Finally, release the sensor by slightly lifting the knob **A** and then lowering it until it rests on the watch. The LED ***sensor*** shows when the watch is correctly placed.

Placing the Sensor on the Watch

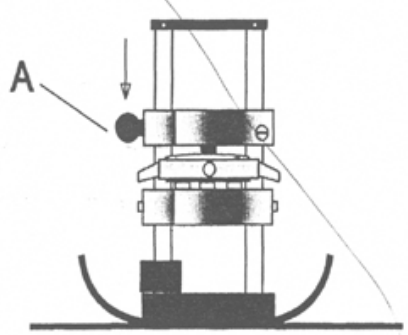


Figure 6

3.7.2 PROGRAM SELECTION

Select the program with which the watch is to be tested from the main menu by using the ↑ ↓ buttons.

Example: Program **P1** - First test with a vacuum value of **-0.5 bar**, next test with a **3 bar** pressure.

Lower the measuring chamber once the watch has been positioned and the yellow LED ***sensor*** has been illuminated.

Lowering ALC 2000 Cover

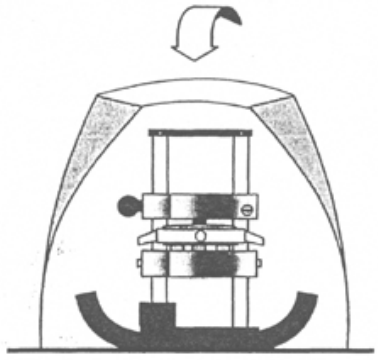


Figure 7
ALC 2000 Closed Position

It will be automatically locked and the following display appears for a few seconds:

P1	-0.5 bar
Locking the chamber	

and then during the build up of the vacuum:

P1	-0.5 bar
Air	- x.x bar

The actual value appears in place of -x.x until the programmed vacuum is attained.

The first measurement is begun once this vacuum has been achieved. Meanwhile the display shows the count-down of the stabilization period and the maximum deformation incurred by the watch, thus:

P1	-0.5 bar	60s
Stabilizing		- 025.6µ

The watch undergoes some further deformation after the vacuum has been attained. An evaluation during the stabilization time (min. 30 s) determines whether the deformation is remaining stable or is increasing/reducing a little.

The measurement begins once the deformation is stable or the stabilization time (max. 60 s) has elapsed. The unit determines the measurement time automatically in our example (from 10 to max. 300 s). The count-down of the measurement time and the measured change in the deformation are displayed, thus:

P1 **T**	-0.5 bar	20s
Measuring		- 0.02µ

T = Thermal, i.e. a wrong measurement may occur due to a thermal influence (just before testing, the watch was worn for a longer time). The test will be repeated (without stabilization time) if the measurement is **rejected**. The **T** will not be displayed anymore. This test mode is only used for the first test under vacuum.

The deformation has increased by -0.02µ at the end of the measurement period in our example. The green LED " **I** " lights up and the display shows that Test 1 has been completed successfully.

P1	-0.5 bar	00s
Test1 okay		+1.8%

If a printer is connected, the result of the first test will be printed out after the second test has been finished. The pressure for the second measurement phase is built up and the display changes to:

P1	3.0 bar
Air	- x.x bar

The actual value appears in place of -x.x until the specified value is reached.

The second measurement begins once this vacuum has been achieved. Meanwhile the display shows the count-down of the stabilization period and the maximum deformation incurred by the watch, thus:

P1	3.0 bar	60s
Stabilizing		+133.4µ

The watch undergoes some further deformation after the pressure has been attained. An evaluation during the stabilization time (min. 30 s) determines whether the deformation is remaining stable or is increasing/reducing a little.

The measurement begins once the deformation is stable or the stabilization time (max. 60 s) has elapsed. The unit determines the measurement time automatically in our example (from 10 to max. 300 s). The count-down of the measurement time and the measured change in the deformation are displayed, thus:

P1	3.0 bar	10s
Measuring		+ 0.03µ

The deformation has increased by +0.03µ at the end of the measurement period in our example. The green LED **II** lights up and the display shows that Test 2 has been completed successfully.

Test1 okay	+1.8%
Test2 okay	+3.1%

The results of the first and second measurement are printed out if a printer is connected. The result shown on the display and the LED's remain unchanged until a new measurement is started.

Remark: The display and the print-out of the tightness values (in our example) +1.8% and +3.1%) can be switched on or off (see chapter 3.2.3, page 10).

If you press the ***escape*** button the LED's remain unchanged but the display changes to show the program that has just been used. In our example:

P1	Auto/1.0%/ Stnd
-0.5 / 3.0 bar	→ Para

Any error messages that might occur are listed below together with their meaning and the appropriate remedy.

3.8 System Error Messages

3.8.1 Power failure

A momentary power interruption has occurred. Switch the unit off

Power failure Switch Off

and then switch it back on again.

3.8.2 Chamber not closed

The chamber has re-opened. No automatic locking has taken place.

Measurement stopped Chamber not closed

Close the chamber again by pressing down on it a little more firmly so that the locking latches can engage properly.

3.8.3 Chamber not tight

A large pressure or vacuum loss has been detected.

Measurement stopped Chamber not tight

The chamber opens automatically.

Check the sealing ring and the contact surface of the chamber for cleanliness and wipe clean as necessary. It is advisable to smear a little silicon grease on the sealing ring from time-to-time.

3.8.4 Sensor out of range

The chamber re-opens immediately after having been closed. There are two basic possible reasons:

Measurement stopped Sensor out of range

- no watch is present
- the sensor has not made contact with the watch.
- the sensor may have been pressed too hard against the watch

Check that the sensor is sitting well on the watch and that the LED ***sensor*** has been illuminated.

3.8.5 No air / no vacuum

The chamber opens again after having been closed.

Measurement stopped No air / no vacuum

Too little or no pressure is present. The vacuum or the pressure for the measurement cannot be produced. Check to ensure that the compressed air connection is sound, that the compressor is switched on and that the valve on the reservoir is open. The message **No vacuum** can also appear if you attempt to use a compressor without a reservoir.

3.8.6 The Chamber remains closed

Because of an electrical or an mechanical defect, the chamber remains closed.

Motor ! Switch Off

By means of an emergency unlock mechanism the chamber can be opened manually. Proceed as follows:

1. **First** the equipment **must be switched off** by means of the mains switch **I / O**. The remaining air pressure in the chamber will be released.

2. An opening is located to the left side of the wooden frame. Remove the cover. Then you can open the chamber while, by means of a screwdriver, you turn the screw head of the emergency unlock mechanism located in the opening ***counter-clockwise***.

3. Check the cleanness of the seal. If necessary, remove the seal from the basic plate. Clean it carefully as well as the surface on the bottom side of the chamber and the seal groove on the basic plate by means of a smooth and dry cloth.

Please consult our After-Sales Service at our Head Office or our Agency, if you cannot eliminate the defect by taking these measures.

Caution:

Equipments from previous series have not been equipped with the emergency unlock mechanism.

In this case do not try to break open the chamber by means of a screwdriver or a similar tool !

Please consult our After-Sales Service at our Head Office or our Agency.

4 INTERPRETATION OF RESULTS

4.1.1 Big leakage

If the test pressure is higher than 1.0 bar, then following message appears:

Big leakage or not compressible watch

If the deformation is less than 1.5µm after the pressure has been applied then the watch either has a large leak that rapidly equalizes the pressure, or it is so hard that it is insufficiently deformed by the applied pressure.

Should this happen, try testing the watch by selecting **Hard** in the menu **Case analysis**.

If the test pressure is lower than 1.0 bar, then following message appears:

Lower pressure Deformation too small

4.1.2 Important leakage

Detection of an important leakage

The watch deforms as the pressure is applied but, because it has a sizable leak, there is a considerable amount of deformation relief. The deformation relief exceeds 15% per second.

4.1.3 Test 1(2) rejected -x.x%

Test 1(2) rejected -x.x%

The watch deforms normally during the pressure increase and stabilization period. A certain amount of deformation relief is measured during the measurement time. The amount of this relief is, however, **greater** than the programmed deformation limit.

4.1.4 TEST 1(2) OKAY ± X.X %

Test 1(2) okay	± x.x%

The watch deforms normally during the pressure increase and stabilization period. A small amount of deformation relief is measured during the measurement time. The amount of this relief is less than the programmed deformation limit.

The value for the deformation limit refers to a measurement time of 60 seconds.

4.1.5 TEST 1(2) OKAY / REJECTED ? ± X.X

Following display appears if you test with a fix selected measuring time which is to short for an accurate measurement:

Test 1(2) okay/rejected ?	± x.x %

and the yellow LED **I** or **II** lights up.

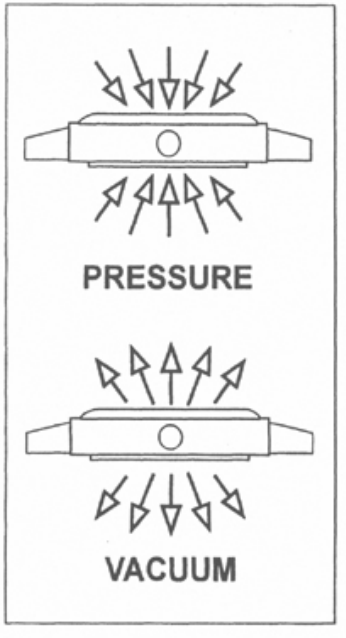
5 TECHNICAL DESCRIPTION

5.1 MEASUREMENT PRINCIPLE

The ALC 2000 checks the water-tight seal on watches by means of the deformation principle. The watch to be tested is clamped into a highly sensitive path measurement system that continuously measures and monitors the thickness of the watch. Having closed the measurement chamber, the watch is subjected to a specified, programmable test pressure. The watch is slightly compressed by this pressure.

The amount of deformation remains constant while a constant pressure is applied provided the watch is watertight. In the case of an imperfect seal, the air that leaks into the watch causes an internal pressure equalization which allows the watch case to tend back towards its original thickness.

A microprocessor measurement system evaluates the change in the amount of deformation according to specified criteria.



5.2 SEAL CRITERION

The ALC 2000 measures the deformation incurred by the watch as the test pressure is applied and then decompressed during the measurement period. The rate at which the deformation relaxes provides a measure of the leak rate into the watch.

The ALC 2000 calculates the relaxation as a percentage of the initial deformation as measured over a period of 1 minute. The percentage of deformation relief that results from a particular size of leak depends on the test pressure applied. The percentage value is always referred back to a pressure of 2 bar so that comparative results can be obtained irrespective of the test pressure applied. The true result is suitably converted if the test pressure is not 2 bar.

Deformation limit - A Definition

The criterion for the decision "watertight"/"leaky" is called the deformation limit and is set at 1% per minute for the standard programs, referred back to a pressure of 2 bar. A value lying between 0.5% and 3% can be selected for customer-specific programs.

The more severely the deformation limit is set, the longer the measurement time has to be in order to achieve the necessary accuracy in the measurement of the deformation relief. A value of 0 cannot be selected since such a criterion could lead to erroneous results because of the distribution of the measurements obtained.

5.3 Interpretation of the results

A positive or negative percentage value appears on the display at the end of a test in addition to the good/poor indication.

This value represents the percentage change in the deformation during the measurement. The value is referred to a measurement time of 60 seconds and a pressure of 2 bar; the result having been correspondingly converted for other measurement conditions.

Through this reference to specific measurement conditions (corresponding to the ISO 2281 Standard) it is possible to compare the results of different measurements directly with one another.

5.3.1 Negative percentage

A negative percentage value means that the deformation has relaxed. This generally means that the watch is not watertight. The greater the percentage value the larger the leak that the watch has. Small negative values can also result from instabilities in the measurement. The watch is classed as being leaky when the negative value is greater than the programmed deformation limit.

5.3.2 Positive percentage

A positive percentage value means that the deformation has increased slightly still further after the stabilization time has elapsed. Most watches exhibit a plastic characteristic to some extent or another, that is, the deformation continues to increase slightly after the pressure has been applied and only settles to a stable state after a period of time. The stabilization time should not be made arbitrarily long otherwise unreasonable test times will result. The deformation can hence be expected to increase slightly during the measurement phase for a well-sealed watch with a plastic characteristic. The reliability of the measurement is not affected by small positive values for the deformation. A large increase in the deformation during the measurement phase can disguise a small leak and make the measurement unreliable. In such cases it is recommended to start the test again since the plastic deformation is usually less during a second measurement under the same conditions.

A watch with a certain size of leak should, theoretically, always give the same result during various tests at the same or various pressures. In practice, however, the size of the opening changes with the pressure so that the leak can appear to be bigger or smaller or even disappear altogether (this is why it is recommended to conduct a water resistant test at both a lower and a higher pressure). Even a repetition of a measurement at the same pressure can produce differing results since the size of the opening can change with mechanical deformations.

5.4 Relationship to the ISO standard

The ISO 2281 Standard specifies that a watch qualifies as being watertight if less than 50 µg of air flows into the casing per minute under a test pressure of 2 bar.

The weight of the air that leaks into a watch cannot be measured directly in a water resistant test using the deformation principle. By making certain assumptions it is, however, possible to determine a relationship between the air that leaks in and the deformation relief.

In the case of a medium sized wristwatch (1300 mm^3 free internal volume) and a test pressure of 2 bar, a leak rate of 50 µg air per minute corresponds to a deformation relief of 1% per minute. This value corresponds to the deformation limit set in the standard programs.

The ISO 2281 Standard does not take the volume of a watch into account, i.e. the leak rate of 50 µg per minute applies to all watches irrespective of their size. The ALC 2000 automatically takes the volume of the watch into account since a lower absolute leak rate can be permitted for a small watch than that for a larger one. If the volume is not to be taken into account during a measurement (test strictly in accordance with the ISO Standard) then the deformation limit must be programmed in relation to the free volume in the watch concerned. Approximate values are 0.5% for large watches, 1% for medium sized watches (default value) and 1.5% for the smaller watches.

The Standard is based on a test pressure of 2 bar; no leak rates being specified for other pressures. The amount of air that flows through a certain size of leak depends on the test pressure. The ALC 2000 takes this dependency into account and converts the results obtained so that they are referred back to a pressure of 2 bar. A watch with a fixed size of leak should theoretically give the same result at any test pressure. In practice, however, the magnitude of a leak is often largely dependent on the pressure applied so that the actual results obtained can differ somewhat.

Remark:

Bearing the above explanation in mind, a water resistant measurement using the ALC 2000 can be made in keeping with the ISO Standard and the results will be largely in agreement. Since the measurement principle used in the ALC 2000 does not conform with the ISO 2281 Standard, no 100% agreement can however be guaranteed.

6 MEASUREMENTS

6.1 Measurement procedure

6.1.1 Deformation initial value

An initial value for the deformation is measured once the test chamber has been closed. This value is then taken as the zero point for the measurement of the deformation itself.

6.1.2 Pressure build-up

Once the deformation zero point has been determined, an inlet valve opens and air flows into the measurement chamber. The pressure is shown continuously on a LCD display. The inlet valve closes as soon as a pressure of about 5% over the nominal level has been achieved. This over-pressure is necessary since the pressure always sinks slightly due to thermal effects.

6.1.3 Stabilization

Most watches exhibit a plastic characteristic to some extent or another, that is, the deformation continues to increase slightly after the pressure has been applied and only settles to a stable state after a period of time. The increase in the deformation can disguise a small amount of leakage so no precise measurement is possible during this time. The deformation is shown continuously on the display during the stabilization period.

6.1.4 Minimum and maximum

The stabilization period is automatically terminated once a maximum deformation has been determined or when the increase drops to below 0.03 µm per second. The minimum stabilization period is 10 s for measurements under pressure and 30 s for measurements under vacuum. The maximum corresponds to the chosen measure-ment time or 60 s in the case of automatic measurement time selection. The elapse of the stabilization period is shown on the display.

6.1.5 Pressure changes

The pressure is also not stable during the initial phase. The air is warmed during the compression stage and then cools down again to the ambient temperature.

This temperature change causes a corresponding pressure change which also affects the deformation. Effects on the deformation caused by pressure changes are automatically compensated by the ALC 2000 so that small pressure fluctuations have no effect on the measurements taken.

The deformation relief is also monitored during the stabilization period albeit according to a less severe criterion compared with that used during the measurement itself.

If a sizable leak has already been detected during the stabilization phase, the measurement is terminated and the message **Large leak detected** is displayed.

6.1.6 Measurement

At the beginning of a measurement, the latest deformation value taken is stored as the new zero-point. The deviation from this value is then shown on the display during the measurement.

The ALC 2000 can automatically calculate the minimum time necessary in order to obtain a reliable measurement. The measurement time is determined by the limited resolution and stability of the deformation measurement. A smaller deformation or a more severe criterion concerning the water resistant necessitates a correspondingly longer measurement time. The elapse of the measurement period is shown by a down-counter on the display.

A fixed measurement time can also be specified in customer-programs. If the programmed, fixed measurement time is too short the result obtained will be unreliable. Such a situation is indicated by a question mark being placed beside the result and the good/poor indicator lighting up yellow.

In the case of a leaky watch the measurement is broken off as soon as a relief of the deformation is detected that corresponds the seal criterion.

At the end of the measurement, the change in the deformation is shown on the display as a percentage relative to a measurement time of 60 seconds and a pressure of 2 bar.

6.1.7 Pressure release

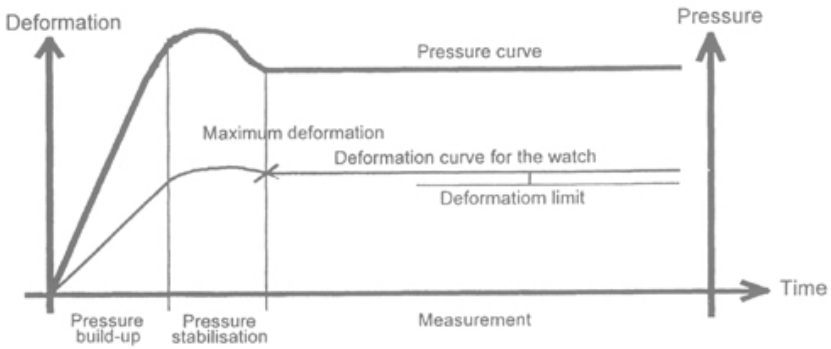
The pressure is released at the conclusion or following a termination of a measurement and the chamber opens automatically.

If a large leak has been detected during a test the pressure is reduced slowly in steps so that any over-pressure in the watch casing can be equalized and hence prevent damage to the watch.

7 APPENDIX

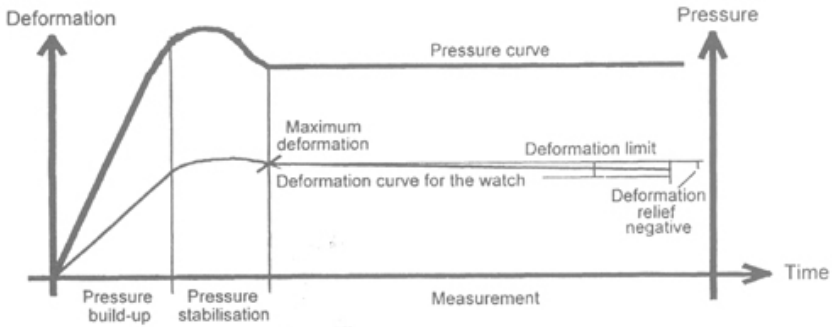
7.1 TYPICAL DEFORMATION CURVES

7.1.1 IDEAL CASE



After the pressure has stabilized within the chamber, the watch deformation remains unchanged for the duration of the measurement period ⇒ **The watch is okay**

7.1.2 TEST 1(2) OKAY ± X.X%



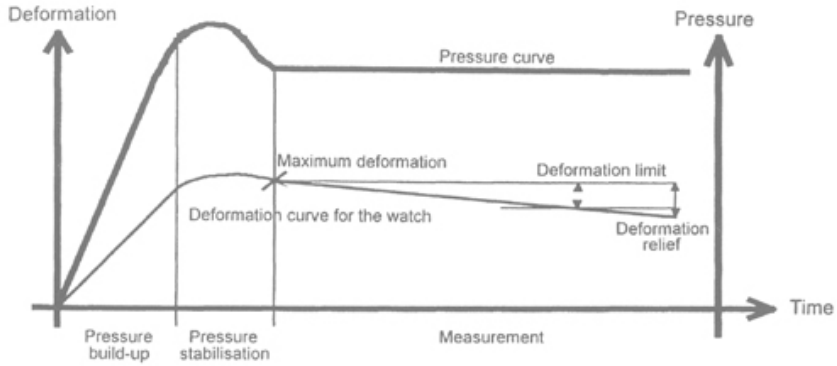
The watch deforms normally during the pressure increase and stabilization period. A small amount of deformation relief is measured during the measurement time. The amount of this relief is **less** than the programmed deformation limit.

The value for the deformation limit refers to a measurement time of 60 seconds and is calculated as follows:

$$\frac{\Delta * 60}{Max\_deformation * Measurement\_time} < K * \text{Deformation limit} \rightarrow \text{Test 1(2) okay}$$

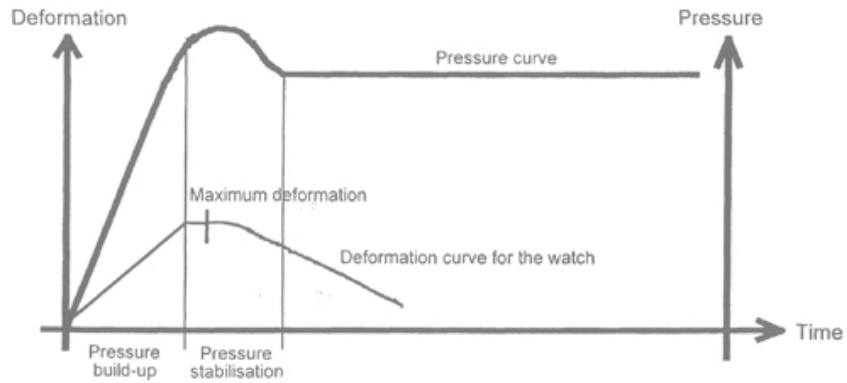
7.1.3 TEST 1 AND/OR 2 REJECTED

The watch deforms normally during the pressure increase and stabilization period. A certain amount of deformation relief is measured during the measurement time. The amount of this relief is greater than the programmed deformation limit.



7.1.4 IMPORTANT LEAKAGE

The watch deforms as the pressure is applied but, because it has a sizable leak, there is a considerable amount of deformation relief. The deformation relief exceeds 15% per second.

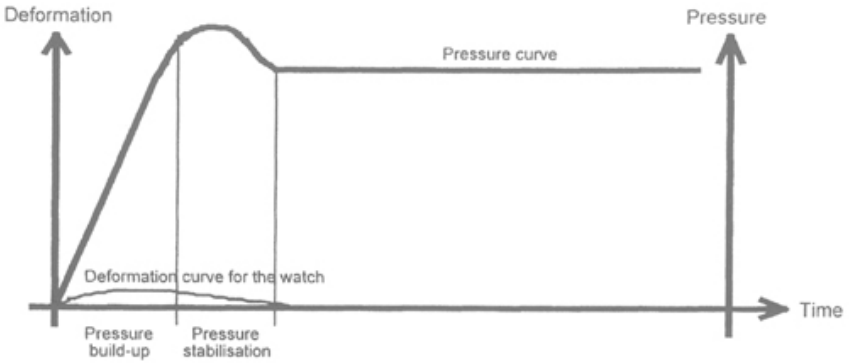


Important leakage is indicated if: $\frac{\Delta(1\_sec) * 60}{Max\_deformation} > 0.15$

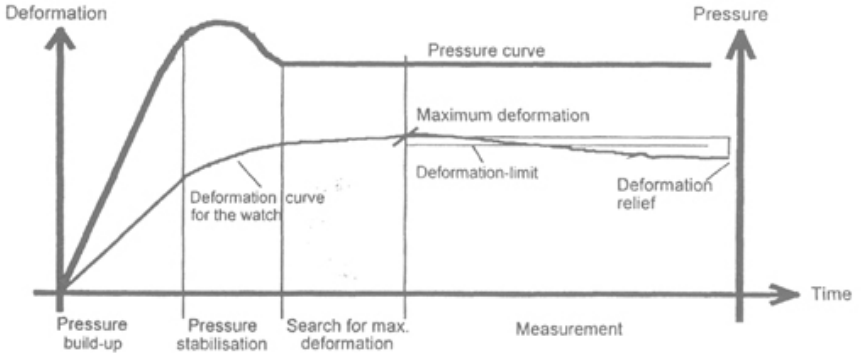
7.1.5 Big leakage

The watch does not deform when a pressure or a vacuum is applied. There are two possibilities for this kind of result:

- The watch has a large leak so that air flows quickly into or out of the casing and the pressure inside and outside is the same. No deformation can hence be measured after the stabilization time.
- The watch is very solidly made and so does not deform (test pressure too low).



7.1.6 Deformation relief in plastic watches



When a watch exhibits a plastic deformation (the deformation increases further after the test pressure has been reached), the unit waits for the maximum deformation to be reached after the stabilization period before the measurement is begun. The decision whether to classify the watch as **okay** or **rejected** is as described on page 29.

7.2 Table of Pressures

Table with the forces which are transmitted from the inside (test under vacuum) and from the outside (test under pressure) to the glass **and** to the back of the watches.
The forces are calculated with the following formula: **Force = P x 1.02 x R^2 x π**

Test under vacuum (bar)	Force from inside to the glass **and** back for Ø 30 mm (kg)
-0.2	1.44
-0.3	2.16
-0.4	2.88
-0.5	3.60
-0.6	4.33
-0.7	5.05
-0.8	5.77

Test under vacuum (bar)	Force from inside to the glass **and** back for Ø 25 mm (kg)
-0.2	1.00
-0.3	1.50
-0.4	2.00
-0.5	2.50
-0.6	3.00
-0.7	3.50
-0.8	4.01

Test under vacuum (bar)	Force from inside to the glass **and** back for Ø 20 mm (kg)
-0.2	0.64
-0.3	0.96
-0.4	1.28
-0.5	1.60
-0.6	1.92
-0.7	2.24
-0.8	2.56

Test under pressure (bar)	Force from outside to the glass **and** back for Ø 30 mm (kg)
0.5	3.60
1.0	7.21
1.5	10.81
2.0	14.42
2.5	18.02
3.0	21.63
3.5	25.23
4.0	28.84
4.5	32.44
5.0	36.05
5.5	39.65
6.0	43.26
6.5	46.86
7.0	50.47
7.5	54.07
8.0	57.68
8.5	61.28
9.0	64.89
9.5	68.49
10.0	72.10

Test under pressure (bar)	Force from outside to the glass **and** back for Ø 25 mm (kg)
0.5	2.50
1.0	5.01
1.5	7.51
2.0	10.01
2.5	12.52
3.0	15.02
3.5	17.52
4.0	20.03
4.5	22.53
5.0	25.03
5.5	27.54
6.0	30.04
6.5	32.55
7.0	35.05
7.5	37.55
8.0	40.06
8.5	42.56
9.0	45.06
9.5	47.57
10.0	50.07

Test under pressure (bar)	Force from outside to the glass **and** back for Ø 20 mm (kg)
0.5	1.60
1.0	3.20
1.5	4.81
2.0	6.41
2.5	8.01
3.0	9.61
3.5	11.22
4.0	12.82
4.5	14.42
5.0	16.02
5.5	17.62
6.0	19.23
6.5	20.83
7.0	22.43
7.5	24.03
8.0	25.64
8.5	27.24
9.0	28.84
9.5	30.44
10.0	32.04

(1 bar = 1.02 kg/cm^2)

7.3 Vacuum in dependence on the Altitude

The generated vacuum can reach max. 85% of the environment pressure. Following typical values result:

Altitude	Absolute Pressure	Maximum Vacuum
0 m	1.01 bar	**-0.85 bar**
500 m (1640 feet)	0.95 bar	**-0.81 bar**
1000 m (3281 feet)	0.90 bar	**-0.76 bar**
1500 m (4921 feet)	0.85 bar	**-0.72 bar**
2000 m (6562 feet)	0.79 bar	**-0.68 bar**

In practical operation and in dependence on the barometric pressure the obtained vacuum may vary a little.

8 TECHNICAL DATA

Measurement principle
- Analysis of the deformation of the watch casing under pressure and/or vacuum.

Fully automatic test program

1 Fixed measurement program
- Fixed test with vacuum and pressure: -0.2 / 2.0 bar.

Customer-specific test programs
- 10 programs with selectable pressures and timing. The limit tolerances for good/poor evaluations can be changed to suit special watches. Testing with vacuum, pressure or vacuum and pressure.

Vacuum and pressure
- Selectable vacuums from -0.2 to -0.8 bar in steps of -0.1 bar.
- Selectable pressures from 0.2 to 1.0 bar in steps of 0.1 bar, from 1.0 to 2.0 bar in steps of 0.2 bar, from 2.0 to 5.0 bar in steps of 0.5 bar and from 5.0 to 10 bar in steps of 1.0 bar.

Measurement times
- Automatic determination of the minimum test time necessary or via manual input from 10 s to 300 s.

Stabilization time
- Automatic transfer from the stabilization phase to the measurement phase once the necessary stability has been achieved.

Deformation measurement
- Absolute deformation from 0.0 to 999.0 µm (during the stabilization phase).
- Relative deformation from 0.0 to 99.9 µm (during the measurement phase).
- Internal resolution: 0.03 µm.

Evaluation and display
- Automatic tight/leaky evaluation.
- Good/poor indication by two-colored LED's.
- LCD-indication of proper watch and sensor positioning.
- Continuous display of the deformation, test pressure, stabilization and measurement time.
- Immediate indication and termination of the measurement if a leak is detected.
- The criteria for the good/poor evaluation (water-tightness tolerance) correspond closely to the ISO and NIHS standards for waterproof watches.

Special features

- Automatic closure of the chamber by a motor.
- Automatic opening of the chamber.
- Printer connection to print-out the measurement results and the parameters.
- RS 232-port to connect a PC for statistics, analysis and remote control.
- Text display in a choice of 9 languages.
- Only 4 operating buttons for all the functions.
- Programs remain stored in the event of a power failure.
- Hi-tech electronics with a 16-bit microprocessor.
- Sensor with quick adjustment for all types of casing, with and without a wrist-strap.

Casing

- Black lacquered hardwood frame, scratch proof aluminum front, back and base-plate.
- Cast aluminum chamber.
- Dimensions: 32 x 23 x 21.5 cm (d x w x h).
- Weight: 6.4 kg.

Compressor connection

- Adjustable for use of a compressor with or without an air reservoir or for use of an existing compressed air hose.
- Switched mains outlet for the connection of a compressor.

Compressed air connection

- Maximum input pressure: 11 bar.

Mains

- Selectable input voltage: 115 / 230 V~. Power consumption without compressor: 15 VA.

Declaration of conformity

- The equipment is in conformity with the following EC-Directives:

89/336/EWG	**EMC**
EN 55011 : 1991	Emissions
EN 50082-1 : 1992	Immunity, public environments
EN 50082-2 : 1995	Immunity, industry
73/23/EWG	**Low voltage directive**
EN 61010 : 1993	Electrical safety
89/392/EWG	**Machinery**
EN 292 : 1991	

Patents

- The equipment is protected by several patents.

9 ACCESSORIES

- Printer CITIZEN CBM 910 (no graphic interface), available for 230 V~ or 115 V~.
- Printer CITIZEN iDP 562 graphic interface, available for 230 V~ or 115 V~.
- Printer Switchbox for connection of 2 equipment to the printer iDP 562.
- Compressor JunAir 6-M with stainless air reservoir 9.5 l. Pressure: 11 bar, available for 230 V~ or 115 V~.
- O-Ring for test chambre.
- Statistics Software incl. card for PC and cable set.

10 MAINTENANCE

10.1 Cleaning

- **ALC 2000**

  Cleaning: remove the seal from the basic plate. Clean carefully from time to time the seal, the surface on the bottom side of the chamber and the seal grove on the basic plate by means of a smooth and dry cloth.

- **Compressor JunAir 6-M**

  Oil level:check the oil level once a week. The oil level must be visible in the glass.

  Removing moisture: blow down the reservoir at least once a week. Close cock tightly afterwards. Please consult the enclosed User's Manual for further information.

Please consult the manual that goes with it if you are using another type of compressor.

For any questions please contact the customer service department at our head office or one of our representatives.

10.2 Calibration

We recommend that the instrument should be calibrated and checked once a year to guarantee its measuring accuracy.

Please contact the customer service department at our head office or one of our representatives.