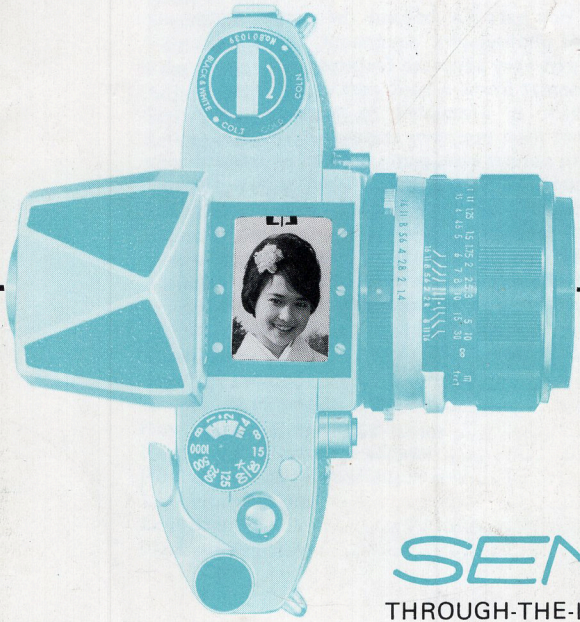
MIRANDA



SENSOMAT

THROUGH-THE-LENS EXPOSURE DETERMINATION

Congratulations. You have just become the owner of one of the finest pieces of photographic equipment, the Miranda Sensomat, a camera with very advanced features.

The Miranda Sensomat forms a basic part of an all-round camera system, which is unequaled in versatility. The Miranda Sensomat has been precision engineered and manufactured to give, with normal care, many years of enjoyment within the wide scope of photography, whether just for snapshots or for advanced technical photography. To take full advantage of all features of this camera, we earnestly suggest you study this manual carefully before loading your camera with the first film. Should any questions pertaining to the operation of your Miranda Sensomat arise, please write to Consumer Service c/o your local dealer or directly to Miranda Camera Co., Ltd., C.P.O. Box 2072 Tokyo

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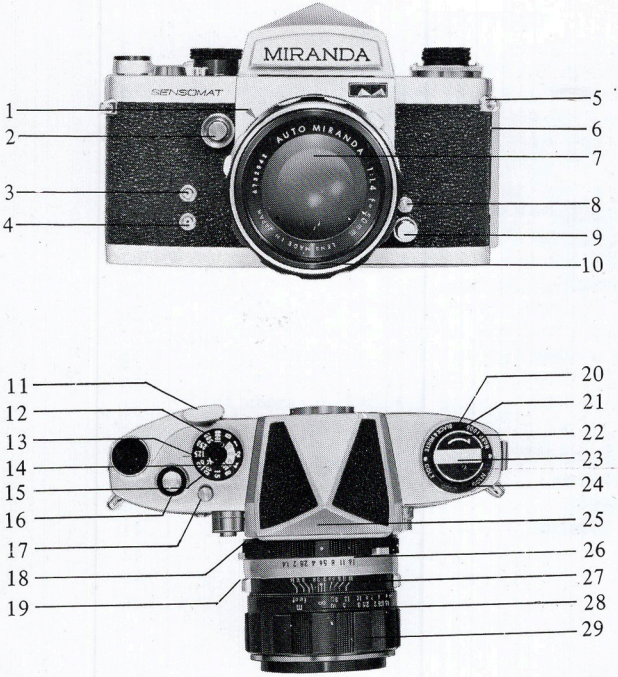
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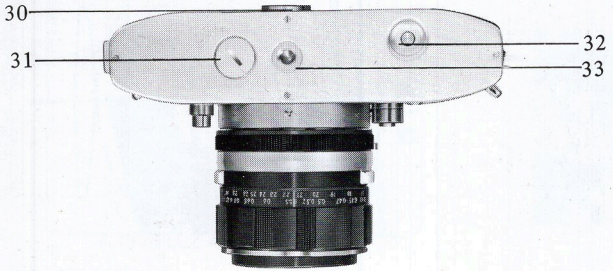

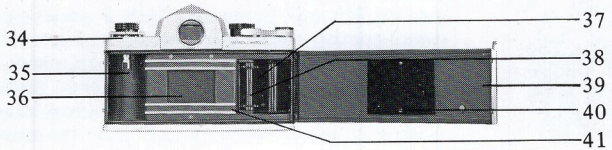

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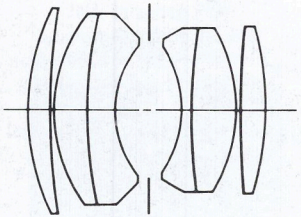
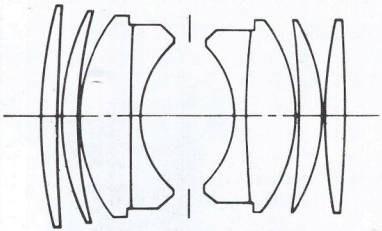


AUTO miranda 50mm f1.8

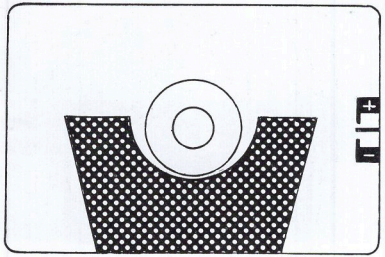
The Superb Auto-Miranda Lens, 50mm f1.8

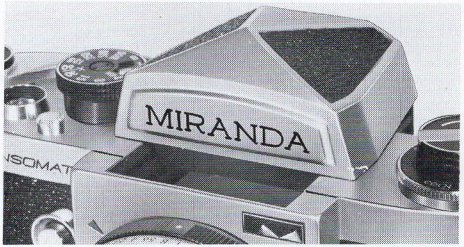
The Miranda Sensomat is equiped with a fully automatic lens, manufactured in accordance with the very rigid Miranda Standards. The lens is composed of 6 elements in 4 groups, diaphragm calibrations from 1.8 - 16. The minimum focusing distance is 43 cm or 17 inches. Angle of view is 45°.



AUTO miranda 50mm f1.4

A new high speed 50 mm f1.4 standard Auto Miranda lens has been developed for use on the Miranda Sensomat. It is a gauss type lens, consisting of 8 elements in 6 groups, diaphragm calibrations from 1.4- 16. minimum focusing distance is 43 cm or 17 inches. Angle of view is 45°. It is advisable to use a lens hood with this lens to avoid reflection on the front element.



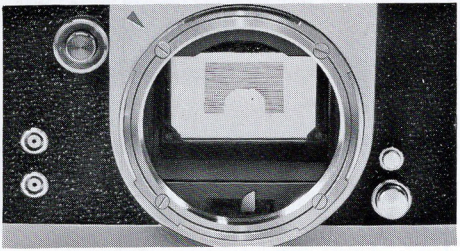


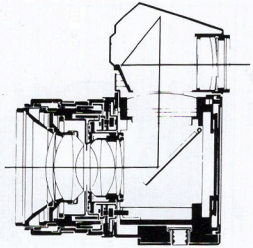
Partial Average Light Measuring

The CdS meter of the Miranda Sensomat measures a fair average of low lights while cutting out the influence of the sky brightness. As the measuring, area does not cover the entire field of view, it gives an accurate average of the low lit subjects, an additional prevention against over-or under exposure. The above diagram indicates the light-measuring area of the exposure meter in the viewfinder.

Interchangeable Finder System

For a Single Less Reflex system to manifest its fullest capacity, it is absolutely a necessity that its viewfinder be interchangeable, with other more convenient types for specific purposes. If a viewfinder is not interchangeable, it puts immediately limitations to such camera. The Miranda Sensomat has viewfinders, which can be interchanged, eyelevel-waistlevel-and magnification types being among the types available.





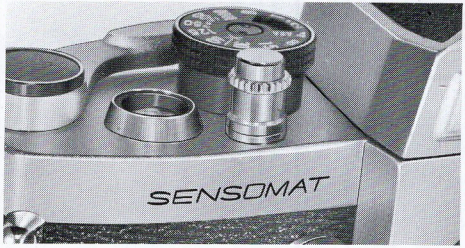
Exclusive Dual-Purpose Lensmount

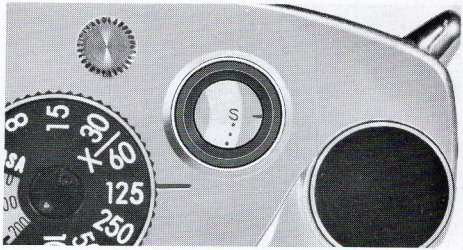
The Miranda Sensomat has, as a far advanced feature, a lensmount which accepts bayonet-and screw mount lenses and accessories.

As the Miranda mount has moreover, a wide diameter and an extremely short flange back, (distance between lens-attaching plane and film surface) it permits the use of most lenses, made for other SLR cameras, using the Miranda adapters.

Instant Return Mirror

The instant action of the swing-up mirror almost completely eliminates viewfinder blackout. Only during the split-second of shutter action, the mirror moves upwards to allow light rays to enter the camera for exposure of the film. Instantly, after the shutter closes, the mirror returns to its original position.





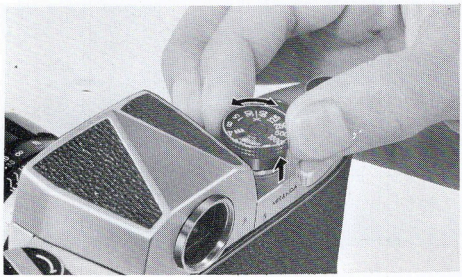
Front-and Top Shutter Release

One of the exclusive features of the Miranda Sensomat is its dual release system which can be activated either from top or front of the camera. It is a matter of personal preference of the photographer which of the two to use. The top-release button can be removed and will provide a socket for use of cable release or self-timer.

Auto-Resetting Film Counter

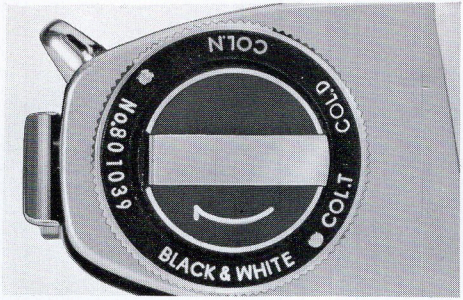
The film counter, which indicates the number of pictures taken, will automatically set itself to the "S" (start) mark, when the camera is opened for loading the film. From there onwards, the film counter will move frame by frame. An added feature of the Miranda Sensomat is the optically enlarged image in the film counter window, for a clear and brilliant view.

- Always load or unload the film in the shade. If no shade is available, do it in the shadow of your own body.
- Whenever possible, avoid loading and unloading in a dusty place or at the seaside where strong salty wind may damage the camera.
- When loading or unloading, take care not to touch the shutter curtains.



The 35mm. film is advanced through rotation of the sprocket and not by direct winding of the spool; therefore, the sprocket must engage the film's perforation perfectly. To check whether the film is advancing properly, the rewind knob is first turned slightly to take up any play in the film; then if the advance lever is wound the rewind knob should rotate. But if the rewind knob fails to turn, it indicates that the film is not properly loaded and requires reloading.

As soon as you have loaded the camera, be sure to adjust the ASA speed indicator (ASA 25–1600) on the shutter speed dial to the ASA speed of the film you have loaded. Lift the shutter speed dial and rotate it until the required ASA speed is opposite the indicator mark. Setting the ASA speed is essential to exposure determination since the ASA speed indicator is cross-coupled to the meter needle in the viewfinder, along with the speed dial. If the ASA speed is not correctly set, the built-in CdS exposure meter will not indicate correct exposure settings.



Film Memory Dial

At the base of the rewind knob is a memory dial, as a reminder of the type of film loaded in the camera. Engravings are:

Col. N. for color-negative film

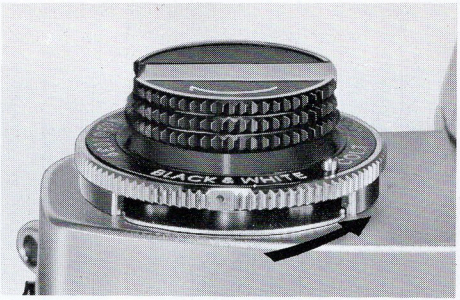
Col. D. for color daylight reversal film

Col. T. for Tungsten (artificial light) reversal film.

Black & White

On the knurled edge of this dial is a red mark, to which the appropriate film type is to be set.

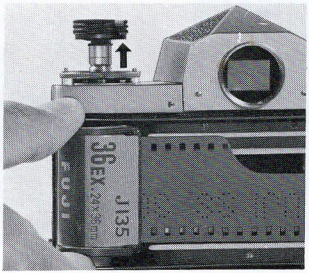
This serves only as a utility and has no influence on the camera operation.



The film memory dial serves also as a release lock for the interchangeable viewfinder system. Turning the dial to the right will release the viewfinder lock.

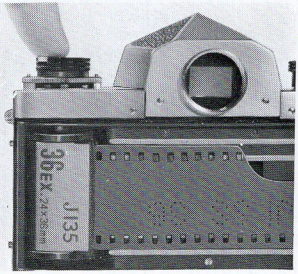
1. Open the back cover

Press lock button in the center of right edge of back cover and pull up clip lever at top at the same time, which immediately opens the back cover. When back cover is opened, counter automatically returns to "S" (start) mark.



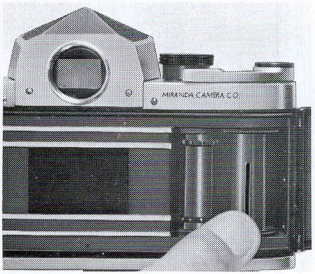
2. Insert cartridge into film chamber

Pull up rewind knob and insert cartridge, taking care that the projecting end of cartridge faces down.



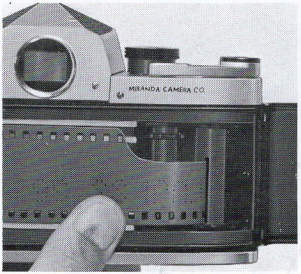
3. Push back rewind knob to original position

If the knob does not go all the way down turn it a little to the left or right.



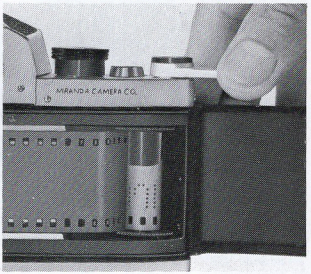
4. Position take-up spool slit

Turn the bottom knurled flange of take-up spool with a finger until slit appears.



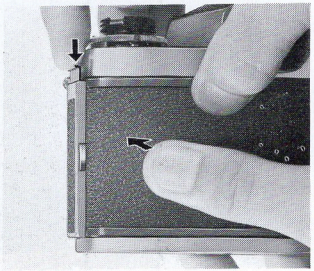
5. Insert tip of film into spool's film slit

Insert leader of film, making sure that one perforation is caught by the claw at the entrance of the film slit. Also see that the sprocket engages the film perforation.



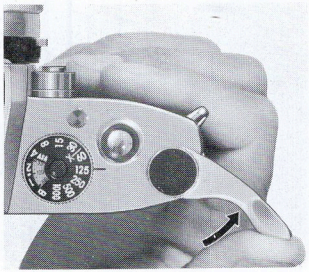
6. Turn film advance lever until perforations on both sides of film are engaged by the sprocket

If one winding fails to make sprocket catch the perforations on both sides of the film, press shutter button and wind again.



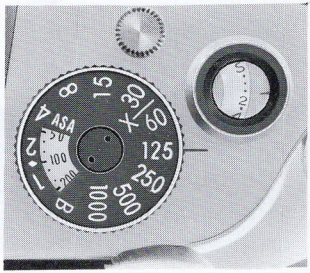
7. If film is advancing properly, close back cover

Upon closing, push down clip lever, which will automatically engage the lock button and the back cover becomes securely locked.



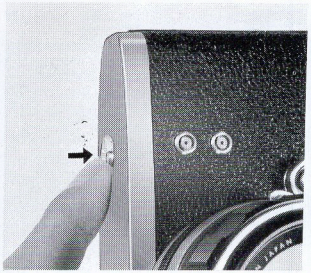
8. Turn film advance lever several times to wind up the fogged portion of film

Shoot several blanks and continue winding the film until film counter indicates "I". Then, slightly turn rewind knob in the direction of arrow to take up any slack.



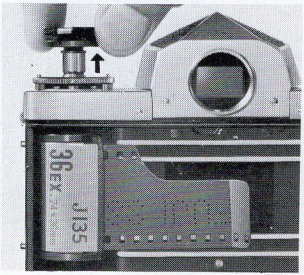
9. When film counter indicates "I" it means film loading is completed

From here, film counter will move frame by frame for each shot to indicate the number of pictures which have been taken.

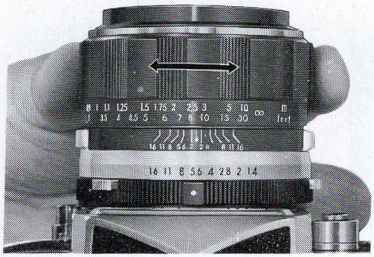


1. First, the film rewind release button on the base of the camera body is pushed in until a small click is heard. This button need not be held during rewinding. The film is now free from the sprocket which has been advancing it, and is ready for rewinding.

2. Flip the rewind crank on the rewind knob and wind in the direction of the arrow. At the end of the roll you will feel the resistance increase and then suddenly cease. Turn the rewind crank several more times to make certain the film has been entirely rewound.

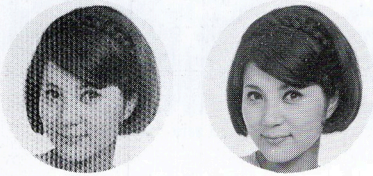


3. Open the back cover by depressing the lock button and pulling up the cover clip at the same time. Pull up the rewind knob and take out the film cartridge. Make certain that no film chips or dust particles are left in the camera.



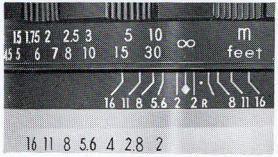
While looking through the viewfinder, if the focusing ring is turned either to the right or left it will, make the blurred image of the subject become clear and sharply focused.

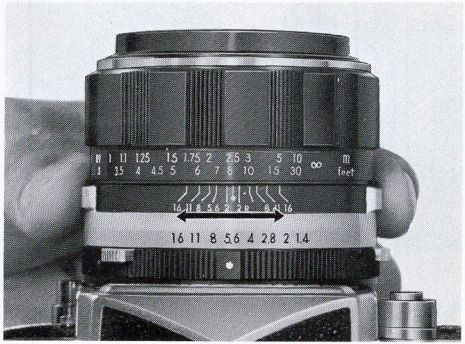
- The focusing is very easy as the viewfinder shows in its center a multi-microprism (collection of minute prisms). This gives jagged edges to the image as soon as it is out of focus even in the slightest degree. Light is collected to the focusing screen by means of a special system of fine-grained Fresnel lens and condenser, which permits bright corner-to-corner viewing.



Focusing for Infra-Red Shots

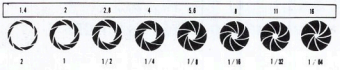
For infra-red shooting, first set to accurate focus in the normal way, then shift that distance reading to match the red "R" mark on the aperture ring of the lens.





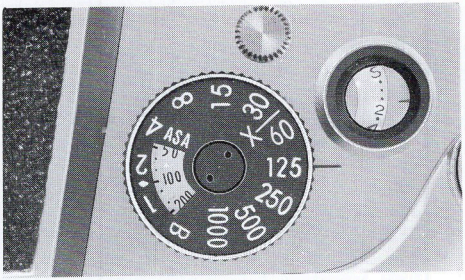
Aperture "f" stop

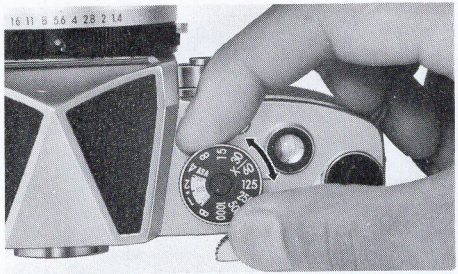
Light Volume Ratio



The lens aperture ring is engraved with f-stop numbers from 1.4 or 1.8 to 16, each equipped with a click-stop. To set to any aperture, hold the two finger grips projecting from the aperture ring and turn the ring until the desired f-stop comes against a red dot close to the lens mount.

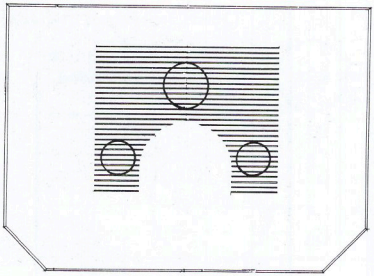
- Aperture adjustment can be used to adjust the incoming light volume or to adjust the depth of field (refer page 32).
- The larger the aperture number, the less light passes through the lens to reach the film. This relationship is such that whenever it is changed to the next bigger f-stop number, it reduces the volume of incoming light by one-half, so if the aperture is closed down in succession from one bigger f number to another, the volume of incoming light would decrease at the rate of ½, ¼, ⅛ and 1/16.
- Setting at a point midway between aperture readings would give intermediate f-values.
- Aperture adjustment can be done at any time before or after film advance.



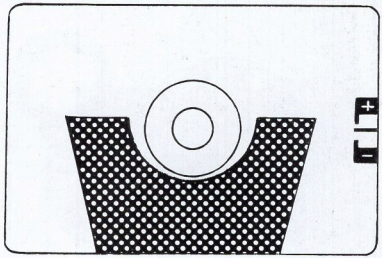


To set the shutter speed, the shutter speed dial is turned to the left or right until the desired speed number lines up with the shutter speed indicator. The dial rotates in either direction.

- The marks "B, 1, 2....1000" indicate "Bulb, 1 sec., ½ sec....1/1000 sec." shutter speed positions.
- "B" (bulb) is for long exposures with the shutter remaining open as long as the button is depressed.
- The red "X" indicates the shutter speed for synchronization with electronic flash.
- Shutter speed can be freely changed before or after winding.
- When turning the shutter speed dial, see that it falls correctly into click-stop position. If set to intermediate positions, the shutter will not operate at an accurate speed.

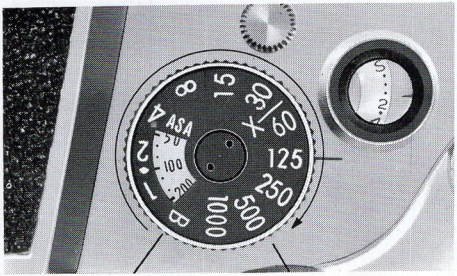


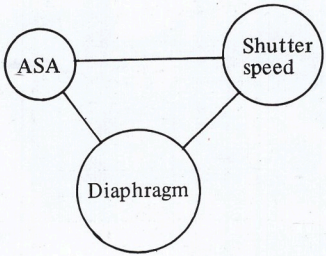
Mirror area



View finder area

The exposure meter measures the brightness of the subject in a unique way. The single CdS cell, behind the mirror, in actual fact is composed of three separate supersensitive light measuring elements, positioned in the upper portion and left and right side of the mirror. This completely eliminates overexposure, that could be caused by the bright light of the sky.





The exposure meter of the Miranda Sensomat is provided with a warning system for over–or underexposure, which could be caused by either too bright or too dim light conditions. This warning system is incorporated in the shutter speed/ASA-speed dial, which will block when attempting usage outside this safety-zone. Extension of this range can be obtained by changing the ASA-speed dial, but is not advisable when color film is loaded in the camera.

The table on the next page shows the exact range within which good results can be obtained.

EXPOSURE RANGE CHART

Shutter Speed / ASA	B	1	1/2	1/4	1/8	1/15	1/30	1/60	1/125	1/250	1/500	1/1000
25												
32												
40												
50												
64												
80												
100												
125												
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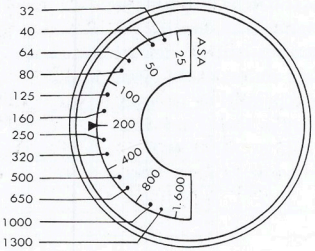
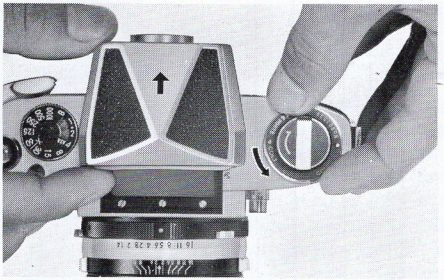


The CdS meter of the MIRANDA Sensomat is coupled to the film speed dial. After loading the film, therefore, see that the film speed dial is set properly. Failure to adjust this dial according to the speed rating of the film loaded in the camera will prevent the meter from giving correct exposure reading.

- Lift and turn the knurled outer ring of the shutter dial in either direction until the desired figure comes directly opposite the indicator.
- It is unnecessary to re-adjust the film speed dial unless film of a different speed rating is loaded in the camera.
- The same film speed setting is employed when using filters or in close-ups and photo-micrography.
- Intermediate settings on the dial denote film speeds given in the illustration.



The viewfinder on the MIRANDA Sensomat is interchangeable and can be changed with the most convenient type according to the purpose of the shot so as to make best use of the camera's capacity. The viewfinders available are the pentaprism type and waist-level finders Types VF-1, VF-3 and VF-4.

- For ordinary shooting it is convenient to use the pentaprism viewfinder which shows the image right side up and right way round.

- For low-angle or high position shooting and for candid shots, the waist-level finder VF1 becomes useful; however, special care should be taken to avoid light entering the camera through the focusing screen which may cause incorrect exposure.

- For close-up, copying and photomicrographic work, use critical focusers VF-3 or 4. The VF-3 viewfinder when collapsed turns into a 15 times magnifier for critical focusing at the center of the focusing screen. When opened it becomes a 5 times magnifier for inspecting the entire picture area.
  The viewfinders can be removed for interchanging by sliding it toward the rear, while turning the viewfinder release dial to the right. To attach, match the viewfinder's base to the camera's groove and slide it forward until it clicks into position.

Exposure system

A very ingenious system in the exposure meter, which accurately measures the light, that enters the camera through the lens, has been incorporated in the Miranda Sensomat.

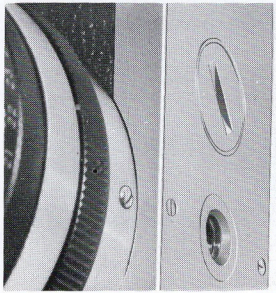
The sensing area of the exposure meter is invisibly placed behind the mirror in alignment with the optical axis, always in position for exposure reading, except for the split-second mirror action when taking a picture. The exposure meter system is cross-coupled and responds to either shutter speed or lens diaphragm adjustments. Either shutter speed or lens diaphragm may be preselected with the second adjustment used to set the exposure meter.

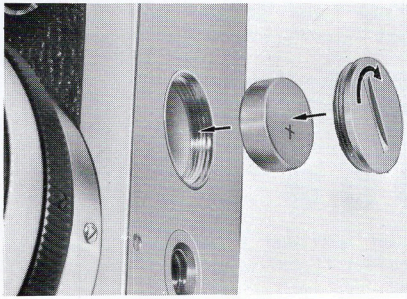
An important fact is the positioning of the CdS cell directly behind the lens, as this obviously gives the most accurate "direct" light value and is less sensitive to extraneous light falling in through the eyepiece (contrary to cameras with CdS cells placed inside the finder).

The exposure meter of the Miranda Sensomat has been so designed as to cover the widest possible range of exposures, from EV 1.6 to EV 18 (with 100 ASA film and 50mm. f1.8 lens,) filmspeeds from ASA 25 to ASA 1600. Correct exposure is easily obtained and visible in the viewfinder, an added feature for last minute adjustments.

The Miranda Sensomat through the lens exposure system is of the closed-down aperture and partial average type, very convenient for a wide range of applications, and especially convenient in macro-micro and close-up photography, and when using lenses and accessories of an unknown f-stop number.

Mercury Battery

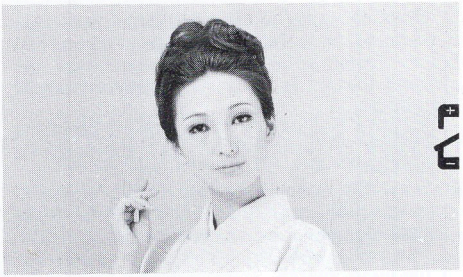




The CdS meter of the MIRANDA Sensomat is powered by a mercury battery. Therefore, before using your new Sensomat load the mercury battery in the battery compartment of the camera.

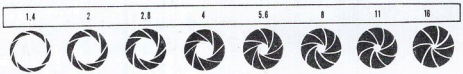
1. Remove the battery compartment lid of the camera by turning it in an anti-clockwise motion.
2. Place the mercury battery in the compartment, seeing to it that the (+) side faces the camera bottom and replace the lid.
3. The meter will be activated by pushing the meter switch.

- The meter will not function if the polarity of the mercury battery is reversed.
- Under ordinary circumstances, the mercury battery will provide sufficient power to work the meter over a duration of about two years. The battery power declines sharply when it nears the end of its life-span, resulting in sluggish movement of the meter needle seen through the finder. In this case, replacement of the mercury battery is necessary.
- When replacing the mercury battery, use Mallory PX 675 or equivalent.
- Remove the mercury battery from its compartment when the camera is to be left unused over any great length of time.

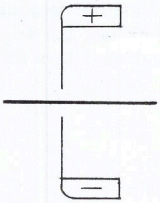


The Miranda Sensomat exposure meter system operates on the "closed down" principle of exposure determination. An exposure reading is made by closing the lens diaphragm down until the meter needle, visible in the viewfinder, indicates that the correct amount of light is entering the lens.

The film must be advanced before meter reading is made in order to lock the diaphragm in the closed-down position.



Failure to wind the film makes the meter activating button inoperative as the switch is directly connected to the winding mechanism.



These lenses are provided with the internal diaphragm coupling. After having set the correct ASA film speed and selected a diaphragm opening, press the exposure meter activating button. In the viewfinder the needle will move either in + (over) or – (under) direction. Adjustment can now be made by turning either shutter speed dial or diaphragm ring till the needle reaches the center position.

If for any reason, such as refocusing, the diaphragm has to be opened before picture is taken, the small release button, above the exposure meter activating button is to be depressed.

To determine whether to use the shutter speeds or diaphragm control greatly depends on the depth of field required. Closing the lens down increases the depth of field, while opening reduces it.

If speed is of prime importance such as sports or stage photography, then it is advisable to preselect the required shutter speed and adjust the exposure by the diaphragm control. (for tables see page 32)

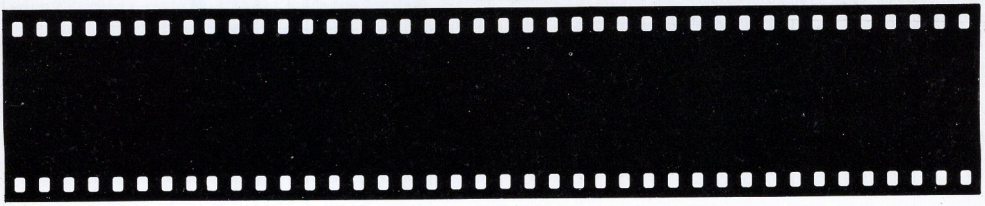
The same applies to other automatic lenses which couple to the automatic diaphragm mechanism of the Miranda Sensomat, and do not belong to the Auto Miranda Series.

CAUTION When the camera is not to be used for some time make sure that the exposure meter is switched off by pressing the release button.

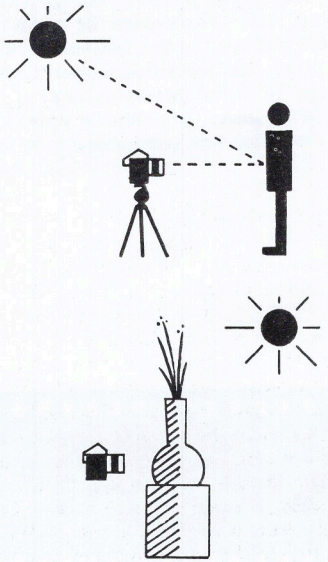
When using preset lenses such as the "Soligor," T-2 system the operation is very easy and will give equally well exposed pictures as with the Auto Miranda lenses. First a lens opening has to be selected and the lens closed down. Turn the shutter speed dial until the needle is in the center position. If proper exposure cannot be obtained, change the lens opening to a different setting and again turn the shutter speed dial.

Characteristics of films vary and it is therefore advisable to run tests on a number of different types, select the film that best suits your particular needs, and stay with it. Of prime importance is of course the application. As a general rule, the slower the emulsion is, the less graininess, resulting in maximum size enlargement possibilities. However, this film requires a longer exposure than film with a fast emulsion.

Where poor lighting conditions prevail, a high speed film is advisable, while in very bright light, the slower film will give better results.



The CdS exposure meter of Miranda Sensomat is of the reflected-light type, which calculates the exposure by measuring the brightness of the subject.
The acceptance area covers the lower section of the subject to be photographed and measures the light by a partial-average system. Depending on the subject, the following methods can also be used.

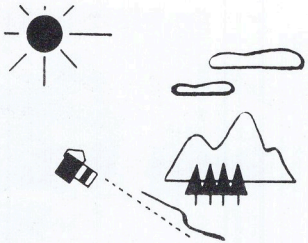


1. Measuring the Brightness of Human Subjects

If the subject and background have the same brightness, measuring from the shooting position gives satisfactory results. But if the background is much brighter, such as a snow scene, open sea or open sky, come as close to the subject as possible and measure the brightness of the face. Be careful not to let the camera create a shadow on the measuring area.

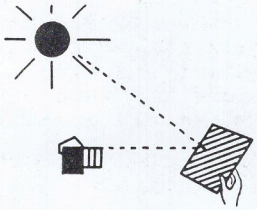
2. Measuring Backlit Subjects

In against-the-light shooting, if direct light enters the camera lens the meter will read too high and cause under-exposure of the subject especially with wide angle lenses. In such a case, come close to the subject for measuring and also take care that no direct light enters the camera. If impossible to avoid this light entry, measure the exposure in normal light and give 2 to 4 times longer exposure. This method of measuring under against-the-light conditions can be used for both human subjects and landscapes.



3. Measuring the Brightness of Landscapes

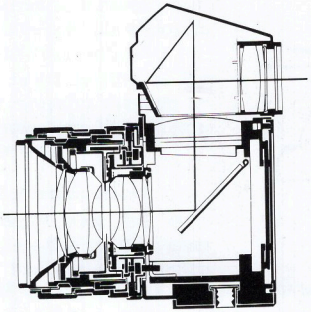
For this, the camera lens should be aimed at a point midway between the horizon and one's own feet. If the horizon is not clear, the lens should be aimed at the ground about 150 feet (50 meters) in front. Because if the bright light from the sky directly enters the camera the measurement could cause under-exposure to the landscape. However, there are exceptions, such as when the sky forms an important part of the picture, in which case the camera must be held level for measuring, and if it is a wide landscape, the exposure well have to be reduced to one-half, or if the contrast is too strong, it may be necessary to increase by two times.



4. Special Method of Measuring

If it is inconvenient to bring the meter close to the subject's face or in snapshots and animal shots, it is possible to get fairly accurate measurements by setting up a standard reflector of 18% reflection (Gray card) ratio in the same condition as the subject and measuring the reflected light. In this case, the exposure measurement would be the same as that of incident light.

When the subject is very dark and the meter needle fails to move, measure the brightness of the light source directly and give a 10 to 20 times increased exposure to get well-exposed pictures.



To avoid blackouts in the finder, it is of great importance that the mirror returns instantly to its viewing position after a picture has been taken. The Miranda Sensomat is equipped with such a mirror, which at the same time houses the CdS-sensing device of the exposure meter. At any time, before or after the exposure, the mirror is in its viewing position.

- The coupled action between the automatic diaphragm and the mirror too is very smooth, so that when the shutter button is pressed:
  (1) The diaphragm closes down to the preset aperture,
  (2) Almost simultaneously the mirror swings up,
  (3) Followed by opening of the shutter curtains and film exposure,
  (4) Then, the shutter closes, mirror returns to normal position and the lens diaphragm re-opens fully.

  All the above actions are instantaneous.

Waist-level finder VF1

This is an ordinary type of reflex viewfinder for use in low and high angle shooting.

It is also convenient when using the camera sideways for candid shots.

- It has a focusing hood, which opens up at one touch of a button, and a collapsible magnifier which increases the size of the screen image and helps obtaining accurate focus.
- This viewfinder shows the image reversed left to right, but it gives bright viewing.

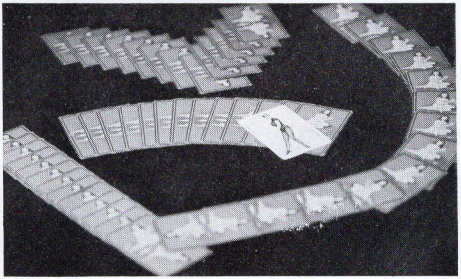
Critical focuser VF3

This is a highly efficient reflex viewfinder which is unique with Miranda and is suitable for precision copying, close-ups, and microscopic shots.

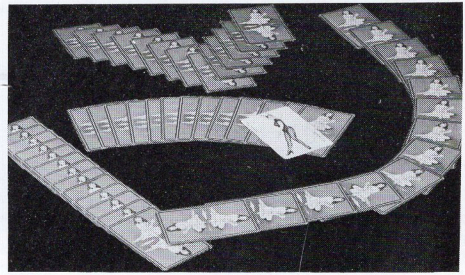
- By erecting the center part of the viewfinder, the entire picture area can be viewed through its 5X magnifier.
- When folded down, the center of the focusing screen can be viewed at 15X magnification for accurate focusing.
- This viewfinder is tightly enclosed and permits easy viewing even in bright places.

Critical focuser VF4

This precision viewfinder which is now introduced for the first time for general camera use was specifically designed as a critical magnifier for micrography. The view finder features an enclosed 5 time magnifier with a diopter adjustment of +3 to −4 diopters. The finder will be found very convenient for critical focusing as the entire image may be inspected.

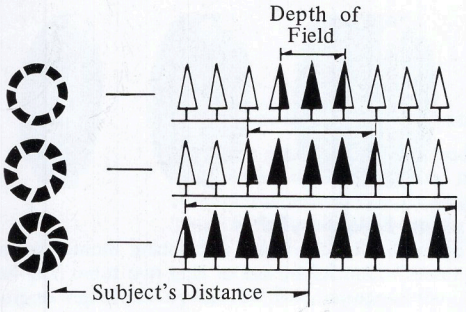


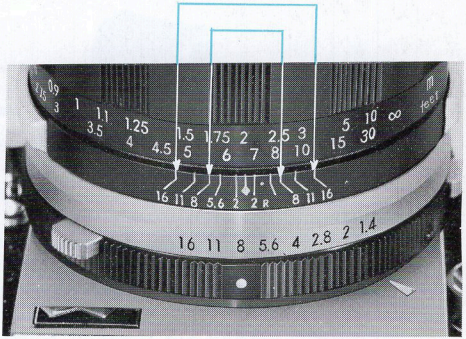
no depth of field

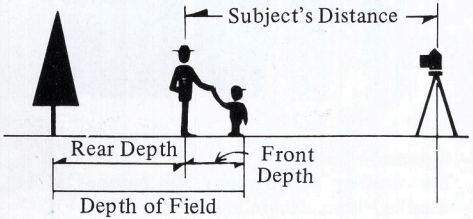


depth of field

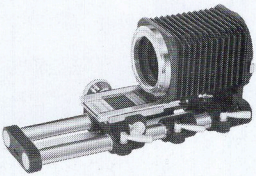
This is the range that is in sharp focus for any particular distance and diaphragm setting. There is relatively very little depth of field where close-up subjects are focused on, and a great deal of depth of field in the case of more distant subjects. Closing the diaphragm down increases the depth of field, and opening the diaphragm up reduces the depth of field. The depth of field also varies with the lens used. Wide angle lenses have lots of depth of field while with telephoto lenses the depth of field is much reduced. If your picture is such that you want both nearby and distant objects to be in sharp focus, then the smallest possible diaphragm should be used. However, very frequently the composition of a picture can be improved by having the principal subject in sharp focus while other objects in the scene are soft and out of focus. This will de-emphasize distracting background objects, and concentrate the viewer's attention on the principal subject.



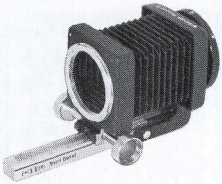




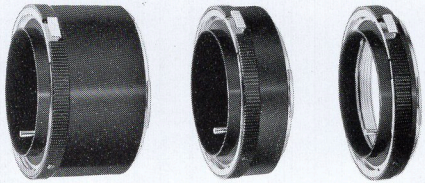
At the center of the lens barrel, facing up, is the depth-of-field scale which indicates the depth of field at a glance. The picture shows the focus adjusted to 2 meters, indicating that the range in which sharp images can be obtained extends from 1.75 to 2.5 meters at f/8 aperture and about 1.5 to 3 meters at f/16.



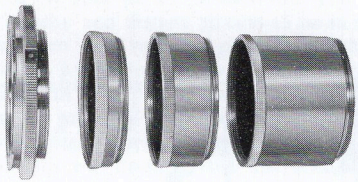
Focabell Au
A deluxe type of extension bellows unit, double track and rack-and-pinion for speedy movements and a precision focusing device.



Focabell S
Foldable compact type with single track which is light and easy to carry.



Auto Extension Tubes
A set of three tubes measuring 8mm, 16mm and 32mm in thickness. Any two tubes may be used together with automatic diaphragm operation.



Extension Tubes
For close-up photography. Set consists of AU. adapter, 8mm, 16mm and 32mm tubes.

How to use bellows and Extension tubes

These attachments are used for macro-photography (close-ups). The closer the lens comes to the subject, the less light passes through the lens, as the distance between the lens and film increases. This has to be compensated for by the camera.

The attachment is mounted between the camera body and the lens to be used. After focusing is performed with the lens at full aperture, the diaphragm is closed down to the preselected diaphragm opening, and the meter switched on. As there is very little depth of field in close-ups it is advisable to select the smallest possible opening. Adjust the meter needle by turning the shutter speed dial and use a cable release to activate the shutter.

When using the Miranda Automatic Extension tubes with an Auto Miranda lens, follow the instructions for exposure determination with Auto Miranda lenses on page 25.

Magnification ratio and exposure factors are shown on the next page.

Extension length mm	Magnification		Picture coverage mm.		Exposure increase ratio	
	50mm	135mm short barrel	50mm	135mm short barrel	50mm	135mm short barrel
5	–	0.04	–	600 x 900	–	1.1X
10	–	0.07	–	343 x 514	–	1.2
15	–	0.11	–	218 x 327	–	1.2
20	–	0.15	–	160 x 240	–	1.3
25	–	0.19	–	126 x 189	–	1.4
30	–	0.22	–	109 x 164	–	1.5
35	–	0.26	–	92 x 138	–	1.6
40	0.8	0.30	30 x 45	80 x 120	3.2	1.7
45	0.9	0.33	27 x 40	73 x 109	3.6	1.8
50	1.0	0.37	24 x 36	65 x 97	4.0	1.9
60	1.2	0.44	20 x 30	55 x 82	4.8	2.1
70	1.4	0.52	17 x 26	46 x 69	5.8	2.3
80	1.6	0.59	15 x 23	41 x 61	6.8	2.5
90	1.8	0.67	13 x 20	36 x 54	7,8	2.8
100	2.0	0.74	12 x 18	32 x 49	9.0	3.0
110	2.2	0.82	11 x 16	29 x 44	10.2	3.3
120	2.4	0.89	10 x 15	27 x 40	11.6	3.6
130	2.6	0.96	9 x 14	25 x 38	13.0	3.9
140	2.8	1.03	9 x 13	23 x 35	14.4	4.2
150	3.0	1.12	8 x 12	21 x 32	16.0	4.5

Which lens to use with the bellows extension unit

While many lenses of different focal lengths can be used, it has been found that the most versatile use of the bellows unit is achieved in conjunction with the standard 50mm camera lens, or 135mm telephoto lens in a special short barrel for use with bellows extension units.

Extension Tubes Magnification ratio and exposure factors

For 50mm f/1.8 Lens

ADAPTER AND RING USED	TOTAL LENGTH (mm)	PICTURE COVERAGE (mm)	MAGNIFI-CATION RATIO	EXPOSURE INCREASE RATIO
Adapter only	8	156 x 238	0.15	1.3
Adapter and 8	16	78 x 117	0.31	1.7
" " 16	24	52 x 78	0.46	2.1
" 8+16	32	40 x 60	0.62	2.6
" 32	40	32 x 48	0.77	3.1
" 8+32	48	26 x 39	0.92	3.7
" 16+32	56	24 x 36	1.08	4.3
" 8+16+32	64	20 x 30	1.23	5.0

For long duration exposure in copying, correct the exposure as follows:

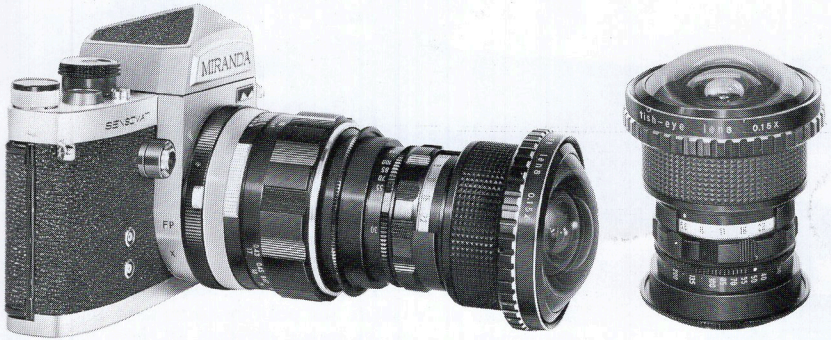
EXPOSURE	1 sec.	5 sec.	15 sec.	45 sec.	2 min.
CORRECTED EXP.	1¼ sec.	7.5 sec.	30 sec.	1 min. 35 sec.	6 min.

These devices double (2X) or triple (3X) the focal length of the lens, used on the camera.

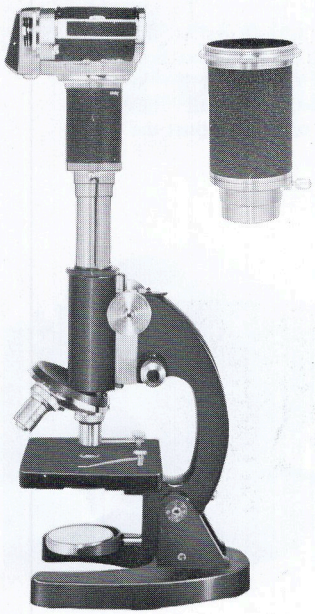
The standard 50mm lens thus becomes a 100 or 150mm telephoto lens. Exposure-increase ratio is automatically compensated for by the built-in exposure meter of the Miranda Sensomat. Follow the instructions given on page 25 or page 26 for the automatic-or preset type converters.

Conversion Lenses

In the past few years, the 180° Fish-eye conversion lenses such as the Soligor converter are becoming increasingly popular. To use these lenses set the master lens (50mm f/1.8) on infinity and set the diaphragm at its maximum opening of 1.8 or 1.4. On the conversion lens itself, make sure that the focal lenght of the master lens is properly set opposite the reference mark. Select a suitable diaphragm opening on the fish-eye conversion lens only and adjust the exposure on the shutter speed dial.

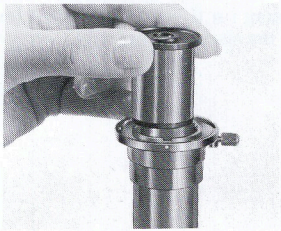


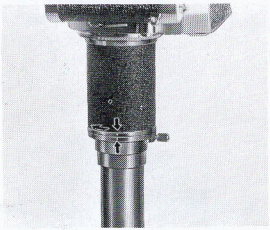
Microscope Adapter



When mounted between camera body and microscope, this adapter makes microscopic picture taking extremely easy.

- The camera lens is taken off.
- The viewfinder can be interchanged with critical focuser VF3 or VF4 for easier focusing.

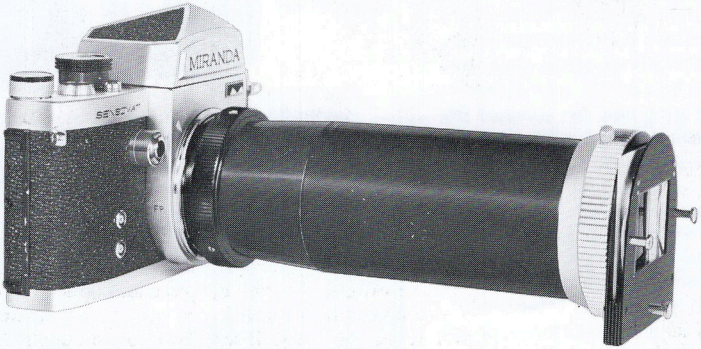




(HOW TO ATTACH)
(1) Attach this adapter to camera body. (2) The connection piece at the end is turned counter-clockwise and detached. (3) Take off microscope's eyepiece and attach it to the inside of the connection piece by means of its bayonet mount. (Picture at left). (4) Insert into microscope's eyepiece as before, match the red spots on tube and bayonet mount of connection piece, set to the position to be used and tighten the connection piece's screw. (Picture at right) adjust the exposure by turning teh shutter speeds dial.

This device, when mounted to the camera body is capable of making duplicates or negatives of slides and slides out of negatives of similar size as the original.

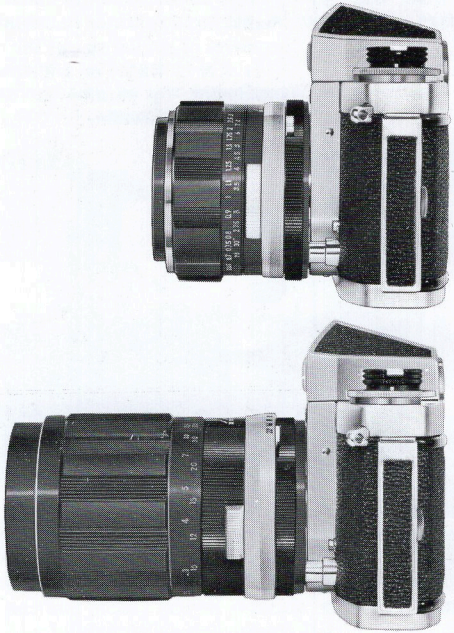
It has a built in f/8 lens. When looking through the viewfinder, by turning the shutter speed dial, correct exposure can be obtained.

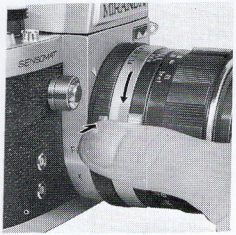
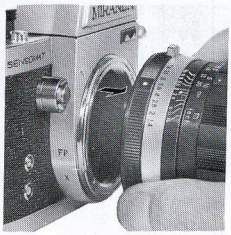
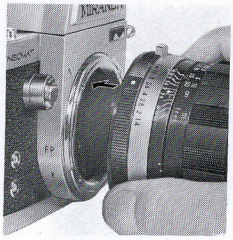
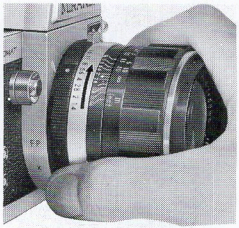


MIRANDA Sensomat has a bayonet type lens mount which permits quick lens interchange and accurate coupling of the automatic diaphragm mechanism.

Lenses can be interchanged regardless to whether the film is advanced or not. Moreover, it makes no difference what aperture value the lenses may have been set at the time of changing.

For Miranda interchangeable lenses, not belonging to the exclusive Auto Miranda Series, such as Soligor or other preset lenses, the inside screw mount can be used. Also, various adapters and accessories can be attached by using either the bayonet or the screw mounts.



Detaching the Lens

While pressing the lens-lock lever on the side of lens barrel, twist the lens counter-clockwise 1/8 of a turn, when the red dot on the barrel stops at the red line on the camera body, the lens comes off easily.

When attaching or detaching the lens, it is advisable to have the camera facing up on one's lap or other manageable place to assure safety, and correct handling.

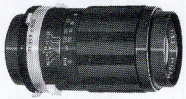
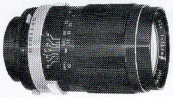
When changing the lens, take care not to let direct light enter the camera body.

Attaching the Lens

Match the red dot of the lens barrel to the red line on the body, fit the lens tightly and turn it clockwise 1/8 of a turn. Then it clicks into position with the red dot exactly in the center.

This can be easily done by having the camera facing up, for then the lens can be placed naturally on the lens mount and then turned in clockwise direction.

Be careful not to hold the helical portion of the lens (focusing ring section in front) when mounting lens as the focusing mechanism may be damaged.

		Angle of View	Smallest Aperture (f)	Closest Focus (m)	Construction (Groups-Elements)	Magnification	Filter Size (mm)
28mm f/2.8		75°	16	0.25	6–8	0.56X	46
35mm f/2.8		63°	16	0.3	5–6	0.7X	46
105mm f/2.8		23°	22	1.2	5–5	2.1X	46
135mm f/3.5		18°	22	1.5	3–4	2.7X	46
135mm f/2.8		18°	22	1.7	5–5	2.7X	55

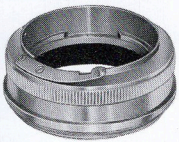
MIRANDA Sensomat has a lens mount of large diameter and a thin body which enables it to accept various types of lenses with the aid of lens mount adapters. With the exception of the AXM adapter, lenses used with these adapters no longer retain their automatic diaphragm feature, but must be set manually.

PM Adapter:
For lenses of Asahi Pentax, Edixa, Yashica Penta, Petri Penta and others having the Praktica mount.

XM Adapter:
For mounting Exakta and Topcon mount lenses.

AXM Adapter:
For automatic Exakta lenses.

LF Adapter:
For Leica and Canon screw-mount lenses.

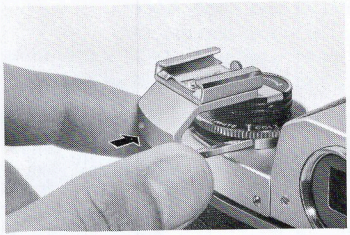


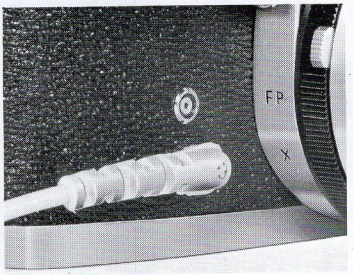
CSF Adapter:
For standard lenses of Contax and Nikon

CTF Adapter:
For wide angle and telephoto lenses of Contax and Nikon.

ML Adapter:
For mounting Miranda lenses on Leica and enlargers.

NM Adapter:
For Nikon lenses.





For snapshots at night, in dark places, and in indoor shooting, flashbulbs or electronic flash can be used to good advantage. Flash units also provide auxiliary light for taking pictures of against-the-light subjects.

- For flash shooting, an exclusive accessory shoe is mounted to the bottom of the rewind knob of the camera.
- The flash unit is inserted from the rear of the accessory shoe and secured by tightening its mount.
- Insert the plug of the flash unit into the camera's synchro terminal, the FP terminal (above) for flashbulb and the X terminal (below) for electronic flash.
- The FP Class flashbulb synchronizes with the shutter at all speeds from 1 second to 1/1000 second. For electronic flash, set the speed to the red "X" mark midway between 1/30 sec and 1/60 sec, but slower speed settings can also be used. For details, refer to the table on the next page.
- The F Class and M Class bulbs can also be used with slow shutter speeds (slower than 1/30 sec) but whenever possible use the FP Class bulbs.
- Each type of flashbulb or electronic flash has a Guide Number to indicate its light output. Exposure should be calculated from these guide numbers. The Guide Number is the product of "distance to subject" multiplied by the lens aperture value. From this relationship, the correct lens aperture can be obtained by dividing the Guide Number with the "distance to the subject".

As main light source

The flash unit is pointed towards to subject and exposure is determined by the exposure index attached to the flash unit.

Bounce light

This way of lighting diffuses the light evenly over the subject and surroundings and is obtained by flashing upwards, reflecting the light from ceiling and walls. In this case the lens opening should be increased by 2 - 3 more stops, due to a certain amount of loss of light.

Fill-in light

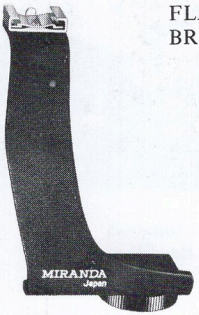
To be used for outdoor photography against the light, to avoid shadows in nearby subjects. No special precautions have to be taken as the fill-in flash will not affect the exposure.

Combination Table for Flash Shooting

(indicates usable factors)

Terminals	Shutter (sec) / Type of Flash	1～1/15	1/30	X	1/60	1/125	1/250	1/500	1/1000
FP	FP Class Bulb	■	■	■	■	■	■	■	■
X	Electronic F Class bulb M Class Bulb	■	■						

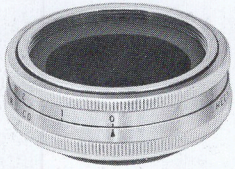
Other Available Accessories



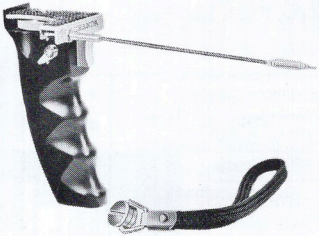
FLASH BRACKET

EYECUP
Rubber Eyecup to be attached to eyepiece of pentaprism or VF-3 viewfinders.
Has built-in Type A eyesight adjustment lens mount.

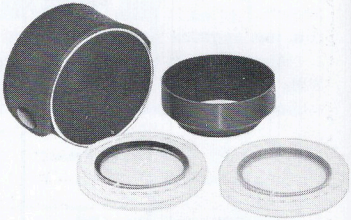
EYESIGHT ADJUSTMENT MOUNTS
Can be attached to eyepiece of pentaprism or VF3 viewfinders.
Type A: for near or farsightedness.
Type B: for astigmatism.



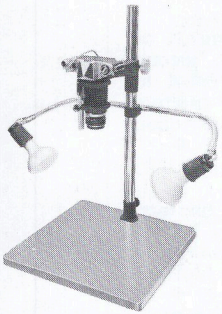
UNIVERSAL HELICOID
(Helical focusing mount)
For precision focusing and close-ups.



PISTOL GRIP

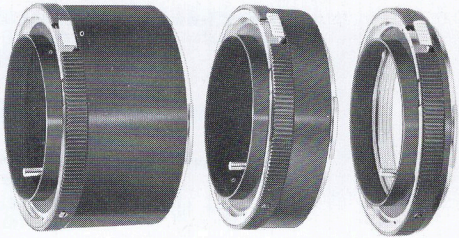


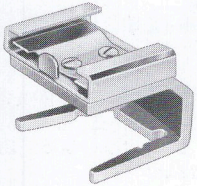
STANDARD LENS HOOD
Can be reversed on 50mm lens and fits into the camera case.
(except on 50mm f1.4)



Miranda Copy Stand
For copying documents, complete with lamp sockets.

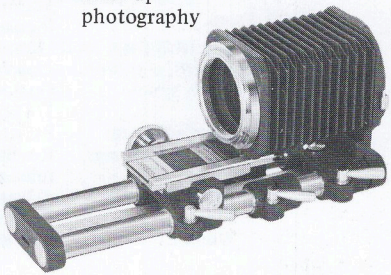
AUTO
Extension
tubes for
use with Auto-Miranda
Lenses.





Miranda Accessory
Shoe for mounting
flash gun.

Focabell AII
for ultra
close up
photography



Miranda Sensomat Technical Data

Lens:	Auto-Miranda 50mm f/1.8, 4 group 6 elements or 50mm f/1.4, 6 group 8 elements. Gauss type, spectra hard coated, fully automatic diaphragm coupled to through-the-lens exposure system. Smallest aperture f/16, closest focus at 43cm (17″), uses screw-in 46mm filter, or lenshood.
Shutter:	Focal plane type, speeds 1-1/1000th sec. and B. Release from top or front of the camera.
Exposure meter:	Through the lens CdS measuring at closed aperture, meter needle visible in finder, measuring range EV 1.6 to 18 (ASA 100 F/1.8) film speed range ASA 25 to 1600. CdS Sensing area behind the mirror, blocking system to prevent over–or under exposure. Meter activating switch also serves as depth of field preview button.
Viewfinder:	Interchangeable pentaprism, magnification 0.92X (with 50mm at infinity) condenser and fresnel lens combined, focusing through multi-microprism grid.
Lens mount:	Miranda dual lens mount, outside bayonet and inside screw mount, 44mmϕ.
Flash sync:	Outlets FP for bulbs and X for electronic flash (X at 1/45th sec.)
Film advance:	By single stroke of 180°
Film rewinding:	Rewind knob with collapsible crank, self resetting release button.
Film counter:	Advance counting type, self resetting.
Size:	147x94x88mm (w/50mm f/1.8 lens)
Weight:	858 gr.

When used on the beach, in strong wind or other unfavorable conditions, damage may be caused if the camera is left unattended, so please observe the following precautions:

CARE AFTER USE

- Clean the lens of dust and dirt by using a soft brush lightly, but do not clean too often.
- Use chamois or other soft material to clean the chrome-plated parts.
- Always use a blower to clean the mirror, which should never be touched with fingers.

PRECAUTIONS IN STORING

- Avoid places of high temperature or high humidity.
- Be careful to avoid shocks as they may cause damage.
- Keep the shutter uncocked.
- Set the lens to infinity before closing the camera case.
- Be very careful not to drop the camera into salt water as repair may become impossible.
- In case the camera is to be left unused for some time, pack it in a plastic bag together with a drying chemical and enclose it within a can or other strong container to prevent damage.

MEMO

Camera No.:

Standard Lens No.:

Numbers other Lenses:

Date(s) purchased:

Exclusive United States Importer:
ALLIED IMPEX CORPORATION
300 Park Avenue South, New York, N.Y. 10010

AUTHORIZED SERVICE STATIONS
300 Park Avenue South, New York, New York 10010
1025 Airway Street, Glendale, California 91201
6445 N. Hamlin Avenue, Chicago Illinois 60645
1328 Motor Circle, Dallas, Texas 75207

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