

# OPERATING INSTRUCTIONS FOR THE CERES SECURE II MOISSANITE TESTER

Congratulations! You have purchased the Ceres Secure II Moissanite detector, incorporating the latest in computer chip technology, and now also able to differentiate electrically-conductive synthetic diamond from natural diamond!. The Secure II is rugged and simple to operate and will provide many years of use with proper care. Please observe the maintenance schedule in this manual, and follow all prescribed user precautions to ensure consistent, accurate testing. **Please read these instructions thoroughly before using the instrument.**

The Secure II is manufactured by Ceres Crystal Industries Inc., which pioneered the use of Cubic Zirconia crystal (CZ) as a diamond simulant in 1976, and also invented and patented the first electronic devices to differentiate between CZ and natural diamond using thermal conductivity (U.S. Patent #'s 4,255,962; 4,448,821 and others).

## HOW THE SECURE II WORKS

Traditional diamond testers, such as the Ceres CZeckpoint, Reliance, or Diamond Probe II, differentiate natural diamond from the common diamond simulants by measuring thermal conductivity (i.e., the amount of heat that a gemstone can absorb). Diamond is the world's best conductor of heat, whereas CZ, glass and other common diamond simulants are poor heat conductors. Unlike these simulants, synthetic Moissanite and laboratory-produced diamond share the property of high thermal conductivity with natural diamond, rendering thermal testers ineffective for the separation of Moissanite/Synthetic from diamond. Ceres' engineers have determined, however, that Moissanite and Synthetic Diamond differ from naturally occurring diamond in that they are electrically conductive, whereas diamond is not. Thus, the Secure II is designed to measure the amount of electricity a gemstone can conduct. It will register a positive "SYNTH" reading for Moissanite/Synthetic if sufficient electrical conductivity is detected. Please note, however, that the Secure II will **not** differentiate between Moissanite and Synthetic Diamond.

**EXTREMELY IMPORTANT Please be aware that Moissanite's ability to conduct electricity is not consistent from one gemstone to another. Furthermore, in some cases, only certain areas of the stone will be sufficiently conductive to register a positive Moissanite reading. To best detect the variety of Moissanite gemstones, follow the testing procedures in this manual carefully. Because its production process is still being refined, Moissanite's chemical characteristics continue to change – please call the customer service numbers listed in the back page of this manual for updated information regarding this new material. Please also note that "Synthetic Diamond" in this manual refers only to laboratory-produced, colorless or near-colorless material grown by the nickel catalyst method, and not to natural diamond that has been enhanced or altered in any way. The Secure II is not intended to test colored synthetic diamond.**

## WHAT IT DOES AND DOES NOT DO

The Ceres Secure II has been designed to provide a rapid initial screening method to identify Moissanite and Synthetic Diamond. A negative test result (the unit does not beep nor activate the "SYNTH" light following a proper test) should be regarded as a strong indication – rather than a positive identification – that the gemstone is not Moissanite/Synthetic. (This does not mean, however, that the stone is a diamond! Please read the testing instructions below carefully.) The Secure II is **NOT** intended to differentiate between natural diamond or diamond simulants such as CZ, Corundum, Glass, Strontium Titanate or Quartz. For that purpose we suggest the use of proven, reliable instruments such as the Ceres CZeckpoint, Diamond Probe II, or Reliance diamond testers. The Secure II is an inexpensive

and practical tool to help identify the new Moissanite gems. **However, use of this instrument is not recommended to replace the judgment or experience of the jeweler or gemologist, and all tests should be confirmed by other methods of evaluation**

**IMPORTANT:** The Secure II is designed solely to differentiate Moissanite and Synthetic Diamond from all other gemstones whether natural diamond, CZ, or any other gem material. **A negative (i.e., non-Moissanite response) does not indicate that the material is diamond** – it will be necessary to use another means to determine if it is a “real” diamond.

## FEATURES

### *METAL WARNING BEEPER*

The Secure II incorporates a warning buzzer that indicates that the probe tip has come in contact with either the gemstone’s metallic setting or the test bed provided with the unit. Without this feature, since gold and silver are excellent conductors of electricity, a positive “SYNTH” response could be obtained if the probe tip were to come in contact with the setting or test bed.

### *SELF DIAGNOSTIC*

Each time you turn the Ceres Secure II on, the sophisticated computer chip in the unit performs a self diagnostic. If there is anything wrong with the unit, the red “READY” light will begin to flash. This flashing indication will also occur if the computer chip detects a failure during normal operation of the unit. This feature ensures that you cannot use the tester in the event that there is a malfunction. If the red “READY” light flashes, turn the unit off and then back on. If it continues to flash, call Ceres Electronics customer service.

## PERFORMING A TEST

### **Mounted Gemstones**

Attach the alligator clip to the jewelry’s setting. **Note - the Ceres Secure II will not function if the alligator clip is not attached.** Be sure the unit is plugged in, and turn it on. The red “READY” light will immediately illuminate, accompanied by a short beep. Hold the attached jewelry by the alligator clip, taking care that your hand does **not** directly touch the jewelry – the Ceres Secure II will operate much more accurately if the body does not touch the jewelry. Next, test that the alligator clip is attached properly by touching the probe tip to the gemstone’s settings. The metal buzzer should sound. You are now ready to probe the gemstone(s), by placing the probe tip squarely against the stone. **It is strongly recommended that as many areas of the gemstone be probed as possible. Moissanite gemstones that do not conduct electricity easily may have “dead” spots where electrical conductivity will be difficult to detect.**

Important – the Ceres Secure II will not work with settings that are non-metallic (i.e., plastic).

### **Loose gemstones**

Connect the alligator clip to the test bed (stored in the back compartment of the unit). Touch the probe to the test bed. The metal warning buzzer should sound, indicating that the test bed is securely attached. The test bed has small holes drilled to contain gems of various sizes. Place the loose gemstone in the hole that best encapsulates the gemstone. Be sure to probe both the table facet and the pavilion of the gem (see diagram). As above, be sure to hold the clamped test bed only by the alligator clip, taking care that your hand does not touch the test bed.

**Helpful Hint --** *The electrical conductivity of a Moissanite gemstone can be enhanced by dabbing a small area of the stone with a water-based marker (included with the unit). Be sure to probe the dabbed area with the Secure’s probe tip. **This procedure increases the contact area and may cause many***

**Moissanite gemstones to test more accurately.** Be sure that the marker's fluid is not contacting the test bed, or a mounted gemstone's setting, as this would produce incorrect readings. Enhancing the electrical conductivity of a gemstone with a water-based marker maximizes the Secure's ability to successfully detect all varieties of Moissanite. Due to the wide range of Moissanite's electrical properties, it is recommended that the marker enhancement procedure be performed as a final test step to determine if the gemstone is Moissanite.

Test results will be as follows:

- ❖ **If the gem is Moissanite or Synthetic Diamond**, the yellow (SYNTH) light will illuminate, accompanied by an audible tone.
- ❖ **If the gem is not Moissanite or Synthetic Diamond**, the red (READY) light will remain on; there will be no tone.
- ❖ **If the test bed or metallic setting is accidentally touched**, the metal warning buzzer will sound, indicating that you must retest. You may repeat the test as often as necessary.

Once it is determined that the gem is not Moissanite/Synthetic, a thermal conductivity tester such as the Ceres CZeckpoint, Reliance, or Diamond Probe II must be used to determine if the gem is a diamond. Note: The order of testing may be reversed – if a thermal tester obtains a "diamond" result first, you may then use the Secure II to determine that the stone is not Moissanite/Synthetic.

## A FEW PRECAUTIONS

- Test only clean gemstones, since body oil, dirt, and dust could produce an electrical path to the test bed or the gemstone's setting, and produce incorrect readings. **A gemstone with contaminants or moisture on its surface could incorrectly test as Moissanite/Synthetic.**
- Make sure that the stone is completely dry after cleaning, as water and other liquids could conduct electricity, causing improper readings. **When performing the marker enhancement procedure, be sure the marker's fluid does not contact the test bed or a gemstone's setting.**
- Clean the probe tip frequently. It is recommended that the tip be cleaned before each use, by scratching it vigorously against a piece of paper. Do not use coated or waxed paper.
- The alligator clip and the test bed should be cleaned periodically with alcohol and a cotton swab.
- A mounted gemstone's setting must not be loose or corroded. Sufficient contact must be made between the gemstone and the setting to ensure that electrical conductivity will occur in the event the gemstone is Moissanite.
- Sporadic "SYNTH" indications may occur if metal is probed with very light pressure. Always probe with sufficient pressure to ensure solid contact between the probe and the gemstone.
- Do not probe too closely to a gemstone's setting as the electricity may arc to it, producing incorrect readings.
- Always keep the protective cover on the probe tip when not using the instrument. Turn the unit off when not in use
- Ib diamonds are known to be electrically conductive. They are usually gray or blue in color and are considered extremely rare. In the unlikely event that these are tested with the Secure II, they could test as Moissanite/Synthetic.

## **SERVICE AGREEMENT**

In the event that your Secure II requires repair, please return it to your dealer. However, we strongly recommend calling Ceres Electronics' Customer Service Department before shipping. Many problems can be solved quickly and easily over the telephone, without the need to return the unit for service.

### **Warning**

There are no user-serviceable parts in the unit. Do not take it apart, as there are areas on the circuit that when touched will give an uncomfortable electrical shock. Evidence of tampering also voids the Limited Lifetime Warranty.

## **WARRANTY AND DISCLAIMER**

CERES CRYSTAL INDUSTRIES INC. WARRANTS THAT THIS CERES SECURE II WILL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR AS LONG AS YOU OWN IT. THIS WARRANTY EXTENDS ONLY TO THE ORIGINAL PURCHASER OF THIS INSTRUMENT AND DOES NOT INCLUDE THE PROBE TIP, THE POWER SUPPLY, OR THE ALLIGATOR CLIP TEST LEAD WHICH ARE WARRANTED FOR TWO (2) YEARS.

In the event of a defect during the warranty period, CERES CRYSTAL INDUSTRIES INC. should be notified in writing and the purchaser should return the instrument to CERES CRYSTAL INDUSTRIES INC., freight prepaid, properly identified, and with proof of purchase date. The sole obligation of CERES CRYSTAL INDUSTRIES INC., after reasonable opportunity to inspect the instrument, will be to repair or replace, at its option, and at no charge to the purchaser, the defective instrument, or any part of the instrument that is proven to the satisfaction of CERES CRYSTAL INDUSTRIES INC. to have been defective at the time of purchase, or that has become defective in normal use during the warranty period.

The above warranty is void if the instrument has been serviced by anyone other than CERES CRYSTAL INDUSTRIES INC. or has been altered, abused, misused or used for purposes other than those for which it was designed or used in a manner contrary to the unit's operators manual.

CERES CRYSTAL INDUSTRIES INC. MAKES NO WARRANTIES REGARDING THE CERES SECURE OTHER THAN THOSE EXPRESSLY CONTAINED HEREIN, AND ALL OTHER WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND ARE EXCLUDED BY IT.

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