107VF

Vibration Analyzer
User's Manual

2021

CONTENT

General

Safety Precautions

To prevent possible electrical shock, fire, personal injury or the device damage:

• Carefully read user's manual.

• Do not place sensor on the objects which exposed to high voltages. These voltages could cause personal injury or death.

• The Analyzer could not be used in potentially explosive environments.

• Take measures to prevent cables and straps become entangled by rotating part of machines at measurement site.

• Do not expose 107VF parts to heavy impacts, high humidity and extreme temperature.

• Do not try to open the display unit – this can damage the system, and your after-sales service warranty will come void

Vibration measurement and balancing involves measurement on rotating machines. Always keep a safe distance to rotating parts and secure transducers and transducer cables from rotating parts.

Balancing involves mounting of trial and balancing weights on the rotor. Always secure the start switch with a locker and also use the emergency switch for double safety before working with the rotor.

This is especially important when the machine is remote controlled.

ALVIB SISTEMAS SL, cannot take responsibility for any accidents on people and machines.

Heed all warnings and recommendations to prevent data loss, data inaccuracy, damage to the instrument, or injury to yourself!

EC DECLARATION OF CONFORMITY

Manufacturer: ALVIB Sistemas S.L., VAT: ES B10840346
Escorpora 24, 17252, Sant Antoni de Calonge, Spain
Product name: 107VF
Description: Single-channel vibration analyzer and balancer
Models:

107VF, 107VF-T, 107VF-T2, 107VF-BE, 107VF-B, 107VF-B1, 107VF-B2

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- 2014/30/EU – Electromagnetic Compatibility (EMC Directive)
- 2011/65/EU – Restriction of Hazardous Substances (RoHS), including amendment (EU) 2015/863

References to the relevant harmonized standards used:

EMC: EN 61326-1:2013, EN 55011:2016/A1:2017, EN 61000-6-2:2019, EN 61000-6-4:2019
RoHS: EN IEC 63000:2018

Additional information:
The product is battery-powered measurement equipment intended for industrial use.

Signed for and on behalf of:
Place of issue: Sant Antoni de Calonge, Spain]
Date: 1 July, 2022
Name: Oleg Ivanov
Position: Director
Company: ALVIB Sistemas S.L.
Signature:

Overview

The **107VF Vibration Analyzer** is a compact yet powerful instrument designed for comprehensive vibration diagnostics of rotating machinery. It supports measurement of overall vibration parameters, detailed FFT spectrum analysis, and on-site evaluation in accordance with **ISO 10816** standards.

The device also enables **field balancing** of rotating equipment, **route-based condition monitoring**, and **data collection** for predictive maintenance. All vibration data is stored in **waveform**, **FFT**, and **CSV** formats, ensuring full compatibility with post-processing tools and external analysis software.

Measurement routes and data files can be conveniently exchanged via **email**, making the 107VF particularly suitable for use at **remote or distributed sites**.

Additional functions such as **tachometer**, **infrared thermometer**, and **bearing tester** are available as optional modules. The device also features **built-in PDF report generation** and **SVG file export** for advanced visualization. The analyzer is **simple to operate**, supports **free firmware upgrades**, and comes with **free data management and reporting software** for efficient analysis and documentation.

Kit Content

The 107VF kit includes:

- 107VF display unit;
- accelerometer, incl. cable 1.5m, magnet for curved surface mounting;
- Optical probe, magnetic stand (-T, -T2, -B versions);
- USB wall charger;
- USB cable;
- ConSpect software and User's Manual on the device drive;
- Carry case.

Specifications

Inputs – IEPE or charge type accelerometers with known sensitivity, switchable. Optical RPM transducer with IR pyrometer sensor (optional)

AD conversion – 24 bits

Dynamic range – 106 dB

Frequency range – 1…10000 Hz

Vibration measurement range (*depends on used accelerometer)**:**

Acceleration – 200 m/s^2

Velocity – 200 mm/s

Displacement – 2000 uM

Accuracy – ±5%

Balancing program – up to 4 Planes, up to 8 Points

Temperature measurement range – -70°C to 380°C

Accuracy – ±0.5% (0…+60°C), ±1% (-40…+120°C), ±2% (-70…+180°C), ±4% (-70…+380°C)

Tachometer measurement range – 10…200,000 rpm

Accuracy – ±0.1% and ±1rpm

FFT spectrum resolution – 400, 800, 1600 lines

Data storage – 4GB micro SD card, built-in

PC interface – USB

Display – color, sunlight readable 128x160 dots

Battery – Li-Po rechargeable, up to 8 hrs continuous operation

Operating Temperature – 0°C to 50°C

Storage Temperature – -20°C to 60°C

Operating Humidity -

Dimensions – 132 x 70 x 33 mm

Weight – 150 g

Measurement functions and features

Vibration Mode – Measures overall levels of vibration acceleration, velocity, and displacement, as well as FFT spectra. Supports both route and off-route measurements.

Tachometer – Measures rotational speed using a contactless optical sensor. Results are displayed in revolutions per minute (RPM) and hertz (Hz).

IR Thermometer – Performs non-contact temperature measurement of objects. Results are displayed in degrees Celsius (°C) and Fahrenheit (°F).

Balancing – Performs measurements and calculations of correction masses for balancing rotating machinery.

Bearing Tester – Provides quick assessment of bearing condition based on shock pulse analysis and Kurtosis evaluation.

PDF Reports – Built-in function for saving measurement data and results as PDF reports.

Operation

Keyboard

– press and hold for 3 sec to turn device ON, short press to turn OFF

– Enter, confirm selection, start measurement

– navigation arrow keys

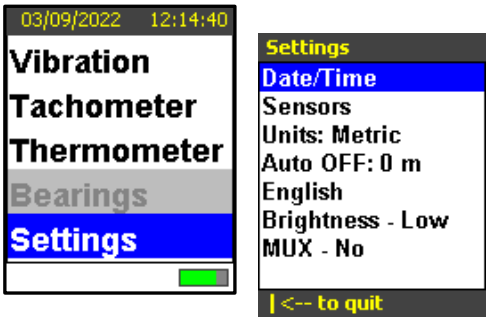
– Menu

– backspace, quit

– option key

Settings

This menu is used to setup:



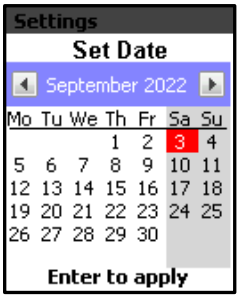
- **Date/Time**
- **Sensors** parameters
- **Units** Metric/Imperial units
- **Auto OFF** delay
- **English** interface language
- **Brightness** Low/Mid/High display brightness
- **MUX** input multiplexer to use triaxial sensors (optional)

Date/Time

Use arrow keys  to set date.

Hold  then press  or  for month decrement/increment.

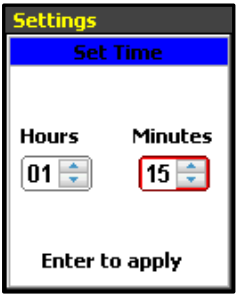
Confirm by  when correct date is set.



Use  keys to set minutes and hours.

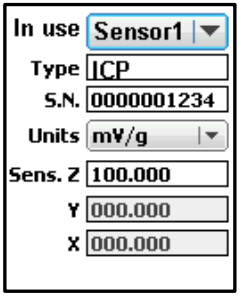
Use  key to switch focused field. Focused field is indicated by red frame.

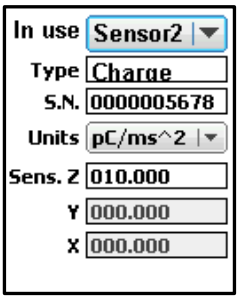
Confirm by  when correct time is set.



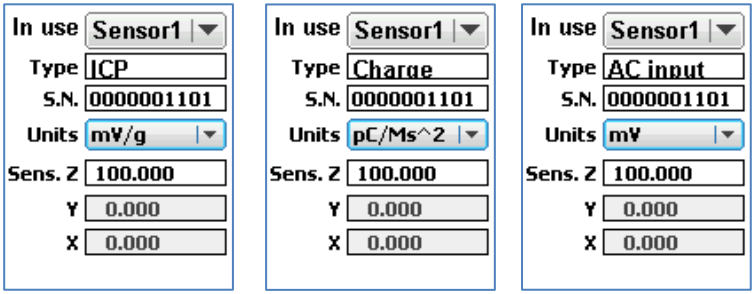
Sensors

Use  keys to choose sensor, which will be used for measurements.





Units - Drop down menu offers three input types – IEPE (mV/g), charge type sensors (pC/ms^2) or AC output (mV) sensors:



Confirm choice by  key.

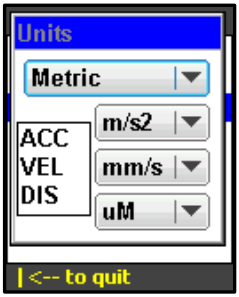
S.N. and **Sensitivity** fields are editable.

Use  key to choose field to edit.

Then use arrow keys  to edit the field value.

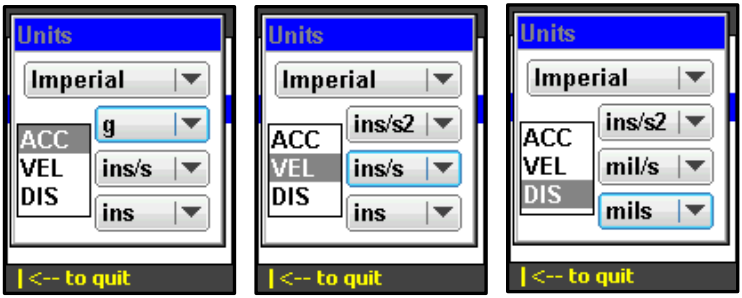
Units

Metric/Imperial units setup



Use  to switch between Metric/Imperial units.

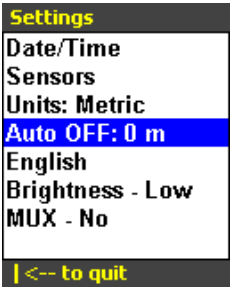
Use  key to choose units for Acceleration, Velocity, Displacement

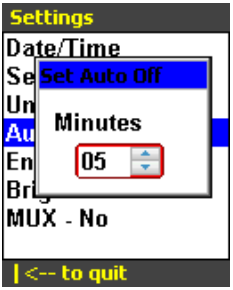


Auto OFF

Use keys to set auto OFF delay (minutes).

Press or key to confirm and quit menu.



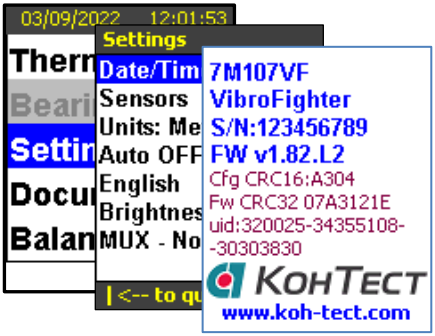


License key

To enable the functionality, the license key must be entered:

- Turn device ON
- Press sequentially , ,
- Use to tick the functions for the provided license key
- Press key
- Set the license key using
- Press to apply

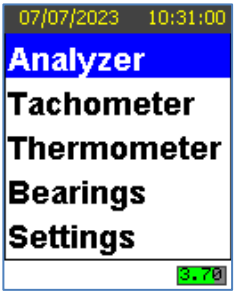
To request a license key:



- Turn the device ON
- Enter Settings menu, then press F1
- Take a photo of the UID screen
- While the device is still on the UID screen, connect it to a PC via USB cable and copy the **sysInfo.sys** file (Note: *sysInfo.sys* is a **system file**. Make sure **"Show hidden files"** is enabled in your PC's File Explorer)
- **Send** both the **photo of the UID screen** and the **SysInfo.sys** file to the **license key provider**.

Vibration

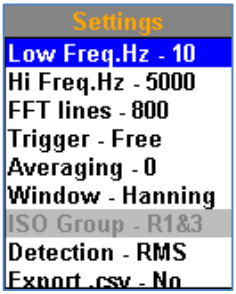
The Analyzer measures vibration parameters including **Acceleration**, **Velocity**, and **Displacement**. When operating in **ISO 10816 mode**, the measurement results are automatically evaluated against the built-in vibration severity classification table in accordance with **ISO 10816-3**.



Use  keys to choose measurement mode:

Vibration measurement settings

Press  key to enter Settings menu.



Use  keys to select a parameter.

Use  keys to change the selected parameter value.

Parameters Description:

Low Freq – Lower frequency limit. Selectable values: **1 Hz**, **2 Hz**, **10 Hz**.

Hi Freq – Upper frequency limit. Available ranges:

200 – 10 000 Hz for *Acceleration*

200 – 5 000 Hz for *Velocity*

200 – 800 Hz for *Displacement*

FFT Lines – FFT spectrum resolution. Options: **400**, **800**, **1600 lines**.

Trigger – Trigger source. Options: **Free**, **Int**, **Ext**, **Strob**. *Note: The **Strob** mode requires the optional **P77STR stroboscope** accessory.*

Averaging – Number of measurements to average. Adjustable from **0 to 64**. *Note: 0 disables averaging (OFF).*

Window – Weighting function applied to FFT analysis. Options: **Hanning**, **Rectangular**.

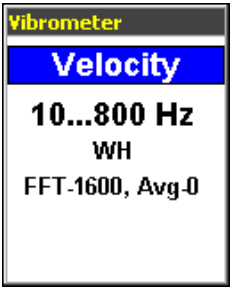
ISO Group – Machine group selection according to **ISO 10816-3**: **R1 & 3**, **F1 & 3**, **R2 & 4**, **F2 & 4**.

Detection – Measurement detection mode: **RMS**, **Pk**, **P-P**.

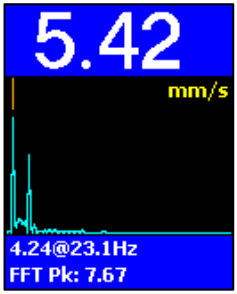
Export .csv – Enable or disable automatic data export to CSV file: **No**, **Yes**.

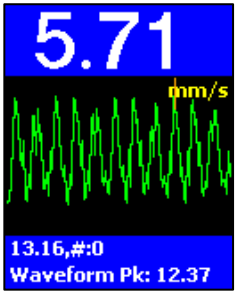
Taking measurements

Select the desired vibration parameter (e.g., **Velocity**).
Adjust the measurement settings if necessary, then press the  key to begin the measurement.



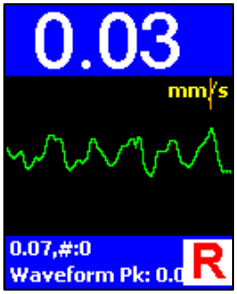
Press the  key to toggle between **FFT Spectrum** and **Waveform** display modes.





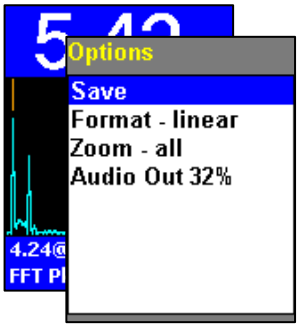
Press the  key to **pause or resume** the measurement.

Press the  key to **start or stop** WAV file recording of the measured waveform.
The **flashing red "R"** indicator shows that recording is in progress



When measurement is stopped:

Press key for **Options**:



Save – Saves the measurement data. Press the key to proceed to *My Documents*.

Format – Select amplitude display format:

Linear or *Logarithmic*. Use the keys to change the parameter value.

Zoom – Adjust frequency axis zoom level. Use the keys to modify the parameter value.

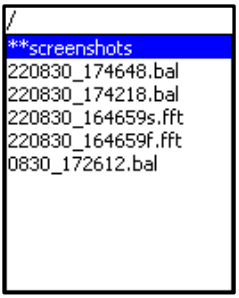
To save measurements

Press the key to end the measurement.

Press the key.

Select **Save**, then press the key.

The device will open the **My Documents** menu.



Browse to the desired destination folder, then press the key to save the measurement.

The device automatically stores **two files** for each measurement:

FFT spectrum file

Waveform file

If the *CSV export* option is enabled, a **.csv** file is also created.

Each saved record is also appended to a **PDF report** that consolidates all measurements within the same folder (measurement location).

The device retains the **path of the last saved files** for quick access during subsequent saves.

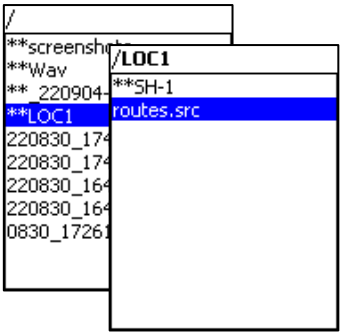
To create a **new folder**, press the F1 key. The system assigns a **date/time stamp** as the default folder name.

To create folders with **custom names**, connect the device to a PC via **USB** (as an external flash drive) and use the PC keyboard to name and organize folders.

Route-based measurements

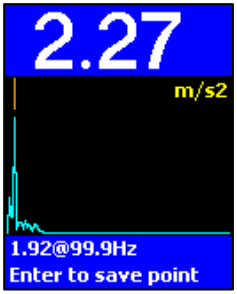
Using ConSpect software create route file and download it to the device

Go to **Documents** menu, move cursor to the route file **routes.src** and press key



Use to browse route points

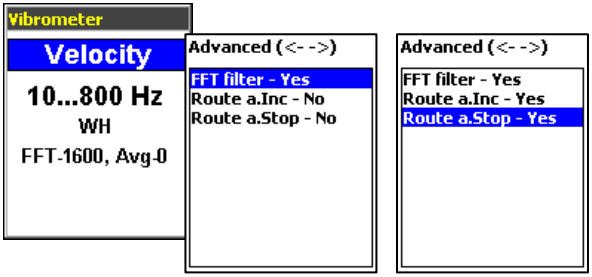
Attach sensor at the measurement point and press key. Device takes measurement with preset parameters and saves files to proper destination folder



Route points navigation can be preset to manual or autoincrement.

While in the Vibrometer menu:

Press F1 key, then use  to set desired options.

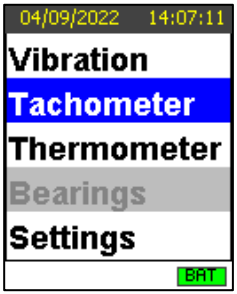


Tachometer (-T, -T2, -B versions)

Connect the optical probe to the device

Enter the **Tachometer** menu

Aim the **optical probe** at the rotating machine part where the **reflective tape** is attached.



Press key to start/stop measurement.

Device displays measurement result in **RPM** and **Hz**

To save measurement:

- Stop measurement then press key
- Browse to the destination folder, then press key to save the file

To save measurement

- press key to stop measurement
- press F1 key
- browse to a destination folder
- press key to save measurement file
- press key one more time to return to measurement menu

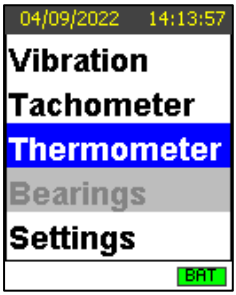
Thermometer (-T2 version)

Connect optical probe to the device

Enter **Thermometer** menu

Aim optical probe to the machine.

Press  key to start/stop measurement.



Device displays measurement result in °**C** and °**F**

To save measurement:

- Stop measurement, then press  key
- Browse to the destination folder, then press  key to save the file

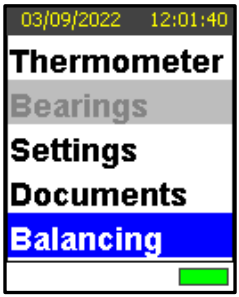
To save measurement

- press  key to stop measurement
- press  key
- browse to a destination folder
- press  key to save measurement file
- press  key one more time to return to measurement menu

Balancing

Setup Balancing parameters

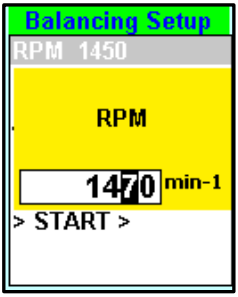
Enter Balancing function.



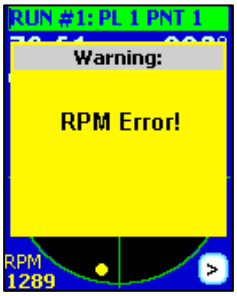
Use  to choose parameter to setup.

Use  to change parameter value.

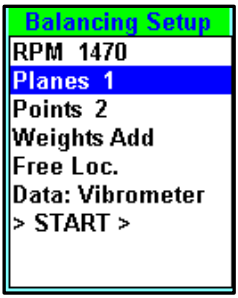
Set **RPM** of the machine at which balancing will be conducted.

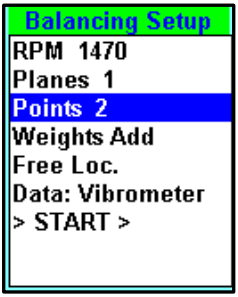


If actual RPM and balancing RPM differs by more than 5% device will display error message while measurement is in progress

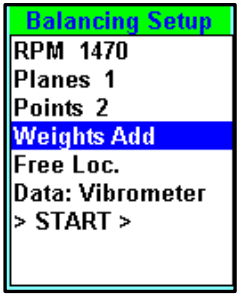


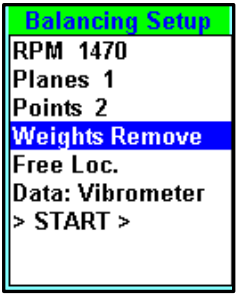
Set number of **Planes** (where correction weights will be attached) and number of **Points** (where the accelerometer will be measuring the vibration levels).



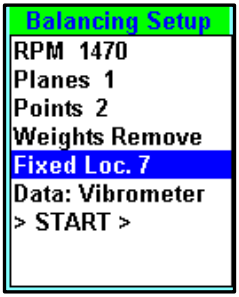


Balancing weights can be preset to **Add** or **Remove**.





Correction weights can be attached at any angular position - **Free Loc.** Or at **Fixed Locations** (e.g., at the fan blades). Number of Fixed locations can be set in the range of 3 to 18 locations.



*Balancing program assumes that angles (and fixed location numbering) are aways calculated **counter wise** machine rotation direction!*

Press  to start measurements.

Balancing in one plane

One-Plane Balancing Procedure Overview

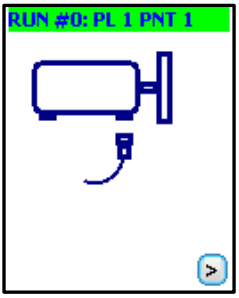
- Run 0 - the initial vibration (unbalance) measurement
- Run 1 – vibration measurement with trial weight attached in plane A
- Stop the machine, attach calculated correction weight at the specified angle on balance planes A.
- Trim run 1… – Start the machine and measure residual vibration level. Once measurement stopped device will calculate trim weight, to further reduce the vibration. If residual vibration is higher than target value – attach trim weight and perform another trim run. Repeat trim runs until required vibration level is achieved.

Example: Balancing procedure flow (one plane, one point)

Set Balancing parameters.

Press 

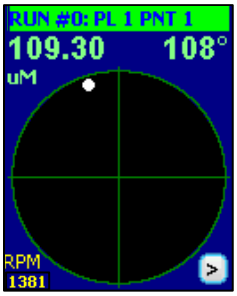
Place accelerometer at measurement point



Press 

Wait reading to stabilize.

Press 

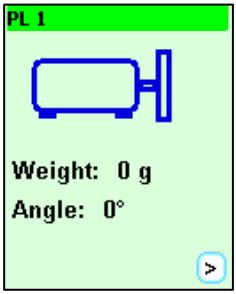


Confirm reading is accepted.

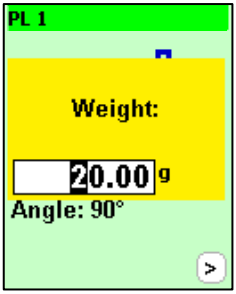
Press 

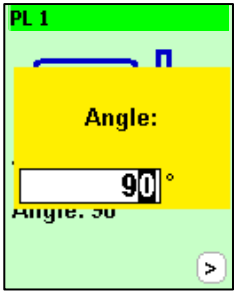
Stop the machine.

Attach the trial weight.



Press  to enter trial weight and angle, at which it is attached

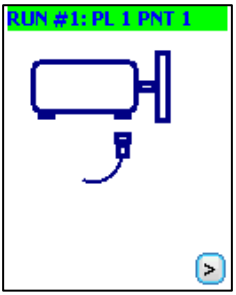




Press 

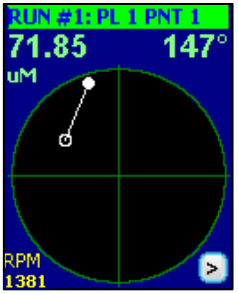
Start the machine.

Press  to start measurement.



Wait reading to stabilize.

Press 



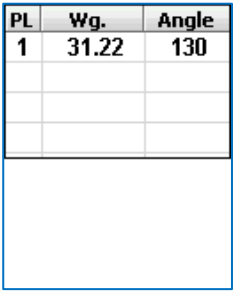
Confirm reading is accepted.

Press 

Stop the machine.

Device displays calculated correction weight to be attached to eliminate disbalance.

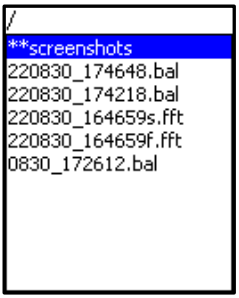
Balancing report can be saved from the result screen.



PL	Wg.	Angle
1	31.22	130

Press enter **My documents** menu

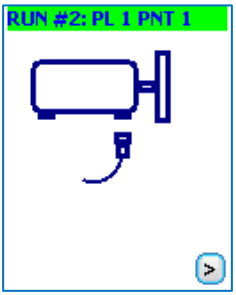
Browse to the destination folder, then press key save measurement.



Residual vibration can be measured now.

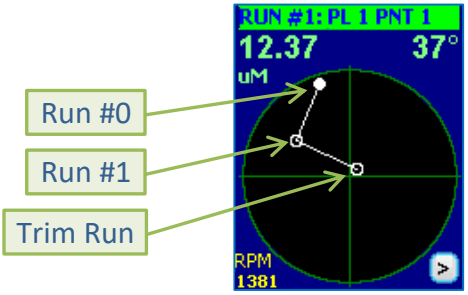
Start the machine.

Press to start measurement.



Wait reading to stabilize.

Press

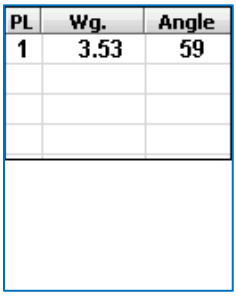


Confirm reading is accepted.

Press

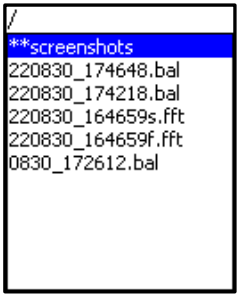
Stop the machine.

Device displays calculated trim weight to be attached to further eliminate disbalance.



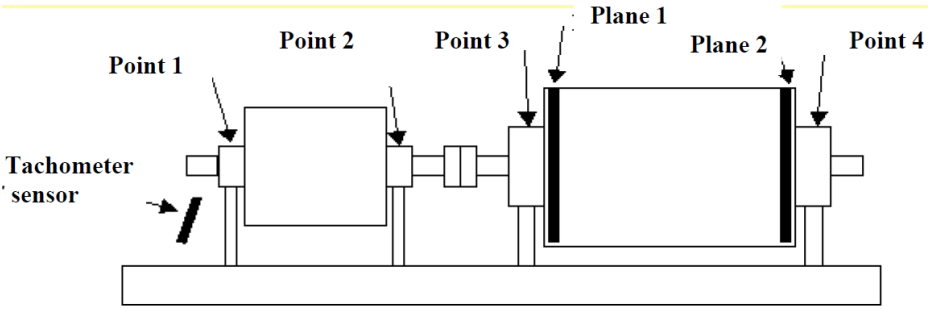
Press  to enter **My documents** menu

Browse to the destination folder, then press  key save measurement.



Example: Balancing procedure flow (two planes, four points)

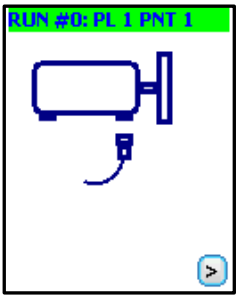
There are two planes were the correction weights to be attached, and four points at which vibration levels will be measured.



Set Balancing parameters.

Press 

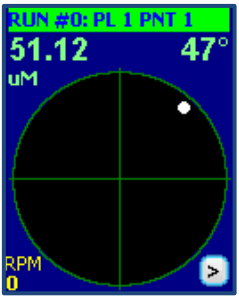
Place accelerometer at measurement point #1



Press 

Wait reading to stabilize.

Press 

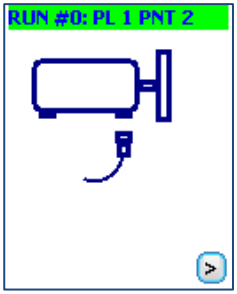


Confirm reading is accepted.

Press 

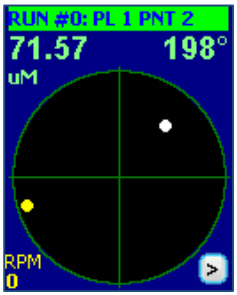
Place accelerometer at measurement point #2

Press 



Wait reading to stabilize.

Press 

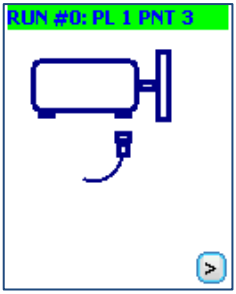


Confirm reading is accepted.

Press 

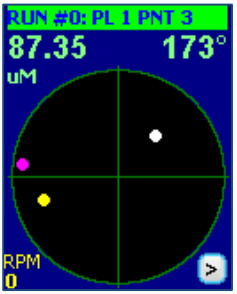
Place accelerometer at measurement point #3

Press 



Wait reading to stabilize.

Press 

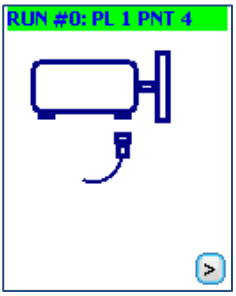


Confirm reading is accepted.

Press 

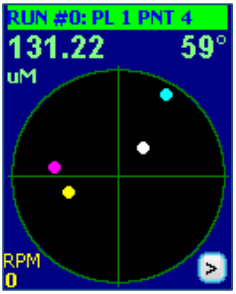
Place accelerometer at measurement point #4

Press 



Wait reading to stabilize.

Press 

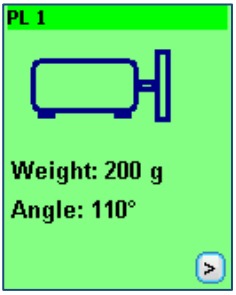


Confirm reading is accepted.

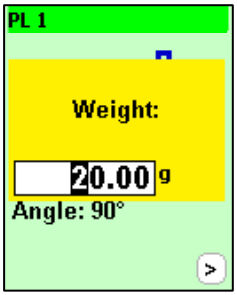
Press 

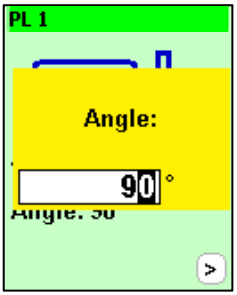
Stop the machine.

Attach the trial weight.



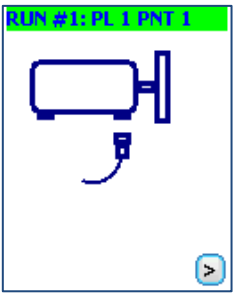
Press *to enter trial weight and angle, at which it will be attached*





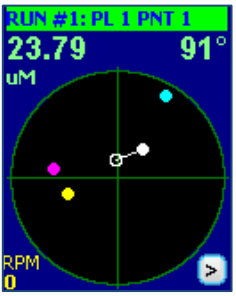
Press

Run the machine and take measure vibration levels at all four points when trial weight is attached at the Plane #1.



Place accelerometer at measurement point #1

Press



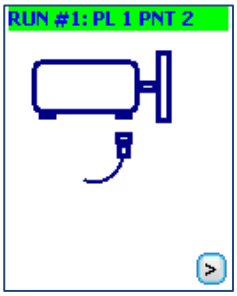
Wait reading to stabilize.

Press

Confirm reading is accepted.

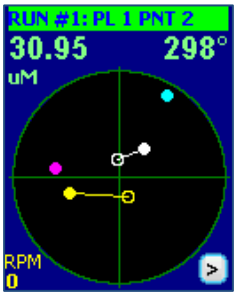
Press

Place accelerometer at measurement point #2



Press

Wait reading to stabilize.

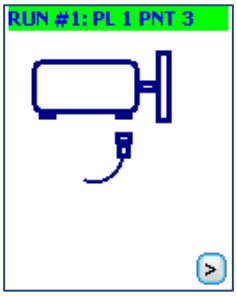


Press

Confirm reading is accepted.

Press

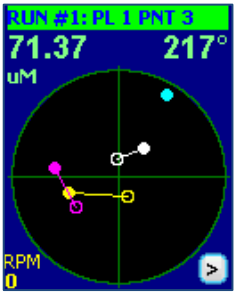
Place accelerometer at measurement point #3



Press

Wait reading to stabilize.

Press

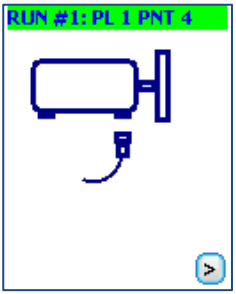


Confirm reading is accepted.

Press

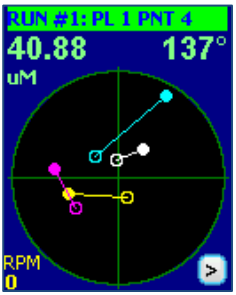
Place accelerometer at measurement point #4

Press



Wait reading to stabilize.

Press



Confirm reading is accepted.

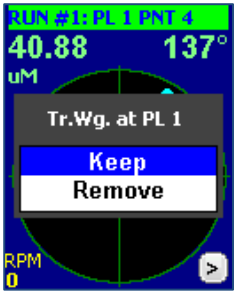
Press 

Stop the machine as measurements at all points is finished.

Now one needs to decide whether to keep or remove the trial weight from Plane #1.

E.g. trial weight can remain attached if vibration levels decreased.

Chose option and press 



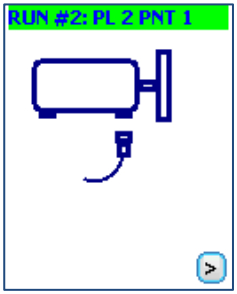
Now attach the trial weight at the Plane #2

Enter trial weight and angle, at which it will be attached.

Run the machine and take measure vibration levels at all four points when trial weight is attached at the Plane #2.

Place accelerometer at measurement point #1

Press 



Wait reading to stabilize.

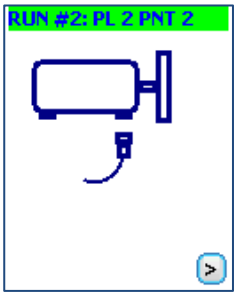
Press 

Confirm reading is accepted.

Press 

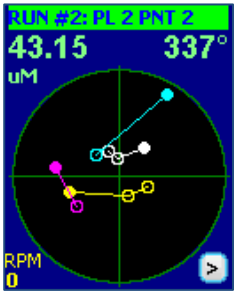
Place accelerometer at measurement point #2

Press 



Wait reading to stabilize.

Press 

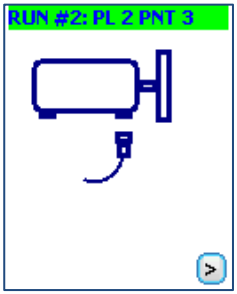


Confirm reading is accepted.

Press 

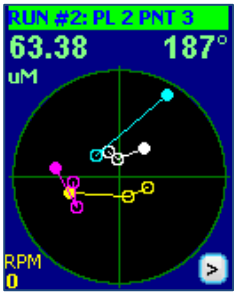
Place accelerometer at measurement point #3

Press 



Wait reading to stabilize.

Press 

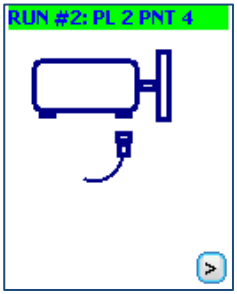


Confirm reading is accepted.

Press

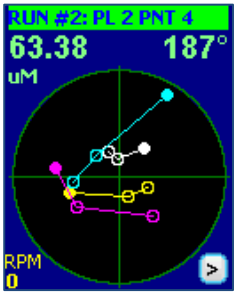
Place accelerometer at measurement point #4

Press



Wait reading to stabilize.

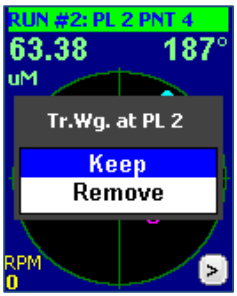
Press



Confirm reading is accepted.

Press

Stop the machine. Choose to keep or remove the trial weight at the Plane #2



Press 

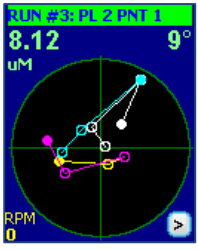
Device displays calculated correction weights to be attached at Planes #1 and #2 to eliminate disbalance.

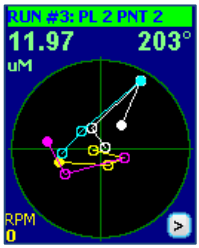
Balancing report can be saved from the result screen.

PL	Wg.	Angle
1	56.93	241
2	98.04	187

Residual vibration can be measured now.

Run the machine and take measurement of residual vibration levels at all four points.





Stop the machine.

When residual vibration measurement is finished, the device calculates trim weights, which need to be attached to further reduce vibration of the machine.

Balancing work can be stopped as acceptable levels are reached.

PL	Wg.	Angle
1	10.00	30
2	14.12	72

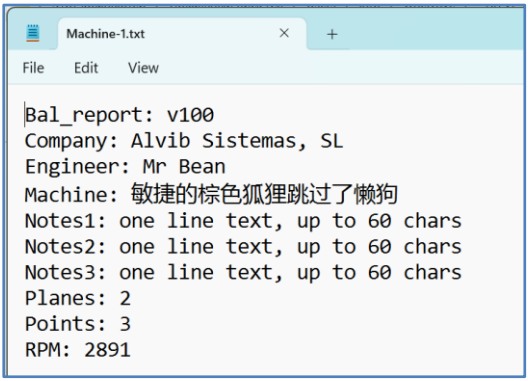
To save balancing report to SVG file

Enabling the Feature:

Copy the folders **“Logo”** and **“Templates”** to the root directory of the **107VF** drive.
These folders contain the necessary configuration and template files supplied with the device.

Replace the existing **Logo.bmp** file with your company logo, ensuring the **file name remains unchanged**.

Adding Text Comments:
Since the 107VF does not include an alphanumeric keypad, comments are added via text files.

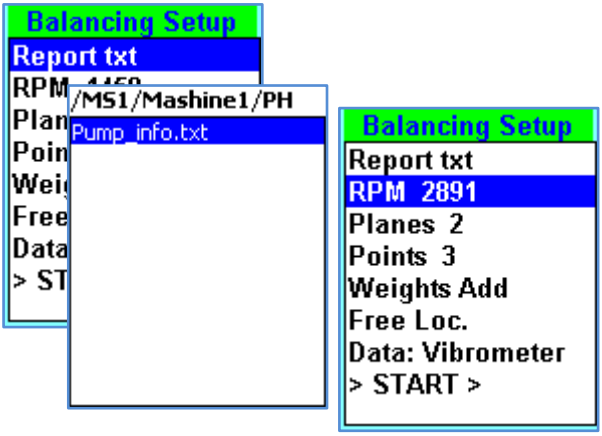


Open the provided template file **Machine-1.txt** in **Windows Notepad**.

Enter the desired comments while keeping all **tag lines ending with a colon (:)** unchanged.

Multiple text files (e.g., *Machine-2.txt*, *Machine-3.txt*, etc.) can be created to store information for different machines as needed.

Text files may be stored anywhere on the 107VF drive — for example, within the folder corresponding to the machine’s measurement



points. The file extension **.txt** must remain unchanged, while the file names may be freely defined.

Procedure:

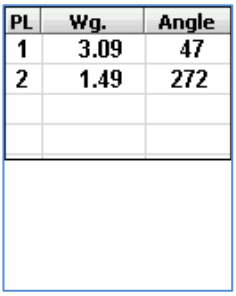
Position cursor at **Report txt**

Press  or 

Browse to the txt file location.

Press  key.

Proceed the Balancing procedure as usual.



In the result screen press  , browse to the destination folder, then press  key to save measurement report file.

Report File Handling

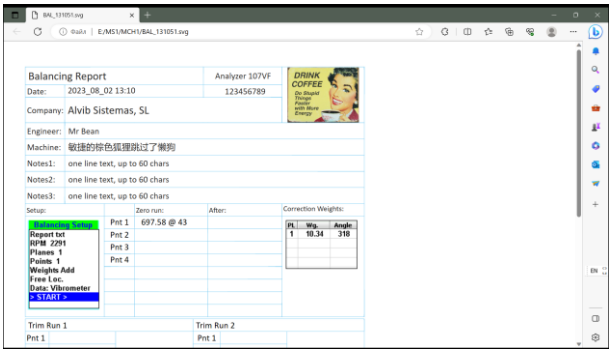
Report files are now saved in **SVG** format.

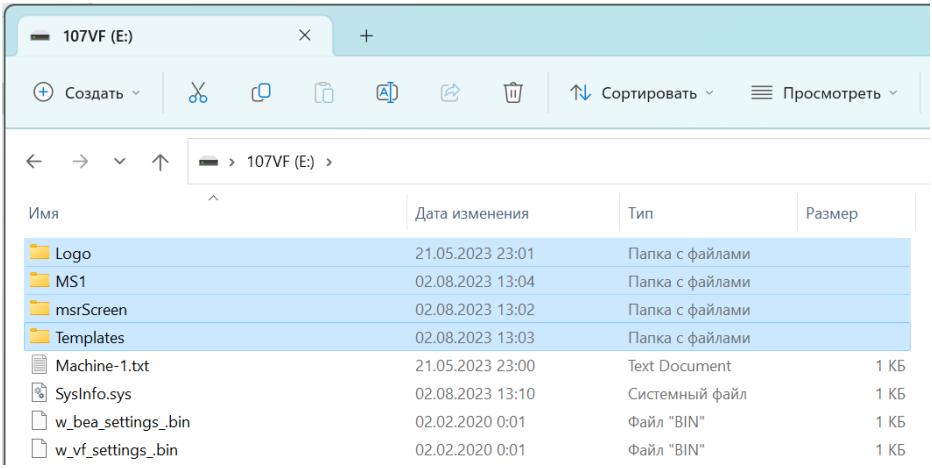
These files can be opened with any standard web browser, such as **Microsoft Edge**. Once opened, the report can be **printed** or **saved as a PDF**.

To transfer report files from the device to a PC:

Create a folder named **ReportsAV** on the PC drive. *(The folder name "ReportsAV" is mandatory.)*

Copy all report folders from the device into the **ReportsAV** folder.


BAL_131051.svg
E:/MS1/MCH1/BAL_131051.svg
Balancing Report
Analyzer 107VF
Date: 2023_08_02 13:10
123456789
Company: Alvib Sistemas, SL
DRINK COFFEE
Engineer: Mr Bean
Machine: 敏捷的棕色狐狸跳过了懒狗
Notes1: one line text, up to 60 chars
Notes2: one line text, up to 60 chars
Notes3: one line text, up to 60 chars
Setup:
Balancing Setup
Report txt
RPM 2291
Planes 1
Points 1
Weights Add
Free Loc.
Data: Vibrometer
START
Zero run:
After:
Pnt 1 697.58 @ 43
Pnt 2
Pnt 3
Pnt 4
Correction Weights:
Pl. Wg. Angle
1 10.34 318
Trim Run 1
Trim Run 2
Pnt 1
Pnt 1


107VF (E:)
Создать
Сортировать
Просмотреть
107VF (E:)
Имя
Дата изменения
Тип
Размер
Logo 21.05.2023 23:01 Папка с файлами
MS1 02.08.2023 13:04 Папка с файлами
msrScreen 02.08.2023 13:02 Папка с файлами
Templates 02.08.2023 13:03 Папка с файлами
Machine-1.txt 21.05.2023 23:00 Text Document 1 КБ
SysInfo.sys 02.08.2023 13:10 Системный файл 1 КБ
w_bea_settings_.bin 02.02.2020 0:01 Файл "BIN" 1 КБ
w_vf_settings_.bin 02.02.2020 0:01 Файл "BIN" 1 КБ

Bearings tester function

Bearings tester function is based on shock pulse measurement and Kurtosis measurement.

Shock Pulse measurement

The most favorable conditions for the operation of bearings occur when their components are separated by a film of lubricant that prevents collisions. However, manufacturing defects, in-service damage, contamination, lack or absence of lubrication create conditions for collisions of bearing elements, resulting in acoustic vibrations in a wide range of frequencies in the bearing body – so called shock pulses.

Even a new bearing is a source of shock pulses from the moment it is commissioned, for which the amplitude of the shock acceleration is denoted by dBi.

The dBi value indicates 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:

0..20 - good condition

20..35 – satisfactory condition

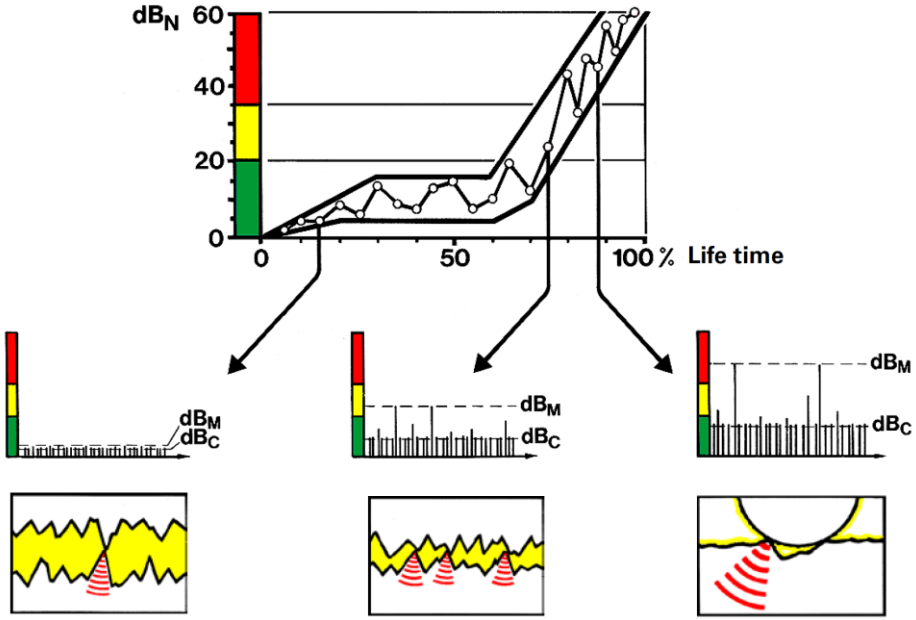
>35.. - Poor condition, risk of failure

Depending on the type of damage in the bearing, the nature of the forced oscillations recorded by the device also changes.

When measured, device allows you to distinguish and measure two characteristic values of the shock pulse amplitude – the carpet value - dBc, and the maximum - dBm values.

The carpet value dBc corresponds to frequent collisions of bearing elements and 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.

If we measure the amplitude of the impact acceleration of a damaged bearing, they are detected by the maximum values - dBm, while the value of dBc depends on the state of lubrication and can increase greatly with a lack of lubrication, accompanied by frequent metal-to-metal contacts. An example of a change in the values of these values is shown in Fig.



An increase in the carpet dBc value can be caused not only by deterioration in the condition of the lubricant, but also by other causes, such as misalignment of the shafts in the coupling of the drive. It is quite easy to distinguish between these phenomena: if the shafts are skewed, the same pattern will be observed for the bearings on both sides of the coupling.

When measuring the amplitude of the shock acceleration of gearbox bearings, the result obtained may be affected by shocks occurring in the gearing, which can be transmitted to the bearings. However, in most cases, the noise of the gears is so low that it does not affect the measurement results.

In the case of impacts resulting from gear defects, the maximum value of dBm increases dramatically on both sides of the gear at the same time.

The greatest effect of monitoring the technical condition of bearings is achieved when recording the measurement results with the construction of a graphical dependence in time. At the same time, it becomes possible to predict the technical condition. An example of processing measurement results is given in Table 1 (page 14).

Measurement results can be stored in the device memory.

Kurtosis

In the case of a serviceable bearing, the probability density of stationary random vibrations that occur in a serviceable bearing due to frictional forces can be considered to be in accordance with the normal law. The appearance of defects accompanied by impacts between the bearing bodies and raceways 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**. Moreover, the more developed the defect, the sharper the density curve becomes.

Based on the results of the analysis of a large sample of defective and non-defective bearings, the following threshold values of the kurtosis coefficient were established:

Ku < 3 – corresponds to the good condition of the bearing;

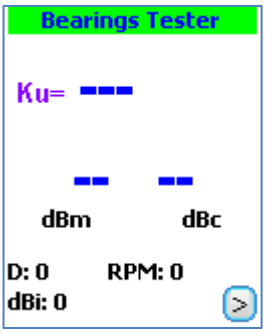
Ku > 3 – the bearing can be operated until the next replacement;

Ku > 5 – the bearing is not allowed to be used.

The statistic index Kurtosis is insensitive to changes in rotational speed and load and does not require knowledge of the bearing size to be diagnosed and repeated measurements. The kurtosis coefficient is sensitive to the lubrication condition of the bearing, so it can also be used to diagnose plain bearings. The Kurtosis measurement cannot identify a defect, so it is recommended to use it at the stage of preliminary assessment of the technical condition of bearings, and to identify and localize defects, use more accurate methods of vibration diagnostics.

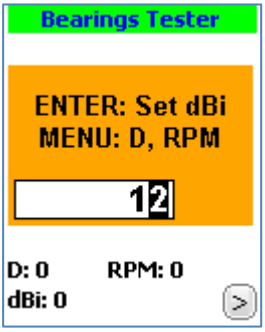
Operation

- Enter **Bearings** menu:



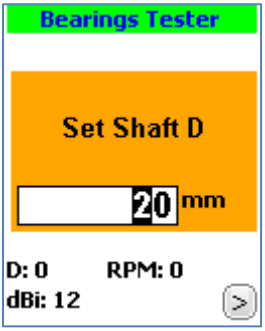
To set dBi

- press key
- Use keys to set dBi value
- Confirm by key



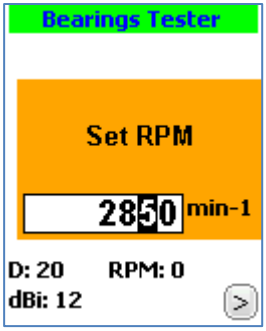
If dbi value is unknown just enter the bearings shaft diameter and RPM and device will calculate the dBi value:

- Press key
- Use keys to set the shaft diameter
- Confirm by key



then

- Use  keys to set the RPM
- Confirm by  key

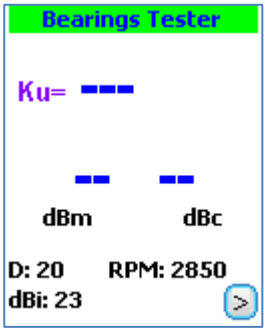


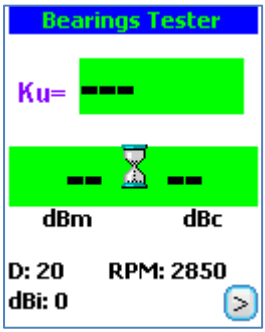
Measurement

- connect P77 probe to the device socket
- press the probe tip against the measuring point with a pressure force of about 1 kg

- press  key

Header color will change to blue when measurement is active.

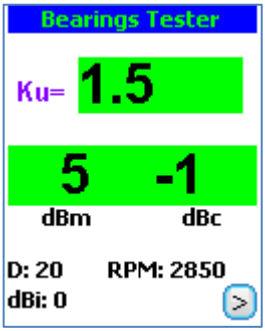


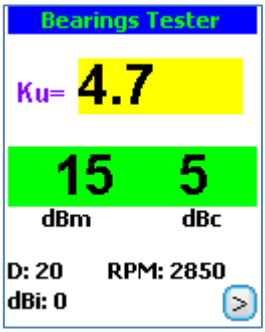


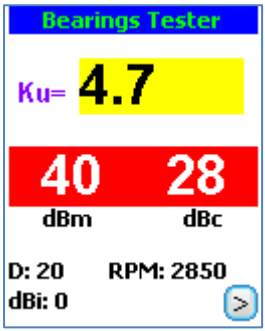
Measured data is continuously updated until the next press of the

key which will terminate measurement.

To facilitate evaluation of the result, the device displays data on a colored background of green, yellow, or red.







Green – corresponds to the good condition of the bearing;

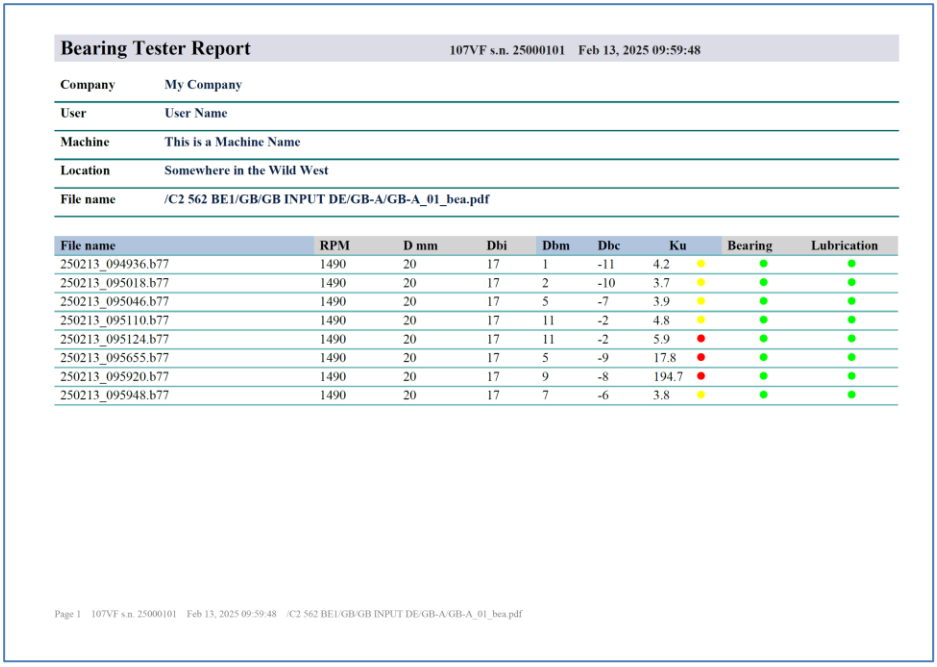
Yellow – the bearing can be operated until the next replacement;

Red – the bearing is not allowed to be used.

To save measurement

- press  key to stop measurement
- press  key
- browse to a destination folder
- press  key to save measurement file
- press  key one more time to return to measurement menu

Each individual measurement record is automatically appended to a PDF report that compiles all measurements associated with the current folder (measurement location):



Bearing Tester Report 107VF s.n. 25000101 Feb 13, 2025 09:59:48

Company	My Company
User	User Name
Machine	This is a Machine Name
Location	Somewhere in the Wild West
File name	/C2 562 BE1/GB/GB INPUT DE/GB-A/GB-A_01_bea.pdf

File name	RPM	D mm	Dbi	Dbm	Dbc	Ku	Bearing	Lubrication
250213_094936.b77	1490	20	17	1	-11	4.2		
250213_095018.b77	1490	20	17	2	-10	3.7		
250213_095046.b77	1490	20	17	5	-7	3.9		
250213_095110.b77	1490	20	17	11	-2	4.8		
250213_095124.b77	1490	20	17	11	-2	5.9		
250213_095655.b77	1490	20	17	5	-9	17.8		
250213_095920.b77	1490	20	17	9	-8	194.7		
250213_095948.b77	1490	20	17	7	-6	3.8		

Page 1 107VF s.n. 25000101 Feb 13, 2025 09:59:48 /C2 562 BE1/GB/GB INPUT DE/GB-A/GB-A_01_bea.pdf

PDF Reports Header Information File Guidelines

Editing Requirements

- The report header information file must be edited as a **plain text file** using **Latin encoding**.
- **Use Notepad** for editing - do not use MS Word or similar programs.

File Structure

- The file can include **comments**, which must begin with a **semicolon (;)** as the **first character** on the line.
- Information fields must follow this strict order:
    1. **Company**
    2. **User**
    3. **Machine**
    4. **Location**
- **Do not** include empty lines or lines containing only spaces.

Special Syntax for Information Lines

- A special character at the **beginning** of an information line alters its behavior:

    *** (asterisk)** → Retains the existing value from the upper-level file.

    - (hyphen) → Clears the value (sets it to an empty string).

Example File:

```
; This is a comment. The semicolon (`;`) must be the first character.
; Usage rules:
; * Line starting with `*` keeps the current value.
; * Line starting with `-` removes the value (sets it to an empty string).
;Company
My Company
;User
Some User
;Machine
This is a Machine
;Location
Somewhere on machine
```

Example with Special Syntax

In the following example:

- The **Company** value remains unchanged (using *).
- The **Location** value is cleared (using -).

```
; This is a comment.
; Usage rules:
; * Line starting with `*` keeps the current value.
; * Line starting with `-` removes the value (sets it to an empty string).
;Company
*
;User
Some User bea 1
;Machine
This is a Machine bea 1
;Location
-
```

Files Hierarchy and Processing

- Header information files are processed in a **hierarchical** order.
- The **top-level** file, **header_top_info.txt**, is located in the **Templates** folder at the root level. Information from this file can be used in any type of report.
- Additional header files exist for **specific procedures** and can be placed from the root folder down to the report file folder.
- If a file is **missing** at any level, the system will continue using information from the higher-level file.
- Files lower in the hierarchy **override** values from higher-level files, except for lines starting with * or -.

Hierarchy Example:

```
/Templates/header_top_info.txt      ; Top-level common file
|
/Templates/header_xxx.txt           ; Top-level procedure file
|
/header_xxx.txt                     ; Root-level procedure file
  |
 Factory/header_xxx.txt             ; Factory-level procedure file
    |
   Workshop/header_xxx.txt          ; Workshop-level procedure file
      |
     Machine/header_xxx.txt         ; Machine-level procedure file
        |
       Point/header_xxx.txt         ; Point-level procedure file
```

Procedure-Specific Header Files

Certain procedures have dedicated header files:

- **header_bea.txt** → for Bearings function report
- **header_bal.txt** → Balancing function report
- **header_vib.txt** → for Analyzer function report

Each of these files follows the same hierarchical structure described above.

header_xxx.txt *are plain text files without formatting or styling. Can only be edited using applications like Notepad or similar. MS Word cannot be used!*

ALVIB SISTEMAS, SOCIEDAD LIMITADA
NIF: B10840346
PUNTA DELS ESCUTS, 3 - Castell-Platja d'Aro (Girona) Spain 17250