

sisco

Gem Tester Pen

SISCO-DT-PGT II



Principle Explanation

The diamond tester's probe consists of two interconnected temperature-sensing elements: one is heated electronically, while the other generates an electrical signal due to the temperature difference of the tested gemstone. This signal is amplified and displayed on a clear analog scale to determine the gemstone's thermal conductivity.

This diamond tester is equipped with a colored gemstone evaluation display screen to help users distinguish common colored gemstones. It is important to note that natural and synthetic gemstones are quite similar in physical and optical properties; therefore, the diamond tester cannot distinguish between them. Like all thermal conductivity-based testing instruments on the market, this diamond tester cannot distinguish between natural diamonds and moissanite.

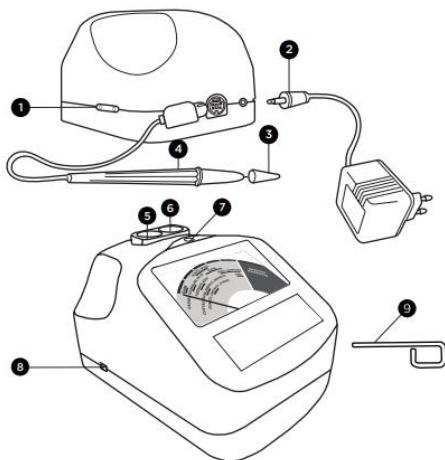
The diamond tester undergoes rigorous quality testing before leaving the factory. When used correctly, it usually provides clear and reliable readings for the tested gemstone. However, for more accurate identification results, it is recommended to use it in conjunction with other testing methods for comprehensive judgment.

Product Features

- Retractable thermoelectric probe tip design ensures constant pressure between the probe tip and the gemstone, reducing human error.
- Ultra-fine probe tip (only 0.6 mm in diameter), capable of detecting diamonds as small as 0.02 ct.
- Metal alarm buzzer design ensures good contact between the probe tip and the gemstone throughout the testing process.
- Clear and easy-to-read analog scale dial supports continuous testing without waiting for internal calibration.
- Built-in calibration dial and glass testing dial for easy comparison and reference.
- Powered by 2 AA batteries or an AC adapter, offering flexible use.

Packaging List

- Diamond tester
- Built-in calibration dial and glass testing dial (for reference)
- AC power adapter
- User manual
- Warranty card
- Protective carrying case
- Quick start guide



1	Thermal conductivity calibration socket
2	Adapter
3	Probe protective cap
4	Probe pen
5	Glass test tray
6	Calibration test tray
7	On/Off LED indicator
8	On/Off switch
9	Calibration probe

Usage and Maintenance Precautions

- Keep the tester dry. Rainwater and any form of liquid or moisture may contain minerals that are corrosive to electronic circuitry. If the tester gets wet, immediately remove the batteries and allow the device to dry completely. If it still does not work properly, the device must be replaced.
- Do not use, store, or expose the tester to dusty or dirty environments, as this may damage its moving parts or electronic components.
- Do not use, store, or expose the tester to high temperatures. Excessive temperatures may damage or shorten the device's lifespan, damage the battery, and cause some plastic parts to deform or melt.
- Do not use, store, or expose the tester to low temperatures. When the device returns to room temperature from a low-temperature environment, condensation may form inside, which can damage the electronic circuit board.
- Do not attempt to disassemble or open the tester using methods not described in this manual, as this may cause damage or affect normal operation.
- Do not drop, impact, or violently shake the tester. Rough handling may damage the internal circuit board or delicate components.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the instrument, as this may damage the casing or internal structure.

- Do not paint the surface of the instrument. Paint may clog moving parts and affect the normal operation of the equipment.

1. Getting Started

Powering the Drill Tester

- This tester can be powered by either an AC adapter or batteries.
- If using an AC adapter (sold separately), connect one end to the tester's power interface and the other end to a power outlet. For safety and proper operation, always use the adapter provided by the original drill tester manufacturer.
- If using batteries, install two AA batteries. When inserting the batteries, pay attention to the positive (+) and negative (-) terminals and install them correctly as shown in Figure 1.1.
- Alkaline batteries are recommended, providing approximately 2.5 hours of continuous operation under normal conditions; using regular batteries will result in a shorter battery life.

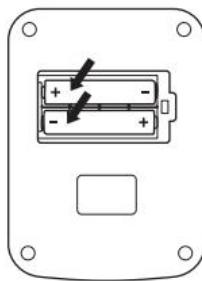


Figure 1.1

Turn on the Drill Tester

Please insert the probe into the socket on the back of the tester (see Figure 1.2).

Note: The probe must be correctly inserted into the socket before turning on the tester. Otherwise, the pointer may swing directly to the dark gray area (diamond area) upon power-on, affecting normal use and reading interpretation.

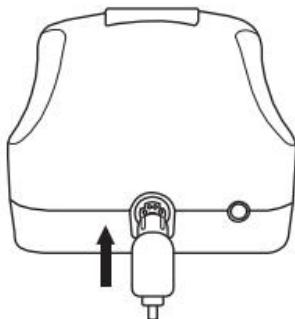


Figure 1.2

Switch the detector to the ON position and wait for the initial warm-up to complete, which takes approximately 30 to 50 seconds (Figure 1.3). During this time, if the reading displayed on the indicator is slightly higher than zero, this is normal.

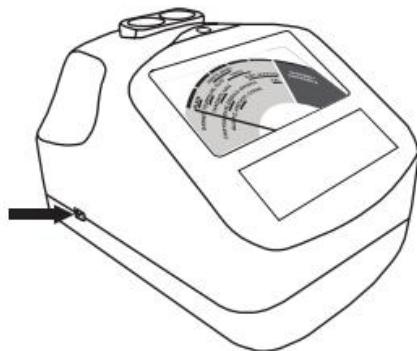


Figure 1.3

Perform a test to confirm that the probe is working properly.

Calibrate the test disc. Place the probe tip on the calibration test disc to the right of the indicator light (Figure 1.4). The pointer should be in the red band and remain stationary (ideally in the center of the red band), with "CAL" displayed above.

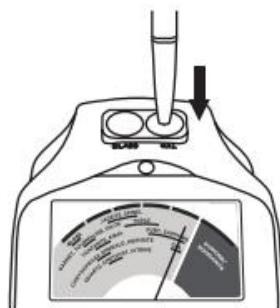


Figure 1.4

Glass Test Panel

- Place the probe tip on the glass test panel to the left of the indicator light (Figure 1.5). After this operation, the pointer should reach its highest point within two to three seconds, penetrating deep into the red stripe of the instrument panel.

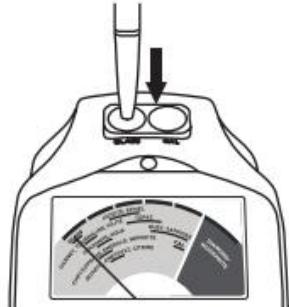


Figure 1.5

Calibration

All testing instruments are calibrated during the manufacturing process and require no further adjustments or user intervention.

Users should not attempt to calibrate them themselves. To minimize any associated risks, users should contact us for assistance. If the user requires recalibration by the manufacturer, the user shall bear the associated shipping costs to and from the service center.

Thermal Conductivity Calibration

To begin calibration, locate the thermal conductivity calibration inlet and lightly touch the switch once with the included calibration probe (Figure 1.6).

After pressing, the buzzer will sound and a flashing blue LED indicator will appear.



Figure 1.6

Press the probe onto the disc, ensuring its tip is fully depressed and retracted into the probe housing (Figure 1.7). Your finger must touch all metal areas of the probe. The pointer indicator will automatically calibrate to the red "CAL" bar. A buzzer will sound twice upon completion of the "CAL" calibration. Remove the probe and wait.

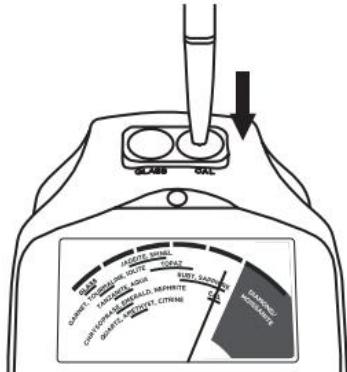
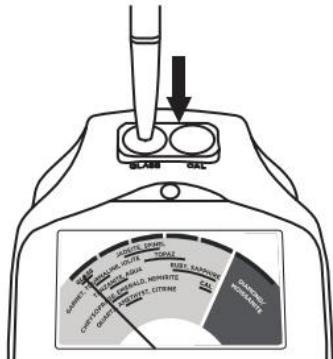


Figure 1.7

When the green LED indicator flashes, press the probe onto the "glass" chip, and then operate the probe as described above (Figure 1.8).

The pointer indicator will automatically calibrate to the red "glass" bar. The buzzer will beep twice after "GLASS" calibration is complete. Remove the probe and wait.



Repeat the "CAL" calibration twice; this will complete the calibration procedure.

The table below shows the sequence of the auxiliary thermal calibration

Program	Indicator light	Press disk	Pin indicator
1	Flashing blue light	CAL	Calibrate to "CAL"
2	Flashing green light	GLASS	Calibrate to "GLASS"
3	Flashing blue light	CAL	Calibrate to "CAL"
4	Flashing green light	CAL	Calibrate to "CAL"

Recommended Testing Conditions

Gemstones should be cleaned and dried before testing. However, complex cleaning procedures are usually unnecessary (Figure 1.9).

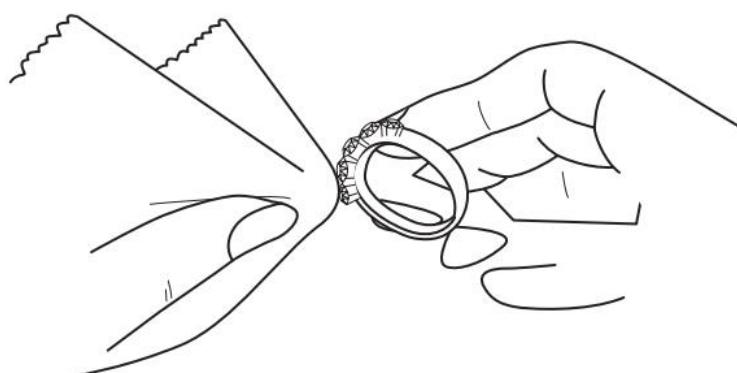


Figure 1.9

The recommended testing temperature is 18°C- 27°C (65°F - 80°F). Please allow the gemstone to reach room temperature before testing. Exposure to and/or operation of the testing instrument outside this range will affect the test results and the performance of the instrument.

Battery Information

Do not leave depleted batteries in the battery compartment. Electrolyte leakage may occur, corroding and damaging the device. If you anticipate not using the device for an extended period, be sure to remove the batteries.

When using AC adapter power, it is not necessary to remove the batteries.

To avoid inaccurate readings, if the red LED indicator does not light up after approximately **50 seconds of power-on**, please replace the batteries promptly. Do not perform any testing when the battery is low or has insufficient power, as this will affect the accuracy of the measurement results.

1. Clean the gemstone before testing.

Prepare a clean piece of tissue paper. Carefully pick up the gemstone with tweezers and place it face down on the paper (Fig. 1.10).

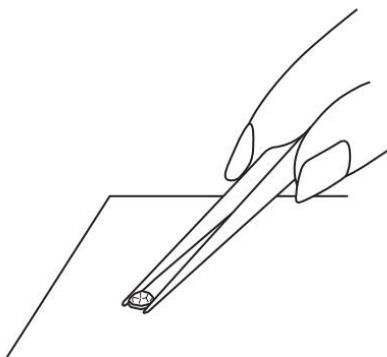


Fig. 1.10

Gently wipe the gemstone with the flat side of the cut paper/jewelry cloth (Fig. 1.11).

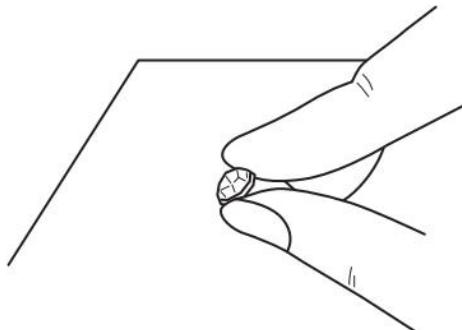


Fig. 1.11

2. Performing the test on the gemstone tester:

- Place the probe tip against the gemstone. Apply slight pressure to fully retract the probe tip into the tester to obtain an accurate reading. This is to maintain stable contact between the probe tip and the gemstone.
- For set jewelry or gemstones:
- Hold the jewelry or gemstone in one hand and the tester in the other (Figure 2.1)
- Care should be taken when testing inlaid jewelry. Users must ensure the gemstones are securely set before performing the test, as gaps between the gemstone and the setting can lead to inaccurate readings.

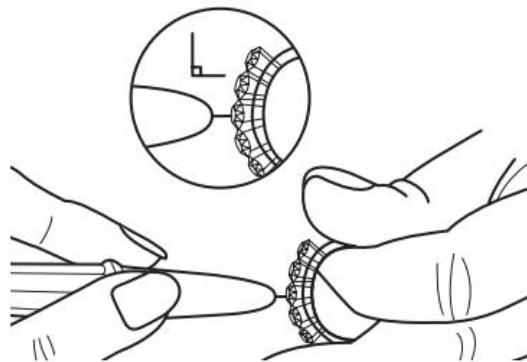


Figure 2.1

If testing a loose gemstone: Place the gemstone on a metal gemstone setting, hold the setting in one hand and the testing instrument in the other (Figure 2.2).

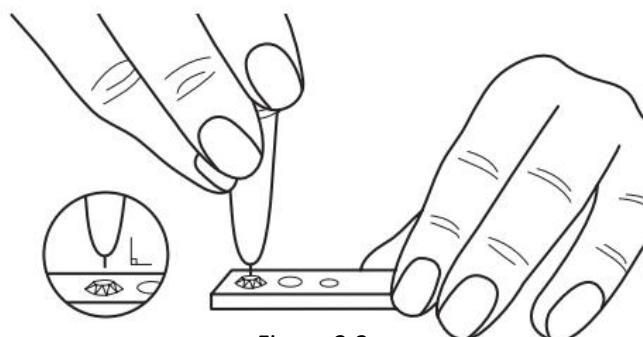


Figure 2.2

Note: The diamond tester does not come with a metal gemstone base.

Tips for using the diamond tester carat scale

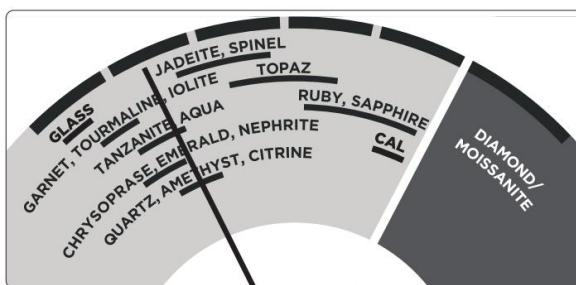
- If this is the first time using the diamond tester, or if it has not been used for a week, it is recommended to wipe the probe tip with a piece of paper to obtain consistent and accurate readings. The probe tip should be gently rubbed on the paper before testing.
- For accurate readings, the probe tip must be perpendicular to the facets of the gemstone, and the cut surface of the gemstone should be facing down during testing. If in doubt, perform the test on the girdle of the gemstone.
- For the diamond tester to function properly, your fingers must always be positioned on the rubber pads on both sides of the tester.
- When testing very small gemstones (no more than 10 points), the gemstone must be allowed to cool before continuing the test.
- It is recommended to collect multiple relevant readings for the displayed test results.

3. Reading the Test Results on the Diamond Tester

The test results are displayed as follows:

- After holding the probe tip against the gemstone for approximately 2 seconds, the pointer will move to the highest reading and then slowly return to its original position. Record the reading at the highest position.
- The diamond tester will provide all possible results on the display screen.
- The diamond tester should only be used to confirm the type of a suspected gemstone.

The following is an example of reading instrument results:



If the pointer stops at the above positions, the tested gemstone may be quartz, amethyst, citrine, tanzanite, or aquamarine—any gemstone within the black band the pointer passes through.

Metal Alarm Buzzer: An audible signal will be emitted if the pen tip touches the metal base of the gemstone.

- **Light Gray Section:** If the pointer stops in this section, a counterfeit gemstone is being detected.
- **Dark Gray Section:** If the pointer stops in this section, a diamond/moissanite is being detected.

When testing very small diamonds, one must expect the result to be a fairly low reading in the dark gray area. Based on the results of thermal testing, a diamond tester can help distinguish:

Sapphire and Iolite	Jadeite and chalcedony
Sapphire and Kyanite	Ruby and spinel
Sapphire and Spinel	Ruby and garnet
Sapphire and Citrine	Topaz and aquamarine
Sapphire and Topaz	Topaz and amethyst
Sapphire and Tourmaline	Topaz and citrine
Jadeite and Nephrite	Spinel and garnet
Nephrite and Garnet	Various gemstones and glass

Thermosensitive test results are only applicable to the gemstones listed above, and they can help jewelers distinguish many easily confused gemstones on the market.

4. Maintaining the Drilling Tester

- The probe and needle are extremely sensitive and should be handled with care to prevent damage to the probe tip.
- Do not use the drilling tester if the indicator light is not on or is not bright enough, to avoid inaccurate measurement results.
- Never leave a depleted battery in the battery compartment, as the battery electrolyte may leak, corroding or damaging the drilling tester. If you anticipate storing the drilling tester for an extended period, remove the batteries.