

Footage Counter Model FC-2012-RW

Version 1

Operation Manual

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1.0 Introduction

The model FC2012 - RW footage counter is an instrument designed to measure the length of tissue paper rolls. It will accommodate standard 4 inch wide tissue rolls or 11 inch paper towel rolls having a 1 ½ inch core. In addition the instrument will accept jumbo tissue rolls up to 15 inch diameter when using the optional jumbo roll adaptors.

The machine consists of a top roller which includes a sensor that measures the speed and length of the test sample. A front drive roll is provided that is driven directly from a variable speed motor. This front drive roll has a face width of 9 inches and will either wind up the paper onto the windup spindle or simply feed the paper into a recycle bin. See the photos below that illustrate these features.

The drive motor features controls that allow for automatic operation. The operator simply threads the paper through the rollers and presses the start button. The motor will now run at a preset speed (variable) while the digital meter displays the footage being fed through the system. When the roll expires the instrument will automatically shut off and the total footage will remain on the display. The footage counter will reset to 0.0 at the beginning of the next test.

This machine is designed to be used both in the laboratory or directly on the production floor. All of the electronic controls are housed in an industrial cabinet.

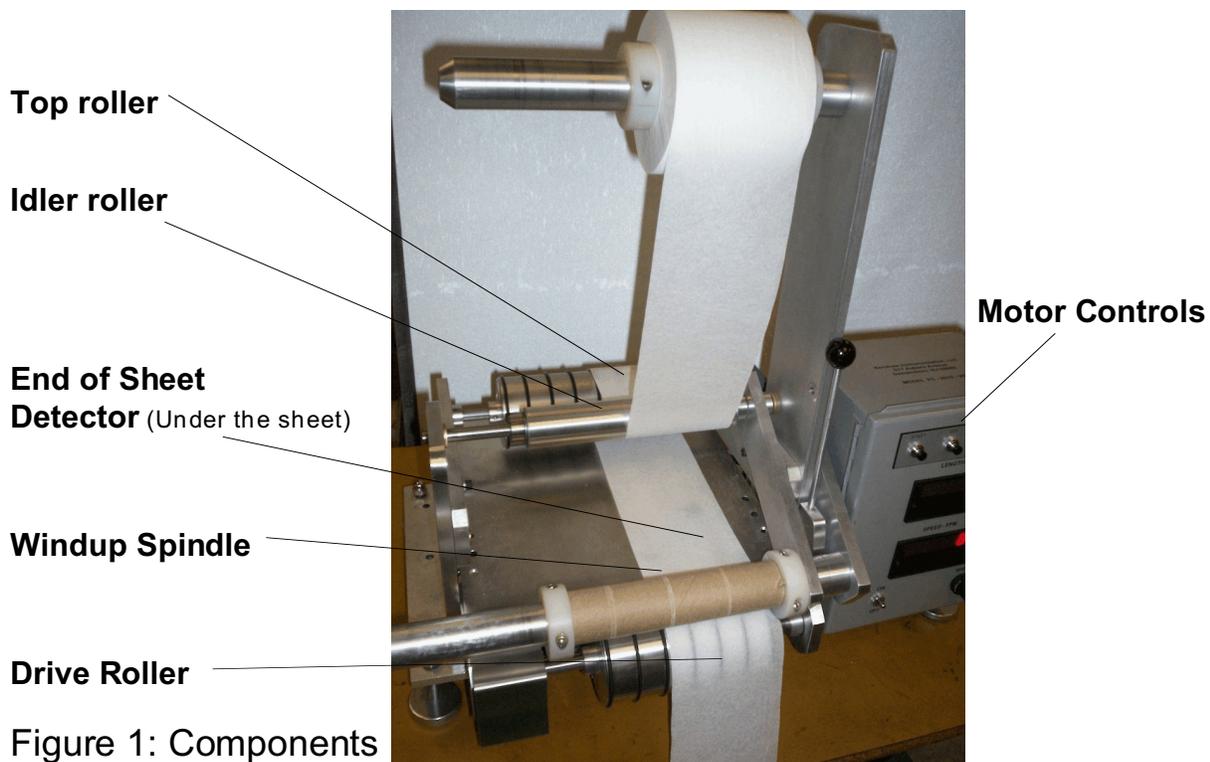


Figure 1: Components

2.0 Controls and Meters

2.1 Length Meter

The digital length meter displays the length of the tissue roll as it is driven from its core. Once the roll reaches the end, the “end of sheet” sensor detects the end

and stops the motor, hence stops the counting process. The length of the roll will remain on the digital display until the start button is depressed to begin the next test.

2.2 Speed Meter

The speed meter simply displays the surface speed of the rollers in feet per minute. The speed is adjustable by a potentiometer located below this display. The speed should be set to best suit the product being tested.

2.3 Controls

There are 4 controls associated with the operation of the motor. The “Start” button starts the test process by resetting the length meter, and starting the motor. The test can be stop at anytime by pressing the “stop” button. The “end of sheet” sensor will stop the test automatically when the end of the sheet passes it.

A “Jog” button is provided to run the motor manually. This momentary push button will operate the motor only when its depressed. The length meter will not be reset when using the “Jog” button. This control is useful when setting up the speed of the rollers before running a test.

3.0 Operation

3.1 Loading a Standard Roll

Slide the roll onto the 1 ½ inch spindle as shown in figure 2. Secure the shaft collar close to the roll core to act as an edge guide during the test.



Figure 2: Standard Roll

3.2 Loading a Jumbo Roll

Slide the jumbo roll onto the 1 ½ inch spindle using the jumbo roll adaptors (optional) as shown in figure 3. The jumbo roll adaptors convert the 1 ½ inch diameter spindle to 3 inches to accommodate these larger rolls.



Figure 3: Jumbo Roll

3.3 Paper feed

Raise the rewind spindle and set it on the lifter block as shown in figure 4.



Figure 4: Lifter Block Handle

Unwind about 18 inches of tissue and wrap it around the idler roller (about a 90° wrap) and then pass it around the top roller (about a 180° wrap), over the “end of sheet detector” and lay it over the front drive roller as shown in Figure 1. Now lower the rewind spindle onto the front drive roller using the lifter block handle as shown in Figure 4.

Now you will choose to rewind the paper onto the rewind spindle (see Figure 5) or to feed it into the recycle bin (see Figure 6).

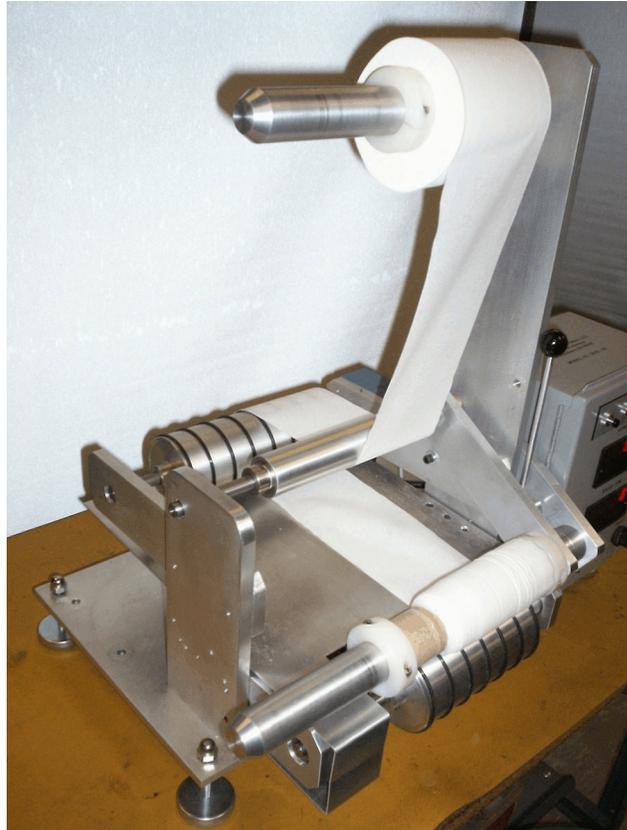


Figure 5: Rewind the Paper Sample

Please note that there is a limit to how large the rewind rolls can be. We have found that the large “Hard Roll Towels” and the jumbo tissue rolls are too large to wind on a single roll. For these larger rollers simply press the stop button when the rewind roller gets about 6 - 8 inches in diameter, allow the machine to come to a stop. Tear the sample at the front drive roller. Remove the rewind roll, install a new cardboard core and attach the free end. Now press the “resume” button and the tester will continue the test without resetting the “length” value.



Figure 6: Feed Sample into Recycle Bin

Please note that a cardboard core should be placed on the rewind spindle to act as a “nip” on the front drive roller as shown in Figure 6. When you start the test, watch the end of the tissue sample to insure it feeds into the recycle bin located at floor level in front of the machine.

3.4 Running a test

Press the start button to start the motor and reset the length meter to 0.0. The instrument will now unwind the entire roller while displaying the length as it feeds. When the end of the tissue passes the “end of sheet” detector the motor will stop turning and the length of this test will remain on the digital display.

4.0 Calibration

The values displayed on the speed and length meters are calculated by scale factors that are programmed into each of the meters. These scale factors are calculated by the diameter of the top roller, and number of counts measured per turn. These parameters will not change over time hence calibration is not normally required. The following 2 paragraphs explain the calibration process. The calibration factors are also calculated below using the following data.

Circumference of top roller = 0.827 foot

Encoder resolution = 30 counts per turn

4.1 Length measurement Scale factor

The equation for the length scale factor is as follows:

Length scale factor = (feet/turn) x (turn/count) = feet/count

Length scale factor = (0.827) x (1/30) = **0.0275** feet/count

our results are displayed on the digital display in 0.1 feet hence we need to multiply the Length scale factor by 10. $0.0275 \times 10 = \mathbf{0.275}$

4.2 Speed measurement Scale factor

The equation for the speed scale factor is as follows:

Speed scale factor = (Counts/second) x (feet/count) x (60 sec/minute) = ft/min

Speed scale factor = (input data) x 0.0275 x 60 = **1.650** feet/minute

4.3 Scale factor input

If the scale factor needs to be adjusted in either of the digital readouts the process is the same as described below.

4.3.1 Press the “Menu” key pad button , the display will read “SCALE 1”

4.3.2 Use the  and  key pad buttons to select the digit and adjust the numbers as desired.

4.3.3 Press the “Menu” key pad button , the display will read “OFFSt 1”

4.3.4 Press the “Menu” key pad button , the display will read “0.0”

4.3.5 The instrument is now ready to operate.

4.4 Special Note about calibration:

Keep in mind that the scale factors calculated in section 4.1 and 4.2 are based on calculations. Normally we start with these theoretical numbers and run sheets of known length through the instrument s a final check. Usually we have to make some small adjustments to these scale factors in order to get more accurate results.

The actual Scale factors that were established for this tester are as follows.

Serial Number: _____

Length Scale Factor: _____

Speed Scale Factor: _____

5.0 Specification

Size: 25" wide x 20" deep x 25" high

Weight: 70 pounds

Power: 115 VAC @ 5 amps

Speed: 10 - 160 Feet/min

Roll Diameter: 15 " maximum diameter

Roll Width: 4" - 11"