

# LX-350

## Shrink Sleeve Label Applicator User Guide





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Check periodically for the most current revision.

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# We Help Companies Deliver Products to the World

Thank you for choosing the AFM LX-350 for your labeling needs. AFM is part of Engage Technologies, an ISO 9001-2015 certified company that has steadily built a solid reputation for quality since 1991. Engage is known for providing rugged, durable, reliable packaging equipment to help companies deliver their products to the world.

Each Engage Technologies company – Squid Ink, Eastey, and American Film & Machinery (AFM), focuses on a different part of the packaging section of the production line.

**E N G A G E** *technologies corporation*



**Squid Ink** ([www.SquidInk.com](http://www.SquidInk.com))

Coding and marking equipment, inks, and fluids for product identification and traceability



**Eastey** ([www.Eastey.com](http://www.Eastey.com))

Automated shrink wrapping and bundling, automated case sealing, case erecting and product handling



**AFM** ([www.AFMSleeves.com](http://www.AFMSleeves.com))

Automated shrink sleeve labeling equipment, tamper-evident banding equipment, shrink tunnels and shrink sleeve consumables

When you purchase your packaging equipment from the Engage Technologies family of companies, you can feel confident that you have a machine that is first in quality and built to last. Thank you for choosing us for your packaging needs.

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# Abbreviations

The following abbreviations are used throughout this User Guide:

Abbreviation	Meaning	Abbreviation	Meaning
AC	Alternating Current	NC	No Connection
ACCE	Accelerator	OPS	Oriented Polystyrene
AFM	<b>American Film &amp; Machinery</b> (714) 974-9006 info@afmsleeves.com	PET	Polyethylene Terephthalate
Amp	Amperes	PLC	Programmable Logic Controller
AUX	Auxiliary	P/N	Part Number
BPM	Bottles per Minute	PPE	Personal Protective Equipment
C	Celsius	PREV	Previous
CL	Cut Length	Psi	Pounds per Square Inch
cm	Centimeters	PVC	Polyvinyl Chloride
DECEL	Decelerator	R	Right
DET	Detected	REV	Reverse
E-Stop	Emergency Stop	RPM	Revolutions per Minute
ENT	Enter	RST	Reset
F	Fahrenheit	sec	Second
FWD	Forward	SEL	Select
GND	Ground	Semi-Auto	Semi-Automatic
HMI	Human Machine Interface	Servo	Servomechanism or servomotor
Hz	Hertz	SW	Switch
I/O	Input/Output	temp.	Temperature
Kg	Kilograms	V	Volts
L	Left	VDC	Volts Direct Current
LCD	Liquid Crystal Display	VFD	Variable Frequency Drive
lbs	Pounds	w/	With
L.S.	Limit Switch	w/o	Without
M/C	Magnetic Contactor	'	Feet
max	Maximum	"	Inches
MCR	Master Control Relay	°	Degrees
mm	Millimeters	∅	Diameter
ms	Milliseconds		

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# Safety

When installing, operating, and maintaining the LX-350 Shrink Sleeve Label Applicator, follow these safety practices.

## Warnings

- **Study this User Guide thoroughly.**  
Read and understand this User Guide before operating the LX-350. Failure to do so may result in serious injury, damage to the machine, and/or may void the warranty.
- **Follow lockout/tagout procedures.**  
Your company must have lockout/tagout procedures for this equipment before first use, and those procedures must be followed (see “Lockout/Tagout” on page 18).
- **Use proper lifting techniques.**  
When unpacking and setting up the LX-350, use proper lifting and safety practices. Avoid overreaching and leaning over. Use at least four persons and a Forklift to lift and move the machine. Use proper lifting techniques when lifting heavy rolls of labels.
- **Wear PPE.**  
While installing, maintaining and operating the LX-350, always wear proper safety clothing, including Safety Shoes and Cut-Resistant Work Gloves. Always wear Safety Glasses with side shields when working with glass containers.
- **Choose a proper location.**  
Do not locate the machine on an uneven surface, as the machine could tip over.
- **Use a code compliant, grounded power source.**  
Ensure that the electrical power source is properly wired and grounded. The power source should comply with all safety regulations and codes applicable to the installation location.
- **Do not tamper with equipment ground.**  
Never remove any ground connection from this equipment. Failure to follow these instructions may result in damage to the equipment, fire, serious personal injury, or death.
- **Before turning on the LX-350, always ensure that:**
  - All necessary accessories are properly connected.
  - All Rollers spin smoothly without obstruction.
  - The Conveyor Belt is free of obstruction and operating properly.
  - The path for the label film, including the Mandrel, is clean and free of obstruction.
  - Tools or other objects have not been placed where they can accidentally fall/roll into the machine.
  - The E-Stop (Emergency Stop) Button is not pushed in.
- **Keep Safety Doors closed during operation.**  
Only open the Safety Doors after the machine has stopped. Failure to follow these instructions can result in injury, can damage the machine, and void the warranty.
- **Avoid injury.**  
The Cutter Blades are extremely sharp. Keep hands and tools away from them when the machine is plugged in, and exercise extreme caution around them even when they are not moving. Wear Cut-Resistant Work Gloves.

- **Beware of unexpected starts.**  
The LX-350 incorporates Line-Control Interlocks, which may allow it to start automatically and without warning. Use caution during all maintenance and operation.
- **Observe warnings.**  
Pay close attention to and understand all warning labels on the machine and follow safe operating practices.
- **Use with proper ventilation.**  
The equipment generates heat and fumes when in operation. Be sure that the area is properly ventilated.
- **Keep water away from electronics**  
Keep water away from the Electrical Enclosure, the HMI, and all other electrical components.
- **Use correct replacement parts.**  
Always replace Fuses and other protective circuit devices with those of the appropriate current rating.
- **Toxic materials.**  
Some shrink label film contains toxic chemicals. Store and dispose of properly.
- **Correct use of E-Stop.**  
Only use the E-Stop Button to shut off the LX-350 during actual emergencies. Routine use of the E-Stop Button can damage the machine and void the warranty.
- **No unusual maintenance.**  
Service and maintenance beyond what is described in this User Guide should be performed by a trained and qualified technician. If in doubt, contact AFM or your authorized distributor.
- **No unauthorized modifications.**  
Do not attempt to modify the machine or software in any way. Doing so may result in damage to the machine, may void the warranty, or may cause serious injury. This machine is protected by hardware Master Control Relay (MCR) and E-Stop and door safety interlocks. Under no circumstances should these be disabled.
- **Follow instructions.**  
All operators must strictly observe these guidelines and ensure that the LX-350 is properly maintained. Failure to do so may result in damage to the machine, may void the warranty, or may cause serious injury.

## Understanding Safety Notifications

	<b>DANGER:</b> Indicates a hazardous situation which, if not avoided, <b>will</b> result in death or serious injury.
	<b>WARNING:</b> Indicates a hazardous situation which, if not avoided, <b>could</b> result in death or serious injury.
	<b>CAUTION:</b> Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	<b>ATTENTION:</b> Indicates a hazardous situation which, if not avoided, could result in property damage only.

## Cautions

When installing, operating, and maintaining the LX-350, observe these cautions.

	<b>Cutting Hazard:</b> Extremely sharp Blades. Keep hands clear.
	<b>Wear Safety Equipment:</b> Wear necessary Personal Protective Equipment (PPE), including Cut-resistant Gloves.
	<b>Electrical Hazard:</b> No user-serviceable parts inside. Dedicated circuit recommended. Check polarity.
	<b>Electrical Ground Hazard:</b> Ensure that unit is properly grounded.
	<b>Fume Hazard:</b> Some fumes may be a health hazard with prolonged exposure. Ensure proper ventilation.
	<b>Pinch Hazard:</b> Keep hands clear.
	<b>Crush Hazard:</b> Keep hands clear.
	<b>Fire Hazard:</b> Do not tamper with electrical equipment.
	<b>Keep Dry:</b> Keep the equipment dry and indoors.

## Lockout/Tagout

Lockout/tagout procedures are safety-related practices developed, documented, and implemented by your company. Lockout/tagout procedures require safely shutting down and disabling the energy input to a machine and any connected equipment that could result in injury or equipment damage if an accidental startup were to occur during inspection, maintenance, adjustments, or repairs. Part of disabling the energy input typically involves applying physical lock(s) to the energy input(s) so that the system cannot be accidentally restarted. Typical energy inputs include electrical, air, fluid, hydraulic, gravity, heat, or steam.

**Your company must have lockout-tagout procedures in place for this machine before use.** To prevent injury or equipment damage due to accidental startup, all inspection, maintenance, adjustments, and repairs of this machine should be governed by your company's lockout/tagout procedures and OSHA requirements/best practices.



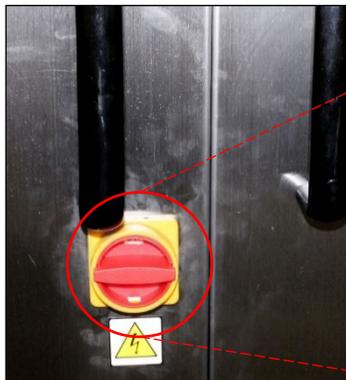
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury and/or equipment damage and may void the warranty.

**NOTE:** OSHA provides information on lockout/tagout best practices, consistent with Title 29, Code of Federal Regulations (CFR), Part 1910.147 and 1910.333, as a basis for companies to develop their own lockout/tagout procedures.

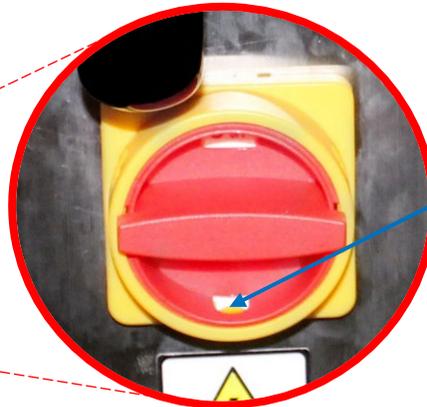
### Lockout/Tagout on the LX-350

The primary energy input for the LX-350 is electrical. The LX-350's Main Power Switch is designed to accept a lock for lockout/tagout purposes. Under a typical configuration, locking the LX-350's Main Power Switch in the "OFF" position will also disable power to the UR-2, Timing Screw, and Brushdowns. However, this should be verified with your specific company's setup before proceeding, and energy inputs for any other connected equipment (for example, a Conveyor, a Steam Tunnel, etc.) should be locked out as well.

#### LX-350 Main Power Switch



AFM-4510009-00213-01



Lockout/Tagout Equipment below is shown for illustrative purposes only and is not included with the LX-350.



AFM-4510009-00523-01

## Liability

The LX-350 Shrink Sleeve Label Applicator has been designed for safe operation under normal conditions. However, unauthorized modifications, improper operation, or carelessness – particularly around the Cutter Blades – can result in serious injury to the user or damage to equipment. The manufacturer or its agents and representatives assume no responsibility or liability for the following:

- Injury or equipment damage due to improper use of the machine.
- Problems or hazards resulting from failure to operate or maintain the equipment as specified in this User Guide.
- Equipment modifications that have not been authorized in writing by AFM.
- Abuse, unauthorized tampering with the system or attempting to perform repairs beyond the scope of what is described in this User Guide.
- Electrical interference or improper/ungrounded power sources.
- Use of the machine in a way that is inconsistent with what is described in this User Guide.
- Failure to apply effective lockout/tagout practices consistent with OSHA requirements (see “Lockout/Tagout” on page 18).
- Failure to comply with federal, state and/or local laws governing operation or function of the machine.

Any of the above misuses will void any and all warranties. Further, Engage Technologies, AFM, or their agents and representatives shall not be held liable for lost profits, incidental or consequential damages, attorney fees, or similar expenses that may result from such misuse. Refer to the Warranty Statement on page 337 for further information.

Always use the equipment in a manner consistent with the instructions in this User Guide.

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# Equipment

## Standard Equipment and Accessories

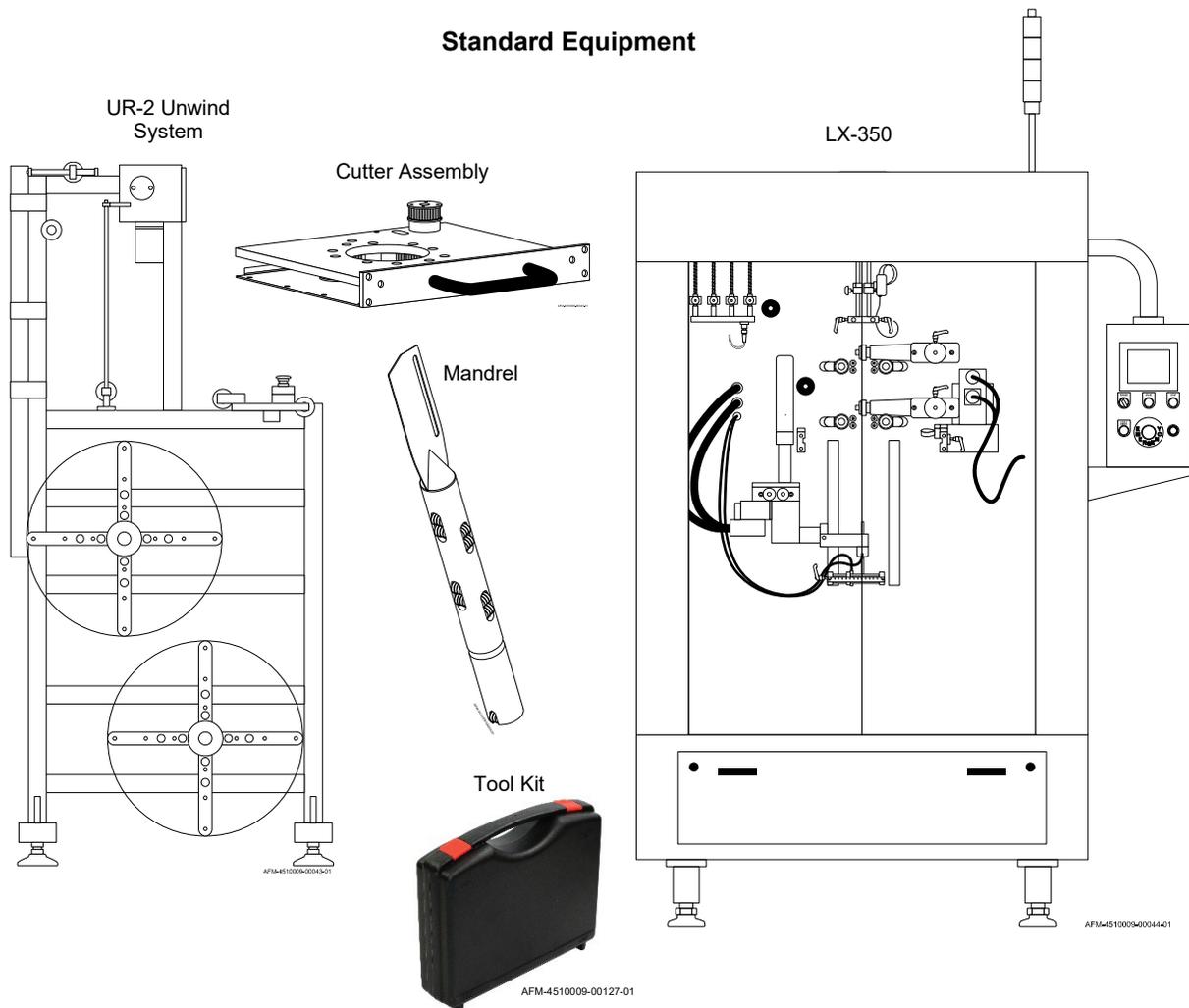
Each LX-350 Shrink Sleeve Label Applicator System includes the following:

### Standard Equipment:

- LX-350
- UR-2 Unwind System
- Mandrel
- Cutter Assembly
- Toolkit

### Standard Accessories:

- Timing Screw Assembly
- Brushdown Assembly
- Turn Bar



The LX-350 is shipped assembled and tested. When unpacking the shipping carton, verify that the contents are complete and in proper condition. If items are missing or damaged, contact your AFM distributor immediately.

## Standard Accessories

The LX-350 comes with three standard accessories: a Timing Screw, Brushdowns and a Turn Bar.

### Timing Screw Assembly

P/N 4502310 (400mm) or P/N 4501973 (800mm)

The Timing Screw Assembly is mounted to the Conveyor upstream from the LX-350, and guides bottles into the machine at a consistent, evenly spaced rate. A 15.75" (400mm) or 31.50" (800mm) Timing Screw Assembly is included as a standard part of LX-350 Shrink Sleeve Label Applicator. Each customer's Timing Screw is made to fit their specific bottle, with a small range of tolerance. Bottle diameter dictates the pocket size and pitch of a Timing Screw. AFM can custom build additional Timing Screws to suit a wide variety of labeling situations.

#### 400 mm Timing Screw Assembly



AFM-4510009-00128-01

#### 800 mm Timing Screw Assembly



AFM-4510009-00129-01

## Brushdown Assembly

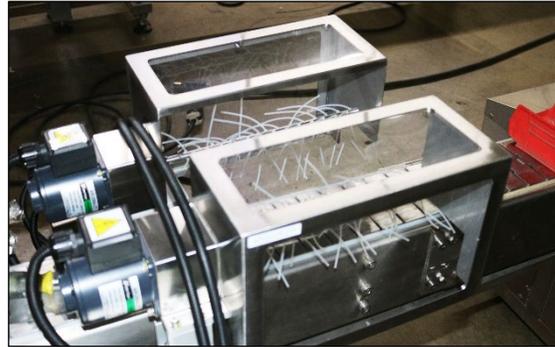
P/N 4500262

A Brushdown Assembly is included as a standard part of LX-350 Shrink Sleeve Label Applicator. The Brushdown Assembly is mounted to the Conveyor immediately downstream from the LX-350. After the bottle has passed through the LX-350, the tendrils of the Brushdown Assembly brush softly down over the sides of the bottle to ensure that the bottom edge of the label is flush with the Conveyor surface (or flush with the Auxiliary Belts, if used) before the bottle enters the Heat Shrink Tunnel.

### Brushdown Assembly



AFM-4510009-00130-01

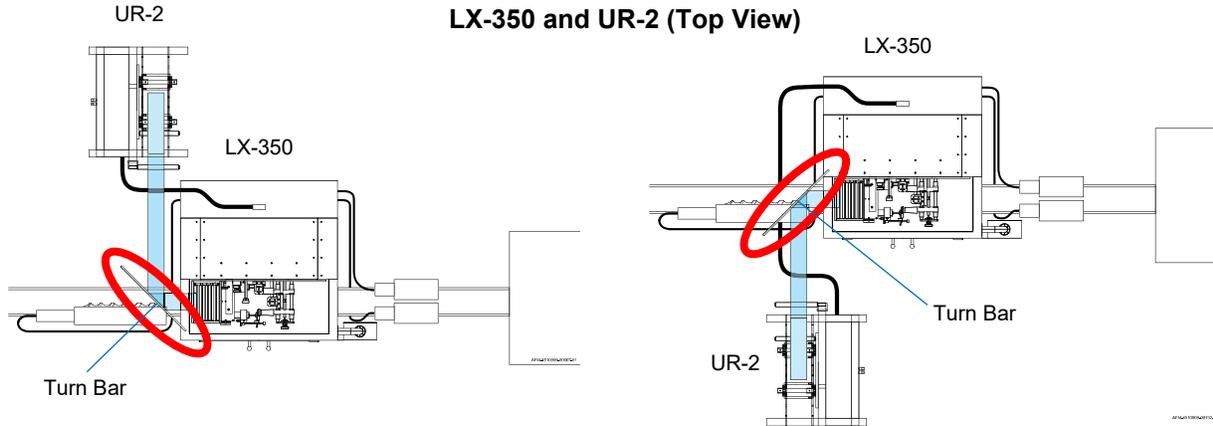


AFM-4510009-00131-01

## Turn Bar

P/N 4505169

The UR-2 needs to be oriented at a 90° angle to the LX-350, which means that the film needs to turn at a 90° angle between the UR-2 and the LX-350. This is accomplished using a Turn Bar, which attaches to the top of the LX-350 near the Dancer and redirects the label film so that it goes straight into the LX-350.



AFM-4510009-00133-01



AFM-4510009-00133-01

## Optional Equipment

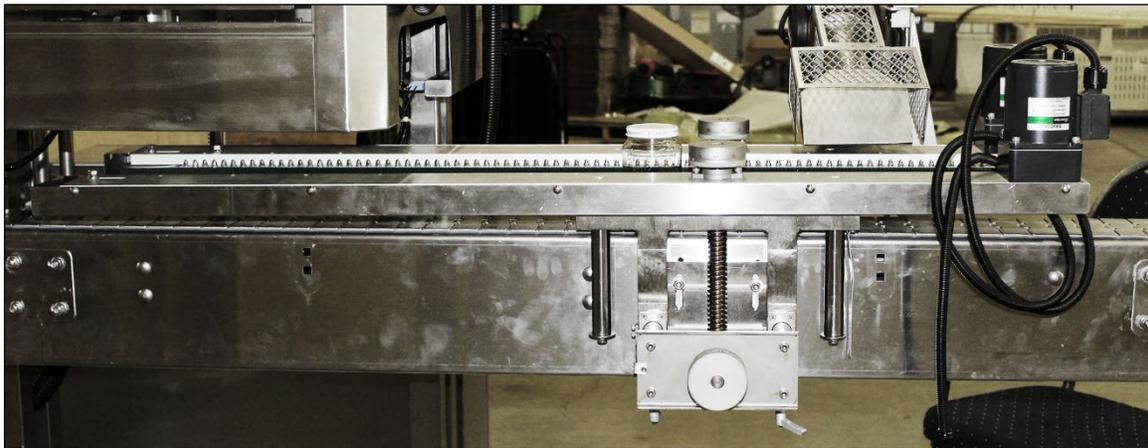
Depending on the labeling tasks being performed, additional equipment may be needed to complete the standard LX-350 setup:

### Auxiliary Belt

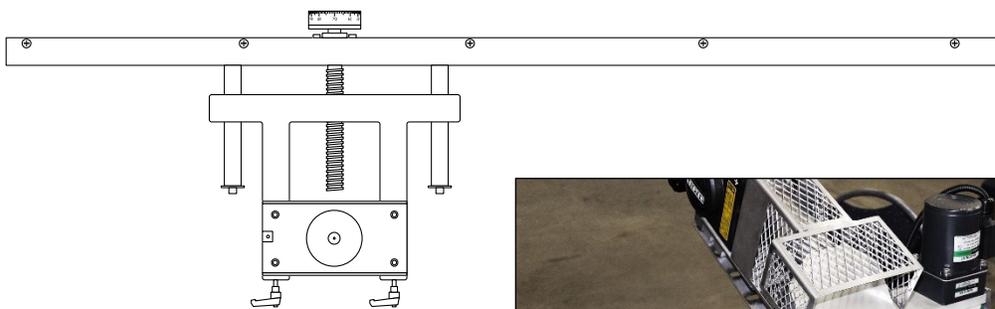
P/N 4502142

To prevent a label from going to the bottom of a bottle (for example, a label that will only be around the bottle's mid-section), or if a tamper evident seal is being applied to the top of a bottle, an Auxiliary Belt may be needed to stop the label before it reaches the bottom of the bottle. Auxiliary Belts go on either side of the Conveyor Belt directly below and just past the Mandrel and touch the sides of the passing bottles to block the paths of the labels as they slide down the length of the bottles.

### Auxiliary Belt



AFM-4510009-00136-01



AFM-4510009-00138-01

## Preheat Gun Assembly

P/N 4502080

When using an Auxiliary Belt, a Preheat Gun Assembly mounted near the end of the belt is recommended to provide flash-shrinking to hold the label in position before it reaches the Heat Shrink Tunnel.

### Preheat Gun Assembly



AFM-4510009-00140-01



AFM-4510009-00137-01



AFM-4510009-00138-01



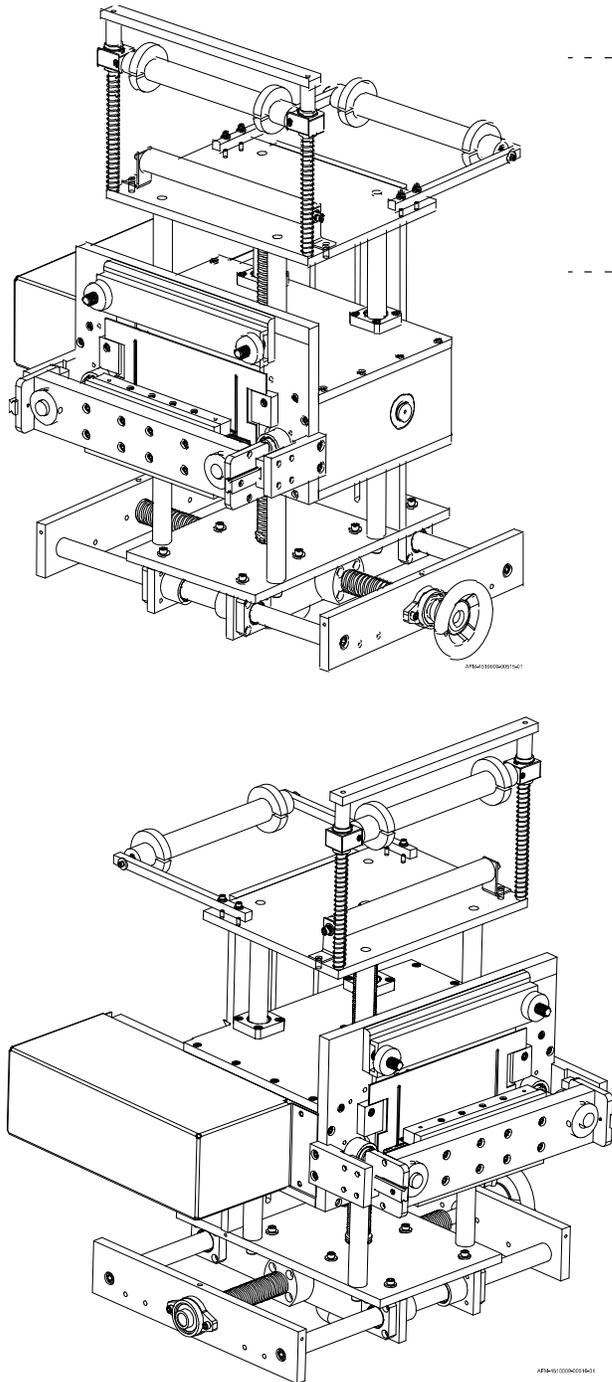
AFM-4510009-00139-01

# T-Perforator

P/N 4502204

A T-Perforator can be used to perforate in the patterns below to provide tamper evidence or to facilitate removal by the customer. A tool change is needed to change the pattern of the perforation.

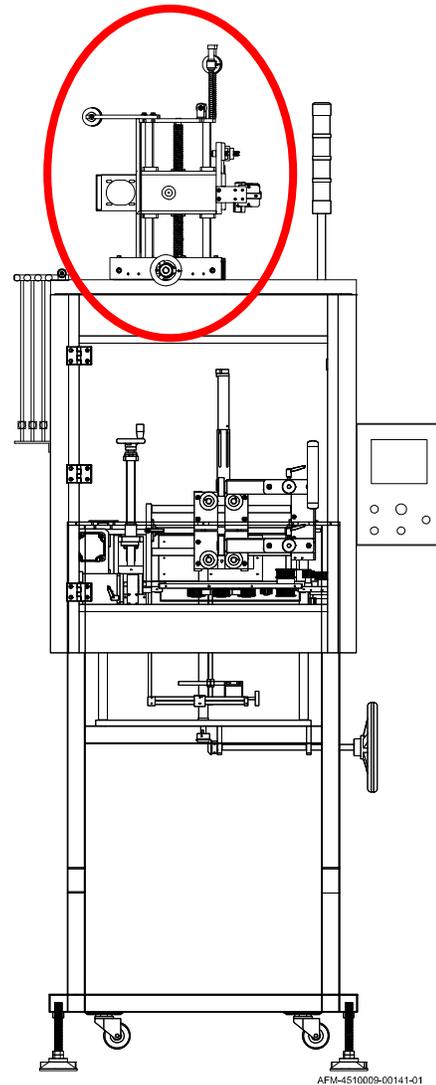
T-Perforator



H-Perf

T-Perf

AFM-4510009-00028-01



## Irregular Timing Screw

Irregular Timing Screws guide irregularly shaped (non-cylindrical) products on the Conveyor Belt into the LX-350. For example, when a bottle's cross-section is a square, the Timing Screw must not only keep the bottles flowing into the LX-350 at a consistent pace but must also ensure that they are correctly aligned to receive a label from the Mandrel.

**Irregular Timing Screw**



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## Dual Timing Screw

A Dual Timing Screw is used for irregularly shaped containers (square, rectangular, oval).

**Dual Timing Screw**



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## **Customer-Supplied Equipment**

Customers are responsible for supplying additional equipment, including but not limited to:

- Cut-Resistant Safety Gloves
- Safety Shoes
- Safety Glasses
- All other safety clothing
- Fire Extinguisher
- Lockout/tagout equipment and procedures

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# Introduction

The LX-350 is designed for middle, full-body, and cap applications. It is intended for moderate to high production rates in industries such as food and beverage, pharmaceutical, nutraceutical, health and beauty, and other manufactured goods. It can also be used for horizontal or vertical perforation of shrink labels and seals.

## Getting Started

The User Guide provides the information needed to set up, use, maintain, and troubleshoot an LX-350 Sleever. Because not all of the information in this User Guide is essential for each stage of interaction with the equipment, this section provides suggestions on what information is needed when.

### Before **DOING ANYTHING** with the LX-350, read:

- The entire “Safety” section, starting on page [15](#).
- “General Overview” on page [33](#).
- The entire “UR-2 Unwind – Detailed Overview” section, starting on page [34](#).
- The entire “LX-350 – Detailed Overview” section, starting on page [37](#).

### Before **INSTALLING/SETTING UP** the LX-350, read:

- The entire “Installation and Setup” section, starting on page [63](#).
- At a minimum, these parts of the “Software” section:
  - “Software Map” on page [85](#).
  - “Common Buttons and Graphics” on page [86](#).
  - “Startup Screen” on page [88](#).
  - “Manual Screens” on page [145](#).
  - “Setting Screens” on page [149](#).
  - “Working Screen” on page [156](#).
- The entire “Label- and Product-Specific Setup” section, starting on page [157](#).
- The entire “Operation” section, starting on page [163](#).

### Before **OPERATING** the LX-350 (assuming the system is already properly installed/set up), read:

- At a minimum, these parts of the “Software” section:
  - “Common Buttons and Graphics” on page [86](#).
  - “Startup Screen” on page [88](#).
  - “Manual Screens” on page [145](#).
  - “Working Screen” on page [156](#).
- The entire “Operation” section, starting on page [163](#).

- At a minimum, these parts of the “Maintenance” section:
  - “Understanding Film Unwind Direction” on page [171](#).
  - “Installing a Film Roll on the UR-2” on page [173](#).
  - “Threading Film Through the UR-2” on page [175](#).
  - “Threading Film Through the LX-350” on page [176](#).
  - “Switching Film Rolls” on page [182](#).

**Before PERFORMING MAINTENANCE on the LX-350, read:**

- The entire “Maintenance” section, starting on page [169](#).

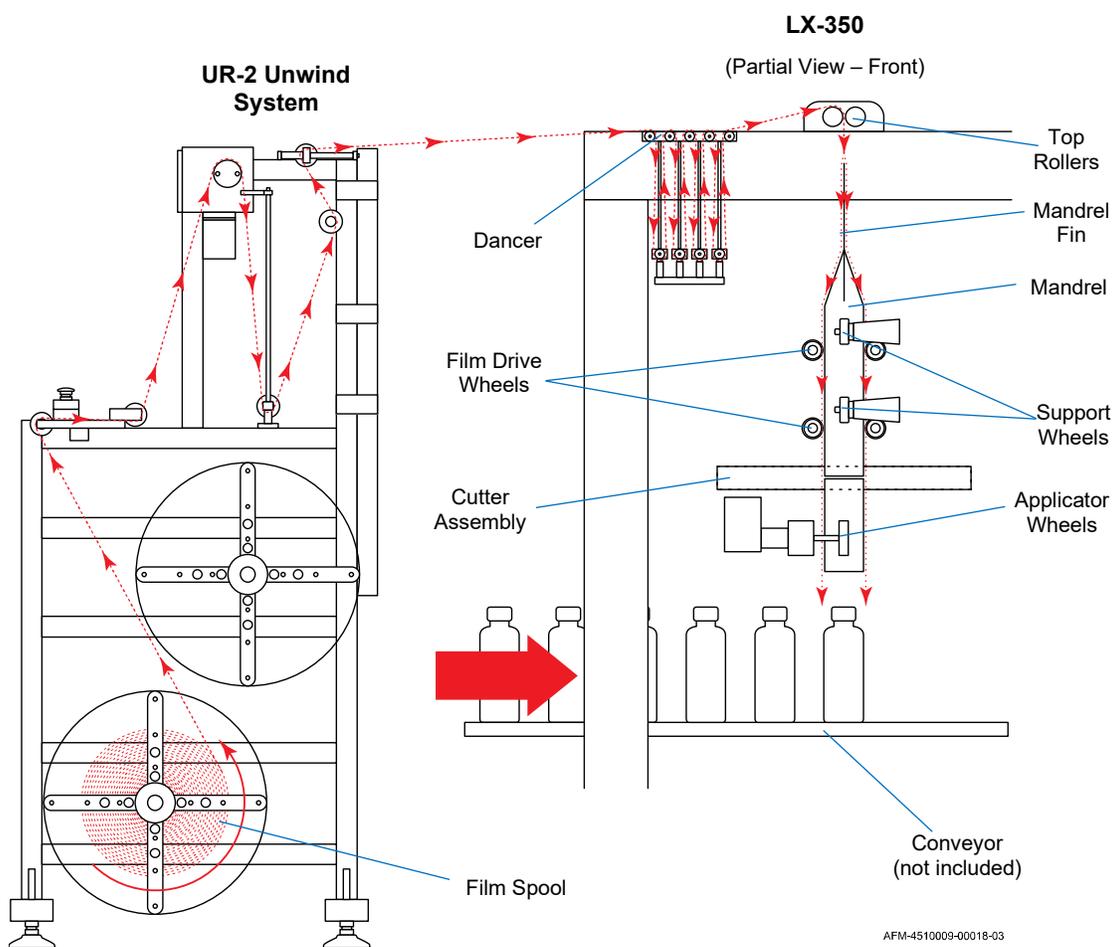
**If any PROBLEMS occur, read:**

- “Troubleshooting” on page [257](#).
- In “Software:”
  - The “Alarm & Message Screens” section starting on page [90](#).
  - The “PLC I/O Monitor Screens” section, starting on page [118](#).
- The “Electrical Schematics” section starting on page [263](#).
- The “Exploded Diagrams and Parts Lists” section starting on page [299](#).

## General Overview

The LX-350 works together with the UR-2 Unwind System, which holds a supply Spool of flattened label film. The UR-2 feeds the label film to the LX-350. The label film enters the Dancer, which evens out the tension on the label film.

LX-350 and UR-2 with Label Film



From the Dancer, the label film goes over the Top Rollers, down onto the Mandrel Fin, and down the length of the Mandrel. As the film passes through the Cutter Assembly, it is cut to the correct label size, and then the Applicator Wheels at the bottom of the Mandrel shoot the cut label down onto the passing bottle.

The LX-350 only applies the labels. It does not shrink them onto the bottles. That must be done by immediately sending the labeled bottles through a Heat Shrink Tunnel. The appropriate type of Heat Shrink Tunnel used will vary based on the label film, the bottle material, and the product inside the bottle. Heat Shrink Tunnel options include:

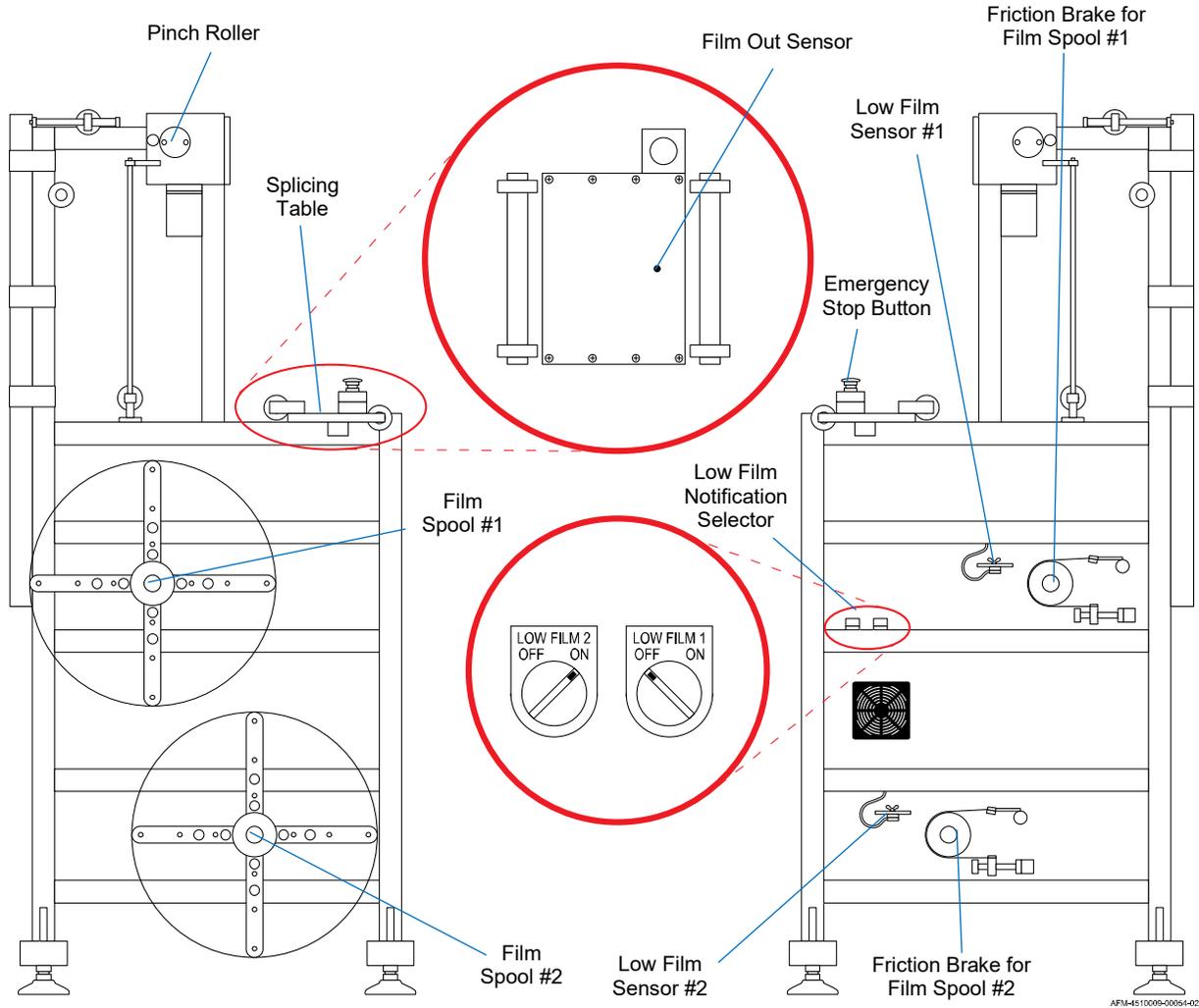
- Electric Radiant Heat: AFM GS Series or OAL Series
- Electric Convection Heat: AFM ES-200
- Steam Heat: AFM WSN300 Series or WSN Gen-S.

Your AFM distributor can help you determine the best Heat Shrink Tunnel for your needs.

## UR-2 Unwind – Detailed Overview

The UR-2 Unwind System has two Film Spools, either of which can supply label film to the LX-350. Typically, when one Spool is in use, the other Spool is loaded with a standby roll of film. When film on the first Spool runs out, the end of that film roll can be spliced onto the beginning of the standby film roll, saving production time by eliminating the need to re-thread the film through the system every time a roll of film runs out.

### UR-2 Components



## Low Film Warning System

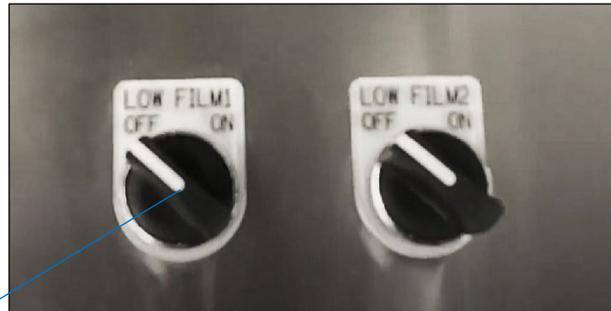
The Low Film Notification Sensor is used to select which Film Spool is currently in use and should be monitored. When one Spool is selected, the other should be deselected. "Film 1" is the top Film Spool, and "Film 2" is the bottom Film Spool. A Sensor shines through a slot to monitor the amount of film remaining on a Film Spool. When the film runs low, the Sensor sends a message to the HMI, and an alarm alerts the user to the situation.

### Low Film Warning System



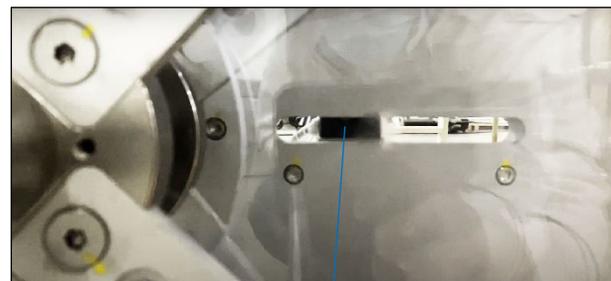
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Low Film Notification Selector



AFM-4510009-00153-01

Slot



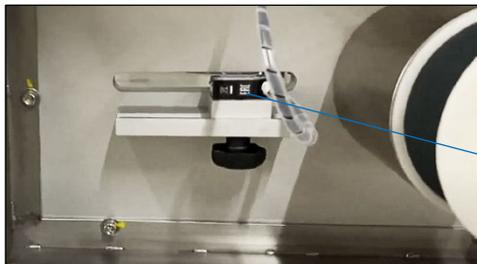
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Low Film Sensor – Spool 1



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Low Film Sensor – Spool 2



AFM-4510009-00156-01

Film Spools



AFM-4510009-00158-01

## Splicing Table

After label film leaves the Film Spool, it moves across the Splicing Table before winding through that various Rollers of the UR-2. A Film Out Sensor on the Splicing Table will automatically stop the LX-350 if the film has run out completely. However, before this happens, the system alerts the user that the film roll is running low. When the film runs out entirely, the UR-2 will automatically stop, giving the user the chance to splice the end of the old film roll onto the beginning of a new roll. The splicing process takes place on the Splicing Table (see “Switching Film Rolls” on page 182).

Located to the side of the Splicing Table is an Emergency Stop Button, which, like the Emergency Stop Button on the LX-350, will immediately stop the entire system if there is a crisis, but should not be used for routine stopping. Routine stopping of the system should be done through the HMI.

### Splicing Table



## LX-350 – Detailed Overview

The LX-350 consists of the Mandrel, the Cutter Assembly, the Chassis, and the HMI.

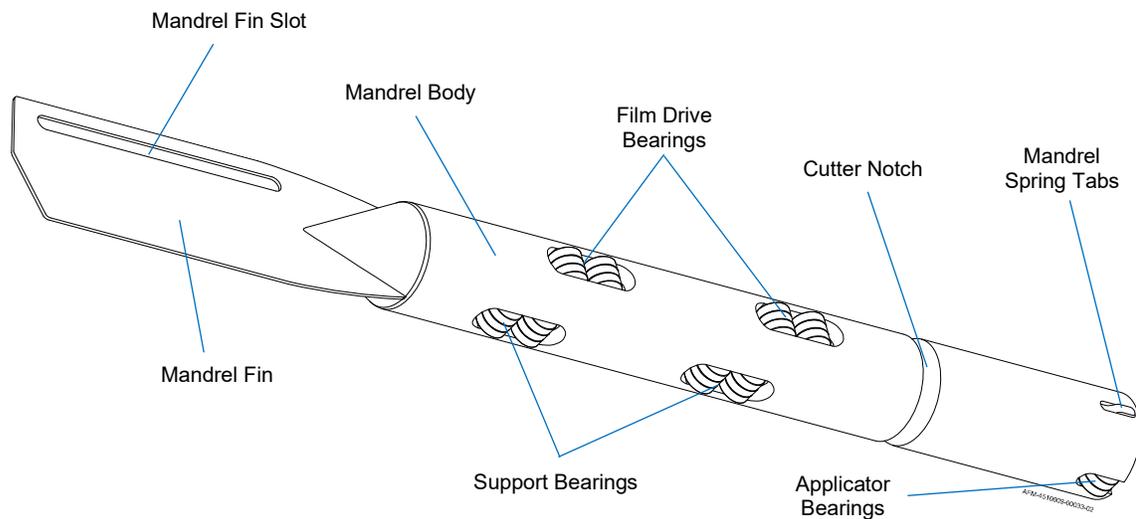
### Mandrel

The Mandrel forms flat label film into the 3D shape of the bottle and serves as a guide as the LX-350 shoots the label down onto the bottle. Label film slides down first over the Mandrel Fin, which separates the flat label film before it is formed around the Mandrel Body.

- A Print Reading Sensor aims a beam through a slot in the Mandrel Fin to look for cut marks in the film.
- The Support Wheels contact the Mandrel's Support Bearings, holding the Mandrel in place.
- The Film Drive Wheels contact the Mandrel's Film Drive Bearings, similarly helping to hold the Mandrel in place, and also advancing the label film down the length of the Mandrel Body one label length at a time.
- As the film passes by the Cutter Notch, information from the Print Reading Sensor triggers the Cutter Blades to rotate through the Cutter Notch, cutting off an individual label.
- The Applicator Wheels, resting against the Applicator Bearings at the bottom of the Mandrel, then shoot the cut label down onto the passing bottle.
- The Mandrel Spring Tabs at the bottom of the Mandrel hold the cut label just above the Applicator Wheels until it is ready to shoot down.

AFM creates custom Mandrels for the specific labeling needs of each customer.

### Mandrel Components

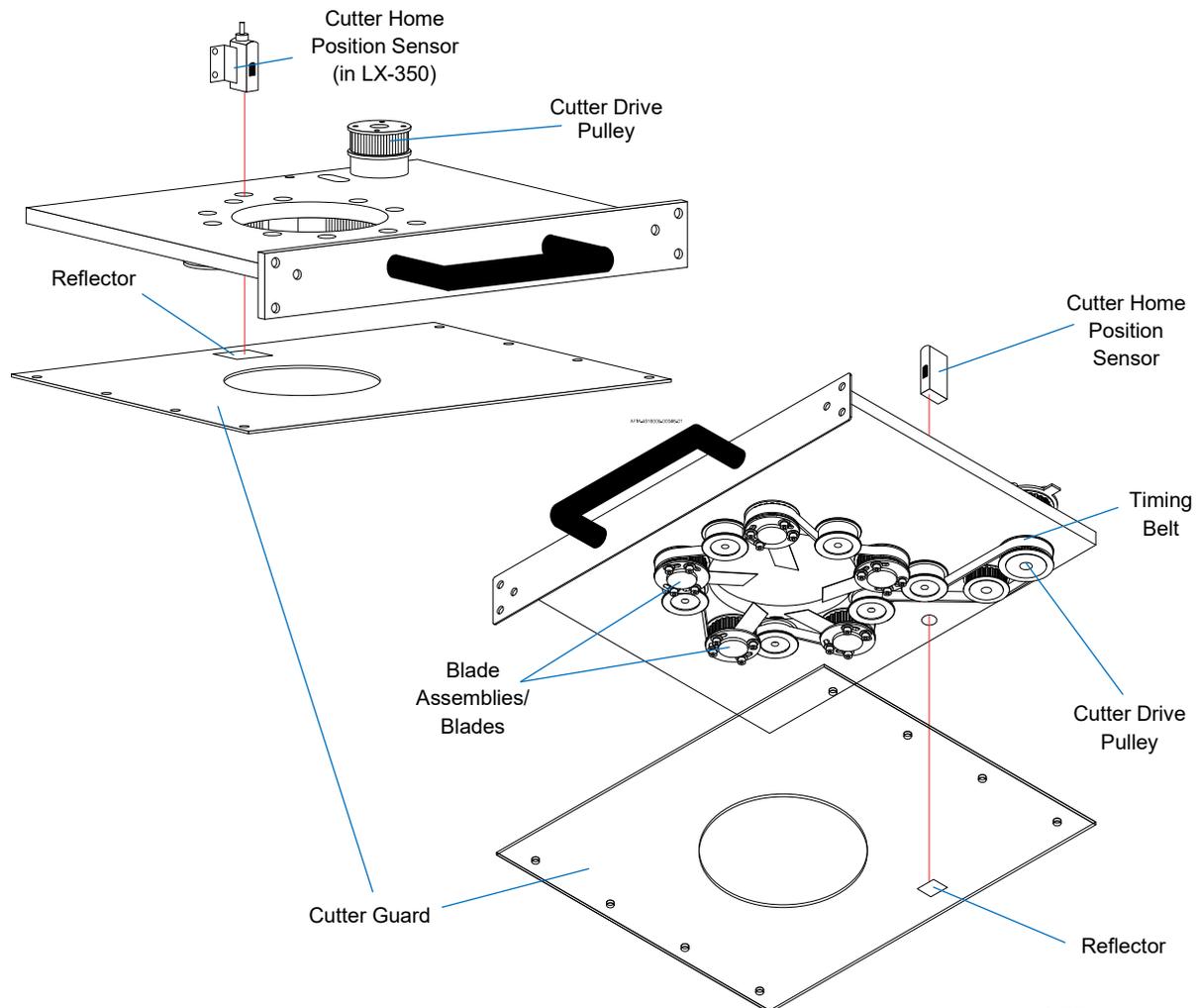


## Cutter Assembly

The Cutter Assembly is a set of Blades that surround the lower part of the Mandrel and cut the label film to the correct label size. Three standard Cutter Assembly sizes are available depending on label size (see “Standard Cutter Assembly Sizes” on page 60). AFM can also provide custom Cutter Assemblies for labels outside of standard specs or irregularly shaped bottles.

- The Cutter Assembly slides horizontally into the Chassis of the LX-350 like a drawer.
- The Cutter Guard mounts to the underside of the Cutter Arms to help protect users from touching the Blades.
- The Mandrel then slides vertically through the hole in the Cutter Assembly and Cutter Guard.
- The Cutter Home Position Sensor inside the Chassis must see the Reflector on the Cutter Guard for the LX-350 to operate.
- When the cut mark in the label material passes across the Cutter Notch in the Mandrel, the Print Reading Sensor triggers the Blade Assemblies to quickly rotate the Blades 360° through the Cutter Notch, cutting through the label film.

### Cutter Assembly Components

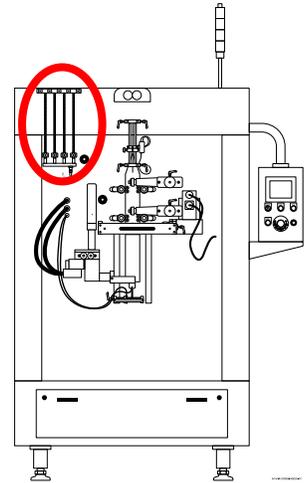
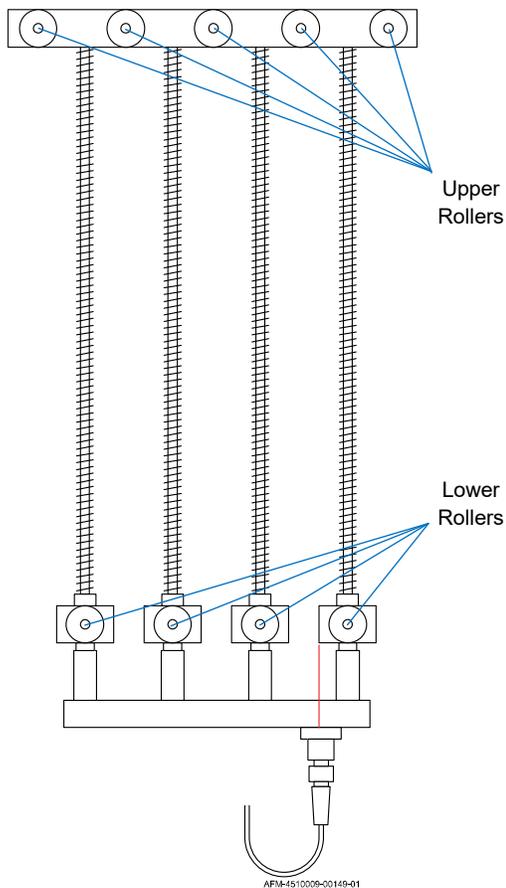


## Front Chassis

The Chassis contains the main gears, motors and electronics for the LX-350. The Chassis has three sections: front, center, and rear. The Front Chassis is where most physical interaction between the film, the bottles, and the machine occurs: it is where labeling takes place. The Front Chassis must have the Mandrel and the Cutter Assembly properly installed in order for the system to operate.

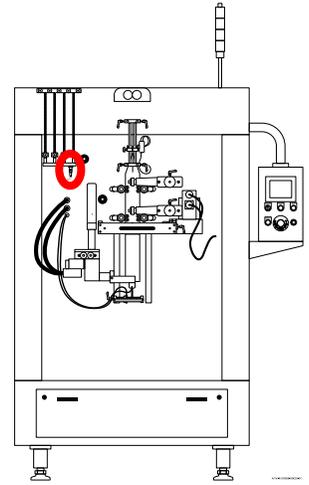
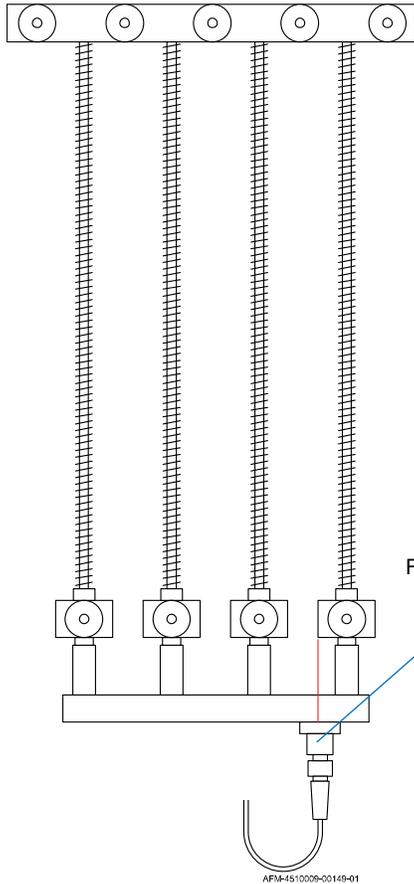
## Dancer

The Dancer has nine Rollers, the bottom four of which are spring-loaded. As the label film enters the LX-150, it winds through the Rollers of the Dancer, evening out the tension in the film.



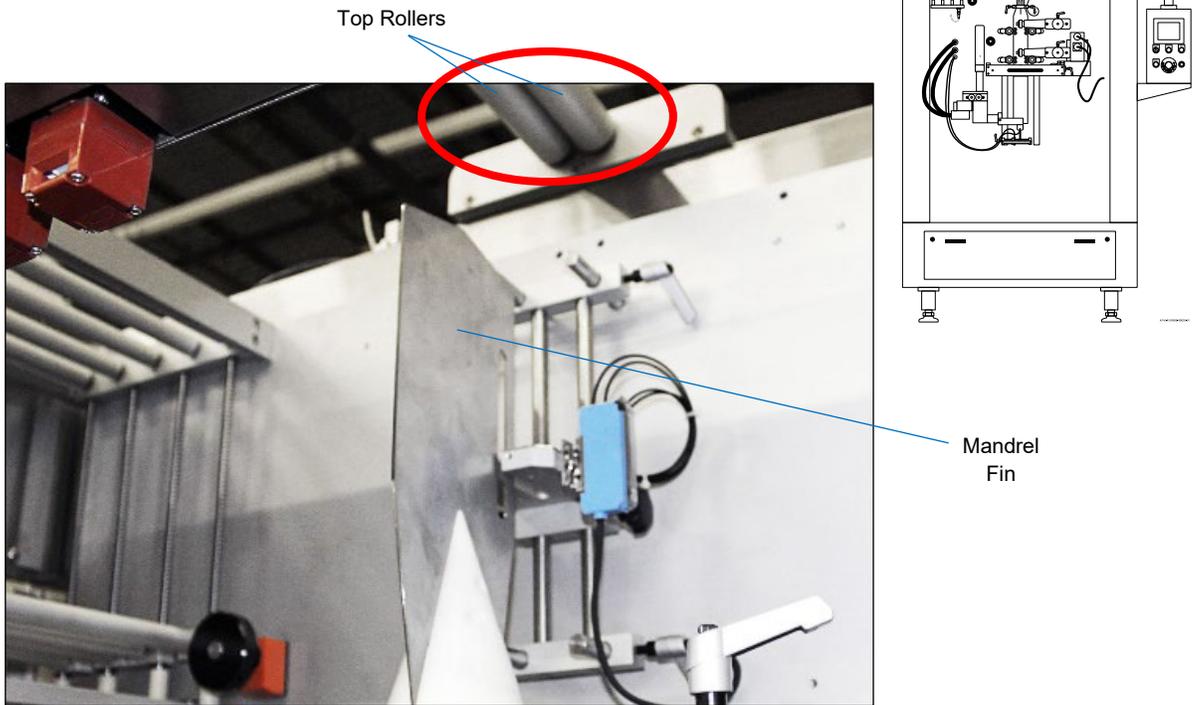
## Film Supply Sensor

The Film Supply Sensor mounted at the bottom of the Dancer adjusts the speed of the UR-2, based on the distance between the Sensor and the innermost bottom Roller.



## Top Rollers

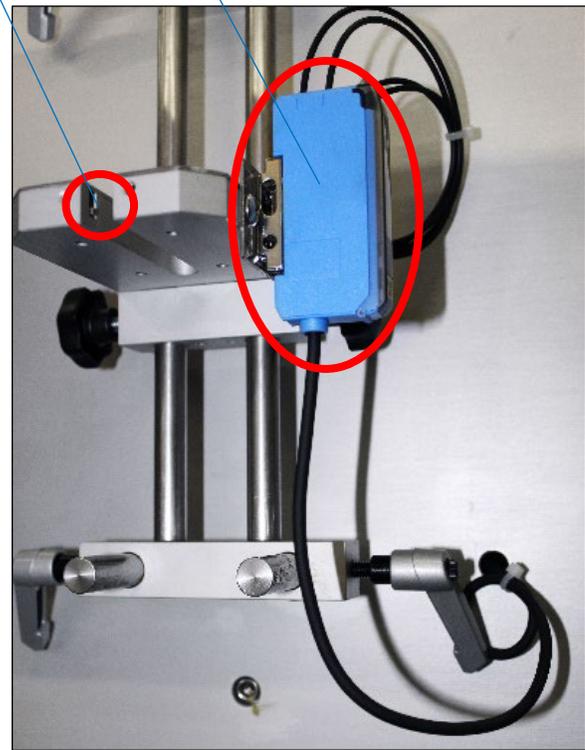
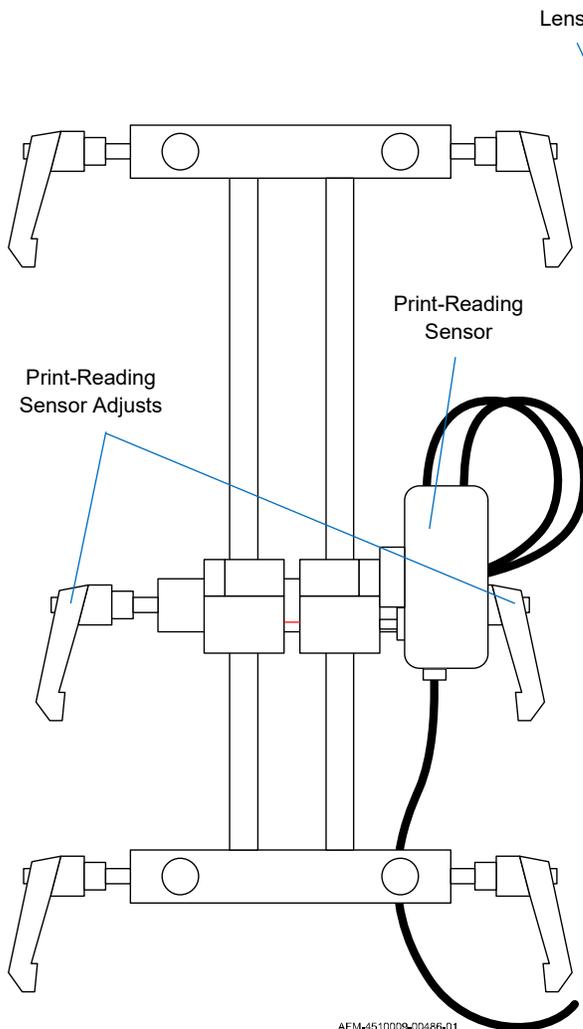
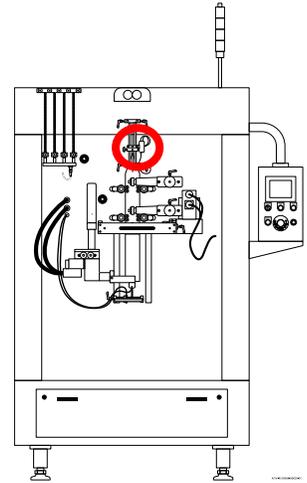
After leaving the Dancer, the label film goes over the Top Rollers, flowing between them. The Top Rollers ensure that the path of the label film is straight down onto the Mandrel Fin.



## Print-Reading Sensor

The Print Reading Sensor has a fiber optic Lens that “looks” through the slot in the Mandrel Fin to detect when there is a clear gap in the printing on the label film. The Print Reading Sensor conveys that information to the Film Drive Wheels to tell them how far to advance the label film down the Mandrel, and also communicates with the Cutter Assembly to tell it when to cut the film.

Two Adjusts allow the Sensor to be moved up or down, and four Locks – Upper and Lower – secure it in position.

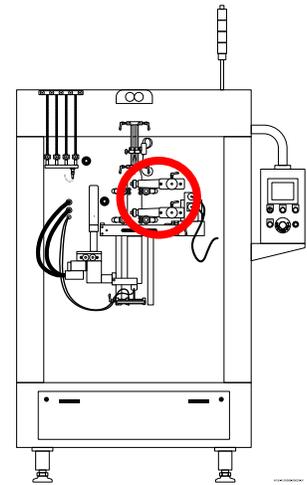
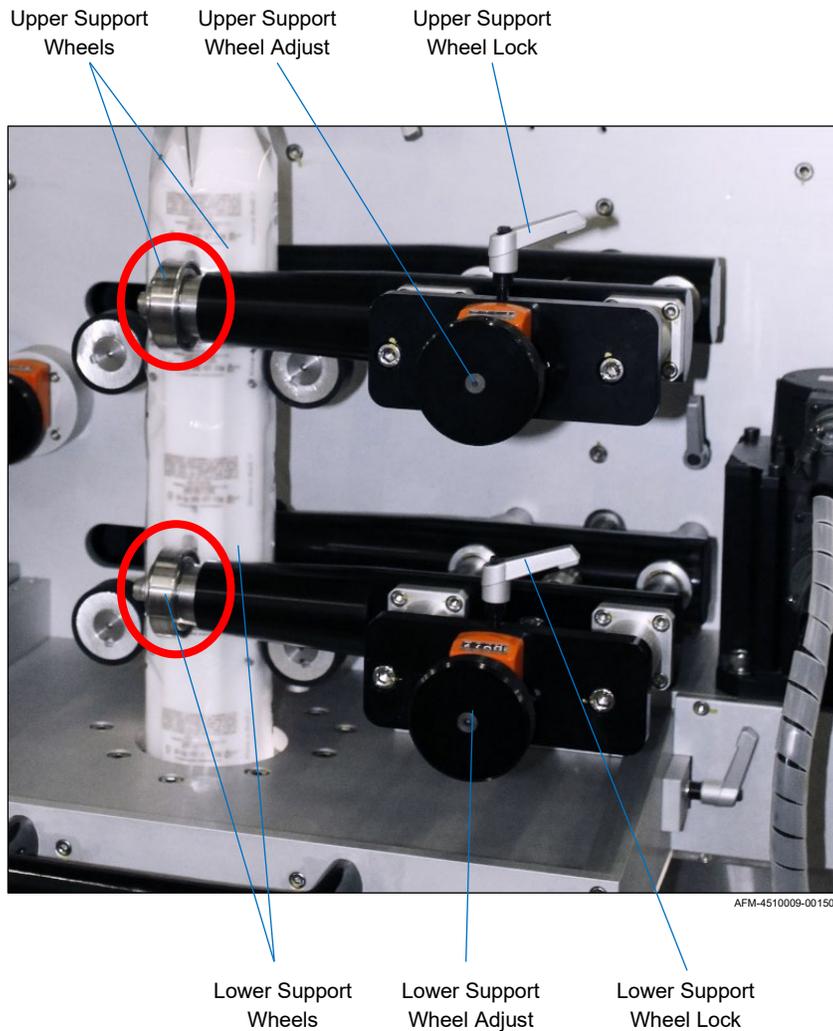


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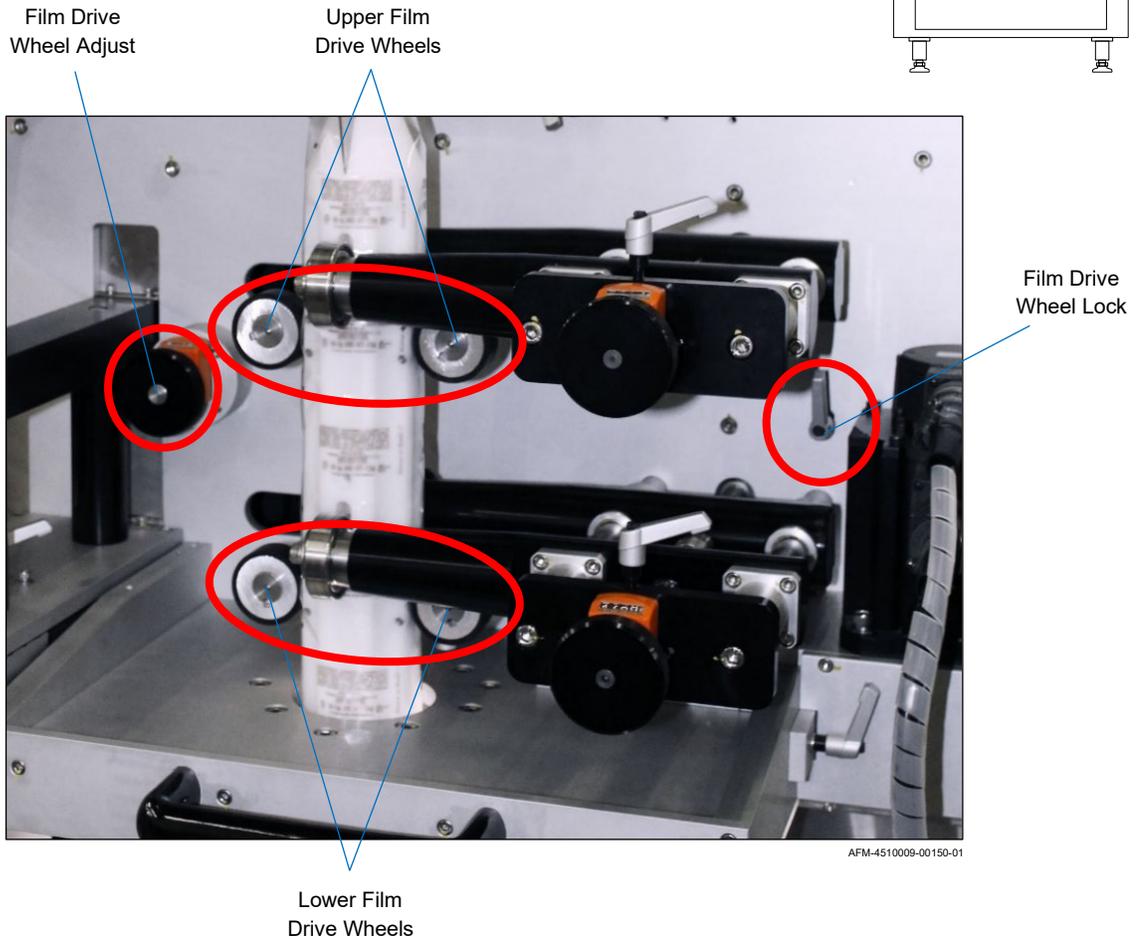
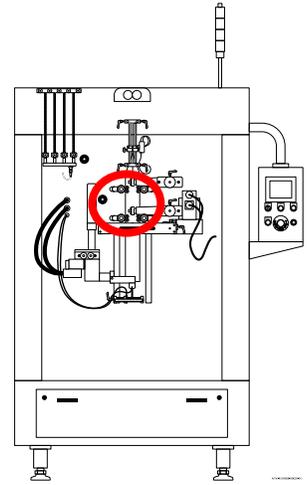
## Support Wheels

Two sets of Support Wheels (Upper and Lower) hold the Mandrel in place. Each set can be adjusted independently of the other. To adjust each set, their Support Wheel Lock must first be loosened. Turning the Support Wheel Adjust moves the Wheels in or out from the Mandrel. Once in position, the Support Wheel Lock must be tightened to secure them in place.



## Film Drive Wheels

Two sets of Film Drive Wheels advance the label film down the length of the Mandrel, and also help hold the Mandrel in place. The Upper and Lower Film Drive Wheels are adjusted together. To adjust them, the Film Drive Wheel Lock must first be loosened, and then the Film Drive Wheel Adjust can be turned to move the Wheels in or out from the Mandrel. Once in position, the Film Drive Wheel Lock must be tightened again to secure them in place.



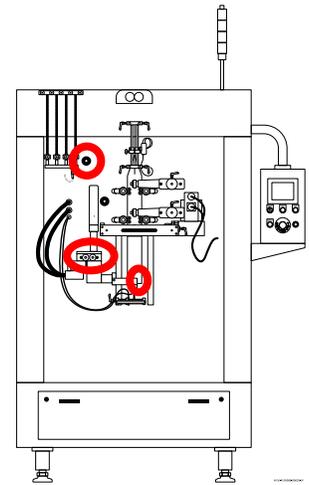
## Applicator Wheels

The Applicator Wheels, located near the bottom of the Mandrel, are driven by the Applicator Motor, and shoot cut labels down from the Mandrel onto passing bottles. The Applicator Wheels can be adjusted vertically and can be moved in and out from the Mandrel.

To adjust them vertically, the Applicator Wheel Vertical Lock must first be loosened, and then the Applicator Wheel Vertical Adjust can be turned to move the Wheels up or down along the length of the Mandrel.

To move the Applicator Wheels in or out from the Mandrel, the Applicator Wheel Horizontal Locks must be loosened, and then the Applicator Wheel Horizontal Adjust can be turned until the Wheels are just touching the Applicator Bearings in the Mandrel.

Once the Applicator Wheels are in position, the Applicator Wheel Vertical Lock and Applicator Wheel Horizontal Lock must be tightened to secure them in place.



Applicator Wheel Vertical Adjust

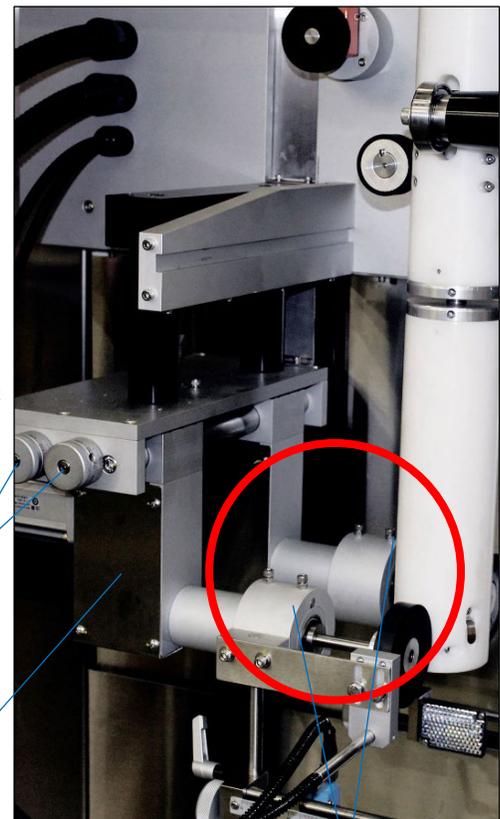


Applicator Wheel In-Out Lock



Applicator Wheel In-Out Adjust

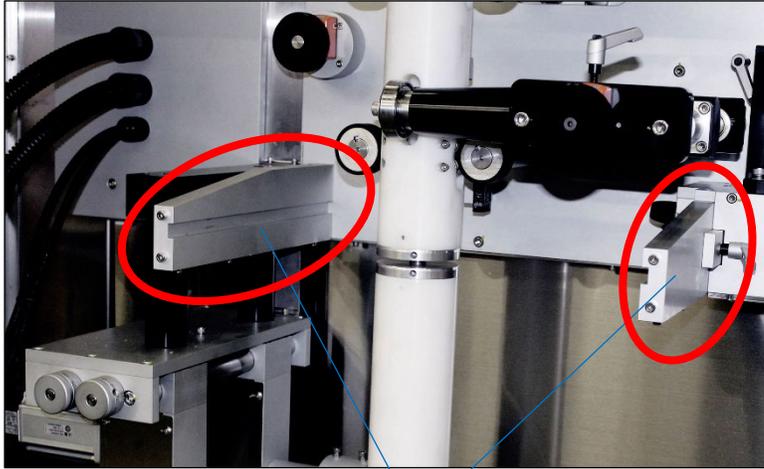
Applicator Motor



Applicator Wheels

## Cutter Support Arms

The Cutter Support Arms, on either side of the Cutter Assembly, hold the Cutter Assembly in place.

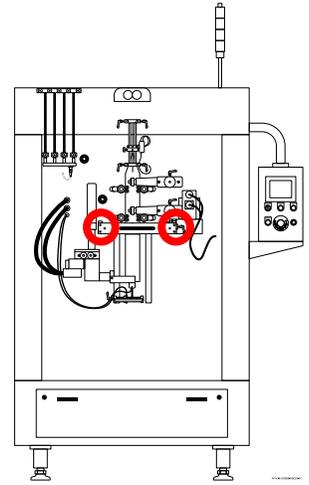


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Cutter  
Support Arms

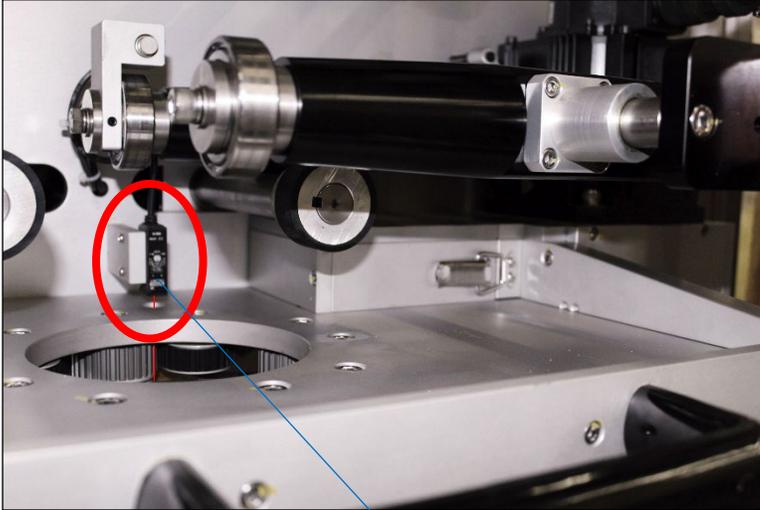


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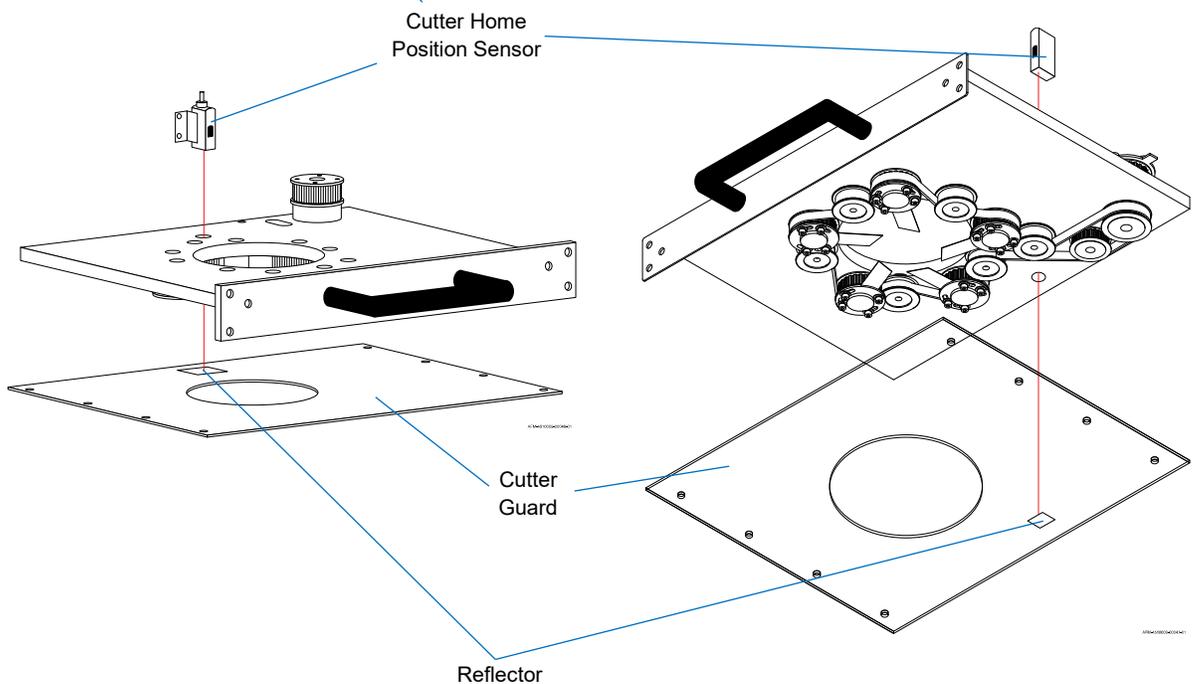
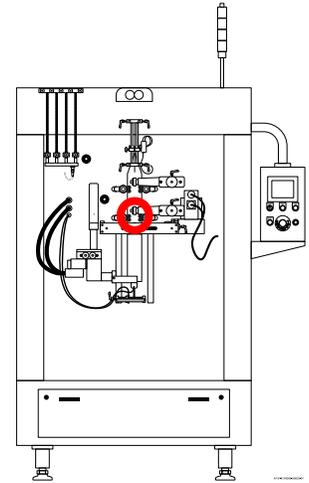


## Cutter Home Position Sensor

The Cutter Home Position Sensor, located behind the Mandrel just above the Cutter Assembly, shines a beam through a hole in the top of the Cutter Assembly. The beam must shine onto the Reflector on the Cutter Guard for the LX-350 to operate. This is a safety feature to ensure that the Cutter Assembly and Cutter Guard are properly in position.



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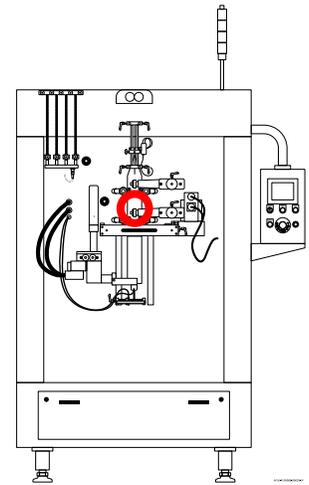


## Mandrel Detect Sensor

The Mandrel Detect Sensor, located behind the Mandrel attached to the rear Lower Support Wheel, checks to see if the Mandrel is in place. If no Mandrel is installed, the LX-350 will not operate.

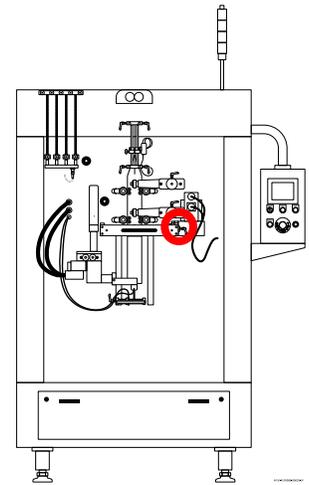


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## Cutter Drive Belt

The Cutter Drive Belt, located toward the rear of the right Cutter Support Arm, is propelled by the Cutter Drive Motor. The Cutter Drive Belt is looped around the Cutter Drive Pulley during operation, turning the Pulley and rotating the Cutter Blades in unison.



Cutter Guard  
(no Cutter Assembly  
is in place)

Cutter  
Drive Belt

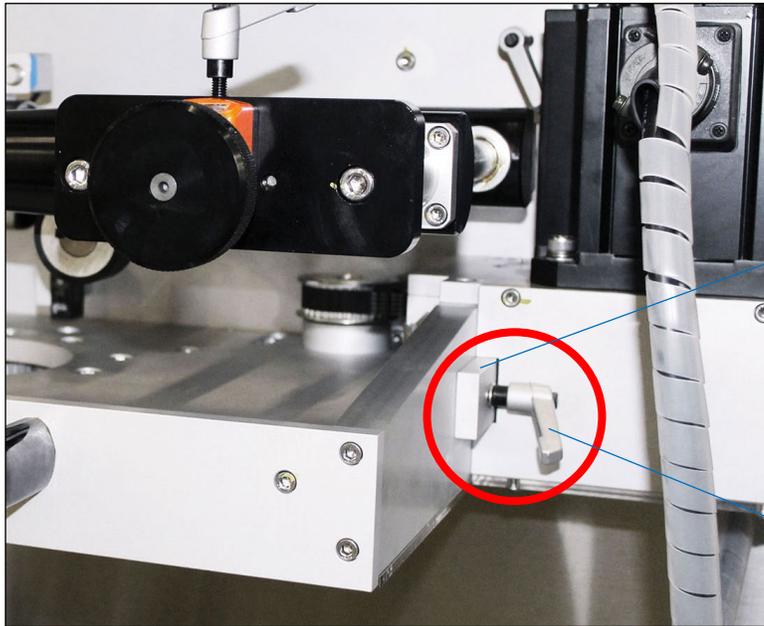
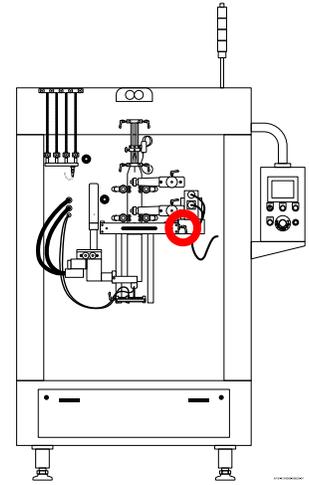
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## Tensioner

The Tensioner, located on the outside of the right Cutter Support Arm, adjusts how loose or tight the Cutter Drive Belt is. Before adjusting, the Tensioner must first be unlocked by turning the Tensioner Lock. Once unlocked, pushing the Tensioner toward the back wall of the Chassis tightens the Cutter Drive Belt. Allowing the Tensioner to slide toward the Front Doors loosens the Cutter Drive Belt.



Tensioner

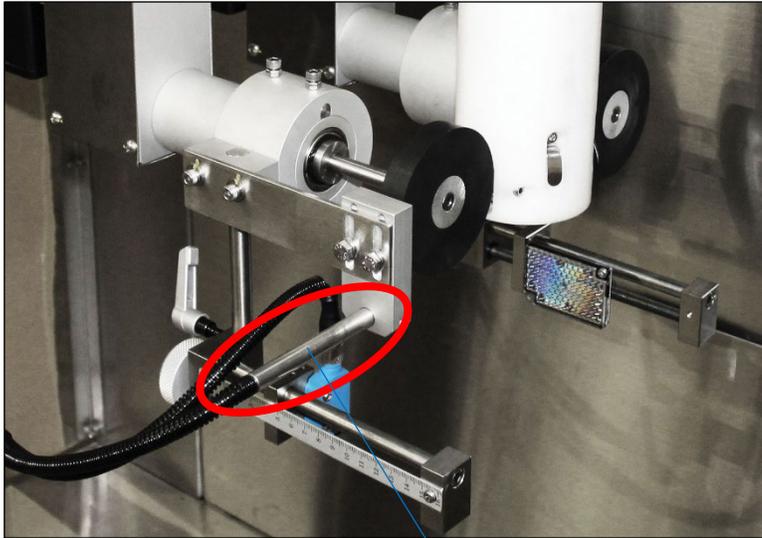
Tensioner  
Lock

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## Application Fail Sensor

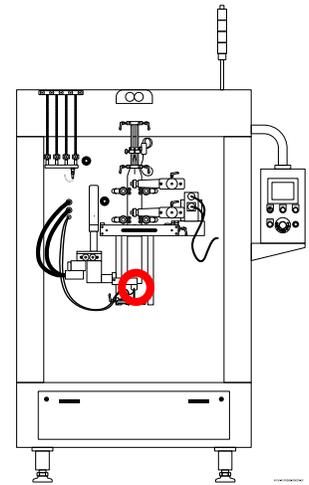
(P/N 4501449)

The Eye for the Application Fail Sensor is located just below the Applicator Wheels. If the Sensor Eye detects label film for too long a time, it may be a sign that the label film has jammed. In this case, the Amplifier for the Application Fail Sensor (located in the Middle Chassis – see page 55) sends a signal to stop production.



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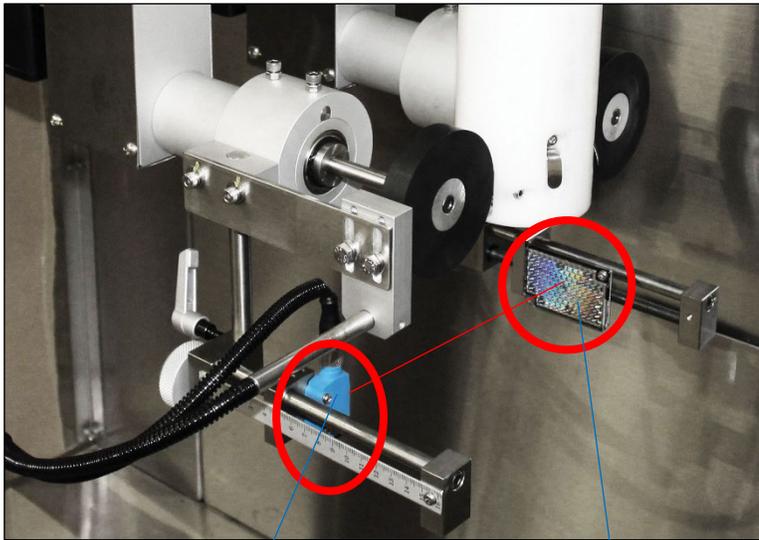
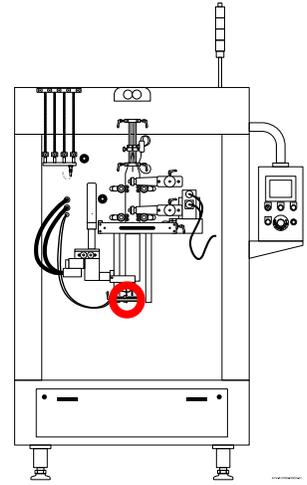
Application  
Fail Sensor



## Work Detect Sensor

(P/N 4502438)

The Work Detect Sensor, located on the Slider just above the Conveyor level, shines a beam at the Work Detect Sensor Reflector across the Conveyor to let the system know when a bottle is about to pass beneath the Mandrel. It should be positioned just slightly upstream from the Mandrel. Whenever a bottle passed on the Conveyor, the Sensor beam is broken, signaling the Applicator Wheel to shoot a label down onto the bottle.



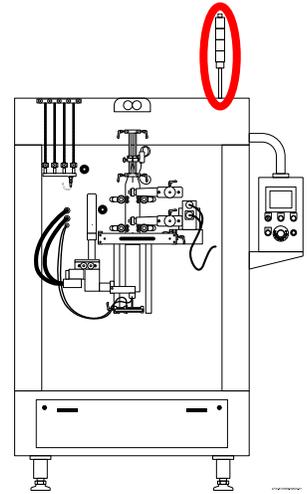
Work Detect Sensor

Work Detect Sensor Reflector

## Alarm Beacon

The Alarm Beacon on the top of the LX-350 alerts users to the general status of the system.

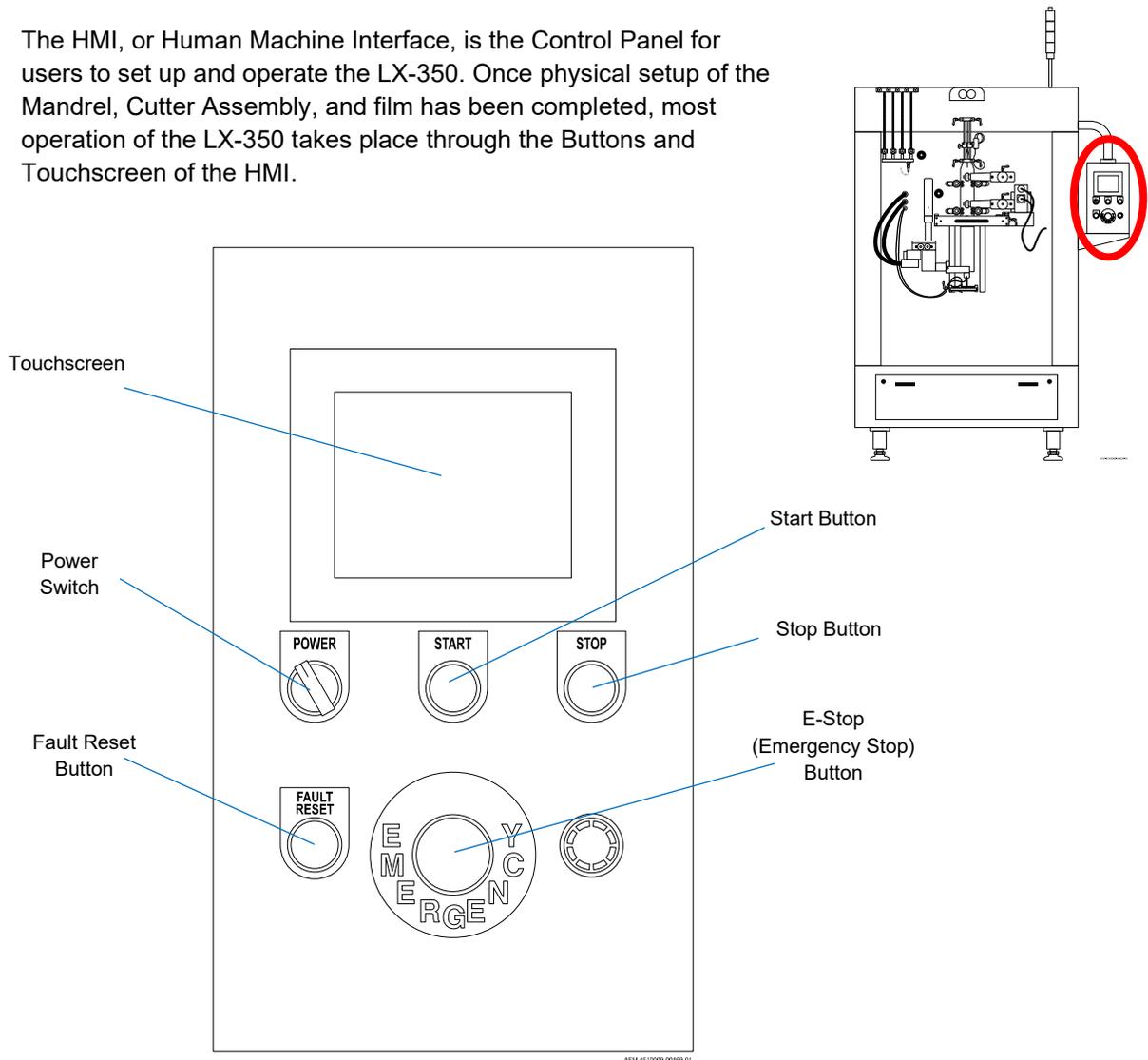
- **Red Light:**  
There is a fault somewhere in the system, and the machine has stopped.
- **Yellow Light:**  
Warning – the Doors are open or the film is low.
- **Green Light:**  
The system is operating, and all conditions are good.
- **White Light:**  
The system is powered on and ready to use.



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## HMI

The HMI, or Human Machine Interface, is the Control Panel for users to set up and operate the LX-350. Once physical setup of the Mandrel, Cutter Assembly, and film has been completed, most operation of the LX-350 takes place through the Buttons and Touchscreen of the HMI.



## Middle Chassis

The Middle Chassis contains connections between the complex electronics in the Rear Chassis and the mechanical features in the Front Chassis. The Middle Chassis can be accessed by removing the panels on either side of the LX-350. The Middle Chassis should only be accessed by an authorized technician, and the system should be disconnected from any power source before doing so.

### Middle Chassis – Upstream View



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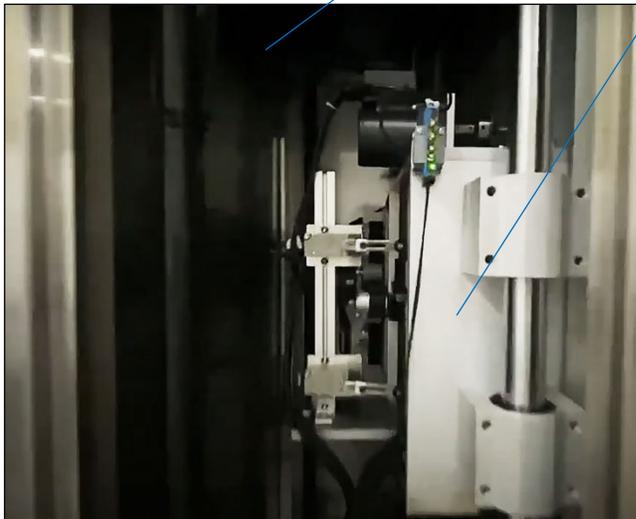
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Upstream Access Panel for Middle Chassis

Inside of Middle Chassis

Head Height Bearing Block Housing (Left Side)

Application Fail Sensor Amplifier

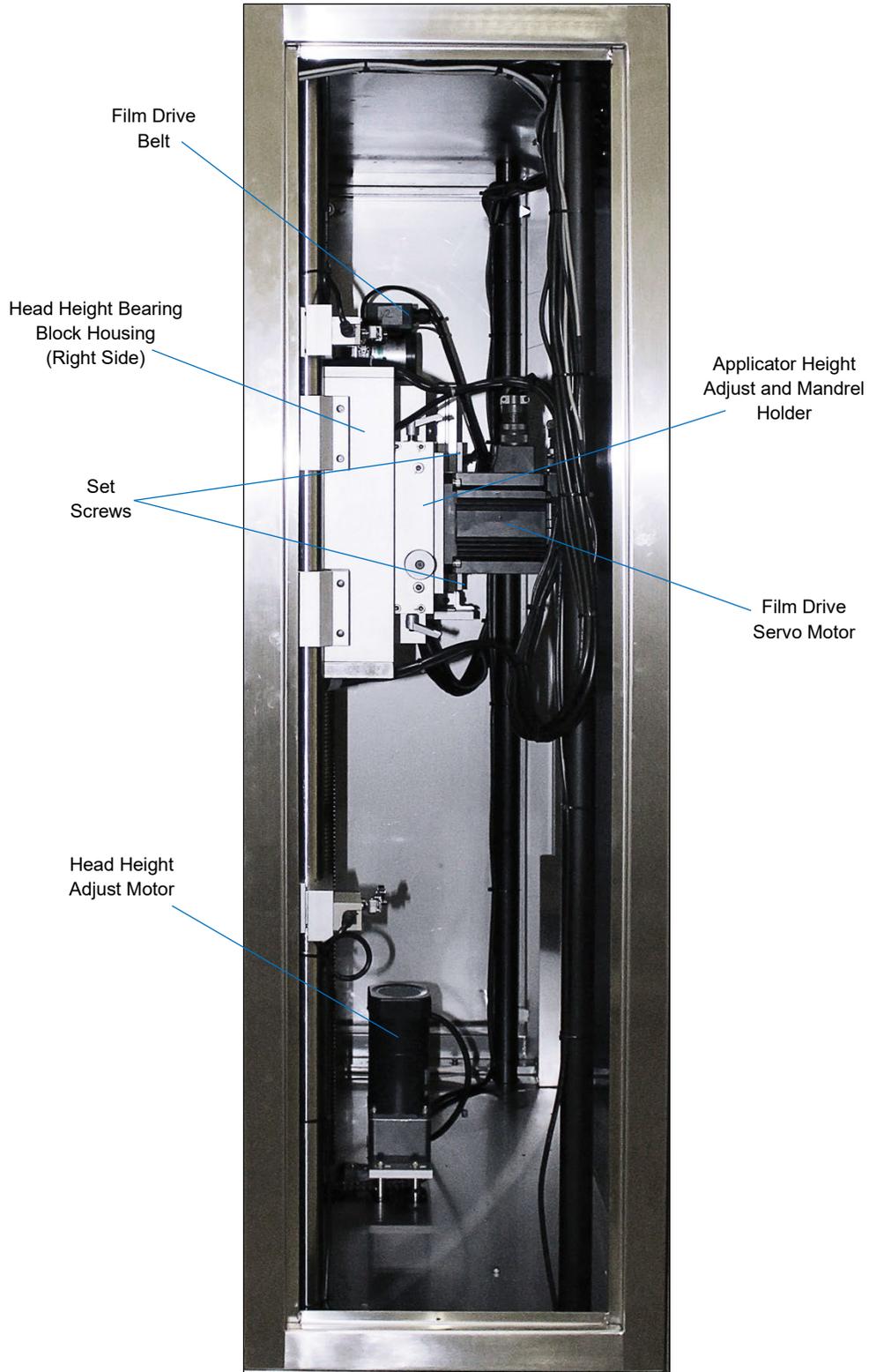


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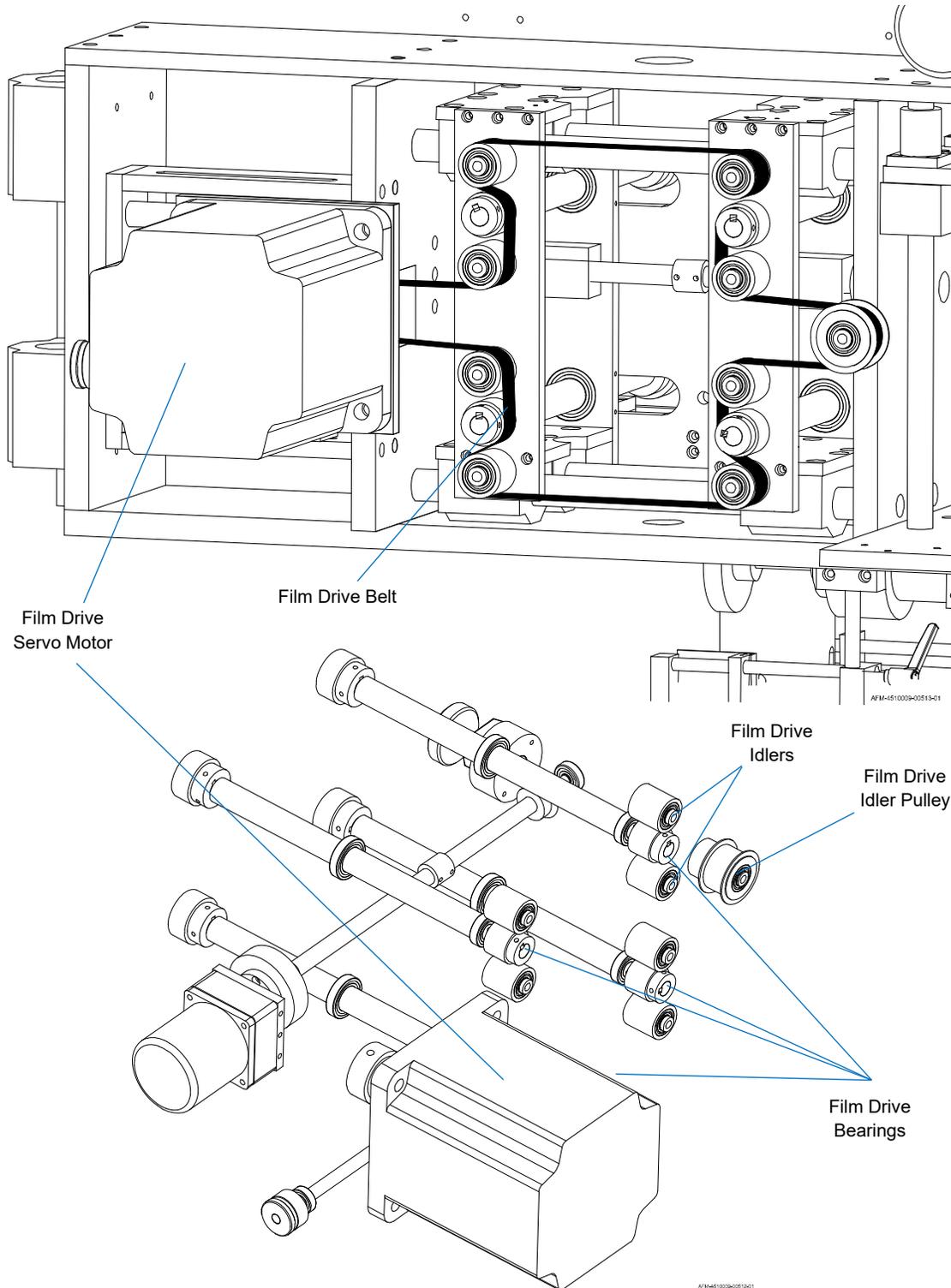
### Middle Chassis – Downstream View



AFM-4510009-00177-01

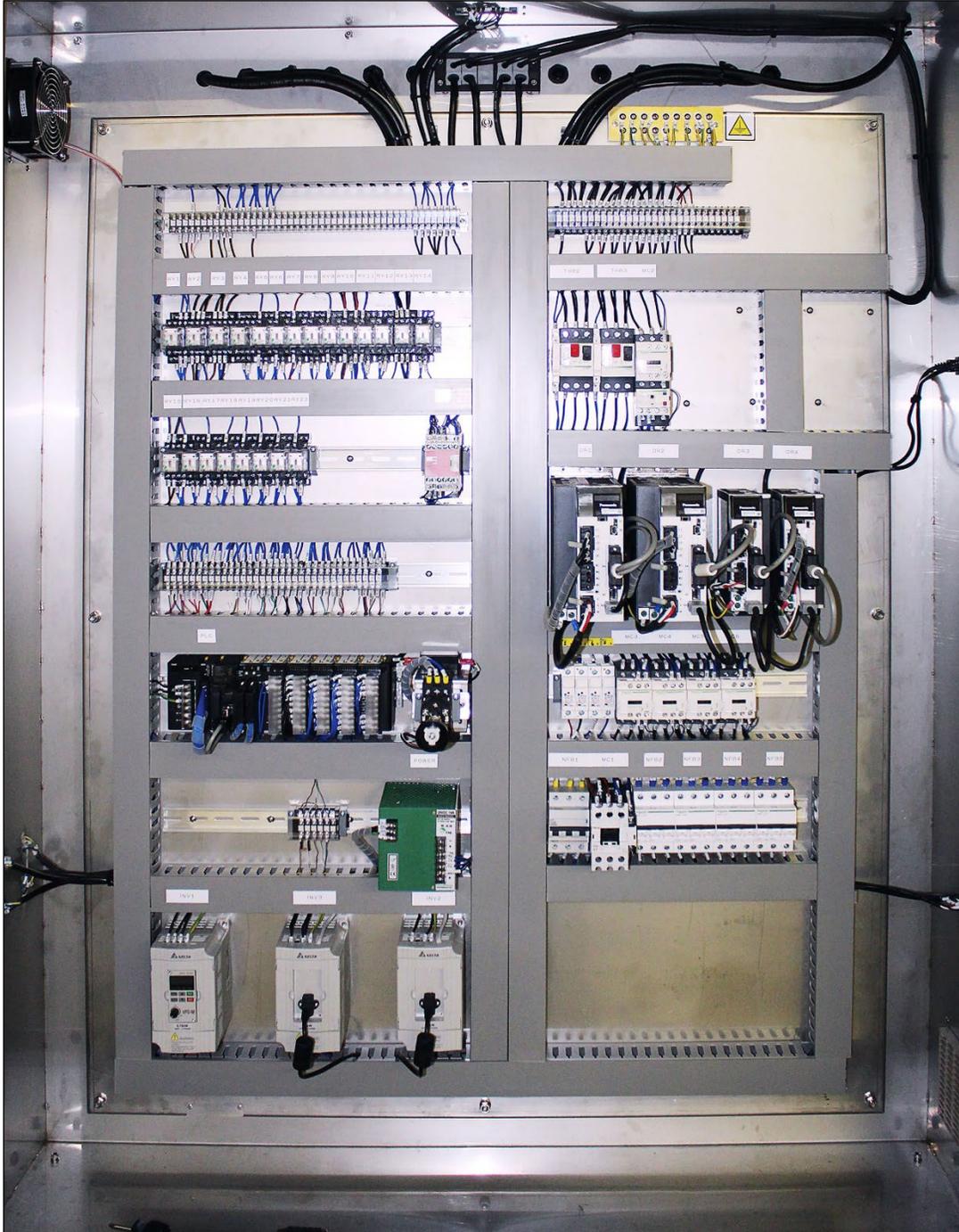
## Film Drive Servo Motor

Located in the Middle Chassis, the Film Drive Assembly includes the Film Drive Servo Motor, which pulls the Film Drive Belt over the Film Drive Bearings and Idlers to rotate the Film Drive Wheels in the Front Chassis.



## Rear Chassis

The Rear Chassis can be accessed by opening the Back Doors of the LX-350. The Rear Chassis contains the complex electronics that control the system. It should only be accessed by an authorized technician, and the system should be disconnected from any power source before doing so.



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## System Specifications

<b>Power Requirements</b>		AC 3-Phase 220 V, 50/60 Hz (functional range: AC 3-Phase 208-240V)
<b>Motors</b>	<b>LX-350</b>	25W x 2, 90W x 1, 400W x 2, 2kW x 2
	<b>UR-2</b>	3 x 220 V, 60 Hz, 5 Amp
<b>Dimensions</b>	<b>LX-350</b>	Height: 83" (210.8 cm)
		Width: 62" (157.5 cm)
		Depth: 50" (127.0 cm)
	<b>UR-2</b>	Height: 75" (190.5 cm)
		Width: 35" (88.9 cm)
		Depth: 31" (78.7 cm)
<b>Speed</b>		Up to 500 BPM (bottles per minute) (Speed varies depending on bottle shape and size and label thickness and length)
<b>Film "Lay Flat" Width</b>		2.75" – 8.66" (7.0 – 22.0 cm)
<b>Label Length (Applied)</b>		1.77" – 7.87"* (4.5 – 20.0 cm)*
<b>Film Thickness</b>		0.0014" – 0.027" (0.035 – 0.07 mm)
<b>Film Material</b>		OPS, PVC, PET

\* Optional XL model of LX-350 can cut label lengths of 2.76" – 9.84" (7.0 – 25.0 cm).

**NOTE:** Formula for calculating correct film "lay flat" width (cylindrical bottles):

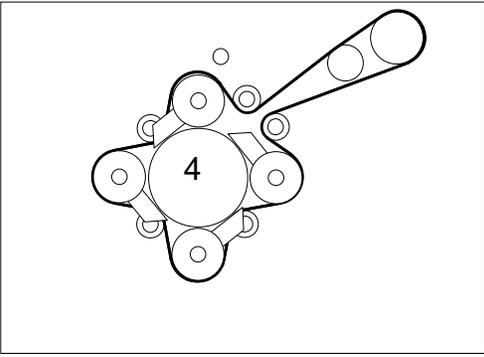
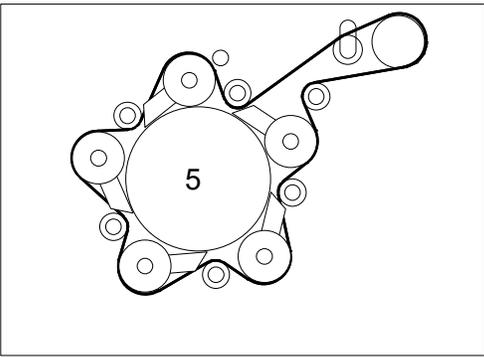
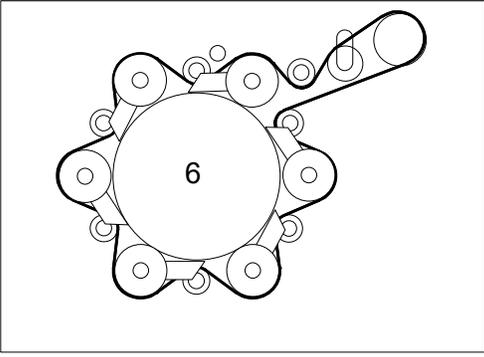
$$(\text{Bottle Diameter} + 2\sim 5 \text{ mm}) \times 1.57$$

**NOTE:** Speed will depend on the shape and types of items, and the thickness, and length of shrinkable film.

**NOTE:** Bottles in irregular shapes (square, rectangular, oval, etc.) require special tooling, including irregular Mandrels, Timing Screws and Cutter Assemblies. All of these can be custom built by AFM for the LX-350.

## Standard Cutter Assembly Sizes

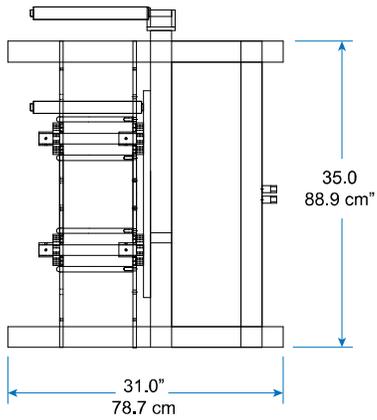
Three standard Cutter Assembly sizes are available for the LX-350, based on the size of the bottle being labeled and the Mandrel being used. Custom-sized Cutter Assemblies tailored to specific needs, including for irregularly shaped bottles, can also be built by AFM upon request.

Cutter Size	Number of Blades	Approximate Bottle Diameter	Label Lay Flat Width
Small (P/N 4500464)	 4	∅ 1.18" – 2.76" (∅ 3.0 – 7.0 cm)	1.89" – 4.53" (4.8 – 11.5 cm)
Medium (P/N 4505155)	 5	∅ 1.97" – 4.33" (∅ 5.0 – 11.0 cm)	3.07" – 6.89" (7.8 – 17.5 cm)
Large (P/N 4505156)	 6	∅ 3.54" – 5.51" (∅ 9.0 – 14.0 cm)	5.51" – 8.66" (14.0 – 22.0 cm)

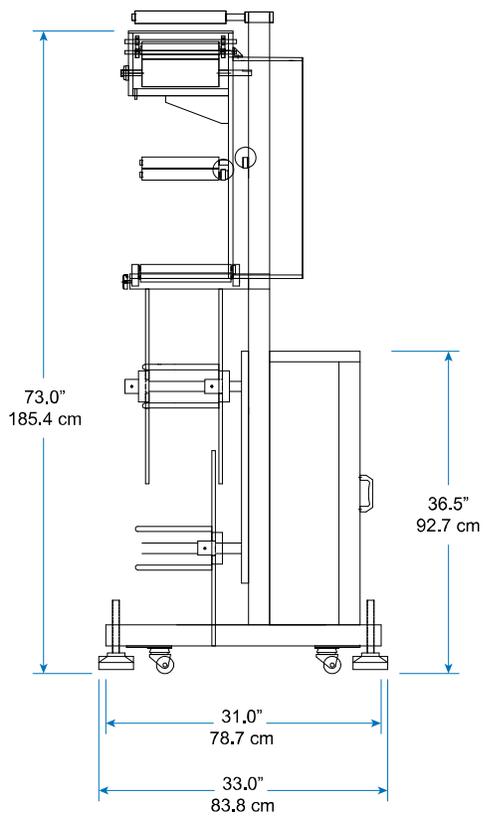
# System Dimensions

## UR-2 Unwind System

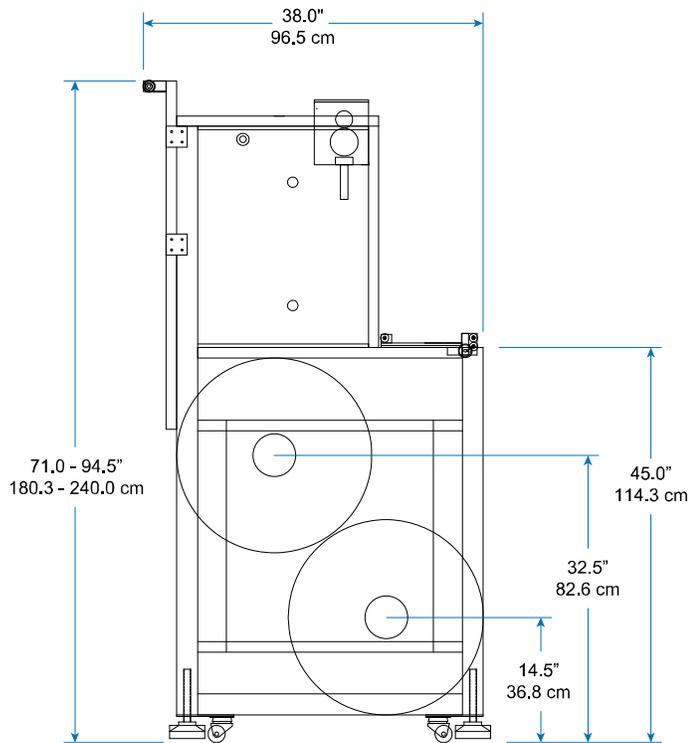
Top View



Front View



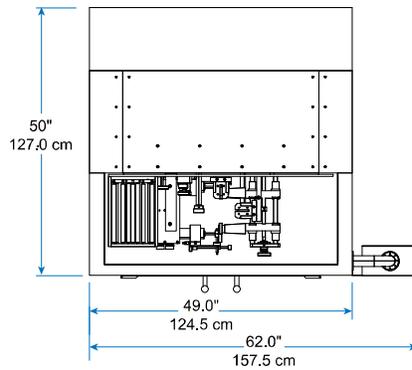
Side View



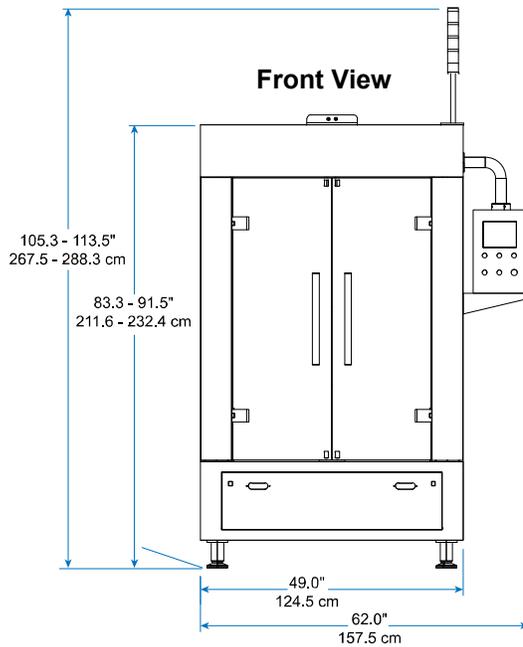
AFM-4510009-0017342

# LX-350 Shrink Sleeve Label Applicator

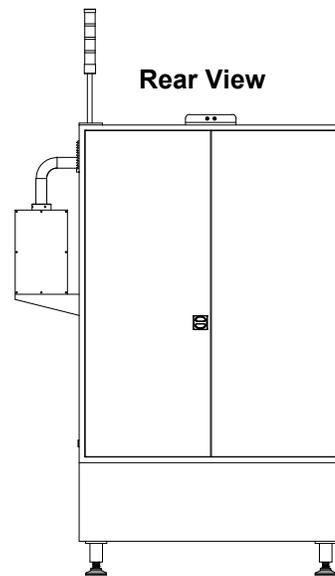
**Top View**



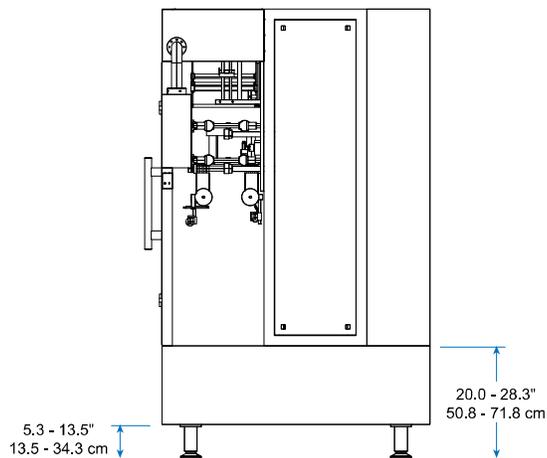
**Front View**



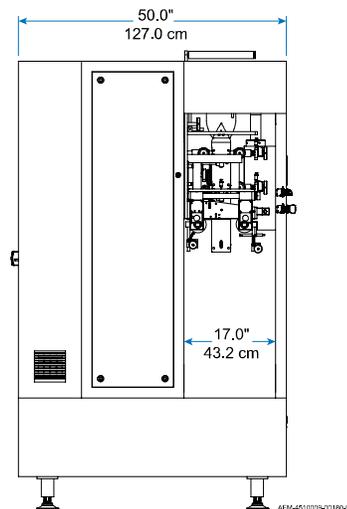
**Rear View**



**Downstream View**



**Upstream View**



# Installation and Setup

## General Installation Considerations

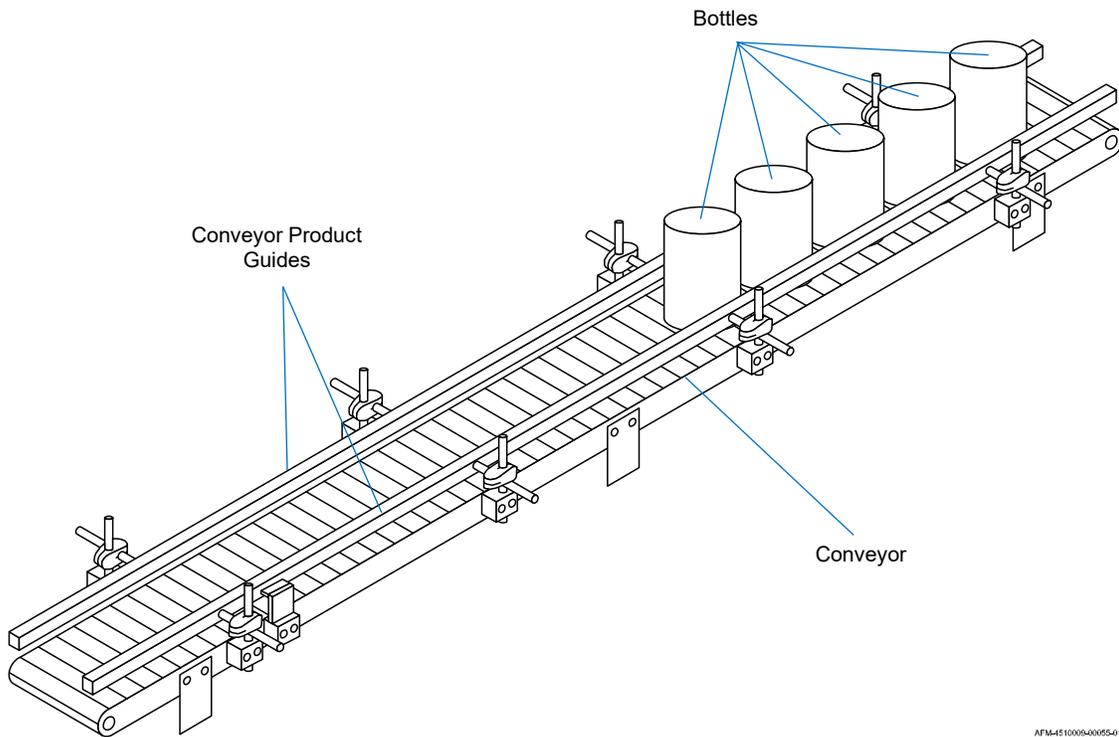
In addition to providing adequate space for the LX-350 and UR-2, and ensuring that they will be in the desired section within the assembly line chain, consider other factors, including:

### Material Handling

The most critical factor for consistently achieving superior quality labeling is product handling. Adequate Conveyor Product Guides must be provided, correctly installed, and properly maintained, so that the bottles consistently pass by in the correct position to be labeled, and unpredictable movements are minimized. Incorrect or inconsistent product handling will cause labeling problems, maintenance problems, and could lead to equipment damage. The customer is responsible for maintaining proper material handling equipment.

Additionally, the Conveyors themselves should be stable, should be properly maintained (smooth running Chain, for example), and should be in adequate working condition for the situation. The UR-2, LX-350, and any accessories should be firmly and securely mounted to the Conveyor, and the Mounts should be periodically checked, to minimize any performance impact due to Conveyor vibrations.

### Product Guides on Conveyor



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## AC Power

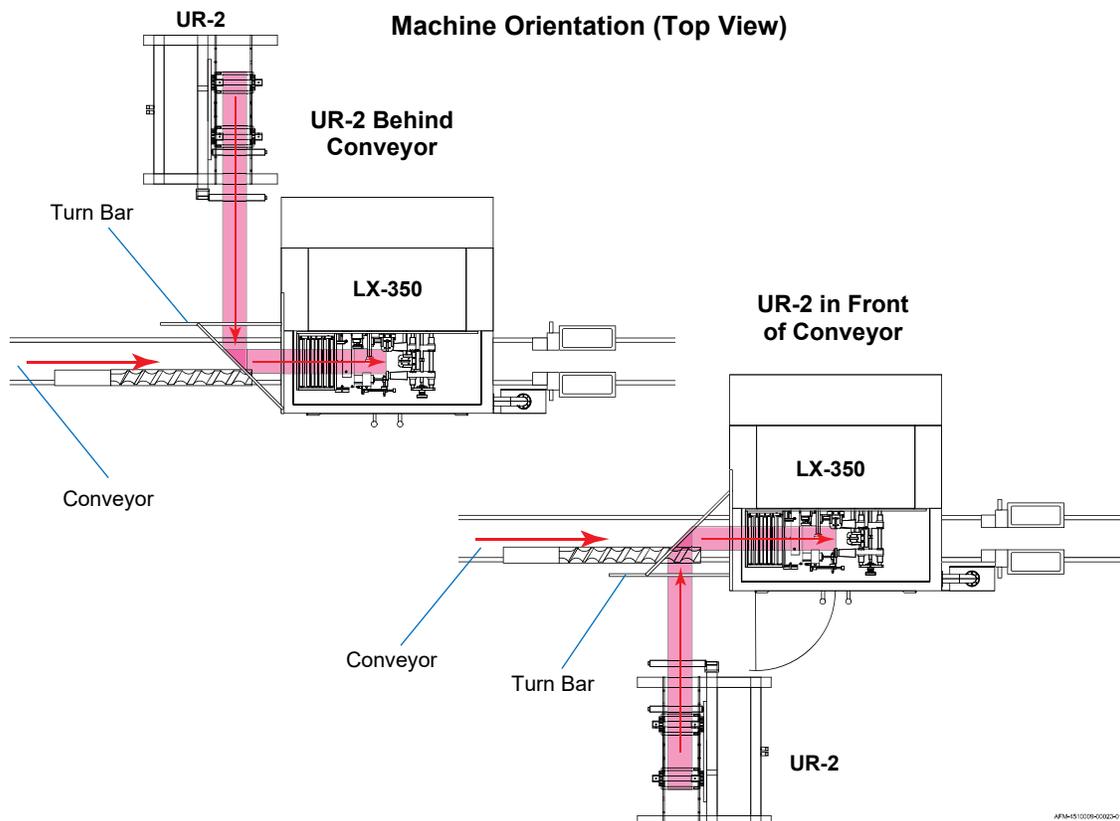
The LX-350 requires a code-compliant, 3-phase, 208-240V 50/60 Hz grounded power supply. Experience has shown that the AC power in locations where the LX-350 is installed can be subject to line noise, brownouts, and blackouts. If line noise, brownouts, or blackouts occur on a regular basis, install a good-quality Line Conditioner to ensure data integrity. In many cases, these devices may not be necessary; it is acceptable to start an installation without them. However, if system lockups or occasional label misfires occur, the first corrective measure should be to isolate and clean up the AC power.

## Work Area

For safety, the work area should have a Fire Extinguisher. The organization should also have lockout/tagout procedures and equipment in place specific to their equipment and processes, including use of the LX-350 and UR-2 (see “Lockout/Tagout” on page 18).

## Orientation

Looking at the front of the LX-350, the Conveyor enters on the left and exits on the right. The UR-2 should be positioned before the LX-350 in the production line and should be oriented at a 90° angle to the Conveyor, as shown below. If the UR-2 is placed in front of the Conveyor, ensure that the LX-350's front doors remain unobstructed. The Turn Bar is used to redirect the film into the LX-350 (see “Turn Bar” on page 24).



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## Mandrel Position

The center line of the Conveyor should run beneath the central axis of the Mandrel (see “Fine-Tuning the LX-350 Position” on page 71).

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## Maintenance Access

When planning the installation, allow for easy access to the Front Door and Electronics Cabinet of the LX-350, as well as to the HMI, so that setup, operation, and maintenance can be done conveniently. Additionally, ensure that both sides of the UR-2 are easily accessible for fast and convenient changeover and splicing of Label Film Spools and for maintenance.

---

## Ventilation

A Heat Shrink Tunnel usually immediately follows the LX-350 on the product path, shrinking the placed labels onto the product. Depending on the product and label material used, hazardous fumes can result from the heat shrink process. Ensure that the work area has proper ventilation.



**WARNING:** Hazardous fumes – ensure that work area has adequate ventilation.

---

## Humidity

High humidity can have a noticeable negative impact on the LX-350's effectiveness. Labels will not slide down the surface of a bottle as easily when that surface has condensation on it. Take reasonable steps to reduce humidity in the work area.

---

## Traffic Patterns

Careless positioning can result in damage to the LX-350 or UR-2. An example would be positioning the machines where they can be accidentally knocked by a Forklift, or similar placement in an area of predictable traffic. Keep the LX-350 and UR-2 away from known traffic paths.



**ATTENTION:** Locate the LX-350 and UR-2 away from known traffic paths.

---

## Physical Installation

Taking into account all the general setup considerations, the LX-350 and UR-2 can be installed.

### VIDEO: LX-350 Setup and Settings

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=1>

Or scan the QR code at right using the camera app on your mobile device.



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### Items Needed for Entire Installation Process:

- Forklift with a minimum 1.75 ton (1.588 kg) capacity
- Licensed Forklift Operator
- Total of at least 3 people to move the machines
- Proper Plug Connection (not included) for the end of the Power Cable: 3-phase, 220V 50/60 Hz, grounded
- Code-compliant, 3-phase, 220V 50/60 Hz grounded AC power supply
- Licensed electrician
- Large Crescent Wrench
- Cut-Resistant Work Gloves
- Level
- Allen Wrench (included in Tool Kit)
- Sturdy Ladder

## Installing the LX-350

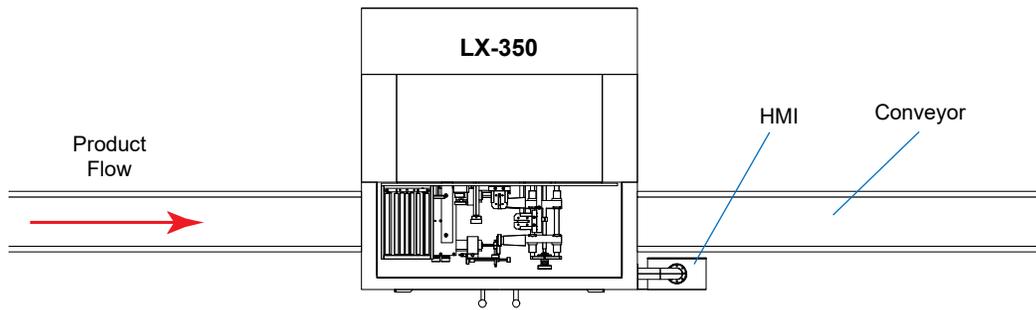
### Items Needed to Install the LX-350:

- Forklift with a minimum 1.75 ton (1.588 kg) capacity
- At least 3 people to move the machine
- Large Crescent Wrench

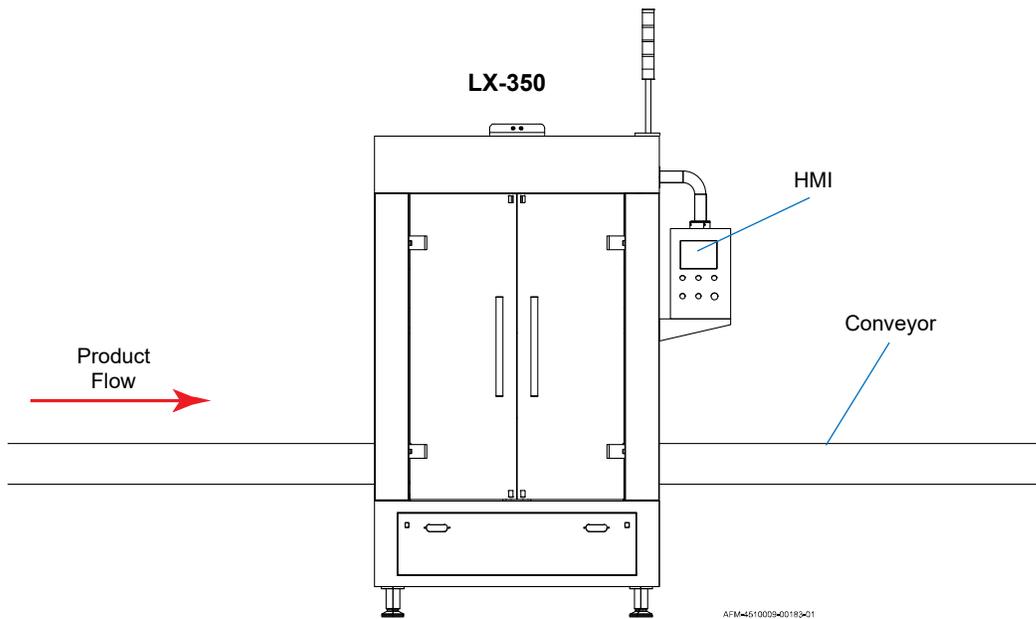
### To Install the LX-350:

1. Find a suitable location for the system (see “General Installation Considerations” on page 63). The LX-350 should be just upstream from a Shrink Tunnel.
2. Have a licensed Forklift operator remove the LX-350 from its shipping container.
3. Move the LX-350 generally into position as shown below. The Conveyor should run through the sides of the LX-350, exiting the side where the HMI is.

### Positioning the LX-350 (Top View)



### Positioning the LX-350 (Front View)



AFM-4510009-00183-01

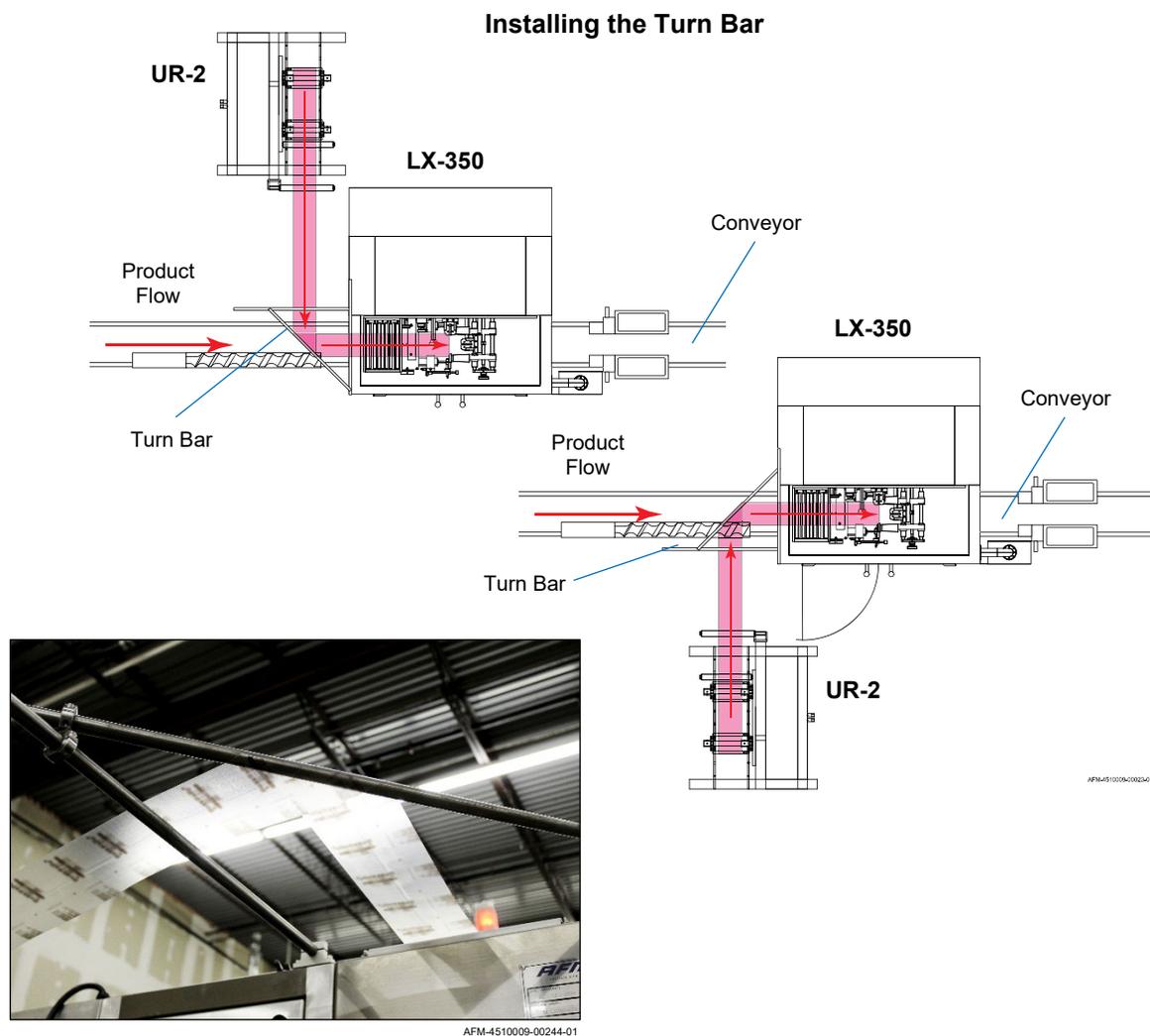
## Installing the Turn Bar

### Items Needed to Install the Turn Bar:

- Wrench
- Ladder

### To Install the Turn Bar:

1. Decide whether the UR-2 will be positioned in front of the LX-350 or behind it and assemble the Turn Bar.
2. Use the diagram below to determine how the Turn Bar should be oriented.



3. Using a stable Ladder and a Wrench, affix the Turn Bar securely to the upstream side of the top of the LX-350.

## Installing the UR-2

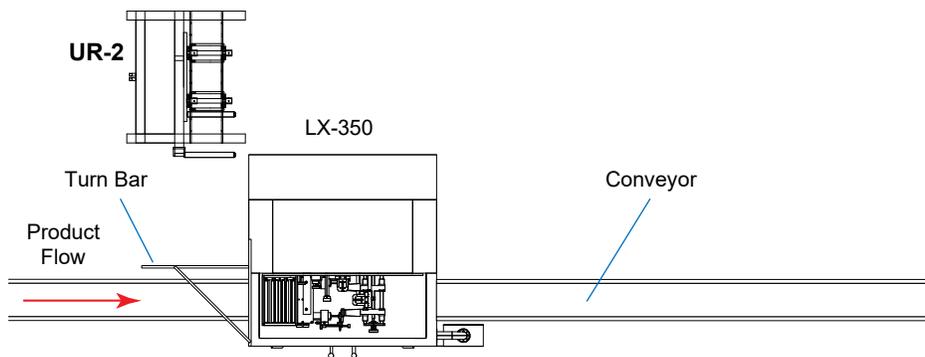
### Items Needed to Install the UR-2:

- Forklift with a minimum 1.75-ton (1,588 kg) capacity
- Licensed Forklift operator
- Total of at least 3 people to move the machine
- Level
- Ladder

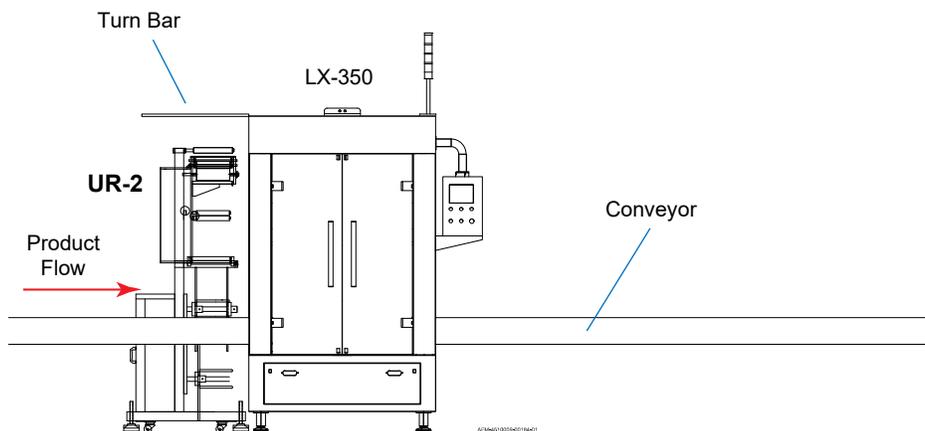
### To Perform Installation:

1. Find a suitable location for the UR-2 (see “General Installation Considerations” on page 63).
2. Have a licensed Forklift operator remove the UR-2 from its shipping container and move the UR-2 generally into position on the upstream side of the LX-350 as shown below. The UR-2 can be placed either in front of or behind the Conveyor, depending on the needs in the workspace.

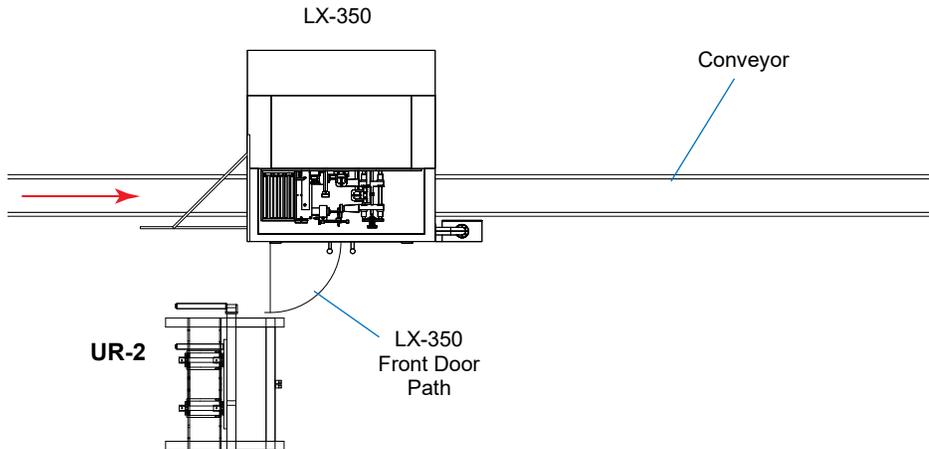
**Positioning the UR-2 Behind Conveyor (Top View)**



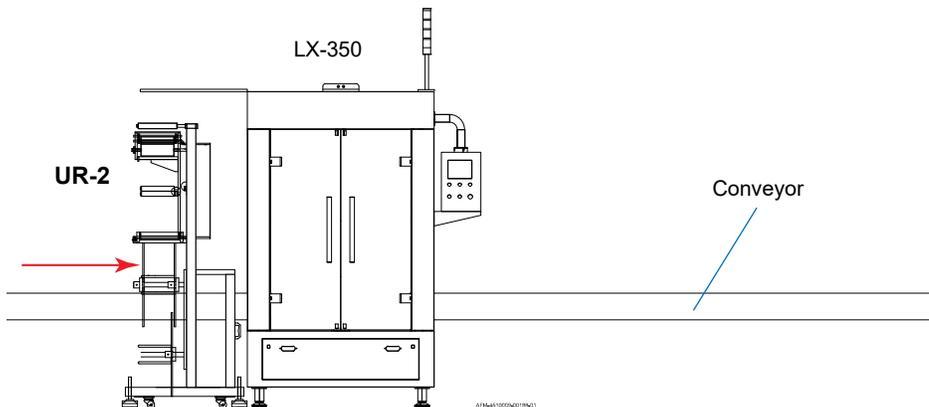
**Positioning the UR-2 Behind Conveyor (Front View)**



### Positioning the UR-2 in Front of Conveyor (Top View)



### Positioning the UR-2 in Front of Conveyor (Front View)



---

## Install the Cutter Assembly

If the Cutter Assembly is not already installed, it should be installed now (see “Installing the Cutter Assembly” on page [195](#)).

---

## Install the Mandrel

If the Mandrel is not already installed, it should be installed now (see “Installing the Mandrel” on page [197](#)).

## Fine-Tuning the LX-350 Position

Stable and precise positioning is essential to the proper functioning of the LX-350.

### VIDEO: Equipment Setup

To see a video of this procedure, click this link:

<https://youtu.be/shn5o7MZxM>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.

**Time:** 0:50 – 1:42



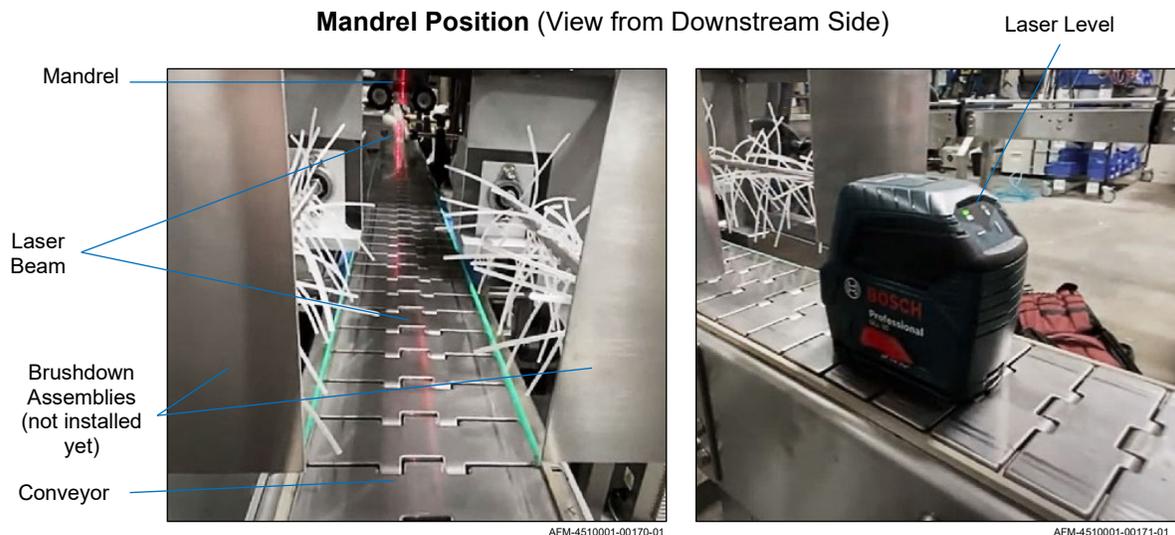
AFM451001-00170-01  
Equipment Setup  
<https://youtu.be/shn5o7MZxM>

### Items Needed to Fine-Tune the LX-350 Position:

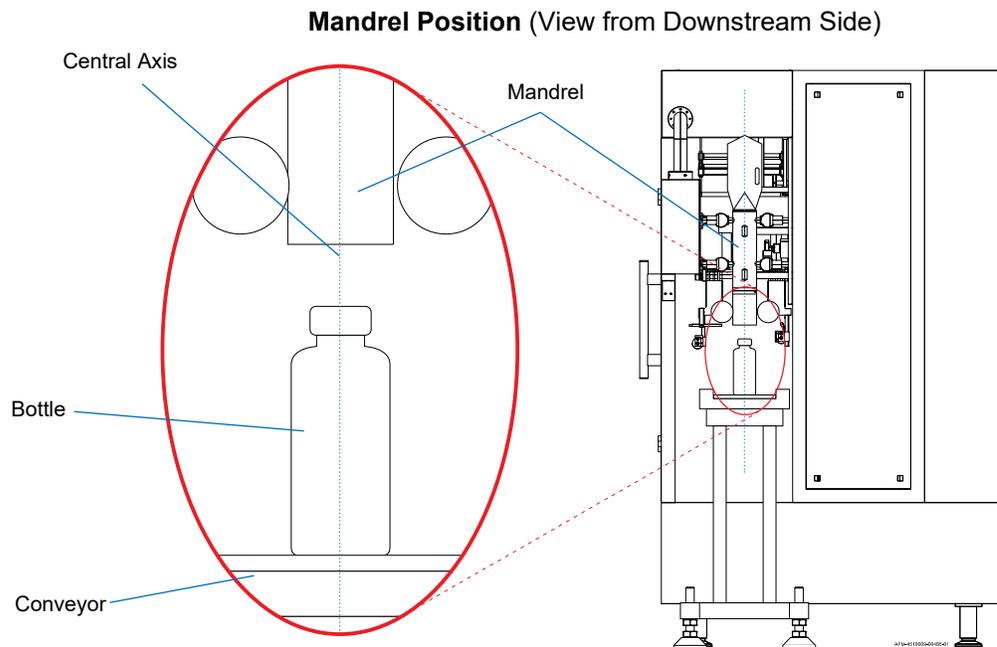
- Total of at least 3 people to move the machine
- Large Crescent Wrench
- Level
- Laser Level
- Tape Measure

### To Fine-Tune the LX-350 Position:

1. Align the center line of the Mandrel with the center line of the Conveyor:
  - a. Place a sample bottle in the center of the Conveyor Belt directly below the Mandrel.
  - b. Use the Tape Measure to place the Laser Level precisely in the center of the Conveyor, downstream from the LX-350 and aimed toward the LX-350, as shown below.

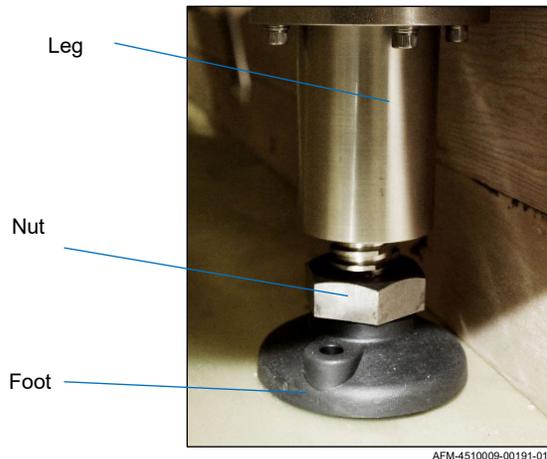


- c. Move the LX-350 until the center axis of the Mandrel lines up precisely with the center axis of the bottle, as shown below.



**2. Level the LX-350 and UR-2:**

- a. Use the Level and the Crescent Wrench to turn the Nut on each Leg of the LX-350 and UR-2 until both units are level in their positions on the floor.



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3. A final part of fine-tuning will be to use the Head Height Adjust to fine-tune the distance from the bottom of the Mandrel to the top of the sample bottle. The distance should be approximately half the length of the labels that will be applied, as shown in the “Mandrel Position” diagram on the previous page. This will be done once the system is properly connected.
4. Turn the Laser Level off but leave it in position. It will be used when installing the Timing Screw.

## Installing the Timing Screw Assembly

The Timing Screw Assembly is needed to regulate the flow of bottles so that they are centered on the Conveyor and are evenly spaced as they enter the LX-350.

### VIDEO: Timing Screw Setup and Adjustments

To see a video of this procedure, click this link:

<https://youtu.be/wBpQN2wkafA>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.



AFM-4510001-00176-01  
Timing Screw Setup and Adjustments  
https://youtu.be/wBpQN2wkafA

### VIDEO: Equipment Setup

**Time:** 1:50 – 2:12

To see a video of this procedure, click this link:

<https://youtu.be/shn5o7MZxbM>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.



AFM-4510001-00176-01  
Equipment Setup  
https://youtu.be/shn5o7MZxbM

### VIDEO: Machine Adjustments and Fine Tuning

**Time:** 0:00 – 1:01

To see a video of this procedure, click this link:

<https://youtu.be/Q3k865kFjmw>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.



AFM-4510001-00176-01  
Machine Adjustments, Timing Screw, Breakdown, and UPLU  
https://youtu.be/Q3k865kFjmw

### Items Needed to Install the Timing Screw Assembly:

- Crescent Wrench
- Alan Wrench
- Laser Level

### To Install the Timing Screw Assembly:

1. Use the Alan Wrench to bolt the Timing Screw Assembly to the side of the Conveyor, with the closest end at least 12" (30.5 cm) upstream from the Mandrel.

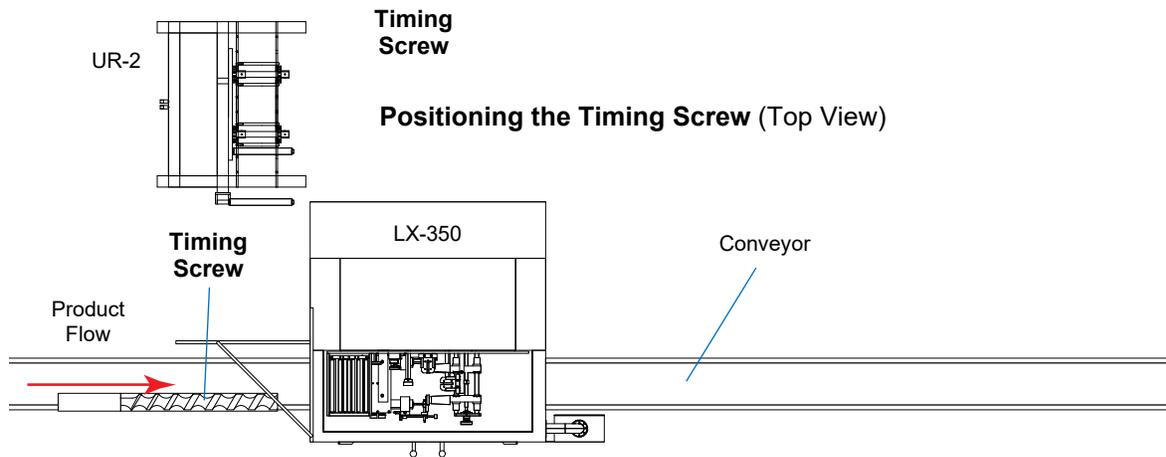
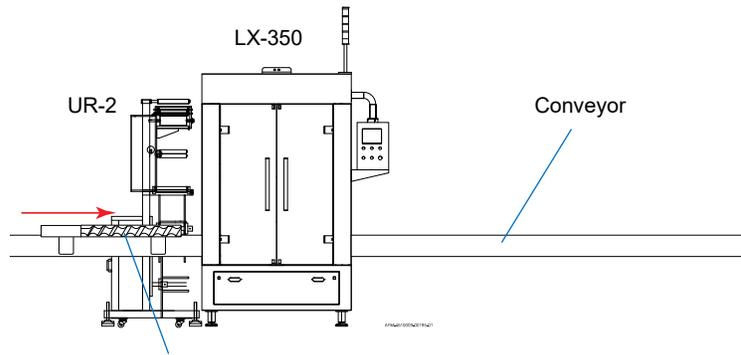


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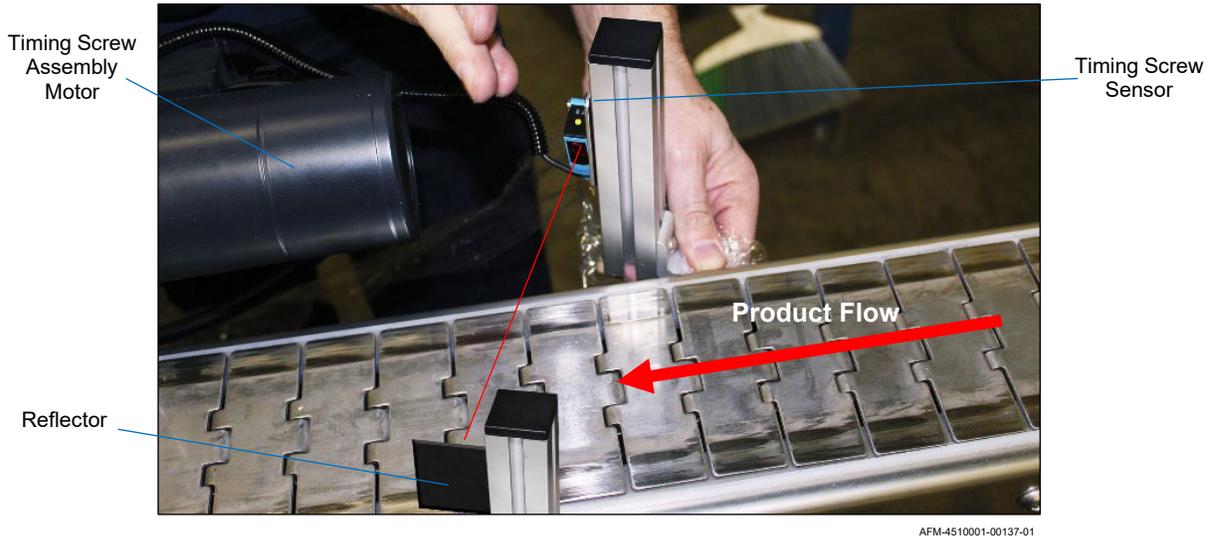
**Positioning the Timing Screw (Front View)**



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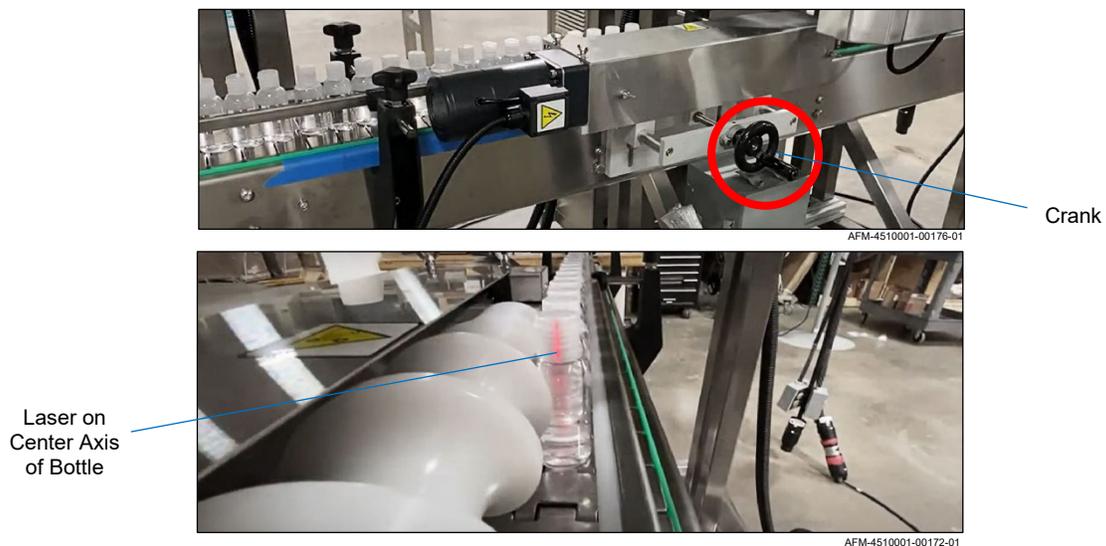
2. Mount the Timing Screw Sensor to the Conveyor upstream from the Timing Screw Assembly, and pointing across the Conveyor at a slight angle downstream.
3. Mount the Reflector on the opposite side of the Conveyor from the Timing Screw Sensor, positioned in such a way to be hit by the beam of the Timing Screw Sensor.

### Mounting the Timing Screw Sensor and Reflector



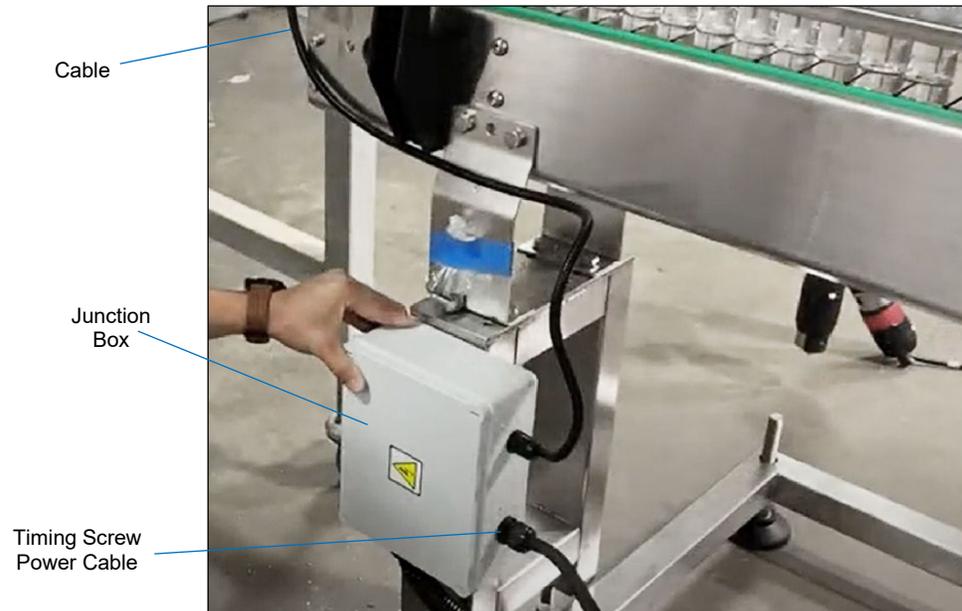
4. Fine Tune the Position of the Timing Screw.
  - a. With the Laser Level in the center of the Conveyor, turn the Laser Level on.
  - b. Place a sample bottle in one of the pockets of the Screw.
  - c. Gently pushing the bottle against the Screw, turn the Crank on the side of the Timing Screw to move the Screw towards or away from the centerline of the Conveyor until the laser beam is pointing at the center axis of the bottle. As shown below.

### Plugging in the Timing Screw Assembly



5. Plug the Cable from the Timing Screw into the Power Box.
6. Attach the Junction Box to the Conveyor.

### Plugging in the Timing Screw Assembly



AFM-4510001-00178-01

## Installing the Brushdown Assemblies

The LX-350 shoots labels down onto bottles with such force that the labels may bounce up off the Conveyor and slide partly back up the bottle. In these cases, heat shrinking the labels onto the bottle would produce undesirable results. To ensure that the labels are pushed down into the correct location on the bottle, the Brushdown Assemblies needs to be installed immediately downstream from the LX-350 (and upstream from the Heat Shrink Tunnel).

### VIDEO: Equipment Setup

**Time:** 2:12 – 2:52

To see a video of this procedure, click this link:

<https://youtu.be/shn5o7MZxbM>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.



AFM451000-140188/01  
Equipment Setup  
<https://youtu.be/shn5o7MZxbM>

### VIDEO: Machine Adjustments and Fine Tuning

**Time:** 1:00 – 1:18

To see a video of this procedure, click this link:

<https://youtu.be/Q3k865kFjmw>

Or scan the QR code at right using the camera app on your mobile device.

**NOTE:** Video shows setup for the LX-150, but basic principles are the same.



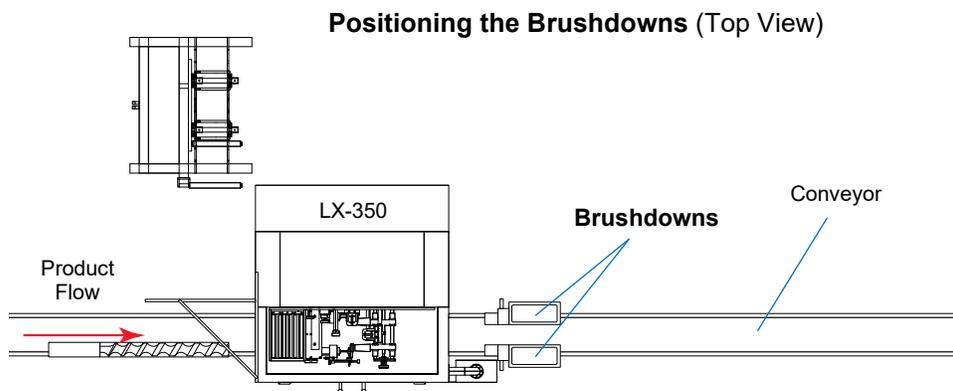
AFM451000-140188/01  
Machine Adjustments, Tuning, Setup, Replacements, and OPM  
<https://youtu.be/Q3k865kFjmw>

### Items Needed to Install the Brushdown Assemblies:

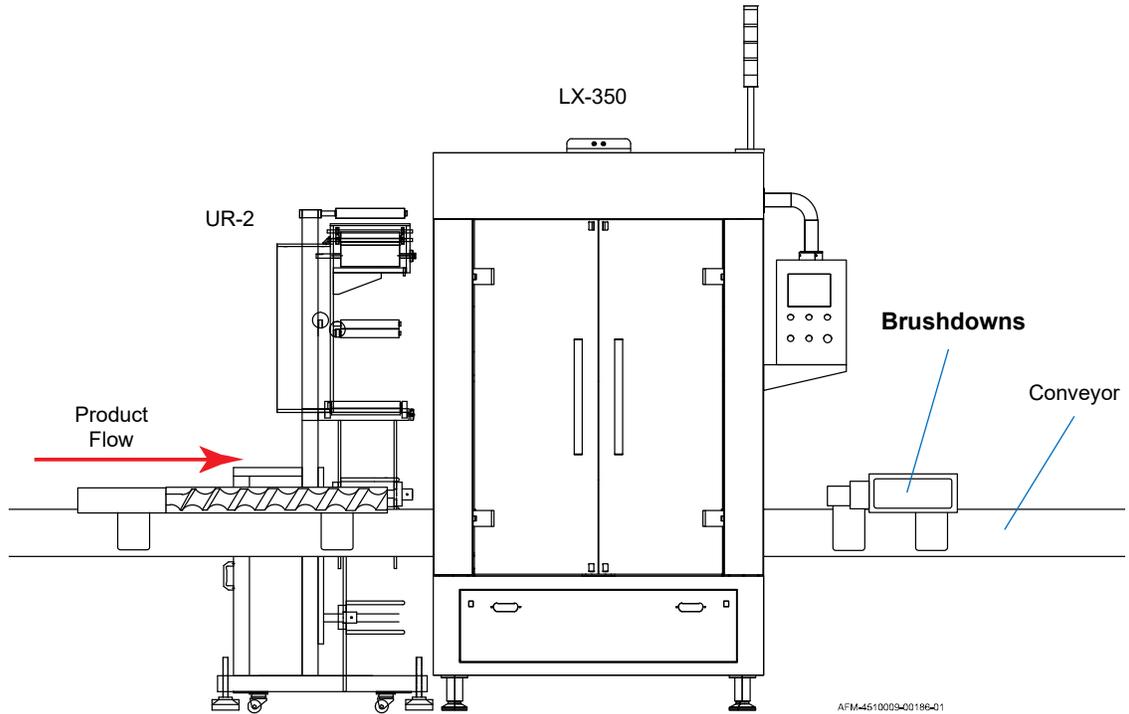
- Crescent Wrench
- Alan Wrench

### To Install the Brushdown Assemblies:

1. Use the Alan Wrench to bolt the Brushdown Mounts to either side of the Conveyor.



### Positioning the Brushdowns (Front View)



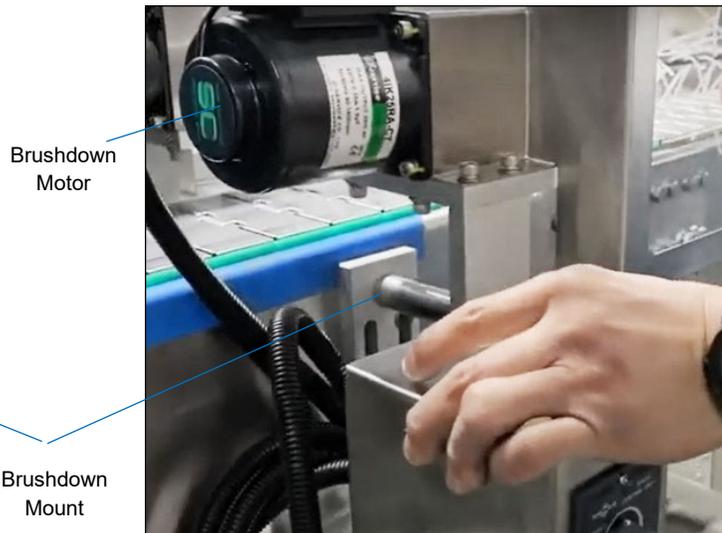
The Mounts should be directly across the Conveyor from each other, and immediately downstream from the LX-350.

2. Lift each Brushdown Unit onto a Mount. The Brushdown's Motor should be on the upstream side, and the bristles should be exposed to the centerline of the Conveyor.

### Mounting the Brushdown Assemblies

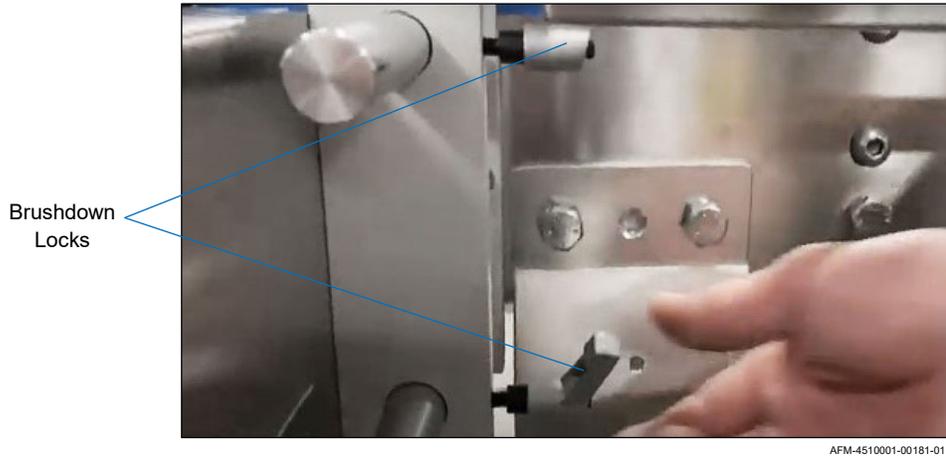


AFM-4510001-00179-01

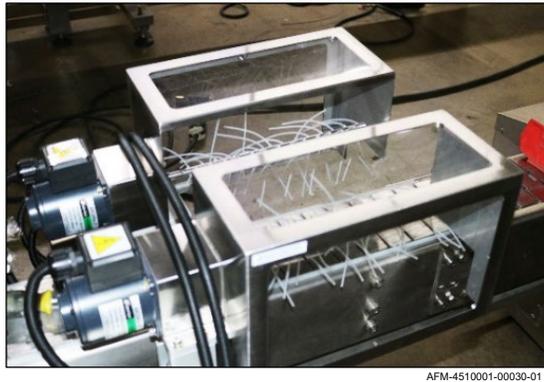


AFM-4510001-00180-01

3. Tighten the Brushdown Locks on both Assemblies to secure them in position.



### Properly Attached Brushdown Assemblies



4. Attach the Control Box to the most accessible Mount.

### Attaching the Control Box to the Mount



## Data and Power Connections

Once the system is physically in place, that data and power connections need to be set up.

### Preparing the LX-350 Power Cable

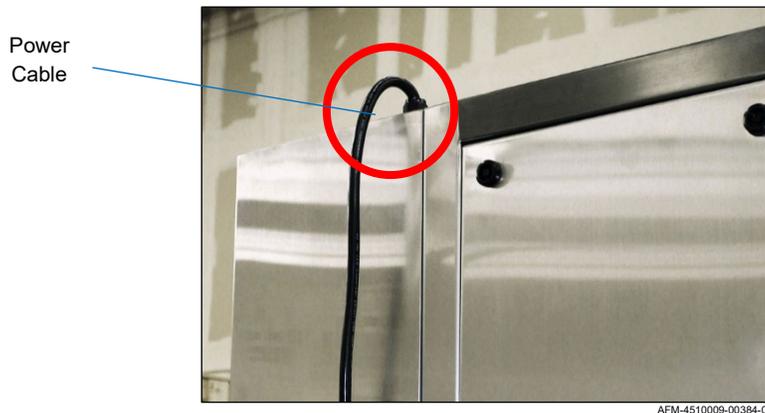
#### Items Needed to Prepare the LX-350 Power Cable:

- Licensed electrician
- Proper Plug Connection (not included) for the end of the Power Cable:  
3-phase, 220V 50/60 Hz, grounded
- Code compliant, 3-phase, 220V 50/60 Hz grounded power supply

#### To Prepare the LX-350 Power Cable:

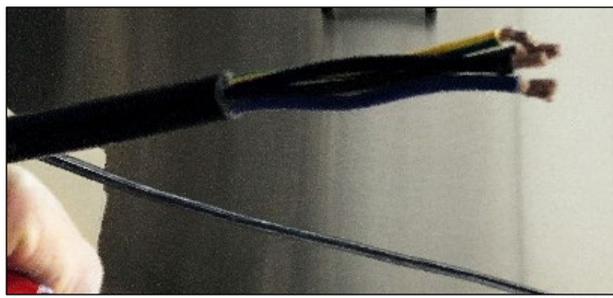
1. Locate the Power Cable on the top of the LX-350, on the upstream side toward the rear.

#### Locating the Power Cable



2. The LX-350 requires a 3-phase, 220V 50/60 Hz grounded power supply. A licensed electrician will need to attach the proper Plug Connection to the end of the system's Power Cable. Do not plug it into an outlet at this point.

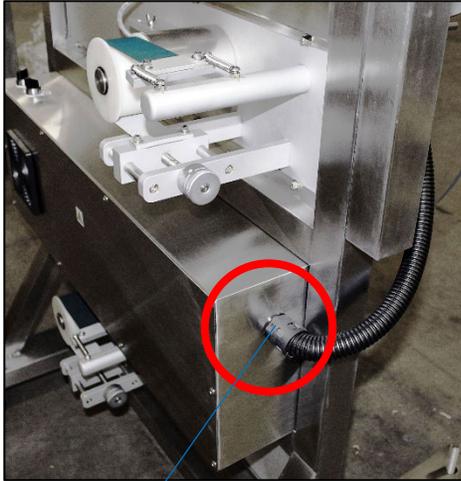
#### 3-Phase Plug Connection



## Connecting the UR-2

1. Locate the Umbilical Cable on the UR-2. This Cable simultaneously supplies power to the UR-2 and provides a communication connection between it and the LX-350.

### UR-2 16-Pin Connector



Umbilical Cable

AFM-4510009-00257-01



16-Pin Connector

AFM-4510009-00345-01

2. Plug the 16-pin Connector at the end of the Unwind Cable into the top of the UR-2 and lock it in place, as shown below.

### Connecting the UR-2 to the LX-350



AFM-4510009-00298-01



AFM-4510009-00297-01



AFM-4510009-00296-01

## Connecting the Timing Screw

1. Plug the Timing Screw Assembly into the Timing Screw Connection on the upstream side of the LX-350 and use the Latch to lock the connection in place.

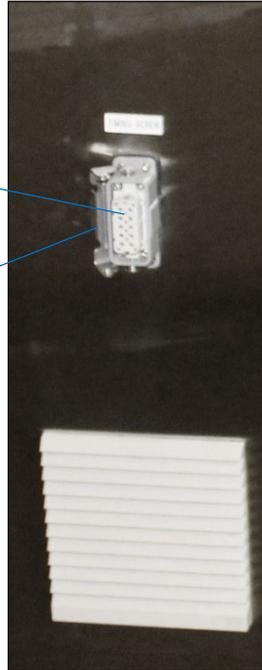
### Timing Screw Connection



AFM-4510009-00199-01

Timing Screw  
Connection

Latch



AFM-4510009-00386-01

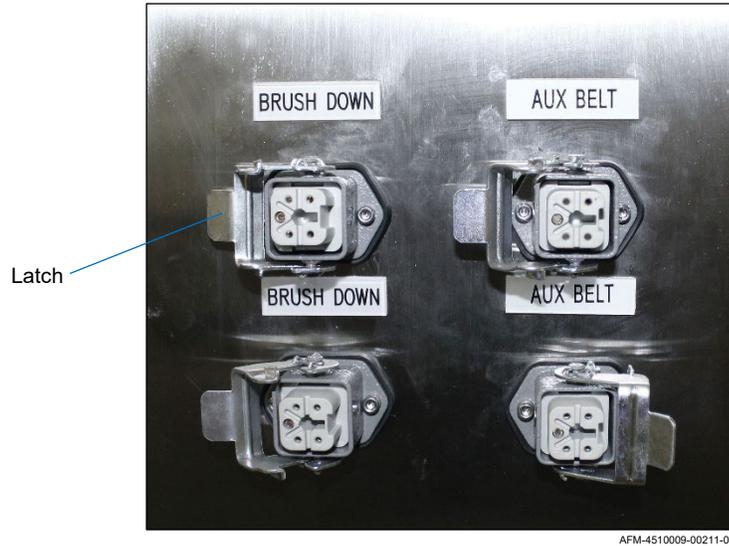


AFM-4510009-00193-01

## Connecting the Brushdowns

1. Plug the Brushdown Assembly (if used) and Auxiliary Belt, (if used) into the downstream side of the outside of the LX-350 and use the Latches to lock the connections in place.

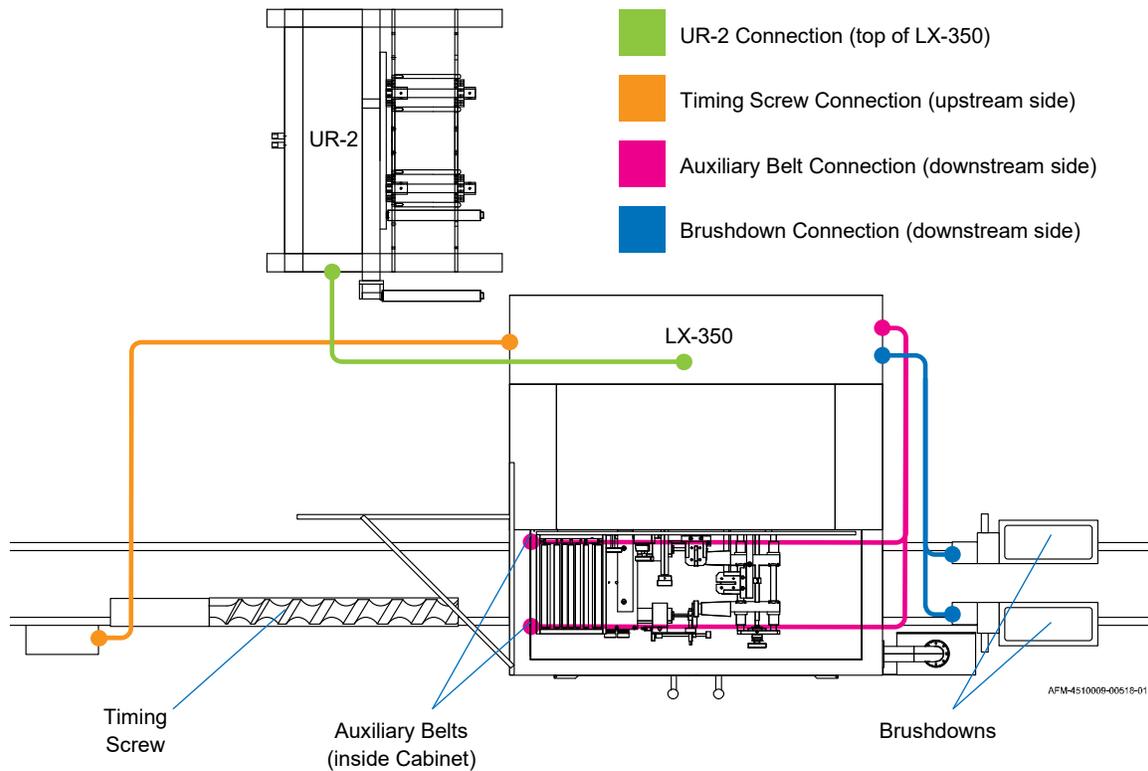
### Brushdown and Auxiliary Belt Connections



## Final Setup

With the equipment secured in place and properly connected, the LX-350 and UR-2 are now generally set up for operation.

**Properly Connected System (Top View)**



However, each different kind of label and bottle requires its own fine-tuned setup. To perform final setup for a specific label and product, please follow the instructions at (“Label- and Product-Specific Setup” on page [157](#)).

# Software

The Human Machine Interface (HMI) uses software which can be controlled through the Touchscreen on the HMI or remotely using a Programmable Logic Controller (PLC). This section describes the functions available through the HMI software.

## Software Map

### OTHER SCREEN (p. 89)

- Alarm and Message Screen (p. 90)
- PLC I/O Monitor Screens (p. 118)
- Parameter Setting Screens (p. 130) (Buttons and fields defined: p. 131)
  - Feed & Cut Motor Setting (p. 131)
  - Feed Correction (p. 133)
  - Supply Motor Setting (p. 134)
  - Application Spacing Setting (p. 135)
  - Timing Screw Spindle Setting (p. 136)
  - Application Fail Setting (p. 138)
  - Application Wheel Speed (p. 139)
  - Change Password (p. 140)
  - Auto Test (p. 141)
  - Print Scan Mode Selection Screens (p. 142)
- Cutter Angle Adjust Screen (p. 144)

### MANUAL SCREENS (p. 145)

- Manual Screen 1 (p. 145)
- Manual Screen 2 (p. 145)

### SETTING SCREENS (p. 149)

- Setting Screen 1 (p. 149)
  - Product Number Screen (p. 151)
- Setting Screen 2 (p. 151)
- Setting Screen 3 (p. 153)
- Setting Screen 4 (p. 153)

### WORKING SCREEN (p. 156)

## Common Buttons and Graphics

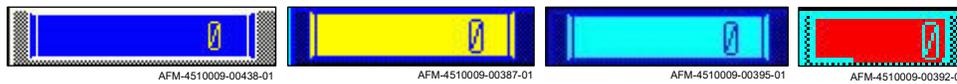
A few buttons and graphics are seen on numerous Screens. Their functions are described below.

### Main Screen Tabs:



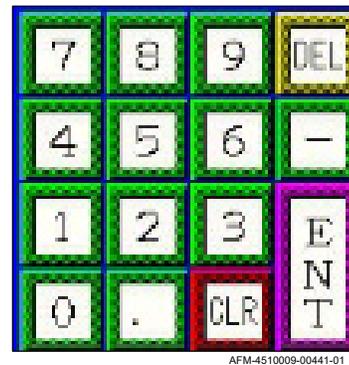
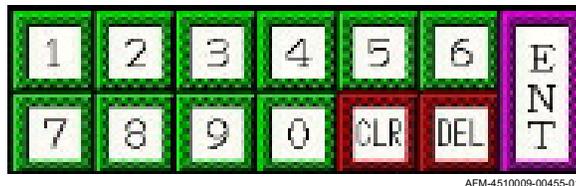
Accesses one of the four main screens. Whichever **Main Screen Tab** is blue is the one that is currently in use.

### Display Fields:



Touching the Display Field brings up a keyboard for entering a value. The Display Field shows the value as it is entered. On the “Password Screen, for example, the Display Field is where the password is entered.

### Keyboards:



Allow users to enter data into the system.

- CLR: Clears all content from the Display Field.
- DEL: Deletes the password one number at a time.
- SPC: Enters a “space.”
- ENT: Applies the password after it is entered.

**“SET” Button:**

AFM-4510009-00410-01

Accepts the value in the Display Field as the new setting.

---

**“Previous” Button:**

AFM-4510009-00477-01



AFM-4510009-00411-01

Returns to the previous screen on the same level in the Software Map.

---

**“Next” Button:**

AFM-4510009-00394-01



AFM-4510009-00402-01

Advances to the next screen on the same level in the Software Map.

---

**“Exit” Button:**

AFM-4510009-00395-01

Returns to the previous level up in the Software Map.

## Startup Screen

The **Startup Screen** appears when the LX-350 is first turned on.

**Startup Screen**



AFM-4510009-00391-01

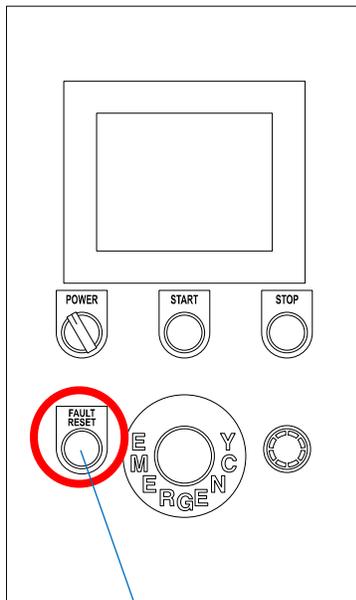
**Fault Reset Screen**



AFM-4510009-00417-01

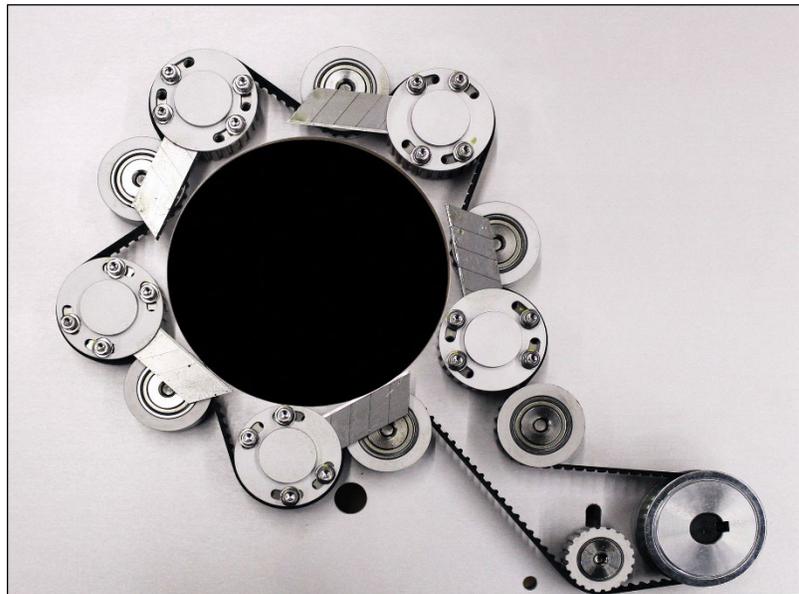
After the **Startup Screen** displays, the **Fault Reset Screen** appears. Press the Fault Reset button on the HMI. This will trigger the Cutter Blades to rotate into their “home” position.

**HMI**



Fault Reset Button

**Cutter Blades in Home Position**



AFM-4510009-00256-01

## Other Screen

Selecting **Other** accesses the **Other Screen**. The **Other Screen** is used to access four screens whose functions are described in detail below,



### Alarm & Message:

Accesses the **Alarm & Message** Screen which provides information about faults that may have occurred (info starts on page [90](#)).

### PLC I/O Monitor:

Accesses the **PLC I/O Monitor Screens** which provides troubleshooting info (info starts on page [118](#)).

### Parameter Setting:

Accesses the **Parameter Setting Screens** for viewing and changing advanced performance settings (info starts on page [130](#)).

### Cutter Angle Adjust:

Accesses the **Cutter Angle Adjust Screen** for setting the home position of the Cutter Blades (info starts on page [144](#)).

## Alarm & Message Screens



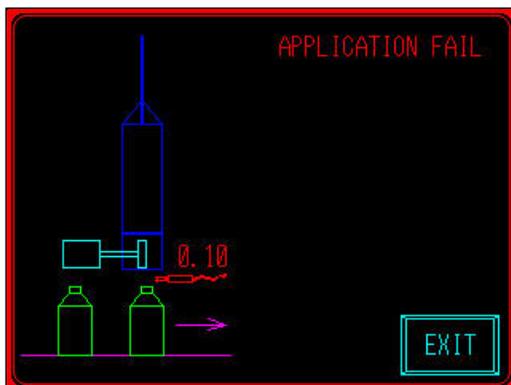
The **Alarm & Message Screen** alerts the user to problems with the system. For example, if the Front Doors of the LX-350 are open, the machine will display an alarm and will not operate until they are closed.

- **Message Area:** Displays any active alarm messages.
- **Clear:** Removes an alarm after the problem has been resolved.
- **Exit:** Exits the Alarm & Message Screen.

### Possible Alarm Messages Include:

- Application Fail (p. [91](#))
- Reset E-Stop (p. [92](#))
- Close Door (p. [92](#))
- Cutter Find Home (p. [94](#))
- Overload Trip (p. [96](#))
- PLC Low Battery (p. [96](#))
- Mandrel Support (p. [98](#))
- Fault Reset (p. [100](#))
- Film Supply Device Connect (p. [100](#))
- Film Supply Device E-Stop (p. [102](#))
- Film Supply Device E-Stop 2 (p. [103](#))
- Film Supply Device Inverter Fault (p. [104](#))
- Film Empty (p. [105](#))
- Inverter Fault (p. [106](#))
- Feed Servo Fault (p. [107](#))
- Cutter Serv Fault (p. [108](#))
- Applying Servo (R) Fault (p. [108](#))
- Applying Servo (L) Fault (p. [110](#))
- E-Stop (p. [110](#))
- H-Perf Device Home (p. [111](#))
- Printing Position Adjustment (p. [112](#))
- Print Signal in Mask Area (p. [115](#))
- No Catch Mark (p. [117](#))

## Application Fail



### Alarm Meaning:

There may be a film jam.

### To Resolve the Issue:

1. Check the entire length of the film path, starting at the bottom of the Mandrel.
2. Clear any obstructions, tangles or jam. If doing so requires work near parts that can move, follow your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18) for shutdown and startup.



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Reset E-Stop



### Alarm Meaning:

The E-Stop Button on the HMI has been pressed.

### To Resolve the Issue:

1. Optional: press the “Buzzer Mute” Button.
2. Address the situation that caused the E-Stop Button to be pushed in the first place. If doing so requires work near parts that can move, follow your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18) for shutdown and startup.

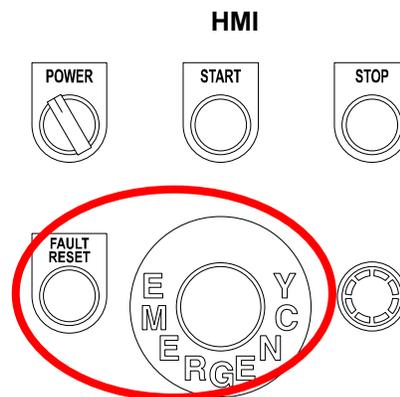


**WARNING:** Failure to investigate and address the cause of the E-Stop alert can result in serious injury or equipment damage.



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

3. Slightly turn the E-Stop Button on the HMI counterclockwise.

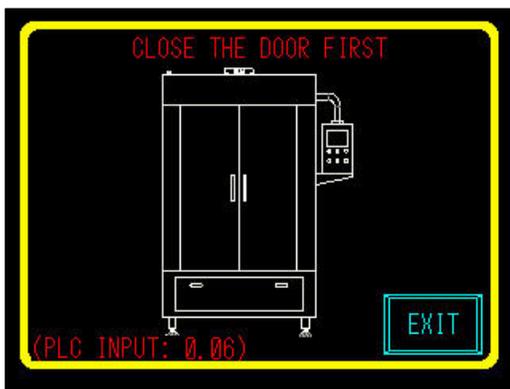


4. Press the Fault Reset Button on the HMI.
5. Allow the Cutter Blades to reset to their “home” position.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Close Door



AFM-4510009-00398-01

### Alarm Meaning:

The Front Doors of the LX-350 are open. Because this is a safety hazard, the LX-350 should not be operated with the doors open.



**WARNING:** Having the Front Doors of the LX-350 open during operation can increase the possibility of a severe cut and can also result in surrounding air currents impacting the accuracy of label application.

### To Resolve the Issue:

1. Close the Front Doors.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Cutter Find Home



AFM-4510009-00401-01

### Alarm Meaning:

The Cutter Home Position Sensor has not detected a Cutter Blade passing by it.

### To Resolve the Issue

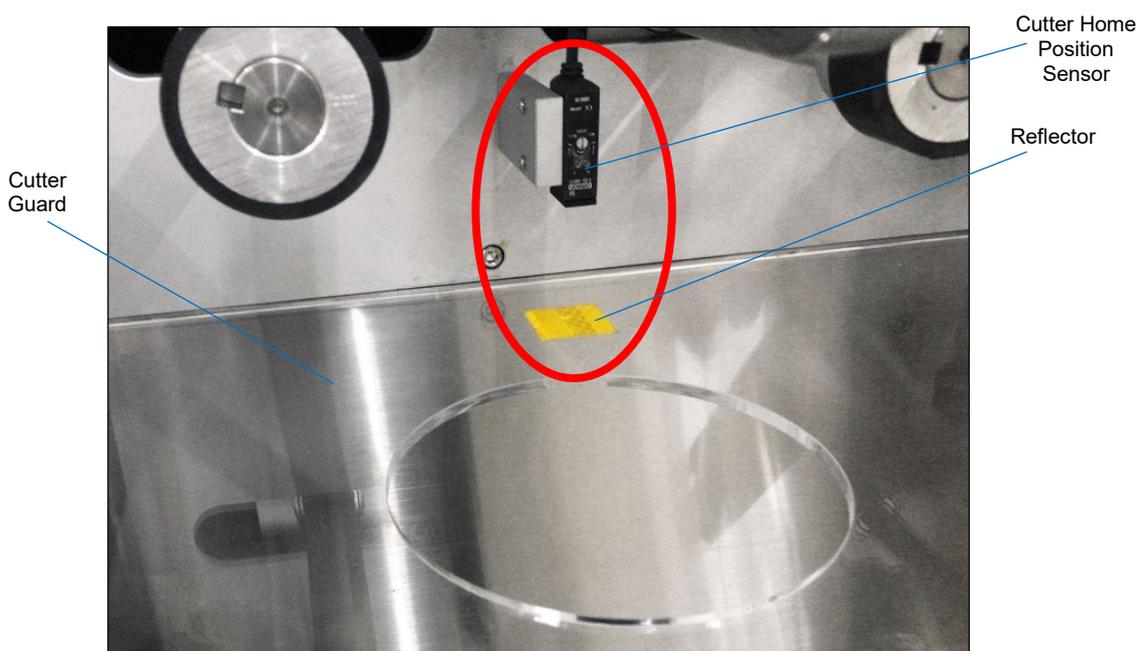
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Verify that the Cutter Guard is securely installed with the Reflector positioned directly below the Cutter Home Position Sensor.

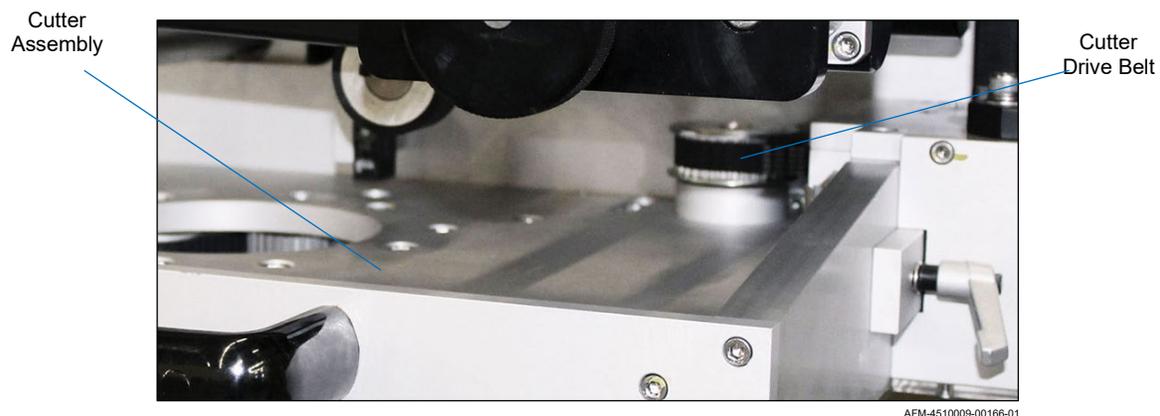
### Correct Reflector Position



AFM-4510009-00467-01

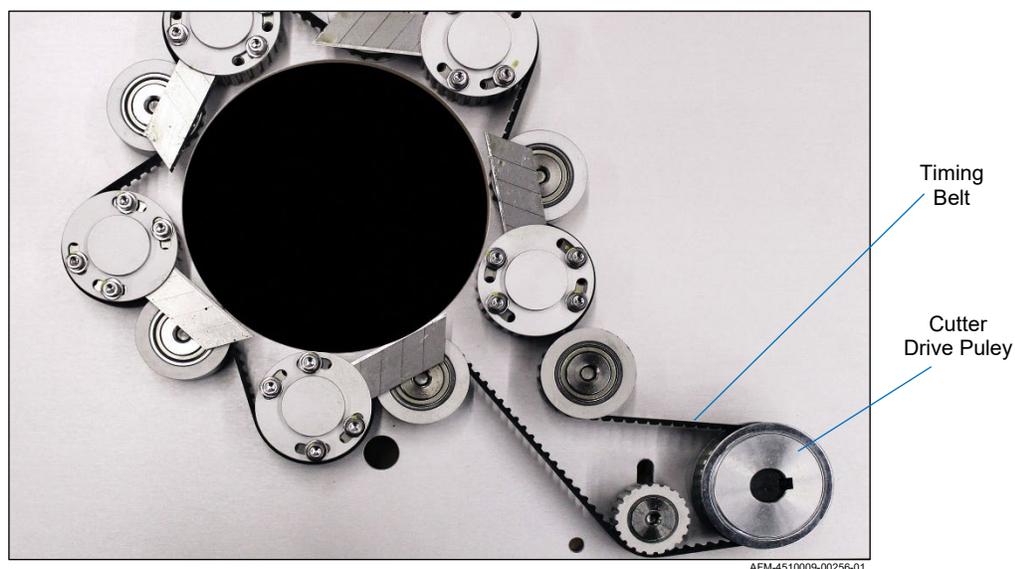
3. Verify that the Cutter Drive Belt is not broken.

### Checking the Cutter Drive Belt



4. Look up at the Cutter Assembly from below to verify that the Timing Belt is not broken.

### Underside of Cutter Assembly



5. Power up the system, following your company's lockout/tagout procedures.
6. Verify that the Cutter Servo Motor rotates the Cutter Drive Pulley while searching for the Cutter home position.

#### To Resume Labeling:

With the issue resolved, select **Exit**. Verify that the Cutter home position has been found before resuming labeling.

## Overload Trip



AFM-4510009-00404-01

### Alarm Meaning:

One or more Thermal Overloads has tripped.

### To Resolve the Issue:

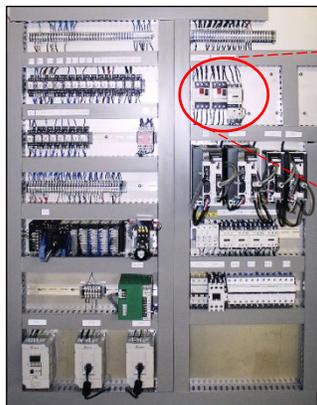
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



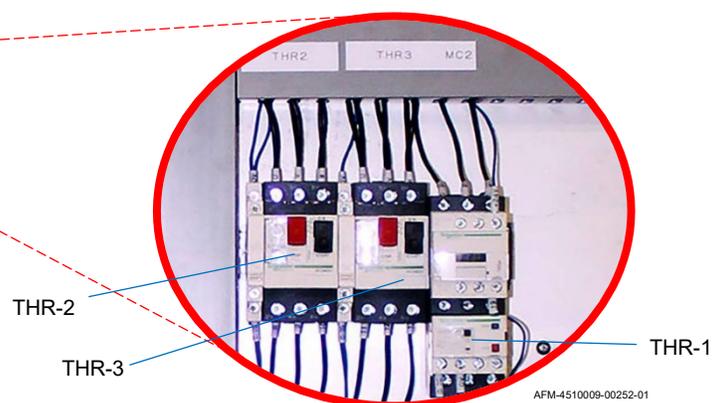
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Back Doors of the LX-350 and check THR-1, THR-2 and THR-3.
3. Reset the tripped Overload by pressing the Reset Button on the Overload.
4. Power up the system, following your company’s lockout/tagout procedures.
5. If the alarm repeats, contact your AFM distributor for guidance before proceeding.

### Locating THR-1, THR-2 and THR-3



AFM-4510009-00178-01

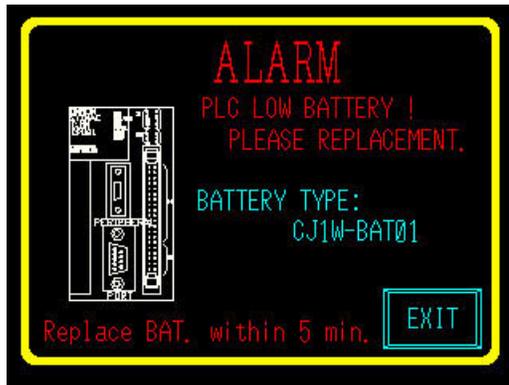


AFM-4510009-00252-01

### To Resume Labeling:

With the issue resolved, select **Exit**.

## PLC Low Battery



AFM-4510009-00405-01

### Alarm Meaning:

The PLC Battery is low and needs to be replaced before continuing.

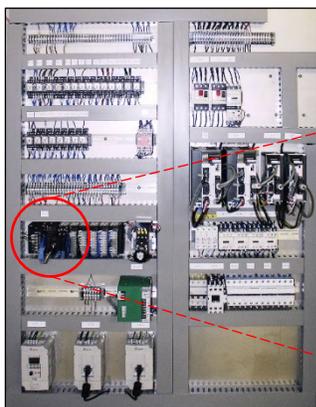
### To Resolve the Issue:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Rear Doors of the LX-350, locate the PLC Battery Housing.
3. Lift the Cover of the PLC Battery Housing and pull out the PLC Battery.

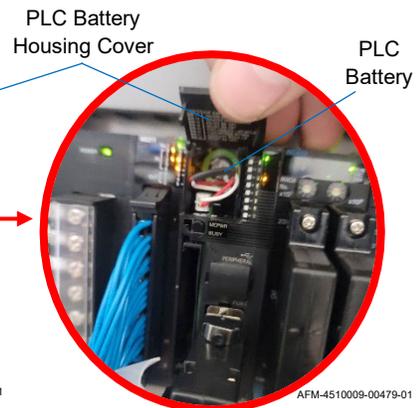


AFM-4510009-00178-01

### Locating the PLC Battery



AFM-4510009-00478-01



AFM-4510009-00479-01

4. Install a new PLC Battery (P/N 4504337).
5. With the new Battery properly installed, power up the system, following your company’s lockout/tagout procedures.
6. Dispose of the old battery properly.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Mandrel Support



### Alarm Meaning:

The Mandrel has slipped down out of the Support Wheels and Film Drive Wheels.

AFM-4510009-00409-01

### To Resolve the Issue:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see “Removing the Mandrel” on page 195).
3. Check the Mandrel for damage caused by the Cutter Assembly or by the fall. If any damage is detected, contact your authorized AFM distributor or AFM Support.



**WARNING:** Do not attempt to use a damaged Mandrel. Doing so can create a safety hazard, cause labeling problems, damage the system, and void the warranty.

4. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).
5. Check for and replace any broken Cutter Blades (see “Replacing the Cutter Blades” on page 227).



**ATTENTION:** Do not operate the system if any Cutter Blades are broken or damaged. Doing so can result in labeling problems.

6. Confirm that the label film is within specifications. Do not use undersized/oversized film.
7. After replacing any damaged Cutter Blades, reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page 195).
8. After addressing any damage to the Mandrel, install an undamaged Mandrel (see “Installing the Mandrel” on page 197).
9. Thread the film over the Mandrel (see end section of “Threading Film Through the LX-350” on page 176).
10. Verify that there is the correct amount of tension between the Support Wheels and the Mandrel Bearings. The Support Wheels should touch the Mandrel Bearings just enough to steadily and reliably hold the Mandrel in position.
11. Verify that there is the correct amount of tension between the Film Drive Wheels and the Mandrel Bearings. The Film Drive Wheels should touch the Mandrel Bearings just enough to consistently advance the film down the Mandrel.

**VIDEO: Film and Idler Wheel Adjustments**

(Video 3) - TRT: 4:37

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=6nw3g6Fmh8I&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=3>

Or scan the QR code at right using the camera app on your mobile device.



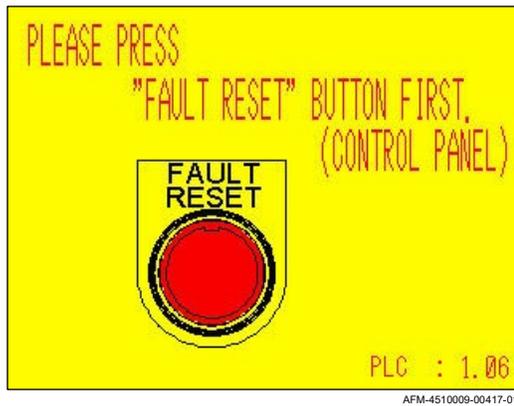
AFM-4510009-00530-01

12. Power up the system, following your company's lockout/tagout procedures.
13. Perform any testing needed (see "Using Recipes and Testing" on page 157).

**To Resume Labeling:**

With the issue resolved, select **Exit**.

## Fault Reset



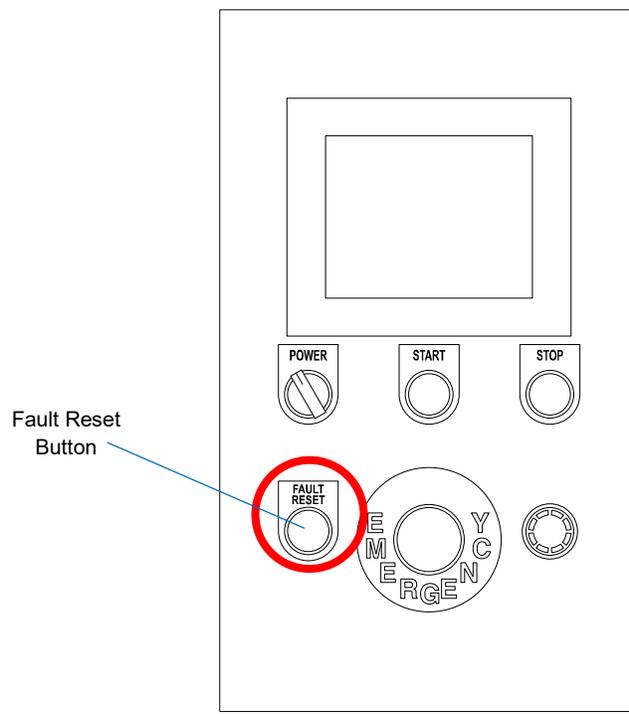
### Alarm Meaning:

The Fault Reset Button on the HMI needs to be pressed.

### To Resolve the Issue:

1. Press the Fault Reset Button.

### HMI



### To Resume Labeling:

With the issue resolved, select **Exit**.

## Film Supply Device Connect



### Alarm Meaning:

The UR-2 is not connected to the LX-350.

### To Resolve the Issue:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).

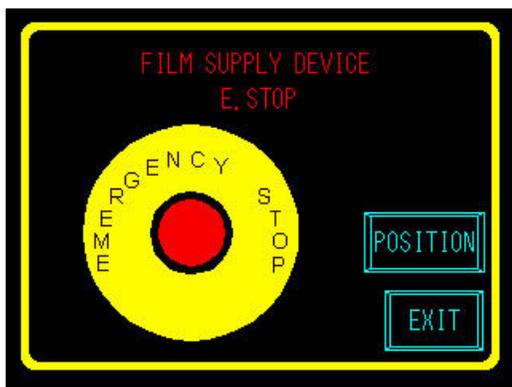
	<b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.
---	---

2. Check that the Unwind Cable is firmly connected to the UR-2, and that its 16-pin connector is firmly connected to the top of the LX-350.
3. Secure any loose connections discovered.
4. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Film Supply Device E-Stop



### Alarm Meaning:

The E-Stop Button on the UR-2 has been pressed.

### To Resolve the Issue:

1. Address the situation that caused the E-Stop Button to be pushed in the first place. If doing so requires work near parts that can move, follow your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18) for shutdown and startup.

	<b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.
---	---

2. Pull out the UR-2's E-Stop Button and slightly turn it counterclockwise.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Film Supply Device E-Stop 2



### Alarm Meaning:

There may be a film jam on the UR-2 or it may be unwinding too slowly.

### To Resolve the Issue:

1. Check the UR-2 for any film jams and untangle them. If doing so requires work near parts that can move, follow your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18) for shutdown and startup.

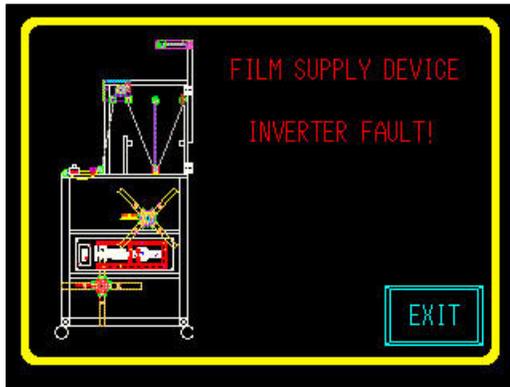
	<p><b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.</p>
--	--

2. Pull out the UR-2's E-Stop Button and slightly turn it counterclockwise.
3. Confirm that the unwind speed matches the labeling speed of the LX-350.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Film Supply Device Inverter Fault



AFM-4510009-00423-01

### Alarm Meaning:

INV-1 Inverter in the UR-2 has generated a fault code.

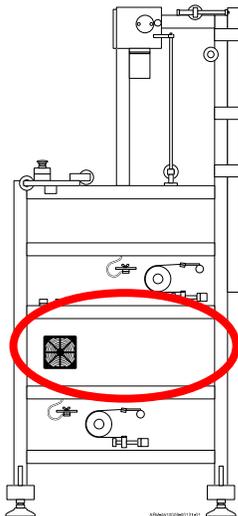
### To Resolve the Issue:

1. Refer to the VFD manual included with the LX-350 to determine what the fault is.
2. Contact your AFM distributor for help resolving the fault.
3. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

4. Follow directions from the AFM distributor. To access INV 1 in the UR-2, remove the Outer Cover of the Motor by removing the Screws that hold it in place.



AFM-4510009-00257-01

### Removing the Outer Cover of the UR-2 Motor

Outer  
Cover



AFM-4510009-00257-01

5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Film Empty



AFM-4510009-00421-01

### Alarm Meaning:

The selected Film Spool on the UR-2 is empty.

### To Resolve the Issue:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).

	<b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.
--	---

2. Load a full Roll of label film on one of the UR-2’s Film Spools and thread the film through the system. (see “Installing a Film Roll on the UR-2” on page 173 and “Threading Film Through the LX-350” on page 176).

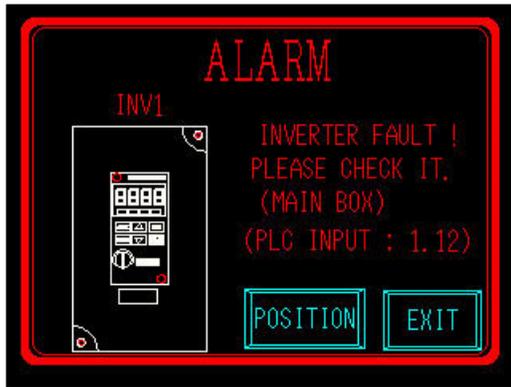
<b>NOTE:</b> The need to thread label film through the entire system can be avoided in future by more closely monitoring the film supply and splicing the spare Roll into the film path when the current Film Roll runs low (see “Switching Film Rolls” on page 182).
---

3. Power up the system, following your company’s lockout/tagout procedures.
4. Perform any testing needed (see “Using Recipes and Testing” on page 157).

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Inverter Fault



AFM-4510009-00442-01

### Alarm Meaning:

The INV-1 Inverter in the LX-350 has generated a fault code.

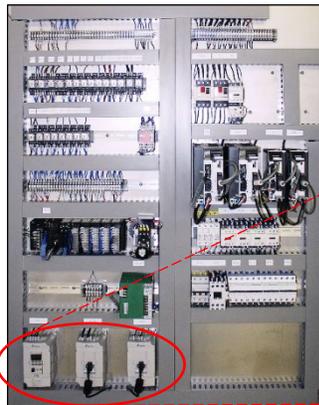
### To Resolve the Issue:

1. Contact your AFM distributor for help resolving the fault.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

3. Open the Read Doors of the LX-350 and locate INV-1.
4. Follow directions from the AFM distributor.



AFM-4510009-00178-01

### Locating INV-1



AFM-4510009-00205-01

5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Feed Servo Fault



AFM-4510009-00443-01

### Alarm Meaning:

DR-1 (Feed Servo Drive) in the LX-350 has generated a fault code.

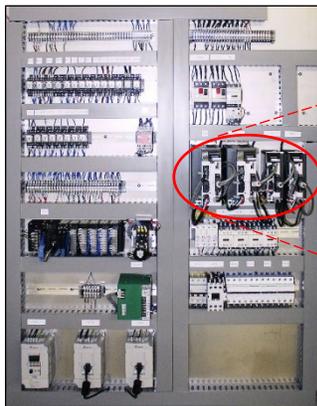
### To Resolve the Issue:

1. Contact your AFM distributor for help resolving the fault.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

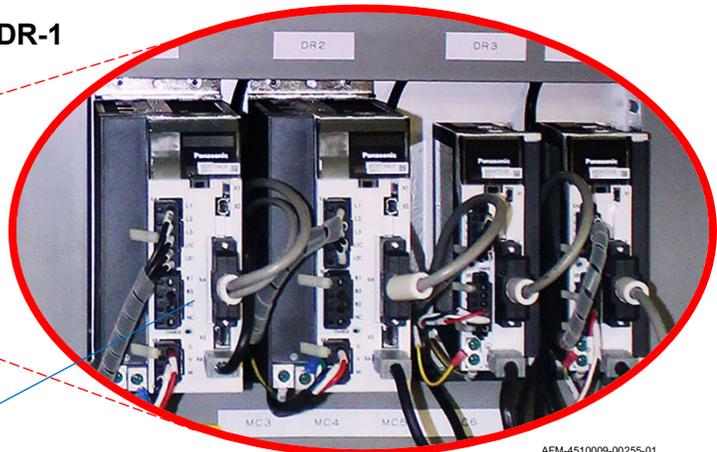
3. Open the Read Doors of the LX-350 and locate DR 1.



AFM-4510009-00178-01

### Locating DR-1

DR-1



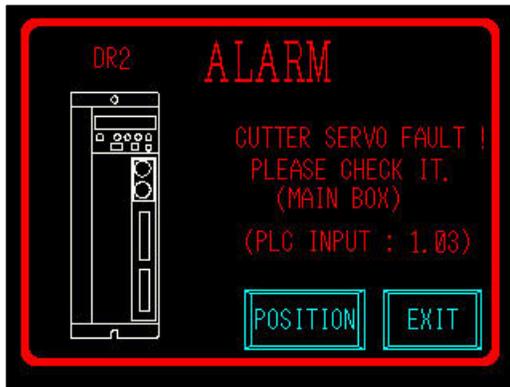
AFM-4510009-00255-01

4. Follow directions from the AFM distributor.
5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Cutter Servo Fault



AFM-4510009-00444-01

### Alarm Meaning:

DR-2 (Cutter Servo Drive) in the LX-350 has generated a fault code.

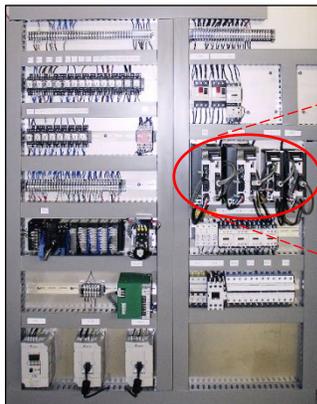
### To Resolve the Issue:

1. Contact your AFM distributor for help resolving the fault.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

3. Open the Read Doors of the LX-350 and locate DR 2.



AFM-4510009-00178-01

### Locating DR-2



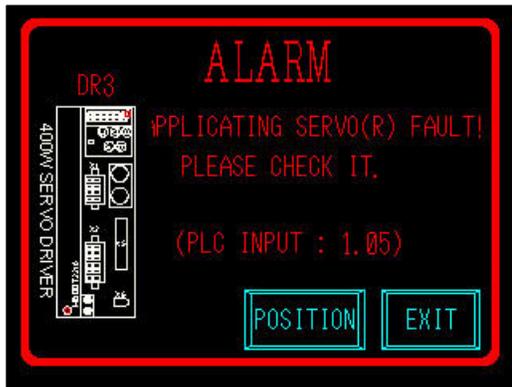
AFM-4510009-00255-01

4. Follow directions from the AFM distributor.
5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Applicating Servo (R) Fault Alarm



AFM-4510009-00445-01

### Alarm Meaning:

DR-3 (Right Applicating Servo Drive) in the LX-350 has generated a fault code.

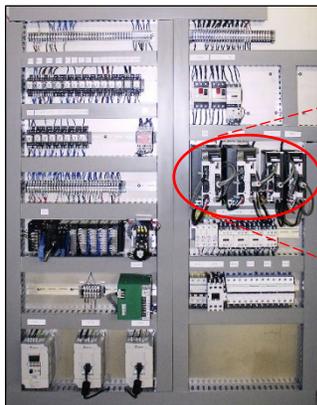
### To Resolve the Issue:

1. Contact your AFM distributor for help resolving the fault.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



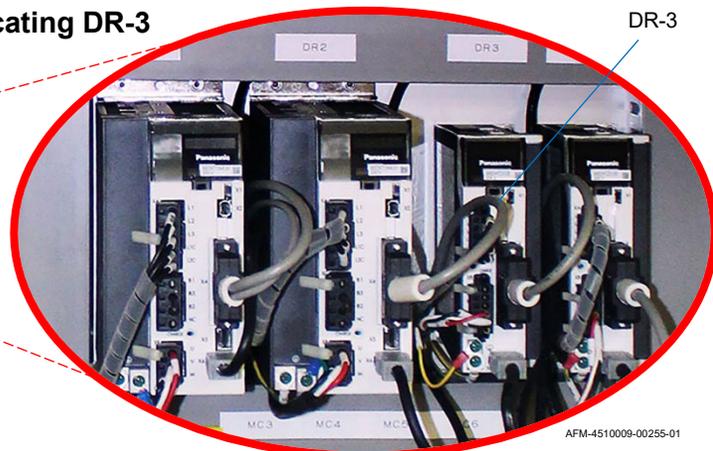
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

3. Open the Read Doors of the LX-350 and locate DR 3.



AFM-4510009-00178-01

### Locating DR-3



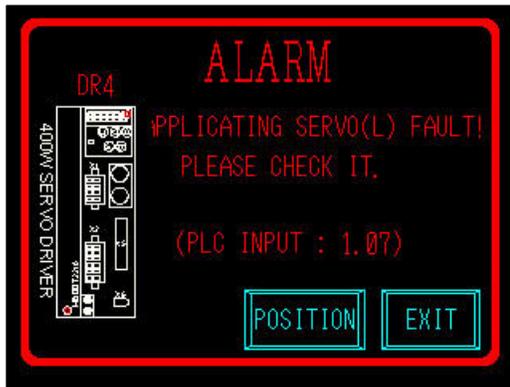
AFM-4510009-00255-01

4. Follow directions from the AFM distributor.
5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## Applicating Servo (L) Fault Alarm



AFM-4510009-00445-01

### Alarm Meaning:

DR-4 (Left Applicating Servo Drive) in the LX-350 has generated a fault code.

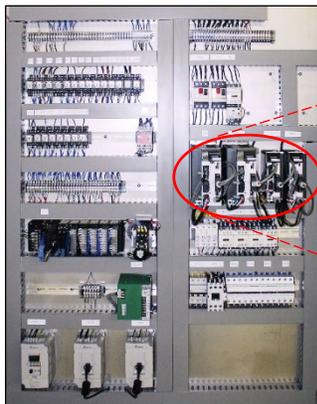
### To Resolve the Issue:

1. Contact your AFM distributor for help resolving the fault.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



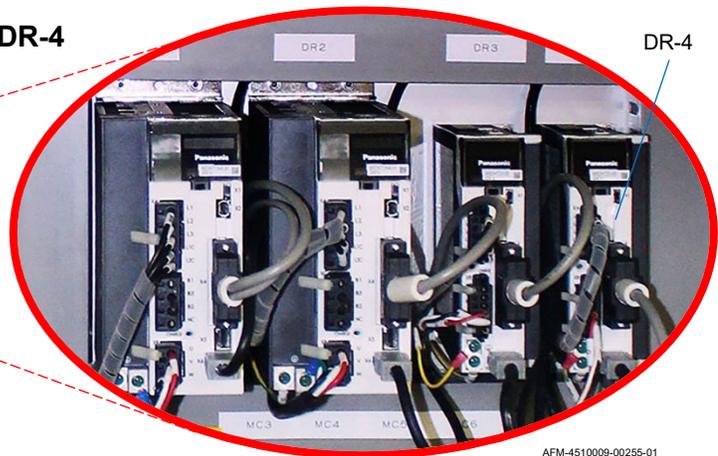
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

3. Open the Read Doors of the LX-350 and locate DR 4.



AFM-4510009-00178-01

### Locating DR-4



AFM-4510009-00255-01

4. Follow directions from the AFM distributor.
5. Power up the system, following your company’s lockout/tagout procedures.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## E-Stop



AFM-4510009-00397-01

### Alarm Meaning:

The E-Stop Button on the HMI has been pressed.

### To Resolve the Issue:

1. Address the situation that caused the E-Stop Button to be pushed in the first place. If doing so requires work near parts that can move, follow your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18) for shutdown and startup.

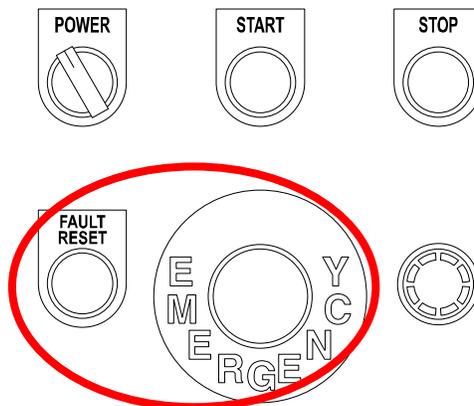


**WARNING:** Failure to investigate and address the cause of the E-Stop alert can result in serious injury or equipment damage.



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

### HMI



2. Slightly turn the E-Stop Button counterclockwise.
3. Press the Fault Reset Button on the HMI.
4. Allow the Cutter Blades to reset to their "home" position.

### To Resume Labeling:

With the issue resolved, select **Exit**.

## H-Perf Device Home



### Alarm Meaning:

This alarm is only relevant when using a T-Perforator (see “T-Perforator” on page 27). It indicates that the Cutter Home Position Sensor has not detected movement of the Perforator.

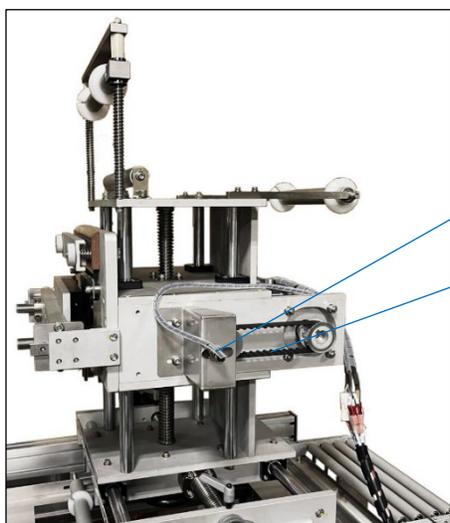
### To Resolve the Issue:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment including the T-Perforator, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Verify that the Sensor is connected to its Cable.
3. Verify that the Drive Belt of the H-Perf Device is not broken.
4. Power up the system, following your company’s lockout/tagout procedures.
5. Verify that the Perforator Servo Motor rotates while searching for home.



### T-Perforator

Sensor  
Drive Belt  
Servo Motor



### To Resume Labeling:

With the issue resolved, select **Exit**.

## Printing Position Adjustment



AFM-4510009-00450-01

### Alarm Meaning:

The Print-Reading Sensor is not detecting the cut mark where it should be in the label film.



AFM-4510009-00321-01

### To Resolve the Issue:

1. On **Manual Screen 1**, press “1 Cycle” several times to advance the label film until the cut is being made at the cut mark and proper registration is achieved. If problems persist, try each of the steps below. After each step, repeat Step 1.
2. On **Setting Screen 1**, verify that the “Cut Length” for the recipe is correct for one label (see “Using Recipes and Testing” on page 157).
3. Verify that the desired “Cut Length” is within the acceptable range for the LX-350 (40 – 250 mm).
4. Verify the correct Mode and Mask Length in the Print Scan Mode Selection Screens:
  - a. Go to **Other Screen** >> Parameter Setting >> Next Page >> 11 Print Scan Mode Selection Screens.
  - b. Select details for “Mode 2” and verify that the Mask Length is as large as or slightly larger than the (non-cut-area) transparent part of the label design.

**VIDEO: Print Scan Mode, Clear Area Jump**

(Video 13) - TRT: 1:14

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=dOATg1xjSOq&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=13>

Or scan the QR code at right using the camera app on your mobile device.



AFM-4510009-00530-01

5. Clean the Fibers of the Print-Reading Sensor (see “Cleaning the Print Reading Sensor ” on page 214).
6. Check that the Film Drive Wheels are not too tight against the Film Drive Bearings (impairing the film’s ability to move through easily), or that the Film Drive Wheels are not too far from the Applicator Bearings (preventing them from advancing the film with precision). If needed, adjust the position of the Film Drive Wheels (see “Film Drive Wheels: Unlocking, Adjusting and Locking” on page 202).

**VIDEO: Film and Idler Wheel Adjustments**

(Video 3) - TRT: 4:37

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=6nw3g6Fmh8I&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=3>

Or scan the QR code at right using the camera app on your mobile device.



AFM-4510009-00530-01

7. Check for a film jam. Starting at the bottom of the Mandrel, check the entire length of the film path for kinks, wrinkles, tangles, twisting, obstructions, unusual wear, etc. and correct any issues found. If doing so requires work near parts that can move, follow your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18) for shutdown and startup.



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

8. If problems persist, adjust the sensitivity of the Print-Reading Sensor (see “Adjusting the Print-Reading Sensor’s Sensitivity” on page 215).

**To Resume Labeling:**

With the issue resolved, select **Exit**.

## Print Signal in Mask Area



### Alarm Meaning:

Can happen when there are clear areas within the label design itself in addition to the (clear) cut marks. The alarm alerts that the label film has gotten so far out of registration that the LX-350 is mistaking the (clear) cut marks for clear areas that have been masked and is seeing those masked clear areas as the cut marks.

### To Resolve the Issue:

1. On **Manual Screen 1**, press “1 Cycle” several times to advance the label film until the cut is being made at the cut mark and proper registration is achieved. If problems persist, try each of the steps below. After each step, repeat Step 1.
2. On **Setting Screen 1**, verify that the “Cut Length” for the recipe is correct for one label (see “Using Recipes and Testing” on page 157).
3. Verify that the desired “Cut Length” is within range for the LX-350 (40 – 250 mm).
4. Clean the Print-Reading Sensor (see “Cleaning the Print Reading Sensor ” on page 214).
5. Check that the Film Drive Wheels are not too tight against the Film Drive Bearings (impairing the passage of the film), or too far from the Film Drive Bearings (preventing them from advancing the film with precision). If needed, adjust the position of the Film Drive Wheels (see “Film Drive Wheels: Unlocking, Adjusting and Locking” on page 202).

#### VIDEO: Film and Idler Wheel Adjustments

(Video 3) - TRT: 4:37

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=6nw3g6Fmh8I&list=PLU8tRvNk7d6uJKBqN3XvJOTIfP6GUeaqL&index=3>

Or scan the QR code at right using the camera app on your mobile device.



6. Check for a film jam. Starting at the bottom of the Mandrel, check the entire length of the film path for kinks, wrinkles, tangles, obstructions, unusual wear, etc. and correct any issues found. If doing so requires work near parts that can move, follow your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18) for shutdown and startup.



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

7. If problems persist, adjust the sensitivity of the Print-Reading Sensor (see “Adjusting the Print-Reading Sensor’s Sensitivity” on page 215).
8. Verify the correct Mode and Mask Length in the Print Scan Mode Selection Screens:
  - a. Go to **Other Screen** >> Parameter Setting >> Next Page >> 11 Print Scan Mode Selection Screens.

- b. Select details for “Mode 2” and verify that the Mask Length is as large as or slightly larger than the (non-cut-area) transparent part of the label design.

<p><b>VIDEO: Print Scan Mode, Clear Area Jump</b></p> <p>(Video 13) - TRT: 1:14</p> <p>To see a video of this procedure, click this link:</p> <p><a href="https://www.youtube.com/watch?v=dOATg1xjSOg&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=13">https://www.youtube.com/watch?v=dOATg1xjSOg&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=13</a></p> <p>Or scan the QR code at right using the camera app on your mobile device.</p>	 <p>AFM-4510009-00530-01</p>
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**To Resume Labeling:**

With the issue resolved, select **Exit**.

## No Catch Mark Alarm



### Alarm Meaning:

The Print-Reading Sensor did not detect a registration mark or clear gap in the film. This means that the label did not advance far enough during the drive cycle. The most likely cause for this is the Film Drive Wheels slipping. It can also be caused by film that is too tight (incorrect diameter for the Mandrel being used) or excess back tension in the film path.

### To Resolve the Issue:

1. Verify that the Film Drive Wheels are firmly against the Mandrel (see “Film Drive Wheel Adjusts (Red)” on page 146) and correct if needed.
2. Verify that the layflat width of the label film is within specifications for the Mandrel being used.
3. Check the label path for anything that could be causing excess tension and correct any issues found. If doing so requires work near parts that can move, follow your company's lockout/tagout procedures (see “Lockout/Tagout” on page 18) for shutdown and startup.

	<p><b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.</p>
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### To Resume Labeling:

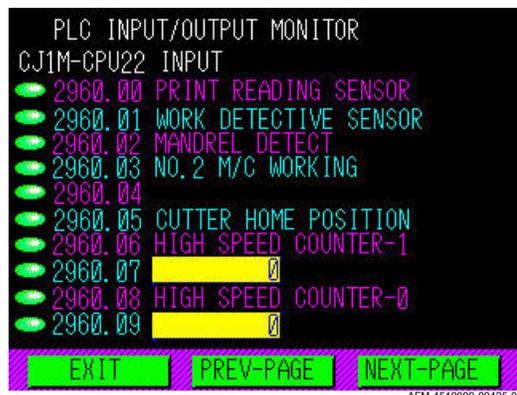
Resolve the issue and select **Exit**.

## PLC I/O Monitor Screens

There are several **PLC I/O Monitor Screens** for troubleshooting with the assistance of your AFM distributor. Each screen shows the status and function of numerous inputs and outputs on the Programmable Logic Controller (PLC). To scroll through the **PLC I/O Monitor Screens**, select **Next-Page** to go forward and **Prev-Page** to go backward.

### 2960.00 – 2960.09: CJ1M-CPU22 Input Screen

Red indicates “Off.” Green indicates “On.”



Number	Item	Function
2960.00	<b>PRINT READING SENSOR</b>	Scans through the Mandrel Fin Slot and senses transparent areas in label film to trigger labeling.
2960.01	<b>WORK DETECTIVE SENSOR</b>	Scans the Conveyor to sense oncoming bottles.
2960.02	<b>MANDREL DETECT</b>	Senses whether a Mandrel is properly in position.
2960.03	<b>NO. 2 M/C WORKING</b>	Main Contactor (turns machine on and off)
2960.04		
2960.05	<b>CUTTER HOME POSITION</b>	Cutter Home Position Sensor input
2960.06	<b>HIGH SPEED COUNTER-1</b>	Servo Control Input (see “LX-350: Film Drive Servo Circuit” on page <a href="#">272</a> ).
2960.07		
2960.08	<b>HIGH SPEED COUNTER-0</b>	Servo Control Input (see “LX-350: Film Drive Servo Circuit” on page <a href="#">272</a> ).
2960.09		

## 2961.00 – 2961.05: CJ1M-CPU22 Output Screen

Red indicates “Off.” Green indicates “On.”



Number	Item	Function
2961.00		
2961.01		
2961.02		
2961.03		
2961.04	<b>STOP FEED-PLS3</b>	Servo Control Input (see “LX-350: Film Drive Servo Circuit” on page 272).
2961.05	<b>STOP FEED-CL</b>	Servo Control Input (see “LX-350: Film Drive Servo Circuit” on page 272).

## 0.00 – 0.09: CJ1W-ID211 Input Screen 1

Red indicates “Off.” Green indicates “On.”



Number	Item	Function
0.00	<b>WORKING SW/ON 1a</b>	HMI Working Switch is on.
0.01	<b>NO. 2 M/C EMERGENCY STOP</b>	State of Master Contactor for Emergency Stop (on or off).
0.02	<b>WORKING SW/OFF 1b</b>	HMI Working Switch is off.
0.03	<b>NO. 2 M/C TIMING SCREW BUTTON</b>	State of Master Contactor for Timing Screw Button (on or off).
0.04	<b>E. STOP (PANEL)</b>	Safety Feature: Emergency Stop Button on HMI shuts down system immediately in emergencies.
0.05	<b>CONTROL LINK-1(FILM FRAME)</b>	Communication connection between Unwind and LX-350.
0.06	<b>SAFETY DOOR (FRONT)</b>	Safety Feature: Front Doors must be closed for LX-350 to operate.
0.07	<b>CONTROL LINK-2(FILM FRAME)</b>	Communication connection between Unwind and LX-350.
0.08	<b>AUX-300 USE</b>	N/A
0.09	<b>OVER CURRENT RELAY TRIP</b>	State of Over Current Relay activation.

## 0.10 – 0.15: CJ1W-ID211 Input Screen 2

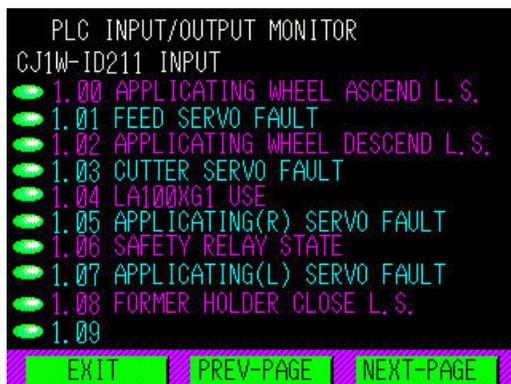
Red indicates “Off.” Green indicates “On.”



Number	Item	Function
0.10	<b>APPLICATION FAIL DET.</b>	An application fail is triggered when the Application Fail Sensor sees a film jam.
0.11	<b>TIMING SCREW SENSOR (OPTION)</b>	Sensor used with the Timing Screw Assembly to detect when there is sufficient backpressure for the Timing Screw to work properly.
0.12	<b>HEAD HIGH L.S. (NC)</b>	State of Upper Limit Switch for Head Height.
0.13	<b>SCREW STOP (CONTROL LINK)</b>	State of external communications link with Timing Screw Assembly.
0.14	<b>HEAD LOW L.S. (NC)</b>	State of Lower Limit Switch for Head Height.
0.15	<b>EXTERNAL E. STOP (CONTROL LINK)</b>	State of connection between LX350 Safety Circuit and Emergency Stop on external machine.

## 1.00 – 1.09: CJ1W-ID211 Input Screen 1

Red indicates “Off.” Green indicates “On.”

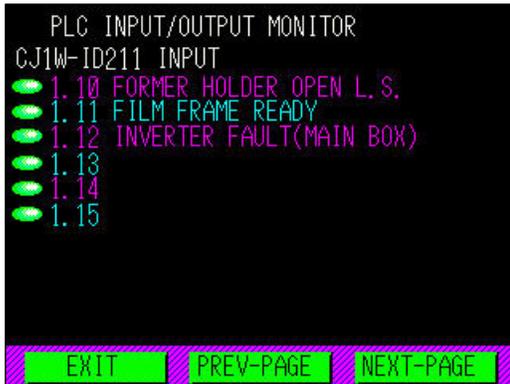


AFM-4510009-00429-01

Number	Item	Function
1.00	<b>APPLICATING WHEEL ASCEND L.S.</b>	State of Upper Limit Switch for Applicator Assembly.
1.01	<b>FEED SERVO FAULT</b>	Fault with Feed Servo.
1.02	<b>APPLICATING WHEEL DESCEND L.S.</b>	State of Lower Limit Switch for Applicator Assembly.
1.03	<b>CUTTER SERVO FAULT</b>	Fault with Cutter Servo.
1.04	<b>LA100XG1 USE</b>	Detection of presence of Unwind System.
1.05	<b>APPLICATING(R) SERVO FAULT</b>	Fault with Right Applying Servo.
1.06	<b>SAFETY RELAY</b>	Activation state of Safety Relay.
1.07	<b>APPLICATING(L) SERVO FAULT</b>	Fault with Left Applying Servo.
1.08	<b>FORMER HOLDER CLOSE L.S.</b>	State of “Close” Limit Switch for Film Drive Wheels.
1.09		

### 1.10 – 1.15: CJ1W-ID211 Input Screen 2

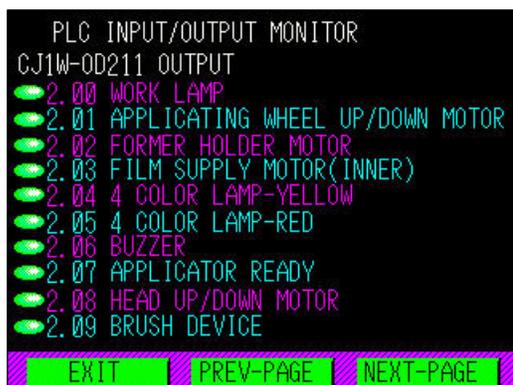
Red indicates “Off.” Green indicates “On.”



Number	Item	Function
1.10	<b>FORMER HOLDER OPEN L.S.</b>	State of “Open” Limit Switch for Film Drive Wheels.
1.11	<b>FILM FRAME READY</b>	Communication connection between Unwind and LX-350.
1.12	<b>INVERTER FAULT (MAIN BOX)</b>	Fault with LX-350 Inverter.
1.13		
1.14		
1.15		

## 2.00 – 2.09: CJ1W-ID211 Output Screen 1

Red indicates “Off.” Green indicates “On.”

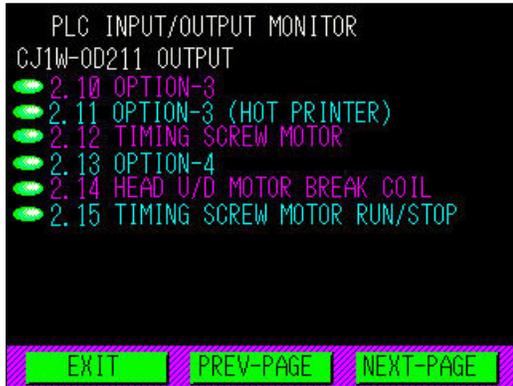


AFM-4510009-00431-01

Number	Item	Function
2.00	<b>WORK LAMP</b>	State of PLC output to green Work Button Lamp.
2.01	<b>APPLICATING WHEEL UP/DOWN MOTOR</b>	State of PLC output to Applying Wheel Up/Down Motor Relay.
2.02	<b>FORMER HOLDER MOTOR</b>	State of PLC output to Film Drive Wheel Adjustment Motor Relay.
2.03	<b>FILM SUPPLY MOTOR (INNER)</b>	N/A
2.04	<b>4 COLOR LAMP-YELLOW</b>	State of output to Yellow Lamp Relay for Alarm Beacon.
2.05	<b>4 COLOR LAMP-RED</b>	State of output to Red Lamp Relay for Alarm Beacon.
2.06	<b>BUZZER</b>	Safety Feature: Buzzer sounds to alert user to critical issues.
2.07	<b>APPLICATOR READY</b>	
2.08	<b>HEAD UP/DOWN MOTOR</b>	State of PLC output to Head Height Adjustment Motor Relay.
2.09	<b>BRUSH DEVICE</b>	State of PLC output to Brushdown Relay.

## 2.10 – 2.15: CJ1W-ID211 Output Screen 2

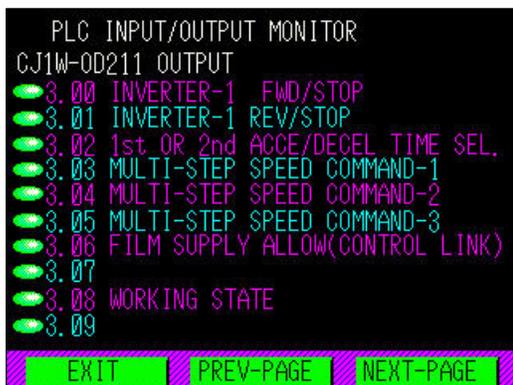
Red indicates “Off.” Green indicates “On.”



Number	Item	Function
2.10	<b>OPTION-2</b>	State of PLC output to optional device relay.
2.11	<b>OPTION-3 (HOT PRINTER)</b>	State of PLC output to optional device relay.
2.12	<b>TIMING SCREW MOTOR</b>	Powers the Timing Screw.
2.13	<b>OPTION-4</b>	State of PLC output to optional device relay.
2.14	<b>HEAD U/D MOTOR BREAK COIL</b>	State of PLC output to Motor Break Coil Relay.
2.15	<b>TIMING SCREW MOTOR RUN/STOP</b>	State of PLC output to Timing Screw Motor Relay.

### 3.00 – 3.09: CJ1W-OD211 Output Screen 1

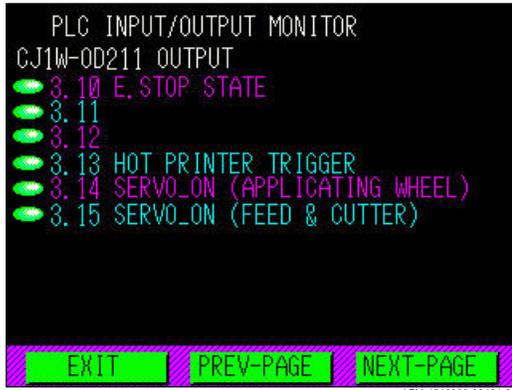
Red indicates “Off.” Green indicates “On.”



Number	Item	Function
3.00	<b>INVERTER-1 FWD/STOP</b>	State of PLC output to Inverter 1 Forward/Stop Relay.
3.01	<b>INVERTER-1 REV/STOP</b>	State of PLC output to Inverter 1 Reverse/Stop Relay.
3.02	<b>1<sup>st</sup> OR 2<sup>nd</sup> ACCE/DECEL TIME SEL.</b>	State of PLC output to 1 <sup>st</sup> or 2 <sup>nd</sup> Acceleration/Deceleration Time Relay.
3.03	<b>MULTI-STEP SPEED COMMAND-1</b>	State of PLC output to Mutli-Step Speed Command 1 Relay.
3.04	<b>MULTI-STEP SPEED COMMAND-2</b>	State of PLC output to Mutli-Step Speed Command 2 Relay.
3.05	<b>MULTI-STEP SPEED COMMAND-3</b>	State of PLC output to Mutli-Step Speed Command 3 Relay.
3.06	<b>FILM SUPPLY ALLOW (CONTROL LINK)</b>	State of PLC output to UR-2 Unwind Enable Relay.
3.07		
3.08	<b>WORKING STATE</b>	N/A
3.09		

### 3.10 – 3.15: CJ1W-OD211 Output Screen 2

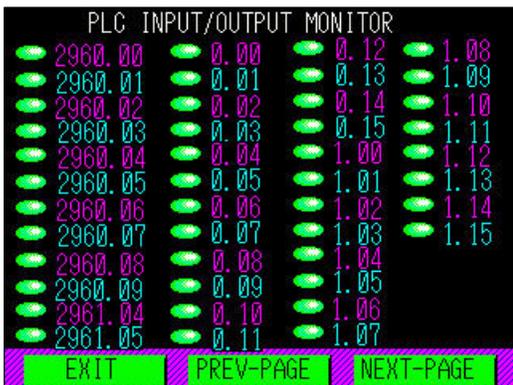
Red indicates “Off.” Green indicates “On.”



Number	Item	Function
3.10	<b>STOP STATE</b>	N/A
3.11		
3.12		
3.13	<b>HOT PRINTER TRIGGER</b>	State of PLC output to external Printer.
3.14	<b>SERVO_ON (APPLICATING WHEEL)</b>	State of PLC output to Applying Servo.
3.15	<b>SERVO_ON (FEED &amp; CUTTER)</b>	State of PLC output to Feed and Cutter Servo.

### PLC I/O Summary Screen 1

Red indicates "Off." Green indicates "On."

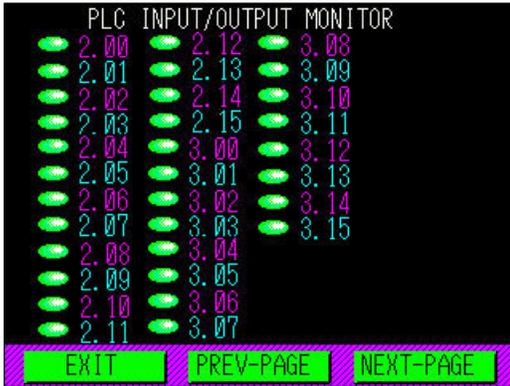


AFM-4510009-00435-01

Number	Details on Page	Number	Details on Page	Number	Details on Page	Number	Details on Page
2960.00	118	0.00	120	0.12	121	1.08	122
2960.01		0.01		0.13		1.09	
2960.02		0.02		0.14		1.10	
2960.03		0.03		0.15		1.11	
2960.04		0.04		1.00	122	1.12	123
2960.05		0.05		1.01		1.13	
2960.06		0.06		1.02		1.14	
2960.07		0.07		1.03		1.15	
2960.08		0.08		1.04			
2960.09	0.09	1.05					
2961.04	119	0.10	121	1.06			
2961.04		0.11		1.07			

## PLC I/O Summary Screen 2

Red indicates "Off." Green indicates "On."



AFM-4510009-00436-01

Number	Details on Page						
2.00	124	2.12	125	3.08	126		
2.01		2.13		3.09			
2.02		2.14		3.10	127		
2.03		2.15		3.11			
2.04		3.00	3.12				
2.05		3.01	3.13				
2.06		3.02	3.14				
2.07		3.03	3.15				
2.08		126	3.04				
2.09			3.05				
2.10	3.06						
2.11	3.07						

## Parameter Setting Screens

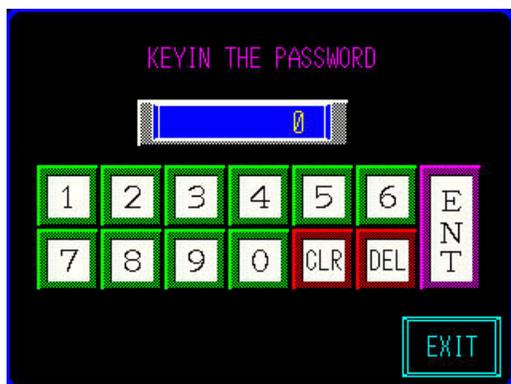
The **Parameter Setting Screens** are password-protected and are used to set advanced functions that affect performance. They are often set at the factory. Operator access is not recommended. If in doubt, please contact your AFM distributor. There are two main **Parameter Setting Screens**.



**WARNING:** Changing settings in the **Parameter Setting Screens** not only impacts performance, but if done by an untrained individual, it can potentially result in serious injury, damage the machine, and will void the warranty. If in doubt, contact your authorized AFM distributor.

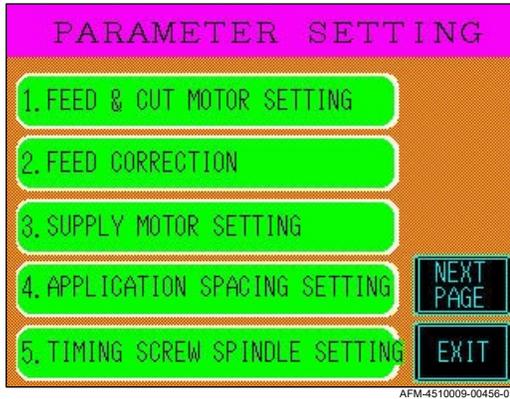
### Password Screen

To access the **Parameter Setting Screens**, first enter the password on the keypad. Press “Set” once the correct password has been entered.



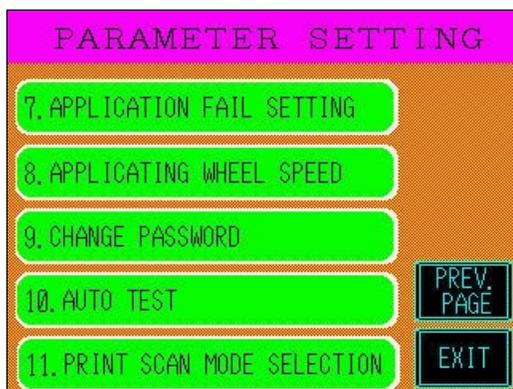
AFM-4510009-00437-01

## Parameter Setting Screen 1



- 1. Feed & Cut Motor Setting:**  
Accesses the **Feed & Cut Motor Setting Screen** (see page [131](#)).
- 2. Feed Correction:**  
Accesses the **Feed Correction Screen** (see page [133](#)).
- 3. Supply Motor Setting:**  
Accesses the **Supply Motor Setting Screen** (see page [134](#)).
- 4. Application Spacing Setting:**  
Accesses the **Application Spacing Setting Screen** (see page [135](#)).
- 5. Timing Screw Spindle Setting:**  
Accesses the **Timing Screw Spindle Setting Screen** (see page [136](#)).

## Parameter Setting Screen 2



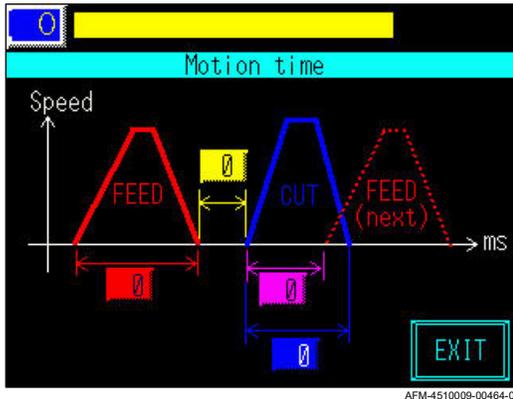
- 7. Application Fail Setting:**  
Accesses the **Application Fail Setting Screen** (see page [138](#)).
- 8. Applying Wheel Speed:**  
Accesses the **Applying Wheel Speed Screen** (see page [139](#)).
- 9. Change Password:**  
Accesses the **Change Password Screen** (see page [140](#)).
- 10. Auto Test:**  
Accesses the **Auto Test Screen** (see page [141](#)).
- 11. Print Scan Mode Selection:**  
Accesses the **Print Scan Mode Selection Screen** (see page [142](#)).

## (1) Feed & Cut Motor Setting Screen

Accessed from **Parameter Setting Screen 1**.



**WARNING:** Settings on the **Feed & Cut Motor Settings Screen** are normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.



### VIDEO: Feed Cut Parameter Settings

(Video 2) - TRT: 2:48

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=-QLt9Vb2Z2E&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=2>

Or scan the QR code at right using the camera app on your mobile device.



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The **Feed & Cut Motor Setting Screen** allows the user to adjust the time (in milliseconds) for the LX-350 to feed and cut a label. Any adjustments should be made during testing and will require some trial and error. To adjust any of the lengths of time, press the colored rectangle with the number and a keyboard will display enabling input of a new length of time:

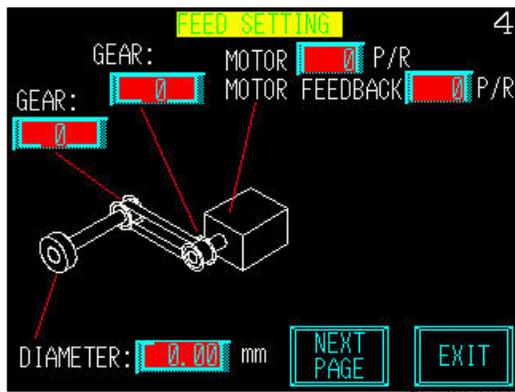
- “Feed” Field (red):**  
Length of time to feed one label’s length of film. A longer label will require a longer feed time (a good starting point is 200 ms). In general, it is ideal to have the slowest feed time possible to accomplish the overall production goals. Faster speeds will result in greater wear and tear on the machine, a greater likelihood of damage to labels from overly aggressive feeding, and a greater likelihood of misfires.
- “Pause” Field (yellow):**  
Length of time that the film is paused to prepare for cutting.
- “Cut” Field (blue):**  
Total length of time required for the Cutter Blades to cut the film. Cut time tends to remain fairly constant regardless of label length (a good starting point is 60 ms).
- “Feed (Next)” Field (purple):**  
Length of cut time before the next label’s length of film begins to feed. Note that this can begin while the current label is being cut.

## (2) Feed Correction

Accessed from **Parameter Setting Screen 1**.



**WARNING:** Settings on the **Feed Correction Screen** are normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.



The **Feed Correction Screen** is used to set/correct the length of film dispensed relative to the Film Drive Wheels' rotation.

To make the adjustment, push and hold "Feed" for a few seconds to feed about 100mm of film. Press "Cut." Measure the cut section of film. Enter this measurement into "Length" and press "Set."

## (3) Supply Motor Setting

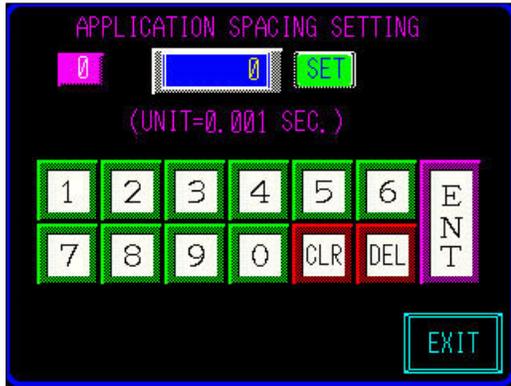
The LX-350 no longer uses a Supply Motor. This setting will be removed with the next software update.

#### (4) Application Spacing Setting

Accessed from **Parameter Setting Screen 1**.



**WARNING:** Settings on the **Application Spacing Setting Screen** are normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.



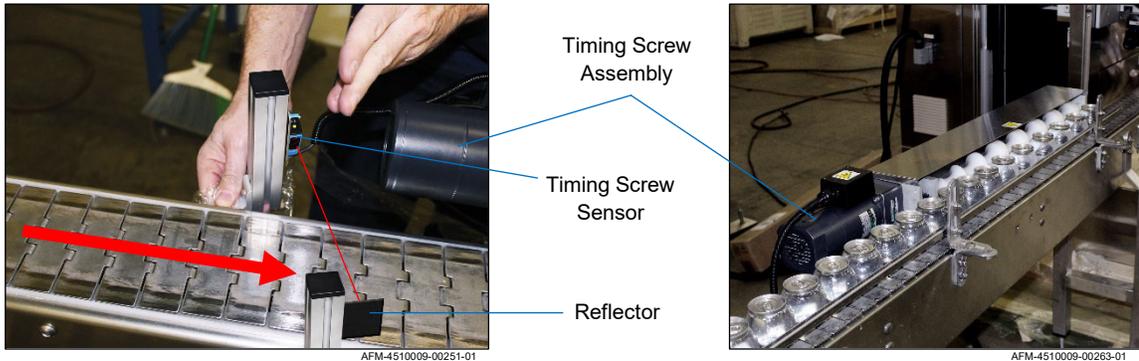
The **Application Spacing Setting Screen** allows the user to set the minimum length of time (in milliseconds) between bottles. If two bottles are closer together on the Conveyor belt than the assigned minimum time, the LX-350 will ignore the second bottle. This prevents a single bottle from triggering two label applications.

### (5) Timing Screw Spindle Setting

Accessed from **Parameter Setting Screen 1**.

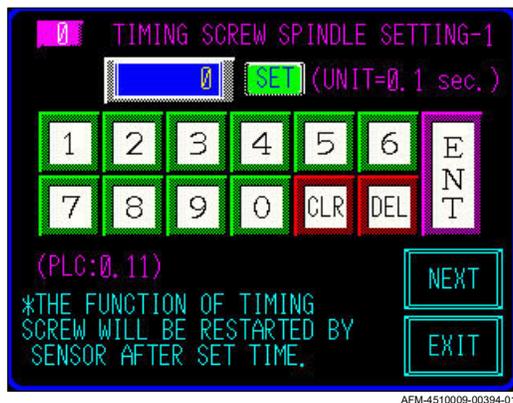
	<p><b>WARNING:</b> Settings on the <b>Timing Screw Spindle Setting Screens</b> are normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.</p>
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The **Timing Screw Spindle Setting Screens** allow the user to set what conditions on the Conveyor trigger the Timing Screw to turn on and off.

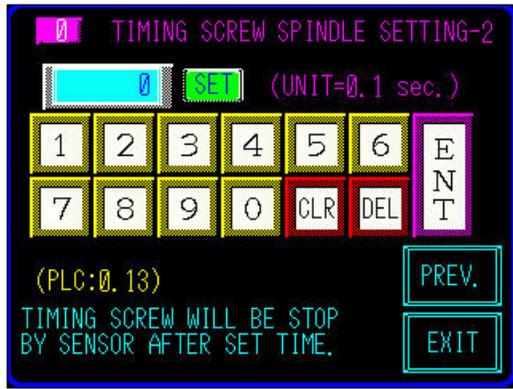


In order to feed bottles consistently into the LX-350, the Timing Screw needs a certain number of bottles lined up on the running Conveyor to cause sufficient back-pressure to push the bottles steadily through. The Timing Screw Sensor is mounted on the Conveyor upstream from the Timing Screw Assembly and detects bottles before they reach the Timing Screw. When enough bottles have lined up, the Timing Screw Sensor Triggers the Timing Screw to begin/resume turning and sending bottles through the LX-350.

#### **Timing Screw Spindle Setting Screen 1**



**Timing Screw Spindle Setting Screen 1** allows the user to set the amount of time (in tenths of a second) for the Timing Screw to turn on after the Timing Screw Sensor has detected bottles (a good starting point is 2 seconds). One or two bottles will be insufficient to trigger the Timing Screw on.

**Timing Screw Spindle Setting Screen 2**

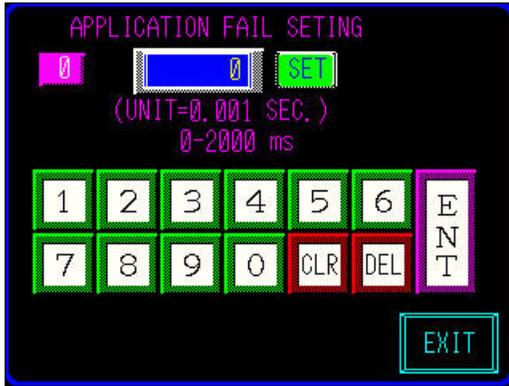
**Timing Screw Spindle Setting Screen 2** allows the user to set the amount of time (in tenths of a second) for the Timing Screw to turn off after the last bottle has passed the Timing Screw Sensor.

## (7) Application Fail Setting

Accessed from **Parameter Setting Screen 2**.



**WARNING:** Settings on the **Application Fail Setting Screen** is normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.



AFM-4510009-00399-01

### VIDEO: Application Fail Sensor

(Video 4) - TRT: 1:16

To see a video of this procedure, click this link:

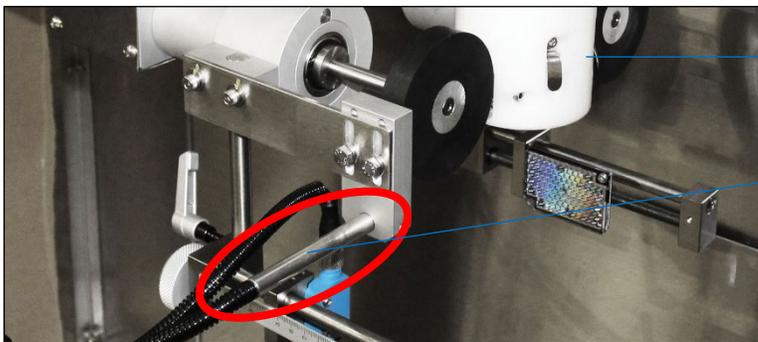
<https://www.youtube.com/watch?v=98frypBUVaM&list=PLU8tRvNk7d6uUKBqN3XvJOTifP6GUeaqL&index=4>

Or scan the QR code at right using the camera app on your mobile device.



AFM-4510009-00530-01

The Application Fail Sensor, inside the LX-350 Chassis near the bottom of the Mandrel, detects the label as it is applied to the passing bottle.



AFM-4510009-00167-01

If the Application Fail Sensor detects the presence of a label for longer than the amount of time that it should take for the label to go onto the bottle, it likely means that label film has become stuck and is hanging off the end of the Mandrel. If this happens, the Application Fail Sensor immediately stops the LX-350 and triggers an alarm message.

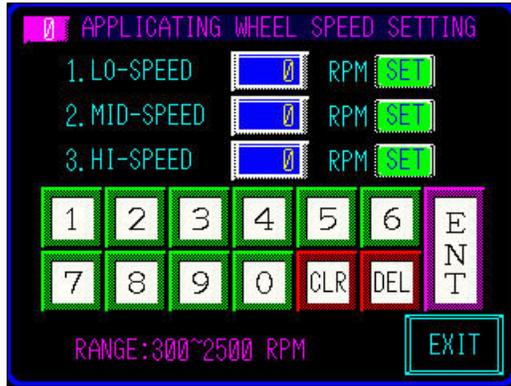
The **Application Fail Setting Screen** allows the user to set the length of time (in milliseconds) that the Application Fail Sensor should expect for a label to be applied to a bottle (for a short label, a time of 50 ms might be appropriate, while for a longer label, a time of 200 ms might be appropriate). Any time beyond that will trigger an alarm.

## (8) Applying Wheel Speed

Accessed from **Parameter Setting Screen 2**.

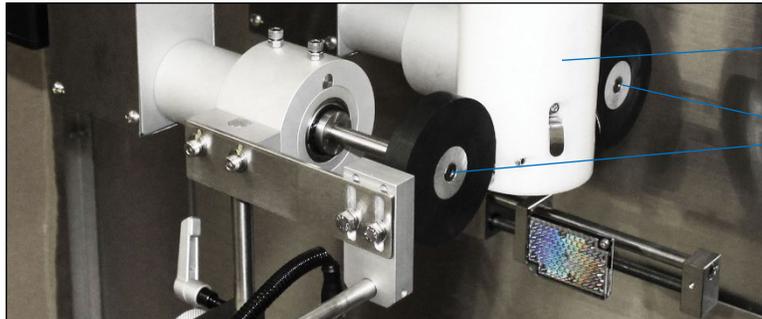


**WARNING:** Settings on the **Applying Wheel Speed Screen** is normally set at the factory and should not be changed by an untrained individual. If in doubt, contact your authorized AFM distributor.



AFM-4510009-00410-01

The Applicator Wheels, located near the bottom of the Mandrel, shoot the cut labels down onto the passing bottles.



AFM-4510009-00167-01

The **Applicator Wheel Speed Screen** enables the user to create three default settings (which will be accessible from the **Setting Screen**). These tell the LX-350 how quickly to turn the Applicator Wheels.

The range of any of those three settings can be between 300-2500 RPM. A slower speed would be appropriate for a longer label or a label that applies easily to the bottle because shooting such a label down too fast onto the bottle could cause film jams or cause the label to bounce back up at the Mandrel.

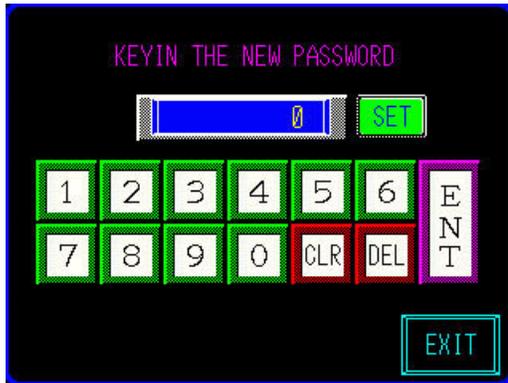
- **Lo-Speed:** Default is 1300 RPM.
- **Mid-Speed:** Default is 1500 RPM.
- **Hi-Speed:** Default is 1700 RPM.

### (9) Change Password

Accessed from **Parameter Setting Screen 2**.



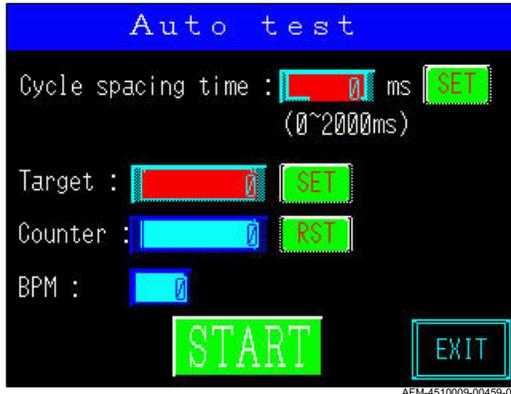
**WARNING:** The **Change Password Screen** should only be accessed by authorized administrators.



The **Change Password Screen** allows the user to create a new password for accessing specific parts of the HMI software. To create a new password, touch the Display Area, key in the new password, select **Enter**, and select **Set**.

## (10) Auto Test

Accessed from **Parameter Setting Screen 2**.



The **Auto Test Screen** can be used to have the LX-350 spit out labels without bottles being present. This can be useful for testing or to get a specific number of cut labels for hand labeling. Label film must already be loaded and properly set up on the UR-2 and LX-350 in order to use this function (see “Installing a Film Roll on the UR-2” on page 173, “Threading Film Through the UR-2” on page 175, and “Threading Film Through the LX-350” on page 176).

Fields where values can be entered are red.

- **Cycle Spacing Time:**  
The amount of time between labels (similar to Application Spacing).
- **Target:**  
The number of labels to be cut.

Other fields, which display real-time information about the test run, are:

- **Counter:**  
Displays the number of labels output in real time (“RST” resets this value to “0”).
- **BPM:**  
Indicates how many labels per minute are being output.

### (11) Print Scan Mode Selection Screens

Accessed from **Parameter Setting Screen 2**.



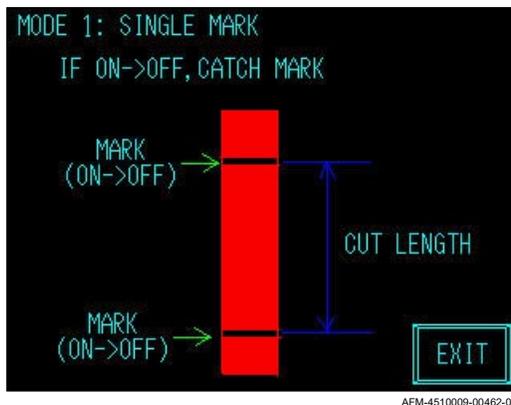
The **Print Scan Mode Selection Screens** tell the LX-350 how to decide where to cut the label film. As label film moves down over the Mandrel Fin, the Print Reading Sensor is constantly scanning for transparent “cut” areas in the label film. These transparent areas trigger the Cutter. Most labels are called “single mark” labels: the only transparent spot on the label film is a band where the cut is supposed to be made.

However, some labels have transparent areas in the design of the label as well. These are known as “multi-mark” labels. The Print Scan Mode Selection Screens enable the user to select whether the label is single mark or multi-mark. If multi-mark, the user can mask off the transparent area within the design using the Detail Screen of Mode 2, so that the Print Reading Sensor ignores those areas and only triggers the Cutter when a transparent cut area passes by.

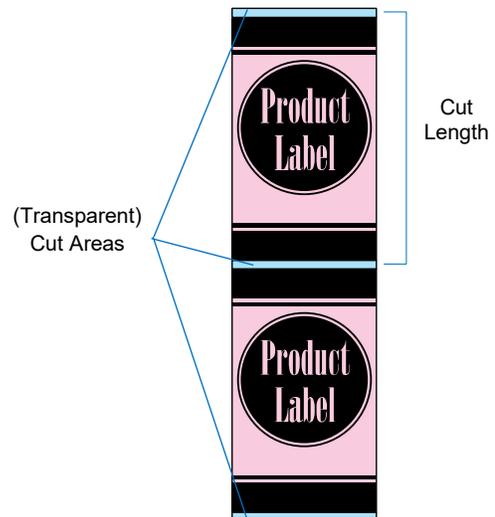
#### Mode 1

If using standard “single mark” labels, select Mode 1. Select “Detail” to confirm that nothing in the label design needs to be masked off.

#### Mode 1 Detail Screen



#### Single Mark Labels



### Mode 2

If using standard “multi-mark” labels, select Mode 2. Select “Detail” to mask off the area in the label design for the Print-Reading Sensor to ignore.

**VIDEO: Print Scan Mode, Clear Area Jump**

(Video 13) - TRT: 1:14

To see a video of this procedure, click this link:

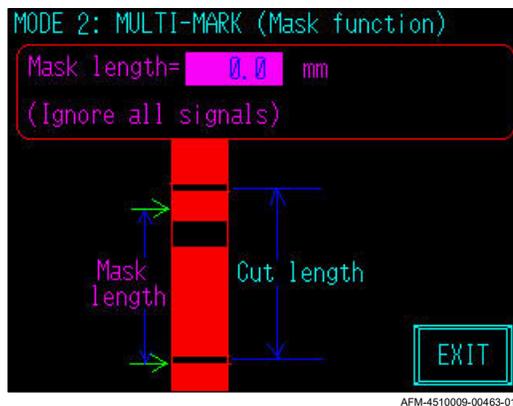
<https://www.youtube.com/watch?v=dOATg1xjSOg&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=13>

Or scan the QR code at right using the camera app on your mobile device.

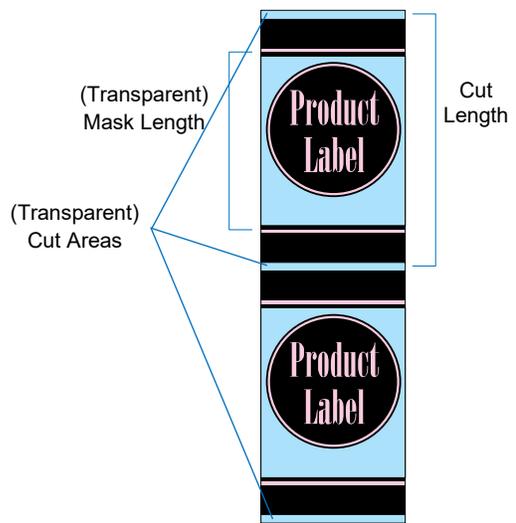


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### Mode 2 Detail Screen

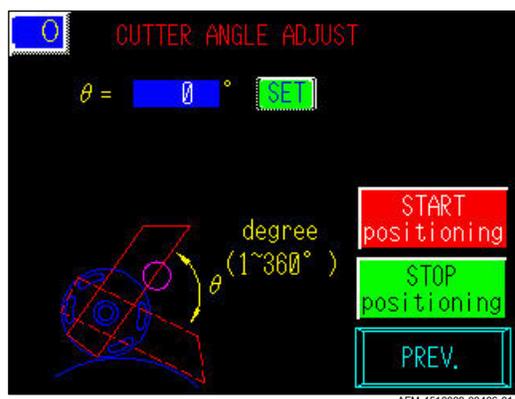


### Multi-Mark Labels



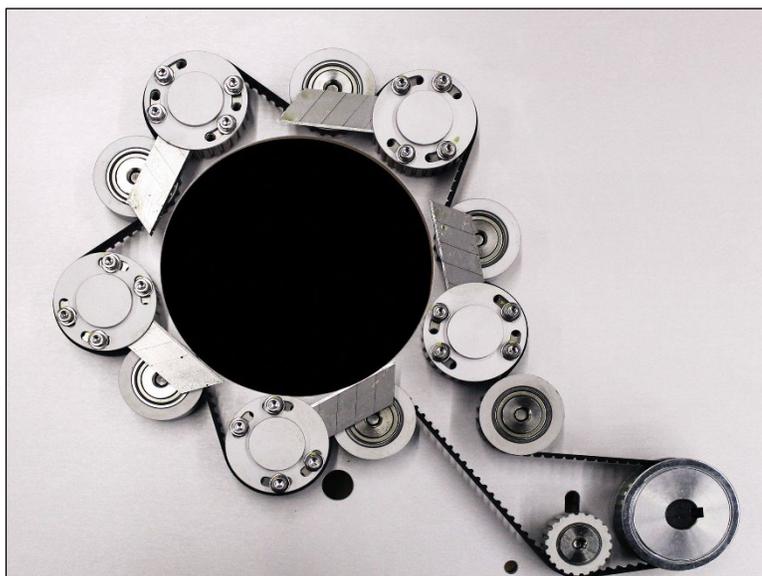
On a multi-mark label, the Mask Length should extend beyond the boundaries of the transparent area(s) in the design.

## Cutter Angle Adjust Screen



The **Cutter Angle Adjust Screen** sets the proper home position for the Cutter Blades. The angle is slightly different depending on Cutter size and should be set as part of any new recipe. When starting a new recipe, the Cutter angle will be 0 degrees, which stops the Cutter Blades under the Cutter Home Position Sensor. The correct home position can be set by using the buttons to rotate the Cutter Blades until the sharp edge of the Blade is at the edge of Cutter opening.

### Correct Home Position: Blades Stopped at Cutter Opening



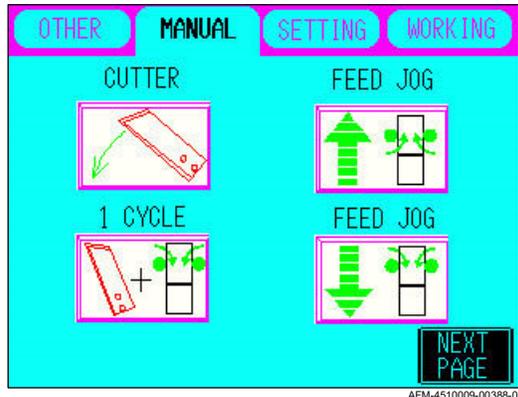
- **Start Positioning:** Rotates the Cutter Blades.
- **Stop Positioning:** Stops rotating the Cutter Blades.
- **SET:** Saves the new positioning for the Cutter Blades.

## Manual Screens

Selecting **Manual** accesses the **Manual Screens**. There are two **Manual Screens**, and they are used to perform some of the setup operations before running the LX-350.

### Manual Screen 1

**Manual Screen 1** is for positioning the film on the Mandrel and doing test cuts.



#### Cutter

Holding this button down for 5 audible beeps rotates the Cutter Blades through one full cycle.

#### 1 Cycle

Holding this button down for 5 audible beeps advances the label film one full label length and cuts it.

#### Feed Jog Up

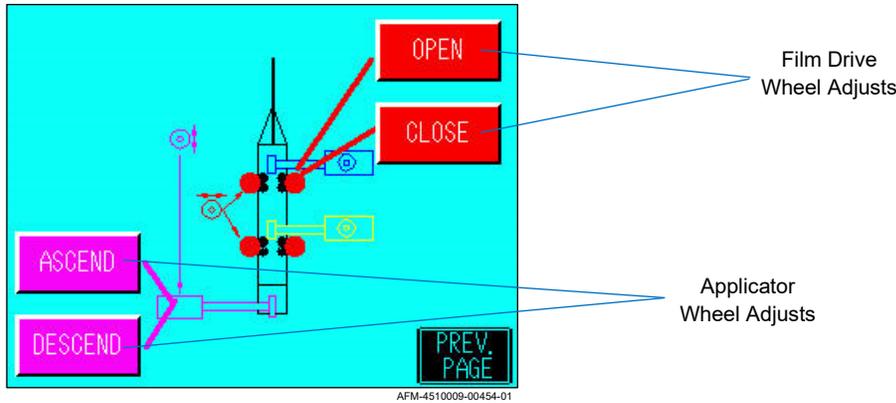
Rotates the Film Drive Wheels to move the label film up on the Mandrel. This can also be done more precisely by manually turning the Film Drive Wheel Adjust.

#### Feed Jog Down

Rotates the Film Drive Wheels to move the label film down on the Mandrel. This can also be done more precisely by manually turning the Film Drive Wheel Adjust.

## Manual Screen 2

**Manual Screen 2** is for adjusting the distance of the Film Drive Wheels from the Mandrel and adjusting the vertical position of the Applicator Wheels.



### Film Drive Wheel Adjusts (Red)

Adjusts both sets of Film Drive Wheels (in unison) in or out from the Mandrel.

#### VIDEO: Adjustments Using the HMI

(Video 16) – TRT: 2:21

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=16>

Or scan the QR code at right using the camera app on your mobile device.

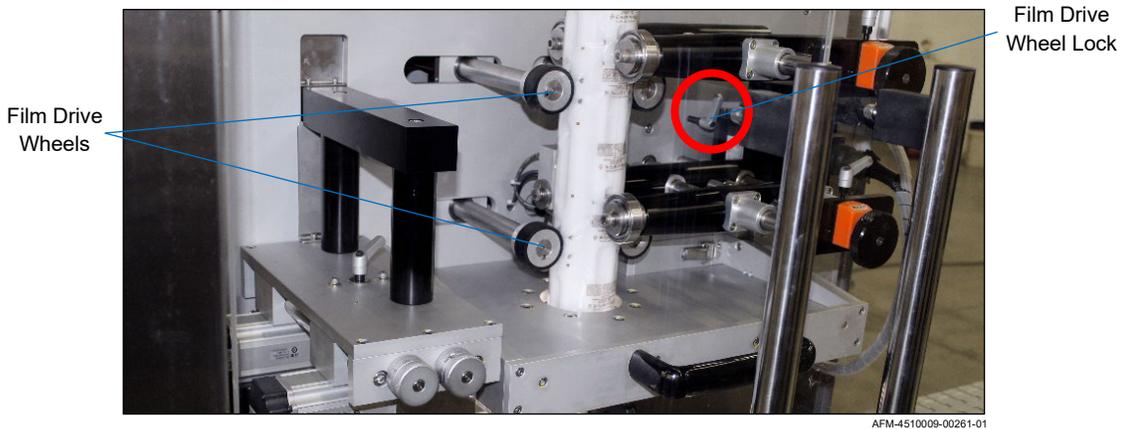


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**ATTENTION:** Always verify that the Film Drive Wheels are unlocked before using these buttons. Using the Open or Close Buttons when the Film Drive Wheels are locked can damage the LX-350 and void the warranty.

### Locking and Unlocking the Film Drive Wheels



- **Open:**  
Moves the Film Drive Wheels away from the Mandrel. Hold the Mandrel by hand when pressing this button to ensure that the Mandrel doesn't fall due to lack of support.
- **Close:**  
Moves the Film Drive Wheels in toward the Mandrel. Before applying labels, the **Close** button should be pressed until the Film Drive Wheels cannot come in any closer to the Mandrel.

### Applicator Wheel Adjusts (Pink)

Adjusts the Applicator Wheels vertically for proper alignment with the Applicator Bearings on the Mandrel.

#### VIDEO: Adjustments Using the HMI

(Video 16) – TRT: 2:21

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=16>

Or scan the QR code at right using the camera app on your mobile device.

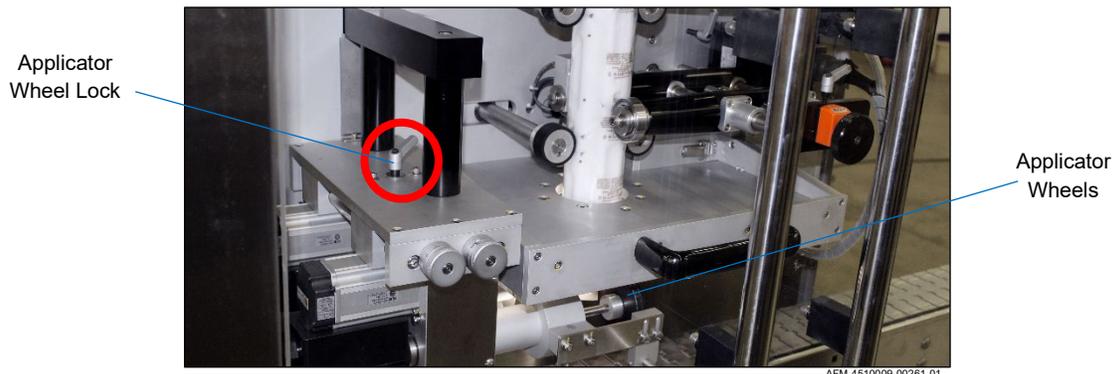


AFM-4510009-00530-01



**ATTENTION:** Always verify that the Applicator Wheels are unlocked before using the Ascend or Descend Buttons. Using them when the Applicator Wheels are locked can damage the LX-350 and void the warranty.

### Locking and Unlocking the Applicator Wheels



- **Ascend:**  
Moves the Applicator Wheels large distances upward on the Mandrel. Use the Applicator Wheel Adjust for fine tuning.
- **Descend:**  
Moves the Applicator Wheels large distances downward on the Mandrel. Use the Applicator Wheel Adjust for fine tuning.

### Locking and Unlocking the Applicator Wheels

Applicator Wheel  
Vertical Adjust



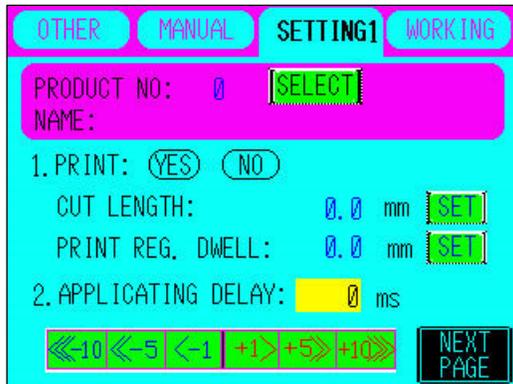
Once the Applicator Wheels are roughly in the correct vertical position, fine-tuning can be done manually by turning the Applicator Wheel Vertical Adjust.

## Setting Screens

Selecting **Setting** accesses the **Setting Screens**. The **Setting Screens** are generally used for setting up before applying labels with the LX-350.

### Setting Screen 1

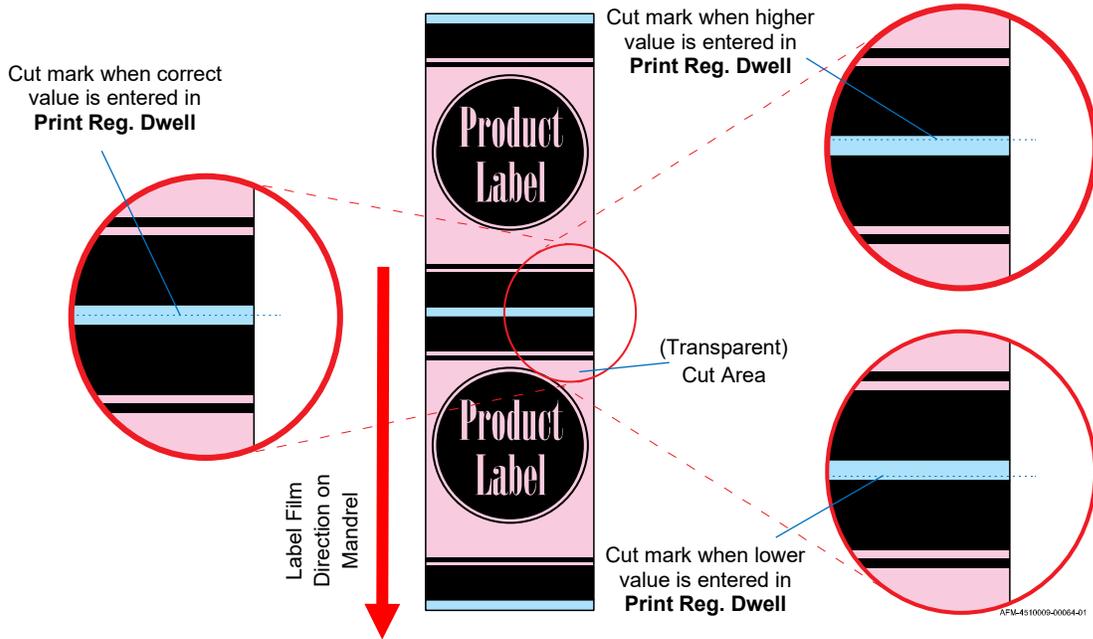
**Setting Screen 1** has basic settings for existing preset labeling “recipes” and allows adjustment of what triggers a cut, where the cut should take place, and when the label should be applied.



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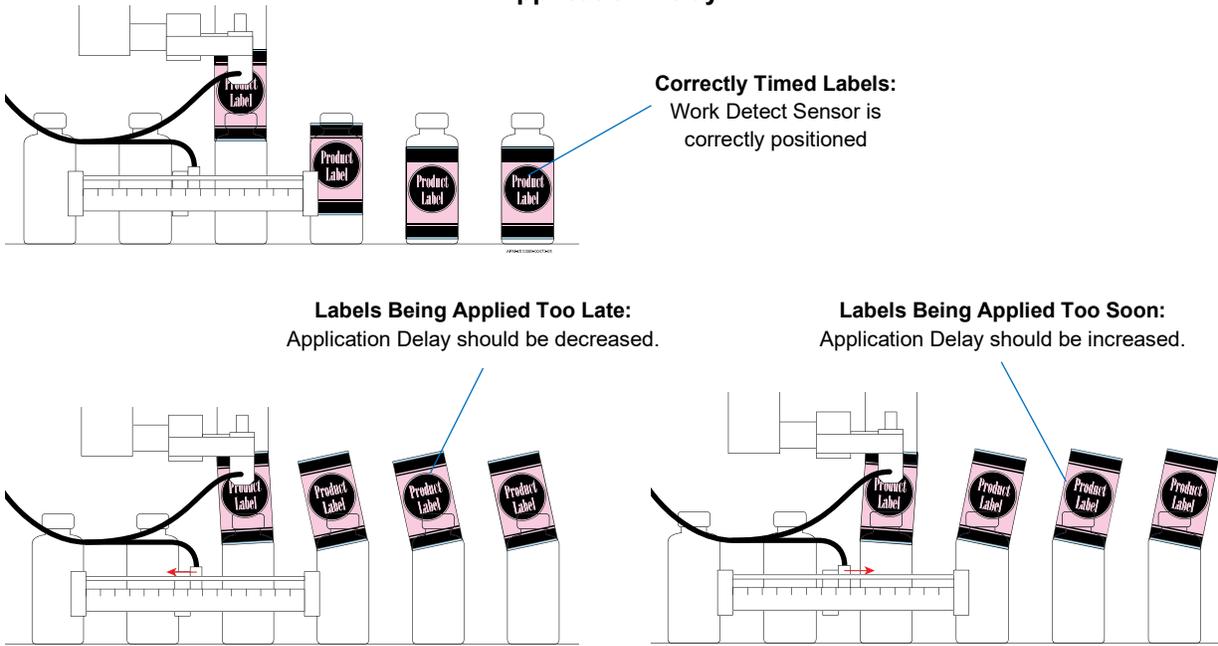
- **Product No:**  
Pressing **Select** accesses the **Product Number Screen**, which shows a list of up to 40 recipes that have already been created and stored in the HMI, or fields which can be chosen to create a new recipe. For more about the **Product Number Screen**, go to “Product Number Screen” on page [151](#).
- **Print:**  
Chooses whether to cut the label film based on the location of the transparent area between labels, or based on the distance that the label film has moved down the Mandrel.
  - **Yes:** Print Reading Sensor looks for transparent cut areas to trigger cutting.
  - **No:** Cut every time the label film has advanced a specified distance.
- **Cut Length:**  
Sets the length of a label and must have a value entered regardless of which kind of cut trigger was selected in “Print.” “Cut Length” tells the LX-350 how long to expect a label to be. Select **Set** to enter a new number.
- **Print Reg. Dwell:**  
Use this function when “Print” is set to **Yes** (Print-Reading Sensor triggers cutting). Print Reg Dwell adjusts the cut position without having to physically move the Print Reading Sensor. It can be used to make large or small adjustments to the cut position (for details, see “Adjusting the Print-Reading Sensor’s Position” starting on page [217](#)).

### Fine Tuning the Print Reg Dwell



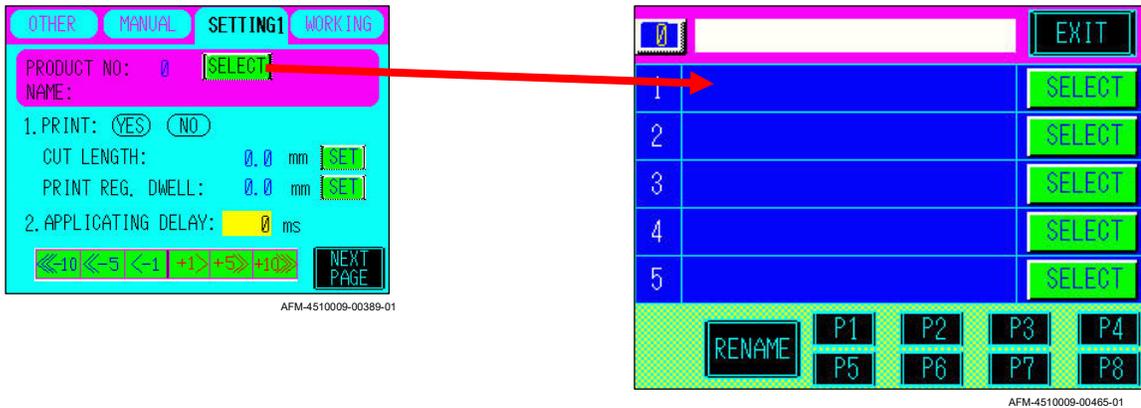
- Application Delay:**  
 Sets the timing of the Applicator Wheels shooting a label down onto a passing bottle. Values are entered using the buttons below the “Application Delay” field. The red buttons on the right decrease the delay time, causing the label to be applied sooner. The blue buttons on the left increase the delay time, causing the label to be applied later.

### Application Delay



## Product Number Screen

The Product Number Screen (accessed by pressing “Select” on Setting Screen 1) shows the available recipes and blank areas that are available for creating new recipes.

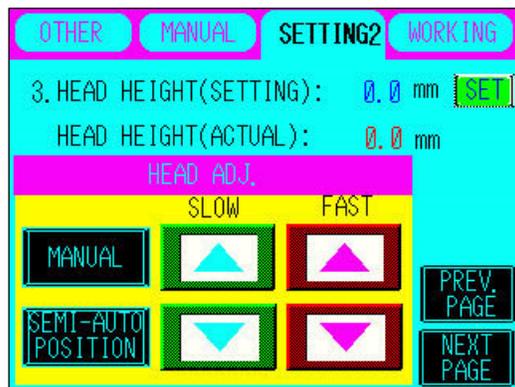


- Select (next to a recipe's name):**  
 Chooses that recipe. To create a new recipe, press **Select** next to an empty field, and then select **Rename**. The **Keyboard Screen** will appear, allowing a (new) name to be entered for the recipe. Once the new name has been entered in the **Keyboard Screen**, select **ENT** to accept the name and return to the **Product Number Screen**.
- Rename:**  
 Accesses the **Keyboard Screen** to rename a recipe.
- P1 – P8:**  
 Access pages 1 - 8 in the list of recipes. Each page has 5 recipes.

## Setting Screen 2

The LX-350's labeling components – the Sensors, Wheels, Mandrel and Cutter Assembly – are all attached to the back wall. This set of components is known as the “Head Assembly.”

**Setting Screen 2** is used to move the Head Assembly up or down to adjust for different bottle heights.



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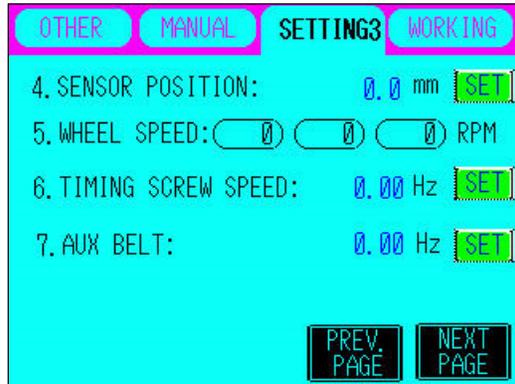
- **Head Height (Setting):**

The “Head Height” (vertical position of the Head Assembly) can be adjusted manually or semi-automatically.

  - **Manual:** Allows the user to move the Head Assembly up or down by pressing and holding the up or down arrows. Releasing an arrow button stops the movement. Allows the user to visually determine when the Head Assembly is in the desired location.
  - **Semi-Auto Position:** Allows the user to move the Head Assembly to a precise, predetermined location. This location is entered by selecting the field for “Head Height (Setting),” entering the desired value, and selecting **Set**. The arrow keys can then be pressed and held to move the Head Assembly to that location. Releasing an arrow button stops the movement before the Head Assembly reaches the preset location if there is an obstruction or other issue.
- **Head Height (Actual):** Gives a real-time reading of the current vertical position of the Head Assembly.

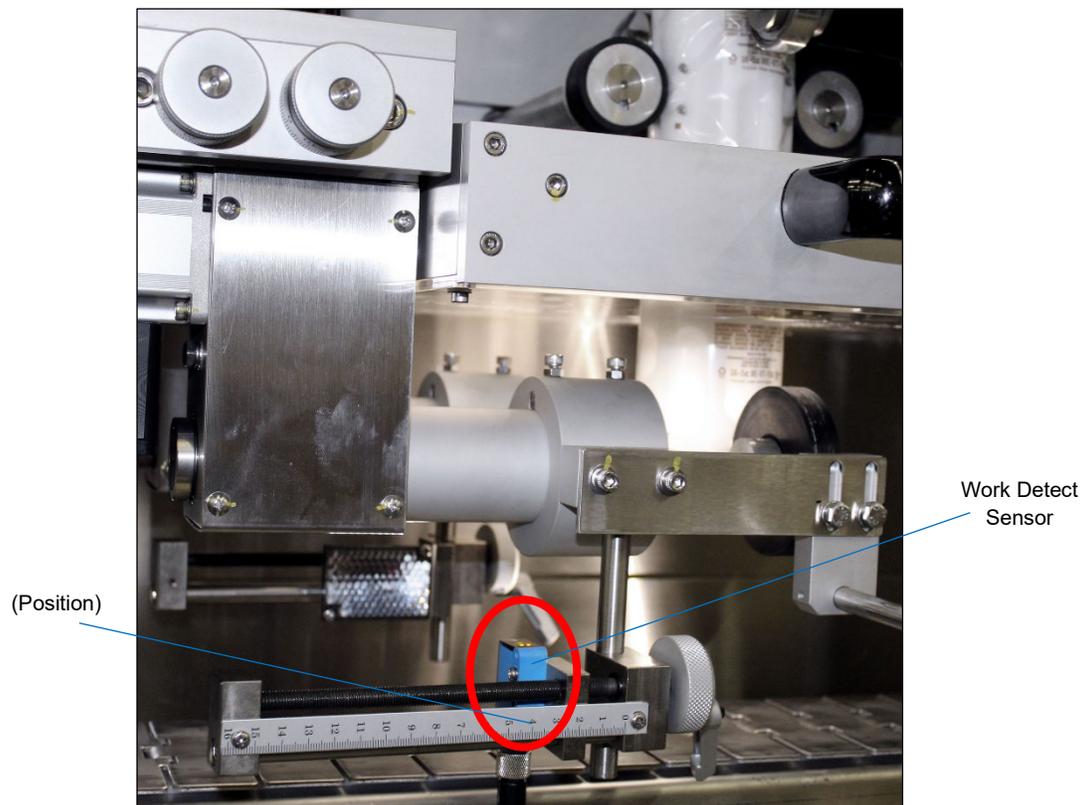
## Setting Screen 3

**Setting Screen 3** is for recording the position of the Work Detect Sensor, and choosing the appropriate speed for the Applicator Wheels, Timing Screw, and Auxiliary Belt.



- **Sensor Position:**

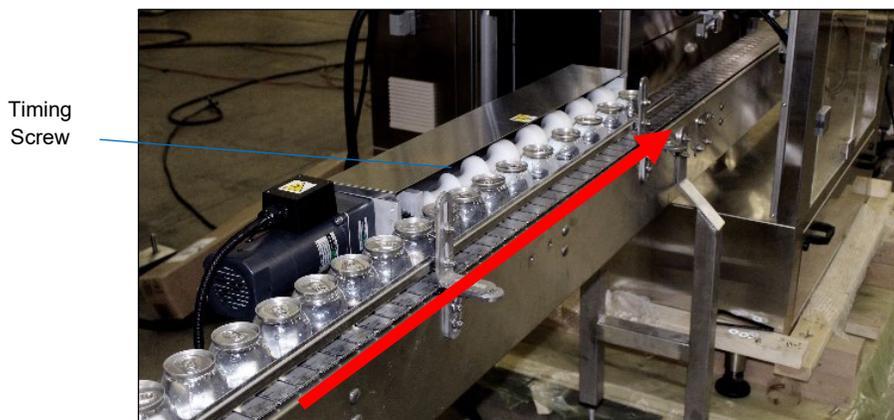
This field does not affect anything. It is a placeholder where the user can record the position of the Work Detect Sensor for future reference for the currently selected recipe.



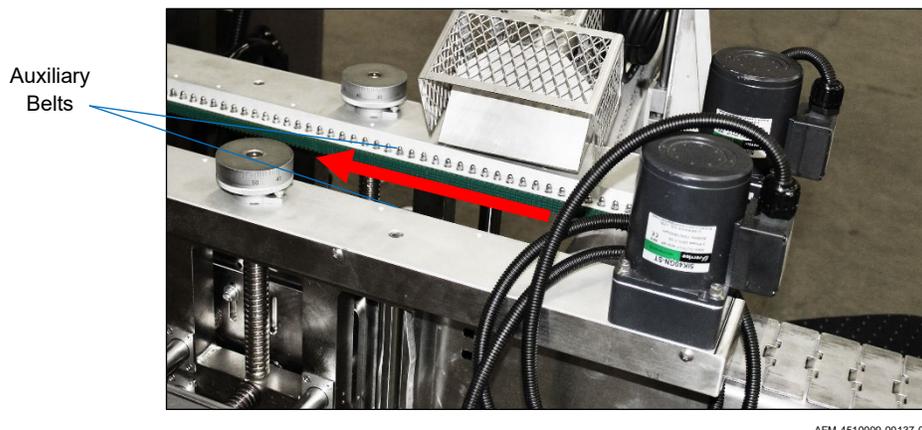
- **Wheel Speed:**

Displays the three Applicator Wheel speed settings entered in **Applying Wheel Speed (Parameters Screen 2)**, (see “Applying Wheel Speed” on page 139) which adjusts the speed of the Applicator Wheels. The factory defaults are 1300, 1500 and 1700 RPM. If your AFM distributor has customized the machine’s settings for your specific needs, these numbers may be different.

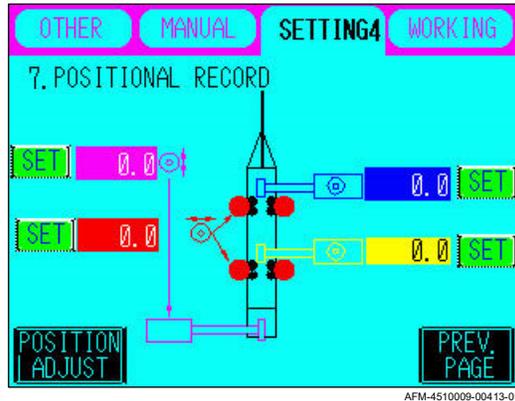
- Selecting the left field chooses the Lo-Speed setting.
  - Selecting the middle field chooses the Mid-Speed setting.
  - Selecting the right field chooses the Hi-Speed setting.
- **Timing Screw Speed:**  
Selects the frequency of power (in Hz) going to the Motor of the Timing Screw Assembly. This affects the rotation speed of the Timing Screw, which affects the number of bottles per minute that run through the LX-350.



- **Aux. Belt:** Selects the frequency of power (in Hz) going to the motor of the Auxiliary Belt (if one is used), which affects the rotation speed of the Auxiliary Belt Wheels. The Auxiliary Belt Wheels should spin at a speed consistent with the speed of the Conveyor. This speed can generally be determined simply by adjusting the Auxiliary Belt speed until it visually appears to be moving at the same speed as the Conveyor.



## Setting Screen 4



Changing the values on this screen does not affect anything. **Setting Screen 4** records the location of the Film Drive Wheels, Support Wheels and Application Wheels (as read from the numeric areas on the Adjusts) for future reference. However, due to system vibration and other factors, these digital records may not stay consistent over time, so using the values on this page should only be used for general positioning.

A better way to ensure that the Film Drive Wheels, Support Wheels, and Application Wheels are touching the Mandrel with the appropriate amount of pressure is to simply use the Adjusts, ignore the numbers, and observe when the Wheels and Bearings are touching properly.

- **Applicator Wheel Position (pink):**  
Touch to input the Applicator Wheel position. Press **Set** to record it.
- **Film Drive Wheel Position (red):**  
Touch to input the Film Drive Wheel position. Press **Set** to record it.
- **Upper Support Wheel Position (blue):**  
Touch to input the Upper Support Wheel position. Press **Set** to record it.
- **Lower Support Wheel Position (yellow):**  
Touch to input the Lower Support Wheel position. Press **Set** to record it.
- **Position Adjust:**  
Press and hold to adjust the position of the Film Drive Wheels, Support Wheels, and Application Wheels to the set values shown on this screen. When finished, inspect the positions of the Wheels, and manually fine-tune their positions as needed.

## Working Screen

Selecting **Working** accesses the **Working Screen**. This is the main screen to use during operation of the LX-350 once everything has been properly set up.



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- **No:** Number of the recipe in use.
- **Name:** Name of the recipe in use.
- **Counter:** Number of bottles have been labeled (0-99,999,999) in real time.
- **RST:** Resets the Counter to “0.”
- **BPM:** Real time number of bottles per minute being labeled per minute.

The four buttons at the bottom of the **Working Screen** power peripheral devices (Timing Screw, Brushdowns, Auxiliary Belts, Reject Station) on and off.

**NOTE:** The peripheral equipment will not actually turn on until the Start button is pressed on the HMI.

**NOTE:** Depending on the peripheral equipment being used with the LX-350, AFM may have custom-programmed some of the buttons at the bottom of the **Working Screen** to control things like the Conveyor Belt instead.

# Label- and Product-Specific Setup

With the LX-350 and UR-2 in position and properly connected, adjustment can be made for the specific label film being used and the product to be labeled.

## Using Recipes and Testing

Labeling requires a significant amount of setup within the software for each unique product labeling situation. To save time, this is accomplished using preset label “recipes.” Recipes for your specific needs have likely already been created for you by AFM or by your distributor. Any recipe can be modified/adjusted by entering new settings while in that recipe.

Before labeling, the correct recipe needs to be selected for the labels being used and the product being labeled. This section provides basic setup instructions and assumes that recipes have already been created for your specific labeling needs (for more detailed setup information, read the “Software” section, starting on page 85).

### VIDEO: HMI Recipe Settings

(Video 8) - TRT: 3:09

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=H-aG2zUGUb4&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=8>

Or scan the QR code at right using the camera app on your mobile device.



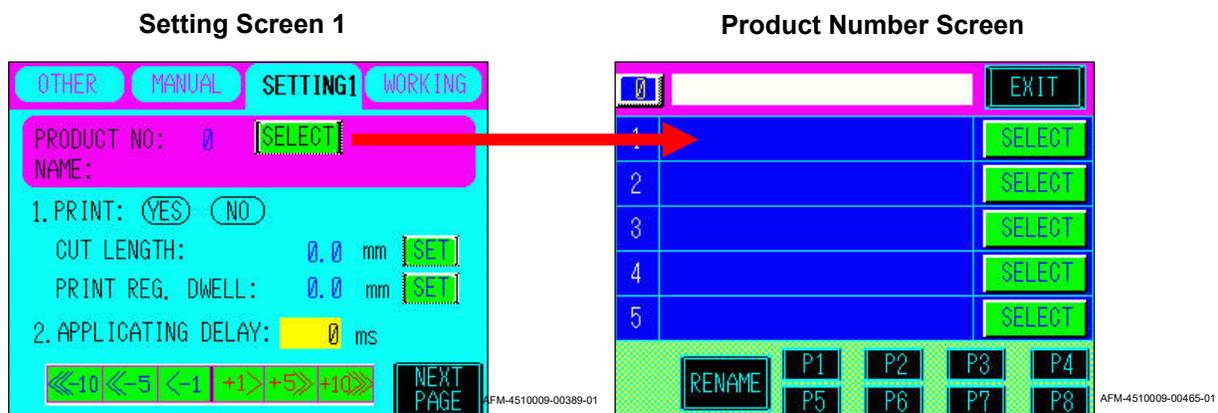
AFM-4510009-00530-01

### Items Needed to Perform Basic Software Setup:

- Ruler

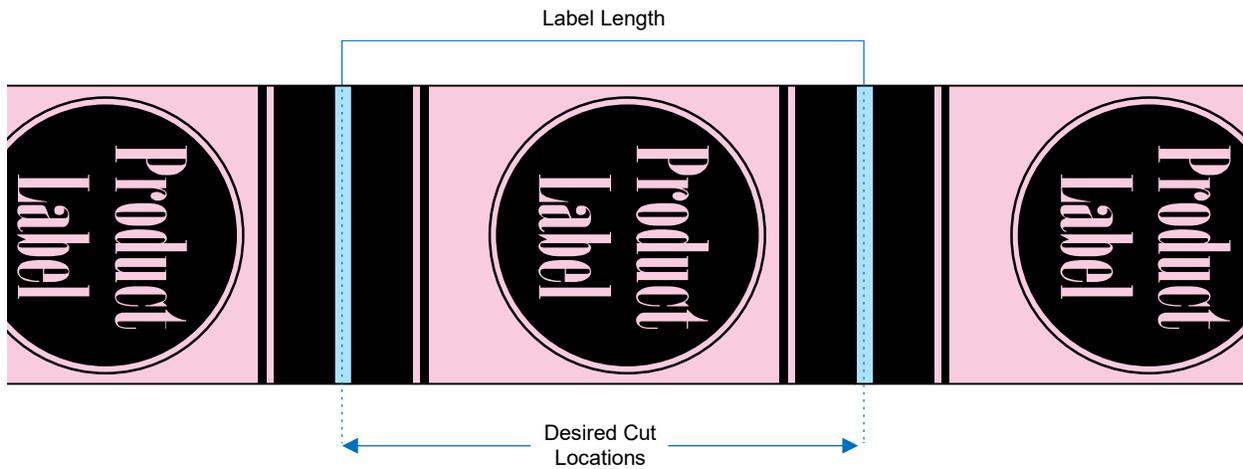
### To Perform Basic Software Setup:

1. Power on the LX-350 (see “Powering On” on page 163).
2. Place a sample bottle on the Conveyor directly below the Mandrel and adjust the head to the proper height (see “Adjusting the Head Height” on page 225).
3. Choose the correct recipe:

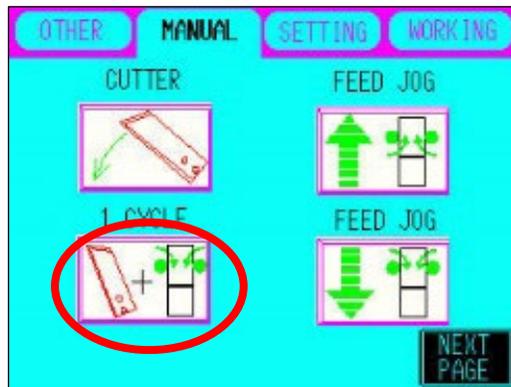


- a. On the HMI, select **Setting1** >> “Select” to access the recipes.
  - b. If needed, navigate to the page for the desired recipe by pressing one of the Page buttons at the bottom of the screen (**P1 – P8**).
  - c. Press the **Select** button next to the desired recipe to choose it.
  - d. Select **Exit** to return to **Setting Screen 1**.
4. While on **Setting Screen 1**, use “Print” to choose what will trigger a cut:
    - a. **YES:** The transparent cut areas in the label film trigger the cut.
    - b. **NO:** The length of film that has passed down the Mandrel triggers the cut.
  5. Regardless of what was selected in “Print,” enter the exact length (in millimeters) of a single label in “Cut Length,” and then select **Set**. A label length should include one full length of the transparent cut area.

### Determining Label Length



6. Test to see where the LX-350 cuts the label film.
  - a. At the top of the screen, select **Manual** >> “1 Cycle” to cut one label. An alarm will beep 5 times.

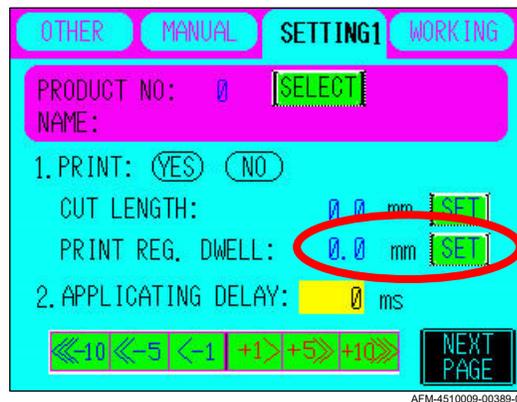


7. Use the cut label to determine the correct “Print Reg Dwell” value.
  - a. Examine the cut location and use a Ruler to determine how far the actual cut is from the desired cut location.

### Example: Determining “Print Reg Dwell”

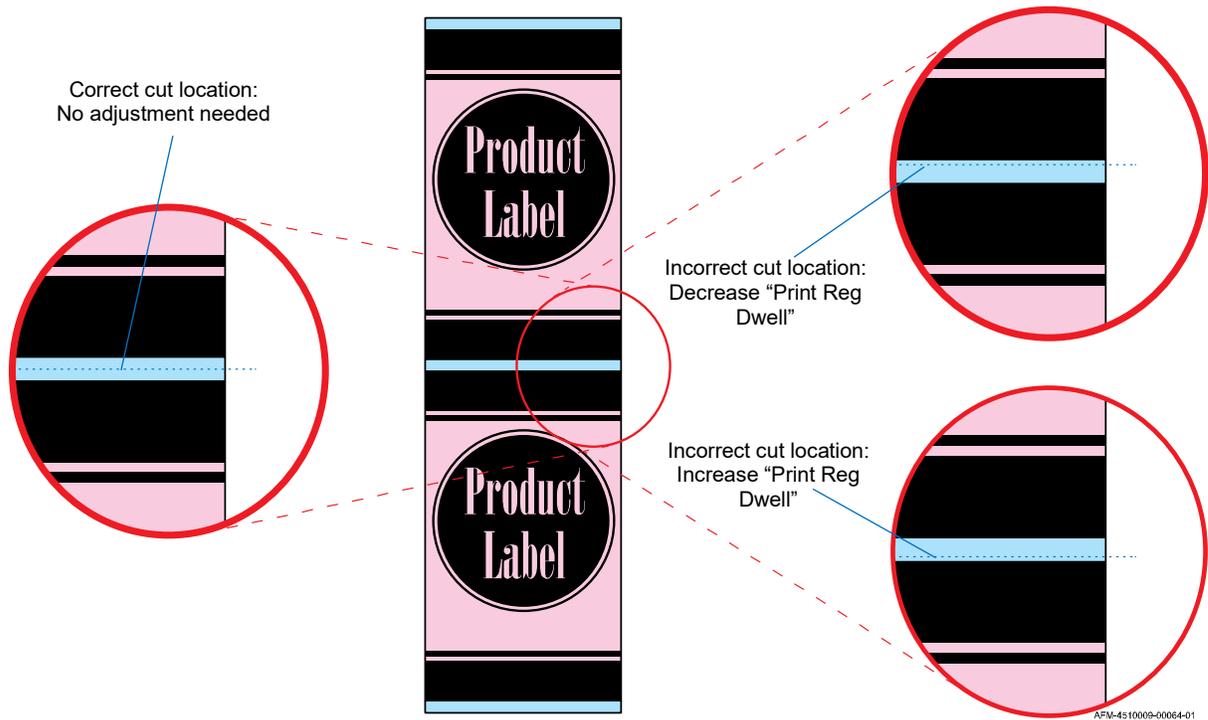


8. Set the “Print Reg Dwell.”
  - a. Select **Setting1**.
  - b. On **Settings Screen 1**, enter the “Print Reg Dwell measurement determined above into the “Print Reg Dwell” field.

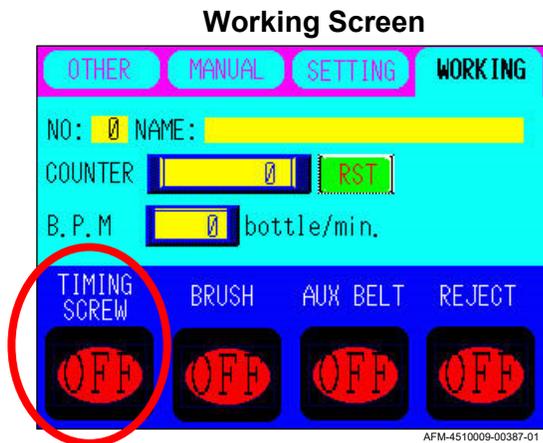


- c. Select **Set** to accept the value.
9. Re-test to see where the LX-350 cuts the label film.
  - a. At the top of the screen, select **Manual** to go to the **Manual Screen**.
  - b. Select **1 Cycle** three times to cut three labels. An alarm will beep 5 times.
  - c. Examine the cut location:
    - i. If the cut is where it should be, continue to the next step.
    - ii. If the cut is below where it should be, slightly increase the “Print Reg Dwell” value, select **Set** to accept the new value, and retest.
    - iii. If the cut is above where it should be, slightly decrease the “Print Reg Dwell” value, select **Set** to accept the new value, and retest.

### Fine Tuning the Print Reg Dwell



10. Repeat the re-testing step several times until the cut consistently appears in the correct location.
11. Test to see where the LX-350 places the labels.
  - a. Select **Working** to go to the **Working Screen**.



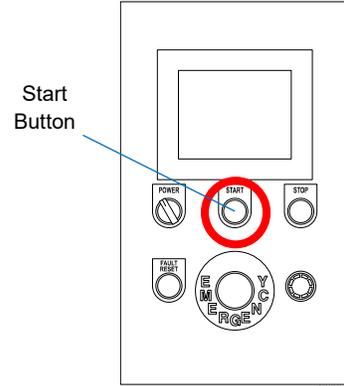
- b. Turn the Conveyor on.
- c. Turn the Timing Screw Assembly on by pressing the button below "Timing Screw." The Timing Screw Assembly will not move yet.
- d. With bottles lined up behind the Timing Screw Assembly on the Conveyor, press the Start Button on the HMI. Test one bottle at a time.

**Containers Lined Up at Timing Screw Assembly**



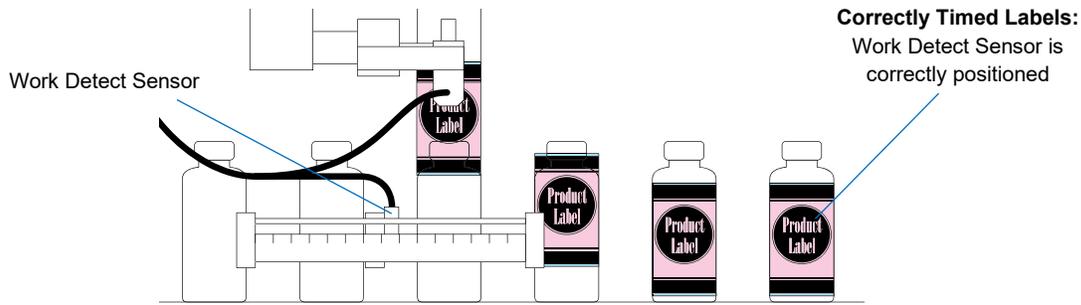
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**HMI**

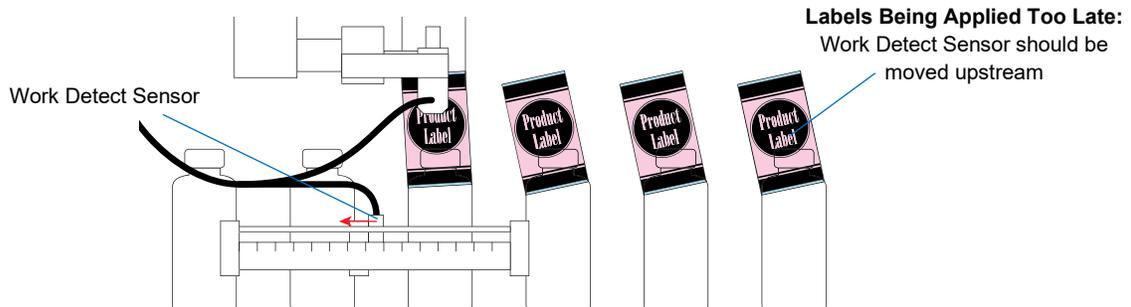


- e. Watch the bottles for accuracy in label placement.
- 12. If labels are not going onto the bottles, adjust when they are applied by moving the Work Detect Sensor using the "Applicating Delay" function on the HMI.

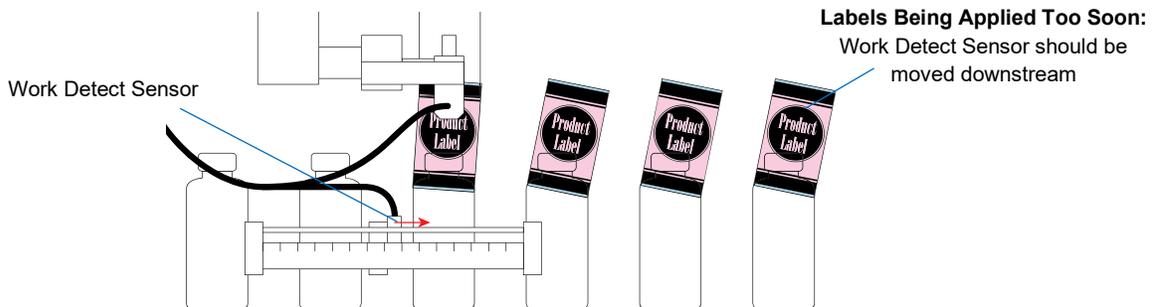
**Work Detect Sensor Position**



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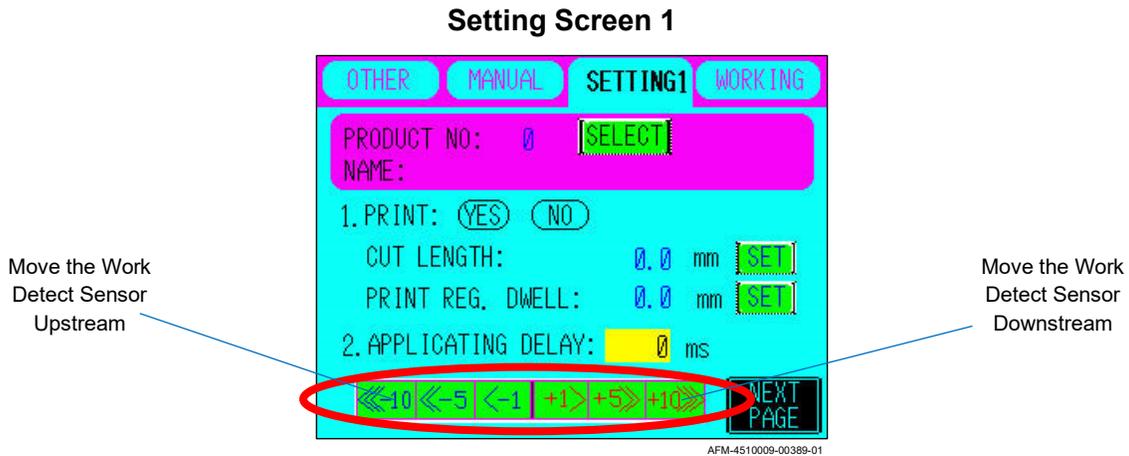


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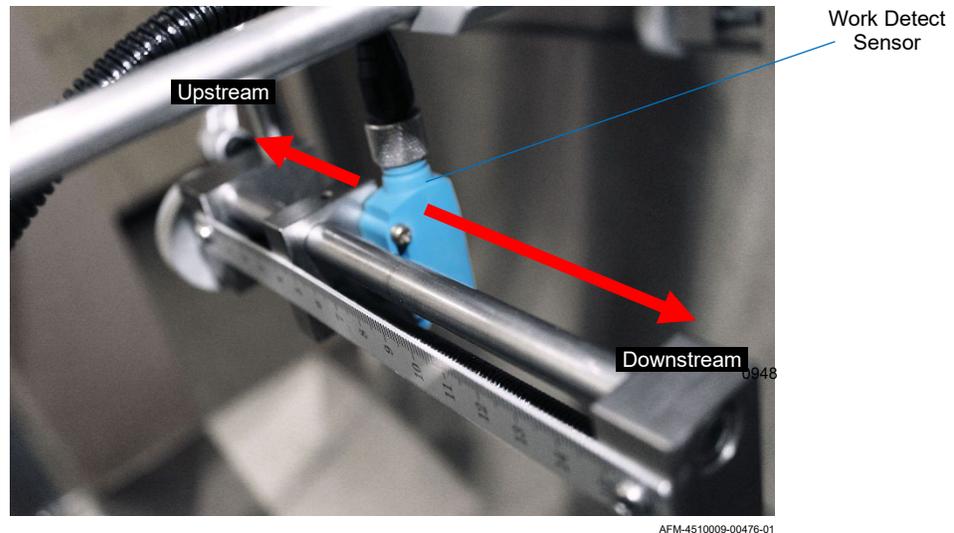
AFM-4510009-00387-01

- a. Select Setting1 to go to Setting Screen 1.



- b. Change the value in the “Applicating Delay” field by pressing the arrows at the bottom.
  - i. If labels are being shot off the Mandrel too soon, increase the value (red buttons on right) to move the Work Detect Sensor further downstream.
  - ii. If labels are being shot off the Mandrel too late, decrease the value (blue buttons on left) to move the Work Detect Sensor further upstream.

**Work Detect Sensor**



- c. Repeat the previous step (Test to position where the LX-350 places the labels) and this step (Move the Work Detect Sensor) until the labels correctly go onto all of the bottles.
- d. Repeat the test at least 3 times to ensure that labels are consistently going onto the bottles.

The LX-350 is now ready to begin labeling bottles. The Counter on the Working Screen will provide real-time information on how many bottles have been labeled.

# Operation

## Powering On

Once the Mandrel and Cutter Assembly are in place and the film has been properly loaded and threaded, the rest of the work with the LX-350 takes place through the HMI.



**WARNING:** Always wear proper safety equipment, including Cut-resistant Work Gloves, when operating or maintaining the LX-350.

### To Power On the LX-350:

1. Verify that the LX-350 is plugged into a grounded, compatible, code-compliant power outlet.
2. Verify that the Front Doors of the LX-350 are closed.
3. Turn the Main Power Switch on the back of the LX-350 clockwise to the “On” position.

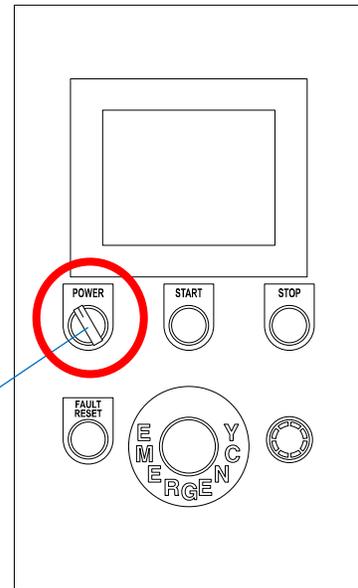
### Locating the Main Power Switch and HMI Power Switch



AFM-4510009-00213-01

Main Power Switch

Power Button



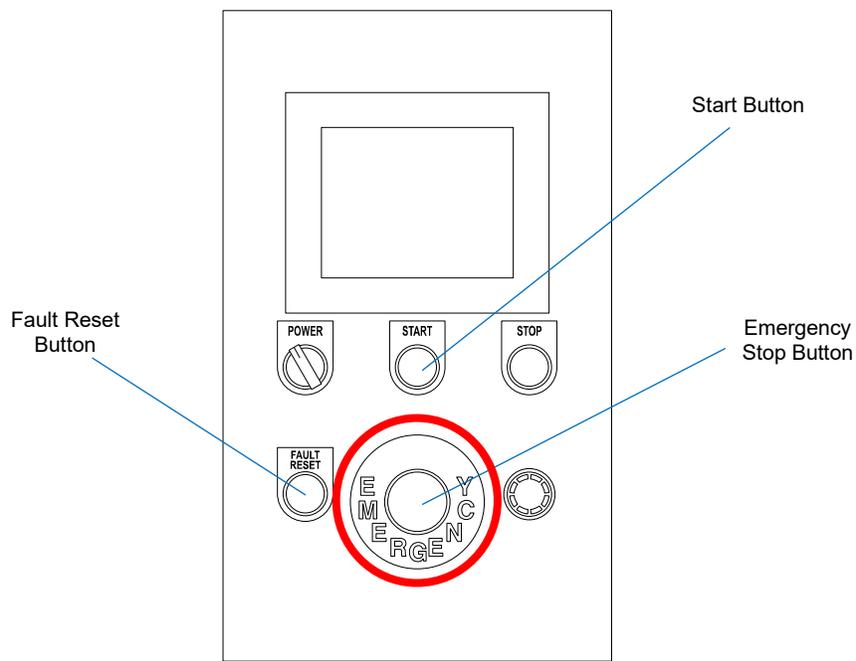
AFM-4510009-00213-01

4. On the HMI, turn the Power Switch to the “On” position.
5. An alarm will sound and a “Fault Reset” graphic will display on the Touchscreen. Respond to it by pressing the Fault Reset Button on the HMI.
6. Cutter positioning information will then display, indicating that the Cutter Blades are rotating into their home position. When they are finished, operation can begin.

## Using E-Stop

The E-Stop Button on the HMI is an important safety feature of the LX-350 but it should only be used in emergencies. If there is an immediate danger of someone being injured during operation (for example, they have managed to get their hand near the Cutter Assembly while the machine is running), pressing the E-Stop Button will shut the machine down right away. An alarm will sound when the E-Stop has been pressed.

### Pressing the E-Stop Button



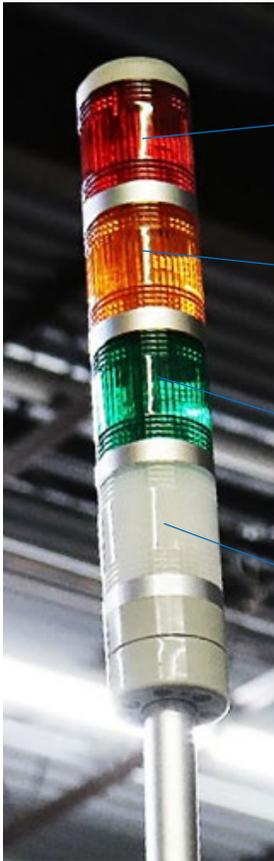
### To Shut Off the Alarm After the E-Stop Button has been Pressed:

1. Turn the E-Stop Button slightly clockwise to reset it.
2. Ensure that the emergency issue has been addressed.
3. Press the Fault Reset Button on the HMI.
4. Wait for the Cutter Assembly to reposition its Blades.
5. The LX-350 should now be ready to resume labeling.

## Alarm Beacon Signals

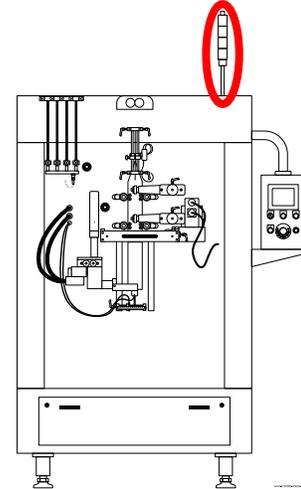
The illuminated Alarm Beacon (P/N: 4502939) on the top of the LX-350 is a standard part of the system and provides alerts about the general status of the system.

### Alarm Beacon



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- RED:**  
There is a fault somewhere in the system and the machine has stopped.
- YELLOW:**  
Warning: The Doors are open or the film is low.
- GREEN:**  
The system is operating and all conditions are good
- WHITE:**  
The system is powered on and ready to use.



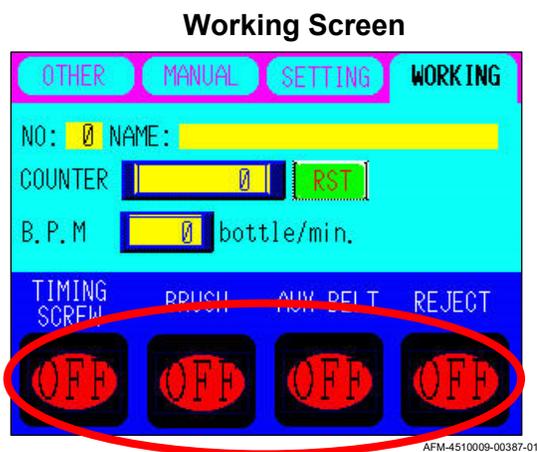
## Applying Labels

Once all software setup and testing have been performed (see “Using Recipes and Testing” on page 157), the LX-350 is ready to label bottles.

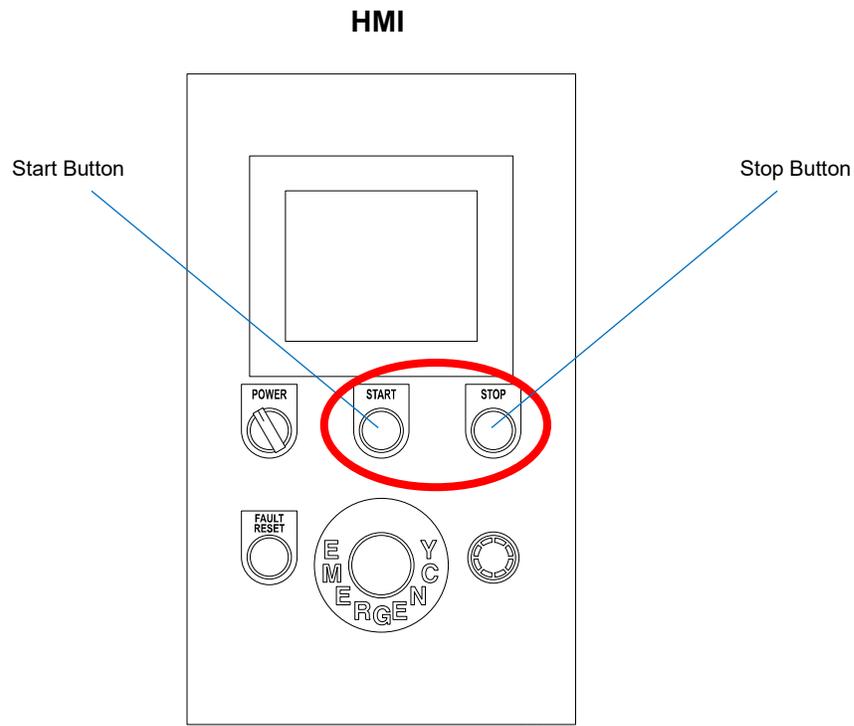
### To Apply Labels:

1. Verify that the Front Doors of the LX-350 are closed.
2. Verify that all peripherals (Timing Screw, Brushdowns, Auxiliary Belts, Reject Stations, etc) are properly set up and connected.
3. Verify that the Heat Tunnel is ready and at the correct temperature for shrinking labels.
4. Verify that the LX-350 is powered on (see “Powering On” on page 163).
5. If needed, use the HMI to position the Film Drive Wheels against the Mandrel (see “Automatic Film Drive Wheel Adjustment” on page 203).
6. On the HMI, go to the **Working Screen**.
7. Ready all of the appropriate peripherals as described below:

**NOTE:** None of the peripherals will actually start until the Start Button on the HMI has been pressed.



- a. Press the **Timing Screw** button to ready the Timing Screw Assembly.
  - b. Press the **Brush** button to ready the Brushdown Assembly, if the bottles will require brushdown.
  - c. Press the **Aux Belt** button to ready the Auxiliary Belts, if they are being used.
  - d. Press the **Reject** button to ready the Reject Station, if one is being used.
8. Start the Conveyor.
  9. Start the LX-350 and all readied peripherals.
    - a. Press the Start Button on the HMI.
    - b. The “Counter” on the Working Screen will display how many bottles are being labeled, and “BPM” will display the rate at which they are being labeled.



10. If a pause in production is needed (for example, labels are shooting onto the Conveyor Belt instead of onto the bottles), press the Stop Button on the HMI and address the issue before restarting.

	<b>ATTENTION:</b> Do not use the E-Stop Button for routine pauses or halts to production, as this can damage the system over time. Instead, press the Stop Button.
---	--

11. Press **Exit** to return to the **Working Screen**.

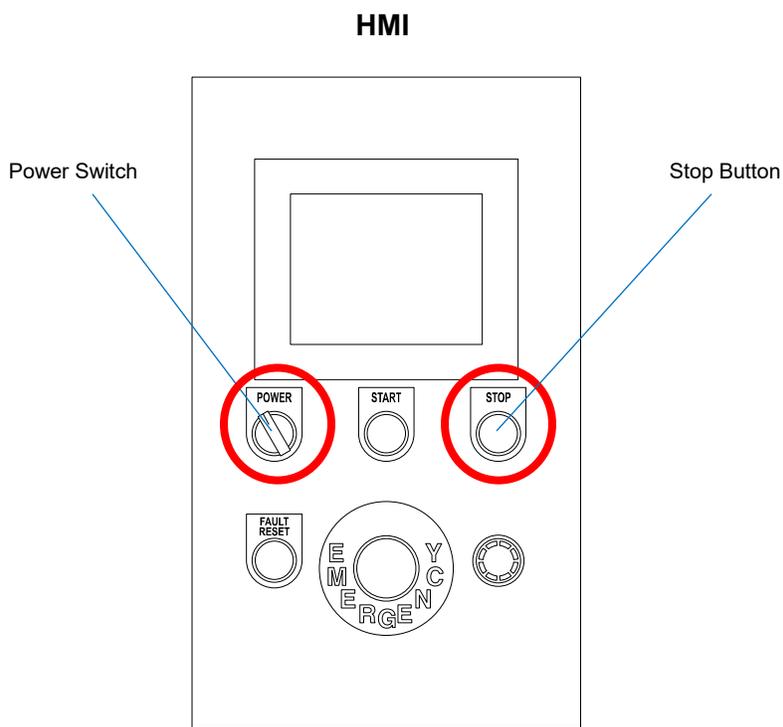
## Powering Off

When done labeling for the day, the system should be powered off.

### To Power Off the LX-350:

1. On the HMI, press the Stop Button.

	<b>ATTENTION:</b> Do not use the E-Stop Button for routine pauses or halts to production, as this can damage the system over time. Instead, press the Stop Button.
---	--



2. On the HMI, turn the Power Switch counterclockwise to the “Off” position.
3. On the back of the LX-350, turn the Power Button counterclockwise to the “Off” position.

# Maintenance

For all procedures in this section, the LX-350 should be stopped unless otherwise specifically stated. Additionally, your company's lockout tagout procedures should be followed wherever specified (see "Lockout/Tagout" on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.



**WARNING:** Always wear proper safety equipment, including Cut-resistant Work Gloves, when operating or maintaining the LX-350.

For maintenance beyond what is described in this User Guide, please contact your authorized AFM distributor.



**ATTENTION:** The LX-350 is a complex piece of machinery. Do not attempt to perform maintenance or repairs other than those described in this User Guide. Failure to follow this directive can result in injury, can damage the equipment, and will void the warranty. If in doubt, contact your AFM distributor.

## Maintenance Schedule

Following the preventative maintenance schedule below can help ensure optimal performance, minimize downtime, and help with budgeting for required replacement parts that should be ordered in advance.

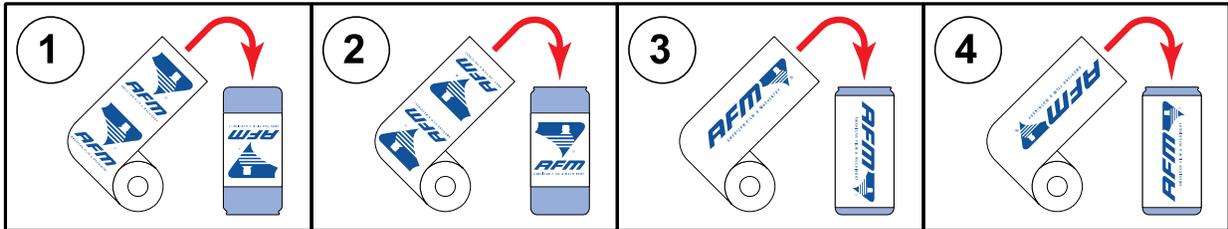
	<b>ATTENTION:</b> Some maintenance activities below should be performed by a qualified technician. If in doubt, please contact your authorized AFM distributor.
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Frequency	Procedure	Page That Describes Procedure
As Needed	Perform a general cleaning of the system.	172
	Clean the Cutter Notch.	220
Daily	Clean the Eye of the Film Out Sensor on the UR-2.	210
Weekly	Clean the Fibers of the Print Reading Sensor.	215
	Clean the Eye of the Work Detect Sensor.	218
Every 3 Weeks	With the LX-350 powered off and unplugged, check for dust in electrical enclosures, and vacuum as necessary.	N/A
	Check the Bearings in the Mandrel and the Wheels that touch them.	221
	Replace all Cutter Blades.	225
	Check the Cutter Drive Belt.	225
	Check the Timing Belt.	232
	Check the Film Feed Drive Belt.	243
Every Year	Replace all Bearings inside the Mandrel (P/N: 4500190).	223
	Replace the Bearings in the Cutter Assembly (P/N 4500178)	236
	Grease the Gears and Bearing Blocks for the Head Height Adjust, Applicator Height Adjust, and Mandrel Holder.	245
	Replace the Support Wheels (P/N: 4500707).	250
Every 2-3 Years	Replace the Cutter Drive Belt (P/N: 4501717).	230
	Replace the Timing Belt.	234
	Replace the Film Feed Drive Belt (P/N: 4501706).	244
	Replace the Film Feed Wheels (P/N: 4500707).	249
	Replace the Applicator Drive Belts (P/N: 4501702), Applicator Bearings (P/N: 4500184 and 4500173), and Applicator Wheels (P/N: 4500136).	251
	Replace the Linear Bearings on the Dancer Assembly (P/N: 4502133).	254

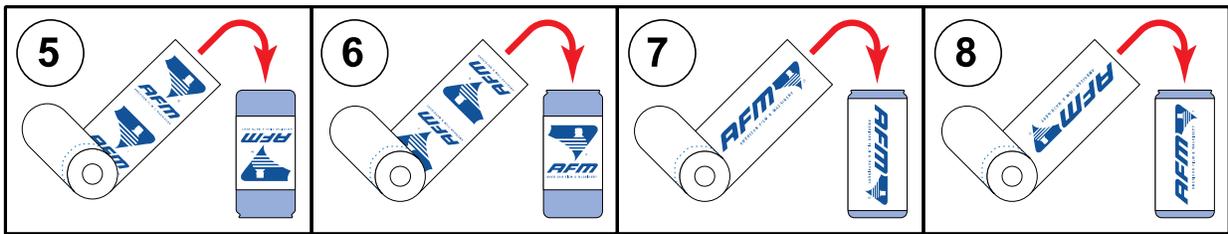
# Understanding Film Unwind Direction

The orientation of the design on a label, combined with how the label unwinds off the roll, determines what the orientation of the label design will be on the final product. The diagrams below show the various configurations and their end results. Always ensure that labels are oriented correctly on the UR-2 and unspool in the correct direction to achieve the result that you want. The UR-2 uses label film that unspools in a clockwise direction.

## Clockwise Unwind (Seam In)



## Counter-clockwise Unwind (Seam Out)



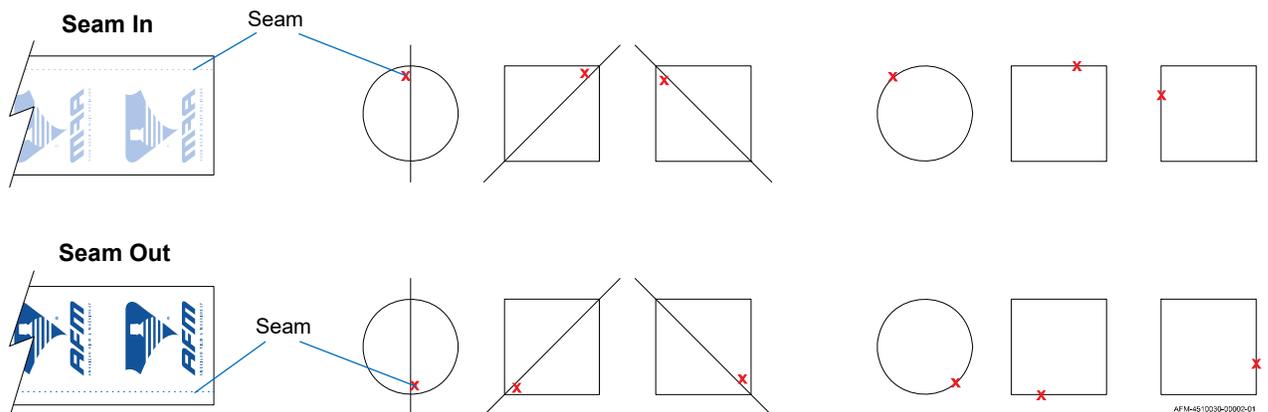
**Seam In vs Seam Out:** Refers to the position of the seam relative to the core of the roll. On a round bottle, seam in or out has no real effect on the end result. On an irregular bottle (square, for example), it changes which panel is facing front or back. This could be important to orientation of the label to bottle features.

**Bottom Out First vs Top Out First:** Labels whose design comes off the roll bottom first will land right-side-up on the bottles. Labels whose design comes off the roll top first will land up-side down on the bottles (appropriate for situations where bottles are upside-down on the Conveyor).

### Film Going to Mandrel

### Top View: Film on Mandrel

### Top View: Film on Bottle



## **Common Maintenance Procedures**

There are several basic procedures and principles used during installation and maintenance of the LX-350 which, once understood, are very simple. To avoid repetition and excessive wording, those procedures and principles are described in this section.

One general principle is that, when adjusting certain parts, they must first be unlocked, then adjusted by turning an adjustment knob, and then locked into position again. For all of these procedures, unless otherwise stated, the UR-2 and LX-350 should be turned off and unplugged from any power source.

## Installing a Film Roll on the UR-2

The LX-350 Shrink Sleeve Label Applicator System uses rolls of label film, which are fed to it from the UR-2 Unwind System.

### To Install a Film Roll on the UR-2:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

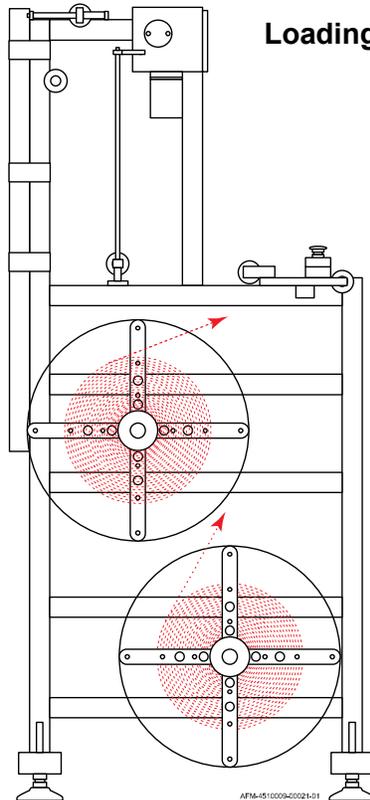
2. Verify that the size of the label film to be used is within specifications for the Mandrel and Cutter Assembly being used (see “Standard Cutter Assembly Sizes” on page 60).



**ATTENTION:** Using the wrong diameter label film can cause damage to the Mandrel and Cutter Assembly.

3. Load one roll of film on either Spool of the UR-2, oriented clockwise (see below):

**NOTE:** A second roll of film can be loaded onto the other Spool, again oriented clockwise, for quick change-over when the first roll runs out.





**ATTENTION:** Failure to load the film in a clockwise orientation as shown above will result in the film winding back onto the Film Spool, potentially damaging the film and undoing the work of threading the film.

4. Verify that the labels are in the correct orientation coming out of the roll (see “Understanding Film Unwind Direction” on page [171](#)). The bottom of the label design should come off the roll first. If this is not the case, the roll may be defective.
5. If film still needs to be threaded through the system, leave everything powered down (see “Threading Film Through the UR-2” on page [175](#)). If only installing the film roll, power up the system following your company’s lockout/tagout procedures.

## Threading Film Through the UR-2

The rolls of label film need to unspool from the UR-2 to the LX-350, so that it can be cut and applied to bottles passing through the LX-350. To accomplish this, the film must first be installed and threaded along a specific path, starting at the UR-2 and ending on the LX-350's Mandrel.

### Needed to Thread Film Through the UR-2:

- Cut-resistant Work Gloves

### To Thread Film Through the UR-2:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

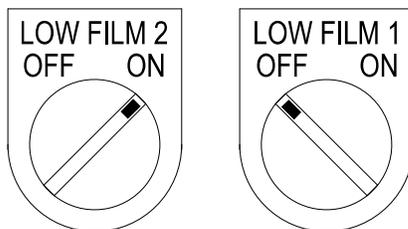
2. Verify that the size of the label film to be used is within specifications for the Mandrel and Cutter Assembly being used (see “Standard Cutter Assembly Sizes” on page 60).



**ATTENTION:** Using the wrong diameter label film can cause damage to the Mandrel and Cutter Assembly.

3. Use the Low Film Notification Selectors on the UR-2 to select the Spool that will be used first.

### Low Film Notification Selectors on UR-2



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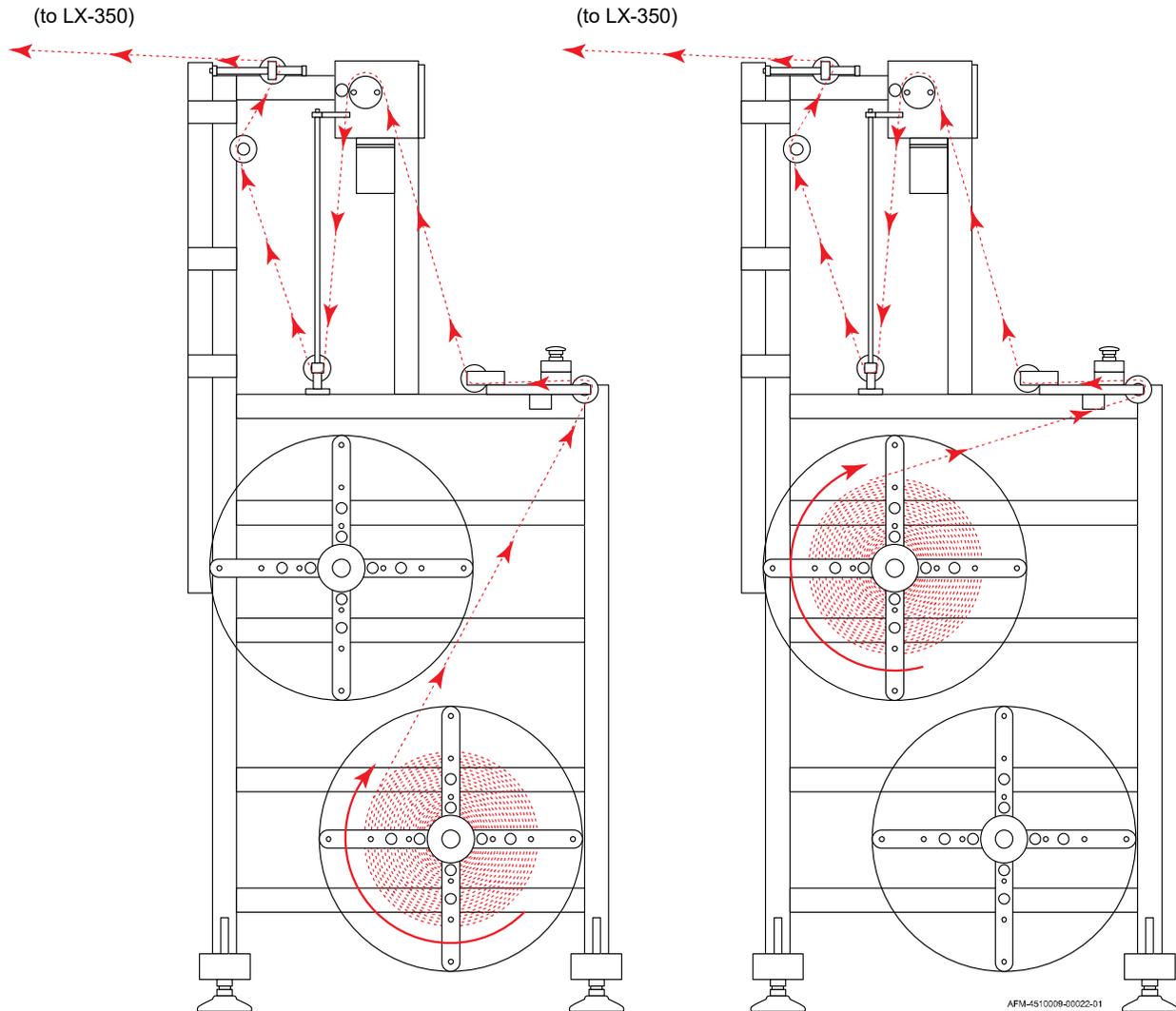


AFM-4510009-00347-01

4. Thread the film through the various Rollers on the UR-2, as shown below:

**NOTE:** After leaving its Spool, the film follows the same path regardless of which Roll it comes from.

### Threading Film Through the UR-2



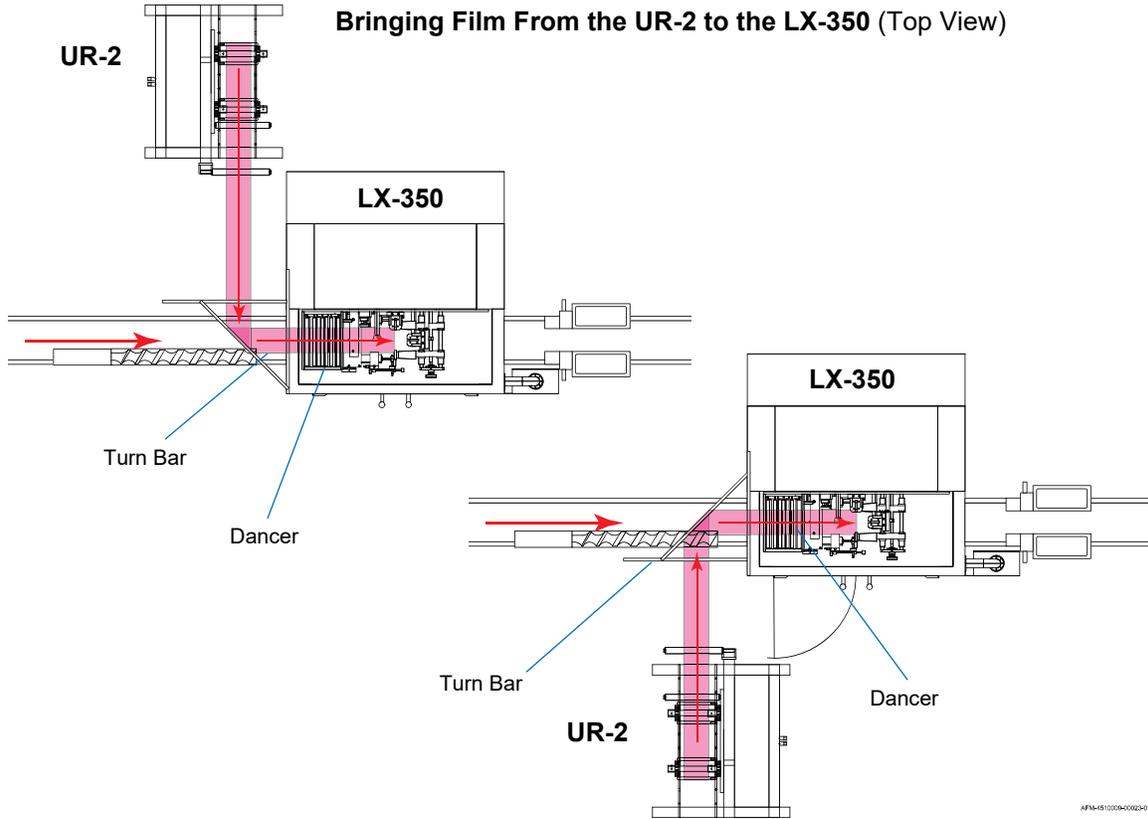
5. When finished, an extra 10' - 15' (3.1 – 4.6 m) of label film should extend past the top of the UR-2, ready to be threaded into the LX-350.
6. Leave everything powered down to thread the film through the LX-350 (see “Threading Film Through the LX-350” on page 176).

### Threading Film Through the LX-350

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).

	<p><b>WARNING:</b> Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.</p>
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2. After leaving the UR-2, the film will need to be brought over the Turn Bar and then under the Turn Bar to redirect the film at a 90° angle to the Dancer of the LX-350, as shown below.

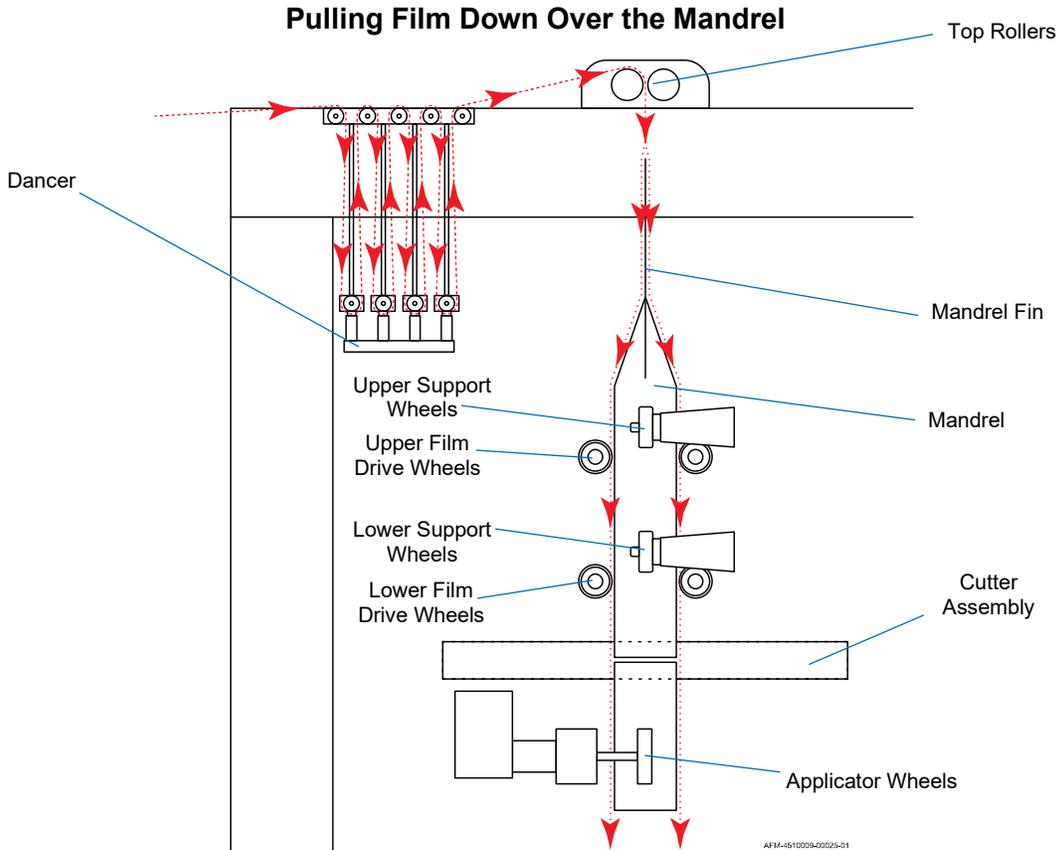


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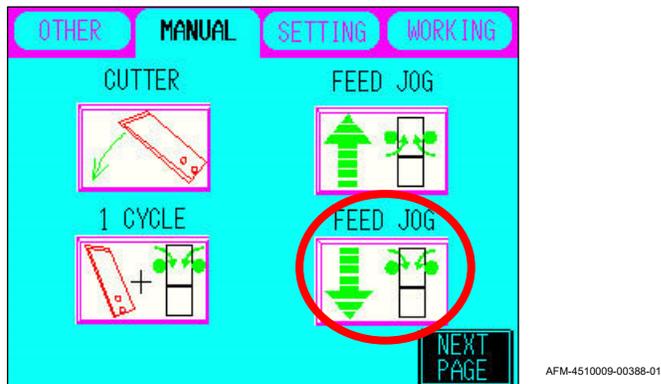
3. Open the Front Doors of the LX-350 and thread the film through the Dancer as shown below:





<p><b>VIDEO: Threading the Film onto the Mandrel</b>                  (Video 10) - TRT: 1:45                  To see a video of this procedure, click this link:  <a href="https://www.youtube.com/watch?v=W7DOjhdg884&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=10">https://www.youtube.com/watch?v=W7DOjhdg884&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=10</a>                  Or scan the QR code at right using the camera app on your mobile device.</p>	 <small>AFM-4510009-00530-01</small>
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7. Power on the system, following your company's lockout/tagout procedures.
8. Advance the film the rest of the way down the Mandrel, past the Applicator Wheels. When complete, the label film should cover the entire length of the Mandrel. Film can be advanced down the Mandrel manually or automatically:
  - a. Automatically: **Manual Screen** >> Feed Jog Down.

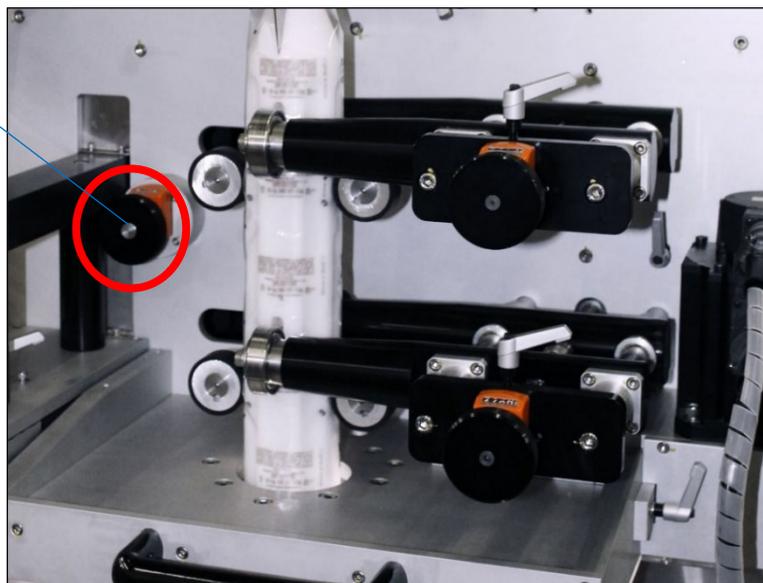


- b. Manually: Turn the Film Drive Wheel Adjust.

	<b>WARNING:</b> If manually bringing film down the Mandrel past the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.
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### Advancing Film with the Film Drive Wheel Adjust

Film Drive  
Wheel Adjust

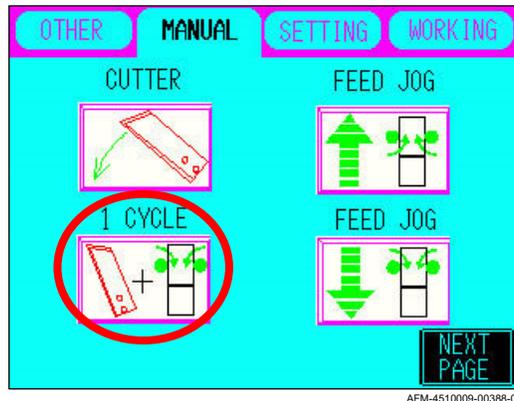


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- 9. Verify that the Film Drive Wheels, Support Wheels and Applicator Wheels are all touching their Bearing counterparts on the Mandrel (through the label film). If not, make the needed adjustments until they are (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205, “Film Drive Wheels: Unlocking, Adjusting and Locking” on page 202, and “Applicator Wheels: Unlocking, Adjusting and Locking” on page 207).
- 10. Fine tune the film registration (see “Fine Tuning the Film Registration” on page 181).

## Fine Tuning the Film Registration

1. If needed, plug in the LX-350.
2. Power on the LX-350 (see “Powering On” on page 163).
3. On the HMI, go to **Manual Screen 1**.
4. Press **1 Cycle** for 5 audible beeps to advance the label film one full label length and cut it.



5. Evaluate the location of the cut position and adjust as needed (see “Using Recipes and Testing” on page 157).
6. If needed, use a pair of scissors to cut off film at one of the transparent cut areas in the film.
7. Verify that the film is not crinkled. If it is, carefully pull the film tight from the bottom and try again.



**WARNING:** The Cutter Blades are sharp. Use caution when working close to the Cutter Assembly.

## Switching Film Rolls

When a Spool of label film is nearly empty, the HMI will signal that the film is low. At that point, the new roll of film can be added without having to spend the time threading the new film through the entire system again. The following splicing procedure allows the user to easily switch between Spool of film in the middle of a project.

### VIDEO: Splicing and Threading Film

(Video 17) – TRT: 6:35

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=0pfW68pIUDo&list=PLU8tRvNk7d6uUKBqN3XvJOTifP6GUeaqL&index=17>

Or scan the QR code at right using the camera app on your mobile device.



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### Needed to Switch Film Rolls:

- At least one Spool of label film
- Splicing Tape
- Scissors
- Hole Punch

### To Switch Film Rolls:

1. When the film roll is almost empty, push the Stop Button on the HMI.
2. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

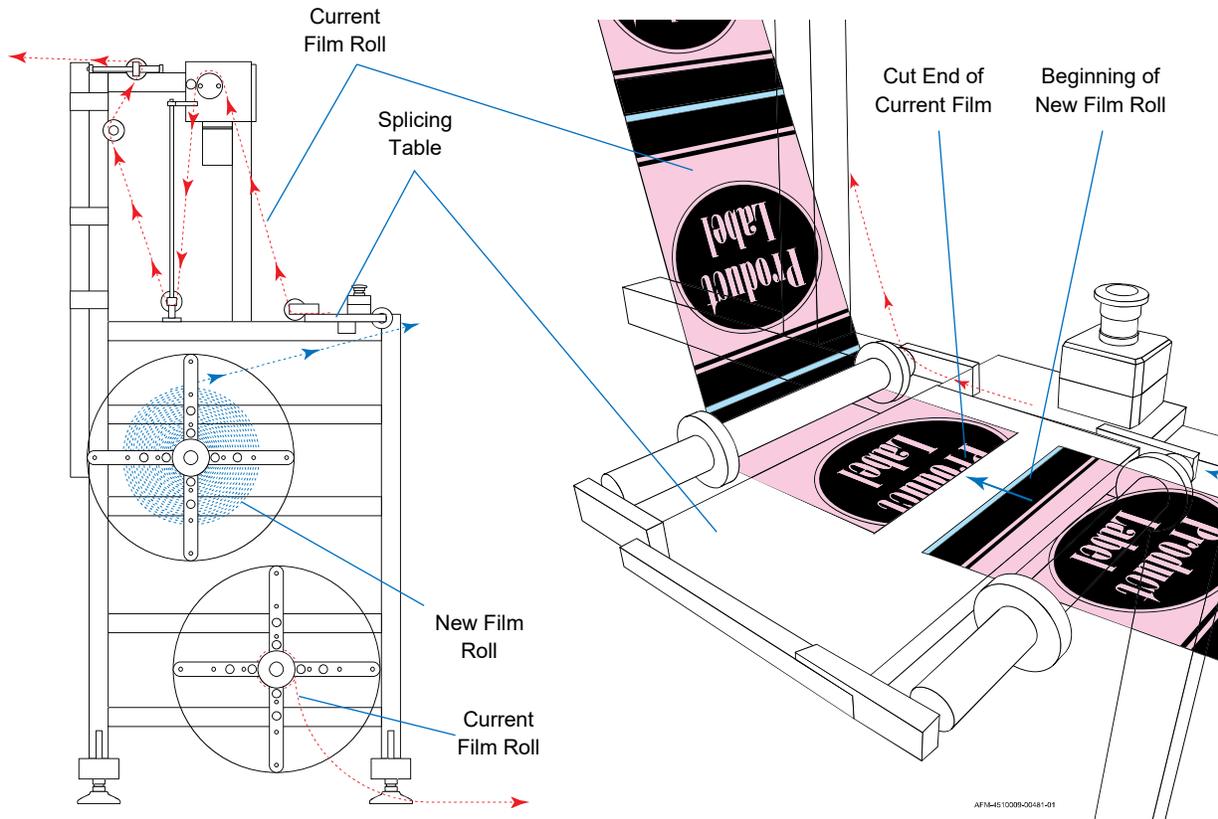
3. Looking at the film as it lays on the Splicing Table, find the halfway point in the label design, and measure an additional 10-15mm further down on it. Cut the old film smoothly across that point in the label design.

### Cutting the End of the Old Film



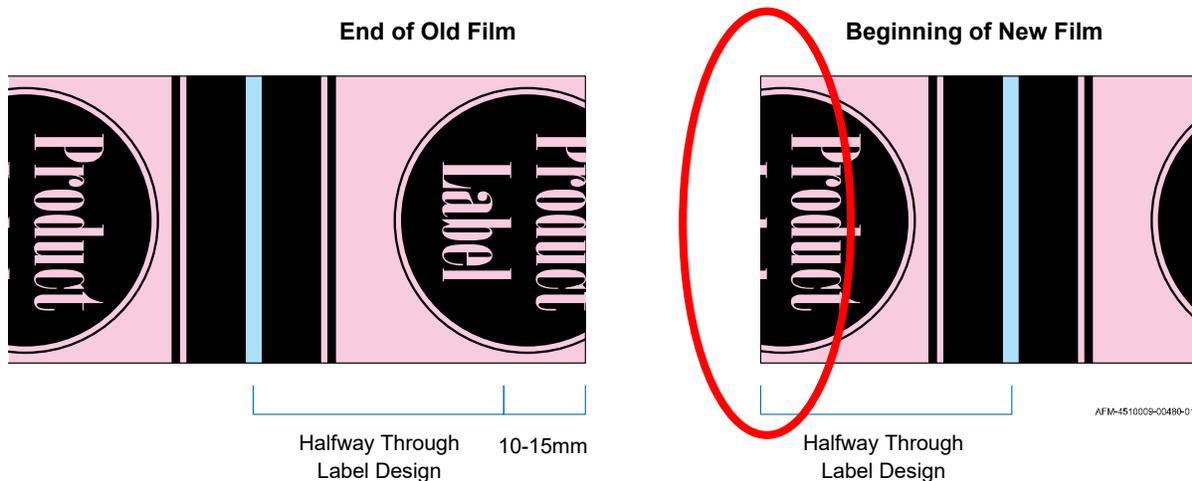
4. If a new roll is not already on the second Film Spool of the UR-2, install one, oriented counterclockwise (see “Installing a Film Roll on the UR-2” on page 173).
5. Run the new film up onto the Splicing Table to meet the end of the old film.

### Preparing to Splice Film



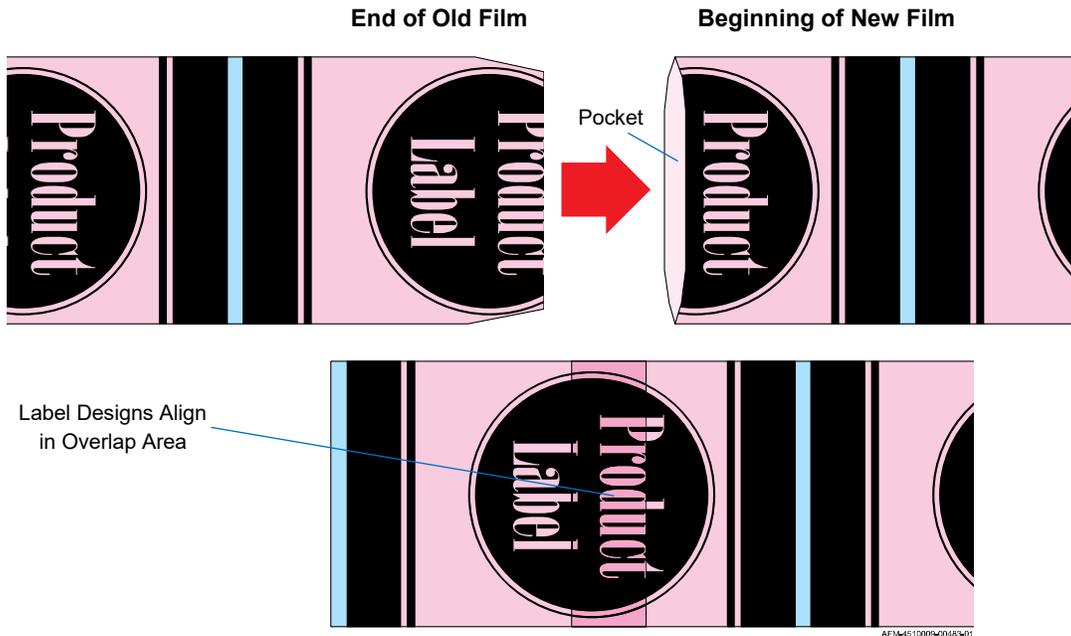
6. Looking at the beginning of the new film as it lays on the Splicing Table, find the halfway point in the label design, and cut the old film across that point.

### Cutting the Beginning of the New Film



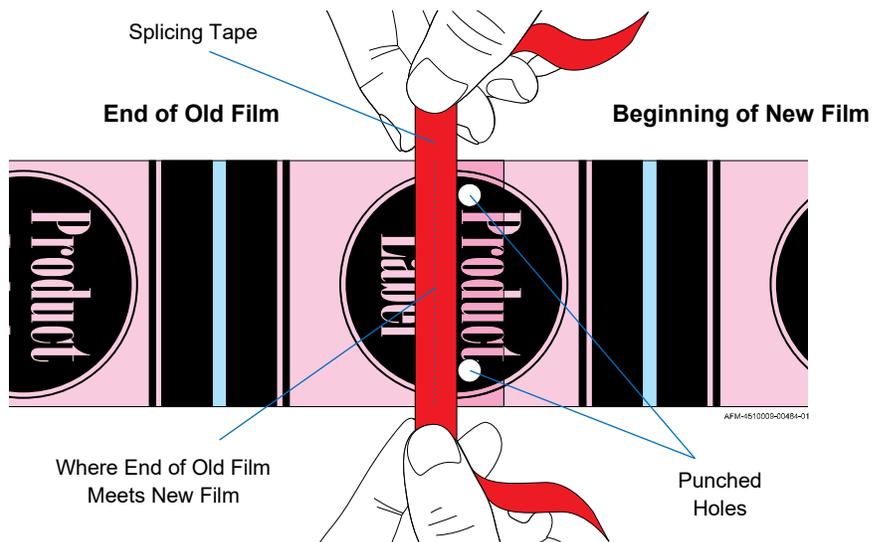
7. Open the cut in the new film to form a pocket, and squeeze in slightly on the end of the old film so that it can fit into that pocket.
8. Slide the end of the old film into that pocket in the beginning of the new film until the design in the old film matches up with the design in the new film.

### Sliding the Old Film into the New Film



9. Carefully apply one layer of splicing tape over the location where the end of the new film meets the old film to secure both pieces of film together. The tape should cover both sides (top and bottom) of the flat film.

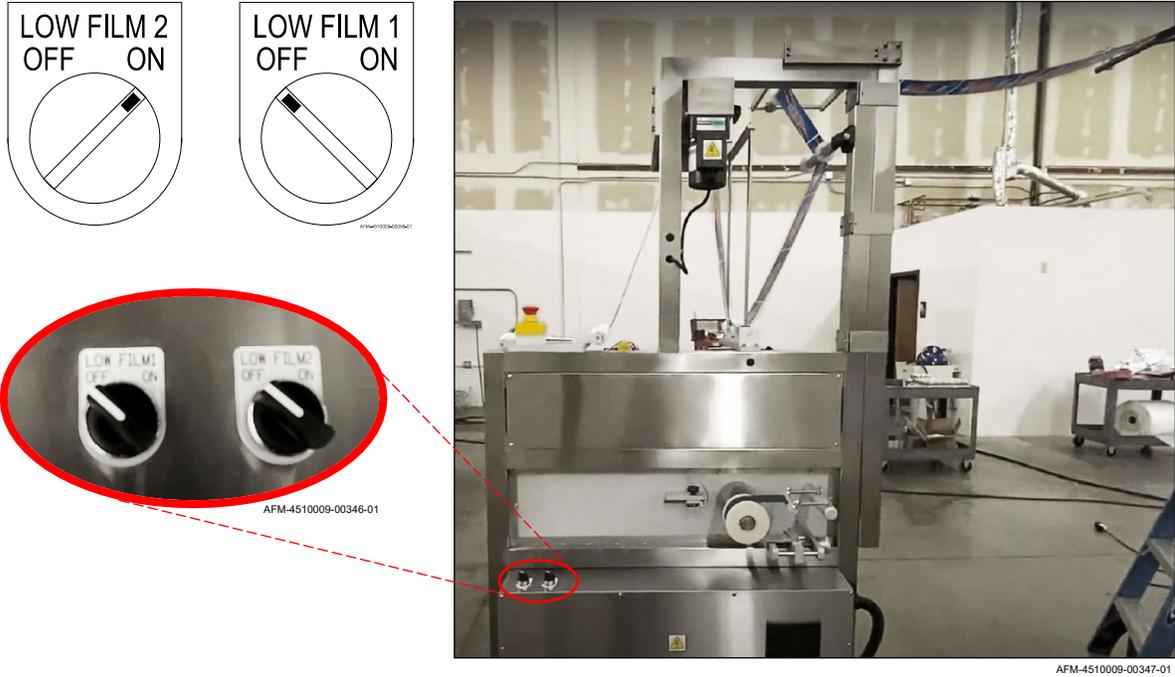
### Applying Splicing Tape and Cutting Air Holes



10. Use a Hole Punch to put two holes in the area where the two pieces of film overlap. This will prevent air pockets from forming in that area, which can impair the machine's ability to push the film smoothly down the Mandrel.

- Change the Low Film Notification Selectors on the UR-2 so that the Spool with the new roll is selected.

**Low Film Notification Selectors on UR-2**



- Power on the system, following your company's lockout/tagout procedures.
- Watch the first few bottles labeled and remove the one with the splicing tape from the Conveyor. If the taped label film triggers an alarm on the system, address the alarm and resume labeling.

## Removing the Mandrel

The Mandrel may occasionally need to be removed to clean out the Cutter Notch, to remove the Cutter Assembly or to use a different sized Mandrel.

### Items Needed to Remove the Mandrel:

- Cut-resistant Work Gloves

### To Remove the Mandrel:

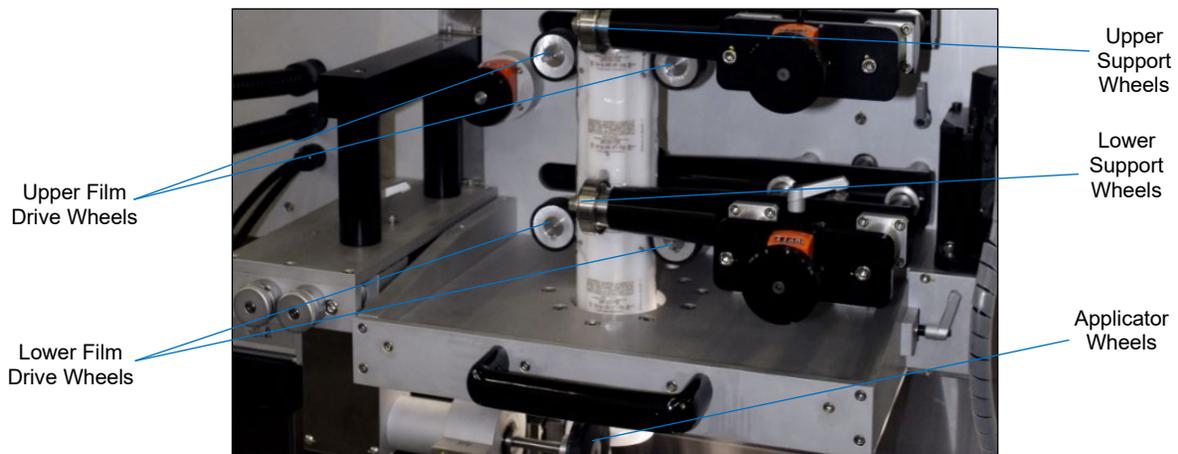
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Front Doors of the LX-350.
3. Remove the film from the Mandrel:
  - a. If there is film on the Mandrel, cut the film above the Mandrel Fin.
  - b. If removing the Mandrel to install a different sized one, unthread the film from the LX-350 and UR-2 and thread the new label film through the system (see “Installing a Film Roll on the UR-2” on page 173, “Threading Film Through the UR-2” on page 175, and “Threading Film Through the LX-350” on page 176). If not changing to a different sized Mandrel, this is unnecessary.
4. Firmly holding the Mandrel to support its weight, move the Wheels that hold the Mandrel in position away from the Mandrel:

### Wheels That Hold the Mandrel in Position



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**WARNING:** Wear Cut-resistant Gloves, and do not hold the Mandrel near the Cutter Assembly. Cutter Blades are very sharp and can easily cause severe cuts.



**ATTENTION:** When the various Wheels have been loosened, there will be nothing left supporting the Mandrel. To ensure that the Mandrel does not fall, use hands to hold it in place while loosening the various Wheels.

- a. Unlock the Applicator Wheel Lock and loosen the Applicator Wheels (see “Applicator Wheels: Unlocking, Adjusting and Locking” on page 207).
  - b. Unlock the Film Drive Wheel Lock and loosen the Film Drive Wheels (see “Film Drive Wheels: Unlocking, Adjusting and Locking” on page 202).
  - c. Unlock the Lower Support Wheel Lock and loosen the Lower Support Wheels (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).
  - d. Unlock the Upper Support Wheel Lock and loosen the Upper Support Wheels (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).
5. When all Wheels have been moved away from the Mandrel, gently lift the Mandrel straight upward and out of the LX-350.

### Removing the Mandrel



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6. Leave the system powered down until a Mandrel is properly installed/reinstalled. Then the system can be powered up, following your company’s lockout/tagout procedures.

## Removing the Cutter Assembly

The Cutter Assembly may occasionally need to be removed in order to switch Blades or to use a different sized Cutter Assembly.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

### VIDEO: Removing the Cutter Assembly

(Video 11) - TRT: 1:18

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=XzVBpnWGB9I&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=11>

Or scan the QR code at right using the camera app on your mobile device.



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### Items Needed to Remove the Cutter Assembly:

- Allen Wrench (included in Tool Kit)
- Cut-resistant Work Gloves

### To Remove the Cutter Assembly:

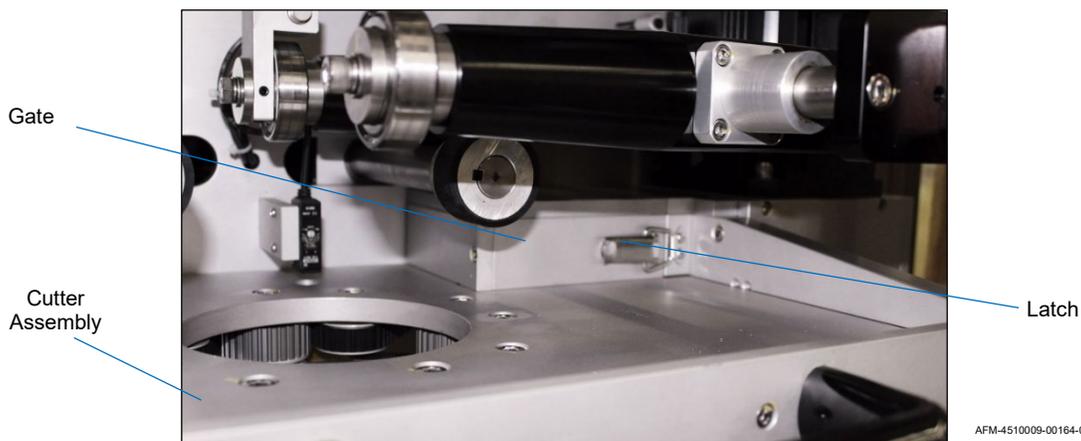
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Front Doors of the LX-350.
3. Remove the Mandrel (see “Removing the Mandrel” on page 186).
4. Unlatch and remove the Gate that houses the Cutter Drive Pulley.

### Removing the Gate



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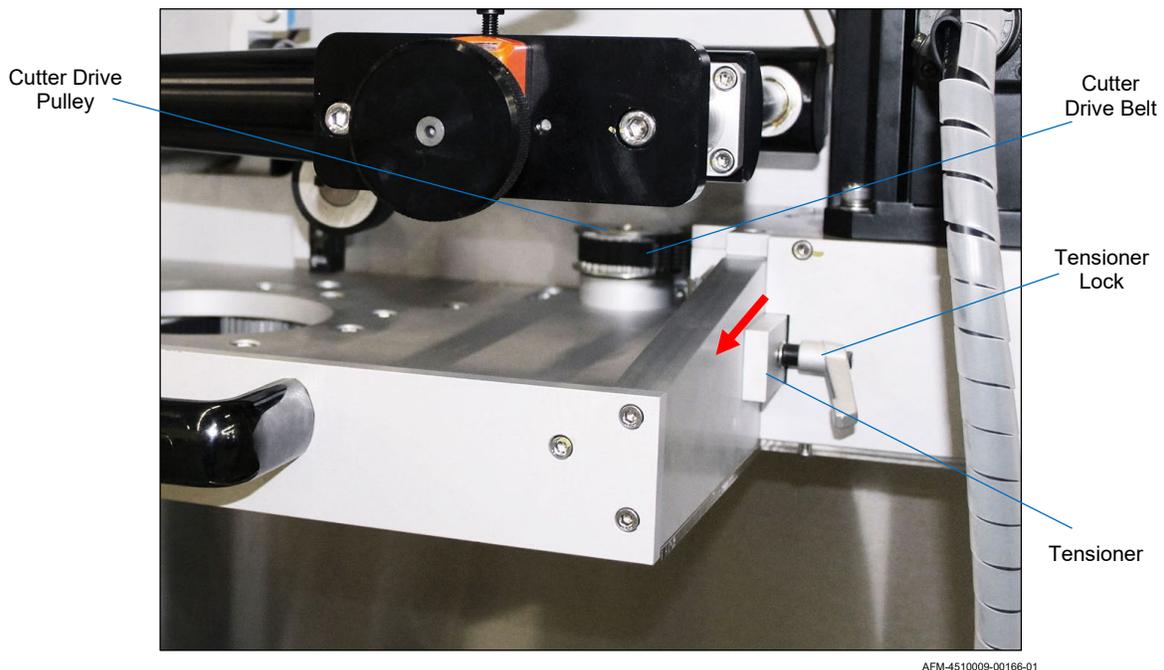
5. Use the Allen Wrench to remove the Screws that hold the Cutter Assembly in place at the ends of both Cutter Support Arms, as shown below.

### Removing the Screws



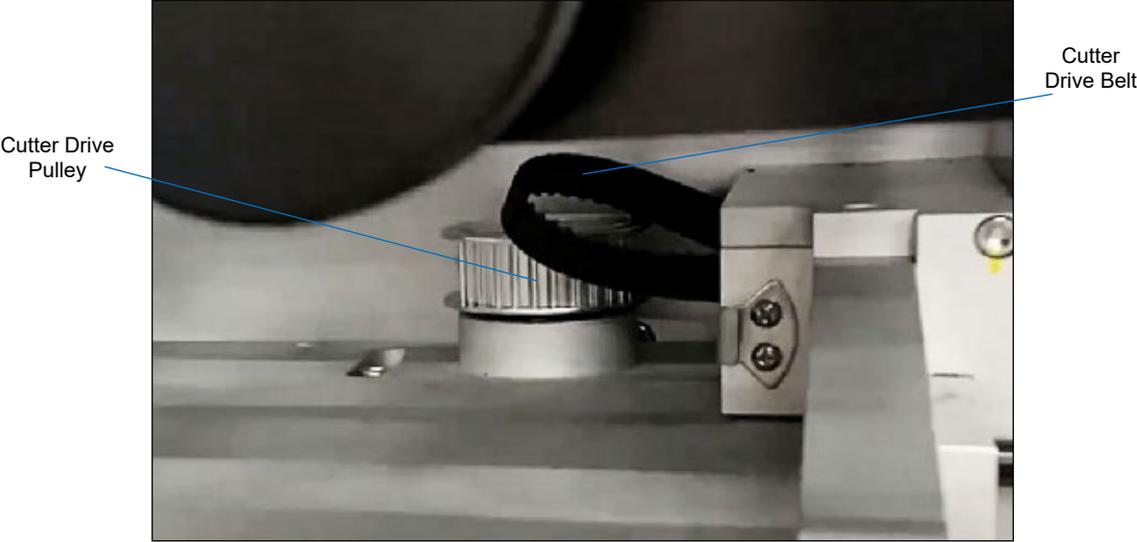
6. Loosen the Tensioner Lock on the right side of the Cutter Support Arm (see "Tensioner: Unlocking, Adjusting and Locking" on page 201).
7. Pull the Tensioner toward the front of the Chassis to loosen the Cutter Drive Belt.

### Pulling the Tensioner



8. Unloop the Cutter Drive Belt from the Cutter Drive Pulley by gently pulling the belt upwards.

**Unlooping the Cutter Drive Belt**



- 9. Grasp the Handle of the Cutter Assembly and pull it outward to remove the Cutter Assembly.

**Pulling Out the Cutter Assembly**

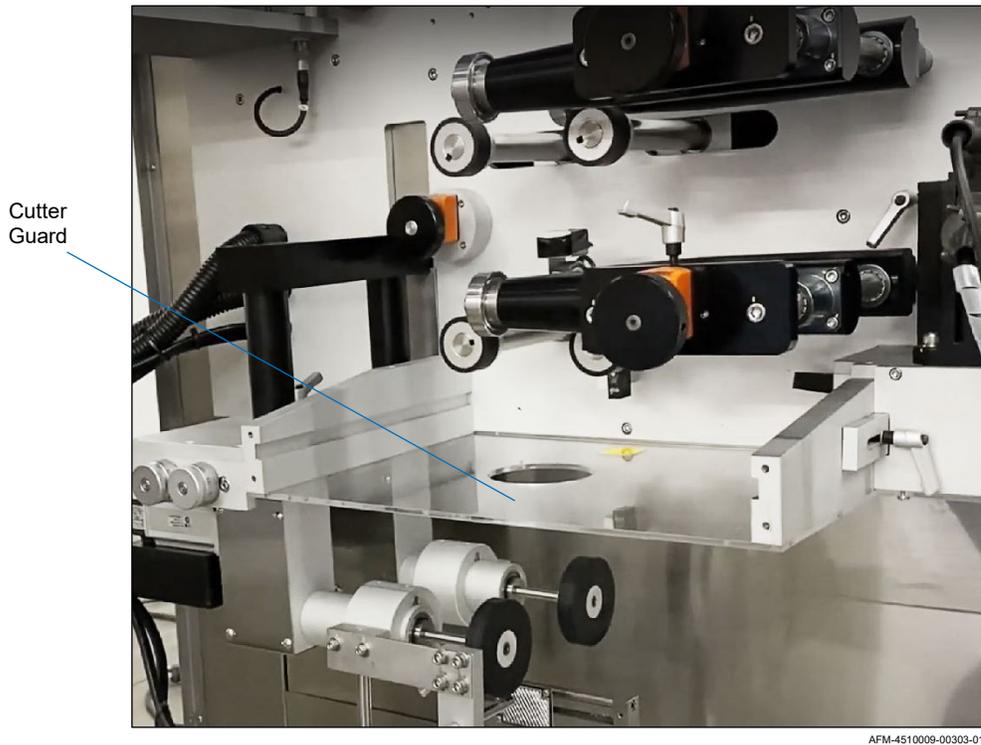


- 10. Leave the system powered down until a Cutter Assembly and Mandrel are properly installed/reinstalled. Then the system can be powered up, following your company's lockout/tagout procedures.

## Removing the Cutter Guard

If replacing the Cutter Assembly with a different sized one, the Cutter Assembly must be removed (see “Removing the Cutter Assembly” on page 188) and then the Cutter Guard must be removed.

**Cutter Guard**



AFM-4510009-00303-01

### Items Needed to Remove the Cutter Guard:

- Allen Wrench (included in Tool Kit)
- Cut-resistant Work Gloves

### To Remove the Cutter Guard:



**ATTENTION:** The Cutter Guard is held in place by 4 Screws on the underside of each Cutter Support Arm. When the Screws have been removed, there will be nothing holding the Cutter Guard in place. To ensure that the Cutter Guard does not fall, use hands to gently hold it in place while loosening the Screws.

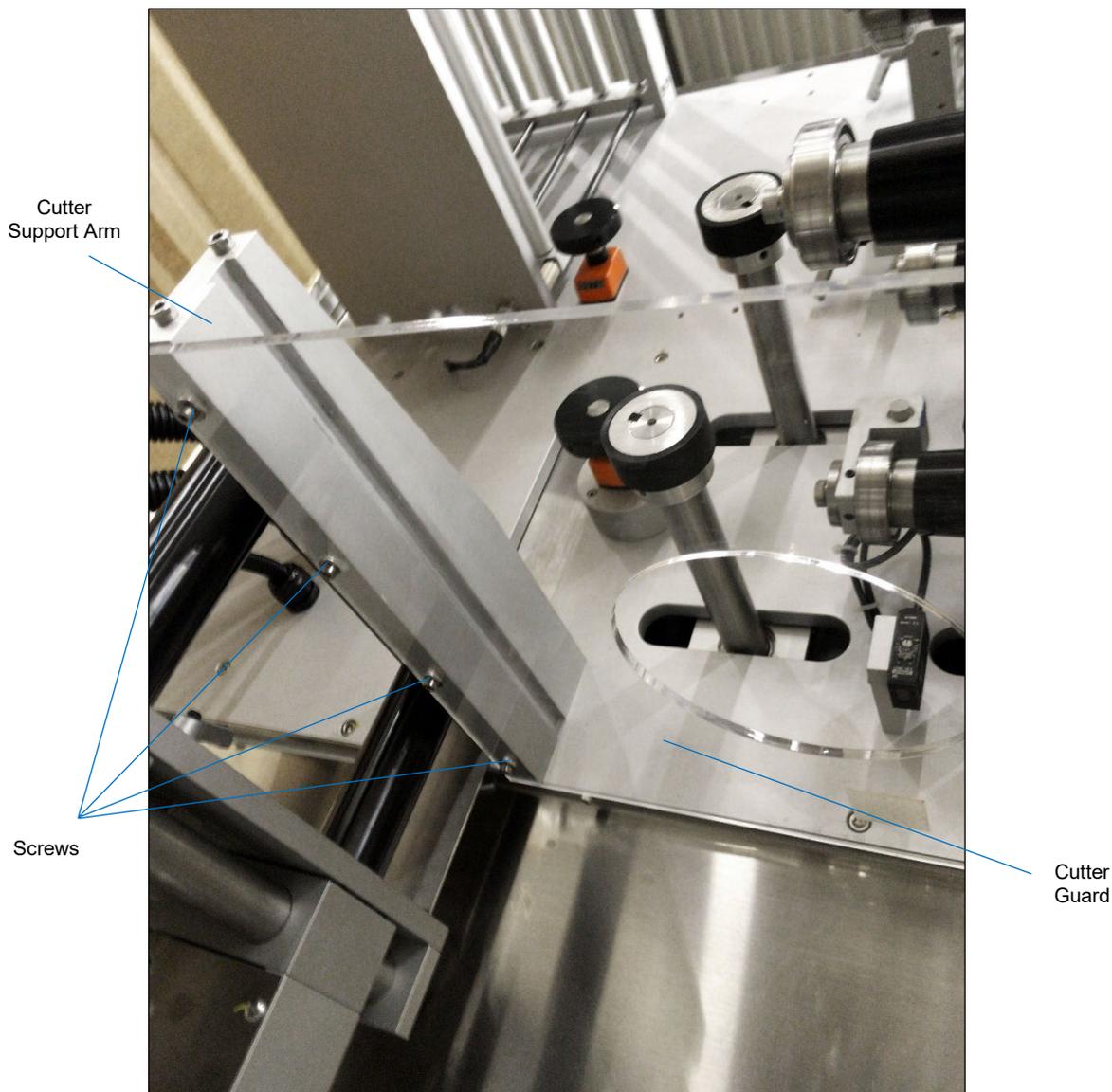
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Using a hand to support the Cutter Guard from beneath, remove the 8 Screws from the undersides of both Cutter Support Arms.

## Removing the Cutter Guard



AFM-4510009-00240-01

- a. Store the Screws, Cutter Guard, and other parts of the Cutter Assembly together for easy retrieval later.
3. Close the Front Doors of the LX-350.
4. Leave the system powered down until the Cutter Guard, a Cutter Assembly, and a Mandrel are properly installed/reinstalled. Then the system can be powered up, following your company's lockout/tagout procedures.

## Installing the Cutter Guard

The Cutter Guard is an important safety feature. It attaches to the underside of the Cutter Support Arms. It must always be securely in position before operation.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.



**WARNING:** The Cutter Guard is an important safety feature. Never operate the LX-350 without the Cutter Guard properly installed.

### Items Needed to Install the Cutter Guard:

- Allen Wrench (included in Tool Kit)
- Cut-resistant Work Gloves
- 8 Cutter Guard Screws

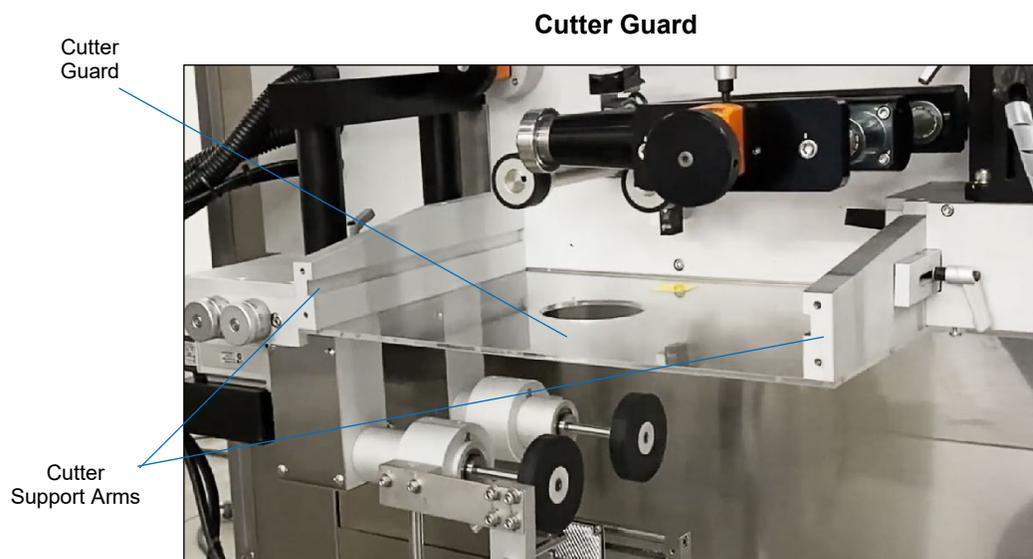
### To Install the Cutter Guard:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

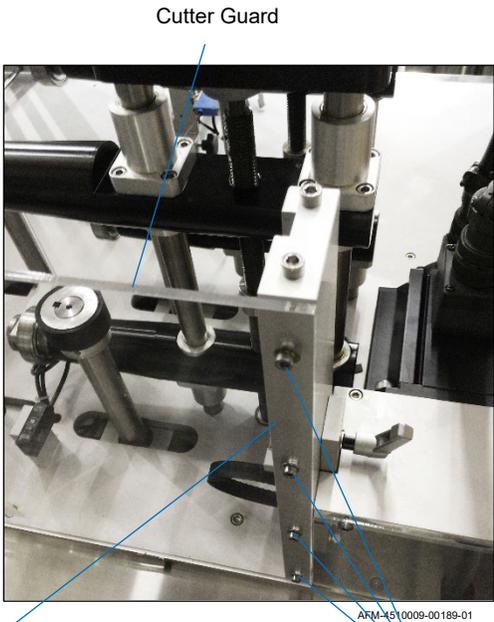
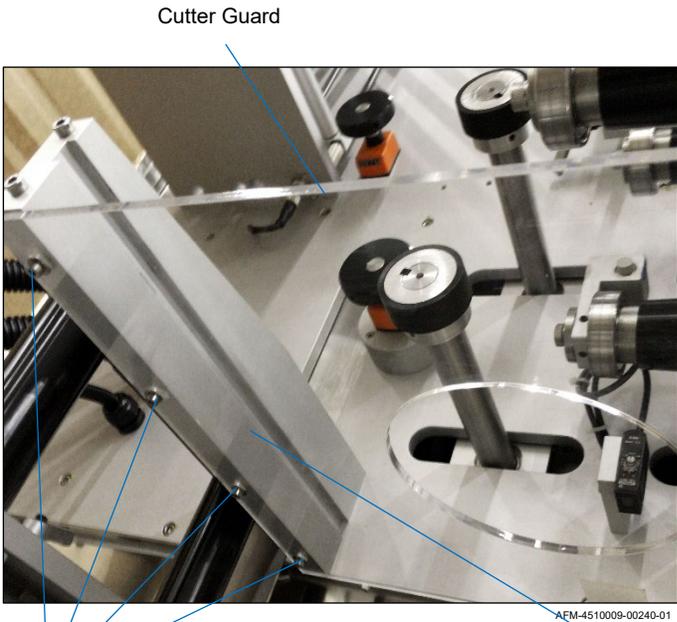
2. Open the Front Doors of the LX-350 and locate the Support Arms



3. Hold the clear Cutter Guard against the underside of the Cutter Support Arms, aligning the screw holes. The yellow Reflector should face the top surface of the Cutter Guard and should be on the edge of the Cutter Guard closest to the rear of the Chassis. When the Cutter Guard

is properly in position, the Cutter Home Position Sensor should point directly down at the yellow Reflector. If the Sensor does not see the Reflector, the LX-350 will not function.

**Installing the Cutter Guard**



Screws

Cutter Support Arms

Screws

- 4. Insert the 8 Screws through the Screw holes in the Cutter Guard and into the Cutter Support Arms and use the Allen Wrench to tighten them so that the Cutter Guard is securely in position.
- 5. Leave the system powered down until a Cutter Assembly and Mandrel are properly installed/reinstalled. Then the system can be powered up, following your company's lockout/tagout procedures.

## Installing the Cutter Assembly

The Cutter Assembly slides horizontally like a drawer into the Cutter Support Arms inside the LX-350 Chassis.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.



**WARNING:** The Cutter Guard is an important safety feature. Never operate the LX-350 without the Cutter Guard properly installed.

### Items Needed to Install the Cutter Assembly:

- Allen Wrench (included in Tool Kit)
- Cut-resistant Work Gloves

### To Install the Cutter Assembly:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. If the Cutter Guard has not already been installed, install it (see “Installing the Cutter Guard” on page 193).
3. Loosen the Tensioner Lock on the right side of the Cutter Support Arm (see “Tensioner: Unlocking, Adjusting and Locking” on page 201).
4. Aligning the ridges in the sides of the Cutter Assembly with the grooves inside the Cutter Support Arms, slide the Cutter Assembly all the way into place with the Handle facing out.

Cutter  
Assembly

### Inserting the Cutter Assembly

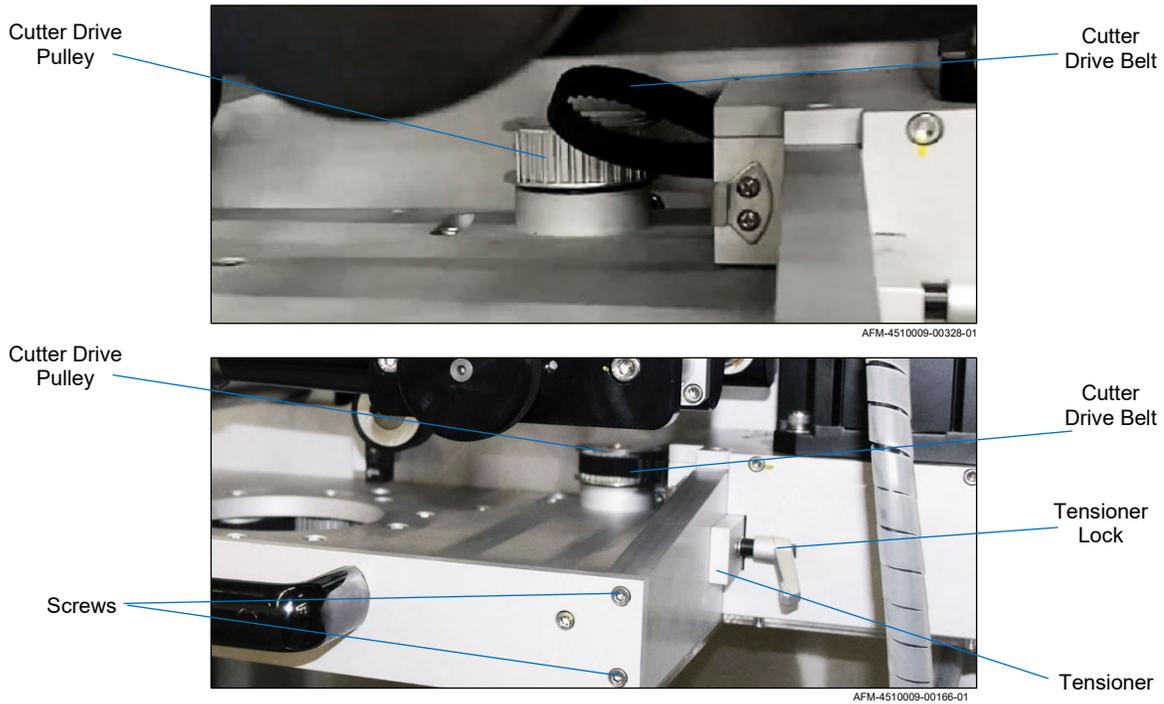
Handle



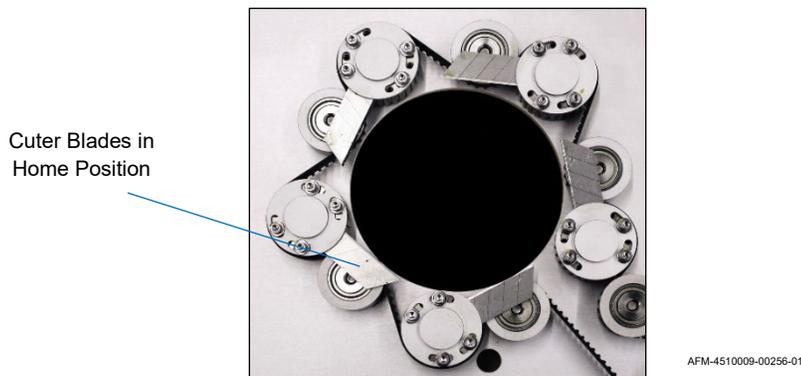
AFM-4510009-00310-01

5. Loop the Cutter Drive Belt around the Cutter Drive Pulley in the inside right corner of the Cutter Assembly. The tension on the Cutter Drive Belt should be very tight.

### Looping the Cutter Drive Belt



6. While pushing the Tensioner firmly toward the back wall of the LX-350, tighten the Tensioner Lock on the side of the Cutter Support Arm (see “Tensioner: Unlocking, Adjusting and Locking” on page 201).
7. Tighten the Screws at the ends on the Cutter Support Arms to hold the Cutter Assembly firmly in place.
8. Install the Mandrel (see “Installing the Mandrel” on page 197).
9. With the Mandrel properly installed, power up the system, following your company’s lockout/tagout procedures.
10. Use the HMI to return the Cutter Blades to their home position (see “Cutter Find Home” on page 94 and “Manual Screen 1” on page 145).



## Installing the Mandrel

Before the LX-350 can be used, the Mandrel must be installed. The Mandrel is held in place mainly by tension with the Support Wheels, Film Drive Wheels, and Applicator Wheels.



**WARNING:** When installing the Mandrel, use extreme caution near the Cutter Assembly. Cutter Blades are very sharp and can easily cause severe cuts.



**ATTENTION:** Failure to hold the Mandrel firmly by hand when installing it will result in the Mandrel falling, potentially damaging it and the LX-350, and voiding the warranty.

### VIDEO: Mandrel Installation

(Video 14) – TRT: 1:40

To see a video of this procedure, click this link:

[https://www.youtube.com/watch?v=hkHRfBnPzOM&list=PLU8tRvNk7d6uUKBqN3XvJO\\_TifP6GUeaqL&index=14](https://www.youtube.com/watch?v=hkHRfBnPzOM&list=PLU8tRvNk7d6uUKBqN3XvJO_TifP6GUeaqL&index=14)

Or scan the QR code at right using the camera app on your mobile device.



AFM-4510009-00530-01

### Needed to Install the Mandrel:

- Cut-resistant Work Gloves

### To Install the Mandrel:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Front Doors of the LX-350.
3. Be sure that the Cutter Assembly has been properly installed.
4. Move the various Wheels outward to make space for the Mandrel:

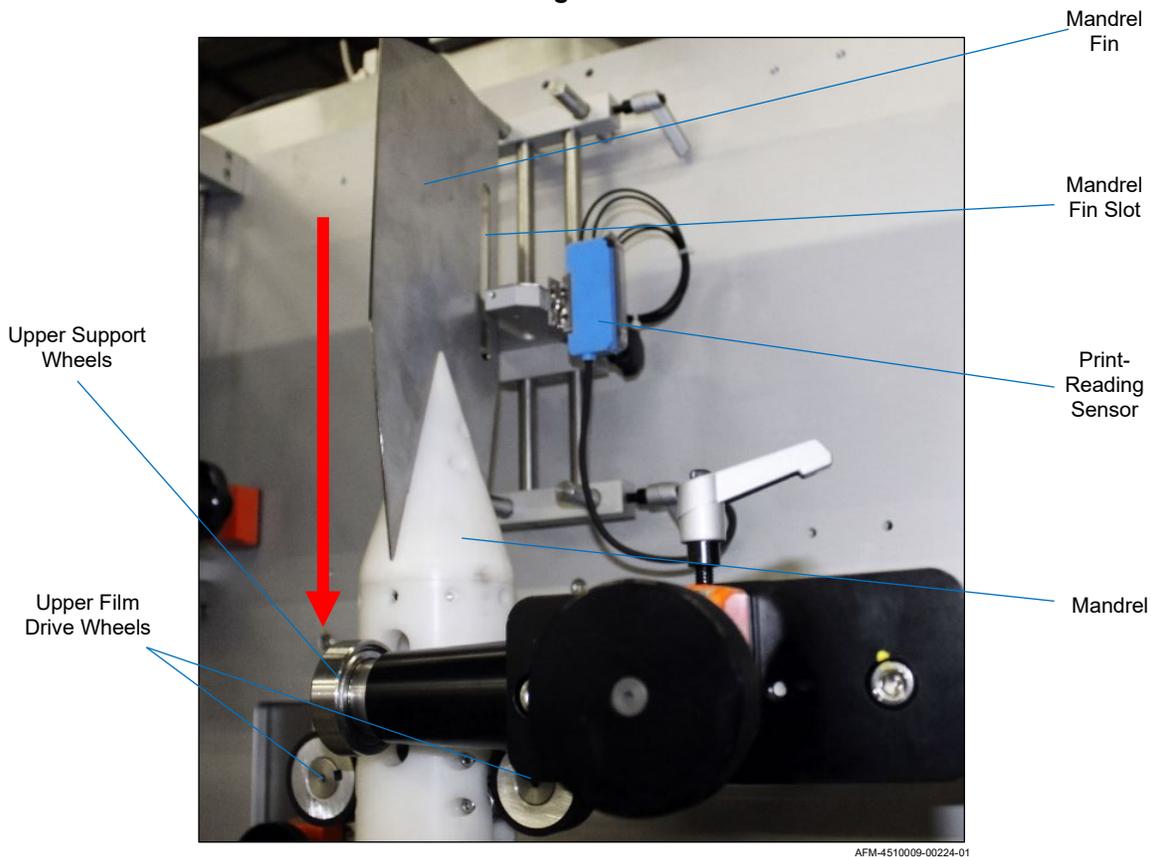


**ATTENTION:** Attempting to position the Applicator Wheels, Film Drive Wheels or Support Wheels when they are locked can damage the LX-350 and void the warranty.

- a. Unlock the Applicator Wheel Lock and loosen the Applicator Wheels (see “Applicator Wheels: Unlocking, Adjusting and Locking” on page 207).
- b. Unlock the Film Drive Wheel Lock and loosen the Film Drive Wheels (see “Film Drive Wheels: Unlocking, Adjusting and Locking” on page 202).
- c. Unlock the Lower Support Wheel Lock and loosen the Lower Support Wheels (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).

- d. Unlock the Upper Support Wheel Lock and loosen the Lower Support Wheels (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).
- 5. Holding the Mandrel vertically with the Mandrel Fin Slot toward the rear of the unit, carefully pass the Mandrel down through the Wheel Assemblies and Cutter Assembly. When the Mandrel is in the correct position:
  - a. The Film Drive Wheels should align with the Film Drive Bearings on the sides of the Mandrel.
  - b. The Support Wheels should align with the Support Bearings on the sides of the Mandrel.
  - c. The Print Reading Sensor should align with the slot in the Mandrel Fin.

**Installing the Mandrel**



- 6. Holding the Mandrel in position by hand, move the Support Wheels in toward the Mandrel:

	<p><b>ATTENTION:</b> Attempting to position the Support Wheels when they are locked can damage the LX-350 and void the warranty.</p>
---	--

- a. Tighten the Upper Support Wheels, and when they are touching the Lower Support Bearings just enough to support the Mandrel, lock them in position (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).
- b. Tighten the Lower Support Wheels, and when they are touching the Lower Support Bearings just enough to support the Mandrel, lock them in position (see “Support Wheels: Unlocking, Adjusting and Locking” on page 205).

	<b>ATTENTION:</b> The Support Wheels must support the full weight of the Mandrel. They are the primary thing keeping the Mandrel from falling.
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7. Power the system on, following your company's lockout tagout procedures.
8. Automatically adjust the Film Drive Wheels:

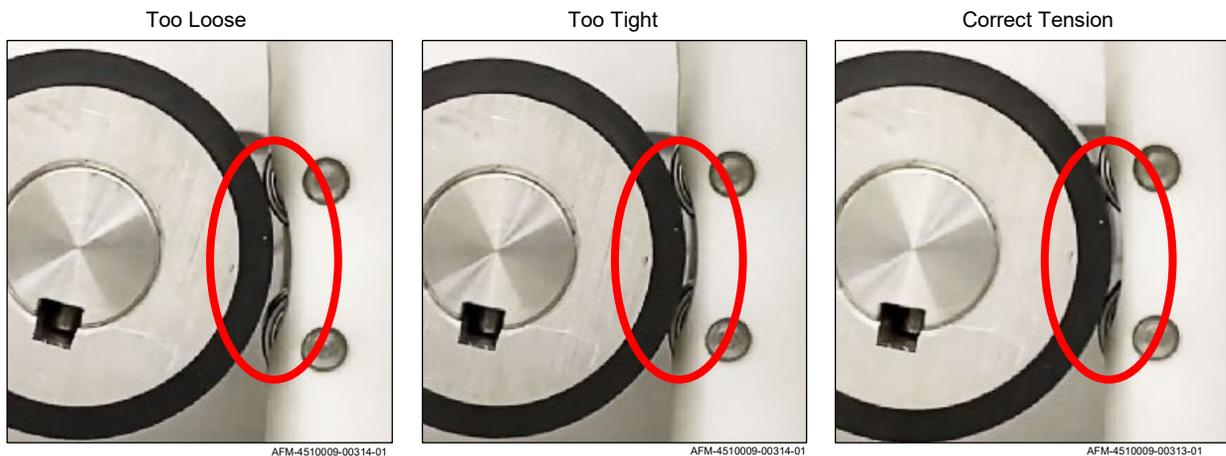
	<b>ATTENTION:</b> Attempting to position the Film Drive Wheels when they are locked can damage the LX-350 and void the warranty.
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<p><b>VIDEO: Film and Idler Wheel Adjustments</b>                  (Video 3) - TRT: 4:37                  To see a video of this procedure, click this link:  <a href="https://www.youtube.com/watch?v=6nw3g6Fmh8I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=3">https://www.youtube.com/watch?v=6nw3g6Fmh8I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=3</a>                  Or scan the QR code at right using the camera app on your mobile device.</p>	 <small>AFM-4510009-00530-01</small>
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- a. Use the HMI to tighten the Film Drive Wheels until they have the correct tension and use the Film Drive Wheel Lock to lock them in position (see "Automatic Film Drive Wheel Adjustment" on page 203).

	<b>ATTENTION:</b> To avoid damaging the film or the LX-350, the Film Drive Wheels should only be tight enough to consistently advance the label film.
--	---

**Finding Correct Tension: Film Drive Wheels Against Mandrel Bearings**



9. Automatically adjust the Applicator Wheels:

	<b>ATTENTION:</b> Attempting to position the Applicator Wheels when they are locked can damage the LX-350 and void the warranty.
---	--

- a. The Applicator Wheels should be at the same vertical level as the Applicator Bearings on the Mandrel. If needed, use the HMI to move the Applicators vertically (see "Vertical Applicator Wheel Adjustment" on page 207).

- b. Use the HMI to tighten the Applicator Wheels until they have the correct tension and use the Applicator Wheel Lock to lock them in position (see “Horizontal Applicator Wheel Adjustment” on page [209](#)).

	<b>ATTENTION:</b> To avoid damaging the film or the LX-350, the Applicator Wheels should only be tight enough to consistently advance the label film.
---	---

10. Close the Front Doors of the LX-350.
11. If labeling a different product than before, fine-tune the Mandrel position (see “Adjusting the Head Height” on page [225](#)).

## Tensioner: Unlocking, Adjusting and Locking

The Tensioner (on the side of the right Cutter Support Arm) ensures that the Cutter Drive Belt puts the right amount of pressure on the Cutter Drive Pulley.

The Tensioner must be loosened when removing/installing the Cutter Assembly.

The Tensioner should be tightened if the Cutter Blades are not reliably going through a full cycle for each cut.

### To Adjust the Tensioner:

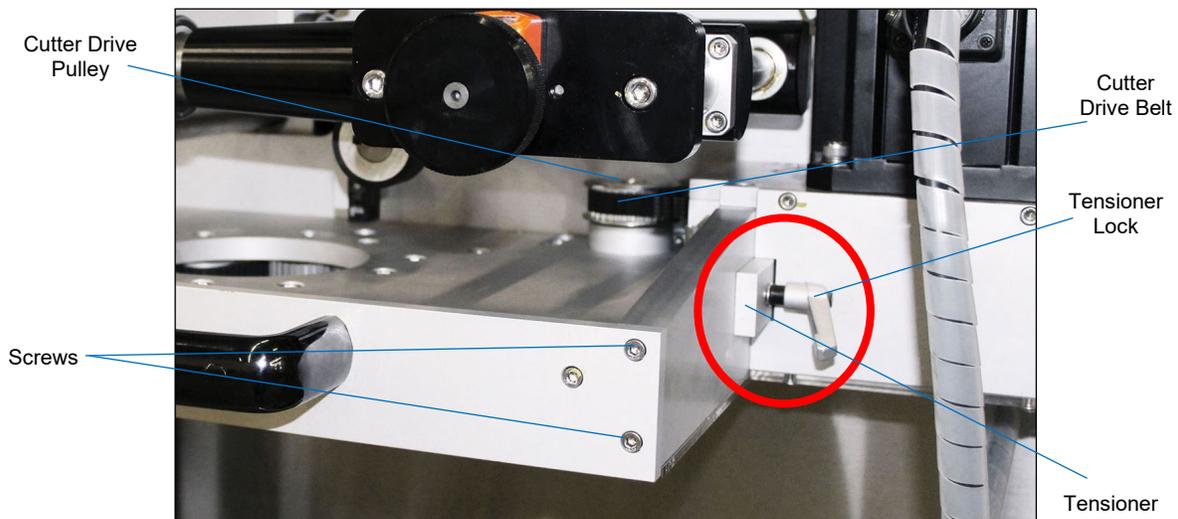
1. Lockout/tagout procedures are not required for simply adjusting the Tensioner. However, if adjusting the Tensioner in preparation for removing the Cutter Assembly, lockout/tagout procedures must be followed: shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Loosen the Tensioner Lock by turning it counterclockwise.
3. Forcefully push the Tensioner toward the back wall to increase tension, or do so with less or no pressure to decrease tension.

### Adjusting the Tensioner



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4. When the desired amount of tension has been achieved, tighten the Tensioner Lock by turning it clockwise.
5. If the system has been powered down for lockout/tagout, leave it powered down.

## Film Drive Wheels: Unlocking, Adjusting and Locking

### VIDEO: Film and Idler Wheel Adjustments

(Video 3) - TRT: 4:37

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=6nw3g6Fmh8I&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=3>

Or scan the QR code at right using the camera app on your mobile device.



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During normal operation, the Film Drive Wheels should rest against the Film Drive Bearings on the Mandrel, advance the film down the length of the Mandrel toward the Cutter Assembly. The Film Drive Wheels can be adjusted manually or by using the HMI.

The Film Drive Wheels must be loosened to remove the Mandrel or when less pressure on the Film Drive Bearings is needed (film is being crinkled or labels show “burn” marks).

The Film Drive Wheels must be tightened to help stabilize the Mandrel and when more pressure on the Film Drive Bearings is needed (film is not being advanced consistently down the Mandrel, Film Drive Wheels appear to be slipping against the film).



**ATTENTION:** Tightening the Film Drive Wheels too much, especially if the Support Wheels are loose, can damage the film, affect performance, and potentially cause the Mandrel to be pushed out of the Support Wheels, causing the Mandrel to fall, potentially damaging it and the LX-350, and voiding the warranty. The Film Drive Wheels should only be tight enough to consistently advance the label film.

### Manual Film Drive Wheel Adjustment

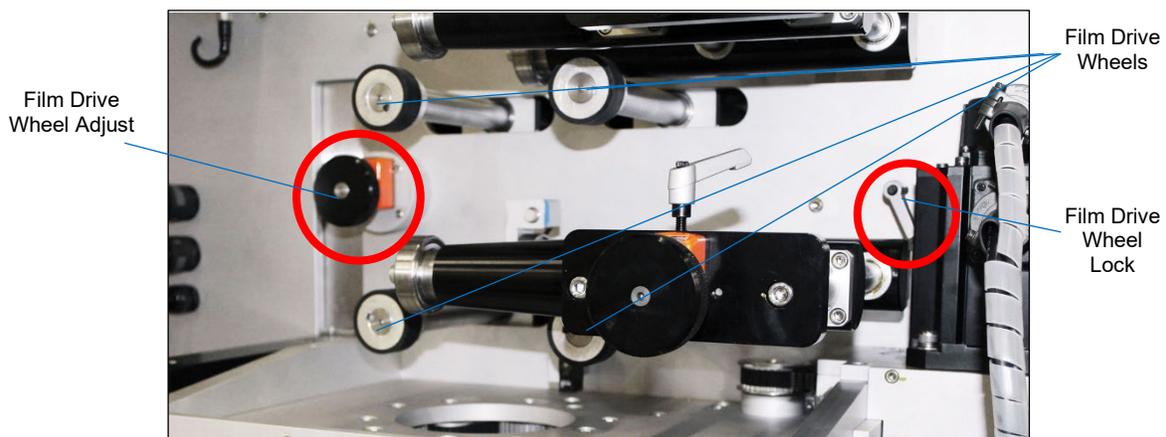
#### To Manually Adjust the Film Drive Wheels:

1. Unlock the Film Drive Wheel Lock by turning it counterclockwise.



**ATTENTION:** Attempting to adjust the Film Drive Wheels when they are locked can damage the LX-350 and void the warranty.

#### Manually Adjusting the Film Drive Wheels



AFM-4510009-00166-01

2. Turn the Film Drive Wheel Adjust counterclockwise to move the Film Drive Wheels away from the Mandrel or clockwise to move them inward toward the Mandrel. The Film Drive Wheels should touch the Mandrel Bearings just enough to consistently advance the film down the Mandrel.
3. When the desired tension is achieved, lock the Film Drive Wheel Lock by turning it clockwise.

## Automatic Film Drive Wheel Adjustment

The Film Drive Wheels can be adjusted automatically through the HMI. When tightened automatically, they can easily be moved to have the correct amount of tension against the Mandrel.

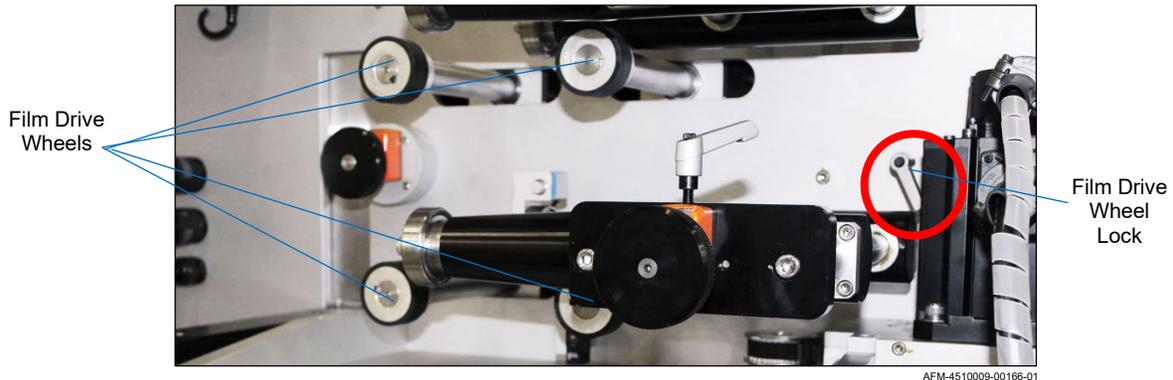
### To Automatically Adjust the Film Drive Wheels:

1. Unlock the Film Drive Wheel Lock by turning it counterclockwise.



**ATTENTION:** Attempting to adjust the Film Drive Wheels when they are locked can damage the LX-350 and void the warranty.

### Automatically Adjusting the Film Drive Wheels



2. With the system powered on, go to **Manual Screen 2** on the HMI.
3. Press and hold the red **Open** Button to move the Film Drive Wheels out from the Mandrel or press and hold the red **Close** Button to move the Film Drive Wheels inward toward the Mandrel. They will stop automatically when they are positioned against the Mandrel with the correct tension.

#### VIDEO: Adjustments Using the HMI

(Video 16) – TRT: 2:21

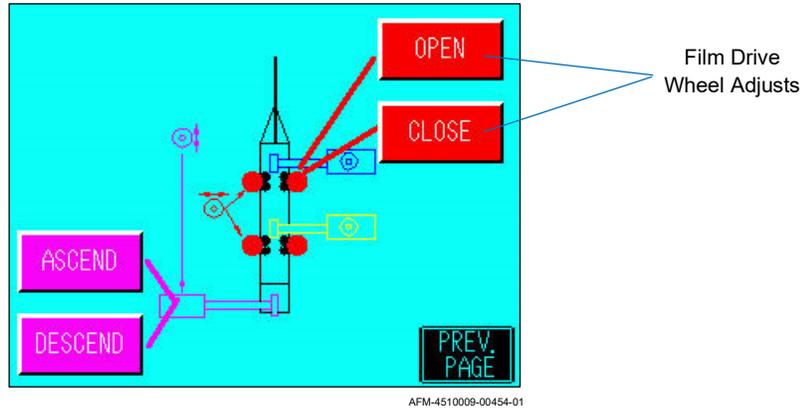
To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=16>

Or scan the QR code at right using the camera app on your mobile device.



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AFM-4510009-00454-01

4. Once the Film Drive Wheels are in the desired position, lock them in place by turning the Film Drive Wheel Lock clockwise.

## Support Wheels: Unlocking, Adjusting and Locking

### VIDEO: Film and Idler Wheel Adjustments

(Video 3) - TRT: 4:37

To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=6nw3g6Fmh8I&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=3>

Or scan the QR code at right using the camera app on your mobile device.



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The Support Wheels hold the Mandrel in place and keep it from falling by resting against the Support Bearings on the Mandrel. Whenever adjusting the Support Wheels, it is always important to hold the Mandrel firmly by hand to ensure that it does not fall. The Upper Support Wheels and Lower Support Wheels can be adjusted independently from one another, allowing one set of Support Wheels to be adjusted while the other set is helping the user to hold the Mandrel.



**ATTENTION:** Failure to hold the Mandrel firmly by hand when loosening the Support Wheels will result in the Mandrel falling, potentially damaging it and the LX-350, and voiding the warranty.

The Support Wheels must be loosened to remove the Mandrel or if they are so tight against the Mandrel that the film cannot easily slide past.

The Support Wheels must be tightened if they are not adequately supporting the Mandrel.

### To Adjust the Upper Support Wheels:

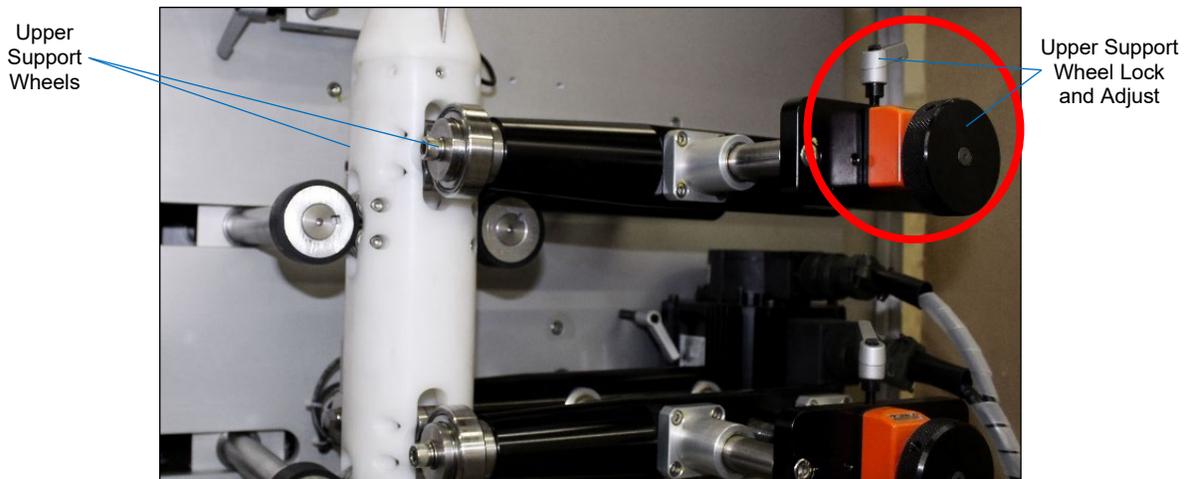
Unless removing the Mandrel, the Upper Support Wheels are best adjusted while the Lower Support Wheels are still helping the user to support the weight of the Mandrel.

1. Unlock the Upper Support Wheel Lock by turning it counterclockwise.



**ATTENTION:** Attempting to position the Upper Support Wheels when they are locked can damage the LX-350 and void the warranty.

### Adjusting the Upper Support Wheels



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2. Turn the Upper Support Wheel Adjust clockwise to move the Upper Support Wheels away from the Mandrel or counterclockwise to move the Upper Support Wheels in toward the Mandrel. The Support Wheels should touch the Mandrel Bearings just enough to steadily and reliably hold the Mandrel in position.
3. When the desired tension is achieved, lock the Support Wheels in place by turning the Upper Support Wheel Lock clockwise.

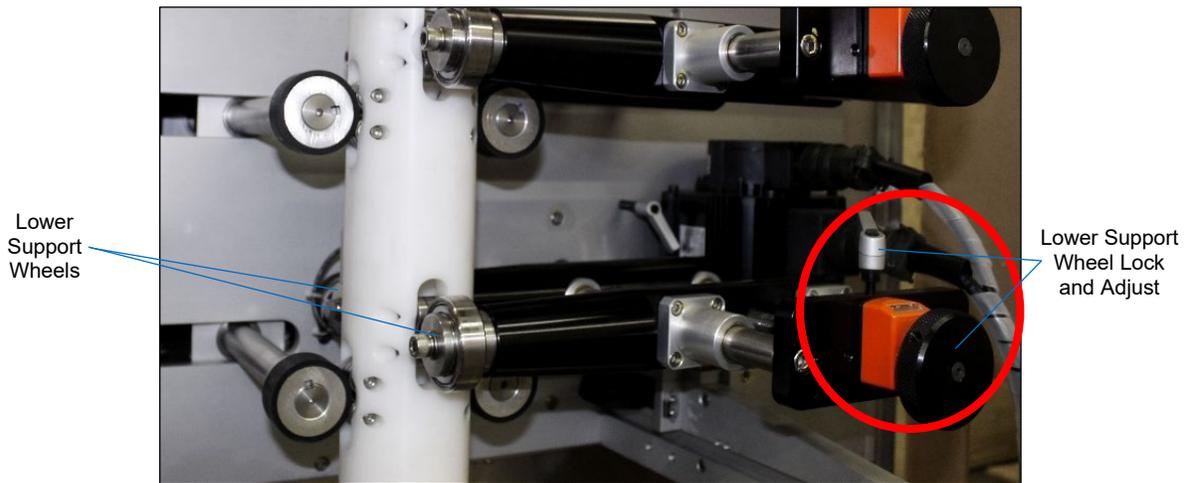
### To Adjust the Lower Support Wheels:

1. Unlock the Lower Support Wheel Lock by turning it counterclockwise.



**ATTENTION:** Attempting to position the Lower Support Wheels when they are locked can damage the LX-350 and void the warranty.

### Adjusting the Lower Support Wheels



AFM-4510009-00222-01

2. Turn the Lower Support Wheel Adjust clockwise to move the Lower Support Wheels away from the Mandrel or counterclockwise to move the Lower Support Wheels in toward the Mandrel. The Support Wheels should touch the Mandrel Bearings just enough to steadily and reliably hold the Mandrel in position.
3. When the desired tension is achieved, lock the Support Wheels in place by turning the Lower Support Wheel Lock clockwise.

## Applicator Wheels: Unlocking, Adjusting and Locking

The Applicator Wheels, resting against the Applicator Bearings toward the bottom of the Mandrel, shoot the cut label off the end of the Mandrel and onto the passing product. The Applicator Wheels should lightly touch the Applicator Bearings on the Mandrel. The Applicator Wheels can be adjusted vertically as well as in and out from the Mandrel.

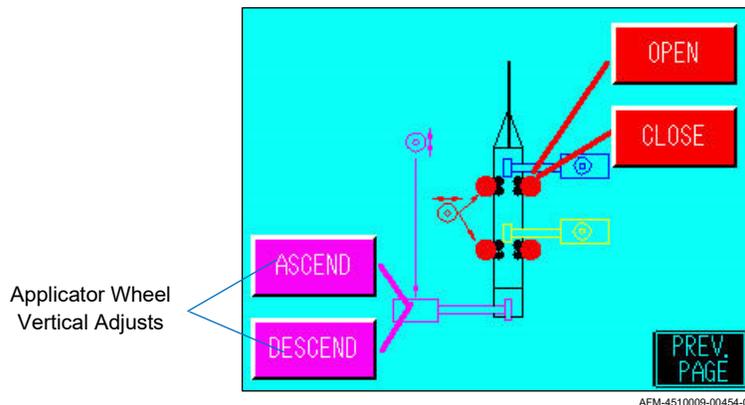
If the Applicator Wheels are too tight against the Applicator Bearings, they will damage the label film and can potentially damage the machine itself.

If the Applicator Wheels are too loose, they will not consistently shoot the labels onto the products.

### Vertical Applicator Wheel Adjustment

#### To Vertically Adjust the Applicator Wheels:

1. If the Applicator Wheels are touching the Mandrel, adjust them out from the Mandrel (see “Horizontal Applicator Wheel Adjustment” on page 209).
2. Use the HMI to move the Applicator Wheels roughly into the desired position.
  - a. With the system powered on, go to **Manual Screen 2** on the HMI.
  - b. Press and hold the pink **Ascend** Button to move the Applicator Wheels upward, or press and hold the pink **Descend** Button to move them downward, until they are roughly aligned with the Applicator Wheel Bearings on the Mandrel.



#### VIDEO: Adjustments Using the HMI

(Video 16) – TRT: 2:21

To see a video of this procedure, click this link:

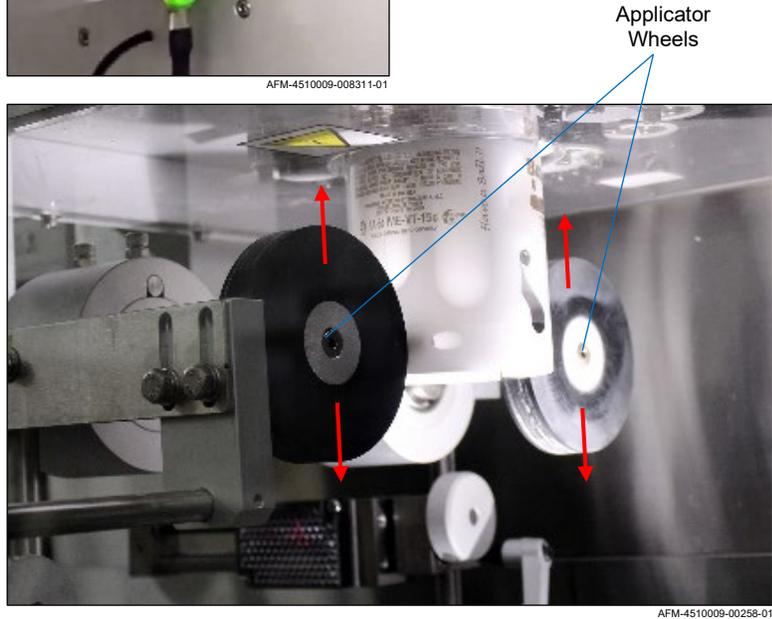
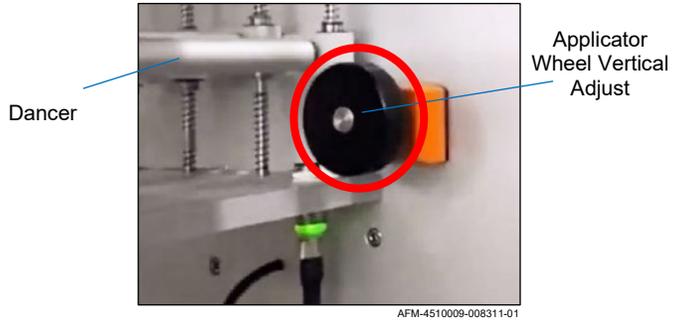
<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=16>

Or scan the QR code at right using the camera app on your mobile device.



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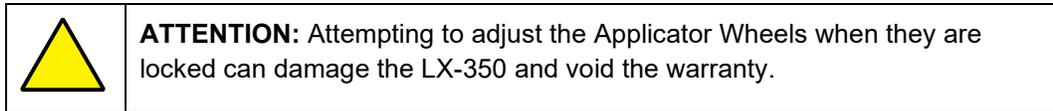
3. Fine tune the vertical position of the Applicator Wheels by physically turning the Applicator Wheel Vertical Adjust until the Applicator Wheels are directly aligned with the Applicator Bearings on the Mandrel.



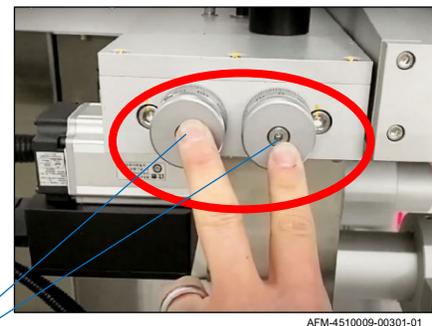
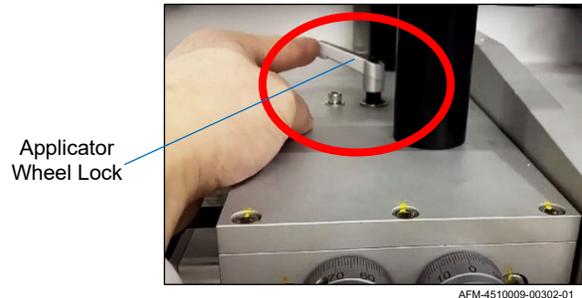
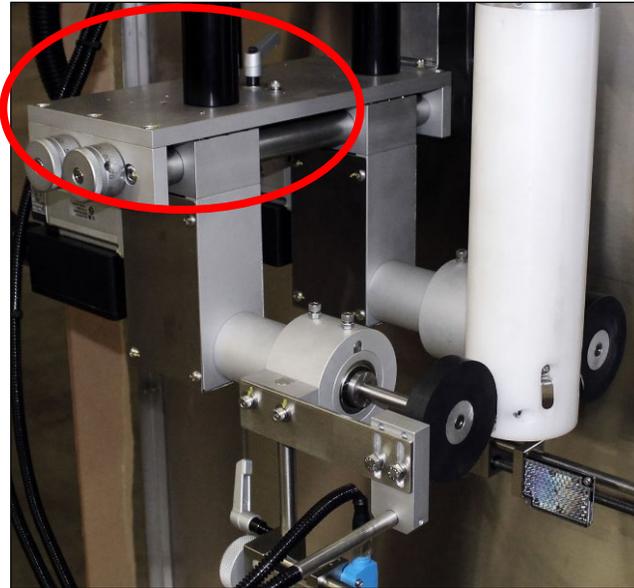
## Horizontal Applicator Wheel Adjustment

### To Horizontally Adjust the Applicator Wheels:

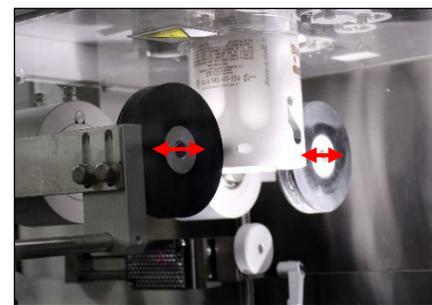
1. Unlock the Applicator Wheel Lock.



### Horizontally Adjusting the Applicator Wheels



Applicator Wheel In-Out Adjusts



2. Turn the Applicator Wheel In-Out Adjusts to move the Applicator Wheels in or out from the Mandrel. One Adjust moves the rear Applicator Wheel and one moves the front Applicator Wheel.
3. If preparing to label, move the Applicator Wheels in toward the Mandrel until they lightly touch the Applicator Wheel Bearings on the Mandrel. Carefully reaching up into the Mandrel from underneath, turning the Applicator Wheel Bearings with a finger should result in the Applicator Wheels turning as well.
4. Once the Applicator Wheels are at the desired tension, lock them in place by turning the Applicator Wheel Lock.

## General Cleaning

The LX-350 may periodically need to be cleaned.



**ATTENTION:** The LX-350 is not “wash-down” rated, where the entire machine is sprayed with water or chemicals. Any attempt to do so can damage the machine, may cause problems with functionality, and will void the warranty.

### Items Needed to Generally Clean the LX-350:

- Lint-free Cloth (multiple)
- Cloth or Paper Towels
- Standard cleaners for use on metal and glass
- Compressed Air

### Cleaning the Outside of the Cabinet

1. Spray the cleaner onto the Cloth/Paper Towels.
2. Wipe the outside of the LX-350 thoroughly. Avoid getting cleaner in the various connections.
3. Use a separate Cloth/Paper Towel to wipe away any cleaner residue.

### Cleaning the Inside Front

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Spray the cleaner onto the Lint-free Cloth.



**ATTENTION:** Never spray water, cleaner, or other liquids directly on any parts.

3. Wipe the surfaces inside the LX-350 thoroughly.
4. Use a separate Lint-free Cloth to wipe away any cleaner residue.
5. If further cleaning is to be done, leave the system powered down. If all cleaning is complete, power up the system, following your company’s lockout/tagout procedures.

## Cleaning the Inside Center Section

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Loosen the Screws that hold the Side Panels of the LX-350 in place and remove the Side Panels to access the Center Section of the Chassis.
3. Use Compressed Air to spray away any dust or other contaminants.



**ATTENTION:** The Center Section of the LX-350 contains complex electronics. They should never be sprayed with water, cleaner, or other liquids. Doing so can damage the equipment and will void the warranty.

### Accessing the Center Section



Upstream  
Side Panel



Downstream  
Side Panel  
Removed

AFM-4510009-00174-01

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4. If further cleaning is to be done, leave the system powered down. If all cleaning is complete, power up the system, following your company’s lockout/tagout procedures.

## Cleaning the Inside Back

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Open the Back Doors of the LX-350 to access the Rear Section of the Chassis
3. Use Compressed Air to spray away any dust or other contaminants.



**ATTENTION:** The Back of the LX-350 contains complex electronics. They should never be sprayed with water, cleaner, or other liquids. Doing so can damage the equipment and will void the warranty

4. If further cleaning is to be done, leave the system powered down. If all cleaning is complete, power up the system, following your company’s lockout/tagout procedures.

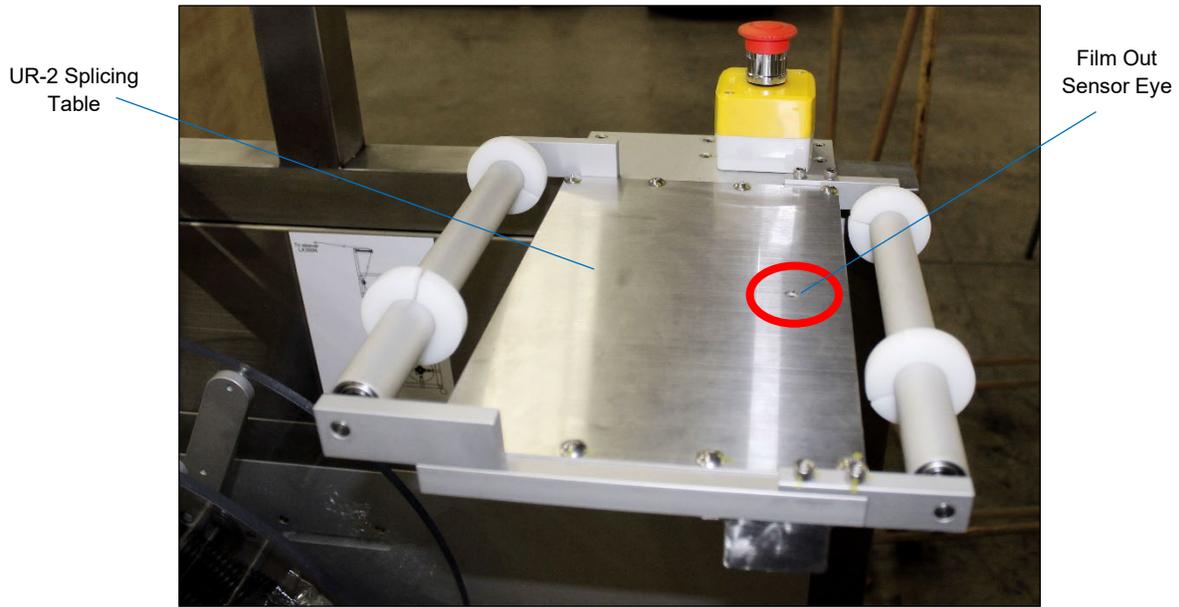
## Cleaning the Film Out Sensor Eye on the UR-2

Each day, check that the Film Out Sensor Eye (fiber) on the UR-2 Splicing Table is not caked in dust. Use a light Brush to clean as necessary.



**ATTENTION:** Do not use Compressed Air. Doing so can damage the Sensor Eye and void the warranty.

### Cleaning the Film Out Sensor Eye



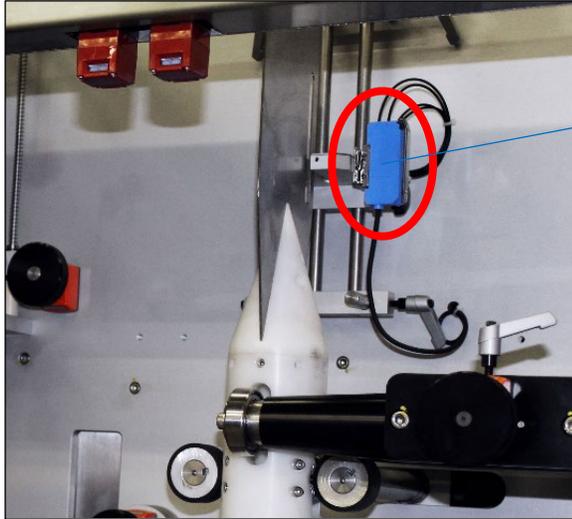
## Cleaning the Print Reading Sensor Fibers and Lens

At least once a week, use a light Brush to gently clean the Fibers and Lens of the Print Reading Sensor.



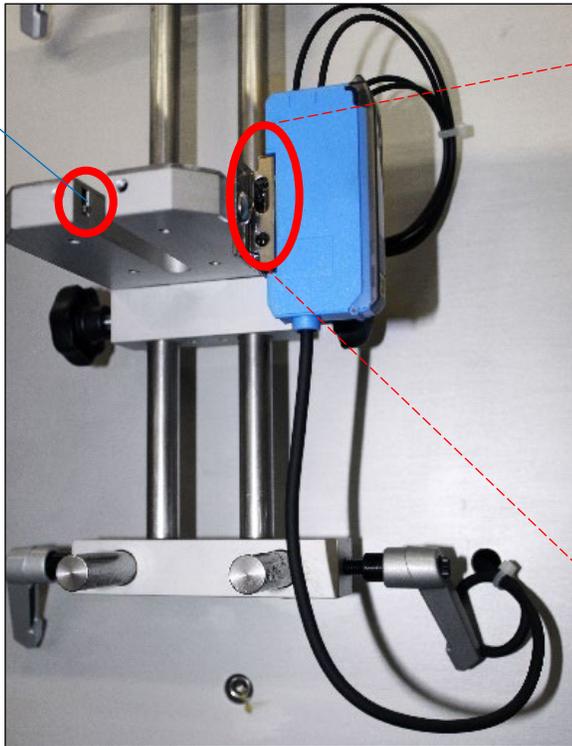
**ATTENTION:** Do not use Compressed Air. Doing so can damage the Fibers and void the warranty.

### Cleaning the Print-Reading Sensor Fibers



Print-Reading  
Sensor

AFM-4510009-00230-01



Print-Reading  
Sensor Lens

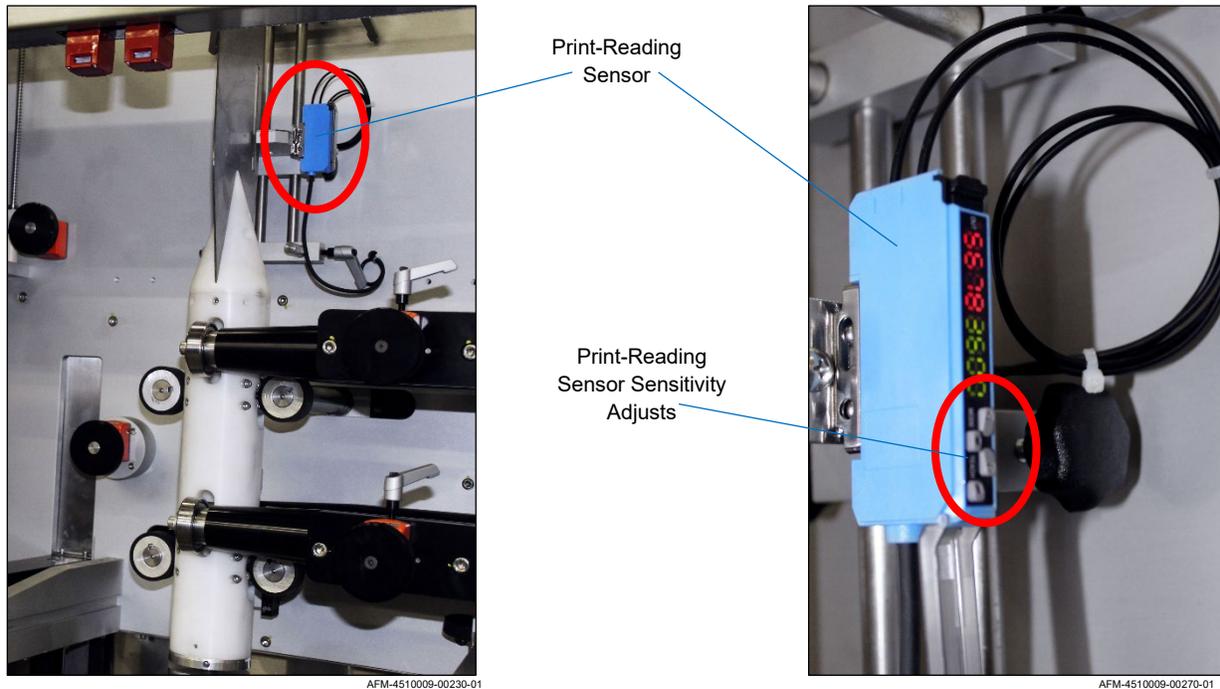
AFM-4510009-00146-01

Print-Reading  
Sensor Fibers



## Adjusting the Print-Reading Sensor's Sensitivity

The Print-Reading Sensor detects clear gaps in the label film design. If the clear gaps are not transparent enough, the Sensor will not always see them. To address this situation, increase the sensitivity of the Print-Reading Sensor.



If the Print-Reading Sensor is not functioning properly, it may mean that the sensitivity of the Sensor needs adjustment. Examples of a possible problem with the Print-Reading Sensor include:

- Alarm on the HMI: Notice: No Catch Mark
- Incorrect label cut lengths
- Incorrect cut locations
- Double or triple labels: the machine appears to ignore where the cut mark appears at times

These issues can have a number of causes. Before attempting to adjust the Print Reading Sensor's sensitivity, explore some other possibilities first:

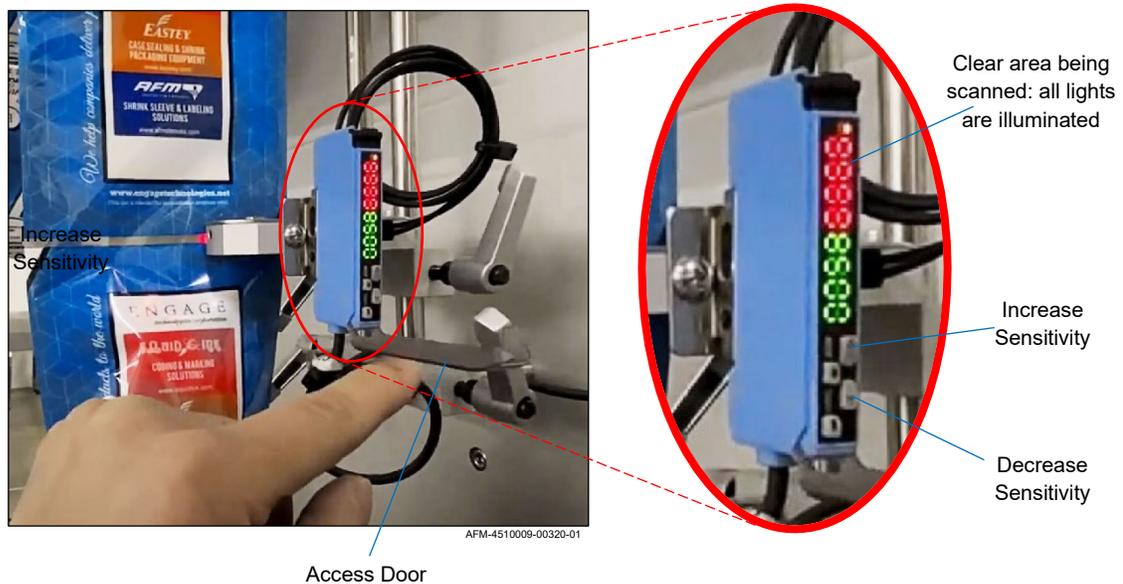
1. Verify that film is threaded through the system. If there is no film, load a new film roll and thread it through the system (see "Installing a Film Roll on the UR-2" on page 173, "Threading Film Through the UR-2" on page 175, "Threading Film Through the LX-350" on page 176, and "Using Recipes and Testing" on page 157).
2. Verify that the Print-Reading Sensor Eye is looking through the slot in the Mandrel Fin.
3. Verify that the correct recipe is loaded.
4. Check that the Film Drive Wheels are tight against the Film Drive Bearings. If they are loose, they can slip on the label and thus fail to advance the film with precision. If needed, adjust the position of the Film Drive Wheels (see "Film Drive Wheels: Unlocking, Adjusting and Locking" on page 202).

5. Clean the Lens of the Print-Reading Sensor (see “Cleaning the Print Reading Sensor Fibers and Lens” on page 214)
6. Verify that the Cut Length shown for the recipe is the same as the desired cut length for the actual labels, and if not, correct it (see “Using Recipes and Testing” on page 157).

If all of these options have been exhausted and the same problems persist, the sensitivity of the Print-Reading Sensor may need adjustment.

### To Adjust the Print-Reading Sensor’s Sensitivity

1. Position the label film on the Mandrel Fin so that the clear area is in the beam of the Print-Reading Sensor.
2. Pull Down the Access Door on the rear of the Print-Reading Sensor.



3. Press the “+” Button to increase the sensitivity and the “-” Button to decrease sensitivity.
4. Test the adjusted sensitivity by pulling the label film vertically and observing how the LED lights on the rear of the Print-Reading Sensor respond to clear label areas vs printed label areas. When the sensitivity is set correctly, there should be a noticeable difference in the response of the lights, and all of them should illuminate in response to the clear areas.
5. When the preferred sensitivity has been achieved, close the Access Door on the rear of the Print-Reading Sensor.

## Adjusting the Print-Reading Sensor's Position

For proper labeling when using the Print-Reading Sensor, the Sensor must align with the transparent cut marks in the label film. During setup or troubleshooting, it may be easiest to accomplish this by adjusting the position of the Sensor itself, rather than adjusting the film.

### VIDEO: Print Registration Sensor

(Video 12) - TRT: 1:26

To see a video of this procedure, click this link:

[https://www.youtube.com/watch?v=\\_ENR1kqDJWc&list=PLU8tRvNk7d6uUKBqN3XvJOTifP6GUeaqL&index=12](https://www.youtube.com/watch?v=_ENR1kqDJWc&list=PLU8tRvNk7d6uUKBqN3XvJOTifP6GUeaqL&index=12)

Or scan the QR code at right using the camera app on your mobile device.

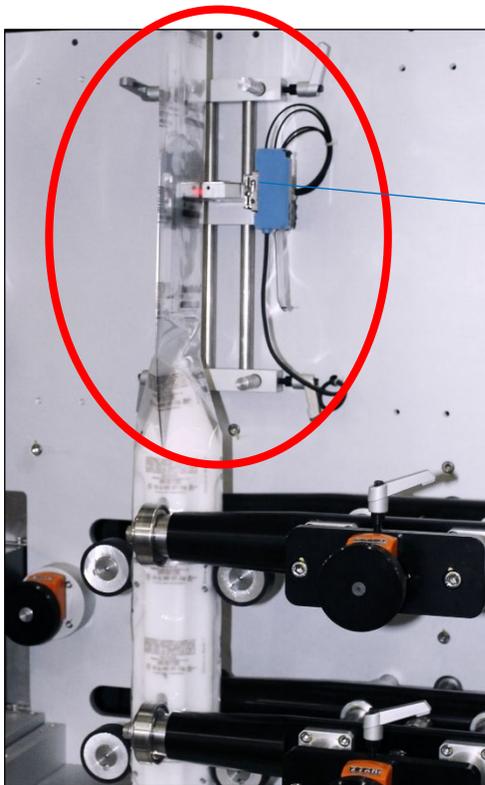


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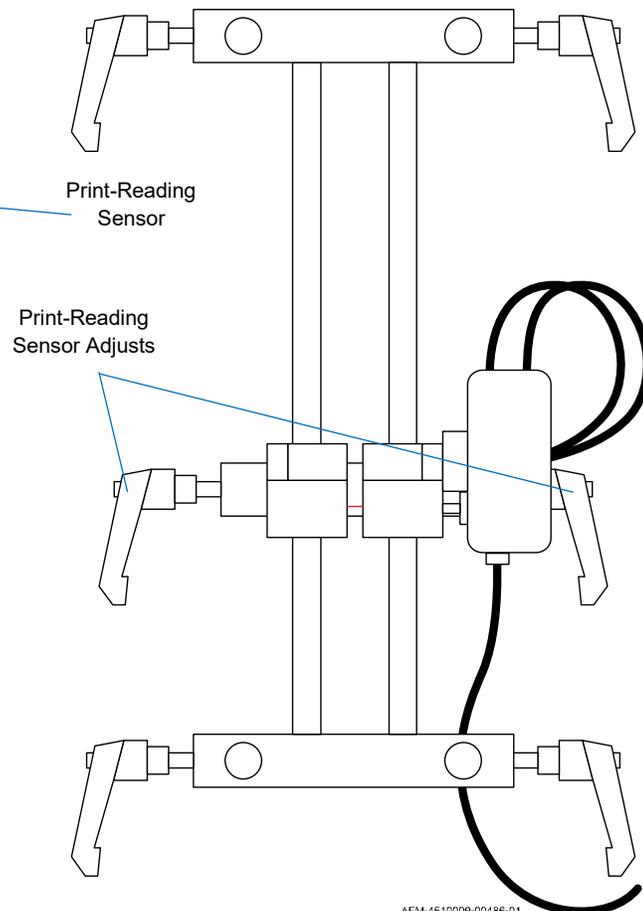
### To Adjust the Print-Reading Sensor's Position:

1. Loosen the Print-Reading Sensor Adjusts.

### Adjusting the Print-Reading Sensor's Position



AFM-4510009-00163-01



AFM-4510009-00486-01

2. Move the Print-Reading Sensor up or down along the tracks.
3. When the desired position has been achieved, retighten the Print-Reading Sensor Adjusts.

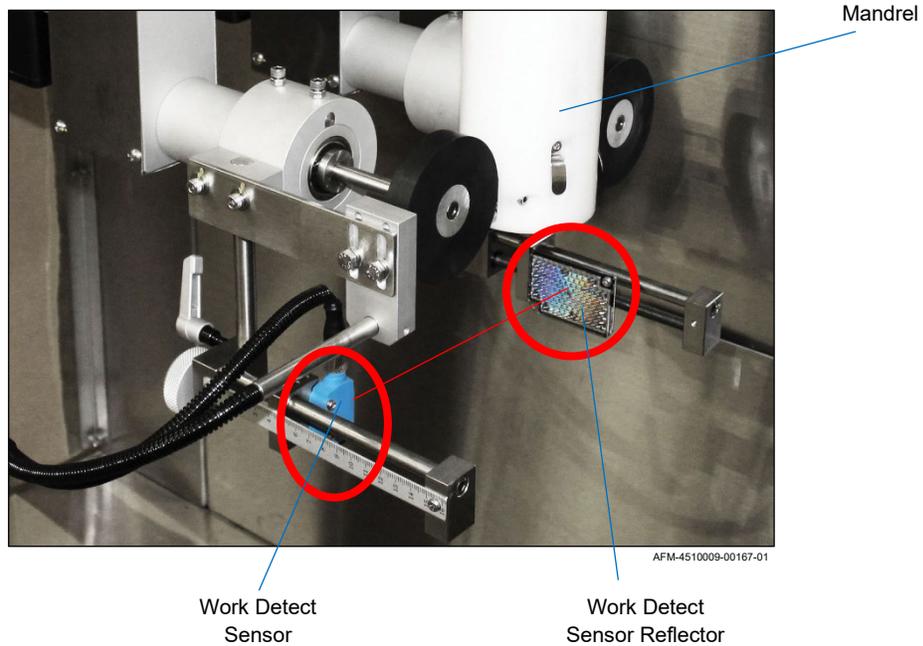
## Cleaning the Work Detect Sensor

The Work Detect Sensor lets the system know when a bottle is about to pass beneath the Mandrel. At least once a week, use a Lint-free Cloth to gently clean the Eye of the Work Detect Sensor and Reflector.



**WARNING:** The Cutter Blades are sharp. Use caution when working close to the Cutter Assembly.

### Cleaning the Work Detect Sensor and Reflector



## Adjusting the Application Fail Sensor's Sensitivity

The Application Fail Sensor detects labels as they shoot off the bottom of the Mandrel. If it detects a label for too long a period of time or detects no label for too long a period of time, it will give an "Application Fail" alarm.

### VIDEO: Application Fail Sensor Machine Adjustment

(Video 5) - TRT: 0:52

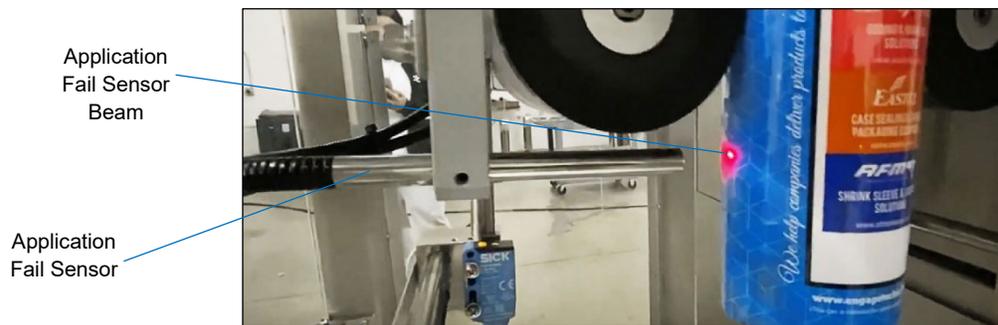
To see a video of this procedure, click this link:

<https://www.youtube.com/watch?v=CHu6TAFv720&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=5>

Or scan the QR code at right using the camera app on your mobile device.



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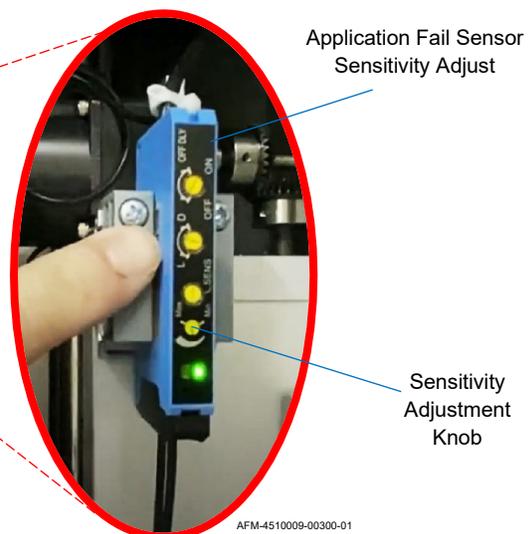
AFM-4510009-00307-01

### To Adjust the Sensitivity of the Application Fail Sensor:

1. Remove the upstream Side Panel from the LX-350 to access the middle section of the Chassis.



AFM-4510009-00468-01



AFM-4510009-00300-01

2. Locate the Application Fail Sensor Sensitivity Adjust.
3. Use a Phillips Head Screwdriver to turn the Sensitivity Adjustment Knob. Clockwise increases sensitivity, and counterclockwise decreases sensitivity.
4. Replace and secure the upstream Side Panel onto the LX-350.

## Cleaning the Cutter Notch

Over time, small slices of film can become wedged into the Cutter Notch of the Mandrel. These should be removed for consistently smooth operation.

### Items Needed to Clean the Cutter Notch:

- Cut-resistant Work Gloves
- Compressed Air

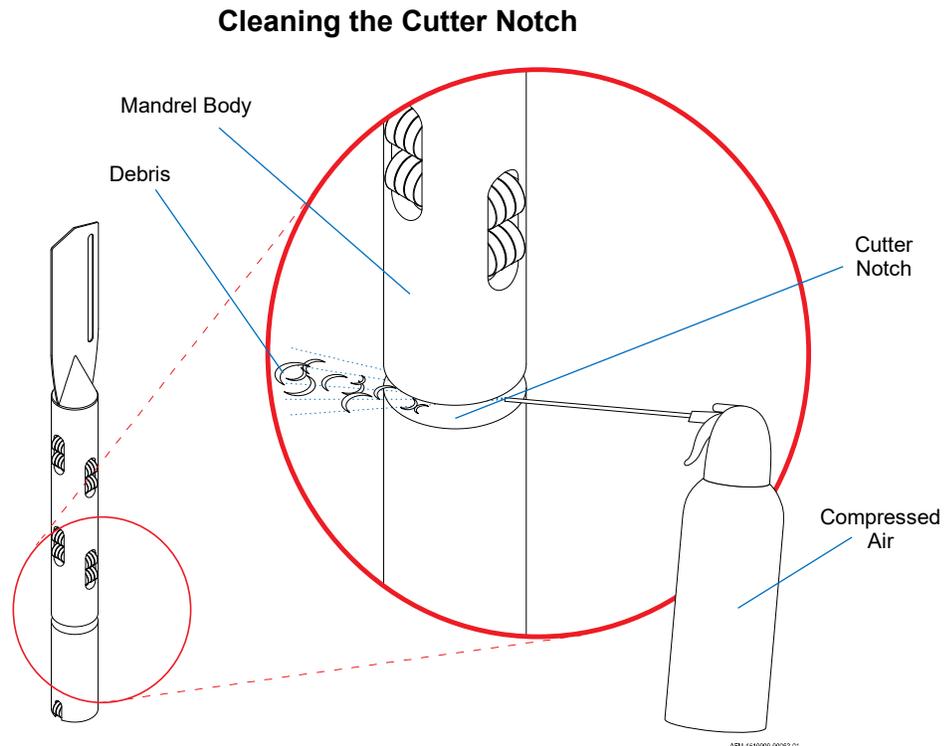
### To Clean the Cutter Notch:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see “Removing the Mandrel” on page 186).
3. Examine the Cutter Notch for any debris.



4. If needed, spray Compressed Air into the Cutter Notch until all debris has been removed.
5. To resume labeling, reinstall the Mandrel (see (“Installing the Mandrel” on page 197) and power the system on, following your company’s lockout/tagout procedures.

## Checking the Mandrel's Bearings and Wheels

At least once every 3 weeks, check that all Bearings in the Mandrel and the Wheels that touch them are clean spin freely.

### Items Needed to Check the Mandrel's Bearings and Wheels:

- Cut-resistant Work Gloves
- Compressed Air

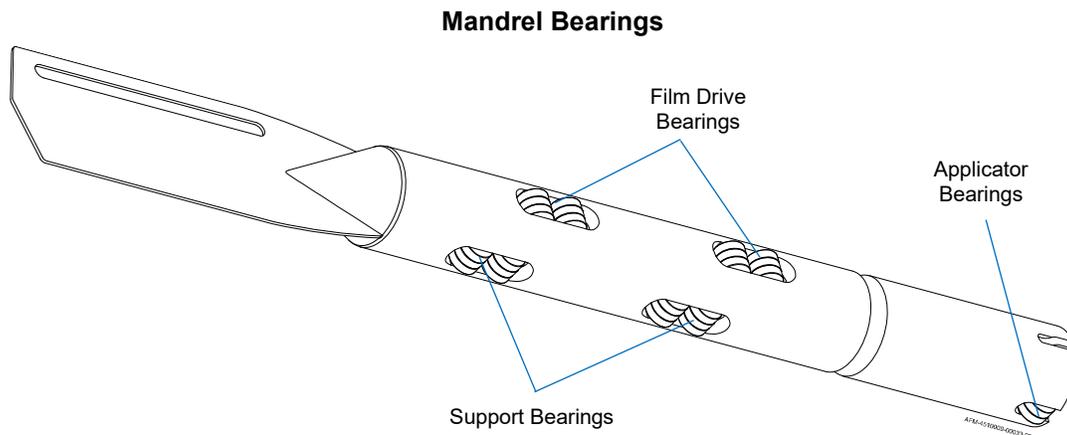
### To Check the Mandrel's Bearings and Wheels:

1. Shut down the LX-350 and UR-2 (see "Powering Off" on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see "Removing the Mandrel" on page 186).
3. Check that all the Bearings in the Mandrel spin freely are free of dust and contaminants, and clean as necessary using compressed air.
4. Once the Bearings are free of dust, a small amount of light mechanical oil/lubricant such as WD-40 can be applied to help the Bearings spin more smoothly.



5. With the Mandrel still removed, manually spin the Support Wheels, Film Drive Wheels, and Applicator Wheels spin freely, and use compressed air to clean them as needed.
6. Check for wear on the (urethane) Applicator Wheels, Support Wheels, and Film Drive Wheels. If there is significant wear on the Applicator Wheels, Support Wheels, and Film Drive Wheels, contact your Squid Ink distributor to replace them.
7. Depending on the film being used, there may be a buildup of shiny, plastic residue on the Wheels. This can cause the film to slip as it is being fed, leading to loss of registration. Check for any shiny buildup on the (urethane) Applicator Wheels, Support Wheels, and Film Drive Wheels. If any residue is present, the Applicator Wheels, Support Wheels, and Film Drive Wheels can be cleaned using distilled (or de-ionized or reverse osmosis filtered) water.



**ATTENTION:** Do not use alcohol on the urethane wheels. Doing so can damage them and void the warranty.

8. Reinstall the Mandrel (“Installing the Mandrel” on page [197](#)).
9. Power the system on, following your company’s lockout/tagout procedures.

## Replacing the Bearings in the Mandrel

All Bearings in the Mandrel should be replaced with new once annually.

### Items Needed to Replace the Mandrel's Bearings:

- Cut-Resistant Work Gloves
- Screwdriver
- New Bearings – 10 sets (P/N 4500190)

### To Replace the Mandrel's Bearings:

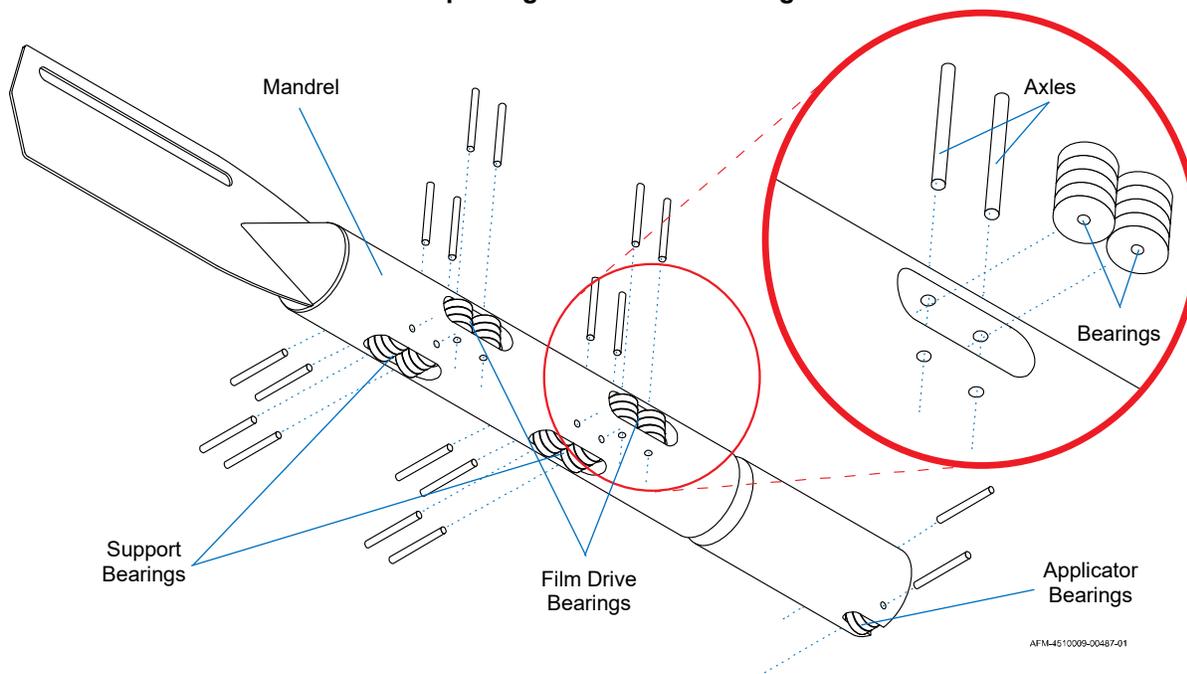
1. Shut down the LX-350 and UR-2 (see "Powering Off" on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company's lockout/tagout procedures (see "Lockout/Tagout" on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see "Removing the Mandrel" on page 186).
3. Use the Screwdriver to push out the Axles for all Bearings in the Mandrel, making note of which Axle goes with which location on the Mandrel. The Axles are only held in place by tension/friction.

### Replacing All Mandrel Bearings



4. Install all new Bearings (Support, Film Drive, and Applicator):
  - a. Slide an Axle partly back into its hole
  - b. Line up the new Bearings on the Axle
  - c. Push the Axle the rest of the way into its original position.

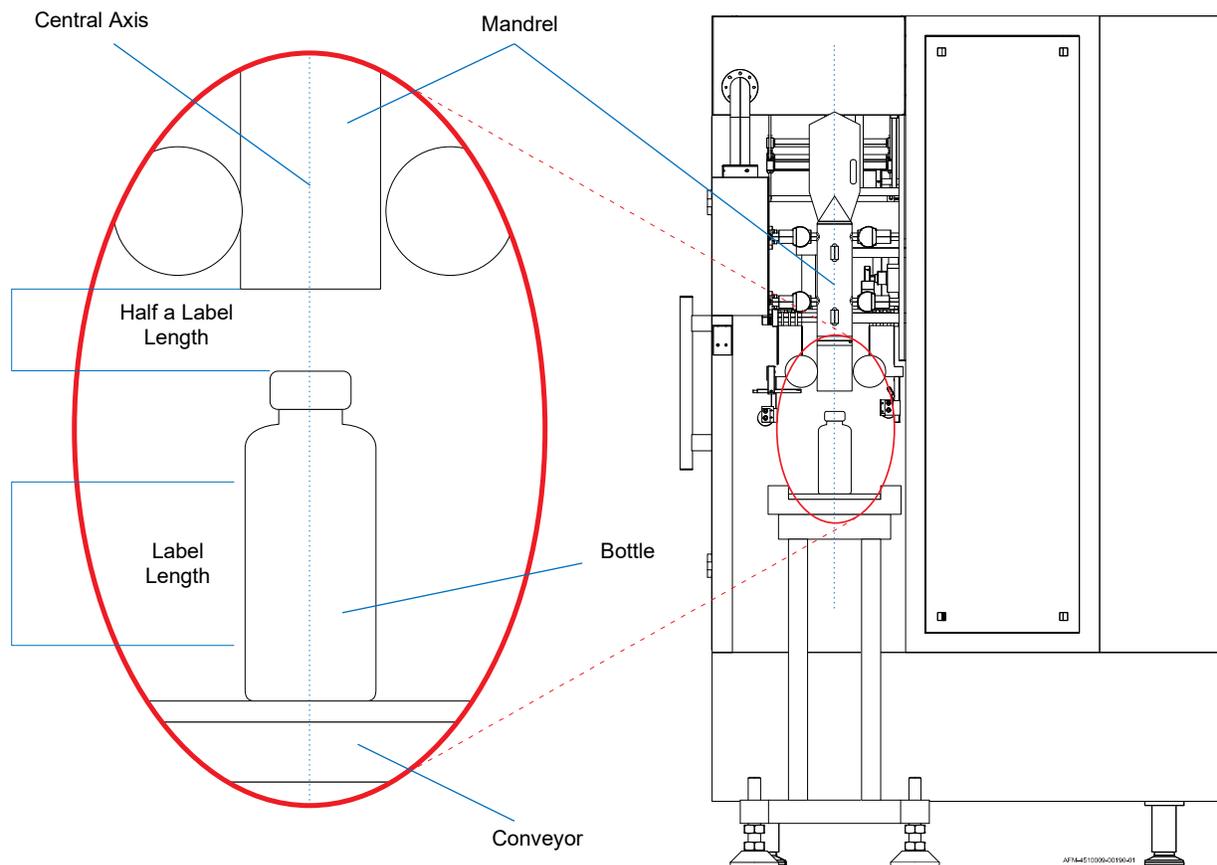
- d. Repeat for all Axles and Bearings.
  - e. Confirm that all Bearings spin freely.
5. When all new Bearings have been installed and can spin freely, the Mandrel can be reinstalled (see “Installing the Mandrel” on page [197](#)).
6. With a Mandrel properly installed, power the system on, following your company’s lockout/tagout procedures.

## Adjusting the Head Height

When the Mandrel is properly positioned for labeling a specific kind of bottle:

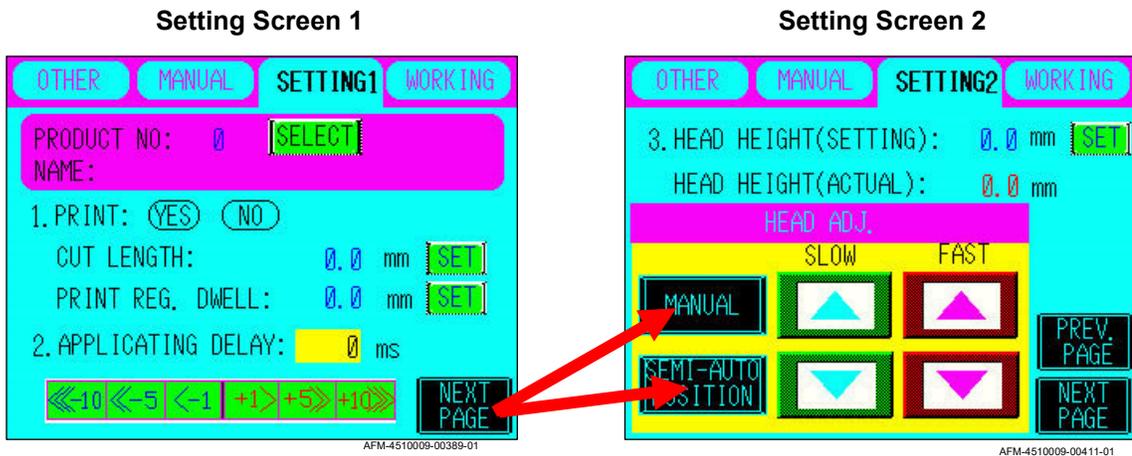
- The Conveyor should run through the sides of the LX-350, exiting the side where the HMI is.
- The center line of the Mandrel, when in place, must line up with the center line of the Conveyor (and the center line of the bottle fed into the LX-350 by the Timing Screw).
- The bottom of the Mandrel should be approximately half a label length above the top of the bottle.

### Distance from Bottom of Mandrel to Top of Bottle (Downstream View)



To get the Mandrel to the proper height above the bottle, adjust the head height (Sensors, Wheels, Mandrel, Cutter Assembly) relative to the bottles by doing the following:

1. Place a sample bottle (the exact product to be labeled) on the Conveyor. If the bottom of the Mandrel is not half a label length above the top of the bottle, do the following:
2. Go to Setting1 >> "Next Page" to navigate to **Setting Screen 2**.



**VIDEO: Adjustments Using the HMI**

(Video 16) – TRT: 2:21

To see a video of this procedure, click this link:  
<https://www.youtube.com/watch?v=zDdNaqQZG-Q&list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&index=16>

Or scan the QR code at right using the camera app on your mobile device.



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3. Select the **Manual** button and press the up and down arrows to set the Head Height to the correct position  
 OR  
 Select the **Semi-Auto** button and press the up and down buttons to move the Head Height to the position recorded in the recipe for that bottle.
4. Remove the bottle from the Conveyor Belt.

## Replacing the Cutter Blades

At least every 3 weeks, or when the Cutter Blades become dulled, they need to be replaced.

**NOTE:** While the Blades may eventually lose enough sharpness to consistently cut labels smoothly, they are still sharp enough to cause severe cuts.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

### Items Needed to Replace the Cutter Blades:

- 3mm Allen Wrench (included in Tool Kit)
- Cut-resistant Work Gloves
- New Cutter Blades (P/N: 4500475)

### To Replace the Cutter Blades:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

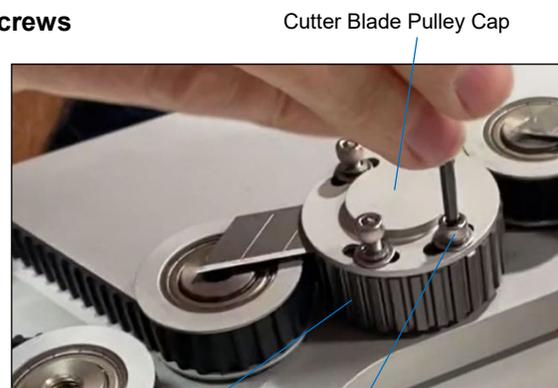
2. Remove the Mandrel (see “Removing the Mandrel” on page 186).
3. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).
4. Remove each Cutter Blade:
  - a. On the top of the Cutter Assembly, hold the Cutter Drive Pulley to prevent the Cutter Blade Pulleys from spinning.

### Loosening the Screws



Cutter Assembly

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Cutter Blade Pulley

Cutter Blade Pulley Cap

Screws

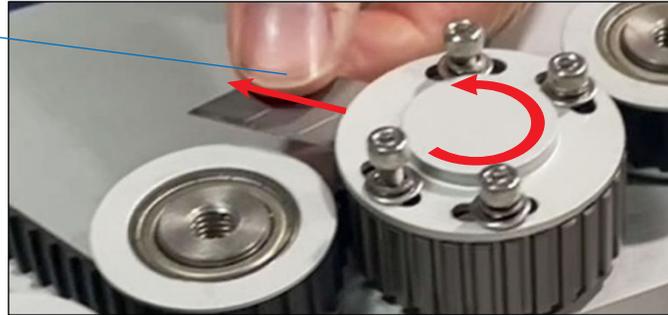
AFM-4510009-00357-01

- b. On the underside of the Cutter Assembly, use the 3mm Allen Wrench to carefully loosen (but do not remove) the four Screws holding each Cutter Blade in its housing.

- c. Carefully rotate the top of each Cutter Blade Pulley counterclockwise.
- d. Holding the back edge of the Cutter Blade, and paying attention to where the other Cutter Blades are, carefully pull out each old Cutter Blade.

#### Removing the Cutter Blades

Holding the back edge of the Cutter Blade



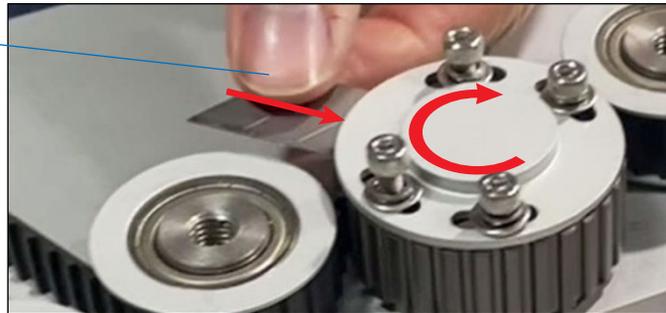
AFM-4510009-00358-01

#### 5. Insert each new Cutter Blade:

- a. Holding the back edge of the Cutter Blade, and paying attention to where the other Cutter Blades are, carefully slide each new Cutter Blade into place. As with the Cutter Blades that were removed, all Cutter Blades should be in the same position relative to the Cutter.

#### Inserting New Cutter Blades

Holding the back edge of the Cutter Blade



AFM-4510009-00358-01

6. Carefully rotate the top of each Cutter Blade Pulley clockwise.
7. Carefully and firmly tighten all Screws holding each Cutter Blade in its Housing.
8. Verify that all Blades are correctly synchronized by manually turning the Cutter Drive Pulley. If a Blade is not synchronized with the others, loosen the Screws for that Blade and carefully adjust it.
9. Check the Timing Belt for wear (see "Checking the Timing Belt" on page 232).
10. Check the Cutter Drive Belt for wear (see "Checking the Cutter Drive Belt" on page 229).
11. Put the Cutter Assembly back in position (see "Installing the Cutter Assembly" on page 195), ensuring that there is proper tension on the Cutter Drive Belt.
12. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company's lockout/tagout procedures.

## Checking the Cutter Drive Belt

At least once every 3 weeks, while changing all of the Cutter Blades, check the Cutter Drive Belt by doing the following:



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



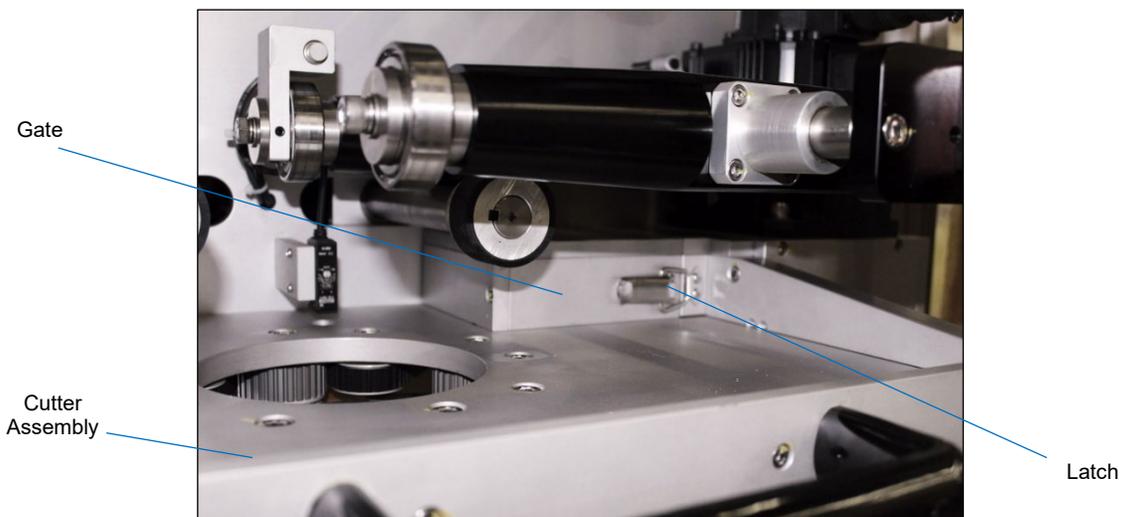
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Unlatch and remove the Gate that houses the Cutter Drive Pulley.
3. Check the condition of the Cutter Drive Belt. Replace it at the first sign of wear (see “Replacing the Cutter Drive Belt” on page 230).



**WARNING:** Failure to replace a worn Timing Belt can impair system performance, can damage the equipment, and can result in injury.

### Unlocking the Gate



AFM-4510009-00164-01

4. Verify proper tension on the Cutter Drive Belt, and adjust if needed by unlocking the Tensioner, tightening it, and locking it again (see “Tensioner: Unlocking, Adjusting and Locking” on page 201).
5. Leave the system powered down until a Cutter Assembly and a Mandrel are properly installed/reinstalled. Then the system can be powered on, following your company’s lockout/tagout procedures.

## Replacing the Cutter Drive Belt

The Cutter Drive Belt turns the Cutter Blades, so it is important that it be in good condition. If it appears worn, it should be replaced.



**WARNING:** When working around the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

### Items Needed to Replace the Cutter Drive Belt:

- Cut-resistant Work Gloves
- New Cutter Drive Belt (P/N 4501717)

### To Replace the Cutter Drive Belt:

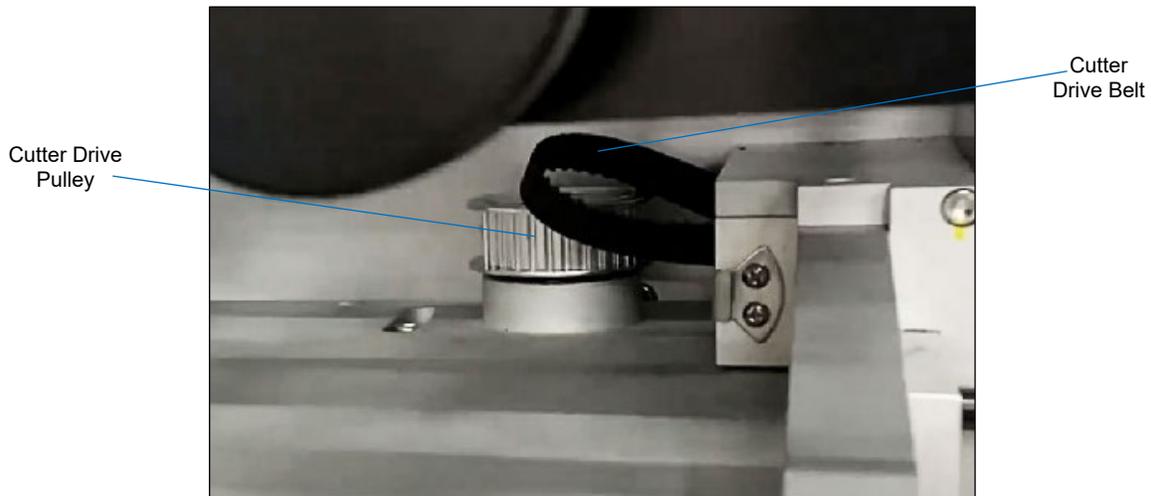
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Unlatch and remove the Gate that houses the Cutter Drive Pulley.
3. Loosen the Tensioner (see “Tensioner: Unlocking, Adjusting and Locking” on page 201).
4. Unloop the Cutter Drive Belt from the Cutter Drive Pulley by gently pulling the belt upwards.

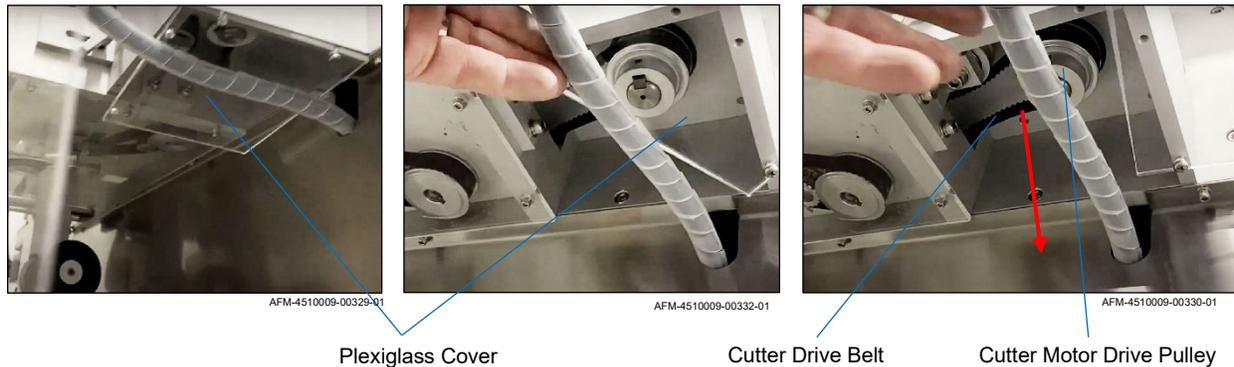
### Unlooping the Cutter Drive Belt



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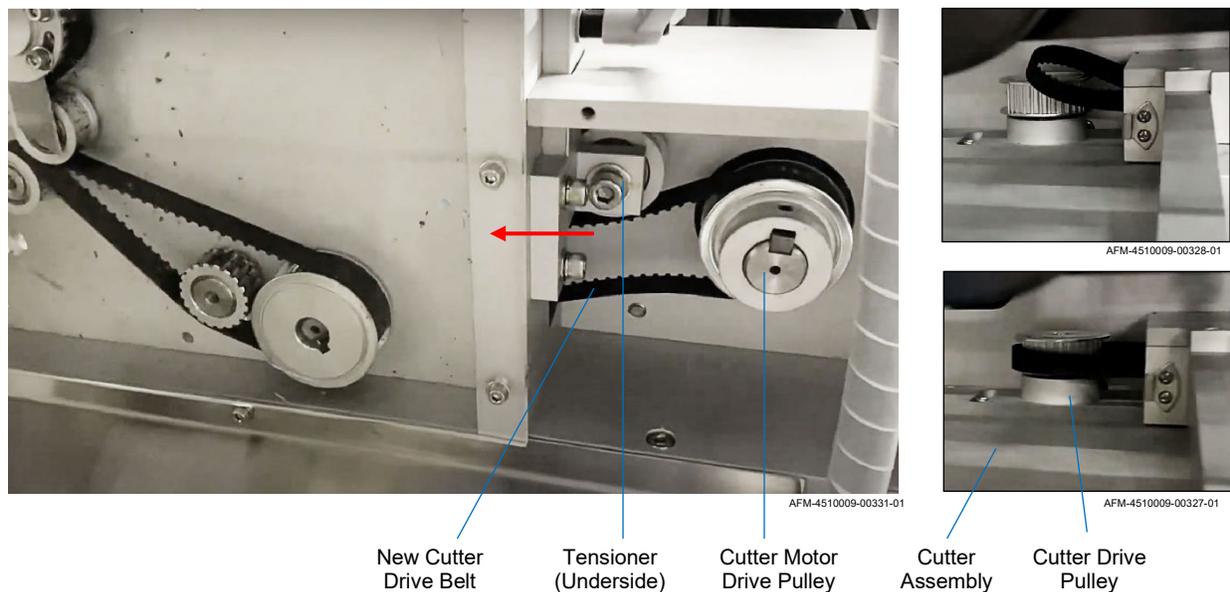
5. Looking from underneath at the part of the Cutter Drive Belt immediately behind the Tensioner, remove all but one of the Screws that hold the plexiglass Cover in place and move it aside.
6. Pull the old Cutter Drive Belt out from underneath.

### Moving the Plexiglass Cover and Removing the Old Belt



7. Slip the new Cutter Drive Belt through from beneath to where the Cutter Drive Pulley is, and loop in around the Cutter Motor Drive Pulley, making sure that the Belt rests against the Tensioner.
8. On the top side of the Cutter Assembly, loop the new Cutter Drive Belt over the Cutter Drive Pulley.

### Installing the New Belt



9. Verify that the Belt is still lopped around the Cutter Motor Drive Pulley and resting against the Tensioner.
10. Replace the plexiglass Cover and reinstall the Screws that hold it in place.
11. Retighten the Tensioner and lock it (see "Tensioner: Unlocking, Adjusting and Locking" on page 201).
12. With the new Cutter Drive Belt properly installed, the system can be powered on, following your company's lockout/tagout procedures.

## Checking the Timing Belt

The Timing Belt loops around each Cutter Blade Pulley and Idler on the Cutter Blade Assembly. Propelled by the Cutter Drive Pulley, it rotates the Cutter Blades. At least once every 3 weeks, while changing all of the Cutter Blades, the Timing Belt should be checked for wear.

### To Check the Timing Belt:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



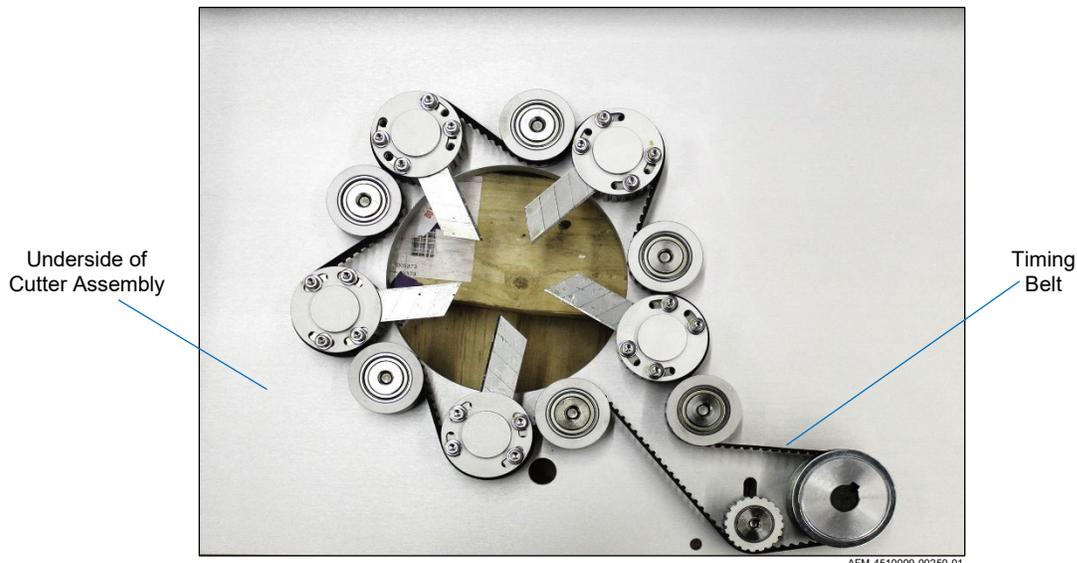
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).
3. With the Cutter Assembly removed from the LX-350, check the condition of the Timing Belt. Replace it at the first sign of wear (see “Replacing the Timing Belt” on page 234).



**WARNING:** Failure to replace a worn Timing Belt can impair system performance, can damage the equipment, and can result in injury.

### Checking the Timing Belt



4. Verify proper tension on the Timing Belt, and adjust if needed (see “Adjusting Tension on the Timing Belt” on page 233). The tension on the Timing Belt should always be tight enough to ensure consistently precise rotation of the Cutter Blades, but should not be overly tight.
5. Reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page 195).
6. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company’s lockout/tagout procedures.

## Adjusting Tension on the Timing Belt

The tension on the Timing Belt should always be tight enough to ensure consistently precise rotation of the Cutter Blades, but should not be overly tight.

### Items Needed to Adjust the Tension on the Timing Belt:

- Cut-resistant Work Gloves
- 5mm Allen Wrench

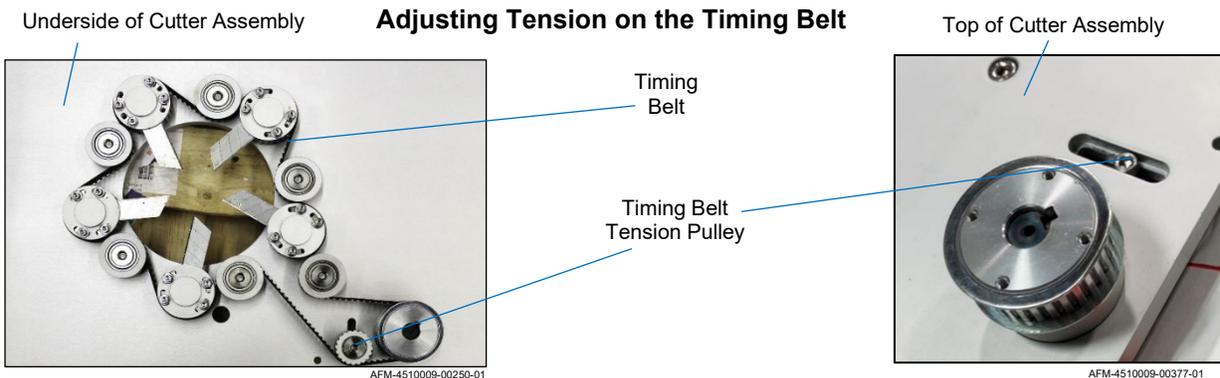
### To Adjust the Tension on the Timing Belt:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).



3. On the top of the Cutter Assembly, locate the Screw for the Timing Belt Tension Pulley and loosen it.
4. On the underside of the Cutter Assembly push the Timing Belt Tension Pulley firmly to achieve the desired tension on the Belt. The Belt should be tight enough to consistently rotate all the Cutter Blades.
5. Holding the Timing Belt Tension Pulley in its new position, retighten the Screw on the underside of the Cutter assembly to lock it in place.
6. Verify that all Cutter Blades are correctly synchronized by manually turning the Cutter Drive Pulley. If a Blade is not synchronized with the others, loosen the Screws for that Blade and carefully adjust it (see “Replacing the Cutter Blades” on page 227).
7. Reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page 195).
8. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company’s lockout/tagout procedures.

## Replacing the Timing Belt

Every 2-3 years, the Timing Belt should be replaced. This procedure should be done at the same time as the replacement of the Cutter Blades and the Cutter Drive Belt.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

### Items Needed to Replace the Timing Belt:

- Cut-resistant Work Gloves
- 5mm Allen Wrench
- New Timing Belt
  - (Small Cutter Assembly: P/N 4501708)
  - (Medium Cutter Assembly: P/N: 4501704)
  - (Large Cutter Assembly: P/N: 4501715)

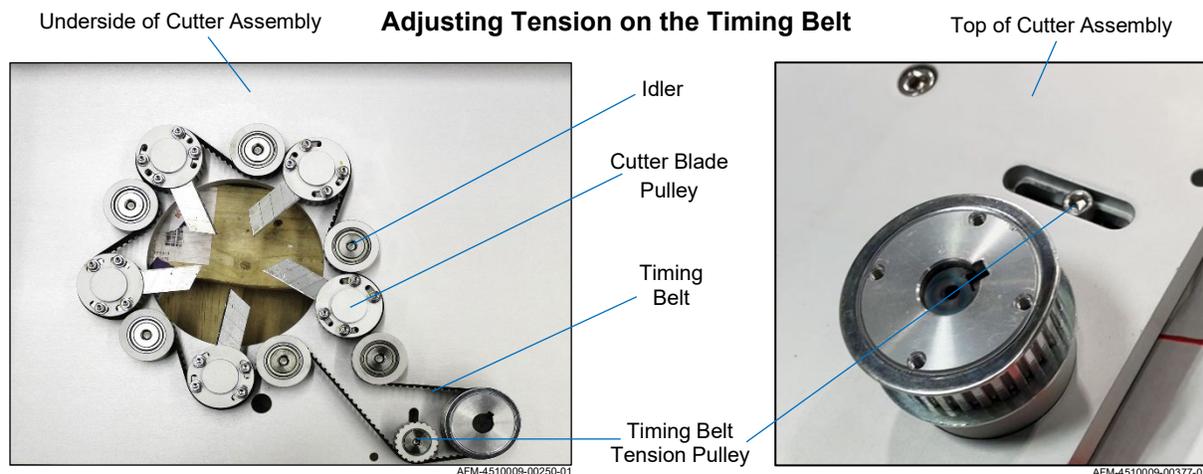
### To Replace the Timing Belt:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).



3. For safety during this procedure, remove all Cutter Blades (see “Replacing the Cutter Blades” on page 227) and leave the Screw for the Timing Belt Tension Pulley loose.
4. With the Cutter Blades removed and the Timing Belt loose, unloop the Timing Belt from around the various Cutter Blade Pulleys and Idlers and remove it.

5. Following the same path, loop the new Timing Belt around the Cutter Blade Pulleys and Idlers, being sure that the ridged side of the Timing Belt is facing inward.
6. Install new Cutter Blades (see “Replacing the Cutter Blades” on page [227](#)).
7. Retighten the tension on the Timing Belt (see “Adjusting Tension on the Timing Belt” on page [233](#)).
8. Reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page [195](#)).
9. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company’s lockout/tagout procedures.

## Replacing the Pulleys/Idlers in the Cutter Assembly

At least once a year, the Bearings in the Cutter Assembly should be replaced. These include the Bearings inside the Cutter Blade Pulleys, Cutter Drive Pulley Core, Timing Belt Tension Pulley, and Idlers (see diagrams on pages 314, 315, and 316). This can be a dangerous process and requires equipment that some users do not have. As an alternative, AFM offers fully assembled Cutter Blade Pulleys, Cutter Drive Pulley Cores, and Idlers, which can simply be switched out with the old ones. Contact AFM for parts specific to your Cutter Assembly.



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.

### Items Needed to Replace the Pulleys/Idlers in the Cutter Assembly:

- Cut-resistant Work Gloves
- Allen Wrenches (2.5mm, 3mm, 5mm, and 6mm)
- New Cutter Drive Pulley Core (P/N: 4501730)
- New Cutter Blade Pulleys (P/N: 4501728)
- New Idlers (P/N: 4503261)
- New Timing Belt Tension Pulley (P/N: 4501741)

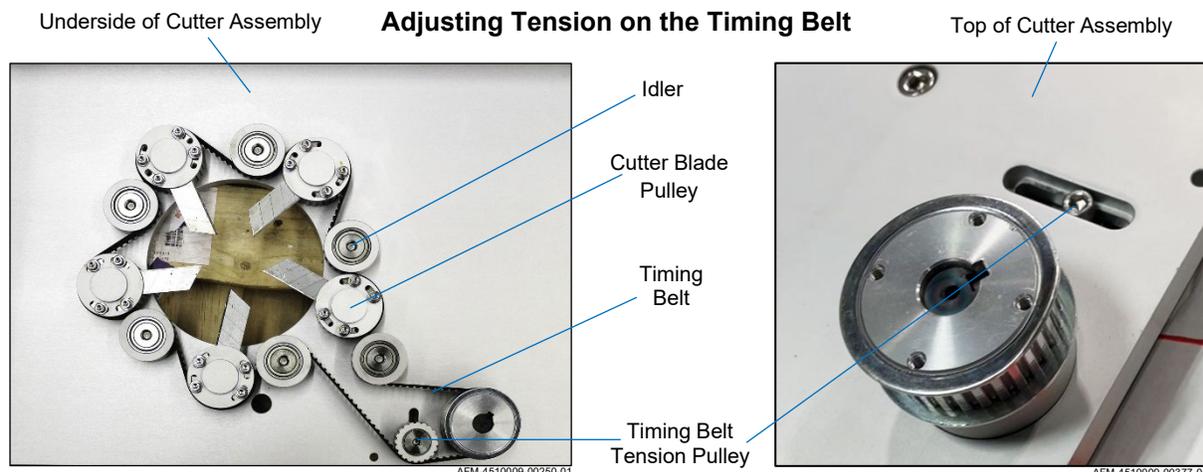
### To Replace the Pulleys/Idlers in the Cutter Assembly:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow effective lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

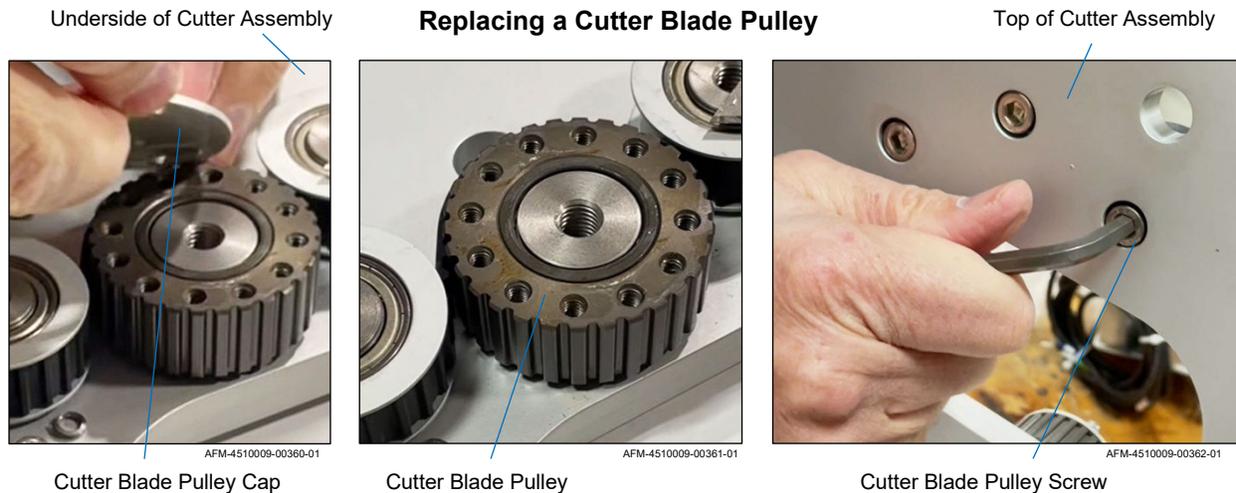
2. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page 188).



3. Remove all Cutter Blades (see “Replacing the Cutter Blades” on page 227) and leave the Screw for the Timing Belt Tension Pulley loose.
4. Lift the Caps off each Cutter Blade Pulley and set the Caps aside along with the Screws and Washers that held them in place.
5. Remove the Timing Belt (see “Replacing the Timing Belt” on page 234).

## Replacing the Cutter Blade Pulleys

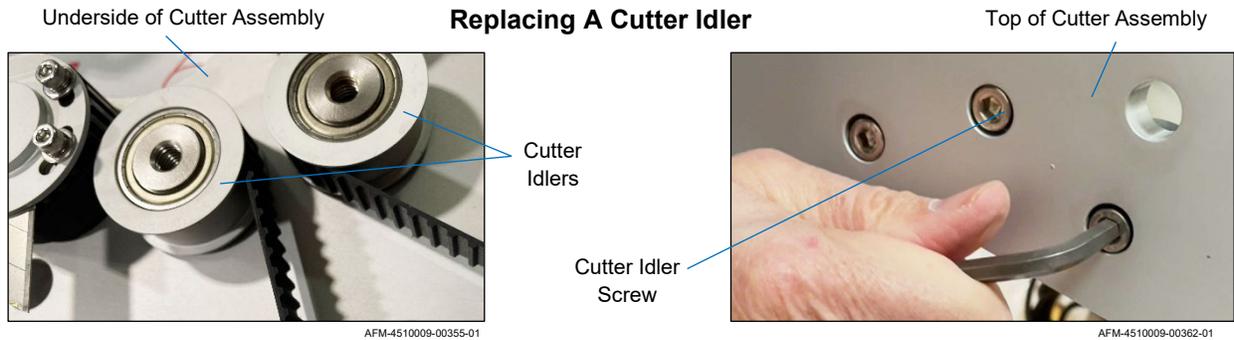
1. Tilt the Cutter Assembly on its side.
2. Holding a Cutter Blade Pulley firmly with one hand, on the opposite side of the Cutter Assembly, use the 6mm Allen Wrench to remove the Screw that holds the Cutter Blade Pulley in place.



3. Place a new Cutter Blade Pulley in the same position and orientation as the old one.
4. On the opposite side of the Cutter Assembly, reinsert the Screw to holds it in place and use the 6mm Allen Wrench to firmly tighten the Screw.
5. Repeat this process for all Cutter Blade Pulleys.

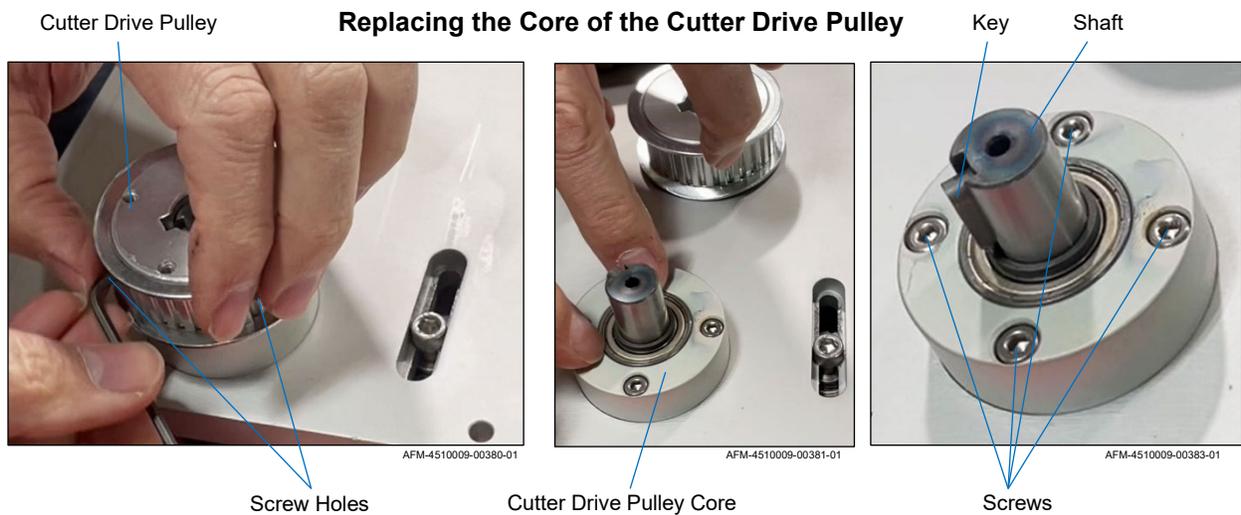
## Replacing the Cutter Idlers

1. Tilt the Cutter Assembly on its side.
2. Holding a Cutter Idler firmly with one hand, on the opposite side of the Cutter Assembly, use the 6mm Allen Wrench to remove the Screw that holds the Idler in place.
3. Place a new Cutter Idler in the same position and orientation as the old one.
4. On the opposite side of the Cutter Assembly, reinsert the Screw to holds it in place and use the 6mm Allen Wrench to firmly tighten the Screw.
5. Repeat this process for all Cutter Idlers.



## Replacing the Cutter Drive Pulley

1. On the top of the Cutter Assembly, locate the two Screws in the side of the Cutter Drive Pulley and use the 2.5mm Allen Wrench to loosen them.
2. Lift the Pulley off its Shaft.
3. Hook the end of the Allen Wrench under the Cutter Drive Pulley Key to lift it out of its notch in the Shaft.
4. Use the 5mm Allen Wrench to remove the 4 Screws holding the Cutter Drive Pulley Core in position.

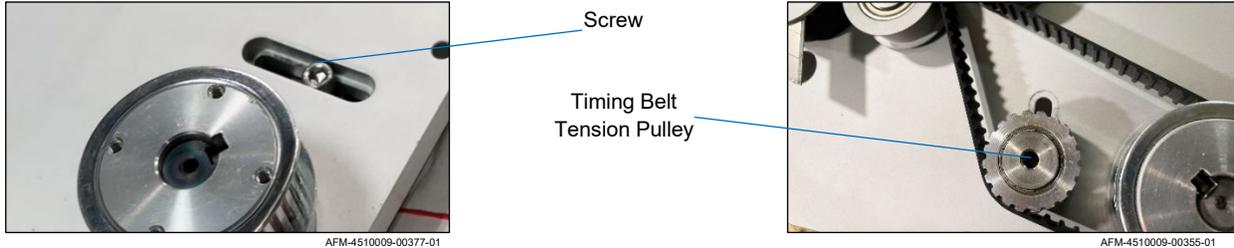


5. Lift the Cutter Drive Pulley Core up off the Shaft.
6. Slide a new Cutter Drive Pulley Core down onto the Shaft.
7. Align the Screw holes, insert the Screws, and tighten them to hold the Cutter Drive Pulley Core firmly in place.
8. Slide the Cutter Drive Pulley back onto the Cutter Drive Pulley Core.
9. Reinsert the two Screws to hold the Cutter Drive Pulley firmly in place.

## Replacing the Timing Belt Tension Pulley

1. On the top of the Cutter Assembly, use the 5mm Allen Wrench to remove the Screw that holds the Timing Belt Tension Pulley in place.
2. Remove the Timing Belt Tension Pulley.

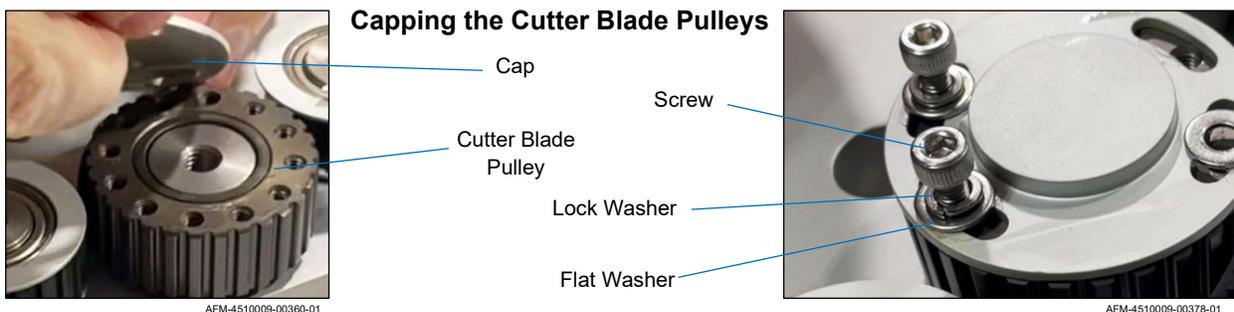
### Replacing the Timing Belt Tension Pulley



3. Place a new Timing Belt Tension Pulley in the same position and orientation as the old one.
4. Reinsert the Screw from the other side of the Cutter Assembly and tighten it enough to hold the Timing Belt Tension Pulley in place but leave it loose enough to get a Timing Belt installed/reinstalled.

## Putting the Cutter Assembly Together Again

1. Install a Timing Belt (see “Replacing the Timing Belt” on page 234), This is an opportunity to put on a new Timing Belt rather than continuing to use the old one.
2. Set the Caps on the new Cutter Blade Pulleys.
3. Paying attention to the order shown below, insert the Screws, Lock Washers and Flat Washers that hold the Caps in place, and tighten the Screws just enough to hold the Cap loosely in position.



4. Replace all Cutter Blades (see “Replacing the Cutter Blades” on page 227).
5. Tighten the Timing Belt Tension Pulley and tighten the Screw to hold it firmly in position (see “Adjusting Tension on the Timing Belt” on page 233).
6. Reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page 195).
7. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company’s lockout/tagout procedures.

## Replacing Bearings in the Cutter Assembly

At least once a year, the Bearings in the Cutter Assembly should be replaced. The Bearings are located inside the Cutter Blade Pulleys, Cutter Drive Pulley, and the Idlers. This can be a dangerous process and requires equipment that some users do not have.

***As an alternative, AFM offers fully assembled Cutter Blade Pulleys, Cutter Drive Pulley, and Idlers, which can simply be switched out with the old ones. Contact AFM for parts specific to your Cutter Assembly.***



**WARNING:** When handling the Cutter Assembly, use extreme caution. Cutter Blades are very sharp and can easily cause severe cuts.



**WARNING:** This process requires high pressure and physical force. If improperly done, metal parts can fly out at a high speed, causing serious injury. Only personnel trained on a Drill Press should perform this procedure. Always wear protective Safety Glasses and a Face Shield when performing this procedure and use equipment that has been verified to work properly. If in doubt, contact your AFM distributor.

### Items Needed to Replace the Bearings in the Cutter Assembly:

- Cut-resistant Work Gloves, Safety Glasses and Face Shield
- Allen Wrenches (2.5mm, 3mm, 5mm, and 6mm)
- New Bearings:
  - Cutter Blade Pulleys (2 Bearings per Pulley – P/N 4500178)
  - Idlers (2 Bearings per Idler – P/N 4500173)
  - Cutter Drive Pulley (2 Bearings per Drive Pulley – P/N 4500178)
  - Idler Pulley (2 Bearings per Pulley – P/N 4500173)
- Drill Press

### To Replace the Bearings in the Cutter Assembly:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page [168](#)) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page [18](#)).



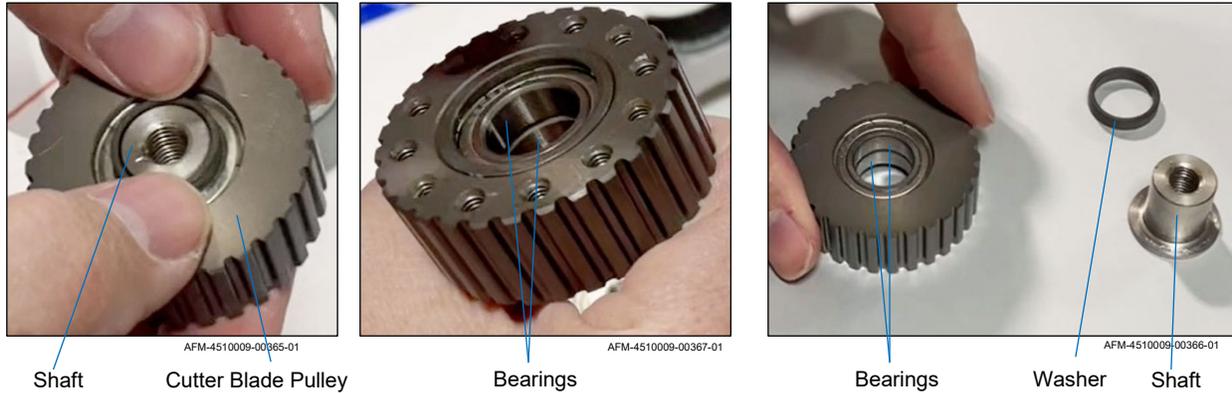
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Cutter Assembly (see “Removing the Cutter Assembly” on page [188](#)).
3. Follow steps in “Replacing the Pulleys/Idlers in the Cutter Assembly” starting on page [236](#):
  - a. Remove all Cutter Blade Pulleys (see “Replacing the Cutter Blade Pulleys” on page [237](#)), Cutter Idlers (see “Replacing the Cutter Idlers” on page [237](#)), and the Core of the Cutter Drive Pulley (see “Replacing the Cutter Drive Pulley” on page [238](#)).
4. Replace the Bearings in the Cutter Blade Pulleys (see “Replacing the Bearings in the Cutter Blade Pulleys” on page [241](#)).

## Replacing the Bearings in the Cutter Blade Pulleys

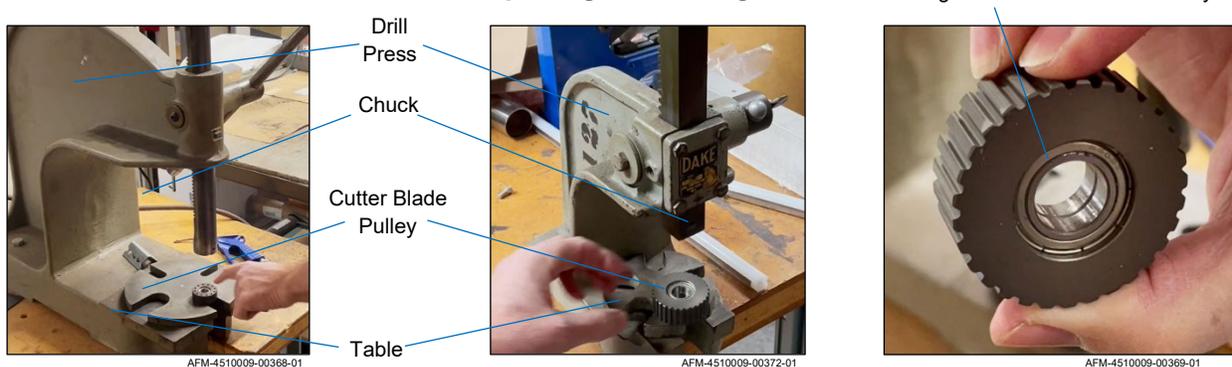
Inside each Cutter Blade Pulley are two Bearings that rest against each other. One is visible from the top of the Pulley, and the other is visible from the bottom of the Pulley.

### Accessing the Bearings



1. Turning a Cutter Blade Pulley bottom side up, push the Shaft up out of the center of it.
2. Locate the Bearings.
3. Place the Cutter Blade Pulley on a Drill Press and use a cylindrical Chuck with a 0.708" (18mm) diameter over a 1.00" (25.4 mm) opening in the Table to push the Bearings out one side of the Pulley.

### Replacing the Bearings



4. Insert one new Bearing over its hole in the bottom side of the Pulley and use the Drill Press to push it into the hole.
5. Set a second Bearing on top of the first and use the Drill Press to push it into the hole, simultaneously pushing the first Bearing further in. When finished, the top of the second Bearing should be flush with the bottom surface of the Pulley.
6. Reinsert the Shaft into the bottom of the Pulley.
7. Repeat for all Cutter Blade Pulleys.
8. Replace the Bearings in the Cutter Idlers (see "Replacing the Bearings in the Cutter Idlers" on page 242).

## Replacing the Bearings in the Cutter Idlers

As with the Cutter Blade Pulleys, inside each Cutter Idler are two Bearings that rest against each other. One is visible from the top of the Idler, and the other is visible from the bottom of the Idler. They are the same size (in fact the same part) as the Bearings in the Cutter Blade Pulley. The process for changing the Bearings in the Idler is the same as for changing the Bearings in the Cutter Drive Pulleys (see “Replacing the Bearings in the Cutter Blade Pulleys” on page [241](#)). When finished, replace the Cutter Drive Bearings (see “Replacing the Cutter Drive Bearings” on page [242](#)).

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## Replacing the Cutter Drive Bearings

As with the Cutter Blade Pulleys, inside the Core of the Cutter Drive Pulley are two Bearings that rest against each other. One is visible from the top of the Idler, and the other is visible from the bottom of the Idler. They are the same size (in fact the same part) as the Bearings in the Cutter Blade Pulley. The process for changing the Bearings in the Core of the Cutter Drive Pulley is the same as for changing the Bearings in the Cutter Drive Pulleys (see “Replacing the Bearings in the Cutter Blade Pulleys” on page [241](#)).

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## Putting the Cutter Assembly Back Together

1. Follow the relevant steps in “Replacing the Cutter Blade Pulleys” on page [237](#) to reattach the Cutter Blade Pulleys to the Cutter Assembly.
2. Follow the relevant steps in “Replacing the Cutter Idlers” on page [237](#) to reattach the Cutter Idlers to the Cutter Assembly.
3. Follow the relevant steps in “Replacing the Cutter Drive Pulley” on page [238](#) to reattach the Cutter Drive Pulley to the Cutter Assembly.
4. Install a Timing Belt (see “Replacing the Timing Belt” on page [234](#)), This is an opportunity to put on a new Timing Belt rather than continuing to use the old one.
5. Set the Caps on the new Cutter Blade Pulleys.
6. Paying attention to the order shown below, insert the Screws, Lock Washers and Flat Washers that hold the Caps in place, and tighten the Screws just enough to hold the Cap loosely in position.
7. Replace all Cutter Blades (see “Replacing the Cutter Blades” on page [227](#)).
8. Tighten the Timing Belt Tension Pulley and tighten the Screw to hold it firmly in position (see “Adjusting Tension on the Timing Belt” on page [233](#)).
9. Reinstall the Cutter Assembly (see “Installing the Cutter Assembly” on page [195](#)).
10. If all maintenance is complete, reinstall the Mandrel and power on the system, following your company’s lockout/tagout procedures.

## Checking the Film Drive Belt

At least once every 3 weeks, verify proper tension on the Film Drive Belt, and adjust if needed.

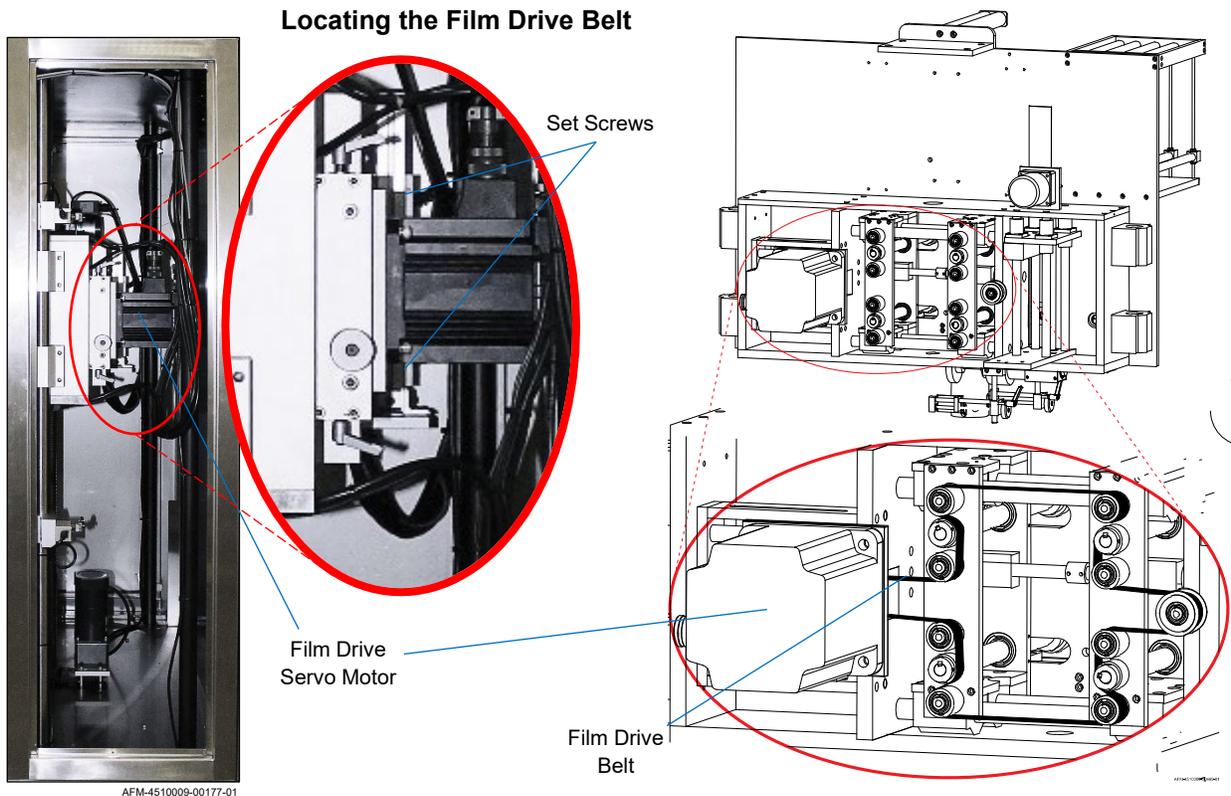
### To Check the Tension on the Film Drive Belt

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the downstream Side Panel of the LX-350 to access the Center Section of the Chassis.
3. Locate the Film Drive Belt.
4. Check the tension on the belt. It should be tight, but not overly tight.
5. Examine the Film Drive Belt and replace it at the first sign of wear (see “Replacing the Film Drive Belt and Idlers” on page 244).
6. Check the tightness of the Set Screws securing the Film Drive Servo Motor in position and, if they are loose, tighten them.



7. If all maintenance is complete, power on the system, following your company’s lockout/tagout procedures.

## **Replacing the Film Drive Belt and Idlers**

Every 2-3 years, the Film Drive Belt and Idlers should be replaced. Contact your AFM distributor to perform this procedure.

## Greasing Major Gears and Bearing Blocks

At least once a year, grease the Gears and Bearing Blocks for the Head Height Adjust, Applicator Height Adjust, and Mandrel Holder.

### Items Needed to Grease the Major Gears and Bearing Blocks:

- Grease
- Cloth

### Greasing the Head Height Adjust Bearing Blocks

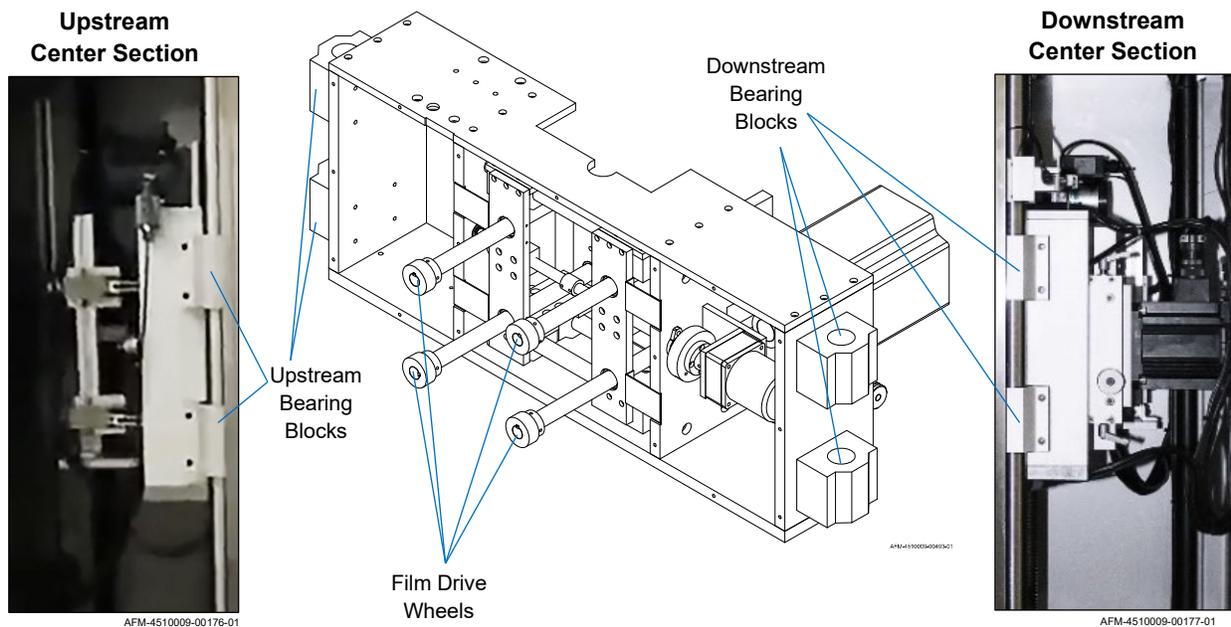
1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the upstream and downstream Side Panels of the LX-350.
3. Locate the Bearing Blocks for the Head Height Adjust and use a cloth to apply grease to them.

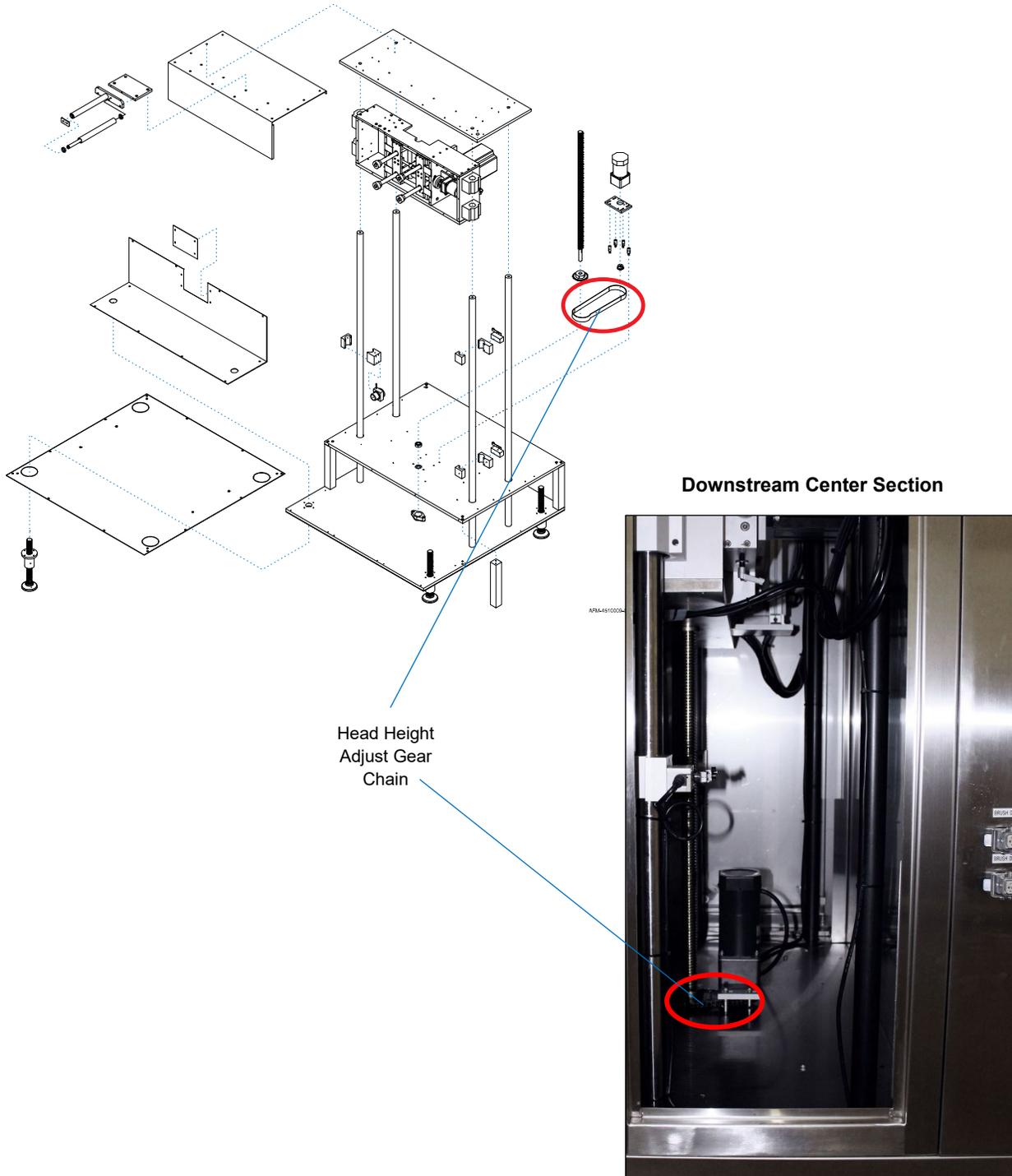
### Locating the Head Height Adjust Bearing Blocks



4. Grease the Head Height Adjust Gear Chain (see “Greasing the Head Height Adjust Gear Chain” on page 246).

## Greasing the Head Height Adjust Gear Chain

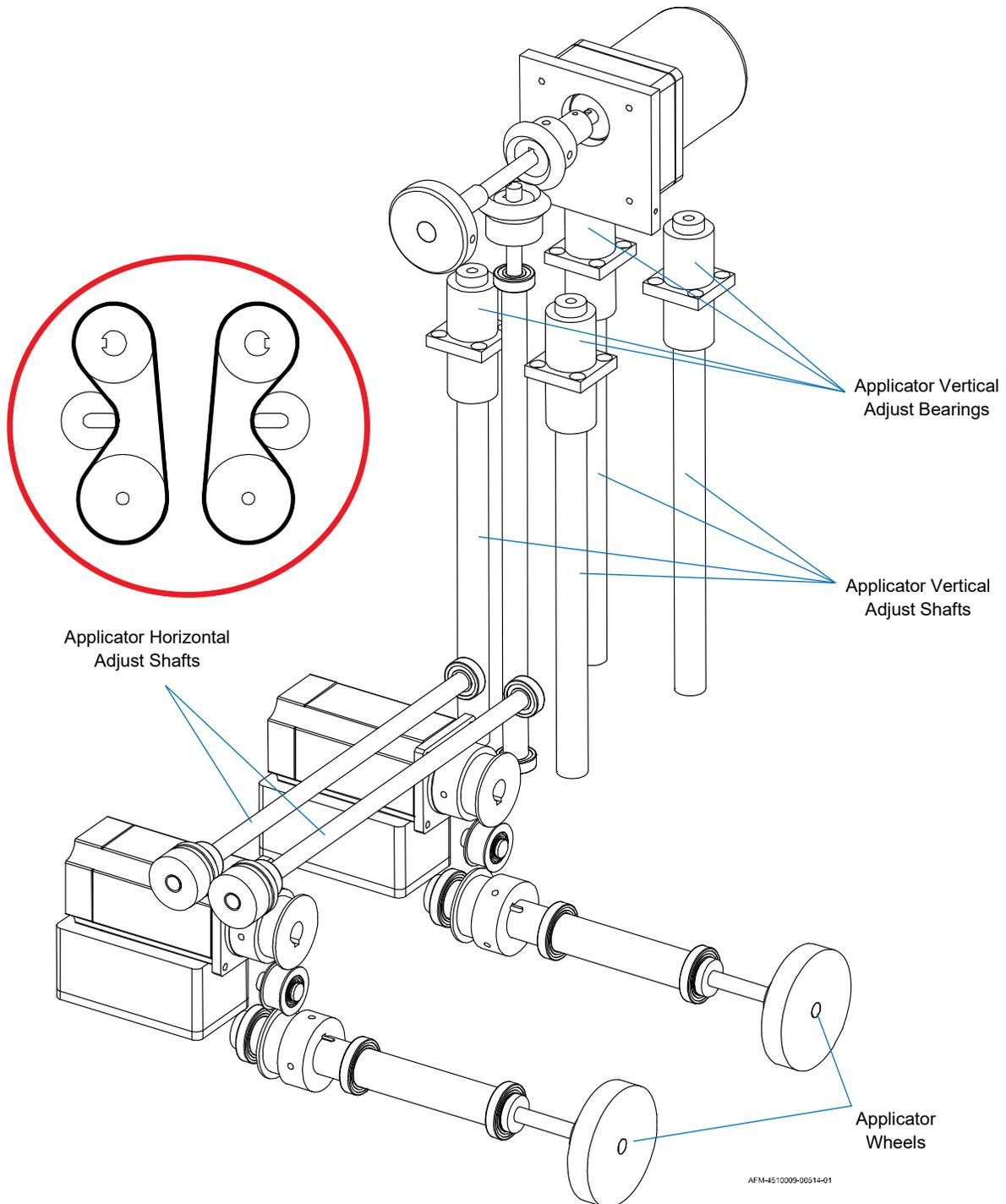
1. With the upstream and downstream Side Panels of the LX-350 still removed, locate the Gear Chain for the Head Height Adjust and use a cloth to apply grease to it.



2. Grease the Applicator Horizontal and Vertical Adjust Bearings (see "Greasing the Applicator Horizontal and Vertical Adjust Bearings" on page 247).

## Greasing the Applicator Horizontal and Vertical Adjust Bearings

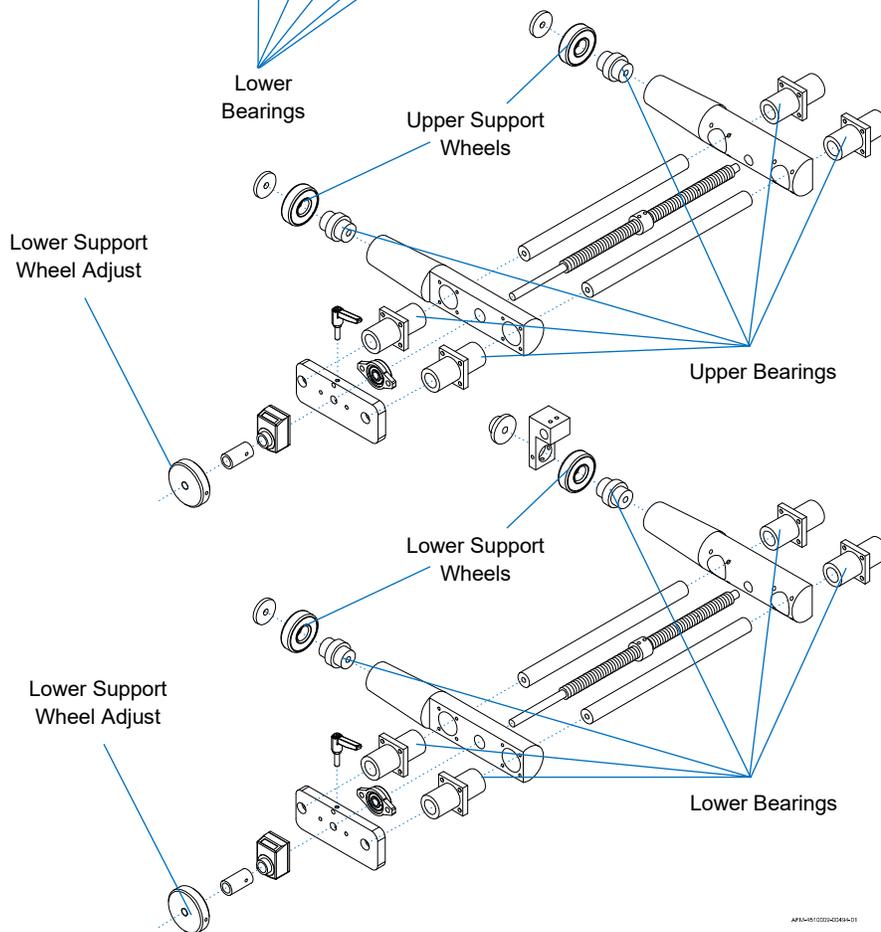
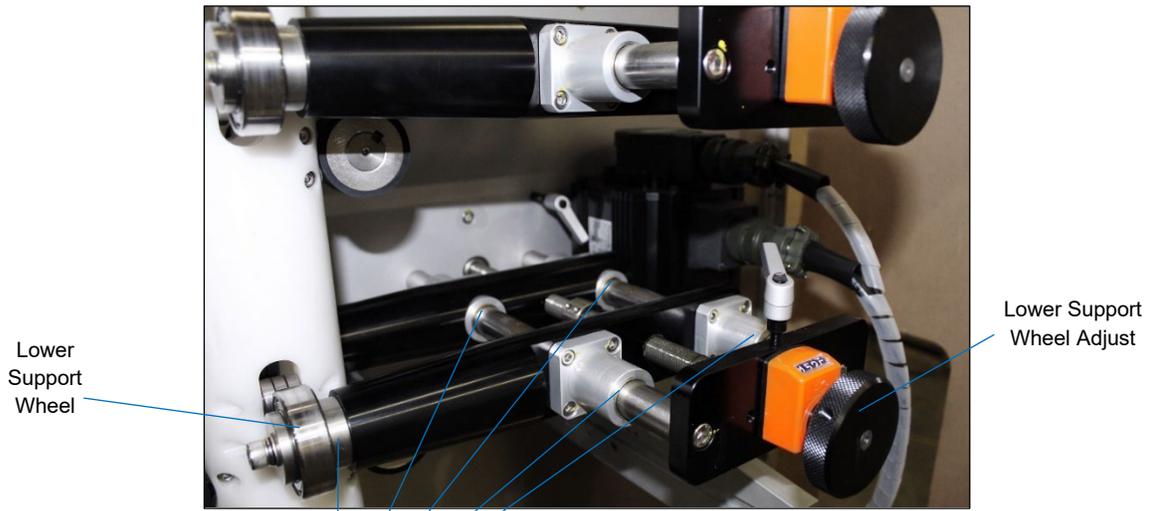
1. Locate the Applicator Horizontal and Vertical Adjust Bearings and Shafts and use a cloth to apply grease to them.



2. Grease the Upper and Lower Mandrel Support Bearings (see "Greasing the Upper and Lower Mandrel Support Adjust Bearings" on page 248).

## Greasing the Upper and Lower Mandrel Support Adjust Bearings

1. Locate the Mandrel Support Adjust Bearings and use a cloth to apply grease to them.



2. If all maintenance work is complete, power on the system, following your company's lockout/tagout procedures.

## Replace the Film Drive Wheels

The Film Drive Wheels should be checked for wear at least every 6 months. They should be replaced at the first sign of wear or every 2-3 years, whichever comes first.

### Items Needed to Replace the Film Drive Wheels:

- Allen Wrench (included in Tool Kit)
- Cut-Resistant Work Gloves
- New Film Drive Wheels – 4 (Part Number 4500707)

### To Replace the Film Drive Wheels:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).

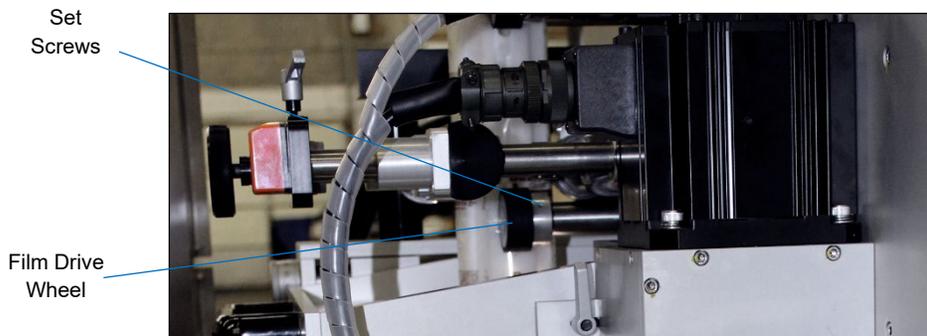


**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see “Removing the Mandrel” on page 186).
3. Remove the Film Drive Wheels.

Each Film Drive Wheel has two Set Screws at 90° to each other holding it in place. The Set Screws are located on the Shaft just behind the Film Drive Wheel. They may be on the top, bottom, or side, depending on the rotation of the Wheel at the time. Use the Allen Wrench to loosen the Set Screws.

#### Downstream View



4. Pop off the old Film Drive Wheel.
5. Put a new Film Drive Wheel in its place.
6. Tighten the Set Screws with the Allen Wrench to secure the new Film Drive Wheel in position.
7. Repeat for all 4 Film Drive Wheels.
8. If all maintenance work is complete, power on the system, following your company’s lockout/tagout procedures.

## Replacing the Support Wheels

The Support Wheels should be replaced every year or as needed.

### Items Needed to Replace the Support Wheels:

- Allen Wrench (included in Tool Kit)
- Cut-Resistant Work Gloves
- New Support Wheels - 4 (Part Number 4500186)

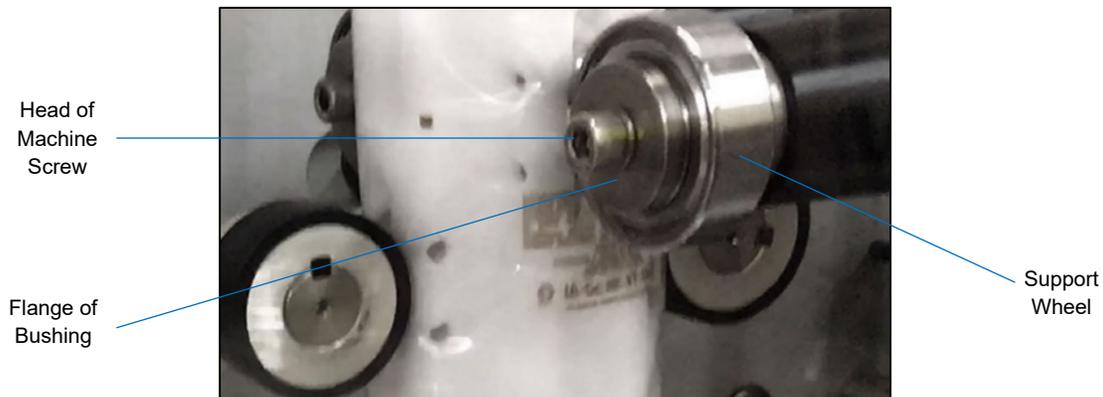
### To Replace the Support Wheels:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see “Removing the Mandrel” on page 186).
3. Remove the Support Wheels.  
Each Support Wheel has a Machine Screw and a Bushing holding it in place. The Machine Screw is in the center of the Support Wheel. Use the Allen Wrench to remove the Machine Screw.



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4. Pop off the old Support Wheel. The Bushing will come off as well (the flange of the Bushing is visible just behind the Machine Screw).
5. Replace the old Support Wheel with a new Support Wheel, using the old Bushing to hold it in place on the Shaft.
6. Insert the Machine Screw and tighten it with the Allen Wrench to secure the new Support Wheel in position.
7. Repeat for all 4 Support Wheels.
8. If all maintenance work is complete, power on the system, following your company’s lockout/tagout procedures.

## Replacing the Applicator Wheels, Bearings and Drive Belts

The Film Drive Wheels and Applicator Drive Belts should be checked for wear at least every 6 months. They should be replaced at the first sign of wear or every 2-3 years, whichever comes first. The Applicator Bearings should be replaced every 2-3 years.

### Items Needed to Replace the Applicator Wheels, Bearings and Drive Belts:

- Allen Wrench (included in Tool Kit)
- Cut-Resistant Work Gloves
- New Applicator Wheels – 2 (P/N 4500136)
- New Applicator Drive Belts – 2 (P/N 4501701)
- New Applicator Bearings – 4 (P/N 4500184 and 4500173)

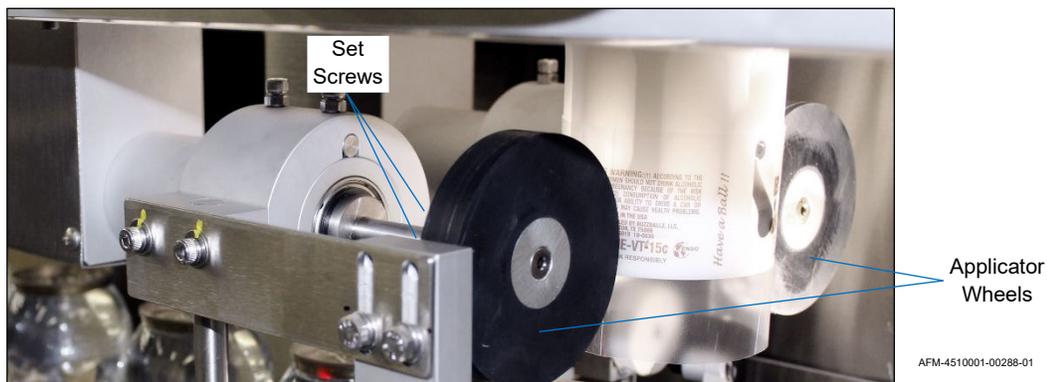
### Replacing the Applicator Wheels

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Remove the Mandrel (see “Removing the Mandrel” on page 186).
3. Each Applicator Wheel has two Set Screws at 90° to each other holding it in place. The Set Screws are located on the Shaft just behind the Applicator Wheel. They may be on the top, bottom, or side, depending on the rotation of the Wheel at the time. Use the Allen Wrench to loosen the Set Screws.

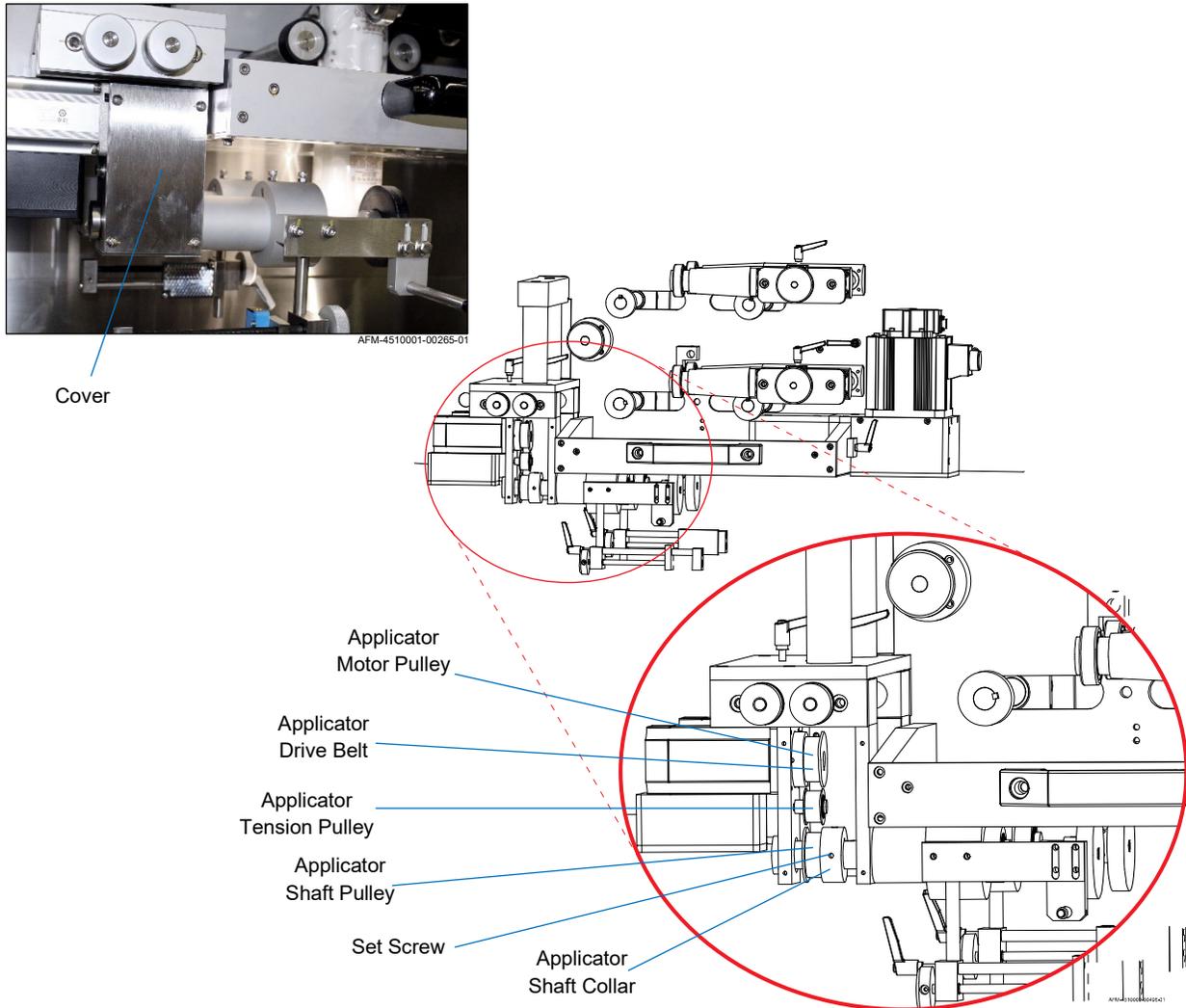


4. Pop off the old Applicator Wheel.
5. Put a new Applicator Wheel in its place.
6. Tighten the Set Screws with the Allen Wrench to secure the new Applicator Wheel in position.
7. Repeat for the other Applicator Wheel.

8. Replace the Applicator Drive Belts and Bearings (see “Replacing the Applicator Drive Belts and Bearings” on page 252).

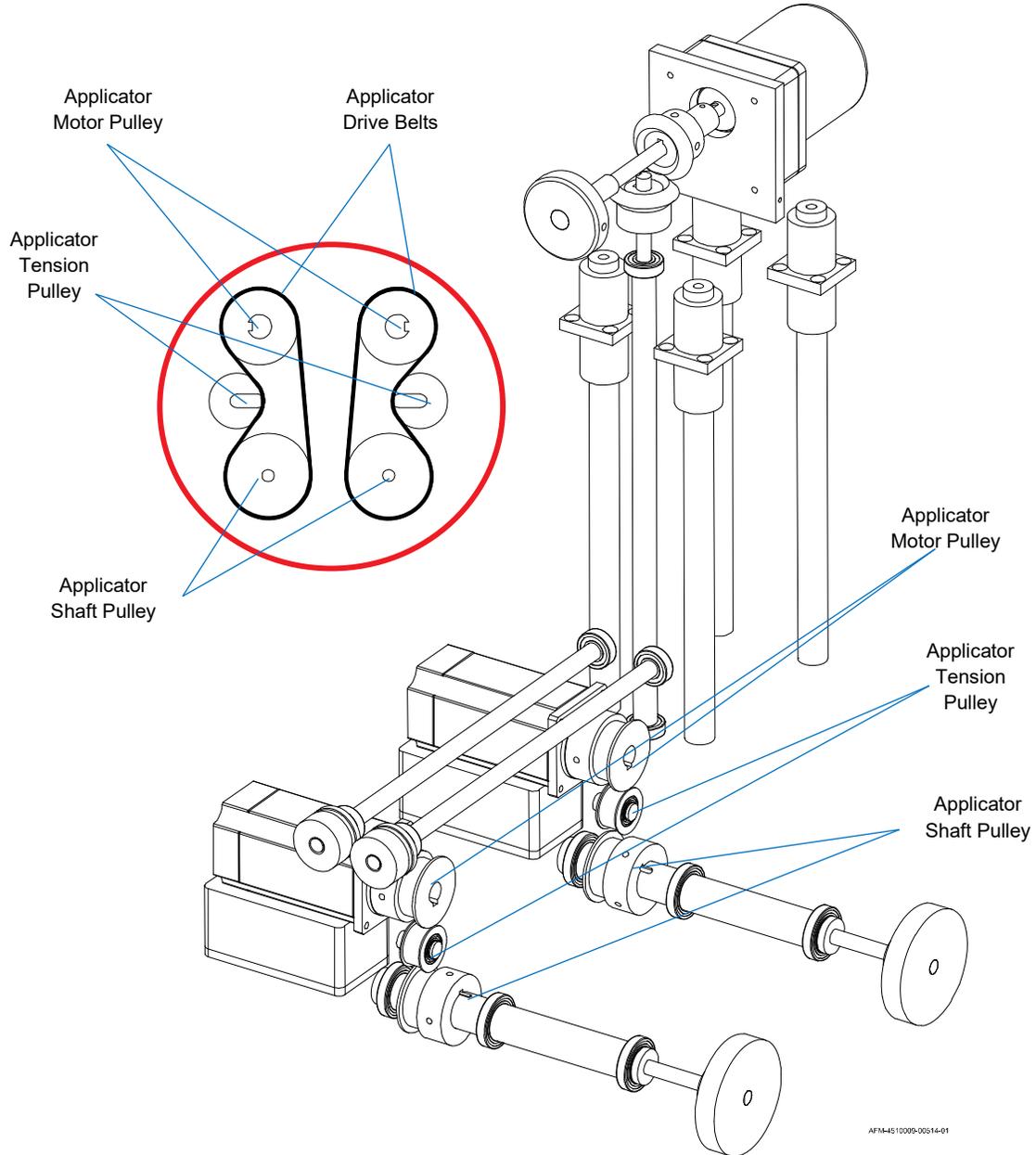
## Replacing the Applicator Drive Belts and Bearings

1. Use an Allen Wrench to remove the Cover from the Applicator Assembly.
2. Pull back the Applicator Tension Pulley to loosen tension on the Applicator Drive Belt.
3. Use an Allen Wrench to loosen the Set Screws that hold the Applicator Shaft Collar in place.
4. Remove the Collar from the back (left) end of the Shaft and slide the Shaft out to the right.
5. Remove the Applicator Drive Belt.



6. Remove the Applicator Drive Pulley and Applicator Motor Pulley.
7. Install a new Applicator Drive Pulley and Applicator Motor Pulley.
8. Install a new Applicator Drive Belt.
9. Slide the Shaft back into the Applicator Shaft Collar and tighten the Set Screws to hold it in place.

10. Push the Applicator Tension Pulley until it is firmly against the Applicator Drive Belt and secure it in position.
11. Repeat for the other Applicator Wheel Assembly.
12. Use the Allen Wrench to secure the Covers back onto the Applicator Wheel Assemblies.



13. If all maintenance work is complete, power on the system, following your company's lockout/tagout procedures.

## Replacing the Linear Bearings in the Dancer

At least every 2-3 years, the Linear Bearings (P/N 4502133) in the Dancer Assembly should be replaced.

### Items Needed to Replace the Linear Bearings in Dancer:

- Allen Wrench
- New Bearings – 18 (P/N 4502131)
- New Linear Bearings – 2 (P/N 4502133)

### To Replace the Linear Bearings in Dancer:

1. Shut down the LX-350 and UR-2 (see “Powering Off” on page 168) and all connected equipment, and disconnect all energy inputs to them, consistent with your company’s lockout/tagout procedures (see “Lockout/Tagout” on page 18).



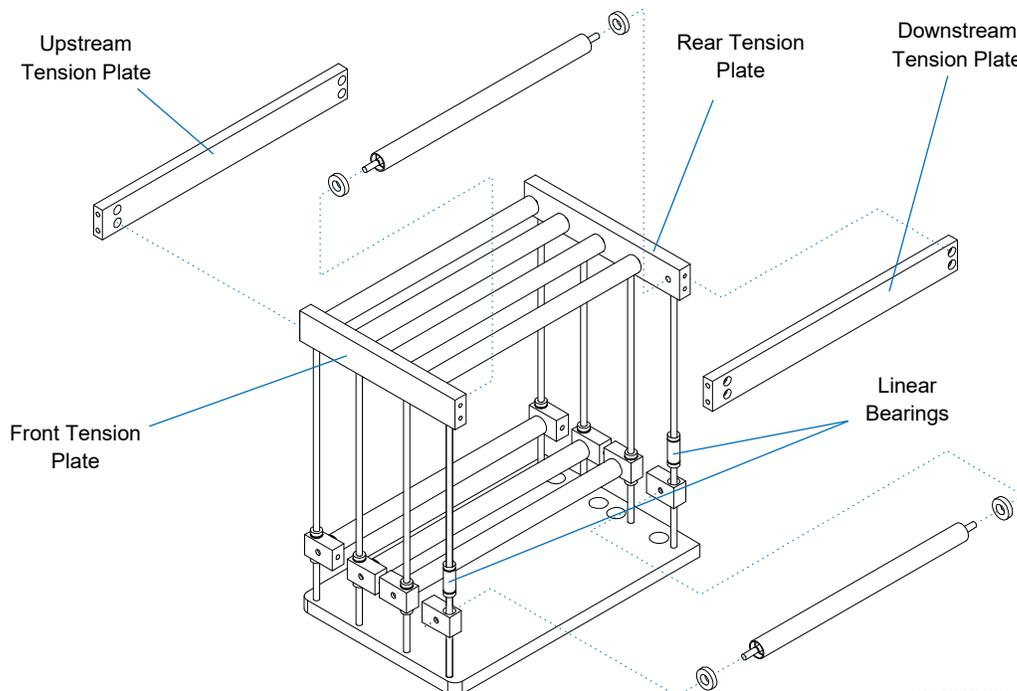
**WARNING:** Failure to follow lockout/tagout procedures can result in serious injury or equipment damage in the event of an accidental restart.

2. Ensure that no film is threaded through the Dancer.
3. Use the Allen Wrench to remove the Upstream and Downstream Tension Plates.



**ATTENTION:** The Tension Plates hold the Dancer together. When they are removed, the remaining Dancer components can disassemble easily.

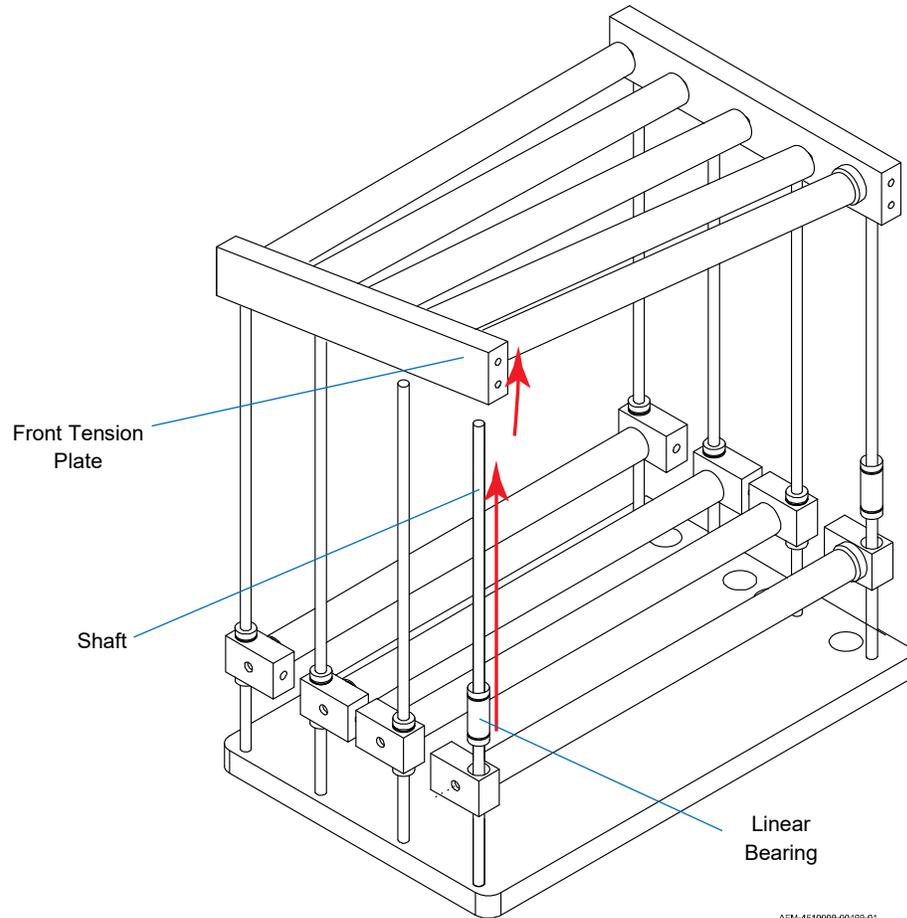
### Replacing the Linear Bearings



AFM-4510009-00498-01

4. Lifting up slightly on the right side of the Front Tension Plate, slide the front Linear Bearing up off the Shaft.

### Replacing the Linear Bearings



5. Slide a new Linear Bearing down onto the Shaft.
6. Set the right side of the Front Tension Plate back down onto the Shaft to hold it in place.
7. Lifting up slightly on the right side of the Rear Tension Plate, slide the front Linear Bearing up off the Shaft.
8. Slide a new Linear Bearing down onto the Shaft.
9. Set the right side of the Rear Tension Plate back down onto the Shaft to hold it in place.
10. Use the Allen Wrench to secure the Upstream and Downstream Tension Plates firmly back into position.
11. If all maintenance work is complete, power on the system, following your company's lockout/tagout procedures.

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# Troubleshooting

Below are some problems that may be encountered during labeling. If other issues occur that are not covered in this section, contact your authorized AFM distributor for assistance.

Problem	Possible Cause	Solution
Labels have "burnout marks."	Film Drive Wheels are too tight against the Mandrel.	Use the HMI to move the Film Drive Wheels out from the Mandrel and then move them back in again automatically (see "Automatic Film Drive Wheel Adjustment" on page 203).
	Support Wheels are too tight against the Mandrel.	Loose the Support Wheels slightly (see "Support Wheels: Unlocking, Adjusting and Locking" on page 205).
	Applicator Wheels are too tight against the Mandrel.	Loosen the Applicator Wheels slightly (see "Horizontal Applicator Wheel Adjustment" on page 209).
Labels are missing the bottles.	Timing Screw is not properly centered on Conveyor.	Check centerline positioning of bottles relative to the bottom of the Mandrel and adjust position of Timing Screw if needed.
	Conveyor is out of centerline alignment.	Check centerline positioning of bottles relative to the bottom of the Mandrel and adjust position of Conveyor if needed.
	Attempting to label too many bottles per minute.	Slow the Timing Screw Assembly speed and Conveyor speed (see "Setting Screen 3" on page 153).
	The Work Detect Sensor is too far upstream or downstream.	Move the Work Detect Sensor (see "Setting Screen 3" on page 153).
	The Mandrel is too far up from the tops of the bottles.	Lower the Head Assembly (see "Setting Screen 2" on page 152).
	Applicator Wheels are not tight enough against the Mandrel.	Tighten the Applicator Wheels slightly (see "Horizontal Applicator Wheel Adjustment" on page 209).
	Applicator Wheels are not properly aligned with the Applicator Bearings on the Mandrel.	Vertically adjust the Applicator Wheels until they are aligned with the Bearings (see "Vertical Applicator Wheel Adjustment" on page 207).
	Mandrel Spring Tabs at the bottom of the Mandrel are too loose.	Pull them out slightly.

Problem	Possible Cause	Solution
Labels are bouncing back up off the bottles.	The Application Wheels are moving too fast.	Adjust the Application Wheel speed (see "Wheel Speed" in "Setting Screen 3" on page <a href="#">153</a> ).
Labels are not reaching the bottom of the bottle (or Side Belts).	Bottles have condensation on them.	Check for condensation on bottles and if any is detected, adjust temperature and humidity of the room.
	Applicator Wheels are not tight enough against the Mandrel.	Tighten the Applicator Wheels slightly (see "Horizontal Applicator Wheel Adjustment" on page <a href="#">209</a> ).
	Applicator Wheels are not spinning fast enough	Adjust the Application Wheel speed (see "Wheel Speed" in "Setting Screen 3" on page <a href="#">153</a> ).
Labels are jamming inside the Cutter Assembly	Mandrel being used does not match label layflat width.	Measure the layflat width of the film to confirm that it is within specifications for the Mandrel being used.
	Cutter Blades are not returning to the correct home position between cuts.	Follow steps for "Cutter Find Home" on page <a href="#">94</a> . Look at Cutter Assembly from underneath and verify that Cutter Blades are returning to correct home position.
	Mandrel Spring Tabs at the bottom of the Mandrel are too far out.	Manually push them inward. Going forward, ensure that the Mandrel Spring Tabs are not touching the Cutter Assembly during Mandrel installation.
Cut marks are rough or ragged.	Debris has collected in the Cutter Notch.	Clean the Cutter Notch (see "Cleaning the Cutter Notch" on page <a href="#">220</a> ).
	The Cutter Blades are dull or damaged.	Replace the Cutter Blades (see "Replacing the Cutter Blades" on page <a href="#">227</a> ).
	Cutter Blades are not starting from their home position.	Follow steps for "Cutter Find Home" on page <a href="#">94</a> . Look at Cutter Assembly from underneath and verify that Cutter Blades are returning to correct home position.
Labels are "bunching" at the Film Drive Wheels.	Mandrel being used does not match label layflat width.	Measure the layflat width of the film to confirm that it is within specifications for the Mandrel being used.
	Film Drive Wheels are too tight against the Mandrel.	Use the HMI to move the Film Drive Wheels out from the Mandrel and then move them back in again automatically (see "Automatic Film Drive Wheel Adjustment" on page <a href="#">203</a> ).

Problem	Possible Cause	Solution
Timing Screw is starting and stopping erratically	Timing Screw Sensor is contaminated with dust or condensation	Use a Non Abrasive, Lint-free Wipe (P/N 2005470) to clean off the Timing Screw Sensor.
Labels are being cut too short, too long, or in the wrong place	The Print-Reading Sensor Lens is dirty or dusty.	Clean the Print-Reading Sensor Lens (see “Cleaning the Print Reading Sensor Fibers and Lens” on page 214).
	Wrong recipe is being used.	Check that the correct recipe is loaded, and if needed, load the correct recipe (see “Label- and Product-Specific Setup” on page 157).
	The Cut Length or some other part of the recipe is incorrect.	Reevaluate the recipe settings (see “Using Recipes and Testing” on page 157).
	The Film Drive Wheels are not tight enough against the Film Drive Bearings (slipping and preventing them from advancing the film with precision).	Use the HMI to move the Film Drive Wheels out from the Mandrel and then move them back in again automatically (see “Automatic Film Drive Wheel Adjustment” on page 203).
	The Print-Reading Sensor is too high or too low.	Adjust the height of the Print-Reading Sensor (see “Adjusting the Print-Reading Sensor’s Position” on page 217).
	The Print Reg Dwell setting is incorrect.	Adjust the Print Reg Dwell setting and test (see “Using Recipes and Testing” on page 157).
	The Print-Reading Sensor’s sensitivity needs to be adjusted.	Adjust the Print-Reading Sensor’s sensitivity (see “Adjusting the Print-Reading Sensor’s Sensitivity” on page 215).
In <i>Print Registration</i> mode, the lengths of cut labels is inconsistent.	Film Drive Wheels are too loose against the Mandrel.	Use the HMI to move the Film Drive Wheels out from the Mandrel and then move them back in again automatically (see “Automatic Film Drive Wheel Adjustment” on page 203).
	The Print-Reading Sensor Lens is dirty or dusty.	Clean the Print-Reading Sensor Lens (see “Cleaning the Print Reading Sensor Fibers and Lens” on page 214).
	Label material is being impeded somewhere in the path before the Film Drive Wheels.	Check the label path for jams or obstructions.
	Cut marks in film are not completely transparent.	Use different label film or adjust the sensitivity of the Print-Reading Sensor (see “Adjusting the Print-Reading Sensor’s Sensitivity” on page 215).

Problem	Possible Cause	Solution
Label film is splitting on the Fin of Mandrel	Incorrect Mandrel size for labels.	Measure the layflat width of the film to confirm that it is within specifications for the Mandrel being used.
	Mandrel Fin has burrs or other contaminants on it.	Clean the Mandrel Fin.
	Film Drive Wheels are too tight or too loose.	Use the HMI to move the Film Drive Wheels out from the Mandrel and then move them back in again automatically (see “Automatic Film Drive Wheel Adjustment” on page 203).
	Support Wheels are too tight or too loose.	Check pressure of Support Wheels. They should rotate but not spin freely.
	Label material is insufficiently glued along the seam (defective film)	Replace the film roll.
	Labels are wound too tightly on the film roll (defective film roll).	Replace the film roll.
<i>Application Fail</i> fault keeps occurring even though there is no label jam.	The Application Fail Sensor is too high or too low.	Adjust the position of the Application Fail Sensor. It should only light when a label is just below the Mandrel.
	The sensitivity of the Application Fail Sensor needs to be adjusted.	Adjust the sensitivity of the Application Fail Sensor (see “Adjusting the Application Fail Sensor’s Sensitivity” on page 219).
	The value input for the Application Fail Setting is too low.	Increase the value of the Application Fail Setting (see “Application Fail Setting” on page 138) and retest.
Labels are not being shot cleanly off the base of the Mandrel.	Applicator Wheels are not properly positioned.	Check pressure and height of Applicator Wheels against Mandrel.
Label film is folding over within the Dancer.	Label film coming off the UR-2 is not correctly aligned with the centerline of the Mandrel.	Verify that the UR-2 is properly aligned with the Dancer (see “Fine-Tuning the LX-350 Position” on page 71).
When using a Perforator, perforation depth is inconsistent.	Loose parts on Perforator.	Check the Perforator for loose components and fasteners.
	Faulty Perforator Linkage.	Check the Perforator Linkage and replace if necessary.

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Film is twisting on the Mandrel.	Insufficient back-tension.	Create more back-tension by slowing the Inner Dancer Motor.
A Servo Motor constantly generates an error message.	Something is causing mechanical binding.	Check the component whose Motor is generating the fault for anything that can impede smooth operation (eg, Cutter Servo Motor: label film has accumulated in the Cutter Assembly, Film Feed Servo Motor: label film may be getting caught above the Mandrel).
A Variable Frequency Drive (VFD) constantly generates a fault and shuts down, requiring a reset of the VFD.	Something is causing mechanical binding.	Check the component whose VFD is generating the fault for anything that can impede smooth operation (eg, Inner Dancer VFD: film jam in the Dancer Assembly).

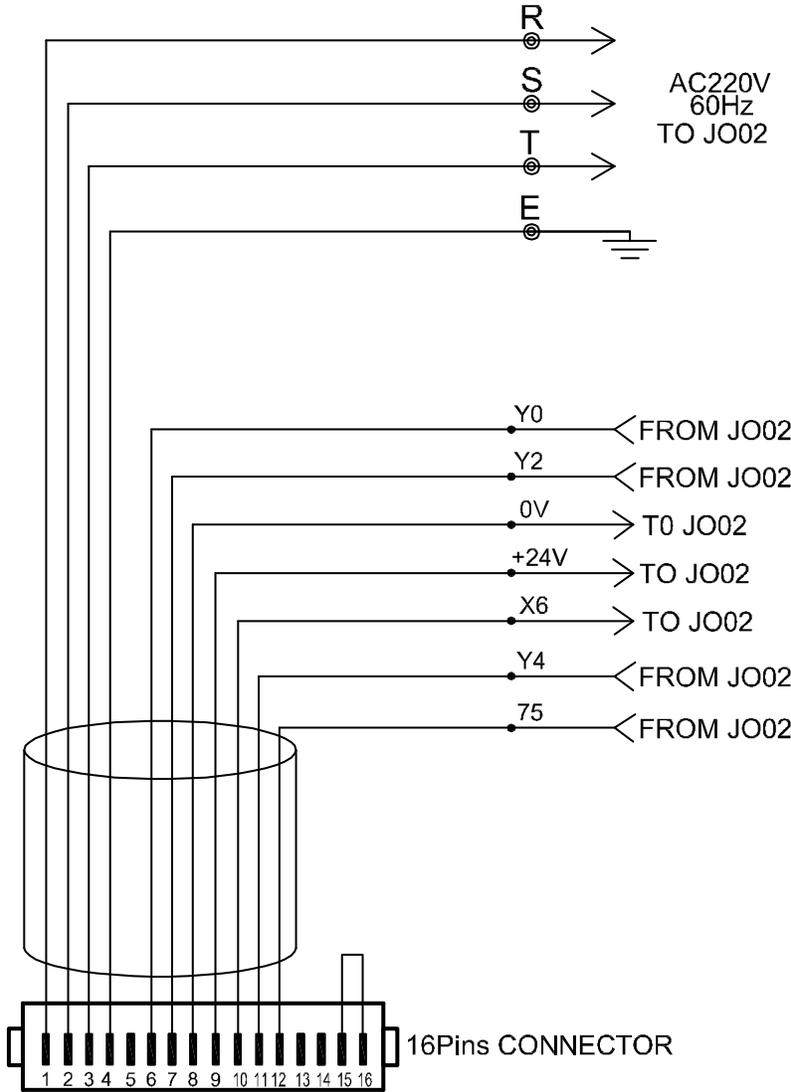
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# Electrical Schematics

## UR-2: LX-350 to UR-2 Connector Schematic

HHMLA150XG1-J001



Plug in Sleeving Machine

AFM-1510009-00506-02

**Drawing Name:**  
Electric Circuit Diagram

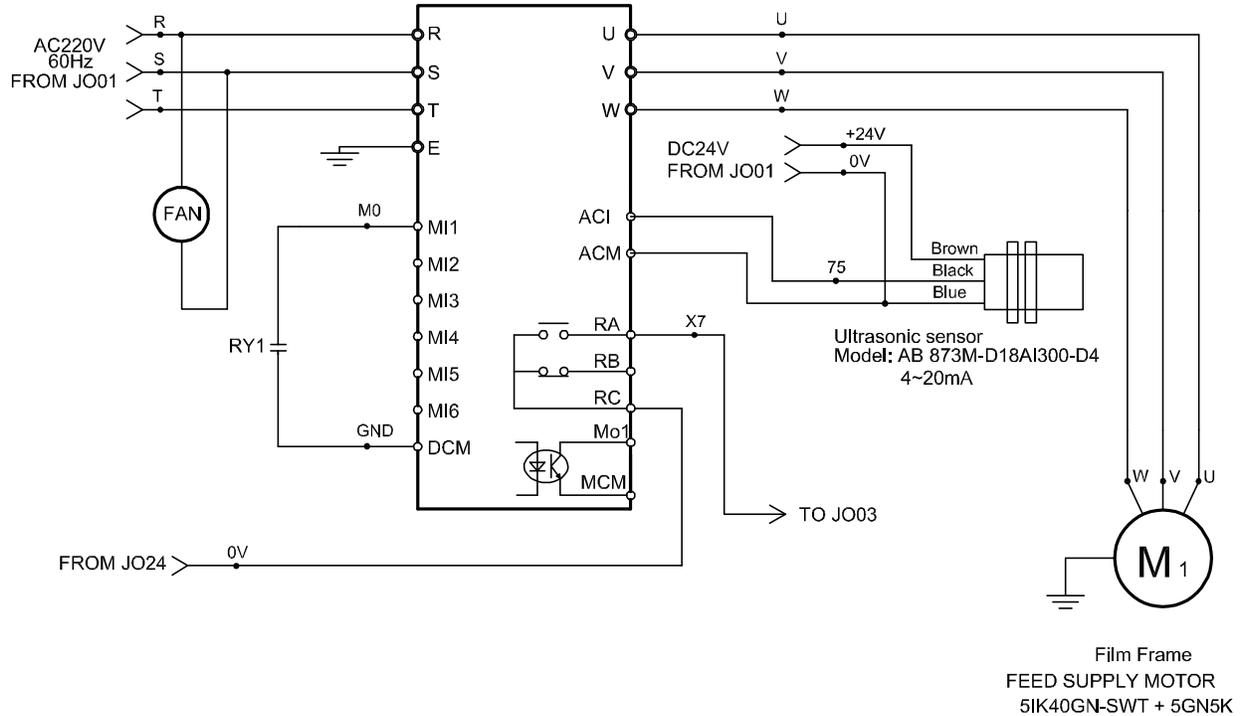
**Drawing No.:**  
HHMLA150XG1-J001

**Machine Codename:**  
G1-FILM FRAME

**Date:**  
10/15/20

# UR-2: Motor Control Circuit Schematic

HHMLA150XG1-J002



## INVERTER SETTING

P00-20:02 MASTER FREQUENCY DETERMINED BY 4 TO 20 mA INPUT

P00-21:01 OPERATING INSTRUCTIONS DETERMINED BY THE EXTERNAL CONTROL TERMINALS.

P01-00: 210 MAXIMUM OUTPUT FREQUENCY

P01-12: 0.1 ACCELERATION TIME 1

P01-13: 0.3 DECELERATION TIME 1

P02-35:1 AFTER RESET, IF THE OPERATION COMMAND EXISTS, THE INVERTER WILL EXECUTE OPERATION

P03-00:0 AVI NO FUNCTION

P03-01:1 ACI FREQUENCY

P00-02: 01 "00" :ALL PARAMETERS CAN BE SET/READ ; "01":ALL PARAMETERS ARE READ-ONLY

AFM-4510009-00507-02

**Drawing Name:**  
Electric Circuit Diagram

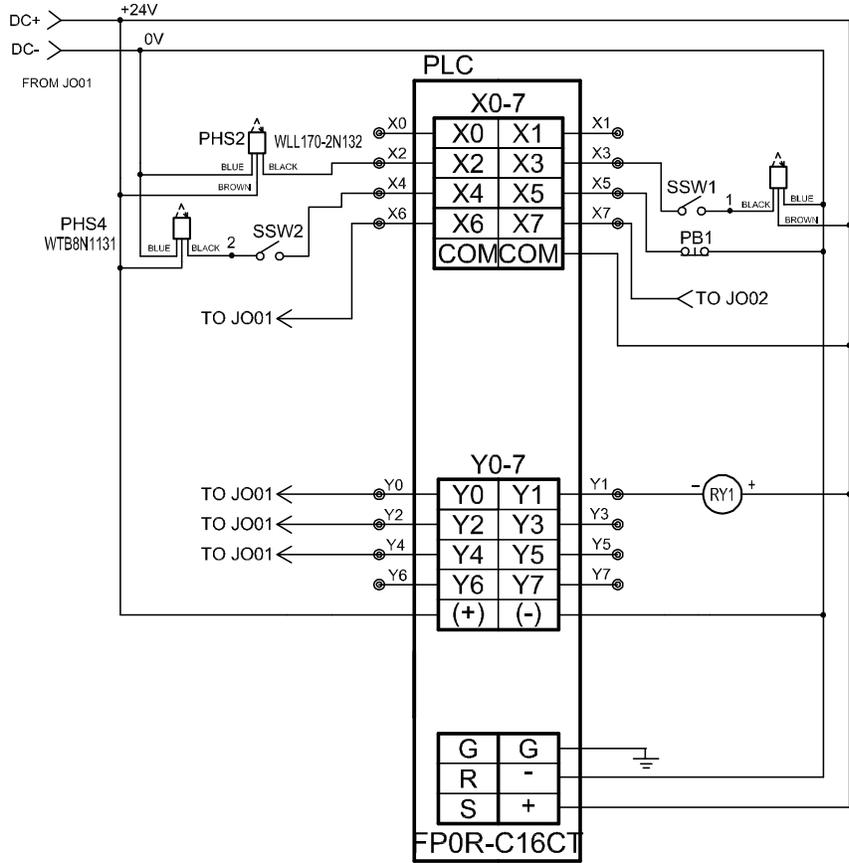
**Drawing No.:**  
HHMLA150XG1-J002

**Machine Codename:**  
G1-FILM FRAME

**Date:**  
10/15/20

# UR-2: PLC Schematic

HHMLA150XG1-J003



- X0:
- X1:
- X2: Film empty detector
- X3: Low film detector-1
- X4: Low film detector-2
- X5: E.stop
- X6: Sleever ready (control link)
- X7: Inverter fault
  
- Y0: CONTROL LINK-1
- Y1: Film supply motor RUN/STOP
- Y2: CONTROL LINK-2
- Y3:
- Y4: Film Frame Ready
- Y5:
- Y6:
- Y7:

AFM-4510003-00508-02

**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
HHMLA150XG1-J003

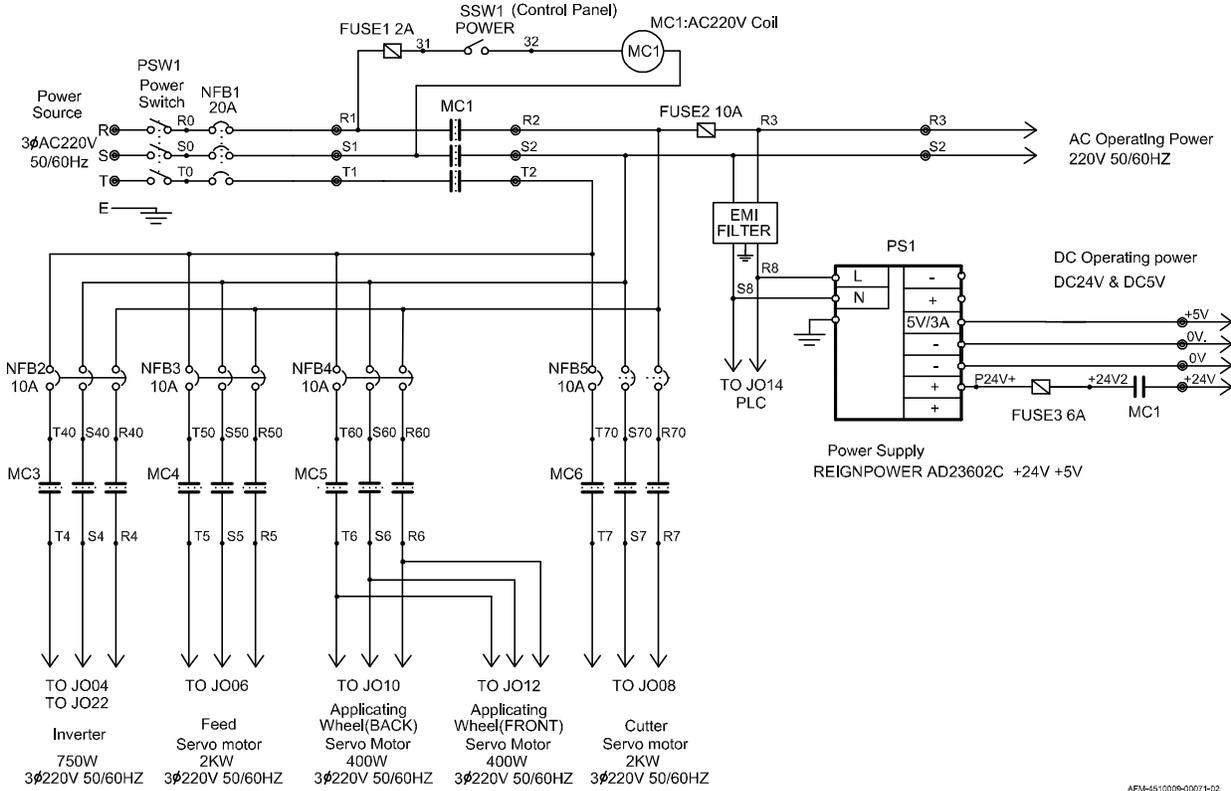
**Machine Codename:**  
G1-FILM FRAME

**Date:**  
10/15/20



# LX-350: Main Power Schematic

LX350N-J001



AFM-4510009-00071-02

**Drawing Name:**  
Electric Circuit Diagram

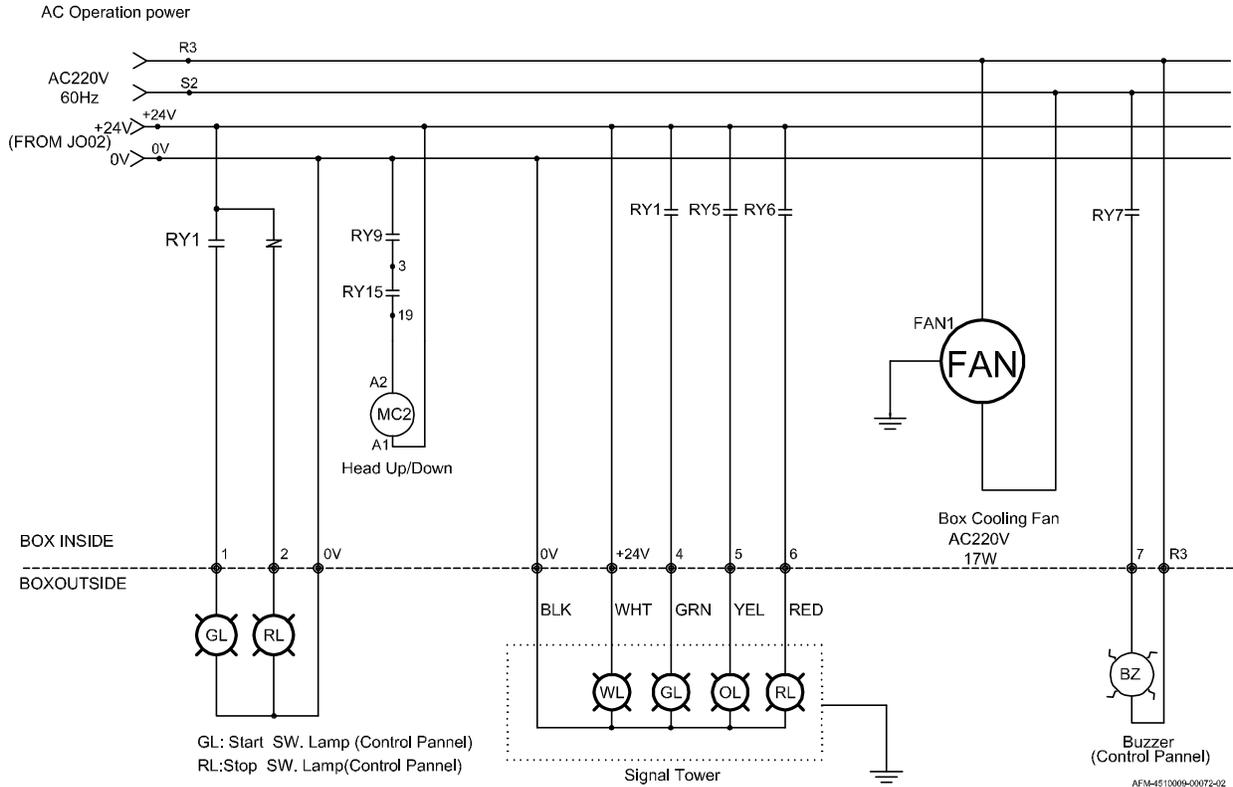
**Drawing No.:**  
LX350N-J001

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Control Schematic 1

## LX350N-J002



AFM-4510009-00072-02

**Drawing Name:**  
 Electric Circuit Diagram

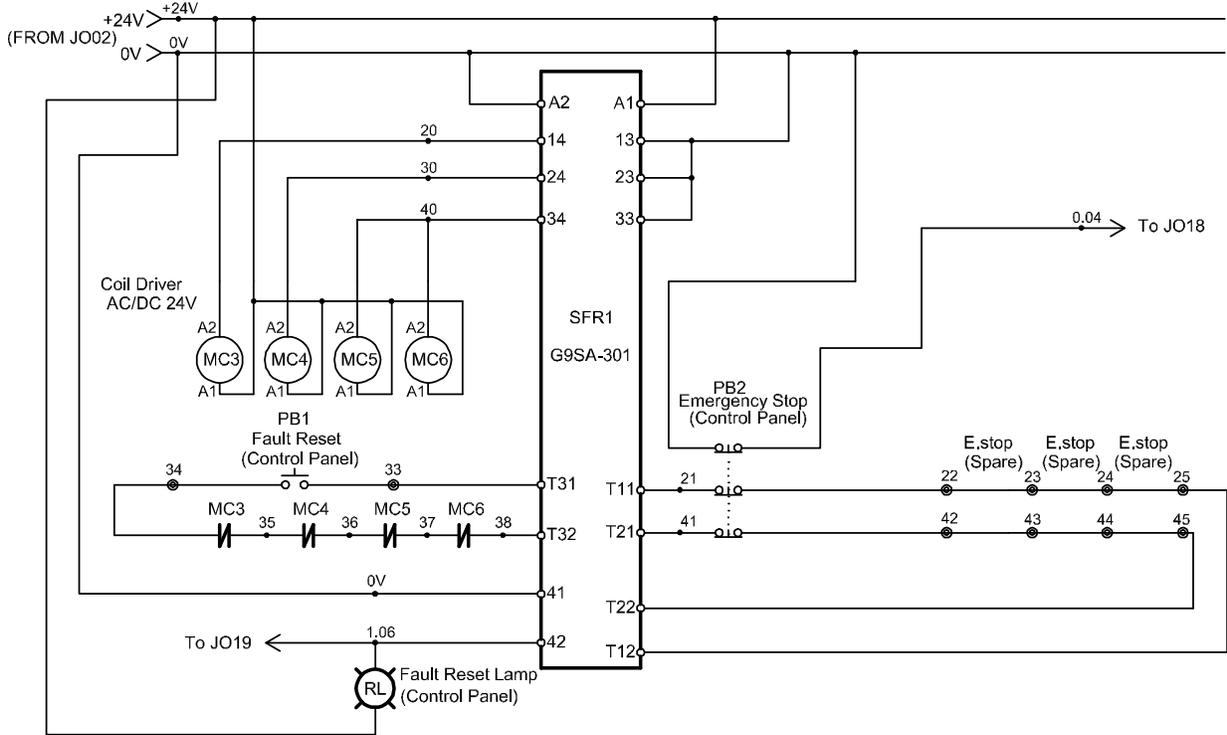
**Drawing No.:**  
 LX350N-J002

**Machine Codename:**  
 LX350N

**Date:**  
 9/18/18

# LX-350: Safety Circuit Schematic

LX350N-J003



OMRON G9SA-301 Safety Relay Unit

AFM-4510009-00073-02

**Drawing Name:**  
Electric Circuit Diagram

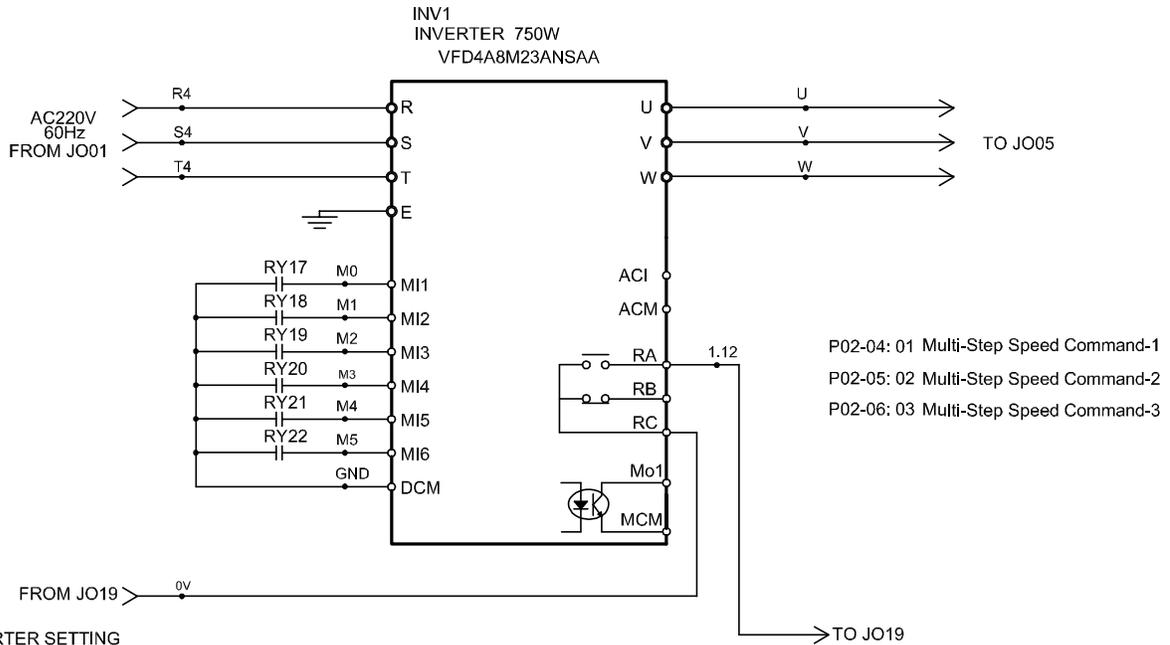
**Drawing No.:**  
LX350N-J003

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Film Supply Schematic

LX350N-J004



**INVERTER SETTING**

- MASTER FREQUENCY: 30 FILM SUPPLY LO-SPEED (Inner)
- P00-21:01 OPERATING INSTRUCTIONS DETERMINED BY THE EXTERNAL CONTROL TERMINALS.
- P01-00:120 MAX. FREQUENCY
- P04-00:80 APPLICATING WHEEL U/D SPEED
- P04-01:40 FORMER HOLDER O/C SPEED
- P04-02:60 HEAD ADJ. FAST SPEED
- P04-03:30 HEAD ADJ. SLOW SPEED
- P04-04:25 HEAD ADJ. MICRO SPEED
- P04-05:120 FILM SUPPLY HI-SPEED (Inner)

- P00-20:2 MASTER FREQUENCY DETERMINED BY 0 TO +10V INPUT ON AVI TERMINAL WITH JUMPERS.
- P01-12: 0.1 ACCELERATION TIME 1
- P01-13: 0.1 DECELERATION TIME 1
- P01-14: 0.5 ACCELERATION TIME 2 (FILM SUPPLY MOTOR USE)
- P01-15: 0.5 DECELERATION TIME 2 (FILM SUPPLY MOTOR USE)
- P02-00: 01 MULTI-FUNCTION INPUT TERMINAL (M0,M1) : M0:FWD/STOP, M1:REV/STOP
- P02-03: 08 MULTI-FUNCTION INPUT TERNAL (M2) : 1st OR 2nd ACCEL/DECEL TIME SELECTION
- P02-16: 01 PHOTOCOUPLER OUTPUT : OUTPUT FREQUENCY ATTAINED
- P00-02: 01 "00" :ALL PARAMETERS CAN BE SET/READ ; "01":ALL PARAMETERS ARE READ-ONLY

AFM4510009-00074-01

**Drawing Name:**  
Electric Circuit Diagram

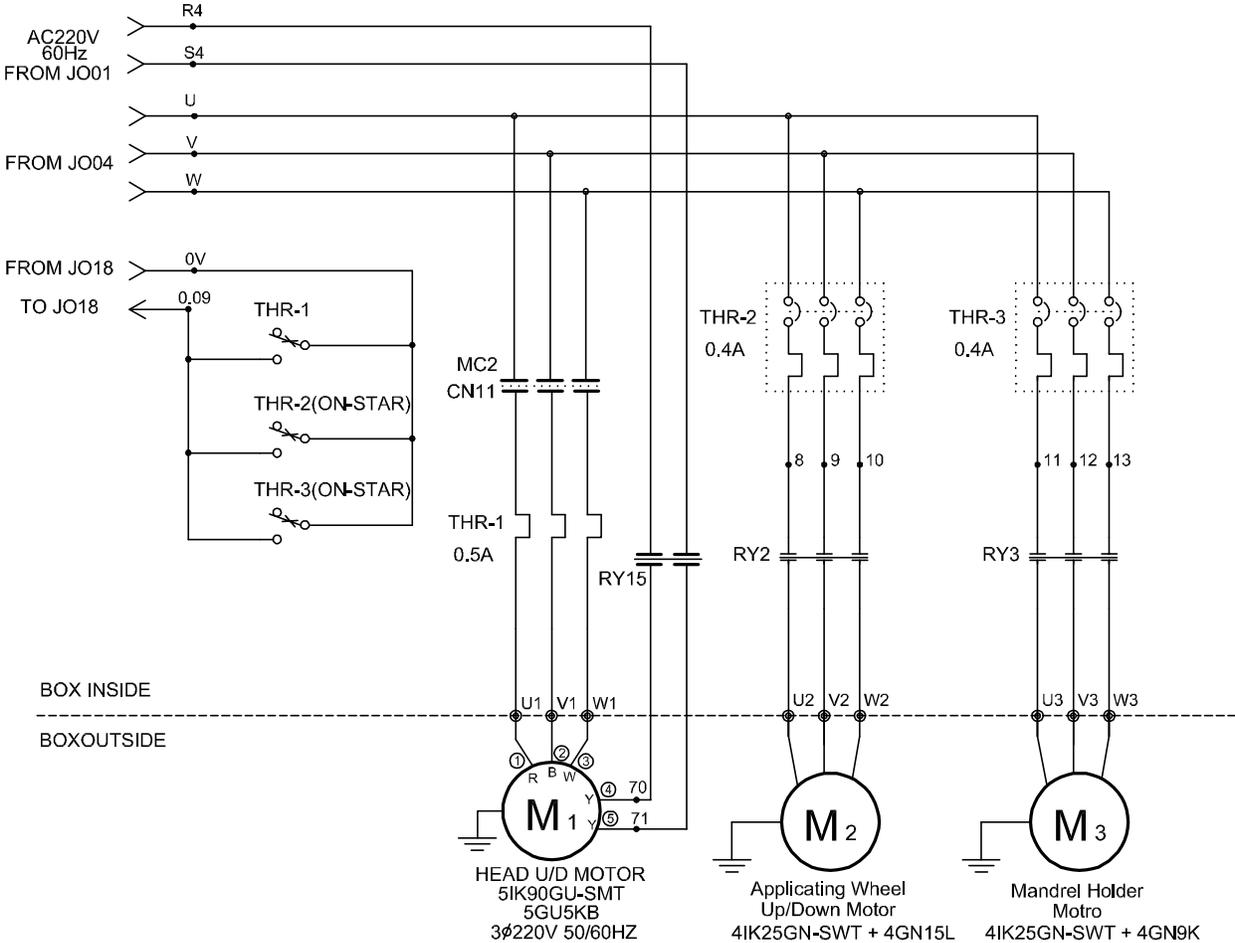
**Drawing No.:**  
LX350N-J004

**Machine Codename:**  
LX350N

**Date:**  
10/15/20

# LX-350: Accessory Motor Control Schematic

LX350N-J005



AFM-4510009-00075-02

**Drawing Name:**  
Electric Circuit Diagram

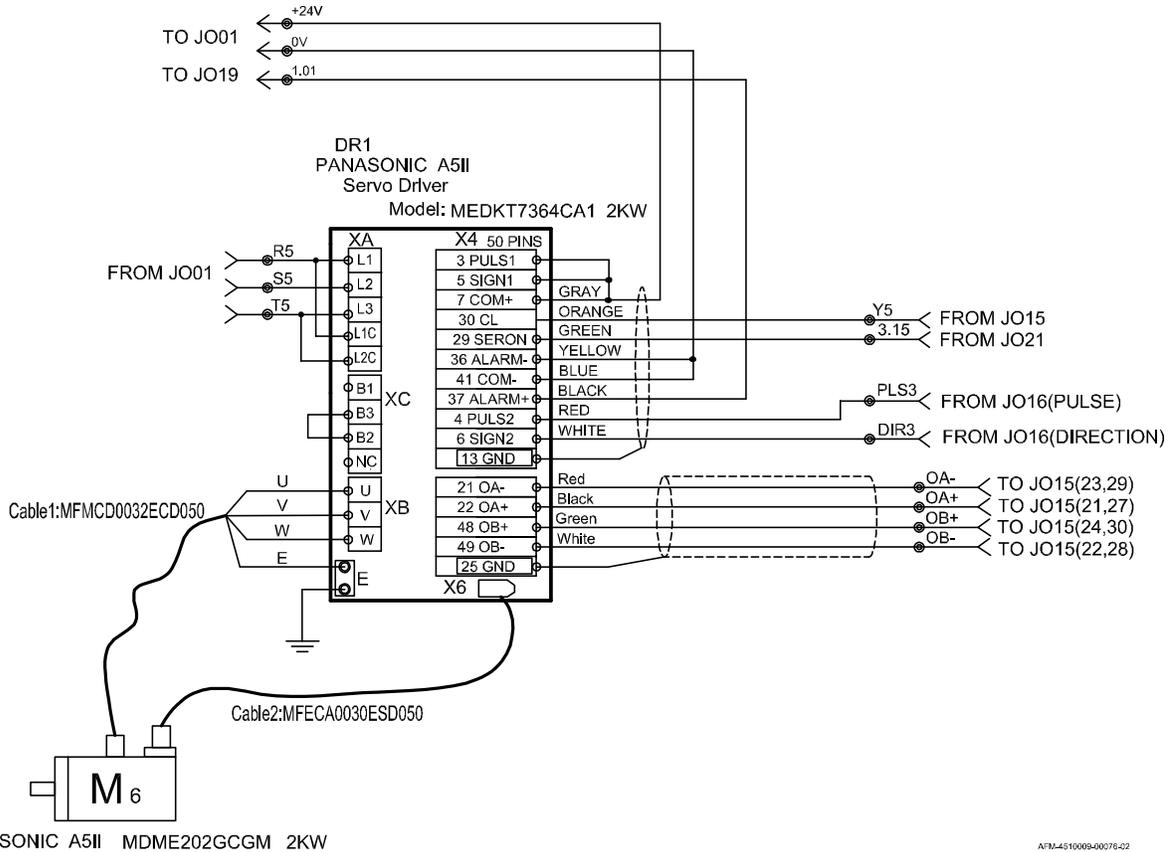
**Drawing No.:**  
LX350N-J005

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Film Drive Servo Circuit Schematic

LX350N-J006



A7M-4510009-00075-02

**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
LX350N-J006

**Machine Codename:**  
LX350N

**Date:**  
10/28/20

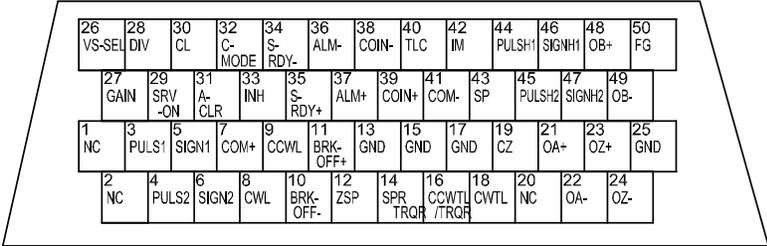
# LX-350: Film Drive Servo Parameters

## LX350N-J007

Feed Servo Motor Driver

Model: MEDKT7364CA1 2KW A5II

50PINS Connector:SCSI2-50P



Wire Color	50Pin NO#	Function	Wire NO#
Gray	7	COM+	+24V
Green	29	SERON	3.15
Gray	3	PULS1	+24V
Red	4	PULS2	PLS3
Gray	5	SIGN1	+24V
White	6	SIGN2	DIR3
Blue	41	COM-	0V
Yellow	36	ALARM-	0V
Black	37	ALARM+	1.01
Orange	30	CL	Y5
	13	shield	
Red	21	OA-	OA-
Black	22	OA+	OA+
Green	48	OB+	OB+
White	49	OB-	OB-
	25	shield	

Setting Method

DISPLAY : r0  
 PRESS "SET"  
 DISPLAY : dp-Spd  
 PRESS "MODE"  
 DISPLAY : PA-00  
 PRESS [UP] TWICE  
 PRESS [DOWN]  
 PRESS [UP] 4 TIMES  
 DISPLAY : PA-42  
 PRESS "SET"  
 PRESS [DOWN][DOWN][DOWN] TO MODIFY ,FACTORY SETTING :3  
 PRESS "SET"  
 DISPLAY : PA-42  
 PRESS "MODE"  
 DISPLAY : EE-SET (SAVE TO EEPROM)  
 PRESS "SET"  
 DISPLAY : EEP-  
 PRESS [DOWN] AND HOLD IT ,TILL SHOW "Finish"

A5 SETTING  
 Pr-0.00 : 0  
 Pr-0.01 : 0  
 Pr-0.02 : 1  
 Pr-0.03 : 20  
 Pr-0.02 : 0  
 Pr-0.07 : 3  
 Pr-0.08 : 7200  
 Pr-0.11 : 500  
 Pr-5.17 : 3

AFM-4510009-00077-02

**Drawing Name:**  
Electric Circuit Diagram

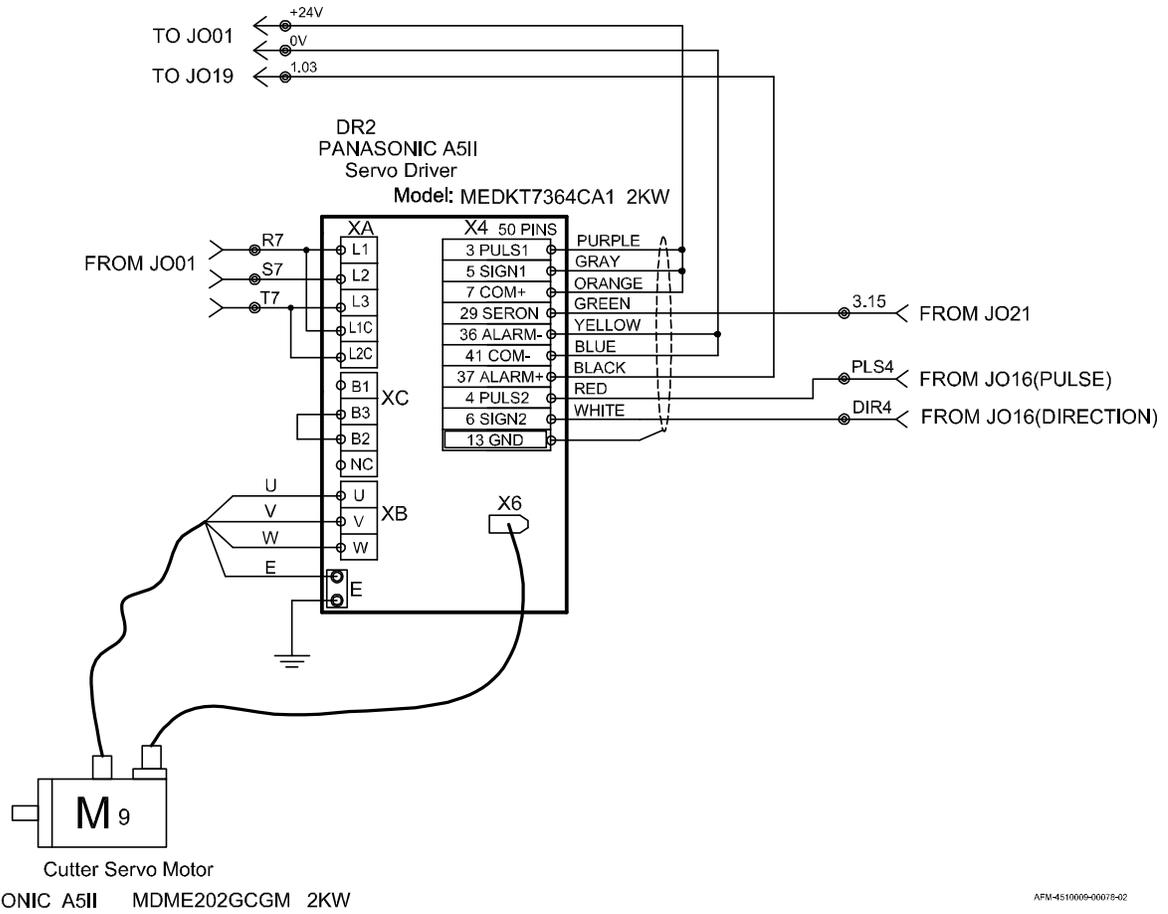
**Drawing No.:**  
LX350N-J007

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Cutter Servo Circuit Schematic

LX350N-J008



**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
LX350N-J008

**Machine Codename:**  
LX350N

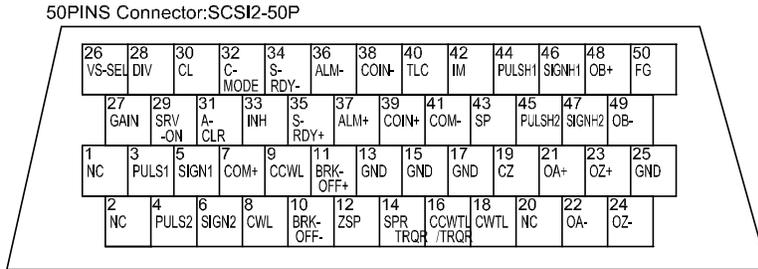
**Date:**  
9/18/18

# LX-350: Cutter Servo Parameters

## LX350N-J009

Cutter Servo Motor Driver

Model: MEDKT7364CA1 2KW A5II



Wire Color	50Pin NO#	Function	Wire NO#
Orange	7	COM+	+24V
Green	29	SERON	3.15
Purple	3	PULS1	+24V
Red	4	PULS2	PLS4
Gray	5	SIGN1	+24V
White	6	SIGN2	DIR4
Blue	41	COM-	0V
Yellow	36	ALARM-	0V
Black	37	ALARM+	1.03
	13	shield	

Setting Method

DISPLAY : r0  
 PRESS "SET"  
 DISPLAY : dp-Spd  
 PRESS " MODE"  
 DISPLAY : PA-00  
 PRESS ⏏ TWICE  
 PRESS ⏏  
 PRESS ⏏ 4 TIMES  
 DISPLAY : PA-42  
 PRESS "SET"  
 PRESS ⏏⏏⏏ TO MODIFY ,FACTORY SETTING :3  
 PRESS "SET"  
 DISPLAY : PA-42  
 PRESS "MODE"  
 DISPLAY : EE-SET (SAVE TO EEPROM)  
 PRESS "SET"  
 DISPLAY : EEP-  
 PRESS ⏏AND HOLD IT,TILL SHOW "Finish"

A5 SETTING  
 Pr-0.00 : 0  
 Pr-0.01 : 0  
 Pr-0.02: 1  
 Pr-0.03: 20  
 Pr-0.02: 0  
 Pr-0.07 : 3  
 Pr-0.08 : 7200

AFM-4510009-00079-02

**Drawing Name:**  
 Electric Circuit Diagram

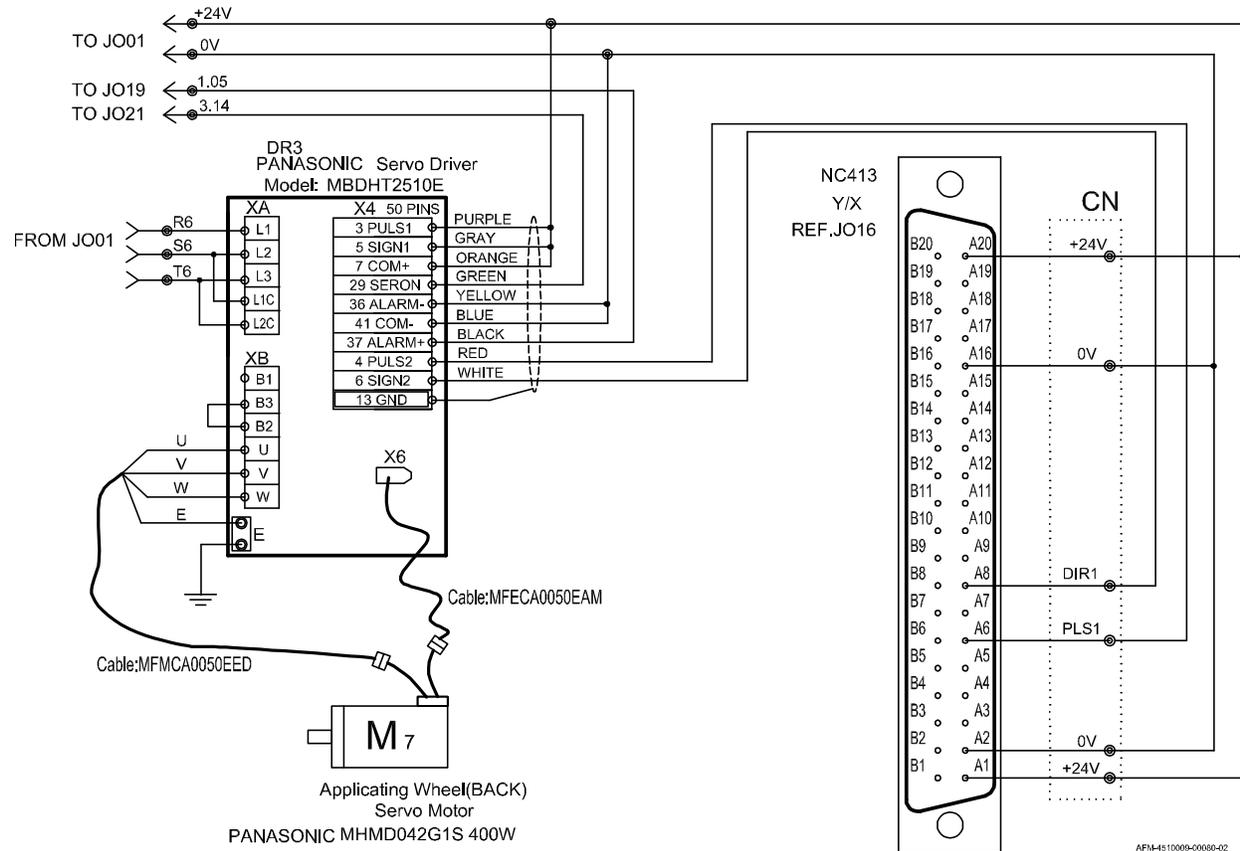
**Drawing No.:**  
 LX350N-J009

**Machine Codename:**  
 LX350N

**Date:**  
 9/18/18

# LX-350: Left Applying Servo Circuit Schematic

LX350N-J010



**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
LX350N-J010

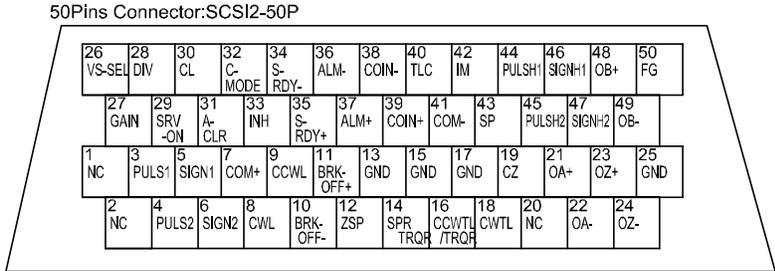
**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Left Applying Servo Parameters

## LX350N-J011

Applicating Wheel  
 DR3 Servo Motor Driver  
 Model: MBDHT2510E



Wire Color	50Pin NO#	Function	Wire NO#
Orange	7	COM+	+24V
Green	29	SERON	3.14
Purple	3	PULS1	+24V
Red	4	PULS2	PLS1
Gray	5	SIGN1	+24V
White	6	SIGN2	DIR1
Blue	41	COM-	0V
Yellow	36	ALARM-	0V
Black	37	ALARM+	1.05
	13	sheld	

Setting Method  
 DISPLAY : r0  
 PRESS "SET"  
 DISPLAY : dp-Spd  
 PRESS "MODE"  
 DISPLAY : PA-00  
 PRESS [ENTER] TWICE  
 PRESS [ENTER]  
 PRESS [ENTER] 4 TIMES  
 DISPLAY : PA-42  
 PRESS "SET"  
 PRESS [ENTER] TO MODIFY ,FACTORY SETTING :3  
 PRESS "SET"  
 DISPLAY: PA-42  
 PRESS "MODE"  
 DISPLAY : EE-SET (SAVE TO EEPROM)  
 PRESS "SET"  
 DISPLAY : EEP-  
 PRESS [ENTER] AND HOLD IT,TILL SHOW "Finish"

A5 SETTING  
 Pr-0.00 : 1 (0:CW ; 1:CCW)  
 Pr-0.01 : 0  
 Pr-0.07 : 3  
 Pr-0.08 : 1000 (1000 P/R)

AFM4510009-00001-02

**Drawing Name:**  
 Electric Circuit Diagram

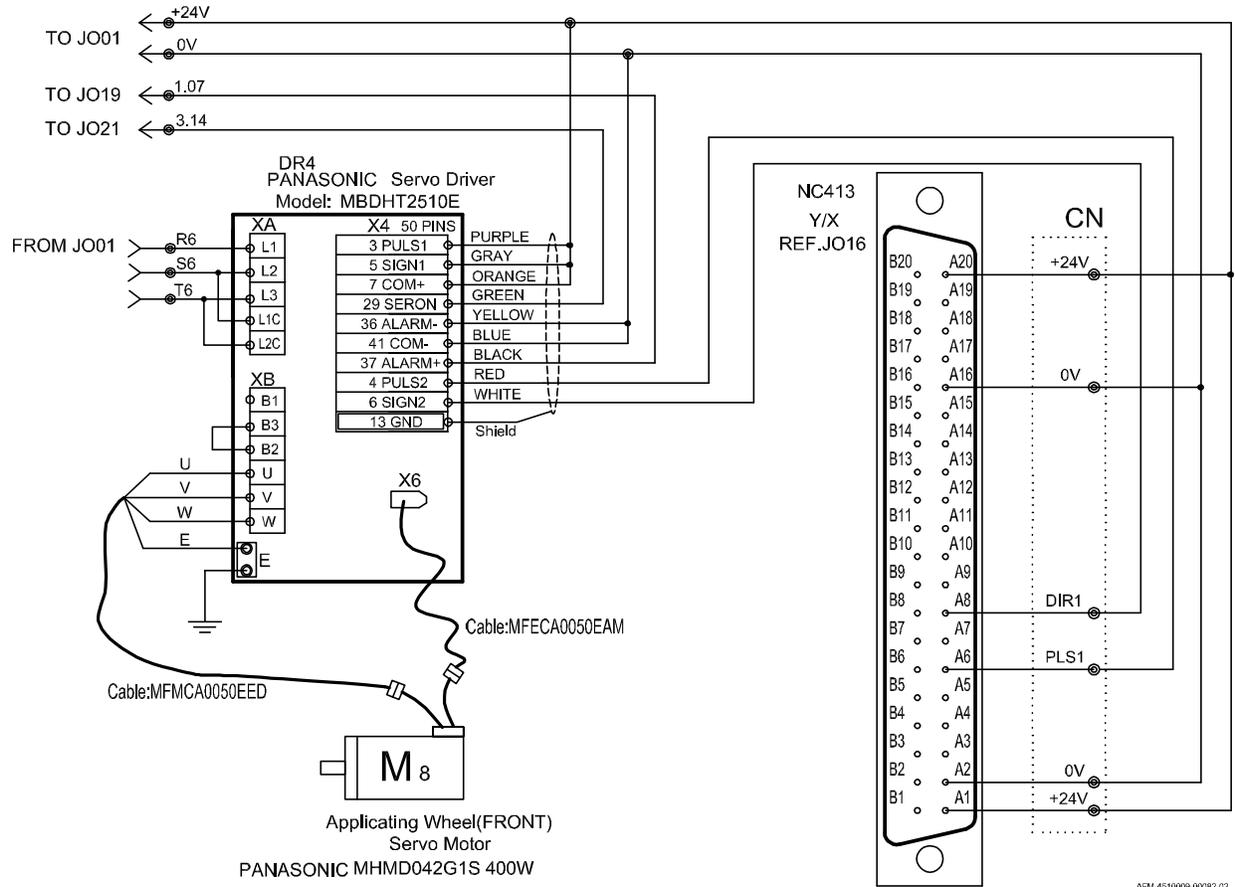
**Drawing No.:**  
 LX350N-J011

**Machine Codename:**  
 LX350N

**Date:**  
 9/18/18

# LX-350: Right Applying Servo Circuit Schematic

LX350N-J012



AFM-4510009-00082-02

**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
LX350N-J012

**Machine Codename:**  
LX350N

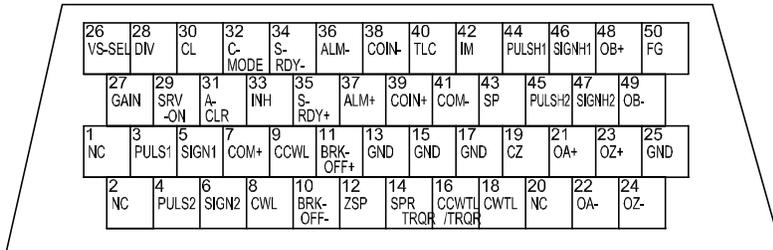
**Date:**  
9/18/18

# LX-350: Right Applying Servo Parameters

## LX350N-J013

Applying Wheel  
 DR4 SERVO MOTOR DRIVER  
 Model: MBDHT2510E

50Pins Connector:SCSI2-50P



Wire Color	50Pin NO#	Function	Wire NO#
Orange	7	COM+	+24V
Green	29	SERON	3.14
Purple	3	PULS1	+24V
Red	4	PULS2	PLS1
Gray	5	SIGN1	+24V
White	6	SIGN2	DIR1
Blue	41	COM-	0V
Yellow	36	ALARM-	0V
Black	37	ALARM+	1.07
	13		

Setting Method

DISPLAY : r0  
 PRESS "SET"  
 DISPLAY : dp-Spd  
 PRESS "MODE"  
 DISPLAY : PA-00  
 PRESS [UP] TWICE  
 PRESS [DOWN] 4 TIMES  
 DISPLAY : PA-42  
 PRESS "SET"  
 PRESS [UP][DOWN][LEFT][RIGHT] TO MODIFY ,FACTORY SETTING :3  
 PRESS "SET"  
 DISPLAY : PA-42  
 PRESS "MODE"  
 DISPLAY : EE-SET (SAVE TO EEPROM)  
 PRESS "SET"  
 DISPLAY : EEP-  
 PRESS [UP] AND HOLD IT, TILL SHOW "Finish"

A5 SETTING

Pr-0.00 : 0 (0: CW ; 1: CCW)  
 Pr-0.01 : 0  
 Pr-0.07 : 3  
 Pr-0.08 : 1000 (1000 P/R)

AF1A4510009-00083402

**Drawing Name:**  
 Electric Circuit Diagram

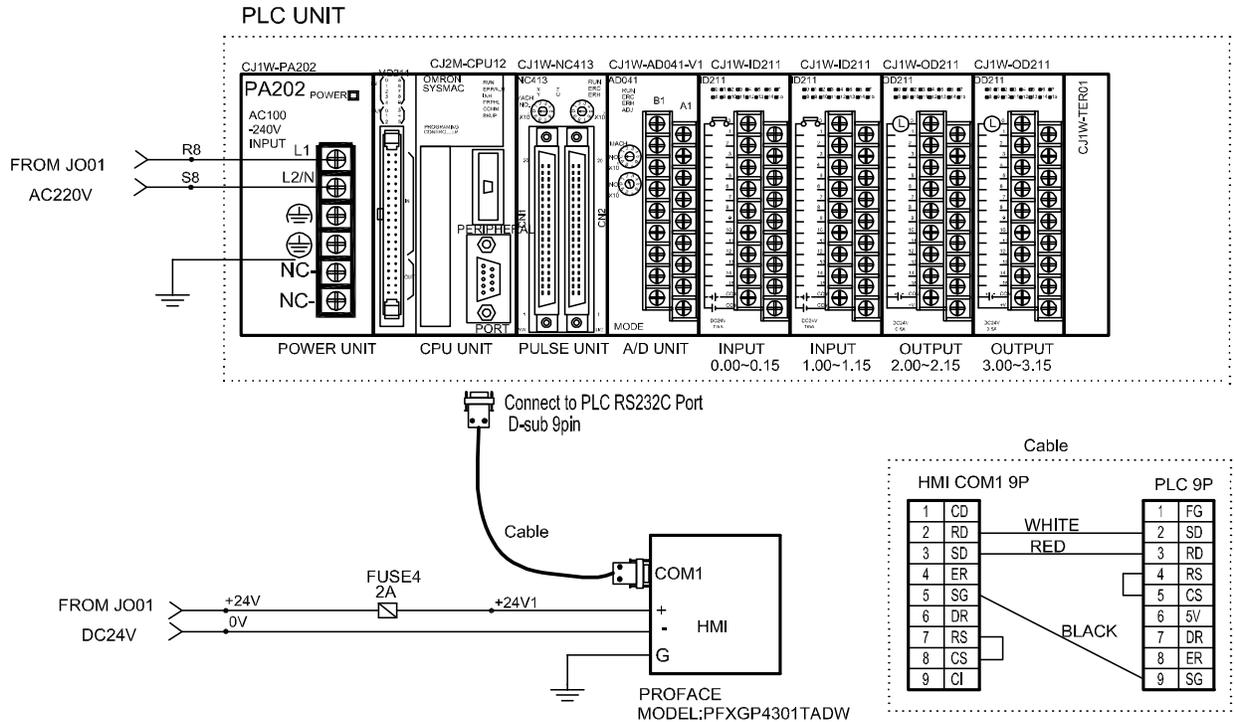
**Drawing No.:**  
 LX350N-J013

**Machine Codename:**  
 LX350N

**Date:**  
 9/18/18

# LX-350: PLC Layout

## LX350N-J014



AFX4510009-00084-02

**Drawing Name:**  
Electric Circuit Diagram

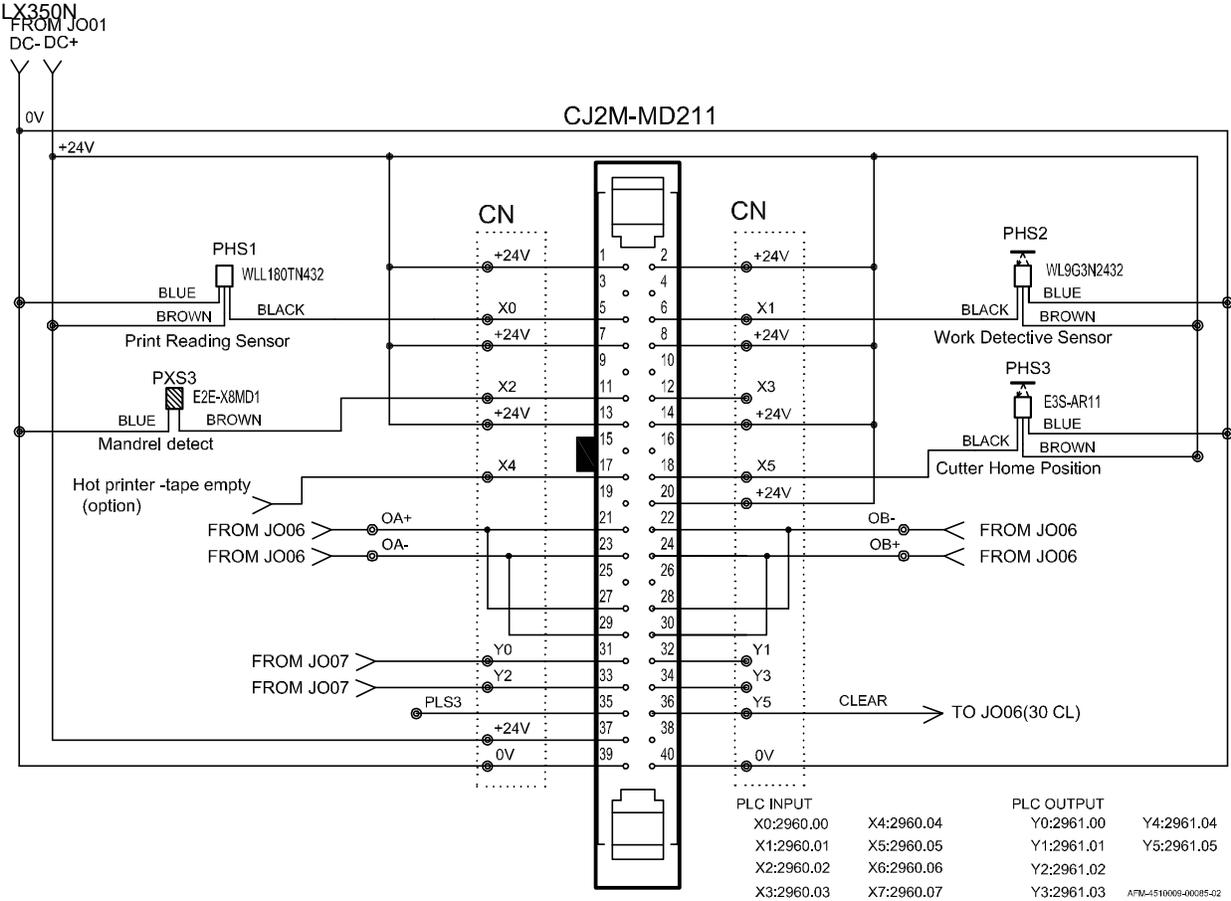
**Drawing No.:**  
LX350N-J014

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC High-Speed Input Circuit Schematic

LX350N-J015



**Drawing Name:**  
Electric Circuit Diagram

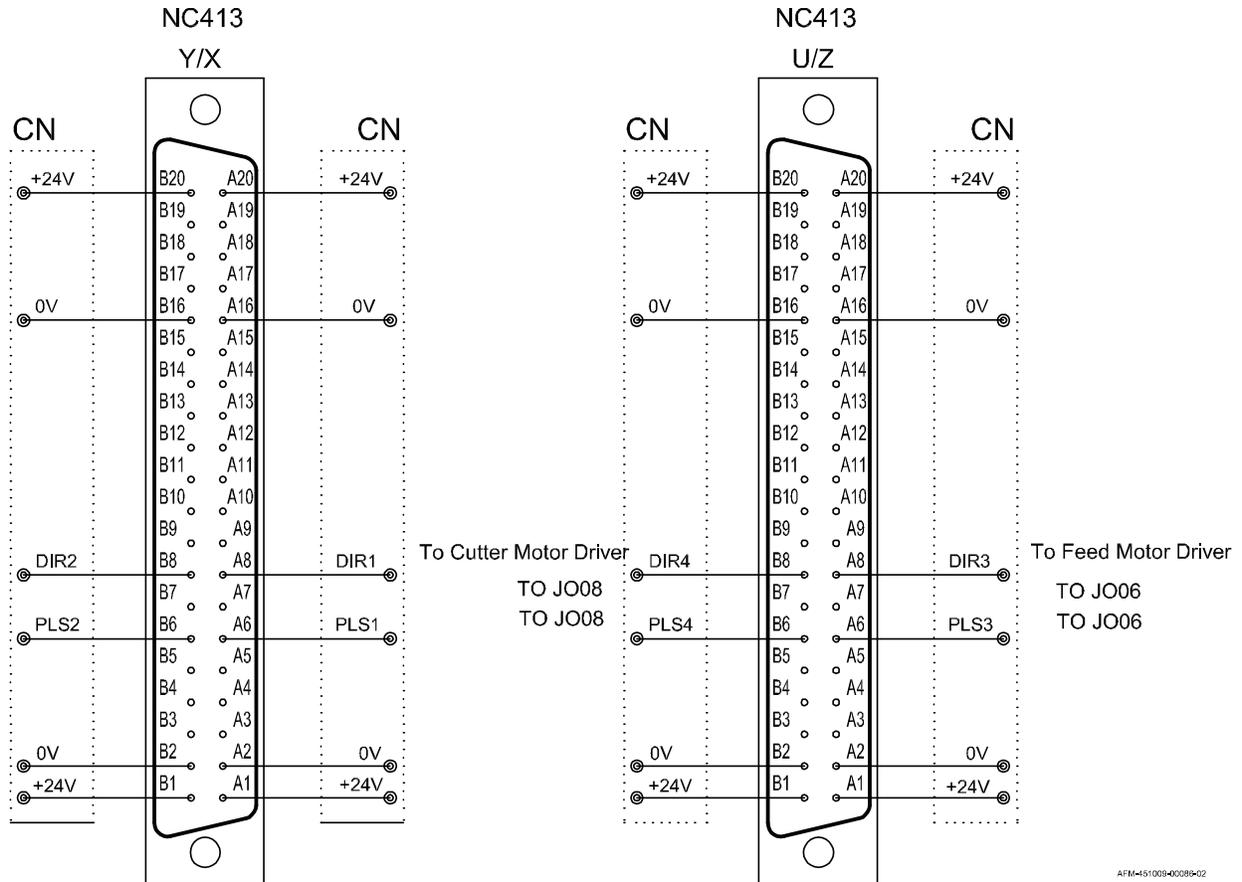
**Drawing No.:**  
LX350N-J015

**Machine Codename:**  
LX350N

**Date:**  
10/28/20

# LX-350: PLC High-Speed Circuit Connectors

LX350N-J016



AFM-51005-00096-02

**Drawing Name:**  
Electric Circuit Diagram

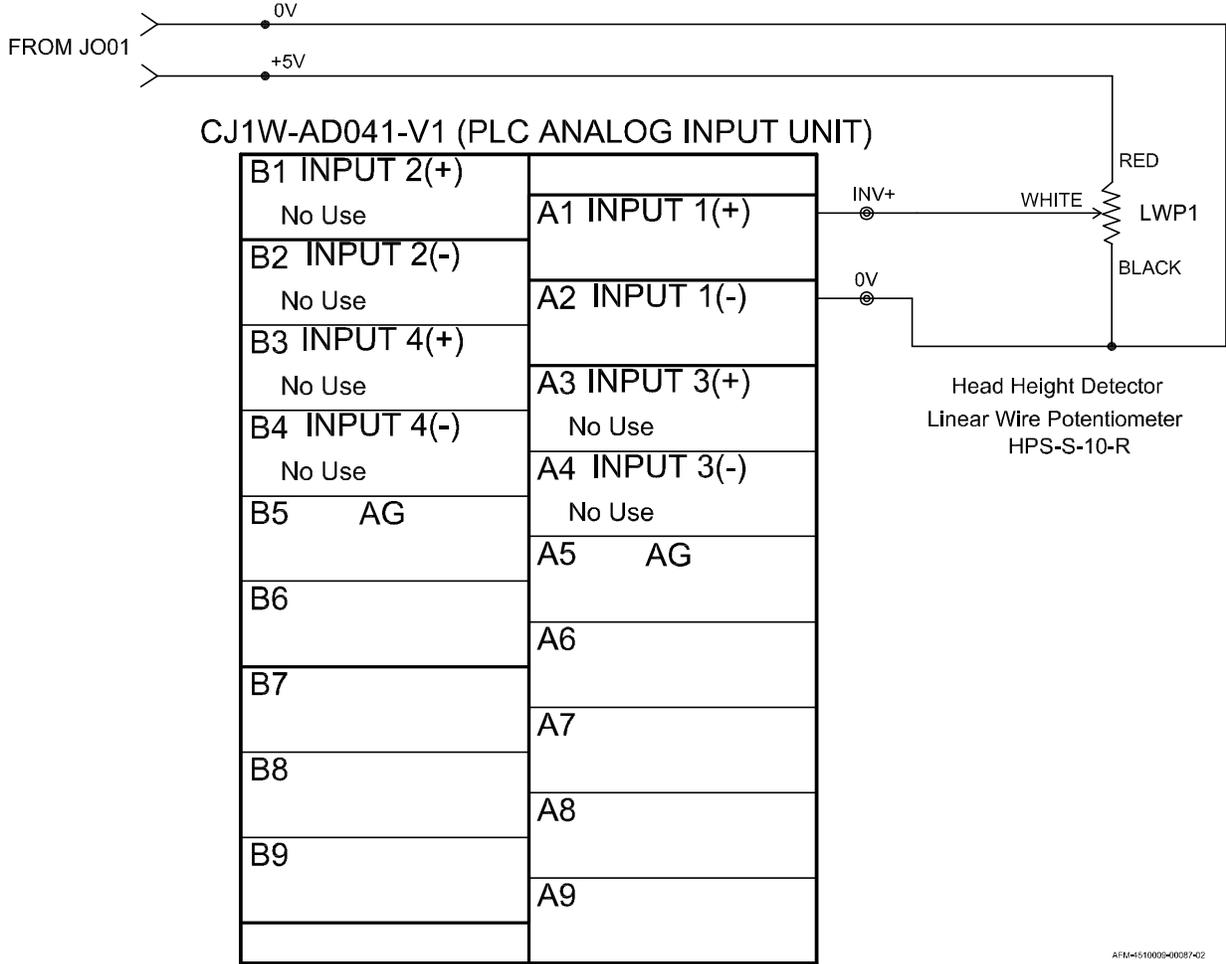
**Drawing No.:**  
LX350N-J016

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC Analog Input Schematic

LX350N-J017



**Drawing Name:**  
Electric Circuit Diagram

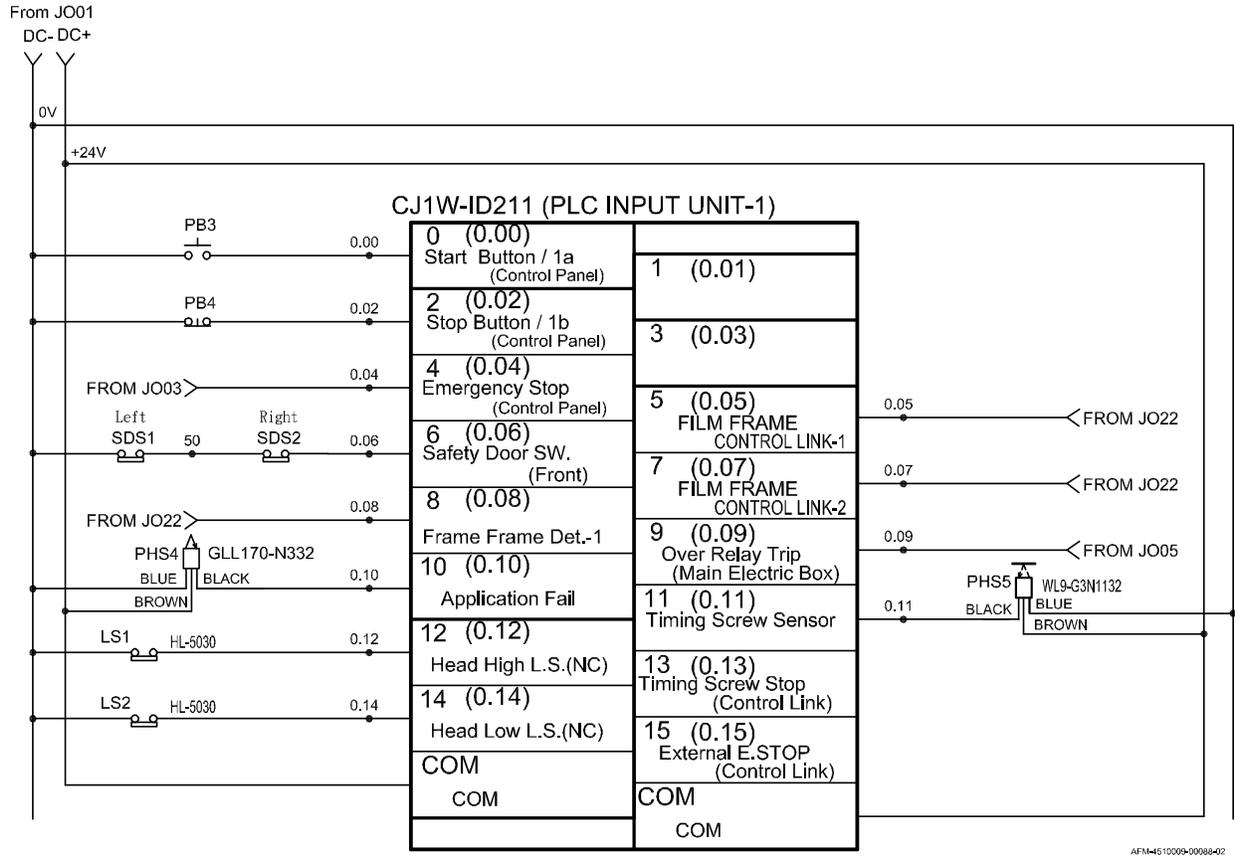
**Drawing No.:**  
LX350N-J017

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC Input 1 Schematic

LX350N-J018



**Drawing Name:**  
Electric Circuit Diagram

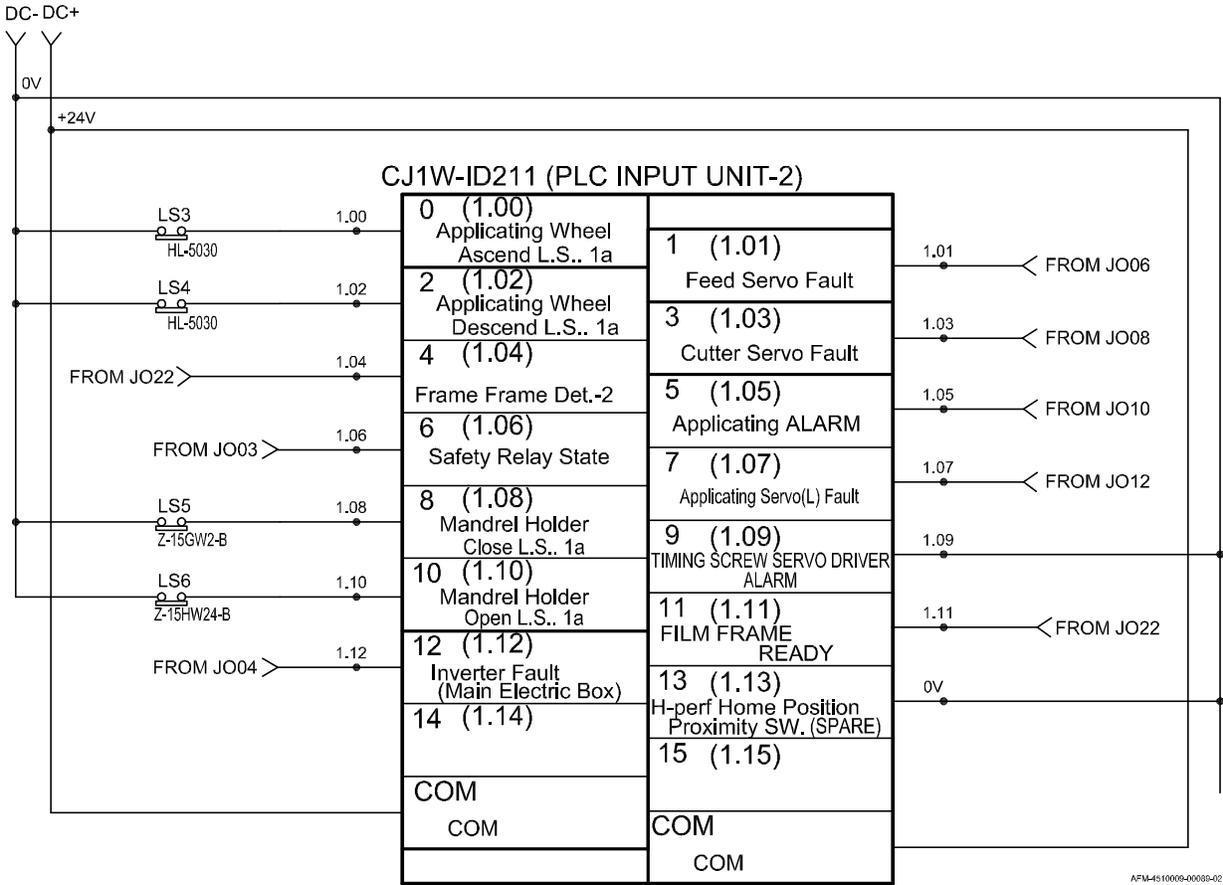
**Drawing No.:**  
LX350N-J018

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC Input 2 Schematic

LX350N-J019



**Drawing Name:**  
Electric Circuit Diagram

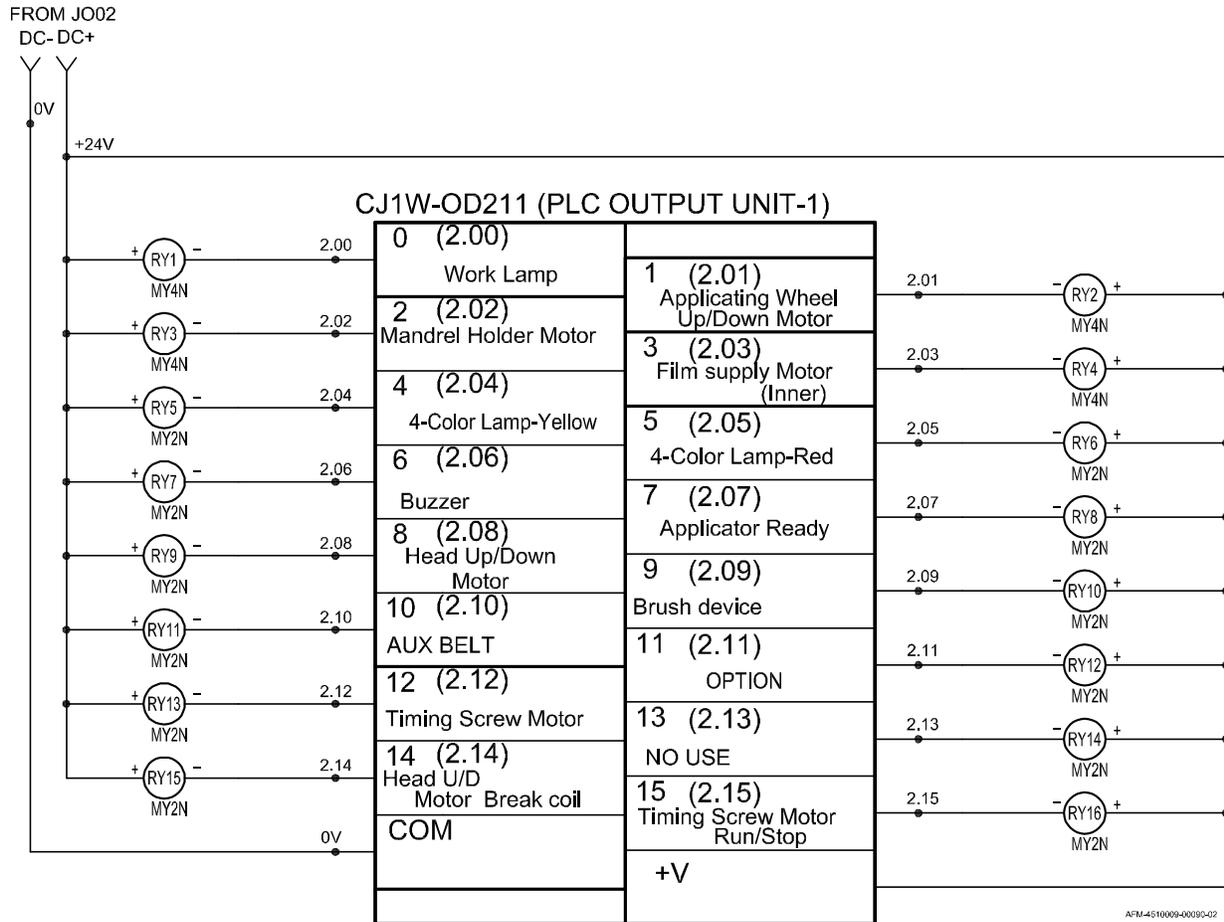
**Drawing No.:**  
LX350N-J019

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC Output 1 Schematic

LX350N-J020



**Drawing Name:**  
Electric Circuit Diagram

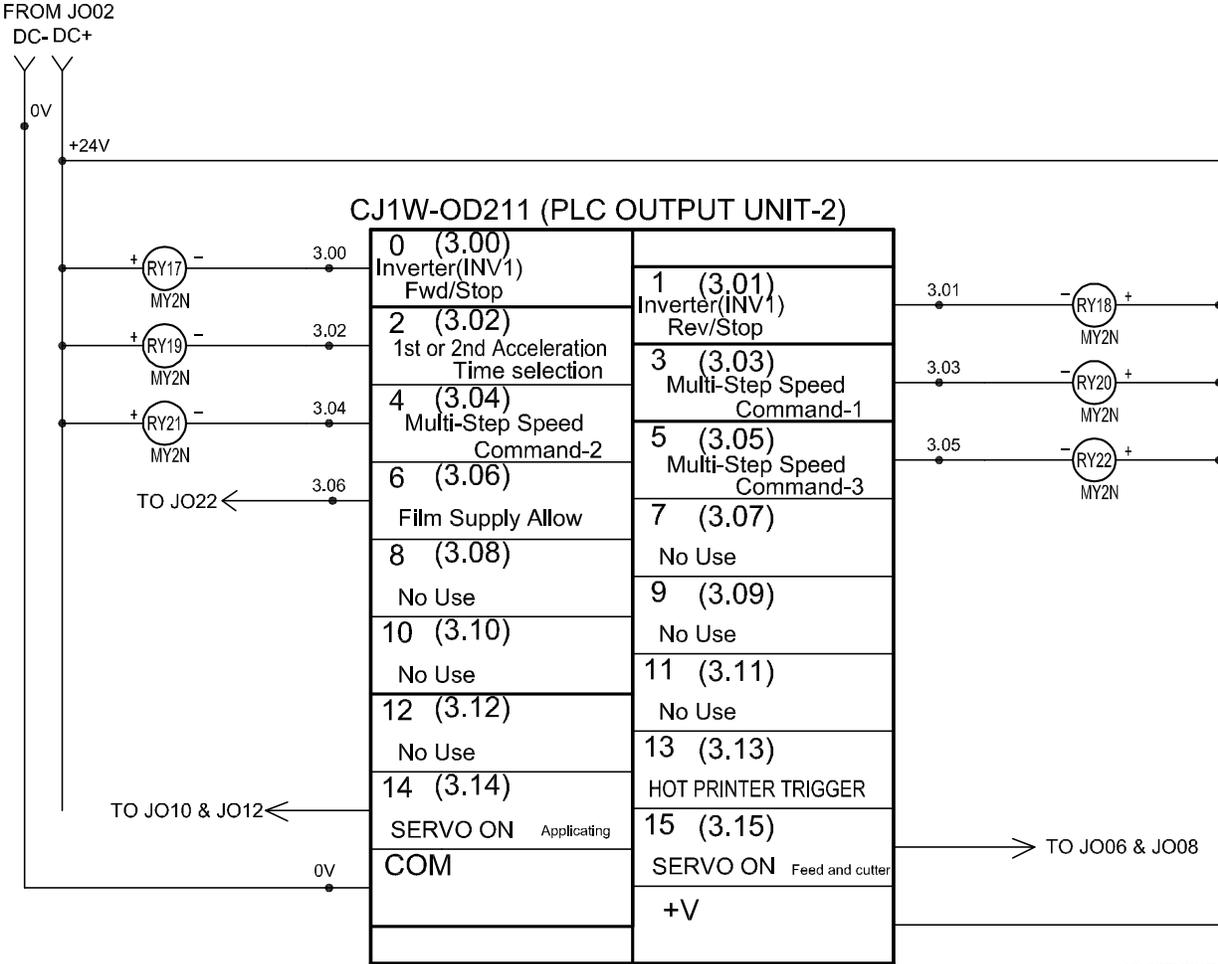
**Drawing No.:**  
LX350N-J020

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: PLC Output 2 Schematic

LX350N-J021



AFM4510009-00091402

**Drawing Name:**  
Electric Circuit Diagram

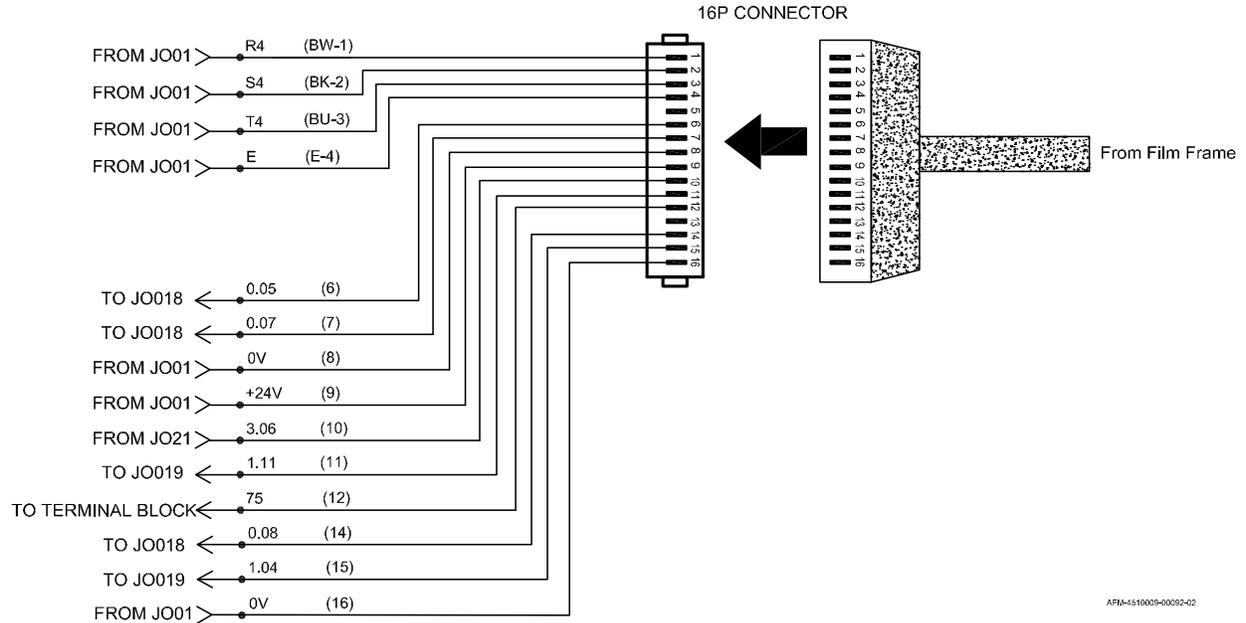
**Drawing No.:**  
LX350N-J021

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: UR-2 Unwind Connector Schematic

LX350N-J022



**Drawing Name:**  
Electric Circuit Diagram

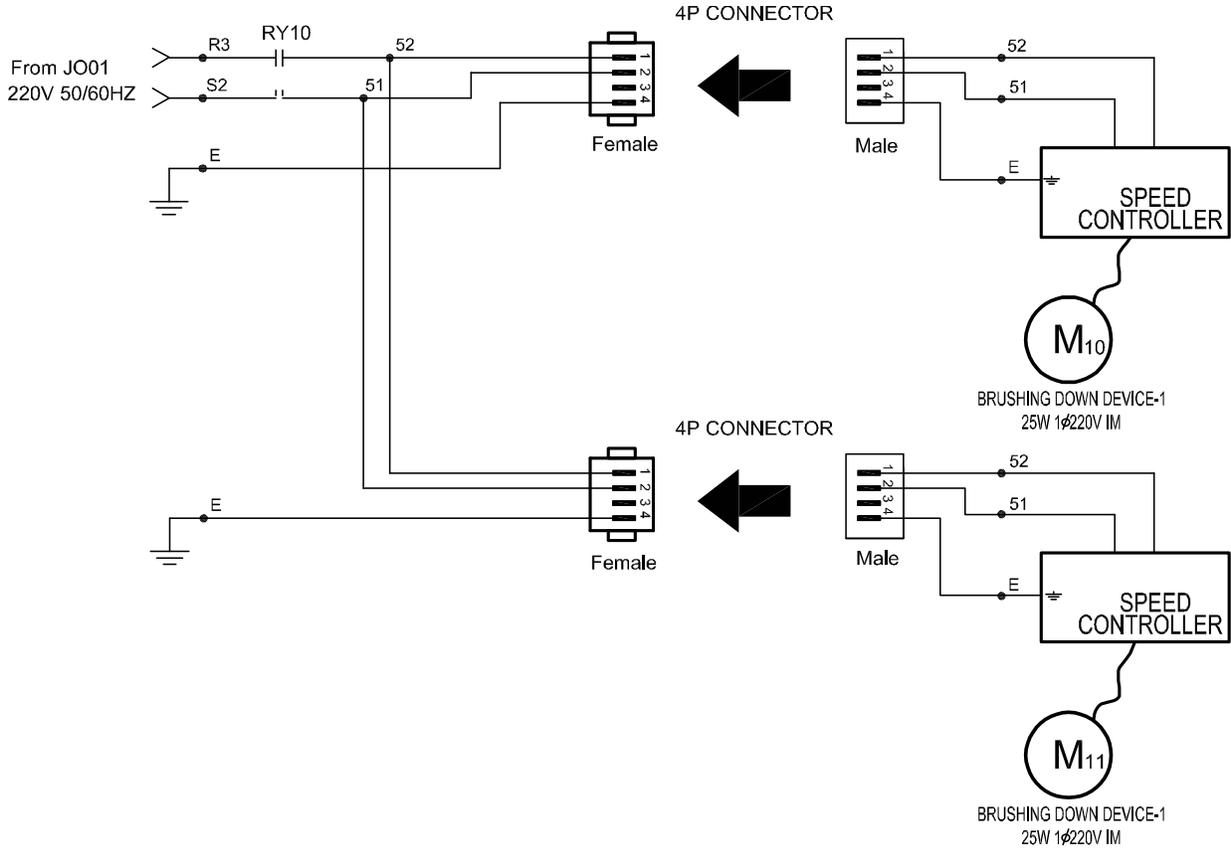
**Drawing No.:**  
LX350N-J022

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Brushdown Circuit Schematic

LX350N-J023



AFM-4510009-00098-02

**Drawing Name:**  
Electric Circuit Diagram

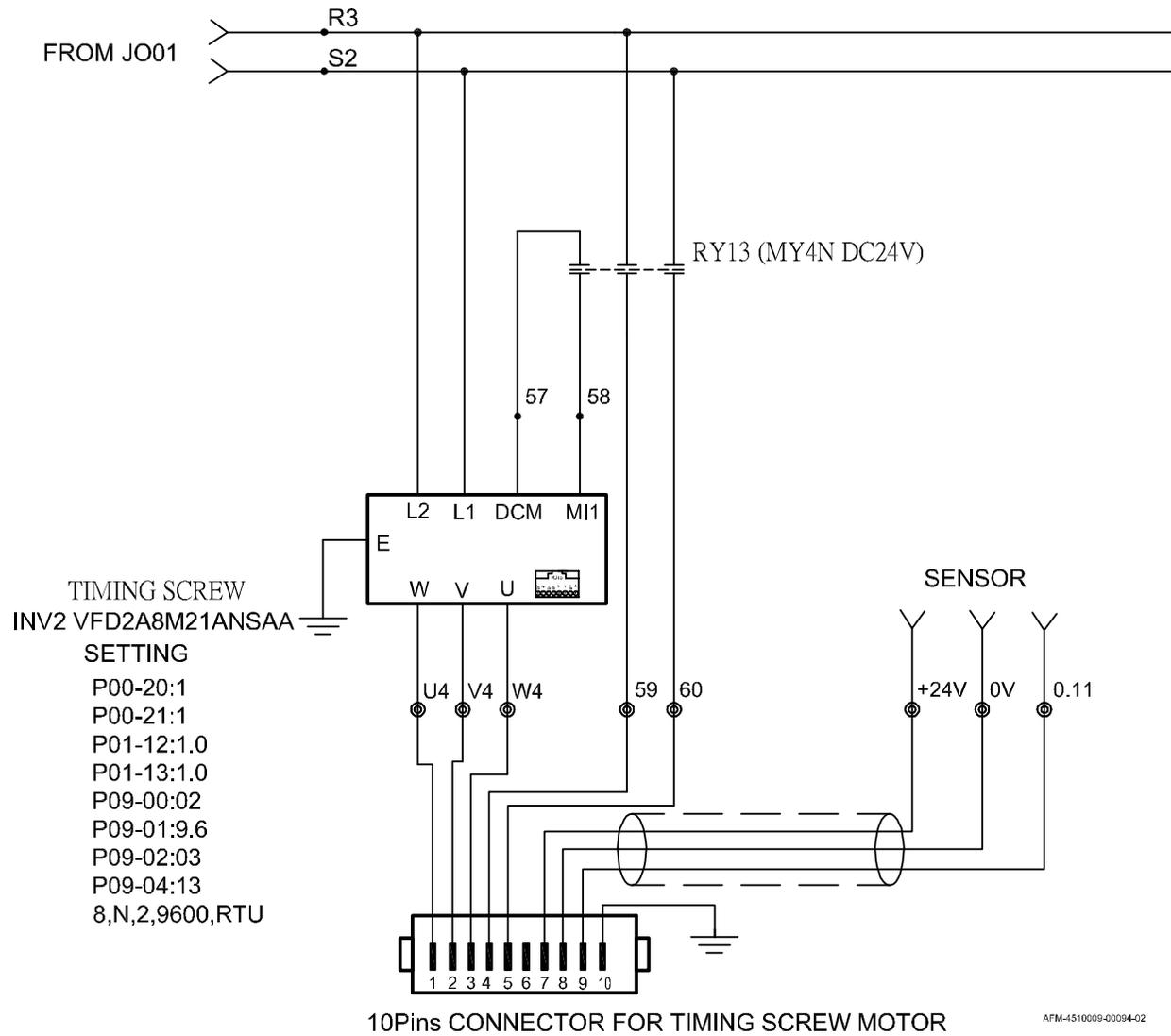
**Drawing No.:**  
LX350N-J023

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Timing Screw Circuit 1

LX350N-J024



**Drawing Name:**  
Electric Circuit Diagram

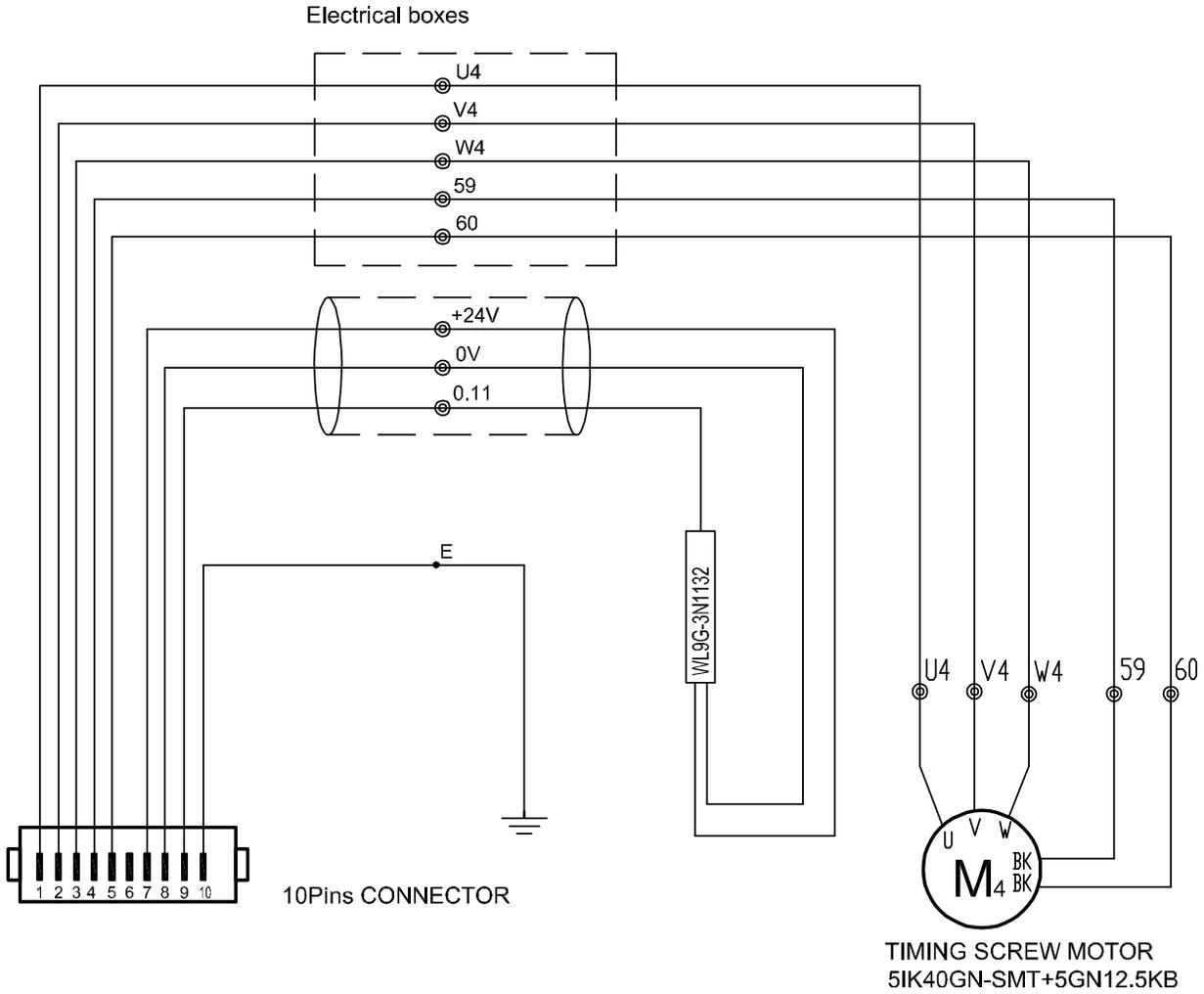
**Drawing No.:**  
LX350N-J024

**Machine Codename:**  
LX350N

**Date:**  
10/15/20

# LX-350: Timing Screw Circuit 2

LX350N-J025



AFM-1510009-00095-02

**Drawing Name:**  
Electric Circuit Diagram

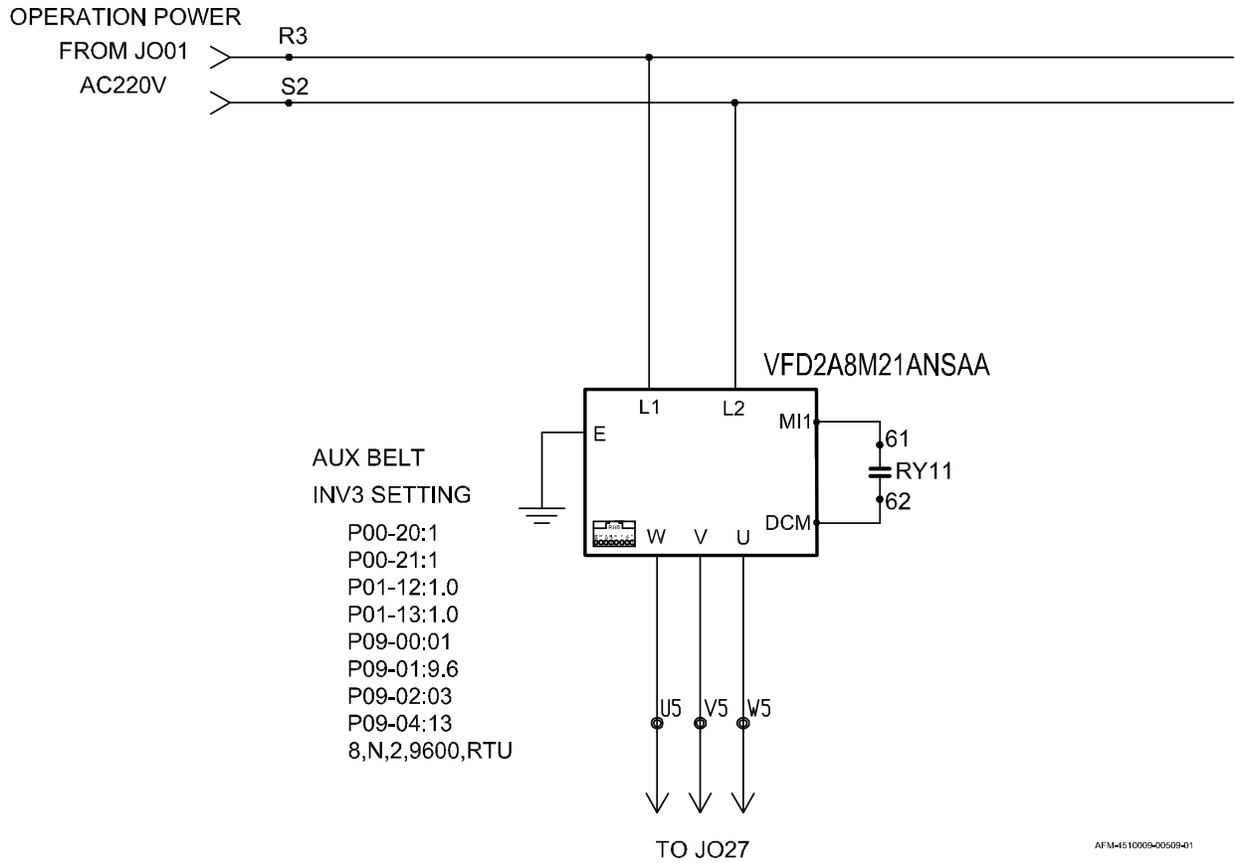
**Drawing No.:**  
LX350N-J025

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

# LX-350: Auxiliary Belt VFD

LX350N-J026



**Drawing Name:**  
Electric Circuit Diagram

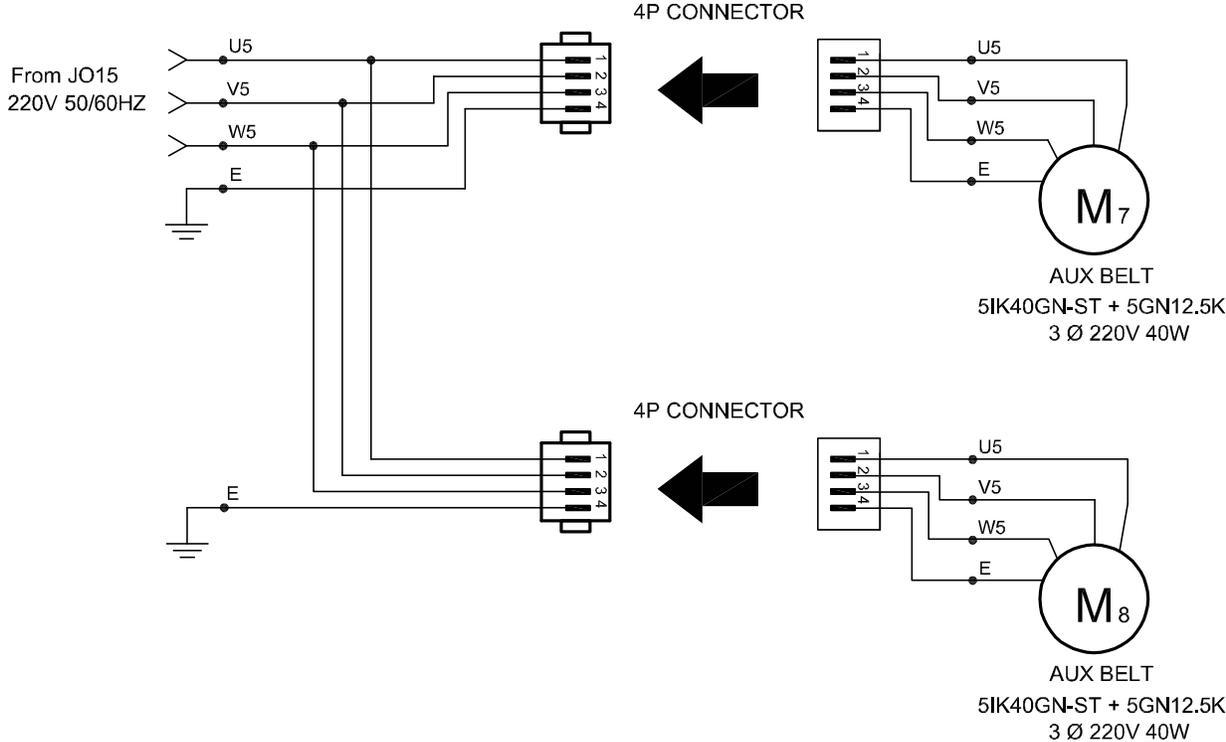
**Drawing No.:**  
LX350N-J026

**Machine Codename:**  
LX350N

**Date:**  
10/15/20

# LX-350: Auxiliary Belt Motors

LX350N-J027



AF3/4510009/0051001

**Drawing Name:**  
Electric Circuit Diagram

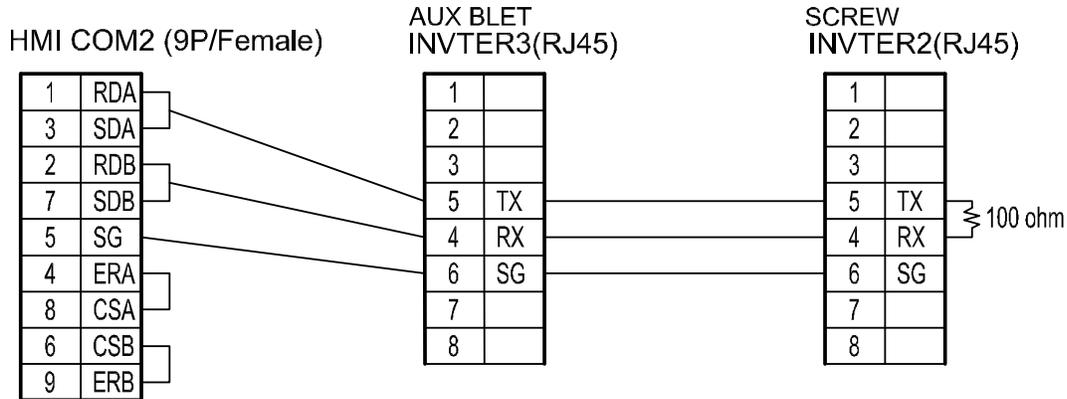
**Drawing No.:**  
LX350N-J027

**Machine Codename:**  
LX350N

**Date:**  
9/18/18

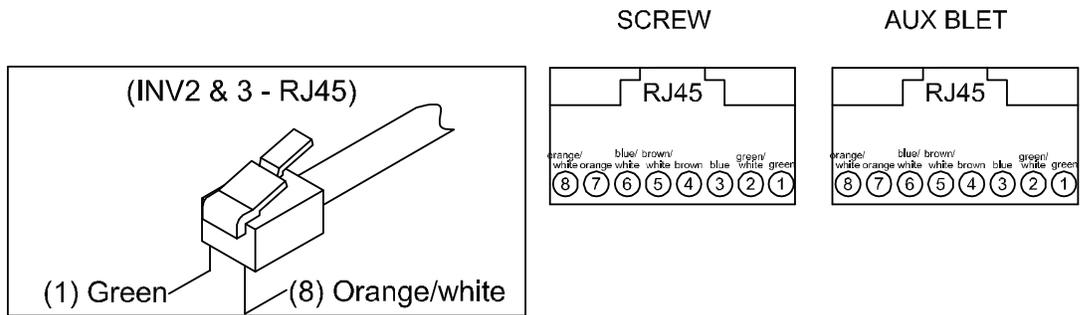
# LX-350: HMI to VFD Communication Connections

LX350N-J028



## RS-485 communication protocols

- Modbus-IDA
- General MODBUS SIO Master
- RS422/RS485(2wire)
- 9600,8,N,2



AFM-4510009-00511-01

**Drawing Name:**  
Electric Circuit Diagram

**Drawing No.:**  
LX350N-J028

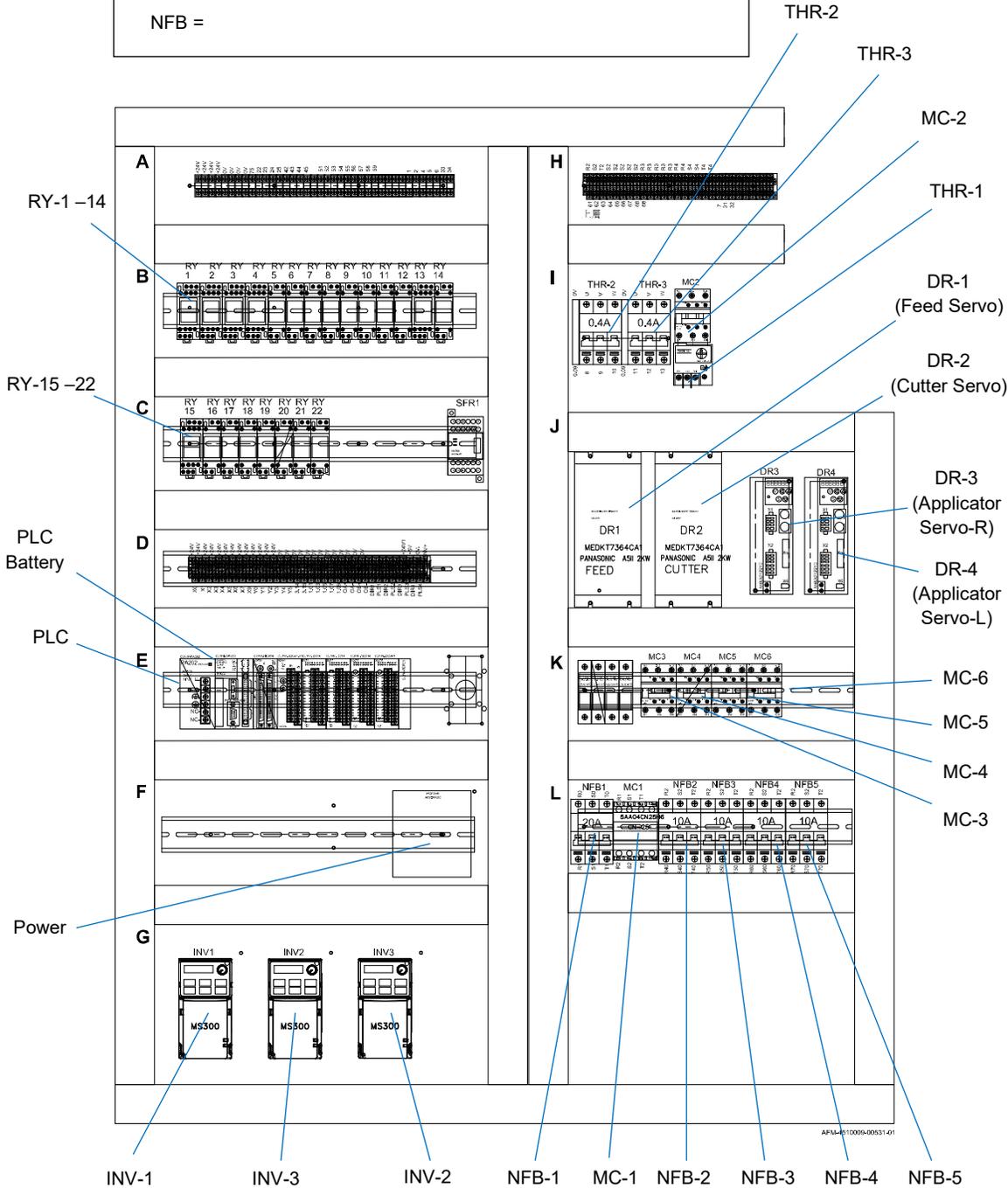
**Machine Codename:**  
LX350N

**Date:**  
10/15/20

# LX-350: Main Panel Layout

## Rear Chassis – Components

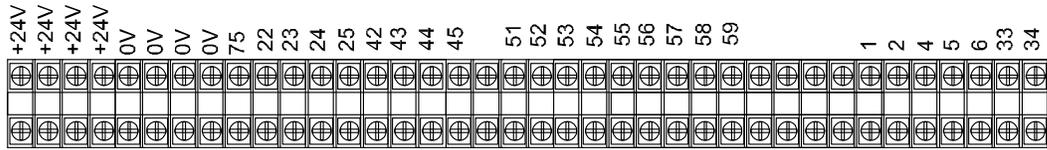
DR = Servo Drive	PLC = Programmable Logic Controller
INV = Inverter	RY = Relay
MC =	THR = Thermal Overload
NFB =	



AFM-110009-00031-01

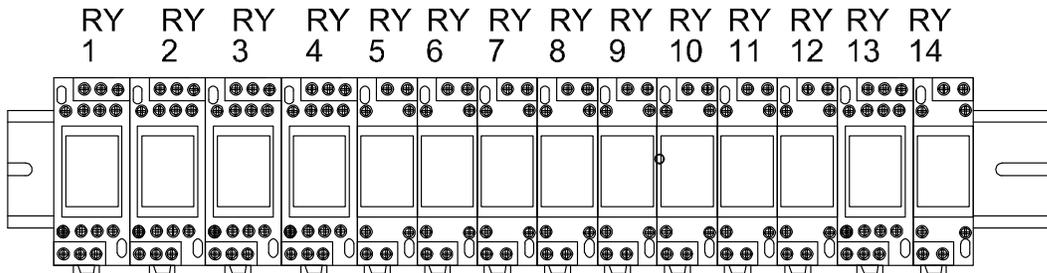
# Electrical Panel in Detail

## Section A



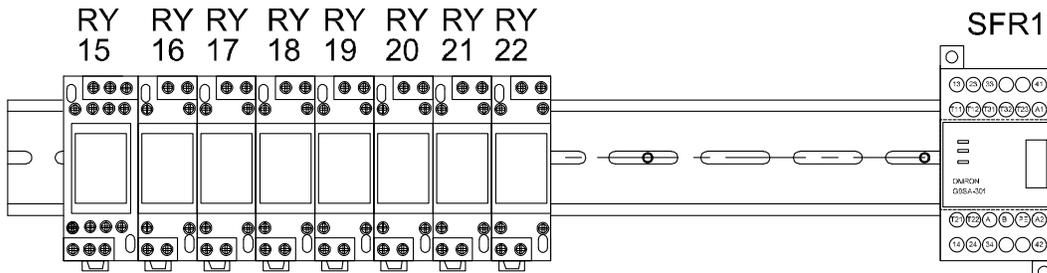
AFM-4510009-00532-01

## Section B



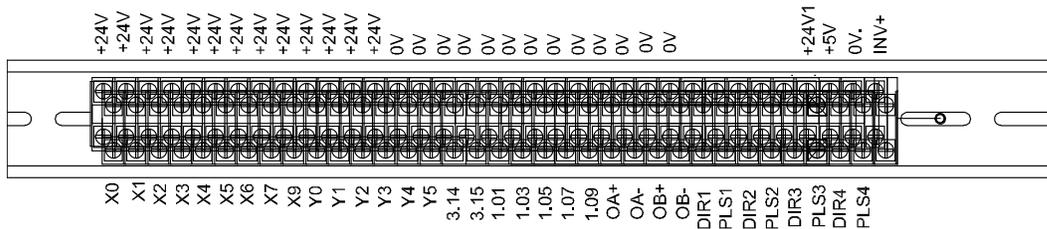
AFM-4510009-00533-01

## Section C



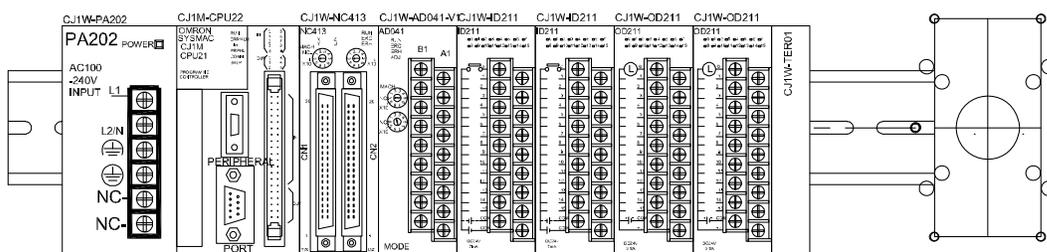
AFM-4510009-00534-01

## Section D



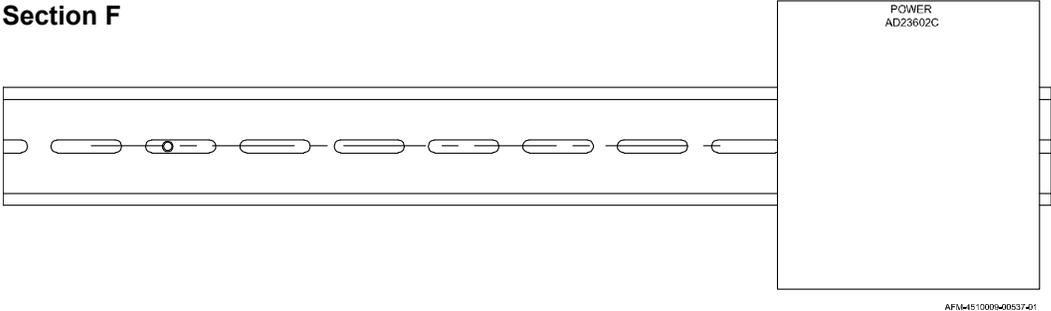
AFM-4510009-00535-01

## Section E



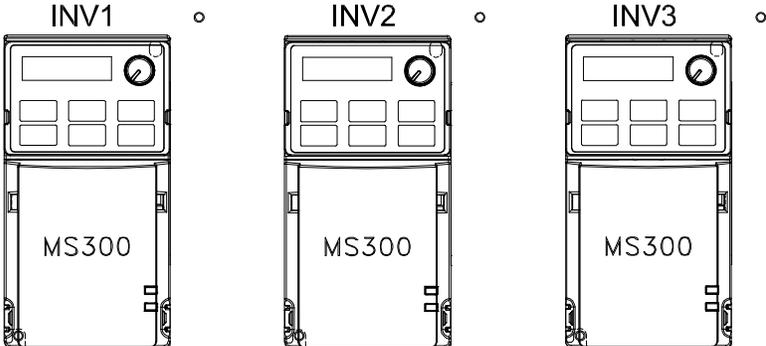
AFM-4510009-00536-01

**Section F**



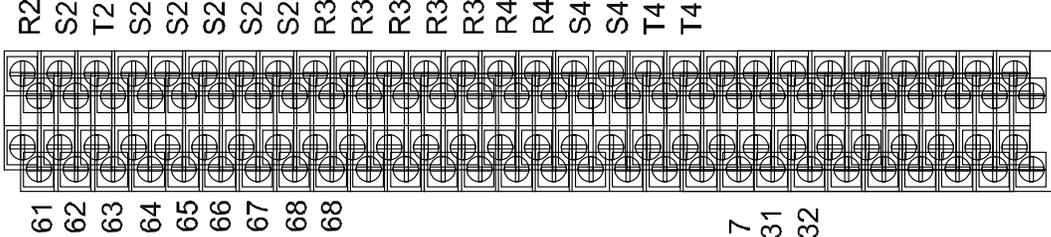
AFM-4510009-00537-01

**Section G**



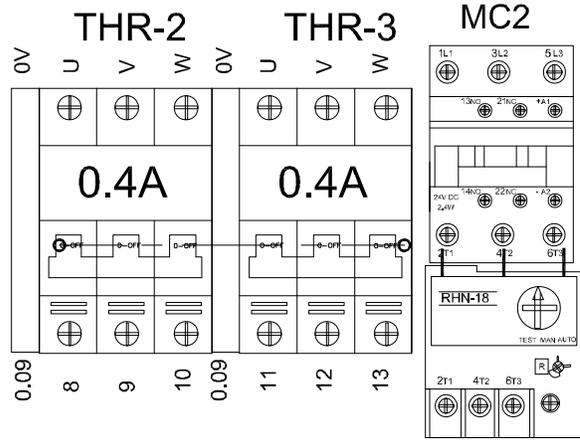
AFM-4510009-00538-01

**Section H**



AFM-4510009-00539-01

**Section I**

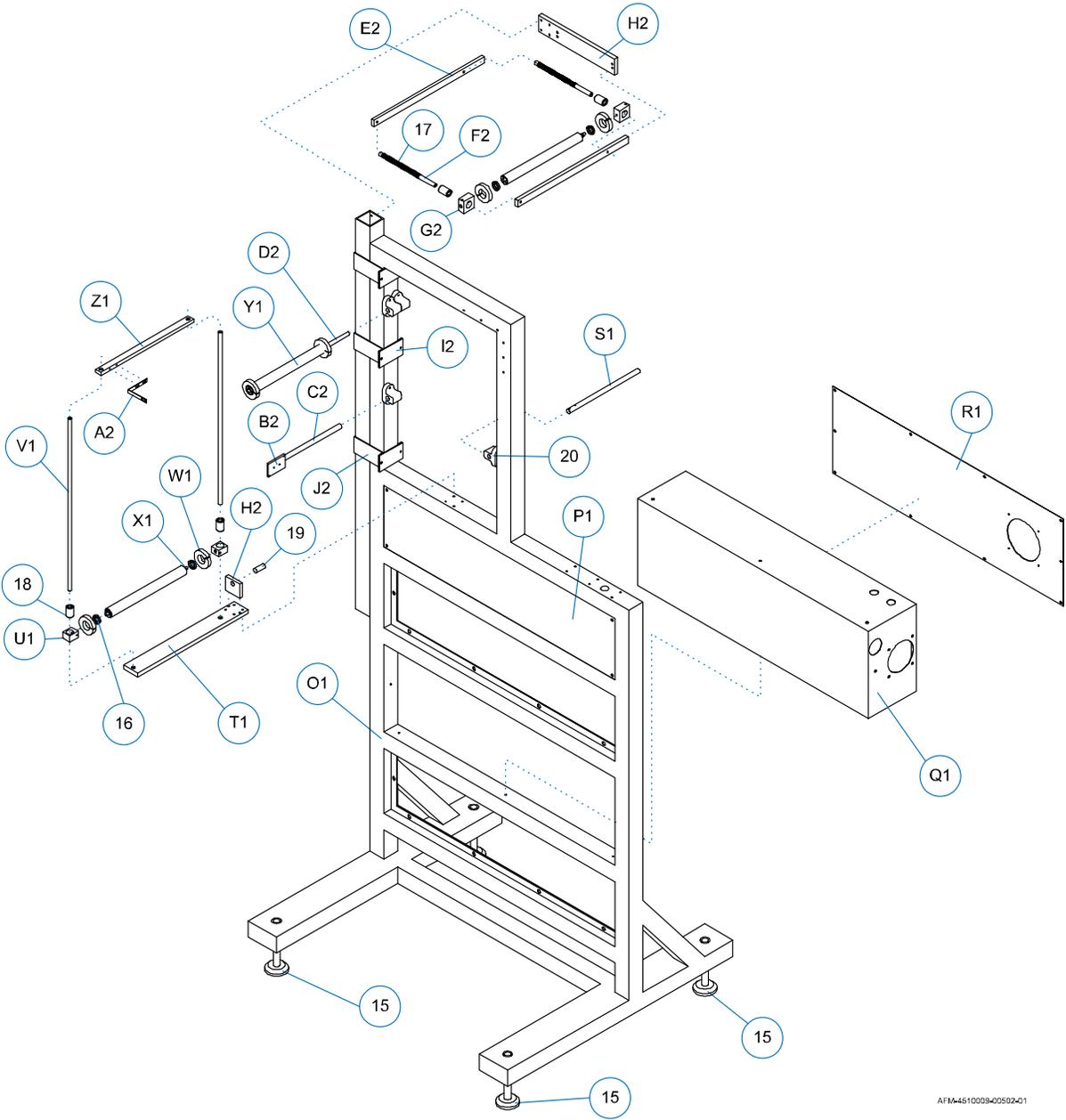


AFM-4510009-00540-01



# Exploded Diagrams and Parts Lists

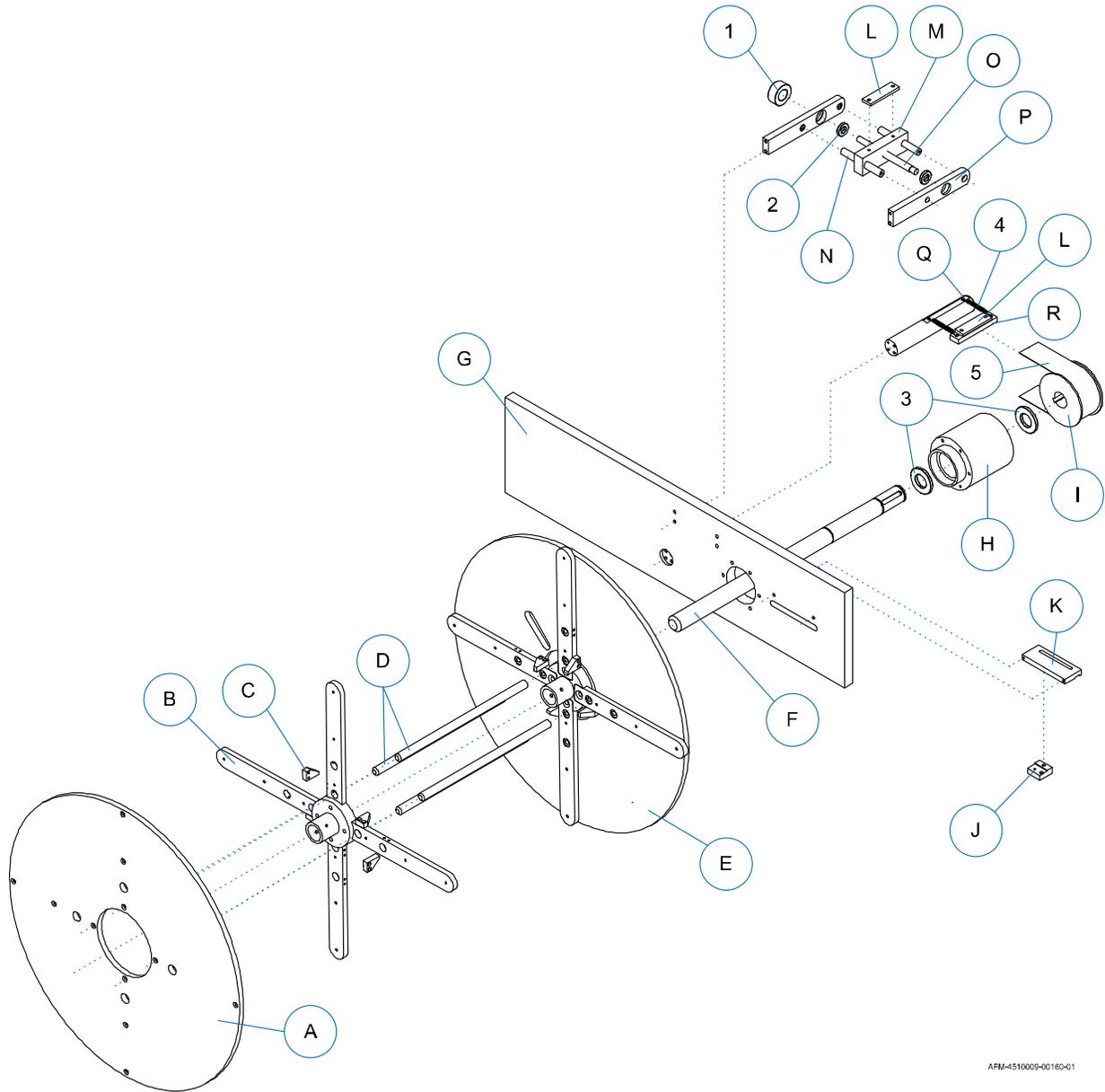
## Exploded Diagram: UR-2 Main Structure



AFM4510009-0050201

Item	Part Number	Description	Specification	Qty
15	4503330	LEG, MACHINE MOUNT	5BD31M20X180S M20150L	4
16	4500171	BEARING – 6900ZZ, 10X22X6	5BE016900ZZ	6
17	4502991	SPRING-UNWIND FILM TENSION, UR-2 SS	5EH1410X11X150X35N	2
18	4502592	BEARING, LINEAR	LM10UU	4
19	4500929	SENSOR-LX150, CUTTER, PROX 10-30 VDC	IM12-04NNS-ZW1	1
20		T-CLIP 5BC4713115X12	Ø 115X12	4
O1	4505711	UR-2 MAIN FRAME	G2-P12	1
P1	4505703	MAIN FRAME UPPER COVER	G2-P04	2
Q1	4505701	UR-2 ELECTRICAL BOX	G2-P01	1
R1	4505702	UR-2 ELECTRICAL BOX COVER	G2-P03	1
S1	4505699	MOUNT, OPTIONAL PHOTO EYE	G2-M48	1
T1	4505694	MOUNT, FILM TENSIONER LOWER	G2-M37	1
U1	4503548	BLOCK, ALUMINUM	5HGG2M44	2
V1	4503547	ROD, UNWIND DANCER	5HGG2M39	2
W1	4503481	COLLAR, DANCER ROLLER	5HGG2M24 G2-M24	6
X1	4503483	SHAFT, DANCER BAR	5HGG2M43 G2-M43	2
Y1	4503480	ROLLER, -A DANCER	5HGG2M23 G2-M23	3
Z1	4505696	MOUNT, FILM TENSIONER UPPER	G2-M40	1
A2	4503177	ANGLE BRACKET, STAINLESS	G2-P14	1
B2	4505700	OPTIONAL PHOTO EYE REFLECTOR	G2-M49	1
C2	4505698	MOUNT, OPTIONAL PHOTO EYE REFLECTOR	G2-M47	1
D2	4503572	SHAFT, UR2 UNWIND ROLLER	5HGG2M45 G2-M45	1
E2	4505697	MOUNT, UPPER TENSIONER A	G2-M41	2
F2	4503546	ROD, UNWIND TENSION	5HGG2M36	2
G2	4503482	HOLDER, DANCER BAR	5HGG2M42	2
H2	4505695	MOUNT, UPPER TENSIONER B	G2-M38	1
I2	4505709	BRACKET, UPPER TENSIONER TUBE 1	G2-P11	3
J2	4505710	BRACKET, UPPER TENSIONER TUBE 2	G2-P11	3

# Exploded Diagram: UR-2 Film Spool



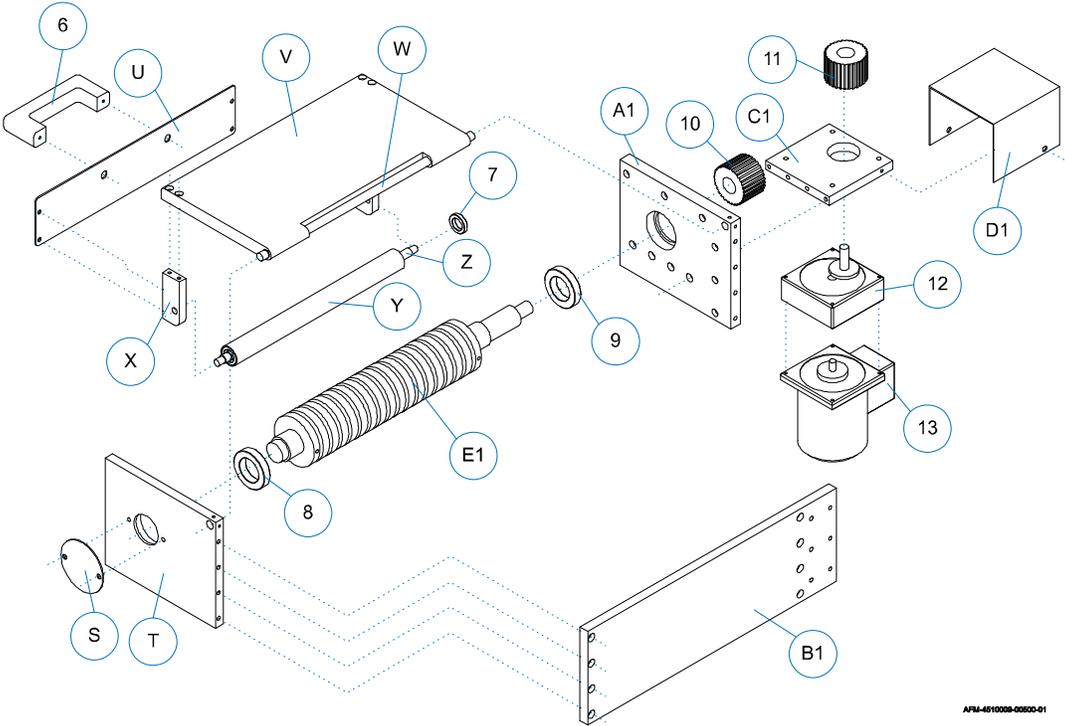
AFM-4510009-00160-01

Item	Part Number	Description	Specification	Qty
1	4502389	Adjustment Knob	5BC04GN01ST32M06X16	2
2	4502366	Bearing	5BE016000ZZ	4
3	4500187	Bearing	5BE016206ZZ	4
4	4503543	Spring	5EH1310X9X31X29N	4
5	4504718	Band, Friction		2
A	4504694	Polycarbonite disc, outer	G2-C01	2
B	4504695	Aluminum arm	G2-M08	8
C	4504696	Gripping cleat	G2-M10	16
D	4504697	Shaft, roll support	G2-M09	8

## 302 Exploded Diagrams and Parts Lists

<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>Specification</b>	<b>Qty</b>
E	4504698	Polycarbonate disc, inner	G2-C02	2
F	4504699	Shaft, main	G2-M04	2
G	4504700	Plate, main	G2-M01	1
H	4504701	Mount, main shaft	G2-M03	2
I	4504702	Brake drum	G2-C01	2
J	4504703	Mount, Photo eye	G2-M20	2
K	4504704	Bracket, Photo eye	G2-M19	2
L	4504705	Bracket, spring, upper	G2-M16	4
M	4504706	Bracket, adjustment middle	G2-M15	2
N	4504707	Shaft, adjustment	G2-M13	4
O	4504708	Shaft, threaded adjustment	G2-M14	2
P	4504709	Bracket, adjustment support	G2-M12	4
Q	4504710	Seat, spring attachment	G2-M18	2
R	4504711	Bracket, spring, lower	G2-M17	2

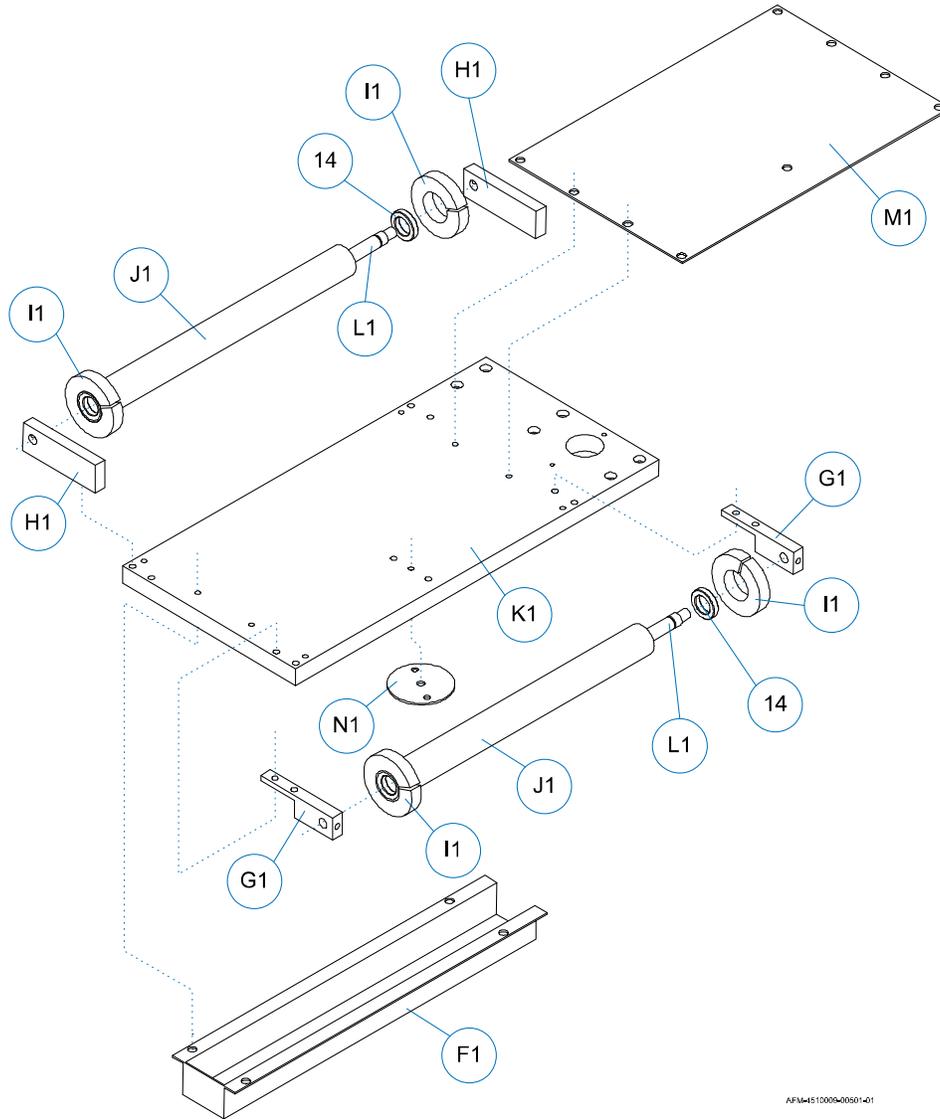
# Exploded Diagram: UR-2 Top Roller



AFM-4510009-0000-01

Item	Part Number	Description	Specification	Qty
6	4505222	HANDLE	5BC03AHG110	1
7	4500171	BEARING-6900ZZ, 10X22X6	5BE016900ZZ	2
8	4500171	BEARING-6900ZZ, 10X22X6	5BE016900ZZ	1
9	4500171	BEARING-6900ZZ, 10X22X6	5BE016900ZZ	1
10	4501071	MITER GEAR 5BF03M20X20T15M65	M2.0 20T D=12 M5-2 4x2	1
11	4501070	MITER GEAR M2.0 20T D=12 M5-2 4X2	M2.0 20T D=15 M6-2 5x2.5	1
12	4503544	GEARBOX 5GN5KF	5CB615GN5K	1
13	4503545	MOTOR 5IK40GN-SW2T	5CB015IK40GNSW2T	1
S	4505707	COVER, BRACKET, TOP ROLLER FRONT	G2-P09	1
T	4505686	BRACKET, TOP ROLLER FRONT	G2-M29	1
U	4505706	BRACKET, TOP ROLLER ACCESS FLIP-UP FRONT	G2-P08	1
V	4505689	BRACKET, TOP ROLLER ACCESS FLIP-UP TOP	G2-M32	1
W	4505688	SHAFT, TOP ROLLER ACCESS FLIP-UP HINGE	G2-M31	1
X	4505691	BRACKET, TOP ROLLER ACCESS FLIP-UP SIDE	G2-M33	2
Y	4505690	ROLLER, TOP ROLLER SQUEEZE	G2-M32 ROLLER	1
Z	4505692	SHAFT, ROLLER, TOP ROLLER SQUEEZE	G2-M34	1
A1	4505685	BRACKET, TOP ROLLER REAR	G2-M28	1
B1	4505684	BRACKET, TOP ROLLER SIDE	G2-M27	1
C1	4505687	MOUNT, MOTOR, TOP ROLLER	G2-M30	1
D1	4505708	COVER, MOTOR, TOP ROLLER	G2-P10	1
E1	4505693	ROLLER, TOP ROLLER DRIVER SQUEEZE	G2-M35	1

## Exploded Diagram: UR-2 Splicing Table

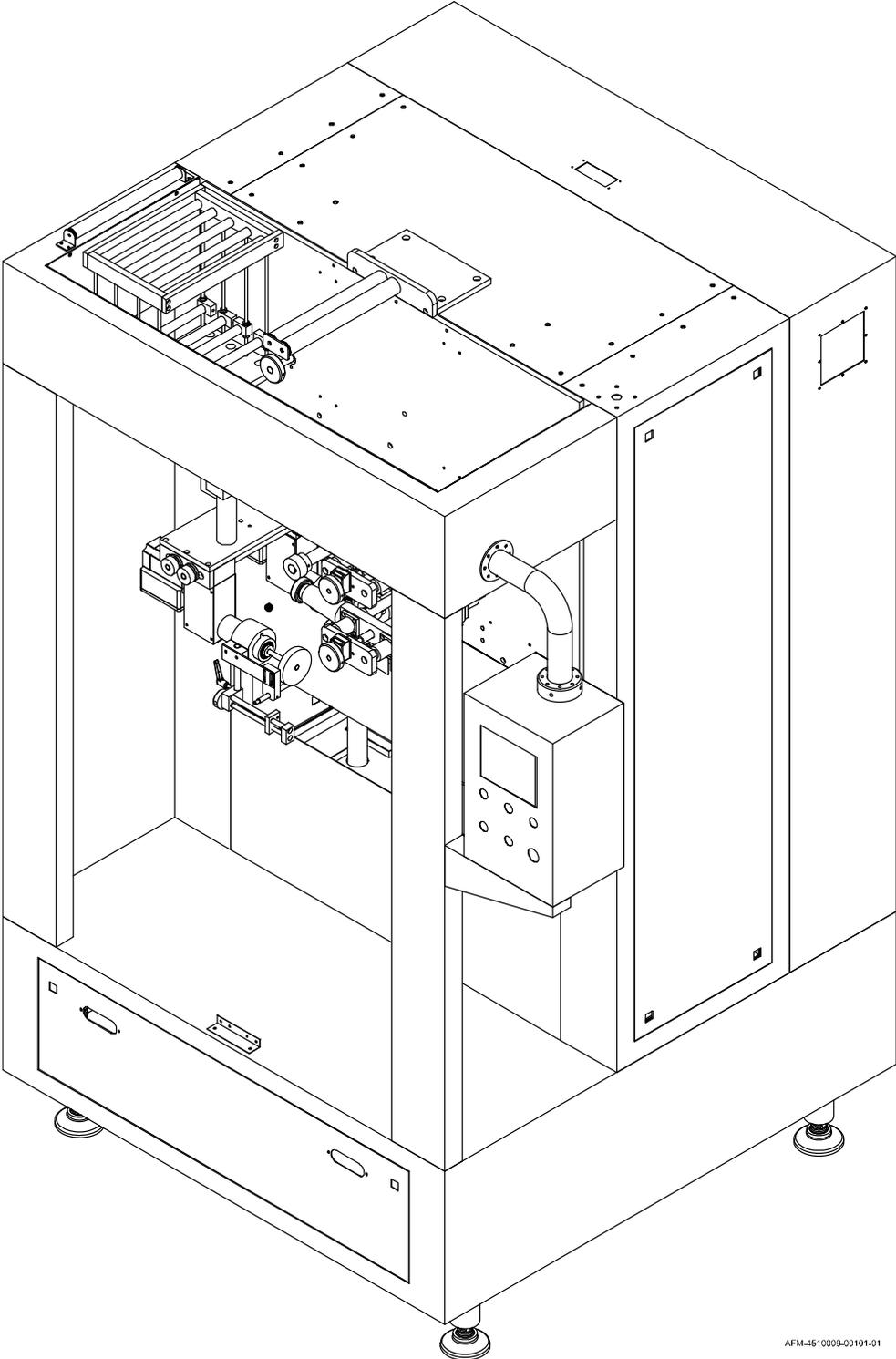


AFM4510009-00501-01

Item	Part Number	Description	Specification	Qty
14	4500171	BEARING-6900ZZ, 10X22X6	5BE016900ZZ	4
F1	4505712	BRACKET, SPLICING TABLE LOWER	G2-P13	1
G1	4505682	BRACKET, SPLICING TABLE LOWER ROLLER	G2-M25	2
H1	4505683	BRACKET, SPLICING TABLE UPPER ROLLER	G2-M26	2
I1	4503481	COLLAR,DANCER ROLLER	5HGG2M24	4
J1	4503480	ROLLER, -A DANCER	G2-M23	2
K1	4505681	PLATE, SPLICING TABLE MOUNT	G2-M21	1
L1	4503571	SHAFT, UR2 UNWIND ROLLER	5HGG2M22	2
M1	4505705	PLATE, SPLICING TABLE	G2-P07	1
N1	4505704	COVER, SPLICING TABLE LOWER CIRCLE	G2-P06	1

# LX-350 Chassis

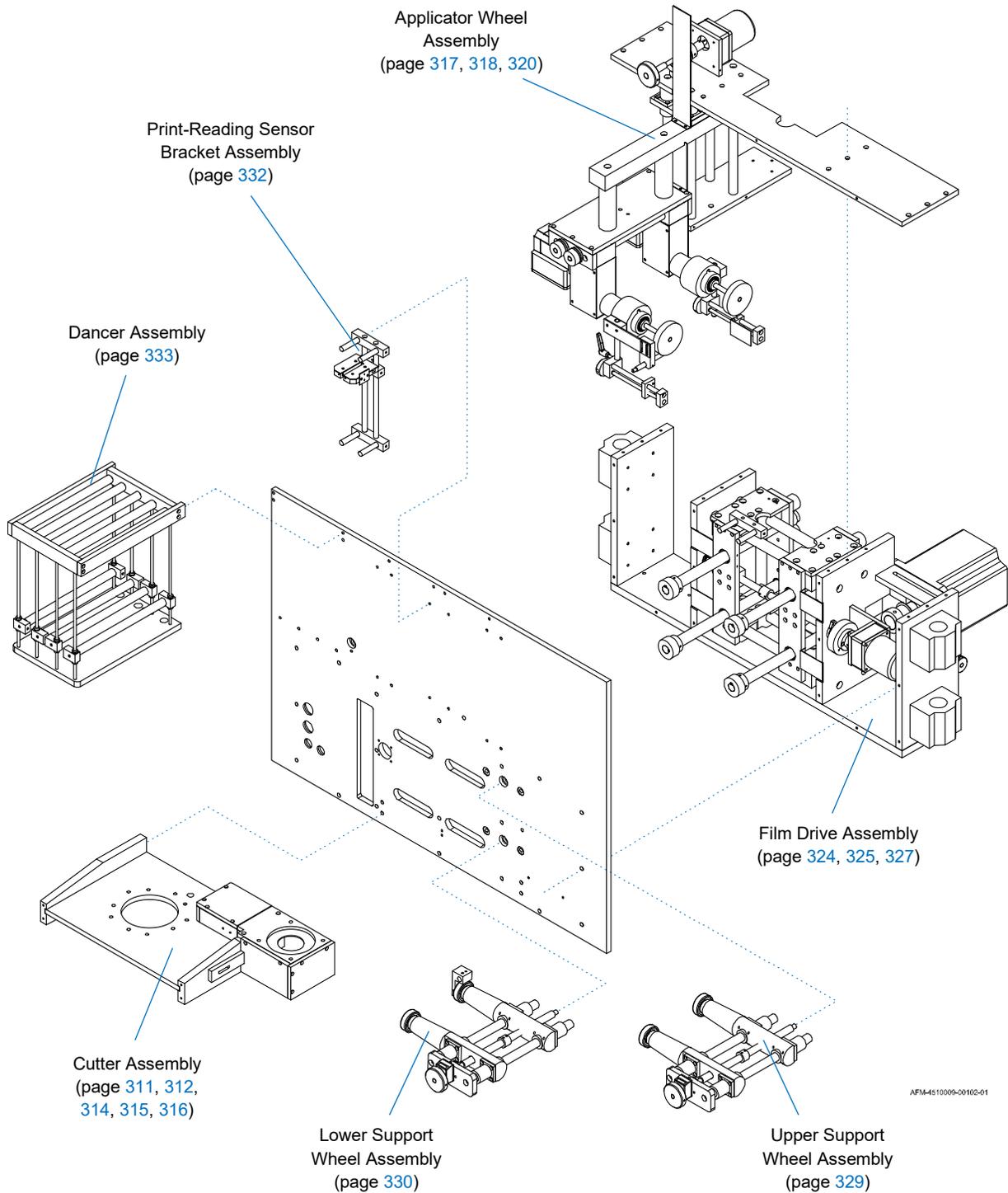
LX350XL-A00



AFM-4510009-00101-01

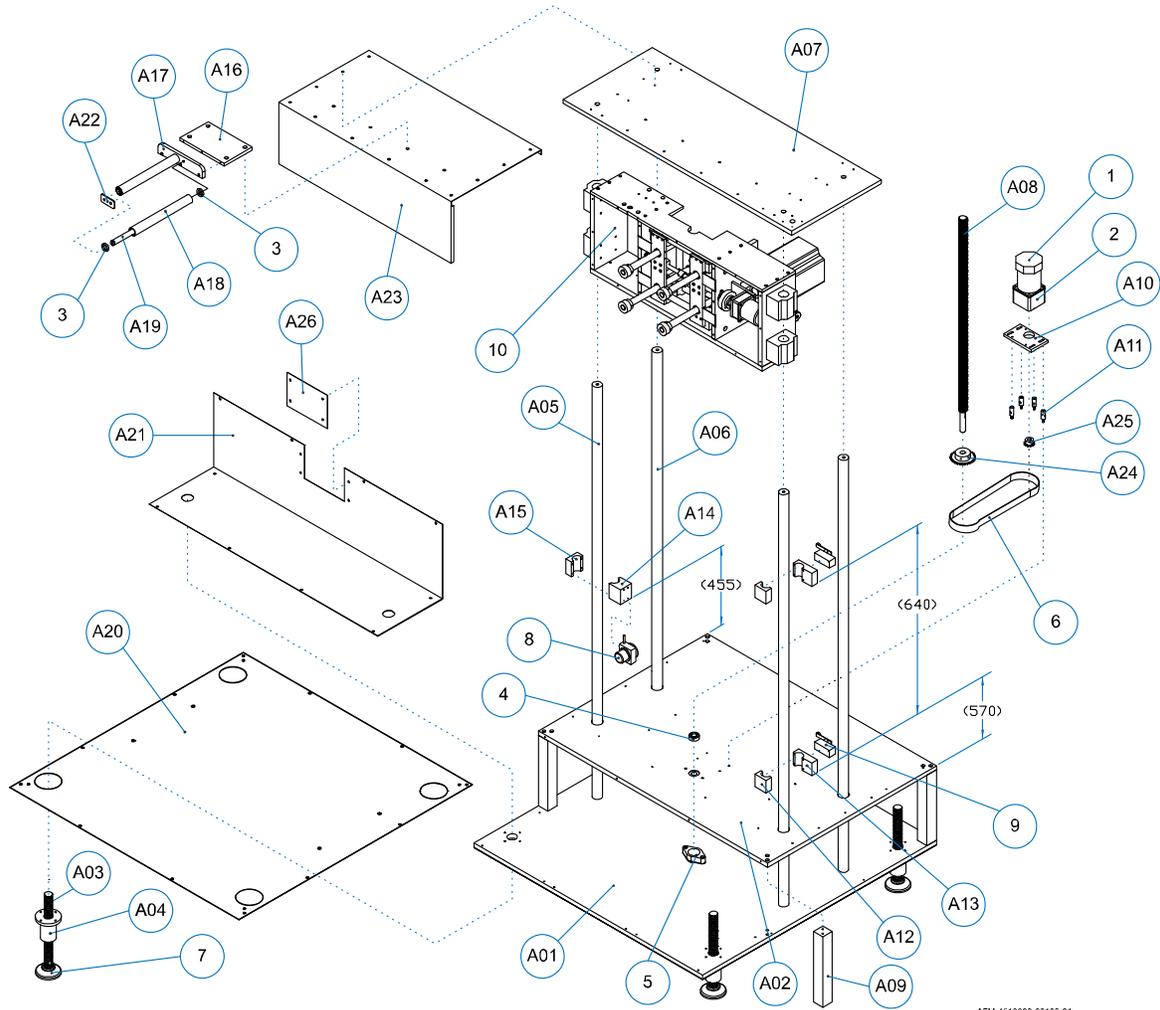
# LX350 Main Components

LX350XL-A01



# Exploded Diagram: LX-350 Main Components

LX350XL-A02



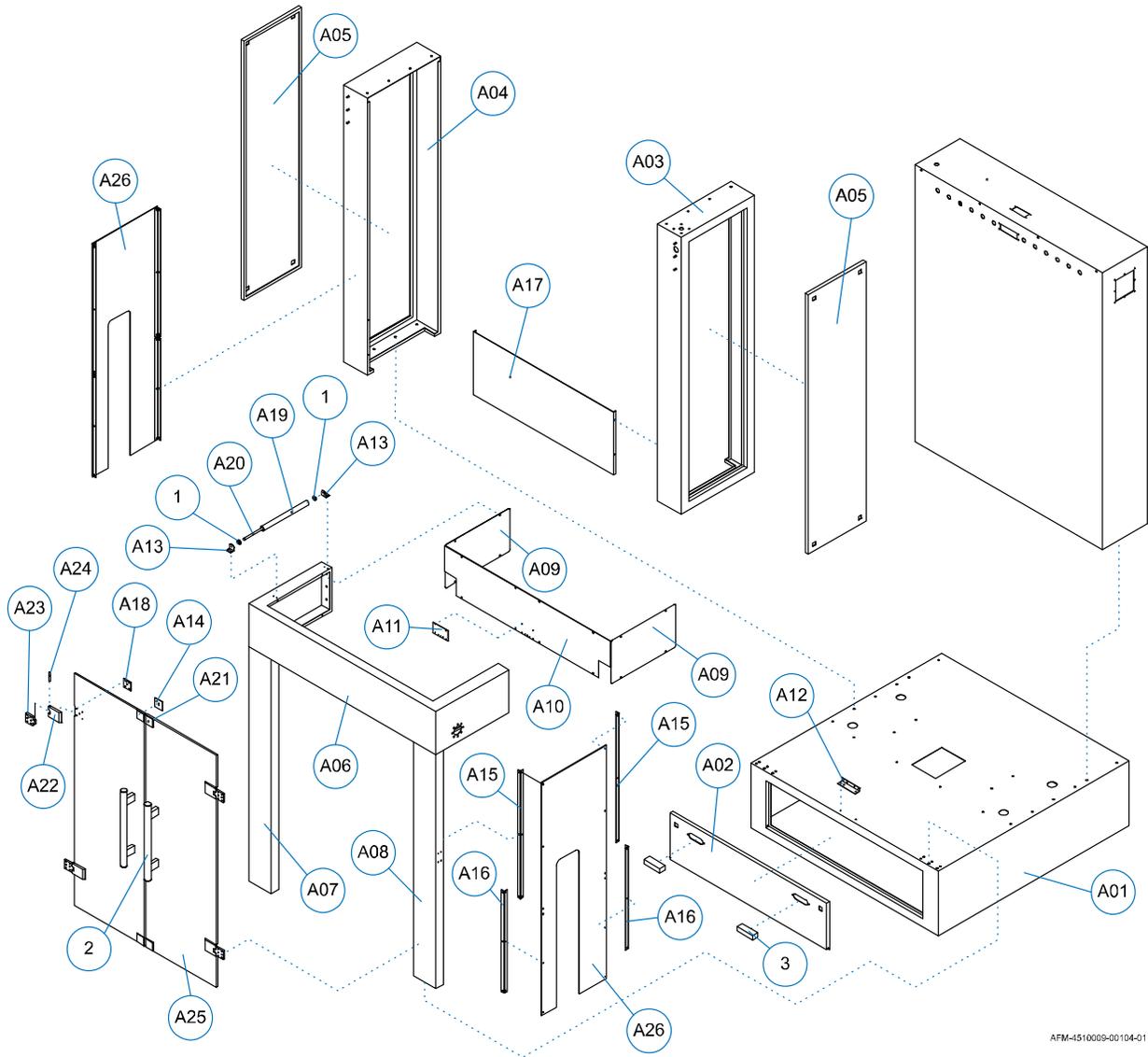
AFM-4510009-00103-01

Item	Part Number	Description	Specification	Qty
1	VLA00075	Induction Motor	5CH015IK90GUSMT	1
2	4504712	Gearbox	5CH615GU5KB	1
3	4500181	Bearings	5BE016804ZZJ	4
4	4504713	Thrust Bearings	5BE0151204	1
5	4504714	With Bearings	5BE03UCFL20402	1
6	4504715	Roller Chain	5BA0113X048	1
7	4504716	Mat Three-Piece Set	5BD31FBDS90	4
8	4504717	Pull-Type Resistance	5AA93HPSS10R	1
9	4501007	Limit Switch	5AB07HL5030	2
10		Film Drive Assembly	(see "Detail: Film Drive Assembly" on page 324 and "Exploded Diagram: Film Drive Assembly Housing" on page 325)	1
A01	4504500	Plate, base	LX350-AM01	1
A02	4504501	Plate, mid	LX350-AM02	1
A03	4504502	Shaft, base adjustment	LX350-AM03	4
A04	4504503	Collar, base adjustment	LX350-AM04	4
A05	4504504	Shaft, vertical support, front	LX350-AM05	2

Item	Part Number	Description	Specification	Qty
A06	4504505	Shaft, vertical support, rear	LX350-AM06	2
A07	4504506	Plate, top	LX350-AM07	1
A08	4504507	Shaft, head height adjustment	LX350-AM08	1
A09	4504508	Spacer, base to mid plate	LX350-AM09	4
A10	4504509	Mount, head height motor	LX350-AM10	1
A11	4504510	Spacer, motor mount	LX350-AM11	4
A12	4504511	Mount, limit switch front	LX350-AM12	2
A13	4504512	Mount, limit switch rear	LX350-AM13	2
A14	4504513	Mount, linear resistor front	LX350-AM14	1
A15	4504514	Mount, linear resistor rear	LX350-AM15	1
A16	4504515	Plate, upper film roller top	LX350-AM18	1
A17	4504516	Plate, upper film roller front	LX350-AM19	1
A18	4504517	Roller, film, upper	LX350-AM20	2
A19	4504518	Shaft, upper film roller	LX350-AM21	2
A20	4504519	Cover, base bottom	LX350-AP03	1
A21	4504520	Cover, base rear	LX350-AP10	1
A22	4504521	Plate, upper film roller	LX350-AP15	1
A23	4504522	Cover, top	LX350-AP22	1
A24	4504523	RS35-30 Gear	LX350XL-AC01	1
A25	4504524	RS35-12 Gear	LX350XL-AC02	1
A26	4504525	Panel, access	LX350-AP24	1

# Exploded Diagram: LX350 Outer Cabinet

LX350XL-A03



AFM-4510009-00104-01

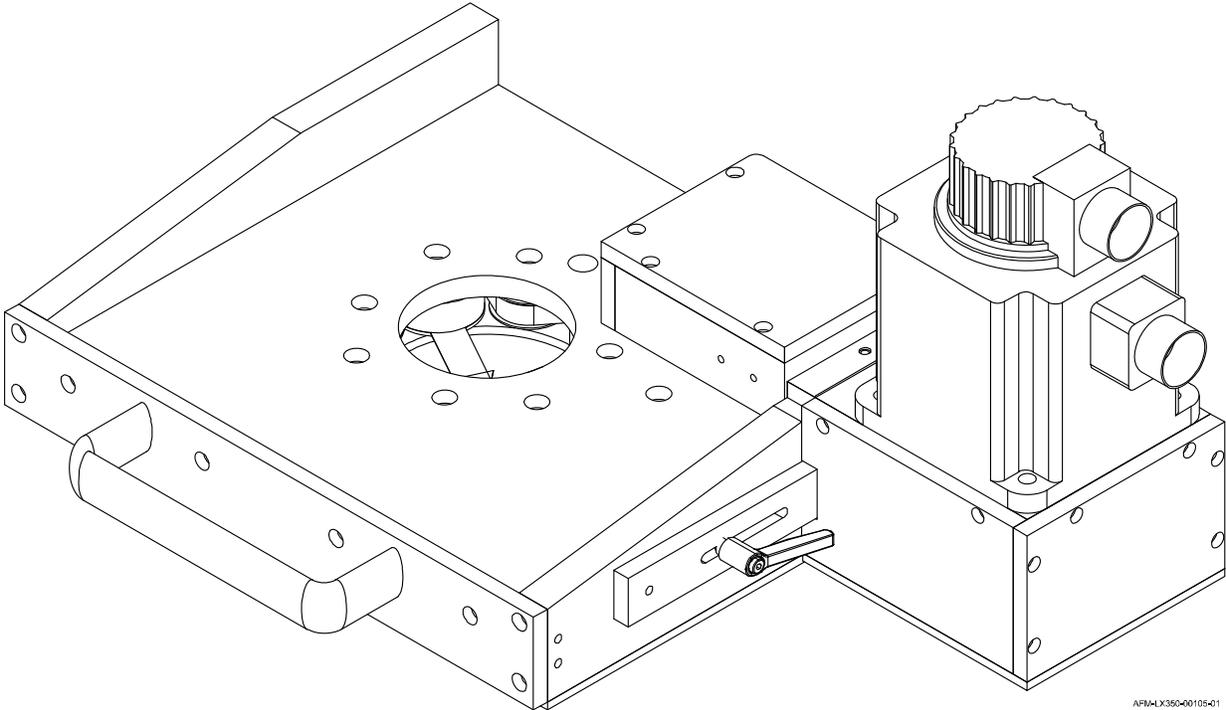
Item	Part Number	Description	Specification	Qty
1	4500171	Bearings	6900ZZJ	2
2	4504526	Bow Handle	ECB300 White Iron	2
3	4504527	Pull Handle	CHM.K710 BNS silver	2
A01	4504528	Housing, base	LX350-AP01	1
A02	4504529	Door, base housing access	LX350-AP01	1
A03	4504530	Housing, mid right	LX350-AP04	1
A04	4504531	Housing, mid left	LX350-AP05	1
A05	4504532	Panel, mid housing access	LX350-AP06	2
A06	4504533	Housing, front upper	LX350-AP07	1
A07	4504534	Housing, front left	LX350-AP08	1

## 310 Exploded Diagrams and Parts Lists

Item	Part Number	Description	Specification	Qty
A08	4504535	Housing, front right	LX350-AP09	1
A09	4504536	Cover, upper housing inner side	LX350-AP11	2
A10	4504537	Cover, upper housing inner mid	LX350-AP12	1
A11	4504538	Bracket, door safety switch	LX350-AP13	1
A12	4504539	Bracket, door stop	LX350-AP14	1
A13	4504540	Bracket, side roller	LX350-AP16	2
A14	4504541	Bracket, door stop inner	LX350-AP17	4
A15	4504542	Bracket, side panel mount upper	LX350-AP18	4
A16	4504543	Bracket, side panel mount lower	LX350-AP19	4
A17	4504544	Panel, rear housing lower	LX350-AP20	1
A18	4504545	Bracket, hinge backing	LX350-AP23	4
A19	4504546	Roller, film entry	LX350-AM16	1
A20	4504547	Shaft, film entry roller	LX350-AM17	1
A21	4504548	Bracket, door stop outer	LX350-AM22	4
A22	4504549	Leaf, door hinge inner	LX350-AM23	4
A23	4504550	Leaf, door hinge outer	LX350-AM24	4
A24	4504551	Pin, door hinge	LX350-AC25	4
A25	4504552	Door, front, polycarbonate	LX350-AC03	2
A26	4504553	Panel, side polycarbonate	LX350-AC04	2

# Cutter Mount Area

LX350XL-E00



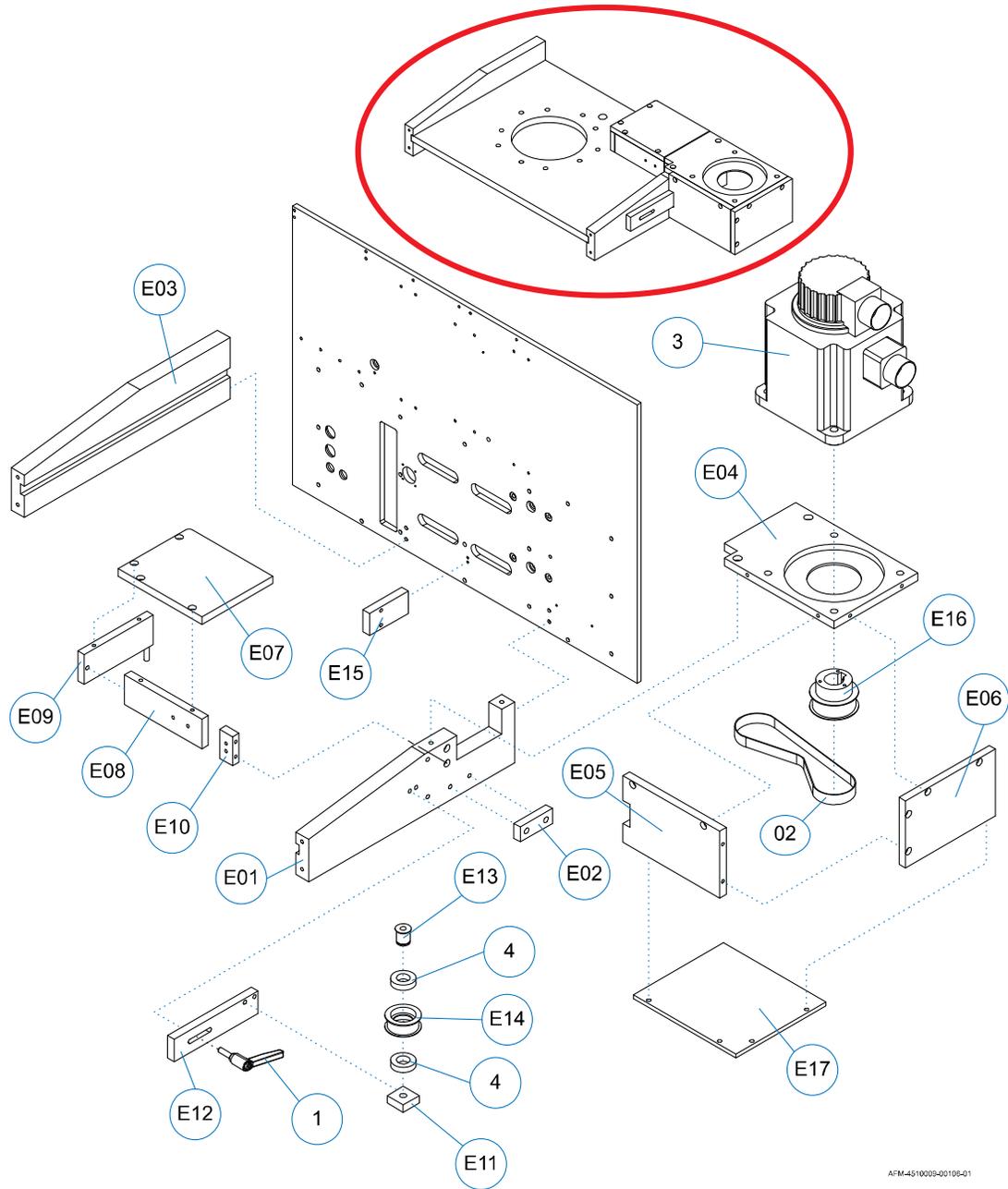
AFMLX350-00105-01

Item	Part Number	Description	Specification	Qty
	4500464	Small Cutter Assembly	HMLA150XE3	1
	4505155	Medium Cutter Assembly	HMLA150EX2	1
	4505156	Large Cutter Assembly	HMLA150XE1	1
	4502091	Extra Large Cutter Assembly		1

**NOTE:** Part numbers above are for standard round Cutter Assemblies. AFM can also provide irregularly shaped Cutter Assemblies (and Mandrels) for labeling bottles with a square, rectangular, oval, or other shaped cross section.

# Exploded Diagram: Cutter Mount Area

LX350XL-E01



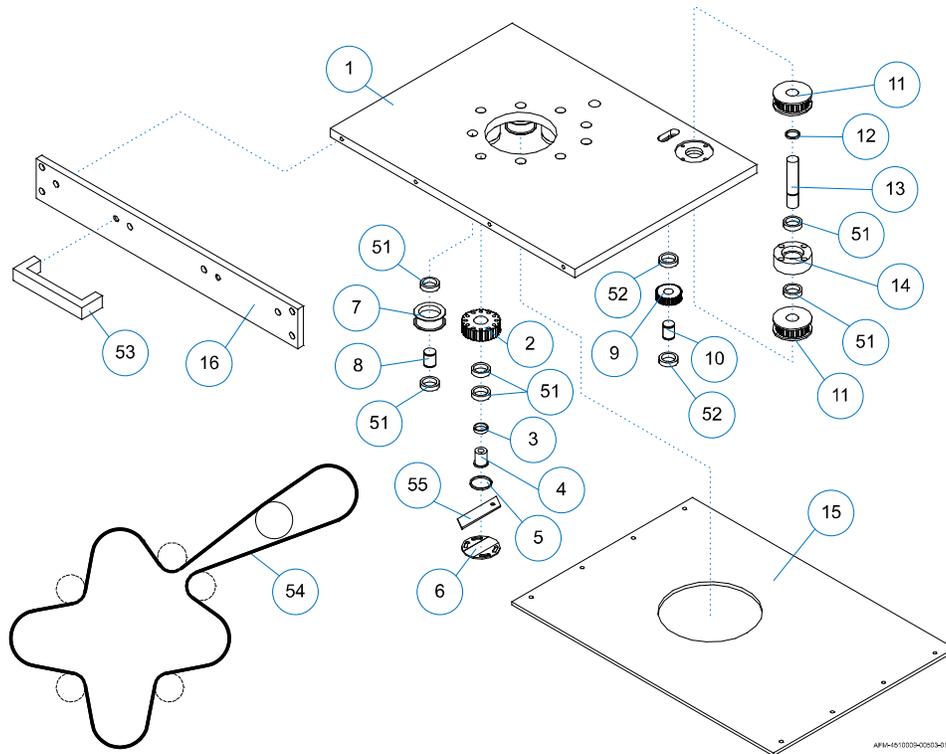
AFM-4510009-00106-01

Item	Part Number	Description	Specification	Qty
1	4502399-2	Turn Handle	TRT40 M6X20	1
2	4501717	Cutter Drive Belt	W=13 mm XL, L=206	1
3	4502709	Servo Motor	MDME202GCGM 2KW	1
4	4500178	Bearings	690ZZZJ EZO	2
E01	4504724	Bracket, cutter mount right	LX350-EM01	1
E02	4504554	Plate, tension stop	LX350-EM02	1
E03	4504555	Bracket, cutter mount left	LX350-EM03	1
E04	4504556	Plate, cutter motor mount top	LX350-EM04	1
E05	4504557	Plate, cutter motor mount front	LX350-EM05	1

Item	Part Number	Description	Specification	Qty
E06	4504558	Plate, cutter motor mount side	LX350-EM06	1
E07	4500447-1	Cover, Top for Drive Belt of Cutter	LX350-EM07	1
E08	4500447-2	Cover, Front for Drive Belt of Cutter	LX350-EM08	1
E09	4500447-3	Cover, Side for Drive Belt of Cutter	LX350-EM09	1
E10	4504559	Plate, cutter cover side	LX350-EM10	1
E11	4504560	Plate, cutter tension roller	LX350-EM11	1
E12	4504561	Plate, cutter tension arm	LX350-EM12	1
E13	4504562	Shaft, cutter tension roller	LX350-EM13	1
E14	4504563	Roller, cutter tension	LX350-EM14	1
E15	4504564	Plate, cutter cover rear	LX350-EM15	1
E16	4504565	Cutter Motor Drive Wheel	LX350XL-EC01	1
E17	4504566	Cutter Drive Wheel Cover	LX350XL-EC02	1

# Exploded Diagram: Small Cutter Assembly

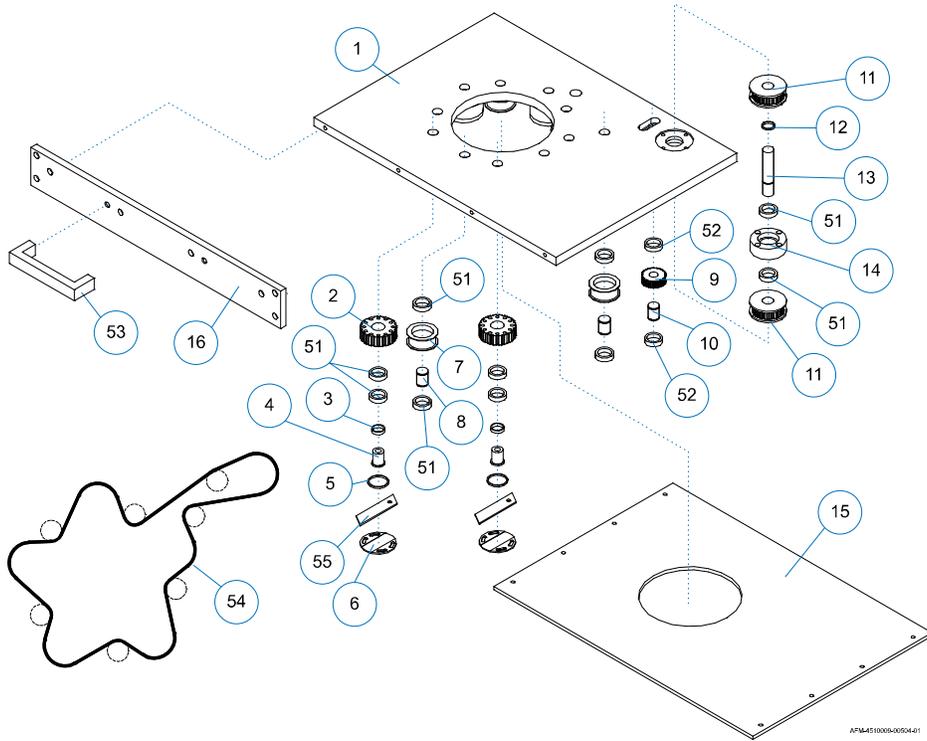
P/N 4500464 (4 Blades)



Item	Part Number	Description	Specification	Qty
1		MACH-LX350 SMALL CUTTER MAIN PLATE		1
2	4501728	Timing Pulley for Blades XL30TD28X25W18	5BF05LA150EC01X2	4
3	4503319	Spacer, Cutter Shaft LX350 3HGLA150EM02X2	LA150-EM02X2 D18XD15.2X4	4
4	4503263	Shaft, Cutter 22X19.3X15	5HGLG150EM05X2 LG150-EM05X2	1
5	4503271	Set Collar, Cutter	LG150T-EM04 – HGLG150EM04X2	4
6	4500224	Blade Cover LX350/LX150	LA150T-EM03X2	4
7	4503261	Pulley, Timing D30X16mm	5HGLG150EM06X1 LG150-EM06X1	5
8	4503262	Shaft, Idler 15X18X12	5HGLG150EM07X1 LG150-EM07X1	5
9	4501741	Timing Pulley for Drive 20TD21X16.5W15	5BF05LA150EC03X2	1
10	4503265	Shaft, Tension D18XD12XL18.5	5HGLG150EM11X2 LG150-EM11X2	1
11	4501730	Timing Pulley for Drive Shaft on Cutter	5F0518XL30t15M55	2
12	4503264	Collar, Spacer 18X15X2	5HGLG150EM08X2 LG150-EM08X2	1
13	4503327	Shaft, Drive LX350 Cutter 5HGLA150EM10X2	LA150-EM10X2 (D15XL70)	1
14	4503328	Mount, Drive Shaft Bearing LX350 Cutter	LA150-EM09X2 D48X28X22X17 5HGLA	1
15	4501523	Fab-Small LX350 Cutter Cover	5FDLA150EC04X3	1
16		MACH-LX350 SMALL CUTTER FRNT PLATE		1
51	4500174	Bearing – 6901ZZ, 12X24X6	5BE016901ZZJ	10
52	4500173	Bearing – 6801ZZ, 12X21X5	5BE016801ZZJ	12
53	4500250	Bow-Type Handle	5BC03AGS200	1
54	4501708	Timing Belt for LX350 Small Cutter	5BB0213X9380XL	1
55	4500470	Blade – Cutter, LX100, 5Y0320X1	5Y0320	4

# Exploded Diagram: Medium Cutter Assembly

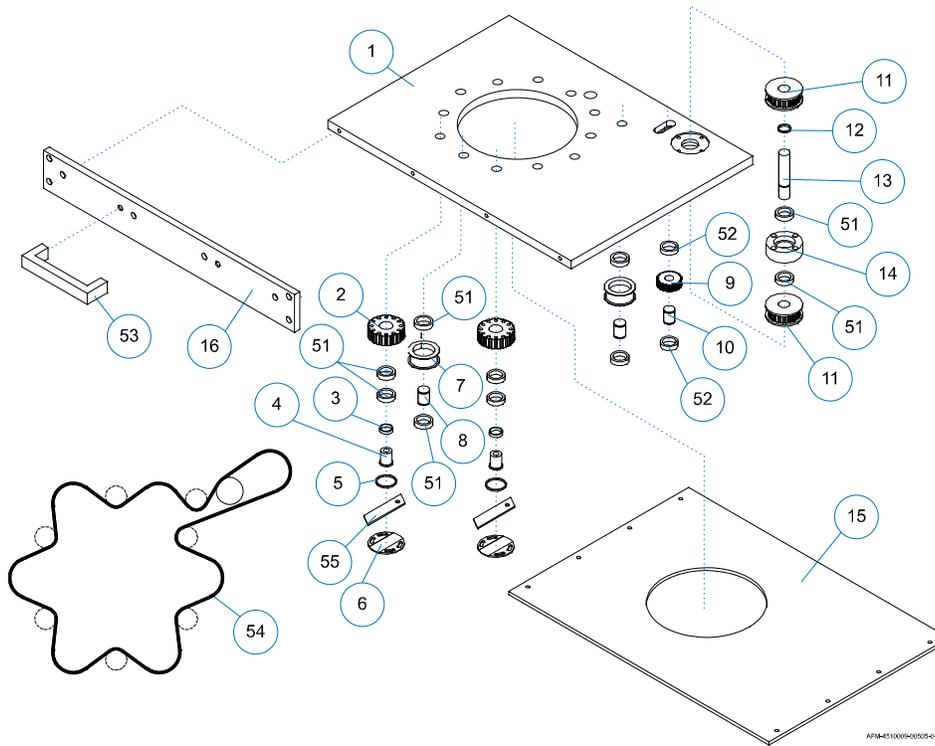
P/N 4505155 (5 Blades)



Item	Part Number	Description	Specification	Qty
1		MACH-LX350 MEDIUM CUTTER MAIN PLATE		1
2	4501728	Timing Pulley for Blades XL30TD28X25W18	5BF05LA150EC01X2	5
3	4503319	Spacer, Cutter Shaft LX350 3HGLA150EM02X2	LA150-EM02X2 D18XD15.2X4	5
4	4503263	Shaft, Cutter 22X19.3X15	5HGLG150EM05X2 LG150-EM05X2	1
5	4503271	Set Collar, Cutter	LG150T-EM04 – HGLG150EM04X2	5
6	4500224	Blade Cover LX350/LX150	LA150T-EM03X2	5
7	4503261	Pulley, Timing D30X16mm	5HGLG150EM06X1 LG150-EM06X1	6
8	4503262	Shaft, Idler 15X18X12	5HGLG150EM07X1 LG150-EM07X1	6
9	4501741	Timing Pulley for Drive 20TD21X16.5W15	5BF05LA150EC03X2	1
10	4503265	Shaft, Tension D18XD12XL18.5	5HGLG150EM11X2 LG150-EM11X2	1
11	4501730	Timing Pulley for Drive Shaft on Cutter	5F0518XL30t15M55	2
12	4503264	Collar, Spacer 18X15X2	5HGLG150EM08X2 LG150-EM08X2	1
13	4503327	Shaft, Drive LX350 Cutter 5HGLA150EM10X2	LA150-EM10X2 (D15XL70)	1
14	4503328	Mount, Drive Shaft Bearing LX350 Cutter	LA150-EM09X2 D48X28X22X17 5HGLA	1
15	4501051	Fab-Medium LX350 Cutter Cover	5FDLA150EC04X2	1
16		MACH-LX350 MEDIUM CUTTER FRNT PLATE		1
51	4500174	Bearing – 6901ZZ, 12X24X6	5BE016901ZZJ	24
52	4500173	Bearing – 6801ZZ, 12X21X5	5BE016801ZZJ	2
53	4500250	Bow-Type Handle	5BC03AGS200	1
54	4501704	Timing Belt for LX350 Medium Cutter	5BB0213X9438XL	1
55	4500470	Blade – Cutter, LX100, 5Y0320X1	5Y0320	5

# Exploded Diagram: Large Cutter Assembly

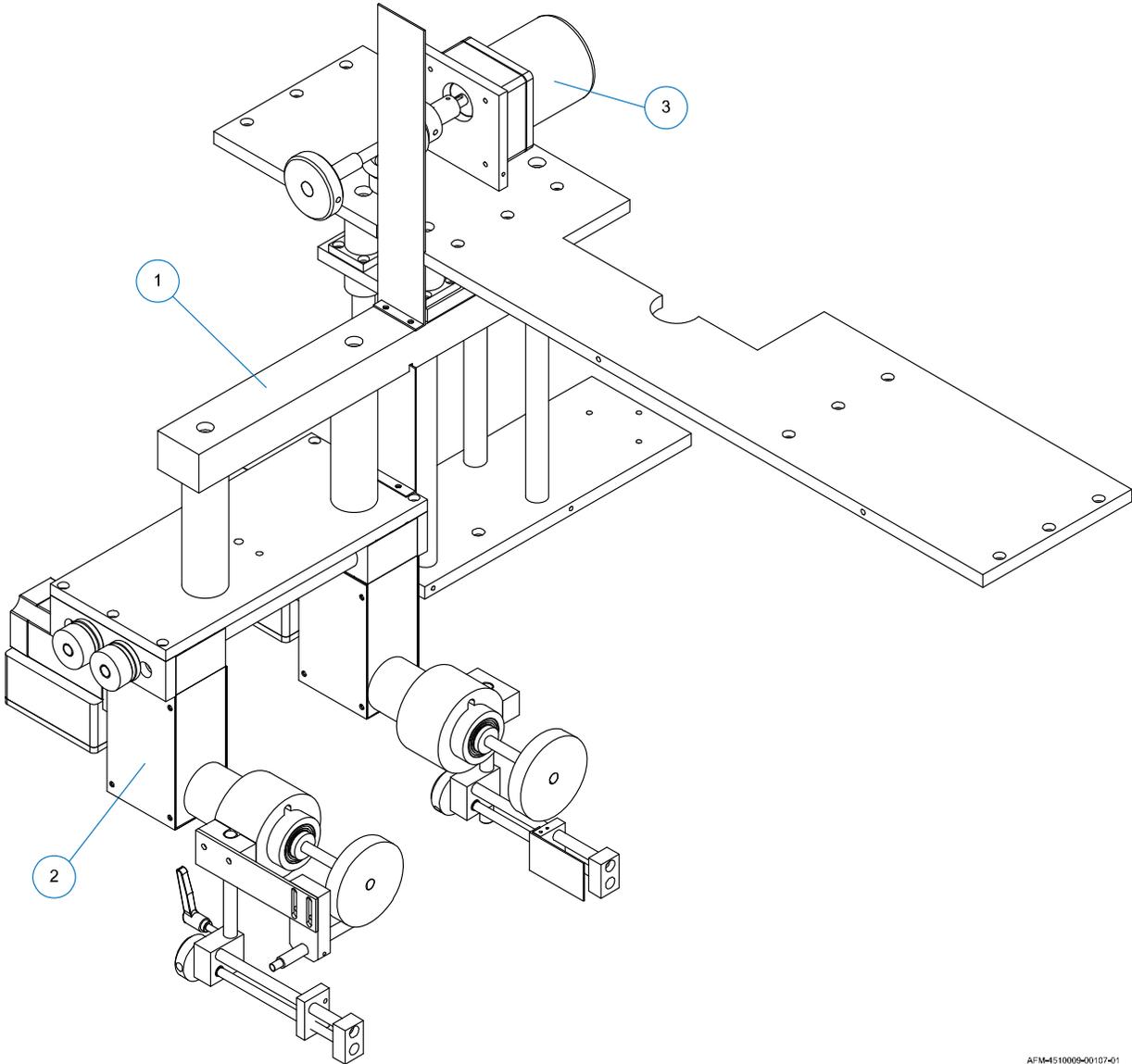
P/N 4505156 (6 Blades)



Item	Part Number	Description	Specification	Qty
1		MACH-LX350 LARGE CUTTER MAIN PLATE		1
2	4501728	Timing Pulley for Blades XL30TD28X25W18	5BF05LA150EC01X2	6
3	4503319	Spacer, Cutter Shaft LX350 3HGLA150EM02X2	LA150-EM02X2 D18XD15.2X4	6
4	4503263	Shaft, Cutter 22X19.3X15	5HGLG150EM05X2 LG150-EM05X2	1
5	4503271	Set Collar, Cutter	LG150T-EM04 – HGLG150EM04X2	6
6	4500224	Blade Cover LX350/LX150	LA150T-EM03X2	6
7	4503261	Pulley, Timing D30X16mm	5HGLG150EM06X1 LG150-EM06X1	7
8	4503262	Shaft, Idler 15X18X12	5HGLG150EM07X1 LG150-EM07X1	8
9	4501741	Timing Pulley for Drive 20TD21X16.5W15	5BF05LA150EC03X2	1
10	4503265	Shaft, Tension D18XD12XL18.5	5HGLG150EM11X2 LG150-EM11X2	1
11	4501730	Timing Pulley for Drive Shaft on Cutter	5F0518XL30t15M55	2
12	4503264	Collar, Spacer 18X15X2	5HGLG150EM08X2 LG150-EM08X2	1
13	4503327	Shaft, Drive LX350 Cutter 5HGLA150EM10X2	LA150-EM10X2 (D15XL70)	1
14	4503328	Mount, Drive Shaft Bearing LX350 Cutter	LA150-EM09X2 D48X28X22X17 5HGLA	1
15	4500477	Fab-Large LX350 Cutter Cover	5FDLA150EC04X1	1
16		MACH-LX350 MEDIUM CUTTER FRNT PLATE		1
51	4500174	Bearing – 6901ZZ, 12X24X6	5BE016901ZZJ	28
52	4500173	Bearing – 6801ZZ, 12X21X5	5BE016801ZZJ	2
53	4500250	Bow-Type Handle	5BC03AGS200	1
54	4501715	Timing Belt for LX350 Large Cutter – 13mmX480mm	5BB0213X9480XL	1
55	4500470	Blade – Cutter, LX100, 5Y0320X1	5Y0320	6

# Detail: Applicator Wheel Assembly

LX350XL-F00

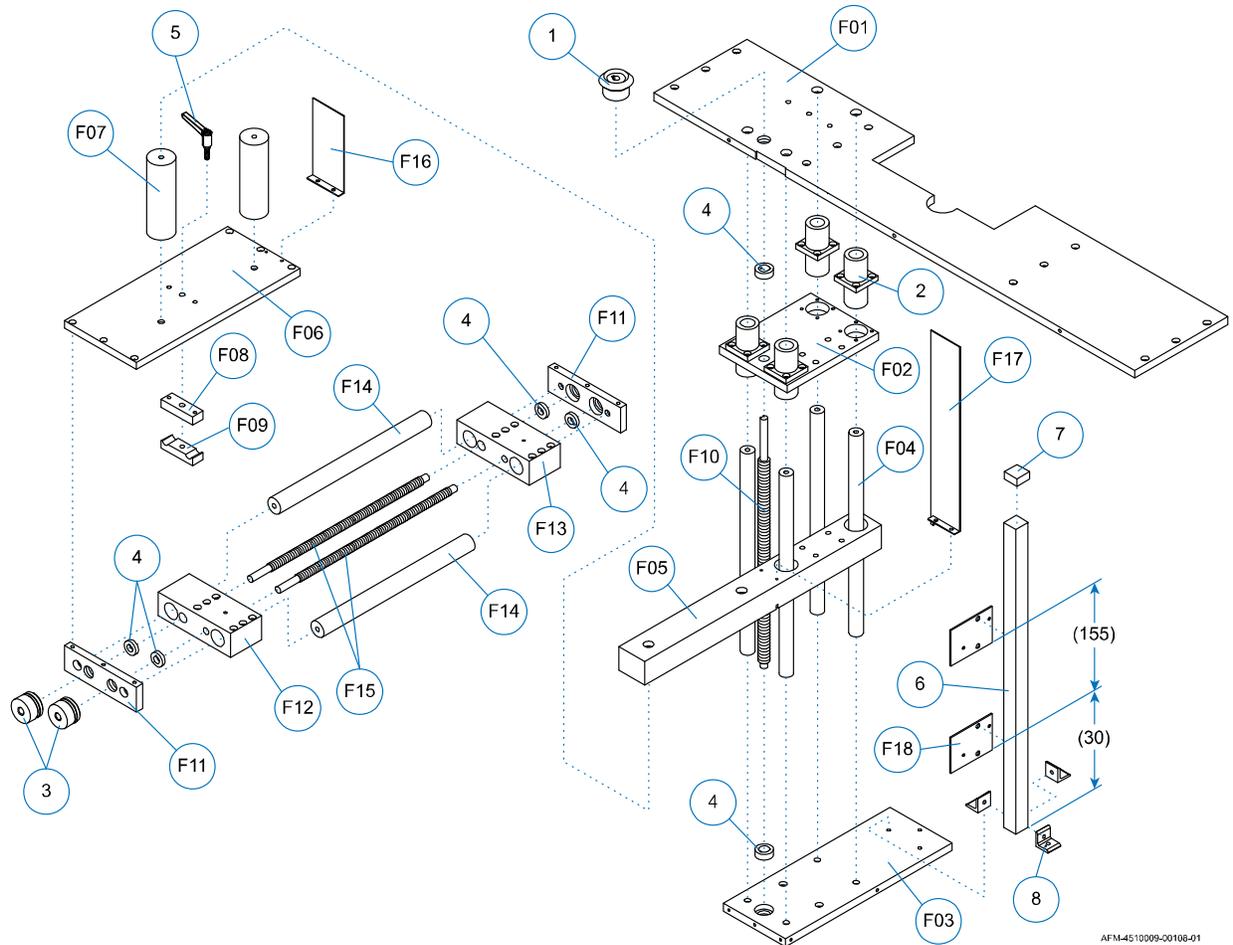


AFM-4510009-00107-01

Item	Part Number	Description	Specification	Qty
1		Applicator Assembly – Upper Section	(see “Exploded Diagram: Applicator Assy – Upper Section” on page 318)	1
2		Applicator Assembly – Lower Section	(see “Exploded Diagram: Applicator Assy – Lower Section” on page 320)	1
3		Applicator Height Adjustment Motor		1

# Exploded Diagram: Applicator Assy – Upper Section

LX350XL-F01



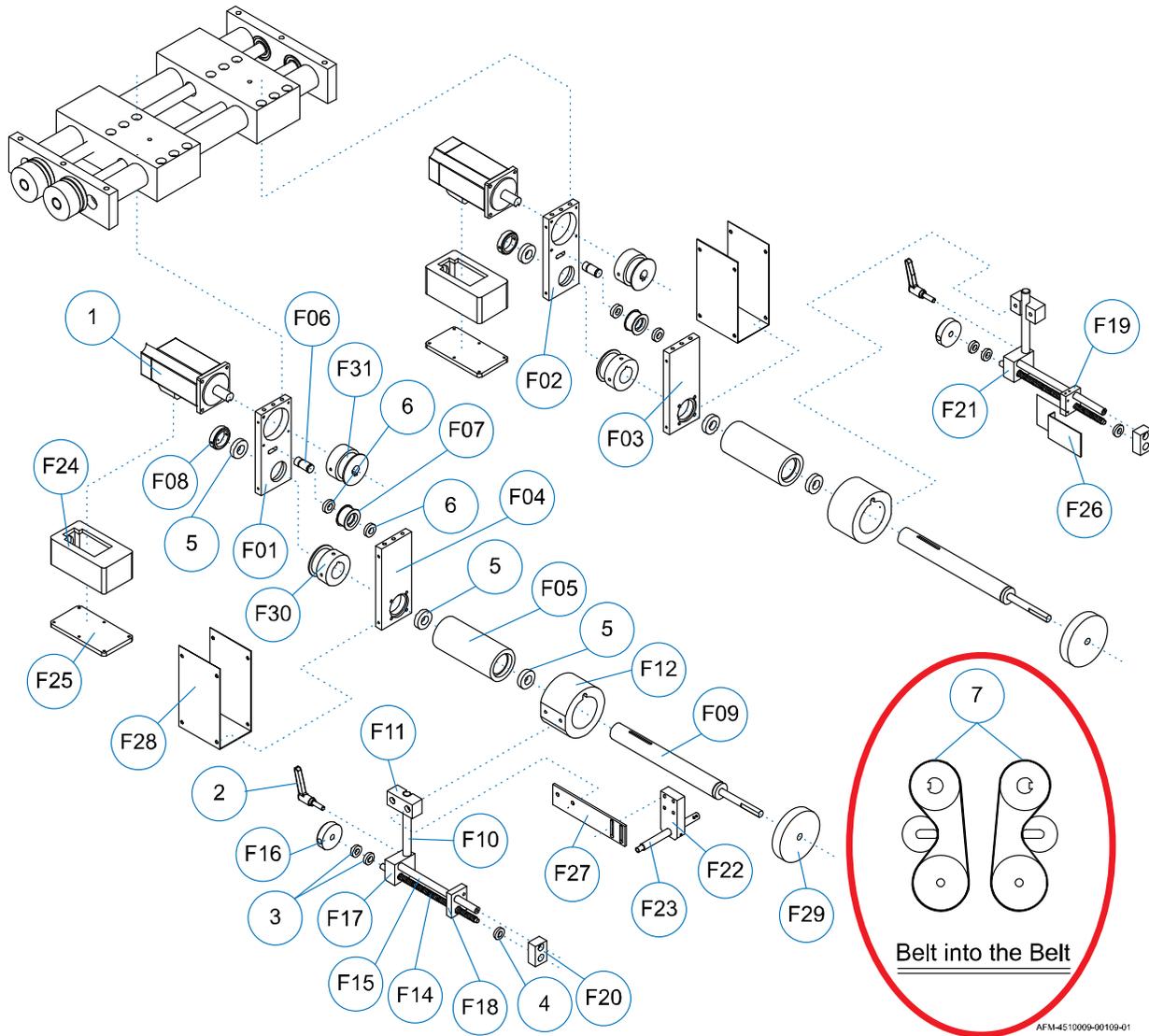
AFM-4510009-00108-01

Item	Part Number	Description	Specification	Qty
1	4501069	Bevel Gear	M1.5 30T D=10 M6-2	1
2	4504719	Linear Bearings	CFPJ20	4
3	4502390	Scale Ring	7011-37-B10 Ø37 D=10	2
4	4502366	Bearings	6000ZZJ	6
5	4501793	Turn the Handle	TRT40 M8X40	1
6	4504567	30*30 Aluminum	355	1
7	4504568	Black Cover	CAP-3030	1
8	4504569	Connecting Seat	.	3
F01	4504570	Plate, applicator assembly upper	LX350-FM01	1
F02	4504571	Plate, applicator bearing mount	LX350-FM02	1
F03	4504572	Plate, applicator assembly lower	LX350-FM03	1
F04	4504573	Shaft, applicator vertical adjustment	LX350-FM04	4
F05	4504574	Arm, applicator assembly adjustment	LX350-FM05	1
F06	4504575	Plate, Applicator assembly top	LX350-FM06	1
F07	4504576	Spacer, applicator assembly mount	LX350-FM07	2
F08	4504577	Bracket, applicator adjustment top	LX350-FM08	1
F09	4504578	Bracket, applicator adjustment bottom	LX350-FM09	1
F10	4503372	Shaft, threaded	LX350-FM10	1
F11	4504579	Plate, applicator adjustment front	LX350-FM14	2
F12	4504580	Block, applicator adjustment front	LX350-FM15	1

<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>Specification</b>	<b>Qty</b>
F13	4504581	Block, applicator adjustment rear	LX350-FM16	1
F14	4503063	Shaft, applicator adjustment horizontal	LX350-FM21	2
F15	4503722	Shaft, applicator adjustment threaded	LX350-FM22	2
F16	4504584	Cover, applicator assembly small	LX350-FP01	1
F17	4504585	Cover, applicator assembly large	LX350-FP02	1
F18	4504586	Cover, applicator assembly side	LX350-FP06	2

# Exploded Diagram: Applicator Assy – Lower Section

LX350XL-F02

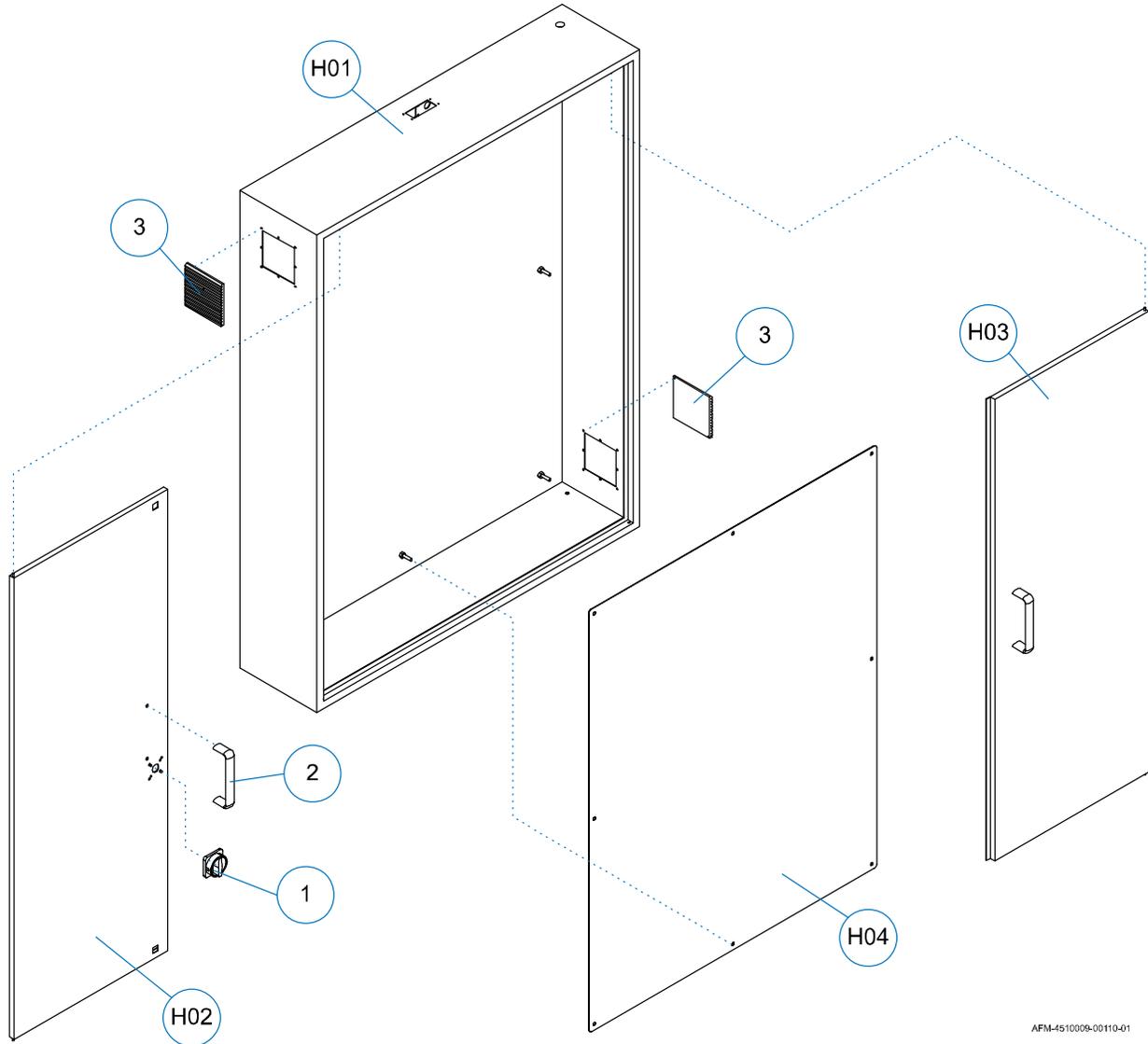


Item	Part Number	Description	Specification	Qty
1	4502301	Servo Motor	MHMD042G1S	2
2	4504294	Turn the Handle	TRT40 M6X20	2
3	VSA00056	Bearings	698ZZ	4
4	4500190	Bearings	696ZZ	2
5	4500184	Bearings	6805ZZJ EZO	6
6	4500173	Bearings	6801ZZJ EZO	4
7	4501701	Timing Belt	W=0.5" XL L=122	2
F01	4503275	Holder, outside applicator motor	5HGLX350FM17	1
F02	4503276	Holder, inside applicator motor	5HGLX350FM18	1
F03	4503277	Holder, outside applicator shaft	5HGLX350FM19	1
F04	4503278	Holder, inside applicator shaft	5HGLX350FM20	1
F05	4504587	Housing, applicator shaft	LX350-FM23	2
F06	4504588	Shaft, applicator belt tension roller	LX350-FM24	2
F07	4502296	Pulley, app. tension LX350N	5HGLX350FM25	2

Item	Part Number	Description	Specification	Qty
F08	4503279	Collar, applicator shaft	5HGLX350FM26	2
F09	4500129	Shaft, applicator (290x25x10)	5HGLX350FM27	2
F10	4502297	Rod, sensor	5HGLA150FM28	2
F11	4503280	Holder for working sensor	5HGLX350FM29	2
F12	4504589	Collar, applicator shaft housing	LX350-FM30	2
F13	4504590		LX350-FM31	2
F14	4503374	Shaft, work eye adjustment threaded	LX350-FM32	2
F15	4504592	Shaft, work eye adjustment	LX350-FM33	2
F16	4503373	Knob, work eye adjustment	LX350-FM34	2
F17	4504594	Block, work eye adjustment	LX350-FM35	1
F18	4504595	Mount, work eye	LX350-FM36	1
F19	4504596	Mount, work eye reflector	LX350-FM37	1
F20	4504597	Block, work eye adjustor end	LX350-FM38	2
F21	4504598	Block, work eye reflector	LX350-FM39	1
F22	4504599	Mount, jam sensor	LX350-FM40	1
F23	4504600	Tube, jam sensor	LX350-FM41	1
F24	4504601	Box, applicator motor junction	LX350-FM42	2
F25	4504602	Cover, applicator motor junction box	LX350-FM43	2
F26	4504603	Plate, work eye reflector mount	LX350-FP03	1
F27	4504604	Plate, jam sensor mount	LX350-FP04	1
F28	4504605	Cover, applicator belt	LX350-FP05	2
F29	4500136	Applicator wheel-LX350	5HFQLA150FC01	2
F30	4504606	Shaft Pulley	5BF05LA150FC02	2
F31	4500142	Motor Pulley	5BF05LA150FC03	2
	4501449	Application Fail Sensor		1
	4502438	Work Detect Sensor		

# Exploded Diagram: Main Electrical Cabinet (Rear)

LX350XL-H00

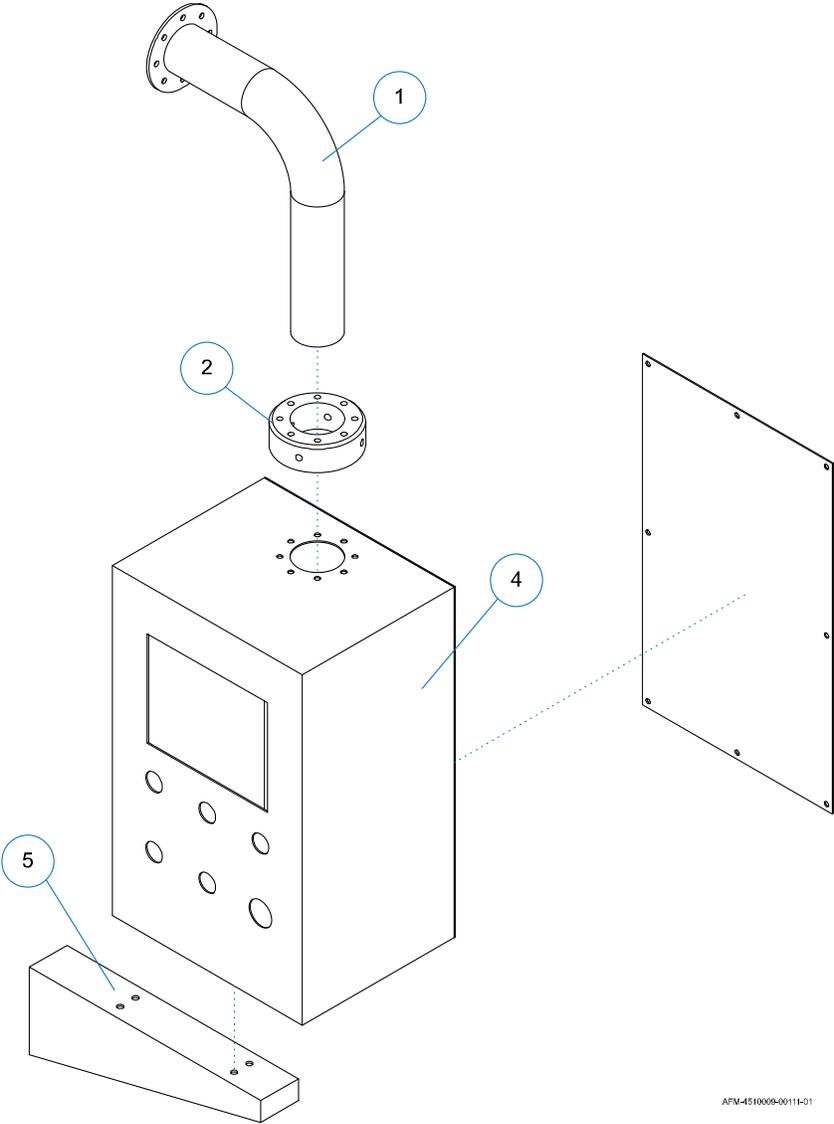


AFM-4510009-00110-01

Item	Part Number	Description	Specification	Qty
1	4501042	Power Switch	FCH-ZH-C332 3P32A	1
2	4500250	Bow Handle	AGS200	2
3	4503517	Cooling Fan Filter	ACIKA04 4" IP44	2
H01	4504607	Housing, electrical cabinet	LX350-HP05	1
H02	4504608	Door, electrical cabinet left	LX350-HP06	1
H03	4504609	Door, electrical cabinet right	LX350-HP07	1
H04	4504610	Panel, electrical cabinet	LX350-HP08	1

# Exploded Diagram: HMI Housing

LX3350XL-H01

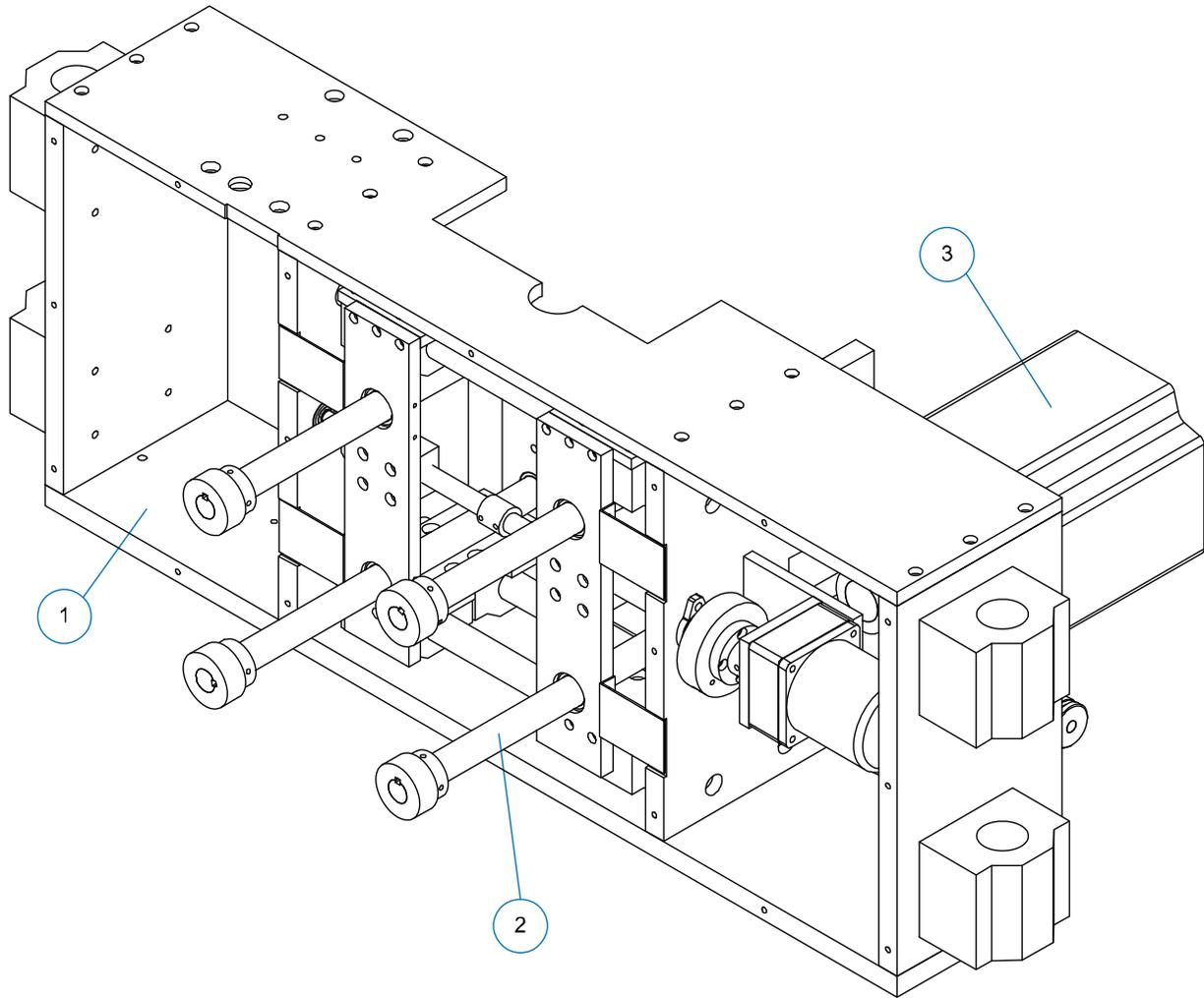


AFW-4510009-00111-01

Item	Part Number	Description	Specification	Qty
1			LX350XL-HP03	1
2			LX350XL-HM01	1
3			LX350XL-HP02	1
4			LX350XL-HP01	1
5			LX350XL-HP04	1

## Detail: Film Drive Assembly

LX350XL-I00

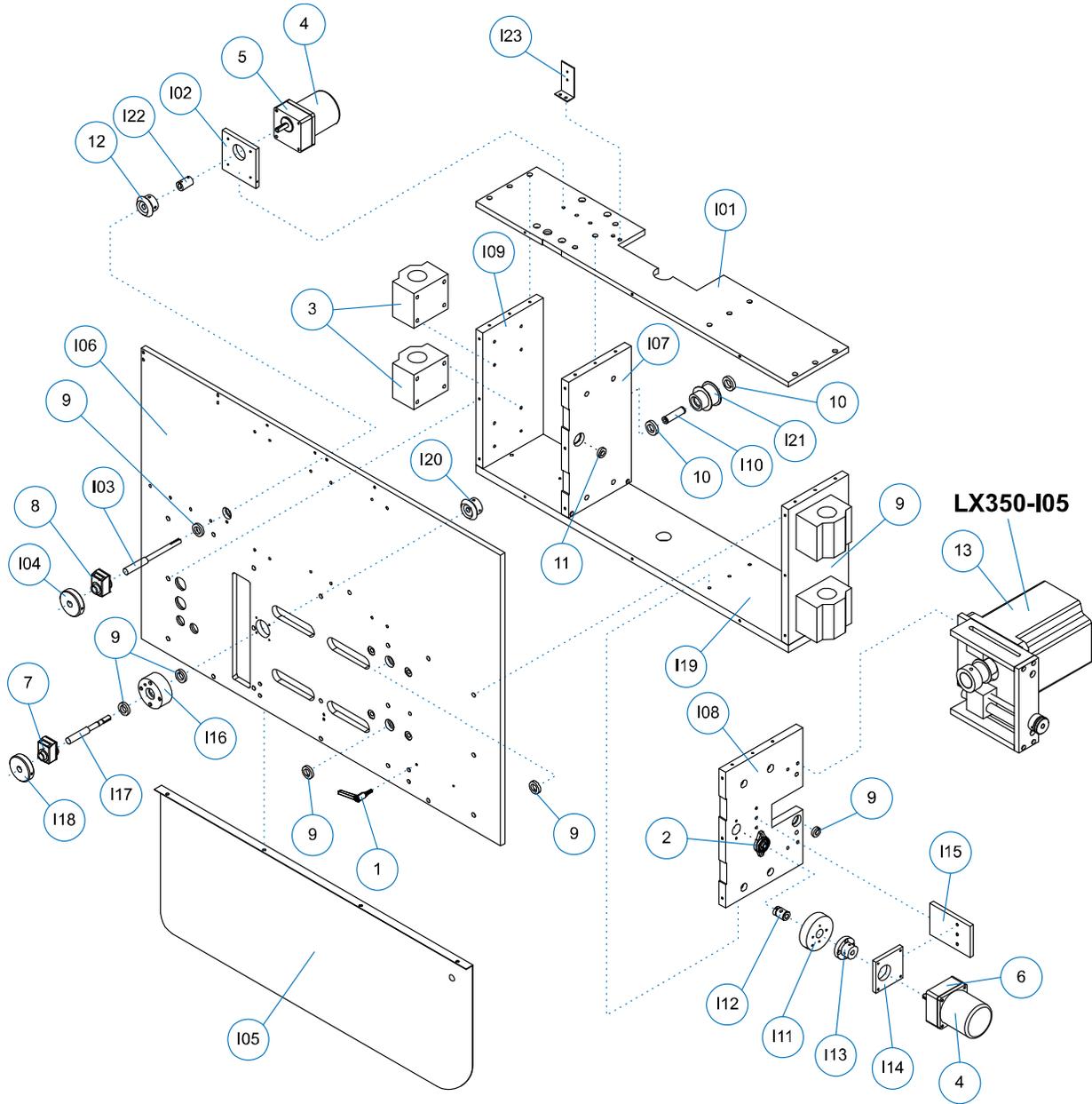


AFM-4510009-00112-01

Item	Part Number	Description	Specification	Qty
1		Film Drive Wheel Assembly Housing	(see "Exploded Diagram: Film Drive Assembly Housing" on page 325)	1
2		Film Drive Wheel Mechanism	(see "Exploded Diagram: Film Drive Wheel Assembly" on page 327)	1
3		Film Drive Servo Motor		1

# Exploded Diagram: Film Drive Assembly Housing

LX350XL-I01



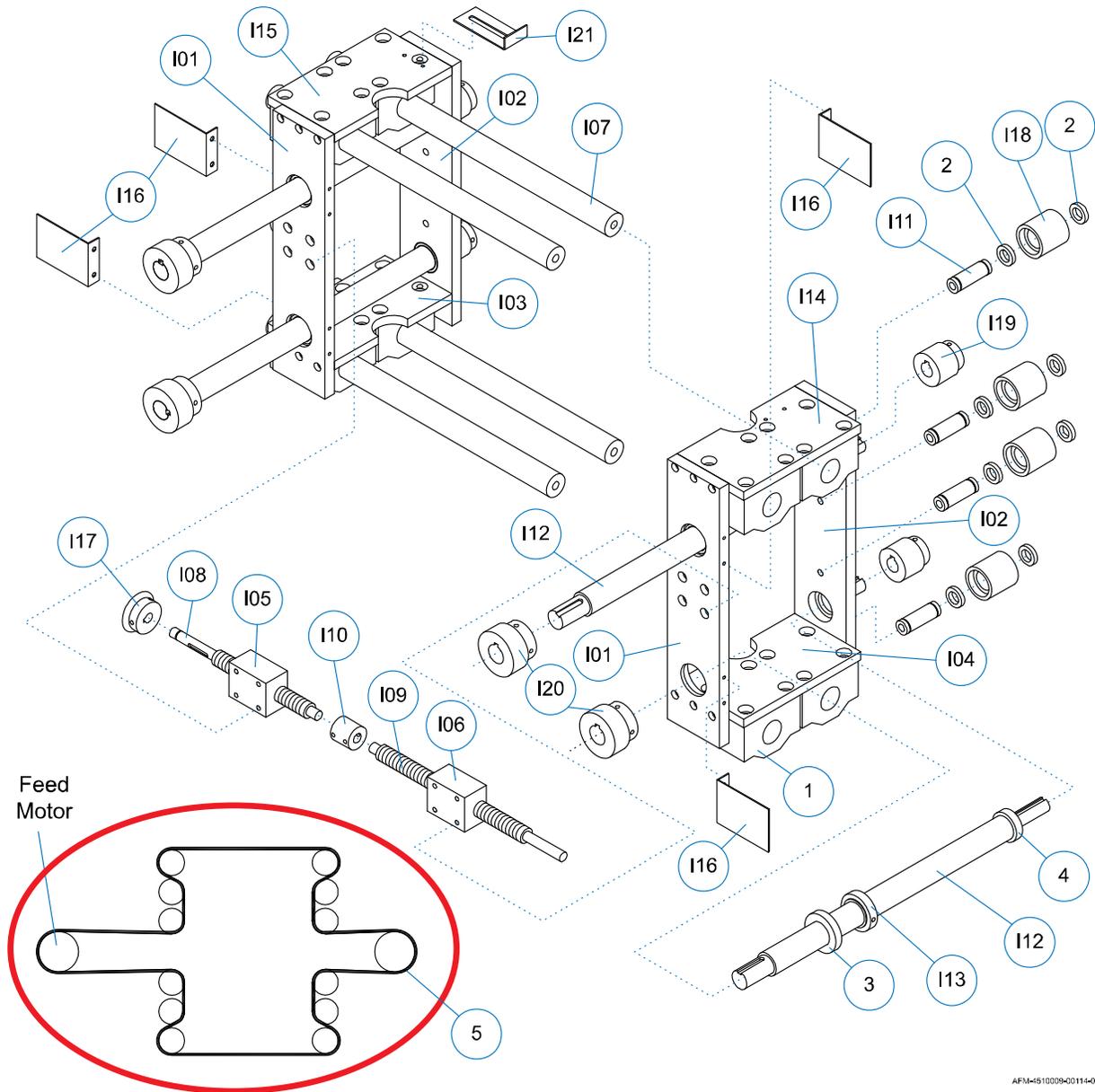
AFM-4510009-00113-01

Item	Part Number	Description	Specification	Qty
1	4501793	Turn Handle	5BC02TRT40M8X40	1
2	4502369	Bearings	5BE03UFL000	1
3	4504721	Linear Ball Bearings	5BE06SC40UU	4
4	4502689	Induction Motor	5CB014IK25GNSW2T	2
5	VSA00015	Gearbox	5CB614GN15L	1
6	4504720	Gearbox	5CB614GN9KF	1
7	4501273	Position Display	DA0402-100-0-1-RH04-10	1
8	4501274	Position Display	DA0404-100-0-1-RH04-10	1

Item	Part Number	Description	Specification	Qty
9	4502366	Bearings	6000ZZJ NMB	6
10	4500178	Bearings	6902ZZJ EZO	2
11	VSA00028	Bearings	6200ZZJ SKF	1
12	4501069	Bevel Gear	M1.5 30T D=10 M6-2	1
13		Film Drive Servo Motor	(see "Exploded Diagram: Film Drive Servo Motor" on page 331)	1
I01	4504611	Plate, head upper	LX350-FM01	1
I02	4504612	Mount, applicator height adjust motor	LX350-FM12	1
I03	4504613	Shaft, applicator height adjust	LX350-FM13	1
I04	4504614	Knob, applicator height adjust	LX350-FM45	1
I05	4504615	Cover, head lower	LX350-AP21	1
I06	4504616	Plate, head front	LX350-IM01	1
I07	4504617	Plate, head mid	LX350-IM02	1
I08	4504618	Plate, head inner	LX350-IM03	1
I09	4504619	Plate, head side	LX350-IM04	2
I10	4504620	Shaft, idler pulley	LX350-IM16	1
I11	4504621	Disc, feed roller lock	LX350-IM43	1
I12	4504622	Shaft, feed roller adjust motor	LX350-IM44	1
I13	4504623	Clutch, feed roller adjust	LX350-IM45	1
I14	4504624	Mount, feed roller adjust motor	LX350-IM46	1
I15	4504625	Bracket, feed roller adjust motor	LX350-IM47	1
I16	4504626	Mount, feed roller adjust shaft	LX350-IM48	1
I17	4504627	Shaft, feed roller adjust manual	LX350-IM49	1
I18	4504628	Knob, feed roller adjust manual	LX350-IM50	1
I19	4504629	Plate, head lower	LX350-IM53	1
I20	4502501	Sprocket	LX350XL-IC01	1
I21	4502502	Pulley, idler film feeding	LX350XL-IC05	1
I22	4504631	Shaft, applicator height adjust motor	LX350-FM11	1
I23	4504632	Plate, head top	LX350-FP07	1

# Exploded Diagram: Film Drive Wheel Assembly

LX350XL-I02



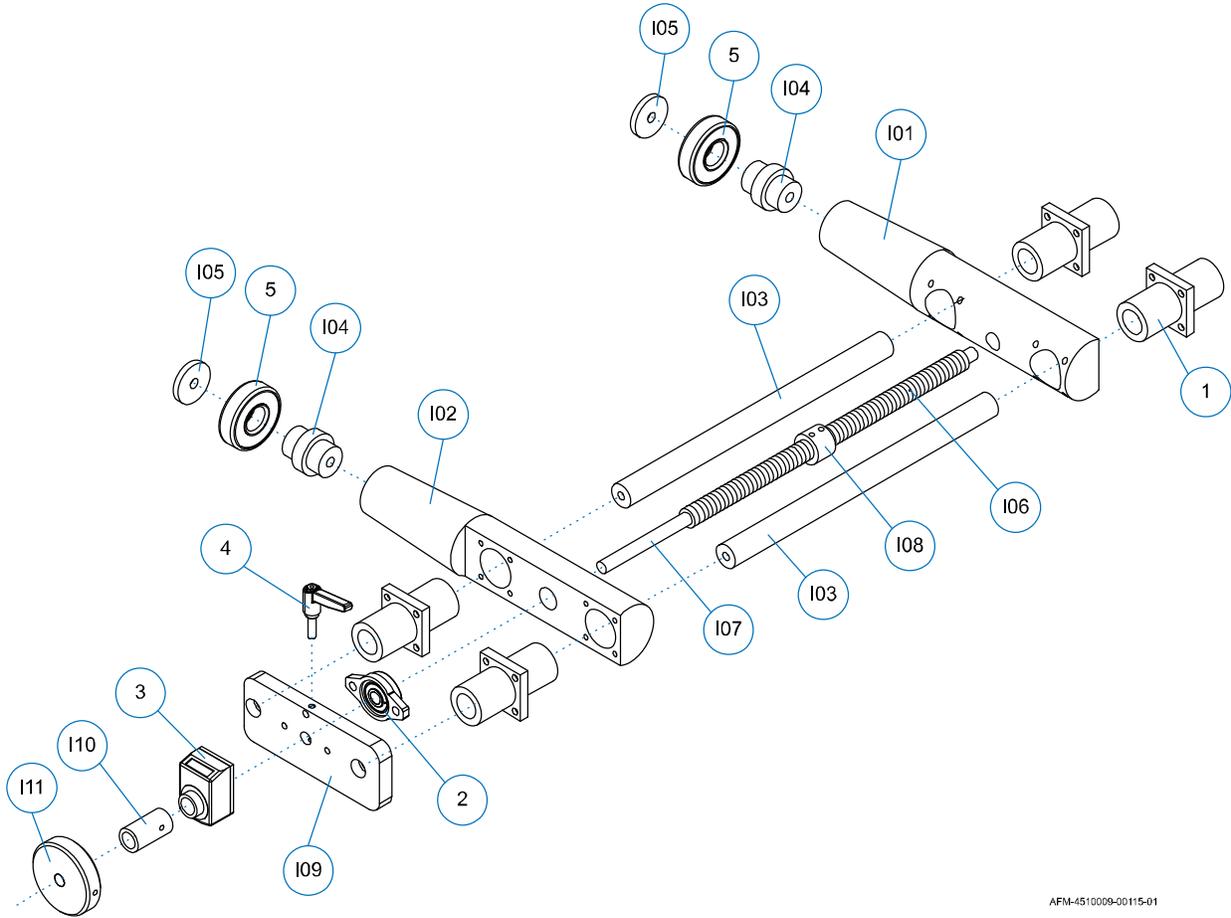
AFM-4510009-00114-01

Item	Part Number	Description	Specification	Qty
1	4504722	Linear Ball Bearings	SC35UU	8
2	4500178	Idler Bearings	6902ZZJ EZO	16
3	4500185	Bearings	6905ZZJ SMT	4
4	4500162	Bearings	6002ZZJ IBK	4
5	4501706	Timing Belt	697DL100 L=69.75	1
I01	4504633	Plate, film drive front	LX350-IM05	2
I02	4504634	Plate, film drive rear	LX350-IM06	2
I03	4504635	Plate, film drive bottom left	LX350-IM07	1
I04	4504636	Plate, film drive bottom right	LX350-IM08	1
I05	4504637	Block, film drive adjust left	LX350-IM09	1
I06	4504638	Block, film drive adjust right	LX350-IM10	1
I07	4504639	Shaft, film drive horizontal adjust	LX350-IM11	4

Item	Part Number	Description	Specification	Qty
I08	4504640	Shaft, film drive adjust threaded left	LX350-IM12	1
I09	4504641	Shaft, film drive adjust threaded right	LX350-IM13	1
I10	4504642	Coupling, film drive shaft	LX350-IM14	1
I11	4504643	Shaft, film feed idler pulley	LX350-IM15	8
I12	4501506	Shaft, film feed roller	LX350-IM17	4
I13	4500709	Ring, film feeding	LX350-IM18	4
I14	4504646	Plate, film drive top right	LX350-IM51	1
I15	4504647	Plate, film drive top left	LX350-IM52	1
I16	4504648	Cover, film drive slot	LX350-IP02	4
I17	4502501	Sprocket, (M1.5X20T D=10,M4-2)	LX350XL-IC01	1
I18	4502502	Pulley, idler film feeding	LX350XL-IC03	8
I19	4501725	Pulley, timing (upper film feed)	LX350XL-IC04	4
I20	4500707	Film feeding rubber wheel, D48X20	LX350XL-IC06	4
I21	4504649	Bracket, film drive	LX350-IP01	1

# Exploded Diagram: Upper Support Wheel Assembly

LX350XL-I03

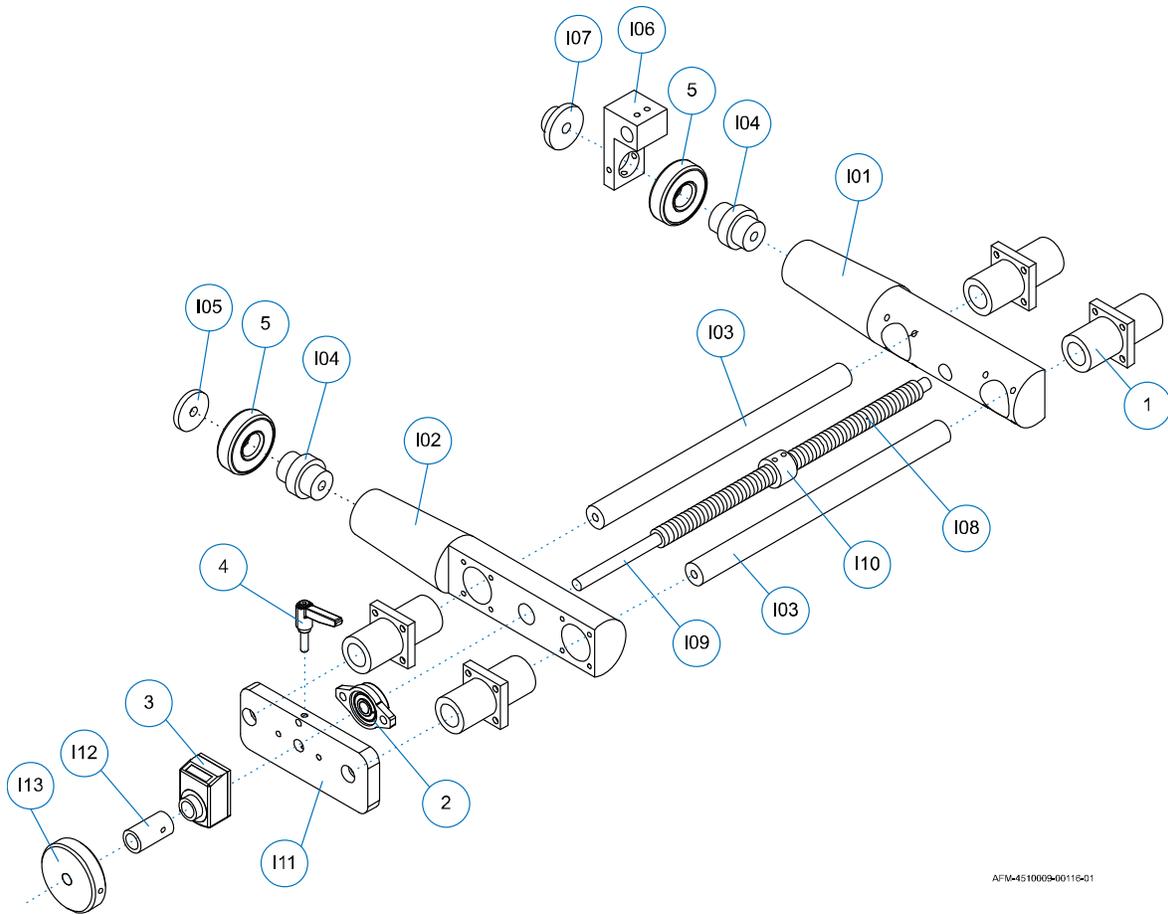


AFM-4510009-00115-01

Item	Part Number	Description	Specification	Qty
1	4504719	Linear Bearings	CFPJ20	4
2	4502369	Bearings	UFL000	1
3	4501273	Position Display	DA0402-100-0-I-RH04-10	1
4	4502399-2	Turn the Handle	TRT40 M6X20	1
5	4502500	Bearings	SS-6205ZZ	2
I01	4504723	Arm, Mandrel support rear	LX350-IM19	1
I02	4504650	Arm, Mandrel support front	LX350-IM20	1
I03	4504651	Shaft, mandrel support adjust	LX350-IM21	2
I04	4504652	Mount, mandrel support bearing	LX350-IM22	2
I05	4504653	Washer, bearing retainer	LX350-IM23	2
I06	4504654	Shaft, mandrel support threaded rear	LX350-IM26	1
I07	4504655	Shaft, mandrel support threaded front	LX350-IM27	1
I08	4504656	Coupling, mandrel support shaft	LX350-IM28	1
I09	4504657	Plate, mandrel support front	LX350-IM29	1
I10	4504658	Coupling, mandrel support knob	LX350-IM30	1
I11	4504659	Knob, mandrel support adjust	LX350-IM31	1

# Exploded Diagram: Lower Support Wheel Assembly

LX350XL-I04

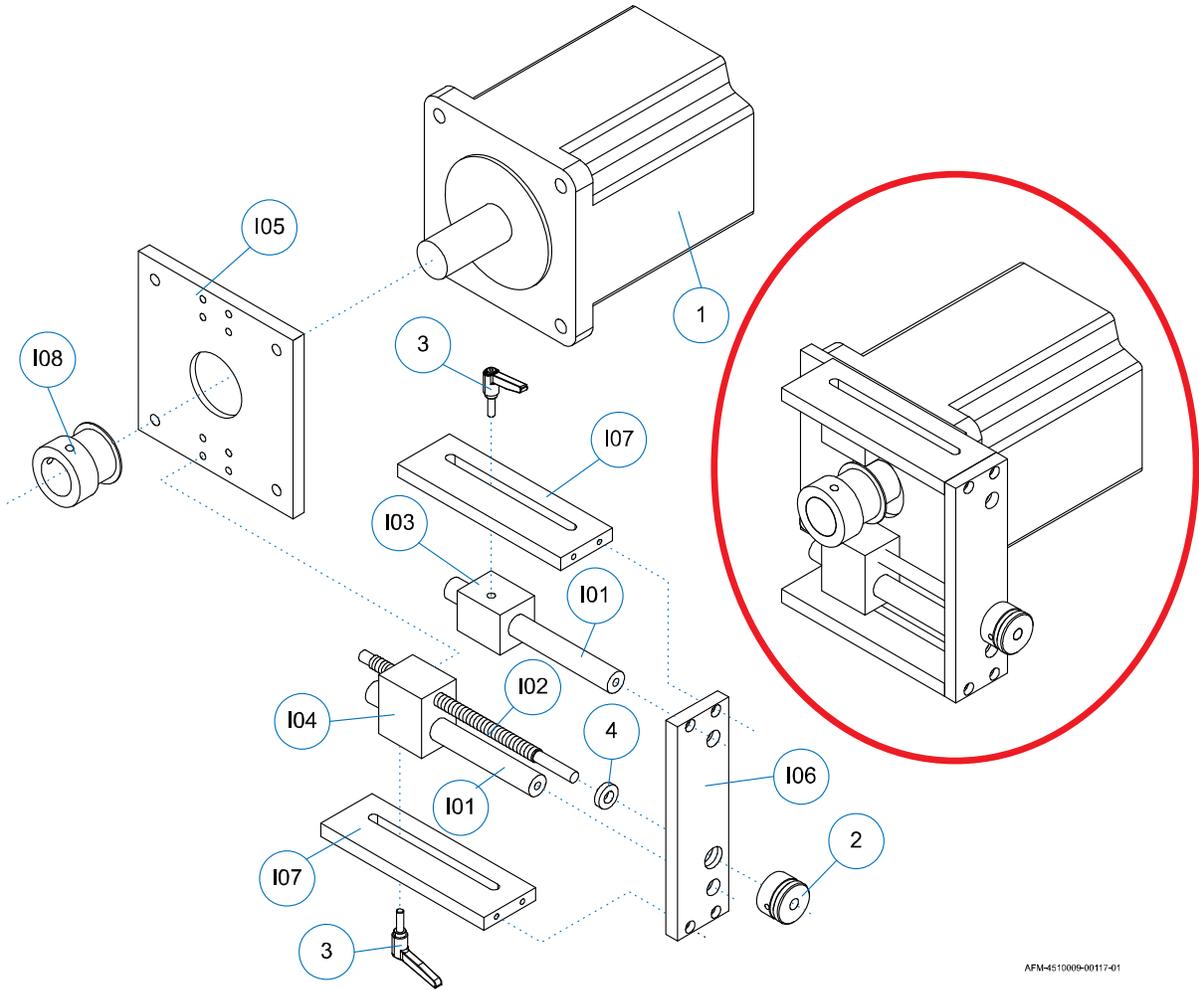


AFM-4510009-00116-01

Item	Part Number	Description	Specification	Qty
1	4504719	Linear Bearings	CFPJ20	4
2	4500742	Bearings	UFL000	1
3	4501273	Position Display	DA0402-100-0-I-RH04-10	1
4	4502399-2	Turn the Handle	TRT40 M6X20	1
5	4500186	Bearings	SS-6205ZZ	2
I01	4504723	Arm, Mandrel support rear	LX350-IM19	1
I02	4504650	Arm, Mandrel support front	LX350-IM20	1
I03	4504651	Shaft, mandrel support adjust	LX350-IM21	2
I04	4504652	Mount, mandrel support bearing	LX350-IM22	2
I05	4504653	Washer, bearing retainer	LX350-IM23	2
I06	4504665	Mount, mandrel detect sensor	LX350-IM24	1
I07	4504666	Retainer, mandrel detect sensor	LX350-IM25	1
I08	4504654	Shaft, mandrel support threaded rear	LX350-IM26	1
I09	4504655	Shaft, mandrel support threaded front	LX350-IM27	1
I10	4504656	Coupling, mandrel support shaft	LX350-IM28	1
I11	4504657	Plate, mandrel support front	LX350-IM29	1
I12	4504658	Coupling, mandrel support knob	LX350-IM30	1
I13	4504659	Knob, mandrel support adjust	LX350-IM31	1

# Exploded Diagram: Film Drive Servo Motor

LX350XL-I05

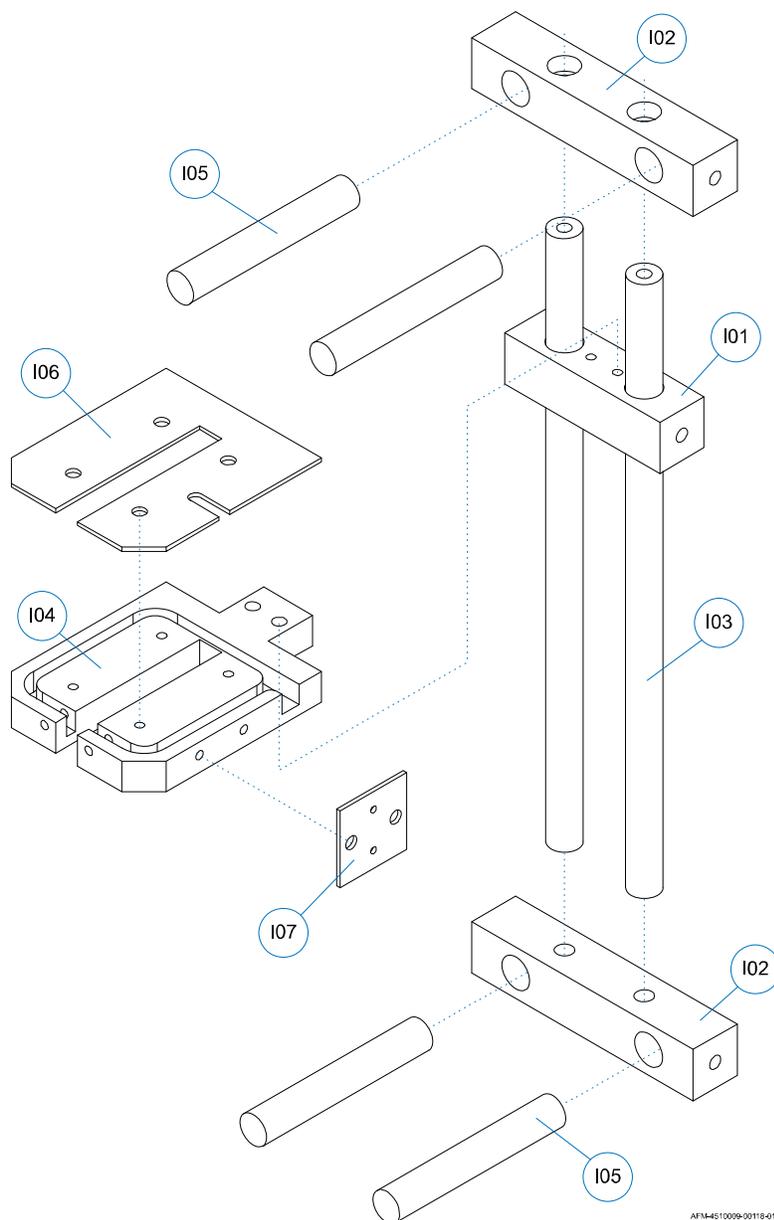


AFM-4510009-00117-01

Item	Part Number	Description	Specification	Qty
1	4502709	Servo Motor (Feed)	MDME202GCGM 2KW	1
2	4502390	Scale ring	7011-37-B10 Ø37 D=10	1
3	4501793	Turn the Handle	TRT40 M8X40	2
4	4502366	Bearings	6000ZZJ NMB	1
I01	4504673	Shaft, film drive motor adjust	LX350-IM32	2
I02	4504674	Shaft, film drive motor adjust threaded	LX350-IM33	1
I03	4504675	Block, film drive shaft	LX350-IM34	1
I04	4504676	Block, film drive shaft threaded	LX350-IM35	1
I05	4504677	Plate, film drive motor mount	LX350-IM36	1
I06	4504678	Plate, film drive adjust side	LX350-IM37	1
I07	4504679	Plate, film drive adjust top/bottom	LX350-IM54	2
I08	4502685	Film feed drive pulley LX350	LX350XL-IC02	1

## Exploded Diagram: Print-Reading Sensor Bracket

LX350XL-I06

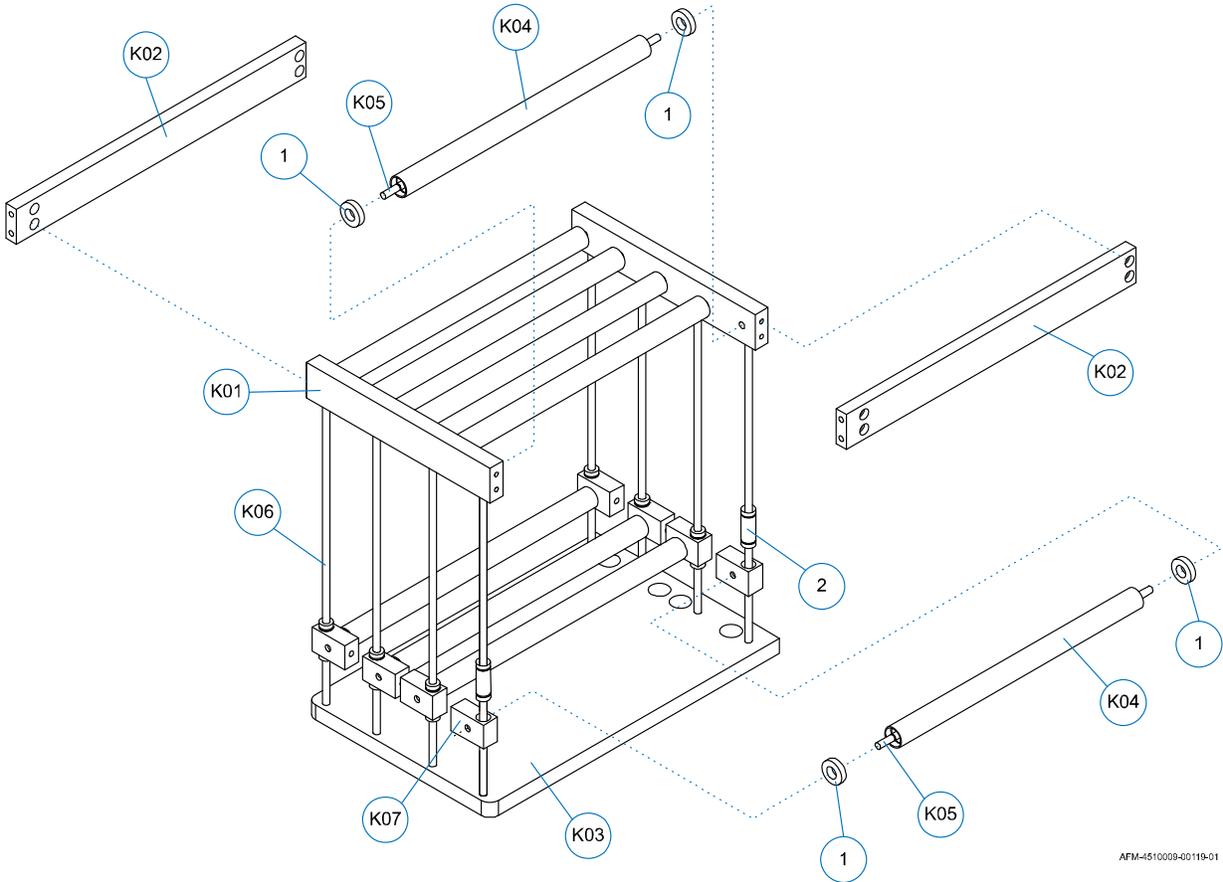


AFM4510009-00118-01

Item	Part Number	Description	Specification	Qty
I01	4504680	Bracket, registration eye adjust	LX350-IM38	1
I02	4504681	Bracket, registration eye mount	LX350-IM39	2
I03	4504682	Shaft, registration eye vert. adjust.	LX350-IM40	2
I04	4504683	Mount, registration eye fibers	LX350-IM41	1
I05	4504684	Shaft, registration eye hor. adjust.	LX350-IM42	4
I06	4504685	Cover, registration eye fibers.	LX350-IP03	1
I07	4504686	Plate, registration eye side	LX350-IP04	1

# Exploded Diagram: Dancer Assembly

LX350XL-K00

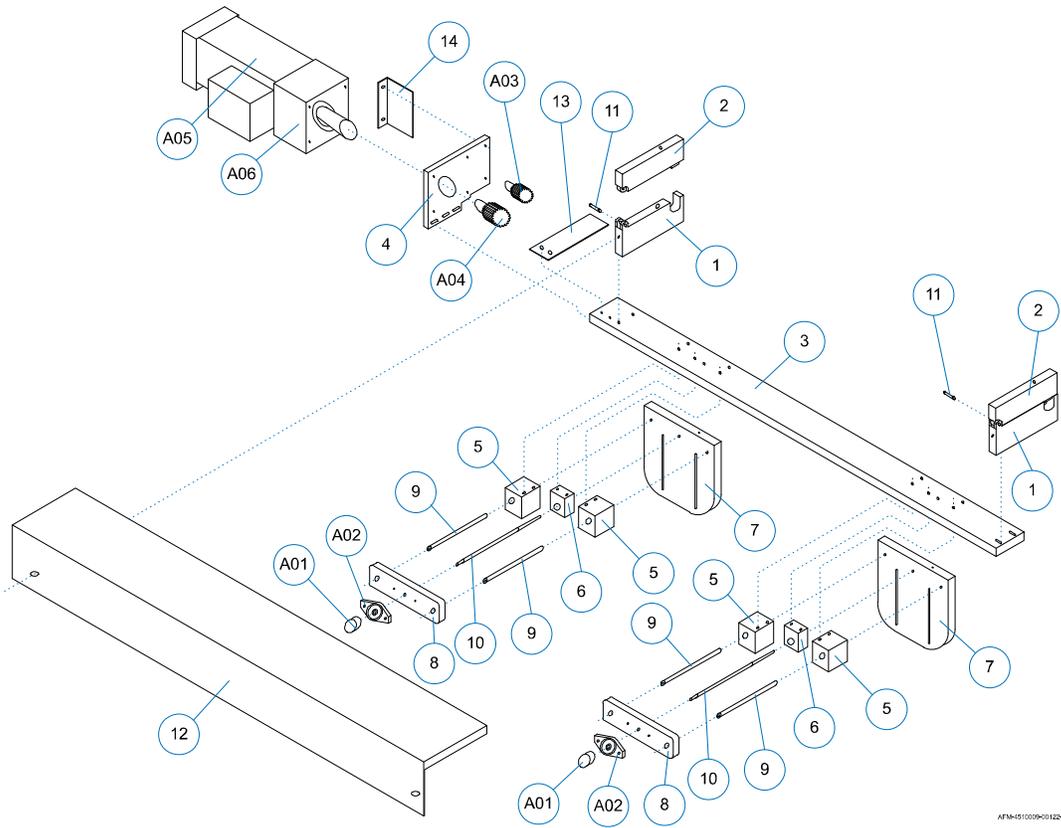


AFM-4510009-00119-01

Item	Part Number	Description	Specification	Qty
1	4502362	Bearings	606ZZ	18
2	4502133	Linear Bearings	LM6LUU	8
K01	4504687	Plate, tension assembly front/rear	LX350-KM01	2
K02	4504688	Plate, tension assembly right/left	LX350-KM02	2
K03	4504689	Plate, tension assembly bottom	LX350-KM03	1
K04	4504690	Roller, tension dancer	LX350-KM04	9
K05	4504691	Shaft, tension dancer roller	LX350-KM05	9
K06	4504692	Shaft, tension dancer vertical	LX350-KM06	8
K07	4504693	Block, tension dancer bearing	LX350-KM07	8

# Exploded Diagram: 800mm Timing Screw Assembly

HHMLA150XL



AFM#010009-01420-1

Item	Part Number	Description	Specification	Qty
1	4503824	Fixed Side Panel	LA150-LM01-1	2
2	4503825	Fixed Cover	LA150-LM02	2
3	4503826	Bottom Plate	LA150-LM03	1
4	4503827	Motor Mount	LA150-LM04	1
5	4503828	Aluminum Bushing	LA150-LM05	5
6	4503829	Copper Nut	LA150-LM06	2
7	4503830	Adjustment Board	LA150-LM07	2
8	4503831	Guide Rod Plate	LA150-LM08	2
9	4503832	Guide Rod	LA150-LM09	4
10	4503833	Adjusting Screw	LA150-LM10	2
11	4503834	Fixed Group Axis	LA150-LM11	2
12	4503835	Cover	LA150-LP01	1
13	4503836	Cover	LA150-LP02	1
14	4503837	Cover	LA150-LP03	1
A01	4503838	Scale Ring	7011-37-B10 37 $\varnothing$ D=10	2
A02	4500742	Block Bearing	UFL000 NKB	2
A03	4503840	Spur Gear	M2 15T D=10 M5-2	1
A04	4503841	Spur Gear	M2 35T D=15 M6-2 5X2.5	1
A05	4503842	Brake Motor	H-5IK180GU-SMTF	1
A06	4503843	Gearbox	H-5GU7.5KBH	1

# Video Library

Access any video below by clicking the link, typing it into your browser, or scanning the QR Code below using the camera app on a mobile device.



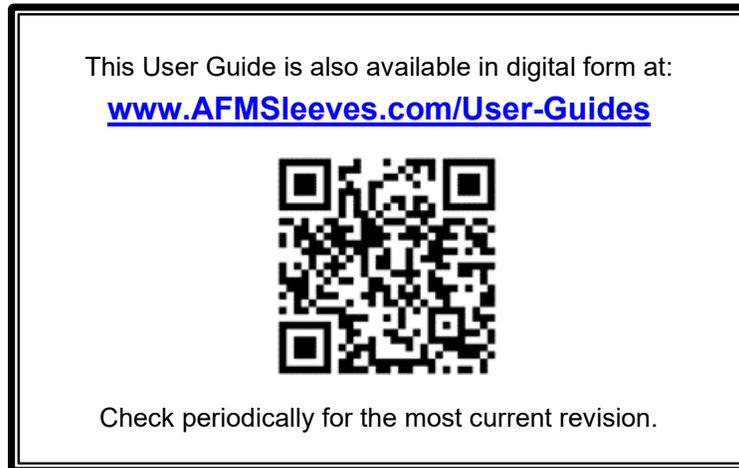
AFM-4510009-00530-01

<p><b>LX-350 Setup and Settings</b> (Video 1) - TRT: 33:04 <a href="https://www.youtube.com/watch?v=iXA_k4v99vQ&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=1">https://www.youtube.com/watch?v=iXA_k4v99vQ&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=1</a></p>
<p><b>Feed Cut Parameter Settings</b> (Video 2) - TRT: 2:48 <a href="https://www.youtube.com/watch?v=-QLt9Vb2Z2E&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=2">https://www.youtube.com/watch?v=-QLt9Vb2Z2E&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=2</a></p>
<p><b>Film and Idler Wheel Adjustments</b> (Video 3) - TRT: 4:37 <a href="https://www.youtube.com/watch?v=6nw3g6Fmh8I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=3">https://www.youtube.com/watch?v=6nw3g6Fmh8I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=3</a></p>
<p><b>Application Fail Sensor</b> (Video 4) - TRT: 1:16 <a href="https://www.youtube.com/watch?v=98frypBUVaM&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=4">https://www.youtube.com/watch?v=98frypBUVaM&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=4</a></p>
<p><b>Application Fail Sensor Machine Adjustment</b> (Video 5) - TRT: 0:52 <a href="https://www.youtube.com/watch?v=CHu6TAFv720&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=5">https://www.youtube.com/watch?v=CHu6TAFv720&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=5</a></p>
<p><b>Film Unwind and Sleever Placement</b> (Video 6) - TRT: 1:12 <a href="https://www.youtube.com/watch?v=D4vSzqHtO9U&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=6">https://www.youtube.com/watch?v=D4vSzqHtO9U&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=6</a></p>
<p><b>Applicator Wheel Adjustments</b> (Video 7) - TRT: 2:02 <a href="https://www.youtube.com/watch?v=FMHO_Zo1FEs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=7">https://www.youtube.com/watch?v=FMHO_Zo1FEs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=7</a></p>
<p><b>HMI Recipe Settings</b> (Video 8) - TRT: 3:09 <a href="https://www.youtube.com/watch?v=H-aG2zUGUb4&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=8">https://www.youtube.com/watch?v=H-aG2zUGUb4&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=8</a></p>
<p><b>Low Film Sensors</b> (Video 9) - TRT: 0:49 <a href="https://youtube.com/watch?v=SEyTfEBsOfs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=9">https://youtube.com/watch?v=SEyTfEBsOfs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=9</a></p>

<b>Threading the Film onto the Mandrel</b> (Video 10) - TRT: 1:45 <a href="https://www.youtube.com/watch?v=W7DOjhdg884&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=10">https://www.youtube.com/watch?v=W7DOjhdg884&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=10</a>
<b>Removing the Cutter Assembly</b> (Video 11) - TRT: 1:18 <a href="https://www.youtube.com/watch?v=XzVBpnWGB9I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=11">https://www.youtube.com/watch?v=XzVBpnWGB9I&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=11</a>
<b>Print Registration Sensor</b> (Video 12) - TRT: 1:26 <a href="https://www.youtube.com/watch?v=_ENR1kqDJWc&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=12">https://www.youtube.com/watch?v=_ENR1kqDJWc&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=12</a>
<b>Print Scan Mode, Clear Area Jump</b> (Video 13) - TRT: 1:14 <a href="https://www.youtube.com/watch?v=dOATg1xjSOg&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=13">https://www.youtube.com/watch?v=dOATg1xjSOg&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=13</a>
<b>Mandrel Installation</b> (Video 14) – TRT: 1:40 <a href="https://www.youtube.com/watch?v=hkHRfBnPzOM&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=14">https://www.youtube.com/watch?v=hkHRfBnPzOM&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=14</a>
<b>Overview of the Film Path</b> (Video 15) – TRT: 0:54 <a href="https://www.youtube.com/watch?v=uW8MAqHCsDs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=15">https://www.youtube.com/watch?v=uW8MAqHCsDs&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=15</a>
<b>Adjustments Using the HMI</b> (Video 16) – TRT: 2:21 <a href="https://www.youtube.com/watch?v=zDdNaqQZG-Q&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=16">https://www.youtube.com/watch?v=zDdNaqQZG-Q&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=16</a>
<b>Splicing and Threading Film</b> (Video 17) – TRT: 6:35 <a href="https://www.youtube.com/watch?v=0pfW68pUDo&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=17">https://www.youtube.com/watch?v=0pfW68pUDo&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=17</a>
<b>Timing Screw Installation</b> (Video 18) – TRT: 6:27 <a href="https://www.youtube.com/watch?v=YR6Y28mYHgo&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=18">https://www.youtube.com/watch?v=YR6Y28mYHgo&amp;list=PLU8tRvNk7d6uUKBqN3XvJOTIfP6GUeaqL&amp;index=18</a>

# User Guide Updates

Updates are regularly made to this User Guide and are immediately uploaded to the AFM website. Periodically check the link below (clickable in the pdf version of this User Guide) for updates to and access to the most current information about this system and best practices for operation and maintenance.



The revision number is always shown prominently on the inner cover page of Squid Ink User Guides:

Revised 1/23/24

P/N 4510009 – Rev B

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If your User Guide is a lower revision than what you see online, download the updated User Guide and use that going forward.

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# Warranty Statement

American Film & Machinery (AFM) warrants that all products it ships will be in good working order and free from defects in material and workmanship for a period of one year from the date of shipment by AFM and will conform to the published specifications for that product.

## Limitations

The warranty of AFM is contingent upon installation, operation, and maintenance of equipment under normal operating conditions. The warranty is void on equipment or parts: damaged by corrosion, improper use, accident, negligence or not operating within the specifications provided; damaged by fire, flood, earthquake, or such other causes beyond the control of AFM; that have been altered or repaired in any way changing the original performance and; that are normally expendable in the usual course of operation. Expendable items include, but are not limited to, heater elements, cutter blades and belts. The warranty period on each replacement equipment or part in fulfillment of the warranty on new equipment or parts shall be for the unexpired portion of the original warranty.

## Repairs

All in-house repairs are rigorously tested for optimum operation and performance and warranted to be, under normal and proper use, free from defects in material and workmanship for a period of 90 days from the date of service.

## Shrinking Quality

Shrinking quality achieved in a given application is dependent on the film, product, installation, material handling, and the maintenance provided. AFM makes no warranty that the shrinking quality achieved in an application will be the same as that achieved on a test piece in our demo facility.

## Shipping Policy

Customer pays all incoming shipping charges for replacement components. If the item is defective and under warranty, AFM will pay all return shipping charges via the least costly method. If expedited shipping is desired, the customer must furnish their shipping account number and shipping fees will be charged to that account.

## Exclusions

Damage due to tampering, abuse, improper adjustment, electrical interference, or the use of non-approved components will void any and all warranties by AFM and its distributors.

## Warranty Verification

If you believe that a product or component may be defective and may be covered by warranty, obtain a Return Material Authorization number by calling our technical support number (toll free at 1-800-835-9344, or 763-428-4846 or Fax: 763-795-8867) or e-mail: [info@afmsleeves.com](mailto:info@afmsleeves.com). Based on the recommendation from AFM technical support, replacement components may be shipped out via UPS Ground or similar method. If expedited shipping is desired, customer must furnish their shipping account and shipping fees will be charged to that account.

Customer is required to return the defective component to AFM. If, after 30 days, AFM hasn't received the defective component, the customer will be invoiced for the replacement component. If the returned

component is found to not be eligible for warranty, AFM will contact the customer, and the customer will be invoiced for the replacement component.

## **Warranty Within 60 Days of Invoice**

For warranty questions that take place within 60 days of the original invoice, AFM will allow cross-shipment of a replacement component to an end-user customer or AFM distributor. The customer will be invoiced for the replacement component 60 days after it ships. Upon receipt of the returned component, AFM will evaluate it and issue credit where necessary.

For components that have been misused or externally damaged, AFM will not issue credit, and will contact the customer to determine whether or not they want the component repaired and/or returned.

## **Warranty After 60 Days of Invoice**

For warranty questions that take place more than 60 days from the original invoice, AFM requires the end-user or AFM distributor to return the component to AFM for repair. Upon receipt of the returned component, AFM will evaluate it and repair as necessary.

Components that fall within our warranty policy will be repaired normally within 5 business days of receipt and returned to the customer via standard ground shipping at AFM's expense. If expedited shipping is required, the customer must furnish their shipping account number and shipping fees will be charged to that account.

For components that have been misused or externally damaged, AFM will contact the customer to determine whether or not they want the component repaired and/or returned.

## **Warranty Eligibility**

The warranty provided by AFM is only to the original buyer.

## **Limited Warranty**

THIS WARRANTY SHALL NOT APPLY IF ANY MODIFICATION, ALTERATION OR ADDITION IS MADE TO THE PRODUCT WITHOUT EASTEY'S PRIOR WRITTEN APPROVAL. FURTHERMORE, THIS WARRANTY DOES NOT APPLY TO PRODUCT DEFECTS DUE TO MISUSE, ABUSE, NEGLIGENCE, OR FAILURE TO FOLLOW RECOMMENDED PROCEDURES. ANY PRODUCT REPAIRED OR ALTERED BY PERSONS OTHER THAN AUTHORIZED AFM REPRESENTATIVES WILL NOT BE COVERED BY THIS WARRANTY. THIS WARRANTY DOES NOT APPLY TO CONSUMABLE ITEMS.

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# Technical Support

For assistance with installing, operating, or maintaining the LX-350, contact your authorized AFM reseller or AFM Technical Support.

Phone: 714-974-9006

Fax: 763-795-8867

Email: [info@afmsleeves.com](mailto:info@afmsleeves.com)

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