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D-SCOPE

The indispensable **analysis tool** for all diamonds

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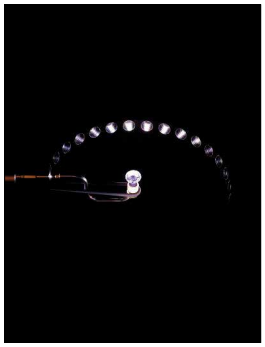
HRD Antwerp has a long experience in research, examination and grading of diamonds. This has lead to the development of our own analysis tool: a Diamond microscope named **D-Scope**. This tool has been shaped and refined throughout the years, so that every aspect is optimized for the analysis of diamonds.

Main features

- **Illumination**
  For the examination of clarity, finish grade and fluorescence.

- **Optics**
  A high quality stereo zoom optical system is used to obtain a clear 3D image through both eyes.

- **Manipulation**
  Move and rotate your diamond, with a maximum flexibility, and a minimal obstruction of the view.



From the beginning on the illumination has been a corner stone of the instrument.
The need to investigate clarity, finishing grade and fluorescence of diamonds has lead to a versatile and flexible lighting solution.
New technologies are still pushing the possibilities.

Heavy demands are placed on the optical system: it has to produce an accurate image to make it possible to study clarity and colour. To gather information on the location of inclusions, it is necessary to have a high depth of view, therefore a stereo-zoom microscope is used. The oculars present images that differ in viewing angle.
The mind combines these two images into one, very much like the natural depth perception.

Manipulation of your diamond with high precision has never been so easy! The gem-manipulator works with a vacuum-system to hold the diamond with a minimum of view obstruction. The ingenious system to rotate the diamond allows a flexible and intuitive manipulation. In combination with a D-Stick or an XY-stage it covers the whole range of movements.

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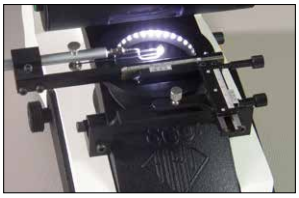
Illumination



The D-Scope base is equipped with a sophisticated illumination system that consists of a unique halogen or LED darkfield lighting, a TL or LED-daylight and also TL or LED-UV lighting.

Darkfield illumination

The dark field illumination was designed to study the inside characteristics of the diamond. A set of mirrors converges the light from all sides into the center of the stone. The smallest inclusions become visible. Yet the light doesn't produce any disturbing reflections on the outside of the stone. The light comes from the side, so it cannot pass directly into the lens.

Overhead daylight illumination

The overhead illumination simulates daylight and therefore offers the best lighting conditions to study clarity, finish grade and even colour. Examining with a 10x loupe can be simulated.

Overhead fluorescence illumination

The overhead fluorescence illumination is useful to study the fluorescence of diamonds. The overhead lighting can be tilted to put into optimal position.
One can also choose for LED (= Light Emitting Diode) illumination, which replaces the regular halogen and TL-lighting and gives the same examining possibilities. Only LED gives more and a brighter white light to the stone. Ideal for the grader to see at a glance the impurities of the stone being examined.

Manipulation

The most important feature, next to the illumination, is the manipulation of the stone. HRD Antwerp was the first manufacturer in the world who came up with the idea to work with a special vacuum gem-manipulator.

The vacuum, created by a pump integrated in the design, is lead through a small tube to a suction pad. This suction pad makes it possible to hold the stone and to move it in all directions without touching it. This allows to study stones from all sides without the view being obstructed.

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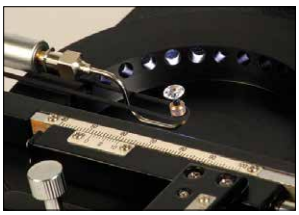
There are two different possibilities to manipulate the vacuum gem-manipulator:

- D-stick: a special designed joystick-like unit
- XY stage: a more accurate holder to move the stone mm per mm (left/right and up/down)



For those who prefer the traditional working method, the vacuum gem-manipulator can be replaced by magnetic tweezers. If preferable both systems can be placed together on the base of the microscope.

Optics

Stereo zoom microscopes provide the ability to see fine details in 3D. The optical excellence allows a better, faster and more reliable identification, analysis and measurement. The long working distance permits easy manipulation of the inspected stones.
All optics are available in binocular and trinocular format.

In case of a trinocular type, the third lens hole can be connected to a digital camera, allowing you to make pictures of your stones.

All optics are standard equipped with 10x oculars. Other oculars and additional lenses are available on request.

Zeiss

Magnification:	0.65x - 5x
Working distance:	92 mm
Viewing angle:	35°
Mount diameter:	Ø 30 mm
Reticules:	Ø 26 mm
Magnification:	10x

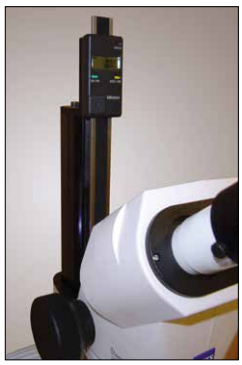
Leica

Magnification:	0.63x - 4x
Working distance:	110 mm
Viewing angle:	38°
Mount diameter:	Ø 30 mm
Reticules:	Ø 26 mm
Magnification:	10x

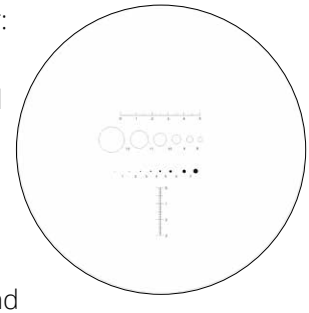
Olympus

Magnification:	0.80x 4x
Working distance:	92 mm
Viewing angle:	45°
Mount diameter:	Ø 30 mm
Reticules:	Ø 24 mm
Magnification:	10x

Accessories



HRD Antwerp graticule kit



A graticule can be used for:

- a precise, objective measurement of internal characteristics with the aid of reference circles (1 to 12)
- measuring the external dimensions of rounds and all other shapes using the linear scale

HRD Antwerp combi graticule kit

The combi graticule combines the use of the HRD Antwerp graticule, for determining the size and depth of inclusions, with those of the graticule for measuring proportions and for measurement angles of inclination.

Avalight

By using a special light source, Avalight, one can visualize the surface finish of a facet with very high contrast. Polishing lines can be observed more easily with this light source than with a classical light source.

This method makes the grading of stones out of the tang much easier. By putting a facet in reflection with Avalight, the smoothness can be observed instantly.

Measuring ruler

This ruler, in combination with the refractive index of diamond, is developed to give exact information at what depth the inclusion is located.

USB camera

A low budget camera with adapter to fit in one of the oculars.
Live images and pictures can be obtained.The USB camera can be connected to a PC or laptop, connected to the internet, so that pictures or small video films can be sent over the internet to your customers or suppliers. Other camera systems for trinoculars can be offered on request.

Transport case/box

- pilot case (leather)
- trolley (leather)
- transport case (plastic, always used for shipments abroad. This to avoid damage to the microscope.)

Transmitted light

For examining rough diamonds we have developed a special sorting support with built-in LED illumination. The support is placed, instead of a vacuum gem-manipulator, over the darkfield illumination so both lightings can be used.

Rough diamonds are manipulated by hand, but it is also possible to install magnetic tweezers or an XY stage on the sorting support.

To conclude: a D-scope can be customized to your specific needs, whether it is to examine polished or rough stones, or even both on the same instrument.

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What you need to know about your D-Scope

Ergonomics

The D-Scope was developed for intensive use. So ergonomics and ease of use were very important in the design. The D-Scope is easily adjustable in height and inclination, so the individual user can assume a comfortable position.

D-Scope characteristics

- Power supply: 220 V
  (for countries with 110 V a special adaptor is supplied)
- Frequency: 50 Hz
- Nominal power consumption: 100 mA
- Weight: 17 kg
- Surface of use: 22 x 42 cm (wxd)
- Height in lowest position: 50 cm
- CE approved

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