

## 110 MBRS Balancing Machines for Turbocharger Core Assemblies



- Fast and precise balancing of turbocharger core assemblies
- Unbalance correction directly in the machine without unclamping
- Direct display of measured values in mg and the exact angular position
- Display of the run-up curve
- Specific adapters with quickclamping system for many turbocharger types
- Conformance to CE safety concepts
- Single-unit housing for minimum space requirement
- Simple type data selection
- Rotor-specific calibration
- Indexing device
- Oil system with oil heating

### Design

In this single unit balancing machine design, all components are combined in one rugged housing. Therefore the machine requires very little floor space for installation. The CAB 690 measuring unit with monitor and keyboard is specially designed for high-speed balancing, and integrated in the upper part of the machine. The measured values can be displayed in a vector format or in large, easy-to-read numbers. The vector display shows the exact unbalance reduction ratio achieved in a correction step. The middle part of the machine accommodates the balancing unit with assembly adapter, surrounded by an enclosure to protect the operator in the event of the bursting of the rotor.

### Range of application

Measurement and correction of unbalance in fully assembled turbochargers. The machine is designed specifically for the requirements of a repair or overhaul facility. However, it is also ideal for cost-effective balancing in a research and development facility.

### Sequence of operations

Balancing:

- After installing the core assembly, closing the compressor cover and the safety guard, the measuring run can be started. The balance run is quick and easy. After the measuring run, the determined unbalance is shown directly on the monitor with amount and angle. The operator may then carry out the necessary correction by grinding on the compressor nut with a hand grinder. A final check run shows whether the residual unbalance is within the specification or whether a second correction step is necessary.

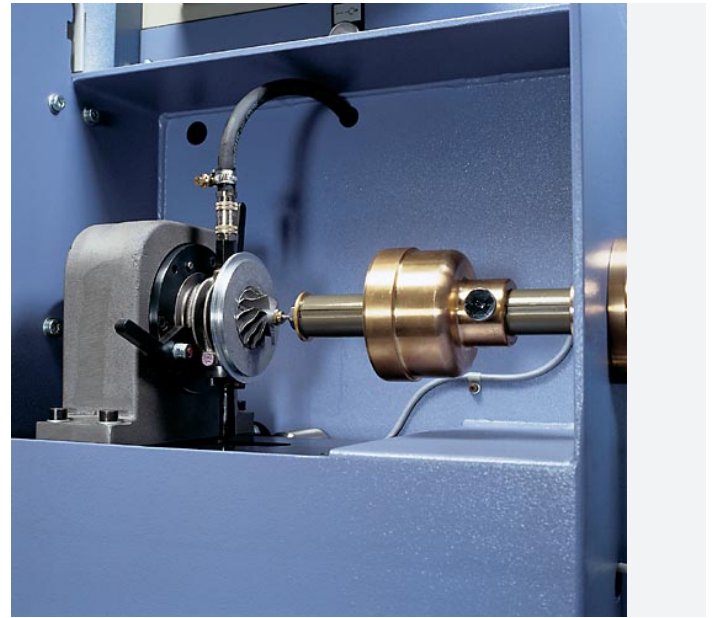
Calibration:

- For each core assembly type a calibration can be easily performed and stored in the measuring unit CAB 690. First the run-up curve of the core assembly has to be recorded. This curve will show the operator the optimum balancing speed. The calibration data determined is stored in the CAB 690 for future balancing runs – up to 100 files are available for rotor data.

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The operating area of the machine is ergonomically designed. The sliding door opens up the entire working area so handling of the work-piece is easy. The assembly adapter is secured onto the damped isolation mass by a quick-acting clamping device. Through this isolation mass, vibrations that may arise, for example, from adjacent machines are effectively suppressed.



The comprehensive protection concept is specifically directed toward the possibility of the rotor bursting. The rugged protective shroud is correspondingly dimensioned and electrically interlocked so that it can only be opened when the rotor is stationary. The compressor cover serves as an additional burst protection. The rotor can be loaded very quickly.

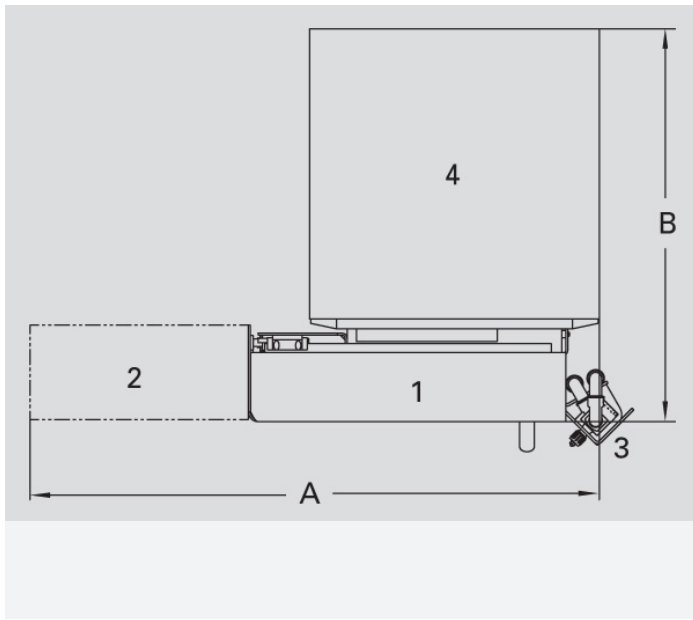


The static unbalance is accurately determined during the first measuring run so that only one or two correction steps are required to achieve an "in-tolerance" assembly. The unbalance correction is carried out by a suitable hand-grinder on the impeller hub at the compressor side. Moving the assembly from the balancing machine to a separate correction device is not necessary.



Standardized assembly adapters that can be quickly and easily changed enable a broad range of fully assembled turbochargers to be balanced.

## 110 MBRS Balancing Machines for Turbocharger Core Assemblies



- 1 Balancing unit
- 2 Protective hood
- 3 Operating panel
- 4 Switch cabinet with CAB 690 measuring system

Plan view (non-binding example)

# 110 MBRS

## Balancing Machines for Turbocharger Core Assemblies

Technical data at a glance		110 MBRS
Measuring unit		CAB 690
Automatic unbalance measurement		•
Manual unbalance correction		•
Manual rotor handling		•
<b>Passenger-vehicle turbochargers core assemblies</b>		
Weight, max.	[kg]	3
Flange diameter	[mm]	150
<b>Machine</b>		
Width A	[mm]	1500
Depth B	[mm]	900
Height C	[mm]	1700
Balancing speed, approx.	[min <sup>-1</sup> ]	250.000
Change over time	[min]	1 - 2
Air pressure	[kPa]	700
	Order No.	R0410100.01
	Order No.	o.r.
Correction tool	Order No.	R0410101.01
Printer	Order No.	R0410103.01
<b>Master assembly adapter</b>		
for prototypes	Order No.	o.r.

2) Data non-binding, dependent on the respective equipment

3) In the machine, correction on the shaft nut

o.r. On request