

PU Foam Gasket Application Thickness Check

1.0 Maintenance Objective & Frequency

The objective of this procedure is to verify that the PU foam gasket dispensing system applies a consistent, specified thickness of foam gasket material to the workpiece. Inconsistent thickness can lead to seal failures, leaks, or material waste. This check ensures the dispensing parameters (pressure, speed, nozzle height) are within tolerance and the foam is curing correctly. This PM is to be performed at the start of each production shift and after any material change or nozzle replacement.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect main power to the dispensing robot and conveyor system. Apply personal lock and tag.
- Pneumatic Isolation: Close the main compressed air supply valve to the dispensing unit and bleed any residual pressure from the lines.
- Chemical Safety: Ensure adequate ventilation. Wear nitrile gloves and safety glasses to avoid skin/eye contact with uncured PU foam.
- PPE: Safety glasses, nitrile gloves, and closed-toe steel-toed boots are mandatory.

3.0 Required Tools, Parts & Lubricants

- Digital caliper (0-150mm range, 0.01mm resolution)
- Thickness gauge (feeler gauge set, 0.05mm to 1.00mm)
- Clean lint-free wipes
- Isopropyl alcohol (99%) for cleaning nozzle and test surface
- Test substrate (same material as production part, e.g., aluminum or plastic plate)
- PU foam gasket material (as per production batch)
- Torque wrench (if nozzle replacement is required, check OEM spec)

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as per Section 2.0. Ensure all energy sources are isolated and locked out.
2. Clean the dispensing nozzle and the test substrate surface with isopropyl alcohol and a lint-free wipe. Allow to dry completely.
3. If a nozzle replacement was performed, torque the nozzle to the OEM specification (typically 8-12 Nm) using the torque wrench.
4. Restore power and pneumatic supply. Remove LOTO devices. Perform a purge cycle to prime the dispensing system with fresh PU foam material.
5. Set the robot to dispense a test gasket on the clean test substrate using the current production program. Ensure the dispensing speed and pressure are set per the process specification.

6. Allow the dispensed foam gasket to cure for the specified time (typically 30-60 seconds, per material data sheet). Do not touch the wet foam.
7. Using the digital caliper, measure the gasket thickness at three points along the gasket length: beginning, middle, and end. Record each measurement.
8. Using the feeler gauge, verify the gasket height consistency across the width. Insert the feeler gauge between the substrate and the gasket at multiple points. The gasket should be uniform and not have high or low spots.
9. Compare the measured thickness to the process specification (e.g., $2.0\text{mm} \pm 0.2\text{mm}$). If any measurement is out of tolerance, proceed to Step 10. If all are within tolerance, skip to Step 11.
10. If out of tolerance, adjust the dispensing parameters: increase or decrease nozzle height by 0.1mm increments, or adjust the material flow rate via the pressure regulator. Repeat Steps 5-9 until thickness is within spec.
11. Clean the test substrate and nozzle with isopropyl alcohol. Dispose of the test gasket and any waste material per local regulations.
12. Document the final thickness measurements and any parameter adjustments made in the PM log or CMMS (ServiceGrid).

5.0 Verification & Return to Service

1. Run a full production cycle on a scrap part to confirm the gasket thickness remains consistent under normal operating conditions.
2. Visually inspect the gasket for any defects such as voids, bubbles, or uneven edges.
3. If the test part passes visual and thickness inspection, the equipment is cleared for production.
4. Remove all tools and cleaning materials from the work area. Ensure the LOTO devices are removed and the machine is in a safe state.
5. Sign off on the PM work order in ServiceGrid, including the recorded thickness measurements and any adjustments made.

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.