LEAK-CHECKER 2000

Manual

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FRONT SIDE/BACK SIDE

Front side

Indication of deformation

OK
Watchcase is waterproof

LED

Start/ Switch
Measuring procedure is started

Lighting when measuring procedure is started

Under pressure indication

Test

LED

Measuring time

NG (Negativ)
LED light is on - watch has a leak
LED is blinking - watch is to hard – no deformation

Measuring procedure is stopped

Back side

Main fuse box for integrated fuses
1,25 AT for 230 Volt. und 3,15AT for 115 Volt

Type label

Switch On/Off

Mains cable connection for
230V~ / 50 Hz or
115V~ / 60 Hz

1.0 Introduction

The accuracy of a wristwatch is, to a great extent, depending on the construction and quality of the watchcase.

The watchcase must protect the sensitive parts inside the watch from mechanical damage as well as from liquids, moisture and dust.

Even a small leak the watchcase can allow moist air to enter and cause corrosion which negatively influences the operation of the watch.

Considering these facts, it is very important to produce waterproof watchcases and also to have the means of testing the waterproofness of all watchcases.

1.1 Principle of operation

The LEAK-CHECKER 2000 is based on the vacuum method to determine the water-proofness of a wristwatch. Any leak I measured by the change in deformation of the watchcase when subjected to a preset level of vacuum.

The instrument conforms to the standards DIN 8310 and ISO 2281 without using water.

The watchcase is placed onto the measurement stand under the test dome. An air pressure reduction vacuum of max. – 0,50 bar is applied inside the dome.
The thickness is measured continuously with a resoluton of 0,0001 mm during that time.

Every watchcase - depending on its construction - will expand more or less due to the pressure difference between the inside and the outside of the case in the test dome.

The watchcase is waterproof when the deformation is not decreasing more then -0,0005 mm during the vacuum measuring time. When this value is exceeded the watchcase has a leak.

2.0 Operation

- Check that the voltage, at the rear of your instrument, is according to your standards.
- Standard version ex factory 230V~ 50 Hz .
- The setting of LEAK-CHECKER 2000 to 115V~ 60 Hz can only be made by a qualified service technician. Should your voltage setting be wrong, please contact us or your local dealer.
- Connect the mains cable into the receptacle at the rear of the instrument.
- Press the switch “on” at the rear of the instrument.
- The instrument is now ready for use.

2.1 Initial settings

The instrument has a basic setting for a max. deformation of the watchcase of 0,05 mm and measuring time of 20 seconds based on a long experience.

The values of the deformation as well as the measuring time can be changed in an easy manner.

2.2 Changing of the deformation value

Depress simultaneously (approx. 5 seconds) the button **“START”** and **“STOP”**

the display „**MM**“ will show you the deformation in steps of 0,01mm in the range of 0,01 – 0,10 mm. We recommend 0,02 - 0,05 mm.

Please Note: the glass might pop out of the watchcase, if a higher range is set.

2.3 Changing of the measuring time

Depress simultaneously (approx. 5 seconds) the button**“TEST”** and **“STOP”**

the display „**SEC**“ will show you the measuring time and it will then increase in steps of 5 seconds from 10 – 60 seconds. A measuring time of 20 seconds is recommended.

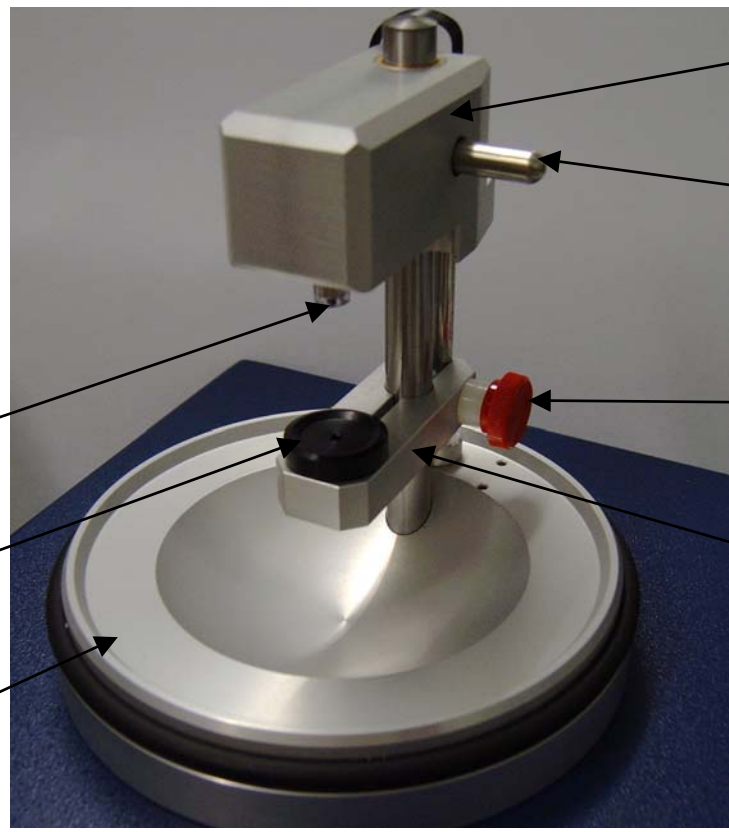
2.4 Max. vacuum

The max. vacuum is – 0,50 bar and cannot be changed.

Note:

After the instrument is turned off, only the pre-programmed initial settings are being reactivated when switching the instrument on again.

3.0 Waterproof testing



Operation of the measuring head:

The measuring head of LEAK-CHECKER 2000 is a precision measuring instrument, that resolves vertical movements of 0,0001 mm.

We recommend to handle the measuring head with care and to avoid touching the the sensor pin or to move it.

Picture 1

Standard watch support

Picture 2

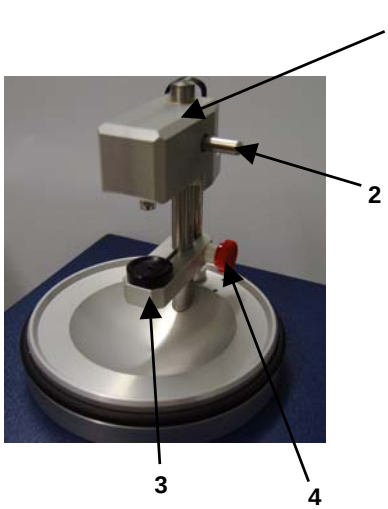
Watch Support for very hard watches

a) Small watches (ladies)

b) Watches with steel cases and mineral glasses.

MEASURING SET UP

4.0 Measuring set up



Push the measuring head (**1**)
with the „release,locking lever“ (**2**) in the upper position.

Place the watch on the watch support (**3**). If you have Rigid wristband you can move the watch support upwards (**4**) by releasling the blocking screw for the table.

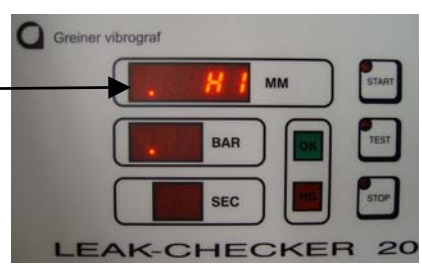
Push the measuring head downwards (**1**) on the watch till the display shows you the value „**00**“ .

Caution!!!

You can only start the instrument with the indication „ 00 „.

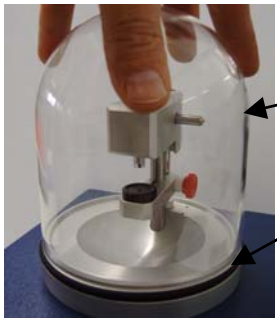
If the display shows you „**L0“,**
The measuring head (**1**) is not resting properly on the watch. Slide the measuring head further Downwards as decribed above.

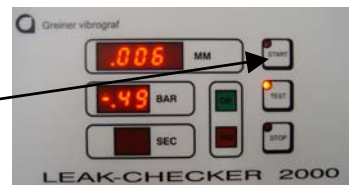
If the display shows you „**HI“,**
the measuring head (**1**)is resting too hard on the watch. Slide the measuring head a little upwards as described above.



MEASURING SET UP

4.1 Put the dome on the testing platform ring.





4.2 Press button **„START“** ,
Testing procedure begins. You should press the dome with your hand in order to close the chamber properly and the vacuum can be built up.
The measuring procedure ends whilst the following datas are shown:

a.) max. extention of the watch case is reached.
Display „**MM**“ indicates you the deformation of the watch case.

b.) on display **„ BAR“** max. value of **– 0,50** bar is indicated.

4.3 After one of the points under **(4.2)** is reached,
the selected measuring time starts.
Should, during the first ten seconds of the measuring time the watchcase change its thickness more than 0,0002 mm, the test will be restarted again.
This procedure can be repeated 3 times.
An acoustical signal is indicating restart.

4.4 When the test is completed (end of measuring time) the result is shown.

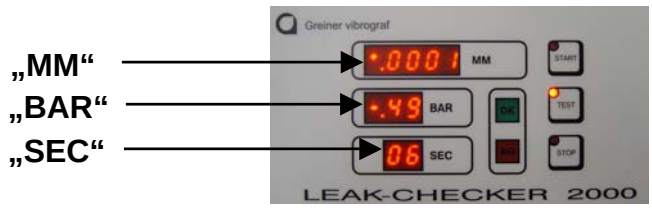
„OK“ (green)
Watch case is waterproof

„NG“ (red)
LED is shining - watchcase is not waterproof
LED is blinking - no deformation watch is to hard (for those watches use the support show in figure 2 page 7).

MEASURING SET UP

5.0 By depressing button **„STOP“**
at any time during the test, the ongoing activity in the instrument is stopped and the vacuum in the test dome is removed.

5.1 If the test is interrupted by pressing the button „**STOP**“,
the relevant values in the instrument are shown on the display.

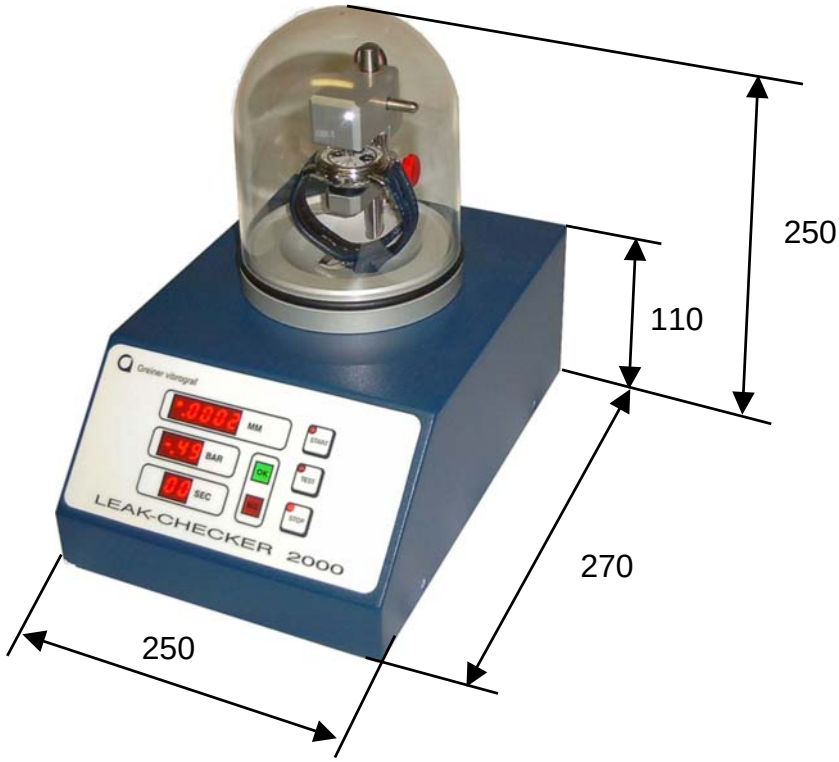


5.2 In the **„BAR“** display
a minus sign will blink after the test is completed and until the pressure in the test dome has reached atomspheric pressure.
Now the plastic dome can be removed from the baseplate.

5.3 After depressing the button **„START“** and the test is started but no or insufficient vacuum can be made, the „**BAR“** display will show a value between 0,00 – 0,55, after 15 seconds the vacuum pump will stop

.

In that case you should press the dome with your hand in order to close the chamber properly and the vacuum can be build up.



Voltage:	230 V , 50/ 60 Hz 115 V , 50/ 60 Hz
Current consumption:	approx. 100 W
Measuring method:	deformation measurement under vacuum
Max. depression:	- 0,50 bar
Testing time:	10 – 60 seconds
Indication of deformation :	4-digits, in mm.
Indication of vacuum:	2-digits, in bar
Indication of measuring time:	2-digits, in seconds
Weight:	5 kg