100 FBLS, 300 FBLS, 500 FBLS

Balancing Machines for Turbocharger Compressors

- Fully automatic balancing of turbocharger compressor rotors
- Patented air bearing support for extreme measurement accuracy
- Digital measured data processing and numerically controlled unbalance correction
- Interfacing with loading gantry and commercially available conveying equipment
- Easy change over to other rotor types
- Short cycle times

Design
Two-station machine with measuring and correction station and fully automatic operating cycle. Vertical balancing unit on a vibration-optimized machine frame, type-dependent, exchangeable precision air-bearing support for the compressor rotor, drive by a special drive plate with air jet adapted to the rotor diameter.
Measured data processing by measuring unit CAB 750.
Correction station with NC-controlled milling unit for unbalance correction by polar milling at the hub and rear side of the compressor rotor.
Gantry loading system for linking the stations and connection to an in-feed and out-feed conveyor.

Range of application
Measurement and correction of dynamic unbalance in machined turbocharger compressor rotors, use of the machine in mid- to large-volume production. Fully automatic unbalance measurement and correction through polar milling in two planes and with up to two correction steps. Loading and unloading by gantry loader.

Sequence of operations

- The work-piece is taken from the transfer conveyor and loaded into the machine
- Automatic measuring run, brake to zero rpm
- Remove the rotor from the measuring station and load it into the correction station
- Clamp, index to the correction position for the 1st plane, advance the milling cutter to the milling position and control the milling cut. If the unbalance is large the cutter is additionally turned to increase the amount of material removed
- Index and move the milling device to the correction position for 2nd plane, repeat the milling process and unclamp
- Transfer the rotor to the measuring station and start the check run
- Remove the work-piece and unload it to the out-feed conveyor

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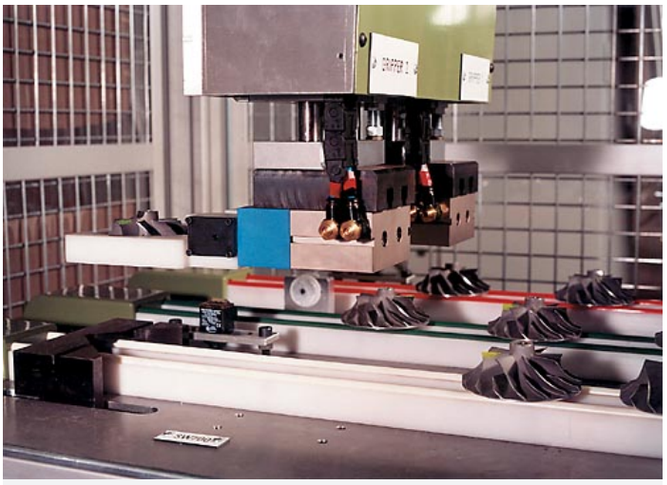
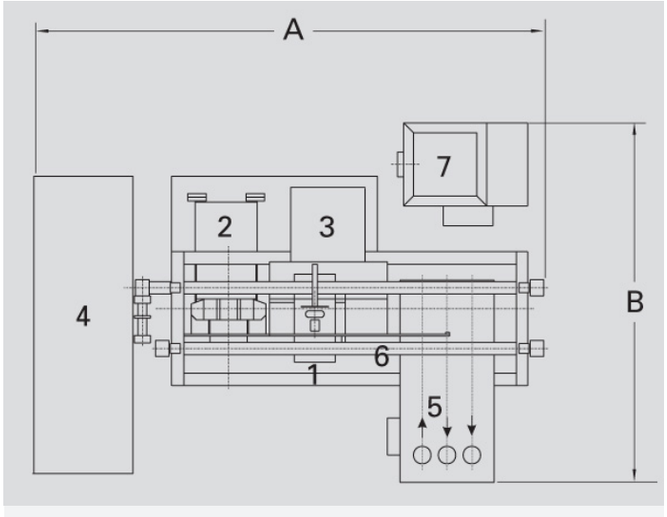
Measuring station with air bearings for highest measuring accuracy.

Unbalance correction at the hub and at the rear of the rotor is achieved by means of a numerically controlled milling unit.



The linear gantry loader system loads the machine stations and links it with the transfer conveyors of the production line.



1 Measuring station2 Correction station3 Measuring system4 Switch cabinet5 Feed and outlet belt6 Loading portal7 Swarf extractor

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

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Data at a glance		100 FBLS	300 FBLS	500 FBLS
Measuring unit		CAB 750	CAB 750	CAB 750
Automatic unbalance measurement		•	•	•
Automatic unbalance correction		•	•	•
Gantry loader		•	•	•
Turbine rotor	-			
Compressor rotor		•	•	•
Rotor				
Weight	[g]	10 - 150	60 - 400	100 - 1500
Diameter	[mm]	30 - 95	65 - 125	120 - 180
Machine				
Width A	[mm]	3000	3000	3000
Depth B	[mm]	4000	4000	4000
Height C	[mm]	2800	2800	2800
Balancing speed, max.	[min -1]	3200	2200	2200
Measurement uncertainty	[gmm]	0,003 - 0,03	0,015 - 0,1	0,05 - 0,4
Cycle time	[s]	25 - 40	30 - 55	35 - 60
Air pressure	[kPa]	450 - 600	450 - 600	450 - 600
Air consumption	[m3/h]	4	4	4
Power consumption	[kVA]	8	8	8

	Order No.	R0380100.01	R0380200.01	R0380300.01

	Order No.	o.r.	o.r.	o.r.
Control cabinet cooling device	Order No.	R0380101.01	R0380201.01	R0380301.01
Remote Control	Order No.	o.r.	o.r.	o.r.

2) Acc. to DIN 1319, 95% probabi ity, work-piece dependent

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

4) Polar milling of the hub and rear side

o.r. On request

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