GUIDE

MINOLTA SLR

MINOLTA SR-1, 1 (v)
MINOLTA SR-7, 7 (v)
MINOLTA SR-1S
MINOLTA SR-T101, T101b
MINOLTA SR-T100, T100b

MINOLTA SR-T303, T303b
MINOLTA XM
MINOLTA XE-1
MINOLTA XE-5

This is a *Camera Guide*. It deals with one make of camera, but it is not boosting it. The *Camera Guide* is a Focal Press publication. It is not sponsored or censored by manufacturers, or dependent on them in any way. The *Camera Guide* is as scrupulous in fully describing the camera and advising on its use as the very best type of manufacturer's book of instructions. It is, however, more critical than they could be. No *Camera Guide* will attempt to camouflage the limitations of a camera or make efforts to sell an endless chain of accessories. It is straightforward, practical and devoted to the questions of how to take the best photographs with a particular camera, rather than to praise of it. The *Camera Guide* is compiled by an author who has had long experience in handling the equipment in question. It represents at the same time the gist of all available literature collected by the *Focal Press Circle of Photographers* and filtered through their considered judgment.

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MINOLTA SLR GUIDE

How to Use the
Minolta SR-1 and Minolta SR-7
Minolta SR-1 (V), SR-1S and Minolta SR-7 (V)
Minolta SR-T101, T101b, Minolta SR-T100,
T100b, Minolta SR-T303, T303b, Minolta XM,
XE-1 and XE-5 Cameras
(*see overleaf for international numbering of these cameras*)

W. D. EMANUEL

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INTERNATIONAL NUMBERING OF MINOLTA CAMERAS

Europe and Hong Kong	*U.S.A., Canada and Mexico*	*Japan*
XM	XK	XI
XE-1	XE-7	XE
XE-5	XE-5	XE-B
SR-T303	SR-T102	SR-T Super
SR-T101	SR-T101	SR-T101
SR-T100	SR-T100	Not available
SR-T303b	SR-T202	SR-T505
SR-T101b	SR-T201	SR-101
SR-T100b	SR-T200	Not available

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CONTENTS

THE MINOLTA REFLEX SYSTEM

The Minolta single-lens reflex is a 35 mm. eye-level reflex camera yielding up to 36 pictures, size $1 \times 1\frac{1}{2}$ in. (24×36 mm.) on perforated 35 mm. film.

The built-in pentaprism finder has a microprism centre for easy, critical focusing, while the surround is covered by a fresnel screen giving even image brightness right into the very corners. Later models have a split-image rangefinder surrounded by a microprism zone. Model XM has interchangeable finder and focusing screen.

The taking lens itself is used to form the finder image. In consequence the finder shows practically the same field as will be obtained on the film. The reflex image remains fully correct at any distance, with any lens, including supplementary lenses, extension tubes or bellows extension.

The mirror of the reflex finder—which deflects the image from its straight path to the film on to the viewfinder screen—returns to the viewing position immediately after the exposure.

The lens is interchangeable by bayonet mount, permitting quick mounting and dismounting with about a 22-degree turn. A wide range of lenses from 7.5 mm. to 1600 mm. is available.

An internal link between the shutter release and lens mount automatically couples lenses which have automatic pre-selector diaphragm control. You select the aperture required, but the lens remains at full aperture for focusing. When you release the shutter, the aperture closes to the pre-set opening and automatically re-opens as soon as the exposure is made. A depth of field pre-view button permits stopping down the lens to the pre-set aperture to observe the depth of field at any time.

Most Rokkor lenses for the Minolta SR have this automatic diaphragm setting, but a few are designed with manual pre-set iris (see Lenses, page 54).

The lens mount carries a depth of field indicator and

distance settings in both feet and metres as well as an infra red focusing mark. Focusing is effected by a helical focusing mount which is part of the lens mount.

The shutter is a focal plane type, travelling close to the film and ensuring full protection of the negative material. With this type of shutter, lenses can be changed while the camera is loaded and whether the shutter is tensioned or released. The full range of shutter speeds is on one dial, which does not rotate on releasing. Intermediate values may be set. The shutter is synchronized for flash bulbs and electronic flash with two standard 3 mm. co-axial outlets. The shutter release is built into the centre of the film transport lever and carries a central cable release socket. The shutters of the X models are electronic for automatic working.

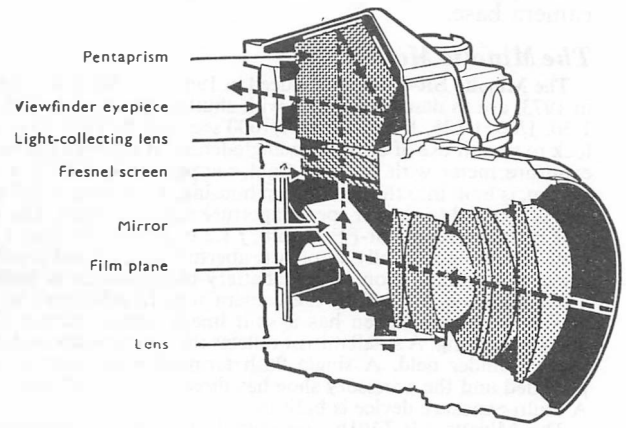
The T101 and later models have through the lens CdS exposure meter with contrast light compensator. A cadmium sulphide (CdS) exposure meter is built into the SR-7 and is available as an accessory for the SR-1. In either case the shutter speed setting is coupled to the meter and only the aperture is read off and transferred to the aperture scale of the lens.

The film advance is by a quick-wind transport lever which with a single stroke advances the film, operates the exposure counter and cocks the shutter, automatically preventing double exposures or blank frames.

An exposure counter built into the top plate re-sets itself to start when the camera back is opened. A delayed action release (self timer) is built into the front plate. This gives an 8 second delay but can be by-passed by releasing the shutter at any time during the running down of the delay timing period.

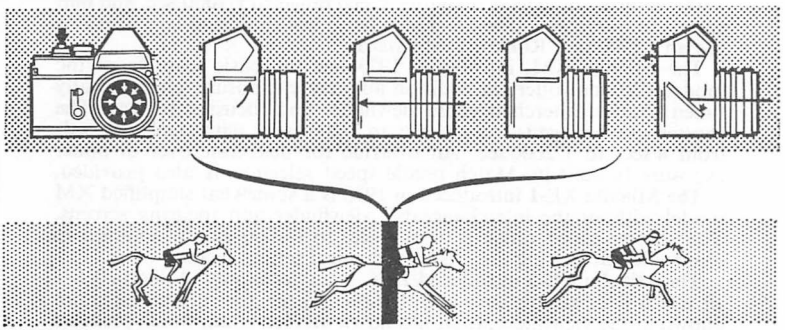
An ASA-DIN conversion table (on earlier models a film speed reminder disc) is fitted to the back of the camera. The camera takes standard 35 mm. cassettes. The film runs from the cassette to the fixed take-up spool and is rewound after exposure. The rewind knob incorporates a fold-over rewind crank for convenient and rapid rewinding of the exposed film.

MINOLTA SR OPTICAL SYSTEM



Above: A section through the camera shows the optical system of lens, mirror, viewfinder lens and fresnel screen, pentaprism and viewfinder eyepiece. The broken line indicates the path of the light when the mirror is in position for viewing and focusing.

Below: When you press the shutter release, the iris closes down to its pre-set aperture, then the mirror flies up, the shutter opens and closes, the mirror returns to its original position and the iris opens to full aperture. Thus, light is shut off from the viewing screen (as symbolized by the black strip in the bottom diagram) only during the actual exposure. The image is visible at all other times both before and after taking the picture.



A tripod bush is placed centrally below the lens in the camera base.

The Minolta Models

The Minolta SR-T101, introduced in 1967, and **SR-T303,** introduced in 1973, are as described above with shutter speeds of 1, ½, ¼, ⅛, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000 sec. and B. They have a mirror lock to permit use of ultra-wide-angle-lenses. A through the lens (TTL) exposure meter with contrast light compensation (CLC), a two cell system, is built into the pentaprism housing, measuring at full aperture, and is coupled to shutter speed, aperture and film speed. The standard lens is the MC Rokkor-PF 58 mm. *f* 1.2 or *f* 1.4 or 55 mm. *f* 1.7 with meter coupling and fully automatic aperture control and depth of field preview button. An on/off and battery check switch is built in. An accessory shoe is fitted to the camera top. In addition the Minolta SR-T303 viewing screen has a split image centre, surrounded by a microprism ring. A small mirror reflects the aperture selected on top of the viewfinder field. A single flash terminal with selector switch is provided and the accessory shoe has direct "hot-shoe" flash contact. A multi-exposure device is built in.

The Minolta SR-T101b, introduced 1976, has in addition to the SR-T101 features, a synchro hot-shoe on top of the prism housing and a memo holder.

The Minolta SR-T303b, introduced 1976, has in addition to the SR-303 features, a safety load signal (SLS) to show that the film has been loaded correctly and transported properly and memo holder on camera back.

The Minolta SR-T100 is a simplified version of the SR-T101. It has no built-in self timer, no shutter speed scale in the viewfinder and is fitted with an *f* 2, 50 mm. Rokkor.

The Minolta SR-T100b, introduced 1976, has in addition to the SR-T100 features, an extended shutter speed range to 1/1000 sec. and film speeds to 6400 ASA. The SR-T100x has a hot shoe, and later versions use an *f* 2.45 mm. Rokkor as standard.

The Minolta XM, introduced 1973 has the basic features of the model T303 but offers in addition automatic exposure, electronically timed shutter, interchangeable viewfinder and focusing screens. The shutter speed range is from 16 sec. to 1/2000 sec., with stepless speeds from 4 sec. to 1/2000 sec. An override for deliberate over or under exposure is built in. Match needle speed selection is also provided.

The Minolta XE-1 introduced in 1975 is a somewhat simplified XM model without the interchangeable viewfinder and focusing screens. The shutter speed range is from 4 sec. to 1/1000 sec. In addition to electronic self stetting there is a mechanical setting facility.

The Minolta XE-5 introduced 1976, is an "economy" Minolta XE-1 of which five features have been left off: (1) the aperture in use is not shown in the viewfinder, (2) it has no viewfinder blind, which prevents

extraneous light entering through the eyepiece and affecting the metering when the camera is used on a tripod e.g. with selftimer, (3) there is no multi exposure system, (4) there is no safety loading signal, which tells that the film is correctly loaded and transported, (5) the prism on the camera front is black instead of chrome.

The Minolta SR-1 (V), introduced 1966, is as described above, with shutter speeds of 1, ½, ¼, ⅛, 1/15, 1/30 .1/60, 1/125, 1/250, 1/500 sec. and B. It has a mirror lock to permit use of the earlier wide-angle lenses up to 21 mm. A separate CdS light meter can be attached and coupled to the shutter speed dial of the camera. Then the meter indicates the aperture to which the lens must be set for the shutter speed in use.

The standard lens of this model is the Rokkor 55 mm. *f* 1.8, a six-element lens made up in five components with fully automatic aperture control. As an alternative this model is also available with the 55 mm. Rokkor *f* 2 with fully automatic aperture.

The Minolta SR-1S, introduced 1968 is a SR-1 (V) (see above) with additional 1/1000th sec. shutter speed. The body is slightly lighter and slimmer. As standard lenses the 55 mm. *f* 1.7 or *f* 2 are fitted.

The Minolta SR-7 (V), introduced 1966, is as described above with shutter speeds of 1, ½, ¼, ⅛, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000 sec. and B. It has a mirror lock to permit use of the 21 mm. ultra-wide angle lens and a CdS exposure meter is built in and coupled to the shutter speed setting. With an angle of reception of only 30° it is particularly accurate.

The standard lens of this model is the Rokkor 58 mm. *f* 1.4, a six-element lens made up in five components with fully automatic aperture control. As an alternative this model is also available with the 55 mm. Rokkor *f* 1.8 with fully automatic aperture.

The Minolta SR-1 is similar to the SR-1 (V) but rather less compact. Its focusing screen has a clear glass centre instead of a microprism area. There is no mirror lock facility and the accessory shoe is different. The shutter is less quiet.

The Minolta SR-7 is similar to the SR-7 (V) but rather less compact. Its focusing screen has a clear glass centre instead of a microprism area. There is no battery check facility and the shutter is less quiet.

The Minolta SR-3. For a short time prior to the introduction of the SR-7 model the SR-3 was available with the features of the SR-7 but without the built-in CdS exposure meter. This model is handled in the same way as the SR-1.

The original Minolta SR-1 and SR-2 cameras which were sold in Japan only, are not covered by this Guide. Nevertheless, most of the text is applicable to these models.

Minolta SR-M without exposure meter, is specifically designed for motor operation with built-in motor for advancing single frames or 3 frames per second. Rewinding is also motorised. A bulk film back for up to 33⅓ ft. film =250 exposures is available for the SR-M. This highly specialised instrument is not covered by this guide

HANDLING THE MINOLTA

In order to simplify the description and handling of the Minolta SR camera without being confused by different features of individual models, this guide is divided into a general section which applies to all Minolta SR models, while the individual requirements and different handling of each model are found in the end pages.

For convenience a symbolic reference system is also used in the general section. Wherever the sign ■ appears further details will be found in the camera pages of the final section for each camera. The appropriate pages are marked accordingly in the bottom left or right hand corner.

Holding

It is obvious that the camera should be held as steady as possible. The slightest shake, even if not seen in the negative, will become visible in the enlargement.

FOR HORIZONTAL PHOTOGRAPHS hold the camera in the palm of both hands, the fingers gripping the front of the body, the thumbs against the back. Use the thumb and middle finger of the left hand to move the lens focusing mount, and the index finger of the right hand to operate the release button. Keep the elbows pressed against the body. Either the right or the left eye may be used on the finder.

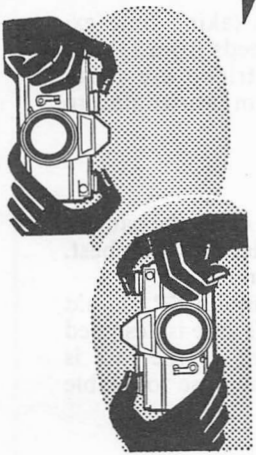
Always stand with your legs apart.

FOR VERTICAL PHOTOGRAPHS turn the camera through 90° so that the left hand presses the camera against your forehead from above. Use the thumb and the index finger to move the focusing mount. The right hand holds the camera from below with the thumb on the release button. It is of no consequence if the position of the hands is reversed: you can suit your own convenience.

To release the shutter, press the release button with the ball of the finger (or thumb). Use finger pressure only, and keep the hand and its grip on the camera steady. The actual pressing down must be done slowly and smoothly. The

HOLDING

For horizontal shots (*right*) hold the camera in the palm of both hands, the fingers gripping the front of the body, and the thumbs against the back. Focus the lens with the middle finger of the left hand.

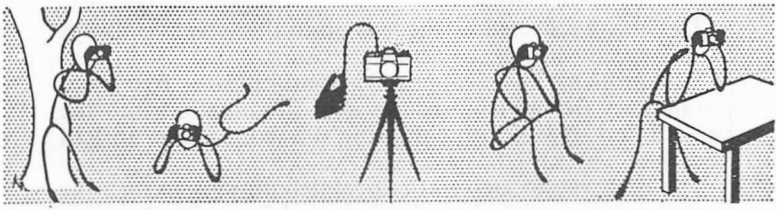


For upright shots (*left*) turn the camera through 90° so that the left hand supports it from underneath. Alternatively, turn it round in the other direction, so that the left hand presses the camera against the forehead from above. In this case the thumb of the right hand presses on the release button, while the palm of the right hand supports the weight of the camera.

Press the elbows close to the body,

always stand with your legs well apart,

and hold quite still while you release.



Above: With the Minolta SR it is specially important to keep the camera really steady during the exposure and for a fraction of a second after pressing the release button. Whenever possible support your body against something solid, such as a tree or wall or prop up your hands against your knees or a table, particularly with slow speeds. Use a cable release for time exposures from a tripod (page 39).

slower the exposure time, the smoother must be the release.

For slow exposures in the hand, it is advisable to rest the elbows or at least to lean the body against some support in order to avoid shake. In this way, 1/15, 1/8 and even 1/4 sec. can be risked without incurring noticeable camera shake at small degrees of enlargement.

Such a support is also desirable for faster exposures, as quite a lot of movements take place inside the camera after pressing the release button. A slightly unsteady hold may easily lead to blurred pictures.

The use of a tripod is necessary when taking time exposures and it is also recommended for speeds from 1/15 to 1 sec. For upright photographs from the tripod use a ball and socket head to allow changing from horizontal to vertical position.

Carrying

To be ready for quick action, it is best to carry the camera on a short strap round the neck so that it lies on your chest. Lifting it to the eye then takes a split second.

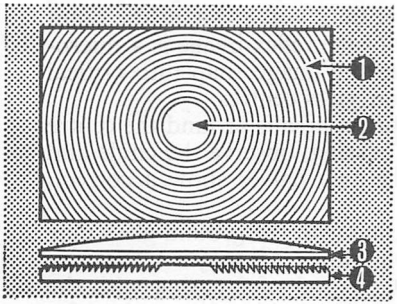
For convenience and protection the Minolta SR should always be carried in its ever-ready case. This case is designed to hold the camera ready for use. The flap of the case is removable when the camera is in continuous use to enable quicker working.

Viewing and Focusing

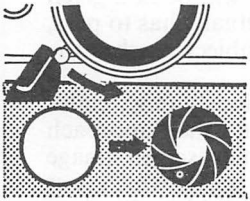
The image reflected by the lens on to the screen is always visible except during the actual exposure.

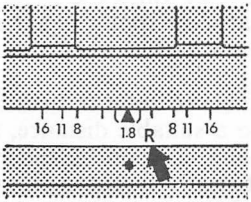
The brilliant image appears in natural size, free from parallax. A fresnel lens ensures even illumination into the very corners. A viewing pentaprism shows the image upright and right way round at eye level.

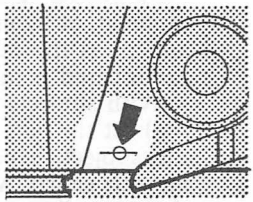
The best way to arrive at critical definition is to turn the focusing mount of the lens slowly to and fro while observing on the ground glass the subject to be focused. As you turn the mount, the image becomes more and more sharp up to a



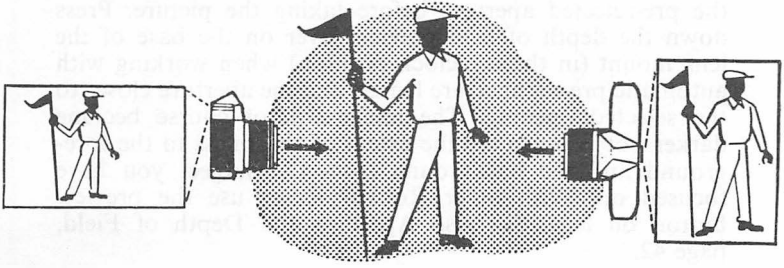
The Minolta SR screen consists of a light-collecting lens (3) over a fresnel screen)(4). The fine lines of the screen (1) present a bright image right out to the corners. The central portion of the screen (2) consists of micro-prisms for critical focusing. In the SR models, this area is clear.
The T303, T303b, XE-1 and XE-5 screens have at the centre a split image spot surrounded by a microprism band for focusing. Such a screen is also available for the XM.







Various aids to focusing are fitted. *Left:* If you wish to check your depth of field before shooting, simply push the depth of field preview button towards the lens. *Centre:* The lens barrel carries a mark to be used instead of the triangular mark for focusing with infra-red film. *Right:* Should you need to measure your shooting distance, a mark on the camera top plate indicates the film plane position.
Below: The viewfinder shows the image upright and the right way round (*left*), even when the camera is held for vertical shots (*right*). With the standard 55 mm. lens the image also appears in approximately natural viewing size. It is, in fact, very slightly enlarged.



certain point, beyond which it will again lose definition. At this "beyond" stage turn the mount back again, narrowing down the degree of movement until you arrive at the point of best definition. The centre of the reflex image is a microprism area; in it you will see the image snap into critical focus. Earlier models had clear glass centres.

On model T303 the microprism area is around the centre split image. To use this for focusing, observe the circle and turn the lens mount until the two halves show a correct, continuous image.

The orthodox way of focusing with the ground glass may be adopted for taking photographs of subjects that are fairly stationary. A different method of focusing with the reflex screen is required when taking subjects in motion. Set the lens to a distance at which the subject will be in a given moment, or focus at some spot which it actually has to pass, and press the release button when the subject reaches the pre-focused point.

With subjects liable to react self-consciously (e.g., children) set the lens to a suitable distance, and then approach the subject, exposing as soon as the reflex screen image appears sharp. Alternatively, focus on an object which is at the same distance from the camera as the subject, but in a different direction. When you have found the range swing round to press the release button as soon as the victim slips into the field of view of the finder.

Pre-Viewing the Depth of Field

You can examine the precise depth of field you get with the pre-selected aperture before taking the picture. Press down the depth of field preview lever on the base of the lens mount (in the 8 o'clock position) when working with automatic pre-set aperture lenses, and the aperture closes to the selected opening. The image will of course become darker but you can see the extent of sharpness to the foreground and the background from the subject you have focused on. With other Rokkor lenses use the preview button on lens. See also Aperture and Depth of Field, page 42.

Infra Red Film Indicator

When infra red film is used, focus in the ordinary way. Then read off the distance on the lens mount scale and turn this to the red letter R engraved on the distance scale. For example, if the focusing scale points to 30 ft., turn the focusing ring so that the 30 ft. mark comes to lie opposite the R.

Film Plane Indicator

If extremely critical focusing with a tape measure is necessary (not required for general photography) you can measure the distance from the subject to the film plane, which is indicated by a red line through a red circle engraved on top of the camera body beside the pentaprism.

Shooting

Practise the following operations first with an empty camera until you can do them more or less automatically.

1. **Work the film transport.** This advances the film and film counter and tensions the shutter ready for the next exposure.
2. **Set the exposure.** Adjust the shutter for the right amount of light for the subject conditions (page 36).
3. **Select the aperture,** smaller aperture for greater depth of field (page 36).
4. **Focus** and determine the picture area to obtain a sharp picture and the view you want.
5. **Release** the shutter gently (page 10).

Loading and Unloading

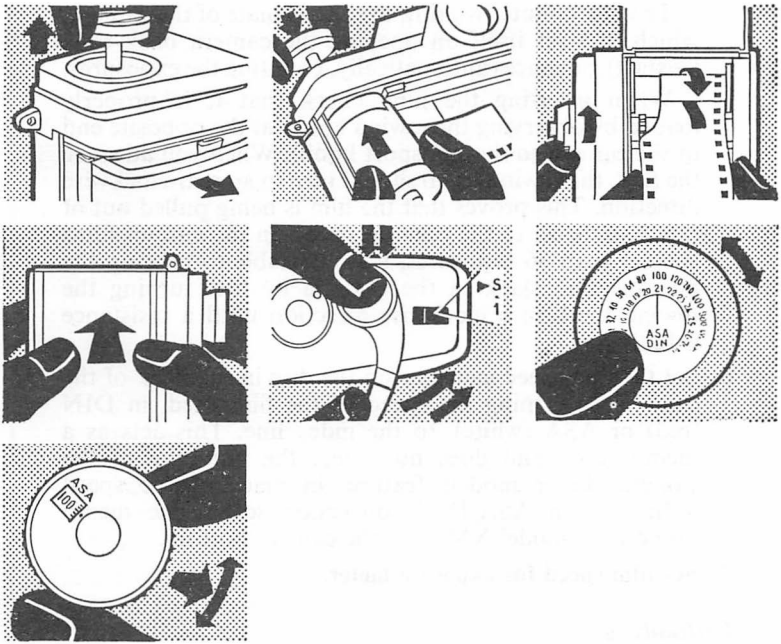
The Minolta SR uses standard perforated cine film 35 mm. wide, as used in the majority of other 35 mm. miniature cameras. It is available in various packings (see also page 21), the most convenient being standard daylight cassettes. These are light-tight containers with a ready cut and trimmed

length of film for 36 or 20 exposures and are loaded into the camera in daylight.

Avoid loading or unloading the camera in brilliant sunlight, though; choose a shady spot or do it in the shadow of your own body if nothing better is available.

Loading

1. **Open the camera back** by pulling out the rewind knob to its stop, then give it a slight extra pull and the back will snap open.
2. **Insert film.** Place a loaded film cassette into the empty film chamber (below the rewind knob) with its hollow part towards rewind key. The mouth of the cassette with the film end must point towards the take-up spool. Push the rewind knob back; if it will not go down, turn the knob slightly and push down again.
3. **Attach the film leader to the take-up spool.** Hold the cassette in position with the left thumb and with the right hand, pull 4 to 4½ in. (10 to 11 cm.) of film from it. Push the free end of the film under the spring clip of the take-up spool of the camera, on XE-1, XE-5 and XM into one of the slots on the take-up spool so that the tooth is engaged with the sprocket hole near the end of the leader. The take-up spool can be turned on its axis by its serrated lower flange to bring the spring clip facing upwards, the most convenient position for inserting the film. Turn the flange of the take-up spool in a clockwise direction or wind the film transport lever until the film slack is taken up. Before closing the camera back, make sure that the perforations of the film engage in the teeth of the film transport sprockets.
4. **Close the camera back** by pressing the hinged back onto the body, when it will snap closed.
5. **Wind on the film and release the shutter twice.** This advances the first two frames which have been exposed to the light while inserting the film into the camera. These



Top, left to right: Open the camera back and lift up the rewind knob. Insert the cassette with the film leader pointing to the take-up spool and push back the rewind knob. Attach the film to the take-up spool and ensure that the sprockets engage in the perforations.

Middle, left to right: Close the camera back. Wind on the film and release the shutter twice. Set the film speed indicator (not on T303).

Bottom: On the SR-7, T101, T100, T303, set the film speed in the shutter knob.

two wasted leader frames do not count as part of the number of exposures on the film.

The film counter window in the top plate of the camera, which had set itself on opening the camera back to S (=start), advances automatically, counting the exposures.

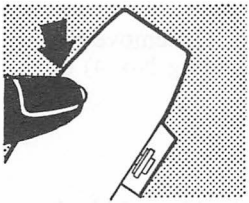
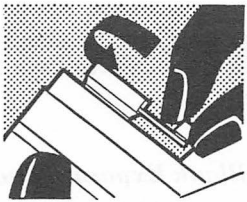
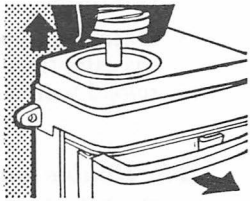
When inserting the film, check that it is properly loaded by observing the rewind knob (at the opposite end of the camera to the transport knob). When you advance the film, the rewind knob should turn in an anti-clockwise direction. This proves that the film is being pulled out of the cassette on to the take-up spool. In the case of films shorter than 36 exposures, it is advisable to take up the possible film slack in the cassette by first turning the rewind knob in a clockwise direction until a resistance is felt.

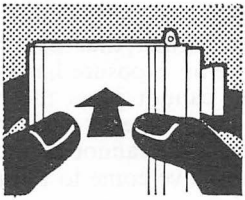
6. **Set the film speed indicator** on the disc in the back of the camera by turning the speed of the film used, in DIN (red) or ASA (white), to the index line. This acts as a memo. only and does not affect the handling of the camera. Later models feature, in place of the speed indicator, an ASA/DIN conversion scale. The memo disc on the model XM is on the camera bottom.
7. **Set film speed for exposure meter.**

Unloading

After all exposures have been made (the number of the exposures taken is automatically shown on the film counter) unload the camera.

1. **Set for rewinding.** Depress release button in base of camera to disengage the transport sprocket in the camera. The button should stay down; if it pops up again, wind the transport lever slightly and push the button down again.
2. **Rewind the film.** Rewind the film into its original cassette by unfolding the rewind crank and turning it clockwise. Winding becomes distinctly easier the moment the film



Set the camera for rewind by depressing the rewind release button in the base (*top, left*). Unfold the rewind crank and rewind the film (*top, centre*). Open the camera back and pull up the rewind knob (*top, right*). Remove the cassette (*bottom, left*) and close the camera back (*bottom, right*).

is fully wound back but give the crank handle another two turns.

3. **Open the camera back** (see Loading No. 1), remove the cassette, then close the camera back (Loading No. 4) or reload with a new film.

The Double and Blank Exposure Lock

The Minolta SR camera is fitted with a double and blank exposure lock. This means that the same piece of film cannot be exposed twice and, further, that the film cannot be wound on by mistake before an exposure has been made.

If, therefore, you cannot press the release button, you must transport the film by means of the rapid winding lever. If the rapid winding lever cannot be moved, the camera is ready for use or you have come to the end of the film and you have to unload.

Deliberate Double Exposures

For deliberate double exposures on all models except T303 make the first exposure in the normal way. Then tighten the film with the rewind knob, and keep hold of the rewind knob. Depress the rewind button (see Unloading No. 1) and work the rapid winding lever. This tensions the shutter without advancing the film. Finally make the second exposure, and carry on in the normal way.

On models T303, T303b, XE-1 and XM one does not need to tighten the film. On T303, T303b and XM just press the rewind knob in the base of the camera after the first exposure has been made and advance the film, on model XE-1 move the multiple exposure lever on the camera top plate to the right. Operating the film transport lever will only set the shutter, but not move the film. Make your second exposure. This procedure can be repeated as often as required for multiple exposures on one film. The exposure counter will, however, advance each time.

Cutting Off Exposed Lengths

If a film which is only partly exposed has to be processed, set the shutter for the next exposure and in the darkroom or in complete darkness cut through with a pair of scissors the frame which lies in the film aperture. Retrim the remainder of the film (see page 22), fix it again on the take-up spool, and close the camera.

You are then ready for the next exposure. The film counter will count the remainder of exposures but allow for at least two frames having been lost through cutting and re-loading.

The re-inserting can be done in daylight. In this case a total of about 6 to 7 frames are lost, for, after inserting and closing, two blind exposures have to be made to wind on the film length which was exposed to the daylight.

Changing Partly-Exposed Films

To replace a partly-exposed film by another one, for instance if you want to take a few colour photographs in between some black-and-white shots, proceed as follows:

1. **Check the number of exposed frames** on the film counter.
2. **Rewind the film** but stop immediately you feel a slight resistance. This resistance comes from pulling the film end from the take-up spool. If the film is to be reloaded again, you must not pull the whole film into the cassette, otherwise the film end would have to be extracted by opening the cassette in the darkroom.
3. **Unload the re-wound film** and note the number of exposures taken on the beginning of the film. Now you can load the camera with any other type of film.

   When reloading, load the partly exposed film in the usual way (page 16), cover the lens with a lens cap (or hold some opaque material against the lens) and as additional precaution stop fully down.

   Wind and release until the film counter has advanced by the number of frames already exposed. To be on the safe side it is advisable to allow one more frame to pass.

   The rest of the film can now be exposed in the usual way.

Other Film Packings

In addition to standard cassettes, 35 mm. film (mainly black and white) is also available in various loose packings for loading into cassettes. This is a much cheaper way of using film as you do not have to buy a new cassette every time with the film. The following packings are available.

DARKROOM REFILLS are lengths cut and trimmed for 36 exposures and have to be loaded into a cassette in total darkness (e.g., in a darkroom, or a light-tight changing bag).

BULK FILM is supplied in lengths of 18 to 200 ft., and is the most economical way of using film. A suitable length is cut off to be loaded into a cassette in total darkness. (Working in total darkness, for loading darkroom refills or bulk film is not difficult. It is, however, advisable to practise filling with a dummy film first in daylight before starting the darkroom work.)

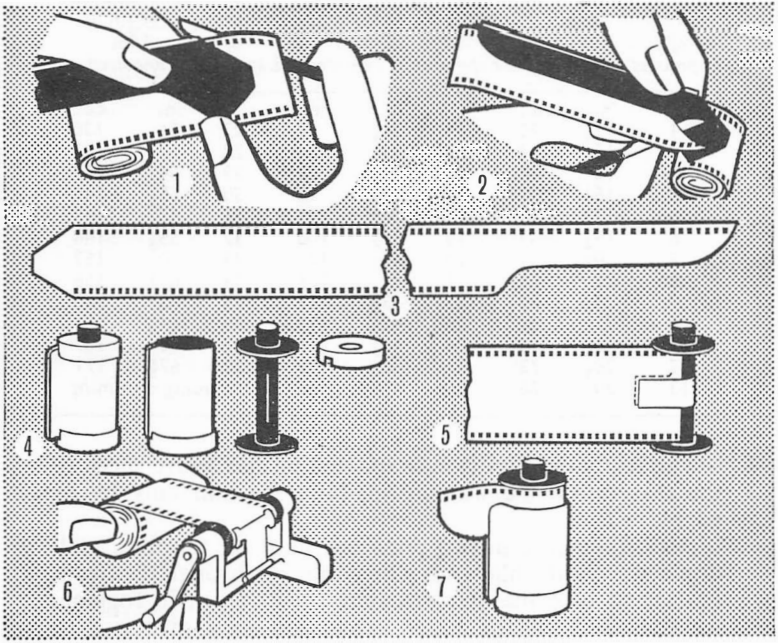
Handling, Winding and Trimming the Film

When handling the actual film, particular care must be taken not to touch its emulsion (matt) side. Always handle it and wind on to the centre spool of the cassette, by holding the film by either side of its edge, preferably between thumb and index finger. At the same time, it is of no less importance that the spot on which the loading is done should be perfectly dry, clean and dust free.

When using bulk film in loading cassettes, the edge of the work-bench can be marked with notches or drawing-pins to indicate various distances, let us say for 12, 24, 36 exposures of film. This considerably simplifies the measuring of film lengths in the darkroom.

The film ends need trimming. At the beginning of the roll of film make either a straight or wedge-shaped cut for the centre spool of the cassette and measure off the required length of film (see table, below). At the end of this make the curved cut for the take-up spool. The curved cut should start between the fifth and sixth bottom perforation—when the emulsion is towards you—and must not go through a perforation hole.

TRIMMING FILMS AND LOADING A CASSETTE



1. The correct trimming of the wedge-shaped end (which is attached to the centre spool of the cassette) with standard trimming template.

2. Trimming of curved cut with standard template.

3. The appearance of the trimmed film: *left*, wedge; *right*, curved cut.

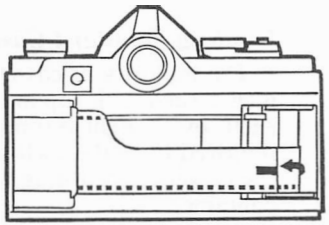
4. The cassette, its outer shell, centre spool and cap.

5. How to fix the film to the centre spool.

6. Winding film on to the centre spool with a mechanical winder.

7. Assembling the cassette.

8. Loading the film into the camera.



8

LENGTH OF FILM REQUIRED FOR ANY NUMBER OF EXPOSURES

Number of Exposures	Length of Film Required		Number of Exposures	Length of Film Required		Number of Exposures	Length of Film Required	
	in.	cm.		in.	cm.		in.	cm.
1	11¾	30	14	31¾	80	27	51	130
2	13⅛	34	15	33	84	28	52½	133
3	15	38	16	34½	88	29	54	137
4	16¼	41	17	36¼	92	30	55½	141
5	17¾	45	18	37¾	96	31	57	145
6	19¼	49	19	39¼	100	32	58½	148
7	20¾	53	20	40½	103	33	60	152
8	22	56	21	42	107	34	61½	156
9	23¾	60	22	43¾	111	35	63	160
10	25¼	64	23	45	114	36	64½	164
11	26¾	68	24	46½	118	37	66	167
12	28½	72	25	48	122	38	67½	171
13	30	76	26	49½	126	Including trimming		

The ready-cut film is now spooled on the centre spool of the cassette. While winding in, hold the film only by its edges.

Also, take care not to press too hard on the film, and don't squeeze the film-ends when drawing through the hand. Failure to take the first precaution may result in fogging, while neglect of the latter precaution may give rise to peculiar kinds of exposure effects known as "lightning flashes". These are due to electrical discharges, and appear as dark, zigzag lines running from the edge of the film towards the centre of the picture.

Loading Standard Cassettes

The majority of cassettes consist of a centre spool which is in a shell with top and bottom cover. The film leaves the shell by a light-trapped slot. The centre spool can be removed from the shell by removing either top or bottom of the cassette, according to the construction of the particular container.

Most cassettes are actually intended by their makers to be used once only, and with the film originally supplied in it. However, provided they are reasonably robustly made, and the light-trapping velvet slot is in good condition, these cassettes *can* be reloaded many times, and will give perfectly satisfactory results—*if handled carefully*.

Loading with Bulk Film or Darkroom Refills

Work in total darkness and prepare the film as described on page 22.

1. **Open the cassette.**
2. **Fix the film to the centre spool.** If the centre spool is fitted with a film catch, thread the tapered end of the film into it. In cases where the centre spool is fitted with a spring, thread the end under it and fold it sharply back. If the centre spool is without any suitable fitting to hold the film, it has been proved best to wind a 1½ in. (4 cm.) piece of cellulose tape round the centre spool, so that on either side about ½ in. tape is used to secure the film.
3. **Wind the film on the centre spool.**
4. **Insert the centre spool into shell,** leaving the first 2 in. of film protruding through the light-trap.
5. **Close the cassette.** Where top and bottom are originally fastened by the outside label, fix the top and bottom cover to the shell preferably with a length of cellulose tape.

Working in Tropical Climates

High and widely varying temperatures with low humidity, as occur in desert regions and dry seasons, and very high humidity in rainy seasons, call for special precautions to protect the life and continued good performance of the camera. These conditions also cause the growth of moulds on organic matter. Sand, dust and insects may present problems.

The camera should be kept dry and clean. Leather parts should be wax polished, metal parts lightly greased. Never

leave the camera unnecessarily exposed to heat. Always keep it in its case. The lens should be covered with a lens cap when not in use, additionally, it should be protected by a colourless filter. Outer lens surfaces have to be kept clean, dirt and grit removed with an air-blower and by tapping. Wipe the lens surface with cotton wool or open mesh fabric (butter muslin), when required.

Store photographic equipment in an airtight metal box or a tin which should be sealed with adhesive (e.g. medical) tape. In a humid atmosphere, add some desiccating agent, e.g., silica gel.

Condensation on the lens may occur when the camera is moved from a cool place into humid heat; this has to be removed before use and the whole camera carefully wiped before re-storing.

Films should not be kept longer than six months in their original air-tight tins (tropical packing) at continual temperatures of 90°F (32°C). At continual 100°F (38°C), the life of most films is limited to a month or two. Keep films for as short as possible a time in the camera.

FILMS AND FILTERS

There are two kinds of films available for the Minolta SR: black-and-white and colour.

Black-and-White Film

This produces a negative on which the colours and brightness range of the subject are translated into black and white. From it, prints or enlargements on paper or black-and-white transparencies can be made.

The black-and-white film used normally is panchromatic, which means that it is sensitive to all colours. There is a choice of several types differing mainly in sensitivity as well as certain other characteristics.

SLOW FILMS are of low sensitivity requiring comparatively great exposure. Their main advantage is the extremely fine grain, permitting a high degree of enlargement without its granular structure becoming unpleasantly visible. Such films also yield images of the greatest sharpness. On the other hand, these slow films are not very suitable for coping with fast movement in other than exceptionally good lighting, nor for general work in poor light. Such films are rated at 40–80 ASA or 17–20 DIN.

MEDIUM SPEED FILMS still yield a reasonably fine grain with good gradation. They are the most suitable material for all-round photography, other than in poor light. These films are rated at 80–160 ASA or 20–23 DIN.

FAST FILMS with a somewhat coarser grain (still acceptable for reasonable degrees of enlargement) will cope with most light conditions including poor light and interiors in favourable conditions. This is the right film for the photographer who wants to be prepared for the unusual, to arrest fast movement with high shutter speeds as well as shots in poor light. The speed ratings are 200–400 ASA or 24–27 DIN.

ULTRA FAST FILMS are primarily intended for high-speed sports shots in dull weather, interior snapshots in poor

light, night photography and ill-lit stage pictures. These films are specialist types for conditions where normal materials are totally inadequate. They should not be used for general photography.

The high speed is achieved at some cost in definition and graininess. Speed ratings range from 500–1,600 ASA or 28–33 DIN.

The above speed figures are based on the latest ASA Standard for film speeds (and on the BS and DIN Standards under revision). These figures, when used on the exposure meter, give minimum correct exposures, to make the most of the versatility of the film and of the image quality. They are also the figures quoted by most film manufacturers. Sometimes films are, however, still rated according to earlier standards which in effect incorporated a generous safety factor against underexposure—by the simple process of overexposing films about 100 per cent (well within the exposure latitude of most black-and-white films). So you may come across films apparently only half as fast as others of similar type, because of this difference in ratings.

This applies to *black-and-white negative* materials only; speed rating methods have not changed for colour films.

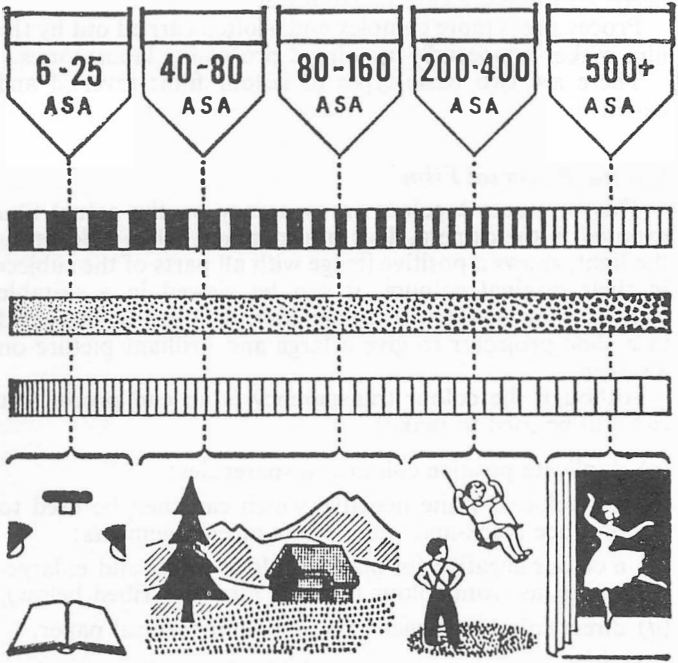
There is a wide range of different makes of films in all speeds on the market. Their characteristics, apart from speed, vary slightly from make to make. It is safe to say that all well-known brands are reliable and good. The best film is the one you are used to.

Professional photographers and advanced amateurs may find one or the other characteristics of a particular make, i.e., its gradation, granular structure, acutance, etc., of particular value for specific jobs.

Colour Film

These films produce an image in colour after appropriate processing, corresponding directly or indirectly to the natural colours of the subject.

FILM SPEED, CONTRAST, GRAIN, RESOLVING POWER



Generally speaking low speed goes with greatest contrast, finest grain, and highest resolving power—and vice versa. The film speed in the *top row* points to the corresponding contrast, grain, and resolving power. As the speed grows (*from left to right*) films decrease in contrast, while the graininess increases. As the speed grows, the acutance and resolution also tends to drop (i.e. the degree to which the film can sharply reproduce very fine detail). The *bottom row* indicates the types of subjects for which films of the various speeds are best (p.27).

Colour film is as easy to use as black-and-white film, but needs a little more care in exposure.

Processing is more complex and is often carried out by the film maker or specially appointed processing laboratories.

There are two basic types of colour film: reversal and negative.

Colour Reversal Film

This produces a colour transparency on the actual film exposed in the camera. This transparency, when held up to the light, shows a positive image with all parts of the subject in their original colours. It can be viewed in a suitable transparency viewer with a magnifier, or it can be projected in a slide projector to give a large and brilliant picture on a screen.

Although the colour transparency is an end product, it can still be used to make:

(*a*) duplicate positive colour transparencies;

(*b*) a black-and-white negative which can then be used to produce black-and-white prints or enlargements;

(*c*) a colour negative for making colour prints and enlargements, as from colour negative film (described below);

(*d*) direct colour enlargements on colour reversal paper.

Colour prints on paper invariably show a loss of colour quality as compared with the original positive transparency.

For correct colour rendering, colour reversal films have to be carefully matched to the light by which they are to be exposed. Accordingly, some are available in two types:

(*a*) daylight colour film, which will give correct colour reproduction in daylight or with electronic flash or blue-tinted flash bulbs;

(*b*) artificial light type colour film, which will give correct rendering by Photoflood illumination or high-power tungsten light.

Colour films made for one kind of light may often be used under different light conditions with the aid of a conversion filter as recommended by the manufacturer.

Different makes of colour film may yield transparencies of a slightly different characteristic colour quality, colour saturation and colour contrast. Which you prefer is very much a matter of personal taste, and you can only be recommended to try various makes to find the one which suits you best.

Colour Negative Film

On processing, this produces a colour negative which shows a negative image of the subject in its complementary colours, e.g., blue appears yellow, red appears blue-green and so on. These colours may sometimes be hidden under an overall orange or reddish tint.

The main purpose of the colour negative is the production of colour prints on paper. The quality is generally higher than that obtained from a positive transparency.

From the colour negative you can make:

(*a*) any number of colour prints in varying sizes;
(*b*) direct black-and-white prints or enlargements, in the same way as from a black-and-white negative;
(*c*) positive colour transparencies for viewing or projection.

Most colour negative films are suitable for exposure by any type of light, e.g., daylight, flash or photofloods. The necessary adjustment of the colour rendering is carried out during the printing stage. Manufacturers sometimes recommend conversion filters even with colour negative films. These mainly serve to simplify the subsequent correction needed in printing.

Colour Film Speeds

The majority of colour films, reversal and negative, are rated between 25 and 100 ASA or 15 and 20 DIN, corresponding to a slow to medium speed for black-and-white

material. Some films have extra sensitivity for poor light conditions. As with black-and-white films, the slower types tend to yield improved image detail, especially with negative colour film, while the fastest emulsions may show slightly reduced colour saturation and image sharpness.

The Choice of Colour Film

Making your choice between colour reversal or negative film (in spite of the various uses that can be made of either type of material) remains an individual question.

First there is the way you want to see the result; as a colour print or as a colour transparency. The print has much to commend it. It is easily shown, stored and carried. The transparency calls for a viewer or projector.

Next, the cost of a colour print is about three times that of the transparency. This may at times be mitigated by the fact that no colour prints need or can be made from unsuitable negatives. The transparency user, however, has additional outlay in the form of a viewer or projector with screen (in most cases both).

A final point to consider is the quality. The transparency will record each colour and its brilliance in full. Held to the light or projected on a screen, the brightness range, which may be 100 : 1, is fully or almost fully retained. It shows colours brilliant with great depth and realism. The colour print can at its best only reflect four-fifths of the light falling on it and even the darkest tones reflect about one-twentieth to one-tenth, so that the full range is no more than 16 : 1. While the colour print is, by necessity, duller than the transparency, it is only fair to say that the eye soon adjusts itself to the reduced brightness range and subjects without great contrast will be very satisfying.

From the point of view of convenience, reversal film has the advantage that it directly gives finished colour pictures of high quality and is still capable of producing colour prints as well. For the maximum versatility and control in print making, however, negative film is superior.

Care of Colour Films

Colour films should be processed as soon as possible after exposure. Always store films in a dry, cold place. Avoid damp or humidity. 35 mm. films which have become damp show white specks. Never leave a film in the car in warm weather: glove compartments, side pockets, boot and shelf are heat danger spots.

Filters for Black-and-White Film

By its nature, a black-and white film can only translate colour values of the subject into tones of lighter or darker grey. Mostly these correspond fairly closely to the *brightness* of the colours, but do not of course differentiate between them. In certain cases the difference between the brightness of two colours may be so slight that both record in almost the same tone of grey. There a filter helps by modifying the depth of one or the other colour, and so making it show up lighter or darker than it would normally.

The commonest example is the blue sky in a landscape, with white clouds. The blue is so brilliant (and the film is often excessively sensitive to it) that the clouds do not show up against it. By putting a yellow filter in front of the camera lens we can subdue or "hold back" the blue, and so making it record darker in the final print. We can even go further and overemphasize the effect progressively with an orange or red filter; these darken the blue so much that the sky looks almost black for a really dramatic effect.

The same considerations hold for other filter effects. For instance, the film renders a red rose in the same tone of grey as the green leaves of the rosebush. With the colour contrast gone, the rose disappears in its surroundings. A green filter makes the rose darker and the leaves lighter; conversely a red filter will show up the rose as light against dark foliage. Scientifically, both filters falsify the tone rendering, but produce a more acceptable pictorial result.

In all these cases a filter *lightens objects of its own colour, and darkens objects of its complementary colour*. Apart from

isolated instances in pictorial photography, such contrast control is very valuable in copying and scientific work (e.g., photomicrography).

All filters cut out some part of the light and thus, as a compensation, an increase in exposure time is necessary when using them. This is stated on most filters in the form of a filter factor indicating by how much (e.g., 2 times, 3 times) the exposure must be increased with that filter. The factors are approximate for they depend not only on the nature of the filter, but also on the exact colour sensitivity of the film and on the colour of the prevailing light.

Filters for Colour Film

The normal yellow, orange, and other filters for black-and-white film must never be used with colour films, as they would give the colour picture a strong overall colour tint.

In daylight and with daylight type film, only two filters are ever required. One is a haze filter, almost colourless but for a slight straw tinge. It is usefully employed on hazy days and in high altitudes to avoid excessive bluishness of the colour picture, especially with distant landscapes, seascapes and near water. This filter does not call for any change in exposure. Original Minolta lenses have a double achromatic coating which gives virtually full colour correction and makes the use of UV and haze filters superflous. On dull days, a second filter, the so-called skylight filter, compensates for the excessive coldness of the colour rendering.

Either filter is also useful for colour photography with electronic flash as it produces somewhat warmer tones.

CONVERSION FILTERS are used if a colour film, balanced for one type of light, should be used in another type of light. The film manufacturers give specific recommendations, generally in the instructions with the film.

The Polarizing Screen

There are times when the judicious use of reflections will enhance the pictorial effect of the picture, but they are also

frequently obtrusive and undesirable. Thus highly-polished subjects are difficult to illuminate successfully so as to obtain a true photographic rendering, since they will reflect too much light and so spoil the reproduction with a glare which obscures the detail. This difficulty can be overcome by the use of the polarizing screen.

It has the special property of suppressing so-called "polarized"light. Light reflections from glass, china, enamel, polished wooden surfaces, and water (but not from metallic surfaces) are polarized to a large extent and can, therefore, be almost extinguished by placing the polarizing filter in proper position over the lens. This screen will prove particularly useful when taking shop windows, furniture, wet objects, etc.

The filter must be rotated to find out its best position on the lens. The Minolta SR Polarizer is ideal for this observation. The filter is simply pushed on the lens mount, and then by slowly rotating the filter in its holder one can find the best or desired result on the reflex-focusing screen. As the polarizing filter cuts out some light, the exposure time should be increased, the factor being about three times.

The polarizing screen is in addition particularly useful in colour photography where it acts similarly to the yellow filter in black-and-white photography, i.e., it darkens a "milky" blue sky. The bluish colour cast obtained with diffused sky light is removed or at least appreciably reduced with the polarizing filter. The reduction or elimination of reflections through this filter is of course just as useful in colour pictures as it is in black-and-white.

EXPOSURE

Exposure means: to expose the film in your camera to light. The dose of light any film needs to produce the right sort of image depends on how sensitive that film is to light. A fast film is more sensitive than a slow film.

Once your choice of film is settled, the basic condition of exposure is settled with it. You are now left with the problem of scaling the light you find in front of your camera to the amount your film needs.

Your job is to judge the light reflected from the subject you are about to photograph. Your grandfather as an amateur photographer used to take into account his geographical position, the time of the year, the hour of the day, the state of the sky as well as the tone of the subject itself, and by so adding one thing to another size up the light reflected from the subject. The experienced professional, of course, hardly ever worked that way. He just had a look and he knew.

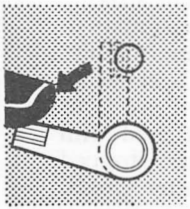
Today a light meter or exposure meter does the same for any photographer. It takes a look, it measures the light and it lets you know.

In fact, it does more than that. It translates the light measured straight into terms of photographic exposure. It does so by presenting you with the choice of aperture numbers and shutter speeds, sorting them out in pairs.

Aperture and Speed

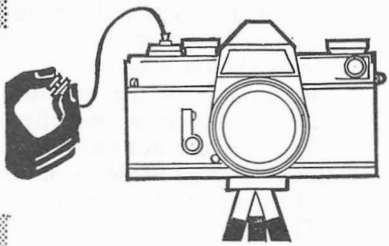
The aperture number or *f*-stop controls the *amount of light* allowed to enter through the lens. These numbers run in a series: 2–2.8–4–5.6–8–11–16–22; each higher stop number lets through half the light of the next lower number (next larger stop).

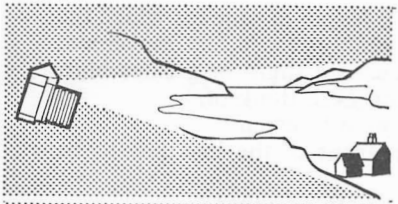
The shutter speed controls the *length of time* for which the lens is kept open to light. Shutter speed figures represent fractions of a second: 2=$\frac{1}{2}$ second, 4=$\frac{1}{4}$ second . . . 500=1/500 second.



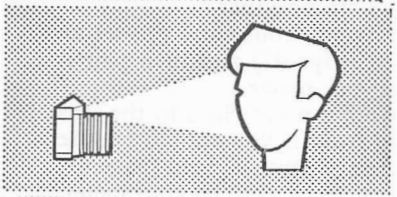
To use the self-timer, push the lever downwards away from the lens barrel (*far left*). To release it, push the button then uncovered towards the lens barrel (*left*).

When using time exposures or any of the slower shutter speeds, operate the shutter by means of a cable release and support the camera, preferably on a tripod.

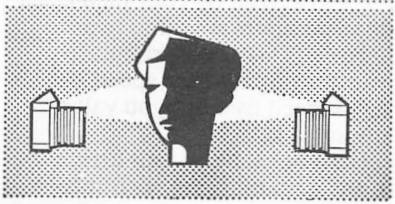




To take general reflected light readings with the Minolta meter, either point it directly at the subject or, with outdoor views, direct it slightly downwards to cut down the amount of light reaching it from the sky.



Where the subject differs appreciably in tone from its surroundings, take a close-up reading on the subject itself and base the exposure on that.



With very contrasty subjects, it is advisable to take separate close-up readings of the lightest and darkest parts of importance. The actual exposure should then be based on the mean of the two readings.

The actual exposure is a product of these two: "how much" and "how long". A large amount of light striking the film for a short time may produce an image similar to that produced by a small amount of light striking the film for a long time. Hence the free choice from a series of balanced aperture-shutter combinations offered by your exposure meter: more or less open apertures paired with more or less quick shutter speeds and more or less stopped down apertures paired with more or less slow shutter speeds.

They all are right and yet one is better than the other.

Why should it be so?

Because both the aperture and the shutter also have secondary functions and effects.

The aperture not only controls the amount of light that is allowed to pass the lens—it also has a bearing on how much of the image will be sharp.

The shutter in controlling the length of time for which the light strikes the film, will inevitably record any movement that happened during that time as a slight or greater blur.

So you are left with three things to think of.

How fast is the action you want to catch?

How much of the scene in front of the lens has to be sharp?

Is the light good enough for both or either?

If there is fast action you have to choose and pre-set an appropriately fast shutter speed (page 41) and then pair it with the stop which is right by your meter.

If the scene is to be sharp from a point close to the lens to some other point well away from it you should choose the stop that will yield the necessary depth of field (page 42) and then pair it with the shutter speed agreed by your meter.

If the light is very poor, the chances are that you may not be able to cope with either extremely fast or particularly deep subjects. Yet your choice in putting shutter speed or depth of field first should still be governed by what you value most about the picture you propose to take.

Exposure nowadays is no problem at all. You can arrive at the right exposure by guessing it or measuring it. But to

hit it off in such a way that it will produce the picture *you* want, is still a matter of intelligent judgment.

Time Exposures

When the light is very weak, especially when you have to use a small stop, even the slowest shutter speed of 1 sec. may be too short. In that case, you need time exposures. Set the shutter to B and press the release button. The shutter now remains open for any length of time until you let go of the release button.

For such time exposures, the camera must be mounted on a firm support such as a tripod.

It is safest to release the shutter with the help of a cable release to avoid shaking the camera. This release screws into the bush in the centre of the release button.

For long time exposures, where the shutter is to remain open for longer than you can conveniently keep the release depressed, use a cable release with a lock.

The Self Timer

A self timer (delayed action release) is built into the Minolta SR cameras except T100 and T100b. It is controlled by the setting lever on the camera front plate. To set the self timer swing it downwards so that it is parallel to the base plate. To release it push the circular chromed button on the front plate which has been bared by moving the lever. The shutter will be released after a lapse of 8 sec., in which time you can take your place in your own picture. You can get a lesser delay time by pushing the lever less than the 90° to the horizontal position but not less than 45° where the delay time is 3 sec.

If, after starting the self timer, you should change your mind, you can by-pass it by pressing the shutter release button to release immediately.

Using an Exposure Meter

To get the best results an exposure meter has to be used intelligently. This may look like a contradiction, since we

have already said that it is an accurate light measuring instrument. But light from all parts of the subject—highlights, shadows and middle tones—falls on the meter, so the reading it gives us is an average one for the whole subject area.

Meters are scaled to suit typically average subjects—i.e., subjects with average areas of light, dark and middle tones. So if you point the meter at a subject of this kind, the exposure reading will be correct.

But if the subject is not average—if there are large highlight areas and little shadow, or large shadow areas with few highlights—then you have to modify the exposure reading to obtain the best results.

So there is more to using a meter than just pointing it at the subject and accepting without question the reading indicated, even though the Minolta SR-1 and SR-7 CdS meters cover only an angle of 30°. This is less than that of the standard lens.

The usual method of using a meter is to point it directly at the subject. This gives the correct exposure reading provided the subject has an average mixture of highlights, shadows and middle tones. But if there is a large bright area, or a large dark area, the best method is to go near to the main subject and take a close-up reading. For example, if the subject is a figure against a white or dark background, by going closer you will reduce the amount of background affecting the meter and therefore get a reading in terms of a more average subject, which is what you want. The SR-T100, T100b, T101, T101b, T303, T303b, XM, XE-1 and XE-5 take account of this through their compensating design.

For some subjects you can take a reading from really close up, aiming the meter at the part of the subject that you want to make sure has optimum exposure. For instance, many photographers take a close-up reading of the sitter's face in portraiture; out-of-doors you can take the reading from the back of your hand.

If you cannot go close up to a subject that needs a close-up reading, then try to find something near at hand that is

similar in tone to the subject, and on which the light falls from the same direction and take a reading from that.

When taking readings of general scenes including a good deal of sky, you have to tilt the meter down slightly to reduce the area of sky "seen" by the meter. The sky is a bright highlight, and by tipping the meter down to exclude some of it, the subject becomes "average" in tone range.

Open views, such as distant landscapes, usually have very light shadows, so you can give a shorter exposure than the meter indicates. It is usual to give half the exposure—i.e., use double the shutter speed, or use one stop smaller.

AGAINST THE LIGHT subjects are extreme cases of non-average tone range. The main lighting becomes a very bright highlight in the field of view, so if you point the meter straight at the subject it will indicate too short an exposure and give you a silhouette effect in the final picture.

This is all right if you want a silhouette. But if you want correct exposure for the subject, you should either take a close-up reading, or take a reading from the camera position and give four to eight times the exposure indicated.

COLOUR FILMS have little exposure latitude, so particularly careful reading is advisable. The meter is used in the same way as for black-and-white films.

Because of the importance of the highlights, if you are using a meter from the camera position for an against-the-light shot, it is best to only double the reading, and not multiply it four to eight times as recommended for black-and-white negative films.

Shutter Speeds and Movement

The actual shutter speed you need within a series of available aperture-speed combinations is governed by considerations of camera steadiness as well as of subject movement.

An unsteady camera hold results in camera shake, to which a small and light instrument such as the Minolta is particularly liable. Even the slightest shake will result in

inferior definition of the negative. Practical experience goes to show that 1/125 sec. is safe, while you have to hold the camera particularly steady when us ing 1/60 or 1/30 sec. Where lighting conditions make even longer exposure times essential and there is no subject movefment, either support the camera on a tripod, or look round or extra support for your elbows and hands—e.g., a wall, ra iling, etc.

The shutter speed required to arrest movement depends of course primarily on the speed with which the subject moves. Remember, however, that parts of the subject (e.g., the legs of a runner) may move faster than the subject as a whole; you may sometimes have to compromise and show such parts slightly unsharp. Often that is not a serious fault, as slight blurring—provided the main part of the subject is sharp—helps to emphasize the impression of movement. Other factors to consider are the distance of the subject—the farther away, the less noticeable the movement blur; the focal length of the lens—a long-focus lens in effect brings the subject nearer; and the direction of the movement. Objects moving across your field of view blur more than if they are approaching or receding.

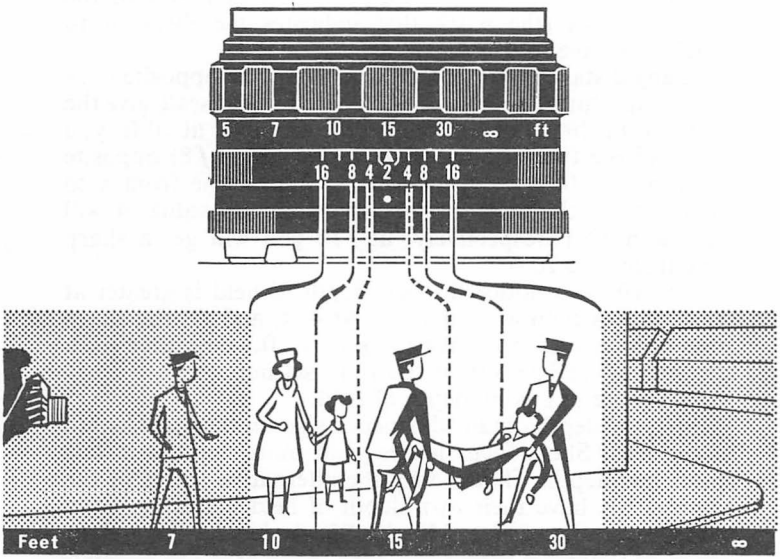
Aperture and Depth of Field

When you focus the Minolta SR on a given object, the image of that object will be really sharp on the film. Things nearer or farther away will be gradually less and less sharp, until they are noticeably blurred. The range of distances over which objects are still acceptably sharp, before you do notice the loss of definition, is known as the depth of field.

You can control the extent of this sharp zone by the lens aperture. As you stop down the lens, the zone of sharpness grows in both directions; as you open up the lens, its depth decreases.

You can obtain the actual zone of sharpness at various apertures and distances from tables, but in practice the most convenient way is to use the depth of field indicator. This is a special scale of aperture numbers marked opposite the distance scale.

DEPTH OF FIELD



Minolta SR cameras carry a depth of field indicator engraved on the lens mount. This shows clearly how much of the subject will be sharp at any given distance and aperture. The figure opposite the triangular index mark is the focused distance (e.g. 15 ft.). The figures opposite the right-hand index line corresponding to the lens aperture indicate the near limit, and the figures opposite the left-hand index line of the same aperture number show the far limit of the depth of field. Thus, at *f* 4, the appropriate lines point approximately to about 13 and 19 ft., while at *f*8 the depth of field shown by the indicator extends from about 11 to 25 ft. and at *f* 16 from 9 to 50 ft.

There are two sets of such numbers from the largest stop (f 1.4 or f 1.8) to the smallest (f 16) on each side of the focusing index (the mark that indicates the distance to which you have set the lens).

At any distance setting, the distance figures opposite each pair of aperture numbers on the depth of field scale give the near and far limits of sharpness. For example, at 10 ft. you may find the two stop values 8 on the scale (f 8) opposite about 8 and 14 ft.—so you have a sharp zone from 8 to 14 ft. At f 4, the distances opposite the stop values 4 will be 9 and 12 ft. respectively; at f 16 you will get a sharp zone from 7 to 20 ft.

You will also notice that the depth of field is greater at far distances than at near ones. At 4 ft. and f 8 the sharp zone only covers from about $3\frac{3}{4}$ to $4\frac{1}{2}$ ft.—less than 1 ft. altogether—against 6 ft. at the 10 ft. setting.

Two more points on depth of field.

First, the depth obtained depends also on the focal length of the lens. Short focus lenses yield more depth and tele lenses less depth. That is why the alternative lenses of the Minolta SR have their own depth of field indicator. Even the fact that the various Minolta SR models have standard lenses of slightly different focal lengths makes some difference.

Secondly, the sharp zones obtained by the indicator or tables are based on a somewhat arbitrary assumption of how much blurring is acceptable. So depth of field data for different cameras with the same lens may not always agree, and you are also quite safe in rounding off figures obtained from such data. And if you intend to make really big enlargements from your negatives, you can use stricter standards of sharpness by simply stopping down the lens by one stop.

Pre-Viewing the Depth of Field

Lenses with automatic aperture setting facilities can be stopped down for depth of field preview by pressing the stop-down button on the camera body. Other Rokkor lenses

have a preview button on the lens itself. Pressing the button stops the lens down and you can visually observe the extent of sharpness before and behind the subject you have actually focused on. At the same time, however, the image on the screen gets darker, so there is a limit to this observation. With other Rokkor lenses use the preview button on lens.

Zone Focusing

With action subjects and similar occasions where you want to shoot quickly, determining sharp zones even with the depth of field indicator wastes too much time. There you need prepared settings covering given near and medium distance ranges that you can easily memorize and set on the camera.

FLASH WITH THE MINOLTA SR

Flash is an efficient light source where no or insufficient daylight is available such as at night, indoors, etc. In the flashlight you carry your own private "sun" with which you can illuminate your subject or scene at any time and place.

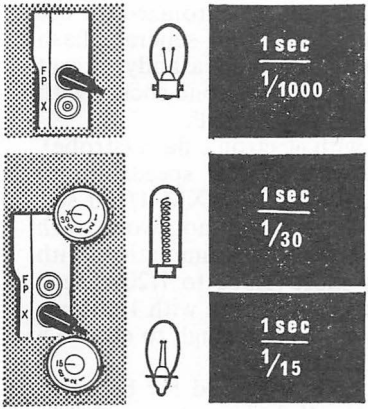
THE FLASH BULB is similar to a small electric bulb. However, when current passes through it, it lights up in an intense flash lasting usually about 1/40 to 1/60 sec. Each bulb will flash only once and has to be discarded afterwards.

The flash bulb is inserted in a flash gun and the current of the battery fires the bulb, while a reflector fixed behind the bulb makes sure that all the light is directed towards the subject. Most flash guns incorporate a capacitor unit which increases the reliability of firing, even when the battery is nearly exhausted.

Flash bulbs, previously available with a clear glass bulb (for black-and-white and negative colour film) or with a blue-tinted bulb (for daylight type reversal colour films), are now supplied in blue-tinted form only. They are suitable for use with all types of film. The blue bulbs can also be used for fill-in lighting by daylight with any type of colour or black-and-white film.

ELECTRONIC FLASH UNITS utilize the discharge of a high-tension capacitor through a flash tube. The power is derived from an accumulator or battery (there are also models working from the main electricity supply). The electronic flash outfit is somewhat bigger and heavier than the flash bulb outfit and its initial cost is higher. Its comparative light output equals a small flash bulb but anything from 10,000 to 25,000 flashes are obtained from one tube. The flash duration is extremely short (1/700 to 1/2000 sec.) and will arrest the fastest movement. The cost of an individual exposure is negligible.

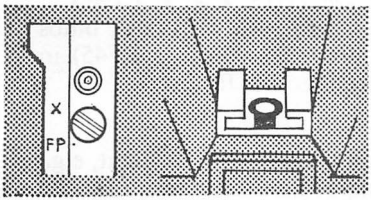
Electronic flash is suitable for black-and-white and negative colour film and for daylight type reversal colour films. It can also be used for fill-in lighting by daylight.



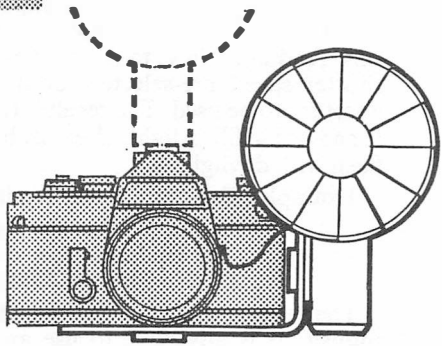
The Minolta SR (except T303 and X series) carries two flash sockets. When the plug from the flash gun is fitted in the top socket, marked FP, the camera is synchronized for focal plane-type flash bulbs at all shutter speeds to 1/500 second (or up to 1/100 second on SR-7 and T101).

The lower flash socket is marked X and serves primarily for synchronizing electronic flash units. These can be used at all shutter speeds from 1 second to the setting marked X on the shutter speed dial, corresponding to 1/30 second, or, on V and T101. models, to 1/60 second

The X socket can also be used for ordinary Class M flash bulbs at shutter speeds from 1 to 1/15 second.



The T303, XE-1, XE-5 and XM have a single flash socket with a selector switch. The accessory shoe has a cordless X contract.



Most flash guns can be fitted directly into the accessory shoe available for the Minolta SR. Alternatively, a flash bracket with an accessory shoe at one end can be fitted to the base of the camera.

How to Use Flash

The Minolta SR shutter is internally synchronized for use with flash bulbs and electronic flash. Two separate flash sockets are fitted into the front of the camera body, except on T303, XE-1, XE-5 and XM which have one socket with a selector switch which can be set to X or FP.

X-synchronisation is for use with electronic flash (strobe). Electronic flash can be used with shutter speeds up to 1/60 sec., on XE-1 and XE-5 1/90 sec., on XM 1/100 sec. Faster speeds than this "X" setting will not work with electronic flash. At the same time, the illumination with electronic flash is so extremely short (1/700 to 1/2000 sec.) that fast-moving objects will be arrested even with 1/60 sec., provided the existing light is not strong enough to enable a secondary image to be formed on the film.

The ordinary M class flash bulbs designed for between-lens shutters can be used with the X flash contact and slow shutter speeds only up to 1/15 sec. (1/15, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1 sec.).

FP synchronisation is intended for use with flash bulbs designed for focal plane shutters (e.g., PF24 or PF45) in conjunction with all shutter speeds to the fastest.

Synchro-Sunlight

If you want to use flash in conjunction with daylight, e.g., to lighten deep shadows, the exposure time is taken for the sunlit side of the subject and the aperture used according to this reading. Now take the flash guide number for the shutter speed pre-selected, double it and divide it by the aperture to be used. The result is the flash-to-subject distance for a normal fill-in light. Use only blue flashbulbs or electronic flash with daylight.

Example: Exposure meter reading at 1/60 sec.$=f$ 16.
Guide number for the flash at 1/60 sec. = 120.
The guide number doubled is 240.
Divide 240 by 16=15.

That means that the flashgun should be 15 ft. from the subject. It is advisable to use an extension cable between

camera and flashgun. This enables you to place the flash farther away from or closer to the subject than the camera. If you have no extension, you can use various methods to reduce the light. These include placing a handkerchief or even your parted fingers over the flash gun. The effect on the power of the light has to be found by experiment.

Attaching Flash Gun to Camera

A flash bracket may be fitted to the base of the Minolta SR anchoring at the tripod bush and protruding over the side of the camera. The protruding end carries an accessory shoe to which the flash unit is attached.

Alternatively a Minolta SR accessory clip can be fitted over the rear of the pentaprism top. It is held in position by the rear eyepiece of the finder and the shoe itself lies above the prism. The accessory hot shoe for the model XM slides over the base of the back cover release knob.

Exposure Guide Numbers

There is a convenient way of working out exposures with flash, and this is by means of a guide number. When you buy flash bulbs you will always find the guide number for any speed of film printed on the packet.

To find the correct aperture to use, divide the guide number by the distance between the flash and the subject. For instance, suppose you find that the guide number of the bulb with the film in use is 160. If you then want to take a photograph at a distance of 10 ft. from the subject, divide 160 by 10=16. Therefore, the correct aperture to use is *f* 16. Alternatively, if you want to use an aperture of *f* 8 for any reason, then the correct flash distance is 160÷8=20. So the flash must be 20 ft. from the subject.

So far we have assumed that the exposures have been for average shots without much subject movement. For these a shutter speed of 1/30 sec. (marked X) is long enough to utilize all the light emitted from the bulb. On the other hand, to arrest fast movements (but with FP bulbs only!) a faster shutter speed is required, such as 1/125, 1/250 or even

1/500 sec. With each of these speeds a different guide number is needed (usually printed on the flash bulb packet) to determine the correct exposure. They allow for a wider aperture to compensate for the fact that at fast shutter speeds some of the light emitted from the bulb is lost.

USING ALTERNATIVE LENSES

The field of view covered by the standard lens is ideal for the majority of subjects. Occasionally, however, a greater or reduced field of view has distinct advantages. The Minolta SR has an interchangeable lens mount permitting use of alternative focal length lenses for such occasions.

Wide-Angle Lens

A wide-angle lens is a lens of shorter focal length. It sees and reproduces more of the subject in front of the camera than does the standard lens.

Such a wide-angle lens has definite advantages in cases where the practicable distance between camera and subject is limited and the standard lens cannot record the whole of the subject. The wide-angle lens is, therefore, primarily used for architectural photography and interiors.

In view of its short focal length, the depth of field covers a particularly wide zone, even at full aperture. It can, therefore, be employed with advantage as a quick-shooting lens for general purposes where accurate focusing or distance-setting would be inconvenient (e.g., through insufficient time).

To get a large image, even of a near subject, you have to go really close to it. Near objects then tend to dwarf more distant ones, and the resulting picture shows pronounced perspective effects. In this way, the wide-angle lens can be used to emphasize perspective.

Telephotography

A tele lens on the other hand has a smaller angle of view than the standard lens. It is of longer focal length, and reproduces less of the subject in front of the camera than the standard lens does, but on a larger scale.

Such a lens is particularly suitable for subjects that are difficult to approach closely, such as animals, children, architectural detail, sports events, etc. In photographing distant views without near foreground, it brings the subject nearer. It also permits a greater camera-to-subject distance

in portraiture, producing a more pleasing and subdued perspective. At the same time, its lesser depth of field concentrates definition on the portrait, avoiding a sharp background which would detract from the main object.

Rokkor Lenses

The lenses made for the Minolta SR by the makers of the camera are listed on page 54. These range from the 16 mm. wide angle to the 1600 mm. telephoto. In addition a Macro lens of standard focal length is available permitting focusing from infinity down to 9 in. where it gives a ratio of reproduction of 1 : 2. With the aid of an intermediate ring it will focus to $7\frac{9}{10}$ in. for ratio 1 : 1.

For the SR T101, T303, XM and XE-1 special lenses, marked MC (=meter coupled) are supplied, which are the same optics and mounts as the other models but fitted with an aperture simulating lug, which permits use of the T101/ T303, XM and XE-1 meter at full aperture. Lenses of the non MC variety can however be used on these cameras by using the stopped down measuring method on pressing the pre-view button of these lenses.

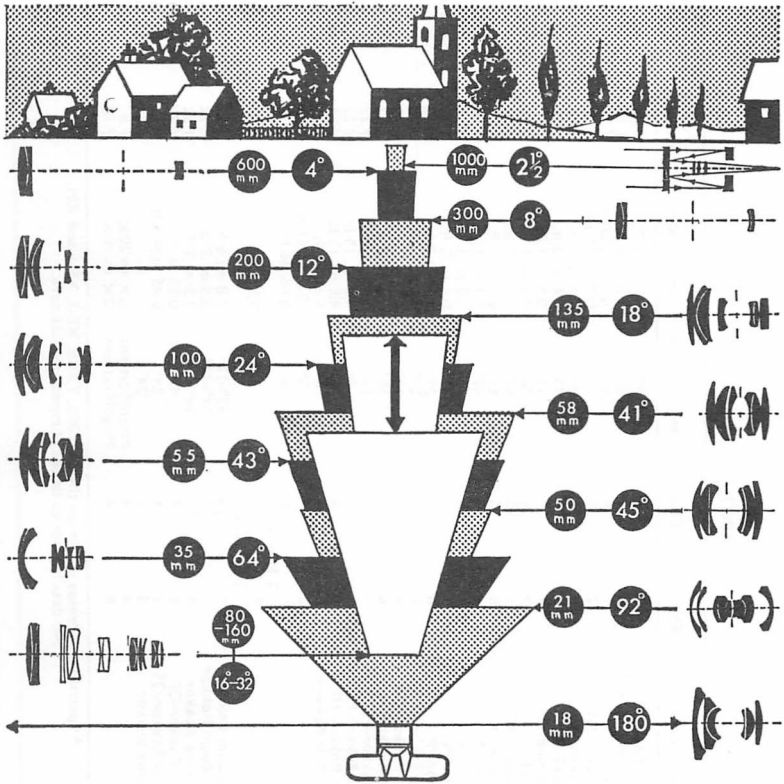
Adaptors

Lenses made for the Exakta camera can be fitted to the Minolta SR camera with the aid of an Exakta mount adaptor. With the adaptor inserted into the camera bayonet mount all Exakta mounted lenses may be used from infinity to nearest distance.

Leica-mount lenses can be used on the Minolta SR camera on inserting a Leica-mount adaptor into the camera bayonet. These lenses can however only be used for close-up work, copying small objects, as they are fitted with a longer mount then required for Minolta SR. The Leica body is less than $\frac{1}{3}$ the depth of that of the Minolta SR camera.

Lens Changing

To remove the lens, push down the lens lock button which is in the 2 o'clock position on the base of the lens mount, Turn the lens barrel anti-clockwise as far as it will go, and



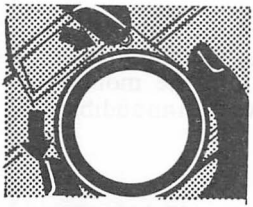
Lenses of many different focal lengths are available for the Minolta SR. They range from 1.5° to 180° angle, i.e. 1600 mm. to 18 mm. focal length. The longer the focal length, the larger the image scale, but the smaller the view covered. The shorter the focal length, the wider the view but the smaller the scale of the image.

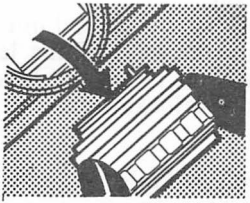
MINOLTA LENSES†

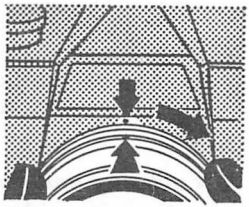
Focal Length and Aperture of Lens	Elements	Groups	Angle of View	Closest Focus in m. and ft.	Smallest Aperture	Filter Size
7.5 mm. f 4 MC Fisheye Rokkor	12	8	180°	0.5 m./1.75 ft.	f22	Built-in
16 mm. f 2.8 MC Fisheye Rokkor-OK	11	8	180°	0.3 m./1 ft.	f 16	Built-in
17 mm. f4 MC W Rokkor	11	9	104°	0.25 m./0.8 ft	f 16	72 mm.
21 mm. f 2.8 MC W Rokkor-NL	12	9	92°	0.25 m./0.8 ft.	f 16	72 mm.
24 mm. f 2.8 MC W Rokkor-SI	9	7	84°	0.3 m./1 ft.	f 16	55 mm.
28 mm. f 3.5 MC W Rokkor-SG	5	5	75°	0.6 m /2 ft.	f 16	55 mm.
28 mm. f 2.88 MC W Rokkor-SI	7	7	75°	0.5 m./1.75 ft.	f 16	55 mm.
28 mm. f 2 MC W Rokkor	10	9	76°	0.3 m./1 ft.	f 16	55 mm.
35 mm. f 2.8 MC W Rokkor-HG	5	5	63°	0.3 m./1 ft.	f 16	55 mm.
35 mm. f 1.8 MC W Rokkor-HH	8	6	63°	0.3 m./1 ft.	f 16	55 mm.
50 mm. f 1.7 MC Rokkor-PF	6	5	47°	0.5 m./1.75 ft.	f 16	55 mm.
50 mm. f 1.4 MC Rokkor-PG	7	5	47°	0.5 m./1.75 ft.	f 16	55 mm.
58 mm. f 1.2 MC Rokkor-PG	7	5	41°	0.6 m./2 ft.	f 16	55 mm.
85 mm. f 1.7 MC Rokkor-PF	6	5	29°	1 m./3.3 ft.	f22	55 mm.
100 mm. f 2.5 MC Tele Rokkor-PF	6	5	24°	1.2 m./4 ft.	f 22	55 mm.
135 mm. f 3.5 MC Tele Rokkor-QD	4	4	18°	1.5 m./5 ft.	f 22	55 mm.
135 mm. f 2.8 MC Tele Rokkor-PF	6	5	18°	1.5 m./5 ft.	f 22	55 mm.
200 mm. f 4MC Tele Rokkor-PE	5	5	12°	2.5 m./8 ft.	f 22	55 mm.
300 mm. f 5.6 MC Tele Rokkor-PE	5	5	8°	4.5 m./15 ft.	f 22	55 mm.
300 mm. f 4.5 MC Tele Rokkor-HF	6	6	8°	4.5 m./15 ft.	f22	72 mm.
400 mm. f 5.6 MC APO Tele Rokkor	7	6	6°	5 m./16 ft.	f32	72 mm.
*800 mm. f 6.3 Telyt	3	1	3°	12.5 m./41 ft	f32	138 mm.
800 mm. f8RF Rokkor	8	7	3°	8 m./26 ft.	f16	Built-in
	2 Mirrors					
1600 mm. f 11 RF Rokkor	7	6	1° 30′	20 m./70 ft.	22	Built-in
	2 Mirrors					
80–200 mm. f 4.5 MC Zoom Rokkor	14	10	30°–12°	1.8 m./6 ft.	f 32	55 mm.
100–200 mm. f 5.6 MC Zoom Rokkor	8	5	24°–12°	2.5 m./8 ft.	f 22	55 mm.
100–500 mm. f 8 MC Zoom Rokkor	16	10	24°–5°	2.5 m./8 ft.	f 32	72 mm.
50 mm. f 3.5 MC Macro Rokkor-QF	6	4	47°	0.23 m./9 in.	f 22	55 mm.
100 mm. f 3.5 MC Macro Rokkor-QE	5	4	24°	0.45 m./1.5 ft.	f22	55 mm.
100 mm. f 4 Auto Bellows Rokkor	3	3	24°	—	f 32	55 mm.
*Photar 12.5 mm. f 1.9	4	4	Magnification:	5× to 20×	f 8	—
*Photar 25 mm. f 2.5	6	4	Magnification:	2× to 10×	f 16	—

* Special Leitz lenses usable on the SR-T303, T303b, XE-1, XE-5 and XM.
† All details refer to lenses of recent manufacture.

CHANGING LENSES AND APERTURE CONTROL

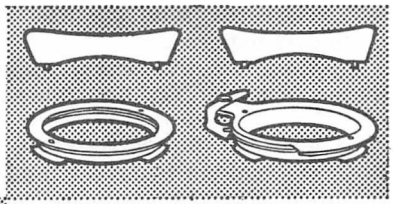


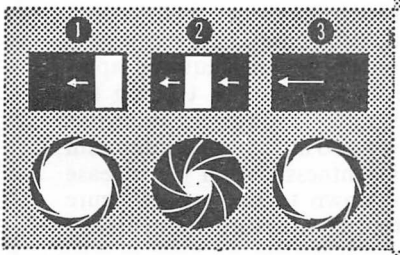




To remove the lens (*left*) push down the lens lock button and turn the lens barrel anti-clockwise until it stops. Lift the lens out carefully (centre). To attach the lens, insert it into the bayonet mount by lining up the red dot on the lens barrel with the red dot on the camera (*right*). Turn the lens clockwise until it stops.

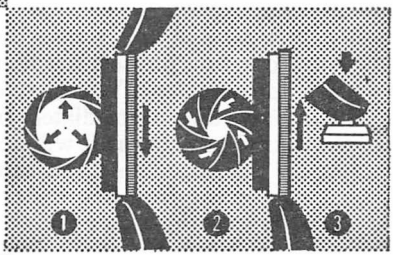
Adapters are available to allow Leica screw lenses (*right*) and Exakta bayonet lenses (*far right*) to be used on the Minolta. The Leica lenses, however, can be used only for close-ups or copying.





The fully automatic lenses close down automatically to the pre-set aperture as you release the shutter and re-open after the exposure. 1. Select the aperture, the iris stays open. 2. Release the shutter, the iris closes to the pre-selected aperture. 3. When the shutter is again closed, the iris re-opens fully.

The pre-set aperture works differently. 1. Pre-select the aperture with the front aperture ring and open the iris fully with the rear aperture ring. 2. Immediately before the exposure, close down the iris to its pre-set aperture by turning the rear ring in the opposite direction. 3. Press the shutter release to take the picture.



lift lens out carefully. Protect the rear of the lens by a rear lens cover immediately.

To attach the lens, line up the red dot on the lens barrel with the red dot on the base of the lens mount, in the 12 o'clock position, and insert the lens into the mount. Turn it clockwise until its locking pin engages with an audible click.

Focusing and Depth of Field

Focusing with a wide-angle or telephoto lens is the same as when using a standard lens. The reflex screen enables the image to be focused accurately. At the same time, the reflex screen shows the exact field of view of the particular lens used. There is no parallax error, nor are supplementary finders required.

The alternative lenses have their own depth of field indicator. This works in the same way as with the standard lens.

Aperture Control Systems

The Rokkor lenses for the Minolta SR camera are either fitted with the automatic pre-set aperture or a pre-set aperture which has to be actuated by hand.

Automatic pre-set aperture. You pre-set the required aperture on the rear ring of the lens mount by turning the aperture selected to the index dot. The aperture remains fully open for focusing and viewing so as to obtain minimum depth of field and maximum brightness. When you release the shutter, the aperture stops down to the pre-set figure and re-opens automatically to full aperture immediately after the exposure.

The pre-set aperture system consists of two control rings. The front ring pre-sets the required aperture, but does not stop down the lens. You therefore focus and view the image at full aperture. Immediately before the exposure you turn the rear ring as far as it will go to stop down the lens to its pre-set aperture. This you can do by touch alone without taking the eye from the finder. After the exposure, simply turn the rear ring back again to open the lens to full aperture.

CLOSE UP WORK

The unaided Minolta SR focuses down to just under 2 ft. where it covers (with the 55 mm. lens) a field of 7¼ in. by 10 in. To take photographs at still closer distances to the subject, close-up lenses, extension tubes, extension bellows or the Macro Rokkor lens can be used. Use of the right angle finder or magnifier (see page 61) is recommended when working with close-up units.

Close-up Lenses

Two close-up lenses are available to screw into the front of the lens mount. With the standard lens, the No. 1 close-up lens gives a 0.1–0.25× reproduction ratio. The No. 2 lens gives 0.2–0.3×. A No. 0 lens can be used with long-focus lenses to reduce the minimum focusing distance, which is commonly 7 ft. or more. The No. 0 lens has no application with standard lenses, however, because it is of greater focal length than the minimum focusing distance of such lenses.

Extension Tubes

A set I of five numbered tubes of various lengths is available. These can be combined in nine different ways to cover focusing distances of:

with a standard 55 mm. focal length lens, between 43 cm. (17 in.) and 7.5 cm. (3 in.) between subject and front of lens mount.

Extension tube set II consists of 2 adaptors and 3 tubes with auto aperture; the focusing distances are slightly different from above set.

The tubes have to be added to each other in numerical order, largest number to the camera body, lowest to the lens. Tube 1 is fitted with front and rear bayonet, tube 2 with front bayonet and screw fitting on back, tubes 3 and 4 have screw fitting on front and back and tube 5 has screw thread on front and bayonet fitting on back.

Extension Bellows

The extension bellows Model 1 (manual or automatic diaphragm versions are available) is the simpler of two bellows units. It has a single runner on which the bellows can be extended or contracted by a focusing knob. The focused lens can then be locked in position by a locking knob. The base of the lens holder has a tripod bush. The back of the lens holder is connected to the camera in the same way as a lens; the lens itself fits into the front bayonet of the lens holder.

With the standard 55 mm. lens set to infinity you can take pictures between 8.8 cm. and 4.3 cm. from front of lens mount to subject, covering a field of $3 \times 4{\cdot}5$ cm. to 1×1.5 cm.

With a 100 mm. focal length lens, distances from 33 cm. to 15.5 cm. can be covered with a field of 6×9 cm. at 33 cm. distance to a field of 1.8×2.8 cm. at 15.5 cm.

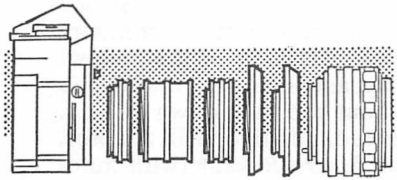
The De Luxe extension bellows is rather more elaborate than the model I and also has an automatic diaphragm version. It is fitted with double runners, extra long bellows extension (17.5 cm.), slide copying attachment and bellows lens hood.

With the standard 55 mm. focal length lens set to infinity, you can cover, from front of lens mount to subject, distances from 7.4 cm. where a field of 2.4×3.6 cm. is covered, down to 3.7 cm. with a picture area of 0.7×1.1 cm.

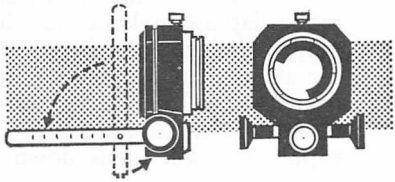
With a 100 mm. lens, the distance range is from 29.6 cm. (field 4.4×6.6 cm.) down to 17 cm. (field 1.4×2.1 cm.). With a 135 mm. lens the distance range is from 45.3 cm. (field 5.9×8.8 cm.) down to 22.6 cm. (field 1.9×2.8 cm.).

A slide copying attachment can be fitted to the front standard of the extension lens hood to copy transparencies or other flat transparent objects. The lens hood bellows provided can be used as a lens hood for close-up photographs and also in conjunction with the slide copying equipment to exclude harmful stray light.

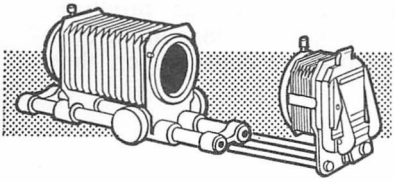
Bellows III are reasonably priced, compact and lightweight bellows performing many of the functions of the Bellows I and giving magnification 0.65 to 2.92 with 50 mm. lens.



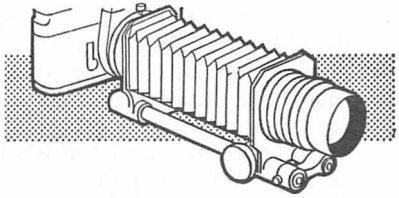
There are five extension tubes that can be used in various combinations to give reproduction ratios (with 55 mm. lens) from about 1 : 7 to 1.4 : 1 (see page 57).



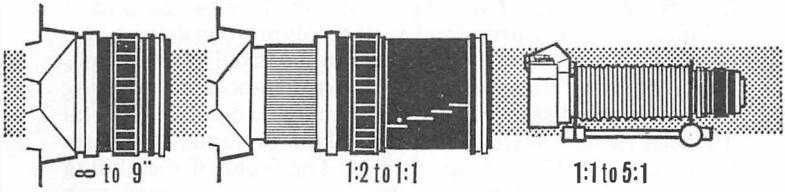
The extension bellows Model I gives magnifications (with the 55 mm. lens) up to 2.4 and focuses down to less than 2 in. It folds compactly for storage (see page 57).



The extension bellows De Luxe gives magnifications (with the 55 mm. lens) up to 3.2 and focuses down to about 1¼ in. The bellows is shown here with the bellows lens hood and transparency copier (see page 58).



With the special short-mount 135 mm. Rokkor lens the De Luxe bellows can be used for focusing from infinity to 1 : 1 reproduction (see page 58)



The Macro Rokkor lens (*left*) focuses from infinity to 9 in. Used with an extension tube (*centre*) it gives 1 : 2 to 1 : 1 reproduction ratios. With bellows extension (*right*) it can give reproduction ratios from 1 : 1 to 5 : 1.

The 135 mm. Rokkor f 4 lens in short mount for use with the above extension bellows (see page 59) has been designed for work from infinity down to natural size. Its short mount in conjunction with the shortest extension of the bellows permits photographing at infinity, and increasing the bellows extension permits focusing without gap right down to 1 : 1. The lens is supplied with Leica thread and Minolta SR adaptor.

The Macro Rokkor and *Auto Macro Rokkor* (with automatic diaphragm) lenses have been designed for macro photography and copying (see page 54). They are also suitable for all general purpose photography. When directly connected to the Minolta SR body the lens can be focused from infinity down to 23 cm. (9 in.); with the extension tube supplied it will focus down to 20 cm. ($7\frac{9}{10}$ in.). Used in conjunction with the extension bellows it can produce negatives from natural size to direct 5× magnification. Exposure factors for close-up work are engraved on the lens barrel.

Minolta SR Copying Stand

The copying stand is for quick and accurate copying with the Minolta SR. It maintains precise, parallel camera position for all close-up work, particularly with extension tubes and the Macro Rokkor lens. It may also be used in conjunction with the extension bellows.

The copying stand consists of a base-board with a work surface of $13 \times 17\frac{1}{2}$ in., a non-slip mat with indication of five different sizes from $3\frac{1}{2} \times 5$ in. to 10×14 in. and a column. A sliding arm fixed to the column consists of two angle pieces. The second piece can be fixed to the first, either pointing downwards for short distances or pointing up for longer distances between camera and base. The full distance range covered from film plane of camera to base-board is from 33 in. down to 8 in. The front of the sliding arm is fitted to hold the Minolta SR correctly aligned with the base, secured by the tripod bush. The column and arm can be removed from the base-board for easy storage.

ACCESSORIES

In addition to the equipment made for close-up work and copying described in the previous chapter and the exposure meter which is described with the SR-1 camera there are various other accessories available.

Accessory Shoe

There are two types. One fits over the pentaprism of the Minolta SR and sits in the centre of the camera top. It will accept flash gun and similar attachments. It is fixed in position by unscrewing the rear black ring of the eyepiece of the prism and placing the circular aperture of the shoe fitting over the chrome rim of the eyepiece. The black ring is then replaced to secure the shoe fitting in position. The type for the V models clips into the grooves of the eyepiece window of the camera. Model SR-T101 has built in accessory shoe.

Right Angle Finder

This attachment permits viewing at low level for photographing children, general low angle shots, close-ups and photomicrography in both horizontal and vertical positions. It is also suitable for unobserved pictures by holding the camera at right angles to the normal taking position (see illustration, page 63). The image seen is the right way up but reversed, left to right.

There are two types. The right-angle finder for the V, S and T101 models clips into the grooves of the eyepiece window of the camera. That of the earlier models fits into a bayonet mount. To fit, remove black ring on eyepiece of camera finder and insert the finder in the bayonet mount thus bared.

The eyepiece of the finder is adjustable from —3 to +1 diopter, to accommodate deficiencies of the eye. To do this, focus on some distant subject with the lens set to infinity and turn the focusing eyepiece of the finder for best definition.

Focusing Magnifier

Straight magnifiers can be attached to the eyepieces of the Minolta SR, SR (V, S) and T101 finders in the same way as described above for the right-angle finders, The magnifier permits precise focusing of the centre of the field of view in copying, ultra close-up work, microphotography and when using long focal length lenses.

Eyepiece Correction Lenses

A range of five different correction lenses is available to permit easier focusing for those with far-sighted eyes. These lenses are screwed into the finder eyepiece of the Minolta SR in place of the black rear ring. The SR (V, S) and T101 models are clipped to the eyepiece window.

Microscope Adaptor

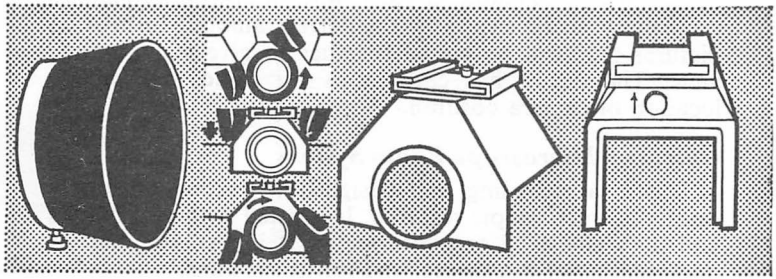
The microscope adaptor permits easy connection of the Minolta SR camera to any standard microscope. Photomicrographs, even of moving objects, can then be taken by observation through the camera reflex finder.

The adaptor consists of a two-part base ring, which accepts the microscope eyepiece and clamps it in position, and a two-part camera ring which engages in the bayonet mount of the camera body. The two sections can be engaged and disengaged with a simple movement.

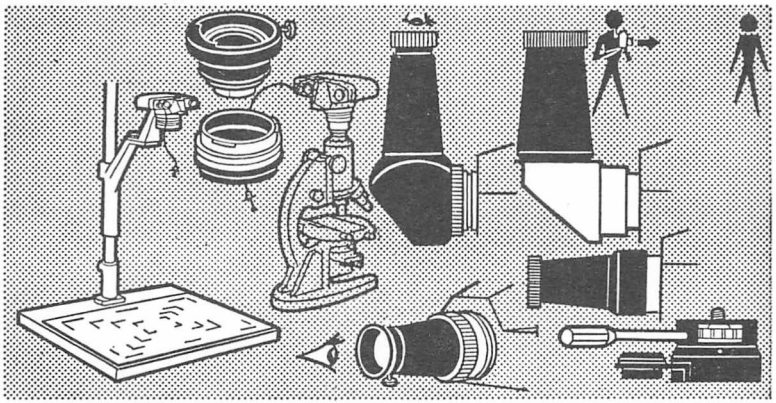
Lens Hood

A lens hood is recommended to prevent stray light from outside the picture area entering the lens. This could produce glare and reflections and thus reduce the brilliancy of the image. A lens hood is supplied with all telephoto lenses, while for the wide angle and standard lenses of the Minolta SR lens hoods are available in push-on mount and fixing screw or screw in reversible.

Beyond the scope of this guide are two specialized units for the Minolta SR which should just be mentioned:



The Minolta SR lenses accept push-on hoods (*left*). Lenses of 100 mm. and up are supplied with hoods. The accessory shoe (*centre*) can be fitted to the SR cameras after turning the viewfinder eyepiece ring clockwise and removing it. Then replace the eyepiece ring to hold the accessory shoe in place. The accessory shoe for the V model clips into the grooves of the eyepiece.



Other accessories include a copying stand (*left*) for photographing documents, laboratory specimens etc. (see page 68); a microscope adapter (*centre*, see page 62); angle finder and straight magnifiers (*right*) to fit over the viewfinder eyepiece; and a panorama head with built-in lever and click stops.

Panorama Head

The Minolta Panorama Head with built-in level enables the camera to be swung by the correct amount to provide pictures that can be pieced together to give a panoramic view. The device has click stops for rapid and precise location of camera position.

Universal Microscope Photo System

This is a recording unit designed to record accurately results of microscopic research. It is fitted with two finders and high efficiency exposure meter. It is also suitable for microfilming of books, etc. and for titling films.

Photo Oscilloscope Unit

This unit is intended to photograph images in electronic testing and research, the curves representing wave forms on cathode ray tubes. These can be viewed and focused by a specially designed finder system of the unit, which consists of a data projector with camera support, hood, oscillograph hood, lens, adaptor ring and regulator.

THE MINOLTA SR : MODEL BY MODEL

These pages deal with the individual Minolta SRs in detail. Self-contained sections for each model cover points of loading, unloading, shooting and specific controls.

For a fuller explanation of aspects common to all Minolta SR cameras, compare these sections with the same headings in the main text.

THE MINOLTA XM

The Minolta XM has the features described on pages 5 to 9. It has interchangeable finders, showing 98 per cent of the film area. The standard finder is an eye-level pentraprism with built-in meter and automatic electronic and match-needle/manual exposure control facility. This finder is interchangeable for match-needle, plain, high magnification and waist-level finders. A matt fresnel field screen with horizontal split-image spot screen (=type P) is supplied as standard which is interchangeable against 7 other screens.

THE SHUTTER is electronically controlled, focal plane and has two mechanical settings. Electronic speeds from 16 sec. to 1/2000 sec. in steps, 4 sec. to 1/2000 sec continuously variable (with Auto Electro finder). Mechanical settings are X (1/1=00 sec.) and B.

THE AUTO ELECTRO FINDER shows aperture, shutter speed scale, meter indicator needle, speed function bar and light-emitting diode exposure warning signal. It has auto exposure override and compensation scale.

Further, the built-in auto "Senswitch" keeps finder power on while camera is held in normal operation. Alternative switches are on Auto Electro and Match-needle finders. Self-timer, battery checker and accessory mount with direct flash contact on base of back-release knob, loaded-film reminder and multi exposure facility are provided.

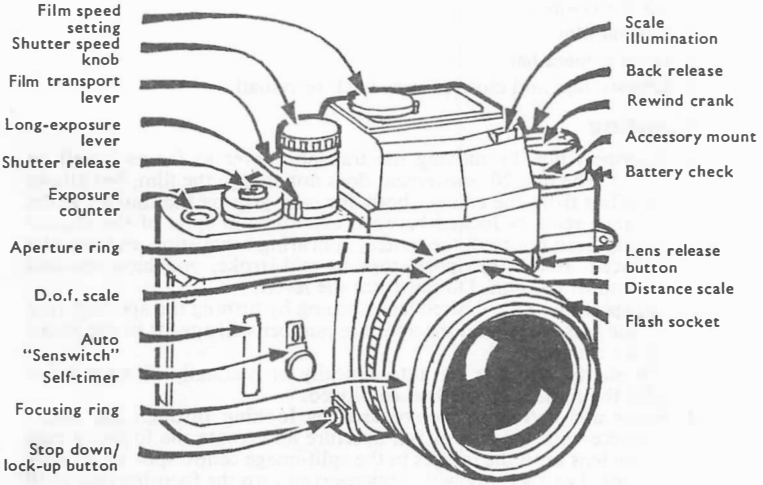
Standard lenses for the Minolta XM are the Rokkor MC 58 mm. *f* 1.2, or the 50 mm. *f* 1.4 or 50 mm. *f* 1.7.

FOR CLOSE-UP PHOTOGRAPHY at distances below the normal focusing range of 22 in., close-up lenses are available as well as a set of extension tubes for lens-to-subject distances between 19 and 2¾ in. and extension bellows.

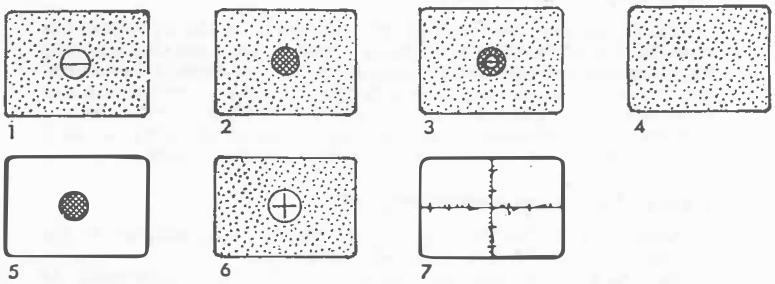
OTHER ACCESSORIES include copying stand, right-angle finder, focusing magnifier, eyepiece correction lenses, microscope adaptor, lens hood, filters, wide-angle, tele- and micro-lenses.

Loading (see page 16)

1. **Open camera back.**
2. **Insert film.**
3. **Attach film leader to take-up spool.**
4. **Close camera back.**
5. **Wind on and release shutter twice.**
6. **Set film speed memo disc** on camera base.
7. **Set film speed** for exposure meter by turning the speed selector on top of the finder until the correct ASA value points to the index dot. Between values may be set.



The Minolta XM uses sophisticated circuitry for fully automatic operation with a replacement prism unit. The "Senswitch" on the camera front operates the metering system as the camera is gripped normally. Four replacement finder units are available and nine focusing screens.



The focusing screens are: 1, Matt fresnel field with split-image rangefinder. 2, Matt fresnel field with microprism rangefinder. 3, Matt fresnel field with both rangefinders. 4, Matt fresnel field only. 5, Clear fresnel with microprism rangefinder for various lenses (three types). 6, Matt fresnel with crossed hairs on clear field. 7, Clear fresnel with graduated cross lines.

Unloading (see page 18)

1. **Set for rewind.**
2. **Rewind film.**
3. **Open camera back.**
4. **Remove film** and close camera back or reload.

Shooting

1. **Transport film** by moving the transport lever as far as it will go (110°). The first 20° movement does not engage the film, but allows an offset from the camera body for easy grip by the thumb. If the advance remains locked between exposures in spite of the shutter having been released, the battery is nearing exhaustion and must be replaced. If the transport stops in mid-stroke, you have reached the end of the film. Do not force the lever.
2. **Set aperture** to the desired lens opening by turning the aperture ring on the lens barrel and the aperture number will appear in the finder above the frame.
3. **The shutter speed** is set automatically or manually in accordance with the measuring method employed.
4. **Focus and determine picture area** by looking through the finder eyepiece with the lens at full aperture and rotate the focusing ring of the lens until the images in the split-image centre spot are exactly aligned. For focusing with a microprism turn the focusing ring until the image appears clear, instead of broken up.
5. **Release the shutter gently.** As you release the shutter the lens diaphragm automatically closes down to the preselected aperture. It reopens to full aperture immediately after the exposure is made.

TTL Exposure Control

One of the two built-in CdS cells mounted on the pentaprism is near the exit node, the other directly opposite. Both are electronically linked, taking simultaneous readings of the various areas of the subject, partly overlapping and automatically calculating a near perfect contrast ratio and ensuring perfect exposure whatever the light conditions.

With the MC Rokkor lenses metering is done at full aperture. With other Rokkor lenses the stop down metering system is used.

Using Auto Exposure Control

1. **Align AUTO** with the index on the shutter speed selector. In the finder the speed/function bar will move to A.
2. **Turn on power** by keeping your hand on the Auto "Senswitch" or using the switch on the finder. The shutter speed needle on the right of the viewfinder indicates the shutter speed in operation automatically from 1/2000 sec. to 4 sec. If the speed is longer than 1 sec. the needle moves between B and X. Depress the auto exposure

override radially as far as it will go to the left. If the speed indicator moves back to 1 or higher that means that the speed is within 4 sec.; if it remains below 1, the exposure set is longer than 4 sec. In this instance adjust the aperture or light to obtain a speed within the limit.

3. **Accidental shutter release** while the power is not switched on or the Auto Senswitch not touched, causes the mirror to stay up and the shutter to stay open for about 30 sec. Turn the shutter speed selector dial to X and the mirror lowers itself and the shutter closes immediately.
4. **Exposure warning signal.** If the exposure warning signal below the scale in the finder blinks red. this indicates that the light is too low for the meter to take an accurate measurement. Aperture and/or other conditions have to be adjusted until the signal goes out.
4. **Auto-exposure override.** To change manually the automatically set exposure push in the protruding auto-exposure override control below the shutter speed knob, and turn it to the right for more or left for less exposure.

Manual Exposure Control

1. **Set the shutter speed** dial with the speed required pointing to the index, the speed indicator in the finder similarly shows the speed selected. The system is automatically switched on to match-needle/ manual working.
2. **Switch on meter power** by keeping the Auto Senswitch down or using the switch on the finder. For manual setting this point can be omitted.
3. **Set lens aperture,** by turning aperture ring on lens until the black needle aligns with the fixed bar. Note: correct aperture can not be obtained with speed settings longer than 1 sec. or at B or X.
4. **For manual operation** the needle alignment can be ignored and any shutter speed (including longer ones than 1 sec.) and aperture combination may be set.

Time Exposures

Time exposures are made with the B aligned with the index of the shutter speed dial. The grey bar moves and remains over the B on the the scale in the finder. The shutter opens when the shutter release button is pressed and remains open until the pressure is released.
To make exposures between 2 and 16 sec.:

1. **Set shutter speed dial** to B. The speed-bar in the finder also shows B for all speeds longer than 1 sec.
2. **Set slow speed lever** by depressing it radially and rotate it so that the index on the collar around the base of the shutter speed knob is aligned with the required speed indication of the slow speed scale on the camera top plate.

3. **To revert to any other shutter speed** the slow speed collar index must first be returned to B on the scale.

Metering with other than MC Lenses

Metering and exposure with other than the MC Rokkor lenses, such as RF Rokkor, Auto Rokkor, manual preset lenses is by the stop down method.

1. **After focusing,** on the Auto Rokkor lenses only, push the stop down lock-up button to release it to its outer stop-down position.
2. Use **automatic or match-needle/manual method** as described above. The viewfinder image gets darker as you stop down. Due to the darkening the split field and microprism centre may become unusable.
3. Leave the lens stopped down to the required taking aperture when releasing the shutter.

Mechanical Shutter Speeds

Meters in the Auto Electro and match-needle finders can NOT be used at mechanical settings; others permit mechanical control of the X (1/100 sec.) and B setting without any battery power.

If the film advance lever works normally, simply turn the shutter speed selector dial to align with X or B, as required, and take the picture as usual.

If the film advance lever has locked and the mirror is up (due to insufficient battery power when the shutter was released at an electronic setting) they can be reset to allow advancing film and viewing by turning the index of the battery chamber cover from C to O and back to C again.

By turning the shutter speed selector to X or B either before or after resetting, one can view, make exposures and advance film even though batteries are unserviceable or completely missing. The mechanical operation will continue as long as the selector dial is not turned to an electronic setting.

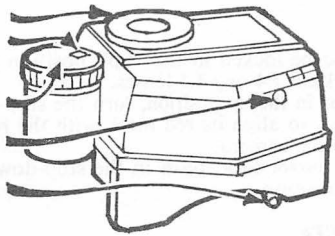
Testing and Replacing Batteries

The Minolta XM uses two silver oxide 1.5V batteries, Mallory MS-76, Ever-Ready S-76 or equivalent. They supply the power for the electronic shutter and for the meter.

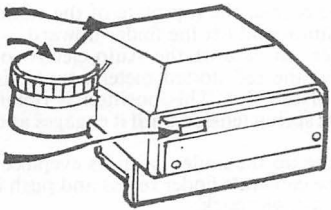
To test the batteries depress the battery check lever in the top of the sidewall of the camera body. If the red light comes on the batteries are serviceable.

To change batteries, which are housed in the base plate of the camera body, insert a coin into the slot of the cover and turn until its dot is aligned with the "O" on the camera base plate. The cover can then be removed. Take out the old batteries and insert two new ones into the sleeve on the inside of the cover, both with their + sign pointing away from the cover. Now replace cover and lock it by returning the dot to

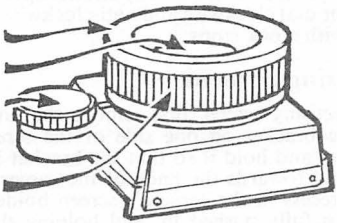
MINOLTA XM INTERCHANGEABLE FINDERS



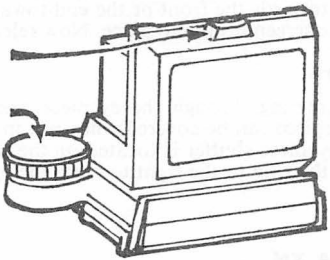
Match-needle TTL finder displaying shutter speed and aperture



Plain finder without meter showing shutter speed and aperture



High magnification finder showing entire field at 6.2X



"Waist-level" finder with built-in magnifier

the "C" position on the camera base plate. Test to confirm that the red light goes on.

Mirror Lock

The mirror has to be locked in the "up" position when using the original 21 mm. Rokkor *f*4 or *f*4.5 lenses.

To lock the mirror in the up position, turn the stop-down button—in its outer position—to align its red mark with the red mark on the rim of the collar on the camera.

To disengage the mirror lock, push in the stop-down button to its inner full aperture position.

Changing Finders

To remove the finder fitted to the Minolta XM push in the finder release button on the rear of the top plate of the camera body, to the left of the finder position and lift the finder upward.

To insert the finder. In case of the Auto-electro or Match-needle finder make sure that the red dotted meter coupler is in position at the red dotted end of the slot. This position is obtained by moving the coupler against its spring tension until it engages at the end opposite the rest position.

With all finders, line up the finder (with its eyepiece pointing to the camera back) with the camera's finder recess and push it straight down until it engages with a slight click.

To engage the coupling pin on the body shutter speed knob turn the shutter speed selector dial clockwise and anti-clockwise until it engages and starts turning with clock stops.

Changing Focusing Screens

To change the focusing screen, first remove the finder. Then grip the small projecting bracket on one side of the screen frame with thumb and forefinger and hold it so that the bracket is on the upper side of the frame and towards the back of the camera over the corresponding curved recess in the camera's screen holder. Keeping the finder release button fully pushed in, and holding the screen at an angle, insert the side towards the front or the end towards the shutter release first and let the screen drop into place. Now release the button.

Eyepiece Shutter

To prevent light entering through the eyepiece and affecting the meter reading, the eyepiece can be covered when not in use, e.g. when using self timer. An eyepiece shutter is located on the right of the eyepiece aperture. Turn the ring to the right to close the eyepiece.

THE MINOLTA XE-1 and XE-5

The Minolta XE-1 has basically the features described on pages 5 to 9. It is essentially an XM model without interchangeable finder and screens and the shutter has a somewhat less extensive range. The Minolta XE-1 has a vertically running metal blade focal plane shutter with electronically controlled speeds from 4 sec. to 1/1000 sec. stepless automatic, or in steps on manual. Mechanically controlled settings —for which there is no battery power required—are: X (=1/90 sec.) and B. The eye-level pentaprism finder shows 94 per cent of the picture area, has a matt fresnel field focusing screen with split-image centre focusing spot surrounded by a microprism band. The aperture numbers and shutter speed of "A" for Auto are visible above the frame and the stepless speeds or metered-manual exposure settings are shown by needle on a scale on the right of the viewfinder frame.

The camera has a coaxial flash socket and hot shoe contact with switch for X and FP synchronization. Also built in are a self-timer, safe load signal, multi expsoure lever, battery checker, eyepiece shutter and memo holder.

The Minolta XE-5 is a XE-1 model as described above on which the aperture used is not shown in the viewfinder and viewfinder blind, multi-exposure system and safe load signal have been omitted. The prism front is black, instead of chrome.

Standard lenses for the Minolta XE-1 and XE-5 are: Rokkor MC 58 mm. *f*1.2 or 50 mm. *f*1.4 or 50 mm. *f*17.

FOR CLOSE-UP PHOTOGRAPHY at distances below the normal focusing range of 22 in., close-up lenses are available as well as a set of extension tubes for lens-to-subject distances between 19 in. and 2¾ in. and extension bellows.

OTHER ACCESSORIES include copying stand, right-angle finder, focusing magnifier, eyepiece correction lenses, microscope adaptor, lens hood, filters, wide-angle, tele- and micro-lenses.

Loading (see page 16)

1. **Open camera back.**
2. **Insert film.**
3. **Attach film leader to take-up spool.**
4. **Close camera back.**
5. **Wind on and release shutter twice.**
6. **Insert film box end into the frame** which shows the ASA/DIN conversion table on the back of the camera as memo of film data.
7. **Set film speed** for exposure meter by depressing the selector release and turning the speed selector on the rim around the rewind knob until the correct ASA value points to the index dot. Between values may be set.

Unloading (see page 18)

1. **Set for rewind.**
2. **Rewind film.**
3. **Open camera back.**
4. **Remove film** and close camera back or reload.

Shooting

1. **Transport film** by moving the transport lever as far as it will go (130°). The first 30° movement does not engage the film, but allows an offset from the camera body for easy grip by the thumb. If the advance remains locked between exposures in spite of the shutter having been released, the battery is nearing exhaustion and must be replaced. If the transport stops in mid-stroke, you have reached the end of the film. Do not force the lever.
2. **Set aperture** to the desired lens opening by turning the aperture ring on the lens barrel and on XE-1 the aperture number will appear in the finder above the frame.
3. **The shutter speed** is set automatically or manually in accordance with the measuring method employed.
4. **Focus and determine picture area** by looking through the finder eyepiece with the lens at full aperture and rotate the focusing ring of the lens until the images in the split image centre spot are exactly aligned. For focusing with a microprism turn the focusing ring until the image appears clear, instead of broken up.
5. **Release the shutter gently.** As you release the shutter the lens diaphragm automatically closes down to the preselected aperture. It reopens to full aperture immediately after the exposure is made.

TTL Exposure Control

One of the two built-in CdS cells mounted on the pentaprism is near the exit node, the other directly opposite. Both are electrically linked, taking simultaneous readings of the various areas of the subject, partly overlapping and automatically calculating a near perfect contrast ratio and ensuring perfect exposure whatever the light conditions.

With the MC Rokkor lenses metering is done at full aperture. With ther Rokkor lenses the stop-down metering system is used.

Using Automatic Exposure Control

With the MC Rokkor lenses open-aperture metering is used with the stop-down button fully pressed in.

1. **Align "Auto"** with the index on the shutter speed selector. In the finder an "A" appears above the finder frame.
2. **Turn on power** by turning the switch on the back of the camera body to the ON position. To prevent needless battery drain and accidental exposures turn lever to OFF when camera is not in use.

3. **The shutter speed** to yield correct exposure is indicated by the needle on the right of the frame. It varies automatically and steplessly according to the prevailing light conditions, aperture preselected and film speed set, within the operating range of 4 sec. to 1/1000 sec. as indicated by the indention on the left of the shutter speed scale. If the needle goes above or below the indentation, the exposure obtained would not be correct and appropriate aperture or other adjustment has to be made.
4. **To preselect a shutter speed** (instead of the aperture) turn the aperture ring until the needle indicates the desired speed.

Metered/Manual Exposure Control

1. **Set shutter speed** by turning the shutter speed selector to any of the speeds from 1/1000 sec. to 4 sec. as desired to the index. The AUTO setting button has to be depressed to be able to set an individual speed. The speed set appears at the right above the finder frame.
2. **Turn aperture ring** until the needle seen in the finder extends through the shutter speed selected and which is shown above the frame. If this alignment cannot be obtained the shutter speed has to be changed to permit it.
3. **Full manual operation** is obtained by disregarding any needle alignment.

Mechanical Shutter Speeds (X and B setting)

Turn the shutter speed selector to X or B, as required. If it was set to AUTO, the Auto setting release button has to be depressed to be able to move the selector. Both X and B settings are mechanically controlled and one can view, make exposures and advance film even though the batteries are exhausted or missing.

With the X setting a fixed shutter speed of 1/90 sec. is obtained, for synchronization with electronic flash, continuous light or FP flashbulbs. The finder will show X on the right above the finder frame.

With the B setting, the shutter opens on pressing the release and remains open until it is released. B appears on the right above the finder frame.

Testing and Replacing Batteries

The Minolta XE-1 and XE-5 use two silver oxide 1.5V batteries, Mallory MS-76, Ever-Ready S-76 or equivalent. They supply the power for the electronic shutter and for the meter.

To test the batteries depress the battery check lever in the top of the sidewall of the camera body. If the red light comes on the batteries are serviceable.

To change batteries, which are housed in the base plate of the camera body, insert a coin into the slot of the cover and turn until its dot is

aligned with the O on the camera base plate, the cover can then be removed. Take out the old batteries and insert two new ones into the sleeve on the inside of the cover, both with their + sign pointing away from the cover. Now replace cover and lock it by returning the dot to the C position on the camera base plate. Test to confirm that the red light goes on.

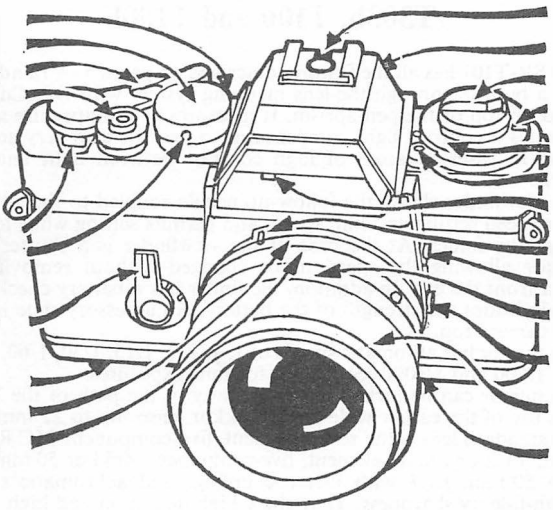
Exposure Adjustment Control

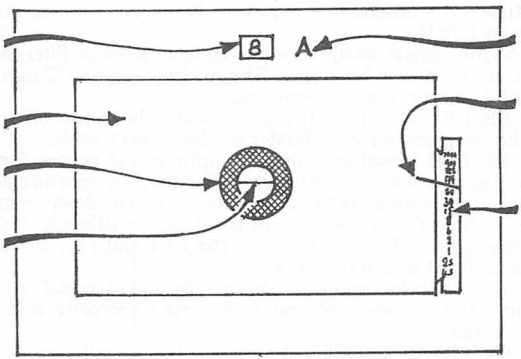
The exposure adjustment control permits increase or decrease of exposure when using the automatic or metered/manual method.

Depress the adjustment control release and turn to the side with + numbers to increase the exposure and to the side with − numbers to decrease exposure. The numbers represent the number of stops by which the exposure is increased or decreased. The index may be set to intermediate positions. Do not forget to set the exposure adjustment control back to O (where it locks into position) after use.

Eyepiece Shutter on XE-1

To prevent light entering through the eyepiece reaching the meter and affecting its reading, when the eye is not on the eyepiece, such as when using the self-timer and other unmanned operations the eyepiece can be closed with a shutter. The eyepiece shutter is located on the left, beside the eyepiece aperture, the lever is turned down to close the eyepiece shutter (not on XE-5)





●Not on EX-5

The Minolta XE-I is an automatic-exposure model setting shutter speeds from 4 seconds ∞ 1/1000 sec to suit film speed, aperture and subject. Shutter speed and aperture are indicated in the viewfinder. Manual setting is also possible. Other features are as on the SRT-303.

THE MINOLTA SR-T101, T101b, T303, T303b, T100 and T100b

The SR-T101 has all the features described on pages 5–9. In addition it has a built-in through-the-lens metering system with two CdS cells located on top of the pentaprism. It measures at full aperture and incorporates a contrast light compensator to provide also very accurate reading in cases of areas of high contrast between light and dark subjects.

The viewfinder shows the follow-up needle coupled to the aperture, shutter speed setting and film speed, and permits setting while looking through the finder. At the base of the viewfinder is a shutter speed indicator allowing the speed to be changed without removing the camera from the eye. In addition, the finder has a battery check mark which indicates the strength of the battery. An accessory shoe is fitted to the camera top.

The shutter has automatic speeds of 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500 and 1/1000 sec., and B for time exposures.

The mirror can be locked out of the way of the path of the lens to permit use of the earlier wide-angle Rokkor lenses up to 21 mm.

The standard lens is the seven-element, five-component MC Rokkor 58 mm. *f*1.2 or the six-element, five-component Rokkor 50 mm. *f*1.4 or the 50 mm. *f*1.7 with meter coupling, and achromatic coating for high-fidelity sharpness. They show high definition and high colour correction with absence of exposure flare. They focus down from infinity to 1.75 ft.

The 58 mm. lenses accept 55 mm. diameter screw-in filter mounts and 57 mm. push-on lens hood; the 55 mm. lens accepts 52 mm. screw-in filters and 54 mm. push-on lens hood.

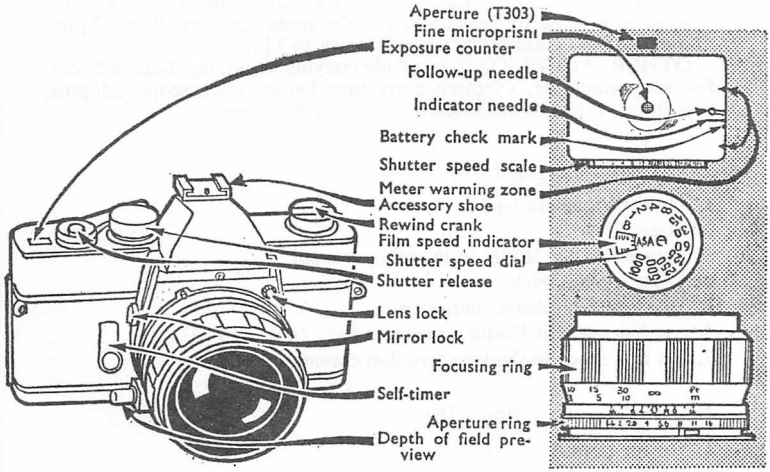
The SR-101b has in addition a synchro hot-shoe on top of the prism housing and a memo holder on the camera back.

The SR-T303 viewfinder shows a split image centre for focusing surrounded by a micro focusing ring. Further, the aperture appears on top of the viewfinder field. It features a single flash terminal with selector switch. The accessory shoe has direct, cordless X flash contact. A multi-exposure device is built in. The *f*1.4 and *f*1.7 lenses are now of 50 mm. focal length (47° angle).

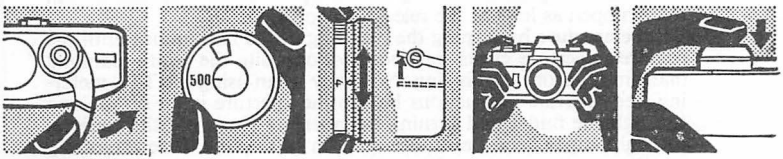
The SR-T303b incorporates also a safety load signal to show that the film has been inserted and transported correctly and a memo-holder on the camera back.

The SR-T100 is a simplified version of the T101, without delayed action; the viewfinder does not show the shutter speed scale, fastest shutter speed 1/500 sec. The lens fitted is the Rokkor *f*2, 50 mm. Meter working range EV4–EV17, fixed film speed indicator.

The SR-100b has extended shutter speed range to 1/1000 sec. and filmspeed range to 6400 ASA.



The film transport lever operates the *exposure counter* as well as tensioning the shutter. Light reaches the meter cell through the camera lens and causes the *indicator needle* in the viewfinder to move. A *follow-up needle* is connected to aperture, film speed and shutter speed settings. A *mirror lock* is fitted so that mirror can be held up when ultra wide angle lenses are used. An *accessory shoe* is fitted to the pentaprism housing and the rewind knob has a fold-out crank. The *shutter release* is threaded for cable release and *depth of field preview* is provided. The *film speed setting* is in the *shutter speed dial* and must be set for correct operation of the meter.



Shooting with the Minolta SR-T101. *From left to right:* Advance the film and tension the shutter with the film transport lever. Set the shutter speed required and line up the follow pointer by adjusting the aperture. Focus and compose the picture and press the shutter release gently.

FOR CLOSE-UP PHOTOGRAPHY at distances below the normal focusing range of 22 in., close-up lenses are available, as well as a set of extension tubes for lens-to-subject distances between 19 and 2¾ in., and extension bellows for distances down to 1¼ in.

OTHER ACCESSORIES include copying stand, right-angle finder, focusing magnifier, eyepiece correction lenses, microscope adaptor, lens hood, filters, wide-angle, tele- and micro-lenses.

Loading (see page 16)

1. **Open the camera back.**
2. **Insert film.**
3. **Attach the film leader to the take-up spool.**
4. **Close camera back.**
5. **Wind on and release shutter twice.**
6. **Set film speed indicator on camera back** (not on T303).
7. **Set film speed in shutter speed dial cut-out.**

Unloading (see page 18)

1. **Set for rewind.**
2. **Rewind film.**
3. **Open camera back.**
4. **Remove film and close camera back, or reload.**

Shooting

1. **Work the film transport** by moving the transport lever as far as it will go.
2. **Set the exposure.** The shutter speed may be pre-set before or after cocking the shutter by turning the speed dial (without lifting it up), either way to bring the speed required opposite the red line at the outside rim on the base of the dial.

   For time exposures, set the shutter speed to B. The shutter will remain open as long as the release is depressed.
3. **Set the aperture** by turning the rear ring of the lens mount until the required aperture clicks into position opposite the white diamond mark in the front of this ring. Normally when using the TTL metering (see separate instructions below) the aperture is set on looking through the finder and turning the aperture ring until the circle at the right edge of the viewfinder is cut in half by the there projecting needle.

   To observe the depth of field on the reflex screen with the lens stopped down, push the diaphragm stud on the camera body. When using Rokkor lenses designed for the earlier Minolta cameras,

use the preview button on the lens barrel or the camera's diaphragm button. When the diaphragm stud is pushed after you have advanced the film, the diaphragm closes down to the pre-set aperture and locks. When the stud is pressed a second time, the diaphragm fully reopens.

4. **Focus and determine picture area** by looking through the finder eyepiece. Turn the focusing ring on the lens mount until the image in the centre of the viewfinder is clearly in focus.
5. **Release the shutter gently.** As you release the shutter the diaphragm automatically closes down to the pre-selected aperture. It reopens to full aperture immediately after the exposure is made.

The TTL Exposure Control

One of the two built-in CdS cells is near the exit node, the other directly opposite. Both are electrically linked, taking simultaneous light readings of the varying areas of the subject and automatically calculating a near perfect contrast ratio and ensuring perfect exposure whatever the lighting conditions.

To Use the Meter

1. **Set the film speed** by lifting up the outer rim of the shutter speed dial and turning it until the ASA speed required appears in the cut-out.
2. **Pre-set the shutter speed** on the camera which is usually determined by the motion of the subject. For general outdoor work a speed of 1/125 sec. can be assumed normal, or, in poor light, 1/60 sec.
3. **Point camera to subject.**
4. **Turn the aperture ring** on the camera while looking through the finder until the circle on the right-hand side appears split in half by the needle. Alternatively, if you want to work with a definite aperture to get a pre-determined depth of field, turn the shutter speed dial until the circle is cut in half by the needle. This will set the shutter speed to suit the aperture pre-selected.

When using Rokkor lenses other than those specifically designed for the model T101/T303 and marked "MC", such as those for the previous Minolta SR models, you have to employ the stop-down measurement system to set exposure. The sequence of operation is then as follows:

1. **Advance the film.**
2. **Press the diaphragm stop-down stud** (it will remain depressed).
3. **Pre-select the shutter speed.**
4. **Turn the diaphragm ring** until circle and needle are aligned. If you **wish,** you can pre-set the diaphragm and vary the shutter speed.
5. **Press the diaphragm stop-down lever** a second time.
6. **Focus and shoot.**

The Meter Battery

To test whether the battery is working properly, use the battery checker on the camera base. Turn the battery switch from the off to the BC position. If, on looking through the finder, the meter indicator needle points to the flat black check mark on the right-hand side of the viewfinder (above the lower triangular mark) the battery can be considered as being fully alive. If not, replace battery, which is a Mallory PX-13, PX-625 or equivalent.

To change the battery, unscrew the circular criss-cross thumb plate in the base of the camera. Insert the new battery with its plus (+) sign facing the thumb plate and the wider diameter section towards the inside of the camera.

If the camera is left unused for long periods of time, the battery should be removed and stored in a dry place. You can preserve the life of a battery by turning the battery switch to the off position when the camera is not used.

The Mirror Lock for Ultra-Wide Angle Lenses

The mirror-locking button, located next to the self-timer, permits locking the mirror out of the path of the lens-to-film plane. Turn the red dot on the locking button upwards and the mirror remains suspended.

This is necessary when the earlier wide-angle lenses up to 21 mm. are used to prevent the back of the lens touching the mirror. Naturally this means that the image cannot be focused on the screen, so focusing is by scale only. However, the very short focal length gives enormous depth of field in most circumstances and accurate distance setting is often unnecessary.

As the reflex finder cannot be used, these lenses are supplied complete with a viewfinder showing the exact field covered. This finder fits over the eyepiece of the pentaprism of the camera.

THE MINOLTA SR-7 AND SR-7 (V)

These models have all the features as described on pages 5–9. In addition they have a built-in cadmium sulphide exposure meter powered by a mercury "button" battery, covering an extensive range from candle light to brilliant outdoor light with a light reception angle of 30°. Either the shutter speed can be pre-set and the aperture found or the aperture can be pre-set and the corresponding shutter speed found.

The shutter has automatic speeds of 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500, 1/1000 sec. and B for time exposures. The mirror can be locked out of the way of the path of the lens to permit use of the earlier wide angle lenses up to 21 mm.

The standard lens is the six-element, five-component Rokkor 58 mm. *f*1.4 with an exclusive achromatic coating for high fidelity sharpness, particularly in colour photography. Partly due to increased lens diameter and use of a convex air lens between the second and third element outstanding definition and high colour correction are combined with increased fidelity and absence of exposure flare. The lens focuses from infinity down to 1 ft. 10 in. (55 cm.). Alternatively this model is also available with the 55 mm. *f*1.8 Rokkor as described on page ■ ***88***.

THE STANDARD LENS accepts 55 mm. screw-in filters and 57 mm. push-on lens hood with fixing screw.

FOR CLOSE-UP PHOTOGRAPHY at distances below the normal focusing range of 22 in., a set of extension tubes is available for lens to subject distances between 19 and $2\frac{3}{4}$ in. and extension bellows for distances from $3\frac{1}{2}$ to $1\frac{1}{4}$ in. Close up lenses are also available.

OTHER ACCESSORIES include copying stand, accessory shoe, right-angle finder, focusing magnifier, eyepiece correction lenses, microscope adaptor, lens hood, filters, wide-angle, tele- and micro-lenses.

Loading (see page 16)

1. **Open the camera back.**
2. **Insert film.**
3. **Attach the film leader to the take-up spool.**
4. **Close camera back.**
5. **Wind on film and release shutter twice.**
6. **Set the film speed indicator.**
7. **Set film speed for exposure meter** (see page ■ ***84***).

Unloading (see page 18)

1. **Set for rewinding.**
2. **Rewind film.**
3. **Open camera back.**

Shooting

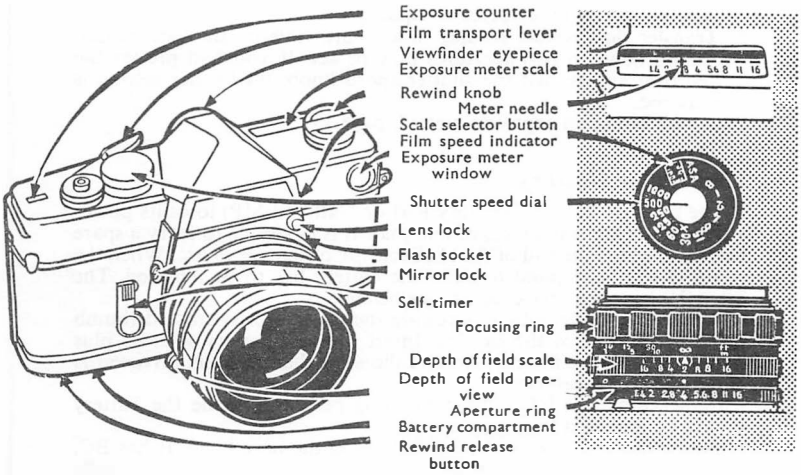
1. **Work the film transport** by moving the transport lever as far as it will go.
2. **Set the exposure.** The shutter speeds may be set before or after cocking the shutter by turning the speed dial either way to bring the required speed opposite the red line in the centre of the dial.
   For time exposures, set the shutter speed to B. The shutter will remain open as long as the release is depressed.
3. **Set the aperture** by turning the rear ring of the lens mount until the required aperture clicks into position opposite the white dot in front of this ring. The exposure meter (for instructions, see below) shows the correct aperture for any shutter speed.
   To observe the depth of field on the reflex screen with the lens stopped down, set the aperture manually by pushing down the chromed lever at the base of the lens flange.
4. **Focus and determine the picture area** by looking through the finder eyepiece. Turn the focusing ring on the lens mount until the image in the centre of the viewfinder is clearly in focus.
5. **Release the shutter gently.** As you release the shutter, the diaphragm automatically closes down to the pre-selected aperture. It re-opens to full aperture immediately after the exposure is made.

The Exposure Control

The built-in CdS exposure meter is coupled to the shutter. It is powered by a mercury "button" battery which lasts for 12 to 24 months and is fitted with a low-sensitivity switch.

Using the Exposure Meter

1. **Set the film speed** in the shutter speed dial. Pull up the outer ring of the shutter speed dial and turn it until the ASA speed of the film used is opposite the white dot on the cut-out of the dial.
2. **Pre-set shutter speed** which is usually determined by the motion of the subject. For general work outdoors a speed of 1/125 sec. can be assumed normal; in poor light 1/60 sec.
3. **Point camera to subject** (see also, page 39).
4. **Read off the aperture required.** The red indicator in the exposure meter window will point to the dotted line of the aperture required. If the indicator points between two dotted lines, the intermediate aperture value is indicated.
   If the meter needle does not register in poor light press the low-sensitivity shift button on the back of the camera top behind the meter window. This switches the scale for low light reading.
   In some cases, you may find that the normal position just gives a reading but it is higher than that given when you switch to the low scale. Always use the lower reading.
   If you want to work with a definite aperture, e.g., to get a pre



The *film transport lever* operates the *exposure counter*, as well as transporting the film and tensioning the shutter. Light reaching the photocell through the *exposure meter window* causes a needle to move across the *exposure meter scale* on the camera top which indicates the aperture required at the shutter speed set. The *scale selector button* enables the meter to be set to maximum sensitivity in poor light. A *mirror lock* is fitted so that the mirror can be held out of the way to fit the 21-mm. wide-angle lens. A *depth of field preview* lever closes the lens down to the pre-set aperture. The *film speed indicator*, which must be set to give correct readings on the meter, is in the *shutter speed dial*, which has click-stops. The *flash socket* has FP and X contacts. The *self-timer* has a variable delay. The battery for the sensitive CdS meter is housed in a compartment in the base of the camera, next to the *rewind release button*.

Shooting with the Minolta SR-7 and SR-7 (V). *From left to right:* Advance the film and tension the shutter with the film transport lever. Set the shutter speed. Read the meter scale for the aperture required and set that aperture on the camera lens. Focus and compose the picture and press the shutter release gently.

determined depth of field, use the meter with the appropriate normal or low light reading and turn the shutter speed dial until the needle points to the aperture required.

5. **Transfer the aperture reading** to aperture scale on the lens mount. Values between two apertures may be set. If you had pre-set the aperture and turned the shutter speed knob, no further setting is required.

See also "Using an exposure meter", page 39.

The Meter Battery

The mercury battery (Mallory RM or National MP) loses its power abruptly. Its life is in excess of one year. It is advisable to carry a spare battery towards the end of the probable life of the one in use. When the meter does not respond to light, the battery has to be replaced. The SR-7 (V) has a battery checker (see below).

Remove the battery by unscrewing the circular criss-crossed thumb plate in the base of the camera. Insert the new battery with its plus sign (+) facing the thumb plate and the wider diameter section towards the inside of the camera.

If the camera is left unused for long periods of time the battery should be removed to preserve its life.

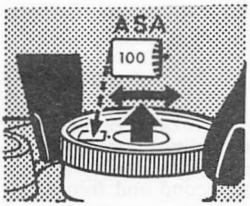
The battery checker on the SR-7 (V) is in the base plate. It has BC, OFF and ON positions. In BC position the exposure meter needle should point to the "check" mark above meter window. If it does not reach it, replace battery. Use OFF mark when the camera is not in use.

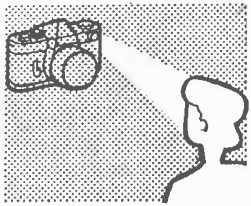
The Mirror Lock for Ultra-Wide Angle Lenses

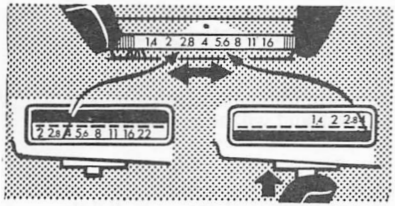
The mirror locking button, located next to the self-timer, permits locking the mirror out of the path of the lens-to-film-plane. Turn the red dot on the locking button upwards and the mirror will remain suspended.

This is necessary when the earlier wide-angle lenses up to 21 mm. are used to prevent the back of the lens touching the mirror. Naturally this means that the image cannot be focused on the screen, so focusing is by scale only. However, the very short focal length gives enormous depth of field in most circumstances and accurate distance setting is often unnecessary.

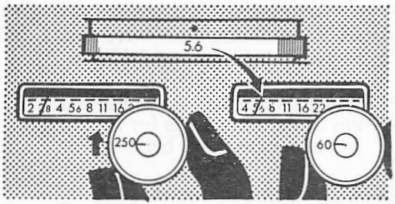
As the reflex finder cannot be used, these lenses are supplied complete with a viewfinder showing the exact field covered. This finder fits over the eyepiece of the pentaprism of the camera.

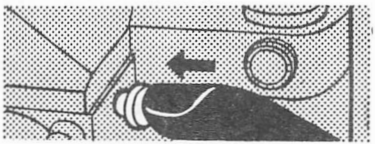




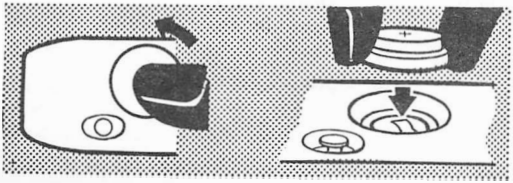


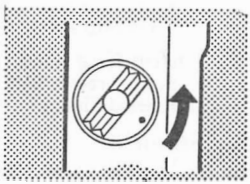
Top, left to right: Set the film speed in the window of the shutter speed dial. Pre-set the required shutter speed. Point the camera towards the subject. *Left, upper:* Read the aperture indicated on the meter scale and set it on the lens. In poor light, press the meter scale selector button to bring the high-sensitivity scale into operation. *Right, lower:* The meter scale selector on model SR-7 (V) is on the camera front. *Left, lower:* If you wish to shoot at a particular aperture, set the lens to that aperture and turn the shutter speed dial until the same aperture is indicated by the meter needle.





Below, left: To replace the meter battery, unscrew the battery compartment cover, remove the old battery and replace with a fresh one, the + sign pointing towards you Replace the cover. *Below, right:* To operate the mirror lock turn the red dot upwards to keep the mirror suspended, turn it downwards to bring the mirror into operation.





THE MINOLTA SR-1, SR-1(V) and SR-1S

This model has all the features as described on pages 5–8. It accepts a CdS exposure meter, available as an extra, which couples to the shutter speed setting.

The shutter has automatic speeds of 1, ½, ¼, ⅛, 1/15, 1/30, 1/60, 1/125, 1/250, 1/500 sec. and B for time exposures.

The standard lens is the six-element, five-component Rokkor 55 mm. *f* 1.8 with an exclusive achromatic coating for high fidelity sharpness, particularly in colour photography. Partly due to increased lens diameter and use of a convex air lens between the second and third element, outstanding definition and high colour correction are combined with increased fidelity and absence of exposure flare. The lens focuses from infinity down to 20 in. (50 cm.). Alternatively this model is also available with the 55 mm. *f* 2 Rokkor.

The Minolta SR-1 (V) has a mirror locking button (see page ■ **92**). The focusing screen has a microprism centre for critical focusing. The accessory shoe differs from that of the SR-1 and will accept the special (V) meter (see page ■ **90**).

The Minolta SR-1S is as the SR-1 (V) with the addition of the shutter speed of 1/1000 sec. As standard lenses the Rokkor *f* 1.7 or 2 of 55 mm. is fitted. The body, of otherwise identical design, is slightly lighter and slimmer.

THE STANDARD LENS ACCEPTS 55 mm. screw-in filters and 57 mm. push-on lens hood with fixing screw. The *f* 1.7 and *f* 2 55 mm. lenses of the SR-1S have a 52 mm. thread.

FOR CLOSE-UP PHOTOGRAPHY at distances below the normal focusing range of 20 in., a set of extension tubes is available for lens to subject distances between 17 and 3 in. and extension bellows for distances from 3½ to 1¼ in.

OTHER ACCESSORIES include CdS exposure meter, copying stand, accessory shoe, right angle finder, focusing magnifier, eyepiece, correction lenses, microscope adaptor, lenshood, filters, wide-angle tele and micro lenses.

Loading (see page 16)

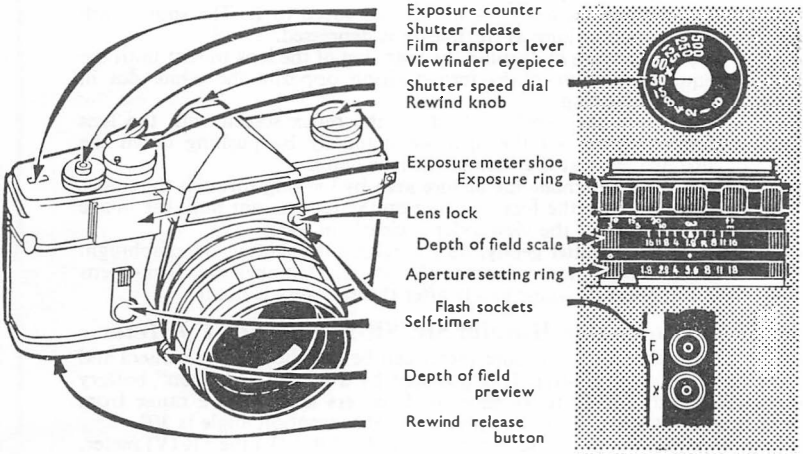
1. **Open the camera back.**
2. **Insert film.**
3. **Attach the film leader to the take-up spool.**
4. **Close camera back.**
5. **Wind on film and release shutter twice.**
6. **Set the film speed indicator.**

Unloading (see page 18)

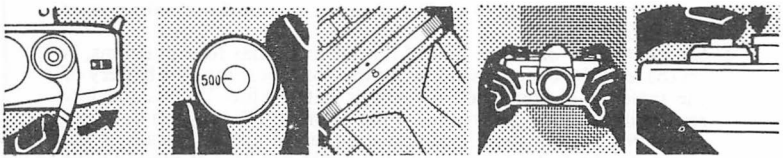
1. **Set for rewinding.**
2. **Rewind film.**
3. **Open camera back.**

Shooting

1. **Work the film transport** by moving the transport lever as far as it will go.



The *film transport lever* operates the *exposure counter*, as well as transporting the film and tensioning the shutter. The *shutter speed dial* provides for speeds from 1 second to 1/500second (SR-1S = 1/100th) and has a B setting for brief time exposures as well as a special X setting for flash. The *rewind knob* has a folding crank handle. The *exposure meter shoe* at the front of the camera accepts the special Minolta SR meter. There are two *flash sockets* for FP and X synchronization. A *self-timer* and *depth of field preview* button are fitted. Around the lens barrel are the *focusing ring*, *depth of field scale* and *aperture setting ring*. The rewind button is located in the base of the camera.



Shooting with the Minolta SR-1, SR-1 (V) and SR-1S. *From left to right:* Advance the film and tension the shutter with the film transport lever. Set shutter speed. Set aperture. Focus and compose the picture in the viewfinder. Press the shutter release gently.

Set the exposure. The shutter speeds may be set before or after cocking the shutter by turning the speed dial either way to bring the required speed opposite the red line in the centre of the dial.

For time exposures, set the shutter speed to B. The shutter will remain open as long as the release is depressed.

3. **Set the aperture** by turning the rear ring of the lens mount until the required aperture clicks into position opposite the white dot in front of this ring.

   To observe the depth of field on the reflex screen with the lens stopped down, set the aperture manually by pushing down the chromed lever at the base of the lens flange.
4. **Focus and determine the picture area** by looking through the finder eyepiece. Turn the focusing ring on the lens mount until the image in the centre of the viewfinder is clearly in focus.
5. **Release the shutter gently.** As you release the shutter, the diaphragm automatically closes down to the pre-selected aperture. It re-opens to full aperture immediately after the exposure is made.

The Attachable Minolta SR, SR-1S and SR(V) Meter

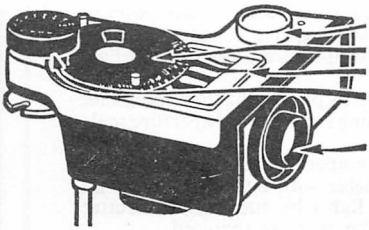
A separate CdS exposure meter can be attached to the camera and coupled to the shutter. It is powered by a mercury "button" battery which lasts for 12 to 24 months. It covers an extensive range from bright outdoors to candle light. The light reception angle is 30°.

For Minolta SR-1 use SR meter and for SR-1 (V) the SR (V) meter.

Using the Exposure Meter

1. **Attach meter to camera.** Set the camera shutter and the shutter speed scale on the meter to the same figure.

   Press the meter down into the fitting on the camera front plate, so that the shutter speed dial engages the dial of the camera.
2. **Set film speed** by turning the dial on the meter carrying two cut outs marked DIN and ASA until the speed of the film in use lines up with the mark opposite the ASA or DIN window.
3. **Pre-select shutter speed** by turning the speed required to the red dot mark (in the 10 o'clock position) outside the dial. The speed required is generally determined by the motion of the subject. For general outdoor work a speed of 1/125 sec. can be assumed normal; in poor light 1/60 sec.
4. **Set light meter dial.** The dial of the SR meter has four positions, is on the left of the meter window. In the "off" position, the battery of the meter is disconnected for longer battery life. "L" is the low sensitivity position and is used if the normal "H" position does not give a reading. In the L position use the red aperture scale of the meter. In the "Check" position the meter needle will swing to the mirror square in the meter window to indicate that the battery power is still adequate. On the SR (V) and S meter, the High-Low button is in the centre of the dial. The On-Off and Battery Check are around its edge.

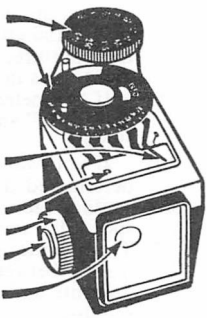


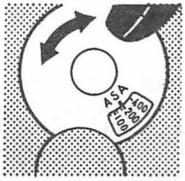
Shutter speed dial
Scale selector dial
Film speed dial
Meter scale and needle
Shutter speed dial

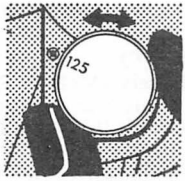
Photo cell window
Meter scale and needle

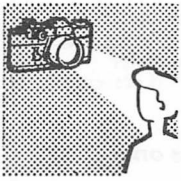
Battery check mark
Scale selector dial
Scale selector button

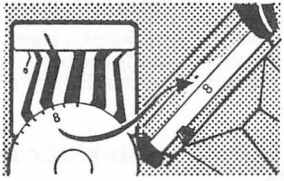
Photo cell window

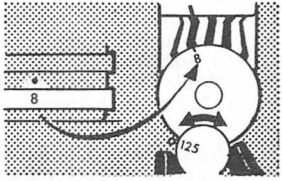




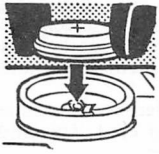


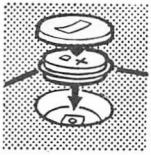






Using the Minolta SR Meter. *Left to right, top:* Attach the meter to the camera. Set the film speed. Pre-select the shutter speed. Set scale selector dial according to light conditions. *Left to right, bottom:* Point camera towards subject. Read off the aperture required and set it on the lens. Alternatively, the aperture can first be set on the lens and the shutter dial rotated until the meter needle points to that aperture.





Replacing the meter battery. *Far left.* When the battery is exhausted, unscrew the battery compartment cover and lift it off. *Centre:* Remove the battery and replace with a fresh one, the + sign pointing towards you. Finally, replace the cover. *Left:* The V and S model compartment is recessed.

5. **Point camera to subject** (see also page 39).
6. **Read off the aperture required.** With the meter dial set to **H** in normal outdoor light, the needle in the meter window will point to one of the guide lines leading to the *white* aperture scale. Read off the aperture. If it points between two apertures, the intermediate aperture is indicated.

   If the meter needle does not register in poor light turn the meter dial to "L" and take the aperture reading from the *red* aperture scale shown.

   If you want to work with a definite aperture (e.g., to get a predetermined depth of field) use the meter with either "H" or "L" settings (according to the prevailing light) by turning the shutter speed dial until the needle points to the aperture required.
7. **Transfer the aperture reading** to the aperture scale on the lens mount. Values between two apertures may be set. If you had pre-set the aperture and turned the shutter speed knob, no further settings are required.

See also "Using an Exposure Meter" page 39.

The Meter Battery

The mercury battery (Mallory RM-IR or National MP) loses its power abrubtly. Its life is in excess of one year. It is advisable to carry a spare battery towards the end of the probable life of the one in use. If, when you set the meter to "Check", the needle does not move to the silver square in the meter window (see above, No. 4) or if the meter does not respond to light, the battery has to be replaced.

Remove the battery by unscrewing the black cap on the underside of the meter. Insert the new battery with its plus sign (+) facing the cap, and the wider diameter section towards the top of the meter.

While the meter is not in use turn the meter dial to "off" to preserve the life of the battery.

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