Helios 44 on Stereo.

At this stage we continue to demonstrate the cleverest and highest conception level of the original "Helios 44" project which enables this supreme lens to be adapted to the most interesting optical tasks.

Now we developed a stereo accessory that goes beyond the known outer limits to the reach of any commom protographer or researcher.

Our full initial kit is composed from a conventional SKF-1 attachment for taking pictures with many kinds of cameras, a SSV-2 viewer for prints in the formats ranging from 9x12 cm up to 10x15 cm, and a NABLA lens which enable close-up picture taking with the same Helios lens at the close range of 0.5 to 1m exhibiting here the full focusing range of original Helios lenses.

This outfit as well as Makroplett tube system and Mikrofokkad Probe lens set shown at the previous 3rd and 4th stages of the Helios 44 description, is intended to be applied to all Helios 44 lenses in screw or baionet mount mount, pre set or automatic since the first batch production.

We begin now presenting our SKF-1 (New Edition) full description;

SKF-1

STEREO ATTACHMENT

WORKING

IN CLOSE-UP AND MACROPHOTOGRAPHY

By Luiz Paracampo

I) Foreword

Stereophotograqraphy stands as the top of the art and techniques in the photographic world. The SKF-1 stands among the top adapters of the splitters models. This article is an overall view of this device emphasizing its properties and versatility.

Its first characteristic is its simplicity and ingenuity of Its construction being basically a clever project, As we know, it is the only one to gather in the same

device several performances. The adapter is originally made for taking photos, but is easily convertible into slide viewing unit or even on projector complement. Its versatility does not ends in this point. Its construction ingenuity lead us to endless adaptations possibilities and uses.

You have originally two adapting threaded rings, one for 49mm and other for 52mm filter threads, although basically developed having in mind operation together the Helios 44 lenses in its various versions, this device will also operate with other lenses with standard 50mm focal lengths (with a small reduction of the homologous* points at infinity).

When using the standard 24x36mm format with the stereoscopic SKF-1 adapter (and all others) the picture becomes vertical, naturally limiting the horizontal taking angle; that way the system is mainly directed to portraits and details of objects. This new edition of SKF-1 can exitously be used together MIR-1 and Jupiter-9 under certain limitations.

When you use a 50mm lens on half frame size, you have a near equivalent to a 100mm lens, always having a double field in vertical format; in 58mm you will have a 116mm. Take on mind that when using a stereo splitter you have in the camera a true portrait lens system, and is limited in taking pictures always at horizontal plane to get vertical pictures near to the ideal vertical size pictures. 4x5 Ratio (Horizontal x Vertical).

To explore the best of our universe, it would be a pity if we could not explore the range of our vision scope (close-up and macrophotography).

The SKF-1 can take great close-ups with introduction of our Nabla accessory which opens new stereoscopic horizons and lets you take stereo photos the normal way on the 0.5 - 1m range.where astonishing macrophotos, together Jupiter 9 and UTZ/T or Makroplett extension tubes.

Images obtained with this optical architecture have the same perspective of the normal binocular human vision and not the parallel sight so common in the high cost devices. Perspective of pictures are so, more near of real sights than other devices normally accepted up to nowadays.

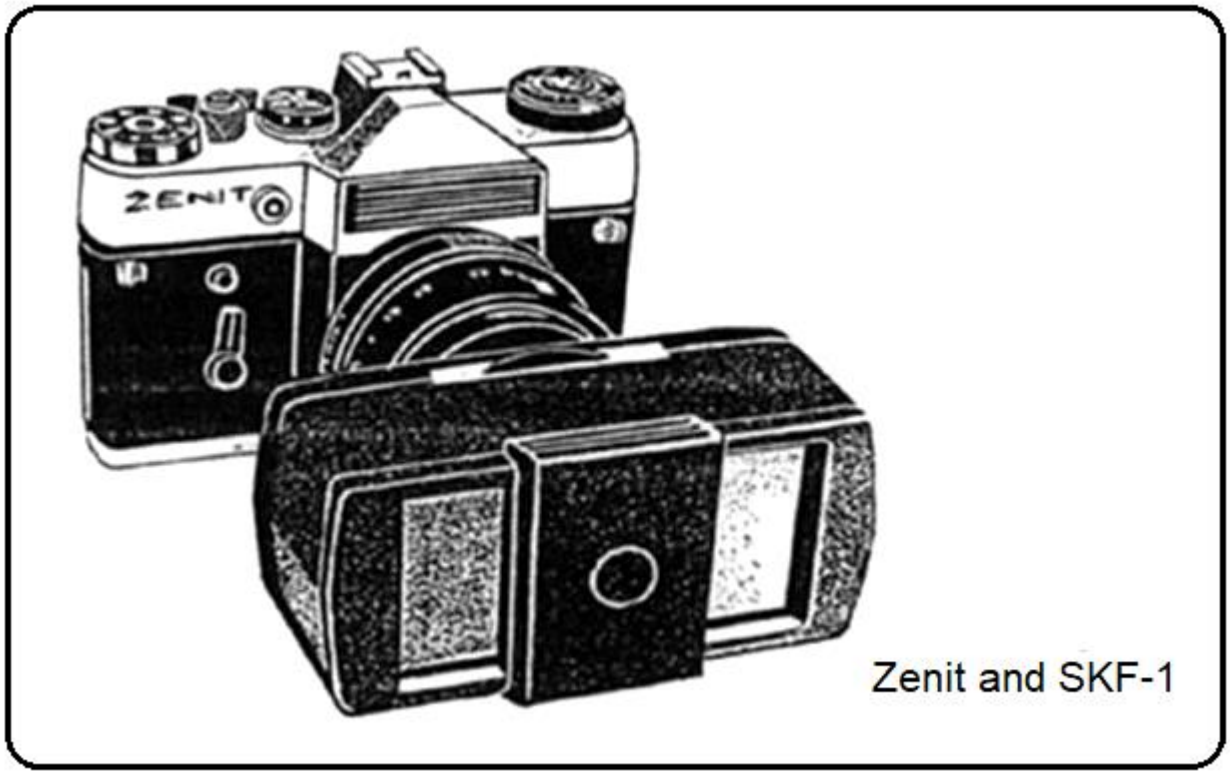
The device when used with the normal lens, limits his operative range in the 2m - 10m range. And closer distances shoud be avoided not to get the hiperstereo effect (giant homologous spacement). The farthest limit is given as 10m because beyond that, the stereo effect is so dim, that does not catch the observer's interest.

***homologous = Same point in the image seen in the two pictures of the stereoscopic pair.**

We will now show you how.

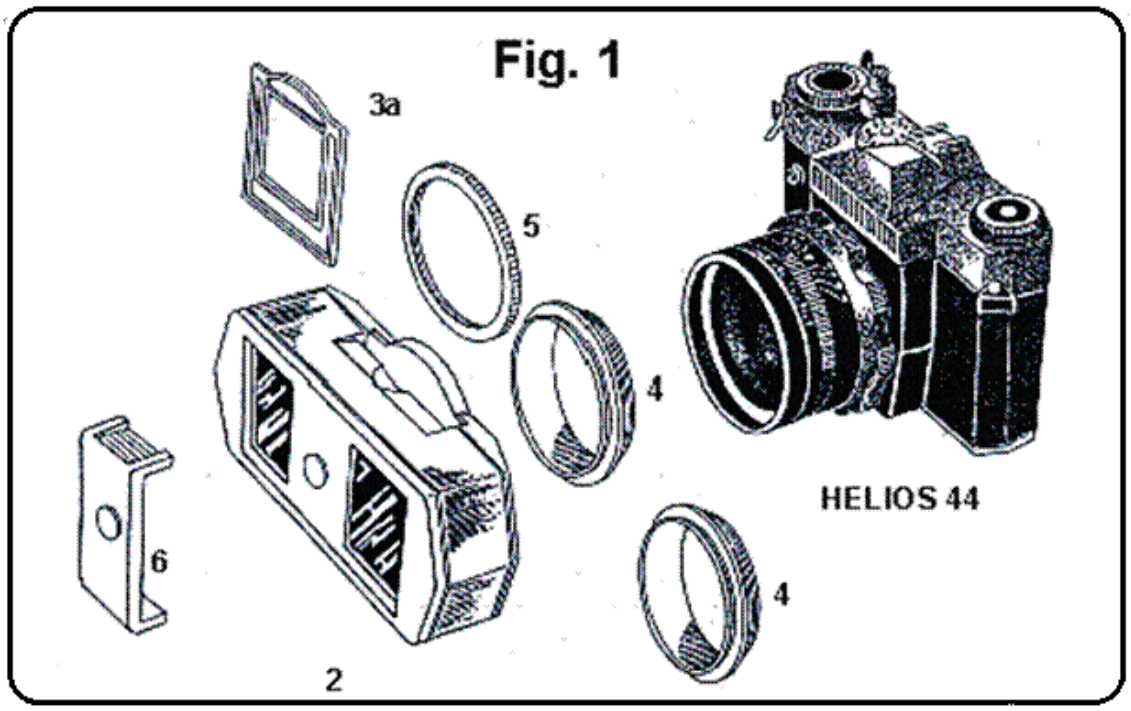
II) Parts and System

First we show a pictorial schematics for knowing and preparing the device for the various uses.



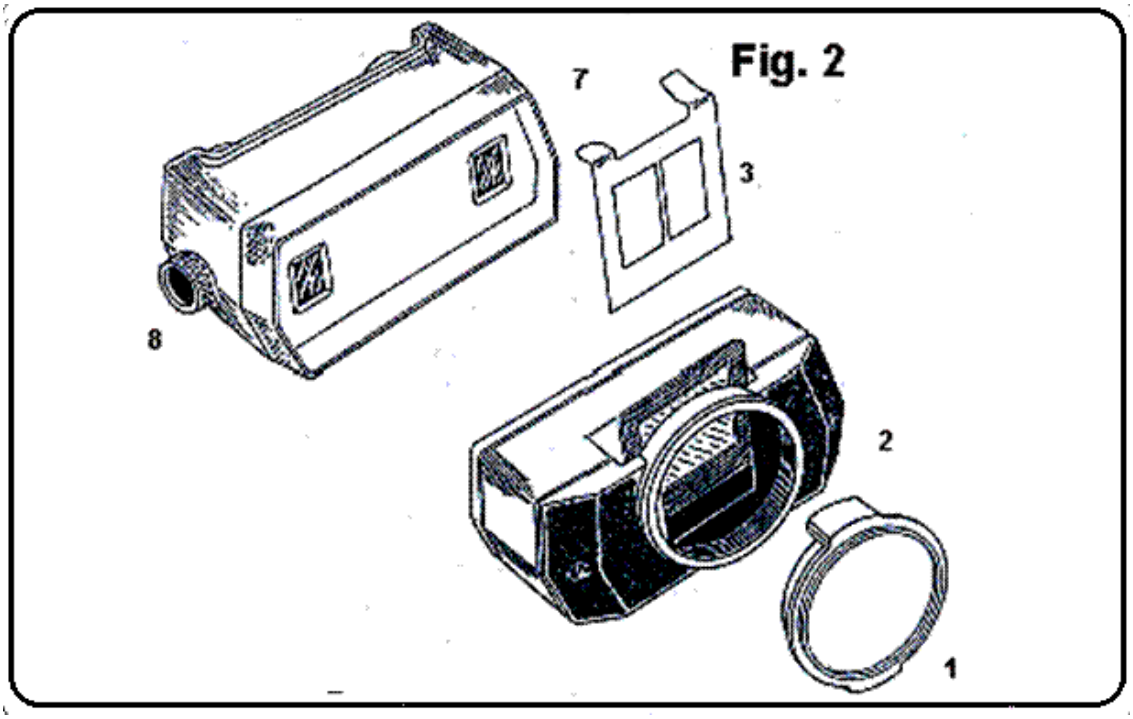
Zenit and SKF-1

The Zenit camera and SKF-1 splitter

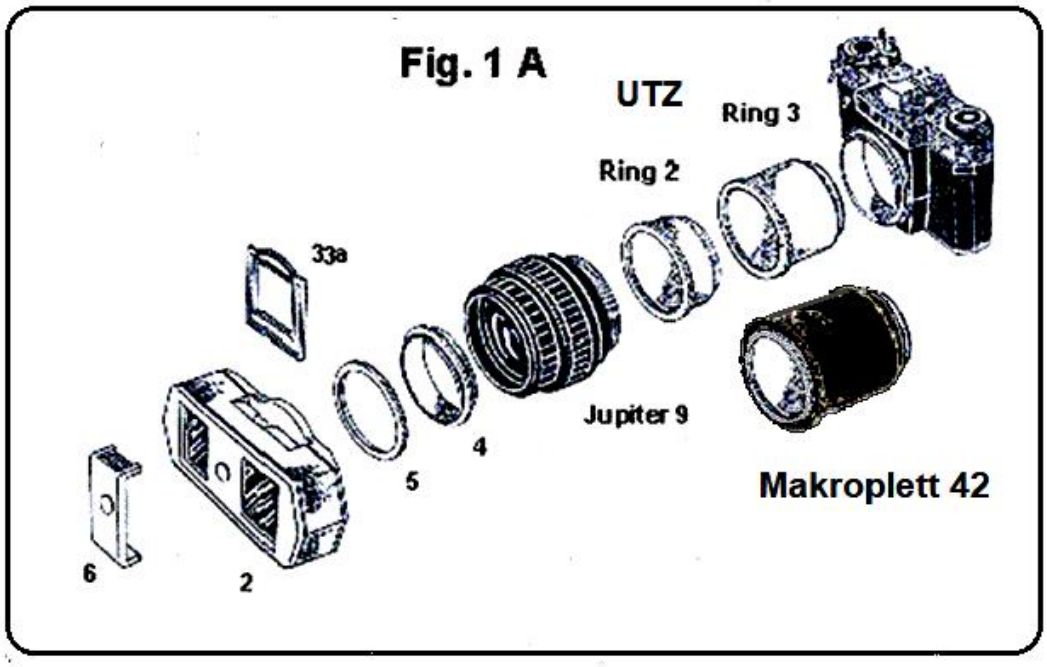


SKF-1 and parts for picture taking

1- Cap, 2- Splitter. 3- Divider, 3a- Frame. 4- 49 and 52mm adapters. 5- Locking ring. 6- Sunshade. Helios -44 lens. Zenit camera, 7- Viewing Box, 8 – Focusing knob.

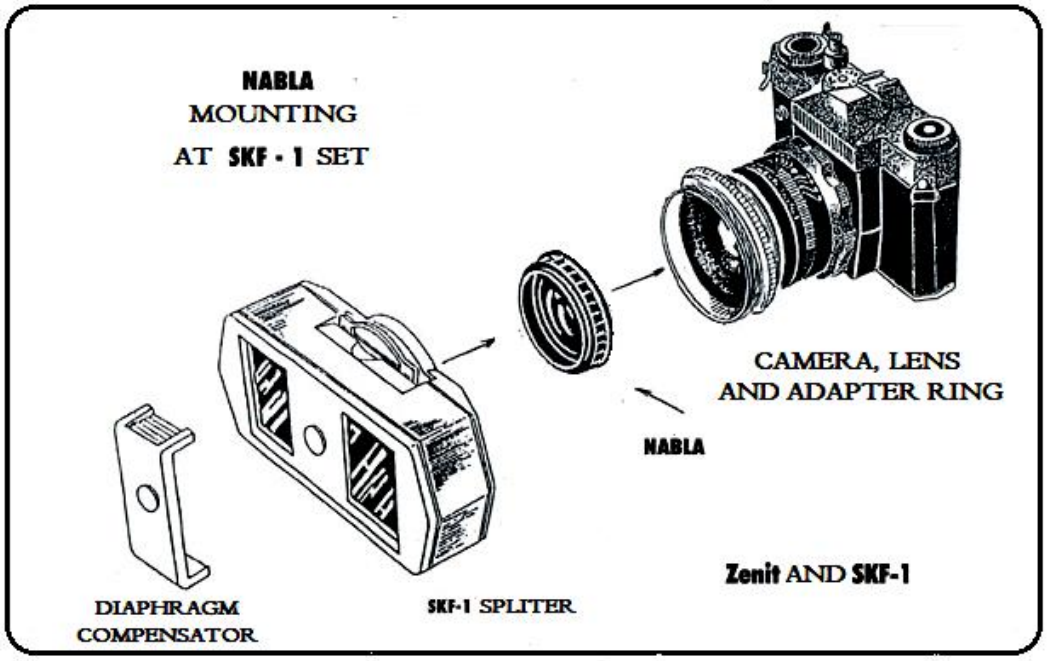


Mounting the device for slide viewing



SKF-1 and parts for Macrophotography

2- Splitter. 3a- Frame. 4- 49 mm adapter. 5- locking ring. 6- sunshade. Júpiter-9 lens. Ring 2 and Ring 3 from UTZ/T extension tubes or Makroplett 42. Zenit camera.



SKF-1 and parts for close-up range

Sunshade. Splitter. 3a- Frame. “Nabla” lens - Mounted in the intermal of the 49 or 52mm adapter. Helios 44 lens. Zenit camera.

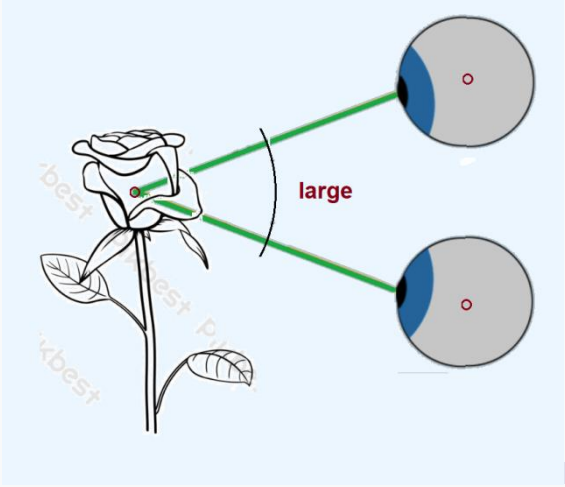
III) Close-up and Macro

A Little bit of teory:

Acording to the distances to be used, high class stereo adapters are made in large or small base. This is because all existing attachments have no automatic convergence, like our eyes which converge when we get closer. Those attachments try to stay in a near parallel viewing in the range they are designed to operate. Human eyes rotate their polar axes converging the image axes to the appreciated object. All similar splitter adapters intended to work with normal camera lens, really DIVERGE when getting closer, and this is due to the optical laws applied in lens movement, during focusing.

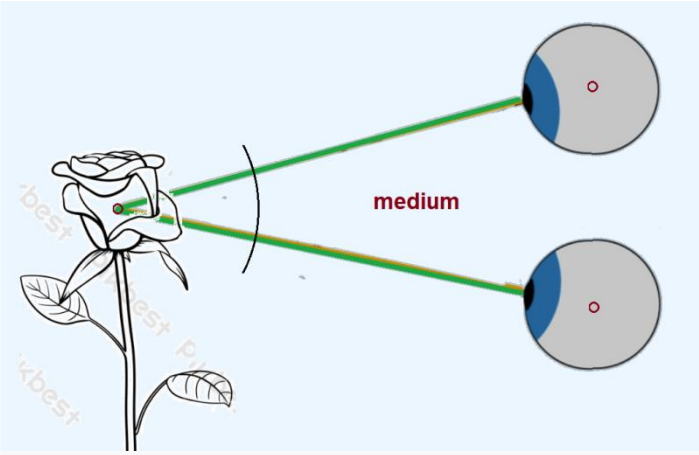
As we have now, a supposed central line axe, (eye's image axes) that diverge when getting clser, we must counteract this phenomenon by another one. This is done by a simple diverging lens (-0.43D) that corrects this natural tendency, There was born the NABLA lens.

NABLA is known as the mathematical vector operator that, applied to a function, produces the gradient and, multiplied scalarly or vectorially by a vector field, produces, respectively, the divergent and the rotational. The rotation takes place at the theoretical virtual nodal points of image formation at the same homotetical human eyes centres, or 65mm. See figures:

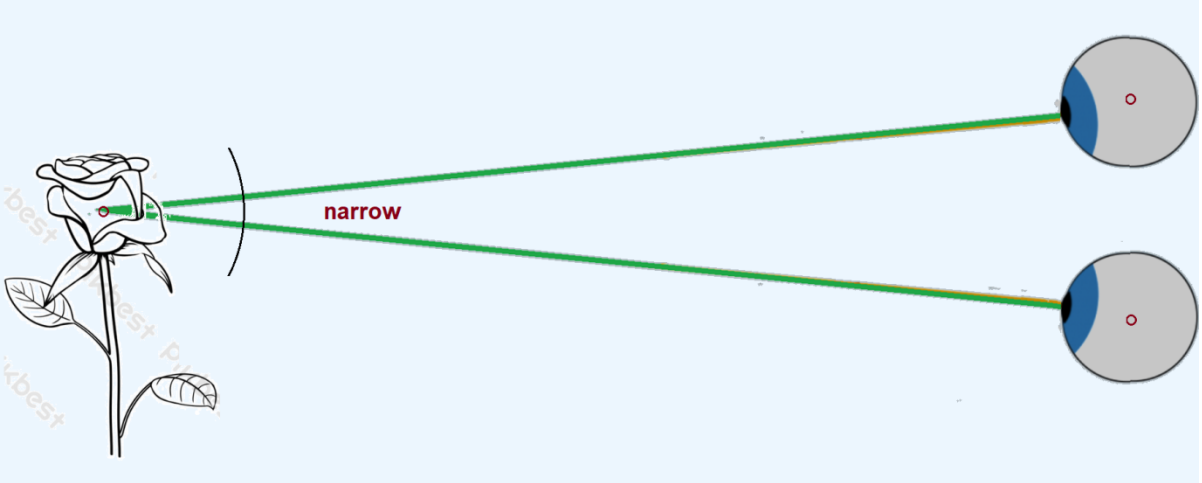


NEAR OBJECT

Nomenclatrure:



DISTANT OBJECT



FAR OBJECT

As we see, in real life the visual axes angles reduces as object goes far, but , -All commercial adapters including the costly ones, operate exactly at the REVERSE way they would do. -

That way, according to the photographers' needs, there are made at least two versions of interpupilary devices on these stereoscopic accessories in order to minimize the project errors of such devices. This complicates the use and increases the investment in such systems.

When you use unit focusing lens, (as are all Helios 44 lenses), the lens increases its focal length when getting closer but its mechanical extension becomes greater yet and the incidence of the new virtual axis create a divergence of the two images. (the center point of them becomes progressively greater as we get closer). When you use front cell focusing lenses the formed objective reduces its focal length when getting at closer distances, the optical block although maintains the same distance from film plane -- Which is worse yet.

Solution: Get closer by simultaneous lens focal length increase and reduction of the needed mechanical extension. This can done by two methods:

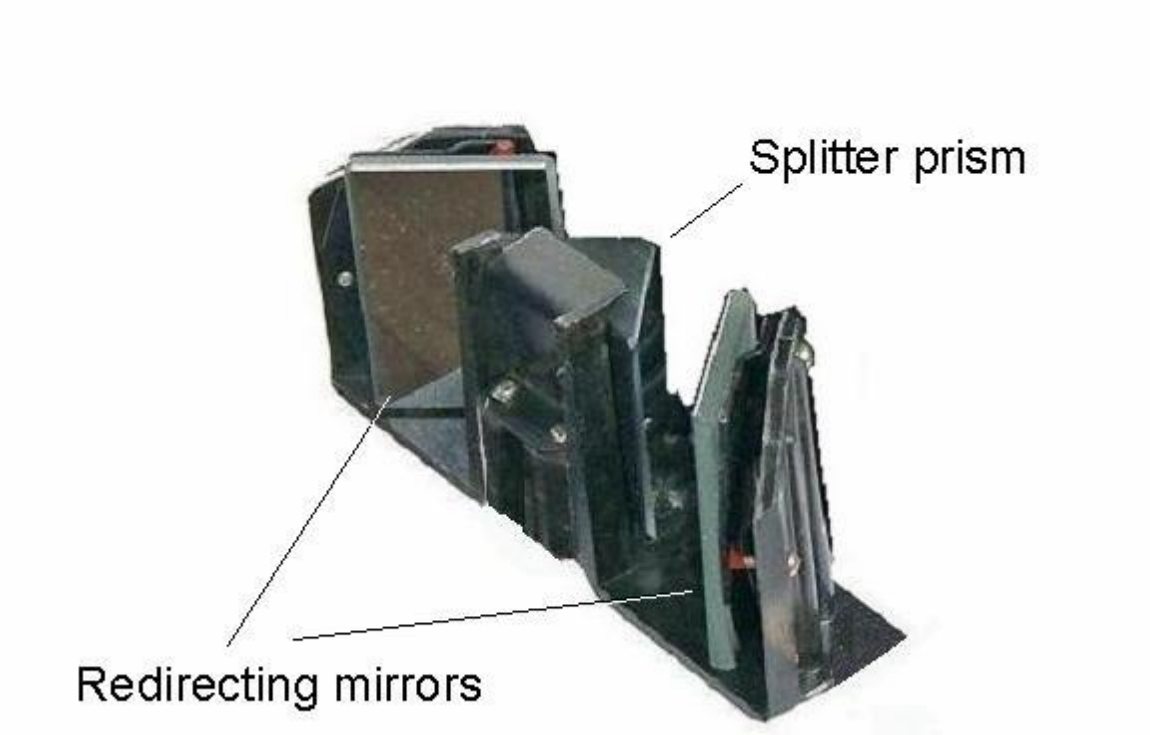
1) Using the "Jupiter 9" 85mm lens and extension tubes when in Macro photography, Or …

2) By the additional placement of "Nabla" lens over the "Helios 44" in close distances - as we will show further.

These solutions give a superior viewing perspective of the image when compared with other type of devices. This is due the that they are nearer the natural man's seeing.

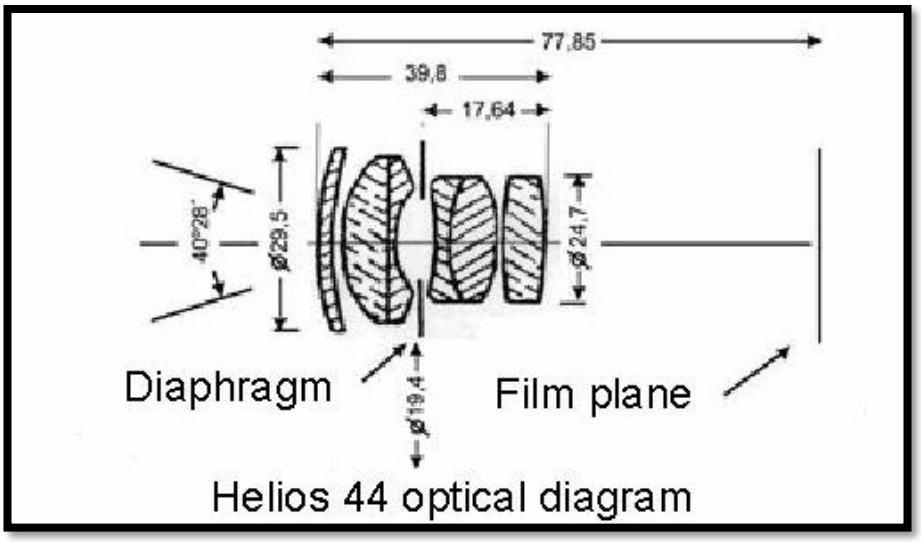
IV) Working principles

Once explained the double eye's viewing system, we will see the accessory working principles through this pictorial instructions. with a little bit of theory- based on the explanations above.



SKF-1 Internals

This device is composed of a mirrored central splitter prism and two redirecting external mirrors.

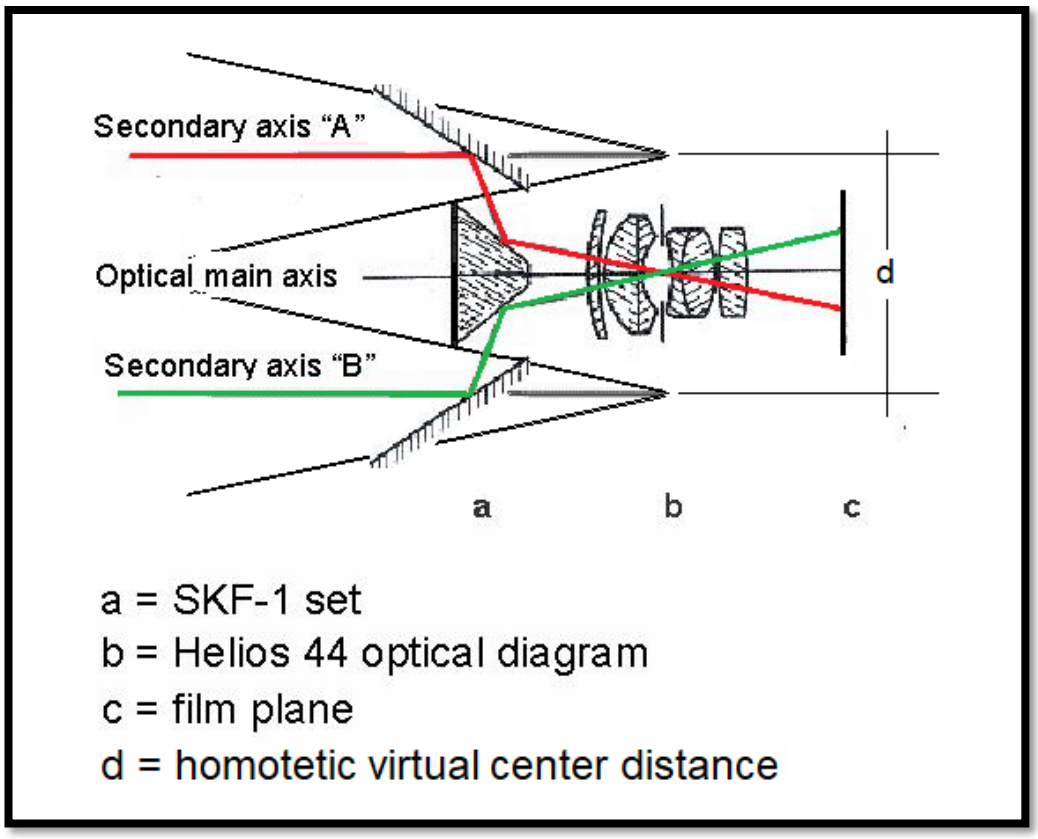


Helios 44 optical diagram and real dimensions.

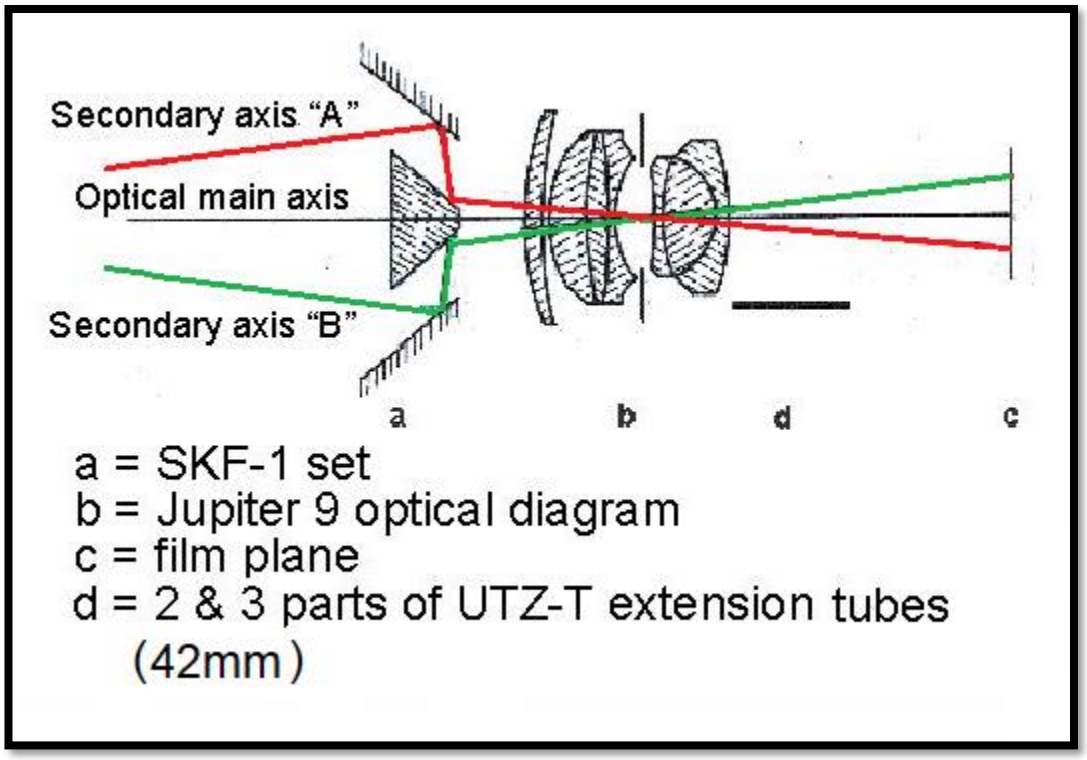
Horizontal Total Coverage Angle at ∞ = 34.8º

That way we must choose the plus and minus 8.7º angles to became our two new virtual central axes of the stereoscopic image.

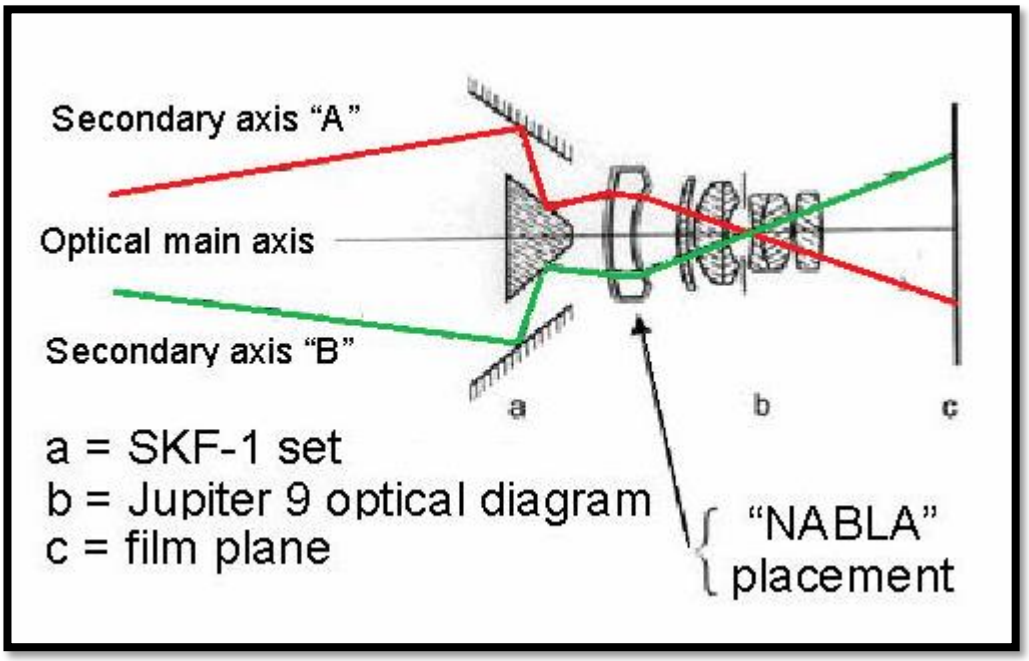
See images.



SKF-1 with Helios 44 set at infinity



SKF-1 with Jupiter 9 set at macro position



SKF-1 with Helios 44 and NABLA lens set at close distances.

People enloyed adapting SKF-1 in a variety of analogical or digital cameras.

SKF-1 com Canon EOS 10D

SKF-1 com Nikon F3

SKF-1 com Canon EOS D60

SKF-1 com Pentax K-1

Em adaptações como nesta Olympus FE 100 o operador ajusta o zoom
para a imagem ideal, visualizando a imagem pelo monitor traseiro,

SKF-1 em conjunto com ARAX 80 (Kiev 88C) e magazine 4.5x6

SKF-1 em conjunto com Fuji GW 690 III

V) Nabla

CONVERGENCE DEVICE FOR SHORT DISTANCE STEREOSCOPIC PICTURE TAKING

Normal lenses acquires higher focal lengths at close distances. And that is true also on steroscopy. The "Nabla" enables one to take pictures in the close range of 0.5 to 1m , taking advantages of the aparent increased focal length of the lens when working stereoscopically. Just when you want to see details. The Nabla device reproduces the man's close distance viewing converging the virtual rays to the center of the near object, at its best. It increases lens focal distance around (2%) .

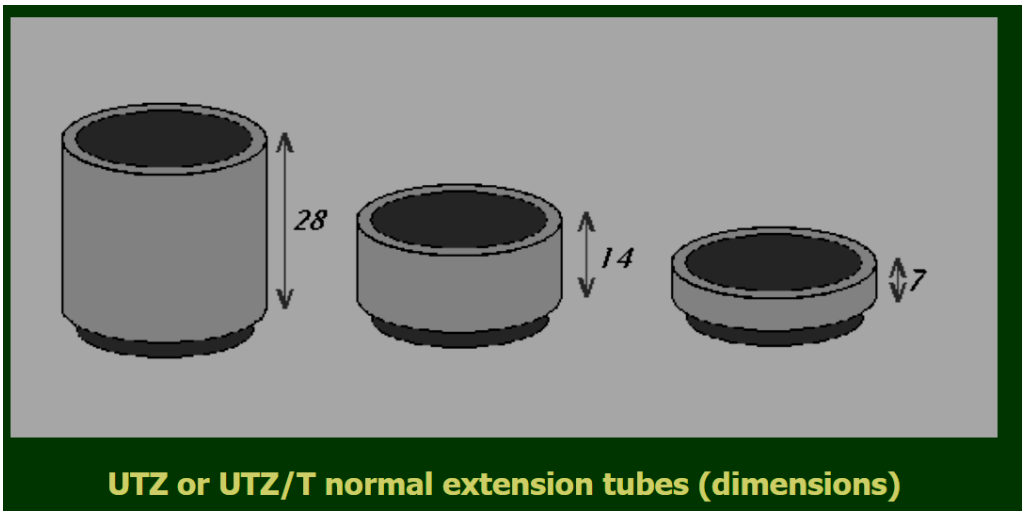
a) NABLA Close-up

Nabla is a close-up lens specially designed to work together the "SKF-1". The lens is placed in the inner part of any of the "SKF-1" coupling tubes delivered with the set. (49mm or 52mm tubes). Different from a common

close-up used in monoscopic photo, this lens is a negative meniscus having –0,43D. Construction properties and optical characteristics of the "SKF-1" enables this further development.

b) Macro Photography

The "SKF-1" can also be used in the macrophotography, together "JUPITER-9" lens and nº 2 & 3 rings (the larger ones) of the "UTZ-T" set. We will obtain a 1:2,4 image scale reduction. See the ray tracing lines in the "HELIOS-44" and "JUPITER-9" & tubes, together "NABLA" lens at the respective diagrams of the previous section.



Macro Rings Extension Tube m-42 for Zenit made in USSR

Compatible lenses to be used in the system

The New "SKF-1" version, also includes the affordable Print Viewer "SSV-2" next described:

VI) SSV-2 Steroscopic Viewer for prints

The SSV-2 display is specially designed for stereoscopic observation of copies on photographic paper in sizes 9x12cm to 10x15cm.

View of The SSV-2 ready finder

OPERATION

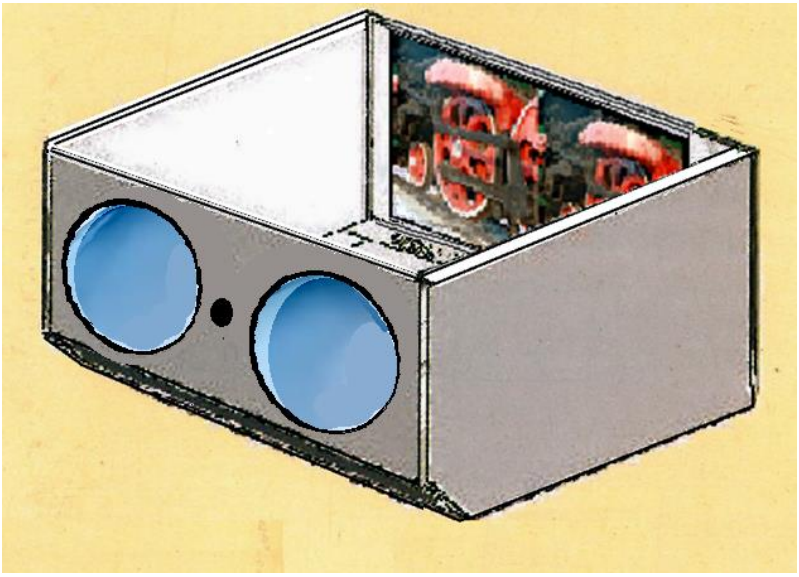


Fig 1 The SSV-2

The photographs taken with the SKF-1 stereoscopic adapter set, both with Helios 44 or Jupiter 9 lens and Zenit câmera, can be viewed easely seen with this viewer. This set is unbeatable in quality and versatility for obtaining the best in stereoscopy.

Using the SSV-2 display is extremely simple. Simply place the photographic copy on the opposite side of the observation lenses (eyepieces) and simply enjoy the best in stereoscopy. The SSV-2 viewfinder has optical glass lenses, which guarantees high-quality image viewing for many, many years. The SSV-2 display accepts individual photographs or photographs placed in small photo albums, the types delivered by laboratories after copy service. Focusing and overlapping of images are obtained by placing the whole unit farther or nearer your eyes up to seeing them confortably.

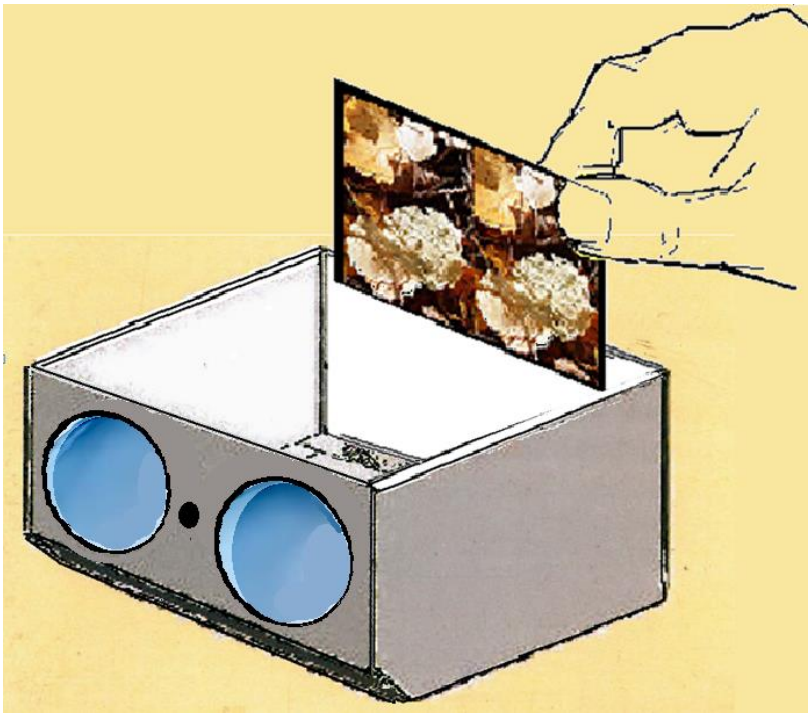


Fig 2 Introducing a Picture In the SSV-2

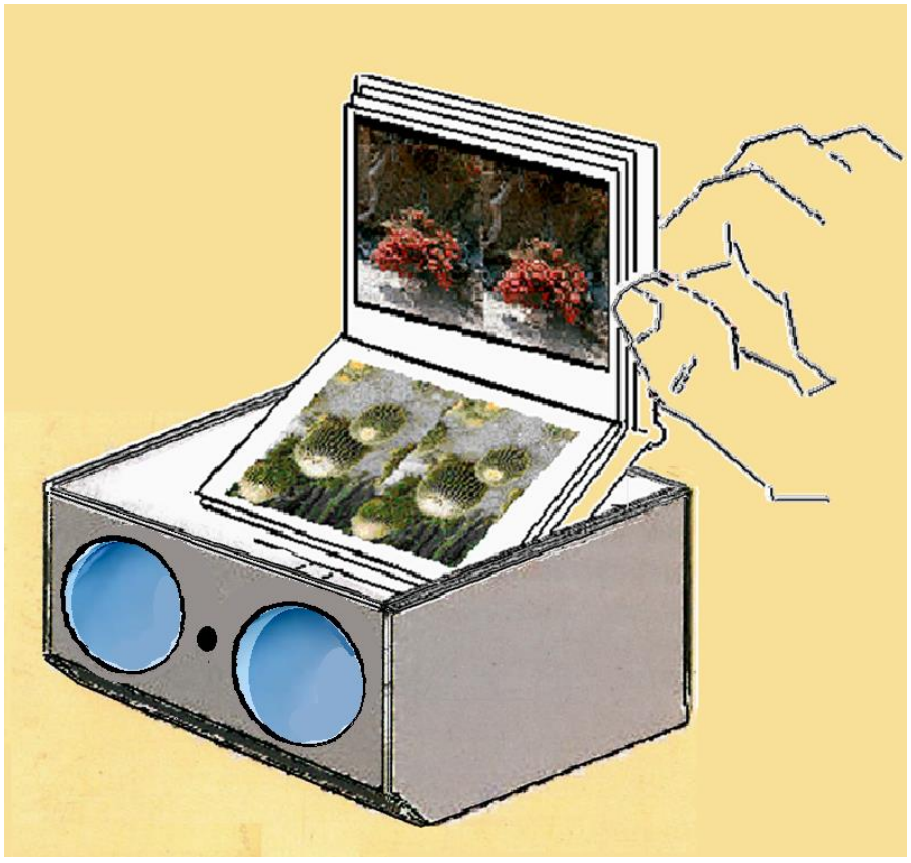
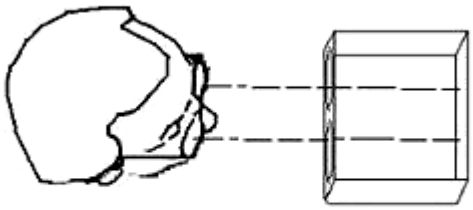
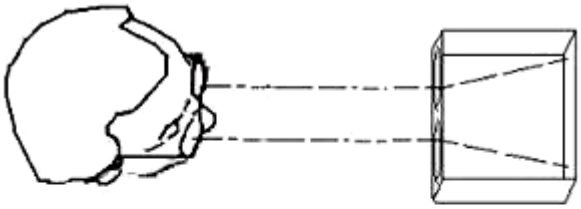
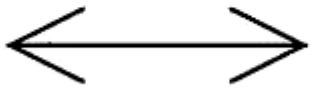


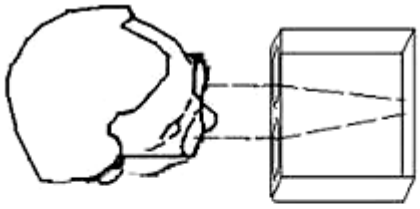
Fig 3 Introducing an album in the SSV-2

The eyepieces of the SSV-2 viewfinder are of large diameter allowing the observer to see normally in the same way the observer sees the objects around them, with or without glasses. The eyepieces are hyperfocused so that they do not require diopter and interpupillary adjustment. Visualization is carried out by placing the display approximately 10cm from the observer's eyes. By moving the SSV-2 viewer further or closer, the observer will find the comfortable point at which he will have a stereoscopic view of the chosen image.









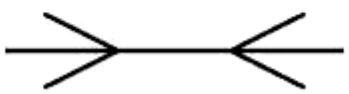


Fig 4 Behavior of the SSV-2 eyepieces according to the observation distance

For its simplicity and convenience, the SSV-2 display is absolutely unique and unbeatable. For viewing quality, we can say that it is truly lifelike. The SKF-1 set with Helios 44 or Jupiter 9 and the NABLA lens together rival systems costing up to 100X their price. The photos obtained do not require any extraordinary treatment. Transparency or copy films are developed, mounted and copied as usual. You will have stereoscopy of objects at a distance or you will be able to explore the world of Macro-Stereophotography Here You will see a new world at your fingertips. Explore the system in depth and discover its full potential... the accessories... You will be amazed. This is the true, The most versátile, advanced and always up-to-date 3-D system.

The recommendation we give for good vision is apparently obvious, - Good illumination. Avoid very bright lighting and angles that Will generate shadows. Always choose bright locations with diffuse lighting, so that it provides homogeneous lighting in the image without bright or dark areas. The SSV-2 has a reflective white surface on its bottom, designed to provide better lighting quality for the observed image. Keep it clean.

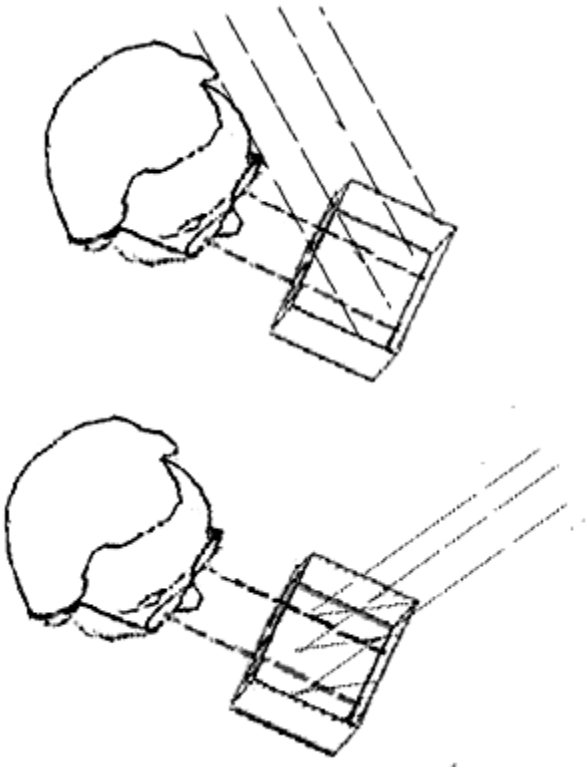


Fig 5 Two favorable image lighting conditions on the SSV-2.

Above Diffuse lighting behind the viewer (no shadows)

Below lighting from the front, using the reflection surface for homogeneity

To feel the potential of stereoscopy and in particular the SKF-1 adapter in conjunction with the Zenit camera, we have selected a series of photos with technical explanations of how to obtain it. You may repeat them yourself, for your own use or for professional purposes.

Stereoscopy has a multitude of applications, scientific, didactic, advertising, and even as the most interesting of hobbies.

Stereoscopy is the highest point of art and photographic technique.

xxxxxx


СКФ-1


VERTEX
SSV-2
Visor Estereoscópico para cópias
VERTEX
SSV-2
Visor Estereoscópico para cópias
Картинки Стереоскоп
Stereo print viewer

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