

150 VM, 151 VM, 150 SVM, 151 SVM, 350 Automatic Vertical Balancing Machines



- Fully automatic operational sequence
- Manual loading and unloading
- Interfacing with production line is possible
- Fully automatic unbalance correction by drilling, milling, welding or riveting
- Analog or NC axis controlled correction
- Digital measured data processing

Range of application

Measurement and correction of single-plane unbalance in disc-shaped rotors with and without shafts, such as flywheels, TMF (twin mass flywheels), brake-drums, gears, clutch-plates, compensation shafts, blowers, etc.

Flexible integration into production line and simple change over of the machine to different rotor types by exchange of work-piece interface adapter and selection of rotor type file. Unbalance correction by axial or radial drilling in polar or component format. If the initial unbalance is larger than can be corrected by one drilling action, multiple holes can be drilled.

Other unbalance correction methods such as milling, welding, riveting or punching can be integrated into the machine on request. The correction units are flexible and are adapted to the work-piece.

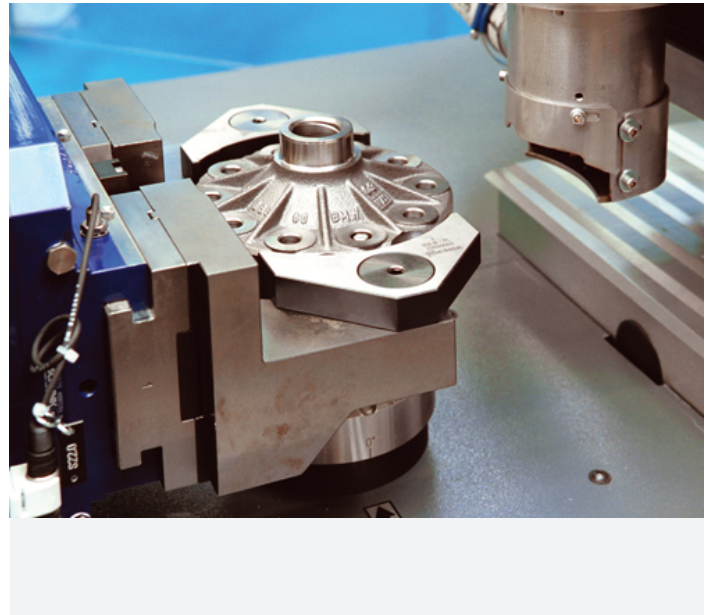
Design

Fully automatic single-station machine with integrated high-performance drill unit. Freely programmable control with fault diagnosis and status display. Clamping of the work-piece to the balancing machine by precision adapters with pneumatic unclamping mechanism. Support device located under the work-piece during drilling, to compensate for the drill force. Unbalance evaluation, correction calculation and correction control through PC controlled measuring unit. Manual loading or optional loading for the machine by a hand-operated system and the corresponding conveying technique.

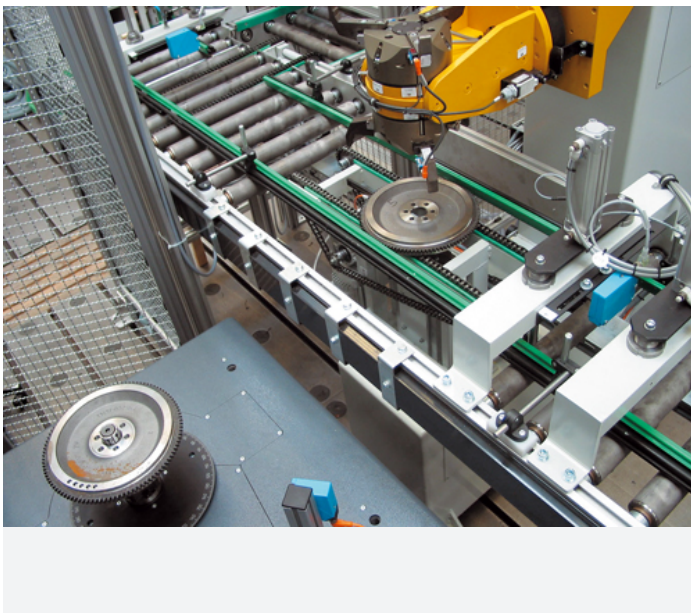
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Horizontally arranged milling unit for radial unbalance correction on an articulated flange. If the unbalance cannot be removed in a single milling operation, correction is made in multiple components as required.



Vertically arranged milling unit for axial unbalance correction on a differential housing. Unbalance correction is made in components.

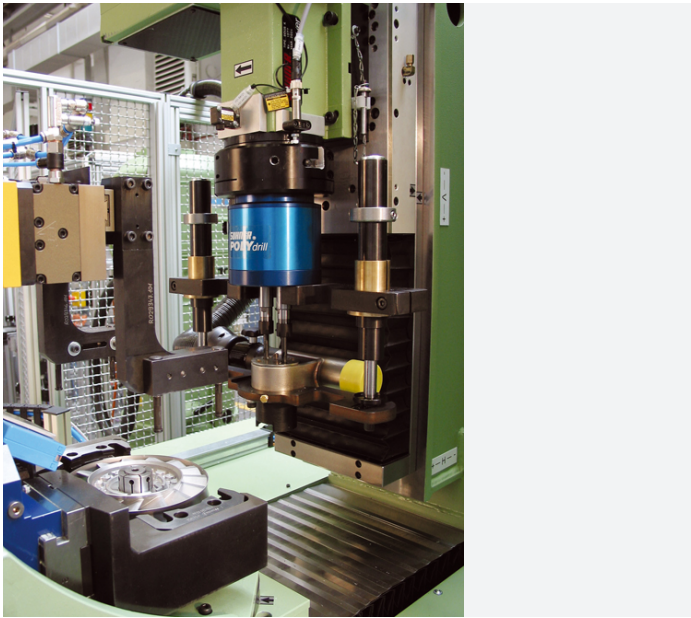


Interfacing with roller conveyors. Flywheels are separated one-by-one and then loaded into the machine by means of a handling system. At the same time, balanced flywheels are unloaded. The double spindle drilling head increases the amount of material removed and reduces the cycle time. Drilling depth and adjustment of the drilling unit to the specific correction radius are controlled by the measuring instrument.

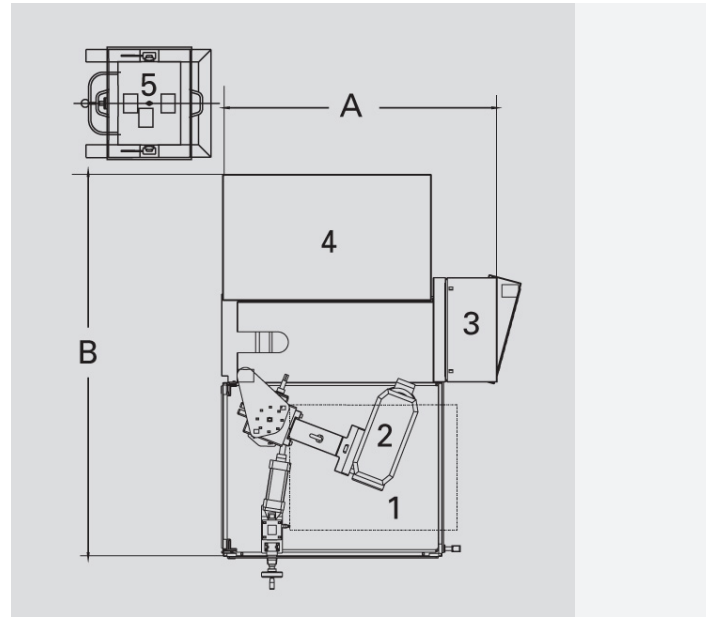


Multiple-station balancing machine with diagonally arranged welding system for unbalance correction on turbines. Correction is made with the help of fixed weights dispensed by a shaking system and supplied one-by-one to the welding electrode. The angle between the two weights is varied depending on the unbalance.

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Vertically arranged double spindle drilling unit for axial unbalance correction on guide wheels. Drilling forces are compensated by a power clamping system.



1 Balancing unit 2 Drill unit 3 Measuring device 4 Controls 5 Swarf extractor (optional)

Plan view (non-binding example)

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Technical data at a glance	150 VM	151 VM	150 SVM	151 SVM	350 SVM	550 SVM
Measuring unit	CAB 950	CAB 950	CAB 950	CAB 950	CAB 950	CAB 950
Unbal. corr. by drilling, vertical	•		•			
Unbal. corr. by drilling, horizontal		•		•		
Unbal. corr. by welding (CD)					•	
Unbal. Corr. By welding (medium frequency)				option		
Unbal. corr. by punching						•
Analog depth control	•	•				
Numerical depth control		•	•			
Manual change-over	•	•				
Automatic change-over			•	•	•	•

Rotor

Weight, max.	[kg]	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100	5 - 100
Diameter, max.	[mm]	240 - 600	240 - 600	240 - 600	240 - 600	240 - 600	240 - 600
Height, max.	[mm]	10 - 200	10 - 200	10 - 200	10 - 200	10 - 200	10 - 200

Machine

Lenght A	[mm]	1500	1500	3400	3400	3400	3400
Width B	[mm]	1700	1700	1500	1500	1500	1500
Height C	[mm]	2200	2200	2400	2400	2400	2400
Balancing speed	[min ⁻¹]	800	800	800	800	800	800
Drilling performance St 60	(mm)	8 - 28	8 - 28	8 - 28	8 - 28	-	-
Measuring uncertainty	[gmm]	2 - 20	2 - 20	2 - 20	2 - 20	2 - 20	2 - 20
Cycle time	[s]	30	30	25	25	25	25
Air pressure	[kPa]	500	500	500	500	500	500
Required air flow	[m ³ /h]	0,5	0,5	1	1	1	1
Power consumption	[kVA]	12	12	25	25	25	25

Order-Nr.	R0030100.01	R0030200.01	R0030300.01	R0030400.01	R0030500.01	R0030600.01
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Drill swarf extractor	Order-Nr.	R0030102.01	R0030102.01	R0030102.01	R0030102.01	-	-
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2) Rotor plus Adaptor

3) Depending on initial unbalance, correction geometry, cutting data and operator

4) data non-binding, depending on respective equipment