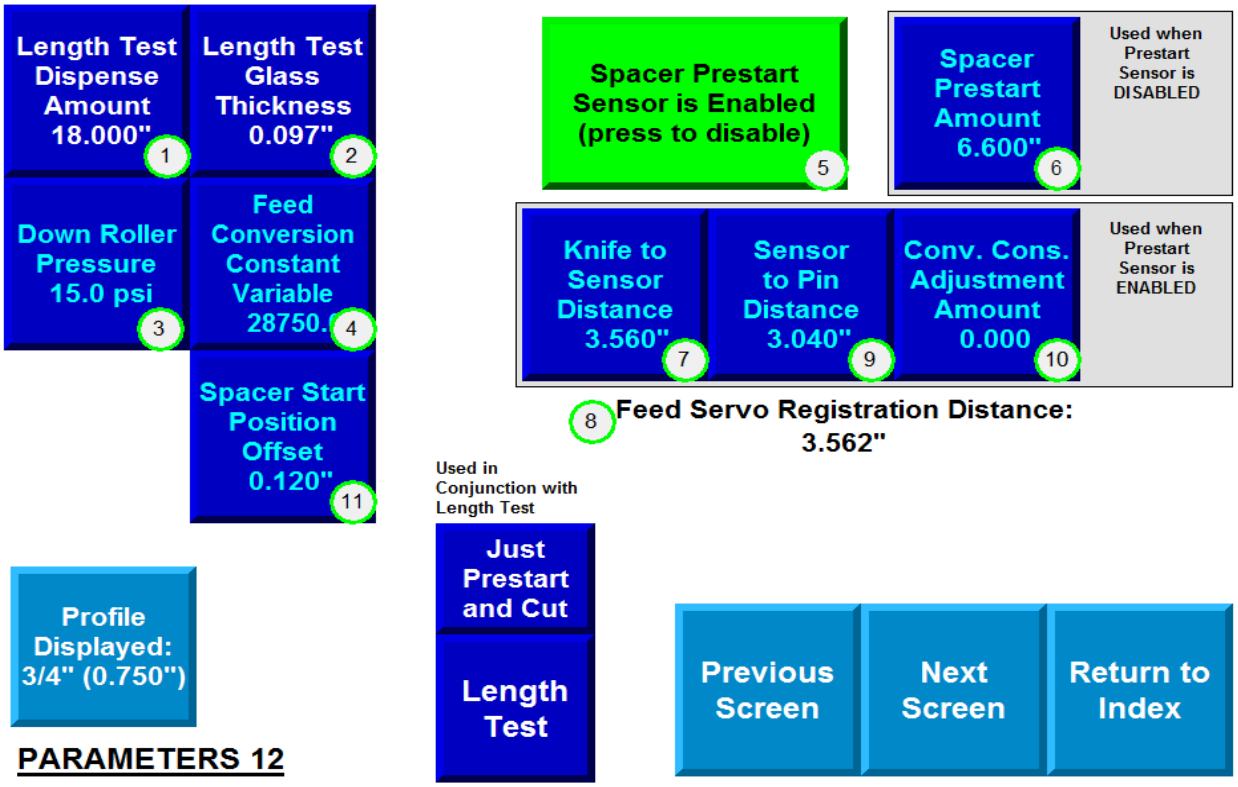
Length Test Parameters
Section 1

Length Test Parameter Descriptions



1.) Length Test Dispense Amount: This is the target length of the length test. Your machine comes supplied with one 18" length test measuring stick, but you may test at whatever length is convenient, as long as the glass is large enough to accommodate. Generally, longer length tests will result in better accuracy.

2.) Glass Thickness: Type in the glass thickness that is being used for the test so the applicator will move to the correct height.

3.) Down Roller Pressure: This parameter adjusts the down roller pressure for the selected recipe. This is the same parameter used during a normal run cycle. Adjust the pressure so the spacer sticks to the glass, but not so much pressure that the spacer rolls over while applying.

4.) Feed Conversion Constant Variable: This parameter is used to tune the spacer length. If the length test measures short of the target length, increase the conversion constant. If the length test measures longer than the target length, decrease the conversion constant. There is not an exact formula to determine how much to change the conversion constant by for a given length difference, but changing the constant by a value of +/-100 should correspond to approximately 1/16" to 1/8" of spacer.

5.) Enable/Disable Prestart Sensor: The Prestart Sensor is used to detect the edge of the spacer during prestart to improve consistency in prestart length. The Prestart Sensor should only be disabled when the sensor is not functioning. The sensor must be enabled to use the automatic conversion constant adjustment.

Length Test Parameters
Section 1

6.) Spacer Prestart Amount: When the Prestart Sensor is disabled, this value determines how much spacer is dispensed prior to touching down on the glass. Adjust this amount so the prestart end lands 0.050" past the center of the applicator pin as shown in figure 2.3 in the next section. If the spacer is not touching down on the glass in the correct spot, adjust it left and right with the Spacer Start Position Offset.

7.) Knife to Sensor Distance: This value is measured from the spacer knife to the prestart sensor. When using the automatic conversion constant adjustment feature, the controller compares this value against the Feed Servo Registration Distance and, if necessary, adjusts the Feed Conversion Constant up or down by the amount in the Conversion Constant Adjust Amount box.

8.) Feed Servo Registration Distance: This read-only value is the amount the Feed servo motor dispensed between the spacer knife and the prestart sensor.
When using the automatic conversion constant adjustment feature, the controller compares this value against the Feed Servo Registration Distance and, if necessary, adjusts the Feed Conversion Constant up or down by the amount in the Conversion Constant Adjust Amount box.

9.) Sensor to Pin Distance: The distance measured from the prestart senor to the pin used when the prestart sensor is enabled. Adjust this amount so the prestart end is centered on the applicator pin as shown in the diagram. The prestart should always be centered on the pin as shown. If the spacer is not touching down on the glass in the correct spot, adjust it left and right with the Spacer Start Position Offset.

10.) Conversion Adjust Amount: When the Prestart Sensor is enabled, this value is how much the Feed Conversion Constant variable is adjusted by when the Feed Registration Position does not match the Knife to Sensor Distance. Set to the adjustment amount to zero to disable the automatic adjustment feature.

11.) Spacer Start Position Offset: This parameter adjusts where the spacer starts on the glass during normal running. Increase this value to move the spacer start position closer to the left edge of the glass.

Length Test Instructions
Section 2

Length Test Sequence of Operations

The Length Test is the tool used to calibrate the gearing ratio between the spacer feed servos and the motion servos of the spacer applicator. This section explains the process of setting up and performing a length test.

Three measurements are required to setup the length test. The Spacer Prestart Amount, the Knife to Sensor Distance, and the Sensor to Pin Distance, all need to be measured and entered into the HMI on the Length Test parameters screen. Figure 2.1 illustrates the locations of the key hardware components and measurements used during the length test setup.

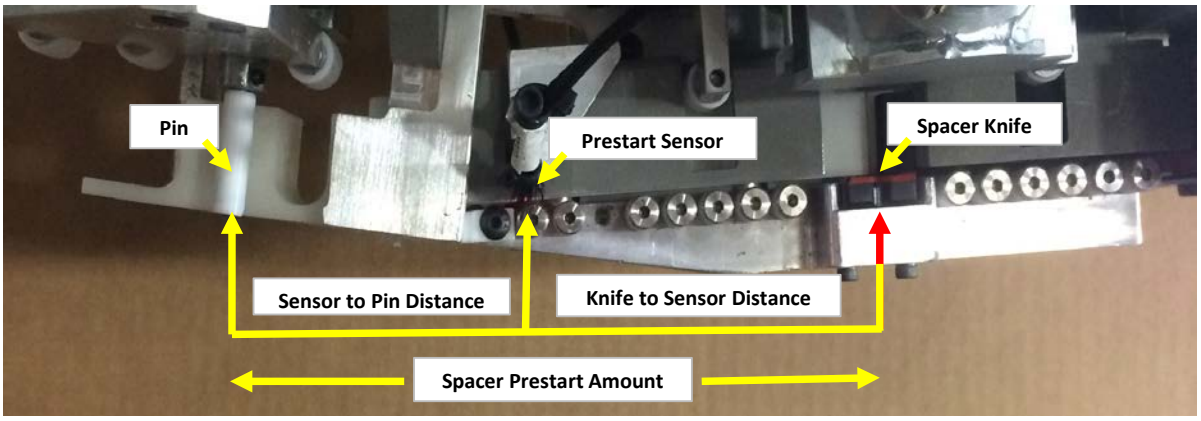


Figure 2.1: The Knife to Sensor Distance is measured between the spacer knife and the prestart sensor. The Sensor to Pin Distance is measured between the prestart sensor and the center of the pin plus 0.050". The Spacer Prestart Amount is measured from the spacer knife to the center of the pin plus 0.050".

When starting from scratch, it is best to begin the length test with a Prestart and Cut Only operation with the prestart sensor disabled. Next, a Prestart and Cut Only operation with the prestart sensor enabled should be run. And finally, a full length test on glass to finely tune the spacer settings should be run. Detailed instructions for each operation follow in this section.

Starting with the Prestart Sensor disabled, enter the Spacer Prestart Amount measurement into the box on the Length Test parameters screen.

Once the Spacer Prestart Amount and Conversion Constant are dialed in, perform a Prestart and Cut Only with the Prestart Sensor enabled.

When the Prestarts are configured, run a full length test to fine tune the spacer length.

Length Test Instructions
Section 2

Prestart and Cut Only: This test is used to set the spacer prestart length. This test does not require any glass to run. If the Prestart Sensor is not enabled, the applicator will dispense the amount in the Spacer Prestart Amount box. If the Prestart Sensor is enabled, the applicator will dispense to the prestart sensor plus the amount in the Sensor to Pin Distance box. Either way, the Spacer Prestart Amount and the Sensor to Pin Distance values should be adjusted so the spacer prestart ends 0.050" past the center of the pin.

To Perform a Prestart and Cut Only Test with the Prestart Sensor Disabled:

1.) Disable the Prestart Sensor with the Enable/Disable Prestart Sensor button on the Length Test screen.
2.) From the Length Test screen, press the Test Mode button, followed by the Just Prestart and Cut button. Press the Start pushbutton to initiate the test.
3.) The applicator will dispense the amount of spacer in the Spacer Prestart Amount box and cut the spacer off.
4.) Measure the dispensed spacer. It should match the length in the Spacer Prestart Amount box. If the prestart is short, the Conversion Constant must be increased. If the prestart is long, the Conversion Constant must be decreased. Change the Conversion Constant by plus or minus 100 at a time to get a feel for how the change affects the spacer length.
5.) Repeat the Prestart and Cut Only operation until the prestart measures the same as the value in the value entered in the Spacer Prestart Amount box.
6.) When the length is correct, confirm that the spacer prestart ends at a point 0.050" past the center of the pin. Adjust the Spacer Prestart Amount until the end is correctly positioned.

Figure 2.2: Measuring a Prestart using the Prestart and Cut method. When the Prestart Sensor is disabled, the prestart should measure the same as the value in the Spacer Prestart Amount box, in this case 6.600". With the Prestart Sensor enabled, the prestart should measure the Knife to Sensor Distance plus the Sensor to Pin Distance.

Length Test Instructions
Section 2

To Perform a Prestart and Cut Only Test with the Prestart Sensor Enabled:

1.) Enable the Prestart Sensor with the Enable/Disable Prestart Sensor button on the Length Test screen.
2.) From the Length Test screen, press the Test Mode button, followed by the Just Prestart and Cut button. Press the Start pushbutton to initiate the test.
3.) The applicator will dispense spacer to the prestart eye plus the amount entered in the Sensor to Pin Distance box.
4.) Adjust the Sensor to Pin Distance until the spacer end is 0.050" past the center of the pin. You must remove the previous spacer to retest when the Prestart Sensor is enabled so the sensor can look for the next spacer edge.
5.) Measure the dispensed spacer. It should match the length in the Sensor to Pin Distance plus the value displayed in the Knife to Sensor Distance box.
6.) Repeat these steps until the Feed Conversion Constant is correct, the Sensor to Pin Distance plus the value displayed in the Feed Registration Position box matches the measured prestart, and the spacer end is centered on the pin.

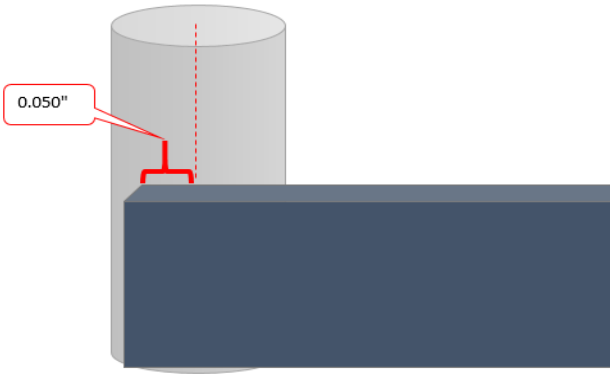


Figure 2.3: Adjusting the Prestart Length. The spacer should stop 0.050" past the center of the pin. Adjust the Spacer Prestart Amount, when not using the Prestart Sensor, or the Sensor to Pin Distance, when using the Prestart Sensor, to adjust the prestart length.

Length Test Instructions
Section 2

Length Test: The Length Test is used to verify and adjust the amount of spacer being applied while the applicator travels along the glass, and is a key component to proper spacer application. Length tests should be run at the start of every shift, after changing spacer reels, or whenever the spacer does not appear to be applying cleanly, with spacer that is too tight or too loose, or misshapen corners.

To Perform a Length Test:

1.) From the HMI main screen, select Length Test to open the Length Test screen. Select the correct Display and Running parameters for your spacer size.

2.) Enter the actual glass thickness in the Glass Thickness box so the applicator moves to the correct height. If a test length of other than eighteen inches is desired, enter it in the Length Test Dispense Amount box.

3.) Press the Length Test button on the HMI, and press the Start pushbutton. The applicator will move to the length test position, and the infeed stop will extend.

4.) Open the safety gate and place the length test glass against the stop on the infeed side of the applicator rollers.

5.) Exit the machine and close the safety gate..

6.) Press the Start pushbutton to run the test. The applicator will apply spacer to the glass.

7.) After the test completes, measure the length of the spacer as applied on the glass. If the spacer measures accurately, no adjustments are necessary. If the measurement is too long, decrease the Feed Conversion Constant parameter by approximately 100 for every 1/8" error. It will take a few tries get a feel for the amount of adjustment necessary, as it varies by spacer size. If the measurement is too short, increase the Feed Conversion Constant. Keep retesting and adjusting until the length is accurate.

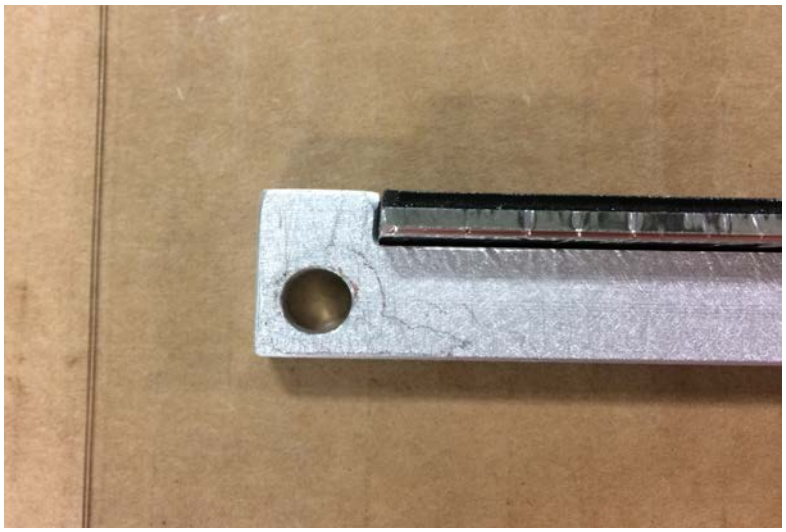


Figure 2.4: Measuring the Length Test. The Length Test should fit snuggly inside the measuring stick without compressing the spacer. Adjust the Conversion Constant if the spacer is too long or too short. If too long, decrease the conversion constant. If too short, increase the conversion constant.

Conversion Constant Automatic Adjustment
Section 3

Spacer Gear Ratio Automatic Adjustment Feature

Your Spacer Applicator Machine comes with a spacer detecting sensor that can measure the amount of spacer dispensed during spacer prestart. If the measured value does not match the known distance, the Feed Conversion Constant is adjusted to compensate for the difference.

To use this feature, the Prestart Sensor must be enabled from the HMI Length Test screen. During every prestart under automatic application, the distance measured by the Feed servo is compared to the Knife to Sensor Distance entered on the HMI. If the values do not match, the Feed Conversion Constant is adjusted up or down by the Conversion Adjustment Amount.

To disable this feature, set the Conversion Adjust Amount to zero. The prestart sensor should be left enabled to detect the spacer on prestart.