

Automated Strapping Machine: Coil Change and Jam Clearing SOP

1.0 Maintenance Objective & Frequency

The objective of this procedure is to safely and efficiently replace an empty or broken strapping coil and clear any strap jams that occur within the strapping head, feed path, or tensioning assembly. Proper execution ensures consistent strap tension, prevents damage to the strapping head components, and minimizes production downtime. This procedure is performed on-demand when a coil runs out or a jam is detected, and should be reviewed during daily operator checks.

2.0 Lockout/Tagout (LOTO) & Safety

- **Electrical Isolation:** Disconnect main power to the strapping machine at the disconnect switch and apply a personal lock and tag.
- **Pneumatic Isolation:** Close the shut-off valve on the compressed air supply line and bleed any residual pressure from the system by actuating the manual bleed valve or cycling the tensioning cylinder.
- **Mechanical Lockout:** Ensure all guards and covers are in place before re-energizing. Do not reach into the strapping head area while the machine is powered.
- **Mandatory PPE:** Safety glasses, cut-resistant gloves (ANSI A4 or higher), and steel-toed boots.

3.0 Required Tools, Parts & Lubricants

- New strapping coil (correct width, gauge, and material per machine specification)
- Strap cutter (manual or pneumatic, as applicable)
- Flathead screwdriver (6mm shaft)
- Needle-nose pliers
- Teflon-based spray lubricant (e.g., Super Lube 21030 or equivalent)
- Clean lint-free rags
- Torque wrench (0-30 Nm range) with appropriate hex bit

4.0 Step-by-Step Maintenance Procedure

1. Perform full LOTO as described in Section 2.0. Verify zero energy state by attempting to cycle the tensioning mechanism manually (should not move).
2. Open the main access door or guard to expose the strapping head, coil mandrel, and feed path. Secure the door in the open position if a prop is provided.
3. If clearing a jam: Locate the jammed strap. Using needle-nose pliers and a flathead screwdriver, carefully work the strap free from the tensioning wheels, sealing head, and feed rollers. Cut the strap into manageable pieces with the strap cutter and remove all fragments. Inspect for any bent or broken components (e.g., feed roller springs, sealing blade).
4. If changing a coil: Remove the empty coil from the mandrel by releasing the coil retainer (usually a spring-loaded pin or threaded knob). Slide the coil off and dispose of it properly.

5. Inspect the mandrel and coil brake assembly for wear or debris. Clean with a lint-free rag. Apply a light coat of Teflon spray lubricant to the mandrel surface to reduce friction during coil rotation.
6. Mount the new coil onto the mandrel, ensuring the strap unwinds in the correct direction (typically clockwise when viewed from the front). Secure the coil retainer and verify the coil spins freely without binding.
7. Thread the strap through the feed path: guide the strap end through the entry guide, over the tensioning wheel, through the sealing head, and out the exit guide. Refer to the machine-specific threading diagram if available.
8. Manually rotate the tensioning wheel using a hex key or by hand (if accessible) to advance the strap approximately 300mm past the sealing head. Ensure the strap lies flat and is not twisted.
9. Close and secure all guards and access doors. Remove LOTO devices and restore pneumatic and electrical power.
10. Perform a dry cycle test: press the cycle start button and observe the strap feed, tension, and seal. Verify the strap is cut cleanly and the seal is formed without slipping. Adjust tension settings if necessary per the machine control panel.

5.0 Verification & Return to Service

1. Run three consecutive test cycles on a scrap product or test block. Confirm that the strap tension is consistent (within $\pm 10\%$ of the set value) and that the seal holds without slippage.
2. Inspect the strap path for any signs of rubbing, binding, or misalignment. Listen for unusual noises during operation (grinding, clicking, or squealing).
3. Verify that the coil brake engages properly when the strap is tensioned and releases when the cycle completes. Adjust brake tension per OEM specifications if needed.
4. Clean up any debris, strap offcuts, or lubricant residue from the work area. Dispose of used straps and empty coils in designated recycling bins.
5. Document the coil change and/or jam clearing in the maintenance log or ServiceGrid work order. Note any worn components observed and schedule replacement if necessary.
6. Return the machine to production. Inform the line supervisor that the strapping machine is ready for operation.

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.