

first look

MINOLTA XD-11

This compact 35-mm SLR lets you have it *your way*: aperture- or shutter-preferred exposure automation, plus an auto-winder



BY LIEF ERICKSENN

The new compact Minolta XD-11 is a camera of grace and panache expressed in function and styling. It is a beautiful camera, and that beauty is expressed deeper than its metal and glove-leather skin. Once and for all Minolta has stopped the endless and often acrimonious argument as to which is better in automatic function cameras, aperture or shutter priority. The XD-11 has both, of course, and is readily switchable from aperture to shutter, or to manual, at the flick of a lever.

The body and the body plates of the X-D 11 are fashioned out of metal, not metalized plastic which, although we are assured is often many times stronger than steel and correspondingly lighter, to me, does not have quite the esthetic of satin chrome or black chrome or metal. The XD-11 has the heft and balance of a thoroughbred and in the field behaves like one.

Body dimensions of the XD-11 are 51x86x136 mm overall, sans lens. The XD-11 weighs in at 560 grams, again without lens. All body contours are rounded or beveled, and all the controls fall easily under the user's fingers. Three controls of special noteworthy-ness are the manual film-advance lever and the shutter-speed dial with its central electromagnetic shutter button.

Ruined as I am by using either motor drives or auto-winders (there is one for

the XD-11), the manual film lever on the XD-11 is utterly delightful. In use it stands off the body a few degrees and sweeps through 130 silken degrees to advance the film and tension the shutter. There is not the slightest trace of drag or grittiness. You literally have to try it to believe it. The shutter-speed dial is oversize and extends beyond the camera top plate a little at the front. This means that you may shift shutter speeds with your eye at the finder using the tip of your index finger. Speeds engraved on the dial in bold white run from 1/1,000 sec down to 1 sec. There are then three other settings available to the photographer: X, for the flash synch (in red) at 1/100 sec; B, which is mechanical; and also 0 which is a mechanical 1/100 sec. Should the meter batteries fail, you may use either the B or the 0 setting and continue taking pictures, if in a somewhat limited fashion. The Minolta XD-11 does not become a piece of conceptual art should its twin 1.5-volt silver-oxide meter batteries give up the ghost.

Alongside the shutter dial and really part of the same assembly is a small lever that will move to one of three positions: S, A, or M. S is shutter-priority automatic and A is aperture-priority automatic. M is a fully manual setting with the camera's meter functioning in a match-number mode.

The shutter release of the Minolta XD-11 is electromagnetic in operation and functions with the smooth, jarless precision of the trigger of a fine target pistol. First pressure on the button switches on the metering and shutter-control electronics. The reader is advised that it is best to put the camera away in his/her gadget bag with the shutter untensioned since the XD-11 has no shutter-release lock and the shutter fires at the slightest pressure. If the Auto Winder D is fitted, I found it best to fire the last shot with the drive switched off to avoid taking pictures of the inside of the camera bag! The center of the shutter release is threaded to take a special electrical remote or standard cable release.

On the other side of the pentaprism housing is the combined film-speed setting dial, exposure-compensation control and rewind/back opening mechanism. Again, this control is large and easily operated. Pressing in a small stud on the top plate of the camera allows you to set film speeds from 12 to 3,200 ASA. Slight inward pressure on a small lever allows you to set into the camera's metering exposure compensations to a maximum and/or minimum of two whole stops in single-stop increments. Although other photographers raised objections about the

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POPULAR PHOTOGRAPHY

lack of a memory lock, I found it not to be a problem. I could easily use either the two-EV exposure adjustment, or failing that, quickly switch to manual for an even greater change.

All the controls mentioned hitherto are heavily detented and unlikely to be accidentally knocked off the selected setting.

A small mention of a few other minor but important controls would not go amiss here. The depth-of-field button has been moved to the left side of the mirror box. The reason is probably twofold: the left hand has the least to do when you are working with the camera, and the depth-of-field button moves in the same direction as the diaphragm pin. On the XD-11 (unlike other Minoltas) the button springs back out as you release it; it does not latch. The depth-of-field preview is available in all automatic and manual modes; however, as Minolta points out in perfect candor, it is not really much use when the camera is set to shutter-preferred automatic. The reason is quite simple. In shutter priority, the diaphragm blades move to a predetermined stop selected by the meter. This

moment the camera fires; therefore, stop is not locked in until the actual there is nothing to prevent the diaphragm blades from stopping all the way to the minimum aperture when you push in the depth-of-field button. In the aperture-priority and manual modes the depth-of-field preview is fully operable.

Minolta has provided the XD-11 with an eyepiece shutter that has a little white dot on it to show that you have closed the shutter for metering with the camera on a tripod and/or with the self-timer, thus preventing extraneous light entering the eyepiece and causing erroneous readings. The variable self-timer, by the way, is mechanical. Mechanical? Yea, and it doesn't use any battery power, either!

There is a safe-load indicator on the back of the top plate. The camera is easy to load, and the back is detachable, presumably to accommodate a soon-to-be-available data back.

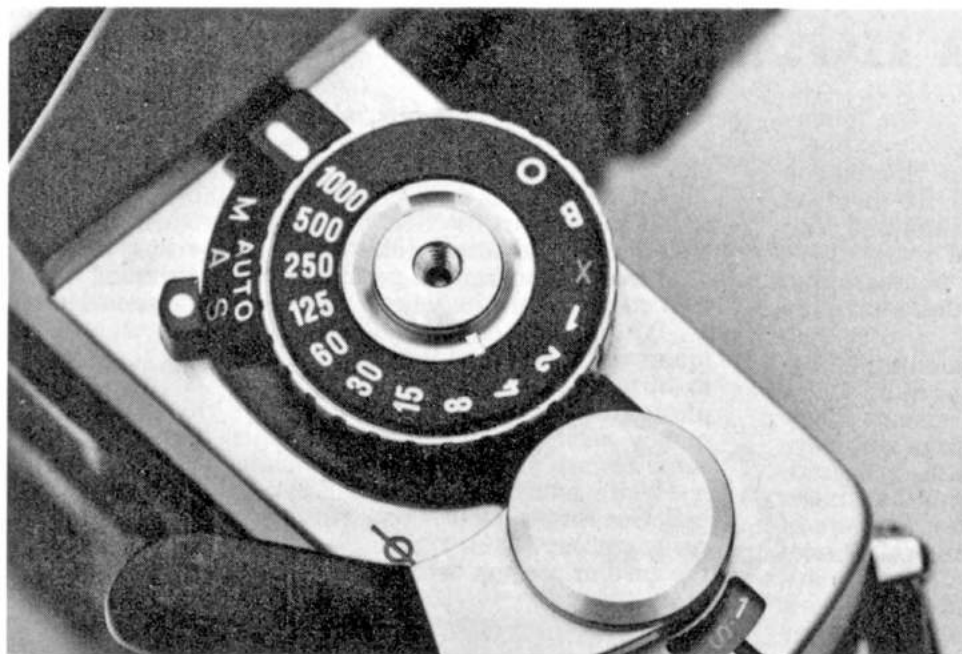
The reflex mirror is large compared to other cameras, thus preventing image cut-off with long lenses. Although the shutter is a metal, vertical scanning type, the Minolta XD-11 is, in my opinion, the quietest 35-mm SLR on the market. It is one of the few 35-mm cameras I would care to shoot with on a

sound stage.

Metering in the Minolta XD-11 is performed by a single silicon photodiode located in the top of the prism. The camera actually reads the scene brightness twice, at full open aperture, and then again as the diaphragm blades close to the predetermined aperture. This makes for extremely accurate readings from the very center-weighted meter and also explains why Minolta does not recommend the use of MC lenses on the XD-11 in a shutter-priority mode. MC Rokkors and Celtics work just fine in an aperture-priority automatic or in a manual mode but because of the diaphragm configuration are seldom accurate enough in shutter priority.

The new MD lenses that Minolta is feeding into the market have a redesigned diaphragm travel and are 100 percent suitable for any mode you can switch the XD-11 to. Eventually all except one or two special lenses will be MD types. MD lenses are of course compatible with other Minolta SLRs.

As far as ease of focusing and screen brightness are concerned, there is no doubt in the writer's mind that Minolta is light-years ahead of anyone else with the XD-11. Using an artificially figured screen called an "acute matte,"



Main control cluster of the XD-11; note the metering-mode switch left of dial.



Combined film-speed dial and exposure-compensation dial set around rewind crank.



The small silver pin actuates the meter display when in shutter-priority mode.



The reflex mirror of the Minolta XD-11 is oversized, preventing image cutoff.



The drive is self-aligning when the locating pin is engaged in the hole in the baseplate.

the XD-11 is easily focused even under very dim lighting conditions. Very wide-angle lenses and lenses such as catadioptrics, have always been hard to focus with an SLR. Not any more, not with the XD-11.

The "acute matte" screen consists of thousands of microscopic conical lenses embossed in a honeycombed pattern onto the screen surface. These act as light pipes and transfer the light to the upper surface of the focusing screen with minimum diffusion loss. The standard screen in the XD-11 is presently the "acute matte" with central rangefinder prism surrounded by a micropism collar. If you, like me, are not overfond of rangefinder screens, don't worry; help is in sight. They will soon be offering three alternative screens, Minolta service-facility installed. There is to be an "acute matte" only screen, an "acute matte" with micropism, and an "acute matte" with a diagonal rangefinder.

The Minolta XD-11 has perhaps the most complete information display in the finder of any camera. When you are set to the aperture-priority mode, the selected working stop will appear in the center of the bottom mask of the finder. Shutter speeds will appear in the right vertical finder mask of the finder. Shutter speeds will appear in the right vertical finder mask, 1/1,000 sec at the top, and 1 sec at the bottom. As the camera selects a shutter speed, a red LED will glow alongside or between a given shutter-speed value. Shutter speeds are selected in a stepless mode; if the exposure requires 1/197 of a sec, that is what you will get.

Switching to shutter priority causes the shutter scale to be replaced with an aperture scale and the LEDs will scan this, indicating, again steplessly, the selected aperture. The shutter speed that you set will appear somewhat to

the right of center in the bottom mask. If you have set the lens to its green minimum aperture, that figure will appear in the center of the bottom mask. Green aperture? The minimum aperture of any lens is engraved in green on all the MD series. This green aperture should be set against the white datum mark on the lens barrel to insure that the XD-11's metering system can select any aperture from maximum to minimum. If you are careless and do not set the green aperture (let's say f/16) and instead set a larger f-stop (say f/5.6) the metering system will still deliver the correct f-stop for shutter priority but will choose between the smallest aperture set against the index and the lens' maximum aperture. Besides limiting the stop range, your error will also cause the in-finder aperture display and LEDs to remain unlit. So you won't know what the camera is doing, although it will still do it with its usual precision. If you look for a moment at the front of the camera lens mount, you will see why. Moving the lens ring to the minimum green aperture causes a cam to move a small silver lever. It is this lever that tells the camera the minimum aperture and actuates the in-finder display.

When switched to manual, the working aperture and the shutter speed set to the shutter dial will appear in the bottom of the finder. The shutter-speed dial will also appear along the vertical mask. All you need do to derive a correct exposure is to turn the aperture ring of the lens until the LED glows alongside a shutter speed on the scale that agrees with your set speed. Alternatively you may shift shutter speeds until the LED and the shutter speed agrees.

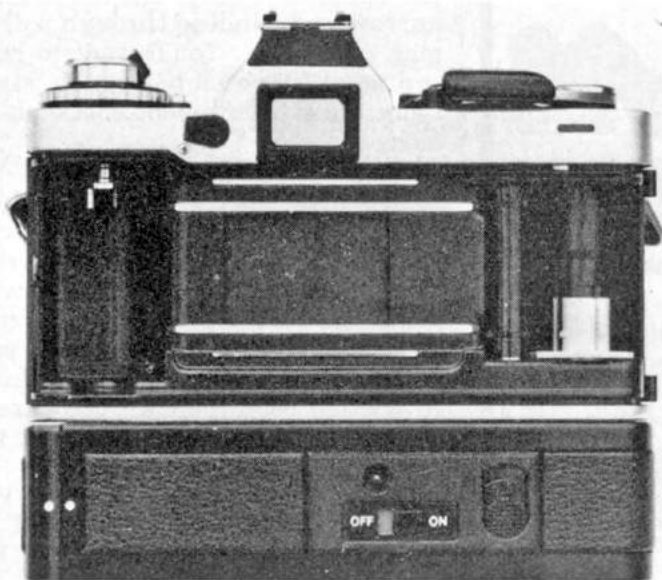
The LED display has two triangular LEDs, one at the top and one at the bottom of the vertical scale. These are

the over- and underexposure warnings. When either of these goes on, it indicates that you should change to a higher or lower f-stop or shutter speed. Should you ignore these warnings, the camera will simply override your selection and make the necessary adjustments for you. This elegant piece of paternalistic cybernation is included so that you shall not blow the exposure of one single frame of film. When you use the XD-11 in a manual mode, no such adjustments occur. The manual setting leaves you in total control of your photographic fate.

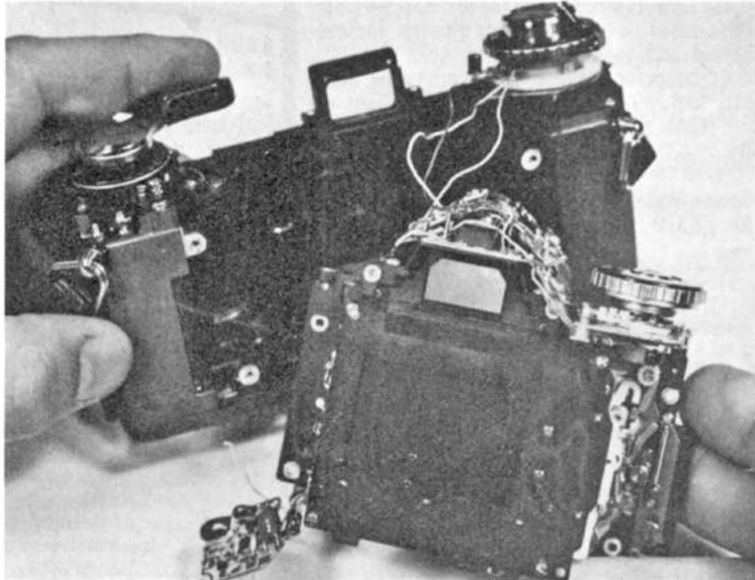
Meter-battery condition is indicated by the relative brightness of the in-finder LED display. If the LEDs become dim, it is time to change the two cells. If the batteries fail, the camera will lock up the mirror. In this event, replace the cells and flick the shutter-speed dial to X to clear the mirror. Should you fire the XD-11 with the lens cap on or shoot in total darkness, the camera will go into Minolta's famous "sulk" mode: the mirror will go up and the shutter mechanism will lock. It will remain this way for about 40 seconds and then clear itself. To speed things up, turn the shutter dial to X to clear the camera immediately.

We now come to the Auto Winder D which is, as Minolta says, the smallest, lightest (and probably the quietest) "electric thumb" available. The Auto Winder D measures 35x37x136 mm and weighs 205 grams without its four AA-type power cells. It attaches to the base of the XD-11 in a fumble-free manner. All that you need do is align a single locating pin with a hole in the camera base plate and turn the key-shaped securing screw home. The drive dogs are self-aligning by virtue of the spring loading, thus eliminating the need to inch the film-advance lever to

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Rear view of the Minolta XD-11 with camera back removed. Shutter travels vertically.



XD-11's interior shows a neat and tidy modular layout that should prove easy to service and/or adjust.

get them to engage.

Batteries are loaded into a magazine which then snaps into the end of the drive housing. You may use any 1.5-volt AA type cell, but 1.25-volt nicads are to be recommended because they are rechargeable, will haul approximately 170 rolls of 36-exposure film at one charge and, in the opinion of this writer, suffer less voltage drop in very cold weather.

The Auto Winder D has only two controls on the back, an on/off switch and an auxiliary rewind button. A red LED will light as the drive cuts out at the end of the film. The Auto Winder D will advance single frames or fire in two frames per sec, continuous cycle. Just keep your finger on the shutter button.

If multiple exposures are your thing, they are easy with the Minolta XD-11. Without the Auto Winder D, all you do is hold in the rewind button and shoot. With the Auto Winder D you may shoot motorized multiple exposures to the tune of two every sec. Simply turn the rewind button on the drive with your thumb, push it upward, and hold it there while you shoot. Registration is excellent with or without the drive, and there is no need to take up the slack in the film cassette.

The use of flash with the XD-11 opens many options to the photographer. You may hot-shoe a flash unit directly to the mount atop the XD-11's prism housing where it will connect directly to the camera, or you may plug in to an auxiliary 3-mm PC socket on the side of the mirror housing. The XD-11 synchs only at X, which is 1/100 sec. This precludes the use of focal-

length lenses and, therefore, use class M types as well as any electronic flash, automatic or otherwise.

The most usual method of using a

flash unit is to simply set the shutter dial to the red X-synch setting and adjust the apertures accordingly. However, under certain circumstances, namely aperture-preferred automatic, you may synch a flash unit to the camera without recourse to the X setting on the dial. This allows some use of the camera's metering capability to determine the correct aperture when metering the ambient light in a synchro-sunlight situation. Two things must be borne in mind. First, the shutter speed must not rise above 1/100 sec; and second, the determined aperture must agree with or be less than the aperture required by the flash unit. This method is best achieved by using an electronic self-sensing flash unit with variable or dial down-power ranges. Then it's quite easy. The XD-11 will synch any gun at speeds of 1/100 sec or slower. Naturally synchro-sunlight shots may be made with the XD-11 set to the manual X synch, but since the meter is inoperative in this setting, you must either first meter the ambient light and then reset to X, or work out the required values yourself.

Minolta offers a specially designed auto-sensing electronic-flash unit, the Auto Electroflash 200X. This unit is designed for hot-shoe operation only and has two manual modes and two auto modes. With the camera set to either of its automatic metering modes, the 200X will seize control of the shutter and set it to 1/100 sec as soon as its capacitors are fully recycled; at the same time the red triangular overexposure LED will pulse in the finder, indicating that the unit is fully recycled.

Although the 200X has a special setting enabling it to follow the drive at two fps, it is quite capable of following the drive when set to either of its au-

tomatic self-sensing modes, provided moderate distances are to be covered. All you do is to dial the film speed into the flash unit's calculator and read off the red or yellow range aperture. If the capacitors in the flash exhaust or cannot recycle in time for the next shot, the unit will relinquish control of the shutter and return the camera to its automatic metering mode. As soon as it has recycled, it will again seize the shutter speed and the LED indicator will begin to pulse. The Auto 200X will not fire until it is fully recycled.

There is a special color-coded winder-synch setting on the selector at the back of the unit. In this "Lo" setting, the flash unit will follow the drive indefinitely, but since it is a manual mode the user must read off the aperture against the distance on the calculator and set the correct stop for a given distance.

The Minolta Electroflash Auto 200X requires four AA-type batteries. The type is left to the choice of the user, but I would suggest that you use either alkaline-manganese or rechargeable nicads. The nicads offer the fastest recycling time. Minolta offers a neat little charger for them. Just stick the cells in it and plug into a wall socket. Twin LEDs indicate charging. This charger may also be used for nicads to be used in the winder.

The flash head of the Auto 200X flash covers 45 degrees vertically and 60 degrees horizontally. The sensing eye's angle of acceptance is approximately 20 degrees. At its most tardy, the Auto 200X belts out a flash pulse of 1/1,000 sec. When it is really trying, it can put out a pulse of light as short as 1/40,000 sec. This, of course, depends on the working distances. When you think about it, this offers you some mighty interesting flash options. It is an ideal match for the XD-11.

In the writer's opinion, the Minolta XD-11 and its ancillary equipment most nearly approaches that synthesis that most photographers hope for: the ability to take out a camera and shoot without the machinery and the calculations getting in the way of the idea. The XD-11 is a camera whose options should satisfy the master and the tyro alike. If you say to me, "I don't like satin-chromed cameras, I want one in black," there is no escape for you. The Minolta XD-11 will soon be available in imperishable black chrome.

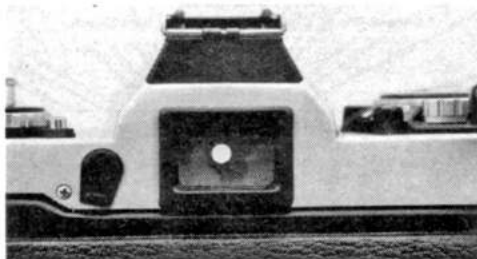
Suggested retail price for the XD-11 with 50-mm MD Rokkor-X f/1.4 lens is \$603; with 50-mm MD Rokkor-X f/1.7 lens, \$545; body only, \$430; Auto Winder D, with case, \$125; Auto Electroflash 200X, with case, \$75. For more information, contact Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446.



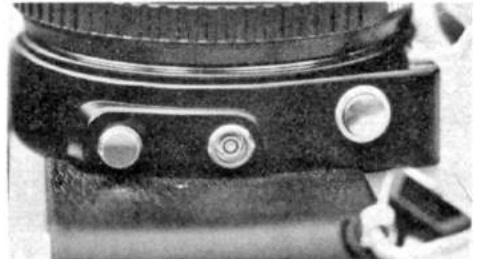
Auto Winder D controls; LED cycling lamp remains on at end of film.



Close-up of base of XD-11 showing the drive-coupling dog and locating hole.



Note the eyepiece shutter switch; white dot on the shutter assures you that its closed.



The depth-of-field preview button has been moved to the left side of the mirror box.

modern tests

newest cameras, lenses & important accessories

MINOLTA XD-11: DUAL AUTO. COMPACT SLR

MANUFACTURER'S SPECIFICATIONS: Minolta XD-11 35mm single-lens reflex camera. Body No. 1017669. LENS: 50mm f/1.4 MD Rokkor-X in interchangeable bayonet mount, stops to f/16, focusing to 20 in., accepts 55mm accessories. SHUTTER: Modified Seiko MFC metal-blade focal plane, electronically timed, with speeds from 1 to 1/1000 sec. plus B, X sync., self-timer. VIEWING: Non-interchangeable eye-level prism with central split-image rangefinder, microprism collar, full area fine-focusing screen. OTHER FEATURES: Two 1.5-volt silver oxide batteries power single silicon cell circuit measuring center-weighted area of focusing screen at full to shooting aperture for both shutter-speed priority (you set shutter speed, camera sets aperture) and aperture priority (you set aperture, camera sets shutter speed) auto exposure, auto-exposure compensation dial, full manual control; shifting aperture and shutter-speed scales in viewfinder with LEDs indicating apertures and speeds set by camera, single numerals show user-set apertures and speeds; over-under exposure warning signals in finder, pulsating flash-ready diode, automatic shutter-speed shifting for over-under exposure in shutter-speed priority mode, electromagnetic shutter release, provision for ordinary and magnetic cable releases, film box memo holder, provision for multiple exposures, built-in eyepiece blind, film winding signal, provision for 2 fps motor winder and auto-flash coupled to camera exposure control and winder, self-timer, hot sync flash shoe, depth of field preview. PRICE: \$603 with 50mm f/1.4 MD Rokkor-X lens.

Following the countless news stories, both long and short, in recent months hailing the arrival of this incredible new-generation compact auto SLR, a sober test report of an actual production camera might seem anticlimactic. But it is only in the cold light of day (and night), in both labora-

tory and field tests, that we can determine the true measure of a camera's ability and convenience, its assets and liabilities (which assuredly every camera does have) and our overall estimation of the instrument.

Rather than assume that our readers have perused and committed to memory all the details printed so far, we think it best to start at the beginning in order to present a completely objective and well-rounded picture of what Minolta has wrought and what we think of it.

Minolta, like Pentax, has been a manufacturer whose SLR cameras have been aimed primarily at the serious amateur photographer market, even though at least one model has had more professional potential—the Minolta XK motor drive camera. But Minolta did not woo the professional with highly specialized equipment as did Canon and Nikon. Instead, this Osaka-based company carefully examined the market it intended to dominate and determined years ago to produce a rugged medium-sized 35mm single-lens reflex with sufficient future development capability to accommodate foreseeable changes and improvements. The SRT-202 match-needle Minolta of today bears more than a striking resemblance to the Minolta SR-2 first introduced in 1958.

Minolta's concern for the amateur photographer can be seen in the evolution of the unique CLC or Contrast Light Compensating meter system, a statistically determined meter system compromise. After examining literally thousands of color photographs made by amateurs, Minolta engineers concluded that most pictures suffered in contrasty light from insufficient shadow detail. Minolta thereby devised CLC which automatically compensated for such lighting by suggesting additional exposure, thus providing additional shadow area detail. While such a system might certainly benefit amateur photographers, a metering system which automatically compensated would not endear itself to professionals who like to do their metering cold turkey.

Minolta, alone among major SLR manufacturers, refused to make available an add-on motor

drive unit because its engineers were convinced that only a motor drive built into the camera itself could guarantee consistent jam-free operation. Professionals might rush to repair agencies with inoperable motor and camera and fall back on second or third spares. Amateurs could not; therefore, whatever Minolta made for them had to be as foolproof as possible.

However, Minolta is not a company which allows its engineers to stick their collective head in the sand, ostrich-style. With the fight already raging between the

camera automatically sets the shutter speed), Minolta designers set out to produce a camera with both systems. First attempts proved exasperating. The tangle of scales, meter needles and pointers was almost too much to bear. Only with the AE-S finder designed for the Minolta XK camera did the designers see a way out for simplified dual automation exposure readouts in the finder—light emitting diodes and changing scales.

But in even more recent years, other design currents in cameras have been running: smaller

Minolta XD-11: What's New At A Glance

LEDs in finder indicate shutter speeds, aperture set by camera. Numerals show user-set shutter speeds, apertures.

Hot shoe sync accepts fully coupled Minolta Auto Electroflash 200X.

Film speed set window and auto exposure compensation dial



Mode selector switch allows shutter speed or aperture priority automation, manual control

Shutter speed scale illumination panel

Aperture scale reflecting window

Electromagnetic shutter release/meter switch

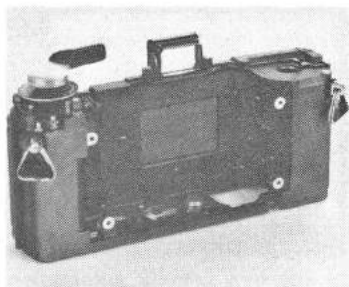
Mechanical self-timer



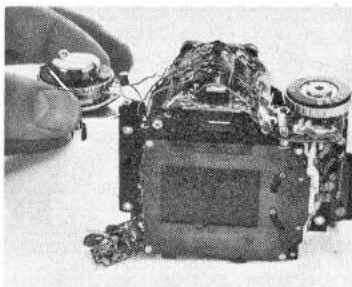
MD Rokkor-X lens provides both shutter and aperture priority automation with electronically controlled metal blade shutter

advocates of shutter-speed priority automation (in which the user sets the shutter speed and the camera sets the aperture) and those who pressed the opposite point of view, preferring aperture-priority automation (in which the user sets the aperture and the

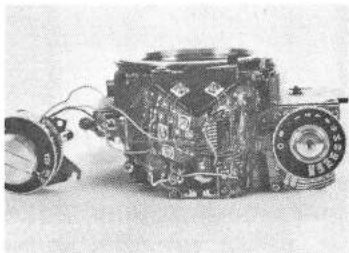
SLRs, auto winders, so-called dedicated automatic electronic flash units which either set the camera or themselves when attached. Over two years ago, Minolta became convinced that its concept of dual automation could be wed to the new wave of



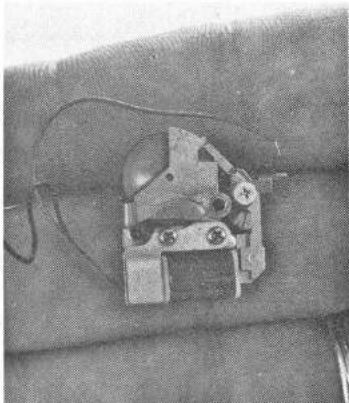
Unlike many compact SLRs, XD-11 body casting is massive, gives good protection to mechanical, electronic innards.



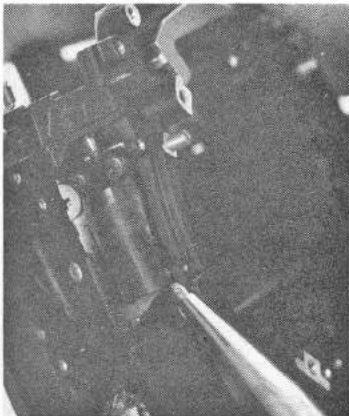
Front component, consisting of shutter prism, electronics and controls, fastens to body casting unit with screws.



Flexible electronic circuit board comes to Minolta from subcontractor, is then wired in place by Minolta technicians. Solid state insures little can go wrong even if camera is subjected to jars.



Little wheel serves big purpose. It closes diaphragm down to precisely right position in shutter-priority auto exposure mode. This necessitates specially balanced diaphragm blades of Minolta's MD lenses.



Why isn't there a lockup mirror? Because air damping cylinder (seen at end of pen point) smooths mirror action, makes lockup virtually unnecessary.

wanted features: a camera as reliable and sturdy as the standard SRTs and XEs, in which no short cuts were taken because of size, could be evolved. And so the camera was designed and built. The result, at first glance, would seem to contradict Minolta's long-standing philosophies: there is no CLC metering system. Instead the single-cell silicon circuitry reads a center-weighted pattern from the focusing screen. An add-on auto winder is available, which appears to be quite contrary to Minolta's former views on the subject. How these changes occurred we will deal with in due course.

The camera body is 1/2 in. shorter and 3/8 in. lower than a Minolta SRT camera but the overall diminution in size appears far greater since the lower top plate really produces a far smaller camera. The XD-11 is about 4 oz. lighter than a 24 1/2-oz. SRT camera body. The size differential between the XD-11 and the present standard auto exposure Minolta, the XK-7 (or XE-5), is readily apparent in the photo on this page.

How compact is the XD-11 compared to other compacts? Taking our usual standard comparison compact, the Olympus OM-1 or 2, the XD-11 is some 3/16 in. higher, 3/8 in. wider and 2 oz. lighter, body for body. We judge the XD-11 to be a medium small compact SLR.

In overall appearance, the camera's all-metal body contours are softer and more rounded than is usual Minolta practice. The leather-like covering is smoother and is slightly padded with a satisfying "give," making the camera, in our opinion, easier to grasp firmly. Noting the complaints from some SLR enthusiasts that the controls of compact cameras are tiny and hard to grasp, Minolta has gone in the other direction and provided a more massive wind lever, far larger and more legible shutter-speed dial, larger-diameter shutter release button and longer rewind crank handle on this camera than on larger Minoltas. The chrome finish is in the traditional Minolta fine satin (and an all-black XD-11 with black chrome—not enamel paint—finish is promised for sometime later this year).

The finder screen shows the standard Minolta split-image rangefinder and surrounding microprism collar. However the screen itself is not the standard one used by Minolta; it is a newly-developed Acute Matte consisting of some 2,500,000 individual optical cells. (Some of these screens have been available for the XK camera). We judged the new screen to be slightly more than 1 full f/stop brighter than a standard Minolta screen, providing a more contrasty, easier to focus image to the corners of the viewing field. Image brightness is up to the best of any compact SLR. Image magnification has been improved to .89X which is .04 greater than the SRT-202 we tested a few months ago and .02 greater than the Olympus. In

practical terms, can you really see the difference in magnification? Yes, you sure can. The large XD-11 screen is impressive.

To the right of the screen, on a black panel outside the screen area, is a vertical aperture or shutter-speed scale of translucent white numerals. When the camera is in shutter-speed priority, the scale shows the aperture to be set by the camera. You switch to aperture priority by moving the convenient, heavily click-stopped mode-selector switch near the shutter-speed dial from S to A. Automatically the vertical scale switches to show a shutter-speed scale instead of an aperture scale. Opposite each numeral, extending in a strip slightly into the right hand edge of the picture finder area, is a strip



Larger than a Olympus OM-2 but much smaller than a Minolta XK-7, the XD-11 we judge as a medium small compact.

GENERAL PERFORMANCE

Checkpoints	Our Standard	As Tested
FINDER:		
Apparent viewing distance	Between infinity and 20 in. (0.5m)	39 in. (1m)
Apparent distance of shutter-speed scale	Between 79 in. (2m) and 26 in. (0.67m)	26 in. (0.67m)
Apparent distance of aperture scale	Same as above	26 in. (0.67m)
Apparent distance of aperture scale/shutter scale LEDs	Same as above	26 in. (0.67m)
View area compared to film area	Vertically and horizontally more than 90%, less than 100%	Vertical: 97% Horizontal: 95%
Parallax error compared to film	Vertical: 0.36mm Horizontal: 0.89mm	Vertical: 0.05mm upwards Horizontal: 0.55mm toward left
Focusing accuracy at maximum aperture	Within depth of focus	No discrepancy
Image magnification	.87 ± 0.1X	.89X
PICTURE SIZE:		
	24 ± 0.6mm x 36 ± 0.9mm	24 x 35.7mm
SHUTTER:		
Curtain travel evenness	± 0.33 stop	+ 0.10 stops
Camera insulation from sync	More than 7 megohms	Infinity
Sync contact efficiency	More than 60%	76%
Synchronizer delay time	X: within full opening	Okay
Shutter curtain bounce	Not allowed	None
Self-timer delay time	7-10 sec.	10 sec.
LENS:		
Focal length	50mm ± 5% (47.5-52.5mm)	51.1mm
Maximum aperture	f/1.4 ± 5% (f/1.33-1.47)	f/1.43
Distortion	± 1.5%	less than 1%
CAMERA SIZE:		
	Body: 5.4 in. wide, 3.4 in. high, 2.1 in. deep (137 x 86 x 53mm) Lens: 2.5 in. diam., 1.6 in. deep (63.5 x 40mm)	
WEIGHT:		
	Body: 1 lb. 4 oz. (567g) Lens: 8 oz. (227g)	

modern tests

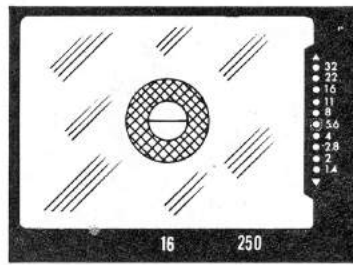
of 12 light emitting diodes, one next to each numeral plus red arrow LEDs, top and bottom, to indicate under- or over-exposure. Slight pressure on the shutter release button causes the metering circuit to turn on, lighting one or two diodes to give an approximate indication of what aperture or shutter speed will be set. If two diodes light, it indicates the actual setting will be somewhere between the adjacent numerals. (Remember the camera itself has stepless apertures and shutter speeds. For instance, in shutter-speed priority, the camera can set a lens opening of f/5.3, 5.4, 5.5 and on aperture priority the actual shutter speed set may be 1/343, 1/344, 1/345 second.)

Below the focusing screen you will see two windows. The central window shows, by means of light reflected off the MD lens' diaphragm control ring, the aperture the user sets. To the right in the second window you see a white translucent shutter speed, but

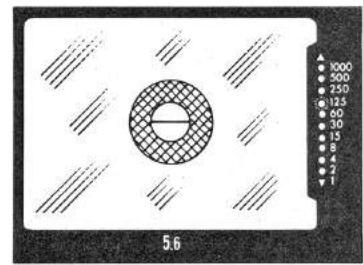
only when you set your own shutter speeds using shutter-speed priority automation. Through this might seem like a real confusion of data, it really isn't: The LEDs always point to the camera-set controls on the vertical scale, while the, user-set controls always appear below in the windows below the viewing area.

What happens when the camera is switched to manual operation? Now you can set both shutter speed and apertures yourself. These appear in the windows below the screen (while the suggested, proper exposure shutter speed for any aperture you set is indicated on the vertical scale—to be followed or not, as you wish). Why on earth would anyone wish to have two different types of automation? Wouldn't either shutter-speed priority or aperture priority really be sufficient? The answer is that having both can be far more convenient.

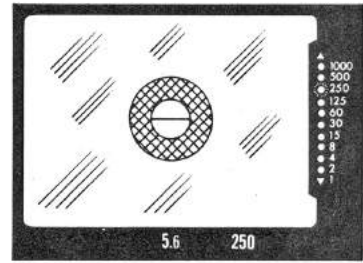
Most photographers find it easier to set the shutter speed first and let the camera's metering system set the lens opening—shutter-speed priority. With the XD-11, the user has an additional bonus on shutter-speed priority. If he selects his shutter speed but the camera metering system indicates that over- or under-expo-



In shutter priority automation, LEDs (right) indicate aperture set by camera, shutter speed below is that set by user; f/16 also seen below may confuse some camera owners (see text).



In aperture priority automation, LEDs (right) indicate shutter speed set by camera; aperture seen below shows user-set lens opening.



On manual operation, shutter speed LEDs at right continue to indicate proper exposure for any aperture you set.

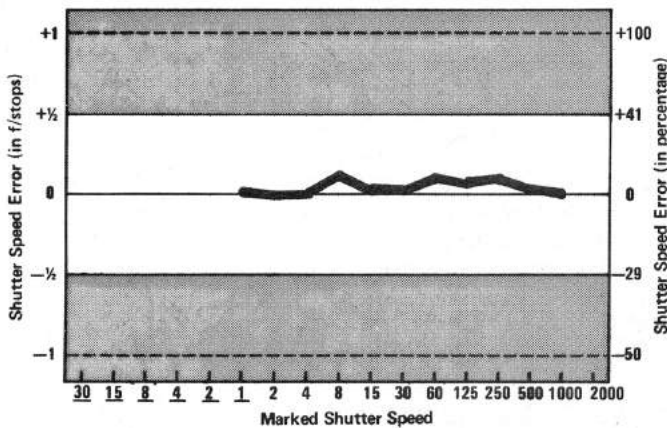
sure will result (since the maximum or minimum lens opening is insufficient) to produce proper exposure), the camera will automatically shift the shutter speed until proper exposure is obtained. In other words, Minolta's version of shutter-speed priority automation provides a virtually foolproof system for obtaining properly exposed photographs. No other SLR operates this way.

While shutter priority is convenient (and has advantages as we've seen), it will only work with the specially-designed Rokkor-X or Celtic MD lenses, which have the necessary lug at the rear to connect to the MD-coupler lug on

the camera body face plate (see photo, top, page 109). When this lug is pushed by the corresponding MD lens lug, the camera's

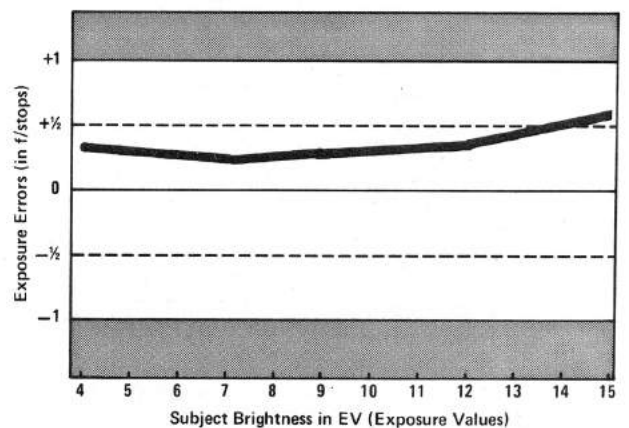
SHUTTER-SPEED ACCURACY

White area indicates tolerance limits



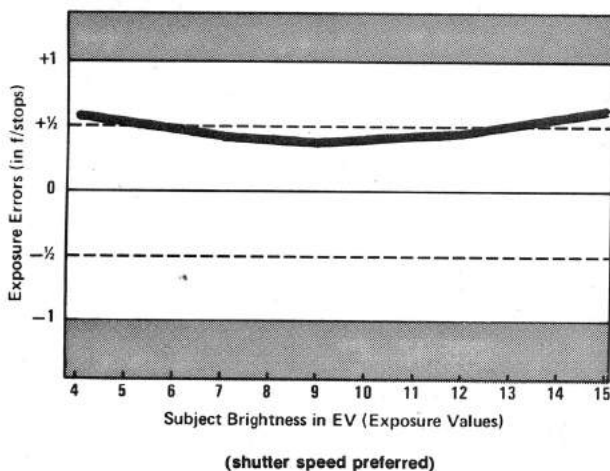
EXPOSURE ACCURACY (at film plane, ASA 100)

White area indicates tolerance limits.



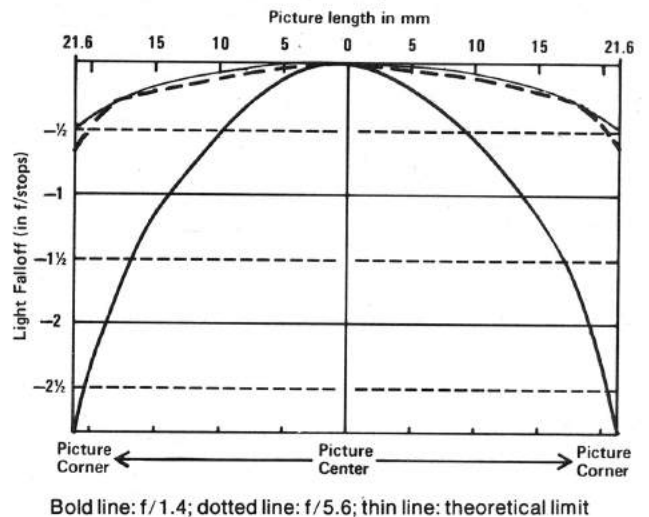
EXPOSURE ACCURACY (at film plane, ASA 100)

White area indicates tolerance limits.



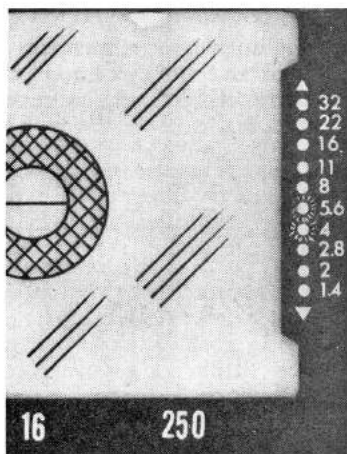
LIGHT FALLOFF (50mm f1.4 MD Rokkor-X)

Standard: At f/5.6, within 1 stop of theoretical limit.

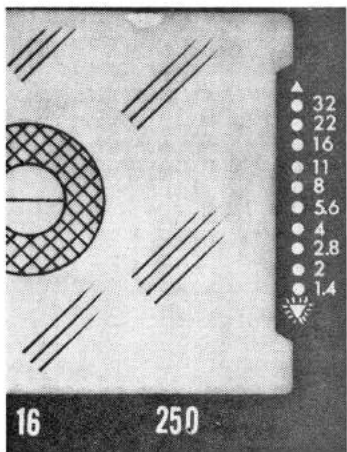


meter circuit is set properly for shutter-speed priority automation. In this case the smallest opening of the lens now appears in the window below the viewfinder screen. This is usually a green colored f/16, 22 or 32.

The green aperture numeral is apt to cause consternation among the unwary since the true aperture to be set appears on the vertical aperture scale. Actually, it might have been preferable to have an "S" for shutter-speed priority appear rather than the smallest aperture numeral. However, to do this, Minolta would have had to eliminate the aperture numeral from the diaphragm ring and replace it with an S—a change which certainly would have annoyed any camera user wanting to read off the smallest aperture on his lens. Ergo, XD-11 owners will have to remember that a green f/16 or f/22 is often to be ignored except as an indication that the camera is ready for shutter-speed priority automation (or that the smallest lens aperture has actually been set for aperture priority automation or the camera is in the manual exposure mode).



Two LEDs alight at once? Dear me. It means shutter speed or aperture to be set by camera is midway between.



Foolproof automation? On shutter-speed priority, camera will automatically switch shutter speeds to maintain proper exposure when under- or over-exposure LED signals appear on scale in finder.

Will there be a special service to adapt older Minolta MC lenses to MD? No. It isn't simply a matter of adding that tiny extra lug. The camera uses a unique metering system called "Cybernation," in which the actual meter cell reading is made before, during and after the lens has closed to its predetermined proper exposure opening. While almost all other SLRs "freeze" the meter reading at full aperture just when the shutter release is pressed, the XD-11 keeps on reading and making necessary changes right down to the moment the mirror flies upwards.

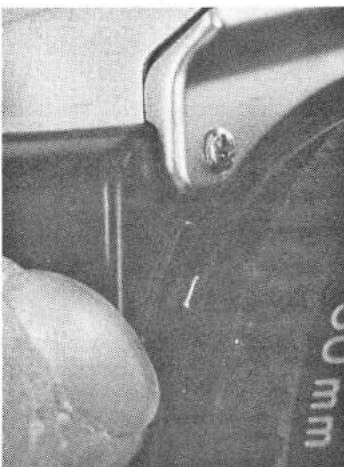
While this system is technically more accurate, it would be hard to devise a particular picture-taking situation to prove it (except where diaphragm blades might get stuck or behave erratically, in which case the Minolta system would certainly yield a better exposure). However, the real reason for Cybernation is to provide a simple method of dual automation. To do this the diaphragm blades must be dynamically balanced with great care, since their precise final exposure position is governed by a turning wheel within the camera body rather than by a brake (usually called a step wedge system) which is used in shutter-speed-priority-only cameras. Lenses without dynamically balanced diaphragm blades will probably not have sufficient accuracy to operate properly. At present, only the new Rokkor-X and Minolta Celtic lenses marked MD can be used in shutter-speed priority with the XD-11.

Does this mean that all the older MC Rokkors, independent makers' lenses, and pre-MC Rokkor lenses are obsolete? Far from it. They (and the MD lenses, of course) can readily be used for aperture-priority automation. Since the user sets the lens opening and the camera's metering system determines the shutter speed for the electronically-controlled shutter, there need be no special smallest aperture keying connection or balanced diaphragm blades at the mercy of a running wheel. You set the aperture you wish, the lens is stopped at that precise point, and the meter reads through the lens, thus determining the shutter time. With fully coupled MC, MD, independent makers' lenses, microscopes, telescopes, mirror lenses, you get full automation at maximum aperture on aperture priority automation. With older pre-MC lenses having auto diaphragms, you can still enjoy auto exposure at shooting aperture by pushing the depth-of-field preview lever. With manual lenses, bellows, or extension tubes, you close down the lens to the aperture you want and the camera will automatically provide the proper exposure.

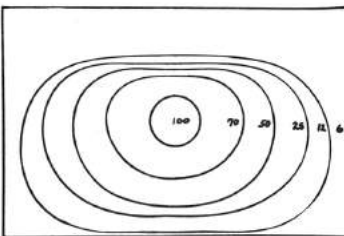
It should be evident that for standard optics, shutter-speed



Spring-loaded rim-driven lug keys lens aperture to camera—same system used on all Minoltas SLRs since SRT-101.



Shutter priority auto exposure control lug is activated by corresponding lug on MD Rokkor lens when lens is shifted to minimum marked aperture, f/16, 22 or 32.



With XD-11 Minolta officially switched from CLC (contrast light compensating) metering to center-weighted.



Items on side of lens mount, top to bottom, are: lens release button, sync terminal, depth-of-field preview button.

priority is most convenient, but for specialized applications already mentioned, aperture-priority exposure is essential for auto exposure.

The adoption of silicon cell meter circuitry in place of the CdS used in the SRT and XE Minolta cameras isn't surprising. Minolta, a pioneer in silicon circuitry, however, didn't adapt it over CdS until the AE-S finder for the XK motor drive camera. Silicon's advantages, in terms of shortened response time and increased low light sensitivity, have been discussed in MODERN many times in the past.

What was not expected, however, was the shift away from CLC metering to regular center-weighted. Actually a careful check of any auto exposure Minolta camera—XE or XK—will reveal that Minolta has already switched metering systems in these cameras at least partially even if they are marked CLC. Why? Probably because the CLC system which worked well in a non-automatic match needle camera did not behave properly in an automatic! The CLC system requires proper metering in contrasty light to be made usually in the horizontal position. Even those who shot vertical pictures often first determined exposure horizontally. However, in the auto exposure mode, the metering and actual exposure is done in whatever format the camera is held—horizontal or vertical. It was determined that with this additional requirement—accurate metering vertically as well as horizontally—the center-weighted meter system produced better results. And so in the XD-11, Minolta bowed to the inevitable and switched to center-weighted metering pattern in this camera.

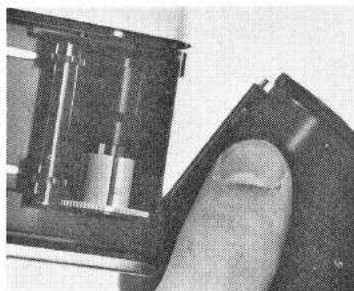
While the metering system will prove to be a most important feature for many users, it is far from being the only important new feature. The electromagnetic shutter release system allows for standard cable releases to be threaded to the shutter button or for remote electronic release cords of 20-in. or 16½-ft. lengths. Multiple exposures can be made by merely pressing in the rewind button beneath the camera and then winding the shutter by operating the film-wind lever. Neither film nor frame counter will move. A film load verification signal at the rear of the camera only operates if the camera has been loaded and threaded properly and film is winding on the take-up spool correctly.

The well-finished interior has an excellent film take-up spool collar with teeth which quickly snag a perforation hole on the film leader to make loading swift and sure. A ± 2 f/stop auto exposure compensation dial around the rewind knob allows a total of 4 f/stops or shutter speed vari-

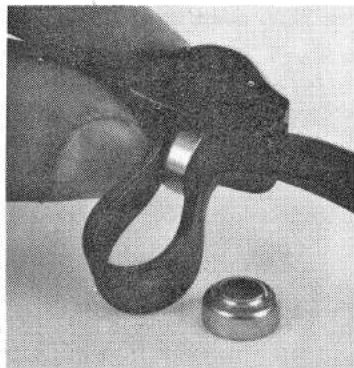
modern tests

ations. These variations show up on the vertical LED indicating scale within the camera finder. A built-in eyepiece blind can be positioned to cover the finder eyepiece, preventing extraneous bright light from entering the finder system, and thus inflating the meter reading when the camera is on a tripod. A much larger rapid-return mirror has been fitted to assure full illumination of the focusing screen even with long lenses or specialized optical equipment having small maximum apertures.

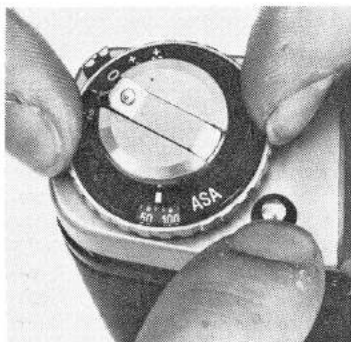
Before we take the camera out for field testing to see if this complicated mechanism can be used simply and conveniently, we wish to discuss two other accessories which many users will feel are almost integral parts of the camera—the Minolta Auto 200X electronic flash unit (\$75) and the Auto Winder D (\$125). The Auto 200X flash, measuring 2¼ x 2¼ x 3½ in., looks much like other Minolta flash units—but the two pinpoint contacts on the bottom



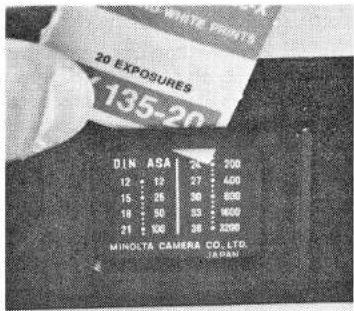
Back can be removed and replaced with special data back (available in the future) to imprint date, other info on picture.



Neat battery holder on plastic neckstrap holds two extra cells, guarantees you won't wind up without battery power.



ASA film speed scale from 12 to 3200 can only be reset after pushing in scale locking button and turning outer dial around rewind knob.



A film box reminder slot? Doesn't every new SLR have one? Note ASA/DIN film speed conversion chart. Good for traveling in Germany maybe.

of its plastic foot give away the fact that it couples specially to the XD-11 camera. What unique feature does it offer? When coupled, the flash unit automatically sets the camera's shutter to the correct 1/100 sec. X-sync flash speed. This alone is not of great significance for most of us. However, the Auto 200X also causes the top arrow-shaped LED within the finder (usually indicating over-exposure) to pulsate—indicating that the flash has completely recycled and is ready to shoot. So you needn't take your eye from the finder to check the readylight. Additionally, during recycling the camera will revert to existing light auto exposure without flash, using the LEDs to show the proper exposure. Also, the flash will not fire until it has recycled to proper capacity.

With ASA 25 film, the autoflash can deliver auto exposure at f/2.8 from 27 in. to 11 ft. and at

f/1.4 from 3¼ ft. to 23 ft. With ASA 400 film, it can deliver the short range at f/11 and the long range at f/5.6. Manual guide number for ASA 25 film is 33 in. high range and 12 in. low range. A very large and legible calculator dial provides all the information you need. The total number of flashes possible depends on the type of batteries used, the range selected and the distance range of the subject since the unit is energy saving. However, with alkaline energizer batteries used at maximum autoflash distance, over 300 flashes are possible with recycling times between ½ sec. and 5 sec.

The flash unit has one additional feature which could be a great boon for owners of auto winders. On the low manual setting it can recycle and fire as fast as 2 fps for up to 40 shots. While your distance range is naturally limited on low power, with ASA 400 film the guide number is still an impressive 40, which should make the unit amply powerful even for close sports work. The electronic flash unit adequately covers the angle of a 35mm focal length lens but can also be used for a 28mm lens by attaching a supplementary wide angle panel (furnished) that cuts the autoflash range and manual guide number only slightly.

The Auto Winder D uses 4 penlight cells and can drive the camera up to 2 fps for 70 36-exposure rolls with alkaline energizers and 150 rolls with nicads. A nice accessory for both Auto Winder D and Auto 200X flash is the 2½ x 4-in. plug-in nicad charger which brings four AA cells back to full strength in 8 hr., using the special Minolta Panasonic batteries (\$15 a set or \$24 with charger).

So much for description. How did the XD-11 and accessories behave in actual operation?

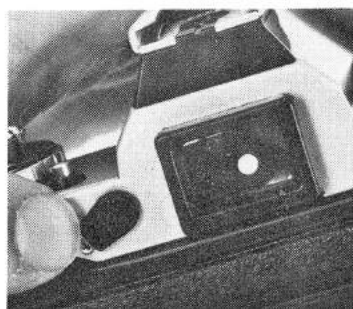
In terms of handling convenience and control placement, we judge the XD-11 to be the best Minolta of all time. The camera can easily be held in the right hand alone, with the ball of your thumb naturally falling slightly on the inside of the comfortably oversized black plastic winder tip and your first finger coming to rest on the 5/16-in. diameter shutter release. The amount of pressure required to turn on the metering system and allowing before shutter release is easily learned. When releasing the shutter the shallow central well surrounding the release button forms an additional finger support so that you can really squeeze off a shot with extreme gentleness. The exposure noise level is quite moderate—just slightly louder than an Olympus OM-2—with most of the noise and vibration occurring after exposure, at the end of the mirror return cycle. We noted that on the two all-mechanical shutter speeds of B and O (the latter

allowing you a 1/100 sec. flash sync as well as single speed if all battery power fails), the shutter button must be depressed considerably more to release the shutter than when the electromagnetic release mechanism is operating. The socket atop the button is threaded so both regular mechanical cable releases and remote electronic releases can be attached... a nice dual touch.

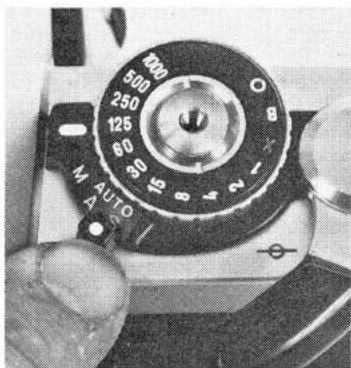
The Seiko MFC vertically-travelling metal blade focal-plane shutter is recocked and film is wound with a smooth easy single 130° movement of the stubby, sturdy rapid-wind lever. Unlike most such mechanisms found on non-additive-stroke wind levers,



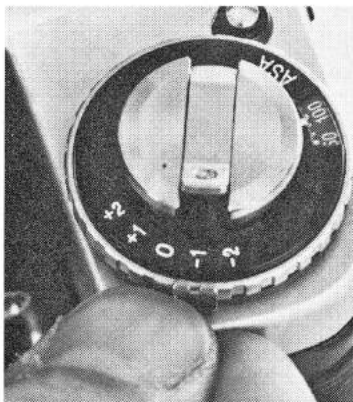
Red bar in safe load signal window indicates whether film has been threaded properly for correct winding.



Rear lever, when pushed, causes viewfinder blind to close (showing white dot). This prevents backlight from entering finder when camera is operated with eye removed from behind finder eyepiece.



Highly visible, convenient exposure mode selector switch has deep indent stop positions for S (shutter priority), A (aperture priority) auto exposure plus M (manual) exposure mode. No batteries? You can still operate camera at 1/100 sec. and for electronic flash by using setting "0" on speed dial.



Exposure adjustment control lever locks in each marked setting, provides ±2 f/stops or shutter-speed exposure compensation depending on auto exposure mode selected.

there is no ratcheting wind noise but only a slight click as the wind is completed, and again when the lever returns to its original rest position. This smooth, quiet action should help photographers attempting to take pictures as noiselessly as possible.

We first tried the camera on shutter-priority automation. We were worried that the mode-selector switch adjacent to the shutter-speed dial might in error move off the "S" setting, but we found the detent satisfyingly secure. In normal existing light, indoors or out, you can really see the vertical translucent scale (which is illuminated by light coming from the lens), the bottom shutter-speed scale (which receives its light from a translucent window on the top front of the prism housing) and the aperture window (whose light is reflected from the lens barrel). However, like all camera information centers within viewfinders, legibility depends on outside light illuminating the scales. When shooting under poor lighting conditions various scales can become difficult to see. Additionally we experienced problems viewing the LEDs in extremely bright light since the LED scale did not seem to be shielded from illumination directly behind it. These occurrences are noticeable only under unusually dark or extremely brilliant illumination, and not often experienced. At all other times the scales were quite visible, as were the LEDs. Almost the entire view through the finder could be seen by eyeglass wearers. (The best solution for them, however, is to use one of Minolta's correction eyepieces.) The split-image rangefinder, micro-prism collar and full-focusing screen were up to Minolta's usual excellent standards.

It did take us some time to accustom ourselves to shutter-speed priority automation since we had a tendency to turn the diaphragm ring off the smallest f/16 green aperture instead of shifting shutter speeds. This caused the LEDs to turn off or the over-exposure warning diode to turn on. A lock position for the lens aperture scale would help duffers like us, and we hope that eventually Minolta incorporates one. Once we taught ourselves to rotate the shutter dial rim with the edge of our second finder, how-



Coupled Auto 200X flash unit provides two autoflash ranges, two manual ranges. The lowest manual range can be synced with auto winder at 2 fps when nicad batteries are used.



Three contact Auto 200X flash unit (shoe plus two central points) provides automatic setting of camera's X sync speed but not aperture.



Compact nicad charger NC-2 charges four cells for winder or flash unit in 8 hr.

ever, we could quickly select the desired shutter speed. Some of our staff technicians were able to maintain sufficient pressure on the shutter release button itself to keep the LEDs lit even while shifting shutter speeds; others found it best to allow the LEDs to be turned off while changing speeds. The protruding rim of the shutter-speed dial does make it possible to shift speeds fairly easily without taking the camera from your eye, but we would like slightly more knurling on the dial's edge to make shifting speeds even easier.

We deliberately set a 1/1000 sec. shutter speed under very poor lighting conditions to see how the automatic speed shifting function worked. We noted that the red (under-exposure warning) arrow diode turned on when slight pressure was applied to the shutter button. This indicated that the light was insufficient even for the lens' largest opening, f/1.4. The camera then automatically shifted the shutter speed downwards from 1/1000 to provide proper exposure—in this case all the way down to about 1/2 sec. We found this to be a most useful feature, particularly for camera users who neglect to keep an eye on their scales and might not notice the under- or over-exposure warning signals. In most cases a slight change in shutter speed would right the exposure and no one would have to subject the camera to the extreme situation that we did.

We shifted easily to aperture priority auto exposure to try the camera on a mirror lens, on a bellows for close-ups, as well as with our pre-MD regular MC Rokkor lenses. We pushed the mode selector switch to A, and immediately the LED scale shifted to show shutter speeds set rather than apertures. Admittedly we found aperture priority automation slightly easier to adapt to from the start, since we no longer had to contend with manually setting the green minimum aperture numeral in the finder before the automation took over. However, many users we asked to try the camera found the shutter priority more comfortable.

Aperture priority does not have the advantage of a shift in aperture or shutter speed if over exposure occurs; however, should the exposure go toward under-exposure and extend further than the official 1 sec. slowest shutter speed, the camera will actually set shutter speeds far slower. While the amount of additional auto exposure shutter speed available may vary from one camera to another, our production test sample was quite capable of auto exposures as long as 16 sec.! We judged exposures made under such conditions sufficiently accurate for good pictures. (The longer you use the XD-11 the more things you will find it can do that aren't in the

Would you like to test your own lens? Get MODERN's Lens Test Kit, \$4.95. Write to Lens Test Kit, MODERN PHOTOGRAPHY, 2160 Patterson Street, Cincinnati, Ohio 45214.

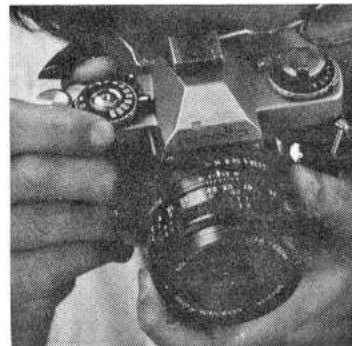
instruction books.)

We did manage to find one problem in obtaining correct exposures for both auto exposure modes. The meter is center-weighted, so what happens when your main subject is not centrally located and has a different brightness level than the central picture area? With most auto SLRs there is a memory hold control which allows you to take a reading from the main subject, hold it, re-compose and then release the camera using the original exposure. This is not so with the XD-11. There is no control to hold the reading.

However, we solved this problem by first checking the reading of the main subject, then swinging the camera to the proper composition and using the exposure compensation dial to match the new LED reading to our first exposure reading. Don't forget to return the dial to its zero position following use. (There is no signal in the viewfinder indicating that the compensating dial is in use.)

The silicon cell located atop the prism above the eyepiece proved highly sensitive and swift in reaction. Consequently, it isn't surprising that it was also sensitive to any extraneous light which entered the eyepiece (as occurs when you make auto exposures without placing your eye close to the finder to shield it). In that case we were thankful for the convenient built-in eyepiece blind which could be flipped into place swiftly. The large white dot on the blind can be helpful to novice camera owners who forget to remove the blind and then wonder why they can't see through the finder!

With auto-exposure cameras, there is always the danger of starting an auto exposure with the lens cap on, causing the mirror to move up and the shutter to remain permanently open, and thus draining the batteries. Vari-



You can change shutter speeds in shutter priority auto exposure mode while viewing aperture LEDs in finder, but it requires a bit of adroit handwork.

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ous SLRs give you specific instructions on what to do next, but nothing could be simpler than with the XD-11. Just shift the shutter dial to the X sync speed and the exposure will automatically end. Since the LED display cannot be left on inadvertently, there is little chance that the two 1.5-volt silver oxide batteries in the bottom of the XD-11 will die prematurely—an ever-present danger in most LED-controlled SLRs. With so-called normal use, it's said that a set of batteries will last about a year. Knowing the great number of pictures taken by MODERN readers, we would place battery life closer to six months and urge you to check battery strength regularly. When the LEDs appear to lose some brightness, replace the batteries. Always carry fresh, spare batteries in the plastic container that slides on the neck strap (a rather chintzy neckstrap for such a fine instrument, by the way—why can't manufacturers furnish straps worthy of the cameras?).

When operating in cold weather (below freezing), inserting a set of fresh batteries is always advisable.

Did we find the dual automation confusing? We expected to but we didn't. Our only trouble (and that of a number of other testers), as we've said, was in the shutter-speed priority mode when we always seemed to be trying to move the aperture off the smallest green numeral). The proof of the pudding was in the countless rolls of perfectly exposed (by shutter-speed and aperture priority automation) film we turned out.

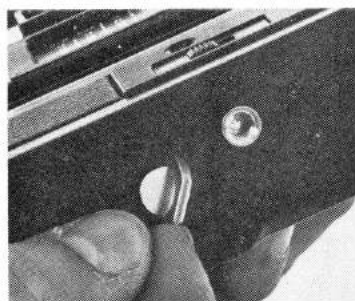
The Auto Winder D was a delight to use since its small bulk ($5\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{3}{8}$ -in.) could easily be slipped into a pocket (try that with auto winders having vertical handles!) and could be attached in seconds because it fits the camera bottom directly with no coupling covers to remove.

Controls are simple. There is an on-off switch, a film rewind lever, plus a red diode operating light. You can make single exposures by pressing down once on the shutter release. By maintaining pressure we were able to achieve 36 exposures in a continuous run within 18.4 sec. at shutter speeds of $1/125$ sec. or faster. Many auto winders experience difficulties at the end of films. The Auto Winder D, if halted at film end while still winding, immediately stops the motor. The red operating light remains on to indicate that the winder should be turned off and the film rewind. Since the XD-11's shutter release button can be fitted with an electronic cord, the cam-

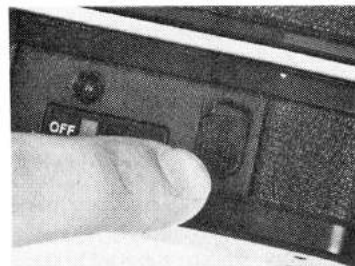
era should be easily adaptable to remote wire or wireless motor-driven control, although it may prove difficult to determine just how many frames you have shot from a long distance.

Why did Minolta relent and produce the add-on Auto Winder D? Because the specifications for auto winders are much more conservative than the needs of high-speed motor drives that must operate at speeds of 5 frames per sec. or so. And the new Seiko MFC shutter has been designed to work with a 2 fps motor winder.

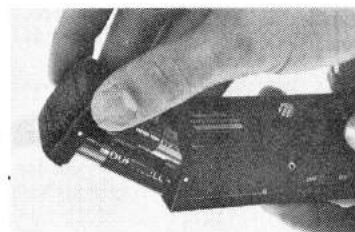
Putting the Auto 200X flash on the XD-11, setting it to the low power option on the manual setting, and wowing your friends with flashes at 2 frames per sec. synced to the winder is almost as good as actually using the combination. Yes, it does work nicely and the climactic shot of the basketball player making the basket will never be missed again. The flash operated well in regular auto-flash modes, and even with the wide angle attachment the corner fall-off in illumination using a 28mm lens was remarkably small and was acceptable.



Folding auto winder attaching key can be operated even if you don't have fingernails.



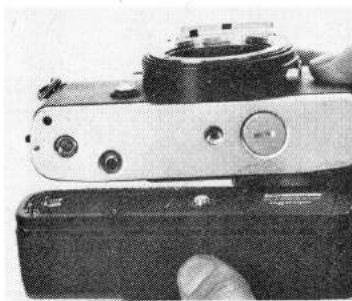
Auto winder film rewind lever is hardily placed so film can be rewound without removing camera from tripod.



Four AA cells clip neatly into Auto Winder battery holder, can power camera up to 2 frames per second for about 150 rolls of 36 exposures when nicads are fitted. (according to the manufacturer claims.)

It's interesting to note that Minolta, despite being the originators and patent holders of the Olympus OM-2 flash-metering-on-the-film-itself system, did not use it for the XD-11. Why? Because the direct slip-on flash of the Auto 200X, while perhaps not as useful for specialized flash close-up, bounce and off-camera work, is far more convenient and uncomplicated to use than is the Olympus system. Thus we have another indication that Minolta has not forgotten its audience—the serious amateur seeking convenience and simplicity.

For our tests of the Minolta XD-11, we also received the new 50mm f/1.4 MD Rokkor-X lens. This is hardly a new optic for us since, in formula and manufacture, it's basically the same 7-element 5-group achromatic (non-multicoated) coated lens as before. But the mount has been reengineered and is now some $\frac{3}{8}$ in. shorter and $2\frac{1}{2}$ oz. lighter than its MC Rokkor predecessor. Still, with its $1\frac{1}{2}$ -in. length, $2\frac{1}{2}$ -in. overall diameter and 8-oz. weight, it cannot be considered a compact lens as the XD-11 is



Auto Winder D fits camera immediately with no need to unscrew baseplate attaching cover.

considered a compact camera. However, Minolta is noted for its very rugged lens mounts which are capable of taking much punishment. (Criticism has been leveled against extremely lightweight compact lenses as having been weakened in the process of paring down size and weight.)

On the Optical Bench: We recently tested the Minolta SR-T 202 with its MC lens (Aug. 1977), and found virtually no obvious difference optically between that and the newest MD Rokkor-X lenses supplied for the Minolta XD-11. The axial image observed on the bench exhibited a slight amount of over-corrected spherical flare wide open (f/1.4); but the star image markedly improved one stop down. At f/5.6, the image became critically sharp. A very slight focus shift was measured between f/1.4 and 5.6, but was judged to be within optical tolerances. We noticed a change in spherical aberration with color (known as spherochromatism) resulting in a modest amount of red-purple fringing at f/1.4 and 2. There was no noticeable decentering or optical-mechanical errors in this test

Resolution

at 1:48 magnification				
f/no	Center Lines/mm	Corner Lines/mm		
1.4	Good	43	Exc.	34
2	Good	48	V/Good	43
2.8	Good	60	Good	48
4	Good	60	V/Good	54
5.6	Good	67	V/Good	60
8	Good	60	V/Good	54
11	Good	54	Exc.	54
16	Good	54	V/Good	48

Contrast

at 30 lines/mm				
f/no	Center %	Corner %		
1.4	Low	45	Medium	35
2	Low	50	Medium	42
2.8	Medium	62	High	53
4	Medium	65	High	62
5.6	Medium	69	High	62
8	Medium	65	High	60
11	Medium	58	High	58
16	Low	54	High	50

sample. Off axis, only a small amount of coma and skew-ray flare were visible on the bench when the lens was wide open. By stopping the lens down to f/5.6, these aberrations came into control and vanished leaving a very compact, sharp image. *In field test slides:* Our color transparencies backed up our optical bench observations. Only shots at f/1.4 were soft due to the flare, but even shots one stop down were very sharp and crisp. The slight focus shift was undetectable. Residual ghosts and flare were minimal even in backlit situations or with the sun in the picture area. MD lenses are the same quality as the MC, but enable you to use the XD-11's aperture priority automation.

In our month of rigorous testing, both in the field and laboratory, the XD-11 never failed or jammed, but we did find one disconcerting factor. Shooting with Minolta's 100mm f/2.5 MD Rokkor-X, we noticed an excessive amount of pincushion distortion in the viewfinder. We first thought it was the lens, but pictures proved the fault to lie in the finder system. Apparently, to achieve such a bright viewfinder image, the incorporation of a focusing screen made up of over 2 million tiny cones (rather than the usual Fresnel rings) may be part of the cause of this viewfinder distortion. It may also be the prism, or both together; but keep in mind that the distortion is only noticeable when you focus on rectilinear subjects and not in normal picture taking situations. It does not appear in the pictures, but can shock you when you first see it. We judged it the most convenient and useful Minolta SLR ever—a new standard of flexibility and compactness for its competitors to try to approach. More important, however: In the hands of a photographer, it will perform well, feel "right" and offer much enjoyment during every picture session.

MINOLTA XD-11

NO. 1064864



Camera type: 35-mm auto-exposure single-lens reflex

Normal lens: 50-mm MD Rokkor-X f/1.4; 50-mm f/1.7 also available

Shutter: Electronically governed, vertically traveling metal; speeds 1 to 1/1,000 sec plus B, X, single mechanical 0 (1/100) sec

Viewfinder: Fixed, eye-level type with central split-image rangefinder surrounded by microprism ring on frosted fresnel field; indicator LEDs show speed being set on "A" mode, aperture being set on "S" mode and correct exposure in "M" mode when shutter speed indicated agrees with speed manually set; also seen are manually set aperture and shutter speed; over-exposure warning LEDs.

Exposure meter: Through-lens, full-aperture reading with single silicon photocell; EV range 1-18 at ASA 100 with f/1.4 lens; plus/minus 2 EV exposure override; ASA range 12-3,200; uses two S-76 1.5-volt silver-oxide batteries

Flash synchronization: Hot-shoe and single PC outlet; X at 1/100 sec, M, MF, and FP bulbs at 1/15 or slower

Film loading: Conventional; swing-open back

Film transport: Single-stroke, non-ratcheted, 30-degree standoff

Film counter: Additive, automatic reset

Other features: Eyepiece shutter, self-timer, depth-of-field preview lever, safe-load signal window, film-tab memo holder

Weight: 822 g (29 oz.) with 50-mm f/1.4 lens

Dimensions: L., 136 mm (5.35 in.); H., 86 mm (3.39 in.); D., 92 mm (3.62 in.) with 50-mm f/1.4 lens.

Accessories: Full line of lenses from 7.5- to 1,600-mm, zooms and macros; Auto Winder D, 200 X electronic flash; remote cords; extension tubes; micro and macro equipment

Price: \$700 with 50-mm f/1.4 lens

Distributor: Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446

Field Check

By P. I. Moore

The long-awaited moment finally had come. The first dual-mode automatic-exposure SLR, the Minolta XD-11, was safely tucked away in my trusty soft bag, protected from the rigors of a packed station-wagon ride for a weekend in the mountains.

My first reaction to the historic SLR, the first "have-it-your way" automatic dual-mode SLR, had been one of enthusiasm. Just the right size, smooth as butter in operation, LED-indicated silicon-cell-selected shutter speed or aperture at a feather-touch of the electromagnetic shutter release.

Arriving in upstate New York, on a mountaintop far from camera stores and other public utilities, I found the camera dead as a doornail in the morn-

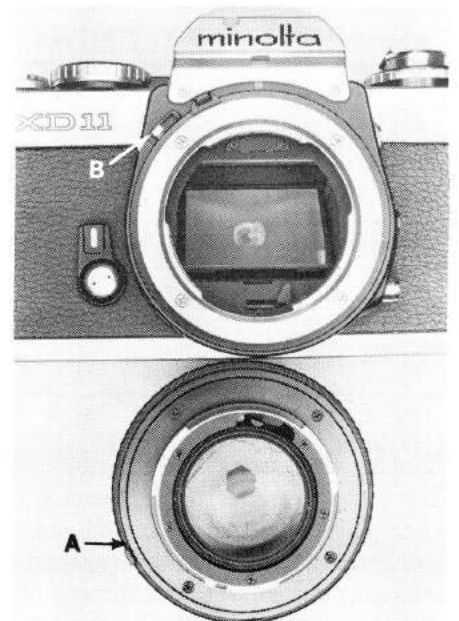
ing. Since I would as soon, in this age of electronics, be without film as batteries, I had plenty of spares—about five miles away by foot.

The mechanical "O" speed of 1/100 sec kept me going until new energy sources could be tapped. Fast-film fanatics should keep a .6ND (4X) neutral-density filter in their bag to keep them in business at 1/100 sec in similar emergencies.

The highly sensitive electromechanical shutter release had been pressed against the resilient case divider, discharging the battery overnight. After-the-fact discussions with Minolta led to a recommendation when traveling to

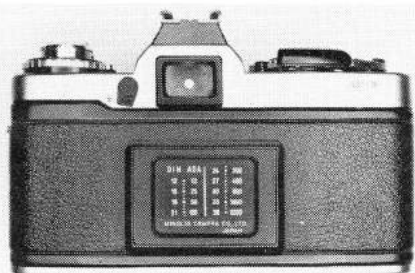
MD lenses have coupling lug (A), engaging mating lug (B) on camera. It signals lens' minimum f-stop, and when it is set there, to camera's shutter-priority exposure-automation system. Otherwise mount, lenses have same couplings as older series.

set the camera at "O" or "B", its mechanically timed speeds where a longer release stroke is needed to fire the shut-



ter or light the LEDs. Obviously, too, turn off the motor. Surer still would be to keep the camera in a "neverready" case while in transit or to have your case compartment stiffened up to protect the release. We note that the XG-7, Minolta's less expensive aperture-preferred-only twin to the XD-11, has a positive "off" switch.

The XD-11 is, self-evident, human



Eyepiece shutter has white dot signal, shown when closed by lever to its left. Window below wind lever has "safely loaded" signal, visible when film is correctly loaded and taking up properly.

Most of XD-11's controls are on top deck. Trip button at center of shutter-speed dial has cable-release socket whose insulated center makes socket do double duty as electrical receptacle for remote-tripping cord. Auto-exposure selection switch is shown set to A for aperture-priority automation. Setting switch to M permits full manual operation, while S selects the shutter-priority mode. Second contact in hot-shoe is for auto-flash unit's part in exposure system.

engineered, even soft to the touch. It's covered in soft black material that feels like glove leather. After an initial reading of the instruction manual, it can be left behind with confidence. The camera won't trip you up.

The size seems just about perfect—not too big for comfort nor too small for firm holding and easy operation. Controls are clustered conveniently—the right hand tripping, advancing, setting shutter speeds and exposure mode. The left is left free to adjust aperture, focus, and support the lens in use.

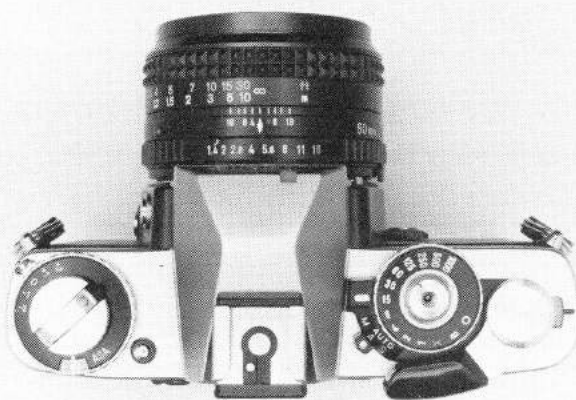
The XD-11 balances well even with the larger Minolta lenses originally made for the XK and XE bodies. Newer lenses in the MD series are smaller, enhancing its slim low profile. Even with long lenses and the motor winder,

Meter-sensitivity pattern

Center-bottomweighted



handling is easy in the hand and on the tripod. Location of the lugs keeps neck straps well out of the way when winding and rewinding. To my surprise, the camera with the new 500-mm Minolta f/8 mirror /continued on page 49



Lens Test Glossary

Aberrations: A flawlessly manufactured lens may still exhibit residual aberrations (image faults). Often, certain aberrations are permitted by the designer to minimize others felt to be more harmful to image quality.

Astigmatism: Causes lines radial to the optical axis, and lines perpendicular to these, to focus in two different planes. Improved by stopping down.

Centering: The center of each curved surface should lie on a common line.

Coma: Comet- or tear-drop-shaped images of off-axis points of light. Improved by stopping down.

Contrast test: Contrast levels are compared electronically between the image of a coarse and fine slit, and the result is expressed as a percentage.

Critical f-stop: The largest opening at which the aberration being examined is considered to be under satisfactory control.

Distortion: Causes image of window frame (for example) to bow out (barrel type) or in (pincushion type), but does not influence sharpness. Not improved by stopping down.

Flare: Causes an overall loss in contrast. Sometimes called "veiling glare."

Flare test: The lens is presented to a target consisting of a totally black spot surrounded by a uniformly bright field of infinite dimension. The amount of light energy present in the center of the image of the black spot is measured and expressed as a percentage of the light energy in the image of the bright surround.

Lateral chromatic aberration: A variation of magnification with color. Not improved by stopping down.

Longitudinal chromatic aberration: A shift of focus with color. Not improved by stopping down.

Spherical aberration: Causes a focus shift as the lens is stopped down.

Star test: The image of a point of light is examined with a microscope. The deviation of the image from the ideal indicates the nature

and extent of the aberrations.

Transmittance: The percentage of light entering a lens that gets transmitted toward the image plane.

T-number: The actual maximum f-number divided by the square-root of the transmittance.

Vignetting: Causes underexposure at the corners of the film. Improved by stopping down.

Misc. terms and practices: *Close working limits* are measured from the target to the foremost portion of the lens when it is set to its closest focusing position. The *close-limit field size* is measured at this point. The portions of the image field examined during both the contrast and star tests are the center, 1/3 out, 2/3 out, and far edge for rectangular formats and correspond to the following positions within the 24x36-mm format of a 35-mm camera's image: the center, 6 mm off-center, 12 mm off-center, and 18 mm off-center. Square formats are examined at the center, halfway to the edge, at the edge, and at the corner. ○

Lens Performance

See Lens Test Glossary on page 47

Mechanical: In view of the extreme importance of correct cooperation between this camera and its lenses, especially in auto-exposure modes, each of the three lenses tested was critically examined internally. Special attention was paid to diaphragm blades and associated mechanisms, since excessive clearances contributing to backlash will result in sporadic exposure errors.

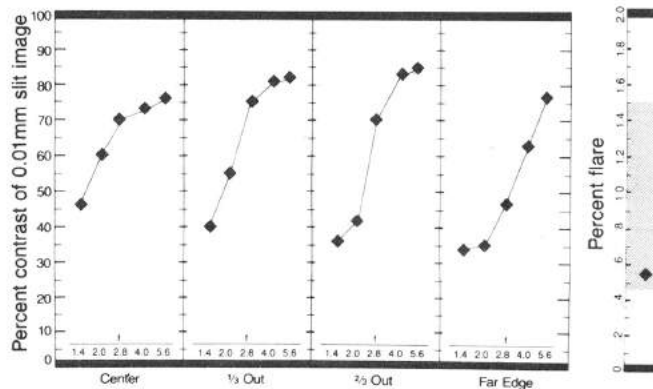
To Minolta's credit, the auto-diaphragm mechanism in all three lenses proved to be sturdy, uncomplicated, and made to very close tolerances. Their diaphragm opening shape was particularly consistent and symmetrical—an indication of excellent design and manufacture.

The 28-mm f/2 incorporates a "floating-element" focusing system that's nearly as elaborate as a zoom lens. It involves the rotation of the front group as the central and rear groups move in a straight line, at a different (faster) rate than the front group through the focusing range. The helicoid is all aluminum, as are those of the other two lenses tested.

The 50-mm f/1.4 has its front group imbedded in a Fibreglas-reinforced plastic cell. Other plastic parts include the front name-ring and the f-stop setting ring. Both carry a lot of data, imparted by the molds; thus the use of plastic for the rings eliminates the expense of engraving.

The 135-mm f/2.8 is conventionally constructed. ●

MD ROKKOR-X 50-MM f/1.4 NO. 3126770

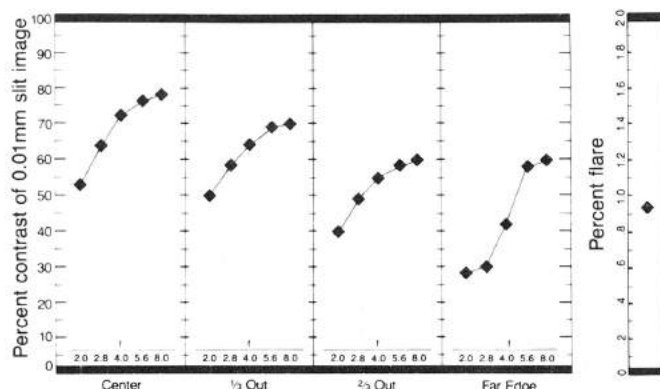


Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	2	2.8	4.5	Critical f-stops
Astigmatism	1.4	1.4	1.4	
Lat. chrom.	None	None	None	
Long. chrom.	blue—red = 0.07 mm			Focus shift
Spherical	f/1.4—f/5.6 = +0.05 mm			
Distortion	Moderate barrel			
Vignetting	None beyond f/3.5			
Centering	Near-perfect			

Dimensions: O.D. 64.5 mm (2.54 in.), L. 40 mm (1.57 in.)
Weight: 232 g (8.12 oz.) **Filter Size:** 55 mm
Close working limit: 344 mm (13.54 in.)
Close limit field size: 157 x 240 mm (6:18 x 9.45 in.)
Focal Length: Marked: 50 mm **Measured:** 50.73 mm
f-number: Marked: f/1.4 **Measured:** f/1.45
Transmittance: 90.0% **T-number:** T-1.53

Diamond represents performance of lens tested. Bar indicates minimum and maximum flare for all lenses of similar focal length and construction tested to date.

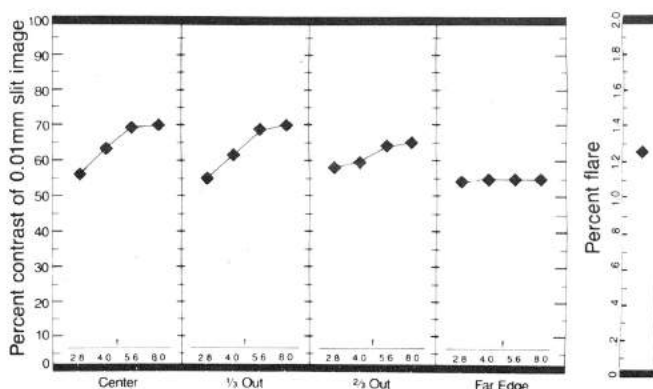
MD W ROKKOR-X 28-MM f/2 NO. 1202482



Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	4	4	6.3	Critical f-stops
Astigmatism	4	6.3	6.3	
Lat. chrom.	Slight	Moderate	Moderate	
Long. chrom.	blue—red = 0.10 mm			Focus shift
Spherical	f/2—f/8 = +0.07 mm			
Distortion	Very slight barrel			
Vignetting	None beyond f/4			
Centering	Off			

Dimensions: O.D. 66 mm (2.60 in.), L. 61 mm (2.40 in.)
Weight: 348 g (12.18 oz.) **Filter Size:** 55 mm
Close working limit: 187 mm (7.36 in.)
Close limit field size: 170 x 258 mm (6.69 x 10.16 in.)
Focal Length: Marked: 28 mm **Measured:** 28.54 mm
f-number: Marked: f/2.0 **Measured:** f/2.01
Transmittance: 80.0% **T-number:** T-2.25

MD TELE ROKKOR-X 135-MM f/2.8 NO. 1232892



Aberration	1/3 out	2/3 out	Far edge	Notes
Coma	4	4.5	6.3	Critical f-stops
Astigmatism	2.8	2.8	2.8	
Lat. chrom.	None	Slight	Pronounced	
Long. chrom.	blue—red = 0.20 mm			Focus shift
Spherical	f/2.8—f/8 = 0.00 mm			
Distortion	None			
Vignetting	None beyond f/4.5			
Centering	Perfect			

Dimensions: O.D. 64 mm (2.52 in.), L. 90 mm (3.54 in.)
Weight: 507 g (17.75 oz.) **Filter Size:** 55 mm
Close working limit: 1343 mm (52.87 in.)
Close limit field size: 211 x 317 mm (8.31 x 12.48 in.)
Focal Length: Marked: 135 mm **Measured:** 135.71 mm
f-number: Marked: f/2.8 **Measured:** f/2.95
Transmittance: 90.0% **T-number:** T-3.11

MINOLTA XD-11

continued from page 47

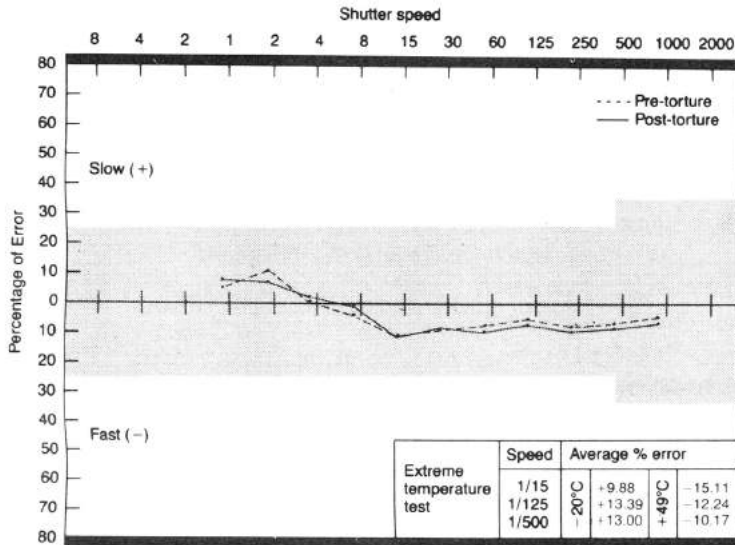
lens balances so well on the body's tripod socket that the lack of one on the lens proved not to be a problem. Some motor drives and winders we've used spring away from the camera bottom, even uncoupling the motor, when heavy lenses are mounted. The folding attachment key holds Minolta's Auto Winder D so solidly in place that this is not a problem with any lens I've tried.

Camera handling is almost identical with or without the motor. The electromechanical tripping mechanism controls the camera with or without the motor from the same shutter release. No change in hand position is required.

The extra weight of the motor—about half a pound with batteries—tends to balance the weight of even a relatively bulky shoe-mount flash so that it doesn't turn turtle on the chest.

Like most small winders, the Auto Winder D will run so many rolls of film per battery set /continued on page 109

Shutter Performance



Suggested ANSI (formerly ASA) shutter-accuracy standards are shown by shaded area. Higher speeds have more tolerance.

Miscellaneous Data

FUNCTION	PRE-TORTURE	POST-TORTURE
Shutter trip:	245 grams	260 grams
Shutter travel:	1.5 mm	1.5 mm
Self-timer:		
Minimum:	0.5 sec	0.5 sec
Maximum:	8.7 sec	8.7 sec
Viewfinder:		
Framing accuracy:	OK	OK
Synchronization:		
Electronic flash:	0.0 msec @ 1/100	0.0 msec @ 1/100

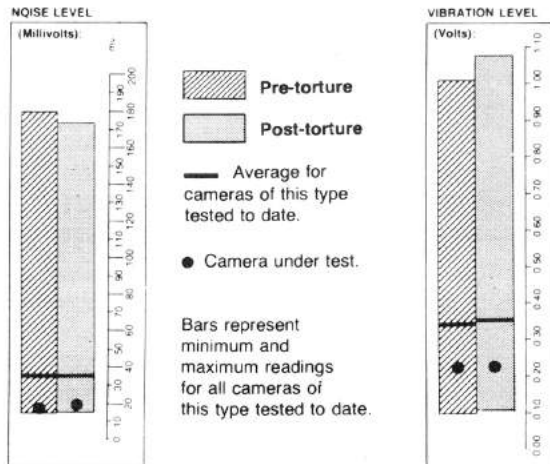
Exposure System

EV ERROR: Top figures are pre-torture, low figures post-torture									
ASA	25			100			400		
BLV	5	10	15	5	10	15	5	10	15
1.4	+0.5	+0.5	+0.6	+0.5	+0.5		+0.6	-0.8	
		-0.6	+0.8	+0.4	+0.6		+0.8	+0.6	
2.0		+0.1	+0.1	+0.1	-0.3		+0.3	+0.4	
		+0.3	+0.3	+0.3	-0.3		+0.3	-0.4	
2.8		+0.1	+0.1	-0	-0.3		+0.3	-0.3	
		+0.3	+0.3	+0.3	-0.3		+0.3	-0.4	
4.0		-0.1	+0.1		-0.3	+0.3	+0.4	-0.4	
		-0.3	+0.3		-0.3	+0.3	+0.4	-0.4	
5.6		-0.3	+0.3		-0.3	+0.3	+0.5	+0.5	
		-0.4	+0.3		-0.4	+0.3	+0.4	+0.5	
8.0		-0.1	+0.3		-0.3	+0.3		+0.5	+0.5
		+0.3	+0.3		-0.3	+0.3		+0.5	+0.5
11		-0.3	+0.1		-0.3	+0.3		+0.4	+0.5
		+0.3	+0.3		+0.3	+0.3		-0.4	+0.5
16			+0.1		-0.3	+0.3		-0.3	+0.4
			+0.3		-0.3	+0.1		-0.4	+0.4

EV ERROR: Top figures are pre-torture, low figures post-torture									
ASA	25			100			400		
BLV	5	10	15	5	10	15	5	10	15
1	+0.8	±0		+0.3					
	+0.8	+0.3		+0.4					
1/2		+0.4		+0.8			+1.0		
		+0.4		+0.3	+0.4		+0.4		
1.4		-0.4		+0.6	+0.4		+0.5		
		+0.4		+0.6	+0.4		+0.4		
1.8		-0.3			-0.4		+0.8	+0.4	
		+0.3			-0.3		+0.8	+0.5	
1/15		+0.3	+0.3		-0.3		+0.8	+0.5	
		+0.3	+0.3		-0.4		+0.8	+0.4	
1/30		-0.6	+0.3		-0.3		+0.4		
		+0.6	+0.3		+0.4		+0.5		
1/60		+0.8	+0.3		+0.3	+0.3	+0.5		
		-0.6	+0.3		+0.3	+0.3	+0.5		
1/125			+0.3		-0.3	+0.3	+0.5		
			+0.3		+0.8	+0.1	+0.5		
1/250		+0.3	+0.3		+0.6	+0.3	+0.4	+0.4	
		+0.3	+0.3		+0.8	+0.3	+0.6	+0.4	
1/500		+0.3	+0.3		+0.3	+0.3	+0.8	-0.4	
		+0.3	+0.3		+0.3	+0.3	+0.9	+0.4	
1:1,000			+0.3		-0.3			+0.4	
			+0.3		-0.4			+0.5	

Blank spaces show limits of camera's dynamic range and/or values tested. BLV: scene luminance = EV @ ASA 100. ANSI tolerances: ±0.5 EV.

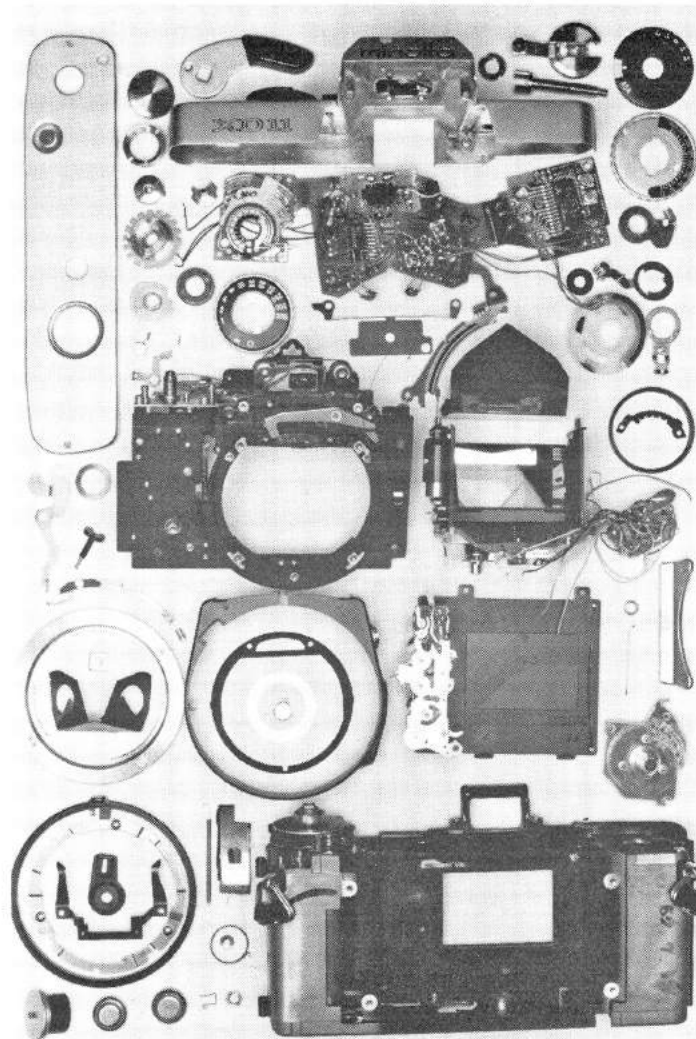
Vibration and Noise



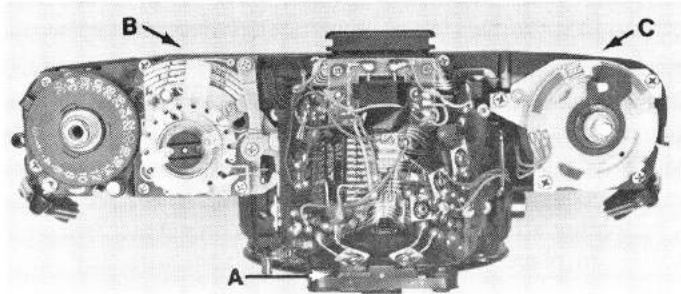
Noise and vibrations standards do not exist, but relative levels become evident when values for several cameras are compared.

Stripdown Report: MINOLTA XD-11

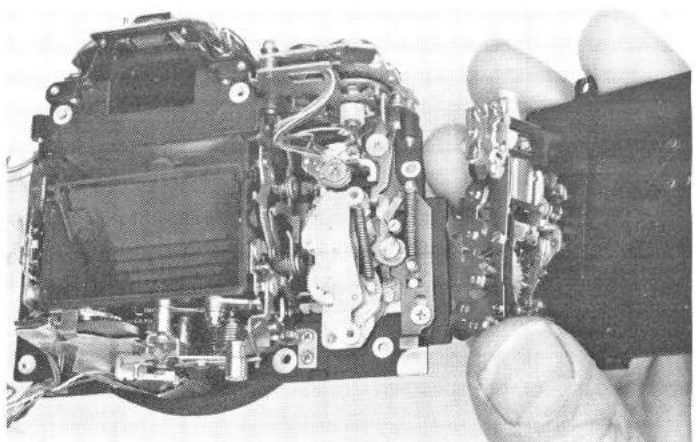
Material choice: (interior) Good (exterior) Good Modular construction? Yes
 Assembly, finish: (interior) Good (exterior) Good Replace key parts easily? Yes
 Repair access: Good Seal against dirt: Fair
 Adjustment provision: Good
 Do frequently made adjustments require major stripdown? No



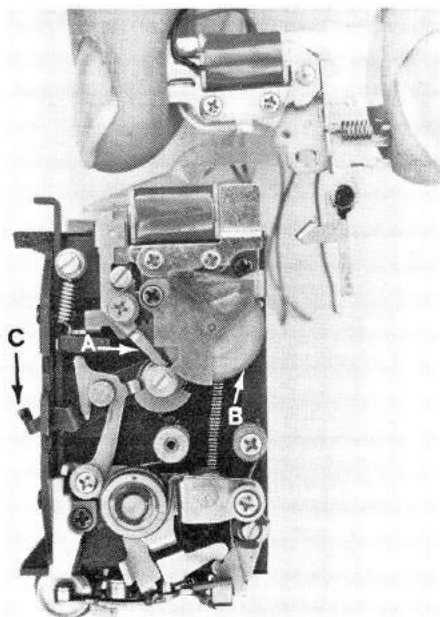
Stripped down to submodular form here, XD-11 nonetheless boasts modular construction, easy access for servicing.



Top view sans cover shows shutter-speed-display tape spooled between rollers at pentaprism's front (A), exposure-system selector switch (B), film-speed/exposure-bias variable resistor (C), overall tidiness.



Age of electronically enriched cameras doesn't mean end of intricate mechanical contrivances. XD-11's versatile functions depend heavily on proper operation of hundreds of moving parts. An example of good repair access is seen here with Seiko MFC shutter being lifted off rear of mirror chamber after removal of three screws, desoldering of four wires.



Students of camera technology will someday analyze the XD-11 as one of their requirements. It's loaded with some of the most advanced design and engineering examples found in any camera being made today. Since the camera's multimode exposure automation is a "first," we'll concentrate on that after mentioning some of the other highlights.

Combination magnet held in fingers is energized for electromagnetically tripping camera. Second combination magnet, below first, releases pawl (A) to drop into teeth of ratchet wheel (B), thus halting diaphragm's closing motion against actuating coupler (C). Action occurs as described when camera is set for shutter-priority auto exposure.

The use of plastics in certain camera parts has attracted close scrutiny: some people worry that the intended cost reduction will be accompanied by an unfortunate cheapness in appearance, feel, or function. With very few exceptions, this has not proven true, and the use of plastics in the XD-11 is judged to be well done.

The camera covering—a spongy plastic whose smooth surface resembles fine leather—has fooled most reviewers into thinking it is glove leather. The shutter and film-speed setting knobs and scales along with the entire front shroud are plastic, as is the panel immediately above the shroud, atop the body flange. This panel, with its tiny window for imaging the f-stop scale /continued on page 110

Field Check: Minolta XD-11

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Aperture-preferred operation is selected for use with earlier Minolta lenses, for special optics (such as mirror or perspective-control lenses, bellows, or optical oddities) or in situations where depth-of-field control is all-important. In dim-light situations with the lens wide open, the camera will set and indicate its selection of shutter speeds down to one sec. Longer exposures may be made but are not identified. The cut-off point varies with the camera. Ours was good down to four to six sec. Below that, the shutter may have to be closed by setting to O or B.

Shutter-preferred operation is for MD-series lenses only. Here we preset our desired shutter speed and the lens' diaphragm ring in use to its smallest f-number—a green 16 on the normal lens—and get an LED readout of the aperture selected by the camera on a scale that displaces the previously seen shutter-speed scale at the right of the finder. If we select too optimistic a shutter speed, the camera indicator runs off the top or bottom of the finder aperture scale, flashing a warning, and then the XD-11 resets itself to a more appropriate shutter speed. The system is convenient and goof-proof, but can leave you without important information if your initial shutter-speed setting was grossly in error. You must reset to aperture-preferred with the appropriate aperture to find out what shutter speed you ended up with.

I found myself using both automatic systems more frequently than manual. The exposure-bias control took care of any disagreements of preference between the camera and myself.

Everything shot with the 500-mm f/8 mirror lens was, of course, aperture-preferred. Operation was easy and exposures accurate—more accurate than they could have been with a mechanically timed noncontinuous shutter. The horizontally split rangefinder circle with its microprism collar tended to black out with this extreme focal length, leaving us with a black hole in the middle of the finder. We understand that interchangeable groundglass options will be made available at factory service centers as you read this.

Working in a dark and spottily lighted forest, we used aperture-preferred to hold depth of field, bracketing exposure with the bias control. Color transparencies were right on and shooting was convenient. In spite of worries about reciprocity failure, exposures of several

seconds were okay.

Shutter-preferred operation came into use when working with children hurtling in and out of shady areas while shooting with the light but fast 135-mm MD Rokkor f/2.8. Again, fast and accurate exposures were produced at a shutter speed selected to match the requirements of the focal length. Once or twice, the system knocked down to a slightly slower speed but not enough to cause motion blurring.

Attention to detail with the user in mind is evident in many areas of the camera. Minolta has, legitimately, picked up Leitz's raised bayonet index buttons. Lens changes can be done one-handed, braille fashion, in the dark. Logically, the entry points are at the top of the mount.

Depth-of-field preview is convenient and uncomplicated: just set the aperture you want and shove in a small button at the left of the lens mount. In shutter-preferred mode, you must go off f/16 temporarily. For me, any SLR without convenient depth-of-field preview is a reflex focusing rangefinder camera—neither fish nor fowl.

No mirror lock-up is provided; this may affect some critical users working at higher magnifications with long tele lenses or macro setups. Microphotographers should test the equipment for vibration level on their instruments. Most of us will never notice its lack. Many automatic cameras have taken this simplifying shortcut.

Exposure override or backlight correction is provided by a small movable tab concentric to the film-speed setting ring around the rewind knob. Pushing this in and twisting it in either direction provides a continuously variable plus or minus two-stop exposure bias. This tab has been enlarged and made more visible since the preproduction models. I would still like to see adjustment of this control made easier, perhaps with only a click-stop to indicate its "normal" position. It slows one down to have to defeat the lock for each change. This control provides the easiest way to bracket with an automatic camera.

I found the viewfinder a pleasure in all respects, its screen bright and contrasty, focusing decisive. Only with extremely long lenses did I feel the need for something different. With my rather powerful glasses I could see the entire finder, including scales and indicators around its periphery. Rectangles stay rectangular: no detectable distortion is introduced by the finder optics. Viewfinder information is provided by a series of LEDs that light up beside the

speed or aperture selected by the system in either automatic mode. In manual use, the meter works normally, indicating its recommendation for the aperture you've already set. Apertures set manually on the lens, for manual or aperture-preferred use, are seen directly at the bottom center of the finder imaged by a small lens system in the prism housing. Just to its right, another display shows the shutter speed preselected in manual or shutter-preferred mode, brightly illuminated by a diffusion panel at the top front of the prism housing.

The centerweighted silicon-cell metering system was fast and accurate. No recovery lag of any sort was noted in automatic motor-drive use, going from one lighting extreme to another. Low-light level sensitivity of EV 1 or one sec at f/1.4 (ASA 100) was more than sufficient for handheld use. The circuitry is on only when the shutter release is depressed either for a reading or to make an actual exposure, so battery drain should be minimal as long as the release is protected in traveling.

We liked the seemingly innocent cable-release socket in the center of the shutter release. This diabolically clever device accepts both an ordinary Compur-type cable release and the screw-in tip of a remote electric cord up to five meters long, operating either mechanically or electrically as needed. Sideward pressure from a stiff or heavy release will turn on the system and the LEDs steadily. Don't leave releases hanging for long periods.

A minor annoyance was the rewind release on the winder itself; it is burdened with an unnecessary safeguard. It must be turned with the ball of the thumb before it can be pushed upward for rewinding or making motor-drive multiple exposures.

We liked especially the compact size and convenient handling of the Minolta XD-11. Its design was fuss-free and sensible. Its sophisticated electronics safeguards the user from his own errors—but without burdening him with unnecessary complication. It's a very well-thought-out camera—part of a very well-thought-out system. ☉

Stripdown: Minolta XD-11

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of the lens in the finder, abuts the top cover. The juxtaposition gives the opportunity to see how well the finish of the panel, a chrome-plated plastic, and the top cover, a chrome-plated brass stamp-

ing, match one another. To me, the finishes appeared identical.

The camera's viewscreen is worth exploring in much greater detail than this space provides, and a technical analysis of it will appear in these pages in the near future. For now, we can summarize by describing its structure: a colorless plastic sheet with a fresnel-lens pattern embossed on the side facing the mirror, and the opposite side embossed with the familiar split-wedge "rangefinder" center, a microprism ring around this, with the frosted remainder of the field created by embossing a myriad of tiny conical "lens-lets" into the surface.

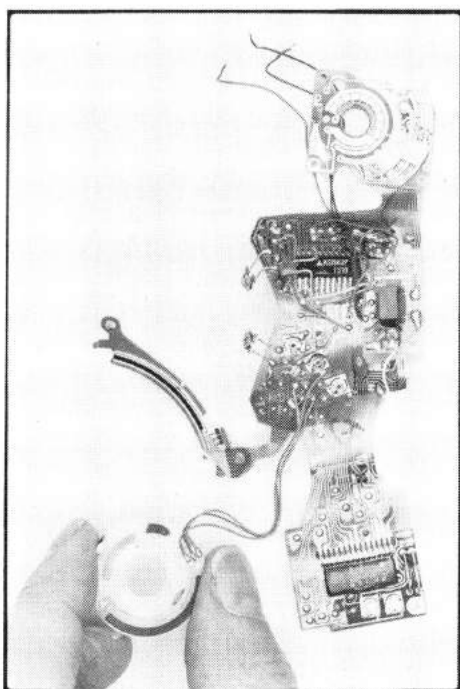
Changing the viewscreen does not require a major stripdown, but should not be attempted except by qualified repairmen. It looks as if a small design/construction change could make the screen user-changeable.

The shutter-release button is a combination mechanical/electrical linkage. In normal operation, i.e., at any setting except "B" or "O", pressing the release button closes a switch. The same switch can be closed by shorting the recessed center of the cable-release socket (within the center of the release button) to the camera body. That's right, the cable-release socket has an insulated contact at its center, so any cable release or, for that matter, any paper-clip wire can be used to trip the camera by shorting out this central contact against the camera body.

This also provides for a convenient way to attach a remote tripping cable: the remote cables are simply two-wire leads, one wire making contact with the insulated center, the other with the (metal) threaded portion of the socket. Screwing the remote-tripping cable into the socket as if it were a cable release completes the connection, and a switch on the end of the cable is closed to complete the circuit, tripping the camera.

The electrical system is completely bypassed when the shutter-speed dial of the XD-11 is set to either "B" or "O", where an internal cam shifts some coupling levers that permit the deeper travel of the release button to trip the camera mechanically.

In the electrically operated mode, the actual release is electromagnetic, using the technique of dumping the small charge from a tiny capacitor into the coil of an electromagnet to negate the attraction of an integral permanent magnet. Such electromagnets with permanent magnetic poles are sometimes called "combination magnets," and are just beginning to be seen in certain cameras. The XD-11 uses two of them; one to trip the camera; the other to arrest



Neat as a pin, XD-11's flexible circuit board eliminates a tangle of wires, improves serviceability and reliability. It has majority of camera's electronic components, yet its removal for this photo required desoldering only 10 wires.

the closing of the diaphragm during shutter-priority auto-exposure operation. In this mode, the final exposure-determination is made as the diaphragm is stopping down, just before the mirror rises. So when the camera is in the shutter-priority mode, exposure-meter readings are made two ways; at full aperture (wide open) for user information, then at the "working aperture" for the actual exposure. Here's how it works:

Selecting a shutter and film speed, the user points the camera at a scene. The photocell responds to the light from the scene coming through the viewscreen, and the nominal f-stop about to be automatically set will be displayed in the finder by an LED lighting up opposite the appropriate number on the f-stop scale.

Tripping the camera brings about the following sequence. The first combination magnet unlatches the diaphragm-actuating coupler in the camera, permitting the diaphragm to begin stopping down. As the diaphragm closes, the photocell responds to the light getting through to it. When the required intensity of light is detected by the photocell, associated circuitry is triggered. This dumps a small charge from a tiny capacitor into the second combination magnet, unlatching a ratchet pawl. This pawl abruptly halts a rapidly spinning ratchet wheel in a geartrain connected to the diaphragm-actuating coupler, thus stopping the closing diaphragm

dead in its tracks.

While this has been going on, the mirror has not moved; if it did, it would blind the photocell. The release of the mirror is retarded through the action of a pneumatic plunger. The spring-loaded plunger is permitted to begin its lazy travel as soon as the initial release of the first combination magnet occurs.

The retarded motion of the plunger, due to the pneumatic drag, is suddenly changed when a bleeder hole in the plunger clears the cylinder bore. Then the plunger speeds up over the remaining short distance it travels, gaining enough momentum to easily unlatch the mirror, which swings up freely, coming to rest against (you guessed it) a spongy plastic strip at the forward edge of the viewscreen frame.

The two-speed pneumatic plunger is put into play again as the spring-powered mirror-box mechanism completes its full cycle and comes to rest. As a variety of sizable spring forces approach the end of their travel, the momentum is dissipated through the plunger. But the mirror itself, through its compound arm action that raises the rear edge as the front swings up, does not rely on the plunger for damping its motion; just for retarding its time of release. A rubbery sleeve on the stud that locates the mirror's angle when at rest cushions the impact of the mirror's downswing.

If, while in the shutter-priority mode, the user ignores the over- or under-range warning lights in the finder and trips the camera without first selecting a shutter speed that the exposure metering system considers to be correct, the system automatically overrides the "incorrectly" selected speed in favor of the closest "correct" one. This holds whether the lens runs out of f-stops for the system at the wide-open or fully stopped-down limit. It's as though the user instructed the camera to take over because it was smarter than he about exposure metering. In the shutter-priority mode the camera agrees with him; it accepts the responsibility and the compliment. Not so in the aperture-preferred mode, though, because of the difference in function.

In the aperture-preferred mode the shutter speed is controlled electronically, having its own electromagnet (not a combination magnet) that traps the shutter's closing blade-set as a function of the film speed and f-stop selected, plus the light reaching the photocell. This is accomplished strictly at full aperture, with none of the sophisticated stop-down final reading, second combination-magnet inter-

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Stripdown: Minolta XD-11

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play described for the shutter-speed-priority mode. The camera might be thought of as "smarter" or more "sophisticated" in the latter mode.

The shutter itself is the very compact Seiko MFC, described in detail previously (see *POPULAR PHOTOGRAPHY*, March '78, page 147), and will be summarized here by simply stating it wins our respect.

The viewfinder display of shutter speeds manually selected incorporates a strictly optical/mechanical system in this electronically enriched camera. The speeds are photographically printed on a narrow band of film whose free ends are wrapped around two small rollers, one of which is spring-loaded, and the other linked to the shutter-speed dial by a fine, twisted-wire cable.

A small milk-white window above the "i" in "Minolta" illuminates the numerals on the tape, which is imaged through the front of the pentaprism, appearing at the bottom of the viewscreen frame.

The electronic endowments of the XD-11 are very neatly concentrated in one of the most intelligently designed flexible circuit boards seen in a camera. One wire required desoldering to disassemble the camera enough for an inside look at the mirror box, shutter, and flexible circuit board. A total of 10 wires (a modest number in this field) were desoldered for the deep stripdown made for this report.

Switches and variable-resistor contacts appeared to be satisfactory, but the contacts associated with tracing the user-selected f-stops did not look to be the best effort Minolta is capable of. If any area of the camera had to be singled out for signs of economizing, I would point to the variable resistors and associated parts found in the film-speed and f-stop translators. They do not have the appearance of their more expensive cousins in Minolta's XE-7, for example. Appearance aside, they seem to function quite well. 