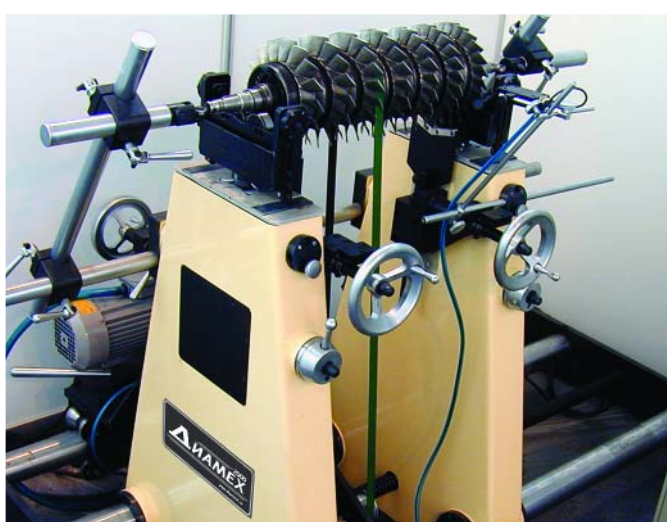


DIAMECH 2000

Vibration Diagnostic and Balancing Machines



UNIVERSAL SOFT-BEARING BALANCING MACHINES

BM series

Precision balancing machines for all types of rotors with masses from 5 grams up to 90 tons



UNIVERSAL SOFT-BEARING BALANCING MACHINES

BM series



Balancing machine BM-8000

Since 1994, start in commercial operation of the first balancing machines of series BM, on the enterprises of various industries of Russia, Ukraine, Kazakhstan, Byelorussia our company it is put more than 600 balancing machines.

Vibration of machines and mechanisms is an actual problem for many industries at which enterprises turbines are maintained, generators, electric motors, compressors, pumps, fans and others rotor machines. As the unbalance of rotors is one of principal causes of the raised vibration, in maintenance of vibrating reliability rotor machines qualitative balancing of rotors at a stage of their manufacturing or repair has essential value.

Our customers – leading enterprises of Russia, Gasprom, Transneft, Rosenergoatom, RAO UES of Russia, all oil refining factories of Russia, Russian Railways, leading aero-engines manufacturers, metal works and others.

Balancing machines of manufacture DIAMECH 2000 are successfully maintained on hundreds enterprises of various industries. Such wide popularity and popularity in circles of the experts engaged in balancing, machine tools DIAMECH 2000 have received due to the reliable work and simplicity of operation, and results of balancing on any of balancing machine of series BM never gave an occasion to doubt of accuracy of a measuring part of the machine tool.

Balancing machines of series BM, have a lot of technical advantages, than favourably differ from machine tools of other firms-manufacturers submitted at present in the market of Russia.

First of all, machine tools of series BM concern to machine tools above resonance type, the balancing occurs on frequencies of rotation in some times exceeding own frequency of system "support - rotor", as against the majority of other machine tools which are under resonance

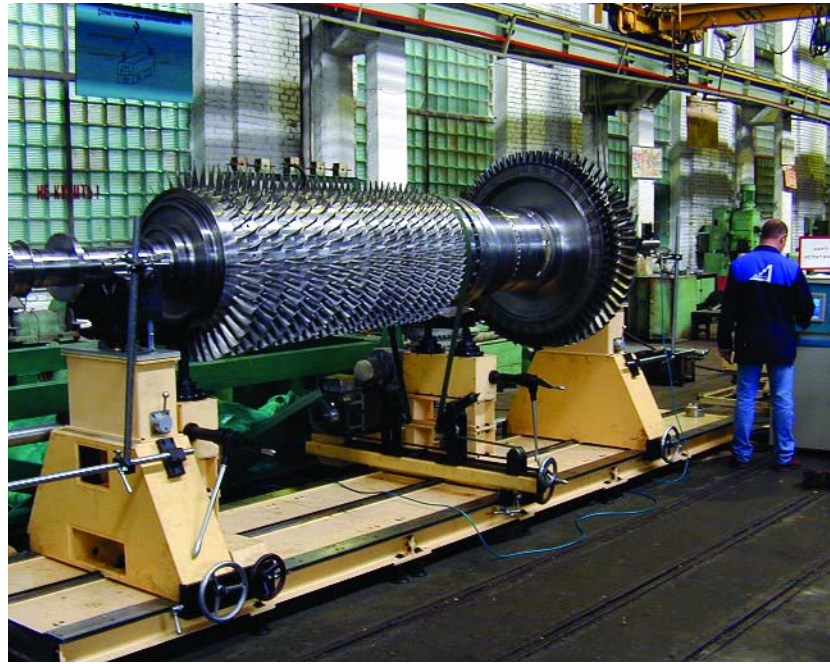
This major difference causes the following basic advantages:

Balancing machines of series BM installed without foundations, no expensive construction of special concrete foundations required, it allows to reduce additional expenses for installation of the machine tool to a minimum and enables to transport the balancing machine to a place of balancing,

Among the applied know-how — unique anti-friction bearing work supports eliminate time-consuming alignment procedures. Bearings have a flat, wide-contact surface to carry rotors without damaging journals,

Practically for all models of balancing machines DIAMECH 2000 it is possible to counterbalance rotors in a range of weights from as much as possible declared, up to weight a hundred times smaller.

Simplicity of use and fast adaptation of the machine tool under different types of rotors allow to spend on balancing of each rotor less than 30 minutes, and the wide range of additional industrial equipment — to balance rotors anyone, even with the most difficult configurations.



Balancing machine BM-8000



Balancing machine BM-3000

For today DIAMECH 2000 serially makes 15 models of soft bearing balancing machines with a horizontal axis of rotation of series BM, for rotors in weights from 5 gramme up to 90 tons, 8 models of horizontal hard bearing balancing machines series BT for rotors in weight from 15 kg up to 9 tons, and 4 models of balancing machines with a vertical axis of rotation of a series V.

All balancing machines of series BM are equipped with the modern computer measuring module which provides the automated process of measurement and calculation of the given balancing.

Precision balancing on low speeds

The basic advantage above resonance balancing machines is the opportunity to make balancing with high accuracy on rather low speeds. Thus accuracy of balancing does not depend on the further increase of frequency of rotation. It is very important to understand and avoid the groundless requirement to balance rotors on high speeds. Accuracy thus does not raise, and advantages above resonance balancing machine are lost. Low speeds are defined by a pliability of support of the machine tool. Own frequency support which are used in balancing machines DIAMECH 2000, does not depend on weight of rotor. Absence of elastic elements and to a minimum the shown friction in hinges approaches properties of support to a mathematical pendulum which own frequency, as is known, depends only on his length and does not depend on weight. It allows to create support not simply with low own frequency, and superlow own frequency and by that to provide very low frequencies of rotation at balancing.

No expensive construction of special concrete foundations required

This advantage, first, considerably reduces cost of civil and erection works, and, second, does the balancing machine transportable, that allows to deliver without special work the machine tool to a place of realization of repair.

Anti-friction bearing work supports

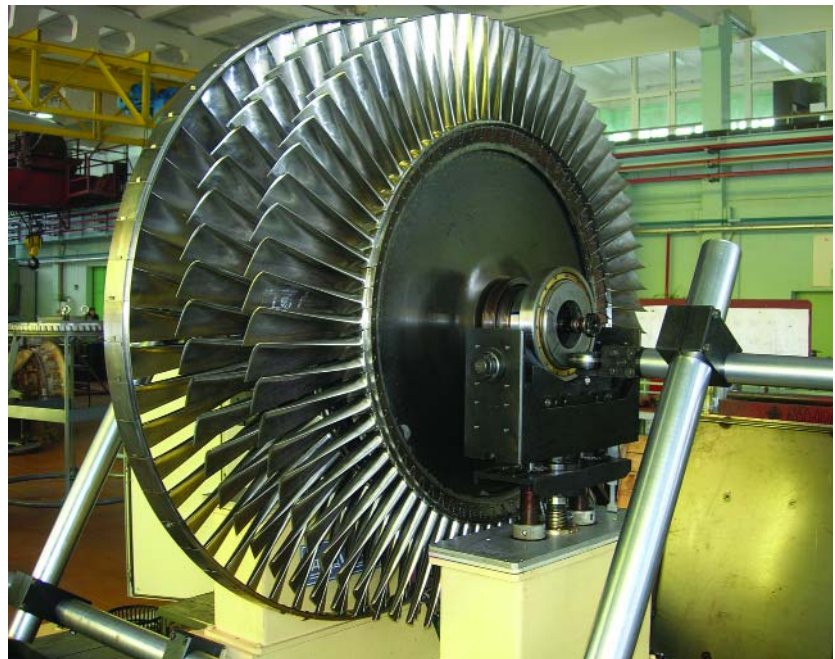
Anti-friction bearing work supports eliminate time-consuming alignment procedures. Bearings have a flat, wide-contact surface to carry rotors without damaging journals,

Smooth loading of a rotor on the balancing machine

The system of special screw-jacks unaccented and exact loading a rotor on roller support that defines long term of operation of high-sensitivity roller support.



Balancing machine BM-3000



Balancing machine BM-1000



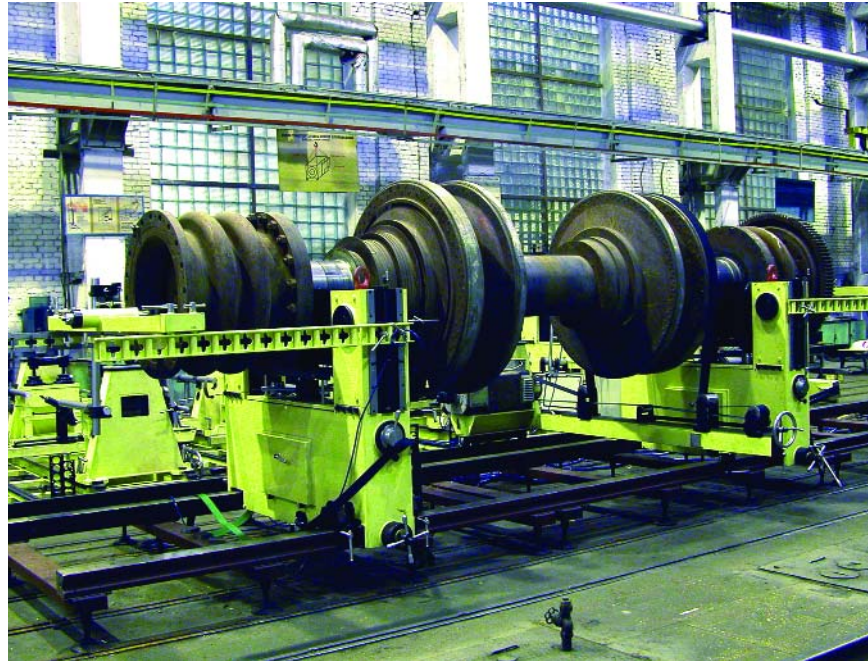
Balancing machine BM-300

Balancing of rotors of any configuration, easy adaptation under various types of rotors

The wide choice of additional equipments, the prisms, special roller blocks allows to balance console rotors and rotors in own bearings, rotors with narrow basic bearing journals and rotors not having an own shaft. Engineers DIAMECH 2000 will develop and will make necessary equipment for balancing specific rotors and rotors of a difficult configuration. Universal belt drive with smooth regulation of frequency of rotation quickly allows to recustomize the machine tool under various types of rotors.

The automated calculation of the data Balancing

The modern computer measuring module, provides the automated process of measurement and calculation of dynamic factors of influence and adjusting weights, storage of the information on a configuration of rotors and factors of influence, a conclusion to the screen of reference values unbalance and results of balancing, listing of reports of balancing.



Balancing machine BM-20000

Service. Training. Engineering.

- Well adjusted system of service of machine tools and maintenance with spare parts.
- Training of experts in balancing in the own Training Centre.
- Development and introduction of techniques of balancing difficult rotors.

STANDARD SPECIFICATION

	BM-010-C	BM-010	BM-050	BM-100	BM-300	BM-1000	BM-3000	BM-5000	BM-8000	BM-10000	BM-20000
Max. rotor weight, kg	3	8	50	100	300	1000	3000	5000	8000	10000	20000
Min. rotor weight, kg	0,005	0,03	0,5	1	3	10	30	50	80	100	1000
Max. rotor diameter, mm	170	170	700	1800	1800	2000	2300	2300	2600	2600	2500
Shaft journal diameter range, mm	2...50	4...60	20...200	12...230	12...230	15...280	20...380	20...400	25...420	25...420	90...350
Distance between the centers of rotor bearing journals, mm											
min	10	40	120	180	180	230	350	350	380	380	1000
max	410	410	1060	1410	1410	2350	2630	2630	5600	5600	12000
Rotor support	Rollers & V-blocks										
Sensitivity, g-mm/kg	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.2
Balancing speed, rev/min	450 >	450 >	350 >	350 >	350 >	300 >	300 >	300 >	300 >	300 >	200 >
Electric drive type	Alternating current with adjustable frequency										
Electric drive power, kW	0.075	0.075	1.1	1.5	1.5	2.2	5.5	11	15	15	20
Type of drive	Belt			Belt (standard) / Belt + End (option)							
Speed sensor	Laser										
Instrumentation	Touch screen balancing computer, with all accessories needed for balancing										
Foundation requirements	Tabletop			Standard shop floor for load carrying capacity - No additional concrete or steel base required							
Base length, mm	500	500	1280	1600	1600	2700	3000	3000	6000	6000	14000
Machine weight, kg	30	30	80	450	500	1100	1500	1700	3000	4000	8500

Specifications are for standard machines; modifications are available to meet specific requirements.

High quality and accuracy of manufacturing of all elements of a design of the machine tool and measuring part guarantee reliable work and reliability of received results.

BM-010-C Universal balancing machine for extremely light rotors such as textile false twist spindles, non-ferrous armatures, rolling-elements, etc. for which the highest level of balancing tolerance is required.

BM-010 Universal balancing machine for light and small rotors such as miniature armatures, miniature fans, turbochargers and complete assemblies for which the highest level of balancing tolerance is required.

BM-050, BM-100, BM-300 Universal soft-bearing balancing machines for light rotors, such as small armatures, fans, for the balancing tasks of the aircraft industry.

BM-1000 Was acquired by all oil refining factories of Russia, it is most claimed at the enterprises of chemical and petrochemical branches, the enterprises for transportation of petroleum and gas, the machine-building enterprises.

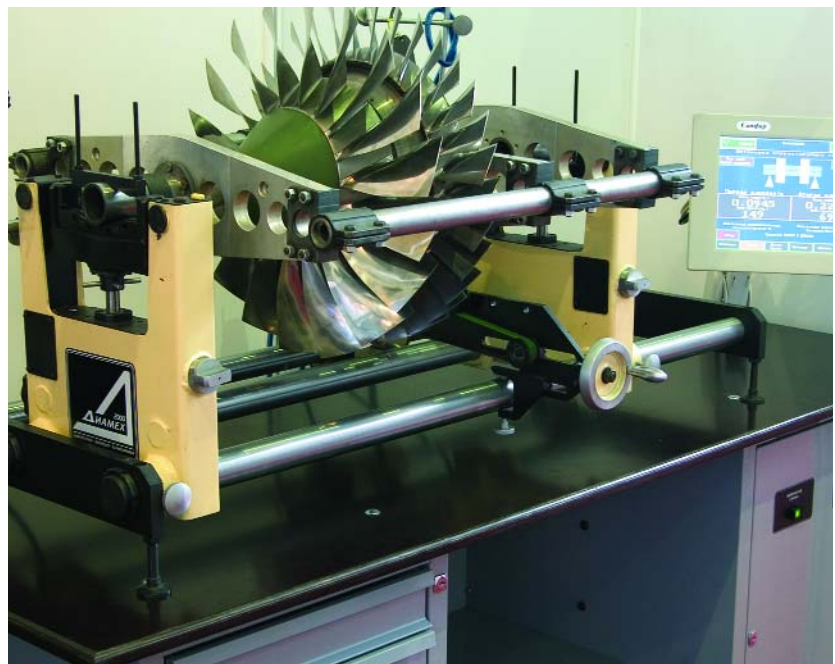
BM-3000, BM-5000 The most popular is a machine of BM-3000 model. Since 1995 more than 150 machines total of this model have been produced.

The BM-3000 machine is widely used at thermal power stations for the balancing of various equipment: different pumps and electric motors, at locomotive repair plants and depots for balancing of driving motor armatures. Balancing machines of models BM-3000 and BM-5000 are established at each Gasprom compressor station.

BM-8000, BM-10000 At Severgasprom BM-8000 balancing machine is installed in every compressor station which allows increasing overhaul quality and reducing a turbo-unit vibration level.

Design features of balancing machines of a new generation make possible, along with simplicity of their installation, to use them in a transportable variant what permits to practice a "machine-to-rotor" strategy instead of a "rotor-to-machine" one as had been traditionally applied. Such a strategy has successfully been used since 2001 at Kurskturboatomenergoremont maintaining nuclear power stations in the European part of Russia. A balancing machine of BM-8000 model installed in a special metal container on a "KAMAZ" truck can be fast shipped as required to Kursk, Smolensk, Kalinin or Novovoronezh nuclear power stations.

BM-20000 Balancing machine BM-20000 model was designed specially for paper-and-pulp industry enterprises and integrated iron-and-steel works for the balancing of large rollers.



Balancing machine BM-050



Balancing machine BM-010

Premium of the Russian Government in the field of Science and Technique

Modern computer measuring module SAPPHIRE

SAPPHIRE is an easy to use computer balancing instrument for Soft-bearing balancing machines and Hard-bearing balancing machines.

The SAPPHIRE electronics provides a wide range of balancing speeds, high measurement accuracy and unique signal filtering. Low speed precision balancing is a major feature of the SAPPHIRE

SAPPHIRE offers you modern software design optimised for operation using a touch screen monitor, with which you quickly achieve results. You use your forefinger to control all functions and communicate with the balancing machine. You rarely need the keyboard simulated on the screen: perhaps to setup a new rotor.



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Specification

- Balancing speed range: 100 to 3000 rev/min
- Balancing in one or two planes
- Touch screen 14", 17" or 21" LCD
- High measuring accuracy even with short balancing cycles
- Auto calibration
- Display correction angles for independently adding or removing rotor balance weights
- Automatic additional turn of a rotor on a required angle with laser angle indicator for the display of the angular position of the rotor
- Rotor Memory storage for up to 500 different rotors internally
- Vector Splitting of unbalance corrections
- Vector Addition of unbalance corrections for combining weights
- Electronic Compensation for tooling errors caused by cardan shafts or adapters
- Semi Automatic or Manual Balance mode cycles
- Firmware in English

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