

Moulder Feed Speed vs Knife Marks Reference Chart

1.0 Form Objective & Asset Scope

This reference chart and maintenance log is designed to document and verify the relationship between moulder feed speed (feet per minute) and the resulting knife marks per inch (KMPI) produced by the cutterhead. Proper KMPI is critical for achieving the desired surface finish and preventing tear-out or chatter marks. This form is used during setup, changeovers, and routine quality checks to ensure cutterhead speed and feed rate are within OEM specifications for the specific wood species and profile being run.

The chart applies to all moulder spindles (top, bottom, left, right, and universal) and is essential for reliability engineers to correlate feed speed adjustments with cutterhead RPM and knife count. Use this log to record actual readings and compare against the target KMPI for the job.

2.0 Administrative & Asset Details

Date: _____

Technician Name: _____

Machine ID / Asset Tag: _____

Moulder Make & Model: _____

Cutterhead Spindle (Top/Bottom/Left/Right/Universal): _____

Number of Knives in Cutterhead: _____

Cutterhead RPM (from tachometer or VFD readout): _____

Wood Species & Moisture Content (%): _____

Profile Description (e.g., S4S, tongue & groove): _____

3.0 Inspection / Parameter Checklist

- ☐ Pass ☐ Fail - Verify cutterhead RPM is stable and within 5% of target speed.
- ☐ Pass ☐ Fail - Record feed speed (FPM) from the moulder's digital readout or hand-held tachometer.
- ☐ Pass ☐ Fail - Calculate theoretical KMPI using formula: $(\text{RPM} \times \text{Number of Knives}) / \text{Feed Speed (FPM)}$.
- ☐ Pass ☐ Fail - Compare calculated KMPI to job specification (typical range: 8-20 KMPI for finish work).
- ☐ Pass ☐ Fail - Inspect a sample board for surface finish quality (no tear-out, chatter, or fuzz).
- ☐ Pass ☐ Fail - Measure actual KMPI on the sample board using a magnifying glass or KMPI gauge.
- ☐ Pass ☐ Fail - Check that feed speed does not exceed the cutterhead's maximum rated feed rate per OEM.
- ☐ Pass ☐ Fail - Verify that the knife projection is consistent (within 0.002 inches) across all knives.

☐ Pass ☐ Fail - Record any adjustments made to feed speed or RPM to achieve target KMPI.

☐ Pass ☐ Fail - Confirm that the chip load per knife is within acceptable limits (typically 0.010-0.030 inches).

4.0 Deficiencies & Work Order Generation

Issue Description (e.g., chatter marks, low KMPI, feed speed drift): _____

Cutterhead or Spindle Affected: _____

Root Cause (e.g., worn bearings, incorrect RPM, dull knives): _____

Parts Required (e.g., replacement knives, bearings, VFD module): _____

Work Order Number Generated: _____

Priority Level (Low/Medium/High/Critical): _____

5.0 Sign-off & Return to Operations

Maintenance Technician Signature: _____ Date: _____

Production Supervisor Review: _____ Date: _____

Quality Assurance Sign-off: _____ Date: _____

Reliability Manager Review (if deficiency found): _____ Date: _____

Regulatory Disclaimer: This maintenance log is a generic template. The end-user assumes all liability for validating all inspection parameters, PM frequencies, and tolerances against specific OEM machinery manuals before active shop floor deployment.