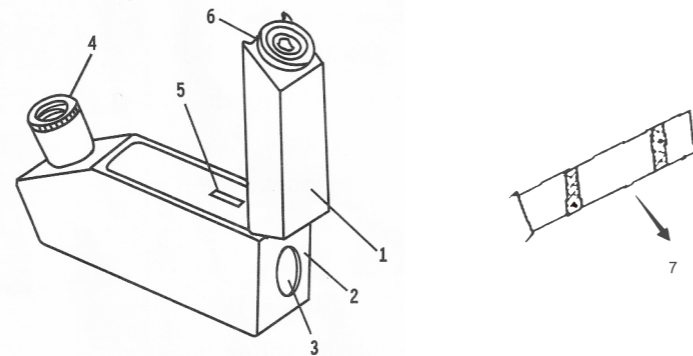


Operation Manual

GEM – TESTER – MODEL SDG – 181

SDG-181 Refractometer index is one of most important optical parameter. Gloss of gem can be estimated by the parameter, The kind of gem can be precisely determined in accordance with the measured value of refractive index because every kind of gem has its inherent refractive. Beside index of double refraction can be also measured. Though the parameter you can judge whether a gem is uniaxial or biaxial photopositive or photonegative, The gemological refractometer is characterized by small volume and less weight. It is easy to carry. It is a popular instrument used in jewelry market.



1.upper cover 2.body 3.filter 4.eyepiece 5.prisim 6.polarizer 7.flash light

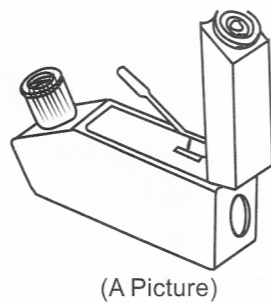
PARAMETERS OF THE INSTRUMENT

Measuring rang: 1.30 – 1.81
 Minimum graduation value: 0.01
 Size: 32 * 60 * 128mm
 Weight: 330g

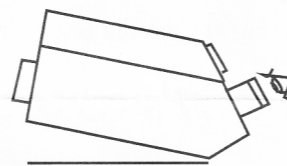
METHOD OF OPERATION

Lay the instrument on the worktable. Open the upper cover (1). Drops of

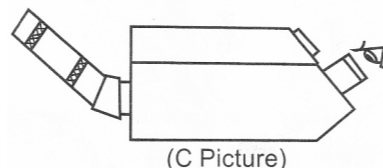
1. special refractometer oil onto the surface of prism (5) by a thin glass bar. (such A picture)
2. Mark the ground surface of gem to be measured close up to prism (5) , depress it lightly, make refractive oil distributed evenly between the two surface, Then close the upper cover.
3. Light source of choice to use: Natural light: The gem of the back-end instrument upward window instrument upward (such B picture)
 Torch light: flashlight screwed to the window light, flashlight must be an upward direction (such C picture)
4. Move eyepiece (4) up and down. Adjust diopter approximately. Now you can see a



(A Picture)



(B Picture)



(C Picture)

light/dark boundary in viewing field. The graduation on which the boundary, located is the refractive index of gem as shown in right Figure.

5. The index of double refractometer of gem can be measured precisely because the filter(3)of the refractometer can eliminate the

Measuring methods

Remove the polarizer(6). Turn it onto eyepiece (4). Then turn the polarizer (6) lightly. You can only read the refractive index value in one direction an a time because the polarizer only allow the light vibrated in one direction to pass through. The turn the polarizer (6) thought 90° , you can measure the refractive index value of the light vibrated at right angles to that mentioned above, Turn the gem in the same direction through small degree then turn the polarizer (6) lightly according to above method, you can read the two refractive index value of the light vibrated at right angles to each other, Operate continuously until the gem is at 180° position to its initial position. From a number of group of measured refractive index

values you can find a group with the difference of maximum refractive index value you can find a group with the different of maximum refractive index and minimum refractive index, The differences the value of index of double refraction of gem .

After measurement, clean away the refractive oil on the prism (5) then put the prism (4) into the box of instrument for protection.

ATTENTION AND MAINTERANCE

1. The instrument is composed of precise components. You should not dismantle it by yourself, After usage, the instrument should be stored in dry place, in order to protect the instrument from moisture and mildewing which can affect the precision of the instrument.
2. The refractive oil should be stored and sealed. While using it, you should use a thin glass bar to dip into it, don' t bring oil into tough with band or eye.
3. The intensity of light source should be approximate. It should be suitable to bright and even viewing field and clear observation.

