

7 - Optical aids and stereoscopy

Hand magnifiers



These lightweight magnifiers have a very comfortable grip and are suitable for right- or left-handed use. The magnifiers are supplied with a case.

O6300 Hand magnifier x3, dia 81 mm

O6301 Hand magnifier x4, dia 80 mm

O6302 Hand magnifier x6, dia 50 mm



This range is also available with a rectangular lens of 96 x 71 mm.

O6304 Rectangular hand magnifier x1.7

O6305 Rectangular hand magnifier x2.3

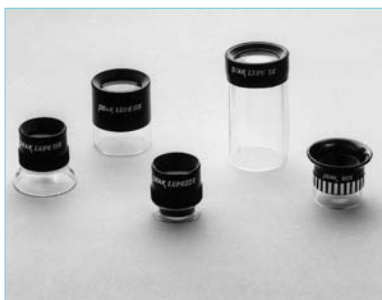
Hand magnifier



This 50 mm lens of x3 magnification weighs only 48 g and is comfortable to hold, giving a good quality image. Field of view of approximately 100 mm diameter.

O6010 Hand magnifier x3

Fixed magnifiers



These simple magnifiers are mounted in clear plastic tubes so that light can reach the object being examined. The x15 magnifier has a two-component, three-element construction; the x22 magnifier has a three-component, four-element construction.

O6021 Fixed magnifier x5

O6022 Fixed magnifier x10

O6023 Fixed magnifier x15

O6024 Fixed magnifier x22

O6025 Fixed magnifier x30

Rubber mounted loupe



This simple x10 loupe stands on a soft rubber suction ring which can be attached to any smooth surface.

O6307 Rubber mounted loupe x10

Watchmakers eyeglasses

These lenses are useful accessories when both hands are required for fine manipulations.

- O613** Watchmakers eyeglass x12
- O617** Watchmakers eyeglass x9
- O620** Watchmakers eyeglass x7
- O621** Watchmakers eyeglass x5



Cassette magnifier

This small magnifier folds into a plastic case for protection during transit. When folded out, the plastic case provides support so that the lens does not have to be held during use. It provides a magnification of x15 with an effective diameter of 19 mm.

- O6043** Cassette magnifier x15



Magnifier for 35 mm film

This x8 magnifier has been specially designed to cover the 24 x 36 mm picture area of single frames of 35 mm film. A 30 mm long scale with 1 mm divisions is engraved along the bottom edge of the transparent plastic mount.

- O6020** Magnifier x8 for 35 mm film



Film punch and holder

This holds strips of 35 mm film for examination by the x8 magnifier (**O6020**). When the required frame is found, a small hole can be punched on the edge of the film for future identification.

- O6306** Film punch and holder for 35 mm film

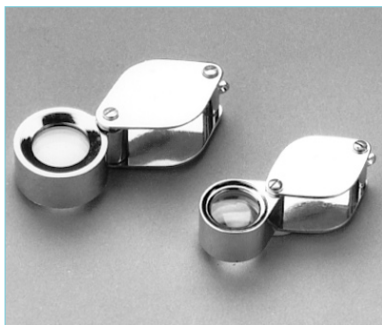
Folding magnifiers

These magnifiers give high power over relatively small areas, and the lenses are protected inside their cases when not in use. They are very small and easy to carry in a pocket.

- O6015** Folding magnifier x7, effective aperture 16 mm
- O6016** Folding magnifier x10, effective aperture 15.5 mm
- O6017** Folding magnifier x14, effective aperture 12 mm
- O6018** Folding magnifier x20, effective aperture 7 mm



Folding magnifier



These magnifiers are useful for detailed examination of photographic negatives. The achromatic x10 lens, which avoids colour fringes, is protected in an aluminium frame.

O615 Achromatic folding magnifier x10, aluminium frame

A x10 magnifier with an uncorrected lens and metal frame is also available.

O616 Folding magnifier x10

Single lens clip-on magnifiers for spectacles



These magnifiers provide additional magnification as required, and can be pivoted out of the way when normal spectacle use is required.

O6320 Clip-on magnifier x2.5

O6321 Clip-on magnifier x3.5

O6322 Clip-on magnifier x4.75

Linen testers



These glass lens magnifiers fold flat for transport, and ensure correct focus of the object when unfolded. A simple scale is engraved on the edge of the stand base.

O6324 Small linen tester x6, base size 25 mm

O6325 Large linen tester x4, base size 38 mm

Fixed stand magnifiers



These are lightweight, easy-to-use magnifiers with shatter-proof optics. The fixed stands ensure the object is always in focus.

O619 Fixed stand magnifier x6, dia 50 mm

O6308 Fixed stand magnifier x8, dia 44 mm

O6309 Fixed stand magnifier x10, dia 36 mm

O6310 Fixed stand magnifier x12, dia 34 mm

O6311 Fixed stand magnifier x20, dia 26 mm

Tilting stand magnifiers



These are similar in construction to the fixed stand magnifiers (**O619, O6308-O6311**). The distortion-free lens can be tilted to the left or right for easy viewing.

O618 Tilting stand magnifier x3, dia 81 mm

O6312 Tilting stand magnifier x4, dia 80 mm

Illuminated measuring magnifier x7

This magnifier is incorporated at the end of a torch handle which accommodates two C-size batteries (not supplied), and is ideal for reading the scale when local illumination is inadequate.

O6040 Illuminated measuring magnifier x7



Illuminated magnifiers x10 and x15

A torch handle has been attached to a fixed magnifier to provide illumination on the object being examined.

O6027 Illuminated magnifier x10

O6028 Illuminated magnifier x15



Illuminated magnifier x3.5

This is a low magnification instrument with a large square lens of 53 x 53 mm. The lens is attached to a torch, which is powered by two C-size batteries (not supplied).

O6026 Illuminated magnifier x3.5

Flexible stand magnifier

This magnifier has a heavy metal base for good stability and a swan-neck for precise positioning. The 100 mm diameter lens has a magnification of x2 and is enclosed by a metal ring.

O6336 Magnifier x2 on flexible arm



Headband magnifier

The headband magnifier is very useful when both hands are required for manipulation. The lenses are mounted in a frame on a lightweight and comfortable headband, which is adjustable by a VELCRO® strip. The standard magnification is x2.2 but a magnification of x3.3 can be achieved by lowering an additional lens.

O637 Headband magnifier



Measuring magnifiers



These x4 and x8 hand-held magnifiers are ideal for quality control and inspection. The clear base allows sufficient surface light to fall on the object being measured, and interchangeable graticules (details available on request) fitted in the base ring permit a variety of measurements to be made quickly. The eyepiece can be focused to suit individual eyesight. The magnifiers are supplied in a leather case.

Magnification	x8	x4
Field of view	25 mm	45 mm
Height	65 mm	85 mm
Overall diameter	40 mm	73 mm

- O6326** Measuring magnifier x8
- O6327** Graticule, horizontal scale 25 mm, 0.1 mm divisions
- O6328** Graticule, crossed scale 20 mm, 0.1 mm divisions
- O6330** Measuring magnifier x4
- O6331** Graticule, horizontal scale 50 mm, 0.01 mm divisions
- O6332** Graticule, crossed scale metric, 50 mm, 0.1 mm divisions and imperial, 2", 0.005" divisions

Measuring magnifier x7



This magnifier has a focusing ring to bring the scale into sharp focus before it is placed on the object to be measured. The magnifier is fitted with an achromatic lens system for good image quality, and is supplied with a 20 mm long scale with 0.1 mm divisions.

- O6030** Measuring magnifier x7

Measuring magnifier x7 with graticule set



This magnifier is supplied in a transit case containing graticule nos. 2, 3, 7, 8 and 10 (**O6072, O6073, O6077, O6078, O6080**), and others may be specified to meet requirements. See page 188 for graticule patterns available.

- O6032** Measuring magnifier x7 with graticule set

Measuring magnifier x10

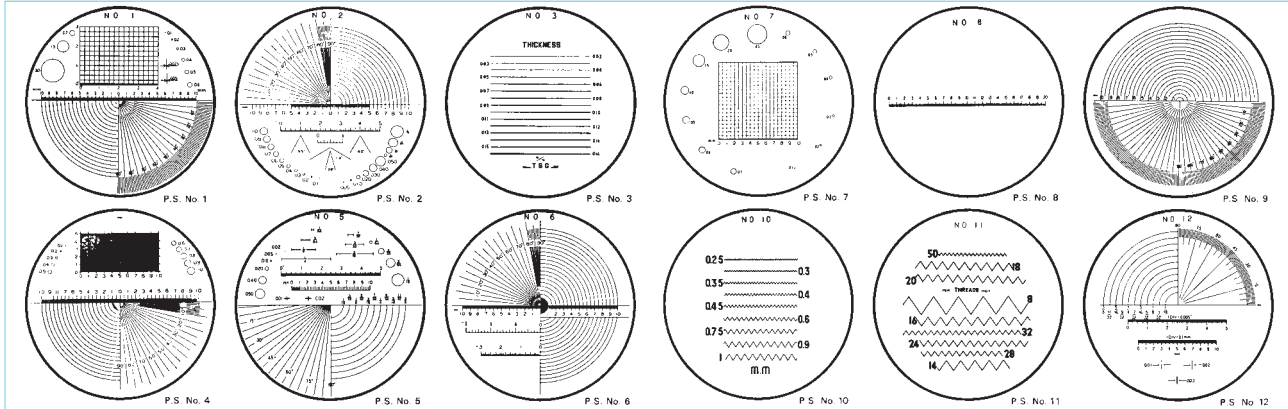


This is a high quality magnifier with a flat field of view of 35 mm, corrected for achromatic and astigmatic error. The magnifier has a bloomed lens system with adjustable focus. A scale is included, and the magnifier is supplied in a case. A range of 12 graticules (**O6101-O6112**) is available for this model; see page 188.

- O6033** Measuring magnifier x10

Graticules for measuring magnifier x7 and x10

Graticule	For x7	For x10	Graticule	For x7	For x10	Graticule	For x7	For x10
No. 1	O6071	O6101	No. 5	O6075	O6105	No. 9	O6079	O6109
No. 2	O6072	O6102	No. 6	O6076	O6106	No. 10	O6080	O6110
No. 3	O6073	O6103	No. 7	O6077	O6107	No. 11	O6081	O6111
No. 4	O6074	O6104	No. 8	O6078	O6108	No. 12	O6082	O6112



Measuring magnifier x15

This x15 magnifier features a four-lens system similar to the x10 magnifier (**O6033**) giving a field of view of 26 mm. It is supplied with a standard graticule, and additional graticules (nos. 1, 2 and 8) are available. These graticules have the same major dimensions as **O6071 - O6082**, but with a different field of view.

O6038	Measuring magnifier x15	O6046	Graticule no.2 for O6038
O6045	Graticule no.1 for O6038	O6047	Graticule no.8 for O6038



Anastigmatic loupe x4

This is a large area magnifier with an excellent corrected lens system which gives a flat and undistorted field of view of up to 58 mm diameter with extremely sharp definition. The effective pupil is nearly 25 mm above the upper lens so that the observer can view the whole field by moving the eyeball. It has adjustable focus, and a detachable glass scale is marked in millimetres and subdivided into 0.1 mm over 50 mm. Dimensions: 73 mm high x 70 mm diameter.

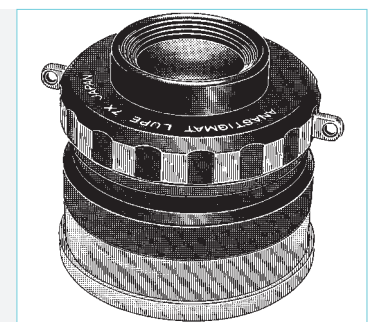
O6011	Anastigmatic loupe x4, fitted with metric scale
O6012	Graticule for O6011, metric scale



Anastigmatic loupe x7

This magnifier has a similar lens construction to the x4 loupe (**O6011**), with higher magnification and a field of view of 41 mm. It has adjustable focus, and its detachable scale is marked in millimetres and subdivided into 0.1 mm. Dimensions: 53 mm high x 55 mm diameter.

O6338	Anastigmatic loupe x7, fitted with metric scale
--------------	---



Telecentric magnifier x7



This is a x7 magnifier with a very small entrance pupil (3 mm) which can be adjusted through three click positions to give a decreased circular aperture (1 mm) or a narrow slit (0.5 mm). This gives a large depth of field, allowing measurements to be made on a curved surface. For a curved object the slit in the eyepiece should be kept perpendicular to the direction in which the length of the object is to be measured. The scale is engraved over a 20 mm length in 0.1 mm divisions.

O6041 Telecentric magnifier x7

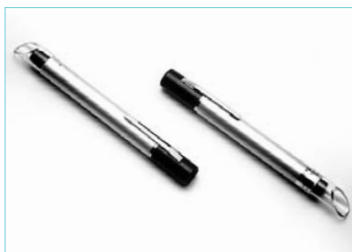
Zoom loupe



This loupe is composed of eight lenses in six groups to allow stepless change of magnification from x8 to x16. The optical system maintains sufficient brightness at any magnification. Its precision machining allows smooth movement, and a 'click-stop' helps the selection of desired magnification from x8, x10, x12, x14 and x16.

O6068 Zoom loupe

Pocket measuring microscopes

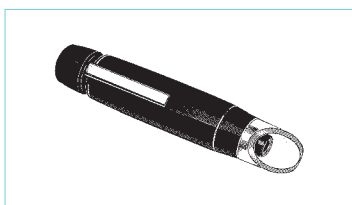


These portable microscopes, available with magnifications of x25 or x50, provide a bright image with good resolution. A scale is incorporated into the lens barrel. The microscope is 130 mm long, fitted with a pocket clip and supplied in a case.

O6333 Pocket measuring microscope x25

O6334 Pocket measuring microscope x50

Pocket microscopes



Similar in construction to the pocket measuring microscope (**O6333**, **O6334**), this version incorporates a prism which gives an upright image. The microscope is 111 mm long, available with magnifications of x25, x50, x75 and x100, fitted with a pocket clip and supplied in a case.

O6341 Pocket microscope x25

O6342 Pocket microscope x50

O6343 Pocket microscope x75

O6344 Pocket microscope x100

Stand microscope



This is a simple stand microscope, which is compact and light with a rubber eye ring. Good brightness and resolution provide excellent visibility of the scale. The microscope is 122 mm high x 41.5 mm diameter, with a smooth focus action and a field of view of 2 mm. It is supplied in a rigid plastic case.

O6335 Stand microscope x50

Illuminated magnifiers

Illuminated table magnifiers

These self-standing magnifiers provide x1.75 magnification plus a built-in close-up lens of x4 magnification and are equipped with a circular fluorescent daylight tube for a consistent, shadow-free light source with low heat emission. The compact magnifier has a 100 mm circular glass lens with a 12 W lamp and a versatile swivel head. The wide lens magnifier has a rectangular lens of 175 x 108 mm and is illuminated by a 22 W lamp. The uniquely designed arm joint allows extra close-up work at table level.

O6170 Illuminated table magnifier x1.75, compact

O6170T Spare circular 12 W lamp for O6170

O6174 Illuminated table magnifier x1.75, wide lens

O6174T Spare circular 22 W lamp for O6174



O6170



O6174

Illuminated magnifiers, arm mounted

These illuminated magnifiers are mounted on robust metal arms and table clamps, to allow easy positioning for close-up and intricate work. A circular 125 mm lens or a wide rectangular lens of 190 x 160 mm, both with a magnification of x1.75, are available. The circular lens magnifier comes with either a mini or a standard circular 22 W daylight tube, while the rectangular lens magnifier is illuminated by two 9 W tubes, providing shadow-free light with low heat emission.

O6171 Illuminated magnifier x1.75, circular lens, mini daylight tube

O6171T Spare circular 22 W mini lamp for O6171

O6172 Illuminated magnifier x1.75, circular lens, standard daylight tube

O6172T Spare circular 22 W standard lamp for O6172

O6173 Illuminated magnifier x1.75, wide rectangular lens

O6173T Spare 9 W lamp for O6173

Accessories are available for alternative fixing options.

O6175 Table base (4 kg) for O6171

O6176 Table base (6 kg) for O6172, O6173

O6177 Screw-down bench bracket



O6171



O6172



O6173

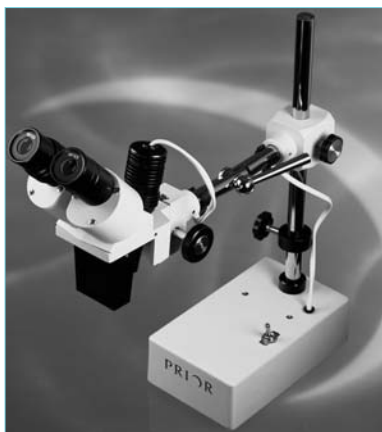
Measuring microscopes



These lightweight instruments are useful for higher magnifications where a hand magnifier becomes inadequate. Each microscope has battery-powered illumination and is equipped with a measuring scale which is focused by the adjustable eyepiece. There is a rack and pinion for easy focusing of the object.

- O6050** Measuring microscope x20
- O6051** Measuring microscope x40
- O6052** Measuring microscope x60
- O6053** Measuring microscope x100
- O6054** Metric graticule for O6050
- O6056** Metric graticule for O6051
- O6058** Metric graticule for O6052
- O6060** Metric graticule for O6053

Stereo microscope



This economical instrument is useful for specimen preparation and critical examination of small electron microscope components. The inclined binocular head is equipped with x10 eyepieces; one has dioptre adjustment. Three interchangeable slide-on objectives are included to give overall magnifications of x10, x20 and x35.

Mounted on a heavy base via a long arm stand, it has full height and tilt adjustments with rack and pinion focusing. The integral 12 V, 10 W illuminator can be operated with 110 V or 240 V AC and is adjustable to give near axis or oblique illumination.

- O6435** Stereo microscope x10, x20, x35
- O6435B** Spare bulb

Stereo microscope ZoomMaster™ 65



The ZoomMaster 65 is a robust and versatile continuous-zoom stereo microscope. With the standard x10 eyepieces, the magnification ranges from x7 to x45. This can be extended by the optional auxiliary lenses; the x0.5 objective gives a range of x3.5 to x22.5, and the x2.0 objective offers x14 to x90. The eyepieces have a dioptre adjustment and rubber eyecups. A détente mechanism indicates magnification without interrupting observation and ensures reproducible measurements. The binocular eyepiece tubes are inclined at 45° with an adjustable interpupillary distance of between 55 and 75 mm. The compact duplex stand integrates both 5 W fluorescent and 6 V 15 W halogen lights for transmitted and incident illumination, with variable intensity control. The stand includes an opal stage plate, blue filter, stage clips and focusing arm with illuminator.

- O6470** Zoom master stereo microscope x7 to x45
- O6471** Auxiliary objective x0.5
- O6472** Auxiliary objective x2.0
- O6473** Spare 6 V 15 W halogen bulb, incident light
- O6474** Spare 5 W fluorescent bulb, transmitted light

Fibre optic illuminators, halogen

A high intensity, heat-free and directional light source is desirable for the preparation and viewing of samples and specimens. The 150 W light source of the KL 1500 LCD offers a continuously adjustable range of light intensities and colour temperatures. The colour temperature is displayed on an LCD screen. For photographic applications, the brightness can be adjusted while maintaining constant colour temperature. A built-in heat filter removes the infra-red component of the bulb output, and coloured filters can be used as desired.

An extensive range of light guides and filters to suit a wide variety of illumination tasks is available. Flexible light guides allow easy adjustment, while swan-neck guides are also self-supporting. Multi-branch versions allow illumination from a number of directions and with different colours if required. Ring lights can be mounted onto the objective lens of a stereo microscope to provide shadow-free illumination.

Internal filters are used when the same colour is required at all light guide outlets. Colour filters and/or a focusing lens can be fitted to the end of the swan-neck and flexible light guides using the focusing attachment.

- O6400** Fibre optic illuminator KL 1500 LCD (specify 240 V or 110 V when ordering)
- O6401** Swan-neck light guide, 1 branch
- O6402** Swan-neck light guide, 2 branch
- O6403** Swan-neck light guide, 3 branch
- O6421** Spare halide bulb

This illuminator offers a complete unit with a cold light source and dual swan-neck light guides for independent sample illumination without affecting the temperature of the sample. Illumination is provided by a 150 W halogen reflector bulb. The output is adjustable from 0 - 100 % and has a colour temperature of 3200 K. Cooling is provided by an axial ventilator.

- O6450** Fibre optic illuminator, 150 W including double swan-neck light guides
- O6451** Spare halogen reflector bulb 21 V 150 W

Please note: some of the attachments for the KL 1500 LCD are not compatible with the KL 1500-ELECTRONIC, KL 1500-T and KL 150B. To order accessories for the older models, please specify model at the time of ordering. Please ask for a full detailed list of available light guides, ring lights, filter and focusing accessories.



Portable microscope

Evolution® portable microscopes are robust, lightweight, hand-sized instruments. They are available either for brightfield microscopy with x4, x10 and x40 long working distance objectives, or for phase contrast microscopy with x4, xP10 and xP20 objectives. Both are equipped with a monocular x10 widefield eyepiece, and a polarisation accessory is available for the brightfield version. The microscopes have LED illumination with built-in condenser and come with a protective carry case and shoulder strap. They are powered by two AA-size batteries (not included) or the 3 V power supply that is part of the package. A mechanical X - Y stage, alternative eyepieces and coloured filters are available as options.

- O6120** Evolution portable brightfield microscope, LED illumination and white frosted filter
- O6121** Evolution phase contrast microscope with phase illuminator, green filter and white frosted filter
- O6122** Mechanical X - Y stage
- O6123** x15 widefield eyepiece
- O6124** x20 widefield eyepiece
- O6125** x20 brightfield objective
- O6126B** Blue frosted filter
- O6126W** White frosted filter
- O6127B** Blue clear filter
- O6127G** Green clear filter
- O6128** Polarising accessory (for brightfield version)



Fibre optic illuminator, LED



The LED light source in the KL 200 LED provides brightness that is equivalent to a 20 W halogen light source. LED sources have advantages over halogen bulbs, including long life, low energy consumption, low heat emission (no cooling fan required), ripple-free DC illumination and white light. The brightness is continuously adjustable and the KL 200 is provided with an international clip plug system to operate on either 100 or 240 V. A range of flexible, swan-neck and ring light guides is available.

- O6460** Fibre optic illuminator KL 200 LED
- O6521** Swan-neck light guide, 1 branch, 3.5 mm dia x 500 mm
- O6522** Swan-neck light guide, 2 branch, 3.5 mm dia x 500 mm
- O6527** Flexible light guide, 1 branch, 4.5 mm dia x 1000 mm
- O6523** Flexible light guide, 2 branch, 4.5 mm dia x 1000 mm
- O6460-1** Ring light, 6-point, 58 mm ID
- O6460-2** Ring light, 6-point, 66 mm ID
- O6460-3** Ring light, continuous, 18.5 mm ID
- O6460-4** Ring light, continuous, 40 mm ID

Digital camera and stand



This high speed Si-3000 3 megapixel USB 2.0 camera allows serial exposure photography of up to 12 frames per second at 2048 x 1536 pixels or 27 fps at 1280 x 1024 pixels using the latest CMOS imaging technology. Other features include optical black level calibration, a progressive scan option and a unique high speed USB 2.0 camera driver that allows real time imaging, eliminating the need for offline processing. The user-friendly software provides an easy-to-use toolbar for comprehensive camera controls and manipulation of the image. A stand is available to support the camera for added convenience. The camera can be mounted via a conventional C-mount.

- O6540** Si-3000 3 megapixel camera

- O6541** Stand for O6540



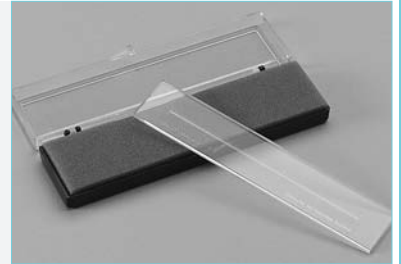
Measurement of diffraction patterns

A range of glass measuring scales is available for the measurement of diffraction patterns.

Glass measuring scale

This glass scale for diffraction pattern measurement is 125 mm long, with a capacity of 100 mm divided into 0.1 mm divisions.

O652 Glass scale 100 mm



Glass measuring scale with magnifier

These glass scales consist of a transparent glass plate with graduations marked by a photo-printing process. The 50 mm glass scale is 3 mm thick, 25 mm wide and 80 mm long, with a capacity of 50 mm divided into 0.1 mm divisions.

Other scales are available in 100, 200 and 300 mm scale lengths. The 200 and 300 mm scales are divided into 0.2 mm divisions and the 100 mm scale into 0.1 mm divisions. All come in a case and with a x15 magnifier for ease in reading the scale.

O6090 Glass scale 50 mm with magnifier

O6091 Glass scale 100 mm with magnifier

O6092 Glass scale 200 mm with magnifier

O6093 Glass scale 300 mm with magnifier



Magscale

Scales of 150 or 310 mm lengths are mounted on a metal frame, carrying a magnifier on precision steel slides. A 450 mm length scale is available with two magnifiers.

O653 Magscale 150 mm long, 0.1 mm divisions

O654 Magscale 310 mm long, 0.1 mm divisions

O657 Magscale 450 mm long, 0.1 mm divisions, two magnifiers

Folding stereoscopes

These simple folding stereoscopes allow pairs of small photographs to be viewed in stereo. The interocular distance can be adjusted from 50 - 70 mm to suit the user. Distance from the lens to the photograph is 115 mm for the x2 model and 75 mm for the x4 model.

Width of field is 65 mm for x2 and 50 mm for x4.

O6001 Stereoscope x2

O6002 Stereoscope x4



Daylight stereo viewer for two 50 x 50 mm mounts



The large aperture lenses of this viewer give good quality viewing of stereo pairs mounted in individual 50 x 50 mm slide mounts. Flexing at the centre strip provides some variation of interocular distance.

O675 Daylight stereo viewer for two 50 x 50 mm mounts

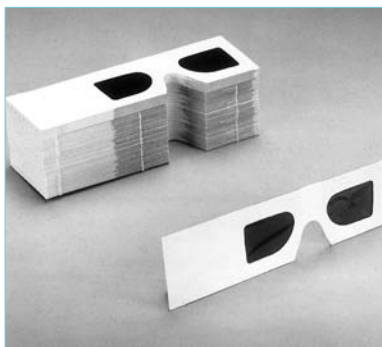
Prismatic stereo viewer



This viewer consists of reversed prisms to enable the viewing of two stereo prints orientated one above the other, and is valuable for viewing prints of different sizes without being limited by overlap problems. The upper part of one prism and the lower part of the other are frosted so that the direct images are obscured and only the fused image is observed. The viewer can be included with reports containing stereo pictures, or attached by string to a wall display using the specially shaped end grip.

O640A Prismatic stereo viewer

Red/green stereo viewers



These are red/green stereo viewers in cardboard mounts for viewing anaglyphs.

O642 Red/green stereo viewers. Pack of 50

O642A Red/green stereo viewers. Pack of 10

Similar viewers with cardboard side arms are available to wear as spectacles.

O664 Red/green stereo viewers with side arms. Pack of 20

Red/blue stereo viewers



Some anaglyphs are made using a red/blue combination instead of red/green. These viewers are available in similar styles to the red/green (**O642**, **O642A** and **O664**).

O665 Red/blue stereo viewers. Pack of 50

O665A Red/blue stereo viewers. Pack of 10

O668 Red/blue stereo viewers with side arms. Pack of 20

Red/blue stereo glasses

Glasses with hard rubber frames

These are high quality glasses for viewing anaglyph 3-D images. The frames are made from hard rubber and the lenses from rigid plastic.

O6270 Red/blue glasses, rubber frames

Plastic clip-on glasses

These deluxe, plastic clip-on 3-D glasses are suitable for clipping onto most types of spectacles, and have an easy flip-up feature. They are especially good for viewing colour anaglyphs on a monitor.

O6271 Red/blue clip-on flip-up glasses



Stereo spectacles

These cardboard frame spectacles carry polarised filters for viewing stereo projections.

O660 Polarised stereo spectacles. Pack of 5



The polarised stereo spectacles are also available in rigid lightweight black plastic frames that fit easily over spectacles, or in ophthalmic quality black plastic frames with thick plastic lenses.

O6276 Polarised stereo spectacles, plastic frame

O6277 Polarised stereo spectacles, ophthalmic frames



Photographing in 3-D booklet

This booklet dealing with 3-D photography, written by David Burder and Pat Whitehouse, provides basic guidance on how to record and take a 3-D photograph using inexpensive and readily available equipment. The booklet is supplied with a stereo viewer.

P9034 Photographing in 3-D booklet

