



Stirrup Bender Controls

EQUIPMENT MANUAL

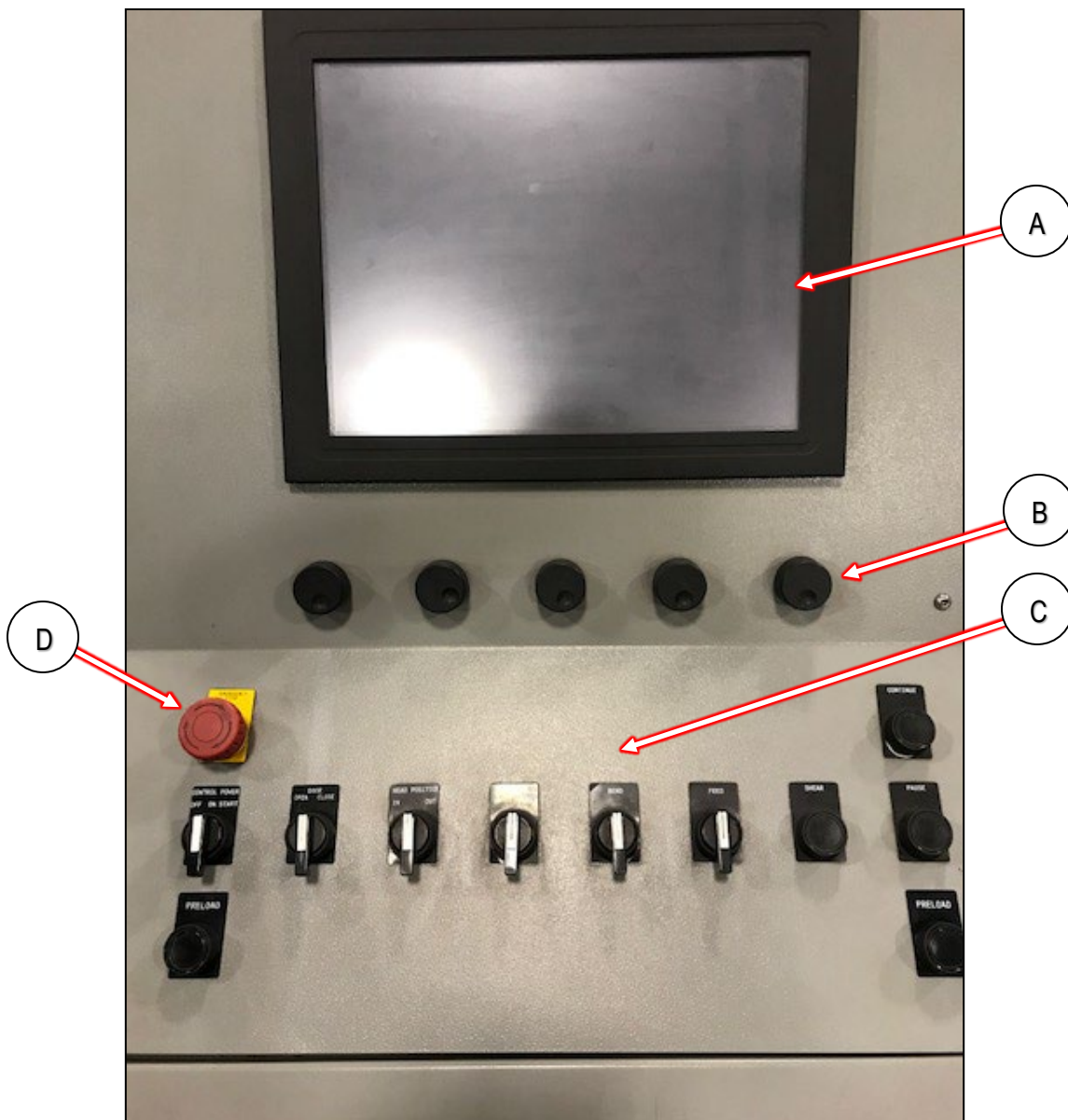
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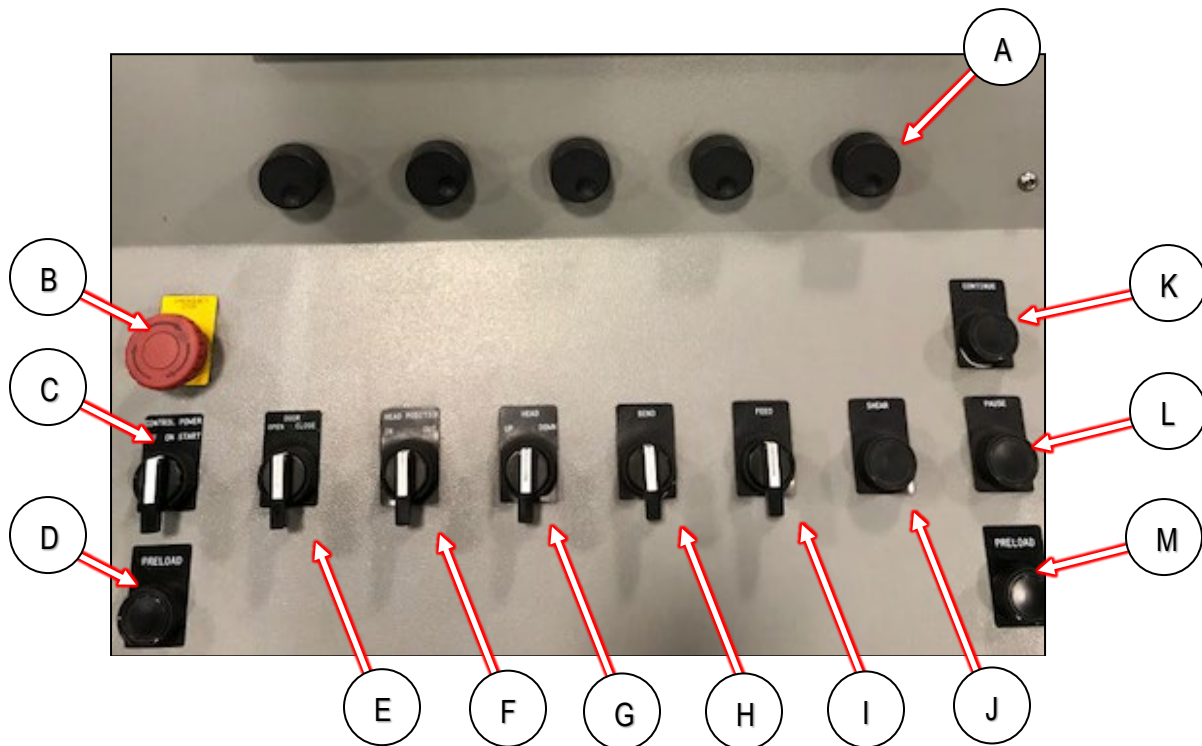
Control Console

Pictured below is the control console for the KRB Machinery Bar Form 616B.



- A:** Touch Screen Display
- B:** Function Control Dials
- C:** Shear, Front Door, Pause, Continue, Head Up/Down, Head In/Out, Feed Fwd/Rev, and Bend CW/CCW
- D:** Emergency Stop

Function Control Switches and Dials



A: Context Specific Function Adjustments (Qty 5)

Used to adjust variables as depicted by on-screen context. The five rotary encoder knobs below the screen on the console are used to provide various inputs to the software. Each knob is associated with a specific color. The five colors are shown in a bar at the bottom of the screen, and each color block can have text inside describing the function of the knob in the current context. The left-to-right order of the five parts of the color bar corresponds to the left-to-right order of the encoder knobs on the console. The input fields controlled by a specific encoder knob are boxed or highlighted with the knob's associated color. If you see a colored box or field, you can adjust that parameter with the appropriate knob. If there is a colored box around a field, it is not necessary to touch the field before turning the knob – it is already active. A gray box indicates that the field can be modified by an encoder knob, but it is not currently active. In this case, touching the gray field will make it active, and de-activate another field in the process. The context-dependent function of the knobs is described in later sections as appropriate.

B: Emergency Stop

Press to deactivate all drives, stopping and preventing all motion. Pull out to reset machine.

C: Control Power

Applies power for machine functionality.

D: Preload

Simultaneously press PRELOAD push button (K); Closes Primary Guard door and Primary Drive feeds bar.

E: Door

OPENS and CLOSES the front door of the machine, switch is active in MANUAL mode.

F: Head Position

Select IN to retract bend mandrel or OUT to extend bend mandrel. Switch is active in MANUAL mode.

G: Head

Select UP to raise bend mandrel or DOWN to lower bend mandrel. Switch is active in MANUAL mode.

H: Bend

Select CCW or CW direction to bend bar. Switch is active in MANUAL mode.

I: Feed

Select FORWARD or REVERSE direction to feed bar. Switch is active in MANUAL mode.

J: Shear

Cycles shear manually when while in MANUAL mode.

K: Continue

Starts automatic cycle when prompted by controller. Will also continue production cycle after it has been paused. Button is active in AUTO mode.

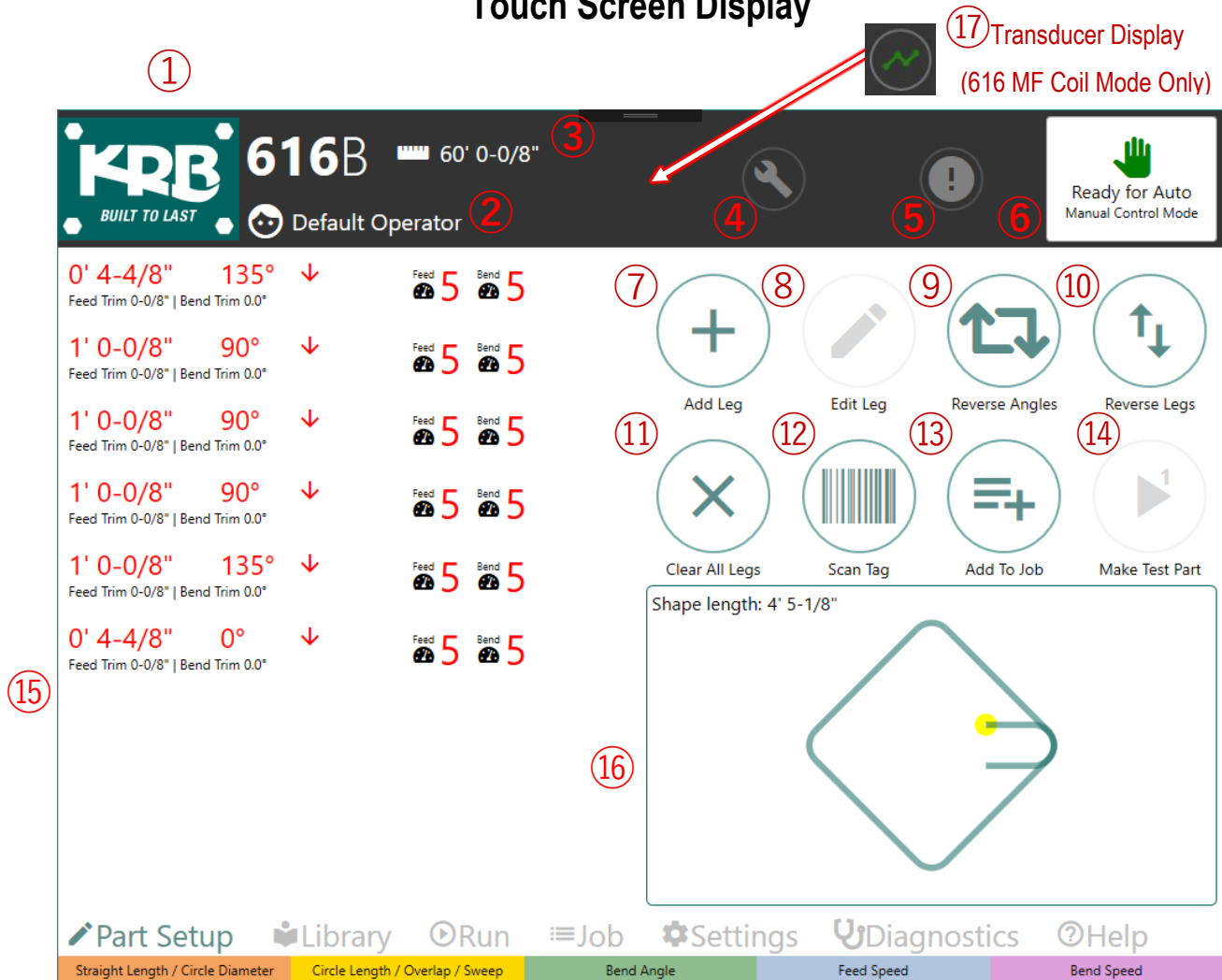
L: Pause

Pauses automatic cycle of machine after part currently being processed is finished and allows any function to be taken. Button is active in AUTO mode.

M: Preload

Simultaneously press PRELOAD push button (K); Closes Primary Guard door and Primary Drive feeds bar.

Touch Screen Display



Primary Screens:

Just above the colored bar at the bottom of the screen is a row of labels representing the primary views or screens you will use to perform various tasks. To switch to a different screen, touch the appropriate label in this row.

Secondary Screens:

In certain primary screens, you will find a button bar at the left side to switch between various views within the primary screen. You can expand or collapse the bar by touching the three horizontal lines at the top. When collapsed, only the icons in the bar are visible. When expanded, you can see a text description along with the icon. Touch one of the icons to switch to a different secondary view.

Message Center

The Message Center display gives you status information and prompts for actions you must take. Items you may see here are prompts to load bar, when your bundle count has been reached, when you have a part switch (job mode).

Startup Screen (Part Setup)

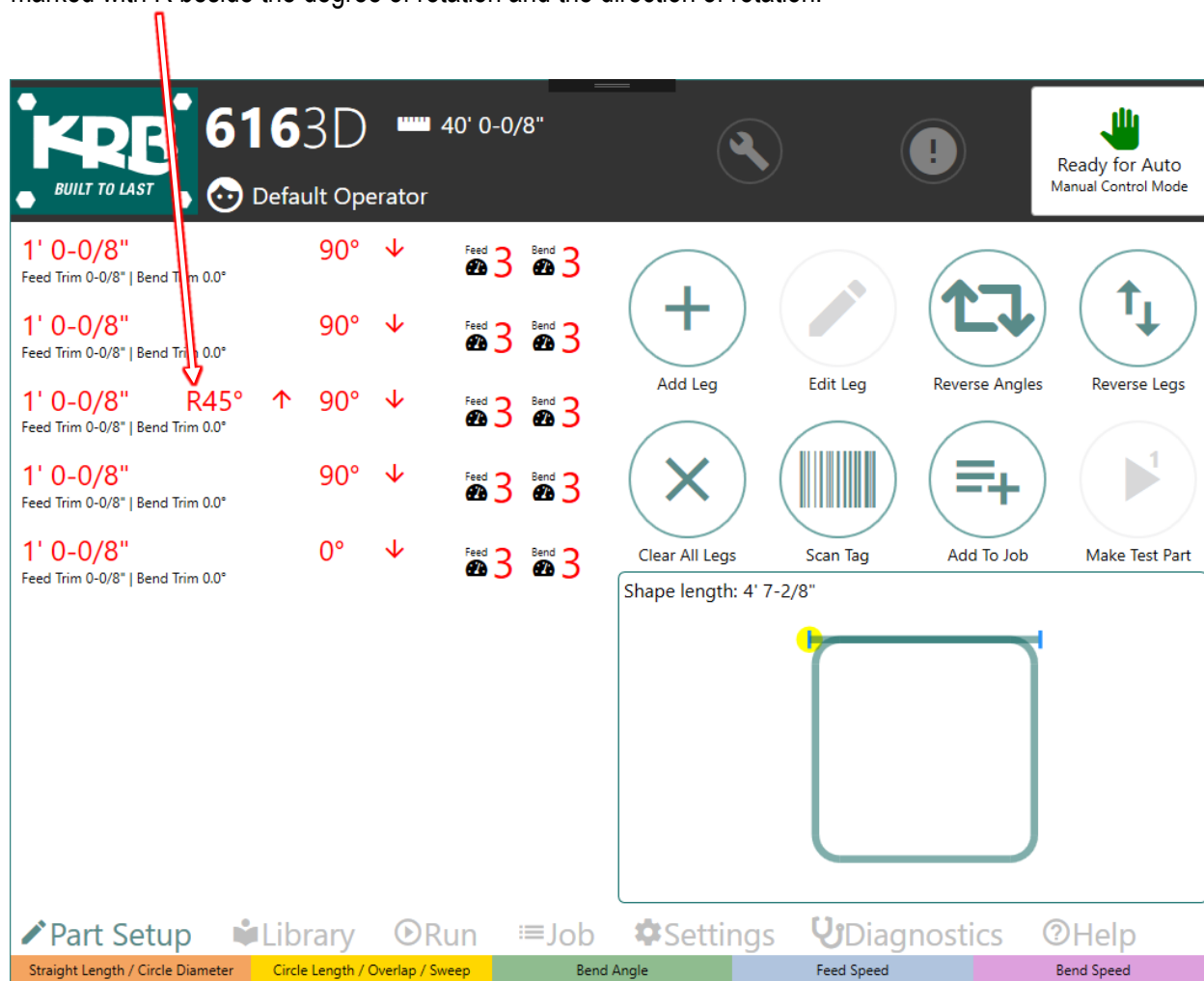
The screen which appears at startup is Part Setup. To select a different primary screen, touch from the labels along the bottom: Part Setup, Library, Run, Job, Settings, Diagnostics, and Help. The active screen will have its label in green font while the others are in gray.

Part Setup

This screen is where you will create and edit the shapes representing the parts you wish to make. The left side of the view contains the leg list for the current working shape. On the right side are buttons for various functions as well as a region which displays a picture of the current working shape.

Part Setup with 3D

This screen looks the same for 3D Automatic Stirrup Benders as above, except that legs with a rotation are marked with R beside the degree of rotation and the direction of rotation.



① Equipment Shut Down

Touch and hold KRB Logo for 5 seconds to initiate a controlled shutdown process. It is never good practice to turn equipment OFF until the shutdown process has completed.

② Operator Display

Shows the currently assigned operator for the machine. This can be changed under the Machine Setup tab as described later.

③ Bar Counter

For all machines except for the 613C, the length of bar currently in the machine is displayed when the machine is in Bar mode. If no bar is present, "Out of bar" will be displayed. This counter is valid when the bar was loaded into the machine after switching to Bar mode.



For the 616 Multiform in Coil Mode is active, instead you will see the **Transducer Display** icon.

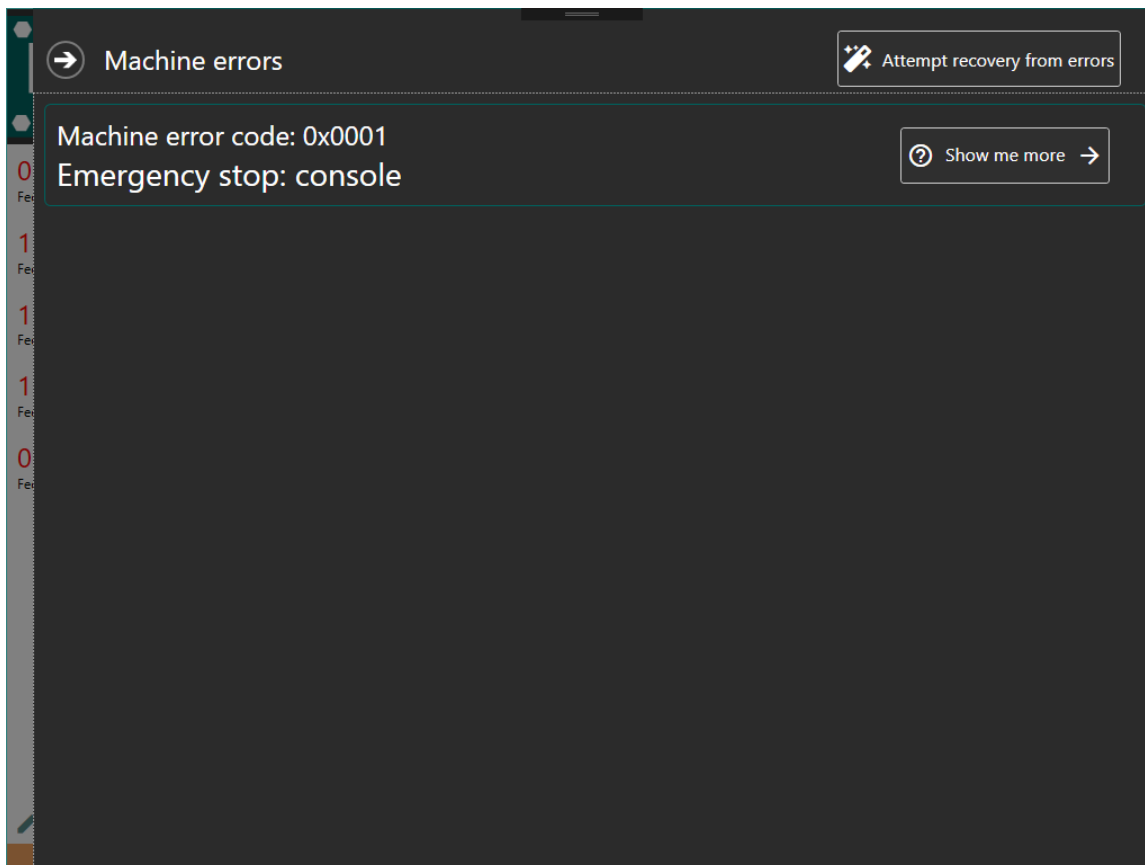
See ⑪⑦ **Transducer Display** below.

④ Maintenance Reminders

The maintenance reminder wrench icon will be enabled when the operating hours of the machine reach a maintenance milestone as specified in the required maintenance schedule section of the manual. When the maintenance tasks have been performed, the maintenance reminders may be dismissed.

⑤ Error Display

When a machine error occurs, the auto/manual block switches to the error state, and the round error button at the top of the screen turns red. The numeric label on the error button shows the number of errors currently active.



To display the list of errors, touch either the error button or the auto/manual block. The errors flyout will show you a list of the current machine errors. When you have taken corrective action for each error, press the **“Attempt recovery from errors”** button with the magic wand icon at the top right. Any errors that cannot be cleared at that point will remain in the list. If all the errors can be cleared, a large green check mark appears and the flyout automatically closes. If you wish to close the flyout manually, press the arrow in the top left. Touching **“Show me more”** will redirect you to the **Help** screen.

⑥ Machine Status / Auto-Manual Bend

Touch the block in the top right to toggle between manual and automatic modes. This block can display four different states: machine error, manual only, manual / ready for auto, and automatic mode. Switching to automatic mode can only be done from the manual / ready for auto state. Manual only mode is enforced if the front door or straightener guard is open – close these to enable the manual / ready for auto state. The manual control switches and buttons on the console are only active when the machine is in manual only or manual / ready for auto mode.

Homing

On all machine variants, the first automatic mode operation after startup or error will cause the bend head to go through a homing procedure to determine its rotational position. On the 1020B and 1020M, the head up/down axis will perform a similar homing procedure prior to the head rotational axis. While homing is in progress, a flyout will appear informing you of the machine status. Once the axes are homed, they will not have to be re-homed until the machine is shut down, or a machine error occurs.

⑦ Add Leg

To add a leg to your shape, press the Add Leg button. A flyout appears with fields you will edit to describe the leg you wish to add.

At the top left is a drop-down menu that allows you to select the leg type. These types include: **Straight Leg**, **Arc/circle with overlap length**, **Arc/circle with total length**, and **Arc/circle with sweep angle**.

At the top right are three buttons: **Cancel**, **Add**, and **Add and do another**. The cancel button closes the flyout without making any changes. Add adds the leg you specified to the shape and closes the flyout. “**Add and do another**” adds the leg you specified to the shape but leaves the flyout open for adding another leg. **Add and do another** is the same as **Add**, and then pressing **Add Leg** again from the **Part Setup** screen. At the bottom right is a drawing of the shape as it currently exists.

At the bottom left is the panel where you specify the bend angle at the end of the leg. There are four “easy buttons” for **45**, **90**, **135**, and **180**, or you can type in any desired angle from 0 to 180. **Clear** resets the bend angle to 0, and the backspace removes the last digit. There are also two buttons to specify whether you want to bend up or bend down. The yellow-highlighted button is the current selection.

At the top right are several fields controlled by the encoder knobs. **Feed trim** and **bend trim** adjust the feed length and bend angle, and **feed speed** and **bend speed** (ranging from 1 at the slow end to 9 at the fast end) set the machine speeds for this leg.

Other regions of the **Add Leg** flyout depend on what leg type you are entering; these will be discussed in the following sections.

Straight Leg

When adding a straight leg, the top left entry panel is where you specify the feed length. This allows you to enter the feed length in terms of feet, inches, and eighths (or mm in metric mode). Clear resets the feed length to 0.

To the right of the length display is a red numeric field – this is your input “staging area.” Numbers you enter show up here before pressing the desired unit button (**ft**, **in**, or **1/8**). After pressing the unit button, the number in the staging area combined with the unit you selected determines how much is added to the length. Each entry you make adds to what is currently in the length field.

As an example, if you wanted to enter in 1' 5-3/8" and your length was currently 0, you could press 1 followed by **ft**, 5 followed by **in**, and 3 followed by **1/8**. This changes the length from 0, to 1', to 1' 5", to 1' 5-3/8". You can do this in any order, and even use smaller units to make larger ones. For instance, starting with a length of 0, you could enter 3 followed by **1/8**, and then 17 followed by **in** – this would achieve the same result as before, 1' 5-3/8". Similarly, 2' can be entered as 24", 12" + 12", or even 192 of the 1/8 unit. Every entry you make simply adds to what is currently in the length field. Again, to reset to zero, use the Clear button – remember, if you had 2' in the length, and you pressed 0 followed by **ft**, you would be adding 0' to the length already there; it would therefore remain at 2'.

The backspace key works on the staging area by removing the last digit there.

The final feature of the length entry panel is setting the head position. There are three choices here: Head In, Head Out, and Head Auto. Head auto is the default. When making certain shapes, it is advantageous to retract the head before feeding on certain legs to avoid bar crossing over the bend area from being snagged on the head, distorting the shape. The Head Auto setting attempts to do the right thing based on where the leg falls in a shape. You may decide that the head needs to be pulled in when it doesn't do so automatically, or you may decide that it can stay out rather than being pulled in automatically. The Head In and Head Out settings force the head to be retracted or left out during a feed, overriding the automatic determination. Normally, you will leave legs set to Head Auto, unless you want to explicitly override the default behavior.

At the top right with the trims and speeds is a field called Repeat Count. The default value for this is 1. If you were creating a shape with a leg that occurs multiple times in a row, such as a square tie, you can adjust this value to reflect how many copies of your leg to add to the shape.

3D Straight Leg

Adding a Straight Leg with a 3D Automatic Stirrup Bender works the same as above, except that beside the Bend Angle button, there is the 3D Rotate Angle button which allows you to rotate the entire length of bar. Unlike with Bend Angles, the only “easy button” angles are 45° and 90° along with buttons to determine which direction bar will rotate (up or down). Regardless of what order the data is entered for the leg, the feed length will be made first, the leg rotation will follow, and the leg bend will be last.

Stirrup Bender Controls



Add: Stirrup Leg Cancel + Add ↺ Add and do another

Length: 1' 0-0/8" 0

1	2	3	ft	Head In
4	5	6	in	Head Out
7	8	9	1/8	Head Auto
Clear	0	↶		

Bend angle: 90° 3D rotate angle: 45°

1	2	3	45°	↑ Rotate Up ↓ Rotate Down
4	5	6	90°	
7	8	9		
Clear	0	↶		

Repeat Count: 1

Feed Trim: 0-0/8" Bend Trim: 0.0°

Feed Speed: 5 Bend Speed: 5

Repeat Count Feed Trim Bend Trim Feed Speed Bend Speed

Add: Stirrup Leg Cancel + Add ↺ Add and do another

Length: 1' 0-0/8" 0

1	2	3	ft	Head In
4	5	6	in	Head Out
7	8	9	1/8	Head Auto
Clear	0	↶		

Bend angle: 90° 3D rotate angle: 45°

1	2	3	45°	↑ Bend Up ↓ Bend Down
4	5	6	90°	
7	8	9	135°	
Clear	0	↶		

Repeat Count: 1

Feed Trim: 0-0/8" Bend Trim: 0.0°

Feed Speed: 5 Bend Speed: 5

Repeat Count Feed Trim Bend Trim Feed Speed Bend Speed

Arc/Circle Leg

When entering arc/circle legs, the primary difference between a straight leg and an arc/circle leg is that you need to specify two parameters (diameter + something else) rather than just one (length). The top left panel allows you to enter these two parameters depending on what leg type you have selected. You will always enter the diameter as one parameter. The other can be one of the following: overlap length, total length, or sweep angle. Both parameters are entered in the same panel; the currently active one is the yellow-highlighted field. Data entry here works just like that for straight leg length.

Instead of the head position buttons, you have the option of specifying a clockwise-fed circle (downward-going) or a counterclockwise-fed circle (upward-going). Yellow highlighting indicates the currently selected option; touch the grayed button to switch.

In the top right panel with the encoder knob-controlled inputs is a parameter called Circle Trim. This allows you to adjust the finished diameter of the part. If fabricated circles are too small, adjust the circle trim down. If fabricated circles are too big, adjust the circle trim up. When adjusting the size of your finished circle, do NOT adjust the diameter parameter – doing this will affect the part in other ways. The diameter is used to calculate how much bar makes a complete circle. The circle trim is used to adjust the fabricated finished diameter. When dealing with large circles, a little trim goes a long way. With smaller circles, you will have to be more heavy-handed with the trim.

Stirrup Bender Controls



Arc/Circle with Total Length

If diameter is highlighted, and you wish to enter the overlap length, touch the overlap field. This will switch the highlighting to the overlap field, indicating that any entry will affect overlap, not diameter.

Add: Arc/circle with total length

Cancel Add Add and do another

Diameter: 0' 0-0/8" Length: 0' 0-0/8" 0

1 2 3 ft Clockwise

4 5 6 in Counterclockwise

7 8 9 1/8

Clear 0 ↩

Bend angle: 0°

1 2 3 45°

4 5 6 90° Bend Up

7 8 9 135° Bend Down

Clear 0 ↩ 180°

Circle Trim 0.0° Update Circle Calibration

Feed Trim 0-0/8" Bend Trim 0.0°

Feed Speed 3 Bend Speed 3

Circle Trim Feed Trim Bend Trim Feed Speed Bend Speed

KRB 616B 60' 0-0/8"

BUILT TO LAST Default Operator

Ready to Run Automatic Mode

2' 0-0/8" dia 0°

8' 0-0/8" len

Feed Trim 0-0/8" | Bend Trim 0.0° | Circle Trim 0.0°

Feed 3 Bend 3

+ Add Leg

Edit Leg

Reverse Angles

Reverse Legs

✕ Clear All Legs

Scan Tag

Add To Job

Make Test Part

Shape length: 8' 0-0/8"

Part Setup Library Run Job Settings Diagnostics Help

Straight Length / Circle Diameter Circle Length / Overlap / Sweep Bend Angle Feed Speed Bend Speed

Arc/Circle with Overlap Length: See above under Arc/Circle Leg for instructions.

Add: Arc/circle with overlap length
Cancel
Add
Add and do another

Diameter: 0' 0-0/8"
Overlap: 0' 0-0/8"
0

1 2 3 ft
2
Clockwise

4 5 6 in
2
Counterclockwise

7 8 9 1/8

Clear 0 ↶

Circle Trim: 0.0°
Update Circle Calibration

Feed Trim: 0-0/8"
Bend Trim: 0.0°

Feed Speed: 3
Bend Speed: 3

Bend angle: 0°

1 2 3 45°
2
Bend Up

4 5 6 90°
2
Bend Down

7 8 9 135°

Clear 0 ↶ 180°

Circle Trim

Feed Trim

Bend Trim

Feed Speed

Bend Speed


616B
60' 0-0/8"
Wrench Icon
Warning Icon
Ready to Run Automatic Mode

BUILT TO LAST
Default Operator

2' 0-0/8" dia
0°
↓ ↺

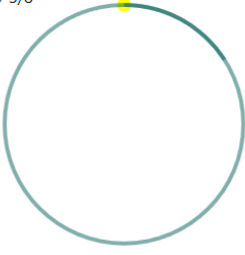
1' 0-0/8" ovr

Feed 3 Bend 3

Feed Trim 0-0/8" | Bend Trim 0.0° | Circle Trim 0.0°

+ Add Leg
✎ Edit Leg
↺↻ Reverse Angles
↕↕ Reverse Legs

✕ Clear All Legs
📊 Scan Tag
≡+ Add To Job
▶¹ Make Test Part

Shape length: 7' 3-3/8"


Part Setup
Library
Run
Job
Settings
Diagnostics
Help

Straight Length / Circle Diameter
Circle Length / Overlap / Sweep
Bend Angle
Feed Speed
Bend Speed

Stirrup Bender Controls



Arc/Circle with Sweep Angle: See above under Arc/Circle Leg for instructions. In the case of sweep angle, the only unit button is degrees. Note that you must still press the degree button, even though it is the only one available.

Add: Arc/circle with sweep angle Cancel Add Add and do another

Diameter: 0' 0-0/8" Sweep: 0° 0

1 2 3 ft Clockwise

4 5 6 in Counterclockwise

7 8 9 1/8

Clear 0 ↩

Bend angle: 0°

1 2 3 45°

4 5 6 90° ↑ Bend Up

7 8 9 135° ↓ Bend Down

Clear 0 ↩ 180°

Circle Trim 0.0° Update Circle Calibration

Feed Trim 0-0/8" Bend Trim 0.0°

Feed Speed 3 Bend Speed 3

Circle Trim Feed Trim Bend Trim Feed Speed Bend Speed

KRB 616B 60' 0-0/8" Default Operator Ready to Run Automatic Mode

2' 0-0/8" dia 0° ↓ ↺

450° swp Feed 3 Bend 3

Feed Trim 0-0/8" | Bend Trim 0.0° | Circle Trim 0.0°

+ Add Leg ✎ Edit Leg ↺↻ Reverse Angles ↕ Reverse Legs

✕ Clear All Legs 📊 Scan Tag ≡+ Add To Job ▶ Make Test Part

Shape length: 7' 10-1/8"

Part Setup Library Run Job Settings Diagnostics Help

Straight Length / Circle Diameter Circle Length / Overlap / Sweep Bend Angle Feed Speed Bend Speed

⑧ Edit Leg

The Edit Leg button is active when a single leg is selected in the leg list. Pressing this button opens a flyout where you can make changes to that leg. At the top right, pressing Cancel will close the flyout without making changes, whereas pressing Apply changes will close the flyout and change your shape. Note that editing a leg will not allow you to change the leg type – you can only edit the leg in the same mode it was entered originally.

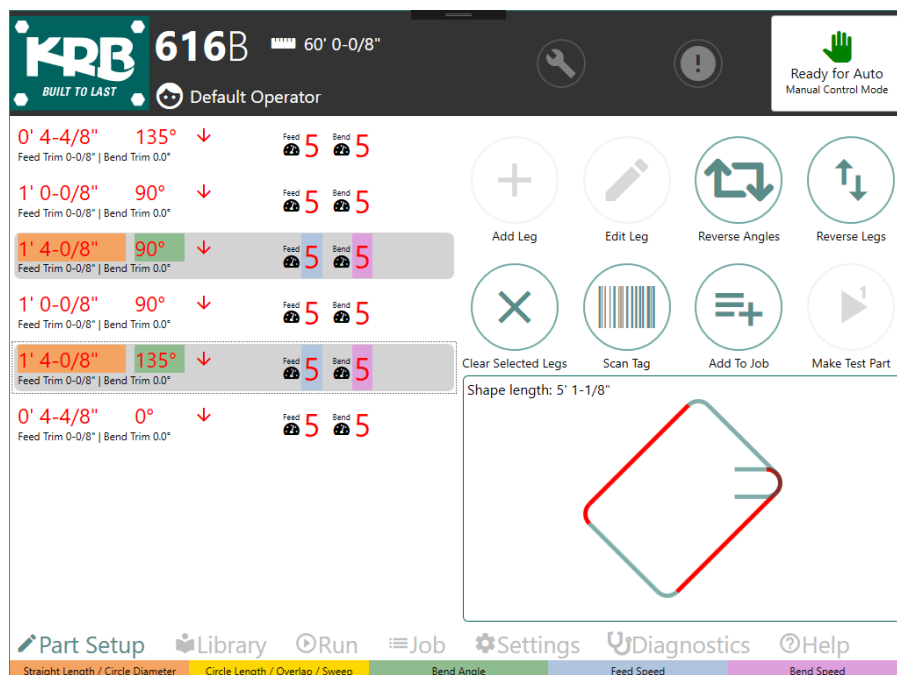
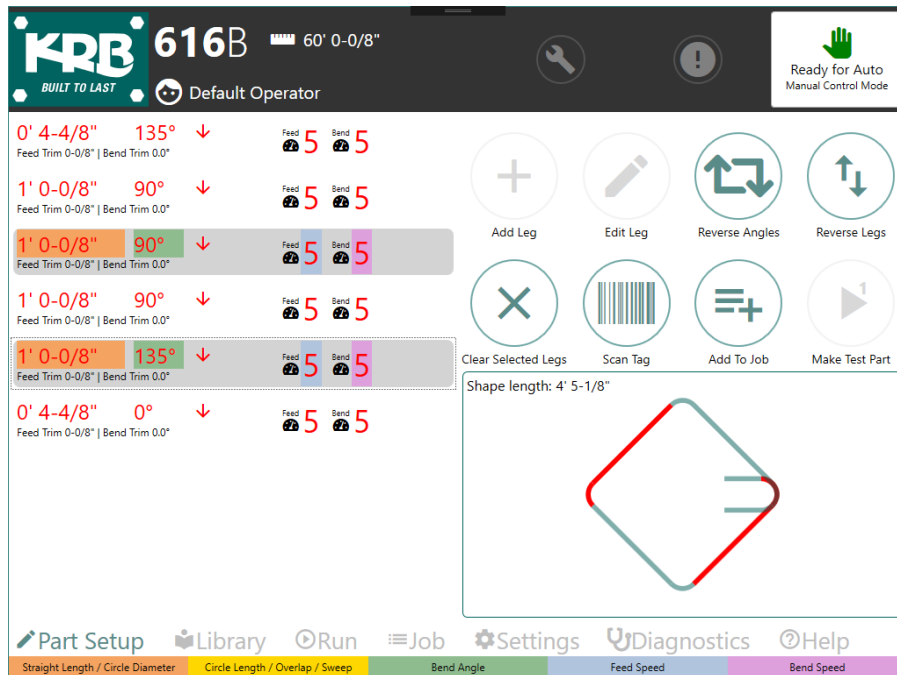
The screenshot displays the 'Edit Leg' flyout interface. At the top right are 'Cancel' and 'Apply changes' buttons. The main area is divided into several sections:

- Length:** A yellow header bar shows 'Length: 2' 0-0/8"'. Below it is a numeric keypad (1-9, 0, Clear, Backspace) and unit buttons (ft, in, 1/8). To the right are 'Head In', 'Head Out', and 'Head Auto' icons.
- Bend angle:** A yellow header bar shows 'Bend angle: 0°'. Below it is a numeric keypad (1-9, 0, Clear, Backspace) and angle buttons (45°, 90°, 135°, 180°). To the right are 'Bend Up' and 'Bend Down' icons.
- Repeat Count:** A numeric input field showing '1'.
- Feed Trim:** A numeric input field showing '0-0/8"'. Below it is a 'Feed Speed' input field showing '5'.
- Bend Trim:** A numeric input field showing '0.0°'. Below it is a 'Bend Speed' input field showing '5'.

At the bottom right is a diagram showing a red line representing the leg, with a yellow dot indicating the bend point. A legend at the bottom identifies the input fields: Repeat Count (orange), Feed Trim (yellow), Bend Trim (green), Feed Speed (blue), and Bend Speed (purple).

Editing Legs with Knobs

Quick edits to certain parameters of the shape legs can be performed with the rotary encoder knobs. Use the color highlights to determine what fields can be edited. Note that multiple legs can be edited simultaneously with the knobs, whereas only one leg can be modified with the Edit Leg button. It is helpful to note that when a leg is selected in the leg list, it is highlighted in the shape drawing. This allows you to easily determine the proper leg selection(s) when editing. Changes made with the knobs are reflected in real time in the shape drawing.



⑨ Reverse Angles

The Reverse Angles button switches the bend direction of each leg in the current working shape - up becomes down, and down becomes up.



⑩ Reverse Legs

Reverses the order of the legs in the leg list.

⑪ Clear All Legs/ Clear Selected Leg/ Clear Selected Legs

This button will clear the entire shape if no legs are selected, or clear the one or more legs that are selected, leaving the rest intact.

⑫ Scan Tag

You can scan tags to input data to the machine when using a bar code scanner. To do this, touch the Scan Tag button; a flyout appears with a “Waiting for scanned data” prompt. At this point, you may scan your tag. When the data are read from the tag, the tag shape becomes the current working shape. If you choose to add this part to a job, the required number of parts from the tag is set in the job. If you wish to close the flyout without scanning a tag, touch the arrow at the top left of the flyout.

⑬ Add To Job

This button will add the current working shape to the job list, or if editing a shape from the job, will update the shape you are editing in the job. Job-related functions are discussed in a later section.

⑭ Make Test Part

This button allows you to make a single piece of the current working shape.

⑮ Shape Lines

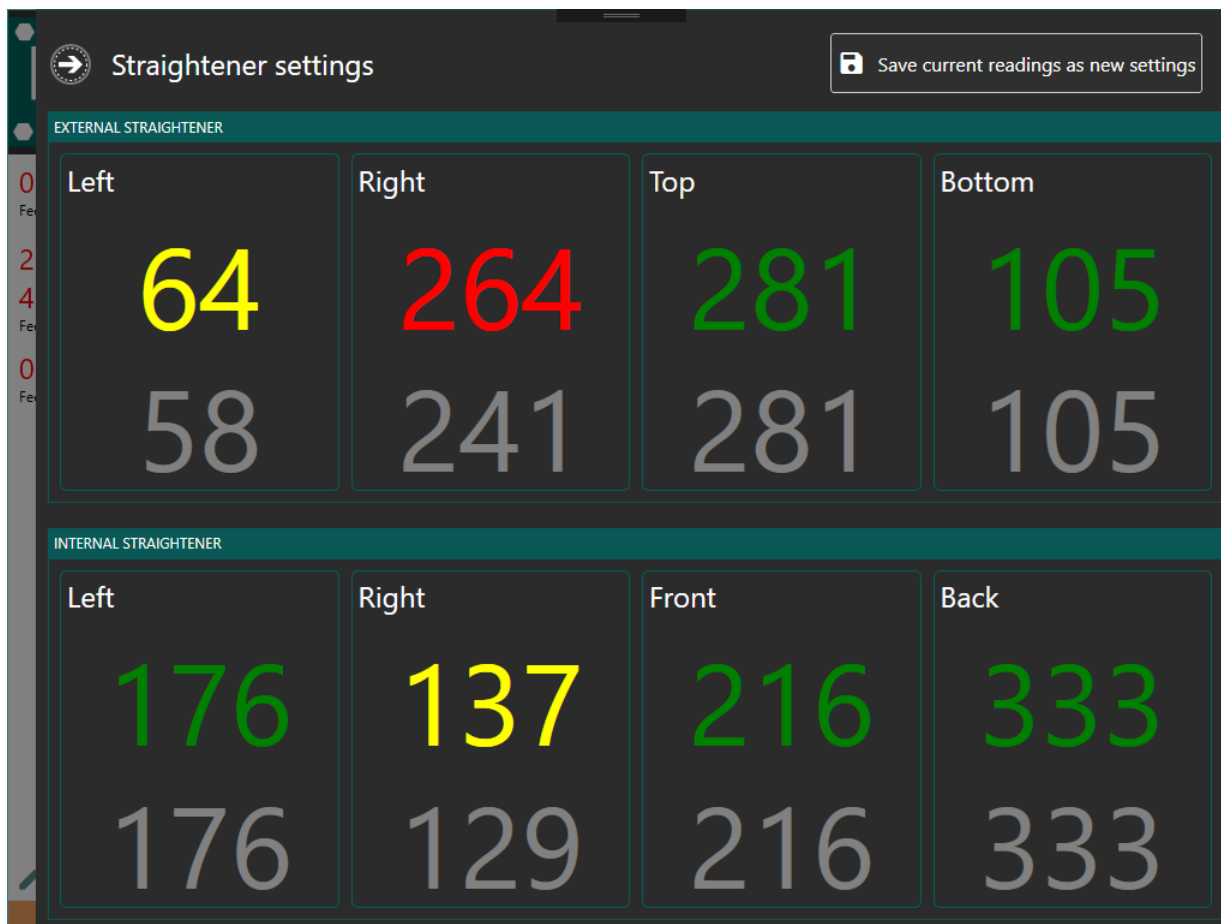
This area displays the different lines that represent the current shape. For example, the second leg of the part displayed in the image above is 10 inches, and the bend after this leg is 90 degrees down. The feed speed is 8, and the bend speed is 7. No feed or bend trims are specified.

⑯ Preview Image

The image has several features to increase its usefulness. To start, there is some transparency in the drawing so you can see when areas are overlapping. The orientation of the image will match the orientation of the part being made on the machine as the shear cuts the bar. When a leg is selected in the leg list, that leg will also be highlighted in the drawing. As you make changes to the shape definition, the shape re-draws to reflect the changes; this is very evident when using the encoder knobs to modify the shape. A yellow dot shows where a leg would be inserted if you were to add one at that point; with no legs selected, it also doubles as an indication of the shear point. The total length of bar required for the shape is shown in the top left of the image box.

When adding legs to the leg list, the current selection in the leg list affects where the leg will be added. If no legs are selected, a new leg will be added at the end of the list. If one of the legs is selected, a new leg will be added just before the one that is selected. This allows you to add a leg anywhere in the list at any time. If more than one leg is selected, the Add Leg button is disabled.

17 Transducer Display (616 Multiform Only)



When viewing the eight readings, the gray values on the bottom are the settings currently stored in the bar setup, and the colored values are the current actual readings. A reading is colored green if it equals or is very close to the stored setting, yellow if it is close to the stored setting but not close enough for green, and red if it is farther out of adjustment. The current readings represent the actual adjustment of the straighteners. To apply the current adjustment settings to the bar setup, press the "Save current readings as new settings" button.

When the flyout is closed, the straightener icon reflects how many readings are currently out of adjustment via the number badge.



The color will be green (with no number badge) if all readings are currently in the green range.



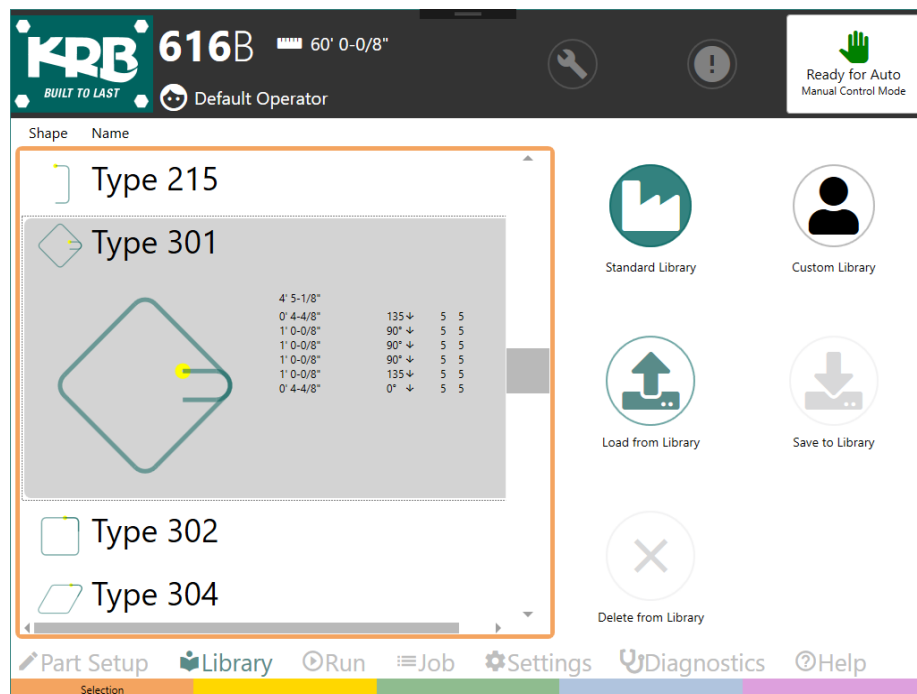
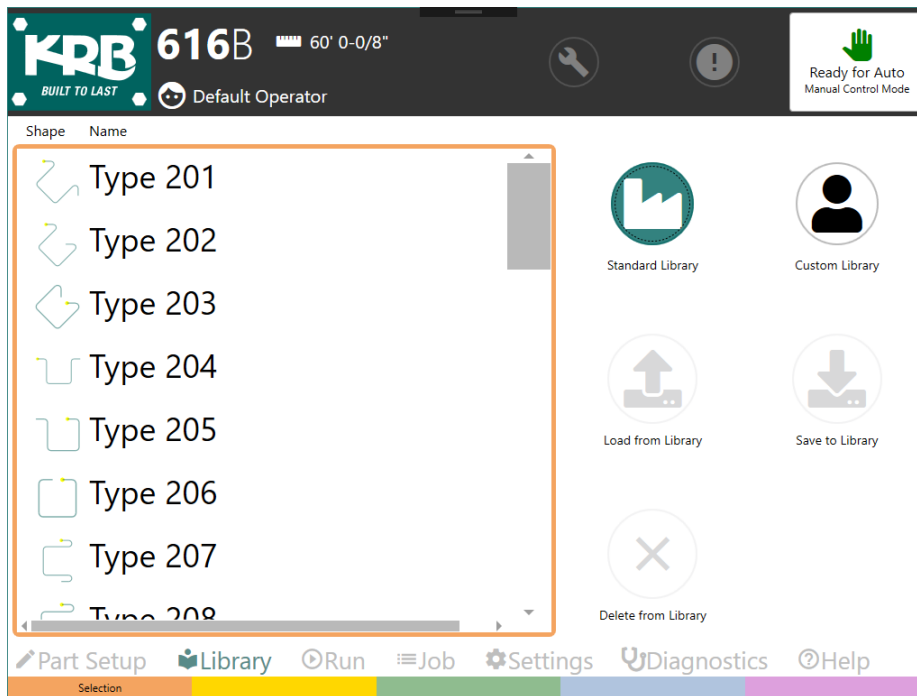
Yellow if any readings are in the yellow range but none in the red range.



Red if any readings are in the red range.

Library

From the Library screen, you can load parts from the standard library, as well as load and save parts to your custom library. When you switch to the Library screen, you are viewing your custom parts library. The parts in the currently selected library are displayed on the left side, and various functions are available via buttons on the right side. If you wish to switch between the standard and custom libraries, use the buttons on the top of the right side.



Loading Parts

You can select a part to load in the list view on the left. The list shows a picture of the shape as well as the part name for each part. When a part is selected either by touching a line or scrolling through the list with the encoder knob, a larger picture as well as the leg list for that part are shown instead. To load a part from the currently selected library, select it and then touch the “Load from Library” button. This will take you back to the Part Setup screen, where you will have the library part you selected as the current working shape. Note that this will replace any part you may have already had in Part Setup.

Saving Parts

When saving a part to your custom library, the current working shape in Part Setup is what you will be saving. In the Library screen, touching the “Save to Library” button will allow you to save the current working shape. In the flyout that appears, enter your desired part name using the on-screen keyboard, and press the “Save Part to Library” button. This will save your part to the custom library and return you to the Part Setup screen. If you don’t want to save the part, close the flyout with the arrow at the top left of the flyout.

Deleting Parts

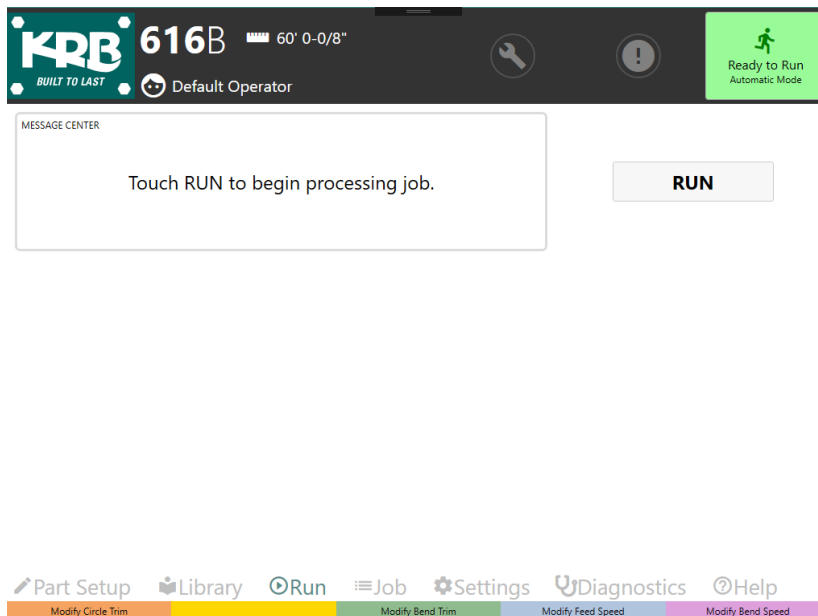
To delete a part from your custom library, select the part and press the “Delete from Library” button. Note that you cannot delete parts from the standard library.

Run

Your options will depend on whether you are in **Bar** or **Coil** mode (See **Bar Setup** in **Settings** below).

Bar Mode

Parts in Job view are run according to the optimizer when in Bar Mode. Follow prompts in message center (load bar, press continue / pause, runout bar, bundle count reached, part switch, etc.).

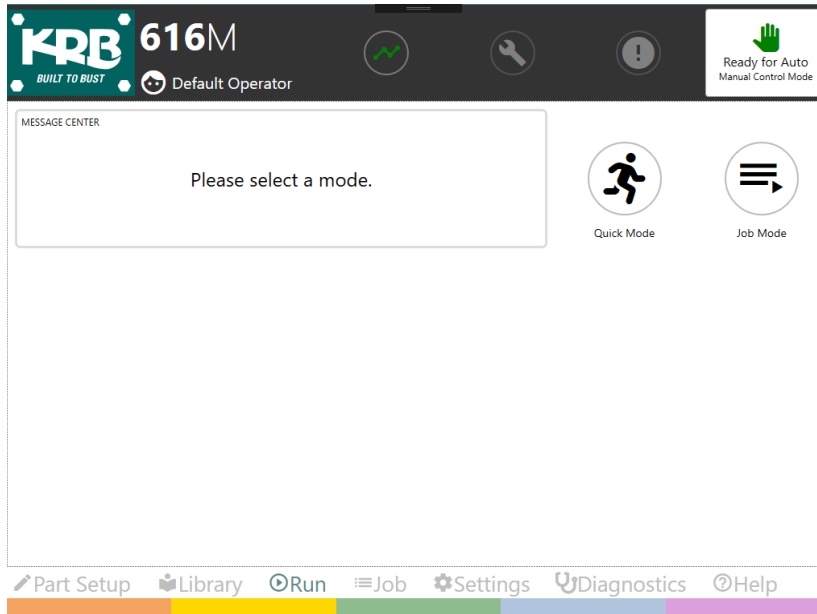


Stirrup Bender Controls

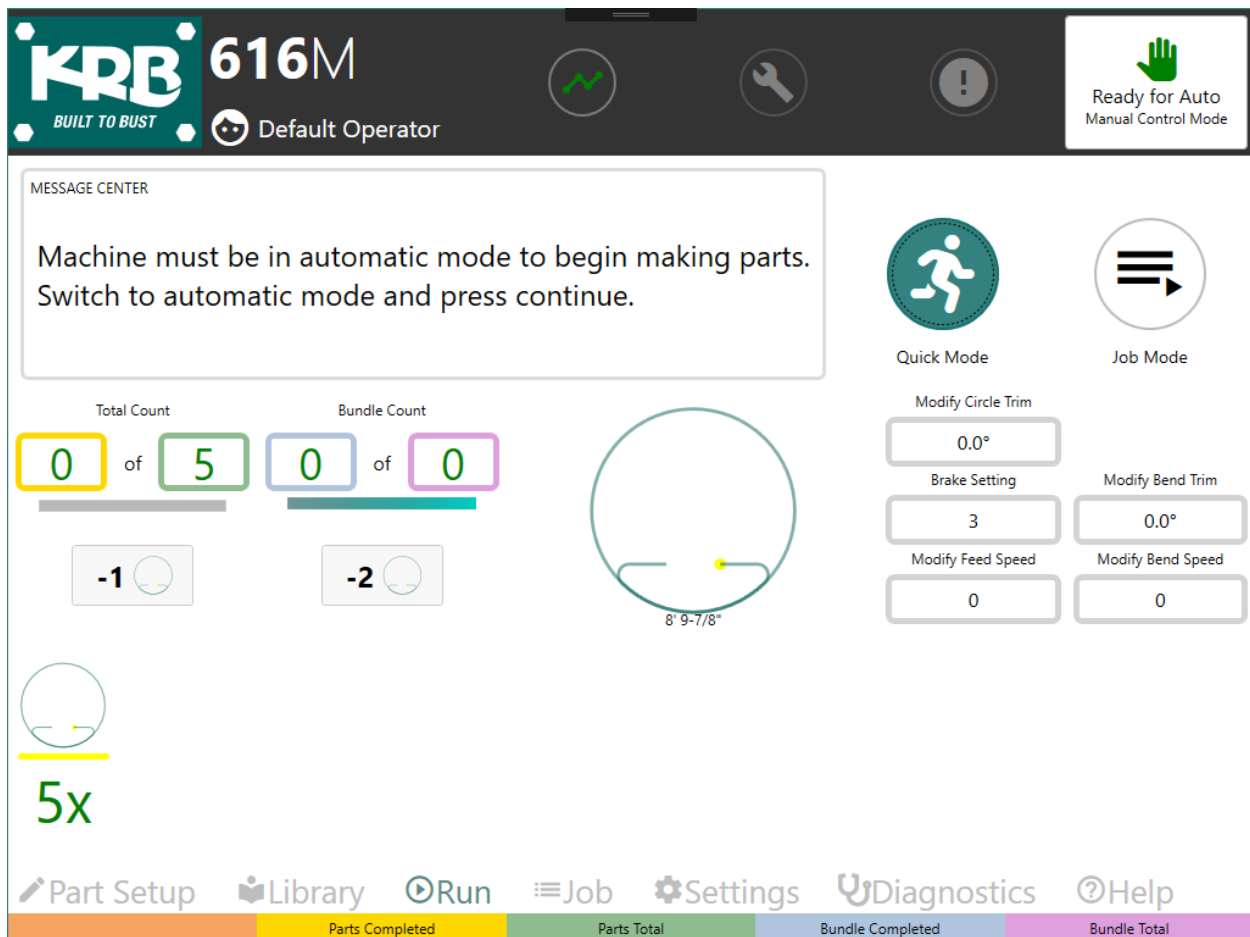


Coil Mode

From here you may select **Quick Mode** or **Job Mode** (see below).



Quick Mode



The selection “Quick Mode” will allow you to run the part currently shown in the Part Setup screen. If there is no part in Part Setup, Quick Mode will alert you to that fact. In Quick Mode, you simply adjust the part counters to your desired values. The rotary encoder knobs can be mapped to either the counters or the run-time speed and trim adjustments. If the counter fields have gray boxes around them, touch one of the counter values to switch the knob focus from the run-time adjustments to the counters.

Setting Part Counts

When running parts, the machine will keep track of how many parts are completed. You have two sets of counters to specify. The Total Count counters are Parts Completed and Parts Total. Parts will be run until the Parts Completed value reaches the Parts Total value. After each shear cycle, the Parts Completed value will increment by 1 or 2, depending on the selected number of bars in the current setup. The Bundle Count counters (Bundle Completed and Bundle Total) can be used to automatically pause production when a certain count has been reached (usually to tie a bundle). These counters can be adjusted for each part in the Job screen, or if running in Quick Mode, directly in the Run screen. Adjustments are made with the appropriate rotary encoder knobs.

Stirrup Bender Controls



Job Mode

The screenshot displays the KRB 616M Stirrup Bender control interface in Job Mode. The top header includes the KRB logo, model number 616M, and the text "BUILT TO BUST". It also features a "Default Operator" status, a "Ready to Run Automatic Mode" indicator, and icons for status, settings, and help.

The main interface area contains a "MESSAGE CENTER" with the instruction: "Press continue to begin processing job." Below this, there are two progress bars: "Total Count" (0 of 16) and "Bundle Count" (3 of 4). A central diagram shows a stirrup shape with a dimension of 3' 6-2/8".

On the right side, there are two mode selection buttons: "Quick Mode" (with a running person icon) and "Job Mode" (with a menu icon). Below these are four adjustable settings:

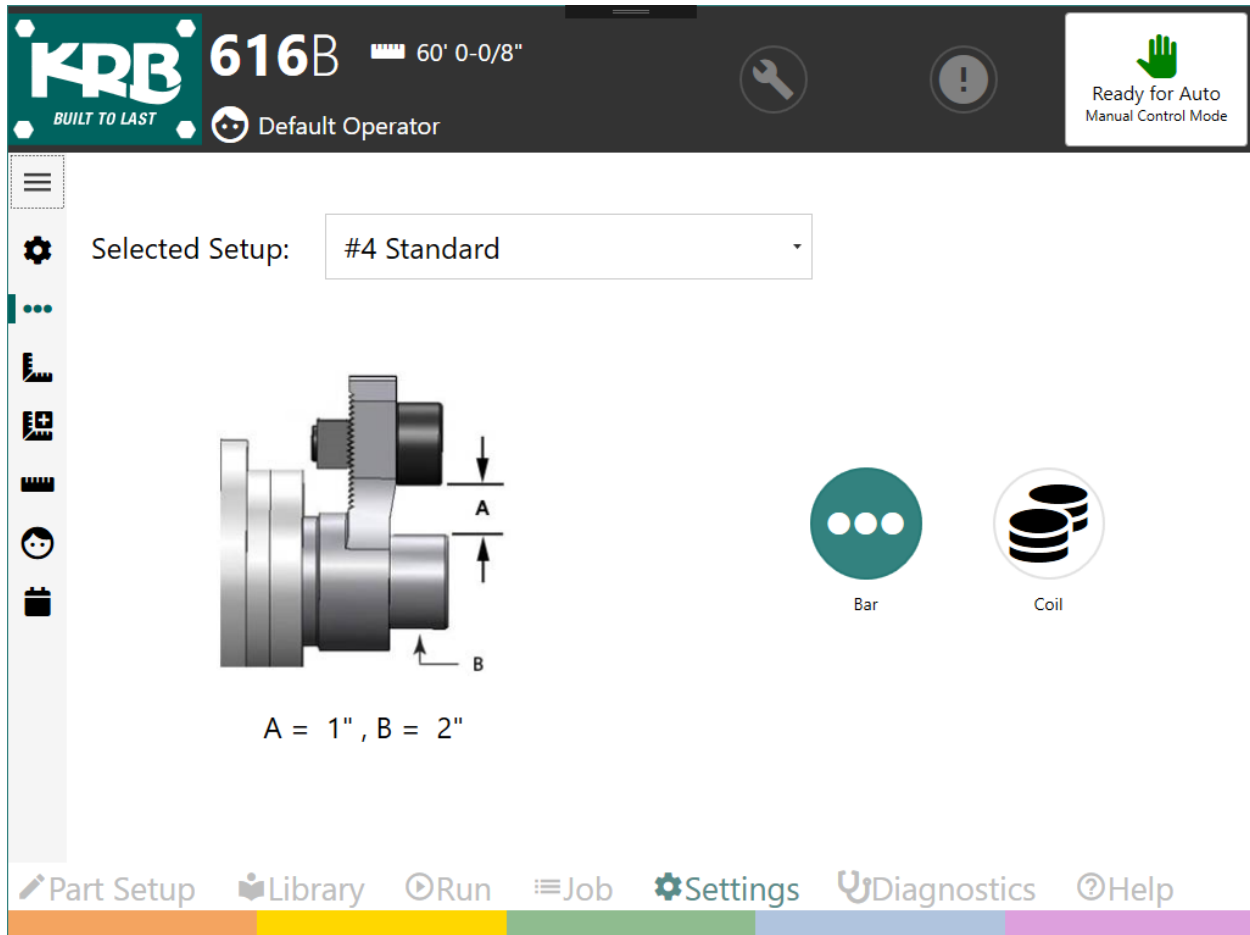
- Modify Circle Trim: 0.0°
- Brake Setting: 3
- Modify Bend Trim: 0.0°
- Modify Bend Speed: 0

At the bottom, there is a row of nine stirrup shapes, each with a quantity below it: 16x, 8x, 16x, 8x, 2x, 2x, 2x, 2x, and 1x. Below this row is a navigation bar with icons for "Part Setup", "Library", "Run", "Job", "Settings", "Diagnostics", and "Help".

Here, the ordering of the parts in Job view can be rearranged with the Move Up / Move Down buttons.

Bar Setup

The Bar Setup view is where you will choose the setup (**Bar Mode** or **Coil Mode**) you wish to use. The mandrel diameter and pin spacing will be displayed based on the setup's bar size.



Stirrup Bender Controls



**616B**  60' 0-0/8"



Ready to Run
Automatic Mode

Default Operator

MESSAGE CENTER

Bundle count reached.
Press continue to resume.

CANCEL

Total Count

10 of 30



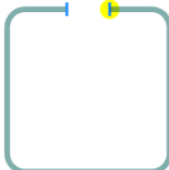
-1 

Bundle Count

10 of 10



-2 


3' 4-2/8"

Modify Circle Trim
0.0°

Modify Bend Trim
0.0°

Modify Feed Speed
0

Modify Bend Speed
0


8x 4x

Modify Circle Trim

Modify Bend Trim

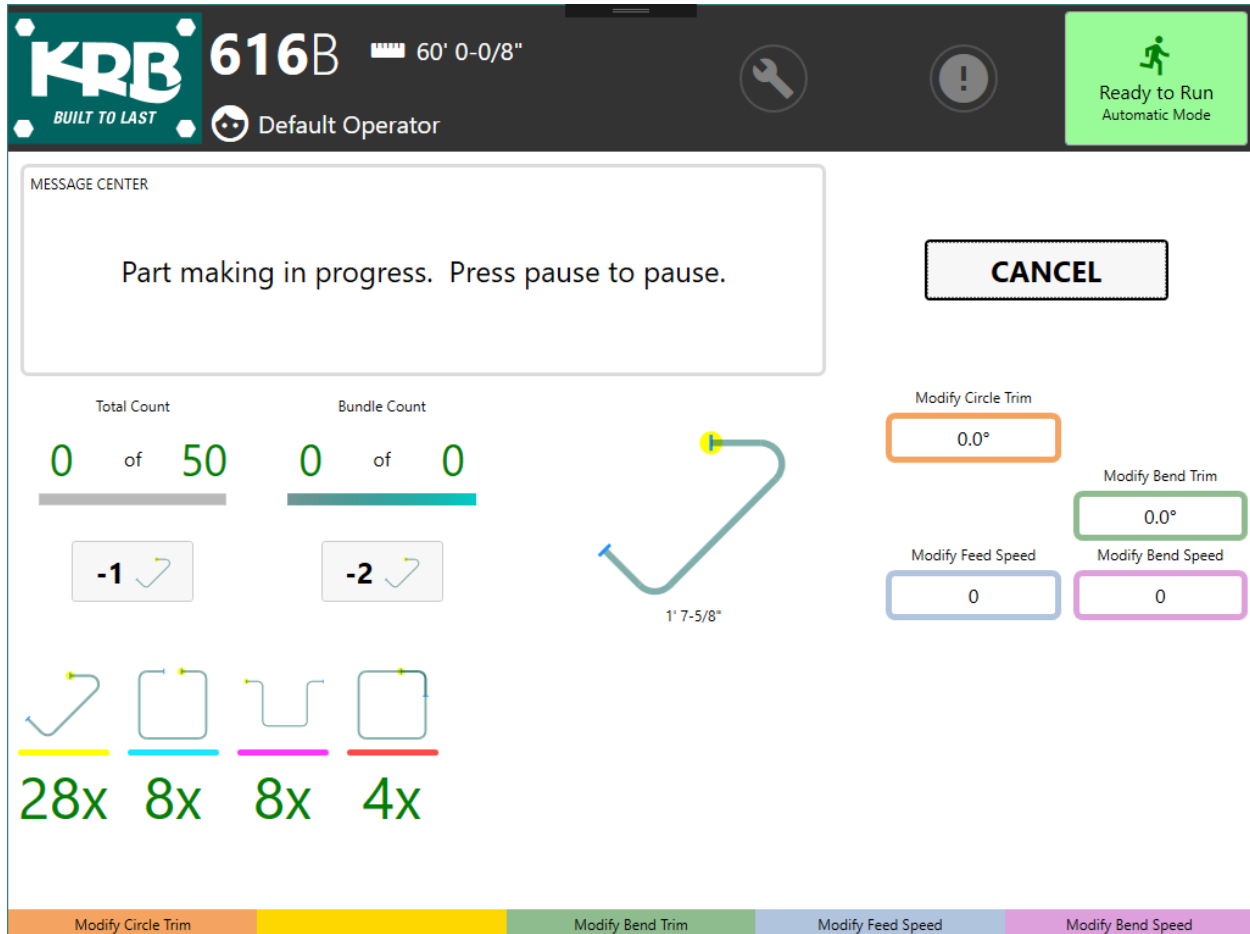
Modify Feed Speed

Modify Bend Speed

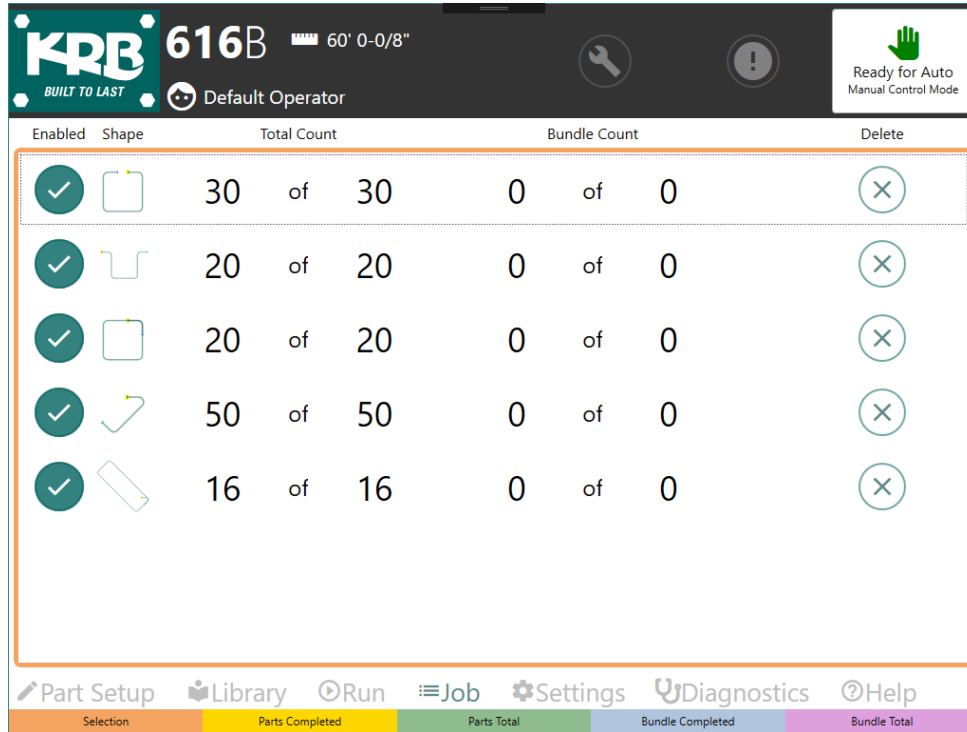


Stirrup Bender Controls

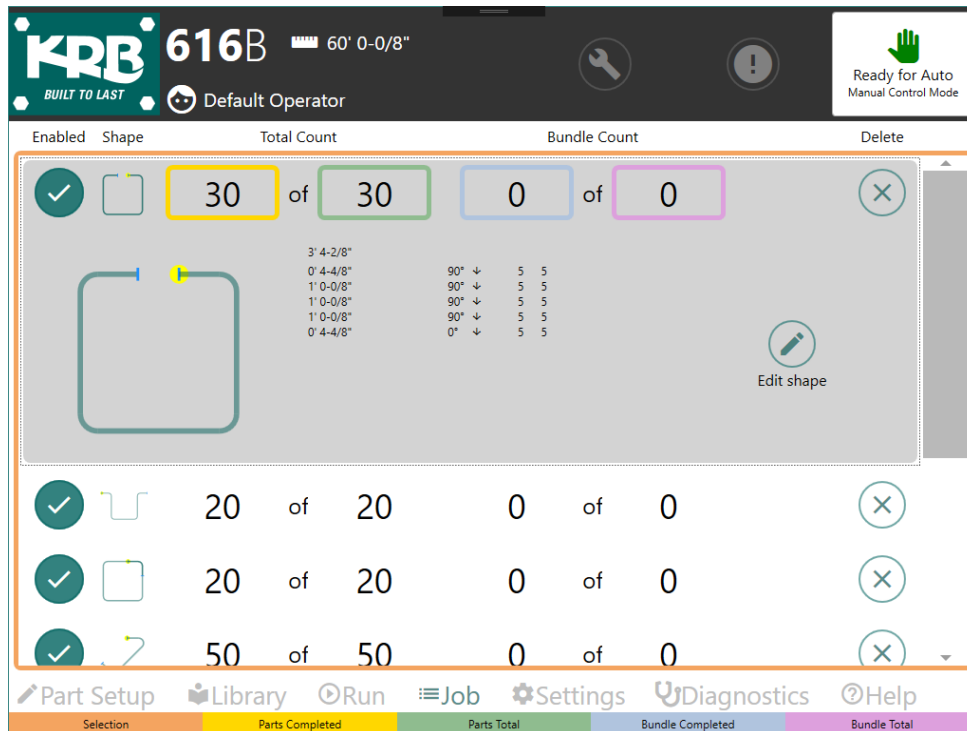
Under the counters, you will see two buttons (-1 and -2) used to adjust the counters downward by 1 or 2 to compensate for a discarded part. Using these buttons automatically adjusts the counters, eliminating the need to keep track of these adjustments in other ways. These buttons always affect the count of the current part displayed in the Run screen.



Job Screen



When a line in the job is selected, you can change the part counters for that part, as well as edit that part.



Adding Parts to Job

Use the Add to Job button in the Part Setup view to add parts to the job.

Enabling Parts in Job

The enable (check mark) button is used to either enable a part to run or to disable that part (without removing it from the job).

Deleting Parts in Job

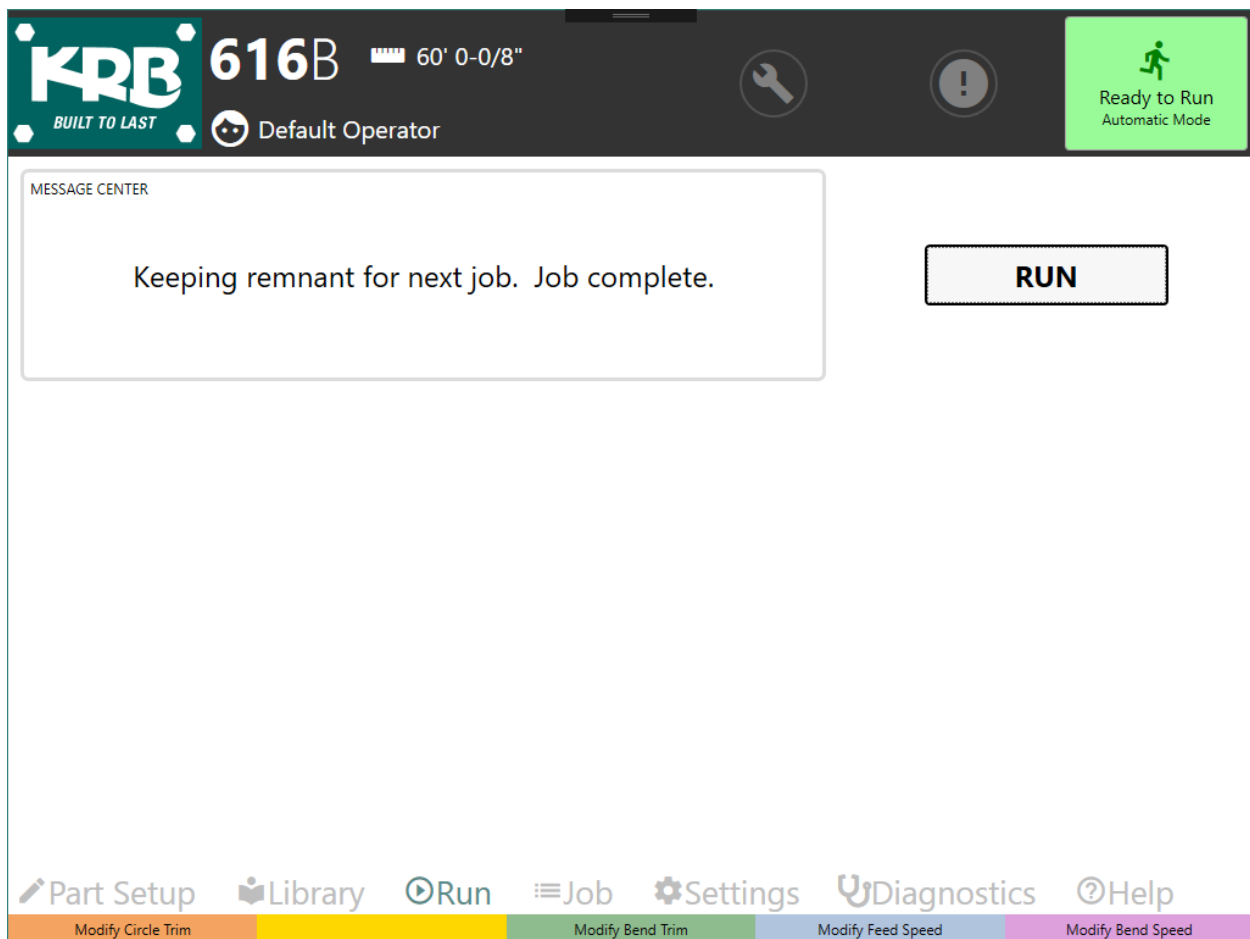
Clicking the delete (X) button for a particular part will remove that part from the job.

Editing Parts in Job

Pressing the edit button transfers a COPY of the part to the Part Setup screen, where you can make changes to the part. Note that none of the changes will affect the part in the job unless you press the Update Job Part button. Pressing this button updates the job part and returns the Part Setup view to Add to Job mode. Alternatively, if you decide not to change the job part, you can simply clear all legs in the Part Setup view to return to Add to Job mode.

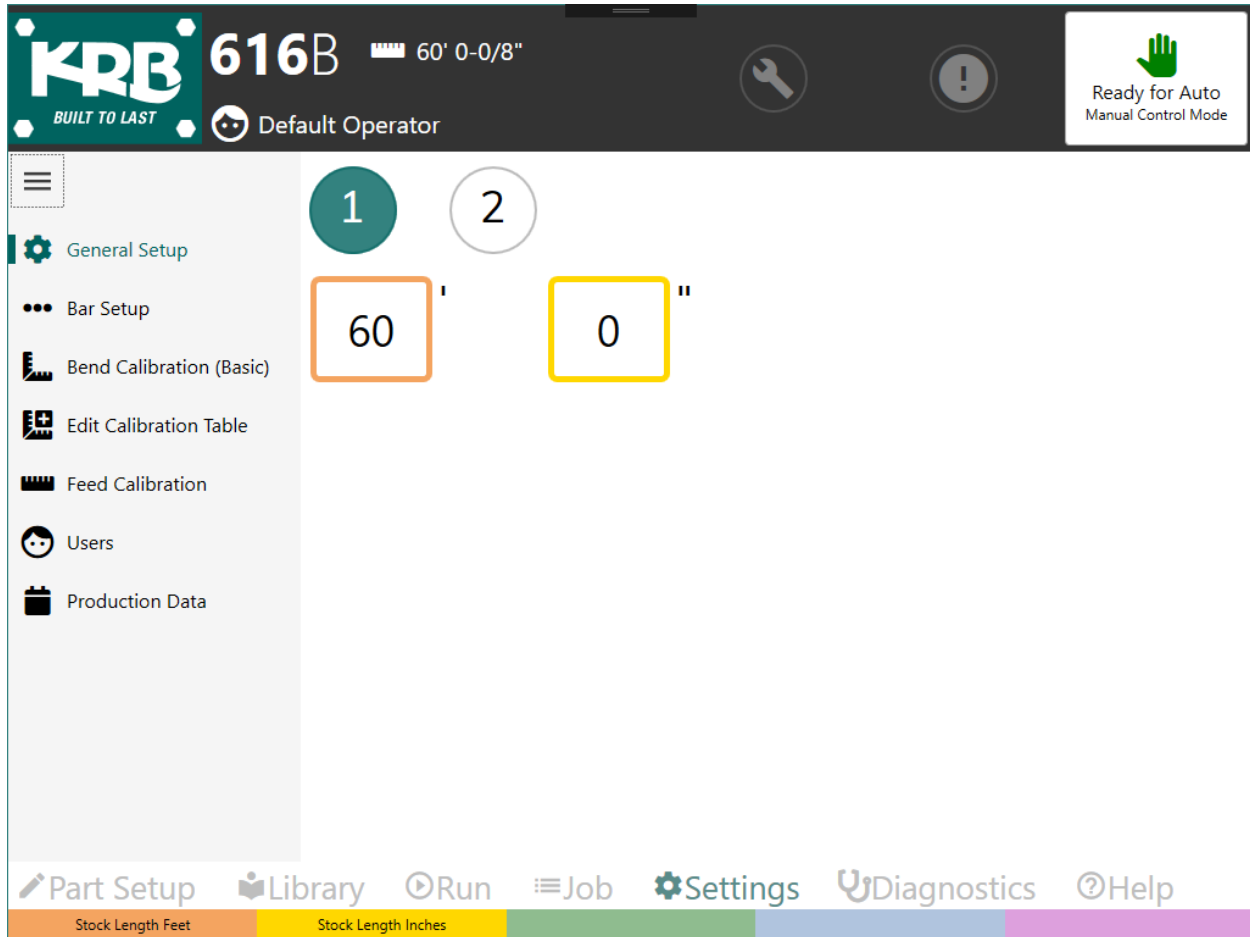
Job Complete

Once a job is complete, the below message will show.



Settings Screen

The Settings screen has several secondary views which are discussed in the following sections under this heading, as well as the Machine Calibration heading.



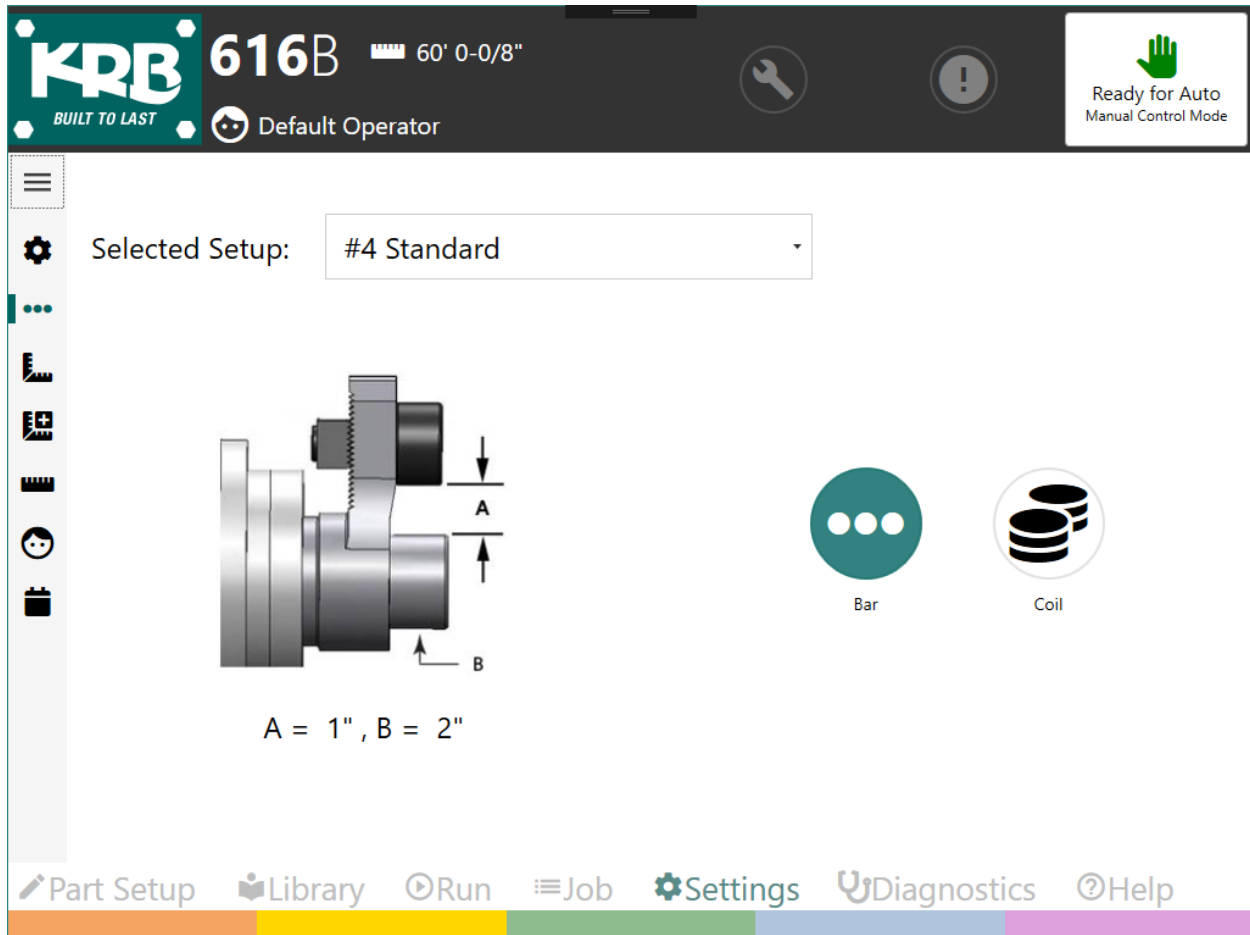
General Setup

In the General Setup view, you can set the number of bars (1 or 2) loaded in the machine for the current setup. This setting is used to determine the correct number of parts to count for each part-making cycle.

For all machines but the 613C, you can set the stock length for the current setup when the machine is in Bar mode.

Bar Setup

The Bar Setup view is where you will choose the setup you wish to use. The mandrel diameter and pin spacing will be displayed based on the setup's bar size.

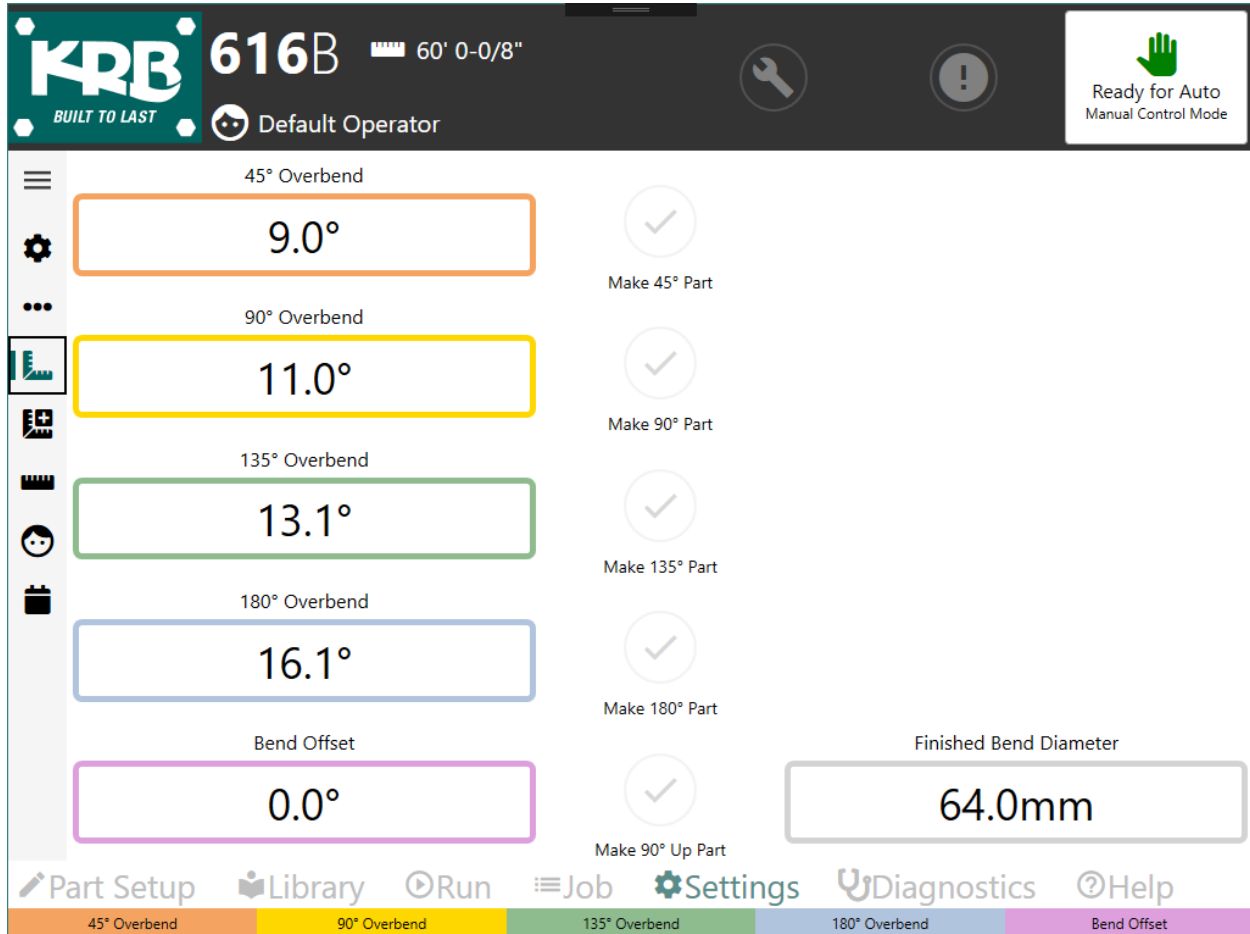


Machine Calibration

The Settings screen has several secondary views which are discussed in the following sections under this heading, as well as the Machine Calibration heading.

Basic Bend Calibration

The basic bend calibration parameters are available for adjustment in this view, as well as buttons to make various test parts. Calibration values for 45-, 90-, 135- and 180-degree bends can be adjusted here, as well as bend offset and finished bend diameter.



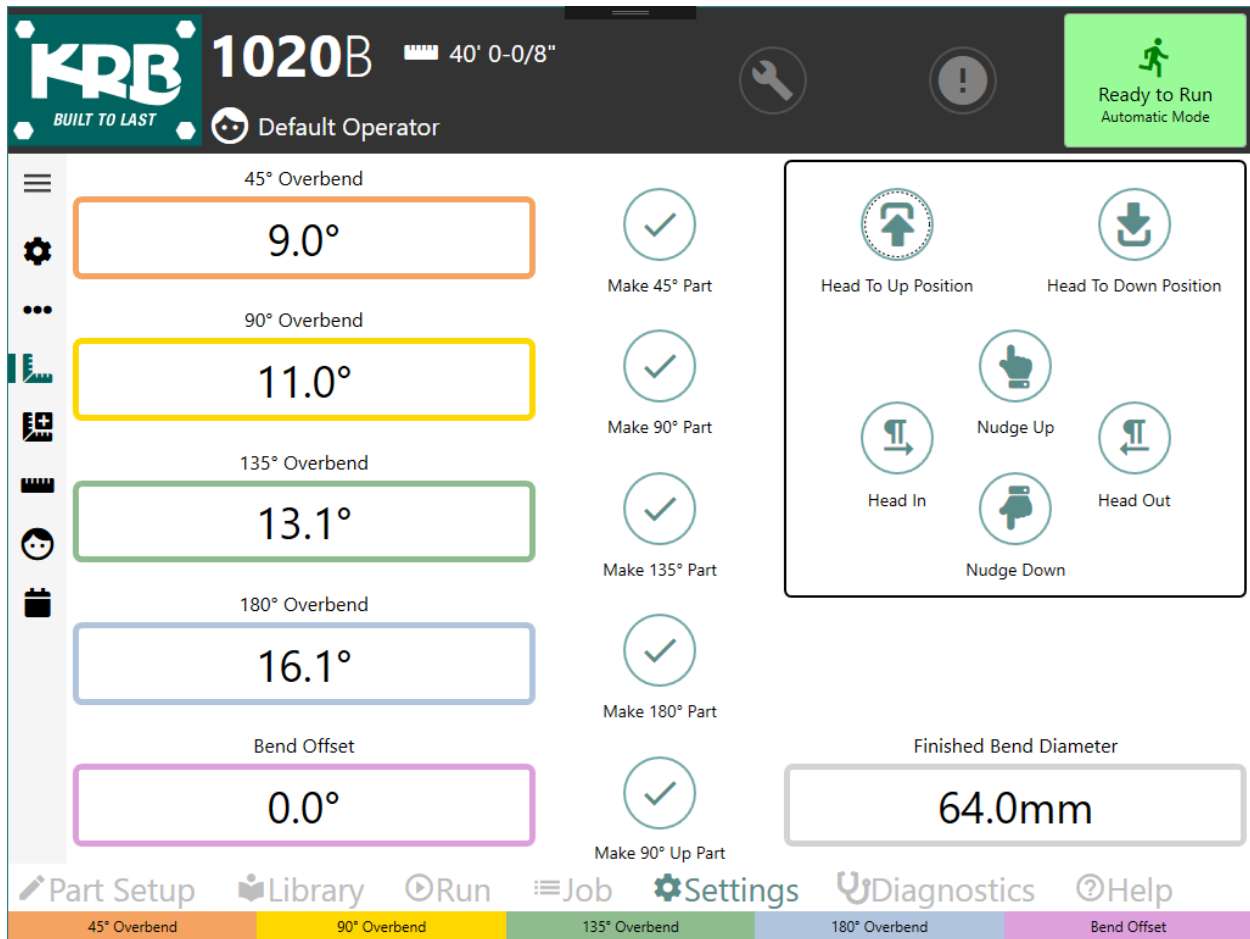
Setting	Value	Action
45° Overbend	9.0°	Make 45° Part
90° Overbend	11.0°	Make 90° Part
135° Overbend	13.1°	Make 135° Part
180° Overbend	16.1°	Make 180° Part
Bend Offset	0.0°	Make 90° Up Part
Finished Bend Diameter	64.0mm	

Navigation Bar: Part Setup | Library | Run | Job | Settings | Diagnostics | Help

Bottom Bar: 45° Overbend | 90° Overbend | 135° Overbend | 180° Overbend | Bend Offset

For each of the four bend angles listed here, the value you are setting is the overbend. This is how much beyond the desired angle you need to bend the bar for the finished angle to measure correctly. Alternatively, you can also think about it as the amount of spring-back that occurs in making a bend of the desired angle. To check these values, each angle has a test button associated with it. Pressing this button (in automatic mode) will generate a piece you can measure for angle accuracy.

The bend offset is a value used to compensate for differences in bending up versus bending down. If the up and down bends are different from one another, the bend offset can be adjusted to equalize them. Once equalized, you can adjust to overbend for the correct finished angle.



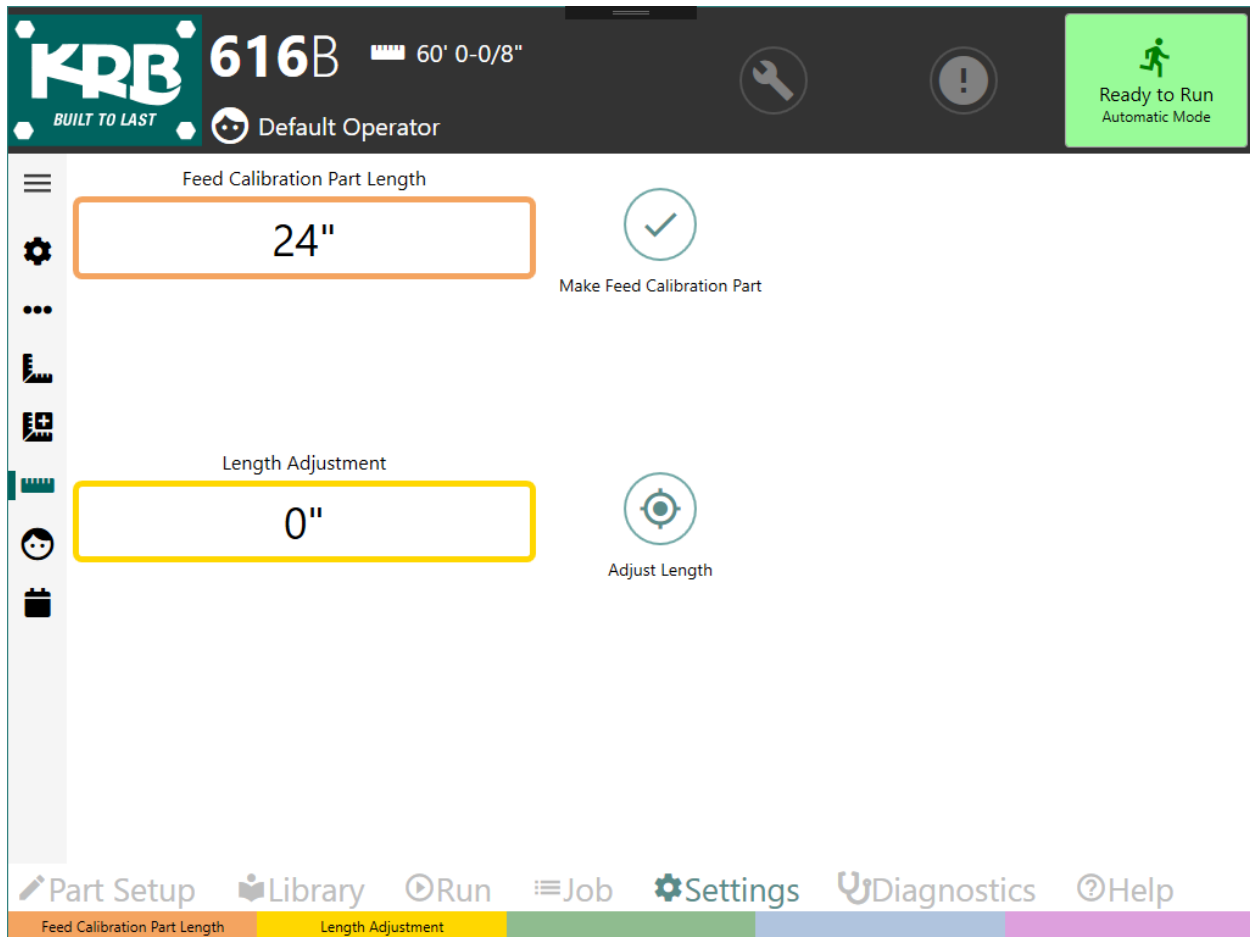
The finished bend diameter is used by the software to compute how much bar is required for a bend of a given angle. If this value is off, the first and last legs of the part will be off – one short and one long. The easiest way to visualize when this is set properly is to make a 180-degree bend. The resulting part should have equal legs. If not, adjust the finished bend diameter one way or the other to equalize the leg lengths. For each of these adjustments, the encoder knobs are used to change the values on the screen. In the case of the bend offset and finished bend diameter, they both share the rightmost (purple) knob. Only one field can be active at a time, indicated by the purple box, while the other has a gray box. To switch between the two, simply touch in the field with the gray box to activate it.

Bend Head Up/Down Position Calibration (1020's)

To calibrate the bend head position up/down, enter the “Settings” tap, all calibration functionality is in the upper right box. To calibrate the bend head up/down (adjustments to ensure the bend tooling is positioned tangent to the bar to be bent, in both the up bending and down bending locations. Machine must be in “Auto” mode to activate this function. Touch the “Head To Up Position” or “Head To Down Position” to move the bend head up or down. The “Nudge Up” and “Nudge Down” allow for fine adjustment the head position. “Head In” and “Head Out” allows for the calibration of the bend head in both directions. After successfully calibrating the head, run a “Test Part” to verify the settings. These settings are automatically “set” when leaving this screen.

Feed Calibration

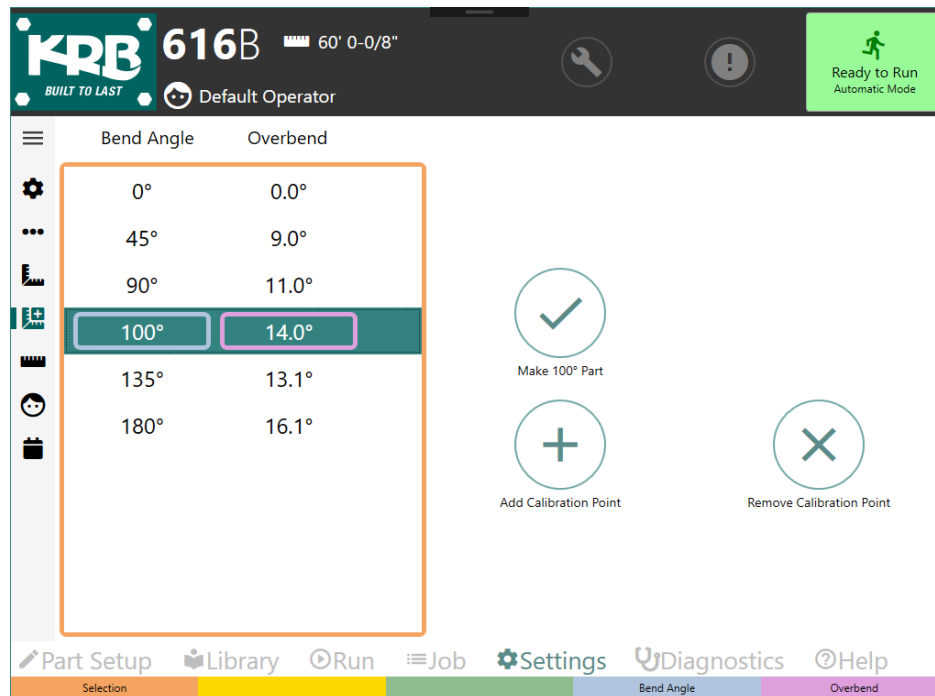
In this view, you can adjust the feed calibration and make test parts you can measure for accuracy. The feed calibration part length is the length over which the correction will be applied. The length adjustment is the size of the correction.



As an example, if you have the feed calibration part length set to 24", and a part made by pressing the Make Feed Calibration Part button measures 24-1/16", you will want to adjust the length down by 1/16". To do this, set the length adjustment to -1/16" (negative in this case, because we want to decrease the length of the test length by 1/16") and press the Adjust Length button. This applies the correction factor and resets the length adjustment field to 0. Making another test part at this point should result in a 24" measurement.

Edit Calibration Table

In this view, you can go beyond the four standard bend angle calibrations and add calibration points for other angles. Many users will never have to use this function, but it is a useful tool to be able to dial in non-standard angles like 57-degree bends. Normally, interpolation is used to calculate the overbend for an angle that falls between two angles in the calibration table. In some cases, you may want to create a new calibration point for a specific angle so a direct value can be specified, rather than one derived via interpolation.



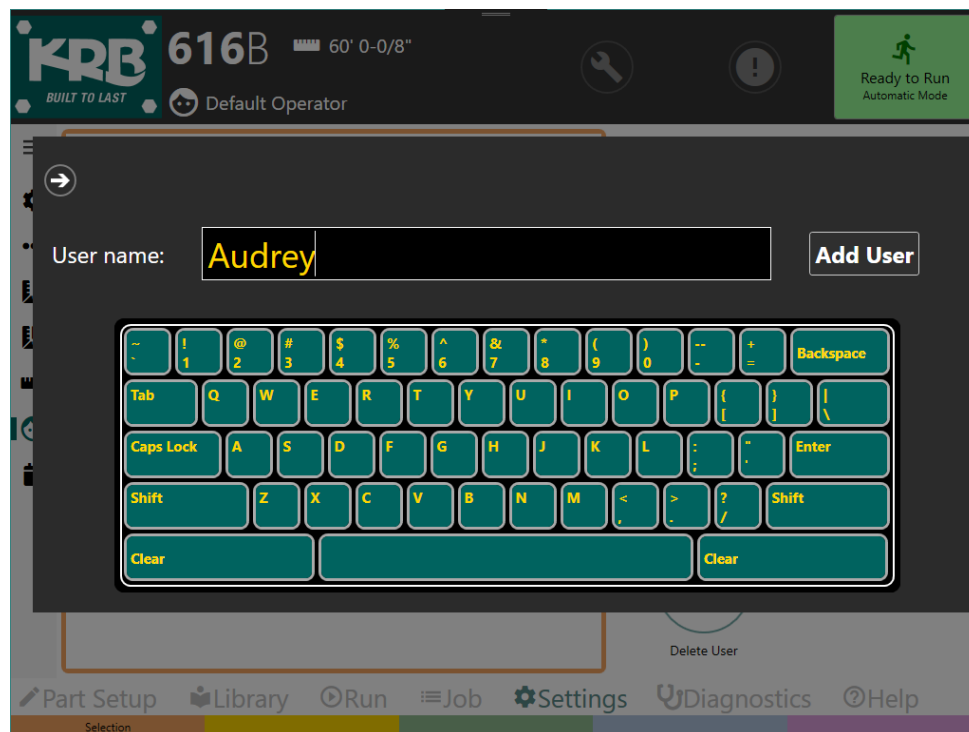
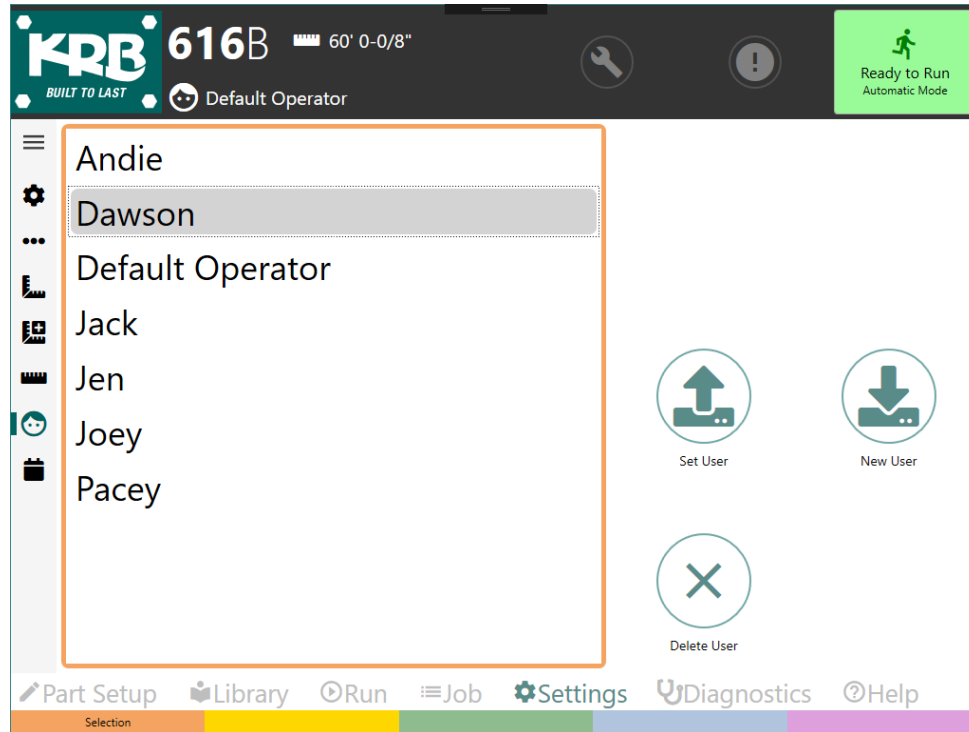
To add a new calibration point, press the Add Calibration Point button. This will insert a new point at the first location available in the table. You can set the angle you wish to assign to this calibration point, as well as its overbend, using the encoder knobs. You can also make a test part of the selected angle for measurement purposes. As an example, if you wish to add a calibration point for a 57-degree angle, press the Add Calibration Point button. Turn the Bend Angle knob until the bend angle reaches 57 degrees. At this point, you can make a test 57-degree part with the test button. After measuring this angle, dial in the overbend using the Overbend knob so that it equals the difference between the measured and desired angles, or how much more you would need to bend the bar to get the desired angle.

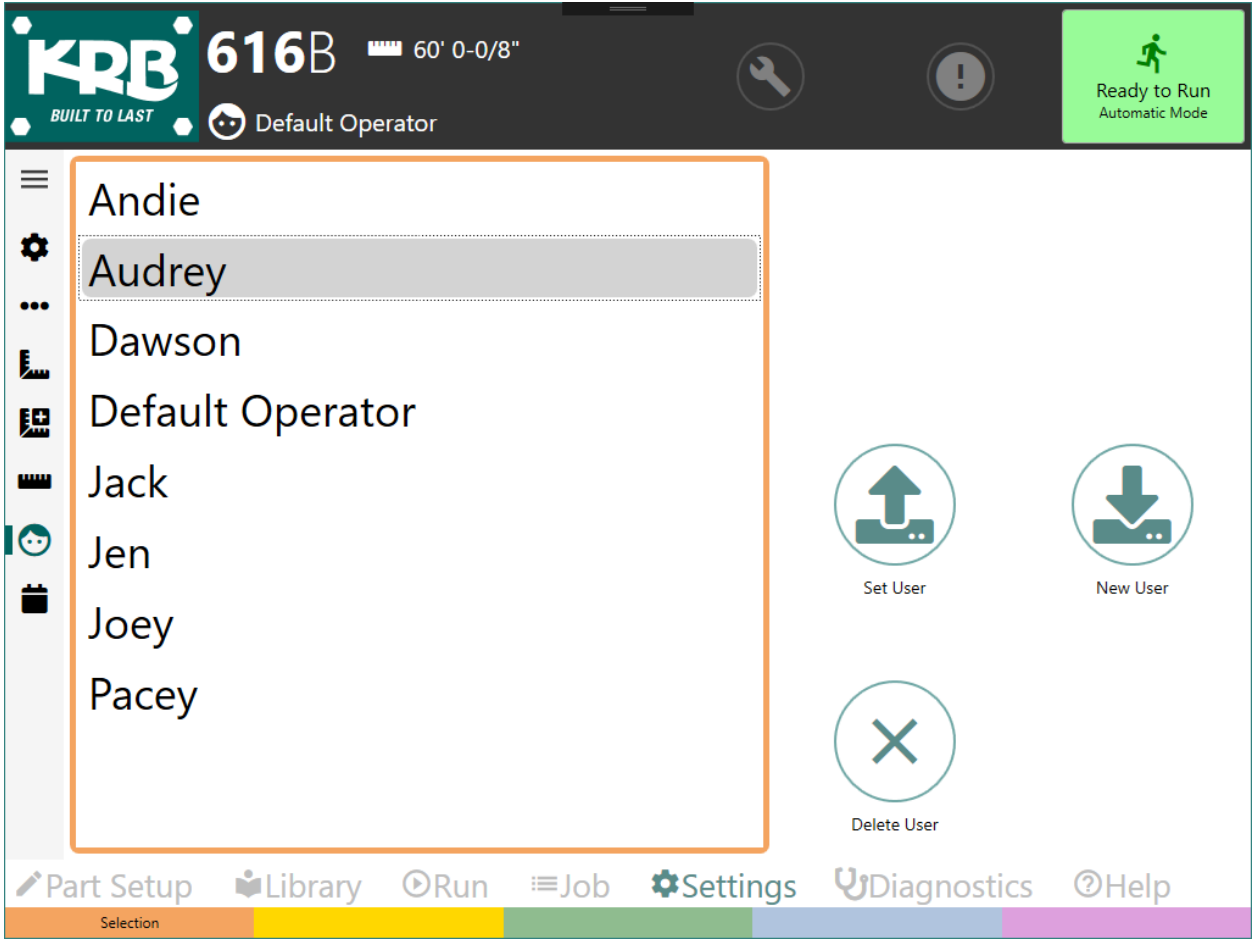
Note that the full calibration table shown here is what is used when making parts. If, for instance, you have a 57-degree entry in your calibration table between 45 and 90 that will affect other angles between 45 and 90. In the basic bend calibration view, you don't see the extra table entries (although the 45, 90, 135 and 180 values are the same in both views – changing it in one view is reflected in the other view, as it is the same data). When you want to make a 75-degree bend, that value is no longer interpolated between the 45- and 90-degree calibration points, but between the 57- and 90-degree calibration points. The net result is that a 75-degree bend that you made before adding the 57-degree calibration point may measure differently after adding the 57-degree calibration point, as it is interpolated between different points now.

To remove an entry that you previously added to the calibration table, select it and press the Remove Calibration Point button. Note that you cannot remove the basic 0, 45, 90, 135, and 180 calibration points.

Users

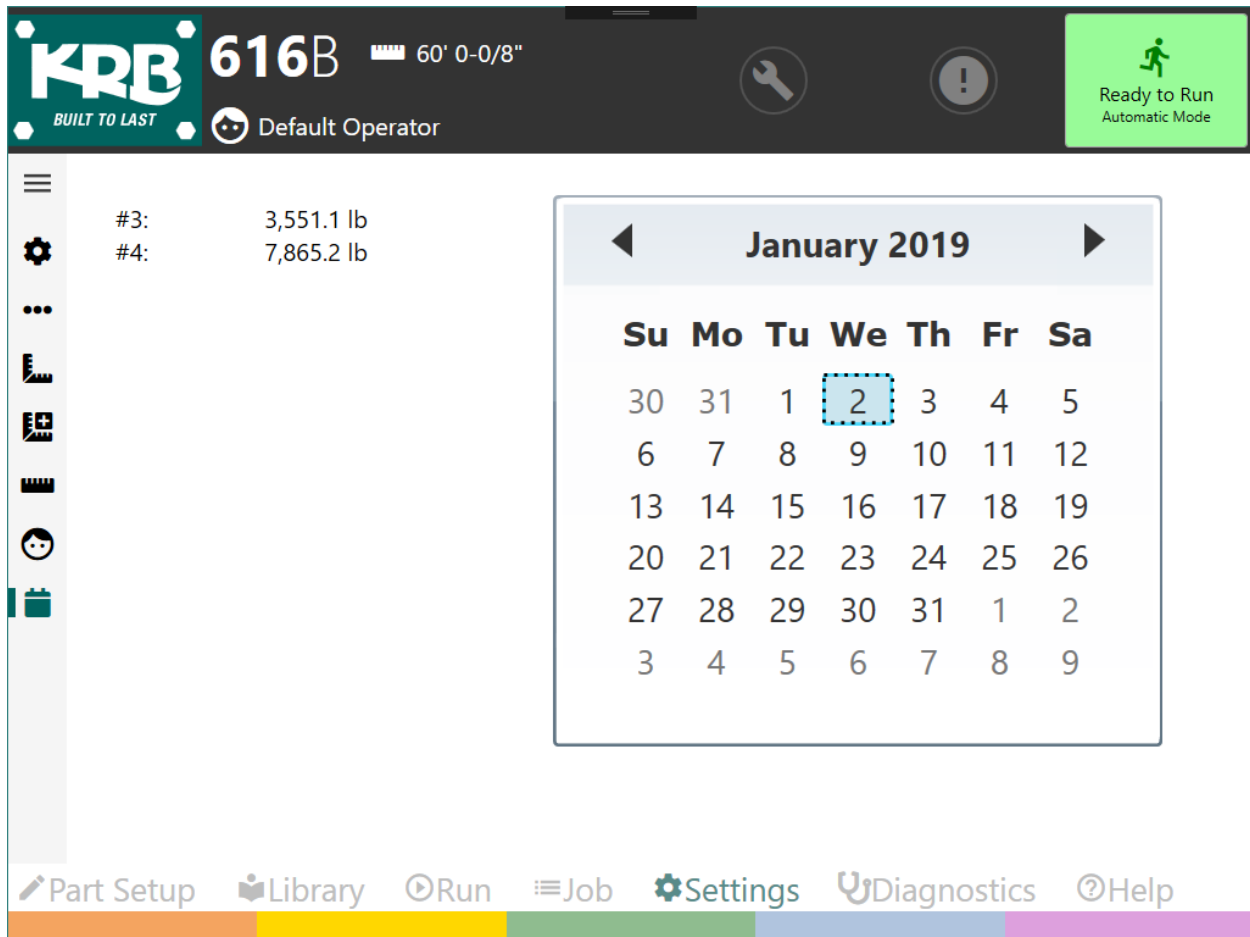
You can set the current user from this view, as well as add or remove users. To set the current user, select them from the list of users on the left and press the Set User button. To create a new user, press the New User button, and use the flyout to enter the name of the user you wish to add. To delete a user, press the Delete User button. Note that you cannot delete the Default Operator user.





Production Data

The production data view allows you to select a date from the calendar. The production weight for each bar size is displayed to the left of the calendar. Note that only parts run from the Run screen contribute to this total; parts made with a test button do not.



KRB 616B 60' 0-0/8"

BUILT TO LAST Default Operator

Ready to Run Automatic Mode

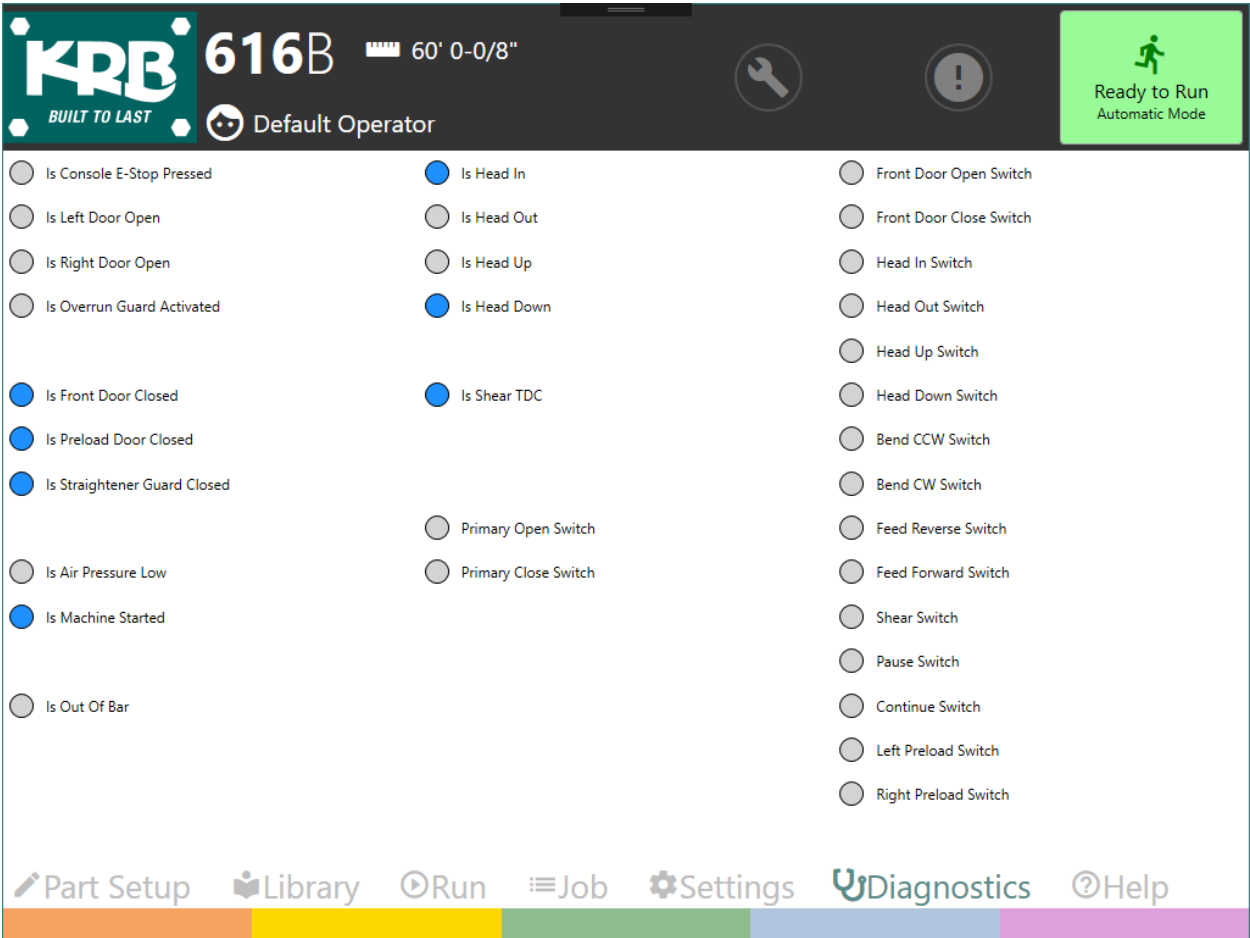
#3: 3,551.1 lb
#4: 7,865.2 lb

January 2019

Su	Mo	Tu	We	Th	Fr	Sa
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

Part Setup Library Run Job Settings Diagnostics Help

Diagnostics Screen



Blue indicator “lights” show status of various inputs.

Help Screen

This screen allows you to search for information on the various functions of the machine. If an error occurs, displaying the error codes will also display a “Show me more” button. Pushing that button will redirect to applicable content in the Help screen.



Manual Revisions by Date

VERSION DATE	CHANGE DESCRIPTION	PAGES
6/7/19	616 B Controls Manual created. Added 616MF Controls.	
V1.09.3.19	3D Controls Added.	