

Baseline **5200**

## PORTABLE BALANCER

### FEATURES

- Field Balancing in a compact and portable instrument.
- Suitable for all kinds of rotors from 250-12000 RPM
- Single- plane and Two-plane\* dynamic field balancing vector measurement and calculations performed by the most advanced Digital Signal Processing techniques.
- Versatile balancing calculations with polar output, blade resolution, trial weight removal or retention options.
- 5200G comes with Grinding Wheel Balancing program for wheels with 3 correction weights or 2 correction weights.
- Program resumes from the stage where one left off without the need for redoing the initial runs.
- Optional mini thermal printer available for printing balancing reports after balancing.
- True rms measurement of overall vibration velocity in 2 channels.
- 360 degree protractor provided for accurate angle measurement on rotors as optional with 5200.
- Two channel instrument for accelerometer sensors.
- Rechargeable maintenance- free battery.
- Lightweight and portable, fits into a briefcase.



### DESCRIPTION

Rotating Machinery, such as fans, blowers, centrifuges, motors, generators, flywheels, pump impellers etc generate undesirable vibrations due to the residual centrifugal forces of an imbalanced rotor. These forces act cyclically on bearings and structural elements of the machine, and eventually lead to premature metal fatigue and failure. Also, the vibration consumes considerable energy, acts as a source of noise, and leads to operator fatigue. It is therefore important to control the balance conditions of all rotating equipment.

More and more users are realizing the tremendous economic benefits of having an active vibration control program for **rotating machinery**. As an example, the Indian Railways is understood to have reduced the out-of-service ratio of locomotives from 18% to less than 1% by mandating balancing of the blowers on the loco. Several companies have confirmed huge reduction in costs of bearing replacements and upto 20% savings in power consumption.

### BALANCING:

The 5200 is a two-channel, highly compact and lightweight instrument with 2 inputs for accelerometer sensors for sensing vibration, and one optical phase reference sensor. Its powerful DSP microcontroller has an efficient algorithm for the extraction of cyclicity and vector measurement even amidst presence of a large noise in the rotor. Two- plane\* and single-plane dynamic balancing can be performed *in-situ* with the 5200. It has all the required vector calculation algorithms built into its program. Thus the operator is freed from the task of determining the weights by calculations or hit-and-try methods, resulting in vastly improved, quick and accurate results.

It is possible to change the rotor settings, for example, from polar results to blade resolution, or from trial weight removed to trial weight retained, or even correction by weight removal, and see the recomputed results easily, without the need for running the rotor again. It is also possible to compare the overall and synchronous vibration readings to confirm unbalance as being the dominant cause of vibration.

The unit is supplied as a complete kit with one sensor, lead, optical reference sensor and magnetic mounting stand as standard. Those requiring 2 sensor for 2 plane balancing can order an extra sensor. The unit runs off rechargeable batteries and will work for about 8-10 hours without recharging, depending upon backlight usage.

NPL-traceable calibration is furnished with each unit, and recalibration is also offered after the specified period.

*NOTE: \*Two-plane balancing requires 2 sensors simultaneously, and therefore one sensor must be ordered separately.*

### **GRINDING WHEEL BALANCING – OPTIONAL MODEL 5200G:**

5200 G is a variant which is provided with grinding wheel balancing options. A grinding wheel requires a slightly different approach since the balancing weights are already provided in a flange by design. The unit will provide the position of the weights to counteract the unbalance. A simple 2 step procedure is required after which the unit provides the exact position of these weights. The accurate digital algorithm ensures that the results ensure ultra-smooth operation of the grinding wheels resulting in superior finish of the workpiece. A 360 degree protractor is provided to accurately measure angles. The optional printer will print a report, if connected.

### **BALANCING PROCEDURE:**

All portable balancers work on the principle of measurement of vibration as a vector, a quantity having a magnitude and an angle. The vibration is the effect of imbalance, which is an unknown vector. Thus the procedure involves placing a known trial weight at an arbitrary location on the rotor, thus changing the vibration vector. From the resulting vector, the unit computes the amount of imbalance in the rotor, and provides the amount of weight required (as a fraction of the trial weight) and its angular location on the rotor (from the trial weight location) for countering the initial imbalance of the rotor.

In some cases the rotor consists of discrete blades or vanes, in which case the correction needs to be resolved to the adjoining blades, such that the resultant is equal to the required correction. The unit does this calculation automatically.

Sometimes it is expedient to leave the trial weight on the rotor. The unit also provides the correction required if the trial weight is not removed.

It is possible for the user to change any of these settings and get the result without running the rotor again.

An optionally available mini-thermal printer can be attached to the unit to print a compact balancing report. This can be a valuable asset to service providers and those requiring a written record of the balancing carried out and results.

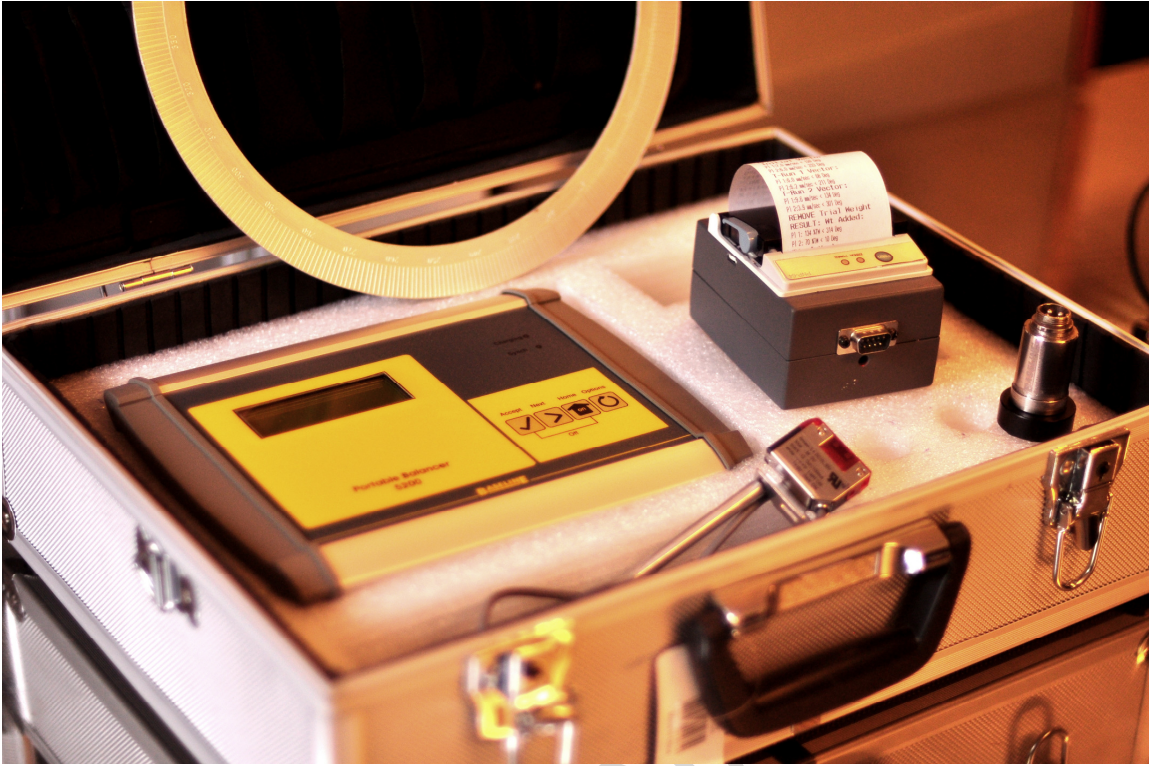
A valuable accessory: A 360 degree protractor is provided with 5200G as standard accessory for actual measurement of angles on a rotor. The tool ensures that mistakes in angle measurement are avoided. It can be ordered extra with 5200.

### **APPLICATIONS:**

- *Balancing of all kinds of blowers, ID and FD fans, pump impellers, centrifuges, motors, generators, special purpose machines, sugar mill machines, flywheels, drum-shaped or disk-shaped rotors*
- *5200G variant for quick and easy balancing of grinding wheels.*
- *Quality checking of rotating equipment residual vibration as an QC check.*
- *In- position 1-plane and 2-plane dynamic balancing with inbuilt computation algorithms.*

### **USERS:**

- *Process plants – Cement, Petrochemicals, Chemicals, Steel, Glass, Rayon and Yarn.*
- *Conventional and nuclear power plants.*
- *Air- conditioning plants.*
- *Oil industry- prospecting and refining.*
- *Automobile and others using CNC machines.*
- *OEM manufacturers of motors, pumps, blowers, impellers, and industrial fans.*
- *Railways.*
- *Service providers.*
- *Research and educational.*



*Some of the accessories shown in the picture may be optional and not part of standard accessories. Please check the exact offer before ordering.*

PRELIMINARY



**Manufactured in India by Baseline Technologies, New Delhi, an ISO 9001:2000 company**

## SPECIFICATIONS

### *Portable Dynamic Balancing Set:*

Inputs	:	Two inputs for accelerometers, one for reference tachosensor
Measurement Mode	:	Velocity (RMS-mm/sec)
Measurement Ranges:	:	Three manually selectable ranges and auto-ranging.
Velocity	:	0-2.5 to 0-250 mm/sec True-RMS in 3 scales.
Speed Range	:	250 – 12000 RPM
Measurements	:	Overall Vibration measurement
<b>Balancing Programs</b>		
5200	:	Single Plane Balancing Two-plane Balancing Blade resolution upto 24 blades, separate for each plane in case of 2-plane rotors. Trial weight retention option. Averaging cycles selectable between 32 and 64 Easy to follow procedure with prompting of steps.
5200G	:	All the above, plus: Computation of position of balance weights for 3-weight and 2-weight flange designs on grinding wheels.
Dimensions	:	236 mm (W) x 181mm (L) x 68mm (H) Supplied fitted in a foam-lined briefcase
Enclosure	:	Aluminum, with ABS side handles, IP40/DIN EN60529
Battery	:	Internal rechargeable Li-Ion battery. Approx charge life of 10 hours continuous use, and a life of approx 500 deep cycles.
Battery charger	:	Separately supplied as standard accessory Also acts as the supply for the Printer, if ordered.
Temperature range	:	0-45 Deg C upto 90% humidity (non-condensing)
Weight	:	1.0 Kgms approx. without carrying case
Standard Accessories (5200)	:	1 Sensor with 3m lead, 1 Magnetic base, 1 reference sensor, 1 magnetic stand, 1 battery charger, Briefcase type carrying case, and 1 Operation Manual NOTE: 2 Plane balancing requires 2 sensors.
Standard Accessories (5200G)	:	All the above plus 360 degree protractor set.
Optional Accessories	:	360 degree protractor set. Mini Thermal Printer. Printer rolls. Set of trial weights.

Note1 : The above stated item is designed and manufactured exclusively by Baseline Technologies, New Delhi, India. Baseline Technologies reserves the right to amend the above specifications at any time in the interest of improvement of the product or its process, or user convenience. The above specifications do not constitute a contract unless accompanied with a formal offer from Baseline Technologies. Baseline expects the users to follow all due precautions in the usage of the instrument and employ the instrument at his own risk, and will not accept responsibility for any consequential damage arising out of its usage.