

OPTIKA

M I C R O S C O P E S

I T A L Y

Ver. 1.0.0



B-500POL



OPERATION MANUAL

OPTIKA MICROSCOPES - ITALY

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This microscope is a scientific precision instrument designed to last for many years with a minimum of maintenance. It is built to high optical and mechanical standards and to withstand daily use.

Optika reminds you that this manual contains important information on safety and maintenance, and that it must therefore be made accessible to the instrument users.

Optika declines any responsibility deriving from instrument uses that do not comply with this manual.

Safety guidelines

This manual contains important information and warnings regarding safety about installation, use and maintenance of the microscope. Please read this manual carefully before using the equipment. To ensure safe use, the user must read and follow all instructions in this manual. OPTIKA products are designed for safe use in normal operating conditions. The equipment and accessories described in the manual are manufactured and tested according to industry standards for safety instrumentation laboratory. Misuse can cause personal injury or damage to the instrument. Keep this manual at hand close to the instrument, for an easy consultation.

Electrical safety

Before connecting the power cord to wall outlet, ensure that your mains voltage for your region corresponds to the voltage supply of the instrument, and that the illuminator's switch is in position OFF. The user must observe the safety regulations in force in his region. The instrument is equipped with CE safety marking, in any case the user has full responsibility concerning the safe use of that instrument.

Warning/Caution symbols used in this manual

The user should be aware of safety aspects when using the instrument. Warning or hazard symbols are shown below. These symbols are used in this manual.



DANGER

The instructions on this symbol to avoid possible severe personal injuries.



WARNING

Warning of use; the incorrect operation on the instrument can cause damages to the person or instrument.



WARNING

Possibility of electric shock.



HOT!

Attention: high temperature surfaces. Avoid direct contact.



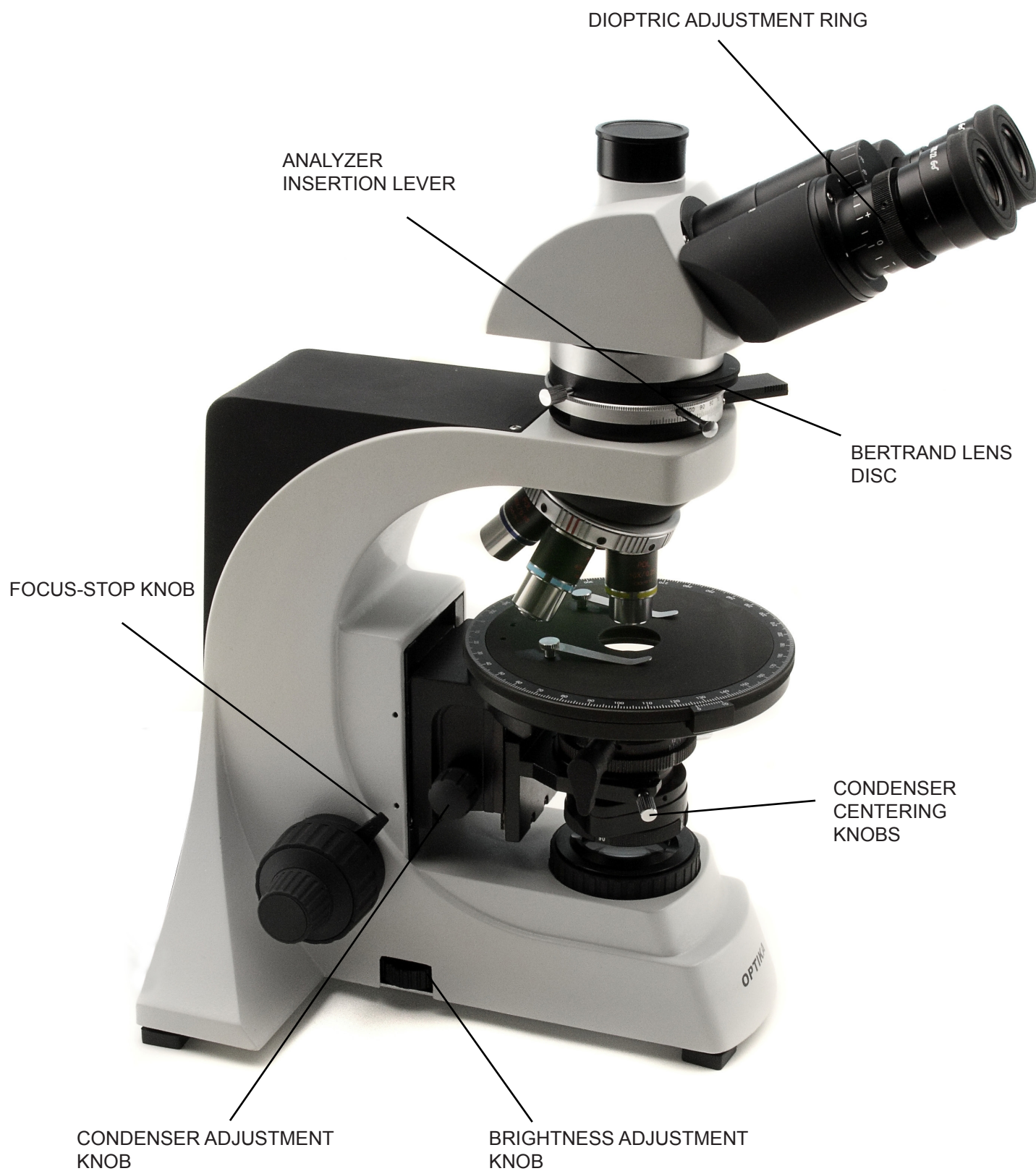
NOTE

Technical notes or usage tips.



1.0 DESCRIPTION







2.0 INTRODUCTION

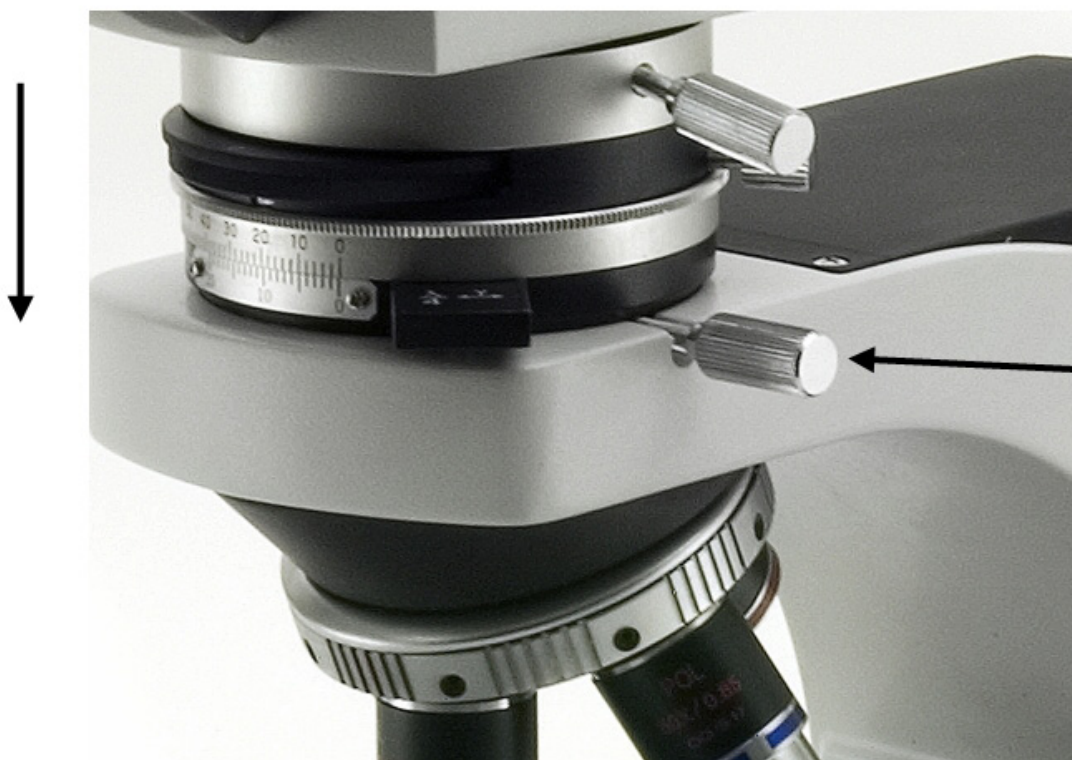
This microscope is a scientific precision instrument designed to last for many years with a minimum of maintenance. It is built to high optical and mechanical standards and to withstand daily laboratory use.

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3.0 UNPACKING AND ASSEMBLY

- 3.1** The microscope is housed in a moulded Styrofoam container. Remove the tape from the edge of the container and lift the top half of the container. Take some care to avoid that the optical items (objectives and eyepieces) fall out and get damaged. Using both hands (one around the arm and one around the base), lift the microscope from the container and put it on a stable desk.
- 3.2** The objectives are located in individual protective vials. Remove the objectives from the vials and insert them into the microscope nosepiece in the order from the lowest magnification to the highest, in a clockwise direction from the rear.
- 3.3** Insert the analyzer/bertrand lens block onto the top of the microscope stand and lock its screw:



- 3.4** Insert the observation head onto the top of the analyzer/bertrand lens block and lock its screw. If you have a trinocular microscope and want to use the photo port, insert your adaptor in the hole on the top of the observation head and fixate it with the screw on the side:



- 3.5** Insert the eyepieces into the eye tubes.

- 3.6** Insert the condenser into its holder and lock its screw:





3.0 UNPACKING AND ASSEMBLY

Connect the mains plug into the socket at the base



Make sure, before you turn the illumination on, that the voltage selector is set to the mains voltage for your region.



The power cord should be used only on network sockets equipped with adequate grounding. Contact a technician to check the state of your electrical system. If there is no need to install additional accessories, the instrument is now ready for use. Once positioned and installed with the necessary components, the microscope is ready to be used. Your microscope is a laboratory instrument designed to last. Handle it always carefully and avoid abrupt vibrations or shocks. Always disconnect the power cable from the microscope when not in use for long time, while you clean it or when you perform any maintenance.



AVOID DISASSEMBLING THE INSTRUMENT

Do not disassemble the instrument. This entails the cancellation of the warranty and may cause malfunction.

4.0 USING THE MICROSCOPE

4.1 Adjust the observation head

Loosen the lock-screw, turn the observation head to a comfortable position for observation, and then lock the lock-screw.

4.2 Place the specimen on the stage

Fix the specimen slide on the mechanical stage using the slide-clamp. Ensure that the specimen is centred over the stage opening.

4.3 Lamp settings

In order to activate the transmitted light illuminator, insert the plug of the mains cable into the mains socket and turn on the switch on the back of the main body. Turn the brightness adjustment knob to a brightness suitable for observation.

4.4 Preliminary settings

Before trying to focus the sample, ensure that:

The field diaphragm is fully open.

The aperture diaphragm is fully open.

No filter is inserted under the observation head.

The analyzer filter is in OUT position (lever fully pulled out).

Photo port closed (lever fully in).

Bertrand lens in OUT position (you read "0" on the Bertrand lens disc under the observation head). Swing out lens of the condenser in OUT position (you have always to do this when observing through 4X and 10X objective).

4.5 Adjust interpupillary distance

Hold the right and left parts of the observation head using both hands and adjust the interpupillary distance by turning the two parts until one circle of light can be seen.

4.6 Focus and diopter adjustment

Loosen the focus-stop knob, rotate the coarse focusing knob to bring the slide into focus with a 4X or 10X objective, then lock the focus-stop knob. Adjust the fine focusing knob to get the image sharp and clear while observing with your right eye, then turn the left diopter ring to a sharp and clear image also with the other eye. Turn the tension-adjust-knob to get a suitable tension for the focus system.

4.7 Align the system

Insert the swing out lens of the condenser and fully close the field diaphragm. Rotate the condenser adjustment knob until you see a sharp image of the closed field diaphragm (a bright spot of light). Act on the condenser centering screws until you move the bright spot in the center of the image field. Then re-open the field diaphragm.

4.8 Center the stage

With the Bertrand lens out, focus on your slide. Center the optical axis of the objective you are using with the rotation axis of the stage using the two centring screws above each objective.

A fairly easy method of centring is the following: look at your sample while continuously rotating the stage clockwise and then counter-clockwise by a little angle (e.g. 30° or 45°). During these oscillations you should spot a point on the sample that doesn't rotate on a circumference but only revolving about itself. With the two objective's centering screws, bring this point in the center of the field of view. In this way the mechanical center of rotation of the stage coincides with the system's optical axis. The stage can be locked in its position using the stage lock knob.

INSERT HERE
THE PROVIDED
SCREWDRIVERS TO
CENTER THE OBJECTIVE





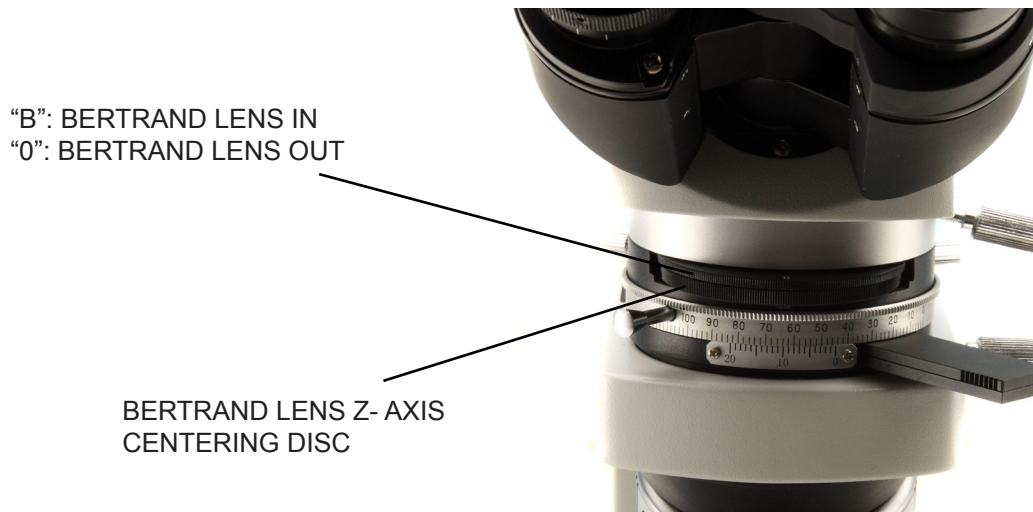
4.9 Set the numerical aperture

Adjust the aperture of the iris diaphragm under the condenser to set the numerical aperture of the illuminator, thus controlling image contrast and resolution.

4.10 Bertrand lens

In order to have a conoscopic view of your sample, you can insert a Bertrand lens in the optical path by rotating the disc under the observation head.

The Bertrand lens can be fine aligned along Z axis by rotating this disc:



The lens can also be centered in X-Y axis by means of two screws located at the back of the lens:

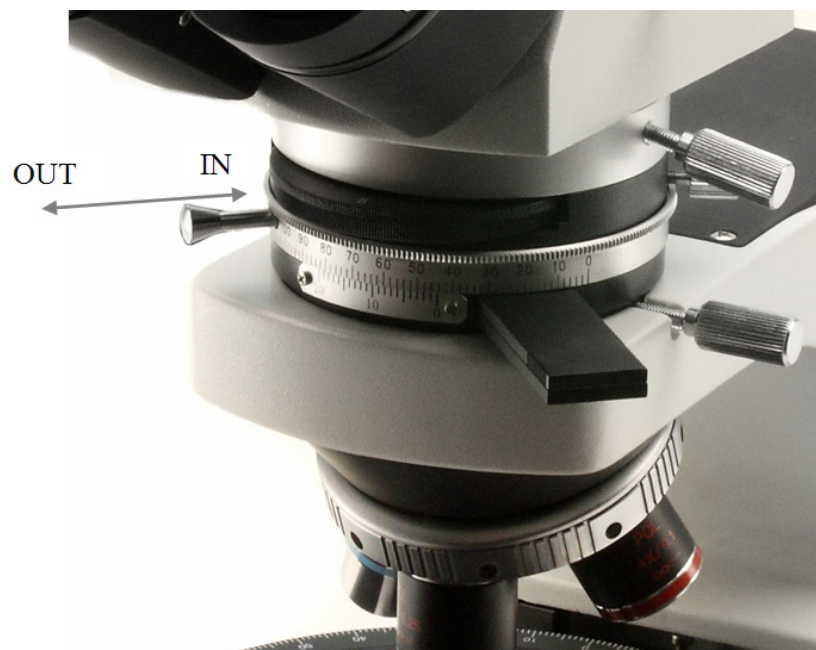


4.11 Polarizer and analyzer filters

Insert or remove the lower polarizer as required. It can also be rotated at any angle:



The analyzer filter can be inserted by means of its lever under the observation head. By holding this lever, it can also be rotated at any angle:





4.0 USING THE MICROSCOPE

4.12 Retardation filter plates

The microscope is provided with these retardation plates: λ , $\lambda/4$ and quartz wedge. You can insert them in the optical path, sliding the plate holder in the slot under the observation head:



5.0 MAINTENANCE

5.1 Always think about

- The following environment is required: Indoor temperature: 0-40°C, Maximum relative humidity: 85 % (non condensing)
- Keep the microscope away from dust and shocks while in use.
- Turn off the light immediately after use.
- Use a soft lens tissue to clean the optics after use.
- Only if needed, use a cloth moistened with water and a mild detergent, rinsing with water and drying immediately with a lint-free cloth.
- After use, cover the microscope with the included dust-cover, and keep it in a dry and clean place.

5.2 Do not!

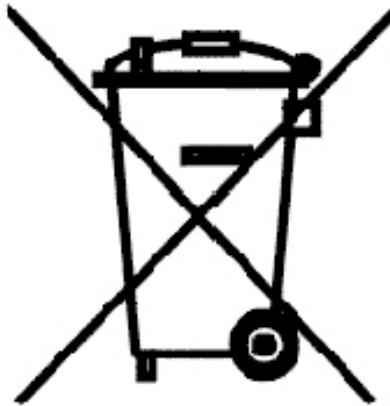
- Wipe the surface of any optical items with your hands. Fingerprints can damage the optics.
- Use solvents, neither on the microscope, nor on the optics.
- Disassemble objective or eyepieces to attempt to clean them.
- Mishandle or impose unnecessary force on the microscope.
- Clean the unit with volatile solvents or abrasive cleaners.
- Attempt to service the microscope yourself.

ILLUMINATION	<p>Light source type X-LED with white LED; light intensity control using a knob on left side of the frame.</p> <p>LED power 3.6W, comparable to an halogen bulb 35W.</p> <p>Color temperature: 6300K</p> <p>LED average lifetime approx.: 50.000h.</p> <p>The light exit can be used as a filter holder for additional filters (blue, yellow, frosted).</p> <p>Voltage: 110/230Vac, 50/60Hz, 0.4/0.8A; Fuse: T3.15A 250V</p> <p>Max power required: 7W</p>
OBSERVATION MODES	Brightfield, Polarized transmitted light
FOCUSING	Coaxial coarse and fine focusing mechanism (graduated, 0.002mm) with upper stop, to prevent the contact between objective and specimen. Adjustable tension of coarse focusing knob.
STAGE	<p>Rotatable stage with locking system and Vernier scale with accuracy 0,1 mm.</p> <p>Diameter 160 mm. Specimen clamps.</p>
NOSEPIECE	<p>Quadruple revolving nosepiece, rotation on ball bearings.</p> <p>Centering system on each objective.</p>
HEAD	<p>Trinocular observation head, inclined 30° and rotatable 360°.</p> <p>Diopter adjustment on left eyepiece sleeve. Interpupillary adjustment 55-75 mm.</p>
EYEPIECES	<p>Wide field eyepieces WF10X/22 with field number 22.</p> <p>One eyepiece has a built-in crosshair reticle for the centering of the optical path.</p>
OBJECTIVES	<p>Infinity corrected optical system IOS (Infinity Optical System).</p> <p>Plan-achromatic "strain-free" objectives infinity corrected, made by following objectives:</p> <ul style="list-style-type: none"> -) PLAN IOS POL 4X , A.N. 0.10, W.D. 4,7 mm -) PLAN IOS POL 10X, A.N. 0.25, W.D. 4,1 mm -) PLAN IOS POL 40X, A.N. 0.65, W.D. 0,5 mm -) PLAN IOS POL 60X, A.N. 0.85, W.D. 0,1 mm <p>All objectives are treated with an anti-fungus treatment.</p>
CONDENSER	<p>Abbe condenser, N.A. 0,9 with centering system.</p> <p>Rotatable polarizer with graduated scale (it can be excluded from optical path through rotation).</p>
BERTRAND LENS	<p>Swing-out type with centering and focusing mechanism for observation in conoscopy/or-thoscopy.</p> <p>Rotatable analyzer from 0° to 90° with graduated scale.</p> <p>Tint plates included:</p> <ul style="list-style-type: none"> -) 1° order red (1 lambda) -) ¼ lambda -) Quartz wedge
DIMENSIONS	<p>HEIGHT: 480 mm WIDTH: 245 mm</p> <p>DEPTH: 380 mm WEIGHT: 9 kg</p>
ACCESSORIES	Instruction manual and dust cover included.



7.0 RECOVERY AND RECYCLING

Art.13 Dlsg 25 july 2005 N°151. "According to directives 2002/95/EC, 2002/96/EC and 2003/108/EC relating to the reduction in the use of hazardous substances in electrical and electronic equipment and waste disposal."



The basket symbol on equipment or on its box indicates that the product at the end of its useful life should be collected separately from other waste.

The separate collection of this equipment at the end of its lifetime is organized and managed by the producer. The user will have to contact the manufacturer and follow the rules that he adopted for end-of-life equipment collection. The collection of the equipment for recycling, treatment and environmentally compatible disposal, helps to prevent possible adverse effects on the environment and health and promotes reuse and/or recycling of materials of the equipment. Improper disposal of the product involves the application of administrative penalties as provided by the laws in force.



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