

SECTION 7

OPERATION

A SUPPLEMENT TO THE OPERATION MANUAL FOR THE

CINCINNATI HYDRAULIC SHEAR WITH TOUCHSCREEN SHEAR CONTROL

Edited for CINCINNATI Shear Software Version 1.4

CINCINNATI[®]

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CONTROL STARTUP AND SHUTDOWN

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CONTROL STARTUP AND SHUTDOWN

DAILY STARTUP

At the beginning of a new shift, after every break, at the start of a new job, or when starting the machine after an extended off period (several hours or longer), the following procedure is recommended:

- Check reservoir oil level.
- Check operator stations for proper operation.
- Check that all required safety devices are operating properly and required safety procedures are being used.
- Check that all operator stations are correctly positioned for the setup or job to be run.
- Check that there are no tools, loose material, or persons near the point-of-operation or behind the machine.
- **BE SAFETY CONSCIOUS.** Always follow the safety precautions outlined in this manual. Be particularly careful never to place any part of one's body in the knife or holddown area.
- Select proper tooling for the job. Make sure the knives are in good condition.
- After starting the Main Drive, let the pump idle for a few minutes.

POWERING UP

To operate the shear after a normal shutdown, turn the Main Disconnect switch on.

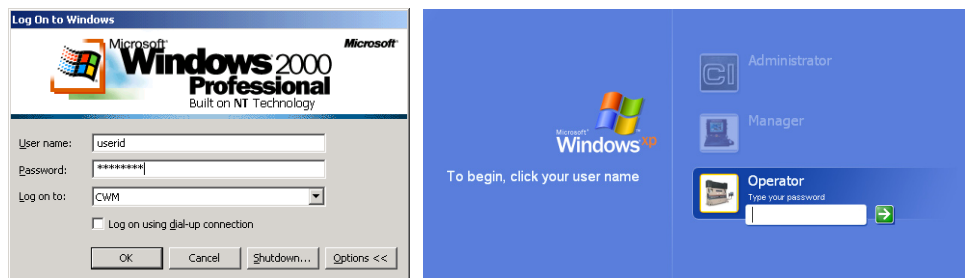
Within a few seconds, the Shear Control will start displaying text on the LCD Display. It will then load the Windows Operating System. After loading Windows, the control will display a screen with figures similar to those shown here.



Note: If main power is on but the control does not start, check that the UPS (Uninterruptible Power Supply) is ON. Also, on machines equipped with a 3.25" floppy drive, check that no floppy disk is in the drive. If the control does not start after these checks, turn the UPS OFF and then ON.

LOGGING ON TO WINDOWS

At the Windows 'Welcome to Windows' dialog, press the "Ctrl", "Alt", and "Delete" (Ctrl+Alt+Del) keys on the keyboard simultaneously to proceed with the logon. When that is complete, a 'Logon' dialog will be displayed. A user name and password is required in order to proceed. If the control has Windows XP installed, icons will appear for each of the three login levels. Clicking on the icon will bring up a password box.



The software accepts different logon levels, starting with the Operator level. After the Operator-level logon, the Shear Control application automatically starts when the user closes the logon window.

If the user logs on at a higher access level, the screen changes to the Windows desktop. From the desktop, the user can start the Shear Control application by double-clicking on the 'Shear' icon.

Note: *CINCINNATI INCORPORATED provides logon user names and passwords to appropriate personnel. User names and passwords should be kept in a safe place.*

The user should start the Shear Control application with Operator-level logon, unless the user needs to perform Windows functions requiring higher level access. After using a non-Operator logon level to make changes outside the Shear Control application, it is good practice to log off and then log on at the Operator level before starting the Shear Control application. When the Shear Control application starts, it uses the Windows logon level as the access level for protected parameters and functions.

IMPORTANT: *Unless higher level access is required to make changes outside the Shear Control application, always use Operator-level logon in Windows. If the Shear Control application is started after a higher level logon, any user can make changes at the higher Shear access level and higher Windows logon level.*

ASSIGNING ACCESS TO MACHINE FEATURES

The user can configure the Shear Control application to enable or disable various features using logon levels and individual password-protected items.

LOGON LEVELS

Operator: (User name: "operator"). The default access level for the Shear Control application. This logon level allows the user to perform these functions:

- View all settings of the current program
- Start and Stop the current program
- Select Units mode
- View Maintenance messages
- View Machine Faults

- Clear Machine Fault messages
- View Configuration settings
- Operate Gage jog buttons

The Operator-level user can also edit the current program settings, but only if Program/Lock is off (see description under **PASSWORD-PROTECTED ITEMS**).

The Operator-level user can select a different program to run (for example, with **File | Open**), but only if one of the following conditions is true: either the Program/Lock is off, or Program/Lock is on and the ‘Program open when locked’ check box is checked on the User Preferences page of the ‘Maintenance Configuration’ dialog.

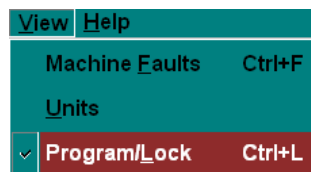
IMPORTANT: *Unless Manager-level changes are required, ALWAYS log on as Operator before starting the Shear Control application! Otherwise, Manager-level access is possible for any Shear user by selecting the “Change Level” button on the General tab of the ‘Configuration’ dialog.*

Manager: (User name: “manager”) Includes Operator-level access and adds these functions:

- Select or create a program
- Edit all program settings
- Toggle Program/Lock
- Edit Operator Station settings
- Change **Stroke Counter** function and edit *Batch Set* value
- Reset Stroke Counter
- Operate **Maintenance Statistics** and **Diagnostics** functions
- Edit Material Library settings in Configuration

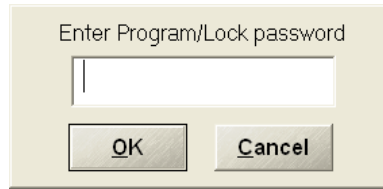
PASSWORD-PROTECTED ITEMS

Program/Lock: Toggles between the Locked and Unlocked modes of programming access. The menu item indicates the *Locked* status with a check mark. When locked, the user cannot edit program settings. Program/Lock also prevents the user from selecting a different program, unless the ‘Program open when locked’ check box is checked on the User Preferences page of the ‘Maintenance Configuration’ dialog.



The ‘Program/Lock’ icon  is displayed in the Menu Bar when Program/Lock is in the *Locked* state.

A user with Manager-level access can toggle the Program/Lock without entering a password. If a user with Operator-level access attempts to toggle the “Program/Lock” menu item, a dialog will open, requiring a password.



Items available to the Operator when Program/Lock is active include:

- Run / Edit page: “Step” field, “Cut (Stroke)” field.
- Spreadsheet page: View only.

Toolbar items available to the Operator when Program/Lock is active include:

- “Stroke Mode”, “Sequence”, “Cycle Start”, and “Cycle Stop” buttons: Full access.
- TouchCalc: Full access.
- ‘Maintenance Messages’ dialog: View only.
- ‘Operator Station’ dialog: View only.

CALIBRATING THE TOUCHSCREEN

If the touchscreen has never been calibrated, or if the current user finds that touching the screen does not move the pointer arrow to the expected location, the user should recalibrate the touchscreen.

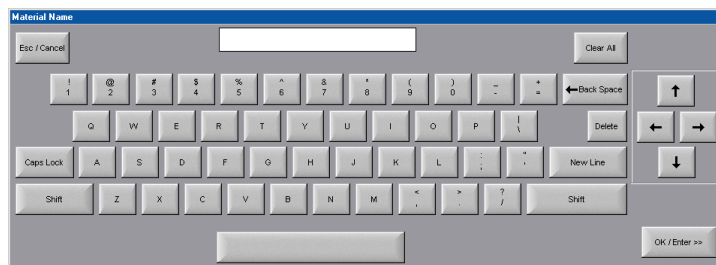
Note: *The touchscreen does not need calibration each time the Shear Control application starts. However, users of significantly different height or operating position may wish to recalibrate the touchscreen. Recalibration can be done at any time.*

To begin the calibration procedure, press the Windows “Start” button on the desktop (or the button on the Shear Control Toolbar) to display the *Start* menu. Selecting **Accessories | Calibrate Touchscreen** will start the calibration routine.

The actual calibration routine may vary, but the general procedure is to press several targets on the screen as directed, and to accept the settings. The procedure adjusts the touchscreen response for the height and operating position of the user.


ON-SCREEN TOUCH KEYBOARD

This control does not use a physical keyboard for input. Instead, an on-screen touch keyboard is available when a function requires keyboard entry.



Logging on to the system requires keyboard entry for user name and password.

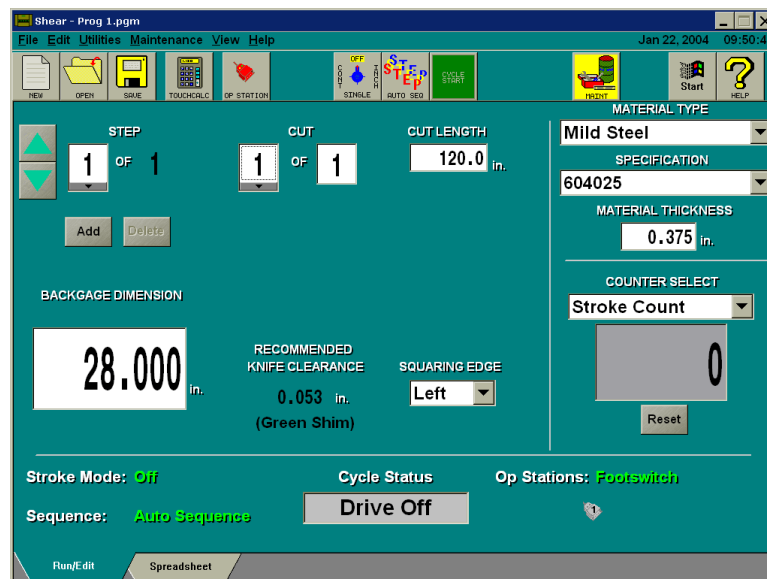
STARTING THE SHEAR CONTROL APPLICATION

If the user logged onto Windows with the Operator user name, the Shear Control application should start automatically. If the Shear Control application is closed, either double-click the ‘Shear’ icon on the desktop  or select **Start | Programs | Shear**.

If the user logged on to Windows with a user name other than Operator, the Shear Control application will not automatically start. To start the Shear Control application, double-click the ‘Shear’ icon on the desktop or select: **Start | Programs | Shear**.

Note: *If the user edits a Shear program and does not save the changes, and then closes the Shear Control application normally, the application automatically saves the edited program in a temporary file. The application automatically reloads the edited program the next time the application starts.*

The Shear Control application will start and display a screen similar to the figure shown here:



CREATING A SHEAR PROGRAM

Different material properties and workpiece dimensions require different settings for the shearing process. A shear program commands the machine settings for a specific job. The settings specify the length of cut and gage position to control the size of the cut piece, the knife clearance to control edge quality, and the squaring edge to accommodate the loading process. The program may also command additional settings for optional functions. A shear program can specify settings for only one machine stroke, or specify different settings for a series of strokes.

A basic program commands these settings:

Step number: Determines which program step is displayed and edited on the screen, and which step the shear will execute if the operator runs the program. The programmer can use the “Add” and “Delete” buttons provided with the “Step” field to create or edit a multiple-step program.

Cut: Specifies how many times the shear will stroke using the settings of the current step. A step can have zero strokes (for example, to move a gage to a different position before the next stroke).

Cut Length: determines where the shear locates the upper knife to start and stop each stroke of the current program step. The minimum cut length for a step is the material dimension parallel with the knife length (i.e. left to right). Maximum cut length is the shear length capacity displayed in the *Configuration* window.

Gage Dimension: Specifies the horizontal distance from the knife edge to the back gage (or optional front gage) for the current program step.

Squaring Edge: Indicates the side of the shear where the workpiece should be loaded against a side gage for the current program step.

Knife Clearance: Specifies the horizontal gap between the knives when they pass each other. For a shear with manual knife clearance adjustment, this field displays the recommended value from the material library, followed by a label indicating the required shim color(s). If the shear has optional power-operated knife clearance, the setting specifies the clearance for each program step, with a value selected from a list of pre-set distances defined in Configuration.

Note: For more information about individual fields, see **RUN / EDIT PAGE** in the **SOFTWARE** section of this manual.

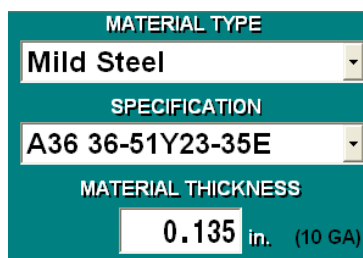
SHEAR CONTROL SETUP

To set up the Shear Control for a job, complete these tasks:

- Select or create the program.
- Prepare the Stroke Counter (if used).
- Select Stroke mode and Sequence mode (toolbar buttons).
- Select the Operator Station requirements.

MATERIAL SETTINGS

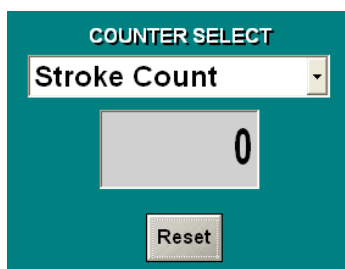
The program specifies a “Material Type”, “Specification”, and “Thickness”. When the operator runs a program, the Shear Control application uses rake and knife clearance parameters stored in the Material Library for the specified material.

A teal-colored dialog box titled "MATERIAL TYPE" at the top. It contains three sections: "MATERIAL TYPE" with a dropdown menu showing "Mild Steel", "SPECIFICATION" with a dropdown menu showing "A36 36-51Y23-35E", and "MATERIAL THICKNESS" with a text input field showing "0.135 in. (10 GA)".

Note: For a model 135 shear, all programs use the same rake and knife clearance; the Material Settings only notify the operator which material and thickness to load for the selected program.

STROKE COUNTER

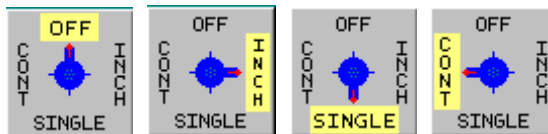
The Shear Control application includes a display to monitor the number of shear strokes or program cycles.

A teal-colored dialog box titled "COUNTER SELECT" at the top. It contains a dropdown menu showing "Stroke Count", a large digital display showing "0", and a "Reset" button at the bottom.

The list box selects the function of the display: “Stroke Count”, “Batch Set”, “Batch Count”, or “Program Count”. For more information, see **COUNTER SELECT** in the **RUN / EDIT PAGE** section of this manual.

STROKE MODE

The user can operate the shear in three different Stroke Modes: “Inch”, “Single Stroke”, or “Continuous”. To select a Stroke Mode, press and release the toolbar button until it indicates the desired mode.



For a description of these modes, see **STROKE MODE** in the **RUN/EDIT PAGE** section of this manual.

SEQUENCE MODE

The user can operate the shear in two different sequencing modes: “1 Step” or “Automatic”. Pressing the toolbar button toggles the Sequence mode between the two selections:



For “1 STEP” sequencing, the shear executes the current step every time the operator enables a stroke. The control does not proceed to the next step in the program.

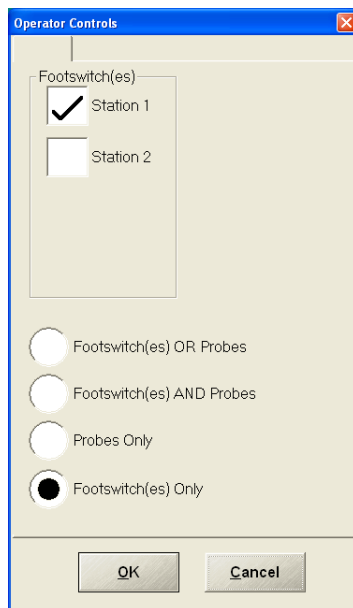
For “Automatic” sequencing, the shear executes the next step (or stroke) in the program each time the operator enables a stroke.

OPERATOR STATION

Before the shear will execute a stroke, the active Operator Station required functions must be satisfied. To view or select the required functions, press the “Operator Station” button on the toolbar:



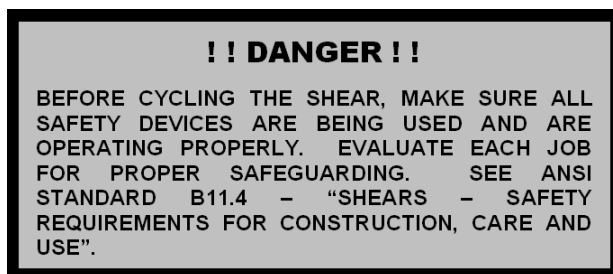
The button opens a dialog with settings for the operator station devices specified in the configuration. In this example dialog, the shear has one footswitch only.



RUNNING THE SHEAR

Note: For this example, complete the control setup tasks and select *Single Stroke mode*.

If the Main Drive is not running (Cycle Status indicates *Drive Off*), press the “Main Drive Start” button to start the hydraulic pump motor. When the Main Drive is on, the “Cycle Status” field on the Run / Edit screen should indicate *Idle*.



To begin running the shear program, press the “Cycle Start” button on the toolbar:



If the back gage (or optional front gage) is not at the commanded position for the first program step, the gage will move to that position after the operator presses “Cycle Start”. The “Cycle Status” field will indicate *Wait* while the gage moves.

If the shear ram is not in position to start the first stroke, the “Cycle Status” field will indicate *Setup Required*. In that case, the operator should press the footswitch to enable ram motion for setup. After the operator presses the footswitch, the ram will move to the starting position.

When the gage and ram are in position to start the first stroke, Cycle Status will indicate *Ready*. Load the material against the indicated side gage and back gage (or optional front gage). Pressing the footswitch to the mid-position will extend the holddowns to clamp the material against the table.

After the holddowns have reached their preset pressure, pressing the footswitch all the way down will move the ram through the stroke to cut the material. The ram will return to the top of the stroke and stop.

LOCKING THE WORKSTATION OR LOGGING OFF

Do not leave the shear when it is setup for operation. Before leaving the area, use this procedure to lockout the control and leave the shear in a safe condition:

- Select “Inch” Stroke mode and press the footswitch to move the ram to the bottom position.
- Press “Main Drive Stop” button to stop the hydraulic pump.
- Turn Control Keyswitch to “Off” and remove the key.
- Lock the Shear Control using “Lock Workstation” or “Log Off” described next.

At any time, pressing ‘Ctrl+Alt+Del’ on the keyboard will open a Windows dialog containing a button to “Lock Workstation”. The “Lock Workstation” button will lock the Shear Control, requiring the next user to type a password to unlock it. When a user leaves the machine temporarily, and the same user is likely to be the next user, “Lock Workstation” is the preferred method for leaving the machine.

To log on after locking the control, use the procedure described in **LOGGING ON TO WINDOWS** in this section. The “User name” field will contain the last user name. Press ‘Ctrl+Alt+Del’ again to bring up the ‘Logon’ dialog and enter the password.

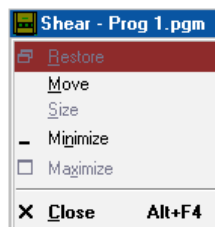
If the user logged on with an access level higher than Operator, or if another user is likely to log on next, logging off completely is a better method than using “Lock Workstation”. To log off, press the ‘Ctrl+Alt+Del’ keys and then press the “Log Off” button. Logging off will close all open applications, including the Shear Control application. The next user will be required to log on as described in **LOGGING ON TO WINDOWS**.

EXITING THE SHEAR CONTROL APPLICATION

Note: *If the UPS is functioning properly, it is not necessary to close the Shear Control application before powering down the machine.*

It is generally not necessary to exit the Shear Control application on the control. If necessary, the application can be closed using any of these methods:

- Select the ‘Shear’ icon  in the upper left corner of the Title Bar. A menu will appear.



- Select the “Close” item.

Or:

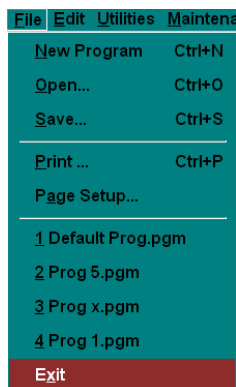
- Open the touchscreen keyboard and press the “Alt” and “F4” keys.

Or:

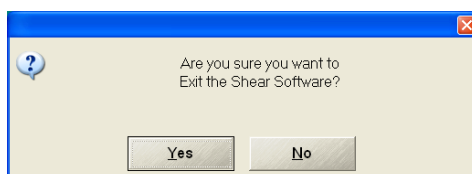
- Select the Close button  in the upper right corner of the Title Bar.

Or:

- From the main menu, select **File | Exit**.



Attempting to exit the application with any of these methods will open a dialog to confirm the action. Select the “Yes” button to close the Shear Control application.



Note: The application saves the current shear program in a temporary file, including any unsaved changes. The application will automatically load the same program the next time the application starts.

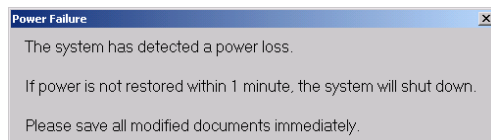
POWERING DOWN

Note: Press the “Main Drive Stop” button to turn off the pump before opening the Main Disconnect switch.

The correct way to power down in a normal situation is to use the Main Disconnect switch. This will disconnect power from the main circuitry and initiate the UPS power down sequence for the Shear Control.

Note: If the UPS is functioning properly, the Shear Control application can be running when power is turned off.

The UPS will make a beeping sound and the control will display a window notifying the user of a power loss.



After about 1 minute, if power has not been restored, the Shear Control will begin to shutdown any running applications and the Windows operating system.

If power is restored within the first minute, shutdown will be aborted. A dialog will appear notifying the user of this event.

About 2 minutes after the actual shutdown procedure starts (or about 3 minutes after loss of power) the UPS will shut off power to the Shear Control.

Note: Windows should be running when the Main Disconnect switch is turned Off in order for the UPS to perform its shutdown procedure.

If Windows is not running when power is lost, the UPS will attempt to supply power to the system as long as possible (as long as its batteries will last). In that case, the operator should shut off the UPS manually using its power off button. At the next power-on following a manual power-off, the operator will have to manually turn on the UPS before the Shear Control will power up.

SOFTWARE

GENERAL LAYOUT AND NAVIGATION

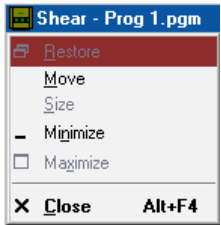


This subsection contains information about the general layout of the software and navigation between the various features of the software.

TITLE BAR



Typical of most Windows applications, the Title Bar provides the icon and title of the application, the name of the file currently open, and a method to close the application. If the user selects the 'Shear' icon in the upper left corner, a Pop-up menu opens providing another method to close the application.



To the right of the icon and the name "Shear", the title bar displays the filename of the loaded shear program. If the program is new, the default name is 'Untitled'. This name will remain until the user saves the active program. When a shear program has been modified but not saved, the title bar displays the filename followed by an asterisk (*).

Note: When the application closes, it saves the current shear program in a temporary file, including any unsaved changes. The application automatically loads the same program the next time the application starts.

In the right-hand corner of the Title Bar is the standard "X" button to close or exit the Shear Control application.

MENU BAR



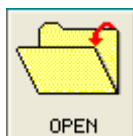
The menu bar provides access to various functions through standard Windows pull-down menus. Functions accessed through the menu bar are typically seldom-used functions or alternate methods to invoke other functions.

To open a file, for example, select **File** from the menu bar.



A pop-up menu will display the list of menu options under the ‘File’ item. From this list, pick the ‘Open’ item. A ‘File Open’ dialog will appear, asking which file should be opened.

The user can access the same ‘File Open’ dialog in one step by pressing the “OPEN” button on the Toolbar.








Other functions, such as the ‘Diagnostics’ items in the *Maintenance* menu, can only be accessed using the Menu Bar.



Note: Details of the individual menu items can be found in the **MENU ITEM DESCRIPTION** subsection in the **SOFTWARE** section of this manual.

Several other informational items are displayed on the Menu Bar. The Time and Date are displayed on the far right side of the Menu Bar as a convenience to the operator. The ‘Program/Lock’ icon, current logon level, gage icons, and other indicators may also be displayed.

Menu Bar Indicators

The ‘Program/Lock’ icon  will be displayed in the Menu Bar when Program/Lock is in the *Locked* state. If Program/Lock is off, the icon is not displayed. The Menu Bar displays the ‘Program/Lock’ icon to notify the user why certain fields or menu items are disabled.

The Menu Bar includes an icon to indicate the calibration status of the back gage; the icon indicates that the gage is either calibrated:  or not calibrated: . If the shear has a “swing-up” back gage, the Menu Bar also includes an icon to indicate the vertical position of the gage; the icon indicates that the gage is either raised:  or lowered: .

If the Shear Control is configured with the *Conveyor* option, the Menu Bar includes an icon to indicate the conveyor status; the icon indicates that the conveyor is either On:  or Off: .

The current logon level indicator will display colored text in the Menu Bar to indicate the present logon level: “Operator” or “Manager”. This indicator provides constant feedback, so the user can avoid leaving the control at an unintended access level.

TOOLBAR (BUTTON BAR)



The Toolbar provides easy access to frequently used functions of the Shear Control application.

To open a file, for example, press the “OPEN” button on the Toolbar. A ‘File Open’ dialog will appear, asking which file should be opened. Using the toolbar button is simpler than selecting the menu items for ‘File’ and ‘Open’ because it requires fewer actions and the button is easier to select with the touchscreen.

Note: For details of individual button functions, see the **TOOLBAR BUTTON DESCRIPTION** subsection in this manual.

PAGES (PAGE-SPECIFIC DATA AREA)

| | | | | | |
|--|--|---|--|--|--|
| <div>STEP 1 OF 4 Add Delete</div> | | <div>CUT 1 OF 1</div> | | <div>CUT LENGTH 48.0 in. (4 ft)</div> | <div>MATERIAL TYPE Mild Steel</div> |
| <div>GAGING METHOD Backgauge</div> | | <div>RECOMMENDED KNIFE CLEARANCE 0.030 in. (Red+Green Shim)</div> | | <div>SQUARING EDGE Left</div> | <div>SPECIFICATION A36 36-51Y23-35E</div> |
| <div>25.000 in. ACTUAL POSITION 48.000</div> | | | | <div>MATERIAL THICKNESS 0.250 in. (1/4")</div> | <div>COUNTER SELECT Stroke Count 111 Reset</div> |

The main area of the Run / Edit screen displays settings related to the currently open program file. The settings are displayed in editable fields and informational fields. For example, in the figure above this paragraph, “CUT LENGTH” is an editable field and “KNIFE CLEARANCE” is an informational field.

Informational fields have green backgrounds. An editable field has a white background when editing is permitted, and a gray background when editing is temporarily disabled. Editing a field or selecting a menu item may be temporarily disabled because the selected control mode does not allow the action, or because the current user logon level does not have privileges needed to make the change. For example, the user cannot edit program settings when Program/Lock mode is selected.

TABS



The Tabs at the bottom of the screen provide a way to navigate between pages. For example, if the Run / Edit page is the current page (the tab is in front and has a green background), the user can select the Spreadsheet tab to view detailed program data on the Spreadsheet page.

EDITING VALUES

EDITABLE FIELDS

Fields will have either a white or a gray background. If the field is white, the field is editable and the user can modify the value. If the field is gray, then the field cannot be modified.



A user with proper access privileges can change an editable (white) field. A gray field may indicate that the user doesn't have the proper access privileges or that the field is temporarily disabled.

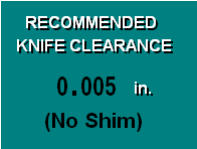
Examples of fields requiring higher level access to modify them include many items in the 'Configuration' dialog. Examples of temporarily disabled fields include most fields visible when Cycle Status is *Ready*.

Most fields are numeric entry fields, but some are alphanumeric entry fields. Numeric entry fields will only accept numbers, decimal point, and sign characters. Selecting a numeric field will typically open the Pop-up Calculator for user input. Alphanumeric fields will accept all letters of the alphabet, numbers, and most other characters. Selecting an alphanumeric field will open the Pop-up Keyboard. An example of an alphanumeric field is the "SETUP NOTES" field on the Spreadsheet page.

Note: *Special methods apply when editing fields in the Spreadsheet. Those methods are described in the **SPREADSHEET FIELDS** subsection.*

INFORMATIONAL (VIEW-ONLY) FIELDS

Informational, or view-only, fields are non-editable fields. These fields are meant to display information to the user, but are not changeable by the user.



POP-UP CALCULATOR ENTRY

The Pop-up Calculator is designed for easy entry of numbers using a touchscreen.



When the user touches a numeric entry field, the Pop-up Calculator will automatically open. To enter a number, press the buttons on the Pop-up Calculator. To transfer the displayed number into the numeric entry field, press the “Enter >>” button.

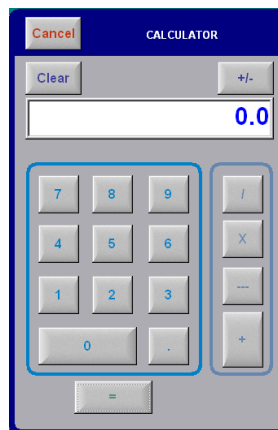


To erase the displayed number, press the “Clear” button. To close the Calculator without changing the numeric entry field, press the “Cancel” button.

The user can also open a Pop-up Calculator with the “TOUCHCALC” toolbar button.



The calculator opened with the toolbar button does not have an “Enter >>” button, because the calculator is not associated with any field. The toolbar includes a button to open this calculator for user convenience.



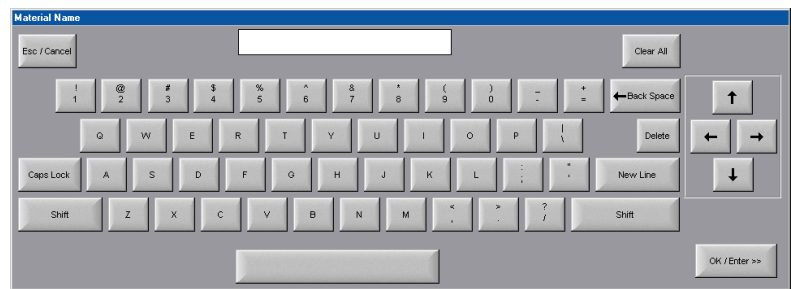
Use of the Pop-up Calculator may be disabled by a check box in the User Preferences tab of the ‘Configuration’ dialog.

When opened by selecting a numeric entry field, the calculator will display text indicating the ‘Range’ under the display field. The ‘Range’ indicates the minimum and maximum values for the selected field. The Pop-up Calculator will limit the input value to the displayed Range. If the “Enter >>” button is pressed with an out-of-range value in the display field, the calculator will display an error message.

Note: For details of the Pop-up Calculator operations and properties, see the **POP-UP CALCULATOR** section in this manual.

POP-UP KEYBOARD ENTRY

The Pop-up Keyboard is designed for easy entry of keyboard characters using a touchscreen.



Selecting an alphanumeric entry field will open the Pop-up Keyboard. An example of an alphanumeric entry field is the “SETUP NOTES” field on the Spreadsheet page.

Use of the Pop-up Keyboard is enabled by a check box on the User Preferences tab of the ‘Configuration’ dialog.

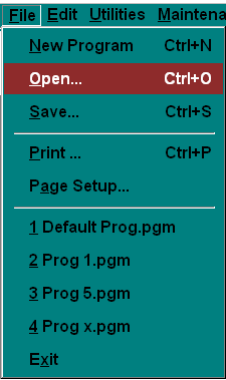
Pressing a button on the Pop-up Keyboard will display the character in the display field of the Pop-up Keyboard. This display field will match the size of the original entry field. Pressing the “OK/Enter >>” button will close the Pop-up Keyboard and transfer the characters into the entry field that the user originally selected.

***Note:** For details on using the Pop-up Keyboard, see the **POP-UP KEYBOARD** section in this manual.*

MENU ITEMS

Selecting a menu name in the Menu Bar opens a pull-down list with items that the user can select. The menu items execute certain commands. An example is the **File | New Program** menu item.

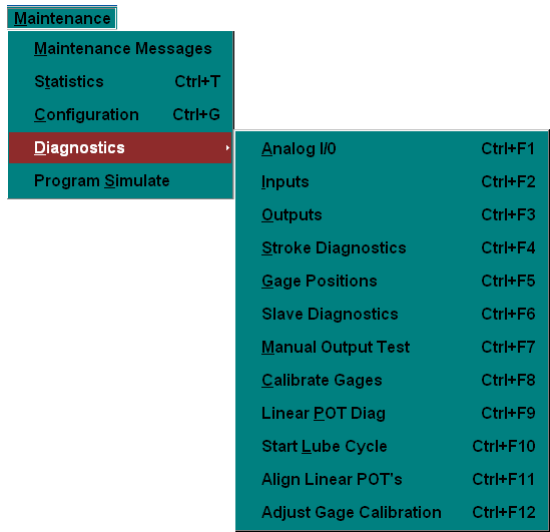
For some menu items, the control requires more information before it can do the requested function. The menu list displays those items with three dots (“...”) after the item name. Selecting the item opens a dialog box asking for the information. An example is the **File | Open...** menu item.



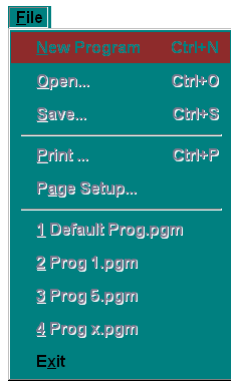
Selecting the “Open ...” menu item will display the ‘File Open’ dialog. After the user selects the filename and closes the dialog, the **File | Open...** command is processed.

MRU File List: A special area in the *File* menu is the Most-Recently-Used (MRU) file list. These are numbered items displayed above the ‘Exit’ item in the *File* menu. The Shear Control application remembers the last four program files that were opened and displays their filenames in the MRU File list for easy opening. Selecting one of these items will automatically load that file without using the ‘File Open’ dialog.

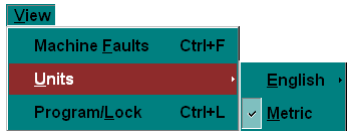
Fly-out Menus: Menu items with an arrow symbol to the right will display a fly-out menu when the item is selected. A fly-out menu is another list of choices under the selected menu item.



Disabled Menu Items: If the name of a menu item is grayed, then that item is not available as a choice. The item may be disabled because the current user does not have access to that function or because the present mode of the control disables the function.

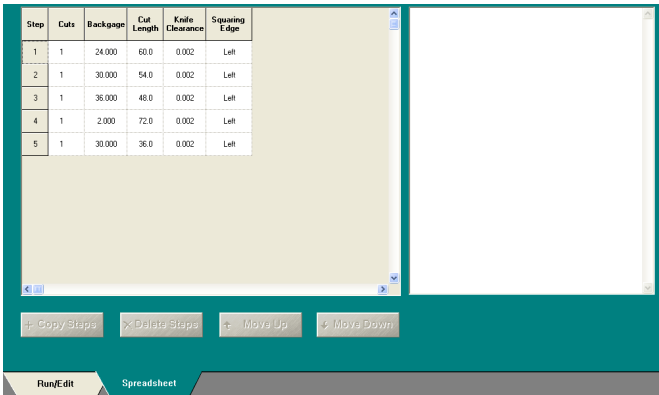


Checked Menu Items: A check mark may be displayed to the left of a menu item, to indicate that the item is selected or enabled. If items in a list are mutually exclusive, then selecting an unchecked item will move the check mark from the previously checked item to the selected item.



SPREADSHEET FIELDS

To edit fields on the Spreadsheet page, the user can apply procedures similar to standard spreadsheet programs.



Note: The Spreadsheet page is designed to display program settings in as little space as possible.

OTHER CONTROLS

Other items common to the Shear Control application are buttons, scroll bars, list boxes, and check boxes.

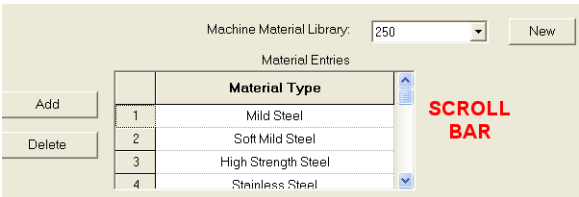
Buttons

Buttons in the Shear Control application are typically displayed as gray-colored controls with beveled edges. When the user touches a button, the application performs the function described by the text and/or graphic on the button.



Scroll Bars

When a field contains more text than the space provided on the screen can display, the application displays the field with a scroll bar. Scroll bars may be displayed on the right and / or bottom of a field.



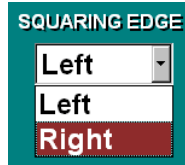
Selecting a scroll bar button will move the displayed text up and down or left and right. To move the text, select the arrow at either end of the scroll bar, select the area between the square button and the arrow, or select and drag the square button toward either arrow.

List Boxes

A List Box is a drop-down list used to select an item from a limited number of predefined choices. A list box has a down arrow displayed on the right side of the field.

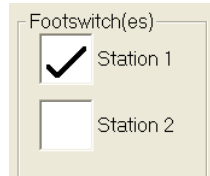


To change the selection in a list box field, first select the down-arrow button, and then select an item from the displayed list. The displayed list will close and the field will display the new selection.



Check Boxes

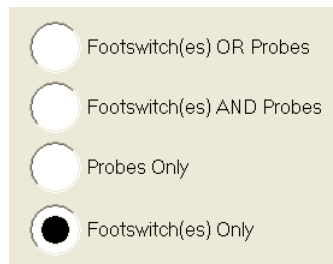
Check boxes are fields with True/False or On/Off values. If the box has a check mark, the value is True or On. If the box is empty, the value is False or Off.



Selecting the check box area will toggle the value in that field. If the box is unchecked (False or Off), the value will toggle to checked (True or On) and vice-versa.

Radio Buttons

The application uses radio buttons to display a group of selections with mutually exclusive properties. Radio buttons force the selection of only one item.



Radio button controls are usually a group of white circles with the selected item displayed with a smaller black circle inside. To choose an item, select the circle to the left of the item name. Choosing one of the items in a group of radio buttons will deselect the previously selected item.

MENU ITEM DESCRIPTION

File Edit Utilities Maintenance View Language Help

This subsection contains detailed descriptions of the individual items accessed through the Menu Bar of the Shear Control application.

FILE MENU

| File | Edit | Utilities | Maintena |
|--------------------|--------|-----------|----------|
| New Program | Ctrl+N | | |
| Open... | Ctrl+O | | |
| Save... | Ctrl+S | | |
| Print ... | Ctrl+P | | |
| Page Setup... | | | |
| 1 Default Prog.pgm | | | |
| 2 Prog 5.pgm | | | |
| 3 Prog x.pgm | | | |
| 4 Prog 1.pgm | | | |
| Exit | | | |

The *File* menu contains commands for loading, saving, and printing files as well as exiting the Shear Control application.

New Program

Selecting **File | New Program** creates a new Shear Control program and selects the Run / Edit page. The **New Program** command loads a single-step program with default values for all fields.

If the previously loaded program has been modified and not saved, then selecting “New Program” will first open a dialog prompting the user to save any changes to the current program before loading the new program.

Equivalent Functions: Selecting **File | New Program** is functionally equivalent to pressing the “NEW” button in the Toolbar.

Open. . .

Selecting **File | Open...** invokes the ‘File Open’ dialog box. In the ‘File Open’ dialog, the “Files of type” field will default to Program Files (*.pgm). To load a file, select a valid filename and press the “OPEN” button.

Equivalent Functions: Selecting **File | Open. . .** is functionally equivalent to pressing the “OPEN” button in the Toolbar.

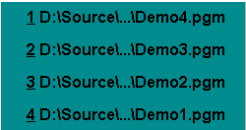
Save. . .

Selecting this menu item will invoke a ‘Save As’ dialog window. To save the file using the name in the “File name” field, simply press the “Save” button on the dialog. To rename the file, type the desired filename in the “File name” field and then press the “Save” button on the dialog. The “Save as type” field indicates the type of file being saved.

Equivalent Functions: Selecting **File | Save. . .** is functionally equivalent to pressing the “SAVE” button in the Toolbar.

MRU File List

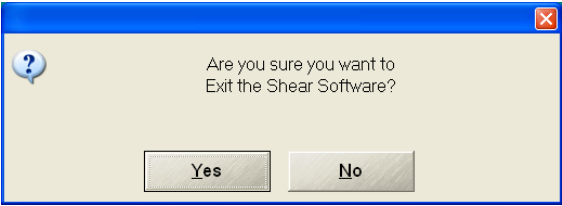
The Most-Recently-Used (MRU) list is a very convenient way to load one of the last four files that were used. When a new file is created or another file is loaded, the name of the previously loaded file is added at the top of the MRU list.



Selecting an item in the MRU list automatically loads that file without invoking the ‘File Open’ dialog.

Exit

Selecting **File | Exit** will open an ‘Are you sure ...’ dialog.



Choosing the “Yes” button will close the application.

***Note:** When the application closes, it saves the current shear program in a temporary file, including any unsaved changes. The application automatically loads the same program the next time the application starts.*

See **EXITING THE SHEAR CONTROL APPLICATION** in the **CONTROL STARTUP AND SHUTDOWN** section for more information.

Equivalent Functions: The ‘Shear’ icon in the upper left corner provides access to a “Close” menu item. The user can also select the “X” button in the upper right corner of the title bar to close the application.

EDIT MENU



Copy

Selecting **Edit | Copy** puts a duplicate of the highlighted characters into the clipboard. The **Copy** command can be used in combination with the **Paste** command to duplicate the contents of one field in another field.

Most values that can be highlighted can be copied, but the **Copy** command is used most frequently in the Spreadsheet page for copying cells.

Paste

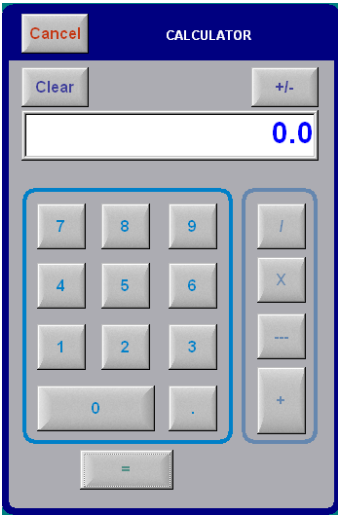
Selecting **Edit | Paste** extracts characters from the clipboard and inserts them wherever the cursor is located. The **Paste** command inserts characters that were placed in the clipboard using the **Copy** command.

UTILITIES MENU

| | | |
|------------------|-------------|------|
| Utilities | Maintenance | View |
| Touch Calculator | F2 | |

Touch Calculator

Selecting **Utilities | Touch Calculator** will open the stand-alone version of the Pop-up Calculator.



When invoked from the “TOUCHCALC” button or menu item, the title will be “CALCULATOR” and the “Enter >>” button will not display. There is no data field associated with the Pop-up Calculator when it is opened this way. The value displayed will be zero. This Pop-up Calculator is intended for user calculations not related to any particular field.

***Note:** Details concerning the Touch Calculator are contained in the **POP-UP CALCULATOR** section in this manual.*

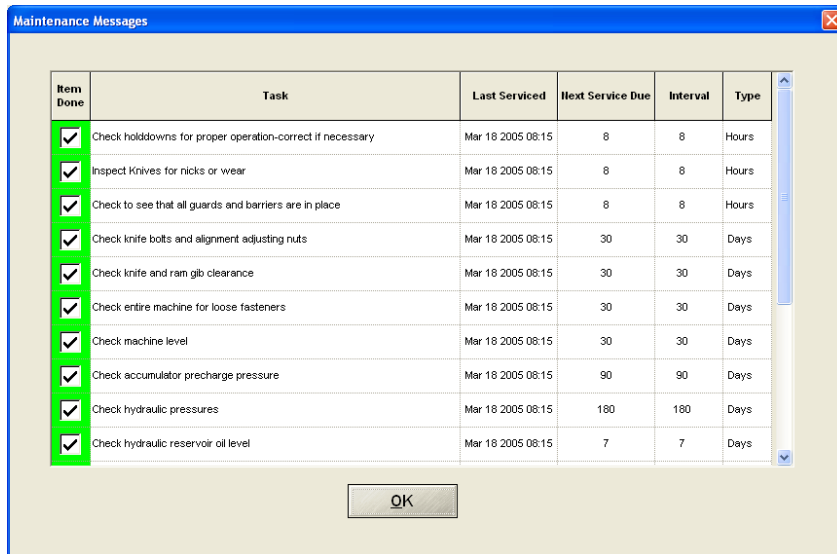
Equivalent Functions: Selecting this menu item is functionally equivalent to pressing the “TOUCHCALC” button in the Toolbar.

MAINTENANCE MENU

| | | |
|----------------------|--------|----------|
| Maintenance | View | Language |
| Maintenance Messages | | |
| Statistics | Ctrl+T | |
| Configuration | Ctrl+G | |
| Diagnostics | | |
| Program Simulate | | |

Maintenance Messages

The Maintenance Messages menu item opens a dialog listing the planned maintenance tasks.



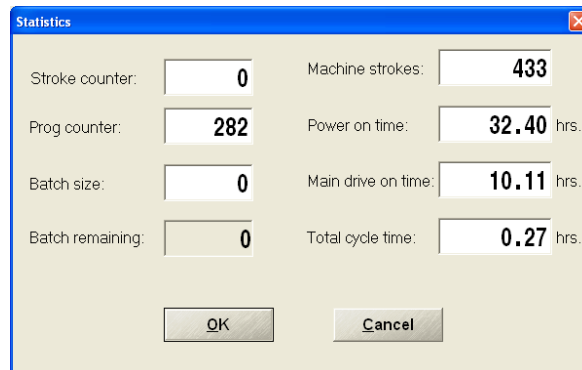
This dialog displays the list of scheduled or completed maintenance tasks and allows the user to acknowledge task completion. The user can also create up to ten user-defined tasks and specify the scheduled interval for each.

Note: For more description of the 'Maintenance Messages' dialog, see the **MAINT (MAINTENANCE MESSAGES)** topic in the **TOOLBAR BUTTON DESCRIPTION** subsection.

Equivalent Functions: Selecting this menu item is functionally equivalent to pressing the "MAINT" button on the Toolbar.

Statistics

The Statistics menu item opens the 'Statistics' dialog. With this dialog, the user can view information such as Program and Batch counts, Machine strokes and cycle times. A user with Manager-level access can also edit the information, unless Program/Lock is active.



Stroke Counter: The Stroke Counter is increased by one each time the shear completes a stroke. A Manager user may edit this value by selecting the field and entering a new value in the Pop-up Calculator.

Prog Counter: The Program Counter is increased by one each time a program has cycled through and returned to Step 1, Cut 1 in Auto Sequence cycle mode. A Manager user may edit this value by selecting the field and entering a new value in the Pop-up Calculator.

Batch Size: This field displays the number of program completions required to finish a batch. When Program/Lock is off, any user may edit this value by selecting the field and entering a new value in the Pop-up Calculator.

Machine Strokes: Machine Strokes is a continuous counter that is incremented every time the Ram is cycled. This value cannot be modified except by a Service Representative from CINCINNATI INCORPORATED.

Power On Time: This field displays the accumulated time that the Shear Control has been powered. This value cannot be modified except by a Service Representative from CINCINNATI INCORPORATED.

Main Drive On Time: This field displays the accumulated time that the Main Drive has been on. This value cannot be modified except by a Service Representative from CINCINNATI INCORPORATED.

Total Cycle Time: This field displays a running total of all program cycle times. This value cannot be modified except by a Service Representative from CINCINNATI INCORPORATED.

Configuration

The “Configuration” menu item provides access to the ‘Configuration’ dialog containing all machine and application configuration values. The ‘Configuration’ dialog has five pages selected with tabs.



General Tab: The General tab is a collection of general machine specifications. Thickness capacity, maximum cut length, gage ranges, and other settings are displayed. Filled check boxes indicate optional features or equipment included with the machine.

Configuration: 12345 New Machine Material Library: 250 Current access level: Administrator Change Level

Max Mild Steel thickness: 0.250 in.
 Length: 12 ft.
 Maximum rake: 0.375 in./ft.
 Minimum rake: 0.236 in./ft.
 Footswitches: 1
 Probes: 0
 Min Clearance(no shim): 0.002 in.
 Green Shim Thickness: 0.010 in.
 Red Shim Thickness: 0.016 in.
 Knife Dimensions: Default Actual
 Height: 3.000 3.000 in.
 Thickness: 1.000 1.000 in.
 Conveyor Speed: 30 in/sec.
 Conveyor Length: 70 in.
 Drop Time Adjust Min/Max: -1.0 3.0 sec

| | Installed | Enabled | Minimum Travel | Maximum Travel | Axis # |
|-----------|-------------------------------------|-------------------------------------|----------------|----------------|--------|
| Backgage | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 0.050 | 48.000 | 1 |
| Frontgage | <input type="checkbox"/> | <input type="checkbox"/> | 9.000 | 81.000 | 2 |

OK Cancel Apply Help

Configuration: Displays the name of the current set of configuration values. The “New” button is used (by CINCINNATI INCORPORATED) to create a different set of configuration values.

Max Mild Steel thickness: Specifies the mild steel capacity of the shear. The software also uses this setting when calculating the maximum vertical knife opening at the Cut Length distance from the Squaring Edge.

Note: For other materials, maximum thickness is specified on the Material Library page.

Length: Specifies the maximum Cut Length that the shear can accommodate.

Maximum rake and Minimum rake: Specify the range that the shear can command for the angle between the upper and lower knives.

Footswitches: Specifies how many footswitches are installed on the shear.

Probes: Specifies how many (optional) contact probes are installed on the shear.

Minimum clearance (no shim): Indicates the minimum knife clearance. Knife clearance is the horizontal distance between the knives as they pass each other. For shears with manual knife clearance adjustment, this setting indicates the clearance when no shims are installed. When the shear has optional powered knife clearance, this setting specifies the minimum clearance.

Green Shim Thickness and Red Shim Thickness: Reference fields. The software uses the values to indicate the required shim(s) below the “Recommended Knife Clearance” field (on the Run / Edit page). If the shear has optional powered knife clearance, these settings specify the increments between the possible knife clearance positions.

Knife Dimensions: Default and Actual: Indicate the cross-sectional dimensions of the knives. If the knives are rotated or replaced, measure the knife dimensions and edit the *Actual* settings to indicate the measured dimensions. Using actual knife dimensions will optimize the accuracy of ram positioning commands.

When a shear has the *Conveyor* option, the General tab includes fields for “Conveyor Speed” and “Conveyor Length”. The software uses these settings to calculate the required support time for each sheared part based on the back gage position.

When a shear has the *Conveyor* option with “Material Supports Installed”, the General tab includes fields for minimum and maximum “Drop Time Adjust” limits. These settings determine the range for the “Drop Time Adjust” field on the Run / Edit page. For more description, see “Drop Time Adjust” in the **RUN/EDIT** portion of the **SOFTWARE** section of this manual.

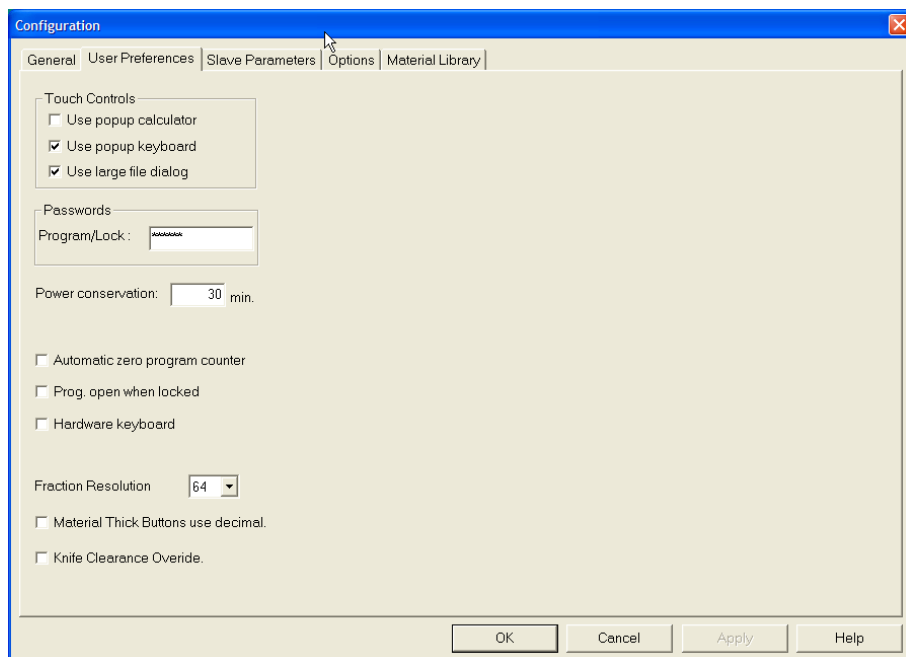
Machine Material Library: Identifies the current library name selected on the Material Library page.

Current access level: indicates the active Windows user name. The “Change Level” button allows the user to request a different access level (requiring the corresponding password) without exiting the Shear Control application or logging out of Windows. After making any required changes at the new access level, the user should restore the original level.

Note: *Changing access levels within the Shear Control application has no effect on the Logon ID or privileges in Windows.*

The **GAGES** section specifies configuration settings for the back gage and optional front gage. Check boxes indicate if each gage is ‘Installed’ or ‘Enabled’. A user with Manager-level access can toggle the *Enabled* status. The Run / Edit and Spreadsheet pages of the Shear Control screen display the commanded position(s) of the “Installed” gage(s). The Shear Control application does not send commands to a gage that is not “Enabled”. “Minimum” and “Maximum Travel” fields indicate the range of each gage position command.

User Preferences Tab: The User Preferences tab allows the user to customize the application. The items in this tab allow certain features to be enabled or disabled based on user preference.



The **TOUCH CONTROLS** section includes check boxes to specify whether the application will use the Pop-up Calculator or keyboard.

A user with Administrator access can edit the “Program/Lock” password field. Before a user with Operator access can toggle the Program/Lock setting, the application will require the user to enter the specified password.

Power Conservation: Specifies the time that the machine can sit idle before the Power Conservation system will shut off the Main Drive.

Automatic zero program counter: Determines whether the application will set the Program Counter to zero when the user opens a different program.

Program open when locked: Controls whether a user can select a different program while Program/Lock mode is active.

Hardware Keyboard: Specifies whether a physical keyboard is plugged into the machine control.

Fraction Resolution: Determines the smallest fraction of an inch that the application will use to display Gage position when the Units mode is **English | Fraction**. For example, when the setting is “64” the application will display the **Gage position** command rounded to the nearest 1/64 inch. A user with Manager access can edit the *Fraction Resolution* setting.

Slave Parameters Tab: Fields in this tab can only be changed by a Service Representative from CINCINNATI INCORPORATED.

Configuration

General | User Preferences | Slave Parameters | Options | Material Library

Slave Parameters

| | | | |
|-----------------------------|------------|------------------------|----------|
| Knife Clearance Minimum: | 0.002 in | Min Knife Opening: | 0.500 in |
| Knife Clear Cyl #1 (Green): | 0.012 in | Motion chk enable | 0 |
| Knife Clear Cyl #2 (Red): | 0.020 in | Motion chk filter time | 166 |
| Knife Clear Max (R+G): | 0.030 in | Transition time | 500 |
| Effective knife length: | 146.750 in | Min up speed in/min | 20 |
| Dist between cylinders: | 164.000 in | Min Down Spd in/min | 20 |
| Total stroke linear pot: | 9.000 in | Max stopped speed | 2 |
| Maximum Cylinder length: | 30.750 in | Counts per inch | 7300 |
| Minimum Cylinder length: | 24.250 in | Max oil temp (°F) | -1 |
| Cylinder offset: | 2.849 in | Oil temp warning (°F) | 140 |
| Des. knife cross at bottom: | 0.060 in | Cooler on temp (°F) | 135 |
| Cylinder anchor to table: | 16.750 in | Heater on temp (°F) | 60 |
| Cyl pin to top of knife: | 5.090 in | Num Input boards | 2 |
| Rem thick center to knife: | 0.375 in | Num Output boards | 5 |
| Rem Travel Angle: | 2.000 deg | Enc Offset low side | 9810 |
| Up Overshoot: | 1.000 in | Enc Offset High side | 8979 |
| | | Backgage Finger Len | 999 |
| | | Backgage Cal Pos | 46.893 |
| | | Bkg Slow Spd Dist | 0.4 |
| | | Bkg In Pos Tolerance | 0.01 |
| | | Bkg Counts per inch | 2000 |

OK Cancel Apply Help

Options Tab: Settings on the Options tab can only be changed by a Service Representative from CINCINNATI INCORPORATED. The 'Options' check boxes configure the software for the indicated optional functions.

Configuration

General | User Preferences | Slave Parameters | Options | Material Library

Options

- ☐ Print program
- ☐ Programmable outputs
- ☐ Powered Knife Clearance
- ☐ Allow Default Program
- ☐ Opposite Hand
- ☐ Pneumatic Sheet Supports
- ☐ Worklight Installed
- ☐ Cushion Clamp
- ☐ Bell Transfer Installed
- ☐ Power Feed Rollers Installed
- ☐ Hydraulic Swing Up Gage Installed
- ☐ Conveyor
 - ☐ Material Supports Installed
 - ☐ Start Stop Conveyor Installed
 - ☐ Scrap Door Installed
 - ☐ Tamper or Drop Leaf Installed
 - ☐ Bar Type Material Sup. Installed

Color preferences

| | |
|--------------------------|--|
| Main Background | |
| Static Text | |
| Static Line | |
| Text Background Color | |
| Static Text Shadow | |
| Text Display | |
| Disabled Edit Text | |
| Disabled Edit Background | |
| Button Text | |
| Button Background | |
| Button Light | |
| Button HighLight | |

Reset Defaults

OK Cancel Apply Help

Material Library Tab: This tab displays parameters that the application uses to shear different materials and thicknesses.

Configuration

General | User Preferences | Slave Parameters | Options | Material Library

Machine Material Library: 250 [New]

Material Entries

| | Material Type |
|---|---------------------|
| 1 | Mild Steel |
| 2 | Soft Mild Steel |
| 3 | High Strength Steel |
| 4 | Stainless Steel |

Specification Entries

| | Specification Name | Min. Thickness (in) | Max. Thickness (in) |
|---|--------------------|---------------------|---------------------|
| 1 | A36 36-51Y23-35E | 0.018 | 0.250 |
| 2 | A131 GRADE A-DS | 0.018 | 0.250 |
| 3 | A283 GRADE A-D | 0.018 | 0.250 |
| 4 | A285 GRADE A-C | 0.018 | 0.250 |

Thickness Entries

| | Material Thickness (in) | Gauge Label | Rake (in/ft) | Knife Clearance (in) |
|---|-------------------------|-------------|--------------|----------------------|
| 1 | 0.105 | 12 GA | 0.236 | 0.002 |
| 2 | 0.135 | 10 GA | 0.236 | 0.012 |
| 3 | 0.188 | 7 GA | 0.303 | 0.020 |
| 4 | 0.250 | 1/4" | 0.375 | 0.030 |

OK Cancel Apply Help

Machine Material Library: Displays the name of the active set of parameters. The Material Library page displays the parameters in three tables, titled “Material Entries”, “Specification Entries”, and “Thickness Entries”. Default parameters are provided by CINCINNATI INCORPORATED. A user with Manager access can edit the tables.

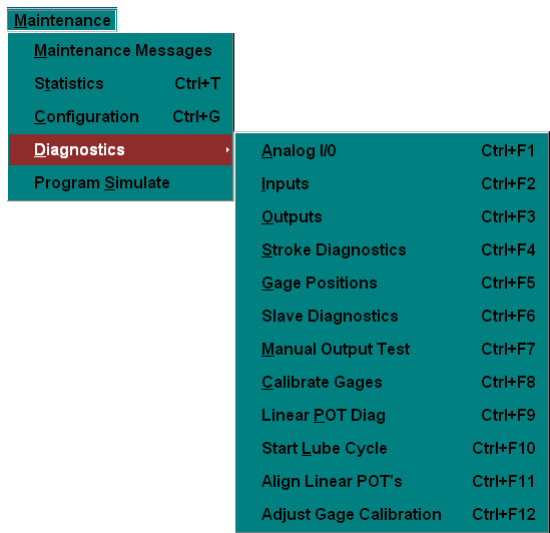
The list of “Material Entries” indicates material names that the library uses to identify groups of parameters. On the Run / Edit screen, the Shear Control application displays these names in the list box titled “Material Type”. For a “Material Type” selected in the first list, the library will display a list of associated *Specification Names* in the ‘Specification Entries’ table. On the Run / Edit screen, the Shear Control application displays these names in the list box titled “Specification”. In the ‘Specification Entities’ table, each *Specification Name* has settings for minimum and maximum thickness, to define the range that the library will support for that material.

For a *Specification Name* selected in the ‘Specification Entries’ table, the third table displays a list of associated *Thickness Entries*. For each thickness, the table contains fields for “Gauge Label”, “Rake”, and “Knife Clearance”. The shear program uses the *Rake* and *Knife Clearance* parameters to cut the material. The “Gauge Label” field is for reference.

Note: For a model 135 shear, all **Thickness Entries** use the same rake and knife clearance.

Diagnostics

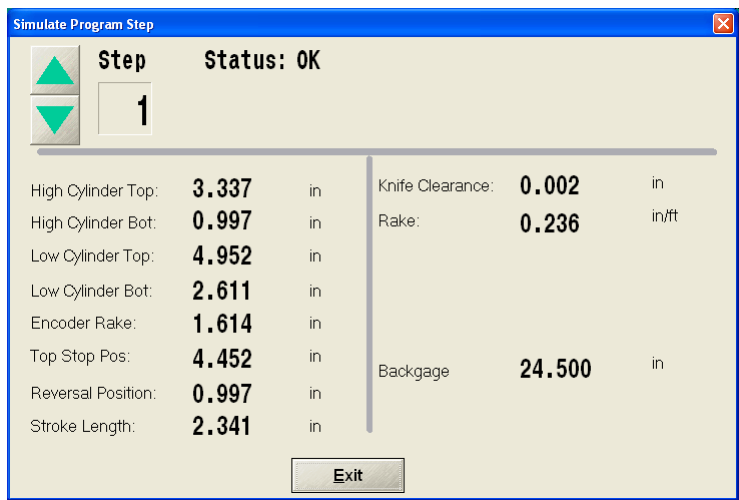
Maintenance | Diagnostics opens a fly-out menu of various diagnostic items.



Diagnostics Windows: In general, the diagnostics windows stay on top of other windows and are updated periodically. For more description, see the **DIAGNOSTICS WINDOWS** section of this manual.

Program Simulate

Maintenance | Program Simulate opens a dialog box displaying position commands that the Shear Control application will use to operate the shear.



The Step up / down arrows allow the user to display the values for each program Step. The ‘Status’ line indicates any errors generated by the displayed program Step.

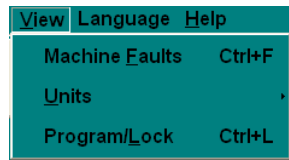
Note: If an error is displayed in the ‘Status’ line, any fields affected by the error may be blank. Correcting the programming error will permit all fields to be calculated and displayed.

The left half of the dialog displays calculated absolute values associated with the hydraulic cylinders. These values can be helpful in diagnosing certain program errors.

The right half of the dialog shows values for “Knife Clearance”, “Rake”, and gage position(s). *Knife Clearance* and *Rake* values can be helpful to confirm that the Shear Control application is commanding the correct settings from the material library for the current material. The Gage position confirms that the application is commanding the position specified for the current program step.

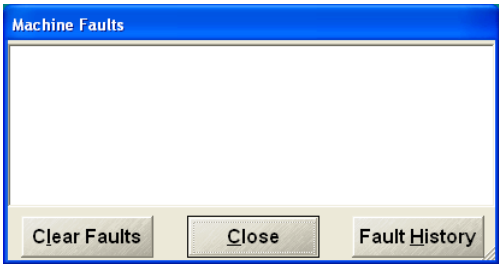
If the shear has the optional Conveyor with Material Supports installed, then the dialog includes the *Drop Time* for each step.

VIEW MENU



Machine Faults

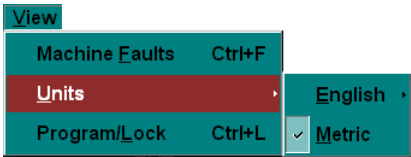
Selecting **View | Machine Faults** opens the ‘Machine Faults’ dialog.



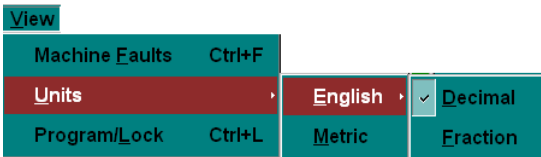
This dialog displays any current Machine Faults and contains a button to allow access to the Fault History.

Units

Selecting the **View | Units** will display a fly-out menu with additional selections.



The two fly-out items are ‘English’ and ‘Metric’. The menu will display the currently selected item with a check mark. To choose another Units mode, just select the item. Changing from Metric units to English will open another fly-out menu with items for ‘Decimal’ and ‘Fraction’ mode.



When Units mode is ‘English Fraction’, the application displays the gage position as a whole number followed by a fraction. When a desired gage position is defined with a fractional part, this mode allows an operator to edit the gage position directly, without first converting the position to a decimal value. For instructions on editing the gage dimension in **English | Fraction** mode, see the **GAGE DIMENSION** topic in the **RUN/EDIT PAGE** section of this manual.

A program written in one units mode may be displayed with other units by choosing another mode in the *View* menu. The Units selection determines how the application displays the program settings; it does not change the program.

Program/Lock

Selecting this menu item toggles the program between Locked and Unlocked access mode. Program/Lock is enabled (the program is locked) when the item has a check mark beside it.

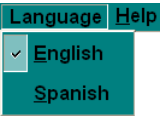
A user with Operator access must type a password to toggle Program/Lock. Users with higher access can toggle Program/Lock without typing a password.

When Program/Lock is checked, no program values can be changed or added, no new programs can be written, and Statistics data cannot be changed. The user cannot select a different program unless the ‘Program open when locked’ check box is checked on the User Preferences page of the ‘Maintenance Configuration’ dialog.

When Program/Lock is in effect, most fields will be gray to indicate they cannot be changed.

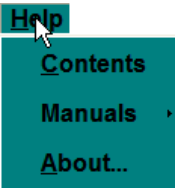
*Note: If Cycle Status is not **Ready** and all fields except “Step” and “Cut” are grayed, then Program/Lock is probably enabled.*

LANGUAGE MENU



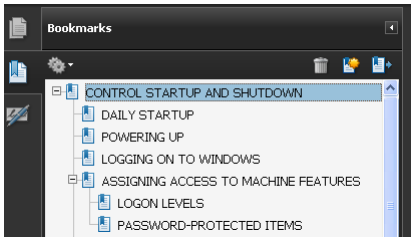
This menu item opens a list of languages that the application can use to display labels and messages. The current language is shown with a check mark. The default language is English. To change the active language, select the language name from the list and then restart the control application.

HELP MENU

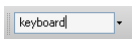


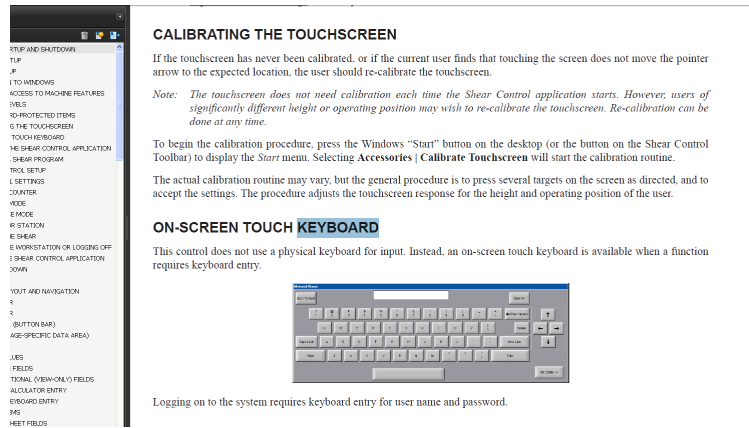
Contents

Help | Contents will open the Operation manual for the Shear system as a .pdf file. The user can navigate to a section, subsection, or topic by selecting the item from the Bookmarks pane on the left-hand side of the .pdf file. The file will automatically jump to the appropriate section of the manual.



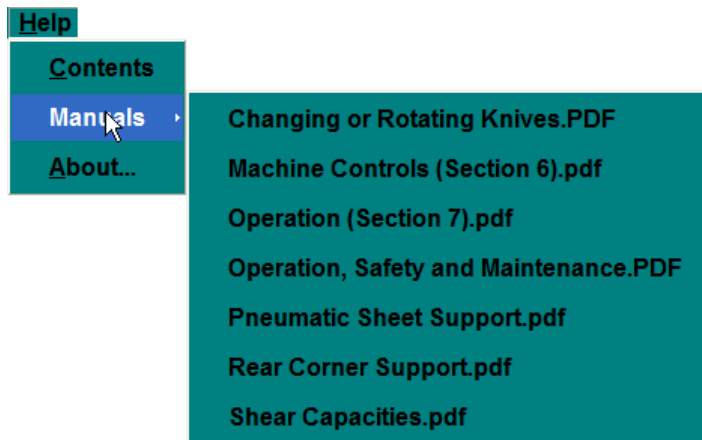
The user can also search for a specific subject by typing a keyword into the Find field at the top of the .pdf file. The file will automatically jump to topics in the manual where the keyword is referenced. The keyword will be selected.





Manuals

Help | Manuals will list the manuals for the Shear system. The user can open a manual by selecting it from the drop-down list. For example, the **Operation, Safety, and Maintenance Manual** or the **Operation Supplement Manual (Section 7)**.



About ...

Help | About opens a dialog window displaying the software title, copyright information, and installed version. If Slave computer hardware is connected, the window also displays the **Slave** software versions.



TOOLBAR BUTTON DESCRIPTION



This subsection describes the buttons in the Toolbar of the Shear Control application.

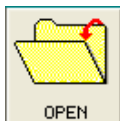
NEW



Selecting the “New” button creates a new Shear Control program. If the previous program has been modified and not saved, the application will prompt the user to save (or ignore) the changes before loading the new program.

Equivalent Functions: Pressing this button is functionally equivalent to selecting **File | New Program** in the Menu Bar.

OPEN



Selecting this button opens the ‘File Open’ dialog. The “Files of type” field will default to Program Files (*.pgm). Selecting a valid filename and pressing the “OPEN” button, or double-clicking the filename will load the file.

Equivalent Functions: Pressing this button is functionally equivalent to selecting **File | Open** in the Menu Bar.

SAVE



Pressing this button opens the ‘Save As’ dialog. To save the file using the name in the “File name” field, press the ‘Save’ button on the dialog. To rename the file, type the desired filename in the ‘File name’ field and then press the ‘Save’ button on the dialog.

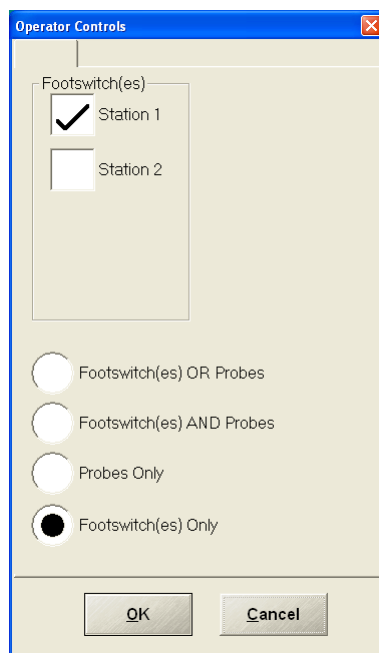
Equivalent Functions: Pressing this button is functionally equivalent to selecting **File | Save** in the Menu Bar.

OP (OPERATOR) STATION



This button opens a dialog window to select the active Operator Stations.

Example:



Note: If Cycle Status is **Ready**, then changing the active **Operator Station** settings (by pressing the “OK” button) will change Cycle Status to **Idle**.

Equivalent Functions: None.

Selecting Active Operator Stations: To activate a footswitch, select the check box next to the identifier. A selected item has a check mark inside the box.

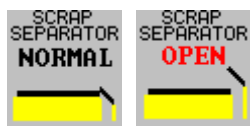
Footswitch(es) OR Probes: When this option is selected, the shear will execute a stroke when either the active footswitches are pressed or the loaded material contacts the active probes.

Footswitch(es) AND Probes: When this option is selected, the shear will execute a stroke when the active footswitches are pressed and the loaded material contacts the active probes.

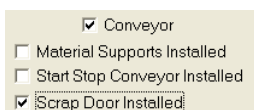
Probes Only: When this option is selected, the shear will execute a stroke when the loaded material contacts the active probes.

Footswitch(es) Only: When this option is selected, the shear will execute a stroke when the active footswitches are pressed.

SCRAP SEPARATOR



The toolbar displays the “Scrap Separator” button when the Configuration Options page has the *Conveyor* and *Scrap Door Installed* options checked.



The Scrap Separator is a hinged plate at the rear of the conveyor, with a programmable actuator that moves the separator between two positions. The toolbar button indicates the status of the separator.

NORMAL: The scrap separator is closed so sheared pieces travel over the scrap bin to the stacker area.

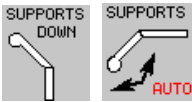
OPEN: The scrap separator is open so sheared pieces (trim cuts or small scrap) fall into the scrap bin.

Pressing the “SCRAP SEPARATOR NORMAL” toolbar button opens the scrap door and changes the button to “SCRAP SEPARATOR OPEN” for one stroke. After the shear completes the stroke, the scrap door closes and the toolbar button returns to “SCRAP SEPARATOR NORMAL”. Using the toolbar button this way overrides the *SCRAP DOOR OPEN* setting in the program.

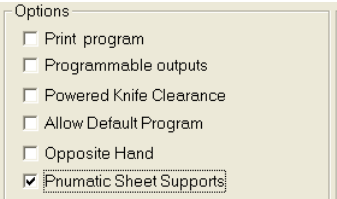
The ‘SCRAP DOOR OPEN’ check box on the Run / Edit page (or Spreadsheet column) determines if each program step will command the scrap door to open.



PNEUMATIC SHEET SUPPORTS



The toolbar displays this button when the ‘Pneumatic Sheet Supports’ check box on the Configuration Options page is checked:



The “SUPPORTS” toolbar button toggles between two settings: *DOWN* and *AUTO*. The default setting is *DOWN*.

DOWN: The control commands the supports to the lowered position and they remain at that position.

AUTO: The control will command the supports to the raised or lowered position according to the Stroke Mode:

OFF, INCH, or CONTINUOUS: The control always commands the supports to the DOWN position.

SINGLE STROKE: The control commands the supports to the raised position until the shear cycle starts. When the ram stroke begins, the control energizes the “Down” solenoid to lower the supports. The solenoid is energized for the time set by Configuration Slave Parameter “SS Down pulse time (msec)” and is then de-energized. When the shear ram reaches the bottom position, the control starts another delay before energizing the “Up” solenoid valve to raise the supports. The user can specify a different value for this delay in each program step. The setting is displayed in an edit field labeled “Drop Time” in the **PROGRAM EDIT** section:



The setting is also displayed for each program step in the **Drop Time** column of the Spreadsheet view.

The *Drop Time* setting represents the estimated time for the sheared piece to drop away from the material supports. The time is displayed in seconds, with 0.1 second resolution. The default value is 2.0 seconds. The setting range is 0.0 to 10.0 seconds. After the *Drop Time* delay, the control energizes the “Up” solenoid valve.

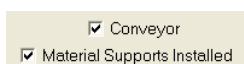
The time required to raise the material supports depends on the adjustment of a manual flow control valve in the air cylinder exhaust piping. When the control commands the supports to the raised position, it keeps the “Up” solenoid energized until it commands the supports down.

Note: *When the pneumatic sheet support arms are raised, they are in a location that will be occupied by the shear ram when it cycles. To avoid any interference, the control lowers the support arms for the ram stroke, and then raises the arms after the ram is up. However, if the next program step does not require the shear ram to move to the top position before the next stroke, then the supports must remain down. That condition exists whenever the Cut Length is less than the maximum shear cut length and the Squaring Edge is the side where the vertical knife opening is larger. This requirement to keep the supports down overrides the AUTO setting on the toolbar button. The control keeps the support arms down until the shear ram is at the top position.*

MATERIAL SUPPORTS



The toolbar displays this button if the Configuration Options page has the check boxes for ‘Conveyor’ and ‘Material Supports Installed’ checked:



The toolbar button toggles between the Supports Down and Supports Auto control modes:

DOWN: The Conveyor keeps the material supports lowered at all times.

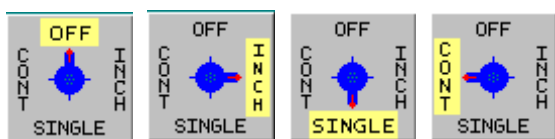
AUTO: The Conveyor raises or lowers the supports depending on the Stroke Mode:

OFF, INCH, or CONTINUOUS: The control always commands the supports to the DOWN position.

SINGLE STROKE: The Conveyor raises the supports until the shear ram begins a stroke, lowers the supports during the stroke, and then raises the supports after the ram returns to the top position.

Note: *When the material support arms are raised, they are in a location that will be occupied by the shear ram when it cycles. To avoid any interference, the control lowers the support arms for the ram stroke, and then raises the arms after the ram is up. However, if the next program step does not require the shear ram to move to the top position before the next stroke, then the supports must remain down. That condition exists whenever the Cut Length is less than the maximum shear cut length and the Squaring Edge is the side where the vertical knife opening is larger. This requirement to keep the supports down overrides the AUTO setting on the toolbar button. The control keeps the support arms down until the shear ram is at the top position.*

STROKE MODE SELECTOR



The “STROKE MODE SELECTOR” button toggles between the OFF, INCH, SINGLE Stroke and CONTINUOUS modes.

OFF: The OFF mode does not allow shear ram motion. The Shear Control begins operation in this mode. The “Cycle Start” button has no effect when the stroke mode is ‘OFF’.

INCH: In INCH mode, the operator can move the ram incrementally by stepping on the footswitch. The operator can release the footswitch at any ram position, and the ram will stop immediately without completing the cycle. The ram continues in the same direction if the operator presses the footswitch again.

SINGLE: In SINGLE STROKE mode, the shear completes one stroke in the program each time the operator enables a stroke. To enable a stroke, the operator presses the footswitch all the way down and/or engages the active probes. The shear ram completes the stroke, returns to the top position and stops. The shear does not start the next stroke until the operator enables another stroke. If the operator releases any active operator station during the stroke, the ram does not stop until it completes the stroke at the top position.

CONT: In CONTINUOUS mode, the shear will execute the next stroke automatically if the operator continues to enable the active operator station(s). In CONTINUOUS mode, the holddowns release the material while the ram is moving up, allowing the operator to move the material into position for the next stroke. If the operator releases any active operator station during the stroke, the ram does not stop until it completes the stroke at the top position.

SEQUENCE MODE SELECTOR



This button toggles between 1 STEP and AUTO SEQ mode. The requirements to start a shear stroke will depend on the selections in the ‘OP STATION’ dialog.

1 STEP: When configured for ‘1 STEP’ sequencing, the shear executes the current step every time the operator enables a stroke. The control does not proceed to the next step in the program.

AUTO SEQ: When configured for ‘Auto’ (Automatic) sequencing, the shear executes the next step (or stroke) in the program each time the operator enables a stroke.

CYCLE START / CYCLE STOP



This toolbar button has three states: dark green “CYCLE START”, bright green “CYCLE START” and red “CYCLE STOP”.

!! DANGER !!

BEFORE CYCLING THE SHEAR, MAKE SURE ALL SAFETY DEVICES ARE BEING USED AND ARE OPERATING PROPERLY. EVALUATE EACH JOB FOR PROPER SAFEGUARDING. SEE ANSI STANDARD B11.4 – “SHEARS – SAFETY REQUIREMENTS FOR CONSTRUCTION, CARE AND USE”.

CYCLE START: When Stroke mode is off or Cycle Status is *Error*, the “CYCLE START” toolbar button is dark green. This color indicates that the operator cannot start or resume the program.

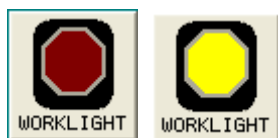
When a program is ready to start or continue with the next step, the control displays the bright green “CYCLE START” button. When the operator presses the button, the gage moves to the starting position for the ram stroke.

CYCLE STOP: When the gage starts to move, the control replaces the “CYCLE START” button with the red “CYCLE STOP” button. While the gage is moving, the Cycle Status is *Wait*. If the operator presses the “CYCLE STOP” button, the gage stops moving and the toolbar button changes to the bright green “CYCLE START”.

Note: Pressing the “CYCLE STOP” button does not stop the Main Drive.

When the ram and gage(s) are in position, the control continues to display the red “CYCLE STOP” button. In that condition, the operator can cycle the shear using the footswitch and/or probes. The operator does not have to press “CYCLE START” for each step; the ram and gage automatically move to their starting positions for the next ram stroke.

WORK LIGHT



The “Work Light” button toggles the work lights on or off. The lights are mounted inside the top front cover above the shear table. The default status is “On”. Pressing the “Main Drive Start” button will also toggle the lights on if they were off. However, pressing the Main Drive “Stop” button does not toggle the lights off if they are on. If the lights are on when “Main Drive Stop” is pressed, the control will turn the lights off when the *Power Conservation* timer expires.

MAINT (MAINTENANCE MESSAGES)



The “Maintenance Messages” button opens a dialog with a list of planned maintenance tasks. The list is a table with columns for the ‘Item Done’ check box, ‘Task’ name, ‘Last Serviced’ date, ‘Next Service Due’, ‘Interval’, and ‘Type’ (time unit) for each task.

Equivalent Functions: Pressing this button is functionally equivalent to selecting **Maintenance | Maintenance Messages** in the Menu Bar.

Note: The “Maintenance Messages” button only appears in the Toolbar when planned maintenance items are due. However, the user can always open the **Maintenance Messages** window using the **Maintenance | Maintenance Messages** menu item.

| Item Done | Task | Last Serviced | Next Service Due | Interval | Type |
|-------------------------------------|--|-------------------|------------------|----------|-------|
| <input checked="" type="checkbox"/> | Check holdowns for proper operation-correct if necessary | Mar 18 2005 08:15 | 8 | 8 | Hours |
| <input checked="" type="checkbox"/> | Inspect Knives for nicks or wear | Mar 18 2005 08:15 | 8 | 8 | Hours |
| <input checked="" type="checkbox"/> | Check to see that all guards and barriers are in place | Mar 18 2005 08:15 | 8 | 8 | Hours |
| <input checked="" type="checkbox"/> | Check knife bolts and alignment adjusting nuts | Mar 18 2005 08:15 | 30 | 30 | Days |
| <input checked="" type="checkbox"/> | Check knife and ram glb clearance | Mar 18 2005 08:15 | 30 | 30 | Days |
| <input checked="" type="checkbox"/> | Check entire machine for loose fasteners | Mar 18 2005 08:15 | 30 | 30 | Days |
| <input checked="" type="checkbox"/> | Check machine level | Mar 18 2005 08:15 | 30 | 30 | Days |
| <input checked="" type="checkbox"/> | Check accumulator precharge pressure | Mar 18 2005 08:15 | 90 | 90 | Days |
| <input checked="" type="checkbox"/> | Check hydraulic pressures | Mar 18 2005 08:15 | 180 | 180 | Days |
| <input checked="" type="checkbox"/> | Check hydraulic reservoir oil level | Mar 18 2005 08:15 | 7 | 7 | Days |

OK

Acknowledging Completed Tasks: Check boxes in the **Item Done** column of the dialog are used to acknowledge the completion of one or more maintenance items. If the area surrounding the check box is red, the task is currently due. If the area is green, the task is not currently due.

When a task has been completed, select the check box next to that task. A check will appear in the check box, the surrounding area will turn green, and the *Last Serviced* date will change to the current date and time.

Note: The user can acknowledge the completion of an item that is not yet due (not yet red), by selecting the (green) check box. A message box will prompt the user to confirm that the selection was intended. This feature allows the user to record the early completion of a preventive maintenance task.

User-Defined Maintenance Items: The last items in the “Maintenance Items” list can be user-defined messages. The dialog allows the user to customize the ‘Task’ description, ‘Interval’, ‘Type’, and ‘Max Interval’ for these items.

To customize a task, select the “Task” field. In this field, highlight the existing text to be overwritten and type a new description of the maintenance task to be performed.

To set the “Interval” field, either select the existing interval period and type a new number, or use the scroll arrow buttons to set the “Interval” (in hours or days, depending on the “Type” field).

If the Interval Type is not correct, select the “Type” field. An arrow will appear to access the drop-down list. Select the arrow and choose the desired Type: ‘Days’ or ‘Hours’.

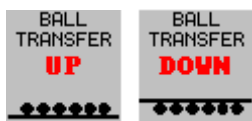
TOUCHCALC (STANDALONE POP-UP CALCULATOR)



Selecting this button opens the stand-alone version of the Pop-up Calculator. When opened with the “TOUCHCALC” button or menu item, the calculator has no “Enter >>” button, since the calculator is not associated with any data field. The application provides this Calculator for user convenience.

Equivalent Functions: Pressing this button is functionally equivalent to selecting **Utilities | Touch Calculator** in the Menu Bar.

BALL TRANSFER



This toolbar includes this button when the shear has the air-operated *Ball Transfer* option. The button toggles the ball transfer supports to be “UP” (above the table) or “DOWN” (below the table). The default position is “UP”. The button indicates the status and pressing the button toggles the supports to the other position. When the operator depresses the footswitch to the middle position, the control activates the holddowns and commands the ball transfers “DOWN”. Releasing the footswitch commands the ball transfers to the “UP” position.

The Ball Transfer toolbar button replaces the “TOUCHCALC” button. When the shear has the *Ball Transfer* option, the operator can open the Pop-up Calculator by selecting **Utilities | Touch Calculator**.

START (WINDOWS)



Pressing the Start toolbar button displays the Windows Start menu. Use this button to access other applications; for example, to select **Accessories | Calibrate Touchscreen**.

HELP



This button opens the *Help* window. For more information on using the Help, refer to the **HELP MENU** topic of the **MENU ITEM DESCRIPTION** section of this manual.

RUN/EDIT PAGE

This is the default page of the Shear Control application. It is the input page for program Step data and the display page for running the machine.

The screenshot shows a control panel with the following fields and buttons:

- STEP:** 1 OF 4. Includes up/down arrow buttons and 'Add'/'Delete' buttons.
- CUT:** 1 OF 1.
- CUT LENGTH:** 48.0 in. (4 ft).
- MATERIAL TYPE:** Mild Steel.
- SPECIFICATION:** A36 36-51Y23-35E.
- MATERIAL THICKNESS:** 0.250 in. (1/4").
- GAGING METHOD:** Backgage.
- RECOMMENDED KNIFE CLEARANCE:** 0.030 in. (Red+Green Shim).
- SQUARING EDGE:** Left.
- COUNTER SELECT:** Stroke Count.
- Reset** button.
- ACTUAL POSITION:** 48.000 in.
- Stroke Mode:** Single Stroke.
- Sequence:** Auto Sequence.
- Cycle Status:** Drive Off.
- Op Stations:** Footswitch.
- Run/Edit** and **Spreadsheet** tabs at the bottom.

STEP

These fields and buttons display, increment, decrement, add, and delete program Steps.

This close-up shows the STEP section with up/down arrows, a '1' in a box, 'OF 2', and 'Add'/'Delete' buttons.

Up and Down Arrows: These buttons increase or decrease the current Step number by one.

Current Step: This field displays the current Step number of the program. This field can be changed using the Up and Down arrows to the left of the field, or by selecting the field. After selecting the (white) “Step” field, an array of “Step number” buttons will appear. Pressing any one of these buttons will change the Step number to that value.

This close-up shows the STEP section with up/down arrows, a '1' in a box, 'OF 2', and a list of buttons labeled '1' and '2' below it.

Total Number of Steps: The field following the word “OF” is a view-only field, showing the total number of Steps in the current program. The displayed number changes after the operator uses the “Add” or “Delete” button.

Add: This button will duplicate the current Step, insert it after the current Step, and make the new Step the current Step of the program.

Example: Assuming the user wants to insert a new Step between the existing Steps 2 and 3.

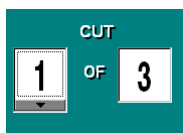
1. Select Step 2 as the current Step, and then select the ‘Add’ button.
2. The application will make a copy of Step 2, insert that copy after Step 2, and make the inserted step, Step 3.

3. The application will display the new Step 3 as the current Step, and increase the Total Number of Steps by one.
4. All Steps that previously followed Step 2 will be moved down in the program by one. That is, the previous Step 3 will become Step 4, etc.

Delete: This button will delete the current Step, display the prior Step, and reduce the Total Number of Steps by one. This button will be disabled if the program has only one Step.

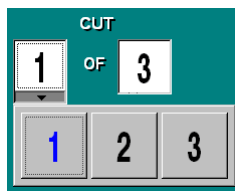
CUT

The two “Cut” fields are the “Current Cut” number and “Total Cuts”.



Current Cut: The first “Cut” field displays the “Current Cut” number. As the shear cycles through a program step, the number in the “Current Cut” field will increase from one to the number in the “Total Cuts” field. For example, if the number in the “Total Cuts” field is 3, then the “Current Cut” field will start with 1 and count up to 3 before the program advances to the next Step. The “Current Cut” number increases by one after each ram stroke.

To change the “Current Cut” number, select the first field and then select one of the numbered buttons.



Total Cuts: This field indicates how many times the shear will cycle the ram using the settings of the current Step, before continuing to the next Step. To change the total number of cuts, select the second field and type a new value using the Pop-up Calculator.

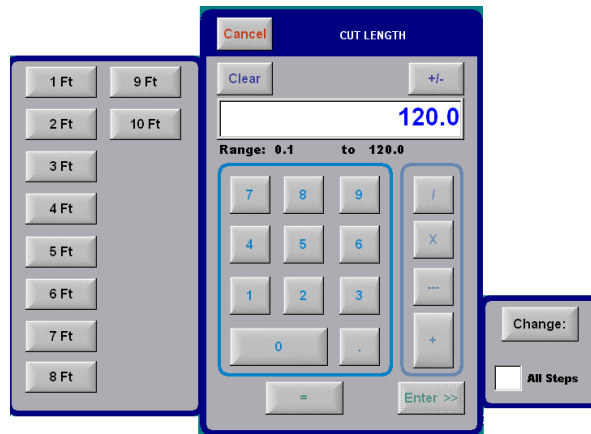
CUT LENGTH

This field determines where the shear locates the upper knife to start and stop each stroke of the current program step.



The minimum cut length for a step is the material dimension parallel with the knife length (i.e. left to right). Maximum cut length is the shear “Length” parameter displayed in the Configuration window.

To edit the “Cut Length”, select the field and type a new value in the Pop-up Calculator. When selected for the “Cut Length” field, the calculator has extra buttons for pre-defined lengths. If the calculator has a button for the desired Cut Length, select that button and then select the “Enter >>” button.



When the View Units are “English” and the *Cut Length* rounded to the nearest inch is a multiple of 12, then the length is also displayed in feet units as a label next to the “Cut Length” field.

PROBES

The General tab of the Configuration window has a list box to specify the number of optional probes installed on the shear. When the number of probes is not zero, the user interface has three changes:

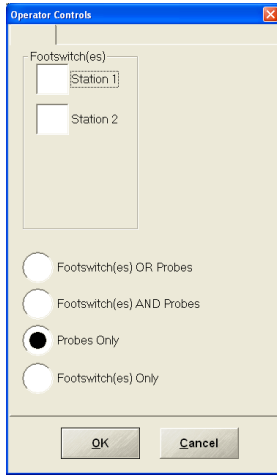
- The Run / Edit screen includes a button for each probe.
- The ‘Operator Station’ dialog box includes option buttons to specify how the control will use the probes.
- The Spreadsheet View includes a column indicating the required probes for each program step.

Run / Edit screen: Each probe button is labeled with a number, displayed in the same order that the probes are installed (from left to right as the operator faces the front of the shear):



The operator can select a probe button on the Run Edit screen to activate or de-activate each probe for each program step. If a probe is activated, then the button color is yellow, indicating the control requires material to contact that probe. When conductive material contacts the probe, the button color changes to green. When a probe is not activated, the button color is gray.

Operator Station: This dialog box includes a group of four option buttons. The selected option button specifies how the control will activate a stroke (see Operator Station toolbar button description.)

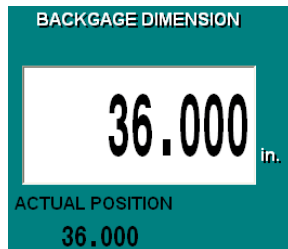


Spreadsheet View: For each program step, the **Probes** column indicates required probes using their button numbers. For example, if probe #1 and #3 are activated, the **Probes** column indicates “1-3”.



| Step | Cuts | Backgage | Cut Length | Probes | Knife Clearance | Squaring Edge |
|------|------|----------|------------|--------|-----------------|---------------|
| 1 | 3 | 24.500 | 48.0 | 1-3 | 0.021 | Left |
| 2 | 1 | 24.000 | 96.0 | 1-4 | 0.021 | Left |

BACKGAGE DIMENSION / GAGING METHOD

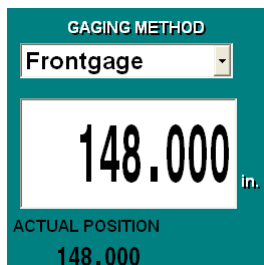
This field displays the commanded position for the back or front gage.



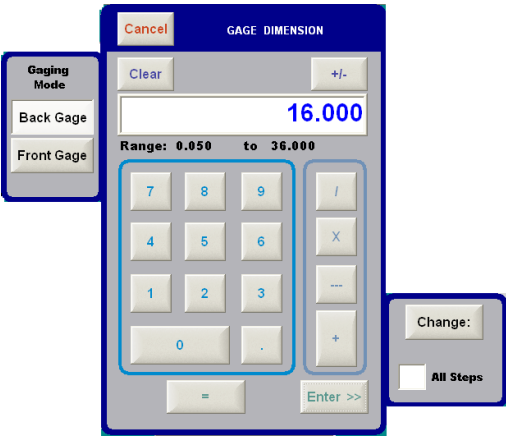
The “Dimension” field indicates the commanded position. To alert the operator when the gage is moving to the next commanded position, the Run / Edit page displays the actual position under the command value. The Run / Edit page always displays the actual position in decimal units.

When the shear has the option “Hydraulic Swing-up Gage Installed”, the Run / Edit page also displays the gage Up / Down status indicator ( or ) next to the actual position of the back gage.

When the shear has both the standard back gage and the optional front gage, the field has a “GAGING METHOD” drop-down list to select the active gage for each step:



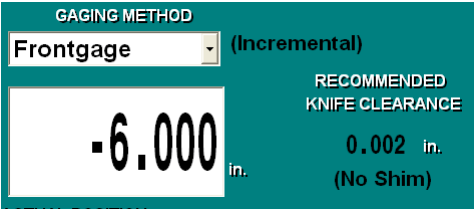
To edit the gage position command, select the field and type a new value in the Pop-up Calculator. If the shear has both gages, the Pop-up Calculator includes an add-on with buttons to select the gage. If a different gage is selected with the add-on button, closing the calculator will change the ‘GAGING METHOD’ selection on the Run Edit page.



Incremental Front Gage Dimension

When the shear has the optional front gage, the operator can edit the gage dimension as an absolute position or as an incremental change from the position of the previous step. To specify an incremental position, type a negative distance in the Pop-up Calculator. Since the control applies the incremental distance to the front gage position of the previous step, the program must specify a front gage position for the previous step, and the active step cannot be Step 1.

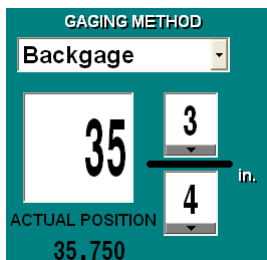
When a program step specifies an incremental front gage position, the Run / Edit page displays the negative dimension with an “Incremental” label next to the ‘GAGING METHOD’ selection:



If a program step with an incremental frontgate position has more than one cut, the gage will move the specified distance before each cut. The control checks that the final frontgate position will not exceed the travel range. If the check fails, the control displays an error message and does not run the program.

Fraction Units

When the active units selection is **English | Fraction**, the gage dimension is displayed as a whole number followed by a fraction. The actual position (displayed under the dimension field) is always a decimal value.



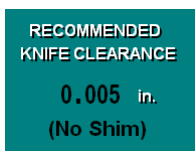
Changing the Units selection to **English | Fraction** will cause the gage dimension to be rounded off to the nearest fraction of an inch specified in Configuration (User Preferences page, *Fraction Resolution* setting). Any fractional part is displayed in simplest form.

To edit the whole number, select that field and enter the new value using the Pop-up Calculator. When the active units are **English | Fraction**, the entire gage dimension (including the decimal fraction) can also be entered in the whole number field as a decimal number. The dimension will be converted and displayed as a whole number and a fraction.

The upper and lower parts of the fraction are limited to specific numbers, displayed with separate buttons. The buttons available for the upper field depend on the displayed number in the lower field. To edit the fraction, first select the lower field to display the button choices, and then select one of the displayed buttons. Then select the upper field and one of the displayed buttons for that field.

KNIFE CLEARANCE

The “Knife Clearance” field specifies the horizontal gap between the knives when they pass each other. For a shear with manual knife clearance adjustment, this field is a read-only display of the “Recommended Knife Clearance”. The displayed value includes a label to identify the required shim combination for manual knife clearance adjustment.



If the shear has optional power-operated knife clearance, the setting specifies the clearance for each program step, with a value selected from a list. The possible selections are determined from the Configuration settings for minimum clearance and shim thicknesses.



Note: *If the shear has optional power-operated knife clearance, the operator cannot select a knife clearance value larger than the default setting.*

The default *Knife Clearance* setting is usually the value specified in the Material Library for the selected material and thickness. However, if the program step has a short back gage dimension (i.e. less than 6 material thicknesses), the default value is the minimum clearance.

If the shear has manual knife clearance adjustment and a program is edited to specify a back gage dimension or material thickness requiring a different knife clearance than the previous program step, then the control will display a message reminding the operator to change the knife clearance shims:



Note: The control displays the **Knife Clearance** message when the program is edited, not while the program is running.

SCRAP DOOR OPEN

When the shear has the *Conveyor* option with “Scrap Door Installed”, the Run / Edit page has a check box to specify if the program step should open the Scrap Door for the sheared piece:



For more information on this check box function, see the **Scrap Separator** toolbar button description.

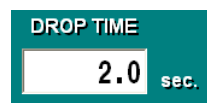
SQUARING EDGE

The “Squaring Edge” field indicates the side of the shear where the workpiece should be loaded against a side gage for the current program step. The squaring edge is either the “Left” or “Right” side when facing the front of the shear. The squaring edge is usually the side where the vertical gap between the knives is largest when the stroke begins. However, a program can specify the other side if required.



DROP TIME

When the shear has the *Pneumatic Sheet Supports* option without the *Conveyor* option, the Run / Edit page has a field to specify the *Drop Time* for each program step:



The *Drop Time* setting is the estimated time for the sheared piece to drop away from the material supports. For more information, see the **Pneumatic Sheet Supports** toolbar button description.

DROP TIME ADJUST

When the shear has the *Conveyor* option with “Material Supports Installed”, the Run / Edit page has a field to specify *Drop Time Adjust* for each program step:

DROP TIME ADJUST

0.0

sec.

For each program step, the control calculates an estimated time for the Conveyor to move the sheared piece beyond the sheet supports. The *Drop Time Adjust* setting allows the operator to increase or decrease the calculated estimate. With this function, the operator can avoid unnecessary program delays by improving the accuracy of the estimate.

MATERIAL TYPE

This field indicates which group of *Material Library* settings the program will use to apply shearing parameters (*Rake* and *Knife Clearance*) for the selected Specification and Thickness. To change the Material Type for a program, select the list box and then select the material name from the displayed list. The list contains the names shown on the Material Library page of the Configuration window.

MATERIAL TYPE

Mild Steel

SPECIFICATION

For the selected *Material Type*, the “Specification” field indicates which set of shearing parameters the program will use for the selected *Thickness*. To change the *Material Specification* for a program, select the list box and then select the Specification name from the displayed list. The list contains the Specification names shown on the Material Library page of the *Configuration* window.

SPECIFICATION

A36 36-51Y23-35E

MATERIAL THICKNESS

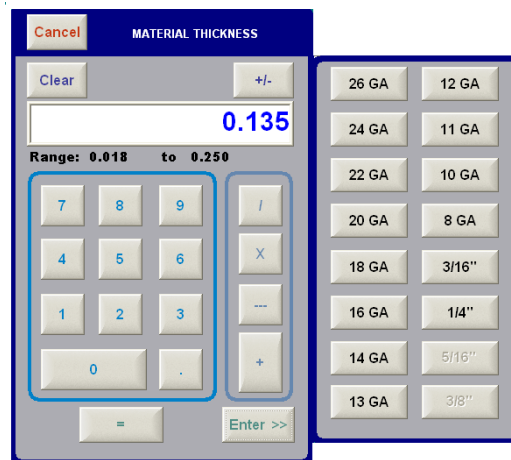
For the selected *Material Type* and *Specification*, the “Thickness” field indicates which set of shearing parameters the program will use from the *Material Library*.

MATERIAL THICKNESS

0.250

in. (1/4")

To change the thickness, select the field and then type the new value in the Pop-up Calculator, or select one of the thickness buttons, and then select the “Enter >>” button. The Pop-up Calculator only enables buttons for thicknesses within the range of the specified material.

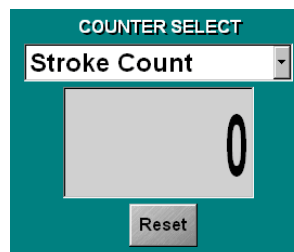


When the View Units are “English” and the thickness corresponds to one of the buttons, the thickness is also displayed with the gauge number or inch fraction designation in a label next to the “Material Thickness” field. The label text is the same as the text on the calculator add-on button.

COUNTER SELECT

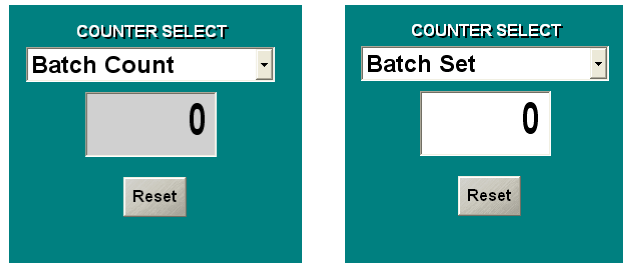
The Shear Control application includes a display to monitor the number of shear strokes or program cycles.

Stroke Count: When selected for Stroke Count, the display indicates how many times the shear ram has cycled since the last time the display was reset.

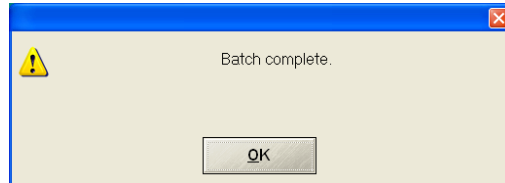


Batch Set and Batch Count: The operator can use *Batch Set* and *Batch Count* to automatically stop the shear after a preset number of program cycles, using this procedure:

1. In the “COUNTER SELECT” drop-down list, select “Batch Set”.
2. Select the “Counter” (number) field.
3. Type the number for the desired batch size using the Pop-up Calculator, and then select the “Enter >>” button to close the calculator. The “Counter” field displays the typed number.
4. Change the COUNTER SELECT list box to ‘Batch Count’.
5. Select the “Reset” Button.



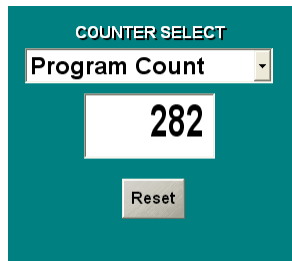
6. Run the program. The display begins with *Batch Count* equal to the *Batch Set* value. The control reduces the count by one every time the program finishes. When the *Batch Count* display reaches zero, the control disables the shear and displays the *Batch complete* message:



7. To re-enable the shear, select "OK" to close the message box. To run another batch of the same size, press "Cycle Start" and repeat the program.
8. To start another batch with a different number of program cycles, change the "COUNTER SELECT" drop-down list to "Batch Set", edit a new starting value, and then change COUNTER SELECT to "Batch Count".

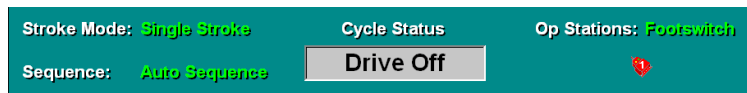
To exit the Batch Count mode, change the "COUNTER SELECT" drop-down list to "Batch Set", select "Reset" (the number changes to zero) and then change "COUNTER SELECT" to "Stroke Count" or "Program Count".

Program Count: When selected for *Program Count*, the display indicates how many times the shear has completed all the steps of the current program, since the last time the display was reset. The displayed value increases by one every time the program restarts with Step 1. Pressing the "Reset" button changes the displayed value to zero.



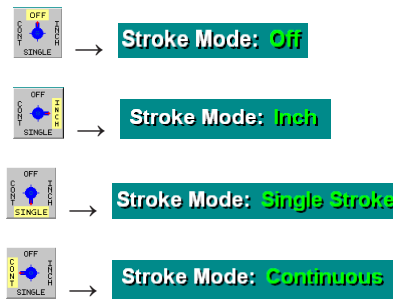
STATUS INDICATORS

The bottom of the Run / Edit page contains several labels and fields to indicate the status of the Shear Control.



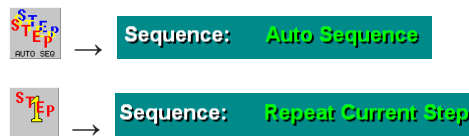
Stroke Mode Label

The Stroke Mode Label indicates the current operating mode selected with the “Stroke Mode” toolbar button. This label can identify the selection with more text characters than are visible on the button.



Sequence Label

The Sequence Label identifies the option selected with the “Sequence” toolbar button.



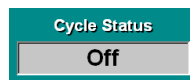
Cycle Status

This read-only field indicates the operating status of the Shear Control. The background color of the field may also change, to help indicate the status described by the text. This list describes the possible “Cycle Status” indicators:

Drive Off: (Gray background.) This status indicates that the Main Drive is off.



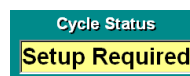
Off: (Gray background.) This status indicates that the Off mode is selected by the “Stroke Mode” toolbar button.



Idle: (Gray background.) This status indicates that the shear is in an operating mode, but the current program has not been started.



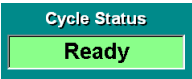
Setup Required: (Yellow background.) The “Cycle Status” field displays this text when the shear ram is not in position to start the next stroke. To move the ram to the starting position, tap on the footswitch. When the ram reaches the starting position, Cycle Status will change to *Ready*. If the shear has power-operated knife clearance, tapping the footswitch will also command any required knife clearance change.



Wait: (Yellow background.) This status notifies the operator that the shear is moving the gage or ram to the required position for the next step.



Ready: (Green background.) This status indicates that the operator can cycle the shear, by activating the current Operator Station devices (i.e. pressing the footswitch).



Error: (Red background.) This status indicates that the Shear Control has reported an error condition. To view the error message, select **View | Machine Faults** from the *Main* menu.



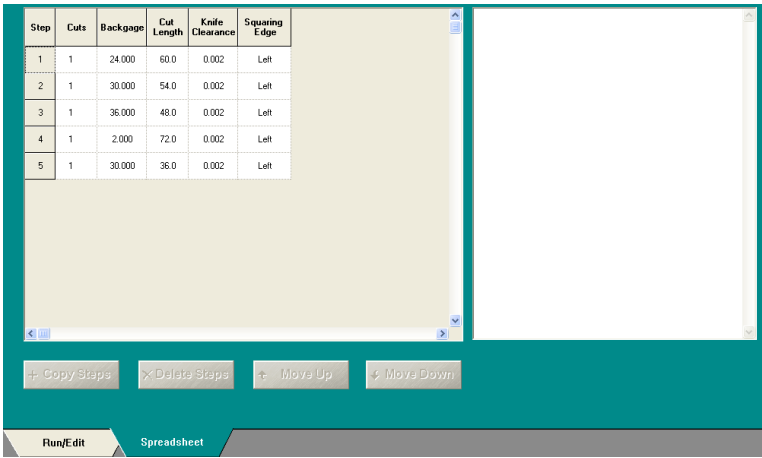
Op. Stations Label

This label indicates the current selection from the ‘Operator Station’ dialog. Under the label, the screen also displays icons identifying the number and status of any installed footswitches.



The color of the icon indicates the status of the footswitch. A gray icon indicates the footswitch is installed but not required by the current program. A red icon indicates the footswitch is required but not currently activated.

SPREADSHEET PAGE



The information provided on the Spreadsheet page is available and editable on the Run / Edit page. The Spreadsheet page provides another view of the data, using a different interface that can be helpful for certain operations. For example, the Spreadsheet page allows the user to view the settings of several program steps at the same time.

If the shear has optional Front Gage, Probes, Pneumatic Sheet Supports, or a Conveyor, the spreadsheet includes additional columns for settings related to those functions.

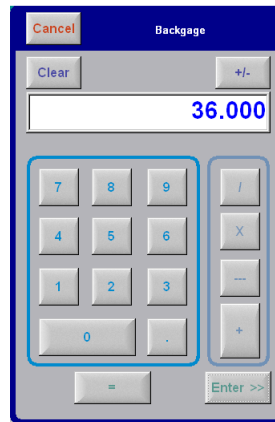
In the “SETUP NOTES” field, the user can type instructions or reminders for running the program. Selecting the “SETUP NOTES” field opens the Pop-up Keyboard to edit the alphanumeric text. The Setup Notes are saved as part of the program.

POP-UP CALCULATOR

OPENING THE CALCULATOR

When the ‘Use Pop-up Calculator’ check box is enabled (checked) in the User Preferences tab of the ‘Configuration’ dialog, the Pop-up Calculator will automatically be displayed if the user selects a numeric entry field. To enter a number in the selected numeric entry field, press the buttons on the Pop-up Calculator and then press the “Enter >>” button.

Note: In this description, the term “button” refers to Windows program buttons on the Shear Control Touchscreen. The term “keys” refer to the keys on a true keyboard.



The Pop-up Calculator may also be invoked by pressing the “TOUCHCALC” button in the Toolbar. This opens a stand-alone version of the Pop-up Calculator for quick calculations. There is no “Enter >>” button because the value is not associated with any particular field.

CALCULATOR BUTTONS

This section describes the buttons found on the Pop-up Calculator. For buttons found on the *Pop-up Calculator add-ons*, refer to the **CALCULATOR ADD-ONS** subsection.

NUMERIC BUTTONS

“0” thru “9” (Numbers): Puts the corresponding number in the display field.

“.” (Decimal Point): Puts a decimal point in the display field, if one is not already present.

MATH FUNCTION BUTTONS

“+” (Plus): Indicates Addition.

“-” (Minus): Indicates Subtraction.

“x” (Multiply): Indicates Multiplication.

“/” (Divide): Indicates Division.

ENTER AND EQUAL BUTTONS

Enter >>: Totals all pending operations and transfers the total to the original numeric entry field named in the Pop-up Calculator title bar. (Also, see **CHANGE/ADD TO...** topics under the **CALCULATOR ADD-ONS** subsection in this manual section.)

'=' (Equal): Totals all operations and puts result in the Pop-up Calculator display field.

OTHER BUTTONS

Cancel: Closes the Pop-up Calculator and restores the original numeric entry field value.

Clear: Clears all numbers and functions previously entered in the Pop-up Calculator, and displays a zero.

'+/-' (Sign-toggle): Changes the sign of the value displayed in the Pop-up Calculator display field from positive-to-negative or negative-to-positive.

EQUIVALENT BUTTONS AND KEYS

Note: The term “button” refers to the buttons on the Pop-up Calculator. The term “keys” refer to the keys on a true keyboard.

- The buttons “0” thru “9” are equivalent to the corresponding number keys on a standard keyboard.
- The “.” (Decimal point) button is equivalent to the period key on a standard keyboard and the decimal point on the numeric keypad part of a 101-key keyboard.
- The “+”, “-”, “x”, and “/” buttons are equivalent to the standard and numeric “+” keys, the standard and numeric “-” keys, the standard and numeric “*” keys, and the standard and numeric “/” keys, respectively.
- The “Cancel” button is equivalent to the “Esc” key on a keyboard.
- The “Clear” button and “C” key on the keyboard are equivalent.
- The “+/-” (Sign-toggle) button and “S” key on the keyboard are equivalent.
- The “=” (Equal) button is equivalent to the “=” key on the keyboard
- The “Enter >>” button is equivalent to the “Enter” key on either the standard keyboard or the numeric keypad.

CALCULATOR OPERATION

INVOKING THE POP-UP CALCULATOR

Pressing the “TOUCHCALC” button on the Toolbar will open the stand-alone version of the Pop-up Calculator. The title will be “CALCULATOR” and the “Enter >>” button and add-ons will be eliminated. The value displayed will be zero.

Selecting a numeric entry field will open the Pop-up Calculator. The name of the selected field will show in the title bar of the Pop-up Calculator. The value displayed will be the current value of the selected field. The “Enter >>” button and associated add-ons will be displayed.

DEFAULT VALUE

When the Pop-up Calculator opens, a value will be displayed. The value may be used or ignored. To use the value as part of a calculation, the first button pressed should be one of the math function buttons. To ignore the value, the first button pressed should be a number or the 'Clear' button.

Examples:

- “5 (displayed when Pop-up Calculator opens) + 3 =” will display the total of 5+3, or “8”.
- “6 (displayed when Pop-up Calculator opens) + 3 =” will display the total of 6+3, or “9”.

STANDARD FUNCTIONS

Two Operand Functions (An ‘operand’ is a quantity or value on which an operation is performed):

These are the standard functions, such as $3+2 =$ or $3*2 =$. The result of these is straightforward.

Three or More Operands:

Calculations using three or more operand functions are valid, such as “ $5x4+3x2+7+1 =$ ”,. The result will be computed using the standard order of precedence for mathematical operators. The standard order or precedence is:

1. “x”, “/”: Multiplication and division have the highest (and equal) precedence. (The “x” button on the Pop-up Calculator is the same as the “*” key.)
2. “+”, “-”: Addition and Subtraction have the lowest (and equal) precedence.

Operations of equal precedence are processed in left-to-right order.

Example: The Pop-up Calculator will perform the computation, “ $5x4+3x2+7+1 =$ ”, in the following steps:

1. First $5x4=20$ changing function to $20+3x2+7+1$
2. Next $3x2=6$ changing function to $20+6+7+1$
3. Next $20+6=26$ changing function to $26+7+1$
4. Next $26+7=33$ changing function to $33 + 1$
5. Finally $33+1=34$ (answer)

FUNCTION AND EQUAL SHORTCUTS

The Pop-up Calculator, like most computer calculators, has a couple of useful shortcut techniques.

Omitting the Last Number (press a function key then “=” or “Enter”):

Pressing a mathematical function button (“+”, “-”, “x”, “/”), then “Enter” or “=” will take the value in the Pop-up Calculator display field as the current and the following operand.

- “5 x =” will compute “ $5 \times 5 =$ ” for an answer of 25.
- “5 x 2 + =” will compute “ $10 + 10 =$ ” because the subtotal of 10 is displayed when the “+” button was pressed, so the “=” button took 10 as the current and next operand for the “+” function, for example $10 + 10$.

Pressing “=” Multiple Times:

To repeat the last operation, press “=” again.

Examples:

- “5 + 4 = =” will display the number 13 (that is, $5 + 4 + 4$).
- “5 + 4 x 2 = = =” will display the number 2197 (that is, $5 + 4 \times 2 = 13$ then $\times 13 \times 13$).

CALCULATOR EXAMPLES

REPLACING A VALUE

The Pop-up Calculator opens with a value already displayed in the Pop-up Calculator display field. Simply type the new number, and press “Enter >>” to accept that number.

Examples: Pop-up Calculator opens with “5.0” displayed in the display field. Press the “1” and “0” buttons to over-type that value, and then press the “Enter >>” button to accept that value and enter it into the numeric entry field being edited. “10.0” will now be displayed in that field.

TYPICAL TWO-NUMBER OPERATIONS

Example: Add 0.5 to the existing gage position value of 5.0.

Selecting the “Gage Dimension” field invokes the Pop-up Calculator. The Pop-up Calculator opens containing the value “5.0” (the current *Gage Dimension* value). To add to this value, press the “+” button on the Pop-up Calculator, then press the “.”, and “5” buttons.

At this point, either press the “Enter >>” button to immediately enter “5.5” into the “Gage Dimension” field, or press the “=” button to see the total in the Pop-up Calculator display field before entering the value into the “Gage Dimension” field using the “Enter >>” button.

Example: Enter a new value into the “Gage Dimension” field by subtracting 0.10 from 2.25.

Selecting the “Gage Dimension” field invokes the Pop-up Calculator. The Pop-up Calculator opens containing the value “5.5” (the current *Gage Dimension* value). To replace this value, start typing new values. Type “2”, “.”, “2”, and “5” using the number buttons or keys. Press the “-” button. Type “.”, and “1” buttons.

At this point, there are two ways to transfer the result into the “Gage Dimension” field. Pressing the “Enter >>” button will immediately enter the result “2.15” into the “Gage Dimension” field. To view the result in the Pop-up Calculator display field first, press the “=” button and then press the “Enter>>” button.

CALCULATOR ADD-ONS

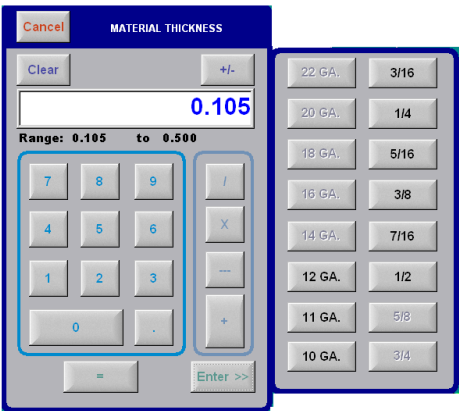
Calculator add-ons are special attachments to the Pop-up Calculator. Add-ons simplify entering or calculating and entering values for specific fields.

The Pop-up Calculator must be enabled in the User Preferences tab of the ‘Configuration’ dialog in order for these add-ons to display.

Add-ons are included for “Material Thickness”, “Cut Length” and “Gage Dimension” fields. In addition, add-ons will display for applicable fields to “Change All Steps”.

MATERIAL THICKNESS ADD-ON

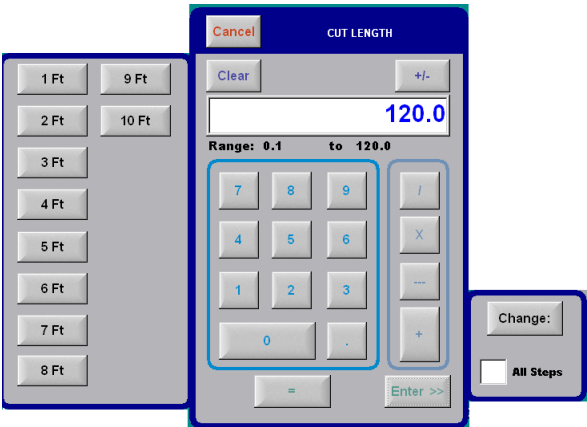
Selecting the “Material Thickness” field on the Run / Edit page will open the Pop-up Calculator with the *Material Thickness add-on*. This add-on displays buttons for up to 16 preset values. The add-on only enables buttons for thicknesses within the range of the currently specified material. Selecting one of the buttons will copy the thickness associated with that button into the Pop-up Calculator display field.



If View Units are “English” and the Thickness is selected with one of the add-on buttons, the software also displays the button text as a label next to the “Material Thickness” field.

CUT LENGTH ADD-ON

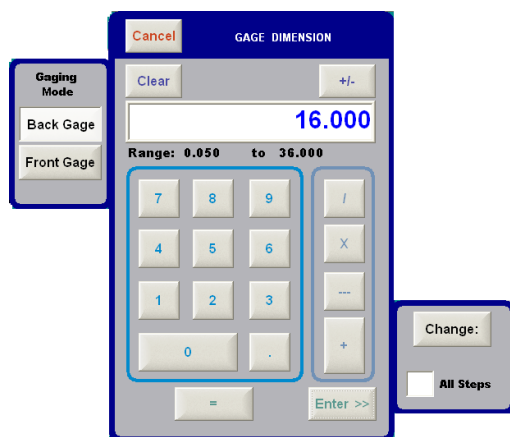
Selecting the “Cut Length” field on the Run / Edit page will open the Pop-up Calculator with the *Cut Length add-on*. This add-on displays buttons for up to 16 preset values. Selecting one of the buttons will copy the length associated with that button into the Pop-up Calculator display field. When the View Units selection is ‘English’, the buttons are labeled in feet and the associated length is entered in inches.



If View Units are ‘English’ and *Cut Length* is selected with one of the add-on buttons, the software also displays the button text as a label next to the “Cut Length” field.

GAGE ADD-ON

When the shear has the optional front gage and the operator selects the gage dimension field, the Pop-up Calculator has an add-on with buttons to select the Back or Front Gage. The default selection is the gage shown on the Run Edit page. If the operator selects a different gage and closes the calculator with “Enter >>”, the ‘GAGING METHOD’ box on the Run Edit page will change to indicate the new selection.



CHANGE/ADD TO ALL STEPS ADD-ON

When the numeric entry field for “Gage Dimension”, “Cut Length”, or “Number of Cuts” is selected, the Pop-up Calculator will include the *Change/Add To All Steps* add-on.



Checking the ‘All Steps’ check box will apply the value shown in the Pop-up Calculator display field to all Steps of the current program when the “Enter >>” button is pressed.

The “Change” button toggles between the **Change** and **Add To** functions when pressed.



When the button label reads “Change”, the value shown in the Pop-up Calculator display field will replace the value that previously existed in the original field. When the button label reads “Add To”, the value shown in the Pop-up Calculator display field will be added to the previous value in the original field.

Example: Change All Steps in a program - Replace all *Cut Length* values in the program to 6 ft. (72.0 inches): In the Pop-up Calculator, check the ‘All Steps’ check box, and make sure the “Change” button label is displayed; toggle the button if necessary. Select the “Enter >>” button on the Pop-up Calculator. The *Cut Length* values will be changed to 72.0 inches for all Steps in the program.

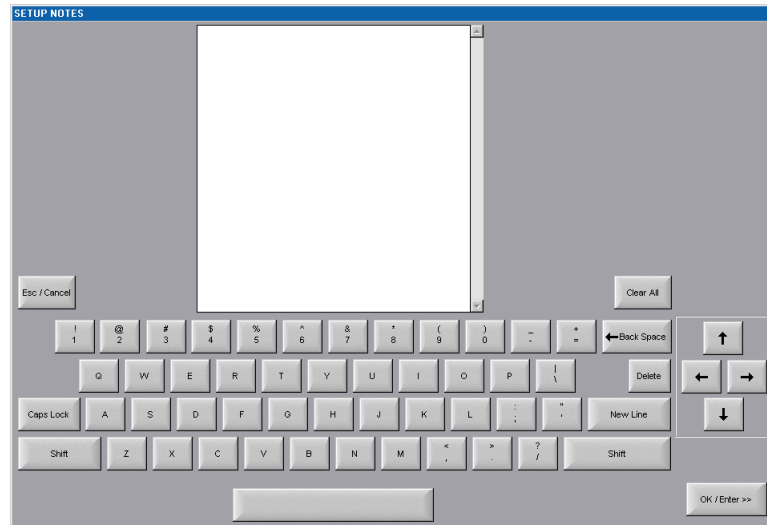
Example: Add displayed value to All Steps in a program - Increase all *Cut Length* values in the program by 2 ft. (24.0 inches): In the Pop-up Calculator, check the ‘All Steps’ check box, and make sure the “Add To” button label is displayed. Select the “Enter >>” button on the Pop-up Calculator. The *Cut Length* values will be increased by 24.0 inches for all Steps in the program.

Example: Subtract a value from All Steps - Type a negative value in the display field (use the “+/-” button to change the sign of the value) and use the **Add To** function.

POP-UP KEYBOARD

GENERAL INFORMATION

The Pop-up Keyboard is a special feature of the Shear Control software specifically designed for easy entry of characters using a Touchscreen instead of a keyboard.



Selecting on an alphanumeric entry field will open the Pop-up Keyboard if the option is enabled in the User Preference tab of the 'Configuration' dialog. An example of an alphanumeric entry field is the "Setup Notes" field on the Spreadsheet page.

While the Pop-up Keyboard is displayed, buttons pressed on the keyboard will display in the display field of the Pop-up Keyboard. This display field will match the size of the original alphanumeric entry field. Pressing the "OK/Enter" button will close the Pop-up Keyboard and transfer the information into the original alphanumeric entry field.

KEYBOARD BUTTONS

Alphanumeric Buttons

Letters, Numbers, and Special Characters: Puts the corresponding character in the Pop-up Keyboard display field.

OK and Cancel Buttons

Esc/Cancel: Rejects any changes to data and closes the Pop-up Keyboard.

OK/Enter >>: Accepts any changes made to the display field and closes the Pop-up Keyboard.

Movement Buttons

←, →, ↓, ↑: These buttons move the cursor within the display field. They do not change any character data.

"New Line" (↵): This button advances the cursor to the start of the next new line. It performs a CRLF (Carriage Return - Line Feed), but does not accept the data or close the Pop-up Keyboard.

Other Buttons

"Backspace" (←): Deletes the character to the left of the cursor and moves the cursor to that position.

"Delete": Deletes the character to the right of (or on top of) the cursor.

“Clear All”: Clears all data in the display field and moves the cursor to the top left corner of the field.

“Shift”: Either the left or right shift button will cause the next character typed on the Pop-up Keyboard to be uppercase. After typing that character, the shift button will toggle back to deselected.

“Caps Lock”: When this button is depressed, all standard characters typed will be uppercase, until the “Caps Lock” button is toggled back to the raised position.

Equivalent Buttons and Keys

Note: *The term “button” is used to refer to the buttons on the Pop-up Keyboard. The term “keys” refer to the keys on a true keyboard.*

- The “Esc/Cancel” button is equivalent to the “Esc” key on a keyboard.
- The “Caps Lock” and “Shift” buttons are equivalent to the corresponding keys on a standard keyboard.
- The “New Line” button is equivalent to the “Enter” key on a standard keyboard.

KEYBOARD OPERATION

Invoking the Pop-up Keyboard: When the Pop-up Keyboard is opened by selecting an alphanumeric entry field, the name of that field is displayed in the Pop-up Keyboard title bar. The Pop-up Keyboard display field will contain the current contents of the selected alphanumeric entry field. The cursor will be positioned after the last existing character, or at the top left corner if the field is empty.

WINDOWS ADMINISTRATION

USER ACCOUNTS

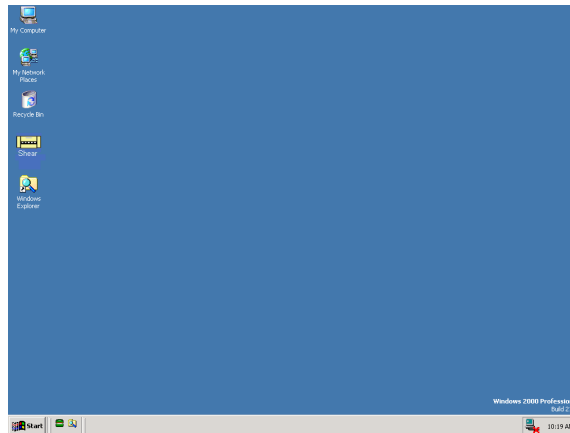
A number of Windows Administration procedures are available to Shear Control user. These include network setup, upgrading CINCINNATI INCORPORATED software, disk defragmentation, creating emergency repair disks, and setting system date and time. All of these functions are available in the Setup or Manager user accounts.

The Setup account has Administrator privileges and therefore can be used for network setup. The applications available on the Setup desktop are limited to those administrative tasks allowed to the customer. The Shear Control application cannot be operated from the Setup account.

The Manager account has access to all applications available to the Operator account, plus the ability to back up and restore data specific to the individual Shear.

***Note:** The Operator account desktop has the same applications as the Manager account.*

MANAGER DESKTOP



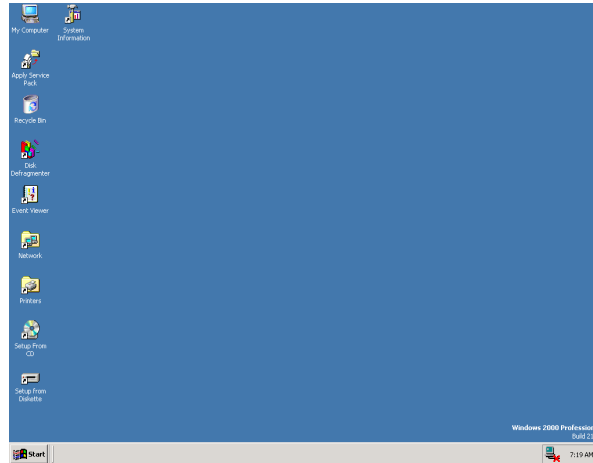
The following are available from the Manager Desktop:

“My Computer”, “My Network Places”, “Recycle Bin”, and “Windows Explorer”: Typical shortcuts for Windows.

“Shear”: Starts the Shear Control application.

“Start” button: Use this to access the Machine Backup / Restore and other available applications.

SETUP DESKTOP



The following are available from the Setup Desktop:

“My Computer”, “My Network Places”, “Recycle Bin”, and “Windows Explorer”: Typical shortcuts for Windows.

“Apply Service Pack”: It is a good idea to install service packs after any modification to Windows, including network setup. All service pack data is on the hard drive. No CD is required. After service pack is installed, the computer will automatically reboot.

“Disk Defragmenter”: Use this utility to reduce disk fragmentation and optimize hard drive performance.

“Event Viewer” and “System Information”: These utilities are used to gather diagnostic information about the system.

“Network”: This is the Network applet from the Windows Control Panel. Use it to install network protocols and services, as well as joining an NT Domain. See **NETWORK SETUP** subsection in this section of the manual.

“Printers”: This is the Printers applet from the Windows Control Panel. Use it to configure printers that the Shear will use.

“Setup from Diskette” and “Setup from CD”: These shortcuts allow Shear software to be upgraded using applications developed by CINCINNATI INCORPORATED. Insert the software upgrade medium and double-click the appropriate shortcut.

Time/Date: Double-click the clock in the lower right-hand corner of the screen to modify the time or date.

“Start” Button: Use this button to access the Touchscreen calibration, Scan Disk, Backup (also used to create an Emergency Repair Disk), and other applications.

DRIVE DESIGNATIONS

Floppy Drive A: This is the 3.25” floppy disk drive on machines equipped with a floppy drive.

Hard Drive C: This is the hard drive partition, which contains Windows, and all control applications and data for running the Shear.

USB Flash Drive E: This is the USB flash drive on machines equipped with a USB flash drive.

CD ROM Drive Z: This is the CD-ROM drive on machines equipped with a CD-ROM drive.

SOFTWARE UPGRADES

While logged in to the Setup account, insert the floppy disk, CD, or USB flash drive from CINCINNATI INCORPORATED. If using a floppy disk, double-click on the “Setup from Diskette” shortcut. If using a CD, double-click on the “Setup from CD” shortcut. If using a USB flash drive, browse to the USB flash drive using Windows Explorer, double-click the USB flash drive, Drive (E:), then double-click the “.exe” file. Follow the prompts provided by the Setup software. Files are loaded for the Shear Control application. The executable terminates and the upgrade is complete.

IMPORTANT: *Do not attempt to install desktop applications without first consulting CINCINNATI INCORPORATED.*

DISK DEFRAGMENTATION

The Disk Defragmenter should be used periodically to maintain hard drive performance. Use the **Analyze** function to determine if defragmenting the drive is necessary. If so, use the **Defragment** function to reduce file fragments. It may be necessary to run the **Defragment** function several times to clean up the disk. Once a **Defragment** cycle is completed, re-run the **Analyze** function to determine if another **Defragment** cycle is needed.

EMERGENCY REPAIR DISK

If the machine is equipped with a floppy disk drive, this process will create a floppy disk that can be helpful in recovering from problems that prevent Windows from booting.

While logged on in the Setup account, insert a blank, formatted floppy disk and go to Start | Programs | Setup | Backup. Once Backup is started, select the “Emergency Repair Disk” button and follow the instructions.

NETWORK SETUP

The Shear Control incorporates all networking capability offered by Windows. There is a diverse array of networking options and properties. This document does not attempt to present a detailed step-by-step procedure for dealing with all of them, but describes details that apply to the Shear Control.

Please contact your company’s System Administrator for custom network setup.

General Setup Information

- The Shear motherboard contains a built-in 10/100 Ethernet port.
- All Windows setup files reside on the hard drive. Setup files are in the following directories:
 1. “C:\WinSetup\Win2k” - Same as “\I386” directory on the distribution CD
 2. “C:\WinSetup\ServicePack” - Same as “\I386” directory on the Service Pack CD
- Whenever prompted for a manufacturer’s disk or setup disk, enter one of these directories.
- Network setup and testing operations can be performed from the Setup account. The desktop contains a Network shortcut, which runs the Windows Control Panel Network applet.

It is recommended that the Service Pack be reapplied after any change to the network setup (or any other Windows setup change, for that matter). This is done by double-clicking the shortcut labeled “Apply Service Pack” on the desktop of the Setup account. No CD is required, as noted above; the service pack is on the hard drive. After applying the service pack, the computer will automatically reboot.

Installing and Removing Protocols and Services

TCP/IP and NetBEUI protocols are pre-installed on the Shear Control at the factory. These may be replaced or added to, as needed. Following are the basic steps:

1. Double-click the 'Network' icon on the setup desktop, and then double-click the connection to modify.
2. To add or remove a protocol or service, highlight the desired item and select "Install" or "Uninstall".
3. Select the desired service or protocol from the menu.
4. When prompted for a Windows Setup Disk, enter "C:\WinSetup\Win2k" instead of Z:\I386. (No Windows Distribution CD is required.)
5. If prompted with "Do you want RAS to support this protocol?", answer "No" except when installing NetBEUI (which should already be installed).

It is a good practice to restart the Shear Control after installing each protocol or service. Windows does not force this, but the procedure reduces problems.

Joining a Domain

The Shear Control can be added to a Windows Domain. Following are the basic steps:

1. Double-click the 'Network' icon on the desktop.
2. In the *Network and Dial-up Connections* window, select "Advanced" and "Network Identification" from the menu.
3. In the *System Properties* window, select the "Properties" button from the Network Identification tab.
4. In the *Identification Changes* window, select the "Domain" radio button and enter the domain name in the edit field.
5. Select the "OK" button.
6. When prompted, enter user name and password of a Domain Administrator.

Mapping Network Drives

1. Double-click 'Windows Explorer' icon on the desktop.
2. In the Explorer window, pick the *Tools* menu and select "Map Network Drive".
3. Select the 'Reconnect at logon' check box if desired.
4. Enter the desired drive letter and network folder.
5. To log onto the host as a user other than current account, select "Connect using a different user name" and enter the information.
6. Select the "Finish" button to complete the drive mapping operation.

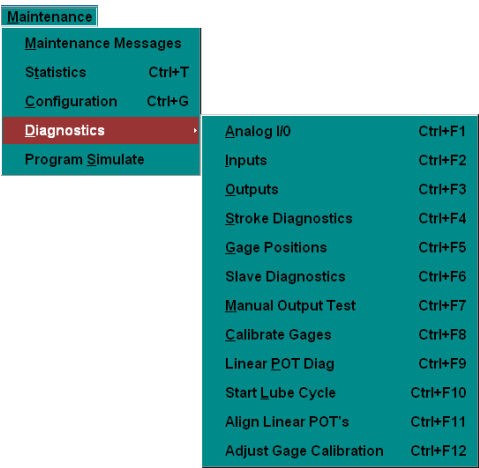
Multiple Operator User Accounts

If the Shear is part of a domain, then any authenticated user in that domain is viewed by the Shear as an Operator. The default user profile is the Operator account profile, so any member of the domain has the permissions, policy restrictions, and desktop of the Operator. Network drives are mapped on a per-user basis, so each user selects an individual network drive-mapping configuration.

DIAGNOSTICS WINDOWS

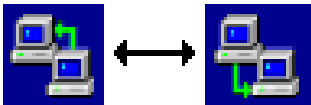
DIAGNOSTICS MENU

The Shear Control application has several diagnostic dialogs available under **Maintenance | Diagnostics**:



The diagnostic dialogs have the following characteristics in common:

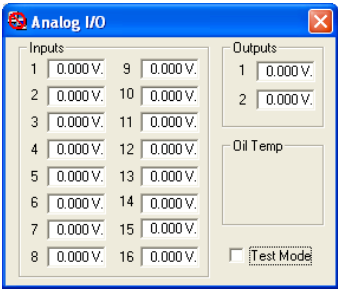
- They are always displayed on top of all other windows and dialogs.
- Their last position is remembered; so, when a diagnostic dialog is opened, it is displayed in the same location on the screen.
- They can be opened and closed quickly using the keyboard shortcuts (for example, 'Ctrl+F1' for Analog I/O)
- The data on the dialogs refresh automatically (except as noted), approximately 2 or 3 times a second. The dialog indicates when it updates the displayed data; the green arrow in the title bar icon toggles between two locations:



The dialogs display a different title bar icon when the user interface computer is not communicating with the slave computer. This icon indicates that displayed data may be invalid:



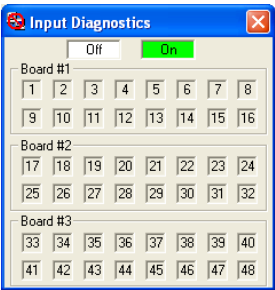
ANALOG I/O



This diagnostic dialog shows the values of the 16 analog inputs (in Volts), the 2 analog outputs (in Volts), and the oil temperature (in °F). Oil temperature(s) will only be displayed if the machine is equipped with an oil temperature sensor.

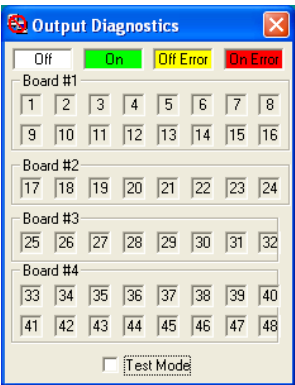
The ‘Test Mode’ check box will put the Analog and Digital outputs in test mode. In this mode, the main drive is turned off, a triangle wave is output on the analog outputs and a “walking ones” test is performed on the digital outputs.

INPUTS



This dialog shows the status of the 48 digital inputs. Green indicates that an input is on and white indicates that an input is off.

OUTPUTS



This dialog shows the status of up to 32 digital outputs. Green indicates that an output is on; white indicates that an output is off; yellow indicates that an output is “Off Error”; red indicates that an output is “On Error”, and gray means that an output is not installed.

Off Error: This status indicates the Output should be Off, but feedback indicates that it is On. This could be caused by a short circuit to Ground or a failed power supply.

On Error: This status indicates the Output should be On, but feedback indicates that it is Off. This could indicate a burned out Output.

The ‘Test Mode’ check box will put the Analog and Digital outputs in test mode. In this mode, the main drive is turned off, a triangle wave is output on the analog outputs and a “walking ones” test is performed on the digital outputs.

STROKE DIAGNOSTICS



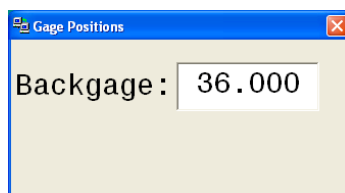
| Low Side Position | High Side Position | Low Side Actual | High Side Actual | Cycle Time | Elapsed Time | Time Stamp |
|-------------------|--------------------|-----------------|------------------|------------|--------------|-------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:13 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:14 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:14 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:14 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:39 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:40 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:42 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:02:43 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:03:23 AM |
| 0.00 | 0.00 | 0.00 | 0.00 | 1.0 | 1.5 | 08:03:24 AM |

This dialog shows stroke statistics for the last 300 strokes. The function to save stroke data is always on; it does not need to be enabled or turned on. The saved stroke data is cleared when the Shear Control application starts, or when the “Reset” button is pressed. The dialog displays the current number of saved strokes in the upper left corner. The **Low Side** and **High Side** column titles refer to the hydraulic cylinders that move the shear ram. The High Side cylinder moves the side of the ram where the vertical knife opening is larger.

Cycle Time is the actual time the ram was moving during the stroke. The *Elapsed Time* includes the *Cycle Time*, time spent in dwells and time spent when the active operator stations are released.

The table of *Stroke Diagnostics* data can be saved by pressing the “Save...” button. The default file name is “strkdiag.txt”; however, the user can specify any name. This function saves the data in a tab-delimited text file where it can be viewed later or imported into a spreadsheet.

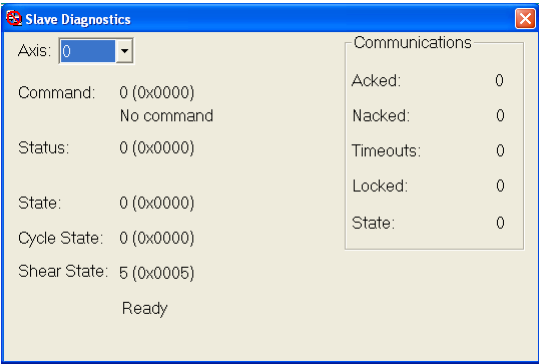
GAGE POSITIONS



Backgage: 36.000

This diagnostic dialog shows the current position of any enabled gages. If the View Units is set to **English | Decimal** or **English | Fraction**, the positions are displayed in decimal inches. If the View Units is set to **Metric**, the positions are displayed in millimeters. The dialog displays “?????” when a gage is not calibrated.

SLAVE DIAGNOSTICS

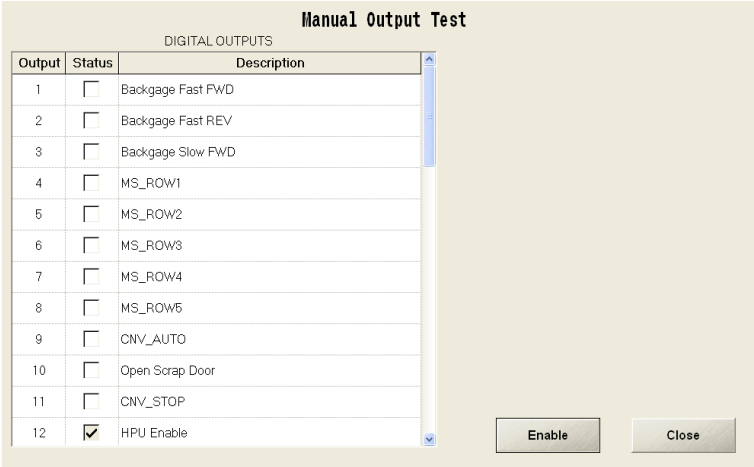


The left side of this dialog is used by CINCINNATI INCORPORATED personnel. The right side shows the status of the serial communications link between the Shear Control and the Slave computer. The number of “Acked” packets should increase several times a second. Excessive numbers of “Nacked” packets or time-outs may indicate a problem with the serial communications cable.

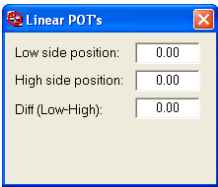
MANUAL OUTPUT TEST

***Note:** This function is only used by CINCINNATI INCORPORATED personnel.*

This dialog allows the user to test the operation of individual outputs. To specify an output for testing, select the empty ‘Status’ check box next to the output description and then select the “Enable” button. To test the selected output, press the #1 footswitch to turn on the output. The output will turn off when the footswitch is released. Groups of independent outputs can be tested together.



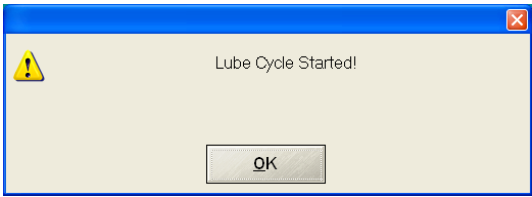
LINEAR POT DIAGNOSTICS



This dialog displays the positions of the high and low-side hydraulic cylinder potentiometers, and their difference. These values are always displayed in inch units, regardless of the View Units selection.

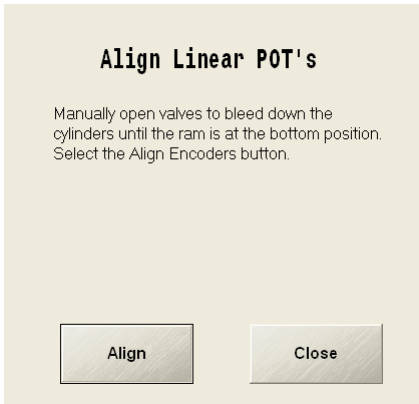
START LUBE CYCLE

This menu item commands the automatic lubrication system to complete one cycle. A message box confirms the selection:



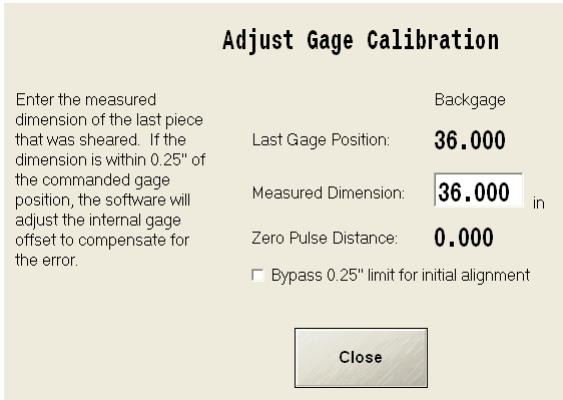
ALIGN LINEAR POTS

This dialog instructs the maintenance or service person to move the shear ram to the bottom position, so the control can adjust internal offset values for the linear potentiometers. The potentiometers (pots) measure the positions of the hydraulic cylinders. For instructions on bleeding down the cylinders and making sure they are both physically bottomed out, see **MATERIAL AND LENGTH CONTROL** in the **MAINTENANCE** section of the **Shear Operation, Safety, and Maintenance Manual**.



ADJUST GAGE CALIBRATION

This Maintenance menu item allows the maintenance or service person to input the measured dimension of a test piece. Select the “Measured Dimension” field and type the dimension in the Pop-up Calculator. Close the calculator with “Enter >>”, and the control will compare the typed dimension with the gage position commanded for the last ram stroke. If the measurement is within 0.250 inches of the commanded dimension, the control adjusts the internal gage offset to compensate for the error. If the difference is more than 0.250 inches, the control displays an error message.



Last Gage Position: This label displays the last commanded gage position. The software displays “?????” when the gage has not been calibrated.

Measured Dimension: Select this field to enter the dimension of the sheared test piece, using the Pop-Up Calculator.

Zero Pulse Distance: The dialog only displays this label for the Administrator user. It indicates the distance between the calibrate limit switch and the first zero pulse received.

“Bypass 0.25” limit for initial alignment”: The dialog only displays this check box for the Administrator user. If checked, the software will calibrate the gage position when the error in the test piece dimension is more than 0.25 inches. This check box is for use by CINCINNATI INCORPORATED personnel only.

LCD DISPLAY ERROR MESSAGES

MESSAGES A THRU K

Axis did not position to within the configured tolerance.

After the control moves an axis, it compares the actual position and the commanded position to determine the position error. If position error is more than the tolerance specified in the *Maintenance Configuration* window, the control displays the error message. For example, after the back gage moves to a commanded position, the control compares the position error with Slave Parameter “Bkg In Pos Tolerance”.

This error is normal when starting a new gage, until the overshoots are established. Press the “Clear” button on the error dialog and then press Cycle Start to reposition the gage. If this error happens unexpectedly, check the gage for binding. Make sure configuration parameters for overshoot compensation and tolerance are set properly.

Both gage up and down limit switches are on.

Under normal conditions, only the Up limit switch input or the Down limit switch input will be on. If both inputs are on, the switch is not operating properly, an input is not operating, or the control has a wiring error. This message applies only to the 375 through 500 HS series shears with swing-up back gage.

Calibrate switch not found during calibration (timed out).

When calibrating the gage, the control allows 2 minutes for the gage to move backward to the calibrate limit switch. If it takes longer, the control stops the gage and displays this error message. This error could indicate a gage is moving too slowly, or a mechanical failure is allowing the encoder to turn without moving the gage.

Calibrate switch stuck on.

When calibrating, the gage is allowed 5 seconds to move forward, away from the calibrate switch. If it takes longer, the control stops the gage and displays this error message. This error could indicate a stuck calibrate switch, a short circuit, or a failed input.

Cannot move back gage when it is swung up.

This error is displayed if the operator attempts to change the back gage dimension when the gage is in the up position. To avoid mechanical interference, the control does not allow the back gage to move in or out when the gage is up. This message applies only to the 375 through 500 HS series shears with swing-up back gage.

Check 24 volt power.

The control detected a loss of 24 volt power. Turn the main disconnect off for a full minute, then apply power. If the problem persists, check the 24 volt power supply level.

***Note:** This error may also indicate an input board failure. The control infers this error if all inputs on the first input board are off. During normal operation, at least one input on the first board is on.*

Check input board #1, Check input board #2, Check output board #1 (LC), Check output board #2 (HC), Check output board #3 (HC), Check output board #4 (LC), Check output board #5 (LC).

During power-up, the control reads an ID code from each I/O board to verify the board is installed properly and working. If any board does not return the correct ID code, the control will display an error message. These errors may indicate any of the following causes:

- The I/O board failed, had an improper cable connection, or lost 24 volt power.
- The failure of one I/O board prevented other boards, connected downstream in series, from operating properly.
- Based on Configuration settings, the control expected an ID code from a board that was not installed.
- An I/O board reported an improper ID code (but otherwise worked normally).

Notes: The control only treats an I/O board error message as a warning. The error condition does not prevent the control from attempting to operate the machine.

The control only checks the I/O boards at power-up. After an operator acknowledges the error message, the control does not repeat the warning.

Communications watchdog expired.

The slave control will disable motion if it does not receive regular communications from the Shear Control. A configuration value sets the maximum time allowed between communications. This error could occur if the Shear Control application is terminated and then restarted, or if the communications cable is disconnected.

Configuration memory corrupt.

This message indicates more than three configuration values were out-of-range during power-up. This error could be caused by updating the software, replacing the slave board, or replacing a battery on the slave board. To clear the error message, close and restart the Shear Control application.

Current step cannot have incremental front gage position.

A program step attempted to command an incremental front gage position when the preceding step also commanded an incremental front gage position. Either revise the current step to specify an absolute front gage position, or edit the program to command an absolute front gage position in the preceding step (add a new step or edit the preceding step).

Downloaded configuration value out of range.

The Shear Control sent a configuration file with one or more parameters out of range. Contact CINCINNATI INCORPORATED Service Department.

First step cannot have incremental Front gage position.

To specify a front gage position in the first program step, the gage dimension must be an absolute position (a positive number).

Foot switch contacts closing out of sequence.

The footswitch has three positions: up (released), middle and down. In normal operation, the switch for the middle position will close before the switch for the down position. If the control detects that the down position switch closes before the middle position switch, it displays the error message. The error indicates that a footswitch is wired incorrectly or an input has failed.

Front Gage increment and number of cuts is less than minimum gage travel range.

When a program step commands an incremental front gage position and more than one cut, the front gage moves the incremental distance for each cut. However, if the final front gage position would exceed the travel range, the control displays this message and does not run the program. Check if the incremental distance is correct, or decrease the number of cuts in that step.

Gage bar not fully up or down.

The back gage angle has two limit switch inputs; one to indicate that the gage is in the Up position and one to indicate that it is Down. One of these switch inputs must be on to operate the shear. Activate the Gage Up/Down selector switch to move the gage angle up or down.

High side POT failure.

Each hydraulic cylinder has a potentiometer (POT) to indicate position. If the analog signal indicates the voltage from the POT is less than 0.01 volt or greater than 9.99 volts, then the control assumes the POT is not working properly. Check the wiring to the POT. Replace and recalibrate the POT if necessary. This error will also occur if the POT is pushed all the way to its end of travel.

***Note:** The High side cylinder supports the side of the ram where the vertical distance between the knives is larger.*

Hold down pressure switch stuck on.

The control detected that the hydraulic pressure switch for the material holddown cylinders is stuck on. The switch should turn off when the holddowns are released. Make sure that the switch activation pressure is set properly. Check the function of the input to the control. If the holddowns do not release in a timely fashion, check the operation of the holddown release valve.

Inputs not configured correctly.

This error is displayed if the control detects active inputs on a board that is not configured. Make sure the number of configured input boards matches the number installed.

Lost clamp pressure while shearing.

If the holddown pressure switch turns off during a shearing operation, the shear will stop and display this error. If this occurs, check that the pressure switch is adjusted properly. Check that the accumulator is properly charged. Check for leaks. Check the operation of cartridge valve #7.

Low hydraulic oil level.

If the hydraulic oil drops below the minimum level, and the shear is equipped with an oil level switch, the control will display this error message and shut down the main drive. Fill the hydraulic reservoir until the oil level is centered in the sight glass.

Low side POT failure.

Each hydraulic cylinder has a potentiometer (POT) to indicate position. If the analog signal indicates the voltage from the POT is less than 0.01 volt or greater than 9.99 volts, then the control assumes the POT is not working properly. Check the wiring to the POT. This error will also occur if the POT is pushed to its end of travel. Replace and recalibrate the POT if necessary.

***Note:** The Low side cylinder supports the side of the ram where the vertical distance between the knives is smaller.*

Lubrication fault, switch did not cycle.

A lubrication cycle started, but the switch indicating successful delivery of oil to the divider valves did not cycle. Check for proper operation of the lubrication valve and divider valves. To clear the fault, a successful lube cycle must take place. To start a new cycle, select “Start Lube Cycle” in **Maintenance | Diagnostics**. This message applies only to 375HS14, 500HS, and 750HS series shears.

Lubrication reservoir is empty.

The float switch in the lubrication system indicates the reservoir is empty. This message applies only to 375HS14, 500HS, and 750HS series shears.

MESSAGES M THRU Z

Main drive must be on to perform requested operation.

This warning is displayed if the operator activates a control that requires the hydraulic pump motor (the main drive) to be on, and the motor is off.

Note: The gage motors are interlocked with the hydraulic pump motor.

Mode selector is OFF.

An operator station device (footswitch) was activated when the Stroke Mode selector was set to “OFF”.

No motion.

If the control asks for motion and the axis (shear or gage) does not move at the required speed, the control will display this error message and shut down the hydraulic pump. When the gage is commanded to move, the control checks gage velocity by measuring how quickly the position encoder value changes. If the gage does not move at the expected speed, or moves in the wrong direction, then the control stops the gage and displays the error message.

If the gage does not move at all, check the circuit breaker on the motor controller, check the operation of the power relay that provides 115V power to the motor controller, and check the wiring to the motor. If the gage moves too slowly, check for mechanical binding or lack of lubrication and check the voltage adjustment on the motor controller.

If the motor appears to be running at the proper speed and direction, check the encoder for proper operation and count direction; check the minimum speed configuration parameters and check the transition time parameters. If the motor turns in the wrong direction, swap the motor leads.

No probes selected.

This warning is displayed if the probe mode is set to “Foot and Probe” or “Probe Only” and no probes are selected. At least one probe must be selected to use these modes.

No zero pulse received when expected.

The control uses the zero pulse to make sure the gage encoder count value is accurate. The zero pulse should occur once every revolution of the encoder. If the encoder count indicates that the encoder turned more than one revolution without sending a zero pulse, then the error message will be displayed. Gage positioning will not be interrupted; the gage will finish its move. Use a logic probe to verify that the CPU receives the Z-pulse and its complement Z' when the encoder turns more than one revolution. Check that the zero pulse filter (configuration parameter) is set properly and is not too large. This error will also occur after a memory loss, until the gage is calibrated. Check the wiring of the Z and Z' signals. Check the encoder cables, especially the RJ45 connectors.

Oil temperature high.

This warning message will be displayed when the oil temperature is above the operating range and the shear is equipped with the oil temperature sensor. If the temperature continues to rise, the control will shut down the main drive. The control will not allow the operator to restart the main drive until the oil cools to an acceptable temperature.

Operator control switch is off.

This message is displayed if a control is activated (footswitch or probe) when the operator control keyswitch is off. Operator control functions are disabled when the keyswitch is off.

Power conservation.

The main drive was shut down due to lack of activity. The Power conservation time can be set in the *Configuration* window. To disable the power conservation function, set the time parameter to zero.

Previous step must use Frontgage to use incremental move.

A program step attempted to command an incremental frontgage position when the previous step specified a backgage position. Either revise the current step to specify an absolute frontgage position, or edit the program to command an absolute frontgage position in the preceding step (add a new step or edit the preceding step).

Recommended Knife Clearance has changed. Verify proper shims are in place.

For a shear with manual knife clearance adjustment, this message reminds the operator that the edited program will require a different knife clearance than the previous setting.

Temperature sensor has failed.

If the oil temperature sensor indicates a value less than zero degrees Fahrenheit, the control infers that the sensor or interface has failed, or has a wiring problem. The heater output will be disabled to prevent overheating of the oil (caused by loss of temperature feedback). The main drive will be disabled to prevent pump damage.

Timed out waiting for clamp pressure.

The control allows 1.5 seconds for pressure to build in the holddown cylinders after activating the hydraulic valves. If this error occurs, check that the pressure switch is operating properly and is set to the proper pressure. Check the function of the input.

Unexpected motion.

The slave control will shut down the hydraulic pump and issue this error if it detects axis motion when the axis (ram or gage) should be stopped. The test for motion is several consecutive velocity measurements greater than a configurable threshold velocity. If the encoder indicates that the gage is moving, and the control has not issued a move command, then the control will display the error message and remove power from the motor controller.

Unexpected gage motion could be caused by a short circuit in the wiring between the I/O board and the motor controller, a failed motor controller, improper configuration, or an outside force back-driving the gage. Check that the transition time configuration parameter is set long enough to allow the gage to come to a complete stop after positioning. If this error occurs when the shear is stroked, look for loose encoder or gearbox mounting. Also, check that the flexible shaft driving the back gage gear box/encoder is properly restrained with cable clamps.

Wrong operator control.

This warning is displayed if the operator activates a disabled footswitch.

Zero pulse error.

A zero pulse was received from one of the gage encoders, and the encoder count value was out of tolerance. The incremental encoder used for position feedback is equipped with a zero pulse or index pulse that occurs once every revolution of the encoder. The control uses the zero pulse to accurately calibrate the encoder and to check the validity of the position indication. When the control receives a zero pulse, it checks if the position counter indicates the expected location of the zero pulse. If the difference between the expected and actual locations exceeds the tolerance value (configuration parameter), then the control will display the error message, stop the gage, and begin the next move with a calibration.

The zero pulse error can be caused by a faulty encoder, faulty wiring, improper configuration, or a tight tolerance parameter. Check the inputs of the differential line receiver on the CPU to make sure that all four encoder signals (*A A' B B'*) change state when the encoder turns. Make sure that the encoder counts per revolution setting (configuration parameter) matches the encoder.

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