# APT 326 Balancing Tool

**Unit designed for modernizing balancing machines, including software**

## Measuring unit with transducer/sensor interface And digital signal processor

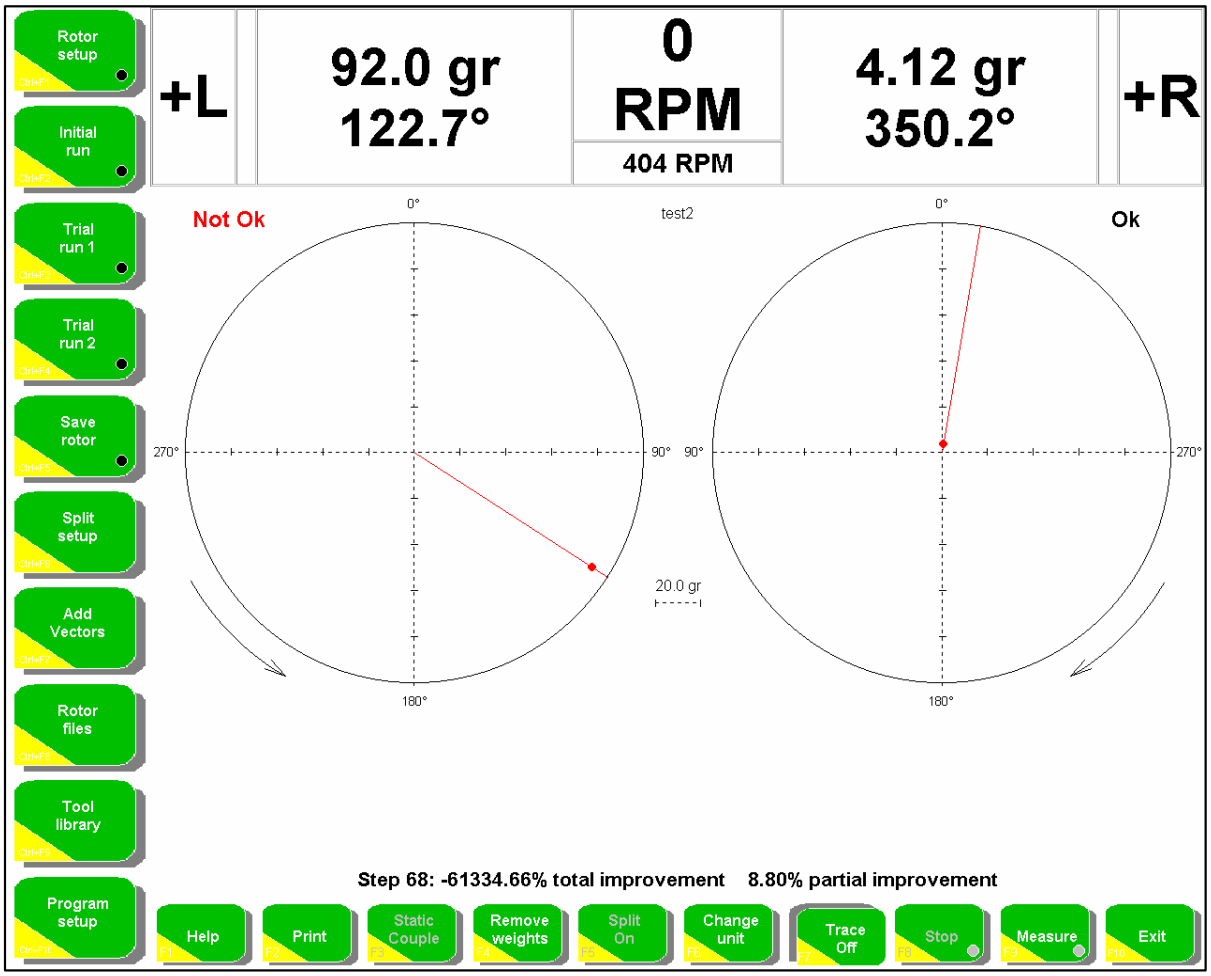

**Functions:**

- ❑ **Balancing with 2 transducers simultaneously.**
- ❑ **RS232 communication with PC software (USB converter incl.).**
- ❑ **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 95, 98, 2000, XP, Vista, 7**
  **The program has several built-in languages.**

**Options:**

- ❑ **Acceleration, velocity and displacement transducers**
- ❑ **Transducer cables**
- ❑ **Encoder for angle positioning of balancing weights**

# APT Software




- **Flexible inputs**

  The program can be controlled either by a mouse, the function buttons F1- F10 or with the use of the touch screen.

  Most of the measurements and calculations are made in the measuring unit so the demand on the PC-computer is limited. The software can run on almost any PC.

- **Starts and saves automatically**

  The program both 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 stabile. A built in relay can automatically stop the machine when the measurements are saved.

- **Balancing and tool library.**

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

  Specially made shafts must sometimes be used when only a part of a rotor is balanced, for example only a fan wheel. The unbalance in these shafts can be stored in the Tool library. When the fan wheel is balanced the unbalance in the "tool" shaft is then automatically reduced from the measured vibrations.

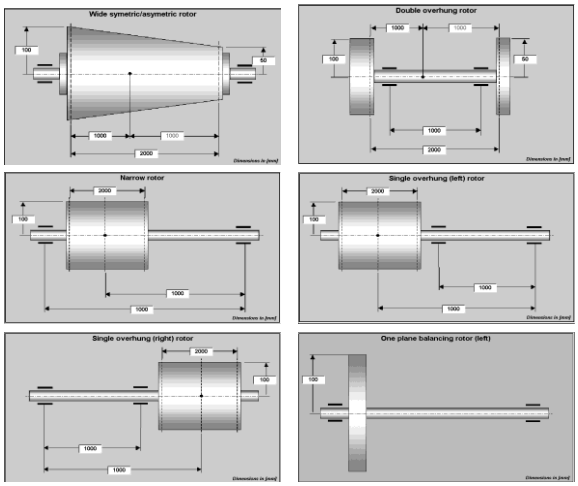
- **Instant change of measuring unit.**

  The unit for vibration can instantly be change between mm/s or um and the unit for unbalance can be change between grams or grmm as well as the change between static+ coupled and normal left+ right unbalance.

# APT Software

## ♦ Balancing according to ISO-Standards

The program has 6 built-in rotor configurations and compares the balancing result with the ISO Standard 1940.




## ♦ Weight distribution to fixed positions

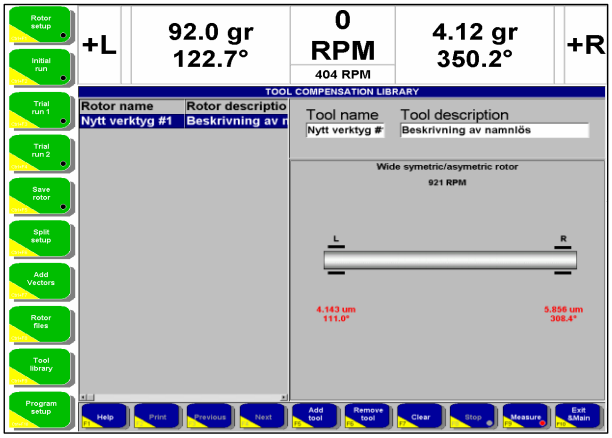
The program can distribute the balancing weight to fixed positions e.g. to bolts in a coupling or to blades in a fan.

## ♦ Weight summations

If a 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 rotor should be balanced. The unbalances in the tool can be stored in a separate tool library and the program will automatically compensate for the tool unbalance.

## ♦ Automatic balancing reports

The program generates an automatic balancing report with permissible and remaining unbalances and initial unbalances and other rotor data.

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: | 0.466 um@213.9° | Initial: | 0.656 um@176.5° |
| Remaining: | 449.6 um@187.0° | Remaining: | 171.1 um@7.5° |

Comments:

Operator Check by

## ♦ Automatic Rotor Data report

This report shows rotor dimensions and other rotor data.

## ♦ And several more functions as shown by the function keys on the main screen.

# Technical Specification

## 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 balance planes: 1 or 2
- Calibration method: Trial Weights
- Unbalance units: gmm or grams
- Vibration units: micrometers, mm/s or g.
- 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 balance reports

## TECHNICAL SPECIFICATION

| **INPUTS** | |
|---|---|
| Vibration – 2channels (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 last 5V, max input swing 24V. |
| Encoder | Suitable for any quadrate Encoder with sensitivity between 360 - 600 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 2Amp, max switching power 62.5VA/30Watt |
| **GAIN** | |
| | From x 0.25 to x128 gain for both channels, auto ranging |
| **ACCURACY** | |
| Vibration | < 1% or ±0.5 mV RMS |
| Angle | <1% or ±1° |
| Speed | <0.1% or ±1 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.100mA |
| **LED INDICATORS** | |
| Green LED | APT326 Interface ON |
| Yellow LED | Tape status |
| **SOFTWARE** | |
| Operation System | Windows 95, 98, 2000, XP, Vista, 7 |
| Balancing Software | APT 300 Software |
| **POWER** | 110-230VAC |
| **DIMENSIONS** | Weight 2.6kg ,height 110mm ,width 260mm ,length 280mm |

## ♦ A complete instrument set contains:

1 pc Measuring unit
1 pc Manual
3 pc Cable connectors
1 pc CD with software
1 pc RS232 communication cable
1pc USB converter

VMI Sverige AB reserves the right to make changes in this technical specification.

Vibrations Mät Instrument

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