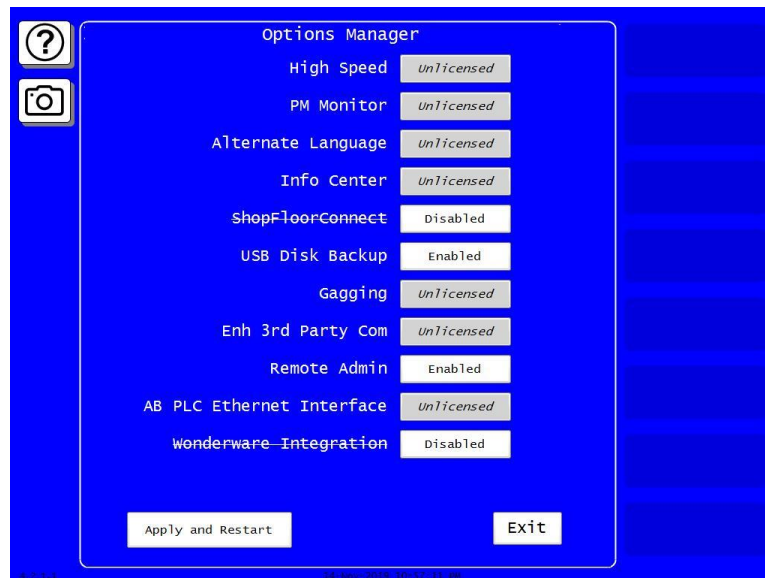


Figure 4-5. Options Manager Screen

To access the Options Manager: in the Initialization menu screen press INSTALLED OPTIONS and on the screen that opens press OPTIONS MANAGER.

In the Options Manager you can enable or disable installed options.

PREFERENCES

(INITIALIZATION – PREFERENCES)

In the Preferences menu, set the tool number mode, backlight timing and whether the time is shown in the footer of reports and messages.

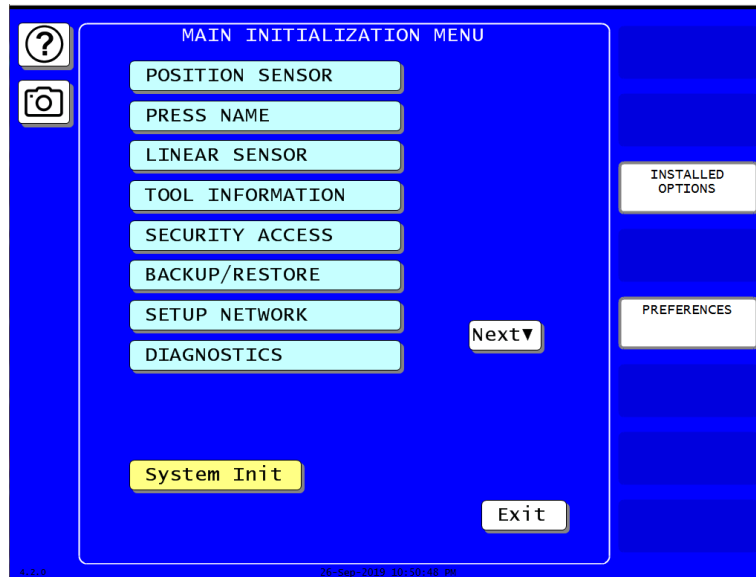


Figure 4-6. Main Initialization Menu

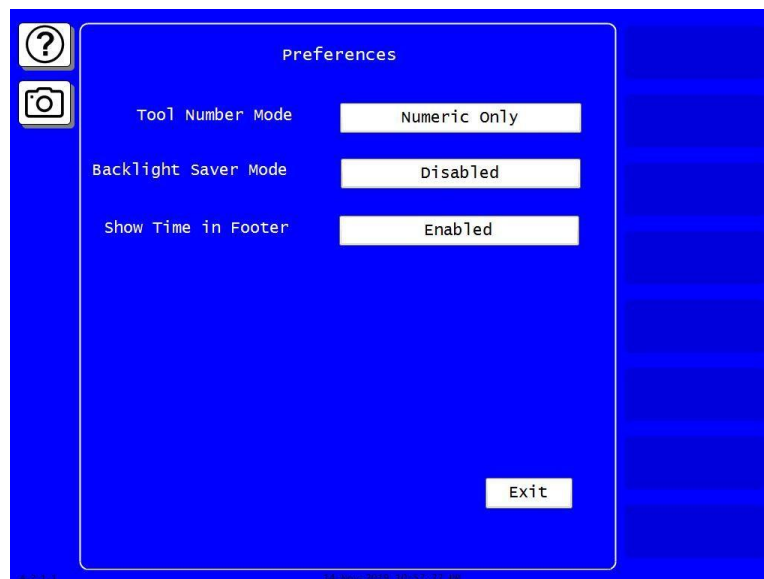


Figure 4-7. Preferences Screen

Table 4-1. Preferences

| Item | Choices |
|----------------------|--|
| Tool Number Mode | Numeric Only / Alphanumeric |
| Backlight Saver Mode | Enabled / 1 Min Inactivity / 15 Min Inactivity |
| Show Time in Footer | Enabled/Disabled |

Tool Number Mode Numeric Only / Alpha Numeric touch to toggle

Backlight Saver Mode Disabled 1 Min Inactivity 15 Min Inactivity touch to toggle

Show Time in Footer Enabled Disabled touch to toggle

Press Exit when done.

SELECT LANGUAGE (OPTIONAL)

(INITIALIZATION – INSTALLED OPTIONS – SELECT LANGUAGE)

If you have ordered the alternate language option, the Installed Options screen provides a Select Language button that allows you to select the language in which you want SmartPAC PRO Servo screens displayed. When you press the Select Language button, the screen shows the available languages. Select your desired language and press Back. A button appears on screens in all three modes enabling you to change to the language you chose.

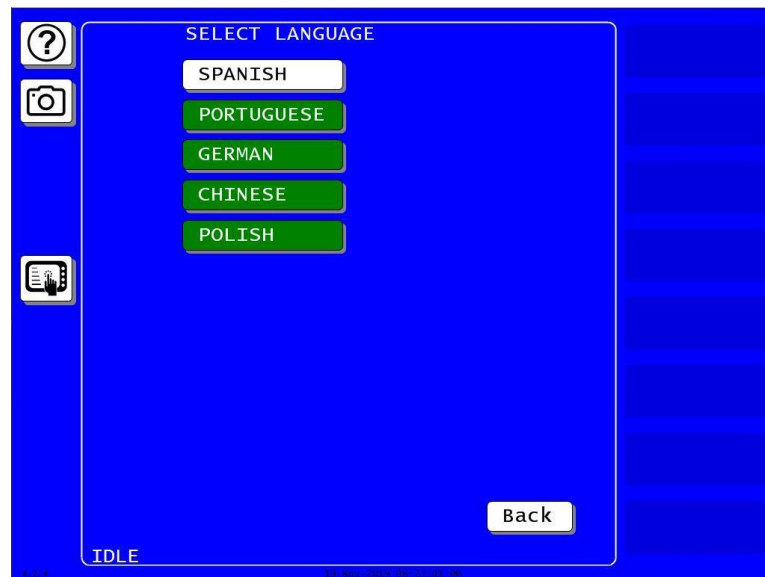


Figure 4-8. Select Language Screen

PRESS NAME

(INITIALIZATION – PRESS NAME)

This item enables you to name the press on which SmartPAC PRO Servo is installed. When you select PRESS NAME, the on-screen keyboard appears, allowing you to enter the press name.

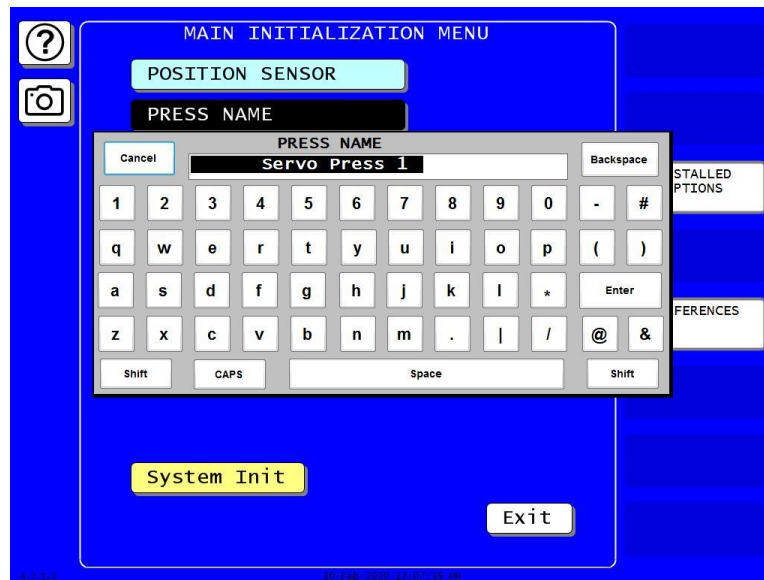


Figure 4-9. Press Name Entry Window

SELECT CAM NAMES (Optional)

(INITIALIZATION – SET CAM NAMES)

NOTICE

CAM NAMES ENTERED IN INITIALIZATION APPLY TO ALL TOOLS

The names you assign to cam channels in Initialization apply to all tools. If, for example, you “custom-name” Channel 1 as “Bypass 3,” then Channel 1 is “Bypass 3” for every tool loaded.

Do the following to assign cam channel names:

1. Press SELECT CAM NAMES on the Main Initialization Menu. The Cam Channel Name Menu, shown in Figure 4-10, displays. The first time you access this screen, all channels are named “UNNAMED.”

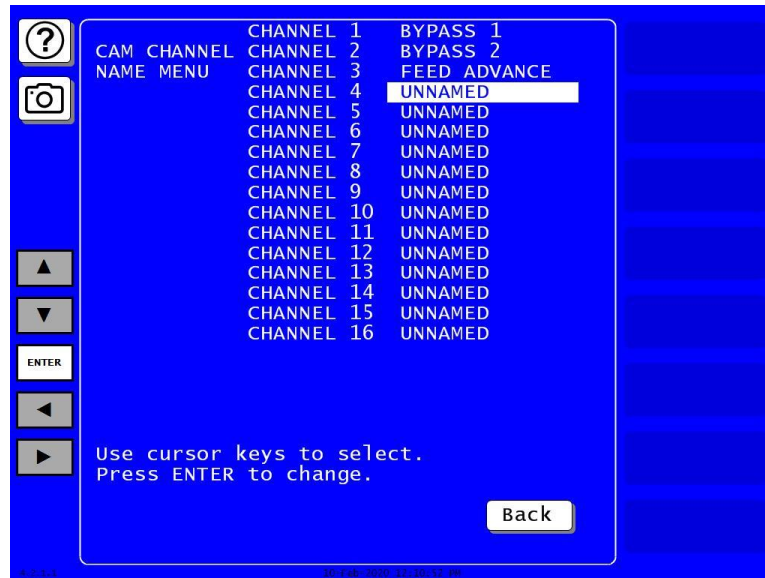


Figure 4-10. Cam Channel Name Menu
(Your display may look different)

- Select a channel. The screen shown in Figure 4-11 displays.



Figure 4-11. Select Name for Cam Channel Screen

- Select from the list of names the name that best describes the function of the selected cam channel. You are returned to the Cam Channel Name Menu with the name you selected displayed to the right of the selected channel.

To view names that appear below the MORE NAMES line, press the Down (▼) cursor key. A new name appears each time you press the Down (▼) cursor. When you have cycled through the complete list, the highlight bar returns to “UNNAMED,” the first item.

- If none of the names in the list seem suitable but you still want to name the cam channel, select “CUSTOM NAME.” The on-screen keyboard displays.

NOTICE

You can plug a computer keyboard into the USB port to enter cam channel names.

5. Key in a “custom” name and press Enter. The on-screen keyboard closes and the “custom” name you selected will be displayed to the right of the selected channel.
6. When you are finished naming channels, press Back to return to the Main Initialization Menu.

SET GLOBAL CAMS (Optional)

(INITIALIZATION – SET CAM NAMES)

 DANGER**PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE**

Use SmartPAC PRO Servo’s programmable cam switch to control auxiliary functions only. The SmartPAC PRO Servo programmable cam capability should never be used to provide timing signals for any safety use including clutch/brake control or muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

This item, which appears on the Main Initialization Menu only when ProCamPAC is installed, allows you to make settings for selected cam channels that apply to all tools programmed on your SmartPAC PRO Servo. To program a global cam, do the following:

NOTICE

If you want to name the cam channel, do so before you program it as a global cam. Enter the cam name as instructed in *SELECT CAM NAMES (Optional)*, page 78.

1. Select SET GLOBAL CAMS on the Main Initialization Menu. The Global Cams menu displays, Figure 4-12. An asterisk (*) indicates the channels that are already programmed as global cams.

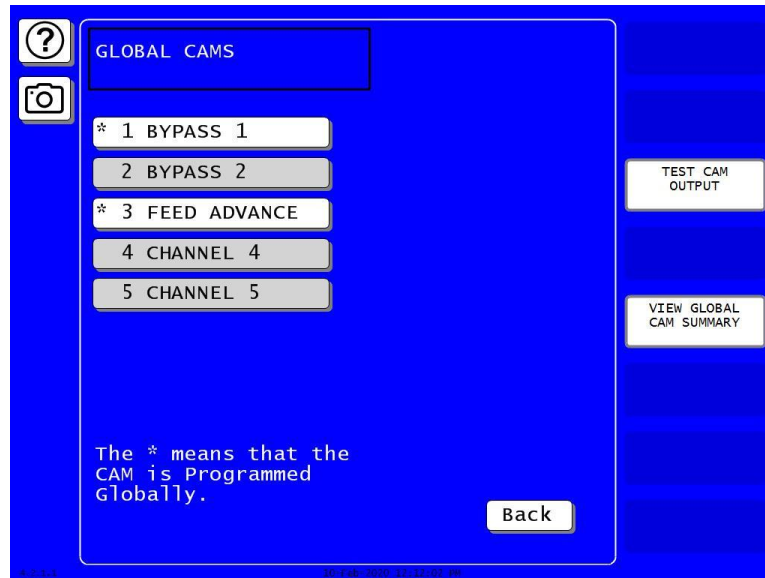


Figure 4-12. Global Cams Menu
Asterisk (*) indicates Global Cams.

2. Select the cam you want to program. The Global Cam Timing Type screen displays, Figure 4-13.



Figure 4-13. Global Cam Timing Type Screen

3. Select the type of cam timing you want to program for this channel, referring to *CAM SWITCH*, page 142, in Chapter 5 for instructions. Note that Auto Advance is not available as a cam timing option for SmartPAC 2 Servo.
4. When you have finished programming the global cam, press Back.

CUSTOM SENSOR NAMES (Optional)

(INITIALIZATION – CUSTOM SENSOR NAMES)

This item, which appears on the Main Initialization Menu only when DiProPAC is installed, allows you to create “custom” names for up to 32 die protection sensors. The custom names you create in Initialization provide the options available to you in Program mode when you select names for your sensors. You create custom names on the Custom Sensor Names screen, Figure 4-14.

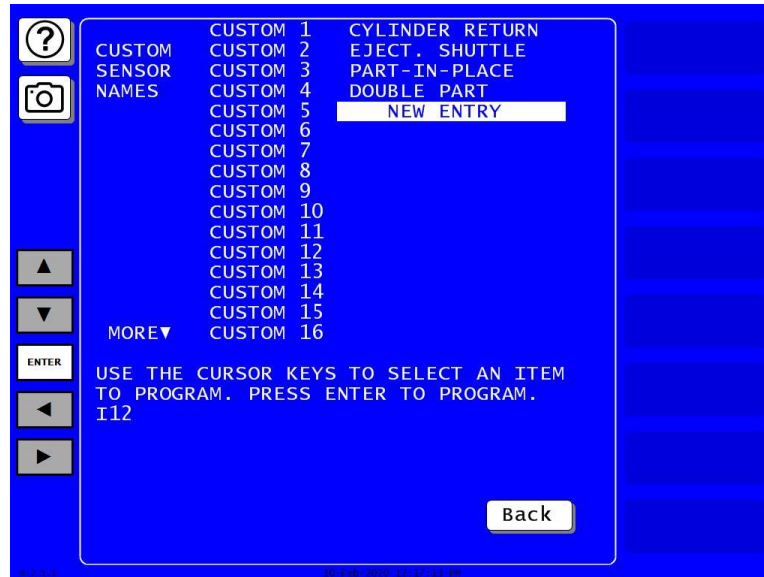


Figure 4-14. Custom Sensor Names Screen

To create a custom name, do the following:

1. Select CUSTOM SENSOR NAMES on the Main Initialization Menu. The Custom Sensor Names screen displays.
2. Select the item for which you want to create a custom name (e.g., CUSTOM 1, CUSTOM 2, etc.). The on-screen keyboard displays.
3. Key in the custom name, following the directions in the on-screen keyboard, then press Enter to accept your entry. You are returned to the Custom Sensor Names screen with the custom name you created displayed to the right of the selected item number. To cancel your selection, press Cancel.
4. Repeat steps 2 and 3 for each item you want to name. To access CUSTOM 17 through CUSTOM 32 items, move the highlight bar down past “CUSTOM 16.” Additional Custom Name entries display sequentially, one at a time.
5. Press Exit when you are done to return to the Main Initialization Menu.

SENSOR ENABLE MODE (Optional)

The SENSOR ENABLE MODE item, which appears on the Main Initialization Menu only when DiProPAC is installed, allows you to select the way in which your die protection sensors are enabled. This item also allows you to enable Setup mode if this feature has been wired during installation. You make these settings on the Die Protection Mode Selection Menu, Figure 4-15.

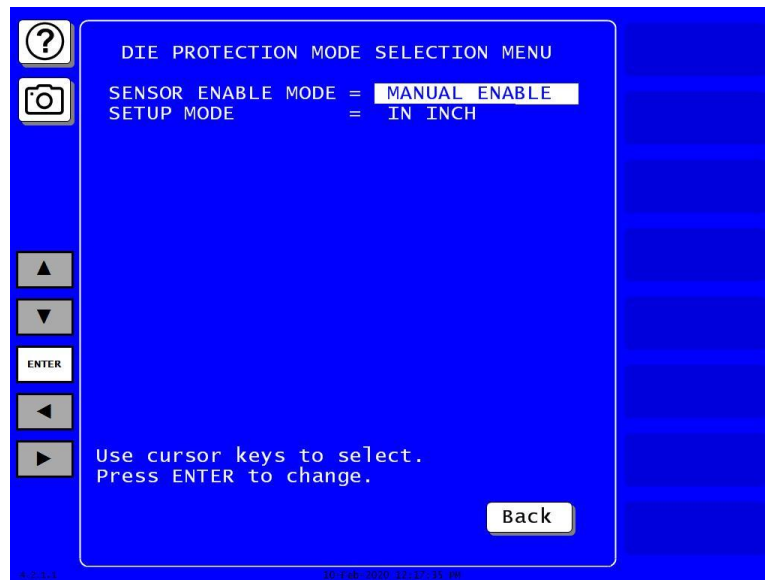


Figure 4-15. Die Protection Enable Mode Selection Menu

Selecting Sensor Enable Mode

You can select one of three modes for enabling die protection sensors:

- **MANUAL ENABLE.** When this option is selected, sensors are not automatically re-enabled after the press is restarted following a setup or other procedure in which the sensors have been temporarily disabled. You must enable or disable sensors manually in Program and Run modes (see *SENSOR ENABLE/DISABLE & STATUS (Optional)*, page 156, or *DISABLE (ENABLE) SENSORS*, page 163).
- **AUTO BY TOOL.** When this option is selected, DiProPAC automatically re-enables all sensors programmed for a specific tool whenever the press is restarted. You specify in Program mode the number of strokes to allow after the press starts before DiProPAC re-enables all sensors for the tool (see *Setting the “Auto Enable by Tool” Counter Value*, page 125).
- **AUTO BY SENSOR.** When this option is selected, DiProPAC automatically re-enables each sensor programmed for a specific tool, sensor by sensor. You specify in Program mode for each sensor the number of strokes to allow after the press is restarted before DiProPAC re-enables that sensor (see *Setting the “Auto Enable by Sensor” Counter Value*, page 5-23).

To select a Sensor Enable mode, do the following:

1. Select SENSOR ENABLE MODE on the Main Initialization Menu. The Die Protection Mode Selection Menu displays, Figure 4-15.
2. With the highlight bar on the SENSOR ENABLE MODE item, press ENTER until the setting you want is displayed, then press Exit to return to the Main Initialization Menu.

Enabling Setup Mode

Setup mode allows you to run the press in Inch without incrementing the good parts and batch counters or triggering a fault condition in the green sensors. This mode, as its name indicates, is used during setup. You enable Setup mode by selecting the Inch setting.

NOTICE

To enable Setup mode, your inch-selector switch must be wired to the Setup mode input, terminal #252 on TB105 (see *Wiring Setup Mode Circuit*, in Chapter 2)

To enable Setup mode, do the following:

1. Select SENSOR ENABLE MODE on the Main Initialization Menu. The Die Protection Mode Selection Menu displays, Figure 4-15.
2. Move the highlight bar to the SETUP MODE item.
3. Press ENTER to toggle the setting from DISABLED to INCH, then press Exit to return to the Main Initialization Menu.

LINEAR SENSOR

(INITIALIZATION – LINEAR SENSOR)

NOTICE

Make sure to select a transducer that is at least as long as or longer than the sum of the maximum stroke length of your press and the maximum shut-height adjustment.

NOTICE

CONNECT SWITCH TO DISABLE INTERRUPTED CYCLE FAULTS DURING SETUP

For ease in setting up and configuring the Linear Sensor, wire a switch between TB5 pin 252 (Setup) and TB5 pin 250 (Gnd). Refer to the wiring diagrams in the back of this manual.

When the switch is closed to ground, this disables interrupted cycle faults.

After you set up the transducer and it is functioning properly, open the switch or remove it.

This item enables you to set up the magnetostrictive linear transducer for use with your press. You set the resolution for the sensor, the sensor's zero value, the maximum Upper Limit in the sensor's range, the offset to apply to the sensor's upper and lower limits, and the units in which Upper Limit, Lower Limit, and Offset Value are measured. You make these settings on the Linear Sensor Setup screen, Figure 4-16.

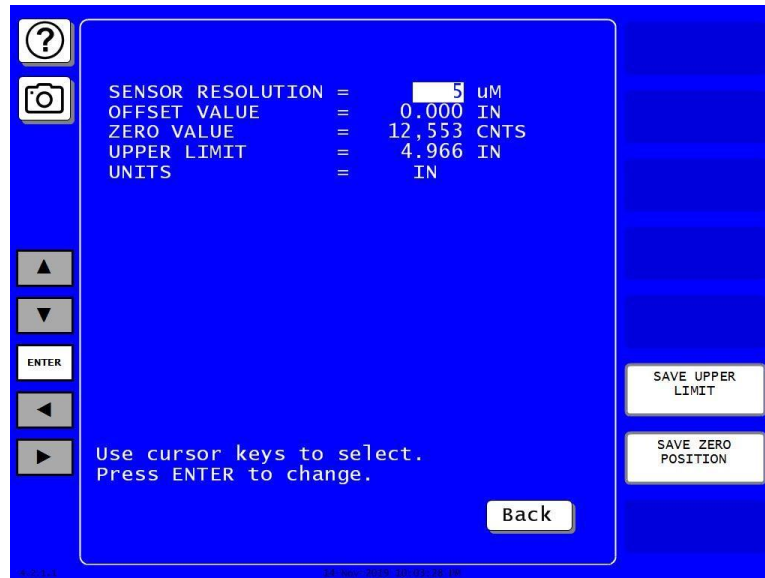


Figure 4-16. Linear Sensor Setup Screen

Table 4-2 explains the settings displayed on the Linear Sensor Setup screen and, where applicable, provides available options.

Table 4-2. Linear Sensor Setup Screen Field Definitions

| Field | Settings | | | | | | |
|-----------------------------------|--|-----------------------|-----------------|------------------------|------------------|-----------------------------------|------------------|
| SENSOR RESOLUTION | <p>The smallest change the sensor can detect in its measurement range. There are three linear sensor resolution options (displayed in micrometers, μm), which are dependent on the length of the sensor:</p> <table> <tr> <td>6- and 12-in. sensors</td> <td>5 μm</td> </tr> <tr> <td>18- and 24-in. sensors</td> <td>10 μm</td> </tr> <tr> <td>30-, 36-, 42-, and 48-in. sensors</td> <td>20 μm</td> </tr> </table> | 6- and 12-in. sensors | 5 μm | 18- and 24-in. sensors | 10 μm | 30-, 36-, 42-, and 48-in. sensors | 20 μm |
| 6- and 12-in. sensors | 5 μm | | | | | | |
| 18- and 24-in. sensors | 10 μm | | | | | | |
| 30-, 36-, 42-, and 48-in. sensors | 20 μm | | | | | | |
| OFFSET VALUE | <p>A value added to the Upper Limit and Lower Limit readings on the Ram Position screen in Program (see page 154) and Run (see page 179) modes that reflects the shut height opening of your press. This corrected reading is used for all displays and settings.</p> <p>The magnetostrictive transducer reports absolute distance, the transducer's lowest position reporting zero, the highest position the instrument's maximum range. The absolute distance must be modified by the Offset Value to represent the true length of the ram's vertical movement.</p> <p>To determine the Offset Value, measure the shut height opening of your press, using a dial gage if you want a precise display. From this value subtract the reading displayed in the Lower Limit field on the Ram Position screen in either Program or Run mode when the press has been inched to its lowest position. The formula is</p> $\text{Offset Value} = \text{Shut height opening} - \text{Lower Limit value}$ | | | | | | |
| ZERO VALUE | <p>The number of counts representing the sensor's output at its zero position. For an MTS sensor, this value should be at least 1,000 counts. For a Balluff sensor, this item should be set to zero (0).</p> | | | | | | |
| UPPER LIMIT | <p>The highest value you can program as the Upper Limit on the Ram Position screen in Program (see page 5-50) and Run (see page 6-22) modes. This value should be set to the ram's position at Top Dead Center (TDC) and at the Upper Limit of its Shut Height adjustment. The Upper Limit can be less than the maximum range of the linear sensor.</p> | | | | | | |
| UNITS | <p>The units in which the sensor's Upper Limit, Lower Limit, and Offset Value are measured. There are two options:</p> <table> <tr> <td>IN</td> <td>Inches</td> </tr> <tr> <td>MM</td> <td>Millimeters</td> </tr> </table> | IN | Inches | MM | Millimeters | | |
| IN | Inches | | | | | | |
| MM | Millimeters | | | | | | |

To enter linear sensor Initialization settings, perform the following steps:

1. Select LINEAR SENSOR on the Main Initialization Menu. The Linear Sensor Setup screen displays.
2. Highlight the UNITS item.
3. Press ENTER repeatedly until the unit you want is displayed, referring to Table 4-2 for available options.

4. Highlight the SENSOR RESOLUTION item. Press ENTER until the setting you want is displayed, referring to Table 4-2 for available options.

NOTICE

DO NOT enter the OFFSET VALUE field until you have set the Zero Value and Upper Limit.

5. Highlight the ZERO VALUE item.
6. Set the ZERO VALUE field in one of the following ways:
 - If you are using a Balluff sensor, this item should be set to zero (0). To change the setting, press ENTER, and when the Numeric Entry window displays key in zero and press ENTER. Your entry displays in the ZERO VALUE field.
 - If you are using an MTS sensor, position the ram at Bottom Dead Center (BDC) and at the Lower Limit of its Shut Height adjustment, then press Save Zero Position. That position, in counts, is displayed in the ZERO VALUE field. The displayed value should be greater than 1,000 counts. If it isn't, the magnet is positioned outside the sensor's range. Move the transducer down so that the magnet is positioned within the sensor's range, then press Save Zero Position again.
7. Highlight the UPPER LIMIT item.
8. Set the UPPER LIMIT value in one of the following ways:
 - Switch to Run mode (see page 160 for instructions). Inch the ram to Top Dead Center (TDC) and adjust the Shut Height to its Upper Limit. Return to this screen, and press Save Upper Limit. The absolute reading reported by the linear sensor displays in the UPPER LIMIT field.
or
 - Press ENTER, and when the Numeric Entry window displays, key in the value you want, using the numeric keypad or the Up (▲) and Down (▼) cursor keys, and press ENTER. The value you specified displays in the UPPER LIMIT field.
9. Highlight the OFFSET VALUE item.

NOTICE

With firmware versions V6.0 or higher, there is no limit for the Offset Value.

10. Press ENTER, key in the value you want in the Numeric Entry window, and press ENTER. The value you specified displays in the OFFSET VALUE field.
11. When you are finished, press Back to return to the Main Initialization Menu.

TOOL INFORMATION

(INITIALIZATION – TOOL INFORMATION)

The TOOL INFORMATION item on the Main Initialization Menu allows you to set up a name, unit of measurement, and number of decimal places for up to six items you wish to document for each tool. You enter specific values and up to thirty characters of special information for each tool in

Program and Run modes (see TOOL INFORMATION, page 5-48 and TOOL INFORMATION, page 6-20).

NOTICE

Tool Information screens maintain only information about the tool. They do not control any aspect of press operation.

NOTICE

This feature is not available if you have the optional PLC interface installed.

To set up items you wish to document for each tool, do the following:

1. Select TOOL INFORMATION on the Main Initialization Menu. The Tool Information Setup screen, Figure 4-17, displays.

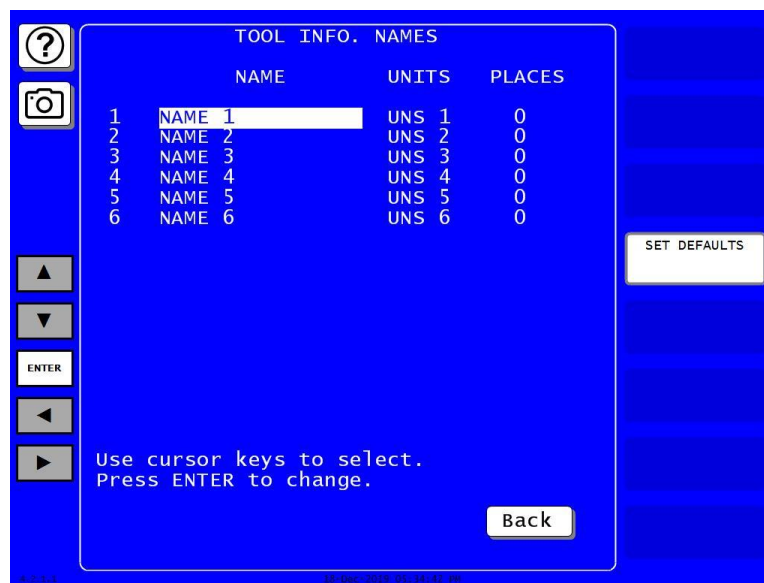


Figure 4-17. Tool Information Setup Screen

2. Highlight the NAME 1 item, and press ENTER. The Tool Information Name screen, Figure 4-18, displays.

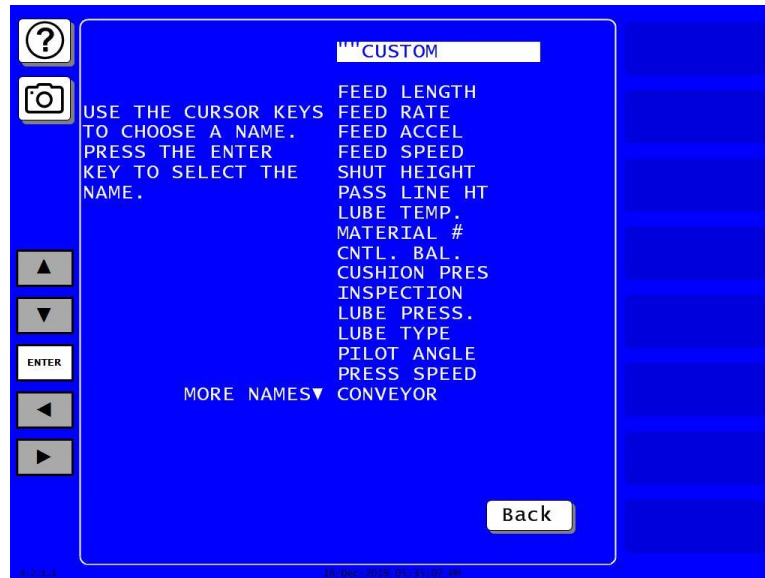


Figure 4-18. Tool Information Name Screen

3. Highlight the name you want, using the cursor keys, and press ENTER. You are returned to the Tool Information Setup screen with the name you selected displayed.
4. If you want to use a name that is not in the list, select “CUSTOM.”
5. When the on-screen keyboard displays, key in a custom name of up to 12 characters. Then press Enter. You are returned to the Tool Information Setup screen with your custom name displayed. To cancel your selection, press Cancel.

NOTICE

You can use a separate computer keyboard plugged into to the USB port to enter tool information names.

6. Highlight the UNS 1 item, and press ENTER. The Tool Information Units Selection screen, shown in Figure 4-19 displays.

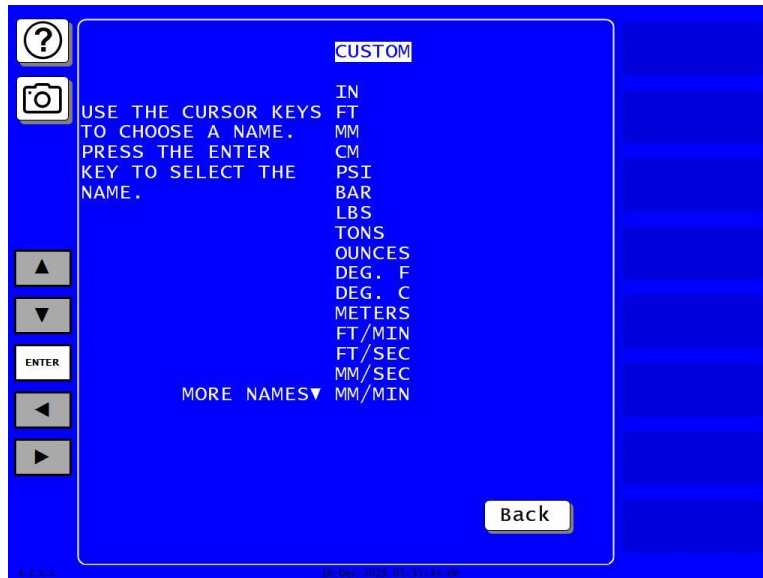


Figure 4-19. Tool Information Units Selection Screen

7. Highlight the abbreviation for the unit you want, using the cursor keys, and press ENTER. (See the table below for an explanation of abbreviations.) You are returned to the Tool Information Setup screen with your units selection displayed.

Table 4-3. Tool Information Setup Screen: Abbreviations for Units

| On-screen Abbreviation | Units | On-screen Abbreviation | Units |
|------------------------|------------------------|------------------------|------------------------|
| IN | Inches | METERS | Meters |
| FT | Feet | FT/MIN | Feet per minute |
| MM | Millimeters | FT/SEC | Feet per second |
| CM | Centimeters | MM/SEC | Millimeters per second |
| PSI | Pounds per square inch | MM/MIN | Millimeters per minute |
| BAR | Bars | GALS | Gallons |
| LBS | Pounds | QTS | Quarts |
| TONS | Tons | GRAMS | Grams |
| OUNCES | Ounces | SPM | Strokes per minute |
| DEG. F | Degrees Fahrenheit | FPM | Feet per minute |
| DEG. C | Degrees Celsius | MPM | Meters per minute |

8. If you want to specify a unit that is not in the list, select “CUSTOM.” When the on-screen keyboard displays, key in a unit of up to 6 characters and press Enter. You are returned to the Tool Information Setup screen with the unit you created displayed.
9. Highlight the zero (0) on the first line in the PLACES column, and press ENTER. When the Numeric Entry window displays, key in the number of decimal places you want displayed for this item on this tool. Then press ENTER.

For numeric values, you can select up to four decimal places. For YES/NO items, enter eight (8) for the number of places. Table 4-4 provides additional information about decimal place formats.

Table 4-4. Tool Information Setup Screen: Decimal Places and Formats

| No. of Places | Example | Digits to Left of Decimal Point | Digits to Right of Decimal Point | Range |
|---------------|---------------------------------------|---------------------------------|----------------------------------|----------------------|
| 0 | Whole numbers: press speed (SPM) | Up to seven (7) | None (0) | 0 to 9,999,999 |
| 1 | | Up to five (5) | One (1) | 0.0 to 99,999.9 |
| 2 | Die location (mm) | Up to four (4) | Two (2) | 0.00 to 9,999.99 |
| 3 | Pass line height (inches) | Up to three (3) | Three (3) | 0.000 to 999.999 |
| 4 | Precise values: material thickness | Up to two (2) | Four (4) | 0.0000 to 99.9999 |
| 8 | Yes or No designation | Not applicable | Not applicable | NO (0) YES (1) |

NOTICE

Do not change the number of decimal places on the Tool Information Setup screen after you have entered any values for specific tools in Program or Run mode. If you change the number of decimal places, entered values will be changed by a factor of ten for each decimal place added or removed.

10. Repeat steps 2-9 to set up other Tool Information items. A Tool Information Setup screen with sample entries filled in is shown in Figure 4-20.

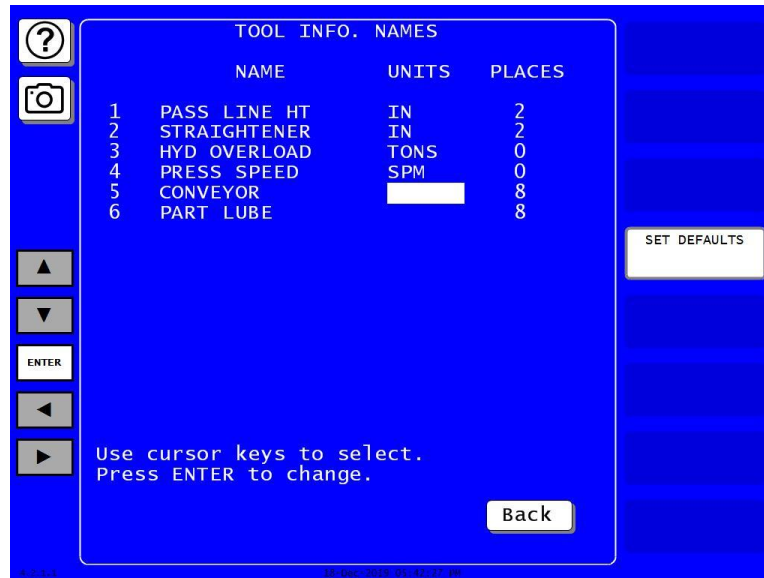


Figure 4-20. Tool Information Setup Screen with Sample Entries

11. When you are finished, press BACK to return to the Main Initialization Menu.

SECURITY ACCESS

(INITIALIZATION – SECURITY ACCESS)

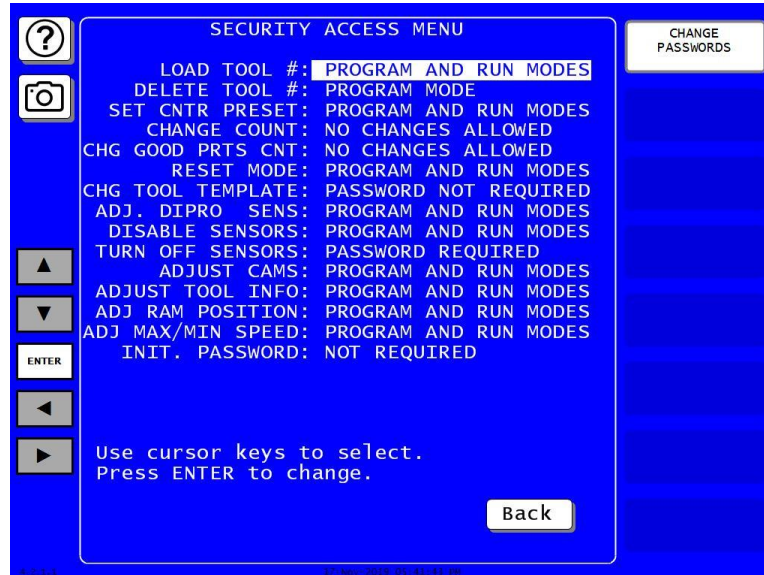


Figure 4-21. Security Access Menu

The SECURITY ACCESS item on the Main Initialization Menu allows you to control user access to SmartPAC PRO Servo operating modes and settings. You set user access on the Security Access Menu, which is shown in Figure 4-21.

For most items on the Security Access Menu, you can specify three types of access:

- **PROGRAM AND RUN MODES.** Allows users to change settings in both Program and Run modes. This access type is the least secure.
- **PROGRAM MODE ONLY.** Allows users to change settings only in Program mode (i.e., when the Program/Run key is in the PROG position). To prevent users from entering the Program mode, you should remove the Program/Run key with the switch in the RUN position.
- **PASSWORD REQUIRED.** Allows users to change settings only after they have entered a password. This access type is the most secure.

The following items on the Security Access Menu allow you to select other access options (see Table 4-5 for a complete list of security access settings):

- **CHANGE COUNTS and CHG GOOD PRTS CNT.** These items allow you to specify NO CHANGES ALLOWED, which prevents changes to actual counter values for strokes, good parts, total hits, and batch counters (CHG COUNTS) or for good parts only (CHG GOOD PRTS CNT). This setting is applicable in either Program or Run mode.
- **INIT. PASSWORD.** This item allows you to require a password for user access to the Main Initialization Menu. To require a password, select MUST BE USED. Otherwise, select NOT REQUIRED.
- **LOAD MONITOR.** This item has four options: ALLOW RECALC/ADJUST, ALLOW RECALC ONLY, NO RECALC/ADJUST, and PASSWORD REQUIRED.
- **CHG TOOL TEMPLATE.** This item has two options: PASSWORD REQUIRED and PASSWORD NOT REQUIRED.

When you attempt to access a menu that is password-protected, SmartPAC PRO Servo displays a window - similar to the one shown in Figure 4-22. Enter Password Window in which to enter your password.

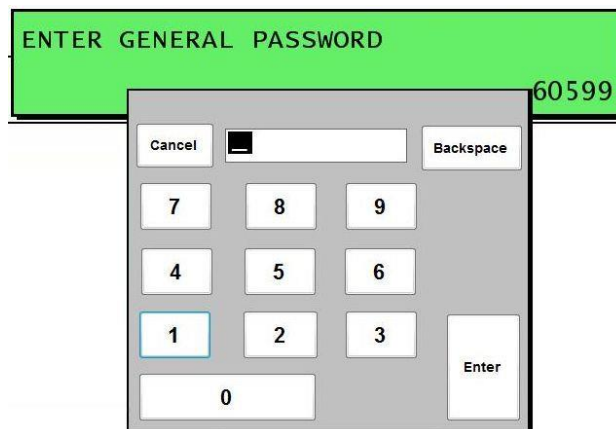


Figure 4-22. Enter Password Window

NOTICE

IF YOU FORGET OR DO NOT KNOW YOUR PASSWORD(S)

Call Wintriss Tech. Support at the telephone number on the cover of this manual. Give the Tech. Support person the 5-digit number in the "Enter General Password" box.

Information about accessing menus in Program and Run modes is provided in chapters 5 and 6.

*Table 4-5. Security Access Settings
Optional modules included; your menu may be different*

| Security Access Menu Item | Security Access Settings |
|----------------------------------|---|
| LOAD TOOL # | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| DELETE TOOL # | PROGRAM MODE NOT ALLOWED PASSWORD REQUIRED |
| SET CNTR PRESET | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| CHANGE COUNTS | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED NO CHANGES ALLOWED |
| CHG GOOD PRTS CNT | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED NO CHANGES ALLOWED |
| RESET MODE | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| CHG TOOL TEMPLATE | PASSWORD REQUIRED PASSWORD NOT REQUIRED |
| ADJ DIPRO SENS | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| DISABLE SENSORS | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| TURN OFF SENSORS | ALLOWED NOT ALLOWED PASSWORD REQUIRED |
| ADJUST CAMS | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| ADJUST FEED | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| LOAD MONITOR | ALLOW RECALC/ADJUST ALLOW RECALC ONLY NO RECALC/ADJUST PASSWORD REQUIRED |
| ADJ. TOOL INFO | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |

| Security Access Menu Item | Security Access Settings |
|---------------------------|---|
| ADJ RAM POSITION | PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED |
| INIT. PASSWORD | NOT REQUIRED MUST BE USED |

Setting Security Access

NOTICE

CHECK YOUR PASSWORDS

Make sure to check your passwords before changing any security access settings. Record the passwords in a safe place. Refer to *Changing Passwords*, page 96.

NOTICE

DO NOT ENABLE INIT. PASSWORD UNTIL YOU HAVE CHECKED YOUR PASSWORDS

Field upgraded SmartPAC PRO Servos may have different passwords than those listed in this manual. If you do not know the Initialization password and change the INIT. PASSWORD item to MUST BE USED, you will not be able to access the Main Initialization Menu.

NOTICE

BE CAREFUL WHEN SETTING RESET MODE SECURITY ACCESS

If you select the PROGRAM MODE ONLY or PASSWORD REQUIRED setting for the RESET MODE item, the operator will not be able to reset SmartPAC PRO Servo in Run mode when the press stops as the result of a malfunction.

- If you want the operator to be able to reset the machine in Run mode following errors, select PROGRAM AND RUN MODES as the Reset Mode setting.
- If you want one person to be responsible for tracking faults, give that individual the Program/Run key, and set Reset Mode access to PROGRAM MODE ONLY. When a fault occurs, that individual can reset the press by turning the key switch to PROG and pressing the RESET key, then resume press operation by turning the key back to RUN.

To make security access settings, do the following:

1. Select SECURITY ACCESS on the Main Initialization Menu to display the Security Access Menu (Figure 4-21, page 92). Note that the factory settings allow all actions to be performed in both Program and Run modes.
2. To change the security access of an item, highlight the item, using the Up (▲) and Down (▼) cursor keys, then press ENTER one or more times until the type of access you want displays. Refer to Table 4-5, page 94, for help with selecting access options.
3. Press EXIT to save your settings and return to the Main Initialization Menu.

Examples

You want to prevent the operator from loading a tool number in Run mode. To accomplish this, set the security access for LOAD TOOL # to PROGRAM MODE ONLY. With this setting, a tool can be loaded only when the Program/Run key is switched to PROG.

You want to give only certain individuals the ability to adjust cams. To accomplish this, set ADJUST CAMS to PASSWORD REQUIRED, and give these individuals the password. With security access set in this way, the cams cannot be adjusted without the user entering the correct password.

Changing Passwords

SmartPAC PRO Servo allows you to set up to four different passwords:

- General Password—Provides access to all SmartPAC PRO Servo menus and settings unless one or more of the following specific passwords is also required
- Init. Password—Provides access to the Main Initialization Menu
- PM Password—Provides access to the PM (Preventive Maintenance) Monitor setup in Program mode
- Tool Template Password—Provides access to the Tool Template (see page 109)

Passwords must be numeric and can be from one to four digits in length.

NOTICE

DEFAULT PASSWORDS

Your SmartPAC PRO Servo comes from the factory with all passwords set to the default password "1234." If you have upgraded your SmartPAC PRO Servo in the field, your passwords may be different.

To change passwords, perform the following steps:

1. On the Security Access Menu (Figure 4-21), press the CHANGE PASSWORDS button to display the Set Passwords Menu (Figure 4-23).

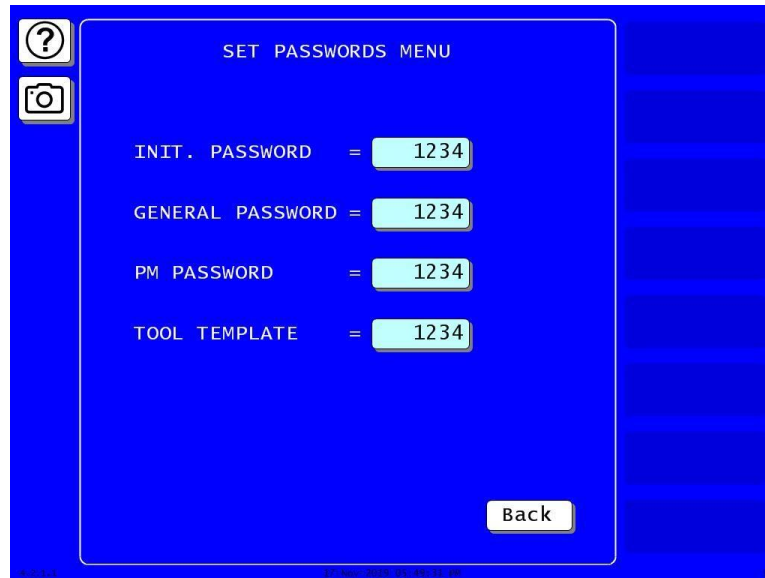


Figure 4-23. Set Passwords Menu

2. Select the password you want to change. The on-screen keyboard displays, Figure 4-24.
3. Key in the new password, following the instructions in the window, and press ENTER. You are returned to the Set Passwords Menu.



Figure 4-24. "Enter a New Password" Window

BACKUP/RESTORE

(INITIALIZATION – BACKUP/RESTORE)

This feature enables you to back up and restore tools programmed on your SmartPAC PRO Servo. Tools may be backed up to a network drive, or, if you have ordered the USB Backup/Restore option to a USB disk inserted in the SmartPAC PRO Servo USB connector on the front of the unit.

This feature also backs up the SmartPAC PRO Servo Initialization parameters. Instructions for backing up tools to a network drive are provided on the Wintriss Web site (http://www.wintriss.com/wcg/automation/smartview/smartview_setup.html). Instructions for backing up tools to a USB disk are provided below.

Backing Up Tools to a USB Disk

(INITIALIZATION – BACKUP/RESTORE)

The USB disk you use for backup must have at least 8 MB of free space in order to store all tools and Initialization parameters on a SmartPAC PRO Servo.

1. Plug a USB disk with the necessary free space into USB connector on the SmartPAC PRO Servo's front panel
2. Select the BACKUP/RESTORE item on the Main Initialization Menu. The date of the last backup (if one was performed) is displayed on the screen.
3. Press Backup and follow the instructions on the screen.

Restoring Tools from a USB Disk

(INITIALIZATION – BACKUP/RESTORE)

NOTICE

You should need to perform a restore only if the SmartPAC PRO Servo tool and Initialization programming has been corrupted or if the SmartPAC PRO Servo board has been replaced. The restore process overwrites programming for all your tools and Initialization setups with the tool and Initialization settings saved during the most recent backup. In performing a restore, you may lose information that has taken you considerable time to input.

To restore backed-up tools to a SmartPAC PRO Servo, do the following:

1. Insert the USB disk containing the tools backup into the USB connector. go to the Backup/Restore Utility Menu, press Restore and follow the prompts on the screen.

Please note that the files on the USB disk are serialized, and they must match the serial number on the SmartPAC PRO Servo.

2. Press Exit to return to the Main Initialization Menu.

SETUP DATA COMMS (Optional)

(INITIALIZATION – SETUP DATA COMMS)

The SETUP DATA COMMS menu, which appears on the Main Initialization Menu only when firmware for the ShopFloorConnect or the third party communications option is installed, allows you to set the parameters for a ShopFloorConnect. The instructions for using this menu are included in the ShopFloorConnect and third party communication firmware documentation.

SETUP NETWORK

(INITIALIZATION – SETUP NETWORK)

NOTICE

- Your network administrator must connect SmartPAC PRO Servo to your network before you can use e-mail messaging or SmartView remote viewing utility. For e-mail, your network must have a valid SMTP mail server.
- If your network requires static IP addresses, your network administrator should call Wintriss Tech. Support.

The SETUP NETWORK item on the Main Initialization Menu allows you to set up SmartPAC PRO Servo's E-mail and SmartView functions and to make other settings necessary to configure a SmartPAC PRO Servo network. You make these settings on the Network Setup Utility screen, Figure 4-25.

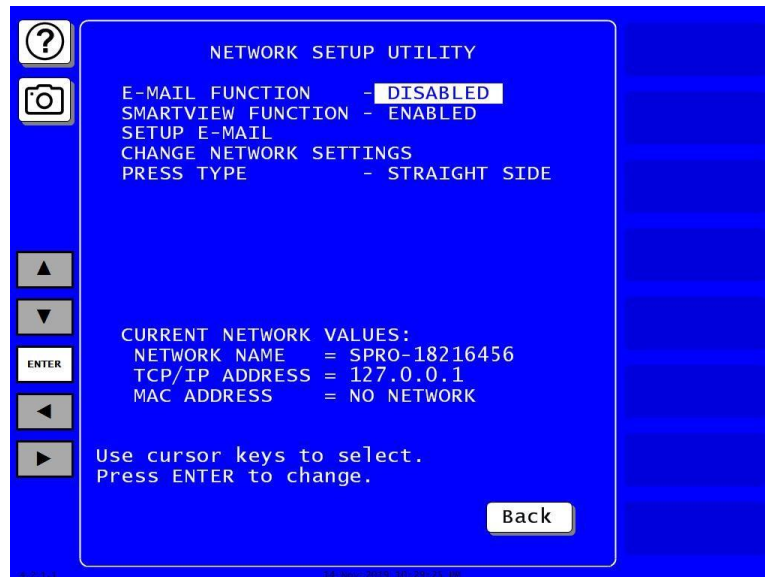


Figure 4-25. Network Setup Utility Screen

E-MAIL FUNCTION

(INITIALIZATION – SETUP NETWORK – E-MAIL FUNCTION)

NOTICE

Consult with your network administrator when setting up e-mail.

SmartPAC PRO Servo's E-mail function allows you to send e-mails to individuals in your SmartPAC PRO Servo network and to other recipients, such as Wintriss Tech. Support, via the Internet. If you plan to use E-mail, do the following to enable this function:

1. Select SETUP NETWORK on the Main Initialization Menu to display the Network Setup Utility screen.

2. Select E-MAIL FUNCTION and press ENTER to toggle the setting to ENABLED.
3. Press EXIT to return to the Main Initialization Menu.

If you don't plan to use E-mail, set the E-MAIL FUNCTION item to DISABLED.

SMARTVIEW FUNCTION

(INITIALIZATION – SETUP NETWORK – SMARTVIEW FUNCTION)

NOTICE

Consult your network administrator when setting up SmartView.

SmartPAC PRO Servo's SmartView function enables individuals on your o network to remotely view the status of each press. (Information about setup and operation of SmartView is provided on http://www.wintriss.com/wcg/automation/smartview/smartview_setup.html.) If you plan to use SmartView, do the following to enable this function:

1. Select SMARTVIEW FUNCTION and press ENTER to toggle the setting to ENABLED.
2. Press EXIT to return to the Main Initialization Menu.

If you don't plan to use SmartView, set the SMARTVIEW FUNCTION item to DISABLED.

SETUP E-MAIL

(INITIALIZATION – SETUP NETWORK – SETUP E-MAIL)

NOTICE

Contact the Wintriss Factory for instructions on how to use this feature.

CHANGE NETWORK SETTINGS

(INITIALIZATION – SETUP NETWORK – CHANGE NETWORK SETTINGS)

This item is to be used only by your Information Technology or Information Systems person. Call Wintriss Tech. Support for assistance in making advanced network settings.

PRESS TYPE

(INITIALIZATION – SETUP NETWORK – PRESS TYPE)

Your entry for the PRESS TYPE item is used by SmartView remote viewing to select the graphic it uses to illustrate the type of press (i.e., straight side or gap frame) on which SmartPAC PRO Servo is installed. This graphic appears in the press information summary on the SmartView Main Page.

To set the press type, do the following:

1. Select PRESS TYPE, then press ENTER to toggle between GAP FRAME and STRAIGHT SIDE until the option you want is displayed.
2. Press Exit to return to the Main Initialization Menu.

DIAGNOSTICS

(INITIALIZATION – DIAGNOSTICS)

The DIAGNOSTICS item on the Main Initialization Menu gives you access to the Diagnostics Menu (see Figure 4-26), which you use primarily when you are working with Wintriss Tech. Support for initial setup or troubleshooting.

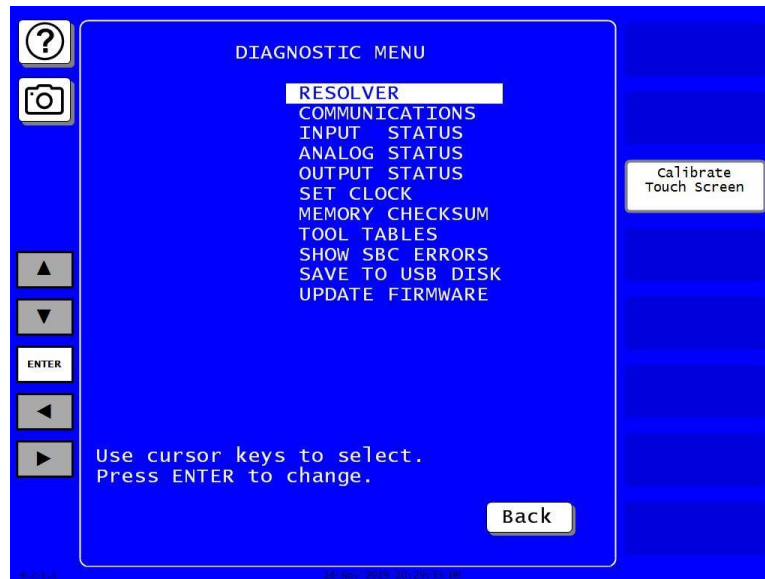


Figure 4-26. Diagnostics Menu

This section documents only the following items:

- COMMUNICATIONS, which allows you to run a communications loopback test
- SET CLOCK, which allows you to set SmartPAC PRO Servo's internal clock to local time
- SAVE TO USB DISK, which allows you to save screen captures and other items to a USB disk
- UPDATE FIRMWARE, which allows you to upload revised firmware to SmartPAC PRO Servo

COMMUNICATIONS

(INITIALIZATION – DIAGNOSTICS – COMMUNICATIONS)

When you select the COMMUNICATIONS item on the Diagnostics Menu, the Communications Data Viewer screen, Figure 4-27, displays.

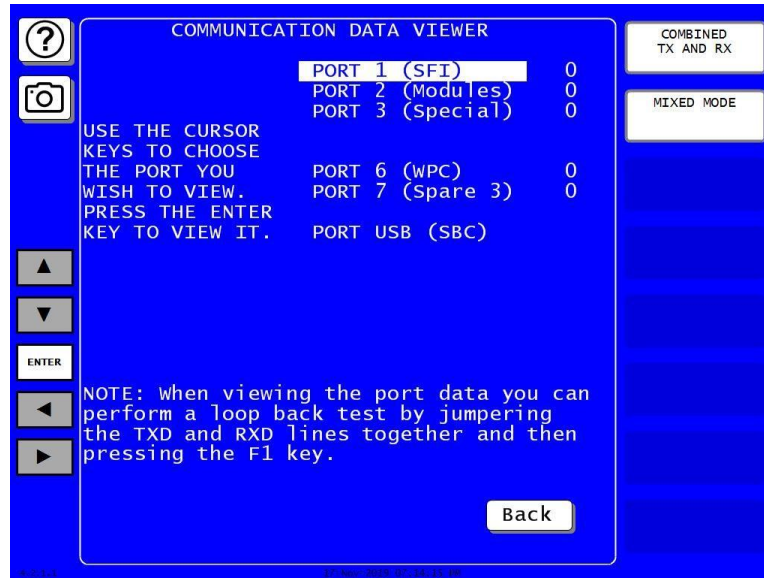


Figure 4-27. Communications Data Viewer Screen

This screen allows you to verify communications between SmartPAC PRO Servo and its installed modules, including SFI.

In the “combined” view, Transmit and Receive data are shown together, Transmit data being displayed as blue on a white background, Receive data displayed as white on blue. This view shows the data as it is transmitted and received in real time. Press the **Reset Buffer** button to view the data starting at the beginning of the buffer.

In the “split” view, Transmit data is shown in the upper half of the screen, Receive data in the lower half. In this view, the data is always shown starting at the beginning of the buffer.

Normal communications between SmartPAC PRO Servo and the selected module (e.g., SFI) is indicated by both Transmit and Receive data being displayed on the screen. If no data or only partial data is displayed, SmartPAC PRO Servo and the other module are not communicating properly.

If the Transmit and Receive Data screen indicates a communications problem, you can perform a “loopback test.” Contact Wintriss Technical Support for more information.

SET CLOCK

(INITIALIZATION – DIAGNOSTICS – SET CLOCK)

When you select the SET CLOCK item on the Diagnostics Menu, the Set the Clock screen displays, .

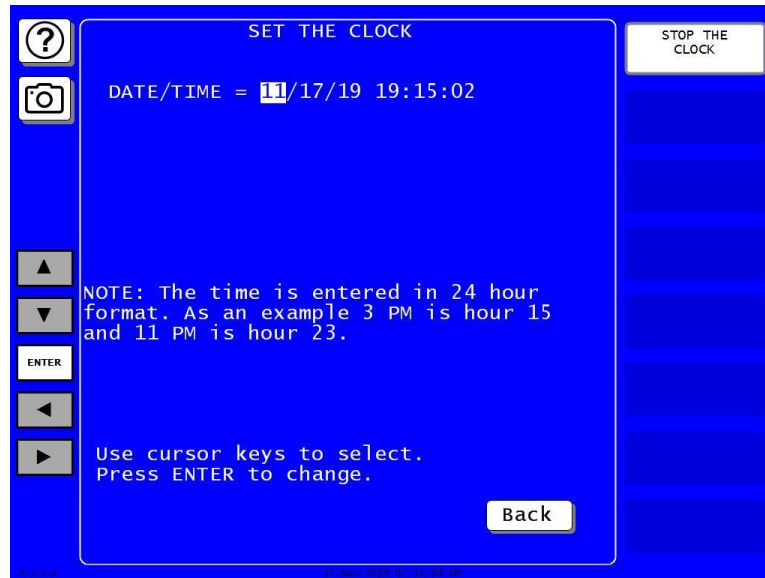


Figure 4-28. Set the Clock Screen

On this screen you can set the date in month/day/year (mm/dd/yy) format and the time in military hours/minutes (hh:mm) format (i.e., 1:30 p.m. = 13:30, 11:00 p.m. = 23:00). To do so, perform these steps:

1. Highlight the segment of the date or time that you want to change, using the Left (◀) and Right (▶) cursor keys, then press ENTER. The on-screen keyboard displays.
2. Key in a value and press ENTER. You are returned to the Set the Clock screen with your entry displayed in the date or time segment you selected in step 1.
3. Repeat steps 1 and 2 for other date/time segments.

NOTICE

To stop the clock, press **Stop the Clock**. The label changes to START THE CLOCK. To restart the clock, press **Start the Clock**.

4. Press EXIT when you are done to return to the Diagnostics Menu.

SAVE TO USB DISK

(INITIALIZATION – DIAGNOSTICS – SAVE TO USB DISK)

This item enables you to save the error/event log, screen captures, and other data maintained in a special SmartPAC PRO Servo buffer to a USB disk. Once the data has been saved, you can remove the USB disk, transfer the information to a computer, and e-mail it to Wintriss Tech. Support or to another recipient (see MESSAGING in Chapter 6). This function is useful if your SmartPAC PRO Servo is not networked. To save information to a USB disk, do the following:

1. Make sure a USB disk is installed in the USB connector on the SmartPAC PRO Servo's front panel.
2. Access the Main Initialization Menu, select DIAGNOSTICS. When the Diagnostics Menu displays, select SAVE TO USB DISK. The following messages appear in succession:

PLEASE WAIT WHILE THE DATA IS BEING TRANSFERRED TO THE USB DISK.
THIS MAY TAKE UP TO ONE MINUTE TO COMPLETE . . .

THE USB DISK TRANSFER HAS FINISHED AND WAS SUCCESSFUL. PRESS THE
RESET KEY AND THEN REMOVE THE USB DISK DEVICE.

3. When the second message appears, press EXIT to return to the Diagnostics Menu and remove the USB disk.

UPDATE FIRMWARE

(INITIALIZATION – DIAGNOSTICS – UPDATE FIRMWARE)

To update the firmware in your SmartPAC PRO Servo, contact Wintriss Tech Support.

Chapter 5 – Program Mode

This chapter shows you how to make settings in SmartPAC PRO Servo Program mode. Program settings, which are entered via the Main Program Menu Table 5-1, control SmartPAC PRO Servo operation for an individual tool. (You make settings that control operation of all tools in Initialization mode—see Chapter 4).



Figure 5-1. Mail Program Menu

Your display may look different, depending on options.

The following sections show you how to create, program, modify, delete, and load individual tools. You are instructed how to enter tool names, set counters, program timing for cams, and make settings for die protection sensors and other SmartPAC PRO Servo options.

Once you have programmed and loaded a tool, you can switch to Run mode to run that tool on your press (refer to Chapter 6). In Run mode, you can also make some adjustments to tool settings.

If you need help using the SmartPAC PRO Servo keyboard to input information on Program mode displays, refer to Chapter 3.

Entering and Exiting Program Mode

Follow the instructions shown in Table 5-1 to enter and exit Program mode.

Table 5-1. Instructions for Entering and Exiting Program Mode

| To Enter Program Mode | To Exit Program Mode |
|---|--|
| Turn the Program/Run key to PROG.* _____ From Initialization mode: Go to the Main Initialization Menu. Press Exit. —or— Turn the Program/Run key to RUN and then back to PROG.* | To switch to Run mode: Turn the Program/Run key to RUN.* _____ To switch to Initialization mode: Go to the Main Program menu, press INITIALIZATION MODE. |
| * If you turn the key and nothing happens, press Exit repeatedly until SmartPAC PRO Servo changes modes. Make sure SmartPAC PRO Servo is in the Main (or top) menu for the mode it is in before you turn the Program/Run key. If SmartPAC PRO Servo is not in a top-level menu, press RESET repeatedly until the Main menu appears. | |

The first display you see in Program mode is the Main Program Menu, Figure 5-1. From this menu, you can access the following screens or functions:

- Tool Manager screen (see next section)
- Sensor Enable/Disable and Status screen (see page 156)

NOTICE

For help with a Program mode screen, press the key when that screen is displayed.

TOOL MANAGER

(PROGRAM – TOOL MANAGER)

The TOOL MANAGER item on the Main Program Menu enables you to create, copy, delete and load tools. You perform these functions on the Tool Manager screen Figure 5-2, which displays when you select TOOL MANAGER.

Once you have created a tool, you must program it before the tool can be loaded. You program tools on the Tool Program Menu, Figure 5-2, which you access from the Tool Manager screen by pressing Edit Tool.

The Tool Manager screen displays a list of the tools that have already been created. (SmartPAC PRO Servo has the capability to store settings for 2000 tools.) The currently loaded tool is highlighted. To copy, delete, program, or load a tool, select that tool and press the appropriate button: COPY TOOL, DELETE TOOL, EDIT TOOL, or LOAD TOOL. To create a new tool, press NEW TOOL.

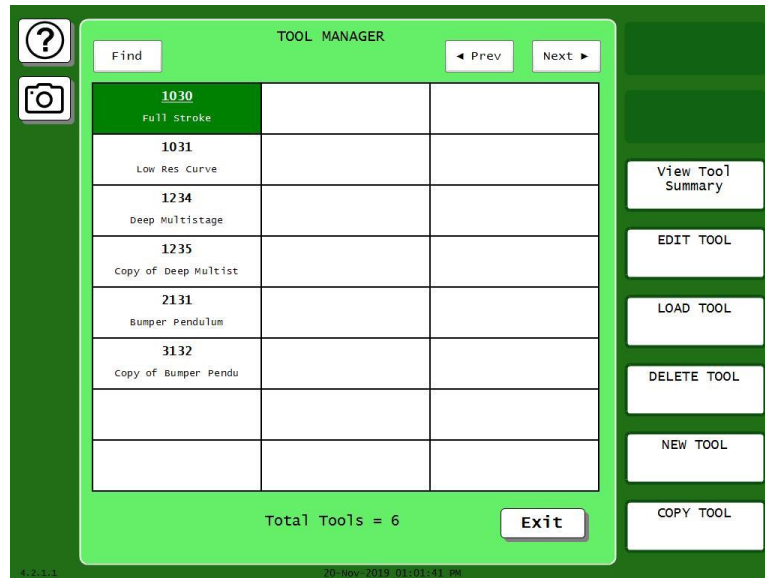


Figure 5-2. Tool Manager Screen

NOTICE

The Tool Manager screen sorts the tool list based on the setting for TOOL NUMBER MODE in Initialization (see page 76).

- If the setting is NUMERIC, tools are sorted by tool number
 - If the setting is ALPHA-NUMERIC, tools are sorted alphabetically by tool name
- In the example shown in Figure 5-2, tools are sorted by tool number.

Creating a New Tool

(PROGRAM – TOOL MANAGER –NEW TOOL)

To create a new tool, do the following:

1. On the Tool Manager screen, NEW TOOL. The Enter New Tool Number window opens. If you selected Numeric tool numbers in Initialization-Preferences, only numeric entry is available.

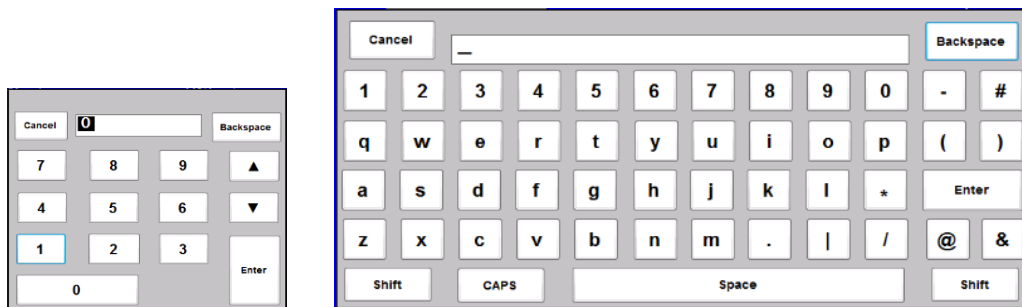


Figure 5-3. Enter New Tool Number Window

2. Key in the desired tool number and press ENTER.

```
DO YOU WANT TO COPY THE TOOL
TEMPLATE PROGRAMMING INTO THIS NEW
TOOL NUMBER?
PRESS THE ENTER KEY TO COPY THE
TOOL TEMPLATE. PRESS THE RESET KEY
TO START WITH A BLANK TOOL.
```

Figure 5-4. Copy Tool Template Window

3. If you want to copy the settings you have programmed for the Tool Template (see *Copying Tool Template to a New Tool*, page 109), press ENTER. If you don't want to copy the Tool Template, press RESET. The Tool Program Menu displays (see Figure 5-10, page 113) with the highlight bar on the TOOL NAME or TOOL ID item.

NOTICE

The first item on the Tool Program Menu is TOOL NAME if Numeric mode has been specified for tool numbers in Initialization. The first item is TOOL ID if Alphanumeric mode has been selected.

4. Create a name for the new tool if tool number mode is Numeric. Refer to *TOOL NAME*, page 113, for instructions.
5. Continue programming settings for the new tool, follow the directions in *Tool Program Menu*, page 112. Then load the tool, referring to *Loading a Tool*, page 110, for instructions.

Copying an Existing Tool

(PROGRAM – GO TO THE TOOL MANAGER – SELECT TOOL – COPY TOOL)

If you want to copy the settings programmed for an existing tool to a new tool, perform the following steps:

1. On the Tool Manager screen, highlight the tool whose settings you want to copy to the new tool, and press COPY TOOL. The Numeric Entry or Alphanumeric Entry window (Figure 5-3) displays, depending on whether you selected Numeric or Alphanumeric tool number mode in Initialization.

NOTICE

If there are more tools in SmartPAC PRO Servo's memory than can be displayed in two columns, press the Left (◀) or Right (▶) cursor key to display the additional hidden column(s).

2. Key in the desired tool number, following the directions displayed in the applicable window.
3. Press ENTER after keying in a tool number. The Tool Program Menu displays (see Figure 5-10, page 113) with the highlight bar on the TOOL NAME or TOOL ID item.

NOTICE

The first item on the Tool Program Menu is TOOL NAME if Numeric mode has been specified for tool numbers in Initialization. The first item is TOOL ID if Alphanumeric mode has been selected.

4. Create a name for the new tool if tool number mode is Numeric. Refer to *TOOL NAME*, page 113, for instructions.

- Change settings for the new tool, as necessary, following the directions in *Tool Program Menu*, page 112. Then load the tool, referring to *Loading a Tool*, page 110, for instructions.

Copying Tool Template to a New Tool

(PROGRAM –TOOL MANAGER – SELECT TOOL TEMPLATE (# 9999999) –COPY TOOL)

Tool Template, which is assigned tool number 9999999, is a tool you can program with settings common to two or more tools (see *Tool Program Menu*, page 112). When used with COPY TOOL, Tool Template allows you to duplicate the same constellation of settings across multiple tools. Tool Template is not used to run the press.

NOTICE

PASSWORD PROTECTION FOR TOOL TEMPLATE

To prevent unauthorized changes, you can set Security Access (page 92) so that a password is required to change the Tool Template.

To copy Tool Template to a new tool, do the following:

- On the Tool Manager screen, highlight TOOL # 9999999, TOOL TEMPLATE, and press Copy Tool. Windows similar to the following appear.

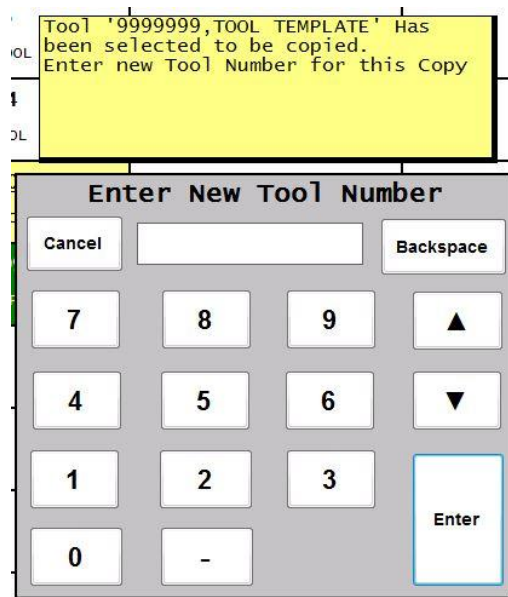


Figure 5-5. Tool Template Copied

- Perform steps 2 through 4 of *Copying an Existing Tool*, page 108.
- Load the new tool, referring to *Loading a Tool* (next section) for instructions.

Loading a Tool

(PROGRAM – TOOL MANAGER – SELECT TOOL – LOAD TOOL)

⚠ DANGER

ANCILLARY EQUIPMENT MAY OPERATE WHEN TOOL IS LOADED

Ensure that all personnel stand clear when you load a tool.

Failure to comply with these instructions will result in death or serious injury.

To load a tool, perform the following steps:

1. On the Tool Manager screen, highlight the tool you want to load and press Load Tool. The warning window shown in Figure 5-6 displays.



Figure 5-6. Load Tool Warning Window

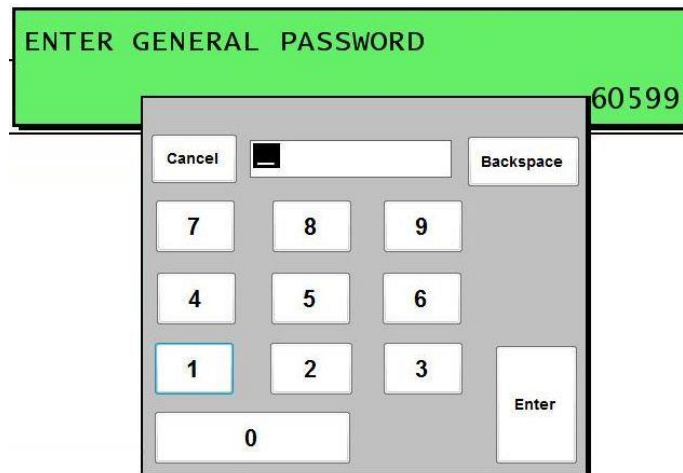


Figure 5-7. Enter Password Window

If this window appears, enter your general password to loading the tool. See *SECURITY ACCESS*, page 92, in Initialization to set password access.

NOTICE

You can also load tool numbers in Run mode, if allowed by security access, as long as the press is stopped.

2. Press ENTER to load the tool. A message should appear indicating that the tool is being loaded.

NOTICE

If an error message displays, go to Chapter 7, page 185 and follow the instructions for correcting the problem. If the error is not covered in Chapter 7, or you cannot fix the problem, call Wintriss Tech. Support.

Changing Settings for a Loaded Tool

(PROGRAM – TOOL MANAGER – SELECT TOOL – EDIT TOOL)

⚠ DANGER**ANCILLARY EQUIPMENT MAY OPERATE WHEN TOOL IS LOADED**

Ensure that all personnel stand clear when you load a tool.

Failure to comply with these instructions will result in death or serious injury.

To change settings for a loaded tool, do the following:

1. With the currently loaded tool highlighted on the Tool Manager screen, press EDIT TOOL.

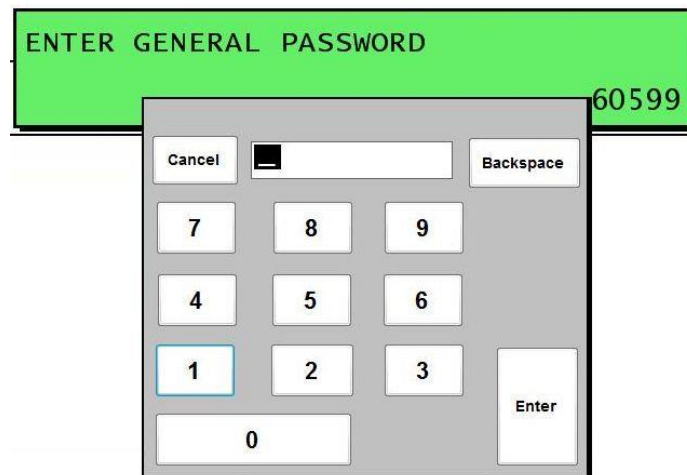


Figure 5-8. Enter Password Window

If this window appears, enter your general password to loading the tool. See SECURITY ACCESS, page 92, in Initialization to set password access.

2. Change settings for the tool, following the instructions in *Tool Program Menu*, page 112.

NOTICE**RELOAD CURRENTLY LOADED TOOL IF YOU CHANGE IT**

If you change settings for a tool that is currently loaded, you should load the tool again after you make the changes. If you do not re-load the tool, the old settings will be used until you load the tool again.

3. When you have made your changes and “reset” out of the Tool Program Menu, the Load Tool Warning window displays, Figure 5-6. Press ENTER to load the tool.

Deleting a Tool

(PROGRAM –TOOL MANAGER – select tool – DELETE TOOL)

To delete a tool, perform the following steps:

1. On the Tool Manager screen, highlight the tool you want to delete, and press Delete Tool. The window shown in Figure 5-9 appears, asking you to confirm that you want to delete the tool.

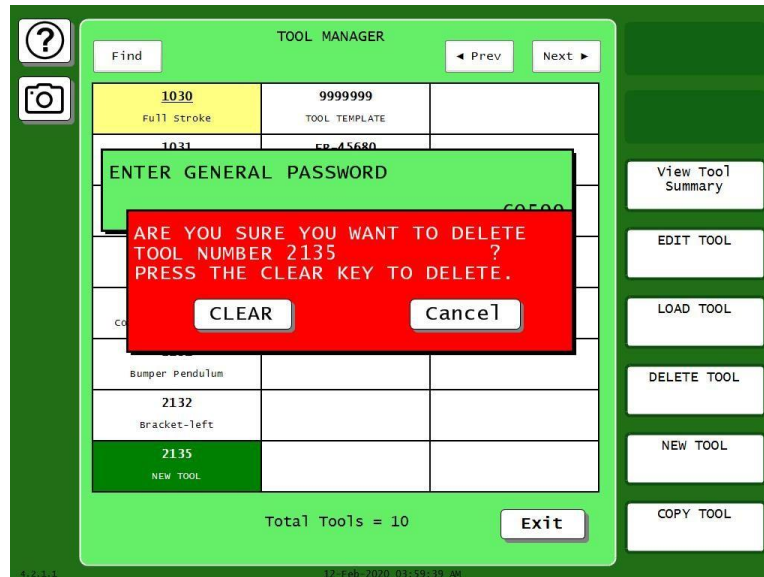


Figure 5-9. Delete Tool Confirmation Message

2. Press the CLEAR key to continue the deletion process. A message displays indicating that the tool has been deleted, and you are returned to the Tool Manager screen with the deleted tool removed from the tool list.

Tool Program Menu

The Tool Program Menu, Figure 5-10, displays whenever you

- Create a new tool
- Copy settings from an existing tool (e.g., Tool Template) to a new tool
- Press EDIT TOOL on the Tool Manager screen with a tool selected.



Figure 5-10. Tool Program Menu
(Includes some options. Your display may look different.)

The following sections show you how to make settings for each of the items on the menu.

NOTICE

For help with screens accessible from the Tool Program Menu, press with that screen displayed.

NOTICE

RELOAD CURRENTLY LOADED TOOL IF YOU CHANGE IT

If you change settings for a tool that is currently loaded, you should load the tool again after you make the settings. If you do not re-load the tool, the old settings will be used.

TOOL NAME

(PROGRAM – TOOL MANAGER – SELECT TOOL – EDIT TOOL – TOOL NAME)

NOTICE

If tool number mode has been set to Numeric in Initialization, this menu item is captioned TOOL NAME. If tool number mode has been set to Alphanumeric, this item is captioned TOOL ID. See Tool Number Mode, page 4-4.

This item on the Tool Program Menu allows you to assign a name to a tool created with a numeric tool number. To do so, perform the following steps:

1. On the Tool Program Menu, select TOOL NAME. The Alphabetic Entry window displays (see Figure 5-11).

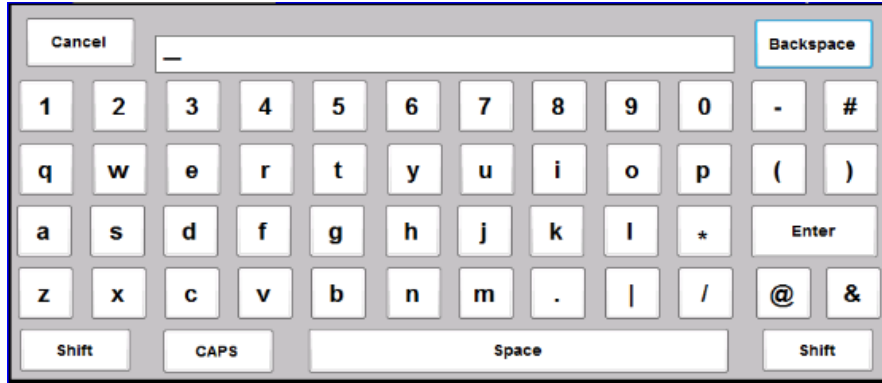


Figure 5-11. Tool Name Entry Window

2. Key in a tool name and press Enter. The screen returns to the Tool Program Menu.

COUNTERS

(PROGRAM –TOOL MANAGER – SELECT TOOL –EDIT TOOL – COUNTERS)

NOTICE

For help with the Counters screen and screens accessible from it, press the HELP key when the applicable screen is displayed.

This item on the Tool Program Menu allows you to set the counters that maintain counts of press strokes and good parts and initiate various actions when a preset number of strokes has been reached. Settings are made via the Counters screen, Figure 5-12.

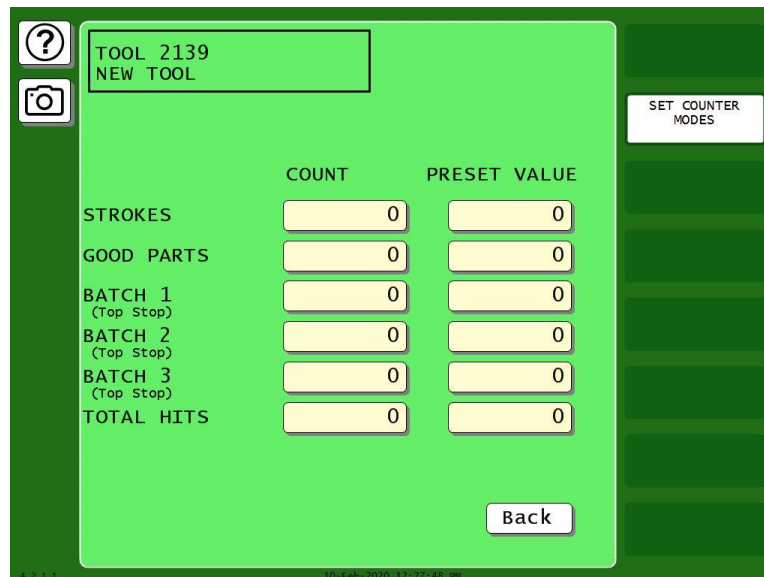


Figure 5-12. Counters Screen

SmartPAC PRO Servo uses the following counters:

- **Strokes counter:** Counts the number of strokes made by the press during a job. When a user-programmed preset value has been reached, SmartPAC PRO Servo top-stops the press and displays a message (see *Counter Preset Reached Messages*, page 187). The counter resets to zero (0) when the message has been cleared.
- **Good Parts counter:** Counts the number of strokes made by the press during a job unless a tonnage monitor, die protection, or process monitor (i.e., ProPAC) fault occurs during a stroke. SmartPAC PRO Servo top-stops the press and displays a message (see page 187) when the programmed preset value has been reached. When the message has been cleared, the counter resets to zero (0).
- **Total Hits counter:** Counts the number of hits on the programmed tool during all jobs. The Total Hits count is incremented by the Strokes counter whenever the tool is loaded. When the programmed preset has been reached, a flashing message displays in the Status Box in Run mode. This counter can be used to indicate when die maintenance is required.
- **Batch counters (3):** Incremented by the Strokes or Good Parts counter, depending on the user-programmed setting. Each batch counter can be set to initiate one of three actions when the programmed preset is reached: Top Stop, Toggle, and Pulse.

When a Batch counter is set to TOP STOP, SmartPAC PRO Servo top-stops the press and displays a message (page 187), as it does for Strokes and Good Parts counters. This setting is useful when stopping the press to change bins or chutes before resuming production.

When a Batch counter is set to TOGGLE, SmartPAC PRO Servo switches the state of a ProCamPAC output from Open to Closed or from Closed to Open. This option is useful for activating a parts diverter. Each batch counter is assigned to a specific ProCamPAC channel: Batch 1 to Channel 6,

Batch 2 to Channel 7, and Batch 3 to Channel 8. If you set a Batch counter to either TOGGLE or PULSE, the ProCamPAC channel controlled by that counter is displayed on the Counters screen, Figure 5-12.

When a Batch counter is set to PULSE, SmartPAC PRO Servo actuates a ProCamPAC output for a specified length of time. The output On time must be specified when making a Pulse setting. You can connect this output to any device that needs to be turned on once every fixed number of strokes (i.e., the Batch counter setting).

Each batch counter is assigned to a specific ProCamPAC channel: Batch 1 to Channel 6, Batch 2 to Channel 7, and Batch 3 to Channel 8. If you set a Batch counter to either TOGGLE or PULSE, the ProCamPAC channel controlled by that counter is displayed on the Counters screen, Figure 5-12.

The ram angle at which Strokes, Good Parts, Total Hits, and Batch counters is incremented can also be programmed.

Setting Preset Values

Counter presets specify the count at which SmartPAC PRO Servo initiates one of three programmed actions (i.e., Top-stop, Toggle, or Pulse). To enter counter presets, do the following:

1. On the Tool Program Menu, select COUNTERS to display the Counters screen.

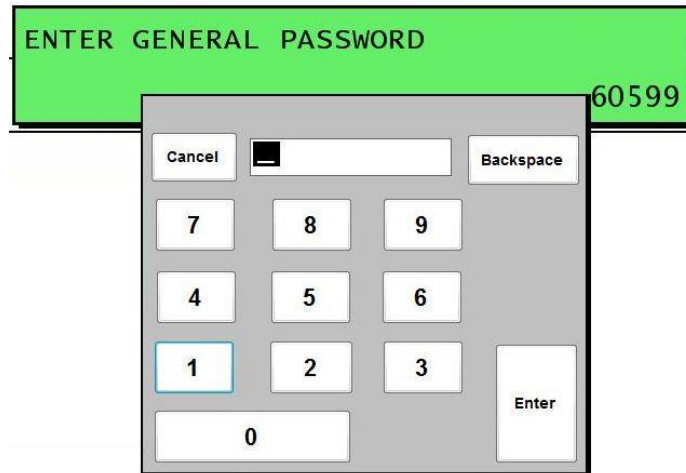


Figure 5-13. Enter Password Window

If this window appears, enter your general password to loading the tool. See SECURITY ACCESS, page 92, in Initialization to set password access.

2. Select the setting displayed in the PRESET VALUE column of the counter you want to program. The Numeric Entry window displays, Figure 5-3.
3. Key in a preset value, following the directions in the window, and press ENTER. The value you entered displays in the PRESET VALUE field for the counter you selected in step 2.

NOTICE

You can disable a counter by setting its preset value to zero.

4. Repeat steps 2 and 3 for each counter preset you want to program.

Changing Count Values

Under some circumstances, you may need to adjust the count upward or downward, or you may want to start the count at some value other than zero. To change count settings, do the following:

NOTICE

ARE YOU "LOCKED OUT"?

If you cannot change count values, security access for the CHANGE COUNTS function may be set to NO CHANGES ALLOWED. See SECURITY ACCESS, page 92.

1. On the Counters screen, select the setting displayed in the COUNT column of the counter you want to adjust. The Numeric Entry window displays, Figure 5-3.

NOTICE

You can return a count to zero by simply moving the highlight bar to the appropriate COUNT field and pressing the CLEAR key.

2. Key in a new value, following the directions in the window, and press ENTER. The window shown in Figure 5-14 displays, asking you to confirm that you want to change the COUNT value.

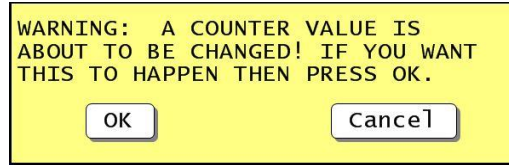


Figure 5-14. Change Count Confirmation Window

3. Press the Up (▲) cursor key to proceed with the Change Count process. The value you entered in step 2 displays in the COUNT field for the counter you selected in step 1.
4. Repeat steps 1 through 3 for each count you want to change.

Clearing the Total Hits Counter

Since the Total Hits counter does not reset to zero (0) when its preset is reached, you must reset the counter manually. To do so, perform the following steps:

1. On the Counters screen, select the setting displayed in the COUNT column for TOTAL HITS.
2. Press the CLEAR key. The Change Count Confirmation window displays, Figure 5-14, asking you to confirm that you want to change the COUNT value.
3. Press the Up (▲) cursor key to proceed with the Change Count process and clear the Total Hits count. The value in the COUNT column for TOTAL HITS is reset to zero (0).

Setting Batch Counter Output and Increment Modes

If you set a Batch counter preset value on the Counters screen, you must also specify the output and increment modes for that counter if they differ from the factory settings. By default, output mode is set to TOP STOP, increment mode to STROKE. To change these settings, perform the following steps:

1. On the Counters screen, press SET COUNTER MODES. The Counter Mode Selections screen displays, Figure 5-15.



Figure 5-15. Counter Mode Selections Screen

2. Move the highlight bar to the setting in the OUTPUT MODE column for the Batch counter you want to program, then press ENTER to scroll through the three options (i.e., TOP STOP, TOGGLE, and PULSE) until the setting you want is displayed.

NOTICE

When you select TOGGLE or PULSE, the ProCamPAC channel associated with output from that batch counter displays on the Counters screen (Figure 5-12, page 114).

3. If you selected PULSE as the output mode in step 2, move the highlight bar to the PULSE TIME (MSEC) column, and press ENTER. The Numeric Entry window displays.
4. Key in a value for the cam channel On time in milliseconds (maximum value, 9,999 mS, or about 10 seconds), following the instructions in the window, then press ENTER. The value you keyed in displays in the PULSE TIME (MSEC) column for the specified Batch counter.
5. Move the highlight bar to the INCREMENT MODE column, then press ENTER to toggle between the STROKE and GOOD PARTS options until the setting you want is displayed.
6. Repeat steps 2 through 5 for other Batch counters, as necessary.
7. Press RESET to return to the Counters screen.

Setting Counter Increment Angle

The ram angle at which counters are incremented is set at the factory to a default value of 270°. This value is satisfactory for counting parts, but if you have programmed Batch counter outputs to control automation, increment angles for those counters should be set to the angle at which you want the automation to activate. The Counter Mode Selections screen allows you to set a common increment angle for Strokes, Good Parts, and Batch 1 counters and separate increment angles for Batch 2 and Batch 3 counters. To change default increment angles, do the following:

1. On the Counter Mode Selections screen, move the highlight bar to the increment angle value for the counter you want to adjust (e.g., Batch 2), then press ENTER. The Numeric Entry window displays.
2. Key in a new increment angle value, following the directions in the window, then press ENTER. The value you entered is displayed on the Counter Mode Selections screen.
3. Repeat steps 1 and 2 for other counters, as necessary.

Setting Parts per Stroke or Strokes per Part

SmartPAC PRO Servo allows you to control how the Strokes and Good Parts counters increment in relation to each other. You can specify the number of parts made during each stroke, in which case the Good Parts counter will increment in multiple units (e.g., 2, 3, etc.) for each increment of the Strokes counter. This setting is useful in multiple-up die applications. Conversely, you can specify the number of strokes required to make each part, causing the Good Parts counter to increment only once for multiple increments (e.g., 2, 3, etc.) of the Strokes counter. This setting is useful in die applications with a gaged cutoff.

To set the number of parts made per stroke or number of strokes required to make a part, do the following:

1. On the Counter Mode Selections screen, press ADVANCED MODES. The Advanced Counter Mode Selections screen, Figure 5-16, displays.

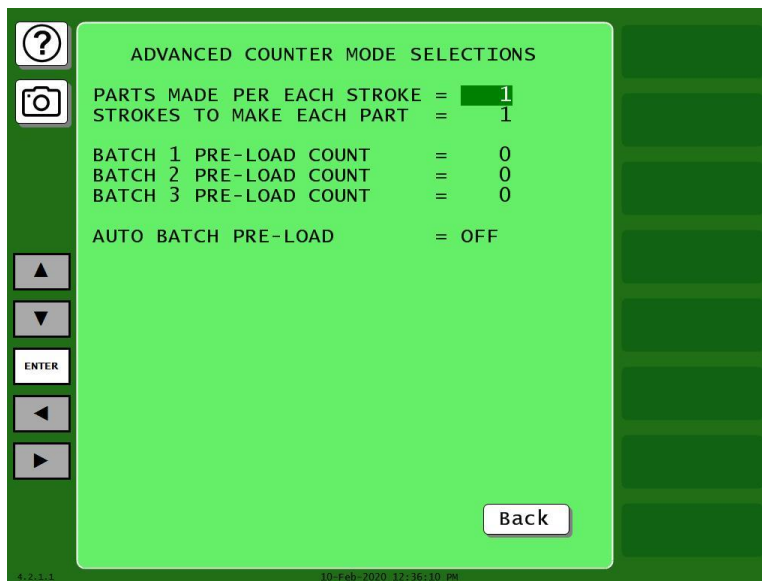


Figure 5-16. Advanced Counter Mode Selections Screen

2. Select the value displayed for the item you want to program (i.e., PARTS MADE PER EACH STROKE or STROKES TO MAKE EACH PART). The Numeric Entry window displays.
3. Key in the value you want, following the directions in the window, and press ENTER. The value you keyed in displays in the field you selected in step 2.
4. Press RESET to return to the Counter Mode Selections screen.

Setting Batch Pre-Load Counts

If you are setting up a tool for gagging operations, you can specify a pre-load count for each

Batch counter on the Advanced Counter Mode Selections screen. This pre-load value displays in the COUNT field for each Batch counter you specify, decreasing by that value the number of strokes (or good parts) required to reach the preset value. You can reset these preload values in Run mode when the Batch preset is reached (see COUNTERS, page 165) as long as you set the CHANGE COUNTS parameter on the Security Access Menu in Initialization to PROGRAM AND RUN MODES (see SECURITY ACCESS, page 92).

To set batch pre-load counts, do the following:

1. Select the pre-load count value for the batch you want (e.g., Batch 1, Batch 2, etc.). The Numeric Entry window displays.
2. Key in a pre-load count value, following the directions in the window, and press ENTER. The value you keyed in displays on the Advanced Counter Mode Selections screen.
3. Make sure that the AUTO BATCH PRE-LOAD field is set to OFF.
4. Press RESET to return to the Counter Mode Selections screen.

DIE PROTECTION (Optional)

(PROGRAM – GO TO THE TOOL MANAGER – SELECT TOOL – EDIT TOOL – DIE PROTECTION)

CAUTION

Some Servo presses are capable of hitting the same part more than once at Bottom Dead Center (BDC) before returning to the top of the stroke. You will have to note the angle ranges at which repeated strokes occur. Any cams programmed within these ranges will actuate once for each hit.

Die protection ready signals programmed within these ranges will expect sensor actuation once for each hit. If this is not feasible, please contact Wintriss Tech. Support to learn about new advanced features.

Failure to comply with these instructions could result in property damage.

NOTICE

For help with the Die Protection Sensor Menu and screens accessible from it, press the HELP key when the applicable screen is displayed.

This item, which appears on the Tool Program Menu only when DiProPAC 8 or DiProPAC 16 is installed, enables you to program up to 8 or 16 die protection sensors. (When DiProPAC 32 is an installed option, this menu item is subdivided into DIPROPAC 1-16 and DIPROPAC 17-32 entries—see Programming DiProPAC 32 Sensors, page 136.) Settings are made via the Die Protection Sensor Menu, Figure 5-17.

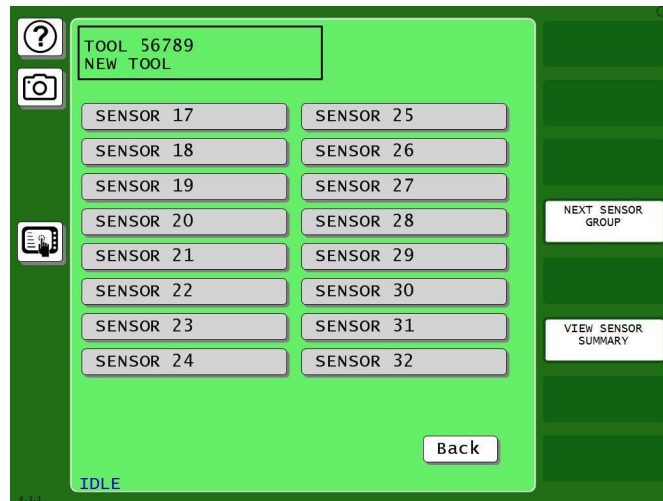


Figure 5-17. Die Protection Sensor Menu
(DiProPAC 16-sensor option shown. Your display may look different.)

Understanding Sensor Terminology

In order to make proper sensor settings on the SmartPAC PRO Servo display, you need to be familiar with basic sensor terminology. Terms that appear on sensor displays are explained in the following sections.

Normally Open, Normally Closed

A normally open (N/O) sensor actuates (signals SmartPAC PRO Servo) when the sensor circuit to SmartPAC PRO Servo switches from open to closed-to-ground. N/O sensors are either “yellow” or “green” (see page 122).

In a normally closed (N/C) sensor, the sensor circuit to SmartPAC PRO Servo is closed to ground in its normal state. The sensor actuates when the circuit opens. Normally closed sensors are “red” (see page 122).

Most contact sensors can be used as either normally open or normally closed, depending on how they are connected. Some electronic sensors can be switched to work either as normally open or normally closed. Most sensors are used as normally open because no current is flowing in the normal state.

Ready Signal

For many sensors, like those that monitor part ejection, blow-off, or feed advance, the event being monitored must occur during a specific portion of the stroke. If the event doesn’t occur during this period, the die may be damaged. The portion of the stroke during which a sensor must actuate is called the Ready signal. You set a Ready signal only for green sensors, which monitor events that must occur on every stroke.

The term “Ready signal” derives from older die protection systems on which a mechanical cam switch on the press sent a signal to the die protection unit during the range of angles within which the sensor was required to actuate.

The Ready signal is set by keying in the beginning (called “ready on”) and ending (called “ready off”) angles of the range of angles during which the sensor must actuate. If the sensor does not actuate (i.e., closure to ground does not occur) during this window, SmartPAC PRO Servo sends a stop command to the press. The type of stop (i.e., top stop, emergency stop, or smart stop) is programmable. See *Setting Sensor Type*, page 129.

Impedance

Impedance is a measure of the resistance to the flow of electric current. Some die protection controls have inputs for electromechanical sensors that provide different impedances. As a rule of thumb, use a high-impedance input if the part is dirty or covered with a non-conductive lubricant. Use a low-impedance input if the part is covered with a water-based or conductive lubricant.

DiProPAC boards shipped since August 2007 are compatible with all impedance levels. However, DiPro Sensor Interface (DSI) 2 cannot be used with low-impedance sensors. If you have a low-impedance application (e.g., a wire probe application in which a part/strip covered with a water-based, conductive lubricant completes the circuit), the sensor must be wired directly to the DiProPAC board.

Sensor Types

Sensors used with die protection systems are classified as red, yellow, or green. For SmartPAC PRO Servo with DiProPAC, there are four types of green sensors—green, green quick check, green constant, and green special—all of which require an event to occur on every stroke or at least once during a set number of strokes.

When you make settings for a tool, you select the sensor type for each sensor connected to SmartPAC PRO Servo. You can program any combination of reds, yellows, or greens. Instructions for programming sensor types is provided starting on page 125.

Yellow Sensors

Yellow sensors, which are normally open to ground, are ideally suited to monitor events like stock buckling, end of stock, or die overload. When a yellow sensor closes, SmartPAC PRO Servo sends a Stop command to the press. Because yellow sensors work independently of the ram angle and do not actuate on every stroke, you do not set a Ready signal for them.

Red Sensors

Red sensors, which are normally closed to ground, are used to monitor the same events as yellow sensors: die overloads, end of stock, and buckling. A Stop command is sent to the press when the red sensor opens. No Ready signal is set for red sensors.

Green Sensors

Green sensors, which are normally open, are used to monitor events that must occur during a certain portion of each stroke or intermittently every designated number of strokes. Examples are part ejection, stock feed, and part transfer. SmartPAC PRO Servo stops the press when the green sensor closes to ground.

Any sensor set to green, green quick check, or green constant must actuate during the Ready signal.

Depending on the type of green sensor, the Ready signal is set either a little longer or a little shorter than the actuation time.

The four types of green sensors are described below.

Green Sensors

A sensor input set to “green” must turn on, at least momentarily, within the Ready signal and be off, at least momentarily, at some point outside the Ready signal, Figure 5-18.

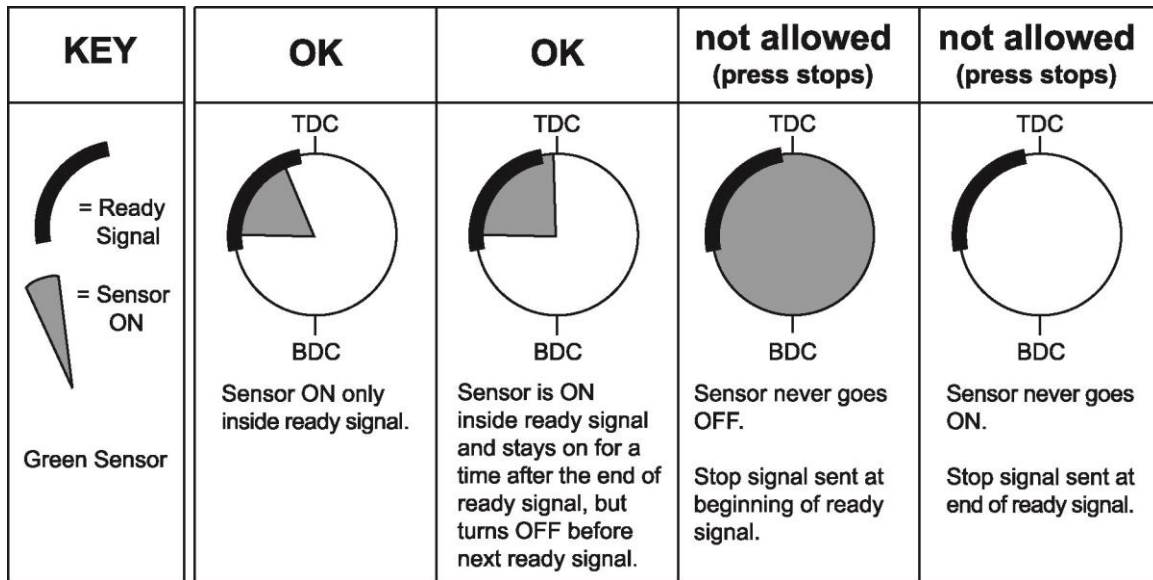


Figure 5-18. Ready Signal Programming for a “Green” Sensor

Green Quick Check Sensors

A sensor input set to “green quick check” must turn on, at least momentarily, within the Ready signal and may not turn off outside the Ready signal, Figure 5-19. In other words, the sensor must turn on and turn off within the Ready signal.

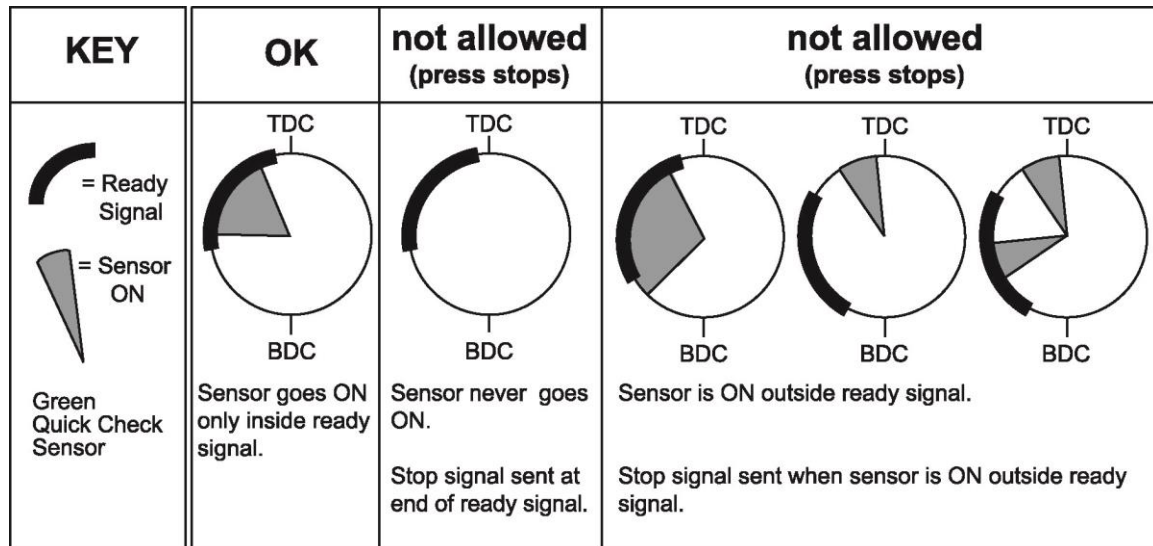


Figure 5-19. Ready Signal Programming for a “Green Quick Check” Sensor

Green Constant Sensors

When you set a sensor input to “green constant,” the sensor must turn on before the Ready signal begins and turn off after the Ready signal ends, remaining actuated continuously during the entire Ready signal, Figure 5-20.

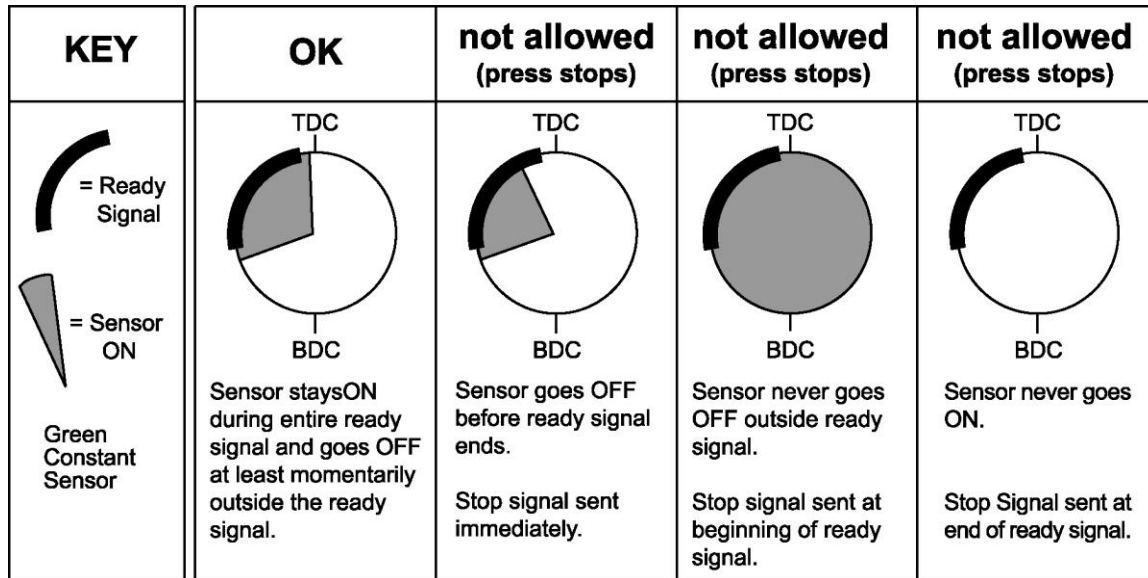


Figure 5-20. Ready Signal Programming for a “Green Constant” Sensor

Green Special Sensors

CAUTION

GREEN SPECIAL SENSOR MAY NOT PREVENT DAMAGE

Use the green special sensor with caution. An undesirable number of slugs can stack up in an ejection hole while still satisfying a green special sensor’s requirements. See the example below.

Failure to comply with these instructions could result in property damage.

Green special sensors are designed to monitor slug ejection, signaling when slugs have stacked up excessively in a slug ejection hole. Slugs are not necessarily ejected on every stroke. Several strokes may be required before they finally break free and fall out of the bottom of the die. If the slugs jam and too many stack up in the hole, the die can be damaged.

Slug stacking is virtually impossible to monitor with a standard green sensor. A red or yellow sensor is equally ineffective because the sensor changes state whenever a slug is ejected.

Instead of actuating once per stroke like a typical green sensor, the green special sensor must actuate at least once during a preset number of strokes. Rather than setting a Ready signal, you set the maximum number of strokes that the press can make without the sensor actuating.

For example, if your die clears all the slugs from a particular ejection hole approximately once every four strokes, you would set a Green Special sensor input for a six-stroke window. If no slugs are ejected after six strokes, SmartPAC PRO Servo sends a Stop command to the press.

Example: How a Green Special Sensor May Not Detect a Problem

Referring to the case cited above, assume that the press makes five strokes without ejecting a slug. On the sixth stroke, one slug ejects and actuates the sensor. The green special sensor is

satisfied and the press continues to run. However, there are still five slugs in the ejection hole. If the press makes five more strokes without ejecting a slug, ten slugs are now stuck in the hole. If this process were to continue, it is conceivable that an infinite number of slugs could stack up in the hole without the press stopping. Luckily, the laws of physics make this scenario unlikely. When slugs jam, it is usually because the bottom one is stuck. If the bottom slug ejects, it is very likely that the rest will soon follow.

Programming Sensor Settings

On the Die Protection Sensor Menu, you select a sensor to program, then enter settings for the sensor on a series of screens that display sequentially. The settings you enter determine which screens display, and programming for each sensor is likely to use a slightly different series of screens. The following sections show you how to make these sensor program settings:

- Set the Auto Enable by Tool (next section) or Auto Enable by Sensor (page 128) stroke counter
- Assign a name to each sensor (page 126)
- Set the sensor type (i.e., red, yellow, green, etc.) (see page 129)
- Set stop type (i.e., Emergency Stop, Top Stop, and Smart Stop) (see page 130)
- Set the critical angle for a sensor programmed as Smart Stop (see page 131)
- Set the Ready signal for a green sensor (see page 132)
- Set the stroke count for a green special sensor (see page 134)

You are also shown how to change sensor settings (see page 135), view the sensor summary (see page 135), and delete sensors (see page 136).

Setting the “Auto Enable by Tool” Counter Value

If you have set Sensor Enable Mode in Initialization to AUTO BY TOOL (see page 83), you must set the Auto Enable by Tool counter when you first access the Die Protection Sensor Menu. The Auto Enable by Tool counter specifies the number of strokes the press must make before all sensors in the tool are re-enabled following a DISABLE SENSORS command (see *SENSOR ENABLE/DISABLE & STATUS (Optional)*, page 156, and *DISABLE (ENABLE) SENSORS*, page 163).

To set the Auto Enable by Tool counter, do the following:

1. Select DIE PROTECTION on the Tool Program Menu. The Die Protection Sensor Menu displays, Figure 5-22, with the AUTO ENABLE COUNTER at the bottom of the screen.

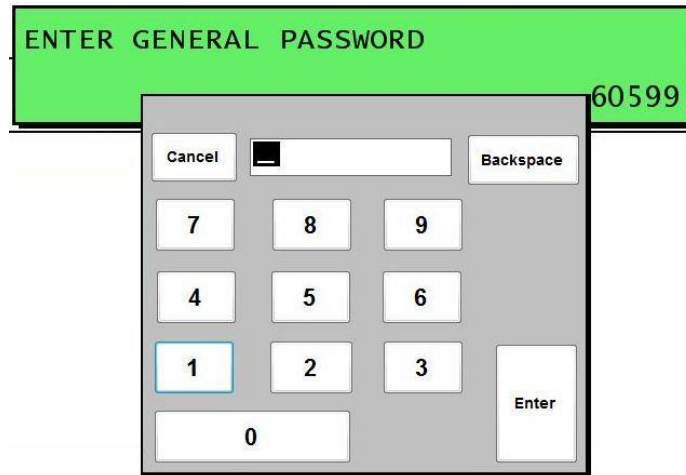


Figure 5-21. "Enter General Password" Screen

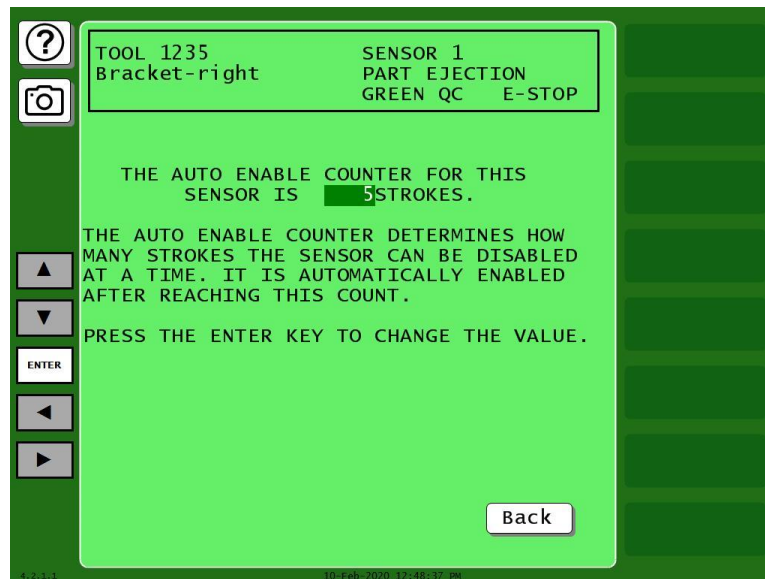


Figure 5-22. Die Protection Sensor Menu with Auto Enable by Tool Counter

2. Select the AUTO ENABLE COUNTER field. The Numeric Entry window displays.
3. Key in the value you want (maximum is 99), following the directions in the window, and press ENTER. The value you keyed in displays in the AUTO ENABLE COUNTER field.
4. Select a sensor to program by moving the highlight bar to that sensor and pressing ENTER.

Naming the Sensor

When you select a sensor to program on the Die Protection Sensor Menu, the Sensor Names screen, Figure 5-23, displays.

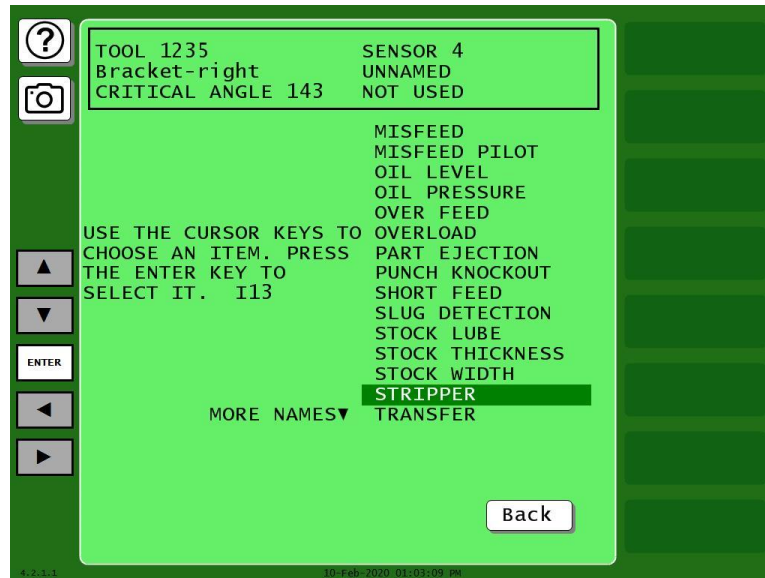


Figure 5-23. Sensor Names Screen

On this screen you can select one of the names displayed, or you can select one of the “custom” names set in Initialization (see *CUSTOM SENSOR NAMES (Optional)*, page 82).

To name a sensor, do the following:

1. Select a sensor (e.g., Sensor 1) on the Die Protection Sensor Menu. The Sensor Names screen displays.
2. Select from the list of names the name that best describes the function of the selected sensor.

To view names that appear below the MORE NAMES line, press the Down (▼) cursor key. A new name appears each time you press the Down (▼) cursor. When you have cycled through the complete list, the highlight bar returns to UNNAMED, the first item.

3. If none of the names in the list seems suitable but you still want to name the sensor, select “CUSTOM” NAME. The Custom Sensor Names screen displays, Figure 5-24.



Figure 5-24. Custom Sensor Names Screen

4. Select a “custom” name from the list. (The number of the custom name—e.g., CUSTOM 1—does not have to match the number of the sensor being programmed—e.g., SENSOR 1.)

If Sensor Enable Mode is set to AUTO BY SENSOR (page 83), you are taken to the Auto Enable by Sensor Counter screen (see next section). Otherwise, the Sensor Type screen displays (see Setting Sensor Type, page 129).

Setting the “Auto Enable by Sensor” Counter Value

If Sensor Enable Mode is set to AUTO BY SENSOR in Initialization (page 83), after you enter a sensor name a screen like Figure 5-25 displays.

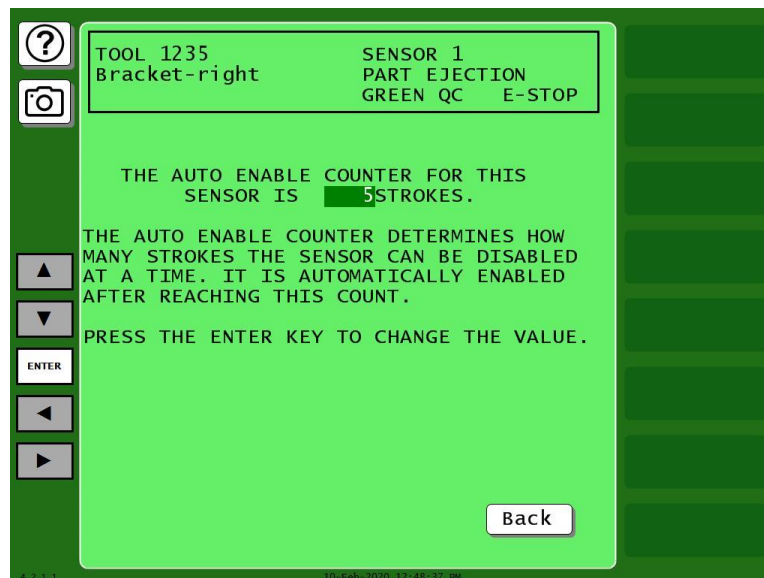


Figure 5-25. Auto Enable by Sensor Counter Screen

This screen allows you to set the Auto Enable by Sensor counter, which specifies the number of press strokes necessary to re-enable the sensor following a DISABLE SENSORS command (see *SENSOR ENABLE/DISABLE & STATUS (Optional)*, page 156, and *DISABLE (ENABLE) SENSORS*, page 163)

To set the Auto Enable by Sensor counter, do the following:

1. On the Auto Enable by Sensor Counter screen, select the value in the AUTO ENABLE COUNTER field. The Numeric Entry window displays.
2. Key in the value you want (maximum is 99), following the directions in the window, and press ENTER. The value you keyed in displays in the AUTO ENABLE COUNTER field.
3. Press ENTER to display the Sensor Type screen (see next section).

Setting Sensor Type

After you select a sensor name and, if AUTO ENABLE BY SENSOR is the Initialization setting, specify the Auto Enable stroke count, the Sensor Type screen, Figure 5-25, displays with the name you selected for the sensor shown at the right of the Status Box beneath the sensor number.



Figure 5-26. Sensor Type Screen

You can select one of six types of sensor (see *Sensor Types*, page 122, for details), or you can select NOT USED, in which case that sensor is not programmed for the tool.

To set the sensor type, do the following:

1. Select the sensor type you want. For all selections except UNUSED, the Sensor Stop Type screen (see next section) displays with the sensor type you selected displayed at the right of the Status Box beneath the sensor name.

If you selected UNUSED, you are returned to the Die Protection Sensor Menu. The name of the sensor you started to program is reset to SENSOR 1, SENSOR 2, etc.

Setting Sensor Stop Type

When you select a sensor type, the Sensor Stop Type screen displays, Figure 5-27. The Sensor Stop Type screen allows you to specify how the press is to be stopped when the die protection sensor detects a fault.

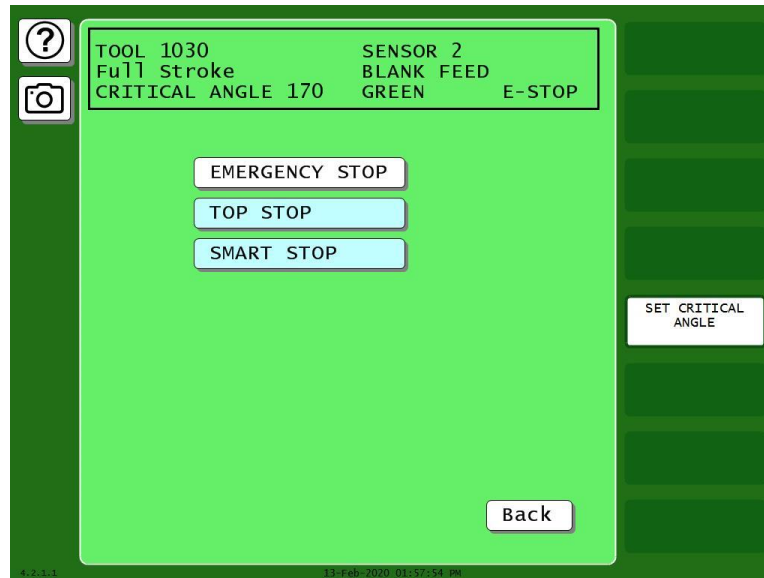


Figure 5-27. Sensor Stop Type Screen

You can select one of three Stop Type settings for the sensor: emergency stop, top stop, or smart stop. The three Stop Type options are described below.

- **Emergency Stop (E-Stop).** SmartPAC PRO Servo stops the press as soon as a sensor fault is detected. You should use this setting for any die-threatening event that occurs before the critical angle, the point in the ram downstroke after which a stop signal to the press cannot prevent the die from closing. A typical Emergency Stop application is a sensor that monitors part ejection on the upstroke. Setting this sensor to an Emergency Stop ensures that the ram will stop on the next stroke before the die closes.
- **Top Stop.** SmartPAC PRO Servo stops the press at the top of its stroke after a sensor fault is detected. You should use this setting for events that do not threaten the die or that occur between the critical angle and bottom dead center (BDC). A typical Top Stop application is a sensor that monitors a feed like a roll feed that takes place well into the downstroke. Setting this sensor to a Top Stop ensures that the press does not stick on the bottom as a result of a stop signal being sent just as the ram is about to contact the material.
- **Smart Stop.** SmartPAC PRO Servo performs either a Top Stop or Emergency Stop depending on the angle at which the sensor fault is detected. SmartPAC PRO Servo top-stops the press if the fault is detected after the critical angle but before bottom dead center (BDC). If the fault is detected after BDC but before the critical angle, SmartPAC PRO Servo performs an emergency stop. A typical Smart Stop application is a sensor that monitors short feeds, which can occur either before or after the critical angle. When you select SMART STOP as the stop type, you must specify the critical angle.

To set the stop type for a sensor, do the following:

On the Sensor Stop Type screen, select the stop type you want (i.e., EMERGENCY STOP, TOP STOP, or SMART STOP).

- If you selected SMART STOP and the critical angle has not yet been set, you are taken to the Critical Angle Programming screen (see next section).
- If you selected EMERGENCY STOP or TOP STOP and the sensor you are programming is a Green, Green Quick Check, or Green Constant sensor, you are taken to the Ready Signal Programming screen (see Setting the Ready Signal for a Green Sensor, page 5-28).
- If you selected EMERGENCY STOP or TOP STOP and the sensor you are programming is a Green Special sensor, you are taken to the Green Special Sensor Stroke Count screen (see Setting the Counter Value for a Green Special Sensor, page 5-30).
- If you selected EMERGENCY STOP or TOP STOP and the sensor you are programming is a red or yellow sensor, you are finished, and the Sensor Settings screen displays, on which all your programmed sensor settings are shown (see Viewing and Changing Sensor Settings, page 5-31).

Setting the Critical Angle for a Sensor Set to SMART STOP

When you program a sensor for a Smart Stop, you must also set the critical angle SmartPAC PRO Servo uses to determine whether an Emergency Stop or Top Stop command is sent to the press. The critical angle you program for the first sensor set to Smart Stop is used as the critical angle for all sensors set to Smart Stop for that tool. If you change the Critical Angle setting for one Smart Stop sensor, the new critical angle is applied to all Smart Stop sensors for that tool.

To set the critical angle for the first sensor set to SMART STOP for a tool, do the following:

1. On the Sensor Stop Type screen, select SMART STOP. The Critical Angle Programming screen, shown in Figure 5-28, displays.

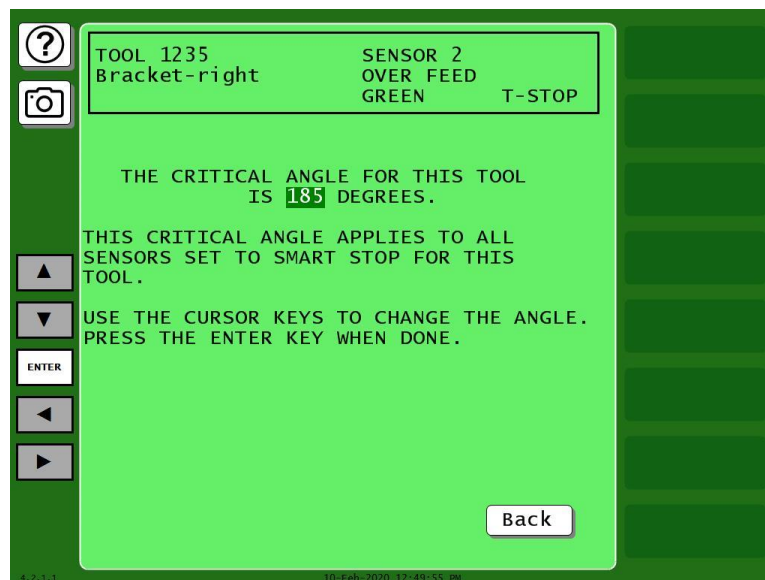


Figure 5-28. Critical Angle Programming Screen

2. Decrement the CRITICAL ANGLE default value of 185°, using the Down (▼) cursor key, until the value you want is displayed. SmartPAC PRO Servo accepts Critical Angle values between 0° and 184°.

NOTICE

The Critical Angle default of 185° cannot be used as your Smart Stop critical angle setting. If you attempt to enter 185° as the critical angle, a window will open, asking you to enter a different value.

3. Press ENTER when you are done.

If the sensor you are programming is a Green, Green Quick Check, or Green Constant sensor, the Ready Signal Programming screen displays (see next section).

If the sensor you are programming is a red or yellow sensor, you are finished, and you are taken to the Sensor Settings screen (see *Viewing and Changing Sensor Settings*, page 135).

After you have programmed one or more Smart Stop sensors, you can change the critical angle by performing these steps:

1. On the Die Protection Sensor Menu, select a sensor programmed as Smart Stop. The Sensor Settings screen (see Figure 5-31, page 135) displays.
2. Select SMART STOP. The Sensor Stop Type screen displays with SMART STOP highlighted.
3. Press SET CRITICAL ANGLE to display the Critical Angle Programming screen.
4. Change the Critical Angle setting, using the Up (▲) and Down (▼) cursor keys.

NOTICE

The critical angle can only be set for values between 0° and 184°. If you attempt to enter 185° as the critical angle, a window will open, asking you to enter a different value.

Setting the Ready Signal for a Green Sensor

After you select the stop type for a Green, Green Quick Check, or Green Constant sensor, the Ready Signal Programming screen displays, Figure 5-29.

On this screen, you set the Ready signal for Green, Green Quick Check, and Green Constant sensor types. The Ready signal is the timing window during which the sensor must actuate to prevent SmartPAC PRO Servo from sending a stop signal to the press. In the example shown in Figure 5-29, the Ready On signal is set to 166°, the Ready Off signal to 194°.

For Green and Green Quick Check sensors, you set the Ready signal so that it is a little longer than the sensor's actuation time. You set the Ready signal for Green Constant sensors so that it is a little shorter than the sensor's actuation time. See *Understanding Sensor Terminology*, page 121, for more information.

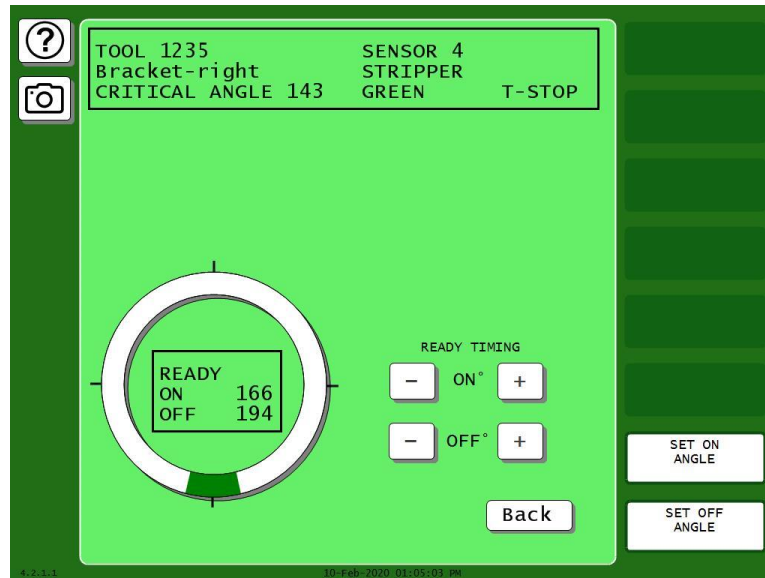


Figure 5-29. Ready Signal Programming Screen

NOTICE

The Ready signal you set in Program mode can be fine-tuned in Run mode after you have run the press. See *Adjusting the Ready Signal for Green Sensors*, page 168, for details.

To set the Ready signal, do the following:

NOTICE

If you do not know how to use the cursor keys to set sensor Ready signal timing, see page 3-6.

- On the Ready Signal Programming screen, set the Ready On angle on the ram angle clock, using the Left (◀) and Right (▶) cursor keys.

As you press the Left (◀) cursor key, the On cursor moves counterclockwise around the display, and the On angle value decreases. When you press the Right (▶) cursor key, the On cursor moves clockwise around the display, and the On angle value increases.

The precise On angle value is displayed in the window inside the clock display.
- Set the Ready Off angle on the ram angle clock, using the Up (▲) and Down (▼) cursor keys.

As you press the Up (▲) cursor key, the Off cursor moves clockwise around the display, and the Off angle increases. As you press the Down (▼) cursor key, the Off cursor moves counterclockwise around the display, and the Off angle decreases.

The precise Off angle value is displayed in the window inside the clock display.
- When you have finished setting the Ready On and Ready Off angles, press RESET. The Sensor Settings screen (see Figure 5-31, page 135) displays with all your sensor settings shown.
- If you want to change any settings, refer to *Viewing and Changing Sensor Settings*, page 135).

Otherwise, press RESET to return to the Die Protection Sensor Menu. The highlight bar automatically scrolls down to the next sensor displayed on the menu.

Setting the Counter Value for a Green Special Sensor

When you select GREEN SPECIAL as the sensor type on the Sensor Type screen, the Green Special Sensor Stroke Count screen displays, Figure 5-30. On this screen, you set the number of strokes that the press can make before the Green Special sensor must actuate.



Figure 5-30. Green Special Sensor Stroke Count Screen

NOTICE

For more information about Green Special sensors, refer to *Understanding Sensor Terminology*, page 121.

To set the Green Special sensor stroke count, do the following:

1. On the Green Special Sensor Stroke Count screen, increment or decrement the stroke counter (maximum value is 99), using the Up (▲) or Down (▼) cursor key, until the value you want is displayed.
2. Press RESET. The Sensor Settings screen, Figure 5-31, displays with all your sensor settings shown.
3. If you want to change any settings, refer to Viewing and Changing Sensor Settings (next section).

Otherwise, press RESET again to return to the Die Protection Sensor Menu. The highlight bar automatically scrolls down to the next sensor displayed on the menu.

Viewing and Changing Sensor Settings

When you finish making settings for a sensor, you are taken to a screen that displays all your sensor settings, similar to Figure 5-31.

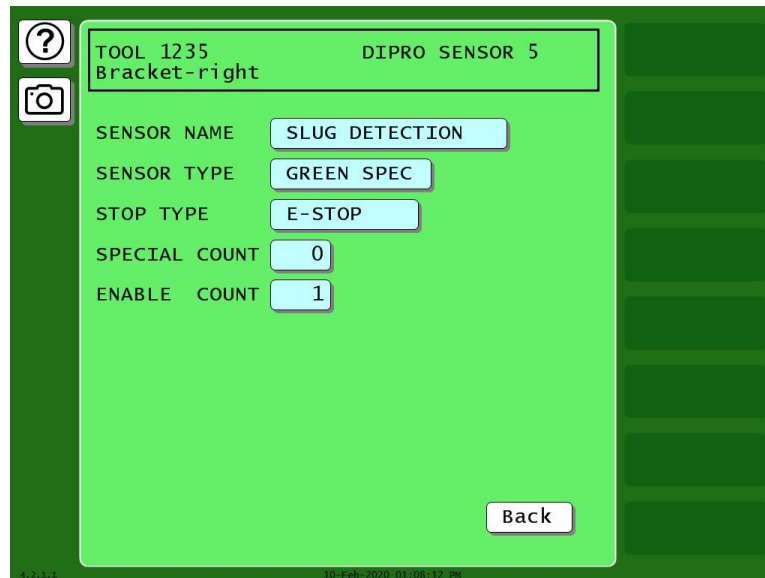


Figure 5-31. Sensor Settings Screen

This screen also displays whenever you select a programmed sensor on the Die Protection Sensor Menu.

To change sensor settings, do the following:

1. On the Sensor Settings screen, select the setting you want to change. The screen on which that setting is programmed displays. For example, if you select the SENSOR NAME setting, the Sensor Names screen (Figure 5-23, page 127) displays.
2. Change the setting on the displayed screen.
3. Press RESET when you are finished to return to the Sensor Settings screen.
4. Repeat steps 1 to 3 for each setting you want to change.
5. Press RESET when you have finished changing settings on the Sensor Settings screen. You are returned to the Die Protection Sensor Menu.

Viewing the Sensor Summary

You can view a summary of the settings that have been made for all programmed sensors shown on the Die Protection Sensor Menu, including the critical angle that has been set for the tool. To view the summary, do the following:

1. On the Die Protection Sensor Menu, press VIEW SENSOR SUMMARY. The Sensor Summary screen displays, Figure 5-32. This screen shows the sensor name, sensor type, stop type, and the Ready signal On and Off angles for Green, Green Quick Check, and Green Constant sensors or the stroke count for Green Special sensors.

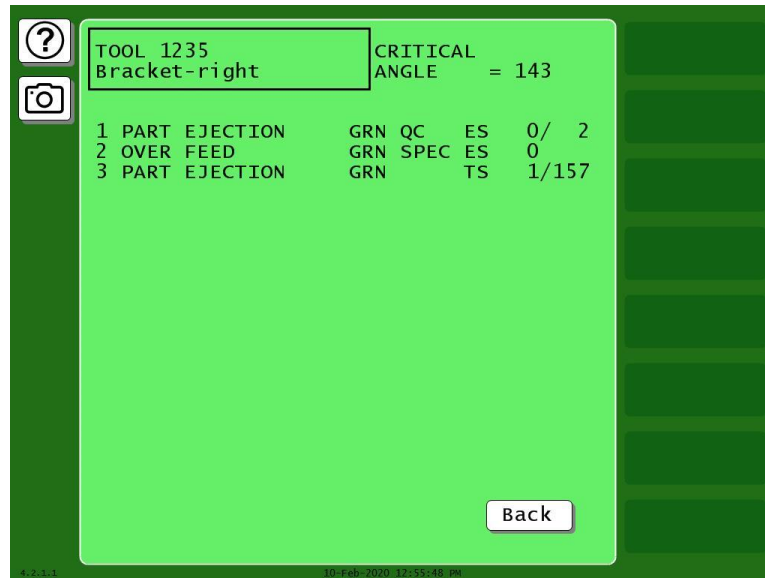


Figure 5-32. Sensor Summary Screen

Deleting a Sensor

To delete a Die Protection sensor, do the following:

1. On the Die Protection Sensor Menu, select the sensor you want to delete. The Sensor Settings screen displays.
2. Select the Sensor Type. The Sensor Type screen appears.
3. Select NOT USED. You are returned to the Die Protection Sensor Menu with the name of the sensor you selected in step 1 removed and a caption specifying the sensor number (e.g., SENSOR 1, SENSOR 2, etc.) displayed.

Programming DiProPAC 32 Sensors

When DiProPAC 32 is an installed option, two menu choices appear on the Tool Program Menu in place of the DIE PROTECTION item: DIPROPAC 1-16 and DIPROPAC 17-32 (see Figure 5-33, page 137,). You program the first sixteen DiProPAC 32 sensors, using the DIPROPAC 1-16 menu item. You select the DIPROPAC 17-32 item to program sensors 17-32.

The first sixteen DiProPAC 32 sensors are programmed in exactly the same way you program DiProPAC 8 and DiProPAC 16 sensors. If you are programming sensors 17-32 as red or yellow sensors, procedures are also the same as for DiProPAC 8 and DiProPAC 16.

When you program sensors 17-32 as green sensors, you must handle them differently. When programmed as green, green quick check, and green constant sensors, sensors 17-32 must use the same Ready signal as an already programmed green, green quick check, or green constant sensor among sensors 1-16. When programmed as green special sensors, sensors 17-32 must use the same stroke count as an already programmed green special sensor among sensors 1-16.

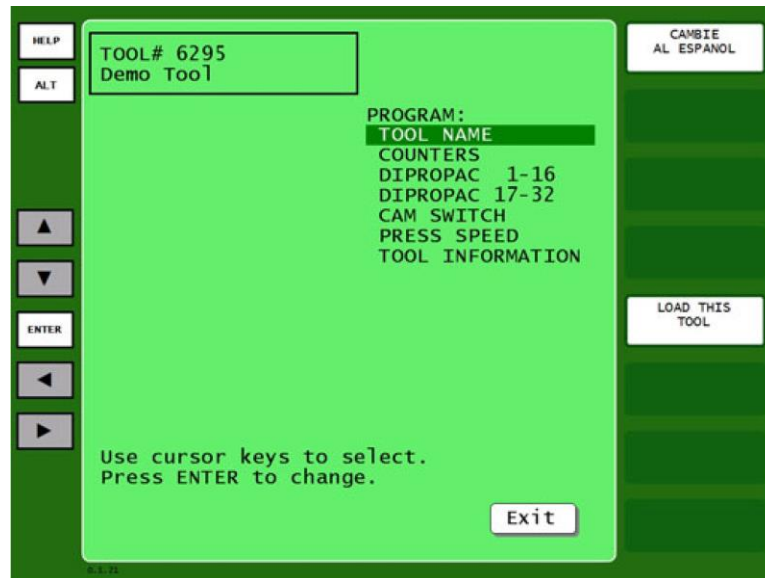


Figure 5-33. Tool Program Menu with DIPROPAC 1-16 and DIPROPAC 17-32 Items

When planning the sensors to be assigned to each DiProPAC 32 input, reserve sensor positions 1-16 for green sensors only. Also, if you are using multiple green sensors for the same function (e.g., transfer, stripper, slug detection, etc.), program only one of the sensor positions 1-16 for this application, leaving sensor positions 17-32 for programming the remaining sensors in the group.

Programming Sensors 17-32 as Green, Green Quick Check, or Green Constant

To program a sensor in the group of sensors 17-32 as a green, green quick check, or green constant sensor, do the following, referring to the appropriate sections of *Programming Sensor Settings*, page 125) if necessary:

1. On the Tool Program Menu, Figure 5-33, select the DIPROPAC 17-32 item. The Die Protection Sensor 17-32 Menu displays, Figure 5-34.

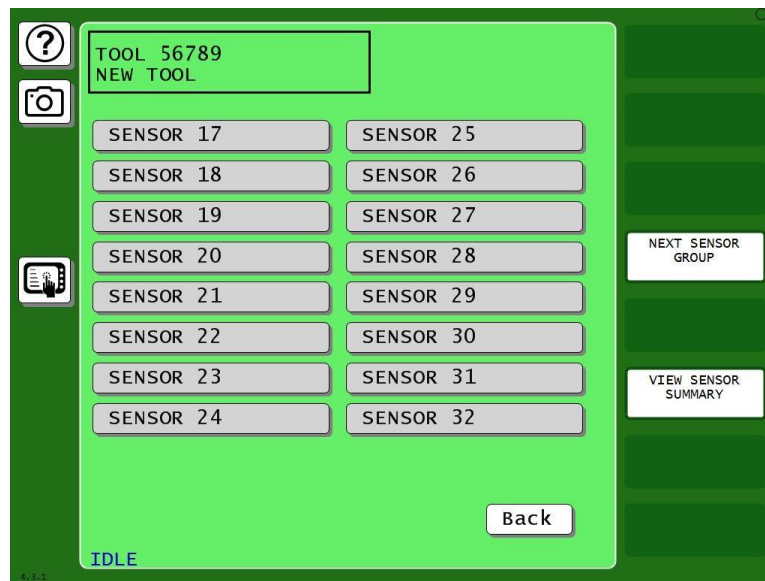


Figure 5-34. Die Protection Sensor 17-32 Menu

2. Select the sensor number that you want to program. The Sensor Names screen displays, Figure 5-35.

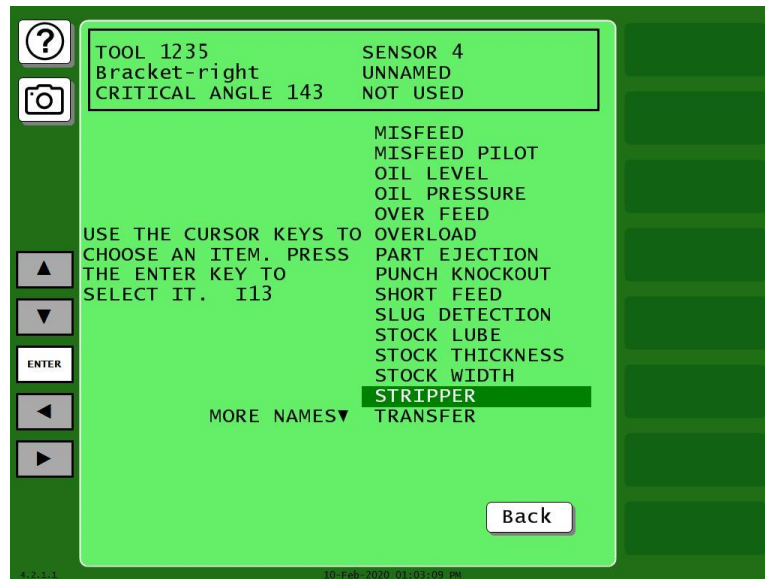


Figure 5-35. Sensor Names Screen with Stripper Function Highlighted

3. Select a function for the sensor. (“Stripper” is used as an example in Figure 5-35.) The Sensor Type screen displays, Figure 5-36.



Figure 5-36. Sensor Type Screen with “GREEN” Highlighted

4. Select the sensor type (i.e., GREEN, GREEN QUICK CHECK, or GREEN CONSTANT). The Sensor Stop Type screen displays, Figure 5-37.

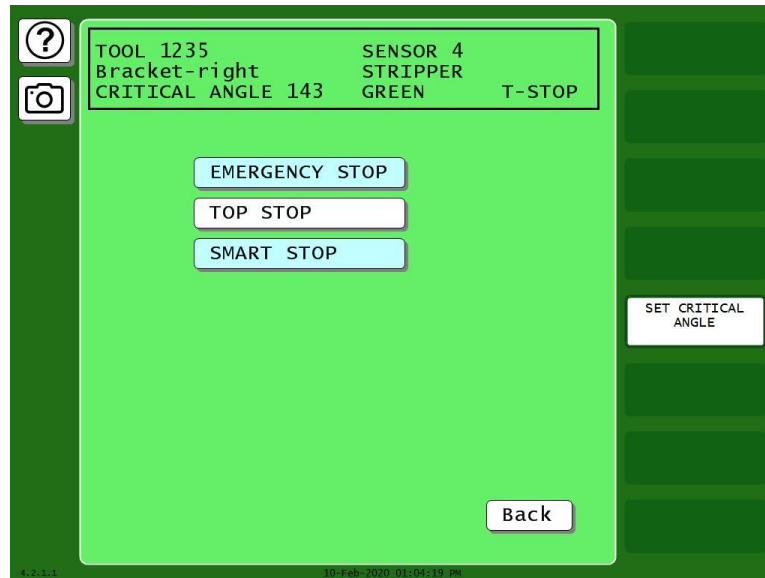


Figure 5-37. Sensor Stop Type Screen

- Select the stop type you want. The Sensor Summary screen displays, Figure 5-38, with the Ready signal On and Off angles shown for each green sensor programmed in the group of sensors 1-16. Sensors are displayed in ascending On angle order.

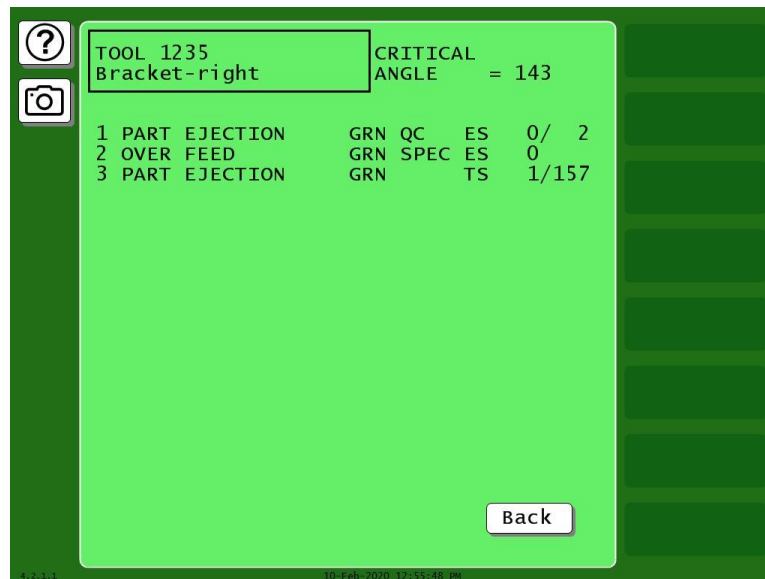


Figure 5-38. Sensor Summary Screen Showing Ready Signals for Green Sensors

- Select the Ready signal you want. The Sensor Settings screen displays, Figure 5-39, showing the sensor name, sensor type, stop type, and Ready signal On and Off angles you have selected. The screen also shows the number of the sensor in the group of sensors 1-16 whose Ready signal is being used as the Ready signal for the sensor you are programming.



Figure 5-39. Sensor Settings Screen

7. Press RESET to return to the Die Protection Sensor 17-32 Menu.

Programming a Sensor as Green Special

To program one of the sensors in the group of sensors 17-32 as a green special sensor, perform the following steps, referring to the appropriate sections of *Programming Sensor Settings*, page 125, if necessary:

1. Perform steps 1 and 2 of the *Programming Sensors 17-32 as Green, Green Quick Check, or Green Constant*, page 137. The Sensor Names screen, Figure 5-39, displays.

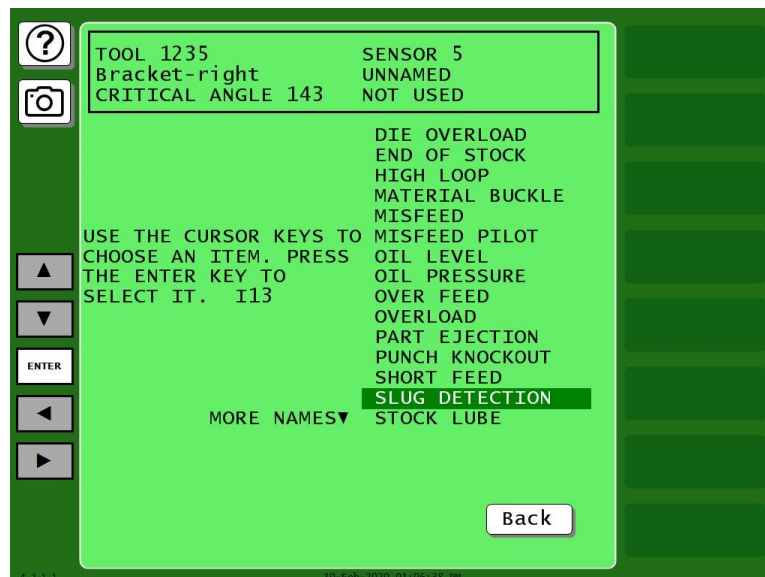


Figure 5-40. Sensor Names Screen with Slug Detection Function Highlighted

- Select a function for the sensor. (“Slug Detection” is used as an example in Figure 5-40.). The Sensor Type screen displays, Figure 5-41.



Figure 5-41. Sensor Type Screen with “GREEN SPECIAL” Highlighted

- Select GREEN SPECIAL from the Sensor Type items.
- When the Sensor Stop Type screen displays, select a stop type. The Sensor Summary screen, Figure 5-42, displays with the stroke count shown for each green special sensor programmed in the group of sensors 1-16.

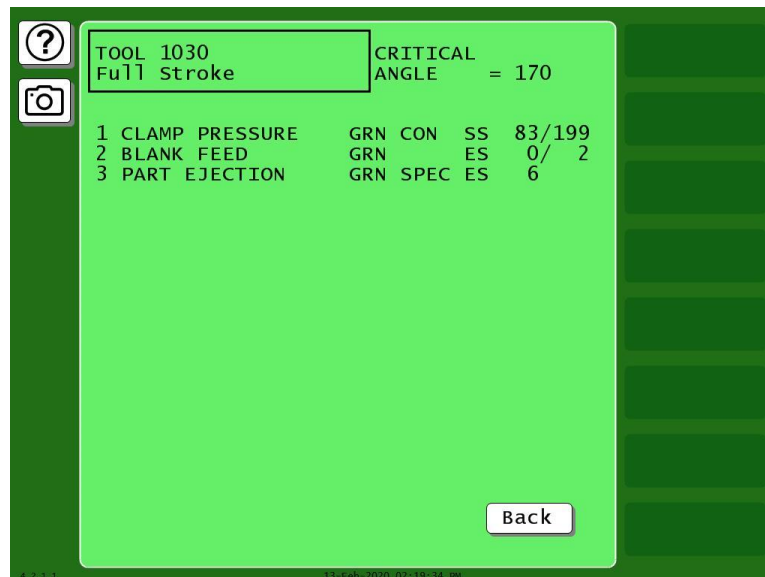


Figure 5-42. Sensor Summary Screen Showing Stroke Counts for Green Special Sensors

- Select the green special stroke count you want. The Sensor Settings screen, Figure 5-43, displays, showing the name of the sensor, sensor type, stop type, and stroke count you have selected. The

screen also shows the number of the sensor in the group of sensors 1-16 whose stroke count is being used as the stroke count for the sensor you are programming.



Figure 5-43. Sensor Settings Screen

6. Press RESET to return to the Die Protection Sensor 17-32 Menu.

CAM SWITCH

(PROGRAM – GO TO THE TOOL MANAGER – SELECT TOOL – EDIT TOOL – CAM SWITCH)

⚠ DANGER

PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC PRO Servo's programmable cam switch to control auxiliary functions only. The SmartPAC PRO Servo programmable cam capability should never be used to provide timing signals for any safety use including muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

NOTICE

MAXIMUM NUMBER OF TIMED CHANNELS PER TOOL

Each tool can have up to four Timed Output cam channels.

CAUTION

Some Servo presses are capable of hitting the same part more than once at Bottom Dead Center (BDC) before returning to the top of the stroke. You will have to note the angle ranges at which repeated strokes occur. Any cams programmed within these ranges will actuate once for each hit. Die protection ready signals programmed within these ranges will expect sensor actuation once for each hit. If this is not feasible, please contact Wintriss Tech. Support to learn about new advanced features.

Failure to comply with these instructions could result in property damage.

NOTICE

For help with the Cam Channel Menu and screens accessible from it, press the HELP key when the applicable screen is displayed.

This item enables you to program up to 8 (for standard 8-channel ProCamPAC) or 15 (for optional 15-channel ProCamPAC) cam channels. Cam channel settings are made via the Cam Channel Menu, which is shown in Figure 5-44, page 143.

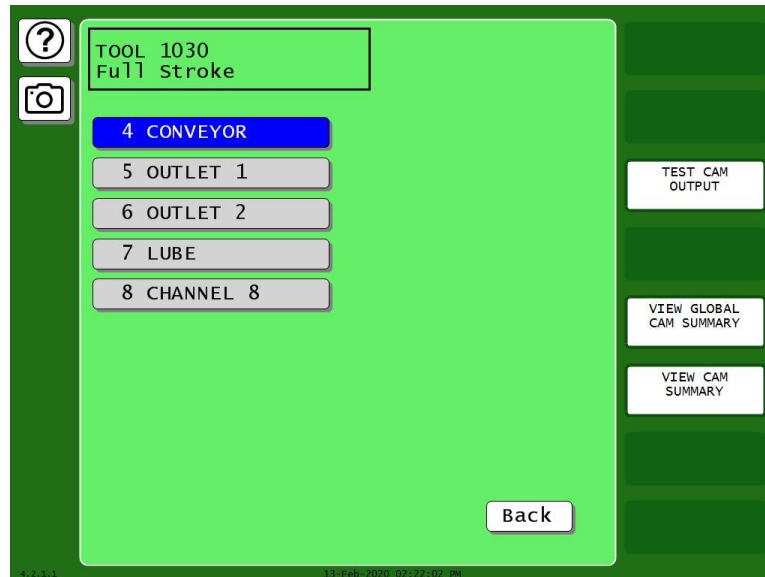


Figure 5-44. Cam Channel Menu

(ProCamPAC Linear 8-channel option shown. Your display may look different.)

Names you have assigned to cam channels in Initialization are displayed on the Cam Channel Menu in place of the default channel numbers (see *SELECT CAM NAMES (Optional)*, page 78).

Channel numbers that are missing from the menu have been programmed as “global” cams in Initialization (see *SET GLOBAL CAMS (Optional)*, page 80). To view global cam channels, View Global Cam Summary, page 80.

Selecting a Cam Channel

To make cam settings, you must first select a cam channel. To do so, perform the following steps:

1. Select CAM SWITCH on the Tool Program Menu. If requested, enter the general password. The Cam Channel Menu displays.

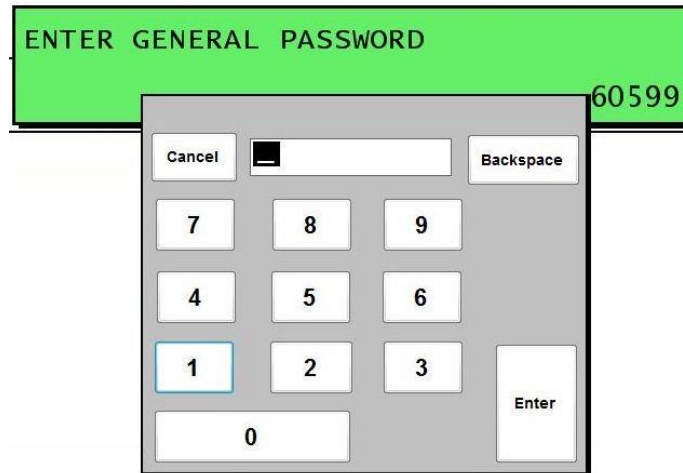


Figure 5-45. “Enter General Password” Screen

2. Select a cam channel to program. The Cam Channel Program Type Menu, shown in Figure 5-46, page 144, displays.



Figure 5-46. Cam Channel Program Type Menu

Instructions for programming cam channels using each of the program types shown on the Cam Channel Program Type Menu except Auto Advance are provided in the following sections. Auto Advance is not available as a cam timing option for SmartPAC PRO Servo.

Making an ON/OFF Setting

The PROGRAM ON/OFF ANGLES item on the Cam Channel Program Type Menu enables you to program the ram angle and position at which a selected cam channel turns on and off. You can program up to four on/off sequences per stroke. To make a single on/off setting for a selected cam channel, perform the following steps (to make multiple on/off settings, see *Setting Multiple ON/OFF Cycles*, page 145):

1. Select PROGRAM ON/OFF ANGLES on the Cam Channel Program Type Menu. The Cam Channel On/Off Program screen displays, Figure 5-47.

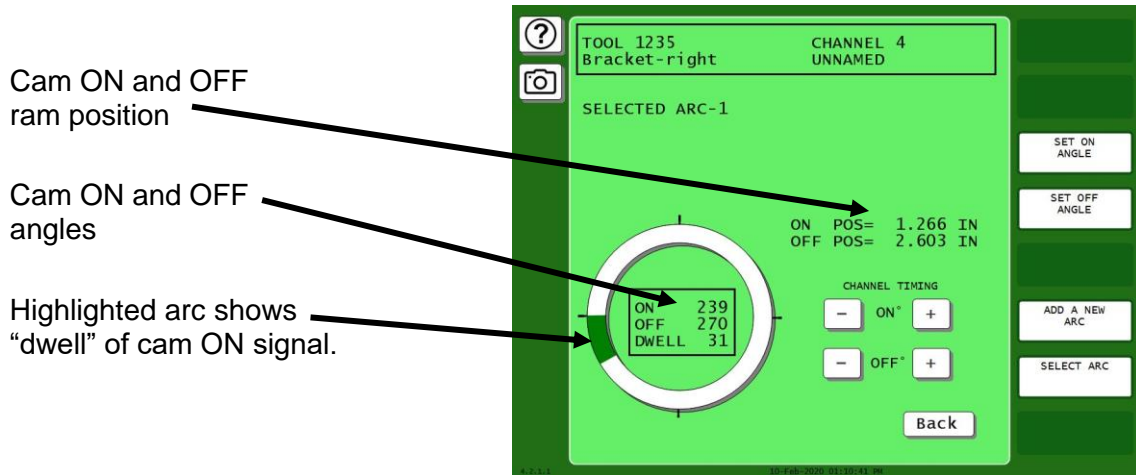


Figure 5-47. Cam Channel On/Off Program Screen

2. Set the On angle on the ram angle clock, using the Left (◀) and Right (▶) cursor keys.

As you press the Left (◀) cursor key, the On cursor moves counterclockwise around the display, and the On angle value decreases. When you press the Right (▶) cursor key, the On cursor moves clockwise around the display, and the On angle value increases.

The precise On angle value is displayed in the window inside the clock display. The ram position (in inches) at which the cam turns on is shown in the ON POS = field at the right of the screen.

3. Set the Off angle on the ram angle clock, using the Up (▲) and Down (▼) cursor keys.

As you press the Up (▲) cursor key, the Off cursor moves clockwise around the display, and the Off angle increases. As you press the Down (▼) cursor key, the Off cursor moves counterclockwise around the display, and the Off angle decreases.

The precise Off angle value is displayed in the window inside the clock display. The ram position (in inches) at which the cam turns off is shown in the OFF POS = field at the right of the screen.

4. Press RESET when you are finished to return to the Cam Channel Program Type Menu.

Setting Multiple ON/OFF Cycles

SmartPAC PRO Servo enables you to set more than one On/Off event (or cycle) for selected cam channels. You can program up to four On/Off events for a single channel and up to six additional On/Offs for all channels. The six-cycle maximum applies to both 8-channel and 15-channel

ProCamPAC. Additional On/Offs you set for global cam channels (see *SET GLOBAL CAMS (Optional)*, page 80) count toward the six-cycle maximum.

Table 5-2 gives examples of how you might use the extra ON/OFFs on an 8-channel ProCamPAC.

Table 5-2. Additional On/Off Settings, 8-channel ProCamPAC: Examples

| Ch 1 | Ch 2 | Ch 3 | Ch 4 | Ch 5 | Ch 6 | Ch 7 | Ch 8 | Total ON/OFFs | Total Extra ON/OFFs |
|------|------|------|------|------|------|------|------|---------------|---------------------|
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 0 |
| 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 11 | 3 |
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 14 | 6 |
| 4 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 14 | 6 |

To set more than one on/off cycle for a cam channel, do the following:

1. Make the first On/Off setting as instructed in *Making an ON/OFF Setting*, page 145. Figure 5-48 shows the Cam Channel On/Off Program screen set for an On angle of 30° and an Off angle of 50°. The ram On and Off positions are 6.998 in. and 6.341 in. Note the caption at the upper left of the screen indicating that Arc 1 is selected.

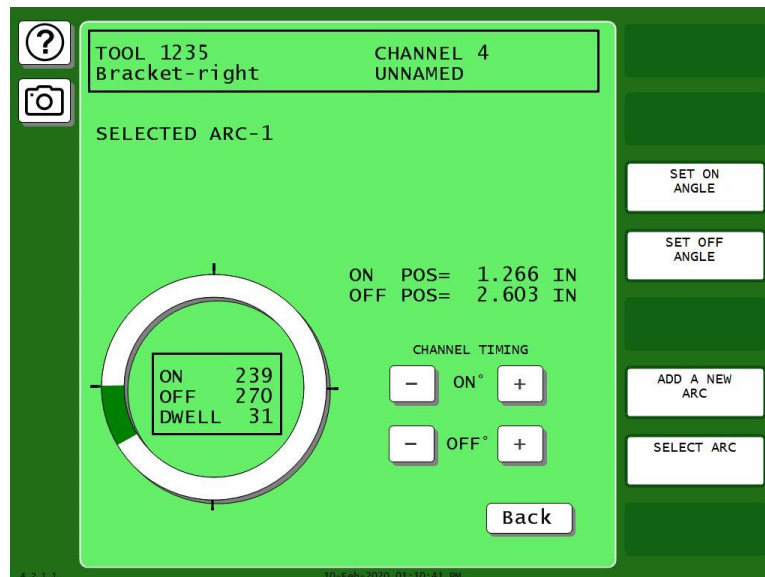


Figure 5-48. Cam Channel On/Off Program Screen: One On/Off Arc

2. Press ADD A NEW ARC on the Cam Channel On/Off Program screen to program a second On/Off cycle. The arc you set in step 1 (i.e., Arc 1) turns dark gray. A new arc appears as a green line at the zero (0) position, and the caption at the left of the screen changes to SELECTED ARC-2.

NOTICE

A new arc always starts at 0°. If one of the arcs you want to program is located near 0°, program it last. If you find that you have too many arcs at 0°, delete channel settings (see page 150) and start over again.

- Program the second arc. Figure 5-49 shows the Cam Channel On/Off Program screen with Arc 2 programmed for an On Angle of 70° and an Off angle of 90°. The corresponding ram On and Off positions are 5.660 in. and 5.003 in.

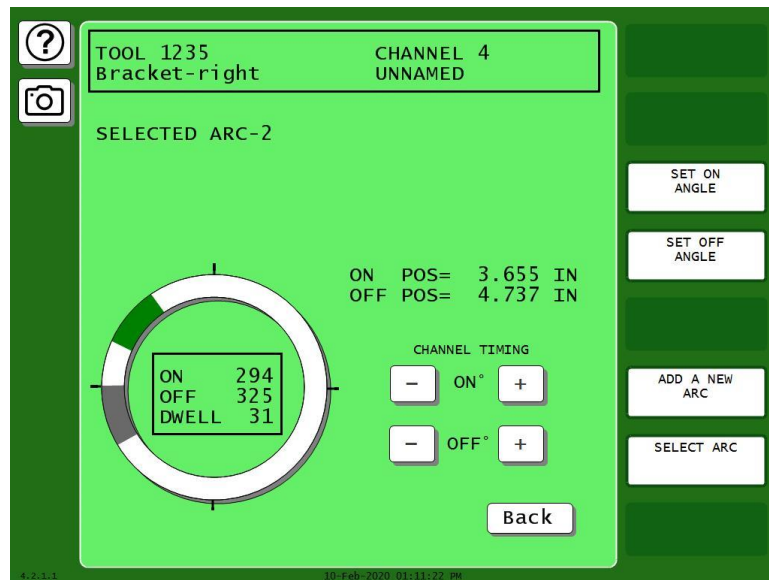


Figure 5-49. Cam Channel On/Off Program Screen: Two On/Off Arcs

- Repeat steps 2 and 3 to add additional arcs. Figure 5-50 shows the Cam Channel On/Off Program screen with a third arc programmed for an On angle of 339° and an Off angle of 353°. Ram On position is 5.022 in., ram Off position 5.161 in.

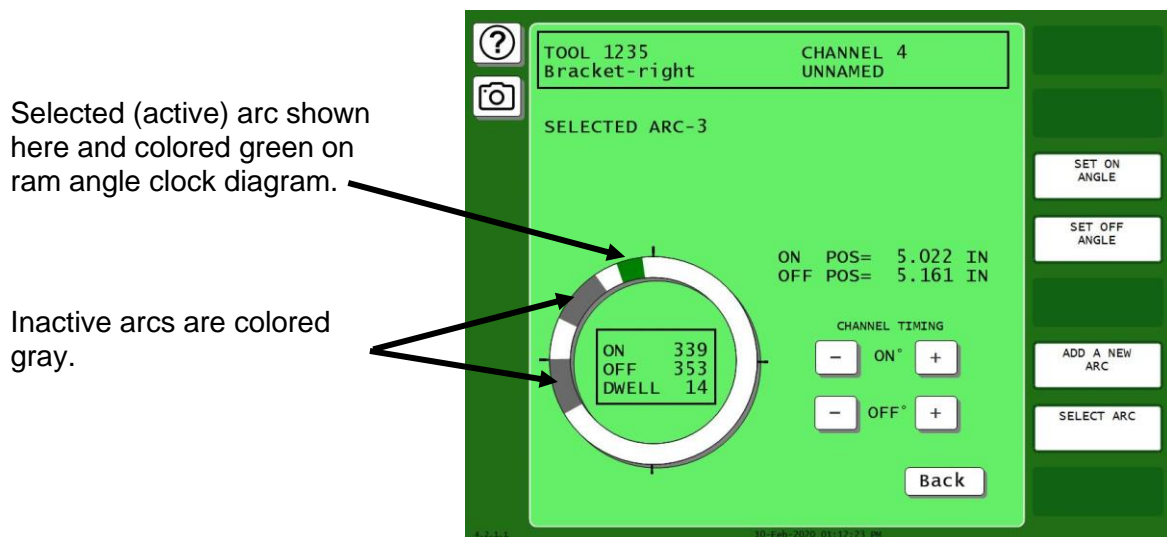


Figure 5-50. Cam Channel On/Off Program Screen: Three On/Off Arcs

- If you want to adjust On/Off settings for a previously programmed arc, press SELECT ARC one or more times until the highlighting for that arc turns green, then use the cursor keys to change the On and/or Off angles.

NOTICE

To delete an On/Off arc for a multi-arc cam channel, you must delete all settings for the channel (see page 5-46) and program the On/Off outputs again.

- Press RESET when you have finished to return to the Cam Channel Program Type Menu.

Making a Timed Output Setting

NOTICE

MAXIMUM NUMBER OF TIMED CHANNELS PER TOOL

Each tool can have up to four Timed Output cam channels.

The PROGRAM TIMED OUTPUT item on the Cam Channel Program Type Menu enables you to program the ram angle and position at which a selected cam channel turns On and the time, or dwell, in milliseconds that the channel stays On.

A Timed Output setting is independent of press speed—with On/Off cam outputs, the On time decreases with press speed—and is recommended for functions such as controlling air and lubrication. This type of cam output also ensures that the channel will turn off after the programmed time. With On/Off cam settings, the channel stays on if the press stops within the On/Off window, potentially wasting air or lube.

To set a Timed Output for a cam, do the following:

- Select PROGRAM TIMED OUTPUT on the Cam Channel Program Type Menu. The Cam Channel Timed Output Program screen displays, Figure 5-51.

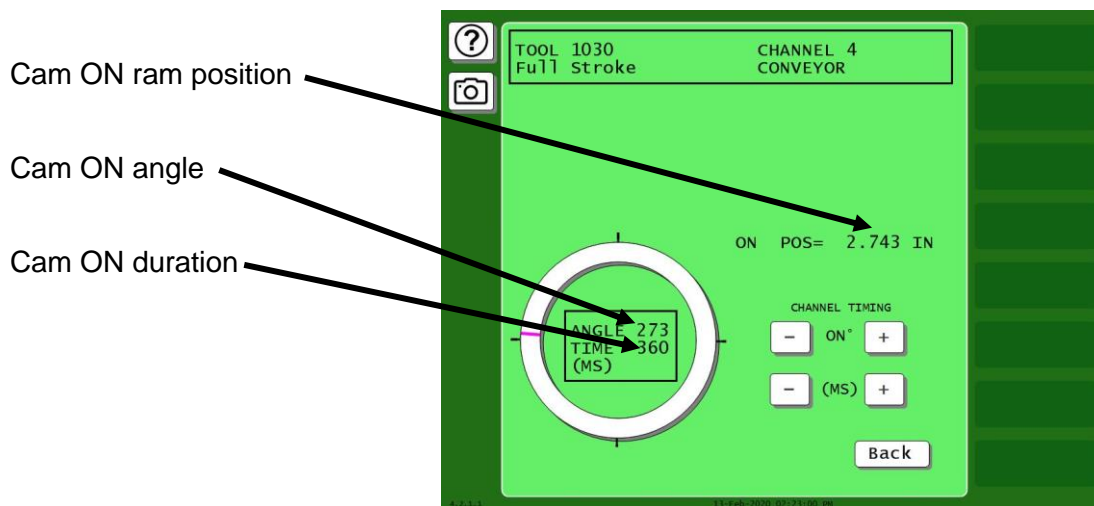


Figure 5-51. Cam Channel Timed Output Program Screen

- Set the On angle on the ram angle clock, using the Left (◀) and Right (▶) cursor keys. As you press the Left (◀) cursor key, the On cursor moves counterclockwise around the display, and the

On angle value decreases. When you press the Right (▶) cursor key, the On cursor moves clockwise around the display, and the On angle value increases.

The precise On angle value is displayed next to the Angle caption in the window inside the clock display. The corresponding ram position (in inches) is shown in the ON POS = field at the right of the screen. In Figure 5-51 the On angle is set to 273°; the ram On position is 2.743 in.

3. Set the On time in milliseconds (maximum is 500 mS, or 0.5 seconds), using the Up (▲) cursor key to increment the Time value displayed in the window and the Down (▼) cursor key to decrement the Time value. The Time value changes in increments of 10 mS. In Figure 5-51, the On time is set to 50 mS.
4. Press RESET when you are finished to return to the Cam Channel Program Type Menu.

NOTICE

FOR APPLICATIONS REQUIRING MORE THAN 500 MILLISECONDS

If you have an application where an On time of more than 500 milliseconds is required, do the following. Program one of the batch counters to a preset of "1," set the Counter Increment Angle to the desired On angle and the Output Mode to PULSE. Then program the Pulse Time to the cam On time you want (e.g., 600 mS). See *Setting Batch Counter Output and Increment Modes*, page 117.

Setting DSV ON Channel Timing

NOTICE

The DSV ON output type setting is available only if you have wired the input check circuit inputs #205 and #206 on TB4 on the SmartPAC PRO Servo board. To activate this circuit, you must apply 12 to 250 V to these inputs when the press is in motion.

The PROGRAM DSV ON item on the Cam Channel Program Type Menu enables you to set the amount of time (in seconds) after the press stops that a DSV On cam channel remains on. A DSV On cam channel turns on when the Dual Safety Valve is energized and the press starts and turns off when the DSV is de-energized and the press stops. You set the DSV delay time on the Cam Channel DSV On Program Screen, Figure 5-52.

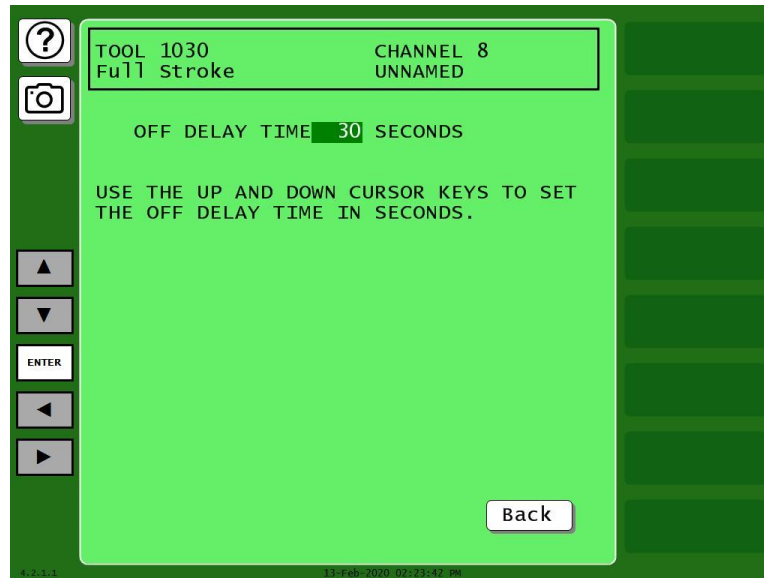


Figure 5-52. Cam Channel DSV ON Program Screen

DSV On cam channel programming is useful for controlling conveyors and other accessories that must operate for a short time after the press stops.

To set the DSV delay time, do the following:

1. Select PROGRAM DSV ON on the Cam Channel Program Type Menu. The Cam Channel DSV On Program screen displays.
2. Increment or decrement the OFF DELAY TIME value (maximum is 254 seconds), using the Up (▲) or Down (▼) cursor key.
3. Press RESET when you are done to return to the Cam Channel Program Type Menu.

Deleting Channel Settings

The DELETE CHANNEL SETTINGS item on the Cam Channel Program Type Menu enables you to delete programmed settings for a selected cam channel. When you delete cam channel settings, all programmed angles and times return to 0 (zero).

To delete settings for a selected cam channel, do the following:

1. Select DELETE CHANNEL SETTINGS on the Cam Channel Program Type Menu. The following window displays, asking you to confirm that you want to delete cam settings.

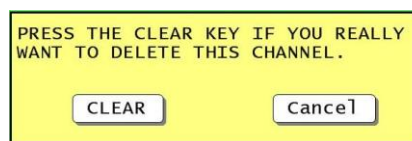


Figure 5-53. Cam Channel Deletion Confirmation Window

2. Press CLEAR to delete the channel. You are returned to the Cam Channel Menu.

Viewing the Cam Summary

Once cam channels have been programmed, you can view their settings on a summary screen accessible from the Cam Channel Menu. To view this screen, do the following:

1. Press VIEW CAM SUMMARY on the Cam Channel Menu. The Cam Summary screen, Figure 5-54, displays with the name, program type, and programmed settings shown for each programmed cam channel. Global cams are not displayed on this screen (see *Viewing Global Cams*, page 151).



Figure 5-54. Cam Summary Screen

Viewing Global Cams

Global cams, which are programmed in Initialization mode (see *SET GLOBAL CAMS (Optional)*, page 80), are cam channels that can be used with any tool set up on your SmartPAC PRO Servo. Global cams can be programmed for any channel except channels 6, 7 and 8 and, once set, cannot be programmed for individual tools. You cannot change global cam settings in Program mode, but you can view them as you are programming other cams.



Figure 5-55. Global Cam Summary Screen

TOOL INFORMATION

(PROGRAM – GO TO THE TOOL MANAGER – SELECT TOOL – EDIT TOOL – TOOL INFORMATION)

NOTICE

- The Tool Information screen provides a convenient place to record information about the tool. It does not control any aspect of press operation.
- This feature is not available if you have the optional PLC interface installed.

This item on the Tool Program Menu enables you to record information about the tool you are programming that may be helpful to operators and setup personnel. You enter information on the Tool Information screen, which is shown in Figure 5-56, page 153.

The Tool Information screen allows you to enter up to six parameters and up to two lines of memo text. The names, units of measurement, and number of decimal places for the parameters are set in Initialization mode (see *TOOL INFORMATION*, page 87).

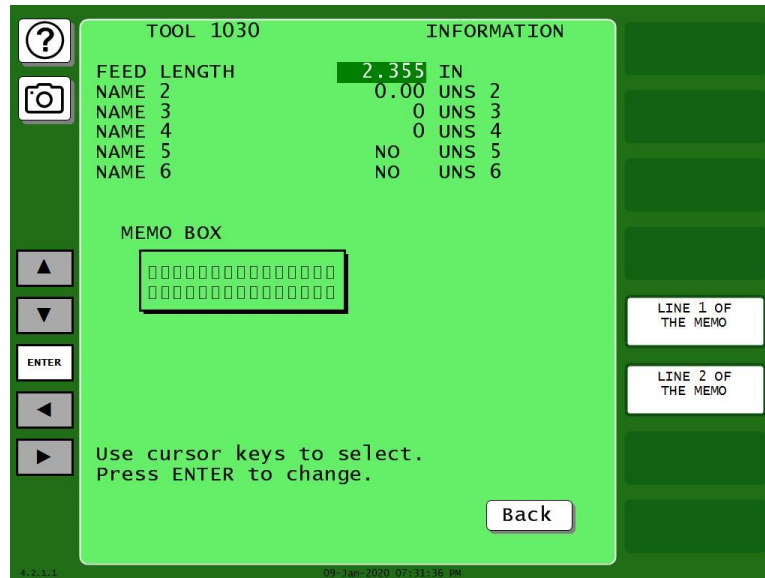


Figure 5-56. Tool Information Screen

To enter tool information, do the following:

1. Select TOOL INFORMATION on the Tool Program Menu. The Tool Information screen displays.

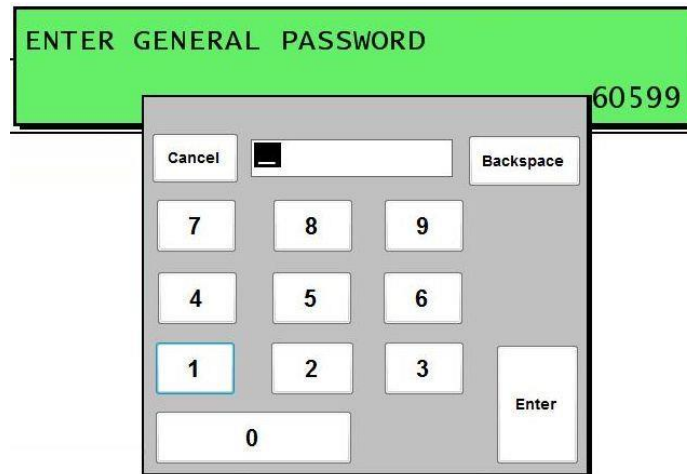


Figure 5-57. "Enter General Password" Screen

2. Select a desired parameter. The Numeric Entry window displays.
3. Key in the value you want, following the directions in the Numeric Entry window. For Yes/No items, key in "0" for NO, "1" for YES. Press ENTER when you are finished. You are returned to the Tool Information screen with your entry displayed in the field you selected in step 2.
4. Repeat steps 2 and 3 to enter other parameters, as necessary.
5. To enter text into the memo box, press LINE 1 OF THE MEMO for the first line and press LINE 2 OF THE MEMO for the second line. When the text entry window displays, key in your entry

and press Enter. The window closes, and your entry appears on the first and/or second line of the memo box.

- When you have finished entering tool information, press RESET to return to the Tool Program Menu.

RAM POSITION

NOTICE

SET INITIALIZATION PARAMETERS BEFORE PROGRAMMING UPPER/LOWER LIMITS

Before you create settings for upper and lower limits in Program mode, be sure to set the Upper Limit and Offset Value on the Linear Sensor Setup screen in Initialization mode (see page 84).

This item on the Tool Program Menu enables you to set upper and lower limits for your magnetostrictive linear transducer. These settings are made on the Ram Position screen, which is shown in Figure 5-58.

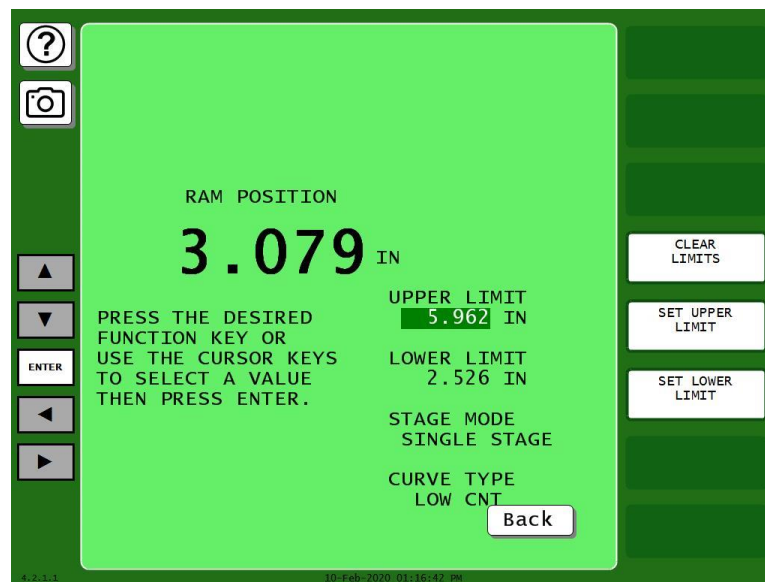


Figure 5-58. Ram Position Screen

SmartPAC PRO Servo sets the Upper Limit you specify on this screen equal to 0° and the Lower Limit to 180°. The vertical distance between Upper and Lower limits is divided into 180 equal parts to represent the angle range of downstroke (0° to 180°) and upstroke (180° to 360°/0°). If the ram passes the Lower Limit on the downstroke, SmartPAC PRO Servo holds the angle at 180°. On the upstroke, the angle begins to increase only when the ram passes the Lower Limit. Similarly, if the ram passes the Upper Limit on the upstroke, SmartPAC PRO Servo holds the angle at 0° until the ram moves past the Upper Limit on its downstroke.

It is extremely important to set limits for each tool precisely. If the ram returns to the Upper Limit without reaching the Lower Limit or returns to its Lower Limit without reaching its Upper Limit, SmartPAC PRO Servo generates a fault (see page 191), prohibiting the press from further stroking until RESET is pressed. Although this message may display for other reasons (e.g., a light curtain obstruction), it commonly occurs when the Lower Limit is set too low or the Upper Limit too high.

In a pendulum motion, the ram position at the top during clockwise movement is often not the same as the top position during counter-clockwise movement. In such a situation, it is very important to set the Upper Limit just below the lower of these two positions.

The STAGE MODE and CURVE TYPE fields should be changed only by advanced users and only after contacting Wintriss Tech. Support.

To set upper and lower limits for the linear sensor, perform the following steps:

NOTICE

It is easier to program upper and lower limits for your transducer in Run mode. You simply Inch the ram to the desired position and press SET UPPER LIMIT or SET LOWER LIMIT. See *RAM POSITION*, page 179.

1. Select RAM POSITION on the Tool Program Menu. The Ram Position screen displays.

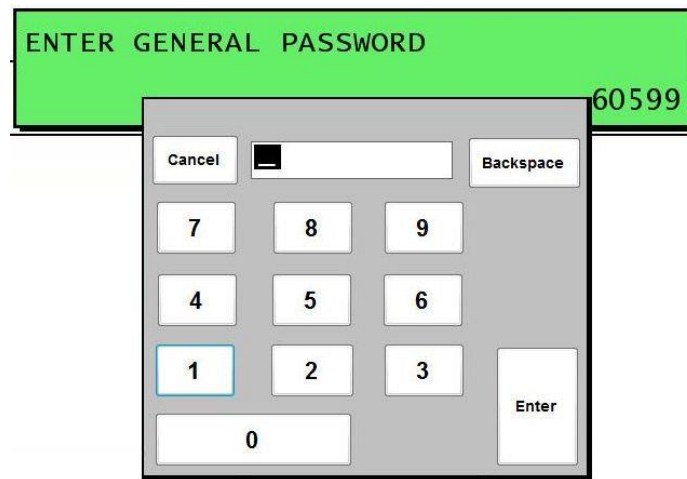


Figure 5-59. "Enter General Password" Screen

2. Press CLEAR LIMITS to clear the current Upper and Lower limits.

NOTICE

The settings you make for Upper Limit and Lower Limit can be any values within the sensor's range up to the maximum Upper Limit set in Initialization. For example, if your sensor is 6 in. in length but you want a stroke of 2 in., you can set your Upper Limit to 4 in. and Lower Limit to 2 in.

3. Set the Upper Limit value in one of the following ways:
 - Switch to Run mode (see page 160 for instructions), Inch the ram to the Upper Limit for the loaded tool, return to this screen, and press SET UPPER LIMIT. The reading reported by the linear sensor displays in the UPPER LIMIT field.
 - Select UPPER LIMIT, and when the Numeric Entry window displays, key in the value you want, using the numeric keypad or the Up (▲) and Down (▼) cursor keys, and press ENTER. The value you specified displays in the UPPER LIMIT field.
4. Set the Lower Limit value in the same manner:

- Switch to Run mode, Inch the ram to the Lower Limit for the loaded tool, return to this screen, and press SET LOWER LIMIT. The reading reported by the linear sensor displays in the LOWER LIMIT field.
 - Select LOWER LIMIT, key in the value you want in the Numeric Entry window, and press ENTER. The value you specified displays in the LOWER LIMIT field.
5. Leave the STAGE TYPE field set to “SINGLE STAGE.” Advanced users who wish to change the setting to “MULTI STAGE” should contact Wintriss Tech. Support.
 6. Leave the CURVE TYPE field set to “SINE.” Advanced users who wish to change the setting to one of the other options (i.e., “PROPORT,” “LOW CNT,” “MED CNT,” or “HIGH CNT”) should contact Wintriss Tech. Support.
 7. When you are finished, press RESET to return to the Tool Program Menu.

SENSOR ENABLE/DISABLE & STATUS (Optional)

[PROGRAM - SENSOR ENABLE/DISABLE & STATUS]

NOTICE

For help with this menu item, press the HELP key.

This item, which appears on the Main Program Menu only when DiProPAC is installed, enables you to view the status of your die protection sensors, enable or disable all the sensors shown on the screen, and turn a selected sensor On or Off. You perform these tasks on the Sensor On/Off Status screen, which is shown in Figure 5-60.

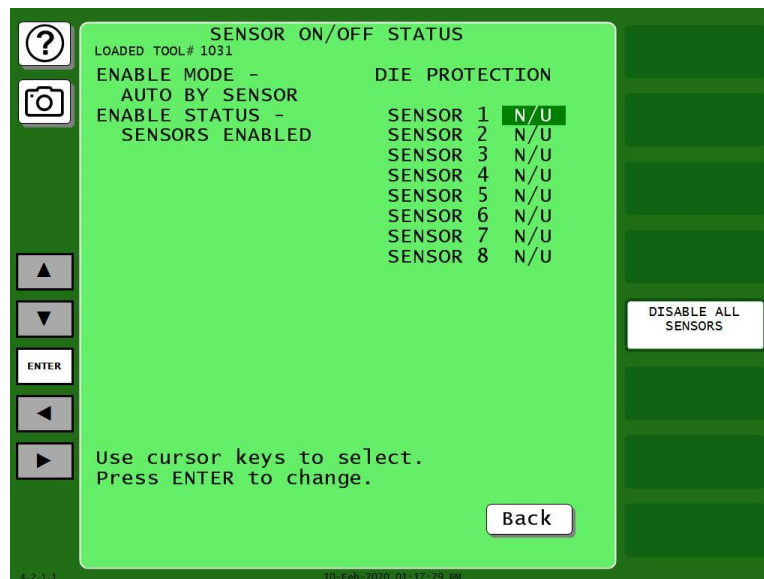


Figure 5-60. Sensor On/Off Status

Viewing Sensor Status

To view the status of your sensors, do the following:

1. Press **SENSOR ENABLE/DISABLE & STATUS** on the Main Program Menu. The Sensor On/Off Status screen displays with status settings for sensors 1 through 8 displayed. Sensors may have one of three status settings: OFF, ON or N/U (Not Used).
2. To view sensors 9 through 16 (if a 16-sensor DiProPAC is installed), press **NEXT 8 SENSORS**. The button changes to **PREVIOUS 8 SENSORS**. To return to the display for sensors 1 through 8, press the button again.
3. Press **RESET** to return to the Main Program Menu.

NOTICE

When a tool is loaded, or when SmartPAC PRO Servo is powered up, all sensors are turned on and enabled.

Enabling or Disabling All Sensors

When you access the Sensor On/Off Status screen, The enable status is displayed at upper left of the screen., either **SENSORS ENABLED** or **SENSORS DISABLED**. When the status is **SENSORS DISABLED**, SmartPAC PRO Servo is not communicating with the sensors.

If the sensors are enabled, press **DISABLE ALL SENSORS** to disable them.

If the sensors are disabled, press **ENABLE ALL SENSORS** to enable them.

Press **Back** to return to the Main Program Menu.

NOTICE

You can also enable or disable all sensors in Run mode. See *DISABLE (ENABLE) SENSORS*, page 163.

Turning a Sensor Off or On

To turn a selected sensor Off or On, do the following:

1. On the Sensor On/Off Status screen, highlight the sensor you want.
2. Press **ENTER** to toggle between the OFF and ON settings until the setting you want is displayed. If you require a password for turning sensors off or on, the Enter Password screen appears. Enter the password and press **Enter**.
3. Press **RESET** to return to the Main Program Menu.

NOTICE

- Sensors that show an N/U status have not been programmed. You cannot change their status.
- If you turn a sensor Off on the Sensor On/Off Status screen, the sensor will turn on when you reload the tool.
- If password is not required, you can turn off or turn on a sensor. Be aware that no confirmation screen appears.

Chapter 6 – Run Mode

NOTICE

RAM POSITION SETTINGS MUST BE PROGRAMMED FOR ALL TOOLS

Make sure that Ram Position settings have been programmed (see page 154) for each tool you load. If you do not set ram upper and lower limits, SmartPAC PRO Servo will use the default setting of 0.000 in., and the ram angle clock will display 0° irrespective of the vertical position of the ram.

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This chapter shows you how to use the displays in SmartPAC PRO Servo Run mode, which is the mode you select to run the press. You learn how to adjust programmed settings for individual tools (see Chapter 5), enable and disable sensors, and monitor tool settings and press operation. Run mode displays are accessible via the Main Run Menu, shown in Figure 6-1.

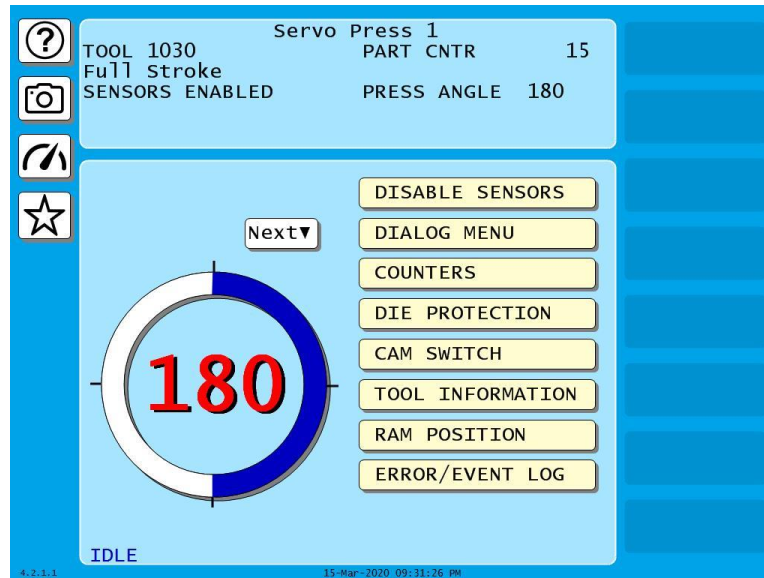


Figure 6-1. Main Run Menu

(Includes some options. Your display may look different.)

In Run mode, you can view and adjust settings only for the tool that is currently loaded. You cannot create new tool numbers or modify settings for an unloaded tool as you can in Program mode.

Some functions that you can perform in Run mode, such as loading a tool and adjusting sensor and cam timing, are also provided in Program mode. Duplicating these functions allows operators to perform essential tasks in Run mode without giving them access to Program mode. Operators can be locked out of Program mode by turning the Program/Run key to RUN and, then, removing the key.

To prevent unauthorized personnel from changing settings or loading tool numbers, you can lock out choices on the Run menu or require a password for access. See *SECURITY ACCESS*, page 92 for instructions.

The following sections show you how to load a tool, adjust counter, die protection, cam, and ram position settings for the tool, and view tool information and the error log. The chapter also covers displaying multiple faults, and sending e-mail messages.

If you need help using the SmartPAC PRO Servo touch display to input information on Run mode displays, refer to Chapter 3.

Entering and Exiting Run Mode

NOTICE

Load a tool number before entering Run mode (see next section).

Follow the instructions shown in Table 6-1 to enter and exit Run mode.

Table 6-1. Instructions for Entering and Exiting Run Mode

| To Enter Run Mode | To Exit Run Mode |
|---|--|
| From Program mode: Turn the Program/Run key to RUN.* | To switch to Program mode: Turn the Program/Run key to PROG.* |
| * If you turn the key and nothing happens, press RESET repeatedly until SmartPAC PRO Servo changes modes. Make sure SmartPAC2 is in the Main (or top) menu for the mode it is in before you turn the Program/Run key. If SmartPAC PRO Servo is not in a top level menu, press RESET repeatedly until the Main menu appears. | |

NOTICE

For help with a Run mode screen, press the key when that screen is displayed.

Loading a Tool

A tool must be loaded before SmartPAC PRO Servo will allow the press to run. If you attempt to switch from Initialization or Program mode to Run mode with no tool loaded, the error message shown in Figure 6-2 displays.



Figure 6-2. No Tool Loaded Warning Window

To respond to this error, do the following:

1. Turn the Program/Run key to PROG.
2. On the Main Program Menu, press RESET to clear the message.
3. Load a tool (see *Loading a Tool*, page 110).
4. Turn the Program/Run key to RUN. SmartPAC PRO Servo switches to Run mode.

Settings Locked, or Password Required

When a Run mode setting is locked, the screen shown in Figure 6-3 displays if the PASSWORD REQUIRED access type has been set for that item on the Security Access Menu in Initialization (see *SECURITY ACCESS*, page 92).

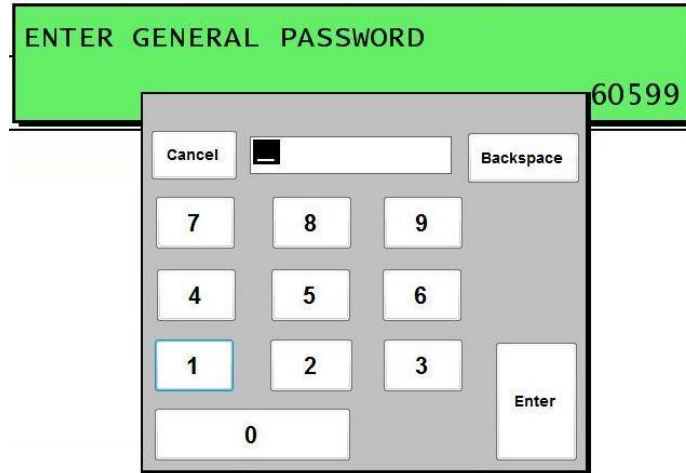


Figure 6-3. “Enter General Password” Screen

When you enter the password, you are given access to the item.

When a Run mode item is set to PROGRAM MODE ONLY, NO CHANGES ALLOWED, ALLOW RECALC ONLY, or NO RECALC/ADJUST, you are prevented from gaining access to that item. No message displays to indicate that the setting is locked, but when you press ENTER to access the item or press the cursor buttons to make an adjustment, nothing happens. When the LOAD NEW TOOL item is locked out, that entry does not appear on the Main Run Menu.

Displaying Multiple Faults

Whenever more than one fault occurs in response to a press condition, the message for the first fault displays in a window on the Main Run Menu and the DISPLAY ALL ERRORS button appears. Press it to view the multiple errors. A large red message window opens, as shown in Figure 6-4, with each fault listed in sequence beneath the caption “ALL PENDING ERRORS.” To close the window, press RESET.



Figure 6-4. Display All Errors Message Window

Opening the Ram Angle Window

You can open a window displaying the ram angle at a magnification comparable to that on the ram angle clock on the Main Run Menu for use on Run mode screens where a prominent ram angle

display is useful such as angle adjustment screens for cams and die protection sensors. Simply press the decimal point (.) key when you are on the Main Run Menu. The ram angle window opens in the upper right corner of the screen, as shown in Figure 6-5. To close the window, press the decimal point key again.

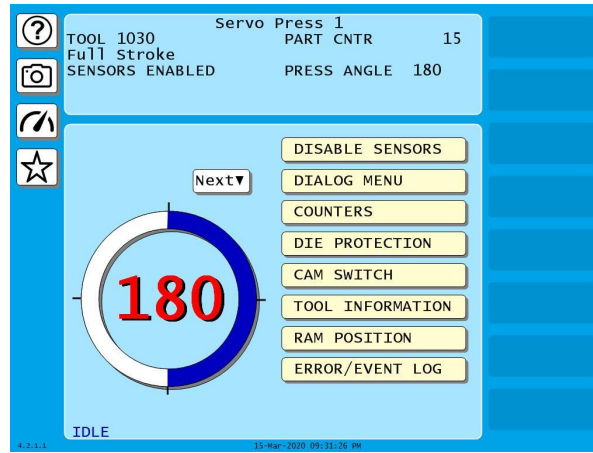


Figure 6-5. Ram Angle Window Displayed on Main Run Menu

The ram angle window can be opened only on the Main Run Menu. Once the window is displayed, it carries over to other selected Run mode screens.

DISABLE (ENABLE) SENSORS

(RUN – DISABLE [ENABLE] SENSORS)

NOTICE

DiProPAC has an optional “sensors disabled” output that turns on when the sensors are disabled. See page 55 for details.

This item allows you to manually enable your sensors when they are disabled or disable your sensors when they are enabled. When sensors are enabled, the message SENSORS ENABLED is displayed at upper left on the Main Run Menu, as shown in Figure 6-6, and this item is captioned DISABLE SENSORS.

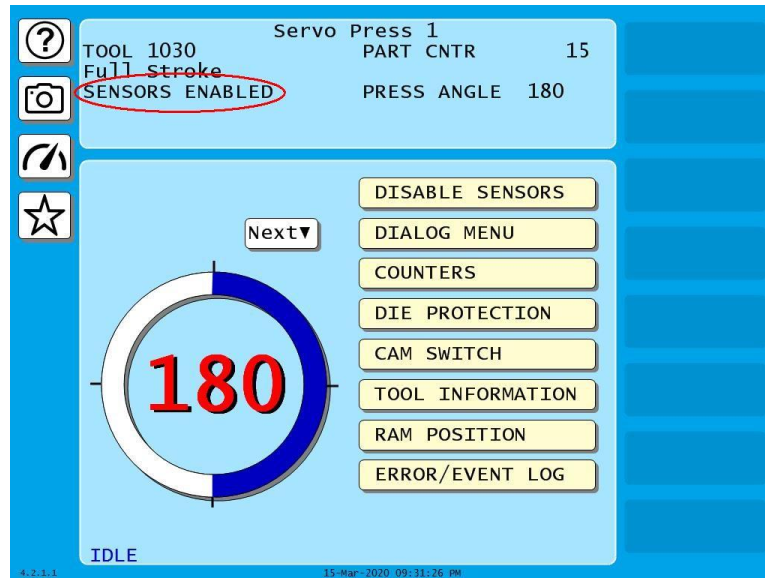


Figure 6-6. Main Run Menu with SENSORS ENABLED

When sensors are disabled, the message SENSORS DISABLED shows at the left of the Status Box, and the item button says ENABLE SENSORS.

To disable or enable sensors, do the following:

1. Press DISABLE SENSORS or ENABLE SENSORS.

If you are enabling sensors, the message at the left of the Status Box changes from SENSORS DISABLED to SENSORS ENABLED.

If you are disabling sensors, the window shown in Figure 6-7 displays.

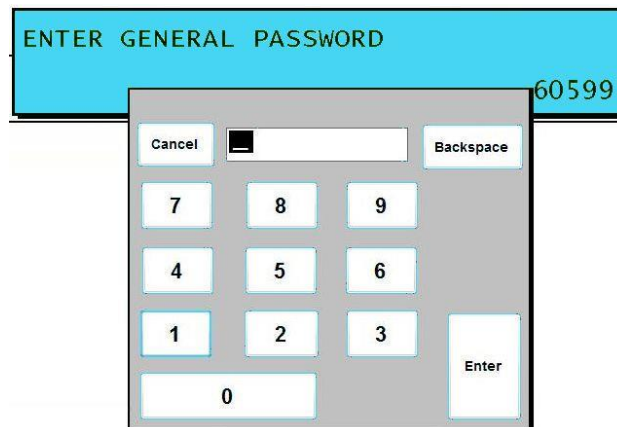


Figure 6-7. Disable Sensors Confirmation – Enter Password

2. Enter the general password if requested and press Enter. The message at the left of the Status Box changes from SENSORS ENABLED to SENSORS DISABLED.

You can manually enable or disable sensors no matter which setting (i.e., Manual, Auto by Tool, or Auto by Sensor) is selected for Sensor Enable Mode in Initialization (see *Selecting Sensor Enable Mode*, page 83). If either of the Auto Enable options is selected, refer to *Setting the “Auto Enable by Tool” Counter Value*, page 125, or *Setting the “Auto Enable by Sensor” Counter Value*, page 128, to make the appropriate setting for the tool.

In order to protect the tool, sensors should always be enabled except during setup and troubleshooting when they can be temporarily disabled. You can wire (see page 55) and enable (see page 84) a setup mode circuit that allows you to run the press in Inch during setup with green sensors disabled. When Setup Mode is active, the message SENSORS IN SETUP MODE is displayed in place of the SENSORS ENABLED message.

NOTICE

If you temporarily disable sensors, be sure to re-enable them before you resume making parts.

COUNTERS

(RUN – COUNTERS)

NOTICE

For help with the Counters screen and screens accessible from it, press when the applicable screen is displayed.

This item allows you to make adjustments to counter settings made in Program mode. Adjustments are entered on the Counters screen (see Figure 6-9, page 166), which displays when you select the COUNTERS item on the Main Run Menu.

NOTICE**ARE YOU LOCKED OUT?**

Access to items on the Counters screen may be limited to Program mode or may require a password. The security access settings in Initialization mode determine when changes can be made. See Table 4-5, page 94.

On this screen, you can change or reset the programmed strokes, good parts, batch and total hits counters and presets if you have the appropriate security access (see Table 4-5, page 94). For instructions on entering counter and preset values, see *COUNTERS*, page 114.

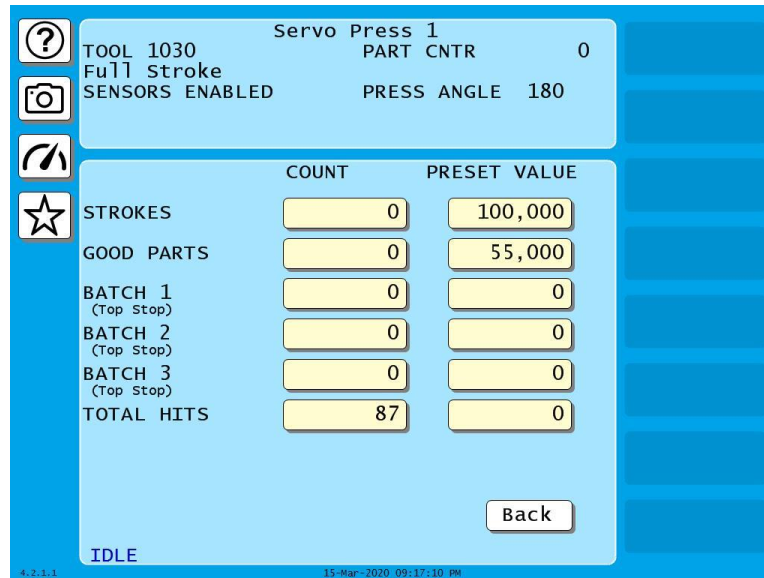


Figure 6-8. Counters Screen

If you have set the CHANGE COUNTS parameter on the Security Access Menu in Initialization to PROGRAM AND RUN MODES (see page 95), you can reset batch counts to the values you have programmed for batch pre-loads (see *Setting Batch Pre-Load Counts*, page 120). When the CHANGE COUNTS feature is enabled for Run mode, the label RELOAD BATCH COUNTERS displays (see Figure 6-9). To reset batch counts to their pre-load values, simply press RELOAD BATCH COUNTERS. Pre-load values display in the Count field for the batches you have programmed with those values.

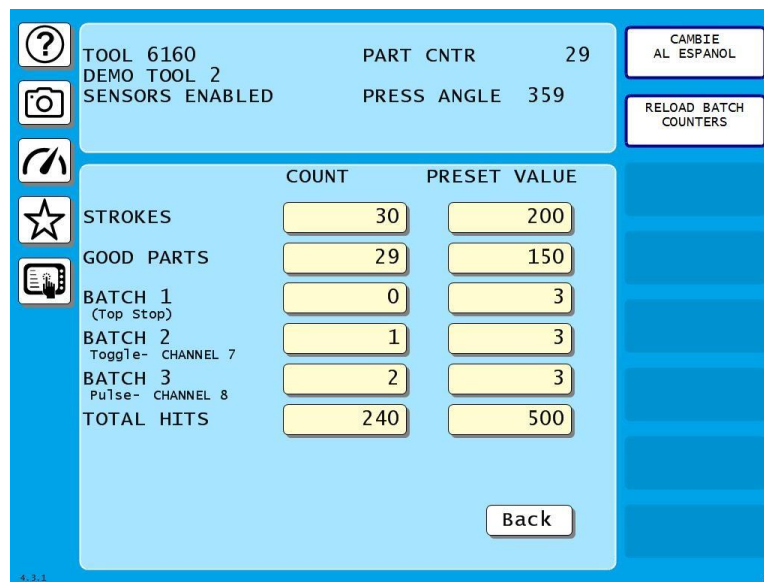


Figure 6-9. Counters Screen with “Reload Batch Counters” Function

When messages display indicating that counter presets have been reached, press RESET to clear the message (see *Counter Preset Reached Messages*, page 187).

NOTICE

When the Total Hits counter reaches its preset value, a flashing message, “Total Hits Preset,” appears in the Status Box at the top of the screen. To clear this message, set the Total Hits preset to zero (0), then reset this value to the desired quantity. See *COUNTERS*, page 114.

DIE PROTECTION (Optional)

(RUN – DIE PROTECTION)

CAUTION

Some Servo presses are capable of hitting the same part more than once at Bottom Dead Center (BDC) before returning to the top of the stroke. You will have to note the angle ranges at which repeated strokes occur. Any cams programmed within these ranges will actuate once for each hit. Die protection ready signals programmed within these ranges will expect sensor actuation once for each hit. If this is not feasible, please contact Wintriss Tech. Support to learn about new advanced features.

Failure to comply with these instructions could result in property damage.

NOTICE

For help with the Die Protection Menu and the screens accessible from it, press the HELP key when the applicable screen is displayed.

This item, which appears on the Main Run Menu only when DiProPAC 8 or DiProPAC 16 is installed, allows you to adjust the Ready signal for green sensors and the stroke preset for green special sensors. Make adjustments via the Die Protection Menu (see Figure 6-10), which displays when you select DIE PROTECTION on the Main Run Menu. You can also view a summary of information for all your sensors and a graphical display of sensor status from this menu.

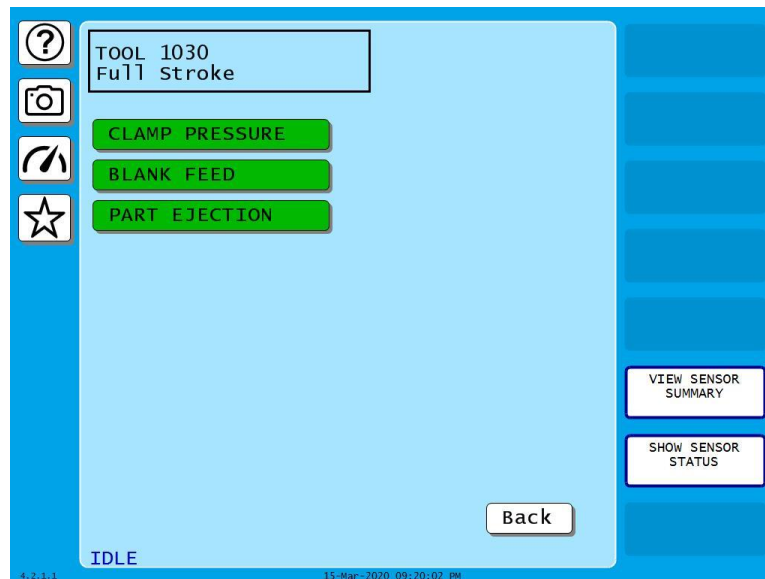


Figure 6-10. Die Protection Menu (Run Mode)

NOTICE**ARE YOU LOCKED OUT?**

Access to items on the Die Protection Menu may be limited to Program mode or may require a password. The security access settings in Initialization mode determine when changes can be made. See Table 4-5, page 94.

The DIE PROTECTION item is split into DIPROPAC 1-16 and DIPROPAC 17-32 entries when DiProPAC 32 is an installed option (see *Adjusting DiProPAC 32 Sensors*, page 172).

To change programmed settings on the Die Protection Menu, you first select a sensor from the list of sensors displayed. Sensors set to UNUSED in Program mode are not shown.

NOTICE**FOR MORE INFORMATION**

For a detailed description of the different types of sensors available in SmartPAC PRO Servo with die protection, refer to *Understanding Sensor Terminology*, page 121. Refer to *Programming Sensor Settings*, page 125, for detailed instructions on modifying sensors..

Adjusting the Ready Signal for Green Sensors

When you select a green, green quick check, or green constant sensor on the Die Protection Menu, the Ready Signal Programming screen, shown in Figure 6-11, displays.

The functionality of this screen differs slightly from that of the Ready Signal Programming screen in Program mode. When you run the press, the angles at which the selected sensor turns on and off on each stroke are shown in the window labelled SENSOR at the right of the screen, and the number of degrees that the sensor is on is represented graphically by a green arc on the ram angle clock. These displays allow you to fine-tune the Ready signal settings made in Program mode.

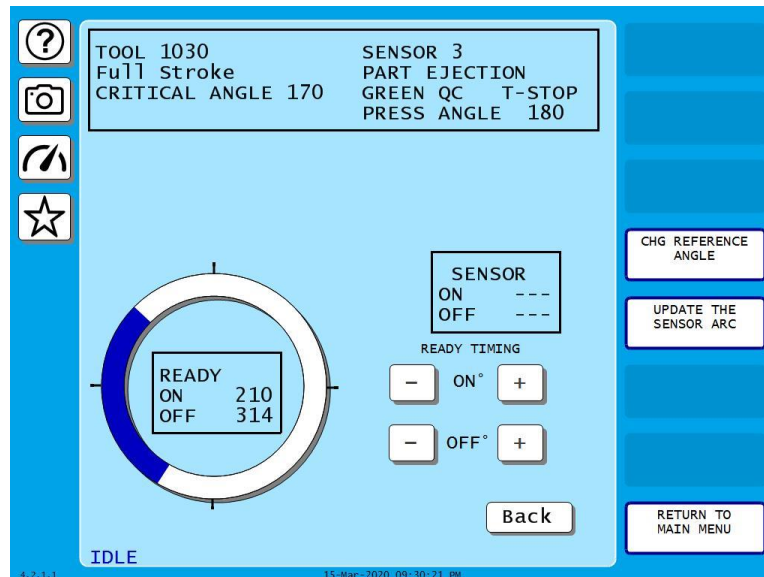


Figure 6-11. Ready Signal Programming Screen

Another difference is that the On and Off cursors move around the ram angle clock more slowly when you press the cursor keys, enabling you to set Ready On and Ready Off angles more precisely.

The On/Off actuation angles displayed in the Sensor window are not updated on every stroke. For green and green quick check sensors, SmartPAC PRO Servo displays the earliest On and latest Off angles for the current sequence of press strokes (you press UPDATE THE SENSOR ARC), updating the display only when the sensor turns on before the previous earliest On signal or turns off after the previous latest Off signal.

For green constant sensors, SmartPAC PRO Servo displays the latest On and earliest Off angles, updating the display only when the sensor turns on after the previous latest On angle and turns off before the previous earliest Off angle.

EXAMPLE

If the On angle for a green quick check sensor fluctuates between 190° and 195° from stroke to stroke, SmartPAC PRO Servo continuously displays 190° as the sensor's On value. However, if the On angle changes to 189°, SmartPAC PRO Servo displays the On angle as 189° on the next stroke.

To clear the actuation angles displayed for a sensor, press UPDATE THE SENSOR ARC. If the press is stopped, the Sensor window displays zeros. If the press is running, SmartPAC PRO Servo displays the actuation angles for the next stroke.

NOTICE

Pressing UPDATE THE SENSOR ARC will not properly update sensor actuations when you are using a mechanical sensor, which vibrates constantly during the stroke. It is better to use an electronic sensor, which is not prone to constant contact bounce..

Pressing CHANGE REFERENCE ANGLE changes the reference angle used to determine earliest/latest On and Off signals from 0°, the default, to 180°. Executing this function may be necessary to correct On readings for green and green quick check sensors that actuate before and stay actuated after TDC. When 0° is the reference angle, there can be no earliest On angle for a sensor that turns on before and off after 0° since angles just before TDC (e.g., 330°) are numerically greater than those just after TDC (e.g., 30°). You should press CHANGE REFERENCE ANGLE whenever the On/Off settings in the Sensor window do not match the start and end points of the green actuation arc on the clock diagram.

To adjust the Ready signal for green sensors, do the following:

NOTICE

IF YOU DO NOT KNOW READY SIGNAL TIMING FOR GREEN SENSORS

If you are unsure of when the sensor turns on and off, program estimated settings in Program mode, load the tool, and turn off the sensor, using the SENSOR ENABLE/DISABLE & STATUS item (see page 156) on the Main Program Menu. Turning the sensor off prevents nuisance stops when you switch to Run mode.

Then, without reloading the tool, turn the Program/Run switch to RUN and perform the procedure shown below. When you are finished adjusting settings in Run mode, go back to Program mode and turn the sensor back on.

1. On the Die Protection Menu, select the desired sensor. The Ready Signal Programming screen displays.

NOTICE

If you have turned off the sensor in Program mode (see NOTICE above), a message displays indicating that the sensor is turned off. Press ENTER to clear the message.

2. Run the press.
3. Observe the On and Off angles displayed in the Sensor window and the green actuation arc shown on the ram angle clock.

NOTICE

To update the sensor's On/Off readings, press UPDATE THE SENSOR ARC.

To change the reference angle from 0° to 180°, press CHANGE REFERENCE ANGLE. The reference angle is used to determine earliest and latest On/Off readings.

NOTICE

When you press UPDATE THE SENSOR ARC, dashes (— —) will display in the ON and OFF fields in the Sensor window just before the information updates.

4. Adjust the sensor's Ready On and Ready Off angles based on the actual On and Off angle readings, using the Left (◀) and Right (▶) cursor keys to move the On cursor and the Up (▲) and Down (▼) cursor keys to move the Off cursor. See *Setting the Ready Signal for a Green Sensor*, page 132, if you need help manipulating the On and Off cursors.
5. Press RESET to return to the Die Protection Menu.

Adjusting the Stroke Preset for Green Special Sensors

To adjust the green special sensor preset value for press strokes, do the following:

1. On the Die Protection Menu, select the desired sensor. The Green Special Sensor Stroke Count screen displays. This screen is identical to the Green Special Sensor Stroke Count screen in Program mode (see Figure 5-30, page 134) except that it displays additional information in the Status box.
2. Increment or decrement the displayed stroke count value, using the Up (▲) or Down (▼) cursor key, until the value you want is shown.
3. Press RESET when you are finished to return to the Die Protection Menu.

Viewing the Sensor Summary

(RUN – DIE PROTECTION –VIEW SENSOR SUMMARY)

You can view a summary of your die protection sensors by pressing VIEW SENSOR SUMMARY. The screen that displays is identical to the Sensor Summary screen accessible in Program mode (see *Viewing the Sensor Summary*, page 135) except that it displays additional information in the Status box.

Viewing Sensor Status

(RUN – DIE PROTECTION –SHOW SENSOR STATUS)

You can view the status of your sensors by pressing SHOW SENSOR STATUS. When you do so, the Sensor Status screen, shown in Figure 6-12, page 172, displays.

The Sensor Status screen shows the status of every sensor for a loaded tool. Sensor inputs are identified by the numbers 1 through 8 (for 8-sensor DiProPAC) or 1 through 16 (for 16-sensor DiProPAC). The type of sensor connected to each input is indicated by the following abbreviations, which appear beneath the blocks representing the sensors.

- G = Green
- GQC = Green Quick Check
- GCON = Green Constant
- GS = Green Special (Number of required strokes is shown to the right of “GS”)
- RED = Red
- YEL = Yellow
- N/U = Not Used

If the sensor block is dark, the sensor is actuated. If it is white, the sensor is not actuated.

The Sensor Status screen is designed so that you can quickly check the status of all your sensors and correct programming or wiring mistakes. When a sensor signals a fault, you can use the display to see the status of all your sensors at the stroke angle at which the press stopped.

When you select the screen with the press running, the actuation blocks for green sensors will flash as they actuate once every stroke. (Due to the slow update rate of this screen, some sensor actuations may be missed.) An actuation block for a green special sensor will flash every preset number of strokes.

A red sensor actuation block is always actuated except when there is a sensor fault, since it is normally grounded. Actuation blocks for yellow sensors are only actuated during a fault condition.

When the press is stopped, the actuation block shows the state of the sensor at that point in the stroke. The actuation block for an unused sensor may display if a sensor has been connected to that input by mistake. The Sensor Status screen shows any change in the state of an input whether the input is being used or not.

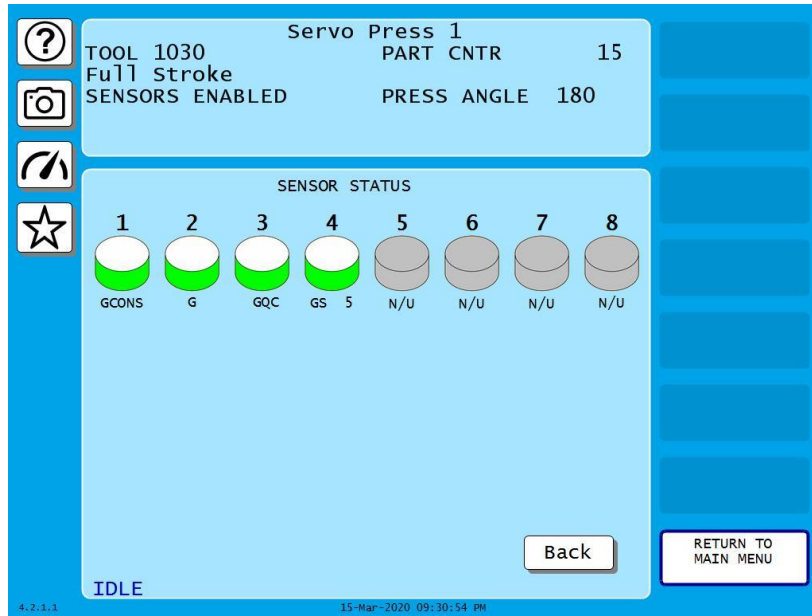


Figure 6-12. Sensor Status Screen

Adjusting DiProPAC 32 Sensors

You access DiProPAC 32 sensors on the SmartPAC PRO Servo Main Run Menu via the Die Protection item, Figure 6-13.

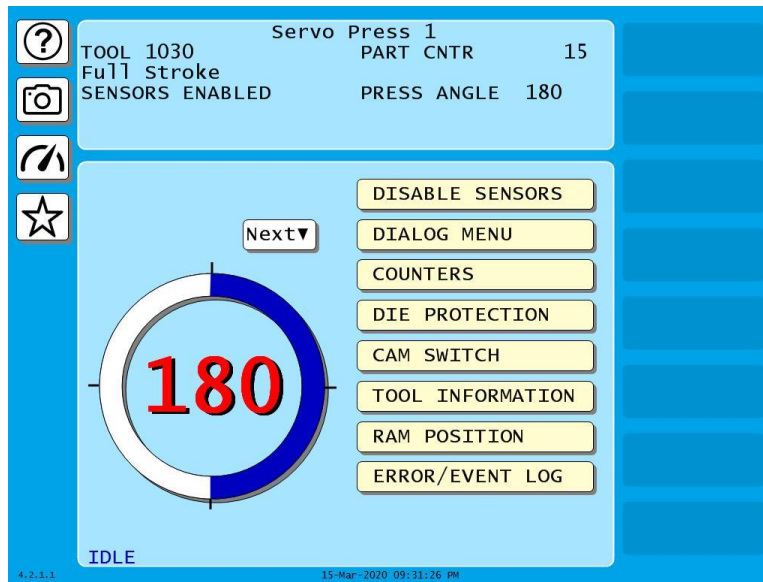


Figure 6-13. Main Run Menu with DiProPAC

When you select the DIPROPAC 1-16 item, the Die Protection Sensor menu for sensors 1-16 displays. On this menu, you can adjust settings for green and green special sensors as described in *Adjusting the Ready Signal for Green Sensors*, page 168, and *Adjusting the Stroke Preset for Green Special Sensors*, page 170.

When you select DIPROPAC 17-32, the Die Protection Sensor menu for sensors 17-32 displays (see Figure 6-16, which shows the sensors that are used as examples in Chapter 5).

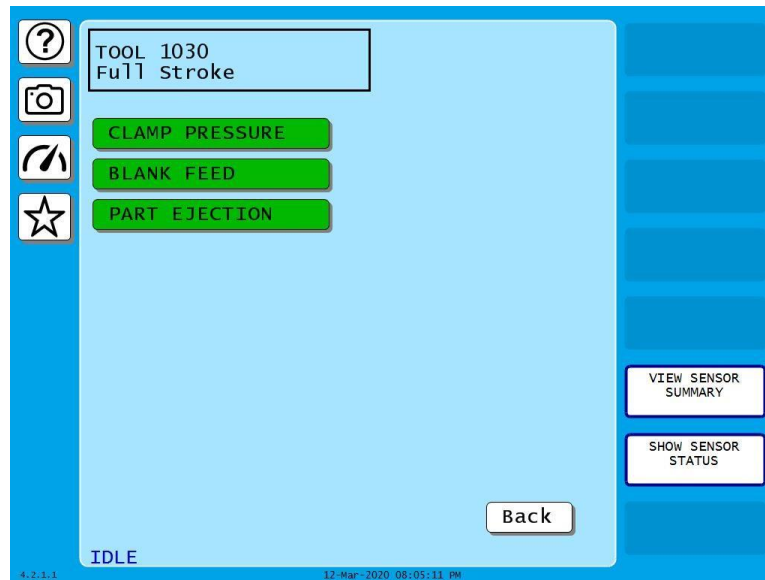


Figure 6-14. Die Protection Sensor Menu for Sensors 17-32

When programmed as green sensors, sensors 17-32 cannot be adjusted in Run mode since they share their Ready signals or stroke counts with one of the first sixteen sensors. You can, however, adjust the Ready signal or stroke count for the sensor on which settings are based. Adjustments are automatically duplicated in all linked sensors 17-32.

The Die Protection Sensor menu for sensors 17-32 allows you to view the Sensory Summary and Sensor Status screens (see page Figure 6-14) for those sixteen sensors.

When you select a sensor programmed as green, green quick check, or green constant on the Die Protection Menu for Sensors 17-32, the Run mode Ready Signal Programming screen displays with a message, located underneath the status box, indicating that you cannot change Ready signal timing for this sensor (see Figure 6-15). If you want to change timing, you must change the timing for the sensor in the group of sensors 1-16 whose Ready signal is being used for the sensor you are programming.

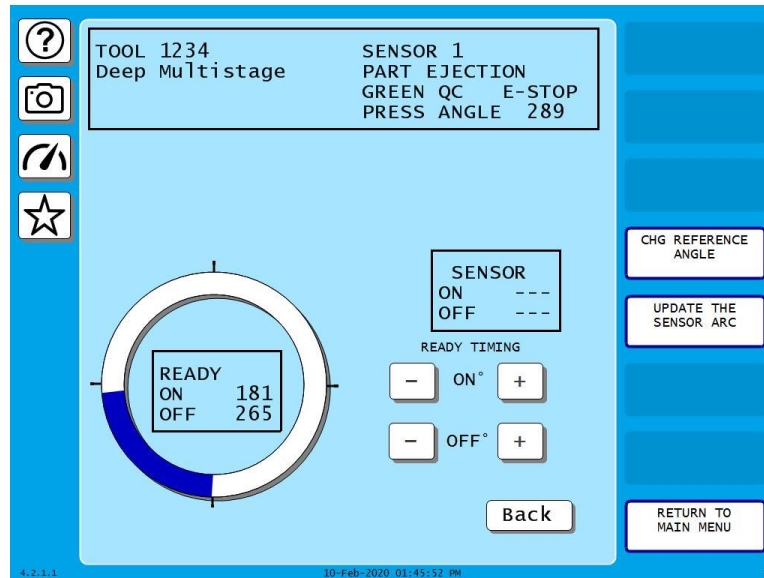


Figure 6-15. Ready Signal Programming Screen, Run Mode

When you select a sensor programmed as green special on the Die Protection Sensor Menu for Sensors 17-32, the Green Special Sensor Stroke Count screen displays with a message, located beneath the stroke preset, indicating that you cannot change the green special stroke count for this sensor (see Figure 6-16). If you want to adjust the stroke count, you must make this change for the green special sensor in the group of sensors 1-16 whose stroke count is being used for the sensor you are programming.

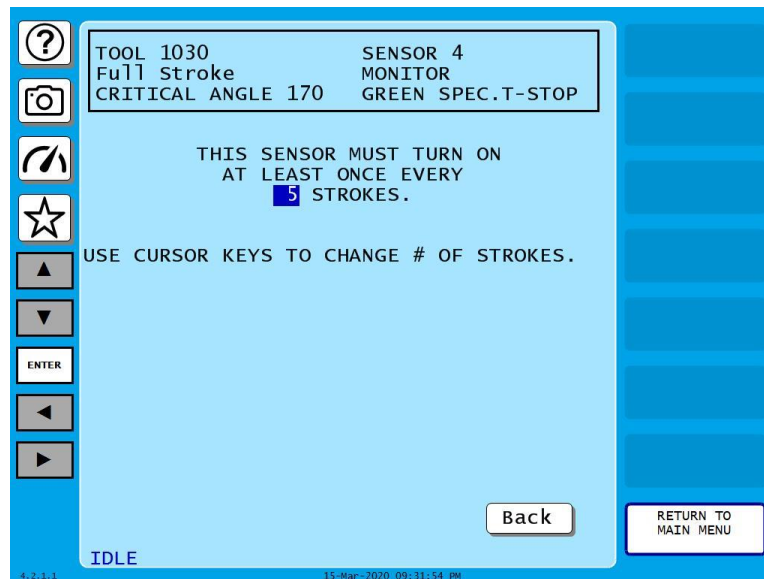


Figure 6-16. Green Special Sensor Stroke Count Screen, Run Mode

CAM SWITCH

(RUN – CAM SWITCH)

⚠ DANGER

PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC PRO Servo's programmable cam switch to control auxiliary functions only. The SmartPAC PRO Servo programmable cam capability should never be used to provide timing signals for any safety use including muting of light curtains.

Failure to comply with these instructions will result in death or serious injury.

CAUTION

MULTIPLE HITS AFFECTING CAM ACTUATION

Some Servo presses are capable of hitting the same part more than once at Bottom Dead Center (BDC) before returning to the top of the stroke. You will have to note the angle ranges at which repeated strokes occur. Any cams programmed within these ranges will actuate once for each hit. Die protection ready signals programmed within these ranges will expect sensor actuation once for each hit. If this is not feasible, please contact Wintriss Tech. Support to learn about new advanced features.

Failure to comply with these instructions could result in property damage.

NOTICE

For help with the Cam Switch Menu and the screens accessible from it, press the HELP key when the applicable screen is displayed.

This item enables you to adjust timing for each programmed cam channel. Adjustments are made via the Cam Switch Menu (see Figure 6-17), which displays when you select CAM SWITCH.

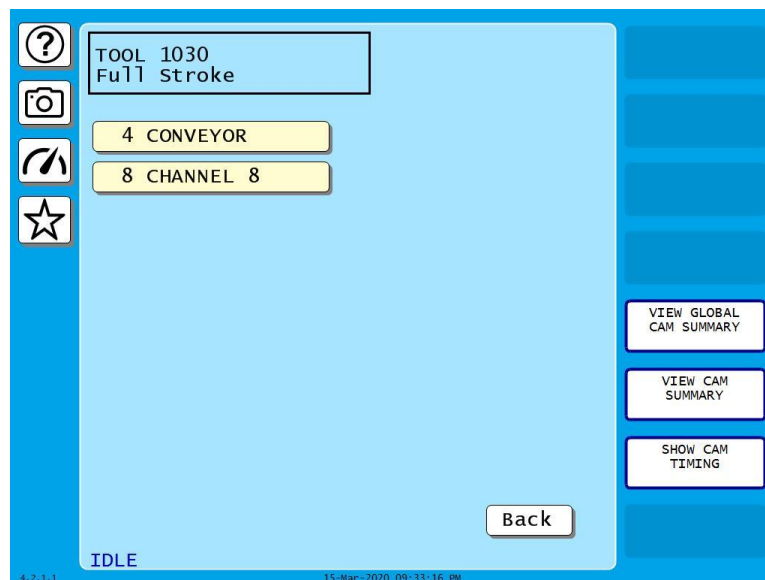


Figure 6-17. Cam Switch Menu

The Cam Switch Menu displays a list of the cam channels that have been set up in Program mode. Up to 8 channels may be displayed for standard ProCamPAC, as many as 15 channels if you have

installed the ProCamPAC 15 option. If you have assigned names to your cam channels in Initialization mode, those names will be displayed. Channels programmed as Global cams are not shown (see *SET GLOBAL CAMS (Optional)*, page 80).

To adjust cam timings for the loaded tool, do the following:

1. On the Cam Switch Menu, select the channel you want to adjust. The Cam Channel Program screen appropriate to the program type of the selected cam channel displays.

NOTICE

ARE YOU LOCKED OUT?

Access to items on this screen may be limited to Program mode or may require a password. The security access settings in Initialization mode determine when changes can be made. See Table 4-5, page 94.

2. Adjust cam timings for the selected channel, following the instructions in the following sections in Chapter 5:
 - *Making an ON/OFF Setting*, page 145
 - *Setting Multiple ON/OFF Cycles*, page 145
 - *Making a Timed Output Setting*, page 148
 - *Setting DSV ON Channel Timing*, page 149
3. When you are finished, press RESET to return to the Cam Switch Menu.

Viewing Cam Timing

(RUN – CAM SWITCH –SHOW CAM TIMING)

You can view a real-time graphic display of the timing settings for your cams by pressing SHOW CAM TIMING. The screen that displays is shown in Figure 6-18.

Cam channels are displayed by number on the Y-axis. Only eight channels can be displayed at a time, so if a 15-channel ProCamPAC is installed, you must press ENTER to display channels 9 through 15. The X-axis displays the ram angle (from 0° to 360°) at which channels turn on and off.

Channel On/Off timing is shown as a blue horizontal bar, the end points of which, when read against the ram angle “ruler” on the X-axis, specify on and off settings for that channel. Channels with Timed outputs are shown in pink characters beginning with the letter “T,” the position of which, when viewed against the ram angle “ruler,” indicates the On angle, followed by a number (e.g., 50), which indicates the channel’s On time in milliseconds.

The Cam Timing screen is updated once every second.

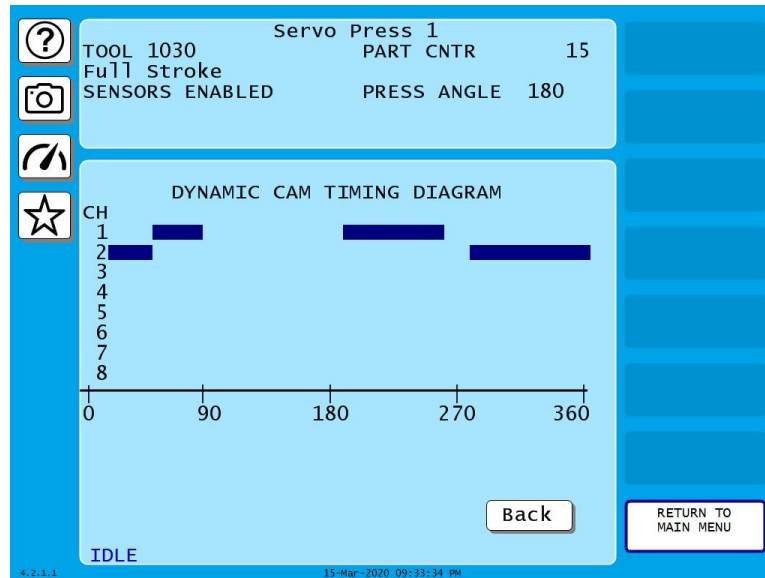


Figure 6-18. Cam Timing Screen

Viewing the Global Cam Summary

(RUN – CAM SWITCH – VIEW GLOBAL CAM SUMMARY)

You can view a summary of the Global cams by pressing VIEW GLOBAL CAM SUMMARY. The screen that displays is identical to the Global Cam Summary screen accessible in Program mode (see *Viewing Global Cams*, page 151) except that it displays additional information in the Status box.

Viewing the Cam Summary

(RUN – CAM SWITCH – VIEW CAM SUMMARY)

You can view a summary of the other cams by pressing VIEW CAM SUMMARY. The screen that displays is identical to the Cam Summary screen accessible in Program mode (see *Viewing the Cam Summary*, page 151) except that it displays additional information in the Status box.

TOOL INFORMATION

(RUN – TOOL INFORMATION)

NOTICE

- The Tool Information screen provides a convenient place to record information about the tool. It does not control any aspect of press operation.
- This feature is not available if you have the optional PLC interface installed.

NOTICE

For help with the Tool Information screen, press the HELP key when the screen is displayed.

This item enables you to change information about the loaded tool that was entered in Program mode (see TOOL INFORMATION, page 152). Adjustments are made on the Tool Number Information screen, which is shown in Figure 6-19.

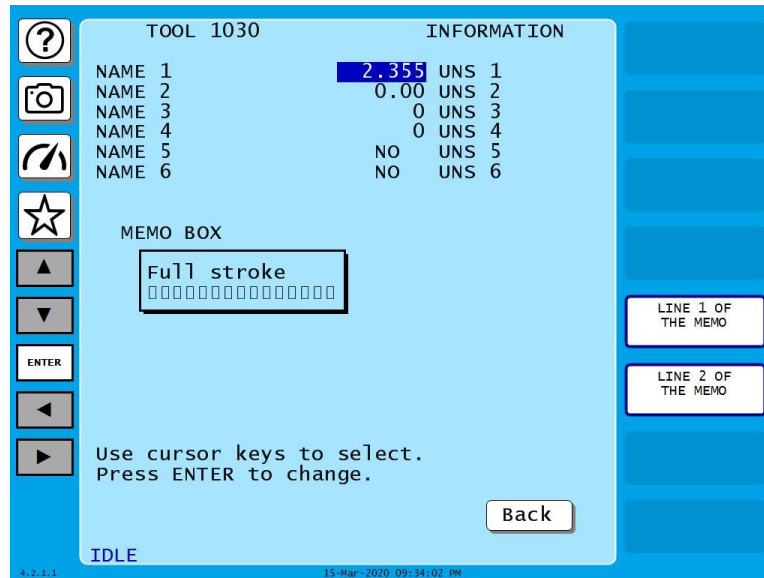


Figure 6-19. Tool Number Information Screen

To change tool information, do the following:

1. Select TOOL INFORMATION on the Main Run Menu. The Tool Number Information screen displays.

NOTICE

ARE YOU LOCKED OUT?

Access to items on this screen may be limited to Program mode or may require a password. The security access settings in Initialization mode determine when changes can be made. See Table 4-5, page 94.

2. Select a parameter you want to change. The Numeric Entry window displays.
3. Key in a new value, following the directions in the Numeric Entry window. For Yes/No items, key in "0" for No, "1" for Yes. Press ENTER when you are finished. You are returned to the Tool Number Information screen with your change displayed in the field you selected in step 2.
4. Repeat steps 2 and 3 to change other parameters, as necessary.
5. To enter text into the memo box, press LINE 1 OF THE MEMO for the first line and press LINE 2 OF THE MEMO for the second line. When the text entry window displays, key in your entry and press Enter. The window closes, and your entry appears on the first and/or second line of the memo box.
6. When you have finished changing tool information, press BACK to return to the Main Run Menu.

RAM POSITION

(RUN-RAM POSITION)

NOTICE

SET INITIALIZATION PARAMETERS BEFORE SETTING UPPER/LOWER LIMITS

Before you create or adjust settings for upper and lower limits in Run mode, be sure to set the maximum Upper Limit and Offset Value on the Linear Sensor screen in Initialization mode (see page 84).

This item allows you to adjust programmed settings (see *RAM POSITION*, page 154) for upper and lower ram position limits and also to program ram position settings. You perform these actions on the Ram Position screen, which is shown in Figure 6-20.

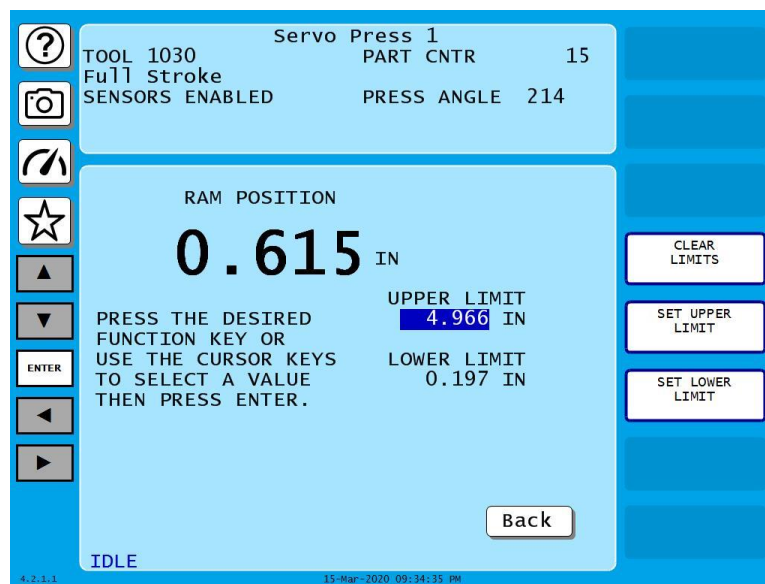


Figure 6-20. Ram Position Screen

To adjust or create upper and lower limits, perform the following steps:

1. Select RAM POSITION on the Main Run Menu. The Ram Position screen displays.

NOTICE

ARE YOU LOCKED OUT?

Access to items on this screen may be limited to Program mode or may require a password. The security access settings in Initialization mode determine when changes can be made. See Table 4-5, page 94.

2. Adjust/set the Upper Limit value in one of the following ways:
 - Inch the press to the desired position, and press SET UPPER LIMIT. The reading reported by the linear sensor displays in the UPPER LIMIT field.

- Select UPPER LIMIT, key in the value you want in the Numeric Entry window, or use the Up (▲) or Down (▼) cursor key to increment or decrement the Upper Limit setting, and press ENTER. The value you specified displays in the UPPER LIMIT field.
3. Adjust/set the Lower Limit value in the same manner:
 - Inch the press to the desired position, and press SET LOWER LIMIT. The reading reported by the linear sensor displays in the LOWER LIMIT field.
 - Select LOWER LIMIT, key in the value you want in the Numeric Entry window, or use the Up (▲) or Down (▼) cursor key to increment or decrement the Lower Limit setting, and press ENTER. The value you specified displays in the LOWER LIMIT field.
 4. Press RESET when you are done to return to the Main Run Menu.

ERROR/EVENT LOG

(RUN – ERROR LOG)

NOTICE

For HELP with the Error/Event Log, press when the screen is displayed.

This item enables you to view a list, called the Error/Event Log (see Figure 6-21), that displays in reverse chronological order the 100 most recent errors or events that have occurred at the press or within SmartPAC PRO Servo.

The Error/Event Log is useful as a troubleshooting aid. Each time the press is stopped due to a fault, the log records the error message, which gives the reason for the stop, and the stroke count and ram angle at which the stop occurred. When a new tool is loaded, the log displays the tool number. If SmartPAC PRO Servo is connected to a computer network and e-mail is enabled, the log also shows messages sent by SmartPAC PRO Servo. When SmartPAC PRO Servo is networked, you can send the Error/Event Log to Wintriss Tech. Support (see *MESSAGING*, page 182). Error messages displayed on the Error/Event Log are documented in Chapter 7.

| DATETIME | ANGLE | COUNT | ERROR/EVENT TEXT |
|---------------------|-------|-------|--|
| 02/10/2020 13:53:36 | 7 | 0 | S00-THE PRESS CYCLE WAS INTERRUPTED BEFORE THE UPPER OR LOWER LIMITS WERE REACHED. Check the die to make sure everything is OK. You may need to readjust the limits. PRESS SPEED 0 RPM |
| 02/10/2020 13:53:33 | 85 | 0 | S17-SENSOR 1 CLAMP PRESSURE GREEN CONSTANT FAULT, This sensor went off in its ready at 85 Deg |
| 02/10/2020 13:51:57 | N/A | N/A | New tool loaded # 1030 |
| 02/10/2020 13:51:11 | N/A | N/A | New tool loaded # ER-45680 |
| 02/10/2020 13:50:50 | N/A | N/A | New tool loaded # 1030 |
| 02/10/2020 13:42:30 | N/A | N/A | New tool loaded # 1234 |
| 02/10/2020 13:42:20 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 13:42:16 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 13:42:15 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 13:42:14 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 13:42:12 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 13:41:43 | 0 | 0 | S14-NO TOOL NUMBER HAS BEEN LOADED Turn the program/run key to the program mode to create a tool number or load a currently programmed tool number. |
| 02/10/2020 | N/A | N/A | New tool loaded # 2120 |

Figure 6-21. Error Event Log

To view the Error/Event Log, do the following:

1. Select ERROR/EVENT LOG on the Main Run Menu to display the Error/Event Log.
2. Use the cursor keys to scroll through the errors and events. When an error is selected, the full text of the error message is displayed in the blue window at the bottom of the screen.

LOAD NEW TOOL

(RUN – LOAD NEW TOOL)

⚠ DANGER

ANCILLARY EQUIPMENT MAY OPERATE WHEN TOOL IS LOADED

Ensure that all personnel stand clear when you load a tool.

Failure to comply with these instructions will result in death or serious injury.

NOTICE

“LOAD NEW TOOL” does not appear on the Main Run Menu if LOAD TOOL # has been set to PROGRAM MODE ONLY on the Security Access Menu in Initialization mode. See *SECURITY ACCESS*, page 92.

NOTICE

For help with the Tool Manager screen, which displays which you select the LOAD NEW TOOL item, press the HELP key when the screen appears.

This item enables you to load a new tool when the press is stopped. (You cannot load a new tool when the press is running. If you attempt to do so, SmartPAC displays an error message, indicating that the press must be stopped before a tool can be loaded.) When you select LOAD NEW TOOL, the Tool Manager screen, shown in Figure 6-22, displays.

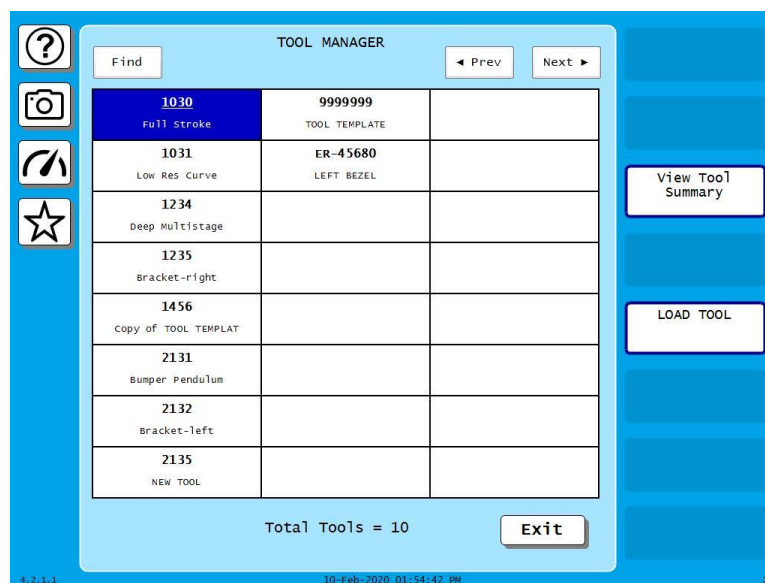


Figure 6-22. Tool Manager Screen

Follow these steps to load a new tool:

1. Select LOAD NEW TOOL from the Main Run Menu. The Tool Manager screen displays.

NOTICE

ARE YOU LOCKED OUT?

Loading a new tool number may be limited to Program mode or may require a password.

The security access settings in Initialization mode determine when a tool can be loaded. See Table 4-5, page 94.

2. Highlight the tool you want and press LOAD TOOL. The warning window shown in Figure 6-23 displays.



Figure 6-23. Load Tool Warning

3. Press ENTER. A message displays, indicating that the tool you selected is being loaded, then you are returned to the Main Run Menu with the tool you loaded shown in the Status Box.

NOTICE

If an error message displays, go to Chapter 7 and follow the instructions for correcting the problem. If the error is not covered in Chapter 7, or you cannot fix the problem, call Wintriss Tech. Support.

MESSAGING

(RUN – MESSAGING)

NOTICE

For help with the MESSAGING item, press when the Messaging screen is displayed.

This item, which appears on the Main Run Menu only when e-mail has been enabled in Initialization (see *E-MAIL FUNCTION*, page 99), allows you to send e-mail messages to recipients accessible via your SmartPAC PRO Servo computer network. Before you can use the e-mail messaging function, you must set up the e-mail recipients and messages using the SmartView remote viewing utility (contact Wintriss Tech Support for details).

To send an e-mail message, using the Messaging function, do the following:

1. Select MESSAGING on the Main Run Menu. A screen displays similar to the one shown in Figure 6-24, which lists the recipients you have set up using SmartView.

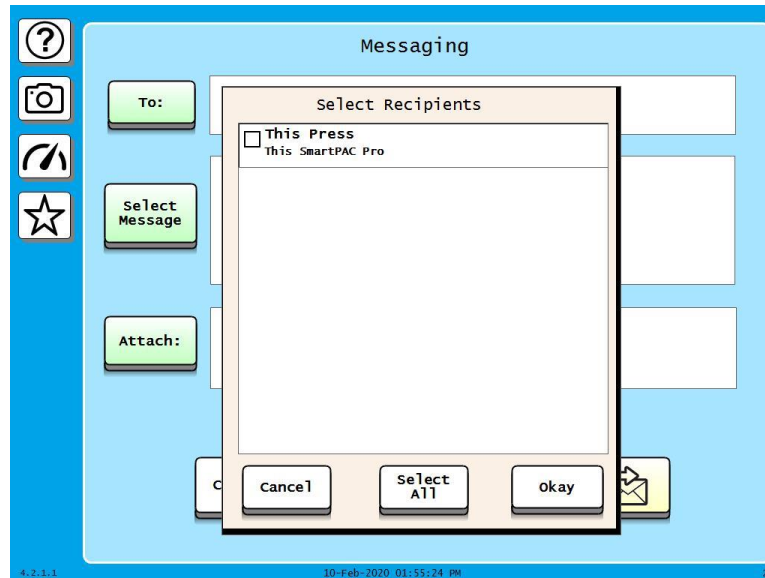


Figure 6-24. Messaging Screen: List of Recipients

2. Highlight the message recipient, using the cursor keys, then press SELECT RECIPIENT. The recipient's name displays in the "To:" field at the top of the screen.
3. To add other recipients, repeat step 2.
4. Press SELECT MESSAGE to display a list of messages, as shown in Figure 6-25.

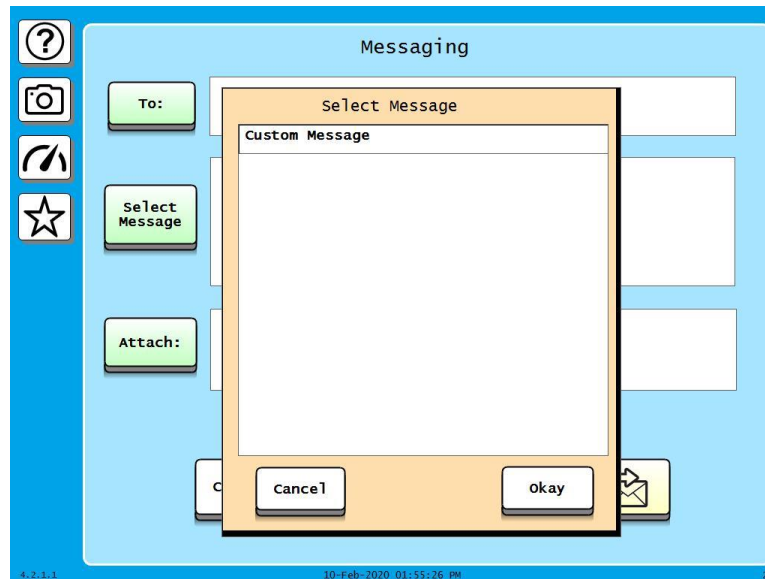


Figure 6-25. Messaging Screen: List of Messages

5. Highlight the message you want, using the cursor keys, then press SELECT MESSAGE again to select the message. The message name displays in the "Message:" field at the top of the screen.

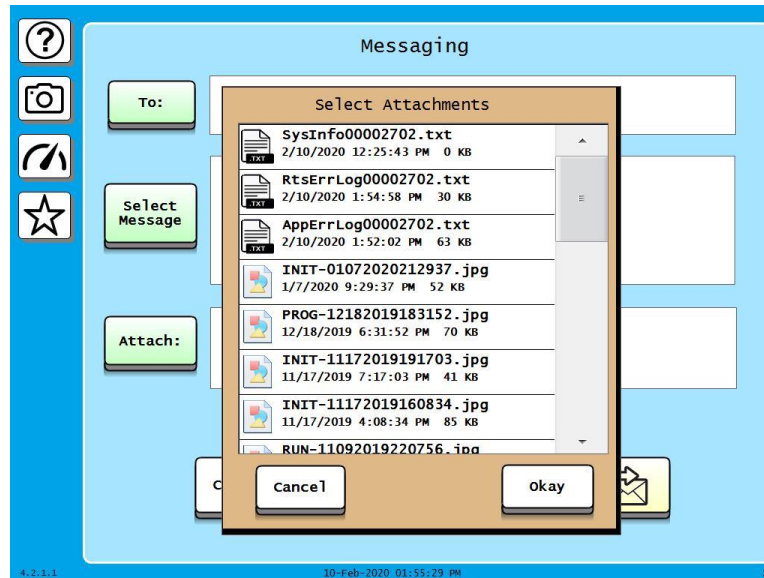


Figure 6-26. Select Attachment Screen

6. Press Select Attachment. In the screen that opens select the desired attachment. Press OKAY.
7. Press SEND MESSAGE and Exit to send the message. You are returned to the Main Run Menu.

Sending E-mail to Wintriss Technical Support

If you select “Wintriss Technical Support” as your recipient, and “Error Log Files” as your message, you can send an e-mail to Wintriss Tech. Support that includes error logs, a list of installed options, and other useful information. An example is shown in Figure 6-27.

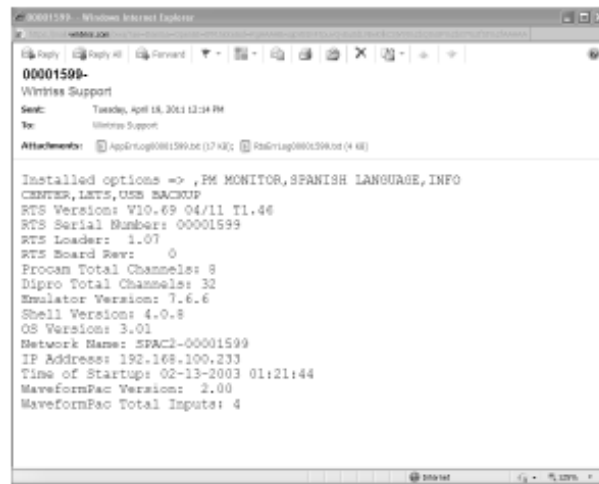


Figure 6-27. Sample E-mail to Wintriss Tech. Support

Chapter 7 – Fault Messages

NOTICE

IMPORTANT INFORMATION TO PROVIDE WHEN CALLING WINTRISS TECH. SUPPORT

When you contact Wintriss Controls for technical assistance, be ready to provide the following information to expedite a resolution to the problem: product name (e.g. SmartPAC PRO Servo); installed options (e.g. DiProPAC, AutoSetPAC, etc.); and firmware version number (e.g., Vs. 2.00). You can determine the last two items by accessing the Installed Options screen in Initialization mode (see page 4-5).

NOTICE

RAM POSITION SETTINGS MUST BE PROGRAMMED FOR ALL TOOLS

Make sure that Ram Position settings have been programmed (see page 154) for each tool you load. If you do not set ram upper and lower limits, SmartPAC PRO Servo will use the default setting of 0.000 in., and the ram angle clock will display 0° irrespective of the vertical position of the ram.

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This chapter documents the fault messages that display on the SmartPAC PRO Servo LCD or in the Error/Event Log, providing a brief explanation of each message and a remedy for correcting the problem.

Responding to Fault Messages

When an error occurs, a red message window like the one shown in Figure 7-1 displays, indicating the type of error and providing a brief explanation.



Figure 7-1. Error Code Window

If the press stops because one of the counter presets has been reached, a yellow message window like the one shown in Figure 7-2 displays.



Figure 7-2. Counter Preset Message Window

When an error message displays, correct the malfunction or other problem, consulting the Problem and Remedy descriptions for the appropriate error message in the sections that follow. When the problem has been corrected, press EXIT (or Remote Reset Button, if installed) to clear the message. If the problem has been solved, you will be able to run the press. Otherwise, you will get the fault message again.

If the problem persists, contact Wintriss Tech. Support. Do not attempt to run the press before correcting the problem.

In the following sections, messages are grouped in five categories:

- Messages that display when a counter preset is reached
- Messages that display for equipment problems
- Messages that display for programming problems
- Messages that display when a sensor signals a fault
- Miscellaneous fault messages

Counter Preset Reached Messages

“Good parts counter preset reached”

Explanation: The value set for the parts counter has been reached. The press should stop at top dead center.

Remedy: Press Exit to clear the message. If your part run is complete, you need to change tooling, material, etc. before you re-start the press.

NOTICE

When this message appears, the good parts count is automatically reset to 0.

“Strokes counter preset reached”

Explanation: The value set for the strokes counter has been reached. The press should stop at top dead center.

Remedy: Press Exit to clear the message. If your part run is complete, you need to change tooling, material, etc. before you re-start the press.

NOTICE

When this message appears, the strokes count is automatically reset to 0.

“Batch # counter preset reached”

Explanation: The value set for one of the three batch counters when the output type is set to TOP STOP has been reached. The press should stop at top dead center. See Setting Batch Counter Output and Increment Modes, page 5-13.

Remedy: Press Exit to clear the message. material, etc. before you re-start the press.

NOTICE

When this message appears, the corresponding batch count is automatically reset to 0.

Messages for Equipment Problems

The following messages indicate problems with the way the press is running and internal problems with SmartPAC PRO Servo.

“Linear transducer output is not correct. Cable may be disconnected. The transducer output is reading incorrectly. Check that the cable is connected and has power.”

Explanation: The transducer output is reading incorrectly..

Remedy: Check that the cable is connected and has power.

If you have a Balluff transducer check that the zero is set to zero.

“Position sensor incorrect”

Explanation: The POSITION SENSOR setting has been enabled in Initialization (see *Position Sensor Mode*, page 73). SmartPAC PRO Servo does not use a position sensor. The POSITION SENSOR item should be set to DISABLED.

Remedy: Change the POSITION SENSOR setting to DISABLED.

E-Stop errors

Explanation: If the word “ESTOP” appears in a message, one or both of the emergency stop relay circuits are not working satisfactorily and may be defective.

Remedy: Check both stop relay circuits. To reset SmartPAC PRO Servo, turn the unit off, then on again. (You cannot use the Exit button to reset this error.) If the error recurs, contact Wintriss Tech. Support.

“Inboard ram test failure”

Explanation: Something is wrong with the SmartPAC PRO Servo main processor board. The board may need to be serviced or replaced.

Remedy: Try turning the power off, then on again. (You cannot use Exit to reset this error.) If the message continues to appear, contact Wintriss Tech. Support for assistance or replacement of the board.

Messages for Programming Problems

These messages indicate that there is a problem with the tool, the tool is not properly loaded, or there is an internal problem with SmartPAC PRO Servo.

“No tool number has been loaded”

Explanation: You are attempting to access Run mode without a tool being loaded. A tool must be loaded before you can enter Run mode.

Remedy: Turn the Program/Run key to PROG to access Program mode, then load the appropriate tool, and turn the Program/Run key back to RUN.

“Tool number table checksum error”

Explanation: The programming for the loaded tool has become corrupted.

This error can occur when SmartPAC PRO Servo has been turned off while you are in the middle of programming a setup, or when you have not properly exited (i.e., by pressing Exit or Back) from a Program or Run menu.

The error can also occur when you upgrade SmartPAC PRO Servo. Sometimes the information in the older firmware does not synchronize properly with the information in the new firmware. Settings can also be damaged due to an internal SmartPAC PRO Servo malfunction.

SmartPAC PRO Servo creates a “checksum” for every tool to check that the tool settings stored in memory are the same as the settings that are loaded with the tool.

The checksum value calculated when tool settings are stored in memory must be the same as the value calculated when the settings are loaded.

Remedy: Access Program mode, and double-check the tool settings. If settings are correct, reload the tool.

If the error was caused because the system was turned off while in Program or Run modes, perform these steps:

1. Press Exit to clear the fault message.
2. Access Program mode, and select GO TO THE TOOL MANAGER.
3. On the Tool Manager screen, highlight the tool, and press EDIT TOOL.
4. On the Tool Program Menu, select CAM SWITCH.
5. Press Exit. SmartPAC PRO Servo will create a new checksum for the tool.
6. Select the tool again, access the Tool Program Menu, and select CAM SWITCH. Verify that all settings are correct.
7. Reload the tool. You should no longer get this fault message.

If the problem is due to a system malfunction, the tool settings will have to be created again from scratch. If this happens more than once, contact Wintriss Tech. Support for assistance.

Messages for Sensor Faults

“Green sensor missed”

Explanation: A green or green quick check sensor did not turn on during the Ready signal nor within 50 milliseconds after the end of the Ready signal. No stroke angle is displayed for this error since the sensor never turned on.

Remedy: Check for the malfunction that the sensor was supposed to detect (part ejection problem, misfeed, transfer problem, etc.). If a malfunction is not the cause, check to be sure that the Ready signal is set properly for this sensor. Check that a sensor is actually plugged into this input on the DSI 2. If no sensor is connected to a sensor input, that input must be set to UNUSED. Check connections between sensors and the controller.

“Green sensor actuated late”

Explanation: A green or green quick check sensor turned on within 50 milliseconds after the end of the Ready signal.

If a green or green quick check sensor does not come on during its Ready signal, SmartPAC PRO Servo continues to look for the sensor signal. If it sees the sensor come on within 50 milliseconds after the Ready signal ends, this message displays. The angle at which the sensor turned on is shown in the message.

Remedy: Check for the malfunction the sensor was supposed to detect (like a part ejection problem or misfeed, etc.). Check that the Ready signal is set properly, and adjust if necessary.

“Green sensor failure”

Explanation: A green or green constant sensor has stayed on from the end of one Ready signal to the beginning of the Ready signal for the next stroke. No stroke angle is shown with this fault.

Remedy: Check for a shorted sensor. Make sure the Ready signal has been set correctly. Check to see if a press or equipment malfunction is causing the sensor to stay on—for instance, a part wedged against a sensor or a pinched wire.

“Green constant fault”

Explanation: A green constant sensor turned off during its Ready signal. Green constant sensors must stay on throughout the Ready signal. The angle at which the sensor turned off is displayed.

Remedy: Check for the malfunction that the sensor was supposed to detect. If no malfunction has occurred, check to make sure that the Ready signal is set properly. Remember, for green constant sensors, the Ready signal must be a little shorter than the sensor’s actuation angle. Check that a sensor is actually plugged into this input. Check connections between the DSI 2 and the controller.

“Green quick check sensor actuated outside ready”

Explanation: A green quick check sensor actuated or stayed on outside the Ready signal. The stroke angle at which the sensor was first detected on outside the Ready signal is shown.

Remedy: Check for the malfunction the sensor was supposed to detect (part ejection problem, misfeed, etc.). Check for a part wedged against the sensor, a shorted sensor, a pinched wire, or other cause that would keep the sensor on or cause it to go on outside its Ready signal. Make sure the Ready signal is set correctly.

“Green special fault”

Explanation: A green special sensor did not actuate (i.e., there was no contact closure to ground) within the maximum number of strokes set in Program mode.

Remedy: Check for the press or equipment malfunction that the sensor was supposed to detect. Check for any cause that would keep the sensor from going on. Make sure the maximum stroke count is set correctly, especially that it is not set too low. See Setting the Counter Value for a Green Special Sensor, page 5-30.

Fault message for yellow sensors “This N/O sensor is grounded”

Explanation: A yellow sensor turned on (i.e., there was a contact closure to ground). When this message is displayed, the angle at which the condition was detected is shown.

Remedy: Check for the press or equipment malfunction that the sensor was supposed to detect. If no malfunction has occurred, check for a shorted sensor or pinched wire.

“Fault message for red sensors “This N/C sensor is open”

Explanation: A red sensor has actuated (i.e., is open to ground). When this message is displayed, the angle at which the condition was detected is shown.

Remedy: Check for the press or equipment malfunction that the sensor was supposed to detect. If no malfunction has occurred, check for a problem with the sensor. Check for loose or detached wiring at the DSI 2 or controller. Check for a severed wire from the sensor to the DSI 2 or controller.

Miscellaneous Fault Messages**“The press cycle was interrupted before upper or lower limits were reached”**

Explanation: The ram is returning to its Upper Limit without having reached its Lower Limit or returning to its Lower Limit without having reached its Upper Limit.

Remedy: Check to see whether the upstroke or downstroke was prevented by a light curtain interruption, the ram hitting something, etc. Verify that the Lower Limit set for Ram Position (see page *RAM POSITION*, page 179) is a little higher than BDC, and adjust, if necessary. Also verify that the ram Upper Limit is set a little lower than TDC, and adjust, if necessary.

NOTICE

When the ram position at the top during clockwise movement is not the same as the top position during counter-clockwise movement, as is often the case in a pendulum motion, make sure to set the Upper Limit just below the lower of these two “top” positions.

“One of the sensor auto enable counters is greater than 99”

Explanation: Normally, this fault will never occur since SmartPAC PRO Servo does not let you enter a value greater than 99. However, this message could display if there is an internal problem with SmartPAC PRO Servo.

Remedy: First press RESET. If the message reappears, contact Wintriss Tech. Support.

“Loss of Communication at Address X”

Explanation: SmartPAC PRO Servo is unable to communicate with the optional module identified by “X” in the message (see Table 7-1).

Remedy: Check the wiring of the specified module. If you continue to get this error message, call Wintriss Tech. Support.

Table 7-1. Communication Errors: SmartPAC PRO Servo Option Identified by Address Number

| Message | Option Identified by Address |
|------------------------------------|-------------------------------------|
| Loss of Communication at Address 1 | AutoSetPAC, Channels 1-4 |
| Loss of Communication at Address 2 | AutoSetPAC, Channels 5-8 |

“File Not Found”

Explanation: You cannot access the SFC Dialog Menu when the DIALOG SCREEN MODE setting on the Set Communications Menu in SmartPAC PRO Servo Initialization is “32 CUSTOM.” This message displays only when you have the SFC firmware option.

Remedy: Press RESET, then change the DIALOG SCREEN MODE setting to “16/16” (see for details, contact Wintriss Tech Support).

Troubleshooting Using the Error/Event Log

The Error/Event Log, which you can view in Run mode, is a useful troubleshooting aid. You can use the Error/Event log to help you diagnose the cause of a problem, or you can send the log to Wintriss Tech. Support to help them narrow down probable causes. See *ERROR/EVENT LOG*, page 180, and *Sending E-mail to Wintriss Technical Support*, page 184, for more information.

Appendix A – Installing the Balluff Linear Transducer

Make sure to install a magnetostrictive linear transducer (page 21) for a description of transducer operation) that is at least as long as or longer than the sum of the maximum stroke length of your press and the maximum shut-height adjustment.

CAUTION

INCORRECT INSTALLATION OF THE TRANSDUCER

It is important that the transducer cable be facing up. If the cable is facing down, the transducer will not work properly.

Failure to comply with these instructions could result in property damage.

Mounting the Transducer

NOTICE

Not all Servo presses are the same. Each installation will be different. The following installation procedure is an example.

Once you have thought out your design and gathered the parts, mount the magnetostrictive linear transducer by performing the following steps, referring to Figure 2-1, page 30 for suggested mounting location and Figure A- 1 for mounting dimensions:

1. Make sure the press is at its Upper Limit (see *RAM POSITION*, page 154).
2. Fabricate a bracket that will fit the length of the transducer and its mounting feet. See Table A- 1 for the number of mounting feet for each transducer model.

Make sure the bracket mounting holes are elongated or oval-shaped so the transducer can be moved up and down during fine-tuning of the transducer's mounting position.

Table A- 1. Balluff Linear Transducer: Number of Mounting Feet

| Transducer Length | Number of Mounting Feet |
|-------------------|-------------------------|
| 6 - 12 in. | 2 |
| 18 - 24 in. | 3 |
| 30 - 36 in. | 4 |
| 42 - 48 in. | 5 |

3. Make a second bracket to hold the magnet connecting rod.
4. Mount the bracket for the transducer on the press.

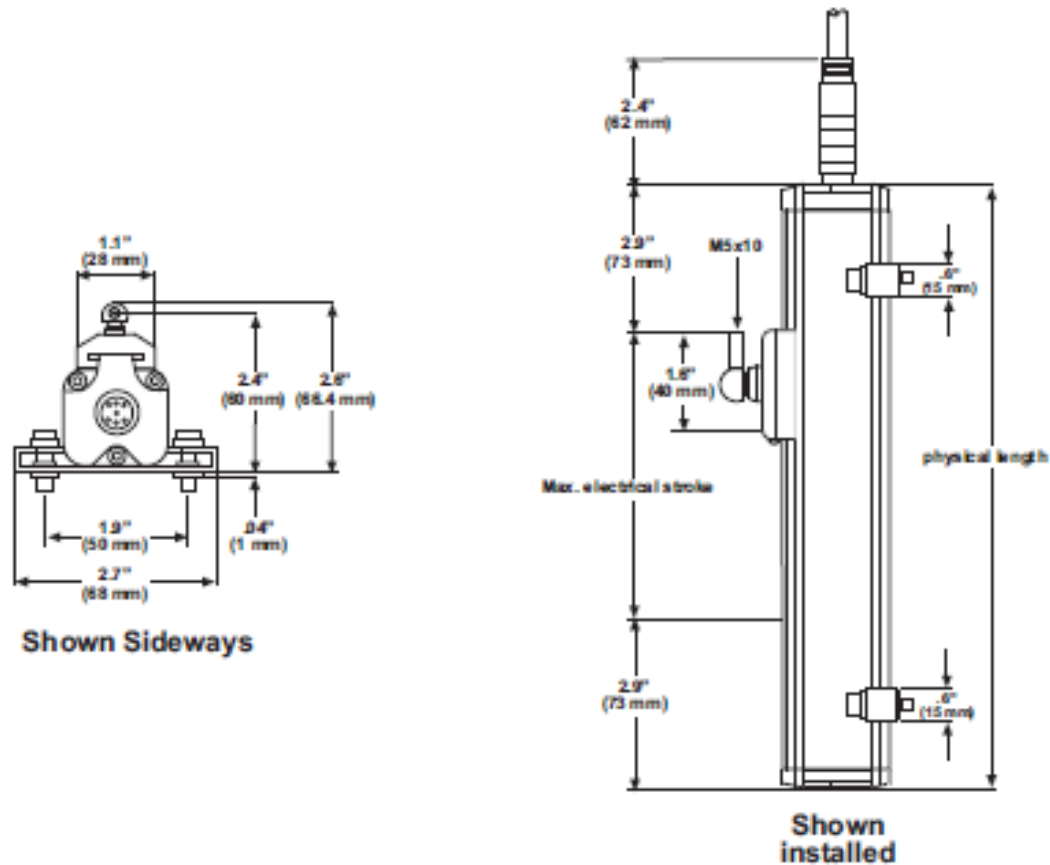


Figure A- 1. Balluff Linear Transducer Dimensions

5. Mount the transducer on the bracket, leaving the screws loose to allow adjustment of transducer position.

NOTICE

The mounting feet come with insulators. They must be installed properly for electrical isolation.

6. Mount the bracket for the magnet connecting rod on the ram.
7. Connect the magnet to the rod. Make sure the magnet is positioned within the transducer's electrical range—a line on the face of the transducer indicates the beginning of its electrical range—and that the arrow on the magnet is facing the electrical connection when the press moves up and down (see Figure A- 1). If the magnet is not positioned within the transducer's electrical range, it will not work properly.
8. Once the magnet is secure, tighten down the transducer.

Wiring the Transducer

To wire the transducer to the SmartPAC PRO Servo board, perform the following steps:

1. Plug the connector on the transducer cable into the transducer if it is not already connected, twisting the locknut so the connection is tight. The connector plugs into the transducer only one way.

2. Run the transducer cable through 1/2-in. conduit from the transducer to one of the knockouts on the bottom left of the SmartPAC PRO Servo enclosure.
3. Measure and cut the transducer wires so they comfortably reach TB402 on the ProCamPAC board. See Figure 2-7, page 37, for the location of the ProCamPAC board on the SmartPAC PRO Servo board and Figure 2-8, page 38 for the location of TB402 on the ProCamPAC board.
4. Unplug the connector from TB402, and attach transducer wires as shown in Figure A- 2, below, Figure A- 2, and Figure 6 (8-channel ProCamPAC) or 7 (15-channel ProCamPAC) at the end of the manual.

NOTICE

The connector can plug into the ProCamPAC board in only one direction. Before wiring the connector, mark its left and right ends when it is plugged in to make sure you wire the correct pin numbers.

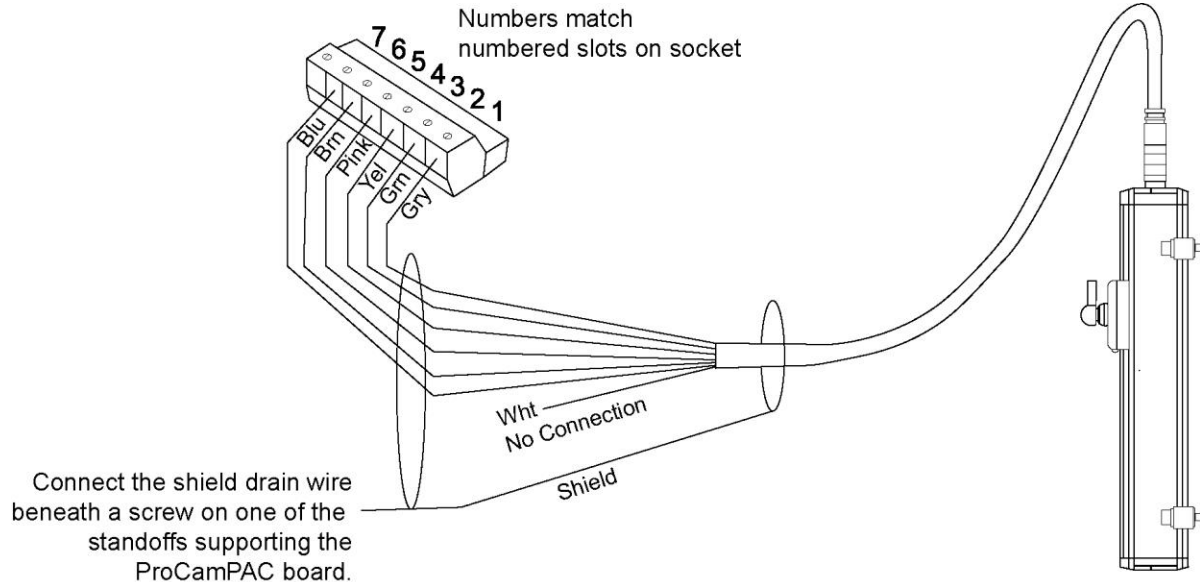


Figure A- 2. Balluff Linear Transducer Pinout

Table A- 2. Balluff Linear Transducer Wiring

| Pin # on TB402 ProCamPAC Linear Board | Wire Color * |
|--|--|
| | Shield Terminate shield drain wire at the ProCamPAC board under a screw in one of the standoffs. |
| 1 (+DATA) | Grey |
| 2 (-DATA) | Green |
| 3 (+CLK) | Yellow |
| 4 (-CLK) | Pink |
| 5 (+24VDC) | Brown |
| 6 (GND) | Blue |

* White is not used.

- Double-check connections, then plug the connector back into TB402. It plugs in only one way.

Glossary

NOTICE

Cross-references to other glossary entries are underlined..

| | |
|------------------------------|--|
| <i>actuation</i> | A change in the state or condition of a sensor. |
| <i>actuation angle</i> | See dwell . |
| <i>actuation block</i> | A graphical indicator on the Sensor Status screen in Run mode, showing whether a sensor is actuated. |
| <i>ANSI</i> | Stands for American National Standards Institute, a U.S. clearinghouse and coordinating body for voluntary standards activity on the national level. |
| <i>auto enable by sensor</i> | A die protection mode in which an individual sensor is automatically actuated after a specified number of strokes. |
| <i>auto enable by tool</i> | A die protection mode in which all sensors in a tool are automatically actuated after a specified number of strokes. |
| <i>batch counter</i> | One of three counters that can be set to increment when either the good parts or strokes counter increments and to either top-stop the press or signal programmable limit switch (PLS) outputs when its preset is reached. See also counter . |
| <i>cam channels</i> | Relays that open and close on signals from the programmable cam switch to turn auxiliary equipment on and off. |
| <i>checksum</i> | A numeric value calculated when a tool is stored in memory and when it is loaded. The two values must match or SmartPAC PRO Servo displays a fault message. |
| <i>communications</i> | Data sent by SmartPAC PRO Servo to one of its installed options (e.g., SFI) or received from an installed option. |
| <i>counter</i> | A SmartPAC PRO Servo feature that maintains a count of the number of strokes made by the press, the number of good parts produced, or the number of strokes that must occur before a programmed output is actuated. See batch counter , total hits counter . |
| <i>critical angle</i> | The point in the ram stroke after which a stop signal to the press cannot prevent the die from closing. |
| <i>diode</i> | A component that reduces or eliminates electrical noise. |
| <i>dwell</i> | The range of angles during which a sensor or cam is actuated, or “on.” Also called actuation angle. |
| <i>emergency stop</i> | A signal sent to the press in response to a malfunction that stops the press immediately. |

| | |
|---------------------------|---|
| <i>error message</i> | A message appearing on the SmartPAC PRO Servo LCD that indicates a fault condition, identifies the problem, and may suggest how to correct it. |
| <i>manual enable</i> | A die protection mode in which sensors are manually enabled or disabled by the operator. |
| <i>messaging</i> | A SmartPAC PRO Servo feature that allows e-mails to be sent from SmartPAC PRO Servo to networked computers, pagers, text-enabled cell phones and other devices. This feature is set up in SmartView. |
| <i>NEMA 12</i> | A rating that certifies that an electrical device is protected against dust, water, and oil. on-off setting Stroke angle settings at which the cam channel is to turn “on” and “off.” |
| <i>OSHA</i> | Stands for Occupational Safety and Health Administration, a government agency that has established regulations for mechanical power presses including presence-sensing devices for point-of-operation guarding. |
| <i>ram angle clock</i> | A graphical indicator on the SmartPAC PRO Servo display that shows the position of the press’s ram in degrees. |
| <i>reset</i> | A command issued by the operator that allows the press to resume operation after it has been stopped due to a malfunction. The “reset” command clears the fault message from the SmartPAC PRO Servo display. The command is issued by pressing the RESET key. |
| <i>security access</i> | Settings made in Initialization that control the amount of access SmartPAC PRO Servo users are given to SmartPAC PRO Servo functions. |
| <i>smart stop</i> | A type of stop programmed for a die protection sensor that sends an emergency stop to the press when a sensor fault occurs before the critical angle or a top stop if the fault occurs after the critical angle. See critical angle , emergency stop , and top stop . |
| <i>suppressor</i> | A component that reduces or eliminates electrical noise. |
| <i>tool template</i> | A tool on the Tool Manager screen that you can program with settings shared by multiple tools, then use as a “template” to copy the common settings to those tools. |
| <i>top stop</i> | A signal sent to the press in response to a malfunction that stops the press at the top of its current stroke (0°). |
| <i>total hits counter</i> | A counter that maintains a count of the total number of hits made by a tool, used in determining when a tool needs regrinding. See counter . |

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SmartPAC PRO Servo Setup Sheet

Tool Name and Number: _____

Counter Presets

| | Batch 1 (Ch. 6) | Batch 2 (Ch. 7) | Batch 3 (Ch. 8) |
|--|--|--|--|
| Preset Value | | | |
| Output mode (circle one) | Top Stop Toggle Pulse for _____mS | Top Stop Toggle Pulse for _____mS | Top Stop Toggle Pulse for _____mS |
| Increment mode (circle one) | Strokes Good Parts | Strokes Good Parts | Strokes Good Parts |
| Increment angle (degrees) | | | |

This tool should be serviced when the TOTAL HITS count reaches _____

Strokes / Part: _____ - OR - Parts / Stroke: _____

Tool Information

| Item | Value | Units |
|------|-------|-------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Tool Memo box text
(30 characters, total)

ProCamPAC Cam Switch – SmartPAC PRO Servo Setup Sheet Channels 1 – 8

Tool Name and Number: _____

| Ch # | Cam Name (function) same for all tools | Global cam? (✓) Not Ch. 6, 7 or 8 | TIMED 4 max. ON angle + ON Time in mS | DSV-ON Time to shut-off after press stops, in seconds | ON/OFF Multiple arcs for ON/OFF only 6 extras, total | | |
|------|---|---|---|---|---|-------------|--------------|
| | | | | | Arc # Normally 1 arc per channel, can be up to 4 | ON angle | OFF angle |
| 1 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 2 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 3 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 4 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 5 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 6 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 7 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 8 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |

ProCamPAC Cam Switch – SmartPAC PRO Servo Setup Sheet Channels 9 – 15

Tool Name and Number: _____

| Ch # | Cam Name (function) same for all tools | Global cam? (✓) Not Ch. 6, 7 or 8 | TIMED 4 max. ON angle + ON Time in mS | DSV-ON Time to shut-off after press stops, in seconds | ON/OFF Multiple arcs for ON/OFF only 6 extras, total | | |
|------|---|---|---|---|---|-------------|--------------|
| | | | | | Arc # Normally 1 arc per channel, can be up to 4 | ON angle | OFF angle |
| 9 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 10 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 11 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 12 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 13 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 14 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 15 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |
| 16 | | | ____ ° ____ mS | ____ sec | Arc 1 | | |
| | | | | | Arc 2 | | |
| | | | | | Arc 3 | | |
| | | | | | Arc 4 | | |

DiProPAC Die Protection – SmartPAC PRO Servo Setup Form Sensors 1-16

Tool Name and Number: _____

| Sensor Number | Sensor Name (function) | Sensor Type (circle one) | Stop Type (circle one) | Ready Signal Timing |
|---------------|------------------------|--------------------------|------------------------|---------------------|
| 1 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| 2 | | GS _____ strokes | SMART STOP | ON |
| | | G R Y | E-STOP | OFF |
| 3 | | GC GQ | TOP STOP | ON |
| | | GS _____ strokes | SMART STOP | OFF |
| 4 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| 5 | | GS _____ strokes | SMART STOP | ON |
| | | G R Y | E-STOP | OFF |
| 6 | | GC GQ | TOP STOP | ON |
| | | GS _____ strokes | SMART STOP | OFF |
| 7 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| 8 | | GS _____ strokes | SMART STOP | ON |
| | | G R Y | E-STOP | OFF |
| 9 | | GC GQ | TOP STOP | ON |
| | | GS _____ strokes | SMART STOP | OFF |
| 10 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| 11 | | GS _____ strokes | SMART STOP | ON |
| | | G R Y | E-STOP | OFF |
| 12 | | GC GQ | TOP STOP | ON |
| | | GS _____ strokes | SMART STOP | OFF |
| 13 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| 14 | | GS _____ strokes | SMART STOP | ON |
| | | G R Y | E-STOP | OFF |
| 15 | | GC GQ | TOP STOP | ON |
| | | GS _____ strokes | SMART STOP | OFF |
| 16 | | G R Y | E-STOP | ON |
| | | GC GQ | TOP STOP | OFF |
| | | GS _____ strokes | SMART STOP | OFF |

Auto Enable Counter Critical Angle (for Smart Stop)

G=GREEN STD; R=RED; Y=YELLOW; GC=GREEN CONSTANT; GQ=GREEN QUICK CHECK;
GS=GREEN SPECIAL

DiProPAC Die Protection – SmartPAC PRO Servo Setup Form Sensors 17-32

Tool Name and Number: _____

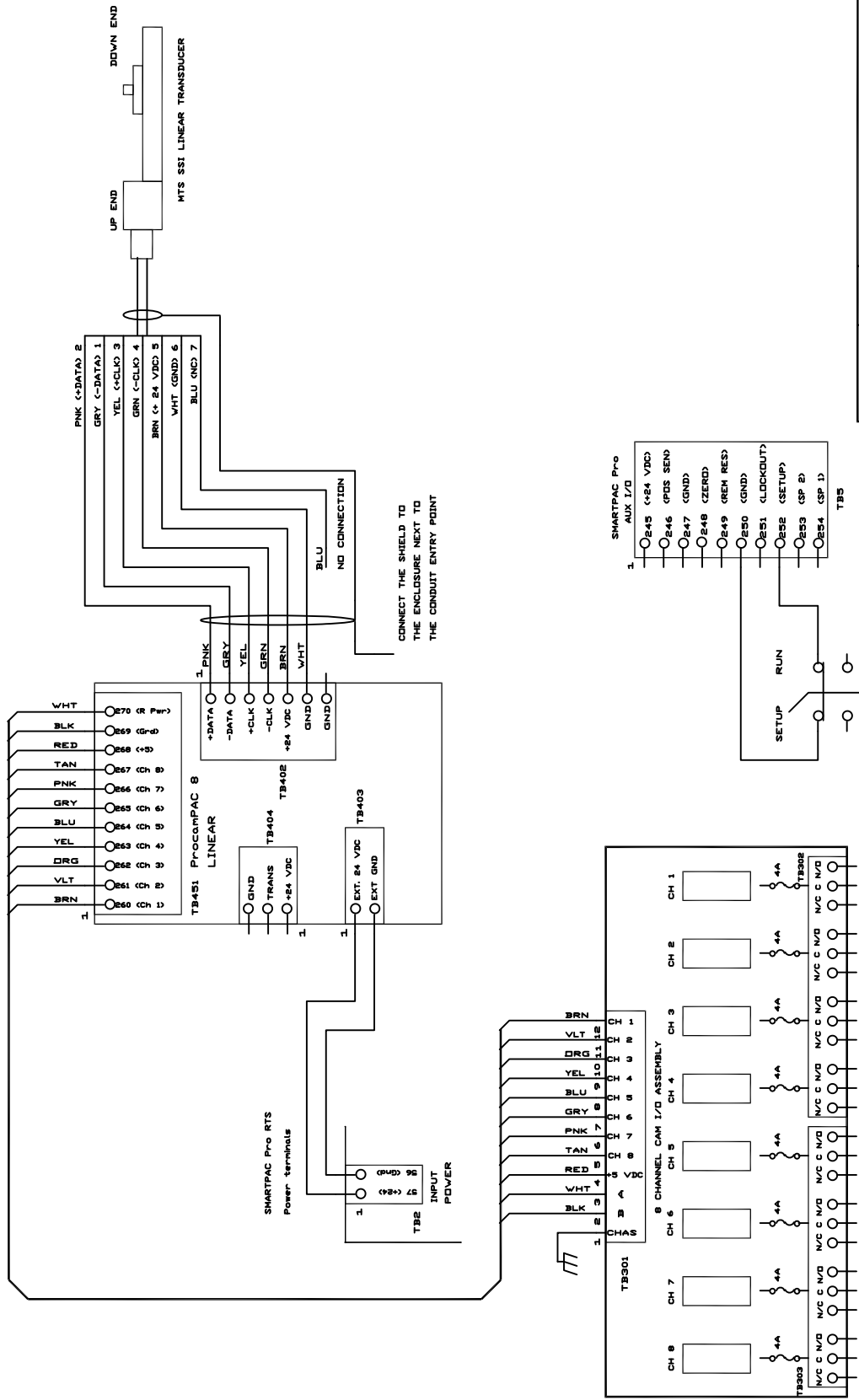
| Sensor Number | Sensor Name (function) | Sensor Type (circle one) | Stop Type (circle one) | Ready Signal Timing |
|---------------|------------------------|--|----------------------------------|---------------------|
| 17 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 18 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 19 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 20 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 21 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 22 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 23 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 24 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 25 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 26 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 27 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 28 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 29 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 30 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 31 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |
| 32 | | G R Y GC GQ GS _____strokes | E-STOP TOP STOP SMART STOP | ON |
| | | | | OFF |

Auto Enable Counter ° Critical Angle ° (for Smart Stop)

G=GREEN STD; R=RED; Y=YELLOW; GC=GREEN CONSTANT;
GQ=GREEN QUICK CHECK; GS=GREEN SPECIAL

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| REV | DESCRIPTION | DATE | APP'D |
|-----|-------------|------|-------|
| | | | |

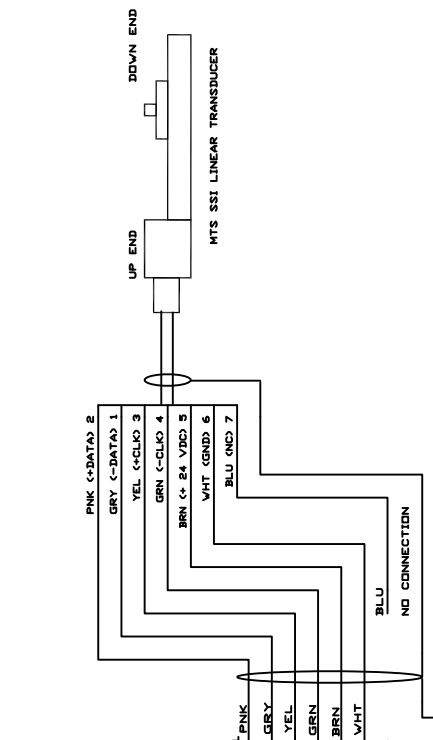
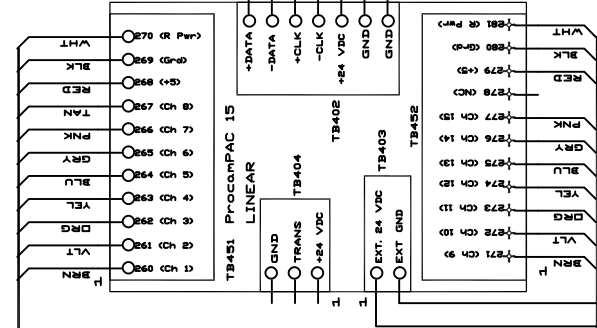
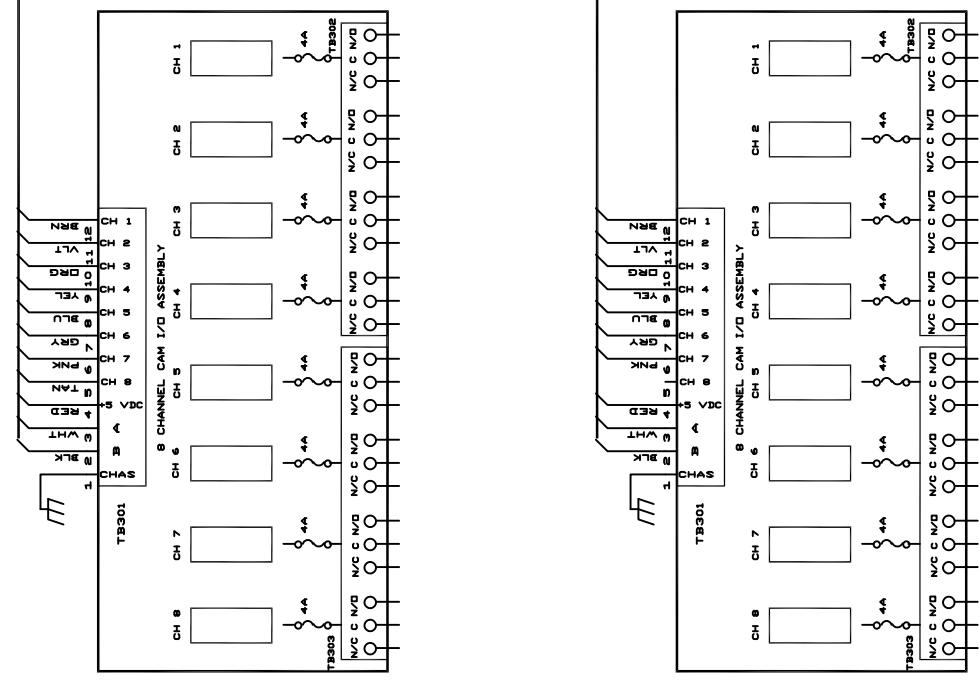


INTERRUPTED CYCLE TESTS ARE DISABLED WHEN INCH/SETUP MODE INPUT IS GROUNDED.

| | | |
|-----------|---------|---------------------------------------|
| DRAWN | DATE | WINTRISS CONTROLS GROUP |
| AJD/B | 6/24/19 | |
| CHK. | | |
| APPROVALS | | |
| ENG. | | TITLE |
| MFG. | | SmartPAC Pro Servo Press ProcompPAC 8 |
| FILENAME | | MTS Transducer Wiring Diagram |
| REL. | | CODE IDENT NO. |
| | | C |
| | | SIZE |
| | | DRAWING NUMBER |
| | | FIGURE 1 |
| | | SCALE |
| | | SHEET |
| | | DF |

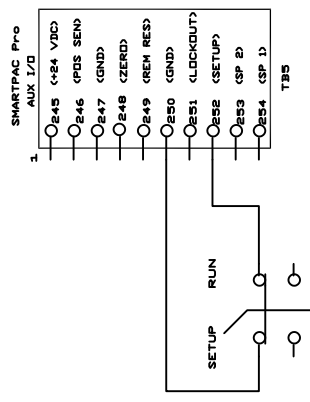
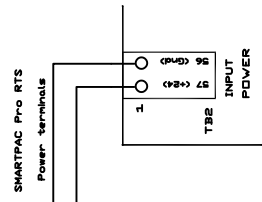
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|-----|-------------|------|-------|
| | | | |



CONNECT THE SHIELD TO THE ENCLOSURE NEXT TO THE CONDUIT ENTRY POINT

NOTE: CHANNEL 16 IS NOT AVAILABLE. IT IS USED TO INTERFACE TO THE LINEAR SENSOR.



INTERRUPTED CYCLE TESTS ARE DISABLED WHEN INCH/SETUP MODE INPUT IS GROUND.

| | | | |
|---|-----|----------|---------|
| DRAWN | ADB | DATE | 6/26/19 |
| CHK: | | | |
| APPROVALS | | | |
| ENGR. | | | |
| MFG. | | | |
| FILENAME | | | |
| REL | | | |
| SCALE | | | |
| TITLE | | | |
| WINTRISS CONTROLS GROUP | | | |
| SmartPAC Pro Servo Press Program PAC 15 | | | |
| MTS Transducer Wiring Diagram | | | |
| CODE IDENT NO. | | SIZE | C |
| DRAWING NUMBER | | FIGURE 2 | |
| REV | | SHEET | DF |

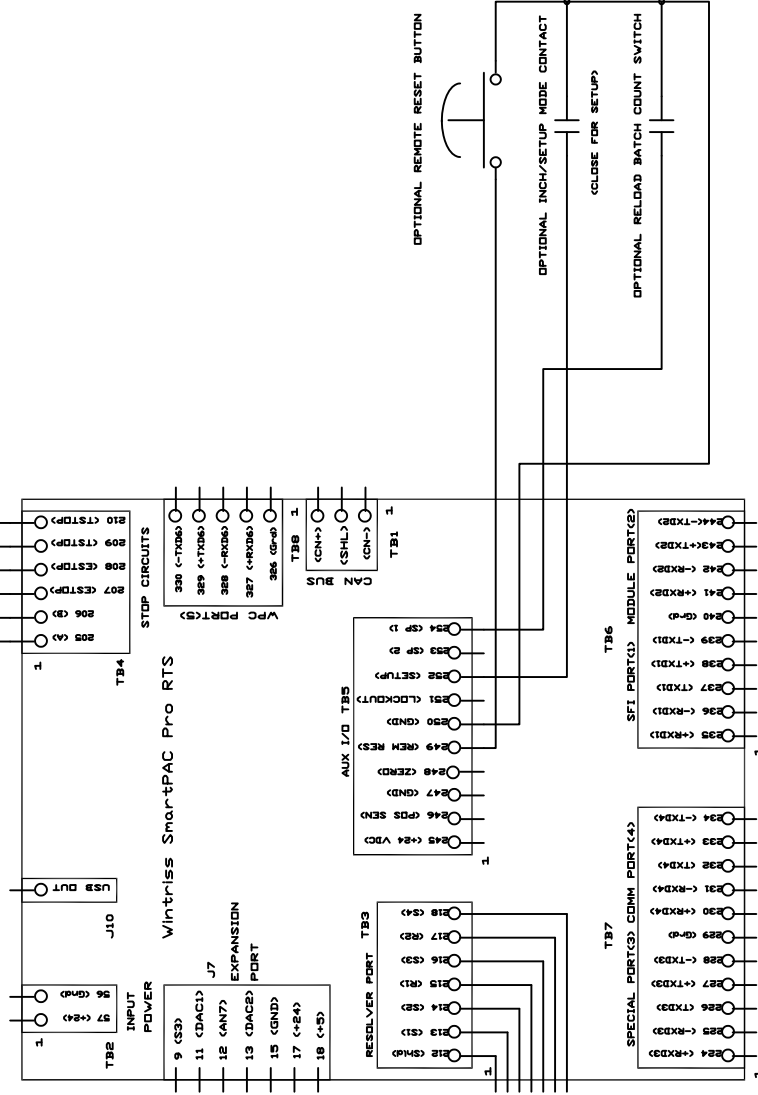
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|-----|-------------|------|-------|
| | | | |

IF USING THE DSV ON TYPE CAM CHANNEL EVENT
 THEN APPLY 12 - 250 VOLTS TO THE INPUT CHECK
 INPUT (A-3) WHEN THE PRESS IS IN MOTION.

CONNECT TO THE EMERGENCY STOP
 INPUT OF THE SERVO CONTROL.

CONNECT TO THE TOP STOP
 INPUT OF THE SERVO CONTROL.



| | | | |
|-----------|-----|----------------|--------------------------|
| DRAWN | ADJ | DATE | 6/26/19 |
| CHK. | | | |
| APPROVALS | | | |
| ENG. | | TITLE | SmartPAC Pro Servo Press |
| MFG. | | | Wiring Diagram |
| REL | | CODE IDENT NO. | C |
| | | DRAWING NUMBER | FIGURE 3 |
| | | SCALE | SHEET |
| | | | OF |

WINTRISS CONTROLS GROUP

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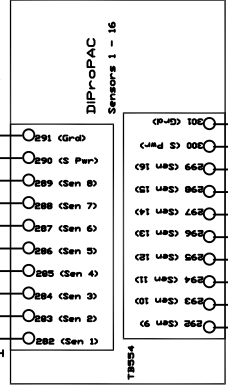
| REV | DESCRIPTION | DATE | APP'D |
|-----|-------------|------|-------|
| | | | |

NOTE 1: CONNECT THE SHIELD TO THE ENCLASURE CLOSE TO THE CONDUIT ENTRY POINT.

NOTE 2: CUT THESE WIRES OFF CLOSE TO THE END OF THE CABLE JACKET.

THE WHITE, TAN AND PINK WIRES ARE NOT USED SEE NOTE 2.

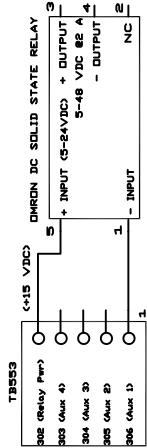
SEE NOTE 1



NOTE FOR DIPROPAC B THERE IS NO LOWER PORTION OF TB854 (692-300).

SEE NOTE 1

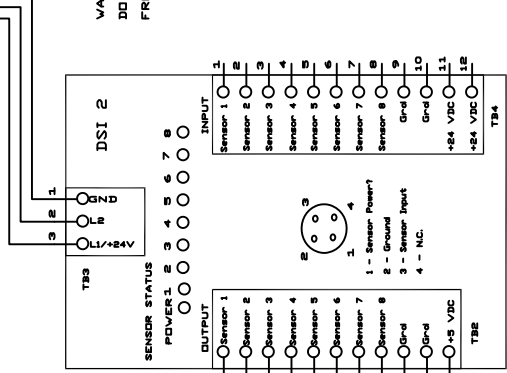
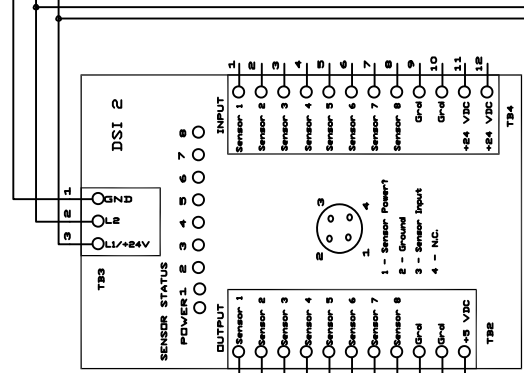
EXAMPLE OF CUSTOMER SUPPLIED SOLID STATE RELAY CONNECTION.



ALL OUTPUTS ARE OPEN COLLECTOR TYPE AND CAN SINK 10 MA TO GROUND.

AUXILIARY OUTPUT FUNCTIONS:

- Aux 1 output (TB855/3) - Turns on when Dipro sensors are disabled. Turns off when sensors enabled in auto enable by tool.
- Aux 2 output (TB855/2) - Turns on when the last sensor enables in auto enable by sensor. If a connected module has a status message displayed, a red fault message is displayed.
- Aux 3 output (TB855/1) - Turns on when stop relay is open. If a connected module has a status message displayed, a yellow status message is displayed.
- Aux 4 output (TB855/4) - Turns on when a dialog error number is present. Error code >= 281 and <= 282.



WARNING: WHEN USING MULTIPLE DSI 2 UNITS, DO NOT CONNECT THE 24 VDC OUTPUTS FROM THE UNITS TOGETHER.

| DRAWN | DATE | TITLE |
|----------|--------|--|
| ADB | 2/8/11 | WINTRISS CONTROLS GROUP |
| CHK. | | |
| ENGR. | | DIP-PROPAC SENSORS 1 - 16 |
| MFG. | | TO DSI 2 WIRING DIAGRAM |
| FILENAME | | CODE IDENT NO. SIZE DRAWING NUMBER REV |
| REL. | | SCALE NONE SHEET 4 OF 4 |

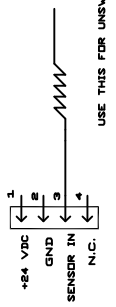
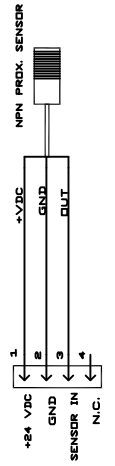
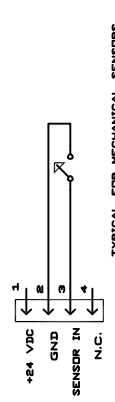
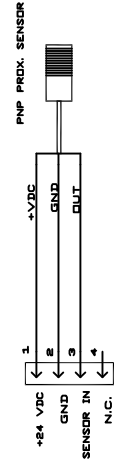
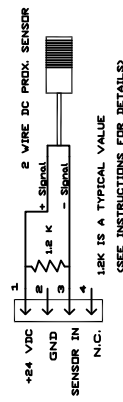
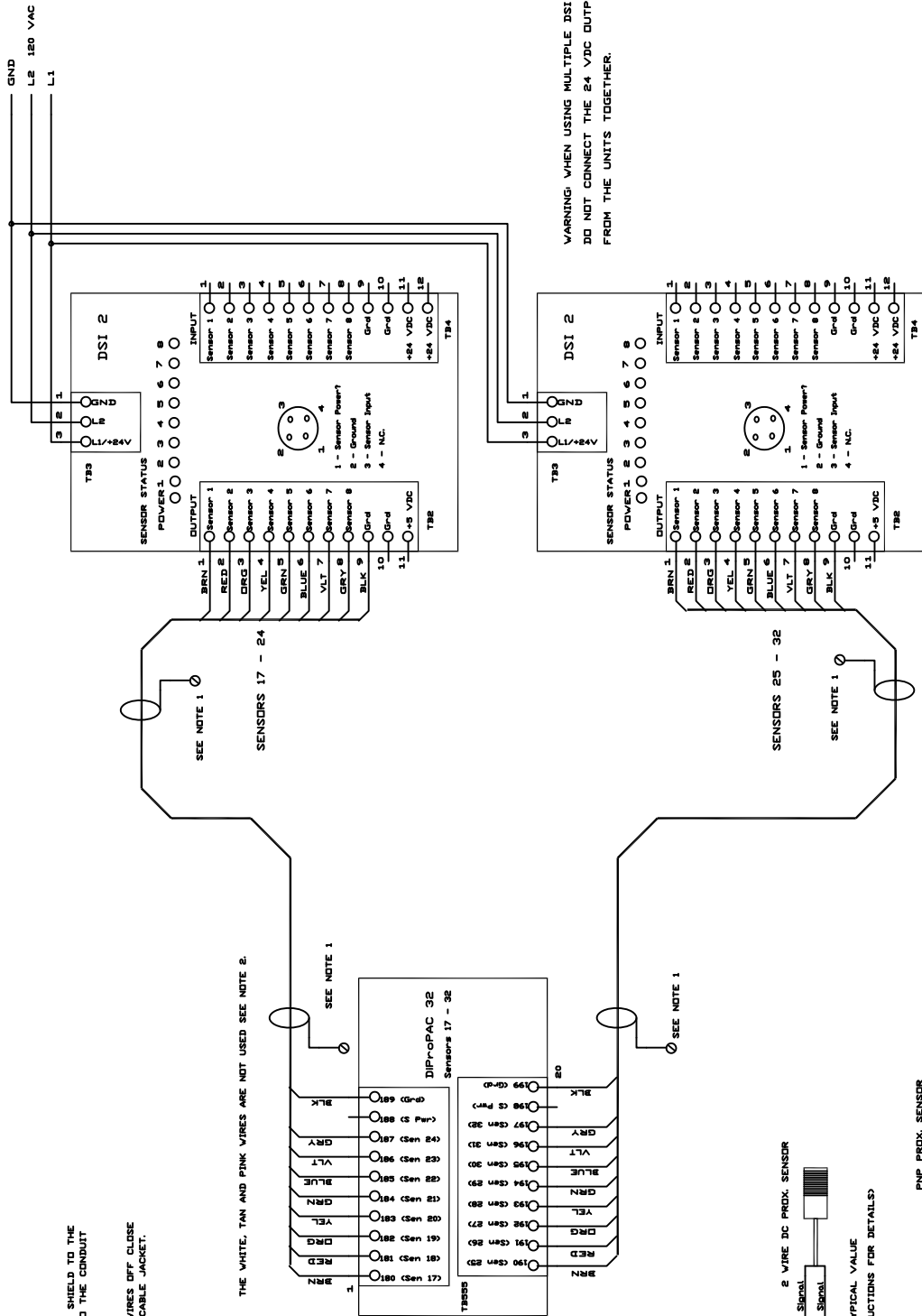
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NOTE: DiproPAC 32 module only works with SmartPAC Pro and SmartPAC 2

NOTE 1: CONNECT THE SHIELD TO THE ENCLOSURE CLOSE TO THE CONDUIT ENTRY POINT.

NOTE 2: CUT THESE WIRES OFF CLOSE TO THE END OF THE CABLE JACKET.

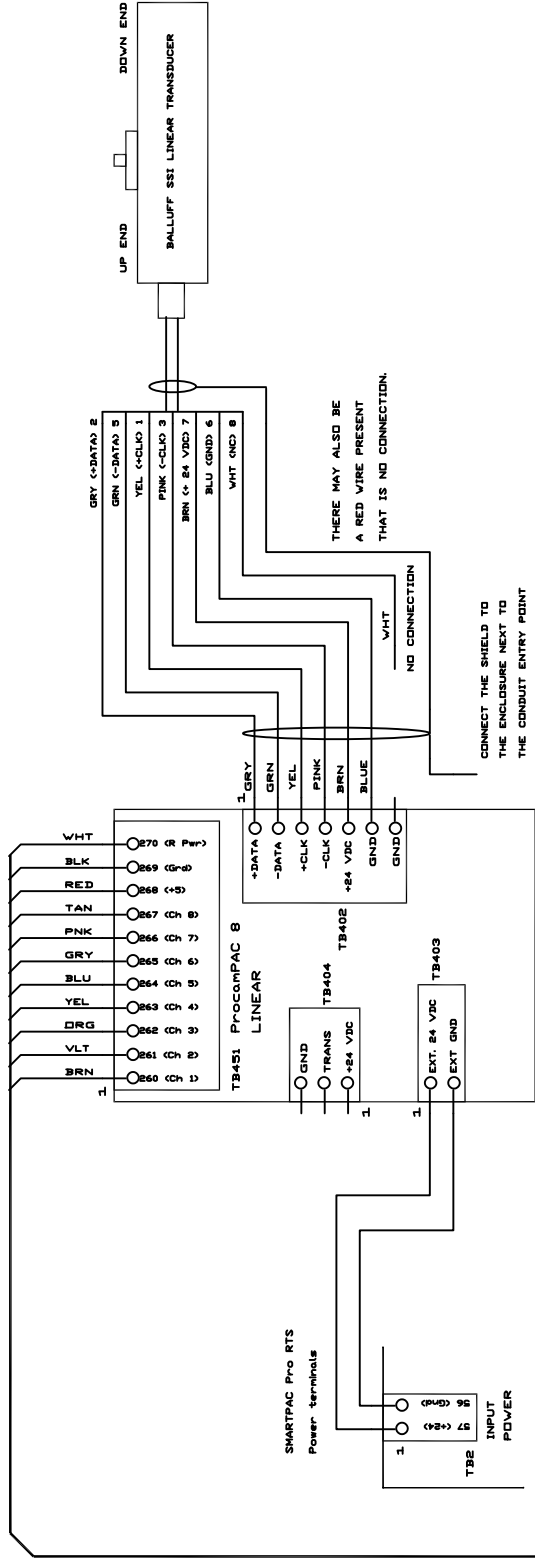
THE WHITE, TAN AND PINK WIRES ARE NOT USED SEE NOTE 2.



| | | | |
|----------|-----|----------------|--------------------------|
| DRAWN | ADB | DATE | 6/30/19 |
| CHK. | | APPROVALS | |
| ENG. | | TITLE | WINTRISS CONTROLS GROUP |
| MFG. | | | DIPROPAC SENSORS 17 - 32 |
| PLANNING | | | TO DSI 2 WIRING DIAGRAM |
| REL | | CODE IDENT NO. | C |
| | | SIZE | DRAWING NUMBER |
| | | SCALE | FIGURE 5 |
| | | | SHEET |
| | | | OF |

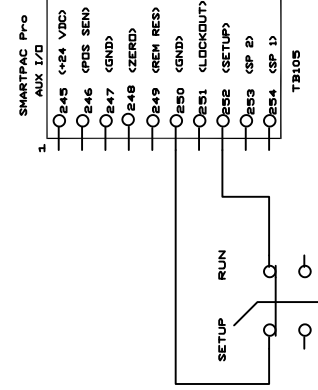
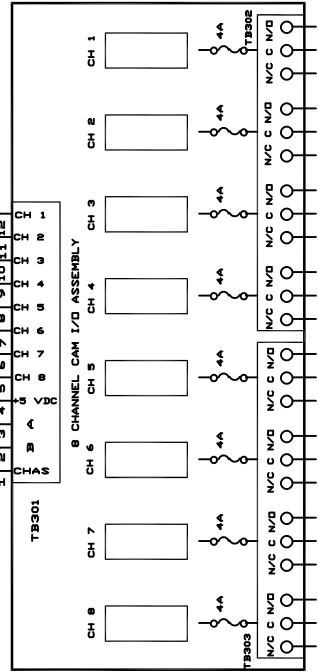
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|-----|-------------|------|-------|
| | | | |



THERE MAY ALSO BE A RED WIRE PRESENT THAT IS NO CONNECTION.

CONNECT THE SHIELD TO THE ENCLOSURE NEXT TO THE CONDUIT ENTRY POINT

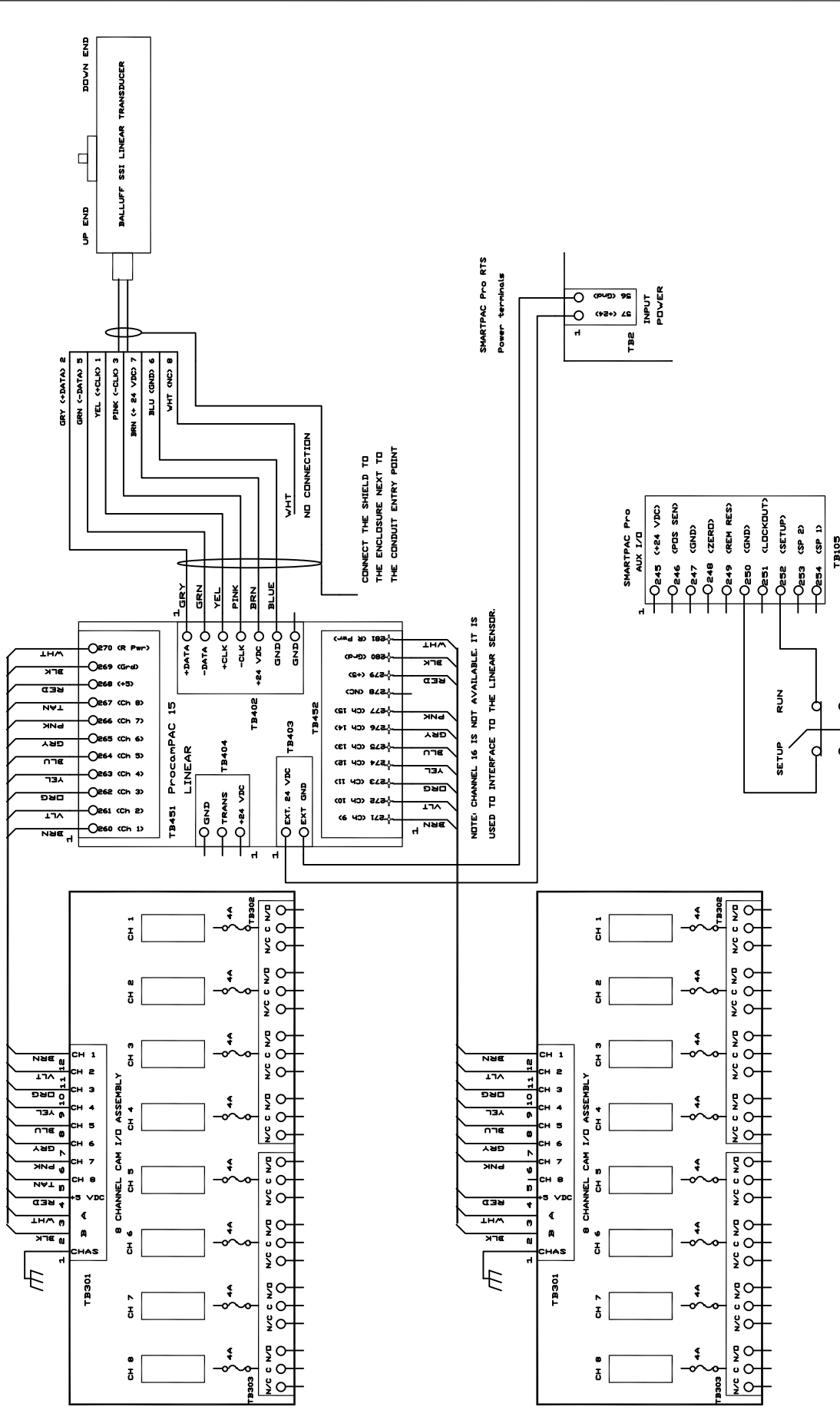


INTERRUPTED CYCLE TESTS ARE DISABLED WHEN INCH/SETUP MODE INPUT IS GROUNDDED.

| DRAWN | DATE | WINTRISS CONTROLS GROUP |
|--|----------|-------------------------|
| AJB | 4/1/2020 | |
| CHK: | | |
| ENG: | | |
| MFG: | | |
| FILENAME | | |
| REL | | |
| TITLE | | |
| SmartPAC Pro Servo Press Procompac 8 Balluff Transducer Wiring Diagram | | |
| CODE IDENT NO. | SIZE | DRAWING NUMBER |
| | C | FIGURE 6 |
| SCALE | | SHEET |
| | | DF |

| REV | DESCRIPTION | DATE | APP'D |
|-----|-------------|------|-------|
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| DRAWN | DATE | WINTRISS CONTROLS GROUP |
|----------------|---|-------------------------|
| AJB | 4/1/2000 | |
| CHK. | | |
| ENG. | | |
| MFG. | | |
| FILENAME | | |
| REL | | |
| SCALE | | |
| TITLE | SmartPAC Pro Servo Press ProcompAC 15 Balluff Transducer Wiring Diagram | |
| CODE IDENT NO. | C | FIGURE 7 |
| SIZE | | |
| DRAWING NUMBER | | |
| REV | | |
| SHEET | | OF |



NOTE: CHANNEL 16 IS NOT AVAILABLE. IT IS USED TO INTERFACE TO THE LINEAR SENSOR.

CONNECT THE SHIELD TO THE ENCLOSURE NEXT TO THE CONDUIT ENTRY POINT

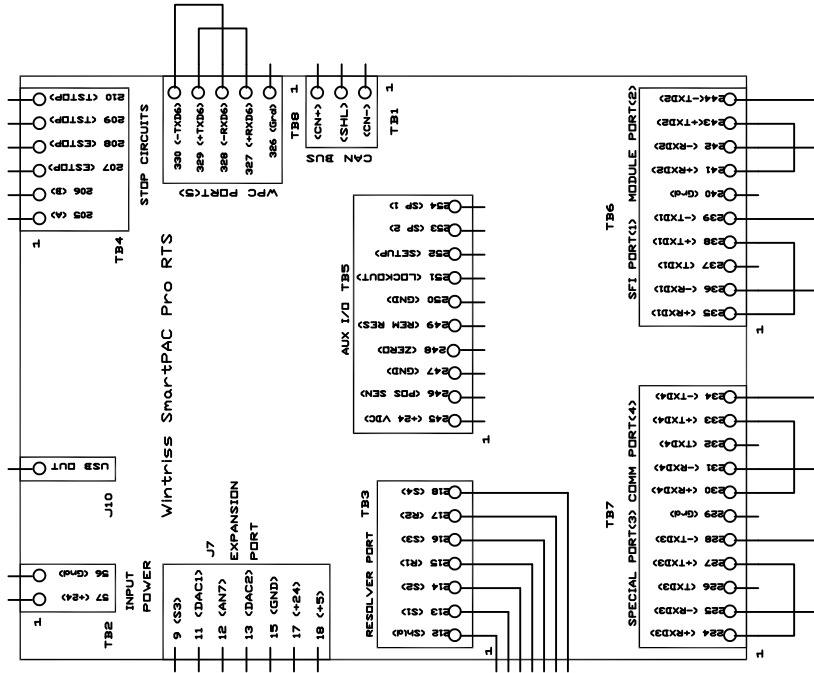
SMARTPAC Pro RTS Power terminals

INTERRUPTED CYCLE TESTS ARE DISABLED WHEN INCH/SETUP MODE INPUT IS GROUNDED.

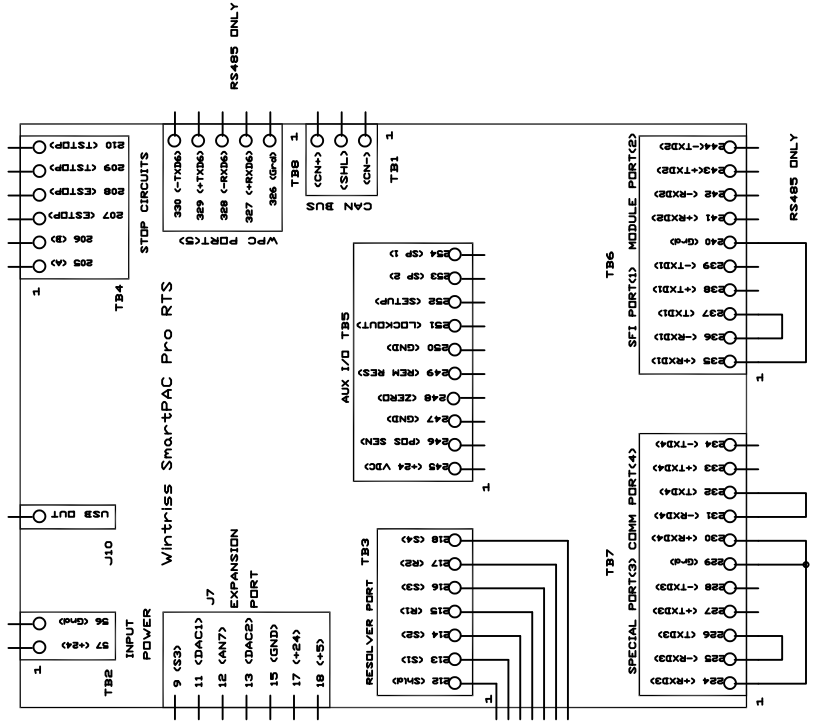
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REV DESCRIPTION DATE APP'D

RS 485 CONNECTIONS



RS 232 CONNECTIONS



| | | | |
|-----------|---------|-----------------------------------|----------|
| DRAWN | DATE | WINTRISS CONTROLS GROUP | |
| AJB | 2/26/19 | | |
| CHK. | | | |
| APPROVALS | | | |
| ENG. | | TITLE | |
| MFG. | | SmartPAC Pro loopback test wiring | |
| FILENAME | | CODE IDENT NO. | REV |
| REL | | C | FIGURE 8 |
| | | SCALE | SHEET |
| | | | DWG |

