



QualiTest® Diagnostics

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July 6, 2020

Milwaukee Tools
Greenwood, MS

The following is a summary of findings from the July 2020 monthly vibration survey of the Heat Treat Blower Motors. Please let us know if there are any questions or comments.

QualiTest® uses a four step rating system for defects.

Class I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

Class II: Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

Class III: Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

Class IV: Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

Hi-Speed Industrial Service tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.

Heat Treat Motors

Heat Treat Motor 1

There did not appear to be any abnormal vibration in this unit this survey. No actions necessary at this time.

Heat Treat Motor 2

Electrical vibrations can be seen in the motor spectra. Overall amplitude is higher on #2 compared to #1. Highest vibration appears to be at 120 HZ. or 2 x line frequency. This is typically due to a variation in air gap between stator and rotor. We will monitor this closely. Rated as a **CLASS I** defect.

Abbreviated Last Measurement Summary

Database: Milwaukee Tools.rbm
Area: HEAT TREAT SYSTEMS

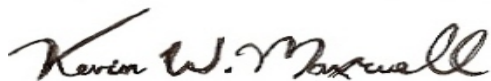
| MEASUREMENT POINT | OVERALL LEVEL | HFD / VHFD |
|--------------------------------|---------------|------------|
| ----- | ----- | ----- |
| MOTOR #1 - HEAT TREAT MOTOR #1 | (24-Jun-20) | |
| | OVERALL LEVEL | 1K-20KHz |
| MOH | .038 In/Sec | .085 G-s |
| MOV | .050 In/Sec | .142 G-s |
| MIH | .0097 In/Sec | .225 G-s |
| MIV | .0075 In/Sec | .302 G-s |
| MIA | .011 In/Sec | .157 G-s |
| MOTOR #2 - HEAT TREAT MOTOR #2 | (24-Jun-20) | |
| | OVERALL LEVEL | 1K-20KHz |
| MOH | .120 In/Sec | .146 G-s |
| MOV | .095 In/Sec | .128 G-s |
| MIH | .013 In/Sec | .238 G-s |
| MIV | .014 In/Sec | .266 G-s |
| MIA | .020 In/Sec | .120 G-s |

Clarification Of Vibration Units:

Acc --> G-s RMS
Vel --> In/Sec PK

As always, it has been a pleasure to serve Milwaukee Tools Greenwood, MS. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III



QualiTest® **Diagnostics**

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