VIBRATION METER - ANALYSER - BALANCER
SHOCK PULSE BEARING TESTER
ROUTE CONDITION MONITOR
WITH TEMP / NOISE MONITORING

107-VF

Vibration, Velocity, Displacement, Acceleration, RPM, Frequency, Balancing, FFT, TWF, Route Data Collection, Temperature, noise, ISO 10816 modes, Shock Pulse & Kurtosis Bearings Testing

1070, Street No. 3, New Chand Mohalla, Gandhi Nagar, Delhi - 110031

+91 9711075595 +91 9711075595 mechtechglobal18@gmail.com www.mechtechglobals.com

ALVIB sistemas

MECH TECH GLOBAL

Reliable – Robust – Reasonable

VIBRATION ANALYZER DATA COLLECTOR 107VF

Overview

The 107VF Vibration Analyzer Balancer & Shock Pulse Bearing Tester is a compact yet powerful instrument designed for comprehensive machinery diagnostics. It measures overall vibration parameters, displays FFT spectra for in-depth rotating machinery analysis, and evaluates vibration severity in compliance with ISO 10816 standards. The device enables machine condition monitoring through route-based data collection, facilitating trend analysis and predictive maintenance. Users can easily exchange route and data files via email for seamless collaboration. Additionally, it assesses bearing condition using the Shock Pulse method and performs noise measurements. Designed for simplicity, the analyzer includes free firmware updates and comes with advanced data management and reporting software, ensuring efficient diagnostics and maintenance workflows.

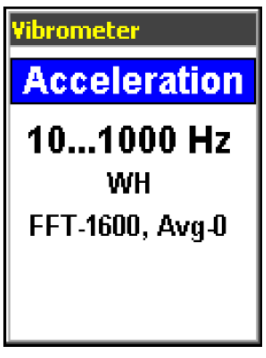
- **Time Waveform Analysis**
- **Spectral Analysis of Vibration (FFT)**
- **Route and Off Route Data Collection**

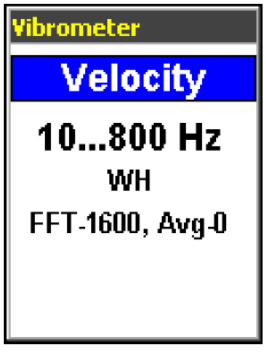
Different Versions of 107VF

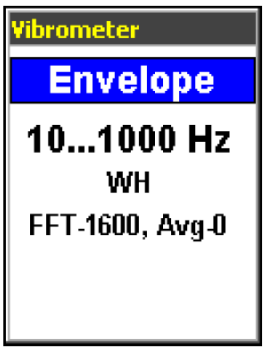
Being Modular, this instrument can be deployed in various configurations to meet specific requirements. It can operate as standalone units for basic functions or be combined into multi-functional systems for specialized applications, enhancing efficiency and performance. Additionally, the modular approach allows for customized cost optimization.

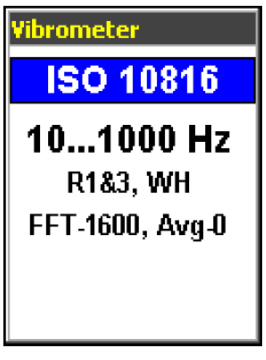
The Represent Bearings tester function in 107VF-BE is based on shock pulse measurement (SPM) and Kurtosis measurement. This feature is optional and can be added to any version of this particular model.

System Version	107VF	107VF-T	107VF-T2	107VF-B	107VF-B	107VF-BE
FFT Analyzer, Vibration meter**	+	+	+	+	+	✓
Optical tachometer**		+	+	+	+	✓
IR Thermometer			+			✓
Single plane balancing				+		✓
Extended balancing function					+	✓









Variants

Standard functions:

- FFT Spectrum
- TWF
- Route and off route data collections
- Conspect Data Collection software

Modular Hardware functions:

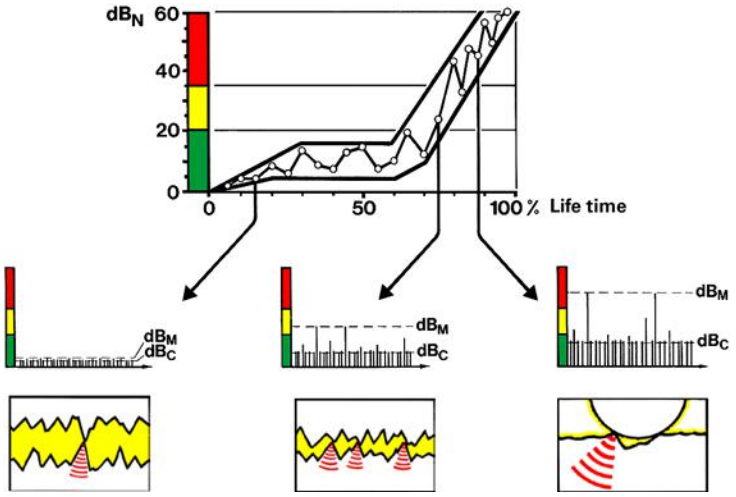
- 1 to 4 plane Balancing
- Temperature measurement
- Speed/RPM measurement
- Audio output to headphone (30 HZ-20kHZ)
- Motor Current Signature Analysis (Current clamp 30, 60, 200, 600, 2000Amp)
- Bearing Condition Assessment by Shock Pulse method
- **Advance software – VibAnalyst™**

SHOCK PULSE & KURTOSIS BEARING ANALYSIS

SHOCK PULSE MEASUREMENT

The principle of Shock Pulse Analysis is based on:

1. The dBi value indicating the condition of a new, properly installed, and lubricated bearing. As defects in the bearing develop, the amplitude of shock pulses increases. Value exceeding the dBi characterizes the damage and is used to assess the condition of the bearing:
2. The carpet value dBc characterizes the state of lubrication. For example, when measuring the impact acceleration amplitude of a well-lubricated and properly mounted bearing, the dBm value will be slightly greater than dBc.



As defects in the bearing develop, the amplitude of shock pulses increases. Value exceeding the dBi characterizes the damage and is used to assess the condition of the bearing:

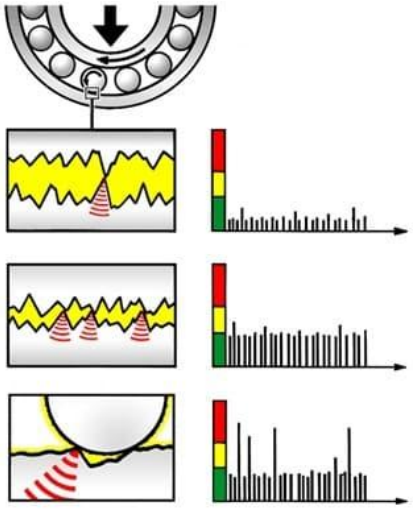
- **0..20 - good condition**
- **20..35 – satisfactory condition**
- **>35.. - Poor condition, risk of failure**

OPERATING PRINCIPLES

Distinguishes and measures two characteristic values of the shock pulse amplitude – the carpet value - dBc, and the maximum - dBm values.
Amplitude of the impact acceleration representing maximum values - dBm, relates to bearing damage, and the value of dBc depends on the state of lubrication which increases with lack of lubrication. Graphical representation in time helps to monitor the health and to predict the condition of bearing. Measurement results can be stored in the device memory.

Features

- Fast, easy, and reliable diagnosis of bearing condition.
- Easy-to-understand condition evaluation in:
  green - yellow - red scales
- Precision analysis of oil film condition in the interface between the outer and inner races
- Spectrum Analysis to verify the source of high shock pulse



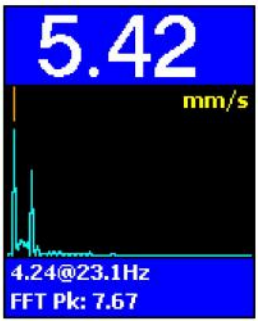
Kurtosis Advantage

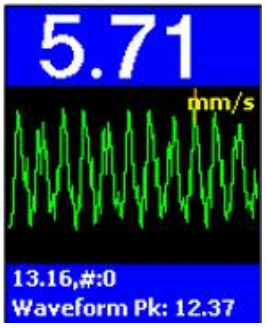
The generation of defects leads to a change in the shape of the probability density curve p(x) and, accordingly, to a change in the numerical value of the kurtosis coefficient E. The more developed the defect, the sharper the density curve Following threshold values of the kurtosis coefficient were established:

- ***Ku < 3 – corresponds to the good condition of the bearing;***
- ***Ku > 3 – the bearing can be operated until the next replacement;***
- ***Ku > 5 – the bearing is not allowed to be used.***

SPECIFICATIONS

- **Inputs:** IEPE or charge-type accelerometers with known sensitivity, switchable. Optical RPM transducer with IR pyrometer sensor
- **Vibration measurement range:**
  - **Acceleration:** 200 m/s2
  - **Velocity:** 200 mm/s
  - **Displacement:** 2000 uM
- **Frequency range:** 1...10000 Hz
- **Speed measurement range:** 20 to 20,000 rpm ±1 rpm
- **FFT spectrum resolution:** 400, 800, 1600 lines
- **Data Collection:** Route or Off-Route
- **AD conversion:** 24 bits
- **Dynamic range:** 106 dB
- **Accuracy:** ±5%
- **Shock pulse measurement range:** 99 dBa
- **Kurtosis Measurement:** Bearing Condition Indicators ***Green, yellow and red***
- **Temperature measurement:** IR (-80°C to 350°C)
- **Noise measurement**
  - **Frequency range:** 30Hz to 20 kHz
  - **Head Set:** Steriotype
- **Data storage:** 4GB micro SD card, built-in
- **PC interface:** USB
- **Display:** color, sunlight-readable 128x160 dots
- **Battery:** Li-Po rechargeable, each charge lasts up to 8 hrs continuous operation
- **Operating Temperature:** 0°C to 50°C
- **Storage Temperature:** -20°C to 60°C
- **Relative Humidity:** up to 80%
- **Dimensions:** 132 x 70 x 33 mm
- **Weight:** 150 g





STANDARD DELIVERY

- **AC102-1A accelerometer, incl. cable 1.8m, magnet for curved surface mount**
- **ConSpect software and User's Manual**

- **Vibration Analyser**
- **battery - LiPo**

USB charger with cable,

Accessories for Modular functions

Non-contact optical tachometer, IR thermometer

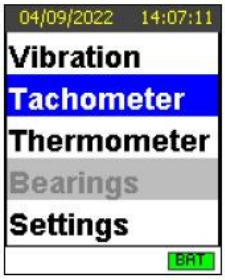
Stereotype Head Set

carry case

OPTIONAL FEATURES

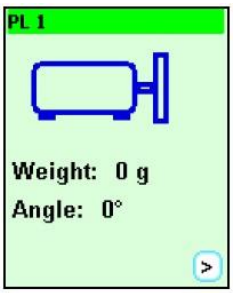
Thermometer (-T2 version)

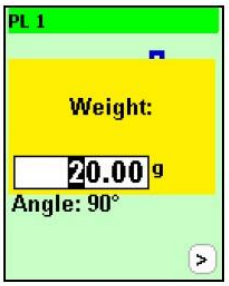
Tachometer (-T versions)



Balancing overview

in-situ balancing

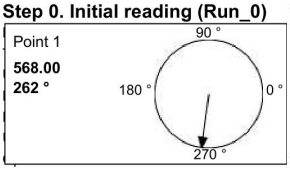




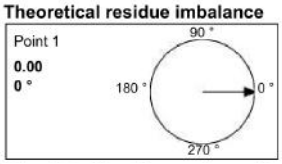
Built-in balancing reports

Plane	Point	0_Run		Theoretical residue	
		Amp.	Deg	Amp.	Deg
1	1	567.9969	262°		

Step 0. Initial reading (Run_0)

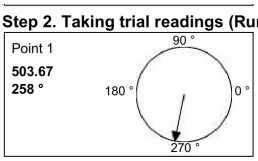


Theoretical residue imbalance



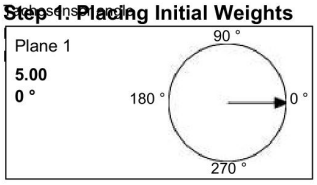
Trial_Run	
Amp.	Deg
503.6707	258°

Step 2. Taking trial readings (Run_NN)

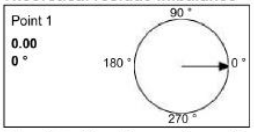


Initial Wght Info		Run_Final Value	
Wght	Deg	Amp.	Deg
5			

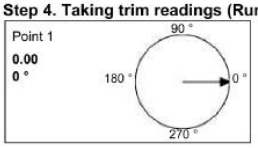
Step 1. Placing Initial Weights



Theoretical residue imbalance



Step 4. Taking trim readings (Run_Final)



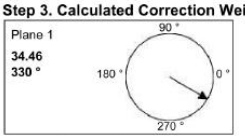
Compens. Value	
Amp.	Deg
503.6707	258°

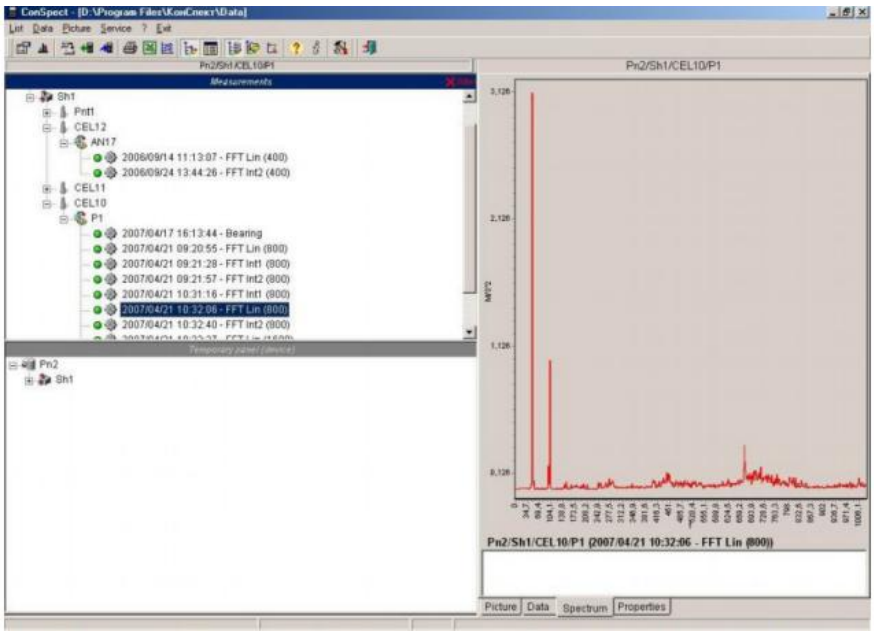
Influence Coefficients	
Amp.	Deg
14.6145	108°

230307_114634 - Balancing
No
M/S^2
1
1
1
0
0
0
07.03.2023 11:46:34

Correction Wghts Info	
Wght	Deg
34.4639	330°

Step 3. Calculated Correction Weights





Plant1/Shop_A1/CEL10/P1	
Parameter	Value
Name	2007/04/21 10:32:06 - FFT Lin (800)
Template	No
Measuring mode	M/S^2
Integrater mode	Lin
Averages	Avg.: 2
Averaging	Frequency
Averaging type	Exponential
Booster	Manual
Sensor sensitivity	14,5 pKl
Booster koeff.	4
Start mode	Free + 0 ms
Trigger	External
Window type	Hamming
Range	10..1027
Points count	800
Common level	RMS = 4,2437
Tracking analysis	No
Phase	No
Synchro*K	0
Creation date	21.04.2007 10:32:06

Tel: +91-8800047150, Mobile: 9711075595, E-mail: mechtechglobal18@gmail.com