

### INTRODUCTION

The Metravi VT-150 Vibration Meter is a reliable and easy to use, hand-held, condition inspection instrument; a fundamental tool of predictive maintenance on the plant floor. It provides vibration measurement, built-in machine alarm indication, bearing status check facility and ambient temperature readings.

The Metravi VT-150 enables plant maintenance technicians to monitor their machines, find potential problems in advance, to prevent failures & breakdowns and ensure machine reliability.

### FEATURES

- Built-in analysis function.
- Analysis results displayed on the screen at the press of a button.
- With ISO standard analysis function.
- Large buttons that are easy to press even with gloves on.
- Practical, easy-to-use vibrometer with diagnosis function.
- Three measurement modes such as acceleration, speed and displacement.

### FUNCTIONS

- Velocity in mm/s RMS.
- Acceleration in g RMS.
- Displacement in  $\mu\text{m}$  Peak-Peak.
- Vibration Evaluation as per ISO10816-3.
- Bg - Hi Frequency Acceleration in g RMS.
- Bv - Hi Frequency Velocity in mm/s RMS.
- Bearing Status Check (by using rules of thumb).
- Non-contact Infrared Temperature in  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$  with Laser Pointer.



### TECHNICAL SPECIFICATIONS

FUNCTION / FEATURE	SPECIFICATIONS
Display	Monochromatic LCD (128x64 px)
Sensors	IEPE Accelerometer, 100mv/g, Integral 80 cm Cable, BNC Connector
Accuracy	< $\pm 5\%$
<b>VIBRATION</b>	
Acceleration Range	0-20g, Peak Frequency 10-12kHz
Velocity Range	0-200mm/s RMS, Frequency 10Hz-1kHz
Displacement Range	0-2000 $\mu$ m, Peak-Peak Freq. 10Hz-1kHz
<b>BEARING STATUS</b>	
Bg	0-20 g RMS Freq. Range 1kHz-12 kHz
Bv	0-200 mm/s RMS Freq. Range 1kHz-12 kHz
<b>ALARM INDICATIONS</b>	Vibration Evaluation for velocity measure: ISO10816-3 Bearing status check for BG and BV by rule-of-thumb
<b>TEMPERATURE</b>	
IR Temperature Range	-20°C to 120°C or -5°F to +250°F
Accuracy	$\pm 2^\circ\text{C}$
Resolution	1°C
Laser Guide	Red, <1mW. IEC 60825-1 compliant
Distance to Sighting Ratio	8:1 (Recommend distance range: < 20 cms)
<b>POWER SUPPLY</b>	
Battery	Lithium rechargeable battery, 3.6V 1700 mAh
Recharge Time	3 hours approx.
Operation Time	>50 hours continuous
Mains Charger	AC 100-240 V, 50/60 Hz input; 4.2 V DC 600 mA output
In-Car Charger	DC 12-24V input; 4.2V DC 600mA output
<b>ENVIRONMENT</b>	
Operation Temperature	-10°C to +50°C
Storage Temperature	-20°C to +60°C
Ingress Protection	IP64 - Dust-tight and splash-resistant
Electromagnetic Compatibility	2004/108/EC
Dimensions	115 x 75 x 25mm (LxWxH)
Weight	230 gms (including battery)

## Bearing status check for BG and BV using rule-of-thumb methods

In practical condition monitoring (especially when no analyzer or advanced tools are available), engineers often use BG (Bearing Goodness) index and BV (Bearing Vibration / Velocity) values as quick indicators of bearing health. Rule-of-thumb checks are meant for screening, not final diagnostics.

Here's a simplified guide:

### 1. BG (Bearing Goodness) – Overall Condition Index

- BG is typically given in % (0–100) by instruments like portable vibration meters/analyzers.
- It indicates how close the bearing is to failure compared to a reference “healthy” signature.
- ◆ Rule of Thumb for BG:
  - 80–100% → Good condition (bearing healthy, no immediate concern).
  - 60–79% → Satisfactory / Acceptable (some wear present, plan inspection in next shutdown).
  - 40–59% → Unsatisfactory (early defects likely, increase monitoring frequency).
  - Below 40% → Alarm / Critical (bearing nearing failure, replacement recommended).

### 2. BV (Bearing Vibration / Velocity) – mm/s RMS

- Based on ISO 10816 guidelines (commonly used rule of thumb for rotating machines).
- Measures overall vibration velocity of the machine/bearing.
- ◆ Rule of Thumb for BV (general industrial machines, ≤15 kW, 600–1800 RPM):
  - ≤ 2.8 mm/s RMS → Good (Normal)
  - 2.8 – 4.5 mm/s RMS → Satisfactory (Monitor closely)
  - 4.5 – 7.1 mm/s RMS → Unsatisfactory (Plan corrective action soon)
  - > 7.1 mm/s RMS → Alarm / Unacceptable (Immediate action required)

