

## Mill Spindle Inspection Report

|   |                                |               |  |
|---|--------------------------------|---------------|--|
| Technician  |                                | Cell#         |  |
| Serial Number   |                                | Date          |  |
| Model   |                                |               |  |
| <b>Why is the Spindle being replaced?</b>   |                                |               |  |
| 1a. What is the symptom?  | Noise                          | Exceeds 140 F | Seized Alarm   |
| 1c. When does the symptom occur?  | Spindle Running Intermittently |               |  |
| 2. Is the spindle physically damaged?   | Yes                            | No            |  |
| 3. Describe the issue:  |                                |               |  |
|   |                                |               |  |
| <b>Mandatory Troubleshooting</b>  |                                |               |  |
| <i>Lubrication</i>  |                                |               |  |
| 4. Are there leaks around the sight glass?  | Yes                            | No            |  |
| 5. Did you see 1 to 3 drops of oil during the oil pump cycle?   | Yes                            | No            |  |
| <i>Spindle Condition</i>  |                                |               |  |
| <i>Inline Spindles</i>  |                                |               |  |
| 6. Has the spindle motor alignment been verified?   | Yes                            | No            |  |
| 7. Has the NCE gap been reset with the correct shim?  | Yes                            | No            | Shim dimension Value:<br>Axial Alignment Value:<br>Radial Alignment Value: |
| <i>Belted Spindles</i>  |                                |               |  |
| 8. Is the drive sprocket/belt in good condition?  | Yes                            | No            |  |
| 9. Is the encoder sprocket/belt in good condition?  | Yes                            | No            |  |
| 10. Has the belt tension been verified?   | Yes                            | No            |  |
| <i>Inline &amp; Belted Spindles</i>   |                                |               |  |
| 11. Look through the alarm history is there any Z-Axis servo Errors alarms generated?   | Yes                            | No            |  |
| 12. Has a vibration test been performed? If no, run a test and attach to service notification.  | Yes                            | No            |  |
| 13. Has a motor only vibrations test been performed? If no, run a test and attach to service notification.  | Yes                            | No            |  |
| 14. Has the spindle been balanced? If no, balance the spindle.  | Yes                            | No            |  |
| 15. Is the TSC union or coolant collector making noise?   | Yes                            | No            |  |
| 16. Is the spindle taper in good condition?   | Yes                            | No            |  |
| 17. Is the spindle fan working?   | Yes                            | No            |  |
| 18. Is the spindle fan vibrating?   | Yes                            | No            |  |
| 19. On machines equipped with TSC. Did you performed a Vibration analysis with the TSC Union/Adapter removed?   | Yes                            | No            |  |
| 20. Has the spindle to toolchanger alignment been verified?   | Yes                            | No            |  |
| <i>HSK Spindle Only</i>   |                                |               |  |
| 21. Has the push out been verified?   | Yes                            | No            |  |
| 22. Has the grippers been greased? If yes, what grease is being used?   | Yes                            | No            | Grease:  |
| <i>Drawbar Condition</i>  |                                |               |  |
| 23. Has the drawbar clamp force been checked? If yes, what is the force value?  | Yes                            | No            | Force: lb  |
| 24. If the spindle is belted with a carbide drawbar has the face runout been verified? If yes, what is the value?   | Yes                            | No            | Runout:  |
| 25. What is the drawbar shaft runout?   | Yes                            | No            |  |
| 26. Are the ball bearings and drawbar cup in good condition?  | Yes                            | No            |  |
| <i>Tool Holders Condition</i>   |                                |               |  |
| 27. Are the pull studs in good condition?   | Yes                            | No            |  |
| 28. Have the pull studs been torqued to spec?   | Yes                            | No            |  |
| 29. Are the correct pull studs and tool holders being used?   | Yes                            | No            |  |
| 30. Have the tool holders been balanced? If no, balance them.   | Yes                            | No            |  |
| <i>Spindle Deflection Test</i>  |                                |               |  |
| 31. Has the Spindle Deflection Test been performed? If yes, please what is the push, pull, and lost motion values? NOTE: Please only perform this if steps 1-30 have been performed and verified, and the machine is continuing to have surface finish issues. Total deflections should not exceed 0.0025 for 40 taper and 0.003 for 50 taper. <b>Do not add lost motion to total deflection.</b> | Yes                            | No            | Push deflection:<br>Pull deflection:<br>Lost Motion:                       |

**Notes/ Observations:**