Operation

REELEX Machine Operation, HMI and Control System

Machine Operation

Cold Start

Follow the below procedure to start the machine when no cable has been strung up on the line.

Single-Spindle Machines

NOTE: Applies to the S320 and S320E REELEX machines.

1. String up Dancers and/or Accumulators and bring the cable over to the wire cleat mounted atop the machine near the buffer.
2. Turn on main power and remove any coils from the machine.
3. Pull up on the Safety Door plunger button on the accumulator or payoff control box.
4. Make sure all door locks on the line are engage and there are no lights illuminated at any door.
5. Press in the E-STOP button on the control box.
6. IMPORTANT: Physically position the safety door to the closed and locked position (so that access to the machine is not possible). This will ensure the door is in the start position.
7. Pull out the E-STOP button and press the E-STOP RESET button on the side of the control box.
8. The safety door will open. Walk into the machine, press the release button on the buffer handle and lower the assembly by hand. A gas shock will counteract the weight of the assembly.
9. Insert the cable through the anti-reverse clamp.
10. Open the length counter shroud and make sure the cable is threaded through the rollers properly. Close the shroud.
11. String up the buffer. The cable should first wrap around the white sheave, then the bottom rim sheave, then the top rim sheave and down into the traverse guide tube.
12. Thread the cable through the guide tube and wire guide.
13. Insert the end of the cable into the hole in the mandrel. Secure the wire by moving the mandrel segment into the raised position.
14. Exit the machine and press the AUX START button.
15. When ready, press the START button. The machine will configure for running and begin winding a coil.

Dual-Spindle Machines

NOTE: Applies to the M340 REELEX machine.

1. String up Accumulators and bring the cable over to the wire cleat mounted atop the machine near the buffer.
2. Turn on main power and remove any coils from the machine.
3. Press in the E-STOP button on the control box.
4. **IMPORTANT:** Physically position the safety doors to the closed and locked position (so that access to the machine is not possible). This will ensure the doors are in the start position.
5. Pull out the E-STOP button and press the E-STOP RESET button on the side of the control box.
6. Both safety doors will open. Walk into the machine, press the release button on the buffer handle and lower the assembly by hand. A gas shock will counteract the weight of the assembly.
7. Insert the cable through the anti-reverse clamp.
8. Open the length counter shroud and make sure the cable is threaded through the rollers properly. Close the shroud.
9. String up the buffer. The cable should first wrap around the white sheave, then the bottom rim sheave, then the top rim sheave and down into the traverse guide tube.
10. Thread the cable through the guide tube and wire guide.
11. Insert the end of the cable into the hole in the **left mandrel.** Secure the wire by moving the mandrel segment into the raised position.
12. Exit the machine and press the AUX START button.
13. When ready, press the START button. The machine will configure for running and begin winding a coil.

Emergency Stops

When the E-STOP button is pressed, all air and power is cut to the machines and the equipment will coast to a stop. Access is denied for 5-8 seconds after an E-Stop to allow the machine to come to a complete stop. Access is available when the switches for the safety door turn green.

Single-Spindle Machine Recovery

After an Emergency Stop, the following procedure must be performed to resume running.

If the machine is in the stopped position (E-STOP button pressed in):

1. **IMPORTANT:** First physically position the safety doors to the closed and locked position (so that access to the machine is not possible). This will ensure the doors are in the start position.
2. Pull out the E-STOP button and press the E-STOP RESET button on the side of the control box.
3. The safety door will open.
4. Enter the machine.
5. Remove any unfinished coils from the machine.
6. Insert the end of the cable into the hole in the mandrel. Secure the wire by moving the mandrel segment into the raised position.
7. Exit the machine and press the AUX START button to start the ancillary equipment.
8. When ready, press the START button. The machine will configure for running and begin winding a coil.

Dual Spindle Machine Recovery

After an Emergency Stop, the following procedure must be performed to resume running.

If the machine is in the stopped position (E-STOP button pressed in):

1. **IMPORTANT:** First physically position the safety doors to the closed and locked position (so that access to the machine is not possible). This will ensure the doors are in the start position.
2. Pull out the E-STOP button and press the E-STOP RESET button on the side of the control box.
3. Both safety doors will open.
4. Enter the machine.
5. Remove any unfinished coils from the machine.
6. Insert the end of the cable into the hole in the **left mandrel.** Secure the wire by moving the mandrel segment into the raised position.
7. Exit the machine and press the AUX START button to start the ancillary equipment.
8. When ready, press the START button. The machine will configure for running and begin winding a coil.

Control Buttons

G4 REELEX machines have a combination of hard (physical) and soft (on HMI screen) control buttons.

Hard Buttons

Aux Start / Stop

Starts and stops the ancillary equipment on the line. If in a rewind configuration, this button turns on the payoff motor. If in an online configuration, the accumulator will turn on. Start button glows green if machine is running.

Start / Stop

Starts and stops the REELEX machine. Start button glows green if machine is running.

Emergency Stop

Cuts all power and air to the machine. Machine will coast to a stop.

Machine Control Soft Buttons

Speed Selection

G4 REELEX machines have 5 speed settings, with 1 being slowest and 5 being fastest. The speeds these indexes represent are set on the Settings screen under Speed Settings.

Endform

The Endform button manually raises or lowers the endform depending on the position of the endform arm. The door must be closed to operate.

Jog

Press and hold this button to slowly advance the REELEX machine at low speed. This button is typically used to pull in a splice or to pull in more cable if manually printing length on the jacket.

Door

When the machine is stopped and the door is closed, press to open the door and access the machine. Press this button again to close the door.

Transfer

Prematurely performs a cut-and-transfer operation between spindles on a dual-spindle machine. Press this button if you wish to switch mandrels prior to the machine reaching Preset 2 (desired coil length).

G4 Controls Operation

The G4 or “Generation 4” REELEX control system combines “off-the-shelf” motors and drives with REELEX’s proprietary Winding Module PCB and a QT-based high-definition HMI touchscreen.

G4 offers improvements to machine reliability, adaptability and ease of maintenance compared to previous control systems.

Control System Comparison

Control System Version	G1	G2	G3	G4
Available On:	No longer available	**S290** **RS1** **D-750** (2013-2016) **D-1500** (2014-2018) **D-2000 & D-2050**	**D-750** (2017+) **D-1500** (2018+)	**S320** **M340**
Operator Interface:	Thumbwheels, Keypads	RedLion HMI Touchscreen	RedLion HMI Touchscreen	Qt HMI Touchscreen
Processing (CPU):	7803A Board	PC-Based CPU	Winding Module	Winding Module
Encoder Handling:	W600 Board	W602 and W603 Board		
Interface to CPU:	W401 Board			
Interface from Controls:	W90 Board W801 Board	A0B6-P Board		
Interface with I/O:	7507 Board	I/O-48	PB-16	PLC
Motor Drives:	REELEX	REELEX	REELEX	Industry Standard
I/O Electrical:	110vdc	24vdc	24vdc	24vdc
Motor Electrical:	110vdc	110vdc	110vdc	220vac

Touchscreen HMI Controls

The REELEX-designed HMI control system interfaces with an integrated PC to provide inputs and feedback to the Winding Module and PLC. As the primary interface with the REELEX machine, the HMI offers a variety of useful features including recipe product selection, live feedback, machine status information and much more. Software is continuously updated, so screens shown in this manual may not be identical to your version.

Some features are available on all screens:

Information Panel on All Screens

The bottom of all screens shows the information panel. In this section, machine controls and feedback are always displayed. Access may also be restricted by pressing the “Lock” button.

Action Button Bar

Depending on what screen is active, different action buttons will appear in this section, including additional windows available under the different screens.

Video Feedback

This section provides real-time video feed. The camera is typically mounted upstream of the REELEX machine to visually verify how much cable is left on the supply reel (use the Production Run feature to automatically stop the machine at the end of the reel).

The camera can be located anywhere on the line.

Machine Speed and User Information

This section displays the current machine RPM and line speed. On dual-spindle machines, it also indicates the mandrel size.

Restricting Access

Press the Lock button to log out of the machine and restrict access to other screens. When locked, press the Unlock button to access other screens.

Security and Access

There are two security conditions for the G4 control system: locked and unlocked.

Locked Condition

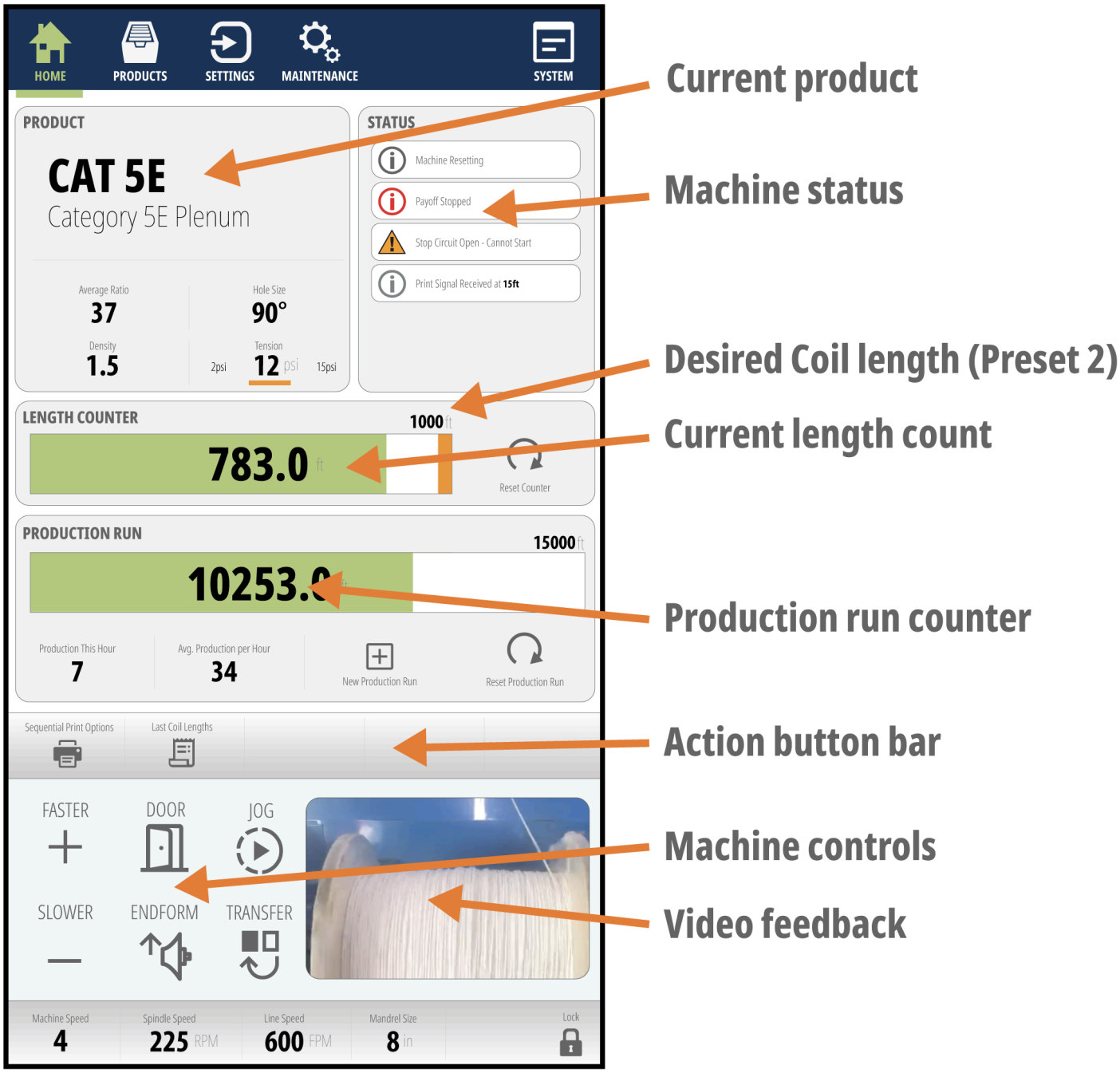
Intended for operators that should not have access to machine setup. In the locked condition, the user can only access the **Home** and **Products** (recipe selection screen).

Unlocked Condition

Intended for maintenance personnel and engineers to enable configuration of products and maintenance of the machine. In the unlocked condition, all screens are available.

Press the Unlock button in the lower right corner of the screen to open the password entry window. There, the password set on the System screen may be entered to unlock the additional screens.

Home Screen



Current Product

Shows what product is currently selected on the PRODUCTS screen.

Machine Status

Gives indicators of what the machine is doing based on various inputs on the line.

Length Counter

The length counter shows the current length of the coil being wound in green. The orange band gives a visual indication of Preset 1, or Slowdown length. When the green band reaches the orange section, the machine will begin to slow down in preparation for the completion of the coil.

Production Run Counter

When beginning a new production run, use this feature to keep track of the amount of product left on the supply reel.

OPERATOR'S NOTE: When beginning a new run (typically after loading a new supply reel), enter the length of product on the reel, or set the length of the production run. The machine will automatically slow down when approaching this length to prevent a crash stop when reaching the end of the reel.

How Production Run Feature Works

1. Press "Enter Production Run" button.
2. Enter the length of the total run.
3. The machine will run the entire length of the run, and begin slowing down at Production Run Slowdown, regardless of what the current length counter value is.
4. The machine will stop once the production run has been completed. **To start the machine again, reset the production run counter.**

Action Bar Buttons on the Home Screen

Sequential Print Options

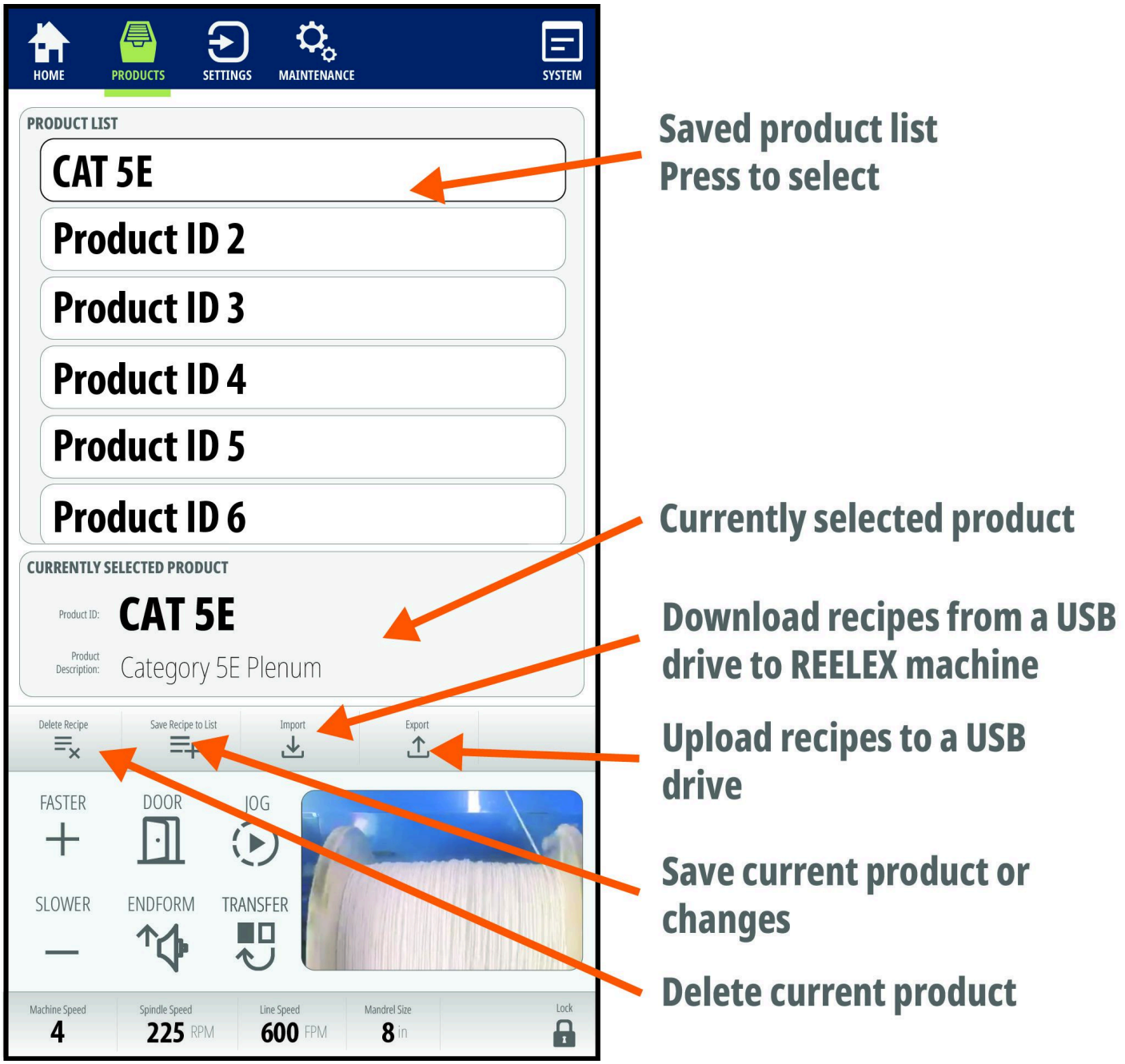
Turn on or off the **sequential print window** and set the lengths between which a sequential print signal will be seen by the control system.

This is typically used in UV mark printing where you do not want errant UV marks to be picked up as actual points at which to stop the machine or cut the cable.

Last Coil Lengths

Provides a list of the lengths of the last several coils completed on the machine. Typically used for QC purposes.

Products Screen



Product List

This is a list of saved recipes in the system. Press to load.

Currently Selected Product

This displays the currently loaded recipe. To delete a recipe from the list, first load the recipe so that it is displayed in this window, then press **Delete Recipe.**

Action Bar Buttons on the Products Screen

Delete Recipe

Deletes the currently selected recipe from the product list.

Save Recipe to List

If changes have been made to the currently loaded recipe, you can press this button to overwrite the currently selected product. If the Product ID that is currently displayed matches one of the items in the list, it will overwrite the recipe. Otherwise, it will create a new recipe.

Import

Download saved recipes from a USB drive by using this function. Insert a USB drive and press this button to load recipes from the USB drive.

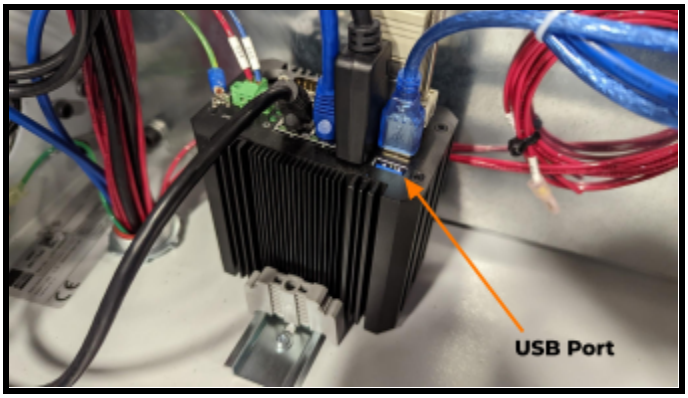
Export

You can transfer recipes between machines or save a backup by uploading the recipe files to a USB storage device. Insert the USB drive and press this button to save files to the drive.

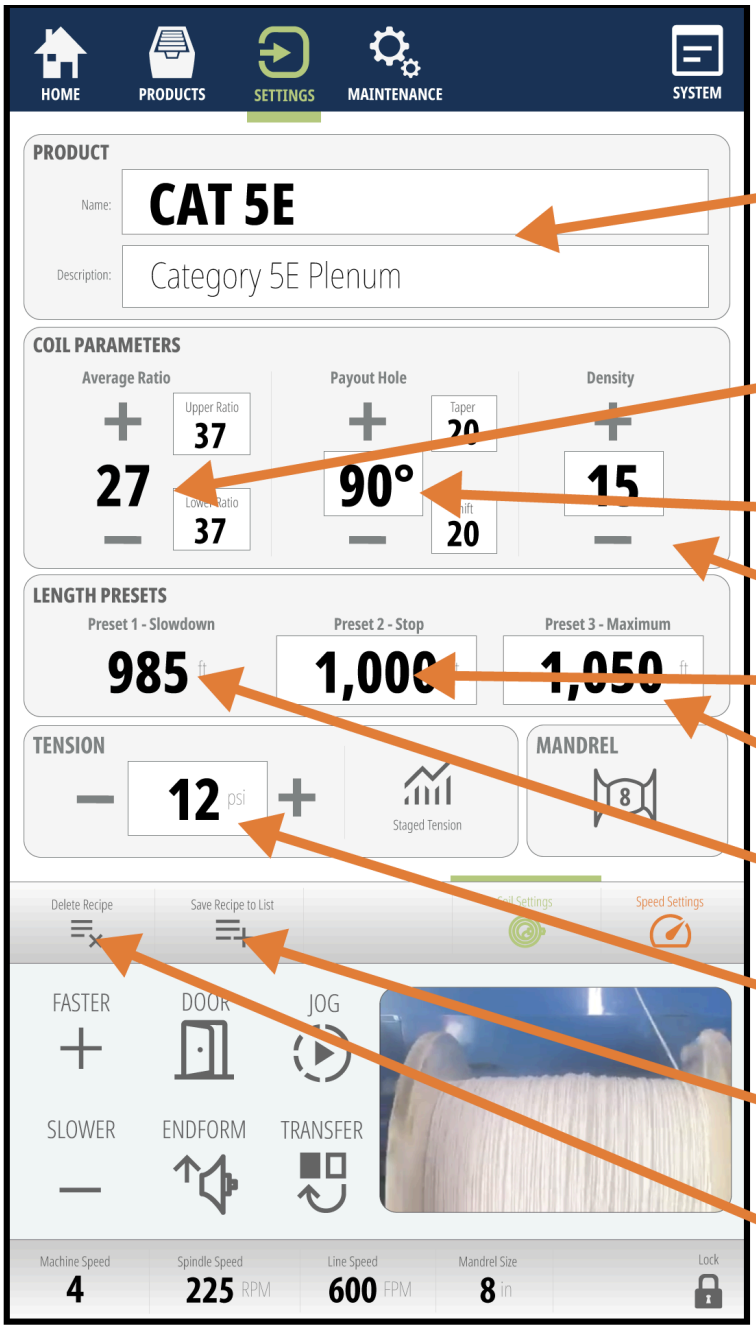
ENGINEERS NOTE: Use the import/export function of the HMI to make recipes consistent across multiple machines.

USB Port

The USB port is located on the top of the industrial PC inside the HMI cabinet.



Settings Screen - Coil Parameters



Enter product identification here

Coil ratios (spacing between layers)

Coil hole parameters

Density factor

Coil Length - Preset 2

Shutdown - Preset 3

Slowdown - Preset 1 (Automatically calculated)

Tension control setting

Save current product or changes

Delete current product

Product Name

Unique identification used to store product settings in memory. This will become the name of the file which stores the product settings.

Product Description

A longer description, part number or name of the product can be entered here. This is a separate text field that can be used for more detailed information about the product.

Length Presets

Slowdown (Preset 1):

Calculated value determined by the Speed Setup screen. Indicates the length at which the machine will begin decelerating. Not editable on this screen, as it changes depending on the machine speed.

ENGINEER'S NOTE: Preset 1 changes depending on speed, because the faster the machine is running the longer it will take to slow down to a stop. Thus, typically Preset 1 will be lower at higher speeds, allowing the machine longer to decelerate before reaching Preset 2. Preset 1 for speeds 1-10 is typically set up once and can be adjusted in the Speed Setup screen of the Settings section.

Stop (Preset 2):

Desired package length in feet or meters. Machine will automatically stop at this length.

Shutdown (Preset 3):

Typically used in sequential printing, this is the length at which the machine will shut down if a signal has not been seen. This may also be viewed as a "Do Not Exceed" limit so the machine does not continue to make a coil in the event of a missed signal.

Coil Parameters

ENGINEER'S NOTE: For more detailed information about coil parameters and their functions, please see the REELEX Packaging Manual.

Coil Settings

	Ratios	Hole Size	Density Factor
Function	Determines separation between wraps. Displayed as average between Upper and Lower ratios. Press <**+**> or <**-**> to adjust average ratio, or press Upper or Lower to adjust individually.	Determines number of degrees circumference the payout hole will be. Press TAPER to adjust hole shape. Press SHIFT to adjust amount of hole shift or slant.	Determines the density factor, or the rate at which the ratios will decrease as the coil builds. A higher number results in a denser coil. Too high a number will have the opposite effect, as layers will stack atop one another.
Range	0-99	**Hole Size**: 0-360 **Taper**: 10-50 **Shift**: 10-50	00-50 (A 10 on G4 machines represents 1.0 on G2 and G3 machines)
Typical Range for LAN cable	Average ratio: 30-40 Try to separate upper and lower by 5-7 digits. Do not use numbers that can easily be divisible by the same factor (i.e. 20 and 40, or 12 and 24)	**REELEX I**: 50° to 60° **EcoCore/REELEX 1.5**: 60° to 80° **REELEX II/AIR**: 80° to 100° **Taper**: 10 **Shift**: 20-50	10

How Do I Know What Parameters to Use?

A Packaging Calculator is available on our website to assist you in setting up new products.

Packaging formulas are available in the REELEX Packaging Guide.

Tension

If using a G2 UDA or Accumulator with Digital Air Regulation, this setting will remotely control the line tension at the dancer. Measured in PSI or BAR. Typical range for LAN cable is < 12 PSI.

Staged Tension

This setting changes line tension based on length. This is typically used to reduce the effects crossovers may have on the electrical properties of twisted-pair cables.

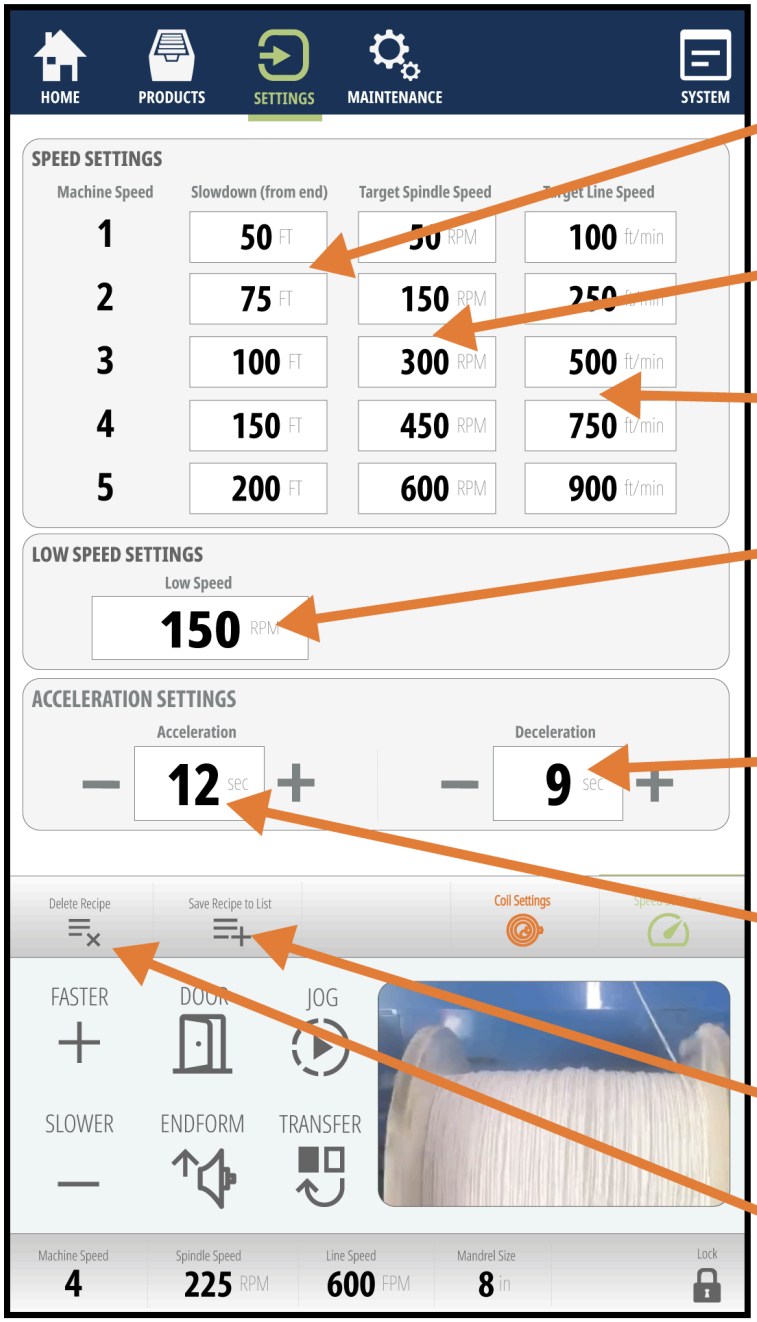
ENGINEER'S NOTE: Two-Stage Tension control can be a useful tool for mitigating electrical performance issues in twisted-pair cables. Try using minimal tension for the first 100 feet, and raising it to normal operating tension after that.

Mandrel Size (Dual-Spindle Machines Only)

Allows the user to select which size mandrel the product is set up for. This setting controls the positioning of the traverse table left and right when in the coiling position.

ENGINEER'S NOTE: The mandrel size is saved to the product recipe, however whenever changing mandrel sizes (for example, when setting up a new product), make sure to change this parameter on the settings screen.

Settings Screen - Speed Settings



Slowdown settings per machine speed index

Machine RPM at selected speed index

Line Speed in Constant Line Speed Mode

Low speed setting (at Preset 1)

Deceleration rate from max speed

Acceleration rate to max speed

Save current product or changes

Delete current product

About REELEX Machine Speed

G4 REELEX machines have 5 speed settings, 1 being the slowest and 5 being the fastest. Speed 5 typically represents the fastest that the motors can safely run (typically 750 RPM). The soft + and - speed buttons incrementally increase or decrease run speed.

Two Speed Modes

REELEX machines are equipped to run in two speed modes: **Constant RPM** and **Constant Line Speed** (or CLS). Constant RPM mode has corresponding RPM values for each speed setting, whereas CLS mode calculates corresponding RPM values based on desired line speeds.

Which speed mode the machine is in is determined by the **Machine Mode** under the Machine Setup Screen.

Constant RPM Speed Mode

Machine follows RPM speed values set to each speed index on the Speed Settings screen.

Constant Line Speed Mode (CLS)

Machine will calculate RPM values for each speed index based on corresponding line speeds, not to exceed the Target Spindle Speed. As the coil grows, the machine will begin to reduce spindle speed as the circumference of the coil takes in more product for each rotation. As a result, the machine will compensate to match a Target Line Speed. Typically used in online configurations.

Slowdown (From End) - “Preset 1”

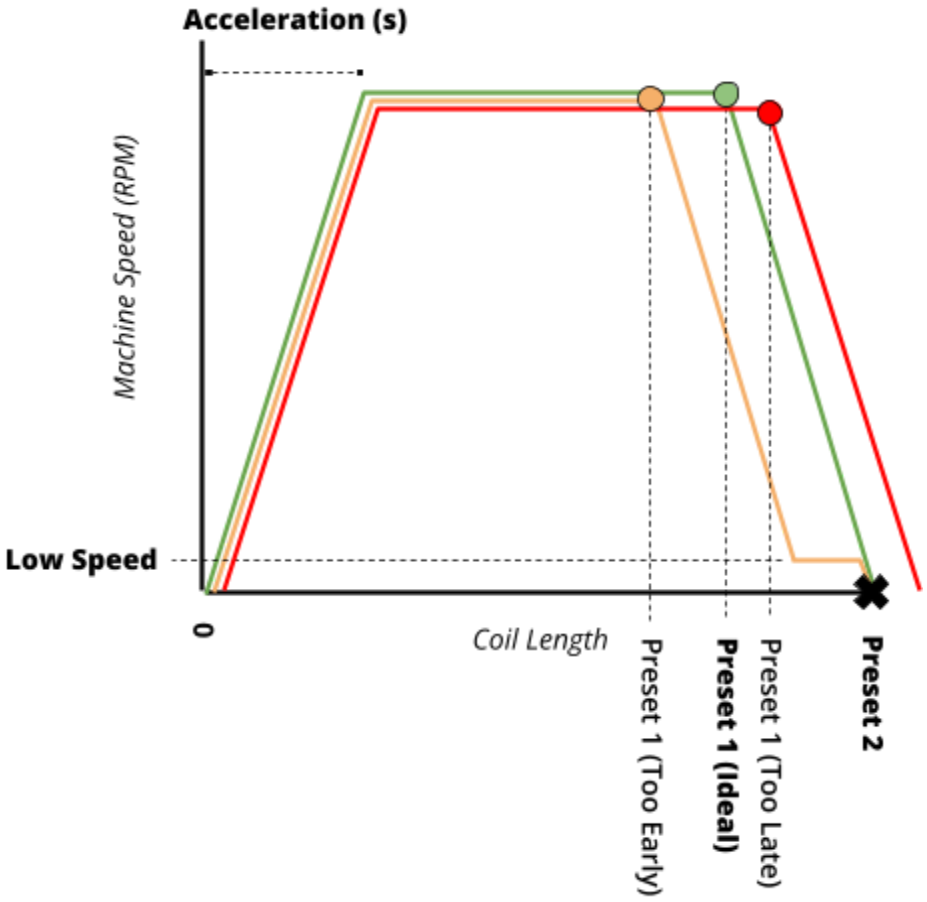
Enter the length before the end of the coil that the machine should begin to slow down. In general, the slower the machine is running, the closer to Preset 2 the Slowdown point can be. The faster the machine is running, the more time is needed to decelerate so the machine does not overshoot Preset 2. When running in a rewind configuration from a supply reel, these settings depend on the weight of the reel, the power of the payoff and the deceleration setting.

If running online with an extruder or another source that does not have inertia, deceleration can occur much faster and “Preset 1” can be set closer to Preset 2 without overshooting.

Setting Preset 1

Preset 1 should be selected for each speed so that the machine begins to decelerate at the right moment allowing the machine to arrive at Low Speed right before Preset 2. This will ensure the machine stops accurately and under control.

ENGINEER'S NOTE: Ideally, Preset 1 is set so that the machine slows down just in time for stop to occur at the length target. Because of the variations in supply reel weights, product characteristics and coil sizes, there needs to be a variety of inputs in order to achieve the desired efficiency of the machine. These speed settings are saved to each product's recipe, but may need to be adjusted depending on production scenarios.



If Preset 1 is too early (i.e. too many feet or meters from the end of the coil), the machine will begin to decelerate too soon, and spend too much time at low speed prior to the end of the coil being reached. An early Preset 1 means the machine is not operating as efficiently as it could be, as time spent at low speed should be minimized where possible.

If Preset 1 is too late (i.e. too close to Preset 2), the machine will not be able to decelerate in time and will overshoot Preset 2.

Target Spindle Speed

Target Spindle Speed is the machine's spindle RPM that the drives will target at each speed setting. In Constant RPM modes, this is the spindle speed that the machine will maintain at each speed setting. In Constant Line Speed modes, this setting is more of a "do not exceed" speed, since the actual machine speed will be lower in order to maintain line speed.

Target Line Speed

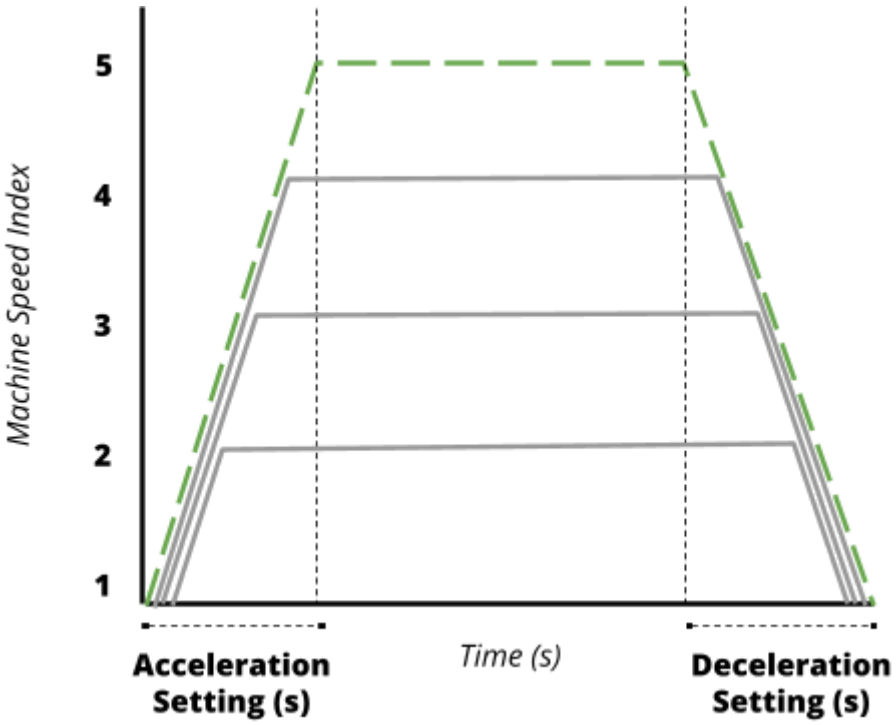
This is the target line speed for each speed index the machine will try to maintain. Available in Constant Line Speed (CLS) operation modes.

Low Speed

This is the speed the machine will operate after decelerating from Preset 1, but prior to stopping at Preset 2. On dual-spindle machines with automatic cut and transfer, the Low Speed setting also provides adjustability to how much torque the spindle motor is applying during transfer.

If Low Speed is set too low, the machine may bog down during transfer of some products. To prevent this, increase the Low Speed RPM to increase the torque applied to the spindle motors.

Acceleration and Deceleration



Measured in seconds, this is the time the REELEX machine will take to accelerate to maximum speed or decelerate from maximum speed. This setting sets the rate of acceleration regardless of speed setting.

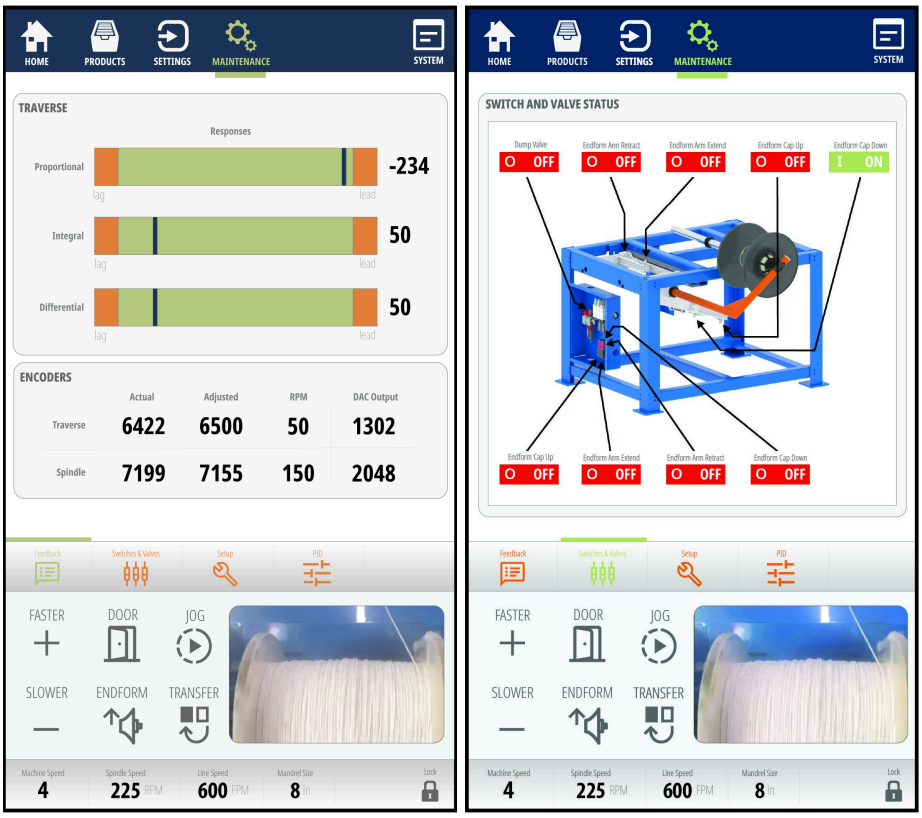
ENGINEERS NOTE: Typically set to 7-10 seconds, this setting should be set according to the ability of the motorized payoff to accelerate the supply reel up to running speed.

If acceleration is set too low (machine accelerates quickly), the REELEX machine may accelerate too quickly, outrun the payoff's ability to accelerate the reel, and cause the dancer to crash.

If deceleration is set too low (machine decelerates quickly), the REELEX machine may decelerate too quickly, creating a condition in which the inertia of the product causes the product to jump off the sheaves.

Maintenance Screen - Machine Feedback

These screens can be used to identify potential encoder errors, motor displacements and switch or valve issues.



Traverse Feedback

The Feedback screen shows graphs of the Proportional, Integral, and Differential responses of the Traverse drive while running. This indicates how far the motor is leading (right of center) or lagging (left of center) compared to where the program indicates it should be positioned. Off center values indicate the motor is running too fast or too slow.

Indicators of Problems

If indicators are far off center, the drive is not responding as expected. Maintenance personnel should review the function of the encoders, ensure keyways are secure, or consider looking at drive software.

Encoders

Spindle and Traverse Encoders

Indicate encoder position and read a range from 0 to 719, representing two 360 degree rotations. Values for spindle and traverse should be somewhat close to each other and read sequentially.

Indicators of Problems

Stop the machine and manually spin the spindle and traverse by hand. Numbers should be sequential and should not be able to go backwards.

Numbers should be relatively close to one another, if not, the traverse and spindle are out of sync.

Spindle and Traverse Digital to Analog (DAC)

D to A value is a measure of speed with reference to the drive. Value is in binary and indicates what the board is outputting to the computer. Higher numbers indicate higher output voltage. The traverse D to A value should fluctuate above and below the spindle value, indicating a switch from upper to lower ratio.

The D to A numbers are 12 bit so the range of these numbers is between 0 and 4095. A value of 2048 is zero speed (mid point). Numbers greater than 2048 are forward speeds with 2048+1500 (3548) being full rpm forward, and 2048-1500 (548) being full reverse rpm. The numbers (ex: 3548 and 548) are approximate because certain factors can change the values that the computer sends out. For example, the computer is always monitoring the rpm of the spindle. If there is an increase in load on the spindle (such as exists with constant line tension and increasing coil diameter) the computer will see a drop in the number of degrees of spindle displacement in a given time interval and will respond by increasing the D/A value.

Indicators of Problems

Excessively high or low values could indicate an out of tune condition or bearing failure.

Spindle value should stay relatively constant. Traverse should fluctuate above and below spindle value.

Numbers should increase at higher speed settings.

Switch & Valve Status

Provides real-time feedback of valves and switches on the machine.

Maintenance Screen - Machine Setup

Machine operation mode

Unit selection

Length counter calibration

Machine behavior in the event of a fault signal

Print window setup

Printing setup

Machine Operation Modes

Configures the machine to behave differently depending on line configuration. Each mode number corresponds to a different machine configuration. The configurations are listed next to the mode number.

Mode	Speed Mode	Slowdown	Stop or Transfer	Printing	Other
REWIND Modes					
1	RPM	Preset 1	Preset 2	✘	
2	Line Speed (CLS)	Preset 1	Preset 2	✘	
3	RPM	Preset 1	Preset 2	✔	
4	Line Speed (CLS)	Preset 1	Sequential Print Signal	✔	
ONLINE Modes					
5	Follow Dancer	Dancer	Preset 2	✘	
6	Follow Dancer	Preset 1	Sequential Print Signal	✔	
7	RPM with Max Line Speed		Sequential Print Signal	✔	Adjustable deceleration and max line speed
8					

Unit Selection

Select which units of measurement the machine should operate in.

Length Calibration

Counter Pulse Value

Default is 1 Pulse = 1 foot or 0.3048 meters.

Fault Behavior

Controls how the machine responds to a fault signal, such as a lump or spark detector.

Distance - Tester to Traverse

Distance product must travel from the sparker to the traverse (in feet).

Allow Start After Fault

Allows the machine to start again after a fault has been detected. If this is set to NO, the fault must be cleared before continuing.

Hard Stop

If set to YES, the machine will come to a rapid stop upon reading a fault signal. If set to NO, the machine will finish the coil.

Sequential Printing Setup

Distance from Printer to Spindle

Distance the product must travel from the printer to the traverse.

Sequential Window

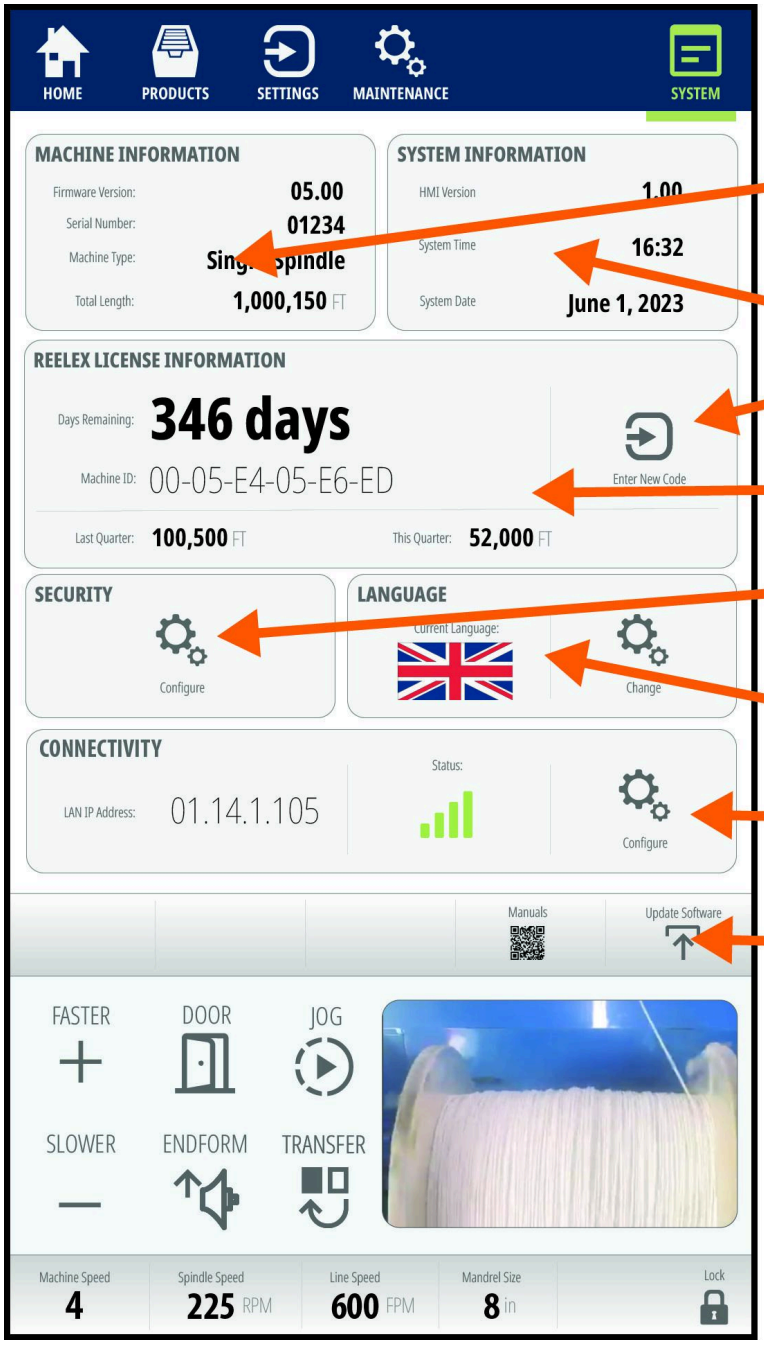
The Print Signal Window causes the machine to only see print signals within two lengths. If the print window is on, the machine will ignore all print signals or marks outside of the window.

Print Window Settings

Opens at: When the length counter reaches this number the computer looks for the sequential reset mark from the printer or UV sensor. Any signals before this footage will be ignored. Only in modes 3, 4 & 6.

Closes at: The machine will ignore any signals beyond this length.

System Screen



Winding Module Firmware

HMI Version and System Time

Press to enter new code

License and Production Info

Security Setup

Language Selection

Connectivity Setup

Press to update software (USB stick required)

Machine Information

Shows current version of the Winding Module software, machine serial number and type.

Total Length

Like an odometer in a vehicle, this is the total length of product that has been run through the REELEX machine.

System Information

Shows the current version of HMI software and system time.

License Information

Shows amount of time remaining if using a time-based code, or the amount of length remaining if using a length-based code.

When requesting additional codes, please refer to the unique Machine ID.

Last Quarter:

Provides a count of the length of product run through the machine in the previous calendar quarter. Useful for customers reporting variable fees as well as provides an indication of machine usage over time.

This Quarter:

Provides a current count of the length of product run through the machine in the current calendar quarter.

Information about Codes and Licensing

Why Codes?

To ensure payments are current and to prevent unlawful patent infringement, a code system is used that allows an authorized REELEX licensee to run the machine for one year. This system disables the REELEX machine in the event of machine sale, bankruptcy, black market sale, account delinquency or unauthorized or unlicensed use of REELEX.

A new code must be entered in order for the machine to continue running. Codes will be provided when licensee account balances are current and paid.

How does it work?

For users paying Fixed usage fees, or for users with three or more REELEX machines and paying Variable usage fees a new unique code will be emailed to you each year. You must enter this code EXACTLY as provided via the Enter New Code window and by pressing the “Apply New License Code” button.

A three month and one month reminder will display for convenience.

For prepaid usage fee customers, a code will be provided upon payment of the requested usage fees.

What happens when the time or length remaining reaches 0?

The machine will be rendered inoperable and will lock. A new, valid code must be entered to continue running.

For more information about REELEX Licensing, please visit: www.reelex.com/licensing

Security

Pressing this button opens a popup window that allows you to set the unlock password.

Language

Pressing this button opens a popup window that allows you to change the language on the HMI.

Connectivity

Provides the IP address of the REELEX machine for networking purposes. Also allows the user to configure networking and remote connectivity.

Networking

The HMI can be connected to a network via Ethernet port. This connection will allow the user to access the HMI via Modbus.

Connecting to the REELEX Machine

1. Supply an ethernet connection to the inside of the HMI cabinet. The port for the ethernet connection is located on the IPC.
2. Press the “Help” button on the left side of the screen, then press “System Settings & Info” on the bottom of the help menu.
3. Press the “Configure Network” button and enter in your network information.
4. Press “Apply Network Changes (Restart)” button. This will reset the HMI and apply your settings to the Ethernet port.

Connecting via Modbus Data

Raw Modbus data can be accessed by configuring the HMI with a Modbus port (usually 502).

Modbus Addresses

Modbus Address	Write	Item	Description	Interpretation
40001	yes	upper ratio	upper ratio	actual
40002	yes	lower ratio	lower ratio	actual
40003	yes	density	density	least significant digit is a decimal
40004	yes	hole size	hole size	actual in degrees
40005	yes	hole shift	hole shift	least significant digit is a decimal, in degrees
40006	yes	hole taper	hole taper	least significant digit is a decimal, in degrees.
40008	yes	Preset 2	stop length	actual in feet or meters
40009	yes	Preset 3	shutdown length	actual in feet or meters
40010	no	current tension	BDA air pressure	actual in PSI or bar
40011	no	footage counter	length counter	actual in feet or meters, no decimal
40012	no	last coil length	previous coil length when length was reset	actual in feet or meters, no decimal
40013	no	production run counter	production run length current	actual in feet or meters use unsigned integer
40014	no	production run	production run length desired (set by operator)	actual in feet or meters use unsigned integer
40015	no	production totalizer	total amount run through machine	actual in feet or meters use unsigned integer
40018	yes	target speed	speed index 0-9	actual speed index
40019	no	average spindle speed	the average speed of the spindle	actual RPM
40020	no	line speed	the current calculated line speed	(feet/meters) / minute
40021	no	mode	the current operation mode of the machine	actual
40027	yes	RPM set1	speed setting 1	actual RPM
40028	yes	RPM set2	speed setting 2	actual RPM
40029	yes	RPM set3	speed setting 3	actual RPM
40030	yes	RPM set4	speed setting 4	actual RPM
40031	yes	RPM set5	speed setting 5	actual RPM
40037	yes	CLS set 1	constant line speed setting 1	(feet/meters) / minute
40038	yes	CLS set 2	constant line speed setting 2	(feet/meters) / minute
40039	yes	CLS set 3	constant line speed setting 3	(feet/meters) / minute

40040	yes	CLS set 4	constant line speed setting 4	(feet/meters) / minute
40041	yes	CLS set 5	constant line speed setting 5	(feet/meters) / minute
40047	no	low speed	RPM at low speed	actual RPM
40048	no	jog speed	RPM at jog	actual RPM
40049	no	accel time	acceleration to speed 10 in seconds	actual seconds
40050	no	decel time	deceleration from speed 10 in seconds	actual seconds
40051	no	coil count total	Continuous count of "good" coils produced	actual
40052	no	coils this hour	number of "good" coils this hour	actual
40053	no	maxProdRate	max production rate achieved in one hour	actual
40054	no	coil counted flag	flag to indicate a "good" coil has been completed	transition of 0 to 1 indicates a good coil
40055	yes	distance from printer to spindle 1 left	distance to pull in before cut	Distance in feet with implement decimal place 105 => 10.5
40057	yes	distance from printer to spindle 2 right	distance to pull in before cut	Distance in feet with implement decimal place 100 => 10.0

We need to decide if we will continue with the break between 0-100 and 600. The 600 index was carried forward from G2 and it would be nice to keep indexes the same for Reelex. However, that causes a problem in Qt where we need to have a 0 - 600 and something position data structure because that is how it is implemented in Qt.

400611	no	system status	indicates current state of the machine.	0x0001 = machine reset, 0x0002 = ready to run, 0x0004 = running
400612	no	faults	indicates any pending faults	0x0010 = payoff not started, 0x0020 = fault1
400613	no	stop circuit open	indicates the systems stop circuit is not closed	0x0001 = stop circuit is open