
Automated Stretch Wrapping Machine Film Tension Adjustment - Preventative Maintenance & Calibration

1.0 Maintenance Objective & Frequency

The objective of this procedure is to calibrate the film tension system on an automated stretch wrapping machine to ensure consistent load containment, minimize film breakage, and prevent premature wear on the pre-stretch rollers and film carriage components. Proper tension adjustment directly impacts wrapping quality, film usage efficiency, and machine reliability.

This PM is to be performed every 500 operating hours or quarterly, whichever comes first. Additional calibration is required whenever film type or gauge is changed, or if load containment failures are observed.

2.0 Lockout/Tagout (LOTO) & Safety

- **Electrical Isolation:** Disconnect main power at the disconnect switch and apply personal lock and tag. Verify zero voltage with a multimeter.
- **Pneumatic Isolation:** Close the air supply valve to the machine and bleed residual pressure from the system using the manual bleed valve.
- **Mechanical Lockout:** Ensure the film carriage is in the home position and the turntable is stationary. Chock the turntable if necessary.
- **PPE:** Wear safety glasses, cut-resistant gloves, and steel-toed boots. When handling film, be cautious of sharp edges on the film roll.

3.0 Required Tools, Parts & Lubricants

- Digital tension gauge (0-50 lbs range, with hook attachment)
- Torque wrench (0-100 in-lbs, 1/4 inch drive)
- Hex key set (metric, 2mm to 8mm)
- Flathead screwdriver (medium)
- Replacement film roll (same gauge as production)
- Clean lint-free cloths
- Isopropyl alcohol (99%) for cleaning rollers
- Lightweight machine oil (ISO 32) for pre-stretch roller bearings

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as per Section 2.0. Confirm all energy sources are isolated and tagged.
2. Open the film carriage access doors. Inspect the pre-stretch rollers for film residue, cuts, or wear. Clean rollers with isopropyl alcohol and a lint-free cloth.
3. Inspect the tension control mechanism (typically a pneumatic cylinder or spring-loaded dancer arm). Check for smooth movement and any signs of binding or leakage. Lubricate pivot points with ISO 32 oil if required.

4. Remove the existing film roll. Install a fresh film roll of the same gauge used in production. Thread the film through the pre-stretch rollers and tension dancer arm according to the machine's threading diagram.
5. Set the machine to manual mode (if applicable) or prepare for a static tension test. Ensure the film clamp is engaged and the film is secured to the load or a test fixture.
6. Attach the digital tension gauge to the film web between the pre-stretch rollers and the film clamp. Pull the gauge perpendicular to the film path to measure the static tension.
7. Compare the measured tension to the OEM specification (typically 10-25 lbs for standard stretch film). If out of range, adjust the tension control: for pneumatic systems, adjust the regulator; for spring-loaded systems, adjust the spring preload using the adjustment nut.
8. Re-measure tension after each adjustment. Repeat until the tension is within ± 2 lbs of the target value. Record the final setting.
9. Check the pre-stretch ratio setting (if adjustable). Verify it matches the film manufacturer's recommendation (typically 200-300%). Adjust the pre-stretch roller speed differential if necessary using the machine's control panel.
10. Inspect all film path rollers for free rotation. Replace any seized or damaged bearings. Torque all roller mounting bolts to 45 in-lbs using the torque wrench.
11. Close the film carriage access doors. Remove LOTO devices and restore power and pneumatic supply.

5.0 Verification & Return to Service

1. Run a test wrap cycle on a standard pallet load. Observe the film tension during wrapping—ensure no film breakage, excessive stretching, or loose wrapping occurs.
2. After the test cycle, inspect the wrapped load. The film should be tight, with no visible wrinkles or tears. The load should not shift when gently pushed.
3. Measure the film tension on the completed load using the tension gauge at three points: top, middle, and bottom. All readings should be within the OEM specification range.
4. If the test is successful, sign off on the PM work order in ServiceGrid. Record the final tension setting and any adjustments made in the maintenance log.
5. If issues persist, re-check the pre-stretch roller condition and tension control mechanism. Escalate to a senior technician if necessary.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.