SCHENCK



Universal application

High balancing accuracy

Easy to upgrade through modular design and a wide range of accessories

Hard-bearing design ensures quick change-over from one rotor to the next

Ergonomically designed CAB 700 or CAB 920 measuring instrumentation with superior functionality

Full range of safety equipment for all protection classes

Horizontal balancing machines

Series HM4/HM40, HM5/HM50

Range of application

Universal balancing machines series HM are designed for accurate balancing of a wide spectrum of rotors. They are suitable for balancing cylindrical rotors with integral shaft journals and for balancing disc shaped rotors on balancing arbors. Typical rotors are electrical armatures, rolls up to 8000 kg, spindles, turbo charger rotors, crankshafts, ventilators, pump impellers, drive assembly components, and gear wheels.

Permanent calibration, ergonomic design and a logical operating sequence facilitate operation.

Their modular design principle and a wide range of accessories make the machine highly flexible.

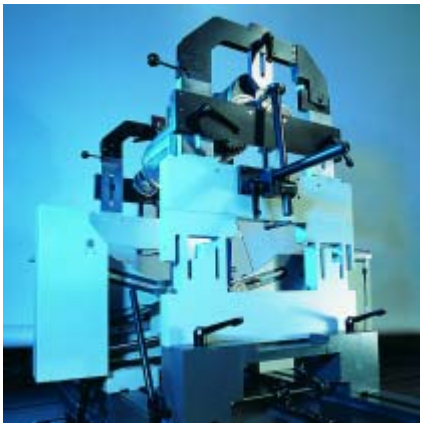
Schenck universal balancing machines series HM are a highly efficient investment both for one-off rotors and for small batches.

Sequence of operation

- Manual loading of the rotor on the bearing pedestals, closing of counter bearings, coupling of the drive system (belt or universal-joint shaft).
- Closing of protection device. Start of automatic measuring sequence:
- Acceleration, determination and display of unbalance on the measuring instrument, deceleration. The measured unbalance values are retained after the measuring run is completed.
- Opening of the protection device, manual unbalance correction (if necessary).
- Verification of residual unbalance (the measuring unit indicates whether the required tolerance has been reached), and unloading of the rotor from the machine.

Special features

- High ease of operation: Hard-bearing design eliminates the need for calibration runs.
- Machine provides for unbalance correction in two planes or separate correction of static and couple unbalance.
- Rotors can be mounted on their original shaft or on a balancing arbor. Balancing with mounted anti-friction bearings available as option.
- Indexing angle display in case of belt drive.
- Automatic measuring cycle with selectable, infinitely variable acceleration, measuring and deceleration times.
- Upgradable with many supplementary modules, e.g. for mass correction.



HM bearing pedestals: Slim, robust bearing pedestals ensure high overall stiffness, high linearity and extremely low damping. Use of the Schenck hard-bearing principle, with the middle section of the bearing pedestal designed as sturdy dynamometer. Sensors are arranged outside the force path and are therefore insensitive to impacts.

Drive systems



Underslung belt drive (BU)



Universal-joint drive (U)

Selection of a drive system is determined by the shape or your rotors. Combinations of different drive systems on one machine are possible. Underslung belt drives (BU) provide for smooth operation and are universally applicable. Universal-joint drives (U) in cases where a high drive power is required.

Measuring units

Balancing in research and development, in a repair shop, in one-off production or in the production of small batches makes entirely different demands on the measuring systems.
Schenck has the right microprocessor-based measuring instrumentation for you, whatever your balancing task. All measuring units offer a consistent operating philosophy, highest accuracy for processing of measured data, and a clear and easy-to-read display. They process measurement signals and provide for direct display of amount and angular position of unbalance. Permanent calibration means that only very few geometric data have to be entered to set the unit for a new rotor type. Features such as storage of measured values, indexing display or the display of instructions help the user to perform the balancing process quickly and efficiently.
The CAB 920 offers extended functionality and superior ergonomics. A variety of application specific software modules are available for both measuring units.



Measuring unit CAB 700



Measuring unit CAB 920

Enclosures

The choice of protective enclosure is determined by the danger the rotor presents, with due consideration to balancing speed, method of unbalance correction and maximum penetration energy of rotor components or fragments.

Depending on the varying protection requirements, ISO 7475 specifies five protection classes (0, A, B, C, D) for balancing machines.

Series HM balancing machines usually require Class B or Class C enclosures. Safety class B should be chosen, if contact with the rotor or parts of the drive system may result in injury. Class C is to be used in cases, where the hazard of fragments detaching from the rotor cannot be ruled out entirely. The size, shape, hardness and tangential speed of a projected fragment are used to calculate the penetration potential. The safety enclosure must be capable of containing any such projected rotor fragments.

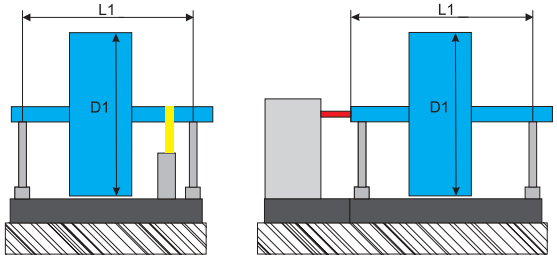

Class B protection


Class C protection

Important data at a glance

Machine		HM 4	HM 40	HM 5	HM 50
Rotor weight, max	[kg]	1500	3000	5500	8000
Diameter, max (D1)	[mm]	1600			
Bearing journal diameter	[mm]	12 - 100	15 - 120	18 - 140	25 - 180
Bearing centre distance (L1) (1) (2)	[mm]	U: 2020; BU: 2750		U: 1970; BU: 2270	
Minimum achievable residual unbal.	[gmm]	5	8	16	20
Rotor drive (2)		BU, U			
Drive power (2)	[kW]	7,5		> 7,5	> 15
Power supply		400V ± 10%, 3Ph, 50Hz			
Measuring instrumentation		CAB 700 (c.f. Brochure RC 1007)			
Paint finish		RAL 7024 / 7035 graphite grey / light grey			
Options					
Measuring unit CAB 920		Reference system for peak power, ... (c.f. Brochure RC 1034)			
Additional software		Operator support, documentation, unbalance correction calculations			
Printer with mounting kit		For documentation of the balancing process			
Machine bed extension	[mm]	1000 / 2000 / 3000		1000 / 2500 / 3500	
Roller carriage inserts for rotor	[Ø mm]	100 - 200	120 - 240	140 - 280	180 - 380
Class B protection to ISO 7475		Protection against contact with rotating parts			
Class C protection to ISO 7475		Protection against projected fragments			

(1) For larger rotors, machine base extension or balancing machines series HM 4/40, HM 5/50 are available
(2) Drive system: BU: Universal belt drive; U: Universal-joint drive, 2-speed



Belt drive BU **Joint drive U**

SCHENCK

Balancing and Diagnostic Systems

SCHENCK RoTec GmbH
Landwehrstraße 55
D-64293 Darmstadt

Tel.: +49 (0) 61 51 - 32 23 11
Fax: +49 (0) 61 51 - 32 23 15
eMail: rotec@schenck.net

Make use of our worldwide distribution network.
Please see us at http://www.schenck-rotec.com

The DÜRR Group

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