DPPlus
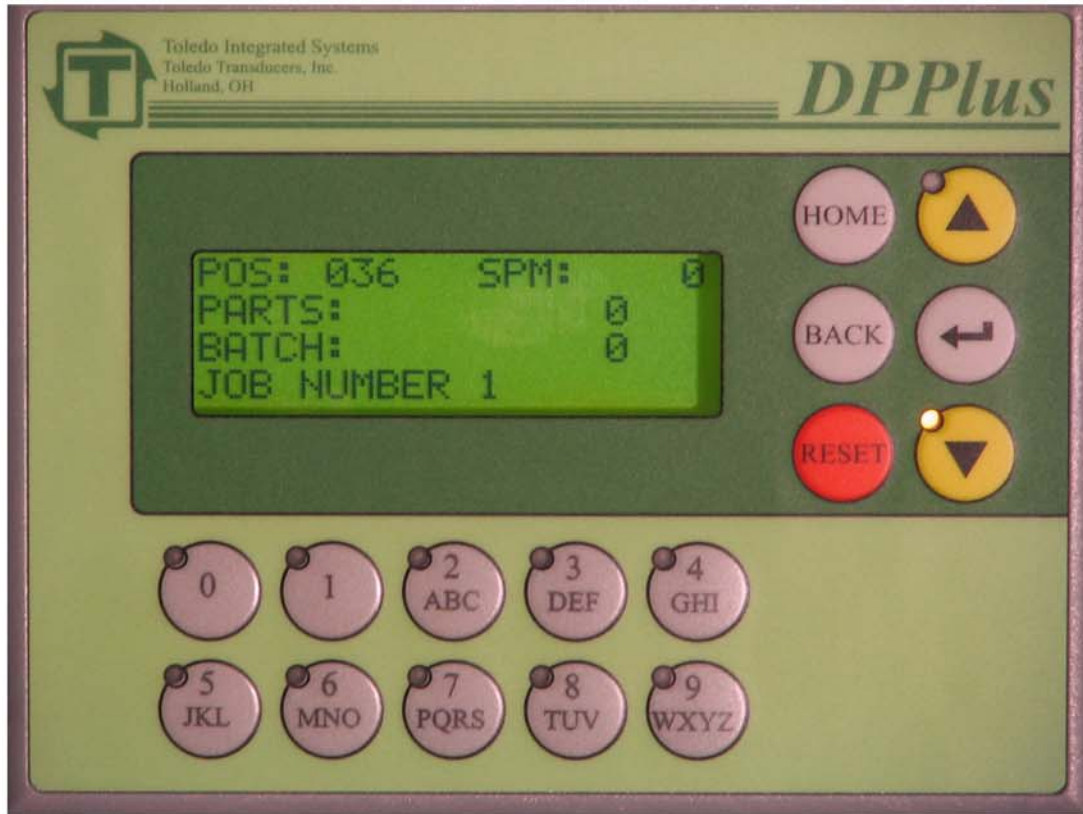

Press Automation System
Toledo Integrated Systems
Toledo Transducers, Inc.

Installation and Operation Manual

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 the manufacturer's shipment. This warranty is limited to the functions of the DPPlus as stated in this manual.

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

F.O.B. to: Toledo Integrated Systems
6834 Spring Valley Drive
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 merchant-ability 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 thereunder. 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 are tied into the DPPlus.

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

There are no warranties that extend beyond those expressly set forth herein.
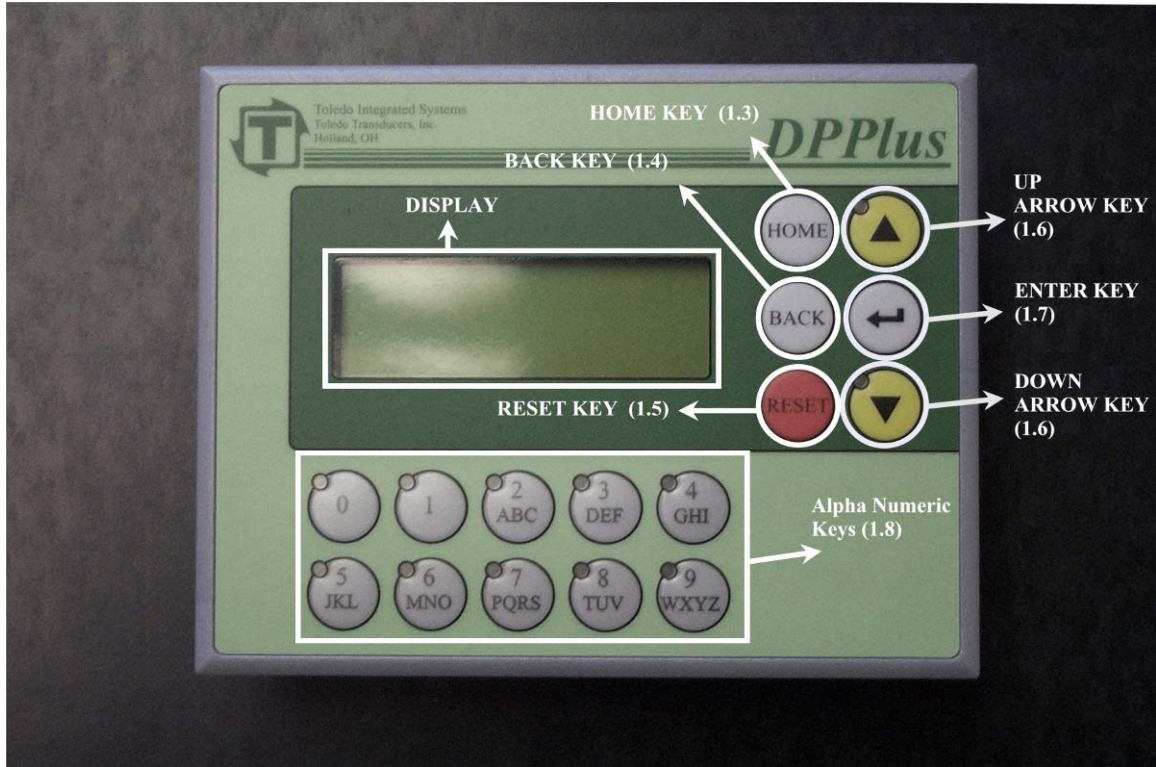
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The DPPlus comes standard with 4 die protection inputs, 8 programmable limit switch outputs, brake monitor, parts and batch counters, separate immediate stop and top stop outputs, and configurable message inputs. The DPPlus has the capability to store information for 50 jobs.

The above picture shows the operation keys that will be used throughout the manual.

1.1 ADJUSTING THE CONTRAST
If the screen is either too dark or too light, the contrast can be adjusted by pressing and holding the *<ENTER>* key and pressing either the up or down arrow key. To darken the text, press the up arrow, press the down arrow to lighten the text. This can be done from any screen.

1.2 DISPLAY BACK LIGHT
The Back Light on the display screen will automatically go out after a period of inactivity. Press any key to reactivate the Back Light.

1.3 HOME KEY
Pressing the *<HOME>* key will bring up the Home Screen from any other screen. The Home Screen displays key information for the operator. Pressing the *<HOME>* key from the Home Screen will display the Menu Select Screen. The Menu Select Screen allows the operator to maneuver through the different screens and functions of the DPPlus.

1.4 BACK KEY
In most instances, pressing the *<BACK>* Key will return control to the previous screen. On specified screens, pressing the *<BACK>* Key will show additional settings, or return control to a specified screen.

1.5 RESET KEY
The red *<RESET>* Key is used to reset any faults that occur. Refer to Section 9 Faults for an explanation. The *<RESET>* Key is also used to reset the Parts Counter and the Stroke Counter. For an explanation, refer to Section 2.6 Change/Reset Counters.

1.6 UP AND DOWN ARROW KEYS
The Up and Down Arrow Keys are used to move the cursor around the screen. When used on a menu screen, the selected display line will blink.

1.7 ENTER KEY
The *<ENTER>* Key is used to submit information to the DPPlus.

1.8 ALPHA-NUMERIC KEYS
The Alpha-numeric Keys are used when making selections from the displayed options. Only keys that currently have valid options will be illuminated. The Alpha-numeric Keys are also used to enter text.

Pressing the <*HOME*> key will bring up the Home Screen from any other screen. This screen displays relevant information for the operator. Pressing the <*HOME*> key from the Home Screen will display the Menu Select Screen.

2.1 POS - POSITION
This display shows the current angle of the press in degrees (0-359).

2.2 SPM – STOKES PER MINUTE
When the press is in motion, this will display the current strokes per minute.

2.3 COUNTERS
Parts Counter
This will display the number of parts produced since the last Parts Counter reset occurred. For an explanation of how to reset the Parts Counter, refer to Section 2.6 Change/Reset Counters.

Batch Counter
The Batch Counter will count up as the press strokes. When the accumulated counter reaches the setpoint, the press will top stop and indicate that the Batch Counter is finished. The operator will need to reset the counter to continue running. If the Batch Counter preset is set to 0, the unit will ignore the Batch Counter. For an explanation of how to reset the Batch Counter, refer to Section 2.6 Change/Reset Counters.

2.4 STATUS MESSAGE
The Status Message display line will show the name of the currently loaded job, if no
faults are present. If the coil change input is on, it will display "COIL CHANGE ON".
If a fault is present it will display the fault.

2.5 DOWN ARROW KEY
Pressing the Down Arrow key from the Home Screen will display the Message Center.
These messages are based on the status of the message inputs. The DPPlus is delivered
from the factory pre-loaded with the fault messages from the Press Pilot 100/150. These
messages can be customized to suit individual needs. For an explanation of how to
customize the messages, refer to Section 7.3 Edit Messages and Section 8.4 Message
Center Set. For a complete list of the Press Pilot 100/150 fault messages, see the Press
Pilot 100 or Press Pilot 150 manual.

2.6 BACK KEY - CHANGE RESET COUNTERS
Pressing the *<BACK>* key from the Home Screen will display the change/reset counters
page.
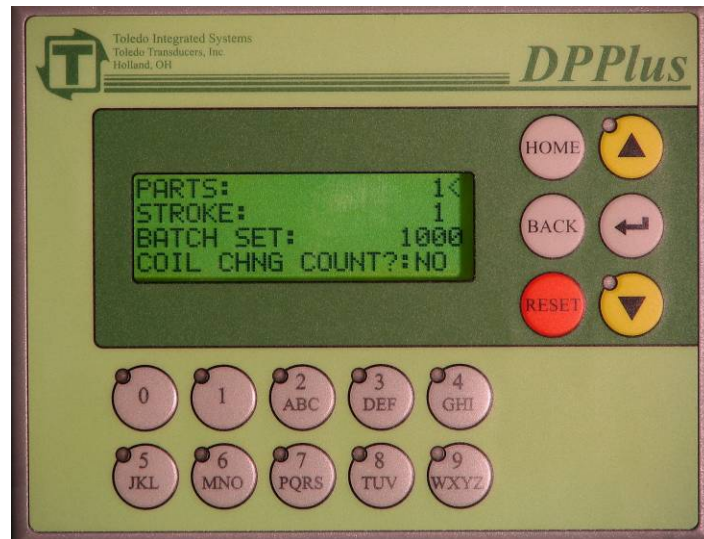
To Change focus from one setting to another, press the *<ENTER>* key.

PARTS
To reset the Parts Counter, press the red *<RESET>* key when the cursor (<) is next to the
Parts Counter Value. To move the cursor to the Stroke Counter, press the *<ENTER>*
key.

STROKE
To reset the Stroke Counter, press the red *<RESET>* key when the cursor (<) is next to the Stroke Counter Value. This can only be reset if the Global Password is active. If the Setup Password is active, press the *<ENTER>* key to edit BATCH SET.

BATCH SET
When the Batch Set is flashing, enter in a number for the Batch Counter Setpoint. A "0" disables the Batch Counter function. After the correct number is displayed, press the *<ENTER>* key. When the Batch Counter accumulated number of strokes reaches the setpoint, the DPPlus will open the Top Stop relay, and keep it open until the DPPlus unit is reset.

COIL CHG COUNT
The Coil Change Count setting controls whether the unit's counters increment while in coil change mode. Use the up and down arrow keys to toggle between "Yes" and "No". Press the *<ENTER>* key when the desired value is displayed. For an explanation of Coil Change Mode, refer to Section 10 Coil Change.

When all settings on this page are acceptable, press the *<BACK>* key to return to the Home screen.
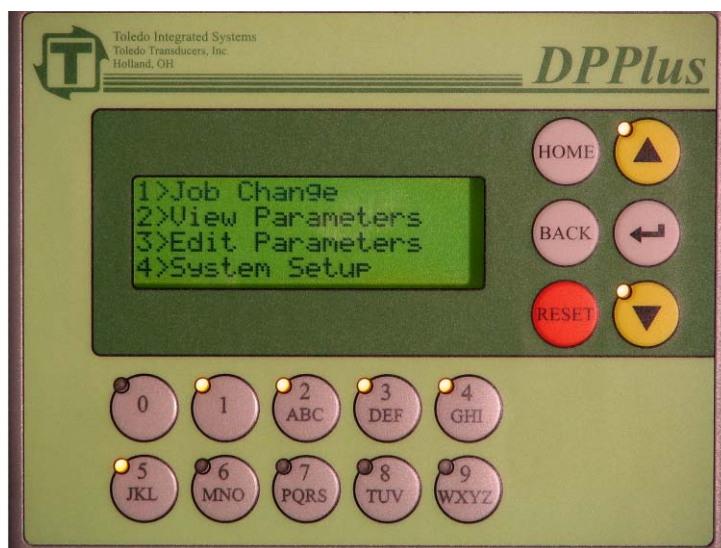
From the Menu Select Screen, you can maneuver to the different settings within the DPPlus. The following five functions can be accessed from this screen: Job Change, View Parameters, Edit Parameters, System Setup, and DPPlus Calibration. To protect the system settings, a password is required for all functions except Job Change and View Parameters.

A selection can be made by either using the arrow keys, or by pressing the alpha-numeric key that corresponds with the appropriate menu option. The alpha-numeric keys that are currently valid will be illuminated. When the display line for the desired selection is flashing, press the <ENTER> key.

To load a different job, access the Menu Select Screen, select Job Change and press the
<ENTER> key. Press the *<BACK>* key to return to the Menu Select Screen.
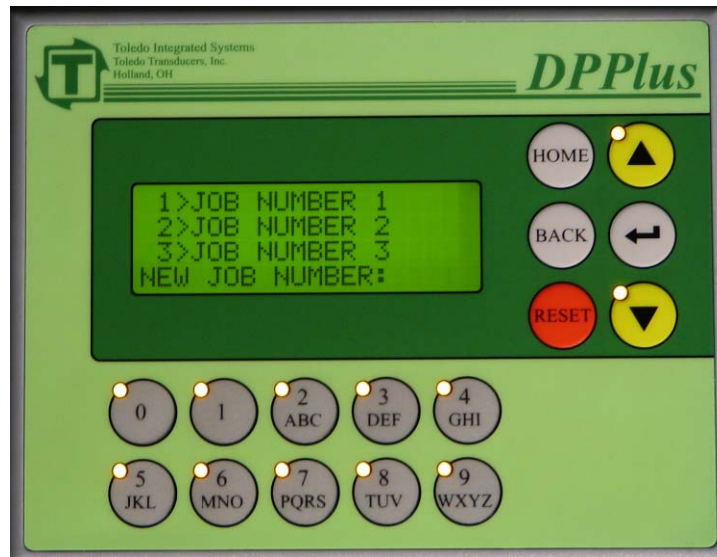
After the *<ENTER>* key has been entered, the Job Change Screen will be shown (NOTE:
JOB NUMBER 1 may be substituted with your job names). This screen displays the job
names, and assigns a number for selection. There are 50 job storage locations available.

Scroll through the various jobs using the up and down arrows keys (they will be
illuminated), or enter the desired job number (1-50) using the alpha-numeric keys. When
the desired job is displayed, use the alpha-numeric keys to enter the job number that is in
front of the job name, and press the *<ENTER>* key.

The following screen will be displayed to verify the job that has been chosen. Either press the *<ENTER>* key to confirm that is the correct job to be loaded, or press the *<BACK>* key to go back to the previous page and change the selection to another job.

When you press the *<ENTER>* button the new Job is loaded.   The following screen will display the name of the new job that was loaded. Press the *<BACK>* key to return to the Menu Select Screen. To return to the Home Screen, press the *<HOME>* key.
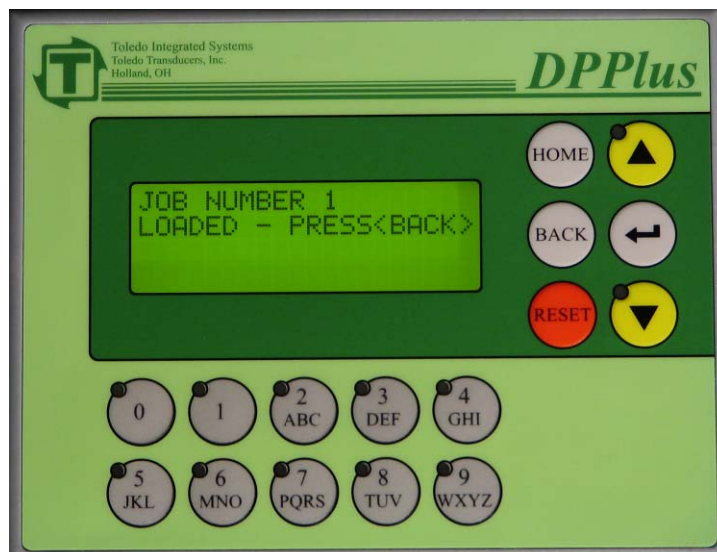
SECTION 5
VIEW PARAMETERS

To view the current program settings, access the Menu Select Screen, select View Parameters and press the *<ENTER>* key. You will be taken to the following screen. While in View Parameters, no edits will be allowed. The following 3 options will be listed: Programmable Limit Switches, Die Protection and Brake Monitor.
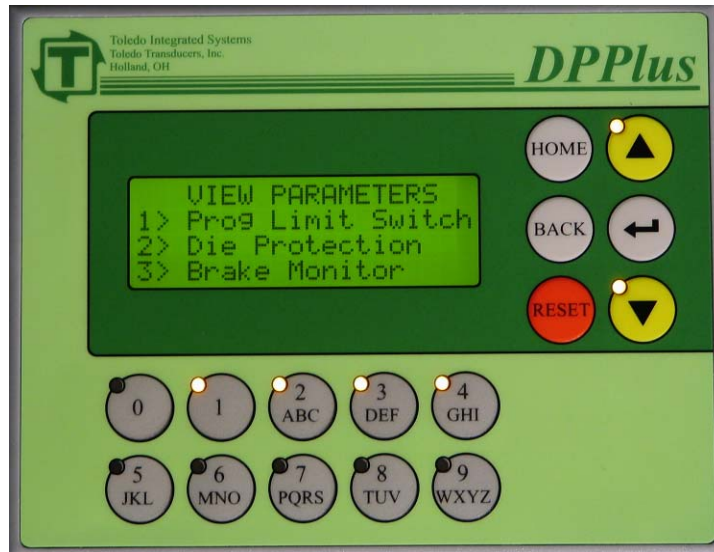
Each option can be selected by either using the arrow keys, or by pressing the alpha-numeric key that corresponds with the appropriate menu option. The alpha-numeric keys that are currently valid will be illuminated. When the display line for the correct selection is flashing, press the *<ENTER>* key.

5.1 PROGRAMMABLE LIMIT SWITCHES

After selecting Programmable Limit Switches from the View Parameters Screen the PLS
Selection Screen (shown above) will be displayed. Either use the alpha-numeric keys or
the arrow keys to select which PLS to display. When the correct selection is flashing,
press the *<ENTER>* key.
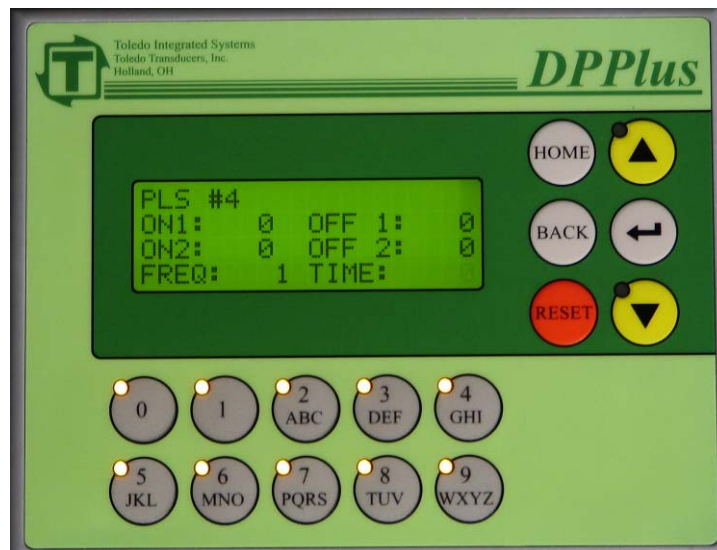
When you press the *<ENTER>* button the above screen, which displays the settings for
this PLS, will appear. The settings cannot be modified from this screen. Pressing the
<BACK> key will display whether the PLS is speed compensated or not. Press the
<BACK> key again to return to the PLS selection menu. For an explanation of PLS
settings, refer to Section 6.1 Programmable Limit Switches.

5.2 DIE PROTECTION

After selecting Die Protection from the View Parameters Screen, the Die Protection Selection Menu (shown above) will be displayed. Either use the alpha-numeric keys (1-5) or the arrow keys, to select which Die Protection Station or the diagnostics screen to be displayed. When the correct selection is flashing, press the *<ENTER>* key.
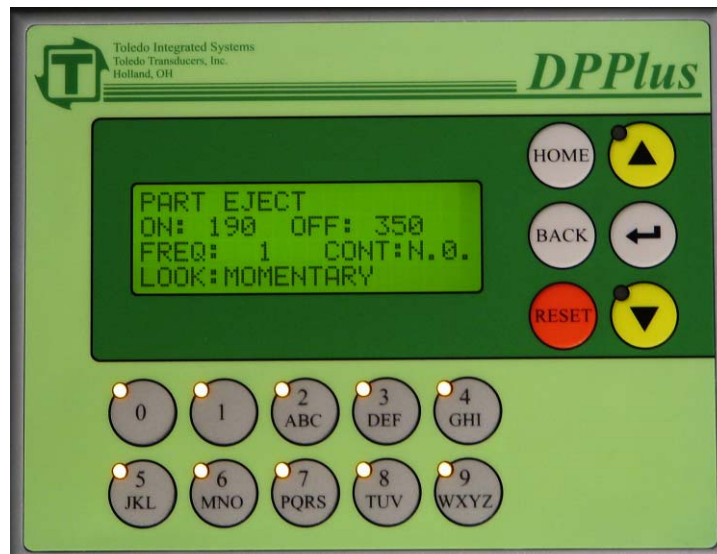
The above screen will now be displayed. This screen displays the settings for this Die Protection Station. The settings cannot be modified from this screen. For an explanation of Die Protection settings, refer to Section 6.2 Die Protection.

Pressing the *<BACK>* key will display these additional settings. Press the *<BACK>* key again to return to the Die Protection Selection Menu.

5.2.1 DIE PROTECTION DIAGNOSTICS

From the Die Protection Selection Menu Page, either press 5 or scroll down until Diagnostics is selected, then press *<ENTER>*. The die protection diagnostics screen will appear and show the degree at which the sensor last turned on, the degree at which the sensor last turned off and the current state of the die protection input for that station.

Pressing the up or down arrow key will scroll through the four individual die protection stations.
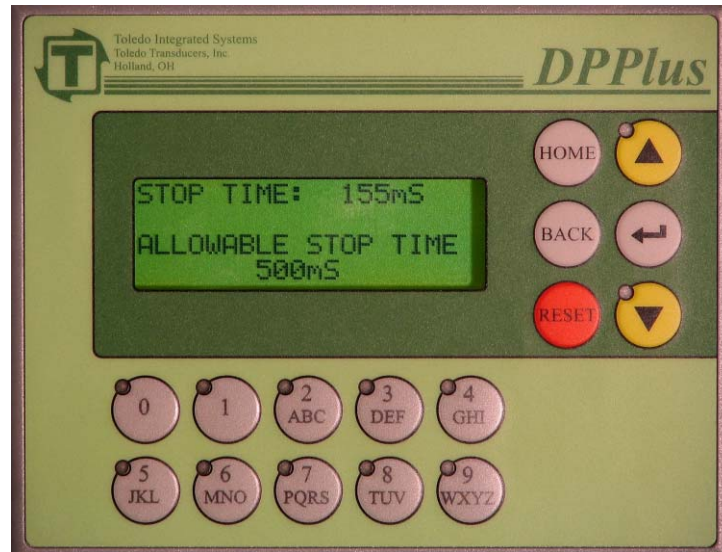
5.3 BRAKE MONITOR

After selecting Brake Monitor from the View Parameters Screen, the above screen will be displayed. This screen shows the last Stop Time, and the Allowable Stop Time. Press the *<BACK>* key to return to the View Parameters Screen.

If it is necessary to modify any of the parameter settings, access the Menu Select Screen, select Edit Parameters and press the *<ENTER>* key. The following screen will appear.
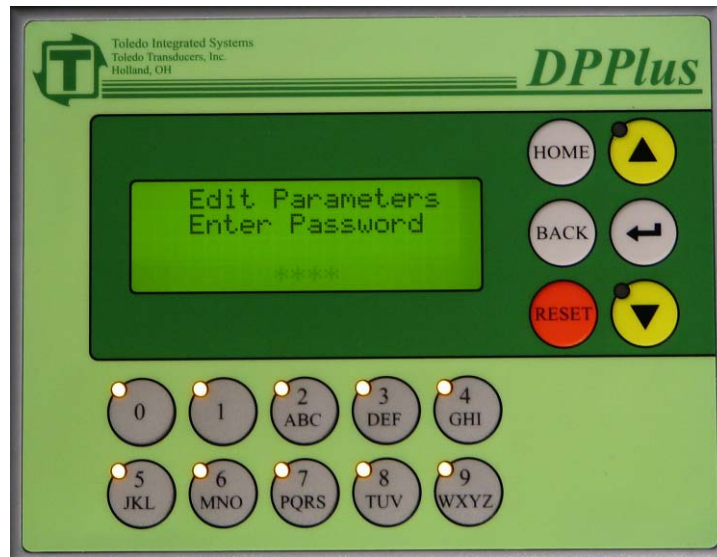
Type the password using the alpha-numeric keys, then press the *<ENTER>* key. If the wrong password is entered, the screen will flash "INCORRECT PASSWORD". Either retry to enter the correct password, or press the *<BACK>* key to return to the Menu Select Screen.
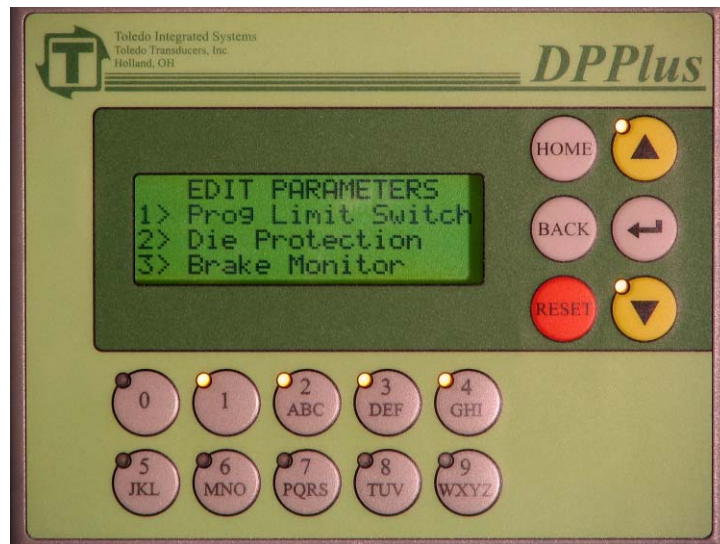
After entering the correct password, you will see the Edit Parameters screen (shown above). There are 3 choices on what settings to edit: Programmable Limit Switches, Die Protection and Brake Monitor.

Each option can be selected by either using the arrow keys, or by pressing the alpha-numeric key that corresponds with the appropriate menu option. The alpha-numeric keys that are currently valid will be illuminated. When the display line for your menu selection is flashing, press the *<ENTER>* key.
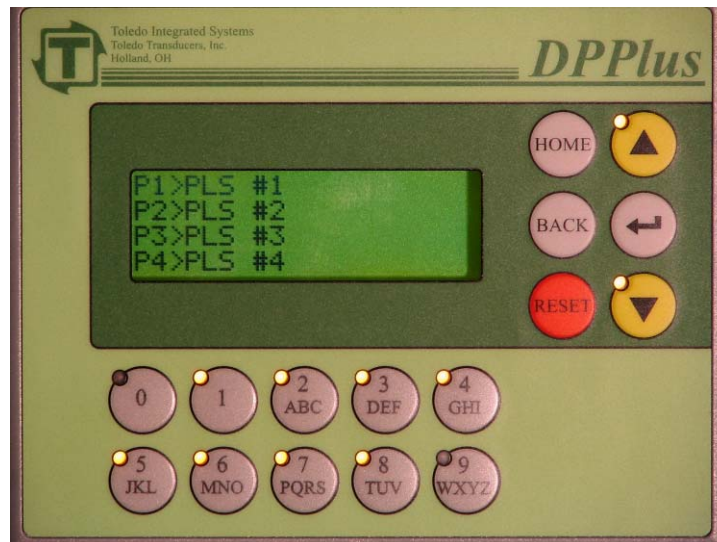
6.1 PROGRAMMABLE LIMIT SWITCHES

After selecting Programmable Limit Switches from the Edit Parameter Screen, the above screen will be displayed. Either use the alpha-numeric keys or the arrow keys to select which PLS to be modified. When the correct selection is flashing, press the *<ENTER>* key.

The following screen will be displayed. These switch settings, ON/OFF degree setting, the Frequency, and the Time, can be modified from this screen.   To move the cursor between settings, press the *<ENTER>* key.
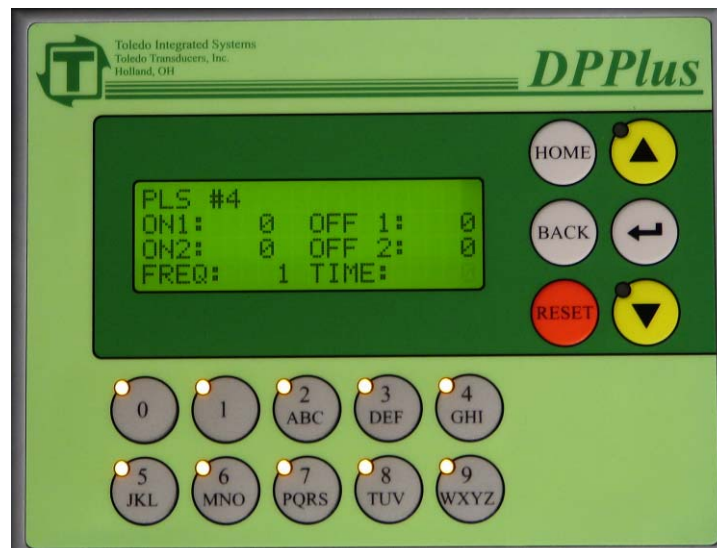
ON/OFF
The ON setting is the degree of the stroke at which you want the switch to turn on and the OFF setting is the degree of the stroke at which you want the switch to turn off. To cycle once per stroke, program the ON1 and OFF1 settings. The switch can be programmed to cycle twice per stroke, by using the ON2 and OFF2 in addition to ON1 and OFF1. The valid range for ON and OFF settings is 1-359.

When this screen first appears, the ON1 value will be flashing. Use the alpha-numeric keys to enter the desired value, then press the *<ENTER>* key. If the existing value is correct, press the *<ENTER>* key to go to the next setting.

> **NOTE:** **To prolong the life of the output relays, set limits for unused limit switches to "0" for both on and off.**

FREQUENCY
Frequency is how often you want the switch to turn on. The value entered is in strokes, and the maximum setting is 99. If the switch needs to be turned on with every stroke, set the Frequency to "1." If the switch needs to be turned on with every other stroke, set the Frequency to "2".
To program the Frequency setting, press the *<ENTER>* key until the Frequency value is flashing, enter a new value using the alpha-numeric keys, then press the *<ENTER>* key.

TIME
When using the Time feature, the switch will turn on according to the ON setting, and turn off after the amount of time (in milliseconds), specified in the Time display, has elapsed or the OFF angle has been achieved, whichever comes first. This feature can be used with functions such as lube and air blow off, to prevent problems caused if the press is stopped for any length of time while at a degree where the switch is still enabled.
A setting of 0 will disable the time feature. To program the Time setting, press the *<ENTER>* key until the Time value is flashing, enter a new value using the alpha-numeric keys, then press the *<ENTER>* key. The value entered is in .01 seconds (eg 510 = 5.10 seconds).

After all values are correct, press the *<BACK>* key.

NOTE: Always use surge suppression on the coils of devices driven by the PLS

The above screen will appear to allow the Speed Compensation to be set on or off for the PLS. If Speed Compensation is required, select "Yes", otherwise select "No". Use the up and down arrows to change the setting. When the correct value is displayed, press the *<ENTER>* key to save the changes. A confirmation message will appear asking if you want to save the settings. Using the arrow keys select "Yes" if you want to save your settings or "No" if you do not want to save your changes. Press the *<ENTER>* after you make your selection. A confirmation screen will be displayed stating that the changes have been saved, and control will return to the PLS Menu, where you can select another PLS for editing. For an explanation of Speed Compensation, refer to Section 8.2 Speed Comp PLS.

Changes made during the editing process will not take effect until the settings are saved.

NOTE: Speed Compensation is used to counteract the mechanical and electrical delays in systems that are controlled by the Programmable Limit Switch. The Speed Compensation will advance the angle for the PLS if Speed Comp is set to "Yes" for that PLS setup. For example, if the DEGREES/100SPM is set to "2", and the press is traveling at 150 SPM, the PLS will be advanced by 3 degrees.

6.2 DIE PROTECTION
After selecting Die Protection from the Edit Parameter Screen, the above screen will be displayed. Either use the alpha-numeric keys or the arrow keys to select the Die Protection to be modified. When the correct selection is flashing, press the *<ENTER>* key.

SECTION 6
EDIT PARAMETERS

The following screen will appear. To move between settings, press the *<ENTER>* key.
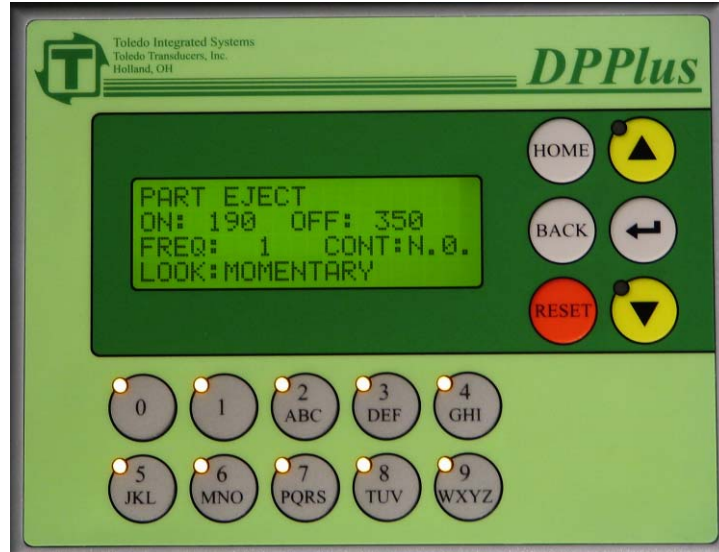
ON/OFF
The ON setting is the degree of the stroke at which the Look Window will start and the OFF setting is the degree of the stroke at which the Look Window will stop. The Look Window is the angle of the press, in degrees, that the event should or should not happen. The valid range for ON and OFF settings is 0-359. (For Example, the part should eject from the press between 190 and 350 degrees. In this case the ON should be set at 190 and the OFF should be set at 350.) The degrees between the ON and OFF will be referenced as Look Window.

When this screen first shows, the ON value will be flashing. Use the numeric keys to enter in the desired value, then press the *<ENTER>* key. If the existing value is correct, press the *<ENTER>* key to go to the next setting.

> **NOTE:** If the die protection station is not being used, set both On and Off to "0". This will cause the DPPlus to ignore the station.

FREQ - FREQUENCY
The Frequency is how often, in strokes, the event should take place. The value entered is in strokes, and the maximum setting is 99. If the event needs to happen every stroke, set the FREQUENCY to "1". If the event needs to happen every other stroke, set the FREQUENCY to "2".

To set the Frequency, press the *<ENTER>* key until the Frequency value is flashing, enter a new value using the alpha-numeric keys, then press the *<ENTER>* key.

CONT - CONTACT
Set this display to match the type of sensor that is being used. Use the up and down arrows to toggle between "N.O." (Normally Open) and "N.C." (Normally Closed). When the correct selection has been made, press the *<ENTER>* key. N.O. states that the contact will be made <u>when</u> the event occurs. N.C. states that the contact will be made <u>until</u> the event occurs.

LOOK
The four different Looks that can be selected are: Momentary, Maintained, Static With Window, and Static. Use the up and down arrows to toggle between these 4 Look types. When the correct Look is displayed, press the *<ENTER>* key to go to the next screen

MOMENTARY: When using this method, the event must happen momentarily during the Look Window. The fault will not occur until after the Look Window OFF angle. The probe must also switch state outside of the window or a probe fault will occur.

MAINTAINED: When using this method, the contact must change state during the Look Window, it must maintain that state throughout the rest of the window. The probe must also switch state outside of the window or a probe fault will occur. The fault will not occur until the Look Window OFF degree if the switch doesn't turn on. Once the switch turns on, the fault will occur immediately if it turns off again within the window.

STATIC W/ WINDOW: When using this method, the contact must turn on during the entire Look Window. The probe must also switch state outside of the window or a probe fault will occur. The fault will occur immediately in this window if the switch is not on.

STATIC: This method sets the event to happen during the entire stroke. The look window is ignored.

Note: To reset a die protection alarm when Static is selected, the station must be on or in the non-fault state before a fault can be reset.

TYPE OF STOP
If a fault occurs on a Die Protection Station, the press will stop according to the type of stop chosen. Press the up and down arrow keys to scroll through the choices:

      TOP STOP: The press will stop on top.
      IMMEDIATE STOP: The press will stop immediately.

Press the *<ENTER>* key when you have the stop type that you want.

COIL CHNG BYPASS
Use the up and down arrow keys to toggle between "Yes" and "No". The Coil Change Bypass setting specifies whether the Die Protection Station is bypassed when the unit is in Coil Change Mode. Press the *<ENTER>* key when you have the correct setting. For an explanation of Coil Change Mode, refer to Section 10 Coil Change.

PROVE SENSOR RST
The Prove Sensor Reset setting specifies whether the sensor has to be toggled on then off in order to reset the fault. This is to test the sensor, to verify that it is functioning properly. "Yes" would indicate that this action must be performed and "No" indicates that it doesn't need to be done.   Press *<ENTER>* when you have the correct setting.

A confirmation screen will be displayed before the settings are saved. To save the settings, use the arrows to change the value to "Yes", then press the *<ENTER>* key. A confirmation message will appear stating that the changes have been saved, and control will return to the Die Protection menu, where another Die Protection Station can be selected for editing.

To cancel the changes, select "No" and press the *<ENTER>* key. A confirmation message will appear stating that the changes have not been saved, and control will return to the Die Protection menu.

> **NOTE: If you have the Prove Sensor Reset set to Yes, the sensor will have to be made in order to reset the fault.**

6.3 BRAKE MONITOR

After selecting Brake Monitor from the Edit Parameter Screen, the following screen will be displayed. The Allowable Stop Time value will be blinking. Enter a new value by using the alpha-numeric keys. The valid range for Allowable Stop Time is 0-1000 milliseconds (i.e. 1000mS=1 Second). When the correct Allowable Stop Time is displayed, press the *<ENTER>* key. Press the *<BACK>* key to return to the Edit Parameters screen.

If the Stop Time (the time it takes from when the power to the clutch valve is removed, until the ram comes to a complete stop) is longer than the Allowable Stop Time, an alarm will occur. To set the Allowable Stop Time, the Global Password must be entered from the Edit Parameters Page.
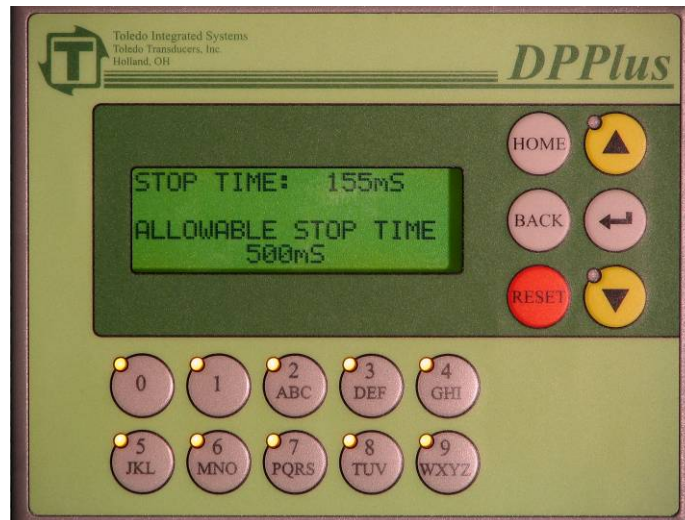
From the Menu Select Screen, select System Setup, and press the *<ENTER>* key. You will be prompted for the password. Type the password using the alpha-numeric keys, then press the *<ENTER>* key. If the wrong password is entered, the screen will flash "INCORRECT PASSWORD". Either retry to enter the correct password, or press the *<BACK>* key to return to the Menu Select Screen.
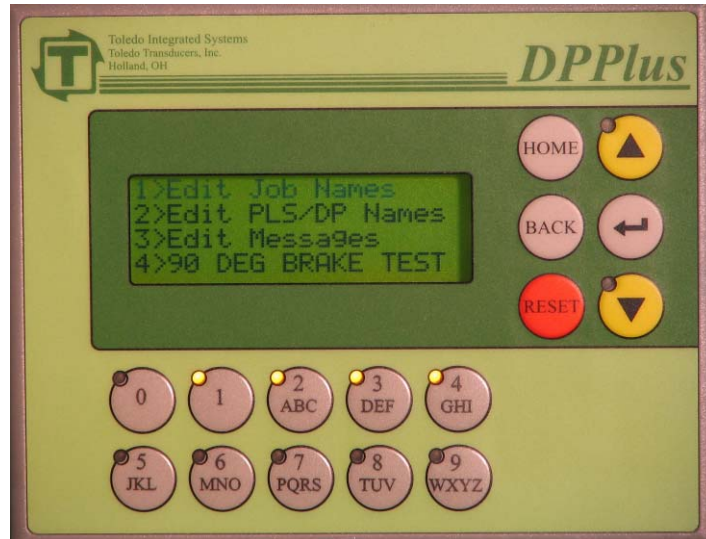
After the correct password has been entered, the System Setup Menu screen (shown above) will be displayed. The following 4 options will be displayed: Edit Job Names, Edit PLS/DP Names, Edit Messages, and 90 Degree Brake Test. Use either the alpha-numeric keys or the arrow keys to select which System Setting to edit. When the correct selection is flashing, press the *<ENTER>* key.
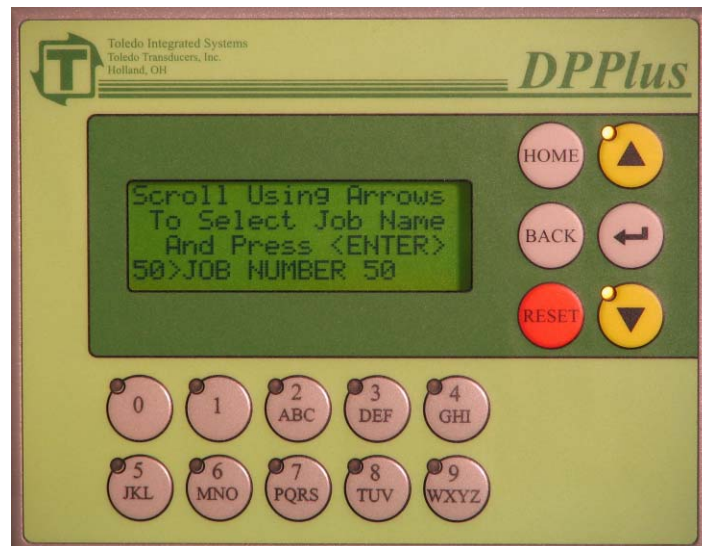
7.1 EDIT JOB NAMES

After selecting Edit Job Names from the System Setup Menu, the above screen will be displayed. Use the up and down arrow keys to scroll to the desired Job Name. When the Job Name to be changed is selected, press the *<ENTER>* key.
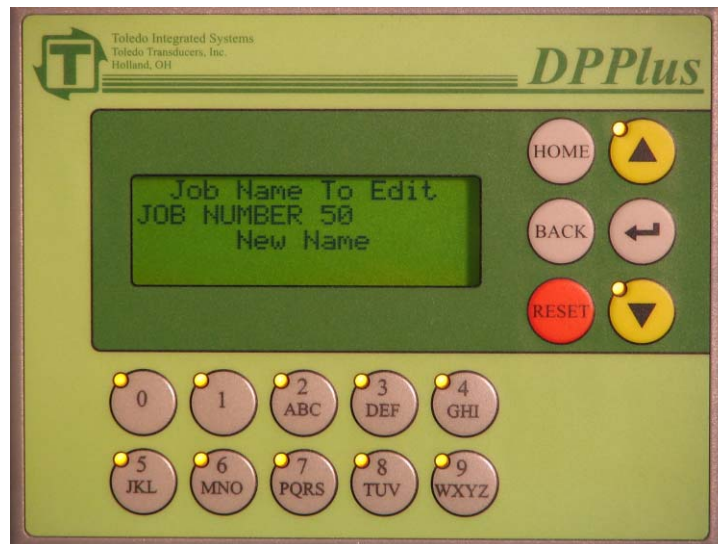
The screen (shown above) will display the Job Name to be modified; the new Job Name will be entered below. Use the alpha-numeric keys to enter the new Job Name. For instructions on entering text, refer to Section 11 Text Entry. When the new Job Name is entered correctly, press the *<ENTER>* key to apply the new name. Press the *<BACK>* key to return to the previous screen to select more Job Names to edit. To cancel changes, press the *<BACK>* key at any time <u>before</u> pressing the *<ENTER>* key.
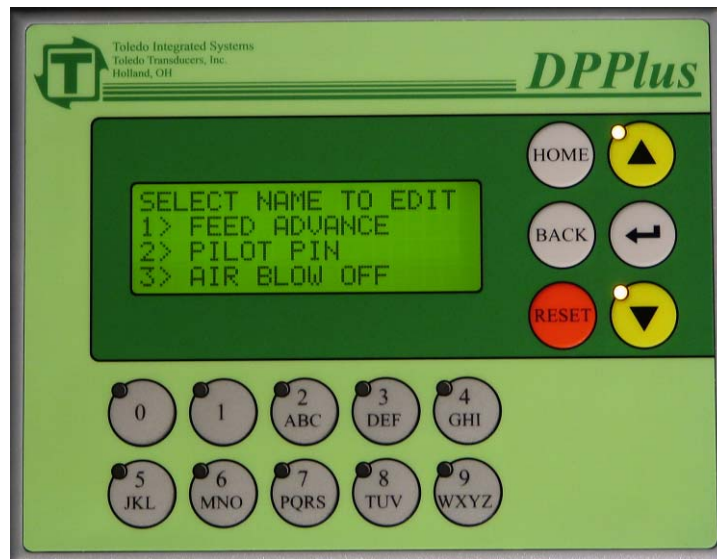
7.2 EDIT PLS/DP NAMES

After selecting Edit PLS/DP Names from the System Setup Menu, the above screen will be displayed. This screen lists the available Programmable Limit Switches and Die Protection names. Use the up and down arrow keys to scroll to the desired name. When the PLS/DP Name to be modified is selected, press the *<ENTER>* key.
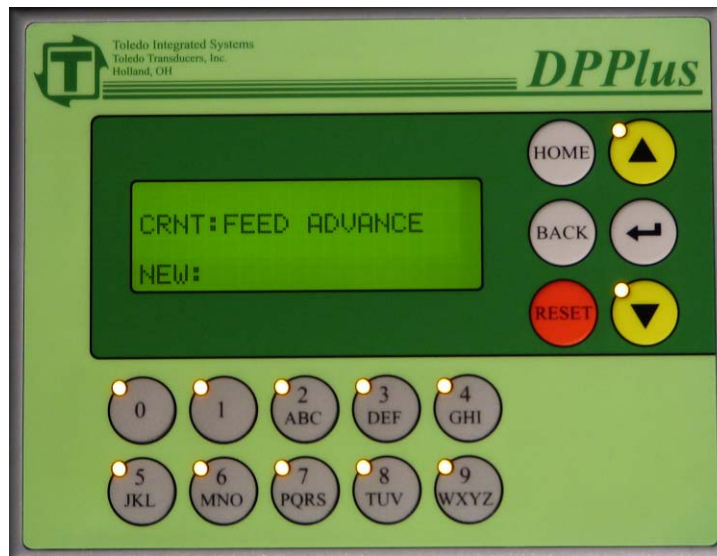
The screen (shown above) will display the PLS/DP Name to be modified; the new Name will be entered below. Use the alpha-numeric keys to enter the new PLS/DP Name. For instructions on entering text, refer to Section 11 Text Entry. When the new PLS/DP Name is entered correctly, press the *<ENTER>* key to apply the new name. Press the

<BACK> key to return to the previous screen to select more PLS/DP Names to edit. To cancel changes, press the *<BACK>* key at any time <u>before</u> pressing the *<ENTER>* key.

7.3 EDIT MESSAGES

After selecting Edit Messages from the System Setup Menu, the above screen will be displayed. This screen will permit the modification of the Messages that are displayed in the Message Center. Use the up and down arrow keys to scroll to the desired Message. When the Message to be changed is selected, press the *<ENTER>* key.
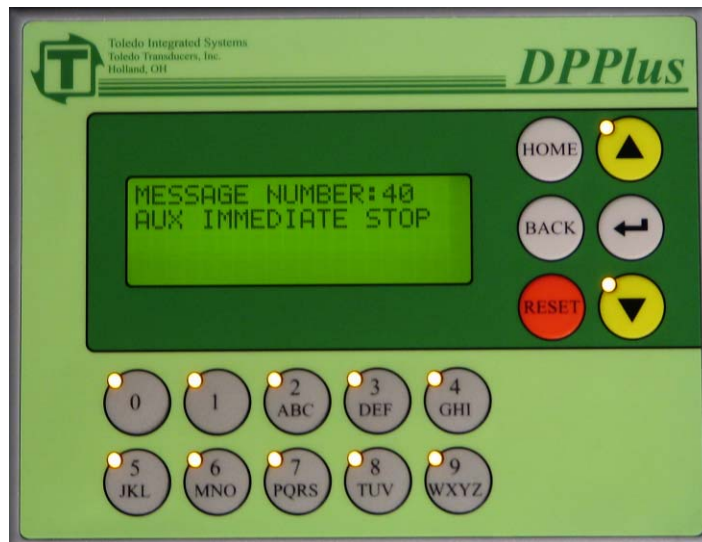
The screen will display the Message to be modified; the new message text will be entered below the current message. Use the alpha-numeric keys to enter the new Message. For instructions on entering text, refer to Section 11 Text Entry. When the new Message text is entered correctly, press the *<ENTER>* key to apply the changes. Press the *<BACK>* key to return to the previous screen to select more Messages to modify.
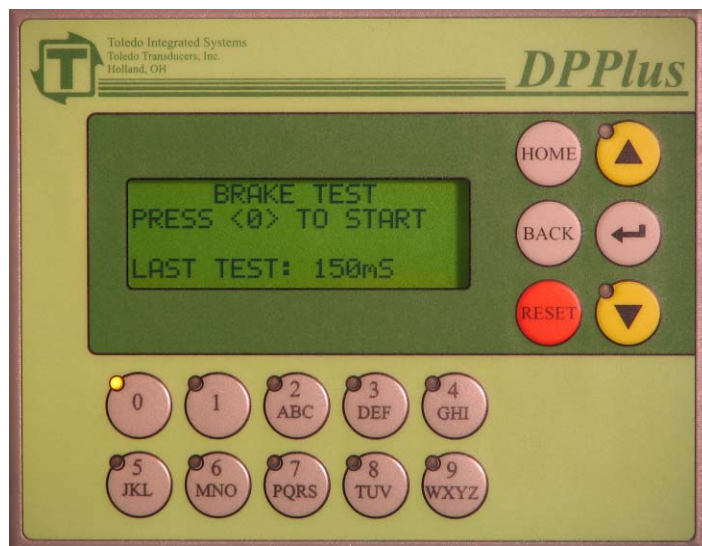
7.4 90 DEG BRAKE TEST
After selecting 90 Deg Brake Test from the System Setup Menu, the above screen will be displayed. This Brake Test is used to test Stop Time when an immediate stop signal is given to the press control when the press is at 90 degrees. The bottom line of the display indicates the stopping time from the last time the test was performed. Brake tests should be performed periodically to check the condition of the brake.

Steps to perform a brake test:

1) Set the counterbalance pressure according to the upper die weight.

2) Put the press at top of the stroke.

3) Put the press in continuous or single mode.

4) Run the main motor at it's fastest speed.

5) Press 0 to activate the brake test.

6) Run the press.

7) When the press passes 90 degrees, the immediate stop output will open up giving a signal to the press control to stop.

8) Once the press comes to a complete stop, the bottom line will display the stopping time.

9) Brake test is complete.

To cancel a 90 Degree Brake Test, press the *<BACK>* key at any time during the process.

From the Menu Select Screen, select DPPlus CALIBRATION and press the *<ENTER>*
key. You will be prompted for the password. Enter the required password, then press the
<ENTER> key. If the wrong password is entered, the screen will flash "INCORRECT
PASSWORD". Either retry to enter the correct password, or press *<BACK>* to go back
to the Menu Select Screen.

> **NOTE: This password is a different password than the one used for access
> to the other screens.**

After the correct password has been entered, the Calibration Menu screen (shown above)
will be displayed. The following 9 options will be listed: Set Press Angle, Speed
Compensation PLS, Press Control Cams, Message Center Setup, Restore Defaults, Edit
Passwords, Dedicated Outputs, Prox Check Setup, and PP1XX Version. Use either the
alpha-numeric keys or the arrow keys to select which Calibration Procedure to perform.
When the correct selection is flashing, press the *<ENTER>* key.

8.1 SET PRESS ANGLE
After selecting Set Press Angle from the Calibration Menu, the above screen will be displayed.

Steps to set the Press Angle:

1) Inch the press around and make sure that the PRESS ANGLE is moving in the correct direction. If it is not, switch the A and B Encoder wires.

2) Inch the r tguu'around at least one full stroke to make sure that the Z pulse has cycled0

3) Inch the press to a known position (the most common is either 0 or 180).

4) When the press is at a known position, use the numeric keys to type in the Angle offset (0-359). The offset can be calculated by determining the number of degrees the displayed angle is from the actual angle of the press.

5) When the correct offset is displayed, press the <*ENTER*> key.
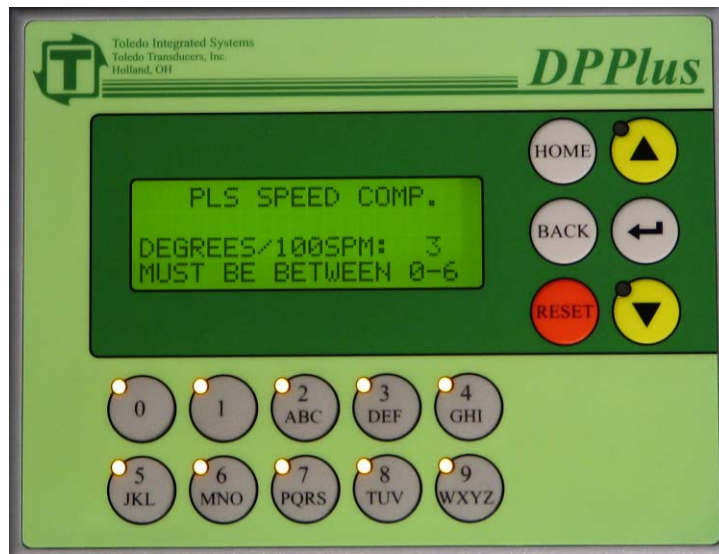
8.2 SPEED COMP PLS

After selecting Speed Comp PLS from the Calibration Menu, the above screen will be displayed. Speed Compensation is used to counteract the mechanical and electrical delays in systems that are controlled by the Programmable Limit Switch.

 The Speed Compensation will advance the angle for the PLS if Speed Comp is set to "Yes" for that PLS setup. For example, if the DEGREES/100SPM is set to "2", and the press is traveling at 150 SPM, the PLS will be advanced by 3 degrees.

All 8 Programmable Limit Switches use this setting for their compensation value.

To set the Speed Compensation for the PLS's, type in a value (0-6) using the alpha-numeric keys. When the correct value is displayed, press the *<ENTER>* key.
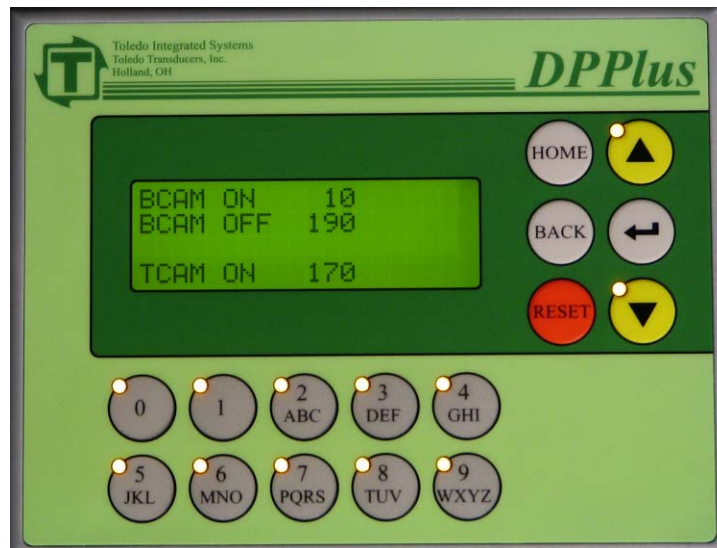
8.3 PRESS CONTROL CAMS

After selecting Press Control Cams from the Calibration Menu, the above screen will be displayed. The default settings are shown in the above example. Note that the TCAM OFF cannot be modified on this screen.

Refer to the Press Pilot 120 manual for the proper settings. To change a setting, use the up and down arrow keys until the value to be modified is flashing. Use the alpha-numeric keys to enter a new number (0-359), then press the *<ENTER>* key. When all settings on this screen are correct, press the *<BACK>* key to proceed to the next screen.
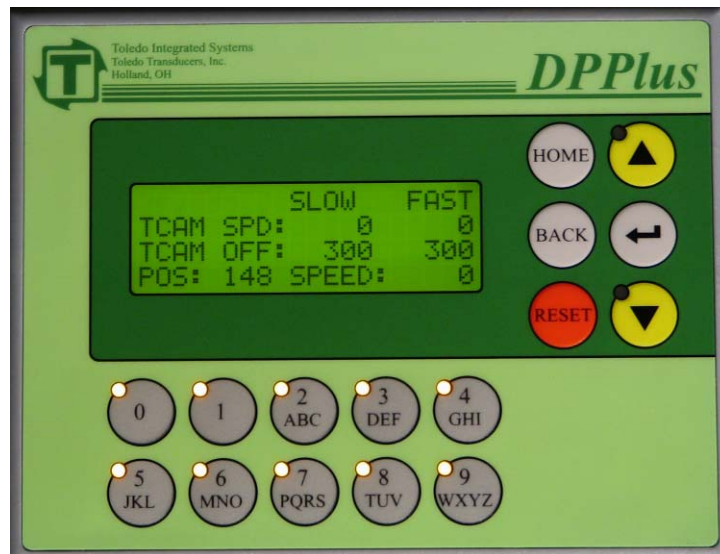
TCAM SPD and TCAM OFF

The TCAM Speed and TCAM OFF settings can be modified on this screen (shown above). The TCAM OFF is speed compensated so that the press stops at or near top regardless of the speed.

To adjust the top stop speed compensation:

1) Set the Slow and Fast TCAM SPD to the same speed. This is to temporarily disable the speed comp calculation while setting it up. Use the *<ENTER>* key to toggle between setpoints.
2) Adjust the TCAM OFF and TCAM ON to the same degree. Run the press and stop it on top. Adjust the angle until the press stops at top. Be sure to keep them both the same for this step.
3) Run the press at the Fast speed (a speed near or at the fastest) and top stop the press. Note the degree that the press stops at. Take this difference and subtract it from SLOW TCAM OFF degree and enter that into the FAST TCAM OFF degree. Enter the speed that the press ran in the FAST TCAM SPD. Run the press again at the fast speed and topstop it. Adjust the FAST TCAM OFF degree until the press stops on top.
4) When the press stops at top at both speeds and the top stop speed compensation is satisfactory, press the *<BACK>* key. This will return control to the DPPlus Calibration Menu page.

NOTE: THESE CAMS ARE ONLY FOR USE WITH THE PRESS PILOT 100 CLUTCH AND BRAKE CONTROLLER!!! THE PRESS PILOT 100 USES A CAM CHECK PROX FOR REDUNDANCY. THEY MAY NOT BE USED IN CONJUNCTION WITH ANY OTHER APPLICATION THAT REQUIRES A CONTROL RELIABLE CAM.

8.4 MESSAGE CENTER SET

After selecting Message Center from the Calibration Menu, the above screen will be displayed. From the Message Center Screen, the system can be programmed to recognize the message center inputs as Individual or Binary Inputs

When "Individual Inputs" is selected, the lowest message number input that is on, will be displayed.

When "Binary Inputs" is selected, the message with the value of the on inputs will be displayed.

MSG 0 = 1
MSG 1 = 2
MSG 2 = 4
MSG 3 = 8
MSG 4 = 16
MSG 5 = 32

Use the up or down arrow keys to select the correct style for the application.
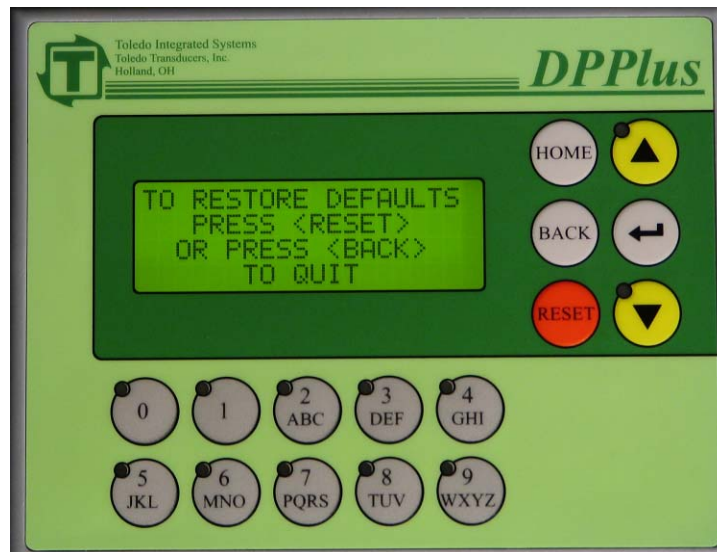
8.5 RESTORE DEFAULTS

After selecting Restore Defaults from the Calibration Menu, the above screen will be displayed. To restore the factory Defaults; press the red *<RESET>* key. This will reset all the settings in the entire unit to factory default, including the Press Control Cams.

A confirmation screen will be displayed. Press the red *<RESET>* key to continue to restore the factory defaults. A message confirming that the defaults are restored is displayed. Control will return to the Calibration Menu.

To quit before restoring the factory defaults, press the *<BACK>* key. Control will return to the Calibration Menu.

Factory Defaults:
BCAM ON = 10
BCAM OFF = 190
TCAM ON = 170
TCAM OFF SLOW = 300
TCAM OFF FAST = 300
Job Name (1-50 = "JOB NUMBER (1-50)"
PLS Name (1-8) = "PLS #(1-8)"
Die Protection Name (1-8) = "DIE PRO (1-4)"
Message Center Messages restored to Binary Coded Messages.

8.6 PASSWORD SETUP

After Selecting Edit Passwords from the Calibration Menu, the user will be able to change the passwords.

The unit comes with 2 levels of passwords:

1) Setup – This level gives the user access to all functions except for DPPlus Calibration, Brake Monitor Setpoint and Stroke Counter Reset.

2) **Global** – This level gives the user access to all functions of the DPPlus.

The unit comes factory set with the passwords disabled (set to 0). Make sure to change these passwords to protect the data from accidental changes.

To disable either password, enter a 0 in for the password.

NOTE: Entering a 0 for global disables both passwords.

When restoring defaults (see Section 8.5) the passwords are unaffected.
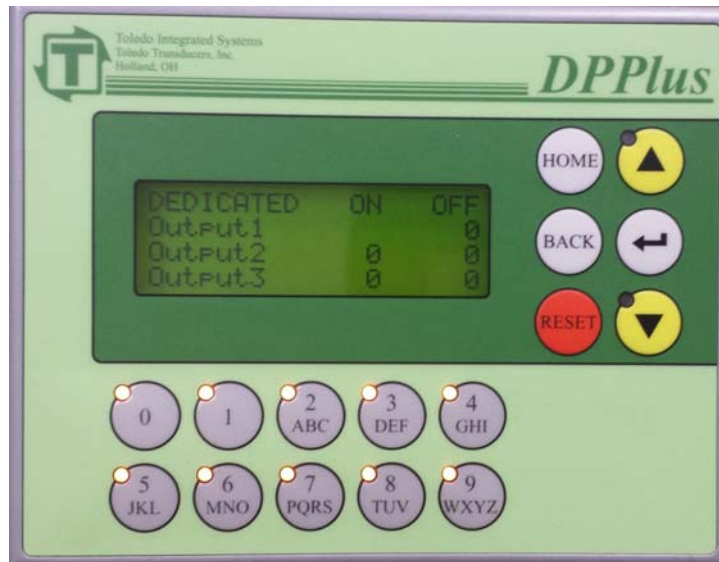
8.7 DEDICATED OUTPUTS

The DPPlus comes equipped with 3 dedicated outputs. These outputs are non-job specific programmable limit switches with only one on degree and one off degree. They will cycle once every stroke.

These outputs can be used for controlling items such as: tonnage monitor probes, top zone of a press to reset hydraulic overloads, machine lube systems etc. Once set, the degrees at which they turn on and off won't change with the job.

After selecting Dedicated Outputs from the Calibration Menu, these settings can be edited.

Pressing the *<ENTER>* key will move between setpoints. These setpoints are the degrees (0-359) at which the outputs (D0-D3) will turn on and off.

NOTE: Always use surge suppression on the coils of devices driven by the Dedicated Outputs.

8.8 PROX CHECK SETUP

This input is used to check for encoder slippage. The prox should be mounted so it will cycle in the same spot every stroke. Set the STPT: ON/OFF so it will alarm if the encoder slips. These settings are set up the same way as a Die Protection station with static with window and N.O. Contact. (See Section 6). The STATUS and LAST ON/OFF are diagnostics to aid in setting the proper setpoints. To disable this input set both ON and OFF to Zero.

8.9 Press Pilot VERSION
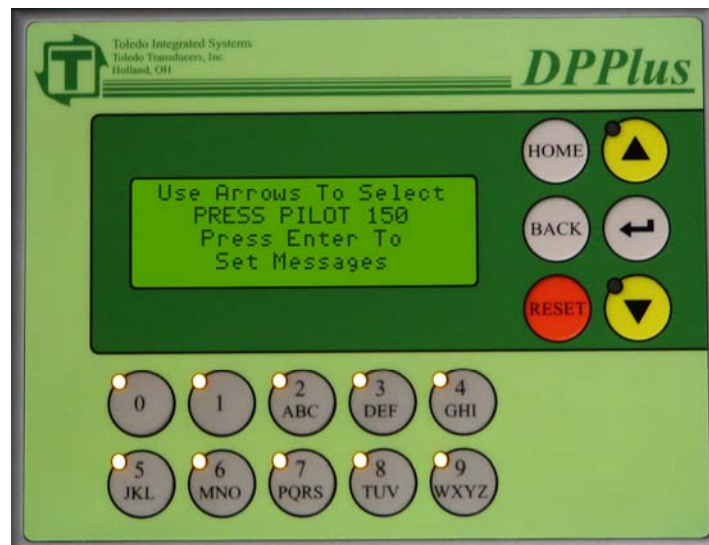
From this screen, the Press Pilot messages can be set for either a PP100 or PP150. Set this according to the model of the Press Pilot by selecting the correct model using the up/down arrows and press the return button. This will load all of the BCD message text corresponding to either the PP150 or PP100. This screen has no function if a Press Pilot is not used with the DPPlus unit.

SECTION 9
FAULTS

The Status Message area on the Home Screen (see section 2.4) will display the appropriate fault message. To reset the fault, either press the red *<RESET>* key on the DPPlus unit, or the REMOTE RESET push button (if installed). The DPPlus will display the Faults Display Screen. Press the <RESET> key or the REMOTE RESET push button again to reset the fault.

If additional faults exist, the next fault will be displayed, and the above reset process will need to be repeated to clear that fault.

9.1 DRIFT FAULT
A Drift Fault occurs when motion is detected on the encoder without the clutch valve engaged.

9.2 NO MOTION FAULT
When the clutch valve is engaged, we give the press 500mS to get above 1SPM before declaring a NO MOTION FAULT. The bottom display on the Home Screen will display this fault. Press the *<RESET>* button to clear the fault.

9.3 DIE PROTECTION PROBE FAULT
This fault occurs if the sensor did not change state during a press cycle. Sensor could be damaged.

9.4 DIE PROTECTION STATION FAULT
This fault occurs when the necessary event did not happen on a Die Protection Station.

9.5 BRAKE MONITOR FAULT
This fault occurs when the stopping time of the press exceeds the Allowable Stopping Time. Refer to Section 6.3 Brake Monitor for an explanation on setting the Allowable Stop Time.

> **NOTE: If Prove Sensor Reset is set to "Yes", the sensor will have to be made in order to reset the fault.**

9.6 REMOTE RESET
The Remote Reset is a normally open button that can be placed in a remote location to reset the faults on the unit. It is wired to DC Common, and input RST.

NOTE: The input RST is a SINKING input and must have DC Common wired on the opposite side of the Remote Reset button. Any other voltages <u>will</u> cause damage to the unit and is not covered under warranty.

9.7 PROX CHECK PROBE FAULT
This fault occurs if the sensor does not change state outside of the window.

9.8 PROX CHECK FAULT
This fault occurs if the prox is off at any time inside the window. Sensor could be damaged.

SECTION 10
COIL CHANGE

While loading the stations in a progressive die, some of the sensors may not make, causing nuisance faults. Also it may not be desirable to count parts during this time. To compensate for this, a Coil Change feature has been incorporated into the DPPlus unit.

The Coil Change feature can bypass Die Protection sensors (if selected to do so) and stop the counters (if selected to do so). The Coil Change feature can be enabled by turning on the Coil Change input.

The Coil Change will remain on while the input is on, and will turn off when the input turns off. An example of this would be to wire to the inch mode selector switch of the press control.

Note: This input is 24VDC sinking.

SECTION 11
TEXT ENTRY

Use the alpha-numeric keys to enter the text. For example, if the number 2 is pressed, the letter A will appear. If pressed immediately again, it will change to the letter B, then C, then 2, then back to A. Pausing for two seconds will take the cursor to the next position. If the next letter uses a different key, pressing the next key will automatically move the cursor to the next position.

BACKSPACE = down arrow key
SPACE = up arrow key.

When text is correctly displayed, press the *<ENTER>* key.

USER NOTES

USER NOTES

REVISION HISTORY

2/2005   REV 1.0   Initial Release

4/29/2005   REV 1.1   Added ability to change passwords

5/11/2005   REV 1.2   User must use the Global password to change the
                                   Allowable Stop Time. Added Rev History.

9/19/2005   REV 1.4   Added Prox Check Input

4/16/2008   REV 1.7   Added Ability to Select either PP100 or PP150
                                   fault messages.

8/27/2009   REV 1.8   Changed Edit counters to be accessed from home
                                   screen <Back> button without password protection

4/9/2010   REV 1.9   Added New PP150 Prompts/Faults. Fixed PLS
                                   Time Off that was multiplied by two. Fixed
                                   manual to show correct Time Off divisions.

3/15/2011   REV 2.0   Corrected Z pulse angle reset.

APPENDIX A
DIE PROTECTION SETUP EXAMPLES

Listed are some setup examples for various common scenarios.

SHORT FEED
The short feed sensor senses when the material is advanced to the proper feed length by the feeder. If the feeder was set to feed from 220-300, then set the ON window to 220. This assures the unit is looking for the sensor to make as soon as the feeder starts to feed. Set the Off window so that if the material isn't sensed, the machine can stop in time. It could be set at any degree past 300. The contact type would typically be NO, and the Look would be Maintained. Setting the Look to Maintained ensures that the unit will fault if the material "drops back". The stop type would be up to the individual user, but if the Off Window is in the downstroke, E-Stop would be a recommended stop type. Coil Change bypass would be set to Yes. Prove Sensor Rst can be set either way based on the customer's preference.

BUCKLE DETECT
A buckle detect sensor senses when the material buckles up. This sensor will tell the unit to fault if it ever touches the material. To set this up, set the Look to Static. The On and Off windows are ignored as the window is the entire stroke. The contact would be NC. The Stop type could be either Top or E-Stop. The Coil Change bypass would be set to Yes. Prove Sensor Rst can be set either way based on the customer's preference.

PART OUT
A part out sensor senses when a part has passed by. The ON and OFF window would be set so that the part turns the sensor on while the window is on. The contact type would typically be NO, and the Look would be Momentary. The stop type would be up to the individual user, but if the Off Window is in the downstroke, E-Stop would be a recommended stop type. Coil Change bypass would be set to Yes. Prove Sensor Rst can be set either way based on the customer's preference.

CAMS WITHIN THE DIE
With some dies, there are sensors within the die which must be on during a certain window. These are sometimes cams within the die. To set up for this, the On and OFF window would be set to the window that the cam is supposed to be engaged. The contact type would typically be NO, and the Look would be Static W/ Window. The stop type would be up to the individual user, but if the Off Window is in the downstroke, E-Stop would be a recommended stop type. Coil Change bypass would be set to No. Prove Sensor Rst can be set either way based on the customer's preference.

APPENDIX A
PLS SETUP EXAMPLES

Listed are some setup examples for various common scenarios.

FEED INITIATE
One use of the PLS switches can be to trigger a feeder to feed instead of using a hard cam. Let's assume that the feeder is supposed to feed from 220-300. The ON 1 would be set at 220. The OFF 1 would be set at 300. The ON 2 and OFF 2 would both be set at 0 as the second window is not needed. The Freq will be 1, and the Time will be 0. Speed comp would be set if the press ran fast enough and the feeder required it.

DIE LUBE
Another use of the PLS switches can be to trigger die lube. Let's assume that it is to be lubed 2 times per stroke. The windows in this example are 90-110 and 300-10. To eliminate the possibility of the press stopping in the window and spraying lube all over the place, we will also enter in a time value. The ON 1 would be 90 and the OFF 1 would be 110. The ON 2 would be 300 and the OFF 2 would be 10. The Freq would be 1 as this is going to happen every stroke. The Time value would be some value that allows enough lube to spray while the press is running, but won't puddle the die with lube if the press stops in one of the windows. Anywhere from 500mS to 1000ms would be a good starting point. The speed comp could be either on or off depending on how crucial the angle to spray really is versus the speed.

DPPlus Terminal Strip Layout

24VDC

+24VDC

DC+ (3 AMP FUSE)

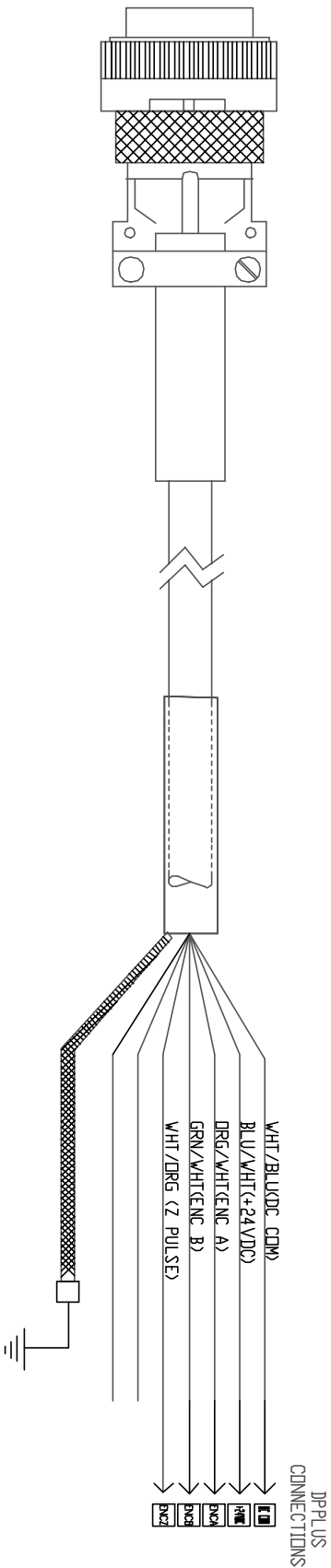|		
+24VDC	o	+24VDC
+24VDC	o	+24VDC
DC COM	o	DC COM
DC COM	o	DC COM
GND	o	GND
ENC A	o	ENC A
ENC B	o	ENC B
ENC Z	o	ENC Z
	BM	
DP1	o	DP1
DP2	o	DP2
DP3	o	DP3
DP4	o	DP4
MSG 0	o	MSG 0
MSG 1	o	MSG 1
MSG 2	o	MSG 2
MSG 3	o	MSG 3
MSG 4	o	MSG 4
MSG 5	o	MSG 5
PRKCHK	o	PRKCHK
CCI	o	CCI
BCAM	o	BCAM
TCAM	o	TCAM

BLU/WHT (+24VDC)

WHT/BLU (DC COM)

ORG/WHT(ENC A)
GRN/WHT(ENC B)
WHT/ORG (Z PULSE)

ENCODER CABLE

AC RELAY COIL - WIRE ACROSS CLUTCH VALVE

DIE PROTECTION INPUTS (24VDC SINKING)

MESSAGE INPUTS (24VDC SINKING)
INDIVIDUAL INPUTS (MSG0 HAS PRECEDENCE)
BINARY INPUTS
MSG0 = 1   MSG1 = 2   MSG2 = 4
MSG3 = 8   MSG4 = 16 MSG5 = 32

REMOTE RESET TO RESET FAULTS AWAY FROM THE DPlus

PROX CHECK
COIL CHANGE INPUT (OPTIONAL)

DC COM

24VDC SINKING OUTPUTS ONLY TO BE USED WITH PressPilot 100

NOTE: ALWAYS USE SURGE SUPPRESSION
ON ALL OUTPUTS OF THE PROGRAMMABLE
LIMIT SWITCHES AND DEDICATED OUTPUTS

IMMEDIATE STOP AND TOP STOP RELAYS ARE
ENERGIZED DURING NORMAL OPERATION
DE-ENERGIZED DURING A FAULT

PLS1
PLS2
PLS3
PLS4
PLS5
PLS6
PLS7
PLS8
IMM STOP
TOP STOP
DO1
DO2
DO3

SWITCH   PLS 1-8   CONTROLLED

PLS 1   14 11 12
PLS 2   14 11 12
PLS 3   14 11 12
PLS 4   14 11 12
PLS 5   14 11 12
PLS 6   14 11 12
PLS 7   14 11 12
PLS 8   14 11 12
IMM STOP   14 11 12
TOP STOP   14 11 12
DO1   14 11 12
DO2   14 11 12
DO3   14 11 12

APPENDIX B

ENCODER CABLE PINOUT
PART # PP100-ENC-CABLE

BACK SIDE OF AMPHENAL

WHT/BRN (NOT USED)
BRN/WHT (NOT USED)
WHT/BLU (DC COM)
BLU/WHT (+24VDC)
WHT/ORG (Z PULSE)
GRN/WHT (ENC B)
ORG/WHT (ENC A)

WHT/BLK(DC COM)
BLU/WHT(+24VDC)
ORG/WHT(ENC A)
GRN/WHT(ENC B)
WHT/ORG (Z PULSE)

DPPLUS
CONNECTIONS
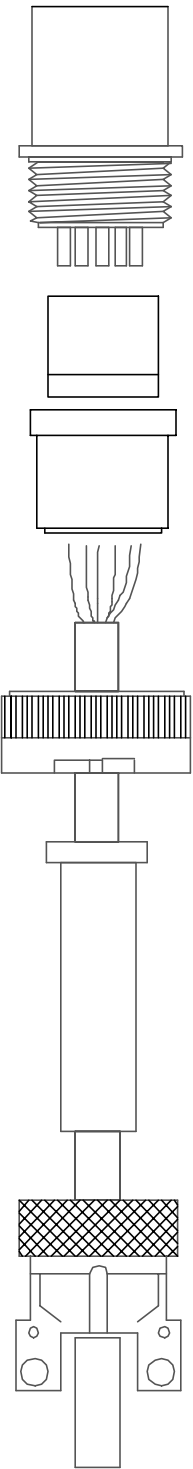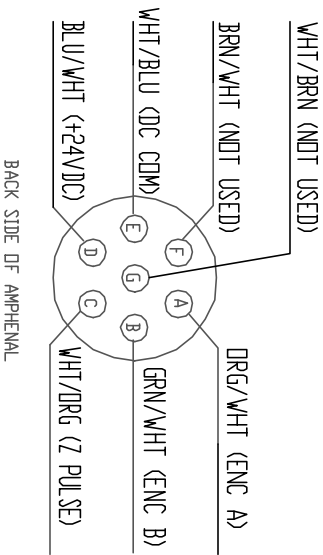
APPENDIX B

ENCODER DIMENSIONS
PART # 1662

NEMA 1 ENCLOSURE WITH MEASUREMENTS

9.28
4.42
3.18
0.75
1.50
0.75

NEMA 1 ENCLOSURE TOP VIEW PART# 1662
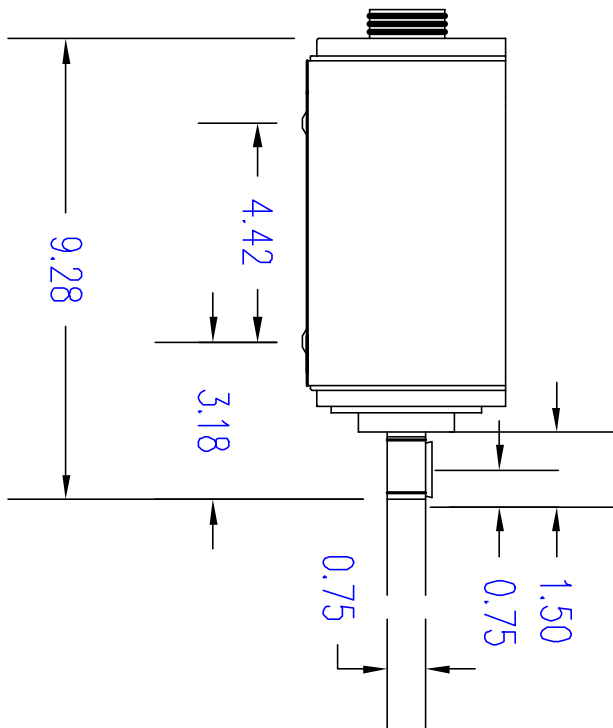
7 PIN MS CONNECTOR

NEMA 1 FRONT VIEW (SHAFT END)

CLEARANCE FOR REMOVING COVER

CLOCKWISE

3.12
5.00
6.50
1.88
2.07
4.05
7.93

7 PIN MS CONNECTOR

WHT/BRN (NOT USED)
BRN/WHT (NOT USED)
WHT/BLU (DC COM)
BLU/WHT (+24VDC)

ORG/WHT (ENC A)
GRN/WHT (ENC B)
WHT/ORG (Z PULSE)

BACK SIDE OF AMPHENOL
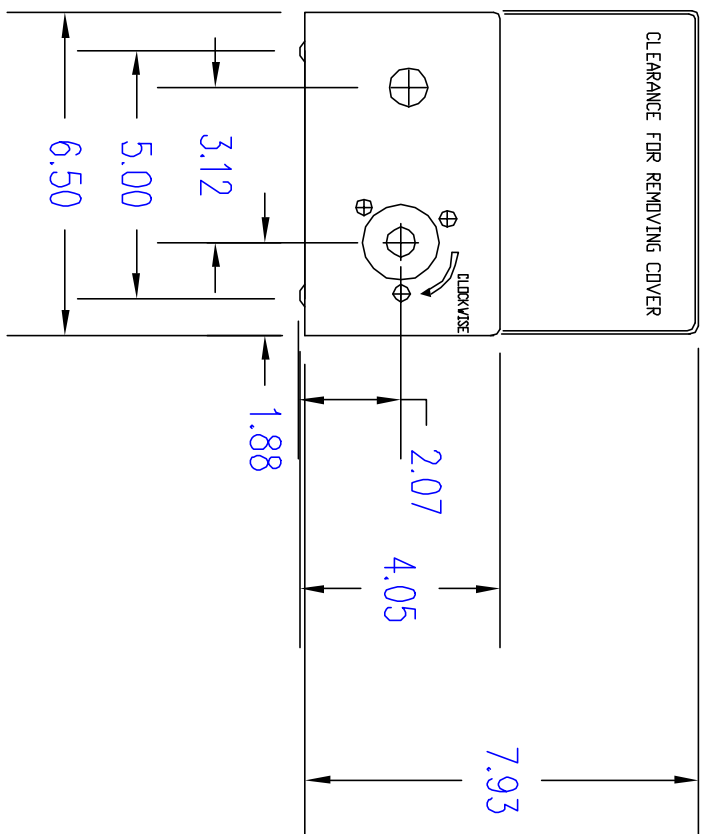
APPENDIX B
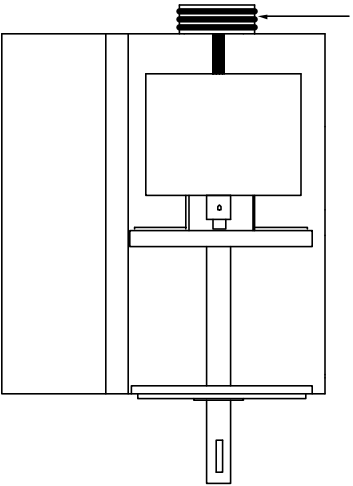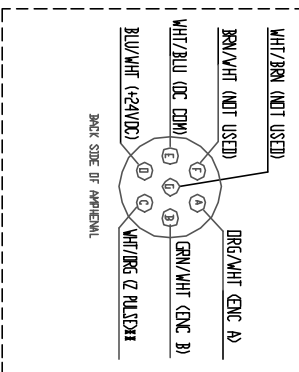
DPPlus MOUNTING DIMENSIONS

MAX DEPTH FOR DIN RAIL COMPONENTS - 4.00"

DPPLUS OUTSIDE DIMENSIONS (6.02x4.72)
DPPLUS CUTOUT DIMENSIONS (5.50x4.40)

6.02

4.40

4.72

DPPLUS

5.50

2.95

24VDC
2.1A

FUSE 3A   +24VDC   DC+

BCAM & TCAM TERMINALS
ONLY PRESENT WHEN
WHEN PURCHASED WITH PP100

17.00

DPPLUS DEPTH

1.81

36" CABLE

IMM STOP AND TOP STOP
WILL BE TERMINALS INSTEAD
OF RELAYS
WHEN PURCHASED WITH PP100

⋇ ALL DIMENSIONS IN INCHES ⋇