



**Quick and precise balancing of turbocharger core assemblies for cars and trucks**

**Unbalance correction directly in the machine without set up change**

**Calculation of the correction values over the complete speed range**

**Special sensor with indexing aid for visual detection and display of the correction position**

**Assembly specific adaptors with quick action clamping system for a wide variety of turbocharger types**

**Conforms to CE safety requirements**

**Effective noise insulation**

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## **Balancing machine for turbocharger core assemblies**

**Type 110 MBRS**

### **Range of application**

The balancing machine is used for measuring and correction of the unbalance of complete turbocharger core assemblies. It is specifically designed to meet the requirements of the repair and maintenance field. It is also ideal for economical balancing in research and development

departments. The high tech instrumentation gives a very accurate indication of the unbalance in the first measuring run, so that only one or two correction steps are necessary to achieve a core assembly which is "in tolerance". Unbalance correction is made on the compressor side by grinding on the shaft nut with the help of a sui-

table hand grinder. There is no need to transfer the core assembly from the balancing machine to a machine tool. Standardised core assembly adaptors provide a quick and easy change over and offer the possibility of balancing a large range of different turbocharger core assemblies.

## Design

The balancing machine features a compact design with all components incorporated in a single robust housing. The machine therefore requires a minimum area of floor space.

The upper part of the machine contains the CAB 950 measuring unit with touch-screen monitor and Windows®-based operating system, which is specially configured for high speed balancing. The unbalance is displayed in terms of angle and amount [mg/g].

The following parameters can be displayed as Bode or Nyquist diagrams:

- displacement
- velocity
- acceleration

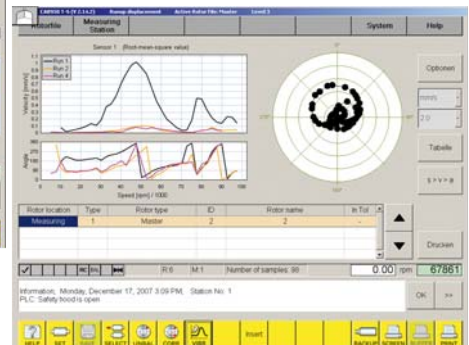
The work area is ergonomically designed and located in the central area of the machine. A sliding door provides burst protection and complete access to the working area, thus providing for easy handling. The core assembly adapter can be mounted quickly and easily. The oil system for supply to the turbochargers is integrated in the machine and is connected by means of a quick-coupling.



Vector indication of the unbalance



Unbalance correction display



Run up curve display

## Optional equipment



Rotor specific workpiece adaptor

- Specific core assembly adapter rings for common turbocharger types
- Adapter rings for prototypes on request
- Basic adapters for larger diameters
- Set up core assemblies
- Correction tool
- Printer for result reports
- Magnetising tool
- Automatic speed regulation
- Pneumatic oil removal out of the core assembly



Correction with optional hand grinder

## Procedure

### Balancing:

After clamping the core assembly, closing the compressor cover and the safety guard, the measuring run is started by pressing a push button.

The balancing run is quick and easy. After the measuring procedure, the determined unbalance is shown directly on the screen in terms of amount and angle. The indexing function enables easy determination of the correct angle for the correction. The operator can now carry out

the necessary correction by grinding or milling the compressor nut with the aid of a hand grinder.

A final check run shows if the residual unbalance is within the specification or whether a second correction step is required.

### Calibration:

For each core assembly type, a calibration can easily be performed and stored in the CAB 950 for future balancing operations.



Clamping a core assembly

## Special features

The comprehensive safety concept is designed to protect the surrounding environment from the high energy released by a bursting turbocharger rotor. The robust safety enclosure is dimensioned accordingly and electro-mechanically locked during the complete measurement run, to prevent opening before the rotor has come to a complete standstill. The compressor cover serves as additional burst protection. The rotors can be mounted and removed very quickly. The comprehensive insulation produces a much more pleasant working environment.



### Important data at a glance

High speed measuring instrumentation		CAB 950
Balancing speed $\text{min}^{-1}$ (depending on rotor type and air supply)		max. 250,000
Measuring sensitivity		depending on the type of core assembly
Core assembly weight	kg	max. 10
Maximum compressor and turbine wheel diameter	mm	max. 100
Maximum flange diameter	mm	max. 250
Power supply		400 V / 50 Hz / 3Ph
Air supply	bar	6 ... 10, outlet 1 $\frac{1}{4}$ "
Language versions		German, English, French, Spanish, Italian, further languages upon request
Safety devices		DIN 45 690 bzw. ISO 7475 Class D
Machine dimensions	WxHxD mm	1100 x 1860 x 970
Change over time	min	1 ... 2
Display of measured values		Unbalance (gmm), material removal (g), velocity, acceleration, displacement

## SCHENCK

### Balancing and Diagnostic Systems

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For the balancing of turbocharger compressor wheels and turbine rotors, please note our balancing machine TBcomfort.