Vibration Measurement Instruments

APT 326

SMART PRODUCTS FOR SMART PEOPLE

Unit designed for modernizing balancing machines, including software.
Measuring unit with transducer/sensor interface and with digital signal processor.

APT 326

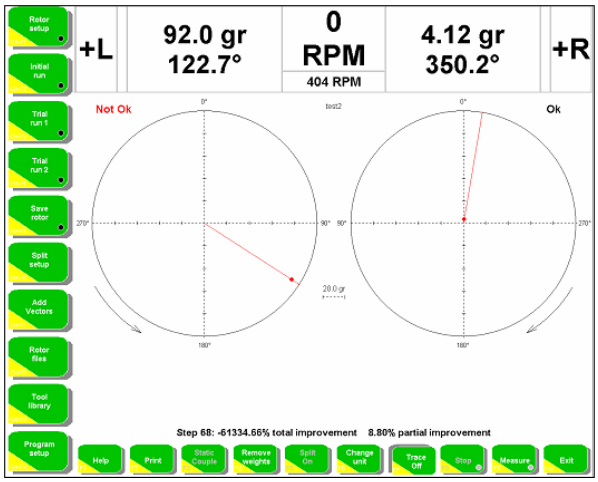
- Balancing with 2 transducers simultaneously. 1 or 2 plane balancing
- RS232 communication with PC software. Adapter from serial port to USB connector
- Suitable as instrument to modernize older balancing machines
- Suitable as instrument for sole developed balancing machines
- Speed range: balancing can be made between 120 to 6000 RPM depending on transducer
- CD with a complete balancing program working under Windows XP, Vista, WIN7, WIN 8.

  Built-in languages: English, Deutsch, Espanol, Russian, Swedish, Romanian, Suomi, Hungarian, and Greek.

Accessories avaliable:

- Acceleration, velocity and displacement transducers
- Encoder for angle positioning of balancing weights
- Transducer cables
- Laser Tacho
- Cables

APT Software



Flexible inputs

The program can be controlled either by mouse, the function buttons F1-F10 or using a touch screen. The software can run on almost any PC.

Starts and saves automatically

The program can be setup so that it starts and finishes the measurements with trial- and balancing weights automatically. A measurement starts automatically when the selected balancing RPM has been obtained and finishes automatically when the measurements are stable. A built-in relay provides a signal, that can be used to stop the machine when the measurements are saved.

Balancing and tool library

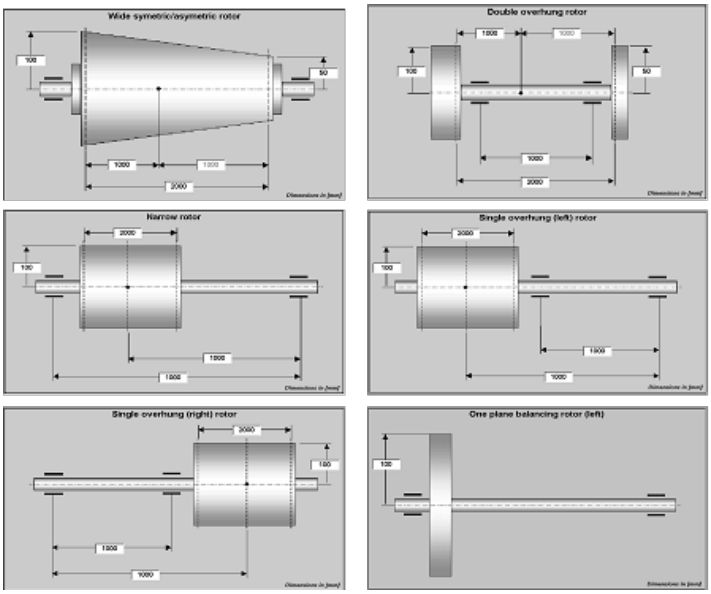
The program can store the balancing session under different file names in a balancing library. The sensitivity to an unbalance is also stored as **Response Matrix**, that can be used next time a rotor is balanced. The software then calculates the balancing weights directly, without the need for trial weights and trial runs.

Specially shafts must be used when only a part of a roting machine is balanced, for example only a fan wheel. The unbalance in the shaft can be stored in the Tool library. When the fan is balanced the unbalance in the ”tool” shaft is automatically reduced from the measures vibrations.

Directly change of measuring unit

The unit for vibration can be changed between mm/s or µm and the unit for unbalance changed between grams, grmm or gram x mm, as well as the change between static+coupled and normal left+right unbalance.

APT Software



Balancing according to ISO-Standards

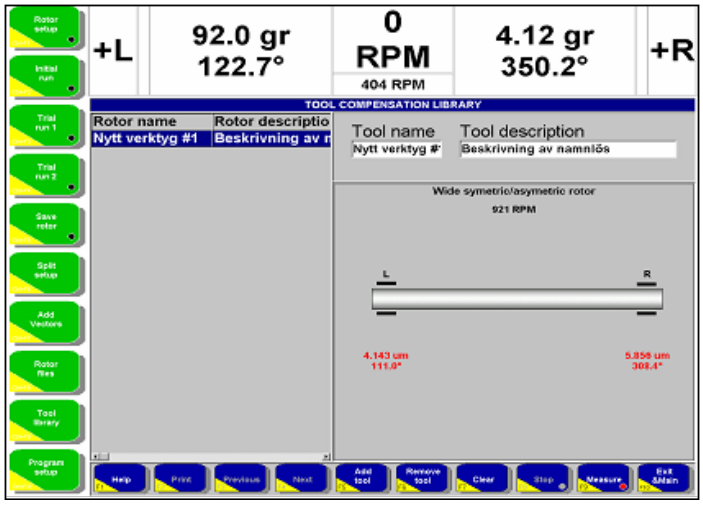
The program has 6 selectable rotor configurations and can compare the balancing result with the ISO Standard 1940.

Weight distributions to fixed positions

The program can distribute the balancing weight to fixed positions e. g. to bolts in a coupling or to blades in a fan (not possible for fixed positions).

Weight summations

Ifa rotor has several old balancing weights the program can calculate one weight as a replacement for all the other weights.



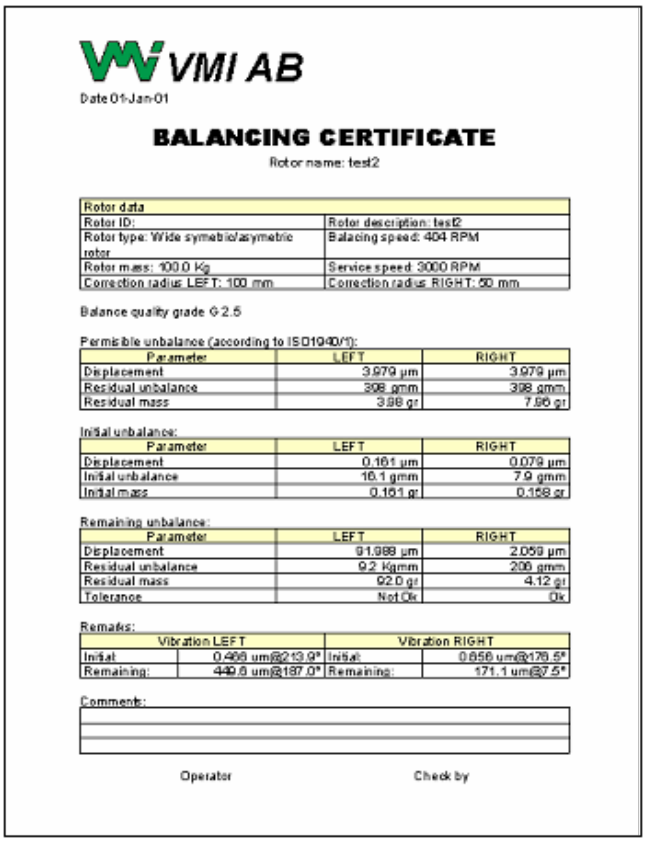
Machine library

Each balancing can be stored in the Machine Library with its own unique file name.

Tool library with tool compensation

A tool must be used when only parts of a rotating machine is balanced. The unbalance in the tool can be stored in a separate tool library and the program will automatically compensate for the tool unbalance.

APT 326



VMI AB

Date 01-Jan-01

BALANCING CERTIFICATE

Rotor name: test2

Rotor data	
Rotor ID:	Rotor description: test2
Rotor type: Wide symetric/asymetric rotor	Balacing speed: 404 RPM
Rotor mass: 100.0 Kg	Service speed: 3000 RPM
Correction radius LEFT: 100 mm	Correction radius RIGHT: 50 mm

Balance quality grade G 2.5

Permisible unbalance (according to ISO1940/1):

Parameter	LEFT	RIGHT
Displacement	3.979 µm	3.979 µm
Residual unbalance	398 gmm	398 gmm
Residual mass	3.98 gr	7.96 gr

Initial unbalance:

Parameter	LEFT	RIGHT
Displacement	0.161 µm	0.079 µm
Initial unbalance	16.1 gmm	7.9 gmm
Initial mass	0.161 gr	0.158 gr

Remaining unbalance:

Parameter	LEFT	RIGHT
Displacement	91.988 µm	2.059 µm
Residual unbalance	9.2 Kgmm	206 gmm
Residual mass	92.0 gr	4.12 gr
Tolerance	Not Ok	Ok

Remarks:

Vibration LEFT		Vibration RIGHT	
Initial:	0.496 um@213.9°	Initial:	0.856 um@178.5°
Remaining:	449.6 um@187.0°	Remaining:	171.1 um@7.5°

Comments:

Operator Check by

Balancing reports

The programcan generate a balancing report with permissible and remaining unbalances and initial unbalances and other rotor data.

Rotor Data report

This report shows rotor dimensions and other rotor data.

More functions are shown by the function keys on the main screen.

A complete instrument set contains:

1 pc Measuring unit

1 pc Manual

3 pc Cable connectors

1 pc CD with software

1 pc communication cable

Technical specification APT

Inputs	
Vibration - 2 channels (max. 5000 mV RMS)	Suitable for accelerometer, velocity transducers or non-contact displacement sensors
Speed	Suitable for any photocell having an output swing of at least 5V, max input swing 24V
Encoder	Suitable for any quadrate Encoder with sensitivity between 360-6000 pulse/revolution and TTL compatible
Outputs	
RS232	RS232 serial output for communication with the balancing computer
Relay	Change-over relay, max 125VAC/60VDC, max switching power 62.5VA/30Watt
Gain	
	From x 0.25 to x 128 gain for both channels, auto ranging
Accuracy	
Vibration	< 1% or ±0.5 mV RMS @ 20Hz
Angle	< 1% or ±1°
Speed	< 0.1% or ± 5 RPM
Transducer power	
Displacement sensors	+24V, regulated, max. 150 mA
Accelerometers	2.4 mA@ max 24V
Photocell	+24V, regulated, max. 100 mA
Encoder	+5V, regulated, max 100 mA
LED indicators	
Green LED	APT Interface ON
Yellow LED	Photocell pulse
Software	
Operation System	Windows 95, 98, 2000, XP, WIN 7, WIN 8 and newer
Balancing Software	APT 300 Software
Power	110-220VAC
Dimensions	Weight 2.6 kg, height 110 mm, width 260 mm, length 280 mm

General specifications

- Balancing speed: 120 to 6000 RPM
- Auto-range between ± 5VAC input signal level
- Filter: dual, narrow band shaft synchronous, digital tracking filters, with averaging
- Number of planes: 1 or 2
- Calibration method: trial weights
- Unbalance units: grams, grmm, gram x mm
- Vibration units: selectable between acceleration, velocity and displacement, imperial or metric (m/s^2, g, mm/s, m/s, in/s, µm, mm, mils, thou)
- Unbalance tolerance: according ISO 1940/1
- Coloured indication for ”OK” and ”Not OK” balance conditions
- Display of dynamic (Left/Right) unbalance or Static/Couple unbalance
- Display correction angles for adding or removing rotor balance mass
- Unbalance display in digital format or combined polar/digital format
- Rotor memory storage: unlimited
- Vector splitting of unbalance corrections
- Vector addition of unbalance corrections for combining mass
- Semi-automatic or manual balance mode cycles
- Electronic compensation for tooling errors caused by adapters
- Customized balancing reports

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www.vmiab.com