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Technical task for the supply of balancing machine for rotor balancing with weight from 30 kg till 3000 kg

Basic technical specifications

Machine type	Above resonance (soft bearings)
Rotor minimum weight	≤ 30 kg
Rotor maximum weight, up to	3000 kg
Rotor maximum diameter, not less than	1600 mm
Minimum distance between the centers of supports (bearings), mm	≤ 300
Maximum distance between the centers of supports (bearings), mm	≥ 2500
Minimum diameter of rotor journals, mm,	≤ 20
Maximum diameter of rotor journals, mm,	≥ 200
Support rollers	Cylindrical
Lowest achievable residual specific unbalance according to GOST 20076-2007 (ISO 2953:1999) at least	0.1 g*mm/kg, must be confirmed by proof test protocol using the certified control rotor
Unbalance reduction ratio according to ISO 2953:1999	95%, must be confirmed by proof test protocol
Balancing machine must provide rotor and armature's balancing with machine's maximum working speed, up to	4800 rpm
Drive type	Belt drive

Balancing machine must be equipped with special screw-jacks (stackers) for possibility of heavy rotor's smooth mounting to the supports (bearings) of the machine.
Balancing machine with the equipment (tools) must provide balancing of the details according to provided drawings. Tools (if will be necessary) cost must be kept from entering into machine's total cost and must be specified separately.

Machine's measurement system specifications

Number of vibration measuring channels	At least 2, (possibly 4)
Data output	The USB connector must be provided on the front dashboard for the opportunity of connecting the external media device

Limit of permissible relative measurement error of vibrodisplacement amplitude and rate speed must be specified in measuring system's specification. In support of device's claimed specifications, it is necessary to provide measuring tools type and its error approval certificate.

Measuring system software's basic specifications.

Measuring system software must have simple, user-friendly, understandable interface, with control capability of all balancing modes by touch screen monitor using.

Rotor data base.	To simplify the user's work, all information about the previous balancing process, balancing protocols, rotor geometry parameters, weight, rotation speed, permissible residual unbalance, coefficient of impact and mass correction technique must be saved in rotor settings data base.
Displaying the information about unbalance angle and size.	For illustrative purposes of current balancing data, measured balance weight mass data and planting angle data must be presented in numerical and graphical form.
New rotor settings	Device's adjustment to the new rotor must be realized by the way of choosing the needed rotor configuration from the beforehand pre-established settings. Provided drawings rotors settings must be installed by manufacturer.
External impacts compensations	Compensation functions must be provided in device's software: key (dowel) compensation, displacement compensation, index compensation.
Rotor rotation	Selection of rotor rotation's direction must be provided: forward and reverse rotation
Methods of calculation	Device must have the possibility of choosing

	the calculation method for the start measurements: influence coefficient determination, rotor geometrical parameters input.
Minimal device's software's functionality	Correcting (balancing) weight mass and angle of planting and removing determination Rotating frequency control Adjustment of revolutions converter Automatic additional turn of a rotor to a required angle Composition of user-defined balancing weights Decomposition of user-defined balancing weights User rights settings Launches history Balancing protocol's creating and editing
Function keys	It is advisable to have «hot keys» provided on the main screen for fast access to necessary software operation modes
Unbalance measuring units	g•mm/kg, g•mm , g•cm
Data backup	For rotor's software data loss prevention, it is necessary to have data backup function

Software special functions

1. Machine's accuracy control according to ISO 2953:1999

For the self consistent accuracy test, device's software must have special mode of machine's accuracy check by criteria of declared characteristics conformity according to c ISO 2953:1999 with testing results output in protocol form with numerical and graphical testing results presentation.

Machine's accuracy control	Lowest achievable residual unbalance check
	Basic error check
	Unbalance reduction ratio check

2. Geometrical parameters measuring

It is advisable that device's software must be provided with special function of rotor's geometry measuring (for a surface runout check).

3. Function of connected equipment condition check.

For the quick identification of potential machine's measuring system failures, the device must be provided with automatic check of connected equipment's working ability: vibration sensors, revolutions converter, angle sensoe, drives.

4. Measuring module calibration
The device must have special calibration function for the periodical measurement module and measuring channels calibration.

Additional requirements

It is necessary to provide in offer documents data (enterprise, contact person with phone number) of at least 10 users of the machine, which is the purchase item.

It is necessary to offer passport and device's operating manual in electronic form, measuring tools type approval certificate to this device, verification methods in offer documents.