Moulder Cutterhead Runout Check & Calibration

1.0 Maintenance Objective & Frequency

The objective of this procedure is to verify and correct the radial and axial runout of the moulder cutterhead assembly. Excessive runout causes vibration, poor surface finish, accelerated bearing wear, and potential tool holder failure. This PM ensures the cutterhead rotates within OEM-specified tolerances (typically 0.001" or 0.025 mm TIR).

Frequency: Every 500 operating hours or quarterly, whichever comes first. Perform immediately after any cutterhead bearing replacement or spindle impact event.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect main power at the disconnect switch and apply personal lock and tag.
- Pneumatic Isolation: Close the main air supply valve and bleed residual pressure from the brake/clamp circuit.
- Mechanical Isolation: Ensure the cutterhead is at a complete stop and the spindle brake is engaged (if equipped).
- Mandatory PPE: Safety glasses, cut-resistant gloves, hearing protection (if running test cycle).

3.0 Required Tools, Parts & Lubricants

- 0.001" resolution dial indicator with magnetic base
- 0.0005" resolution test indicator (optional for high-precision check)
- Torque wrench (range 10-50 Nm) with appropriate hex or socket bit for cutterhead bolts
- Clean lint-free rags
- Isopropyl alcohol (99%) for cleaning
- Replacement cutterhead bolts (if any are damaged or stretched)
- Anti-seize compound (for bolt threads)

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO as per Section 2.0. Verify zero energy state by attempting to start the moulder.
2. Remove the cutterhead access cover and any dust hoods to expose the cutterhead assembly.
3. Clean the cutterhead body and spindle nose thoroughly with isopropyl alcohol and a lint-free rag. Remove all pitch, resin, and debris.
4. Mount the dial indicator on a rigid magnetic base attached to the machine frame or a non-moving part of the spindle housing.
5. Position the indicator plunger perpendicular to the cutterhead body (not on a knife or insert) near the outboard end. Preload the plunger by 0.010" and zero the dial.

6. Rotate the cutterhead by hand slowly through one full revolution. Record the maximum and minimum readings. Calculate Total Indicated Runout (TIR) = max - min. Acceptable TIR is ≤ 0.001" (0.025 mm). If TIR exceeds 0.002" (0.050 mm), proceed to step 7. Otherwise, skip to step 10.

7. If runout is excessive, check the cutterhead mounting bolts. Remove each bolt one at a time, inspect for damage or stretching, apply anti-seize, and re-torque to OEM specification (typically 35-45 Nm). Use a cross-tightening pattern.

8. Re-check runout as in step 6. If still excessive, remove the cutterhead from the spindle. Inspect the spindle taper and cutterhead bore for burrs, nicks, or debris. Clean with a fine stone if necessary. Reinstall and torque bolts.

9. If runout remains above 0.002" after cleaning and re-torquing, the spindle or cutterhead may be damaged. Tag the machine as "Out of Service - Requires Spindle/Cutterhead Inspection" and notify the maintenance supervisor.

10. Remove the dial indicator and magnetic base. Reinstall the cutterhead access cover and dust hoods. Ensure all fasteners are tightened.

5.0 Verification & Return to Service

1. Remove LOTO devices. Restore electrical and pneumatic power.

2. Run the moulder at idle speed (no feed) for 2 minutes. Listen for unusual vibration or noise. If any, stop immediately and investigate.

3. Run a test piece of scrap lumber at normal feed speed. Inspect the surface finish for washboarding, chatter marks, or uneven cut. Acceptable finish is smooth and uniform.

4. If the test piece is acceptable, sign off on the PM work order in ServiceGrid, noting the final TIR reading and any corrective actions taken.

5. If the test piece shows defects, re-check runout and repeat the procedure. If the issue persists, escalate to the maintenance supervisor.