NOVOTEST

Concrete Cover Meter NOVOTEST
Rebar Detector

OPERATING MANUAL

2016

CONTENTS

1. Introduction

The following operation manual explains the preparation, setup, principles of operation, usage, and troubleshooting of the Concrete Cover Meter NOVOTEST Rebar Detector.

Please, read this instructions carefully for operate the Concrete Cover Meter NOVOTEST Rebar Detector functions quickly and effectively.

In doing this you will be able to take full advantage of the function range of the instrument. At the same time, you will also avoid errors and wrong operation which in turn would cause incorrect test results and thus could lead to injury and damage.

2. Appointment

The Concrete Cover Meter NOVOTEST Rebar Detector is handy, easy to operate and can carry out tests quickly without any difficulties.

Concrete Cover Meter NOVOTEST Rebar Detector is intended for operational monitoring of reinforced concrete products and structures for process control in the factories and building sites, surveys buildings and structures. The device measures the protective layer of concrete by magnetic method.

Measuring the thickness of Concrete Cover Meter NOVOTEST Rebar Detector allows for:

- operational control of the quality of reinforced concrete products and structures magnetic method for process control

in factories and construction sites, the examination of structures, buildings and structures;
- determination of surface areas of structures, free from the overlying valve to measure the strength of the methods: ultrasound, shock pulse, separation from the edge chipping and cleavage;
- measure the diameter and depth of reinforcement.

The main function of Concrete Cover Meter NOVOTEST Rebar Detector:
- measuring the thickness of the protective layer of concrete with a certain diameter;
- determination of the diameter of fittings for a known protective layer;
- measurements of the unknown parameters of reinforcement;
- scan mode products;
- deep search for reinforcement;
- configuration mode for steel.

3. Specifications

3.1. Specification

Range of measuring the thickness of the protective layer, mm	2 ... 170
Distance between the armatures, not less for rebar diameters 3 ... 10 mm for rebar diameters 12 ... 50 mm	 100 200
Controlled diameters, mm	3-50
Limiting the thickness of the protective layer, mm	150
Measurement accuracy, mm	(0,03 h + 0.5)

Measurement accuracy of rebar diameter	Not normalized
Overall dimensions of electronic unit, mm	120x60x25
Overall dimensions of sensor, mm	40x50x180
Operating temperature, ° C	-5 ... +50 ° C
Power	2pcs AA batteries
Time of continuous work hours, not less	10
Weight of electronic unit with batteries, no more, kg	0.25
Weight of sensor, no more, kg	0.65

3.2. Power supply

Battery operation: 2pcs 1,5V AA rechargeable batteries NiCd (approx. 6 hours operation) or NiMH (approx. 10 hours operation). It is allowing using of non-rechargeable cells.

Used or defective batteries are special refuse and must be disposed of according to the governing laws!

4. Packing list

4.1. Information processing unit -1 pc
4.2. Sensor -1 pc
4.3. Charger -1 pc
4.4. Battery -2 pcs
4.5. Dielectric spacer -1 pc
4.6. Operation manual -1 pc
4.7. Case (bag) -1 pc

5. The circuit diagram, principles of operation, indicators and controls

5.1. Block-diagram

The device includes the electronic module and probe, attached with the connector. Detachable connector is on the upper front surface of the case. Navigation buttons are on the front panel, as well as the graphic indicator. The battery located in the lower back spot of the case under the cover in the compartment for batteries.

5.2. Operation principles

Operation of the device is based on registration of changing of the electromagnetic field of the sensor (probe) at interaction it with rebar.

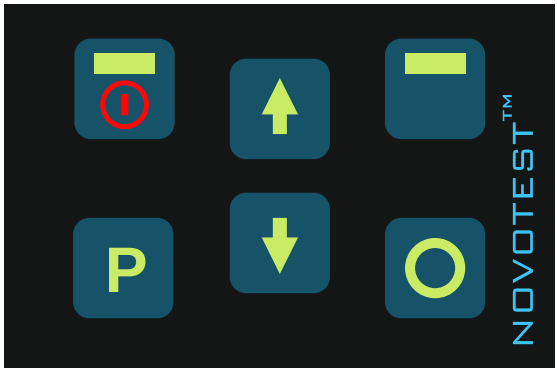
Searching of reinforcing bars is carried out by scanning the tested surface in conjunction with the rotation around the axis of the sensor to obtain the lowest possible for this case thickness value of the protective layer.

The device allows to determine the unknown diameter of rebar using a dielectric spacer. The first measurement is performed without spacer and the data recorded in the memory of the device, then the second measurement is performed with the spacer and the instrument display the diameter of reinforcement.

5.3. Device display

Display indicates the measured thickness of concrete cover in mm. The searching process is displayed on the display like distance to rebar and linear indicator.

5.4. Device keyboard



5.5. Keys function

 – Turn on/off key;

 – Function key;

– Measurement modes switch;

 – «ZERO» key;

 – Increasing of input values;

 – Decreasing of input values.

6. Device Usage

6.1. Preparation for operation

6.1.1. Operation with batteries

Connect the probe to the connector on the panel of the information processing unit.

1. Install batteries in the battery compartment using polarity.
2. For checking the charge of the batteries press and hold the button  .
3. The Level of the batteries charging is shown on the left upper corner of the display as a small battery icon. The dark battery color means the batteries is fully charged. During discharging the battery icon segments disappear consecutively, from left to the right. One dark segment or absence of segments means that the batteries needs recharging. The battery icon is present on the display in any mode of the device operation.
4. For charging the batteries turn off the device pressing the button  . After that take off the batteries from the battery compartment and charge it according to p.6.1.2.

5. After installing the recharged batteries in the battery compartment turn on the device.

6.1.2. Charging the batteries

For charging the batteries:
- install the batteries to the charger, observing the correct polarity;
- connect the charger to the mains power supply.

The batteries will be fully charged in approximately 14 hours. It is forbidden to leave the charger alone during charging. After long storage period the batteries need recharging once every 2 months, even if it was not used.

6.2. Turning on the device

Prepare the device for operation according to p.6.1 and turn on it pressing the button  .

The name of device, its serial number and version of firmware appear on the display after pressing the button.

After that the device is ready for operation.

6.3. Measurements

There are the following modes of operation of the device:
- Basic Mode - Measuring the thickness of the protective layer of concrete with a certain diameter of rebar
- Scan mode

- Deep search for reinforcement
- Determination of the diameter of fittings for a known protective layer

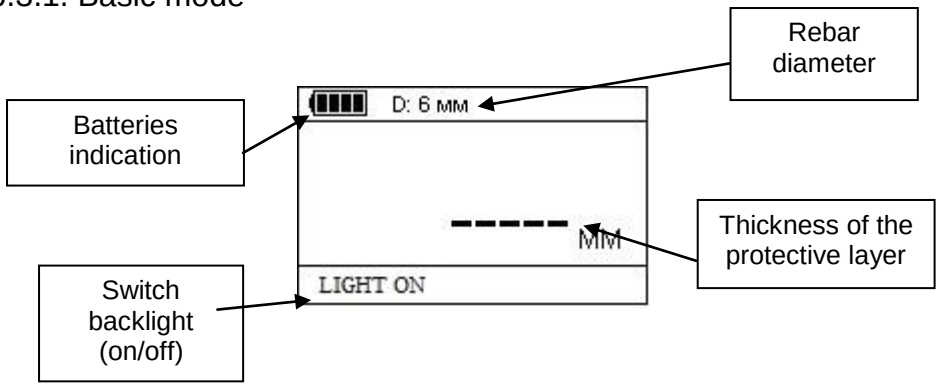
Switching between modes is done by pressing the button P.

Attention!
After turning it is necessary to perform calibration in the following sequence:
- Remove the sensor from the metal objects at a distance not less than 0.5 meters and ensure its immobility;

- Press key O, after that as soon as the Error become 0.0%, the device will be ready for measurements in Basic Mode.

NOTE: Calibration is recommended to perform every 10 minutes of operation or before each new series of measurements.

6.3.1. Basic mode



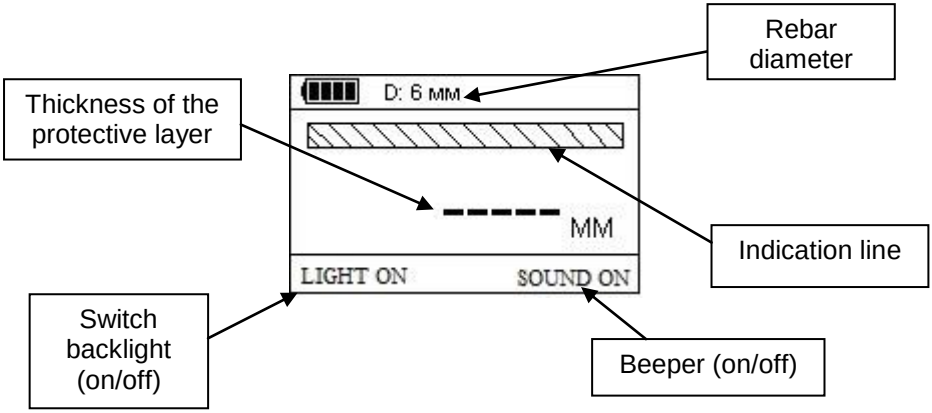
Changing the diameter of rebar is done by pressing up  or down  keys.

Turning on/off the backlight is performed by pressing the  key.

Before testing, user has to define the direction of rebar through rotation around the axis of the sensor to obtain the lowest possible for this case thickness value of the protective layer, when the reinforcement is located under the longitudinal axis of the sensor.
If direction of fittings is unknown, the searching is performed by scanning the tested surface in conjunction with the rotation the sensor around the vertical axis by ± 90 degrees.

For measurements with the maximum precision, after definition direction (projection) of fittings should be performed calibration (setting ZERO). User has to place the sensor in the same spatial position as during the measurement and ensure the absence metal objects at a distance of not less than 0.5 meters.

6.3.2. Scan mode

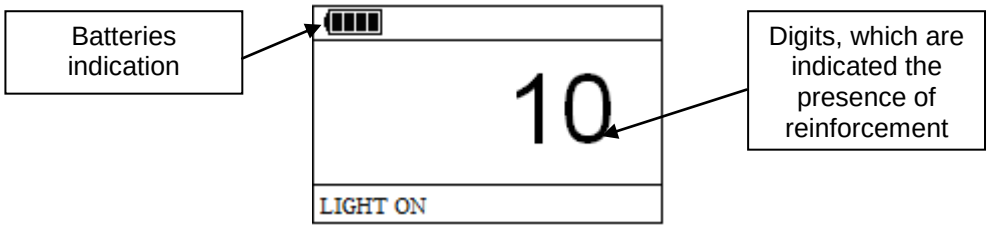


When approaching to reinforcement, the length of the indication line decreases and the frequency of the audio signal increases.

Turning on/off the backlight is performed by pressing the  key.

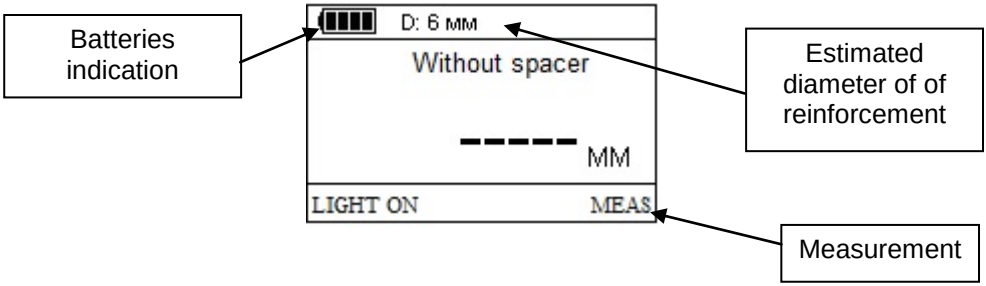
Turning on/off the Beeper is performed by pressing the  key.

6.3.3. Deep search for reinforcement



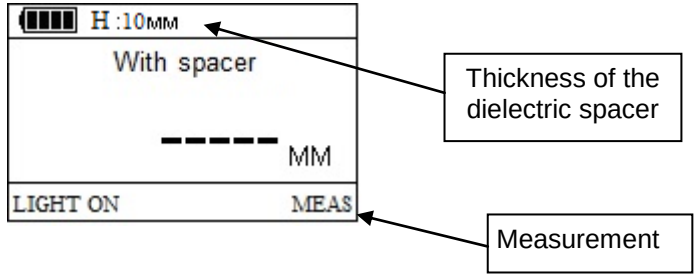
The digits in this mode, are not related with distance. They just indicate the signal from the sensor. The closer the fitting the greater the value of digits.

6.3.4. Determination of the diameter of fittings for a known protective layer



6.3.4.1. Operation principle in measurement mode of reinforcement diameter:
- Enter the estimated diameter of reinforcement;

- Put the sensor on tested surface and press the button  for measurement;
on the display will be shown:



- Enter the thickness value of the dielectric spacer;
- Put the sensor on tested surface through dielectric spacer and press the button  for measurement;
- On the display will be show the diameter value of rebar.

7. Technical maintenance, special conditions of operation

12.1 On the whole, Concrete Cover Meter NOVOTEST Rebar Detector do not require any special maintenance. However, for the purpose of Concrete Cover Meter NOVOTEST Rebar Detector stable operation, regular maintenance is advisable.

7.2. Information processing unit maintenance
To clean from any pollution, use soft dry cloth. Do not use the water, since the hardness tester is neither spray-proof nor water-proof due to the joints on its body.
Do not use any solvents, they can damage indication signs and writings on the front and back sides of the body.

7.3. Battery maintenance
The battery average life is not less than 3 years. The battery used in compliance with the "C" or "AA" international standard. It is done for the convenience of it s replacement when it is required or sharp reduction of the continuous operation time. Replacement is possible only by the battery with similar characteristics in compliance with the marking on it. From environmental protection point of view, the best thing is to use the battery.

7.4. Storage
7.4.1. Concrete Cover Meter NOVOTEST Rebar Detector shall be kept in the carry case, the probe and the batteries shall be disconnected.
7.4.2. If Concrete Cover Meter NOVOTEST Rebar Detector is kept in the carry case for than 14 days, the battery shall be taken out from its compartment in the information processing unit.
7.4.3. It is recommended to keep Concrete Cover Meter NOVOTEST Rebar Detector in closed premises with the relative humidity not more than 80%, there shall be no mold, paints, acids, chemical agents and other chemicals, the evaporation of which my give a harmful effect. Sharp fluctuations of temperature and humidity which can result in dew formation are not allowed.

7.5. Transportation

7.5.1. Concrete Cover Meter NOVOTEST Rebar Detector transportation in the carry case shall be only in closed vehicles, where the possibility of mechanical damage or atmospheric precipitation is excluded.

7.5.2. The way packed in carry cases Concrete Cover Meter NOVOTEST Rebar Detector are located inside the vehicle shall exclude.

7.6. Putting into operation after storage and transportation

7.6.1. After storage or transportation under the temperature lower than -5°C, before starting Concrete Cover Meter NOVOTEST Rebar Detector operation, it is necessary to keep it not longer than 1 hour under the temperature higher than +10°C and not less than 2 hours under the temperature higher than 0°C.

7.6.2. Before operating Concrete Cover Meter NOVOTEST Rebar Detector which was stored for more than 3 months and transported for more than 2 months, it is necessary to check such Concrete Cover Meter NOVOTEST Rebar Detector on the reference sample. If the measured AVEARGE value of the Cover Meter NOVOTEST Rebar Detector does not correspond to the reference sample value within the error limits, it is necessary to calibrate the hardness tester.

7.7. Special operation conditions

7.7.1. Increased dust content and humidity. Put the information processing unit of Cover Meter NOVOTEST Rebar Detector into a transparent plastic bag. Tighten it at the level of connective cable a bit lower than the probe plug.

After the work under such conditions is finished, information processing unit shall taken out of the plastic bag and air it.

7.7.2. Frost (<0°C). Information processing unit is the most sensitive to low temperature part of Cover Meter NOVOTEST Rebar Detector,

especially display. If there is a possibility, keep Cover Meter NOVOTEST Rebar Detector closer to your body and protect id with your coat or keep in the inside pocket, taking it out time from time for inputting the data into the archive.

8. Precautions and trouble shouting

8.1. Treat the Cover Meter NOVOTEST Rebar Detector with care. Any wrong treatment may result in the violation of the present Technical Reference and Operation Manual regulations and, thus, lead to the manufacturer Cover Meter NOVOTEST Rebar Detector warranty cessation.

8.2. Always check the integrity of the cables, Information processing unit and probes. Provide immediate replacement of the damaged parts by the original ones. This job shall be performed by skilled personnel.

8.3. Do not expose the Cover Meter NOVOTEST Rebar Detector to aggressive chemical medium.

8.4. Do not leave the Cover Meter NOVOTEST Rebar Detector in the direct Sun.

8.5. Do not sink the Cover Meter NOVOTEST Rebar Detector into any liquids. If the Cover Meter NOVOTEST Rebar Detector gets wet, take the battery out and leave for 24 hours to get dry. If the Cover Meter NOVOTEST Rebar Detector is used under the increased humidity or dust conditions, place the information processing unit into the plastic bag. After work period is over, it is mandatory to get the Cover Meter NOVOTEST Rebar Detector dry.

9. Manufacturer’s guarantee and service maintenance

9.1. In case when Cover Meter NOVOTEST Rebar Detector (information processing unit and probe), supplied by the Seller within one year since the delivery date used properly, appear defective, the Seller shall repair or replace them or supply new parts therefore and

send them to the Buyer. The other parts of the device (battery, charger, bag) warranty does not cover. The Buyer must prepay any shipping charges, taxes, or duties associated with transportation of the product to the service location, and Seller pays return shipping and associated costs. In addition, the Buyer shall be responsible for insuring any product shipped or returned to an authorized service location, and the Buyer shall bear risk of loss during shipping to the service location, and Seller all risks during delivery to the Buyer. In order to exercise its rights the Buyer shall inform the Seller as soon as possible after the date when such defect appeared.

9.2. Prepare technically grounded reclamation document and send it together with the hardness tester to the guarantee service or to the manufacturer at the address: Scientific and Technical Centre “Industrial devices and technologies" Ltd., 51200. Ukraine, Novomoskovsk, Spasskaya str., 5, Phone: +38067 593 59 77

9.3. Post guarantee maintenance is conducted by the manufacturer service centre upon the Customer request.

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