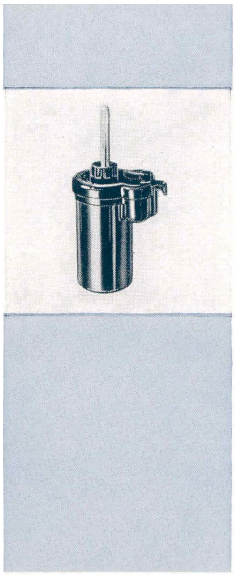


MINOX Developing Tank

The developing of MINOX black-and-white films becomes a simple and convenient matter with the MINOX Developing Tank.

You need no darkroom. You place the film cassette into the "light lock" of the tank, and twist the tank core to unwind the film inside – that's all. The MINOX Tank Thermometer and your watch are the only other equipment you need.

Pre-measured quantities of MINOX dry chemicals for micro-grain development are available in handy packets, ready for solution in water.

Ask your Dealer to show you the simple operation of the MINOX Daylight-Loading Developing Tank.

Holding the MINOX

The illustrations show the most practical way of holding your MINOX: With both hands, and steadied against the face. Such a steady, firm hold is assurance against camera movement during exposure. Keep both thumbs under the camera and other fingers on top to avoid the possibility of covering the lens window. You might practice this hold in front of a mirror to check yourself. The same hold can conveniently be used for vertical or horizontal pictures.

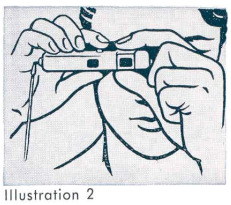
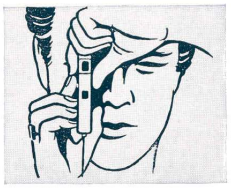
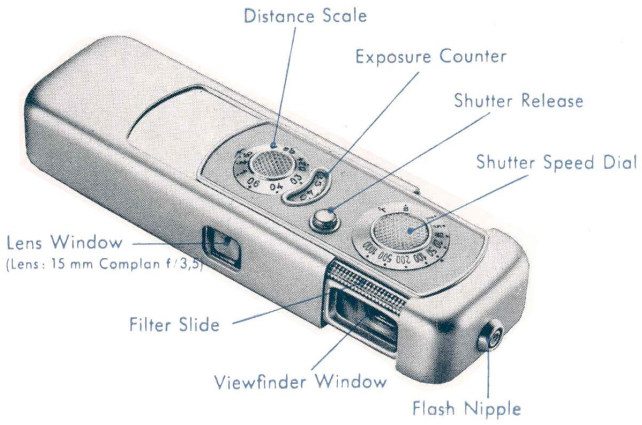


Illustration 2

Illustration 3





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. . . **IF film cassette does not lie flush in both film chambers, so that back cover of camera cannot be closed**

This may happen on rare occasions when the film take-up core rests on the teeth of the transport wheel in the film chamber. Simply lift out cassette, pull camera open all the way, and close again until the film gate opens. Re-insert cassette. Close cover.

. . . **IF film shows dark areas along edges at intervals**

Either the cassette was handled in very bright light or the film was advanced beyond the red dot before un-loading which may result in light entering through the film slit of the cassette.

For scenery without important foreground interest, always set the Scale at Infinity (∞). At this setting, the Depth of Field begins at approximately 12 ft.

For accurate measuring of extreme close-ups (8" to 24"), the safety chain of your MINOX carries small beads at distances corresponding exactly to the close distances engraved on the Distance Scale. With the chain locked in the camera socket, and held taut, exact measurements can be made at 8 – 10 – 12 – 18 and 24 inches (full length). The Depth of Field ranges and Subject Sizes at various set distances are shown in the Tables on page 27.

Always f/3.5 — an Important MINOX Feature

The 15 mm Complan lens of your MINOX yields such extreme Depth of Field, and together with the slightly curved design of the Film Gate gives such outstanding definition over the entire film area, that an adjustable lens diaphragm could be omitted – saving you an extra operation necessary with other cameras.

The MINOX always works at full f/3.5 opening.

The Convenient Filters

You can place the built-in orange or green filters before the lens simply by pushing the knurled slide – above the viewfinder window – towards the lens window. Make sure the desired filter is fully visible in the lens window. When using the green filter, double the exposure time (i. e. use $^1/_{100}$ sec. instead of $^1/_{200}$ sec.); with the orange filter, triple the exposure. For tips on using filters, see pages 16 and 17.

The filters are automatically retracted when the camera is closed. Therefore, subsequent exposures are made without a filter unless the filter is again pushed into position.

Taking the Picture

When you are ready to "shoot", frame your picture in the viewfinder (see page 4), and "squeeze" the shutter release button – don't "punch" it. For critically sharp pictures, the camera must not be jarred during exposure. The shutter release of the MINOX works so smoothly – and without resistance – that you will find it easy to operate.

NOTE: The small circle in the lens window indicates that the shutter is wound, ready for an exposure. If the circle is not showing, simply "push-and-pull" the camera to make it ready.

. . . **IF film has thin horizontal scratches (telephone wires)**

Dust is the enemy of your MINOX films. Never keep a film cassette in your pocket without a wrapper. Before loading the camera, blow out any dust particles which may have lodged in the film chambers.

. . . **IF film cassette will not easily drop into camera when loading**

The film gate **must be open** when the film is dropped into the camera; be sure to push the camera (with open cover) together about $^1/_8$" to open gate. (See page 9.)

. . . **IF the cassette cannot be removed from camera, or if cassette lid lifts out, but the film and container remain in camera**

See previous explanation. Film gate must be open when loading or un-loading cassette. Never use force to remove film. Accidentally opened film may be partly saved if it is immediately wrapped in black paper.

. . . **IF a picture is partly blank**

One of your fingers covered the lens window. Be sure to keep fingers clear of lens window during exposure – check your "hold"; see page 3.

. . . **IF your film shows irregular spacing or overlapping**

Either you forgot to set the exposure counter at the red dot when you started the film, or you did not pull and push the camera ALL THE WAY between exposures.

. . . **IF some of your negatives are very thin, others almost black**

Determine correct shutter setting for each picture situation. Use an exposure guide or, better still, the MINOX photo-electric exposure meter.

. . . **IF some prints show more "grain" than others from the same film**

Badly over-exposed pictures have coarser grain. Over-exposure is as undesirable as under-exposure. Use an exposure guide or MINOX exposure meter to get correct shutter speed every time.

The Exposure Counter

tells you at a glance how many pictures you have taken on the film. The Counter advances automatically each time you move the film forward by a "pull-push" of the MINOX.

The Exposure Counter must be set at the red dot between 50 and 0 before a new film cassette is inserted. (Illustration 9). Otherwise, overlapping pictures may result.

Loading

Film cassettes should be shielded from bright sunlight. Always load – or un-load – the MINOX in subdued light, or in the shade.

Set Exposure Counter at red dot between 50 and 0 by "pumping" camera. With camera in pulled-out position, press down on crescent-shaped Snaplock (illustration 10) and slide open Back Cover until both Film Chambers are free. Then "close" camera about 1/8 inch to spread the Film Gate open. (This occurs when the snaplock almost disappears in the camera Illustration 11).

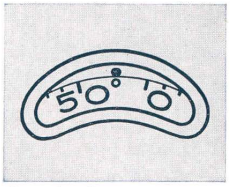
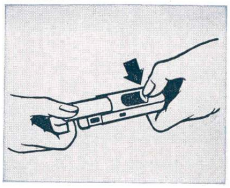
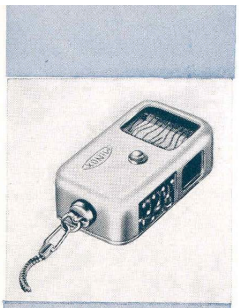


Illustration 9

Illustration 10





The MINOX Exposure Meter

. . . tells you the correct shutter setting for any picture at a glance – and "remembers" the setting until you make the next exposure reading.

What's more, a built-in viewfinder lets you pre-view the picture just as your MINOX camera will see it; thus, you can select the best possible angle every time.

Correct shutter setting means better pictures – pictures with fine highlights, good shadow detail, and every subtle tone of the original scene. Color film, particularly, requires correct exposure to assure proper color values.

Even smaller than the MINOX camera, the Minox Exposure Meter is a precision built photo-electric meter with a honeycomb light gathering lens for readings over a wide range of light conditions. It has jewel bearings and is shock resistant.

Supplied with a leather case to match your camera case, and with a chrome chain, the MINOX Exposure Meter is the perfect companion for your MINOX camera. It may also be used with oher cameras.

The engraved figures are fractions of a second (2 indicates $1/2$ second, 1000 is $1/1000$ sec., etc.). Intermediate speeds may also be set.

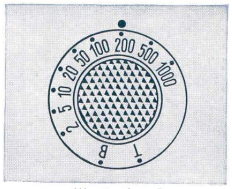


Illustration 5
Shutter Speed Dial
(set at $1/200$ sec.)

When the Dial is set at "B", the shutter opens if the Shutter Release is pressed down, and remains open as long as the Release is held down; set at "T" (Time), the shutter opens when the Release is pressed down, and remains open until the Release is pressed a second time. B or T exposures should be made only with the MINOX resting on or against a firm support, or with a tripod (see page 14).

Always use an exposure guide, or the MINOX Exposure Meter, to determine the correct shutter setting for existing light conditions.

Shutter guide for outdoor pictures

This simple guide will give you good results from two hours after sunrise until two hours before sunset. For accurate and convenient determination of shutter speeds for all possible conditions, the MINOX Exposure Meter is recommended.
Use the shutter speed shown opposite the **type of subject,** under the prevailing **light conditions.**

Subjects are:
AVERAGE – Nearby people, gardens, houses
LIGHT – People in beach, sea, snow scenes, distant scenery
DARK – People in dark clothing, dark flowers, streets, houses
When in doubt use AVERAGE setting.

Light Conditions are:
BRIGHT Sun – Clear Sky strong shadows
HAZY Sun – Soft shadows
CLOUDY Bright – No sun, no shadows
CLOUDY Dull – No sun, dark sky

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 12 Film (Green Label)				
AVERAGE	100	50	20	10
LIGHT	200	100	50	20
DARK	50	20	10	5
ASA 25 Film (Yellow Label)				
AVERAGE	200	100	50	20
LIGHT	500	200	100	50
DARK	100	50	20	10

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 50 Film (Blue Label)				
AVERAGE	500	200	100	50
LIGHT	100	500	200	100
DARK	200	100	50	20
ASA 100 Film (Red Label)				
AVERAGE	1000	500	200	100
LIGHT	*1000	1000	500	200
DARK	500	200	100	50

*Note: Use green filter

For shutter settings when using Green or Orange Filter, see page 17.

YOUR MINOX is a precision instrument designed and built to give you excellent pictures under all kinds of conditions, indoors and out. As your constant companion, your MINOX is always ready to catch not only delightful, spontaneous snapshots, but an endless variety of fine pictures of any subject, any occasion, at any time.

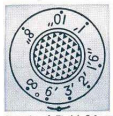
This Manual shows you the way to best results with your MINOX. It contains many valuable tips which you will find helpful. Read the various sections carefully so that you will get fine results right from the start.

The **first section** explains the operation of your MINOX. Read it with the un-loaded camera at hand – once you are familiar with the simple operating steps, you will always enjoy the full pleasure of picture-taking with your MINOX.

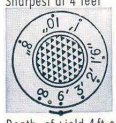
Part two will help you select the proper kind of film for best results. It tells about filters, flash, close-ups, and many other special uses for your MINOX.

The **final pages** point out annoying little errors which may make the difference between a good and a bad picture. You will find it easy to avoid such mistakes, once you are aware of them.

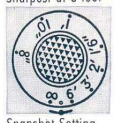
If you have any questions, your MINOX dealer will always be glad to help.



6
Depth of Field 3ft to 6ft
Sharpest at 4 feet



7
Depth. of Field 4ft o 11ft
Sharpest at 6 feet



8
Snapshot Setting
Depth of Field 6ft to Infinitv
Sharpest at 12 ft

Setting the Distance (Focusing)

The MINOX Distance Scale is calibrated from 8" to Infinity (∞). Set the subject-to-camera distance by rotating the Distance Scale until the estimated distance is opposite the black dot of the small bracket. Objects at the set distance will be sharpest but, within a certain range, nearer and farther objects will also appear acceptably sharp. The entire range of sharpness from nearest to farihest objects is called "depth of field".

The near and far limits of the Depth of Field for any distance setting are indicated on the MINOX by the small bracket adjacent to the Distance Scale. For example, when set at 6' (Illustration 7), the Depth of Field extends from 4 ft to 11 ft; or, when set at 4' (Illustration 6) it reaches from 3 ft to 6 ft. The greatest Depth of Field is obtained with the SNAPSHOT SETTING (small dot half-way between ∞-Infinity – and 6 ft) as shown in illustration 8. You will find this setting convenient for all pictures which require quick readiness and fast shooting, (i. e. Sports, Groups, Street Scenes, etc); just keep in mind that the nearest object must be at least 6 feet away.

Subject/Field Size and Depth of Field Tables.

Distance Focused On	Subject / Field Size – inch.	Depth of Field
∞ **Infinity**	—	**12' 8"** to ∞
12'	105 x 77	6' 1 1/2" to ∞
6'	**53** x **38**	**4'** to **11' 4"**
4'	35 x 25 1/2	3' 1/2" to 5' 11"
3'	**26** x **19**	**2' 5 7/8"** to **3' 9 1/2"**
2' 4 7/8"	20 3/4 x 15	1' 11 7/8" to 2' 11 1/4"
2'	**17** 1/8 x **12** 1/2	**1' 8 3/4"** to **2' 4 1/2"**
1' 8 3/4"	14 7/8 x 10 7/8	1' 6 3/8" to 2'
1' 6"	**12** 3/4 x **9** 3/4	**1' 4** 1/8" to **1' 8** 1/2"
1' 2 3/8"	10 1/2 x 7 1/8	1' 1 1/8" to 1' 3 7/8"
1'	**8** 7/8 x **6**	**11** 1/8" to **1' 1"**
10 7/8"	7 1/2 x 5 3/8	10 1/8" to 11 3/4"
10"	**6** 3/4 x **4** 7/8	**9** 1/4" to **10** 3/4"
8 7/8"	6 x 4 3/8	8 3/8" to 9 1/2"
8"	**5** 3/8 x **3** 7/8	**7** 5/8" to **8** 1/2"

Distances are measured from the **front** of the camera.

Figures in light type apply when distance scale of camera is set exactly half-way between two adjacent engraved distance markings.

For convenient measuring of close distances, the MINOX chain is equipped with beads at 8" – 10" – 12" – 18".

Picture Series and Sequence Shots

Your MINOX – compact and instantly ready to "shoot" – makes it so easy to get spontaneous, un-posed pictures. Whenever possible take a whole series of pictures to tell a complete story. With a little practice, you can take an entire sequence of pictures within a few seconds; simply keep your MINOX at eye-level and "pump" the camera with your right hand to advance film and re-cock the shutter.

Tele-Photography with the MINOX

There are times when you cannot get close enough to a subject to get a large image on your MINOX film – or, in fact, you may want to remain at a distance on purpose. Your MINOX may be attached to any high-quality binocular with the MINOX Binocular Clamp; focusing and view-finding is done conveniently through one of the binocular eye-pieces while the MINOX is mounted to the other one. If you are interested in wildlife, mountaineering, etc. you will find the Binocular Clamp a valuable addition to your MINOX.

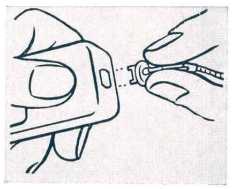
Film cassette will drop out of camera with slight tapping, or may be lifted out by its bridge. Store the cassette in film box or in black paper until it is developed.
Note: Color Films end at 30 or 36 – see film package. Unload after two push-and-pull motions. Advance Exposure Counter to red dot before loading new film.

CAUTION: Do not advance films beyond the numbers indicated above, as the film would be entirely pulled into the take-up side; this may result in light entering through the cassette slit during un-loading.

Attaching the Safety Chain

To protect your MINOX against accidental falls, always keep it on its chain. Insert the rectangular plug at the end of the chain into the corresponding Chain Socket of the camera. The spring-loaded dust cover will disappear in the camera. Use the D-ring at the end of the chain in the manner of a screw driver, inserting it into the slot of the plug disc; turn the plug one-quarter turn to the right. (Illustration 12). To remove the chain, reverse these steps; insert D-ring into slot, turn one-quarter to the **left** – plug will jump out of socket.

Illustration 12



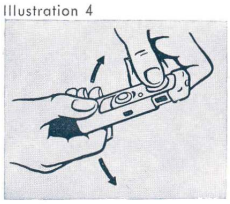
The Viewfinder

The luminous frame within the MINOX viewfinder contains the exact picture area that will appear on the film. The viewfinder image is automatically corrected, at all distances, to agree with the picture area. (Parallax Compensation). For extreme close-ups (8–10 inches), the picture area lies a frame-width within the luminous frame.

Eyeglass wearers may readily use the MINOX viewfinder without correction lenses.

Setting the Shutter

Illustration 4



The length of time the light is permitted to reach the film is controlled by the shutter. The Shutter Speed Dial is conveniently rotated by placing the thumb on the knurled surface while holding the forefinger under the camera and, with the other hand, turning the camera until the desired speed is set opposite the black dot. The Shutter Speed Dial may be rotated with the camera open or closed, whether the shutter is wound or not.

MINOX Slide Projector Model 30

There is no greather thrill than seeing your fine MINOX Color Transparencies projected on the screen. All the subtleties of color are brought out in projection.

The MINOX Slide Projector is especially designed for your MINOX slides. It has an efficient light system, with a 100 Watt projection bulb, silvered concave glass reflector, and aspherical condenser lens; a special adjusting lamp socket permits critical alignment of the filament for even illumination over the entire picture area.

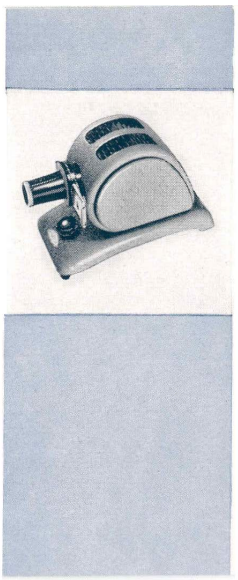
Triple-wall construction of the all-metal housing assures free air circulation for complete ventilation of the lighting system. A heat-absorbing filter gives added protection to the transparencies during projection.

The MINOSTAR f/2.9 35 mm projection lens, in focusing mount, produces brilliant, critically sharp screen images.

The MINOX Slide Projector has an attractive, practical, gray instrument crackle finish. Built-in front elevating micrometer screw permits height adjustment to center the projected image on the screen. The projector is supplied complete with an all-metal slide carrier.

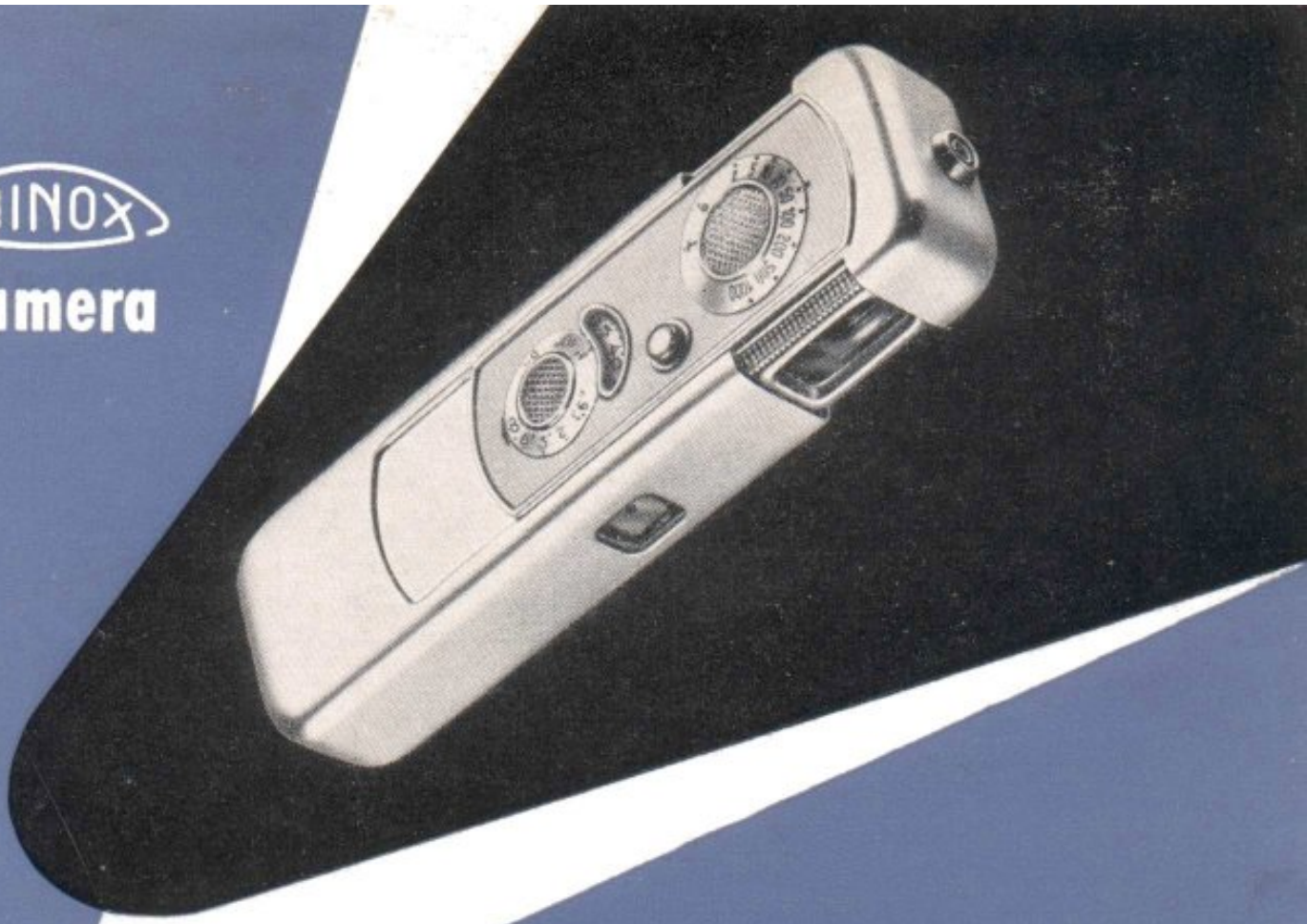
MINOX color transparencies for projection in the MINOX Slide Projector should be mounted in MINOX 30x30 mm Transparency Mounts; the MINOX Transparency Cutter is a convenient accessory for cutting individual transparencies out of film strips.

The MINOX Projector may also be used with other ultra-miniature transparency sizes down to 15x15 mm.



MINOX

Camera



OWNER'S MANUAL

The little MINOX – for great enjoyment

Before you start reading, please fold back this and the last page of the Manual, so that you will have the diagrams of the MINOX constantly at your fingertips for reference.

THINGS TO REMEMBER

Before loading —
make sure Exposure Counter is set at red dot between 50 an 0
Before inserting or removing film cassette —
make sure Film Gate is open
When taking the picture —
keep fingers away from lens window;
hold camera steady; "squeeze" shutter release button
At end of film —
do not attempt to take more pictures than the film allows (50 on black-and-white; 30 or 36 on color film)
Always —
keep Lens Window clean. Fingerprints or other smudges on the lens window cause un-sharp pictures. To clean, wrap soft linen cloth around match stick.

Changing the Film Type

Some day you may want to take color pictures just when your MINOX is loaded with black-and-white film – or vice versa. Thanks to the MINOX film cassette, it is very easy to "switch" from one film to another at any time.

When you want to change cassettes, "pump" camera once to transport the last-exposed film frame into the take-up end of the cassette. Then remove cassette in the usual manner (see page 10). Note number showing on Exposure Counter; write this number on cassette for future reference.

Before inserting fresh film, set exposure counter at red dot between 50 and 0 – as described on page 9 – and load in the usual manner.

When you re-load the "started" cassette: First set exposure counter three numbers **back** of the number which you noted when you removed the cassette; example: if you took the cassette out at "28", set counter at "25". Now insert cassette in the usual manner. Pump camera three times. This takes up any slack in the cassette and gets your MINOX ready for the next exposure.

Remember: Load and un-load only in subdued light, or in the shade.

Color Film does not have as much exposure latitude as black-and-white film. Therefore, use correct shutter speed! The MINOX photo-electric exposure meter is particularly valuable in Color Photography. Even slight deviations from the correct shutter speed may result in false color reproduction.

As a general rule, color pictures are best taken with the sun slightly to one side behind the photographer's back.

If you are seriously interested in all phases of Color Photography, you will find it worthwhile to read one of the many comprehensive books covering this field.

Copying

. . . of documents, drawings, books, etc. is easily done with your MINOX. By using a tripod, MINOX Repro Stand, MINOX Copying Arm, or other means of support, you can conveniently copy such matter, getting as close as 8 inches for largest possible reproduction. Use the special MINOX ASA 5 Micro Grain Copy Film, except when copying photographs or illustrations containing half-tones for which regular MINOX ASA 12 or ASA 25 film is recommended. (See tables showing area covered at various distances, on page 27.)

TIPS FOR BEST RESULTS

The "best" Film

MINOX film is available in several different types for black-and-white photography, and for Color Pictures. The black-and-white films vary in sensitivity (speed) to suit every possible need. The sensitivity is expressed in American Standard exposure index numbers: ASA 12 (Green Label), ASA 25 (Yellow Label), ASA 50 (Blue Label), ASA 100 (Red Label). ASA 100 film is twice as sensitive to light as ASA 50, ASA 50 twice as sensitivite as ASA 25, and so on. Thus, under any given conditions ASA 50 film, for instance, would require only half the shutter speed needed for ASA 25.

The lower the film sensitivity, the finer the detail it is capable of reproducing in the final print. Therefore, the super-sensitive ASA 100 film should be used only in instances when there is not enough illumination for slower films, or when flash exposures are not feasible (stage photography, candid shots, etc.). The medium sensitivity films ASA 25 and ASA 50 are best suited for all-around picture-taking, and will yield excellent prints in all popular sizes. ASA 12 film is especially suited for bright beach, mountain, and snow scenes, as well as for close-ups of stationary small objects with the MINOX used on a tripod.

MINOX Color Film is available for daylight, and for artificial (tungsten) light.

Steady!

Get used to a comfortable, steady hold of your MINOX during exposure; experience will show you whether you can get steady pictures even at the slower shutter speeds. Generally, you will find it advisable to use a tripod or other firm support for shutter

How to Stop Moving Subjects

Sports and other fast action call for high shutter speeds – otherwise your pictures may be blurred. But even under unfavourable light conditions, requiring slower shutter speeds, you can stop motion by using professional tricks. It is easier, for example, to stop motion of a subject moving straight toward the camera, or at a slight angle, than it is to "freeze" a subject moving straight across at right angles to the camera. Or, watch for the "still moment" such as is reached by a swing at its highest point just before it swings back, or by the tennis player during the serve when the ball is at the peak of the toss, and the racket is about to be swung. Even $1/20$ second will "stop" such shots. For very fast motion – automobile races, speed boats, skiing – another well-known professional trick will help you get fine results: Keep the car, boat, or skier centered in the MINOX viewfinder and follow the motion with the camera, releasing the shutter at any instant during this panoraming. The background will be blurred, adding to the impression of fast action, but the subject stays sharp even at $1/50$ second.

The two built-in Filters

. . . . . will help you improve your black-and-white pictures. In scenic pictures, the green filter will give a blue sky – which would otherwise appear white in the final

print – a richer tone, making white clouds stand out clearly. Green foliage, lawns, etc. which would normally print darker, will show a lighter tone and better modulation. Because the green filter reduces the overall amount of light transmitted through the lens, you must double the shutter speed – in other words use $1/100$ sec. when the MINOX exposure meter or exposure guide indicates $1/200$ sec.

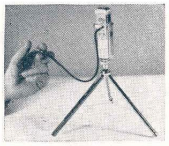
The orange filter – which requires three times normal shutter speed – darkens blue skies considerably, but lightens all reddish tones. Even in full sunlight it produces dramatic skies and scenes resembling night shots. More important is its ability to produce clear pictures on days when there is a blue atmospheric haze. The orange filter is particularly useful for cloud pictures, snow scenes, mountain photography, and on hazy days. DO NOT USE THE ORANGE FILTER FOR PORTRAITS as red lips would appear almost white.

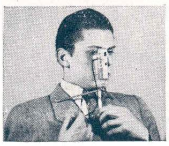
NEVER USE THE GREEN OR ORANGE FILTER WITH COLOR FILM.

$1/500$ sec. without filter

$1/270$ sec. with green filter, sky darker, clouds stand out

$1/100$ sec. with orange filter sky very dark, clouds "fluffy", green areas lighter





speeds of 1/20 sec. and slower. For all snapshots, use the hold suggested on page 3, always making sure that you "squeeze" the shutter to avoid jarring the camera.

How About Longer Exposures?

You may be able to hold the MINOX steady by leaning your elbows on a table or other firm surface, or against a wall; or you may place the MINOX on a glass, ledge, etc. It is best, however, to attach the MINOX with a camera clamp to a tripod. You will find the MINOX pocket tripod a particularly fine and versatile accessory. Only slightly larger than a pencil, this tripod with its swivel top may be used on a table, chair, window sill, or against a wall. It may also be held against your shoulders. The pictures at the left suggest various ways of using the MINOX tripod. As an extra precaution against jarring the camera, always use a cable release for tripod exposures.

It's a Colorful World

The 15 mm f/3.5 Complan lens of your MINOX is color-corrected, and has an anti-reflection coating – in other words it is ideally suited for Color Photography.

If you have never taken color pictures before, keep in mind the following suggestions which will help you get fine results from the outset:

Color Film yields the best results in bright or hazy sunlight; on overcast days, results are usually not satisfactory.

Morning and early afternoon hours are the best time for color pictures. At noon the light is usually bluish, resulting in very "cold" colors or an over-all bluish tinge. During the hours just after sunrise, or just before sunset, the light is more reddish, resulting in very "warm" colors.

Watch for the possibility of color reflections (which may not be visible to the eye): A white dress on a green lawn is never pure white, but faintly green.

YOUR MINOX is a precision instrument designed and built to give you excellent pictures under all kinds of conditions, indoors and out. As your constant companion, your MINOX is always ready to catch not only delightful, spontaneous snapshots, but an endless variety of fine pictures of any subject, any occasion, at any time.

This Manual shows you the way to best results with your MINOX. It contains many valuable tips which you will find helpful. Read the various sections carefully so that you will get fine results right from the start.

The **first section** explains the operation of your MINOX. Read it with the un-loaded camera at hand – once you are familiar with the simple operating steps, you will always enjoy the full pleasure of picture-taking with your MINOX.

Part two will help you select the proper kind of film for best results. It tells about filters, flash, close-ups, and many other special uses for your MINOX.

The **final pages** point out annoying little errors which may make the difference between a good and a bad picture. You will find it easy to avoid such mistakes, once you are aware of them.

If you have any questions, your MINOX dealer will always be glad to help.

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Tips for best results

The "best" Film – S T E A D Y – How about Longer Exposures? – "Frame" your Subject – Close-ups of Small Things – How to stop Moving Subjects – The two built-in Filters – Flash is Easy – It's a Colorful World – Copying – Changing the Film Type – Picture Series – Tele-Photography 13

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1/100 sec. without flash. Scenery properly exposed figure too dark

1/200 sec. with electronic flash. Light balanced for figure and scenery

Flash is Easy

You can get fine pictures with your MINOX right around the clock, because, when daylight or room light is no longer sufficient, you can attach a flash unit to your camera. Even in daylight, you can penetrate deep shadows or lighten scenes by using flash.

The MINOX may be used with any type of flash source connected to the flash nipple of the camera. The shutter has built-in synchronization of the X-type (it "fires" the flash as soon as the shutter release of the camera is pressed).

Flash Source	**Synchronized at shutter speeds:**
Electronic Flash Units	1/2 second to 1/500 second
Flash Bulbs: SM, SF	1/2 second to 1/100 second
M-2, 5, 8, 25	1/2 second to 1/20 second

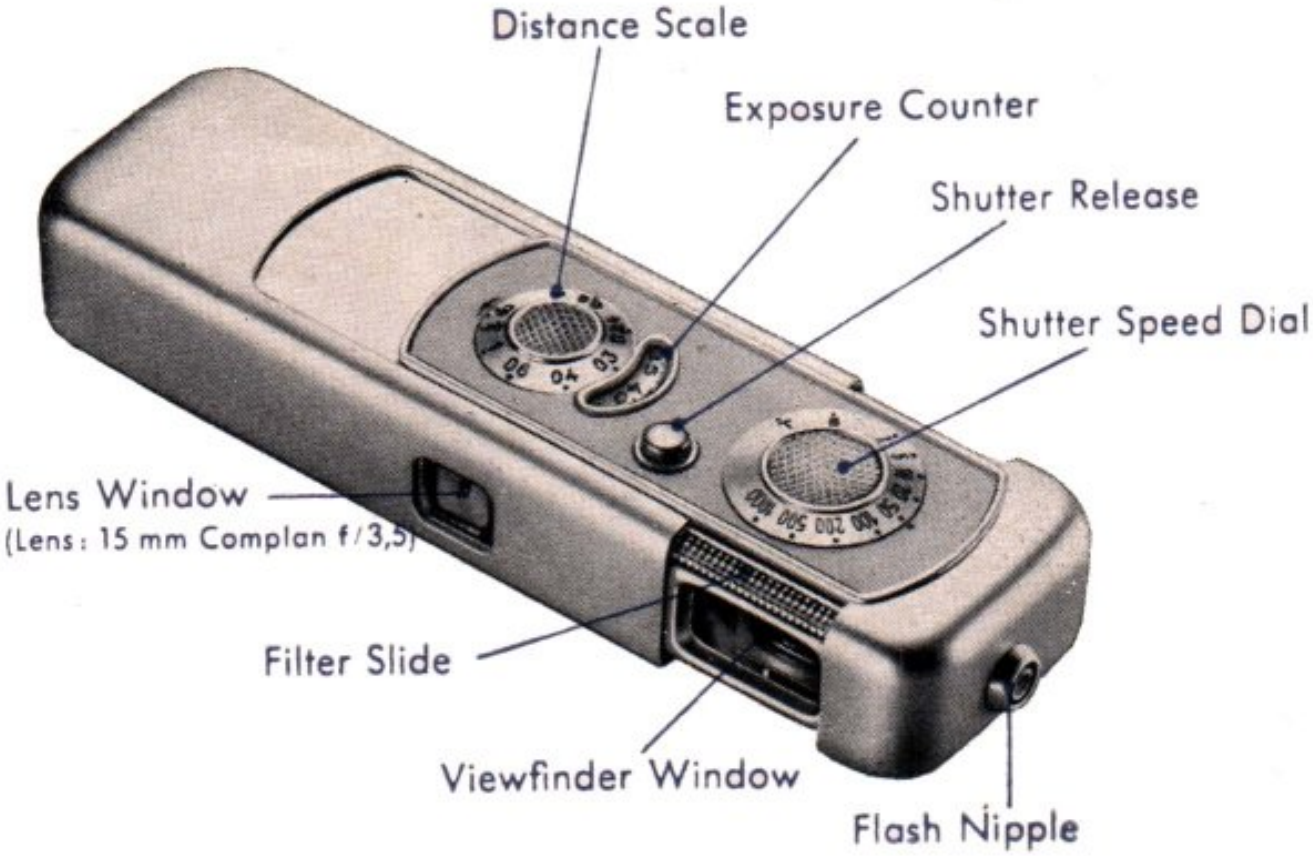
A flash unit made by MINOX is expected to become available soon, very complete flash instructions will be issued at the same time.

"Frame" Your Subject

Since the MINOX viewfinder shows you the exact picture area, you can easily compose your picture before you actually take it, so that unimportant or disturbing details are omitted right at the start. Advance planning of composition saves extra work in enlarging, and it gives you precisely the picture you want every time.

Close-ups of Small Things

There is a special fascination in close-ups. A frame-filling picture of a single blossom showing the delicate details of each petal can be more exciting than showing a whole acre of flowers. Therefore: Get CLOSE to the subject! Your MINOX offers you the great advantage that you can get as close as 8 inches without any supplementary equipment or extra lenses. Make the most of this excellent feature. Always use the measuring beads of the safety chain to determine the correct distance, as the depth of field at close range is very limited. For instance, when the distance scale is set at 1 ft., the depth extends only from 11 inches to 13 inches. Therefore, accurate distance setting is a must for extreme close-ups. Remember also that, at distances between 8 and 10 inches, the picture area lies a frame-width within the luminous frame of the viewfinder.

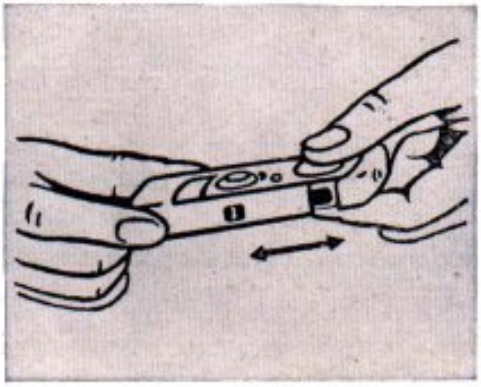

Distance Scale
Exposure Counter
Shutter Release
Shutter Speed Dial
Lens Window
(Lens: 15 mm Complan f/3,5)
Filter Slide
Viewfinder Window
Flash Nipple

HOW TO USE THE MINOX

Opening and Closing the Camera

To open the camera for picture-taking, place left thumb on Shutter Speed Dial and left forefinger on underside of camera, while grasping narrow sides of camera with the right thumb and forefinger; pull camera open – like a telescope – as far as it will go. After a picture has been taken, push the camera together as far as possible. This "pumping" action automatically advances the film and winds the shutter for the next exposure. IMPORTANT: Pull or push **all the way!**

Illustration 1



Holding the MINOX

The illustrations show the most practical way of holding your MINOX: With both hands, and steadied against the face. Such a steady, firm hold is assurance against camera movement during exposure. Keep both thumbs under the camera and other fingers on top to avoid the possibility of covering the lens window. You might practice this hold in front of a mirror to check yourself. The same hold can conveniently be used for vertical or horizontal pictures.

Illustration 2

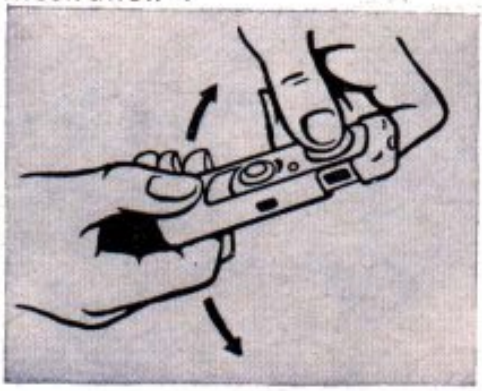
Illustration 3

The Viewfinder

The luminous frame within the MINOX viewfinder contains the exact picture area that will appear on the film. The viewfinder image is automatically corrected, at all distances, to agree with the picture area. (Parallax Compensation). For extreme close-ups (8–10 inches), the picture area lies a frame-width within the luminous frame.

Eyeglass wearers may readily use the MINOX viewfinder without correction lenses.

Illustration 4



Setting the Shutter

The length of time the light is permitted to reach the film is controlled by the shutter. The Shutter Speed Dial is conveniently rotated by placing the thumb on the knurled surface while holding the forefinger under the camera and, with the other hand, turning the camera until the desired speed is set opposite the black dot. The Shutter Speed Dial may be rotated with the camera open or closed, whether the shutter is wound or not.

The engraved figures are fractions of a second (2 indicates $1/2$ second, 1000 is $1/1000$ sec., etc.). Intermediate speeds may also be set.

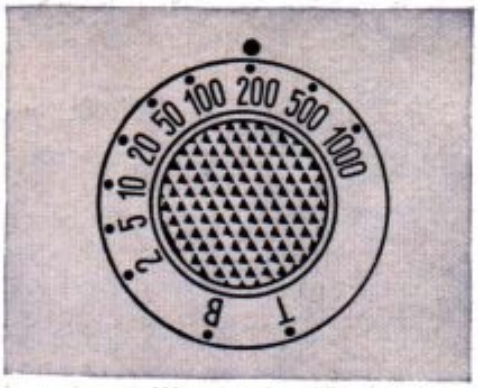


Illustration 5
Shutter Speed Dial
(set at $1/200$ sec.)

When the Dial is set at "B", the shutter opens if the Shutter Release is pressed down, and remains open as long as the Release is held down; set at "T" (Time), the shutter opens when the Release is pressed down, and remains open until the Release is pressed a second time. B or T exposures should be made only with the MINOX resting on or against a firm support, or with a tripod (see page 14).

Always use an exposure guide, or the MINOX Exposure Meter, to determine the correct shutter setting for existing light conditions.

The Convenient Filters

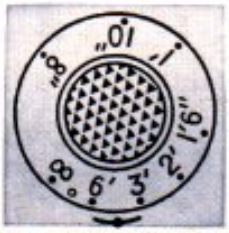
You can place the built-in orange or green filters before the lens simply by pushing the knurled slide – above the viewfinder window – towards the lens window. Make sure the desired filter is fully visible in the lens window. When using the green filter, double the exposure time (i. e. use $^1/_{100}$ sec. instead of $^1/_{200}$ sec.); with the orange filter, triple the exposure. For tips on using filters, see pages 16 and 17.

The filters are automatically retracted when the camera is closed. Therefore, subsequent exposures are made without a filter unless the filter is again pushed into position.

Taking the Picture

When you are ready to "shoot", frame your picture in the viewfinder (see page 4), and "squeeze" the shutter release button – don't "punch" it. For critically sharp pictures, the camera must not be jarred during exposure. The shutter release of the MINOX works so smoothly – and without resistance – that you will find it easy to operate.

NOTE: The small circle in the lens window indicates that the shutter is wound, ready for an exposure. If the circle is not showing, simply "push-and-pull" the camera to make it ready.



6

Depth of Field 3ft to 6ft
Sharpest at 4 feet

7

Depth. of Field 4ft o 11ft
Sharpest at 6 feet

8

Snapshot Setting
Depth of Field 6ft to Infinitv
Sharpest at 12 ft

Setting the Distance (Focusing)

The MINOX Distance Scale is calibrated from 8" to Infinity (∞). Set the subject-to-camera distance by rotating the Distance Scale until the estimated distance is opposite the black dot of the small bracket. Objects at the set distance will be sharpest but, within a certain range, nearer and farther objects will also appear acceptably sharp. The entire range of sharpness from nearest to farthest objects is called "depth of field".

The near and far limits of the Depth of Field for any distance setting are indicated on the MINOX by the small bracket adjacent to the Distance Scale. For example, when set at 6' (Illustration 7), the Depth of Field extends from 4 ft to 11 ft; or, when set at 4' (Illustration 6) it reaches from 3 ft to 6 ft. The greatest Depth of Field is obtained with the SNAPSHOT SETTING (small dot half-way between ∞-Infinity – and 6 ft) as shown in illustration 8. You will find this setting convenient for all pictures which require quick readiness and fast shooting, (i. e. Sports, Groups, Street Scenes, etc); just keep in mind that the nearest object must be at least 6 feet away.

The Exposure Counter

tells you at a glance how many pictures you have taken on the film. The Counter advances automatically each time you move the film forward by a "pull-push" of the MINOX.

The Exposure Counter must be set at the red dot between 50 and 0 before a new film cassette is inserted. (Illustration 9). Otherwise, overlapping pictures may result.

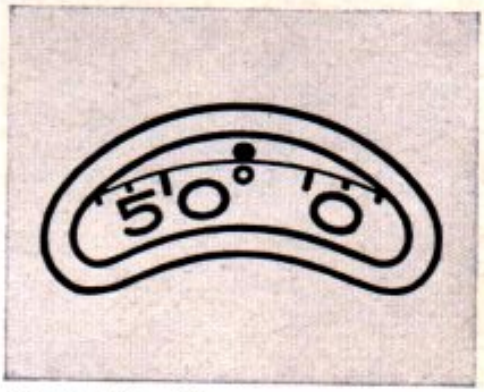


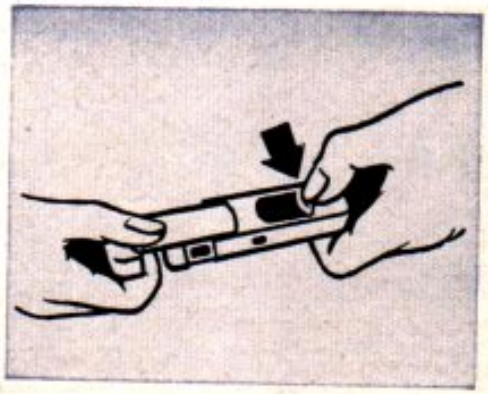
Illustration 9

Loading

Film cassettes should be shielded from bright sunlight. Always load – or un-load – the MINOX in subdued light, or in the shade.

Set Exposure Counter at red dot between 50 and 0 by "pumping" camera. With camera in pulled-out position, press down on crescent-shaped Snaplock (illustration 10) and slide open Back Cover until both Film Chambers are free. Then "close" camera about 1/8 inch to spread the Film Gate open. (This occurs when the snaplock almost disappears in the camera Illustration 11).

Illustration 10



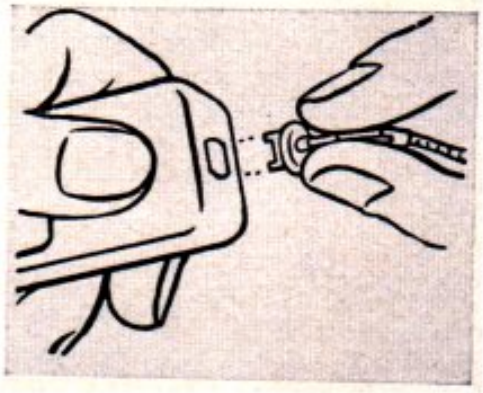
Film cassette will drop out of camera with slight tapping, or may be lifted out by its bridge. Store the cassette in film box or in black paper until it is developed.
Note: Color Films end at 30 or 36 – see film package. Unload after two push-and-pull motions. Advance Exposure Counter to red dot before loading new film.

CAUTION: Do not advance films beyond the numbers indicated above, as the film would be entirely pulled into the take-up side; this may result in light entering through the cassette slit during un-loading.

Attaching the Safety Chain

To protect your MINOX against accidental falls, always keep it on its chain. Insert the rectangular plug at the end of the chain into the corresponding Chain Socket of the camera. The spring-loaded dust cover will disappear in the camera. Use the D-ring at the end of the chain in the manner of a screw driver, inserting it into the slot of the plug disc; turn the plug one-quarter turn to the right. (Illustration 12). To remove the chain, reverse these steps; insert D-ring into slot, turn one-quarter to the **left** – plug will jump out of socket.

Illustration 12



THINGS TO REMEMBER

Before loading —

make sure Exposure Counter is set at red dot between 50 an 0

Before inserting or removing film cassette —

make sure Film Gate is open

When taking the picture —

keep fingers away from lens window; hold camera steady; "squeeze" shutter release button

At end of film —

do not attempt to take more pictures than the film allows (50 on black-and-white; 30 or 36 on color film)

Always —

keep Lens Window clean. Fingerprints or other smudges on the lens window cause un-sharp pictures. To clean, wrap soft linen cloth around match stick.

For scenery without important foreground interest, always set the Scale at Infinity (∞). At this setting, the Depth of Field begins at approximately 12 ft.

For accurate measuring of extreme close-ups (8" to 24"), the safety chain of your MINOX carries small beads at distances corresponding exactly to the close distances engraved on the Distance Scale. With the chain locked in the camera socket, and held taut, exact measurements can be made at 8 – 10 – 12 – 18 and 24 inches (full length). The Depth of Field ranges and Subject Sizes at various set distances are shown in the Tables on page 27.

Always f/3.5 — an Important MINOX Feature

The 15 mm Complan lens of your MINOX yields such extreme Depth of Field, and together with the slightly curved design of the Film Gate gives such outstanding definition over the entire film area, that an adjustable lens diaphragm could be omitted – saving you an extra operation necessary with other cameras.

The MINOX always works at full f/3.5 opening.

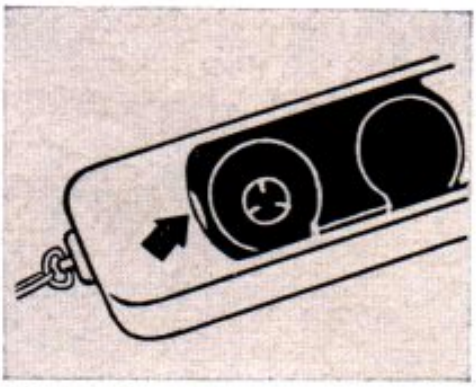


Illustration 11

LOAD CASSETTE INTO CAMERA ONLY WHEN FILM GATE IS OPEN. Drop cassette into film chambers, close back cover, and push-pull camera once.

If the back cover cannot be closed – this is a rare coincidence when the film take-up core is resting on the teeth of the transport wheel in the film chamber – lift out the cassette, pull the camera open all the way, and close again until the film gate opens. Re-insert cassette, close back cover, and push-pull-push camera once.

Un-Loading

Watch the Exposure Counter – 50 is the last exposure! Push-and-pull the camera twice. The Exposure Counter should now be at the red dot. Unload in subdued light. Open back cover and spread film gate (as if to load).

"Frame" Your Subject

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TIPS FOR BEST RESULTS

The "best" Film

MINOX film is available in several different types for black-and-white photography, and for Color Pictures. The black-and-white films vary in sensitivity (speed) to suit every possible need. The sensitivity is expressed in American Standard exposure index numbers: ASA 12 (Green Label), ASA 25 (Yellow Label), ASA 50 (Blue Label), ASA 100 (Red Label). ASA 100 film is twice as sensitive to light as ASA 50, ASA 50 twice as sensitivite as ASA 25, and so on. Thus, under any given conditions ASA 50 film, for instance, would require only half the shutter speed needed for ASA 25.
The lower the film sensitivity, the finer the detail it is capable of reproducing in the final print. Therefore, the super-sensitive ASA 100 film should be used only in instances when there is not enough illumination for slower films, or when flash exposures are not feasible (stage photography, candid shots, etc.). The medium sensitivity films ASA 25 and ASA 50 are best suited for all-around picture-taking, and will yield excellent prints in all popular sizes. ASA 12 film is especially suited for bright beach, mountain, and snow scenes, as well as for close-ups of stationary small objects with the MINOX used on a tripod.
MINOX Color Film is available for daylight, and for artificial (tungsten) light.

Steady!

Get used to a comfortable, steady hold of your MINOX during exposure; experience will show you whether you can get steady pictures even at the slower shutter speeds. Generally, you will find it advisable to use a tripod or other firm support for shutter

How to Stop Moving Subjects

Sports and other fast action call for high shutter speeds – otherwise your pictures may be blurred. But even under unfavourable light conditions, requiring slower shutter speeds, you can stop motion by using professional tricks. It is easier, for example, to stop motion of a subject moving straight toward the camera, or at a slight angle, than it is to "freeze" a subject moving straight across at right angles to the camera. Or, watch for the "still moment" such as is reached by a swing at its highest point just before it swings back, or by the tennis player during the serve when the ball is at the peak of the toss, and the racket is about to be swung. Even $^1/_{20}$ second will "stop" such shots. For very fast motion – automobile races, speed boats, skiing – another well-known professional trick will help you get fine results: Keep the car, boat, or skier centered in the MINOX viewfinder and follow the motion with the camera, releasing the shutter at any instant during this panoraming. The background will be blurred, adding to the impression of fast action, but the subject stays sharp even at $^1/_{50}$ second.

The two built-in Filters

. . . . . will help you improve your black-and-white pictures. In scenic pictures, the green filter will give a blue sky – which would otherwise appear white in the final

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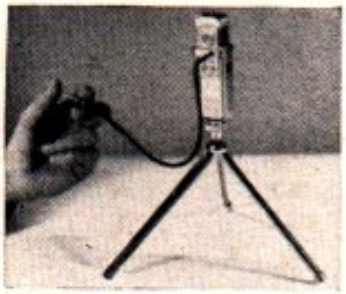

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Changing the Film Type

Some day you may want to take color pictures just when your MINOX is loaded with black-and-white film – or vice versa. Thanks to the MINOX film cassette, it is very easy to "switch" from one film to another at any time.

When you want to change cassettes, "pump" camera once to transport the last-exposed film frame into the take-up end of the cassette. Then remove cassette in the usual manner (see page 10). Note number showing on Exposure Counter; write this number on cassette for future reference.

Before inserting fresh film, set exposure counter at red dot between 50 and 0 – as described on page 9 – and load in the usual manner.

When you re-load the "started" cassette: First set exposure counter three numbers **back** of the number which you noted when you removed the cassette; example: if you took the cassette out at "28", set counter at "25". Now insert cassette in the usual manner. Pump camera three times. This takes up any slack in the cassette and gets your MINOX ready for the next exposure.

Remember: Load and un-load only in subdued light, or in the shade.

print – a richer tone, making white clouds stand out clearly. Green foliage, lawns, etc. which would normally print darker, will show a lighter tone and better modulation. Because the green filter reduces the overall amount of light transmitted through the lens, you must double the shutter speed – in other words use $^1/_{100}$ sec. when the MINOX exposure meter or exposure guide indicates $^1/_{200}$ sec.

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NEVER USE THE GREEN OR ORANGE FILTER WITH COLOR FILM.

$^1/_{500}$ sec. without filter

$^1/_{200}$ sec. with green filter, sky darker, clouds stand out

$^1/_{100}$ sec. with orange filter sky very dark, clouds "fluffy", green areas lighter

Picture Series and Sequence Shots

Your MINOX – compact and instantly ready to "shoot" – makes it so easy to get spontaneous, un-posed pictures. Whenever possible take a whole series of pictures to tell a complete story. With a little practice, you can take an entire sequence of pictures within a few seconds; simply keep your MINOX at eye-level and "pump" the camera with your right hand to advance film and re-cock the shutter.

Tele-Photography with the MINOX

There are times when you cannot get close enough to a subject to get a large image on your MINOX film – or, in fact, you may want to remain at a distance on purpose. Your MINOX may be attached to any high-quality binocular with the MINOX Binocular Clamp; focusing and view-finding is done conveniently through one of the binocular eye-pieces while the MINOX is mounted to the other one. If you are interested in wildlife, mountaineering, etc. you will find the Binocular Clamp a valuable addition to your MINOX.

. . . **IF a picture is partly blank**

One of your fingers covered the lens window. Be sure to keep fingers clear of lens window during exposure – check your "hold"; see page 3.

. . . **IF your film shows irregular spacing or overlapping**

Either you forgot to set the exposure counter at the red dot when you started the film, or you did not pull and push the camera ALL THE WAY between exposures.

. . . **IF some of your negatives are very thin, others almost black**

Determine correct shutter setting for each picture situation. Use an exposure guide or, better still, the MINOX photo-electric exposure meter.

. . . **IF some prints show more "grain" than others from the same film**

Badly over-exposed pictures have coarser grain. Over-exposure is as undesirable as under-exposure. Use an exposure guide or MINOX exposure meter to get correct shutter speed every time.

Color Film does not have as much exposure latitude as black-and-white film. Therefore, use correct shutter speed! The MINOX photo-electric exposure meter is particularly valuable in Color Photography. Even slight deviations from the correct shutter speed may result in false color reproduction.

As a general rule, color pictures are best taken with the sun slightly to one side behind the photographer's back.

If you are seriously interested in all phases of Color Photography, you will find it worthwhile to read one of the many comprehensive books covering this field.

Copying

. . . of documents, drawings, books, etc. is easily done with your MINOX. By using a tripod, MINOX Repro Stand, MINOX Copying Arm, or other means of support, you can conveniently copy such matter, getting as close as 8 inches for largest possible reproduction. Use the special MINOX ASA 5 Micro Grain Copy Film, except when copying photographs or illustrations containing half-tones for which regular MINOX ASA 12 or ASA 25 film is recommended. (See tables showing area covered at various distances, on page 27.)

. . . **IF film cassette does not lie flush in both film chambers, so that back cover of camera cannot be closed**

This may happen on rare occasions when the film take-up core rests on the teeth of the transport wheel in the film chamber. Simply lift out cassette, pull camera open all the way, and close again until the film gate opens. Re-insert cassette. Close cover.

. . . **IF film shows dark areas along edges at intervals**

Either the cassette was handled in very bright light or the film was advanced beyond the red dot before un-loading which may result in light entering through the film slit of the cassette.

WHAT HAPPENED?

You will find it easy to get the "feel" of your MINOX within a short time, and to get fine results with every picture. If you should have a failure at one time or another, check it against these possible errors and learn to avoid a repetition:

. . . **IF the principal subject is not sharp**

The distance scale was not set correctly. Always set the distance carefully, especially for close-ups. Use the measuring chain for extreme close-ups.

. . . **IF pictures look muddy and out of focus**

The lens window probably has a fingerprint or other smudge on it. Clean with soft linen cloth wrapped around a match.

. . . **IF there are blurred or double outlines**

The camera moved during exposure; (hold camera steady or use tripod for longer exposures), OR subject moved (use faster shutter speed for moving subjects).

1/100 sec. without flash. Scenery properly exposed figure too dark

1/200 sec. with electronic flash. Light balanced for figure and scenery

Flash is Easy

You can get fine pictures with your MINOX right around the clock, because, when daylight or room light is no longer sufficient, you can attach a flash unit to your camera. Even in daylight, you can penetrate deep shadows or lighten scenes by using flash.

The MINOX may be used with any type of flash source connected to the flash nipple of the camera. The shutter has built-in synchronization of the X-type (it "fires" the flash as soon as the shutter release of the camera is pressed).

Flash Source	**Synchronized at shutter speeds:**
Electronic Flash Units	1/2 second to 1/500 second
Flash Bulbs: SM, SF	1/2 second to 1/100 second
M-2, 5, 8, 25	1/2 second to 1/20 second

A flash unit made by MINOX is expected to become available soon, very complete flash instructions will be issued at the same time.

. . . **IF film has thin horizontal scratches (telephone wires)**

Dust is the enemy of your MINOX films. Never keep a film cassette in your pocket without a wrapper. Before loading the camera, blow out any dust particles which may have lodged in the film chambers.

. . . **IF film cassette will not easily drop into camera when loading**

The film gate **must be open** when the film is dropped into the camera; be sure to push the camera (with open cover) together about 1/8" to open gate. (See page 9.)

. . . **IF the cassette cannot be removed from camera, or if cassette lid lifts out, but the film and container remain in camera**

See previous explanation. Film gate must be open when loading or un-loading cassette. Never use force to remove film. Accidentally opened film may be partly saved if it is immediately wrapped in black paper.

Subject/Field Size and Depth of Field Tables.

Distance Focused On	Subject / Field Size – inch.	Depth of Field
∞ **Infinity**	—	**12′ 8″** to ∞
12′	105 x 77	6′ 1 1/2″ to ∞
6′	**53** x **38**	**4′** to **11′ 4″**
4′	35 x 25 1/2	3′ 1/2″ to 5′ 11″
3′	**26** x **19**	**2′ 5 7/8″** to **3′ 9 1/2″**
2′ 4 7/8″	20 3/4 x 15	1′ 11 7/8″ to 2′ 11 1/4″
2′	**17** 1/8 x **12** 1/2	**1′ 8** 3/4″ to **2′ 4** 1/2″
1′ 8 3/4″	14 7/8 x 10 7/8	1′ 6 3/8″ to 2′
1′ 6″	**12** 3/4 x **9** 3/4	**1′ 4** 1/8″ to **1′ 8** 1/2″
1′ 2 3/8″	10 1/2 x 7 1/8	1′ 1 1/8″ to 1′ 3 7/8″
1′	**8** 7/8 x **6**	**11** 1/8″ to **1′ 1″**
10 7/8″	7 1/2 x 5 3/8	10 1/8″ to 11 3/4″
10″	**6** 3/4 x **4** 7/8	**9** 1/4″ to **10** 3/4″
8 7/8″	6 x 4 3/8	8 3/8″ to 9 1/2″
8″	**5** 3/8 x **3** 7/8	**7** 5/8″ to **8** 1/2″

Distances are measured from the **front** of the camera.

Figures in light type apply when distance scale of camera is set exactly half-way between two adjacent engraved distance markings.

For convenient measuring of close distances, the MINOX chain is equipped with beads at 8″ – 10″ – 12″ – 18″.

MINOX Slide Projector Model 30

There is no greather thrill than seeing your fine MINOX Color Transparencies projected on the screen. All the subtleties of color are brought out in projection.

The MINOX Slide Projector is especially designed for your MINOX slides. It has an efficient light system, with a 100 Watt projection bulb, silvered concave glass reflector, and aspherical condenser lens; a special adjusting lamp socket permits critical alignment of the filament for even illumination over the entire picture area.

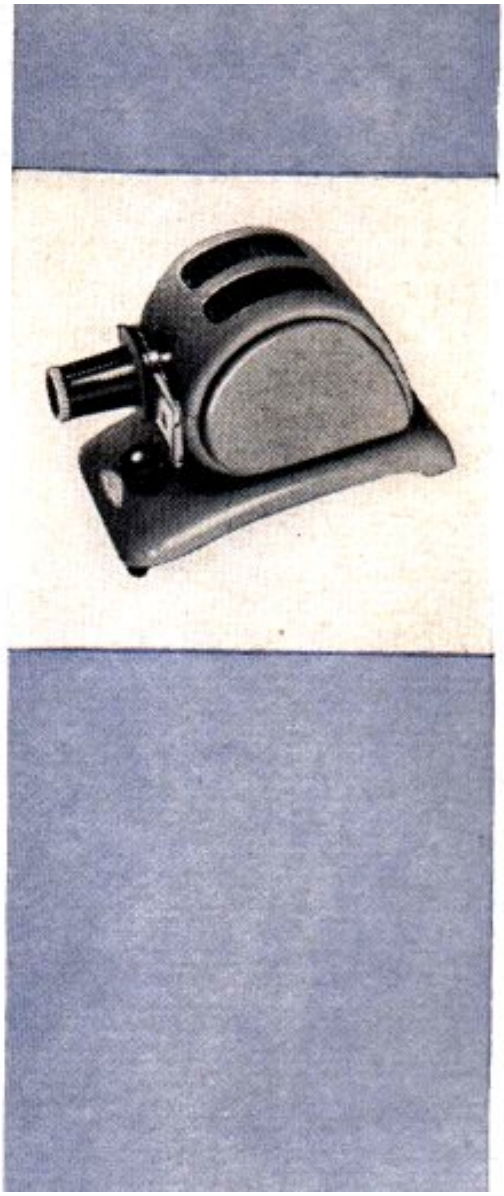
Triple-wall construction of the all-metal housing assures free air circulation for complete ventilation of the lighting system. A heat-absorbing filter gives added protection to the transparencies during projection.

The MINOSTAR f/2.9 35 mm projection lens, in focusing mount, produces brilliant, critically sharp screen images.

The MINOX Slide Projector has an attractive, practical, gray instrument crackle finish. Built-in front elevating micrometer screw permits height adjustment to center the projected image on the screen. The projector is supplied complete with an all-metal slide carrier.

MINOX color transparencies for projection in the MINOX Slide Projector should be mounted in MINOX 30 x 30 mm Transparency Mounts; the MINOX Transparency Cutter is a convenient accessory for cutting individual transparencies out of film strips.

The MINOX Projector may also be used with other ultra-miniature transparency sizes down to 15 x 15 mm.



Shutter guide for outdoor pictures

This simple guide will give you good results from two hours after sunrise until two hours before sunset. For accurate and convenient determination of shutter speeds for all possible conditions, the MINOX Exposure Meter is recommended.
Use the shutter speed shown opposite the **type of subject,** under the prevailing **light conditions.**

Subjects are:
AVERAGE – Nearby people, gardens, houses
LIGHT – People in beach, sea, snow scenes, distant scenery
DARK – People in dark clothing, dark flowers, streets, houses
When in doubt use AVERAGE setting.

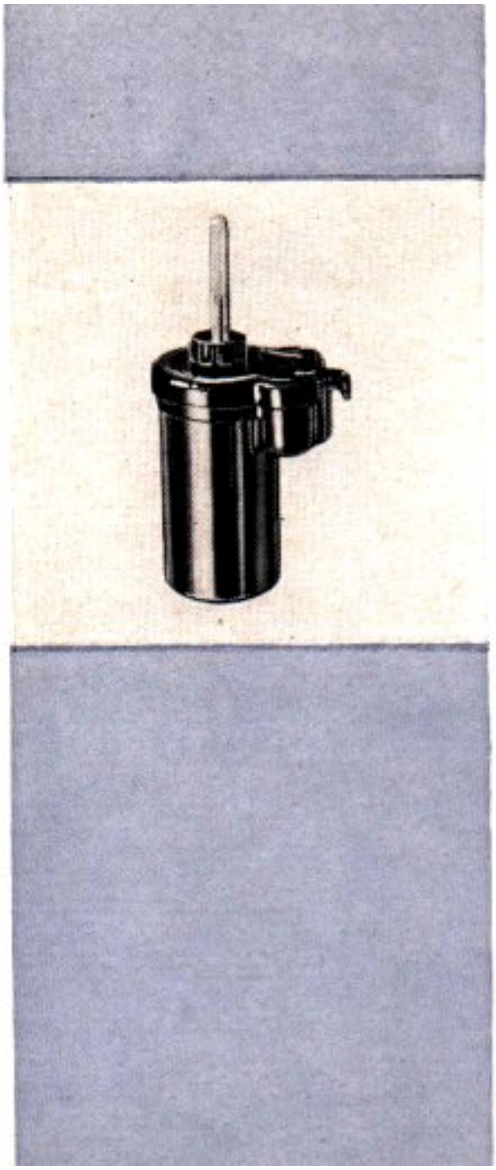
Light Conditions are:
BRIGHT Sun – Clear Sky strong shadows
HAZY Sun – Soft shadows
CLOUDY Bright – No sun, no shadows
CLOUDY Dull – No sun, dark sky

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 12 Film (Green Label)				
AVERAGE	100	50	20	10
LIGHT	200	100	50	20
DARK	50	20	10	5
ASA 25 Film (Yellow Label)				
AVERAGE	200	100	50	20
LIGHT	500	200	100	50
DARK	100	50	20	10

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 50 Film (Blue Label)				
AVERAGE	500	200	100	50
LIGHT	1000	500	200	100
DARK	200	100	50	20
ASA 100 Film (Red Label)				
AVERAGE	1000	500	200	100
LIGHT	*1000	1000	500	200
DARK	500	200	100	50

*Note: Use green filter

For shutter settings when using Green or Orange Filter, see page 17.



MINOX Developing Tank

The developing of MINOX black-and-white films becomes a simple and convenient matter with the MINOX Developing Tank.

You need no darkroom. You place the film cassette into the "light lock" of the tank, and twist the tank core to unwind the film inside – that's all. The MINOX Tank Thermometer and your watch are the only other equipment you need.

Pre-measured quantities of MINOX dry chemicals for micro-grain development are available in handy packets, ready for solution in water.

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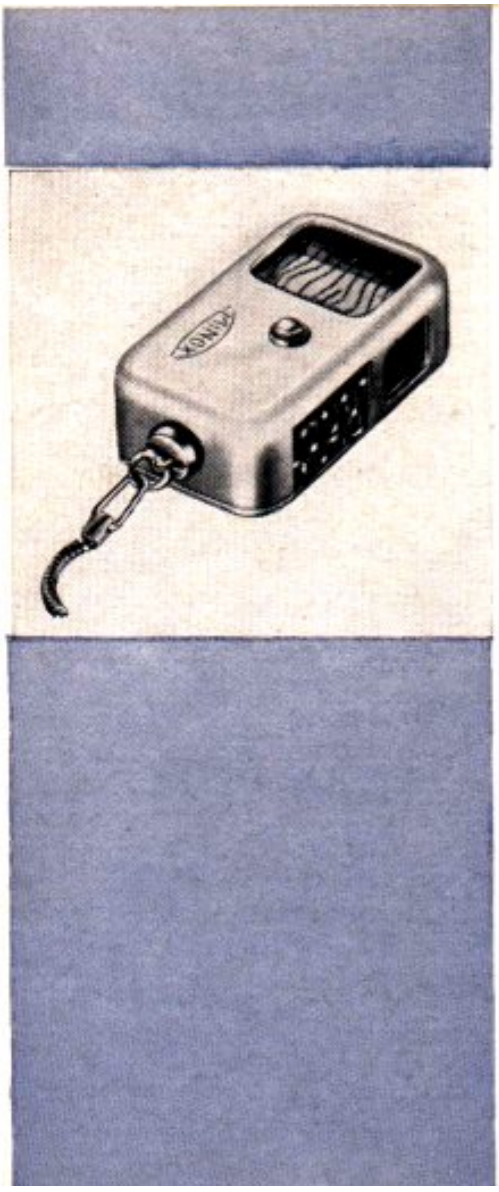


The MINOX Exposure Meter

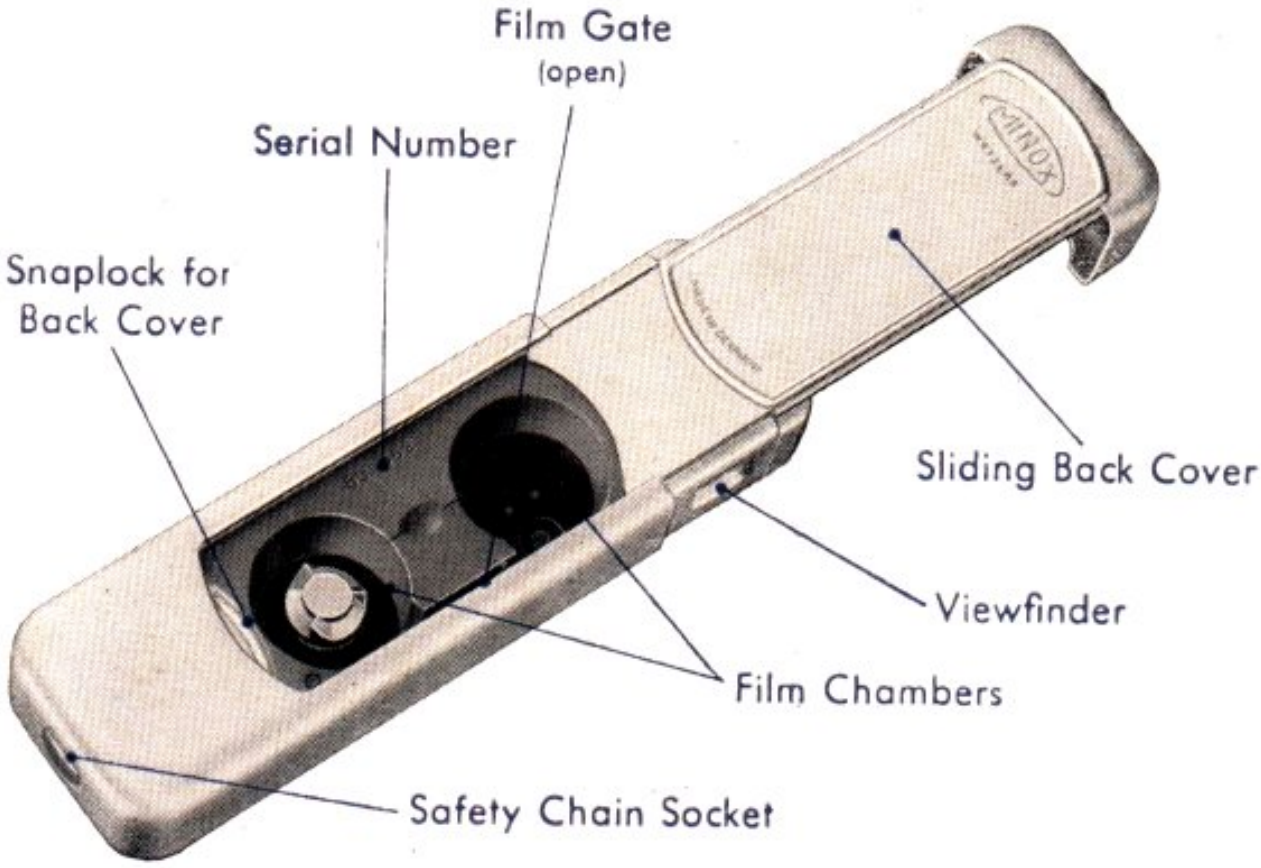
. . . tells you the correct shutter setting for any picture at a glance – and "remembers" the setting until you make the next exposure reading.

What's more, a built-in viewfinder lets you pre-view the picture just as your MINOX camera will see it; thus, you can select the best possible angle every time.

Correct shutter setting means better pictures – pictures with fine highlights, good shadow detail, and every subtle tone of the original scene. Color film, particularly, requires correct exposure to assure proper color values.

Even smaller than the MINOX camera, the Minox Exposure Meter is a precision built photo-electric meter with a honeycomb light gathering lens for readings over a wide range of light conditions. It has jewel bearings and is shock resistant.

Supplied with a leather case to match your camera case, and with a chrome chain, the MINOX Exposure Meter is the perfect companion for your MINOX camera. It may also be used with oher cameras.


Film Gate
(open)
Serial Number
Snaplock for
Back Cover
Sliding Back Cover
Viewfinder
Film Chambers
Safety Chain Socket

MINOX ACCESSORIES

For Picture Taking:

MINOX Exposure Meter · MINOX Camera Clamp for attaching to Tripod etc. · MINOX Table Tripod · MINOX Binocular Clamp MINOX Copying Arm · MINOX Universal Copying Arm · MINOX Folding Reproduction Stand · MINOX Black and white films for all purposes and all degrees of sensitivity · MINOX Color film.

This complete line of intelligently designed and very practical accessories add to the scope of MINOX photography. They will be welcomed particularly by those photographers who want to utilize the many special applications to which the MINOX can be put, or who want to do their own developing and enlarging.

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MINOX ACCESSORIES

MINOX
Accessories

For Film Developing:

MINOX Daylight Developing Tank · MINOX Fine Grain Developer. MINOX Transparent Negative Wallets.

For Enlarging:

MINOX Enlarger Copying Stand · MINOX Enlarging Easel with print Masks · MINOX Film Magnifier.

For Projection:

MINOX Projector · MINOX Slide Frames · MINOX Film Cutter.

MINOX G.m.b.H.
Optical and Precision Engineering Works
GIESSEN, P.O.B. 137, West Germany

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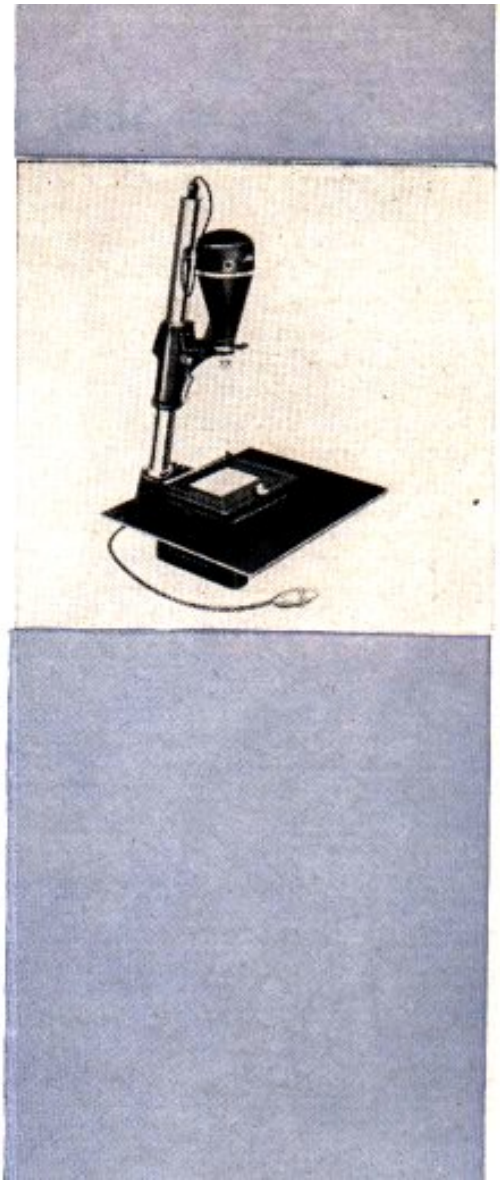
The MINOX Enlarger-Copying Stand

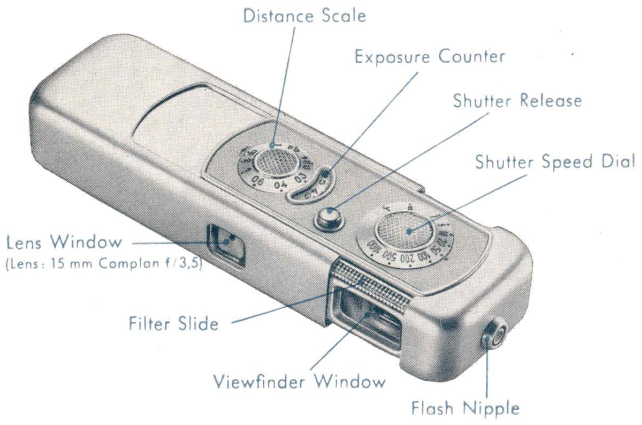
While commercial MINOX processing services can give you excellent enlargements from your films, you will get even greater satisfaction and pleasure from your MINOX if you make enlargements yourself. Then you can obtain precisely the results you desire, compose each picture perfectly, and use the paper surface and contrast that best suits the individual subject.

The MINOX Enlarger-Copying Stand is equipped with a light source, condenser unit, and lens system specifically designed for ultra-miniature film; here, as in the MINOX camera, the film is held in a curved position and the highly corrected 15 mm f/3.5 lens yields prints of critical sharpness. Enlargements up to 11 x 14 inches can be made on the baseboard, while even greater enlargements are possible by means of an accessory reflex mirror.

With the lamp house removed, the upright becomes the support for a Copying Arm to hold the MINOX, or other cameras, for photographing documents or small objects at close range.

Accessory film carriers permit using the MINOX Enlarger for 8 mm, 16 mm or 10 x 10 mm film sizes.





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For Projection:

MINOX Projector · MINOX Slide Frames · MINOX Film Cutter.

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NEW YORK 3, N. Y. LOS ANGELES 46, CALIF.

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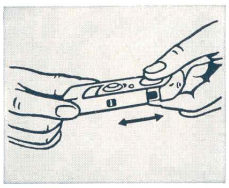
HOW TO USE THE MINOX

Opening and Closing the Camera

To open the camera for picture-taking, place left thumb on Shutter Speed Dial and left forefinger on underside of camera, while grasping narrow sides of camera with the right thumb and forefinger; pull camera open – like a telescope – as far as it will go. After a picture has been taken, push the camera together as far as possible. This "pumping" action automatically advances the film and winds the shutter for the next exposure. IMPORTANT: Pull or push **all the way!**

Illustration 1



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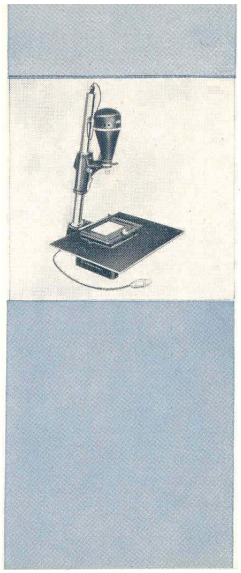

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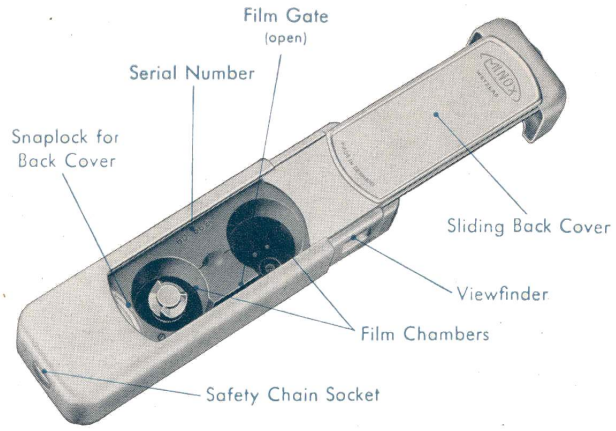
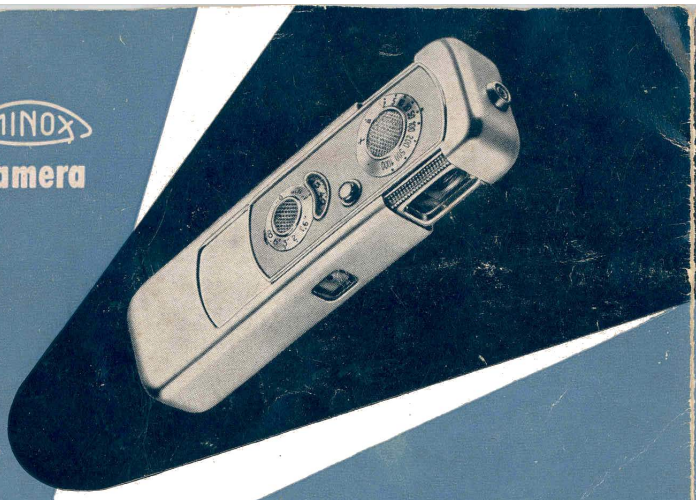


MINOX

Camera



PRICE 50 cents

OWNER'S MANUAL

The little MINOX – for great enjoyment

Before you start reading, please fold back this and the last page of the Manual, so that you will have the diagrams of the MINOX constantly at your fingertips for reference.

Picture Series and Sequence Shots

Your MINOX – compact and instantly ready to "shoot" – makes it so easy to get spontaneous, un-posed pictures. Whenever possible take a whole series of pictures to tell a complete story. With a little practice, you can take an entire sequence of pictures within a few seconds; simply keep your MINOX at eye-level and "pump" the camera with your right hand to advance film and re-cock the shutter.

Tele-Photography with the MINOX

There are times when you cannot get close enough to a subject to get a large image on your MINOX film – or, in fact, you may want to remain at a distance on purpose. Your MINOX may be attached to any high-quality binocular with the MINOX Binocular Clamp; focusing and view-finding is done conveniently through one of the binocular eye-pieces while the MINOX is mounted to the other one. If you are interested in wildlife, mountaineering, etc. you will find the Binocular Clamp a valuable addition to your MINOX.

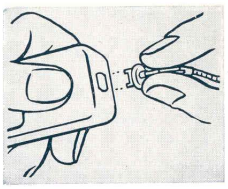
Film cassette will drop out of camera with slight tapping, or may be lifted out by its bridge. Store the cassette in film box or in black paper until it is developed.
Note: Color Films end at 30 or 36 – see film package. Unload after two push-and-pull motions. Advance Exposure Counter to red dot before loading new film.

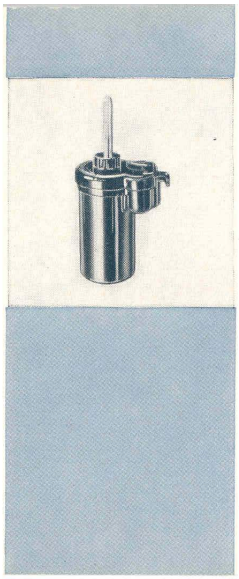
CAUTION: Do not advance films beyond the numbers indicated above, as the film would be entirely pulled into the take-up side; this may result in light entering through the cassette slit during un-loading.

Attaching the Safety Chain

To protect your MINOX against accidental falls, always keep it on its chain. Insert the rectangular plug at the end of the chain into the corresponding Chain Socket of the camera. The spring-loaded dust cover will disappear in the camera. Use the D-ring at the end of the chain in the manner of a screw driver, inserting it into the slot of the plug disc; turn the plug one-quarter turn to the right. (Illustration 12). To remove the chain, reverse these steps; insert D-ring into slot, turn one-quarter to the **left** – plug will jump out of socket.

Illustration 12





MINOX Developing Tank

The developing of MINOX black-and-white films becomes a simple and convenient matter with the MINOX Developing Tank.
You need no darkroom. You place the film cassette into the "light lock" of the tank, and twist the tank core to unwind the film inside – that's all. The MINOX Tank Thermometer and your watch are the only other equipment you need.
Pre-measured quantities of MINOX dry chemicals for micro-grain development are available in handy packets, ready for solution in water.
Ask your Dealer to show you the simple operation of the MINOX Daylight-Loading Developing Tank.

Holding the MINOX

The illustrations show the most practical way of holding your MINOX: With both hands, and steadied against the face. Such a steady, firm hold is assurance against camera movement during exposure. Keep both thumbs under the camera and other fingers on top to avoid the possibility of covering the lens window. You might practice this hold in front of a mirror to check yourself. The same hold can conveniently be used for vertical or horizontal pictures.

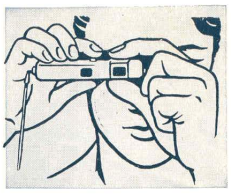
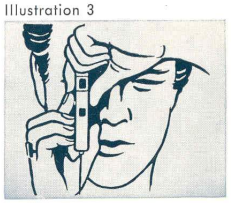


Illustration 2

Illustration 3



The Convenient Filters

You can place the built-in orange or green filters before the lens simply by pushing the knurled slide – above the viewfinder window – towards the lens window. Make sure the desired filter is fully visible in the lens window. When using the green filter, double the exposure time (i. e. use $^1/_{100}$ sec. instead of $^1/_{200}$ sec.); with the orange filter, triple the exposure. For tips on using filters, see pages 16 and 17.

The filters are automatically retracted when the camera is closed. Therefore, subsequent exposures are made without a filter unless the filter is again pushed into position.

Taking the Picture

When you are ready to "shoot", frame your picture in the viewfinder (see page 4), and "squeeze" the shutter release button – don't "punch" it. For critically sharp pictures, the camera must not be jarred during exposure. The shutter release of the MINOX works so smoothly – and without resistance – that you will find it easy to operate.

NOTE: The small circle in the lens window indicates that the shutter is wound, ready for an exposure. If the circle is not showing, simply "push-and-pull" the camera to make it ready.

. . . IF film has thin horizontal scratches (telephone wires)

Dust is the enemy of your MINOX films. Never keep a film cassette in your pocket without a wrapper. Before loading the camera, blow out any dust particles which may have lodged in the film chambers.

. . . IF film cassette will not easily drop into camera when loading

The film gate **must be open** when the film is dropped into the camera; be sure to push the camera (with open cover) together about $^1/_8$" to open gate. (See page 9.)

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What's more, a built-in viewfinder lets you pre-view the picture just as your MINOX camera will see it; thus, you can select the best possible angle every time.

Correct shutter setting means better pictures – pictures with fine highlights, good shadow detail, and every subtle tone of the original scene. Color film, particularly, requires correct exposure to assure proper color values.

Even smaller than the MINOX camera, the MINOX Exposure Meter is a precision built photo-electric meter with a honeycomb light gathering lens for readings over a wide range of light conditions. It has jewel bearings and is shock resistant.

Supplied with a leather case to match your camera case, and with a chrome chain, the MINOX Exposure Meter is the perfect companion for your MINOX camera. It may also be used with other cameras.

The Shutter Speed Dial may be rotated with the camera open or closed, whether the shutter is wound or not.

The engraved figures are fractions of a second (2 indicates $^1/_2$ second, 1000 is $^1/_{1000}$ sec., etc.). Intermediate speeds may also be set.

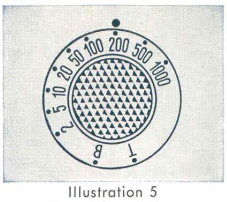
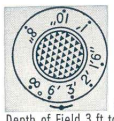


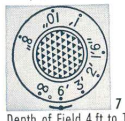
Illustration 5
Shutter Speed Dial
(set at $^1/_{200}$ sec.)

When the Dial is set at "B", the shutter opens if the Shutter Release is pressed down, and remains open as long as the Release is held down; set at "T" (Time), the shutter opens when the Release is pressed down, and remains open until the Release is pressed a second time. B or T exposures should be made only with the MINOX resting on or against a firm support, or with a tripod (see page 14).

Always use an exposure guide, or the MINOX Exposure Meter, to determine the correct shutter setting for existing light conditions.



6
Depth of Field 3 ft to 6 ft
Sharpest at 4 feet



7
Depth of Field 4 ft to 11 ft
Sharpest at 6 feet

8
Snapshot Setting
Depth of Field 6 ft to Infinity
Sharpest at 12 ft

Setting the Distance (Focusing)

The MINOX Distance Scale is calibrated from 8" to Infinity (∞). Set the subject-to-camera distance by rotating the Distance Scale until the estimated distance is opposite the black dot of the small bracket. Objects at the set distance will be sharpest but, within a certain range, nearer and farther objects will also appear acceptably sharp. The entire range of sharpness from nearest to farthest objects is called "depth of field".

The near and far limits of the Depth of Field for any distance setting are indicated on the MINOX by the small bracket adjacent to the Distance Scale. For example, when set at 6' (Illustration 7), the Depth of Field extends from 4 ft to 11 ft; or, when set at 4' (Illustration 6) it reaches from 3 ft to 6 ft. The greatest Depth of Field is obtained with the SNAPSHOT SETTING (small dot half-way between ∞-Infinity – and 6 ft) as shown in illustration 8. You will find this setting convenient for all pictures which require quick readiness and fast shooting, (i. e. Sports, Groups, Street Scenes, etc.); just keep in mind that the nearest object must be at least 6 feet away.

Subject / Field Size and Depth of Field Tables.

Distance Focused On	Subject / Field Size – inch.	Depth of Field
∞ **Infinity**	—	**12' 8"** to ∞
12'	105 x 77	6' 1 1/2" to ∞
6'	**53** x **38**	**4'** to **11' 4"**
4'	35 x 25 1/2	3' 1/2" to 5' 11"
3'	**26** x **19**	**2' 5 7/8"** to **3' 9 1/2"**
2' 4 7/8"	20 3/4 x 15	1' 11 7/8" to 2' 11 1/4"
2'	**17** 1/8 x **12** 1/2	**1' 8 3/4"** to **2' 4 1/2"**
1' 8 3/4"	14 7/8 x 10 7/8	1' 6 3/8" to 2'
1' 6"	**12** 3/4 x **9** 3/4	**1' 4** 1/8" to **1' 8** 1/2"
1' 2 3/8"	10 1/2 x 7 1/8	1' 1 1/8" to 1' 3 7/8"
1'	**8** 7/8 x **6**	**11** 1/8" to **1' 1"**
10 7/8"	7 1/2 x 5 3/8	10 1/8" to 11 3/4"
10"	**6** 3/4 x **4** 7/8	**9** 1/4" to **10** 3/4"
8 7/8"	6 x 4 3/8	8 3/8" to 9 1/2"
8"	**5** 3/8 x **3** 7/8	**7** 5/8" to **8** 1/2"

Distances are measured from the **front** of the camera.

Figures in light type apply when distance scale of camera is set exactly half-way between two adjacent engraved distance markings.

For convenient measuring of close distances, the MINOX chain is equipped with beads at 8" – 10" – 12" – 18".

. . . **IF film cassette does not lie flush in both film chambers, so that back cover of camera cannot be closed**

This may happen on rare occasions when the film take-up core rests on the teeth of the transport wheel in the film chamber. Simply lift out cassette, pull camera open all the way, and close again until the film gate opens. Re-insert cassette. Close cover.

. . . **IF film shows dark areas along edges at intervals**

Either the cassette was handled in very bright light or the film was advanced beyond the red dot before un-loading which may result in light entering through the film slit of the cassette.

For scenery without important foreground interest, always set the Scale at Infinity (∞). At this setting, the Depth of Field begins at approximately 12 ft.

For accurate measuring of extreme close-ups (8" to 24"), the safety chain of your MINOX carries small beads at distances corresponding exactly to the close distances engraved on the Distance Scale. With the chain locked in the camera socket, and held taut, exact measurements can be made at 8 – 10 – 12 – 18 and 24 inches (full length). The Depth of Field ranges and Subject Sizes at various set distances are shown in the Tables on page 27.

Always f/3.5 — an Important MINOX Feature

The 15 mm Complan lens of your MINOX yields such extreme Depth of Field, and together with the slightly curved design of the Film Gate gives such outstanding definition over the entire film area, that an adjustable lens diaphragm could be omitted – saving you an extra operation necessary with other cameras.

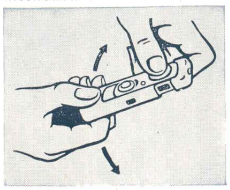
The MINOX always works at full f/3.5 opening.

The Viewfinder

The luminous frame within the MINOX viewfinder contains the exact picture area that will appear on the film. The viewfinder image is automatically corrected, at all distances, to agree with the picture area. (Parallax Compensation). For extreme close-ups (8–10 inches), the picture area lies a frame-width within the luminous frame.

Eyeglass wearers may readily use the MINOX viewfinder without correction lenses.

Illustration 4



Setting the Shutter

The length of time the light is permitted to reach the film is controlled by the shutter. The Shutter Speed Dial is conveniently rotated by placing the thumb on the knurled surface while holding the forefinger under the camera and, with the other hand, turning the camera until the desired speed is set opposite the black dot.

MINOX Slide Projector Model 30

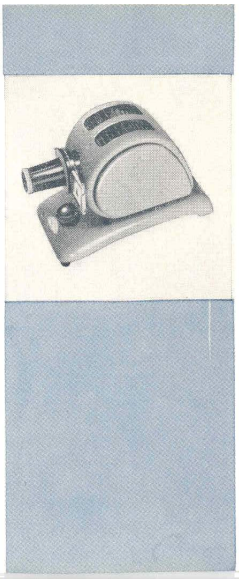
There is no greather thrill than seeing your fine MINOX Color Transparencies projected on the screen. All the subtleties of color are brought out in projection.

The MINOX Slide Projector is especially designed for your MINOX slides. It has an efficient light system, with a 100 Watt projection bulb, silvered concave glass reflector, and aspherical condenser lens; a special adjusting lamp socket permits critical alignment of the filament for even illumination over the entire picture area. Triple-wall construction of the all-metal housing assures free air circulation for complete ventilation of the lighting system. A heat absorbing filter gives added protection to the transparencies during projection.

The MINOSTAR f/2.9 35 mm projection lens, in focusing mount, produces brilliant, critically sharp screen images. The MINOX Slide Projector has an attractive, practical, gray instrument crackle finish. Built-in front elevating micrometer screw permits height adjustment to center the projected image on the screen. The projector is supplied complete with an al-lmetal slide carrier.

MINOX color transparencies for projection in the MINOX Slide Projector should be mounted in MINOX 30 x 30 mm Transparency Mounts; the MINOX Transparency Cutter is a convenient accessory for cutting individual transparencies out of film strips.

The MINOX Projector may also be used with other ultraminiature transparency sizes down to 15 x 15 mm.



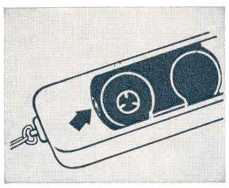


Illustration 11

LOAD CASSETTE INTO CAMERA ONLY WHEN FILM GATE IS OPEN. Drop cassette into film chambers, close back cover, and push-pull camera once.

If the back cover cannot be closed – this is a rare coincidence when the film take-up core is resting on the teeth of the transport wheel in the film chamber – lift out the cassette, pull the camera open all the way, and close again until the film gate opens. Re-insert cassette, close back cover, and push-pull-push camera once.

Un-Loading

Watch the Exposure Counter – 50 is the last exposure! Push-and-pull the camera twice. The Exposure Counter should now be at the red dot. Unload in subdued light. Open back cover and spread film gate (as if to load).

WHAT HAEPENED?

You will find it easy to get the "feel" of your MINOX within a short time, and to get fine results with every picture. If you should have a failure at one time or another, check it against these possible errors and learn to avoid a repetition:

. . . IF the principal subject is not sharp

The distance scale was not set correctly. Always set the distance carefully, especially for close-ups. Use the measuring chain for extreme close-ups.

. . . IF pictures look muddy and out of focus

The lens window probably has a fingerprint or other smudge on it. Clean with soft linen cloth wrapped around a match.

. . . IF there are blurred or double outlines

The camera moved during exposure; (hold camera steady or use tripod for longer exposures), OR subject moved (use faster shutter speed for moving subjects).

THINGS TO REMEMBER

Before loading —
make sure Exposure Counter is set at red dot between 50 an 0
Before inserting or removing film cassette —
make sure Film Gate is open
When taking the picture —
keep fingers away from lens window;
hold camera steady; "squeeze" shutter release button
At end of film —
do not attempt to take more pictures than the film allows (50 on black-and-white; 30 or 36 on color film)
Always —
keep Lens Window clean. Fingerprints or other smudges on the lens window cause un-sharp pictures. To clean, wrap soft linen cloth around match stick.

Changing the Film Type

Some day you may want to take color pictures just when your MINOX is loaded with black-and-white film – or vice versa. Thanks to the MINOX film cassette, it is very easy to "switch" from one film to another at any time.

When you want to change cassettes, "pump" camera once to transport the last-exposed film frame into the take-up end of the cassette. Then remove cassette in the usual manner (see page 10). Note number showing on Exposure Counter; write this number on cassette for future reference.

Before inserting fresh film, set exposure counter at red dot between 50 and 0 – as described on page 9 – and load in the usual manner.

When you re-load the "started" cassette: First set exposure counter three numbers **back** of the number which you noted when you removed the cassette; example: if you took the cassette out at "28", set counter at "25". Now insert cassette in the usual manner. Pump camera three times. This takes up any slack in the cassette and gets your MINOX ready for the next exposure.

Remember: Load and un-load only in subdued light, or in the shade.

Shutter guide for outdoor pictures

This simple guide will give you good results from two hours after sunrise until two hours before sunset. For accurate and convenient determination of shutter speeds for all possible conditions, the MINOX Exposure Meter is recommended.
Use the shutter speed shown opposite the **type of subject,** under the prevailing **light conditions.**

Subjects are:
AVERAGE – Nearby people, gardens, houses
LIGHT – People in beach, sea, snow scenes, distant scenery
DARK – People in dark clothing, dark flowers, streets, houses
When in doubt use AVERAGE setting.

Light Conditions are:
BRIGHT Sun – Clear Sky strong shadows
HAZY Sun – Soft shadows
CLOUDY Bright – No sun, no shadows
CLOUDY Dull – No sun, dark sky

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 12 Film (Green Label)				
AVERAGE	100	50	20	10
LIGHT	200	100	50	20
DARK	50	20	10	5
ASA 25 Film (Yellow Label)				
AVERAGE	200	100	50	20
LIGHT	500	200	100	50
DARK	100	50	20	10

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 50 Film (Blue Label)				
AVERAGE	500	200	100	50
LIGHT	1000	500	200	100
DARK	200	100	50	20
ASA 100 Film (Red Label)				
AVERAGE	1000	500	200	100
LIGHT	*1000	1000	500	200
DARK	500	200	100	50

*Note: Use green filter

For shutter settings when using Green or Orange Filter, see page 17.

YOUR MINOX is a precision instrument designed and built to give you excellent pictures under all kinds of conditions, indoors and out. As your constant companion, your MINOX is always ready to catch not only delightful, spontaneous snapshots, but an endless variety of fine pictures of any subject, any occasion, at any time.
This Manual shows you the way to best results with your MINOX. It contains many valuable tips which you will find helpful. Read the various sections carefully so that you will get fine results right from the start.

The **first section** explains the operation of your MINOX. Read it with the un-loaded camera at hand – once you are familiar with the simple operating steps, you will always enjoy the full pleasure of picture-taking with your MINOX.

Part two will help you select the proper kind of film for best results. It tells about filters, flash, close-ups, and many other special uses for your MINOX.

The **final pages** point out annoying little errors which may make the difference between a good and a bad picture. You will find it easy to avoid such mistakes, once you are aware of them.

If you have any questions, your MINOX dealer will always be glad to help, and we invite you to write to us whenever we may be of service to you.

Sole U. S. Distributors
Kling Photo Corporation
235 Fourth Avenue New York 3, N. Y.

. . . IF a picture is partly blank

One of your fingers covered the lens window. Be sure to keep fingers clear of lens window during exposure – check your "hold"; see page 3.

. . . IF your film shows irregular spacing or overlapping

Either you forgot to set the exposure counter at the red dot when you started the film, or you did not pull and push the camera ALL THE WAY between exposures.

. . . IF some of your negatives are very thin, others almost black

Determine correct shutter setting for each picture situation. Use an exposure guide or, better still, the MINOX photo-electric exposure meter.

. . . IF some prints show more "grain" than others from the same film

Badly over-exposed pictures have coarser grain. Over-exposure is as undesirable as under-exposure. Use an exposure guide or MINOX exposure meter to get correct shutter speed every time.

The Exposure Counter

tells you at a glance how many pictures you have taken on the film. The Counter advances automatically each time you move the film forward by a "pull-push" of the MINOX.

The Exposure Counter must be set at the red dot between 50 and 0 before a new film cassette is inserted. (Illustration 9). Otherwise, overlapping pictures may result.

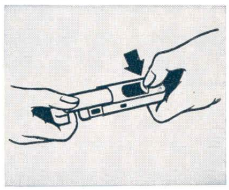
Loading

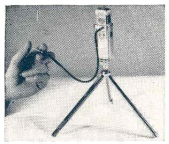
Film cassettes should be shielded from bright sunlight. Always load – or un-load – the MINOX in subdued light, or in the shade.

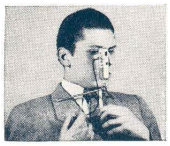
Set Exposure Counter at red dot between 50 and 0 by "pumping" camera. With camera in pulled-out position, press down on crescent-shaped Snaplock (illustration 10) and slide open Back Cover until both Film Chambers are free. Then "close" camera about 1/8 inch to spread the Film Gate open. (This occurs when the snaplock almost disappears in the camera Illustration 11).

Illustration 9

Illustration 10







speeds of 1/20 sec. and slower. For all snapshots, use the hold suggested on page 3, always making sure that you "squeeze" the shutter to avoid jarring the camera.

How About Longer Exposures?

You may be able to hold the MINOX steady by leaning your elbows on a table or other firm surface, or against a wall; or you may place the MINOX on a glass, ledge, etc. It is best, however, to attach the MINOX with a camera clamp to a tripod. You will find the MINOX pocket tripod a particularly fine and versatile accessory. Only slightly larger than a pencil, this tripod with its swivel top may be used on a table, chair, window sill, or against a wall. It may also be held against your shoulders. The pictures at the left suggest various ways of using the MINOX tripod. As an extra precaution against jarring the camera, always use a cable release for tripod exposures.

It's a Colorful World

The 15 mm f/3.5 Complan lens of your MINOX is color-corrected, and has an anti-reflection coating – in other words it is ideally suited for Color Photography.

If you have never taken color pictures before, keep in mind the following suggestions which will help you get fine results from the outset:

Color Film yields the best results in bright or hazy sunlight; on overcast days, results are usually not satisfactory.

Morning and early afternoon hours are the best time for color pictures. At noon the light is usually bluish, resulting in very "cold" colors or an over-all bluish tinge. During the hours just after sunrise, or just before sunset, the light is more reddish, resulting in very "warm" colors.

Watch for the possibility of color reflections (which may not be visible to the eye): A white dress on a green lawn is never pure white, but faintly green.

How to Stop Moving Subjects

Sports and other fast action call for high shutter speeds – otherwise your pictures may be blurred. But even under unfavourable light conditions, requiring slower shutter speeds, you can stop motion by using professional tricks. It is easier, for example, to stop motion of a subject moving straight toward the camera, or at a slight angle, than it is to "freeze" a subject moving straight across at right angles to the camera. Or, watch for the "still moment" such as is reached by a swing at its highest point just before it swings back, or by the tennis player during the serve when the ball is at the peak of the toss, and the racket is about to be swung. Even $^1/_{20}$ second will "stop" such shots. For very fast motion – automobile races, speed boats, skiing – another well-known professional trick will help you get fine results: Keep the car, boat, or skier centered in the MINOX viewfinder and follow the motion with the camera, releasing the shutter at any instant during this panoraming. The background will be blurred, adding to the impression of fast action, but the subject stays sharp even at $^1/_{50}$ second.

The two built-in Filters

. . . . . will help you improve your black-and-white pictures. In scenic pictures, the green filter will give a blue sky – which would otherwise appear white in the final

print – a richer tone, making white clouds stand out clearly. Green foliage, lawns, etc. which would normally print darker, will show a lighter tone and better modulation. Because the green filter reduces the overall amount of light transmitted through the lens, you must double the shutter speed – in other words use $^1/_{100}$ sec. when the MINOX exposure meter or exposure guide indicates $^1/_{200}$ sec.

The orange filter – which requires three times normal shutter speed – darkens blue skies considerably, but lightens all reddish tones. Even in full sunlight it produces dramatic skies and scenes resembling night shots. More important is its ability to produce clear pictures on days when there is a blue atmospheric haze. The orange filter is particularly useful for cloud pictures, snow scenes, mountain photography, and on hazy days. DO NOT USE THE ORANGE FILTER FOR PORTRAITS as red lips would appear almost white.

NEVER USE THE GREEN OR ORANGE FILTER WITH COLOR FILM.

$^1/_{500}$ sec. without filter

$^1/_{200}$ sec. with green filter, sky darker, clouds stand out

$^1/_{100}$ sec. with orange filter sky very dark, clouds "fluffy", green areas lighter

Color Film does not have as much exposure latitude as black-and-white film. Therefore, use correct shutter speed! The MINOX photo-electric exposure meter is particularly valuable in Color Photography. Even slight deviations from the correct shutter speed may result in false color reproduction.

As a general rule, color pictures are best taken with the sun slightly to one side behind the photographer's back.

If you are seriously interested in all phases of Color Photography, you will find it worthwhile to read one of the many comprehensive books covering this field.

Copying

. . . of documents, drawings, books, etc. is easily done with your MINOX. By using a tripod, MINOX Repro Stand, MINOX Copying Arm, or other means of support, you can conveniently copy such matter, getting as close as 8 inches for largest possible reproduction. Use the special MINOX ASA 5 Micro Grain Copy Film, except when copying photographs or illustrations containing half-tones for which regular MINOX ASA 12 or ASA 25 film is recommended. (See tables showing area covered at various distances, on page 27.)

TIPS FOR BEST RESULTS

The "best" Film

MINOX film is available in several different types for black-and-white photography, and for Color Pictures. The black-and-white films vary in sensitivity (speed) to suit every possible need. The sensitivity is expressed in American Standard exposure index numbers: ASA 12 (Green Label), ASA 25 (Yellow Label), ASA 50 (Blue Label), ASA 100 (Red Label). ASA 100 film is twice as sensitive to light as ASA 50, ASA 50 twice as sensitivite as ASA 25, and so on. Thus, under any given conditions ASA 50 film, for instance, would require only half the shutter speed needed for ASA 25.

The lower the film sensitivity, the finer the detail it is capable of reproducing in the final print. Therefore, the super-sensitive ASA 100 film should be used only in instances when there is not enough illumination for slower films, or when flash exposures are not feasible (stage photography, candid shots, etc.). The medium sensitivity films ASA 25 and ASA 50 are best suited for all-around picture-taking, and will yield excellent prints in all popular sizes. ASA 12 film is especially suited for bright beach, mountain, and snow scenes, as well as for close-ups of stationary small objects with the MINOX used on a tripod.

MINOX Color Film is available for daylight, and for artificial (tungsten) light.

Steady!

Get used to a comfortable, steady hold of your MINOX during exposure; experience will show you whether you can get steady pictures even at the slower shutter speeds. Generally, you will find it advisable to use a tripod or other firm support for shutter

1/100 sec. without flash. Scenery properly exposed figure too dark

1/200 sec. with electronic flash. Light balanced for figure and scenery

Flash is Easy

You can get fine pictures with your MINOX right around the clock, because, when daylight or room light is no longer sufficient, you can attach a flash unit to your camera. Even in daylight, you can penetrate deep shadows or lighten scenes by using flash.

The MINOX may be used with any type of flash source connected to the flash nipple of the camera. The shutter has built-in synchronization of the X-type (it "fires" the flash as soon as the shutter release of the camera is pressed).

Flash Source	**Synchronized at shutter speeds:**
Electronic Flash Units	1/2 second to 1/500 second
Flash Bulbs: SM, SF	1/2 second to 1/100 second
M-2, 5, 8, 25	1/2 second to 1/20 second

A flash unit made by MINOX is expected to become available soon, very complete flash instructions will be issued at the same time.

"Frame" Your Subject

Since the MINOX viewfinder shows you the exact picture area, you can easily compose your picture before you actually take it, so that unimportant or disturbing details are omitted right at the start. Advance planning of composition saves extra work in enlarging, and it gives you precisely the picture you want every time.

Close-ups of Small Things

There is a special fascination in close-ups. A frame-filling picture of a single blossom showing the delicate details of each petal can be more exciting than showing a whole acre of flowers. Therefore: Get CLOSE to the subject! Your MINOX offers you the great advantage that you can get as close as 8 inches without any supplementary equipment or extra lenses. Make the most of this excellent feature. Always use the measuring beads of the safety chain to determine the correct distance, as the depth of field at close range is very limited. For instance, when the distance scale is set at 1 ft., the depth extends only from 11 inches to 13 inches. Therefore, accurate distance setting is a must for extreme close-ups. Remember also that, at distances between 8 and 10 inches, the picture area lies a frame-width within the luminous frame of the viewfinder.

MINOX

Camera

OWNER'S MANUAL

The little MINOX – for great enjoyment

Before you start reading. please fold back this and the last page of the Manual, so that you will have the diagrams of the MINOX constantly at your fingertips for reference.

MINOX ACCESSORIES

For Picture Taking:

MINOX Exposure Meter · MINOX Camera Clamp for attaching to Tripod etc. · MINOX Table Tripod · MINOX Binocular Clamp MINOX Copying Arm · MINOX Universal Copying Arm · MINOX Folding Reproduction Stand · MINOX Black and white films for all purposes and all degrees os sensitivity · MINOX Color film.

This complete line of intelligently designed and very practical accessories add to the scope of MINOX photography. They will be welcomed particularly by those photographers who want to utilize the many special applications to which the MINOX can be put, or who want to do their own developing and enlarging.

MINOX ACCESSORIES

For Film Developing:

MINOX Daylight Developing Tank · MINOX Fine Grain Developer. MINOX Tranparent Negative Wallets.

For Enlarging:

MINOX Enlarger Copying Stand · MINOX Enlarging Easel with print Masks · MINOX Film Magnifier.

For Projection:

MINOX Projector · MINOX Slide Frames · MINOX Film Cutter.

MINOX
Accessories

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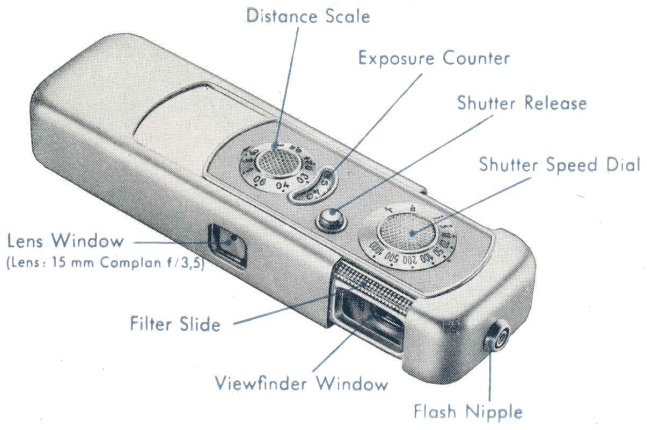
412 e Printed in Germany 12. 55



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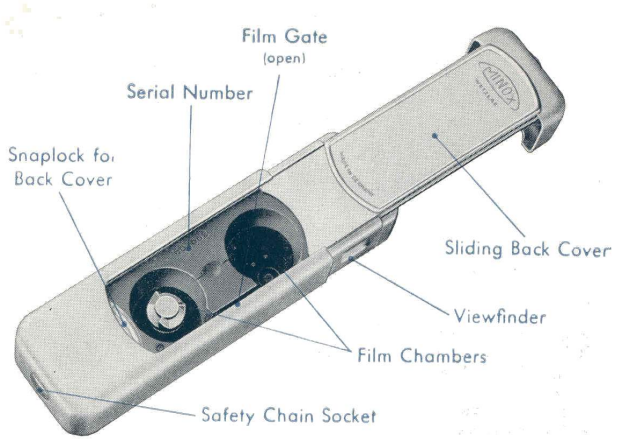
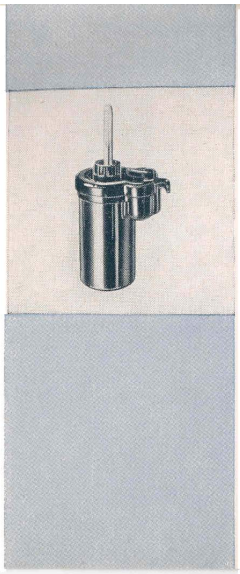




MINOX Developing Tank

The developing of MINOX black-and-white films becomes a simple and convenient matter with the MINOX Developing Tank.

You need no darkroom. You place the film cassette into the "light lock" of the tank, and twist the tank core to unwind the film inside – that's all. The MINOX Tank Thermometer and your watch are the only other equipment you need.

Pre-measured quantities of MINOX dry chemicals for micro-grain development are available in handy packets, ready for solution in water.

Ask your Dealer to show you the simple operation of the MINOX Daylight-Loading Developing Tank.

Holding the MINOX

The illustrations show the most practical way of holding your MINOX: With both hands, and steadied against the face. Such a steady, firm hold is assurance against camera movement during exposure. Keep both thumbs under the camera and other fingers on top to avoid the possibility of covering the lens window. You might practice this hold in front of a mirror to check yourself. The same hold can conveniently be used for vertical or horizontal pictures.

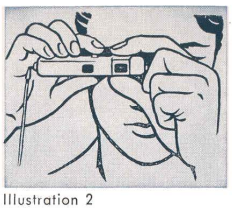


Illustration 2

Illustration 3

Shutter guide for outdoor pictures

This simple guide will give you good results from two hours after sunrise until two hours before sunset. For accurate and convenient determination of shutter speeds for all possible conditions, the MINOX Exposure Meter is recommended.
Use the shutter speed shown opposite the **type of subject,** under the prevailing **light conditions.**

Subjects are:
AVERAGE – Nearby people, gardens, houses
LIGHT – People in beach, sea, snow scenes, distant scenery
DARK – People in dark clothing, dark flowers, streets, houses
When in doubt use AVERAGE setting.

Light Conditions are:
BRIGHT Sun – Clear Sky strong shadows
HAZY Sun – Soft shadows
CLOUDY Bright – No sun, no shadows
CLOUDY Dull – No sun, dark sky

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 12 Film (Green Label)				
AVERAGE	100	50	20	10
LIGHT	200	100	50	20
DARK	50	20	10	5
ASA 25 Film (Yellow Label)				
AVERAGE	200	100	50	20
LIGHT	500	200	100	50
DARK	100	50	20	10

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 50 Film (Blue Label)				
AVERAGE	500	200	100	50
LIGHT	1000	500	200	100
DARK	200	100	50	20
ASA 100 Film (Red Label)				
AVERAGE	1000	500	200	100
LIGHT	*1000	1000	500	200
DARK	500	200	100	50

*Note: Use green filter

For shutter settings when using Green or Orange Filter, see page 17.

YOUR MINOX is a precision instrument designed and built to give you excellent pictures under all kinds of conditions, indoors and out. As your constant companion, your MINOX is always ready to catch not only delightful, spontaneous snapshots, but an endless variety of fine pictures of any subject, any occasion, at any time.

This Manual shows you the way to best results with your MINOX. It contains many valuable tips which you will find helpful. Read the various sections carefully so that you will get fine results right from the start.

The **first section** explains the operation of your MINOX. Read it with the un-loaded camera at hand – once you are familiar with the simple operating steps, you will always enjoy the full pleasure of picture-taking with your MINOX.

Part two will help you select the proper kind of film for best results. It tells about filters, flash, close-ups, and many other special uses for your MINOX.

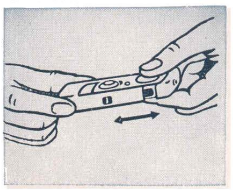
The **final pages** point out annoying little errors which may make the difference between a good and a bad picture. You will find it easy to avoid such mistakes, once you are aware of them.

If you have any questions, your MINOX dealer will always be glad to help.

HOW TO USE THE MINOX

Opening and Closing the Camera

Illustration 1



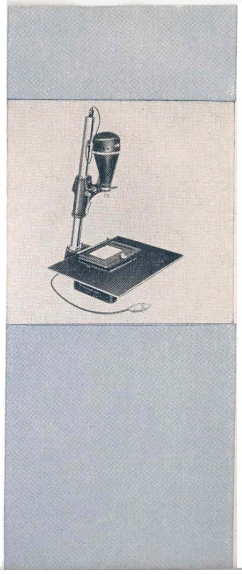
To open the camera for picture-taking, place left thumb on Shutter Speed Dial and left forefinger on underside of camera, while grasping narrow sides of camera with the right thumb and forefinger; pull camera open – like a telescope – as far as it will go. After a picture has been taken, push the camera together as far as possible. This "pumping" action automatically advances the film and winds the shutter for the next exposure. IMPORTANT: Pull or push **all the way!**

The MINOX Enlarger-Copying Stand

While commercial MINOX processing services can give you excellent enlargements from your films, you will get even greater satisfaction and pleasure from your MINOX if you make enlargements yourself. Then you can obtain precisely the results you desire, compose each picture perfectly, and use the paper surface and contrast that best suits the individual subject.

The MINOX Enlarger-Copying Stand is equipped with a light source, condenser unit, and lens system specifically designed for ultra-miniature film; as in the MINOX camera, the film is held in a curved position and the highly corrected 15 mm. f/3.5 lens yields prints of critical sharpness. Enlargements up to 11 x 14 inches can be made on the baseboard, while even greater enlargements are possible by means of an accessory reflex mirror. With the lamp house removed, the upright becomes the support for a Copying Arm to hold the MINOX, or other cameras, for photographing documents or small objects at close range.

Accessory film carriers permit using the MINOX Enlarger for 8 mm, 16 mm or 10 x 10 mm film sizes.



. . . **IF film cassette does not lie flush in both film chambers, so that back cover of camera cannot be closed**

This may happen on rare occasions when the film take-up core rests on the teeth of the transport wheel in the film chamber. Simply lift out cassette, pull camera open all the way, and close again until the film gate opens. Re-insert cassette. Close cover.

. . . **IF film shows dark areas along edges at intervals**

Either the cassette was handled in very bright light or the film was advanced beyond the red dot before un-loading which may result in light entering through the film slit of the cassette.

For scenery without important foreground interest, always set the Scale at Infinity (∞). At this setting, the Depth of Field begins at approximately 12 ft.

For accurate measuring of extreme close-ups (8″ to 24″), the safety chain of your MINOX carries small beads at distances corresponding exactly to the close distances engraved on the Distance Scale. With the chain locked in the camera socket, and held taut, exact measurements can be made at 8 – 10 – 12 – 18 and 24 inches (full length). The Depth of Field ranges and Subject Sizes at various set distances are shown in the Tables on page 27.

Always f/3.5 — an Important MINOX Feature

The 15 mm Complan lens of your MINOX yields such extreme Depth of Field, and together with the slightly curved design of the Film Gate gives such outstanding definition over the entire film area, that an adjustable lens diaphragm could be omitted – saving you an extra operation necessary with other cameras.

The MINOX always works at full f/3.5 opening.

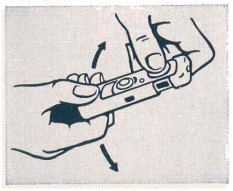
The Viewfinder

The luminous frame within the MINOX viewfinder contains the exact picture area that will appear on the film. The viewfinder image is automatically corrected, at all distances, to agree with the picture area. (Parallax Compensation). For extreme close-ups (8–10 inches), the picture area lies a frame-width within the luminous frame.

Eyeglass wearers may readily use the MINOX viewfinder without correction lenses.

Setting the Shutter

Illustration 4



The length of time the light is permitted to reach the film is controlled by the shutter. The Shutter Speed Dial is conveniently rotated by placing the thumb on the knurled surface while holding the forefinger under the camera and, with the other hand, turning the camera until the desired speed is set opposite the black dot. The Shutter Speed Dial may be rotated with the camera open or closed, whether the shutter is wound or not.

MINOX Slide Projector Model 30

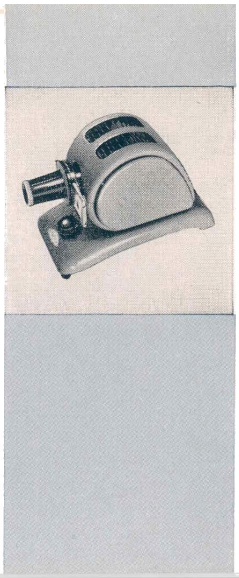
There is no greather thrill than seeing your fine MINOX Color Transparencies projected on the screen. All the subtleties of color are brought out in projection.

The MINOX Slide Projector is especially designed for your MINOX slides. It has an efficient light system, with a 100 Watt projection bulb, silvered concave glass reflector, and aspherical condenser lens; a special adjusting lamp socket permits critical alignment of the filament for even illumination over the entire picture area. Triple-wall construction of the all-metal housing assures free air circulation for complete ventilation of the lighting system. A heat absorbing filter gives added protection to the transparencies during projection.

The MINOSTAR f/2.9 35 mm projection lens, in focusing mount, produces brilliant, critically sharp screen images. The MINOX Slide Projector has an attractive, practical, gray instrument crackle finish. Built-in front elevating micrometer screw permits height adjustment to center the projected image on the screen. The projector is supplied complete with an all-metal slide carrier.

MINOX color transparencies for projection in the MINOX Slide Projector should be mounted in MINOX 30 x 30 mm Transparency Mounts; the MINOX Transparency Cutter is a convenient accessory for cutting individual transparencies out of film strips.

The MINOX Projector may also be used with other ultraminiature transparency sizes down to 15 x 15 mm.



The Convenient Filters

You can place the built-in orange or green filters before the lens simply by pushing the knurled slide – above the viewfinder window – towards the lens window. Make sure the desired filter is fully visible in the lens window. When using the green filter, double the exposure time (i. e. use $^1/_{100}$ sec. instead of $^1/_{200}$ sec.); with the orange filter, triple the exposure. For tips on using filters, see pages 16 and 17.

The filters are automatically retracted when the camera is closed. Therefore, subsequent exposures are made without a filter unless the filter is again pushed into position.

Taking the Picture

When you are ready to "shoot", frame your picture in the viewfinder (see page 4), and "squeeze" the shutter release button – don't "punch" it. For critically sharp pictures, the camera must not be jarred during exposure. The shutter release of the MINOX works so smoothly – and without resistance – that you will find it easy to operate.

NOTE: The small circle in the lens window indicates that the shutter is wound, ready for an exposure. If the circle is not showing, simply "push-and-pull" the camera to make it ready.

. . . IF film has thin horizontal scratches (telephone wires)

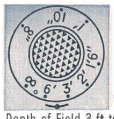
Dust is the enemy of your MINOX films. Never keep a film cassette in your pocket without a wrapper. Before loading the camera, blow out any dust particles which may have lodged in the film chambers.

. . . IF film cassette will not easily drop into camera when loading

The film gate **must be open** when the film is dropped into the camera; be sure to push the camera (with open cover) together about $^1/_8$" to open gate. (See page 9.)

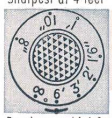
. . . IF the cassette cannot be removed from camera, or if cassette lid lifts out, but the film and container remain in camera

See previous explanation. Film gate must be open when loading or un-loading cassette. Never use force to remove film. Accidentally opened film may be partly saved if it is immediately wrapped in black paper.



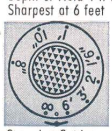
6

Depth of Field 3 ft to 6 ft
Sharpest at 4 feet



7

Depth of Field 4 ft to 11 ft
Sharpest at 6 feet



8

Snapshot Setting
Depth of field 6 ft to Infinity
Sharpest at 12 feet

Setting the Distance (Focusing)

The MINOX Distance Scale is calibrated from 8" to Infinity (∞). Set the subject-to-camera distance by rotating the Distance Scale until the estimated distance is opposite the black dot of the small bracket. Objects at the set distance will be sharpest but, within a certain range, nearer and farther objects will also appear acceptably sharp. The entire range of sharpness from nearest to farthest objects is called "depth of field".

The near and far limits of the Depth of Field for any distance setting are indicated on the MINOX by the small bracket adjacent to the Distance Scale. For example, when set at 6' (Illustration 7), the Depth of Field extends from 4 ft to 11 ft; or, when set at 4' (Illustration 6) it reaches from 3 ft to 6 ft. The greatest Depth of Field is obtained with the SNAPSHOT SETTING (small dot half-way between ∞-Infinity – and 6 ft) as shown in illustration 8. You will find this setting convenient for all pictures which require quick readiness and fast shooting, (i. e. Sports, Groups, Street Scenes, etc.); just keep in mind that the nearest object must be at least 6 feet away.

Subject/Field Size and Depth of Field Tables

Distance Focused On	Subject/Field Size – inch.	Depth of Field
∞ **Infinity**	—	**12'** 8" to ∞
12'	105 x 77	6' 11 1/2" to ∞
6'	**53** x **38**	**4'** to **11'** 4"
4'	35 x 25 1/2	3' 1/2" to 5' 11"
3'	**26** x **19**	**2'** 5 7/8" to **3'** 9 1/2"
2' 4 7/8"	20 3/4 x 15	1' 11 7/8" to 2' 11 1/4"
2'	**17** 1/8 x **12** 1/2	**1'** 8 3/4" to **2'** 4 1/2"
1' 8 3/4"	14 7/8 x 10 7/8	1' 6 3/8" to 2'
1' 6"	**12** 3/4 x **9** 3/4	**1'** 4 1/8" to **1'** 8 1/2"
1' 2 3/8"	10 1/2 x 7 1/8	1' 1 1/8" to 1' 3 7/8"
1'	**8** 7/8 x **6**	**11** 1/8" to **1'** 1"
10 7/8"	7 1/2 x 5 3/8	10 1/8" to 11 3/4"
10"	**6** 3/4 x **4** 7/8	**9** 1/4" to **10** 3/4"
8 7/8"	6 x 4 3/8	8 3/8" to 9 1/2"
8"	**5** 3/8 x **3** 7/8	**7** 5/8" to **8** 1/2"

Distances are measured from the **front** of the camera.

Figures in light type apply when distance scale of camera is set exactly half-way between two adjacent engraved distance markings.

For convenient measuring of close distances, the MINOX chain is equipped with beads at 8" – 10" – 12" – 18".

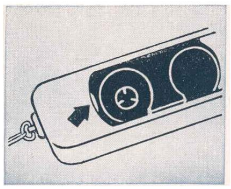


Illustration 11

LOAD CASSETTE INTO CAMERA ONLY WHEN FILM GATE IS OPEN. Drop cassette into film chambers, close back cover, and push-pull camera once.

If the back cover cannot be closed – this is a rare coincidence when the film take-up core is resting on the teeth of the transport wheel in the film chamber – lift out the cassette, pull the camera open all the way, and close again until the film gate opens. Re-insert cassette, close back cover, and push-pull-push camera once.

Un-Loading

Watch the Exposure Counter – 50 is the last exposure! Push-and-pull the camera twice. The Exposure Counter should now be at the red dot. Unload in subdued light. Open back cover and spread film gate (as if to load).

WHAT HAPPENED?

You will find it easy to get the "feel" of your MINOX within a short time, and to get fine results with every picture. If you should have a failure at one time or another, check it against these possible errors and learn to avoid a repetition:

. . . **IF the principal subject is not sharp**

The distance scale was not set correctly. Always set the distance carefully, especially for close-ups. Use the measuring chain for extreme close-ups.

. . . **IF pictures look muddy and out of focus**

The lens window probably has a fingerprint or other smudge on it. Clean with soft linen cloth wrapped around a match.

. . . **IF there are blurred or double outlines**

The camera moved during exposure; (hold camera steady or use tripod for longer exposures), OR subject moved (use faster shutter speed for moving subjects).

Picture Series and Sequence Shots

Your MINOX – compact and instantly ready to "shoot" – makes it so easy to get spontaneous, un-posed pictures. Whenever possible take a whole series of pictures to tell a complete story. With a little practice, you can take an entire sequence of pictures within a few seconds; simply keep your MINOX at eye-level and "pump" the camera with your right hand to advance film and re-cock the shutter.

Tele-Photography with the MINOX

There are times when you cannot get close enough to a subject to get a large image on your MINOX film – or, in fact, you may want to remain at a distance on purpose. Your MINOX may be attached to any high-quality binocular with the MINOX Binocular Clamp; focusing and view-finding is done conveniently through one of the binocular eye-pieces while the MINOX is mounted to the other one. If you are interested in wildlife, mountaineering, etc. you will find the Binocular Clamp a valuable addition to your MINOX.

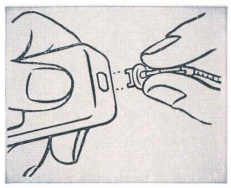
Film cassette will drop out of camera with slight tapping, or may be lifted out by its bridge. Store the cassette in film box or in black paper until it is developed.
Note: Color Films end at 36. Unload after two push-and-pull motions. Advance Exposure Counter to red dot before loading new film.

CAUTION: Do not advance films beyond the numbers indicated above, as the film would be entirely pulled into the take-up side; this may result in light entering through the cassette slit during un-loading.

Attaching the Safety Chain

To protect your MINOX against accidental falls, always keep it on its chain. Insert the rectangular plug at the end of the chain into the corresponding Chain Socket of the camera. The spring-loaded dust cover will disappear in the camera. Use the D-ring at the end of the chain in the manner of a screw driver, inserting it into the slot of the plug disc; turn the plug one-quarter turn to the right. (Illustration 12). To remove the chain, reverse these steps; insert D-ring into slot, turn one-quarter to the **left** – plug will jump out of socket.

Illustration 12



. . . **IF a picture is partly blank**

One of your fingers covered the lens window. Be sure to keep fingers clear of lens window during exposure – check your "hold"; see page 3.

. . . **IF your film shows irregular spacing or overlapping**

Either you forgot to set the exposure counter at the red dot when you started the film, or you did not pull and push the camera ALL THE WAY between exposures.

. . . **IF some of your negatives are very thin, others almost black**

Determine correct shutter setting for each picture situation. Use an exposure guide or, better still, the MINOX photo-electric exposure meter.

. . . **IF some prints show more "grain" than others from the same film**

Badly over-exposed pictures have coarser grain. Over-exposure is as undesirable as under-exposure. Use an exposure guide or MINOX exposure meter to get correct shutter speed every time.

The Exposure Counter

tells you at a glance how many pictures you have taken on the film. The Counter advances automatically each time you move the film forward by a "pull-push" of the MINOX.

The Exposure Counter must be set at the red dot between 50 and 0 before a new film cassette is inserted. (Illustration 9). Otherwise, overlapping pictures may result.

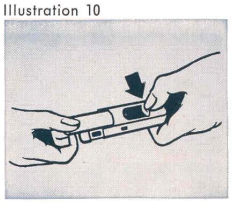
Loading

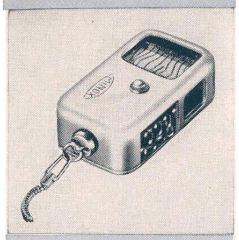
Film cassettes should be shielded from bright sunlight. Always load – or un-load – the MINOX in subdued light, or in the shade.

Set Exposure Counter at red dot between 50 and 0 by "pumping" camera. With camera in pulled-out position, press down on crescent-shaped Snaplock (illustration 10) and slide open Back Cover until both Film Chambers are free. Then "close" camera about 1/8 inch to spread the Film Gate open. (This occurs when the snaplock almost disappears in the camera Illustration 11).

Illustration 9

Illustration 10





The MINOX Exposure Meter

. . . tells you the correct shutter setting for any picture at a glance–and "remembers" the setting until you make the next exposure reading.

What's more, a built-in viewfinder lets you pre-view the picture just as your MINOX camera will see it; thus, you can select the best possible angle every time.

Correct shutter setting means better pictures – pictures with fine highlights, good shadow detail, and every subtle tone of the original scene. Color film, particularly, requires correct exposure to assure proper color values.

Even smaller than the MINOX camera, the MINOX Exposure Meter is a precision built photo-electric meter with a honeycomb light gathering lens for readings over a wide range of light conditions. It has jewel bearings and is shock resistant.

Supplied with a leather case to match your camera case, and with a chrome chain, the MINOX Exposure Meter is the perfect companion for your MINOX camera. It may also be used with other cameras.

The engraved figures are fractions of a second (2 indicates $1/2$ second, 1000 is $1/1000$ sec., etc.). Intermediate speeds may also be set.

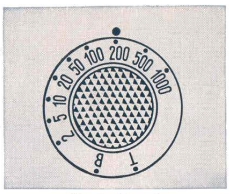


Illustration 5
Shutter Speed Dial
(set at $1/200$ sec.)

When the Dial is set at "B", the shutter opens if the Shutter Release is pressed down, and remains open as long as the Release is held down; set at "T" (Time), the shutter opens when the Release is pressed down, and remains open until the Release is pressed a second time. B or T exposures should be made only with the MINOX resting on or against a firm support, or with a tripod (see page 14).

Always use an exposure guide, or the MINOX Exposure Meter, to determine the correct shutter setting for existing light conditions.

THINGS TO REMEMBER

Before loading —
make sure Exposure Counter is set at red dot between 50 an 0
Before inserting or removing film cassette —
make sure Film Gate is open
When taking the picture —
keep fingers away from lens window;
hold camera steady; "squeeze" shutter release button
At end of film —
do not attempt to take more pictures than the film allows (50 on black-and-white; 36 on color film)
Always —
keep Lens Window clean. Fingerprints or other smudges on the lens window cause un-sharp pictures. To clean, wrap soft linen cloth around match stick.

Changing the Film Type

Some day you may want to take color pictures just when your MINOX is loaded with black-and-white film – or vice versa. Thanks to the MINOX film cassette, it is very easy to "switch" from one film to another at any time.

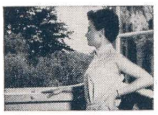
When you want to change cassettes, "pump" camera once to transport the last-exposed film frame into the take-up end of the cassette. Then remove cassette in the usual manner (see page 10). Note number showing on Exposure Counter; write this number on cassette for future reference.

Before inserting fresh film, set exposure counter at red dot between 50 and 0 – as described on page 9 – and load in the usual manner.

When you re-load the "started" cassette: First set exposure counter three numbers **back** of the number which you noted when you removed the cassette; example: if you took the cassette out at "28", set counter at "25". Now insert cassette in the usual manner. Pump camera three times. This takes up any slack in the cassette and gets your MINOX ready for the next exposure.

Remember: Load and un-load only in subdued light, or in the shade.

1/100 sec. without flash. Scenery properly exposed figure too dark



1/200 sec. with electronic flash. Light balanced for figure and scenery

Flash is Easy

You can get fine pictures with your MINOX right around the clock, because, when daylight or room light is no longer sufficient, you can attach a flash unit to your camera. Even in daylight, you can penetrate deep shadows or lighten scenes by using flash.

The MINOX may be used with any type of flash source connected to the flash nipple of the camera. The shutter has built-in synchronization of the X-type (it "fires" the flash as soon as the shutter release of the camera is pressed).

Flash Source	Synchronized at shutter speeds:
Electronic Flash Units	1/2 second to 1/500 second
Flash Bulbs: SM, SF	1/2 second to 1/100 second
M-2, 5, 8, 25	1/2 second to 1/20 second

"Frame" Your Subject

Since the MINOX viewfinder shows you the exact picture area, you can easily compose your picture before you actually take it, so that unimportant or disturbing details are omitted right at the start. Advance planning of composition saves extra work in enlarging, and it gives you precisely the picture you want every time.

Close-ups of Small Things

There is a special fascination in close-ups. A frame-filling picture of a single blossom showing the delicate details of each petal can be more exciting than showing a whole acre of flowers. Therefore: Get CLOSE to the subject! Your MINOX offers you the great advantage that you can get as close as 8 inches without any supplementary equipment or extra lenses. Make the most of this excellent feature. Always use the measuring beads of the safety chain to determine the correct distance, as the depth of field at close range is very limited. For instance, when the distance scale is set at 1 ft., the depth extends only from 11 inches to 13 inches. Therefore, accurate distance setting is a must for extreme close-ups. Remember also that, at distances between 8 and 10 inches, the picture area lies a frame-width within the luminous frame of the viewfinder.

Color Film does not have as much exposure latitude as black-and-white film. Therefore, use correct shutter speed! The MINOX photo-electric exposure meter is particularly valuable in Color Photography. Even slight deviations from the correct shutter speed may result in false color reproduction.

As a general rule, color pictures are best taken with the sun slightly to one side behind the photographer's back.

If you are seriously interested in all phases of Color Photography, you will find it worthwhile to read one of the many comprehensive books covering this field.

Copying

. . . of documents, drawings, books, etc. is easily done with your MINOX. By using a tripod, MINOX Repro Stand, MINOX Copying Arm, or other means of support, you can conveniently copy such matter, getting as close as 8 inches for largest possible reproduction. Use the special MINOX Micro Grain Copy Film, except when copying photographs or illustrations containing half-tones for which regular MINOX ASA 12 or ASA 25 film is recommended. (See tables showing area covered at various distances, on page 27.)

TIPS FOR BEST RESULTS

The "best" Film

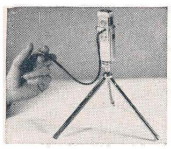
MINOX film is available in several different types for black-and-white photography, and for Color Pictures. The black-and-white films vary in sensitivity (speed) to suit every possible need. The sensitivity is expressed in American Standard exposure index numbers: ASA 12 (Green Label), ASA 25 (Yellow Label), ASA 50 (Blue Label), ASA 100 (Red Label). ASA 100 film is twice as sensitive to light as ASA 50, ASA 50 twice as sensitivite as ASA 25, and so on. Thus, under any given conditions ASA 50 film, for instance, would require only half the shutter speed needed for ASA 25.

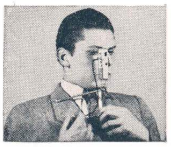
The lower the film sensitivity, the finer the detail it is capable of reproducing in the final print. Therefore, the super-sensitive ASA 100 film should be used only in instances when there is not enough illumination for slower films, or when flash exposures are not feasible (stage photography, candid shots, etc.). The medium sensitivity films ASA 25 and ASA 50 are best suited for all-around picture-taking, and will yield excellent prints in all popular sizes. ASA 12 film is especially suited for bright beach, montain, and snow scenes, as well as for close-ups of stationary small objects with the MINOX used on a tripod.

MINOX Color Film is available for daylight, and for artifical (tungsten) light.

Steady!

Get used to a comfortable, steady hold of your MINOX during exposure; experience will show you whether you can get steady pictures even at the slower shutter speeds. Generally, you will find it advisable to use a tripod or other firm support for shutter





speeds of 1/20 sec. and slower. For all snapshots, use the hold suggested on page 3, always making sure that you "squeeze" the shutter to avoid jarring the camera.

How About Longer Exposures?

You may be able to hold the MINOX steady by leaning your elbows on a table or other firm surface, or against a wall; or you may place the MINOX on a glass, ledge, etc. It is best, however, to attach the MINOX with a camera clamp to a tripod. You will find the MINOX pocket tripod a particularly fine and versatile accessory. Only slightly larger than a pencil, this tripod with its swivel top may be used on a table, chair, window sill, or against a wall. It may also be held against your shoulders. The pictures at the left suggest various ways of using the MINOX tripod. As an extra precaution against jarring the camera, always use a cable release for tripod exposures.

It's a Colorful World

The 15 mm f/3.5 Complan lens of your MINOX is color-corrected, and has an anti-reflection coating – in other words it is ideally suited for Color Photography.

If you have never taken color pictures before, keep in mind the following suggestions which will help you get fine results from the outset:

Color Film yields the best results in bright or hazy sunlight; on overcast days, results are usually not satisfactory.

Morning and early afternoon hours are the best time for color pictures. At noon the light is usually bluish, resulting in very "cold" colors or an over-all bluish tinge. During the hours just after sunrise, or just before sunset, the light is more reddish, resulting in very "warm" colors.

Watch for the possibility of color reflections (which may not be visible to the eye): A white dress on a green lawn is never pure white, but faintly green.

How to Stop Moving Subjects

Sports and other fast action call for high shutter speeds – otherwise your pictures may be blurred. But even under unfavourable light conditions, requiring slower shutter speeds, you can stop motion by using professional tricks. It is easier, for example, to stop motion of a subject moving straight toward the camera, or at a slight angle, than it is to "freeze" a subject moving straight across at right angles to the camera. Or, watch for the "still moment" such as is reached by a swing at its highest point just before it swings back, or by the tennis player during the serve when the ball is at the peak of the toss, and the racket is about to be swung. Even $^1/_{20}$ second will "stop" such shots. For very fast motion – automobile races, speed boats, skiing – another well-known professional trick will help you get fine results: Keep the car, boat, or skier centered in the MINOX viewfinder and follow the motion with the camera, releasing the shutter at any instant during this panoraming. The background will be blurred, adding to the impression of fast action, but the subject stays sharp even at $^1/_{50}$ second.

The two built-in Filters

. . . . . will help you improve your black-and-white pictures. In scenic pictures, the green filter will give a blue sky – which would otherwise appear white in the final

print – a richer tone, making white clouds stand out clearly. Green foliage, lawns, etc. which would normally print darker, will show a lighter tone and better modulation. Because the green filter reduces the overall amount of light transmitted through the lens, you must double the shutter speed – in other words use $^1/_{100}$ sec. when the MINOX exposure meter or exposure guide indicates $^1/_{200}$ sec.

The orange filter – which requires three times normal shutter speed – darkens blue skies considerably, but lightens all reddish tones. Even in full sunlight it produces dramatic skies and scenes resembling night shots. More important is its ability to produce clear pictures on days when there is a blue atmospheric haze. The orange filter is particularly useful for cloud pictures, snow scenes, mountain photography, and on hazy days. DO NOT USE THE ORANGE FILTER FOR PORTRAITS as red lips would appear almost white.

NEVER USE THE GREEN OR ORANGE FILTER WITH COLOR FILM.

$^1/_{500}$ sec. without filter

$^1/_{200}$ sec. with green filter, sky darker, clouds stand out

$^1/_{100}$ sec. with orange filter, sky very dark, clouds "fluffy", green areas lighter

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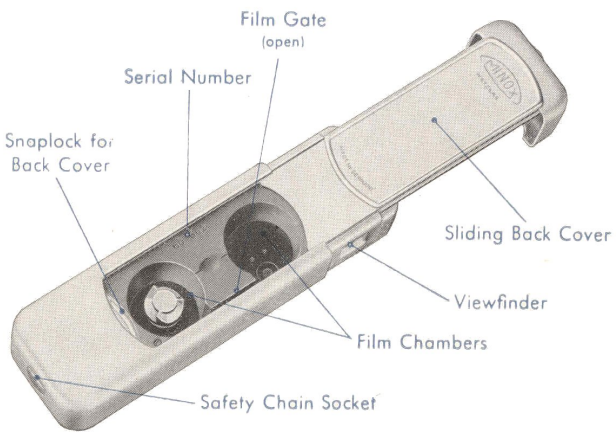

MINOX ACCESSORIES

For Picture Taking:

MINOX Exposure Meter · MINOX Camera Clamp for attaching to Tripod etc. · MINOX Table Tripod · MINOX Binocular Clamp MINOX Copying Arm · MINOX Universal Copying Arm · MINOX Folding Reproduction Stand · MINOX Black and white films for all purposes and all degrees os sensitivity · MINOX Color film.

This complete line of intelligently designed and very practical accessories add to the scope of MINOX photography. They will be welcomed particularly by those photographers who want to utilize the many special applications to which the MINOX can be put, or who want to do their own developing and enlarging.

MINOX ACCESSORIES

MINOX
Accessories

For Film Developing:

MINOX Daylight Developing Tank · MINOX Fine Grain Developer. MINOX Tranparent Negative Wallets.

For Enlarging:

MINOX Enlarger Copying Stand · MINOX Enlarging Easel with print Masks · MINOX Film Magnifier.

For Projection:

MINOX Projector · MINOX Slide Frames · MINOX Film Cutter.

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Shutter guide for outdoor pictures

This simple guide will give you good results from two hours after sunrise until two hours before sunset. For accurate and convenient determination of shutter speeds for all possible conditions, the MINOX Exposure Meter is recommended.
Use the shutter speed shown opposite the **type of subject,** under the prevailing **light conditions.**

Subjects are:
AVERAGE – Nearby people, gardens, houses
LIGHT – People in beach, sea, snow scenes, distant scenery
DARK – People in dark clothing, dark flowers, streets, houses
When in doubt use AVERAGE setting.

Light Conditions are:
BRIGHT Sun – Clear Sky strong shadows
HAZY Sun – Soft shadows
CLOUDY Bright – No sun, no shadows
CLOUDY Dull – No sun, dark sky

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 12 Film (Green Label)				
AVERAGE	100	50	20	10
LIGHT	200	100	50	20
DARK	50	20	10	5
ASA 25 Film (Yellow Label)				
AVERAGE	200	100	50	20
LIGHT	500	200	100	50
DARK	100	50	20	10

	Bright Sun	Hazy Sun	Cloudy Bright	Cloudy Dull
ASA 50 Film (Blue Label)				
AVERAGE	500	200	100	50
LIGHT	1000	500	200	100
DARK	200	100	50	20
ASA 100 Film (Red Label)				
AVERAGE	1000	500	200	100
LIGHT	*1000	1000	500	200
DARK	500	200	100	50

*Note: Use green filter

For shutter settings when using Green or Orange Filter, see page 17.

YOUR MINOX is a precision instrument designed and built to give you excellent pictures under all kinds of conditions, indoors and out. As your constant companion, your MINOX is always ready to catch not only delightful, spontaneous snapshots, but an endless variety of fine pictures of any subject, any occasion, at any time.

This Manual shows you the way to best results with your MINOX. It contains many valuable tips which you will find helpful. Read the various sections carefully so that you will get fine results right from the start.

The **first section** explains the operation of your MINOX. Read it with the un-loaded camera at hand – once you are familiar with the simple operating steps, you will always enjoy the full pleasure of picture-taking with your MINOX.

Part two will help you select the proper kind of film for best results. It tells about filters, flash, close-ups, and many other special uses for your MINOX.

The **final pages** point out annoying little errors which may make the difference between a good and a bad picture. You will find it easy to avoid such mistakes, once you are aware of them.

If you have any questions, your MINOX dealer will always be glad to help, and we invite you to write to us whenever we may be of service to you.

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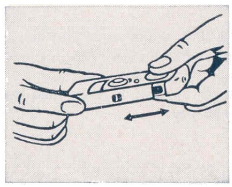
HOW TO USE THE MINOX

Opening and Closing the Camera

Illustration 1



To open the camera for picture-taking, place left thumb on Shutter Speed Dial and left forefinger on underside of camera, while grasping narrow sides of camera with the right thumb and forefinger; pull camera open – like a telescope – as far as it will go. After a picture has been taken, push the camera together as far as possible. This "pumping" action automatically advances the film and winds the shutter for the next exposure. IMPORTANT: Pull or push **all the way!**

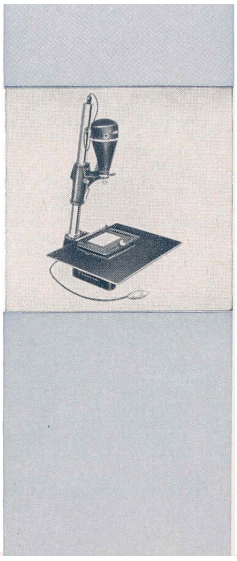
The MINOX Enlarger-Copying Stand

While commercial MINOX processing services can give you excellent enlargements from your films, you will get even greater satisfaction and pleasure from your MINOX if you make enlargements yourself. Then you can obtain precisely the results you desire, compose each picture perfectly, and use the paper surface and contrast that best suits the individual subject.

The MINOX Enlarger-Copying Stand is equipped with a light source, condenser unit, and lens system specifically designed for ultra-miniature film; as in the MINOX camera, the film is held in a curved position and the highly corrected 15 mm. f/3.5 lens yields prints of critical sharpness. Enlargements up to 11 x 14 inches can be made on the baseboard, while even greater enlargements are possible by means of an accessory reflex mirror.

With the lamp house removed, the upright becomes the support for a Copying Arm to hold the MINOX, or other cameras, for photographing documents or small objects at close range.

Accessory film carriers permit using the MINOX Enlarger for 8 mm, 16 mm or 10 x 10 mm film sizes.



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