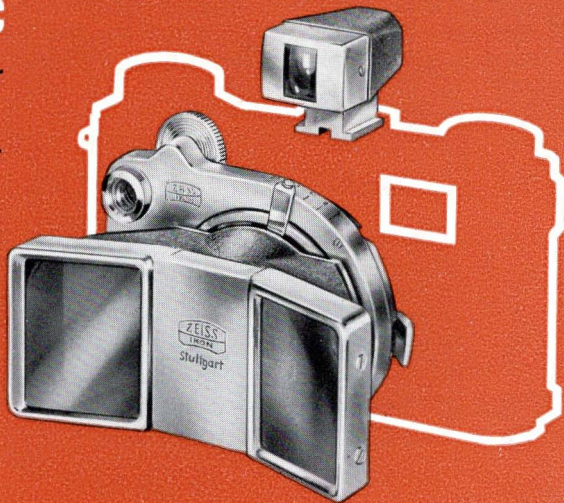


INSTRUCTIONS FOR USE

Stereotar-c

Stereo-attachment for
the CONTAX

ZEISS IKON AG. STUTT GART



Stereo-Photography – simplicity itself!

When ZEISS IKON AG. STUTTGART set about developing an attachment for taking stereo-photographs, the guiding principle was that stereo-photography had to be made as simple as ordinary flat photography. So successful were they in this endeavour that not only is it now perfectly easy to take stereo-photographs, but in addition, the mounting and framing of the transparencies and their viewing and projection presents no untoward difficulties whatsoever. This perfect simplicity is the result of the invention of a whole range of integrated apparatus, each unit of which is ideally adapted to and complements the others: the CONTAX-STEREO-SYSTEM. There are certain rules which have to be observed strictly in stereo-photography, but the technical perfection and operative efficiency of the ZEISS IKON stereo-apparatus makes it quite unnecessary for the user to worry about them. For further details, ask for the special prospectus which the "Photoberatung der ZEISS IKON AG.", STUTTGART, Dornhaldenstrasse 5, will be only too pleased to send you free of charge.

The STEREOTAR-C is designed for use with the CONTAX IIa and CONTAX IIIa. It is also possible to attach it to older models of the CONTAX II and CONTAX III, but in these cases the coupled rangefinder cannot be used.

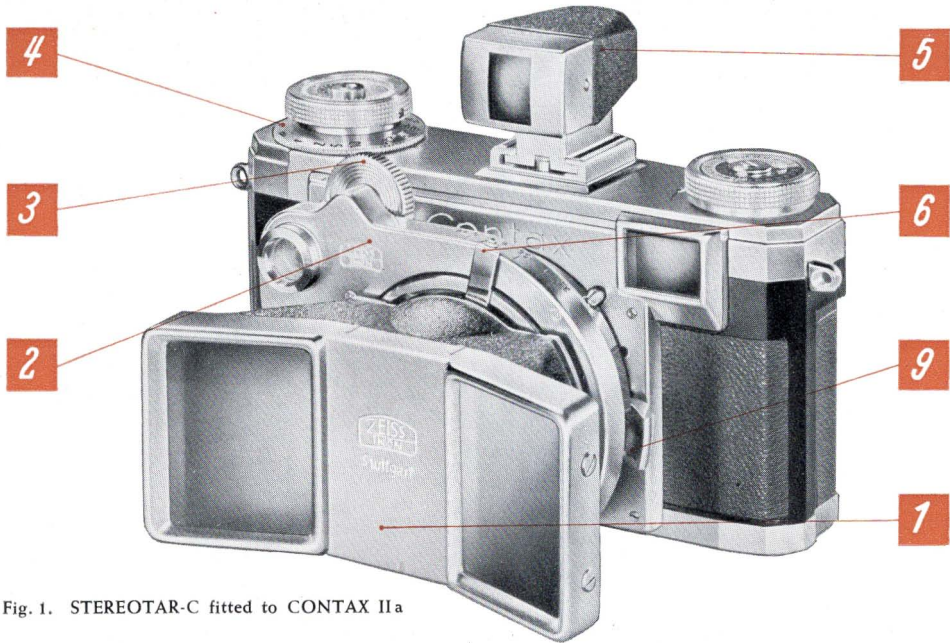


Fig. 1. STEREOTAR-C fitted to CONTAX IIa

The straightforward operations described in the following pages will soon be mastered by every CONTAX-photographer. On pages 19 to 23, there will be found a few practical hints on stereo-photography, which should help you produce successful pictures right from the start. If you need any additional advise, ask your photo-dealer or the above-mentioned ZEISS IKON Photoberatung.

The figures in the illustrations refer to the following parts:

- Fig. 1 1 Prism attachment
2 Double lens panel
3 Rangefinder focusing wheel
4 Shutter speed setting ring
5 Slip-on viewfinder
6 Diaphragm lever

Fig. 2 7 Protective covers for STEREOTAR-C

Fig. 3 8 Lock spring on prism attachment

Fig. 4 9 Lock pawl on lens panel

Fig. 6 10 Depth-of-field scale

11 Distance setting scale

Fig. 9 12 Viewfinder parallax-compensation lever

13 Rangefinder eyepiece

14 Viewfinder eyepiece

Specification

The stereo apparatus for use with the CONTAX consists of the STEREOTAR-C attachment with its accompanying special slip-on viewfinder (5). The STEREOTAR-C is made up of two units: the double-lens panel (2) and the prism attachment (1). Whether or not the prism attachment is used depends on the distance between the camera and the subject.

The double-lens panel contains two $f/3.5$ Stereotar lenses. Each lens has a focal length of 35 mm, which gives approximately the same angle of view as the normal CONTAX lens with its 50 mm focal length. The lenses are coated and colour-corrected, and yield both black-and-white and colour pictures with remarkably fine definition.

The two Stereotar lenses produce two 18 x 24 mm half-images or homologues (useful area 16 x 22.5 mm), which lie side-by-side within the normal negative area of 24 x 36 mm (see Fig. 14—17). By exchanging the STEREOTAR-C for any other CONTAX lens, stereo and flat photographs can be taken alternately on the same length of film.

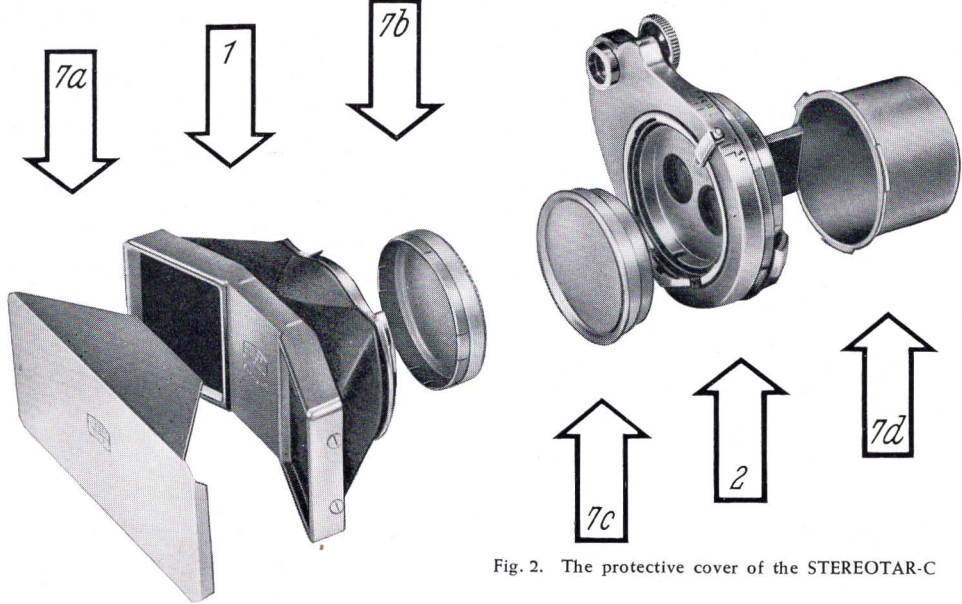


Fig. 2. The protective cover of the STEREOTAR-C

Assembly

The familiar bayonet mounts of the CONTAX system are used to attach the prism attachment to the double-lens panel and the latter to the camera. First of all, remove the standard lens from the camera and **remember to set the distance setting scale of the CONTAX to "infinity"**.

Before assembling the individual components of the STEREOTAR-C, the protecting covers (7b and 7c) must be removed. Furthermore, after depressing the lock pawl (9), lift out the cover (7d) from the bayonet mount (Fig. 2). It is advisable not to remove the front cover (7a) from the prism attachment until the assembly is completed, in order to avoid touching the glasses.

When assembling the apparatus, bear in mind the following rules:

to assemble: **Red dot to red dot; turn to the left as far as possible or until an audible click is heard.**

to dismantle: Depress lock pawl (9) or lock spring (8); turn to the right as far as possible, until red dots again coincide.

Fig. 3. Attaching the prism attachment to the lens panel. To remove, depress lock spring (8)

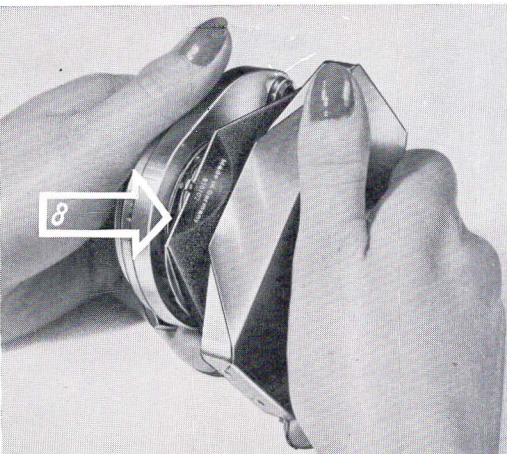
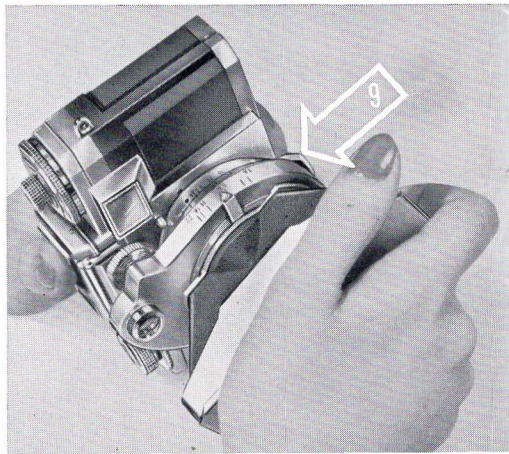


Fig. 4. Attaching the STEREOTAR-C to the CONTAX body. To remove depress lock pawl (9)



As shown in Fig. 5, the slip-on viewfinder (5) is slid into the accessory shoe of the CONTAX as far as possible. The little lever beneath the viewfinder is used to compensate for parallax (see Fig. 9).

Settings

Exposure time

The correct exposure values for setting the shutter speed are best measured with either the built-in exposure meter of the CONTAX IIIa or the ZEISS IKON IKOPHOT exposure meter. The shutter speed should be set as usual, by means of the shutter speed setting ring on the CONTAX body (4). The delayed action mechanism can also be used for stereo-photography.

Fig. 5. Slipping on the viewfinder

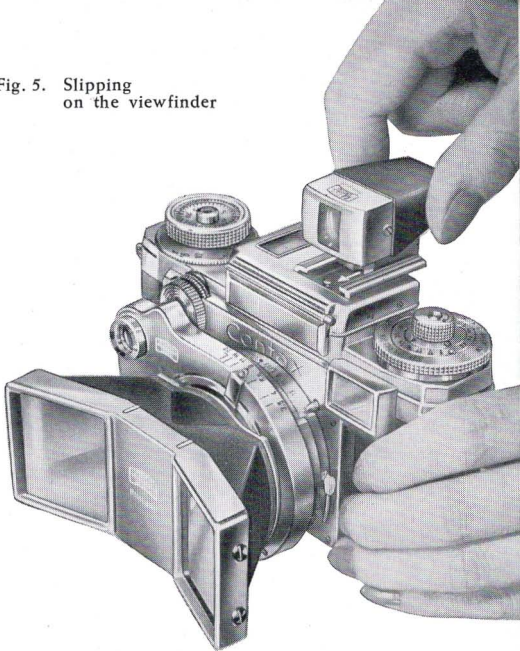
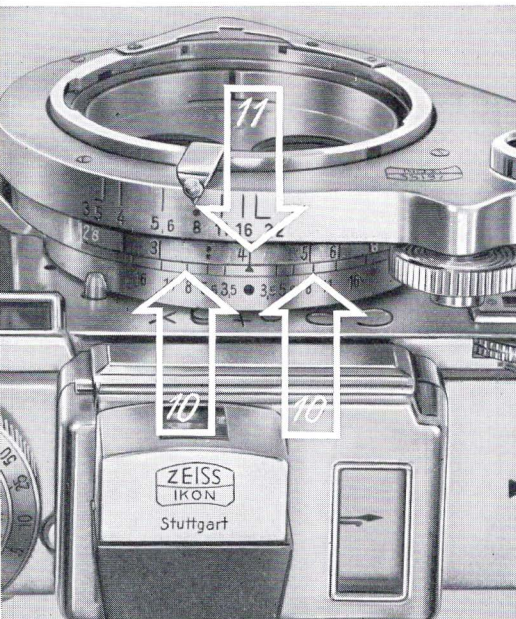


Fig. 6. The setting scales of the STEREOTAR-C



Diaphragm setting

The lever (6) sets the aperture for both STEREOTAR lenses at the same time. If possible, choose a stop giving sufficient depth of field to portray clearly both the furthest and nearest objects which you desire to include in the picture. Once this is decided, the correct stop can be found easily by reference to the depth-of-field scale (10) or the depth-of-field table on page 25 of this booklet (see also: Red-Dot Setting). Fig. 6 shows, for example, how a distance setting of 4' and a stop of $f:8$ will cover a depth of field from 3'3" to 5'. Of course, this does not prevent you from making pictures of subjects where an unsharp background does not matter.

Distance setting

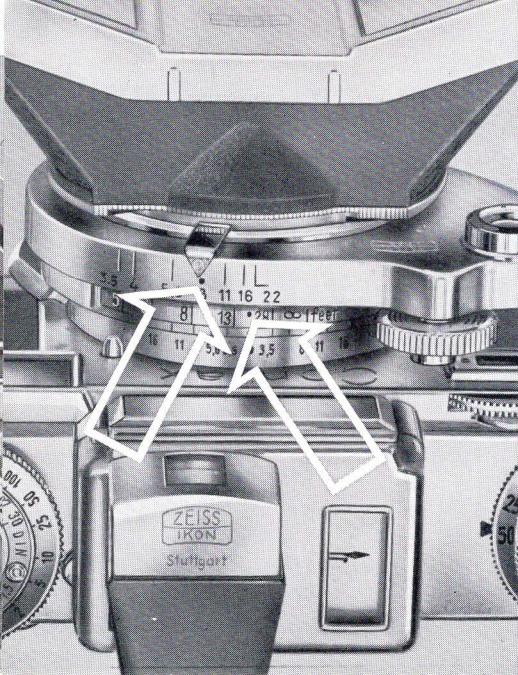
The STEREOTAR-C can be used either with or without the prism attachment. For **normal distances**, that is, from 8' to infinity, the prism attachment **must** be used, while for **portraits**, starting at 2'8", the prism attachment **should not** be used (see page 19). The shortest possible distances for both these ranges are marked by red figures on the distance setting scale (11).

To measure the distance correctly, turn the focusing wheel (3) until the double images in the rangefinder of the CONTAX coincide. This operation automatically focuses both lenses of the STEREOTAR-C.

When working with earlier models of the CONTAX II and III, the distance must be estimated by some other means and set on the distance setting scale (11) by turning the focusing wheel (3) of the STEREOTAR-C. This is because the rotating wedges built into the STEREOTAR-C form a functional unit only with the rangefinder of the CONTAX IIa or IIIa.

Red-Dot setting

For both the normal and the portrait range, a separate Red-Dot Setting scale has been provided, which in favourable lighting conditions can be



used to ensure increased readiness for action.

For taking stereo snapshots, the following procedure should be adopted. Set the diaphragm setting lever to the figure 8, marked by a red dot. Then,

**for subjects within the normal range
(with prism attachment),**

turn the focusing wheel (3) to the single red dot between 13' and 28' (Fig. 7). All objects between 8' and infinity will then be sharp.

**For subjects within the portrait range
(without prism attachment),**

the distance should be set to the two red dots between 3' and 4' (Fig. 8). The depth of field will then cover the distance 3' and 4'4".

Fig. 7. Red-Dot Setting for normal range

It is imperative that the lever (12) of the slip-on viewfinder (Fig. 9) should be set to the appropriate dot for the range in use, even when the distance has been measured with the rangefinder (13) of the CONTAX. The same system applies:

For subjects within the normal range (with prism attachment): single red dot (to the right).

For subjects within the portrait range (without prism attachment): two red dots (to the left).

The field covered by each half-image can then be seen through the eyepiece of the viewfinder (14). In no circumstances should the CONTAX be tilted in any

Fig. 8. Red-Dot Setting for portrait range

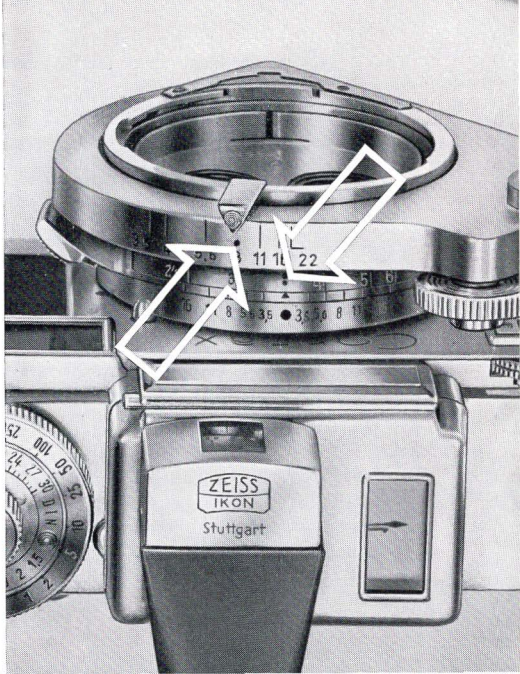
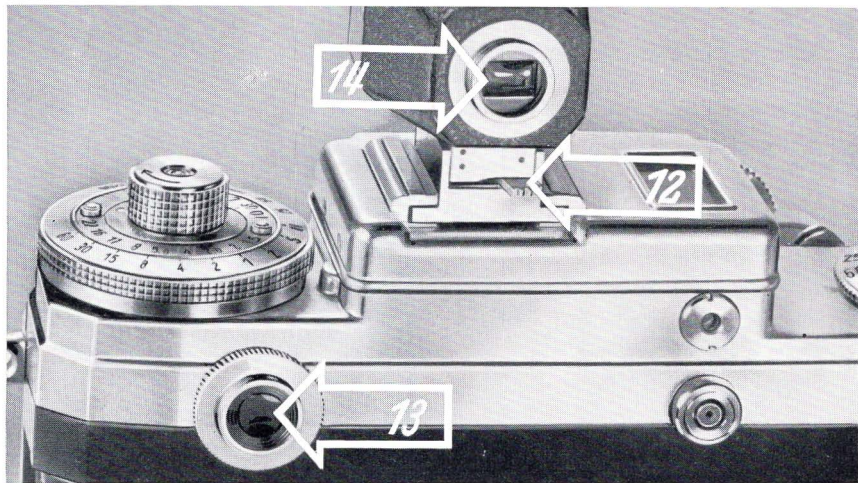


Fig. 9. Parallax compensation of the viewfinder



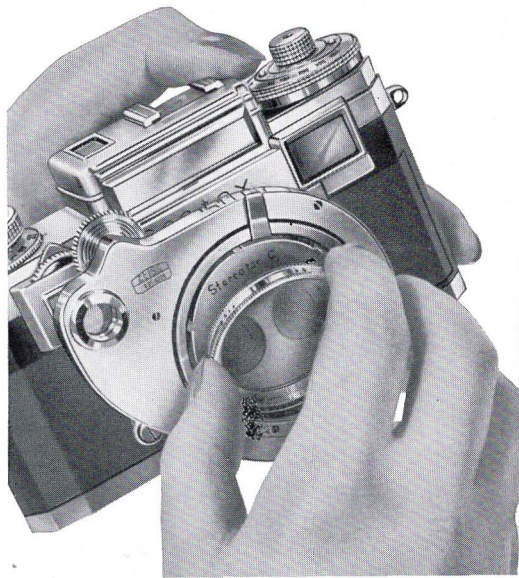
direction or rotated through 90° , when taking stereo photographs.

Accessories for the STEREOTAR-C

ZEISS IKON Precision Filters

All filters designed for use with the standard 50 mm CONTAX lenses can also be used with the STEREOTAR-C (Order No. 354, obtainable in the colours yellow, yellow-green, orange, red, UV and blue [IKOLOR]). They can be slipped into the spring-loaded holding rings on the front of the lens panel, so that the inner thread of the filter mount points outwards (Fig. 10). The prism attachment can then be replaced with ease.

Fig. 10. Attaching the colour filters



Stereo-PROXAR Lenses

Close-up stereo photographs can be taken with the STEREOTAR-C using the appropriate stereo PROXAR lens for one of the three CONTAMETER ranges, which are approximately 50, 30, and 20 cm (20", 14", and 8"). They should be used in conjunction with the view-

rangefinder of the CONTAX-CONTAMETER, which should be inserted into the accessory shoe of the CONTAX to replace the slip-on view-finder of the STEREOTAR-C (Fig. 11).

For the purposes of stereo photography, the upper and lower limits of the image field are indicated by two bracket-like lines above and beneath the largest rectangle, and on either side by the smallest rectangle (see Fig. 12), no

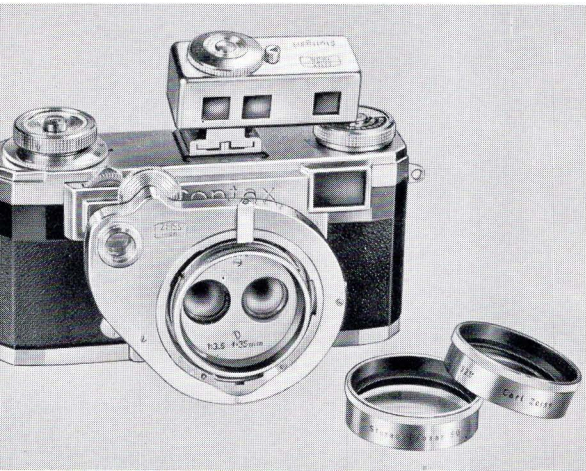


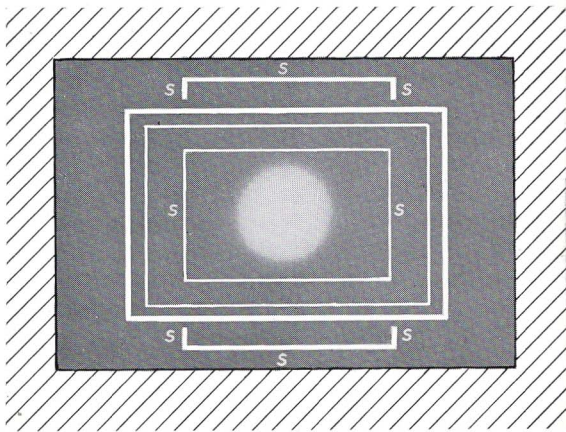
Fig. 11. STEREOTAR-C as used for close-up photography

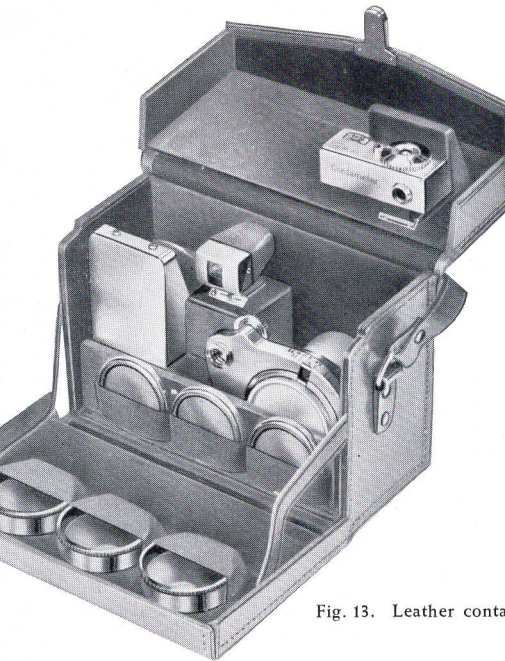
matter which of the three stereo lenses is being employed. These image-framing marks can be included on request in previous models of the CONTAMETER (Order No. 439).

The adjustment of the CONTAMETER view/rangefinder in accordance with the identification number of the stereo PROXAR lens used has been described in detail in the instructions for the use of the CONTAMETER. When using stereo PROXAR lenses, the distance should not be set to "infinity" on the scale of the STEREOTAR-C lens panel, but should be determined according to the data given on page 20 and the table on page 26.

The stereo PROXAR lenses are fitted into the spring-loaded holding ring of the lens panel in the same way as the filters. However, when using PROXAR lenses in conjunction with filters, the filter must be screwed into the rear thread of the supplementary lens and both attached to the holding ring of the lens panel as a single unit, with the filter nearest to the camera.

Fig. 12. Framing the image field in the CONTAMETER view/rangefinder





Leather Container

A well-made leather container (Fig. 13) is available for storing and carrying the stereo equipment (Order No. 1243); it will accommodate both the lens panel and the prism attachment of the STEREOTAR-C, the slip-on finder, a CONTAMETER view/rangefinder, three stereo PROXAR lenses and three colour filters.

Care and maintenance

All glass parts of the prism attachment which are exposed to air must be handled as carefully as the double lenses. Dust should be removed with a very soft artist's brush and the glass surfaces should be wiped with a soft and lint-free linen cloth only when absolutely

Fig. 13. Leather container for the STEREOTAR-C

necessary. When not in actual use, the STEREOTAR-C should be covered with its four protective covers (2).

The Technique of Stereo Photography

Normal Range: Stereo Photography with Prism Attachment

To obtain a genuine 3-D effect within a range of between 8' (near point) and infinity (distant point), the STEREOTAR-C should be used with the prism attachment. This causes an apparent magnification of the actual inter-pupillary distance (the base) to 2 $\frac{1}{2}$ inches (62 mm).

Portrait Range: Stereo Photography without Prism Attachment

If the distance between the camera and the subject or any part of it is less than 8', it is usually necessary to remove the prism attachment. In this case, the base is formed by the actual distance between the two lenses, which is $\frac{3}{4}$ inches (18 mm). With this base the depth of the image field extends from a near point of 2'8" outwards. In fact,

there is no actual limit to the subject distance, although it should be borne in mind that the 3-D effect becomes increasingly less apparent the greater the subject distance.

Close-up Range: Stereo Photography with Stereo Proxar Lenses

The near points of the ranges obtainable with the three stereo PROXAR lenses, denoted by the figures 50, 30 and 20, correspond to the relevant distance settings of the CONTAMETER and are actually 20", 14" and 8", measured from the front of the mount of the supplementary lens. The extension of the depth of the image field into the background can be found in the table on page 26. When, as is usually required, the entire image field including its depth of field should extend towards the background from the appropriate near point (CONTAMETER setting), the distance setting ring of the STEREOTAR-C should be set according to the table. This ensures the most effective utilisation of the practicable range of definition.

When the maximum range of definition is not required, matters can be simplified greatly by setting the distance setting scale of the STEREOTAR-C (11) to 2'8". Under no circumstances, however, is it permissible to set the distance to infinity, as is the usual practice when taking flat photographs with the CONTAMETER.

The near point must be established by means of the CONTAMETER view/rangefinder (which should be set according to the identification number of the stereo PROXAR lens in use); to do this the double images of that part of the subject which is nearest to the camera must be made to coincide.

The table on page 26 also shows the various subject sizes and image scales in relation to the focusing plane of the CONTAMETER.

The Boundaries of the Stereo Picture

The sharp boundary lines framing the stereoscopic picture play a very important role, in that they provide a spatial base for the eye of the viewer. When viewing 3-D pictures, all objects should appear behind this frame, as though seen through a window.

Provided that the shortest permissible taking distance for each range (normal range 8', portrait range 2'8" and close-up range 20", 14" or 8") has been strictly adhered to, and the utmost care taken in binding the transparencies into the precision-made original ZEISS IKON stereo masks (see page 27), this frame effect will be obtained automatically. With regard to the correct distances, these can be ascertained quite easily with the rangefinder or the view/rangefinder of the CONTAMETER.

In cases where objects are taken at distances shorter than the prescribed distance for each individual range, all objects which were too close to the lens will appear in the viewer or in projection as though placed in front of the frame. This can be used to good advantage for creating special effects, by deliberately placing objects too close to the lens. Care should be taken, however, not to shorten the permissible taking distance unduly and attention must be paid to the possibility of these objects being cut off by the frame.

Depth of Field

Generally speaking, the depth of field in stereo-photography should be as great as possible; this should be achieved by suitable settings of the distance and diaphragm scales. The use of the Red-Dot-Setting, which guarantees a satisfactory depth of field for all ranges, will make a simple matter of this operation. (Remember: normal range, single red dot on distance setting scale; portrait range, two red dots.) It is, of course,

possible to adjust the distance setting and aperture to suit the subject matter and the effect desired.

Illumination

Stereo pictures should always be taken under good lighting conditions. Large areas of shadow usually spoil the 3-D effect. The most effective results will be obtained from bright pictures without high contrasts. Both flashbulbs and electronic flash equipment, such as the ZEISS IKON capacitor flashguns IKOBLITZ O and III, can be employed successfully.

Tables

The first table (page 25) gives the depth-of-field ranges for the various stops, the object size as seen on the film for the various distance settings (in relation to the useful image size 16 x 22.5 mm) and also the image scales for the various distance

settings of the STEREOTAR-C, in both the normal and the portrait ranges. All distances are measured from the film plane, and all measurements are quoted in metres.

The second table (page 26) gives the distance setting on the STEREOTAR-C for the various stop values, giving the best possible definition of the the depth of field at our disposal, when the distance setting on the CONTAMETER is set to the near point of the taking range. Furthermore, the table shows the extent of the depth of field afforded by the individual settings towards the background. Moreover, correct values are given for each of the three CONTAMETER settings (50, 30 and 20), the image scales and the object sizes. The distance setting figures for the CONTAMETER are measured from the outer rim of the supplementary lens mount. The depth-of-field-figures are based on a circle of confusion $\frac{1}{30}$ mm in diameter.

Table for Stereotar f/3.5/35 mm within the normal and portrait range

Distance setting in relation to focal plane		Depths of field at stop						Width a height of object within the set distance	Image Scale
		3,5	5,6	8	11	16	22		
Normal range	∞				12' - ∞	8'6" - ∞	6'2" - ∞		
	28'		13' - ∞	10'6" - ∞	8'6" - ∞	6'6" - ∞	5' - ∞	13'1" x 18'	1:250
	.	11'7" -29'	9'10"-55'	8'3" - ∞	7' - ∞	5'8" - ∞	4'7" - ∞	7'1" x 10'	1:135
	13'	9'9" -20'	8'6" -28'	7'4" -58'	6'4" - ∞	5'2" - ∞	4'3" - ∞	6'3/4" x 8'63/4"	1:116
	8'	6'8" -10'	6' -12'	5'5" -15'	4'10"-23'	4'2" -143'	3'6" - ∞	3'8" x 5'21/4"	1:70
Portrait range	6'	5'3" -7'	4'10"-7'11"	4'6" -9'	4'1" -12'	3'7" -20'	3'1" -170'	2'9" x 3'103/4"	1:53
	5'	4'6" -5'8"	4'2" -6'3"	3'11"-7'	3'8" -8'3"	3'3" -11'9"	2'10"-24'	2'3" x 3'2"	1:43
	4'	3'8" -4'5"	3'6" -4'8"	3'31/2"-5'2"	3'1" -5'10"	2'10"-7'3"	2'6" -10'6"	1'91/4"x 2'6"	1:34
	:	3'3" -3'9"	3'1" -4'	2'111/2"-4'4"	2'91/2"-4'9"	2'7" -5'8"	2'31/2"-7'6"	1'43/4"x 2'	1:27
	3'	2'10"-3'21/2"	2'81/2"-3'5"	2'7" -3'7"	2'51/2"-3'11"	2'31/2"-4'51/2"	2'11/2"-5'6"	1'11/2"x 1'10"	1:25
	2'8"	2'61/2"-2'10"	2'51/2"-2'101/2"	2'4" -3'1"	2'3" -3'4"	2'1" -3'9"	1'11"-4'5"	1'1/2"x 1'61/4"	1:20

Table for Stereotar f/3.5/35 mm in conjunction with Stereo-PROXAR-Lenses

Stop	Stereo-Proxar 50		Stereo-Proxar 30		Stereo-Proxar 20	
	Distance setting in feet	Depth of field from the Contameter dist. sett.*	Distance setting in feet	Depth of field from the Contameter dist. sett.*	Distance setting in feet	Depth of field from the Contameter dist. sett.*
3.5	2'8"	1'9 $\frac{1}{4}$ "	2'8"	1'2 $\frac{1}{4}$ "	3'	8 $\frac{3}{4}$ "
5.6	2'10"	1'11 $\frac{1}{4}$ "	2'8"	1'2 $\frac{3}{4}$ "	3' :	9"
8			2'10"	1'3 $\frac{1}{2}$ "		
11	3'	2'2"	3'	1'4 $\frac{1}{2}$ "	:	9 $\frac{1}{2}$ "
16	3' :	2'6 $\frac{1}{2}$ "	3' :	1'6 $\frac{1}{4}$ "	4'	10 $\frac{1}{3}$ "
22	:	3'1"	:	1'8 $\frac{1}{2}$ "	5'	11 $\frac{1}{2}$ "
Contameter Distance setting**	1'8 $\frac{1}{4}$ "		1'13 $\frac{1}{4}$ "		8 $\frac{1}{2}$ "	
Object size***	8 $\frac{3}{4}$ " x 1'1 $\frac{1}{4}$ "		5 $\frac{7}{8}$ " x 8 $\frac{1}{4}$ "		3 $\frac{3}{4}$ " x 5 $\frac{1}{4}$ "	
Image scale***	1 : 13,8		1:9,4		1:5,9	

*) Measured from the front-rim of Stereo-PROXAR lens mount

**) — CONTAMETER distance setting — Distance between front-rim of Stereo-PROXAR lens mount and object (near point)

***) In relation to the CONTAMETER distance setting and projection format 16 x 22,5 mm

Fig. 14. Inserting the film into the stereo mask

Mounting the Stereo Photos

Both for viewing and projecting, the two half-pictures or homologues must be accurately positioned relative to each other; the correct vertical alignment and distance between the two halves is essential for a realistic 3-D effect. The great advantage of the CONTAX-STEREO-SYSTEM is that these homologues are already in the correct viewing position on the film; there is no need for separate cutting and re-assembling. All that has to be done is to cut out the related pairs which are considered satisfactory from the photographic point of view, and place them in the mounting supports of the original ZEISS IKON stereo masks (Fig. 14). The

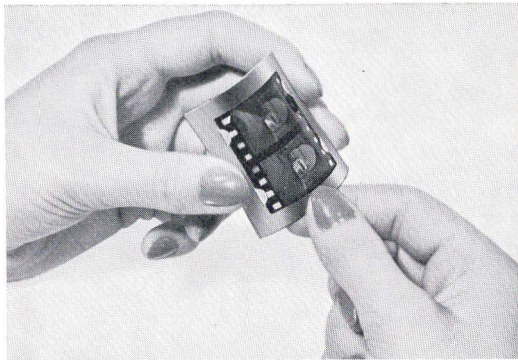
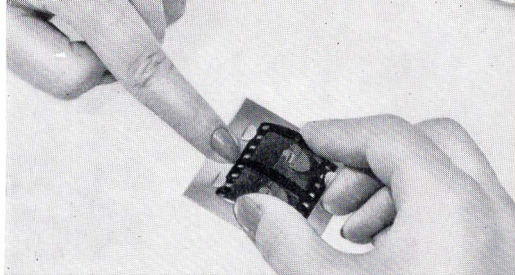
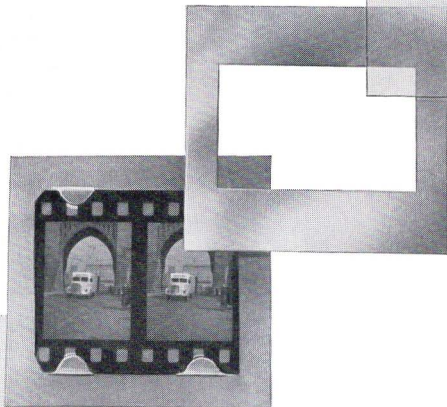


Fig. 15. Adjusting the position of the film

Fig. 16.
Order of components for binding



central bar of the mask should cover the blank space between the two half-images. Should it be necessary to make any lateral adjustments, the mask should be bent slightly so that the film rests on the outer curve: in this way it will be easier to slide it into the correct position (Fig. 15). The next step is to bind the transparency; the film, sandwiched

between the stereo mask and the cover mask (Fig. 16), is placed between the special 2" x 2" cover glasses in the same way as a normal transparency (Fig. 17).

The ZEISS IKON stereo masks are made precisely to measure, as they can only serve their purpose satisfactorily if the given measurements are adhered to strictly. The masks can be obtained in sets of 50 (Order No. 1503) from all photo-retailers dealing in stereo equipment.

Viewing and Projecting

A special stereoscope is at present under construction for viewing stereo pictures made with the equipment of the CONTAX-STEREO-SYSTEM. For projection, the IKOLUX

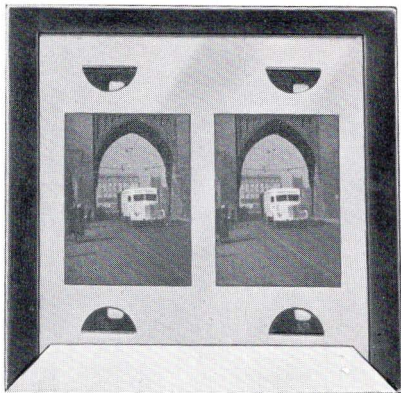


Fig. 17. Completed stereo transparency

Fig. 19. Polarising spectacles

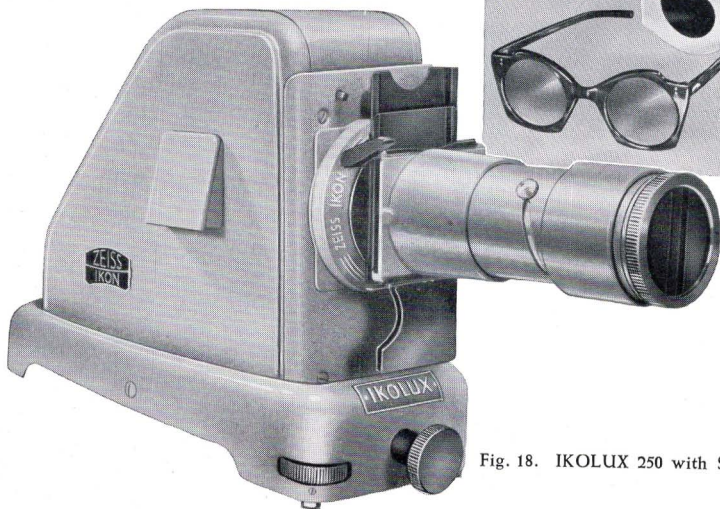


Fig. 18. IKOLUX 250 with STERIKON 10

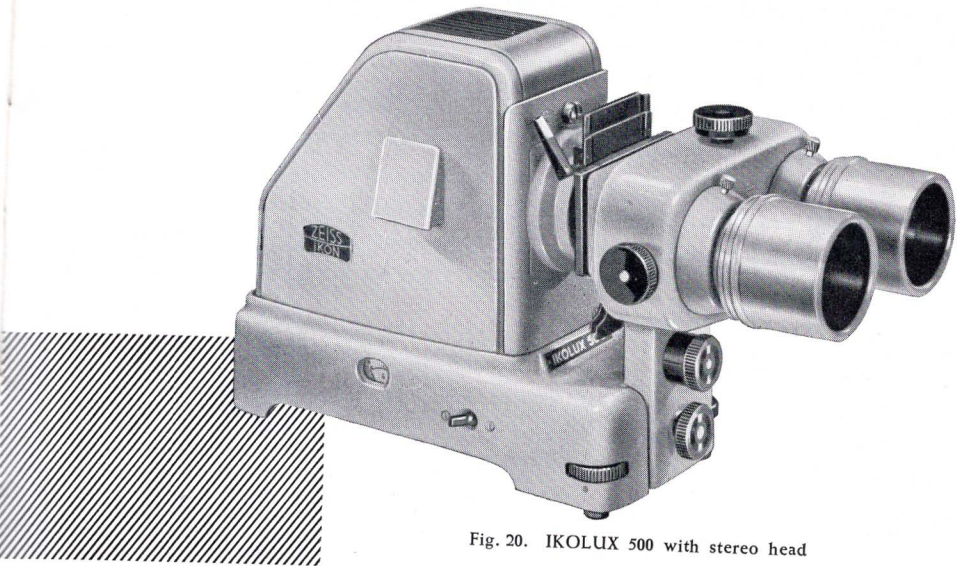


Fig. 20. IKOLUX 500 with stereo head

projector fitted with stereo accessories is an admirable instrument.

For projecting stereo transparencies with the IKOLUX 250, which is equipped with the high-speed Orikar $f:2.5/100$ mm lens, the STERIKON 10 attachment has been specially designed. The STERIKON 10 can also be used with the IKOLUX 500 or with our former AVISO II still projector, which must be fitted with the above-mentioned lens. For projection in schools, halls and other large buildings, the use of the IKOLUX 500 with a stereo head is especially recommended, since it permits the use of interchangeable lenses of different focal lengths.

Since stereo pictures are projected with variable polarised light, they must be projected on to a screen with a metallic surface (the so-called "silver screens"). For viewing the pictures, polarising spectacles are necessary, which are quite inexpensive and can be obtained with either cardboard or plastic frames (Order No. 1500 and 1501).

Improvements in design may involve small deviations from the description of the apparatus as given in this booklet.





The marking oo on the Stereotar-C

The STEREOTAR-C working with **two** lenses produces two so-called "bi-lensed" unexchanged stereo half-images. The type of stereo pictures is denoted by a **symbol of two circles oo** in order to indicate its manner of production. For this reason the STEREOTAR-C bears the oo-symbol.

This denotation serves for the very important purpose of differentiating pictures taken with two lenses from those taken with one lens, the so-called **mono-lens** pictures. These are not only produced with one lens but the stereo half-images are also interchanged. They bear the symbol of **one circle o only**.

This was necessary since the different pictures of these lens types call also for different viewers and projectors and a different adjustment of polarising filters in the projectors. The viewer and projectors made by ZEISS IKON are provided therefore with the identical markings, that is to say, that all devices designed for the use with the STEREOTAR-C must bear the double-circle symbol.