

Wintriss  
Controls

---

## **SmartPAC® 2 Hydraulic**

**Press Automation Control**  
**1129900**  
**Rev. J January 2015**

**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

## **Changes for Revision J of the SmartPAC 2 Hydraulic User Manual (1129900)**

This revision of the SmartPAC 2 Hydraulic user manual covers SmartPAC 2 Hydraulic software version 13.23 and higher. The changes include:

- Revised procedure for wiring linear and pressure transducers to DC power (see page 2-16)

**T**hank you for purchasing a Wintriss Product. We appreciate your business and want to do whatever we can to ensure your satisfaction. Wintriss products are built to stay on the job day after day, and are backed by an ironclad guarantee, international standards approvals, and unbeatable support. Whenever you need assistance or service, we back all our products with excellent spare parts inventories, training programs, and prompt repair service. We would like to share with you a list of service options—probably the largest number of service options offered in the industry.

- **Technical Assistance**

We offer a toll-free line for technical assistance. Call our Wintriss Technical Support Hotline at 1-800-586-TECH (8324) should you have any questions about your equipment. Our technical staff is ready to assist you Monday through Friday, 8 a.m. to 5 p.m. EST. In many cases our experienced technical staff can resolve your inquiry right over the phone.

- **Return Authorization**

Please call our “800” number for a return authorization (RMA) number to return a product for repair. Returned goods must arrive freight prepaid. In order to process your return quickly, we ask that you provide us with the following pertinent information when you call: purchase order number, shipping address, contact name and telephone number, and product type. The assigned RMA number should appear on all packages returned to Wintriss Controls Group to ensure prompt service.

At the time of requesting an RMA, you will be quoted a flat-rate repair price for the product you are returning. We ask that you either fax us a PO for that amount or enclose the PO with the returned item. This will enable us to ship the item back to you as soon as the repair has been completed. If the item cannot be repaired or there are additional charges, you will be contacted for approval.

Please be sure to carefully pack all returned items and ship to our Acton, MA location.

- **Expedited Repair Program**

Rush service providing 48 hour turnaround is available for most products upon request. An Expedite Fee will be applied to our standard repair rate.

- **Board Exchange Program**

If your needs are urgent, you can take advantage of our Board Exchange (EX) program. Call our “800” number between 8 a.m. and 5 p.m. EST and we will send a replacement to you overnight. A fee does apply to this service. Contact Wintriss Technical Support at 800-586-8324 for details.

- **Service Center**

Our Service Center for product service is located at our headquarters in Acton MA. If your equipment requires repair, please contact us at 800-586-8324 to obtain a return authorization number.

Nationwide field service is also available. Contact the Wintriss Technical Support group at 800-586-8324.

- **Product Training**

We also offer both product training and maintenance/troubleshooting courses at our Acton, MA and Chicago-area facilities. On-site training is available from the factory or through your local Wintriss representative.

- **Restocking Charge**

Returned goods are subject to a 20% restocking charge if returned for credit. The minimum charge is \$50, not to exceed \$250 per item.

Whatever the product, we are committed to satisfying you with innovative engineering, quality construction, reliable performance, and ongoing, helpful support. Call us whenever you need assistance.

# Table of Contents

---

<b>Chapter 1.</b>	<b>Introduction . . . . .</b>	<b>1-1</b>
	SmartPAC 2 Hydraulic Standard Features . . . . .	1-2
	SmartPAC 2 Hydraulic Options . . . . .	1-2
	SmartPAC 2 Hydraulic Front Panel . . . . .	1-3
	SmartPAC 2 Hydraulic Operation . . . . .	1-4
	SmartPAC 2 Hydraulic Settings . . . . .	1-4
	Sensors Available for DiProPAC . . . . .	1-5
	Programmable Cam Channels . . . . .	1-6
	SmartPAC 2's Three Modes of Operation . . . . .	1-7
	SmartPAC 2 Hydraulic Specifications . . . . .	1-7
<b>Chapter 2.</b>	<b>Installation . . . . .</b>	<b>2-1</b>
	Before You Start . . . . .	2-2
	Installation Guidelines . . . . .	2-3
	Connecting Wires to Terminal Block Connectors . . . . .	2-5
	Terminating Cable Shields . . . . .	2-5
	Checking the Press . . . . .	2-6
	Mounting the SmartPAC 2 Control Enclosure . . . . .	2-7
	Installing SmartPAC 2 as a Panel Mount . . . . .	2-8
	Installing the MTS Linear Transducer . . . . .	2-10
	Mounting the Transducer . . . . .	2-10
	Wiring the Transducer . . . . .	2-11
	Installing the Optional Pressure Transducer . . . . .	2-14
	Mounting the Transducer . . . . .	2-14
	Wiring the Transducer . . . . .	2-15
	Wiring DC Power . . . . .	2-16
	Connecting AC Wiring . . . . .	2-17
	Connecting Stop Circuits . . . . .	2-18
	Connecting to Network . . . . .	2-20
	Replacing ProCamPAC . . . . .	2-20
	Adding or Upgrading DiProPAC . . . . .	2-22
	Replacing an Existing Board . . . . .	2-22
	Installing a New Board . . . . .	2-24
	Connecting DiPro Sensor Interface to SmartPAC 2 . . . . .	2-25
	Connecting Programmable Cam Channels . . . . .	2-27
	Connecting Channels 1 and 2 . . . . .	2-33
	Connecting Channels 3 and 4 for Return on Pressure (Optional) . . . . .	2-34
	Wiring Setup Mode Circuit . . . . .	2-34
	Wiring a Remote Reset Switch (Optional) . . . . .	2-34



Wiring a Sensor-Disabled Output (Optional) . . . . .	2-35
Wiring a Press-in-Motion Signal (Optional) . . . . .	2-35
Turning on Power to SmartPAC 2 Hydraulic . . . . .	2-35
Verifying Installation of DiProPAC and ProCamPAC . . . . .	2-37
Final Checkout . . . . .	2-38
Set Up a “Test” Tool . . . . .	2-38
Check Stroke Limits . . . . .	2-38
Check the Top-stop Circuit . . . . .	2-39
Check the Emergency-stop Circuit . . . . .	2-39
Check Cam Channels . . . . .	2-39
Test Complete . . . . .	2-40
What Next? . . . . .	2-40
Wiring Tables for SmartPAC 2 Hydraulic Options . . . . .	2-41

## **Chapter 3. Keyboard, Displays and Operating Modes . . . . . 3-1**

Comparing SmartPAC 2 with Original SmartPAC . . . . .	3-2
SmartPAC 2 Keyboard . . . . .	3-3
Number Keys . . . . .	3-3
CLEAR Key . . . . .	3-5
Cursor Keys . . . . .	3-5
HELP Key . . . . .	3-9
ENTER Key . . . . .	3-10
RESET Key . . . . .	3-10
Program/Run Key Switch . . . . .	3-11
Function Keys . . . . .	3-12
Hot Keys . . . . .	3-12
SmartPAC 2 Hydraulic Display Layout in Run Mode . . . . .	3-13
Selecting an Item on a Display . . . . .	3-14
SmartPAC 2 Operating Modes . . . . .	3-15
Initialization Mode . . . . .	3-17
Program Mode . . . . .	3-19
Run Mode . . . . .	3-21
Screen Capture . . . . .	3-23
Screen Capture in SmartPAC 2 Main Versions Earlier than V 5.3.1 . . . . .	3-23
Screen Capture in SmartPAC 2 Main Versions V 5.3.1 and Later . . . . .	3-25

## **Chapter 4. Initialization Mode . . . . . 4-1**

Entering and Exiting Initialization Mode . . . . .	4-1
POSITION SENSOR . . . . .	4-2
Position Sensor Mode . . . . .	4-3
Resolver Motion Mode (Normal Motion – Link Motion) . . . . .	4-3
Angle Wheel Rotation (Clockwise – Counterclockwise) . . . . .	4-3
Tool Number Mode . . . . .	4-4
Counter Setup Mode . . . . .	4-5

Counter Increment Mode . . . . .	4-5
INSTALLED OPTIONS . . . . .	4-6
PRESS NAME . . . . .	4-7
SELECT CAM NAMES . . . . .	4-8
SET GLOBAL CAMS . . . . .	4-10
CUSTOM SENSOR NAMES (Optional) . . . . .	4-12
SENSOR ENABLE MODE (Optional) . . . . .	4-13
Selecting Sensor Enable Mode . . . . .	4-14
Enabling Setup Mode . . . . .	4-15
LINEAR SENSOR . . . . .	4-15
TOOL INFORMATION . . . . .	4-19
SECURITY ACCESS . . . . .	4-23
Setting Security Access . . . . .	4-25
Changing Passwords . . . . .	4-26
BACKUP/RESTORE . . . . .	4-28
Backing Up Tools to a USB Disk . . . . .	4-28
Restoring Tools from a USB Disk . . . . .	4-30
SETUP DATA COMMS (Optional) . . . . .	4-31
SETUP NETWORK . . . . .	4-32
E-MAIL FUNCTION . . . . .	4-32
SMARTVIEW FUNCTION . . . . .	4-33
SETUP E-MAIL . . . . .	4-33
CHANGE NETWORK SETTINGS . . . . .	4-35
PRESS TYPE . . . . .	4-36
DIAGNOSTICS . . . . .	4-36
COMMUNICATIONS . . . . .	4-37
SET CLOCK . . . . .	4-38
SAVE TO USB DISK . . . . .	4-40
UPDATE FIRMWARE . . . . .	4-40
Using a Computer Keyboard to Enter Names . . . . .	4-40

## **Chapter 5. Program Mode . . . . . 5-1**

Entering and Exiting Program Mode . . . . .	5-1
TOOL MANAGER . . . . .	5-2
Creating a New Tool . . . . .	5-3
Copying an Existing Tool . . . . .	5-4
Copying Tool Template to a New Tool . . . . .	5-5
Loading a Tool . . . . .	5-5
Changing Settings for a Loaded Tool . . . . .	5-6
Deleting a Tool . . . . .	5-7
Tool Program Menu . . . . .	5-8
TOOL NAME or TOOL ID . . . . .	5-8
COUNTERS . . . . .	5-9
Setting Preset Values . . . . .	5-11
Changing Count Values . . . . .	5-11

Clearing the Total Hits Counter . . . . .	5-12
Setting Batch Counter Output and Increment Modes . . . . .	5-13
Setting Counter Increment Angle . . . . .	5-14
Setting Parts per Stroke or Strokes per Part . . . . .	5-14
Setting Batch Pre-Load Counts . . . . .	5-15
DIE PROTECTION (Optional) . . . . .	5-16
Understanding Sensor Terminology . . . . .	5-16
Programming Sensor Settings . . . . .	5-21
Programming DiProPAC 32 Sensors . . . . .	5-32
CAM SWITCH . . . . .	5-38
Selecting a Cam Channel . . . . .	5-39
Making an ON/OFF Setting . . . . .	5-40
Setting Multiple ON/OFF Cycles . . . . .	5-41
Making a Timed Output Setting . . . . .	5-44
Setting DSV ON Channel Timing . . . . .	5-45
Deleting Channel Settings . . . . .	5-46
Viewing the Cam Summary . . . . .	5-47
Viewing Global Cams . . . . .	5-47
TOOL INFORMATION . . . . .	5-48
RAM POSITION . . . . .	5-50
RAM TONNAGE (Optional) . . . . .	5-52
SENSOR ENABLE/DISABLE & STATUS (Optional) . . . . .	5-55
Viewing Sensor Status . . . . .	5-55
Enabling or Disabling All Sensors . . . . .	5-56
Turning a Sensor Off or On . . . . .	5-56

## **Chapter 6. Run Mode . . . . . 6-1**

Entering and Exiting Run Mode . . . . .	6-2
Loading a Tool . . . . .	6-3
Programming Hot Keys . . . . .	6-3
Settings Locked, or Password Required . . . . .	6-5
Displaying Multiple Faults . . . . .	6-5
Opening the Ram Angle Window . . . . .	6-6
DISABLE (ENABLE) SENSORS . . . . .	6-7
COUNTERS . . . . .	6-8
DIE PROTECTION (Optional) . . . . .	6-10
Adjusting the Ready Signal for Green Sensors . . . . .	6-11
Adjusting the Stroke Preset for Green Special Sensors . . . . .	6-13
Viewing the Sensor Summary . . . . .	6-13
Viewing Sensor Status . . . . .	6-14
Adjusting DiProPAC 32 Sensors . . . . .	6-15
CAM SWITCH . . . . .	6-17
Viewing Cam Timing . . . . .	6-18
Viewing the Global Cam Summary . . . . .	6-19
Viewing the Cam Summary . . . . .	6-19

TOOL INFORMATION .....	6-20
RAM POSITION .....	6-21
RAM TONNAGE (Optional) .....	6-23
ERROR/EVENT LOG .....	6-25
LOAD NEW TOOL .....	6-26
MESSAGING .....	6-27
Sending E-mail to Wintriss Technical Support .....	6-29
TOGGLE HOT KEYS .....	6-30
 <b>Chapter 7. Fault Messages .....</b>	<b>7-1</b>
Responding to Fault Messages .....	7-1
Counter Preset Reached Messages .....	7-2
Messages for Equipment Problems .....	7-3
Messages for Programming Problems .....	7-3
Messages for Sensor Faults .....	7-5
Miscellaneous Fault Messages .....	7-7
Troubleshooting Using the Error/Event Log .....	7-8
 <b>Appendix A. Installing the Balluff Linear Transducer .....</b>	<b>A-1</b>
Mounting the Transducer .....	A-1
Wiring the Transducer .....	A-3
 <b>Appendix B. SmartPAC Preventive Maintenance (PM) Monitor (Optional) .....</b>	<b>B-1</b>
About SmartPAC PM Monitor .....	B-1
Comparison with Traditional Preventive Maintenance .....	B-1
How the PM Monitor Works .....	B-2
Examples of How to Use the PM Monitor .....	B-2
Installing the PM Monitor .....	B-3
For New Systems from the Factory .....	B-3
For Existing Systems .....	B-3
Using the PM Monitor in Initialization Mode .....	B-4
How to Get into SmartPAC Initialization and PM Monitor .....	B-4
Initializing the PM Monitor .....	B-6
Assigning a New PM Password Number .....	B-8
Selecting PM Item Names .....	B-8
Using the PM Monitor in Run mode .....	B-12
How to Get into SmartPAC Run Mode .....	B-12
A Tool Number Must Be Loaded Before Switching to Run Mode .....	B-12
Viewing and Modifying PM Alerts .....	B-13

## **Appendix C. Updating SmartPAC 2 Firmware . . . . . C-1**

Updating Firmware Using a USB Disk . . . . .	C-1
Installing Updated Firmware from USB Disk to SmartPAC 2 . . . . .	C-2
Downloading Updated Firmware from the Wintriss Server . . . . .	C-7
Installing Firmware from a Replacement Compact Flash (CF) Card . . . . .	C-9

## **Appendix D. SmartView Remote Viewing and E-mail Setup . . . . D-1**

Network Requirements . . . . .	D-1
Network Setup . . . . .	D-1
Plugging in the Network Cable . . . . .	D-2
Programming Network Settings . . . . .	D-2
Changing Network Settings . . . . .	D-3
Installing SmartView . . . . .	D-6
Checking Explorer Settings . . . . .	D-6
Installing SmartView on Your Computer . . . . .	D-8
SmartView Operation . . . . .	D-10
Setup Page . . . . .	D-10
Main Page . . . . .	D-11
Press Status Information Page . . . . .	D-12
Remote Messaging . . . . .	D-13
E-mail Setup . . . . .	D-14
SmartView Ping Utility . . . . .	D-15

## **Appendix E. Upgrading from Original SmartPAC to SmartPAC 2 E-1**

Backing Up Tools on Original SmartPAC . . . . .	E-1
Removing SmartPAC 1 and Mounting SmartPAC 2 . . . . .	E-3
Wiring the SmartPAC 2 . . . . .	E-4
AC Wiring on SmartPAC 2 . . . . .	E-12
Restoring Tools to SmartPAC 2 . . . . .	E-12
System Checkout . . . . .	E-14

## **Appendix F. Replacing SmartPAC 2 PC Board . . . . . F-1**

Unpacking the Replacement Board . . . . .	F-1
Installing the Replacement Board . . . . .	F-2

## **Appendix G. Reporting Downtime and Scrap to SFC . . . . . G-1**

Machine States to Which SFC Logs Press Time . . . . .	G-1
SmartPAC 2 Downtime Reporting Features . . . . .	G-2
Forced Idle Dialog Mode . . . . .	G-2
Backfilling vs. Forward Filling . . . . .	G-2

Putting the Press “Back on Line” .....	G-3
Forced Error Dialog Mode .....	G-4
Persist Dialog Mode .....	G-5
Single-stroke Mode .....	G-6
Reset Strokes Counters .....	G-6
Setting up SmartPAC 2 to Report Downtime .....	G-7
Making Downtime Reporting Settings .....	G-7
Programming Downtime Reasons .....	G-12
Documenting Downtime on the Dialog Menu .....	G-16
Documenting Downtime in Response to the Forced Dialog Message .....	G-16
Documenting Downtime in Other Situations .....	G-19
Ending a Job .....	G-20
Creating Hot Keys for Dialog Menu Functions .....	G-21
Reporting Scrap and Good Parts to SFC .....	G-22
Making Scrap Entries .....	G-22
Adjusting the Good Parts Counter .....	G-25

## **Appendix H. Reporting Downtime and Scrap to LETS .....H-1**

Machine States to Which LETS Logs Press Time .....	H-1
SmartPAC 2 Downtime Reporting Features .....	H-2
Forced Idle Dialog Mode .....	H-2
Backfilling vs. Forward Filling .....	H-2
Putting the Press “Back on Line” .....	H-3
Forced Error Dialog Mode .....	H-4
Persist Dialog Mode .....	H-5
Single-stroke Mode .....	H-6
Reset Strokes Counters .....	H-6
Setting up SmartPAC 2 to Report Downtime .....	H-6
Making Downtime Reporting Settings .....	H-7
Programming Downtime Reasons .....	H-11
Documenting Downtime on the Dialog Menu .....	H-14
Documenting Downtime in Response to the Forced Dialog Message .....	H-14
Documenting Downtime in Other Situations .....	H-17
Creating Hot Keys for Dialog Menu Functions .....	H-18
Reporting Scrap and Good Parts to LETS .....	H-19
Making Scrap Entries .....	H-20
Adjusting the Good Parts Counter .....	H-23

## **Glossary ..... GL-1**

## **Index ..... I-1**

## **Wintriss Manuals**

## SmartPAC 2 Setup Sheets

## Figures at End of Manual

- Figure 1. SmartPAC 2 Hydraulic ProCamPAC 8 MTS Transducer Wiring Diagram
- Figure 2. SmartPAC 2 Hydraulic ProCamPAC 15 MTS Transducer Wiring Diagram
- Figure 3. SmartPAC 2 Hydraulic Wiring Diagram
- Figure 4. DiProPAC Sensors 1-16 to DSI 2 Wiring Diagram
- Figure 5. DiProPAC Sensors 17-32 to DSI 2 Wiring Diagram
- Figure 6. SmartPAC 2 Hydraulic ProCamPAC 8 Balluff Transducer Wiring Diagram
- Figure 7. SmartPAC 2 Hydraulic ProCamPAC 15 Balluff Transducer Wiring Diagram
- Figure 8. SmartPAC 2 Loopback Wiring Connections

## List of Figures

Figure 1-1.	SmartPAC 2 Hydraulic Front Panel .....	1-3
Figure 2-1.	Installation Overview .....	2-4
Figure 2-2.	Attaching Wires to Connector .....	2-5
Figure 2-3.	Connecting Shield Drain Wire to Ground Stud .....	2-6
Figure 2-4.	SmartPAC 2 Hydraulic Mounting Dimensions: Enclosure .....	2-7
Figure 2-5.	SmartPAC 2 Hydraulic Mounting and Cutout Dimensions: Panel Mount .....	2-9
Figure 2-6.	MTS Linear Transducer Dimensions .....	2-11
Figure 2-7.	SmartPAC 2 Hydraulic Board with ProCamPAC and DiProPAC Boards Installed ..	2-12
Figure 2-8.	ProCamPAC Linear Boards, Location of Components: .....	2-13
Figure 2-9.	MTS Linear Transducer Pinout .....	2-14
Figure 2-10.	Wiring AC to Terminal Block, Inside Enclosure, Top Right .....	2-18
Figure 2-11.	SmartPAC 2 Hydraulic Board: Location of Components .....	2-19
Figure 2-12.	DiProPAC Boards (8-, 16-, and 32-Sensor): Location of Components .....	2-23
Figure 2-13.	ProCamPAC Output Assembly .....	2-29
Figure 2-14.	Cam Outputs Board .....	2-30
Figure 2-15.	Connector TB302 and TB303 for Wiring Relays to Equipment .....	2-32
Figure 2-16.	Installing Suppressors Across an AC Load .....	2-33
Figure 2-17.	Installing a Diode Across a DC Load .....	2-33
Figure 2-18.	SmartPAC 2 Startup Screen .....	2-36
Figure 2-19.	Main Program Menu .....	2-36
Figure 2-20.	Main Initialization Menu .....	2-37
Figure 2-21.	Installed Options Screen .....	2-38
Figure 3-1.	SmartPAC 2 Hydraulic Front Panel .....	3-1
Figure 3-2.	Differences Between SmartPAC 2 and Original SmartPAC .....	3-2
Figure 3-3.	SmartPAC 2 Keyboard .....	3-3
Figure 3-4.	Number Keys .....	3-3
Figure 3-5.	Numeric Entry Window (Left); Alphabetic Entry Window (Right) .....	3-4
Figure 3-6.	Alphanumeric Entry Window .....	3-4
Figure 3-7.	Clear Key .....	3-5
Figure 3-8.	Cursor Keys .....	3-5
Figure 3-9.	Highlighted Item on Run Menu .....	3-6
Figure 3-10.	Cam Channel Timing: On=0°, Off=0° .....	3-8

Figure 3-11. Cam Channel Timing: On=239°, Off=0° .....	3-8
Figure 3-12. Cam Channel Timing: On=239°, Off=270° .....	3-9
Figure 3-13. HELP Key .....	3-9
Figure 3-14. ENTER Key .....	3-10
Figure 3-15. RESET Key .....	3-11
Figure 3-16. Program/Run Key Switch .....	3-11
Figure 3-17. Function Keys .....	3-12
Figure 3-18. Hot Keys Programmed on Main Run Menu .....	3-13
Figure 3-19. SmartPAC 2 Hydraulic Display, Run Mode .....	3-14
Figure 3-20. Main Run Menu with “CAM SWITCH” Highlighted .....	3-14
Figure 3-21. SmartPAC 2 Operating Modes, Showing Main Menus .....	3-15
Figure 3-22. Initialization Mode Main Menu .....	3-17
Figure 3-23. Navigation Example: Initialization Mode .....	3-18
Figure 3-24. Program Mode Main Menu .....	3-19
Figure 3-25. Navigation Example: Program Mode .....	3-20
Figure 3-26. Run Mode Main Menu .....	3-21
Figure 3-27. Navigation Example: Run Mode .....	3-22
Figure 4-1. Main Initialization Menu .....	4-1
Figure 4-2. Position Sensor Screen .....	4-3
Figure 4-3. Installed Options Screen .....	4-6
Figure 4-4. Select Language Screen .....	4-7
Figure 4-5. Alphabetic Entry Window .....	4-7
Figure 4-6. Cam Channel Name Menu .....	4-9
Figure 4-7. Cam Channel Name Selection Screen .....	4-9
Figure 4-8. Global Cams Menu .....	4-11
Figure 4-9. Global Cam Timing Type Screen .....	4-12
Figure 4-10. Custom Sensor Names Screen .....	4-13
Figure 4-11. Die Protection Mode Selection Menu .....	4-14
Figure 4-12. Linear Sensor Setup Screen .....	4-16
Figure 4-13. Tool Information Setup Screen .....	4-19
Figure 4-14. Tool Information Name Screen .....	4-20
Figure 4-15. Tool Information Units Selection Screen .....	4-21
Figure 4-16. Tool Information Setup Screen with Sample Entries .....	4-22
Figure 4-17. Security Access Menu .....	4-23
Figure 4-18. “Enter Your Password” Screen .....	4-25
Figure 4-19. Set Passwords Menu .....	4-27
Figure 4-20. “Enter a New Password” Window .....	4-27
Figure 4-21. Backup/Restore Control Menu .....	4-29
Figure 4-22. Backup/Restore Control Menu with Restore Confirmation Window Displayed .....	4-31
Figure 4-23. Set Communications Menu .....	4-31
Figure 4-24. Network Setup Utility Screen .....	4-32
Figure 4-25. Setup E-mail Screen .....	4-34
Figure 4-26. Alphanumeric Entry Window with Default Mail Server Displayed .....	4-34
Figure 4-27. Diagnostics Menu .....	4-36
Figure 4-28. Communications Data Viewer Screen .....	4-37
Figure 4-29. Transmit and Receive Data Screen: Combined View (Left), Split View (Right) .....	4-37
Figure 4-30. Set the Clock Screen .....	4-39
Figure 5-1. Main Program Menu .....	5-1
Figure 5-2. Tool Manager Screen .....	5-3
Figure 5-3. Numeric Entry Window (Left); Alphanumeric Entry Window (Right) .....	5-3



Figure 5-4.	Copy Tool Template Window .....	5-4
Figure 5-5.	“Enter Your Password” Screen .....	5-6
Figure 5-6.	Load Tool Warning Window .....	5-6
Figure 5-7.	“Enter Your Password” Screen .....	5-7
Figure 5-8.	Delete Tool Confirmation Message .....	5-7
Figure 5-9.	Tool Program Menu .....	5-8
Figure 5-10.	Alphabetic Entry Window .....	5-9
Figure 5-11.	Counters Screen .....	5-10
Figure 5-12.	“Enter Your Password” Screen .....	5-11
Figure 5-13.	Change Count Confirmation Window .....	5-12
Figure 5-14.	Counter Mode Selections Screen .....	5-13
Figure 5-15.	Advanced Counter Mode Selections Screen .....	5-15
Figure 5-16.	Die Protection Sensor Menu .....	5-16
Figure 5-17.	Ready Signal Programming for a “Green” Sensor .....	5-19
Figure 5-18.	Ready Signal Programming for a “Green Quick Check” Sensor .....	5-19
Figure 5-19.	Ready Signal Programming for a “Green Constant” Sensor .....	5-20
Figure 5-20.	“Enter Your Password” Screen .....	5-22
Figure 5-21.	Die Protection Sensor Menu with Auto Enable by Tool Counter .....	5-22
Figure 5-22.	Sensor Names Screen .....	5-23
Figure 5-23.	Custom Sensor Names Screen .....	5-24
Figure 5-24.	Auto Enable by Sensor Counter Screen .....	5-24
Figure 5-25.	Sensor Type Screen .....	5-25
Figure 5-26.	Sensor Stop Type Screen .....	5-26
Figure 5-27.	Critical Angle Programming Screen .....	5-27
Figure 5-28.	Ready Signal Programming Screen .....	5-29
Figure 5-29.	Green Special Sensor Stroke Count Screen .....	5-30
Figure 5-30.	Sensor Settings Screen .....	5-31
Figure 5-31.	Sensor Summary Screen .....	5-32
Figure 5-32.	Tool Program Menu with DIPROPAC 1-16 and DIPROPAC 17-32 Items .....	5-33
Figure 5-33.	Die Protection Sensor 17-32 Menu .....	5-33
Figure 5-34.	Sensor Names Screen with Stripper Function Highlighted .....	5-34
Figure 5-35.	Sensor Type Screen with “GREEN” Highlighted .....	5-34
Figure 5-36.	Sensor Stop Type Screen .....	5-35
Figure 5-37.	Sensor Summary Screen Showing Ready Signals for Green Sensors .....	5-35
Figure 5-38.	Sensor Settings Screen .....	5-36
Figure 5-39.	Sensor Names Screen with Slug Detection Function Highlighted .....	5-36
Figure 5-40.	Sensor Type Screen with “GREEN SPECIAL” Highlighted .....	5-37
Figure 5-41.	Sensor Summary Screen Showing Stroke Counts for Green Special Sensors .....	5-37
Figure 5-42.	Sensor Settings Screen .....	5-38
Figure 5-43.	Cam Channel Menu .....	5-39
Figure 5-44.	“Enter Your Password” Screen .....	5-40
Figure 5-45.	Cam Channel Program Type Menu .....	5-40
Figure 5-46.	Cam Channel On/Off Program Screen .....	5-41
Figure 5-47.	Cam Channel On/Off Program Screen: One On/Off Arc .....	5-42
Figure 5-48.	Cam Channel On/Off Program Screen: Two On/Off Arcs .....	5-43
Figure 5-49.	Cam Channel On/Off Program Screen: Three On/Off Arcs .....	5-43
Figure 5-50.	Cam Channel Timed Output Program Screen .....	5-44
Figure 5-51.	Cam Channel DSV On Program Screen .....	5-46
Figure 5-52.	Cam Channel Deletion Confirmation Window .....	5-46
Figure 5-53.	Cam Summary Screen .....	5-47

Figure 5-54.	Global Cam Summary Screen .....	5-48
Figure 5-55.	Tool Information Screen .....	5-48
Figure 5-56.	“Enter Your Password” Screen .....	5-49
Figure 5-57.	Ram Position Screen .....	5-50
Figure 5-58.	“Enter Your Password” Screen .....	5-51
Figure 5-59.	Ram Tonnage Screen (“Distance Only” Option) .....	5-53
Figure 5-60.	“Enter Your Password” Screen .....	5-53
Figure 5-61.	Ram Tonnage Screen (“Pressure or Distance” Option) .....	5-54
Figure 5-62.	Sensor On/Off Status .....	5-55
Figure 5-63.	“Sensor Turned Off” Message .....	5-57
Figure 6-1.	Main Run Menu .....	6-1
Figure 6-2.	No Tool Loaded Warning Window .....	6-3
Figure 6-3.	Main Run Menu, Showing Hot Keys Programmed .....	6-4
Figure 6-4.	Hot Keys Instruction Window .....	6-4
Figure 6-5.	“Enter Your Password” Screen .....	6-5
Figure 6-6.	Display All Errors Message Window .....	6-6
Figure 6-7.	Ram Angle Window Displayed on Main Run Menu .....	6-6
Figure 6-8.	Main Run Menu with SENSORS ENABLED and SENSOR DISABLED Displays .....	6-7
Figure 6-9.	Disable Sensors Confirmation Message .....	6-7
Figure 6-10.	Counters Screen .....	6-9
Figure 6-11.	Counters Screen with “Reload Batch Counters” Function .....	6-9
Figure 6-12.	Die Protection Menu (Run Mode) .....	6-10
Figure 6-13.	Ready Signal Programming Screen .....	6-11
Figure 6-14.	Sensor Status Screen .....	6-14
Figure 6-15.	Main Run Menu with DIPROPAC 1-16 and DIPROPAC 17-32 Items Shown .....	6-15
Figure 6-16.	Die Protection Sensor Menu for Sensors 17-32 .....	6-16
Figure 6-17.	Ready Signal Programming Screen, Run Mode .....	6-16
Figure 6-18.	Green Special Sensor Stroke Count Screen, Run Mode .....	6-17
Figure 6-19.	Cam Switch Menu .....	6-18
Figure 6-20.	Cam Timing Screen .....	6-19
Figure 6-21.	Tool Number Information Screen .....	6-20
Figure 6-22.	Ram Position Screen .....	6-22
Figure 6-23.	Ram Tonnage Screen .....	6-23
Figure 6-24.	Error/Event Log .....	6-25
Figure 6-25.	Tool Manager Screen .....	6-26
Figure 6-26.	Load Tool Warning Window .....	6-27
Figure 6-27.	Messaging Screen: List of Recipients .....	6-28
Figure 6-28.	Messaging Screen: List of Messages .....	6-28
Figure 6-29.	Sample E-mail to Wintriss Tech. Support .....	6-29
Figure 6-30.	Toggle Hot Keys 1 and 2 Menu Items .....	6-30
Figure 7-1.	Error Code Window .....	7-1
Figure 7-2.	Counter Preset Message Window .....	7-1
Figure A-1.	Balluff Linear Transducer Dimensions .....	A-2
Figure A-2.	Balluff Linear Transducer Pinout .....	A-3
Figure B-1.	“PM Monitor” Highlighted on SmartPAC 2 Initialization Menu .....	B-4
Figure B-2.	PM Password Screen .....	B-5
Figure B-3.	PM Password Screen Showing Password Retrieval Number .....	B-6
Figure B-4.	PM Entry Screen .....	B-7
Figure B-5.	Initialize PM Screen .....	B-7
Figure B-6.	Initialize Warning Screen .....	B-8

Figure B-7.	PM Monitor Screen .....	B-9
Figure B-8.	List of Available PM Names Screen .....	B-9
Figure B-9.	Alphanumeric Display Superimposed over PM Names Screen .....	B-10
Figure B-10.	Tracking Units Selection Screen .....	B-10
Figure B-11.	Superimposed Number Display .....	B-11
Figure B-12.	Programmed PM Item: Example .....	B-11
Figure B-13.	“PM Monitor” Highlighted on SmartPAC 2 Run Menu .....	B-12
Figure B-14.	Run Mode Screen Showing PM Monitor in “Normal” Status Mode .....	B-13
Figure B-15.	Run Mode Screen Showing “Slide Adjust Motor” in “Alert” Mode .....	B-14
Figure C-1.	Firmware Load Menu with “XFER FROM USB DISK” Highlighted .....	C-3
Figure C-2.	Firmware Load Menu with “LOAD NEW FIRMWARE” Highlighted .....	C-5
Figure C-3.	Firmware Load Menu with Yellow Status Window .....	C-5
Figure C-4.	SmartPAC 2 Display with “Loading Firmware” Message .....	C-6
Figure C-5.	Firmware Load Menu with “RELOAD CURRENT FIRMWARE” Highlighted .....	C-10
Figure C-6.	Firmware Load Menu with Yellow Status Window .....	C-10
Figure C-7.	SmartPAC 2 Display with “Loading Firmware” Message .....	C-11
Figure D-1.	Internet Explorer Window with “Internet Options” Selected .....	D-6
Figure D-2.	Internet Options Screen .....	D-7
Figure D-3.	Security Tab with “Custom Level” Button .....	D-7
Figure D-4.	SmartView Introductory Page .....	D-8
Figure D-5.	SmartView Setup Page .....	D-8
Figure D-6.	Mabry Winsock ActiveX Control Window .....	D-9
Figure D-7.	SmartView Main Page .....	D-10
Figure D-8.	SmartView Main Page with Status of Multiple Presses Shown .....	D-12
Figure D-9.	Press Status Information Page .....	D-13
Figure D-10.	SmartPAC 2 Remote Message .....	D-14
Figure D-11.	Email Setup Page .....	D-15
Figure D-12.	Mabry Internet Ping Window .....	D-16
Figure D-13.	Ping Utility Window .....	D-16
Figure D-14.	Ping Utility Window with Example of a Successful Ping .....	D-17
Figure D-15.	Ping Utility Window with Examples of Two Unsuccessful Pings .....	D-17
Figure E-1.	Backup/Restore Control Menu .....	E-2
Figure E-2.	SmartPAC 2 AC Wiring (Inside Enclosure, Top Right) .....	E-12
Figure E-3.	Backup/Restore Control Menu with Restore Confirmation Message Displayed .....	E-13
Figure F-1.	SmartPAC 2 PC Board .....	F-3
Figure F-2.	Firmware Load Menu with “RELOAD CURRENT FIRMWARE” Highlighted .....	F-5
Figure G-1.	Forced Idle Dialog Mode Time Line (Downtime Reason Backfilled) .....	G-3
Figure G-2.	Forced Idle Dialog Mode Time Line (Downtime Reason Forward Filled) .....	G-4
Figure G-3.	Forced Error Dialog Mode Time Line .....	G-5
Figure G-4.	SmartPAC 2 Main Initialization Menu .....	G-8
Figure G-5.	Set Communications Menu .....	G-8
Figure G-6.	Dialog Fixed Name Choice Menu .....	G-13
Figure G-7.	Dialog Special Choice Name Menu .....	G-15
Figure G-8.	SmartPAC 2 Run Mode Main Menu with Forced Dialog Message Displayed .....	G-16
Figure G-9.	Dialog Menu (“16/16” Dialog Screen Mode) .....	G-17
Figure G-10.	Dialog Menu (“32 CUSTOM” Dialog Screen Mode) .....	G-17
Figure G-11.	Dialog Menu with F2/F3 Option Window Displayed .....	G-18
Figure G-12.	SmartPAC 2 Run Mode Main Menu with DIALOG MENU Item Selected .....	G-19
Figure G-13.	Security Access Menu with CHANGE COUNT and CHG GOOD PRTS CNT Items Set to “PROGRAM AND RUN MODES” .....	G-22

Figure G-14. Counters Screen with “Scrap Value” Function (F3) Shown .....	G-23
Figure G-15. Counters Screen with Scrap Value Entry Window Displayed (30 Items Shown) .....	G-23
Figure G-16. Counters Screen with Scrap Value Updated to 30 Items .....	G-24
Figure G-17. Counters Screen with Scrap Value Entry Window Displayed (10 Items Shown) .....	G-24
Figure G-18. Counters Screen with Scrap Value Updated to 40 Items .....	G-25
Figure G-19. Good Parts Counter Adjustment Confirmation Window .....	G-26
Figure H-1. Forced Idle Dialog Mode Time Line (Downtime Reason Backfilled) .....	H-3
Figure H-2. Forced Idle Dialog Mode Time Line (Downtime Reason Forward Filled) .....	H-4
Figure H-3. Forced Error Dialog Mode Time Line .....	H-5
Figure H-4. SmartPAC 2 Main Initialization Menu .....	H-7
Figure H-5. Set Communications Menu .....	H-7
Figure H-6. Dialog Fixed Name Choice Menu .....	H-11
Figure H-7. Dialog Special Choice Name Menu .....	H-13
Figure H-8. SmartPAC 2 Run Mode Main Menu with Forced Dialog Message Displayed .....	H-15
Figure H-9. Dialog Menu .....	H-15
Figure H-10. Dialog Menu with F2/F3 Option Window Displayed .....	H-16
Figure H-11. SmartPAC 2 Run Mode Main Menu with DIALOG MENU Item Selected .....	H-17
Figure H-12. Security Access Menu with CHANGE COUNT and CHG GOOD PRTS CNT Items Set to “PROGRAM AND RUN MODES” .....	H-19
Figure H-13. Counters Screen with “Scrap Value” Function (F3) Shown .....	H-20
Figure H-14. Counters Screen with Scrap Value Entry Window Displayed (30 Items Shown) .....	H-20
Figure H-15. Counters Screen with Scrap Value Updated to 30 Items .....	H-21
Figure H-16. Counters Screen with Scrap Value Entry Window Displayed (40 Items Shown) .....	H-22
Figure H-17. Counters Screen with Scrap Value Updated to 40 Items .....	H-22
Figure H-18. Good Parts Counter Adjustment Confirmation Window .....	H-23

## List of Tables

Table 1-1. SmartPAC 2 Hydraulic Specifications .....	1-7
Table 2-1. MTS Linear Transducer Wiring .....	2-14
Table 2-2. Pressure Transducer Wiring .....	2-16
Table 2-3. DC Power Wiring: .....	2-16
Table 2-4. Stop Circuit Wiring Connections: TB102 .....	2-19
Table 2-5. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 Wiring, Sensors 1-8 .....	2-25
Table 2-6. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 Wiring, Sensors 9-16 .....	2-26
Table 2-7. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 Wiring, Sensors 17-24 .....	2-26
Table 2-8. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 Wiring, Sensors 25-32 .....	2-27
Table 2-9. ProCamPAC Linear to Cam Output Assembly TB301 Wiring, Cams 1-8 .....	2-31
Table 2-10. ProCamPAC Linear to Cam Output Assembly TB301 Wiring, Cams 9-15 .....	2-31
Table 2-11. Connections to Relays .....	2-32
Table 2-12. Cam Channels 1 and 2: On and Off Angles .....	2-39
Table 2-13. Stop and Input Check Circuit (TB102) Wiring .....	2-41
Table 2-14. SFI Port (1) and Module Port (2) (TB103) Wiring .....	2-41
Table 2-15. Special Port (3) and PACNet Port (4) (TB104) Wiring .....	2-41
Table 2-16. Spare 1 Port (5) and WPC Port (6) (TB105) Wiring .....	2-41
Table 2-17. Spare 3 Port (7) and Spare 4 Port (8) (TB106) Wiring .....	2-42
Table 2-18. Aux I/O (TB107) Wiring .....	2-42
Table 3-1. Number Key Functions .....	3-4

Table 3-2.	Initialization, Program and Run Modes: Entry and Exit Procedures .....	3-16
Table 4-1.	Instructions for Entering and Exiting Initialization Mode .....	4-2
Table 4-2.	Numeric and Alphanumeric Tool Number Modes .....	4-4
Table 4-3.	Linear Sensor Setup Screen Field Definitions .....	4-16
Table 4-4.	Tool Information Setup Screen: Abbreviations for Units .....	4-21
Table 4-5.	Tool Information Setup Screen: Decimal Places and Formats .....	4-22
Table 4-6.	Security Access Settings .....	4-24
Table 4-7.	Setup E-mail Items .....	4-35
Table 5-1.	Instructions for Entering and Exiting Program Mode .....	5-2
Table 5-2.	Additional On/Off Settings, 8-channel ProCamPAC: Examples .....	5-42
Table 6-1.	Instructions for Entering and Exiting Run Mode .....	6-2
Table 7-1.	Communication Errors: SmartPAC 2 Option Identified by Address Number .....	7-7
Table A-1.	Balluff Linear Transducer: Number of Mounting Feet .....	A-1
Table A-2.	Balluff Linear Transducer Wiring .....	A-4
Table B-1.	Preventive Maintenance Items .....	B-3
Table B-2.	PM Tracking Units .....	B-3
Table C-1.	Record of Current Counts .....	C-2
Table C-2.	Record of Linear Sensor Initialization Settings .....	C-3
Table D-1.	SmartPAC 2 Board: PS 2 and Y-Cable Configuration .....	D-4
Table E-1.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Main Power .....	E-6
Table E-2.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Zero Cam .....	E-6
Table E-3.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Input Check, E-Stop, and Top Stop ..	E-6
Table E-4.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Resolver Port .....	E-7
Table E-5.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Position Sensor (If Used) .....	E-7
Table E-6.	SmartPAC 1 to SmartPAC 2 Wiring Changes: DiProPAC, 8-Channel .....	E-7
Table E-7.	SmartPAC 1 to SmartPAC 2 Wiring Changes: DiProPAC, 16-Channel .....	E-8
Table E-8.	SmartPAC 1 to SmartPAC 2 Wiring Changes: ProCamPAC, 8-Channel .....	E-8
Table E-9.	SmartPAC 1 to SmartPAC 2 Wiring Changes: ProCamPAC, 16-Channel .....	E-9
Table E-10.	SmartPAC 1 to SmartPAC 2 Wiring Changes: WPC Port (Integration Only) .....	E-9
Table E-11.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Remote Dual Op. Station Select (Optional Remote Switch) .....	E-10
Table E-12.	SmartPAC 1 to SmartPAC 2 Wiring Changes: WPC Adjustment Lockout Switch (Optional) .....	E-10
Table E-13.	SmartPAC 1 to SmartPAC 2 Wiring Changes: Remote Reset (Optional) .....	E-10
Table E-14.	SmartPAC 1 to SmartPAC 2 Wiring Changes: AutoSetPAC/WaveFormPAC, 2 or 4 Channel (Integration Only) .....	E-10
Table E-15.	SmartPAC 1 to SmartPAC 2 Wiring Changes: SFI (Optional) .....	E-11
Table E-16.	SmartPAC 1 to SmartPAC 2 Wiring Changes: MultiPAC (Special Port - Optional)	E-11
Table G-1.	Set Communications Menu Settings .....	G-9
Table H-1.	Set Communications Menu Settings .....	H-8

# How To Use This Manual

This manual shows you how to install, set up, program, operate, and troubleshoot SmartPAC 2 Hydraulic including the optional DiProPAC and ProCamPAC modules.

Chapter 1 provides an overview of the operation and features of SmartPAC 2 Hydraulic.

Chapter 2 shows you how to install SmartPAC 2 Hydraulic.

Chapter 3 shows you how to use the SmartPAC 2 displays and keyboard.

Chapter 4 shows you how to use SmartPAC 2 Hydraulic in Initialization mode, which is the mode you select to make settings that apply to SmartPAC 2 Hydraulic operation for all tools.

Chapter 5 shows you how to use SmartPAC 2 Hydraulic in Program mode, which is the mode you select to program settings that apply to SmartPAC 2 Hydraulic operation for individual tools.

Chapters 6 shows you how to use SmartPAC 2 Hydraulic 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 2 front panel when a fault condition occurs or a counter preset is reached, and shows you how to correct SmartPAC 2 Hydraulic faults.

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

Appendix B shows you how to use the optional PM (Preventative Maintenance) Monitor available with SmartPAC 2.

Appendix C shows you how to upgrade SmartPAC 2 firmware.

Appendix D shows you how to install and use the SmartView remote viewing utility.

Appendix E provides instructions in upgrading from an original SmartPAC to a SmartPAC 2.

Appendix F shows you how to install a replacement SmartPAC 2 board.

Appendix G shows you how to report downtime and scrap to Wintriss's ShopFloorConnect Asset Utilization Software (SFC).

Appendix H shows you how to report downtime and scrap to Wintriss's Line Efficiency Tracking Software (LETS).

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

Setup sheets at the back of the manual provide forms on which you can maintain a record of Initialization and Program settings for your SmartPAC 2 Hydraulic.

Wiring diagrams (Figures 1 through 8) following the Setup sheets provide wiring connections for SmartPAC 2 Hydraulic, DiProPAC, ProCamPAC, and the SmartPAC 2 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 symbol 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 (LETS/SFC and SBR), 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>

SMARTPAC 2 HYDRAULIC

USER MANUAL

1129900

©2015 Wintriss Controls Group, LLC





# Chapter 1. Introduction

---

SmartPAC 2 Hydraulic is a smart modular interface for multiple press automation functions. With the same user interface as SmartPAC 2, which is widely used on standard mechanical presses, SmartPAC 2 Hydraulic 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 5-50) 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 2 Hydraulic to work correctly.

Every SmartPAC 2 Hydraulic provides a magnetostrictive position transducer, eight-channel programmable cam switch, and extensive counter capabilities. SmartPAC 2 Hydraulic 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 2 Hydraulic is microprocessor-based, it can monitor or control all these different functions during a press stroke. Additionally, it saves these settings for up to 200 tools.

SmartPAC 2 Hydraulic features a large, bright color display, a numeric keypad, and easy-to-use keys to program and run your press. SmartPAC 2 Hydraulic can be connected to a computer network, enabling press operation to be monitored remotely and e-mail messages to be sent from the SmartPAC 2 Hydraulic control.

SmartPAC 2 Hydraulic can be configured with the following options:

- Return-on-pressure capability
- Up to 32-sensor die protection system
- Up to 15-channel programmable cam switch
- Two- or four-input load monitoring
- Servofeed interface
- Preventive maintenance monitor

In addition, SmartPAC 2 Hydraulic can be linked to Wintriss’s ShopFloorConnect Asset Utilization Software (SFC) or Line Efficiency Tracking Software (LETS) for data collection, analysis and reporting.

## 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.

## SmartPAC 2 Hydraulic Standard Features

SmartPAC 2 Hydraulic 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 2's keyboard and large, bright, color display
- All tool programming is automatically saved in SmartPAC 2's non-volatile memory. To use the same settings when you run the job again, simply re-load your stored tool number. SmartPAC 2 can save settings for up to 200 tools.
- SmartPAC 2 Hydraulic's programmable cam switch provides cam timings for upper limit, lower limit, speed changes, feeder signals and other hydraulic press equipment, including global cams for press operation functions and multiple on-off cycles.
- Fault messages appear on the SmartPAC 2 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 2 Hydraulic 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 2.
- SmartPAC 2 Hydraulic 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 2 Hydraulic Options

When configured with the DiProPAC option, SmartPAC 2 Hydraulic 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 2 Hydraulic option, enables die setup sheets and other plant-specific press information to be displayed on the SmartPAC 2 screen. This option allows you to store information needed throughout the plant on a central server, where it is available to operators via SmartPAC 2's Ethernet connectivity. In order to make use of Info Center functionality, SmartView (see Appendix D) must be installed. Documentation of the Info Center option is available at

[www.smartpac2.com/SmartView/InfoCenterSetupHelp.htm](http://www.smartpac2.com/SmartView/InfoCenterSetupHelp.htm)

## SmartPAC 2 Hydraulic Front Panel

Programming and operation of SmartPAC 2 Hydraulic is accomplished via the SmartPAC 2 Hydraulic front panel, which is shown in Figure 1-1. A brief description of each panel component is provided below.

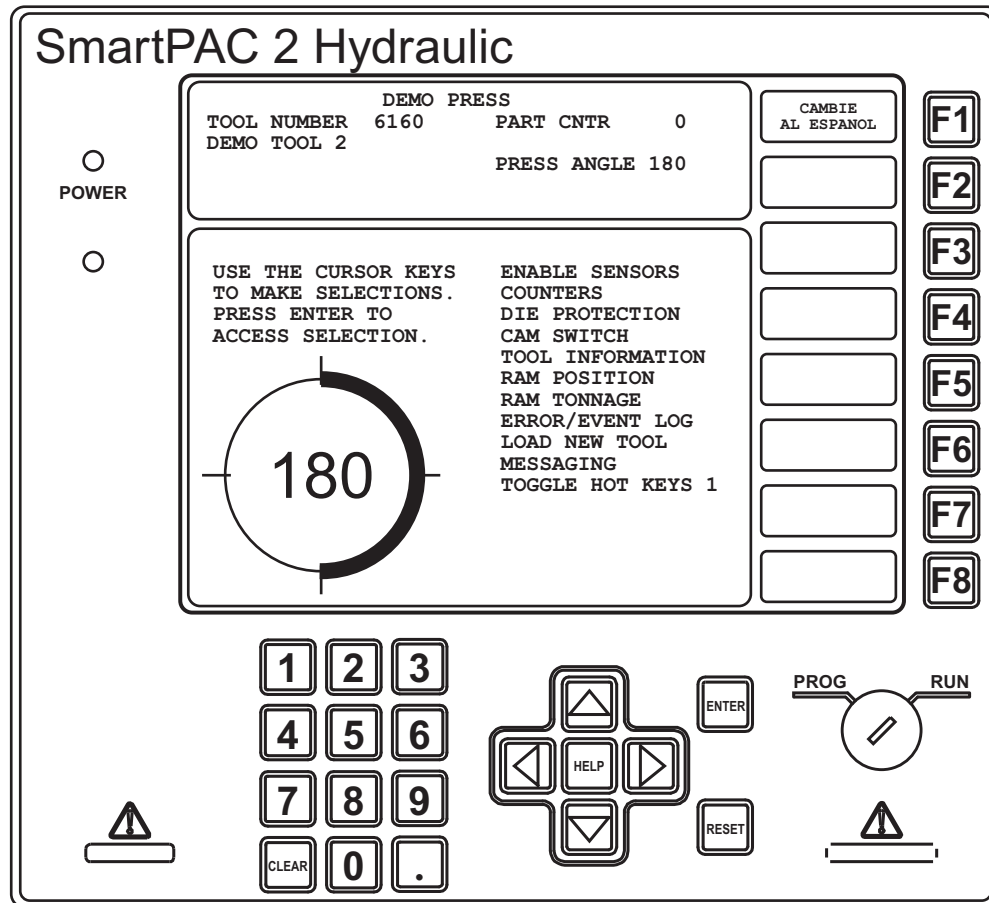


Figure 1-1. SmartPAC 2 Hydraulic Front Panel

### Display

Used with the keyboard to make and adjust settings, load tool numbers, and view diagnostic messages. The display, which measures 10.4 in. (264 mm) diagonally, is a color liquid crystal display (LCD).

### Program/Run key switch

Allows Program mode to be locked so settings cannot be changed by the press operator. Key must be set to “Run” to operate the press. Minor adjustments, including loading an existing tool, can be made in Run mode.

### Keyboard

Consists of cursor keys and a numeric keypad (described below) that are used with the display to make settings.

<b>Cursor keys</b>	Enable you to select a display item with the highlight bar. Also allow you to select alphabetic characters and special symbols when naming the press, tools, cam channels, and sensors. Additional functions are described in Chapter 3 (see page 3-5).
<b>Number keys</b>	Enable you to input numeric values such as counter presets or tool numbers
<b>Function keys</b>	Eight keys labelled “F1” to “F8” that perform specific tasks. Functions performed by pressing the key are displayed to the left of the key label. Function keys can also be programmed as “Hot keys” that take the user directly to desired screens.
<b>HELP key</b>	Enables you to access a help screen that provides information about the display you are looking at.
<b>ENTER key</b>	When you press this key, SmartPAC 2 accepts the menu item you have selected or the number you have keyed in.
<b>RESET key</b>	You press this key when you are done with a programming or other procedure. Also resets SmartPAC 2 after fault or event messages appear on the display.

Detailed instructions on how to use the keyboard and display are provided in Chapter 3.

## SmartPAC 2 Hydraulic Operation

SmartPAC 2 Hydraulic is connected to a transducer mounted on the press, which reads the ram position. As the transducer moves up and down, its signals are interpreted by SmartPAC 2 Hydraulic’s electronics to determine the correct ram angle at every point in the stroke. SmartPAC 2 Hydraulic 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 2 Hydraulic Settings

You can make the following settings, using the keys on the SmartPAC 2 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 2 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 2 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 2'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 2 Hydraulic setup, you can require a special password for access to the Main Initialization Menu.
- **Set counters.** SmartPAC 2 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 2.** You reset SmartPAC 2 whenever the press is stopped because of a malfunction. The malfunction is described in a fault message, which displays on the SmartPAC 2 Hydraulic 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 2'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 2 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 2 Hydraulic as long as it can switch between an open state (i.e., sensor circuit to SmartPAC 2 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 2 Hydraulic, contact Wintriss Controls.

Wintriss makes or sells a wide range of sensors. Those that can be used with SmartPAC 2 Hydraulic 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 2 Hydraulic's programmable cam switch to control auxiliary functions only. The SmartPAC 2 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 2 Hydraulic 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 2 Hydraulic 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 2's Three Modes of Operation

SmartPAC 2 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 2 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 2 Hydraulic 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. Run mode is discussed in Chapter 6.

## SmartPAC 2 Hydraulic Specifications

SmartPAC 2 Hydraulic specifications are shown in Table 1-1.

*Table 1-1. SmartPAC 2 Hydraulic Specifications*

<b>Equipment</b>	Main enclosure: 12.76 x 11.53 x 5.28 in. (324 x 293 x 134 mm), NEMA 12, shock mounted. Weight: 17.4 lbs. Panel mount: 12.3 x 11.3 in. (312 x 287 mm) 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
<b>Electrical</b>	Input: 115/230 $\pm$ 10% Vac 50/60 Hz, 50 VA
<b>Oper. Temp.</b>	32° to 122° F (0° to 50° C)
<b>Speed</b>	300 SPM maximum
<b>Accuracy</b>	$\pm$ 2/3°
<b>Counters</b>	Good parts, strokes, 3 batch with presets (7 digits) Number-of-hits-on-tool counter: counts all hits on tool; resettable to 0 after maintenance
<b>Display</b>	10.4 in. (264 mm) color active matrix TFT liquid crystal display (LCD) Power LED
<b>Memory</b>	Allows storage of settings for 200 tools
<b>Inputs/Outputs</b>	Inputs for position transducer, remote reset, and setup mode and for USB, PS/2 and Ethernet RJ-45 connectors  Outputs for Emergency Return (top stop) and emergency stop: ratings 0-4 A resistive @ 120V max (AC or DC); Normally open–Held closed. Fault condition or power off opens relay(s)



Table 1-1. SmartPAC 2 Hydraulic Specifications (Cont.)

<b>Communications</b>	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.
<b>Standard Features</b>	<p><b>ProCamPAC</b> provides up to 8 programmable cam switch output channels (up to 15 channels with ProCamPAC 15 option)</p> <p>Programmable cam output assembly: NEMA 12, holds up to 8 outputs  Enclosure: 9 x 11 x 3.5 in. (229 x 279 x 89 mm) shock-mounted  Relay SPDT 0-3 A resistive @ 240V  DC solid state SPST 2A @ 5-60 VDC  AC solid state SPST 1A @ 70-250 Vac</p>
<b>Options</b>	<p><b>DiProPAC</b> provides up to 32 die protection sensor inputs</p> <p>Power for electronic sensors (NPN only): 15 VDC min., 100 mA total  DiPro Sensor Interface, DSI 2*: 5.88 x 5.41 x 3.42 in. (149 x 137 x 87 mm)  DiProPAC sensor-disabled output: open collector, 8 mA max.</p> <p><b>AutoSetPAC*</b> 10.25 x 12 x 4 in. (260 x 305 x 102 mm)</p> <p>2 or 4 strain link inputs  Ability to store high, low, and repeatability setpoints with tool number  Displays, adjusts, recalculates “auto” setpoints and displays actual load  Displays and saves load signatures</p> <p><b>SFI*</b> ServoFeed Interface integrates servofeed</p> <p><b>SBR</b> Provides capability to back up tool settings to a Windows laptop PC. Requires purchase of SBR software.</p> <p><b>USB Disk Backup</b> Enables backup of programmed tool settings to USB disk</p> <p><b>Info Center</b> With this option Setup sheets and other press information stored on a central server can be displayed on networked SmartPAC 2s</p> <p><b>Bilingual*</b> (English/Spanish) status/adjust menus</p> <p><b>Preventive Maintenance (PM) Monitor</b> Tracks selected press functions requiring scheduled maintenance and alerts the user when maintenance is due</p> <p><b>PLC Interface</b> Enables SmartPAC 2 to transmit additional tool settings to a Programmable Logic Controller for press automation and auxiliary functions</p> <p><b>ShopFloorConnect Asset Utilization Software (SFC) or Line Efficiency Tracking Software (LETS)</b> Provides capability for production information from SmartPAC 2 to be downloaded to SFC or LETS data collection software for generation of OEE and other reports. Requires purchase of SFC or LETS software.</p> <p><b>3rd Party Comms</b> This option allows SmartPAC 2 to transmit real-time and status information to external software for reporting and other tasks</p>

\* Consult product user manual. DSI 2: #1121900; AutoSetPAC: #1101600; SFI: #1102500; Bilingual (English/Spanish): #1130600.

# 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 2 Hydraulic’s programmable cam switch to control auxiliary functions only. The SmartPAC 2 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 2 Hydraulic, 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 2 Hydraulic 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.

## **NOTICE**

### **UPGRADING FROM ORIGINAL SMARTPAC**

See Appendix E for instructions on upgrading from original SmartPAC to SmartPAC 2.

## Before You Start

### NOTICE

#### READ INSTALLATION INSTRUCTIONS BEFORE STARTING INSTALLATION

If you install SmartPAC 2 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 2 HYDRAULIC BEFORE INSTALLING ON A PRESS

If you have not used SmartPAC 2 Hydraulic before, learn how to initialize and program it before installing it on a press. On the bench, wire the linear transducer to SmartPAC 2 Hydraulic (see page 2-11), connect the transducer to a DC power source (see page 2-16), and wire AC power (see page 2-17). You can then access all the menus and make settings. See Chapter 3 for instructions on using the keyboard and displays, 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 2 Hydraulic and some of its options. It is organized in the following sections:

- *Installation Guidelines*, page 2-3
- *Connecting Wires to Terminal Block Connectors*, page 2-5
- *Terminating Cable Shields*, page 2-5
- *Checking the Press*, page 2-6
- *Mounting the SmartPAC 2 Control Enclosure*, page 2-7
- *Installing SmartPAC 2 as a Panel Mount*, page 2-8
- *Installing the MTS Linear Transducer*, page 2-10
- *Installing the Optional Pressure Transducer*, page 2-14
- *Wiring DC Power*, page 2-16
- *Connecting AC Wiring*, page 2-17
- *Connecting Stop Circuits*, page 2-18
- *Connecting to Network*, page 2-20
- *Replacing ProCamPAC*, page 2-20
- *Adding or Upgrading DiProPAC*, page 2-22
- *Connecting DiPro Sensor Interface to SmartPAC 2*, page 2-25
- *Connecting Programmable Cam Channels*, page 2-27
- *Turning on Power to SmartPAC 2 Hydraulic*, page 2-35
- *Verifying Installation of DiProPAC and ProCamPAC*, page 2-37
- *Final Checkout*, page 2-38
- *Wiring Setup Mode Circuit*, page 2-34
- *Wiring a Remote Reset Switch (Optional)*, page 2-34
- *Wiring a Sensor-Disabled Output (Optional)*, page 2-35
- *Wiring a Press-in-Motion Signal (Optional)*, page 2-35
- *Wiring Tables for SmartPAC 2 Hydraulic Options*, page 2-41

## Installation Guidelines

Observe the following guidelines when installing SmartPAC 2 Hydraulic, referring to Figure 2-1, page 2-4 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 2 enclosure. Run one or two low voltage conduits for the transducer and communications control wires into the lower left-hand corner of SmartPAC 2 Hydraulic. 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 2 Hydraulic should be run separately from the DC control wires going to the ProCamPAC Output Assembly. Never use the SmartPAC 2 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 2 is connected to a ServoFeed Interface (SFI™), AutoSetPAC, RamPAC, SBR, LETS/SFC, or other equipment.

- Provide NEMA 12 conduit and connections

Because SmartPAC 2 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 2

The ground wire from SmartPAC 2 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 2-5).

- Install suppressors across inductive loads

All relays, solenoids, or other inductive loads that are controlled by SmartPAC 2 must be suppressed. Suppressors should be installed across the load and as close to the load as possible. See Figure 2-16, page 2-33. 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.

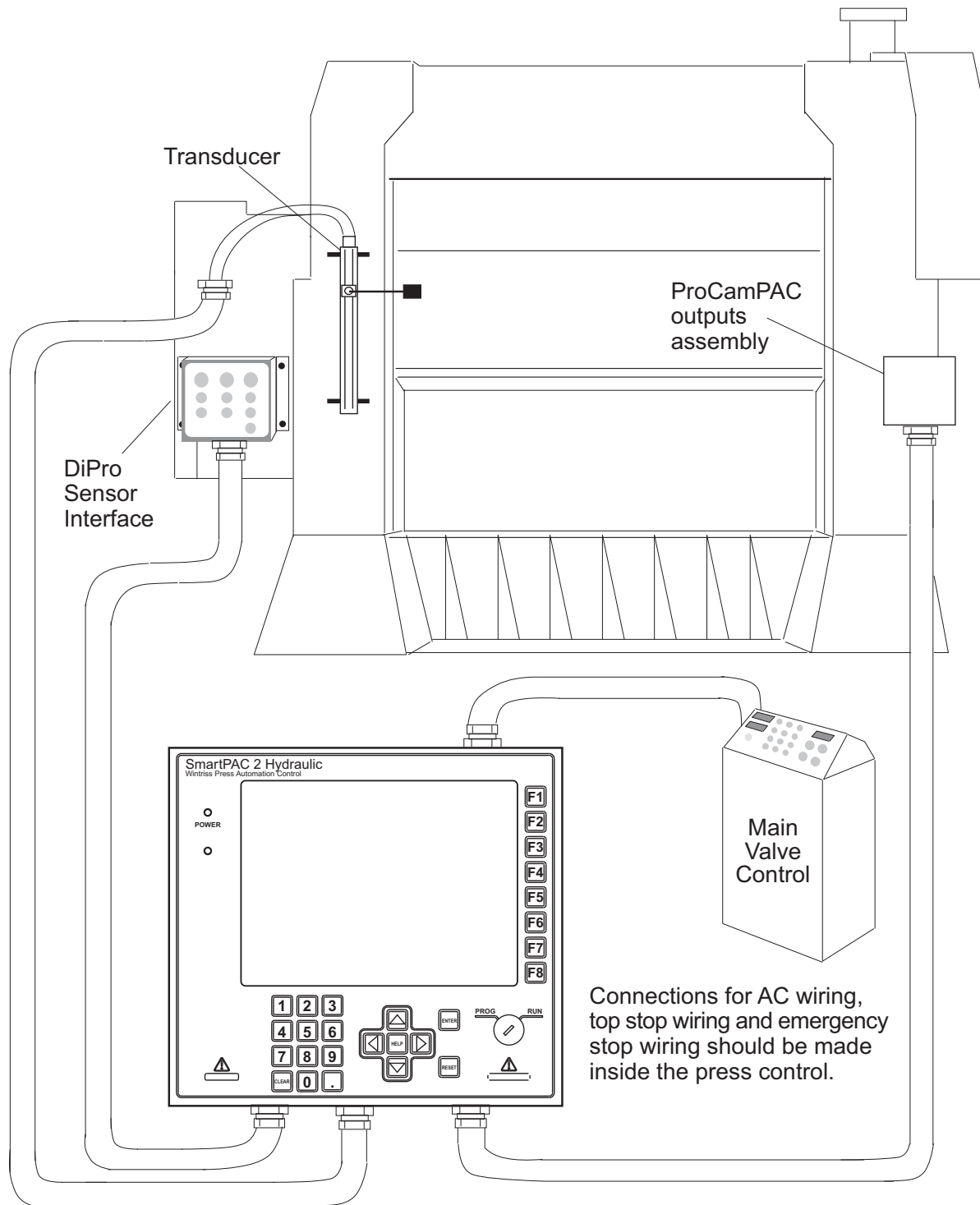


Figure 2-1. Installation Overview

## Connecting Wires to Terminal Block Connectors

### NOTICE

#### CONNECTOR WIRING

The connector can plug into the receptacle on the PC 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.

Connect wires to terminal block connectors as follows:

1. To connect a wire, find the correct terminal and loosen the screw over it by turning it counterclockwise (see Figure 2-2).
2. Strip the correct wire for this terminal 1/4 in. (6.4 mm) from end.
3. Insert bare wire into the terminal 90% of the way. Tighten the screw. The metal tooth inside will clamp down on the bare wire for a tight connection. Make sure that the metal tooth is clamped down on the bare part of the wire, not on the insulation.
4. Connect all wires. Double-check connections when done.
5. Plug the connector firmly into the receptacle on the PC board. The connector can fit into the receptacle in only one direction.

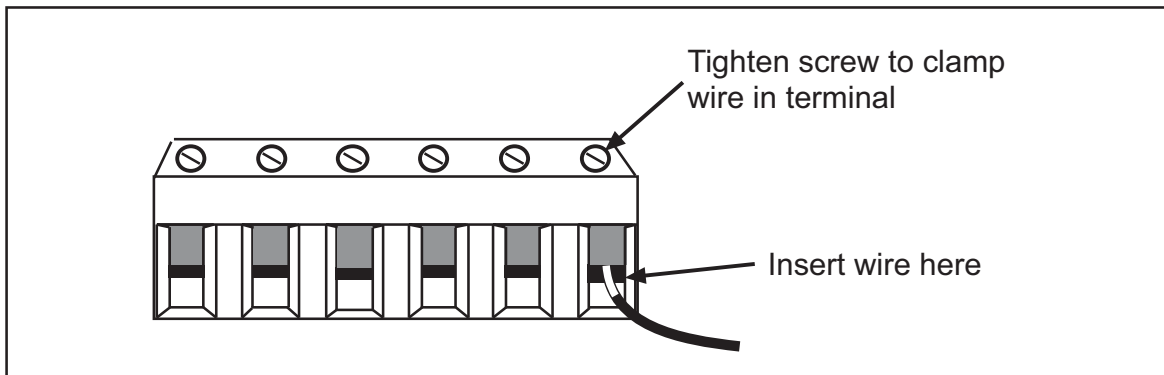


Figure 2-2. Attaching Wires to Connector

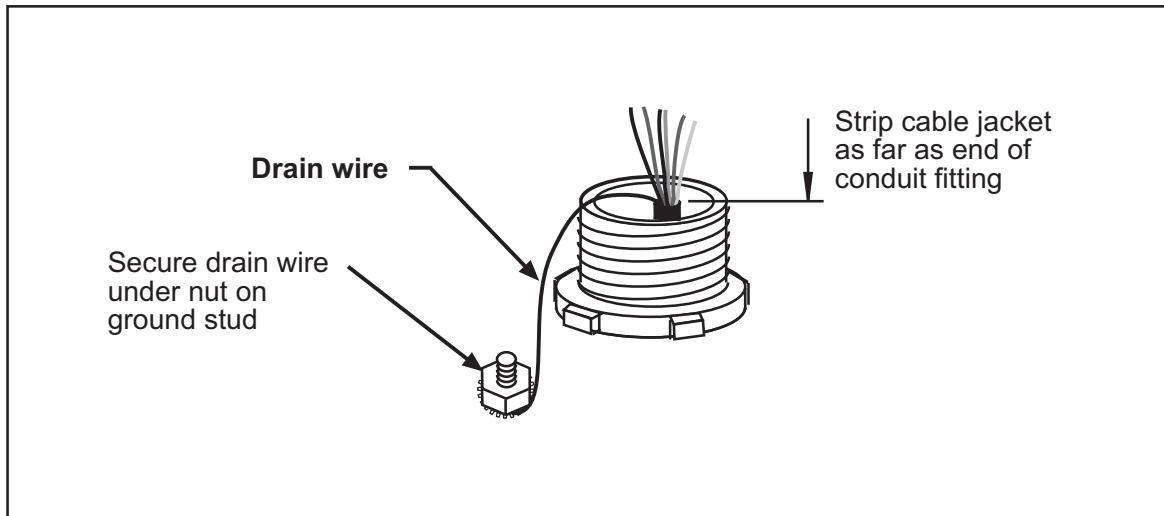
## Terminating Cable Shields

### NOTICE

#### TERMINATE BOTH ENDS OF SHIELD

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

Your SmartPAC 2 Hydraulic has ground studs on the inside of the enclosure for terminating cable shields at their point of entry.



*Figure 2-3. Connecting Shield Drain Wire to Ground Stud*

For each shielded cable, perform the following steps, referring to Figure 2-3.

1. Strip the cable jacket as far as the end of the conduit fitting.
2. Cut the drain wire to a length that allows it to wrap at least once around the nearest grounding stud. Loosen the nut on the stud, wrap the drain wire clockwise around the stud, and tighten down the nut.
3. Connect the rest of the wires in the cable to the terminal block.

## Checking the Press

Before starting the installation, remove the die from the press and run the press in all its operating modes—Jog, Run, 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 2 Hydraulic will be connected to the press stop circuits. Do not forget to mark on your electrical prints where you connect SmartPAC 2. Move the press ram to its programmed Upper Limit (see page 5-50).

## Mounting the SmartPAC 2 Control Enclosure

### NOTICE

If your SmartPAC 2 Hydraulic is a panel mount version, go to the next section, page 2-8, for mounting instructions.

### NOTICE

#### PLACE SMARTPAC 2 AT A CONVENIENT HEIGHT

SmartPAC 2 Hydraulic 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 2 enclosure, follow the steps below, referring to Figure 2-4.

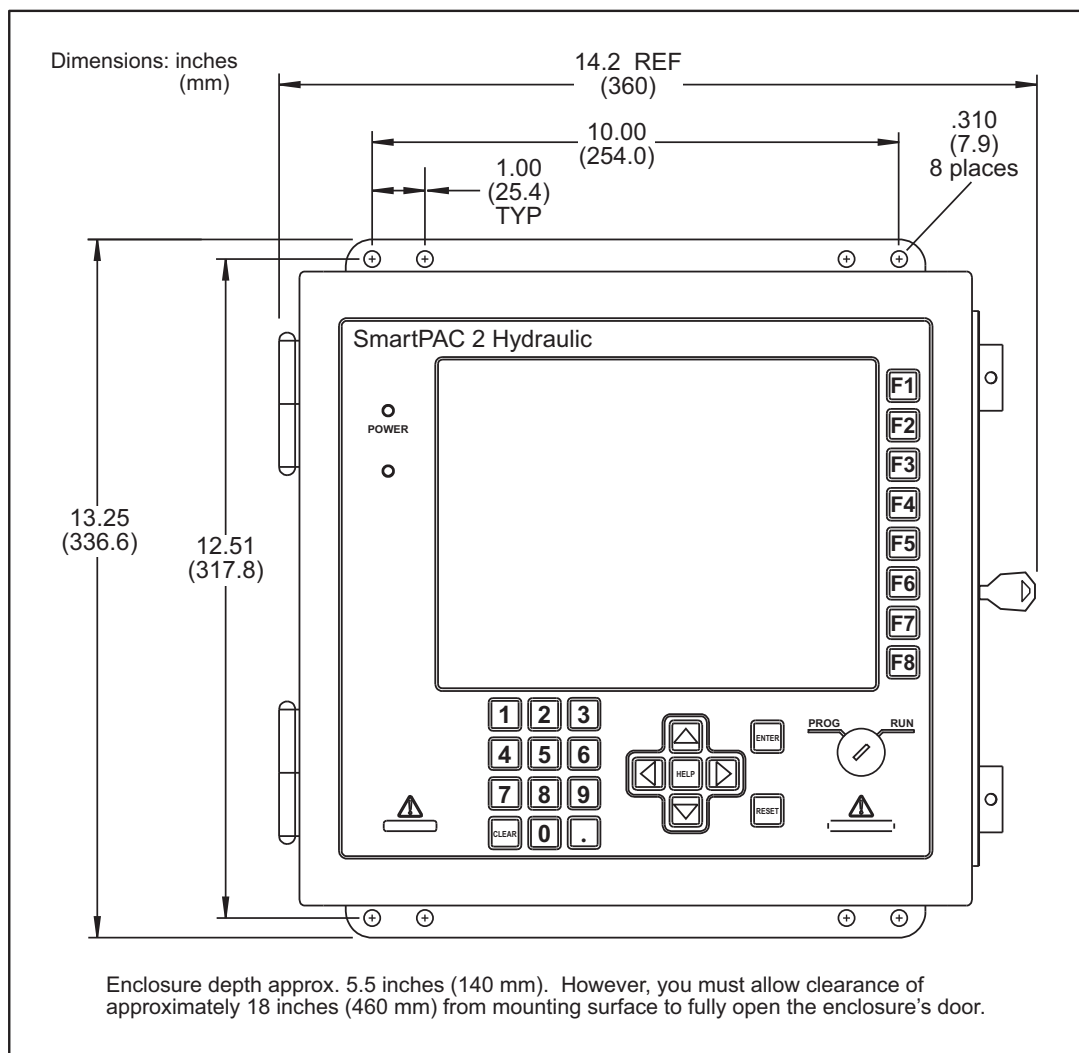


Figure 2-4. SmartPAC 2 Hydraulic Mounting Dimensions: Enclosure

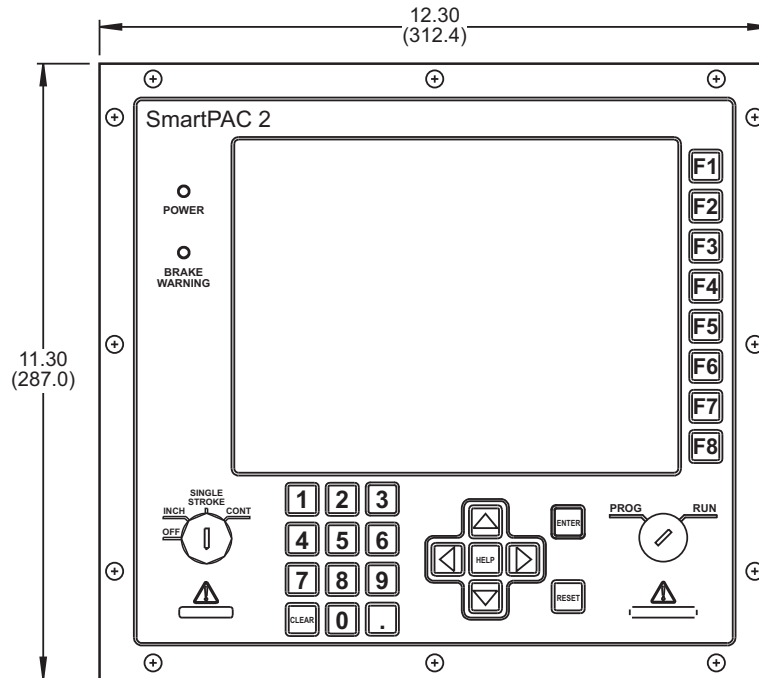


1. Determine a convenient location for the enclosure. Ideally, the enclosure should be mounted where operators and setup personnel can easily see the readouts and reach the keyboard. Make sure that all cables can reach the enclosure. Leave enough room to open the door at least 120°. The enclosure can 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 2 as a Panel Mount

If you have received the panel-mount configuration of SmartPAC 2 Hydraulic, 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 2 Hydraulic. Ideally, SmartPAC 2 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 2-5, page 2-9 for mounting and “cutout” 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 page 2-38), install the panel mount in your enclosure or console, using twelve #10-32 screws.



NOTE:  
SmartPAC and SmartPAC 2  
both use the same size cutout:  
9.5 x 11 inches. The top 9 holes  
are in the same location.

If you are replacing a SmartPAC  
with a SmartPAC 2, drill three  
additional holes at the locations  
shown for the bottom three holes.

Allow 6 inches (153 mm)  
minimum clearance behind  
the panel

Dimensions:  
Inches (mm)

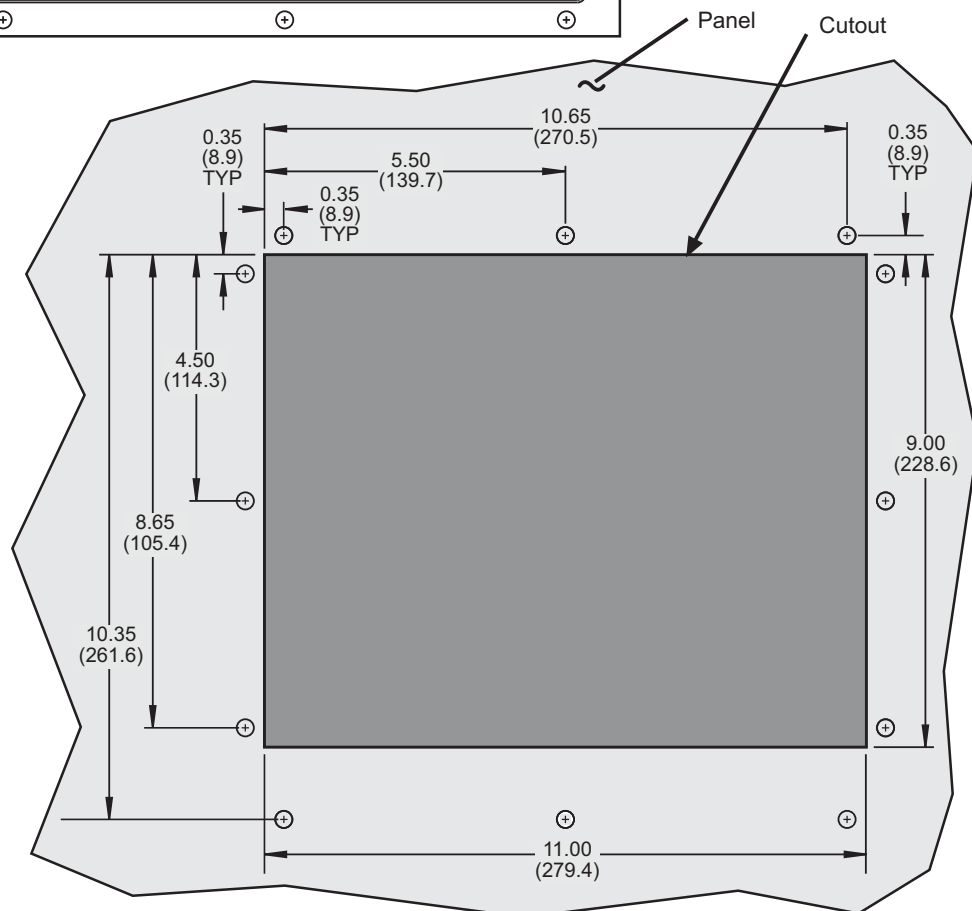


Figure 2-5. SmartPAC 2 Hydraulic Mounting and Cutout Dimensions: Panel Mount

## Installing the MTS Linear Transducer

Make sure to install a magnetostrictive linear transducer (see page 1-4 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. If you have ordered a Balluff rather than an MTS transducer, refer to Appendix A for installation instructions.

### CAUTION

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 hydraulic 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 2-4 for suggested mounting location and Figure 2-6, page 2-11 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.

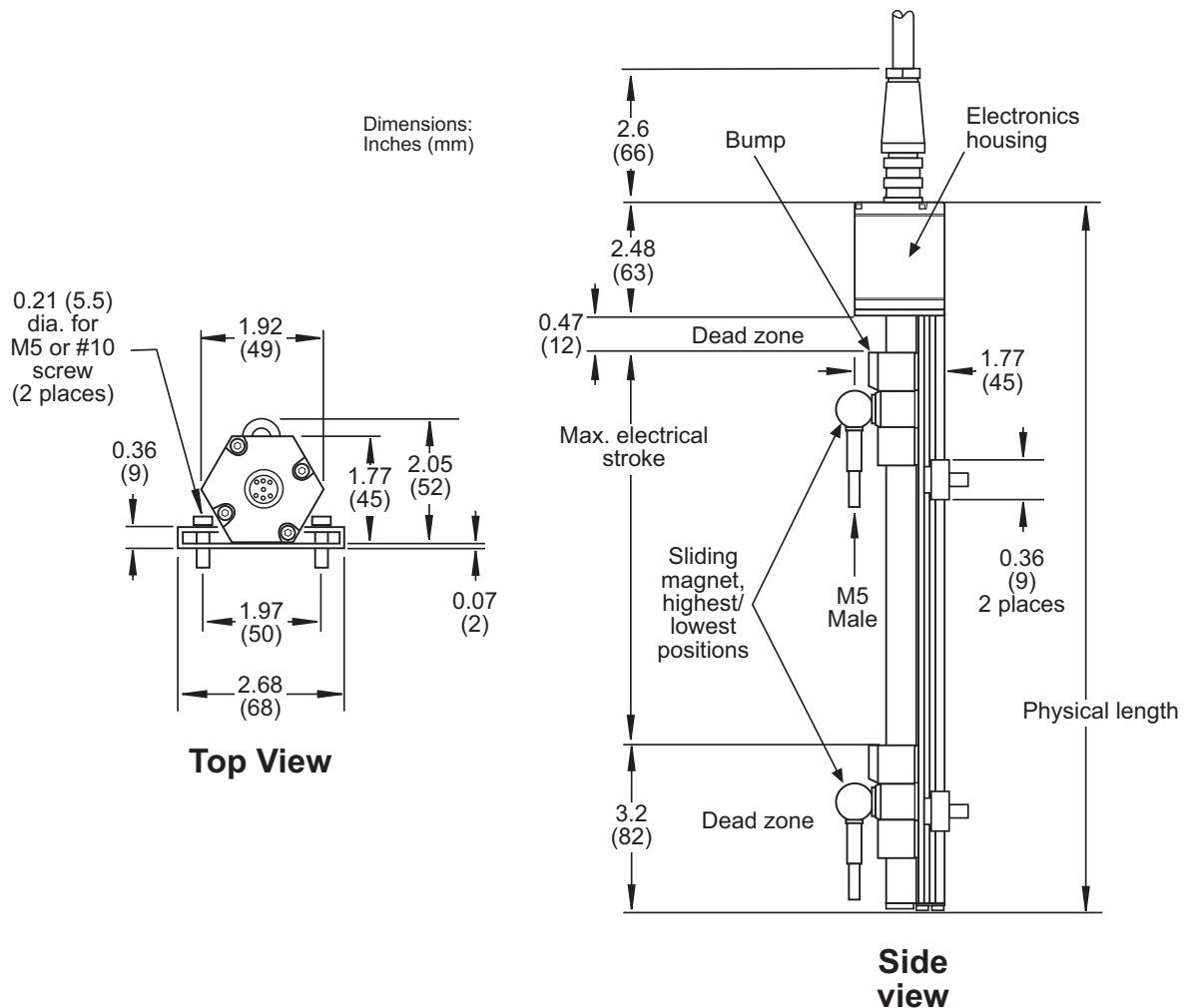
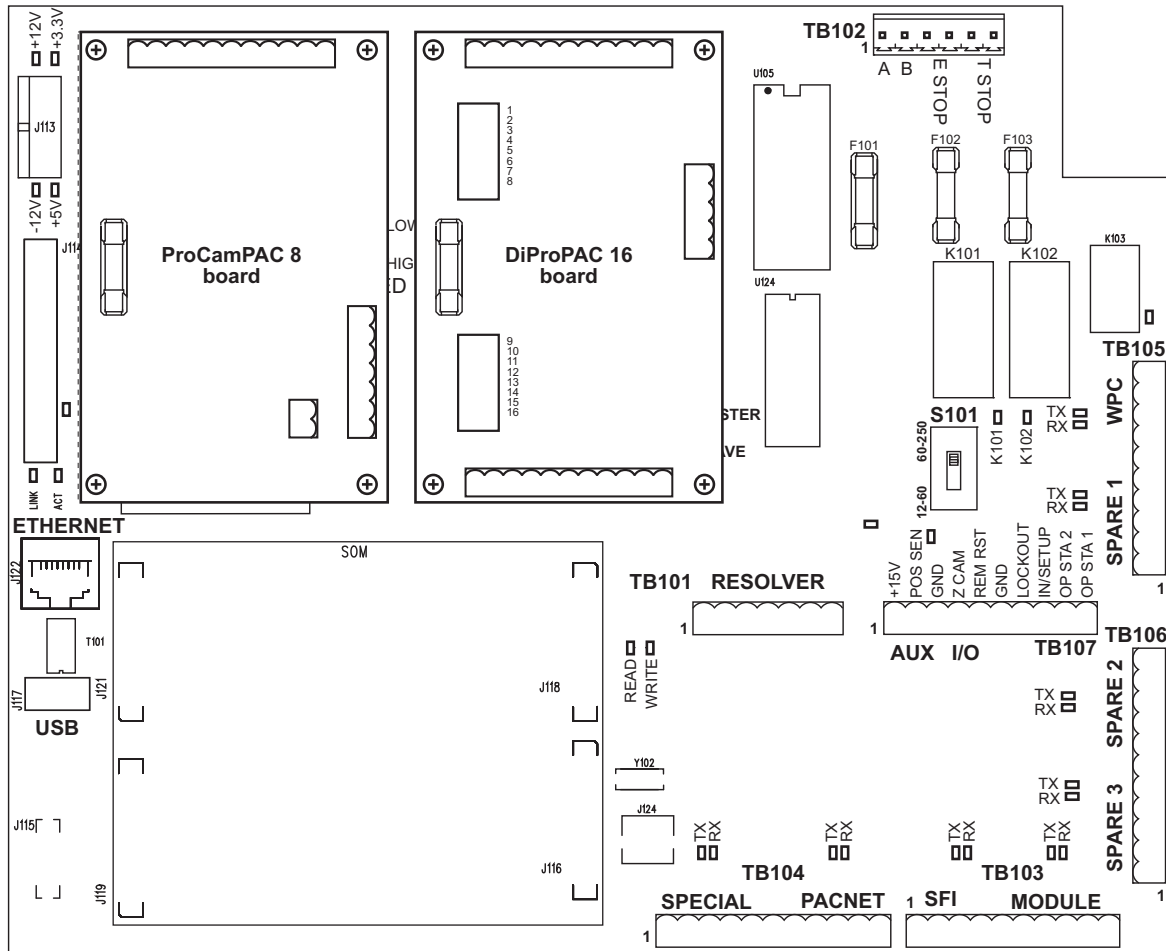


Figure 2-6. MTS Linear Transducer Dimensions

## Wiring the Transducer

To wire the transducer to the SmartPAC 2 Hydraulic 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 2 enclosure.
3. Measure and cut the transducer wires so they comfortably reach TB402 on the ProCamPAC board. See Figure 2-7, page 2-12, below, for the location of the ProCamPAC board on the SmartPAC 2 Hydraulic board and Figure 2-8, page 2-13 for the location of TB402 on the ProCamPAC board.



*Figure 2-7. SmartPAC 2 Hydraulic Board with ProCamPAC and DiProPAC Boards Installed*

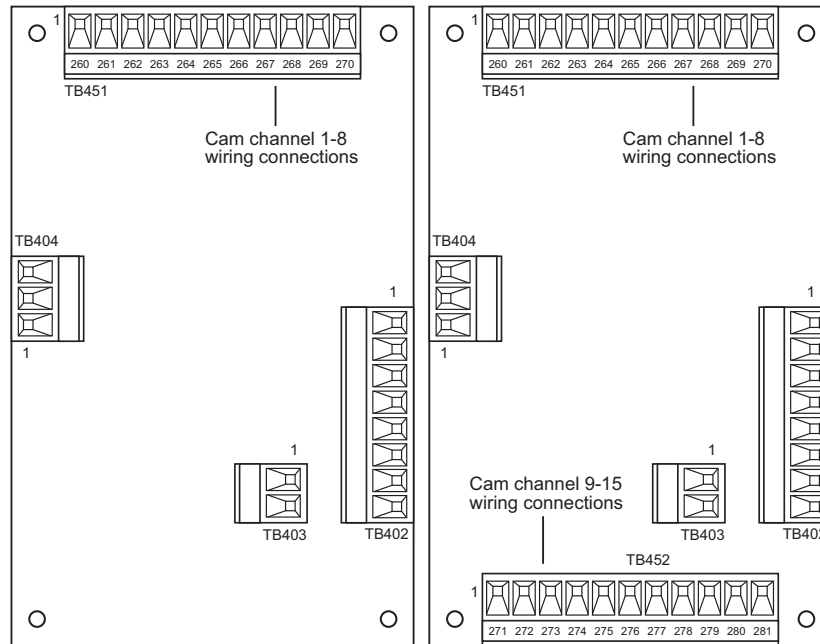


Figure 2-8. ProCamPAC Linear Boards, Location of Components:  
8-Channel (Left), 15-Channel (Right)

4. Unplug the connector from TB402, and attach transducer wires as shown in Figure 2-9 and Table 2-1, page 2-14, and Figure 1 (8-channel ProCamPAC) or 2 (15-channel ProCamPAC) at the back of the manual. Refer to *Connecting Wires to Terminal Block Connectors*, page 2-5 if you need additional help.

### 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.

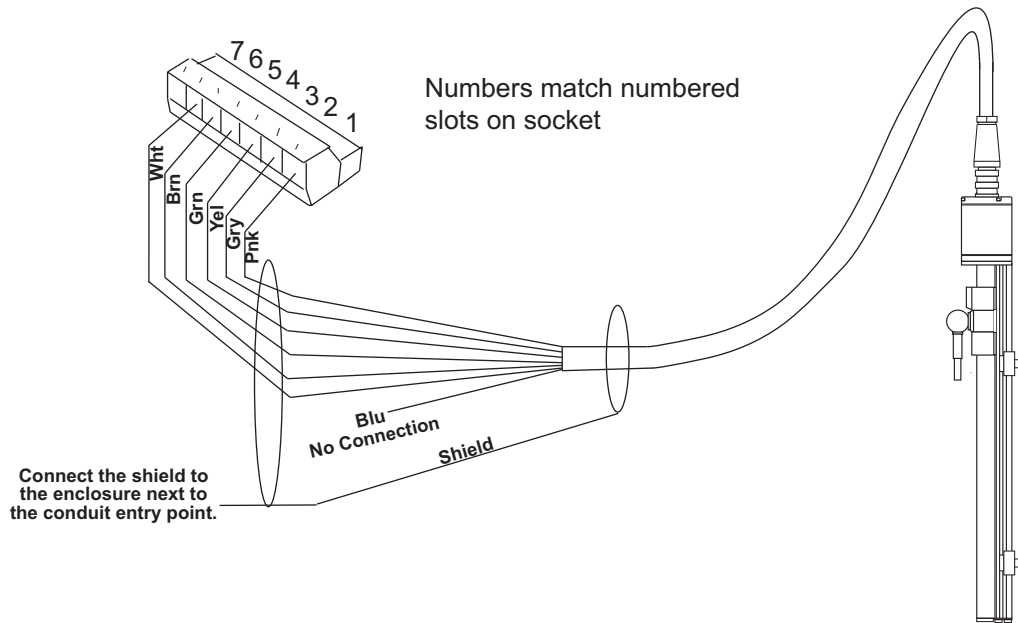


Figure 2-9. MTS Linear Transducer Pinout

Table 2-1. MTS Linear Transducer Wiring

Pin # on TB402 ProCamPAC Linear Board	Wire Color *
	Shield (terminate to ground stud nearest entry to enclosure)
1 (+DATA)	Pink
2 (-DATA)	Grey
3 (+CLK)	Yellow
4 (-CLK)	Green
5 (+24VDC)	Brown
6 (GND)	White

\* Blue is not used.

## Installing the Optional Pressure Transducer

A pressure transducer that can be used to read the hydraulic pressure at the bottom of the press stroke is available from Wintriss. The following sections show you how to mount and wire the pressure transducer.

### Mounting the Transducer

Determine a convenient location on the press to mount the transducer. Bear in mind that the transducer cable must be capable of being connected and disconnected. Also be aware that each machine will have its own mounting considerations. On the more complicated systems,

some experimenting may be required to get the transducer to provide accurate readings of total system pressure. Observe the following guidelines to determine a mounting location:

- On hydraulic presses that use one hydraulic cylinder with an up and a down solenoid to move the ram, the transducer should be mounted on the top of the cylinder where the pressure is being generated. Some cylinders will have a plug into which the transducer can be inserted.
- On presses that use a divider valve to move main pressure to multiple hydraulic cylinders, the transducer should be mounted near the input of the divider valve. This location ensures that the transducer reads the total system pressure rather than the pressure of an individual cylinder.
- On presses that accomplish speed changes by altering the way the oil is pumped through the cylinders, be aware that speed changes can alter the pressure the transducer is measuring.
- Some presses will have counterbalance cylinders, which require pressure to overcome. This pressure will be read by the transducer as well.
- The pressure which the transducer will be subject to can be as much as 5000 PSI. This high pressure should be taken into consideration when mounting the device.

To mount the pressure transducer, perform the following steps:

1. The transducer comes with a male 1/4-in. NPT fitting. Place a fitting into the hole in the tank or the fitting in the pipe that will allow you to install the threaded end of the transducer.
2. Wrap the threaded end of the transducer with plumbing tape and put it into the fitting you installed.

## Wiring the Transducer

Perform the following steps to connect the pressure transducer to the SmartPAC 2 Hydraulic.

1. Locate the transducer cable. The cable is gray with a connector at one end that plugs into the transducer.
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 2 enclosure. You can also run other low-voltage cables, such as the linear transducer cable, through this conduit.
3. Measure and cut the transducer wires so they comfortably reach TB404 on the ProCamPAC board. See Figure 2-7, page 2-12 for the location of the ProCamPAC board on the SmartPAC 2 Hydraulic board and Figure 2-8, page 2-13 for the location of TB404 on the ProCamPAC board. Cut the cable so you have enough left to use as a service loop to unplug the connectors.
4. Strip off the gray insulation to reveal approximately 2 in. of the red, black, and white wires and the shield. Strip the insulation on each wire so that approximately 1/4 to 3/16 in. of bare wire is exposed.



5. Connect the pressure transducer wires to TB404 on the ProCamPAC board, as shown in Table 2-2 and in Figure 1 or 2 at the back of this manual.

*Table 2-2. Pressure Transducer Wiring*

<b>Transducer Wire Color</b>	<b>ProCamPAC Pin # (TB404)</b>
Red	1 (+24 VDC)
White	2 (TRANS)
Black	3 (GND)

## Wiring DC Power

Both the linear and pressure transducers require a DC power source. Your SmartPAC 2 Hydraulic may already have a small DC power supply installed on the side and wired to the ProCamPAC.

If your unit does not have the small DC power supply installed and you plan to use your own 24 VDC 0.5 A power supply, connect it to TB403 on the ProCamPAC Linear board as shown in Table 2-3 and Figure 1 (8-channel ProCamPAC Linear) or 2 (15-channel ProCamPAC Linear) at the back of the manual. See Figure 2-8 for the location of TB403 on ProCamPAC Linear boards.

*Table 2-3. DC Power Wiring*

<b>Pin # on TB403 ProCamPAC Linear Board</b>
1 (24 VDC)
2 (GND)

## Connecting AC Wiring

### 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 2 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 2-3) along with the wiring for emergency-stop and top-stop 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 2 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, page 2-18).

For a panel mount unit, the terminal block is mounted to the back of the faceplate near the top right corner of the SmartPAC 2 Hydraulic 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.
3. Connect the AC input wires and ground wire as shown in Figure 2-10 and Figure 3 at the back of the manual. Make your ground connection as follows:
  - **SmartPAC 2 Enclosure:** Connect your ground (green or green/yellow) wire to the set screw terminal on the inside of the enclosure. To connect to the set screw terminal, strip the ground wire about 1/4 in. (6.4 mm) from end, loosen the screw on the terminal, slide the wire in the hole, and tighten the screw to secure the wire in place.
  - **SmartPAC 2 Panel Mount:** Connect the ground wire to the ground stud on the face plate below the AC input terminal block.
4. Connect AC wires to the power source only after all installation procedures have been completed and you are ready to perform final checkout tests (see page 2-38).

### WARNING

#### ELECTRIC SHOCK HAZARD

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.**

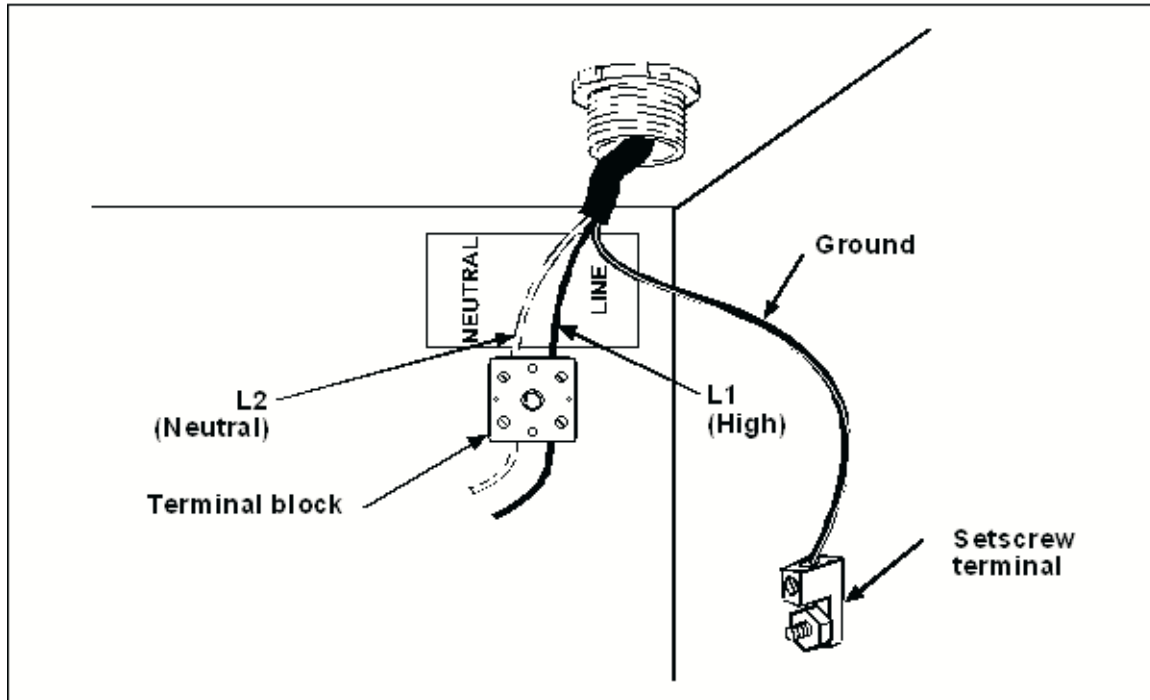


Figure 2-10. Wiring AC to Terminal Block, Inside Enclosure, Top Right

## Connecting Stop Circuits

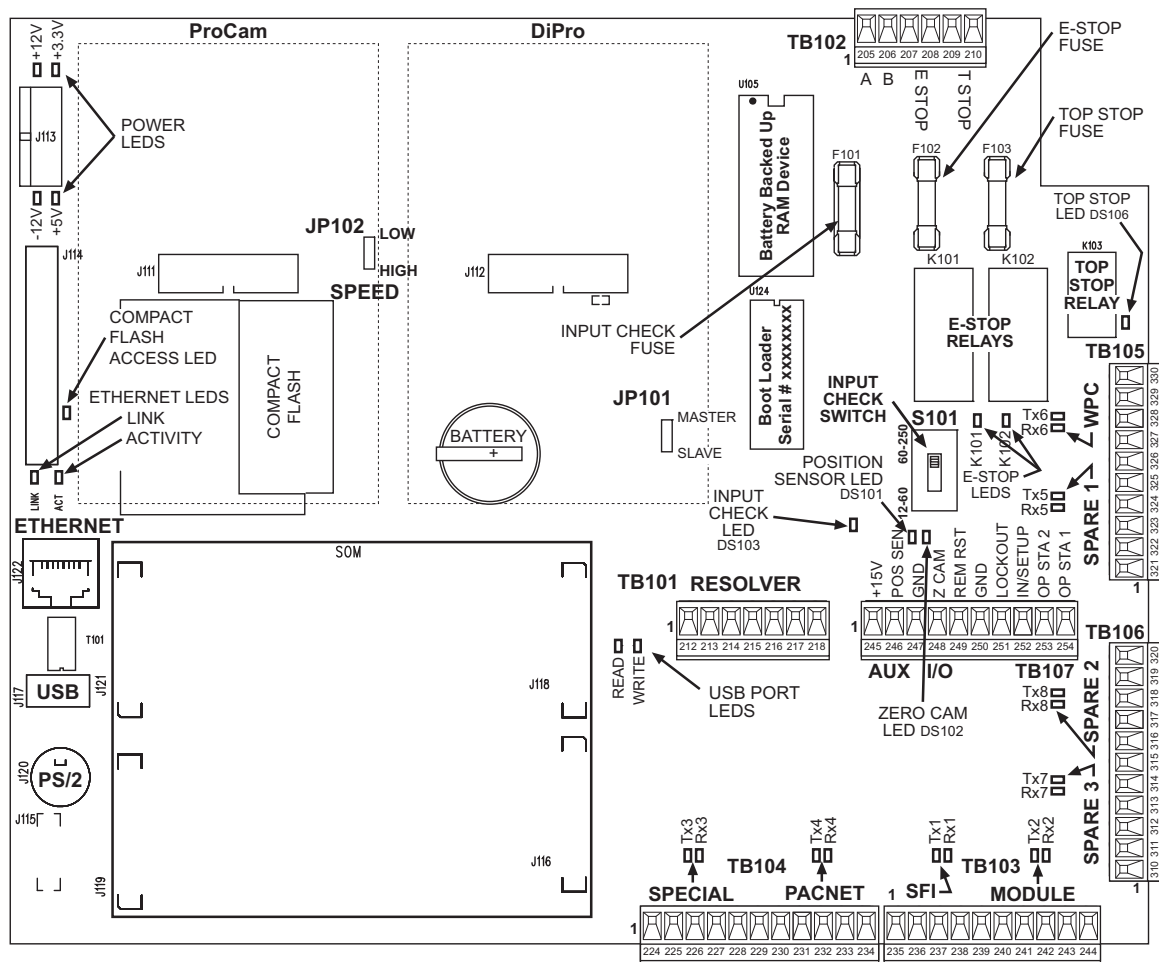
You need four wires to connect SmartPAC 2 Hydraulic to your press control stop circuits, two for the emergency-stop circuit and two for the top-stop circuit. You can wire these circuits at your press control. Refer to your press control manual or other electrical prints.

To make wiring connections, perform the following steps:

1. Run the stop circuit wires to SmartPAC 2 Hydraulic through flexible liquid-tight conduit to the enclosure. Because SmartPAC 2 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 TB102 on the SmartPAC 2 Hydraulic board (see Figure 2-11, page 2-19) and unplug it from its socket. Connect the wires for the stop circuits to TB102 pin locations, as shown in Table 2-4, page 2-19 and Figure 3 at the end of the manual.
3. Plug the connector back into its socket. Double-check connections to make sure that you didn't wire the connector backwards (see *Connecting Wires to Terminal Block Connectors*, page 2-5).
4. Connect top-stop and E-stop 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.



*Figure 2-11. SmartPAC 2 Hydraulic Board: Location of Components*

*Table 2-4. Stop Circuit Wiring Connections: TB102*

<b>Circuit</b>	<b>SmartPAC 2 TB102 Pin Locations</b>
E-stop	207
E-stop	208
Top-stop	209
Top-stop	210

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

## Connecting to Network

Before you can connect SmartPAC 2 Hydraulic to a computer network, your network administrator must make the necessary connections and settings.

The Ethernet cable is plugged into the Ethernet connector on the SmartPAC 2 Hydraulic board (see Figure 2-11, page 2-19).

### NOTICE

#### SETTING STATIC IP ADDRESS

SmartPAC 2 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 2 with a static IP address. See *CHANGE NETWORK SETTINGS*, page 4-35.

## Replacing ProCamPAC

### WARNING

#### ELECTRIC SHOCK HAZARD

Turn off and disconnect power from SmartPAC 2 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 PROCAMPAC LINEAR BOARD IN CORRECT LOCATION

Install the ProCamPAC Linear board in the location shown in Figure 2-7, page 2-12. If you install the board in the wrong location, SmartPAC 2 Hydraulic will not recognize that ProCamPAC is installed.

Eight- and 15-channel configurations of ProCamPAC are interchangeable. When the ProCamPAC Linear board is installed in the correct location, SmartPAC 2 recognizes whether it is an 8- or 15-channel board.

To replace an existing ProCamPAC Linear board, do the following:

1. Turn off power to the SmartPAC 2 Hydraulic.

2. On the SmartPAC 2 Hydraulic board, locate the ProCamPAC board (see Figure 2-7, page 2-12).

### 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.**

3. Making sure you are grounded, remove the connector(s) attached to the board. Connectors are wired to the following components (see Figure 1 or 2 at the back of the manual):
  - TB402–Magnetostrictive linear transducer
  - TB403–DSI 2
  - TB404–Pressure transducer (if installed)
  - TB451 and TB452–ProCamPAC output assembly
4. Remove the four screws that hold the board to the standoffs, and put them aside.
5. Mark the board to identify it so you don't re-install it by mistake.
6. Remove the board by pulling it straight up from the SmartPAC 2 Hydraulic board and out of its connector.
7. Making sure that you are still grounded, install the new board by plugging it into the J111 connector (see Figure 2-11, page 2-19). The connector is keyed, so you can only plug in the board in one direction.
8. When the board is properly seated, screw it down to the four standoffs, using the screws you removed in step 4.
9. Reinstall the connector(s) you removed in step 3.

You will not be able to reinstall connector TB452 if you are replacing a 15-channel with an 8-channel ProCamPAC. There is no mating connector for TB452 on the ProCamPAC 8 Linear board. In that case, make sure to disconnect the wires from TB452 and from the equipment to which it is connected.
10. If you have installed a 15-channel board in place of an 8-channel board, remove connector TB452 and wire it to the ProCamPAC Output assembly, following the procedure in *Connecting Programmable Cam Channels*, page 2-27. Plug the TB452 connector back into the ProCamPAC 15 Linear board when you are finished.
11. Verify that you have installed the board(s) properly by performing the *Verifying Installation of DiProPAC and ProCamPAC* procedure, page 2-37. You need to complete this procedure before you can use SmartPAC 2 Hydraulic.

# Adding or Upgrading DiProPAC

## WARNING

### **ELECTRIC SHOCK HAZARD**

Turn off and disconnect power from SmartPAC 2 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 BOARD IN CORRECT LOCATION**

Install the DiProPAC board in the location shown in Figure 2-7, page 2-12. If you install the board in the wrong location, SmartPAC 2 Hydraulic will not recognize that DiProPAC is installed.

Eight-, 16-, and 32-channel configurations of DiProPAC are interchangeable. When the DiProPAC board is installed in the correct location, SmartPAC 2 recognizes whether it is an 8-, 16-, or 32-channel board.

## **NOTICE**

### **MAKE SURE TO CLEAR TABLES AFTER INSTALLING DIPROPAC 32**

If you are installing a DiProPAC 32 board, you must clear some of the SmartPAC 2 memory tables; otherwise, your SmartPAC 2 will not operate properly. After installing the board, clear the tables by accessing the Diagnostics Menu from the SmartPAC 2 Main Initialization Menu (see Figure 4-1, page 4-1) and selecting the CLEAR TABLES item (see Figure 4-27, page 4-36). On the Clear Tables Utility screen, select DIPRO 32, and when the red warning window displays, press the CLEAR key to confirm that you want to continue with the Clear Tables process.

The following instructions describe how to add die protection capabilities to a basic SmartPAC 2 Hydraulic or upgrade your existing die protection capabilities. DiProPAC is available as an 8-sensor, 16-sensor, or 32-sensor board. Wiring instructions for the DiProPAC board are provided starting on page 2-25.

## Replacing an Existing Board

To replace an existing DiProPAC board, do the following:

1. Turn off power to the SmartPAC 2 Hydraulic.

- On the SmartPAC 2 Hydraulic board, locate the DiProPAC board (see Figure 2-7, page 2-12).

### 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.**

- Making sure you are grounded, remove the connector(s) attached to the board (see Figure 2-12).

Connector TB554 (and TB555 if it is wired) go(es) to DSI 2. Connector TB453 is used for auxiliary outputs. See Figure 4 or 5 at the back of the manual.

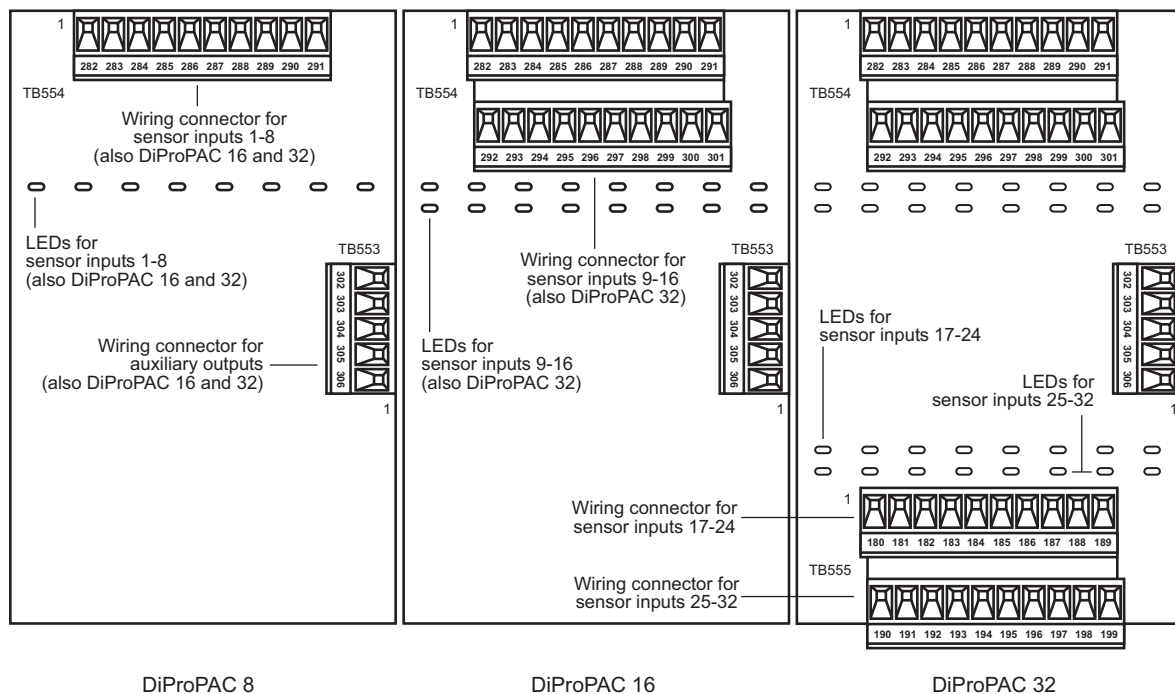


Figure 2-12. DiProPAC Boards (8-, 16-, and 32-Sensor): Location of Components

- Remove the four screws that hold the board to the standoffs, and put them aside.
- Mark the board to identify it so you don't re-install it by mistake.
- Remove the board by pulling it straight up from the SmartPAC 2 Hydraulic board and out of its connector.
- Making sure that you are still grounded, install the new board by plugging it into the J112 connector (see Figure 2-11, page 2-19). Connectors are keyed, so you can only plug in the board in one direction.



8. When the board is properly seated, screw it down to the four standoffs, using the screws you removed in step 4.
9. Reinstall the connector(s) you removed in step 3.

If you are upgrading from an 8- to a 16-sensor DiProPAC or from a 16- to a 32-sensor DiProPAC, make sure you plug the connector(s) into the correct terminal block(s). TB554 and TB555 pin assignments for the different boards are as follows (see Figure 2-12):

  - DiProPAC 8: Sensors 1-8 to TB554 upper
  - DiProPAC 16: Sensors 1-8 to TB554 upper, sensors 9-16 to TB554 lower
  - DiProPAC 32: Sensors 1-8 to TB554 upper, sensors 9-16 to TB554 lower
10. If you have installed a board with an additional connector (i.e., a 16-sensor board in place of an 8-sensor board, or a 32-sensor board in place of a 16-sensor board), wire that connector or those connectors to the DiPro Sensor Interface, following the instructions in *Connecting DiPro Sensor Interface to SmartPAC 2*, page 2-25.
11. Verify that you have installed the DiProPAC board properly by performing the *Verifying Installation of DiProPAC and ProCamPAC* procedure, page 2-37. You need to complete this procedure before you can use SmartPAC 2 Hydraulic.

## Installing a New Board

To install a new DiProPAC board, do the following:

1. On the SmartPAC 2 Hydraulic board, find the location where the DiProPAC board will be installed (see Figure 2-7, page 2-12).

### 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 J112 connector (see Figure 2-11, page 2-19). Connectors are keyed, so you can only plug in the board 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.

Connector TB554 (and TB555 if it is wired) go(es) to DSI 2. Connector TB453 is used for auxiliary outputs. See Figure 4 or 5 at the back of the manual.

TB554 and TB555 pin assignments for the different boards are as follows (see Figure 2-12, page 2-23):

- DiProPAC 8: Sensors 1-8 to TB554 upper
- DiProPAC 16: Sensors 1-8 to TB554 upper, sensors 9-16 to TB554 lower

- DiProPAC 32: Sensors 1-8 to TB554 upper, sensors 9-16 to TB554 lower, sensors 17-24 to TB555 upper, and sensors 25-32 to TB555 lower
5. Wire the TB554 and TB555 connectors to the DiPro Sensor Interface, following the instructions in *Connecting DiPro Sensor Interface to SmartPAC 2*, page 2-25.
  6. Plug the connector(s) back into their sockets on the board.
  7. Verify that you have installed the DiProPAC board properly by performing the *Verifying Installation of DiProPAC and ProCamPAC* procedure, page 2-37. You need to complete this procedure before you can use SmartPAC 2 Hydraulic.

## Connecting DiPro Sensor Interface to SmartPAC 2

To connect your DiPro die protection sensors through the DiPro Sensor Interface (DSI) 2, refer to Table 2-5, below, to wire sensors 1-8, Table 2-6, page 2-26 to wire sensors 9-16, Table 2-7, page 2-26 to wire sensors 17-24, and Table 2-8, page 2-27 to wire sensors 25-32. Wiring diagrams (Figure 4 for sensors 1-16, Figure 5 for sensors 17-32) are provided at the back 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.

Table 2-5. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 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 2-6. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 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 2-7. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 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 2-8. DiPro Sensor Interface (DSI) 2 to SmartPAC 2 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.

## NOTICE

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

## Connecting Programmable Cam Channels

### DANGER

#### PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC 2 Hydraulic's programmable cam switch to control auxiliary functions only. The SmartPAC 2 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.

Channel 1 and 2 are preprogrammed and labelled “TOP LIMIT” and “BOTTOM LIMIT.” Channel 3 is reserved for the optional Return-on-Pressure feature with dwell and labelled “DWELL.”

To mount the ProCamPAC Output Assembly and wire it to the ProCamPAC board inside the SmartPAC 2 Hydraulic 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 2-13, page 2-29.
3. Select the relays to be used with each channel. Relays should already be plugged into the Cam Outputs board (see Figure 2-14, page 2-30), 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 2-13 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 2-9, page 2-31 (for the 8-channel option) or Table 2-9 and Table 2-10, page 2-31 (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.

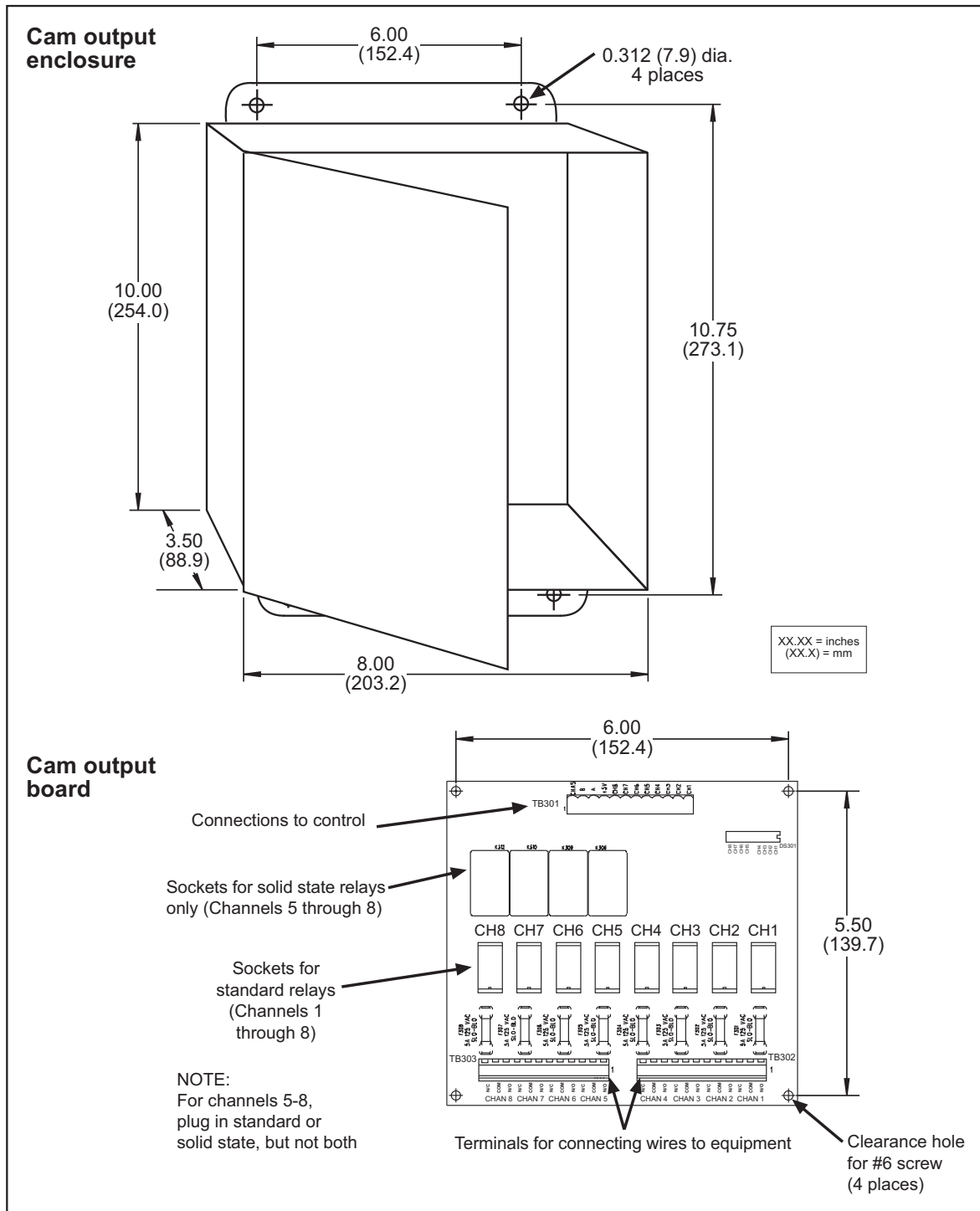


Figure 2-13. ProCamPAC Output Assembly

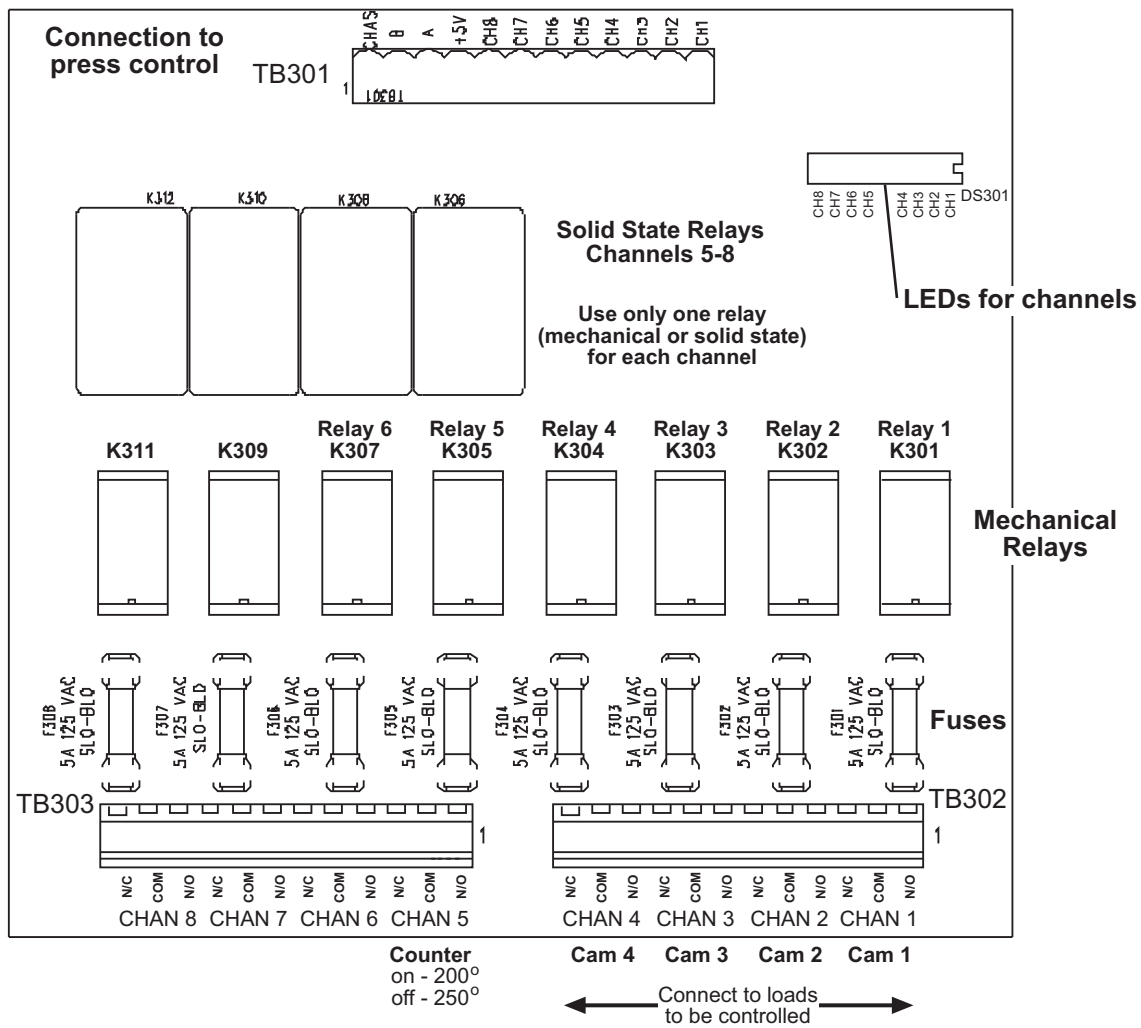


Figure 2-14. Cam Outputs Board

Table 2-9. 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 2-10. 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

- Run the cable(s) through conduit to TB301 in the ProCamPAC Output enclosure, using the knockouts directly above the connector.
- Remove the TB301 connector from its socket, and connect wires from the 12-conductor cable(s) as shown in Table 2-9 (for 8-channel ProCamPAC Linear) or Table 2-9 and Table 2-10 (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 (see Figure 2-15).

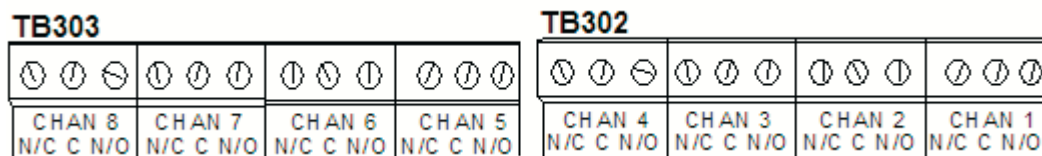


Figure 2-15. Connector TB302 and TB303 for Wiring Relays to Equipment

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 2 Hydraulic. 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 2 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 2-11.)

Table 2-11. 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 2-16, page 2-33). 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 2-17, page 2-33).

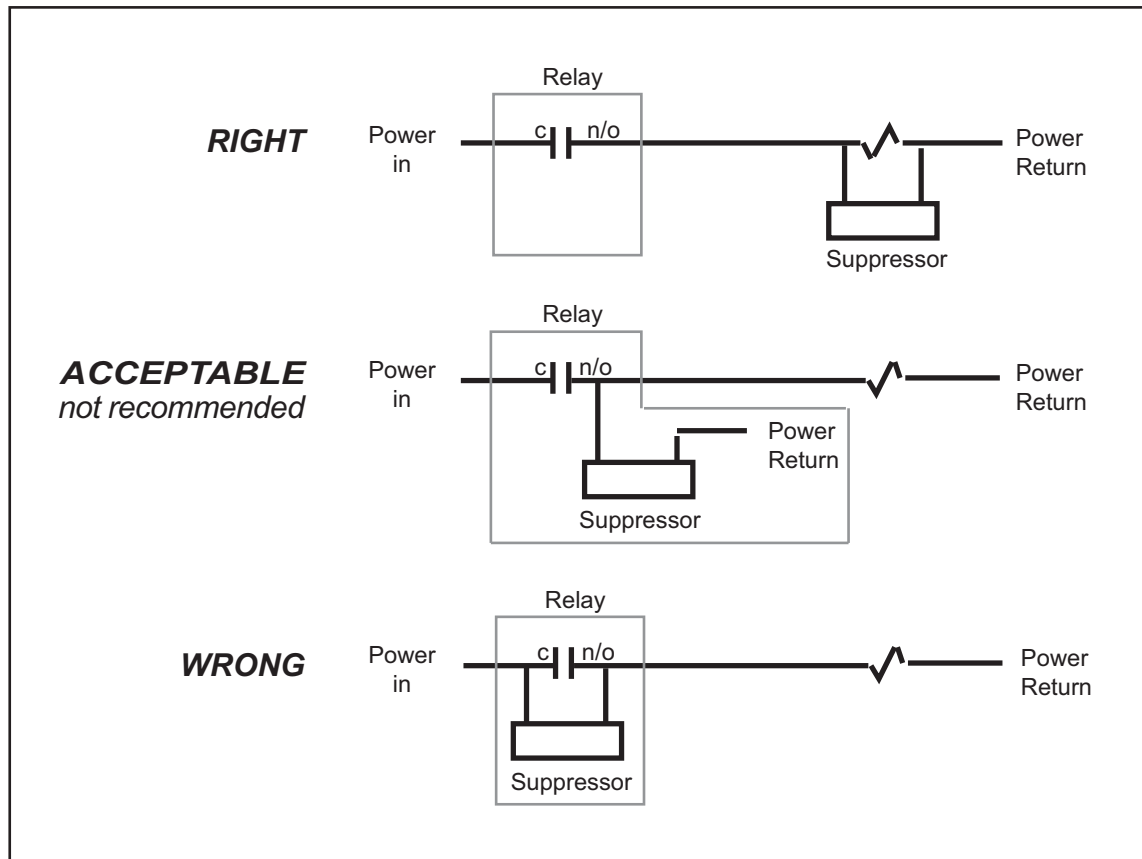


Figure 2-16. Installing Suppressors Across an AC Load

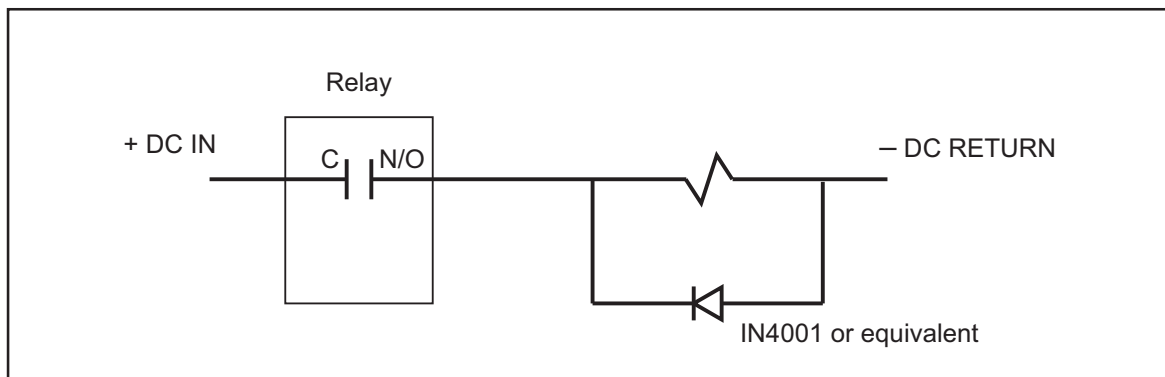


Figure 2-17. Installing a Diode Across a DC Load

## Connecting Channels 1 and 2

Channels 1 and 2 must be wired to Top Limit and Bottom Limit inputs of your control. If this is a retrofit, disconnect the previous Top Limit input from your control and wire the Channel 1 output to the same terminal. Also, disconnect the Bottom Limit input and wire the Channel 2 output to that terminal.

## Connecting Channels 3 and 4 for Return on Pressure (Optional)

If you have installed the optional pressure transducer for Return on Pressure and plan to specify a dwell time at the specified pressure, wire Channel 3 to an appropriate input on your SmartPAC 2. When this cam is On, the down-valve shifts to neutral position to maintain pressure/tonnage. Cam Channel 4 is used to set the window during which SmartPAC 2 monitors the pressure for the Return on Pressure operation. Do not connect any wiring to Channel 4 if you use the Return on Pressure feature.

### NOTICE

#### **DO NOT MAKE WIRING CONNECTIONS TO CHANNEL 4 FOR RETURN ON PRESSURE**

If you have installed the optional pressure transducer and intend to use the Return on Pressure feature, DO NOT connect any wiring to cam channel 4. Cam channel 4 is reserved for setting the pressure monitoring window when you use Return on Pressure.

## Wiring Setup Mode Circuit

SmartPAC 2 Setup mode allows you to disable green sensors and parts/batch counters, using a remote switch. Typically, the Setup mode circuit is enabled when Jog mode is selected on your main control. When you jog the press, SmartPAC 2 will not stop the press when a fault condition is detected. The Setup mode terminal can be wired to an extra contact on the Jog 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 Jog mode. Connect a wire from SmartPAC 2 terminal block TB107, terminal #252 (SETUP) to one side of a normally open switch (see Figure 2-11, page 2-19, Table 2-18, page 2-42, and Figure 3 at the end of the manual). Connect the other side of the switch to GND (TB107, 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 2 TB107, terminal #249 (REM RES) to a normally open switch (see Figure 2-11, page 2-19, Table 2-18, page 2-42, and Figure 3 at the end of the manual). Connect another wire from the switch to GND (TB107, terminal #250). SmartPAC 2 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 2-12, page 2-23 and Figure 4 or 5 at the back 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.

## Wiring a Press-in-Motion Signal (Optional)

If you plan to program any of your cam channels as a DSV ON output type (see *Setting DSV ON Channel Timing*, page 5-45), you must wire the input check circuit inputs #205 (A) and #206 (B) on TB102 on the SmartPAC 2 Hydraulic board (see Figure 2-11, page 2-19, Table 2-13, page 2-41, and Figure 3 at the back of the manual). To activate this circuit, you must apply 12 to 250 V to these inputs when the press is in motion.

## Turning on Power to SmartPAC 2 Hydraulic

### NOTICE

For help in using the SmartPAC 2 keyboard and display, see Chapter 3.

### NOTICE

If you turn the Program/Run key and nothing happens, press RESET repeatedly until SmartPAC 2 changes modes. Before turning the Program/Run key, make sure SmartPAC 2 is in the Main menu for the mode it is in. If it is not, press RESET repeatedly until the Main menu appears. Then turn the Program/Run key.

To turn on power to SmartPAC 2 Hydraulic, 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 2 Hydraulic.

The green Power LED on the SmartPAC 2 front panel illuminates, a red SmartPAC 2 screen appears for a few seconds (see Figure 2-18, page 2-36), then the display goes off and the amber LED beneath the Power LED flashes at approximately two-second intervals while SmartPAC 2 completes its startup routine. This can take up to one minute. Eventually, the Main Program Menu appears (see Figure 2-19, page 2-36).

**NOTICE**

- If an error message displays when SmartPAC 2 starts up, press RESET.
- If the error message continues to appear after your press RESET, 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 2-18. SmartPAC 2 Startup Screen

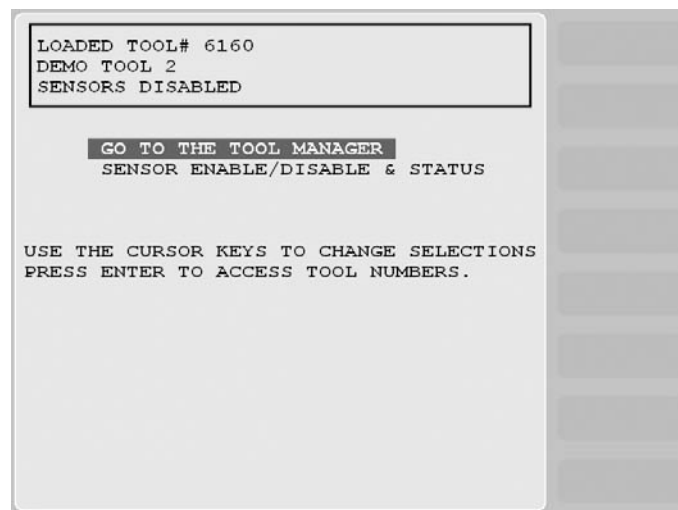


Figure 2-19. Main Program Menu

4. If the SmartPAC 2 display remains off, do the following:
  - **If the green Power LED on SmartPAC 2 does not illuminate**  
Turn off power to SmartPAC 2, and recheck all power connections. Check that the connectors are correctly seated on both ends of the cables between the SmartPAC 2 board and the display. Power up SmartPAC 2 again. If the display remains off, contact Wintriss Tech. Support.

- **If the green Power LED illuminates, but the display remains off**

Power down SmartPAC 2, and check that the connectors are correctly seated on both ends of the cables between the SmartPAC 2 board and the display. Power up SmartPAC 2 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 2 Hydraulic, 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 2 display, press the 1 and CLEAR keys at the same time to display the Main Initialization Menu (see Figure 2-20).

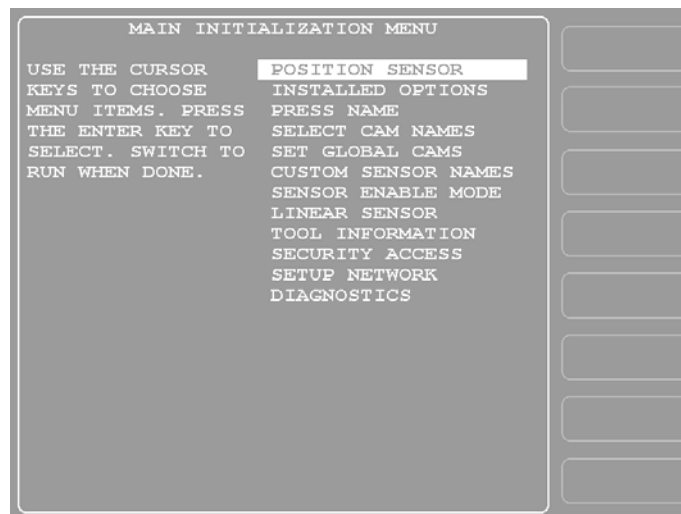


Figure 2-20. Main Initialization Menu

2. Move the highlight bar to INSTALLED OPTIONS, and press ENTER. The Installed Options screen, shown in Figure 2-21, page 2-38 displays.
3. 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*, page 2-22 and/or *Replacing ProCamPAC*, page 2-20 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.

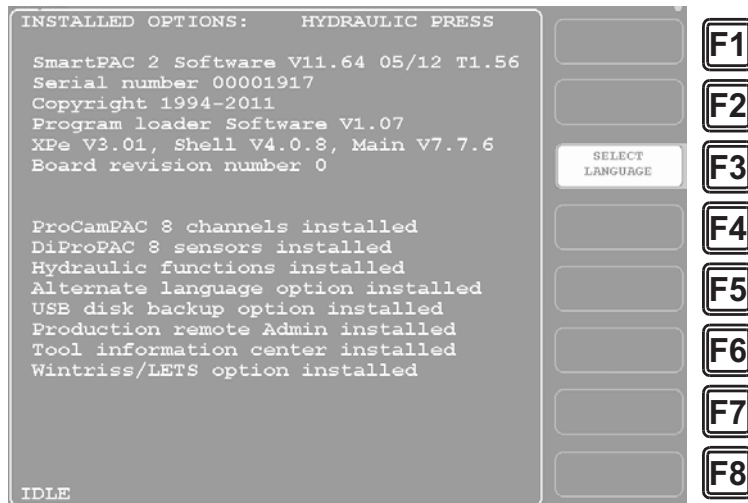


Figure 2-21. Installed Options Screen

## Final Checkout

Before using SmartPAC 2 Hydraulic, 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 5-3, *TOOL NAME or TOOL ID*, page 5-8, and *COUNTERS*, page 5-9). If you are not familiar with how to use the SmartPAC 2 keyboard and displays, see Chapter 3.
2. Program Upper Limit and Lower Limit settings on the Ram Position screen (see page 5-50).
3. Load the tool number (see *Loading a Tool*, page 5-5), and enter Run mode (see *Entering and Exiting Run Mode*, page 6-2).

### Check Stroke Limits

4. Jog the press. Verify that the ram moves accurately between programmed Upper and Lower limits (see *RAM POSITION*, page 5-50).
5. Operate the press in Run, 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. Program new Upper and Lower limits, and verify that the ram moves accurately between the new limits.

8. If limits are not working properly, check to make sure that cam channels 1 and 2, which are pre-programmed for Top Limit and Bottom Limit, turn on and off at the angles shown in Table 2-12.

Table 2-12. Cam Channels 1 and 2: On and Off Angles

Cam Channel	On Angle	Off Angle
1	0	2
2	180	182

### NOTICE

Do not adjust either the On or Off angle. If you want to adjust the bottom return point, adjust the Lower Limit you set on the Ram Position screen in Program Mode (see page 5-50).

If the ram moves accurately between programmed limits, verify that the wiring from the Output relays to your Main Valve control is good.

## Check the Top-stop Circuit

9. Set the stroke counter preset to a small value (e.g., 10), referring to *COUNTERS*, page 5-9; 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 10.
  - If the press did not top-stop and SmartPAC 2 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

10. Turn the Program/Run key switch to PROG, and press RESET until the Main Program Menu (see Figure 2-19, page 2-36) displays. Try stroking the press. Since SmartPAC 2 Hydraulic's E-stop relays are always open in Program mode, the ram should not move.
  - If the ram does not move, go to step 11.
  - 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

11. If you are using cam channels other than channels 1, 2, 3, or 4, create some test settings for those cam channels in Program mode (see *CAM SWITCH*, page 5-38), 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

12. If you get to this step, SmartPAC 2 Hydraulic is working correctly. Clear any error messages by pressing RESET, then delete the test tool. You can now create a tool in SmartPAC 2 Hydraulic, program settings for it, load it, and begin to make parts using your new SmartPAC 2 Hydraulic.

## What Next?

To program and use your SmartPAC 2 Hydraulic, follow the instructions in the remaining chapters of this manual. Go to Chapter 4 to make Initialization settings for your SmartPAC 2.

## Wiring Tables for SmartPAC 2 Hydraulic Options

*Table 2-13. Stop and Input Check Circuit (TB102) Wiring*

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

*Table 2-14. SFI Port (1) and Module Port (2) (TB103) Wiring*

Pin #	Signal	Port
235	+RXD1	SFI PORT (1)
236	–RXD1	“
237	TXD1	“
238	+TXD1	“
239	–TXD1	“
240	GND	“
241	+RXD2	MODULE PORT (2)
242	–RXD2	“
243	+TXD2	“
244	–TXD2	“

*Table 2-15. Special Port (3) and PACNet Port (4) (TB104) Wiring*

Pin #	Signal	Port
224	+RXD3	SPECIAL PORT (3)
225	–RXD3	“
226	TXD3	“
227	+TXD3	“
228	–TXD3	“
229	GND	“
230	+RXD4	PACNET PORT (4)
231	–RXD4	“
232	TXD4	“
233	+TXD4	“
234	–TXD4	“

*Table 2-16. Spare 1 Port (5) and WPC Port (6) (TB105) Wiring*

Pin #	Signal	Port
330	–TXD6	WPC PORT (6)
329	+TXD6	“
328	–RXD6	“
327	+RXD6	“
326	GND	“
325	–TXD5	SPARE 1 PORT (5)
324	+TXD5	“
323	TXD5	“
322	–RXD5	“
321	+RXD5	“

*Table 2-17. Spare 3 Port (7) and Spare 4 Port (8) (TB106) Wiring*

<b>Pin #</b>	<b>Signal</b>	<b>Port</b>
320	–TXD8	SPARE 2 PORT (8)
319	+TXD8	“
318	TXD8	“
317	–RXD8	“
316	+RXD8	“
315	GND	“
314	–TXD7	SPARE 3 PORT (7)
313	+TXD7	“
312	TXD7	“
311	–RXD7	“
310	+RXD7	“

*Table 2-18. Aux I/O (TB107) Wiring*

<b>Pin #</b>	<b>Signal</b>
245	+15 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

# Chapter 3. Keyboard, Displays and Operating Modes

This chapter shows you how to use the SmartPAC 2 Hydraulic keyboard and displays and introduces you to SmartPAC 2's three operating modes. The keyboard and the screen on which the displays appear are located on the SmartPAC 2 Hydraulic front panel, which is shown in Figure 3-1.

It is a good idea to learn how to use SmartPAC 2 Hydraulic before you install it. Set up the unit on a bench and wire a power cord, a DC power source, and a transducer to it, then try making settings on the displays. SmartPAC 2 Hydraulic is easy to use. The instructions on each display tell you which key to press in order to proceed to the next step.

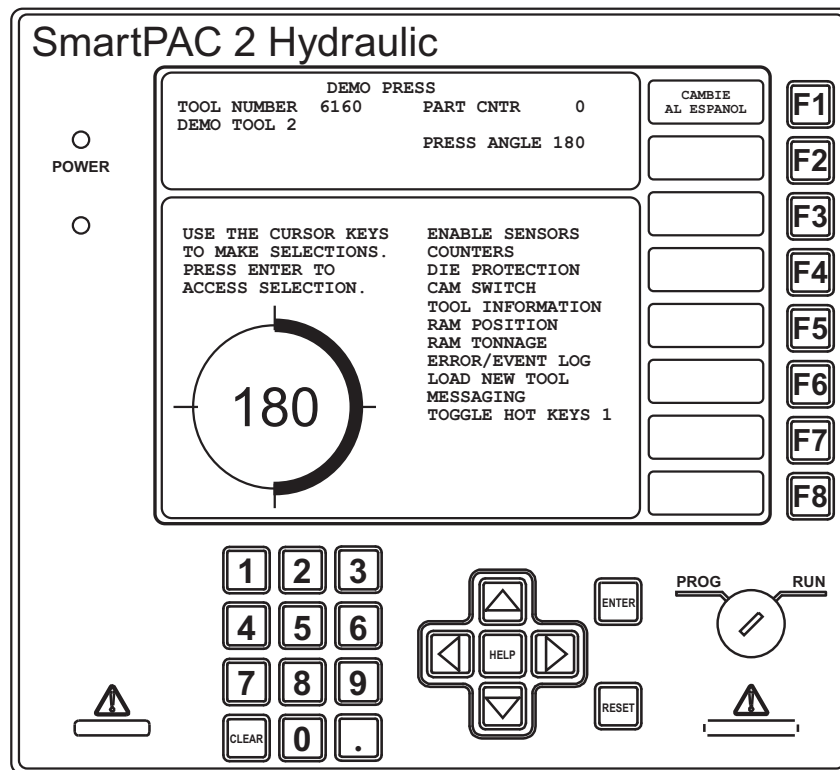


Figure 3-1. SmartPAC 2 Hydraulic Front Panel

This chapter covers the following topics:

- *Comparing SmartPAC 2 with Original SmartPAC*, next page
- *SmartPAC 2 Keyboard*, page 3-3
- *SmartPAC 2 Hydraulic Display Layout in Run Mode*, page 3-13
- *Selecting an Item on a Display*, page 3-14
- *SmartPAC 2 Operating Modes*, page 3-15
- *Screen Capture*, page 3-23

## Comparing SmartPAC 2 with Original SmartPAC

If you are familiar with the original SmartPAC Hydraulic, learning to use the SmartPAC 2 Hydraulic should be fairly easy. Figure 3-2 shows the differences between SmartPAC Hydraulic and SmartPAC 2 Hydraulic front panels.

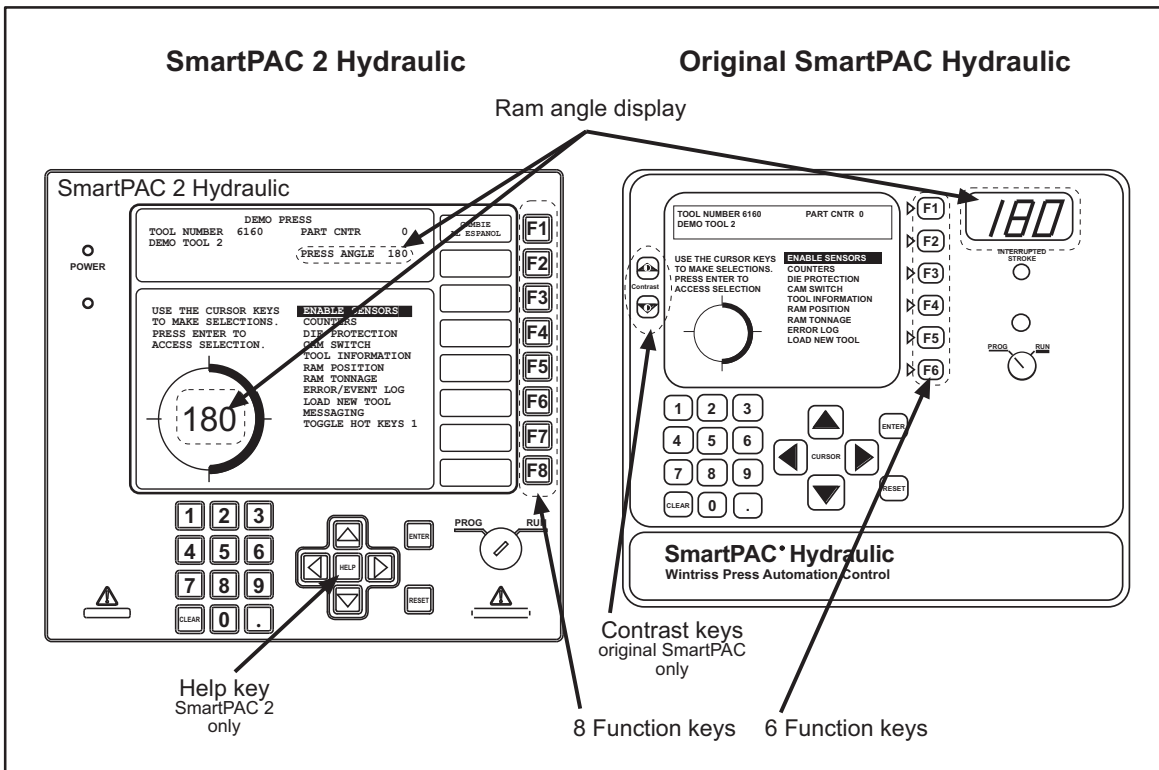


Figure 3-2. Differences Between SmartPAC 2 and Original SmartPAC

SmartPAC 2 Hydraulic and the original SmartPAC Hydraulic are similar in appearance, and many of the procedures for using them are the same. The differences between their front-panel controls are:

Item	SmartPAC 2	Original SmartPAC
Ram Angle display	In the center of the Ram Angle clock on the display and in the status box at the top of the display.	Separate red 3-digit LED display
Function Keys	8 function keys	6 function keys
Help Key	At center of cursor keys; press to access information about the current screen.	None
Contrast keys	None—display is self-adjusting	2 to left of display screen

## SmartPAC 2 Keyboard

The SmartPAC 2 keyboard, as shown in Figure 3-3, is composed of number keys, cursor keys, function keys, and HELP, CLEAR, ENTER, and RESET keys. There is also a Program/Run key switch. Use of the keys and key switch is explained in the following sections.

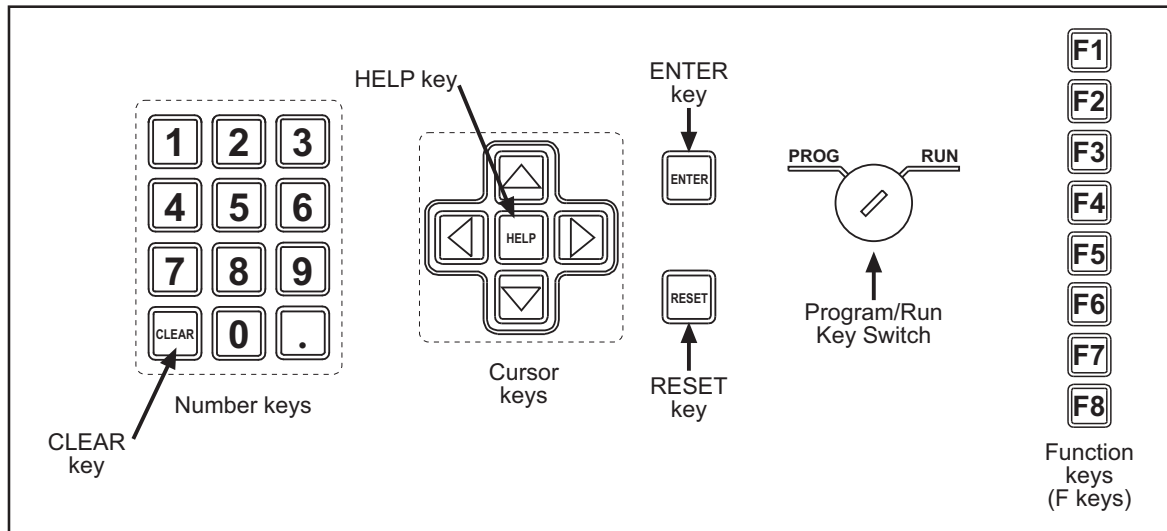


Figure 3-3. SmartPAC 2 Keyboard

### Number Keys

The number keys, shown in Figure 3-4, are used to input numeric values, such as counter presets or tool numbers. They are used in conjunction with entry windows—numeric, alphabetic, and alphanumeric—which display when you select items on SmartPAC 2 Hydraulic screens (see Figure 3-5 and Figure 3-6, page 3-4)

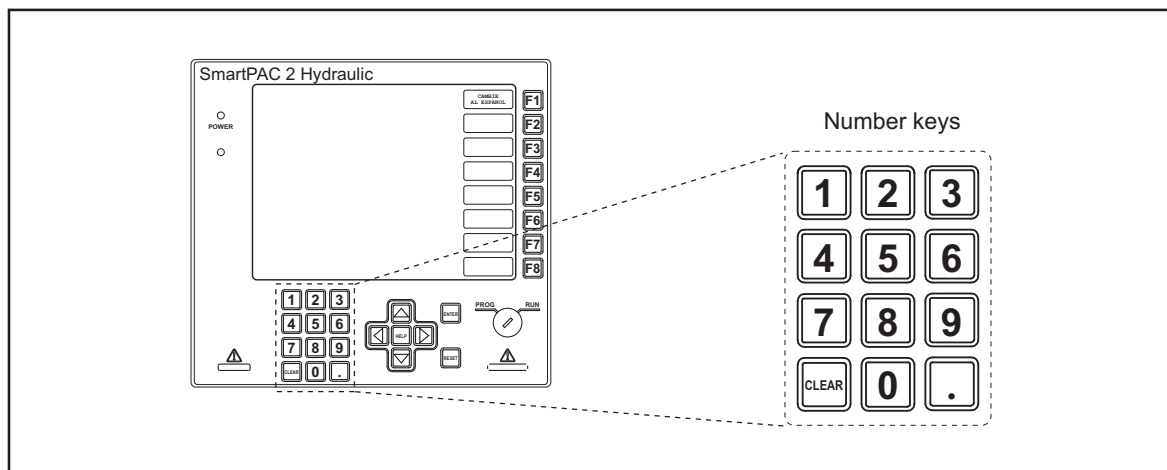


Figure 3-4. Number Keys

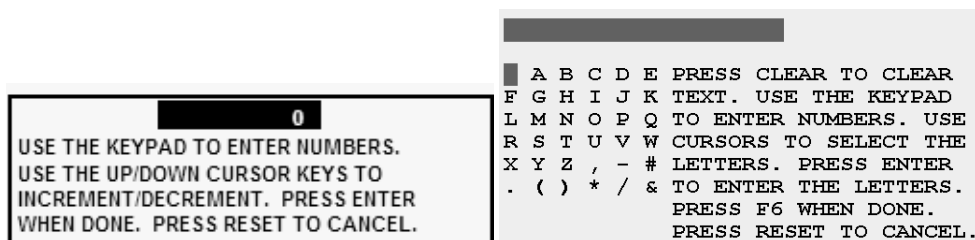


Figure 3-5. Numeric Entry Window (Left); Alphabetic Entry Window (Right)

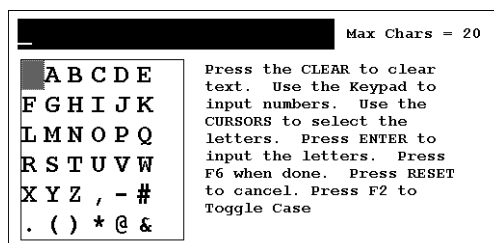


Figure 3-6. Alphanumeric Entry Window

To enter a number in an entry window, simply key in the individual digits of the number, using the number keys. In Numeric Entry windows, press ENTER; in Alphabetic or Alphanumeric Entry windows, press **F6**. The window closes, and the number you entered (and, in the case of alphabetic or alphanumeric entry, accompanying letters or symbols) appears on the SmartPAC 2 screen next to the item you selected.

You can also use the cursor keys to enter information on these entry screens (see *Cursor Keys*, page 3-5). The CLEAR key is used to delete entered information (see *CLEAR Key*, next). To cancel a numeric entry operation, press RESET (see *RESET Key*, page 3-10).

The number keys are also used to execute several functions. Pressing the 8 and 0 keys at the same time saves a screen capture of the current display (see page 3-23). Pressing 2 and 0 simultaneously on a selected Run mode screen programs the next function key you press as a Hot key for that screen (see page 6-3). Pressing the decimal point (.) key on the Main Run Menu opens a window in the upper right corner of the screen displaying the ram angle in large characters (see page 6-6). This window carries over to other Run mode screens on which a prominent ram angle display is useful such as angle adjustment screens for cams and die protection sensors. These keys and their functions are summarized in Table 3-1.

Table 3-1. Number Key Functions

Key/Key Combination	Function
8 and 0	Capture screen
2 and 0	Program Hot key
Decimal point (.)	Display ram angle on Main Run Menu and selected Run mode screens

## CLEAR Key

The CLEAR key, shown in Figure 3-7, is used to delete digits or characters in a SmartPAC 2 entry window (see Figure 3-5 and Figure 3-6). You also use the CLEAR key as directed in other procedures, such as deleting a tool.

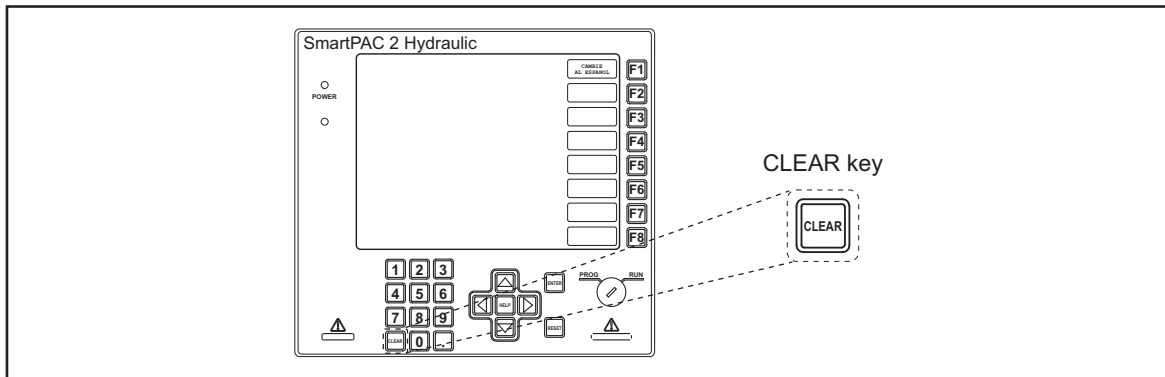


Figure 3-7. Clear Key

## Cursor Keys

The cursor, or arrow, keys, shown in Figure 3-8, are used to

- Move the highlight bar over an item you want to select on a SmartPAC 2 display
- Increase or decrease numeric values in SmartPAC 2 entry windows and screens
- Move the highlight box over a letter you want to enter in a SmartPAC 2 entry window
- Set the Ready signal for sensors and timing for cams

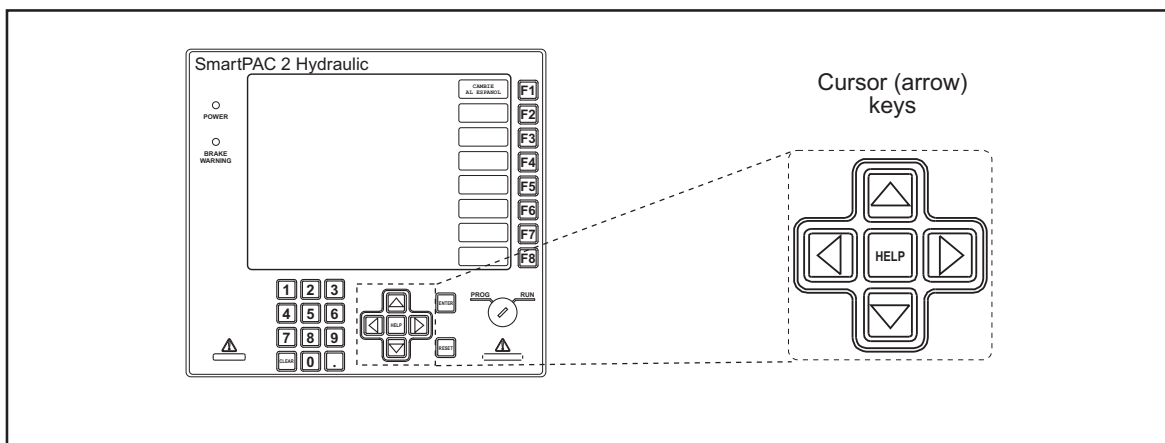


Figure 3-8. Cursor Keys



## Using Cursor Keys to Move the Highlight Bar

The cursor keys control the movement of the highlight bar that you use to select items on a SmartPAC 2 Hydraulic screen, such as the CAM SWITCH item on the SmartPAC 2 Hydraulic Run Menu shown in Figure 3-9.



*Figure 3-9. Highlighted Item on Run Menu*

Pressing the Up (▲) and Down (▼) cursor keys moves the highlight bar up and down the list of items. When the highlight bar rests on the item you want to select, press ENTER.

The highlight bar moves one item up or down for each depression of the appropriate key. If you hold down the key, the highlight bar moves until you release it.

If there is only one column of items displayed, the highlight bar wraps to the top of the list when you press the Down (▼) cursor key with the bar on the last item. The highlight bar moves to the bottom of the list when you press the Up (▲) cursor key with the bar on the first item.

If there is more than one column of items, the highlight bar will move from the bottom of one column to the top of the column to the right of it when you press the Down (▼) cursor key with the bar on the last item in the first column. You can also use the Left (◀) and Right (▶) cursor keys to move between columns on the same level.

When there are more columns than can be displayed on the screen (the tool list in Tool Manager, for example, can have up to nine columns), pressing the Left (◀) and Right (▶) cursor keys will move you to the hidden columns. The highlight bar wraps to an item in the leftmost column when the Right (▶) cursor key is pressed with the bar in the rightmost column. Likewise, the bar wraps to the rightmost column when the Left (◀) cursor key is pressed with the highlight bar in the leftmost column.

## Using Cursor Keys to Increase or Decrease Numeric Values

The Up (▲) and Down (▼) cursor keys can be used to increase and decrease numeric values displayed in SmartPAC 2 entry windows (see Figure 3-5 and Figure 3-6) and on some SmartPAC 2 screens. To increase the value, press the Up (▲) cursor; to decrease the value, press the Down (▼) cursor. The displayed value increases or decreases one unit for each depression of the appropriate key. If you hold down the key, the value continues to increase or decrease until you release it.

## Using Cursor Keys to Highlight Letters in Entry Windows

You can use Up (▲), Down (▼), Left (◀), and Right (▶) cursor keys to move the highlight box from one letter (including symbols and the space character) to another in alphabetic and alphanumeric entry windows (see Figure 3-5 and Figure 3-6). When the letter you want is highlighted, you press ENTER to accept that letter. To accept an entire alphabetic or alphanumeric entry, press function key **F6**.

In the alphanumeric entry window (see Figure 3-6), you can press the **F2** key to change between upper- and lower-case letters. For more information about alphanumeric mode, see *Tool Number Mode*, page 4-4.

## Using Cursor Keys to Set Timing

You can use the cursor keys to set timing for your programmable cam switch and optional sensors, setting the ram angle and position at which you want a cam channel or Ready signal to turn on and off. For detailed instructions on using die protection sensors and cams, see *DIE PROTECTION (Optional)*, page 5-16 and *CAM SWITCH*, page 5-38.

Timing settings are made on a ram angle clock that appears on Die Protection and Cam Switch screens in Program and Run modes. When these screens are displayed, the cursor keys move two cursors around this diagram, one cursor controlling the angle at which the sensor or cam turns on, the other controlling the angle at which the sensor or cam turns off. The two cursors define the endpoints of a highlighted arc that indicates graphically the duration of the On signal. The four cursor keys function in the following manner:

- Right (▶) cursor key increases the On setting, moving the On cursor clockwise.
- Left (◀) cursor key decreases the On setting, moving the On cursor counterclockwise.
- Up (▲) cursor key increases the Off setting, moving the Off cursor clockwise.
- Down (▼) cursor key decreases the Off setting, moving the Off cursor counterclockwise.

The following steps illustrate how the cursor keys are used to set timing for a cam channel in Program mode.

1. Before On/Off settings have been made for a cam channel, On and Off ram angles are both 0°, as shown in Figure 3-10, page 3-8. The “dwell” (i.e., the number of degrees during which the channel is On) is 0°. The ram position (in inches) at which the cam turns on and off is also displayed.

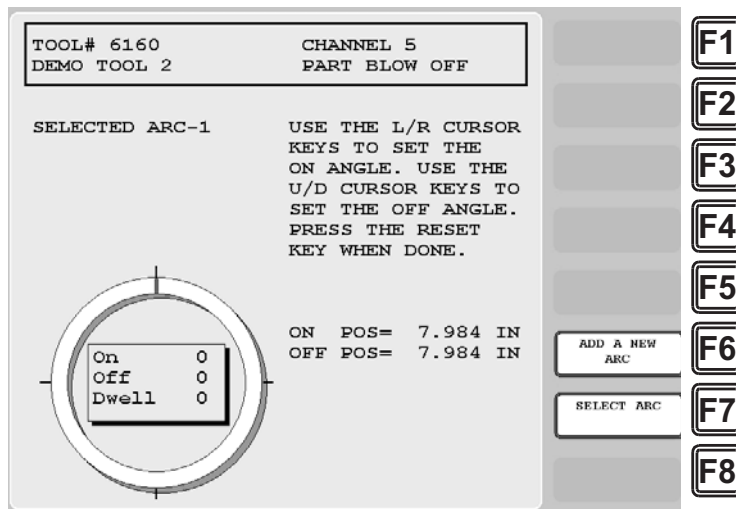


Figure 3-10. Cam Channel Timing: On=0°, Off=0°

- To set the On angle, you use the Left (◀) and Right (▶) cursor keys. Press and hold down the Right (▶) cursor key to move the On cursor clockwise around the ram angle diagram until you reach 239°. The On angle is shown in the window in the center of the ram angle clock; the ram On position is displayed in the ON POS = field. Your display should look like the one shown in Figure 3-11. If you overshoot the On angle you want, simply press the Left (◀) cursor key to move the On cursor counterclockwise. Notice that the dwell has changed to 121° (i.e., 360°-239°), indicating that the cam channel is on for 121°. The dwell angle is shown graphically by the highlighted arc on the ram angle clock.

## NOTICE

Zero degrees (0°) and 360° are located at the same point in the ram angle diagram.

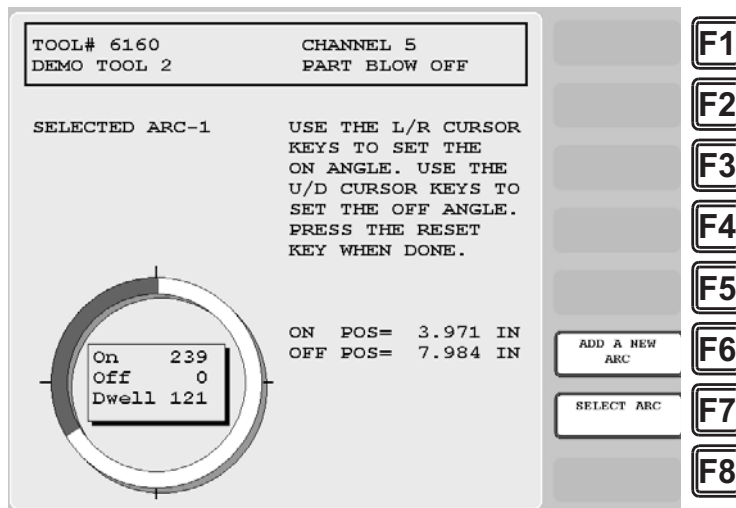


Figure 3-11. Cam Channel Timing: On=239°, Off=0°

- To set the Off angle, you use the Up (▲) and Down (▼) cursor keys. With the cam channel timing set as in Figure 3-11, press the Down (▼) cursor key and hold it down until the Off cursor, moving counterclockwise, reaches 270° as shown in the window inside the ram angle diagram. The ram Off position is shown in the OFF POS = field. The channel timing display should look like the one shown in Figure 3-12. If you overshoot the desired Off angle, press the Up (▲) cursor key to move the Off cursor clockwise.

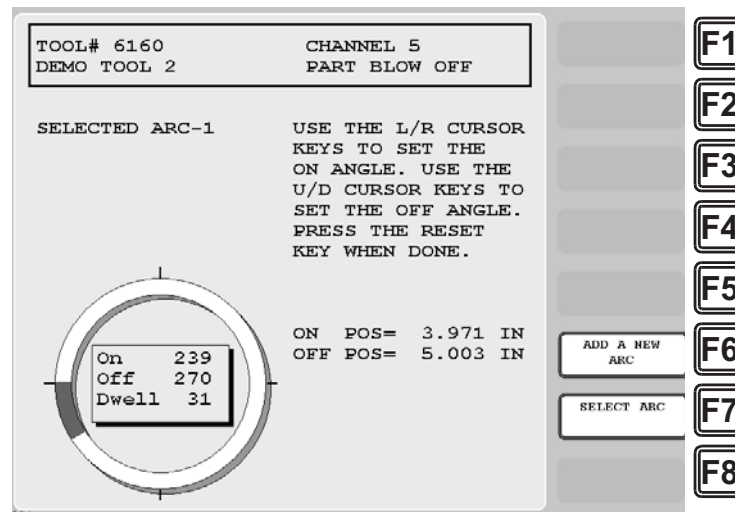


Figure 3-12. Cam Channel Timing: On=239°, Off=270°

## HELP Key

The HELP key, shown in Figure 3-13, provides information about the current SmartPAC 2 display. Pressing HELP takes you to a Help screen that instructs you how to use the display and explains key terms you need to know.

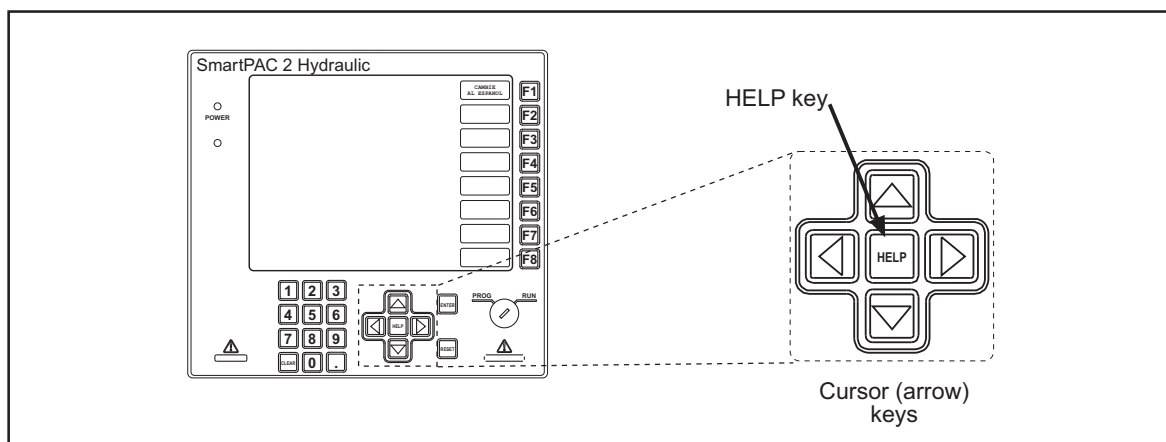


Figure 3-13. HELP Key

## ENTER Key

The ENTER key, shown in Figure 3-14, is used to complete selection of an item on a SmartPAC 2 display. After you have highlighted the item with the cursor keys (see *Cursor Keys*, page 3-5), pressing the ENTER key displays the SmartPAC 2 Hydraulic screen for that item. You also use the ENTER key for other functions, such as to accept a number you have keyed in, to start loading settings for a tool, etc.

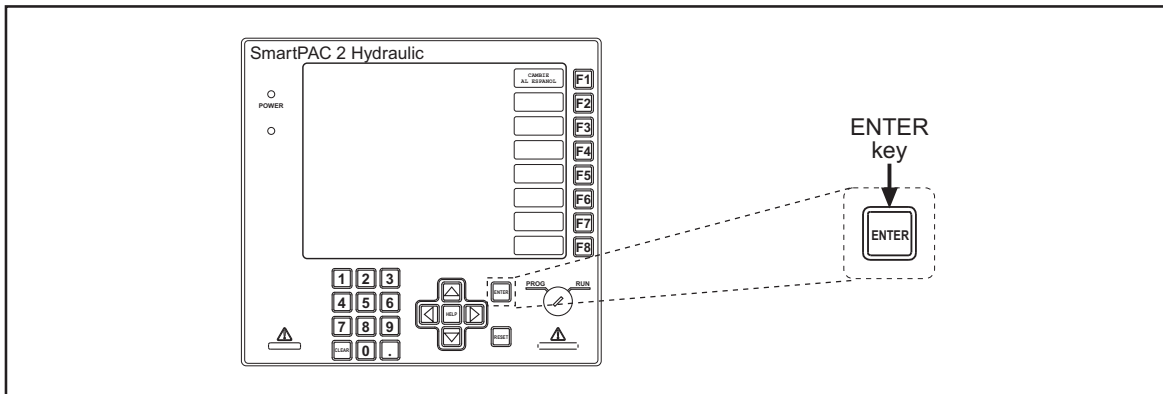


Figure 3-14. ENTER Key

### NOTICE

#### **SELECT = HIGHLIGHT + ENTER**

When this manual instructs you to *select* an item, you should highlight the item and press ENTER.

## RESET Key

The RESET key, shown in Figure 3-15, page 3-11, has two functions: to exit from the current display and return to the previous display and to reset SmartPAC 2 when an error is generated or a counter preset is reached.

When RESET is used to exit from a display, a screen message indicates the conditions under which RESET should be pressed (e.g., *PRESS RESET WHEN DONE* or *PRESS RESET TO CANCEL*).

When RESET is used to reset SmartPAC 2, the message documenting the error or indicating that the counter preset has been reached disappears, and you can once again run the press.

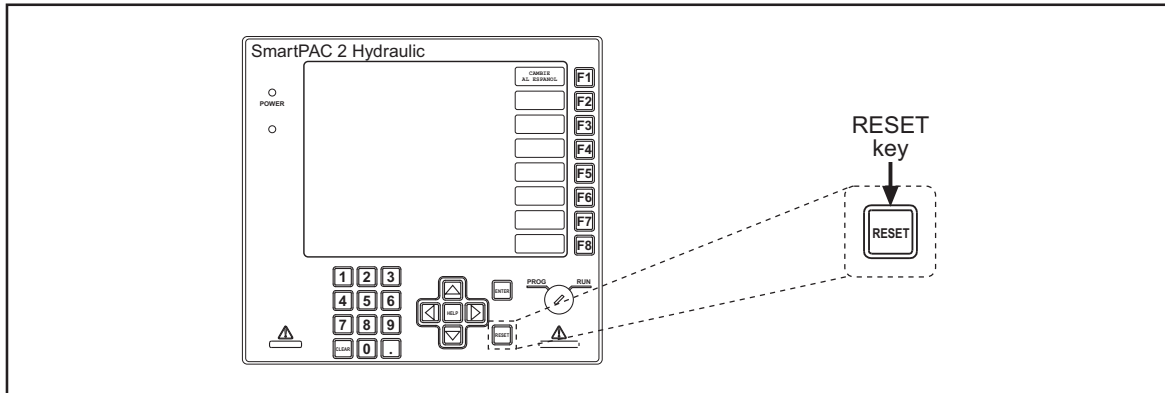


Figure 3-15. RESET Key

## Program/Run Key Switch

The Program/Run key switch, shown in Figure 3-16, is used to move between Program and Run modes (see *SmartPAC 2 Operating Modes*, page 3-15).

- When you turn the key switch to PROG, SmartPAC 2 enters Program mode
- When you turn the key switch to RUN, SmartPAC 2 enters Run mode

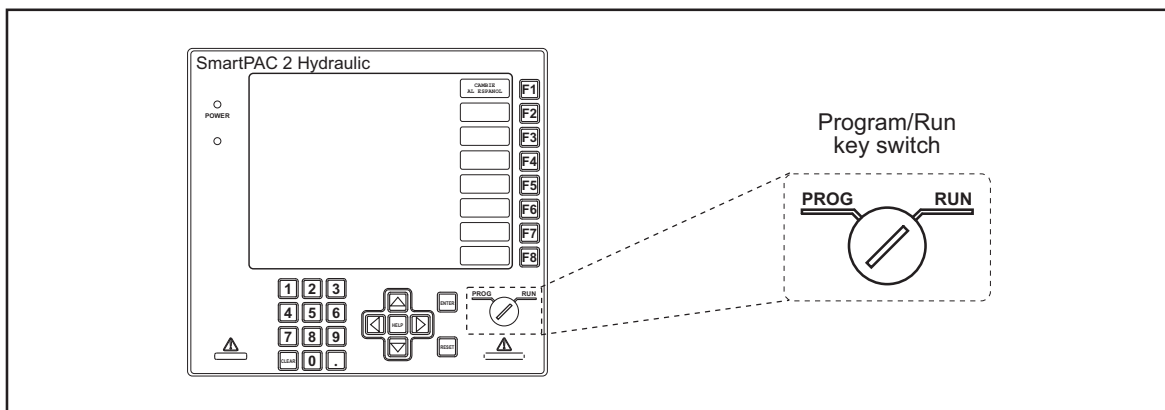


Figure 3-16. Program/Run Key Switch

The switch has a removable key so that access to Run mode can be controlled.

### NOTICE

SmartPAC 2 changes from Run to Program mode or from Program to Run when the display shows the Main menu in the mode you are leaving. If you turn the key and nothing happens, press RESET repeatedly until you see the new mode appear on the display.

## Function Keys

The function keys, shown in Figure 3-17, are used to perform specific tasks on SmartPAC 2 Hydraulic screens. Located on the SmartPAC 2 Hydraulic panel along the right edge of the LCD, these eight keys, **F1** through **F8**, are assigned different functions on each SmartPAC 2 display. Specific functions are shown in a rectangular label on the LCD just to the left of the function key number label. When a function key has no label, no function has been assigned to that key on that screen. Screen messages may instruct you to press specific function keys to perform certain tasks. In most of the screens in Run mode, the **F8** key has been assigned the function of returning you to the Main Run Menu.

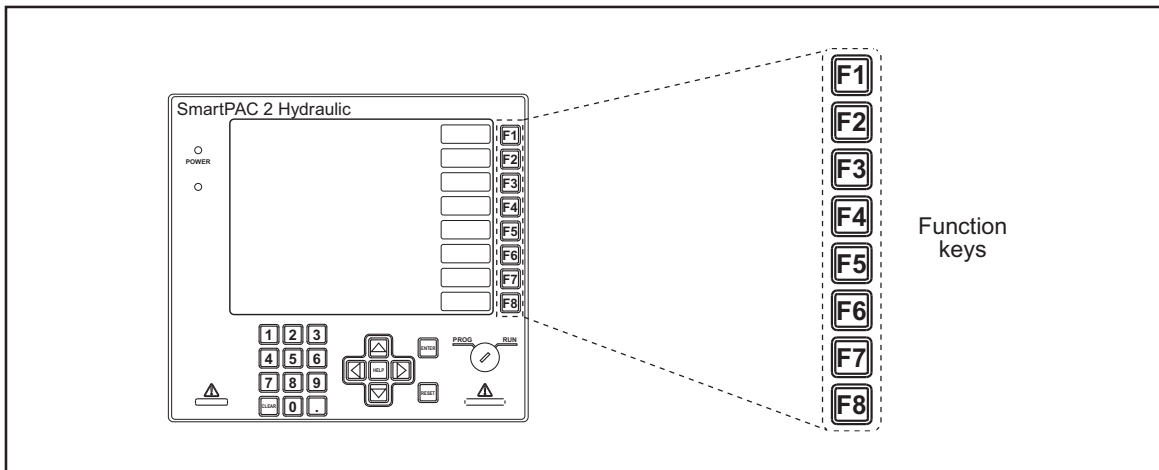


Figure 3-17. Function Keys

In Run mode, you can program function keys as “Hot” keys to give you quick access to frequently-used screens. See *Hot Keys*, next, for more information.

## Hot Keys

Hot keys, shown in Figure 3-18, page 3-13, are function keys you program to take you directly to Run mode screens you use frequently. When a function key is programmed as a Hot key, a description of the screen to which the key is linked appears in the label to the left of the function key number on the Main Run Menu. When you press that function key, SmartPAC 2 goes to that screen. For detailed instructions on how to use Hot keys, see page 6-3.

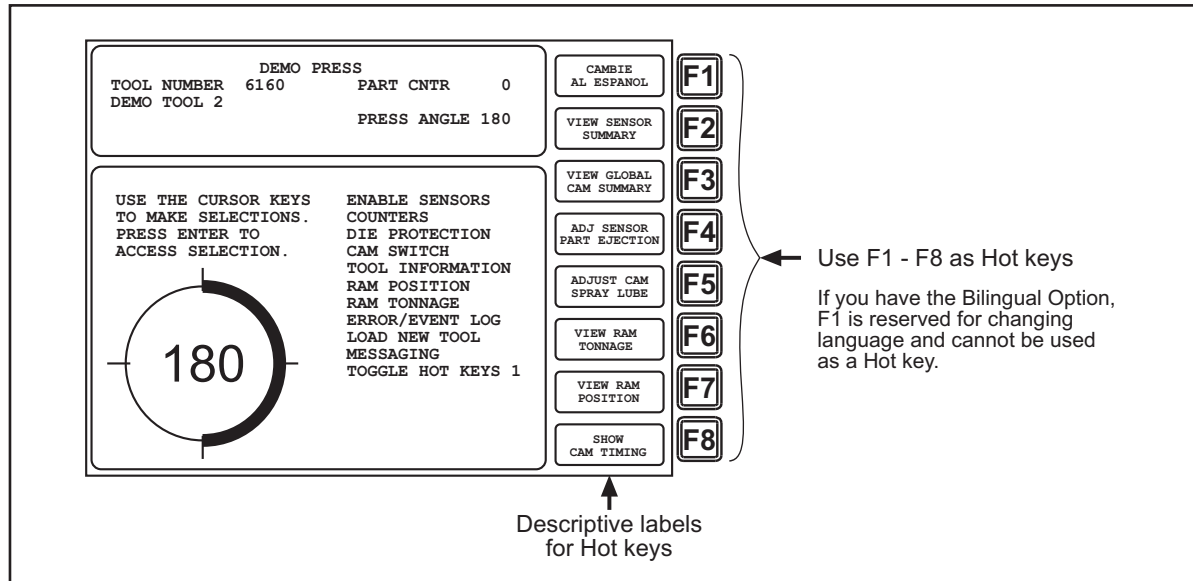


Figure 3-18. Hot Keys Programmed on Main Run Menu

### Example

You frequently need to adjust the timing for the cam channel that controls part blowoff. For convenience, you set up a Hot key to take you directly from the Main Run Menu to the adjust screen for that cam channel.

You can use all the function keys, **F1** through **F8**, as Hot keys.

### NOTICE

If you have the Bilingual Spanish/English option, **F1** is reserved for switching between languages in Run mode and cannot be used as a Hot key.

Hot keys are identified by the red frame around their descriptive labels. If your SmartPAC 2 Hydraulic does not have the bilingual option installed, you can have two sets of Hot keys, making a total of sixteen. To switch from one set to the other, highlight “TOGGLE HOT KEYS 1,” and press ENTER. “TOGGLE HOT KEYS 2” replaces “TOGGLE HOT KEYS 1” on the menu, and the other set of Hot key labels appears.

## SmartPAC 2 Hydraulic Display Layout in Run Mode

The layout of the SmartPAC 2 Hydraulic display in Run mode is shown in Figure 3-19, page 3-14. At the top of the display is a status box that contains information such as the press name and the press speed or angle. Below the status box is the Run window, which contains menu items, instructions, graphics, and other elements. Along the right edge of the display are the eight function keys with descriptive labels shown for active keys. If any function keys have been programmed as Hot keys (see page 3-12), their labels have a red border.

You progress from menu to menu in Run mode by use of the ENTER and RESET keys, as instructed on the display. You navigate in the same way in Initialization and Program modes.



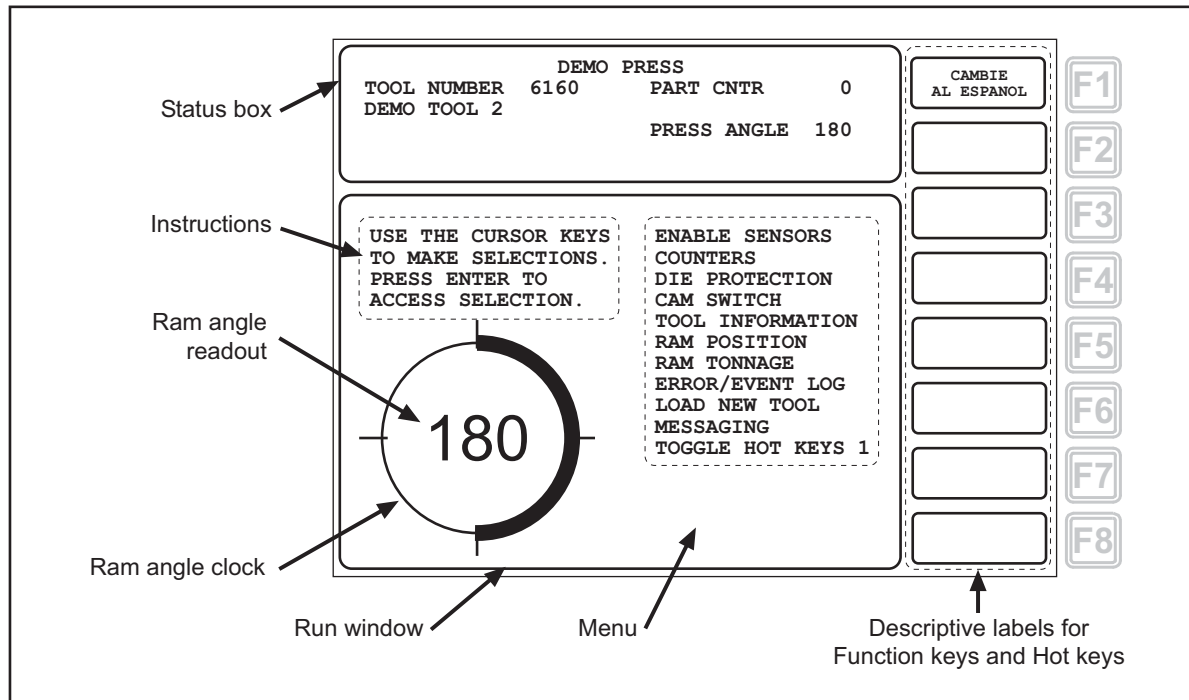


Figure 3-19. SmartPAC 2 Hydraulic Display, Run Mode

## Selecting an Item on a Display

To select an item on a SmartPAC 2 display, highlight the item you want, using the cursor keys (see page 3-6), and press ENTER. Figure 3-20 shows the Main Run Menu with the “CAM SWITCH” item highlighted. SmartPAC 2 goes to the display you have selected, on which you can select another item or make a setting. Screen messages tell you how to proceed on each display.

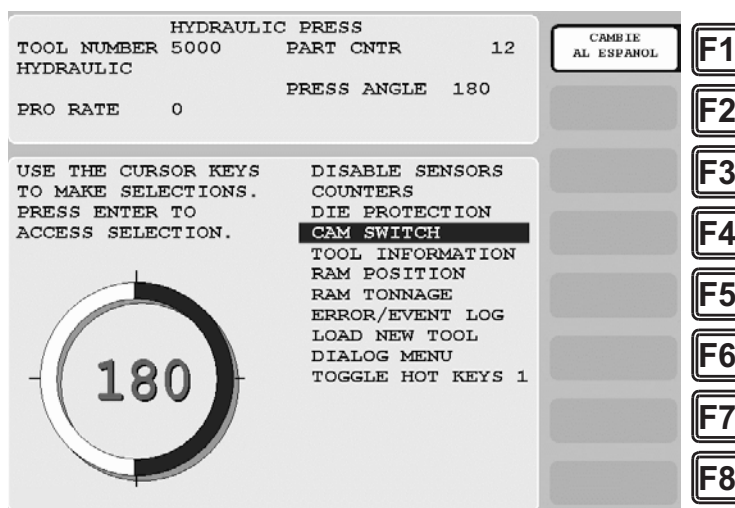


Figure 3-20. Main Run Menu with “CAM SWITCH” Highlighted

## SmartPAC 2 Operating Modes

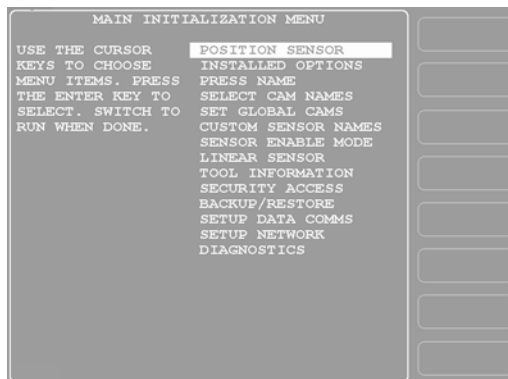
SmartPAC 2 has three modes of operation: Initialization mode, Program mode, and Run mode. The Main, or top, menu for each mode is shown in Figure 3-21 along with a physical description of the display, a summary of what you can do in that mode, and a reference to the chapter in which that mode is documented. Table 3-2, page 3-16 provides more detail about what you can do in each mode, instructs you in how to enter and exit the mode, and refers you to other sections of the manual.

### NOTICE

To exit any mode, be sure you are in the Main menu, shown in Figure 3-21. If you are not in the Main menu, press RESET repeatedly until the Main menu appears.

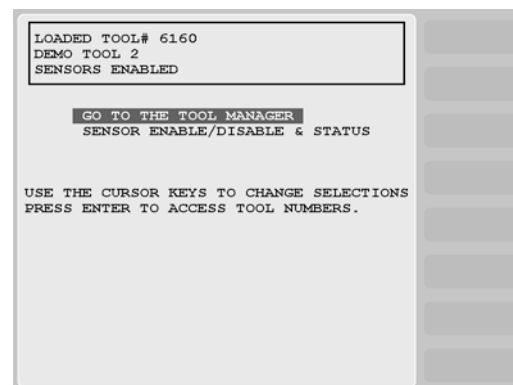
#### Initialization Mode (Chapter 4)

white text on dark blue display  
settings for the press



#### Program Mode (Chapter 5)

black text on light green display  
settings for individual tools



#### Run Mode (Chapter 6)

black text on light blue display  
live screens; some adjustments possible "on the fly"

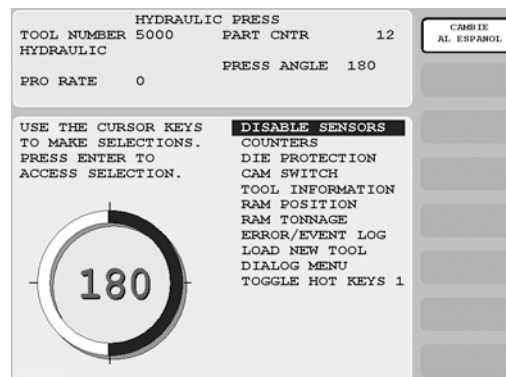


Figure 3-21. SmartPAC 2 Operating Modes, Showing Main Menus

Table 3-2. Initialization, Program and Run Modes: Entry and Exit Procedures

Mode	How to Enter This Mode	How to Exit This Mode
<b>Initialization</b> Make settings that control operation of SmartPAC 2 with all tools. You use Initialization mode extensively when you install a new SmartPAC 2. You will use this mode only occasionally after you set up SmartPAC 2 and the press is running. See page 3-17 and Chapter 4. White text on dark blue display.	Turn Program/Run key to PROG.* Then press the “1” and “CLEAR” keys simultaneously and hold down a few seconds until the Main Initialization Menu appears.	<i>To switch to Program mode:</i> Press RESET. <hr/> <i>To switch to Run mode:</i> Turn the Program/Run key to RUN.*
<b>Program</b> Create, modify and load settings for individual tools that control SmartPAC 2 operation when that tool is loaded. See page 3-19 and Chapter 5. Black text on green display.	<i>From Run mode:</i> Turn the Program/Run key to PROG.* <hr/> <i>From Initialization mode:</i> Go to the Main Initialization Menu, and Press RESET. —or— Turn the Program/Run key to RUN and then back to PROG.*	<i>To switch to Run mode:</i> Turn the Program/Run key to RUN.* <hr/> <i>To switch to Initialization mode:</i> Press the “1” and “CLEAR” keys simultaneously and hold down a few seconds until the Main Initialization Menu appears.
<b>Run</b> Run the press. In this mode you can adjust counters, cams, sensors and other functions while the press is running. See page 3-21 and Chapter 6. Black text on light blue display.	Turn the Program/Run key to RUN.*	<i>To switch to Program mode:</i> Turn the Program/Run key to PROG.*
* If you turn the key and nothing happens, press RESET repeatedly until SmartPAC 2 changes modes. Before you turn the Program/Run key, make sure SmartPAC 2 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.		

## Initialization Mode

Initialization mode allows you make settings that control the operation of SmartPAC 2 with any tool. (Settings for individual tools are made in Program mode—see page 3-19.)

Initialization mode is used extensively when you install a new SmartPAC 2, but you will likely use it only occasionally after SmartPAC 2 is set up and the press is running.

The Main Initialization Menu is shown in Figure 3-22. Figure 3-23, page 3-18 shows you how to navigate through the SmartPAC 2 Hydraulic menus in Initialization mode.

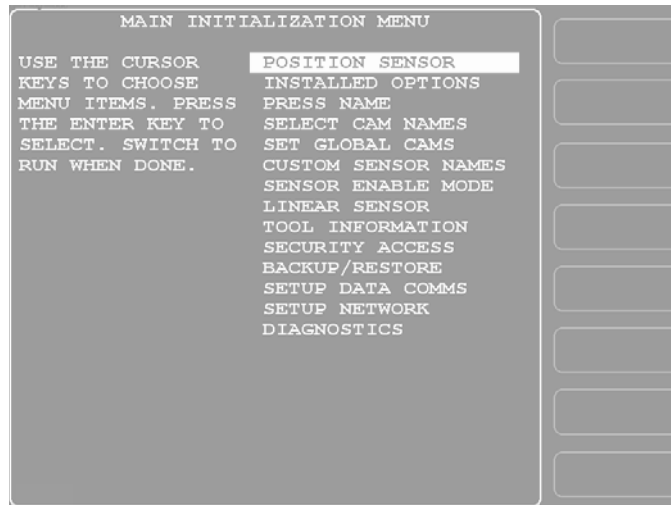


Figure 3-22. Initialization Mode Main Menu

See Chapter 4 for detailed instructions on how to use SmartPAC 2 Hydraulic in Initialization mode.

### NOTICE

For help with an item on the Main Initialization Menu, press the HELP key when that screen is displayed.

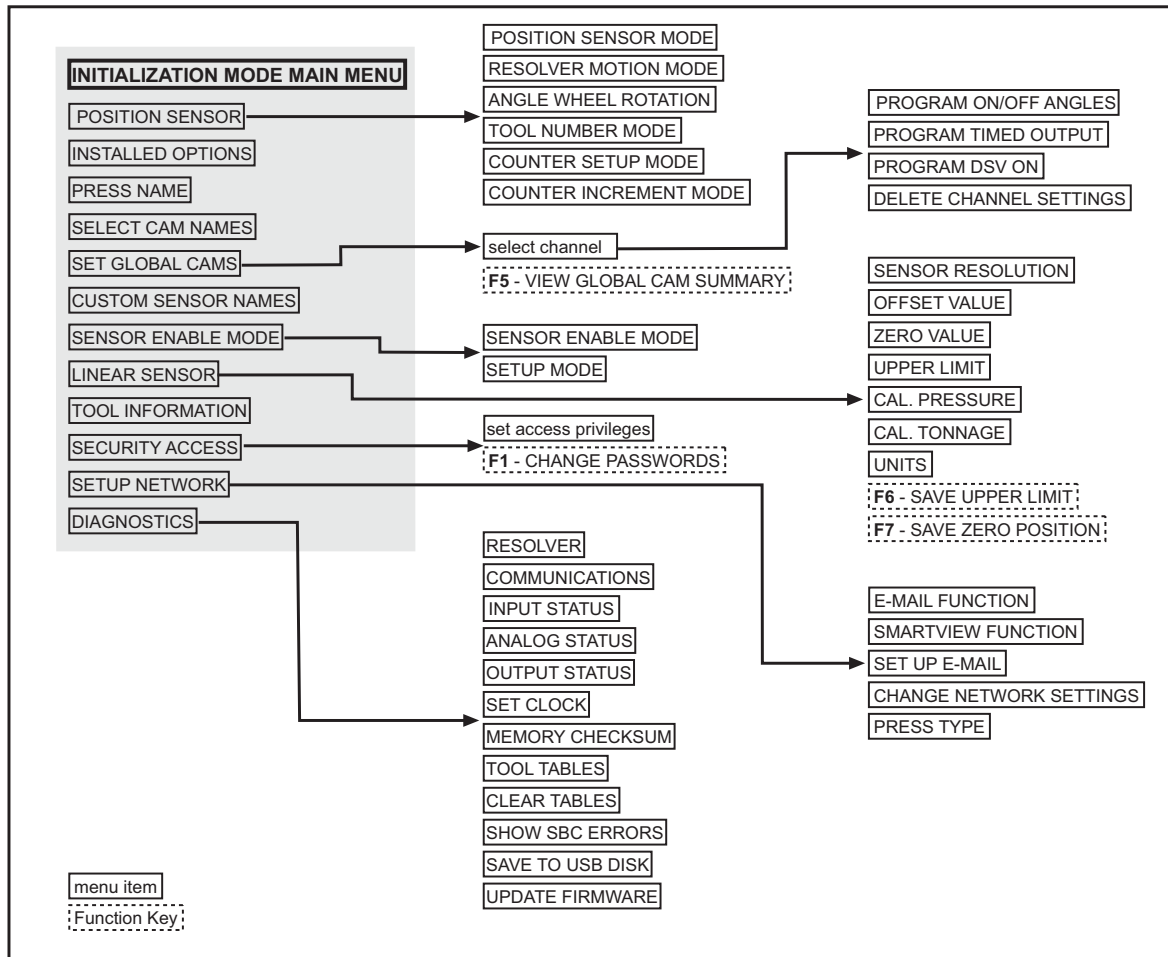


Figure 3-23. Navigation Example: Initialization Mode

Press ENTER to go in direction of arrow. Press RESET to return to previous menu.

This illustration includes some optional features. Your menus may be different.

## Program Mode

Program mode allows you to create, copy, modify and delete tool settings as well as enable or disable sensors. The Main Program Menu is shown in Figure 3-24. Figure 3-25, page 3-20 shows you how to navigate through the SmartPAC 2 Hydraulic menus in Program mode.

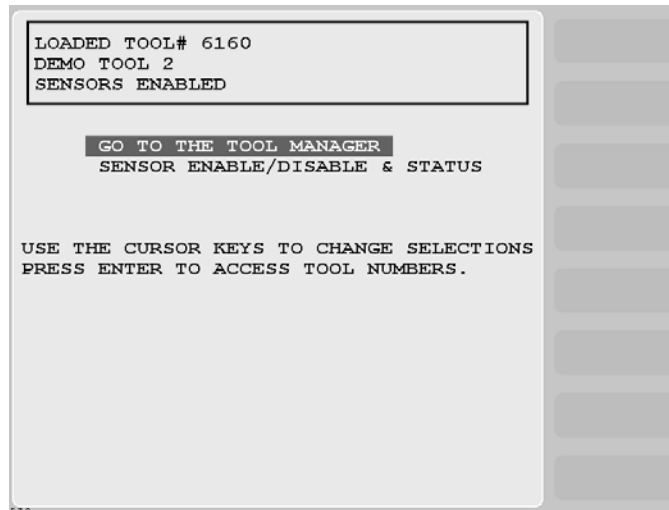


Figure 3-24. Program Mode Main Menu

See Chapter 5 for detailed instructions on how to use SmartPAC 2 Hydraulic in Program mode.

### NOTICE

For help with an item on the Main Program Menu, press the HELP key when that screen is displayed.

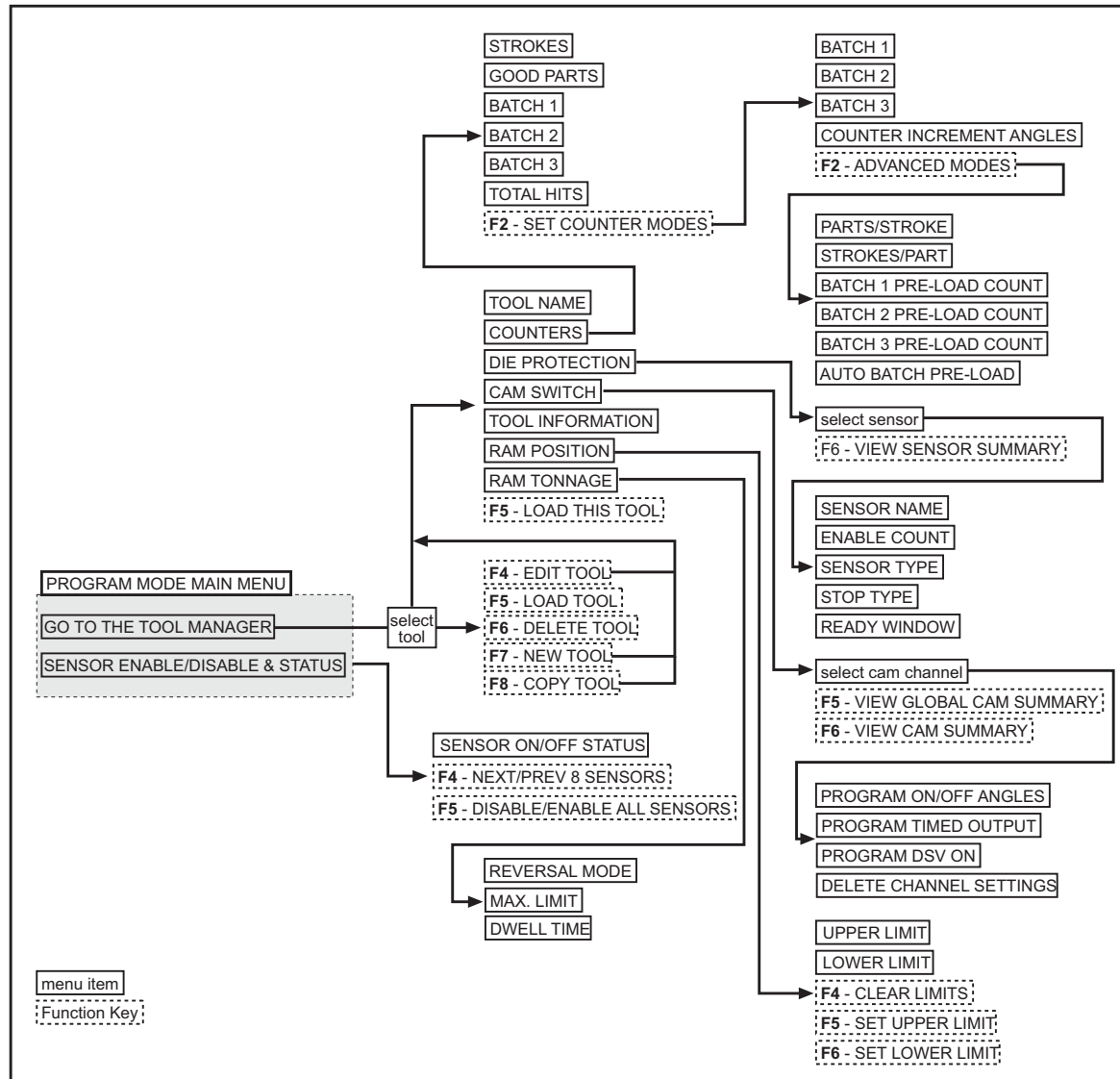


Figure 3-25. Navigation Example: Program Mode

Press ENTER to go in direction of arrow. Press RESET to return to previous menu.  
This illustration includes some optional features. Your menus may be different.

## Run Mode

Run mode is the mode you use to run the press. The Main Run Menu, shown in Figure 3-26, displays the ram stroke on a ram 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 ram 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.

Figure 3-27, page 3-22 shows you how to navigate through the SmartPAC 2 Hydraulic menus in Run mode.

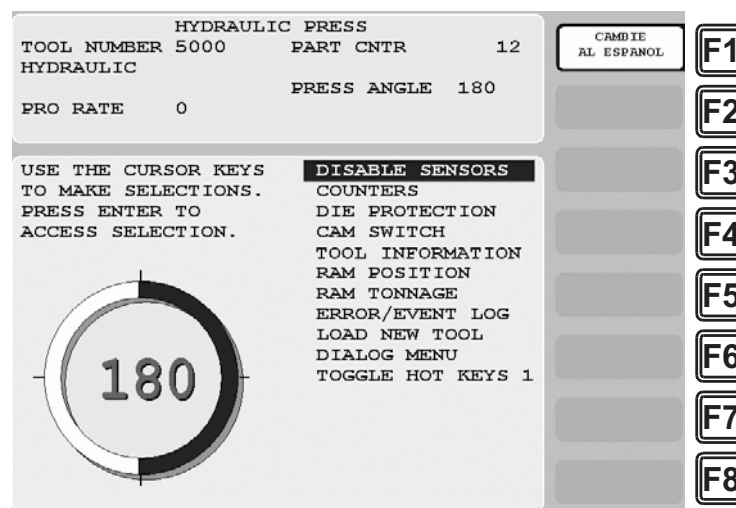


Figure 3-26. Run Mode Main Menu

See Chapter 6 for detailed instructions on how to use SmartPAC 2 Hydraulic in Run mode.

### NOTICE

For help with an item on the Main Run Menu, press the HELP key when that screen is displayed.



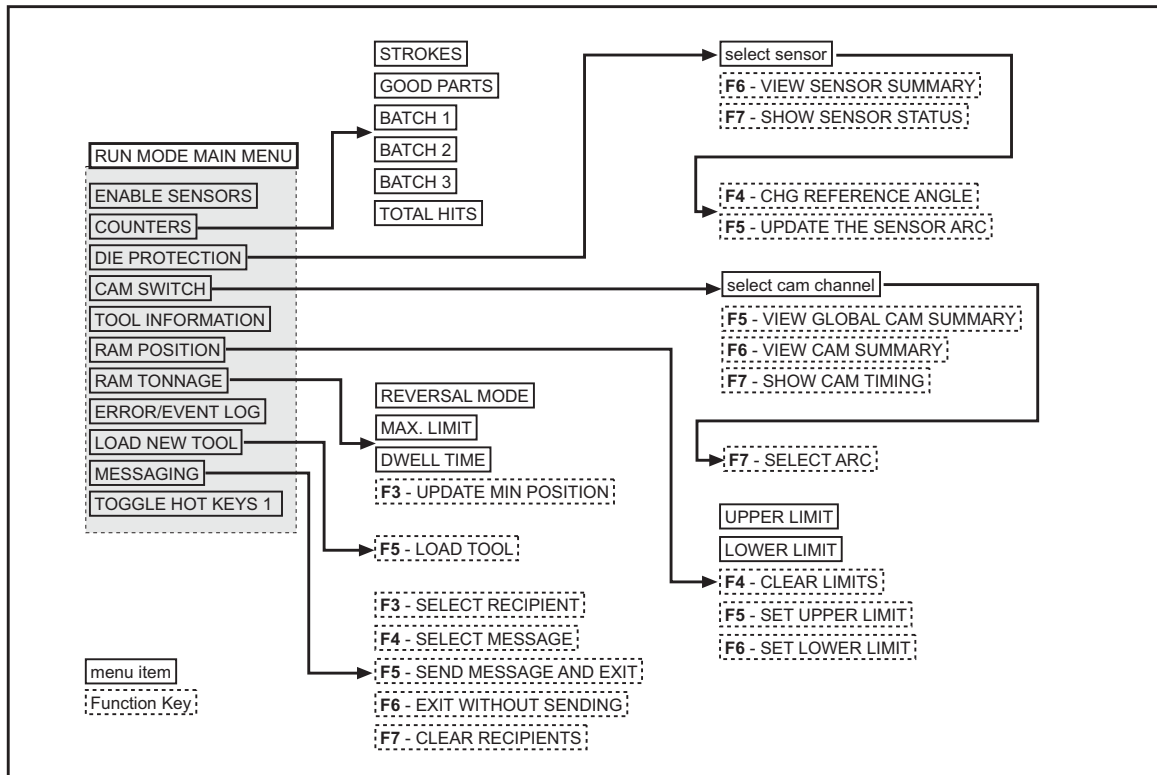


Figure 3-27. Navigation Example: Run Mode

Press ENTER to go in direction of arrow. Press RESET to return to previous menu.

This illustration includes some optional features; your menus may be different.

## Screen Capture

SmartPAC 2 allows you to save a copy of one or more SmartPAC 2 screens to aid in troubleshooting or maintain records of tool settings such as cam on/off angles. Your screen capture options depend on your SmartPAC 2 Main firmware version, which you can easily determine by accessing the Installed Options screen (see page 4-6.)

If the SmartPAC 2 Main version is earlier than V 5.3.1, refer to *Screen Capture in SmartPAC 2 Main Versions Earlier than V 5.3.1*, below. If your version of SmartPAC 2 Main is V 5.3.1 or later, refer to *Screen Capture in SmartPAC 2 Main Versions V 5.3.1 and Later*, page 3-25.

### Screen Capture in SmartPAC 2 Main Versions Earlier than V 5.3.1

If the SmartPAC 2 Main version is earlier than Version 5.3.1, all screen captures are saved to SmartPAC 2 memory, each new screen capture overwriting the previous one. You can e-mail the current screen capture in memory to a selected recipient if the SmartPAC 2 is connected to a computer network and recipient e-mail addresses have been set up in SmartView. You can also save the screen capture to a USB disk inserted in the SmartPAC 2 USB connector.

#### Saving a Screen Capture to SmartPAC 2 Memory

To save a copy of a SmartPAC 2 screen to SmartPAC 2 memory, do the following:

1. On the SmartPAC 2 front panel, access the screen you want to capture.
2. Press the 8 and 0 (zero) keys simultaneously for a second or two until the message “Capturing Screen...” in very small letters appears at the top right of the display.

The captured screen remains in SmartPAC 2 memory until the next screen capture is performed, the new screen capture overwriting the old one.

#### E-Mailing a Screen Capture

E-mail provides a convenient way of sharing screen captures with individuals responsible for troubleshooting your SmartPAC 2 (e.g., Wintriss Tech. Support) or maintaining a record of tool settings. In order to use e-mail, your SmartPAC 2 must be connected to a computer network and e-mail addresses of recipients configured in SmartView (see page D-14). To e-mail a copy of the screen currently residing in SmartPAC 2 memory (see *Saving a Screen Capture to SmartPAC 2 Memory*, above), do the following:

1. Access the Run mode Main Menu (see Figure 6-1, page 6-1), and select MESSAGING. A screen displays with the headings “From:,” “To:,” and “Message:” at the top and a window with a list of e-mail recipients beneath. The “From:” slot is filled with the e-mail address that has been configured for your SmartPAC 2 (see page D-2).
2. Highlight the recipient you want, using the Up (▲) or Down (▼) cursor key, then press **F3** (Select Recipient). The recipient you selected appears in the “To:” slot.
3. Press **F4** (Select Message) to display a list of available messages, highlight the “Screen Capture” item, and press **F4** again. “Screen Capture” appears in the “Message:” slot.

4. Press **F5** (Send Message and Exit). The message “Sending Message” appears beneath the message window, and you are returned to the Main Run Menu.

Refer to *MESSAGING*, page 6-27 for additional information about sending e-mail messages.

## Saving a Screen Capture to a USB Disk

You can save a copy of the current screen residing in SmartPAC 2 memory to a USB disk inserted in the USB connector on the SmartPAC 2 processor board. A USB disk allows you to transfer the screen capture to another computer when your SmartPAC 2 is not networked. The error/event log (see page 6-25) and other information maintained in a special SmartPAC 2 buffer are saved along with the screen capture. To save this information, do the following:

### CAUTION

#### POWER DOWN SMARTPAC 2 BEFORE INSERTING USB DISK

Do not insert a USB disk into the USB connector while SmartPAC 2 is running. The USB disk could touch a component on the SmartPAC 2 board, resulting in a short circuit and damage to the board. Always power down SmartPAC 2 before inserting a USB disk.

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

1. Power down the SmartPAC 2.
2. Open the SmartPAC 2 enclosure or console.
3. Locate the USB connector, J121, on the SmartPAC 2 board (see Figure 2-11, page 2-19), then carefully insert the USB disk into the USB connector.

### NOTICE

The USB disk can be inserted into the USB connector only one way. Do not attempt to force the USB disk into the connector.

4. Shut the enclosure or console door, and power up the SmartPAC 2.
5. Access the Main Initialization Menu (see Figure 4-1, page 4-1), select **DIAGNOSTICS**, and when the Diagnostics Menu (see Figure 4-27, page 4-36) 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.
6. When the second message appears, press **RESET** to return to the Diagnostics Menu.
7. Power down the SmartPAC 2, and remove the USB disk.

The screen capture is saved to a folder on the USB disk named UpLoadnnnnnnnnn, where *nnnnnnnnnn* is the serial number of the SmartPAC 2. The screen capture itself is named ScreenCapturennnnnnnnn.gif. There are additional files in the UpLoad folder.

## Screen Capture in SmartPAC 2 Main Versions V 5.3.1 and Later

If you are running SmartPAC 2 Main Version 5.3.1 or later, screen captures can be saved to SmartPAC 2 memory as in earlier versions or, if a properly configured USB disk is inserted in the SmartPAC 2 USB connector when the capture is made, you can save one or more screen captures directly to the USB disk. If you choose to continue saving screen captures to SmartPAC 2 memory, you can still copy the screen capture to an e-mail message or to a USB disk as described in *Screen Capture in SmartPAC 2 Main Versions Earlier than V 5.3.1*, above.

### Saving Multiple Screen Captures to a USB Disk

To save one or more screen captures to a USB disk, do the following:

#### CAUTION

##### POWER DOWN SMARTPAC 2 BEFORE INSERTING USB DISK

Do not insert a USB disk into the USB connector while SmartPAC 2 is running. The USB disk could touch a component on the SmartPAC 2 board, resulting in a short circuit and damage to the board. Always power down SmartPAC 2 before inserting a USB disk.

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

1. At your PC, create a folder named “Capture” in the root directory of the USB disk.
2. Power down the SmartPAC 2, and open the SmartPAC 2 enclosure or console.
3. Locate the USB connector, J121, on the SmartPAC 2 board (see Figure 2-11, page 2-19), then carefully insert the USB disk into the USB connector.

#### NOTICE

The USB disk can be inserted into the USB connector only one way. Do not attempt to force the USB disk into the connector.

4. Shut the enclosure or console door, and power up the SmartPAC 2.
5. On the SmartPAC 2 front panel, access one of the screens you want to capture.
6. Press the 8 and 0 (zero) keys simultaneously for a second or two until the message “USB Capturing Screen...” in very small letters appears at the top right of the display.
7. Repeat steps 5 and 6 for additional screens. The number of screens you can capture is limited only by the capacity of your disk.
8. When you are finished, open the enclosure or console, and remove the USB disk.

Captured screens are saved to a folder in the Capture folder named “Capturennnnnnnn,” where *nnnnnnnn* is the SmartPAC 2 serial number. Screen capture files are named using a prefix that stands for the operating mode in which the screen functions (i.e., INIT, PROG, and RUN) followed by the date and time of the capture (e.g., INIT-02212007102234).

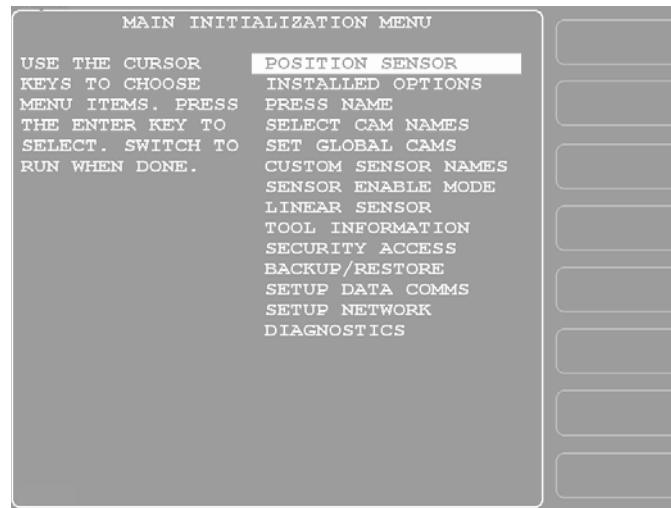
The date is expressed in *mmddyyyy* (month/day/year) format, the time in *hhmmss* (hours/minutes/seconds) military format. All screen captures are saved as .gif files.



# Chapter 4. Initialization Mode

---

This chapter shows you how to make settings in SmartPAC 2 Initialization mode. Initialization settings, which are entered via the Main Initialization Menu (see Figure 4-1), control operation of SmartPAC 2 Hydraulic for all tools. (You make settings for individual tools in Program mode—see Chapter 5).



*Figure 4-1. Main Initialization Menu*

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

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 2 options installed, you will also make Initialization settings for them. Refer to the user manuals for the options you have purchased for instructions.

## Entering and Exiting Initialization Mode

### NOTICE

#### **SELECT = HIGHLIGHT + ENTER**

When this manual instructs you to select an item, you should highlight the item, and press ENTER.

Follow the instructions shown in Table 4-1, page 4-2 to enter and exit Initialization mode. See Figure 3-23, page 3-18 for help in navigating in Initialization mode.

Table 4-1. Instructions for Entering and Exiting Initialization Mode

To Enter Initialization Mode	To Exit Initialization Mode
<ol style="list-style-type: none"> <li>1. Turn Program/Run key to PROG.*</li> <li>2. Press the “1” and “CLEAR” keys simultaneously and hold down a few seconds until the Main Initialization Menu appears.</li> </ol>	<p><i>To switch to Program mode:</i></p> <p>Press RESET.</p> <hr/> <p><i>To switch to Run mode:</i></p> <p>Turn the Program/Run key to RUN.*</p>

\* If you turn the key and nothing happens, press RESET repeatedly until SmartPAC 2 changes modes. Make sure SmartPAC 2 is in the Main (or top) menu for the mode it is in before you turn the Program/Run key. If SmartPAC 2 is not in a top-level menu, press RESET repeatedly until the Main menu appears.

The first display you see in Initialization mode is the Main Initialization Menu (see Figure 4-1). From this menu, you can access all the Initialization mode displays.

The following sections show you how to use the selections available on the Main Initialization Menu to set initialization parameters for SmartPAC 2 Hydraulic with DiProPAC.

## NOTICE

### SET THE INTERNAL CLOCK IN SMARTPAC 2

When you initialize your SmartPAC 2, be sure to set the clock to the correct date and to your local time according to the instructions in *SET CLOCK*, page 4-38.

## POSITION SENSOR

### (INITIALIZATION – POSITION SENSOR)

This item allows you to select the format (i.e., numeric or alphanumeric) to be used in entering tool numbers, specify whether counters are to be incremented in Inch mode during setup, and make other settings. Parameters are set on the screen shown in Figure 4-2, page 4-3. The following sections show you how to set each parameter

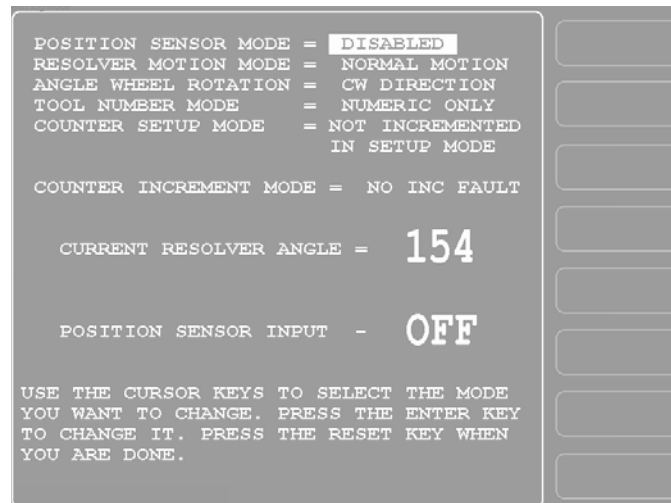


Figure 4-2. Position Sensor Screen

## Position Sensor Mode

(INITIALIZATION – POSITION SENSOR)

SmartPAC 2 Hydraulic 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 will display (see page 7-3 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 RESET when you are done.

## Resolver Motion Mode (Normal Motion – Link Motion)

(INITIALIZATION – POSITION SENSOR)

SmartPAC 2 Hydraulic does not use a resolver. Leave this option set to “NORMAL MOTION,” its default setting. The setting has no affect on the operation of your press.

## Angle Wheel Rotation (Clockwise – Counterclockwise)

(INITIALIZATION – POSITION SENSOR)

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



## Tool Number Mode

(INITIALIZATION – POSITION SENSOR)

### NOTICE

Before you set up your SmartPAC 2, decide which tool number mode you will use, numeric or alphanumeric. Set up your SmartPAC 2 in that mode, and do not change tool number modes afterward.

This item enables you to select which format—Numeric or Alphanumeric—is used to enter tool numbers in SmartPAC 2. In Numeric mode, tool numbers are limited to 7 digits and contain only numbers. Alphanumeric tool “numbers” can contain 20 characters, including both letters and numbers. Other differences between the two tool number modes are shown in Table 4-2.

*Table 4-2. Numeric and Alphanumeric Tool Number Modes*

<b>Numeric Tool Number Mode</b>	<b>Alphanumeric Tool Number Mode</b>
Tool Number: numbers only	Tool Number: letters, numbers, symbols
7 digits, max.	20 characters, max.
Tool Manager: Sorts tool numbers numerically	Tool Manager: Sorts tool numbers alphanumerically
Tool Name: Optional, entered by user Alphanumeric (letters, numbers and symbols) 20 characters, max.	Tool ID: Automatically assigned by SmartPAC 2; assigned consecutively, starting with “1” Numeric Editable by user (must be unique) 7 digits, max.

To set tool number mode, do the following:

1. Press ENTER to toggle between “NUMERIC ONLY” and “ALPHANUMERIC.”
2. When the setting you want is displayed, press RESET.

Once you select a mode and program a tool, do not change tool number mode.

## When You Upgrade from an Original SmartPAC

### NOTICE

#### UPGRADING FROM ORIGINAL SMARTPAC

See Appendix E for more information about upgrading from original SmartPAC Hydraulic to SmartPAC 2 Hydraulic.

When you replace an original SmartPAC Hydraulic with SmartPAC 2 Hydraulic and transfer tool setup information, the existing tools will default to Numeric mode. If you want to change

to Alphanumeric mode, you must perform the following procedure before you change tool number mode.

1. In SmartPAC 1, check to make sure that each tool has a valid, unique tool name. This will become its Alphanumeric tool number after you change tool number mode to “Alphanumeric.”
2. If a tool does not have a tool name, go to Program mode and enter a unique name for it.
3. If more than one tool has the same name, change the duplicate name or names to unique ones.

When you have completed these changes, you can set tool number mode to “Alphanumeric.”

## 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 2 “setup mode ready” (see *Wiring Setup Mode Circuit*, page 2-34.) To set this parameter, do the following:

1. Press ENTER to toggle between two settings:
  - “IS INCREMENTED IN ALL MODES”—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 RESET.

## Counter Increment Mode

(INITIALIZATION – POSITION SENSOR)

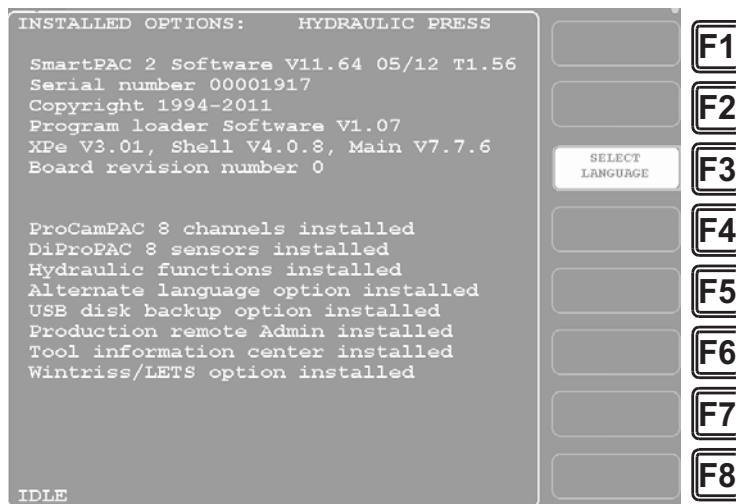
This item, which is provided for SFC (see Appendix G) or LETS (see Appendix H) customers, allows you to specify whether the Good Parts counter increments during a fault condition. The default setting, NO INC FAULT, prevents the counter from incrementing when there is a fault. To set this parameter, do 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 RESET.

## INSTALLED OPTIONS

(INITIALIZATION – INSTALLED OPTIONS)

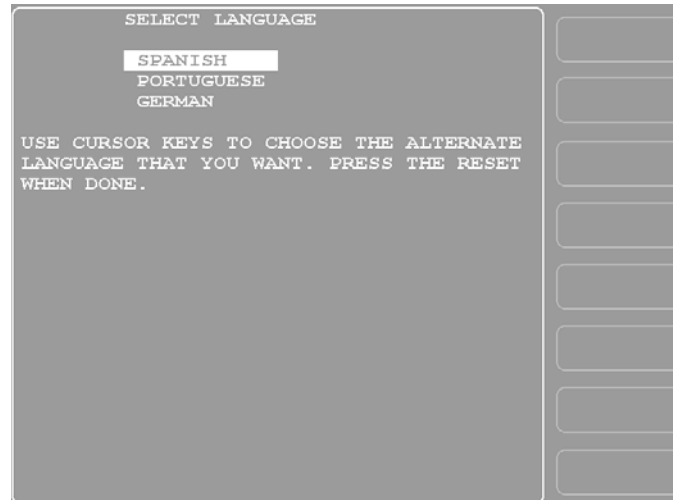
This item enables you to view the options that are installed on your SmartPAC 2 Hydraulic (see Figure 4-3), including the number of cam channels and sensors.



*Figure 4-3. Installed Options Screen*

Your screen will look different.

If you have ordered the alternate language option, this screen also provides a function key, **F3** (Select Language), that allows you to select the language in which you want SmartPAC 2 Hydraulic screens displayed. When you press **F3**, the screen shown in Figure 4-4, page 4-7 displays.



*Figure 4-4. Select Language Screen*

To select a language, highlight one of the three items, and press RESET. You are returned to the Installed Options screen.

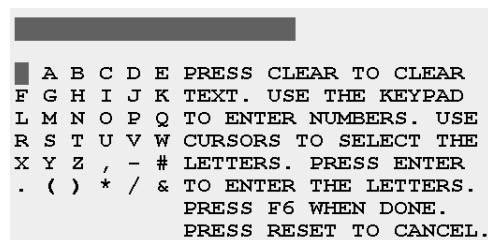
## PRESS NAME

(INITIALIZATION – PRESS NAME)

### NOTICE

You can use a separate computer keyboard to enter the press name. See page 4-40.

This item enables you to name the press on which SmartPAC 2 Hydraulic is installed. When you select PRESS NAME, the Alphabetic Entry window opens (see Figure 4-5), allowing you to enter the characters for the press name you want, using any combination of alphabetic characters, numbers and symbols.



*Figure 4-5. Alphabetic Entry Window*

To enter a press name in the Alphabetic Entry window, do the following:

1. To key in letters and symbols, highlight each character, using the Up (▲), Down (▼), Left (◀), and Right (▶) cursor keys, then press ENTER. Pressing the CLEAR key clears the text.

To key in numbers, use the numeric keypad, then press ENTER.

2. To accept your entry, press **F6**. To cancel your selection, press RESET.

## SELECT CAM NAMES

(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.

### NOTICE

#### **CAM CHANNELS 1 THROUGH 4 HAVE BEEN ASSIGNED NAMES AT THE FACTORY**

Cam channels 1 through 4 have already been named. Channels 1 and 2 control standard features and cannot be renamed. You can, however, rename channels 3 and 4 if you do not plan to use the optional features they control

This item allows you to assign descriptive names to each of your cam channels. You can name up to 15 channels, depending on your SmartPAC 2 Hydraulic configuration (i.e., standard 8-channel or optional 15-channel ProCamPAC). Do the following to assign cam channel names:

1. Select SELECT CAM NAMES on the Main Initialization Menu. The Cam Channel Name Menu, shown in Figure 4-6, page 4-9, displays.

The first time you access this screen, all channels are named “UNNAMED” except channels 1 through 4, which are pre-programmed at the factory for the following functions:

- Channels 1 and 2, which are named “Top Limit” and “Bottom Limit,” are used to signal the valve control when the ram has reached Top and Bottom limits. Do not change the pre-programmed names.
- Channel 3, which is named “Dwell,” is used for reverse on tonnage with dwell at the bottom, an optional SmartPAC 2 Hydraulic feature. If you do not plan to use this option, you can rename Channel 3 on this screen and program it for another cam function (see *CAM SWITCH*, page 5-38).
- Channel 4 is named “Press Rev Win” (i.e., “Pressure Reversal Window”). This cam, which sets the monitoring window within which the pressure measurement for automatic reversal is taken, may be needed if the optional pressure transducer has been installed (see page 2-14) and you plan to use the pressure reversal option.

Specifying a pressure reversal window is necessary on multi-speed presses due to the high hydraulic pressure in the system during the fast speed. The window must be programmed to occur during the slow speed when the material is formed. Channel 4 is NOT wired to any I/O. The timing information is used internally. If you do not plan to use the pressure reversal option, you can rename Channel 4 on this screen and program it for another cam function (see *CAM SWITCH*, page 5-38).

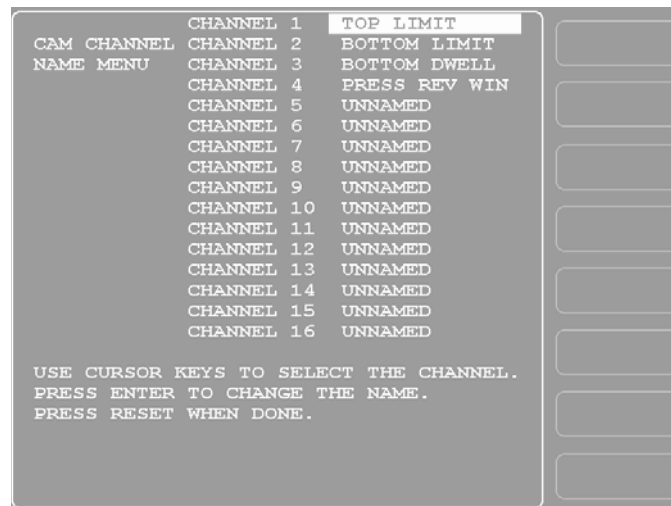


Figure 4-6. Cam Channel Name Menu

Your display may look different.

2. Select a channel. The screen shown in Figure 4-7 displays.

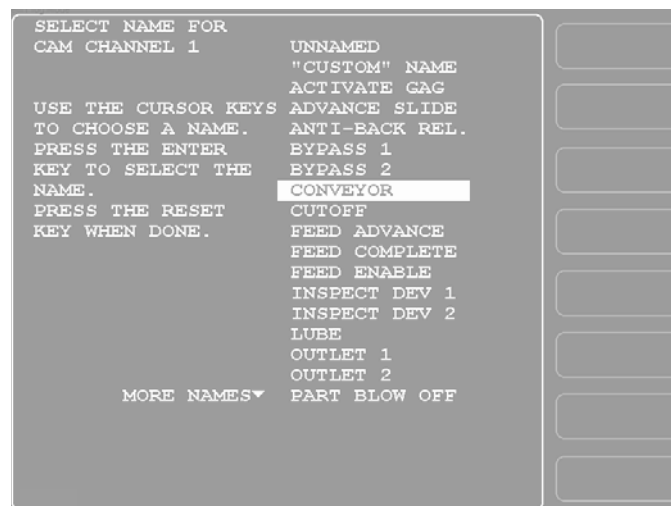


Figure 4-7. Cam Channel Name Selection Screen

## NOTICE

Do not rename channels 1 and 2, which control standard SmartPAC 2 Hydraulic features.

3. 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.

4. If none of the names in the list seem suitable but you still want to name the cam channel, you can select “CUSTOM NAME.” If you do so, the Alphabetic Entry window (see Figure 4-5, page 4-7) displays.

#### NOTICE

You can use a separate computer keyboard to enter cam channel names. See page 4-40.

5. Key in a “custom” cam channel name, following the directions in the Alphabetic Entry window, then press **F6** to accept your entry. You are returned to the Cam Channel Name Menu with the “custom” name you selected displayed to the right of the selected channel. To cancel your selection, press RESET.
6. When you are finished naming channels, press RESET to return to the Main Initialization Menu.

#### NOTICE

Cam channel names do not replace channel numbers. They simply provide a way to identify channel numbers by their function.

## SET GLOBAL CAMS

(INITIALIZATION – SET GLOBAL CAMS)

### DANGER

#### PROGRAMMABLE CAM SWITCH NOT FOR SAFETY USE

Use SmartPAC 2 Hydraulic's programmable cam switch to control auxiliary functions only. The SmartPAC 2 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

Set as global cams only cam channels that perform identically regardless of the tool installed.

**NOTICE****CHANNELS 6, 7 AND 8 CANNOT BE USED FOR GLOBAL CAMS**

You can set any channel as a global cam except channels 6, 7 and 8.

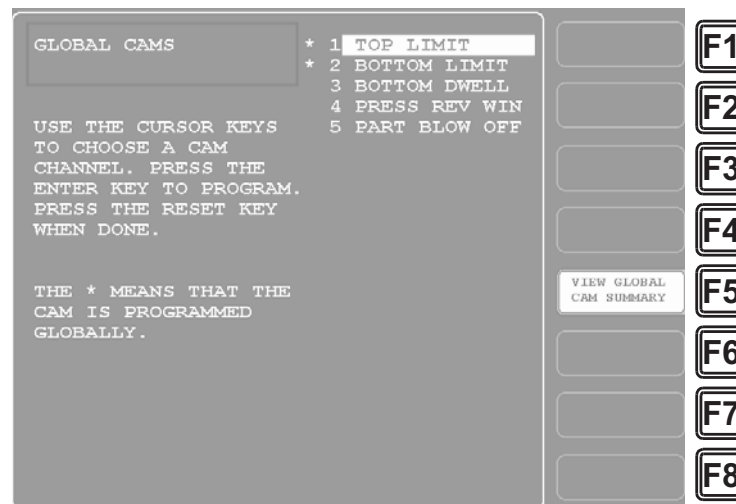
This item allows you to make settings for selected cam channels that apply to all tools programmed on your SmartPAC 2 Hydraulic. These cam channels are called “global” cams; they are used to program events that remain the same on all tools. The global cam feature eliminates the need to program the same cam information for multiple tools and ensures that the cam always operates in the same way. For example, you can program channels 1 (Top Limit) and 2 (Bottom Limit) as global cams since top and bottom ram settings are the same for all tools.

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*, page 4-8.

1. Select SET GLOBAL CAMS on the Main Initialization Menu. The Global Cams menu, shown in Figure 4-8, displays. An asterisk (\*) indicates the channels that are already programmed as global cams.



*Figure 4-8. Global Cams Menu*  
Asterisk (\*) Indicates Global Cams

2. Select the cam you want to program. The Global Cam Timing Type screen, shown in Figure 4-9, page 4-12 displays.



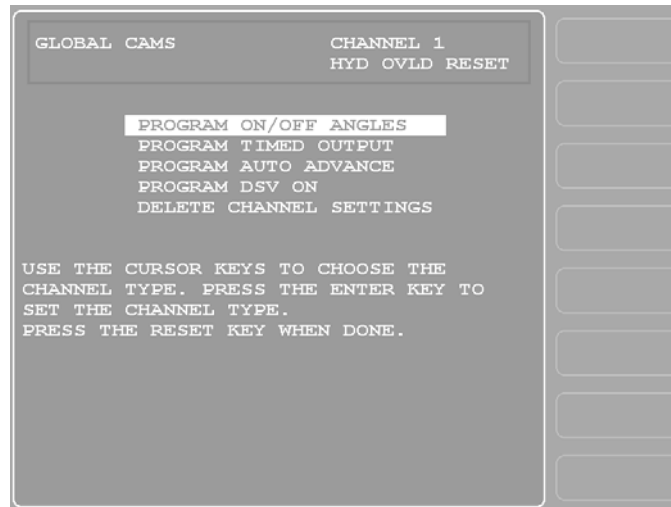


Figure 4-9. Global Cam Timing Type Screen

3. Select the type of cam timing you want to program for this channel, referring to *CAM SWITCH*, page 5-38 for instructions. Note that Auto Advance is not available as a cam timing option for SmartPAC 2 Hydraulic.
4. When you have finished programming the global cam, press RESET.

## 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, which is shown in Figure 4-10, page 4-13.

#### NOTICE

You can use a separate computer keyboard to enter custom sensor names. See page 4-40.

#### NOTICE

Custom Name entries 17-32 display sequentially, one at a time as you move the highlight bar down past the CUSTOM 16 item.

Custom names do not have to be entered in the sequence that you use to name sensors. Sensor 1 can be assigned Custom Name 32, Sensor 2 Custom Name 15, Sensor 3 Custom Name 5, etc. See page 5-23 for instructions in assigning custom names to sensors.

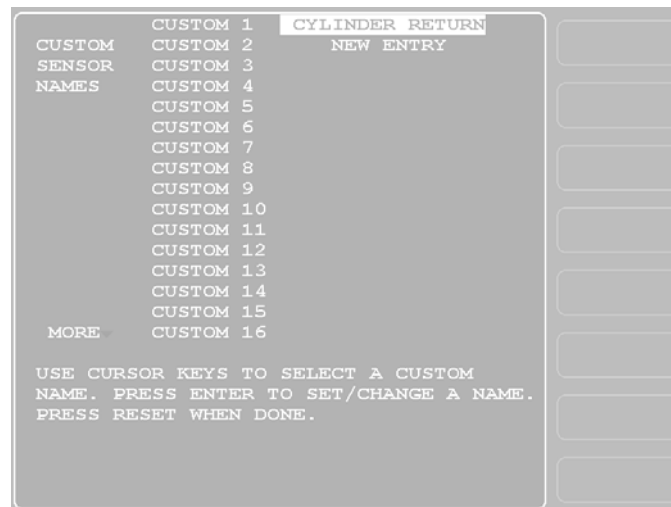


Figure 4-10. Custom Sensor Names Screen

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 Alphabetic Entry window (see Figure 4-5, page 4-7) displays.
3. Key in the custom name, following the directions in the Alphabetic Entry window, then press **F6** 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 RESET.
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 RESET when you are done to return to the Main Initialization Menu.

## SENSOR ENABLE MODE (Optional)

(INITIALIZATION – SENSOR ENABLE MODE)

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 (see Figure 4-11, page 4-14).

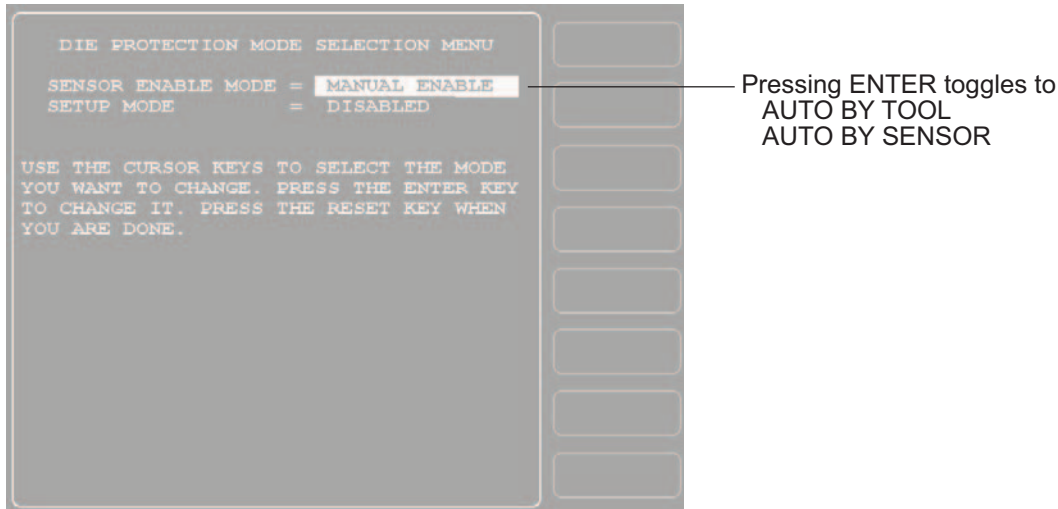


Figure 4-11. Die Protection Mode Selection Menu

## 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 5-55 and *DISABLE (ENABLE) SENSORS*, page 6-7).
- **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 5-21).
- **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 5-24).

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 (see Figure 4-11).
2. With the highlight bar on the **SENSOR ENABLE MODE** item, press **ENTER** until the setting you want is displayed.
3. Press **RESET** to return to the Main Initialization Menu.

## Enabling Setup Mode

Setup mode allows you to run the press in Jog mode 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 Jog setting.

### NOTICE

To enable Setup mode, your Jog-selector switch must be wired to the Setup mode input, terminal #252 on TB107 (see *Wiring Setup Mode Circuit*, page 2-34).

To enable Setup mode, do the following:

1. Select SENSOR ENABLE MODE on the Main Initialization Menu. The Die Protection Mode Selection Menu displays.
2. Move the highlight bar to the SETUP MODE item.
3. Press ENTER to toggle the setting from DISABLED to IN INCH.
4. Press RESET 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.

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 can also set the Calibration Pressure and Calibration Tonnage if you have installed the optional pressure transducer (see page 2-14) and plan to use the Reverse on Pressure feature. SmartPAC 2 Hydraulic uses the Cal. Pressure and Cal. Tonnage settings to convert the pressure transducer signal into the tonnage developed by the press.

You make these settings on the Linear Sensor Setup screen, which is shown in Figure 4-12, page 4-16.

SENSOR RESOLUTION = 5  $\mu$ M  
 OFFSET VALUE = 2.000 IN  
 ZERO VALUE = 0 CNTS  
 UPPER LIMIT = 7.984 IN  
 CAL. PRESSURE = 300 PSI  
 CAL. TONNAGE = 250 TONS  
 UNITS = IN

USE THE CURSOR KEYS TO SELECT THE VALUE.  
 PRESS THE ENTER KEY TO CHANGE THE VALUE.  
 PRESS THE RESET KEY WHEN DONE.

IDLE

F1  
 F2  
 F3  
 F4  
 F5  
 F6  
 F7  
 F8

SAVE UPPER LIMIT  
 SAVE ZERO POSITION

Figure 4-12. Linear Sensor Setup Screen

Table 4-3 explains the settings displayed on the Linear Sensor Setup screen and, where applicable, provides available options.

Table 4-3. 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, <math>\mu</math>M), which are dependent on the length of the sensor:</p> <p>6- and 12-in. sensors                      5 <math>\mu</math>M          18- and 24-in. sensors                    10 <math>\mu</math>M          30-, 36-, 42-, and 48-in. sensors      20 <math>\mu</math>M</p>
OFFSET VALUE	<p>A value added to the Upper Limit and Lower Limit readings on the Ram Position screen in Program (see page 5-50) and Run (see page 6-22) 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> <p>Offset Value = Shut height opening – Lower Limit value</p>

Table 4-3. Linear Sensor Setup Screen Field Definitions (Cont.)

Field	Settings
ZERO VALUE	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).
UPPER LIMIT	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 6-21) modes. This value should be set to the maximum stroke length of your press, including any additional distance created by ram adjustments. The Upper Limit can be less than the maximum range of the linear sensor.
CAL. PRESSURE	The hydraulic pressure (in pounds per square inch, or psi) equivalent to the tonnage rating of the press, or as close to the rated tonnage as possible. This and the next setting are machine-specific and depend on the size and make of the hydraulic cylinders. Refer to the press manufacturer's specifications, which are usually displayed as a chart on the machine. If you have not installed a pressure transducer, leave this value set to 0 (zero), the default.
CAL. TONNAGE	The tonnage equivalent to the pressure shown in the CAL, PRESSURE field. Refer to the press manufacturer's specifications. If you have not installed a pressure transducer, leave this value set to 0 (zero), the default.
UNITS	The units in which the sensor's Upper Limit, Lower Limit, and Offset Value are measured. There are two options: 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. With the highlight bar on the SENSOR RESOLUTION item, press ENTER until the setting you want is displayed, referring to Table 4-3 for available options.

### NOTICE

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

3. Move the highlight bar to the ZERO VALUE item.

4. 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 (see Figure 3-5, page 3-4), key in zero, using the numeric keypad, 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 **F7** (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 **F7** again.
5. Move the highlight bar to the UPPER LIMIT item.
6. Set the UPPER LIMIT value in one of the following ways:
  - Switch to Run mode (see page 6-2 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 **F6** (Save Upper Limit). The absolute reading reported by the linear sensor displays in the UPPER LIMIT field.
  - Press ENTER, and when the Numeric Entry window displays (see Figure 3-5, page 3-4), 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.
7. Move the highlight bar to the OFFSET VALUE item.

**NOTICE**

With firmware versions V9.08 or higher, there is no limit for the Offset Value.

8. 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.
9. If you have installed a pressure transducer and plan to use the optional Reverse on Tonnage feature, repeat steps 7 and 8 for the CAL. PRESSURE and CAL. TONNAGE items. Otherwise, leave these items set to 0 (zero).
10. Move the highlight bar to the UNITS item.
11. Press ENTER until the setting you want is displayed, referring to Table 4-3 for available options.
12. When you are finished, press RESET 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 only maintain 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, shown in Figure 4-13, displays.

	NAME	UNITS	PLACES
TOOL	1 NAME 1	UNS 1	0
INFO.	2 NAME 2	UNS 2	0
NAMES	3 NAME 3	UNS 3	0
	4 NAME 4	UNS 4	0
	5 NAME 5	UNS 5	0
	6 NAME 6	UNS 6	0

USE CURSOR KEYS TO SELECT A NAME. PRESS  
ENTER TO CHANGE, PRESS RESET WHEN DONE.

Figure 4-13. Tool Information Setup Screen

2. Highlight the NAME 1 item, and press ENTER. The Tool Information Name screen, shown in Figure 4-14, page 4-20, displays.



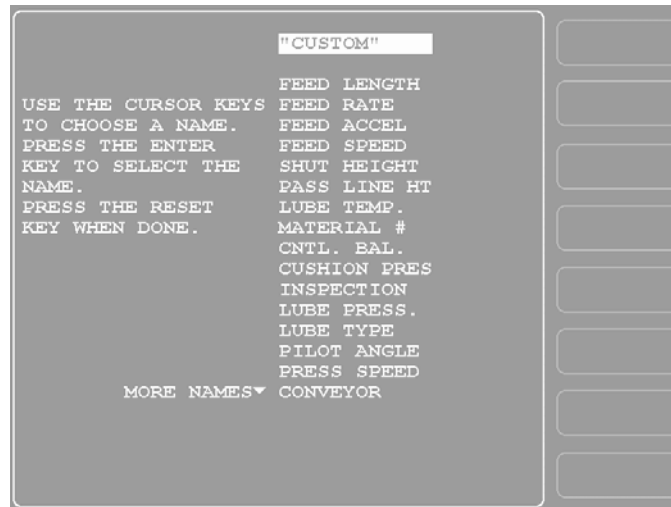


Figure 4-14. Tool Information Name Screen

3. Move the highlight bar to 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 the “CUSTOM” item.
5. When the Alphabetic Entry window (see Figure 4-5, page 4-7) displays, key in a custom name of up to 12 characters, following the directions on the screen, then press **F6** to accept your entry. You are returned to the Tool Information Setup screen with your custom name displayed. To cancel your selection, press RESET.

#### NOTICE

You can use a separate computer keyboard to enter tool information names. See page 4-40.

6. Highlight the UNS 1 item, and press ENTER. The Tool Information Units Selection screen, shown in Figure 4-15, page 4-21, displays.

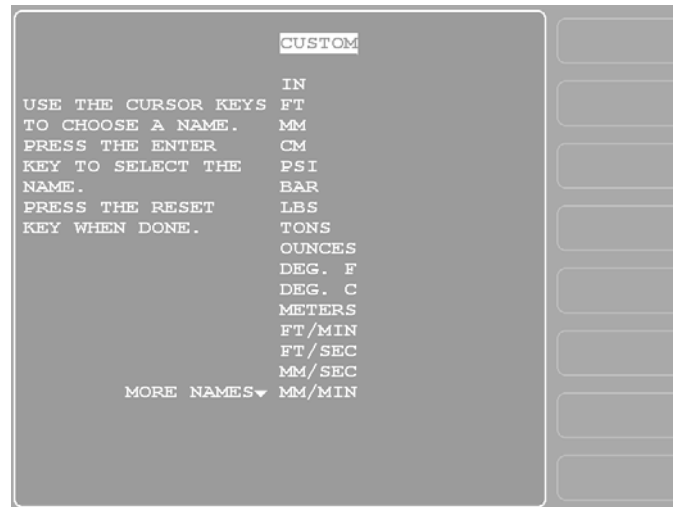


Figure 4-15. Tool Information Units Selection Screen

7. Move the highlight bar to the abbreviation for the unit you want, using the cursor keys, and press ENTER. (See Table 4-4 for an explanation of abbreviations.) You are returned to the Tool Information Setup screen with your Units selection displayed.

Table 4-4. 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 the “CUSTOM” item. When the Alphabetic Entry window displays, key in a unit of up to 6 characters. To accept your entry, press **F6**. 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 (see Figure 3-5, page 3-4), key in a value, using the numeric keypad or the Up (▲) and Down (▼) cursor keys, 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 4-5 provides additional information about decimal place formats.

*Table 4-5. 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 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.

- Repeat steps 2-9 for other Tool Information items you want to set up. A Tool Information Setup screen with sample entries filled in is shown in Figure 4-16.

	NAME	UNITS	PLACES
TOOL	1 PASS LINE HT	IN	2
INFO.	2 STRAIGHTENER	IN	2
NAMES	3 HYD. OVLD.	TONS	0
	4 PRESS SPEED	SPM	0
	5 CONVEYOR		8
	6 PART LUBE		8

USE CURSOR KEYS TO SELECT A NAME. PRESS ENTER TO CHANGE, PRESS RESET WHEN DONE.

*Figure 4-16. Tool Information Setup Screen with Sample Entries*

- When you are finished, press RESET to return to the Main Initialization Menu.

## SECURITY ACCESS

(INITIALIZATION – TOOL INFORMATION)

The SECURITY ACCESS item on the Main Initialization Menu allows you to control user access to SmartPAC 2 Hydraulic operating modes and settings. You set user access on the Security Access Menu, which is shown in Figure 4-17.



Figure 4-17. Security Access Menu

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 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 4-6, page 4-24 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.

*Table 4-6. Security Access Settings*

Optional modules included; your menu may be different

<b>Security Access Menu Item</b>	<b>Security Access Settings</b>
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

Table 4-6. Security Access Settings (Cont.)

Optional modules included; your menu may be different

ADJ. TOOL INFO	PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED
ADJ RAM POSITION	PROGRAM AND RUN MODES PROGRAM MODE ONLY PASSWORD REQUIRED
INIT. PASSWORD	NOT REQUIRED MUST BE USED

When you attempt to access a menu that is password-protected, SmartPAC 2 displays a window (see Figure 4-18) that asks you to enter your password.

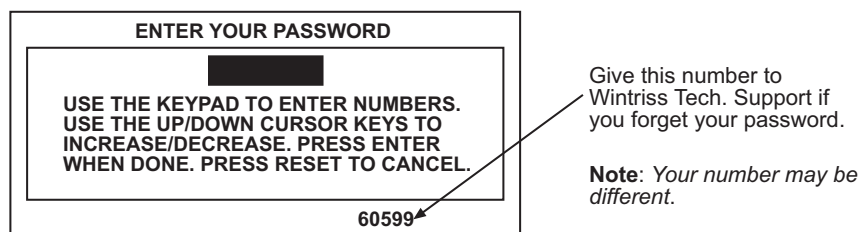


Figure 4-18. "Enter Your Password" Screen

**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 from the bottom of the "Enter your password" display.

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

**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 4-26.

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

Field upgraded SmartPAC 2s 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 2 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 (see Figure 4-17). 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 4-6 for help with selecting access options.
3. Press RESET 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 2 allows you to set up to four different passwords:

- General Password—Provides access to all SmartPAC 2 Hydraulic 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 (see Appendix B)
- Tool Template Password—Provides access to the Tool Template (see page 5-5)

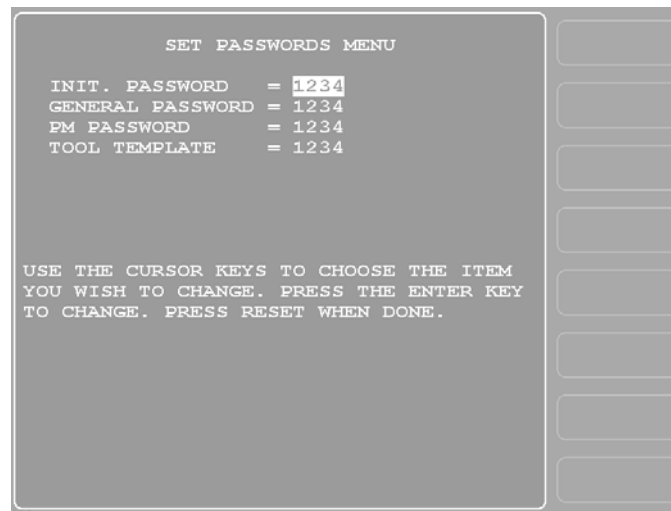
Passwords must be numeric and can be from one to four digits in length.

**NOTICE****DEFAULT PASSWORDS**

Your SmartPAC 2 comes from the factory with all passwords set to the default password “1234.” If you have upgraded your SmartPAC 2 in the field, your passwords may be different.

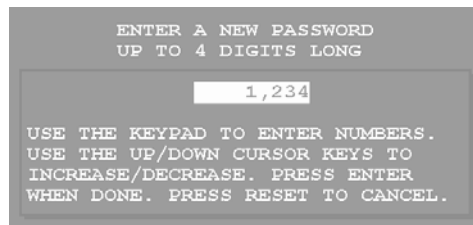
To change passwords, perform the following steps:

1. On the Security Access Menu (see Figure 4-17), press **F1** (Change Passwords) to display the Set Passwords Menu (see Figure 4-19).



*Figure 4-19. Set Passwords Menu*

2. Select the password you want to change. The window shown in Figure 4-20 displays.



*Figure 4-20. “Enter a New Password” Window*

3. Key in the new password, following the instructions in the window, and press ENTER. You are returned to the Set Passwords Menu.



## BACKUP/RESTORE

This item, which displays on the Main Initialization Menu only when you have SmartPAC 2 version V5.32 or higher, enables you to back up and restore tools programmed on your SmartPAC 2. Tools may be backed up to a network drive, or, if you have ordered the USB Backup/Restore option (part no. 9679619), to a USB disk inserted in the SmartPAC 2 board.

You can back up as many as 200 tools per SmartPAC 2 as well as SmartPAC 2 Initialization parameters.

Instructions for backing up tools to a network drive are provided on the [SmartPAC2.com](http://SmartPAC2.com) Web site. Click on *See a Demo*, then on *Backup Setup Online Manual*. Instructions for backing up tools to a USB disk are provided below.

### Backing Up Tools to a USB Disk

The USB disk you use for backup must have at least 600 KB of free space in order to store all tools and Initialization parameters on a SmartPAC 2. USB disks are available in a wide range of capacities, and you should choose a device that will allow you to store backup information for all your SmartPAC 2s. A USB disk that should meet most needs is available from Wintriss (part no. 9679401).

Backup files are written to folders named “Backupnnnnnnnn,” where *nnnnnnnn* is the serial number of the SmartPAC 2. Use of the serial number in the folder name allows SmartPAC 2—and you—to identify the backup information pertaining to a particular control. Within folders, there are at least two files, one for tool backups, named “nnnnnnnn-Tool,” the other for Initialization backups, named “nnnnnnnn-Init.” Again, *nnnnnnnn* is the SmartPAC 2 serial number.

When two or more backups have been performed on the same SmartPAC 2, two additional files are maintained in the backup folder, named “nnnnnnnn-Tool.old” and “nnnnnnnn-Init.old.” These files contain the next-most-recent tool and Initialization backups of the SmartPAC 2 with the specified serial number.

To back up tools on a SmartPAC 2, do the following:

1. Make sure a USB disk with the necessary free space is installed in the USB connector in the lower left corner of the SmartPAC 2 board (component J121 in Figure 2-11, page 2-19).

2. Select the BACKUP/RESTORE item on the Main Initialization Menu. The Backup/Restore Control Menu displays with the message

Please wait

Checking SmartPAC 2 tools...

appearing briefly at the top of the screen, followed by a message displaying the number of tools that have been programmed on that SmartPAC 2 (see Figure 4-21, page 4-29).

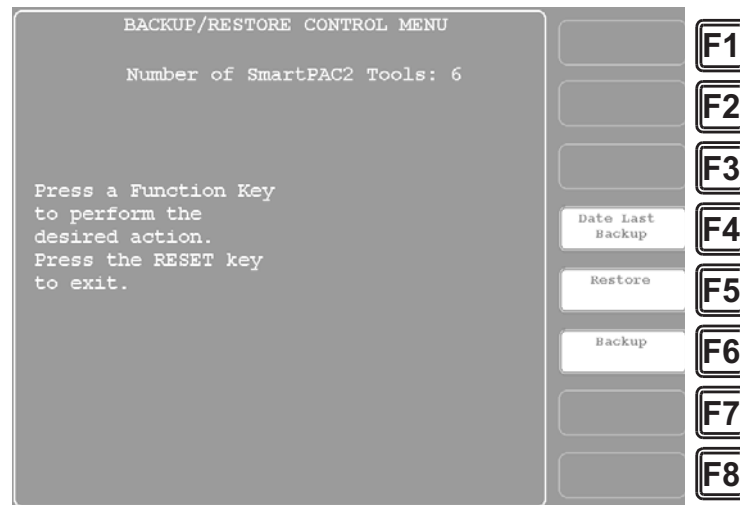


Figure 4-21. Backup/Restore Control Menu

### NOTICE

You can view the date and time of the last backup by pressing the **F4** (Date Last Backup) function key. The date and time display at the bottom of the screen.

3. To begin the backup process, press the **F6** (Backup) function key.

### NOTICE

If the SmartPAC 2 detects that the USB disk does not have enough free space to store the tool and initialization backup information, a message like the following displays:

```
There is NOT enough space available
on USB Disk!
Please remove and free up approx
nnn.nK then try again
Press RESET to clear this message
```

The variable *nnn.n* is the number of kilobytes (KB) of free space required for the backup. Press RESET to clear the message, then remove the USB disk, install another USB disk with the required amount of free space, and press **F6** (Backup) again.

If you want to re-use the original USB disk, you can insert it into a USB connector on your computer, delete the files necessary to free up the required amount of space, re-install it in the SmartPAC 2, and reinitiate the backup.

The message

Please wait...

appears briefly at the top of the screen, and the following message displays near the bottom

USB Disk Detected (nnn Meg free)

where *nnn* is the amount of disk space in megabytes available for storing backup information.

As the backup proceeds, messages like the following display at the top of the screen

Backing up SmartPAC2 data for Tool nnnnnn

where *nnnnnn* is the tool number, followed by messages like

Backing up SmartPAC2 data for Init Group nn

where *nn* is the Initialization group number. Then the message

Transferring files...

displays briefly as backup files are written to the USB disk. When the backup is complete, the following message displays:

Backup Finished!

4. Press RESET to return to the Main Initialization Menu.

## Restoring Tools from a USB Disk

### NOTICE

You should only need to perform a restore if the SmartPAC 2 tool and Initialization programming has been corrupted or if the SmartPAC 2 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 2, do the following:

1. With the USB disk onto which tools have been backed up inserted in the USB connector (see step 1 of the *Backing Up Tools to a USB Disk* procedure, page 4-28) and the Backup/Restore Control Menu (see Figure 4-21) displayed, press the **F5** (Restore) function key. A window opens, asking you to confirm that you really want to restore tools to the SmartPAC 2, as shown in Figure 4-22, page 4-31.

### NOTICE

Make sure that you really want to restore the tool settings contained on the USB disk. During the restore process, current tool programming will be overwritten by the backed-up settings.

2. Press ENTER to continue with the restore.

The same sorts of messages display during the restore process as occurred during backup (see step 3 of the *Backing Up Tools to a USB Disk* procedure, page 4-29). When the restore is complete, the following message displays:

Finished Restore!

Press RESET to return to the Main Initialization Menu.

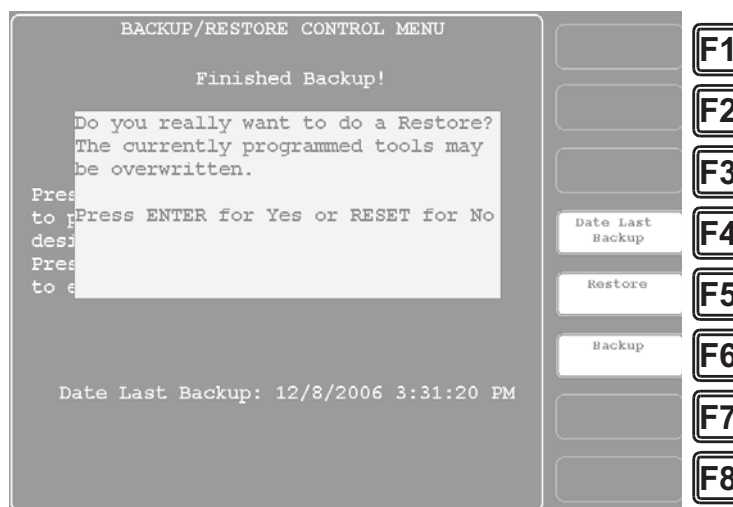


Figure 4-22. Backup/Restore Control Menu with Restore Confirmation Window Displayed

## SETUP DATA COMMS (Optional)

### (INITIALIZATION – SETUP DATA COMMS)

The SETUP DATA COMMS item, which appears on the Main Initialization Menu only when firmware for Wintriss data collection software is installed, allows you to set communications parameters for a Wintriss data collection software product. Communications settings are made on the Set Communications Menu, which is shown in Figure 4-23. This screen is fully documented starting on page G-7 for SmartPAC 2 users with the SFC firmware option. If you have the LETS firmware option, refer to page H-7 for Set Communications Menu documentation.

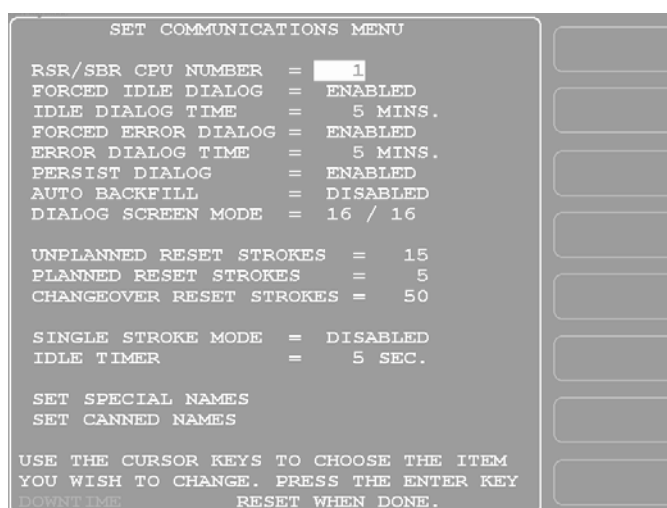


Figure 4-23. Set Communications Menu

# SETUP NETWORK

(INITIALIZATION – SETUP NETWORK)

## NOTICE

- Your network administrator must connect SmartPAC 2 to your computer 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. See *CHANGE NETWORK SETTINGS*, page 4-35.

The SETUP NETWORK item on the Main Initialization Menu allows you to set up SmartPAC 2's E-mail and SmartView functions and to make other settings necessary to configure a SmartPAC 2 network. You make these settings on the Network Setup Utility screen, which is shown in Figure 4-24.

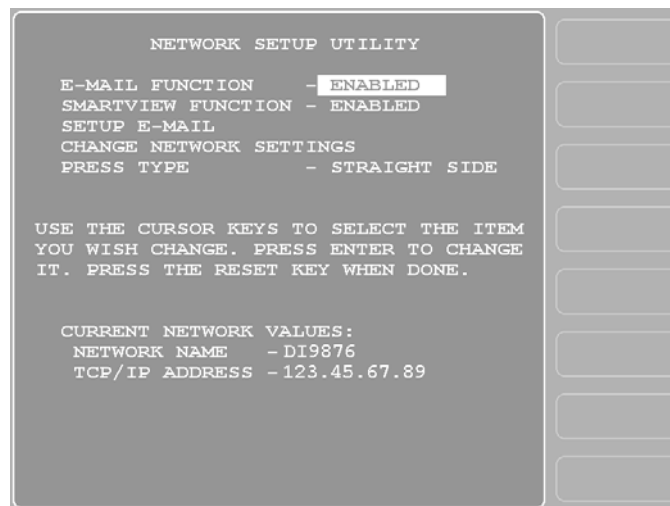


Figure 4-24. Network Setup Utility Screen

## E-MAIL FUNCTION

(INITIALIZATION – SETUP NETWORK – E-MAIL FUNCTION)

## NOTICE

- Consult with your network administrator when setting up e-mail.
- Use the SmartView remote viewing utility (see next item) to set up e-mail messages and recipients.

SmartPAC 2's E-mail function allows you to send e-mails to individuals in your SmartPAC 2 Hydraulic 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. With the highlight bar on **E-MAIL FUNCTION**, press **ENTER** to toggle the setting to **ENABLED**.
3. Press **RESET** 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 2's SmartView function enables individuals in your SmartPAC 2 Hydraulic network to view the operation of each press in your pressroom from a remote location. (Information about setup and operation of SmartView is provided in Appendix D.) If you plan to use SmartView, do the following to enable this function:

1. With the highlight bar on the **SMARTVIEW FUNCTION** item on the Network Setup Utility screen, press **ENTER** to toggle the setting to **ENABLED**.
2. Press **RESET** 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

- Consult your network administrator when setting up e-mail.
- Use SmartView remote viewing utility (see previous item) to set up e-mail messages and recipients.

If you have enabled the SmartPAC 2 E-mail function, you should use the **SETUP E-MAIL** item on the Network Setup Utility screen to enter E-mail settings. Settings are made on the Setup E-mail screen, which is shown in Figure 4-25, page 4-34.

To set up E-mail, do the following:

1. Select **SETUP E-MAIL** on the Network Setup Utility screen. The Setup E-Mail screen displays.

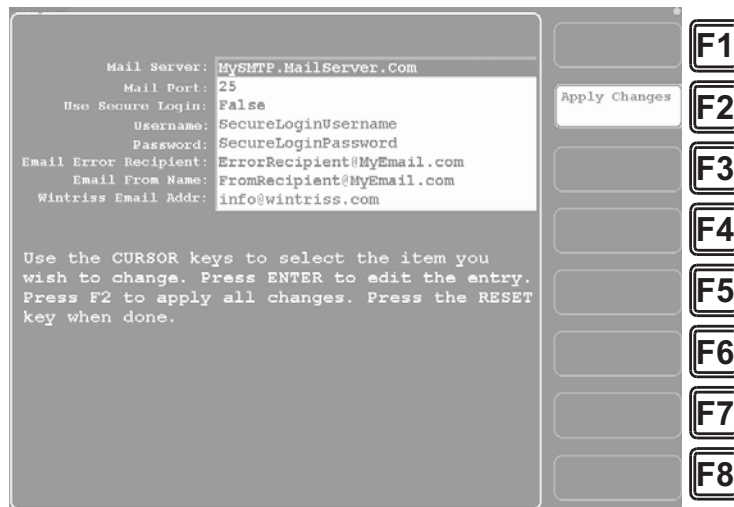


Figure 4-25. Setup E-mail Screen

2. With the highlight bar in the **Mail Server:** field, press ENTER. The Alphanumeric Entry window, shown in Figure 4-26, displays with the default mail server shown at the top of the window.

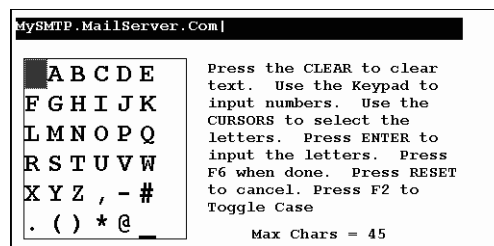


Figure 4-26. Alphanumeric Entry Window with Default Mail Server Displayed

3. Key in the name or IP address of your mail server, following the directions in the window, then press **F6** to save your entry and return to the Setup E-mail screen. Your entry is now displayed in the **Mail Server:** field.

For help in filling in this and other items, refer to Table 4-7, page 4-35. You can also consult your plant network administrator.

4. Select the next item (e.g., **Mail Port:**, **Use Secure Login:**, etc.), and repeat steps 2 and 3, referring to Table 4-7 for help.
5. When you are done, press **F2** (Apply Changes) to apply the changes you have made, then press RESET to return to the Network Setup Utility screen.

## NOTICE

You can use a separate computer keyboard to enter information. See page 4-40.

Table 4-7. Setup E-mail Items

Item	Description	Examples
<b>Mail Server</b>	The name or IP address of the SMTP mail server on your network	server.yourcompany.com 124.15.62.53
<b>Mail Port</b>	The port on the server used for mail. Usually 25.	25
<b>Use Secure Login</b>	Indicates whether a username and password are required to log in to the network  TRUE = Password required FALSE = No password required  If the setting is "FALSE," you don't need to enter a username or password.	FALSE TRUE
<b>Username</b>	The username (if necessary) for logging in to the network	username joe_user
<b>Password</b>	The password (if necessary) for logging in to the network	password secret452
<b>Email Error Recipient</b>	The e-mail address to which messages issued when an e-mail fails to be delivered are sent. SmartPAC 2 cannot receive e-mail.	ErrorRecipient @yourcompany.com joe.user@yourcompany.com
<b>E-mail From Name</b>	Name to be shown in the "From" field in the e-mail header. Some networks require a particular format of "From" name.	FromRecipient @yourcompany.com Press_14@yourcompany.com
<b>Wintriss E-mail Addr</b>	The e-mail address of Wintriss Tech. Support. Use the default unless instructed otherwise.	info@wintriss.com

After you enter settings on the Network Setup Utility screen, you use SmartView to complete setting up the e-mail messages and recipients for your SmartPAC 2 (see Appendix D).

## 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.

### NOTICE

#### SETTING STATIC IP ADDRESS

SmartPAC 2 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 the person who supports your network call Wintriss Tech. Support for assistance in setting up SmartPAC 2 with a static IP address.



## PRESS TYPE

(INITIALIZATION – SETUP NETWORK – PRESS TYPE)

Your entry for the PRESS TYPE item is used by the SmartView remote viewing utility (see *SMARTVIEW FUNCTION*, page 4-33) to select the graphic it uses to illustrate the type of press (i.e., straight side or gap frame) on which SmartPAC 2 is installed. This graphic appears in the press information summary on the SmartView Main Page.

To set the press type, do the following:

1. With the highlight bar in the PRESS TYPE field, press ENTER to toggle between GAP FRAME and STRAIGHT SIDE until the option you want is displayed.
2. Press RESET 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 4-27), which you use primarily when you are working with Wintriss Tech. Support for initial setup or troubleshooting. 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 2'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 2

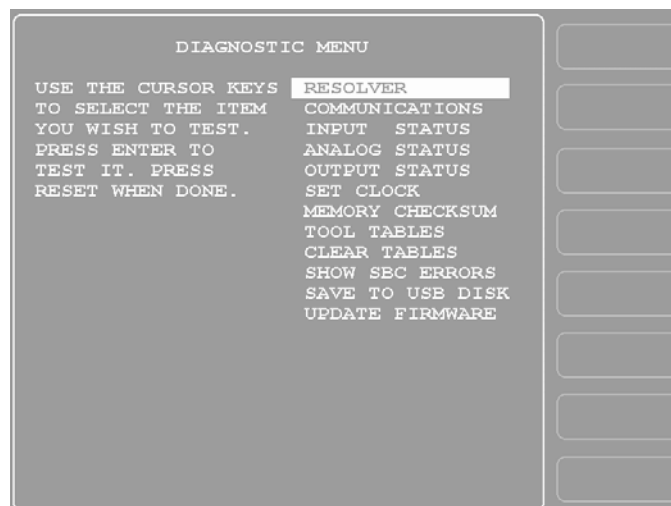


Figure 4-27. Diagnostics Menu

## COMMUNICATIONS

### (INITIALIZATION – DIAGNOSTICS – COMMUNICATIONS)

When you select the COMMUNICATIONS item on the Diagnostics Menu, the Communications Data Viewer screen, shown in Figure 4-28, displays.

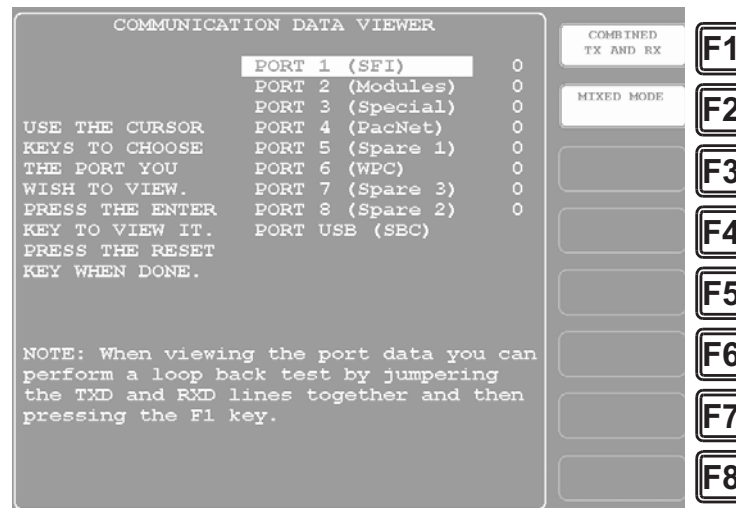


Figure 4-28. Communications Data Viewer Screen

This screen allows you to verify communications between SmartPAC 2 and its installed modules (e.g., SFI). When you press ENTER with the highlight bar resting on one of the communications ports (e.g., PORT 1 (SFI)), the Transmit and Receive Data screen for that communications port displays (see Figure 4-29).

You can view communications data in two screen formats: combined and split. Press ENTER with the **F1** key label showing “COMBINED TX AND RX” to view the combined format. Press ENTER with **F1** showing “SPLIT TX AND RX” to view the split format.

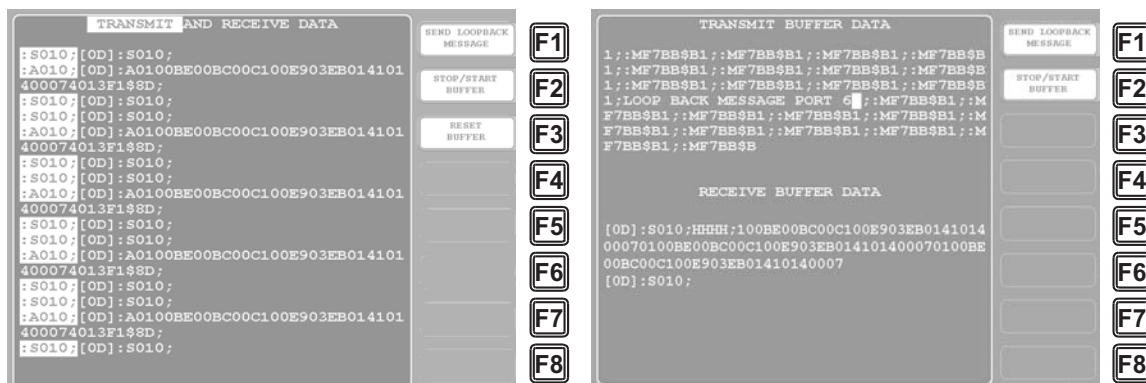


Figure 4-29. Transmit and Receive Data Screen: Combined View (Left), Split View (Right)

In the “combined” view, Transmit and Receive data are shown together (see the left panel in Figure 4-29), 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 **F3** (Reset Buffer) 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 (see right panel in Figure 4-29). In this view, the data is always shown starting at the beginning of the buffer.

Normal communications between SmartPAC 2 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 2 and the other module are not communicating properly. If you want to examine transmitted or received data, press **F2** (Stop/Start Buffer).

If the Transmit and Receive Data screen indicates a communications problem, you can perform a “loopback test.” To do so, you connect (or jumper) the TXD (transmit) and RXD (receive) lines, and then press **F1** (Send Loopback Message) to check communications. In effect, you are “receiving” the communications data that you are transmitting. This test is useful when verifying the accuracy of Transmit and Receive hardware and wiring.

To perform a loopback test, follow these steps:

1. Wire loopback jumpers for the port or ports you want to check, following the wiring diagram in Figure 8 at the end of the manual. Figure 8 shows loopback test wiring for both RS232 and RS485 communications. Be sure to follow the correct diagram for your system.
2. Select the port/module you want to test, such as “PORT 1 (SFI).” The Transmit and Receive Data screen for that port displays.
3. Press **F1** (Send Loopback Message) to start the test. The message “LOOP BACK MESSAGE PORT X” displays, where *X* is the number of the port you selected.

If you need help performing the loopback test, contact Wintriss Tech. Support. Be prepared to provide the following information: **product name** (e.g., SmartPAC 2 Hydraulic); **installed options** (e.g., DiProPAC, ProCamPAC, etc.); and **firmware version number** (e.g., Vs. 2.00). You can determine the last two items by accessing the Installed Options screen (see Figure 4-3, page 4-6).

## SET CLOCK

(INITIALIZATION – DIAGNOSTICS – SET CLOCK)

When you select the SET CLOCK item on the Diagnostics Menu, the Set the Clock screen, shown in Figure 4-30, page 4-39, displays.

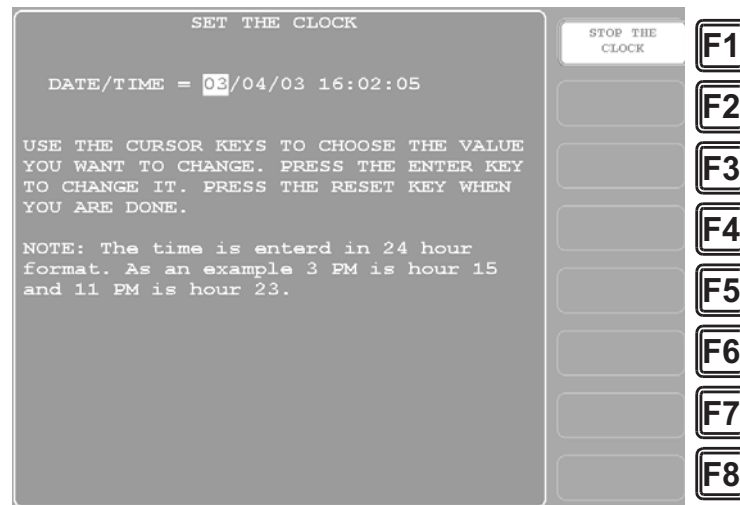


Figure 4-30. Set the Clock Screen

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 Numeric Entry window (see Figure 3-5, page 3-4) displays.
2. Key in a value, using the numeric keypad or the Up ( ▲ ) and Down ( ▼ ) cursor keys, 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 **F1** (Stop the Clock). The **F1** label changes to START THE CLOCK. To restart the clock, press **F1** (Start the Clock).

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

#### NOTICE

You will have to change the clock setting in the spring and fall when your local time changes from Standard to Daylight Savings and from Daylight Savings to Standard.

## SAVE TO USB DISK

(INITIALIZATION – DIAGNOSTICS – SAVE TO USB DISK)

This item enables you to save the error/event log (see page 6-25), screen captures (see page 3-23), and other data maintained in a special SmartPAC 2 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*, page 6-27). This function is useful if your SmartPAC 2 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 2 board (see steps 1 through 4 of the *Saving a Screen Capture to a USB Disk*, page 3-24).
2. Access the Main Initialization Menu, select DIAGNOSTICS, and when the Diagnostics Menu (see Figure 4-27) 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 RESET to return to the Diagnostics Menu.
4. Power down your SmartPAC 2, and remove the USB disk.

## UPDATE FIRMWARE

(INITIALIZATION – DIAGNOSTICS – UPDATE FIRMWARE)

To update the firmware in your SmartPAC 2 Hydraulic, refer to Appendix C.

## Using a Computer Keyboard to Enter Names

When entering the name for your press and custom names for cams and sensors, you can use a computer keyboard connected to SmartPAC 2. To connect the keyboard and use it to key in names, proceed as follows:

1. Power down SmartPAC 2.
2. Plug the keyboard into the appropriate connector on the SmartPAC 2 board (see Figure 2-11, page 2-19).
  - **Keyboard with a USB connector:** Plug into the USB connector (J121).
  - **Keyboard with a PS/2 connector:** Plug into the PS/2 connector (J120).
3. Power up SmartPAC 2.

4. Select the name you want to enter (e.g., PRESS NAME), and when the Alphabetic Entry window displays (see Figure 4-5, page 4-7), type your entry on the keyboard.

You can type any alphabetic or symbol character shown in the Alphabetic Entry window. You can also enter numbers and use the backspace key and the space bar. As you type, the characters appear at the top of the Alphabetic Entry window.

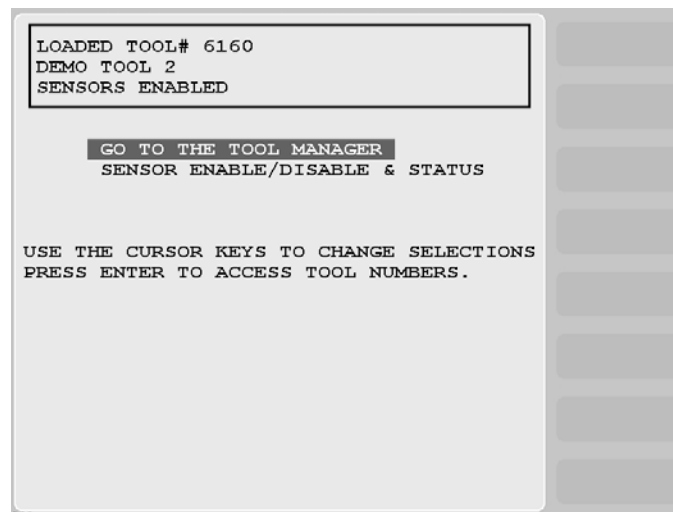
5. When you have finished typing, press **F6** on the SmartPAC 2 Hydraulic panel to accept your entry.



# Chapter 5. Program Mode

---

This chapter shows you how to make settings in SmartPAC 2 Program mode. Program settings, which are entered via the Main Program Menu (see Figure 5-1), control SmartPAC 2 Hydraulic operation for an individual tool. (You make settings that control operation of all tools in Initialization mode—see Chapter 4).



*Figure 5-1. Main Program Menu*

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

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 2 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 2 keyboard to input information on Program mode displays, refer to Chapter 3.

## Entering and Exiting Program Mode

### **NOTICE**

#### **SELECT = HIGHLIGHT + ENTER**

When this manual instructs you to select an item, you should highlight the item, and press ENTER.

Follow the instructions shown in Table 5-1, page 5-2 to enter and exit Program mode. See Figure 3-25, page 3-20 for help in navigating in Program mode



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

To Enter Program Mode	To Exit Program Mode
<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.</p> <p>Press RESET.</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>Press the “1” and “CLEAR” keys simultaneously and hold down a few seconds until the Main Initialization Menu appears.</p>
<p>* If you turn the key and nothing happens, press RESET repeatedly until SmartPAC 2 changes modes. Make sure SmartPAC 2 is in the Main (or top) menu for the mode it is in before you turn the Program/Run key. If SmartPAC 2 is not in a top-level menu, press RESET repeatedly until the Main menu appears.</p>	

The first display you see in Program mode is the Main Program Menu (see 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 5-55)

## NOTICE

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

# TOOL MANAGER

## (PROGRAM – GO TO THE TOOL MANAGER)

The GO TO 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 (see Figure 5-2, page 5-3), which displays when you select GO TO THE 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 (see Figure 5-9, page 5-8), which you access from the Tool Manager screen by pressing the **F4** (Edit Tool) key.

The Tool Manager screen displays a list of the tools that have already been created. (SmartPAC 2 has the capability to store settings for up to 200 tools.) The currently loaded tool is highlighted. To copy, delete, program, or load a tool, select that tool and press the appropriate function key (i.e., **F8** (Copy Tool), **F6** (Delete Tool), **F4** (Edit Tool), or **F5** (Load Tool)). To create a new tool, press **F7** (New Tool).

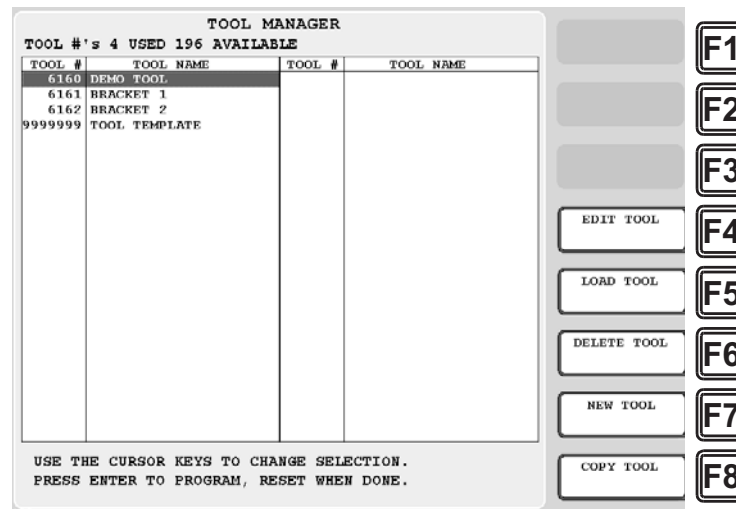


Figure 5-2. Tool Manager Screen

## NOTICE

The Tool Manager screen sorts the tool list based on the setting for TOOL NUMBER MODE in Initialization (see page 4-4).

- 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 – GO TO THE TOOL MANAGER – select tool – **F7**-NEW TOOL)

To create a new tool, do the following:

1. On the Tool Manager screen, press **F7** (New Tool). The Numeric Entry or Alphanumeric Entry window (see Figure 5-3) displays, depending on whether you selected Numeric or Alphanumeric tool number mode in Initialization.

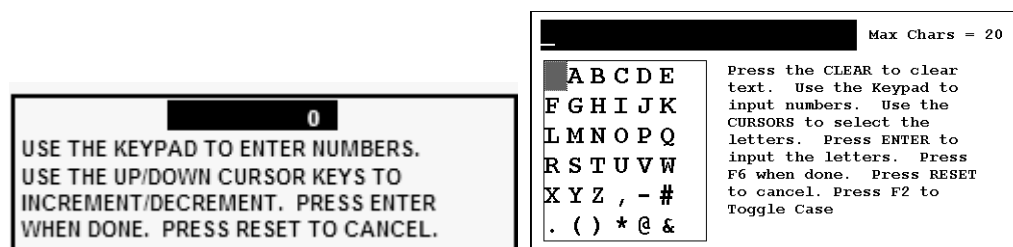


Figure 5-3. Numeric Entry Window (Left); Alphanumeric Entry Window (Right)

2. Key in the desired tool number, following the directions displayed in the applicable window.
3. Press ENTER after keying in a numeric tool number or **F6** after keying in an alphanumeric tool number. The window shown in Figure 5-4, page 5-4 displays.

```
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

4. If you want to copy the settings you have programmed for the Tool Template (see *Copying Tool Template to a New Tool*, page 5-5), press ENTER. If you don't want to copy the Tool Template, press RESET. The Tool Program Menu displays (see Figure 5-9, page 5-8) 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.

5. Create a name for the new tool if tool number mode is Numeric. Refer to *TOOL NAME or TOOL ID*, page 5-8 for instructions.
6. Continue programming settings for the new tool, follow the directions in *Tool Program Menu*, page 5-8. Then load the tool, referring to *Loading a Tool*, page 5-5 for instructions.

## Copying an Existing Tool

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F8**-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 **F8** (Copy Tool). The Numeric Entry or Alphanumeric Entry window (see 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 2'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 numeric tool number or **F6** after keying in an alphanumeric tool number. The Tool Program Menu displays (see Figure 5-9, page 5-8) 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 or TOOL ID*, page 5-8 for instructions.
5. Change settings for the new tool, as necessary, following the directions in *Tool Program Menu*, page 5-8. Then load the tool, referring to *Loading a Tool*, page 5-5 for instructions.

## Copying Tool Template to a New Tool

(PROGRAM – GO TO THE TOOL MANAGER – select Tool Template, # 9999999 – **F8**-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 5-8). When used with the COPY TOOL (**F3**) function, 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 4-23) so that a password is required to change the Tool Template.

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

1. On the Tool Manager screen, highlight TOOL # 9999999, TOOL TEMPLATE, and press **F8** (Copy Tool).
2. Perform steps 2 through 4 of the *Copying an Existing Tool* procedure, starting on page 5-4.
3. Load the new tool, referring to *Loading a Tool* (next section) for instructions.

## Loading a Tool

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F5**-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 **F5** (Load Tool). The warning window shown in Figure 5-6 displays,

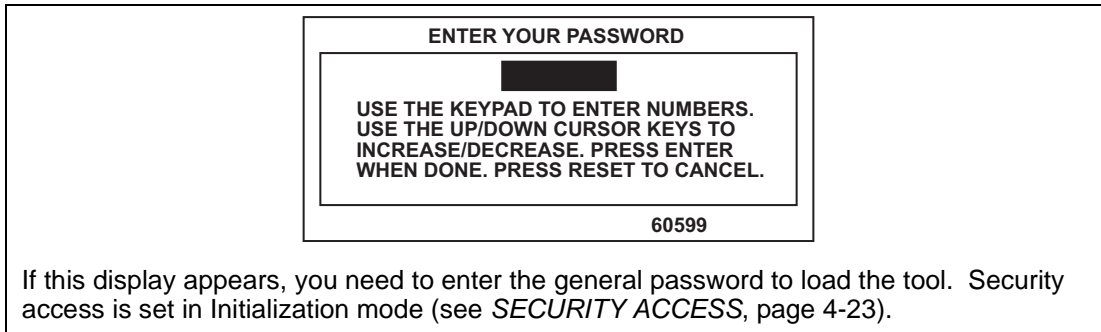


Figure 5-5. "Enter Your Password" Screen

## NOTICE

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

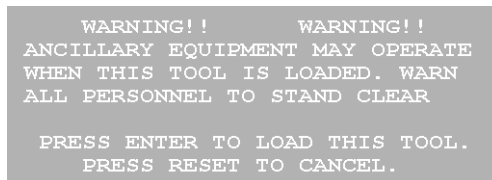


Figure 5-6. Load Tool Warning Window

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 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 – GO TO THE TOOL MANAGER – select tool – **F4**-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 **F4** (Edit Tool).

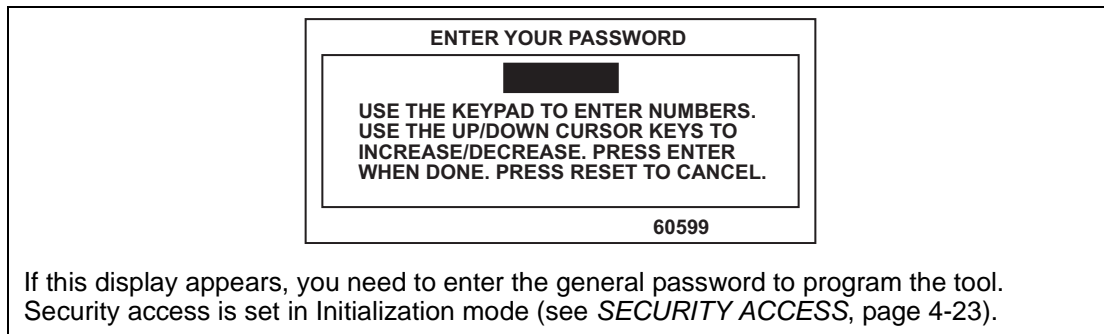
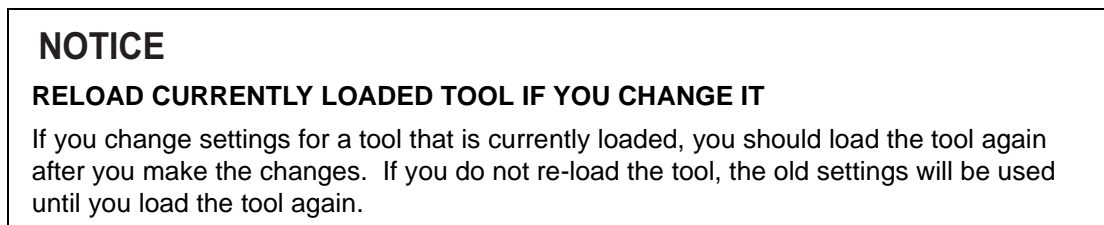


Figure 5-7. "Enter Your Password" Screen

2. Change settings for the tool, following the instructions in *Tool Program Menu*, page 5-8.



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

## Deleting a Tool

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F6**-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 **F6** (Delete Tool). The window shown in Figure 5-8 appears, asking you to confirm that you want to delete the tool.

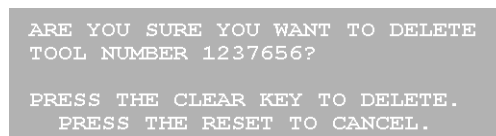


Figure 5-8. Delete Tool Confirmation Message

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, which is shown in Figure 5-9, displays whenever you

- Create a new tool
- Copy settings from an existing tool (e.g., Tool Template) to a new tool
- Press the **F4** (Edit Tool) function key on the Tool Manager screen with a tool selected.

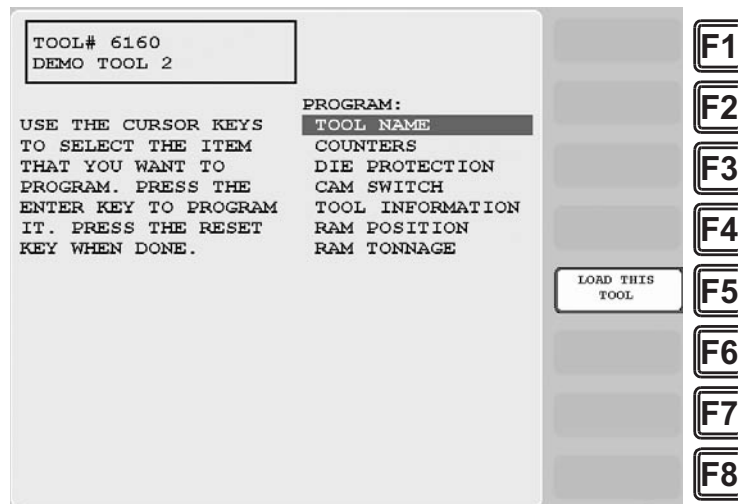


Figure 5-9. Tool Program Menu

(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 the HELP key 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 or TOOL ID

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F4**-EDIT TOOL – TOOL NAME/ID)

### 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:

### NOTICE

If you have selected alphanumeric tool number mode in Initialization (see *Tool Number Mode*, page 4-4), a tool ID is automatically generated by the system. You can view this number by selecting the TOOL ID item on the Tool Program Menu. There is no reason to change the tool ID.

1. On the Tool Program Menu, select TOOL NAME. The Alphabetic Entry window displays (see Figure 5-10).

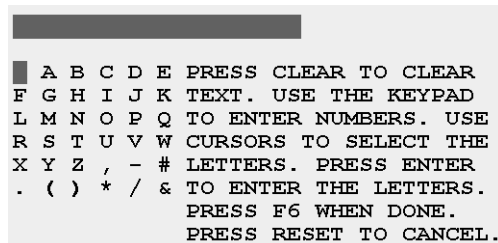


Figure 5-10. Alphabetic Entry Window

2. Key in a tool name, following the instructions in the Alphabetic Entry window, then press **F6**.
3. When you are finished, press **RESET** to return to the Tool Program Menu.

## COUNTERS

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F4**-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 (see Figure 5-11, page 5-10).



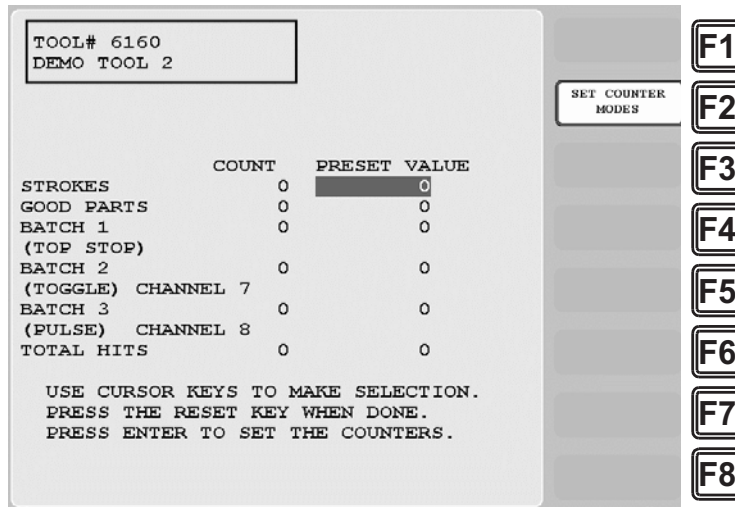


Figure 5-11. Counters Screen

SmartPAC 2 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 2 top-stops the press and displays a message (see *Counter Preset Reached Messages*, page 7-2). 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 2 top-stops the press and displays a message (see page 7-2) 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 2 top-stops the press and displays a message (see page 7-2), 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 2 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.

When a Batch counter is set to PULSE, SmartPAC 2 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 (see Figure 5-11).

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 2 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.

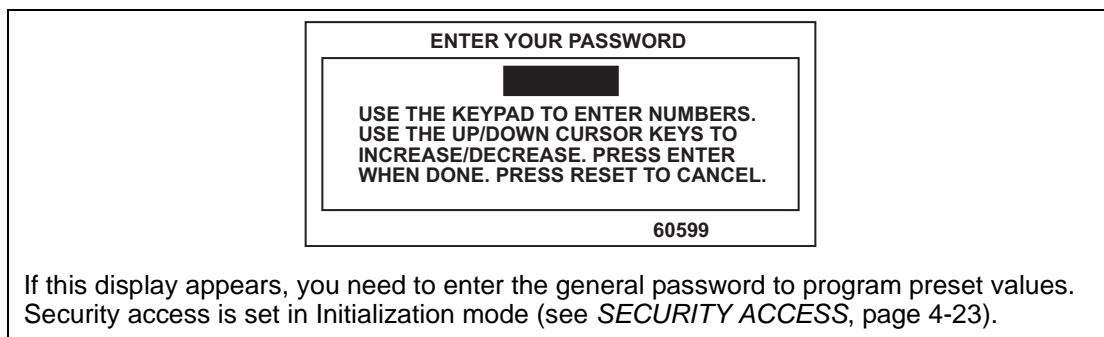


Figure 5-12. "Enter Your Password" Screen

2. Select the setting displayed in the PRESET VALUE column of the counter you want to program. The Numeric Entry window (see Figure 5-3, page 5-3) displays.
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 4-23.

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

**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 5-13 displays, asking you to confirm that you want to change the COUNT value.

WARNING: A COUNTER VALUE IS ABOUT  
TO BE CHANGED! IF YOU WANT THIS TO  
HAPPEN THEN PRESS THE UP CURSOR  
KEY. IF YOU DO NOT WANT TO CHANGE  
THE COUNTER VALUE THEN PRESS RESET

*Figure 5-13. 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 (see Figure 5-13) displays, 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 **F2** (Set Counter Modes). The Counter Mode Selections screen, shown in Figure 5-14, displays.

	OUTPUT MODE	PULSE (MSEC) TIME	INCREMENT MODE
BATCH 1	TOP STOP	0	GOOD PARTS
BATCH 2	TOGGLE	0	GOOD PARTS
BATCH 3	PULSE	250	STROKE

COUNTER INCREMENT ANGLES	
STROKE, GOOD PARTS, BATCH 1	270
BATCH 2	270
BATCH 3	270

USE THE CURSOR KEYS TO CHOOSE THE ITEM YOU WISH TO CHANGE. PRESS THE ENTER KEY TO CHANGE. PRESS RESET WHEN DONE.

Figure 5-14. 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 (see Figure 5-11, page 5-10).

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 (see Figure 5-3, page 5-3) 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:

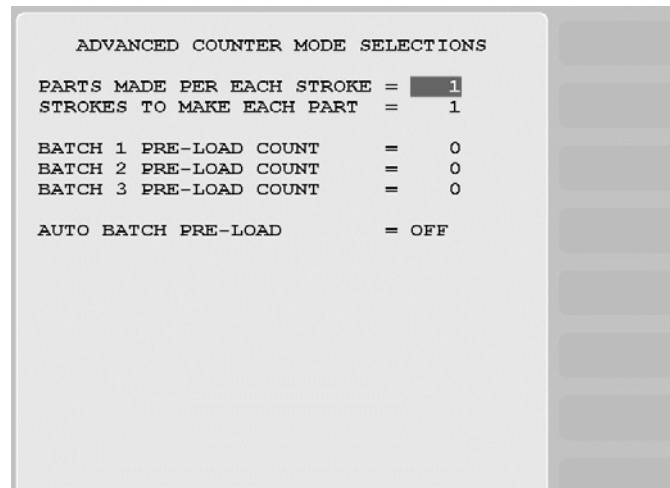
1. On the Counter Mode Selections screen, move the highlight bar to the increment angle value for the counter you want to adjust (e.g., Batch 2), then press ENTER. The Numeric Entry window (see Figure 5-3, page 5-3) displays.
2. Key in a new increment angle value, following the directions in the window, 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 2 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 gagged 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 **F2** (Advanced Modes). The Advanced Counter Mode Selections screen, shown in Figure 5-15, page 5-15, displays.



```

ADVANCED COUNTER MODE SELECTIONS

PARTS MADE PER EACH STROKE = 1
STROKES TO MAKE EACH PART = 1

BATCH 1 PRE-LOAD COUNT    = 0
BATCH 2 PRE-LOAD COUNT    = 0
BATCH 3 PRE-LOAD COUNT    = 0

AUTO BATCH PRE-LOAD       = OFF

```

Figure 5-15. 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 (see Figure 5-3, page 5-3) 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 pre-load values in Run mode when the Batch preset is reached (see *COUNTERS*, page 6-8) 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 4-23).

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 (see Figure 5-3, page 5-3) 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 – **F4**-EDIT TOOL – DIE PROTECTION)

### 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 5-32.) Settings are made via the Die Protection Sensor Menu, which is shown in Figure 5-16.

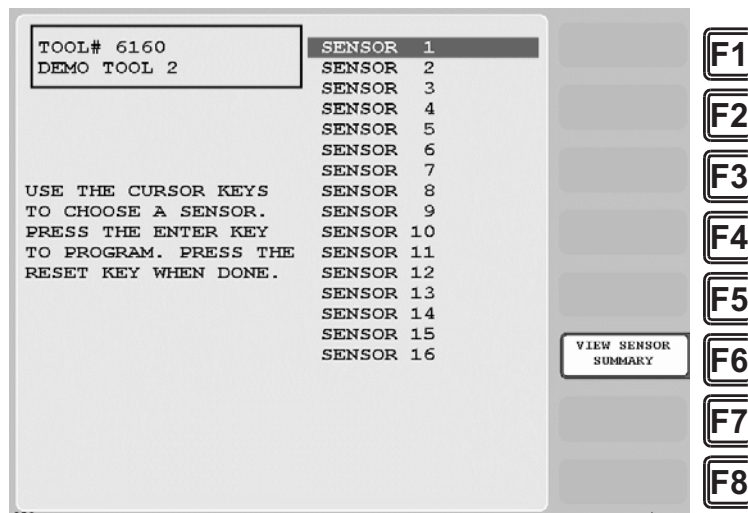


Figure 5-16. Die Protection Sensor Menu

(DiProPAC 16-sensor option shown. Your display may look different.)

## Understanding Sensor Terminology

In order to make proper sensor settings on the SmartPAC 2 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 2) when the sensor circuit to SmartPAC 2 switches from open to closed-to-ground. N/O sensors are either “yellow” or “green” (see page 5-18).

In a normally closed (N/C) sensor, the sensor circuit to SmartPAC 2 is closed to ground in its normal state. The sensor actuates when the circuit opens. Normally closed sensors are “red” (see page 5-18).

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 2 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 Stop Type*, page 5-26.

## 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 2 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 2. You can program any combination of reds, yellows, or greens. Instructions for programming sensor types is provided starting on page 5-25.

### *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 2 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 2 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 (see Figure 5-17).

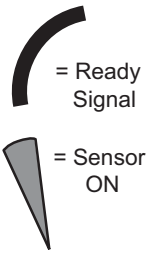
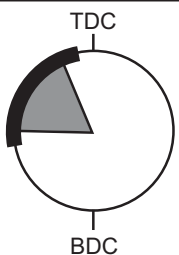
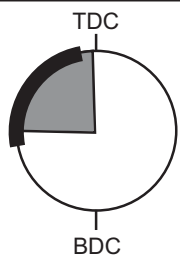
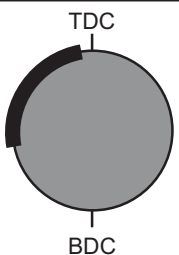
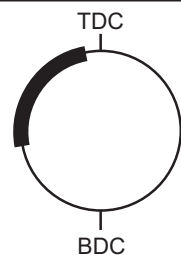
KEY	OK	OK	not allowed (press stops)	not allowed (press stops)
 <p>= Ready Signal</p> <p>= Sensor ON</p> <p>Green Sensor</p>	 <p>Sensor ON only inside ready signal.</p>	 <p>Sensor is ON inside ready signal and stays on for a time after the end of ready signal, but turns OFF before next ready signal.</p>	 <p>Sensor never goes OFF.</p> <p>Stop signal sent at beginning of ready signal.</p>	 <p>Sensor never goes ON.</p> <p>Stop signal sent at end of ready signal.</p>

Figure 5-17. 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 (see Figure 5-18). In other words, the sensor must turn on and turn off within the Ready signal.

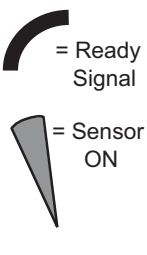
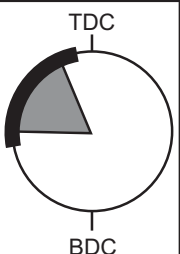
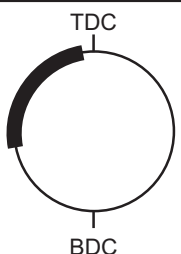
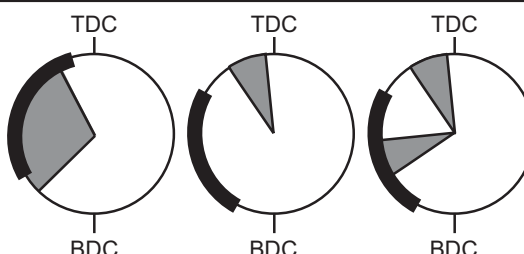
KEY	OK	not allowed (press stops)	not allowed (press stops)
 <p>= Ready Signal</p> <p>= Sensor ON</p> <p>Green Quick Check Sensor</p>	 <p>Sensor goes ON only inside ready signal.</p>	 <p>Sensor never goes ON.</p> <p>Stop signal sent at end of ready signal.</p>	 <p>Sensor is ON outside ready signal.</p> <p>Stop signal sent when sensor is ON outside ready signal.</p>

Figure 5-18. 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 (see Figure 5-19).

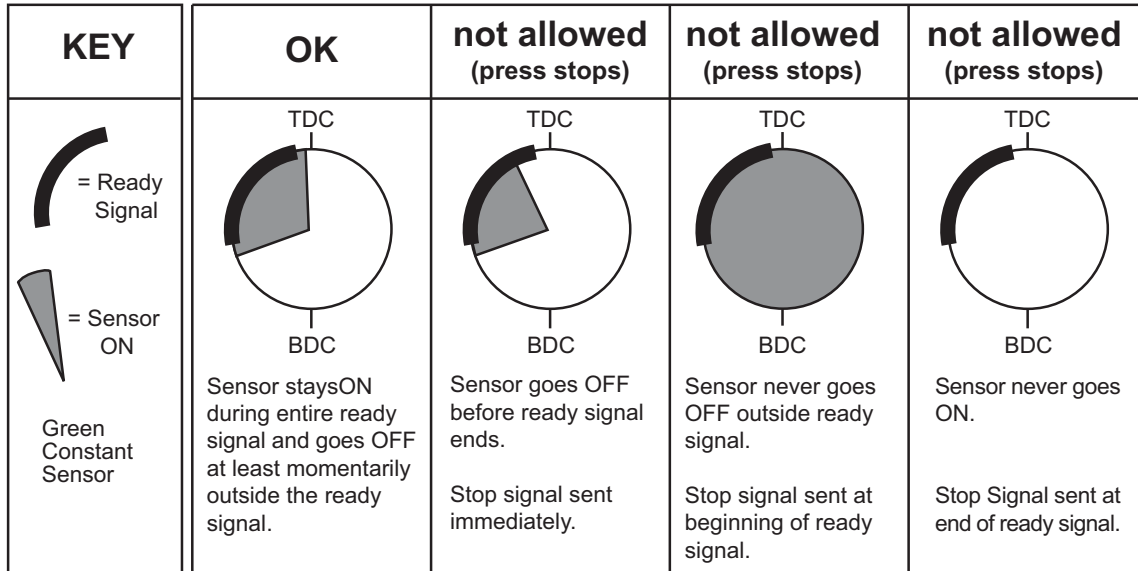


Figure 5-19. Ready Signal Programming for a “Green Constant” Sensor

## 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, signalling 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 2 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 (see page 5-21) or Auto Enable by Sensor (see page 5-24) stroke counter
- Assign a name to each sensor (see page 5-23)
- Set the sensor type (i.e., red, yellow, green, etc.) (see page 5-25)
- Set stop type (i.e., Emergency Stop, Top Stop, and Smart Stop) (see page 5-26)
- Set the critical angle for a sensor programmed as Smart Stop (see page 5-27)
- Set the Ready signal for a green sensor (see page 5-28)
- Set the stroke count for a green special sensor (see page 5-30)

You are also shown how to change sensor settings (see page 5-31), view the sensor summary (see page 5-31), and delete sensors (see page 5-32).

**Setting the “Auto Enable by Tool” Counter Value**

If you have set Sensor Enable Mode in Initialization to AUTO BY TOOL (see page 4-13), 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 5-55 and *DISABLE (ENABLE) SENSORS*, page 6-7).

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 (see Figure 5-21) with the AUTO ENABLE COUNTER field shown to the left of the list of sensors.

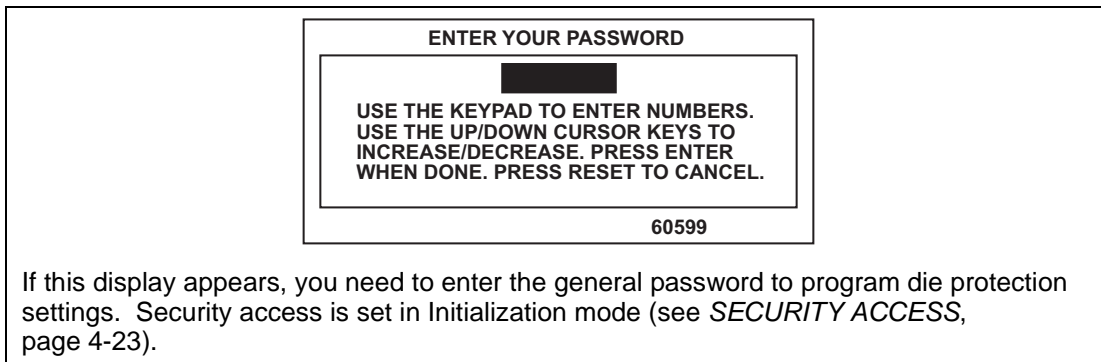


Figure 5-20. "Enter Your Password" Screen

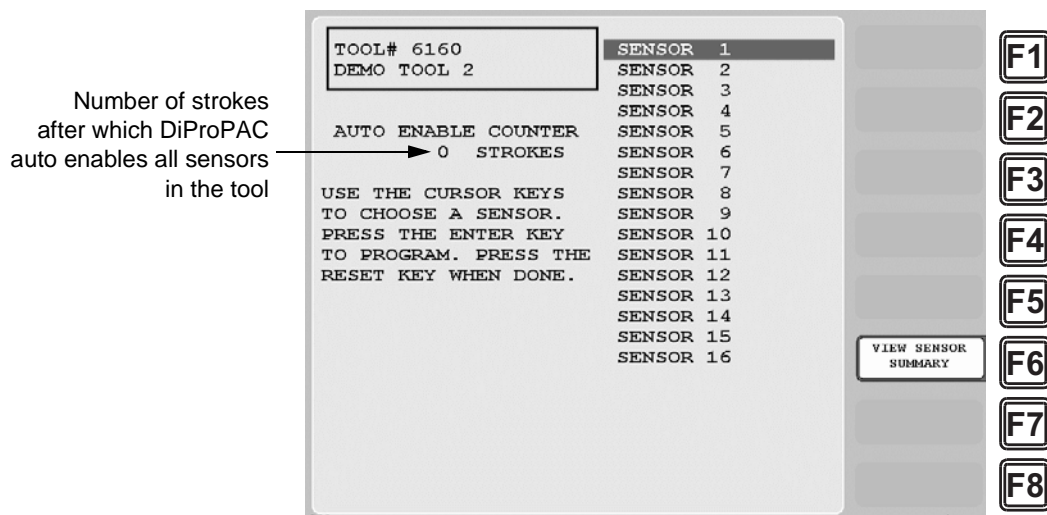


Figure 5-21. Die Protection Sensor Menu with Auto Enable by Tool Counter

2. Select the AUTO ENABLE COUNTER field. The Numeric Entry window (see Figure 5-3, page 5-3) 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, shown in Figure 5-22, displays.

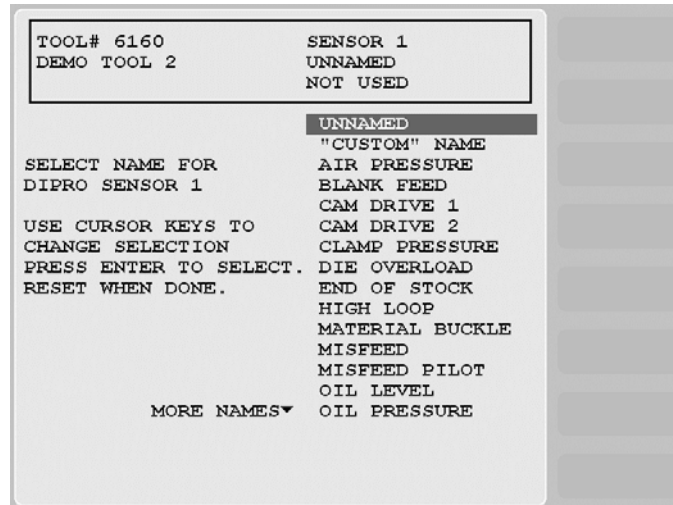


Figure 5-22. Sensor Names Screen

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 4-12).

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, shown in Figure 5-23, page 5-24, displays.

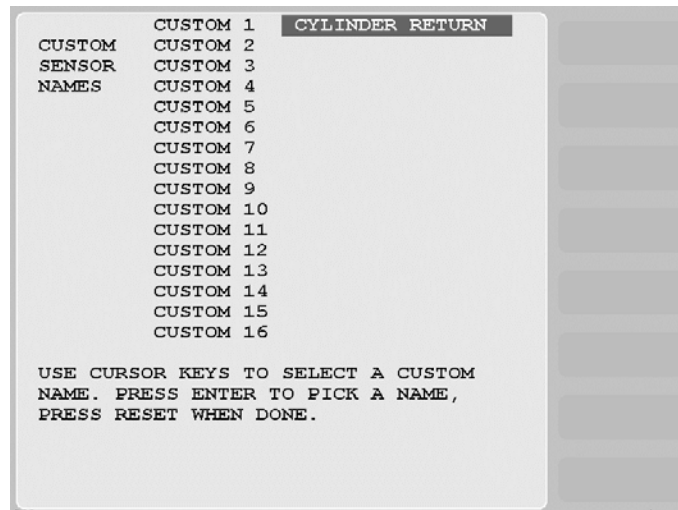


Figure 5-23. Custom Sensor Names Screen

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 (see page 4-13), 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 5-25).

### Setting the “Auto Enable by Sensor” Counter Value

If Sensor Enable Mode is set to AUTO BY SENSOR in Initialization (see page 4-13), a screen like the one shown in Figure 5-24 displays after you enter a sensor name.

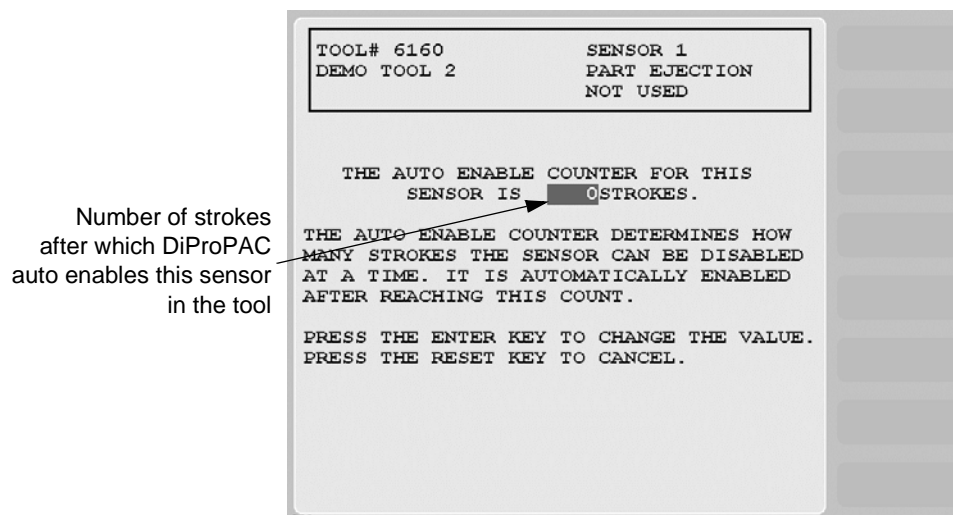


Figure 5-24. Auto Enable by Sensor Counter Screen

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 5-55 and *DISABLE (ENABLE) SENSORS*, page 6-7).

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 (see Figure 5-3, page 5-3) 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, shown in Figure 5-25, displays with the name you selected for the sensor shown at the right of the Status Box beneath the sensor number.

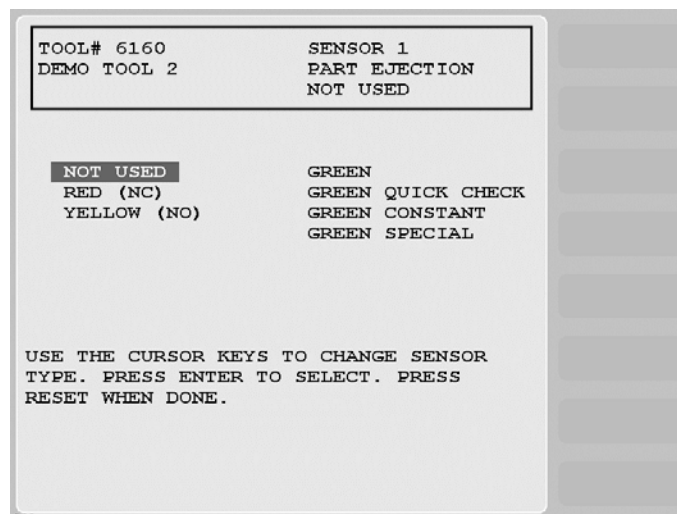


Figure 5-25. Sensor Type Screen

You can select one of six types of sensor (see *Sensor Types*, page 5-17 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, shown in Figure 5-26, displays. The Sensor Stop Type screen allows you to specify how the press is to be stopped when the die protection sensor detects a fault.

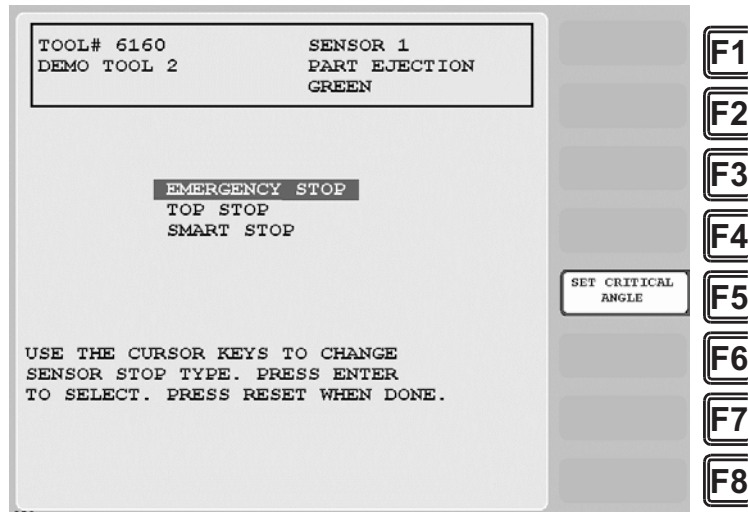


Figure 5-26. Sensor Stop Type Screen

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 2 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 2 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 2 performs either a Top Stop or Emergency Stop depending on the angle at which the sensor fault is detected. SmartPAC 2 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 2 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:

1. 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 2 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 5-27, displays.

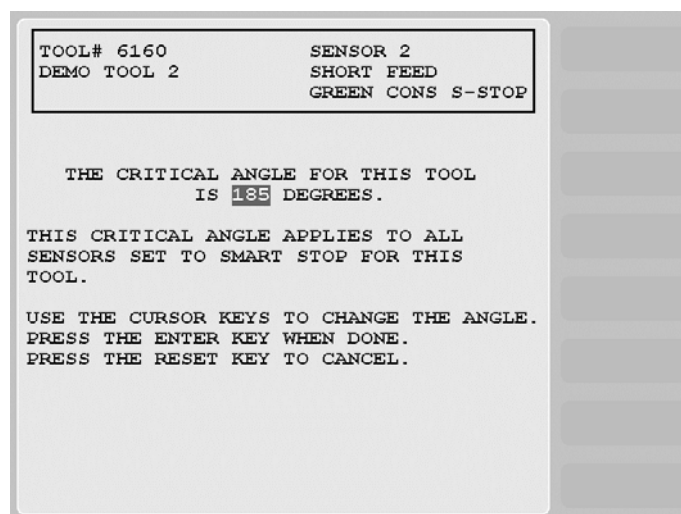


Figure 5-27. Critical Angle Programming Screen

- Decrement the CRITICAL ANGLE default value of 185°, using the Down (▼) cursor key, until the value you want is displayed. SmartPAC 2 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.

- 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 5-31).

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

- On the Die Protection Sensor Menu, select a sensor programmed as Smart Stop. The Sensor Settings screen (see Figure 5-30, page 5-31) displays.
- Select SMART STOP. The Sensor Stop Type screen displays with SMART STOP highlighted.
- Press **F5** (Set Critical Angle) to display the Critical Angle Programming screen.
- 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, shown in Figure 5-28, page 5-29, displays.

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 2 from sending a stop signal to the press. In the example shown in Figure 5-28, the Ready On signal is set to 180°, the Ready Off signal to 265°.

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 5-16 for more information.

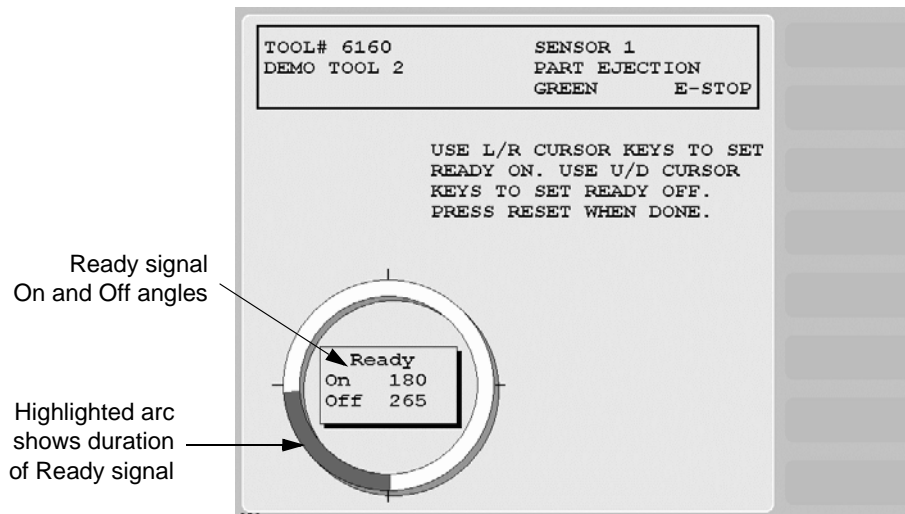


Figure 5-28. Ready Signal Programming Screen

## 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 6-11 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 3-7.

1. 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.

2. 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.

3. When you have finished setting the Ready On and Ready Off angles, press RESET. The Sensor Settings screen (see Figure 5-30, page 5-31) displays with all your sensor settings shown.

4. If you want to change any settings, refer to *Viewing and Changing Sensor Settings*, page 5-31).

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, shown in Figure 5-29, displays. On this screen, you set the number of strokes that the press can make before the Green Special sensor must actuate.

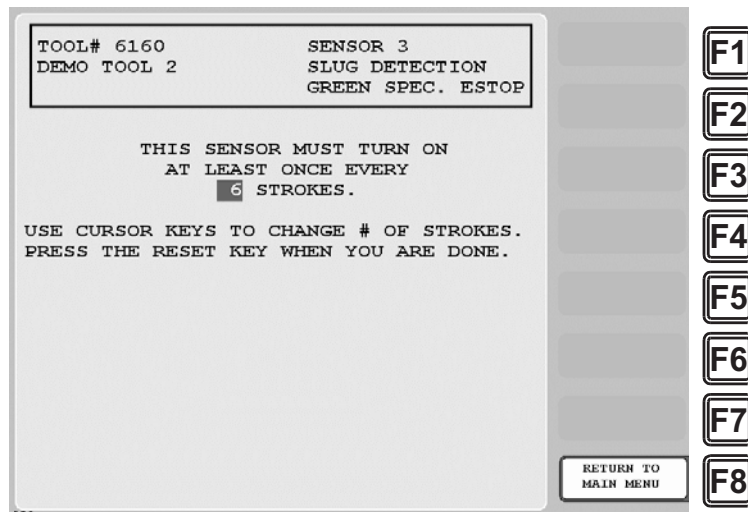


Figure 5-29. Green Special Sensor Stroke Count Screen

#### NOTICE

For more information about Green Special sensors, refer to *Understanding Sensor Terminology*, page 5-16.

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 (see Figure 5-30, page 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 like the one shown in Figure 5-30, which displays all your sensor settings.

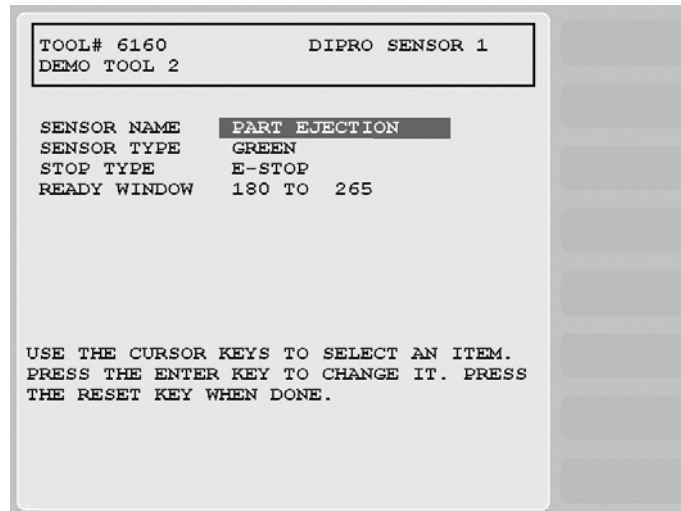


Figure 5-30. Sensor Settings Screen

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 5-22, page 5-23) 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 **F6** (View Sensor Summary). The Sensor Summary screen, shown in Figure 5-31, page 5-32, displays. 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.

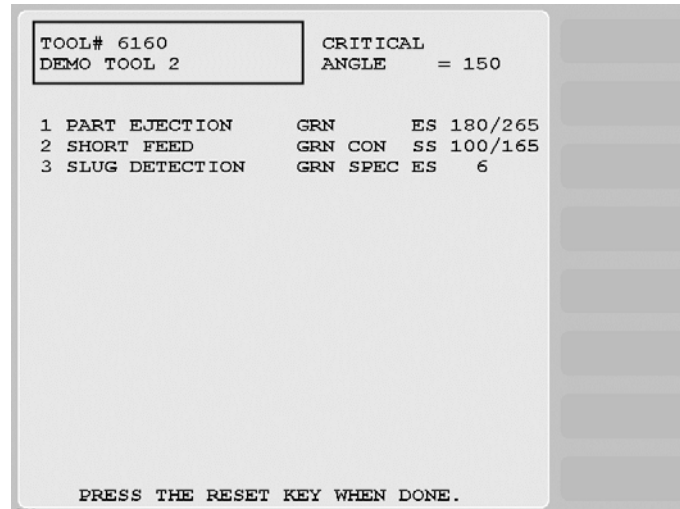


Figure 5-31. Sensor Summary Screen

## 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 5-32, page 5-33). 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.

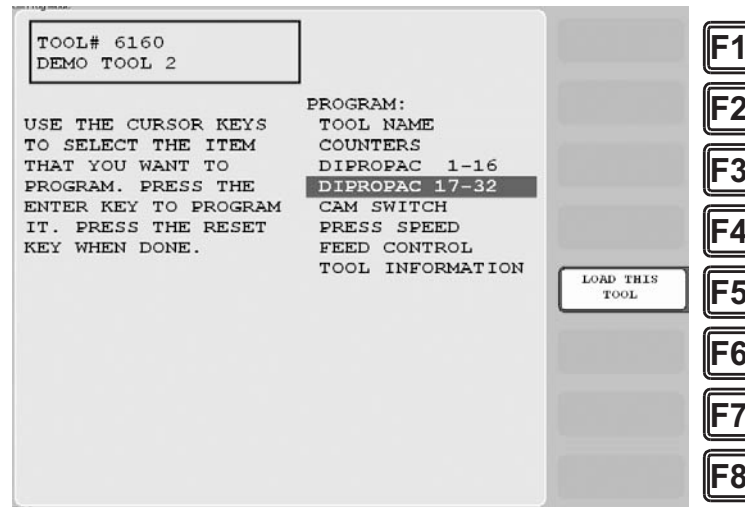


Figure 5-32. Tool Program Menu with DIPROPAC 1-16 and DIPROPAC 17-32 Items

When planning the sensors to be assigned to each DiProPAC 32 input, make sure to 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* (see page 5-21) if necessary:

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

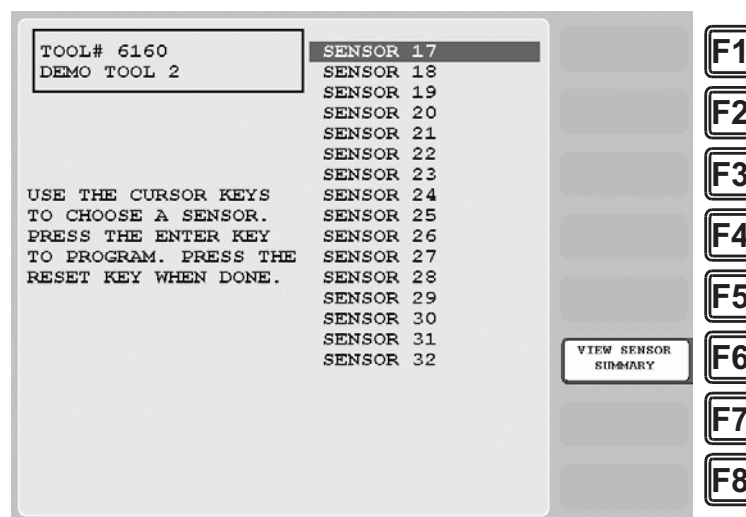


Figure 5-33. Die Protection Sensor 17-32 Menu



2. Select the sensor number that you want to program. The Sensor Names screen (see Figure 5-34) displays.

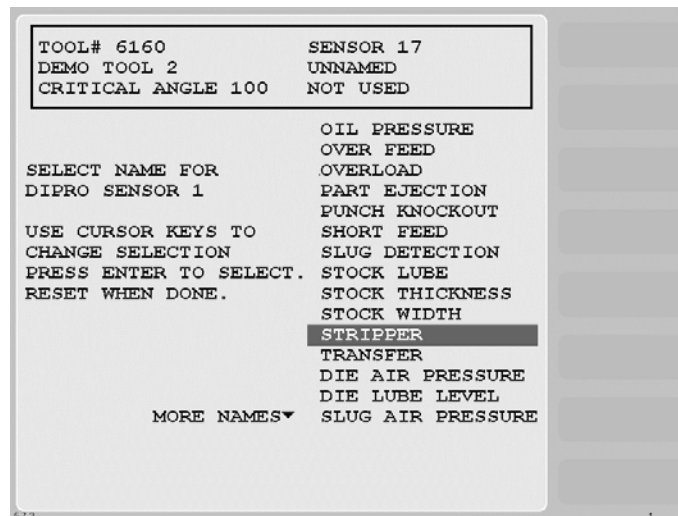


Figure 5-34. Sensor Names Screen with Stripper Function Highlighted

3. Select a function for the sensor. (“Stripper” is used as an example in Figure 5-34.) The Sensor Type screen (see Figure 5-35) displays.

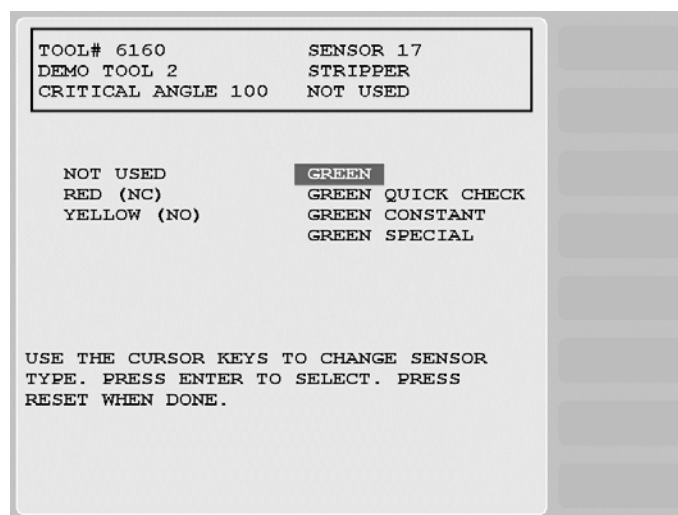


Figure 5-35. Sensor Type Screen with “GREEN” Highlighted

4. Select the sensor type (i.e., GREEN, GREEN QUICK CHECK, or GREEN CONSTANT). The Sensor Stop Type screen (see Figure 5-36, page 5-35) displays.

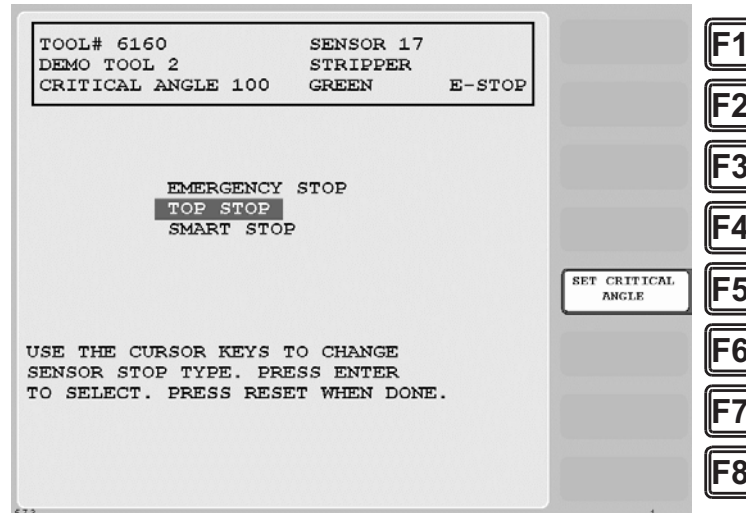


Figure 5-36. Sensor Stop Type Screen

5. Select the stop type you want. The Sensor Summary screen displays (see Figure 5-37) 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.

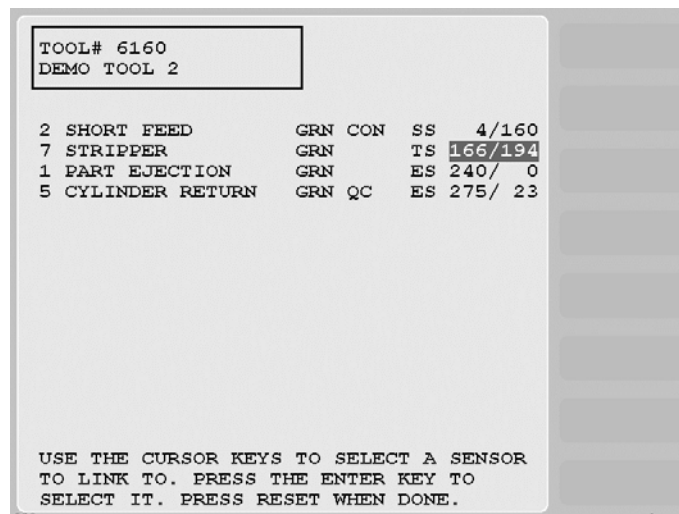


Figure 5-37. Sensor Summary Screen Showing Ready Signals for Green Sensors

6. Select the Ready signal you want. The Sensor Settings screen displays (see Figure 5-38, page 5-36), 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.

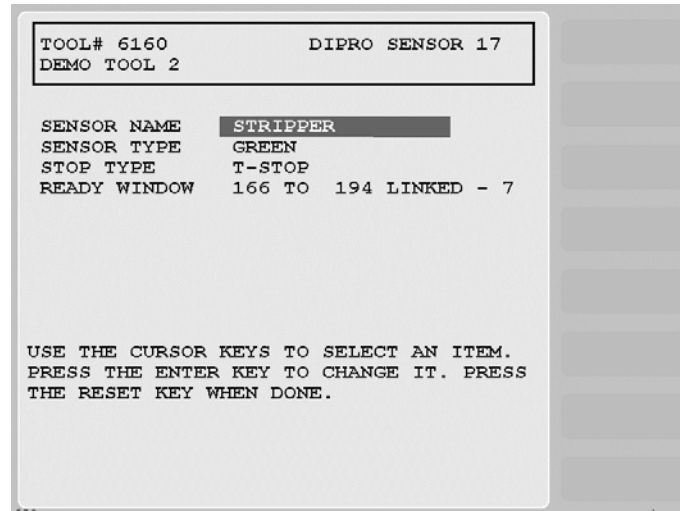


Figure 5-38. Sensor Settings Screen

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* (see page 5-21) if necessary:

1. Perform steps 1 and 2 of the *Programming Sensors 17-32 as Green, Green Quick Check, or Green Constant* procedure, page 5-33. The Sensor Names screen (see Figure 5-39) displays.

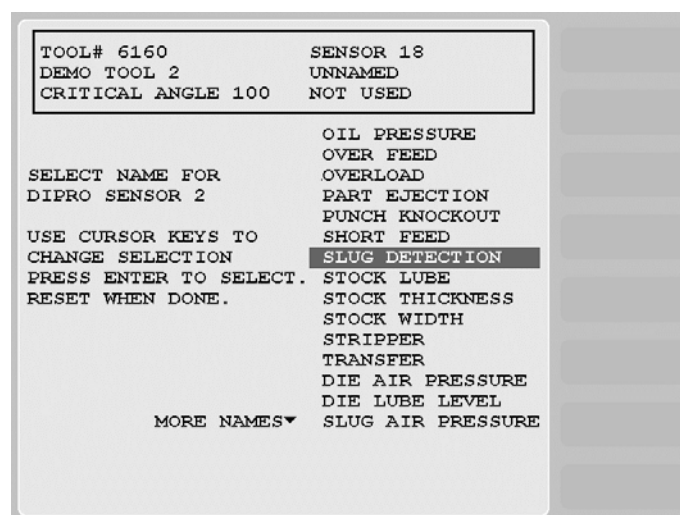


Figure 5-39. Sensor Names Screen with Slug Detection Function Highlighted

2. Select a function for the sensor. (“Slug Detection” is used as an example in Figure 5-39.) The Sensor Type screen (see Figure 5-40, page 5-37) displays.

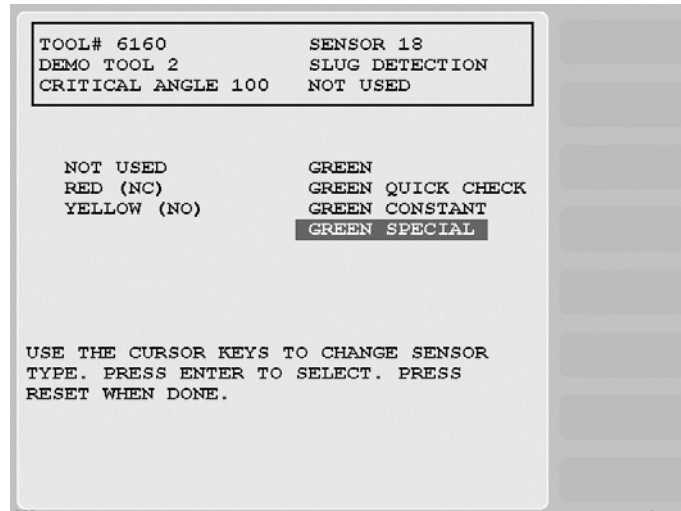


Figure 5-40. Sensor Type Screen with “GREEN SPECIAL” Highlighted

3. Select GREEN SPECIAL from the Sensor Type items.
4. When the Sensor Stop Type screen displays, select a stop type. The Sensor Summary screen (see Figure 5-41) displays with the stroke count shown for each green special sensor programmed in the group of sensors 1-16.

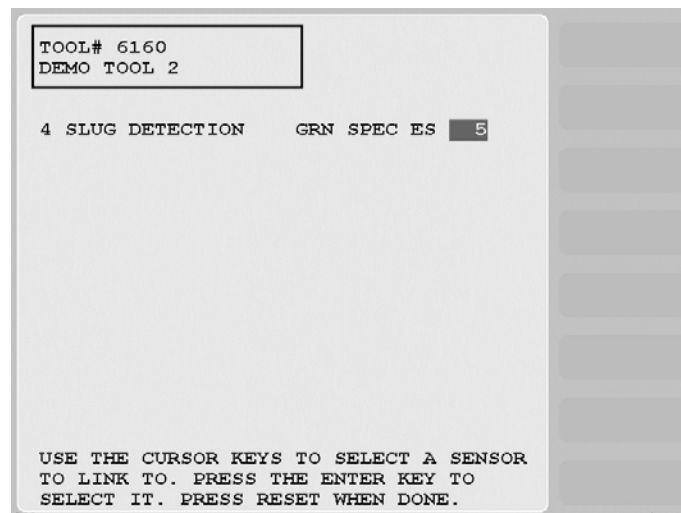


Figure 5-41. Sensor Summary Screen Showing Stroke Counts for Green Special Sensors

5. Select the green special stroke count you want. The Sensor Settings screen (see Figure 5-42, page 5-38) 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.

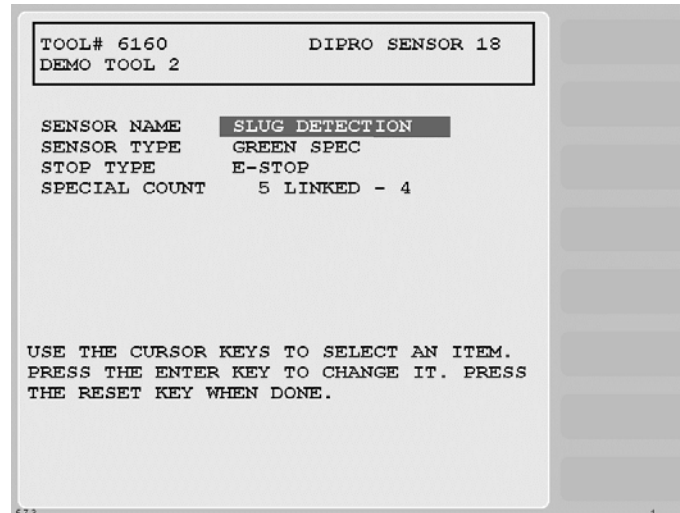


Figure 5-42. Sensor Settings Screen

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

## CAM SWITCH

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F4**-EDIT TOOL – CAM SWITCH)

### **⚠ DANGER**

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

Use SmartPAC 2 Hydraulic's programmable cam switch to control auxiliary functions only. The SmartPAC 2 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.

### **NOTICE**

Cam channels 3 and 4 should be named "Bottom Dwell" and "Press Rev Win," their factory settings, unless you have changed them in Initialization (see *SELECT CAM NAMES*, page 4-8). These cam functions are reserved for the optional Return on Pressure feature. Make sure these two channels are wired correctly (see page 2-34).

### **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 5-43.

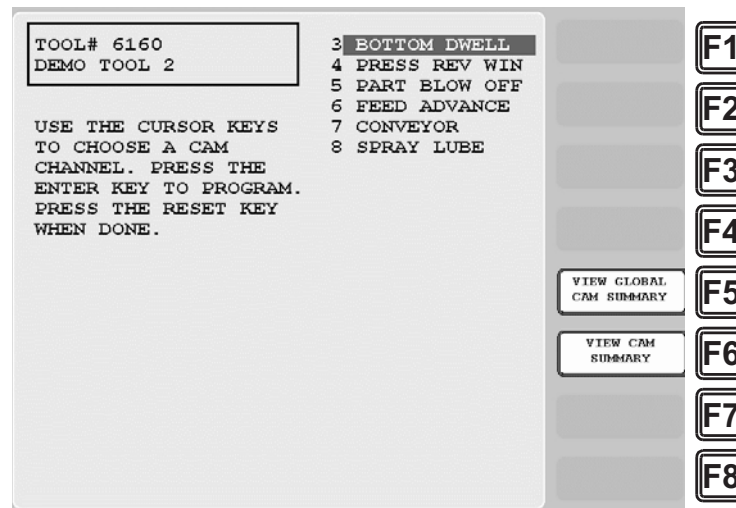


Figure 5-43. Cam Channel Menu

(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*, page 4-8). Names for cam channels 3 and 4 should be “Bottom Dwell” and “Press Rev Win,” which are pre-set at the factory, unless you have renamed them in Initialization.

Channel numbers that are missing from the menu have been programmed as “global” cams in Initialization (see *SET GLOBAL CAMS*, page 4-10). To view global cam channels, press **F5** (View Global Cam Summary) (see page 5-47).

## 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. The Cam Channel Menu displays.

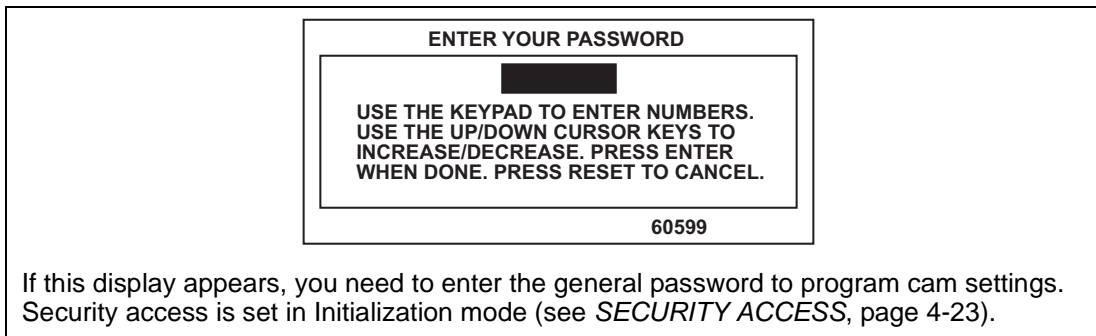


Figure 5-44. "Enter Your Password" Screen

2. Select a cam channel to program. The Cam Channel Program Type Menu, shown in Figure 5-45, displays.

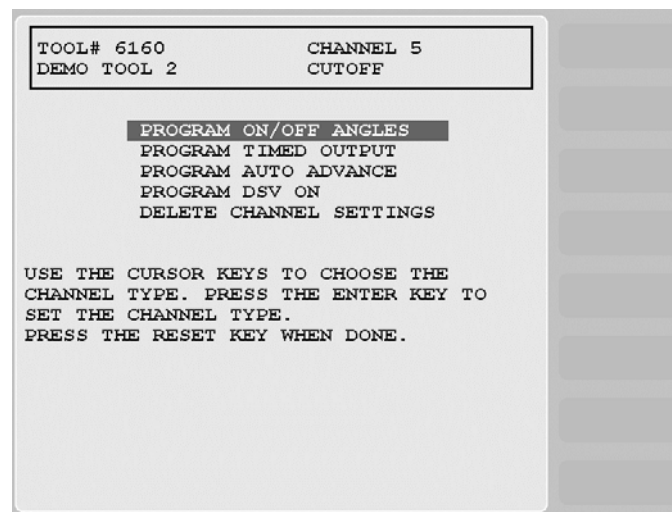


Figure 5-45. Cam Channel Program Type Menu

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 2 Hydraulic.

## 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 5-41):

1. Select PROGRAM ON/OFF ANGLES on the Cam Channel Program Type Menu. The Cam Channel On/Off Program screen, shown in Figure 5-46, displays.

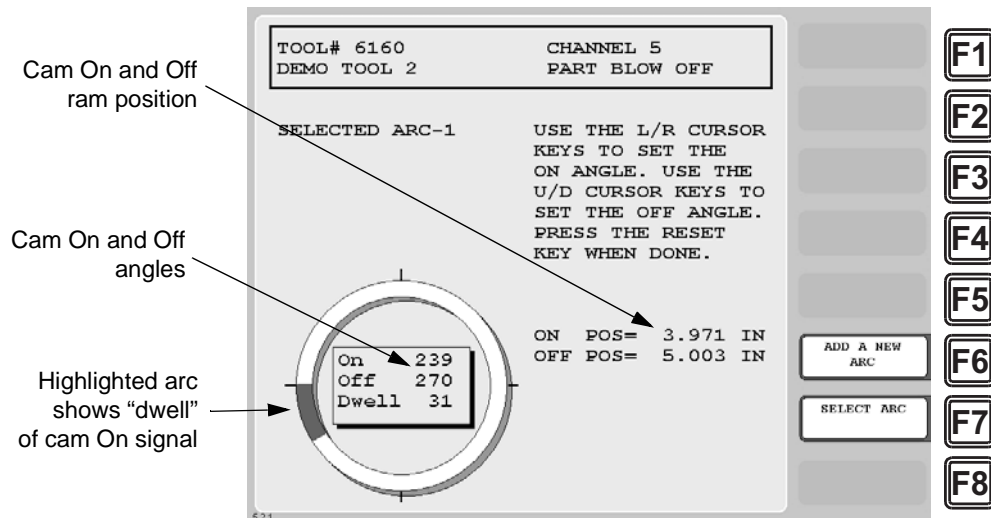


Figure 5-46. Cam Channel On/Off Program Screen

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 2 Hydraulic 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*, page 4-10) 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 5-40. Figure 5-47 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.

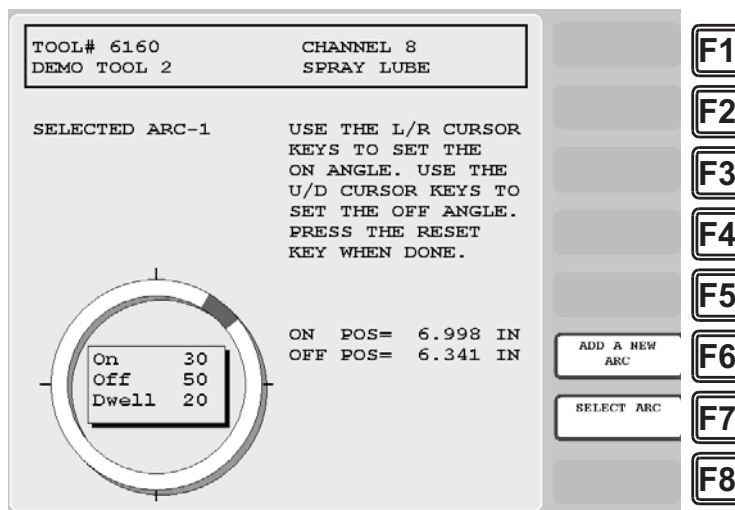


Figure 5-47. Cam Channel On/Off Program Screen: One On/Off Arc

2. Press **F6** (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 5-46) and start over again.

- Program the second arc. Figure 5-48 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.

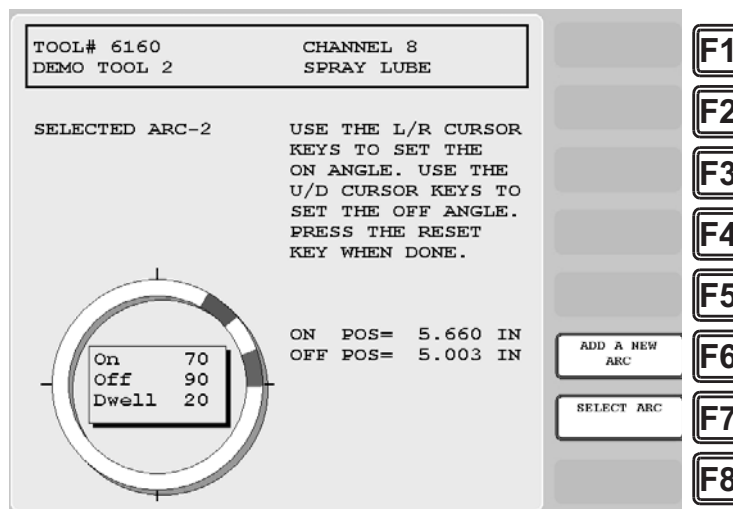


Figure 5-48. Cam Channel On/Off Program Screen: Two On/Off Arcs

- Repeat steps 2 and 3 to add additional arcs. Figure 5-49 shows the Cam Channel On/Off Program screen with a third arc programmed for an On angle of 110° and an Off angle of 130°. Ram On position is 4.323 in., ram Off position 3.666 in.

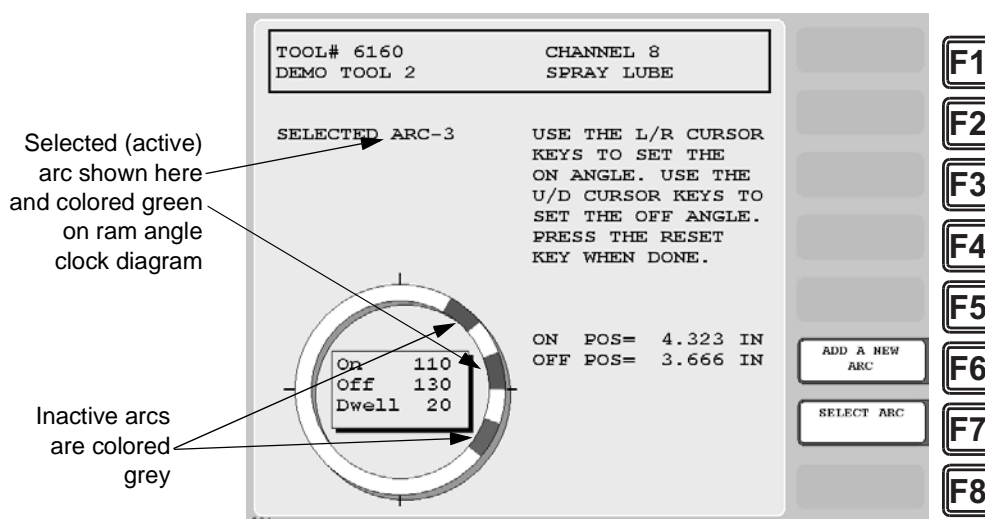


Figure 5-49. Cam Channel On/Off Program Screen: Three On/Off Arcs

- If you want to adjust On/Off settings for a previously programmed arc, press **F7** (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, shown in Figure 5-50, displays.

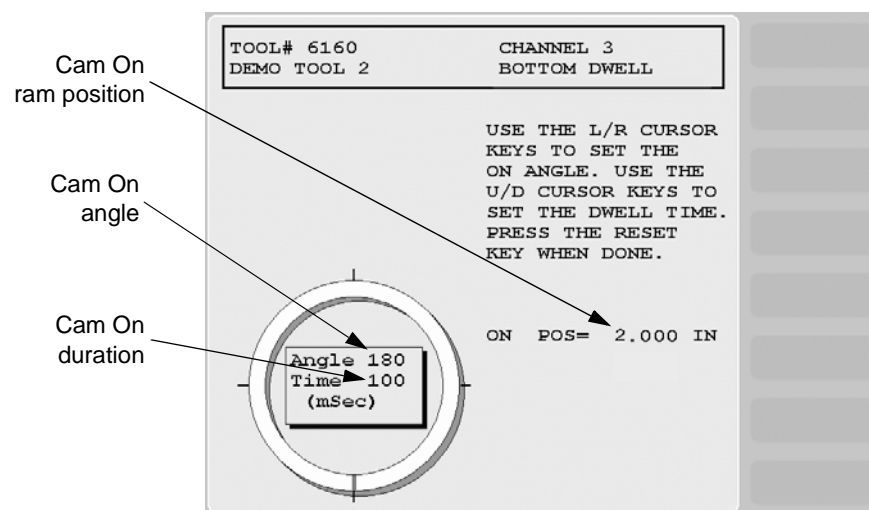


Figure 5-50. Cam Channel Timed Output Program Screen

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 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 5-50 the On angle is set to 180°; the ram On position is 2.000 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 5-50, the On time is set to 100 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 5-13.

## 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 TB102 on the SmartPAC 2 Hydraulic board (see *Wiring a Press-in-Motion Signal (Optional)*, page 2-35). 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, which is shown in Figure 5-51, page 5-46.

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

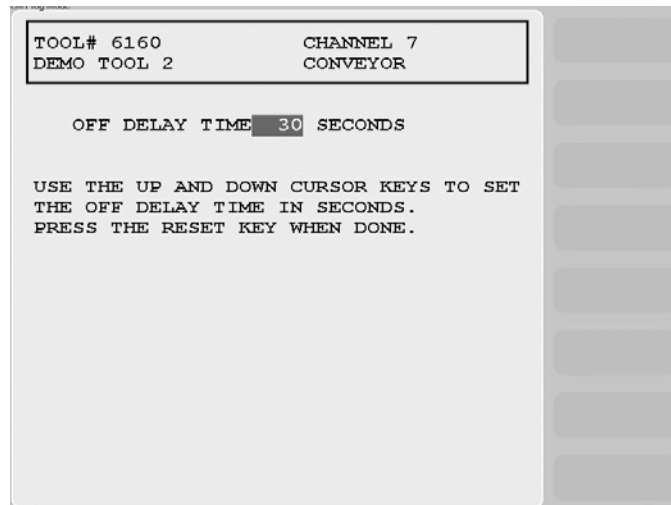


Figure 5-51. Cam Channel DSV On Program Screen

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.

PRESS THE CLEAR KEY IF YOU REALLY  
WANT TO DELETE THIS CHANNEL. PRESS  
THE RESET KEY IF YOU DO NOT.

Figure 5-52. 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 **F6** (View Cam Summary) on the Cam Channel Menu. The Cam Summary screen, shown in Figure 5-53, 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 5-47).

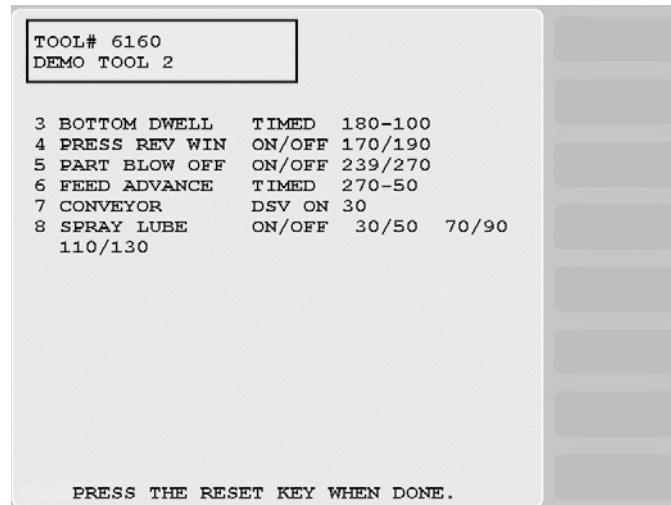


Figure 5-53. Cam Summary Screen

## Viewing Global Cams

Global cams, which are programmed in Initialization mode (see *SET GLOBAL CAMS*, page 4-10), are cam channels that can be used with any tool set up on your SmartPAC 2 Hydraulic. 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.

To view global cams, do the following:

1. Press **F5** (View Global Cam Summary) on the Cam Channel Menu. The Global Cam Summary screen (see Figure 5-54, page 5-48) displays with the name, program type, and programmed settings shown for each channel set as a global cam.

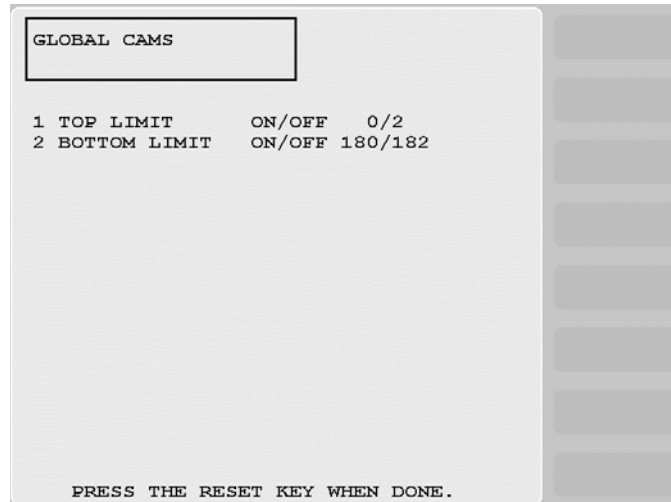


Figure 5-54. Global Cam Summary Screen

## TOOL INFORMATION

(PROGRAM – GO TO THE TOOL MANAGER – select tool – **F4**-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 5-55.

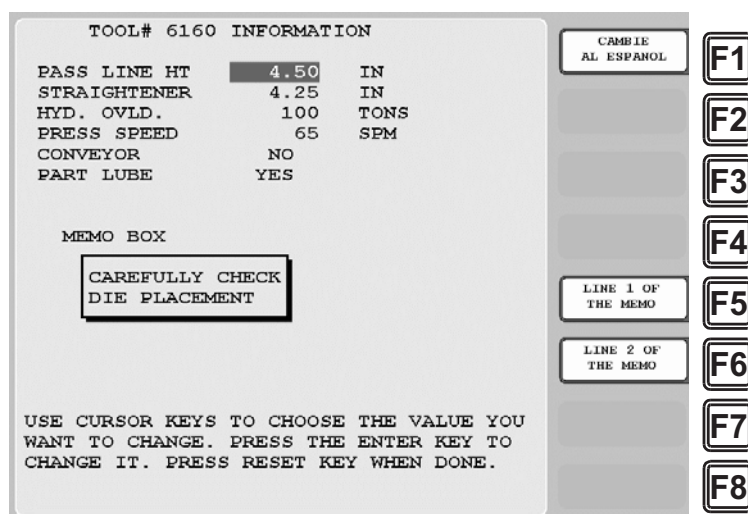


Figure 5-55. Tool Information Screen

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 4-19).

To enter tool information, do the following:

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

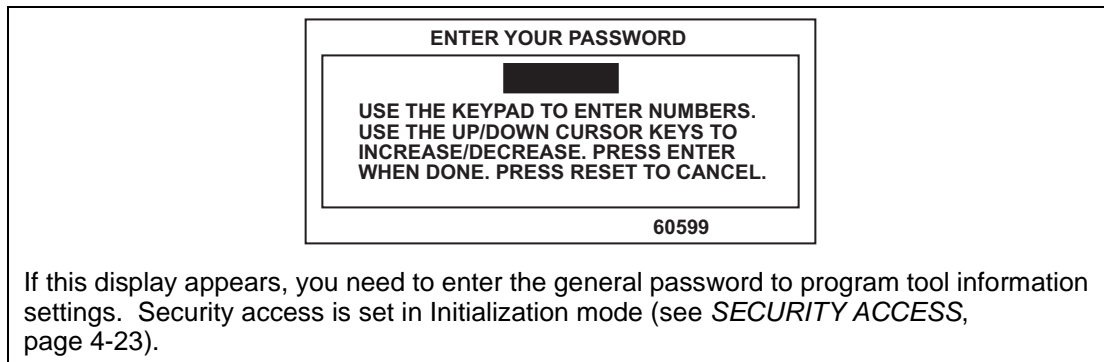


Figure 5-56. "Enter Your Password" Screen

2. Select a desired parameter. The Numeric Entry window (see Figure 5-3, page 5-3) 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 **F5** for the first line, **F6** for the second line. When the Alphabetic Entry window (see Figure 5-10, page 5-9) displays, key in your entry, following the directions in the window, and press **F6**. The window closes, and your entry appears on the first or second line of the memo box.
6. 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 4-15).

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 5-57.

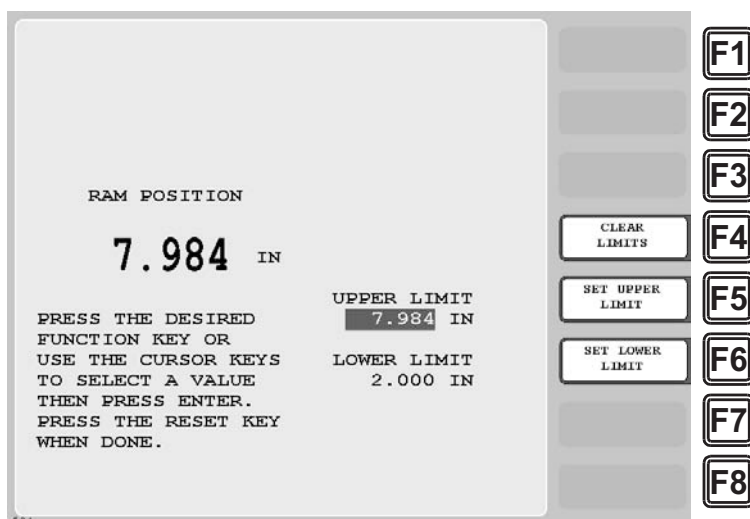


Figure 5-57. Ram Position Screen

SmartPAC 2 Hydraulic 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 2 Hydraulic 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 2 Hydraulic 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 2 Hydraulic generates a fault (see page 7-7), 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.

**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 **F5** to set the Upper Limit or **F6** to set the Lower Limit. See *RAM POSITION*, page 6-21.

**NOTICE**

When you change tool numbers and the ram is below the new Upper Limit, the ram may automatically rise to the Upper Limit. If you are above the new Upper Limit, the ram will not descend to the Upper Limit until the press cycles once.

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

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

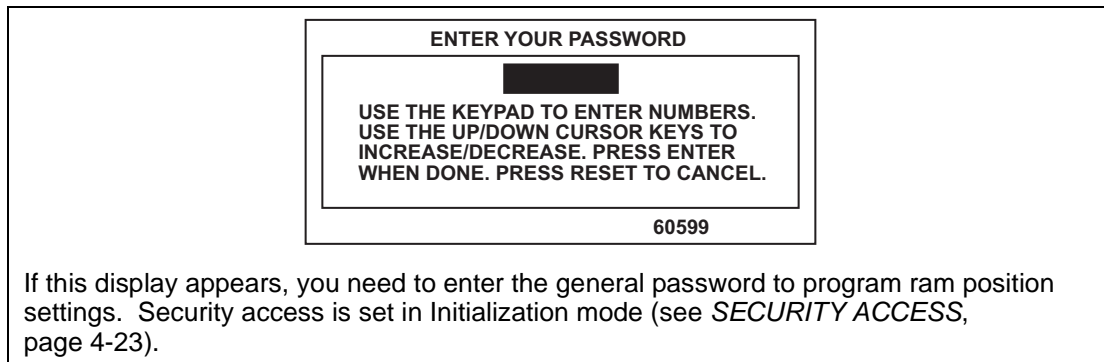


Figure 5-58. "Enter Your Password" Screen

2. Press **F4** (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 6-2 for instructions), Jog the ram to the Upper Limit for the loaded tool, return to this screen, and press **F5** (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.

**NOTICE**

If you are using the Return on Pressure feature, make sure to set the Lower Limit slightly below the position where the maximum pressure is developed in order to make the part properly. You set the maximum pressure (i.e., MAX. LIMIT) on the Ram Tonnage screen (see page 5-52).

4. Set the Lower Limit value in the same manner:
  - Switch to Run mode, Jog the ram to the Lower Limit for the loaded tool, return to this screen, and press **F6** (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. When you are finished, press RESET to return to the Tool Program Menu.

## RAM TONNAGE (Optional)

This item, which appears on the Tool Program Menu only if Calibration Pressure and Calibration Tonnage settings have been entered on the Linear Sensor screen in Initialization (see page 4-15), enables you to select the reversal mode that returns the ram to the Upper Limit set on the Ram Position screen (see page 5-50). You make this selection on the Ram Tonnage screen, which is shown in Figure 5-59, page 5-53.

If the default setting, Distance Only, is selected, the ram returns to the Upper Limit when it reaches the Lower Limit set on the Ram Position screen. If you select Pressure or Distance, the ram returns to the Upper Limit when the hydraulic pressure reaches a value corresponding to the maximum tonnage that you set on this screen or reaches the Lower Limit, whichever occurs first.

The maximum tonnage you specify is the tonnage necessary to make the part and must be less than or equal to the press capacity. You must set this value precisely in order for each tool to return on pressure properly.

You can also specify for the Pressure or Distance option how long the ram remains in contact with the material once it reaches the maximum tonnage. This Dwell Time setting is used in applications such as deep draw.

In order to use the Return on Pressure feature, you must install the optional pressure transducer (see page 2-14), which monitors the pressure at the bottom of the stroke, and wire cam channels 3 and 4 correctly, as shown on page 2-34.

The Ram Tonnage screen also displays the tonnage corresponding to the hydraulic pressure of the ram on the current stroke.

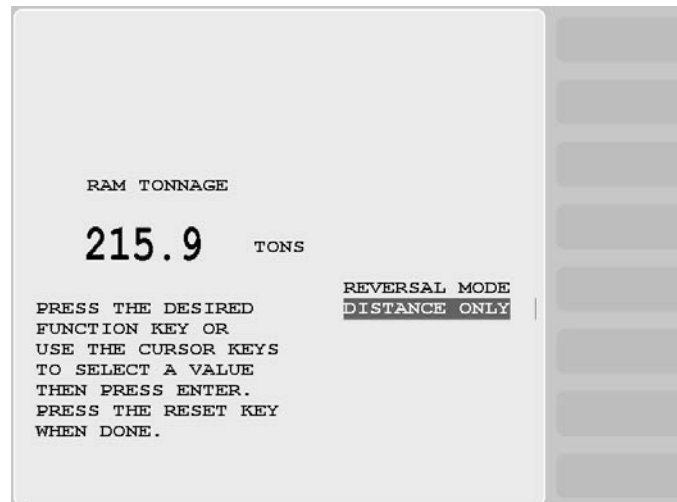


Figure 5-59. Ram Tonnage Screen ("Distance Only" Option)

To select the ram's reversal mode and enter settings for the Pressure or Distance option, perform the following steps:

1. Select RAM TONNAGE on the Tool Program Menu. The Ram Tonnage screen displays.

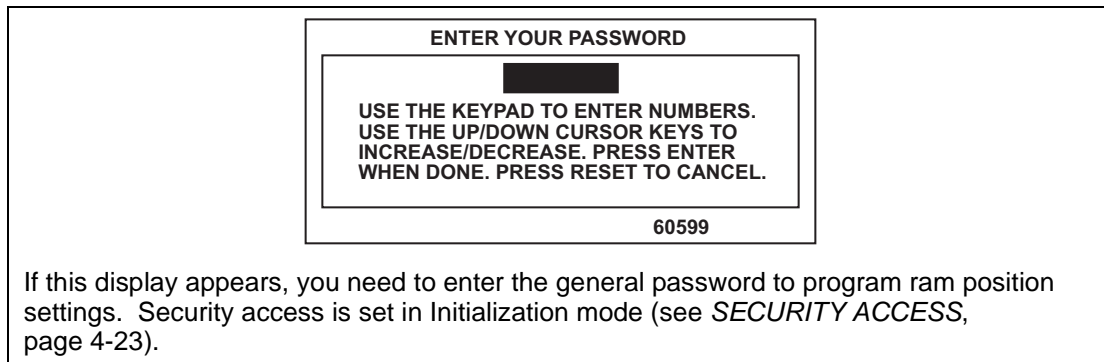


Figure 5-60. "Enter Your Password" Screen

2. Press ENTER to select the desired Reversal Mode setting, "DISTANCE ONLY" or "PRESS. OR DIST."

If you select "PRESS. OR DIST.," the MAX. LIMIT and DWELL TIME fields display beneath REVERSAL MODE as shown in Figure 5-61, page 5-54.

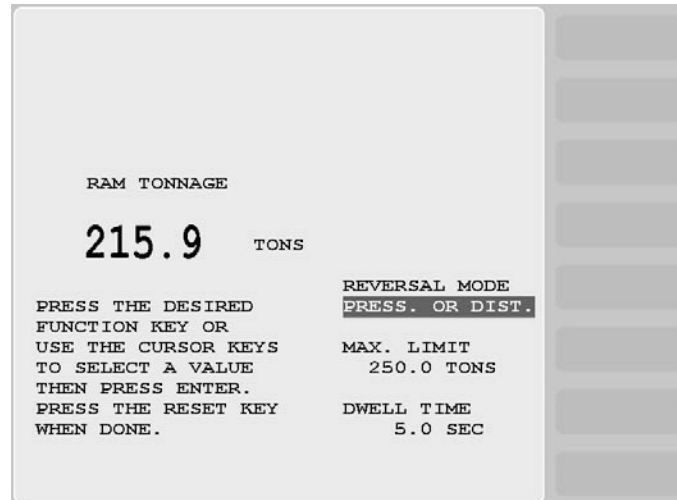


Figure 5-61. Ram Tonnage Screen (“Pressure or Distance” Option)

### NOTICE

The value you enter in the MAX. LIMIT field should be the tonnage necessary to make the part. It must be less than or equal to the press capacity.

3. To set the maximum tonnage for reversal of the ram if you have selected the “PRESS. OR DIST.” option, highlight the MAX. LIMIT field, press ENTER, key in the value you want in the Numeric Entry window, and press ENTER again. The value you specified is displayed in the MAX. LIMIT field.

### NOTICE

For proper functioning of the Return on Pressure feature, the LOWER LIMIT field on the Ram Position screen must be set slightly below the position where the maximum tonnage is developed in order to make the part properly.

### NOTICE

You must wire Channel 3 on the ProCamPAC Output Assembly to the “Dwell” input on your main control in order for the Dwell function to work.

4. To set the length of time that the ram remains in the position at which maximum tonnage is developed, highlight the DWELL TIME field, press ENTER, key in the value you want in the Numeric Entry window, and press ENTER again. The value you specified displays in the DWELL TIME field.
5. 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 5-62.

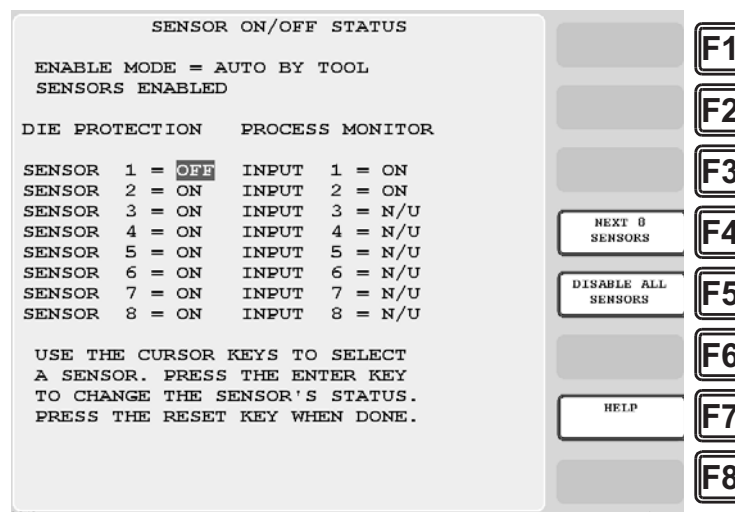


Figure 5-62. Sensor On/Off Status

### Viewing Sensor Status

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

1. Select 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 **F4** (Next 8 Sensors). The **F4** label changes to "Previous 8 Sensors." To return to the display for sensors 1 through 8, press **F4** again.
3. Press RESET to return to the Main Program Menu.

### NOTICE

When a tool is loaded, or when SmartPAC 2 is powered up, all sensors are turned on and enabled.

## Enabling or Disabling All Sensors

When you access the Sensor On/Off Status screen, a message is displayed on the second line of the screen beneath the screen title indicating whether sensors are enabled or disabled. If the message is **SENSORS ENABLED**, the **F5** function key is labelled “Disable All Sensors.” If the message is **SENSORS DISABLED**, **F5** is labelled “Enable All Sensors.”

When the message is **SENSORS ENABLED**, SmartPAC 2 is communicating with all the sensors that are programmed and turned on. When the message is **SENSORS DISABLED**, SmartPAC 2 is not communicating with the sensors.

To enable or disable all sensors, do the following:

1. On the Sensor On/Off Status screen, press **F5**.

If the **SENSORS DISABLED** message is displayed, **F5** is labelled “Enable All Sensors,” and pressing **F5** enables all the sensors.

If the **SENSORS ENABLED** message is displayed, **F5** is labelled “Disable All Sensors,” and pressing **F5** disables all the sensors.

2. Press **RESET** to return to the Main Program Menu.

### NOTICE

You can also enable or disable all sensors in Run mode. See *DISABLE (ENABLE) SENSORS*, page 6-7.

## Turning a Sensor Off or On

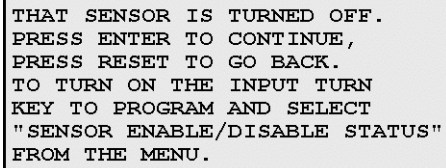
To turn a selected sensor Off or On, do the following:

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.
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.

In Run mode, you can see which sensors are turned Off by viewing sensor status (see page 6-14.) If you select a sensor in Run mode that is turned Off, SmartPAC notifies you with the message shown in Figure 5-63, page 5-57.



THAT SENSOR IS TURNED OFF.  
PRESS ENTER TO CONTINUE,  
PRESS RESET TO GO BACK.  
TO TURN ON THE INPUT TURN  
KEY TO PROGRAM AND SELECT  
"SENSOR ENABLE/DISABLE STATUS"  
FROM THE MENU.

*Figure 5-63. "Sensor Turned Off" Message*





# 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 5-50) for each tool you load. If you do not set ram upper and lower limits, SmartPAC 2 Hydraulic 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.

This chapter shows you how to use the displays in SmartPAC 2 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, which is shown in Figure 6-1.

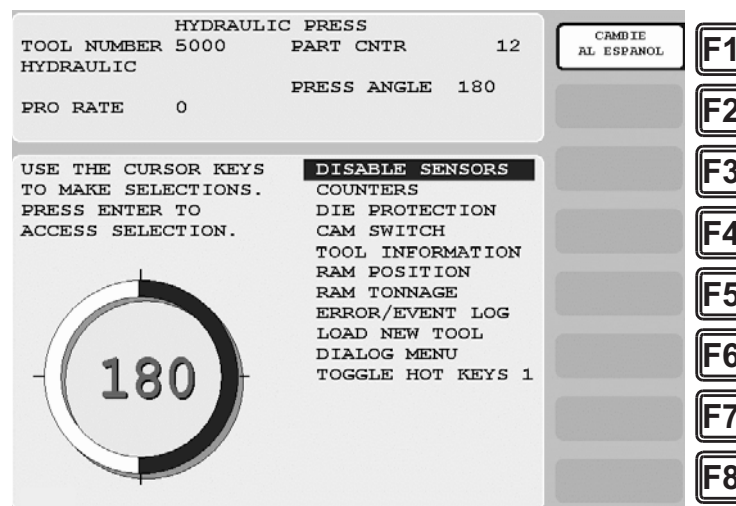


Figure 6-1. Main Run Menu

(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 4-23 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, sending e-mail messages, programming Hot keys, and toggling between the two sets of Hot keys.

If you need help using the SmartPAC 2 keyboard to input information on Run mode displays, refer to Chapter 3.

## Entering and Exiting Run Mode

### NOTICE

#### **SELECT = HIGHLIGHT + ENTER**

When this manual instructs you to select an item, you should highlight the item and press ENTER.

### 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. See Figure 3-27, page 3-22 for help in navigating in Run mode.

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

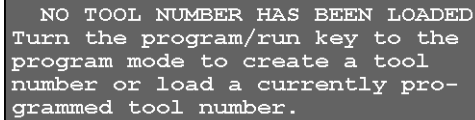
To Enter Run Mode	To Exit Run Mode
<p><i>From Program mode:</i></p> <p>Turn the Program/Run key to RUN.*</p>	<p><i>To switch to Program mode:</i></p> <p>Turn the Program/Run key to PROG.*</p>
<p>* If you turn the key and nothing happens, press RESET repeatedly until SmartPAC 2 changes modes. Make sure SmartPAC 2 is in the Main (or top) menu for the mode it is in before you turn the Program/Run key. If SmartPAC 2 is not in a top-level menu, press RESET repeatedly until the Main menu appears.</p>	

### NOTICE

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

## Loading a Tool

A tool must be loaded before SmartPAC 2 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.



```
NO TOOL NUMBER HAS BEEN LOADED
Turn the program/run key to the
program mode to create a tool
number or load a currently pro-
grammed tool number.
```

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 5-5).
4. Turn the Program/Run key to RUN. SmartPAC 2 switches to Run mode.

## Programming Hot Keys

Hot keys are function keys that you can program to take you directly from the Main Run Menu to screens you use frequently. Once a Hot key is programmed, pressing that function key displays the desired screen.

### Example

You frequently need to adjust the timing for the cam channel that controls part blowoff. For convenience, you set up a Hot key to take you directly from the Main Run Menu to the adjustment screen for that cam channel.

All the function keys, **F1** through **F8**, can be used as Hot keys, unless you have the bilingual option, which uses **F1** to change languages. Each function key can be programmed with two Hot key assignments, providing a total of up to sixteen Hot keys. Hot keys can be identified by the red frame around the label describing the key's function (see Figure 6-3, page 6-4).

If you program one or more function keys with dual Hot key assignments, you move between the two sets of assignments by selecting the TOGGLE HOT KEYS item on the Main Run Menu (see *TOGGLE HOT KEYS*, page 6-30). When the first set of Hot keys is displayed, the menu item caption is "TOGGLE HOT KEYS 1." Selecting this item displays the second set of Hot keys and changes the item caption to "TOGGLE HOT KEYS 2."

### NOTICE

If you add or remove a SmartPAC 2 option (e.g., DiProPAC, AutoSetPAC, etc.), the Hot keys you have programmed previously may not navigate correctly. If one or more Hot keys no longer take you to desired screens, delete and re-program those Hot keys.

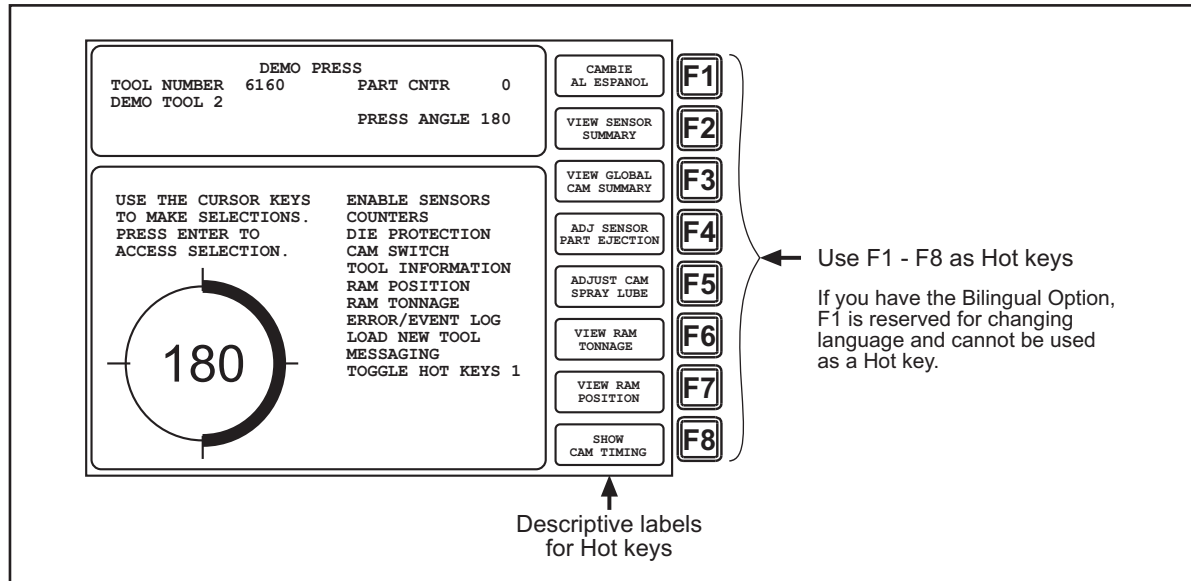


Figure 6-3. Main Run Menu, Showing Hot Keys Programmed

To program a Hot key, do the following:

1. From the Main Run Menu, access the screen you want.

### NOTICE

For best results, start from the Main Run Menu and go as directly as possible to the desired screen.

2. On the numeric keypad, press “2” and “0” simultaneously for a few seconds until the window shown in Figure 6-4 displays. Labels for the currently selected set of programmed Hot keys display to the left of the applicable function keys.

TO CREATE A HOT KEY, JUST PRESS  
THE FUNCTION KEY YOU WISH TO USE.  
TO DELETE A HOT KEY, PRESS THE  
CLEAR KEY AND THEN PRESS THE HOT  
KEY YOU WISH TO DELETE. TO TOGGLE  
THE HOT KEYS, USE THE CURSOR KEYS.  
PRESS THE RESET KEY TO CANCEL.

Figure 6-4. Hot Keys Instruction Window

3. To display the other set of Hot keys, press the Up (▲) or Down (▼) cursor.
4. To program a Hot key, press the desired function key. The instruction window closes and SmartPAC 2 returns to the previous screen in the screen hierarchy.

If you select a function key that has already been programmed, that key will be linked to the new screen.

To delete a Hot key, do the following:

1. With the Hot Keys Instruction window (see Figure 6-4) displayed, press CLEAR, then the function key associated with the Hot key you wish to delete.

## Settings Locked, or Password Required

When a Run mode setting is locked, the screen shown in Figure 6-5 displays if the PASSWORD REQUIRED access type has been set for that item on the Security Access Menu in Initialization (see *SECURITY ACCESS*, page 4-23).

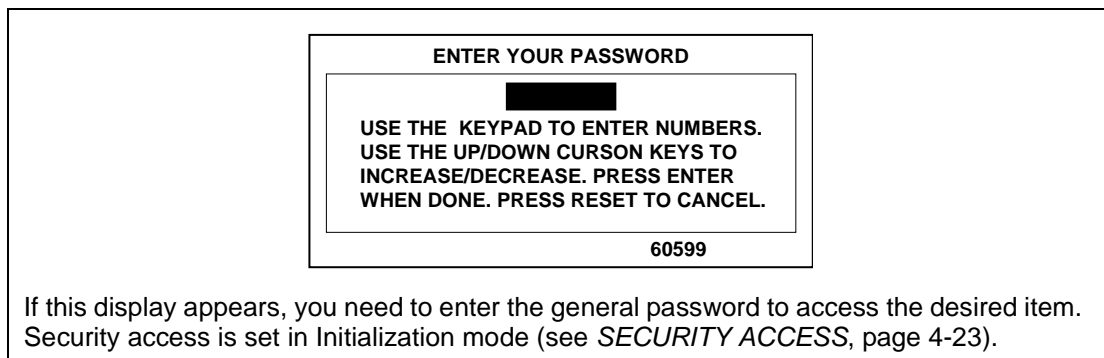


Figure 6-5. "Enter Your Password" Screen

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 keys 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 label "Display All Errors" appears to the left of function key **F8**. To view the multiple errors, press **F8**. A large red message window opens, as shown in Figure 6-6, page 6-6, with each fault listed in sequence beneath the caption "ALL PENDING ERRORS." To close the window, press RESET.

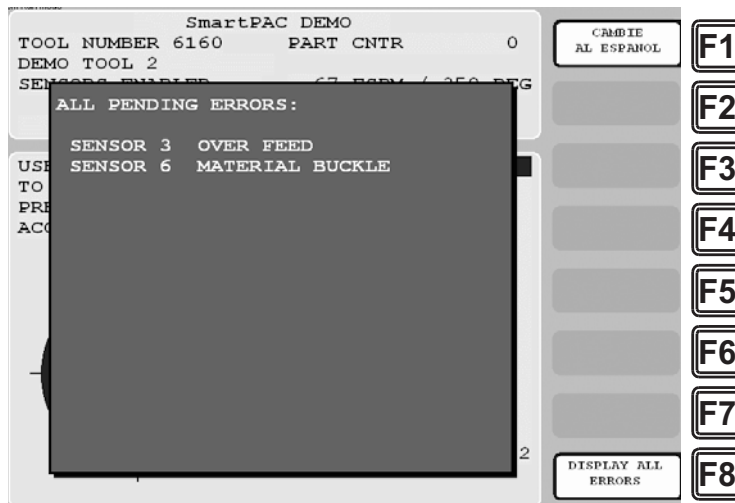


Figure 6-6. Display All Errors Message Window

## 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 6-7. To close the window, press the decimal point key again.

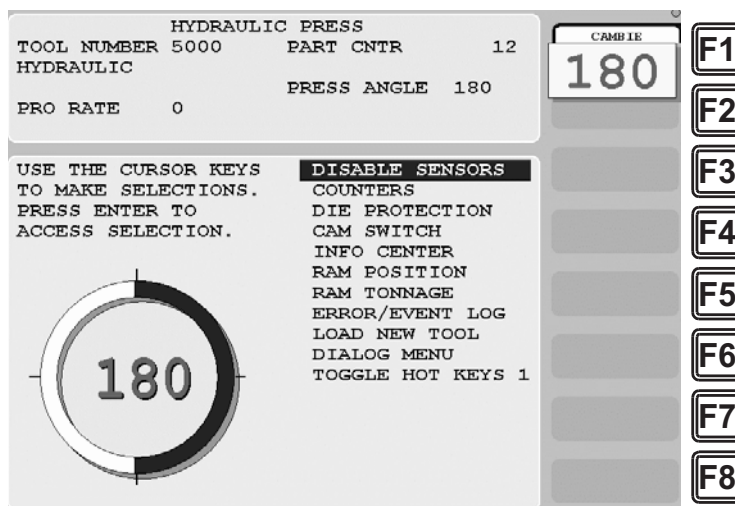


Figure 6-7. Ram Angle Window Displayed on Main Run Menu

The ram angle window can only be opened 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 2-35 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 the left of the Status Box on the Main Run Menu, as shown in Figure 6-8, and this item is captioned **DISABLE SENSORS**.

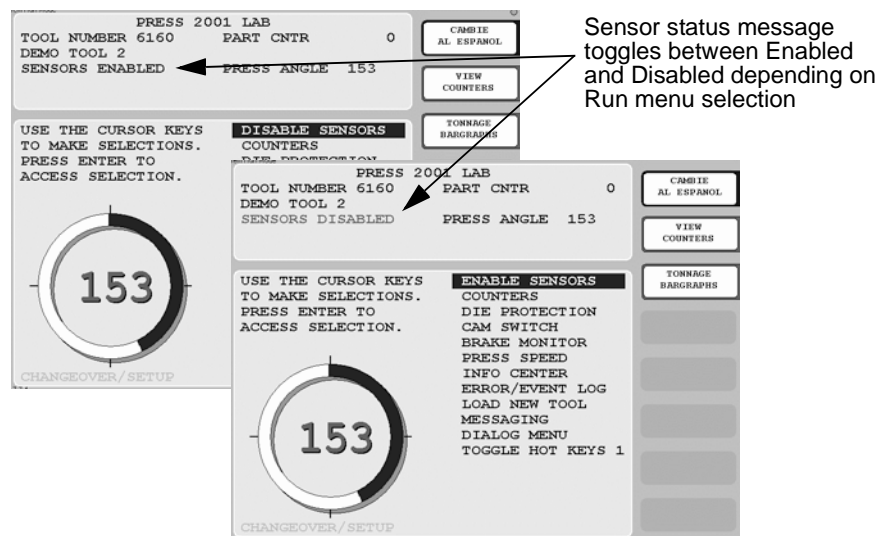


Figure 6-8. Main Run Menu with **SENSORS ENABLED** and **SENSOR DISABLED** Displays

When sensors are disabled, the message **SENSORS DISABLED** flashes in red at the left of the Status Box, and the item is captioned **ENABLE SENSORS**.

To disable or enable sensors, do the following:

1. Press **ENTER** with the highlight bar on the **DISABLE SENSORS** or **ENABLE SENSORS** item on the Main Run Menu.

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 6-9 displays.

PRESS THE FIVE KEY TO DISABLE  
THE SENSORS.

Figure 6-9. Disable Sensors Confirmation Message



2. Press the 5 key to confirm that you want to disable the sensors. The message at the left of the Status Box changes from SENSORS ENABLED to SENSORS DISABLED, which flashes in red.

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 4-14). If either of the Auto Enable options is selected, you should refer to *Setting the “Auto Enable by Tool” Counter Value*, page 5-21 or *Setting the “Auto Enable by Sensor” Counter Value*, page 5-24 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 2-34) and enable (see page 4-15) 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 the Status Box 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 the HELP key 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 6-10, page 6-9), 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 4-6, page 4-24.

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 4-6, page 4-24). For instructions on entering counter and preset values, see *COUNTERS*, page 5-9.

TOOL NUMBER 6160		PART CNTR	0
DEMO TOOL 2		CONTINUOUS MODE	
SENSORS ENABLED		1200 SPM / 359 DEG	

	COUNT	PRESET VALUE
STROKES	0	5,000
GOOD PARTS	0	4,100
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOGGLE) CHANNEL 7		
BATCH 3	0	0
(PULSE) CHANNEL 8		
TOTAL HITS	0	10,000

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS ENTER TO SET THE COUNTERS.

CAMBIE AL ESPAÑOL

RETURN TO MAIN MENU

F1

F2

F3

F4

F5

F6

F7

F8

Figure 6-10. Counters Screen

If you have set the CHANGE COUNTS parameter on the Security Access Menu in Initialization to PROGRAM AND RUN MODES (see page 4-24), you can reset batch counts to the values you have programmed for batch pre-loads (see *Setting Batch Pre-Load Counts*, page 5-15). When the CHANGE COUNTS feature is enabled for Run mode, the label RELOAD BATCH COUNTERS displays to the left of the **F2** function key (see Figure 6-11), and **F2** becomes active. To reset batch counts to their pre-load values, simply press **F2**. Pre-load values display in the Count field for the batches you have programmed with those values.

TOOL NUMBER 6160		PART CNTR	29
DEMO TOOL 2		CONTINUOUS MODE	
SENSORS ENABLED		1200 SPM / 359 DEG	

	COUNT	PRESET VALUE
STROKES	30	200
GOOD PARTS	29	150
BATCH 1	0	3
(TOP STOP)		
BATCH 2	1	3
(TOGGLE) CHANNEL 7		
BATCH 3	2	3
(PULSE) CHANNEL 8		
TOTAL HITS	240	500

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS ENTER TO SET THE COUNTERS.

CAMBIE AL ESPAÑOL

RELOAD BATCH COUNTERS

RETURN TO MAIN MENU

F1

F2

F3

F4

F5

F6

F7

F8

Figure 6-11. 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 7-2).

**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 5-9.

**DIE PROTECTION (Optional)**

(RUN – DIE PROTECTION)

**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. Adjustments are made via the Die Protection Menu (see Figure 6-12, page 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.

**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 4-6, page 4-24.

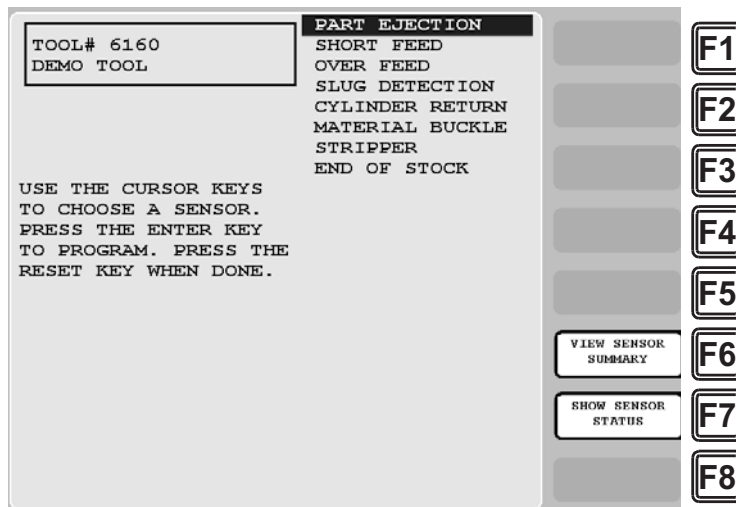


Figure 6-12. Die Protection Menu (Run Mode)

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 6-15).

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 2 with die protection, refer to *Understanding Sensor Terminology*, page 5-16. Refer to *Programming Sensor Settings*, page 5-21 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 6-13, page 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.

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.

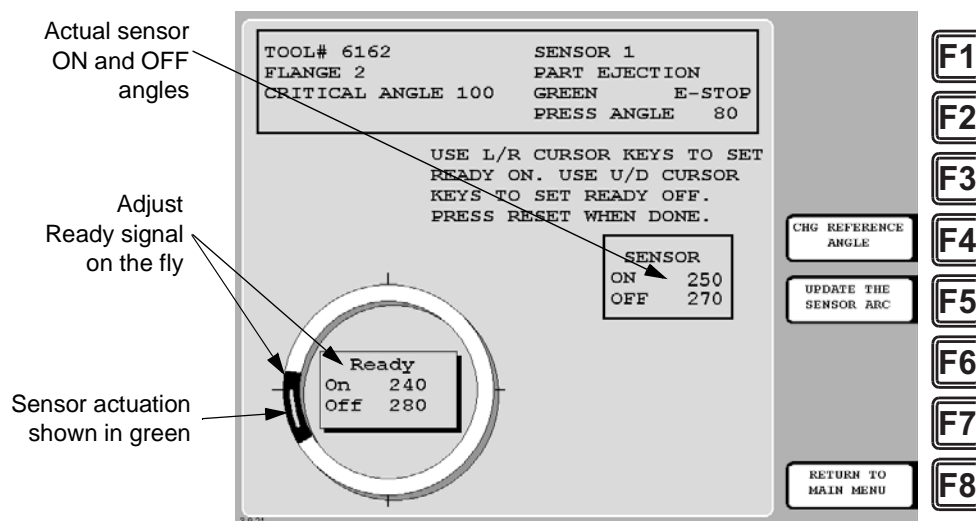


Figure 6-13. Ready Signal Programming Screen

The On/Off actuation angles displayed in the Sensor window are not updated on every stroke. For green and green quick check sensors, SmartPAC 2 displays the earliest On and latest Off angles for the current sequence of press strokes (until the **F5** (Update the Sensor Arc) function

key is pressed), 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 2 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 2 continuously displays 190° as the sensor's On value. However, if the On angle changes to 189°, SmartPAC 2 displays the On angle as 189° on the next stroke.

To clear the actuation angles displayed for a sensor, press the **F5** (Update the Sensor Arc) function key. If the press is stopped, the Sensor window displays zeros. If the press is running, SmartPAC 2 displays the actuation angles for the next stroke.

#### NOTICE

Pressing **F5** 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 **F4** (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 **F4** 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 on the Main Program Menu (see page 5-56). 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 **F5** (Update the Sensor Arc).

To change the reference angle from 0° to 180°, press **F4**. The reference angle is used to determine earliest and latest On/Off readings.

**NOTICE**

When you press **F5**, 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 5-28 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 5-29, page 5-30) 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 – **F6**-VIEW SENSOR SUMMARY)

You can view a summary of your die protection sensors by pressing **F6** (View Sensor Summary). The screen that displays is identical to the Sensor Summary screen accessible in Program mode (see *Viewing the Sensor Summary*, page 5-31) except that it displays additional information in the Status box.

## Viewing Sensor Status

(RUN – DIE PROTECTION – **F7**-SHOW SENSOR STATUS)

You can view the status of your sensors by pressing **F7** (Show Sensor Status). When you do so, the Sensor Status screen, shown in Figure 6-14, 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.

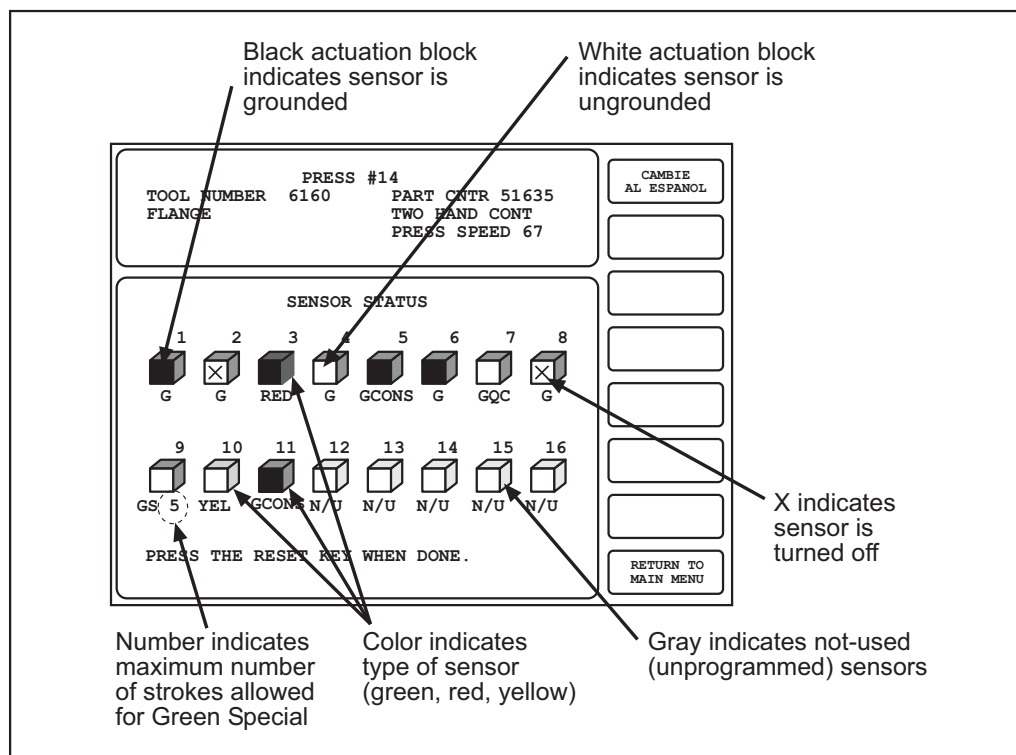


Figure 6-14. Sensor Status Screen



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.

## Adjusting DiProPAC 32 Sensors

You access DiProPAC 32 sensors on the SmartPAC 2 Hydraulic Main Run Menu via the DIPROPAC 1-16 and DIPROPAC 17-32 items, as shown in Figure 6-15.

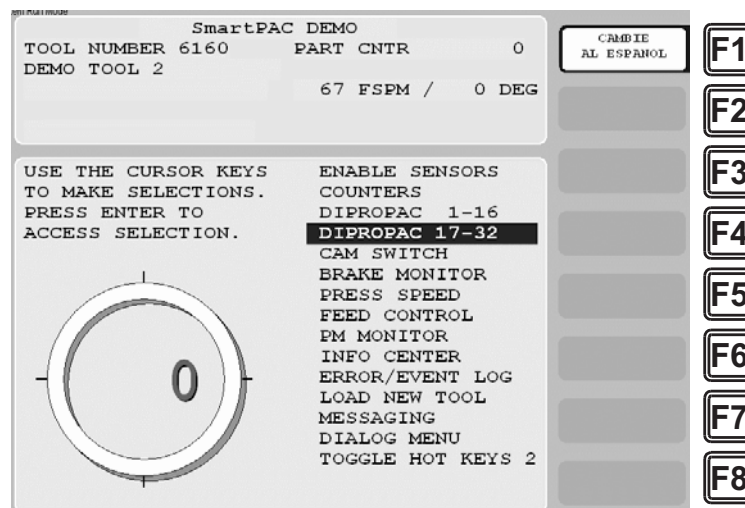


Figure 6-15. Main Run Menu with DIPROPAC 1-16 and DIPROPAC 17-32 Items Shown

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 6-11 and *Adjusting the Stroke Preset for Green Special Sensors*, page 6-13.

When you select DIPROPAC 17-32, the Die Protection Sensor menu for sensors 17-32 displays (see Figure 6-16, page 6-16, which shows the sensors that are used as examples in Chapter 5).

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 6-14) for those sixteen sensors.

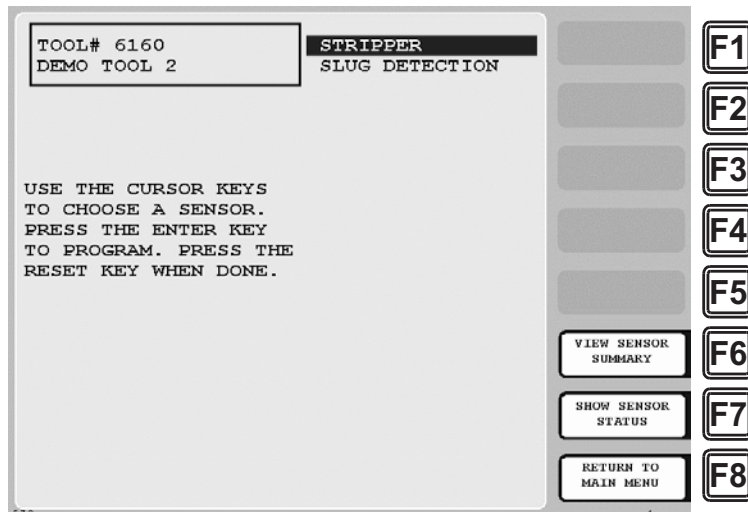


Figure 6-16. Die Protection Sensor Menu for Sensors 17-32

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 6-17). 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.

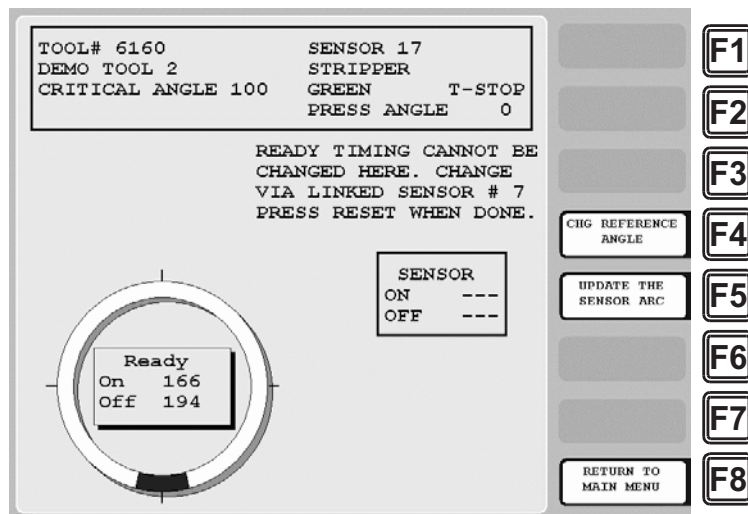


Figure 6-17. Ready Signal Programming Screen, Run Mode

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 6-18). 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.

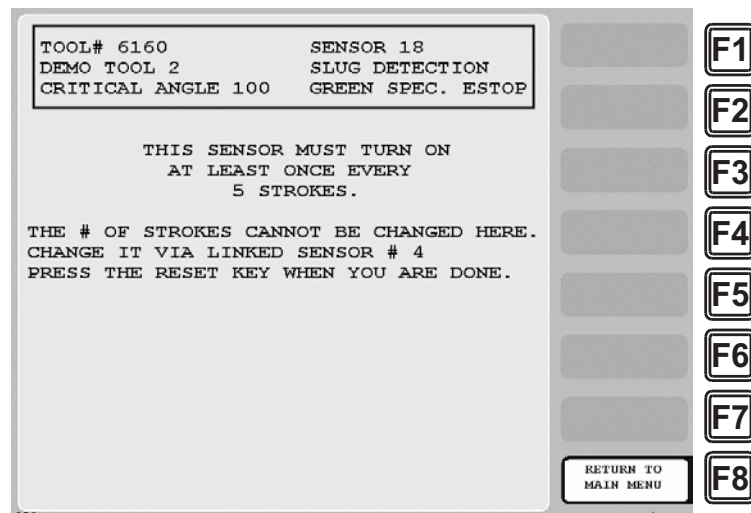


Figure 6-18. Green Special Sensor Stroke Count Screen, Run Mode

## CAM SWITCH

(RUN – CAM SWITCH)

### **⚠ DANGER**

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

Use SmartPAC 2 Hydraulic's programmable cam switch to control auxiliary functions only. The SmartPAC 2 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**

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 6-19, page 6-18), which displays when you select CAM SWITCH.

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*, page 4-10).

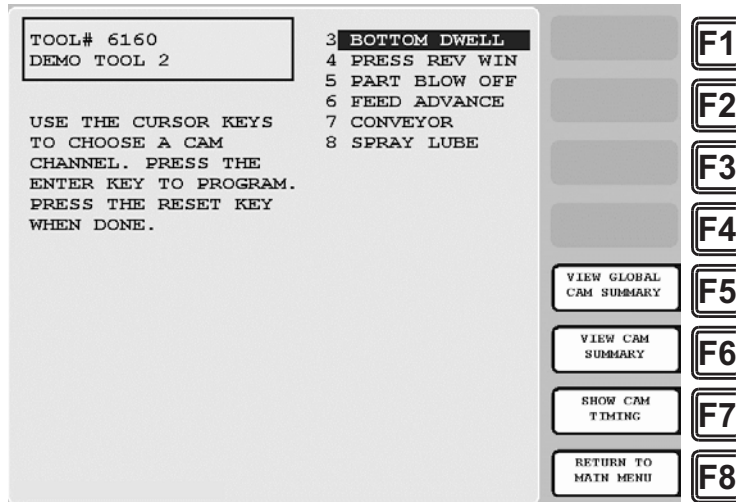


Figure 6-19. Cam Switch Menu

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 4-6, page 4-24.

2. Adjust cam timings for the selected channel, following the instructions in the following sections in Chapter 5:
  - *Making an ON/OFF Setting*, page 5-40
  - *Setting Multiple ON/OFF Cycles*, page 5-41
  - *Making a Timed Output Setting*, page 5-44
  - *Setting DSV ON Channel Timing*, page 5-45
3. When you are finished, press RESET to return to the Cam Switch Menu.

## Viewing Cam Timing

(RUN – CAM SWITCH – **F7**-SHOW CAM TIMING)

You can view a real-time graphic display of the timing settings for your cams by pressing the **F7** (Show Cam Timing) function key. The screen that displays when you press **F7** is shown in Figure 6-20, page 6-19.

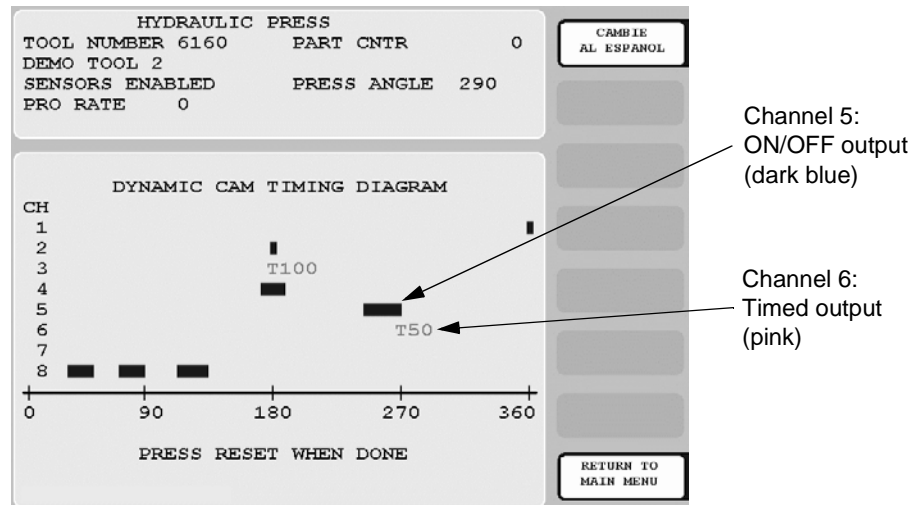


Figure 6-20. Cam Timing Screen

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.

## Viewing the Global Cam Summary

(RUN – CAM SWITCH – **F5**-VIEW GLOBAL CAM SUMMARY)

You can view a summary of the Global cams by pressing **F5** (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 5-47) except that it displays additional information in the Status box.

## Viewing the Cam Summary

(RUN – CAM SWITCH – **F6**-VIEW CAM SUMMARY)

You can view a summary of the other cams by pressing **F6** (View Cam Summary). The screen that displays is identical to the Cam Summary screen accessible in Program mode (see *Viewing the Cam Summary*, page 5-47) except that it displays additional information in the Status box.

## TOOL INFORMATION

(RUN – TOOL INFORMATION)

### NOTICE

#### IF INFO CENTER IS INSTALLED

If you have ordered Info Center as an installed option, the TOOL INFORMATION item will not appear on the Main Run Menu. Instead, INFO CENTER will be displayed. Documentation of the Info Center option is available at

[www.smartpac2.com/SmartView/InfoCenterSetupHelp.htm](http://www.smartpac2.com/SmartView/InfoCenterSetupHelp.htm)

### 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 5-48). Adjustments are made on the Tool Number Information screen, which is shown in Figure 6-21, page 6-20.

TOOL NUMBER1237654 INFORMATION

PASS LINE HT	5.94	IN
STRAIGHTENER	4.25	IN
HYD. OVLD.	200	TONS
PRESS SPEED	65	SPM
CONVEYOR	YES	
PART LUBE	NO	

MEMO BOX

CAREFULLY CHECK  
DIE PLACEMENT

USE CURSOR KEYS TO CHOOSE THE VALUE YOU WANT TO CHANGE. PRESS THE ENTER KEY TO CHANGE IT. PRESS RESET KEY WHEN DONE.

F1

F2

F3

F4

LINE 1 OF THE MEMO F5

LINE 2 OF THE MEMO F6

F7

RETURN TO MAIN MENU F8

Figure 6-21. 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 4-6, page 4-24.

2. Select a parameter you want to change. The Numeric Entry window (see Figure 5-3, page 5-3) 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 edit text in the memo box, press **F4** for the first line, **F5** for the second line. When the Alphabetic Entry window (Figure 5-10, page 5-9) displays, key in your edits, following the directions in the window, and press **F6**. The window closes, and your changes appear on the memo box line you selected.
6. When you have finished changing tool information, press RESET 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 4-15).

This item allows you to adjust programmed settings (see *RAM POSITION*, page 5-50) 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 6-22, page 6-22.

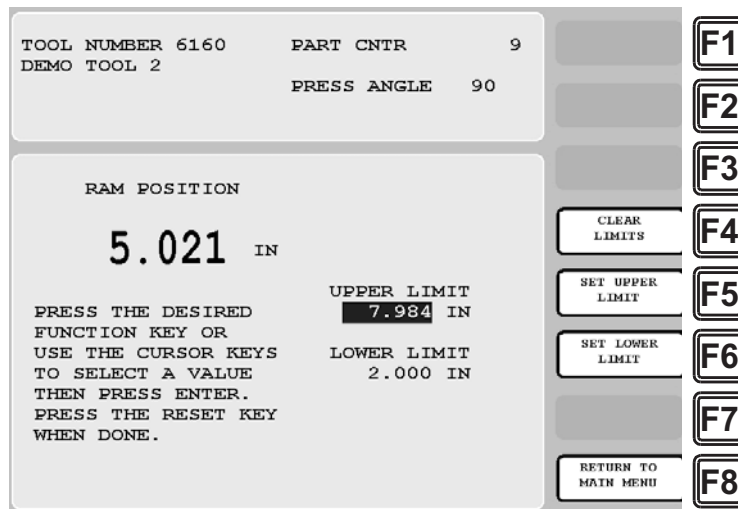


Figure 6-22. Ram Position Screen

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 4-6, page 4-24.

2. Adjust/set the Upper Limit value in one of the following ways:
  - Jog the press to the desired position, and press **F5** (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:
  - Jog the press to the desired position, and press **F6** (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.

## RAM TONNAGE (Optional)

This item, which appears on the Main Run Menu only if Calibration Pressure and Calibration Tonnage settings have been entered on the Linear Sensor screen in Initialization (see page 4-15), enables you to change the programmed reversal mode and adjust programmed settings for Max. Limit and Dwell Time if the Pressure or Distance reversal mode option has been selected (see *RAM TONNAGE (Optional)*, page 5-52). You can also view the tonnage corresponding to the current hydraulic pressure of the ram. You perform these actions on the Ram Tonnage screen, which is shown in Figure 6-23.

The screenshot shows the Ram Tonnage screen with the following fields and controls:

- TOOL NUMBER** 6160
- DEMO TOOL** 2
- PART CNTR** 9
- PRESS ANGLE** 176
- \*RAM TONNAGE** MIN. 2.000 IN
- 230.0 TONS**
- REVERSAL MODE** PRESS. OR DIST.
- MAX. LIMIT** 250.0 TONS
- DWELL TIME** 5.0 SEC
- UPDATE MIN POSITION** (F3)
- RETURN TO MAIN MENU** (F8)
- Navigation keys: F1, F2, F3, F4, F5, F6, F7, F8

Instructions on the screen: PRESS THE DESIRED FUNCTION KEY OR USE THE CURSOR KEYS TO SELECT A VALUE THEN PRESS ENTER. PRESS THE RESET KEY WHEN DONE.

Figure 6-23. Ram Tonnage Screen

When the Pressure or Distance option is selected, the Ram Tonnage screen also displays (in the MIN. field) the current lowest, or “minimum,” vertical position of the ram. The screen displays an asterisk (\*) to the left of the RAM TONNAGE caption whenever the ram returns on the maximum pressure (i.e., MAX. LIMIT) setting.

To change programmed Ram Tonnage entries, perform the following steps:

1. Select RAM TONNAGE on the Main Run Menu. The Ram Tonnage screen displays with the current ram tonnage shown in the RAM TONNAGE field.

### 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 4-6, page 4-24.

2. To change the programmed Reversal Mode setting, press ENTER to select the desired option, “DISTANCE ONLY” or “PRESS. OR DIST.” If you select “PRESS. OR DIST.,” the MAX. LIMIT and DWELL TIME fields display beneath REVERSAL MODE, as shown in Figure 6-23, and the MIN. field displays above REVERAL MODE.



**NOTICE**

The value you enter in the MAX. LIMIT field should be the tonnage necessary to make the part. It must be less than or equal to the press capacity.

3. To adjust the maximum tonnage for the “PRESS. OR DIST.” option, highlight the MAX. LIMIT field, press ENTER, key in the value you want in the Numeric Entry window, or use the Up (▲) or Down (▼) cursor key to increment or decrement the Max. Limit setting, and press ENTER again. The value you specified is displayed in the MAX. LIMIT field.

**NOTICE**

For proper functioning of the Return on Pressure feature, the LOWER LIMIT field on the Ram Position screen must be set slightly below the position where the maximum tonnage is developed in order to make the part properly.

**NOTICE**

You must wire Channel 3 on the ProCamPAC Output Assembly to the “Dwell” input on your main control in order for the Dwell function to work.

4. To adjust the dwell time for the “PRESS. OR DIST.” option, highlight the DWELL TIME field, press ENTER, key in the value you want in the Numeric Entry window, or use the Up (▲) or Down (▼) cursor key to increment or decrement the Dwell Time setting, and press ENTER again. The value you specified displays in the DWELL TIME field.

**NOTICE**

When no asterisk appears to the left of RAM TONNAGE, the ram is reaching the Lower Limit set in Program mode before developing its maximum pressure, and the Dwell Time setting cannot be implemented. To correct this problem, reduce the Lower Limit value (see page 5-50).

5. To refresh the minimum ram position value displayed in the MIN. field, press **F3** (Update Min Position).
6. When you are finished, press RESET to return to the Tool Program Menu.

## ERROR/EVENT LOG

(RUN – ERROR LOG)

### NOTICE

For HELP with the Error/Event Log, press the HELP key when the screen is displayed.

This item enables you to view a list, called the Error/Event Log (see Figure 6-24), that displays in reverse chronological order the 100 most recent errors or events that have occurred at the press or within SmartPAC 2 Hydraulic.

DATE	TIME	ANGLE	COUNT	ERROR/EVENT TEXT
03-07-2003	10:52:41	344	0	M66 ESTOP CIRCUIT FAILED THE
03-07-2003	10:52:41	344	0	High setpoint exceeded on
03-07-2003	10:52:41	344	0	F20 FLYWHEEL STILL TURNING
03-07-2003	13:42:33	349	7323	F46 COUNTER BALANCE PRESSURE IS
03-07-2003	13:12:29	212	6145	F53 USER INPUT 3: DIE NITROGEN
03-07-2003	12:49:41	4	4430	SENSOR 6 MATERIAL BUCKLE YELLOW FAUL
03-07-2003	12:02:29	99	3019	F64 SHADOW B INPUTS OPENED
03-07-2003	11:32:01	357	1623	SENSOR 8 END OF STOCK
03-07-2003	11:00:41	44	409	SENSOR 2 SHORT FEED
03-07-2003	10:59:11	344	9	ONE OF THE SENSOR AUTO ENABLED COUNT
03-07-2003	10:52:41	349	0	THE RESOLVER POSITION IS DIFFERENT
03-07-2003	10:52:41	43	3	F13 EMERGENCY STOP OPENED
03-07-2003	10:29:28	339	0	F56 USER INPUT 6: LOW OIL PRESS.
03-07-2003	10:29:10			New tool loaded # 14
03-07-2003	09:24:49			Initialization mode entered
03-07-2003	07:17:27	312	12595	F16 TOP STOP CIRCUIT OPENED
03-07-2003	07:17:23	312	12595	High setpoint exceeded on
03-07-2003	07:13:19	332	12594	F56 USER INPUT 6: LOW OIL PRESS.
03-07-2003	07:12:37	332	12594	SENSOR 1 MATERIAL BUCKLE YELLOW FAUL
03-07-2003	06:59:53	332	12594	PRESS CONTROL IS IN LOCKOUT MODE
03-06-2003	15:35:59	332	12594	F10 PRESS MOTOR IS OFF
03-06-2003	14:51:42	3	12594	THE RESOLVER POSITION IS DIFFERENT
03-06-2003	14:51:19	332	12594	F56 USER INPUT 6: LOW OIL PRESS.
03-06-2003	14:50:37	332	12594	SENSOR 1 MATERIAL BUCKLE YELLOW FAUL
03-06-2003	14:49:53	332	12594	PRESS CONTROL IS IN LOCKOUT MODE
03-06-2003	14:48:59	332	12594	F10 PRESS MOTOR IS OFF
03-06-2003	14:48:42	3	12594	THE RESOLVER POSITION IS DIFFERENT

High setpoint exceeded on  
INPUT 2 RIGHT REAR  
Setpoint of 30.1 Tonnage of 32.6

Return To Main Menu

Figure 6-24. Error/Event Log

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 2 is connected to a computer network and e-mail is enabled, the log also shows messages sent by SmartPAC 2. When SmartPAC 2 is networked, you can send the Error/Event Log to Wintriss Tech. Support (see *MESSAGING*, page 6-27). Error messages displayed on the Error/Event Log are documented in Chapter 7.

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 4-23.

## **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 6-25, displays.

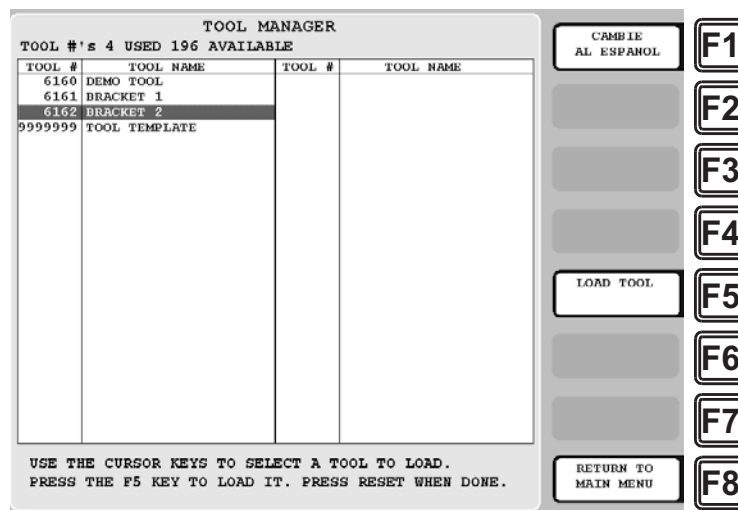


Figure 6-25. Tool Manager Screen

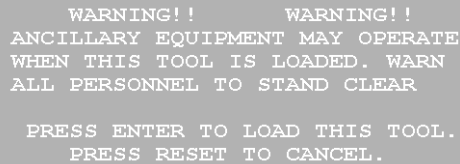
Follow these steps to load a new tool:

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 4-6, page 4-24.

2. Highlight the tool you want and press **F5** (Load Tool). The warning window shown in Figure 6-26 displays.

A rectangular warning window with a light gray background and black text. The text is centered and reads: "WARNING!! WARNING!!", "ANCILLARY EQUIPMENT MAY OPERATE", "WHEN THIS TOOL IS LOADED. WARN", "ALL PERSONNEL TO STAND CLEAR", "PRESS ENTER TO LOAD THIS TOOL.", and "PRESS RESET TO CANCEL.".

WARNING!! WARNING!!  
ANCILLARY EQUIPMENT MAY OPERATE  
WHEN THIS TOOL IS LOADED. WARN  
ALL PERSONNEL TO STAND CLEAR  
  
PRESS ENTER TO LOAD THIS TOOL.  
PRESS RESET TO CANCEL.

*Figure 6-26. Load Tool Warning Window*

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 the HELP key 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 4-32), allows you to send e-mail messages to recipients accessible via your SmartPAC 2 Hydraulic 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 (see Appendix C).

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 6-27, which lists the recipients you have set up using SmartView.

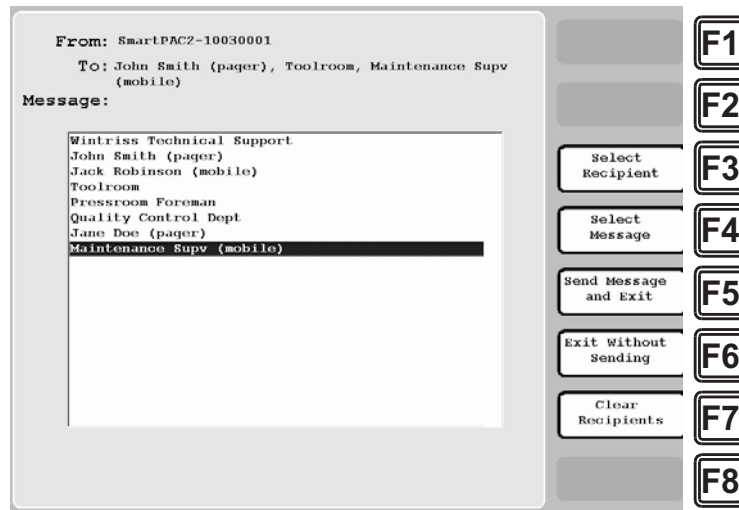


Figure 6-27. Messaging Screen: List of Recipients

2. Highlight the message recipient, using the cursor keys, then press **F3** (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 **F4** (Select Message) to display a list of messages, as shown in Figure 6-28.

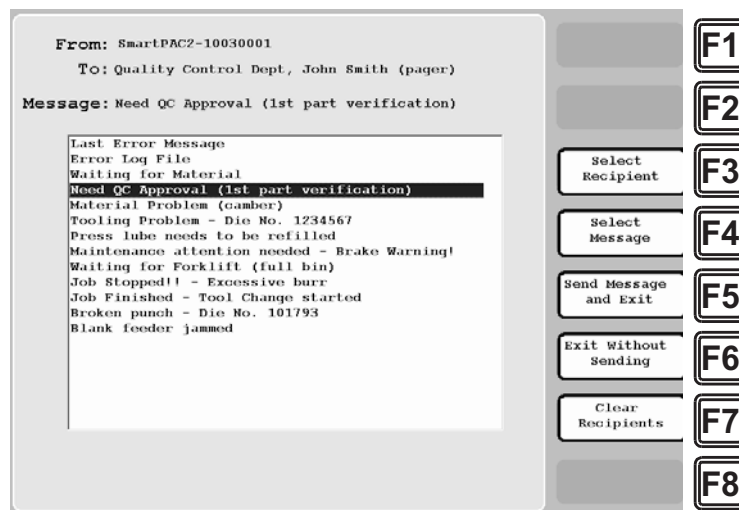


Figure 6-28. Messaging Screen: List of Messages

5. Highlight the message you want, using the cursor keys, then press **F4** (Select Message) again to select the message. The message name displays in the "Message:" field at the top of the screen.
6. Press **F5** (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 6-29.

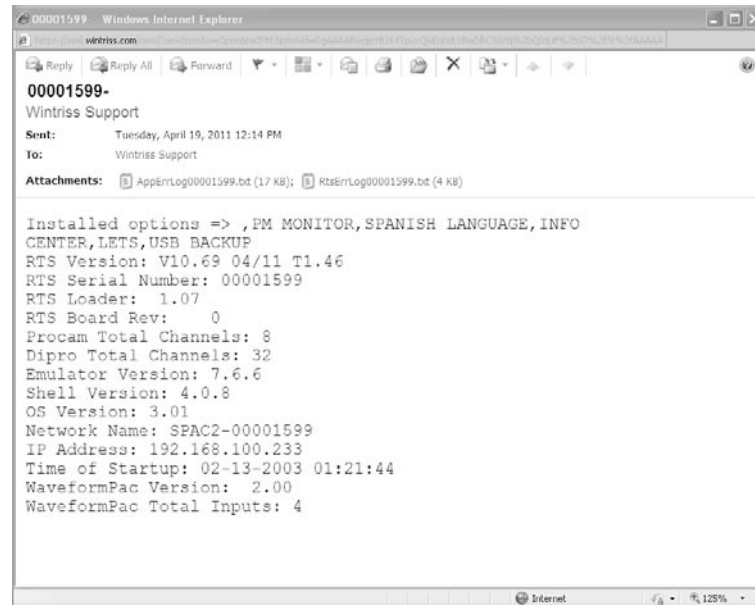


Figure 6-29. Sample E-mail to Wintriss Tech. Support

## TOGGLE HOT KEYS

### (RUN – TOGGLE HOT KEYS)

This item enables you to switch between the two sets of Hot keys available in SmartPAC 2. If you select this item when TOGGLE HOT KEYS 1 is the caption, the second set of Hot Keys displays; when you select TOGGLE HOT KEYS 2, the first set of Hot Keys appears (see Figure 6-30). For more information about programming and using Hot keys, see *Programming Hot Keys*, page 6-3.

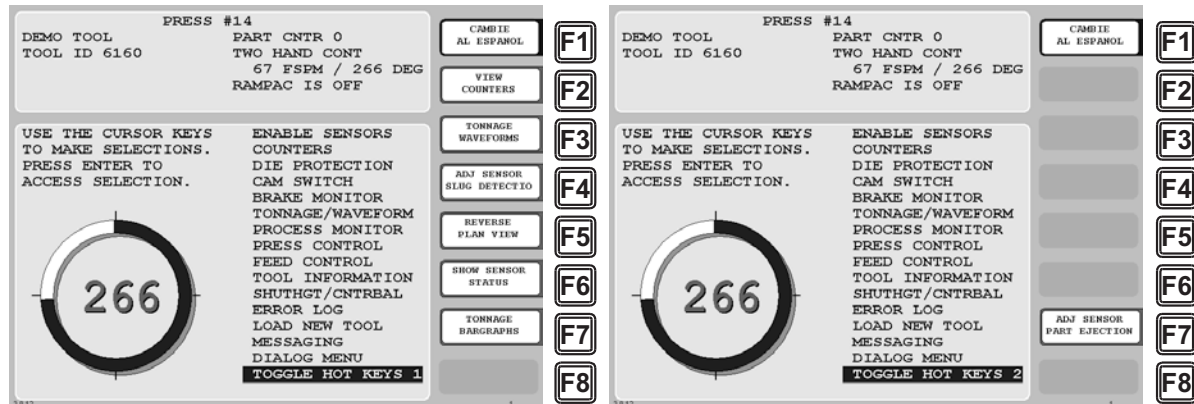


Figure 6-30. Toggle Hot Keys 1 and 2 Menu Items

# 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 2 Hydraulic); 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 4-6).

## NOTICE

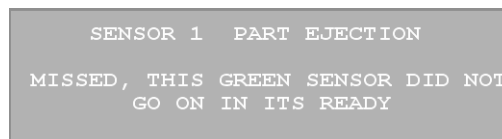
### RAM POSITION SETTINGS MUST BE PROGRAMMED FOR ALL TOOLS

Make sure that Ram Position settings have been programmed (see page 5-50) for each tool you load. If you do not set ram upper and lower limits, SmartPAC 2 Hydraulic 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.

This chapter documents the fault messages that display on the SmartPAC 2 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.



```
SENSOR 1  PART EJECTION
MISSED, THIS GREEN SENSOR DID NOT
GO ON IN ITS READY
```

*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.



```
STROKE COUNTER PRESET REACHED
```

*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 the RESET key (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 RESET 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 RESET 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 RESET to clear the message.

**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 2.

### “Position sensor incorrect”

*Explanation:* The POSITION SENSOR setting has been enabled in Initialization (see page 4-3). SmartPAC 2 Hydraulic 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 2, turn the unit off, then on again. (You cannot use the RESET key to reset this error.) If the error recurs, contact Wintriss Tech. Support.

### “Inboard ram test failure”

*Explanation:* Something is wrong with the SmartPAC 2 main processor board. The board may need to be serviced or replaced.

*Remedy:* Try turning the power off, then on again. (You cannot use the RESET key 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 2.

### “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 2 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 RESET) from a Program or Run menu.

The error can also occur when you upgrade SmartPAC 2. 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 2 malfunction.

SmartPAC 2 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 the RESET key 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 **F4** (Edit Tool).
4. On the Tool Program Menu, select CAM SWITCH.
5. Press RESET. SmartPAC 2 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 2 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 6-21) 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.

### **“One of the sensor auto enable counters is greater than 99”**

*Explanation:* Normally, this fault will never occur since SmartPAC 2 does not let you enter a value greater than 99. However, this message could display if there is an internal problem with SmartPAC 2.

*Remedy:* First press RESET. If the message reappears, contact Wintriss Tech. Support.

### **“Loss of Communication at Address X”**

*Explanation:* SmartPAC 2 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 2 Option Identified by Address Number*

<b>Message</b>	<b>Option Identified by Address</b>
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 Dialog Menu when the DIALOG SCREEN MODE setting on the Set Communications Menu in SmartPAC 2 Initialization is “32 CUSTOM.” This message displays only when you have the LETS firmware option.

*Remedy:* Press RESET, then change the DIALOG SCREEN MODE setting to “16/16” (see page H-7).

## **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 6-25 and *Sending E-mail to Wintriss Technical Support*, page 6-29 for more information.

# Appendix A. Installing the Balluff Linear Transducer

---

Make sure to install a magnetostrictive linear transducer (see page 1-4 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

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 hydraulic 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 2-4 for suggested mounting location and Figure A-1, page A-2 for mounting dimensions:

1. Make sure the press is at its Upper Limit (see *RAM POSITION*, page 5-50).
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.



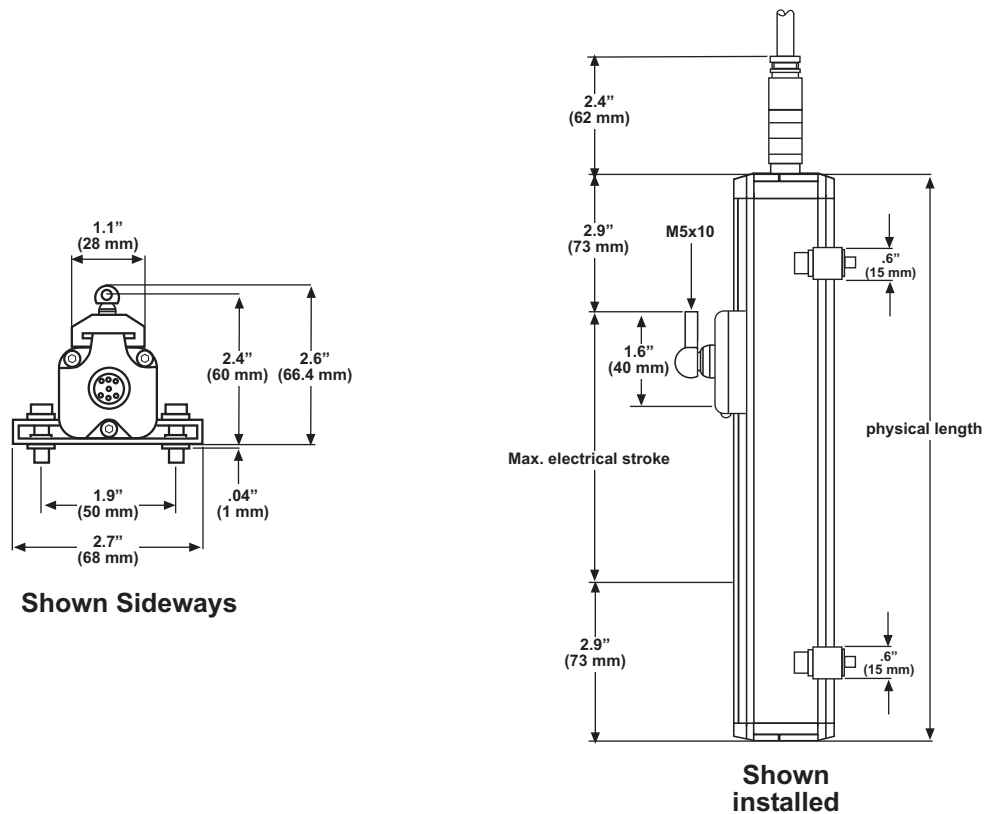


Figure A-1. Balluff Linear Transducer Dimensions

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 2 Hydraulic 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 2 enclosure.
3. Measure and cut the transducer wires so they comfortably reach TB402 on the ProCamPAC board. See Figure 2-7, page 2-12 for the location of the ProCamPAC board on the SmartPAC 2 Hydraulic board and Figure 2-8, page 2-13 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, Table A-2, page A-4, and Figure 6 (8-channel ProCamPAC) or 7 (15-channel ProCamPAC) at the back of the manual. Refer to *Connecting Wires to Terminal Block Connectors*, page 2-5 if you need additional help.

### 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.

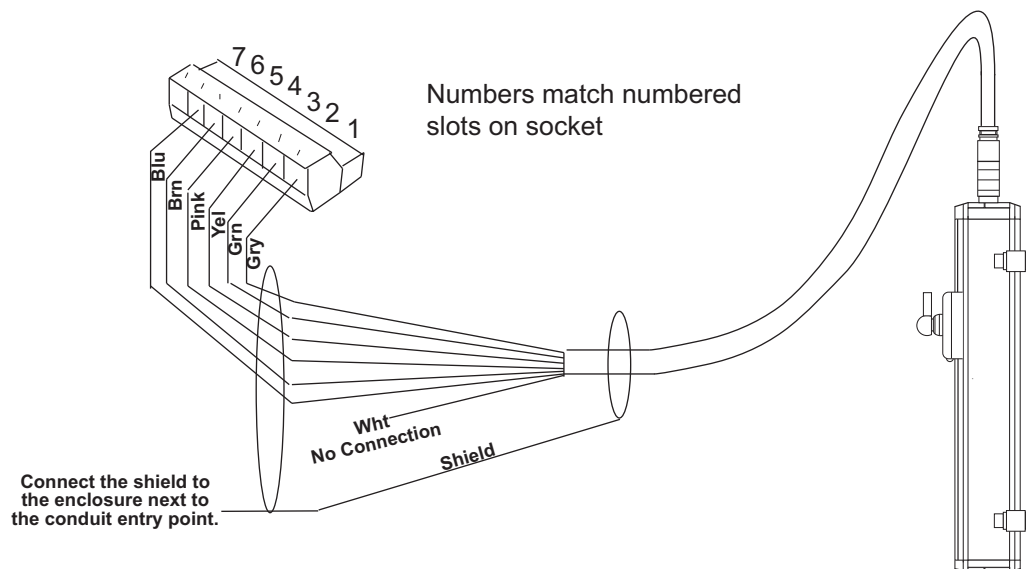


Figure A-2. Balluff Linear Transducer Pinout

Table A-2. Balluff Linear Transducer Wiring

Pin # on TB402 ProCamPAC Linear Board	Wire Color *
	Shield (terminate to ground stud nearest entry to enclosure)
1 (+DATA)	Grey
2 (-DATA)	Green
3 (+CLK)	Yellow
4 (-CLK)	Pink
5 (+24VDC)	Brown
6 (GND)	Blue

\* White is not used.

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

# Appendix B. SmartPAC Preventive Maintenance (PM) Monitor (Optional)

---

This appendix explains how to initialize, set up, and use the features of the SmartPAC Preventive Maintenance (PM) Monitor. This appendix serves as an add-on to the chapters in this manual. References will be made to certain sections. Complete all the steps in each of those sections unless otherwise noted.

## NOTICE

### UPGRADING FIRMWARE

If you have a SmartPAC 2 system with AutoSetPAC, you must upgrade the firmware to accept PM Monitor functionality. Check the version of your AutoSetPAC firmware at “Installed Options” in Initialization mode. If the firmware version number is lower than 1.26 for a 2-channel AutoSetPAC or lower than 1.22 for a 4-channel unit, contact Wintriss Tech. Support immediately to obtain the correct AutoSetPAC firmware.

## About SmartPAC PM Monitor

The SmartPAC PM Monitor is an option which allows the maintenance department to manage its time more effectively. The PM Monitor tracks up to 64 items on the press based on specific usage, rather than merely signaling when a period of time has passed. Consequently, the entire stamping process is monitored automatically, and maintenance is alerted only when equipment requires attention.

## Comparison with Traditional Preventive Maintenance

Equipment used on or around the press needs to be checked at regular intervals, such as daily, weekly, or every specified number of strokes. Traditional preventive maintenance programs are based upon elapsed time and would be adequate if your presses were used in the same way all the time. However, with just-in-time manufacturing, shorter job runs, and more tool changes, presses and auxiliary equipment must frequently change the way that they operate. Each change results in varying degrees of wear and tear on the machinery. As a result, traditional PM programs are not the most effective way to handle these kinds of variations.

Here is an example. A traditional PM program may alert maintenance to inspect a press, s braking system every three months. During that time, the press is idle or running a continuous coil-fed job, and the brake experiences minimal wear. As a result, any time spent checking the brake would be wasted. On the other hand, if the press were running a hand-fed job in Single-stroke mode, the many starts and stops of the machine would cause greater-than-normal brake wear, and three months would be too long to wait between inspections.

## How the PM Monitor Works

In the previous example, the SmartPAC 2 PM monitor would keep track of machine stops and could be set to signal a PM alert for the braking system after 50,000 machine stops, for example. If the press is idle or running coil fed jobs, the time between alerts will be long. If the press is used for hand-fed jobs, the time between alerts will be shorter.

Up to 64 items can be set up in the PM Monitor's schedule. **Tracking units** such as machine starts or stops, strokes, motor-on hours, cam channel actuations, die changes, tonnage overloads, etc. (depending on how SmartPAC is configured), can be assigned to each item in the schedule. The PM Monitor can also track hours, days, weeks and months for items that need to be maintained according to a specific time schedule. A **tracking frequency** is assigned to each item to tell the PM Monitor when to signal an alert. At that time, an alert message appears in SmartPAC's status bar in Run mode.

The entire PM **schedule** can be viewed in Run mode. The schedule shows each item, its units, frequency, and current value. Any items in **alert status** are highlighted. Items with alert status will be highlighted until the alert is cleared and the item is reset. The PM monitor continues to track alerted items until they are reset. Please note that SmartPAC does not stop the press when an item is in alert status. SmartPAC's PM schedule is password-protected to keep unauthorized personnel from clearing an alert.

## Examples of How to Use the PM Monitor

Some examples to help you properly set up your PM monitor are provided in Table B-1 and Table B-2, page B-3, which show "PM items" and "PM tracking units." If you do not find a suitable PM item name, you can program a "custom" name to match your application. Examples below provide such "custom" suggestions. To obtain further assistance in using the PM Monitor, contact Wintriss Tech. Support.

The tracking unit "**Ch. cycles**" (for cam channels 1 through 8 or 16), can be used to track the usage of various ancillary devices controlled by SmartPAC. Some PM items might include: feeder, pilot release solenoid, and ejection cylinders.

The tracking unit "**Die changes**" can be used to track the usage of components that are directly related to changing tools at SmartPAC. Some PM item examples might include: hydraulic clamping mechanism and the ram adjust motor.

WPC press control faults F50 through F58 can be used to monitor items connected to the user-definable inputs set when SmartPAC is integrated with the Wintriss Clutch/Brake Control (WPC). Here are some examples: lube pressure, lube level, Nitrogen pressure (related to Nitrogen die spring systems).

*Table B-1. Preventive Maintenance Items*

air rotary seals	back shaft bearing (1 through 4)
brake	bull gear
clutch valve	conveyor (1 through 6)
counterbalance system	drive belts
DSV	feeder
flywheel bearing	gibs
lube filter	lube motor
lube system	main bearing (1 through 4)
main motor	oil level
pilot solenoid	pinion key
pitman bearing (1 through 4)	"Custom" name

*Table B-2. PM Tracking Units*

run hours <sup>1</sup>	days
weeks	months
die changes	ch. cycles (1 through 16) <sup>2</sup>
WPC press control faults, F50-F58 <sup>3</sup>	press overloads <sup>4</sup>

- 1 For SmartPAC (without WPC), "run hours" refers to the length of time that SmartPAC is "on". For SmartPAC with WPC, it means how long the motor is "on". (The version of SmartPAC that you currently have is without WPC. Contact Wintriss Controls if you require WPC.)
- 2 Ch. cycles 1 through 16 can be used only if you have a 16-channel ProCamPAC. Only ch. cycles 1 through 8 can be used for an 8-channel configuration.
- 3 These are only available if you have SmartPAC with WPC and if you have wired and assigned press functions to the user-definable inputs. (The version of SmartPAC that you currently have is without WPC. Contact Wintriss Controls if you require WPC.)
- 4 "Press overload" is only available with the AutoSetPAC option.

## Installing the PM Monitor

### For New Systems from the Factory

If you purchased a SmartPAC 2 system with the PM Monitor pre-installed at the factory, you can proceed directly to *Using the PM Monitor in Initialization Mode*, page B-4.

### For Existing Systems

If you ordered the PM Monitor options separately (in other words, if you already had a SmartPAC 2, and you were just adding the PM option), you must first physically upgrade your SmartPAC 2 system for compatibility. To upgrade your SmartPAC 2 firmware, refer to Appendix C.

Once firmware has been upgraded, proceed to *Using the PM Monitor in Initialization Mode* (below).

### NOTICE

PM Monitor must be initialized before you can use it (see page B-6).

## Using the PM Monitor in Initialization Mode

### How to Get into SmartPAC Initialization and PM Monitor

### NOTICE

**SELECT = HIGHLIGHT + ENTER**

When this manual says SELECT, it means highlight the item and press ENTER.

### NOTICE

Before changing modes, make sure your screen shows the first display in the mode you are in. If that display is not shown, nothing will happen when you turn the Program /Run key. In that case, keep pressing the RESET key. When the first display in the mode is reached, SmartPAC will instantly switch to the new mode.

1. To get into Initialization mode, turn the Program/Run key to “PROG,” and then press both the “1” and “CLEAR” keys simultaneously for one second.

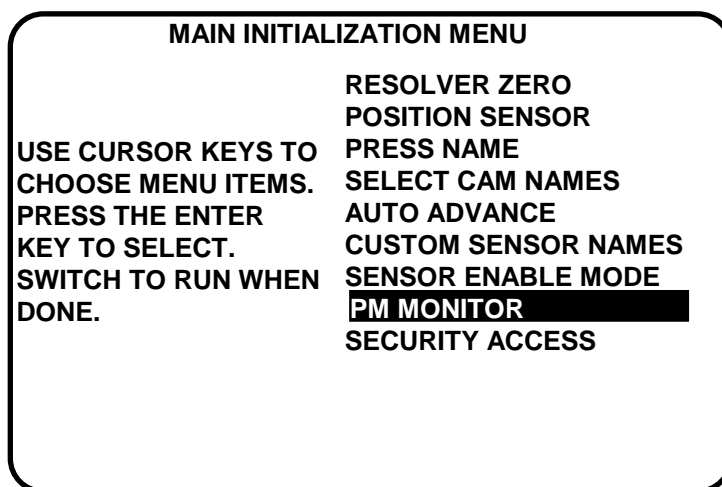


Figure B-1. “PM Monitor” Highlighted on SmartPAC 2 Initialization Menu

2. Select “PM Monitor” from the main Initialization menu (see Figure B-1). A screen will appear asking for your password.

**NOTICE**

The password prompt will appear EVERY time that you select “PM Monitor” from the Initialization mode.

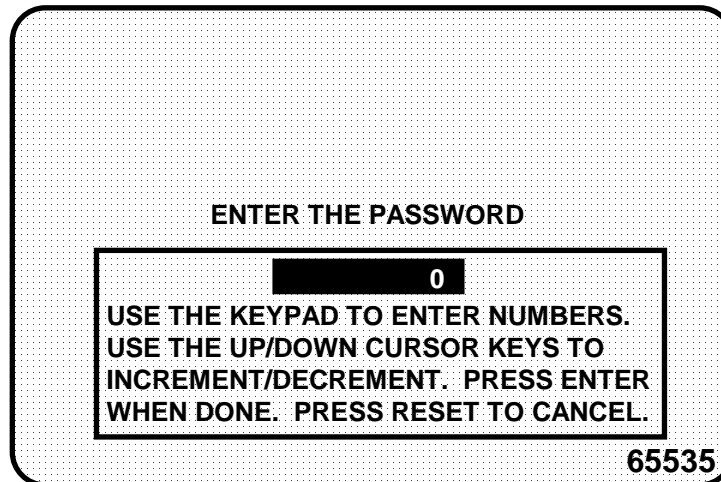


Figure B-2. PM Password Screen

3. At this point, consider the applicable alternatives below, depending on whether you have a *new system* (which includes the PM option already installed at the factory), or an *existing* SmartPAC (where you have to install and initialize this option yourself). Proceed with the one that corresponds with your system.

**For New Systems from the Factory**

If you purchased a SmartPAC system with the PM Monitor pre-installed at the factory, it is not necessary for you to clear/initialize the PM Monitor. However, you do need to complete the steps below as directed.

1. Enter the password “1234” at the “PM password” screen. This will take you immediately to the “PM Entry” screen.
2. As we mentioned above, you do not need to initialize your PM Monitor option, as it has already been done at the factory. However, it is advisable for you to change your password from the default “1234” to a different number, for security reasons.
3. To do this, press **F6** which is labeled “Init”. It is at this screen (“Initialize PM” - see Figure B-5) where you can also change your password. Proceed to *Assigning a New PM Password Number*, page B-8 to change your password (skip *Initializing the PM Monitor*, page B-6 altogether). Once you have done that, you can use the PM Monitor.



## For Existing Systems

If you ordered the PM Monitor options separately, you *must* initialize this option before you can actually use it. Complete all the steps in *Initializing the PM Monitor*, below, to initialize the PM Monitor.

### NOTICE

You should already have installed the firmware upgrade. If not, go back to *Installing the PM Monitor*, page B-3 before proceeding further.

## Initializing the PM Monitor

1. Select “PM Monitor” from the Main Initialization Menu (see Figure B-1). A screen will appear asking for your password.

### NOTICE

The password prompt will appear EVERY time that you select “PM Monitor” from the Initialization mode.

2. To determine the password for your system, note the number at the bottom-right corner of the password screen, and call the factory at the telephone number on the cover of this manual. (*Because you have an upgraded system, the password may not be “1234”.*)

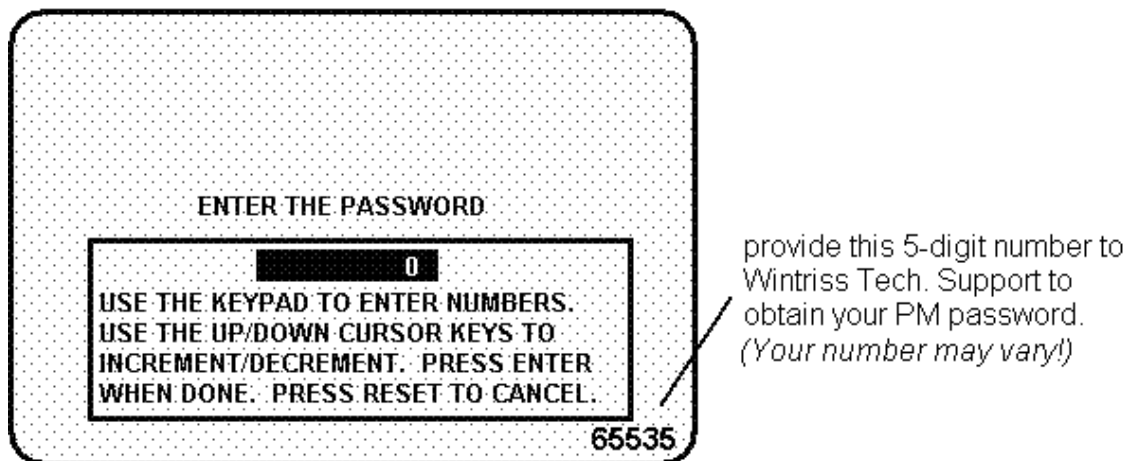
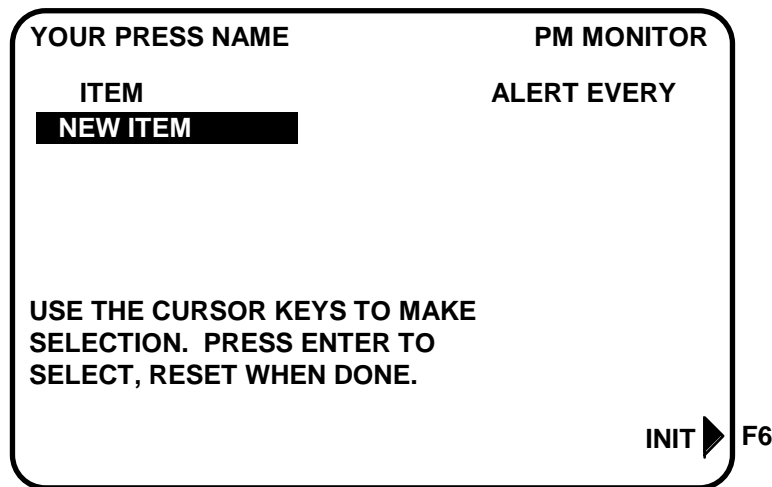


Figure B-3. PM Password Screen Showing Password Retrieval Number

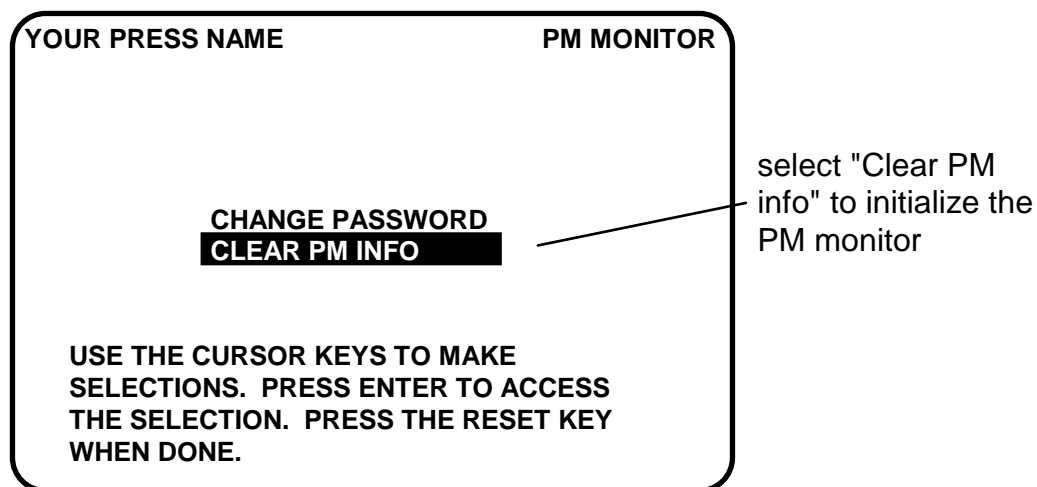
3. Enter the password that you obtained from Wintriss Controls, using the numeric keypad. This will take you to the PM Entry Screen (see below). Don't worry if erroneous information appears on the screen, as it will disappear once you have completed step 5.



The PM Entry Screen is a rectangular display with a black border. At the top left, it says "YOUR PRESS NAME". At the top right, it says "PM MONITOR". Below "YOUR PRESS NAME", there is a label "ITEM" and a black rectangular button labeled "NEW ITEM". To the right of the "NEW ITEM" button, it says "ALERT EVERY". In the center of the screen, there is a block of text: "USE THE CURSOR KEYS TO MAKE SELECTION. PRESS ENTER TO SELECT, RESET WHEN DONE." In the bottom right corner, there is a label "INIT" followed by a right-pointing arrow and the text "F6".

Figure B-4. PM Entry Screen

4. Press function key **F6**, which is labeled "Init".
5. From this screen you can initialize the PM Monitor. To initialize, select "Clear PM Info". (Notice that you can also change your password on this screen. To change your password, refer to the next section, *Assigning a New PM Password Number*.)



The Initialize PM Screen is a rectangular display with a black border. At the top left, it says "YOUR PRESS NAME". At the top right, it says "PM MONITOR". In the center, there are two options: "CHANGE PASSWORD" and "CLEAR PM INFO". The "CLEAR PM INFO" option is highlighted with a black rectangular background. A line points from the text "select 'Clear PM info' to initialize the PM monitor" to the "CLEAR PM INFO" button. At the bottom of the screen, there is a block of text: "USE THE CURSOR KEYS TO MAKE SELECTIONS. PRESS ENTER TO ACCESS THE SELECTION. PRESS THE RESET KEY WHEN DONE."

Figure B-5. Initialize PM Screen

6. Notice the “Warning” message and accompanying instructions appearing on the screen (see below). Press the CLEAR key to initialize. (If you decide not to, then press RESET.)

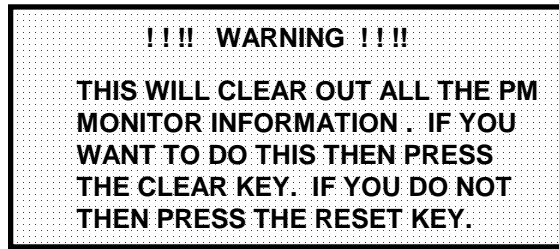


Figure B-6. Initialize Warning Screen

7. Once you press CLEAR, you will briefly see the confirming message “INITIALIZING PM MONITOR”.
8. Next, press RESET to exit from the “Initialize PM” screen. You will be returned to the PM Entry screen. Proceed to the next section to assign a new password number.

## Assigning a New PM Password Number

Before you can actually set up and use the PM Monitor, you may want to assign a new password number. (The default password is “1234”.) For security reasons, it is advisable to change the default password. Follow the steps below to change the password. You can also change the password under the Security Access item on the Main Initialization Menu (see *Changing Passwords*, page 4-26).

1. Go to the “PM Entry” screen (Figure B-4). Press **F6** (Init).
2. You will see the “Initialize PM” screen (Figure B-5). Select “Change Password”.
3. As the screen indicates, enter a new password, up to 4 digits (numeric only). Use the numeric keypad or the up/down cursor keys. Then press ENTER.
4. Make sure that you record this number and keep it in a place where you can find it. Without it, you cannot change settings in the PM Monitor. You are now ready to use the PM Monitor. Go to the next section.

## Selecting PM Item Names

You are now ready to set up PM parameters in Initialization. You can select a name for each preventive maintenance item that adequately describes its function. SmartPAC provides about 35 names. If there is a function for which you cannot find a suitable name, you can create a new name using the “Custom” feature. (This procedure is explained in step 5 below.)

1. Select “New item” from this display. (You may be asked for a password before getting to this screen. If so, enter it.)


YOUR PRESS NAME	PM MONITOR
ITEM	ALERT EVERY
<b>NEW ITEM</b>	
<p>USE THE CURSOR KEYS TO MAKE SELECTION. PRESS ENTER TO SELECT, RESET WHEN DONE.</p>	
<p>INIT  F6</p>	

Figure B-7. PM Monitor Screen

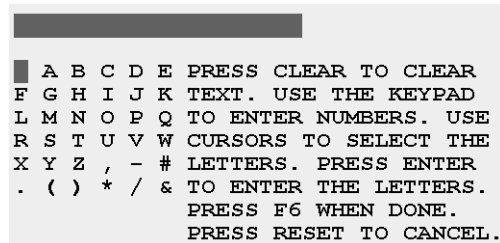
2. Next, you will see the following display. You should give the item a name that best describes its function, so first check the list for a suitable name.

YOUR PRESS NAME	PM MONITOR
<p>USE THE CURSOR KEYS TO MAKE SELECTION. PRESS ENTER TO SELECT, RESET WHEN DONE.</p>	<b>"CUSTOM NAME"</b>
	AIR ROTARY SEALS
	BCKSHFT BEARING 1
	BCKSHFT BEARING 2
	BCKSHFT BEARING 3
	BCKSHFT BEARING 4
	BRAKE
	BULL GEAR
	CLUTCH VALVE
	CONVEYOR 1
	CONVEYOR 2
	CONVEYOR 3
	CONVEYOR 4
CONVEYOR 5	
CONVEYOR 6	
MORE ▼	

Figure B-8. List of Available PM Names Screen

3. To see the complete list of names, press the Down (▼) cursor key until the bottom name on the list is highlighted, then keep pressing it. A new name will appear each time you press the key. You can use the Up (▲) cursor key to reverse direction.
4. If you do not find a suitable name but you still want to name the item, you can select “Custom Name” by highlighting it and pressing ENTER.

5. When the Alphanumeric Entry window displays (see Figure B-9), key in the custom name. The name you select can be any combination of alphanumeric characters, symbols, etc. Pressing the CLEAR key clears the text. To create a custom name, do the following:
  - a. To select letters or symbols: Use the Up (▲), Down (▼), Left (◀), and/or Right (▶) cursor keys to highlight the desired letter; then press ENTER.
  - b. To select numbers: Use the numeric keypad.
  - c. When finished, press function key **F6** (to the right of the LCD display). To cancel your selection, press RESET. (For assistance in using the various keys, refer to Chapter 3 of this manual.)



```

A B C D E PRESS CLEAR TO CLEAR
F G H I J K TEXT. USE THE KEYPAD
L M N O P Q TO ENTER NUMBERS. USE
R S T U V W CURSORS TO SELECT THE
X Y Z , - # LETTERS. PRESS ENTER
. ( ) * / & TO ENTER THE LETTERS.
PRESS F6 WHEN DONE.
PRESS RESET TO CANCEL.
  
```

Figure B-9. Alphanumeric Display Superimposed over PM Names Screen

6. After you have named the item, you are prompted to set the PM monitor tracking units. You can select a time-based measure, such as run hours, days, weeks, or months; or you can select measures linked to the process, such as strokes, die changes, or programmable cam channel cycles. Select the most applicable tracking unit of measure.

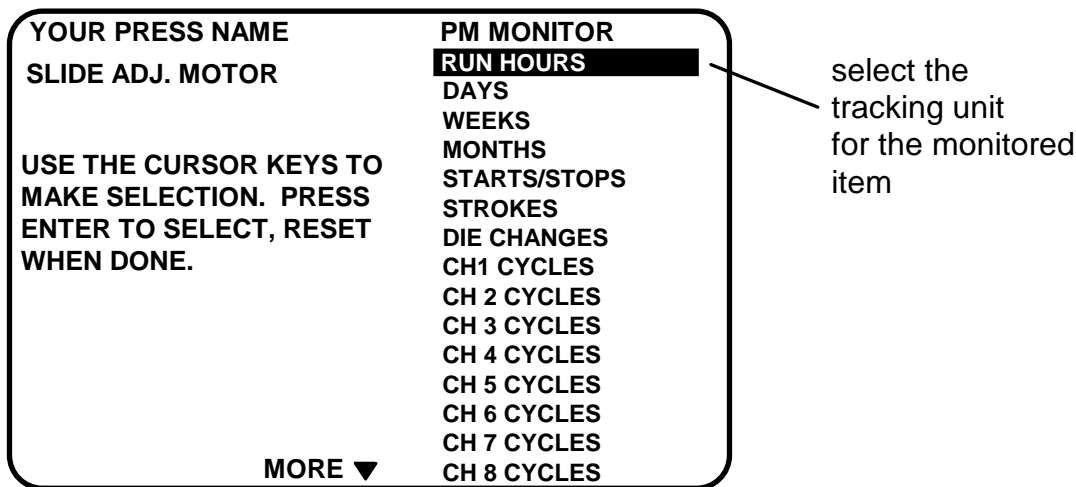


Figure B-10. Tracking Units Selection Screen

7. Next, the number display appears superimposed over the previous display (see the next illustration). Use the number keys or cursor keys to set the tracking frequency for the PM item.

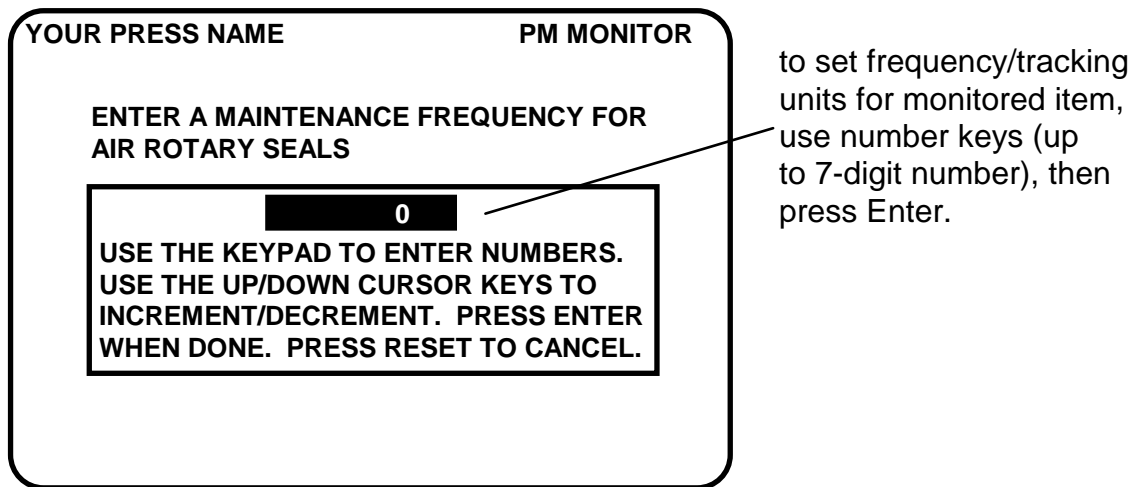


Figure B-11. Superimposed Number Display

8. In the following illustration, we entered the slide adjust motor as our first PM item, set the tracking unit of measure to be “die changes”, and the frequency at “100”. Notice that the PM name is listed just below “new item”.

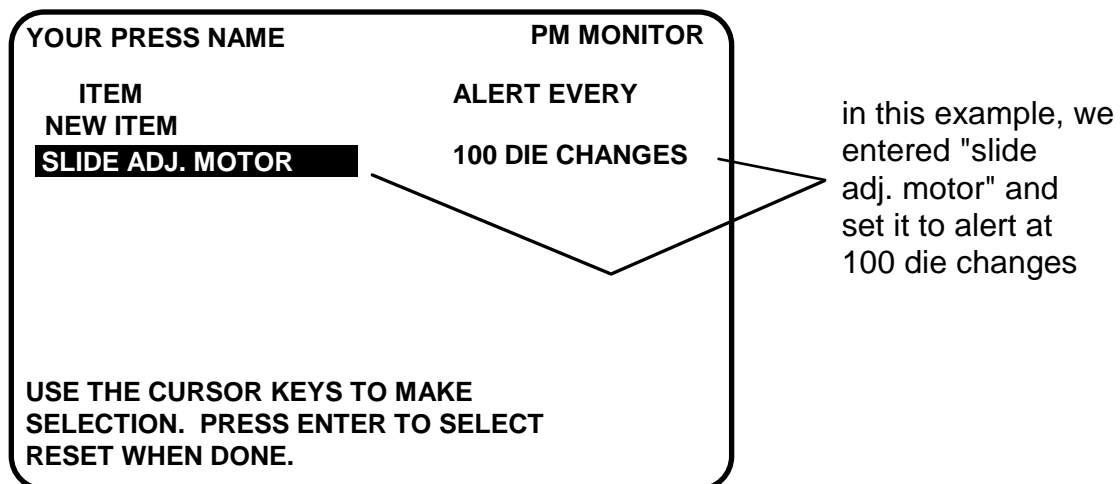


Figure B-12. Programmed PM Item: Example

9. To set more PM items, repeat steps 1 through 8. When you are completely done initializing the PM items, press RESET to return to the Main Initialization Menu.
10. You can now go to the Run mode to view the PM Monitor status conditions. There is no PM information to set in SmartPAC's Program mode. You made all the required settings in the Initialization mode.

# Using the PM Monitor in Run mode

## How to Get into SmartPAC Run Mode

To get into Run mode, turn the Program/Run key to RUN.

### NOTICE

Before changing modes, make sure your screen shows the first display in the mode you are in. If that display is not shown, nothing will happen when you turn the Program /Run key. In that case, keep pressing the RESET key. When the first display in the mode is reached, you will instantly switch to the new mode.

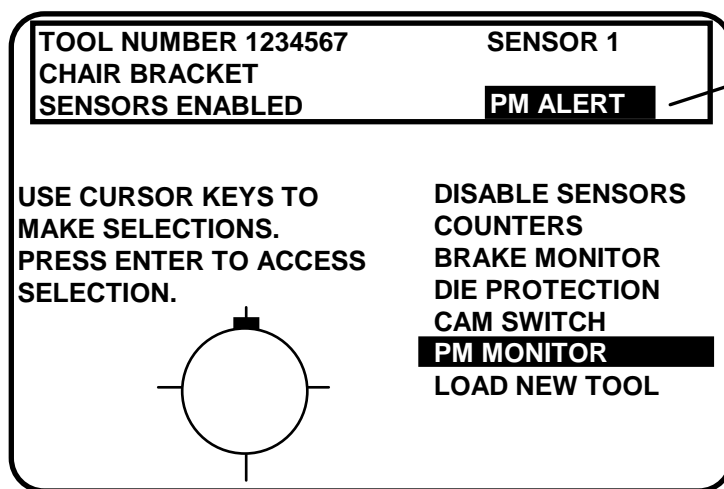
## A Tool Number Must Be Loaded Before Switching to Run Mode

If no tool number has been loaded, you cannot switch from Initialization mode or Program mode to Run mode. A tool number must be loaded before SmartPAC will allow the press to run.

If you try to switch to Run mode without a tool number loaded, you will get this error message on your screen:

*NO TOOL NUMBER HAS BEEN LOADED*

If so, turn the Program/Run key to “PROG”. Press RESET to clear the error message. Then load a tool number. Now turn the Program/Run key to “RUN”. The Run menu, shown below, is the first display you see in Run mode. From this display you can access the PM Monitor selection.



This alert message appears at the main Run menu when a PM alert condition is present. Select PM Monitor from this screen to attend to the offending item.

Figure B-13. “PM Monitor” Highlighted on SmartPAC 2 Run Menu

(Your list of options may be different, depending on the features you have installed.)

## Viewing and Modifying PM Alerts

1. Select “PM Monitor” from the first display in Run mode.
2. You will see the list of PM items that you previously assigned in Initialization. The first item is highlighted in the next example. Use the cursor keys to view the other items on the schedule. Currently the PM status for all items is “normal” (see display). This means that none of the items has reached the limits set in Initialization.

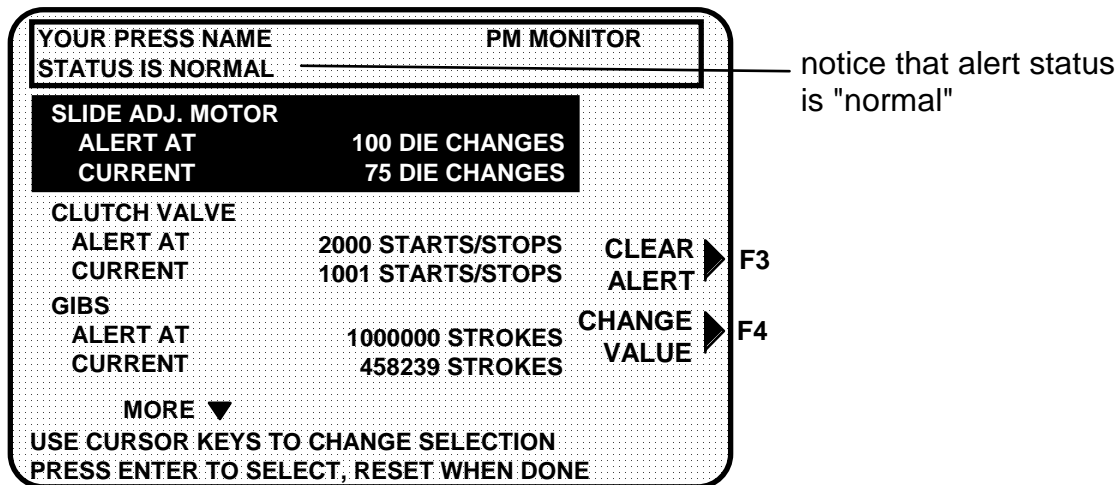


Figure B-14. Run Mode Screen Showing PM Monitor in “Normal” Status Mode

### NOTICE

You may notice that some of the current values do not update on every stroke while the press is running. SmartPAC is keeping track of these items, but does not refresh the display until the press actually stops.



3. The next display shows that one of the items, "Slide Adjust Motor," is now in "alert" status mode. It flashes on the screen. Also, the number of items in alert status mode appears at the top of the screen.

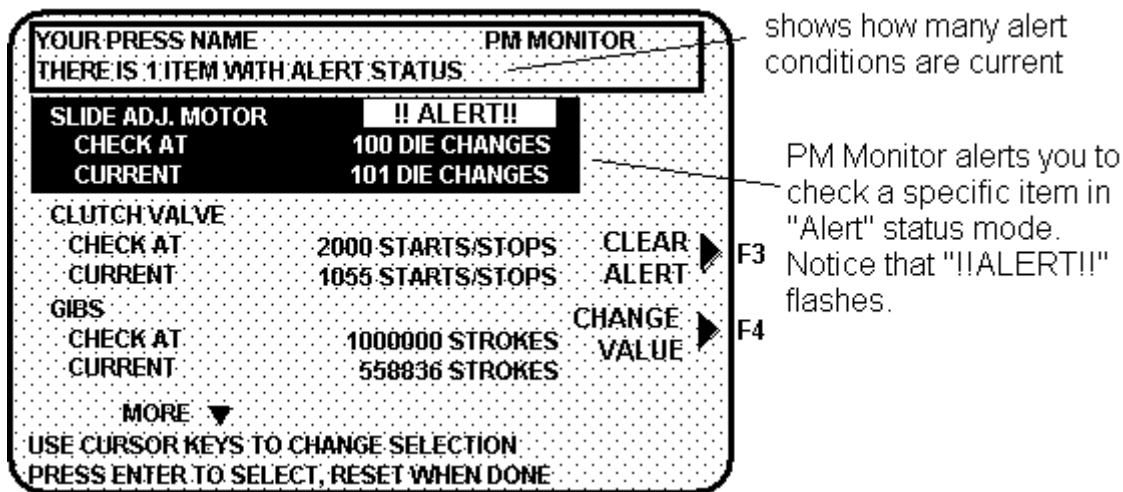


Figure B-15. Run Mode Screen Showing "Slide Adjust Motor" in "Alert" Mode

4. To view other items in the schedule that may or may not be in "alert" status, use the cursor keys. If more than three PM items were set in Initialization, they will not all appear on the screen. To view them, simply use the cursor keys to scroll down the list.
5. To clear the alert, first highlight that item, press the appropriate function key (designated on your screen), and enter the PM password.

### NOTICE

When you clear the alert condition for a certain item, you automatically reset its current value to zero. You cannot recall the previous value.

6. If you want to change the frequency value on a given PM item, first highlight that item, press the designated function key, and enter the PM password. The number display will be superimposed over the screen (similar to Figure B-9). Use the number keys or cursor keys to modify the tracking frequency for that PM item.
7. Once you are done viewing or modifying this screen, press RESET to return to the main Run menu.

# Appendix C. Updating SmartPAC 2 Firmware

---

This appendix shows you how to update SmartPAC 2 firmware, using a USB disk, and load SmartPAC 2 firmware installed on a Compact Flash (CF) card. The appendix is organized in the following sections:

- *Updating Firmware Using a USB Disk* (next)
- *Installing Firmware from a Replacement Compact Flash (CF) Card*, page C-9

## Updating Firmware Using a USB Disk

### NOTICE

#### FIRMWARE ORDER MUST INCLUDE SMARTPAC 2 SERIAL NUMBER

When you order new firmware, make sure to include the serial number of your SmartPAC 2 unit. Wintriss needs the serial number to create the correct firmware for your SmartPAC 2.

The serial number is located on the top-mounting flange of the SmartPAC 2 enclosure and on the Boot Loader chip (U124) on the SmartPAC 2 board (see Figure 2-11, page 2-19). If you have a panel mount unit, the serial number can be found on the other side of the plate on which the AC input terminal block is mounted.

To order new SmartPAC 2 firmware, you must fill out a “SmartPAC 2 Firmware Upgrade” form, available from your Wintriss representative or Wintriss Tech. Support. Make sure to specify on the form the serial number on your SmartPAC 2. The firmware upgrade file you receive from Wintriss includes this serial number in its file name (i.e., SP2nnnnnnnnn, where SP2 stands for SmartPAC 2 and nnnnnnnnn is the eight-digit SmartPAC 2 serial number).

You can obtain SmartPAC 2 firmware in several ways. This appendix describes two methods, in which the firmware is loaded on a USB disk and installed via the USB connector on your SmartPAC 2 PC board. The two methods are as follows:

- **Firmware is loaded on a USB disk and sent to you by United Parcel Service (UPS)** or other shipping method. If you select this option, you pay for shipping and the cost of the USB disk. You also have to wait for delivery of the order. Follow the instructions in *Installing Updated Firmware from USB Disk to SmartPAC 2* on the next page if you choose this method.
- **Firmware is available via an e-mail with a link** to the Wintriss download site. You download a compressed file containing the firmware, then copy the firmware to your own USB disk and install it on the SmartPAC 2. To transfer the firmware to the USB disk, follow the instructions in *Downloading Updated Firmware from the Wintriss Server*, page C-7. Then load the firmware into SmartPAC 2, using the *Installing Updated Firmware from USB Disk to SmartPAC 2* procedure on the next page.

**Other options are available if your SmartPAC 2 unit is networked.** Call Wintriss Tech. Support for more information.

**NOTICE**

If you elect to download SmartPAC 2 firmware from Wintriss, you must have

- A PC with a USB port and one of the following Windows operating systems: Windows 2000, Windows XP, and Windows 7
- A USB disk with at least 4 MB of available space

**Installing Updated Firmware from USB Disk to SmartPAC 2**

Follow these steps to load new firmware from a USB disk to your SmartPAC 2.

**NOTICE**

If you downloaded your firmware from Wintriss, go to page C-7 and follow the instructions in *Downloading Updated Firmware from the Wintriss Server* to load the firmware onto a USB disk. Then return to this page and install the firmware on your SmartPAC 2.

1. If a tool is loaded and you are currently running a job, you must record the current tool number, tool name or tool ID, and counter values before installing the new firmware. You do not need to record the preset values, which are saved with the tool settings. You can use Table C-1 to record counter settings.

*Table C-1. Record of Current Counts*

<b>Tool Number</b> _____		
<b>Tool Name or Tool ID</b> _____		
<b>Counter</b>	<b>Count</b>	<b>Preset Value</b>
Strokes		You do not have to record Preset Values. They are saved with the tool settings.
Good Parts		
Batch 1		
Batch 2		
Batch 3		
Total Hits		

2. If you have a SmartPAC 2 Servo or SmartPAC 2 Hydraulic, you must record the current Linear Sensor settings in Initialization mode. You can use Table C-2, page C3 for this purpose.

Table C-2. Record of Linear Sensor Initialization Settings

Parameter	Setting
Sensor Resolution	
Offset Value	
Zero Value *	
Upper Limit	
Units	

\* If your firmware version does not support this item, make sure to set the field to zero after updating the firmware.

- Check the serial number of the new firmware to make sure it matches the serial number of your SmartPAC 2. The firmware serial number begins with the prefix “SP2” (for SmartPAC 2) followed by a numeric code (i.e., SP2nnnnnnnn). The numeric code is the serial number of your SmartPAC 2 unit.

### NOTICE

- If you received your firmware on a USB disk, the serial number is the name of the folder stored on the disk. To verify the serial number, insert the disk into your computer's USB port, double-click on *My Computer*, and open the USB disk (usually identified by the label “Removable Disk” with a drive letter next to it.)
- If you downloaded your firmware from Wintriss, the serial number is the name of the compressed file you downloaded.

- Power down your SmartPAC 2.
- Press and hold down the **F1** function key while powering up the SmartPAC 2, releasing **F1** when the red Wintriss SmartPAC 2 screen displays. After about a minute the FIRMWARE LOAD MENU will appear (see Figure C-1).

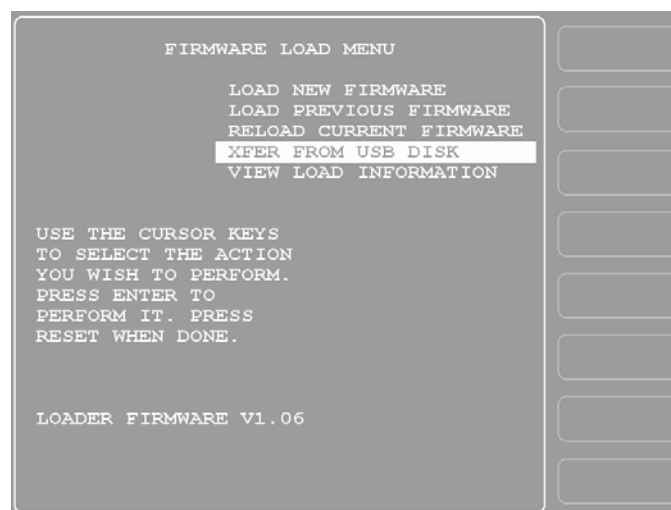


Figure C-1. Firmware Load Menu with “XFER FROM USB DISK” Highlighted

**⚠ WARNING****ELECTRIC SHOCK HAZARD**

- Ensure that the power source is off before you replace electronic components in a control.
- Disconnect power from the machinery it is connected to before replacing electronic components. This includes disconnecting power to the machine control and motor.
- Ensure that servicing is performed by qualified personnel.

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

6. Open the SmartPAC 2 enclosure or console.

**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.**

7. Locate the USB connector, J121, on the SmartPAC 2 board (refer to Figure 2-11, page 2-19).

**NOTICE**

The USB disk can fit into the USB connector in only one orientation. DO NOT try to force the USB disk into the connector when it is in the wrong orientation.

8. Making sure that the USB disk is oriented correctly, carefully insert the USB disk into the USB connector. Wait about a minute for the SmartPAC 2 to recognize the USB disk.
9. Close the door of the enclosure or console.
10. Using the cursor keys, highlight “XFER FROM USB DISK,” as shown in Figure C-1, and press ENTER. After a few seconds, the message “USB DISK TRANSFER COMPLETE” displays briefly, then the Firmware Load Menu appears again, as shown in Figure C-2, page C-5.

**NOTICE**

If the USB disk does not contain the correct folder for this SmartPAC 2 serial number, you will first see a message at the bottom of the screen that says “SP2nnnnnnnn DIRECTORY NOT FOUND” and then a red window with the message “THERE WAS NO RESPONSE TO THE USB DISK FILE TRANSFER REQUEST.” If these messages display, re-check the serial numbers of the SmartPAC 2 and the SmartPAC 2 firmware you are trying to load. If the two serial numbers match, try loading the firmware again. If this still does not work, contact Wintriss Tech. Support.

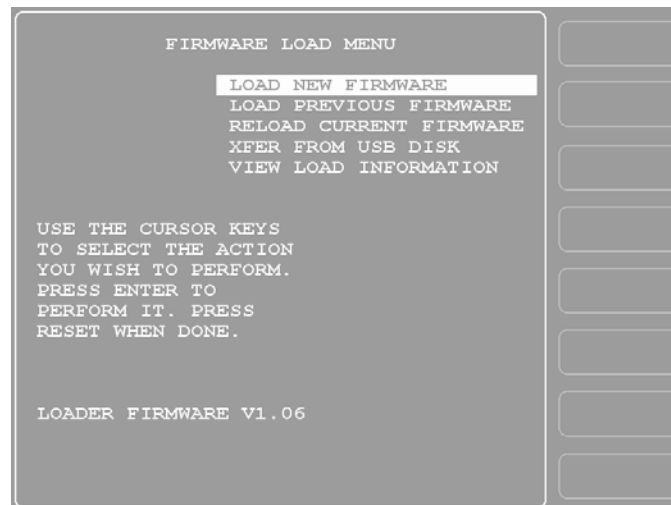


Figure C-2. Firmware Load Menu with “LOAD NEW FIRMWARE” Highlighted

11. With “LOAD NEW FIRMWARE” selected, as shown in Figure C-2, press ENTER. A yellow status window appears with the message “YOU ARE ABOUT TO REPROGRAM THE SMARTPAC 2 RTS UNIT. . .” (see Figure C-3).

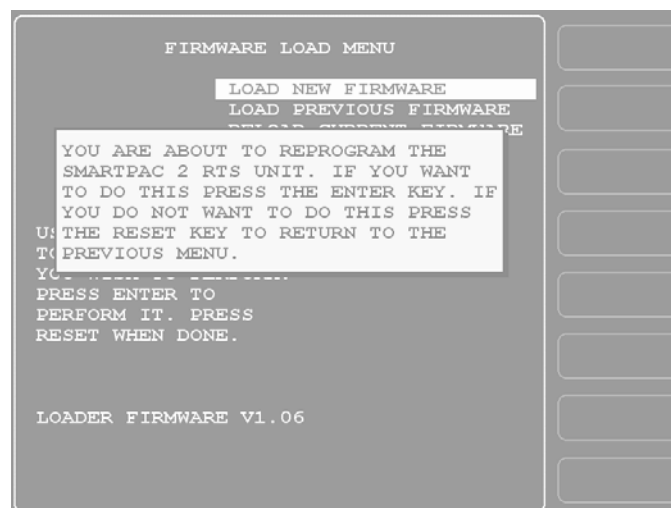


Figure C-3. Firmware Load Menu with Yellow Status Window

12. Press ENTER to continue. A display like that shown in Figure C-4, page C-6 appears, indicating that the firmware is being loaded. It takes about five minutes for the firmware to load.

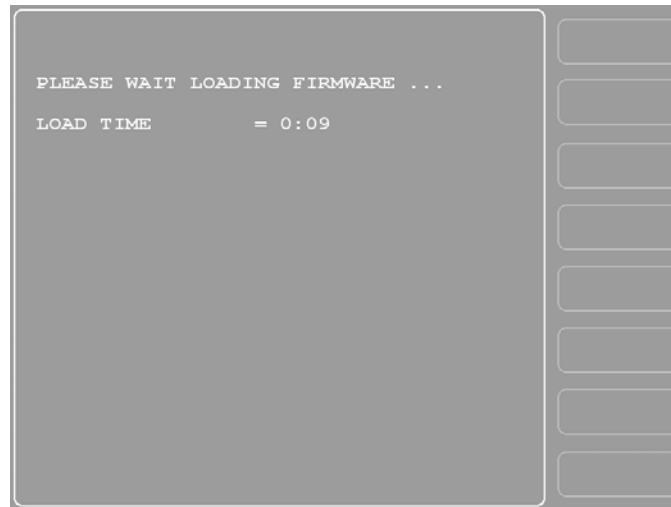


Figure C-4. SmartPAC 2 Display with "Loading Firmware" Message

### NOTICE

If power is lost to SmartPAC 2 during installation of the firmware, SmartPAC 2 will default to the Firmware Load Menu display when the unit is powered back up. Repeat steps 10-12 to install the firmware again.

13. When the firmware is completely loaded, the Load Time counter stops incrementing, a yellow status window appears briefly saying "THE DOWNLOAD SEQUENCE IS COMPLETE," and the SmartPAC 2 will restart (reboot) itself. Once the reboot is complete, another yellow status window appears saying, "YOU HAVE NOW UPDATED THE SMARTPAC SOFTWARE. SHUT THE POWER OFF AND THEN TURN IT BACK ON TO RESTART THE SMARTPAC 2."
14. Power down the SmartPAC 2. Remove the USB disk from the USB connector.
15. Power up the SmartPAC 2. Access the Main Initialization Menu and select "INSTALLED OPTIONS" to check for new installed options or enhancements, if any.

### NOTICE

If you have a MultiPAC module connected to SmartPAC 2, the following message may appear when you power up the unit: "A MULTIPAC MODULE WAS INSTALLED THE LAST TIME THE UNIT WAS POWERED-UP AND WAS NOT SEEN THIS TIME." If you receive this message, power down SmartPAC 2 again, then power the unit back up. If the message still appears, contact Wintriss Tech. Support.

16. If you suspended a job in order to load SmartPAC 2 firmware, reload the tool and enter the counts for your job-in-progress from Table C-1, page C2 as follows:
  - a. Enter Run mode and select COUNTERS.
  - b. Enter the count values from Table C-1 for each line in the display.
  - c. When you are finished, you can continue running the job that was in progress.

**NOTICE**

Your Security Access settings may be set to prevent changing the count values in Run mode. If this is the case, go to the Main Initialization Menu, select "SECURITY ACCESS", and set "CHANGE COUNT" to "PROGRAM AND RUN MODES." After you change the count values, you can reset the Security Access if desired.

17. If you have a SmartPAC 2 Servo or SmartPAC 2 Hydraulic unit, enter the settings you recorded in step 2 on the Linear Sensor screen in Initialization mode.

**Downloading Updated Firmware from the Wintriss Server****NOTICE**

To copy firmware downloaded from Wintriss to a USB disk, you must have:

- A PC with a USB port and one of the following Windows operating systems: Windows 2000, Windows XP, or Windows 7
- A USB disk with at least 4 MB of available space

To download firmware from the Wintriss server, perform the following steps:

1. Click on the link provided in the e-mail you received from Wintriss in response to your firmware order. If the link has been disabled by your security settings, copy the link, paste it into a Browser window, and press ENTER.
2. When a window displays asking if you want to open the file or save the file to your computer, select the Save option.
3. When the Save As window displays, click on *Save* with the following settings selected:  
**Save in:** Desktop  
**File name:** SP2nnnnnnnn (where *nnnnnnnn* is your SmartPAC 2 serial number)  
**Save as type:** Application
4. Click on *Save* to save the file to your desktop. This may take a few minutes.
5. When the Download Complete window displays, click on *Close* to end the download. (On some systems, the window may close automatically.)
6. Locate the downloaded, compressed file on your desktop (the icon displays the WinZip logo and the file name SP2nnnnnnnn), and double-click on it to launch the WinZip Self-Extractor utility.
7. When the WinZip Self-Extractor window displays, select the folder to which you want the contents of the unzipped file saved (the default is C:\WintrissUpdates), and click on *Unzip*.

**NOTICE**

You can change the drive and/or folder to which you save the file by clicking on the *Browse* button and navigating to the desired location. You can create a new folder by typing the folder name in the **Unzip to folder:** field.



8. Click on *OK* in the window displaying the message that the file has been unzipped successfully, then click on *Close* in the WinZip Self-Extractor window.
9. Double-click on the *My Computer* icon on your desktop, and when the “My Computer” window opens, navigate to the folder in which you placed the unzipped SmartPAC 2 firmware file. (The contents of the unzipped file are in a folder named SP2nnnnnnnn, where nnnnnnnn is the serial number of your SmartPAC 2.)
10. Insert a USB disk into your computer’s USB port. Wait a few moments for it to be recognized.
  - If your computer is already set up to use a USB disk, the USB drive (usually named “Removable Disk” with a drive letter next it) will appear in the “My Computer” window.
  - If you have never used a USB disk on your computer, you will be prompted with a message saying, “New hardware has been found.” Follow the on-screen instructions to find and install the proper drivers for your USB disk. For assistance, contact your information technology staff.
11. With both the SP2nnnnnnnn folder and the USB “Removable Disk” icon visible in “My Computer” windows, copy the SP2nnnnnnnn folder to the USB disk.
12. Stop the USB disk, using the “Unplug or Eject Hardware” utility on your computer. (The “Unplug or Eject Hardware” icon is often displayed on the far right side of the Task Bar.)

**NOTICE**

Be sure to stop the USB disk before removing it from the computer. If you don’t, valuable data on your computer may be corrupted or lost.

If you are using Windows XP, you do not need to “unplug” or “eject” the USB disk.

13. Remove the USB disk from the USB drive.

To install downloaded firmware from the USB disk to SmartPAC 2, follow the instructions in *Installing Updated Firmware from USB Disk to SmartPAC 2*, page C-2.

## Installing Firmware from a Replacement Compact Flash (CF) Card

### NOTICE

#### MAKE SURE TO SPECIFY YOUR SMARTPAC 2 SERIAL NUMBER

When you order a replacement Compact Flash (CF) card, make sure to include the serial number of your SmartPAC 2. Wintriss needs the serial number to create the correct firmware for your SmartPAC 2.

The serial number is located on the top-mounting flange of the SmartPAC 2 enclosure and on the Boot Loader chip (U124) on the SmartPAC 2 board (see Figure 2-11, page 2-19). If you have a panel mount unit, the serial number can be found on the other side of the plate on which the AC input terminal block is mounted.

If you are replacing a Compact Flash (CF) card, perform the following steps to reload the SmartPAC 2 firmware resident on it:

### WARNING

#### ELECTRIC SHOCK HAZARD

- Ensure that the power source is off before you replace electronic components in a control.
- Disconnect power from the machinery it is connected to before replacing electronic components. This includes disconnecting power to the machine control and motor.
- Ensure that servicing is performed by qualified personnel.

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

1. With power to the SmartPAC 2 turned off, insert the replacement Compact Flash card in the receptacle on the SmartPAC 2 board (see Figure 2-11, page 2-19). If a ProCamPAC board is installed, you will have to remove it to access the Compact Flash slot.
2. Close the door of the enclosure or console.
3. Press and hold down the **F1** function key while powering up the SmartPAC 2, releasing **F1** when the red Wintriss SmartPAC 2 screen displays. After about a minute the FIRMWARE LOAD MENU will appear (see Figure C-5, page C-10).

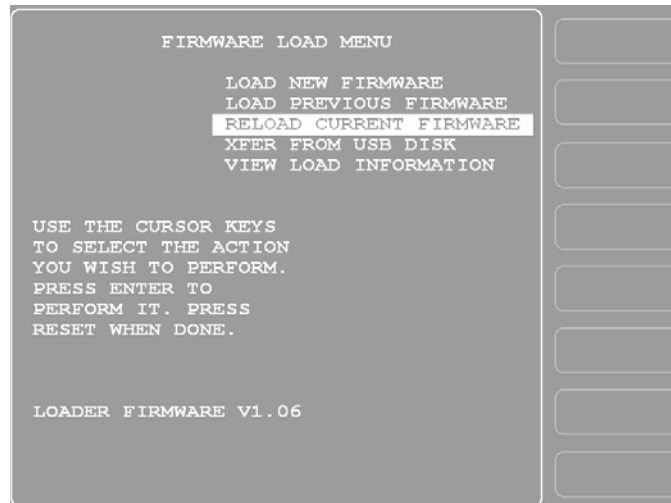


Figure C-5. Firmware Load Menu with “RELOAD CURRENT FIRMWARE” Highlighted

4. Using the cursor keys, highlight “RELOAD CURRENT FIRMWARE,” as shown in Figure C-5, and press ENTER. A yellow status window appears with the message “YOU ARE ABOUT TO REPROGRAM THE SMARTPAC 2 RTS UNIT . . .” (see Figure C-6).

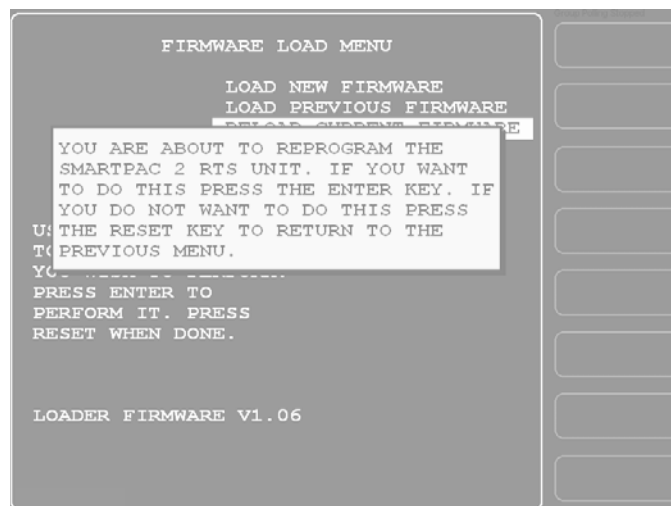


Figure C-6. Firmware Load Menu with Yellow Status Window

5. Press ENTER to continue. The message “PLEASE WAIT WHILE THE FIRMWARE MEMORY IS BEING ERASED” displays briefly, followed by a display like the one shown in Figure C-7, page C-11, indicating that the firmware is being loaded. It takes about five minutes for the firmware to load.

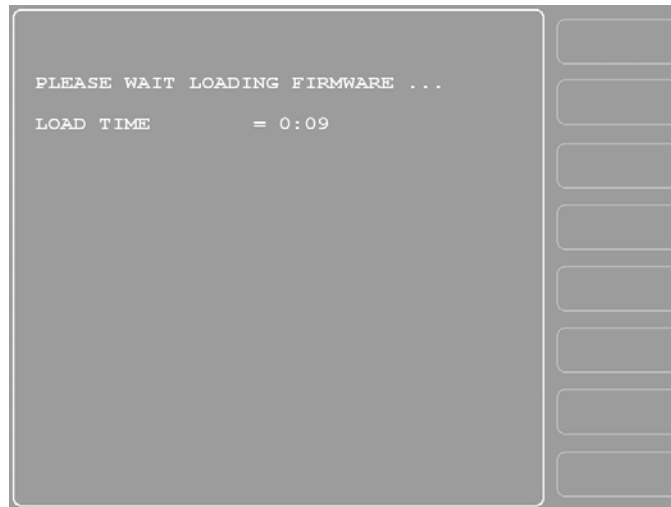


Figure C-7. SmartPAC 2 Display with “Loading Firmware” Message

### NOTICE

If power is lost to SmartPAC 2 during installation of the firmware, SmartPAC 2 will default to the Firmware Load Menu display when the unit is powered back up. Repeat steps 4 and 5 to install the firmware again.

6. When the firmware is completely loaded, the Load Time counter stops incrementing, a yellow status window appears briefly saying “THE DOWNLOAD SEQUENCE IS COMPLETE,” and the SmartPAC 2 will restart (reboot) itself. Once the reboot is complete, another yellow status window appears saying, “YOU HAVE NOW UPDATED THE SMARTPAC SOFTWARE. SHUT THE POWER OFF AND THEN TURN IT BACK ON TO RESTART THE SMARTPAC 2.”
7. Power down the SmartPAC 2, then power the unit back up.
8. Access the Main Initialization Menu, and select “INSTALLED OPTIONS” to verify that all the options in your SmartPAC 2 configuration have been installed.

### NOTICE

If you have a MultiPAC module connected to SmartPAC 2, the following message may appear when you power up the unit: “A MULTIPAC MODULE WAS INSTALLED THE LAST TIME THE UNIT WAS POWERED-UP AND WAS NOT SEEN THIS TIME.” If you receive this message, power down SmartPAC 2 again, then power the unit back up. If the message still appears, contact Wintriss Tech. Support.



# Appendix D. SmartView Remote Viewing and E-mail Setup

---

SmartView is a web-based application that allows you to remotely view the status of your SmartPAC-2-equipped presses over your network. There is no software to install. You simply go to the SmartPAC 2 web site, [www.smartpac2.com](http://www.smartpac2.com), using Microsoft Internet Explorer version 5.5 or higher, and enter the network names of the SmartPAC 2s that you want to view.

You are taken to the SmartView Main Page screen (see Figure D-7, page D-10), which displays the status—i.e., running, stopped, or offline—of all of your presses as well as selected details about each press. From the Main Page you can access a Detail display for a selected press, which provides additional press details. If you have dial-up or VPN (Virtual Private Network) access to your company's network, you can view the status of your presses from anywhere in the world over the World Wide Web.

SmartView also provides a remote messaging feature that allows you to send text messages from your PC to any SmartPAC 2 on your network.

SmartView's email facility enables press operators to send diagnostic information, screen captures or custom text messages to Wintriss Technical Support or to any device capable of receiving an email-based text message, including computers, cell phones, pagers, and PDAs. The SmartPAC 2 Error/Event Log can be sent to Wintriss Tech. Support or any other recipient, aiding in troubleshooting application and programming problems.

## Network Requirements

In order to use SmartView or send emails from your SmartPAC 2, your network must meet the following requirements:

- Hardware
  - LAN (Local Area Network) (SmartPAC 2 listens on Port 1007 (Default))
  - SMTP Mail Server (Only if using E-mail feature)
  - CAT5 cable with RJ45 connector
- Browser
  - Internet Explorer (5.5 or higher)

## Network Setup

You should consult with your company's IT department before setting up your network. They will be able to answer key questions such as how your company's LAN (Local Area Network) is set up, whether the SmartPAC 2 will have a fixed IP (Internet Protocol) address or use DHCP (Dynamic Host Configuration Protocol), and how email will be sent. They will also be able to offer advice regarding network hardware issues such as cabling, hubs and mail servers.

## Plugging in the Network Cable

### NOTICE

Do not run Cat5 cable inside conduits containing AC high voltage wires. Ideally, run Cat5 cable in a separate conduit away from sources of electrical noise.

1. With SmartPAC 2 turned off, open the enclosure and plug your network (CAT5) cable with the RJ45 connector into the Ethernet connector (J122) on the SmartPAC 2 board (refer to Figure 2-7, page 2-12 for location).

2. Power up the SmartPAC 2.

The green LED labeled LINK on the RJ45 connector should illuminate, indicating that the network connection is active. If the LINK LED does not illuminate, unplug the connector and try plugging it in again. If the LED still fails to illuminate, ask your IT department to PING (Packet InterNet Groper) it. PING is a DOS utility used to test for network connectivity. See *SmartView Ping Utility*, page D-15.

3. When you are satisfied that the network connection is active, close the SmartPAC 2 enclosure.

## Programming Network Settings

### Enabling E-mail and SmartView and Selecting Press Type

1. On the Main Program Menu, press the 1 and CLEAR keys simultaneously for a few seconds until the Main Initialization Menu displays (see Figure 4-1, page 4-1).
2. Select SETUP NETWORK to access the Network Setup Utility screen (see Figure 4-24, page 4-32).
3. Make sure that the E-mail and SmartView functions are both enabled. If they aren't, press ENTER to toggle the appropriate entry from DISABLED to ENABLED.
4. Make sure that the Press Type is set correctly.

### Setting Up E-mail

### NOTICE

You must have an SMTP (Simple Mail Transfer Protocol) mail server for the E-mail feature to function properly. Contact your IT department for information about SMTP server settings and account information. It is a good idea to have the information ready ahead of time before trying to enter program fields.

1. Select **SETUP E-MAIL** on the Network Setup Utility screen. The screen that displays (see Figure 4-25, page 4-34) provides fields in which you can enter your SMTP mail server settings. Follow on-screen instructions to enter or edit entries.

2. **Mail Server:** Enter Mail Server address first. Be sure to pay careful attention to case-sensitive text (e.g., MySMTP.MailServer.Com). Use the **F2** function key to toggle letter case.
3. **Mail Port:** Leave mail port set to 25.
4. **Use Secure Login:** Press the ENTER key to toggle between FALSE and TRUE. Some SMTP accounts require a Username and Password. If so, set Secure Login to TRUE.

**NOTICE**

Most IT departments do not use secure login. If so, leave this entry set to FALSE.

5. **Username:** If you selected TRUE in step 4, you must enter a Username. This entry is case sensitive. Use the **F2** function key to toggle letter case. Leave the field blank if you set Secure Login to FALSE.
6. **Password:** If you selected TRUE in step 4, you must also enter a Password. This entry is case sensitive. Use the **F2** function key to toggle letter case. Leave the field blank if you set Secure Login to FALSE.
7. **Email Error Recipient:** Enter the E-mail address of the person to whom you want undeliverable messages sent (e.g., the individual responsible for SmartPAC2). Leave the field blank if you do not need to track or be notified of undeliverable e-mails. If you are unsure of what to enter, contact your IT department.
8. **Email From Name:** You will probably want to enter the name of the press in this field (e.g., Press#@yourcompany.com), although you can enter any name. Depending on how your company's SMTP server software is configured and what rules are in place, you may have to experiment with different name formats. Contact your IT department for help.
9. **Wintriss Email Addr:** Leave this field unchanged. You can use this E-mail address to send error logs and screen captures to Wintriss Tech. Support for help in troubleshooting your SmartPAC 2.

**NOTICE**

If the Wintriss E-mail Address ever changes, Wintriss will notify you. If this occurs, change this entry to the new Wintriss Technical Support E-mail Address.

## Changing Network Settings

**NOTICE**

Perform this procedure only if you want to change your SmartPAC 2 from the default DHCP setting (Dynamic Host Configuration Protocol) to a Static or Fixed IP address or if you want to change your SmartPAC 2's default network computer name (i.e., SPAC2-nnnnnnnn, where *nnnnnnnn* is the serial number of your SmartPAC 2).



In order to make changes to network settings, you will need to connect either a USB or PS 2 mouse to the appropriate connector. For a PS 2 mouse, use connector J120 on the SmartPAC 2 board. For a USB mouse, use connector J117.

The USB mouse is probably the more convenient choice for SmartPAC 2 board versions Rev. 5 and lower since plugging it in requires only one operation. If you use a PS 2 type mouse with Rev. 5 and lower boards, you will need to plug a Y-cable into J120 and then plug the mouse into the connector on the arm of the Y labeled MOUSE. SmartPAC 2 Rev. 3 boards require that you reverse the connection and plug the mouse into the Y-cable connector labeled KEYBOARD. For versions of SmartPAC 2 boards Rev. 6 or higher, the PS 2 mouse plugs directly into connector J120. Differences in PS 2 mouse connections for different versions of SmartPAC 2 boards are summarized in Table D-1.

*Table D-1. SmartPAC 2 Board: PS 2 and Y-Cable Configuration*

Board Rev. #	Identifier	PS 2 Default Configuration	Y-Cable Connection
Rev. 2	Green TB102 Connector	Keyboard Default	Do not reverse
Rev. 3	Orange TB102 Connector	Mouse Default	Reverse
Rev. 5	Yellow band on PS2 Connector	Mouse Default	Do not reverse
Rev. 6 & Higher	Mouse = MS J120 Keyboard = KB J125	N.A.	N.A.

## Changing from System Default DHCP to Static or Fixed IP Address

1. Power down the SmartPAC 2.
2. Open the enclosure. Access the PS 2 (J120) or USB (J117) connector on the SmartPAC 2 board (see Figure 2-11, page 2-19 for location), and plug in your mouse.
3. Power up the SmartPAC 2. Once the unit has finished booting up, you should see a mouse pointer on your display and be able to move it around.
4. Turn the PROG/RUN key switch to PROG.
5. Access the Main Initialization Menu, and select SETUP NETWORK.
6. On the Network Setup Utility screen, select CHANGE NETWORK SETTINGS.
7. When the red warning window displays, indicating that you are about to be taken to the Control Panel and that you need to connect a mouse (which you have done in step 2), press the 5 key.
8. When the Control Panel displays, double-left-click with your mouse on the Network Connections folder.
9. Single-right-click on the Local Area Connection icon.
10. Single-left-click on Properties in the drop-down box that displays. A Window should appear labelled Local Area Connection Properties.

11. In the Local Area Connection Properties window, select Internet Protocol (TCP/IP) and single-left-click on the Properties button. The Internet Protocol (TCP/IP) Properties window displays with two radio buttons already selected: “Obtain an IP address automatically” and “Obtain DNS server address automatically.” These are the default settings to make your SmartPAC 2 DHCP-enabled.
12. Single-left-click once to select “Use the following IP address,” and single-left click again to select “Use the following DNS server address.”
13. Using the on-screen keyboard, enter the appropriate IP addresses. Consult your IT department if you need help.
14. Single-left-click on the *OK* button.
15. Close the On-Screen Keyboard, Local Area Connection Properties, and Network Connections windows. You should see a blank blue screen with a small window labeled Control Panel Entered with the words Re-Start System and Save Changes. Single-left-click on the *OK* button to restart the SmartPAC 2 and save your new network settings.
16. To test these changes, try launching SmartView and viewing the press. Also, go to the Setup Page in SmartView (see page D-10) and see if the IP address you entered is displayed.

If you do not have network connectivity, you may need to repeat the preceding steps to make changes and/or have your settings saved.

### Changing Computer Name and Member Settings (System Properties)

1. Repeat steps 1 through 7 above.
2. Double-left-click on the System icon.
3. Single-left-click on the Computer Name tab in the System Properties window.

#### NOTICE

It is not necessary to enter a Computer description. Leave this window blank.

4. Single-left-click on the *Change* button.
5. In the Computer Name Changes window, move the mouse pointer over the Del (Delete) key on the on-screen keyboard—the pointer becomes a hand—and single-left-click with the mouse. The computer name SPAC2-nnnnnnnn (where *nnnnnnnn* is the serial number of your SmartPAC 2) is deleted.
6. Enter the new computer name on the on-screen keyboard, single-left-clicking with the mouse on the desired characters.
7. If you want to change from the factory default Workgroup to Domain, unselect the Workgroup radio button, and select the Domain radio button.

**NOTICE**

SmartPAC 2 is configured at the factory to be part of a Workgroup. If your IT department requires that SmartPAC 2 be part of a Domain, you must change this setting. Contact your IT department for help.

8. Close the on-screen keyboard.
9. Single-left-click on the *OK* button.
10. When you are prompted to restart the computer, click on the *OK* button.
11. In the System Properties window, click on *OK*, then click on *Yes* to restart the computer and save changes.
12. After SmartPAC 2 reboots, the Main Initialization Menu should display.

## Installing SmartView

SmartView can be installed on any desktop or laptop PC that is networked to your company's LAN. If you will use SmartView on multiple computers, you must install the software on each one. In order to install SmartView, your PC must meet the following requirements:

- Microsoft Internet Explorer (version 5.5 or higher)
- Client must have administrative privileges
- If a firewall is used, SmartPAC 2 must be a trusted site

**NOTICE**

SmartView performance and speed may be affected by older and slower equipment. For optimal performance it is recommended that the computer used to run SmartView be reasonably up-to-date.

## Checking Explorer Settings

1. Open Microsoft Internet Explorer.
2. At the top of the Explorer window, click on the Tools drop-down menu and select Internet Options (see Figure D-1).



*Figure D-1. Internet Explorer Window with "Internet Options" Selected*

3. On the Internet Options screen (see Figure D-2), click on the Security tab.

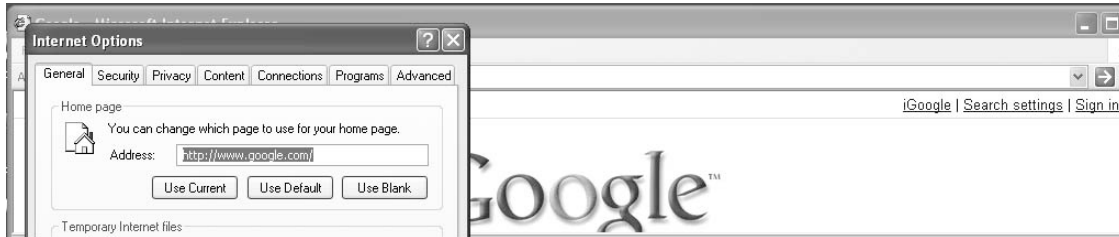


Figure D-2. Internet Options Screen

4. On the Security tab (see Figure D-3), click on the Custom Level button.

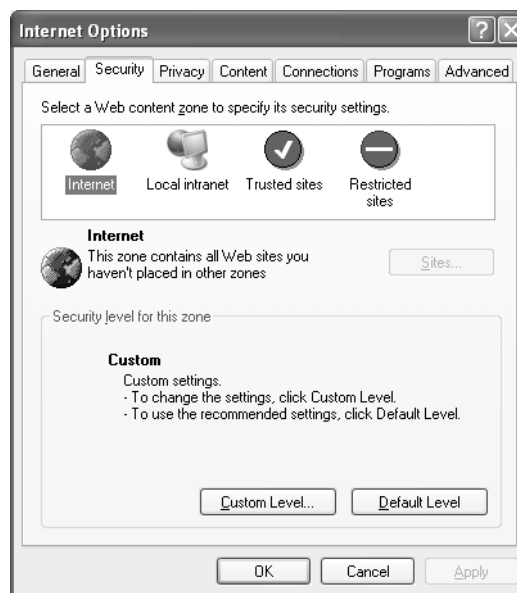


Figure D-3. Security Tab with "Custom Level" Button

5. Ensure that the following security browser settings are configured:
  - Download signed ActiveX controls: Prompt
  - Run ActiveX controls and plug-ins: Enable
  - Script ActiveX controls marked safe for scripting: Enable
  - Active scripting: Enable
6. When all settings are verified, click on the *OK* button on the Security Settings screen, then click on *OK* on the Internet Options screen.

## Installing SmartView on Your Computer

1. Enter <http://www.smartpac2.com> in the Internet Explorer address window, and click on the Go button to launch SmartView. If you are installing SmartView for the first time, the SmartView introductory page (see Figure D-4) will display. Otherwise, you will be taken directly to the SmartView Setup Page (see Figure D-5).

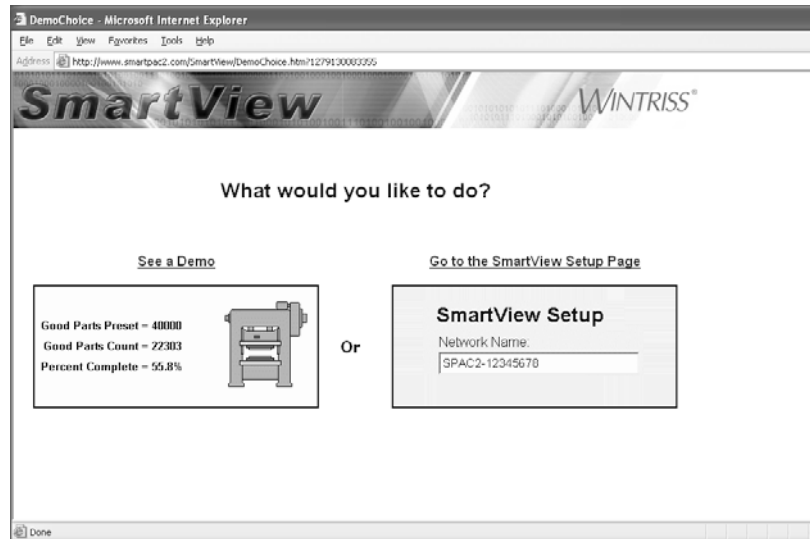


Figure D-4. SmartView Introductory Page

2. Click on the *Go to the SmartView Setup Page* on the SmartView introductory page, if necessary, to access the SmartView Setup Page (see Figure D-5).



Figure D-5. SmartView Setup Page

3. Click in the Network Name window, and type "Demo1" as shown in Figure D-5.

4. Click in the Press Name window, and type “Demo Press 1” as shown in Figure D-5.
5. Click on the *Add* button. Your entries are displayed in the large window beneath the Network Name and Press Name windows.

**NOTICE**

You can also type network and press names directly into the large window.

**NOTICE**

Additional Demo Press simulations are available. To add these simulations, repeat steps 3 through 5, but instead of using “Demo1,” type “Demo2,” etc. in the Network Name field. You can enter names with up to two digits (e.g., Demo Press 35) in the Press Name window. These Demos are for testing and demonstration purposes.

6. Click in the User Name window, and type your name.
7. Click on the *Submit Changes* button.
8. When the window shown in Figure D-6 displays, asking if you want to download the Mabry WinSock ActiveX control, click on the *Install* button.



Figure D-6. Mabry Winsock ActiveX Control Window

**NOTICE**

The Mabry WinSock ActiveX control enables you to run SmartView on your browser. This software must be installed on your computer in order for SmartView to function properly. You may be prompted to install the software prior to this step. If you are not prompted to install this control, check to make sure your browser security settings are correct (see step 5, page D-7), or contact your IT department for more information.

9. The SmartView Main Page (see Figure D-7, page D-10) should now appear. Click on the *Add to Favorites* button to save this web site for future use.



Figure D-7. SmartView Main Page

## SmartView Operation

### Setup Page

Follow these steps to fill in the information on the SmartView Setup Page (see Figure D-5, page D-8):

1. On the SmartView Main Page, click on Setup to display the SmartView Setup Page.
2. Enter in the Network Name window "SPAC2-nnnnnnnn," where *nnnnnnnn* is the SmartPAC 2 8-digit serial number, if you have assigned your SmartPAC 2 a DHCP address

or

Enter in the Network Name window the SmartPAC 2 IP address if you have assigned your SmartPAC 2 a fixed or static IP address.

3. Enter in Press Name window a name for your press, using up to 25 characters (e.g., Press 8, Press 9, etc.).
4. Click on the *Add* button. Your entries are displayed in the large window beneath the Network Name and Press Name windows.

#### NOTICE

You can also type network and press names directly into the large window.

5. Enter a user name if you have not already done so.
6. Click on the *Submit Changes* button. SmartView will check for networked units and indicate if a connection is made.
7. To add more networked SmartPAC 2s, click on Setup on the Main Page to go back to the Setup Page, and repeat steps 2 through 6. You do not have to enter your user name each time. It is a good idea to record your settings on paper.

8. To make changes, select the line you want in the large window, edit the selection, and click on the *Submit Changes* button.
9. To delete an item, select that line in the large window, press the Delete key, and click on the *Submit Changes* button.

**NOTICE**

You can prevent a press from displaying on the Main Page without deleting its entry on the Setup Page by placing a single quotation mark in front of the entry (e.g., 'SPAC2-12345678, Press 7.)

10. If you get a “No Connection” message after clicking on *Submit Changes*, check to make sure that you have entered the correct SmartPAC2 serial number or IP address.

**NOTICE**

If the “No Connection” message persists, you may need to Ping your SmartPAC 2. See page D-15 for instructions.

## Main Page

The SmartView Main Page, shown in Figure D-8, page D-12, lets you view a summary of information about the presses you have networked.

The Main Page displays the following press information:

- Press running speed (SPM) (if press is running)
- Press angle (if press is stopped or in a fault condition)
- Estimated hours to completion of job
- Number of parts required
- Number of parts made
- Percent of job complete

The color of the press graphic at the right of each press summary indicates the press's current state:

- Green – Press is running
- Red – Press is stopped
- Grey – Press is offline (i.e., power is off or there is no network connection)

When a press is offline, the message “Off Line” displays next to the press graphic.

The *Refresh* button at the top of the page allows you to update the Main Page display with the latest press status information (e.g., current parts count).

The Detail link at the top of each press summary takes you to the Press Status Information Page (see next section), on which you can view detail press information.





Figure D-8. SmartView Main Page with Status of Multiple Presses Shown

## Press Status Information Page

The Press Status Information Page (see Figure D-9, page D-13), which displays when you click on the Detail link in a summary panel on the Main Page, provides an expanded view of your press.

It displays the following detail information about the selected press:

- Faults (if press is in a fault condition)
- Sensor status
- Current tool number and name
- Job number
- Press capacity
- Number of parts required
- Number of parts made
- Percent of job complete
- Current job running time
- Estimated hours to job completion
- Current press tonnage
- Tonnage as a percent of press capacity

The Update button at the top of the page allows you to view the most current detail information. You can view the Error/Event Log or Installed Options screen by clicking on the Error Log or Installed Options link at the top of the page.

To return to the Main Page, click on the Main link. To go to the Wintriss.com web site, click on the Wintriss.com link.

The Remote Message window at the bottom of the page allows you to send a text message from your computer to SmartPAC2 (see next section).

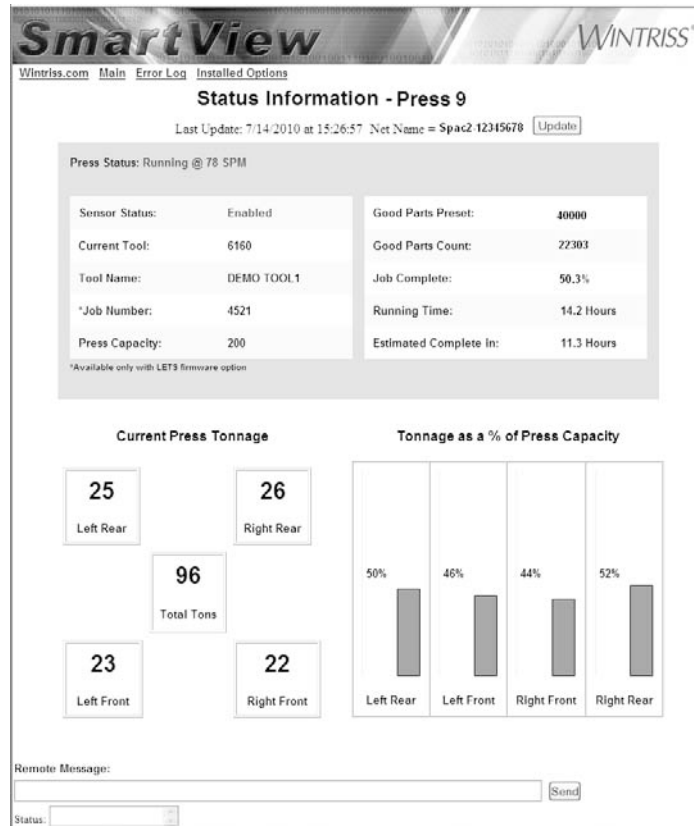


Figure D-9. Press Status Information Page

## Remote Messaging

You can send a remote message from your computer to other press operators by typing the message (95 characters maximum, including spaces) in the Remote Message window on the Press Status Information Page, and clicking on the *Send* Button. A Status box displays on your computer to let you know if the transmission was successful. Your message will display as a post-it note on the SmartPAC 2 to which you have directed it (see Figure D-10, page D-14).

Once the message is read, it can be cleared by going to the Error/Event Log (click on the [Error Log](#) link) and pressing the **F4** key. The Error/Event log maintains the status of all messages (i.e., Sent or Cleared) by date and time.

### NOTICE

SmartPAC 2 only displays the most recent message. When another message is sent, SmartPAC 2 automatically clears the previous message and displays the new one.

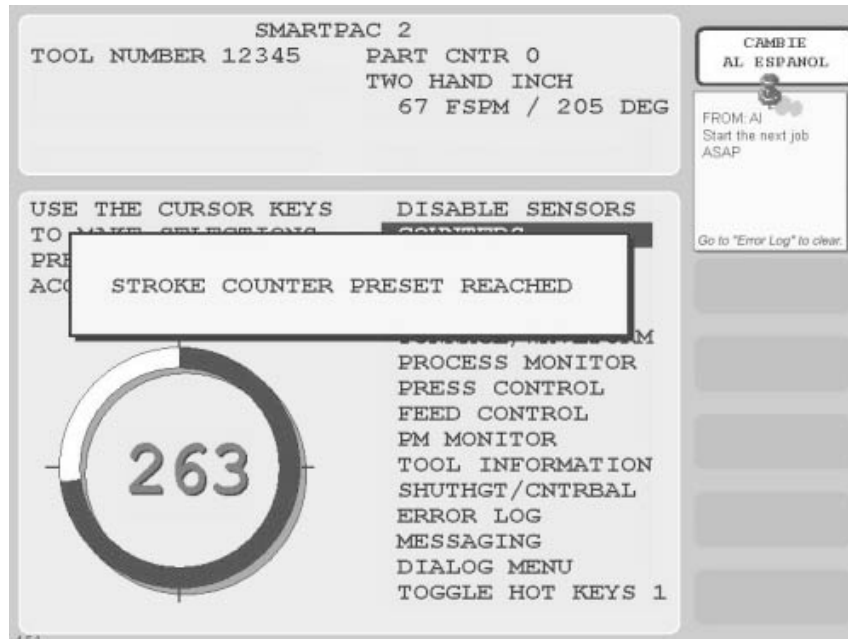


Figure D-10. SmartPAC 2 Remote Message

## E-mail Setup

You can enter new or edit existing recipient email addresses and messages on the E-mail Setup Page (see Figure D-11, page D-15), which you access from the SmartView Setup Page by clicking on the [Email Setup](#) link.

To add, change, or delete email information, do the following:

1. Click on the Down Arrow (▼) in the Select a Press window, then select the press for which you want to enter or edit email information.

Existing names/email addresses and messages for that press display in the two large windows on the screen. A status box displays to inform you that the data has been received and is ready to change.

2. To add an email name/address entry, click in the Name window, and type the person's name, then click in the Email Address window, and type his or her E-mail address. Click on the *Add* button. Your entries are displayed in the large window beneath the Name and E-mail Address windows.

### NOTICE

You can also type the name and email address entries, separated by a comma, on a line in the large window.

3. To add an email message entry, click in the Messages window, type the text of the message, and click on the *Add* button. Your entry is displayed in the large window beneath the Messages window.



Figure D-11. Email Setup Page

## NOTICE

You can also type the email message entry on a line in the large window.

4. Click on the **Save** button to save your entries.
5. To change an email name, email address, or email message entry, select the appropriate line in one of the large windows, edit the selection, and click on the **Save** button.
6. To delete an entry, select the appropriate line in a large window, press the Delete key or backspace over the item, and click on the **Save** button.

Your clipboard functions are a convenient way to speed up entry. For example, to copy the same email list to multiple email-enabled SmartPAC2s, just left-click and drag your mouse over the entire email recipient list on one SmartPAC2, and paste (Control-V) it into the Email Setup Page on another SmartPAC2.

## SmartView Ping Utility

The Ping utility is an administrator's tool that is used to check whether a SmartPAC 2 is connected to the network and communicating properly. This utility is a good resource if you get a "No Connection" message after clicking on the *Submit Changes* button on the SmartView Setup Page (see *Setup Page*, step 10, page D-11).

To access the Ping Utility, click on the [Ping Utility](#) link on the Setup Page. The first time you access the Ping utility, you will be prompted to download the Mabry Internet Ping ActiveX Control and COM Object, as shown in Figure D-12. Click on the *Install* button in the Security Warning window to begin the download.

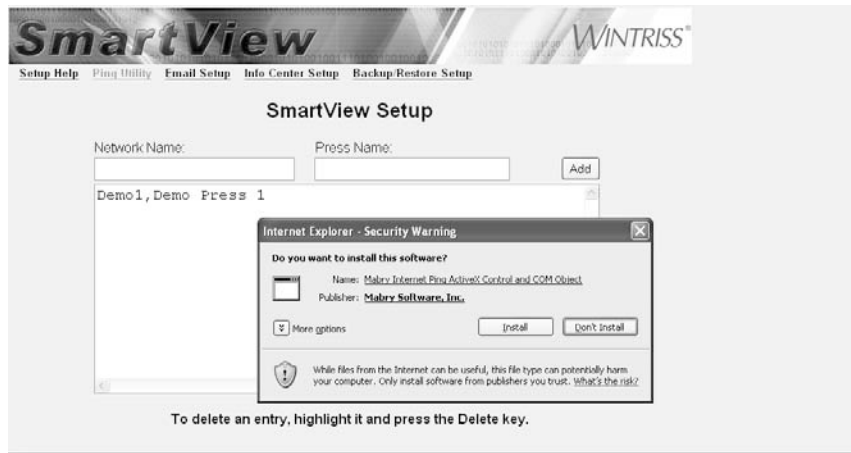


Figure D-12. Mabry Internet Ping Window

To Ping your SmartPAC2 from SmartView, follow these steps:

1. Make sure your SmartPAC 2 is turned on and the network cable is plugged into the Ethernet connector (J122).
2. On the SmartView Setup Page, click on the [Ping Utility](#) link. The Ping Utility window, shown in Figure D-13, displays.

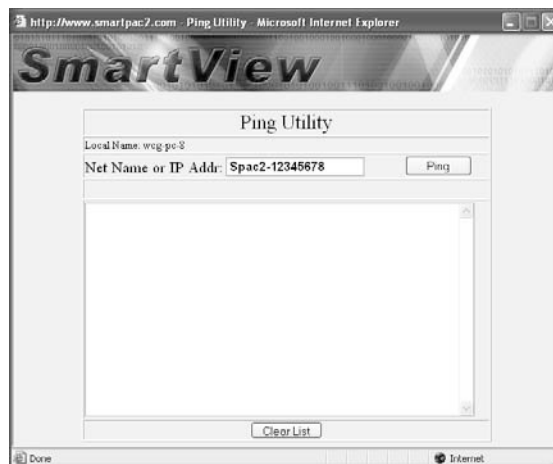


Figure D-13. Ping Utility Window

3. Click on the Net Name or IP Addr(ess) window, and enter the SmartPAC 2 serial number (i.e., SPAC2-xxxxxxxx, where xxxxxxxx is the serial number) if configured for DHCP or the IP address if configured for a Static IP address.

- Click on the *Ping* button. A message indicating the success of the Ping is displayed in the large window below Net Name or IP Addr(ess) as shown in Figure D-14 and Figure D-15. Figure D-14 provides an example of a message indicating a successful Ping. Figure D-15 shows messages indicating two unsuccessful Ping attempts.

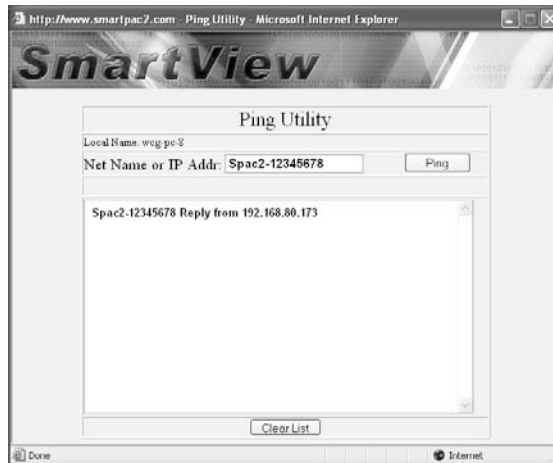


Figure D-14. Ping Utility Window with Example of a Successful Ping

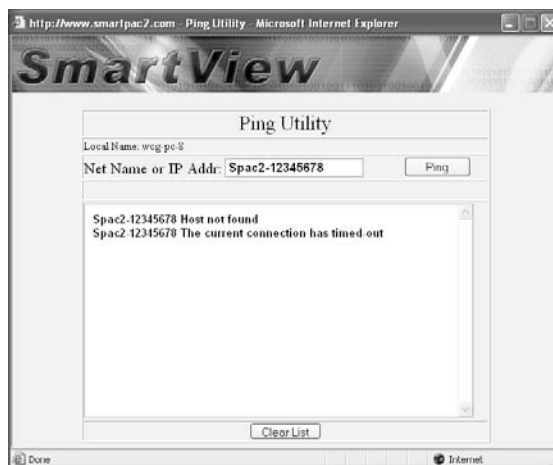


Figure D-15. Ping Utility Window with Examples of Two Unsuccessful Pings

The “Host not found” message shown in Figure D-15 is typical of what you might see if the name or IP address entered on the target device is not present on the network. The message “The current connection has timed out” is typical of what you might find if the SmartPAC 2 is turned off or the physical network connection is faulty (e.g., the RJ45 connector is not plugged in or seated correctly or the Cat 5 cable between the SmartPAC 2 and the Hub is cut or defective).

You can determine the source of the problem more precisely by pinging the PC closest to the SmartPAC 2 on your LAN. If the Ping is successful, the problem is with the SmartPAC 2 rather than with the network.

If you continue to get results like those shown in Figure D-15, you may want to contact your IT department.

5. To clear the message(s) from the Ping Utility Window, click on the *Clear List* button.

# Appendix E. Upgrading from Original SmartPAC to SmartPAC 2

---

## NOTICE

### ADDING PM MONITOR

If you had an AutoSetPAC module on your original SmartPAC, and the new SmartPAC 2 includes Preventive Maintenance Monitor, you may need to upgrade your AutoSetPAC firmware. See notice on page B-1.

## NOTICE

### USING ALPHANUMERIC TOOL NUMBERS IN SMARTPAC 2

If you convert from an original SmartPAC, the tool number mode in your SmartPAC 2 will default to the Numeric mode. If you want to be able to use Alphanumeric mode in SmartPAC 2, you must first do the following in SmartPAC 1:

1. Check to see that each tool has a valid, unique name. This name will become the tool number if you switch to Alphanumeric mode.
2. If tools do not have names, enter Program mode and assign a unique name to each tool.
3. If two or more tools have been given the same name, reassign names so they are unique.

This appendix provides instructions in how to install a SmartPAC 2 in place of an original SmartPAC. It shows you how to

- Back up tools on the original SmartPAC (next section)
- Mount the new SmartPAC 2 (page E-3)
- Swap wiring from the original SmartPAC to the SmartPAC 2 (page E-4)
- Restore tool settings to the SmartPAC 2 (page E-12)
- Enter initialization settings into SmartPAC 2 and perform system checkout (page E-14)

## Backing Up Tools on Original SmartPAC

This section shows you how to back up tools on an original SmartPAC, using SBR (SmartPAC Backup and Restore), which you can order from Wintriss.

SBR enables you to transfer backed-up tool settings from your original SmartPAC to your new SmartPAC 2, using the hard drive of a connected computer or over a network. (For instructions in how to restore settings, see *Restoring Tools to SmartPAC 2*, page E-12.)

SmartPAC Initialization settings cannot be restored to SmartPAC 2. Initialization settings should be copied to a paper form (see the SmartPAC Initialization Setup Sheet at the back of the manual), then, after tool settings have been restored, entered manually one-by-one into SmartPAC 2, referring to the settings on the form.



If you have programmed tool #99999999 in SmartPAC 1, be sure to make a copy of that tool with a new tool number, then delete tool #99999999 before initiating a backup. In SmartPAC 2, tool #99999999 is reserved for Tool Template, a new SmartPAC feature (see page 5-5).

If your tool database is small and programming isn't complicated, you may opt not to use a backup utility. It may be simpler to record SmartPAC 1 tool settings on a setup sheet, then enter the recorded settings into the SmartPAC 2.

## Backing Up Tools to a Laptop

To use the SBR program to back up tools on your SmartPAC 1 to a connected laptop, refer to the "Using SBR to Upgrade from SmartPAC 1 to SmartPAC 2" section of the *SmartPAC Backup and Restore Instruction Sheet*, which is provided with the SBR software.

### NOTICE

When setting up SmartPACs in SBR, make sure to identify the control you are backing up as a "SmartPAC 1" and the control you are restoring to as a "SmartPAC 2." With these settings, SBR will back up all tools and Initialization settings from the SmartPAC 1, then, when it detects that a SmartPAC 2 is connected, restore only the tool settings, ignoring the Initialization parameters.

## Backing Up Tools to a Network Server

To back up tools on your SmartPAC 1 to a network server, perform the following steps:

1. With the Main Program Menu displayed on the SmartPAC 1 front panel, press the **1** and **CLEAR** keys at the same time and hold them down for a few seconds until the Main Initialization Menu displays.
2. Select the BACKUP/RESTORE menu item to display the Backup/Restore Control Menu (see Figure E-1).

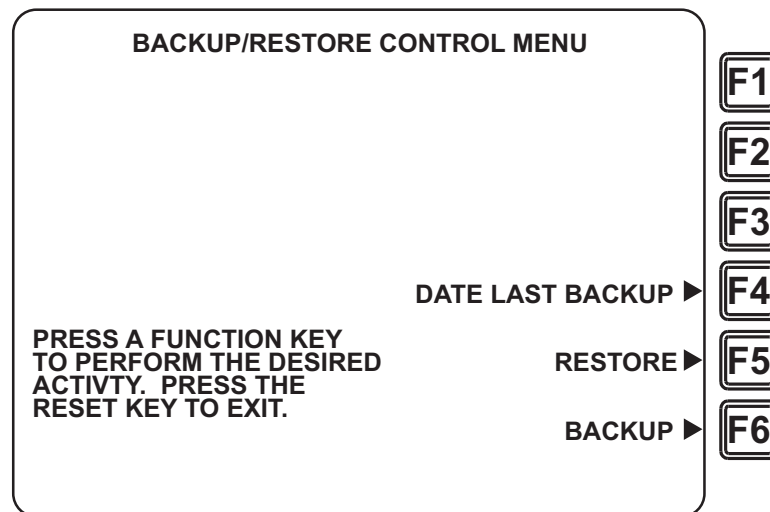


Figure E-1. Backup/Restore Control Menu

3. Press the **F6** (Backup) function key to begin the backup process. While the backup is proceeding, the **Status** field on the SBR screen displays the message

*Backing up...*

When the backup is complete, the message in the **Status** field changes to

*Connected*

and the time at which the backup was completed displays in the **Time of Last Backup** field.

## Removing SmartPAC 1 and Mounting SmartPAC 2

1. Make sure that SmartPAC 1 is powered down.
2. Label all wires connected to the SmartPAC 1 board, noting their pin locations, to facilitate reconnecting them to SmartPAC 2. Also, make note of any ancillary wiring such as warning beacons, relays, etc.

### NOTICE

One convenient way to easily remember pinouts and wire colors is to snip wires about 1/2 in. from their connectors, leaving a colored wire stub in each pin location. You should make sure you have enough wire before doing this.

### 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.**

3. Make a sketch showing how your wires and seal-tight cables enter your SmartPAC 1 enclosure.
4. Remove all wires and seal-tight from your SmartPAC 1.
5. Remove the DiProPAC and ProCamPAC boards from the SmartPAC 1 board if they are installed and are to be reused.
6. Remove the SmartPAC 1 from your press and place it in a safe location.
7. Determine how you will mount your new SmartPAC 2.

### NOTICE

The SmartPAC 2 enclosure is 1 in. taller than SmartPAC 1. For a panel mount, the SmartPAC 2 cutout is the same size as for SmartPAC 1, but there must be at least a 1 in. clearance from the bottom of the panel to the nearest switch plate. See Table 1-1. SmartPAC 2 Hydraulic Specifications, page 1-7.

**NOTICE**

If the SmartPAC 1 you are replacing is integrated with a WPC II and you are using a remote stroke select switch, you need a special 10-ft. wiring harness (P/N 4322701) to connect the Stroke Select switch on the WPC to your SmartPAC 2.

**8. Mount your new SmartPAC 2.**

If you are installing a SmartPAC 2 enclosure, the two upper or two lower shock mounts will have to be moved to accommodate the 1 in. increase in size. It may be a good idea to replace all four shock mounts if they look worn. Some customization may be required if a mounting bracket or pendant is used. In most cases, modifications are simple.

**NOTICE**

Be careful when mounting the SmartPAC 2 enclosure that the front door does not become dislodged from its hinges.

## Wiring the SmartPAC 2

**NOTICE**

If the SmartPAC 1 you are replacing is integrated with a WPC II and you are using a remote stroke select switch, you need a special 10-ft. wiring harness (P/N 4322701) to connect the Stroke Select switch on the WPC to your SmartPAC 2.

The wiring connections you need to make when you replace a SmartPAC with a SmartPAC 2 are shown in the tables starting on page E-6. These wiring tables cover the following SmartPAC components:

- Main power
- Zero cam
- Input check, emergency stop, and top stop
- Resolver port
- Position sensor (if used)
- DiProPAC
- ProCamPAC
- WPC port (integration only)
- Remote dual op. station select (optional remote switch)
- WPC adjustment lockout switch (optional)
- Remote reset (optional)
- AutoSetPAC/WaveFormPAC 2- or 4-channel (optional)
- SFI (optional)
- MultiPAC (special port - optional)

Follow the instructions below to transfer the wiring from your old SmartPAC to SmartPAC 2.

1. Referring to the sketch you made in step 3 of the *Removing SmartPAC 1 and Mounting SmartPAC 2* procedure (page E-3), feed all wires into SmartPAC 2 knockout holes and secure all seal-tight connectors. See *AC Wiring on SmartPAC 2*, page E-12 for details on wiring the AC input and ground connections.
2. Check to make sure that the positions of jumpers JP101 (Master or Slave) and JP102 (high or low speed) and input check switch (S101) are the same as they were in SmartPAC 1. Refer to Figure 2-7, page 2-12 for jumper and switch locations.

**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.**

3. Paying careful attention to orientation, reinstall and rewire the DiProPAC (connector J112 in Figure 2-7) and ProCamPAC (connector J111) boards you removed in step 5 of the *Removing SmartPAC 1 and Mounting SmartPAC 2* procedure (page E-3). Skip this step if you purchased SmartPAC 2 with ProCamPAC and DiProPAC already installed.
4. Referring to the appropriate wiring table (Table E-1 through Table E-16) and to the wiring diagram in Figure 1 at the back of the manual, terminate all wires at their appropriate pin locations. Re-cut and strip wires where necessary.
5. Make the appropriate wiring connections between DiProPAC and ProCamPAC boards, if installed (see step 3), and DSI 2 and the Cam Output assembly. See Figures 1 (or 6), 2 (or 7), 4 and 5 at the back of the manual.
6. If you plan to network your SmartPAC 2, run Cat 5 cable with an RJ-45 connector into the enclosure.

**NOTICE**

The Cat 5 cable can share seal-tight conduit with a low-voltage line or it can be run separately. Do not run the Cat 5 cable with high-voltage wiring.

**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.**

7. Check your work, making sure that all wiring is correct, terminal screws are tight and making an electrical connection, and all connectors and socketed ICs are seated.
8. Connect AC input wires and ground wire to SmartPAC 2 as shown in *AC Wiring on SmartPAC 2*, page E-12.

9. When you are confident that all wiring is correct, apply power and wait about a minute for SmartPAC 2 to boot up. Then Turn the Prog/Run key to PROG.

### NOTICE

After SmartPAC 2 has booted up, you may see a message about the resolver position being different. Press RESET to clear the message.

*Table E-1. SmartPAC 1 to SmartPAC 2 Wiring Changes: Main Power*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
L1	TB101	201	→	AC Input L1 - High	201	
L2	TB101	202	→	AC Input L2 - Neutral	202	
GND	TB101	203	→	GND	Setscrew terminal or ground stud	

*Table E-2. SmartPAC 1 to SmartPAC 2 Wiring Changes: Zero Cam*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
ZERO CAM	TB101	211	→	TB107	248	

*Table E-3. SmartPAC 1 to SmartPAC 2 Wiring Changes: Input Check, E-Stop, and Top Stop*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
A (Input Chk.)	TB101	205	→	TB102	205	
B (Input Chk.)	TB101	206	→	TB102	206	
E-STOP	TB101	207	→	TB102	207	
E-STOP	TB101	208	→	TB102	208	
T-STOP	TB101	209	→	TB102	209	
T-STOP	TB101	210	→	TB102	210	

Table E-4. SmartPAC 1 to SmartPAC 2 Wiring Changes: Resolver Port

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
SHIELD	TB106	212	→	TB101	212	
S1	TB106	213	→	TB101	213	
S2	TB106	214	→	TB101	214	
R1	TB106	215	→	TB101	215	
S3	TB106	216	→	TB101	216	
R2	TB106	217	→	TB101	217	
S4	TB106	218	→	TB101	218	

Table E-5. SmartPAC 1 to SmartPAC 2 Wiring Changes: Position Sensor (If Used)

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
+V	TB107	245	→	TB107	245	
POS	TB107	246	→	TB107	246	
GND	TB107	247	→	TB107	247	

Table E-6. SmartPAC 1 to SmartPAC 2 Wiring Changes: DiProPAC, 8-Channel

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
SENSOR 1	TB501	282	→	TB554	282	
SENSOR 2	TB501	283	→	TB554	283	
SENSOR 3	TB501	284	→	TB554	284	
SENSOR 4	TB501	285	→	TB554	285	
SENSOR 5	TB501	286	→	TB554	286	
SENSOR 6	TB501	287	→	TB554	287	
SENSOR 7	TB501	288	→	TB554	288	
SENSOR 8	TB501	289	→	TB554	289	
SEN. POWER	TB501	290	→	TB554	290	
GND	TB501	291	→	TB554	291	

Table E-7. SmartPAC 1 to SmartPAC 2 Wiring Changes: DiProPAC, 16-Channel

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (✓)
	Connector	Pin Number		Connector	Pin Number	
SENSOR 1	TB551	282	→	TB554	282	
SENSOR 2	TB551	283	→	TB554	283	
SENSOR 3	TB551	284	→	TB554	284	
SENSOR 4	TB551	285	→	TB554	285	
SENSOR 5	TB551	286	→	TB554	286	
SENSOR 6	TB551	287	→	TB554	287	
SENSOR 7	TB551	288	→	TB554	288	
SENSOR 8	TB551	289	→	TB554	289	
SENS. PWR.	TB551	290	→	TB554	290	
GND	TB551	291	→	TB554	291	
SENSOR 9	TB552	292	→	TB554	292	
SENSOR 10	TB552	293	→	TB554	293	
SENSOR 11	TB552	294	→	TB554	294	
SENSOR 12	TB552	295	→	TB554	295	
SENSOR 13	TB552	296	→	TB554	296	
SENSOR 14	TB552	297	→	TB554	297	
SENSOR 15	TB552	298	→	TB554	298	
SENSOR 16	TB552	299	→	TB554	299	
SENS. PWR.	TB552	300	→	TB554	300	
GND	TB552	301	→	TB554	301	

Table E-8. SmartPAC 1 to SmartPAC 2 Wiring Changes: ProCamPAC, 8-Channel

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (✓)
	Connector	Pin Number		Connector	Pin Number	
CHANNEL 1	TB401	260	→	TB401	260	
CHANNEL 2	TB401	261	→	TB401	261	
CHANNEL 3	TB401	262	→	TB401	262	
CHANNEL 4	TB401	263	→	TB401	263	
CHANNEL 5	TB401	264	→	TB401	264	
CHANNEL 6	TB401	265	→	TB401	265	
CHANNEL 7	TB401	266	→	TB401	266	
CHANNEL 8	TB401	267	→	TB401	267	
+ 5 VDC	TB401	268	→	TB401	268	
GND	TB401	269	→	TB401	269	
RELAY PWR.	TB401	270	→	TB401	270	

Table E-9. SmartPAC 1 to SmartPAC 2 Wiring Changes: ProCamPAC, 16-Channel

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
CHANNEL 1	TB451	260	→	TB451	260	
CHANNEL 2	TB451	261	→	TB451	261	
CHANNEL 3	TB451	262	→	TB451	262	
CHANNEL 4	TB451	263	→	TB451	263	
CHANNEL 5	TB451	264	→	TB451	264	
CHANNEL 6	TB451	265	→	TB451	265	
CHANNEL 7	TB451	266	→	TB451	266	
CHANNEL 8	TB451	267	→	TB451	267	
+ 5 VDC	TB451	268	→	TB451	268	
GND	TB451	269	→	TB451	269	
RELAY PWR.	TB451	270	→	TB451	270	
CHANNEL 9	TB452	271	→	TB452	271	
CHANNEL 10	TB452	272	→	TB452	272	
CHANNEL 11	TB452	273	→	TB452	273	
CHANNEL 12	TB452	274	→	TB452	274	
CHANNEL 13	TB452	275	→	TB452	275	
CHANNEL 14	TB452	276	→	TB452	276	
CHANNEL 15	TB452	277	→	TB452	277	
CHANNEL 16	TB452	278	→	TB452	278	
+ 5 VDC	TB452	279	→	TB452	279	
GND	TB452	280	→	TB452	280	
RELAY PWR.	TB452	281	→	TB452	281	

Table E-10. SmartPAC 1 to SmartPAC 2 Wiring Changes: WPC Port (Integration Only)

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
+RXD6	TB104	219	→	TB105	327	
-RXD6	TB104	220	→	TB105	328	
+TXD6	TB104	221	→	TB105	329	
-TXD6	TB104	222	→	TB105	330	
GND	TB104	223	→	TB105	326	



*Table E-11. SmartPAC 1 to SmartPAC 2 Wiring Changes: Remote Dual Op. Station Select  
(Optional Remote Switch)*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
OP STA 1	TB202	253	→	TB107	254	
OP STA 2	TB202	254	→	TB107	253	
GND	TB202	256	→	TB107	250	

*Table E-12. SmartPAC 1 to SmartPAC 2 Wiring Changes: WPC Adjustment Lockout Switch  
(Optional)*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
LOCKOUT	TB202	255	→	TB107	251	
GND	TB202	256	→	TB107	250	

*Table E-13. SmartPAC 1 to SmartPAC 2 Wiring Changes: Remote Reset (Optional)*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
REMOTE RES	TB203	257	→	TB107	249	
GND	TB203	258	→	TB107	250	

*Table E-14. SmartPAC 1 to SmartPAC 2 Wiring Changes: AutoSetPAC/WaveFormPAC,  
2 or 4 Channel (Integration Only)*

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
GND	TB102	240	→	TB103	240	
+RXD2	TB102	241	→	TB103	241	
-RXD2	TB102	242	→	TB103	242	
+TXD2	TB102	243	→	TB103	243	
-TXD2	TB102	244	→	TB103	244	

Table E-15. SmartPAC 1 to SmartPAC 2 Wiring Changes: SFI (Optional)

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
+RXD1	TB102	235	→	TB103	235	
-RXD1	TB102	236	→	TB103	236	
TXD1	TB102	237	→	TB103	237	
+TXD1	TB102	238	→	TB103	238	
-TXD1	TB102	239	→	TB103	239	
GND	TB102	240	→	TB103	240	

Table E-16. SmartPAC 1 to SmartPAC 2 Wiring Changes: MultiPAC (Special Port - Optional)

Signal Type	Original SmartPAC		→	SmartPAC 2		Done (√)
	Connector	Pin Number		Connector	Pin Number	
+RXD3	TB103	224	→	TB104	224	
-RXD3	TB103	225	→	TB104	225	
TXD3	TB103	226	→	TB104	226	
+TXD3	TB103	227	→	TB104	227	
-TXD3	TB103	228	→	TB104	228	
GND	TB103	229	→	TB104	229	

## AC Wiring on SmartPAC 2

Connect the AC input wires and ground wire as shown in Figure E-2.

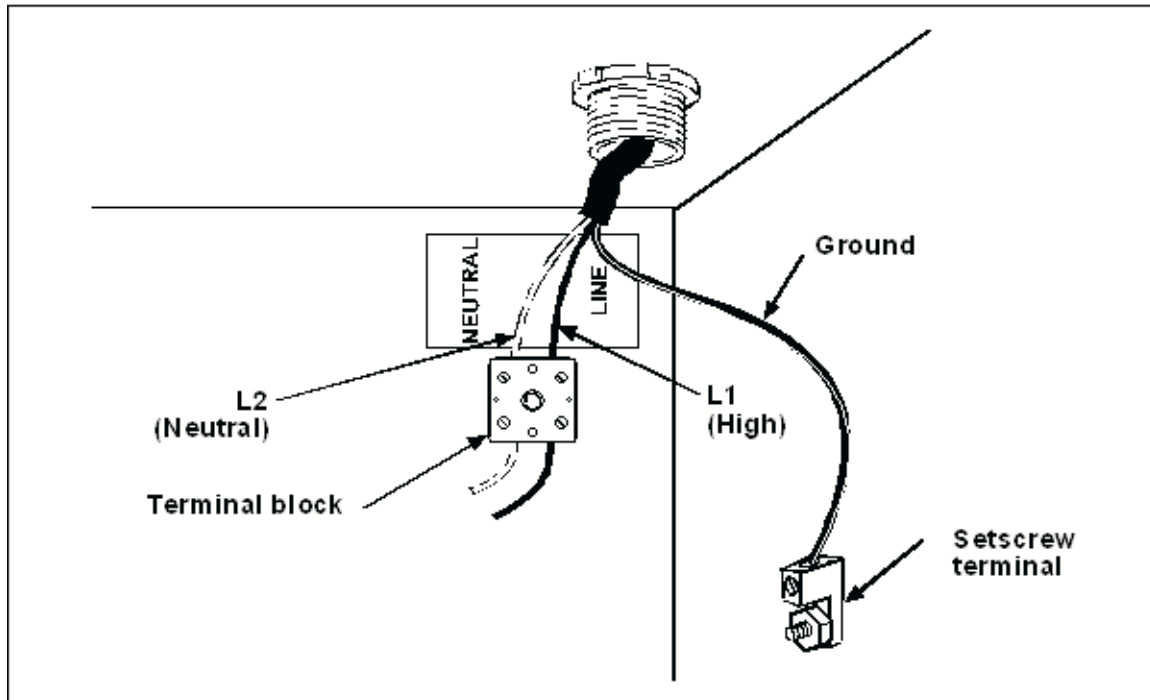


Figure E-2. SmartPAC 2 AC Wiring (Inside Enclosure, Top Right)

Make your ground connection as follows:

- For SmartPAC 2 enclosure: Connect your ground (green or green/yellow) wire to the set screw terminal on the inside of the enclosure, as shown in Figure E-2. Strip the ground wire about 1/4 in. (6.4 mm) from the end, loosen the screw on the terminal, slide the wire in the hole, and tighten the screw to secure the wire in place.
- For SmartPAC 2 panel mount: Connect the ground wire to the ground stud located on the face plate below the AC input terminal block.

## Restoring Tools to SmartPAC 2

You can use SBR to restore backed-up tools from a SmartPAC 1 to a SmartPAC 2 via a connected laptop, or, if the SmartPAC 2 is on a network, you can restore tool settings from a network server. However, you cannot restore SmartPAC 1 Initialization settings to SmartPAC 2. To transfer this information to SmartPAC 2, you should copy Initialization settings to a paper form before performing the back-up, then, after restoring the other setup information, enter the Initialization settings from the form manually into SmartPAC 2 (see *System Checkout*, page E-14).

## Restoring Tools from a Laptop

To use the SBR program to restore backed-up tools via a connected laptop, refer to the “Using SBR to Upgrade from SmartPAC 1 to SmartPAC 2” section of the *SmartPAC Backup and Restore Instruction Sheet*, which is provided with the SBR software.

### NOTICE

Make sure to identify the control you are restoring to as a “SmartPAC 2.” When SBR detects that a SmartPAC 2 is connected, it will restore only the backed-up tool settings, ignoring the Initialization parameters.

## Restoring Tools from a Network Server

To restore backed-up tools from a network server, perform the following steps:

1. On the Backup/Restore Control Menu in Initialization mode on the SmartPAC 2, press the **F5** (Restore) function key. The message shown in Figure E-3 displays.

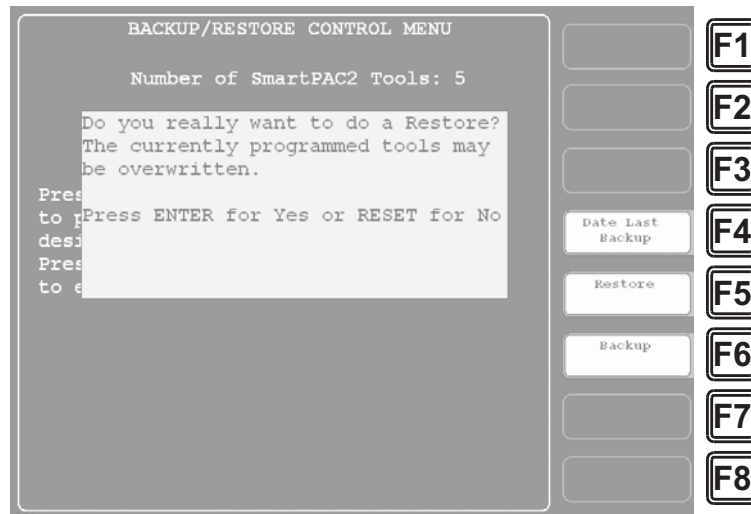


Figure E-3. Backup/Restore Control Menu with Restore Confirmation Message Displayed

2. Press ENTER to continue with the restore. When the restore has been completed, the following message displays on the Backup/Restore Control Menu:  
*Restore complete!*

## System Checkout

To enter SmartPAC 1 initialization settings into SmartPAC 2 and test SmartPAC 2 operation, do the following:

1. In SmartPAC 2, access the Main Initialization Menu.
2. Referring to the initialization information you recorded for the SmartPAC 1 control (see *Backing Up Tools on Original SmartPAC*, page E-1), enter these initialization settings into SmartPAC 2.
3. When you have finished entering initialization information, check to make sure that the following parameters are set correctly, making changes if necessary:
  - Position Sensor: Resolver Motion Mode should be set to Normal Motion unless you are using a link motion press
  - Position Sensor: Tool Number Mode should be set to Numeric Only
  - Setup Network: If SmartPAC 2 is going to be networked, see page D-1 for detailed instructions on how to enter network settings.
  - Diagnostics: Set Clock is set to Clock at the factory. Make sure that the date and time are correct. If they aren't, make corrections.
4. Access the Main Program Menu, and select GO TO THE TOOL MANAGER.
5. When the Tool Manager screen displays, make sure that all tools that were programmed in SmartPAC 1 are shown.

### NOTICE

Tool Manager is a new screen that allows you to edit, load, delete, create, and copy tools. See page 5-2 in this manual for instructions on how to program the Tool Manager.

### NOTICE

Before loading a tool and setting up a new job, it is a good idea to create a test tool with a tool number that is not currently being used. The test tool can be deleted when checkout is complete.

6. Load a test tool, following the instructions in *Creating a New Tool*, page 5-3.
7. Turn the Program/Run key to RUN.
8. Go through the menu choices to make sure your new SmartPAC 2 is functioning properly. Consult your manual for information on how to use new features that you are not familiar with. You should also run the press without the tool in place. Make sure that all ancillary equipment such as conveyors, feeds and cams are functioning properly.
9. Once you are satisfied that your SmartPAC 2 is operating identically to your SmartPAC 1, you can load the tool for the next job, set up the die, and run the press.

# Appendix F. Replacing SmartPAC 2 PC Board

---

The following procedures show you how to unpack and install a replacement SmartPAC 2 PC board that you have received through the Wintriss Board Exchange (EX) program.

## NOTICE

Under the board exchange program, a replacement board can usually be shipped to you overnight if you contact Wintriss Tech. Support the previous business day. Full details about the program are available by calling Wintriss Tech. Support.

## Unpacking the Replacement Board

Perform the following steps as soon as you receive your replacement SmartPAC 2 PC board:

## 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.**

1. Making sure you are grounded, carefully unpack the replacement PC board and remove it from its anti-static bag.

## NOTICE

Be sure to save the shipping box in case you need to return the replacement board.

2. Verify that the board has not been damaged during shipment. If damage has occurred, contact Wintriss Tech. Support immediately.
3. If your replacement board was shipped with a Boot Loader chip (component U124 in Figure F-1, page F-3), verify that the serial number located on its label matches the serial number on the Boot Loader chip on the board being replaced.

## NOTICE

The label on the top-mounting flange of the SmartPAC 2 enclosure also shows the serial number.

4. Put the PC board back in its anti-static bag until you are ready to install it.

## Installing the Replacement Board

To remove the old SmartPAC 2 PC board and install the new replacement board, perform the following steps:

### **WARNING**

#### **ELECTRIC SHOCK HAZARD**

- Ensure that the power source is off before you replace electronic components in a control.
- Disconnect power from the machinery it is connected to before replacing electronic components. This includes disconnecting power to the machine control and motor.
- Ensure that servicing is performed by qualified personnel.

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

1. Shut off power to the SmartPAC 2.
2. Open the SmartPAC 2 enclosure or console.

### **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.**

3. Making sure you are grounded, unplug all wired connectors from the SmartPAC 2 PC board (see Figure F-1, page F-3), including connectors on the ProCamPAC and DiProPAC boards (if installed).

### **NOTICE**

Connectors are labeled “TBnnn” or “Jnnn” in Figure F-1, where *nnn* is a three-digit numeric identifier.

To remove the small display connector J115, grasp the connector firmly between your index finger and thumb and wiggle it gently back and forth in an upward direction. Do not pull on the wires attached to the connector.

4. Remove the DiProPAC and ProCamPAC PC boards, if installed, and set them aside in a safe location.

### **NOTICE**

Do not remove the SOM (Industrial Computer) circuit board (see Figure F-1).

5. With a 1/4-in. nut driver, remove all six 1/4-in. nuts and six of the eight 1/4-in. standoffs (see Figure F-1). **Do not** remove the upper right standoff for the ProCamPAC PC board or the lower left standoff for the DiProPAC PC board.

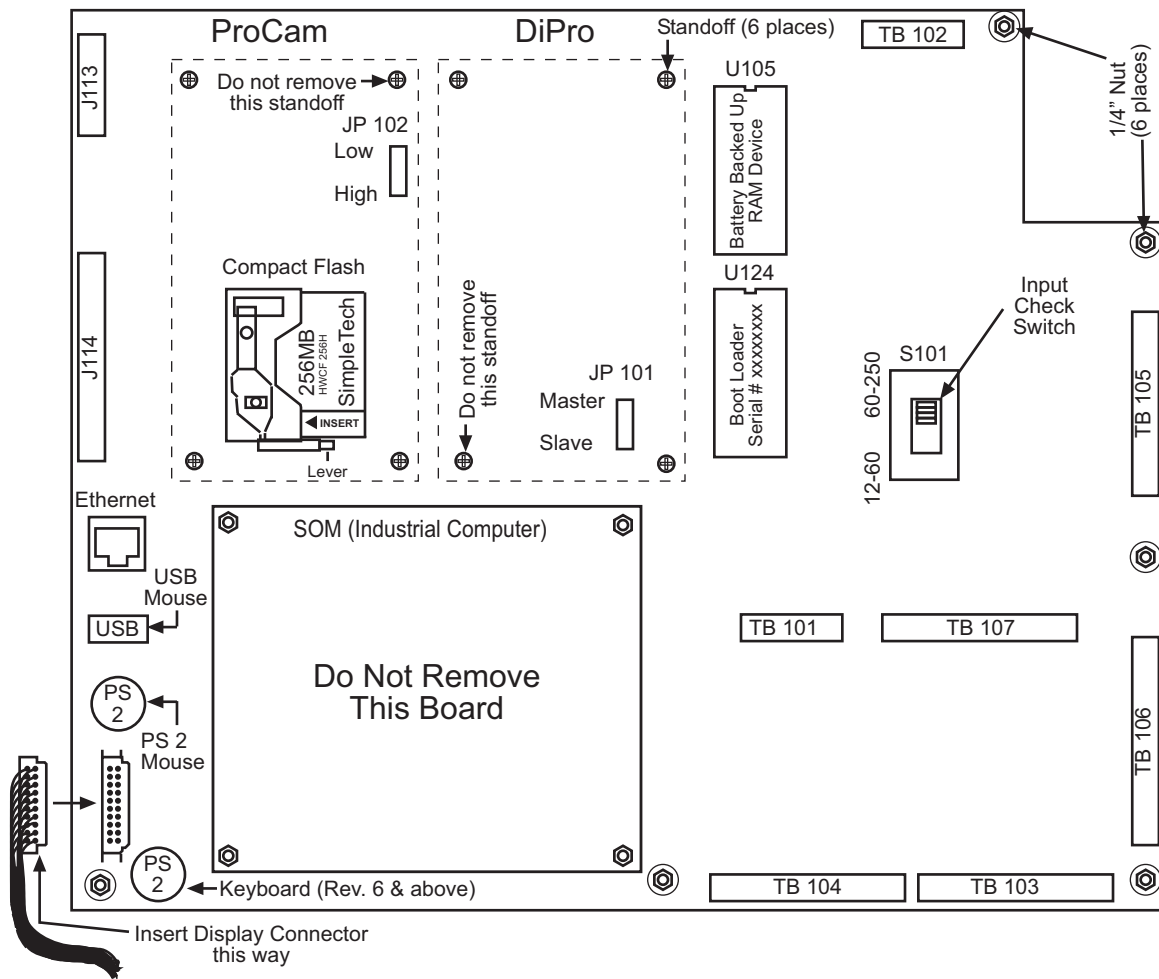


Figure F-1. SmartPAC 2 PC Board

6. Using both hands, carefully lift the PC board out of the enclosure, or from the mounting plate if your unit is a panel mount.
7. Tag or label the board in a conspicuous place to identify it.
8. Place the old board you have just removed and the new replacement board side by side on a clean, flat, dry surface.
9. Carefully eject and remove the compact flash card from the old board and insert it into the replacement board in the same location (see Figure F-1).

### NOTICE

To eject the compact flash card, push the lever on the bottom of the compact flash receptacle all the way to the left.

To reinstall the compact flash card, insert the card into the flash receptacle with the INSERT arrow on the label pointing toward the receptacle, and carefully push the card into the receptacle until you hear it click into place.



10. Remove the Battery Backed Up Ram chip (U105 in Figure F-1) from the original board and install it in the replacement board. This chip holds all your tool data.

**NOTICE**

To remove the Battery Backed Up Ram chip:

1. Place a small, flat-blade screwdriver between the Boot Loader Chip (U124 in Figure F-1) and the bottom of the Battery Backed Up Ram chip. *Make sure the screwdriver is in contact with the chip itself and not with the chip socket.*
2. Using the Boot Loader Chip as a fulcrum, gently pry up the Battery Backed Up Ram chip with the screwdriver until the chip begins to move. Then, grasping the chip firmly at both ends, pull it upward until it comes free. Be careful not to bend the legs of the chip.

**NOTICE**

Before replacing the Battery Backed Up Ram chip:

1. Make sure to inspect the legs of the chip. If any are bent, carefully straighten them, using small needle nose pliers.
2. Line up the chip with the socket, making sure the notch or identification dot on the top of the chip is aligned with the notch or identification dot on the socket. Then push the chip in evenly until it is fully seated.

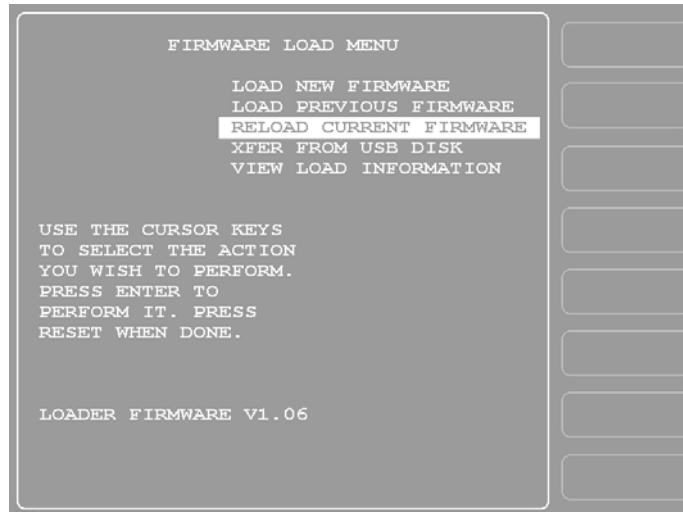
11. If your replacement board was shipped without a Boot Loader chip (U124 in Figure F-1), you must remove the Boot Loader chip from your old board and insert it into the replacement board.

**NOTICE**

Use a flat blade screwdriver or an IC puller to remove the Boot Loader chip. Make sure that the notch on the chip lines up with the notch on the socket.

12. Make sure that the Input Check switch (S101 in Figure F-1) and the Master/Slave and High/Low speed jumpers (J101 and J102 in Figure F-1) are in the same position on the replacement board as they are on the old board.
13. Install the replacement board in the enclosure, or on the mounting plate if your unit is a panel mount, reusing the nuts and standoffs you removed in step 5 and tightening them down with the 1/4-in. nut driver. Refer to Figure F-1 for correct placement of nuts and standoffs.
14. Reinstall the ProCamPAC and DiProPAC PC boards, if necessary, in their proper locations on the SmartPAC 2 board.
15. Plug all the connectors you removed in step 3 back into the SmartPAC 2 board, including connectors on the ProCamPAC and DiProPAC boards (if installed). Make sure to insert the display connector (J115 in Figure F-1) into the SmartPAC 2 board with the correct orientation.
16. Double-check to make that sure all connectors are plugged into the correct slots.

17. Close the door of the SmartPAC 2 enclosure or console.
18. On the SmartPAC 2 display, press and hold down the **F1** function key while powering up the SmartPAC 2, releasing **F1** when the red Wintriss SmartPAC 2 screen displays. After about a minute the FIRMWARE LOAD MENU (see Figure F-2) will appear.



*Figure F-2. Firmware Load Menu with “RELOAD CURRENT FIRMWARE” Highlighted*

19. Select “RELOAD CURRENT FIRMWARE” (if this menu choice does not appear, call Wintriss Tech. Support), and press ENTER.
20. Follow the on-screen instructions for loading new firmware. This process will take approximately 4 to 5 minutes.
21. When the reload process has been completed, you are ready to resume normal operation.

### NOTICE

Before setting up and running a job, it is a good idea to test a few SmartPAC 2 modes and menus to make sure the unit is operating normally. If you have swapped the Battery Backed Up Ram chip in step 10, go into the Tool Manager (enter from the Main Program Menu) and verify that all your tools have been restored. If you experience any problems, call Wintriss Tech. Support.

22. Place the malfunctioning board in the anti-static bag in which you received the replacement board.

Place the anti-static bag with the old board in the box in which you received the replacement board, and ship it back to Wintriss, using the shipping label with the Return Authorization (RA) number. Contact Wintriss Tech. Support if you have additional questions.



# Appendix G. Reporting Downtime and Scrap to SFC

---

This appendix shows you how to report press downtime from your SmartPAC 2 control to Wintriss's ShopFloorConnect Asset Utilization Software (SFC). The appendix discusses the six machine states to which SFC logs press time, explains the downtime reporting features of SmartPAC 2, shows you how to set up SmartPAC 2 to report downtime to SFC, and provides instructions for reporting downtime.

The appendix also shows you how to use the scrap counter on the SmartPAC 2 Counters screen in Run mode to report scrap to SFC and how to adjust the Good Parts count that is reported to SFC.

SmartPAC's downtime- and scrap-reporting features are available only on SmartPAC 2 versions 4.59 or higher; in addition, the SFC firmware option must be installed.

## Machine States to Which SFC Logs Press Time

SFC logs all elapsed time at each press to one of six categories called machine states. The sum of all the times assigned to these machine states for an individual press is the number of hours in a production day (e.g., 12 hours, 24 hours, etc.). SFC selects the machine state to which to log press time on the basis of downtime reporting and other information it receives from SmartPAC 2. Machine states are differentiated as follows:

- **Running Time**—Press is running and making parts
- **Idle Time**—Press is stopped, no SmartPAC error has occurred, and the reason the press is stopped has not been documented in SmartPAC 2
- **Unplanned Downtime**—Press is stopped due to a SmartPAC 2 error, or if the press is stopped for another reason, that reason has been assigned to the Unplanned Downtime state in SFC
- **Planned Downtime**—Press is stopped, and the reason has been assigned to the Planned Downtime state in SFC
- **Changeover Time**—Press is stopped, and the reason has been assigned to the Changeover state in SFC
- **Offline Time**—Press is stopped because there is no power to the press or the network is down

All time during which the press is stopped for any reason other than a power interruption or network failure is logged by SFC to Idle Time unless a downtime reason is reported from the SmartPAC 2. Idle Time is treated in ShopFloorConnect as downtime with no documented reason. Since corrective action cannot be taken until a cause is identified, SmartPAC 2 has been designed to allow very precise reporting of downtime to SFC and may be programmed to require the operator to select a specific downtime reason each time the press enters an Idle state. When operator intervention is required, periods of press inactivity are more likely to be assigned to a specific downtime reason than to be logged as Idle Time.

## SmartPAC 2 Downtime Reporting Features

Downtime reasons in SmartPAC 2 may be reported to SFC either automatically by the system or manually by the operator. When the press is stopped because of an error generated by SmartPAC 2 or an installed SmartPAC 2 module, the specific fault (e.g., “Sensor 1 Part Ejection Missed”) is reported automatically as a downtime reason to SFC.

When the press is stopped by the operator or by a piece of auxiliary equipment not connected to the SmartPAC 2, a downtime reason must be reported manually by the operator since SmartPAC 2 is unable to detect the reason for the interruption (see *Forced Idle Dialog Mode*, below). Downtime reasons may also be assigned manually to provide additional detail for periods documented automatically with specific error conditions (see *Forced Error Dialog Mode*, page G-4).

### Forced Idle Dialog Mode

If the SmartPAC 2 is set to Forced Idle Dialog mode (see *Making Downtime Reporting Settings*, page G-7), a downtime reason must be entered whenever the press is stopped by the operator or by auxiliary equipment. When the press stops (see Figure G-1, page G-3 for a schematic time line), a message displays at the SmartPAC 2 stating that the operator must enter a downtime reason before the press can be restarted. When the operator closes the message window, the Dialog Menu automatically displays. The Dialog Menu, a selection on the SmartPAC 2 Main Run Menu, displays a list of downtime reasons from which the operator must select to report downtime to SFC. Refer to *Programming Downtime Reasons*, page G-12 for instructions on how to set up the Dialog Menu.

The Forced Dialog message can be programmed to display a specified number of minutes after the press stops (see Figure G-1). This Idle Dialog Time setting enables the press to be stopped briefly without requiring entry of a downtime reason.

### Backfilling vs. Forward Filling

SFC initially logs the time after the press is stopped by the operator or by auxiliary equipment to Idle Time. When the operator selects an item on the Dialog Menu, the period of time previously documented as Idle is assigned that downtime reason. Downtime can be assigned manually or automatically, depending on how your SmartPAC 2 is programmed (see *Making Downtime Reporting Settings*, page G-7).

If SmartPAC 2 is set up for manual downtime reporting, the operator selects how the downtime is to be assigned in an option window that displays following selection of the downtime reason (see Figure G-11, page G-18). One option, which is called “backfilling,” is to assign the downtime reason to all time that has elapsed since the press was stopped (see Figure G-1). The other option is to “forward fill” the downtime reason, assigning it to the period from reporting of the downtime reason until the press is restarted (see Figure G-2, page G-4). When this option is selected, all elapsed time before entry of the downtime reason is assigned to the previous downtime reason, if one was reported, or to Idle Time.

If SmartPAC 2 is set up for automatic downtime reporting, the option window does not display following selection of the downtime reason, and downtime is automatically backfilled.

## Putting the Press “Back on Line”

A period of Idle Time or Planned or Unplanned downtime comes to an end either a programmed number of strokes after the operator restarts the press (see *Reset Strokes Counters*, page G-6) or when he selects “Back on Line” from the Dialog Menu. If the press is restarted at the same time as “Back on Line” is selected, SFC begins documenting the machine state as “Running time” (see Figure G-1). When the operator selects “Back on Line” without restarting the press, the subsequent period until the press is restarted is logged to Idle Time (see Figure G-2).

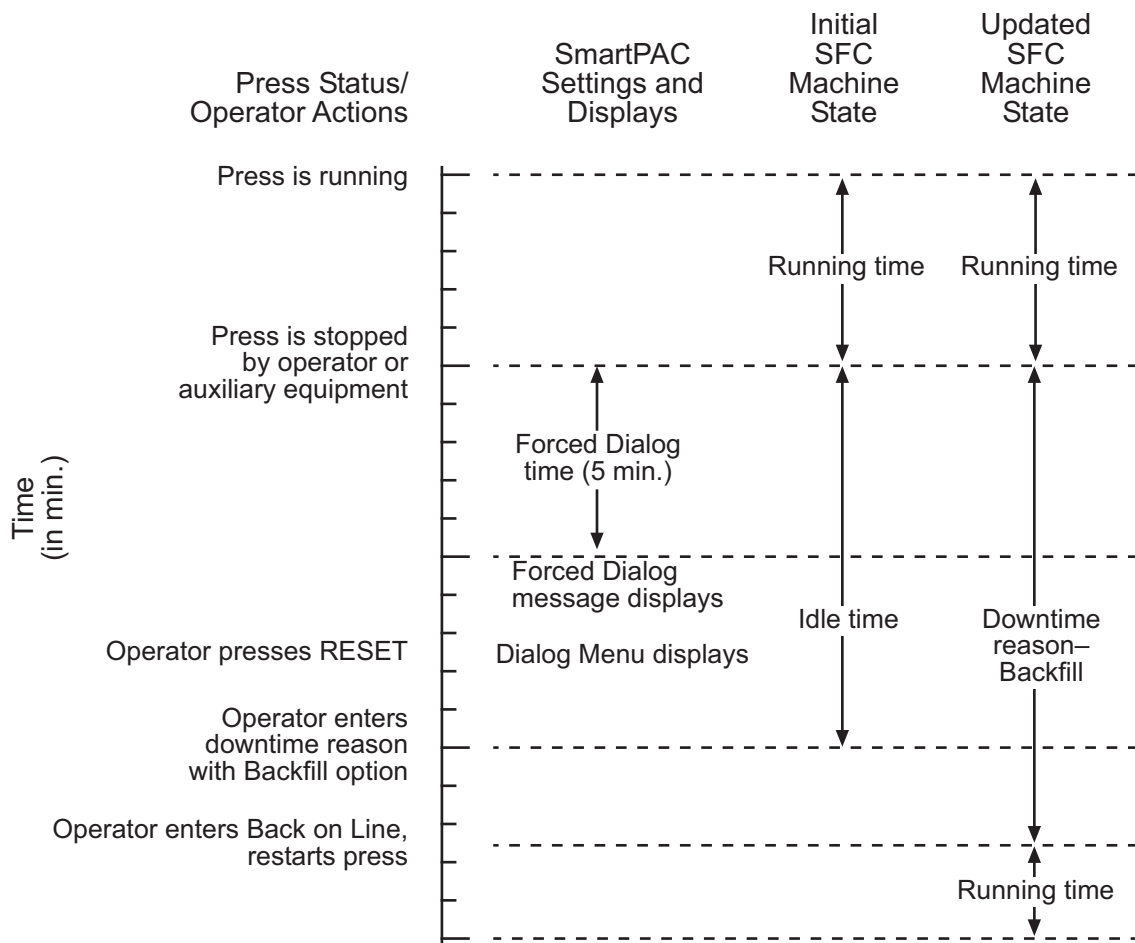


Figure G-1. Forced Idle Dialog Mode Time Line (Downtime Reason Backfilled)

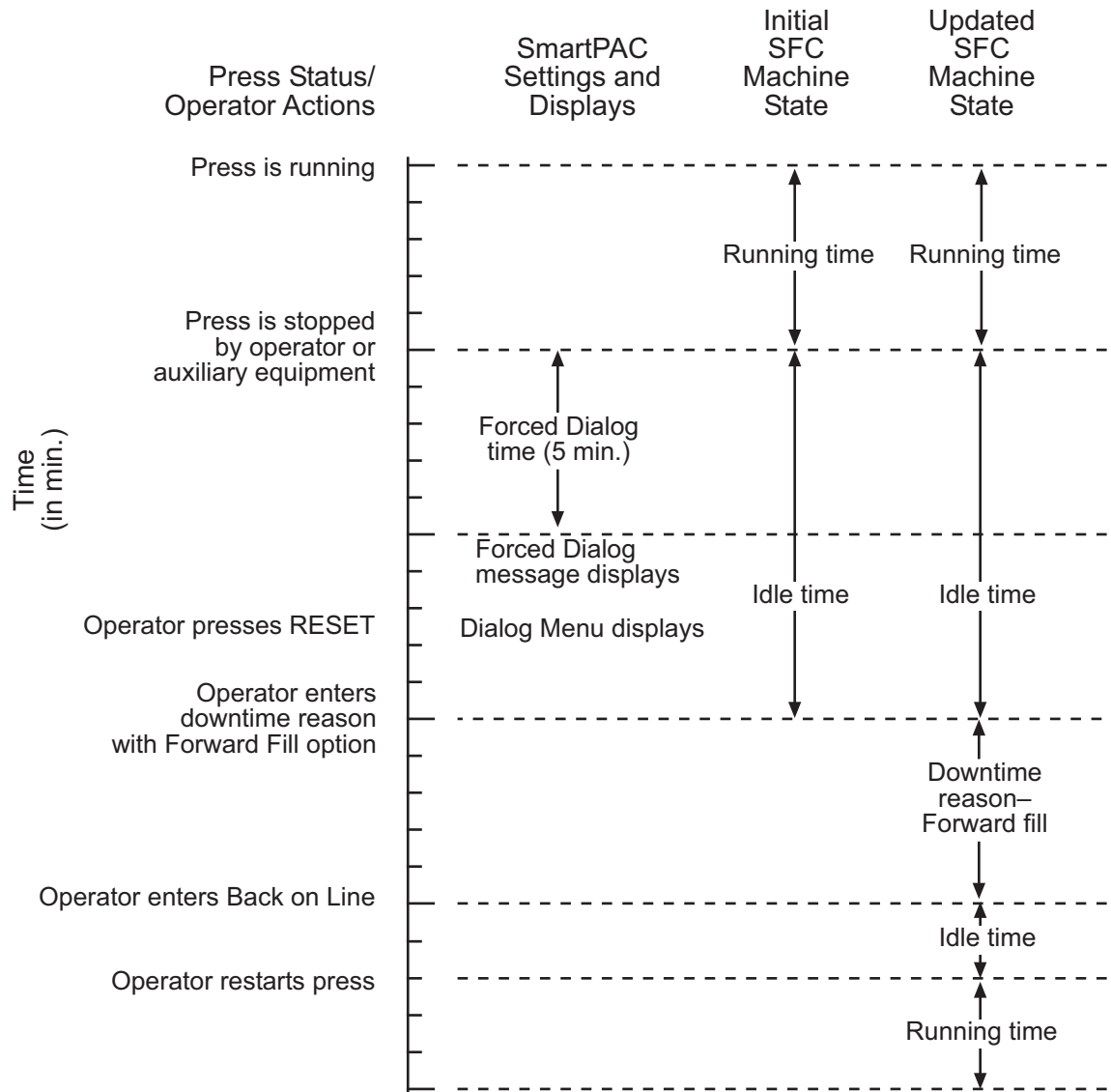


Figure G-2. Forced Idle Dialog Mode Time Line (Downtime Reason Forward Filled)

## Forced Error Dialog Mode

The Dialog Menu can also be programmed to display whenever the press is stopped due to a SmartPAC 2-generated fault. This feature, called Forced Error Dialog mode (see *Making Downtime Reporting Settings*, page G-7), allows the operator to add detail to a period of downtime that is initially logged to a specific SmartPAC 2 error but may actually have a different cause.

For example, SmartPAC 2 may be set up to generate an “End of Stock” error whenever the press runs out of material. This downtime reason is applied to the period of time during which a new coil is located and brought to the press unless the operator selects a more appropriate downtime reason, such as “Waiting for Coil,” and, using the backfill option (see *Backfilling vs. Forward Filling*, page G-2), applies it to the incompletely documented period. When the

downtime reason is backfilled (see Figure G-3 for a schematic time line), SmartPAC logs one second to the initial error (e.g., “Sensor 5–End of Stock”), assuring that the fault is documented, and the remaining time to the new downtime reason (e.g., “Waiting for Coil”).

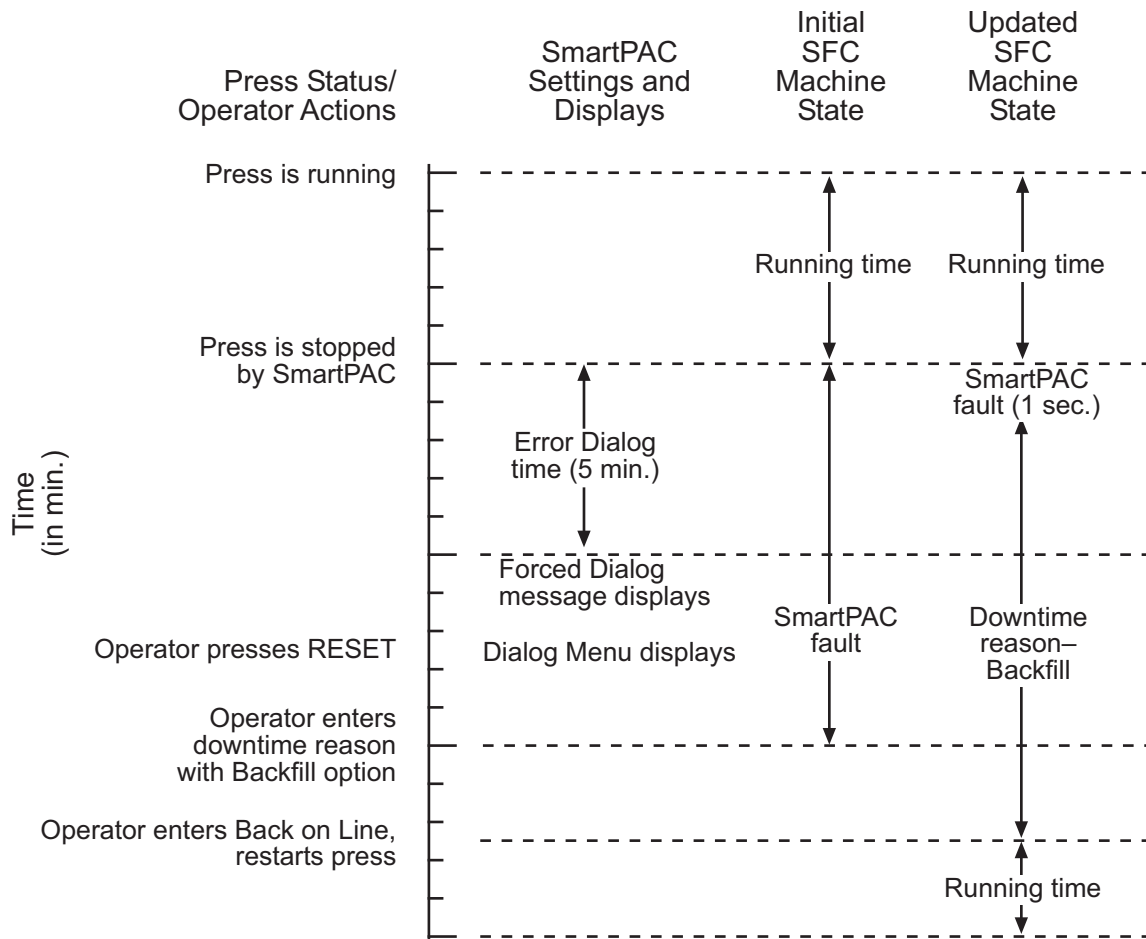


Figure G-3. Forced Error Dialog Mode Time Line

Downtime reasons can also be “forward filled” in Forced Error Dialog mode.

As in Forced Idle Dialog mode, the Forced Dialog message can be programmed to display a specified number of minutes after the press stops (see Figure G-3). This Error Dialog Time setting prevents nuisance faults such as “Counter preset reached” from being reported as downtime.

## Persist Dialog Mode

Periods during which the press is powered down are normally documented as Offline Time and the period following the next power-up assigned to Idle Time. Periods subsequent to machine power-ups are documented as Idle Time even when the period immediately preceding the shutdown has been assigned to an Unplanned Downtime reason. The only machine states that carry over from the period immediately preceding a shutdown to the period immediately succeeding a power-up are Changeover Time and Planned Downtime. In



these cases, the period during which the press is offline and the time immediately following press power-up are assigned to the machine state in effect when the press was powered down.

SmartPAC 2 can be programmed so that Unplanned Downtime reasons selected from the Dialog Menu also “persist” through press shutdowns (see *Making Downtime Reporting Settings*, page G-7). When this setting is enabled, both the interval during which the press was powered down and the time following resumption of power to the press are assigned to the downtime reason in effect when the press was shut down. One second of the period during which the press was offline is assigned to Offline Time to document this event.

## Single-stroke Mode

For hand-fed applications, a special setting can be programmed at the SmartPAC 2 (see *Making Downtime Reporting Settings*, page G-7) that allows the state of the press to be continuously reported as “Running” as long as the operator maintains a pre-determined cycle time. Normally, Single-stroke operation produces an alternating series of “Running” and “Idle” events as the press cycles and then stops to allow the operator to remove one part and load another. Since the state of the press is reported as “Running” only a fraction of the time even when the operator is maintaining an acceptable production rate, this data stream does not accurately reflect press productivity, skewing OEE ratings unfairly downward.

When you make this cycle time setting, SmartPAC 2 no longer looks for a change of state to determine whether the press is running but rather expects to see the press stroke at least once during the pre-programmed interval. If a stroke is detected, the press is reported as “Running”; if not, the press is considered to be stopped and reported as “Idle.”

## Reset Strokes Counters

Normally, a period of Idle Time, Planned or Unplanned Downtime, or Changeover Time is ended when the operator selects “Back on Line” from the Dialog Menu and restarts the press (see *Putting the Press “Back on Line,”* page G-3). However, since the operator may forget to select the “Back on Line” item, an alternative way of terminating a period of downtime is available.

SmartPAC 2 can be programmed to begin logging time following a downtime period to Running Time after a specified number of press strokes. A Reset Strokes counter (see *Making Downtime Reporting Settings*, page G-7) begins incrementing when the press is restarted, and after the counter reaches its preset, SFC changes the machine state to which it logs press time from the downtime reason to Running Time. Three different Reset Strokes counters can be programmed, allowing you to set different restart intervals following periods of Planned Downtime, Unplanned Downtime, and Changeover time.

## Setting up SmartPAC 2 to Report Downtime

To set up SmartPAC 2 to report downtime to SFC, you make downtime reporting settings on the Set Communications Menu. You program downtime reasons in one of two ways, depending on the setting you select in the DIALOG SCREEN MODE field on the Set Communications Menu (see Table G-1, page G-10).

When the default setting “16 / 16” is selected, you create downtime reasons on the Dialog Special Choice Name and Dialog Fixed Name Choice menus, which you access via the SET SPECIAL NAMES and SET CANNED NAMES items on the Set Communications Menu.

When you select the DIALOG SCREEN MODE setting of “32 CUSTOM,” you create downtime reasons in SFC and download them to the SmartPAC 2. The SET SPECIAL NAMES and SET CANNED NAMES items do not display when the “32 CUSTOM” option is selected.

### NOTICE

Wintriss recommends that you select the “32 CUSTOM” setting if your shop floor uses only SmartPAC 2 controls. The “16 / 16” setting should be selected only if you have a mix of SmartPAC 2s and SmartPAC 1s and want to maintain consistency in your downtime reporting method.

The “32 CUSTOM” setting provides two advantages. All downtime reasons can be customized to meet the specific needs of your shop floor setup (up to 32 custom names can be created in SFC Administrator), and you can include all reasons in the Downtime by Reason report, which allows you to track occurrences of a specific downtime reason across multiple machines.

With the “16 / 16” setting you can create only 16 custom reasons (the other 16 are “canned”), and only the custom reasons can be included in the Downtime by Reason report. The report cannot be generated for “canned” reasons.

## Making Downtime Reporting Settings

To enable and configure the SmartPAC 2 downtime reporting features described in the previous section, perform the following steps:

1. At the SmartPAC 2, turn the Program/Run key to “PROG,” then press the “1” and “CLEAR” keys simultaneously for a second or two until the Main Initialization Menu (see Figure G-4, page G-8) displays.

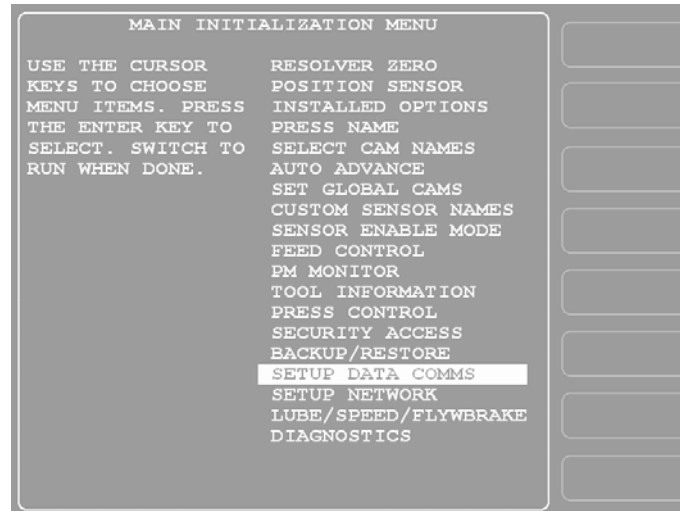


Figure G-4. SmartPAC 2 Main Initialization Menu

2. Highlight the “SETUP DATA COMMS” menu item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Set Communications Menu (see Figure G-5) displays:

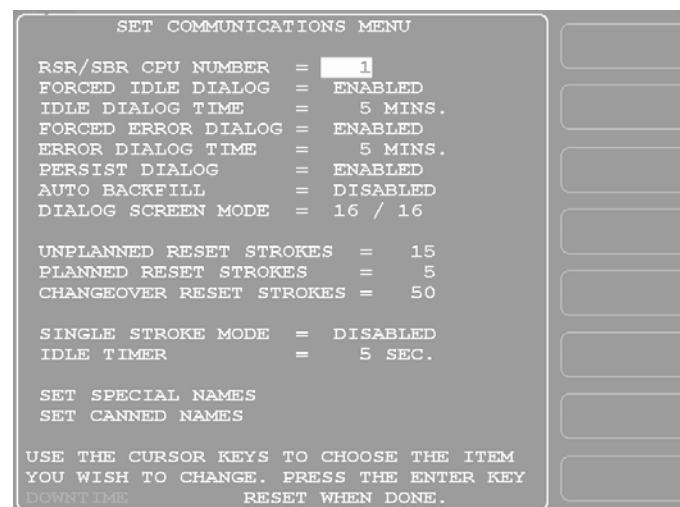


Figure G-5. Set Communications Menu

## NOTICE

Wintriss recommends that you take advantage of the additional features provided by the “32 Custom” dialog screen mode setting. The “16 / 16” setting should be selected only when you have both SmartPAC 1s and SmartPAC 2s and, even then, only if complete consistency is required.

3. Highlight each menu item you want to set, using the Up (▲) or Down (▼) cursor key, then do the following:
  - To enable or disable a feature, press ENTER until the desired setting is displayed.
  - To specify a value for an item (with the exception of IDLE TIMER), press ENTER to display the Numeric Entry window, key in your entry with the SmartPAC 2 keypad, and press ENTER again.
  - To select an option for DIALOG SCREEN MODE, press ENTER until the desired setting is displayed. When DIALOG SCREEN MODE is set to “16 / 16,” the SET SPECIAL NAMES and SET CANNED NAMES items display at the bottom of the menu. When the setting is “32 CUSTOM,” these items do not appear.
  - To select a value for IDLE TIMER, press ENTER until the desired value is displayed.
  - To display screens on which you can program Dialog Menu entries (the DIALOG SCREEN MODE setting must be “16 / 16”), press ENTER with the cursor resting in the SET SPECIAL NAMES or SET CANNED NAMES field.

To program downtime reasons when DIALOG SCREEN MODE is set to “32 CUSTOM,” you use ShopFloorConnect Administrator.

Table G-1 explains each field on the Set Communications Menu and provides instructions on how to make settings.

*Table G-1. Set Communications Menu Settings*

Field	Settings
RSR/SBR CPU NUMBER	When SmartPAC 2 is connected to SFC, this field must be set to “1.” Other CPU Number values may be used when SmartPAC 2 is connected to certain legacy software products that require each SmartPAC 2 to be assigned a unique identifier.
FORCED IDLE DIALOG	Indicates whether SmartPAC 2 displays the Forced Dialog message and Dialog Menu after the press has been stopped by the operator or by auxiliary equipment not connected to SmartPAC 2. The number of minutes after the press has stopped before the Forced Dialog message appears is specified in the IDLE DIALOG TIME field (see next entry). At the appearance of the Forced Dialog message, the operator must select a downtime reason on the Dialog Menu in order to restart the press. This setting allows time that elapses after the press is stopped by the operator or by equipment not connected to SmartPAC 2 to be documented with a downtime reason rather than as Idle Time. There are two settings:  ENABLED    Forced Idle Dialog mode enabled DISABLED    Forced Idle Dialog mode disabled
IDLE DIALOG TIME	Specifies the number of minutes (1-60) after the press has stopped in Forced Idle Dialog mode before the Forced Dialog message displays. This setting allows you to prevent Forced Idle Dialog from being triggered by brief stops. Suggested initial value: 5 minutes.

Table G-1. Set Communications Menu Settings (Cont.)

Field	Settings
FORCED ERROR DIALOG	<p>Indicates whether SmartPAC 2 displays the Forced Dialog message and Dialog Menu after the press has been stopped by a SmartPAC 2 fault. The number of minutes after the press has stopped before the Forced Dialog message appears is specified in the ERROR DIALOG TIME field (see next entry). At the appearance of the Forced Dialog message, the operator must select a downtime reason on the Dialog Menu in order to restart the press. This setting allows time that elapses after the press is stopped due to a SmartPAC 2 fault to be assigned a different downtime reason. There are two settings:</p> <p>ENABLED Forced Error Dialog mode enabled            DISABLED Forced Error Dialog mode disabled</p>
ERROR DIALOG TIME	<p>Specifies the number of minutes (1-60) after the press has stopped in Forced Error Dialog mode before the Forced Dialog message displays. This setting allows you to prevent reporting of SmartPAC 2 nuisance faults such as "Counter preset reached." Suggested initial value: 5 minutes.</p>
PERSIST DIALOG	<p>Indicates whether an Unplanned Downtime reason from the Dialog Menu that is assigned before a press shutdown continues to be applied to the period during which the press is down and to the time after the press is powered up again. Normally, the interval during a press shutdown is assigned to "Offline Time" and the period after the press is powered up to "Idle Time." There are two settings:</p> <p>ENABLED Persist Dialog mode enabled            DISABLED Persist Dialog mode disabled</p>
AUTO BACKFILL	<p>Indicates whether time occurring after the press has been stopped up to the point when the operator selects a downtime reason is automatically documented with that reason. When this item is disabled, the operator is given the option of backfilling or forward filling downtime following selection of a downtime reason. When this item is enabled, the downtime reason selected by the operator is automatically backfilled. There are two settings:</p> <p>ENABLED Auto Backfill enabled            DISABLED Auto Backfill disabled</p>
DIALOG SCREEN MODE	<p>Indicates whether downtime reasons are created on the screens accessible from the SET SPECIAL NAMES and SET CANNED NAMES menu items (see below) or in ShopFloorConnect Administrator. There are two settings:</p> <p>16 / 16 Downtime reasons are created in SmartPAC            32 CUSTOM Downtime reasons are created in SFC</p> <p>When the "16 / 16" setting is selected, you can create only 16 custom downtime reasons, and only those reasons can be included in the Downtime by Reason Report. The "32 CUSTOM" setting enables you to create up to 32 custom reasons, all of which can appear in the Downtime by Reason Report. When the "32 CUSTOM" setting is selected, the SET SPECIAL NAMES and SET CANNED NAMES items do not display.</p>

Table G-1. Set Communications Menu Settings (Cont.)

Field	Settings
UNPLANNED RESET STROKES PLANNED RESET STROKES CHANGEOVER RESET STROKES	<p>Specifies the number of strokes that must occur after the press is restarted following a period of Unplanned Downtime, Planned Downtime, or Changeover Time before SFC begins documenting the machine state as "Running Time." This setting prevents additional press time from being attributed to a downtime reason when the operator forgets to select the "BACK ON LINE" item from the Dialog Menu. The number of strokes you specify should be the maximum number of press cycles that are likely to be needed to return the press to production. Valid entries: 1-9999. Suggested settings:</p> <p>Set the Unplanned Reset Strokes counter to two strokes more than the maximum number of strokes required to fill an empty die. This setting should give the operator sufficient time to complete a response to the downtime cause (such as Coil Change) that requires the longest time to address.</p> <p>Set the Planned Reset Strokes counter to the lowest number of strokes required to return the press to production following a lunch or other break.</p> <p>Set the Changeover Reset Strokes counter to the maximum number of strokes required to complete a die setup.</p>
SINGLE STROKE MODE	<p>This setting, which is used for hand-fed applications when the press is being run in Single-stroke mode, indicates whether SFC counts press cycles (or parts made) within the period specified in the IDLE TIMER field (see next entry) to determine whether the press is "running." When this field is set to "ENABLED," SFC only documents the press as "Idle" when no cycles occur (i.e., no parts are made) during an Idle Timer period. There are two settings:</p> <p>ENABLED    Single-stroke Mode enabled DISABLED    Single-stroke Mode disabled</p>
IDLE TIMER	<p>Specifies the number of seconds during which SmartPAC 2 counts the number of press strokes in Single-stroke mode to determine a production rate for hand-fed applications. This value should be twice the cycle time for the slowest hand-fed job run on a press. For example, if the slowest job produces an average of 6 parts per minute, the Idle Timer should be set to 20 seconds (6 parts per minute = 10-second cycle time; 2 x 10 seconds = 20 seconds). Available selections: 5, 10, 15, 20, 30, and 60.</p>

Table G-1. Set Communications Menu Settings (Cont.)

Field	Settings
SET SPECIAL NAMES	Displays the Dialog Special Choice Name Menu, on which you can create up to 16 custom downtime reasons for display on the Dialog Menu and specify the order in which they will appear (see <i>Creating Special Names on the Dialog Special Choice Name Menu</i> , page G-14). This item does not display when the setting for DIALOG SCREEN MODE is “32 CUSTOM.”
SET CANNED NAMES	Displays the Dialog Fixed Name Choice Menu, on which you can select up to 14 pre-programmed, or “canned,” downtime reasons for display on the Dialog Menu and specify the order in which they will appear (see <i>Selecting Canned Names on the Dialog Fixed Name Choice Menu</i> , page G-13). This item does not display when the setting for DIALOG SCREEN MODE is “32 CUSTOM.”

## Programming Downtime Reasons

If the DIALOG SCREEN MODE item on the Set Communications Menu has been set to “16 / 16,” the default, the SET SPECIAL NAMES and SET CANNED NAMES items are displayed on the menu, allowing you to specify the downtime reasons that appear on the Dialog Menu and the order in which they are presented. The items you program on these two menus will be the menu selections available to the operator when the Dialog Menu displays in Forced Idle Dialog or Forced Error Dialog mode, or when the operator accesses the menu at other times.

If the DIALOG SCREEN MODE setting is “32 CUSTOM,” the SET SPECIAL NAMES and SET CANNED NAMES items do not display, and you create downtime reasons in SFC.

“Canned” names are downtime reasons whose text has been pre-programmed into the SmartPAC 2. “Special” names are downtime reasons whose text you assign. You can select up to 14 “canned” names and create up to 16 “special” names. The Dialog Menu can include both “canned” and “special” entries, displaying up to 30 items.

### NOTICE

It is recommended that you create a standardized list of downtime reasons for all your presses. Having the Dialog Menu display the same downtime reasons in the same order on all SmartPAC 2s will help to minimize reporting errors.

When planning the order in which you want Dialog Menu items to display, you should attempt to predetermine the downtime causes that are likely to occur most frequently and place these at the beginning of the downtime reason sequence.

## Selecting Canned Names on the Dialog Fixed Name Choice Menu

When you select the SET CANNED NAMES item on the Set Communications Menu, the Dialog Fixed Name Choice Menu (see Figure G-6) displays. This menu allows you to select the “Canned” names that will appear on the Dialog Menu. “Canned” names are downtime reasons whose text has already been programmed into the SmartPAC 2. You can select up to 14 of these pre-programmed entries for inclusion in the Dialog Menu.

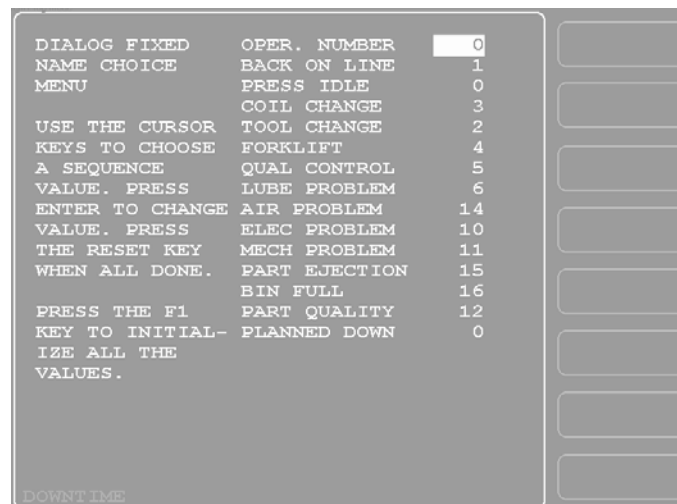


Figure G-6. Dialog Fixed Name Choice Menu

You select a “canned” name by entering a sequence number to the right of the name’s text entry. The sequence number specifies the position in which that item will appear on the Dialog Menu. For example, in the screen shown in Figure G-6, the item LUBE PROBLEM has a sequence number of 6 and, so, will appear sixth on the Dialog Menu. Since “special” downtime reasons may also appear on the Dialog Menu, be sure to maintain the necessary intervals in your “canned” name numbering scheme to accommodate these items.

To prevent a “canned” name from appearing on the Dialog Menu, set its sequence number to 0.

It is recommended that you include the following “canned” items in the Dialog Menu:

- **TOOL CHANGE**—This downtime reason is logged to the Changeover Time machine state, enabling SFC to track time for tool changes separately from other unplanned downtime and create special Changeover reports. “Tool Change” is the only Unplanned Downtime reason that is assigned to time when power to the press is off. Powering down the press is often necessary during tool changeover.
- **BACK ON LINE**—This selection enables the operator to end a downtime event. When BACK ON LINE is selected, the machine state will change from “Unplanned Downtime,” “Planned Downtime,” or “Changeover Time” to “Running Time” if the press is running or from one of these “downtime” states to “Idle Time” if the press is stopped.
- **OPER. NUMBER**—This “canned” name allows the operator to enter an operator number, enabling SFC to assign a period of press time such as a shift to a particular operator.



To select the pre-programmed downtime reasons that will appear on the Dialog Menu and the order in which they will appear, do the following:

1. On the Set Communications Menu, highlight the SET CANNED NAMES item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Dialog Fixed Name Choice Menu (see Figure G-6) displays with the cursor resting in the OPER. NUMBER field.
2. Press ENTER, and when the Numeric Entry window appears, type the numeric position in which you want that item to appear on the Dialog Menu, or type “0” if you want to prevent the item from displaying on the Dialog Menu. Press ENTER to save your entry and return to the Dialog Fixed Name Choice Menu.
3. Move the cursor to the BACK ON LINE field, using the Down (▼) cursor key, and repeat step 2. Do the same for the remaining menu items.

### NOTICE

Remember to leave intervals between sequence numbers to allow room for “special” downtime reasons. See *Creating Special Names on the Dialog Special Choice Name Menu*, page G-14.

If the same sequence number is assigned to both a “canned” and a “special” name, both entries will display in that position on the Dialog Menu with the “special” name shown first.

4. When you are finished setting the sequence of “canned” names, press RESET to save your entries and return to the Set Communications Menu.

## Creating Special Names on the Dialog Special Choice Name Menu

When you select the SET SPECIAL NAMES item on the Set Communications Menu, the Dialog Special Choice Name Menu (see Figure G-7, page G-15) displays. This menu allows you to select the “special” names that will appear on the Dialog Menu. “Special” names are downtime reasons created by the user. Each name can be up to 12 characters in length, and you can include up to 16 of them in the Dialog Menu.

You specify the order in which “special” names appear on the Dialog Menu by entering a sequence number to the right of each text entry. The sequence number specifies the position in which that item will appear on the Dialog Menu. Since “canned” downtime reasons may also appear on the Dialog Menu, be sure to maintain the necessary intervals in your “special” name numbering scheme to accommodate these items.

To prevent a “special” name from appearing on the Dialog Menu, set its sequence number to 0.

To program “special” downtime reasons for inclusion in the Dialog Menu, perform the following steps:

1. On the Set Communications Menu, highlight the SET SPECIAL NAMES item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Dialog Special Choice Name Menu displays with the cursor resting in the SPEC. 1 field.

DIALOG SPECIAL	SPEC. 1	QC APPROVAL	7	
NAME CHOICE	SPEC. 2	NO OPERATOR	8	
MENU	SPEC. 3	MACH. MAINT.	9	
	SPEC. 4	FEED PROBLEM	13	
USE THE CURSOR	SPEC. 5		0	
KEYS TO CHOOSE	SPEC. 6		0	
A NAME OR SE-	SPEC. 7		0	
QUENCE VALUE.	SPEC. 8		0	
PRESS ENTER TO	SPEC. 9		0	
CHANGE. PRESS	SPEC. 10		0	
THE RESET KEY	SPEC. 11		0	
WHEN ALL DONE.	SPEC. 12		0	
	SPEC. 13		0	
PRESS THE F1	SPEC. 14		0	
KEY TO CLEAR	SPEC. 15		0	
ALL THE NAMES	SPEC. 16		0	
AND VALUES.				
DOWNTIME				

Figure G-7. Dialog Special Choice Name Menu

- Press ENTER, and when the Alphabetic Entry window displays, type the text (12 characters maximum, including spaces) of the downtime reason that you want to appear on the Dialog Menu; then, press **F6** to save your entry and return to the Dialog Special Choice Name Menu.
- Press the Right ( **►** ) cursor key to move the cursor to the column for the SPEC. 1 sequence number.
- Press ENTER, and when the Numeric Entry window displays, type the numeric position in which you want that downtime reason to appear on the Dialog Menu; then, press ENTER to save your entry and return to the Dialog Special Choice Name Menu.

### NOTICE

Remember to leave intervals between sequence numbers to allow room for “canned” downtime reasons. See *Selecting Canned Names on the Dialog Fixed Name Choice Menu*, page G-13.

If the same sequence number is assigned to both a “canned” and a “special” name, both entries will display in that position on the Dialog Menu with the “special” name shown first.

- Move the cursor to the SPEC. 2 field, using the Down ( **▼** ) cursor key, and repeat steps 2 through 4. Do the same for the remaining menu items.
- When you have finished programming “special” downtime reasons, press RESET to save your entries and return to the Set Communications Menu.

## Documenting Downtime on the Dialog Menu

A downtime reason can be selected on the Dialog Menu either in response to the Forced Dialog message or when the operator wants to change a previous downtime entry or add detail to reported downtime.

### Documenting Downtime in Response to the Forced Dialog Message

With Forced Idle Dialog mode or Forced Error Dialog mode enabled (see *Making Downtime Reporting Settings*, page G-7), the operator is prompted to enter a downtime reason on the Dialog Menu whenever SmartPAC 2 detects that the press has stopped under the appropriate circumstances. This message is shown in Figure G-8.

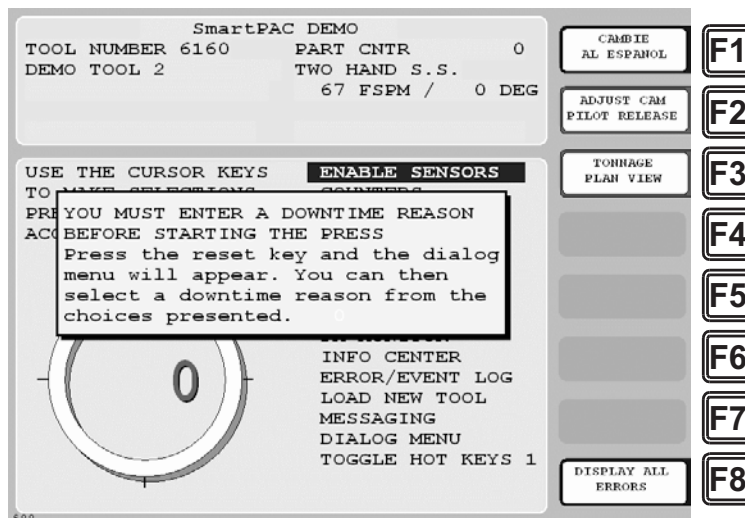


Figure G-8. SmartPAC 2 Run Mode Main Menu with Forced Dialog Message Displayed

To respond to this prompt, perform the following steps:

1. Press RESET to clear the message. The Dialog Menu displays. If dialog screen mode is set to "16/16" (see *Setting up SmartPAC 2 to Report Downtime*, page G-7), the Dialog Menu looks like the example shown in Figure G-9, page G-17. If "32 CUSTOM" is the dialog screen mode setting, the Dialog Menu looks like the example shown in Figure G-10. Note that the "32 CUSTOM" Dialog Menu has assigned the Operator Number, Back on Line, and Changeover downtime reasons to function keys **F4**, **F5**, and **F6**; also, the **F7** key has been assigned to the End Job function (see *Ending a Job*, page G-20).

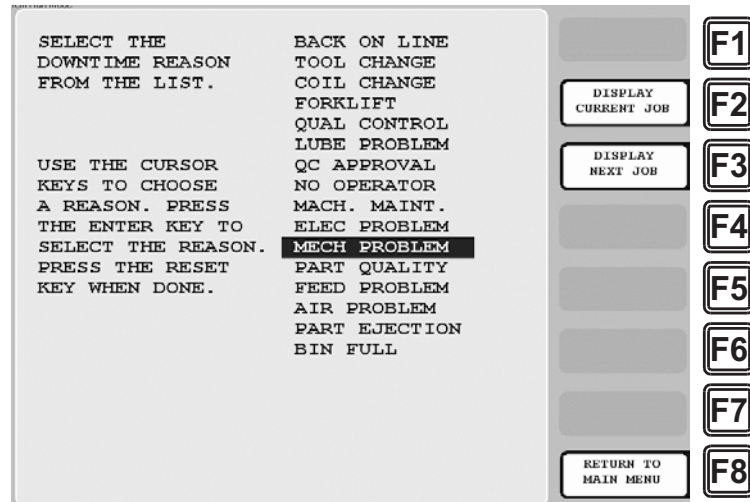


Figure G-9. Dialog Menu ("16/16" Dialog Screen Mode)

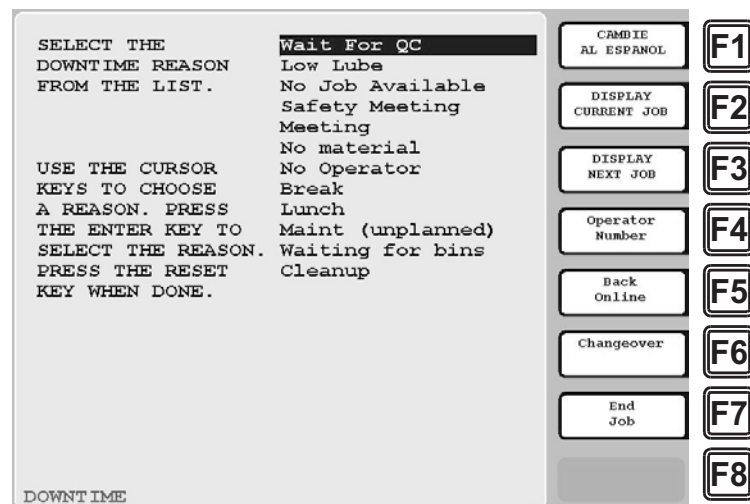


Figure G-10. Dialog Menu ("32 CUSTOM" Dialog Screen Mode)

2. Highlight the downtime reason you want (in Figure G-9, MECH PROBLEM is selected as an example), using the Up (▲) or Down (▼) cursor key, and press ENTER.

or

Press the function key for Operator Number, Back on Line, or Changeover ("32 CUSTOM" dialog screen mode only; see Figure G-10).

3. If Auto Backfill has been enabled on the Set Communications Menu (see Table G-1, page G-10), the downtime reason you selected is automatically “backfilled” (i.e., assigned to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection). If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry. The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.
4. If Auto Backfill has been disabled, the window shown in Figure G-11 displays.

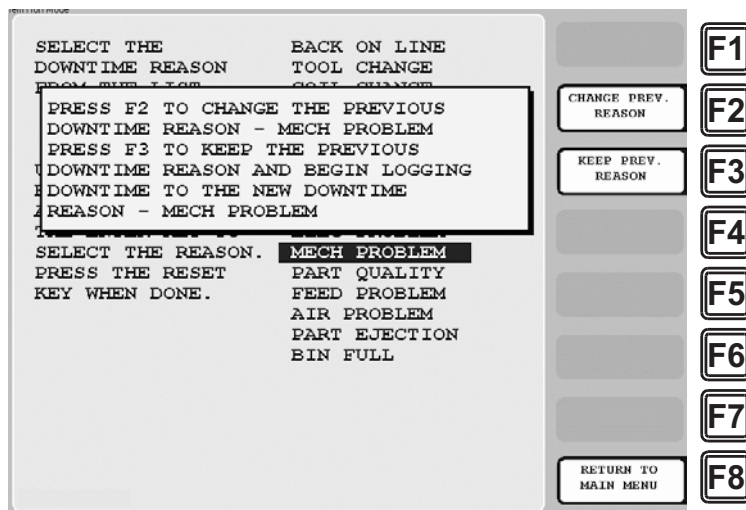


Figure G-11. Dialog Menu with **F2/F3** Option Window Displayed

Press the **F2** (Change Prev. Reason) function key to “backfill” the selected downtime reason, in other words, to assign it to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection. If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry.

or

Press **F3** (Keep Prev. Reason) to leave documentation of the period up to the present unchanged and “forward fill” the selected downtime reason, in other words, assign it to the period from the present up to entry of the next downtime reason or the BACK ON LINE selection.

The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

## Documenting Downtime in Other Situations

You can report downtime reasons to SFC at any time without being prompted by the Forced Dialog message.

### EXAMPLE: UPDATING A DOWNTIME REASON

The operator stops the press for what he assumes is a feed problem and selects the downtime reason “FEED PROBLEM” from the Dialog Menu. After further investigation, he finds that the feed is working properly but the air supply to the feed is intermittent. The operator accesses the Dialog Menu, selects “AIR PROBLEM” from the list of downtime reasons, and chooses the **F2** (Change Prev. Reason) option. SFC changes the reason for the downtime period from “FEED PROBLEM” to “AIR PROBLEM.”

To report downtime without being prompted, perform the following steps:

1. On the Main Run Menu (see Figure G-12), select the DIALOG MENU item.

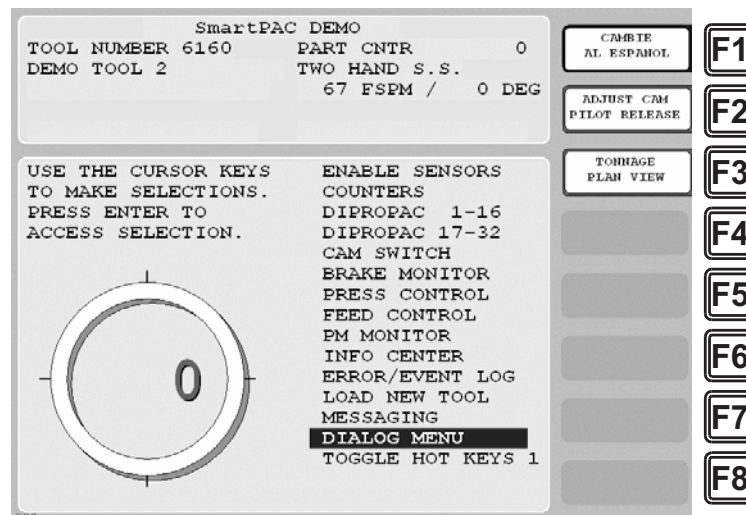


Figure G-12. SmartPAC 2 Run Mode Main Menu with DIALOG MENU Item Selected

2. On the Dialog Menu, highlight the downtime reason you want, using the Up (▲) or Down (▼) cursor key, and press ENTER.  
or  
Press the function key for Operator Number, Back on Line, or Changeover (“32 CUSTOM” dialog screen mode only).
3. If Auto Backfill has been enabled on the Set Communications Menu (see Table G-1, page G-10), the downtime reason you selected is automatically “backfilled” (i.e., assigned to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection). If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry. The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.



4. If Auto Backfill has been disabled, the window shown in Figure G-11 displays.

Press the **F2** (Change Prev. Reason) function key to “backfill” the selected downtime reason, in other words, to assign it to the period of Idle Time or downtime up to entry of the next downtime reason or the BACK ON LINE selection. If a downtime reason other than a SmartPAC 2 fault has been assigned to this period, the downtime reason you selected will replace it. If a SmartPAC 2 fault has been assigned to this period, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry.

or

Press **F3** (Keep Prev. Reason) to leave documentation of the period up to the present unchanged and “forward fill” the selected downtime reason, in other words, assign it to the period from the present up to entry of the next downtime reason or the BACK ON LINE selection.

The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

## Ending a Job

If you are using the “32 CUSTOM” dialog screen mode setting, the Dialog Menu allows you to “close out” the previous job when no subsequent job is immediately available, thereby preventing any non-job-related downtime to be charged against it. You close out the previous job by pressing the **F7** (End Job) function key (see Figure G-10, page G-17).

Normally, in ShopFloorConnect one job ends and a new one begins when a new tool number is loaded, at which point all data stops accruing for the previous tool and begins accruing for the new tool.

When an End Job function is executed, the SmartPAC 2 will report the tool number to SFC as Tool Number “0” to indicate that the machine is in a “No Job” condition. All time logged during the No Job condition can be assigned machine states (Planned Downtime, Unplanned Downtime, or Changeover) and downtime reasons just as if a tool were actually loaded.

Please note that if the End Job button is used, the current job will end, but the machine can still be run. Any production run after the job has ended will be attributed to a new job.

### NOTICE

DO NOT use the End Job function key unless you are absolutely certain that you want to close out the previous job. A job cannot be “reopened” once it has ended. If you attempt to reopen a job, any production that is run after the end of the job will be attributed to a new job using the same tool number.

## Creating Hot Keys for Dialog Menu Functions

You can create Hot Keys on the Main Run Menu (see page 3-12 for an overview) for menu selections and function key assignments on the Dialog Menu, enabling you to perform Dialog Menu tasks from the Run Menu. When Dialogue Screen Mode is set to “32 CUSTOM” (see Table G-1, page G-10), you can create Hot Keys for both selected menu items and for function keys **F4** through **F7**, which are pre-programmed. If Dialogue Screen Mode is set to “16/16,” you can create Hot Keys only for menu items.

To program Hot Keys for selections on the Dialog Menu, perform the following steps:

1. On the Main Run Menu, select the DIALOG MENU item.

### NOTICE

The SmartPAC 2 must be in an Idle state when you program Hot Keys. Make sure to select BACK ON LINE before attempting to make Hot Key assignments.

2. On the Dialog Menu, highlight the BACK ON LINE item and press ENTER to place the SmartPAC 2 in an Idle state. You are returned to the Main Run Menu.
3. Repeat step 1 to access the Dialog Menu again.

### NOTICE

The keystrokes you use to select a downtime reason for a Hot Key are recorded. Make sure to scroll to the desired selection using the fewest number of keystrokes.

4. Highlight the Dialog Menu selection for which you want to create a Hot Key, using the Up (▲) or Down (▼) cursor key. Use the fewest number of keystrokes possible in scrolling to the item.
5. Press the “2” and “0” keys simultaneously for a few seconds until the Hot Keys Instruction Window displays (see Figure 6-4, page 6-4), then press the function key you want to make the Hot Key for the selected menu item.

To program Hot Keys for function keys **F4** through **F7** on the Dialog Menu when Dialog Screen Mode is set to “32 CUSTOM,” perform the following steps:

1. Repeat steps 1 through 3 of the previous procedure.
2. Select the number on the SmartPAC 2 keypad corresponding to the function key for which you want to create a Hot Key (e.g., press “5” for function key **F5** (Back on Line)).
3. Press the “2” and “0” keys simultaneously for a few seconds until the Hot Keys Instruction Window displays, then press the function key you want to make the Hot Key for the selected Dialog Menu function.



## Reporting Scrap and Good Parts to SFC

If you are running SFC-compatible firmware, SmartPAC 2 enables you to document scrap so that scrap counts can be reported to SFC. The scrap counter, which appears on the Counters screen in Run mode, maintains a cumulative total of all user scrap entries for the currently running job, resetting to zero when the job is complete.

The cumulative scrap count reduces by that amount the number of good parts reported to SFC. The good parts count is maintained in the Good Parts Count field on the Counters screen (see Figure G-14, page G-23). If you wish to adjust the Good Parts counter upward, you can do so in up to 1,000-part increments in Run mode and in larger increments in Program mode.

To enable scrap entries and Good Parts counter adjustments to be made in Run mode, you must set the CHANGE COUNT and CHG GOOD PRTS CNT items on the Security Access Menu in Initialization mode to “PROGRAM AND RUN MODES,” as shown in Figure G-13. (To display the Security Access Menu, select SECURITY ACCESS from the Main Initialization Menu—see Figure G-4, page G-8.)

If you want to allow scrap entries to be made in Run mode but prevent Good Parts counter adjustments, you must set the CHG GOOD PRTS CNT item on the Security Access Menu to “NO CHANGES ALLOWED” while leaving the CHANGE COUNT item set to “PROGRAM AND RUN MODES.”

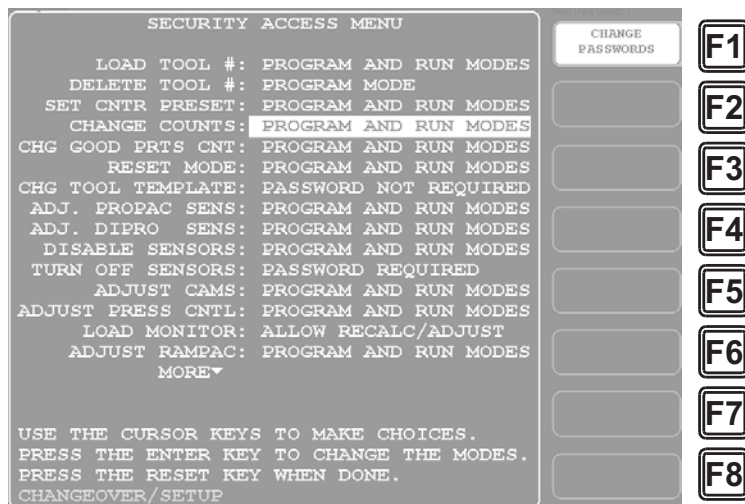


Figure G-13. Security Access Menu with CHANGE COUNT and CHG GOOD PRTS CNT Items Set to “PROGRAM AND RUN MODES”

By default, the Good Parts counter does not increment during a fault condition. If you wish the counter to increment even when there is a fault, set the COUNTER INCREMENT MODE item on the Position Sensor screen to “INC ALWAYS” (see page 4-5).

## Making Scrap Entries

To document scrap for a currently running job, do the following:

1. With the tool loaded and running, select “COUNTERS” on the Main Run Menu (see Figure G-12, page G-19) to display the Counters screen (see Figure G-14).

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	900
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	900	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL **F1**

RELOAD BATCH COUNTERS **F2**

SCRAP VALUE 0 **F3**

**F4**

**F5**

**F6**

**F7**

RETURN TO MAIN MENU **F8**

Figure G-14. Counters Screen with “Scrap Value” Function (**F3**) Shown

2. Press **F3** (Scrap Value). The Scrap Value Entry window displays (see Figure G-15).

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	900
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	900	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

30

USE THE KEYPAD TO ENTER NUMBERS.  
TO INCREASE/DECREASE. PRESS ENTER  
WHEN DONE. PRESS RESET TO CANCEL.

PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL **F1**

RELOAD BATCH COUNTERS **F2**

SCRAP VALUE 0 **F3**

**F4**

**F5**

**F6**

**F7**

RETURN TO MAIN MENU **F8**

Figure G-15. Counters Screen with Scrap Value Entry Window Displayed (30 Items Shown)

Key in the amount of scrap you wish to document, following the directions in the window, and press ENTER. (Figure G-15 shows a scrap entry of “30” as an example.)

When you press ENTER, the Scrap Value Entry window disappears. The value you keyed in is added to the current scrap value, and the result is displayed beneath the “Scrap Value” caption to the left of the **F3** function key, as shown in Figure G-16, page G-24, where a scrap value of “30” is used as an example. The Good Parts counter is reduced by the amount of your scrap entry (e.g.,  $900 - 30 = 870$  in Figure G-16).

SmartPAC DEMO				
DEMO TOOL 2	PART CNTR	870	CAMBIE AL ESPAÑOL	F1
TOOL ID 6160			RELOAD BATCH COUNTERS	F2
SENSORS ENABLED	PRESS ANGLE	0	SCRAP VALUE 30	F3
				F4
				F5
				F6
				F7
			RETURN TO MAIN MENU	F8

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	870	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

Figure G-16. Counters Screen with Scrap Value Updated to 30 Items

## NOTICE

### INDIVIDUAL SCRAP ENTRIES ARE ADDED TO THE CURRENT SCRAP TOTAL

The Scrap Value counter maintains a cumulative total of the scrap items documented for each job. The value you enter in the Scrap Value Entry window (see Figure G-15, page G-23) is automatically added to the total.

For example, if the count in the Scrap Value field is “30,” and you want to include an additional 10 parts in the count, you would enter “10” in the Scrap Value Entry window (see Figure G-17). When you are returned to the Counters screen, the Scrap Value counter would display 40 parts (the 30 parts in the current total plus the 10 parts you entered; the Good Parts counter would be reduced by 10 parts (see Figure G-18, page G-25).

SmartPAC DEMO				
DEMO TOOL 2	PART CNTR	1720	CAMBIE AL ESPAÑOL	F1
TOOL ID 6160			RELOAD BATCH COUNTERS	F2
SENSORS ENABLED	PRESS ANGLE	0	SCRAP VALUE 30	F3
				F4
				F5
				F6
				F7
			RETURN TO MAIN MENU	F8

	COUNT	PRESET VALUE
STROKES	1,750	0
GOOD PARTS	1,720	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE THE KEYPAD TO ENTER NUMBERS.  
USE THE UP/DOWN CURSOR KEYS TO INCREASE/DECREASE. PRESS ENTER WHEN DONE. PRESS RESET TO CANCEL.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

Figure G-17. Counters Screen with Scrap Value Entry Window Displayed (10 Items Shown)

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	1710
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	1,750	0
GOOD PARTS	1,710	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL	F1
RELOAD BATCH COUNTERS	F2
SCRAP VALUE 40	F3
	F4
	F5
	F6
	F7
RETURN TO MAIN MENU	F8

Figure G-18. Counters Screen with Scrap Value Updated to 40 Items

- Repeat step 2 for the remaining scrap entries associated with the current job until the job is completed.

## Adjusting the Good Parts Counter

### NOTICE

You can only increase the value maintained by the Good Parts counter. You cannot decrease the Good Parts counter except by entering scrap values.

### NOTICE

You cannot adjust the Good Parts counter if the CHG GOOD PRTS CNT item on the Security Access Menu has been set to "NO CHANGES ALLOWED."

The Run mode Counters screen enables you to increase the Good Parts count to adjust for count inaccuracies, such as when good parts may be produced but not counted in Setup mode or during Fault conditions. The count can be increased by up to 1,000 parts at a time.

The Counters screen in Program mode allows you to increase Good Parts by larger amounts (see *Adjusting the Good Parts Counter in Program Mode*, next page). This capability is useful if new firmware is installed in the middle of a job, causing the Good Parts counter to reset to zero.

## Adjusting the Good Parts Counter in Run Mode

To increase the Good Parts count in Run mode, do the following:

- Select the GOOD PARTS COUNT field on the Counters screen.

2. When the Good Parts Entry window (like the window shown in Figure G-15) displays, key in the number of good parts you want to add (1,000 parts maximum), and press ENTER. A Confirmation window like the one shown in Figure G-19 displays.

WARNING: A COUNTER VALUE IS ABOUT  
TO BE CHANGED! IF YOU WANT THIS TO  
HAPPEN THEN PRESS THE UP CURSOR  
KEY. IF YOU DO NOT WANT TO CHANGE  
THE COUNTER VALUE THEN PRESS RESET

*Figure G-19. Good Parts Counter Adjustment Confirmation Window*

3. Press the Up (▲) cursor key to confirm that you want to change the Good Parts counter value. You are returned to the Counters screen with your adjustment reflected in the GOOD PARTS COUNT field.

### NOTICE

If you attempt to enter a value greater than 1,000 or one that reduces (rather than increases) the Good Parts count, an error message will display briefly.

## Adjusting the Good Parts Counter in Program Mode

### NOTICE

In Program mode, you can increase the Good Parts count in increments greater than 1,000.

To increase the Good Parts count in Program mode, do the following:

1. On the Counters screen in Run mode, press RESET to return to the Main Run Menu.
2. Turn the Program/Run key to “PROG” to display the Main Program Menu.
3. Select “GO TO THE TOOL MANAGER” to display the Tool Manager screen.
4. Press **F4** (Edit Tool) with the loaded tool selected to display the Tool Program Menu.
5. Select COUNTERS to display the Counters screen.
6. Perform steps 1 through 3 of the procedure for adjusting the Good Parts counter in Run mode, above.

# Appendix H. Reporting Downtime and Scrap to LETS

---

This appendix shows you how to report press downtime from your SmartPAC 2 control to Wintriss's Line Efficiency Tracking Software (LETS). The appendix discusses the six machine states to which LETS logs press time, explains the downtime reporting features of SmartPAC 2, shows you how to set up SmartPAC 2 to report downtime to LETS, and provides instructions for reporting downtime.

The appendix also shows you how to use the scrap counter on the SmartPAC 2 Counters screen in Run mode to report scrap to LETS and how to adjust the Good Parts count that is reported to LETS.

SmartPAC's downtime- and scrap-reporting features are available only on SmartPAC 2 versions 4.59 or higher; in addition, the LETS firmware option must be installed.

## Machine States to Which LETS Logs Press Time

LETS logs all elapsed time at each press to one of six categories called machine states. The sum of all the times assigned to these machine states for an individual press is the number of hours in a production day (e.g., 12 hours, 24 hours, etc.). LETS selects the machine state to which to log press time on the basis of downtime reporting and other information it receives from SmartPAC 2. Machine states are differentiated as follows:

- **Running Time**—Press is running and making parts
- **Idle Time**—Press is stopped, no SmartPAC error has occurred, and the reason the press is stopped has not been documented in SmartPAC 2
- **Unplanned Downtime**—Press is stopped due to a SmartPAC 2 error, or if the press is stopped for another reason, that reason has been documented in SmartPAC 2 as a downtime reason other than Planned Downtime or Tool Change
- **Planned Downtime**—Press is stopped, and the reason has been documented in SmartPAC 2 as Planned Downtime

### NOTICE

The Planned Downtime machine state should only be assigned for lunch and coffee breaks, meetings, training, etc. Planned Downtime is not used in calculating Overall Equipment Effectiveness (OEE) and, therefore, does not reduce the OEE value.

- **Changeover Time**—Press is stopped, and the reason has been documented in SmartPAC 2 as Tool Change
- **Offline Time**—Press is stopped because there is no power to the press or the network is down

All time during which the press is stopped for any reason other than a power interruption or network failure is logged by LETS to Idle Time unless a downtime reason is reported from the SmartPAC 2. Since Overall Equipment Effectiveness (OEE) and other efficiency metrics assign high ratings to machines with low Idle Time values, SmartPAC 2 has been designed to allow very precise reporting of downtime to LETS and may be programmed to require the operator to select a specific downtime reason each time the press enters an Idle state. When operator intervention is required, periods of press inactivity are more likely to be assigned to a specific downtime reason than to be logged as Idle Time.

## SmartPAC 2 Downtime Reporting Features

Downtime reasons in SmartPAC 2 may be reported to LETS either automatically by the system or manually by the operator. When the press is stopped because of an error generated by SmartPAC 2 or an installed SmartPAC 2 module, the specific fault (e.g., “Sensor 1 Part Ejection Missed”) is reported automatically as a downtime reason to LETS.

When the press is stopped by the operator or by a piece of auxiliary equipment not connected to the SmartPAC 2, a downtime reason must be reported manually by the operator since SmartPAC 2 is unable to detect the reason for the interruption (see *Forced Idle Dialog Mode*, below). Downtime reasons may also be assigned manually to provide additional detail for periods documented automatically with specific error conditions (see *Forced Error Dialog Mode*, page H-4).

### Forced Idle Dialog Mode

If the SmartPAC 2 is set to Forced Idle Dialog mode (see *Making Downtime Reporting Settings*, page H-7), a downtime reason must be entered whenever the press is stopped by the operator or by auxiliary equipment. When the press stops (see Figure H-1, page H-3 for a schematic time line), a message displays at the SmartPAC 2 stating that the operator must enter a downtime reason before the press can be restarted. When the operator closes the message window, the Dialog Menu automatically displays. The Dialog Menu, a selection on the SmartPAC 2 Main Run Menu, displays a list of downtime reasons from which the operator must select to report downtime to LETS. Refer to *Programming Downtime Reasons*, page H-11 for instructions on how to set up the Dialog Menu.

The Forced Dialog message can be programmed to display a specified number of minutes after the press stops (see Figure H-1). This Idle Dialog Time setting enables the press to be stopped briefly without requiring entry of a downtime reason.

### Backfilling vs. Forward Filling

LETS initially logs the time after the press is stopped by the operator or by auxiliary equipment to Idle Time. When the operator selects an item on the Dialog Menu, the period of time previously documented as Idle is assigned that downtime reason. Downtime can be assigned manually or automatically, depending on how your SmartPAC 2 is programmed (see *Making Downtime Reporting Settings*, page H-7).

If SmartPAC 2 is set up for manual downtime reporting, the operator selects how the downtime is to be assigned in an option window that displays following selection of the downtime reason (see Figure H-10, page H-16). One option, which is called “backfilling,” is to assign the downtime reason to all time that has elapsed since the press was stopped (see Figure H-1). The other option is to “forward fill” the downtime reason, assigning it to the period from reporting of the downtime reason until the press is restarted (see Figure H-2, page H-4). When this option is selected, all elapsed time before entry of the downtime reason is assigned to the previous downtime reason, if one was reported, or to Idle Time.

If SmartPAC 2 is set up for automatic downtime reporting, the option window does not display following selection of the downtime reason and downtime is automatically backfilled.

## Putting the Press “Back on Line”

A period of Idle Time or downtime (either “Planned” or “Unplanned”) comes to an end when the operator selects “Back on Line” from the Dialog Menu. If the press is restarted at the same time, LETS begins documenting the machine state as “Running time” (see Figure H-1). When the operator selects “Back on Line” without restarting the press, the subsequent period until the press is restarted is logged to Idle Time (see Figure H-2).

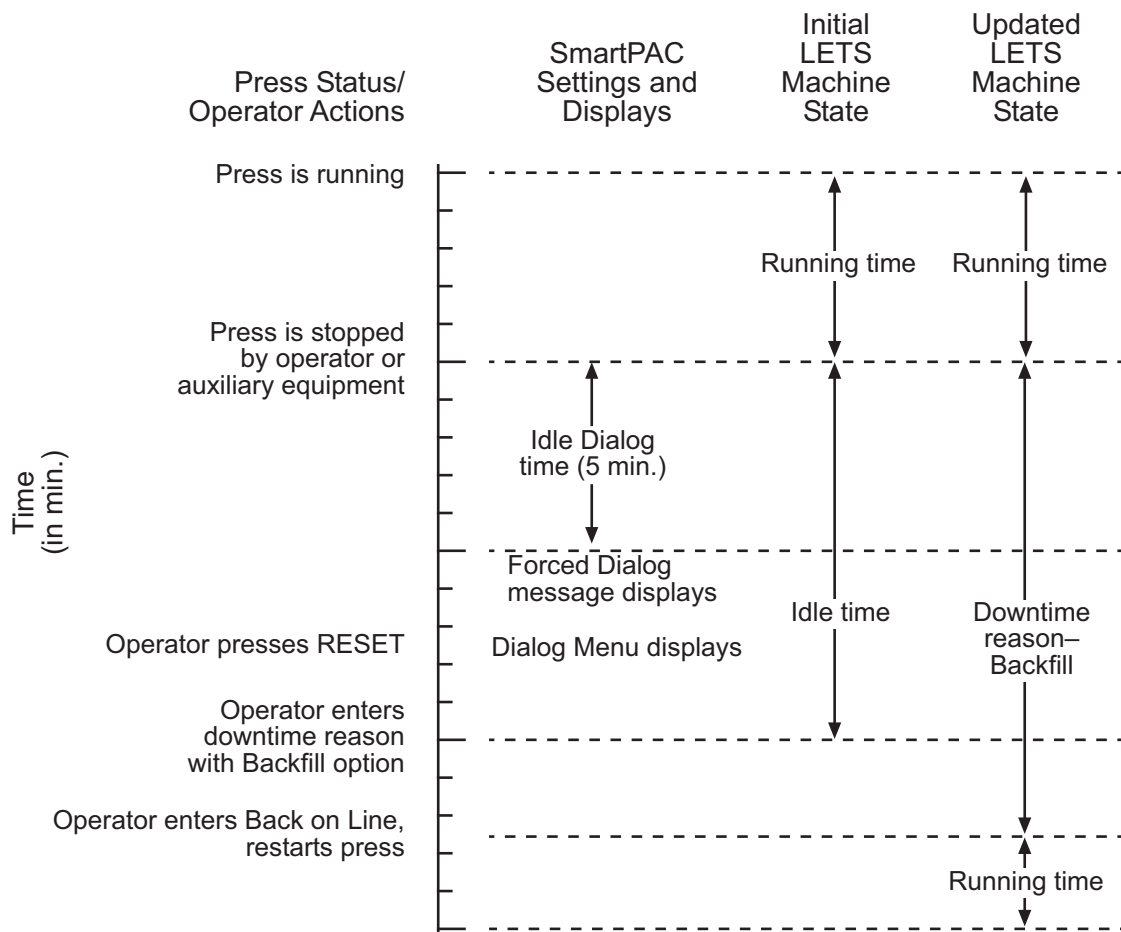


Figure H-1. Forced Idle Dialog Mode Time Line (Downtime Reason Backfilled)



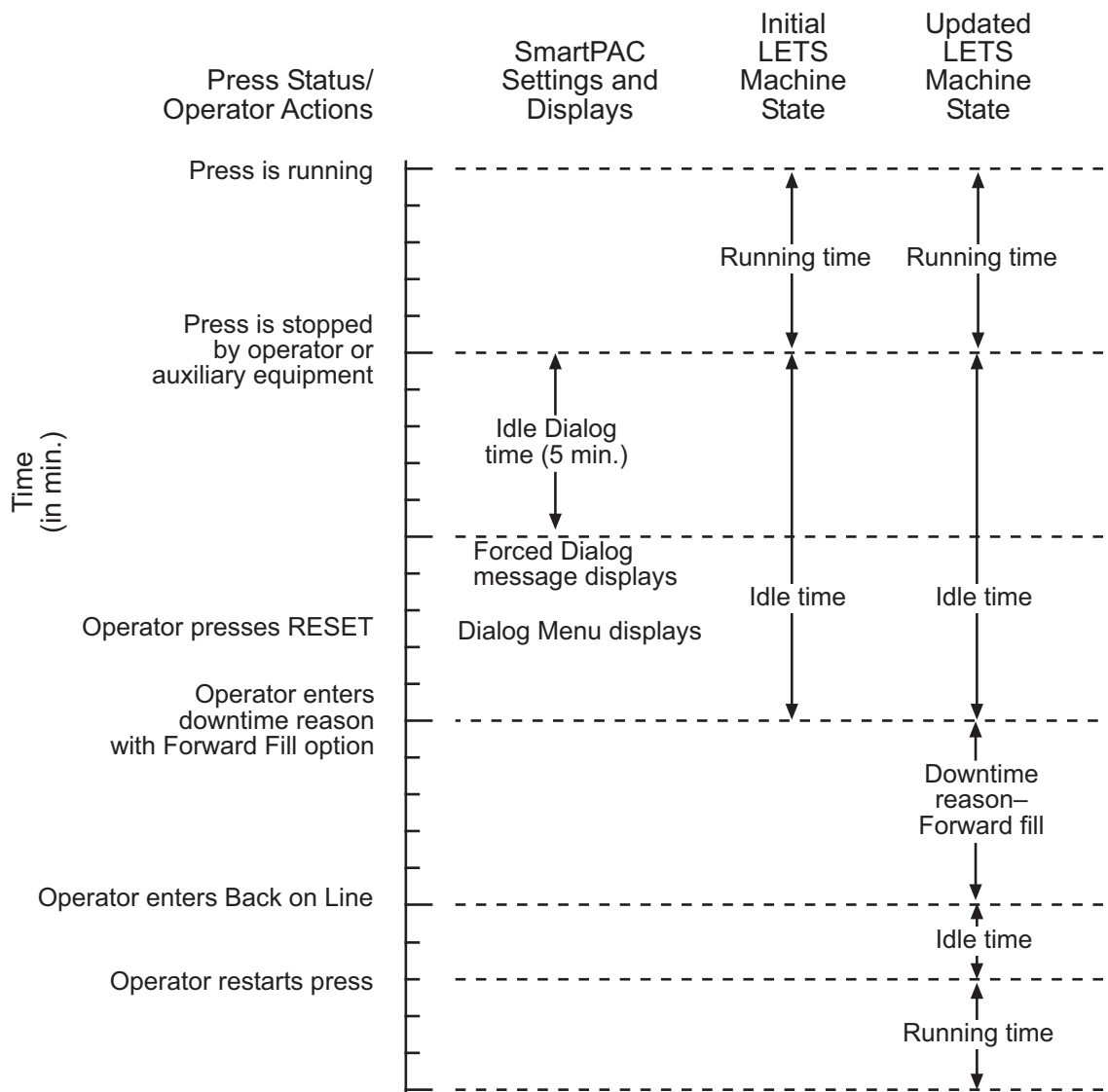


Figure H-2. Forced Idle Dialog Mode Time Line (Downtime Reason Forward Filled)

## Forced Error Dialog Mode

The Dialog Menu can also be programmed to display whenever the press is stopped due to a SmartPAC 2 fault. This feature, called Forced Error Dialog mode (see *Making Downtime Reporting Settings*, page H-7), allows the operator to add detail to a period of downtime that is initially logged to a specific SmartPAC 2 error but may actually have a different cause.

For example, SmartPAC 2 may be set up to generate an “End of Stock” error whenever the press runs out of material. This downtime reason is applied to the period of time during which a new coil is located and brought to the press unless the operator selects a more appropriate downtime reason, such as “Waiting for Coil,” and, using the backfill option (see *Backfilling vs. Forward Filling*, page H-2), applies it to the incompletely documented period. When the downtime reason is backfilled (see Figure H-3, page H-5 for a schematic time line), SmartPAC logs one second to the initial error (e.g., “Sensor 5—End of Stock”), assuring that

the fault is documented, and the remaining time to the new downtime reason (e.g., “Waiting for Coil”).

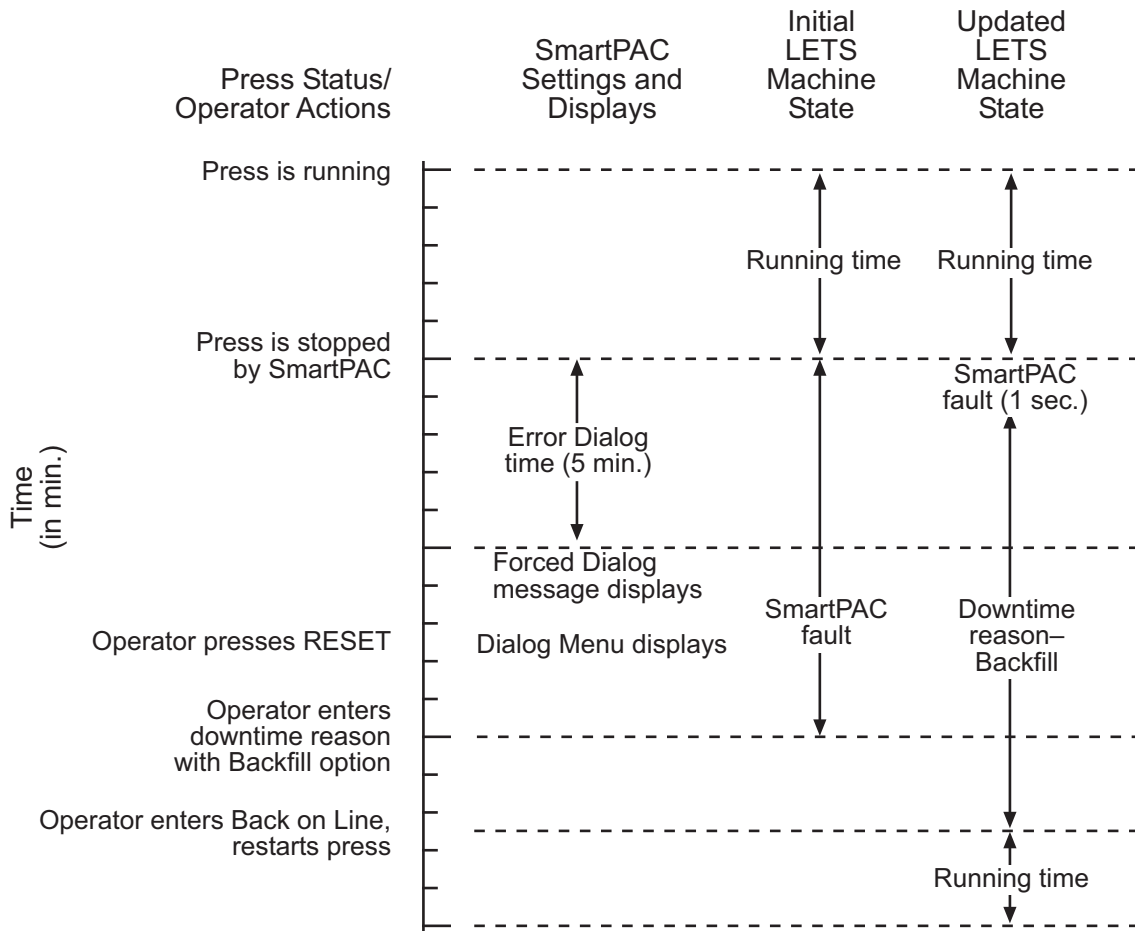


Figure H-3. Forced Error Dialog Mode Time Line

Downtime reasons can also be “forward filled” in Forced Error Dialog mode.

As in Forced Idle Dialog mode, the Forced Dialog message can be programmed to display a specified number of minutes after the press stops (see Figure H-3). This Error Dialog Time setting prevents nuisance faults such as “Counter preset reached” from being reported as downtime.

## Persist Dialog Mode

Periods during which the press is powered down are normally documented as Offline Time and the period following the next power-up assigned to Idle Time. Periods subsequent to machine power-ups are documented as Idle Time even when the period immediately preceding the shutdown has been assigned to an Unplanned Downtime reason. The only machine states that carry over from the period immediately preceding a shutdown to the period immediately succeeding a power-up are Changeover Time and Planned Downtime. In

these cases, the period during which the press is offline and the time immediately following press power-up are assigned to the machine state in effect when the press was powered down.

SmartPAC 2 can be programmed so that Unplanned Downtime reasons selected from the Dialog Menu also “persist” through press shutdowns (see *Making Downtime Reporting Settings*, page H-7). When this setting is enabled, both the interval during which the press was powered down and the time following resumption of power to the press are assigned to the downtime reason in effect when the press was shut down. One second of the period during which the press was offline is assigned to Offline Time to document this event.

## Single-stroke Mode

For hand-fed applications, a special setting can be programmed at the SmartPAC 2 (see *Setting up SmartPAC 2 to Report Downtime*, page H-6) that allows the press to operate continuously in Single-stroke mode without the operator having to enter a downtime reason at the end of each stroke, when the SmartPAC 2 considers the press to be stopped. Instead of looking for a change of state (i.e., from Running to Stopped), SmartPAC 2 looks for at least one press cycle during a pre-programmed interval and, if it detects no stroke, considers that the press is stopped, reporting subsequent time as Idle Time.

## Reset Strokes Counters

Normally, a period of Idle Time, Planned or Unplanned Downtime, or Changeover Time is ended when the operator selects “Back on Line” from the Dialog Menu and restarts the press (see *Putting the Press “Back on Line,”* page H-3). However, since the operator may forget to select the “Back on Line” item, an alternative way of terminating a period of downtime is available.

SmartPAC 2 can be programmed to begin logging time following a downtime period to Running Time after a specified number of press strokes. A Reset Strokes counter (see *Making Downtime Reporting Settings*, page H-7) begins incrementing when the press is restarted, and after the counter reaches its preset, LETS changes the machine state to which it logs press time from the downtime reason to Running Time. Three different Reset Strokes counters can be programmed, allowing you to set different restart intervals following periods of Planned Downtime, Unplanned Downtime, and Changeover time.

## Setting up SmartPAC 2 to Report Downtime

To set up SmartPAC 2 to report downtime to LETS, you make downtime reporting settings on the Set Communications Menu and program downtime reasons on the Dialog Fixed Name Choice Menu and the Dialog Special Choice Name Menu.

## Making Downtime Reporting Settings

To enable and configure the SmartPAC 2 downtime reporting features described in the previous section, perform the following steps:

1. At the SmartPAC 2, turn the Program/Run key to “PROG,” then press the “1” and “CLEAR” keys simultaneously for a second or two until the Main Initialization Menu (see Figure H-4) displays.

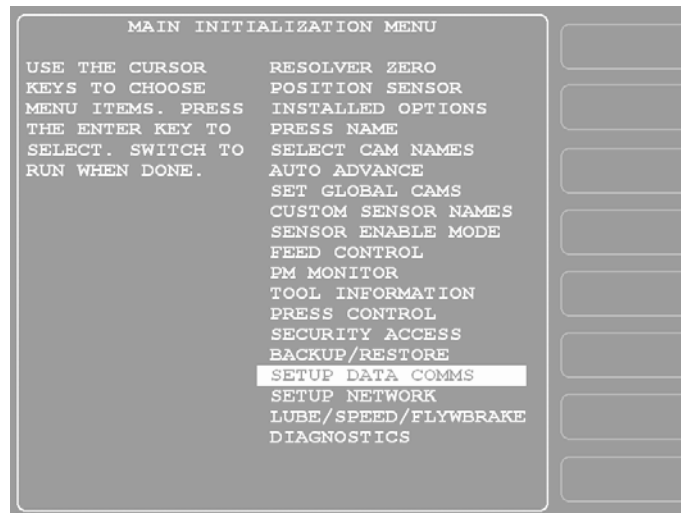


Figure H-4. SmartPAC 2 Main Initialization Menu

2. Highlight the “SETUP DATA COMMS” menu item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Set Communications Menu (see Figure H-5) displays:

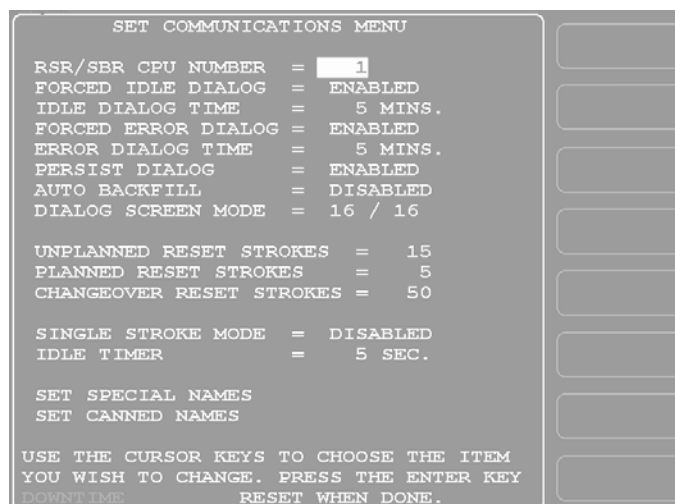


Figure H-5. Set Communications Menu

3. Highlight each menu item you want to set, using the Up (▲) or Down (▼) cursor key, then do the following:
  - To enable or disable a feature, press ENTER until the desired setting is displayed.
  - To specify a value for an item (with the exception of IDLE TIMER), press ENTER to display the Numeric Entry window, key in your entry with the SmartPAC 2 keypad, and press ENTER again.

### NOTICE

Make sure that the DIALOG SCREEN MODE item is set to "16 / 16." If DIALOG SCREEN MODE is set to "32 CUSTOM," you will not be able to access the Dialog Menu. The fault message "File Not Found" will display when you attempt to do so.

- Leave the DIALOG SCREEN MODE item set to "16 / 16," the default. The "32 CUSTOM" setting is for SFC customers only.
- To select a value for IDLE TIMER, press ENTER until the desired value is displayed.
- To display screens on which you can program Dialog Menu entries, press ENTER with the cursor resting in the SET SPECIAL NAMES or SET CANNED NAMES field.

Table H-1 explains each field on the Set Communications Menu and provides instructions on how to make settings.

*Table H-1. Set Communications Menu Settings*

Field	Settings
RSR/SBR CPU NUMBER	When SmartPAC 2 is connected to LETS, this field must be set to "1." Other CPU Number values may be used when SmartPAC 2 is connected to certain legacy software products that require each SmartPAC 2 to be assigned a unique identifier.
FORCED IDLE DIALOG	Indicates whether SmartPAC 2 displays the Forced Dialog message and Dialog Menu after the press has been stopped by the operator or by auxiliary equipment not connected to SmartPAC 2. The number of minutes after the press has stopped before the Forced Dialog message appears is specified in the IDLE DIALOG TIME field (see next entry). At the appearance of the Forced Dialog message, the operator must select a downtime reason on the Dialog Menu in order to restart the press. This setting allows time that elapses after the press is stopped by the operator or by equipment not connected to SmartPAC 2 to be documented with a downtime reason rather than as Idle Time. There are two settings:  ENABLED    Forced Idle Dialog mode enabled DISABLED    Forced Idle Dialog mode disabled
IDLE DIALOG TIME	Specifies the number of minutes (1-60) after the press has stopped in Forced Idle Dialog mode before the Forced Dialog message displays. This setting allows you to prevent Forced Idle Dialog from being triggered by brief stops. Suggested initial value: 5 minutes.

Table H-1. Set Communications Menu Settings (Cont.)

Field	Settings
FORCED ERROR DIALOG	<p>Indicates whether SmartPAC 2 displays the Forced Dialog message and Dialog Menu after the press has been stopped by a SmartPAC 2 fault. The number of minutes after the press has stopped before the Forced Dialog message appears is specified in the ERROR DIALOG TIME field (see next entry). At the appearance of the Forced Dialog message, the operator must select a downtime reason on the Dialog Menu in order to restart the press. This setting allows time that elapses after the press is stopped due to a SmartPAC 2 fault to be assigned a different downtime reason. There are two settings:</p> <p>ENABLED    Forced Error Dialog mode enabled          DISABLED    Forced Error Dialog mode disabled</p>
ERROR DIALOG TIME	<p>Specifies the number of minutes (1-60) after the press has stopped in Forced Error Dialog mode before the Forced Dialog message displays. This setting allows you to prevent reporting of SmartPAC 2 nuisance faults such as "Counter preset reached." Suggested initial value: 5 minutes.</p>
PERSIST DIALOG	<p>Indicates whether an Unplanned Downtime reason from the Dialog Menu that is assigned before a press shutdown continues to be applied to the period during which the press is down and to the time after the press is powered up again. Normally, the interval during a press shutdown is assigned to "Offline Time" and the period after the press is powered up to "Idle Time." There are two settings:</p> <p>ENABLED    Persist Dialog mode enabled          DISABLED    Persist Dialog mode disabled</p>
AUTO BACKFILL	<p>Indicates whether time occurring after the press has been stopped up to the point when the operator selects a downtime reason is automatically documented with that reason. When this item is disabled, the operator is given the option of backfilling or forward filling downtime following selection of a downtime reason. When this item is enabled, the downtime reason selected by the operator is automatically backfilled. There are two settings:</p> <p>ENABLED    Auto Backfill enabled          DISABLED    Auto Backfill disabled</p>
DIALOG SCREEN MODE	<p>This item, which is set to "16 / 16" by default, should not be changed. The "32 CUSTOM" setting is for SFC customers only. If you set this item to "32 CUSTOM," the message "File Not Found" will display when you access the Dialog Menu.</p>

Table H-1. Set Communications Menu Settings (Cont.)

Field	Settings
UNPLANNED RESET STROKES PLANNED RESET STROKES CHANGEOVER RESET STROKES	<p>Specifies the number of strokes that must occur after the press is restarted following a period of Unplanned Downtime, Planned Downtime, or Changeover Time before LETS begins documenting the machine state as "Running Time." This setting prevents additional press time from being attributed to a downtime reason when the operator forgets to select the "BACK ON LINE" item from the Dialog Menu. The number of strokes you specify should be the maximum number of press cycles that are likely to be needed to return the press to production. Valid entries: 1-9999. Suggested settings:</p> <p>Set the Unplanned Reset Strokes counter to two strokes more than the maximum number of strokes required to fill an empty die. This setting should give the operator sufficient time to complete a response to the downtime cause (such as Coil Change) that requires the longest time to address.</p> <p>Set the Planned Reset Strokes counter to the lowest number of strokes required to return the press to production following a lunch or other break.</p> <p>Set the Changeover Reset Strokes counter to the maximum number of strokes required to complete a die setup.</p>
SINGLE STROKE MODE	<p>This setting, which is used for hand-fed applications when the press is being run in Single-stroke mode, indicates whether LETS counts press cycles (or parts made) within the period specified in the IDLE TIMER field (see next entry) to determine whether the press is "running." When this field is set to "ENABLED," LETS only documents the press as "Idle" when no cycles occur (i.e., no parts are made) during an Idle Timer period. There are two settings:</p> <p>ENABLED Single-stroke Mode enabled DISABLED Single-stroke Mode disabled</p>
IDLE TIMER	<p>Specifies the number of seconds during which SmartPAC 2 counts the number of press strokes in Single-stroke mode to determine a production rate for hand-fed applications. This value should be twice the cycle time for the slowest hand-fed job run on a press. For example, if the slowest job produces an average of 6 parts per minute, the Idle Timer should be set to 20 seconds (6 parts per minute = 10-second cycle time; 2 x 10 seconds = 20 seconds). Available selections: 5, 10, 15, 20, 30, and 60.</p>
SET SPECIAL NAMES	<p>Displays the Dialog Special Choice Name Menu, on which you can create up to 16 custom downtime reasons for display on the Dialog Menu and specify the order in which they will appear (see <i>Creating Special Names on the Dialog Special Choice Name Menu</i>, page H-13).</p>
SET CANNED NAMES	<p>Displays the Dialog Fixed Name Choice Menu, on which you can select up to 14 pre-programmed, or "canned," downtime reasons for display on the Dialog Menu and specify the order in which they will appear (see <i>Selecting Canned Names on the Dialog Fixed Name Choice Menu</i>, page H-11).</p>

## Programming Downtime Reasons

The SET SPECIAL NAMES and SET CANNED NAMES items on the Set Communications Menu allow you to specify the downtime reasons that appear on the Dialog Menu and the order in which they are presented. The items you program on these two menus will be the menu selections available to the operator when the Dialog Menu displays in Forced Idle Dialog or Forced Error Dialog mode, or when the operator accesses the menu at other times.

“Canned” names are downtime reasons whose text has been pre-programmed into the SmartPAC 2. “Special” names are downtime reasons whose text you assign. You can select up to 14 “canned” names and create up to 16 “special” names. The Dialog Menu can include both “canned” and “special” entries, displaying up to 30 items.

### NOTICE

It is recommended that you create a standardized list of downtime reasons for all your presses. Having the Dialog Menu display the same downtime reasons in the same order on all SmartPAC 2s will help to minimize reporting errors.

When planning the order in which you want Dialog Menu items to display, you should attempt to predetermine the downtime causes that are likely to occur most frequently and place these at the beginning of the downtime reason sequence.

### Selecting Canned Names on the Dialog Fixed Name Choice Menu

When you select the SET CANNED NAMES item on the Set Communications Menu, the Dialog Fixed Name Choice Menu (see Figure H-6) displays. This menu allows you to select the “Canned” names that will appear on the Dialog Menu. “Canned” names are downtime reasons whose text has already been programmed into the SmartPAC 2. You can select up to 14 of these pre-programmed entries for inclusion in the Dialog Menu.

Dialog Fixed Name Choice Menu	Oper. Number
BACK ON LINE	1
PRESS IDLE	0
COIL CHANGE	4
TOOL CHANGE	2
FORKLIFT	5
QUAL CONTROL	6
LUBE PROBLEM	7
AIR PROBLEM	15
ELEC PROBLEM	11
MECH PROBLEM	12
PART EJECTION	16
BIN FULL	0
PART QUALITY	13
PLANNED DOWN	3

PRESS THE F1 KEY TO INITIALIZE ALL THE VALUES.

Figure H-6. Dialog Fixed Name Choice Menu



You select a “canned” name by entering a sequence number to the right of the name’s text entry. The sequence number specifies the position in which that item will appear on the Dialog Menu. For example, in the screen shown in Figure H-6, the item LUBE PROBLEM has a sequence number of 7 and, so, will appear seventh on the Dialog Menu. Since “special” downtime reasons may also appear on the Dialog Menu, be sure to maintain the necessary intervals in your “canned” name numbering scheme to accommodate these items.

To prevent a “canned” name from appearing on the Dialog Menu, set its sequence number to 0.

It is recommended that you include the following “canned” items in the Dialog Menu:

- **TOOL CHANGE**—This downtime reason is logged to the Changeover Time machine state, enabling LETS to track time for tool changes separately from other unplanned downtime and create special Changeover reports. “Tool Change” is the only Unplanned Downtime reason that is assigned to time when power to the press is off. Powering down the press is often necessary during tool changeover.
- **PLANNED DOWN**—This entry is logged to the Planned Downtime machine state, which includes time for planned lunch or coffee breaks, meetings, training, etc. Planned Downtime is not used in calculating Overall Equipment Effectiveness (OEE) and, therefore, does not reduce the OEE value.
- **BACK ON LINE**—This selection enables the operator to end a downtime event. When BACK ON LINE is selected, the machine state will change from “Unplanned Downtime,” “Planned Downtime,” or “Changeover Time” to “Running Time” if the press is running or from one of these “downtime” states to “Idle Time” if the press is stopped.
- **OPER. NUMBER**—This “canned” name allows the operator to enter an operator number, enabling LETS to assign a period of press time such as a shift to a particular operator.

To select the pre-programmed downtime reasons that will appear on the Dialog Menu and the order in which they will appear, do the following:

1. On the Set Communications Menu, highlight the SET CANNED NAMES item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Dialog Fixed Name Choice Menu (see Figure H-6) displays with the cursor resting in the OPER. NUMBER field.
2. Press ENTER, and when the Numeric Entry window appears, type the numeric position in which you want that item to appear on the Dialog Menu, or type “0” if you want to prevent the item from displaying on the Dialog Menu. Press ENTER to save your entry and return to the Dialog Fixed Name Choice Menu.
3. Move the cursor to the BACK ON LINE field, using the Down (▼) cursor key, and repeat step 2. Do the same for the remaining menu items.

## NOTICE

Remember to leave intervals between sequence numbers to allow room for “special” downtime reasons. See *Creating Special Names on the Dialog Special Choice Name Menu*, page H-13.

If the same sequence number is assigned to both a “canned” and a “special” name, both entries will display in that position on the Dialog Menu with the “special” name shown first.

- When you are finished setting the sequence of “canned” names, press RESET to save your entries and return to the Set Communications Menu.

### Creating Special Names on the Dialog Special Choice Name Menu

When you select the SET SPECIAL NAMES item on the Set Communications Menu, the Dialog Special Choice Name Menu (see Figure H-7) displays. This menu allows you to select the “special” names that will appear on the Dialog Menu. “Special” names are downtime reasons created by the user. Each name can be up to 12 characters in length, and you can include up to 16 of them in the Dialog Menu.

DIALOG SPECIAL	SPEC. 1	QC APPROVAL	8
CHOICE NAME	SPEC. 2	NO OPERATOR	9
MENU	SPEC. 3	MACH. MAINT.	10
	SPEC. 4	FEED PROBLEM	14
USE THE CURSOR	SPEC. 5		0
KEYS TO CHOOSE	SPEC. 6		0
A NAME OR SE-	SPEC. 7		0
QUENCE VALUE.	SPEC. 8		0
PRESS ENTER TO	SPEC. 9		0
CHANGE. PRESS	SPEC. 10		0
THE RESET KEY	SPEC. 11		0
WHEN ALL DONE.	SPEC. 12		0
	SPEC. 13		0
PRESS THE F1	SPEC. 14		0
KEY TO CLEAR	SPEC. 15		0
ALL THE NAMES	SPEC. 16		0
AND VALUES.			

Figure H-7. Dialog Special Choice Name Menu

You specify the order in which “special” names appear on the Dialog Menu by entering a sequence number to the right of each text entry. The sequence number specifies the position in which that item will appear on the Dialog Menu. Since “canned” downtime reasons may also appear on the Dialog Menu, be sure to maintain the necessary intervals in your “special” name numbering scheme to accommodate these items.

To prevent a “special” name from appearing on the Dialog Menu, set its sequence number to 0.

To program “special” downtime reasons for inclusion in the Dialog Menu, perform the following steps:

- On the Set Communications Menu, highlight the SET SPECIAL NAMES item, using the Up (▲) or Down (▼) cursor key, and press ENTER. The Dialog Special Choice Name Menu (see Figure H-7) displays with the cursor resting in the SPEC. 1 field.
- Press ENTER, and when the Alphabetic Entry window displays, type the text (12 characters maximum, including spaces) of the downtime reason that you want to appear on the Dialog Menu; then, press **F6** to save your entry and return to the Dialog Special Choice Name Menu.

3. Press the Right ( ► ) cursor key to move the cursor to the column for the SPEC. 1 sequence number.
4. Press ENTER, and when the Numeric Entry window displays, type the numeric position in which you want that downtime reason to appear on the Dialog Menu; then, press ENTER to save your entry and return to the Dialog Special Choice Name Menu.

**NOTICE**

Remember to leave intervals between sequence numbers to allow room for “canned” downtime reasons. See *Selecting Canned Names on the Dialog Fixed Name Choice Menu*, page H-11.

If the same sequence number is assigned to both a “canned” and a “special” name, both entries will display in that position on the Dialog Menu with the “special” name shown first.

5. Move the cursor to the SPEC. 2 field, using the Down ( ▼ ) cursor key, and repeat steps 2 through 4. Do the same for the remaining menu items.
6. When you have finished programming “special” downtime reasons, press RESET to save your entries and return to the Set Communications Menu.

## Documenting Downtime on the Dialog Menu

A downtime reason can be selected on the Dialog Menu either in response to the Forced Dialog message or when the operator wants to change a previous downtime entry or add detail to reported downtime.

### Documenting Downtime in Response to the Forced Dialog Message

With Forced Idle Dialog mode or Forced Error Dialog mode enabled (see *Making Downtime Reporting Settings*, page H-7), the operator is prompted to enter a downtime reason on the Dialog Menu whenever SmartPAC 2 detects that the press has stopped under the appropriate circumstances. This message is shown in Figure H-8, page H-15.

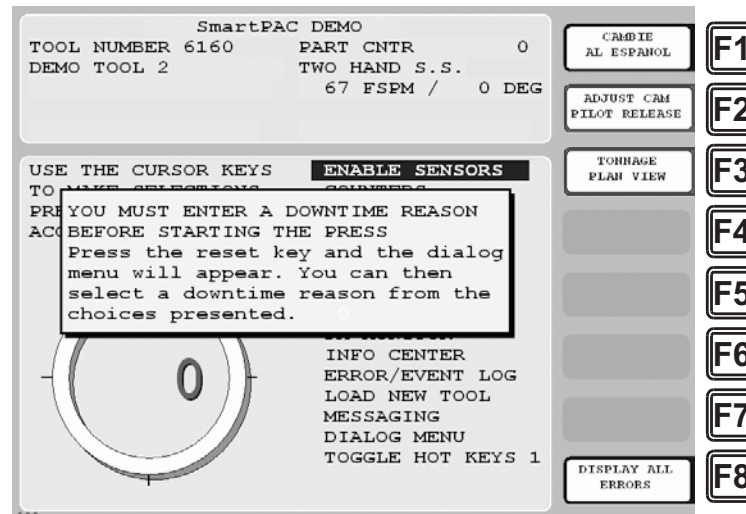


Figure H-8. SmartPAC 2 Run Mode Main Menu with Forced Dialog Message Displayed

To respond to this prompt, perform the following steps:

1. Press RESET to clear the message. The Dialog Menu (see Figure H-9) displays.

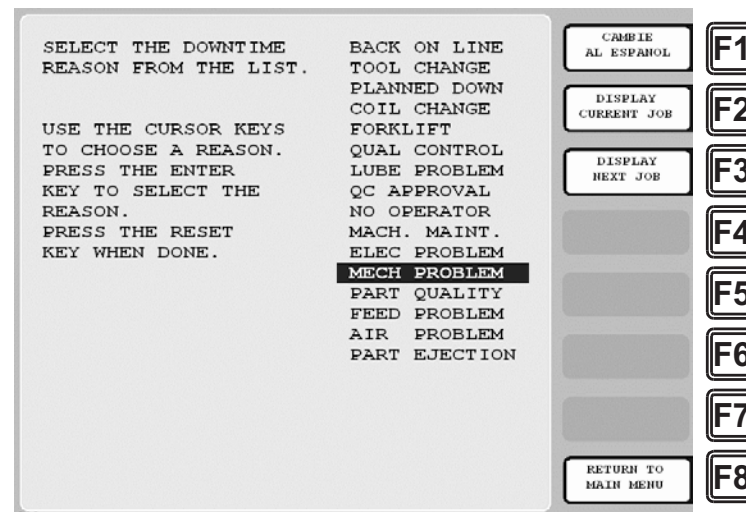


Figure H-9. Dialog Menu

2. Highlight the downtime reason you want (in Figure H-9, MECH PROBLEM is selected as an example), using the Up (▲) or Down (▼) cursor key, and press ENTER.
3. If Auto Backfill has been enabled on the Set Communications Menu (see Table H-1, page H-9), the downtime reason you selected is automatically “backfilled” (i.e., assigned to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection). If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will

replace that entry. The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

4. If Auto Backfill has been disabled, the window shown in Figure H-10 displays.

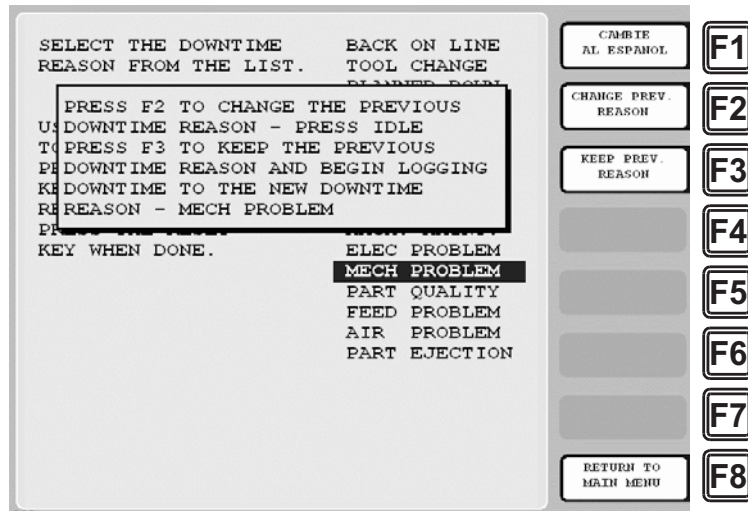


Figure H-10. Dialog Menu with F2/F3 Option Window Displayed

Press the **F2** (Change Prev. Reason) function key to “backfill” the selected downtime reason, in other words, to assign it to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection. If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry.

or

Press **F3** (Keep Prev. Reason) to leave documentation of the period up to the present unchanged and “forward fill” the selected downtime reason, in other words, assign it to the period from the present up to entry of the next downtime reason or the BACK ON LINE selection.

The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

## Documenting Downtime in Other Situations

You can report downtime reasons to LETS at any time without being prompted by the Forced Dialog message.

### EXAMPLE: UPDATING A DOWNTIME REASON

The operator stops the press for what he assumes is a feed problem and selects the downtime reason “FEED PROBLEM” from the Dialog Menu. After further investigation, he finds that the feed is working properly but the air supply to the feed is intermittent. The operator accesses the Dialog Menu, selects “AIR PROBLEM” from the list of downtime reasons, and chooses the **F2** (Change Prev. Reason) option. LETS changes the reason for the downtime period from “FEED PROBLEM” to “AIR PROBLEM.”

To report downtime without being prompted, perform the following steps:

1. On the Main Run Menu (see Figure H-11), select the DIALOG MENU item.

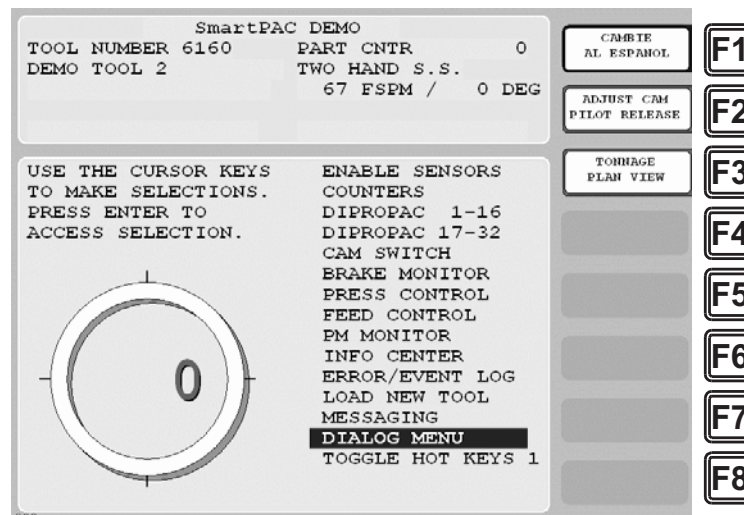


Figure H-11. SmartPAC 2 Run Mode Main Menu with DIALOG MENU Item Selected

2. On the Dialog Menu, highlight the downtime reason you want, using the Up (▲) or Down (▼) cursor key, and press ENTER.
3. If Auto Backfill has been enabled on the Set Communications Menu (see Table H-1, page H-9), the downtime reason you selected is automatically “backfilled” (i.e., assigned to the period from the time that the press was stopped up to entry of the next downtime reason or the BACK ON LINE selection). If a SmartPAC 2 fault has already been assigned to this period of press inactivity, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry. The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

4. If Auto Backfill has been disabled, the window shown in Figure H-10 displays.

Press the **F2** (Change Prev. Reason) function key to “backfill” the selected downtime reason, in other words, to assign it to the period of Idle Time or downtime up to entry of the next downtime reason or the BACK ON LINE selection. If a downtime reason other than a SmartPAC 2 fault has been assigned to this period, the downtime reason you selected will replace it. If a SmartPAC 2 fault has been assigned to this period, that fault will be documented as having consumed 1 second and the remainder of the period filled with the downtime reason you selected. If the period has been documented as Idle Time, your downtime reason will replace that entry.

or

Press **F3** (Keep Prev. Reason) to leave documentation of the period up to the present unchanged and “forward fill” the selected downtime reason, in other words, assign it to the period from the present up to entry of the next downtime reason or the BACK ON LINE selection.

The SmartPAC 2 will display a message stating that the downtime reason has been sent to the host computer.

## Creating Hot Keys for Dialog Menu Functions

You can create Hot Keys on the Main Run Menu (see page 3-12 for an overview) for selections on the Dialog Menu, enabling you to perform Dialog Menu tasks from the Run Menu. To do so, perform the following steps:

1. On the Main Run Menu, select the DIALOG MENU item.

### NOTICE

The SmartPAC 2 must be in an Idle state when you program Hot Keys. Make sure to select BACK ON LINE before attempting to make Hot Key assignments.

2. On the Dialog Menu, highlight the BACK ON LINE item and press ENTER to place the SmartPAC 2 in an Idle state. You are returned to the Main Run Menu.
3. Repeat step 1 to access the Dialog Menu again.

### NOTICE

The keystrokes you use to select a downtime reason for a Hot Key are recorded. Make sure to scroll to the desired selection using the fewest number of keystrokes.

4. Highlight the Dialog Menu selection for which you want to create a Hot Key, using the Up (▲) or Down (▼) cursor key. Use the fewest number of keystrokes possible in scrolling to the item.
5. Press the “2” and “0” keys simultaneously for a few seconds until the Hot Keys Instruction Window displays (see Figure 6-4, page 6-4), then press the function key you want to make the Hot Key for the selected menu item.



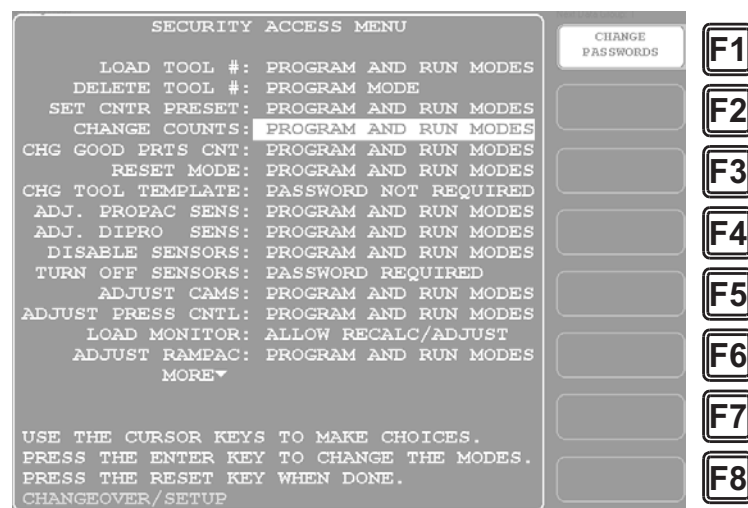
## Reporting Scrap and Good Parts to LETS

If you are running LETS-compatible firmware, SmartPAC 2 enables you to document scrap so that scrap counts can be reported to LETS. The scrap counter, which appears on the Counters screen in Run mode, maintains a cumulative total of all user scrap entries for the currently running job, resetting to zero when the job is complete.

The cumulative scrap count reduces by that amount the number of good parts reported to LETS. The good parts count is maintained in the Good Parts Count field on the Counters screen (see Figure H-13, page H-20). If you wish to adjust the Good Parts counter upward, you can do so in up to 1,000-part increments in Run mode and in larger increments in Program mode.

To enable scrap entries and Good Parts counter adjustments to be made in Run mode, you must set the CHANGE COUNT and CHG GOOD PRTS CNT items on the Security Access Menu in Initialization mode to “PROGRAM AND RUN MODES,” as shown in Figure H-12. (To display the Security Access Menu, select SECURITY ACCESS from the Main Initialization Menu—see Figure H-4, page H-7.)

If you want to allow scrap entries to be made in Run mode but prevent Good Parts counter adjustments, you must set the CHG GOOD PRTS CNT item on the Security Access Menu to “NO CHANGES ALLOWED” while leaving the CHANGE COUNT item set to “PROGRAM AND RUN MODES.”



*Figure H-12. Security Access Menu with CHANGE COUNT and CHG GOOD PRTS CNT Items Set to “PROGRAM AND RUN MODES”*

By default, the Good Parts counter does not increment during a fault condition. If you wish the counter to increment even when there is a fault, set the COUNTER INCREMENT MODE item on the Position Sensor screen to “INC ALWAYS” (see page 4-5).



## Making Scrap Entries

To document scrap for a currently running job, do the following:

1. With the tool loaded and running, select “COUNTERS” on the Main Run Menu (see Figure H-11, page H-17) to display the Counters screen (see Figure H-13).

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	900
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	900	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL (F1)  
 RELOAD BATCH COUNTERS (F2)  
 SCRAP VALUE 0 (F3)  
 (F4)  
 (F5)  
 (F6)  
 (F7)  
 RETURN TO MAIN MENU (F8)

Figure H-13. Counters Screen with “Scrap Value” Function (F3) Shown

2. Press **F3** (Scrap Value). The Scrap Value Entry window displays (see Figure H-14).

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	900
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	900	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE THE KEYPAD TO ENTER NUMBERS.  
USE THE UP/DOWN CURSOR KEYS TO INCREASE/DECREASE. PRESS ENTER WHEN DONE. PRESS RESET TO CANCEL.

CAMBIE AL ESPAÑOL (F1)  
 RELOAD BATCH COUNTERS (F2)  
 SCRAP VALUE 0 (F3)  
 (F4)  
 (F5)  
 (F6)  
 (F7)  
 RETURN TO MAIN MENU (F8)

Figure H-14. Counters Screen with Scrap Value Entry Window Displayed (30 Items Shown)

3. If this is your first scrap entry for the job, perform this step; otherwise, go to step 4.

Key in the amount of scrap you wish to document, following the directions in the window, and press ENTER. (Figure H-14 shows a scrap entry of “30” as an example.)

When you press ENTER, the Scrap Value Entry window disappears, and the value you keyed in is displayed beneath the “Scrap Value” caption to the left of the **F3** function key, as shown in Figure H-15, where a scrap value of “30” is used as an example. The Good Parts counter is reduced by the amount of your scrap entry (e.g.,  $900-30=870$  in Figure H-15).

SmartPAC DEMO		
DEMO TOOL 2	PART CNTR	870
TOOL ID 6160		
SENSORS ENABLED	PRESS ANGLE	0

	COUNT	PRESET VALUE
STROKES	900	0
GOOD PARTS	870	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

USE CURSOR KEYS TO MAKE SELECTION.  
 PRESS THE RESET KEY WHEN DONE.  
 PRESS CLEAR KEY TO CLEAR THE COUNT.  
 PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL	<b>F1</b>
RELOAD BATCH COUNTERS	<b>F2</b>
SCRAP VALUE 30	<b>F3</b>
	<b>F4</b>
	<b>F5</b>
	<b>F6</b>
	<b>F7</b>
RETURN TO MAIN MENU	<b>F8</b>

Figure H-15. Counters Screen with Scrap Value Updated to 30 Items

## NOTICE

### INDIVIDUAL SCRAP ENTRIES MUST INCLUDE CURRENT SCRAP TOTAL

The Scrap Value counter maintains a cumulative total of the scrap items documented for each job. In order to increment this counter, the value you enter in the Scrap Value Entry window (see Figure H-14, page H-20) must include the current scrap total—in other words, you must add the number of scrap items you wish to document to the current value shown in the Scrap Value counter. The Good Parts counter, on the other hand, is reduced by the actual number of scrap pieces you are reporting in this session, in other words, the difference between your scrap entry and the current Scrap Value total.

For example, if the count in the Scrap Value field is “30,” and you want to include an additional 10 parts in the count, you would enter “40” (not “10”) in the Scrap Value Entry window. When you are returned to the Counters screen, the Scrap Value counter would display 40 parts; the Good Parts counter would be reduced by 10 parts.

- If you have made previous Scrap Value entries for this job, key in the sum of the scrap count you wish to document this time and the current total shown in the Scrap Value field, and press ENTER. See Figure H-16, page H-22, in which “40” is used as the sample scrap input.

SmartPAC DEMO

DEMO TOOL 2      PART CNTR      1720

TOOL ID 6160

SENSORS ENABLED      PRESS ANGLE      0

	COUNT	PRESET VALUE
STROKES	1,750	0
GOOD PARTS	1,720	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

SCRAP VALUE ENTRY

40

TO USE THE KEYPAD TO ENTER NUMBERS.  
TO USE THE UP/DOWN CURSOR KEYS TO INCREASE/DECREASE. PRESS ENTER WHEN DONE. PRESS RESET TO CANCEL.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL F1

RELOAD BATCH COUNTERS F2

SCRAP VALUE 30 F3

F4

F5

F6

F7

RETURN TO MAIN MENU F8

Figure H-16. Counters Screen with Scrap Value Entry Window Displayed (40 Items Shown)

You are returned to the Counters screen. The value you entered in the Scrap Value Entry window is displayed beneath the “Scrap Value” caption to the left of the **F3** function key (see Figure H-17, in which a scrap total of “40” is used as an example). The Good Parts counter is reduced by the difference between the amount of your Scrap Value entry and the current Scrap Value (e.g.,  $1,720 - (40 - 30) = 1,710$  in Figure H-17).

SmartPAC DEMO

DEMO TOOL 2      PART CNTR      1710

TOOL ID 6160

SENSORS ENABLED      PRESS ANGLE      0

	COUNT	PRESET VALUE
STROKES	1,750	0
GOOD PARTS	1,710	10,000
BATCH 1	0	0
(TOP STOP)		
BATCH 2	0	0
(TOP STOP)		
BATCH 3	0	0
(TOP STOP)		
TOTAL HITS	0	0

SCRAP VALUE 40

USE CURSOR KEYS TO MAKE SELECTION.  
PRESS THE RESET KEY WHEN DONE.  
PRESS CLEAR KEY TO CLEAR THE COUNT.  
PRESS ENTER TO CHANGE THE COUNT.

CAMBIE AL ESPAÑOL F1

RELOAD BATCH COUNTERS F2

SCRAP VALUE 40 F3

F4

F5

F6

F7

RETURN TO MAIN MENU F8

Figure H-17. Counters Screen with Scrap Value Updated to 40 Items

- Repeat step 4 for the remaining scrap entries associated with the current job until the job is completed.

## Adjusting the Good Parts Counter

### NOTICE

You can only increase the value maintained by the Good Parts counter. You cannot decrease the Good Parts counter except by entering scrap values.

### NOTICE

You cannot adjust the Good Parts counter if the CHG GOOD PRTS CNT item on the Security Access Menu has been set to "NO CHANGES ALLOWED."

The Run mode Counters screen enables you to increase the Good Parts count to adjust for count inaccuracies, such as when good parts may be produced but not counted in Setup mode or during Fault conditions. The count can be increased by up to 1,000 parts at a time.

The Counters screen in Program mode allows you to increase Good Parts by larger amounts (see *Adjusting the Good Parts Counter in Program Mode*, next page). This capability is useful if new firmware is installed in the middle of a job, causing the Good Parts counter to reset to zero.

### Adjusting the Good Parts Counter in Run Mode

To increase the Good Parts count in Run mode, do the following:

1. Select the GOOD PARTS COUNT field on the Counters screen.
2. When the Good Parts Entry window (like the window shown in Figure H-14) displays, key in the number of good parts you want to add (1,000 parts maximum), and press ENTER. A Confirmation window like the one shown in Figure H-18 displays.

WARNING: A COUNTER VALUE IS ABOUT  
TO BE CHANGED! IF YOU WANT THIS TO  
HAPPEN THEN PRESS THE UP CURSOR  
KEY. IF YOU DO NOT WANT TO CHANGE  
THE COUNTER VALUE THEN PRESS RESET

Figure H-18. Good Parts Counter Adjustment Confirmation Window

3. Press the Up (▲) cursor key to confirm that you want to change the Good Parts counter value. You are returned to the Counters screen with your adjustment reflected in the GOOD PARTS COUNT field.

### NOTICE

If you attempt to enter a value greater than 1,000 or one that reduces (rather than increases) the Good Parts count, an error message will display briefly.

## Adjusting the Good Parts Counter in Program Mode

### NOTICE

In Program mode, you can increase the Good Parts count in increments greater than 1,000.

To increase the Good Parts count in Program mode, do the following:

1. On the Counters screen in Run mode, press RESET to return to the Main Run Menu.
2. Turn the Program/Run key to “PROG” to display the Main Program Menu.
3. Select “GO TO THE TOOL MANAGER” to display the Tool Manager screen.
4. Press **F4** (Edit Tool) with the loaded tool selected to display the Tool Program Menu.
5. Select COUNTERS to display the Counters screen.
6. Perform steps 1 through 3 of the procedure for adjusting the Good Parts counter in Run mode, above.

# Glossary

---

## NOTICE

Cross-references to other glossary entries are shown in *italics*.

actuation	A change in the state or condition of a sensor.
actuation angle	See <i>dwell</i> .
actuation block	A graphical indicator on the Sensor Status screen in Run mode, showing whether a sensor is actuated.
ANSI	Stands for American National Standards Institute, a U.S. clearinghouse and coordinating body for voluntary standards activity on the national level.
auto enable by sensor	A die protection mode in which an individual sensor is automatically actuated after a specified number of strokes.
auto enable by tool	A die protection mode in which all sensors in a tool are automatically actuated after a specified number of strokes.
batch counter	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 <i>counter</i> .
cam channels	Relays that open and close on signals from the programmable cam switch to turn auxiliary equipment on and off.
checksum	A numeric value calculated when a tool is stored in memory and when it is loaded. The two values must match or SmartPAC 2 displays a fault message.
communications	Data sent by SmartPAC 2 to one of its installed options (e.g., SFI) or received from an installed option.
counter	A SmartPAC 2 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 <i>batch counter</i> , <i>total hits counter</i> .
critical angle	The point in the ram stroke after which a stop signal to the press cannot prevent the die from closing.
diode	A component that reduces or eliminates electrical noise.

dwelling	The range of angles during which a sensor or cam is actuated, or “on.” Also called <i>actuation angle</i> .
emergency stop	A signal sent to the press in response to a malfunction that stops the press immediately.
error message	A message appearing on the SmartPAC 2 LCD that indicates a fault condition, identifies the problem, and may suggest how to correct it.
manual enable	A die protection mode in which sensors are manually enabled or disabled by the operator.
messaging	A SmartPAC 2 feature that allows e-mails to be sent from SmartPAC 2 to networked computers, pagers, text-enabled cell phones and other devices. This feature is set up in SmartView.
NEMA 12	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.”
OSHA	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.
ram angle clock	A graphical indicator on the SmartPAC 2 display that shows the position of the press’s ram in degrees.
reset	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 2 display. The command is issued by pressing the RESET key.
security access	Settings made in Initialization that control the amount of access SmartPAC 2 users are given to SmartPAC 2 functions.
smart stop	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 <i>critical angle</i> , <i>emergency stop</i> , and <i>top stop</i> .
suppressor	A component that reduces or eliminates electrical noise.

Tool Template	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.
top stop	A signal sent to the press in response to a malfunction that stops the press at the top of its current stroke (0°).
total hits counter	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 <i>counter</i> .





# Index

---

## –A–

- AC wiring
  - connecting to SmartPAC 2, 2-17
  - grounding, 2-17
  - running in conduit, 2-17
- alerts (preventive maintenance)
  - clearing, B-14
  - setting conditions for, B-10
  - viewing, B-13
- alphanumeric tool numbers, setting, 4-4
- auto enable
  - setting the auto enable by sensor counter, 5-24
  - setting the auto enable by tool counter, 5-21

## –B–

- backup (tool and initialization data),
  - performing, 4-28
- batch counters. *See also* counters
  - setting increment mode, 5-13
  - setting output mode, 5-13
- board
  - installing a new DiProPAC board, 2-24
  - replacing a DiProPAC board, 2-22
  - replacing a ProCamPAC board, 2-20
  - replacing a SmartPAC 2 board, F-1
- board layouts
  - Cam Output, 2-30
  - DiProPAC, 2-23
  - DiProPAC installed on SmartPAC 2 board, 2-12
  - ProCamPAC, 2-13
  - ProCamPAC installed on SmartPAC 2 board, 2-12
  - SmartPAC 2, 2-19

## –C–

- cam channels
  - adjusting programmed settings, 6-18
  - deleting settings, 5-46
  - naming, 4-8
  - programming, 5-39
  - programming a DSV on delay time, 5-45
  - programming a timed output setting, 5-44
  - programming an on/off setting, 5-40
  - programming multiple on/off settings, 5-41
  - setting global cams, 4-11
  - testing, 2-39
  - viewing cam timing, 6-18
  - viewing the cam summary, 5-47, 6-19
  - viewing the global cam summary, 5-47, 6-19
- cam output assembly. *See* ProCamPAC output assembly
- cam output relays. *See* relays, cam output

- checkout tests, performing, 2-38
- CLEAR key (SmartPAC 2), using, 3-5
- clock, setting, 4-39
- communications
  - faults, 7-7
  - performing a loopback test, 4-38
  - setting parameters for Wintriss data collection software, 4-31, G-7, H-7
  - verifying, 4-37
  - viewing transmit and receive data, 4-38
- counters
  - adjusting good parts count for reporting to LETS, H-23
  - adjusting good parts count for reporting to SFC, G-25
  - adjusting in Program mode, 5-11
  - adjusting in Run mode, 6-8
  - clearing the total hits counter, 5-12
  - entering preset values, 5-11
  - entering scrap counts for reporting to LETS, H-20
  - entering scrap counts for reporting to SFC, G-23
  - preset reached messages, 7-2
  - programming, 5-9
  - resetting batch counters, 6-9
  - setting batch pre-load counts, 5-15
  - setting increment angle, 5-14
  - setting increment mode for batch counters, 5-13
  - setting output mode for batch counters, 5-13
  - setting parts per stroke or strokes per part, 5-14
  - setting the auto enable by sensor counter, 5-24
  - setting the auto enable by tool counter, 5-21
  - setting the strokes counter for a green special sensor, 5-30
- critical angle, setting for a sensor set to smart stop, 5-27
- cursor keys (SmartPAC 2)
  - using to highlight letters in entry windows, 3-7
  - using to increment/decrement numeric values, 3-6
  - using to move the highlight bar, 3-6
  - using to set timing, 3-7
- custom names
  - creating for cam channels in Initialization mode, 4-10
  - creating for sensors in Initialization mode, 4-12
  - selecting for sensors in Program mode, 5-23
- cutout dimensions, SmartPAC 2 panel mount, 2-9

## –D–

- date, setting, 4-39
- DC power, wiring, 2-16

decimal places (tool information)  
 formats, 4-22  
 setting, 4-21  
 delay time, setting for a DSV on cam channel, 5-45  
 diagnostics, setting menu items, 4-36  
 dimensions. *See* mounting dimensions  
 diodes, installing, 2-32  
 DiPro Sensor Interface (DSI) 2, connecting sensors  
 to, 2-25  
 DiProPAC. *See also* sensors (die protection)  
 adding or upgrading, 2-22  
 board layouts, 2-23  
 installing new board, 2-24  
 replacing board, 2-22  
 verifying installation, 2-37  
 display (SmartPAC 2)  
 layout, 3-13  
 selecting an item, 3-14  
 downtime, reporting to LETS, H-1  
 downtime, reporting to SFC, G-1  
 DSV on cam channel  
 setting the delay time, 5-45  
 wiring a press-in-motion signal for, 2-35

## -E-

e-mail  
 adding/changing messages in SmartView, D-14  
 adding/changing recipient addresses in  
 SmartView, D-14  
 enabling in Initialization, 4-32  
 enabling in SmartView, D-2  
 sending messages, 6-27  
 sending messages to Wintriss Tech. Support, 6-29  
 setting up in Initialization, 4-33  
 setting up in SmartView, D-2, D-14  
 emergency stop  
 faults, 7-3  
 setting as sensor stop type, 5-26  
 testing emergency stop circuit, 2-39  
 wiring emergency stop circuit, 2-18  
 enable mode (sensor), setting, 4-13  
 enclosure, SmartPAC 2  
 grounding AC wiring, 2-17  
 mounting, 2-7  
 ENTER key (SmartPAC 2), using, 3-10  
 error messages. *See* faults  
 error/event log  
 sending in an e-mail to Wintriss Tech.  
 Support, 6-29  
 using to troubleshoot SmartPAC 2 problems, 7-8  
 viewing, 6-25  
 Ethernet, connecting cable to SmartPAC 2, 2-20  
 events, viewing in the error/event log, 6-25

## -F-

faults  
 displaying multiple faults, 6-5  
 equipment problem faults, 7-3

responding to, 7-1  
 sensor faults, 7-5  
 tool programming faults, 7-3  
 viewing in the error/event log, 6-25  
 final checkout. *See* checkout tests, performing  
 firmware (SmartPAC 2)  
 downloading updated firmware from  
 Wintriss, C-7  
 installing updated firmware, 4-40, C-2  
 ordering updated firmware, C-1  
 front panel (SmartPAC 2), components, 1-3  
 function keys (SmartPAC 2), using, 3-12

## -G-

global cams  
 setting, 4-11  
 viewing the global cam summary, 5-47, 6-19  
 good parts count, reporting to LETS, H-19  
 good parts count, reporting to SFC, G-22  
 green sensors  
 adjusting the ready signal, 6-11  
 overview, 5-18  
 programming the ready signal, 5-28, 5-33  
 selecting as sensor type, 5-25  
 green special sensors  
 adjusting the stroke preset, 6-13  
 programming the stroke preset, 5-30, 5-36

## -H-

HELP key (SmartPAC 2), using, 3-9  
 hot keys  
 deleting, 6-5  
 overview, 3-12  
 programming, 6-3  
 programming for dialog menu functions, G-21,  
 H-18  
 toggling between two sets, 6-30

## -I-

Info Center, 1-2  
 Initialization mode  
 entering and exiting, 4-1  
 main menu, 4-1  
 navigation, 3-18  
 overview, 3-17  
 input check circuit. *See* press-in-motion signal,  
 wiring  
 installation guidelines, 2-3  
 installed options. *See* options (installed), viewing  
 IP address, changing type in SmartView, D-4

## -K-

key switch, Program/Run, 3-11  
 key(s), using  
 CLEAR key, 3-5  
 cursor keys, 3-5  
 ENTER key, 3-10  
 function keys, 3-12

HELP key, 3-9  
 hot keys, 3-12  
 number keys, 3-3  
 RESET key, 3-10  
 keyboard (computer), using to enter names, 4-40  
 keyboard (SmartPAC 2), using, 3-3

### —L—

language, selecting, 4-7  
 LETS (Line Efficiency Tracking Software)  
   reporting downtime to, H-1  
   reporting good parts count to, H-19  
   reporting scrap count to, H-19  
   setting communications with SmartPAC 2, H-7  
 linear transducer  
   adjusting upper/lower limits, 6-21  
   mounting, 2-10, A-1  
   setting maximum upper limit, 4-15  
   setting offset, 4-15  
   setting resolution, 4-15  
   setting upper/lower limits, 5-50, 6-21  
   testing upper/lower limits, 2-38  
   wiring, 2-11, A-3  
 locked display, entering password to unlock, 6-5  
 loopback test, performing, 4-38

### —M—

magnetostrictive linear transducer. *See* linear transducer  
 messaging  
   enabling in Initialization mode, 4-33  
   sending a remote message in SmartView, D-13  
   sending e-mail messages in SmartPAC 2, 6-27  
 mounting dimensions  
   linear transducer, 2-11, A-2  
   ProCamPAC output assembly, 2-29  
   SmartPAC 2 enclosure, 2-7  
   SmartPAC 2 panel mount, 2-9

### —N—

name(s)  
   assigning to tools, 5-9  
   creating custom names for cam channels, 4-10  
   creating custom names for sensors, 4-12  
   selecting for cam channels, 4-8  
   selecting for PM items, B-8  
   selecting for sensors, 5-23  
   setting for a press, 4-7  
 network  
   backing up tool settings to, 4-28  
   changing settings, 4-35, D-4  
   connecting SmartPAC 2 to, 2-20  
   programming settings, D-2  
   requirements for SmartView, D-1  
   setting up, 4-32, D-1  
 new tool, loading, 6-26  
 number keys (SmartPAC 2), using, 3-3  
 numeric tool numbers, setting, 4-4

### —O—

operating modes  
   entering and exiting, 3-16  
   Initialization mode, 3-17  
   overview, 3-15  
   Program mode, 3-19  
   Run mode, 3-21  
 options (installed), viewing, 4-6  
 output mode, setting for batch counters, 5-13

### —P—

panel mount, SmartPAC 2  
   installing, 2-8  
   mounting and cutout dimensions, 2-9  
 password  
   assigning a new PM monitor password, B-8  
   changing defaults, 4-26  
   checking, 4-26  
   entering the PM monitor password, B-4  
   entering to unlock a protected screen, 4-25, 6-5  
   lost or forgotten password, 4-25  
 ping utility, using in SmartView, D-15  
 power, turning on to SmartPAC 2, 2-35  
 presets (counter)  
   preset reached messages, 7-2  
   setting and clearing, 5-11  
 press  
   selecting press type in SmartView, D-2  
   setting press name, 4-7  
   setting press type, 4-36  
 press-in-motion signal, wiring, 2-35  
 pressure transducer  
   mounting, 2-14  
   wiring, 2-15  
 preventive maintenance (PM) monitor  
   assigning a new password, B-8  
   clearing an alert, B-14  
   entering the password, B-4  
   initializing, B-6  
   installing, B-3  
   making Initialization settings, B-4  
   modifying the tracking frequency in Run mode, B-14  
   operation, B-2  
   selecting PM item names, B-8  
   setting tracking frequency, B-11  
   setting tracking units, B-10  
   using in Run mode, B-12  
   viewing PM status, B-13  
 ProCamPAC  
   board layouts, 2-13  
   replacing board, 2-20  
   testing cam channels, 2-39  
   upgrading, 2-20  
   verifying installation, 2-37  
 ProCamPAC output assembly  
   board layout, 2-30  
   connecting relays to equipment, 2-32

- installing diodes, 2-32
- mounting, 2-28
- running wiring in conduit, 2-28
- selecting relays for cam channels, 2-28
- wiring, 2-28
- Program mode
  - entering and exiting, 5-1
  - main menu, 5-1
  - navigation, 3-20
  - overview, 3-19
- Program/Run key switch (SmartPAC 2), using, 3-11
- pulse
  - setting batch counter output mode to, 5-13
  - setting duration of pulsed batch counter output, 5-13

## -R-

- ram angle clock
  - setting cam channel timing on, 5-41, 5-42, 5-45
  - setting green sensor ready signal on, 5-29
- ram angle window, opening, 6-6
- ram position
  - adjusting upper/lower limits, 6-21
  - setting upper/lower limits, 5-50, 6-21
  - testing upper/lower limits, 2-38
  - viewing, 5-50, 6-21
  - viewing cam on/off settings, 5-40, 5-44
- ram tonnage
  - adjusting dwell time for return on pressure, 6-23
  - adjusting tonnage for return on pressure, 6-23
  - selecting reversal mode, 5-52, 6-23
  - setting dwell time for return on pressure, 5-52
  - setting tonnage for return on pressure, 5-52
  - viewing, 5-52, 6-23
- ready signal
  - adjusting for green sensors, 6-10
  - overview, 5-17
  - programming for green sensors, 5-28, 5-33
- red sensors
  - faults, 7-7
  - overview, 5-18
  - selecting as sensor type, 5-25
- relays, cam output
  - connecting to equipment, 2-32
  - installing diodes, 2-32
  - installing suppressors, 2-32
  - selecting for each channel, 2-28
- remote messages, sending in SmartView, D-13
- remote reset switch, wiring, 2-34
- RESET key (SmartPAC 2), using, 3-10
- restore (tool and initialization data),
  - performing, 4-28
- Run mode
  - entering and exiting, 6-2
  - main menu, 6-1
  - navigation, 3-22
  - overview, 3-21

## -S-

- SBR (SmartPAC Backup and Restore)
  - using to back up tool settings in SmartPAC 1, E-1
  - using to restore SmartPAC 1 tool settings to SmartPAC 2, E-12
- scrap count, reporting to LETS, H-19
- scrap count, reporting to SFC, G-22
- screens (SmartPAC 2)
  - e-mailing screen captures, 3-23
  - layout, 3-13
  - making screen captures, 3-23
- security
  - access settings, 4-24
  - access types, 4-23
  - changing passwords, 4-27
  - setting access privileges, 4-23
- sensor summary, viewing, 5-31
- sensor-disabled output, wiring, 2-35
- sensors (die protection)
  - adjusting the ready signal for green sensors, 6-10
  - adjusting the stroke preset for green special sensors, 6-10
  - changing sensor settings, 5-31
  - deleting a sensor, 5-32
  - enabling/disabling, 5-55, 6-7
  - faults, 7-5
  - naming, 5-23
  - programming, 5-16, 5-21, 5-33
  - programming the ready signal for green sensors, 5-28, 5-33
  - programming the stroke preset for green special sensors, 5-30, 5-36
  - sensor terminology, 5-16
  - sensors available from Wintriss, 1-5
  - setting enable mode, 4-13
  - setting sensor type, 5-25
  - setting stop type, 5-26
  - setting the auto enable by sensor counter, 5-24
  - setting the auto enable by tool counter, 5-21
  - setting the critical angle for sensors set to smart stop, 5-27
  - turning a sensor on or off, 5-56
  - types, 5-18
  - viewing actual on/off angles, 6-11
  - viewing sensor settings, 5-31
  - viewing sensor status, 5-55, 6-14
  - viewing the sensor summary, 5-31, 6-13
- setup mode
  - enabling, 4-15
  - enabling/disabling counters, 4-5
  - wiring circuit, 2-34
- SFC (ShopFloorConnect Asset Utilization Software)
  - reporting downtime to, G-1
  - reporting good parts count to, G-22
  - reporting scrap count to, G-22
  - setting communications with SmartPAC 2, G-7
- smart stop, setting as sensor stop type, 5-26

SmartPAC 1, upgrading to SmartPAC 2, E-1

SmartPAC 2 board layout, 2-19

#### SmartView

changing IP address type, D-4

changing network settings, D-4

enabling, 4-33, D-2

enabling e-mail, D-2

installing, D-6

network requirements, D-1

operation, D-10

programming network settings, D-2

selecting press type, D-2

sending remote messages, D-13

setting up e-mail, D-2

setting up the network, D-1

using the main page, D-11

using the ping utility, D-15

using the press status information page, D-12

using the setup page, D-10

specifications, SmartPAC 2, 1-7

status (sensor), viewing, 5-55, 6-14

#### stop circuits

running in conduit, 2-18

wiring, 2-18

stop type (sensor), setting, 5-26

#### stroke preset

adjusting for green special sensors, 6-10

programming for green special sensors, 5-30, 5-36

suppressors, installing, 2-32

### -T-

test tool, creating and loading, 2-38

tests. *See* checkout tests, performing

time, setting, 4-39

toggle, setting batch counter output mode to, 5-13

#### tool information

abbreviations for units, 4-21

changing tool parameters, 6-20

decimal place formats, 4-22

entering tool parameters, 5-48

setting formats for, 4-19

tool number mode, setting, 4-4

tool template, copying to a new tool, 5-5

#### tool(s)

assigning names to, 5-9

backing up SmartPAC 2 settings, 4-28

backing up/restoring SmartPAC 1 settings to SmartPAC 2, E-1

changing settings, 5-6

copying settings from an existing tool to a new tool, 5-4

copying tool template to a new tool, 5-5

creating a new tool, 5-3

creating and loading a test tool, 2-38

deleting a tool, 5-7

entering tool information, 5-48

loading a new tool in Program mode, 5-5

loading a new tool in Run mode, 6-26

loading a tool to access Run mode, 6-3

programming, 5-8

restoring SmartPAC 2 settings, 4-30

tool programming faults, 7-3

#### top stop

setting as sensor stop type, 5-26

setting batch counter output mode to top stop, 5-13

testing top stop circuit, 2-39

wiring top stop circuit, 2-18

#### tracking frequency (preventive maintenance)

modifying, B-14

setting, B-11

#### tracking units (preventive maintenance),

setting, B-10

transducer. *See* linear transducer, pressure transducer

### -U-

units (tool information), abbreviations, 4-21

upgrade, SmartPAC 1 to SmartPAC 2, E-1

#### USB disk

backing up and restoring tool settings, 4-28

saving SmartPAC 2 information to, 4-40

### -W-

#### wiring

general recommendations, 2-3

running in conduit, 2-3

#### wiring connections

AC power, 2-17

aux I/O, 2-42

DC power, 2-16

DiPro Sensor Interface (DSI) 2, 2-25, 2-26

linear transducer, 2-14, A-4

press-in-motion signal, 2-35, 2-41

pressure transducer, 2-16

ProCamPAC output assembly, 2-28

remote reset switch, 2-34

sensor-disabled output, 2-35

setup mode circuit, 2-34

SFI and module ports, 2-41

spare 1 and WPC ports, 2-41

spare 3 and 4 ports, 2-42

special and PACNet ports, 2-41

stop circuits, 2-18

### -Y-

#### yellow sensors

faults, 7-6

overview, 5-18

selecting as sensor type, 5-25



# Wintriss Manuals

---

Wintriss Product	Installation Manual Doc. No.	User Manual/CD Doc. No.
AutoSet (1500, 1500 Plus, 1504, 1504 Plus)	DA71747	DA71447
AutoSetPAC (Tonnage Monitor)	DA71413	DA71443
Die Protection Handbook	N.A. *	1130300 *
DiPro 1500	DA71428	DA71447
DSI 2 Sensor Interface	N.A. *	DA66970 *
LETS Machine Interface (LMI)	N.A. **	DA71974 **
MultiPAC Types 1 and 2	DA71409	DA71443
MultiPAC Types 4 and 5	DA71410	DA71443
ProCam 1500	DA71430	DA71447
ProPAC (Process Monitor-In-die Measurement)	DA71411	DA71443
RamPAC (Shut Height, Counterbalance & Cushion Control)	DA71412	DA71443
Servofeed Interface-Coe/Wintriss	DA71415	DA71443
Servofeed Interface-CWP/Wintriss	DA71416	DA71443
Servofeed Interface-DiPro	DA71429	DA71447
Servofeed Interface-Electrocraft/Wintriss	DA71417	DA71443
Servofeed Interface-Indramat/Wintriss	DA71418	DA71443
Servofeed Interface-ProCam	DA71431	DA71447
Servofeed Interface-SmartPAC	DA71420	DA71443
Servofeed Interface-Waddington/Wintriss	DA71419	DA71443
SFC Machine Interface (SMI)	N.A. **	1140800**
Shadow 8 Safety Light Curtain	N. A. *	1139300 *
Shadow V Safety Light Curtain	DA71433	DA71449
Shadow VI Safety Light Curtain	DA71422	DA71445
Shadow VII Safety Light Curtain	N. A. *	1129400 *
SmartPAC (w/ DiProPAC & ProCamPAC)	DA71439	DA71454
SmartPAC 2 (w/ DiProPAC & ProCamPAC)	DA71406	DA71441
SmartPAC 2 Hydraulic	DA71436	DA71451
SmartPAC 2 Servo	DA71437	DA71452
SmartPAC 2 w/ WPC 2000 Integration	DA71407	DA71442
SmartPAC 2 w/WPC 2000 Run Mode (Spanish)	N. A. *	DA71443
SmartPAC Hydraulic	DA71435	DA71451
SmartPAC Run Mode (Spanish)	N. A. *	DA71443 *
SmartPAC w/ WPC II Integration	DA71440	DA71455
WaveFormPAC (Advanced Load Analyzer)	DA71414	DA71443
Wintriss Brake Monitor	DA71432	DA71448
Wintriss Clock Display	N. A. *	DA67206 *
WPC 1000 Wintriss Press Control	DA71423	DA71446
WPC 2000 Option 2	DA71408	DA71442
WPC 2000 Wintriss Press Control	DA71421	DA71444
WPC II Wintriss Press Control	DA71438	DA71453

\* Installation Manual not available; User Manual available in hard copy only. Die Protection Handbook available in hard copy (1102400) and on CD (1130300).

\*\* Installation Manual not available. User Manual available on CD only.



# SmartPAC 2 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 2 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 2 Setup Sheet

## Channels 9 - 15

Tool Name and Number: \_\_\_\_\_

Ch. #	Cam Name (function) same for all tools	Global cam? (✓)	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		

# DiProPAC Die Protection – SmartPAC 2 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 GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
2		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
3		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
4		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
5		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
6		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
7		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
8		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
9		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
10		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
11		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
12		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
13		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
14		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
15		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	ON OFF
16		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

# DiProPAC Die Protection – SmartPAC 2 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	Linked to Sensor #_____
18		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
19		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
20		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
21		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
22		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
23		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
24		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
25		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
26		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
27		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
28		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
29		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
30		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
31		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____
32		G R Y GC GQ GS _____ strokes	E-STOP TOP STOP SMART STOP	Linked to Sensor #_____

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

# SmartPAC Initialization Setup Sheet

Initialization Menu Item	Initialization Setting	Options
Position Sensor	Position Sensor Mode	Enabled Disabled
	Counter Setup Mode	Not incremented in Inch mode Is incremented in all modes
Installed Options (e.g., PM Monitor, Feed Control, Press Control, Lube/Speed Control)		
Press Name		_____
Set Brake Monitor	Stop Time Limit	_____ msec
	Start Time Limit	_____ msec
Select Cam Names	Channel 1	_____
	Channel 2	_____
	Channel 3	_____
	Channel 4	_____
	Channel 5	_____
	Channel 6	_____
	Channel 7	_____
	Channel 8	_____
	Channel 9	_____
	Channel 10	_____
	Channel 11	_____
	Channel 12	_____
	Channel 13	_____
	Channel 14	_____
	Channel 15	_____
	Channel 16	_____
Auto Advance	Advance Constant 1	_____
	Advance Constant 2	_____
	Top Stop Constant	_____
	Slow RPM	_____
Custom Sensor Names	Custom 1	_____
	Custom 2	_____
	Custom 3	_____
	Custom 4	_____
	Custom 5	_____
	Custom 6	_____
	Custom 7	_____
	Custom 8	_____
	Custom 9	_____
	Custom 10	_____

## SmartPAC Initialization Setup Sheet (Page 2)

Initialization Menu Item	Initialization Setting	Options
Custom Sensor Names (cont)	Custom 11	_____
	Custom 12	_____
	Custom 13	_____
	Custom 14	_____
	Custom 15	_____
	Custom 16	_____
Sensor Enable Mode	Sensor Enable Mode	Manual Enable Auto by Tool Auto by Sensor
Tool Information	Tool 1	Name _____ Units _____ Places _____
	Tool 2	Name _____ Units _____ Places _____
	Tool 3	Name _____ Units _____ Places _____
	Tool 4	Name _____ Units _____ Places _____
	Tool 5	Name _____ Units _____ Places _____
	Tool 6	Name _____ Units _____ Places _____

## SmartPAC Initialization Setup Sheet (Page 3)

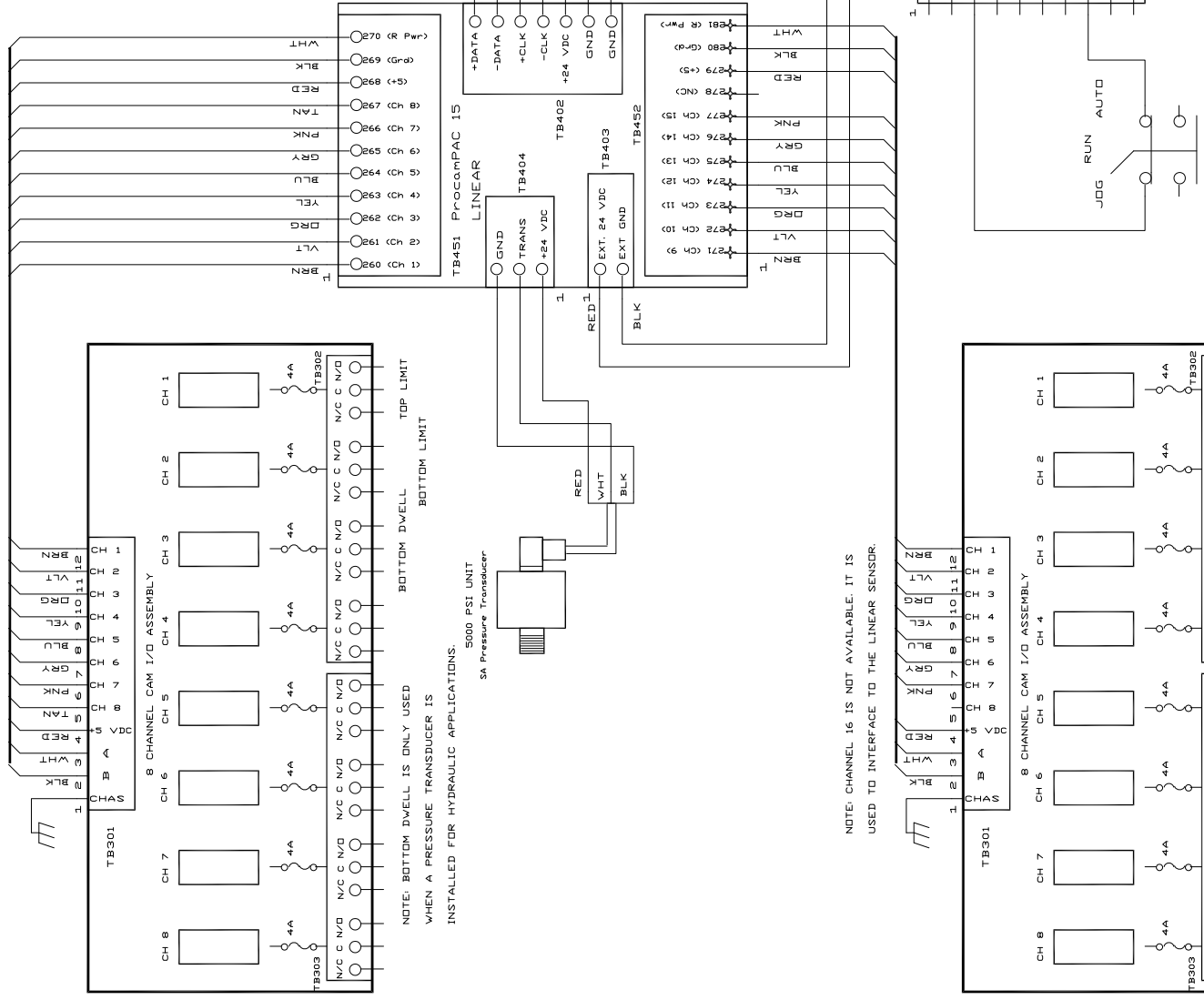
Initialization Menu Item	Initialization Setting	Options
Security Access	Load Tool #	Program and Run Modes Program Mode Only Password Required
	Delete Tool #	Program Mode Password Required Not Allowed
	Set Counter Preset	Program and Run Modes Program Mode Only Password Required
	Change Count	Program and Run Modes Program Mode Only Password Required
	Reset Mode	Program and Run Modes Program Mode Only Password Required
	Adjust Sensors	Program and Run Modes Program Mode Only Password Required
	Disable Sensors	Program and Run Modes Program Mode Only Password Required
	Turn Off Sensors	Password Required Allowed Not Allowed
	Adjust Cams	Program and Run Modes Program Mode Only Password Required
	Adjust Feed	Program and Run Modes Program Mode Only Password Required
	Adjust Tool Info	Program and Run Modes Program Mode Only Password Required
	Initialize Password	Must Be Used Not Required
	Set Passwords Menu	Init. Password _____ General Password _____





REV		REVISIONS		DATE		APP'D	
DESCRIPTION							

PROPRIETARY RIGHTS: This document discloses subject matter in which Wintriss Controls Group has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce or disclose the document, any part thereof, any information contained therein or any physical article or device, or to practice any method or process, except by written permission or written agreement with Wintriss Controls Group.



NOTE: If the Internal Power Supply is not used then a separate 24 VDC supply may be used. Current requirements are 100 MA.

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.

DRAWN		DATE		TITLE	
ADB		1/15/15		Wintriss Controls Group	
CHK.		APPROVALS		SmartPAC 2 Hydraulic ProcamPAC 15	
ENG.		MFG.		MTS Transducer Wiring Diagram	
FILENAME		CODE IDENT NO.		SIZE	
REL		FIGURE 2		REV	
SCALE		SHEET		DIF	

INTERRUPTED CYCLE TESTS ARE DISABLED WHEN INCH/SETUP MODE INPUT IS GROUND.



PROPRIETARY RIGHTS. This document discloses subject matter in which Wintriss Controls Group has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce or disclose the document, any part thereof, any information contained therein or any physical article or information embodied therein, in whole or in part, without the prior written agreement with Wintriss Controls Group.

REVISITONS		DESCRIPTION	DATE	APP'D
REV				

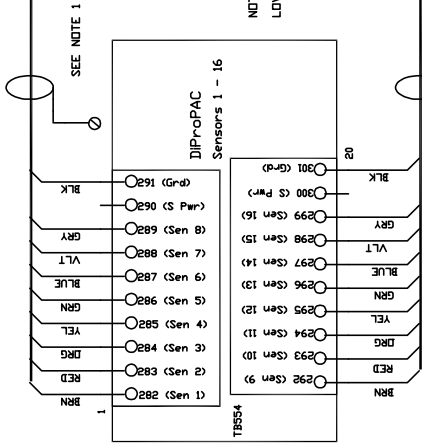
GND  
L2 120 VAC  
L1

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.

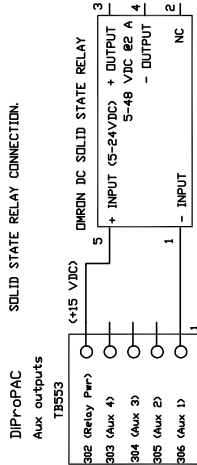
THE WHITE, TAN AND PINK WIRES ARE NOT USED SEE NOTE 2.

SENSORS 1 - 8



NOTE FOR DIPROPAC 8 THERE IS NO LOWER PORTION OF TB554 (292-301).

EXAMPLE OF CUSTOMER SUPPLIED SOLID STATE RELAY CONNECTION.

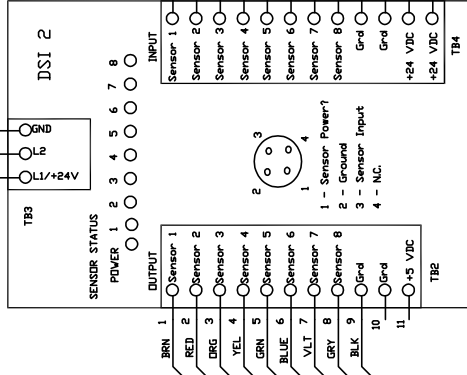
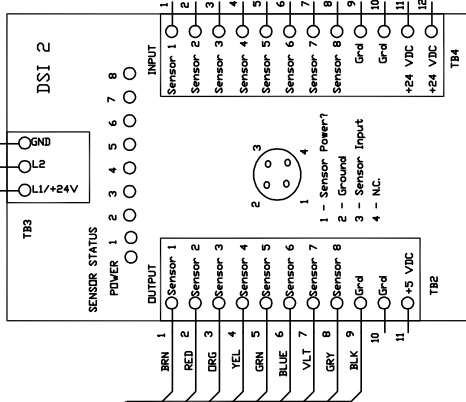


ALL OUTPUTS ARE OPEN COLLECTOR TYPE AND CAN SINK 10 MA TO GROUND.

AUXILIARY OUTPUT FUNCTIONS:

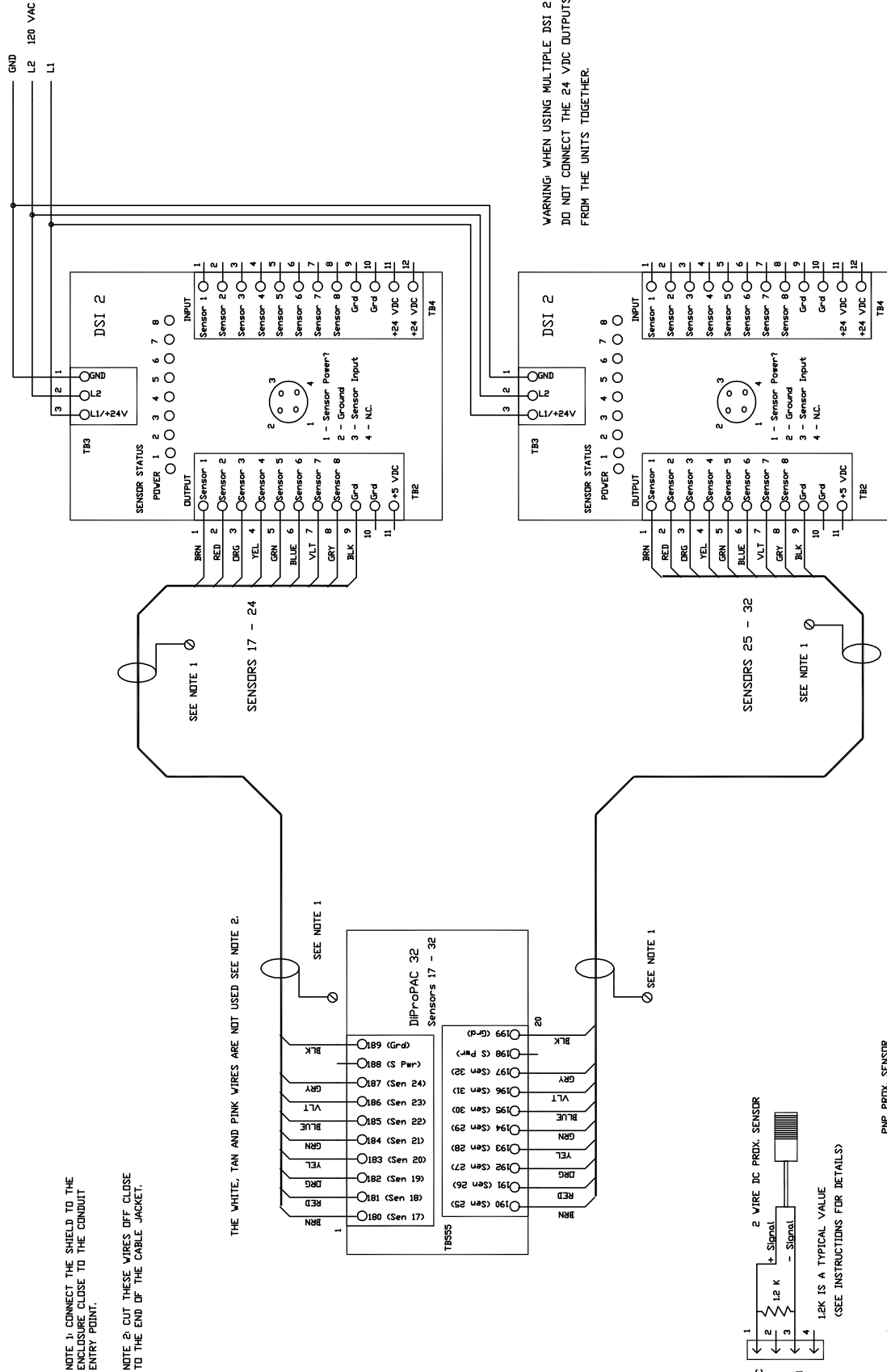
- Aux 1 output (TB553/1) - Turns on when Dipro sensors are disabled. Turns off when sensors enabled in auto enable by tool. Turns off when the last sensor enables in auto enable by sensor.
- Aux 2 output (TB553/2) - Turns on when estop relays are open. If a connected module has a fault. If the WPC has a red fault message displayed.
- Aux 3 output (TB553/3) - Turns on when top stop relay is open. If a connected module has a status message displayed. If the WPC has a yellow status message displayed.
- Aux 4 output (TB553/4) - Turns on when a dialog error number is present. Error code >= 221 and <=252.

WARNING: WHEN USING MULTIPLE DSI 2 UNITS, DO NOT CONNECT THE 24 VDC OUTPUTS FROM THE UNITS TOGETHER.



DRAWN	ADB	DATE	2/8/11	WINTRISS CONTROLS GROUP	
CHK.					
ENG.				TITLE	
WFG.				DIPRO-PAC SENSORS 1 - 16	
PLWME				TO DSI 2 WIRING DIAGRAM	
REL				CODE IDENT NO.	REV
				SIZE	DRAWING NUMBER
				C	FIGURE 4
				SCALE	SHEET
				NONE	DF

NOTE: DIPRO 32 MODULE ONLY WORKS WITH THE SMARTPAC 2 UNIT.



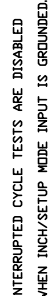
**WARNING: WHEN USING MULTIPLE DSI 2 UNITS, DO NOT CONNECT THE 24 VDC OUTPUTS FROM THE UNITS TOGETHER.**

DRAWN	ADJB	DATE 2/28/11	WINTRISS CONTROLS GROUP				
CHK.							
APPROVALS			TITLE				
ENG.			DIPPOPAC SENSORS 17 - 32				
MFG.			TO DSI 2 WIRING DIAGRAM				
FILDRWK			CODE	IDENT NO.	SIZE	DRAWING NUMBER	REV
					C		
REL			SCALE	NONE		FIGURE 5	
						SHEET	OF

TYPICAL FOR MECHANICAL SENSORS.  
USE THIS FOR MECHANICAL SWITCHES  
AND SWITCHED PROBES.

USE THIS FOR UNSWITCHED PROBES.  
THESE PROBES ARE GROUNDED BY THE  
PART OR THE PRESS FRAME.

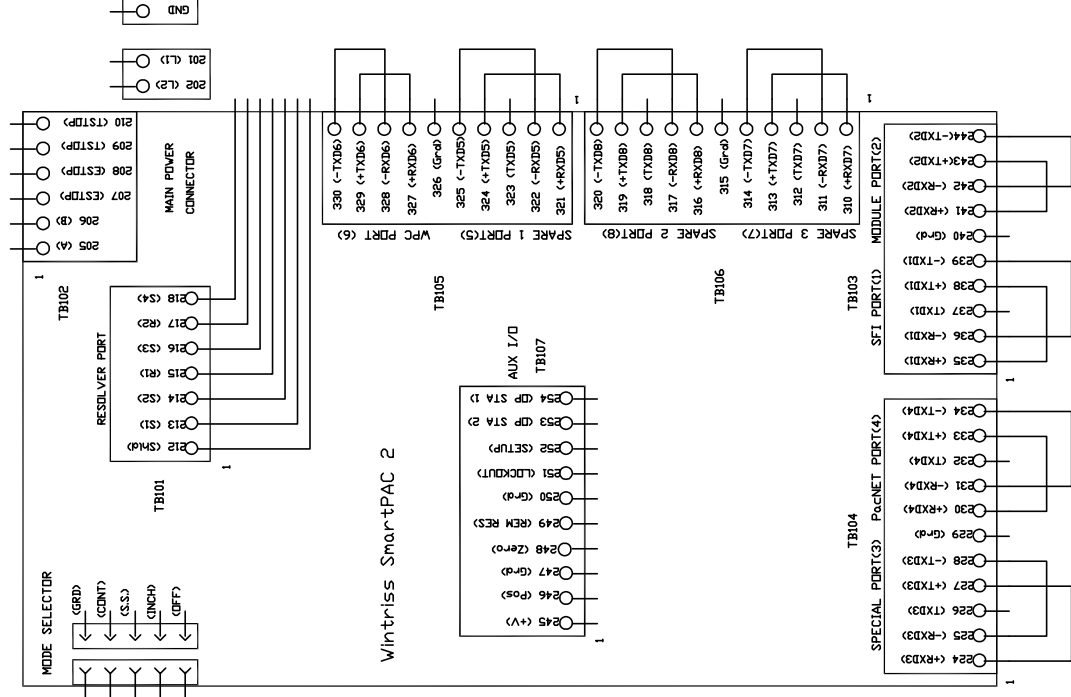




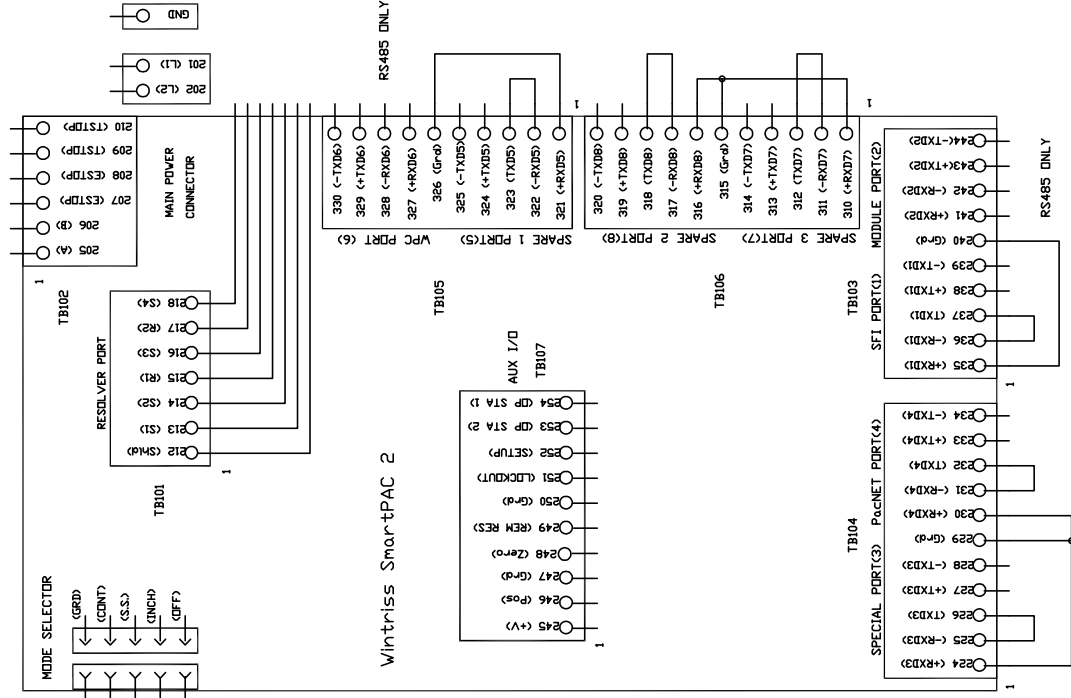
**PROPRIETARY RIGHTS:** This document discloses subject matter in which Wintriss Controls Group has proprietary rights. Neither receipt nor possession thereof confers or transfers any right to reproduce or disclose the document, any part thereof, any information contained therein or any physical article or device, or to practice any method or process, except by written permission or written agreement with Wintriss Controls Group.

REVISIONS		
REV	DESCRIPTION	DATE
		APPR'D

## RS 485 CONNECTIONS



## RS 232 CONNECTIONS



DRAWN		AJB		DATE 3/2/12	
CHK.					
WINTRISS CONTROLS GROUP					
TITLE					
SMARTPAC 2 LOOPBACK WIRING CONNECTIONS					
FILENAME		CODE IDENT NO.		SIZE	DRAWING NUMBER
				C	FIGURE. 8
REV					
REL		SCALE		SHEET	DF