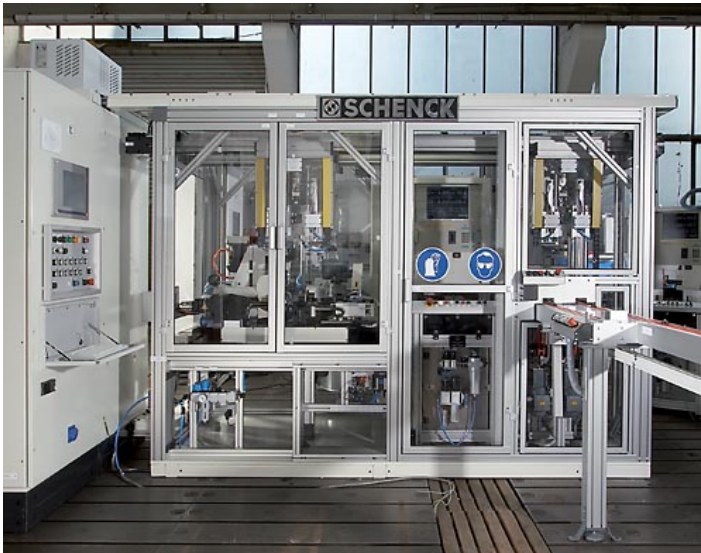


050 FBLS, 200 FBLS, 400 FBLS Balancing Machines for Turbocharger Turbine Rotors



- Automatic or semi-automatic balancing
- Patented air bearing supports for highest measurement accuracy
- Digital measured data processing and numerically controlled unbalance correction
- Optional interfacing with gantry loader and commercially available conveyor system
- Easy change over to other rotor types

Design

Multi-station machine with measuring and correction station and fully automatic or semi automatic operating sequence. Vertical balancing unit on vibration-optimized machine frame of aluminium profile, type-dependent, exchangeable precision air bearing support for the turbine rotor, drive by special drive plate with air jet adapted to the rotor diameter. Measured data processing by measuring unit CAB 750. Correction station with two digitally controlled processing units for unbalance correction by polar grinding on the hub and the rear side of the rotor. Automatic truing unit for the grinding disc. Optional gantry loader system for linking the stations and connection of in-feed and out-feed conveyors.

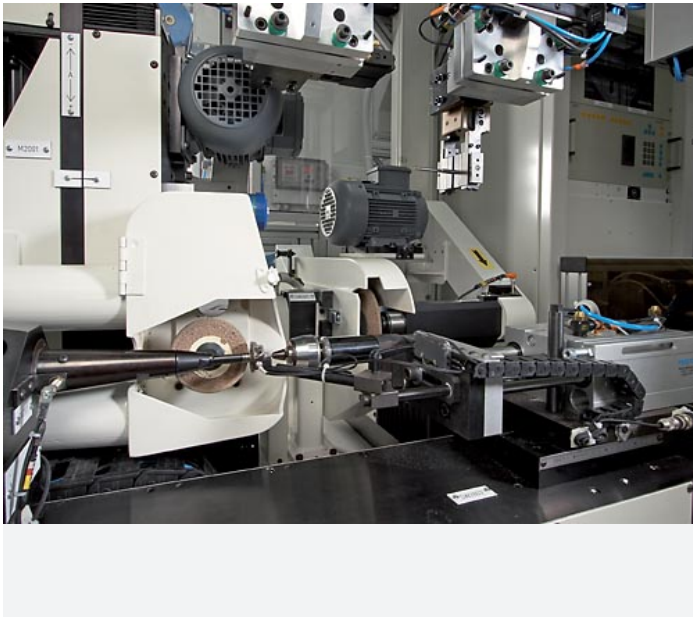
Range of application

Measurement and correction of dynamic unbalance in machined turbocharger turbine rotors. Use of the machine in mid- and large-volume production. Fully / semi automatic unbalance measurement and correction by grinding in two planes and with up to two correction steps. Loading and unloading manually or by gantry loader.

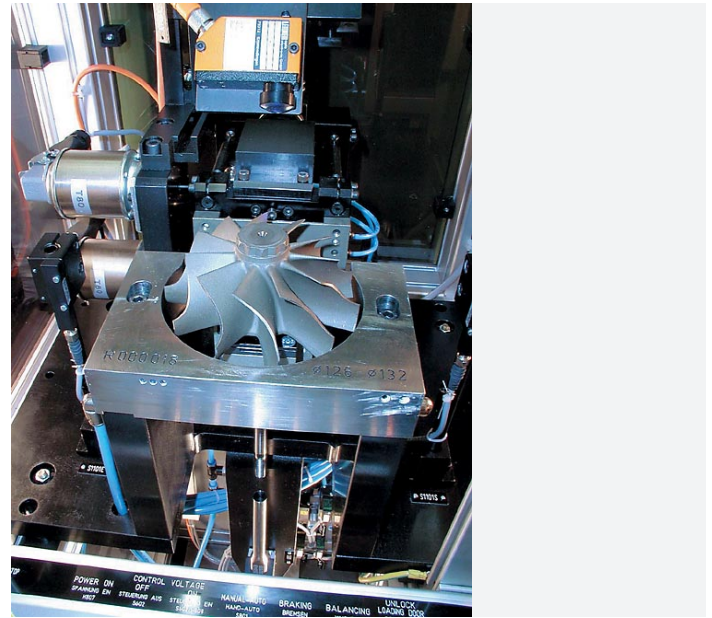
Sequence of operations

- The work-piece is taken from the transfer equipment, provided with a reference mark and loaded into the measuring station
- Automatic measuring run. Calculate and transfer measured values to the correction station, brake to zero rpm
- Remove the rotor from the measuring station and load into the correction station
- Automatic correction: clamp, index to the correction position for the 1st plane, adjust the grinding unit, controlled grinding of a sector. Index to the correction position for the 2nd plane, repeat the grinding process and unclamp
- Transfer the rotor to the measuring station and start the check run. If the rotor is not in tolerance after the 1st correction step a 2nd correction step can be carried out
- Remove the work-piece and unload. The work-piece handling can be done manually or by means of a loading system

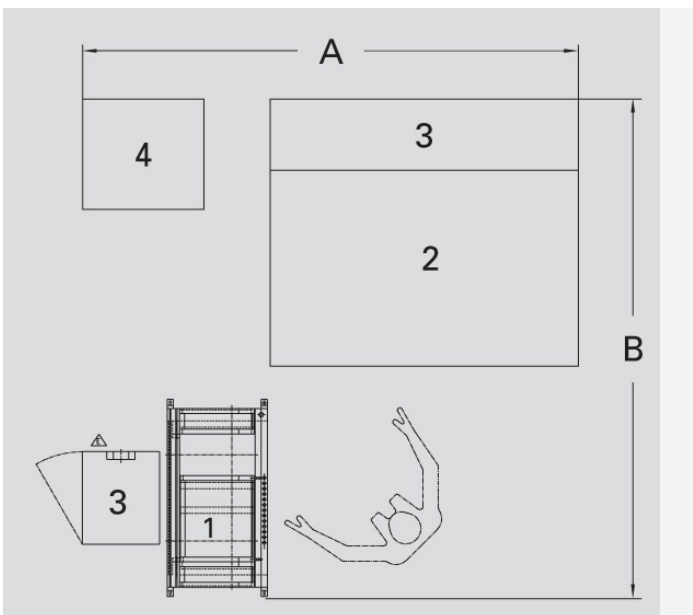
050 FBLS, 200 FBLS, 400 FBLS Balancing Machines for Turbocharger Turbine Rotors



Fully automatic unbalance correction in two planes, on the hub and at the rear of the turbine rotor by two grinding units. An automatic truing device guarantees a constant correction form to ensure precise unbalance removal during axis control.



The air-bearing balancing unit and measuring unit CAB 750 are amongst the most accurate industrial measuring systems currently in the market. The integrated lifting device allows automatic interfacing with a conveyor system and protects the supports.



1 Measuring station 2 Correction station 3 Switch cabinet 4 Dust extractor

Plan view (non-binding example of 200 FBLS: dimensions and set-up of the switch cabinet depend on the relevant application)

050 FBLS, 200 FBLS, 400 FBLS Balancing Machines for Turbocharger Turbine Rotors

Technical data at a glance		050 FBLS	200 FBLS	400 FBLS
Measuring unit		CAB 750	CAB 750	CAB 750
Automatic unbalance measurement		•	•	•
Manual unbalance correction		•	•	•
Turbine rotor		•	•	•
Compressor rotor		-		
Rotor				
Weight	[g]	50 - 200	100 - 600	400 - 1600
Diameter	[mm]	30 - 65	45 - 95	65 - 125
Machine				
Width A	[mm]	3500	3500	3500
Depth B	[mm]	2400	2400	2400
Height C	[mm]	2800	2800	2800
Balancing speed, max.	[min ⁻¹]	3200	2200	2200
Measurement uncertainty	[gmm]	0,002 - 0,02	0,01 - 0,1	0,05 - 0,3
Cycle time	[s]	60 - 70	60 - 70	60 - 80
Air pressure	[kPa]	450 - 600	450 - 600	450 - 600
Air consumption	[m ³ /h]	4	4	4
Power consumption	[kVA]	8	8	8
	Order No.	R0390100.01	R0390200.01	R0390300.01
	Order No.	o.r.	o.r.	o.r.
Control cabinet cooling device for measuring station	Order No.	R0390101.01	R0390201.01	R0390301.01
Gantry loader	Order No.	R0390102.01	R0390202.01	R0390302.01

- 2) Acc. To DIN 1319, 95% probability, work-piece dependent
 3) Dependent on initial unbalance and skill of the operator
 4) Data non-binding, dependent on the respective equipment
 5) Polar grinding on the hub and rear side
 o.r .On request