

The MTG-3000 User Manual

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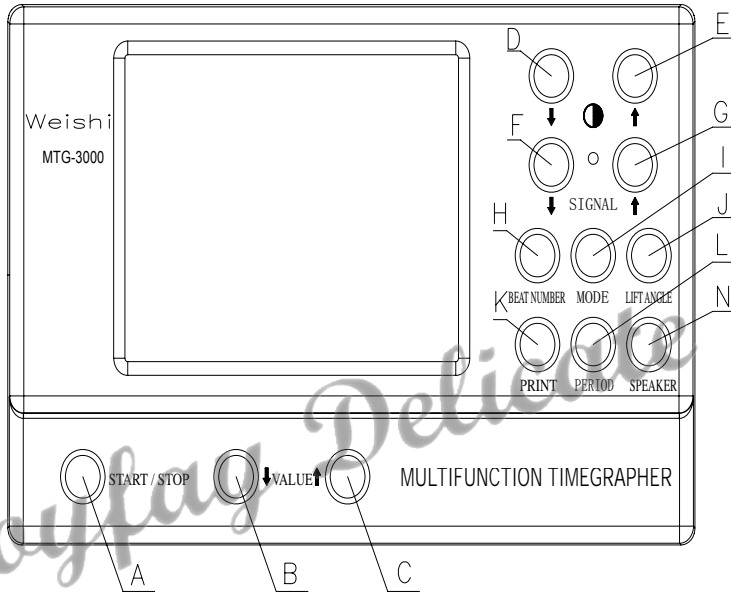
1. INSTRUMENT FUNCTION

The MTG-3000 is a precise mechanical watches test instrument. It is used for multi-testing mechanical watch by watch manufacturers and watch technician, which is the below feature:

1. The LED screen can completely display the watch frequency.
2. The instrument can automatic adjust the signal intensity according to the different watch.
3. The instrument can automatic calculate and display the day rate, amplitude and beat error.
4. The instrument can automatic tests the common beat watch, otherwise you can manually select for the special ones.
5. The instrument can select the test period of 2S, 4S, 6S, 8S, 12S, 20S, 30S, 60S, which can calculate the average value of corresponding period.
6. Six kinds of test orientation can be set; the simulation sound can be set.

2. KEYS AND DISPLAY

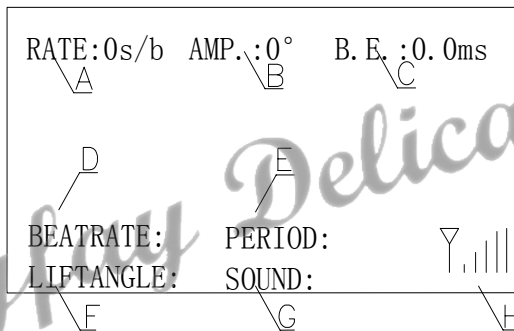
2.1 THE KEYS FUNCTION



- | | | |
|---|-------------|---|
| A | Start/Stop | The key used for start/stop to test the watch |
| B | Value↓ | The key used for selection of the next lower value |
| C | Value↑ | The key used for selection of the next higher value |
| D | Brightness↓ | The key used for adjustment the screen be darker |
| E | Brightness↑ | The key used for adjustment the screen be brighter |
| F | Signal↓ | The key used for decrease the signal |
| G | Signal↑ | The key used for increase the signal |
| H | Beat Number | The key used for adjustment the beat number |

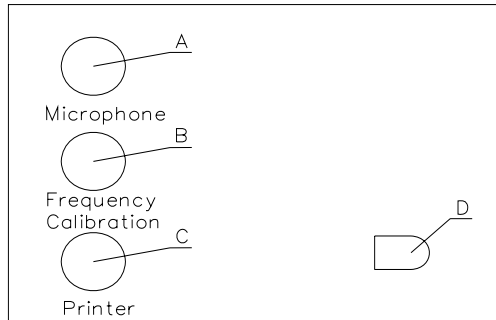
I	Display method	The key used for adjustment the display method
J	Lift Angle	The key used for adjustment the lift angle
K	Print	The key used for the out-print.
L	Period	The key used for the test period
N	Speaker	The key used for power on/off the speaker

2.2 THE PARAMETERS DISPLAY



A	Rate	Display of rate deviation in seconds per day
B	Amplitude	Display of the amplitude in degrees
C	Beat error	Display of the beat error in millisecond
D	Beat	Display of the current beat value
E	Period	Display of the test period
F	Lift Angle	Display of the degrees of lift angle
G	Speaker	Display of the mute or audio speaker
H	Signal	Display of adjustment the signal intensity

2.3 CONNECTION



- A The microphone connector
- B The frequency calibration connector (Just for the engineer use)
- C The printer connector
- D The power supply connector (Adaptation range for 100 - 240V~)

3. INSTALLATION

3.1 THE BASIC EQUIPMENT COMPONENTS

- A The test hosts
- B The microphone
- C The power cable
- D The user manual

3.2 THE INSTRUMENT INSTALLATION

ATTENTION: The instrument is to be installed in such a way: it is not directly exposed under the sunlight or up to 60°C. The microphone should be placed at the sufficient distance from noisy machines, loudspeakers, sharp stroke sound and particularly from ultrasonic cleaning machines. The high noise will disturb signal input from the microphone. If the instrument is equipped with a printer, then it should also be far away the printer.

3.2.1 THE POWER SUPPLY INSTALLATION

Plug the power cable into the outlet. Power supply voltage is 100 - 240V~.

3.2.2 THE MICROPHONE CONNECTION

Connect the sensor plugs with the host sensor connector.

3.2.3 THE PRINTR CONNECTION

Connect the plug of thermal printer with the host interface.

(The connection is unnecessary if no printer.)

4. OPERATION

The instrument automatic start to work after power-on, some parameters set by the user don't store after power-down, and can be return to factory settings when you power on again.

Place the watch on the signal sensor and watch crown should touch on the sheet metal. Test orientation can be changed freely, and the hand should remove from the sensor after confirmation test orientation. The Green LED is flashing, meaning that it has received the watch signal.

5. THE USAGE OF KEYS

5.1 The start and stop key

You need to pause the instrument by using the start/stop key when setting the parameter (The brightness and signal key can adjust at any time.)

After setting the parameters and pressing the start/stop key again, the instrument can start the test state once again.

5.2 The value key ↓

You can set the lower value by pressing the value key ↓.

5.3 The value key ↑

You can set the higher value by pressing the value key ↑.

5.4 The brightness key ↓

At first press the start/stop key (The LED is in red), and then press the brightness key ↓, the screen becomes darker.

The brightness key ↓ can adjust the brightness freely in the test process, but the instrument doesn't store the settings.

5.5 The brightness key ↑

At first press the start/stop key (The LED is in red), and then press the brightness key ↑, the screen becomes brighter.

The brightness key ↑ can adjust the brightness freely in the test process, but the instrument doesn't store the settings.

5.6 The signal key ↓

The key can decrease the input signal.

5.7 The signal key ↑

The key can increase the input signal.

5.8 The beat number key

At first press the start/stop key (The LED is in red), and then press the beat number key, you can manually adjust the beat number when the beat number display screen is bright. The instrument starts to test as the select beat number after pressing the start/stop key again.

5.9 The display mode key

First press the start/stop key (The LED is in red), and then press the display mode key, you can select the vertical or level display method. The instrument starts to test after pressing the start/stop key again.

5.10 The lift angle key

First press the stop/stop key (The LED is in red), and then press the lift angle key, you can manually adjust the degrees of the lift angle by pressing the value key ↑ ↓ when the lift angle display screen is bright. The instrument starts to calculate the amplitude as the new lift angle. (The setting parameter is 52°)

5.11 The printer key

The printer should connect with the host and turn on the power supply, at first press the start/stop key to pause the machine (The LED is in red), the printer will print the data after pressing the printer key again.

Press the start/stop key one time if need to continue the test or stop the print.

5.12 The period key

First press the start/stop key (The LED is in red), and then press the period key, you can manually adjust the period by pressing the value key $\uparrow\downarrow$ when the period display screen is bright. The instrument starts to calculate the test result as the new period time. (The default setting is 4S)

5.13 The speaker key

Turn on/off built-in speaker by pressing the speaker key.

6. THE PARAMETER

6.1 The beat number (Frequency number) Manual and Automatic selection

The automatic select beat number by the instrument as below:

12000, 14400, 18000, 19800, 21600, 25200, 28800, 36000, 43200

The instrument automatic display the closet beat number if the watch beat number is not in the automatic selection range, but the test result is incorrect, so need to select the beat number manually. The manual selection can select the special beat number.

The manual select beat number as below:

3600, 6000, 7200, 7380, 7440, 7800, 9000, 9100, 10800, 11880, 12000, 12342, 12480, 12600, 13320, 13440, 13500, 14000, 14040, 14160, 14200, 14280, 14400, 14520, 14580, 14760, 14850, 15000, 15360, 15600, 16200, 16320, 16800, 17196, 17258, 17280, 17786, 17897, 18000, 18049, 18514, 19332, 19440, 19800, 20160, 20222, 20944, 21000, 21031, 21306, 21600, 25200, 28800, 32400, 36000, 43200

6.2 The lift angle

Most of the movement lift angle is 52°, so the instrument setting lift angle is 52°.

The lift angle degree can set between 30° and 70° when calculating the amplitude.

6.3 The test period

The test period is: 2S, 4S, 8S, 12S, 20S, 30S, 60S; the base time for calculate the average test result.

7. The TECHNICAL DATA

·The test range: The mechanical watch day rate deviation, amplitude, beat error and record the beat number curve.

·The beat number: Automatic test common beat number, also manual select test the special beat number.

·The day rate deviation measurement: The rate deviation range is between $\pm 999\text{S/day}$, the precision is 1S/day.

·The amplitude measurement: Display in digit, the resolution is 1° and the test range is 100 - 360° (The lift angle can affect the amplitude, and the range is 30 ~ 70°; the amplitude doesn't exceed the 330° in normal circumstances)

·The period time of measurement average value: 2S, 4S, 8S, 12S, 20S, 30S, 60S.

·The amplitude (the frequency error) measurement: The value displays in the millisecond. The resolution is 0.1 millisecond and the test range is 0.0 - 9.9 millisecond.

·The amplitude: The range is 30 - 70°, and the default value is 52°.

·The supply voltage: The single 100 - 240V~, 0.1A, 50 - 60Hz.

- The measurement orientation: six kinds of orientation.
- The use of the environment: 0 - 50°C, the relative humidity is 0 - 80 % RH.
- The instrument outer case: The light grey in plastic cement.
- The measurement:
- The weight:

8. THE INSTRUMENT MAINTAINCE

8.1 There is no reaction for the instrument after power on.

Check out whether the power supply accessory work or not; check it by usage another power supply accessory.

8.2 The instrument can start the test state after the sound of “DI”, but it can’t work after installing the sensor.

Check out whether the watch work or not (and the amplitude is up 100°), and make sure the watch crown can touch the sensor metal sheet.

8.3 The LED signal is in red, but the shown lines is scattered or appear many lines.

Maybe the beat number was wrong, and adjusts the right beat number by manual selection.