TORQUE CONVERTER BALANCER SB 02.350

CERTIFICATE
OPERATORS MANUAL



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WARNING! Do not operate the WELDER without reading the contents of the certificate.

INTRODUCTION

This certificate, combined with the technical description and operators manual, is a document that certifies main parameters and technical characteristics of the Torque converter balancer (hereinafter called Stand) guaranteed by the manufacturer.

The document also contains the description and mode of functioning of the Stand, operating instructions and other information necessary to ensure the full use of the technical capabilities of this device.

1. USE

The stand is designed for the measurement of static imbalance of automatic gearbox torque converters in the dynamic mode and calculation of the mass of correcting weights and their positions.

2. USAGE ENVIRONMENT

2.1. The stand must be operated in closed heated facilities under the following conditions:
2.1.1. Air temperature from +10 to +30 °C
2.1.2. Relative humidity not more than 80%
2.1.3. The power supply must meet the following requirements: 220±20V, one-phase, 50±0,5 hz.
2.2. Average service life of the stand is not less than 5 years

3. SPECIFICATIONS *

№	Parameter	Value
1	Measurement error of imbalance value, g	1
2	Measurement error of unbalance angle, not more than degree	3
3	Parameters of torque converters - diameter not more than, мм - weight not more than, kg	 400 20
4	Power, consumed by the stand, not more than W	200
5	Dimensions, mm	710*497,2*1057
6	Weight, not more then kg	145

* The manufacturer has the right to make design and technical changes that do not involve degradation of equipment functionality.

4. PACKAGE CONTENTS

Package contents of the stand include:
4.1. The stand
4.2. Certificate, operators manual

5. STAND CONFIGURATION

5.1.General view of the stand is shown in Picture 5.1.



Pic.5.1 – General view of the stand

1 – body
2 – balancing ring (faceplate)
3 – measuring desk

5.2. Design of the stand.

5.2.1. The stand is designed as a rigid metal frame 1 (Pic 5.1), closed with panels. Measuring desk 3 is a separate module on the top. Torque converter to be balanced is mounted on the faceplate 2.

5.2.2. The faceplate of the stand is mounted on a rotating spindle, on the body of which the shock sensor and the sensor of the angular position of the spindle are fixed. The faceplate is pre-balanced.

5.2.3. Drive of the measuring ring is made using belt drive with single-phase asynchronous motor. The drive has the ability to adjust the belt tension (accessible after removing the left sidebar).

6. STAND INSTALLATION REQUIREMENTS.

6.1. After transportation or storage at temperatures below +5 ° C it is necessary to keep the stand in standard containers at operating temperature at least 4 hours.

6.2. The stand must be installed on a flat concrete floor or foundation, so that all props touch the base. Deviation of the stand base from the horizontal plane shall be not more than 10mm by 1 meter. It is recommended to fix the stand on the ground with anchor bolts.

6.3. When installing the stand it is not permitted to use elastic elements, rubber gaskets etc. The vibration level at the installation place must be minimized. There shall be no vibration or resonance frequencies in the place of installation of the stand in the range of 1 ... 10 Hz. There shall be no heat sources near the stand, creating a local overheating of its parts and sources of electromagnetic fields. All these factors can lead to an increase in measurement errors.

6.4. In order to provide convenience, connection, maintenance and repair it is recommended to install the stand at a distance of not less than 800 mm from the wall.

6.5. There should be no large high-frequency surge and switching noise, for example, because of work of welders and other powerful equipment, which are on a common line.

Note: Not complying with paragraphs 6.3 and 6.5 can lead to malfunction of the stand that is not within the scope of warranty.

7. SAFETY PRECAUTIONS

7.1. When working with the stand general requirements of the technical operation of electrical equipment and electrical appliances must be complied.

7.2. The stand body must be grounded.

8. GETTING READY

8.1. After unpacking and installing the stand in a workplace connect it to the mains. To connect the stand to the mains a room must be equipped with appropriate tripolar electrical socket with the ground wire.

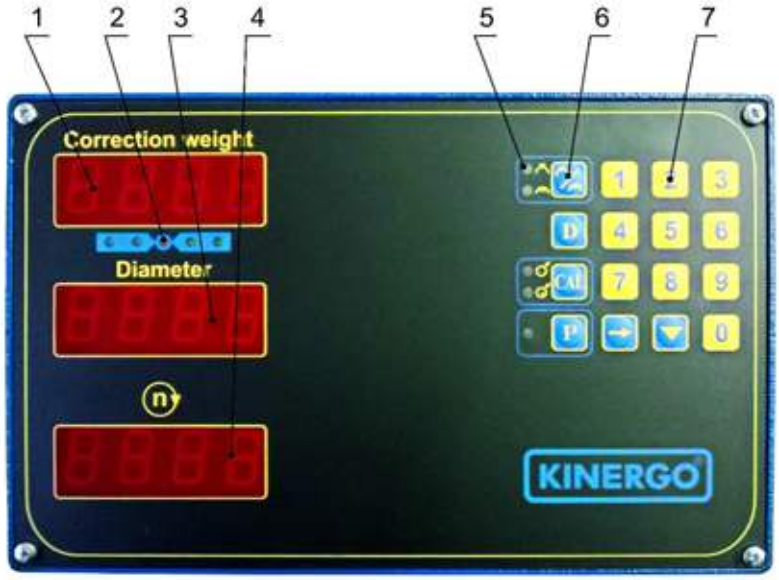
8.2. For normal operation of the stand supply voltage must be within 220 ± 10%.

8.3. For staff safety before turning the stand on make sure you have safety ground.

WARNING! Working without a safety ground is strictly prohibited!

9. DESCRIPTION OF MEASURING DESK

9.1. General view of the front of the measuring desk is shown in Pic. 9.1



Pic.9.1 – the front of the measuring desk

1 – unbalance indicator (in grams)
2 – positioning LEDs
3 – diameter indicator (in mm)
4 – an indicator of value of speed (rev / min) and the operating modes
5 - console mode LEDs:
- ◠ - correction by the addition of metal
- ◠ - correction by removing metal
- ◠ - conditional balancing conducted
- ◠ - conditional ablation of the machine imbalances is performed

6 - The mode button of the console:
- ◠/◠ - correction method selection button (by adding or removing metal)
- **D** – correction diameter input button
- **Cal** – console calibration button
- P – console internal parameters display button
- → - parameter select button
- ▼ - record in memory button

7 – digital keyboard (1…9, 0)

10. PREPARATION FOR BALANCING

10.1. Turn on the power of the stand.

When you turn on the power switch of the stand there is a beep and the self-test (when the checksum doesn't comply "Err0" appears on the display 4 - in this case check the settings). If during the initial self-test errors are not detected, zeros appear in all indicators, those LEDs 5 switch on, which correspond to preset mode. There is a beep when pressing any button.

10.2. Pick up the adapter * for the plug of a balancing torque converter for its centering on the faceplate 2 (Pic.5.1). Install the torque converter with plug down and fix it with bolts through the slots in the faceplate (bolts should be evenly spaced around the circumference and have the same weight).

10.3. Select the adapter to fix the internal parts of torque converter and insert it through the hub.

*** Note: The adapters are not supplied with the machine and presented separately or made by yourself.**

10.4. Enter the value of torque converter outside diameter.

To correctly calculate the mass of correction weights it is necessary to accurately define its diameter. To do this, press the «D» button (Pic.9.1). The indicator 3 lights up the prompt "- - -", then you must enter three digits - value of the diameter correction in mm. In case of incorrect diameter – repeat it.

10.5 Press "◠/◠" to select the method of correction (by adding or removing metal) when the corresponding LED lights up.

The device is ready for measurement.

11. BALANCING OF A TORQUE CONVERTER

11.1. Measuring of disbalance.

11.1 1. Prepare to balancing according to point 10.

11.1.2. Activate the stand by pressing «Start» button on body 1 of the stand (Pic. 5.1).

Control the frequency of rotation (in rev / min) by using an indicator 4.

11.1.3. After stabilization of readings on indicator 1 disable the rotation with button «STOP».

The mass in grams of corrector weights is shown in display 1, calculated according to the measured imbalance, selected correction method (adding or removing metal "◠/◠") and specified correction diameter. On line 2 (Pic.9.1) one of the LEDs light up in any place.

11.1.4. If after stopping of the rotation you will find that the diameter is incorrect, enter it correctly and the measurement results will be automatically recalculated without a re-start of the machine

11.2. Installation of correction weight.

11.2.1. Turn the wheel manually, at that the glow of LEDs on line 2 will move, and at some point all the LEDs light up on the line. This means that the place on torque converter you should add (or remove depending on "◠/◠" LED) correction weight is right in front of an operator (opposite to the label).

11.2.2. In case of adding metal select correction weight the mass of which is equal to the reading on display 1 (taking into account the weight added when welding) and weld it to the body of torque converter.

11.3. Check.

To check the results of balancing restart the stand. If a torque converter is balanced correctly, indicator 1 shows the value less than the permissible final unbalance in grams for this type of torque converter. Otherwise, repeat balancing.

12. REMOVAL OF STAND DISBALANCE

This setting is carried out if there is no confidence in the precision landing of a torque converter on the faceplate (if the eccentricity of landing is more than 10-20 microns depending on the mass of the torque converter). Setting is carried out for each size of torque converter with the adapter and mandrel. This adjustment is carried out after the decrease of imbalance to a value close to the maximum allowable.

12.1. Measure imbalances.

12.2. Turn the item 180 ° relative to the mandrel.

12.3. Press the «Cal» button until «CALE» appears in the indicator 4 (Pic 9.1).

12.4. Perform measuring. When the measurement is over «End» is displayed in the indicator 4 and the indicator 1 shows the value of imbalance caused by an error of landing and the imbalance of the spindle or mandrel.

12.5. For storage in memory (conditional ablation of the machine imbalances) press the «Cal» button until the indicator 4 displays «CALE» and then press «▼» (in this case, the LED "⚷" goes on and the stored values are taken into account in the following measuring). Machine imbalances are taken into account after switching off and on the power.

To disable the conditional ablation of machine imbalances press «Cal» button until the indicator 4 displays «CALE» and then press "→" button (the LED "⚷" goes off).

13. CALIBRATION

Calibrations are carried out only in case of repair of the machine after changing the vibration sensor or encoder, as well as significant reduction in the accuracy of balancing.

13.1. Calibrating the imbalance. Carried out without the balancing item.

13.1.1. Press the «Cal» button. The indicator 4 (Pic.9.1) displays «CAL0».

13.1.2. Perform measuring. When the measurement is over the indicator 4 displays «End» and the LED "☌" turns on. This means that the conventional balancing is performed and the imbalance is stored, and its value subtracted from subsequent measurements.

13.1.3. Install the control weight on the faceplate (it should weight 5 ... 20 times greater than the mass corresponding to the permissible residual unbalance).

13.1.4. Enter the diameter of the control weight installation (see 10.4.).

13.1.5. Press the «Cal» button until the indicator 4 displays «CAL1».

13.1.6. The indicator 1 displays prompt "- - -. - ", after which it's necessary to enter four digits (with the nonsignificant zeros in the Most Significant Bits) - the mass of the control weight in tenths of a gram (for example, at a mass of 46.5 grams of weight you must enter the digit" 0 4 6 5 "). When the weight is incorrect - re-enter the four digits.

13.1.7. Perform measuring. When the measurement is over indicator 4 displays «End» and the measuring device calculates the required settings.

13.1.8. If you want to save these settings in memory press the button «▼».

13.1.9. Disable conventional balancing.

Press the «Cal» button until the indicator 4 displays «CAL0», then press the button "→". The LED "☌" turns off.

13.2. Calibration of the angle imbalance.

13.2.1. Press the «Cal» button. The indicator 4 displays «CAL0».

13.2.2. Perform measuring. When the measurement is over indicator 4 displays «End» and the LED "☌" turns on. This means that the conventional balancing is performed and the imbalance is stored, and its value subtracted from subsequent measurements.

13.2.3. Install the control weight on the faceplate (it should weight 5 ... 20 times greater than the mass corresponding to the permissible residual unbalance) in any angular position.

13.2.4. Perform measuring.

13.2.5. Press the «Cal» button until the indicator 4 display «CALF».

13.2.6. Manually rotate the faceplate aligning control weight with a label on the lid of the machine (while in mode "◠").

13.2.7. Press the «▼» to save the angle in memory.

14. MAINTENANCE

Maintenance should be performed to ensure the normal operation of the stand during the operation period. Frequency of service depends on the environmental conditions and the intensity of the stand use.

Recommended types and timing of maintenance:

- Daily service
- Cleaning the stand every 3 months
- Adjust the belt tension as needed.

When opening the stand for maintenance it must be disconnected from the mains.

14.1. Daily service.

Every day after work the stand body must be cleaned of dirt and dust and the working part of the spindle and faceplate must be wiped with a cloth moistened with mineral oil.

Attention! During daily work process it is necessary to keep clean seats of faceplate and if necessary wipe it with a cloth moistened with mineral oil to prevent premature wear and failure.

14.2. Cleaning the stand.

Every three months it is necessary to remove dust and transmission wear products from the internal cavity of the stand after removing the side cover. Cleaning should be done with a vacuum cleaner or by blowing dry air.

14.3. Adjust the belt tension.

As necessary, adjust the belt tension by moving the bracket with engine after removing the side cover. If the belt tension is normal, deflection of its branch should be 15 ... 20 mm with stress application 0.8-1.0 kg.

Note: If the belt is creaking it's possible to lubricate it with some axle-grease or special lubricant sold in auto parts stores that prevents creaking of alternator belt in a car.

15. STORAGE AND SHIPMENT PRECAUTIONS

Transportation conditions must comply with the terms 5 according to GOST 15150-69 at ambient temperatures from -25 to +55 ° C in compliance with anti-shock and vibration.

Stand should be transported in closed transport of any kind. Railway wagons, containers, and truck bodies used to transport devices must not have any trace of cement, coal, chemicals, etc.

The storage must comply with the terms 1 according to GOST 15150-69. There should not be any dust, acid or alkali fumes, corrosive gases and other harmful impurities in the storage that may cause corrosion.

16. WARRANTY

16.1 The manufacturer guarantees compliance of the stand with all the requirements and the technical characteristics specified in this certificate if the relevant conditions of usage, transportation and storage are met.

16.2 The warranty does not apply to:

- — product without the certificate, logos or serial number;
- — natural wear;
- — consumables (oils, lubricants, belts, etc.);
- — damage caused by using the product for purposes beyond its purpose;
- — paint products
- — defects caused by mechanical damage, improper or careless operation;
- — damage caused by unauthorized changes to the product design or its components;

16.3 The warranty period of operation of the stand is 12 months from the date of delivery to the Customer.

16.4 Seller diagnoses the cause of a fault on the basis of images or video, provided by the Buyer. If this is not possible, the customer comes to the Seller for warranty inspection and repair of the goods. The Customer shall bear the costs associated with the arrival of a specialist for repair or shipment of defective parts or assemblies.

16.5 The buyer cannot claim compensation for any incidental, indirect or consequential costs, such as lost profits or revenue, other commercial loss, inconvenience caused by equipment failure etc.

16.6 In the case of warranty replacement of parts or assemblies warranty for replacement item is 90 days or until the end of the initial term (12 months from the date of delivery to the Customer) whichever is longer.