INTELLI-FOLD™

Operations Manual

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Front Panel Overlay

	These are the soft-keys. The graphics above the keys will change depending on the screen displayed.

Help	Press for screen or item-specific help.
Auto	Press to navigate to Auto Screen
Manual	Press to navigate to Manual Screen
Program	Press to navigate to Program Screen

	Key switch that selects 1- or 2-man operation.
	Press and hold to jog the Folding Beam up. If the Upper Jaw is not closed, the Folding beam will not move up.
	Press and hold to jog the Folding Beam down.
	Press and hold to jog the Upper Jaw up. If the Folding Beam is up, the Upper jaw will not open.
	Press and hold to jog the Upper Jaw down. If the Folding Beam is up, the Upper Jaw will not close.
	Press and hold to jog the Rotary Shear away from home. If the Folding Beam is up or the Upper jaw is open, the Rotary Shear will not jog.
	Press and hold to jog the Rotary Shear towards home. If the Folding Beam is up or the Upper Jaw is open, the Rotary Shear will not jog.
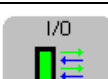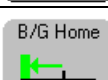
Manual Screen
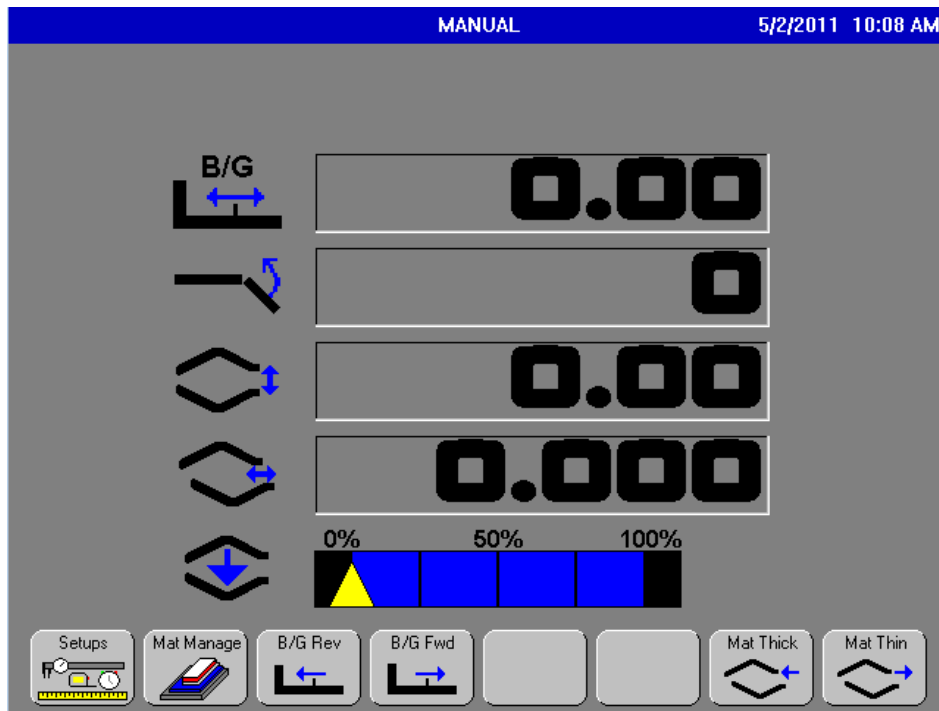
Setups	Press to enter the Setups Screen for Parameters and to bring up another set of function keys for Compact Flash, Touch Screen Calibration, Machine Calibration, Inputs and Outputs, Backgauge Home, and Security.
Mat Manage	Press to enter the Material Management Screen.
B/G Rev	Press and hold to jog the backgauge to the rear of the machine.
B/G Fwd	Press and hold to jog the backgauge to the front of the machine.
Mat Thick	Press and hold to increase the material thickness. This moves the upper jaw away from the folding beam. (if installed)
Mat Thin	Press and hold to decrease the material thickness. This moves the upper jaw toward the folding beam. (if installed)

Setups Screen

SETUPS		5/2/2011 10:12 AM

Miscellaneous

		Versions
Language	English	Hardware:
Machine Profile	6	Software:
Units of Measure	Inches/PSI	
Use Jobs	No	
Operator Sync Time	2.00 s	Meters
Backgauge		Parts: 1
Encoder Resolution	0.00 cnt/in	Cycles: 1
Folding Beam		Database
Resolution	0.00 cnt/in	Usage: 0 %
Up Start Slow Degrees	5 deg	Tag Printer
Up Finish Slow Degrees	10 deg	Not Installed
Down Start Slow Degrees	5 deg	
Down Finish Slow Degrees	10 deg	
Down Finish Creep Degrees	10 deg	
Maximum Bend Angle	140 deg	
Maximum Radius Angle	20 deg	
Dwell Time	0.50 s	
Force Slow Speed Angle	15 deg	
Angle to Start Opening Jaw	0 deg	

Buttons: Tag Init | CF Manage | Set Time | Cal TS | Calibrate | I/O | B/G Home | SECURITY

Tag Init	Press to refresh the screen. Some values may be automatically altered by the control. Pressing this key forces all items to be refreshed.
CF Manage	Press to navigate to the Compact Flash Card management screen.
Set Time	
Cal TS	Press to navigate to the Touch Calibration screen. Press the Red Shift key and then the F4 to invoke the touch screen test, press anywhere on the screen for a press confirmation.
Calibrate	Press to navigate to the Machine Calibration Screen.
I/O	Press to navigate to the Input/Output screen. Digital and Analog inputs and outputs can be viewed.
B/G Home	Press to reference the Backgauge(s).
Parts: 1	This field shows how many parts were made on the machine.
Cycles: 1	This field shows how many times the upper jaw has made it to pressure while running in Auto mode.
Database Usage: 0 %	This field shows the percentage of the used storage space for parts & materials.
SECURITY	Press to navigate to the security screen

Setups Screen cont'd
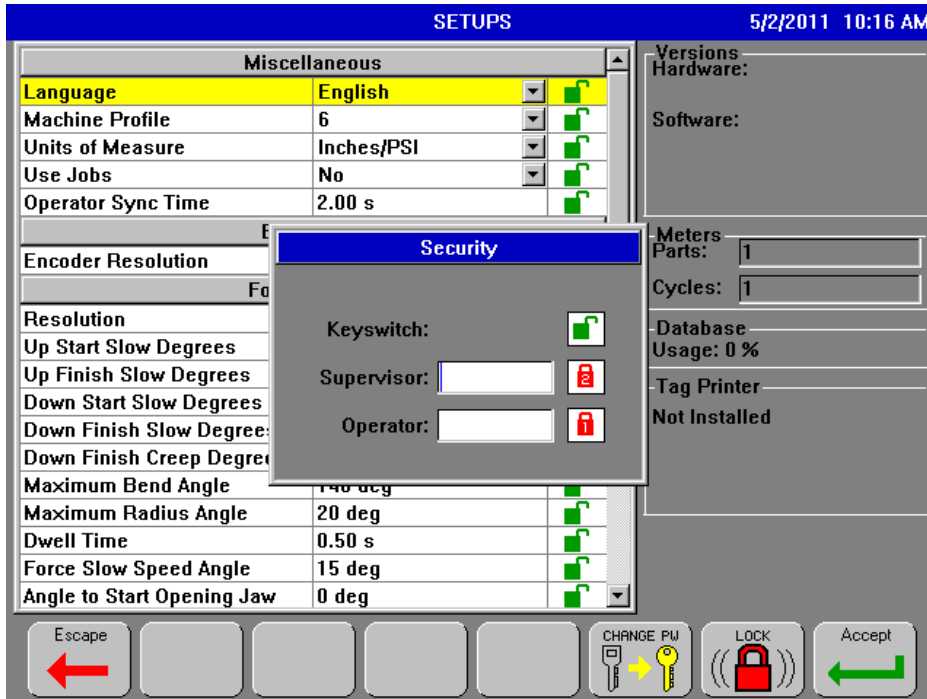
Escape (←)	Press to return to the previous page.
CHANGE PW	Press to change the password. The highlighted field will be edited.
LOCK	Press to lock. The highlighted filed will be locked.
Accept	Press to finish.

Setups Descriptions

Note: Some parameters are not available for some machines.

PARAMETER	[DEFAULT], VALUE or RANGE	DESCRIPTION
Miscellaneous		
Language	["English"]	Select from a drop-down list box.
Machine Profile	1-6	Refers to the specific model of machine the controller is installed on.
Units of Measurement	["Inches/PSI"]	Select from a drop-down list box.
Use Jobs	["No"]	Select from a drop-down list box.
Hydraulic Idle Time	[5], (minutes)	Amount of time machine can remain idle before turning the power off to the hydraulics.
Operator Sync Time	[2], 0 – 10 (Seconds)	When in 2-man operation (selectable by switch on front panel), both operators must activate their corresponding pedal within this amount of time to initiate closing the upper jaw.
Maximum System Pressure	[2900], (PSI)	Defines the maximum system pressure. It is used to calculate the hydraulics pressure. If not correct, the pressure readings will be incorrect. This is a factory setting and should not be changed unless specified by the Manufacturer.
BACKGAUGE		
(NOTE: if encoder resolution is set to "0" the following items will not be displayed)		
Encoder Resolution	[0.00], (cnt/in.)	Resolution for the encoder of the backgauge. Should not be changed unless specified by Manufacturer.
Closed-Loop	NO	Set to yes if using a Closed Loop Servo to control the backgauge.
Tolerance	[.02], (Inches)	Maximum allowable distance error when setting up the backgauge. If it is not within this distance it will backup and retry, it will retry a maximum of 10 tries.
Stopping Distance	[0.00], (Inches)	Distance the backgauge coasts after it is requested to stop. This value is automatically adjusted by the controller as operating conditions change. This value should initially be set to "0".
Max Auto Stopping Distance Adj.	[1.00], (Inches)	Maximum distance the backgauge is allowed to self correct for each attempt to reach a position. Set to "0" if you want to disable the backgauge Auto-Correction.
Slow Distance	[0.50], (Inches)	Distance the backgauge will move in slow speed before the target position is reached. Larger values will cause the backgauge to move in slow speed for a longer distance. Too small of a value may cause the backgauge to overshoot the target position, causing it to retry.
Finger Distance	[18.62], (Inches)	Distance between the backgauge stop and the front fingers. (typically around 18"). Must be set correctly or part dimensions will be incorrect.

Minimum Dimension	[0.50], (Inches)	Minimum part dimension allowed by the backgauge. CAUTION: this value depends on the type of fingers installed. If incorrect, it can cause the fingers to be smashed by the upper jaw causing damage.
Forced Finger Switch Point	[0.00], (Inches)	Determines where the backgauge fingers will be forced to be turned on. If this is set to "0", the controller will automatically calculate switch point using the target position and Finger Distance parameters. Otherwise, the entered value will determine this.
Minimum Approach Distance	[0.50], (Inches)	If distance to the next target position is less then this distance away, the backgauge will move away from the target, then approach it. If it is greater, the backgauge will move directly towards the target.
Force BG Rear Approach	YES/NO	If this parameter is set to "YES", the backgauge will always approach the target from the rear. This is desirable if the backgauge drive has gear backlash. If set to "NO" the backgauge can approach from any direction.
Polarity Determines Dir	NO/YES	"NO" Keeps the analog output from going to a negative voltage polarity. (NOTE: the B/G digital outputs will determine the drives direction of rotation). "YES" Allows the analog output to go to both negative and positive polarities. The analog output will determine the drives direction of rotation. Negative voltage will cause the drive to go in reverse, Positive will cause it to go forward. In this case digital outputs are not used.
Analog Ramp Time (Sec)	[0.00], (Seconds)	Sets the amount of time (in secs.) it takes for the analog output to go from 0% to the desired velocity %. (i.e. – if the parameter is set to 1, it will take 1 second for the go from stopped to the desired velocity.) NOTE: If the analog drive is not being used, this should be set to "0".
Provide Adjustment Column	NO/YES	If set to "YES", you will have an extra column to enter backgauge adjustments. This allows part designer and program screens to remain in-sync
Min Finger Lift Dim.	[1.63], 0.00-4.00	Backgauge dimensions less then this will keep the fingers flat so they do not hit the lower jaw
Analog Jog Velocity	[20], 0-100%	Sets the analog speed output to this percentage of the drives maximum speed when the backgauge is being jogged. This parameter should be set to a value that allows the backgauge to move at a fairly slow velocity.
Analog Slow Velocity	[10], 0-100%	Sets the analog speed output to this percentage of the drives maximum speed when the backgauge requested to move slow. This parameter should be set to a value that allows the backgauge drive to move as slow and stable as possible.
Analog Fast Velocity	[60], 0-100%	Sets the analog output speed to this percent of the drives max velocity when the backgauge is requested to move fast. Should be set to a value that allows the backgauge drive to move at a fairly quick velocity.

Home Position	[38.09], (Inches	Calibration items are specific to the machine which the controller is installed. Incorrect values may cause the machine to become erratic or unstable. These items should only be modified manually if requested to do so by the Manufacturer.

BACKGAUGE TWO
(NOTE: if encoder resolution is set to "0" the following items will not be displayed)

Encoder Resolution	[0.00], (cnt/in.)	Resolution for the encoder of the backgauge. Should not be changed unless specified by Manufacturer.
Closed-Loop	NO	Set to yes if using a Closed Loop Servo to control the backgauge.
Tolerance	[.02] , (Inches)	Maximum allowable distance error when setting up the backgauge. If it is not within this distance it will backup and retry, it will retry a maximum of 10 tries.
Stopping Distance	[0.00], (Inches)	Distance the backgauge coasts after it is requested to stop. This value is automatically adjusted by the controller as operating conditions change. This value should initially be set to "0".
Slow Distance	[0.50], (Inches)	Distance the backgauge will move in slow speed before the target position is reached. Larger values will cause the backgauge to move in slow speed for a longer distance. Too small of a value may cause the backgauge to overshoot the target position, causing it to retry.
Finger Distance	[18.62], (Inches)	Distance between the backgauge stop and the front fingers. (typically around 18"). Must be set correctly or part dimensions will be incorrect.
Minimum Dimension	[0.50], (Inches)	Minimum part dimension allowed by the backgauge. CAUTION: this value depends on the type of fingers installed. If incorrect, it can cause the fingers to be smashed by the upper jaw causing damage.
Home Position	[38.09], (Inches	Calibration items are specific to the machine which the controller is installed. Incorrect values may cause the machine to become erratic or unstable. These items should only be modified manually if requested to do so by the Manufacturer.

FOLDING BEAM

Stopping Degrees	[0], (Degrees)	Allows for stopping (coasting) time of the folding beam. If the folding beam coasts 1 degree after commanded to stop, then 1 should be set in this parameter.
Up Start Slow Degrees	[5], (Degrees)	Degrees from 0 the folding beam will move in slow speed when its starts to move up. This value allows the folding beam to start in slow, then shift to fast, therefore reducing stress on the valves and folding beam hinges.
Up Finish Slow Degrees	[10], (Degrees)	Degrees from the request bend angle the folding beam will shift into slow. This is used to prevent the folding beam from overshooting the requested bend angle.

Down Start Slow Degrees	[5], (Degrees)	Degrees from the requested bend angle the folding beam will move in slow speed when it starts to move down. This value allows the folding beam to start slow at first rather that trying to start in fast speed, therefore reducing stress on the valves and folding beam hinges.
Down Finish Slow Degrees	[10], (Degrees)	Degrees from 0 the folding beam will move in slow speed as it finishes a bend operation. This value allows the folding beam to finish the operation in slow rather than finishing in a fast speed, therefore reducing stress on the valves and folding beam hinges.
Maximum Bend Angle	[140], (Degrees)	Maximum bend angle (in degrees) the folder can achieve. This is a factory setting and should not be changed unless specified by the manufacturer.
Maximum Radius Angle	[20], (Degrees)	Defines the bend threshold for each step of a bump-bend. If the bend angle for each step of a bump-bend is greater than this angle, a sling-bend will be performed, which means the folding beam will return to 0 degrees after each step of the bend.
Dwell Time	[0.50], (seconds)	Time (in seconds) the folding beam waits at the requested bend angle before moving back to 0 degrees.
Force Slow Speed Angle	[15], (Degrees)	The angle prior to the machines maximum folding angle that the folding beam will be forced into slow speed to prevent momentum bending and machine damage.
Angle to Start Opening Jaw	[0], (Degrees)	Upper jaw will start to open with Folding beam drops below this angle. Enter "0" to disable simultaneous motion.
Move Backgauge Early	YES/NO	When set to "Yes", this will allow the backgauge to move early, before the folding beam is down toward the next position as long as the upper jaw is out of the way. If set to "No", then the backgauge will wait to move position until the both the upper jaw and folding beam have reached their target positions.
ADC Folding Beam @ 0 Deg	[1142], 0 - 4096	Calibration value when the Folding Beam is at "0" degrees.
ADC Folding Beam @ 90 Deg	[2148], 0 - 4096	Calibration value when the Folding Beam is at "90" degrees.
UPPER JAW		
E-Stop Jaw Open Distance	[1], 0 – 6 (Inches)	Distance the upper jaw will add to the currently open distance when an emergency stop is activated. **Example:** If this value is 1 inch, the upper jaw is open 0.5 inch, an E-STOP is activated, and the upper jaw will open to 1.5 inches. The upper jaw will not open if folding beam is up or the shear is not home.
Stopping Distance	[0.00], (Inches)	Allows for the stopping (coasting) time of the upper jaw. (i.e. if the upper jaw coasts .01 inches after it is requested to stop, then .01 should be entered here.
Up Start Slow Distance	[0.30], (Seconds)	Distance from the current position that the upper jaw will move in slow speed when it begins to open. This value allows the upper jaw to start slow at first rather than trying to start in fast speed, therefore reducing stress on the valves and upper jaw hinges.

Up Finish Slow Distance	[0.30], (Inches)	Distance prior to the requested open position that the upper jaw will move in slow speed. This value allows the upper jaw to finish the operation in slow rather than fast speed, therefore reducing stress on the valves and upper jaw hinges.
Down Start Slow Distance	[0.30], (Inches)	Distance from the current position that the upper jaw will move in slow speed when it begins to close. This value allows the upper jaw to start slow at first rather than trying to start in fast speed, therefore reducing stress on the valves and upper jaw hinges.
Down Finish Slow Distance	[0.30], (Inches)	Distance prior to the requested closed position that the upper jaw will move in slow speed. This value allows the upper jaw to finish the operation in slow rather than fast speed, therefore reducing stress on the valves and upper jaw hinges.
Maximum Open Distance	[8.00], (Inches)	Maximum distance the upper jaw can open. This is a factory setting and should not be changed unless directed to do so by the Manufacturer.
Auto-Hem Time	[1], 0 – 5 (Seconds)	The upper jaw will automatically open after this amount of time on a hem operation. If zero is entered, the bend pedal must be pressed to complete the hem and open the upper jaw.
Prog. Default Open Distance	[0.70], 0 – 1 (Inches)	Defines the default upper jaw open distance that will be used when a new operation is added when programming.
Safety Stop Dimension	[0.70], (Inches)	Distance from closed the upper jaw will stop after a bend cycle has started. Once this distance is reached the Operator will have to press the close pedal again to complete bend cycle. This is a safety feature to prevent foreign objects from entering the clamp area a last chance before the upper jaw completely closes.
Pressure Relief Time	[0.5], (Sec.)	Time (in seconds) the upper jaw will pause before opening. This setting is used to bleed off hydraulic pressure from the valves and prevent hydraulic knocks.
Clamp Pressure Fail Percent	[10], (%)	Percentage of pressure that can be lost while upper jaw has reached the programmed pressure before an error is displayed. Some materials may still be formed with a certain loss of clamping pressure.
ADC Clamp Pressure @ Min	[1], 0 - 4096	Calibration value when the Clamp pressure is at the minimum pressure.
ADC Clamp Pressure @ Max	[2385], 0 - 4096	Calibration value when the Clamp pressure is at the maximum pressure.
ADC Upper Jaw @ 0 Inches	[685], 0 - 4096	Calibration value when the Upper Jaw is closed.
ADC Upper Jaw @ 6 Inches	[2001], 0 - 4096	Calibration value when the Upper jaw is opened to 6 inches

MATERIAL THICKNESS		
Adjustment	Auto/Manual	When set to AUTOMATIC, the machine will automatically adjust to the correct gauge (if the machine option is installed). When set to MANUAL, the operator must manually position the gauge adjustment. To change, press <ENTER> to open the drop-down-list-box. Then use the up and down cursor keys to make the desired selection and press <ENTER> to activate.
Tolerance	[0.010], (Inches)	Maximum allowable thickness error when positioning the gauge adjustment. When the gauge adjustment is moved to a position, it will verify it is within this dimension. This value should be set to an acceptable distance.
Stopping Distance	[0.000], (Inches)	Stopping, or coasting, distance of the gauge adjust. If the gauge adjust coasts .01 inches after it is requested to stop, then .01 should be entered here.
Max Dimension	[0.100], (Inches)	Maximum dimension the gauge adjust is allowed to obtain. This is a factory setting and should not be changed unless specified by the manufacturer.
Default Bend Radius	[0.000], (Inches)	Radius of the bend point area of the upper jaw.
Thickness Adder Percentage	[0], (%)	Amount in percent that is added to the material thickness. If set to 25 percent, and the material thickness is programmed to .1 inch, the actual thickness will be adjusted to .125 inches.
M/T Minimum Dimension	[0.000], (Inches)	Measured distance of the upper jaw offset when the material thickness is at its minimum
M/T Maximum Dimension	[0.000], (Inches)	Measured distance of the upper jaw offset when the material thickness is at its maximum
ADC Mat. Thickness @ Min	[90], 0 - 4096	Calibration value when the Material Thickness position is at the minimum position.
ADC Mat. Thickness @ Max	[3758], 0 - 4096	Calibration value when the Material Thickness position is at the maximum position.
ROTARY SHEAR **(NOTE: if encoder resolution is set to "0" the following items will not be displayed)**		
Resolution	[0.000], (ct/in)	Resolution of the rotary shear encoder/proximity switch in Inches Per Count. If this parameter is not 0, the shearing distance is calculated by pulses from an encoder or other sensor. In this case, the 'Rotary Shear Velocity' parameter should be set to 0.
Velocity	[0.000], (in/s)	Velocity of the rotary shear in Inches Per Second. If this parameter is not 0, the shearing distance is calculated by time. In this case, the 'Rotary Shear Resolution' parameter should be set to 0.
Distance to Bend Edge	[0.00], (Inches)	Distance from the bend edge to the rotary shear cutting point.
Dwell Time	[0.00], (sec.)	Time (in seconds) the rotary shear will pause after a shear operation before returning home.
Home Offeset	[0.00], (Inches)	Distance from the rotary shear home position to the right-most position where folding materials will be placed. The home offset value is added to the requested shear distance to ensure the material is completely cut.

TAG PRINTER		
PRINTER	[ ]	Select the correct type of printer that you are using on the line.
CONTROLLER NETWORK		
Node	[0]	Network node number of this device. Each controller on the network must have a unique node number.
TOUCH SCREEN		
Enabled	YES/NO	Select YES to enable the touch-screen. Select NO to disable it.
Sensitivity	[10]	The lower this value, the harder you must press on the screen to register a touch.
Double-Touch Delay	[25]	The time threshold between subsequent touches to register a double-touch. The lower this value, the faster the double-touch must be.
X-Calibration Left	[3892]	Calibration point that represents the left-most point on the horizontal axis of the touch-screen.
X-Calibration Right	[144]	Calibration point that represents the right-most point on the horizontal axis of the touch-screen.
Y-Calibration Top	[3800]	Calibration point that represents the top-most point on the vertical axis of the touch-screen.
Y-Calibration Bottom	[186]	Calibration point that represents the bottom-most point on the vertical axis of the touch-screen.

Material Management Screen

MATERIAL MANAGEMENT					12/13/2010 1:00 PM
Name	Description	Thickness	Pressure	Overbend	Bend Radius
MILD STEEL	MILD STEEL	0.040 in	1500 PSI	5 deg	0.000 in
ALUMINUM-1	ALUMINUM - TYPE 1	0.030 in	800 PSI	3 deg	0.000 in
STAINLESS STEEL	GRADE - 2	0.035 in	1800 PSI	2 deg	0.000 in
BRASS	BRASS	0.040 in	900 PSI	7 deg	0.000 in
COPPER	COPPER	0.030 in	1100 PSI	5 deg	0.000 in

Mat Add   Mat Delete   Refresh Pts

Button	Description
Mat Add	Press to add new material.
Mat Delete	Press to delete current material. Material cannot be in use by any parts.
Refresh Pts	Press to update all parts with the newly changed material.

To Add New Material:
- Press <Mat Add> to add new material to the end of the list.
- Fill in the appropriate field for the new material.

To Delete Material:
- Navigate to it using the arrow keys.
- Press <Mat Delete>.

To Update Material:
- Press <Refresh Parts> to update the material information that is used in any of the programmed parts.
- If a specific material needs its amount of over-bend to be changed correctly, it should be done here, instead of changing it in every part.
- By pressing <Refresh Parts>, all programmed parts that use this material will have its over-bend amount changed to this new value.

Example:
A material named "MILD STEEL" has an over-bend value of 5 degrees; you have parts that use this "MILD STEEL" material.
A new shipment of material doesn't react the same as the previous material. The new material needs 9 degrees of over-bend.
- Change the over-bend amount in the "MILD STEEL" material to 9 degrees.
- Press <Refresh Part>.
- This will change the material over-bend in every part that references this material.
- If you have 32 programmed parts that use this "MILD STEEL" material , all of them will have the over-bend changed to this new value. This keeps you from having to go to every part and change the over-bend value.

Program Parts Screen

	L↔ (in)	L↕ (in)	L↔ 2 (in)	⌐ (deg)	◇ (in)	◈ (PSI/in)	⌐ (deg)	↔ (in)	⌐ (deg)	↙ (in)	Bumps	Flip	Heli	
0	12.00	0.00	0.00	0	0.70	0	0	200	0	0.00	0	○	○	
1	0.75	0.00	0.00	90	1.00	0	0	0	0	0.00	0	○	○	
2	10.50	0.00	0.00	90	0.60	0	0	0	0	0.00	0	○	○	
3	8.00	0.00	0.00	90	0.60	0	0	0	0	0.00	0	○	○	
4	2.50	0.00	0.00	90	1.00	0	0	0	0	0.00	0	○	○	
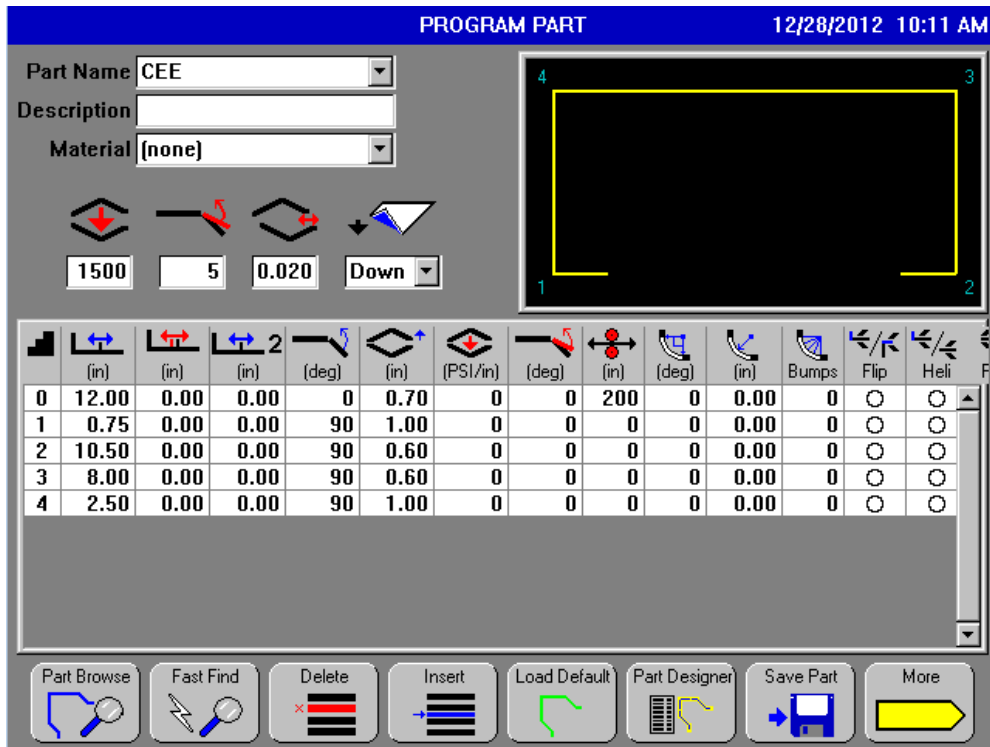
Icon	Description	Icon	Description
Part Browse	Press to open graphical parts browser.	Flip	Press to signify a flip operation for part.
Fast Find	Press to open fast-find dialog.	Heli	Press to signify a helicopter operation for part.
Delete	Press to delete operation at cursor position.	Prop	Press to signify a propeller operation for part.
Insert	Press to insert an operation at cursor position.	Move Up	Press to move the operation at cursor up one position.
Load Default	Press to load default part.	Move Down	Press to move the operation at cursor down one position.
Part Designer	Press to navigate to part designer screen.		
Save Part	Press to save current part to memory.		
More	Press to display next group of softkeys.		

ICON	PARTS OPERATIONS GRID DESCRIPTIONS
	STEP NUMBER: Sequence number of the parts operation.
	BACKGAUGE 1: Shows the position of backgauge 1 for the current operation.
	BACKGAUGE ADJUSTMENTS: Allows Part Designer and Program Screens to remain in sync. Can be used to make minor adjustments to segment lengths that will be included during part modifications.
	BACKGAUGE 2: Shows the position of backgauge 2 for the current operation. If Backgauge 2 is not enabled then it will not be displayed.
	BEND ANGLE: The distance the folding beam will reach for the current operation. If "0" is entered a hem will be performed.
	UPPER JAW: Distance the upper jaw will open after an operation is complete.
	CLAMP PRESSURE/OPEN DISTANCE: The amount of pressure that the clamp will reach for the current operation (value greater than 1). The distance the clamp will stay open when creating an open hem (value less than 1).
	OVERBEND ANGLE: The bend amount in degrees that is added to or subtracted from the total bend angle. (i.e. if a bend angle is 45 degrees and a value of 5 is entered for the overbend angle the actual bend angle the folding beam will move is 50 degrees.
	ROTARY SHEAR: Distance the rotary shear will travel out for a shear operation.
	BUMP-BEND DEGREES: Indicates the radius of the bend.
	BUMP-BEND RADIUS: Indicates the radius of the bend.
	BUMP-BEND STEPS: Indicates the number of steps needed for the bend.
	FLIP: Shows when a flip is needed for the current operation. The blue light on the light tree will also illuminate.
	HELI-ROTATE: Shows when a heli-rotate is needed for the current operation. The amber light on the light tree will also illuminate.
	PROP-ROTATE: Shows when a prop-rotate is needed for the current operation. The amber light on the light tree will also illuminate.

Programming a Part:

- If not already in the Program screen, press <Program>.
- Use the arrow keys to navigate to the "Description" field.
- Enter a description and press <Enter>. (See Alpha-Entry to enter text)
- Press <Enter> to bring up the material list.
- Use arrow keys to select a material and press <Enter>. If no material needs to be selected, skip this field.
- Enter a global hydraulic pressure value and press <Enter>. This is used as the pressure for any operation that is not over-ridden with a pressure.
- Enter an over-bend value and press <Enter>. This is the amount of over-bend that is added to, or subtracted from, each operation.
- Enter a material thickness value and <Enter>.
- Press <Enter> when the "Paint Direction" item is selected. This will open the drop-down list box.
- Use the arrow keys to choose between "Up" or "Down", then press <Enter> to select.
- Press "Pg Dn" to navigate to the part grid. This is where the part operations will be programmed. "Pg Up" will transition back to the top of the screen.
- Enter a value for backgauge2 (if installed), and backgauge1. You may enter a value as an absolute position or a position relative to the previous position.
  - ➢ Absolute: Enter an absolute position by keying in the number with no preceeding + or – sign.
  - ➢ Relative: Enter a relative position by first entering a + or – in front of the relative number. For example, if the previous position was 20 inches, and you know you want the next position to be 2.5 inches less, you may simply enter -2.5. When you press enter, the resulting 17.5 will be displayed automatically.
- Enter a value for the pressure override. This pressure will be used only for this operation instead of the global pressure.
- Enter a value for the bend angle.
- Enter a value for the over-bend angle.
- Enter a value for the upper jaw open distance.
- If performing a radius bend, enter the following:
  - ➢ Degrees of radius bend (degrees), Radius of bend (distance), Number of steps in the bend (counts).
  - ➢ If a shear is desired, enter the distance for the shear to travel.

If flips or turns need to be programmed, there are two ways to accomplish this:
1) Navigate to the flip- or turn-column, then press any of the number keys on the keypad to toggle the indicator.
2) a) Press "MORE" to bring up the next set of softkeys.
   b) Press the desired softkey for the flip or turn desired.
   c) Press "MORE" again to return to the original softkeys.

The flip and turn indicators in the programming grid correspond to the lights on the light tower.
When a part is run and the current operation has a flip or turn, the corresponding light on the light tower will illuminate to notify the operator that the part needs to be flipped or turned BEFORE the bend takes place.

- To move to the next row, press <Enter> when on the last item in the current row, or press <End>.
- When a new row is started, some items will auto-fill with values.
- The backguage(s) will auto-fill with the values that are in "Backbauge(s) Minimum Dimension" from the "Setups"screen.
- The bend angle will auto-fill with the value from the previous row.

- The upper jaw open distance will auto-fill with the "Program Default Open Distance" setup parameter.
- To move an operation up, move the cursor to the desired operation and press <(Move Up)>.
- To move an operation down, move the cursor to the desired operation and press <(Move Down)>.
- To insert an operation, move the cursor to the desired operation and press "Insert Operation". A new line will be inserted before the current operation.
- To delete an operation, move the cursor to the desired operation and press <Delete Operation>.
- To delete all operations in the part, move the cursor to the desired operation. Press and release <Shift>, then press <Delete Operation>.

Bump-Bends:
- A bump-bend is a term referring to a single operation that contains multiple evenly spaced small bends; this is used to create a rounded look to a bend in a part.
- There are three items that must be programmed to produce a bump-bend: a) degrees (degrees of the curve), b) radius (radius of the curve), and c) number of steps.
- The controller will calculate the position of the backgauge and the amount of bend angle for each bump or step.

One Touch Edit

From the Program Part screen, you may double touch on the picture of the part in the upper right corner to pull up an enlarged picture of the part.
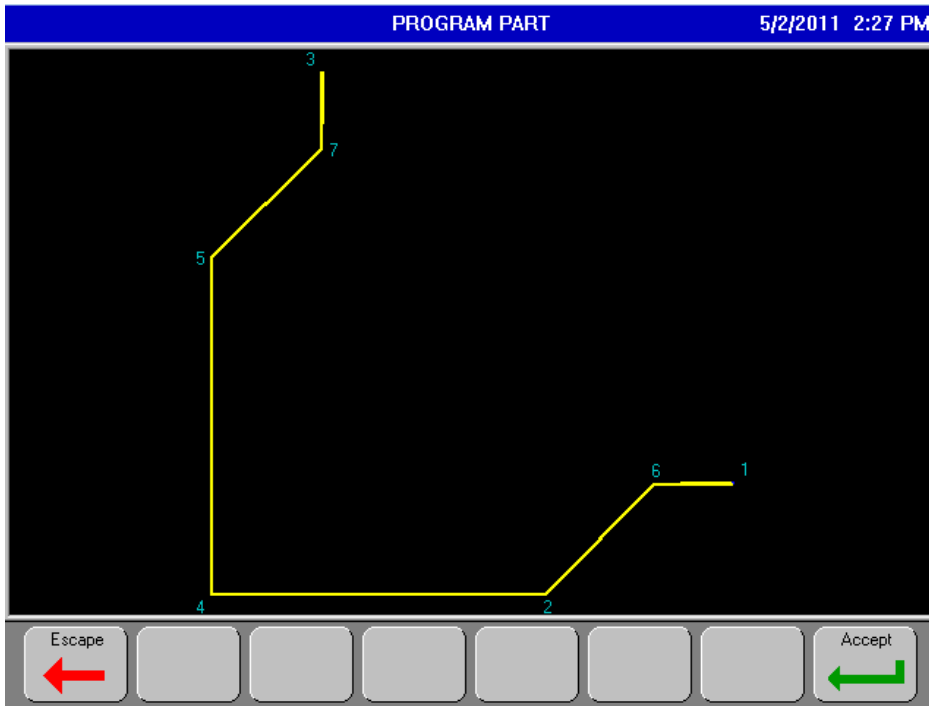
From this enlarged picture, you may click on any segment to pull up a numeric field for a quick edit. You may type in a new length and angle, and press enter to accept, or escape to exit the numeric field without any changes and select another segment. When you are finished with all edits, press accept to return to the Program Part Screen, where your changes have been made for you.
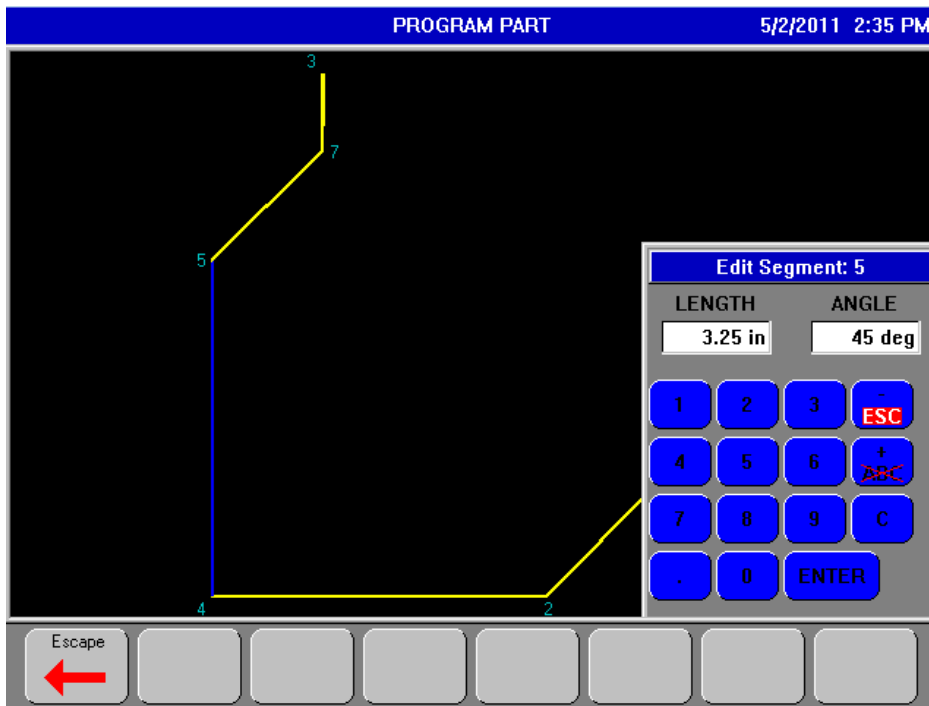
NOTE: When you return to the Program Part Screen the part name now has an * by it. This shows that the part has been modified and you will need to save it if you want to use for future use.

Calibrating and Using Touch Screen

To calibrate the touch screen, go to manual, and press F1. Then press F4 for the touch screen calibration. Once you've followed the directions given to you on the screen, your touch screen is ready for use.

Using the touch screen is very simple. Touching any button on the screen will navigate you to the screen that button is indicating. Touching anywhere on the screen that is not a button will change the area of focus. A double touch on a numeric entry field will bring up the following screen allowing you to edit the field.
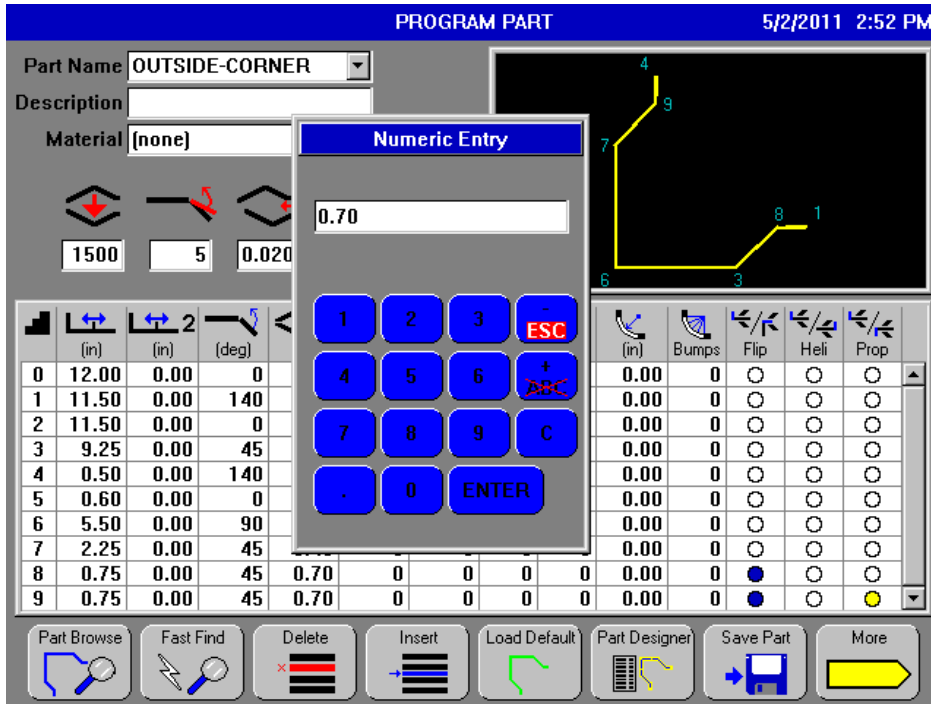
A double touch on an alpha-numeric entry field will bring up the following screen allowing you to enter your data.
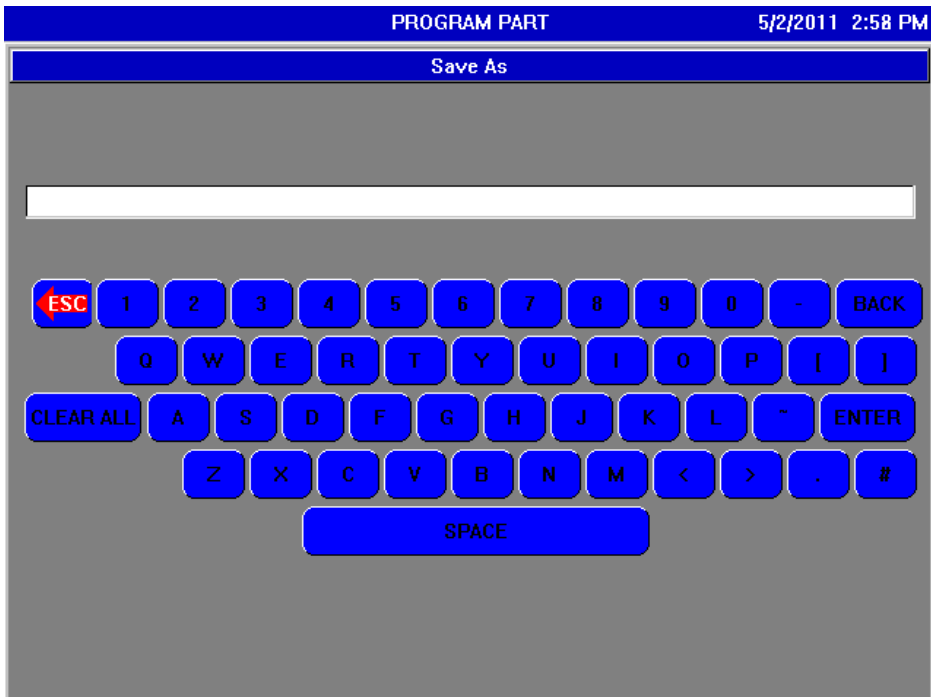
Saving a Part without Touch Screen
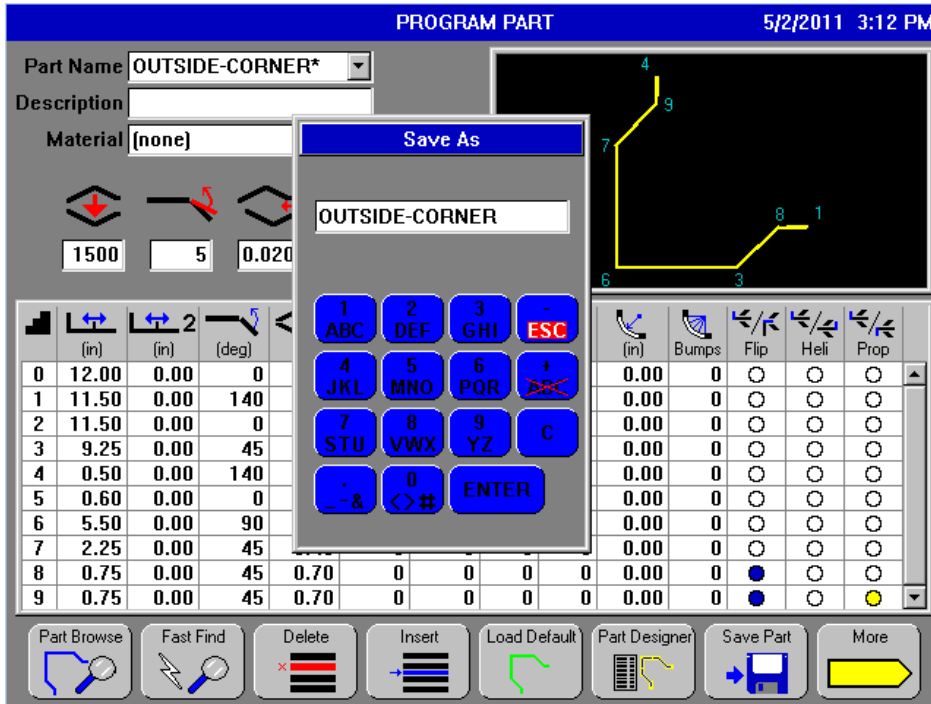
Alpha-Entry Dialog:

To enter text using the numeric keypad, do the following:
The 1st press of the "1" key will display the letter "A".
The 2nd press of the "1" key will display the letter "B".
The 3rd press of the "1" key will display the letter "C".
The 4th press of the "1" key will display the number "1".
Further presses of the "1" key will continue to sequence thru the letters/number (or other characters).
To rotate thru the available letters for a specific key, you must press & release the key within the 1 second timeout.
Waiting longer than 1 second will accept the displayed letter/number/character.
To accept the displayed letter or number, don't press any keys for 1 second.
To delete an incorrect letter, simply press the <C> button to delete single characters as needed.
To clear all, press the <+> button.
To escape without saving, press the <-> key.
Press the <Enter> key to close and save the text entry dialog .

Example: To enter the word "BECK", do the following.
Press the "1" key 2 times. This will display the letter "B".
Wait more that 1 second to accept the displayed letter.
Press the "2" key 2 times. This will display the letter "E".
Wait more that 1 second to accept the displayed letter.
Press the "1" key 3 times. This will display the letter "C".
Wait more than 1 second to accept the displayed letter.
Press the "4" key 2 times. This will display the letter "K".
Wait more that 1 second to accept the displayed letter.
Press the <Enter> key to accept this text.

Note: Leading and trailing spaces are not allowed and will be removed when the text entry dialog is closed.

Saving a Part with Touch Screen Enabled
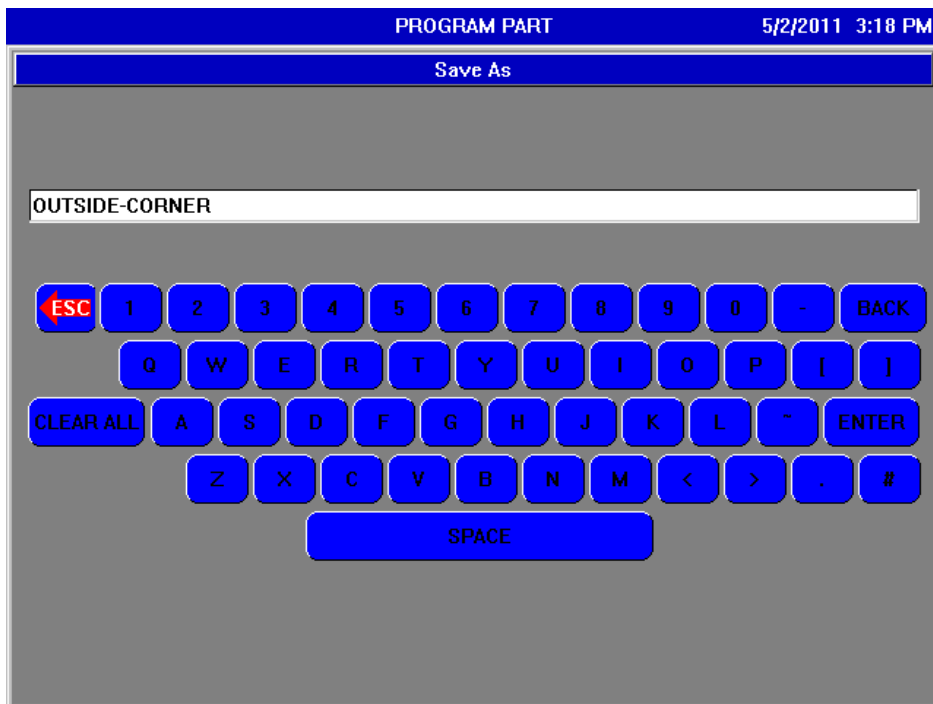
- To name a Part, press the letter or number on the screen you wish to use.
- To delete a single character, press the "BACK" button.
- Press "CLEAR ALL" to delete everything.
- Press the "ESC" button to go back without saving.
- To save and close, pre "ENTER" when you have finished your part name.

Bending Information

The following is a description of each of the three items that are used to determine the actual machine's bend angle. Over-bending is often necessary to achieve the required bend on the part.

A) **Part Settings Over-Bend** is a bend angle that is added to all bend operations in the part.
Typically, the "Part Settings Over-bend" value will be used to tweak the part bend angles to compensate for different qualities of the stock material without altering the individual bend operations.
This allows the operator to easily add a greater bend angle to every bend operation in the part in one easy step.

B) **Bend Angle** is the amount of bend for the current operation.

C) **Over-Bend** is a value that is added to, or subtracted from, the bend angle.
It is used to adjust the desired bend angle of the current operation.
This range is -30 to +30 degrees. The "+" symbol is not needed for positive values.

Some bend operations may require "just a bit" more , or less, of a bend angle. These entry fields allow this without having to change the bend angle entry of each operation which could also cause the graphic part image
not to represent the part correctly.

Example:
Assume the part needs a 45-degree bend:

If the material typically requires a 3-degree over-bend to obtain an actual 45-degree bend, a "45" is entered in the "Bend Angle" of the operation and a "3" is entered in the "Over-Bend" field. Notice that the over-bend amount of 3 degrees is added to the "Over-Bend" field for the operation and not to the "Part Settings Over-Bend" field. This will add the 3 degree over-bend to the current operation only, and not to every operation. If the 3-degree over-bend amount is entered
in the "Part Settings Over-Bend" field, then all operations will have 3 degrees added to them. If every operation needs a 3-degree over-bend, then a "3" is entered in the "Part Settings Over-Bend" field.

The "Part Settings Over-Bend", "Bend Angle", and "Over-Bend" fields can be used in any combination. The "Bend Angle" should be the desired angle. The machine will bend to the sum of the three angles. If entered correctly, the material will spring back to the desired angle.

Examples of Over-Bend Combinations:

Part Settings Over-Bend	Bend Angle	Over-Bend	Resulting Bend Angle
0	45	0	45
5	45	0	50
5	45	3	53
0	45	8	53
5	45	-2	48

Part Designer Screen
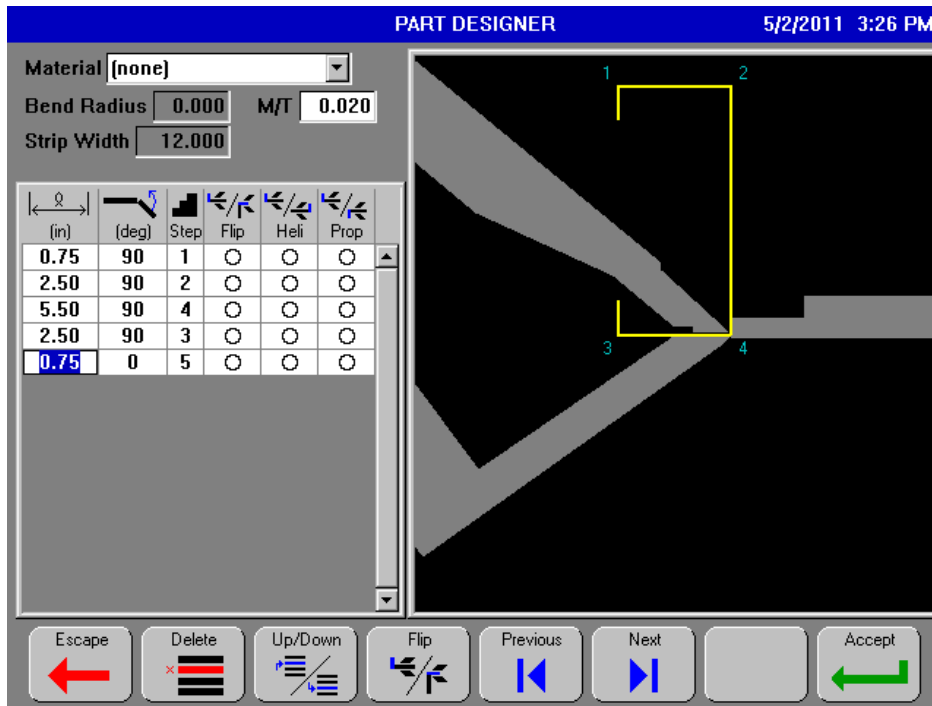
Escape	Press to escape the part designer screen without accepting the current part.
Delete	Press to delete the current segment at the cursor.
Up/Down	Press to move the current segment up one row. Press <Shift> and this key to move down.
Flip	Press to perform a flip operation.
Previous	When verifying the sequence of a part, this key will jump to the prior step from the current cursor.
Next	When verifying the sequence of a part, this key will jump to the next step from the cursor.
Accept	Press to accept the current design. The program screen will appear with the operations of the design.

Designing a Part with the Part Designer

- The Part Designer is used to enter segment lengths and bend angles rather than entering backgauge dimensions.
- From the program screen, press <F6>; this will bring up the Part Designer screen.
- If a part is loaded (or programmed) in the program screen when <F6> is pressed, the part will be translated to the part designer screen.
- If no part is loaded in the program screen, a blank design with a default starting value will be used. The material selection will not be transferred from the program part screen to the part designer.
- To navigate to the upper portion of the screen, press <Pg Up>.
- To navigate to the grid area, press the <Pg Dn>.
- The fields on top of the screen are "Material" drop-down-list box, "Bend Radius", and a Material Thickness ("M/T"). On the left side of the screen is the operations grid. There are six columns in this grid: a) Segment Length, b) Bend-Angle, c) Step, d) Flip, e) Heli, and f) Prop. On the right side of the screen is a graphical representation of the part being designed.
- To start designing the part, press <Pg Dn> to navigate to the grid area (if not already in the grid).
- Enter a segment length in column 1 and press <Enter>. The cursor will automatically move to the bend column.
- In column 2, enter the bend angle for this segment and press <Enter>.
- Repeat this process for each segment needed.
- As you enter segment length and bend values, column 3 (Step) will automatically increment for each row.
- To add a "Flip" to the current segment, press <F4>, or cursor to the "Flip" column and press any number key.
- To add a "Heli" to the current segment, cursor to the "Heli" column and press any number key.
- The "Prop" designator is automatically activated when required and cannot be user-selected or changed.
- To move a segment up one row, Press <F3>.
- To move a segment down one row, press and release <Shift>, then press <F3>.
- To delete a segment, move the cursor to the desired segment and press <F2>.

Viewing a Part Being Made:
- Once all segments are entered, you can sequence through the part by pressing <F5> and <F6>.
- <F5> will move to the previous sequence step; <F6> will move to the next sequence step.
- As you step forward and backward using <F5> and <F6>, you can verify the order of the bending process.
- You can also verify that the part does not collide with the upper jaw or folding beam in the graphics window.
- To change the sequence ordering, use the arrow keys to move to the "Step" column of the segment you want to change, and enter a new step value. Any steps that have a lower value than the currently entered step value will not be changed. Any steps that have a higher value than the currently entered value will be shifted up one count. In other words, it moves up all the steps greater than the entered step number by one to make room for enserting this new value.

Selecting a Material:
- To select the material, press <Pg Up> to move to the upper area of the screen.
- Press <Enter> to open the drop-down-list box. Using the up and down arrow keys, navigate to the desired material and press <Enter>. The M/T field will be automatically loaded with the material's thickness. This value may be overridden with a different value.
- The "Bend Radius" field in the upper area of the screen cannot be changed; this value is taken from the setups.

Finishing the Design:
- To accept the design, press <OK>; this will transfer the part to the program screen.
- When the part is transferred, the bend radius and the material thickness are used in the calculations for the

backgauge positions. To abort the design, press <Esc>. Any previously programmed information will be lost. You can easily return to the part designer screen with the current design by pressing <F6>.

- Since the program screen will have a programmed part (the one just designed in the part designer), it will transfer it back to the designer screen.
- If accepting a design by pressing <OK>, and a material is selected from the drop-down-list box with the
- thickness overridden, the part will be transferred to the program screen with the "Material" field showing
- the selected material and the thickness value shown in red. This notifies the user that the material thickness value is different from the programmed material thickness.

Example: Material "A" has a thickness of 0.030 inch. The user overrides the thickness field (M/T) with 0.020 inch and presses <OK>. When the part transfers to the program screen, the "Material" field will show "A" (the selected material from the part designer screen), and the "M/T" field will show 0.020 in red color.

- Save the part when it is finished from within the program Part screen.
- Parts cannot be saved from within the Part Designer screen.

Auto Screen
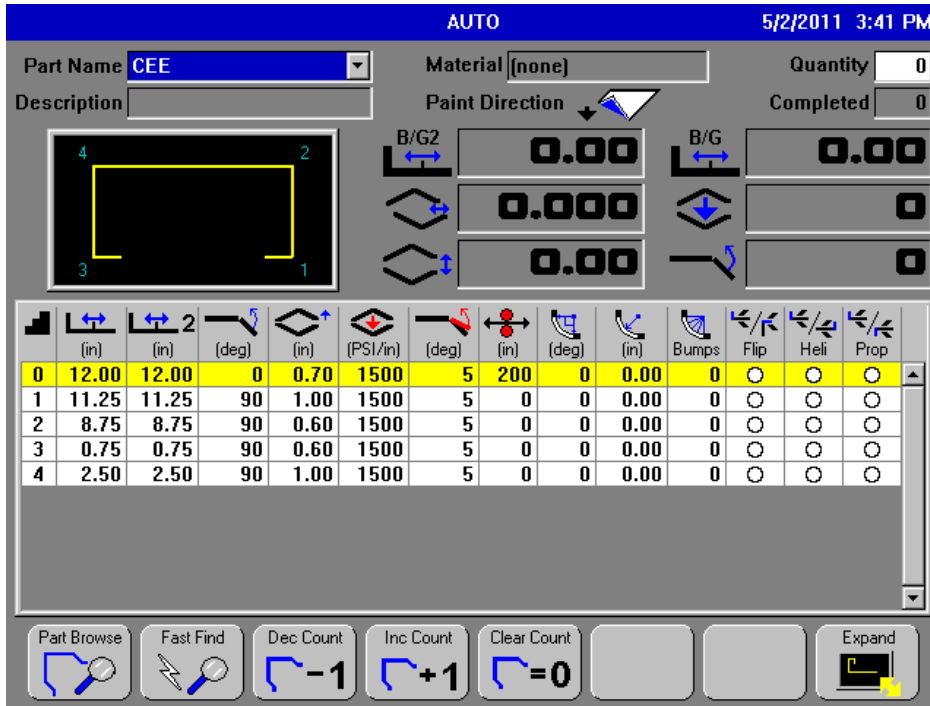
	Press to open the graphical parts browser.
Part Browse	Press to open the graphical parts browser.
Fast Find	Press to open the Fast-Find dialog.
Dec Count −1	Press to subtract one part from the quantity of parts completed.
Inc Count +1	Press to add one part to the quantity of parts completed.
Clear Count =0	Press to reset the quantity of parts completed to zero.
Expand	Press to bring up a screen which shows each individual step, and what the part should look like once the step is completed.

B/G2	0.00	Shows the current position of backgauge 2 (if enabled).
B/G	0.00	Shows the current position of backgauge 1.
	0.000	Shows the current position of the material thickness.
	0	Shows the current clamp pressure.
	0.00	Shows the current position of the upper jaw.
	0	Shows the current position of the folding beam.
Quantity 0		Shows how many parts are requested to be made. Enter a numeric qty then press <Enter>
Completed 0		Shows how many parts have been made.

Auto Screen - Expand

This screen shows the operations step by step, and a visual of what each step should look like. Pressing the "Expand" button again will return you to the original Auto screen.

Running a Part

- For this explanation, it is assumed that one operator will be running the machine. If two operators are required, see the following section on 2-man mode.
- Set the 1-man / 2-man key switch to the 1-man position.
- Navigate to the Auto screen by pressing <AUTO> on the front panel.
- Press <Enter> to open the drop-down-list box. This list box shows all the available parts.
- Use the up and down arrow keys to select a part, then press <OK> or <ENTER> to load it.
- You may also press <F1> (Part Browser) and select a part from the graphical display.
- Once loaded, all of the operations required to make the part will be displayed in the operations grid. A graphical representation will also be displayed. A yellow highlight will be shown on the first operation step in the operations grid.
- Enter a quantity of parts to be made (optional):
  - ➢ Use the left and right arrow keys to navigate to the "Quantity" field.
  - ➢ Enter the number parts you want to make and press <Enter>.
- Press the <Start> button on the front panel to start the machine. If the backgauge is not referenced, it will do so. The first valid operation will be highlighted in green; this shows what operation is currently being performed.
- Perform the operations:
  - ➢ Clamping the material:
    - ▪ Press the clamp-close pedal. The upper jaw will begin to close, and then automatically stop at the safety stop position.
    - ▪ Release the clamp-close pedal and then press it again. The upper jaw will close all the way and clamp to the programmed pressure.
    - ▪ Once the upper jaw is at pressure, the white light on the light tower will illuminate.
    - ▪ Release the clamp-close pedal.
    - ▪ Press the bend pedal and release.
  - ➢ Form the material
    - ▪ If shearing, the shear will move out and cut the material, then return home.
    - ▪ If bending, the folding beam will move up to the programmed bend angle, then return home.
    - ▪ If hemming, the clamp will open after the hem is complete.
  - ➢ After the operation is complete, the upper jaw will open for the next step, the green highlight bar will move to the next operation, and the backgauge will move to the next dimension
  - ➢ Repeat these steps for each operation.

Positioning Upper Jaw:

- These movements will not cause the controller to stop operating in Auto. It is sometimes necessary to stop the upper jaws motion or raise it up.
- At any time you may stop closing the upper jaw by removing your foot from the close pedal.
- To open the upper jaw, press the left pedal all the way down. If the jaw had achieved pressure, the white pressure light will turn off.
- To resume closing again, simply press the close pedal. If the jaw was opened above the safety-stop position, it will once again automatically stop there.
- While running in auto mode, the close-pedal may be pressed prior to the backgauge being in position. This will allow the upper jaw to close as soon as the backgauge reaches position.

Part-Count Notification:

- When the "Completed" field and the "Quantity" fields are equal, a dialog will display, stating that the job is finished. This means that all parts that were requested have been completed.
- Press <Enter> to close this dialog. You may press <Start> again to continue making parts. This is only a notice, and you may continue to run parts without further messages.

Entering and Exiting Auto Mode:

- Press <Start> on the front panel at any time to toggle in and out of Auto Mode.
- When the machine is idle (not in Auto Mode), a yellow highlight will be shown on the current operation step, and the header bar at the top of the screen will be blue.
- You may use the up and down arrow keys to select the initial step to start from.

Bump-Bends:

If a bump-bend is in progress, a yellow window with two numbers is displayed over the "Completed" information box in the upper right area of the auto screen. The first number is the iteration, or the bend number (bump), the machine is currently working on. The second number is the total bumps required for the bump-bend. The bump-bend example on the left shows the machine is working on the second bend out of a total of 5 bends. As each bend of a bump-bend is completed, the first number will increment. When a bump-bend operation is completed, the yellow box will disappear and the parts "Completed" information box will be re-displayed.
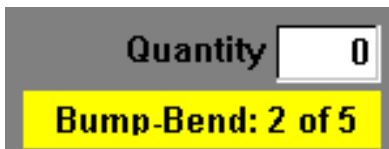
2-Man Mode:

To run in 2-man mode, set the 1-man / 2-man key switch to the 2-man position. When running in 2-man mode, the second operator must press his or her pedal within the sync. time to initiate the clamp to close. The "Operator Sync. Time" parameter in the Setups screen sets this synchronization time.

Part Browser Screen
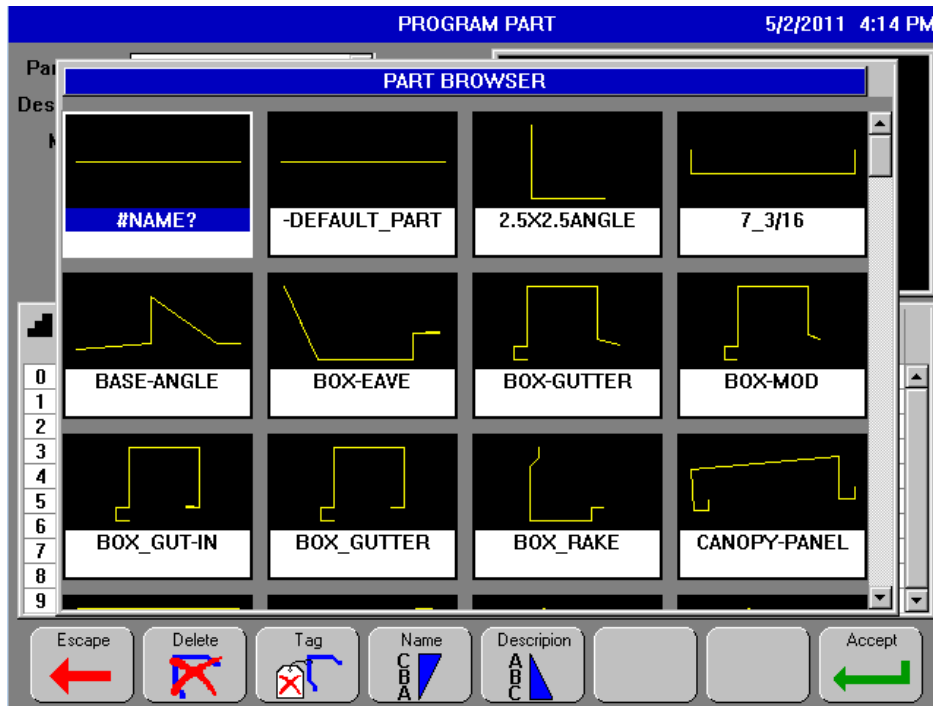
Escape	Press to close the part browser without selecting a part.	Name	Press to view parts by either ascending or descending order by name.
Delete	Press to delete a part from the list.	Description	Press to view parts by either ascending or descending order by description.
Tag	Press to select multiple parts to delete from the list. After the parts are tagged, you can press the delete button to delete them.	Accept	Press to load the selected part.

Part Browser:

To select a part:
- Use the arrow keys to navigate to the desired part.
- A white border will surround the currently selected part as well as change its name to a blue background.
- Accept the part by pressing <Accept> or <Enter>. To escape without selecting a part, press <Escape>.

To delete a part (only available from within the program part screen):
- Use the arrow keys to navigate to the desired part.
- A white border will surround the currently selected part and its name will be highlighted in blue.
- Press <Delete> to delete.
- A confirmation dialog will open to confirm deletion of the part. Once a part is deleted, it cannot be recovered.
- To delete multiple parts, "Tag" the parts that you want to be deleted, then press <Delete> and all "Tagged" parts will be deleted.

Fast-Find Screen
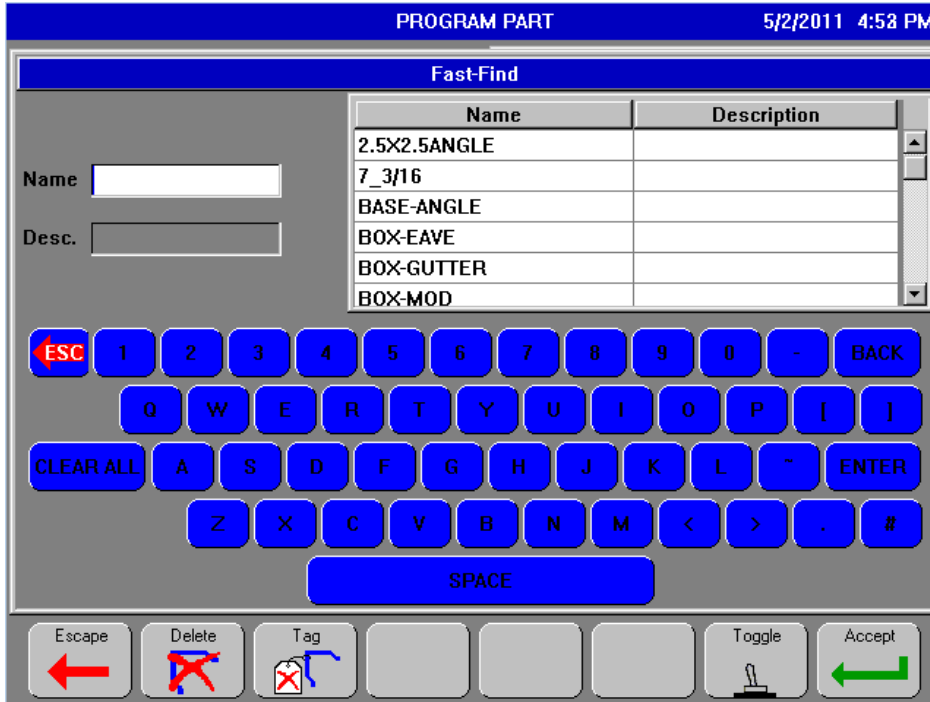
Escape	Press to close the Fast-Find browser without selecting a part.	Toggle	Press this button to switch between part name and part description.
Delete	Press to delete a part from the list.	Accept	Press to load the selected part.
Tag	Press to select multiple parts to delete from the list. After the parts are tagged, you can press the delete button to delete them.		

Fast-Find:

Fast-Find allows the operator to quickly find a part by partially entering its name. As each letter is entered, the database is searched for the next part name that matches the characters entered.

Example: If an "O" is entered, the "OUTSIDE-ANGLE" part name will be selected with a border. This is the first part in the database that alphabetically matches the first entered character. If you continue to enter "OUTSIDE-", the "OUTSIDE-ANGLE" will remain selected. If a "C" is entered on the end of "OUTSIDE-", the part "OUTSIDE-CORNER" will become selected because

it is the next closest partial match to the characters entered. The arrow keys can also be used to navigate through the part names. This allows you to enter only a few characters of a name to quickly get to an area of part names, then use the arrow keys to navigate to the actual part you want.

- To accept a part by press <OK> or <Enter>.
- To escape without selecting a part, press <ESC>.
- To delete a part, use the arrow keys to navigate to the desired part. A border will surround the currently selected part. Press <Delete> to delete. A confirmation dialog will open to confirm deletion of the part. Once a part is deleted, it cannot be   recovered.

To delete a part (only available from within the program part screen):
- Use the arrow keys to navigate to the desired part.
- A black border will surround the currently selected part.
- Press <Delete> to delete.
- A confirmation dialog will open to confirm deletion of the part. Once a part is deleted, it cannot be recovered.
- To delete multiple parts, "Tag" the parts that you want to be deleted, then press <Delete> and all "Tagged" parts will be   deleted.

Compact Flash Management Screen
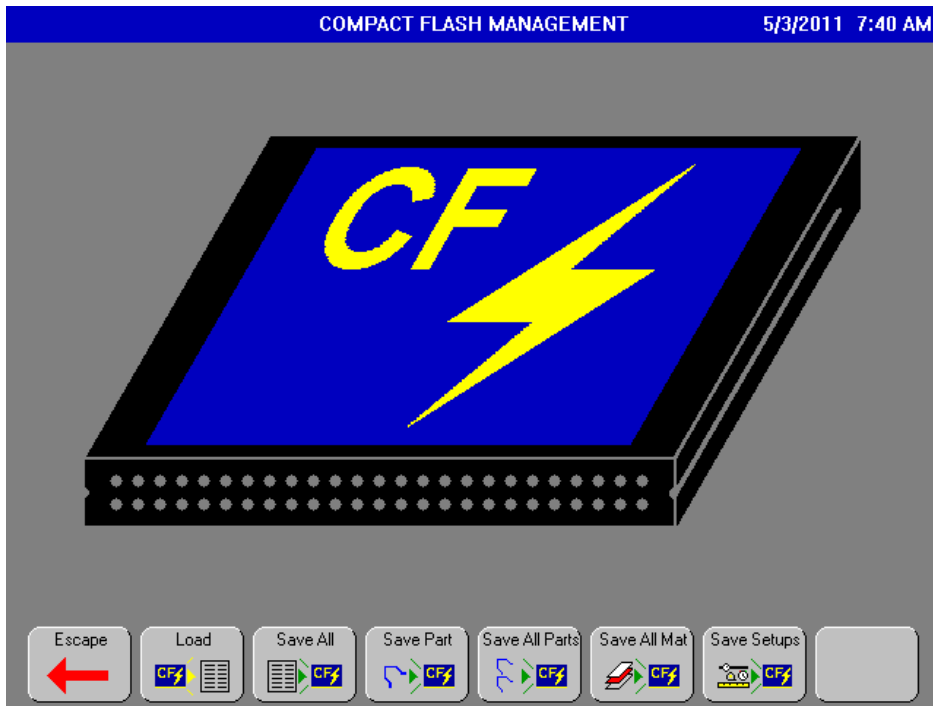
Escape	Press to return to the Setups screen.
Load	Press to import a file from the compact flash card. A file structure will come up to pick from.
Save All	Press to export everything to the compact flash card. After selecting, a keyboard will come up to type in a name.
Save Part	Press to export a specific part to the compact flash card. After selecting, a keyboard will come up to type in a name.
Save All Parts	Press to export all parts to the compact flash card. After selecting, a keyboard will come up to type in a name.
Save All Mat	Press to export all materials to the compact flash card. After selecting, a keyboard will come up to type in a name.
Save Setups	Press to export the setups to the compact flash card. After selecting, a keyboard will come up to type in a name.

Import (Load) a File from Compact Flash Card:
- Press <Import> (F2). A "Compact Flash Browser" dialog will open.
- Navigate to the file you want to load with the arrow keys, and press <Enter> or <OK>. The file can be Setups, Materials, or Parts, or can contain any combination of these.
- If you make a mistake, you press <Esc> to cancel.
- When importing parts or materials, if any item being imported has the same name as an item already in the database, a confirmation dialog will open to confirm the replacement of the database item with the item on the compact flash card.
- Care should be taken when importing setups, as there are no overwrite confirmations, since setups always have the same names. Once setups are imported, you cannot revert back to the previous values.

Export (Save) all to Compact Flash Card:
- This saves Setups, Materials, and Parts to a single file.
- Press <Export All> (F3). A "Save All Filename" dialog will open with a default filename of "FOLDER".
- Accept the default filename, or change it.
- Press <Enter> or <OK>.
- If you make a mistake, press <Esc> to cancel.

Export (Save) a Part to Compact Flash Card:
- This saves a specific part to the compact flash card.
- Press <Export Part> (F4). A "Part Browser" dialog will open.
- Navigate to the part you want to save and press <Enter> or <OK>.
- If you make a mistake, press <Esc> to cancel.

Export (Save) all Parts to Compact Flash Card:
- This saves all of the parts to the compact flash card.
- Press <Export All Parts> (F5). A "Save Parts Filename" dialog will open with a default filename of "PARTS".
- Accept the default filename, or change it.
- Press <Enter> or <OK>.
- If you make a mistake, press <Esc> to cancel.

Export (Save) all Materials to Compact Flash Card:
- This saves all of the materials to the compact flash card.
- Press <Export Materials> (F6). A "Save Materials Filename" dialog will open with a default filename of "MATERIALS".
- Accept the default filename, or change it.
- Press <Enter> or <OK>.
- If you make a mistake, press <Esc> to cancel.

Export (Save) Setups to Compact Flash Card:
- This saves the machine setups to the compact flash card.
- Press <Save Setups> (F7). A "Save Setups Filename" dialog will open with a default filename of "SETUPS".
- Accept the default filename, or change it.
- Press <Enter> or <OK>.
- If you make a mistake, press <Esc> to cancel.

Calibration Screen
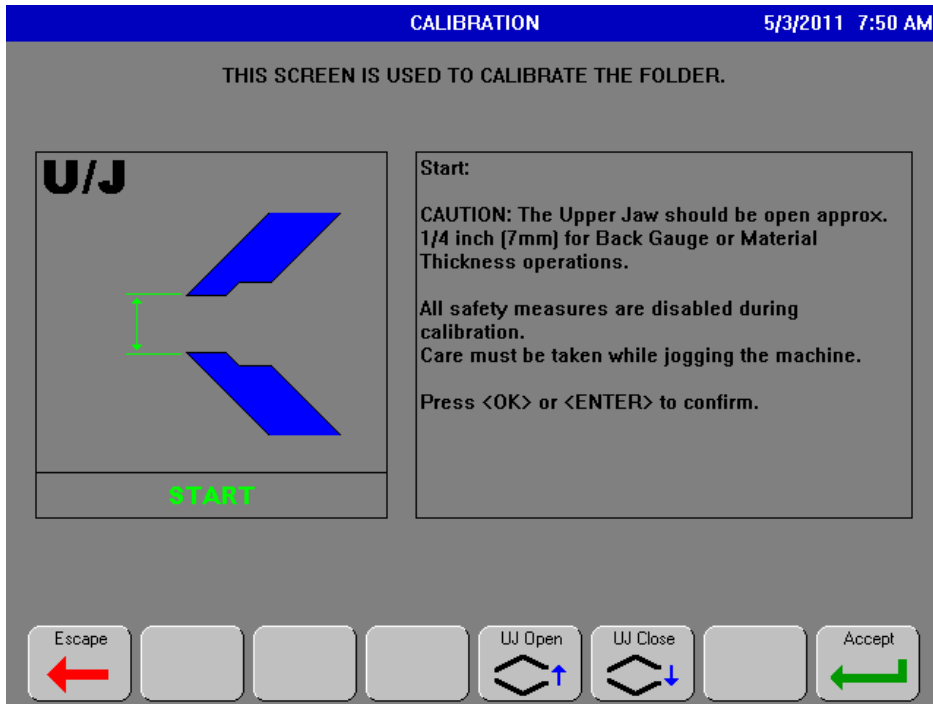
Escape	Press to return to the Setups screen.
UJ Open	Press to jog. This softkey will change depending on the item being calibrated.
UJ Close	Press to jog. This softkey will change depending on the item being calibrated.
Accept	Press to accept a position or entered value.

Calibration:

- Calibration of the machine is necessary in order to know where each motion item is.
- If parts are incorrect, you should calibrate the machine to ensure accuracy.
- Calibrating a machine with an Intelli-Fold controller takes only a few minutes.

Caution:
- Care must be taken while jogging items in the calibration screen.
- Machine damage can occur if one item is jogged into another one.
- There are no jog rules in place to ensure machine safety.

Calibration Procedure:
- Two information windows are displayed:
    - The left window shows a graphic representation of the selected item being calibrated and its position.
    - The right window contains a detailed text explanation of how to calibrate the selected item.
- After the initial step of opening the upper jaw to one inch minimum, and <Enter> or <OK> is pressed, you may select any specific item to calibrate. You are not forced to calibrate every item.
- If you are calibrating every item, the order in which the items are presented have been designed to permit a smooth process from start to finish.
- An actual calibration procedure is not presented here due to the detailed information on the controller itself.

Input / Output Screen

INPUTS AND OUTPUTS		5/3/2011 8:00 AM

INPUTS

- (J300-03) SHEAR SENSE
- (J300-04) SHEAR OT
- (J300-05) SHEAR HOME
- (J300-06) SHEAR LIGHT CURTAIN
- (J300-07)
- (J300-08) SETUP LOCKOUT
- (J301-01) BG1 HOME
- (J301-02) BG1 OT
- (J301-03) HYDRAULICS ON
- (J301-04) BG2 HOME
- (J301-05) BG2 OT
- (J301-06) BG READY
- (J301-07)
- (J301-08)
- (J302-01) LASER
- (J302-02)
- (J302-03) MACHINE HALT
- (J302-04) MAIN LEFT FOOT-CLOSE
- (J302-05) MAIN LEFT FOOT-OPEN
- (J302-06) MAIN RIGHT FOOT-BEND
- (J302-07) AUX. FOOT-OK
- (J302-08) E-STOP
- (J303-01) FRONT PANEL START BUTTON
- (J303-02) FRONT PANEL 2-MAN SELECTION

OUTPUTS

- (J400-02) ROTATE LIGHT-AMBER
- (J400-03) FLIP LIGHT-BLUE
- (J400-04) PRESSURE LIGHT-WHITE
- (J400-05) BUZZER
- (J401-01) HYDRAULICS ON REQUEST
- (J401-02) MT DECREASE
- (J401-03) MT INCREASE
- (J401-04) SHEAR OUT (FWD)
- (J401-05) SHEAR IN (REV)
- (J401-06) BG1 FINGERS
- (J401-07)
- (J401-08)
- (J401-09)
- (J401-10) BG2 FINGERS
- (J402-01) FB UP
- (J402-02) FB DOWN
- (J402-03) HIGH PRESSURE UNLOAD
- (J402-04) UJ UP
- (J402-05) UJ DOWN
- (J402-06) LOW PRESSURE UNLOAD
- (J402-07) UJ DECOMPRESSION
- (J402-08) BG JOGGING
- (J403-01) BG1 FWD
- (J403-02) BG1 REV
- (J403-03) BG1 SLOW
- (J403-04) BG2 FWD
- (J403-05) BG2 REV
- (J403-06) BG2 SLOW

F/B (J600)	U/J (J601)	M/T (J602)	C/P (J603)	B/G2 (J604)	B/G (J605)
N/A	N/A	N/A	N/A	N/A	N/A

Button	Description
Escape	Press to return to the Setups screen.
B/G Rev	Press and hold to jog the backgauge to the rear of the machine.
B/G Fwd	Press and hold to jog the backgauge to the front of the machine.
Mat Thick	Press and hold to increase the Material Thickness (upper jaw backward).
Mat Thin	Press and hold to decrease the Material Thickness (upper jaw forward).

Input/Output Screen (Cont'd.)

- The Input/Output screen is used to see the current state of the inputs, outputs, the analog positions, and the backgauges.
- It is used as a reference when something should be active.

Digital Inputs:

- In the table on the previous page, the left column shows all of the inputs. If an input is active, the circle to the left of the description will turn blue.
- All digital inputs are active low; so when an input is active, it is being pulled to ground (DC common).

Digital Outputs:

- In the table on the previous page, the right column shows all of the outputs. If an output is active, the circle to the left of the description will turn blue.
- J403 outputs:
  - ➢ These ouputs are active-high.
  - ➢ When they are active, they are at 24VDC.
  - ➢ To verify one of these outputs is working, it is recommended that you measure between ground (DC Common) and the output with a meter. When active, your meter should read 24VDC.
- All other outputs:
  - ➢ The digital outputs are active low.
  - ➢ When active, they are at 0VDC with respect to ground. (DC common).
  - ➢ To verify one of these outputs is working, it is recommended that you measure between +24VDC and that output with a meter. When active, your meter should read 24VDC.

Analog Inputs:

- The analog inputs, F/B, U/J, M/T, and C/P, are the raw positions, which the controller reads.
- These raw values are translated by using the setup parameters to obtain the actual positions.
- You should not try to translate these values into actual positions.
- A different machine may display a different value, even though the position is in the exact same location.

Backgauges:

- The values in the Backgauge 1 and Backgauge 2 fields are the relative backgauge positions; this means that when you show this screen, the backgauge values are cleared to 0.
- This allows you to easily see which direction, and how many encoder counts, have occurred since this screen was displayed.
- If you need to clear the encoder to count back to zero for any reason, leave the screen and then return to it.

Additional Information:

Jogging:

- The machine cannot be jogged while in the auto mode (header bar at the top of the screen is green).
- If the 2-man switch on the front panel of the controller is selected, the permission pedal must also be pressed to jog the upper jaw closed. This allows the second operator to confirm that it is OK to close the upper jaw.
- If the hydraulic unit is off, it will only turn on by jogging the upper jaw open, or by jogging the folding beam down.
- As a safety precaution, attempting to jog the upper jaw downward when the hydraulic unit is off, will not turn it on.
- While jogging the upper jaw closed, the upper jaw will stop at the safety stop distance.
- The "Close" pedal must be released, then re-pressed, to continue below the safety stop.
- There are also jog rules, which are enforced at all times, except in the calibration screen. These rules protect the machine from moving into positions that could cause damage to the machine. The rules are as follows:
  - ➢ The upper jaw must be open in order to jog the backgauges or the material thickness.
  - ➢ The upper jaw must be closed in order to raise the folding beam.

Backgauges:

- If a backgauge encoder resolution is set to zero, it will force the machine to skip positioning the backgauge; this allows the machine to partially operate if there is a backgauge drive failure.
- The user must manually position the material since the backgauge will not position automatically.

Backgauge Rear Approach Setups Parameter:

- This parameter is found under the "Backgauge" section of Setups.
- This Setup parameter allows the operator to force the backgauge to always approach from the rear of the target position.
- If set to "No", the backgauge can approach the target position from the front or the rear.
- If set to "Yes", the backgauge is forced to approach the target position from the rear only.
- If the current position is in front of the target position, the backgauge will move behind the target position and then approach from the rear.
- This setting should be set to "Yes" if the backgauge drive has gear backlash. If there is no gear backlash, setting this parameter to "No" will allow greater throughput when making parts.

Memory, Compact Flash, Files:

- Parts, Materials, and Setups are stored in the controller's memory.
- The compact flash card is used to back up these items, or to make copies of parts and materials for use on another machine.
- When a part is programmed and saved, it is saved into the controller memory, not to the compact flash card.
- When a part is selected to run, it is retrieved from the controller memory, not from the compact flash card.
- The compact flash card does not have to be inserted into the controller for the machine to operate.
- The controller does not have to be turned off in order to insert or remove the compact flash card.
- The machine data stored on the compact flash card may be copied to a PC for safekeeping.
- The type of data that is saved on a compact flash card is in text form; therefore, sections of files can be merged into a single file, and then easily imported into the controller.

Hems:

- If a zero is entered in the "Auto-Hem Time" setup parameter, the bend pedal must be pressed to complete the hem and open the upper jaw.
- If a value other than zero is entered, the bend pedal does not need to be pressed. The value entered in the setup parameter will be used as the hem delay time.
- Once pressure is reached during a hem operation, a time delay will start. When the delay expires, the upper jaw will open.
- During the hem delay, the bend pedal may be pressed to end the hem cycle early.

Help System:

- While any item is selected, press <HELP> to get help on that item.
- There is also a help index that lists every item that is associated with help.
- Press and release <SHIFT>, then press <HELP> to open the help index.
- Select the item you want help with, then press <ENTER>.
- Press any key to close the item details, then select another item and press <ENTER> for the next item you want help with.
- To close the help index, press any key other than <ENTER>.

Maximum Auto Stopping Distance Adjustment Parameter (Setups):

This parameter sets the maximum amount of distance the "stopping distance" parameter is allowed to change each time the backgauge attempts to reach a target.

Example: (tolerance 0.02 inch; stopping distance 0.25 inch; maximum auto Stopping distance adjustment 1 inch)

- When the backgauge moves towards the target, it overshoots by 0.02 inch.
- The backgauge position is still in tolerance, but not exactly on target.
- The controller will adjust the stopping distance to be 0.02 inch earlier (more) than it was previously set at. This makes the backgauge to stop an additional 0.02 inch earlier than before to make it coast exactly on target.
- The Maximum Auto Stopping Distance Adjustment sets a limit to the maximum amount the Stopping Distance parameter is allowed to change for each new backgauge position movement.
- If the Maximum Auto Stopping Distance Adjustment parameter is set to 0 inch, the Stopping Distance parameter will never be allowed to automatically adjust.
- There may be a large difference of the amount of load that is put on the backgauge. This parameter allows the controller to automatically adjust itself to attempt to compensate for these variances.
- A jam-up resulting in an error greater than Maximum Auto Stopping Distance Adjustment will not alter the stopping distance.

Light Tower:

White (top) = Clamp has reached programmed pressure.
Blue (middle) = Flip, or when Helicopter and Propeller are both used.
Amber (bottom) = When a Helicopter Rotate the light flashes; when a Propeller Rotate the light is on solid.

Flip	Heli	Prop	Light Stack
●			**Blue**
	●		**Amber (Flashing)**
		●	**Amber**
	●	●	**Blue**

Movement Rules:

- When the backgauge is homing, the upper jaw will open to 1 inch if it is not already open 1 inch or more.
- Shear will not operate under the following conditions:
  - An operation step number is zero.
  - An operation shear length is zero.
  - The CPI in setups is zero.
- After a shear operation is started, pressing the bend pedal will force the shear to end its cycle and return home.

Upgrading Controller Application Code:

- Two files are required to update the Intelli-Fold controller:
  - The compact flash updating program.
  - The Intelli-Fold application code.
- The above two files should be copied to a compact flash card under a directory named BA1100.
- When viewing the compact flash directory structure on a PC, it should look like the following:
  (If Your Compact Flash Drive Letter is E:)   **E:\BA1100\AUTORUN.S19**
                                                        E:\BA1100\Folder.S19
                                                        E:\BA1100C\AUTORUN.S19
                                                        E:\BA1100C\BA1100C-D_IntelliFold.S19
- Before upgrading the firmware, make a backup of all setups, materials and parts to the compact flash card, using the Compact Flash Management screen.
- Power off the controller and insert the compact flash card that contains the firmware.
- While holding down <Program> and <F1>, power on the controller. You may release the keys after three seconds.
- The new application that is contained on the compact flash card will be programmed into the controller. This process will take approximately 3 to 5 minutes.
- During this time, the screen may display strange patterns and colors, which is normal.
- When the splash screen appears, turn the controller off. While holding down <F5>, power the control back on.
- Release <F5> when the splash screen appears; this will clear and initialize the database memory.
- **Note:** It is very important to perform this step. If the database is not initialized after new code is installed, unpredictable results may occur.
- The setups, materials, and parts can now be imported (loaded) from the compact flash card.

Modified Shear Operation:

- When performing a shear operation with the 'Flip' and 'Heli Rotate' items selected, the controller has a slightly different behavior when running the shear. This is useful when using hemming or other types of attachments.
- Normally, when performing a standard shear operation, the "Distance To Bend Edge" setup parameter is the shear offset value.
- When a modified shear operation is performed ('Flip' and 'Heli Rotate' lights on), the distance to bend edge value will be entered into the Bump-Bend radius field. This allows any number of additional attachments to be used without the need to change the "Distance To Bend Edge" setup parameter for each type of attachment.
- The 'Flip' and 'Heli Rotate' lights tell the controller to ignore the "Distance To Bend Edge" setup parameter and to use the Bump-Bend radius field as the tool offset distance.

Machine Operation Flow:

- When running in auto mode, the blue and amber lights on the light tower will turn on with the amber light blinking.
- After the machine has clamped to pressure, press the bend pedal to start the shear.
- Once the shear has traveled to the programmed distance, it will stop.
- The upper jaw will open to allow the removal of the material, and or insertion, of a new piece of material. At this point, the upper jaw may be repositioned or clamped to pressure. If clamped to pressure, the current operations programmed pressure is used. The white lamp will also illuminate to show that clamp is at pressure.
- Press the bend pedal to return the shear back to the home position.

Digital, Variable Frequency Drives (VFD) and Servo Backgauge Drives:

Variable Frequency Drives (VFD):

- The Intelli-Fold controller has the following digital outputs available: a) <u>Forward</u>, b) <u>Reverse</u>, and c) <u>Slow</u>.
- The simplest way to wire the controller to a VFD is to connect these outputs to digital inputs on the VFD and program the drive to run at predetermined set-points for fast and slow based on these inputs.
- The speeds for fast and slow along with the ramps are determined by the drive.
- If the motor has a brake, you need to release the brake anytime the forward or reverse outputs are on.
- If the drive is equipped with an analog input, you may also use the Intelli-Fold analog output to tell the drive what speed to run. In this case, the drive needs to be enabled anytime the forward or reverse outputs are on
- If the drive accepts a bipolar velocity command, the direction can be determined by the analog voltage. If not, reverse needs to be a digital input into the drive.

Analog Speed Output:

- <u>Caution</u>: The Intelli-Fold analog output is differential; this means that both the "plus" and "minus" analog signals vary with respect to ground.
- If your drive has a single-ended input (one signal is shorted to ground) you must use an adapter. The Beck Automation "Analog Converter" (item number BA1045) accomplishes this.
- If using the Intelli-Fold analog output, you can set the speeds (command voltage levels) via setup parameters in the Intelli-Fold controller.
- You can use the ramp times in the drive, in which case you would set the ramp times in the Intelli-Fold to zero. Or, you can set the ramp times in the drive to a minimum value and program the ramps in the Intelli-Fold controller.

Servo Drives:

- Most servo drives have a bipolar velocity command input. Connect the Intelli-Fold analog output to this input.
- Adhere to the same precautions mentioned above.
- The drive needs to be enabled anytime the forward or reverse outputs are on. You may tie them together (wired-OR) and use that combined signal to enable the drive.
- Speed ramps will be determined by the settings in the Intelli-Fold controller.

Light Curtain:

- The logic for the Light Curtain sensor input on the controller is on (active-low) when the curtain is clear (or OK).
- When blocked during a shear operation, the input should turn off, which signifies an error condition.