

Getting started manual

Chromascope

Cape

CHROMA | SCOPE

CAPE



Chromascope BVBA

Lange Herentalsestraat 50
B-2018 Antwerp, Belgium

Mail: info@chromascope.be

Website: www.chromascope.be

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Device :

Cape

Accompanying accessories :

Device

Adaptor

Cable

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SAFETY PRECAUTIONS

Always take into account the following safety regulations when using the device. When used differently than described in this manual, there is an inherent risk for damage of the device or serious injury of the user or possible bystanders. The manufacturer and supplier will not be responsible when the user does not take into account the instructions described in this manual.

In this manual all safety reports are indicated with the words “Warning” and “Watch Out”. They mean the following :

Warning :

Important information pointing out a situation which may cause serious personal injury and damage to the device when neglecting the directions.

Watch out :

Important information which informs the user on how to avoid damage to the device or to prevent a situation which may inflict light injuries.

1 USER CONDITIONS

The device is designed for in-door use.

The operator of the device should have read and understood the manual before using the device.

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2 PRODUCT DESCRIPTION

2.1 SYSTEM SPECIFICATIONS

Colour in diamond (also in other precious stones) is caused by absorption of light. White light consists in a mixture of rainbow colours. When a number of colours selectively disappear because of absorption in the diamond, one can notice the mixture of remaining colours coming back from the diamond.

Absorption of certain colour components is brought on by atomic and molecular impurities. A 'perfect' diamond crystal which contains no traces of impurities, is colourless. As the amount of impurities increases, the colour changes.

The largest part of natural diamond belongs to **type Ia**. These stones contain nitrogen impurities, which mostly appear in groups of 3 nitrogen atoms (N_3 aggregate). These impurities absorb blue light, which results in a yellow colour of the diamond.

One of the most important colour scales for the allocation of the colour judgement of a polished stone is the 'Cape series'. This scale starts from absolute colourlessness indicated with the letter D. When a stone starts to show a pale yellow shade, this quotation drops to E, F, G, Polished stones are compared to 'masterstones' in order to classify them into certain colour zones.

When the concentration of nitrogen impurities of a type Ia stone increases, the blue absorption increases and the diamond appears to be more yellow. This shows there is a direct connection between the concentration of impurities and the colour quotation via the 'Cape series'. For rough stones it is most of the time not possible to perform a reliable colour judgement by using polished 'masterstones'. The "Chromascope Cape" device offers a solution here.

The "Chromascope Cape" device measures the concentration of nitrogen impurities and *correlates* this with a judgement within the 'Cape series', in other words, a colour letter is allocated to the rough stone. Since the larger part of natural diamonds belongs to type Ia, the colour of most stones can be determined.

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When using the “Chromascope Cape”, the following restrictions need to be taken into account :

- For a small part of diamonds, the yellowness of the stone is determined by other impurities than nitrogen. These can not be measured by the device.
- The brown tint in a type II rough diamond will not be measured.
- Strong fluorescent stones can cause unreliable measurements.
- Often the colour inside a rough stone is not everywhere the same. The device however measures the average colour. It is recommended to measure the rough stone in different areas to get an idea of the colour variation present in the stone. This colour variation is caused by the fact that the concentration of nitrogen impurities is not the same in every part of the diamond.
- The “Chromascope Cape” device determines the colour of the “Cape series” from “D” until “K”. When a diamond has a lower colour than “K” or is “fancy colour”, only the measured value will be given, no colour letter will be granted.

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2.2 USER MANUAL

Remark : Before using the device for the first time, the device needs to be charged completely for at least 12 hours. (refer to paragraph 2.3.2.)

2.2.1 STARTING THE SYSTEM

Press the “on/off switch” for a few seconds.



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- A “Welcome-message” appears on the screen.



- After a few seconds “ready” appears.



- The system is now ready to be used.

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2.2.2 CALIBRATE THE SYSTEM

After starting the system it is recommended to calibrate the device.

The device is rather sensitive to temperature fluctuations, therefore it is recommended to calibrate after a few measurements.

At constant temperature conditions, calibration will be stable for a longer period. However, calibration needs to be checked regularly.

The device is well calibrated when after measuring with an empty measure cell (without diamond) the number "100,0" is reached.

- Press the "calibrate" switch briefly.



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- The following message appears on the screen : “Remove diamond Press calibrate”.



- Open the lid and check for diamonds in the device.
Calibration needs to be done with an empty measure cell, so without any diamonds present.
- After checking, close the lid and press “calibrate” again to continue the calibration procedure.
The following message appears on the screen : “Calibrating”; followed by “Calibration successful”.
Measuring can be started again, only when “ready” re-appears on the screen.

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- Finally, "ready" appears again.

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- On the basis of a measurement without diamond, the calibration can be checked (refer to paragraph 2.2.3). When the measured colour value is about “100”, the device has been calibrated correctly and measuring can be continued. On the other hand, it is not necessary to calibrate the device after every measurement.

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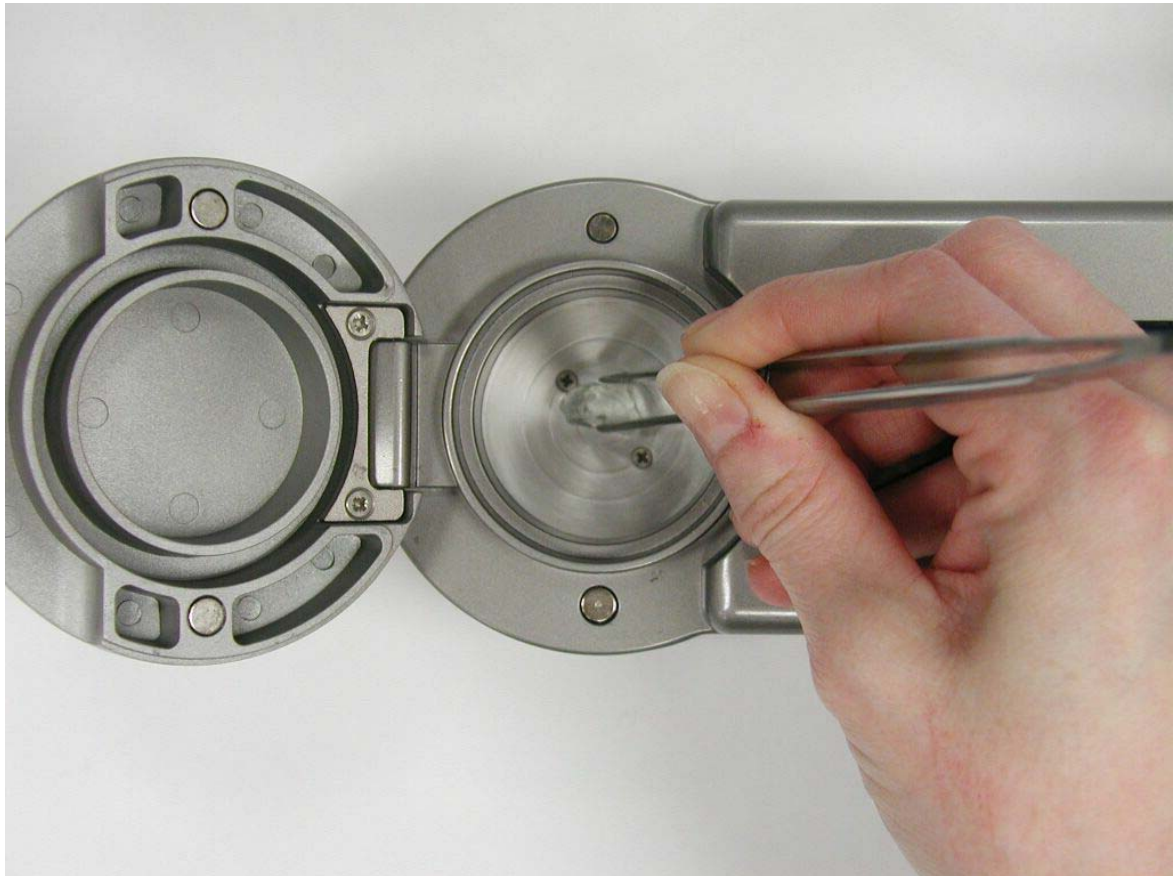
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2.2.3 MEASURING

After the device is started and calibrated, the measuring of the diamond can be started.

- Place the diamond in the centre of the measure cell, the largest and flattest side of the diamond facing the bottom.
- Advice: To recognise the possible colour variation in the diamond, the diamond can be measured repeatedly on different sides (refer to paragraph 2.1)



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- Close the lid and press the “measure” switch.



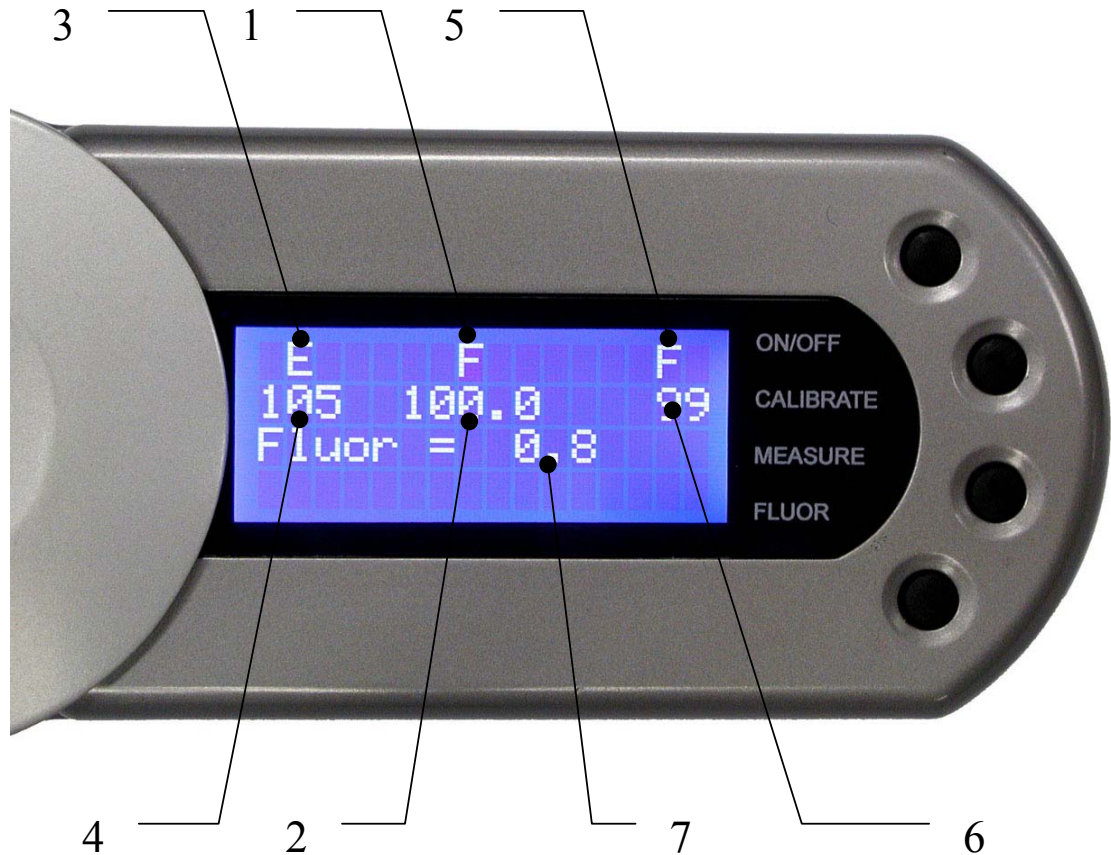
- The following message appears on the screen.



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- This message is followed by the following screen :



The letter in the middle at the top(1) (blinking) indicates the colour of the diamond. Beneath, the measured colour value (2) is given.

On the left (3 & 4) and on the right (5 & 6) of these figures, the letters and limit values of the colours between which the measured diamond lies, is given.

The third line indicates the level of fluorescence (7).

When no fluorescence is visible through the device, a value of about "1" appears, this corresponds with a fluorescence "nil".

The limit values of the colours in each device can vary from the limit values mentioned on the picture on top.

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2.2.4 VISUAL FLUORESCENCE

Herefore, the device needs to be started, but calibration is not needed.

- Open the measure cell and place the diamond in it.
- Leave the measure cell open and press the “Fluor” switch briefly. It is not necessary to keep pushing the “Fluor” switch.

A specific UV light lights up which enables us to see the fluorecence of the diamond.

To see this fluorecence better, the backlight of the LCD screen is switched off.



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- *The falling light can be screened well by using your hands, so the fluorescence is clearer.*



Warning !

This device contains a UV light source, which radiates an intense UV light !

Every direct eye contact with this UV light can cause serious damage to the eyes and needs to be avoided.

Keep out of the reach of children !

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After the measurement the UV light can be switched off by pressing the “Fluor” switch briefly, or wait 20 seconds until the light is switched off automatically. The following message appears on the screen :



2.2.5 SWITCH OFF THE SYSTEM

- The device can be switched off by pressing the “on/off” switch.

The backlight of the LCD screen is switched off after 2 minutes, to save the battery load. The system stays stand by, the backlight of the LCD is switched on again after touching one of the buttons.

The device is switched off automatically, 10 minutes after the last operation.

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2.3 REMARKS

2.3.1 CLOSE LID

Close the lid of the measure cell when the message “close lid” appears on the screen.



It is not possible to measure when the lid of the measure cell is open.

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2.3.2 BATTERY LOW



“Battery Low” on the screen means that the device is at the end of its nominal supply.

Connect the device immediately to the power supply using the adaptor. This way, you can continue working without any problems.

The device may be used when connected to the mains voltage.

The quality of the lithium battery will not decrease because of “surplus charging” of the battery.

Remark : When the battery is totally empty, it can take a few hours before the device can be restarted, after connecting it to the adaptor.

When the battery of the device is totally empty, a complete upload, which normally takes about 4 hours, can take a few hours longer; this for safety reasons.

2.3.3 GAIN ERROR

When “Gain Error” appears on the screen, there is not enough light in the diamond to measure correctly. We suggest to turn the diamond to an other position on the detector. Now you can try again to measure the diamond.

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3 PHYSICAL QUALITIES

Weight : +- 900 g

Dimensions : H:75mm W:195mm L:85mm

Conditions

Power supply : 6-7.5V DC 1.5A

**Watch out : The device may only be used with the accompanying adaptor !
The adaptor is to be switched on a 220V net !**