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KNOWLEDGE THROUGH VISION

Comprehensive Scope 2

Instruction Manual
T-19011C - Monocular
T-19021C - Dual Viewing
T-19031C - Binocular
T-19041C - Trinocular

Application

Thank you for purchasing the new Ken-A-Vision Comprehensive Scope 2 microscope. You will be pleased to find that this is a finely built, high quality, versatile unit that should work well within your curriculum. The Comprehensive Scope 2 base is modularly designed and while maintaining a common, standard base unit it is possible to make changes in accessories. A different head, 100 X DIN objective lens and mechanical stage with Abbé condenser may be added to create a differently configured microscope. This unit has been designed by Ken-A-Vision with the user in mind. It utilizes the latest advances in research design as commonly seen on more expensive microscopes utilizing an ergonomic position of controls for the user. Base is lined with a resilient polymer preventing everyday damage from use. All microscopes are pre-aligned and calibrated ready for immediate use.

Specifications

Ken-A-Vision Product #	T-19011C	T-19021C	T-19031C	T-19041C
Die Cast Aluminum Body; Coated	✔	✔	✔	✔
Anti-microbial coating	✔	✔	✔	✔
Base Outlined with Resilient Polymer	✔	✔	✔	✔
10X Widefield Eyepiece with Pointer	✔	✔	✔	✔
Monocular, Interchangeable Head	✔			
Dual Viewing, Interchangeable Head		✔		
Binocular, Interchangeable Head			✔	
Trinocular Interchangeable Head, 30° Seidentöpf Binocular with Camera Port				✔
Eye tubes at 30°; Ball Bearing 360° Full Rotation	✔	✔	✔	✔

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4 holed, 45° reversed nosepiece; 360°	✔	✔	✔	✔
4x DIN Plan Achromat N.A. 0.10 Objective lens	✔	✔	✔	✔
10x DIN Plan Achromat N.A. 0.25 Objective lens	✔	✔	✔	✔
40x DIN Plan Achromat N.A. 0.65 Objective lens, Spring Loaded	✔	✔	✔	✔
100x DIN Plan Achromat N.A. 1.25 Objective lens, Oil Immersion, Spring Loaded to prevent scratching	⊖	⊖	✔	✔
Diopter adjustment ± 0.20X		✔	✔	✔
Low Position coaxial Coarse and Fine Focus Rubber Gripped knobs on a Rack and Pinion mechanism; Right and Left	✔	✔	✔	✔
Fine Focusing Scale 0.002mm (200 microns)	✔	✔	✔	✔
Retractable "Fold and Store" Handle for Transport	✔	✔	✔	✔
Storage Compartment for Power/Charger supply	✔	✔	✔	✔
Ken-A-Vision Cool Light Illumination	✔	✔	✔	✔
Low Position Rheostat/ Dimmer Switch	✔	✔	✔	✔

Ken-A-Vision Product #	T-19011C	T-19021C	T-19031C	T-19041C
Detachable Low Voltage External Power Supply Input -110v-240v, ±500mA; Output 5.5v, ±500mA	✔	✔	✔	✔
Standard Stage -Spring loaded stage clips; Condenser built-in (0.65 N.A.); 5 hole Disc Diaphragm	✔	✔	⊖	⊖
Mechanical Stage - Coated 130mm x 120 mm; Coaxial Low Position X and Y Knobs; 0.1mm Vernier Scales X and Y; Abbé Condenser (1.25 N.A.); Iris Diaphragm	⊖	⊖	✔	✔

⊖ Available option

MICROSCOPE PREPARATION

Check the coarse focus tension. The knobs are rubberized and oversized to allow for better gripping. The coarse focus knob should turn easily to change the focus, but the stage should not drift or slip on its own.

Check the stage stop safety feature. Be sure the stage moves up and down when turning the focusing knob. The stage stop is a thumb screw with a lock nut found just behind the stage. To check the stop, first place a prepared slide in position for viewing. Move the coarse focus until the object and stage are as close together as they can be. Look at the slide and turn the 40x objective into place. This objective should be very close to the slide, but not touching. The Stop was set at the factory. If the spring loaded 40x lens becomes fully depressed into the socket, the stop needs to be adjusted, by loosening the locking nut and knurled knob and re-setting the stop position.

NORMAL OPERATION

General Operation Notes

Eyepieces

The widefield eyepiece is locked in to place to avoid loss of eyepiece. There is a pointer built-in to (only one if head has two eyepieces) the eyepiece to help identify parts of observed specimens.

Built-In Illuminator - Ken-A-Vision Cool Light/ Power

Your Comprehensive 2 microscope has the Ken-A-Vision Cool Light, LED lighting system. The unit came with a detachable power cord/charging adapter.

Cordless operation - Specialized, rechargeable batteries (KAV Part # VFBATBU5) should be placed into the battery holding compartment at the bottom of the microscope. The microscope power cord/charging adapter should be plugged into a standard electrical source as soon as possible to charge the batteries. It will take approximately 8 hours to fully charge a single microscope. A normal charge should give up to 40 hours of continuous use. NEVER STORE UNIT FOR ANY LENGTH OF TIME WITH THE BATTERIES MOSTLY DISCHARGED. Always store the unit in a charged condition because due to leakage, once a battery gets too low, it will be impossible to recharge the batteries and new ones will have to be purchased. DO NOT SUBSTITUTE STANDARD AA BATTERIES IN UNIT, AS IT WILL DAMAGE SYSTEM.

Corded operation - With the battery compartment empty, and plug in the detachable power supply into a standard electrical source.

Conversion - Add rechargeable batteries (KAV Part # VFBATBU5) to battery case as noted above. Charge batteries using the power cord/charging adapter plugged into a standard electrical outlet.

Differences among Ken-A-Vision Comprehensive Scope 2 Microscopes

T-19021C

The dual viewing head allows two people to look at the same specimen at the same time or connect a camera to one eyepiece for group presentation. One of the dual viewing eyepieces has a diopter on the tube for focusing. This allows focusing for each person's individual eye correction.

T-19031C

The binocular eyepiece has a diopter on both eye tubes for focusing. The Interpupiliary Adjustment. When using the binocular microscope there is an adjustment for the distance between the viewer's eyes called interpupilliary adjustment. The eyepiece lenses will spread apart or get closer together to fit each individual. Place one hand on each side of the binocular head next to the eyepieces and pushing in and out until the distance between the eyes is comfortably positioned. You will see only one image.

Focus

Place a specimen slide under the stage clips or in mechanical stage and move into position for viewing. Use the 4x objective first. Raise the stage until it will go no higher. Then lower the stage to bring into focus. Use the fine focus knob to achieve optimum resolution. Once the image is sharp you should be able to

simply turn the nosepiece to the next objective lens and do minor adjustments with the fine focus knob. With Coaxial focusing both the coarse and fine focus knobs are on the same axis. The coarse focus knob is the larger knob located next to the arm of the microscope. The fine focus knob is the smaller knob mounted on the outside of the coarse focus knob. Having both sets of knobs on the same axis makes it easier to switch from one focus knob to the other without removing your attention from your prepared slide.

Disk Diaphragm (T-19011C & T-19021C)

The rotating disk is located under the stage (1=Smallest 6=Largest). The different sized holes are used to control the amount of light that is projected upward into the slide. Simply rotate the understage disc until one of the five different sized holes lines up with the condenser lens in the stage opening. There is no set rule regarding which setting to use with a particular objective lens but the higher the magnification power the more light is needed.

Iris Diaphragm (include on T-19031C & T-19041C)

Within the mechanism of the Abbé condenser there is an iris diaphragm that operates much in the same way as the iris of the eye. A very thin lever on the front of the condenser mechanism, will slide side to side, modifying the amount of light that will reach the specimen on the stage.

Note to novice microscopists --- Many things are seen better in low light then in high, and looking at an intense light for too long a period of time may cause headaches.

Abbé Condenser 1.25 N.A. (included on models T-19031C & T-19041C)

The purpose of the condenser lens is to focus the light onto the specimen. (adjust the amount of light needed on a specimen) The N.A. of 1.25 gives an Abbé condenser the ability to be used with higher magnification 100x objective lens. Movement of the condenser is controlled by a knurled knob beneath the stage on the left side.

Mechanical Stage (included on models T-19031C & T-19041C; Optional on T-19011C & T-19021C)

The mechanical stage is a mechanical way to move the slide around on your stage. It consists of a spring loaded slide holder and two low position knobs on the lower right side. One knob moves the slide forward and backward (y axis), while the other knob moves the slide from left to right (x axis). The Vernier on the x and y axis allow the user to precisely mark a location of something on a slide that they may choose to return to at a later time.

Interchangeable Heads

Using an Allen wrench, insert into screw slot in arm next to head. Loosen screw to remove plastic dust cap. Set desired microscope head on arm. Tighten screw with Allen wrench until snug. No need to over tighten.

Adding a new Objective

Various objectives may be purchased for the Comprehensive 2 microscope as options. Being careful to align the threads, simply screw the new objective into one of the four slots in the head. DO NOT OVERTIGHTEN (In the T-19011C and T-19021C as shipped standard, there is an empty fourth slot which may be used). If unit already has four objectives in place, then one will have to be unscrewed and new one inserted.

CARE AND MAINTENANCE

Your microscope is a fine precision instrument and should be treated with care. When not in use it should be protected from dust by the plastic cover provided. Lenses and eyepieces should be cleaned periodically with optical lens tissue which is soft and lint free. Painted surfaces can be cleaned with a moistened cloth. When using a 100xR objective oil emersion lens, be sure not to leave any oil on the lens after use. Dip a cotton swab or lens paper with a small amount of denatured alcohol, and clean the lens surface carefully. Do not use aggressive solvents to clean lens.

Ken-A-Vision has quality technicians on staff to repair or service your microscopes.
Ken-A-Vision recommends service every two years for optimal life of the product. Contact us at 1.816.353.4787 for more details.
WARRANTY: TEN YEAR LIMITED WARRANTY AGAINST DEFECTIVE PARTS AND WORKMANSHIP

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5615 Raytown Road • Kansas City, MO 64133 U.S.A.
Tel.: 816-353-4787 • Fax: 816-358-5072
email:info@ken-a-vision.com • www.ken-a-vision.com