Toledo Integrated Systems
Toledo Transducers Inc.

Press Pilot 150

Manual
And
Installation guide
**Article I. Limited Warranty**

The software and sensors are warranted by the manufacturer, Toledo Integrated Systems, to be free from defects in workmanship for one year from the date of manufacturer’s shipment. This warranty is limited to the functions of the Press Pilot 150 as stated in this manual. If modifications are made to the software, Toledo Integrated Systems will not be responsible for the Press Pilot 150.

All products subject to this warranty must be returned for examination, repair or replacement to:

F.O.B. Toledo Integrated Systems
6834 Spring Valley Dr.
Holland, OH 43528

The express warranty set forth herein is in lieu of all other warranties, expressed or implied, including without limitation any warranties of merchantability or fitness for particular purpose. All such warranties are hereby disclaimed and excluded by the manufacturer.

Repair or replacement of defective products as provided above is the sole and exclusive remedy provided there under. The manufacturer shall not be liable for any further loss, damages, or expenses, including incidental or consequential damages, directly or indirectly arising from the sale or use of this product. This includes any failure inside other manufacturers’ units that the Press Pilot 150 is tied into.

Any unauthorized repairs or changes to the program will void this warranty.

There are no warranties that extend beyond those expressly set forth herein.
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PP150 Firmware revision history

(Current Rev. 3032)

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<th>Rev.#</th>
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<tr>
<td>2023</td>
<td>Initial release</td>
</tr>
<tr>
<td>2024</td>
<td>Addition of Ethernet</td>
</tr>
</tbody>
</table>
| 2025  | De-bounce mode input  
- Bypass all faults during watchdog check on powerup 
- Brake monitor test mode and main motor fwd added to Ethernet I/O table |
| 2026  | Added ability to bypass motion detect in inch mode  
- Modified Saving/Recalling Parameters |
| 2027  | Ethernet communications speed upgrade |
| 2028  | (Never released) |
| 2029  | Added clutch engagement fault |
| 2030  | Modified logic for clutch on no motion fault |
| 2031  | Modified Z-pulse (Encoders use only) |
| 2043  | Speed Comp Zone Settings  
- Auto Single and Cont. on Demand  
- Modified Resolver Resolution for SPM/Top Stop Calc. |
| 2044  | Modified Encoder Brake Monitor |
| 2045  | Added T-Cam Off to Ethernet settings |
| 2047  | Changed Clutch Motion Timer (Never Released) |
| 2048  | Added Hydraulic Overload Monitoring |
| 2051  | Added “Excessive Stop Time” Fault |
| 2054  | Added 2 Programmable Outputs  
- Added PLS, motion detect bit and SPM to Ethernet  
- Modified Hyd. OL to include Pumping |
| 2056  | Added functionality to counters |
| 2060  | Added prompt..”must inch 1st stroke”. |
| 2061  | Modified T-Cam Off to be speed comp default stop. |
| 2062  | Modified multiple run bar check. |
| 2063  | Modified auto-single to unarm if t-stop is push and clutch is still on. |
| 2064  | Added count to the remote display. |
| 2065  | Allow count to reset always from reset button,  
(uncheck mute & 10ms bm time (defaults)), add screen after save chgs. |
| 2067  | Major release..modified the speed comp top stop..added last stop reason to enet (word 18 in plc). |
| 3000  | New version (3.00) for remote screen implementation. |
| 3003  | Major release..Modified last stop reason. |
| 3006  | Modifications for proface screen not saving data |
| 3007  | Modified bm to store actual test SPM....changed so it saves everytime you leave config screen |
| 3008  | Added complete interrupt vector table to eliminate reboots that occur due to spurious interrupts |
| 3009  | Modified encoder SPM calculation |
| 3011  | Modified auto single/cont on demand armed logic |
| 3012  | Improved checksum method for the battery ram data |
| 3014  | Fixed cam single stroke not stopping at top |
3016 fixed when inch top stop is used with speed compensation
3017 auto single timeout min to 1 sec-fix pls faulting data flash
3018 cont arm not arming, change to enet so it saves to data flash
3019 z-pulse only in window...delay spm on display...always compute speed comp off
3020 not released
3021 inch stop at top fixed, tcamoff only save if screen over enet, counters only with screen, extended clutch no motion timer
3022 modified pls save to save after they leave the pls screen
3023 modified the clutch on and no motion fault timer
3024 modified the I/O Board Replacements Parts Info
3027 Z-Pulse Mute on upstroke programming
3028 Arm Auto Single Stroke bug fix
3029 Digital filter for Resolver Position
3030 Clutch engagement fix for single stroke mode w/light curtain mute
3031 fix for irregular stopping when speed comp is used with an early stop position
3032 Digital filter for encoder Z-Pulse signal near reset position.
1 Incoming Power Connections

L1 and L2 – Incoming 120 VAC

The customer supplied 120VAC power must be from a clean and continuous source. The PP150 has its own internal ±24VDC power supply for all I/O applications. This DC power should only be used for I/O on the Press Pilot, and is limited to 1Amp service.

2 User Inputs

I. Run/Inch Buttons
The system requires one set of two Run/Inch Buttons in order to function, and is expandable up to four sets. Each button must have a set of normally open and normally closed contacts. The inputs into the PP150 are labeled “L-RUN(x) NO/NC” and “R-RUN(x) NC/NO” where ‘x’ is the station number of the run buttons, NC stands for Normally closed, and NO stands for normally open. Anti-tie down has been built into the system in order to inhibit the ability to “tie down” one or both of the run buttons. An anti-tie down fault will occur within 500ms (milliseconds) of an incorrect contact state on the run buttons. This fault is automatically reset when an anti-tie down situation is cleared.

II. Prox Check Input
The system requires a proximity switch to check position in a settable window throughout each stroke. The proximity switch must be mounted separately from the resolver/encoder in order to account for chain break or slippage on the press position device. A fault will be generated if the prox switch cycles twice without seeing the BCAM or TCAM change state. A fault will also be generated if the prox switch does not cycle inside the window.

III. Fault Reset Button
The PP150 Reset Button will reset any current PP150 fault when pressed. This button needs to have one normally open contact sending a signal to the “FAUL RST” input on the PP150.

IV. Arm Continuous Button
The system requires the use of a Prior Action “Continuous Arm” Button and should be equipped with a normally open contact sending a signal to the “arm cont” input on the PP150. When the mode selector switch is in continuous mode and this button is pressed, “Continuous” will be
armed and ready to run. We suggest an illuminated push button for this as the “Continuous Armed” output will come on as long as continuous is armed. See Chapter 3 Section IV for the light output.

V. Mode Selector Switch
The Clutch/Brake controller requires a keyed selector switch for four modes of operation, (Off, Inch, Single and Continuous). There should be a NO contact for each mode.

**Off**
When the key is in this position, the press will not run. The key should be able to be removed when in this position.

**Inch**
When the key is in this position, the ram will move when the Inch Buttons are pressed if no faults are present.

**Single**
When the key is in this position, the ram will cycle one stroke when the Run Buttons are pressed. The Run Buttons must be held past Bottom Dead Center (BDC) in order for the ram to carry up to top on its own. If the buttons are released on the downstroke the ram will stop. The buttons must be released and pressed again in order for the ram to move a second stroke.

**Continuous**
When the key is in this position the ram will cycle continuously until stopped by a Top Stop, E-Stop or, Immediate Stop command or until a PP150 fault is detected. This mode requires a “Prior Action” button to arm. Once armed, if the Run Buttons are not pressed within a settable period of time (2-10 seconds) the “Continuous Armed” circuit will time out and have to be rearmed. This mode requires the Run Buttons to be held until past BDC. Once past BDC the press will run continuously. If the buttons are released on the downstroke of the first stroke the ram will stop.

VI. Top Stop Input
The system requires the use of a Top Stop Button equipped with a set of normally closed contacts. When the press is running in continuous mode and this button is pressed the ram will stop the next time it reaches top. Wire the top stop button to the terminal block labeled “Top Stop” A terminal block labeled “Top Stopj” is available for use if more than one top stop device is needed. “Top Stopj” is not a top stop device input. If the auxiliary top stop terminal block “Top Stopj” is used, it must be wired in series with the “Top
Stop” terminal block in order for the device to properly stop the press.

VII. Clutch Air Pressure Switch/Counter Balance Pressure Switch
The system requires a separate N.O. switch on both the Clutch Air Pressure supply “Clut AIR” and the Counter Balance Air Pressure “CBAL AIR” supply. Without these inputs the system will stay faulted.

VIII. Main Motor Forward Contact
The system requires a contact from the Main Motor Forward Starter to be wired into the “MTR FWD” input. This is needed in order to move the ram in single and continuous modes. It is not needed in Inch mode, and allows the press to inch with the main motor off, also known as “dead motor inch”.

IX. Immediate Stop Input
The “Immed Stop” input must remain high for sourcing inputs, and low for sinking inputs in order for the press to run in any mode. Losing the “Immed Stop” input will immediately stop the press. This input can be used to stop the press for auxiliary equipment such as die protection. An auxiliary terminal block labeled “Immed Stopj” is available for use if more than one immediate stop device is needed. “Immed Stopj” is not an immediate stop device input. If the auxiliary immediate stop terminal block “Immed Stopj” is used, it must be wired in series with the “Immed Stop” terminal block in order for the device to properly immediately stop the press.

X. ESR-1 and ESR-2
These inputs should be wired so that two identical (redundant) circuits are used to stop the clutch. Each contact in the series should have two sets of contacts. This is your emergency stop for the press. Auxiliary equipment that is not safety related should be wired to the immediate stop input. These circuits are wired to directly shut off power to the clutch valves when the string is broken. If the circuits are not identical, PP150 faults will occur because of power being removed from one of the solenoids and not the other. If this does occur the valve will have to be reset. These circuits are also monitored by the controller and will cause a mismatch fault during a mismatch condition. In order to reset the fault, both circuits must be turned off, the PP150 reset button must be pushed, and then both circuits must be turned back on. Press the clutch reset button again to make sure no faults exist.
XI. Resolver Inputs
To incorporate the different methods for tracking press position, the PP150 is equipped with the ability to run off three separate systems. Resolver based systems create cams dependent on an absolute press position. The PP150 has the ability to run up to 1700 stokes per minute using the resolver for press position. Connect the resolver for the system using inputs R1, R2, S1, S2, S3, S4, and SHLD. These inputs are found on the latch side of the PP150. Refer to the electrical schematics for wiring a resolver, and Chapter 5 Section II on how to calibrate the Resolver.

Encoder Inputs
An encoder based system creates cams dependent on an automatically calculated offset, and the ‘z’ pulse from the encoder. The PP150 has the ability to run up to 500 stokes per minute using the Encoder for press position. Connect the Encoder to inputs ENC A, ENC B, and ENC Z. Refer to the electrical schematic for wiring the encoder, and Chapter 5 Section II on how to choose the encoder as the default position monitor.

XII. Clutch Valve Fault Monitor
The system is equipped with a clutch solenoid valve fault input that needs to be on at all times. Anytime this input is not on a clutch valve monitor fault will occur. This fault can only be reset if the input is on. (Wire this input “on” if the solenoid valve does not have a fault contact)
XIII. BCAM and TCAM

Typical settings for cam switches:

<table>
<thead>
<tr>
<th></th>
<th>On</th>
<th>Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCAM</td>
<td>10</td>
<td>190</td>
</tr>
<tr>
<td>TCAM</td>
<td>170</td>
<td>350</td>
</tr>
</tbody>
</table>

- **BCAM** turns on at a position to detect a faulty brake.
- **TCAM** turns off at a position to let the press stop on top.

**TCAM and BCAM must overlap slightly at bottom**

**Important:** The above settings are typical but not specific to every application. Changes made should be dependant on the functionality of the system being controlled.

**Note:** Transition faults will occur during initial startup until cam switches are set in the correct sequence. The PP150 can run up to 300 Strokes per Minute using a cam based system.

**Note:** Shaded (red) areas represent closed contacts.

**BCam:** The Bcam (also known as Brake Cam or Bottom Cam) is used to detect a faulty flywheel brake, and where the bottom of the stroke occurs. Set Bcam to turn on near the top of the stroke after the press has made a top stop. This setting will help aid in the detection of a brake problem by creating a fault if Bcam has turned on after a top stop has been commanded. Bcam should turn off at the bottom of the stroke, but after Tcam has turned on.
Bcam and Tcam must overlap at the bottom of the stroke. If this does not occur, the PP150 will not know where bottom is, and a fault will be generated.

Tcam: The Tcam (also known as Takeover Cam or Top Stop Cam) is used to take over the press run function after Tcam on, and stop the press at top after Tcam off. Set Tcam on to overlap Bcam near the bottom of the stroke. Bcam and Tcam must overlap at the bottom of the stroke. Once Tcam comes on, the operator will be able to release the run buttons and the PP150 will stroke the press to top in Single stroke mode, or continue to stroke in Continuous mode. Adjust Tcam off to stop the press at top dead center.
3 User Outputs

I. Outputs C1 & C2 - Clutch 1 & 2
These outputs will energize the Clutch/Brake Valve. A dual solenoid valve must be used and each solenoid must be wired to these separate outputs. C1 and C2 are protected with 1A fuses. It is required that the Surge Suppressors included with the PP150 be used to suppress any noise that may be associated with the firing of the clutch valves.

Note: suppressors are recommended to be put on any solenoid valve connected to the control.

II. CF Relay - Clutch Fault
The PP150 internal fault relay will energize when a PP150 Fault is detected in the software. See Chapter 6 on PP150 Fault messages. It is suggested that a red pilot light be used to indicate the clutch fault. Wire this pilot light through the relay contacts “Faultf” and “Faults”. See the electrical schematics for wiring a device to show a PP150 fault.

III. CO Relay - Clutch OK
This ‘OK’ relay will energize when the PP150 is ready to run. It is suggested that a green illuminated push button be used to indicate clutch ok. This will give the ability to reset the clutch and verify the ok condition. Wire the light through the relay contacts “Okf” and “Oks”. See the electrical schematics for wiring a device to this output.

IV. CA Relay - Continuous Armed
This output will energize when the continuous cycle is armed and ready. When this light is on the system is armed in continuous mode. While lit, the run buttons must be pushed and held past bottom on the first stroke. It is suggested that a blue illuminated push button be used as mentioned in Chapter 2 Section IV “Continuous Arm Button”. Wire the N.O. contact of the pushbutton to the PP150 terminal block “ARM CONT”. Wire the light through the relay contacts “C-armf” and “C-arms”. See the electrical schematics for wiring a device to the continuous Arm output.

V. Clutch On To Auxiliary Equipment
This output is wired in series through a normally open set of contacts on both C1 and C2’s internal force guided relays. It can be used to tell auxiliary equipment that the clutch is engaged. These are dry contacts so any AC or DC power 250V, 6A rated or less can be used.
VI. Binary message outputs
There are six outputs that are 24VDC sinking outputs. These outputs represent a binary value for the PP150 messaging.

M0 Message Bit 0 = 1
M1 Message Bit 1 = 2
M2 Message Bit 2 = 4
M3 Message Bit 3 = 8
M4 Message Bit 4 = 16
M5 Message Bit 5 = 32
4 PRESS PILOT 150 SCREENS

The pp150 screens have moved to sheet 100.
I. PROMPTS/FAULTS

This screen is the main screen that loads when power is first applied. It shows all the PP150 Prompts and Faults. The three numbers at the bottom of the screen are the corresponding values for the prompt/fault displayed. The first number is the processor in which the fault was generated from. A ‘0’ indicates the ‘A’ processor, and a ‘1’ indicates the ‘B’ processor. The second and third numbers are codes generated to aid in the troubleshooting process. See Chapter 6 for all the fault codes and their respective corrective actions. These numbers are also output through the Binary Message Bits 0-5 in Chapter 3 Section VI.

The menu can be accessed by pressing either the up arrow key ▲ or the down arrow key ▼.

II. BRAKE MONITOR

This screen shows the real time information for the brake monitor. The Stop Time number indicates how long in milliseconds it took for the press to stop during the last stop command. The Stop Degrees is the number of degrees it took to stop during that last stop command. The Stop Limit is the user settable time at which the Brake Monitor will fault out if the Stop Time has surpassed the Stop Limit. These numbers are not changeable on this screen. See Chapter 5 Section XI for setting the brake monitor.
III. LAST BRAKE TEST

This screen shows the information regarding the last time a Brake Monitor Test was performed. The Stop Time number indicates how long in milliseconds it took for the press to stop during the last Brake Test. The Stop Degrees is the number of degrees it took to stop during the last Brake Test. The test speed is the speed of the press at which the test was administered. See Chapter 5 Section XII for running a Brake Monitor Test.

IV. PROX INFO

This screen shows the Last On and Last Off degrees for the prox check sensor. This information is helpful in setting the Prox Check window, and for troubleshooting the prox check sensor. See Chapter 5 Section XVI for setting the Prox check window.

V. MOST RECENT FAULT

This screen will show the operator the fault that is presently stopping the press control. The current fault listed on this screen will stay until a new fault has occurred. Once a new fault has occurred, the new fault will show on this page, and the fault that was on this page will move to the Previous Fault screen. See chapter 5 for fault messages and troubleshooting.
VI. PREVIOUS FAULT

![Previous Fault Screen]

This screen will show the operator the fault that had occurred last before the present fault state. Once a new fault occurs, this screen will show the fault from the Most Recent Flt screen. See chapter 5 for fault messages and troubleshooting.

VII. TWO FAULTS AGO

![Two Faults Ago Screen]

This screen will show the operator the fault that had occurred two faults before the present fault state. Once a new fault occurs, this screen will show the fault from the Previous Fault screen. See chapter 5 for fault messages and troubleshooting.

VIII. Programmable outputs

![Programmable Outputs Screen]

This screen will allow the operator to view and modify the output windows for both outputs. The example shows the first output turning on at 170° and off at 190° (typical pilot release example). The second example shows the second output turning on at 270° and turning off at 90° (typical feed window).
IX. Last stop reason

This screen will show the operator the last stop reason for the clutch turning off.

Last stop reason codes:

0. Press Running
1. Mode Changed
2. Immediate Stop Input Off
3. Top Stop Input Off
4. Fault Present, Check History
5. 90 Degree Stop Test
6. Counters Done
7. E-Stop Opened
8. Run Buttons Released
9. Main Motor Forward Input Off
10. Auto-Run Input Off
11. Auto Enable Input Off
12. Fault Reset PB
13. Diagnostic Dip Switch Changed
X. COUNTERS

![Counters Image]

I. BATCH PRESET
This page shows the current counter info for the press and for the current batch. To change the batch counter preset, press the button to move the cursor to the Batch Pre setting, and press the button to bring up a highlighted cursor. Use the left hand set of arrow keys to change the counter by one hundred, and the right hand arrow keys to change the number by single digits. To disable the batch counter, set the Batch Pre to zero, or uncheck the Stop When Done setting.

II. BATCH LEFT
As the press runs and the batch counter has been set, the Batch Left will decrease. If this counter should need to be cleared, cursor down to it and press the button to do so. This will clear the Batch Left and start the Batch count from the preset.

III. STOP WHEN DONE
Check this setting with the button to stop the press on top when a batch count has finished.

IV. LIFETIME
This counter shows the amount of strokes since the PP150 was installed. This counter is able to be reset from the Counters screen via the Calibration m...
5  Configuration screens

The PP150 is equipped with configuration screens to enhance certain functions and change settings according to system requirements.

To put in configuration mode:

1) Locate SW1 (Red 4-Dip switch) inside edge of the PP150 on the door.
2) Move dip #1 to the on position. (See Fig. 5-1)

Note: For “advanced settings”, move dip #3 to the on position as well. (See Fig. 5-2)

To cycle through the screens use the or keys.

I. POSITION CONTROL

This screen gives the control three separate ways to track position. Apply Resolver to use the resolver based controls, Encoder for the encoder based controls, or Hard Cams for the Cam based controls. The PP150 is limited in its speed depending on what system is chosen to run. The Resolver based system can run up to 1700 Strokes Per Minute. The Encoder based system can run up to 500 Strokes Per Minute, and the Cam based system can run up to 300 Strokes Per Minute.
II. RESOLVER OFFSET/Encoder Calibration

The selection for the Position control will determine which screen above is displayed.

The left screen is where the user sets the offset for the resolver in order to program the correct resolver angle. This page is only visible when Resolver has been chosen from the Position Control page. The resolver offset is used to adjust the PP150’s position to the resolver’s actual position. To determine the resolver offset needed, stop the press at a known position, then note the position on the PP150. Subtract this angle from known position to get the resolver offset. To change the resolver offset, press the key.

The right screen is where the user sets the desired angle when using an encoder for position. Stop the press at a known position, enter the desired angle then put it in cal mode by checking cal mode on. It will say “in cal mode…inch press once”. Inch the press one time. The PP150 will come out of cal mode automatically once the encoder Z-pulse has toggled on.

III. CAM SETTINGS

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This page is only visible when Resolver or Encoder is chosen from the Position Control screen, and is where Cam settings can be changed. See the graph in Chapter 2 Section XIII for typical Cam settings. To change the cam settings, press the right set of Up/Down keys to scroll to the cam settings to change, and press the key.
IV. PRESS SPEED

This screen is only visible when Hard Cams are chosen from the Position Control screen.

This is where the max speed of the press is chosen. Choose which window the press speed is, and apply it by pressing the apply button. The check mark shows which speed is chosen.

V. ARM CONTINUOUS 1

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen is where the settings for arming the press in continuous are changed. Arming the press in continuous can be done three different ways. Anywhere means the press can be armed continuous regardless of position. Top Zone means the press can only be armed in top zone. Top zone is defined by the window between Tcam off and Bcam on. Window lets the user define a window that the press needs to be in before it can be continuous armed. This window can be set on the Arm Continuous 2 screen.
VI. ARM CONTINUOUS 2

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen is part two of the last screen. This is where the continuous arming window is set, and where the continuous arm timeout cycle is set. This screen is not visible if Cams are chosen on the Position Controls screen. To change these settings, press the right set of Up/Down keys to scroll to the desired settings, and press the key.

- Use the right set of Up/Down arrow keys to increase or decrease the degree by $1^\circ$, or
- Use the left set of Up/Down arrow keys to increase or decrease the degree by $10^\circ$.

VII. LC MUTE/TOPSTOP

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen lets the user select Light curtain muting and top stop settings.

Checking the Mute Curtains setting will “mute” or ignore the light curtains on the up stroke only. Go to page 83 to mute light curtains on upstroke with encoder setup.

Checking Cont IMM Top Stop will top stop the press anywhere in the stroke when a top stop is commanded. If a top stop command is given inside the top zone, the press will try to stop even though it will not be able to physically stop in the top zone. This setting is important when interfacing with a system that can give
A top stop signal too late, but still expects to see the press stop on top. (eg. A Transfer System) If this condition occurs, the PP150 will most likely generate a Top Stop Overrun fault. With Cont IMM Top Stop unchecked, the PP150 will take an extra stroke if the top stop signal is given inside the top zone. This will ensure the press will stop at top.

Checking Inch Stop At Top will stop the press at top in Inch mode. The operator will need to release the buttons to reinitiate a stroke. With Inch Stop At Top unchecked, the press will run continuously while the run buttons are pushed.

Checking 2 Stroke Top Stop will set the press to top stop on the second stroke around. This is only used in high speed applications where it will take more than 360 degrees to stop the press.

VIII. SPEED COMP TOP 1

This screen shows the angle setup for the speed compensated top stop. Fast Spm is the strokes per minute at which the press is at full speed. Fast Stop is the angle at which the press needs a top stop signal in order to stop at top going the Fast Spm speed. Slow Spm is the strokes per minute at which the press is at its slowest speed. Slow Stop is the angle at which the press needs a top stop signal in order to stop on top going the Slow Spm speed. These settings are active only when Enable Speed Comp is checked on the Speed Comp Top 2 screen.
IX. SPEED COMP TOP 2

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen sets up the use and calibration of the compensated top stop feature. To enable the Speed Comp Top Stop feature, check next to the Enable Speed Comp setting.

Calibrating the Speed Comp Top Stop:

* To ensure the correct values are used for the Speed Compensation Top Stop, Disable Speed Comp while calibrating.

Setting the slow speed Spm and Angle: Go to the Cam Settings screen via the Configuration menu, and run the press in continuous mode at its slowest strokes per minute. Once running at minimum speed, press the top stop button on the down stroke and record the degrees at which the press stops. If the press stopped before zero, subtract the stopping angle from 360 and add that to the current T-cam off parameter. Enter the new number into the T-cam off angle. If the press stopped after zero degrees subtract however many degrees past zero it stopped from the current T-cam off parameter and enter the new number into the T-cam off angle. Once the slow stop Spm and angle have been calculated, go to the Speed Comp Top 1 screen and enter the slow strokes per minute into Slow SPM and the T-cam off angle at slow speed into the Slow Stop parameter.

Setting the Fast speed Spm and Angle: Go to the Cam Settings screen via the Configuration menu, and run the press in continuous mode at its fastest strokes per minute. Once running at maximum speed, press the top stop button on the down stroke and record the degrees at which the press stops. If the press stopped before zero, subtract the stopping angle from 360 and add that to the current T-cam off parameter. Enter the new number into the T-cam off angle. If the press stopped after zero degrees subtract however many degrees past zero it stopped from the current T-cam off parameter and enter the new number into the T-cam off angle. Once the fast stop Spm and angle have been calculated, go to the Speed Comp Top 1 screen and enter
The fast strokes per minute into Fast SPM and the T-cam off angle at fast speed into the Fast Stop parameter. Once both Slow and Fast values have been entered, go to the Speed Comp Top 2 screen, and check Cal Mode On/Off. Since the speeds and angles for both the slow and fast values have been entered, put a check mark next to both the Fast Values Ok, and the Slow Values Ok to accept the settings on the Speed Comp Top 1 screen. After both are checked, the PP150 will come out of Cal mode automatically. To put these values into effect enable the Speed Compensation Top Stop by putting a check mark next to Enable Speed Comp.

The next 4 screens (sc offset zones1-4) are used to account for a top stop that is not perfectly linear. These zones are usually only needed for faster presses that take more than one stroke to stop. If you do not need this function simply put a zero in the offset for each of the zones1-4. The values on this screen are used in conjunction with the speed comp top stop calculation. After the PP150 calculates the stop angle from the current running speed, it then uses the values on these screens to decide whether or not to add or subtract degrees to the calculated angle.

Set these values starting with Zone1 as the slowest speed. In the example above, if the speed of the press is greater than 500 SPM, after the calculation for the top stop is complete, it will subtract 11 degrees from the calculated stop angle, in turn attempting to stop the press earlier.

X. MISC. TIMERS

This screen is not visible when Hard Cams are chosen on the Position Control screen.
This screen allows the user to set the preset times of three different timers. This screen is not visible when Hard Cams are chosen on the Position Control screen.

**Bypass Motion In Inch:** Check this setting to bypass the clutch engagement (flt. 14) and clutch on and no motion (flt. 19) faults while in inch mode. Note: Motion detection faults are always enabled in single and continuous modes.

**Clt Engage:** Set this timer for the number of milliseconds the PP150 should wait until a fault is generated due to clutch engaged but no motion detected. A no motion situation occurs when the controller sends a signal to the clutch valves, but has not seen a change in press position for the duration of the Clt Engage timer.

**Multi RBar:** This is a time in seconds that all active run stations must be depressed after the first station has given a valid run signal. After the first run station is depressed, all of the active run stations must depress their run buttons within this set time, or a fault will be generated.

**Drift Fault:** This is the timer for the amount in milliseconds the PP150 will wait till a fault is generated due to a motion that has not been commanded.

**XI. BRAKE TEST 1**

![Brake Test 1 Screen]

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen allows the user to change the three brake test setpoints.

**TEST SPEED:** This is the speed at which the press will perform the test. Once the brake test is initialized the press speed will need to be adjusted to this preset. When the press reaches this speed the brake test will start.
BT TIMEOUT: This is the brake test timeout setpoint. Once the brake test has been initialized the test must be performed within this time window. If the brake test is not done within the allotted time the test will be automatically canceled.

BM FLT LIM: This is the brake monitor fault limit. This sets the limit where a fault is given if the stop time takes longer than the allotted time.

XII. BRAKE TEST 2

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen allows the user to start the brake test. Press the key to start the test.

If the test is not performed in the allotted time that was set in section XI, the test will automatically cancel and “BRAKE TEST IS ON” will disappear. Once the brake test has been initialized, the key can be pressed to cancel the test manually. After the test has been started and the press is running at the Brake test speed, an immediate stop signal will be generated at 90 degrees. Once the press is stopped, the Stop Time, Stop Degs and Test Speed will be saved on the Last Brake Test screen via the main menu.

XIII. LED DISPLAY

This screen is visible when Hard Cams are chosen on the Position Control screen, but not all settings are available.

This screen allows the user to change the information displayed on the LED display when the press is in motion. If the user
chooses to display angle then SPM, once the clutch is engaged the angle will be displayed for three seconds before displaying the strokes per minute. The same will happen for angle then Batch for the batch count to be displayed. If “angle only” or “batch left only” are selected then the LED display will always display the selected value.

XIV. COUNTERS

This screen shows the lifetime stroke count since implementation of the PP150. The counter can be cleared by pressing the key. This screen also lets the user choose whether they want their tub counter display to count up or to count down. It also lets the user enter how many parts the tub counter should be incremented or decremented for each stroke. Note: The “Parts per Stroke” value does not change the Lifetime counter increment value…that counter will increment by one for every stroke.

XV. SAVE/RESTORE

From this screen the user is able to save the current setup, restore the last saved setup, or restore the factory defaults.
XVI. PROX SETUP

This screen is not visible when Hard Cams are chosen on the Position Control screen.

This screen gives the user the ability to tell the PP150 when the prox check is in the correct position. Once the prox check sensor has been mounted, the angle at which it makes will need to be verified as correct. If the angle is correct, press the ✉ key. Once this is done, the PP150 creates a window. The window created is the window in which the prox check must make every stroke. This window is set 10 degrees before the angle verified, and 30 degrees after the verified angle to create a total of 40 degrees. To account for nuisance faults, the PP150 has a built-in de-bounce program in which the prox can come on and off several times inside the prox check window, but must be off outside the window.

XVII. Ethernet settings (Refer to section 10, Page 50)
6 Troubleshooting

1. Fault Displays and Corrective Action

Note: Faults 1-99 are faults for the A processor. Faults 101-199 are duplicates of faults 1-99 except only for the B processor.

Message Bit outputs 0-5 represent a binary number.

Message Bit 0 = 1
Message Bit 1 = 2
Message Bit 2 = 4
Message Bit 3 = 8
Message Bit 4 = 16
Message Bit 5 = 32

These outputs are sinking 24VDC outputs.

The wording next to each number is what is displayed on the PP150 screen, and the optional 2x16 LCD display.

Message Code 1 & 101 - E-STOP MISMATCH
ESR1 is off and ESR2 is on, or vice versa. Check the E-Stop wiring. Both circuits will have to show their off state and their on state in order to reset. Press the PP150 Reset button in the e-stop off state, and then again in the on state to reset. See Chapter 3 Section ix for further assistance.

Message Code 2 & 102 - TIE DOWN STN-1 RELEASE BUTTONS
A tie-down fault has occurred at station 1. Check to make sure the run buttons are released. If the buttons are released, check to make sure the correct contacts are being used on the corresponding inputs.

Note: The left and right run buttons of any station being used must include a NO and a NC contact. These contacts must be wired into the PP150 correctly, and must change state when depressed.

Message Code 3 & 103 - TIE DOWN STN-2 RELEASE BUTTONS
A tie-down fault has occurred at station 2. Check to make sure the run buttons are released. If the buttons are released, check to make sure the correct contacts are being used on the corresponding inputs.

Note: The left and right run buttons of any station being used must include a NO and a NC contact. These contacts must be wired into the PP150 correctly, and must change state when depressed.
Message Code 4 & 104 – TIE DOWN STN-3 RELEASE BUTTONS
A tie-down fault has occurred at station 3. Check to make sure the run buttons are released. If the buttons are released, check to make sure the correct contacts are being used on the corresponding inputs.

Note: The left and right run buttons of any station being used must include a NO and a NC contact. These contacts must be wired into the PP150 correctly, and must change state when depressed.

Message Code 5 & 105 – TIE DOWN STN-4 RELEASE BUTTONS
A tie-down fault has occurred at station 4. Check to make sure the run buttons are released. If the buttons are released, check to make sure the correct contacts are being used on the corresponding inputs.

Note: The left and right run buttons of any station being used must include a NO and a NC contact. These contacts must be wired into the PP150 correctly, and must change state when depressed.

Message Code 6 & 106 – MULTIRUN TIMEOUT RELEASE BUTTONS
This message occurs when multiple stations are active and all active stations have not depressed their run buttons in time designated since the first stations run buttons were depressed. All active stations must be depressed within a set time after the first station is depressed in order for the PP150 to see a valid run signal. When this message shows, release the run buttons and try again making sure all active run stations are used at the same time. If a run station is not being used, it must be bypassed correctly using the corresponding bypass terminal block on the PP150. See the electrical prints for bypassing the run stations.

Message Code 7 & 107 – WATCHDOG CHK FLT MUST RESTART
This error occurs when the PP150 program has come across an internal error. If this happens, the PP150 must be restarted. If the fault persists, contact Toledo Integrated Systems for further assistance.

Message Code (8&108), (10&110) – WATCHDOG (1&2) MONITOR FAULT
The PP150 has dual processors, each having a force guided watchdog relay. The watchdog relay is used to remove power to the clutch valves if a major fault occurs. These relays are checked for proper operation at startup and are continuously monitored for the correct state. To reset this fault, Attempt to reset with the PP150 Flt reset PB. If the PB will not reset the fault, cycle power to the PP150.

If the error persists, contact Toledo Integrated Systems for further assistance.
Message Code 9 & 109 – EXCESSIVE STOP TIME FAULT
This fault happens when the PP150 clutch relays are turned off and the resolver/encoder see motion for more than 1.5 times the allowable brake time. This is a major fault and should not be taken lightly. Ensure that the air to the C/B solenoid is sufficient and that the C/B unit is disengaging correctly.

Message Code 11& 111 – MULTIPLE MODES DETECTED FAULT
This system checks to make sure that only one mode is selected from the selector switch. If this occurs, first check the wiring from the mode selector switch. Also, check for broken or stuck contacts within the mode selector switch. Press the PP150 Reset button to clear the fault once the condition is corrected.

Message Code 12 & 112 – NO MODE DETECTED FAULT
This occurs when the mode key switch is turned to the “OFF” position. Turn the mode key switch to a mode other than off to reset this fault.

Message Code 13 & 113 – HEARTBEAT FAULT
This message is the detection of a “heartbeat” from the either of the processors. If either processor does not see the other processors heartbeat, this is the error that occurs. Press the PP150 reset button to clear the fault. If the fault persists, contact Toledo Integrated Systems for further assistance.

Message Code 14 & 114 – CLUTCH ENGAGEMENT FAULT
When a clutch “ON” signal has been sent to the clutch valves, and no motion is seen from the resolver/encoder, then this fault is declared. Check the resolver/encoder for: proper wiring, to see if the coupling to the press is OK, for proper direction, and check to make sure the clutch valve is not faulted. Press the PP150 reset button to clear this fault. (Refer to chapter 5 section x for timer settings, Page 27)

Message Code 15 & 115 – MUTE RELAY MONITOR FAULT
This system checks the position of each of its internal force guided relays used for muting the light curtains. If the relay failed to turn off when it was requested by the processor, this fault will occur. Press the PP150 reset button to reset the fault.

Message Code 16 & 116 – CLUTCH RELAY MONITOR FAULT
This system checks the position of each of its internal force guided relays used to send the Clutch ON signal to C1 and C2. If the relay failed to turn on or off when it was requested by the processor, this fault will occur. Press the PP150 reset button to reset the fault.

Note: Clutch, Watchdog and Mute relays must be replaced using original factory supplied components. If the fault cannot be reset, Contact Toledo Integrated Systems for replacement parts.
Message Code 17 & 117 – CLUTCH VALVE MONITOR FAULT
The PP150 is equipped with an input to show on screen if a clutch solenoid valve has faulted. This input should always be on and will declare a fault if it is off for more than 1 second. The input should come directly from the clutch solenoid valve fault contact. Check the clutch valve for a fault condition. Press the PP150 reset button to reset the fault once the valve is not faulted. (Jump this input “on” if the solenoid valve does not have a fault contact)

Message Code 18 & 118 – UNCOMMANDED MOTION FAULT
This system checks to make sure the clutch valves are engaged first and then motion is seen. If motion occurs before the clutch valves are engaged, this fault will occur. Press the PP150 reset button to reset the fault. (Refer to Chapter 5, Section x Drift Flt, Page 27)

Message Code 19 & 119 – CLUTCH ON BUT NO MOTION FAULT
Once the PP150 has seen motion, the press must continue with motion the entire time the clutch valve is on. If at anytime the press stops after motion has been detected and the clutch outputs are on, this fault will occur. Press the PP150 reset button to reset the fault.

Message Code 20 & 120 – HYDRAULIC OL PUMPING PROMPT
After a Hyd. OL fault has been acknowledged and the press has been inched to the top zone, the press will stop automatically and start pumping the hyd. OL solenoid. The output will stay on/pumping (depending on the settings) until the hyd. OL input is “good” for 10 continuous seconds. See hyd. OL section (16) for complete process.

Message Code 21 & 121 – PROX CYCLED OUTSIDE WINDOW
This fault will not occur if Hard Cams are chosen on the position Control screen.

When a resolver or an Encoder is the primary means of checking motion, the PP150 has the capability of setting any window in the stroke for the prox check switch to cycle. Once this window has been set, the prox should come on and off inside this window. If the prox cycles outside the window, this fault will occur. Check to make sure the Prox check sensor is coming on at the correct degree, and press the PP150 reset button to reset the fault.

Message Code 22 & 122 – RESOLVER FAULT
If a resolver is selected for the means of motion detection and there is no resolver connected to the PP150, this fault will occur. This fault will also occur if the resolver is not wired correctly. See the electrical schematics for wiring the resolver to the PP150.
Message Code 23 & 123 – PROX CYCLED TWICE FAULT
This fault will not occur if Hard Cams are chosen on the position Control screen.

When a resolver or an Encoder is the primary means of checking motion, the PP150 has the capability of setting any window in the stroke for the prox check switch to cycle. Once this window has been set, the prox should come on and off inside this window. There also is programming used to debounce any false readings that may occur during normal cycling of the prox switch. Once the prox switch angle is verified, the prox window is computed and automatically applied. This window allows the prox switch to cycle as many times as it wants in order to alleviate nuisance faults. If the prox is still cycling outside of this window, this fault will occur. Press the PP150 reset button to reset this fault.

Message Code 24 & 124 – NO PROX IN WINDOW FAULT
This fault will not occur if Hard Cams are chosen on the position Control screen.

This fault will occur when the prox check has failed to cycle inside the user defined window. Make sure that the prox is mounted correctly, and that the window is set to capture when the prox cycles. Change accordingly, and press the PP150 reset button to reset this fault.

Message Code 25 & 125 – TOP STOP OVERRUN FAULT
A Top stop is defined as a stopping point in the top zone of the stroke. Top Zone is defined as the degrees between Tcam off and Bcam on. Knowing this information, the press must stop between Tcam off and Bcam on in order to top stop. If the press stops after Bcam has turned on, this is considered a top stop overrun and will result in this fault. This fault will only occur if a top stop has been initiated, and the press fails to stop before Bcam on. Make sure the Tcam off angle is correct, the condition of the brake is in good condition, counter balance pressure is correct, and press the PP150 reset button to reset the fault.

Message Code 26 & 126 – BRAKE MONITOR FAULT
This fault will occur when the brake monitor stopping time has exceeded the user defined set point. Before resetting the fault, investigate the cause of the excessive stopping time and take corrective action. Press the PP150 reset button to reset the fault.

Message Code 27 & 127 – COUNTER BAL AIR PRESSURE FAULT
The PP150 is constantly checking to make sure the system has a good signal from the counter balance air pressure switch. Make sure the counter balance air pressure switch is set correctly in order for the PP150 to accurately advise of incorrect pressure. Check the pressure switch, and press the PP150 reset button to reset the fault.
Message Code 28 & 128 – CLUTCH AIR PRESSURE FAULT
The PP150 is constantly checking to make sure the system has a good signal from the clutch air pressure switch. Make sure the clutch air pressure switch is set correctly in order for the PP150 to accurately advise of incorrect pressure. Check the pressure switch, and press the PP150 reset button to reset the fault.

FAULTS 31-38 and 131-138 ARE FAULTS EXCLUSIVE TO THE HARD CAM BASED SYSTEM.

ALL CAM FAULTS CAN BE CAUSED BY FAULTY CONTACTS ON SWITCHES THAT BOUNCE (Codes 31-38 and 131-138).

Message Code 31 & 131 – PROX CYCLED AND A CAM WAS ON
This fault means that the Prox check cycled while either Bcam or Tcam was on. The prox in a Cam based system should always come on in the top zone. Adjust the prox so that it does not cycle until Tcam is off, but before Bcam comes on. Refer to Chapter 2 Section xiii for a graphical illustration. Press the PP150 reset button to reset the fault.

Message Code 32 & 132 – BCAM ON AND PROX DIDN’T CYCLE
The prox in a Cam based system should always come on in the top zone. If the prox fails to cycle in the top zone and Bcam comes on, this fault will occur. Make sure the cams are set correctly and that the prox check cycles in the top zone. Refer to Chapter 2 Section xiii for a graphical illustration. Press the PP150 reset button to reset the fault.

Message Code 33 & 133 – NO CAM OVERLAP AT BOTTOM
Bcam and Tcam need to be set so that the degree Bcam turns off, and the degree Tcam turns on overlap. If this does not happen, this fault will occur. Refer to Chapter 2 Section xiii for a graphical illustration on default settings for cam switches. Press the PP150 reset button to reset the fault.

Message Code 34 & 134 – BCAM CYCLED TWICE AT BOTTOM
This fault occurs when Bcam cycles normally, but cycles again after Tcam turns on and before Tcam turns off. Refer to Chapter 2 Section xiii for a graphical illustration on default settings for cam switches. Press the PP150 reset button to reset the fault.

Message Code 35 & 135 – PROX CYCLED AND NO BOTTOM ZONE
This fault occurs when the prox check cycles normally, but Bcam and Tcam do not overlap. It can also be the case that Bcam never cycled before Tcam came on. Check to make sure that the cams are working properly and the windows are set correctly. Press the PP150 reset button to reset the fault.
Message Code 36 & 136 – PROX CYCLED AND NO UP ZONE
This fault occurs when the prox check cycles normally, but Bcam and Tcam did not overlap at the bottom of the stroke. It can also be the case that Tcam never cycled before the prox check cycled. Check to make sure that the cams are working properly and the windows are set correctly. Press the PP150 reset button to reset the fault.

Message Code 37 & 137 – BCAM OFF BEFORE TCAM CAME ON
Bcam and Tcam need to be set so that the degree Bcam turns off, and the degree Tcam turns on overlap. If this does not happen, this fault will occur. Refer to Chapter 2 Section xiii for a graphical illustration on default settings for cam switches. Press the PP150 reset button to reset the fault.

Message Code 38 & 138 – PROX CYCLED TWICE FAULT
In the cam based system, the prox check needs come on and off once during the degrees that Tcam is off, and Bcam turns on. If for any reason the prox cycles more than once in that window, this fault will occur. Check the coupling on the cam box, and make certain the prox switch is not cycling twice at the top. Adjust the prox as needed. Press the PP150 reset button to reset the fault.

Message Code 39 & 139 – Ethernet heartbeat fault
When Ethernet is enabled, a heartbeat signal is checked between the pp150 and the plc. This is considered a communications error on the Ethernet network. Check all Ethernet cables.

Message Code 40 & 140 – Hydraulic OL Flt...Reset to Ack
When the Hyd. OL input goes on/off (depending on settings), this fault will show on the screen. Push PP150 reset button to ack. The fault, then follow the prompts. See hyd. OL section (16) for complete process.

THE FOLLOWING MESSAGES (41-60) ARE CONSIDERED PROMPTS AND NOT FAULT CONDITIONS. AFTER THE CONDITION STATED IS MET, THE PP150 WILL AUTOMATICALLY RESET.

Message Code 41 & 141 – SINGLE STROKE READY
This is a prompt from the PP150 indicating that all requirements to be able to run the press in Single Stroke mode have been verified.

Message Code 42 & 142 – CONTINUOUS NOT ARMED
This is a prompt indicating that all requirements to run in Continuous mode are met except the Continuous Arm (prior action) button has not been pushed. Push the Continuous Arm button to Arm the press. Once the button has been pushed, the Press will stay armed for a user defined time limit. Once the time is up, the button will need to be pushed again.
Message Code 43 & 143 – CONTINUOUS ARMED
This is a prompt from the PP150 indicating that all requirements to be able to run the press in continuous mode have been verified.

Message Code 44 & 144 – CONTINUOUS AND MOTOR NOT FWD
This is a prompt indicating that all requirements to run in Continuous mode are met except the main motor is not running forward.

Message Code 45 & 145 – BRAKE MONITOR TEST MODE ON
This is a prompt indicating that the PP150 is in brake monitor test mode. The PP150 should only be run in Brake Test Mode for the purpose of testing the brake. Failure to do so may cause damage to the press and any die that may be in the press bed.

Message Code 46 & 146 – AUX IMMEDIATE STOP OPEN
This prompt indicates that an immediate stop has been declared through the immediate stop auxiliary input on the PP150. Check all devices that are connected to the “Immed Stop” and “Immed Stopj” terminal blocks, and verify they are not in a fault state.

Message Code 47 & 147 – AUX TOP STOP OPEN
This prompt indicates that a top stop has been declared through the top stop auxiliary input on the PP150. Check all devices that are connected to the “Top Stop” and “Top Stopj” terminal blocks, and verify they are not in a fault state.

Message Code 48 & 148 – SPEED COMP CAL MODE ON
This is a prompt indicating that the PP150 is in Speed Compensation Calibration mode. The PP150 should only be run in Speed Comp Mode for the purpose of calibrating the speed compensation feature. Failure to do so may cause damage to the press and any die that may be in the press bed.

Message Code 49 & 149 – OL BLOWN...INCH PRESS FWD TO TOP
This is a prompt indicating that the Hyd. OL has been acknowledged and the press needs to be inched fwd to the top zone to pump the Hyd. OL solenoid. See hyd. OL section (16) for complete process.

Message Code 50 & 149 – OL BLOWN...INCH PRESS REV TO TOP
This is a prompt indicating that the Hyd. OL has been acknowledged and the press needs to be inched rev to the top zone to pump the Hyd. OL solenoid. See hyd. OL section (16) for complete process.

Message Code 51 & 151 – IN SINGLE BUT MOTOR NOT FWD
This is a prompt indicating that all requirements to run in Single Stroke mode are met except the main motor is not running forward.

Message Code 52 & 152 – INCH PRESS TO ARM CONTINUOUS
This prompt indicates that in order to Arm the press in continuous, the press must be in the user defined zone. Once the press is in this zone, it can be armed for continuous mode.
Message Code 53 & 153 – INCH MODE READY
This is a prompt from the PP150 indicating that all requirements to be able to run the press in Inch mode have been verified.

Message Code 54 & 154 – MODE SELECT IN OFF
This prompt indicates the mode selector switch is in the off position.

Message Code 55 & 155 – EMERGENCY STOP CIRCUIT OPEN
This is a prompt indicating the emergency stop circuit is not reset. Check to make sure all devices in the emergency stop circuit are made. If all the devices are good, this prompt will reset automatically.

Message Code 56 & 156 – BATCH COUNT DONE
Once the preset batch count has been finished, this prompt will appear on the screen. Press the PP150 reset button to reload the same count into the batch preset.

Message Code 57 & 157 – AUTO-SINGLE ENABLED...PUSH TO ARM
This prompt means that the auto-single enable input is on and the system is waiting to be armed. See the auto-single Section (15) for a description of the process.

Message Code 58 & 158 – AUTO-SINGLE ARMED
This prompt means that the auto-single enable input is on and the system is armed and waiting for the “engage” input to single stroke the press. See the auto-single Section (15) for a description of the process.

Message Code 59 & 159 – CONT-ON-DEMAND ENABLED...PUSH TO ARM
This prompt means that the cont-on-demand enable input is on and the system is waiting to be armed. See the cont-on-demand Section (15) for a description of the process.

Message Code 60 & 160 – CONT-ON-DEMAND ARMED
This prompt means that the cont-on-demand enable input is on and the system is armed and waiting for the “engage” input to begin stroking the press. See the cont-on-demand Section (15) for a description of the process.

Message Code 61 & 161 – z-pulse outside of check window
This fault only occurs if the mute curtains is selected under lc mute/top stop and an encoder is used. The z-pulse must occur between 1-50 degrees. See the MUTE LIGHT CURTAINS ON UPSTROKE WITH ENCODER SETUP Section (18) for a description of the process.

Message Code 62 & 162 – prox location incorrect
This fault only occurs if the mute curtains is selected under lc mute/top stop and an encoder is used. The prox must be set to cycle between 71-130 degrees. See the MUTE LIGHT CURTAINS ON UPSTROKE WITH ENCODER SETUP Section (18) for a description of the process.
II. INPUT DIAGNOSTIC SCREENS

The system is equipped with an input diagnostics to test system functions and the inputs. To put in diagnostic mode:

1) Locate SW1 (4 bit-Dip switch) inside of the PP150 on the door.

2) Move dip switch #2 to the on position.

To cycle through the diagnostic screens use the key to the left. To test any of the system functions or inputs, cycle through the items by pressing the key in the middle until the item is displayed at the bottom of the screen and press the key. To stop the test press the again.

The first two screens shown below are used to test the built in LED and LCD screens. If the background for an input or output is dark, it signifies that the output is good. All of the diagnostic screens follow this format.

The next diagnostic screen is the binary output message screen.

The next diagnostic screen is the relay screen. The column list on the left represents the relays for the “A” processor and the column list on the right represent the relays for the “B” processor. Four other outputs can be tested from this screen including pp150 reset (ok), pp150 fault (fault), continuous arm (c-arm) and output 1 (out1).
The next six diagnostic screens are titled with a page number in the bottom left of the display. The numbers to the left of the descriptions for the “a” and “b” processors represent the terminal number on the PP150.

Pg-01 & pg-05 are screens for the run stations. These two screens show indicate that the N.C. contacts for run station #1 are on and run stations #2, #3 & #4 are bypassed.

Pg-02 displays the mode of the PP150. Pg-03 displays clutch, counterbalance, motor, clutch valve, top stop and immediate stop inputs. Pg-04 displays ENCODER, PROX AND CAM INPUTS. Pg-06 displays inputs 1, 2, 3 and the E-STOP inputs.

The last screen tests the top three dip switch outputs on the door of the PP150 and the six buttons on the front of the PP150. The screen below indicates that second dip switch is on.
III. Resolver Wiring

The PP150 resolver input has a built-in excitation which supports standard 5,000 Hz rotor-excited positional resolvers. The input can be configured in Master Mode or Slave Mode. In Master Mode, the PP150 supplies excitation voltage to the resolver and is wired directly to the resolver. In Slave Mode, the PP150 does not supply excitation voltage to the resolver and is wired to the resolver input terminal of a Master device, where the resolver signal is shared. The resolver input consists of the following components:

- Turns on if ROTOR voltage is too high
- Turns on if the (2) STATOR voltages are too high

Master and Slave Selections
- R1/R2 Voltage Scaling
- S1/S3 Voltage Scaling
- S2/S4 Voltage Scaling

CONNECTOR WIRING

Resolver Interface (detail)
IV. Resolver Dip Switch Settings

1) Set all DIP switches to the OFF (left) position.
(A Dot in these pictures means that side is pushed in.)

2) Determine whether the resolver input should be in MASTER mode or SLAVE mode and make the proper setting.

3) Make resolver connection.

4) With the system on (press can be either running or not running), check to see if the “ROT” LED turns on. Scale down the rotor input voltage by 4X if the “ROT” LED does turn on.

5) With the resolver rotating, check to see if the “STAT” LED turns on. If it turns on at any point in a full stroke, scale down both stator input voltages first by 2X. If it still turns on, scale it down further by 3X and then by 5X until the “STAT” LED is not turned on. Perform the test in this order to give our unit the highest workable voltage and therefore more accurate results.

   NOTE: Two stator inputs must have the same scale down factor. Therefore, the setting of STAT1 must be the same as STAT2.

6) Record all DIP switch settings.

7) Resolver setup is basically completed. Refer to the Operation section of this manual for resolver offset adjustment.

8) The picture to the right shows a PP150 resolver set to:
- Master (1&2 Right)
- ROT = No Scale (3 Left)
- STAT = Scale Down 2X (4&6,7&9 Left – 5&8 Right)
7 Start-up Procedure

After wiring the press control, follow the steps below to ensure all settings are adjusted correctly for proper functionality and safety.

1. Set Position Control to correct setting (see page 21)

   A. If using resolver:
      i. Adjust the offset angle until the press position displays the correct angle (see page 22).
      ii. Record offset on data sheet inside PP150 (see page 44).

   B. If using encoder:
      i. Go to encoder cal screen.
      ii. Adjust the desired angle.
      iii. Enter encoder cal mode.
      iv. Inch the press around until it comes out of cal mode.

   C. If using hard cams:
      i. Adjust hard cams (see page 11).
      ii. Continue to step 6 of the start-up procedures.

2. Adjust soft cam settings (see page 22).
3. Disable the inch stop at top setting on the LC mute/top stop screen (see page 24).

4. Verify Prox:
   (After the press position has been adjusted correctly)

   I. Cycle the press in inch mode until the prox has cycled. (You will most likely get a fault during this procedure because the window for the prox check has not been verified yet).

   II. Once you are sure the position is correct and the prox has cycled once, go to the “prox setup” screen and check verify the prox position in the PP150 (see page 30).

   III. Attempt to inch the press a full stroke, if you get a fault, verify the prox position again. Follow this procedure until you can cycle the press completely without getting a fault. Note: you can view the current prox angles and window from the operator’s prox info screen (see page 17).

5. Adjust the “speed compensation” settings (see page 25-26).
6. Adjust where you want to be able to “arm continuous” (see page 23-24).

![ARM CONTINUOUS 1](image1)

![ARM CONTINUOUS 2](image2)

7. Adjust the “misc. timers” to the desired values (see page 27).

![MISC. TIMERS](image3)

8. Adjust the “lc mute/top stop” settings to the desired values (see page 24).

![LC MUTE/TOP STOP](image4)

9. Adjust the brake monitor/test settings. (see page 28)

![BRAKE TEST 1](image5)

![BRAKE TEST 2](image6)

Note: If you are using hard cams, skip this step and proceed to step 10.
10. Adjust LED display (see page 29).

11. Reset the lifetime counter (see page 29).

12. Save current settings to memory to be backed up. This will save all settings at their current state so in the event that a setting is modified, you can restore to the initial start-up settings. This is done from the “save/restore” screen in the configuration screens (see page 30).
8 PP150 START-UP CHECKLIST
(BE SURE TO UPDATE THE DATASHEET ON THE BACK OF THE PP150 AS WELL AS
THE DATASHEET IN SECTION 9)

1. Set Position Control and offset/position...Pages 22-23
2. Adjust soft cams (res/enc only) ...Page 23
3. temporarily disable inch stop at top (res/enc only) Pages 25-26
4. verify prox (res/enc only) ...Page 32
5. Adjust speed comp top stop (res/enc only) ...Pages 26-28
6. Adjust arm cont settings...Pages 24-25
7. Adjust misc. timers...Page 28
8. Adjust light curtain mute and top stop settings...Pages 25-26
9. Adjust brake monitor settings (Run brake test) ...Pages 29-30
10. Adjust desired led display...Page 30
11. Reset lifetime counter...Page 31
12. Save settings to backup...Page 31

9 PP150 CONFIGURATION SETTINGS

I. Configuration data sheet

<table>
<thead>
<tr>
<th>PP150 Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup by:</td>
</tr>
<tr>
<td>Press #:</td>
</tr>
<tr>
<td>CAMS</td>
</tr>
<tr>
<td>Position Selection</td>
</tr>
<tr>
<td>Resolver Offset:</td>
</tr>
<tr>
<td>Arm Window:</td>
</tr>
<tr>
<td>Arm Selection:</td>
</tr>
<tr>
<td>Arm Timeout:</td>
</tr>
<tr>
<td>B-Soft Cam:</td>
</tr>
<tr>
<td>T-Soft Cam:</td>
</tr>
<tr>
<td>Speed Comp Enabler:</td>
</tr>
<tr>
<td>Fast SPM:</td>
</tr>
<tr>
<td>Fast Angle:</td>
</tr>
<tr>
<td>Slow SPM:</td>
</tr>
<tr>
<td>Slow Angle:</td>
</tr>
<tr>
<td>No Motion Limit:</td>
</tr>
<tr>
<td>Multi Run Bar:</td>
</tr>
<tr>
<td>Drift Fault Timer:</td>
</tr>
<tr>
<td>Mute Light Curtains:</td>
</tr>
<tr>
<td>Cont. imm. Top Stop:</td>
</tr>
<tr>
<td>Inch Stop at Top:</td>
</tr>
<tr>
<td>Brake Mon. Fault Time:</td>
</tr>
</tbody>
</table>
II. **Speed Zone Settings**

Record below the values used in the Speed Comp Top Stop Zones 1-4.

**Zone 1:**
IF Speed > ______ SPM

Stop Offset ______°
Stop Early ______
Stop Angle ______°

**Zone 2:**
IF Speed > ______ SPM

Stop Offset ______°
Stop Early ______
Stop Angle ______°

**Zone 3:**
IF Speed > ______ SPM

Stop Offset ______°
Stop Early ______
Stop Angle ______°

**Zone 4:**
IF Speed > ______ SPM

Stop Offset ______°
Stop Early ______
Stop Angle ______°
III. I/O Board Replacements Parts Info

- Input Power Jumpers Down (Sinking)
- Ethernet Port (Optional)
- Resolver Dip Switches (Page 39)
- Push Button Lights Relays (4)
  Mfg. Panasonic
  P/N: DS1E-S-DC24V
  Toledo P/N: 6603-735
- 4A @ 110/220 VAC Input Fuse
  Mfg. Wickmann
  P/N: 39014000440
  Toledo P/N: 6602-387
- LC Mute Relays
  Mfg P/N: C75A-3A1B-DC24
  Toledo P/N: 6604-735
- Watch Dog Relays
  Mfg P/N: C75A-2A2B-DC24
  Toledo P/N: 6605-735
- Clutch Relays
  Mfg P/N: C75A-3A1B-DC24
  Toledo P/N: 6604-735
- (A) x3 2A @ 120VAC Output Fuse
  Mfg. Wickmann
  P/N: 39012000440
  Toledo P/N: 6615-387
10 PP150 Ethernet Communication Setup (Optional)

The PP150 is capable of communicating to a PLC on Ethernet/IP using cip. This is an optional function and must be ordered from the factory prior to shipment/installation. This section explains how to set up the PP150 and an Allen Bradley PLC using RSLogix 5000.

1. Set the IP Address in the PP150 to the desired, unused address. The PP150 must be restarted before new settings become active. (Default is 192.168.0.254)

2. Set the Subnet Mask in the PP150 to the desired value. The PP150 must be restarted before new settings become active. (Default is 255.255.255.0)

3. Settings in the PLC are explained in the next 15 pages

A. Open your project in RSLogix 5000
B. Right click on your Ethernet module and select “New Module...” (Figure 10.1)
C. Select The communications modules and open the list by clicking on the plus (+) symbol. (Figure 10.2)

D. Select Ethernet-Module and then click ok (Figure 10.3)
E. Enter the name you want to refer to the PP150 in your programming. Sample: PP150EthernetIP (Figure 10.4)

F. Select the Comm Format to be Data – INT. (See Sample: Figure 10.5)
G. Enter the correct IP address of the PP150. See Sample: 192.168.16.146 (Figure 10.6)

H. Enter the Assembly Instance and Size exactly as it appears in Figure 10.6. All six of these values must be entered correctly or communication will fail.

![New Module](image)

**Figure 10.6**

I. Enter the correct value for the requested packet interval (Figure 10.7)

![Module Properties: LocalENB](image)

**Figure 10.7**
J. Right click on your MainTask Folder and select “New Program…” (Figure 10.8)

K. Enter the Name of the New Program as PP150 (See example below…Figure 10.9)
L. Right click on the new program (PP150) that you just made and select “New Routine…” (Figure 10.10)

M. Enter the Name of the New Routine as PP150Routine (See example below…Figure 10.11)
N. Right click on the New Program (PP150) and select “Properties” (Figure 10.12)
D. **Under the configuration tab, select PP150 as the Main Routine** (See example below...Figure 10.13)

![Program Properties - PP150](image)

**Figure 10.13**

P. **Copy the rungs 1-9 from the sample program supplied with the PP150** (See example below...Figure 10.14)

![Copy Rung](image)

**Figure 10.14**
Q. Paste the copied rungs from the sample program into your new program ladder logic. Note: these rungs should be copied to the PP150Routine that you just created. This will ensure that the imported tags (section 10.R) works correctly (See example below...Figure 10.15)

**Figure 10.15**

R. **IMPORT** Program Tags by selecting Tools, then “IMPORT...” (See example below...Figure 10.16)

**Figure 10.16**
S. Select the PP150EthernetIP-Tags.csv file from the CD supplied with the controller. (See example below...Figure 10.17)
## 11 P150 Ethernet I/O Mapping

Figures 11.1 thru 11.8 show the mapping for all the PP150 I/O.

### Table: Input Word 1 (Figure 11.1)

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Style</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>(...)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.I.Data</td>
<td>(...)</td>
<td></td>
<td>INT[31]</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[0]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[1]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[2]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Internal Connection Error</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[3]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[4]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[5]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[6]</td>
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<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[7]</td>
<td>0</td>
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<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[8]</td>
<td>0</td>
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<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[9]</td>
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<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[10]</td>
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<td>BOOL</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[12]</td>
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</tr>
<tr>
<td>PP150EthernetP.I.Data[13]</td>
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<tr>
<td>PP150EthernetP.I.Data[14]</td>
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<td>Communication Status Word</td>
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<tr>
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</tr>
<tr>
<td>PP150EthernetP.I.Data[16]</td>
<td>-15127</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 Input Status Word 1</td>
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### Table: Input Word 0 (Figure 11.2)

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</tr>
<tr>
<td>PP150EthernetP.I.Data</td>
<td>(...)</td>
<td></td>
<td>INT[31]</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[0]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Communication Status Word</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[1]</td>
<td>-15127</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 Input Status Word 1</td>
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<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.I.Data[3]</td>
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<td>Not Used</td>
</tr>
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<td>PP150EthernetP.I.Data[4]</td>
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<td>Not Used</td>
</tr>
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<td>Not Used</td>
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<td>PP150EthernetP.I.Data[6]</td>
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<td>BOOL</td>
<td>Not Used</td>
</tr>
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<td>PP150EthernetP.I.Data[7]</td>
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<td>Decimal</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
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<td>PP150EthernetP.I.Data[8]</td>
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<td>Decimal</td>
<td>BOOL</td>
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<td>PP150EthernetP.I.Data[9]</td>
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<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Mode SS (Normal) Input</td>
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<td>PP150 Fault Reset PB Input</td>
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<tr>
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<td>BOOL</td>
<td>PP150 Arm Cont PB Input</td>
</tr>
<tr>
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<td>PP150 Clutch Air Input</td>
</tr>
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<td>PP150 Counter Balance Air Input</td>
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<td>Value</td>
<td>Style</td>
<td>Data Type</td>
<td>Description</td>
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<td>PP150 Right Run 3 (NC)</td>
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**INPUT WORD 3 (FIGURE 11.3)**

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<th>Style</th>
<th>Data Type</th>
<th>Description</th>
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</thead>
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<td></td>
<td>BOOL</td>
<td>PP150 Left Run 1 (NO)</td>
</tr>
<tr>
<td>FF150EthernetP1</td>
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<td></td>
<td>BOOL</td>
<td>PP150 Left Run 2 (NO)</td>
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<tr>
<td>FF150EthernetP1</td>
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<td></td>
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<td>FF150EthernetP1</td>
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<td>PP150 Right Run 2 (NC)</td>
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<td>PP150 Right Run 3 (NC)</td>
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<td>FF150EthernetP1</td>
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<td>FF150EthernetP1</td>
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<td>BOOL</td>
<td>PP150 E-CAM Input</td>
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**INPUT WORD 2 (FIGURE 11.3)**
### Input Word 4 (Figure 11.5)

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<td>Communication Status Word</td>
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<td>PP150EthernetP.IData[1]</td>
<td>-14111</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 Input Status Word 1</td>
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### Input Word 15 (Figure 11.6)

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</tr>
</thead>
<tbody>
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<td>Decimal</td>
<td>INT</td>
<td>PP150 Outputs</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].0</td>
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<td>Decimal</td>
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<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].1</td>
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<td>Decimal</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
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<td>Decimal</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].3</td>
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<td>Decimal</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].4</td>
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<td>Decimal</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
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<td>BOOL</td>
<td>PP150 Clutch On</td>
</tr>
<tr>
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<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Watch Dog On</td>
</tr>
<tr>
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<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Light Curtain Bypass On</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].8</td>
<td>1</td>
<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Clutch Fault Light On</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].9</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Clutch OK. Light On</td>
</tr>
<tr>
<td>PP150EthernetP.IData[15].10</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>PP150 Cont. Arm Light On</td>
</tr>
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<td>PP150EthernetP.IData[15].11</td>
<td>1</td>
<td>Decimal</td>
<td>BOOL</td>
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</tr>
<tr>
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</tr>
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</tr>
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<td>Not Used</td>
</tr>
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<td>21845</td>
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<td>INT</td>
<td>Not Used</td>
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<td>Value</td>
<td>Style</td>
<td>Data Type</td>
<td>Description</td>
</tr>
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<td>-------</td>
<td>-------</td>
<td>-----------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[10]</td>
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<td>Decimal</td>
<td>INT</td>
<td>PP150 Last Stop Time (mS)</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[12]</td>
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<td>Decimal</td>
<td>INT</td>
<td>PP150 Last Test Stop Time (mS)</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[13]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 Last Test Degrees To Stop</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[14]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 Last Test SPM</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[16]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>PP150 SPM</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[17]</td>
<td>110</td>
<td>Decimal</td>
<td>INT</td>
<td>Heartbeat Counter</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[18]</td>
<td>4</td>
<td>Decimal</td>
<td>INT</td>
<td>Last Stop Reason</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[19]</td>
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<td>Decimal</td>
<td>INT</td>
<td>Batch Count</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[20]</td>
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<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[21]</td>
<td>1</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual Control Word 1</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[22]</td>
<td>2</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual Resolver Desired Angle</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[23]</td>
<td>3</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual Encoder Desired Angle</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[25]</td>
<td>5</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual Brake Test Speed Value</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[26]</td>
<td>6</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual T-Cam Off Value</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[27]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[28]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[29]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
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<td>PP15DEthernetPn.Data[31]</td>
<td>-22336</td>
<td>Decimal</td>
<td>INT</td>
<td>Reserved</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[32]</td>
<td>-496</td>
<td>Decimal</td>
<td>INT</td>
<td>Reserved</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[33]</td>
<td>-1</td>
<td>Decimal</td>
<td>INT</td>
<td>Reserved</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[34]</td>
<td>255</td>
<td>Decimal</td>
<td>INT</td>
<td>Reserved</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[35]</td>
<td>10</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual PLS 1 On</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[36]</td>
<td>11</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual PLS 1 Off</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[37]</td>
<td>12</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual PLS 2 On</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[38]</td>
<td>13</td>
<td>Decimal</td>
<td>INT</td>
<td>Actual PLS 2 Off</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[39]</td>
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<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP15DEthernetPn.Data[40]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
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**Input Words 4-40 (Figure 11.7)**
<table>
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<tr>
<th>Name</th>
<th>Value</th>
<th>Style</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP150EthernetP.C</td>
<td>...</td>
<td></td>
<td>A8:ETHE...</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.I</td>
<td>...</td>
<td></td>
<td>A8:ETHE...</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.O</td>
<td>...</td>
<td></td>
<td>A8:ETHE...</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.O.Data</td>
<td>...</td>
<td></td>
<td>INT[21]</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[0]</td>
<td>1</td>
<td>Decimal</td>
<td>INT</td>
<td>Configuration Word</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[1]</td>
<td>1</td>
<td>Decimal</td>
<td>INT</td>
<td>Control Word 1 to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[2]</td>
<td>2</td>
<td>Decimal</td>
<td>INT</td>
<td>Desired Resolver Angle to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[3]</td>
<td>3</td>
<td>Decimal</td>
<td>INT</td>
<td>Desired Encoder Angle to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[4]</td>
<td>4</td>
<td>Decimal</td>
<td>INT</td>
<td>Desired Brake Stop Limit to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[5]</td>
<td>5</td>
<td>Decimal</td>
<td>INT</td>
<td>Desired Brake Test Speed to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[6]</td>
<td>6</td>
<td>Decimal</td>
<td>INT</td>
<td>Desired T-Cam Off to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[7]</td>
<td>7</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[8]</td>
<td>8</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[9]</td>
<td>9</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[10]</td>
<td>1</td>
<td>Decimal</td>
<td>INT</td>
<td>HeartBeat to PP150 (Bit 0)</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[12]</td>
<td>-496</td>
<td>Decimal</td>
<td>INT</td>
<td>RESERVED</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[13]</td>
<td>-1</td>
<td>Decimal</td>
<td>INT</td>
<td>RESERVED</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[14]</td>
<td>255</td>
<td>Decimal</td>
<td>INT</td>
<td>RESERVED</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[15]</td>
<td>10</td>
<td>Decimal</td>
<td>INT</td>
<td>PLS 1 WINDOW ON to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[16]</td>
<td>11</td>
<td>Decimal</td>
<td>INT</td>
<td>PLS 1 WINDOW OFF to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[17]</td>
<td>12</td>
<td>Decimal</td>
<td>INT</td>
<td>PLS 2 WINDOW ON to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[18]</td>
<td>13</td>
<td>Decimal</td>
<td>INT</td>
<td>PLS 2 WINDOW OFF to PP150</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[19]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Counter Preset</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[20]</td>
<td>0</td>
<td>Decimal</td>
<td>INT</td>
<td>Not Used</td>
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Output Words 0-20 (Figure 11.8)

<table>
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<th>Name</th>
<th>Value</th>
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<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP150EthernetP.O</td>
<td>...</td>
<td></td>
<td>A8:ETHEFNET...</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.O.Data</td>
<td>...</td>
<td></td>
<td>INT[11]</td>
<td></td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[0]</td>
<td>1</td>
<td>Decimal</td>
<td>INT</td>
<td>Configuration Word</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[1]</td>
<td>1</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Enable/Disable PP150 Ethernet Outputs</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[2]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Configuration Word</td>
</tr>
<tr>
<td>PP150EthernetP.O.Data[3]</td>
<td>0</td>
<td>Decimal</td>
<td>BOOL</td>
<td>Configuration Word</td>
</tr>
</tbody>
</table>

Output Word 0 (Figure 11.9)

Note: For communication, Output Word0.0 must be 1 (Enabled)
<table>
<thead>
<tr>
<th>Name</th>
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<th>St</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP150Ethernet Port Data</td>
<td>{ ... }</td>
<td></td>
<td>AB:ET</td>
<td></td>
</tr>
<tr>
<td>PP150Ethernet Port Data[0]</td>
<td></td>
<td>0</td>
<td>INT[11]</td>
<td>Configuration Word</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[1]</td>
<td></td>
<td>0</td>
<td>INT</td>
<td>Control Word 1 to PP150</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[2]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Main Motor FWD to PP150</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[3]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Program New Resolver Angle to PP150</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[4]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Program New Encoder Angle to PP150</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[5]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Start Brake Monitor Test to PP150</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[6]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[7]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[8]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[9]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[10]</td>
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<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[11]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[12]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[13]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[14]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
<tr>
<td>PP150Ethernet Port Data[15]</td>
<td></td>
<td>0</td>
<td>BOOL</td>
<td>Not Used</td>
</tr>
</tbody>
</table>

*Output Word 1 (Figure 11.10)*
12 P150 LADDER LOGIX EXAMPLES

Figures 12.1 thru 12.3 show example ladder logic for heartbeat, heartbeat monitoring and enabling PLC outputs for the PP150. NOTE: In the examples below, Ladders 9 and 10 (Figure 12.1) are required for the PP150 to monitor a heartbeat with the PLC.

Example Ladder Logic for (Required) Heartbeat and Enable bits (Figure 12.1)

Example Ladder Logic for (optional) Heartbeat Monitoring (Figure 12.2)

Example Ladder Logic for (Optional) Heartbeat Fault Capture (Figure 12.3)
13 P150 EDS (Electronic Data Sheet) Installation

To view the PP150 as known device in your RSLinx you must install the EDS file using the RSLinx EDS Hardware Installation Tool. Figures 13.1 thru 13.7 will walk you through the installation process.

Run the EDS Hardware Installation Tool Program. (Figure 13.1)
Click on the “Add” button. (Figure 13.2)

Select “Register a single file” and Browse...to search for the EDS file supplied by Toledo Integrated Systems. (Figure 13.3)
Click on the “Next” button to let Rockwell test the file. (Figure 13.4)

Click on the “Change Icon…” Button. (Figure 13.5)
Click on Browse...then search for the PP150-icon.ico file supplied by Toledo Integrated Systems. (Figure 13.6)

Click on Next and the Installation will be complete. (Figure 13.7)
14 P150 Ethernet/IP Settings

- To view/modify the PP150 Ethernet/IP settings flip the appropriate internal dip switch to get to the configuration screens. (see section 5 page 19 of this manual)

- Be sure to enable the Ethernet capability of the PP150 by checking the Enable Line on the configuration screen. The PP150 must be restarted after any modifications to Ethernet settings are made.

**Note:** Enabling the Ethernet, will disable some features from the PP150 screen. The following features will not be able to be modified directly from the PP150, they can only be modified through the PLC using the I/O Mapping (see section 11 Page 54 of this manual).

- Features that are not modifiable from the PP150 with Ethernet enabled:

  1. Resolver/Encoder Position calibration
  2. Brake Monitor Stop Limit
  3. 90° Brake Monitor Test
  4. T-Cam Off Value
  5. PLS Outputs

**Ethernet screen with example IP address set to 192.168.16.146 (Default)**

(Figure 14.1)

**Ethernet screen with example Subnet Mask set to 255.255.255.0 (Default)**

(Figure 14.2)
15 P150 Auto Single Stroke and Cont. on Demand

- The PP150 is equipped with two automatic modes. Depending on the mode input, either auto single or continuous on demand can be accomplished. These auto modes require an enable input (In2 #38), an initiate auto stroke (in1 #37) and an arm input (arm cont. is used #19).

- To use the auto modes, the enable input must be on. If the enable input is ever off, the control will immediately stop the press and return to “normal” operation.

- Once the enable input is on, you must arm the unit for auto operation.

The auto modes settings can be configured in the screen using the config/advanced dip switches. (see figures 15.1 &15.2)

(Figure 15.1)                          (Figure 15.2)

Auto Settings:

- 1. 1st stk req. pb: Selecting this option will require that the operator use the Palm Buttons to initiate the first stroke in auto mode. Note: The palm Buttons will operate the same as “normal” mode until the buttons have been held through bottom. Once this occurs, the unit is now armed and requires only the “Initiate Auto Stroke” input to engage the clutch.

- 2. Req. Off To Arm: Selecting this option will require that the “Initiate Auto Stroke” input is off to allow the unit to be auto armed. Note: if this is not selected and the “Initiate Auto Stroke” input is on when the arm button is pushed, the press will stroke.

- 3. Enable Timeout: Selecting this option will disarm the unit once the timeout timer has finished. Every engagement of the clutch resets this timer.

- 4. Arm Timeout: This is the time that the unit will stay armed without the clutch being engaged. This timer is in seconds and has a max of 1800 seconds (30 minutes). Setting this to zero will bypass the timer.
- **5. Cont. Delay:** This is the time the unit will delay engaging the clutch (in continuous mode), once it has received the “Initiate Auto Stroke” input. This timer is in seconds and has a max of 30 seconds. Setting this to zero will bypass the timer.

**Continuous-On-Demand Functionality notes:**

- If 1st stroke requires palm buttons is selected and the “Initiate Auto Stroke” input is off, the palm buttons will only allow you to complete one stroke. If the “Initiate Auto Stroke” input is on, the press will continue to run until the “Initiate Auto Stroke” input is turned off.

- If at any point in the stroke the “Initiate Auto Stroke” input is turned off, the press will top stop and remain armed. If the “Initiate Auto Stroke” input is again turned on, the clutch will engage.

- **Any of the following will disarm the unit:**
  1. Emergency Stop Open
  2. Immediate Stop Open
  3. Top Stop Open
  4. Any Mode change
  5. PP150 Reset Button Pushed
  6. Tie Down Fault (Only if 1st stk req. pb...once through bottom, this fault is bypassed)
  7. Any Latched Fault in the PP150
  8. The arm timeout timer is completed (only if the clutch is off and timeout is enabled)

**NOTE:** Auto Single and continuous on Demand require full press guarding by end customer. Toledo Integrated Systems is not responsible for incorrect wiring or insufficient guarding while using either of these two auto features.

### 16 Hydraulic Overload Monitoring

**Input**

The PP150 is equipped with one input [tb 39] to monitor a Hydraulic Overload Limit Switch. This input can be configured to trigger a hydraulic overload fault either when it goes low, or when it goes high. Refer to the sample screen shot in (Fig. 16.1). When the “input fault hi” has a checkmark, the unit will declare a hydraulic overload fault when the input goes high.

**Output**

There is one relay (Dry Contact) output [tb 72 &73] to control the Hydraulic OL “Pump/Reset/Hold” solenoid. This output can also be configured to be low or hi. When the “output hi” has a checkmark, the output will remain on when
THE HYDRAULIC OVERLOADS ARE NORMAL. ONCE THE INPUT INDICATES THAT THE HYDRAULIC OVERLOADS HAVE FAULTED OUT, THE OUTPUT WILL GO LOW UNTIL THE OVERLOADS ARE COMMANDED TO RESET.

TOGGLE

IF THE OUTPUT HAS TO PULSE HI AND LO TO RESET THE OVERLOADS, SET THE “RESET TIMER” VALUE TO BE A NUMBER OTHER THAN ZERO. IF NO PULSE IS REQUIRED, SET THE VALUE TO ZERO.

THE HYDRAULIC OVERLOAD SETTINGS CAN BE CONFIGURED IN THE SCREEN USING THE CONFIG/ADVANCED DIP SWITCHES. (SEE FIGURES 16.1 & 16.2)

Sample Procedure with “input fault low” unchecked and “output hi” checked:
- If the monitored input ever turns off, the output will turn off and the press will immediate stop.
- The PP150 will report a Hydraulic OL fault and require you to push the reset button to acknowledge the fault.
- Once the fault has been acknowledged, the control will automatically tell you to inch the press either fwd or rev to the top zone. (If you do not have reverse on your motor you will either have to dead inch the press fwd thru bottom or unwire the main motor fwd input [22] to allow the PP150 to stroke.)
- Once in the top zone, the PP150 will again stop the press and turn on the Hydraulic OL “pump/hold” output.
- Once the input turns back on for 10 continuous seconds, the Hydraulic OL fault will be cleared.
Figures 16.3-16.6 show how the input and output settings affect the system. Relays may need to be added to the output in order to integrate the system into the hydraulic overload system (ex, if the system has 2 valves, etc).

**Input Hi/Output Hi (Toggle) Example**

<table>
<thead>
<tr>
<th>Faulted</th>
<th>In Top Zone</th>
<th>Input Hi</th>
<th>OK to Run</th>
<th>Normal Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
<td>Ack./Inch to Top</td>
<td>OL Pump</td>
<td>(10 sec)</td>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

Input
- Hi
- Lo

Output
- HI
- Lo

Toggle Delay (mS) 500 to 9000 mS

(Figure 16.3)

**Input Hi/Output Hi Example**

<table>
<thead>
<tr>
<th>Faulted</th>
<th>In Top Zone</th>
<th>Input Hi</th>
<th>OK to Run</th>
<th>Normal Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
<td>Ack./Inch to Top</td>
<td>OL Pump</td>
<td>(10 sec)</td>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

Input
- Hi
- Lo

Output
- HI
- Lo

Toggle Delay (mS) = 0 mS

(Figure 16.4)
**Input Lo/Output Lo (Toggle) Example**

<table>
<thead>
<tr>
<th>Normal Operation</th>
<th>Ack./Inch to Top</th>
<th>OL Pump</th>
<th>OK to Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Lo</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Figure 16.5)*

**Input Hi/Output Lo Example**

<table>
<thead>
<tr>
<th>Normal Operation</th>
<th>Ack./Inch to Top</th>
<th>OL Pump</th>
<th>OK to Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Hi</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Figure 16.6)*
17 Programmable Outputs

The PP150 is equipped with two programmable outputs [TB 86 & 87]. These outputs are programmed to turn on once during each stroke and are settable through either the PP150 screen or over Ethernet (if option purchased). Figure 17.1 shows the screen used to modify the output windows. The example shows the first output turning on at 170° and off at 190° (typical pilot release example). The second example shows the second output turning on at 270° and turning off at 90° (typical feed window).

![Image of Programmable Outputs Screen]

(Fig. 17.1)

The Mo and M1 outputs share the same terminals as the “message bits”. Only one option can be used (either MSG. Bits or PLS Outputs). The Programmable outputs/"PLS” must be enabled to ensure MO and M1 cycle according to the selected windows. The toggle from PLS/MSG can be configured in the screen using the config/advanced dip switches. (see figures 17.2 & 17.3)

![Image of HYD. Ol/PLS Screen](image)

(Figure 17.2)

(Figure 17.3)

(Note: The MO and M1 outputs are sinking (nnp) outputs and are designed to be run to a sinking input of an aux. device or to the common of a DC relay.)

Safety Note: The Programmable Outputs should NEVER be run into the prox. Check input.
18 MUTE LIGHT CURTAINS ON UPSTROKE WITH ENCODER SETUP

If the user selects mute curtains under LC mute/top stop and an encoder is used, the z-pulse and prox must be timed as below.
The PSS9 is shipped with all 12VDC input jumpers set for sourcing to change the inputs to sinking. The jumper in the D2 board must be changed as shown.

See page 51 of the PSS9 manual for picture example of jumpers.

**Input Power Jumper Example**

- **L-RUN3** NC
- **L-RUN3** NC
- **R-RUN3** NC

(For inputs on bottom of PSS9 only)

Voltage supplied to the input inputs can be either sinking or sourcing. Do not connect a common to these inputs.

- **[40] D-RUN3 NC**
- **[43] R-RUN3 NC**
- **[49] R-RUN3 NC**
- **[44] BYPASSED**
- **[40] L-RUN3 NC**
- **[43] L-RUN3 NC**
- **[49] L-RUN3 NC**
- **[44] BYPASSED**

- **[50] 24VDC**
- **[51] DC COM**
- **[52] SHLD**
- **[53] LC3**

**Power Supply to E-Stop String**

- **[54] D-COM**
- **[55] 120VAC 2A INCOMING POWER**
- **[56] 120VAC 2A INCOMING POWER**

**Customer Supplied**

- **[57] RELAY and**
- **[58] AUX**

**Remote Screen**

- **[59] LF**
- **[60] LF**
- **[62] LF**
- **[63] LF**
- **[64] LF**
- **[65] LF**
- **[66] LF**
- **[67] LF**

**Internal Relay Contacts**

- **[68] D-COM**
- **[69] D-COM**

**Typical Customer E-Stop String**

- **[70] D-COM**
- **[71] D-COM**
- **[72] D-COM**
- **[73] D-COM**

**Note:** For proper redundancy each E-Stop device must have dual contacts. Use one contact from each E-Stop device in ESI string, use one contact from each E-Stop device in ESI string.

**Volts Sinking Outputs**

- **[50] 24VDC**

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**Page 104**

**Important**

All AC lines must be run in separate conduit from all DC lines.
NOTES:

1) ALL DIMENSIONS ARE IN INCHES.
Jumper Locations

LEAVE 3" OF WIRE

1" HEAT SHRINK 2419-082

REAR VIEW

PRESS PILOT 150

LEAVE 13" OF WIRE

1" HEAT SHRINK 2419-082

CABLE LENGTH TO NOT EXCEED 50'
CABLE MUST NOT BE SPLICED

STANDARD CABLE LENGTH 10'
CUTOUT

4.1300

2.6000

4.5900

3.0500
Toledo Integrated Systems
Toledo Transducers Inc.

Press Pilot 150
Remote Display

Manual
And
Installation guide
SECTION 1 HOME SCREEN

This screen shows:

1) Touch the press angle display to navigate to the press angle display (See section 2).
2) This field displays the most recent reason for the clutch disengaging.
3) This field displays the current PP150 prompt. This prompt could be a message or a fault.
4) These lights will flash when communication via Ethernet is occurring.
5) SPM: Current strokes per minute.
6) Angle: The current angle of the press.
7) Touch the stop history button to navigate to the stop history page. (See section 3)
8) Touch the brake monitor button to navigate to the brake monitor page. (See section 4)
9) Touch the counters button to navigate to the counters page. (See section 5)
10) Touch the PP150 setup button to navigate to the settings menu page. (See section 6)
Navigate to the PRESS ANGLE screen by touching the press angle display on the HOME screen.

This screen shows a graphic representation of the current press angle and strokes per minute (SPM).

Touch the HOME button to return to the HOME screen.
SECTION 3 FAULTS

Navigate to the FAULTS screen by touching the stop history button on the HOME screen.

This screen shows (1) the most recent fault, (2) the previous fault, (3) and two faults ago. The fault number and a brief description are given.

Touch the HOME button to return to the HOME screen.
SECTION 4 BRAKE MONITOR

Navigate to the BRAKE MONITOR screen by touching the brake monitor button on the HOME screen.

This screen shows:

1) Last stop time (mS).
2) Last degrees to stop (Degrees).
3) Max. Limit for stop time (mS).
4) Last 90 degree test stop time (mS).
5) Last 90 degree test degrees to stop (Degrees).
6) Last 90 degree test actual speed (mS).
7) Current prompt/fault.

Touch the HOME button to return to the HOME screen.
SECTION 5 COUNTERS

Navigate to the COUNTERS screen by touching the counters button on the HOME screen.

This screen shows:

1) This field displays the most recent reason for the clutch disengaging.
2) This field displays the current PP150 prompt. This prompt could be a message or a fault.
3) Angle: The current angle of the press.
4) Stop time: Last stop time (mS).
5) Batch count: Shows the number of parts made in the batch.
6) Preset: Sets the number of parts per batch.
7) SPM: Current strokes per minute.

Touch the HOME button to return to the HOME screen.
Navigate to the SETTINGS MENU screen by touching the PP150 setup button on the HOME screen.

Use this screen to navigate to any of the settings sub screens.

This screen shows:

1) Pilot Press 150 input/output button.
2) Press Angle Settings button.
3) Break Monitor Settings button.
4) Programmable Limit Switch button.
5) Screen Settings button.

Touch the HOME button to return to the HOME screen.
6.1 PP150 I/O

Touch PP150 I/O on the settings menu (Figure 6) to access this screen.

There are three screens. Scroll through the screens by touching the arrows.

All inputs and outputs are shown. If the bubble next to the name of a signal is lit blue the signal is currently on.

These screen shows:

1) Example input off.
2) Example input on.

Touch the RETURN button to return to the SETTINGS MENU screen.

![Figure 7](image-url)
Figure 8

20 - CLT. AIR
21 - CTR. BAL.
22 - MTR. FWD
23 - CLT VALVE
24 - TOP STOP
26 - IMM STOP

35 - B - CAM
36 - T - CAM
37 - AUTO STRK
38 - AUTO ENBL
39 - HYD. 0/L

Figure 9

40 - LR3 N.O.
42 - RR3 N.C.
44 - STN3 BYP.
45 - LR4 N.O.
47 - RR4 N.C.
49 - STN4 BYP.

CLUTCH RLY
WDOG RLY
MUTE RLY
ESTOP-1
ESTOP-2

PREV
NEXT
PREV
NEXT
RETURN
RETURN
6.2 Programmable Limit Switches

Touch the PLS button on the settings menu (Figure 6) to access this screen. The Programable Limit Switches will only be valid if activated in the pp150.

This screen shows:

1) Programmable Limit Switch 1 turn on angle (Push to change).
2) Programmable Limit Switch 1 turn off angle (Push to change).
3) Programmable Limit Switch 2 turn on angle (Push to change).
4) Programmable Limit Switch 2 turn off angle (Push to change).
5) Current SPM and press angle.

Touch the RETURN button to return to the SETTINGS MENU screen.
6.3 Press Angle Settings

Touch SET PRESS ANGLE on the settings menu (Figure 6). Then, enter the correct password to access this screen. This screen shows:

1) **If using a resolver** enter current press position to change resolver angle. *Note: touching “Enter” will change the angle immediately.*

2) **If using an encoder** enter current press position to change encoder angle. *Note: touching “Enter” will change the angle immediately. You must stroke press 1 revolution in inch mode to save encoder position.*

3) Enter desired angle to turn off clutch during a single stroke of top situation. 0 will bypass the screen’s setting and use what is in the PP150.

Touch the RETURN button to return to the SETTINGS MENU screen.
6.4 Screen Setup

Touch SCREEN SETUP on the settings menu (Figure 6). Then, enter the correct password to access this screen.

This screen is for use by Toledo Integrated Systems. If access is required, please contact Toledo Integrated Systems.

Touch the RETURN button to return to the SETTINGS MENU screen.
6.5 Brake Monitor Settings

Touch BRAKE MON SETTNGS on the settings menu (Figure 6). Then, enter the correct password to access this screen.

This screen shows:

1) Enter the speed the press needs to exceed during a 90 degree brake test.
2) Press to begin 90 degree brake test. This will stop the press at 90 degrees if the SPM is greater than the test speed (Number 4 above)
3) Max. stop time (mS)
4) Last 90 degree test stop time (mS).
5) Last 90 degree test degrees to stop (Degrees).
6) Last 90 degree test actual speed (mS).
7) Current prompt/fault.

Touch the RETURN button to return to the SETTINGS MENU screen.
SECTION 6 LAYOUTS

Figure 13

Figure 13 provides the dimensions needed for the cutout in order to mount the Remote Display, as well as the size of the Remote Display itself.

Figure 14

Figure 14 displays the method for connecting the remote display to the Press Pilot 150, including the proper designation of IP addresses.