

Printing Best Practices

Sequential Print Setup on REELEX Equipment

Setup and Configuration	2
Sequential Printing at the REELEX Machine	2
Pre-Printing the Cable and UV Mark Method	2
Printer Location	3
S320/D-750 Print Head Location	4
M340/D-1500 Print Head Location	4
Optional Accessories Stand	5
Controls Setup	6
S320 / M340	6
G2 and G3 D-750, D-1500 and D-2050	6
D-2000	6
Machine Mode Selection	7
Machine Operation Modes	7
Critical Machine Parameters	8
Low Speed	8
Desired Coil Length - "Preset 2"	8
Slowdown (From End) - "Preset 1"	8
Distance from Printer to Spindle	8
Length Calibration	8
Counter Pulse Value	8
Sequential Window	9
Print Window Settings	9
Setting Preset 1	9
Correct Setup	9
Incorrect Setup	10
Optimizing Efficiency	11
Print Sequence	12
Cut Accuracy	12
Support	12

Setup and Configuration

In the most common setup for a printer is located downstream of any dancers or accumulators, and upstream of the REELEX buffer.

The REELEX machine simply requires a “cut” or “reset” output from the printer to be integrated into the line.

For assistance in setting up your REELEX machine with an in-line printer or UV sensor, please contact support@reelex.com.

Sequential Printing at the REELEX Machine

This is the most common and reliable configuration. In this setup, the print head is located between the dancer and the REELEX machine and the printer sends a signal to the REELEX machine to stop and/or cut the cable at the appropriate point.

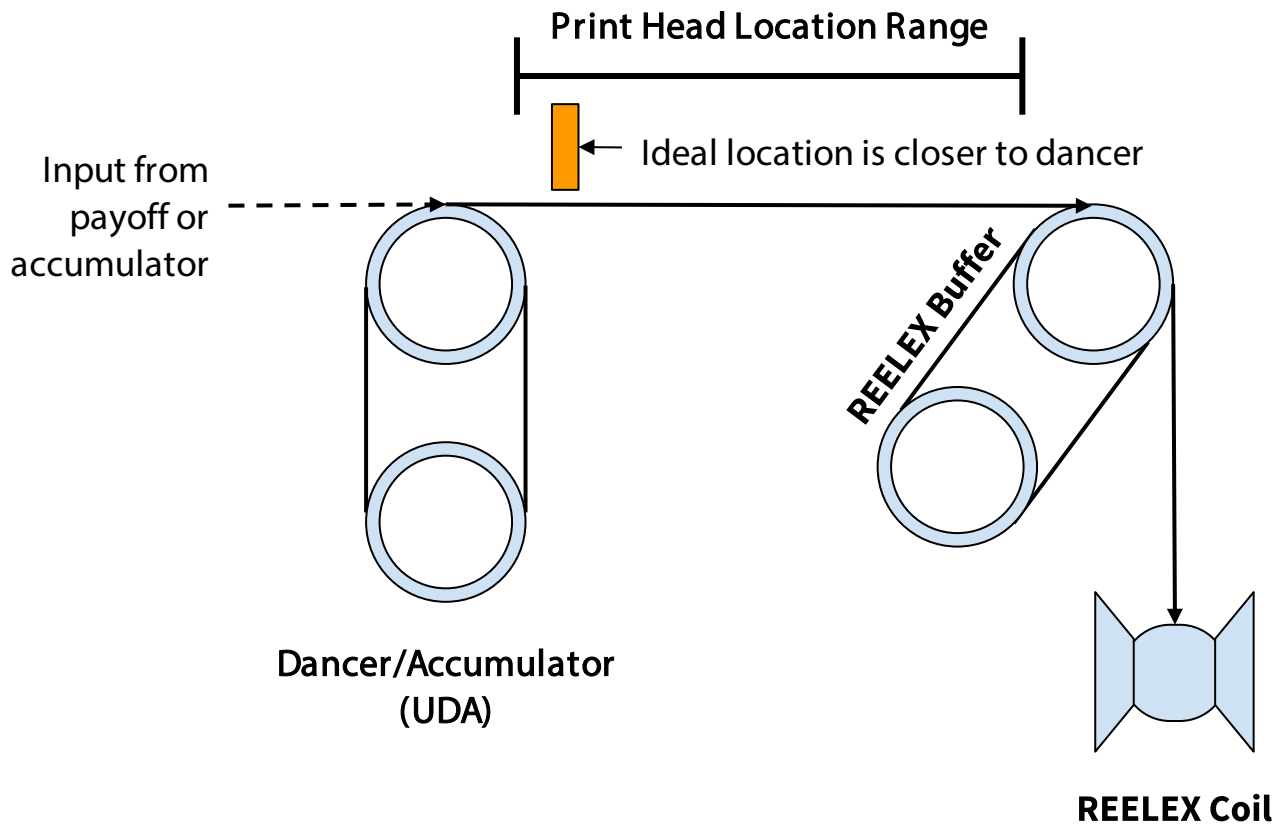
Pre-Printing the Cable and UV Mark Method

In this configuration, the cable is already printed (for example, 0-1,000ft or 0-305m) before entering the packaging line. If this configuration is used, a UV spray is often applied to the cable where the cut should occur. A UV sensor is mounted between the dancer and the REELEX buffer which sends a stop or cut signal to the REELEX machine at the appropriate point. This method is less common.

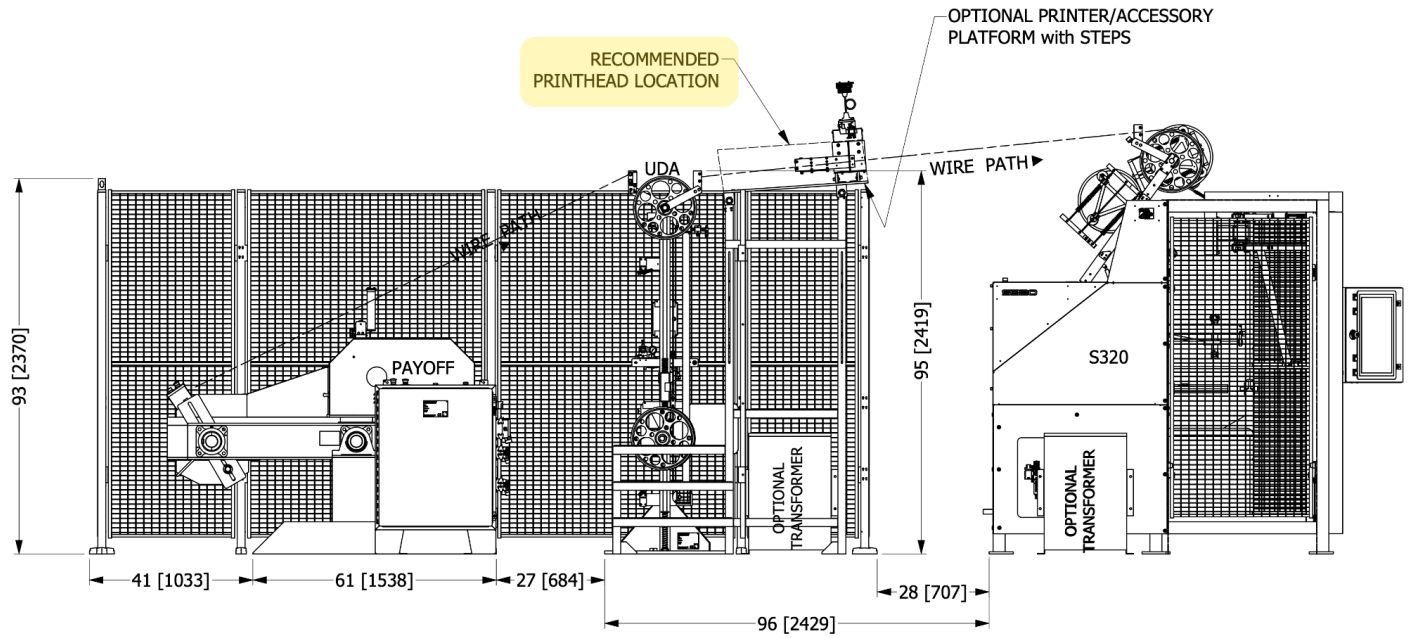
Printer Location

The print head should be located between the output of the dancer and the input of the REELEX machine's buffer. Ideally, the print head is closer to the dancer to allow time for the ink to dry.

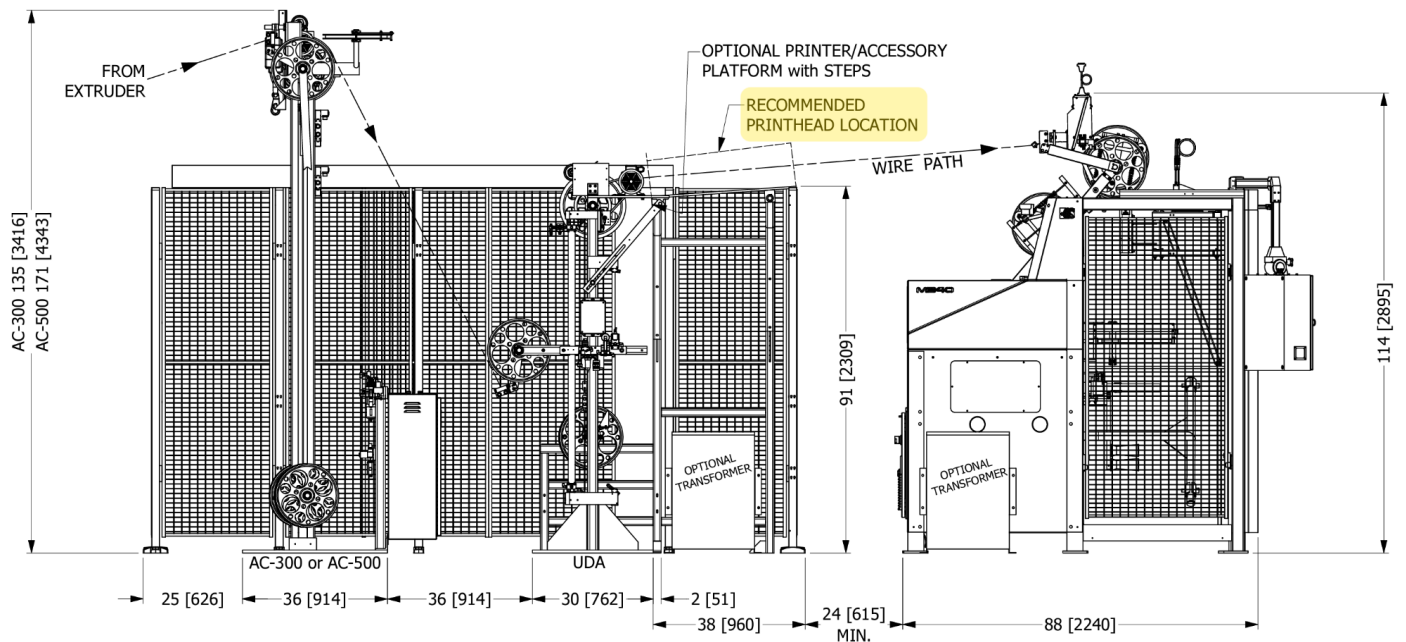
If necessary, the distance between the dancer and the REELEX machine can be increased to allow for more drying time at higher speeds.



S320/D-750 Print Head Location

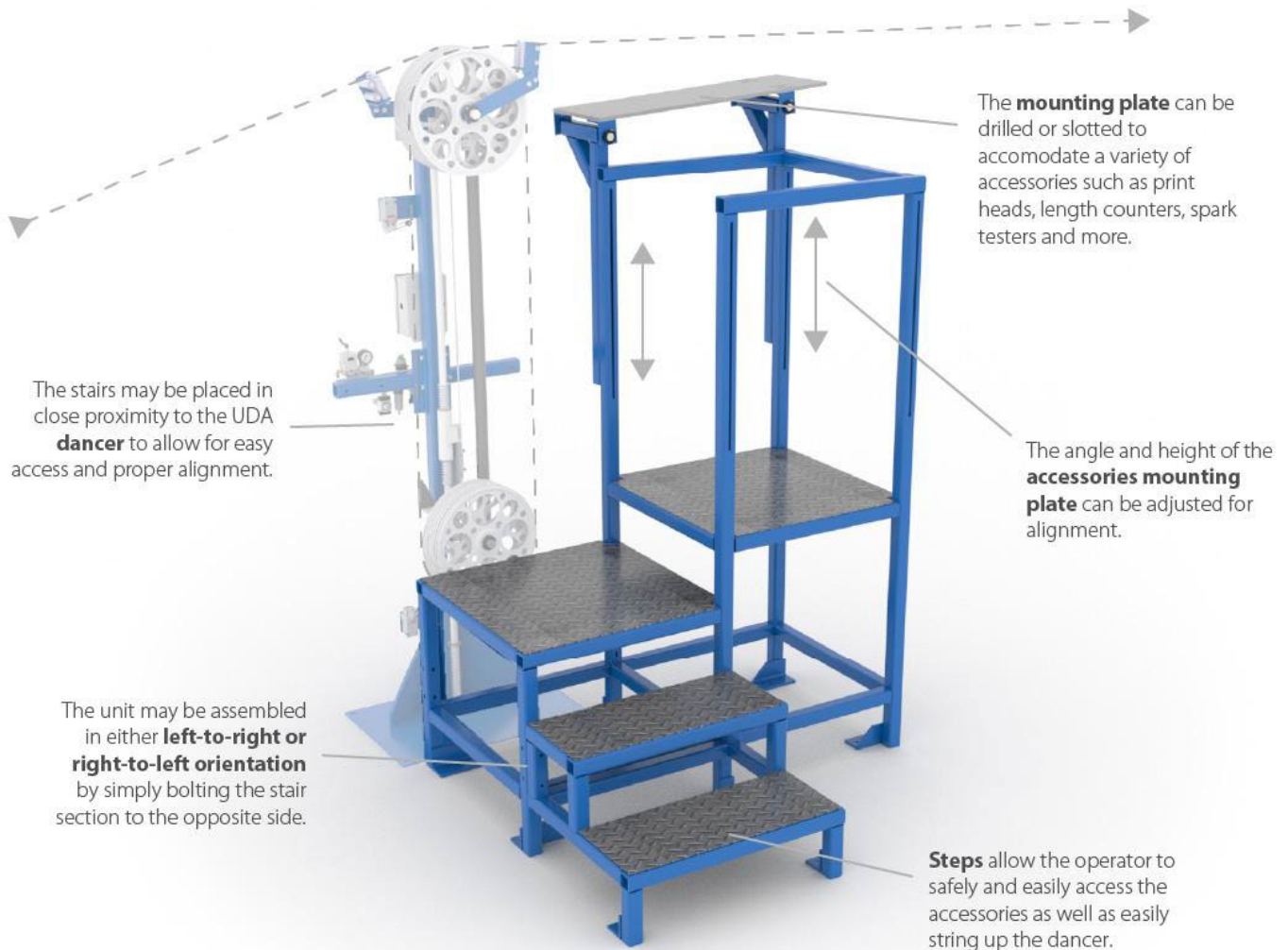


M340/D-1500 Print Head Location



Optional Accessories Stand

REELEX offers an accessories platform that provides an ideal mounting location for the printer and other accessories. This platform also offers a safe platform for the operator to access the printer and dancer during string up. For more information: <https://www.reelex.com/machines/accessories/#stand>



Controls Setup

Please refer to your machine's operation manual for more information on controls setup:

S320 / M340

- [Operation - G4 REELEX Machines, HMI and Control System](#)

G2 and G3 D-750, D-1500 and D-2050

- [REELEX Machine Operation - G2 and G3 Controls and HMI](#)

D-2000

- [Operation - D-2000/D-2050](#)

Machine Mode Selection

The correct machine mode must be selected to integrate a printer on the REELEX machine. By selecting one of the applicable modes, the REELEX machine will stop and/or cut and transfer upon receiving a reset signal from the print head. See chart below.

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.

NOTE: If the printer is being outrun in RPM mode, we suggest running in CLS mode so that the max line speed of the printer is not exceeded.

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

Critical Machine Parameters

Low Speed

This is the speed the machine will operate after decelerating from Preset 1, and the speed at which the machine should be operating when receiving the print signal. 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.

The machine must be at “low speed” before receiving a print signal.

Desired Coil Length - “Preset 2”

“Preset 2” represents the desired coil length.

NOTE: In this application where we are receiving a signal from a printer, Preset 2 is not applicable and the machine will stop or cut based on the signal received from the printer or UV sensor.

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 “Low Speed” the Slowdown point can be. The faster the machine is running, the more time is needed to decelerate so the machine does not overshoot the point where the machine needs to be at low speed. 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 the low speed point without overshooting.

See [Setting Preset 1](#)

Distance from Printer to Spindle

Distance the product must travel from the printer to the traverse. This determines how much cable is pulled in once a signal is received from the printer.

Length Calibration

Counter Pulse Value

Default is 1 Pulse = 1 foot or 0.3048 meters.

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.

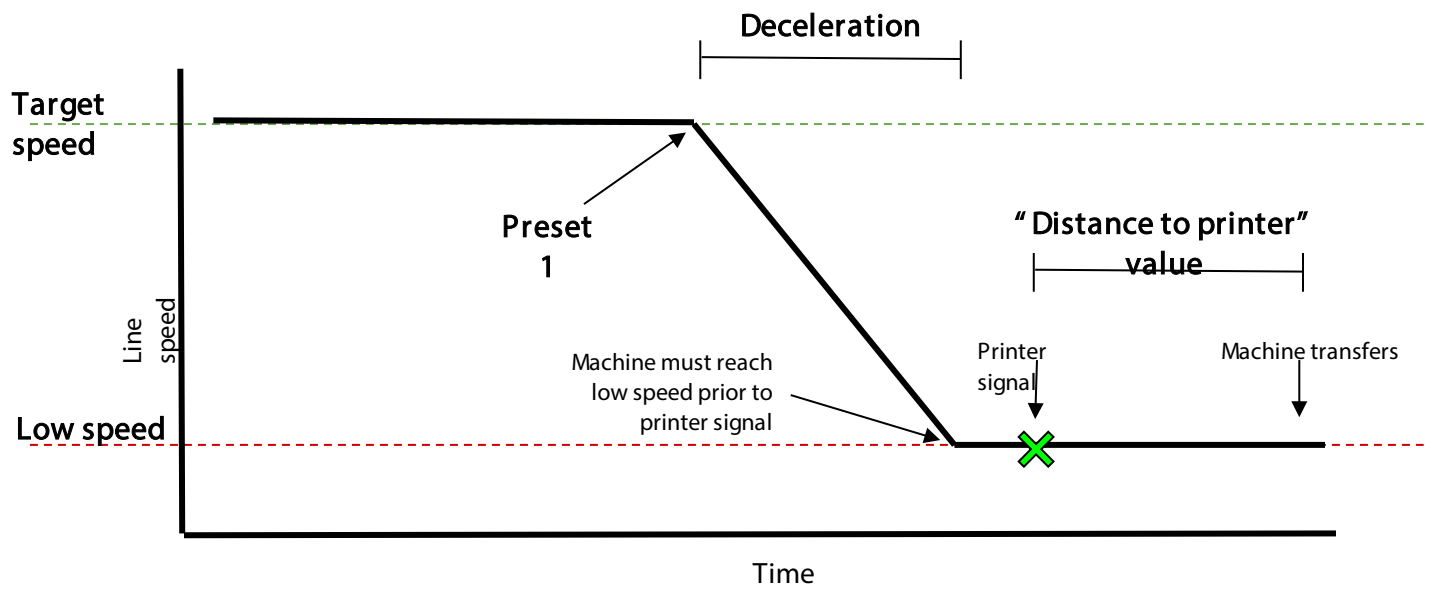
Setting Preset 1

It is critical that Preset 1 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 the receipt of the print signal. This will ensure the machine cuts 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 or print signal. 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.

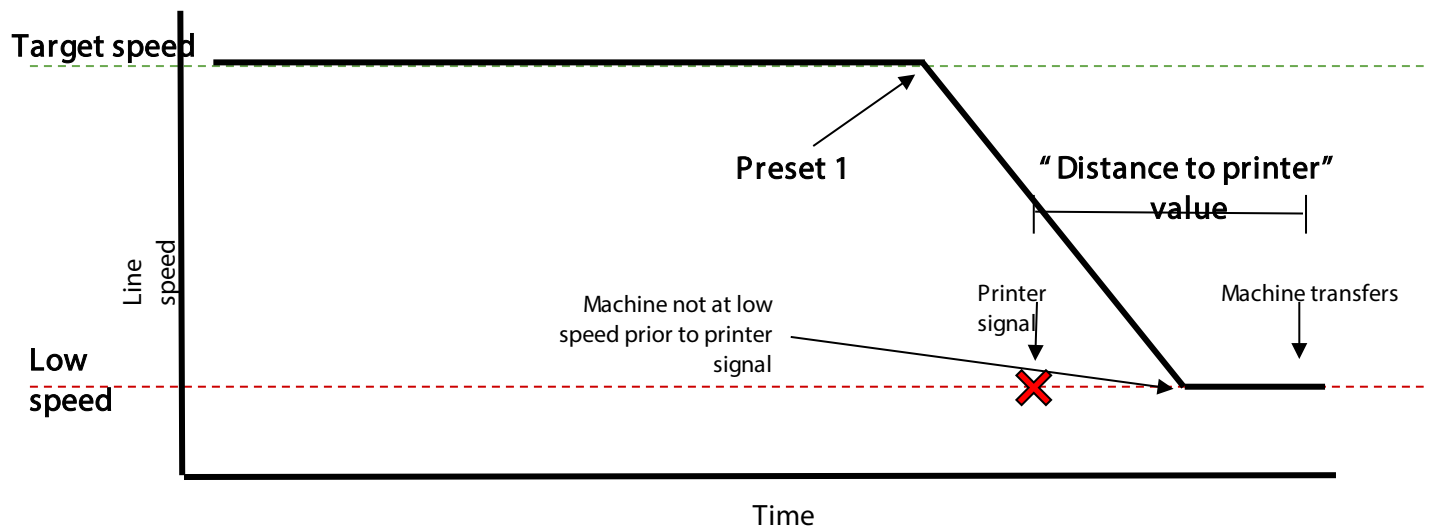
IMPORTANT: The spindle must be "under control" when it is time to transfer. This requires the winding speed to be at a stabilized low speed prior to receiving the print signal.

Correct Setup



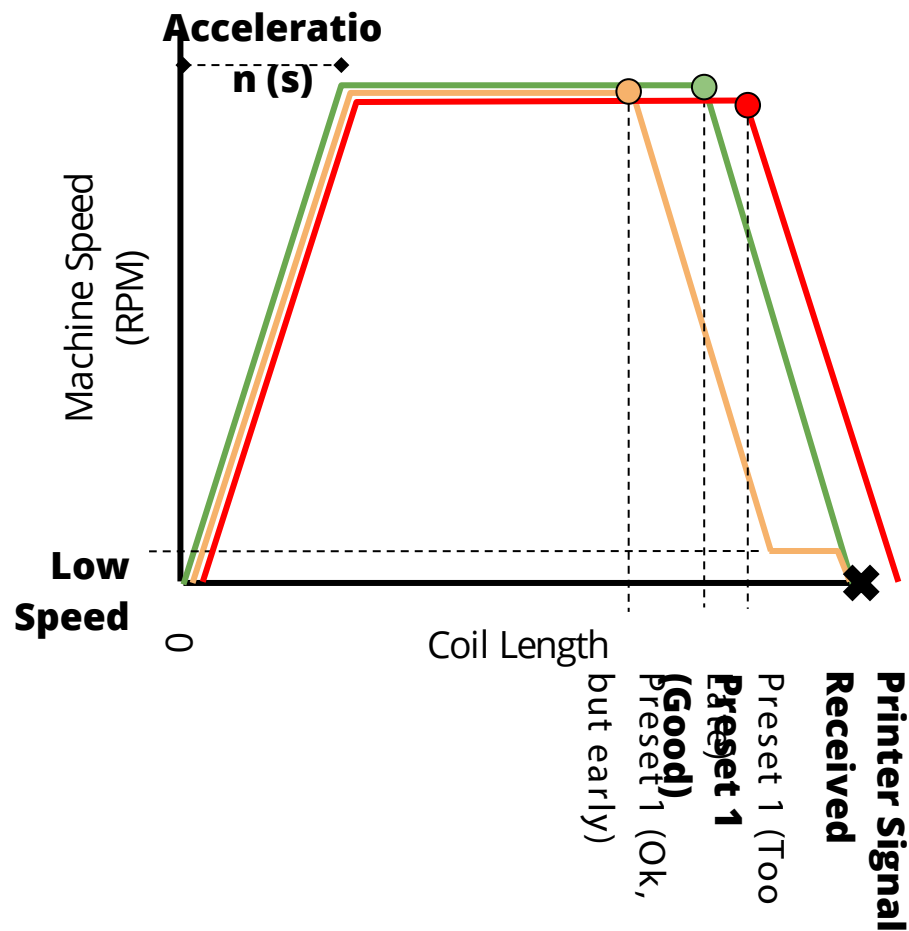
Incorrect Setup

For an accurate cut, the spindle must not be decelerating or not "under control" when it is time to transfer:



Optimizing Efficiency

To maximize the efficiency of the REELEX machine in a print configuration, Preset 1 should be set so that when operating at normal speed, the REELEX machine reaches low speed just before receiving a signal from the printer.



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 the print signal), the machine will not be able to decelerate in time and will overshoot the print signal, causing missed cuts and inaccurate lengths.

Print Sequence

The REELEX system is designed to operate in the following sequence:

1. The REELEX machine will decelerate from operating speed to low speed* at a predetermined length set by Preset 1 (generally within 5% of the end of the coil, but depends on line speed and deceleration conditions).
2. When the printer reaches the desired coil length (1,000ft or 305m for example), the printer generates an electrical signal that is provided to the REELEX machine to indicate the end of the coil.
3. The REELEX machine continues to wind at low speed and pulls in the distance from the print head to the REELEX coil**, stops and cuts.

* Low speed is required so the REELEX machine has sufficient time to stop once the transfer signal is received. The faster the machine is running, the more product will be pulled in when it comes to a stop. Think of it like the braking distance of a vehicle - the faster the vehicle is going the longer the stopping distance will be. If the machine is always at low speed when the signal is received, the length pulled in will be consistent. The further the printer is from the REELEX machine, the higher low speed can be set to, slightly increasing throughput.

** Note: There can be variations and deviations because the length of wire that is in the REELEX buffer can vary. There can also be greater variations on the D-2000 / D-2050 because the coil must be oriented with the hole facing up for the automated packaging to occur. As a result, if the hole is facing down at the predetermined length, the machine will pull in additional cable in order to orient the hole up for tube insertion.

Cut Accuracy

The accuracy of the cut depends on several factors, including:

- Correct calibration of the length counter
- Proper distance set between the print head and mandrel ([Distance from Printer to Spindle](#))
- It is critical that the REELEX machine has reached "Low Speed" when the print signal is received. See [Setting Preset 1](#)

Generally, the M340 and D-1500 can reliably and repeatedly cut to within 12-inches (300mm) or less of the desired location.

Support

For assistance in setting up your REELEX machine with an in-line printer or UV sensor, please contact support@reelex.com.