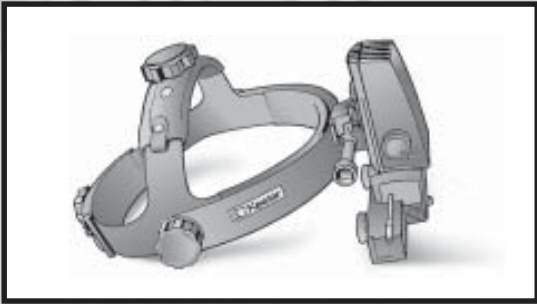

VANTAGE

Instructions



VANTAGE

Mode d'emploi

PRIERE DE LIRE ATTENTIVEMENT CE MODE D'EMPLOI A
RESPECTER MINUTIEUSEMENT

Gebrauchsanleitung

Bitte lesen und befolgen Sie diese Anleitung sorgfältig

Istruzioni

LEGGERE E SEGUIRE ATTENTAMENTE QUESTE ISTRUZIONI

Instrucciones

LEA ESTAS INSTRUCCIONES Y SIGALAS CUIDADOSAMENTE

User Manual

Please read and follow these instructions carefully

Introduction

Thank you for purchasing the Keeler Vantage Indirect Ophthalmoscope. We have taken the greatest care in the design, development and manufacture of this product to ensure that you get many years of trouble-free service. However, it is important that you read the descriptions, installation and operating instructions carefully prior to installing or using your new indirect Ophthalmoscope.

Contents

Description of the Product

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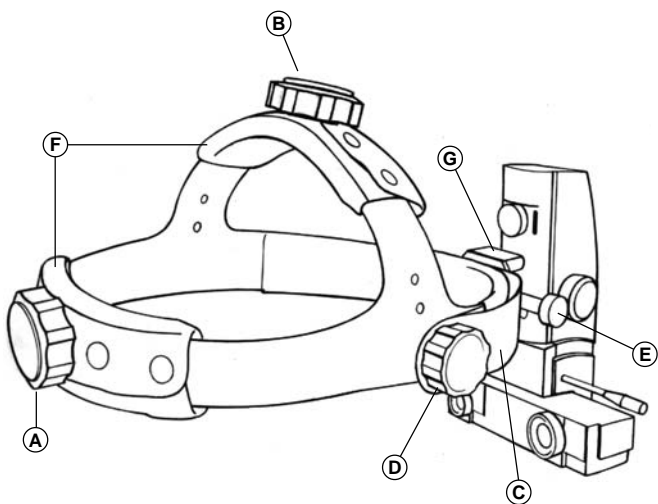
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As part of our policy for continued product development we reserve the right to amend specifications at any time without prior notice.

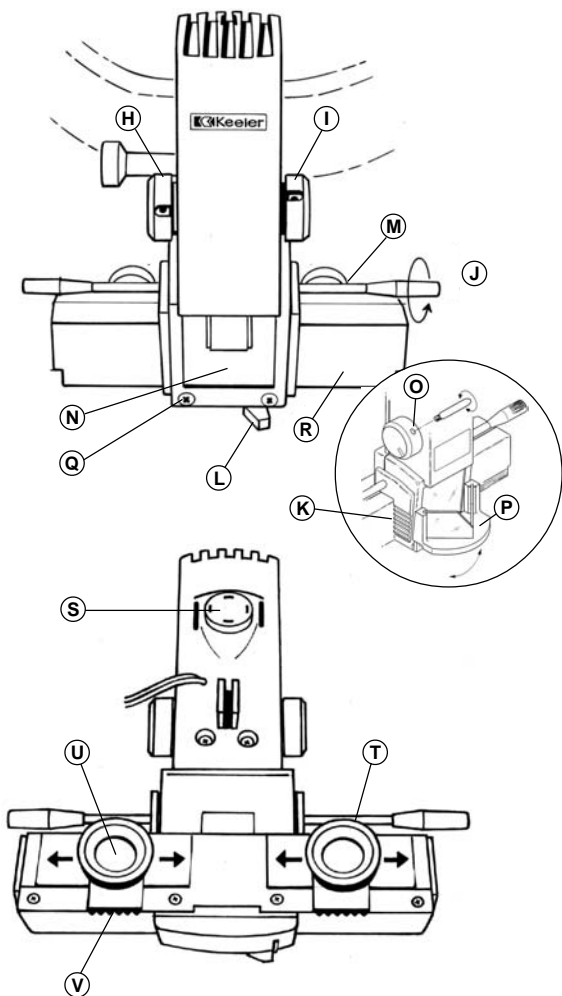
Description of the Product



Description of the Product

- A** Headband Size Adjustment Knob
(Occipitally)
- B** Headband Height Adjustment Knob
(Cranially)
- C** Metal Outer Brow Band
- D** Brow Band Tension Knob
- E** Ophthalmoscope Angle Knob
- F** Leather Comfort Pads
- G** Hinge System

Description of the Product

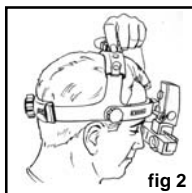
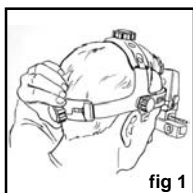


Description of the Product

- H** Aperture Selection Knob
- I** Filter Selection Knob
- J** Mirror Angle Control
- K** Mirror Height Control
- L** Optics Convergence Lever
- M** Individual Eyepiece
- N** Front Window
- O** Port for Sterilisable Lever
- P** Teaching Mirror
- Q** Screw to attach Teaching Mirror
- R** Binocular Block
- S** Bulb
- T** Rubber Caps
- U** Optics of Eyepiece
- V** Interpupillary Distance Control

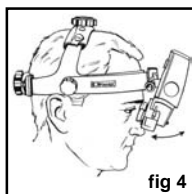
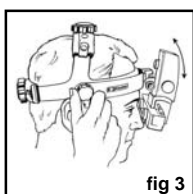
Using the Vantage

Headband Adjustment



Comfortable Fit

Adjust the size (A) *fig. 1* and the height (B) *fig. 2*, so that the instrument is supported comfortably around and on top of the head.



Ophthalmoscope Angle Alignment

For vertical alignment of the eyepieces and binocular block (R), adjust the height of the Metal Outer Brow Bar (C) if necessary by using the browband tension knobs (D) located on the sides of the headset (Fig 3).

Position the Binocular Block (R) as close to the eyes or spectacles as possible for maximum field of view. Slightly loosen the hinge mechanism control (E) knob to allow for adjustment and tighten when in position as in (Fig 4).

For further instructions see page 110
How to use an Indirect Ophthalmoscope.

Using the Vantage

Interpupillary Distance Setting Control (V)

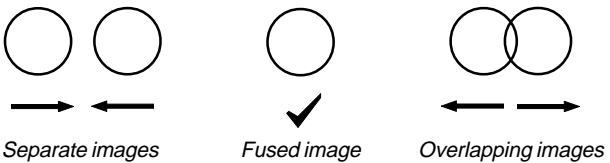
Because the eyes are dissociated, particular care must be taken to ensure the optics (eyepieces) are set properly in front of each eye.

Always set the Aperture Selection (H) to the large light patch for this exercise.

Place an object, perhaps the thumb, approximately 40cm from the face and centre it horizontally in the light patch. Then, close one eye. Using the thumb and forefinger of the opposite hand, slide the P.D.Control (V) of the open eye (located directly under each eyepiece) so that your object moves into the centre of the field, keeping the object in the centre of the light patch. Repeat for the other eye.

Obtaining a Fused Image

Ensure that a singular, **fused image** is obtained as follows:



Mirror Angle Control (J)

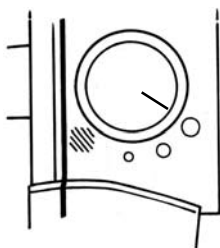
The light is positioned vertically into the upper two thirds of the field of view by rotating the spindle (J) located on either side of the binocular block.

Using the Vantage

Setting the Aperture and Filter

Aperture Selection Control (H)

By rotating the knob (H) different apertures may be selected



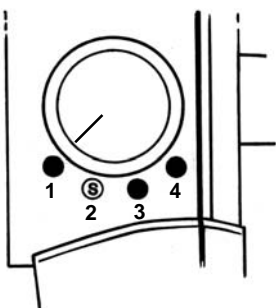
The Keeler Vantage has 4 light apertures which offer maximum versatility when encountering a variety of pupil sizes, opacities and conditions:

- Large**
The large, round, homogeneous patch is suitable for routine examinations through fully dilated pupils.
- Medium**
The intermediate patch is designed to reduce reflections when entering a partially or poorly dilated pupil (3mm). It is also ideal for closer inspection of particular fundal areas.
- Small**
This light patch is ideal for small, undilated pupils and may be used in conjunction with the Optics Convergence Lever set to the small pupil setting (see page 106).
- Diffuser**
This unique extra wide beam of diffused light permits a more relaxed technique during more challenging fundus examinations; the peripheral retina, poorly dilated eyes and uncooperative patients. Beginners may also find this aperture particularly helpful since the alignment between the headset, the condensing lens and the pupil, in order to achieve a full lens image, is not as critical as with the conventional beam.

Using the Vantage

Filter Selection Control (I)

By rotating the knob (I), different filters may be selected. Note: For use in surgery, sterilisable levers may be screwed into the ports located on both the Filter and Aperture Selection Control Knobs.



1) **Silver Circle**

Clear light - Select the clear light with no filter when inspecting a specific pathology and a brighter, whiter light is desired.

2) **Safety Filter** Ⓢ

Use this filter for all routine examinations, as it reduces infrared, ultra-violet and blue hazard wavelengths without compromising tissue colour. This setting is also more comfortable for the patient, as the light is slightly yellow rather than white.

3) **Green Circle**

Red Free Filter - This filter reduces red light, so blood will appear black, silhouetted against a dark background.

4) **Blue Circle**

Cobalt Blue Filter - For fluorescein angiography.

Using the Vantage

Mirror Height Control (K)

The Keeler Vantage offers the unique facility to raise and lower the height (not just the angle) of the illumination mirror, independently of the viewing optics, for optimum binocular viewing through small pupils and when viewing the peripheral retina (Fig 1).

For maximum stereopsis with larger pupils, keep the mirror in the upper position, creating a steeper angle between the viewing axis and the illumination axis, whilst minimising reflections.

To view through undilated pupils, lower the height of the mirror, then adjust the mirror angle, which will align the axis of illumination more closely with the viewing axis. If full lens illumination still proves difficult, selecting the Diffuser may offer the best opportunity to illuminate the widest fundal area possible.

For optimal stereopsis when examining the peripheral retina (which means viewing through an elliptical pupil), with the Keeler Vantage, the mirror height may be lowered, and the mirror angle adjusted, bringing the illumination more coaxial to the viewing axis whilst providing the best opportunity for stereopsis.

Optics Convergence Lever (L)

The lever in the right hand position (Fig 2) allows the mirrors to be separated achieving improved stereopsis in a dilated eye. By moving the lever either partially or completely to the left (Fig 3) the optics are converged to view through a small pupil.

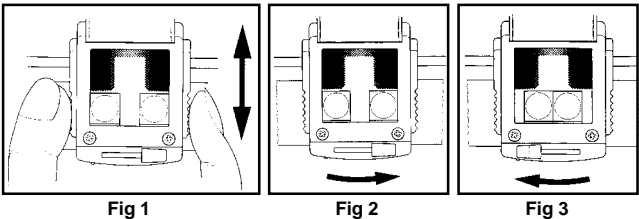


Fig 1

Fig 2

Fig 3

Accessories

1. Teaching Mirror (P)

To enable the Keeler Vantage to be used with a teaching mirror, the teaching bi-mirror attachment must be fitted as follows:

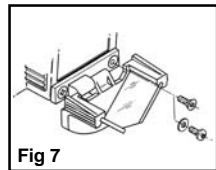
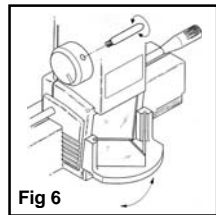
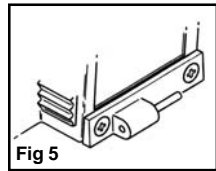
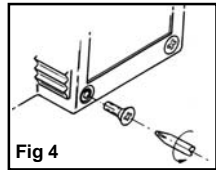
- Remove the posidrive screws from the panel beneath the front window with the screwdriver supplied. (Fig 4)
- Fit the Mounting Bar with the pin pointing to the right and secure with screws removed in step 1 (Fig 5)
- Slide the Teaching Mirror onto the pin on the Mounting Bar. The bi-mirror can now be swivelled up and down.
- To remove, slide the teaching mirror to the right of the pin and return to its case leaving mounting bar in position (Fig 6).

To make the Teaching Mirror Non-Removable for security purposes proceed as follows:

Remove the posidrive screws as in (a) above.

Fit the Mounting Bar as in (b) above but replace screw on left side only.

Fit the Teaching Mirror as in (c) above.



Accessories

Fold the Teaching Mirror down and slide it slightly to the right to reveal fixing hole. Then secure the mounting bar with the special washer and pan head screw provided (Fig 7).

Return the Teaching Mirror to its central position.

The Teaching Mirror can now be demounted only by removing the screw. *Retain the screwdriver for future use.*

Sterilisable Levers (O)

Stainless steel levers are provided in the Accessory Case and can be screwed into the ports located in the Aperture and Filter Selection Control Knobs for surgical applications.

Rubber Eyepiece Caps (T)

Rubber eyepiece caps are provided to protect spectacles and have been manufactured in rubber to avoid any abrasions. To use, simply fit over the eye caps.

Plano Lenses

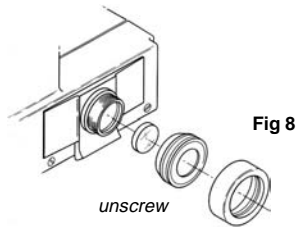
The Keeler Vantage is supplied with +2 diopter lenses as standard. Plano lenses, if preferred, are available and can be fitted as shown in (Fig 8).

Scleral Depressors

Scleral Depressors are available to view the ora serrata.

Gown clips

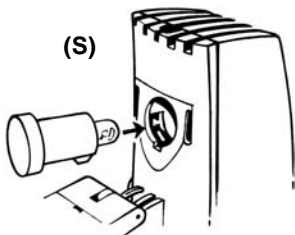
Gown clips can be used to tidy the Vantage wire by clipping the wire to an article of clothing



Bulb Replacement

Caution: *The Bulb may get very hot after prolonged use.*

Disconnect the instrument from the electricity supply. Remove the bulb from the back of the instrument and insert the new bulb, ensuring the bulb's key is aligned with the aperture and securely pushed in.



Cleaning Instructions

Disconnect the unit by unplugging the DIN-style connector from the system power source.

You can clean your indirect optics and front window with the Keeler cleaning cloth provided. The headband cushions can be cleaned by using soapy water but **do not immerse the Instrument in water**. The instrument can be cleaned with a damp cloth if preferred.

Sterilisation Procedures

NON-STERILE

Recommended Sterility Method

The optional sterilisable levers for the aperture and filter selection control knobs may be sterilised by autoclaving.

Autoclave to AAMI Guidelines

Sterility assurance level 10⁰

Maximum Temperature 260°F (126°F)

These parts are designed to withstand conditions employed for dry heat and ethylene oxide sterilization.

Servicing

There are no user serviceable parts on the Instrument. Please contact your authorised Keeler distributor or return your Instrument to Keeler.

How to use a Binocular Indirect Ophthalmoscope

1. Preparation of the Patient

Explain the procedure to the patient and inform them that the light, although bright, is not damaging to the eyes and subsequent after-images may be seen.

Take any necessary precautions when dilating the pupil such as assessing the depth of the anterior chamber. Instilling a topical anaesthetic first will allow better absorption of the mydriatic as well as reducing the blinking urge. Follow with the dilation routine preferred.

2. Headband Adjustment

The Vantage headband is designed to ensure comfort even with prolonged use; however, care must be taken to see that the headband is balanced so that the main weight is supported by the top headstrap rather than by the circumference band.

- a) Loosen the headband with the adjustment knob at the back (A) and place the headband on the head. Tighten until just snug (the headband should be able to be pulled off the head without loosening this ratchet more than one or two notches). Do not over tighten.
- b) Lengthen or shorten the headband height with the ratchet at the top (B) until the inner leather padded brow band on the front of the headband rests comfortably above the eyebrow.
- c) Raise or lower the ophthalmoscope (E) to vertically align the eyepieces in front of the eyes by slightly loosening the knobs on either side of the headset, then manually lower or raise the outer metal brow band until alignment is correct and re-tighten.
- d) Swing the eyepieces in toward the eyes as close as possible

How to use a Binocular Indirect Ophthalmoscope

by slightly loosening the ophthalmoscope knob (E) and re-tightening when in position.

Provided the Vantage is only used by one practitioner, it will remain in adjustment from one patient to the next.

3. Adjust the height of the light beam into the upper two thirds of the field with the mirror angle control spindles (J).
4. Select the appropriate light patch size with the aperture selection knob (see aperture selection, page 104).
5. Set the interpupillary distance (PD). Slide the eyepiece control located underneath each ocular until it is positioned directly in front of each eye. This is best done by looking at an object, like your thumb, which has been placed in the centre of the light patch, at approximately 40cm away while closing each eye alternately. Each ocular incorporates a +2 diopter lens to make accommodation unnecessary. (For further instruction on setting the PD, see page 103).
6. Select any required filters at this point (see filter selection, page 105).

7. Method of Observation

- a) It is best to have the patient reclining in order to obtain optimum views of the periphery, although examination of the posterior pole can be done with the patient sitting upright.
- b) Turn the room lights down to enhance contrast and minimise ambient light reflections.
- c) Adjust the rheostat on the transformer so there is enough light to see subtle colour variation on the patient's retina. This is usually just below half way for lightly pigmented retinas, and slightly more for more highly pigmented retinas.

How to use a Binocular Indirect Ophthalmoscope

- d) Direct the patient's gaze to where you intend to begin the examination, and ask them to fixate at some point. It is best to examine the complete periphery first to allow the patient to acclimatise to the light before examining the posterior pole.
- e) Hold the condensing lens between the thumb and forefinger with the silver side (least convex side) towards the patient at a little less than arm's length away. The lens can be steadied by resting the other fingers on the patient's cheek or forehead.
- f) With the condensing lens held to one side, direct the light beam at the patient's pupil and obtain a red retinal reflex.
- g) Begin by placing the condensing lens in the light path approximately 1 inch from the patient's pupil. Centre the pupil in the lens.

Keeping the pupil centred and the lens parallel to the headset, slowly move the condensing lens away from the eye, directly upward toward the headset, until an image of the fundus spreads to completely fill the lens (this will occur at the fixed focal length of the condensing lens selected, see page 114).

- h) It is imperative at the moment the retinal image fills the lens that any movements or minor adjustments are made very delicately. If the lens is moved even slightly too far from the eye, an inverted, minified image will come into view.

Conversely, if the lens is not brought out far enough from the eye, strong, white reflections will be visible. To remove these reflections, gently pull the lens directly back toward the headset, until achieving the proper focal length from the patient's eye for that lens.

How to use a Binocular Indirect Ophthalmoscope

- i) To view different areas of the retina, it is easiest to use a combination of asking the patient to change their direction of gaze and the practitioner to move his body in the **opposite** direction, always maintaining parallel alignment between the headset, condensing lens and pupil.

Note: the retinal image captured at any given time in the condensing lens is optically both inverted and reversed; however, the quadrant from which this image is taken is accurate. In other words, if the superior-nasal retina is being examined, what is seen in the condensing lens is, indeed, supra-nasal fundus, but that area is then inverted and reversed.

- j) If a distinct patch of light is seen on the retina, this is usually a result of too short a distance between the headset and the condensing lens or imprecise alignment between the headset, condensing lens and pupil. If this cannot be corrected easily by extending the arm or manipulating alignments, the diffuser on the aperture selection control should be selected.

5. Choice of Condensing Lenses

As shown below the higher the power of the lens, the smaller the magnification and the shorter the working distance but the larger the field of view will be.

How to use a Binocular Indirect Ophthalmoscope

Table 1

LENS SIZE		MAGNIFICATION	FIELD OF VIEW (°.°)	WORKING DISTANCE OF LENS FROM CORNEA (mm)
15D	52mm	3.92	40	60.0
	45mm	3.89	35	60.6
20D	50mm	2.97	46	43.1
	35mm	2.93	32	44.3
25D	45mm	2.41	52	32.8
	33mm	2.36	38	34.2
30D	43mm	2.05	58	26.5
	31mm	1.99	42	27.4
40D	40mm	1.59	64	17.7
	31mm	1.53	50	19.0
Pan Retinal				
2.2	52mm	2.56	56	34.1

How to use a Binocular Indirect Ophthalmoscope

Selecting a Condensing Lens

Most practitioners find performing a thorough indirect examination requires at least two condensing lenses: a 28 or 30 diopter lens for routine examinations or when viewing through smaller pupils; and, a 20 diopter lens for routine examinations or when increased magnification is desired for making a diagnosis of a specific pathology. An even lower power lens, like a 14D or 15D, is helpful when viewing the posterior pole. Conversely, when viewing through undilated eyes, a 40 diopter lens offers the widest field possible.

KIT 1 1204-P-2440

Consisting of:

Vantage Indirect on Headband	1202-P-6114
Wipe Cloth	2199-P-7136
Instructions	EP59-09548
Utility Carton	EP79-07239

KIT 2 1204-P-2459

Consisting of:

Vantage Indirect on Headband	1202-P-6114
Wipe Cloth	2199-P-7136
Instructions	EP59-09548
Delsey Case	3412-P-5207

Power Sources

Power Supply/Charger 100V	
Power Supply Charger 120V	1952-P-1136
Power Supply/Charger 220V	1952-P-1128
Power Supply/Charger 240V (UK)	1952-P-1101
Power Supply/Charger 240V (Aus)	

Wall Mounting Kits

Extension Kit	1999-P-7260
<i>(Consisting of Rail to mount Indirect, Accessory Box & Rechargeable battery)</i>	
Wall Rail Kit	1999-P-1053
<i>(Consisting of Rail to mount on wall)</i>	
Cradle Kit	1999-P-7113
Wall Pad	EP39-22706

Accessories

Porta Power 'C'	1919-P-5063
Charging Cord Set	1952-P-5030
Volk Lens	2105-K-1159
Teaching Mirror Kit	1202-P-7053
Spare Bulb	1012-P-5110
Large Thimble	1201-P-6067
Small Thimble	1201-P-6075
Eye Caps	EP39-53799 x 2
Levers	EP39-53625 x 2
Plano Lenses	EP39-53748 x 2
Gown Clips	1299-P-5061
Accessory Box	3412-P-5215
Shoulder Pouch	EP29-03650
Chart Pad	1201-P-7000
Pencil Set	1299-P-7032
Delsey Case	3412-P-5207

Vantage Kit A

(In Delsey Case with all available accessories)

Vantage on Headband	1202-P-6114
Hi-Tech Lens Cloth	2199-P-7136
Volk Lens	2105-K-1159
Case	3412-P-5207
Chart Pad	1201-P-7000
Pencil Set	1299-P-7032
Porta Charge C	1919-P-5063
Charging Cord Set	1952-P-5030
Accessory Box	3412-P-5215
Teaching Mirror	1202-P-7053
Screw Driver	EP79-07212
Fuse	EP79-01435
Bulb	1012-P-5110
Large Thimble	1201-P-6067
Small Thimble	1201-P-6075
Eye Caps x 2	EP39-53799
Lever x 2	EP39-53625
Plano Lens x 2	EP39-53748
Gown Clips x 2	1299-P-5061
Porta Power C Carry Case	EP29-03650
Wall Pad	EP39-22706
Extension Kit	1999-P-7260
Cradle Kit	1999-P-7113
Power Supply <i>(see below)</i>	

KIT A - Part Numbers

Vantage Kit A - 100V	1204-P-2520
Vantage Kit A - 120V	1204-P-2539
Vantage Kit A - 220V	1204-P-2547
Vantage Kit A - 240V	1204-P-2555
Vantage Kit A - 240V (Australia)	1204-P-2563

**To connect the instrument to a
Power Supply see attached separate instructions**



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EP59-09548